C-10225
08/28/2015

CITY CLERK
ORIGINAL

PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS

PROJECT NO. 121325

WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION-PHASE III

(JUNE, 2015)

GLENDALE

Registered Professional Engineer (Civil)
CERTIFICATE NO.
47509
JEREMY W.
LAIPPLE
Date Signed 5/28/15
ARIZONA, U.S.A.
Expires 03/31/17

CITY OF GLENDALE

ENGINEERING DEPARTMENT
5850 W. Glendale Avenue, Glendale, Arizona 85301 (623) 930-3630

GLENDALE AZ

Engineering Department

Memorandum

DATE: June 16, 2015
TO: All Plan and Specification Holders
FROM: Engineering
SUBJECT: PROJECT NO. 121325 – WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION-PHASE III

ADDENDUM NO. 1

In accordance with the contract documents "Information for Bidders," Page 4, Paragraph 12 CHANGES TO PLANS AND DOCUMENTS, the following revisions and clarifications to the plans and specifications shall become a part of the contract documents and the bidder shall acknowledge receipt thereof as directed in Paragraph 13 of the Information for Bidders.

PRE-BID MEETING CLARIFICATIONS

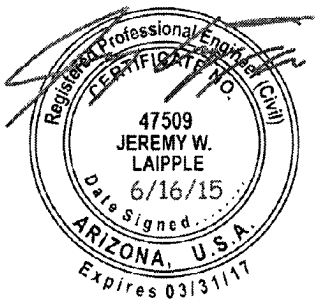
1. Construction Schedule – Work restrictions shall be in place for the downtown Glendale area as shown on drawing sheets 6 thru 10. No work shall be scheduled to occur between November 27, (start of Glendale Glitters) through February 7 (end of Glendale Chocolate Affaire.

2. Public Involvement – "Your Project Marketing and Outreach (YPMO)" is the Public Involvement representative for this project, and will act as the primary point of contact between the Contractor and the general public. Contractor shall be required to coordinate with and through YPMO for communication and correspondence with the general public, including public meetings and the distribution of informational fliers, door hangers, etc. The Contractor is responsible to communicate schedule and anticipated public impacts as necessary to keep YPMO accurately informed. Contractor shall accompany YPMO to public meetings as requested.

3. Fire Hydrant Removal – The existing fire hydrant at 67th Lane and Sherri Jean Lane shall be removed by the Contractor and salvaged to the City, as described in the Technical Specifications Section 01025 – Measurement and Payment as part of Bid Item 24.

4. If the Contract is to be awarded, it will be awarded to a responsive and responsible Bidder based on the low total base bid in the best interest of the City. Unit pricing is required to be provided in the proposal Bid Form. The extensions and additions will be verified to assure correctness. Award will be based on the revised total if any errors are found.

END OF ADDENDUM



PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS

MAYOR
Jerry P. Weiers

COUNCIL MEMBERS
Jaime Aldama
Samuel U. Chavira
Ian Hugh
Gary D. Sherwood
Lauren Tolmachoff
Bart Turner

ACTING CITY MANAGER
Richard A. Bowers

CITY ATTORNEY
Michael D. Bailey

CITY CLERK
Pamela Hanna

CITY ENGINEER
David D. Beard

GLENDALE AZ

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NOTICE TO CONTRACTORS

Sealed bids shall be either mailed to the City of Glendale Engineering Department, 5850 West Glendale Avenue, Glendale, Arizona, 85301, or hand-delivered to the Engineering Department office, third floor, 5850 West Glendale Avenue, Glendale, Arizona, for furnishing all plant, material, equipment and labor, and to complete construction of: **PROJECT NO. 121325-WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III.** Provide construction work to rehabilitate sanitary sewer collection pipes and manholes at various locations throughout the City of Glendale as shown on the working drawings and specifications.

Bids must be received by the Engineering Department of the City of Glendale no later than 1:30 P.M., JUNE 18, 2015. Any bid received after that time will not be considered and will be returned to the bidder. At that time, the bids will be publicly opened and read aloud in the Engineering Department Conference Room, 5850 West Glendale Avenue, Glendale, Arizona.

A mandatory pre-bid conference will be held on JUNE 11, 2015, at 1:30 P.M., in the Engineering Department Conference Room, 5850 West Glendale Avenue, Glendale, Arizona. Bidders, contractors, and other interested parties are invited to attend this conference which will be conducted by the Owner and Engineer to answer any questions.

Plans, specifications and contract documents may be examined, and copies may be obtained at City of Glendale Engineering Department, 5850 West Glendale Avenue, Glendale, Arizona. A non-refundable charge of $25.00 shall be paid for each set of plans and specifications issued from this office.

Each bid shall be in accordance with the plans, specifications and contract documents, and shall be set forth and submitted on the BID DOCUMENTS included with the project specifications book. The BID DOCUMENTS may be removed from the project specifications book and submitted independently of such book. Each bid shall be accompanied by a proposal guarantee, in the form of a certified or cashier's check or bid bond for ten percent (10%) of the amount of bid, made payable to the order of the City of Glendale, Arizona, to insure that the successful bidder will enter into the contract if awarded to him and submit the required Certificate of Insurance, Payment Bond and Performance Bond. All proposal guarantees, except those of the three lowest qualified bidders, will be returned immediately following the opening and checking of proposals. The proposal guarantees of the three lowest qualified bidders will be returned immediately after the contract documents have been executed by the successful bidder. The proposal guarantee shall be declared forfeited as liquidated damages if the successful bidder refuses to enter into said contract or submit the Certificate of Insurance, Payment Bond and Performance Bond after being requested to do so by the City of Glendale, Arizona.

The City of Glendale reserves the right to reject any or all bids or waive any informality or irregularity in a bid. No bidder may withdraw his bid for a period of seventy (70) days after opening and reading of the bids.

The City of Glendale is an equal opportunity employer and minority business enterprises and women's business enterprises are encouraged to submit bids.

CITY OF GLENDALE, ARIZONA

Published: MAY 28 & JUNE 4, 2015
The Glendale Star

INFORMATION FOR BIDDERS

1. ELIGIBILITY OF CONTRACTORS: When calling for bids for contracts for public work to be performed on behalf of the State or any political subdivision thereof, which will be paid for from public funds, no bid shall be considered for performance of a contract, including construction work which is not submitted by a bidder duly licensed as a contractor in this State. No bid shall be awarded to any contractor or entity not authorized to do business in the State of Arizona by the Arizona Corporation Commission, as required by statute.

2. PROPOSAL: Bids to receive consideration shall be made in accordance with the following instructions:

(a) Before submitting a bid, bidders shall carefully examine the plans and specifications and contract documents, visit the site of the work, fully inform themselves as to all existing conditions and limitations.

(b) Bids shall be submitted on the "PROPOSAL" forms provided and delivered to the City of Glendale Engineering Department on or before the day and hour set in the "NOTICE TO CONTRACTORS," as published. Bids shall be enclosed in a sealed envelope marked on the outside lower right-hand corner indicating:

1. The bidder's name and address.
2. The project number.
3. The title of the project.
4. The time and date the bids are to be received.

(c) It is the sole responsibility of the bidder to see that his bid is received in proper time. Any bids received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

(d) The signatures of all persons shall be in longhand. Any interlineations, alterations, or erasures must be initialed by the signer of the bid.

(e) Bids shall not contain any recapitulations of the work to be done. No oral, telegraphic, telephonic, or modified proposals will be considered.

3. BID SECURITY: Each proposal shall be accompanied by a proposal guarantee in the form of a certified or cashier's check or bid bond, with a properly executed Power of Attorney attached, in an amount equal at least to ten percent (10%) of the proposal payable without condition to the City. If a bid bond is submitted with the bid it shall be issued by a company licensed with the Arizona Department of Insurance and authorized to issue such bonds in this state. **NO BONDS ISSUED BY INDIVIDUAL SURETIES WILL BE ACCEPTED. The company issuing the bid bond shall have a rating of not less than A- in the BEST rating available at the time this project was let to bid.** The proposal guarantee shall guarantee that the bidder, if awarded the contract, will, within ten (10) working days after the award, execute such contract in accordance with the proposal and in manner and form required by the contract documents, and will furnish good and sufficient bond for the faithful performance of the same, a payment bond and a certificate of insurance. The bid securities of the three (3) lowest bidders will be retained until the contract is awarded, or other disposition made thereof. The bid securities of all bidders, except the three (3) lowest, will be returned promptly after the canvass of bids. In the event the Contractor fails, within ten (10)

working days after the award, to execute said Contract and deliver the Performance and Labor and Material Payment Bonds and the Certificate of Insurance, the Bid Security shall become the property of the City.

4. WITHDRAWAL OF BID: Any bidder may withdraw his bid, either personally, by telegram or by written request, at any time prior to the scheduled closing time for receipt of bids. No bid may be withdrawn by telephone. Any bid withdrawn will not be opened and will be returned to the bidder. After opening and reading of the bids, no bidder may withdraw his bid for a period of seventy (70) days from the date of opening and reading.

5. LATE BIDS: Bids received after the scheduled closing time for receipt of bids, as contained in the "Notice to Contractors," will not be considered and will be returned to the bidder.

6. AWARD OR REJECTION OF BIDS: The contract will be awarded to the lowest and best qualified responsive bidder complying with these instructions and with the "NOTICE TO CONTRACTORS." The City of Glendale, Arizona, however, reserves the right to accept or reject any or all bids or to waive any or all informalities or irregularities in the bid. Alternates may be accepted depending upon the availability of City funds. Accepted alternates will be considered in determining the lowest responsive and responsible bidder.

7. BIDDERS INTERESTED IN MORE THAN ONE BID: No person, firm or corporation shall be allowed to make, file, or be interested in more than one (1) bid for the same work unless alternate bids are called for in the specifications or any addenda. A person, firm, or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices on materials to a bidder is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

8. CONTRACT AND BONDS: The form of contract, which the successful bidder as Contractor will be required to execute and the forms of bonds which he shall be required to furnish are included in the contract documents and should be carefully examined by the bidder. The successful bidder shall use the forms provided or such other forms as are acceptable by the City. The Contract and Performance and Labor and Material Payment Bonds will be executed in three (3) original counterparts. All bonds shall be issued by companies licensed with the Arizona Department of Insurance and authorized to issue such bonds in this state. **NO BONDS ISSUED BY INDIVIDUAL SURETIES WILL BE ACCEPTED. The company issuing any bond shall have a rating of not less than A- in the BEST rating available at the time this project was let to bid.**

9. INSURANCE REQUIREMENTS: Contractor, and each Sub-contractor performing work or providing materials related to this Agreement must procure and maintain the insurance coverages described (collectively, "Contractor's Policies"), until each Parties' obligations under this Agreement are completed. Contractor must at all times relevant hereto carry a commercial general liability policy with a combined single limit of at least $1,000,000 per occurrence and $2,000,000 annual aggregate. **Contracts in excess of $250,000 shall require $2,000,000 single occurrence/$5,000,000 annual aggregate.**

Sub-contractors must at all times relevant hereto carry a general commercial liability policy with a combined single limit of at least $1,000,000 per occurrence.

This commercial general liability insurance must include independent contractors' liability, contractual liability, broad form property coverage, products and completed operations, XCU

hazards if requested by the City, and a separation of insurance provision.

These limits may be met through a combination of primary and excess liability coverage.

Auto. A business auto policy providing a liability limit of at least $1,000,000 per accident for Contractor and $1,000,000 per accident for Sub-contractors and covering owned, non-owned and hired automobiles.

Workers' Compensation and Employer's Liability. A workers' compensation and employer's liability policy providing at least the minimum benefits required by Arizona law.

Equipment Insurance. Contractor must secure, pay for, and maintain all-risk insurance as necessary to protect the City against loss of owned, non-owned, rented or leased capital equipment and tools, equipment and scaffolding, staging, towers and forms owned or rented by Contractor or its Sub-contractors.

10. SUBCONTRACTORS LISTING AND CERTIFICATION OF CONTRACT COMPLIANCE: The contractor will be required to furnish the form of subcontractors listing and certification of contract compliance with the executed contract documents. This information is requested for tracking and insurance purposes only.

11. INTERPRETATION OF PLANS AND DOCUMENTS: If any person contemplating a bid for proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other proposed contract documents, or finds discrepancies in or omissions from the plans and specifications, he may submit to the Engineering Department, a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. Questions received less than ninety-six (96) hours before the bid opening time may not be answered. Any interpretation or correction of the documents will be made only by Addendum, duly issued and a copy of such Addendum will be mailed or delivered to each person receiving a set of such documents. The City of Glendale will not be responsible for any other explanations or interpretations of the proposed documents.

12. CHANGES TO PLANS AND DOCUMENTS: Any changes to the plans and documents shall be made only by Addendum. No verbal or other changes to the plans and documents will be valid. A copy of each Addendum will be mailed or delivered as provided in Section 13 below.

13. ADDENDUM: Any addenda will be faxed, mailed or delivered to all who are known by the City to have received a complete set of bid documents, and to offices where bid documents have been filed for review purposes. It is the responsibility of each bidder to ascertain that he has received all addenda issued by telephoning the office identified in the NOTICE TO CONTRACTORS as the location where bid documents are available prior to submitting his bid.

Bidders shall acknowledge all addenda in the appropriate location on the "PROPOSAL" form. Failure to acknowledge receipt of Addenda shall render the bid proposal non-responsive and it will be rejected.

14. ASSIGNMENT OF CONTRACT: No assignment by the Contractor of any contract to be entered into hereunder, or any part thereof, or of funds to be received thereunder by the Contractor, will be recognized by the Owner unless such assignment has had prior approval of the Owner, and the Surety has been given due notice of such assignment in writing and has consented thereto in

writing.

15. PLANS AND SPECIFICATIONS TO SUCCESSFUL BIDDER: The successful bidder may obtain five (5) sets of plans and specifications for this project from the City.

16. TIME OF COMPLETION: The Contractor shall commence work under this project on or before the tenth day following receipt of the Notice to Proceed for that project from the City of Glendale and shall fully complete all work under the project within ONE-HUNDRED DAYS (120 DAYS) consecutive calendar days from and including the date of receipt of such Notice to Proceed. Time is of the essence in the completion of all work required under this contract. The Contractor shall, at all times, during the continuance of the contract, prosecute the work with such force and equipment as is sufficient to complete all work within the time specified.

17. CITY OF GLENDALE TRANSACTION PRIVILEGE TAX: The City of Glendale transaction privilege tax shall **NOT** be waived under the provisions of this contract. The current privilege tax rate can be obtained from the City of Glendale Sales Tax and Licenses Department. The Contractor shall be responsible for reporting and payment of all city, county, state or federal taxes.

18. PRE-BID CONFERENCE: **A MANDATORY pre-bid conference** will be held on JUNE 11, 2015, at 1:30 P.M., in the Engineering Department Conference Room, 5850 West Glendale Avenue, Glendale, Arizona. Bidders, contractors, and other interested parties are invited to attend this conference which will be conducted by the Owner and Engineer to answer any questions.

19. ALTERNATES: Alternate proposals will not be considered unless called for in the documents or any addenda thereto. When alternates are requested, all requested alternates or alternate bid items, unless otherwise stated, shall be bid. If no change in the base bid will occur with the alternate, enter "No Change."

20. APPROVAL OF SUBSTITUTIONS: The materials, products and equipment described in the Documents and Addenda establish a standard or required function, dimension, appearance and quality to be met by any proposed substitution. No substitute will be considered, before bid opening, unless written request for approval has been received by the City Engineer at least ten (10) working days prior to the scheduled closing time for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including any drawings, cuts, performance and test data and any other information necessary for evaluation of the substitute. Bidder shall not be entitled to approval of a substitute.

If a substitute is approved, the approval shall be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

21. USE OF "EQUALS": When the specifications for materials, articles, products and equipment state "or equal," contractor may bid upon, and use materials, articles, products and equipment which will perform equally the duties imposed by the general design. The City Engineering Department will have the final approval of all materials, articles, products and equipment proposed to be used as an "equal." It shall not be purchased or installed without the prior written approval from the City Engineering Department.

Approvals for "equals," before bid opening, may be requested in writing to the City Engineering

Department for approval. Requests must be received at least ten (10) days prior to the date set for opening the Bid Proposals. The request shall state the name of the material, article, product or equipment for which the item is sought to be considered an equal and a complete description of the proposed equal including any drawings, cuts, performance and test data and any other information necessary for approval of the equal. All approvals will be issued in the form of an addendum.

22. EXAMINATION OF CONTRACT DOCUMENTS AND VISIT SITE: Before submitting a Bid Proposal, bidders should carefully examine the Contract Documents, visit the site of the work, fully inform themselves as to all existing conditions and limitations. No consideration will be granted for any alleged misunderstanding of the material, articles or piece of equipment to be furnished or work to be done. It is understood that the tender of the Bid Proposal carries with it the agreement to all items and conditions referred to herein or indicated in the Contract Documents.

23. BIDDERS IN DEFAULT: No bid will be awarded to any person, firm or corporation that is not authorized by the Arizona Corporation Commission to do business in the State of Arizona, in arrears or is in default to the City of Glendale upon any debt or contract, or that is a defaulter as surety or otherwise upon any obligation to the City of Glendale, or has failed to faithfully perform any previous contract with the City of Glendale.

END OF INFORMATION FOR BIDDERS

PROPOSAL

Place City of Glendale, Arizona

Date June 18, 2015

Proposal of Action Direct LLC, a Corporation organized and existing under the laws of the State of Arizona. a partnership consisting of N/A; or an individual trading as N/A.

TO THE HONORABLE MAYOR AND COUNCIL
CITY OF GLENDALE
GLENDALE, ARIZONA

Gentlemen:

The undersigned hereby proposes and agrees to furnish any and all required labor, materials, construction equipment, transportation and services for the construction of: **PROJECT 121325 - WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III**, in strict conformity with the plans and specifications for the following unit prices:

(Extension of these unit prices on the basis of estimated quantities and the totaling of these extensions are for the purpose of comparing bids only. The mathematics of such extensions and totaling will be checked and corrected by the Engineering Department, before evaluating the bids, and the lowest of such corrected and checked totals will determine the lowest bids.)

BID SCHEDULE

PROJECT NO: 121325

WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION PHASE III

BASE BID

ITEM	DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL AMOUNT
1	Arizona Pollution Discharge Elimination System (AZPDES)	1	LS	$ 3,400.00	$ 3,400.00
2	Mobilization and Demobilization	1	LS	$ 49,100.00	$ 49,100.00
3	Provide and Remove Bypass Pumping and Piping System	1	LS	$ 92,600.00	$ 92,600.00
4	Clean Existing Small Diameter Sewer (8-inch and 10-inch diameter)	1,739	LF	$ 13.00	$ 22,607.00
5	Clean Existing Large Diameter Sewer (27-inch diameter)	843	LF	$ 14.00	$ 11,802.00
6	Pre and Post CCTV Inspection	5,164	LF	$ 3.00	$ 15,492.00
7	Asphalt Concrete Pavement Replacement (MAG STD DET 200-1, T-TOP)	253	SY	$ 221.00	$ 55,913.00
8	Remove and Dispose Existing "Flush Tank" Manhole	1	LS	$ 3,700.00	$ 3,700.00
9	Remove and Replace Existing Curb and Gutter (MAG STD DET 220, TYPE A)	24	LF	$ 80.00	$ 1,920.00
10	Remove and Replace Existing Curb and Gutter (MAG STD DET 220, TYPE C)	15	LF	$ 102.00	$ 1,530.00
11	Remove and Replace Existing Curb and Gutter Transition (MAG STD DET 221)	10	LF	$ 147.00	$ 1,470.00
12	Remove and Replace Existing Chain Link Fence (MAG STD DET 160, MOD)	38	LF	$ 154.00	$ 5,852.00
13	Install 8-inch Diameter Sewer Main	424	LF	$ 75.00	$ 31,800.00
14	Furnish and Install 60-inch Diameter Sanitary Sewer Manhole (MAG STD DET 420)	3	EA	$ 8,700.00	$ 26,100.00
15	Install 8-inch Diameter CIPP Liner	1,499	LF	$ 52.00	$ 77,948.00
16	Install 10-inch Diameter CIPP Liner	240	LF	$ 106.00	$ 25,440.00
17	Clean and Epoxy Coat 60-inch Diameter Sewer Manhole	14	EA	$ 4,000.00	$ 56,000.00

18	Install 6-inch Diameter Ductile Iron (DIP) Water Pipe (Restrained Joint)	124	LF	$ 171.00	$ 21,204.00
19	Install Concrete Encasement of Pipe (MAG STD DET 404)	44	LF	$ 125.00	$ 5,500.00
20	Install 8-inch Diameter Ceramic Epoxy Lined Ductile Iron Sewer Pipe	32	LF	$ 160.00	$ 5,120.00
21	Install 27-inch Diameter CIPP Liner	843	LF	$ 244.00	$ 205,692.00
22	Reinstate Sewer Service Lateral and Install Lateral Seal	24	EA	$ 163.00	$ 3,912.00
23	Install 30-inch Manhole Frame and Cover (MAG STD DET 422)	7	EA	$ 1,000.00	$ 7,000.00
24	Fire Hydrant Assembly (GLENDALE STD DET G-660 MOD)	1	EA	$ 4,500.00	$ 4,500.00
25	Water Service Connection (GLENDALE STD DET G-642)	1	EA	$ 2,600.00	$ 2,600.00
26	Provide Off-Duty Police Officer	200	HR	$ 61.00	$ 12,200.00
27	Provide Traffic Control	1	LS	$ 16,600.00	$ 16,600.00
28	Owner's Contingency	1	LS	$ 82,000	$ 82,000
				TOTAL BID COST	$ 849,002.00

The undersigned hereby declares that he has visited the site(s) and has carefully examined the contract documents relating to the work covered by the above bid or bids.

Upon receipt of notice of the acceptance of this bid, we will execute the formal contract attached within ten (10) days, and will deliver a one hundred percent (100%) Performance Bond for the faithful performance of this Contract, together with a one hundred percent (100%) Payment Bond and Certificate of Insurance.

The bid security attached, with endorsement, in the sum of ten percent (10%) of the total bid, is to become the property of the City of Glendale, Arizona, in the event the Contract and Bonds are not executed within the time set forth, as liquidated damages for the delay and additional work caused thereby.

The undersigned has checked carefully all the above figures and understands that the City of Glendale, Arizona, will not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

The undersigned understands that the Mayor and Council of the City of Glendale, Arizona, reserves the right to reject any or all bids or to waive any informalities or irregularities in the bid.

Respectfully submitted,

Action Direct LLC dba Redpoint Contracting
Contractor

Arizona Contractor's Classification and License No.

ROC #: 265009

By _____
Jeremiah Caucutt / Director of Preconstruction

39506 N. Daisy Mtn Dr. Ste #122

Phoenix, AZ 85086
(Complete business address)

Telephone Number: 602.792.0013
Fax Number 602.792.0016

Bidder shall signify receipt of all Addenda here (if any):

Addenda #1 Pdf - 6-16-15, Addenda #2 6-17-15

Failure to acknowledge receipt of all Addenda shall render the bid proposal non-responsive and will be rejected.

Acknowledged by Jeremiah Caucutt / Director of Preconstruction

CITY OF GLENDALE

Subcontractor Listing and Certification of Contract Compliance

PROJECT 121325 - WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III

The undersigned contractor hereby submits the following list of firms to be employed as subcontractors on the above referenced project:

SUBCONTRACTOR	WORK ELEMENTS	CONTRACT VALUE	DBE(Y/N)*	AGENCY**
VIG	PAVING	$30,587	N	
INSITUFORM	CIPP	$230,341	N	
SOUTHWEST	COATING	$40,900	N	
WASTE MOVERS	BYPASS	$60,959	N	

The undersigned hereby certifies that all subcontracts shall be in writing and shall provide that all work to be performed shall be in accordance with the terms of the Contract. All subcontracts shall be subject to approval by the City. Certified copies of all subcontracts shall be furnished to the Engineer; however, prices may be omitted. Subcontracts shall conform to the regulations governing employment of labor.

Action Direct LLC; dba Redpoint Contracting
Name of Firm

DBE?(Y/N)*: N Agency**: N/A

Signature

Jeremiah Caucutt / Director of Preconstruction
Title

*Firms certified as Disadvantaged Business Enterprises. **Indicate certifying agency, e.g., ADOT, MCHD, COP, etc. **This information is requested for tracking purposes only.** The City of Glendale is an equal opportunity employer and minority business enterprises and women's business enterprises are encouraged to submit bids.

Project 121325

CITY CLERK
ORIGINAL

C-10225
08/28/2015

CONSTRUCTION AGREEMENT

This Construction Agreement ("Agreement") is entered into and effective between the CITY OF GLENDALE, an Arizona municipal corporation ("City"), and Action Direct LLC, an Arizona limited liability company, dba Redpoint Contracting ("Contractor") as of the 28 day of August, 20__.

RECITALS

A. City intends to undertake a project for the benefit of the public and with public funds that is more fully set forth in the **Notice to Contractors** and the attached **Exhibit A** ("Project");

B. City desires to retain the services of Contractor to perform those specific duties and produce the specific work as set forth in the Project, the plans and specifications, the **Information for Bidders,** and the **Maricopa Association of Governments** ("MAG") **General and Supplemental Conditions and Provisions**;

C. City and Contractor desire to memorialize their agreement with this document.

AGREEMENT

In consideration of the Recitals, which are confirmed as true and correct and incorporated by this reference, the mutual promises and covenants contained in this Agreement, and other good and valuable consideration, City and Contractor agree as follows:

1. Project.

1.1 Scope. Contractor will provide all services and material necessary to assure the Project is completed timely and efficiently consistent with Project requirements, including, but not limited to, working in close interaction and interfacing with City and its designated employees, and working closely with others, including other contractors, providers or consultants retained by City.

1.2 Documents. The following documents are, by this reference, entirely incorporated into this Agreement and attached Exhibits as though fully set forth herein:

(A) Notice to Contractors;
(B) Information for Bidders;
(C) MAG General Conditions, Supplemental General Conditions, Special and Technical Provisions;
(D) Proposal;
(E) Bid Bond;
(F) Payment Bond;
(G) Performance Bond;
(H) Certificate of Insurance;
(I) Appendix; and
(J) Plans and Addenda thereto.

Should a conflict exist between this Agreement (and its attachments), and any of the incorporated documents as listed above, the provisions of this Agreement shall govern.

1.3 Project Team.

(A) Project Manager. Contractor will designate an employee as Project Manager with sufficient training, knowledge, and experience to, in the City's opinion, to complete the project and handle all aspects of the Project such that the work produced by Contractor is consistent with applicable standards as detailed in this Agreement.

(B) Project Team.

(1) The Project manager and all other employees assigned to the project by Contractor will comprise the "Project Team."

(2) Project Manager will have responsibility for and will supervise all other employees assigned to the project by Contractor.

(C) Sub-contractors.

(1) Contractor may engage specific technical contractor (each a "Sub-contractor") to furnish certain service functions.

(2) Contractor will remain fully responsible for Sub-contractor's services.

(3) Sub-contractors must be approved by the City, unless the Sub-contractor was previously mentioned in the response to the solicitation.

(4) Contractor shall certify by letter that contracts with Sub-contractors have been executed incorporating requirements and standards as set forth in this Agreement.

2. **Schedule.** The Project will be undertaken in a manner that ensures it is completed in a timely and efficient manner. If not otherwise stated in **Exhibit A**, the Project shall be completed by no later than within one hundred twenty (120) consecutive calendar days from and including the date of receipt of the Notice to Proceed.

3. **Contractor's Work.**

3.1 Standard. Contractor must perform services in accordance with the standards of due diligence, care, and quality prevailing among contractors having substantial experience with the successful furnishing of services and materials for projects that are equivalent in size, scope, quality, and other criteria under the Project and identified in this Agreement.

3.2 Licensing. Contractor warrants that:

(A) Contractor and Sub-contractors will hold all appropriate and required licenses, registrations and other approvals necessary for the lawful furnishing of services ("Approvals"); and

(B) Neither Contractor nor any Sub-contractor has been debarred or otherwise legally excluded from contracting with any federal, state, or local governmental entity ("Debarment").

(1) City is under no obligation to ascertain or confirm the existence or issuance of any Approvals or Debarments or to examine Contractor's contracting ability.

(2) Contractor must notify City immediately if any Approvals or Debarment changes during the Agreement's duration and the failure of the Contractor to notify City as required will constitute a material default of this Agreement.

3.3 Compliance. Services and materials will be furnished in compliance with applicable federal, state, county and local statutes, rules, regulations, ordinances, building codes, life safety codes, or other standards and criteria designated by City.

3.4 Coordination; Interaction.

(A) If the City determines that the Project requires the coordination of professional services or other providers, Contractor will work in close consultation with City to proactively interact with any other contractors retained by City on the Project ("Coordinating Entities").

(B) Subject to any limitations expressly stated in the budget, Contractor will meet to review the Project, schedules, budget, and in-progress work with Coordinating Entities and the City as often and for durations as City reasonably considers necessary in order to ensure the timely work delivery and Project completion.

(C) If the Project does not involve Coordinating Entities, Contractor will proactively interact with any other contractors when directed by City to obtain or disseminate timely information for the proper execution of the Project.

3.5 Hazardous Substances. Contractor is responsible for the appropriate handling, disposal of, and if necessary, any remediation and all losses and damages to the City, associated with the use or release of hazardous substances by Contractor in connection with completion of the Project.

3.6 **Warranties.** At any time within two years after completion of the Project, Contractor must, at Contractor's sole expense and within 20 days of written notice from the City, uncover, correct and remedy all defects in Contractor's work. City will accept a manufacturer's warranty on approved equipment as satisfaction of the Contractor's warranty under this subsection.

3.7. **Bonds.** Upon execution of this Agreement, and if applicable, Contractor must furnish Payment and Performance bonds as required under A.R.S. § 34-608.

4. Compensation for the Project.

4.1 **Compensation.** Contractor's compensation for the Project, including those furnished by its Sub-contractors will not exceed $849,002, as specifically detailed in the Contractor's bid and set forth in **Exhibit B** ("Compensation").

4.2 **Change in Scope of Project.** The Compensation may be equitably adjusted if the originally contemplated scope of services as outlined in the Project is significantly modified by the City.

(A) Adjustments to the Scope or Compensation require a written amendment to this Agreement and may require City Council approval.

(B) Additional services which are outside the scope of the Project and not contained in this Agreement may not be performed by the Contractor without prior written authorization from the City.

5. Billings and Payment.

5.1 Applications.

(A) The Contractor will submit monthly invoices (each, a "Payment Application") to City's Project Manager and City will remit payments based upon the Payment Application as stated below.

(B) The period covered by each Payment Application will be one calendar month ending on the last day of the month.

5.2 Payment.

(A) After a full and complete Payment Application is received, City will process and remit payment within 30 days.

(B) Payment may be subject to or conditioned upon City's receipt of:

(1) Completed work generated by Contractor and its Sub-contractors; and

(2) Unconditional waivers and releases on final payment from Sub-contractors as City may reasonably request to assure the Project will be free of claims arising from required performances under this Agreement.

5.3 **Review and Withholding.** City's Project Manager will timely review and certify Payment Applications.

(A) If the Payment Application is rejected, the Project Manager will issue a written listing of the items not approved for payment.

(B) City may withhold an amount sufficient to pay expenses that City reasonably expects to incur in correcting the deficiency or deficiencies rejected for payment.

(C) Contractor will provide, by separate cover, and concurrent with the execution of this Agreement, all required financial information to the City, including City of Glendale Transaction Privilege License and Federal Taxpayer identification numbers.

(D) City will temporarily withhold Compensation amounts as required by A.R.S. 34-221(C).

6. Termination.

6.1 For Convenience. City may terminate this Agreement for convenience, without cause, by delivering a written termination notice stating the effective termination date, which may not be less than 15 days following the date of delivery.

(A) Contractor will be equitably compensated any services and materials furnished prior to receipt of the termination notice and for reasonable costs incurred.

(B) Contractor will also be similarly compensated for any approved effort expended and approved costs incurred that are directly associated with Project closeout and delivery of the required items to the City.

6.2 For Cause. City may terminate this Agreement for cause if Contractor fails to cure any breach of this Agreement within seven days after receipt of written notice specifying the breach.

(A) Contractor will not be entitled to further payment until after City has determined its damages. If City's damages resulting from the breach, as determined by City, are less than the equitable amount due but not paid Contractor for Service and Repair furnished, City will pay the amount due to Contractor, less City's damages.

(B) If City's direct damages exceed amounts otherwise due to Contractor, Contractor must pay the difference to City immediately upon demand; however, Contractor will not be subject to consequential damages more than $1,000,000 or the amount of this Agreement, whichever is greater.

7. Insurance.

7.1 Requirements. Contractor must obtain and maintain the following insurance ("Required Insurance"):

(A) Contractor and Sub-contractors. Contractor, and each Sub-contractor performing work or providing materials related to this Agreement must procure and maintain the insurance coverages described below (collectively, "Contractor's Policies"), until each Parties' obligations under this Agreement are completed.

(B) General Liability.

(1) Contractor must at all times relevant hereto carry a commercial general liability policy with a combined single limit of at least $1,000,000 per occurrence and $2,000,000 annual aggregate.

(2) Sub-contactors must at all times relevant hereto carry a general commercial liability policy with a combined single limit of at least $1,000,000 per occurrence.

(3) This commercial general liability insurance must include independent contractors' liability, contractual liability, broad form property coverage, products and completed operations, XCU hazards if requested by the City, and a separation of insurance provision.

(4) These limits may be met through a combination of primary and excess liability coverage.

(C) Auto. A business auto policy providing a liability limit of at least $1,000,000 per accident for Contractor and 1,000,000 per accident for Sub-contractors and covering owned, non-owned and hired automobiles.

(D) Workers' Compensation and Employer's Liability. A workers' compensation and employer's liability policy providing at least the minimum benefits required by Arizona law.

(E) Equipment Insurance. Contractor must secure, pay for, and maintain all-risk insurance as necessary to protect the City against loss of owned, non-owned, rented or leased capital equipment and tools, equipment and scaffolding, staging, towers and forms owned or rented by Contractor or its Sub-contractors.

(F) Notice of Changes. Contractor's Policies must provide for not less than 30 days' advance written notice to City Representative of:

(1) Cancellation or termination of Contractor or Sub-contractor's Policies;

(2) Reduction of the coverage limits of any of Contractor or and Sub-contractor's Policies; and

(3) Any other material modification of Contractor or Sub-contractor's Policies related to this Agreement.

(G) Certificates of Insurance.

(1) Within 10 business days after the execution of the Agreement, Contractor must deliver to City Representative certificates of insurance for each of Contractor and Sub-contractor's Policies, which will confirm the existence or issuance of Contractor and Sub-contractor's Policies in accordance with the provisions of this section, and copies of the endorsements of Contractor and Sub-contractor's Policies in accordance with the provisions of this section.

(2) City is and will be under no obligation either to ascertain or confirm the existence or issuance of Contractor and Sub-contractor's Policies, or to examine Contractor and Sub-contractor's Policies, or to inform Contractor or Sub-contractor in the event that any coverage does not comply with the requirements of this section.

(3) Contractor's failure to secure and maintain Contractor Policies and to assure Sub-contractor policies as required will constitute a material default under this Agreement.

(H) Other Contractors or Vendors.

(1) Other contractors or vendors that may be contracted by Contractor with in connection with the Project must procure and maintain insurance coverage as is appropriate to their particular agreement.

(2) This insurance coverage must comply with the requirements set forth above for Contractor's Policies (e.g., the requirements pertaining to endorsements to name the parties as additional insured parties and certificates of insurance).

(I) Policies. Except with respect to workers' compensation and employer's liability coverages, the City must be named and properly endorsed as additional insureds on all liability policies required by this section.

(1) The coverage extended to additional insureds must be primary and must not contribute with any insurance or self insurance policies or programs maintained by the additional insureds.

(2) All insurance policies obtained pursuant to this section must be with companies legally authorized to do business in the State of Arizona and acceptable to all parties.

7.2 Sub-contractors.

(A) Contractor must also cause its Sub-contractors to obtain and maintain the Required Insurance.

(B) City may consider waiving these insurance requirements for a specific Sub-contractor if City is satisfied the amounts required are not commercially available to the Sub-contractor and the insurance the Sub-contractor does have is appropriate for the Sub-contractor's work under this Agreement.

(C) Contractor and Sub-contractors must provide to the City proof of Required Insurance whenever requested.

7.3 Indemnification.

(A) To the fullest extent permitted by law, Contractor must defend, indemnify, and hold harmless City and its elected officials, officers, employees and agents (each, an "Indemnified Party," collectively, the

"Indemnified Parties"), for, from, and against any and all claims, demands, actions, damages, judgments, settlements, personal injury (including sickness, disease, death, and bodily harm), property damage (including loss of use), infringement, governmental action and all other losses and expenses, including attorneys' fees and litigation expenses (each, a "Demand or Expense"; collectively, "Demands or Expenses") asserted by a third-party (i.e. a person or entity other than City or Contractor) and that arises out of or results from the breach of this Agreement by the Contractor or the Contractor's negligent actions, errors or omissions (including any Sub-contractor or other person or firm employed by Contractor), whether sustained before or after completion of the Project.

(B) This indemnity and hold harmless policy applies even if a Demand or Expense is in part due to the Indemnified Party's negligence or breach of a responsibility under this Agreement, but in that event, Contractor shall be liable only to the extent the Demand or Expense results from the negligence or breach of a responsibility of Contractor or of any person or entity for whom Contractor is responsible.

(C) Contractor is not required to indemnify any Indemnified Parties for, from, or against any Demand or Expense resulting from the Indemnified Party's sole negligence or other fault solely attributable to the Indemnified Party.

7.4 **Waiver of Subrogation.** Contractor waives, and will require any Subcontractor to waive, all rights of subrogation against the City to the extent of all losses or damages covered by any policy of insurance.

8. Immigration Law Compliance.

8.1 Contractor, and on behalf any subcontractor, warrants, to the extent applicable under A.R.S. § 41-4401, compliance with all federal immigration laws and regulations that relate to their employees as well as compliance with A.R.S. § 23-214(A) which requires registration and participation with the E-Verify Program.

8.2 Any breach of warranty under subsection 8.1 above is considered a material breach of this Agreement and is subject to penalties up to and including termination of this Agreement.

8.3 City retains the legal right to inspect the papers of any Contractor or subcontractor employee who performs work under this Agreement to ensure that the Contractor or any subcontractor is compliant with the warranty under subsection 8.1 above.

8.4 City may conduct random inspections, and upon request of City, Contractor shall provide copies of papers and records of Contractor demonstrating continued compliance with the warranty under subsection 8.1 above. Contractor agrees to keep papers and records available for inspection by the City during normal business hours and will cooperate with City in exercise of its statutory duties and not deny access to its business premises or applicable papers or records for the purposes of enforcement of this section 8.

8.5 Contractor agrees to incorporate into any subcontracts under this Agreement the same obligations imposed upon Contractor and expressly accrue those obligations directly to the benefit of the City. Contractor also agrees to require any subcontractor to incorporate into each of its own subcontracts under this Agreement the same obligations above and expressly accrue those obligations to the benefit of the City.

8.6 Contractor's warranty and obligations under this section to the City is continuing throughout the term of this Agreement or until such time as the City determines, in its sole discretion, that Arizona law has been modified in that compliance with this section is no longer a requirement.

8.7 The "E-Verify Program" above means the employment verification program administered by the United States Department of Homeland Security, the Social Security Administration, or any successor program.

9. Conflict. Contractor acknowledges this Agreement is subject to A.R.S. § 38-511, which allows for cancellation of this Agreement in the event any person who is significantly involved in initiating, negotiating, securing, drafting, or creating the Agreement on City's behalf is also an employee, agent, or consultant of any other party to this Agreement.

10. Non-Discrimination Policies. Contractor must not discriminate against any employee or applicant for employment on the basis of race, religion, color sex or national origin. Contractor must develop, implement and maintain non-discrimination policies and post the policies in conspicuous places visible to employees and applicants for employment. Contractor will require any Sub-contractor to be bound to the same requirements as stated within this section.

11. Notices.

11.1 A notice, request or other communication that is required or permitted under this Agreement (each a "Notice") will be effective only if:

(A) The Notice is in writing, and

(B) Delivered in person or by private express overnight delivery service (delivery charges prepaid), certified or registered mail (return receipt requested).

(C) Notice will be deemed to have been delivered to the person to whom it is addressed as of the date of receipt, if:

(1) Received on a business day, or before 5:00 p.m., at the address for Notices identified for the Party in this Agreement by U.S. Mail, hand delivery, or overnight courier on or before 5:00 p.m.; or

(2) As of the next business day after receipt, if received after 5:00 p.m.

(D) The burden of proof of the place and time of delivery is upon the Party giving the Notice.

(E) Digitalized signatures and copies of signatures will have the same effect as original signatures.

11.2 **Representatives.**

(A) Contractor. Contractor's representative ("Contractor's Representative") authorized to act on Contractor's behalf with respect to the Project, and his or her address for Notice delivery is:

Redpoint Contracting
Attn: Jeremiah Caucutt
39506 North Daisy Mountain Drive, Suite 122
Phoenix, Arizona 85086

(B) City. City's representative ("City's Representative") authorized to act on City's behalf, and his or her address for Notice delivery is:

City of Glendale
Attn: Mike Johnson
5850 West Glendale Avenue
Glendale, Arizona 85301

With required copies to:

City of Glendale
City Manager
5850 West Glendale Avenue
Glendale, Arizona 85301

City of Glendale
City Attorney
5850 West Glendale Avenue
Glendale, Arizona 85301

(C) Concurrent Notices.

(1) All notices to City's representative must be given concurrently to City Manager and City Attorney.

(2) A notice will not be considered to have been received by City's representative until the time that it has also been received by City Manager and City Attorney.

(3) City may appoint one or more designees for the purpose of receiving notice by delivery of a written notice to Contractor identifying the designee(s) and their respective addresses for notices.

(D) **Changes.** Contractor or City may change its representative or information on Notice, by giving Notice of the change in accordance with this section at least ten days prior to the change.

12. **Financing Assignment.** City may assign this Agreement to any City-affiliated entity, including a non-profit corporation or other entity whose primary purpose is to own or manage the Project.

13. **Entire Agreement; Survival; Counterparts; Signatures.**

13.1 Integration. This Agreement contains, except as stated below, the entire agreement between City and Contractor and supersedes all prior conversations and negotiations between the parties regarding the Project or this Agreement.

(A) Neither Party has made any representations, warranties or agreements as to any matters concerning the Agreement's subject matter.

(B) Representations, statements, conditions, or warranties not contained in this Agreement will not be binding on the parties.

(C) Any solicitation, addendums and responses submitted by the Contractor are incorporated fully into this Agreement as Exhibit A. Any inconsistency between Exhibit A and this Agreement will be resolved by the terms and conditions stated in this Agreement.

13.2 Interpretation.

(A) The parties fairly negotiated the Agreement's provisions to the extent they believed necessary and with the legal representation they deemed appropriate.

(B) The parties are of equal bargaining position and this Agreement must be construed equally between the parties without consideration of which of the parties may have drafted this Agreement.

(C) The Agreement will be interpreted in accordance with the laws of the State of Arizona.

13.3 Survival. Except as specifically provided otherwise in this Agreement each warranty, representation, indemnification and hold harmless provision, insurance requirement, and every other right, remedy and responsibility of a Party, will survive completion of the Project, or the earlier termination of this Agreement.

13.4 Amendment. No amendment to this Agreement will be binding unless in writing and executed by the parties. Any amendment may be subject to City Council approval.

13.5 Remedies. All rights and remedies provided in this Agreement are cumulative and the exercise of any one or more right or remedy will not affect any other rights or remedies under this Agreement or applicable law.

13.6 Severability. If any provision of this Agreement is voided or found unenforceable, that determination will not affect the validity of the other provisions, and the voided or unenforceable provision will be reformed to conform to applicable law.

14.7 Counterparts. This Agreement may be executed in counterparts, and all counterparts will together comprise one instrument.

14. **Dispute Resolution.** Each claim, controversy and dispute ("Dispute") between Contractor and City will be resolved in accordance with Exhibit C. The final determination will be made by the City.

15. **Exhibits.** The following exhibits, with reference to the term in which they are first referenced, are incorporated by this reference.

Exhibit A	Project
Exhibit B	Compensation
Exhibit C	Dispute Resolution

Project 121325

The parties enter into this Agreement as of the date shown above.

City of Glendale,
an Arizona municipal corporation

By: Richard A. Bowers
Its: Acting City Manager

ATTEST:

City Clerk (SEAL)

APPROVED AS TO FORM:

City Attorney

Action Direct LLC, and Arizona limited liability company
dba Redpoint Contracting

By: Scott Mitchell
Its: Manager

WOMEN-OWNED/MINORITY BUSINESS [ ] YES [✓] NO
CITY OF GLENDALE TRANSACTION PRIVILEGE TAX NO. [redacted]
FEDERAL TAXPAYER IDENTIFICATION NO. [redacted]

Project 121325

EXHIBIT A
CONSTRUCTION AGREEMENT

PROJECT

Provide construction work to rehabilitate sanitary sewer collection pipes and manholes at various locations throughout the City of Glendale as shown on the working drawings and specifications.

EXHIBIT B
CONSTRUCTION AGREEMENT

COMPENSATION

METHOD AND AMOUNT OF COMPENSATION

By bid, including all services, materials and costs.

NOT-TO-EXCEED AMOUNT

The total amount of compensation paid to Contractor for full completion of all work required by the Project during the entire term of the Project must not exceed 849,002.

DETAILED PROJECT COMPENSATION

As shown in detail on the Bid Schedule

EXHIBIT C
CONSTRUCTION AGREEMENT

DISPUTE RESOLUTION

1. Disputes.

1.1 Commitment. The parties commit to resolving all disputes promptly, equitably, and in a good-faith, cost-effective manner.

1.2 Application. The provisions of this Exhibit will be used by the parties to resolve all controversies, claims, or disputes ("Dispute") arising out of or related to this Agreement-including Disputes regarding any alleged breaches of this Agreement.

1.3 Initiation. A party may initiate a Dispute by delivery of written notice of the Dispute, including the specifics of the Dispute, to the Representative of the other party as required in this Agreement.

1.4 Informal Resolution. When a Dispute notice is given, the parties will designate a member of their senior management who will be authorized to expeditiously resolve the Dispute.

(A) The parties will provide each other with reasonable access during normal business hours to any and all non-privileged records, information and data pertaining to any Dispute in order to assist in resolving the Dispute as expeditiously and cost effectively as possible;

(B) The parties' senior managers will meet within 10 business days to discuss and attempt to resolve the Dispute promptly, equitably, and in a good faith manner, and

(C) The Senior Managers will agree to subsequent meetings if both parties agree that further meetings are necessary to reach a resolution of the Dispute.

2. Arbitration.

2.1 Rules. If the parties are unable to resolve the Dispute by negotiation within 30 days from the Dispute notice, and unless otherwise informal discussions are extended by the mutual agreement, the Dispute will be decided by binding arbitration in accordance with Construction Industry Rules of the AAA, as amended herein. Although the arbitration will be conducted in accordance with AAA Rules, it will not be administered by the AAA, but will be heard independently.

(A) The parties will exercise best efforts to select an arbitrator within 5 business days after agreement for arbitration. If the parties have not agreed upon an arbitrator within this period, the parties will submit the selection of the arbitrator to one of the principals of the mediation firm of Scott & Skelly, LLC, who will then select the arbitrator. The parties will equally share the fees and costs incurred in the selection of the arbitrator.

(B) The arbitrator selected must be an attorney with at least 15 years experience with commercial construction legal matters in Maricopa County, Arizona, be independent, impartial, and not have engaged in any business for or adverse to either Party for at least 10 years.

2.2 Discovery. The extent and the time set for discovery will be as determined by the arbitrator. Each Party must, however, within ten (10) days of selection of an arbitrator deliver to the other Party copies of all documents in the delivering party's possession that are relevant to the dispute.

2.3 Hearing. The arbitration hearing will be held within 90 days of the appointment of the arbitrator. The arbitration hearing, all proceedings, and all discovery will be conducted in Glendale, Arizona unless otherwise agreed by the parties or required as a result of witness location. Telephonic hearings and other reasonable arrangements may be used to minimize costs.

2.4 Award. At the arbitration hearing, each Party will submit its position to the arbitrator, evidence to support that position, and the exact award sought in this matter with specificity. The arbitrator must select the award sought

by one of the parties as the final judgment and may not independently alter or modify the awards sought by the parties, fashion any remedy, or make any equitable order. The arbitrator has no authority to consider or award punitive damages.

2.5 Final Decision. The Arbitrator's decision should be rendered within 15 days after the arbitration hearing is concluded. This decision will be final and binding on the Parties.

2.6 Costs. The prevailing party may enter the arbitration in any court having jurisdiction in order to convert it to a judgment. The non-prevailing party shall pay all of the prevailing party's arbitration costs and expenses, including reasonable attorney's fees and costs.

3. Services to Continue Pending Dispute. Unless otherwise agreed to in writing, Contractor must continue to perform and maintain progress of required services during any Dispute resolution or arbitration proceedings, and City will continue to make payment to Contractor in accordance with this Agreement.

4. Exceptions.

4.1 Third Party Claims. City and Contractor are not required to arbitrate any third-party claim, cross-claim, counter claim, or other claim or defense of a third-party who is not obligated by contract to arbitrate disputes with City and Contractor.

4.2 Liens. City or Contractor may commence and prosecute a civil action to contest a lien or stop notice, or enforce any lien or stop notice, but only to the extent the lien or stop notice the Party seeks to enforce is enforceable under Arizona Law, including, without limitation, an action under A.R.S. § 33-420, without the necessity of initiating or exhausting the procedures of this Exhibit.

4.3 Governmental Actions. This Exhibit does not apply to, and must not be construed to require arbitration of, any claims, actions or other process filed or issued by City of Glendale Building Safety Department or any other agency of City acting in its governmental permitting or other regulatory capacity.

C- 70124636

INDIVIDUAL SURETIES WILL NOT BE ACCEPTED
STATUTORY PERFORMANCE BOND PURSUANT TO TITLE 34,
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

The Guarantee Company of North America USA

That Action Direct LLC dba Redpoint Contracting (hereinafter called the Principal), as Principal, and , a corporation organized and existing under the laws of the State of Michigan with its principal office in the City of Southfield, (hereinafter called the Surety), as Surety, are held and firmly bound unto the City of Glendale, a municipal corporation, (hereinafter called the Obligee), in the amount of Eight Hundred Forty Nine Thousand Two Dollars & 00/100 Dollars ($ 849,002.00), for the payment whereof; the said Principal and Surety bind themselves, and their heirs, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, The Principal has entered into a certain written contract with the Obligee, dated the 28th day of August, 20 15, to construct **PROJECT 121325 - WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III**, 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 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 and 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 2, Article 2, 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 or any party which recovers judgment on this bond shall be entitled to such reasonable attorney's fees as may be fixed by the court or a judge thereof.

Witness our hands this 14th day of September, 20 15.

Action Direct LLC dba Redpoint Contracting
Principal Seal

By

The Guarantee Company of North America USA
Melanie L. Ankeney
Surety Melanie L. Ankeney, Attorney-In-Fact Seal

Constructors Bonding, Inc.
Agency of Record

1819 E. Morten, Suite 220, Phoenix, AZ 85020
Agency Address

Telephone Number: 480-878-4226

INDIVIDUAL SURETIES WILL NOT BE ACCEPTED

STATUTORY PAYMENT BOND PURSUANT TO TITLE 34, CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES

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

Bond# 70124636

KNOW ALL MEN BY THESE PRESENTS:

That, Action Direct LLC dba Redpoint Contracting (hereinafter called the Principal), as Principal, and The Guarantee Company of North America USA, a corporation organized and existing under the laws of the State of Michigan with its principal office in the City of Southfield, (hereinafter called the Surety), as Surety, are held and firmly bound unto the City of Glendale, a municipal corporation, (hereinafter called the Obligee), in the amount of $849,002.00 Dollars ($ **849,002.00**), for the payment whereof; the said Principal and Surety bind themselves, and their heirs, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, The Principal has entered into a certain written contract with the Obligee, dated the day of August 28, 2015, to construct **PROJECT 121325 - WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III** 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 monies 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 having been required of the said Principal in order to comply with the provisions of Title 34, Chapter 2, Article 2, of the Arizona Revised Statutes, all rights and remedies on this bond shall inure solely to such persons and shall be determined in accordance with the provisions, conditions, and limitations of said Title, Chapter and Article, to the same extent as if they were copied at length herein.

The prevailing party or any party which recovers judgment on this bond shall be entitled to such reasonable attorney's fees as may be fixed by the court or a judge thereof.

Witness our hands this 14th day of September, 2015.

Action Direct LLC dba Redpoint Contracting
Principal Seal

By _____

The Guarantee Company of North America USA

Melanie L. Ankeney

Surety Melanie L. Ankeney, Attorney-In-Fact Seal

Constructors Bonding, Inc.

Agency of Record

1819 E. Morten, Suite 220

Agency Address

Phoenix, AZ 85020

Telephone 480-878-4226

THE GUARANTEE™

The Guarantee Company of North America USA
Southfield, Michigan

POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS: That **THE GUARANTEE COMPANY OF NORTH AMERICA USA**, a corporation organized and existing under the laws of the State of Michigan, having its principal office in Southfield, Michigan, does hereby constitute and appoint

David J. McKee, Patrick R. Hedges, Joseph A. Clarken III, Melanie L. Ankeney, Jennifer S. Castillo
Constructors Bonding, Inc.

its true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise.

The execution of such instrument(s) in pursuance of these presents, shall be as binding upon **THE GUARANTEE COMPANY OF NORTH AMERICA USA** as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at the principal office.

The Power of Attorney is executed and may be certified so, and may be revoked, pursuant to and by authority of Article IX, Section 9.03 of the By-Laws adopted by the Board of Directors of **THE GUARANTEE COMPANY OF NORTH AMERICA USA** at a meeting held on the 31st day of December, 2003. The President, or any Vice President, acting with any Secretary or Assistant Secretary, shall have power and authority:

1. To appoint Attorney(s)-in-fact, and to authorize them to execute on behalf of the Company, and attach the Seal of the Company thereto, bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof; and
2. To revoke, at any time, any such Attorney-in-fact and revoke the authority given, except as provided below
3. In connection with obligations in favor of the Florida Department of Transportation only, it is agreed that the power and authority hereby given to the Attorney-in-Fact includes any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts required by the State of Florida Department of Transportation. It is fully understood that consenting to the State of Florida Department of Transportation making payment of the final estimate to the Contractor and/or its assignee, shall not relieve this surety company of any of its obligations under its bond.
4. In connection with obligations in favor of the Kentucky Department of Highways only, it is agreed that the power and authority hereby given to the Attorney-in-Fact cannot be modified or revoked unless prior written personal notice of such intent has been given to the Commissioner – Department of Highways of the Commonwealth of Kentucky at least thirty (30) days prior to the modification or revocation.

Further, this Power of Attorney is signed and sealed by facsimile pursuant to resolution of the Board of Directors of the Company adopted at a meeting duly called and held on the 6th day of December 2011, of which the following is a true excerpt:

RESOLVED that the signature of any authorized officer and the seal of the Company may be affixed by facsimile to any Power of Attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, contracts of indemnity and other writings obligatory in the nature thereof, and such signature and seal when so used shall have the same force and effect as though manually affixed.

IN WITNESS WHEREOF, **THE GUARANTEE COMPANY OF NORTH AMERICA USA** has caused this instrument to be signed and its corporate seal to be affixed by its authorized officer, this 23rd day of February, 2012.

THE GUARANTEE COMPANY OF NORTH AMERICA USA

Stephen C. Ruschak, President & Chief Operating Officer **Randall Musselman, Secretary**

STATE OF MICHIGAN
County of Oakland

On this 23rd day of February, 2012 before me came the individuals who executed the preceding instrument, to me personally known, and being by me duly sworn, said that each is the herein described and authorized officer of The Guarantee Company of North America USA; that the seal affixed to said instrument is the Corporate Seal of said Company; that the Corporate Seal and each signature were duly affixed by order of the Board of Directors of

Cynthia A. Takai
Notary Public, State of Michigan
County of Oakland
My Commission Expires February 27, 2018
Acting in Oakland County

IN WITNESS WHEREOF, I have hereunto set my hand at The Guarantee Company of North America USA offices the day and year above written.

Cynthia A. Takai

I, Randall Musselman, Secretary of **THE GUARANTEE COMPANY OF NORTH AMERICA USA**, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney executed by **THE GUARANTEE COMPANY OF NORTH AMERICA USA**, which is still in full force and effect.

IN WITNESS WHEREOF, I have thereunto set my hand and attached the seal of said Company this 14th day of September, 2015

Randall Musselman, Secretary

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 9/14/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lovitt & Touché - Tempe 1050 W Washington Street, Suite 233 Tempe AZ 85281	**CONTACT NAME:** Jackie Wanta **PHONE (A/C, No, Ext):** 602-956-2250 **FAX (A/C, No):** 602-956-2258 **E-MAIL ADDRESS:** jwanta@lovitt-touche.com
INSURED REDCONT-C1 Action Direct, LLC dba Redpoint Contracting 39506 Daisy Mountain Dr # 122-480 Phoenix AZ 85086	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** INSURER A : State National Insurance 12831 INSURER B : Navigators Specialty Insurance Comp INSURER C : Torus National Insurance Company 25496 INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 2008179711 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [X] PRO-JECT [ ] LOC OTHER:	Y	Y	XNDP0173100	7/1/2015	7/1/2016	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$1,000,000 $100,000 $10,000 $1,000,000 $2,000,000 $2,000,000 $
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS [ ] SCHEDULED AUTOS X HIRED AUTOS [X] NON-OWNED AUTOS	Y	Y	XNDA0173100	7/1/2015	7/1/2016	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$1,000,000 $ $ $ $
B	[ ] UMBRELLA LIAB [X] OCCUR X EXCESS LIAB [ ] CLAIMS-MADE DED [X] RETENTION $0	Y	Y	CH15EXC846539IC	7/1/2015	7/1/2016	EACH OCCURRENCE AGGREGATE $	$5,000,000 $5,000,000 $
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	Y	T10150257	7/1/2015	7/1/2016	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Certificate Holder and owner (if applicable) are additional insureds as respects general liability, automobile liability and excess liability if required in a written contract. Waiver of Subrogation applies to the general liability, auto liability & Worker Comp if required in a written contract. The general liability insurance is primary and certificate holder's insurance is non-contributory if required by written contract.

Re: Job Number 655 - Wastewater Collection System Manhole Rehab Phase III, Glenn Drive and North 59th Avenue, Glendale, AZ

CERTIFICATE HOLDER

City of Glendale
5058 West Glendale Avenue
Glendale AZ 85301

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
BLANKET AS REQUIRED BY WRITTEN CONTRACT	**ALL LOCATIONS PER WRITTEN CONTRACT**
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location And Description Of Completed Operations
BLANKET AS REQUIRED BY WRITTEN CONTRACT	**ALL LOCATIONS PER WRITTEN CONTRACT**
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

POLICY CHANGES

Policy Change Number

POLICY NUMBER	POLICY CHANGES EFFECTIVE 7/1/2015	COMPANY State National Insurance Company
NAMED INSURED Action Direct, LLC dba Redpoint Contracting		AUTHORIZED REPRESENTATIVE KDC Associates, LLC.
COVERAGE PARTS AFFECTED COMMERCIAL AUTO COVERAGE PART		

CHANGES

ADDITIONAL INSURED – PRIMARY AND NONCONTRIBUTORY

This endorsement modifies insurance provided under the following:

COMMERCIAL COVERAGE FORM CA 00 01
Schedule

This policy provides any person or organization for whom you are performing operations when you and such person or organization have agreed in writing in a contract or agreement that such person or organization be added as an additional insured on your policy.

The insurance provided by this policy to the person or organization shown in the Schedule and named as an additional insured is primary insurance. We will not seek contribution from any other insurance available to that additional insured.

Authorized Representative Signature

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Copyright, ISO Commercial Risk Services, Inc., 1983

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

EARLIER NOTICE OF CANCELLATION PROVIDED BY US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

PER CERTIFICATES ON FILE WITH AGENCY

Number of Days' Notice 30

(If no entry appears above, information required to complete this Schedule will be shown in the Declarations as applicable to this endorsement.)

For any statutorily permitted reason other than nonpayment of premium, the number of days required for notice of cancellation, as provided in paragraph **2.** of either the CANCELLATION Common Policy Condition or as amended by an applicable state cancellation endorsement, is increased to the number of days shown in the Schedule above.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

GENERAL LIABILITY COVERAGE EXTENSION ENDORSEMENT

Various provisions in this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.

Throughout this policy the words "you" and "your" refer to the Named Insured shown in the Declarations, and any other person or organization qualifying as a Named Insured under this policy. The words "we", "us" and "our" refer to the Company providing this insurance.

The word "insured" means any person or organization qualifying as such under **Section II - Who Is An Insured**. Other words and phrases that appear in quotation marks have special meaning. Refer to **Section V - Definitions**.

The following is a summary of the limits additional coverages and extensions provided by this endorsement. For complete details on specific coverages, consult the policy contract wording.

SCHEDULE

Blanket Additional Insured When Required by Contract	Included
Broadened Definition of Mobile Equipment	Included
Damage to Premises Rented to You	Broadened Perils
Liberalization	Included
Medical Payments	Increased to $10,000 per person (unless excluded)
Non-Owned Aircraft	If rented or loaned with a paid crew
Non-Owned Watercraft	Increased to 51 feet long
Notice of Occurrence	Included
Per Location and Per Project Aggregates	Included
Property Damage to "Customers' Goods"	Up to $10,000 per "occurrence"
Property Damage to Borrowed Equipment	Up to $10,000 per "occurrence"
Revised Exclusion for Expected or Intended Injury	Included
Supplementary Payments	
Bail Bonds	Up to $2,500
Loss of Earnings	Up to $300 a day
Unintentional Failure to Disclose Hazards	Included
Waiver of Transfer of Rights of Recovery	Included

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This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

Unless specifically stated in this endorsement, all other terms, conditions and exclusions of the policy remain unchanged.

Changes to SECTION I - COVERAGES

DAMAGE TO PREMISES RENTED TO YOU

A. **SECTION I - COVERAGE A., 2. Exclusions** is amended to delete the last paragraph and is replaced by the following:

Exclusions **c.** through **n.** do not apply to damage by fire, lightning, explosion, smoke or sprinkler leakage to premises while rented to you or temporarily occupied by you with permission of the owner. A separate limit of insurance applies to this coverage as described in **SECTION III - LIMITS OF INSURANCE**.

6. Subject to **5.** above, the higher of $300,000 or the Damage to Premises Rented to You Limit shown in the Declarations is the most we will pay under Coverage A for damages because of "property damage" to any one premises, while rented to you, or in the case of damage by fire, while rented to you or temporarily occupied by you with permission of the owner.

NON-OWNED WATERCRAFT AND NON-OWNED AIRCRAFT RENTED OR LOANED TO YOU WITH A CREW

Exclusion **g. Aircraft, Auto or Watercraft**, paragraph **(2)** is deleted in its entirety and replaced with the following:

(2) A watercraft you do not own that is:
(a) Less than 51 feet long; and
(b) Not being used to carry persons or property for a charge.

The following is added to **g. Aircraft, Auto or Watercraft:**

(6) An aircraft not owned by any insured that is rented or loaned to you, provided that:

1. The pilot in command holds a currently effective certificate issued by the duly constituted authority of the United States of America or Canada, designating that person as a commercial or airline transport pilot;
2. It is rented with a trained, paid crew; and
3. It does not transport persons or cargo for a charge.

If other insurance applies to a loss because of "property damage" to non-owned watercraft or aircraft as described in **(2) (a)** and **(b)** or **(6)** above, the insurance provided by this Coverage Form does not apply whether the other insurance is primary, excess, contingent, or issued on any other basis.

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Changes to SECTION I - COVERAGE A - EXCLUSIONS

EXPECTED OR INTENDED INJURY

Exclusion 2. a. *is deleted in its entirety and replaced by the following:*

a. Expected or Intended Injury

"Bodily injury" or 'property damage" expected or intended from the standpoint of the insured.

This exclusion does not apply to "bodily injury" or "property damage" resulting from the use of reasonable force to protect persons or property.

PROPERTY DAMAGE - BORROWED EQUIPMENT

A. **2. Exclusions, j. Damage to Property, (4)** Personal Property in the care, custody or control of the insured;

does not apply to "property damage" to borrowed equipment while that equipment:

1. is not being used to perform operations; and
2. is away from an insured's premises.

B. The insurance afforded by this provision is excess over any valid and collectible property insurance (including any deductible) available to the insured whether primary, excess, contingent or on any other basis.

C. **SECTION III - LIMITS OF INSURANCE** is amended to add the following:

Subject to the General Aggregate provision, the most we will pay under this provision for "property damage" to borrowed equipment is $10,000 per "occurrence".

PROPERTY DAMAGE - "CUSTOMERS' GOODS"

A. Paragraphs **(3), (4)** and **(6)** of **Exclusion** j. of **SECTION I - COVERAGES, COVERAGE A** does not apply to "property damage" to "customers' goods" while on your premises.

B. The insurance afforded by this provision is excess over any valid and collectible property insurance (including any deductible) available to the insured whether primary excess, contingent or on any other basis.

C. **SECTION III - LIMITS OF INSURANCE** is amended to add the following:

Subject to the General Aggregate provision, the most we will pay under this provision for "property damage" to customers' goods is $10,000 per "occurrence".

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Changes to SECTION II - WHO IS AN INSURED

ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - AUTOMATIC STATUS WHEN REQUIRED IN CONSTRUCTION AGREEMENT WITH YOU

A. **Section II – Who Is An Insured** is amended to include as an additional insured any person or organization for whom you are performing operations when you and such person or organization have agreed in writing in a contract or agreement that such person or organization be added as an additional insured on your policy. Such person or organization is an additional insured only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured.

A person's or organization's status as an additional insured under this endorsement ends when your operations for that additional insured are completed.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to:

1. "Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or the failure to render, any professional architectural, engineering or surveying services, including:

   a. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

   b. Supervisory, inspection, architectural or engineering activities.

2. "Bodily injury" or "property damage" occurring after:

   a. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or

   b. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

Changes to SECTION III - LIMITS OF INSURANCE

MEDICAL PAYMENTS

The following applies only if Medical Payments Coverage is not excluded from the policy to which this endorsement is attached:

Paragraph **7.** is deleted in its entirety and replaced by the following:

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7. Subject to paragraph **5,** the Medical Expense Limit is equal to the Medical Expense Limit stated in the Declarations, subject to a minimum of $10,000 and is the most we will pay under Coverage C for all medical expenses because of "bodily injury" sustained by any one person.

PER LOCATION AND PER PROJECT AGGREGATES

SECTION III - LIMITS OF INSURANCE, is amended to add the following:

A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under **COVERAGE A (SECTION I),** and for all medical expenses caused by accidents under **COVERAGE C (SECTION I)**, which can be attributed only to operations at a covered "location" or covered construction project:

1. A separate Per Location or Per Project General Aggregate Limit applies to each covered "location" or covered construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.

2. The Per Location or Per Project General Aggregate Limit is the most we will pay for the sum of all damages under **COVERAGE A.,** except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", and for medical expenses under **COVERAGE C**, regardless of the number of:
   a. insureds;
   b. claims made or "suits" brought; or
   c. persons or organizations making claims or bringing "suits".

3. Any payments made under **COVERAGE A** for damages or under **COVERAGE C** for medical expenses shall reduce the Per Location or Per Project General Aggregate Limit for each covered "location" or covered project for which payment is made. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other covered "location" or covered project's general aggregate.

4. The limits shown in the Declarations for Each Occurrence, Fire Damage and Medical Expense continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Per Location or Per Project General Aggregate Limit.

B. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under **COVERAGE A (SECTION I),** and for all medical expenses caused by accidents under **COVERAGE C (SECTION I)**, which cannot be attributed only to ongoing operations at a covered "location" or covered project:

1. Any payments made under **Coverage A** for damages or under **Coverage C** for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and

2. Such payments shall not reduce any Per Location or Per Project General Aggregate Limit.

C. When coverage for liability arising out of the products-completed operations hazard" is provided, any payments for damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard" will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Per Location or Per Project General Aggregate Limit.

D. Definition

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For the purposes of the Per Location and Per Project Aggregates, "location" means premises involving the same or connecting lots, or premises whose connection is interrupted only by a street, roadway, waterway or right-of-way of a railroad.

E. If the applicable covered construction project has been abandoned, delayed, or abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.

F. The provision of **Limits of Insurance (Section III)** not otherwise modified by this endorsement shall continue to apply as stipulated.

Changes to SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

Item **8. Transfer of Rights of Recovery Against Others to Us** is amended by the addition of the following:

We agree to waive any right of recovery we may have against any person or organization with whom you have agreed by contract prior to an "occurrence" to waive such rights because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". The waiver applies only to the person or organization with whom you have agreed in a contract prior to an "occurrence" to waive such rights.

NOTICE OF OCCURRENCE

The following is added to paragraph **2. Duties In The Event of Occurrence, Offense Claims or Suit:**

Your rights under the Coverage Part will not be prejudiced if you fail to give us notice of an "occurrence, offense, claim or "suit" and that failure is solely due to your reasonable belief that the "bodily injury" or "property damage" is not covered under this Coverage Part. However, you shall give written notice of this "occurrence" offense, claim or "suit" to us as soon as you are aware that this insurance may apply to such "occurrence" offense, claim or "suit".

UNINTENTIONAL FAILURE TO DISCLOSE ALL HAZARDS

SECTION IV, COMMERCIAL GENERAL LIABILITY CONDITIONS, is amended to include the following:

10. Based on our reliance on your representations as to existing hazards, if you unintentionally fail to disclose all such hazards prior to the beginning of the policy period of the Coverage Part, we shall not deny coverage under this coverage Part because of such failure.

LIBERALIZATION

SECTION IV, COMMERCIAL GENERAL LIABILITY CONDITIONS, is amended to include the following:

11. If we revise this Coverage Form to provide more coverage without additional premium charge, your policy will automatically provide the additional coverage as of the day the revision is effective in your state.

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Changes to SECTION V - DEFINITIONS

12. **Mobile Equipment**, paragraph **f. (1)** is amended to add the following:

    This shall not apply to self-propelled vehicles of less than 1000 pounds gross vehicle weight.

The following definition is added:

23. **"Customers' goods"** means tangible personal property belonging to your customers and left with you for storage, service or repair. "Customers goods" does not include:

    a. Accounts, bills, currency, deeds, food stamps or other evidences of debt, money, notes or securities. Lottery tickets held for sale are not securities; or

    b. Animals; or

    c. Contraband, or property in the course of illegal transportation or trade; or

    d. Personal property while airborne or waterborne; or

    e. Property that is covered under another coverage form of this or any other policy in which it is more specifically described, except for the excess of the amount due (whether you can collect on it or not) from that other insurance; or

    f. Vehicles or self-propelled machines (including aircraft or watercraft) that are licensed for use on public roads.

    This paragraph does not apply to:
    (1) Vehicles or self-propelled machines, other than autos, you hold for sale; or
    (2) Rowboats or canoes out of water at the described premises;

    g. The following property while outside of buildings:
    (1) Grain, hay straw or other crops;
    (2) Fences, radio or television antennas (including satellite dishes) and their lead-in wiring, masts or towers, signs (other than signs attached to buildings), trees, shrubs or plants (other than trees, shrubs or plants held for sale).

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POLICY NUMBER:

COMMERCIAL AUTO
CA 20 48 02 99

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
GARAGE COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" under the Who Is An Insured Provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Endorsement Effective: 7/1/2015 1:45:00 PM	Countersigned By:
Named Insured: Action Direct, LLC dba Redpoint Contracting	(Authorized Representative)

SCHEDULE

Name of Person(s) or Organization(s):

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to the endorsement.)

Each person or organization shown in the Schedule is an "insured" for Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured Provision contained in **Section II** of the Coverage Form.

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COMMERCIAL AUTO
AA 99 08 04 09

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

COMMERCIAL AUTOMOBILE COVERAGE EXTENSION ENDORSEMENT

Various provisions in this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.

Throughout this policy the words "you" and "your" refer to the Named Insured shown in the Declarations, and any other person or organization qualifying as a Named Insured under this policy. The words "we", "us" and "our" refer to the Company providing this insurance.

The word "insured" means any person or organization qualifying as such under **Section II - Who Is An Insured**. Other words and phrases that appear in quotation marks have special meaning. **Refer to Section V - Definitions.**

The following is a summary of the limits, additional coverages and extensions provided by this endorsement. For complete details on specific coverages, consult the policy contract wording.

Schedule

Blanket Waiver of Transfer of Rights of Recovery	Included
Broadened Definition of **Who Is An Insured**	Included
Loss of Use Expenses	Up to $50 a day / $750 Maximum
Revised Deductible for Glass Damage	Included
Supplementary Payments	
Bail Bonds	Up to $2,500
Loss of Earnings	Up to $300 a day
Transportation Expenses	Up to $50 a day / $1,500 Maximum
Unintentional Failure to Disclose	Included
Auto Loan/Lease Gap Coverage	Included

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COMMERCIAL AUTO
AA 99 08 04 09

This endorsement modifies insurance provide under the following:

BUSINESS AUTO COVERAGE FORM

Unless specifically stated in this endorsement, all other terms, conditions and exclusions of the policy remain unchanged.

Changes to SECTION II – LIABILITY COVERAGE

A. Coverage, 1. Who Is An Insured is amended to add the following:

d. Any organization you newly acquire or form during the policy period provided you own 50% or more of the business entity. However, coverage under this provision:

(1) Does not apply if the organization you acquire or form is an "insured" under another liability policy or would be an insured under such a policy but for its termination or the exhaustion of its limits of insurance;

(2) Does not apply to "bodily injury" or "property damage" that occurred before you acquired or formed the organization; and

(3) Is afforded only for the first 90 days after you acquire or form the organization or until the end of the policy period, whichever comes first.

e. Any person or organization to whom you become obligated to include as an additional insured under this policy, as a result of a written contract or written agreement you enter into which requires you to furnish insurance to that person or organization of the type provided by this policy, but only with respect to liability arising out of use of a covered "auto". However, the insurance provided will not exceed the lesser of:

(1) The coverage and/or limits of this policy, or

(2) The coverage and/or limits required by said contract or agreement.

f. An employee of yours is an "insured" while using a covered "auto" you don't own, hire or borrow in your business or your personal affairs.

A. Coverage, 2. Coverage Extensions, a. Supplementary Payments, (2) and **(4)** are deleted in their entirety and replaced with the following:

(2) Up to $2,500 for cost of bail bonds (including bonds for related traffic law violations) required because of an "accident" we cover. We do not have to furnish these bonds.

(4) All reasonable expenses incurred by the "insured" at our request, including actual loss of earnings up to $300 a day because of time off from work.

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SECTION III – PHYSICAL DAMAGE COVERAGE is amended to add the following:

A. Coverage, 4. Coverage Extensions, a. Transportation Expenses is deleted in its entirety and replaced with the following:

a. Transportation Expenses

We will pay up to $50 per day, to a maximum of $1,500, for temporary transportation expense incurred by you because of the total theft of a covered "auto" of the private passenger type. We will pay only for those covered "autos" for which you carry either Comprehensive or Specified Causes of Loss Coverage. We will pay for temporary transportation expenses incurred during the period beginning 48 hours after the theft and ending, regardless of the policy's expiration, when the covered "auto" is returned to use or we pay for its "loss".

A. Coverage, 4. Coverage Extensions, b. Loss Of Use Expenses is deleted in its entirety and replaced with the following:

b. Loss Of Use Expenses

For Hired Auto Physical Damage, we will pay expenses for which an "insured" becomes legally responsible to pay for loss of use of a vehicle rented or hired without a driver, under a written rental contract or agreement. We will pay for loss of use expenses if caused by:

(1) Other than collision only if the Declarations indicate that Comprehensive Coverage is provided for any covered "auto";

(2) Specified Causes Of Loss only if the Declarations indicate that Specified Causes Of Loss Coverage is provided for any covered "auto"; or

(3) Collision only if the Declarations indicate that Collision Coverage is provided for any covered "auto".

However, the most we will pay for any expenses for loss of use is $50 per day, to a maximum of $750.

D. Deductible is deleted in its entirety and replaced with the following:

For each covered "auto", our obligation to pay for, repair, return or replace damaged or stolen property will be reduced by the applicable deductible shown in the Declarations. Any Comprehensive Coverage deductible shown in the Declarations does not apply to "loss" caused by fire or lightning and no deductible applies to glass damage if the glass is repaired rather than replaced.

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SECTION IV – BUSINESS AUTO CONDITIONS is amended as follows:

A. **Loss Conditions, 5. Transfer Of Rights Of Recovery Against Others To Us** is deleted in its entirety and replaced with the following:

5. Transfer Of Rights Of Recovery Against Others To Us

We waive any right of recovery we may have against any person or organization to the extent required of you by a written contract executed prior to any "accident", provided that the "accident" arises out of operations contemplated by such contract. The waiver applies only to the person or organization designated in such contract.

A. **General Conditions, 2. Concealment, Misrepresentation Or Fraud** is amended by adding the following:

2. Concealment, Misrepresentation Or Fraud

The unintentional omission of, or unintentional error in, any information given by you shall not prejudice your rights under this insurance. However, this provision does not affect our right to collect additional premium or exercise our right of cancellation or non-renewal.

Auto Loan/Lease Gap Coverage is added as follows:

For those businesses not listed as "auto" dealerships in the Declarations, the following provisions apply:

If a long term leased "auto", under an original lease agreement, is a covered "auto" under this Coverage Form and the lessor of the covered "auto" is named as an additional insured under this policy, in the event of a total loss to the leased covered "auto", we will pay any unpaid amount due on the lease or loan, less the amount paid under the **Physical Damage Coverage** Section of the policy; and less any:

a. Overdue lease/loan payments at the time of the "loss";

b. Financial penalties imposed under a lease for excessive use, abnormal wear and tear or high mileage;

c. Security deposits not returned by the lessor;

d. Costs for extended warranties, credit Life Insurance, Health Accident or Disability Insurance purchased with the loan or lease; and

e. Carry-over balances from previous loans or leases.

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WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit any one not named in the Schedule.

Schedule

WHERE REQUIRED BY WRITTEN CONTRACT, PROVIDED THE CONTRACT IS SIGNED AND DATED PRIOR TO THE DATE OF LOSS TO WHICH THIS WAIVER APPLIES. IN NO INSTANCE SHALL THE PROVISIONS AFFORDED BY THIS ENDORSEMENT BENEFIT ANY COMPANY OPERATING AIRCRAFT FOR HIRE.

Per Policy Minimum Waiver Premium by State:

$500:	AL, AR, CA, CO, CT, DC, ID, IL, IN, IA, KS, ME, MD, MI, MS, MT, NV, NM, OH, OK, OR, PA, RI, SD, UT, VT, VA, WA, WV
$250:	AK, DE, LA, NY
$100:	NC
$50:	WI
N/A:	AZ, FL, GA, HI, MA, MN, MO, NE, SC, TN, TX

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.
(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective	07/01/15	Policy No.	T10150257	Endorsement No.	6
Insured	Action Direct, LLC			Policy Effective Date	07/01/15
Insurance Company	Torus National Insurance Company				

Countersigned By _____

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CITY OF GLENDALE, ARIZONA
PUBLIC WORKS/ENGINEERING DEPARTMENT

CONTRACTOR'S AFFIDAVIT
REGARDING
SETTLEMENT OF CLAIMS

PROJECT 121325 - WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III

To the City of Glendale, Arizona

Gentlemen:

This is to certify that all lawful claims for materials, rental of equipment and labor used in connection with the construction of the above project, whether by subcontractor or claimant in person, have been duly discharged.

The undersigned, for the consideration of $_____ , as set out in the final pay estimate, as full and complete payment under the terms of the contract, hereby waives and relinquishes any and all further claims or right of lien under, in connection with, or as a result of the above described project. The undersigned further agrees to indemnify and save harmless the City of Glendale against any and all liens, claims of liens, suits, actions, damages, charges, costs, litigation expenses, attorneys' fees and any other and expenses whatsoever, which said City may suffer arising out of the failure of the undersigned to pay for all labor performance and materials furnished for the performance of said installation.

Signed and dated at _____ , this _____ day of _____ , 20___.

_____
Contractor

By _____

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

The foregoing instrument was subscribed and sworn to before me this ___ day of _____, 20 .

_____
Notary Public

My Commission Expires: _____

SUPPLEMENTAL GENERAL CONDITIONS

1. GENERAL: By Ordinance No. 1110 New Series, the City of Glendale adopted the "Uniform Standard Specifications for Public Works Construction," which are sponsored and distributed by the Maricopa Association of Governments. Copies of these documents, with revisions, are on file in the office of the City Engineer of the City of Glendale, and are hereby made a part of these Contract Documents.

Whenever in the Uniform Standard Specifications, the words "The Contracting Agency" are used, the meaning shall be the City of Glendale.

In all cases where ASTM, AASHTO, AWWA, USAG, Federal, City of Phoenix, MAG Specifications, Maricopa County, Arizona State Highway, City of Glendale or other standard specifications are referred to, unless otherwise stated, revisions, supplements or addenda issued on or before the date of this contract, shall prevail. In the event of any conflict between these project specifications and the requirements of the plans, detail drawings, MAG Standard Details and Specifications, these project specifications shall prevail.

2. DEFINITIONS: The following terms, as used in or pertaining to the Contract Documents, are defined as follows:

CITY: The word "City" refers to the City of Glendale, Arizona. The official representative of said City in these proceedings shall be the City Engineer.

CONTRACTOR: The word "Contractor" means the person, firm, or corporation with whom the Contract is made by the City.

MATERIALS: The term "Materials" includes, in addition to materials incorporated in the project, equipment and other material used and/or consumed in the performance of the work.

SUBCONTRACTOR: The word "Subcontractor" includes those having a direct contract with the Contractor and those who furnish material worked to a special design according to the plans and/or specifications for this work, but does not include those who merely furnish materials not so worked.

ENGINEER: The word "Engineer" means a person, firm or corporation duly authorized by the City, to act for the City in staking out the work, inspecting materials and construction, and interpreting plans and specifications.

CONTRACT DOCUMENTS: The words "Contract Documents" mean the Notice to Contractors, Information for Bidders, "Uniform Standard Specifications for Public Works Construction," MAG General Conditions, Supplemental General Conditions, Special Provisions, Supplemental Specifications, Proposal, Contract, Payment Bond, Performance Bond, Certificates of Insurance, Plans and Addenda thereto.

3. PROPOSAL QUANTITIES: It is expressly understood and agreed by the parties hereto that the quantities of the various classes of work to be done and material to be furnished under this Contract, which have been estimated as stated in the Proposal, are only approximate and are to be used SOLELY for the purpose of comparing, on a consistent basis, the proposals offered for the work under this Contract; and the Contractor further agrees that the City will not be held responsible if any of the quantities shall be found incorrect; and the Contractor will not make any claim for damages or for loss of profits because of a difference between the quantities of the various classes of work as estimated and the work actually done. If any error, omission, or mis-statement is found to occur in the estimated quantities, the same shall not invalidate this Contract or release the Contractor from the execution and completion of the whole or any part of the work in accordance with the specifications and the plans herein mentioned, or for the prices herein agreed upon and fixed therefore, or excuse him from any of the obligations or liabilities hereunder, or entitle him to any damages or compensation except as may be provided for in this Contract.

4. WITHDRAWAL OF PROPOSALS: No proposal shall be withdrawn following the opening and reading of the bids for a period of 50 days from the date of opening without the consent of the contracting agency through the body or agent duly authorized to accept or reject the proposal.

5. LOSSES AND DAMAGES: All loss or damage arising out of the nature of the work to be done or from the action of the elements, or from any unforeseen circumstances in the prosecution of the same, or from any unusual obstructions or difficulties which may be encountered in and/or during the prosecution of the work, or from any casualty whatsoever of every description, shall be sustained and borne by the Contractor at his own cost and expense except as otherwise provided by the contract documents or the laws of the State of Arizona.

6. DUST PREVENTION: The Contractor shall take whatever steps, procedures or means required to prevent abnormal dust conditions due to his construction operations in connection with this contract. The dust control measures shall be maintained at all times during construction of the project, to the satisfaction of the Engineer, in accordance with the requirements of the "Maricopa County Health Department Air Pollution Control Regulations" which have been adopted pursuant to A.R.S. § 36-779.

The Contractor shall be required to obtain the necessary permit from the Maricopa County Air Pollution Control Bureau, 1001 N. Central Ave., Phoenix, Arizona 85004 - telephone (602) 506-6727.

7. EXCESS MATERIAL: Excess material shall be removed from the work site and wasted at a location approved by the Engineer. Broken concrete and asphalt may be delivered to the Glendale Sanitary Landfill located at 115th Avenue and Glendale Avenue. The prevailing regulations and fee schedule will not be waived for work under this project. All materials, to be disposed of at the landfill, shall be weighed and disposed of at the prevailing rate.

8. STOCKPILE OF MATERIALS: The Contractor may place or stockpile materials in the public right-of-way, if approved by the Engineer, provided they do not prevent access to adjacent properties or prevent compliance with traffic regulations.

Traffic shall not be required to travel over stockpiled materials, and proper dust control shall be maintained.

9. REFUSE COLLECTION ACCESS: At any time the project construction shall require the closure or disruption of traffic in any roadway, alley, or refuse collection easement such that normal refuse collection will be interfered with, the Contractor shall, at least 48 hours prior to causing such closure or disruption, make arrangements with the Field Operations Department in order that refuse collection service can be maintained.

10. CLEAN-UP: After all work under this contract is completed, the Contractor shall remove all loose concrete, lumber, wire, reinforcing, debris, and other materials not incorporated in the work, from the site of the work. Clean-up shall include the removal of all excess pointing mortar materials within pipes and removal of over-size rocks and boulders left after finish grading. The contractor shall provide for the legal disposal of all waste products, debris, etc., and shall make necessary arrangements for such disposal.

11. SHOP DRAWINGS: The Contractor shall provide shop drawings as may be necessary for the prosecution of the work as required by the contract documents. The Engineer shall promptly review all shop drawings. The Engineer's approval of any shop drawing shall not release the Contractor from responsibility for deviations from the contract documents. The approval of any shop drawing which substantially deviates from the requirements of the contract documents shall be evidenced by a change order.

When submitted for the Engineer's review, shop drawings shall bear the contractor's certification that he has reviewed, checked, and approved the shop drawings and that they are in conformance with the requirements of the contract documents.

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

12. PROTECTION OF FINISHED OR PARTIALLY FINISHED WORK: The Contractor shall properly guard and protect all finished or partially finished work, and shall be responsible for the same until the entire contract is completed and accepted, in writing, by the City. The Contractor shall turn over the entire work in full accordance with the specifications before final settlement shall be made.

13. STATUS OF EMPLOYEES: Contractor shall be responsible for assuring the legal working status of its employees and its subcontractor's employees.

14. LAWS AND REGULATIONS: This Contract shall be governed by and constructed in accordance with the laws of the State of Arizona. The Contractor shall keep himself fully informed of all existing and future City and County Ordinances and Regulations and State and Federal Laws and Occupational Safety and Health Standards (OSHA) in any manner affecting the work herein specified. He shall at all times observe and comply with said Ordinances, Regulations, or Laws.

15. PERMITS: The City has obtained certain required permits which are included in the project specifications, but it will be the duty of the Contractor to determine that all the necessary permits have been obtained. The Contractor shall, at his own expense, obtain all required permits which have not been furnished by the City. A no-fee permit will be issued for work in the City of Glendale right-of-way and easement. (Also see Paragraph 7. Dust Prevention.)

16. ELECTRIC POWER AND WATER: The Contractor shall make his own arrangements for electric power and water. Subject to the convenience of the City, he may be permitted to connect to existing facilities where available, but he shall meter and bear the cost of such power or water. Fire hydrant meters may be obtained from the City of Glendale. Installation and removal of meters should be scheduled through the City's Water Services/Utilities Division at 930-2700. For details and current rates, please visit http://www.glendaleaz.com/CrossConnection/firehydrantmeterprogram.cfm.

17. SURVEY CONTROL POINTS AND MONUMENTS: Existing survey monuments indicated on the plans or found during construction shall be protected by the Contractor, and in the event removal is necessary, removal and replacement shall be performed by permission of the Engineer, under direct supervision of the Engineer or his authorized representative. Survey monuments shall be constructed to conform to the requirements of MAG Specifications, Section 405, and Standard Details.

18. EXISTING UTILITIES: The Contractor is hereby advised that the location of all utilities, as shown on the plans, may not be complete nor exact and the Contractor shall satisfy himself as to the exact location of the utilities by contacting Blue Stake or the utility companies before proceeding with the work. After the underground utilities are located by Blue Stake or the utility company, the contractor shall excavate in a careful and prudent manner to prevent unwillful damage to the underground utilities.

In the event the Contractor or its Subcontractor damages an existing, properly identified underground City of Glendale water or sewer line, the Contractor shall be responsible for the repairs at its expense.

The exact location of all existing underground service utilities, whether or not indicated on the plans, shall be determined by the Contractor at no expense to the City, and he shall conduct his work so as to prevent interruption of service or damage to them.

The Contractor shall protect existing utility services and be responsible for their replacement if damaged by him, or to make necessary adjustment in their location, if required, in order to complete the work for his Contract.

Utility companies and other interested parties have been provided with construction plans and the

construction schedule for this project. The Contractor shall comply with MAG Specifications 105.6 to cooperate with the utility companies.

19. MAINTENANCE OF IRRIGATION FACILITIES: Where irrigation facilities interfere with construction, the Contractor shall remove and replace the affected irrigation facilities to its original condition. Final acceptance of replaced facilities will depend upon final approval of the Engineer.

20. OVERHEAD UTILITY LINES AND POLES: Contractor is advised that when work around overhead lines and poles is required on a project the Contractor is required to coordinate with Utility Companies who own and operate overhead lines and poles. The coordination may include, but not be limited to the following activities: pole bracing, de-energizing of lines, and temporary relocations. Contractor is responsible to contact the applicable Utility Company representative and discuss his proposed construction methods; in order to determine what actions the Utility Company must take and the costs related to those actions. The Contractor shall include these costs in the applicable bid items for this project.

The primary and the backup representatives for this review and cost determinations are as follows:

Arizona Public Service:	Mr. Bobby Garza	602-371-7989
Qwest:	Mr. Ron Floyd	602-630-1932
Salt River Project:	Mr. Tim Rinn	602-236-8694
Salt River Project:	Ms. Mariann Ward	602-236-6389
Cox Communications:	Mr. Ron Pint	623-328-3529
Cox Communications:	Ms. Linda Facio	623-328-3500

21. SOUTHWEST GAS FACILITIES EXPOSED DURING CONSTRUCTION: The Contractor, upon exposing a gas line during construction, shall call SOUTHWEST GAS at 602-271-4277. The Southwest Gas patrolman will respond, usually within an hour, to inspect the line. Minor cuts or abrasions to the pipe coating will be rewrapped and tracer wire will be reconnected at no cost to the City.

22. UNDERGROUND UTILITIES' BEDDING: All water, sewer, storm drain, irrigation and other conduits installed within the City of Glendale shall be bedded from bottom of excavation to one foot above the pipe with granular bedding material meeting the requirements of Section 601.4.6 of MAG Uniform Standard Specifications. The initial bedding under the pipe shall follow City of Glendale Detail G-690.

23. SEWER SERVICE LINES: The Contractor shall be responsible for locating, and protecting from damage during construction, all sewer service lines within the project which are not owned by the City. Contractor will be permitted to review the "as-builts" to assist Contractor in locating the non-City owned sewer service lines. These "as-builts" were prepared, and supplied to the City, by private developers or contractors who installed the non-City owned sewer service lines. Therefore, the City does not guarantee or warranty the accuracy of such "as-builts" and the contractor, as a condition for being allowed to review such "as-builts", hereby agrees to hold the City harmless for any and all damages or other expenses contractor may incur as a result of any inaccuracies or incorrect information in these "as-builts".

24. RIGHTS-OF-WAY: The City will provide rights-of-way and easements for all work specified in this Contract, and the Contractor shall not enter or occupy with man, tools, equipment or materials any private ground outside the property of the City of Glendale, Maricopa County, Arizona, without the consent of the property owner.

25. SUBCONTRACTS: Subcontracts shall be in accordance with, and the Contractor shall be bound by, the following provisions:

All subcontracts shall be subject to the approval of the City.

All subcontracts shall be in writing and shall provide that all work to be performed thereunder shall be performed in accordance with the terms of the Contract.

Certified copies of any and all subcontracts shall be furnished to the City Engineering Department; however, prices may be omitted.

Subcontracts shall conform to the regulations governing employment of labor.

The subcontracting of any part of the work will in no way relieve the Contractor of his responsibility under the Contract.

26. PRE-CONSTRUCTION CONFERENCE: After completion of the Contract Documents, to include bonds, insurance and signatures, and prior to the commencement of any work on the project, the Engineer will schedule a Pre-Construction Conference. This will be held at the City of Glendale, 5850 West Glendale Avenue, Glendale, Arizona.

The purpose of this Conference is to establish a working relationship between the Contractor, Utility Companies, and the Engineer. The agenda will include critical elements of the construction schedule, procedures for handling shop drawings and other submittals, cost breakdown of major lump sum items, payment application and processing, coordination with the involved utility companies, emergency telephone numbers for all representatives involved in the course of construction, and establishment of the Notice to Proceed date.

Minimum attendance by the Contractor shall be a responsible official of the company/corporation, who is authorized to execute and sign documents on behalf of the company/corporation.

27. OVERTIME:

Regular Work Hours: The work required to be performed by the Plans and Specifications for the Project shall be performed only during regular working hours, unless the City has authorized overtime work in accordance with the procedures set forth below. Regular working hours shall be defined as one 8-1/2 hour shift per day, Monday through Friday, or, upon prior approval of the City, one 10-1/2 hour shift per day on a compressed four day work week during Monday through Friday. Regular working hours shall not include Saturdays, Sundays or City recognized legal holidays.

Authorization and Costs: If the Contractor desires to schedule work for times other than regular work hours (overtime), the Contractor shall make a written request to the City at least two business days prior to the scheduled overtime. The City reserves the right to deny the request to work overtime based on the best interest and needs of the City. If an overtime request is denied, the City may, at its sole discretion, extend the contract time at no additional costs to the City.

In the event the Contractor does perform work overtime, with or without the prior approval of the City, the Contractor shall be responsible to the City for all additional costs that may be incurred by the City as a result of the Contractor's overtime work, including costs for engineering, inspections, testing, surveying and construction administration, all in accordance with MAG Section 108.5. However, the Contractor shall not be responsible for City's costs incurred as a result of overtime work requested by the City or overtime work resulting from an emergency which is not the responsibility of the Contractor or its employees, subcontractors or suppliers. The City's cost will be billed directly to the Contractor or may, at the City's option, be deducted from monies due the Contractor.

28. CONTRACTOR'S CONSTRUCTION SCHEDULE: Concurrently, with the execution of the contract and prior to the pre construction conference, the Contractor shall submit a preliminary schedule for the Engineer's review and acceptance. The schedule shall be in sufficient detail to allow the Engineer to determine if the proposed schedule will conform to an acceptable program of construction operations, as determined by the contracting agency. Within ten calendar days after the preliminary schedule, described above, has been accepted by the Engineer, the Contractor shall submit a progress schedule, utilizing the critical path method scheduling technique, showing the order in which he proposes to carry out the work, the dates on which he will start each phase of the work, and the contemplated date for completion of each phase. The Contractor shall not be permitted to commence construction until the schedule complying with this paragraph has been submitted to the

City. The Contractor will not be granted any extension to the contract time or compensation for any damages as a result of the City's refusal to allow Contractor to commence construction until the critical path method progress schedule has been submitted and accepted by the Engineer.

The critical path method (CPM) scheduling technique requires a breakdown of the entire work into individual tasks and an analysis of the number of days required to perform each task. The schedule submitted to the City should highlight and identify the critical path for the project. After the work is in progress, the Contractor shall submit supplementary progress schedules, using the critical path method technique, of the progress to date and projection for completion. The supplementary progress schedules shall be submitted with each pay request in accordance with the paragraph, "Payments to Contractors," of these Supplemental General Conditions. The progress schedules shall be subject to the acceptance of the Engineer. In the event the Contractor fails to submit a supplementary progress schedule acceptable to the Engineer, the City may withhold further progress payments to the Contractor until the Contractor submits an acceptable supplementary progress schedule, which is accepted by the Engineer, to the City. Schedule changes requiring an increase in the City's engineering personnel on the project shall not be put into effect until the Engineer has approved such increase and made arrangements for the required additional personnel.

29. CHARACTER OF WORKMEN: None but skilled foremen and workmen shall be employed on work requiring special qualifications. When required by the Engineer, the Contractor shall discharge any person who is, in the opinion of the Engineer, disorderly, dangerous, insubordinate, incompetent, or otherwise objectionable. The Contractor shall keep the City harmless from damages or claims for compensation that may occur in the enforcement of this section of the specifications.

30. HINDRANCES AND DELAYS: Except as otherwise provided herein, no charge shall be made by the Contractor for hindrances or delays from any cause during the progress of the work embraced in this Contract; but such delays, if due to no fault or neglect of the Contractor, shall entitle the Contractor to an extension of time allowed for completing the work, sufficient to compensate for the delay, the amount of the delay to be determined by the Engineer, provided the Contractor shall give said Engineer immediate notice in writing of the cause of such delay.

30.1 Delay: In the event of a delay for which the City is solely responsible, which is unreasonable under the circumstances and which was not within the contemplation of City and Contractor at the time this Contract is executed, City and Contractor shall negotiate, in good faith, a payment by the City to Contractor for the expenses incurred by Contractor as a result of such delay, in accordance with the City of Glendale Engineering Department's POLICY STATEMENT FOR CALCULATING DELAYS AND DAMAGES. This provision shall not be construed to void any provision in the contract which requires notice of delay or provides for liquidated damages. However, if the delay is the result of any act or neglect of a third party, including the architect, engineer or other contractor employed by the City, or by labor disputes, fire, unusual delay in transportation, adverse weather conditions not reasonably foreseeable, unavoidable casualties, or any causes beyond the Contractor's control, the Contractor shall not be entitled to any payments or compensation for expenses incurred as a result of such delay, but the Contract Time shall be extended by Change Order for such reasonable time as the Engineer may determine. No extension or compensation will be granted for any delay which is the result, wholly or partially, of any act or neglect of Contractor or any Subcontractor hired by Contractor.

31. LIQUIDATED DAMAGES:

31.1 Should the contractor fail to substantially complete the work under this contract within the time for completion stated in the paragraph "Time of Completion," in the Information for Bidders, then the contractor shall pay the City of Glendale, Arizona, liquidated damages, pursuant to the provisions of Section 108.9, Standard Specifications for Public Works Construction, Maricopa Association of Governments, until the work is substantially complete.

31.2 Should the contractor fail to fully and finally complete the work under this contract within the time for completion set forth in the paragraph "Time of Completion," in the Information for Bidders, even though the contractor has achieved substantial completion of the work within such time, then the

contractor shall pay the City of Glendale, liquidated damages (pursuant to the provisions of Section 108.9, Standard Specifications for Public Works Construction, Maricopa Association of Governments), in an amount equal to 100% of the applicable liquidated damage rate set forth in MAG Section 108.9 for each and every calendar day of delay until the work is fully and finally complete and accepted.

31.3 The date of substantial completion shall be the date when the work is sufficiently complete, in accordance with the contract documents, so the owner can fully occupy and utilize the work or designated portion thereof for the use for which it is intended, with all the project's parts and systems operable as required by the contract documents and all the work is complete, accessible, operable, and usable by the owner for its intended purpose(s), and all parts, systems and sitework are 100% complete and cleaned for the owner's use. Only incidental corrective work and final cleaning (if required), beyond cleaning needed for the owner's full use, may remain for final completion.

31.4 Full and final completion shall be that date when all work under the project, including incidental corrective work under punch list and final cleaning, has been completed and the entire project is accepted by the owner.

32. PAYMENTS TO CONTRACTOR: The measurements of quantities and the payments to the Contractor shall be in accordance with MAG Uniform Standard Specifications for Public Works Construction, Part 100 - General Conditions, Section 109 - Measurements and Payments.

Payments will be made on the basis of itemized, monthly statements prepared by the City and signed by the Contractor. The Contractor shall submit an itemized, duly certified and approved estimate for work completed through the last day of the preceding month in accordance with MAG Specifications, as amended by these Supplemental General Conditions. Upon approval of the pay estimate, the City will mail the check directly to the Contractor.

The pay estimate shall be accompanied by an updated progress schedule as required by these Supplemental General Conditions and a cash flow report when required by the Special Provisions. Approval of progress payments shall be conditional upon submittal of progress schedules and cash flow reports, when required, which are acceptable to the Engineer.

Upon 100% completion and acceptance of the project, and with the request for final payment, the Contractor shall complete and submit the "Contractor's Affidavit Regarding Settlement of Claims" form which is included in these specifications. Before final payment and release of retention, Contractor must arrange for its Surety to provide the City with a fully executed AIA Consent of Surety form. To avoid delays in the final payment, the Surety may send the Consent of Surety directly to the City via fax at (623) 915-2861, and mail the original to the City of Glendale Engineering Department, 5850 West Glendale Avenue, Glendale, Arizona 85301. Should any ambiguity arise between the Contract and these Conditions, the provisions of the Contract shall prevail.

33. WARRANTY: This project shall have a 2 year warranty. The warranty period shall begin upon final acceptance of the work by the City of Glendale.

END OF SUPPLEMENTAL GENERAL CONDITIONS

SPECIAL PROVISIONS

1. SCOPE OF WORK: Provide construction work to rehabilitate sanitary sewer collection pipes and manholes at various locations throughout the City of Glendale as shown on the working drawings and specifications.

2. DEFINITIONS:

A. Section: Reference to a Section on the plans or in these Specifications shall mean a Section of the Uniform Standard Specifications for Public Works Construction, sponsored and distributed by Maricopa Association of Governments (MAG), latest revision. The provisions of MAG Uniform Standard Specifications and Details for Public Works Construction, which are not altered or modified by the drawings or by these Special Provisions or by any subsequently issued Addendum, shall apply to the contract even though the Contractor's attention is not specifically drawn to such provisions.

B. Standard Detail: Reference to a MAG Standard Detail (MAG S.D.) on the plans or in these specifications shall mean a standard detail drawing in the latest revision of the Uniform Standard Specifications for Public Works Construction, sponsored and distributed by Maricopa Association of Governments. City of Glendale Standard Detail (C.O.G. S.D.) shall mean a standard detail drawing in the City of Glendale's Engineering Design and Construction Standards, latest revision. City of Phoenix Standard Detail (C.O.P. S.D.) shall mean a standard detail drawing in the Phoenix Supplemental Standard Details for Public Works Construction, latest revision.

3. SUSPENSION OF WORK: The Engineer reserves the right to suspend the work wholly or in part if deemed necessary for the best interest of the City. This suspension will be without compensation to the Contractor, other than to adjust the contract time in accordance with MAG Section 108.

4. COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS: In all instances wherein the item and/or specifications require installation or construction in accordance with either manufacturer's or supplier's recommendations and/or instructions, said recommendations and/or instructions shall be submitted with the applicable portions clearly marked for approval prior to the commencement of work on that item or portion of the contract.

5. TRAFFIC REGULATIONS:

5.1 All traffic affected by this construction shall be regulated in accordance with the City of Phoenix "Traffic Barricade Manual," the "Manual of Uniform Traffic Control Devices" and these Special Provisions. The following traffic restrictions are minimum requirements throughout the construction period:

5.1.1 All references in the City of Phoenix "Traffic Barricade Manual" and the "Manual of Uniform Traffic Control Devices" to "arterial" and/or "collector" streets shall mean "arterial and/or major arterial" streets and are referred to as "major" streets in the following sections.

5.1.2 A minimum of two travel lanes (one for each direction) shall be maintained open to traffic at all times on all major streets. All work that enters or crosses a major street must be done at times other than 6:00 a.m. to 8:30 a.m., and 4:00 p.m. to 6:00 p.m. unless approved by the Transportation Director or Designee.

5.1.3 A travel lane shall be defined as ten (10) feet of roadway not obstructed by traffic control devices with a safe motor vehicle operating speed of twenty-five (25) miles per hour.

5.1.4 A travel lane will not be considered as open to traffic until it has been graded reasonably smooth and is paved with a minimum of two (2) inches of asphalt. This shall be considered temporary pavement and shall be removed completely before proceeding with final surfacing.

5.1.5 The Contractor shall provide and maintain all required and requested traffic control devices to protect and guide traffic for all work in the construction area.

5.1.6 Intersection area shall be defined as all of the area within the right-of-way of intersecting streets, plus two-hundred fifty (250) feet beyond the center of the intersected streets on all legs of the intersection.

5.1.7 The Contractor shall maintain all existing traffic signs erect, clean and in full view of the intended traffic at all times. Street name signs at major street intersections shall be maintained erect at all times. If any signs interfere with construction, the Contractor shall notify the Transportation Department at least 48 hours in advance before covering or removing said signage. The Contractor shall be responsible for reinstalling all signs removed or covered and verifying they are correctly placed. The Transportation Department will inspect all signage prior to completion of the project.

5.1.8 Local access to all properties on the subject project shall be maintained at all possible times in the form of a safe and reasonable direct route to at least one of the above defined major streets. Whenever local access cannot be maintained, the Contractor shall notify the affected property owner or user and the Engineer at least Seventy-Two (72) hours in advance.

5.1.9 The Contractor shall be required to provide a uniformed off-duty City of Glendale police officer to assist with traffic control whenever traffic in any one direction is restricted to one lane at a signalized major intersection or at other locations if it should become necessary in the opinion of the Transportation Director or Designee. If the Contractor chooses to use a police officer at other locations during peak traffic hours or to assist with his other traffic control operations, the cost shall be included in the lump sum for "Traffic Control" and not paid out of the hours allowed for "Off Duty Glendale Police Officer." All requests for off-duty officers will be made through the Glendale Police Department, Off-Duty Work Administrator. The Contractor must provide evidence of workmen's compensation coverage before any officer will be permitted to work.

Measurement for payment of the uniformed off-duty Glendale police officer hours will be made by the actual number of man-hours used for traffic control at signalized major intersections or as approved by the Engineer. Because the quantity of hours is dependent on the Contractors schedule of activities, the unit price bid for this item will be administered as a contingency bid item and any adjustment in hours will not be subject to the 20 percent limitation.

Payment for the off-duty Glendale police officer will be made at the contract unit price bid per hour for OFF DUTY GLENDALE POLICE OFFICER and shall include the net hourly rate of $35.00 per police officer with a three (3) hour minimum. The net hourly rate shall be increased to include withholding for Federal, State, FICA, Medicare, Workmen's Compensation insurance and any payroll administrative costs.

5.1.10 The Contractor shall prepare a traffic control plan for the project and submit it to the City Transportation Director or Designee for review and approval at least fifteen (15) working days prior to the start of construction. The traffic control plan must be submitted through the City of Glendale on-Line Traffic Control Plan application process at www.glendaleaz.com/transportation/TrafficControlForm.cfm. The traffic control plan shall include message boards installed a minimum of seven (7) working days prior to restrictions when requested by the Transportation Director or Designee, additional public notification shall be required for major restrictions that impact adjacent stakeholders. Any changes to the traffic control plan during construction shall be submitted to the City Transportation Director or Designee for approval at least seventy-two (72) hours before implementation.

Payment for this item shall be made at the contract lump sum price for TRAFFIC CONTROL.

5.1.11 It is the City's desire to maintain one lane of traffic in each direction on minor streets whenever possible. Should it become imperative for the Contractor to close off a portion of any minor street or reduce the travel way to a single lane, he/she must obtain approval from the City Transportation Director or Designee Seventy-Two (72) hours prior to implementing a traffic control change. He/she must provide all the necessary signs to detour traffic and/or flag person to control traffic for a single lane. The maximum amount of time that the street may be closed is from 9:00 a.m. until 4:00 p.m.

5.1.12 Flagger Requirements: All flaggers shall be properly trained and certified by a recognized source, such as the American Traffic Safety Services Association (ATSSA) or National Safety Council, and shall carry with them at all times proof that training and certification requirements have been completed within the last two years.

6. ENERGIZED AERIAL ELECTRICAL POWER LINES: The utility company maintains energized aerial electrical power lines in the immediate vicinity of this project. Do not consider these lines to be insulated. Construction personnel working in proximity to these lines are exposed to an extreme hazard from electrical shock. Contractors, their employees, and all other construction personnel working on this project must be warned of the danger and instructed to take adequate protective measures, including maintaining a minimum ten (10) feet clearance between the lines and all construction equipment and personnel. (See: OSHA Standard 1926.550(a)15.) As an additional safety precaution, Contractors should also be instructed to call the utility company to arrange, if possible, to have these lines de-energized or relocated when the work reaches their immediate vicinity. The cost of such temporary arrangements would be borne by the Contractor. The utility company can often respond to such requests if two days advance notice is given, but some situations may require up to sixty (60) days lead time for relocation or other arrangements.

7. WEEKLY NEWSLETTER: The Contractor shall prepare, subject to the approval of the Engineer, and distribute on a weekly basis by U.S. Mail, a one page newsletter containing a brief description of the work completed during the past week and work expected to be accomplished during the next week. Information such as, but not limited to, detours or hotline telephone numbers shall be included as required. Payment shall be made as a proportionate share of the lump sum as based on original calendar completion date, however, the Contractor shall continue preparation and distribution until one week after the date of substantial completion. The City shall supply the Contractor with a list of names and addresses not to exceed 500.

8. CONCRETE GUTTER WATER TESTING: The MAG Uniform Standard Specifications, Section 340.3, CONSTRUCTION METHODS, shall be modified as follows: The 1/2 inch referenced in Paragraph 16 beginning, "When required by the Engineer, gutter having a slope of 0.8 foot...," shall be changed to 1/4 inch.

9. RECORD DRAWINGS: The Contractor shall maintain one set of contract drawings with all changes, deviations, additions and deletions clearly marked thereon. Upon completion of the work, this set of drawings, shall be marked "RECORD DRAWINGS," dated, and delivered to the Engineer prior to approval of the Contractor's final payment request.

10. AZPDES Permit Requirements:

A. This project is subject to the Arizona Pollutant Discharge Elimination System (AZPDES) Stormwater requirements for construction sites under the Environmental Protection Agency (EPA) General Permit for Arizona. Under provisions of that permit, the Contractor shall be designated as permittee, and shall take all necessary measures to assure compliance with the AZPDES General Permit for Arizona as well as all other applicable Federal, State and local laws, ordinances, statutes, rules and regulations pertaining to stormwater discharge. As the permittee, the Contractor is responsible for preparing, in a manner acceptable to the EPA, **ADEQ, and the City of Glendale,** all documents required by this regulation, including but not necessarily limited to:

1. Stormwater Pollution Prevention Plan (SWPPP) for the project, including certification of compliance form. Contractor shall be required to develop, implement, update and revise the SWPPP, as necessary, in order to assure compliance with the ADEQ permit requirements. **All SWPPP revisions must be reviewed by the City of Glendale's Engineering Department prior to implementation.** The SWPPP shall be retained on the project site at all times during construction.

2. Notice of Intent (NOI) to assure compliance with the AZPDES General Permit for Arizona, including certification of signatures.

3. Notice of Termination (NOT) of coverage under AZPDES General Permit for Arizona.

B. Three copies of the SWPPP and the NOI shall be submitted to the City of Glendale during the pre-construction meeting and shall be subject to review by the City prior to implementation.

C. Contractor shall submit the completed and duly signed NOI forms no later than forty-eight (48) hours prior to the **pre-construction meeting** for the project to the following agency:

Arizona Department of Environmental Quality; Surface Water Section/Stormwater
and General Permits Unit
1110 West Washington, 5415A-1
Phoenix, AZ 85007

The contractor may also go online and use the Stormwater SMART NOI System at:

http://www.az.gov/webapp/noi/main.do

Failure by the Contractor (or Subcontractors of any tier) to submit NOI's within the mandated time frame shall result in delay of the construction start date, and no claim for extension of time will be granted for such delay. A copy of the completed NOI shall be posted at the construction site.

D. Inspections of all stormwater pollution control devices on the project shall be performed by the Contractor on a monthly basis and following each rainfall of 0.50 inches or more in a 24-hour period at the project site as required under provisions of the AZPDES General Permit for Arizona. Contractor shall prepare reports on such inspections and retain the reports for a period of three years following the completion of the project. Inspection reports shall be submitted monthly to the City along with progress payment requests. Additionally, Contractor shall maintain all stormwater pollution control devices on the project in proper working order, which shall include cleaning and/or repair during the duration of the project.

E. Contractor warrants that its employees and Subcontractors of any tier and their employees shall at all times comply with all applicable laws, ordinances, statutes, rules and regulations set forth by all federal, state and local governments and the Arizona Department of Environmental Quality in connection with AZPDES Permitting requirements and laws and regulations pertaining to air, groundwater and surface water quality.

Fines and penalties imposed by the ADEQ against the City of Glendale or the Contractor, for Contractor's failure to comply with any of the requirements of AZPDES General Permit of Arizona, shall be borne by the Contractor.

F. Upon project completion, acceptance and demobilization, Contractor shall use the SMART NOI web-based service to complete the NOT process and also provide a copy of the NOT to **the City of Glendale** thereby terminating all AZPDES permit coverage for the project. Contractor shall then surrender to the City all inspection information and other documents prepared and maintained by the Contractor in compliance of the AZPDES General Permit. Contractor shall retain the originals of such documents for a period of three (3) years following the completion of the project.

G. Copies of all required forms and guidance for preparing the SWPPP are available at the ADEQ website http://www.azdeq.gov/environ/water/permits/stormwater.html.

H. The Lump Sum price for the SWPPP shall include all material, labor, and all other costs relating to the preparation, installation and maintenance of the SWPPP during project construction, including assuring proper operation of the pollution control devices installed, and all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events, runoff or releases on the project. The Lump Sum price for the SWPPP shall be inclusive of all costs, and no additional claims shall be made by Contractor under any other specification provision of these documents, including Change Conditions. Payment for this bid item shall be upon final completion and acceptance of the project, as per Section 109.1.

Payment for AZPDES permit requirements shall be made on the basis of lump sum for all work for **STORMWATER POLLUTION PREVENTION PLAN.** Payment shall include installation of inlet markers, supplied by the City, on all catch basins, scuppers, drywells and elsewhere as directed by the City. Markers shall be installed using a suitable 2-part epoxy as approved by the City.

11. CONSTRUCTION MATERIALS SAMPLING AND TESTING: The contractor, at their expense, shall provide adequate personnel for construction materials sampling and testing functions as required by the City of Glendale. Proof of certifications of the following requirements shall be provided to the City of Glendale prior to commencement of construction:

A. LABORATORY TESTING SERVICES: Construction materials testing laboratories must meet the following requirements in order to perform laboratory testing on construction materials samples:
   a. Possess and maintain current AASHTO accreditation (including R18) provided by the AASHTO Materials Reference Laboratory (AMRL), and Cement and Concrete Reference Laboratory (CCRL) in any test methods preformed and be currently participating in their respective proficiency programs.
   b. Concrete strength testing must be performed by a technician currently certified by the American Concrete Institute (ACI) as a "Concrete Strength Testing Technician".

B. FIELD TESTING AND SAMPLING SERVICES: Field technicians shall be employed by the construction materials testing laboratory noted above and have current "*Field Technician Certification*" from the Arizona Technical Testing Institute (ATTI) and current "*Concrete Field Testing Technician – Grade 1*" certification from the American Concrete Institute.

C. TESTING FREQUENCIES: Laboratory and field testing and sampling shall adhere to the current City of Glendale minimum frequencies (see tables below) formal documentation, records etc. shall be provided to the City in a timely manner and as part of required project documentation for overall project acceptance. The City reserves the right to utilize independent / additional testing to confirm prior results.

Payment for this item will be made at the contract lump sum price fully complete

for CONSTRUCTION MATERIALS SAMPLING AND TESTING.

CITY OF GLENDALE - CONSTRUCTION ENGINEERING

MATERIALS TESTING SECTION

ASPHALTIC CONCRETE MINIMUM SAMPLING AND TESTING FREQUENCY

TYPE OF SAMPLE	REQUIRED TEST(S)	TEST METHOD DESIGNATION	MINIMUM SAMPLE FREQUENCY	MINIMUM SIZE OF SAMPLE
COLD FEED AGGREGATE OR COMBINED HOT-BIN AGGREGATE SAMPLES	SIEVE ANALYSIS	A.S.T.M. C - 136	1 - EVERY 500 TONS	25Kg
	SAND EQUIVALENT	A.S.T.M. D - 2419	1 - PER DAY	10Kg
	SPECIFIC GRAVITY (COARSE & FINE)	A.S.T.M C-127 / C-128	1 - PER DAY	12Kg
	SIEVE ANALYSIS	A.S.T.M. C - 136	1 - PER EACH ADDITIONAL 500 TONS PRODUCED	25Kg
UNCOMPACTED ASPHALTIC CONCRETE MIXTURE	IGNITION-GRADATION	ARIZ.427	1 - PER FIRST 500 TONS PER DAY	9 Kg
	GYRATORY COMPACTION	AASHTO TP4	1 - PER FIRST 500 TONS PER DAY	9 Kg
	MAX. THEORETICAL SPECIFIC GRAVITY	A.S.T.M. D - 2041	1 - PER FIRST 500 TONS PER DAY	7 Kg
	IGNITION-GRADATION	ARIZ.427	1 - PER EACH ADDITIONAL 500 TONS PRODUCED	9 Kg
	MARSHAL COMPACTION	ASTM D-6926/D6927	1 - PER FIRST 500 TONS PER DAY	9 Kg
COMPACTED ASPHALTIC CONCRETE MIXTURE	NUCLEAR DENSITY	A.S.T.M. D - 2950	1 - PER 750 LINEAR FT PER PASS OR RIBBON	N/A
	SPECIFIC GRAVITY BY CORE SAMPLE	A.S.T.M. D - 2726	1 - PER 750 LINEAR FT PER PASS OR RIBBON	N/A

revised 1/07/2013

City of Glendale				
Minimum Construction Materials Field Testing Frequency				
Type of Material	Type of Structure	Minimum Test Frequency	Minimum Test Requirement	Test Method
Native In-Situ	Curb, Gutter & Sidewalk	1-per 500 lin.ft.	90% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Roadway Subgrade	1-per 500 lin.ft.	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Trench Backfill	1-per 500 lin.ft. per 1 ft. lift	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Structural Fill	1-per lift	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Driveways, Aprons, Valley Gutters	1- per structure	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Aggregate Base	Pipe Bedding	1-per 500 lin.ft.	95%	ASTM D-698 / D-2922
Aggregate Base	Curb, Gutter & Sidewalk	1-per 500 lin.ft.	95%	ASTM D-698 / D-2922
Aggregate Base	Roadway Base	1-per 500 lin.ft.	100%	ASTM D-698 / D-2922
Aggregate Base	Structural Fill	1-per lift	95%	ASTM D-698 / D-2922
Concrete	Curb, Gutter, Sidewalk, Driveways	1 set per 50 yards or 1/2 days pour	1 set of (4) 4X8 Cylinders	ASTM C-71 / C-172
Asphaltic Concrete	Roadway (Arterial)	1-per 750 lin.ft. per pass	92% - Nuclear Density	ASTM D-2950 / D-2041
Asphaltic Concrete	Roadway (Arterial)	1-per 750 lin.ft. per pass	92% - Core Density	ASTM D-2726
Asphaltic Concrete	Roadway (Residential)	1-per 750 lin.ft. per pass	95% - Marshall Density	ASTM D-6926/D6927
Asphaltic Concrete	Roadway (Residential)	1-per 750 lin.ft. per pass	95% - Core Density	ASTM D-2726
Asphaltic Concrete	Roadway	1 Sample per 500 tons	Uncompacted Field Sample	AC Laboratory Tests*
NOTE: This table is based on the approximate **minimum** number of tests to be performed and requirements may be increased depending on site conditions or other circumstances at the discretion of the City of Glendale. * All Asphaltic Concrete Laboratory Tests are covered on another sheet provided upon request.				

Revised 01/07/2013

12. CASH FLOW REPORT: The Contractor shall prepare a Cash Flow Report for projected monthly project cash flow on a City provided form and submit it for approval prior to issuance of the Notice to Proceed. The accumulation of monthly pay estimate costs shall be plotted versus time in accordance with the proposed construction schedule. After approval, the Contractor shall submit an updated Cash Flow Report prior to the receipt of each Progress Payment. Each updated Cash Flow Report shall reflect the Contractor's actual monthly payment versus the actual elapsed contract time.

At the City's request, if the projected quarterly project cash flow varies by more than ten percent of the total contract price, the Contractor shall prepare a revised Cash Flow Report. Each revised Cash Flow Report is subject to approval by the City prior to issuance of the progress payment.

Revisions to the report resulting from Contractor initiated delays or work schedule changes shall be at no cost to the City. Any revisions required by City initiated delays or changes to the work shall be paid as an integral part of the approved Change Order.

13. CONSTRUCTION SIGN: The project type to be indicated on the sign shall be 121325 - WASTEWATER COLLECTION SYSTEM & MANHOLE REHABILITATION - PHASE III . See "Construction Sign Detail."

14. ALLOWANCE FOR CONSTRUCTION CONTINGENCIES: Bid schedule includes a lump sum contingency allowance. This allowance is at all times the property of the City and is for the sole purpose of reimbursing Contractor for any unforeseen work not apparent at the time of bidding or additional work requested by the CITY OF GLENDALE.

No work anticipated for reimbursement under this Bid Item shall be initiated by Contractor until Contractor, City of Glendale Representative and City of Glendale agree on the scope and cost to perform the additional work. The Contractor shall prepare and submit to City of Glendale Representative a cost itemization and summary for the additional work. City of Glendale Representative and City of Glendale shall review and approve prior to Contractor proceeding with any additional work. Any portion of the stated sum not expended remains the property of the City of Glendale.

Work under this section shall consist of any additional work identified by the owner and contractor due to construction activity. All work under this item shall be itemized as per MAG requirements and deducted from the set amount of $82,000.00. All work under this section shall include but is not limited to all necessary materials, tools, layout, survey and labor required to complete each task.

Measurement and payment for this item shall be made on an individual basis per task and as described above. Limit for this item is set at $82,000.00 on the bid form, under line item ALLOWANCE FOR CONSTRUCTION CONTINGENCY.

END OF SPECIAL PROVISIONS

Project Life Cycle Cash Flow Schedule

Project No.: 0 Date:

Project Name: 0

Company Name: 0

Project Start Date: 0 Project Completion Date

Original Updated Revised

		Estimated		Actual	
Qtr.	Fiscal Yr.	Amount	Accum.	Amount	Accum.
1st	07/13 - 09/13	$ -	$ -		
2nd	10/13 - 12/13	$ -			
3rd	01/14- 03-14	$ -			
4th	04/14 - 06/14				
1st	07/14 - 09/14				
2nd	10/14- 12/14				
3rd	01/15- 03/15				
4th	04/15- 06/15				
1st	07/15 - 09/15	$ -	$ -	$ -	$ -
2nd	10/15 - 12/15	$ -	$ -		
3rd	01/16 - 03/16	$ -	$ -		
4th	04/16 - 06/16	$ -	$ -		
1st	07/16 - 09/16	$ -	$ -	$ -	$ -
2nd	10/16 - 12/16				
3rd	01/17- 03/17				
4th	04/17 06/17				
1st	07/17 - 09/17				
2nd	10/17 - 12/17				
3rd	01/18- 03/18	$ -	$ -	$ -	$ -
4th	04/18- 06/18				
	Totals	$ -		$ -	$ -

* COG's fiscal year is July 1, (current year) through June 30, (following year)

For Engineering Use Only:

Account No: PO No.

CONSTRUCTION SIGN DETAIL

CONSTRUCTION SIGNS ARE TO BE IN PLACE BEFORE PHYSICAL CONSTRUCTION BEGINS

SIGNS SHALL BE MADE OF 3/4" AC EXTERIOR PLYWOOD OR OTHER MATERIAL APPROVED BY THE ENGINEER

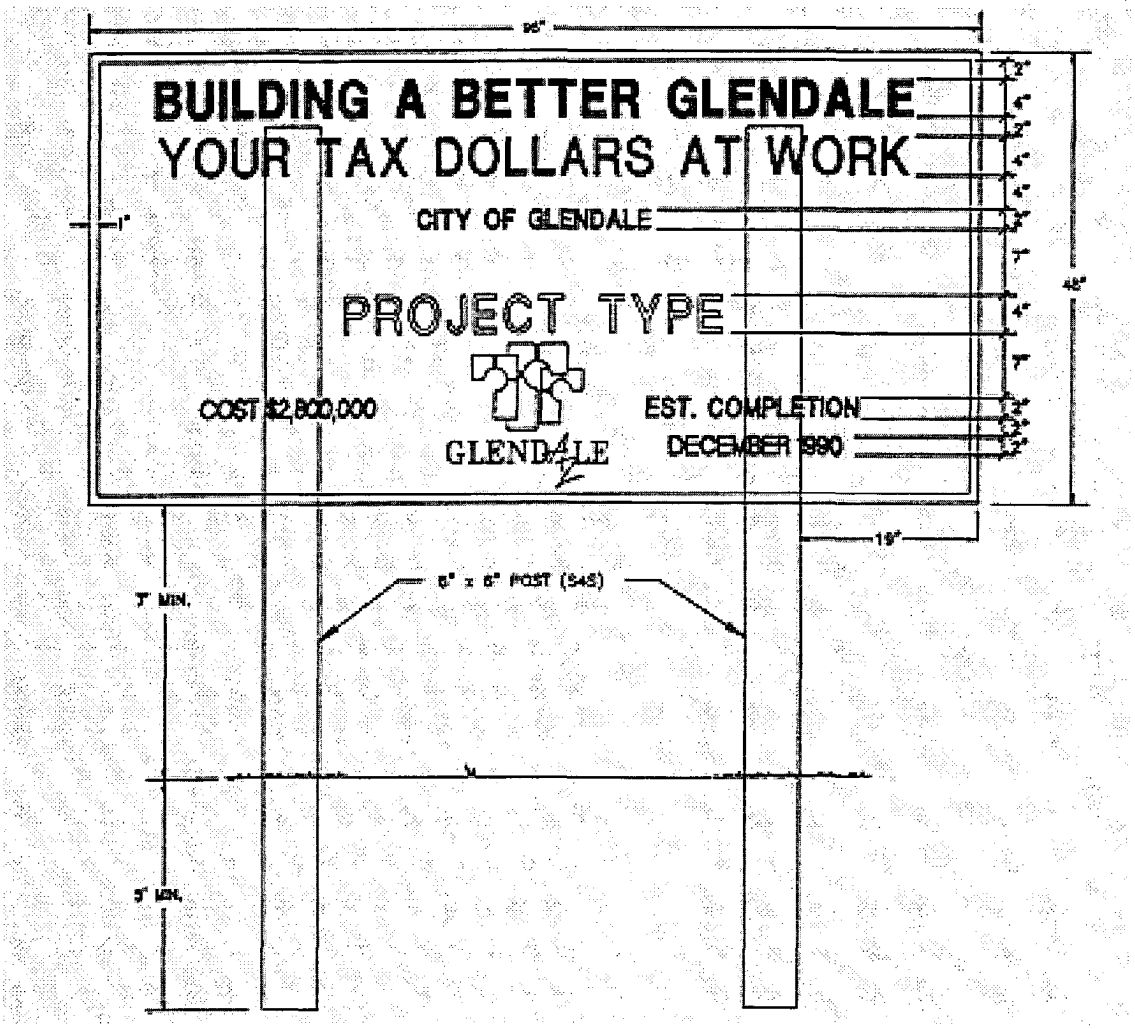
BACKGROUND TO BE PAINTED WHITE WITH STENCIL BLACK LETTERS, NUMERALS AND BORDER.

POSTS SHALL BE PAINTED WHITE. ALL MOUNTING HARDWARE TO BE RUST PROOF MATERIAL

SIGNS SHALL BE SO PLACED THAT THEY WILL NOT OBSCURE OR DETRACT FROM OTHER SIGNING.

CONTRACTOR TO FILL IN THE PROJECT TYPE, COMPLETION DATE, AND COST AS DIRECTED.

THE 12" X 13" TWO COLOR GLENDALE LOGO IS AVAILABLE BY CONTACTING THE CITY OF GLENDALE ENGINEERING DEPT. AT 623-930-3630. COST $18.00



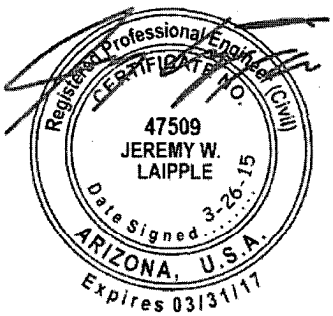
CITY OF GLENDALE

Wastewater Collection System and Manhole Rehabilitation
PHASE III

Project No. 121325

TECHNICAL SPECIFICATIONS

MARCH 26, 2015



MAYOR
Jerry P. Weiers

CITY COUNCIL

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CITY OF GLENDALE

Wastewater Collection System and Manhole Rehabilitation
PHASE III
Project No. 121325

TECHNICAL SPECIFICATIONS

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SECTION 01010
PROJECT SUMMARY

PART 1 - GENERAL

1.01 AGENCY DEFINITIONS

Wherever used in the Contract Documents, the following reference names are used interchangeably and will have the meanings listed:

EQUIVALENT REFERENCE NAMES	ENTITY NAME
City, Owner	City of Glendale 5850 W. Glendale Ave Glendale, AZ 85301-2599
City's Representative, City's Project Manager	City of Glendale Michael Johnson 5850 W. Glendale Ave 3rd Floor Glendale, AZ 85301-2599
City's Engineer, Engineer, Inspector	Dibble Engineering 7500 N. Dreamy Draw Drive, Ste 200 Phoenix, AZ 85020
Contractor, Developer	Company awarded a construction contract to perform the work.

1.02 SCOPE

A. Contractor shall provide all materials, equipment, and labor necessary to replace or rehabilitate existing sanitary sewer pipe utilizing trenchless Cured-In-Place-Pipe (CIPP) lining or traditional open cut replacement techniques as identified in project Design Drawings and outlined in these Technical Specifications.

B. Major work to be performed under these Technical Specifications includes the following:

1. General:

a) Rehabilitate and/or replace existing sanitary sewer pipe, lateral service connections and access manholes according to City Standards, Maricopa Association of Governments (MAG) standards or as shown in project Design Drawings.

b) Replace existing potable water pipe, isolation valves, fire hydrant and fittings according to Maricopa Association of Governments (MAG) standards or as shown in project Design Drawings.

c) Perform cleaning of the sanitary sewer pipes and manholes to remove all grease, scale, roots, debris, and foreign protrusions prior to rehabilitation.

d) Provide all by-pass pumps, pipes, isolation valves, air release valves, power, noise control and odor control including materials, labor and equipment as necessary to maintain sanitary sewer service and prevent sewage backups into homes and businesses, along with diversion of sanitary sewage flows as necessary around the work.

e) Restore areas disturbed by construction activities back to pre-existing conditions.

f) Provide all traffic control on streets and alleys during construction as necessary for cleaning, excavation, asphalt removal and replacement, manhole removal and/or installation, pre and post rehabilitation closed-circuit television (CCTV) inspection, CIPP lining, lateral reinstatement, and bypassing of sanitary sewer flows for sewer rehabilitation. Traffic control plans must be submitted to and approved by the City of Glendale prior to beginning of work.

g) Communicate with the City's Engineer for public notification and communication of the anticipated work to the general public along with coordination and maintenance of access to properties as necessary during the course of the work.

2. Open Cut Installation:

a. Perform all excavation, backfill, compaction and surface restoration according to City Standards or Maricopa Association of Governments (MAG) standards.

b. Provide all cutting, removal, transport and legal disposal of pipe, appurtenances and surface materials removed from the project, including asbestos cement pipe to an approved off-site disposal location.

c. Repair of surface improvements back to original condition and dimensions.

d. Provide and install piping, fittings and couplings to reconnect sanitary service laterals to reestablish gravity service to adjacent properties.

e. Installation of new pre-cast concrete sanitary sewer access manholes including an interior epoxy protective coating, along with ring and cover, and formed bench and channel interior.

3. Pipe Rehabilitation:

a) Perform pre-rehabilitation and post-rehabilitation closed-circuit television (CCTV) inspection of the sanitary sewer pipe interior.

b) Install Cured-In-Place-Pipe (CIPP) lining into the interior of the existing sanitary sewer pipe. Removal of all material(s) that may interfere with CIPP lining insertion prior to installation.

c) Reinstate lateral access openings to reestablish sanitary sewer service to adjacent properties.

d) Installation of cured-in-place sanitary sewer lateral seals as directed or shown in the project Design Drawings.

4. Manhole Rehabilitation

a) Clean manhole interior using grit and/or hydro-blasting techniques to prepare interior manhole surfaces according to proposed protective epoxy coating manufacturer recommendations.

b) Installation of a protective epoxy coating to the interior of newly installed and existing concrete manholes.

1.03 EXISTING UTILITIES

A. The Contractor shall be responsible for identification and verification of the location of all existing pipes and utilities, either underground and/or overhead, prior to conducting work activities.

B. Contractor is required to contact Blue Stake at 263-1100 at least two (2) working days prior to start of any excavation at each site.

C. The Contractor shall identify and verify the location of all sewer service laterals located within the pipes being rehabilitated prior to conducting work activities.

D. The Contractor shall identify and verify the location and grade of all water service lines and sewer service lateral taps located within the pipes being replaced prior to conducting excavation activities.

E. The Contractor shall be responsible for verifying volume of sanitary sewer flows in collection system piping and individual service laterals and shall coordinate and install all necessary connections, piping, and by-pass pumping as necessary to maintain uninterrupted service and prevent sanitary sewer overflow.

F. Maps of the City's sanitary sewer collection system are available from the City upon request. If maps are desired, it shall be the responsibility of the Contractor to obtain and pay all fees associated with obtaining copies of these maps.

1.04 PRESENT CONDITION

A. Many of the project sewers were inspected in previous years using closed-circuit television (CCTV) and documented by their inspection tapes and log sheets. The City does not guarantee the current condition of the pipes. The Contractor shall be responsible to field verify current condition to his own satisfaction.

B. Copies of the CCTV and log sheet information indicated above will be provided to the Contractor if available and requested. All requests must be submitted through the City's Project Manager.

1.05 FLOW CHARACTERISTICS

A. Contractor shall be responsible to maintain uninterrupted sanitary sewer service to all businesses and residents within the project limits.

B. The project sewer receives wastewater from residential, commercial, and industrial facilities. The Contractor shall bypass flows around the work described in the Contract Documents as necessary to complete the work specified.

C. Sanitary sewer flow measurement data is not available for the project area. The Contractor shall be responsible for any/all monitoring of flows as necessary to size any bypass system to ensure against sanitary sewer overflows (SSO).

D. The Contractor shall be responsible for maintaining uninterrupted sanitary sewer service around the pipe segment(s) being replaced or lined and by-

pass pump flows as necessary to ensure against excessive surcharging and overflow of the upstream collection system and/or laterals.

PART 2- PRODUCTS

NOT USED

PART 3- EXECUTION

3.01 REHABILITATION OF PIPES AND MANHOLES

General items of work to be performed in pipes and manholes includes all by-pass pumping of existing sanitary sewer flows and the following:

A. INSTALLATION OF NEW SANITARY SEWER PIPE

1) New sanitary sewer pipe and lateral service connections shall be installed according to Maricopa Association of Governments (MAG) standards or as shown in project Design Drawings.

2) Contractor shall be responsible for verification and adjustment of pipe grade and corresponding service lateral elevation as necessary for proper sanitary sewer gravity drainage. Contractor shall notify City's Engineer if modification of manhole invert or service lateral elevation are necessary prior to pipe installation.

B. INSTALLATION OF CIPP LINING

1) All pipes shall be power washed cleaned with pressurized heated water to remove all fats/oils/grease (FOG) and debris prior to CIPP lining.

2) Interior condition of all pipes shall be documented prior to and following rehabilitation utilizing Closed Circuit Television (CCTV) camera equipment.

3) Install Cured-In-Place-Pipe (CIPP) lining into pipes as directed.

4) CIPP liner shall be installed in accordance with Technical Specification Section 02767 – CIPP Lining of Existing Sewers.

5) Bulges or encrustations that may hinder the installation of the CIPP liner or cause noticeable deformations in the interior surface profile of the CIPP liner shall be removed prior to liner installation. OSHA confined

space entry safety precautions shall be followed if man entry pipe preparation procedures are undertaken.

6) CIPP liner shrinkage following installation in excess of 6-inches, as measured from the interior wall of the manhole at each end of the pipe, shall be repaired according to manufacturer's recommendations using material equal to or greater thickness, strength and life expectancy as the original lining material. Repair material shall overlap the existing liner material a minimum of 12-inches. Interior transition from lining to point repair liner shall be smooth so not to collect materials. Termination of the CIPP liner into the manhole shall be sealed with epoxy with a smooth transition so not to collect debris or sediments.

C. MANHOLES

1) All manholes shall be power washed clean with pressurized heated water to remove all fats/oils/grease (FOG) and debris prior to resurfacing back to original interior dimensions prior to protective coating application.

**** END OF SECTION ****

SECTION 01014
WORK SEQUENCE

PART 1 - GENERAL

1.01 CONTINUITY OF FACILITY OPERATIONS

Work under this Project shall be planned, scheduled and performed so as to minimize disruption to the operation of existing facilities, residences, and businesses. The Contractor shall provide all equipment and facilities, including piping, pumps, noise control, odor control, and standby power, necessary to maintain sanitary sewer flow through and/or around the work area.

1.02 PROJECT COMPLETION

The project shall be completed within the contract time as outlined in the Contract Documents.

1.03 PUBLIC INFORMATION

A. Public notification shall be provided by the City's Engineer for notification of construction activities to the general public. Contractor shall coordinate anticipated construction activities and schedules with the City Engineer's for use by the City Engineer's Public Notification Firm.

B. Refer to Technical Specification Section 01400 – Public Awareness

1.04 PROJECT CONSTRUCTION COORDINATION

A. At the Preconstruction Conference, the Contractor shall designate a Field Superintendent who will be on the job and available for communication at all times during construction. The Contractor's Field Superintendent shall be available 24 hours a day by mobile telephone, home telephone, answering service, pager, or other means acceptable to the City. The Superintendent shall be the contact person representing the Contractor, and shall be capable of giving direct field orders on behalf of the Contractor as the need arises. Official job communication shall be conducted between Contractor's Field Superintendent and the City.

B. Contractor shall obtain approval from the City 72 hours in advance 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 City. The City will not entertain Contractor claims for additional compensation

arising out of construction delays caused by inadequate duration of notification.

C. Contractor's Field Superintendent shall conduct and attend a weekly construction progress meeting. Location of meeting shall be determined by the City. Contractor shall prepare, distribute copies, and present a two week look-ahead anticipated schedule of work activities at the meeting. Deviation from the schedule presented shall be at the approval of the City.

D. The Contractor shall be responsible for coordination of the work schedule. It shall be the responsibility of the Contractor to resolve conflicts with adjacent construction and schedule the work of this project accordingly. The City will not entertain Contractor claims for additional compensation arising out of construction delays caused by adjacent construction work. The City reserves the right at its sole discretion, grant an extension of contract time due to unforeseen delays caused by adjacent construction activities or conflicts upon written request by the Contractor at the time the delay occurs.

1.05 SCHEDULING AND SEQUENCING CONSTRAINTS

A. Contractor shall rehabilitate or replace pipes and manholes identified in the Construction Documents. Once construction activities commence on one area of the Projects, the Contractor shall continue uninterrupted until all pipes and manhole rehabilitation in that area are complete, unless otherwise allowed in writing by the City.

B. No construction activities shall begin on-site until all required submittals are approved.

C. Traffic control will remain in effect as dictated by the Traffic Control Plan until all work is completed, inspected, and accepted. Contractor shall maintain access to all private property along the Projects on a 24-hour basis unless written approval is otherwise obtained from property Owner(s) acknowledging and accepting reduced access. Copies of all written approvals shall be provided to the City prior to access interruption. Refer to Technical Specification Section 02100 – Traffic Control.

D. Bypassing sewage flow as required for rehabilitation or replacement of all pipes and manholes is part of this contract. Bypass pumping will remain in operation as depicted in the Bypass Pumping Plan until all work is completed, inspected, and accepted. Refer to Technical Specification Section 02145 – Diversion of Sewage Flows and Dewatering for the bypass pumping requirements and restrictions.

E. Cleaning and dewatering will be required for all pipes and manholes to be rehabilitated. Reference Technical Specification Section 02760 - Sewer and Sewer Structure Cleaning

F. The Contractor shall perform a detailed inspection of the work to confirm completion of all work items and conformance to the project specifications. Inspection of the work will be carried out by the City or City's Engineer after receipt of the Contractor's written request for inspection. The Contractor shall request inspection prior to decommissioning bypass pump operation. The Contractor shall notify the City's Engineer at least 24 hours prior to completion of the Work.

G. The Contractor shall provide CCTV records after each pipe is taken out of service, dewatered and cleaned for the City's Engineer to review said records collected by the Contractor of the pipe interior. The Contractor shall notify the City's Engineer at least 48 hours prior to completion of the cleaning and CCTV video operation. Refer to Section 02761 – Remote CCTV Inspection of Existing and Rehabilitated Sewers.

H. The Contractor shall provide sufficient time after each pipe is taken out of service, dewatered and cleaned for the City or City's Engineer to inspect the pipe interior. The Contractor shall notify the City or City's Engineer at least 48 hours prior to completion of the cleaning operation. After receipt of the Contractor's written notice of work completion, the City or the City's Engineer 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 City or City's Engineer upon satisfactory completion of the punch list items. All costs associated with re-inspection, including bypass pumping costs, City Engineer's time for re-inspection costs, shall be the responsibility of the Contractor.

1.06 CONTRACTOR WORK HOURS

Contractor may be required to work at night, after hours, or on weekends to minimize disruption to area residents or businesses. It shall be the responsibility of the Contractor to obtain a City "After Hours Work Permit" prior to working at night, after hours, or weekends. The Contractor shall adjust work schedule to accommodate residents or business operation at no additional cost to the City. The Contractor shall provide the City fourteen (14) day notice of anticipated work schedule. Work hours shall be presented at the regularly scheduled progress meetings for approval by the City.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

Project No. 121325

SECTION 01015
CONTRACTOR'S USE OF PREMISES

PART 1 - GENERAL

1.01 OWNER'S RESPONSIBILITIES

City staff is responsible for operating the existing water valves for distribution system isolation throughout the execution of this Contract.

1.02 CONTRACTOR'S RESPONSIBILITIES

Except where the Contractor is bypassing flows, sewers and pipes will remain in operation throughout the performance of this Contract. All coordination between City personnel and the Contractor on all sewer and water system operational matters shall be through the City's Project Manager unless otherwise approved.

1.03 USE AND OPERATION OF EXISTING FACILITIES:

A. The Contractor shall not interfere with the operation of existing sewers except to bypass flows as necessary to perform the work. The Contractor shall exercise every precaution to ensure that debris and material from its operation does not enter the sewer. Any debris or blockage entering into the sewer as a result of the Contractor's work shall be immediately removed at the Contractor's expense. Any damages caused by or as a result of the debris entering the sewer shall be the responsibility of the Contractor.

B. 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 (if present) to the City. All disturbed areas shall comply with the Dust Control Plan required by Maricopa County as specified in Technical Specification Section 01062 – Permits and Easements.

1.04 TRAFFIC:

The Contractor shall conform to Technical Specification Section 02100 – Traffic Control

1.05 DAMAGE TO EXISTING PROPERTY

A. Contractor shall be responsible for any damage to existing walls, landscaping, structures, piping, work, materials, or equipment because of its operations, and shall repair or replace any damaged walls, landscaping, structures, piping, work, materials or equipment to the satisfaction of, and at no additional cost to the City.

B. Contractor shall protect all existing structures and property from damage.

C. Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, ditches, embankments, block walls, landscaping, or other public or private property, which may be caused by transporting equipment, materials, or workers to or from the work. 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 at no additional cost to the City.

D. Contractor shall be responsible for any and all damage to private property as caused by the Contractor's operations including but not limited to sewage backups. Damage to private property shall be repaired by the Contractor at no additional cost to the City.

E. Contractor shall be responsible to identify, locate and control all contributory flows, either collection main or lateral, that may detrimentally impact proper CIPP liner installation.

PART 2- PRODUCTS

NOT USED

PART 3- EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Measurement and payment for Work performed shall be in accordance with the unit price, unless work is defined as an allowance item.

B. Defect assessment and non-payment for rejected work.

1.02 AUTHORITY

A. The City's Engineer 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 in Bid Tab and project Design Drawings are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the City's Engineer shall determine payment.

B. If the actual Work requires more or fewer quantities than those quantities indicated, 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 completion basis.

F. Allowance: City has provided a general allowance for items of work as directed by the City's Engineer. Examples of allowance items include but are not limited to spot repairs of sewers, rehabilitation of deteriorated manholes, installation of manhole in place of clean-out, odor control, variable message boards, off duty police officer for traffic control and manhole installation. All costs shall be approved prior to initiating work. Any work performed without prior authorization shall be at the Contactor's expense.

1.05 PAYMENT

A. Payment Includes: Full compensation for all required labor, products, tools, equipment, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit, insurance, bonding, taxes, and all other 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 City's Engineer 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.

1.06 BID ITEM DESCRIPTIONS

Description of items contained within the Bid Form are as follows:

Bid Item 1 – ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This item is intended to cover all costs associated with items installed to conform to National Pollution Discharge Elimination System (NPDES), Storm Water Pollution Prevention Plan (SWPPP), Drainage Design Manual for Maricopa County, Arizona, Volume III, section regarding "Erosion Control" and all applicable EPA requirements. Payment shall include temporary earthen berm, corrugated metal culvert, diversion dikes, filter barrier, silt fence, sandbag berms and temporary drainage swale and culvert. Also included is the removal and legal disposal of temporary materials installed following completion of construction activities. Measurement for payment shall be made under the bid item 'Arizona Pollutant Discharge Elimination System (AZPDES)'

per the contract unit price LUMP SUM and paid as a percentage of the completed project.

Bid Item 2 – MOBILIZATION AND DEMOBILIZATION

This item includes full compensation to the Contractor for a single round trip mobilization and demobilization 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 will be measured for payment by the LUMP SUM as a single complete UNIT OF WORK. Payment for mobilization and demobilization will be made at the contract lump sum price.

Payment shall be made in equal one-third portions. The first payment will be paid with the Contractor's initial billing. The second payment will be made when the total payments to the Contractor for the pay items, exclusive of payments for mobilization and demobilization, equal greater than one-half of the initial contracted amount. The remaining one-third will be paid as part of the final payment due to the Contractor.

Bid Item 3 – PROVIDE AND REMOVE BYPASS PUMPING AND PIPING SYSTEM

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 and removal of bypass pumps and sewage spill containment around pumps, fuel spill containment system, bypass pipes and valving, pneumatic plugs, pressure testing, odor control covers, noise suppression, air vacuum valves, burp tanks, double containment piping, anchor blocks, vactoring, excavation and backfill of any required trenching for subsurface crossing of streets by bypass force main, saw cutting and removal of asphalt concrete pavement, removal and replacement of curb, gutter and sidewalks (in kind), steel plating, new pavement and backfill meeting the requirements of the City of Glendale, and flushing of pumps and pipes after bypass completion, landscape restoration, and all other incidentals thereto for which separate payment is not provided under other items in the Bid Form. Measurement for payment shall be made on a LUMP SUM basis as established in the Bid Form.

Payment for all costs to provide bypass pumping of sewers or alternate arrangements shall be included in the LUMP SUM bid for bypass pumping and piping.

Bid Item 4 – CLEAN EXISTING SMALL DIAMETER SEWER (8-INCH AND 10-INCH DIAMETER):

This item includes full compensation to the Contractor for hydro cleaning as indicated on Design Drawings and specified in the Technical Specifications Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING of existing 8-inch and 10-inch diameter sanitary sewer pipes. Work shall include, but not be limited to: cleaning of pipes to be rehabilitated with off-site disposal of sediments and debris according to all applicable state and federal regulations. This item also includes removal of any obstructions that may hinder installation of CIPP liner. This item also includes all necessary safety and support systems, labor, equipment and materials required to perform the work. Measurement for payment shall be made on a LINEAR FOOT basis of sewer pipe cleaned, measured from center of manhole to center of manhole, according to the individual sewer pipe diameters.

Bid Item 5 – CLEAN EXISTING LARGE DIAMETER SEWER (27-INCH DIAMETER):

This item includes full compensation to the Contractor for hydro cleaning as indicated on Design Drawings and specified in the Technical Specifications Section 02760 – SEWER PIPE AND SEWER STRUCTURE CLEANING of existing 27-inch diameter sanitary sewer pipes. Work shall include, but not be limited to: cleaning of pipes to be rehabilitated with off-site disposal of sediments and debris according to all applicable state and federal regulations. This item also includes removal of any obstructions that may hinder installation of CIPP liner. This item also includes all necessary safety and support systems, labor, equipment and materials required to perform the work. Measurement for payment shall be made on a LINEAR FOOT basis of sewer pipe cleaned, measured from center of manhole to center of manhole, according to the individual sewer pipe diameters.

Bid Item 6 – PRE AND POST CCTV INSPECTION

This item includes full compensation to the Contractor for CCTV video inspection as indicated on Design Drawings and specified in the Technical Specifications SECTION 02761 - REMOTE CCTV INSPECTION OF EXISTING AND REHABILITATED SEWERS of existing 8-inch, 10-inch and 27-inch diameter sanitary sewer pipes. Work shall include, but not be limited to CCTV inspection at two project milestones, pre-liner installation (after cleaning) CCTV inspection and a second CCTV inspection at post-liner installation (after liner installation and service lateral reinstatement if applicable), and all necessary safety and support systems, miscellaneous labor, materials and equipment required to perform the work. Payment shall be made on a LINEAR FOOT basis of sewer pipe (measured from center of manhole to center of manhole) CCTV inspected.

Bid Item 7 – ASPHALT CONCRETE PAVEMENT REPLACEMENT (MAG STD DET 200-1, T-TOP)

This items includes full compensation to the Contractor to furnish and install asphalt concrete pavement in accordance with Design Drawings and MAG Standard Detail 200-1, "T-Top" and MAG Specification Section 336. Payment for this item includes excavation, backfill, compaction, saw cutting, asphalt concrete pavement, tack coat, joint cut/sealant per COG Standard Detail G-317, placement, rolling, testing, and any adjacent facility protection. This item also includes all costs associated with asphalt concrete pavement reflective lane striping, excavation, removal, handling, loading, hauling, and proper disposal of asphalt concrete pavement removed and any dump fees associated with legal disposal of asphalt concrete pavement removed. Measurement for payment shall be per SQUARE YARD of asphalt concrete pavement installed complete and accepted in-place.

Bid Item 8 – REMOVE AND DISPOSE EXISTING "FLUSH TANK" MANHOLE

This item includes full compensation to the Contractor to remove an existing antique 60-inch diameter concrete sanitary sewer manhole "flush tank" complete, including concrete manhole base, barrel, cone, chimney, ring and cover, and all interior piping and plug. Installation of a new manhole in the flush tank location is paid under separate bid item.

This item also includes the removal and replacement of the existing decorative stamped and colored asphalt concrete pavement, including excavation, backfill, compaction, saw cutting, asphalt concrete pavement, tack coat, joint sealant per COG Standard Detail G-317, placement, rolling, testing, asphalt concrete color application and texturing to match existing pavement, and any adjacent facility protection. This item also includes all costs associated with removal, handling, loading, hauling and proper disposal of asphalt concrete pavement removed and any dump fees associated with the legal disposal of asphalt concrete pavement removed.

This work will be measured for payment following removal of the existing flush tank manhole. Payment shall be made per LUMP SUM for the sewer flush tank removal. Payment will be made at final acceptance of completed manhole removal.

Bid Items 9 through 11 - REMOVE AND REPLACE EXISTING CURB AND GUTTER

This item includes full compensation to the Contractor for all labor, materials, and required equipment to remove and replace in-kind existing single curb and curb and gutter as shown on the Design Drawings. The limits of curb removal shall be to existing expansion, contraction, or construction joints. New curb and gutters shall match existing grades. Measurement for payment shall be made on a LINEAR FOOT basis of curb or curb and gutter removed and replaced.

Bid Item 12 – REMOVE AND REPLACE EXISTING CHAIN LINK FENCE (MAG STD DET 160 MOD)

This item includes full compensation to the Contractor for all labor, materials, and required equipment to remove and replace in-kind existing chain link fencing, including posts, post foundations, adjacent concrete edging, fence and top rail, as required to make the water main swing connections per the project Design Drawings. Measurement for payment shall be made on a LINEAR FOOT basis of chain link fence removed and replaced.

Bid Item 13 – INSTALL 8-INCH DIAMETER SEWER MAIN

This items includes full compensation to the Contractor to furnish and install sanitary sewer pipe of the size identified and as called out on the Design Drawings. Pipe may be vitrified clay pipe (VCP) or SDR 35 polyvinyl chloride (PVC) pipe. Payment for this work includes all excavation (MAG Specification Section 601), (MAG Specification Section 615), installation, service lateral wye, elbows, 4-inch lateral pipe, and coupling to connect to existing service lateral pipe. This item also includes the watertight connection to access manholes, pressure testing, bedding, backfill, ½ sack CLSM, compaction, disposal of excess excavation materials, temporary road surface maintenance, etc. Payment for existing pipe removal, hauling and disposal shall be incorporated into the price per foot of pipe. Measurement for payment shall be per LINEAR FOOT (through fittings) of pipe installed for the size of pipe called for, installed in-place complete and accepted.

Bid Item 14 – FURNISH AND INSTALL 60-INCH DIAMETER SANITARY SEWER MANHOLE (MAG STD DET 420-1)

This item includes full compensation to the Contractor to furnish a new 60-inch diameter precast concrete sanitary sewer access manhole complete, per MAG Standard Detail 420-1, including base, formed concrete channel(s), barrel, cone, and 30-inch diameter chimney. Work also includes all labor, materials and required equipment to connect the manhole into the existing collection system and plug with concrete any existing pipe identified in the Design Drawings for abandonment. This item shall include all required mobilization and demobilization of crews and equipment to supply, deliver on-site, leveling, set in place, installation of seals, and any incidentals required to complete the work.

This work will be measured for payment after installation of manhole. Payment shall be made per EACH sewer manhole installed and final acceptance of completed manhole installation.

Bid Items 15 and 16 – INSTALL 8-INCH AND 10-INCH DIAMETER CIPP LINER

This item includes full compensation to the Contractor to rehabilitate 8-inch and 10-inch diameter sanitary sewer pipes with cured-in-place-pipe method including all labor, materials, and required equipment. This item includes all labor and materials for installation, operation, maintenance and removal of small, temporary bypass pumps and lay flat hoses (if necessary) for transfer of sanitary sewer flow around the work area, plugging of sewers, identification and control of nuisance/detrimental lateral flows, all public notification coordination, traffic control plan according to City requirements, and all labor, materials, and coordination of traffic control according to the approved plan, incidental materials and labor to complete the rehabilitation. Lining shall be furnished, installed and tested, and shall include all sampling and testing, and any incidentals required to complete work. Pre-CCTV (after cleaning), and post-CCTV (after liner installation), service lateral reinstatement and lateral seal installation are included in other bid items.

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 to center of downstream manhole. No proportional payment shall be made for liner on-site, but not yet installed. Payment shall be made on a LINEAR FOOT basis of sewer pipe rehabilitated according to the individual pipe diameter.

Segments shall not be approved for payment unless the following has been submitted and approved: Pre and Post CCTV, cure logs, and copy of sample testing chain of custody letter and laboratory test results.

Bid Item 17 – CLEAN AND EPOXY COAT 60-INCH DIAMETER SANITARY SEWER MANHOLE

This item includes full compensation to the Contractor for preparation and application of an epoxy protective coating on the interior of newly installed 60-inch diameter sanitary sewer manholes or rehabilitation of existing sanitary sewer manholes with depths indicated in the Design Drawings and specified in the Technical Specification Section - 09710 - CONCRETE AND MASONRY COATINGS. Work shall include, but not be limited to: all labor, materials, and required equipment to prepare the surface including hydro blast and/or grit blast clean manholes to remove all loose or deteriorated materials down to sound concrete, scarify and restore benches and inverts, wash interior surfaces to neutralize pH, install grout underlayment to restore interior dimensions back to new dimensions, furnish and install a City of Glendale approved epoxy coating system, spark testing and 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 drawings and specifications, along with any incidentals necessary to complete the work. Payment shall be for EACH manhole rehabilitated as established in the Bid

Form.

Bid Item 18 – INSTALL 6-INCH DIAMETER DUCTILE IRON (DIP) WATER PIPE (RESTRAINED JOINT)

This item includes full compensation to the Contractor to furnish and install ductile iron pipe water main, in conformance with MAG Specification 610, of the size identified and as called out on the Design Drawings. Payment for this work includes all excavation (MAG Specification Section 601), (MAG Specification Section 610), bends, coupling and/or transition couplings to connect new DIP to existing AC pipe, isolation valves, tees, installation, metallic locating tape, electronic ball markers, #4 rebar, 14-gage wire, flushing, cleaning, disinfecting (MAG Specification Section 611), pressure testing, bedding, backfill, ½ sack CLSM, polywrap, compaction, thrust restraint and joint restraint methods, thrust blocks, landscape repair, disposal of excess excavation materials, temporary road surface maintenance, etc. This item also includes all labor, equipment, and material necessary to remove and legally dispose of the existing water main pipe, including asbestos cement pipe (ACP), of the size and location indicated in the design drawings. Licensed Contractor required to handle ACP pipe, hazardous waste disposal is also required. Payment for this item includes all excavation, trenching, removal, hauling, and dumping of the existing ACP water main. Payment for ACP pipe removal and disposal shall be incorporated into the price per foot of DIP pipe. Measurement for payment shall be per LINEAR FOOT (through fittings) of DIP installed for the size of pipe called for installed complete and accepted complete in-place.

Bid Item 19 – INSTALL CONCRETE ENCASEMENT OF PIPE (MAG STD DET 404)

This item includes full compensation to the Contractor to construct water and sanitary sewer encasement in conformance with MAG Standard Detail 404. Furnish and install water and sanitary sewer encasement at the locations shown on the design drawings. Payment includes all excavation, trenching, bedding backfill (MAG Specification Section 601), encasing the new and existing pipe (MAG Specification 610), and installation. Measurement for payment of this work shall be per LINEAR FOOT installed complete and accepted in-place. Payment will be made when encasement is complete and accepted in-place

Bid Item 20 - INSTALL 8-INCH DIAMETER CERAMIC EPOXY LINED DUCTILE IRON SEWER PIPE

This item includes full compensation to the Contractor to furnish and install ceramic epoxy lined ductile iron sanitary sewer pipe of the size identified and as called out in the project Design Drawings. Payment for his work includes all excavation (MAG Specification Section 601), (MAG Specification Section 615), installation and coupling connection to existing sewer pipe. This item also includes bedding, backfill, compaction, disposal of excess excavation materials, removal and offsite disposal of

existing sewer pipe, temporary road surface maintenance, etc. Payment for this item includes all excavation, trenching, and removal, hauling, and dumping of the existing sewer main material. Measurement for payment shall be per LINEAR FOOT of pipe installed complete and accepted in place.

Bid Item 21 – INSTALL 27-INCH DIAMETER CIPP LINER

This item includes full compensation to the Contractor to rehabilitate 27-inch diameter sanitary sewer pipelines with cured-in-place-pipe method including all labor, materials, and required equipment. This item includes all labor and materials for public notification coordination, develop traffic control plan according to regulatory agency requirements, incidental materials and labor to complete the sanitary sewer pipe rehabilitation. This item also includes re-cleaning of pipes to be rehabilitated as specified and as required by rehabilitation manufacturer requirements prior to post-lining CCTV inspection. Lining shall be furnished, installed and tested, and shall include all required mobilization and demobilization, sampling and testing, and any incidentals required to complete work. Pre-CCTV (after cleaning), and post-CCTV (after liner installation) is 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. Payment shall be made on a LINEAR FOOT basis of sewer pipe rehabilitated.

Segments shall not be approved for payment unless the following has been submitted: Pre and Post CCTV, temperature cure logs, and copy of sample testing chain of custody letter, and laboratory test results.

Bid Item 22 - REINSTATE SEWER SERVICE LATERAL AND INSTALL LATERAL SEAL

This item includes full compensation to the Contractor to reinstate sanitary sewer service laterals into the newly CIPP lined sewer pipe as identified by the City or shown in Design Drawings including all labor, materials, and required equipment. This item includes all labor and materials to remove liner material covering the sanitary service lateral connection and brush smooth the opening by the use of a robotically controlled equipment to re-establish the connection between the service lateral pipe and the mainline pipe to not less than 100 percent of its original opening area. This item shall include all required mobilization and demobilization of crews and equipment, and any incidentals required to complete the work. Payment will be made at final acceptance of rehabilitated mainline pipe.

This item also includes full compensation to the Contractor to furnish and install sanitary sewer service lateral connection seals into the 8-inch and 10-inch diameter

sewer mains as directed by the City. Seals shall extend 4-inches up the lateral connection. This item shall include all required mobilization and demobilization of crews and equipment, re-cleaning of the sewer main to standards required of the lateral seal manufacturer, installation of lateral seals, and any incidentals required to complete the work. Payment will be made at final acceptance of rehabilitated sewer main.

This work will be measured for payment after reinstatement of the service lateral and seal installed accepted in-place and complete as determined from final video documentation records. Payment shall be made per EACH sewer lateral reinstated regardless of lateral diameter.

Bid Item 23 – INSTALL 30-INCH MANHOLE FRAME AND COVER (MAG STD DET 422)

This item includes full compensation to the Contractor to install new 30-inch diameter sanitary sewer ring and cover per MAG Standard Detail 422 on existing or newly installed manholes as supplied by the City of Glendale. Work also includes providing and installing any necessary pre-cast adjustment rings to adjust the ring and cover to surface grade, and installation of a concrete collar around the ring in the location identified in the design drawings. This item shall include all required mobilization and demobilization of crews and equipment to remove and dispose of adjacent surface material and existing manhole ring and cover (as necessary), and any incidentals required to complete the work. Payment will be made at final acceptance of completed manhole ring, cover and collar.

This work will be measured for payment after installation of a manhole ring, cover and concrete collar. Payment shall be made per EACH sewer manhole ring, cover and collar installed. Payment will be made at final acceptance of completed installation.

Bid Item 24 - FIRE HYDRANT ASSEMBLY (GLENDALE STD DET G-660 MOD)

This item includes full compensation to the Contractor for all labor, materials, and required equipment to furnish and install water piping, tee, valve, fittings, and appurtenances to connect a new fire hydrant to the new ductile iron water main per the approved Design Drawings. Hydrant and hydrant extension shall be provided by the City. This item also includes excavation of existing hydrant and appurtenance removal, backfill, compaction and surface repairs back to original condition along with delivery of the existing fire hydrant, adjacent isolation valve, valve box and cover which shall be salvaged back to the City upon removal. Measurement for payment shall be made per EACH fire hydrant assembly installed, complete and accepted.

Bid Item 25 - WATER SERVICE CONNECTION (GLENDALE STD DET G-642)

This item includes full compensation to the Contractor for all labor, materials, and required equipment to furnish and install water service piping, tapping saddle, corporation stop, fittings, and appurtenances to reconnect existing water service to the new ductile iron water main in the location shown in the approved Design Drawings. Measurement for payment shall be made per EACH water service connection installed complete and accepted in-place.

Bid Item 26 – PROVIDE OFF DUTY POLICE OFFICER (ALLOWANCE)

This item covers all costs associated with providing an off-duty law enforcement officer at signalized intersections or as directed by the City. Payment for this item includes all costs associated with providing an officer at signalized intersections when traffic is restricted as described in the 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. Measurement for payment shall be per contract unit price HOURLY. Payment for work completed under this bid item shall be made from this ALLOWANCE based on approved invoiced hourly rates.

Bid Item 27 – PROVIDE TRAFFIC CONTROL

This items includes full compensation to the Contractor to cover all costs associated with developing and implementing an approved traffic control plan in accordance with MAG Standard Specification Section 401, the City of Phoenix Barricade Manual, the Manual of Uniform Traffic Control Devices Handbook (2009 Edition) and the appropriate ADOT supplements, and City of Glendale Barricades Ordinance and Technical Specification Section 02100 – TRAFFIC CONTROL. Contractor shall be required to submit traffic control plans online to the City of Glendale Transportation Department and Arizona Department of Transportation for review and approval prior to proceeding with any construction activities. Payment includes all coordination, labor and equipment, installation, maintenance, flagging, and removal of temporary traffic control devices and signage for the duration of the project to divert traffic around or through the construction area. Measurement for payment shall be LUMP SUM and paid as a percentage of the completed project.

Bid Item 28 – OWNER ALLOWANCE

Owner Allowance shall be utilized at the discretion of the City for the completion of unspecified work not covered by other pay items. Authorization for work to be paid under this bid item shall be made by the City prior to the start of the work. It is further understood that authorized work, if any, may be less than the allowance item. Payment for work completed under this bid item shall be made from this OWNER ALLOWANCE based on approved time and materials invoices or an approved contract

change order.

**** END OF SECTION ****

SECTION 01060
HEALTH AND SAFETY

PART 1 - GENERAL

1.01 HEALTH AND SAFETY 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, but not limited to, Confined Space Entry Permit on-site and available for review any time work activities are commencing.

B. Contractor shall comply with the provisions of the Federal Occupational Safety and Health Act, as amended.

C. 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 State Department of Health and/or as specified by the Maricopa County Health Department, Sanitary Code.

D. The Contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility reasonably necessary to protect the life and the 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. It supplements the regulatory requirements of Paragraph 1.01 and the requirements of 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.

1.03 INFECTIOUS DISEASES:

Contractor should anticipate that a wide spectrum of disease-producing organisms will be present in the sewer and appurtenant structures. In addition

to the requirements set forth in the regulations described in Paragraph 1.01 above, 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. A preventative inoculation program (tetanus/diphtheria, hepatitis, etc.) to all workers and supervisors.

3. Clothing to protect against infection, including Tyvek suit with hood, rubber boots with full sole and heel steel insert-liners, safety glasses or goggles, and gloves to all workers and supervisors.

1.04 DANGEROUS GASES AND OXYGEN DEFICIENCY:

The sewer, sewer manholes and junction structures are confined spaces, which means they have a limited means of egress and is subject to the accumulation of dangerous gases or oxygen deficiency. Volatile petroleum products and common household hazardous materials may be present within the sewer. Explosive gases, such as methane generated from decomposing organic material, may be accumulated. Toxic gases, such as hydrogen sulfide, may be present in life-threatening concentrations. Significant oxygen depletion may occur. In addition, 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.

In addition to the requirements set forth in the regulations described in Paragraph 1.01 above, the Contractor shall also provide, but not limited to the following:

1. 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 sewer.

1.05 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. MSDS sheets shall accompany all products brought on-site. Contractor shall be responsible for reading and understanding all MSDS sheets and providing protection from chemicals present.

1.06 ASBESTOS-CEMENT PIPE:

The Contractor shall abide by all asbestos-cement handling and disposal procedures as required by all local, state and federal regulatory agencies.

1.07 SUBMITTALS

Contractor shall submit according to Technical Specification Section 01300 – Submittals.

1. Health and Safety Plan that identifies responsible party on-site, hazards present and outlines proper procedures to address hazards and conditions.

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 Health and Safety 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 Health and Safety Plan. The Contractor is responsible for ensuring that necessary gas monitoring, protective clothing, and other supplies and equipment as specified are available to implement this plan.

C. REVISIONS:

In the event that regulatory agencies or jurisdictions determine the Health and Safety Plan to be inadequate to protect employees and the public:

1. The Contractor shall stop the work in progress until adequate safety measures are implemented.

2. The Contractor shall modify the plan to meet the requirements of said regulatory agencies, jurisdictions, and the City.

3. The Contractor shall provide the City and City's Engineer with the

revisions to the plan within two (2) days of the notice of deficiency.

D. MINIMUM CONSIDERATIONS:

The Health and Safety Plan shall, as a minimum, include the following considerations:

1. Objective.
2. Key personnel and responsibilities.
3. Hazard analysis of the work activities and environment.
4. Training requirements, including authorized personnel and qualifications for work in confined spaces.
5. Personal protective equipment.
6. Confined Space Entry Plan, refer to Technical Specification Section 01105 – Confined Space Entry Plan.
7. Site control measures.
8. Work practices, decontamination procedures, and work limitations.
9. Emergency procedures, including evacuation plan, location of first aid, fire extinguishers, eyewash, drinking water, map showing route to nearest medical facility, list of key personnel who are currently certified in first aid/CPR.
10. Job site cleanup, and spill containment and cleanup procedures.
11. Telephone numbers for the following:
    a. 24-hour number to contact Contractor's Representative.
    b. Emergency services.
    c. City Project Manager
    d. City's Engineer
12. Documentation (training, on-site gas monitor number and calibration date, injury or illness log, 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

All sewers and manholes are located in the City of Glendale right-of-way, ADOT right-of-way, or utility easements.

1.02 PERMITS TO BE OBTAINED BY THE CONTRACTOR

Contractor shall obtain any additional permits and access agreements required by the work and shall pay all costs thereof, including agency inspections. The Contractor shall comply with all applicable terms and conditions therein and provide copies to the City's Engineer per Technical Specification Section 01300 – Submittals before working in areas covered by those permits.

The following permits shall be obtained by the Contractor if applicable to the work:

1. Hauling Permit
2. Maricopa County Earthmoving/Dust Control Permit
3. City of Glendale Right-of-Way Construction Permit
4. Arizona Department of Transportation (ADOT) Right-of-Way Encroachment Permit
5. Storm Water Pollution Prevention Plan (SWPPP)
6. ADEQ - DeMinimus Discharge Permit
7. AZPDES General Permit for Arizona, Notice of Intent (NOI) and Notice of Termination (NOT).
8. City of Glendale After Hours Work Permit (if applicable)
9. Traffic Barricade Manual, Chapter III - Street Closure Permit
10. Confined Space Entry Permit
11. City of Glendale Floodplain Use Permit

1.03 POSTING

Permits shall be posted (or available for review) at the site of the work at all times work is commencing.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

PART 1 - GENERAL

1.01 INSPECTION AND TESTING OF MATERIALS

The Contractor shall assist the City's Engineer by providing access to the location where the work is in progress, including but not limited to Contractor escort into permitted confined space entry areas with all safety equipment properly functioning and tested. Contractor shall provide 24 hour notice of anticipated work completion with request for inspection. The City will not entertain claims of delay for failure to give proper notice.

All workmanship and materials shall be subject to inspection by the City's Engineer who may select samples of materials in such a number and quantities as the City's Engineer may deem necessary to determine their qualities. The City's Engineer will accept or reject the materials in accordance with the results of such trials. All rejected materials associated with the representative sample shall be promptly replaced to the satisfaction of the City's Engineer. The Contractor shall replace rejected work and materials and bear all costs for doing so.

Contractor shall appoint, employ, and pay an independent firm to provide materials testing services as necessary to complete the work. Such testing includes but not limited to the following:

1. Asphalt concrete testing
2. Concrete testing
3. Soils compaction testing
4. CIPP sample flexural strength testing
5. CIPP sample flexural modulus
6. CIPP liner thickness
7. CIPP resin infrared spectrograph of sample
8. Water main disinfection testing
9. Water main pressure testing
10. Sewer pipe air (or hydrostatic) testing
11. CCTV inspection video of pipe interior

Contractor shall provide copies of the results of independent testing per

Technical Specification Section 01300 – Submittals for review and acceptance.

A Chain of Custody of each CIPP sample taken shall be verified and signed by the City's Engineer inspector. Failure to obtain signature of the City's Engineer inspector will be a basis of rejection of the sample including the representative materials.

Non-rejection or non-inspection of materials does not constitute acceptance by the City's Engineer.

Inspection will be provided on an 8-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 City's Engineer two (2) working days before the proposed overtime work. The City's Engineer reserves the right to deny the requested overtime. If an overtime request is denied, the City's Engineer may extend the contract time at no additional cost to the City.

The Contractor shall pay additional fees for third re-inspections of items not meeting project Technical Specifications, if required. An hourly rate of $100.00 per hour shall be charged to the Contractor and withheld by the City from the Contractor's request for payment.

Contractor's on-site Representative shall sign City's Engineer Inspector's Daily Construction Report as acknowledgment of report information.

1.02 REFERENCES

Technical Specification Section 02767 – CIPP Lining of Existing Sewers

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

PART 1 - GENERAL

1.01 DESCRIPTION

Wherever used in the Contract Documents, the following abbreviations will have the meanings listed:

AAC Arizona Administrative Code
1700 West Washington, 7th Floor
Phoenix, AZ 85007-2808

AASHTO American Association of State Highway and Transportation Officials
444 North Capitol Street, N.W., Suite 225
Washington, D.C. 20001

ACI American Concrete Institute
Post Office Box 19150
Detroit, MI

ADEQ Arizona Department of Environmental Quality
3033 North Central Avenue
Phoenix, AZ 85012

ADOT Arizona Department of Transportation
206 South 17th Avenue
Phoenix, AZ 85004

ADWR Arizona Department of Water Resources
500 North Third Street
Phoenix, AZ 85004

AEIC Association of Edison Illuminating Companies
51 East 42nd Street
New York, NY 10017

AISC American Institute of Steel Construction, Inc.
One East Wacker Drive, Suite 3100
Chicago, IL 60601-2001

AISI	American Iron and Steel Institute 1101 17th Street, N.W., suite 1300 Washington, D.C. 20036-4700
ANSI	American National Standards Institute, Inc. 1430 Broadway New York, NY 10018
API	American Petroleum Institute 1001 K Street, N.W. Washington, D.C. 20006
ASCE	American Society of Civil Engineers 345 East 47th Street New York, NY 10017
ASCII	American Standard Code for Information Interchange United States of America Standards Institute 10 East 40th Street New York, NY 10016
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWS	American Welding Society 550 N.W. LeJeune Road Miami, FL 33135
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
BOCA	Building Officials and Code Administrators 7926 Halstead Homewood, IL 60430
CFR	Code of Federal Regulations Superintendent of Documents Government Printing Office Washington, D.C. 20402

CMAA Crane Manufacturers Association of America, Inc.
(Formerly called: Overhead Electrical Crane Institute) (OECI)
326 Freeport Road
Pittsburgh, PA 15238

CRSI Concrete Reinforcing Steel Institute
180 North La Salle Street
Chicago, IL 60601

EEI Edison Electric Institute
90 Park Avenue
New York, NY 10016

FEDSPEC Federal Specifications
General Services Administration
Specification and Consumer Information
Distribution Branch
Washington Navy Yard, Building 197
Washington, DC 20407

FEDSTDS Federal Standards
(see FEDSPECS)

IES Illuminating Engineering Society
c/o United Engineering Center
345 East 47th Street
New York, NY 10017

MAG Maricopa Association of Governments
1820 West Washington Avenue
Phoenix, AZ 85007

NACE National Association of Corrosion Engineers
P.O. Box 986
Katy, TX 77450

NASSCO National Association of Sanitary Sewer Companies
1314 Bedford Ave., Suite 201
Baltimore, MD 21208

NFPA National Fire Protection Association
Batterymarch Park
Quincy, Maine 02269

NPDES	National Pollution Discharge Elimination System Environmental Protection Agency, Region 9 75 Hawthorne Street San Francisco, CA
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational and Health Administration San Francisco Regional Office 450 Golden Gate Avenue, Box 36017 San Francisco, CA 94102
SWPPP	Storm water Pollution Prevention Plan Environmental Protection Agency, Region 9 75 Hawthorne Street San Francisco, CA
UBC	Uniform Building Code Published by ICBO
UL	Underwriters Laboratories Inc. 207 East Ohio Street Chicago, IL 60611
WABO	Welding Association of Building Officers Post Office Box 7310 Olympia, WA 98507

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01102
CONTRACTOR'S HAZARDOUS MATERIALS MANAGEMENT PROGRAM

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall comply with all Federal, State and local Laws, Rules and Regulations related to environmental protection and environmental safety including, but not limited to, the following:

1. Title 29 Code of Federal Regulations Parts 1910, Occupational Safety and Health
2. Title 40 Code of Federal Regulations, Environmental Protections
3. Title 49 Code of Federal Regulations, Transportation
4. State OSHA
5. State ADEQ
6. State ADWR
7. Maricopa County Air Quality Rules and Regulations

B. In order to insure the City that the Contractor is complying with the intent of the regulations stated in Paragraph A above, as they relate to the on-site use of hazardous materials, hazardous wastes and other substances similarly defined in those regulations, the Contractor shall develop and maintain a Hazardous Materials Management Program that meets, as a minimum, the requirements specified herein. The interests of the City are that accidental spills, site contamination, asbestos containment, and injury of personnel on the site are avoided. The City will not enforce suspected violations of Laws, Rules and Regulations referenced in Paragraph A above; however, the City will notify the Contractor of suspected violations. If, in the opinion of the City, the Contractor fails to address the suspected violations in a timely and appropriate manner, the City will notify the appropriate 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 City for violations committed on the site by the Contractor, as well as any costs to the City associated with cleanup of materials, shall be reimbursed immediately by the Contractor. All documents required by the program shall be made available to the City's Project Manager immediately upon request.

C. Responsibility for any hazardous waste, as defined in any of the above listed regulations, generated by the Contractor shall belong to the

Contractor. If the Contractor is utilizing a substance that qualifies as a hazardous waste, the Contractor shall obtain a provisional 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 legal disposal of hazardous wastes generated. The identification number can be obtained from the Arizona Department of Environmental Quality (ADEQ). This number shall be provided to the City's Engineer within five (5) days after Notice to Proceed, or before any hazardous materials are brought onto or removed from the site.

1.02 HAZARDOUS MATERIALS PROGRAM REQUIREMENTS

A. Within the regulations listed in Subpart 1.01. A. above, 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. Contractor shall develop and provide to the City's Project Manager 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 will 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 or transported off-site.

C. 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 Fahrenheit

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 CERCLA lists regardless of quantity

D. Contractor shall maintain on the site two notebooks containing current (dated within the past two years) Material Safety Data Sheets (MSDS) for all materials being used on site, whether or not they are defined as a Hazardous Material in Paragraph A hereinabove. One notebook shall be kept in the Contractors on-site office or on-site field superintendent possession, and the other shall be kept in the Treatment Plant Administration building serving the area of rehabilitation or as directed by the City. These notebooks 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 Contractor, City, and City's Engineer.

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. Contractor shall, to the satisfaction of the City's Project Manager, 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 City's Project Manager clearly identifying the hazardous materials storage site.

3. All hazardous material 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 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 City's Project Manager will notify the Contractor, and Contractor will, within one 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 City encourages storage of hazardous materials off site until the materials are needed on site.

I. The Contractor shall make all documentation required herein available immediately upon request of the City's Project Manager. The Contractor's Safety Representative will meet at least monthly with the City's Project Manager to review the Contractor's Hazardous Materials Management Program documents, procedures, and inspect the storage site and job site to insure the requirements specified herein are being complied with. The Contractor shall also provide the City's Project Manager with copies of all permits obtained from environmental regulatory agencies.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

SECTION 01104
STORM WATER POLLUTION PREVENTION PLAN

PART 1 - GENERAL

1.01 DESCRIPTION

A. Comply with the terms and conditions of the Arizona Pollutant Discharge Elimination System (AZPDES) requirements under the Arizona Department of Environmental Quality (ADEQ) General Permit. Under provisions of that permit, Contractor is designated as permittee and responsible for providing necessary material and for taking appropriate measures to minimize pollutants in stormwater runoff from the Project. Obtain a DeMinimus Discharge Permit from ADEQ for any discharge that is to Waters of the U.S., and comply with the requirements of the permit.

B. The Contract Price shall include all material, labor and other permits and incidental costs related to:

1. Preparing, updating and revising the Stormwater Construction Pollution Prevention Plan (SWPPP).

2. Installing and maintaining all structural and non-structural items chosen by Contractor to comply with the construction SWPPP.

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 City's stormwater code.

5. Preparing the Notice of Intent and Notice of Termination shall be covered by the AZPDES General Permit for Arizona.

6. Obtain and comply with DeMinimus Permit, if such permit is required.

C. All necessary SWPPP controls and practices must be implemented prior to commencement of any construction, excavation or backfill activity.

1.02 SUBMITTALS

A. Submit, at least two days prior to the initial start of construction on the project; completed and signed Notice of Intent forms to the State of Arizona at the following addresses:

Stormwater Program – Water Permits Section / NOI
Arizona Department of Environmental Quality
1110 West Washington, 5415B-3
Phoenix, AZ 85007

B. Submit to the City, no later than one (1) day before submitting to the State agency the following:

1. Notice of Intent (NOI) to be covered by the AZPDES General Permit for Arizona, including certifications of signature.

2. SWPPP for the Project, including certification of signature. Stormwater Plan shall include 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. A manual has been prepared by the Maricopa County Flood Control District to aid in Contractor's preparation of the SWPPP. This manual, "Drainage Design Manual for Maricopa County Arizona, Volume III, Erosion Control" is available at the Flood Control District Office, 2801 West Durango Street, Phoenix, Arizona. The complete Construction General Permit is in the December 8, 1999, Federal Register available at local libraries and is also available from the ADEQ website at:

www.adeq.state.az.us/environ/water/permits/download/constgp.pdf.

C. Submit to the City, as part of the Construction SWPPP a construction site inspection report that includes the following:

1. Inspection scope.
2. Inspector qualifications.
3. Observations of SWPPP non-compliance and corrective steps taken.
4. Certificate of Compliance with SWPPP and the AZPDES General Permit for Stormwater Discharge in the event of no incidents. Reports shall be submitted each quarter, at a minimum, throughout the Contract duration.

D. Submit to the City, upon project completion the Notice of Termination (NOT) of coverage under AZPDES General Permit.

PART 2 – PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

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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 specifications, 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

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 City's Engineer in each case where his submittal may affect the work of another contractor or the City. The Contractor shall coordinate submittals among his subcontractors and suppliers.

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."

The Contractor shall certify on each submittal document that he has reviewed the submittal, verified field conditions, and complied with the contract documents.

The Contractor may authorize in writing a material or equipment supplier to deal directly with the City's Engineer or with the City with regard to 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 specification sections.

At the beginning of work, the City's Engineer will furnish the Contractor a list of those submittals specified in the contract documents. The list provided will include:

1. Submittals for Review and Comment;
2. Product Data for Information Only.

B. 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 City's Engineer for review and comment.

C. SUBMITTALS PRODUCT DATA FOR INFORMATION ONLY:

Where specified, the Contractor shall furnish submittals (product data) to the City's Engineer for information only.

1.04 TRANSMITTAL PROCEDURE

A. GENERAL:

Unless otherwise specified, submittals regarding material and equipment shall be accompanied by Transmittal Form 01999-A as contained 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. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

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 Contractor. 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 025B, for example, is the second re-submittal of submittal 025.

B. CCTV Submittal Schedule:

The contractor shall submit the following:

1. Cleaning and assessment CCTV of a segment a maximum of 30 days and a minimum of 72 hours prior to the scheduled lining of a segment.

2. Pre-lining CCTV of a segment within 24 hours from the time of the liner installation.

3. Post-lining CCTV of a segment within 10 working days following the date of liner installation.

C. DEVIATION FROM CONTRACT:

If the Contractor proposes to provide material, equipment, or method of work, which deviates from the contract documents, he shall indicate so under "deviations" on the transmittal form accompanying the submittal copies.

D. 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 or more review. (see Section: 1.07 THIRD AND SUBSEQUENT SUBMITTALS)

1.05 REVIEW PROCEDURE

A. GENERAL:

Submittals are specified for those features and characteristics of materials, 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 enables 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. All submittals shall be submitted electronically via email or external hard drive in PDF format for review and comment.

2. All Product Data shall be submitted electronically via email or external hard drive in PDF format.

B. SUBMITTALS FOR REVIEW AND COMMENT:

Unless otherwise specified, within ten (10) calendar days after receipt of a submittal for review and comment, the City's Engineer shall review the submittal and return one copy of the marked-up original in PDF format. Shop drawing submittals that require markups shall be marked up in red by the City's Engineer. The City's Engineer will retain the original. 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. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.

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 City's Engineer or the City, 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 City has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials proposed.

1.07 THIRD AND SUBSEQUENT SUBMITTALS

The cost for third and subsequent submittals shall be borne by the Contractor. The cost of reviews for third and subsequent reviews shall be at a rate of $300 per review and shall be charged to the Contractor as a reduction in Contractor's pay request.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

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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 City in monitoring progress and for the assessment of the impact of change orders on the Schedule.

1.02 SUBMITTAL PROCEDURES

The City will provide the Contractor with a list of sewer pipe segments to be rehabilitated. Contractor shall submit a schedule to the City within ten (10) calendar days of receiving Notice to Proceed with work identifying the duration of mobilization, anticipated time when work is to be performed, cleaning, pre-video, rehabilitation duration and date of project completion. Schedule shall be transmitted to the City per Technical Specification Section 01300 - Submittals.

PART 2 - PRODUCTS

2.01 PROGRESS SCHEDULES

A. Contractor shall provide a two-week look-ahead schedule to the City Schedule shall be updated weekly with anticipated sewer pipes and/or structures to be rehabilitated. Schedule shall also list sewer pipes rehabilitated to date.

B. Schedule shall be prepared on computer software (Microsoft Project) that facilitates schedule updates and e-mailing.

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 project shall be shown on the schedule.

E. The scheduled 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 in a critical path for each separate project.

F. Dates imposed on the schedule by the Contractor shall not be binding on the City.

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 Construction Documents.

H. Provide a list of the holidays and non-work days applicable to the schedule.

I. Provide a Construction Schedule and Narrative Summary stating project status so the City may use them as a basis for determining the Contractor's compliance with the Technical Specification requirements regarding progress payments, contract time extensions, change order prices and impacts, and the overall progress of the work. 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 job meeting with the City, the City's Engineer and others invited by the City or City's Engineer.

3.02 UPDATES

A. Requests for extensions in time resulting from changes issued by the City shall be accompanied by a Narrative Report 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 (updated) Construction Schedule. In the case of the work being behind schedule, the Contractor shall 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 RECORDING

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 located in easements. These recordings shall clearly document site conditions prior to construction activities commence, and again following the completion of construction activities.

1.02 PAYMENT

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

Contractor shall submit the following information for review per Technical Specification Section 01300 – Submittals, at the Preconstruction Conference:

1. Site condition photography taken prior to construction.

2. 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 City, and may, at the City's discretion, be a means of determining whether and to what extent damage resulting from the Contractor's operations occurred during the Contract work.

B. VIDEO RECORDINGS DATA FORMAT

Contractor shall submit video data in .mpeg and .jpeg format only.

C. PHOTOGRAPHS:

Photographs shall be color digital (high resolution) format stored on DVD media and shall indicate on the front of each jewel protection case the date, name of Project, and location where the photographs were taken. One copy of each DVD shall be submitted to the City's Engineer per Technical Specification Section 01300 - Submittals.

D. VIDEO RECORDINGS:

Video recordings shall be copied to DVD media (.mpeg format) and shall indicate on the DVD label and the jewel protection case the date, name of Project, and the location where the video was recorded. The recordings should contain an audio track, which narrates the progression of the video recording through the site.

PART 3 - EXECUTION

3.01 VIDEO / DVD

A. 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. 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

Contractor shall obtain photographs, and provide City's Engineer copies, of areas of special interest, unique features and/or special conditions identified during construction (i.e. usually dealing with construction that occurs in easements and/or on or near private property). The Contractor shall provide additional photographs of these unique features upon the request of the City or the City's Engineer.

****END OF SECTION****

SECTION 01400
PUBLIC AWARENESS

PART 1 - GENERAL

1.01 DESCRIPTION

The work under this item consists of coordination with a public information (PI) firm hired by the City's Engineer. The Contractor shall be responsible for coordination of construction activities and work schedules with the PI firm. The PI firm shall be responsible for informing adjacent property owners regarding the impact and schedule of construction work, attendance at public information meeting(s), responding to on-site public inquiries, review, printing and assisting the Contractor in the distribution of public information materials.

1.02 CONSTRUCTION NOTICES AND DOOR HANGERS

The Contractor shall obtain copies from the City's Engineer and retain the following materials at each site:

1. 72-hour and 24-hour door hanger and Cancel/Reschedule door hanger (Format: English & Spanish)

2. Written Notification to be distributed a minimum of one (1) week prior to service interruption or potentially impacted by construction activities. (Format: English & Spanish).

1.03 WORK PROGRESS INTERRUPTION

The Contractor shall notify the City's Engineer if the work must be stopped and a 24-hour notice has already been distributed.

1.04 NOTICE OF DISRUPTION

The Contractor shall notify the City and City's Engineer 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 hotline telephone service is available to reply to resident's construction concerns, damage

claims, resident's complaints etc. will be provided by the Public Information (PI) firm. The Contractor shall work with the City's Engineer and PI firm and assist in addressing hotline complaints or concerns.

B. A log of telephone or on-site contacts of residential complaints received shall be maintained by the City's Engineer PI firm. Complaints shall be forwarded to the Contractor for resolution. The Contractor shall maintain a log of complaints received from the PI firm and the procedures undertaken for resolution.

C. The Contractor shall immediately communicate to the City's Engineer any public issues concerning damage to private property, health concerns, nuisances and general complaints. The Contractor shall immediately address the issues. A Log shall contain at the minimum the following:

Date of Communication
Time of Communication
Name of Person Receiving the Complaint
Contact Name
Contact Address
Contact Return Telephone Number
Description of Complaint or Concern
Description of Discussions
Description of Proposed Resolution

Individual log entries shall be submitted to City, PI firm and City's Engineer within 24 hours. A summary of all public contacts received and/or addressed shall be submitted to the City, City's Engineer and PI firm weekly.

1.06 ATTENDANCE AT PUBLIC INFORMATION MEETING

The Contractor and his on-site Field Superintendent shall attend all project public meetings scheduled as requested by the City.

1.07 WORK IN EASEMENTS

A. Work may take place in streets, narrow alleys, or easements. Access and working space may be limited. Careful attention to public access and private property protection is required.

B. Contractor shall take surface feature pre-construction videos of easement areas 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 any questions from the public or assist the public with any access needs. The Contractor shall provide a letter to the City that the on-site Field Superintendent is duly authorized to act in behalf of the Contractor during public relation activities and/or construction problem resolution.

PART 2 – PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

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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 Construction Documents shall be kept at the work site and available for use at all times.

PART 2 - PRODUCTS

2.01 POWER

A. Contractor shall provide power for work at the work site as approved by the City. If needed, the Contractor shall make arrangements with the electrical utility for power takeoff points, voltage and phasing requirements, transformers 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 as may be required by the City.

B. The Contractor may opt to utilize portable generators at his discretion to power equipment. In supplying power to the work site, the Contractor shall comply with all applicable construction noise ordinances as required by the City and safety regulations.

C. Contractor shall use battery, pneumatic, or hydraulic power for all in-sewer work. This limitation is not necessary for work on the surface or in sewer lighting.

2.02 LIGHTING AND ILLUMINATION

As necessary, the Contractor shall provide low voltage lighting and illumination in the sewer, in accordance with the guidelines published in Practice for Industrial Lighting, ANSI/IES RP7-1983. Lighting used by the Contractor on the surface shall be placed to avoid nuisance to traffic or local residences.

2.03 TELEPHONE

Contractor shall provide telephone service for its own use. Cellular telephone service is acceptable as a substitute for telephone service. These telephone costs shall be paid by the Contractor.

2.04 WATER

A. All water for testing, flushing, cleaning, disinfection, and construction shall be furnished by the Contractor.

B. Water may be available upon authorization by the City, by connecting to the City's water system at a point approved by the City. The City may charge the Contractor for water used in performing the above functions. A backflow preventer, meeting the requirements of ANSI A40.6, latest revision, shall be installed in each and every connection to the City's water supply. The Contractor shall be required to meter and pay for all water used.

2.05 SANITARY FACILITIES

The Contractor shall provide toilet and decontamination facilities for its work force and the City's Engineer at the work site. They shall comply with applicable laws, ordinances, and regulations pertaining to public health and sanitation of dwellings and camps.

2.06 STORAGE AND WORKSHOP FACILITIES

Contractor shall provide acceptable on-site storage for the protection of materials, supplies, and fabricated items. Storage shall be located in the Contractor's storage area.

2.07 TOOLS AND EQUIPMENT

Contractor shall supply all necessary tools and equipment for accomplishing the work.

2.08 SECURITY

Contractor shall be responsible for the security of its material on the site and in the Contractor's storage and parking areas. The Contractor shall provide a security fence around its storage area.

2.09 DISPOSAL SITE

Contractor shall make provisions for a legal, off-site debris disposal site.

PART 3 - EXECUTION

NOT USED

****END OF SECTION****

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SECTION 01560
ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site per MAG 107.5. Remove physical evidence of temporary facilities at completion of work.

1.02 SEWAGE SPILL CONTROL

A. A sewage spill is defined as any release of sewage. Sewage spills are not permitted. The following are examples of a sewage spill: flow of sewage out of the sewer pipe; sewage leaks from fittings, pipes and pumps that are not captured; sewage in contact with the soil on the ground or within pits or excavations. The Contractor shall be responsible for all consequences and damages caused by a sewage spill due to the Contractor's work activities.

B. Contractor shall give both verbal and written notification to the City immediately in the event of any sewage spill.

C. Prior to start of construction, the Contractor shall submit a Spill Response Plan identifying the notifications required, personnel responsible for cleanup operations, clean up equipment maintained on-site, materials transportation and disposal, and plan supplements to identify procedures taken to avoid future incidents. No work shall begin without approval of the spill plan by the City.

1.03 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 so if 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 sewage spills as quickly as possible.

C. Emergency Telephone list is part of this procedure and will be kept up-to-date at all times.

D. Follow Standard Procedure List.

E. Fill out attached Confidential Spill Reporting Form. See Technical Specification Section 01999 – Reference Forms.

F. Contractor shall develop an Emergency Spill Response Phone List containing, but not limited to, the following. Submit list according to Technical Specification Section 01300 – Submittals.

Contractor Numbers:
(name) _____ (Foreman)..... (___)___-____
(name) _____ (Superintendent ..... (___)___-____
(name) _____ (General Superintendent)... (___)___-____
(name) _____ (Project Manager)..... (___)___-____
(name) _____ (Safety Officer)..... (___)___-____

City's Engineer Numbers:
(name)(_____) (Project Manager) (___)___-____
(name)(_____) (Construction Manager)(___)___-____
(name)(_____) (On-site Inspector) (___)___-____

City of Glendale:
(name) _____ City's Representative..... (___) ___-____
(name)_____ City's Project Manager... (___) ___-____

1.04 STANDARD REPORTING PROCEDURES

A. Handling Emergency: Medical emergency, fire or explosions call **911** immediately. Do not call **911** for wastewater spills.

B. Observe: Contractor shall, without endangering himself, obtain enough information to make an initial assessment of the situation.

C. Protocol for Notification of Spill:

1. Contractor:
Contractor shall verbally notify City's Representative and City's Engineer on-site Inspector immediately, always within one (1) hour. Document all calls and conversations.

2. City's Representative:
City's Representative shall verbally notify City's Project Manager and Contractor in less than one (1) hour. Document all calls and conversations.

D. Report: As soon as possible, but no later than 24 hours following discovery of spill, the Contractor shall complete the Confidential Spill Reporting Form, 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 City's Engineer per Technical Specification Section 01300 — Submittals except as herein modified. Spill reports shall be hand carried to City's Engineer as soon as complete.

E. Submit: The Contractor shall verify that the City has received a copy of the report and supporting documentation and submitted copy of said report to the City's Construction Project Manager in a timely manner. Compare all reports and report discrepancies to the City's Construction Project Manager and retain one (1) in the project files located at the Contractor's office.

1.05 SANITARY SEWAGE BACKUP

A. If a sanitary sewage backup occurs into a lateral and a residence or business sustains property damage, the following procedure is to be adhered to:

1. 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 stoppage, Contractor crews are to determine the cause and source (if possible) of the stoppage. Contractor authorized personnel shall assist in obtaining an emergency clean-up service and relocate the residents, if necessary, to minimize health risks. Contractor shall be responsible for all costs and coordination efforts associated with the sewer backup including, but not limited to:

   a. Relocation of residents
   b. Temporary housing of displaced residents
   c. Removal, disposal and replacement of damaged building materials
   d. Clean-up and sanitizing costs
   e. Replacement of damaged personal items
   f. Relocation of residents back into the residence
   g. Certification that cleanup is complete and the building is satisfactory for public entry and/or occupancy

2. Determine the extent of the property damage (photographs are recommended). A report (Incident Report), with the photos shall be provided to the Contractor's Safety Officer. At the Contractor's discretion, the Safety Officer may forward the information to the corporate liability insurance carrier. Information compiled should include:

   a. Time call was received
   b. Time the crew arrived at the site

c. Time work was completed
d. Cause of stoppage/source of stoppage (if possible) and location of stoppage
e. Name of property City/tenant and address of affected property
f. Extent of damage
g. Action taken

3. Contractor's authorized personnel will also assist and pay all costs for obtaining and coordinating a sub-contractor to perform restoration work and will work with the selected sub-contractor to equitably restore the premises to its pre-loss condition.

4. The Contractor shall notify the City and City's Engineer of a stoppage in the sewer pipe.

5. Notify the City in the event of any spills.

6. City shall be responsible for notifying Arizona Department of Environmental Quality (ADEQ) only as it pertains to Arizona State Law Requirements.

1.06 SURCHARGING

Upon notification or discovery that a surcharge condition exists, Contractor's crews shall respond immediately to the area with proper equipment and manpower to reduce the surcharging. If, due to limited capacity of the sewers, the surcharging cannot be reduced, then any discharge which occurs shall be properly cleaned. Waste products are to be disposed of in accordance with state and federal laws.

A Confidential Spill Reporting Form must be developed by the Contractor and distributed to the required parties according to Section 1.05. Distribution of said Confidential Spill Reporting Form must take place within one (1) day of the occurrence.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 SITE MAINTENANCE

A. Contractor shall keep the work site, staging areas, storage and parking area, and Contractor's facilities clean and free from rubbish and debris. Materials

and equipment shall be promptly removed from the site when they are 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 Work Site. Refer to each section for further requirements.

B. Contractor shall not store equipment or materials anywhere other than locations indicated by the City. Property surrounding the Work Site shall be completely free of all debris and rubbish at all times.

3.02 CLEAN-UP:

A. Waste material of any kind shall not be permitted to remain on the Work Site or on adjacent streets. Immediately, upon such materials becoming unfit for use in the work, they shall be collected, carried off the site and 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 City.

C. In the event that waste material, refuse, debris and/or rubbish are not so removed from the Work Site by the Contractor, the City reserves the right to have the waste material, refuse, debris and/or rubbish removed and disposed at the expense of the Contractor.

D. Paints, solvents, and other construction materials shall be handled with care to prevent entry of contaminants into storm drains, surface waters, or soils.

3.03 BARRIERS:

A barrier shall be provided around all unattended excavations and open structures. The barrier shall enclose the area and prevent unauthorized access.

3.04 STREET CLEANING:

A. 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, drilling rigs, 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 City's Engineer.

C. All streets in the construction area used by 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 104.1.3 and shall be at the Contractor's expense.

E. Any violation of the requirements shall be sufficient grounds for the City's Engineer 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 sewers or wastewater facilities.

G. Contractor shall use a wet power pick-up broom as part of the dust control effort.

3.05 AIR POLLUTION CONTROL

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 City shall cause the equipment to be repaired or replaced.

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.

3.06 ODOR:

The Contractor shall employ methods and procedures that mitigate the generation and discharge of objectionable odors to the surface environment at all times.

3.07 ODOR CONTROL:

Contractor shall be responsible to control odors emanating from the work area. Contractor shall cover open sewers when work activity is not actively being performed to minimize odor.

3.08 NOISE CONTROL

A. Contractor shall perform all work in compliance with OSHA standards and in no case will noise levels be permitted which would interfere with the work of the CITY or others. Noise levels shall be in accordance with City noise ordinance.

B. If pumping operations occur after normal work hours as stated in City ordinance, Contractor shall utilize sound attenuated bypass pumps or air compressors with a maximum decibel rating of 70 db @ 50 feet. Noise barriers may be constructed around noisy construction equipment as necessary to reduce noise below limits stated.

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 to manage noise levels to within 70 db @ 50 feet levels. No internal combustion engine shall be operated on the project without said muffler.

D. Noisy portable equipment, such as generators shall be located as far away from sensitive noise receptor areas as practicable. (Sensitive noise receptors are defined as occupied buildings with windows or doors facing the site.) Noise barriers shall be constructed around noisy construction equipment such as air compressors, pumps 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 landscaped 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 same 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 1 year after the end of construction date. The Contractor shall be responsible for any tree or plant that the Contractor had replaced that is deemed unhealthy during that year.

B. All landscaped areas and other surface improvements which are damaged by actions of the Contractor shall be restored to their original condition at the Contractor's expense.

3.10 SURFACE WATER CONTROL

A. 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.

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

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

Contractor shall not dispose of chemical or any waste materials from the construction operations into the sanitary sewer system.

****END OF SECTION****

PART 1 - GENERAL

1.01 GENERAL

This section specifies restoration of areas disturbed by the Contractor's work including but not limited to: Work Site, staging area, storage area, and parking areas.

1.02 STRUCTURES

Contractor shall remove such existing structures or portions of 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 under this Project.

1.03 ROADS AND STREETS

Unless otherwise specified, roads and streets in which the surface is removed, cracked, 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 in accordance with current City, State and/or MAG requirements at the Contractor's expense. The Contractor shall record on a video the entire road or street area to be used for the work and parking area as specified in Technical Specification Section 01380 – Photographs and Video Recordings. Copies of the DVD shall be submitted to the City or City's Engineer prior to starting the work. Once construction starts, Contractor assumes liability and 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. Streets, sidewalks, and other City, County or State owned facilities impacted by construction activities shall be replaced or repaired in accordance with current City and MAG requirements.

1.04 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

A. Cultivated or planted areas, other unpaved areas, and other surface improvements which are damaged by actions of the Contractor shall be restored to their original condition. The Contractor shall record on a video the

entire area to be used as the Work Site, 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 City or City's Engineer prior to starting the work. Once construction starts, Contractor assumes responsibility for condition and repair.

B. Existing guard posts, barricades, and fences shall be protected and replaced if damaged.

1.05 PROTECTION OF EXISTING INSTALLATIONS

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 City or City's Engineer.

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 Site, staging area, storage area, and parking area as documented in the photographs and video recordings.

B. The City or City's Engineer shall determine if and when restoration of the site is acceptable following review of the pre-construction and post-construction recordings.

**** END OF SECTION ****

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
01999-A	Submittal Transmittal Form
01999-B	Request For Information Form
01999-C	Confidential Spill Reporting Form
01999-D	Chain of Custody Form

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 on Form 01999-A contained herein.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT 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

[a]**Note: NET = No exceptions taken; MCN = Make corrections noted; A&R = Amend and resubmit; R = Rejected**
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

[This page intentionally left blank]

01999-B. REQUEST FOR INFORMATION FORM

REQUEST FOR INFORMATION

RFI NO. _____

OWNER:

PROJECT: _____

_____

CONTRACTOR: _____

ROUTING	SENT	RECEIVED
Contractor	_____	_____
Engineer	_____	_____
RPR/Contractor	_____	_____

RFI TITLE: _____

REFERENCES: **DRAWING NO:** _____ **LOCATION:** _____

SPEC. SECTION: _____ **PAGE:** _____

OTHERS: _____

The following information is requested as described below or in the attachments:

_____

_____

_____

_____

_____

_____

_____

By: _____ Date: _____

The following information is provided as described below or in the attachments:

_____

_____

_____

_____

_____

_____

_____

_____

By: _____ Date: _____

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FORM 01999-C

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.

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: drywell, dry wash, canal, riverbed, private property, retention basin, sanitary sewer, secondary containment, storm drain, city street, air (vapors or odors) or 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_____

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

17. How many people were exposed? _____

18. What product was used for disinfection and how much was used?

    _____
    _____

19. General
    Comments:_____
    _____
    _____
    _____
    _____
    _____
    _____

Printed name and signature of person who completed this form:

Printed Name_____ Title_____ Phone_____

Signature_____ Date_____

FORM 01999-D

CHAIN OF CUSTODY	
PROJECT:	
CITY CONTRACT NUMBER:	
PROJECT NUMBER:	

ENGINEER:	
COMPANY NAME:	Dibble Engineering, Inc
ADDRESS	7500 North Dreamy Draw Drive, Suite 200
	Phoenix, Arizona 85020
CONTACT PHONE NUMBER:	(602) 957-1155
CONTACT NAME:	

CONTRACTOR:	
COMPANY NAME:	
ADDRESS	
CONTACT PHONE NUMBER:	
CONTACT NAME:	

TESTING LABORATORY:	
LAB NAME:	
ADDRESS	
CONTACT PHONE NUMBER:	
FAX NUMBER	
CONTACT NAME:	

Date Sample Taken:	
Sample Number:	
Quarter Section No.	
Upstream Manhole No.	

Pipe Segment No.	
Pipe Diameter	
Liner Design Thickness:	
Resign Type:	
Downstream Manhole No.	

SAMPLE TAKEN BY:	SIGNATURE:	
		DATE
	PRINT NAME:	

ENGINEER, RECEIVED BY:	SIGNATURE:	
		DATE
	PRINT NAME:	

LABORATORY RECIEVED BY:	SIGNATURE:	
		DATE
	PRINT NAME:	

TEST RESULTS, RECEIVED BY:	SIGNATURE:	
		DATE
	PRINT NAME:	

**** END OF SECTION ****

SECTION 02100
TRAFFIC CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

Traffic control during construction shall be provided in accordance with the requirements of the City of Phoenix Supplements to the MAG Uniform Standard Specification and Details Section 401, Traffic Control and City of Glendale Barricade Ordinance.

1.02 TRAFFIC REGULATIONS

A. Traffic Control Plan must be submitted on-line to the City of Glendale Transportation Department for review and approval for all major thoroughfares including but not limited to collector streets impacted by construction operations.

B. Contractor shall be required to submit traffic control plans to the Arizona Department of Transportation for review and approval prior to proceeding with construction within the Loop 101 corridor.

C. All traffic and/or traffic control devices on this project shall be provided, maintained and/or controlled as specified in the City of Phoenix Traffic Barricade Manual, 2009 or latest revision and amendments.

D. Traffic/Pedestrian control shall comply with the latest addition to MUTCD Part 6, City of Phoenix Barricade Manual, MAG Section 401 or any special condition required by the City of Glendale.

E. The submitter/designer of the Traffic Control Plan (TCP) shall be IMSA or ATSSA certified.

F. Permission to restrict City streets, sidewalks and alleys (street closure permits) shall be requested as specified in Chapter III of the Traffic Barricade Manual, 2009 or latest revision and amendments.

G. Unless otherwise provided for in the following "Special Traffic Regulations", all traffic on this project shall be regulated as specified in Chapter 4 of the Traffic Barricade Manual, 2009 Edition or latest version and amendments.

H. No deviation to the "Special Traffic Regulations" will be allowed or implemented unless submitted to the City for review and approval two (2) weeks prior to

proposed work.

I. Law enforcement officers may be required 300 feet of a signalized intersection. Officers may be required for non-signalized construction areas at the discretion of the City.

J. A minimum of three (3) working days, (72 hours), advance notice is required for TCP review prior to construction starting.

1.03 TRAFFIC CONTROL / ACCESS

A. Contractor shall be responsible to present traffic control plans at the regularly scheduled project progress meeting for review as outlined in Technical Specification Section 01014 – Work Sequence, paragraph 1.04 C. Uninterrupted access to commercial businesses and residences shall be maintained at all times. Contractor shall be responsible to adjust work schedule to minimize disruption to normal operation of businesses.

B. Contractor shall be responsible to coordinate traffic control plans and inform the project's public relations sub-consultant of any potential impacts to commercial businesses or residents per Technical Specification Section 01400 – Public Awareness. Contractor shall adjust work activities and schedules to minimize disruptions to the City, residents and traveling public. City reserve the right to request the Contractor move his operations or modify work plans and schedules to minimize disruptions to commercial business or residents at no cost to the City.

1.04 TRAFFIC CONTROL PLAN DISTRIBUTION

A. Copy of approved Traffic Control Plan (TCP) shall be submitted to the City prior to start of work. Contractor shall complete the City's standard submittal form (see below) and attach it to the TCP.

B. Copy of 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.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

**** END OF SECTION ****

PART 1 – GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section describes the requirements for temporary by-passing and dewatering of sanitary sewers during CCTV inspection, cleaning operations, rehabilitation, and inspection of the project during rehabilitation. Temporary bypass of flow around the work area is very important for the project, including the maintenance of service to customers, or making alternative arrangements acceptable to the City and customers. Any temporary by-pass shall comply with ADEQ, Maricopa County Health and EPA regulations.

B. REQUIREMENTS:

Contractor shall provide all coordination, labor, materials, equipment and supervision to temporarily bypass sanitary sewer flow around the Contractor's work in accordance with the Contractor's specific needs of the rehabilitation method being utilized.

The Contractor shall not damage public or private property or create a nuisance or health menace. All cost for repairs of Contractor's damages or damages that occur as a result of the Contractors activities shall be the responsibility of the Contractor.

The Contractor shall provide appropriate surface appurtenances or perform excavation to lower the grade of by-pass pipe to maintain uninterrupted access to all residences, business, sidewalks, and driveways. Work shall also include the removal of all equipment and perform all repairs to replace disturbed features back to original condition, dimensions and grade.

Contractor shall be responsible to notify and coordinate with all trash collection services and postal mail delivery to maintain uninterrupted service to all residences and businesses. Modification of work schedule or alternate arrangements shall be provided by the Contractor.

Contractor shall coordinate work schedules and locations of work with public transportation services. In the event that work is scheduled to occur that interrupts normal bus stop access, the bus stop location shall be temporarily relocated and appropriate relocation signage, seating and shade structures provided.

The actual design of the bypass arrangement shall be the responsibility of the Contractor, and shall be submitted to the City or City's Engineer for review only for general conformance to project objectives. Review shall not relieve the Contractor of liability or responsibilities associated with the bypass. Means and methods of accomplishing the bypassing shall be the responsibility of the Contractor.

The Contractor shall have the entire bypassing system in place and successfully pressure tested with potable water at 1.5 times the maximum operating pressure of the system before bypassing any sewage. The Contractor shall notify the City or City's Engineer 48 hours prior to pressure testing the bypass piping system. The pressure test shall be performed in the presence of the City or City's Engineer, unless the City has granted prior approval to perform the test in their absence.

The Contractor shall notify the City or City's Engineer 48 hours prior to initiating by-pass operation. The bypass system equipment and existing flows shall be continuously monitored.

It is the Contractor's responsibility to arrange all necessary access and temporary construction agreements with all affected parties for the contractor's proposed location of the bypass system.

Contractor is responsible for immediate and proper cleanup as per Technical Specification Section 01560 – ENVIRONMENTAL CONTROLS should any sewage spill occur. Regardless of amount, the contractor shall pay for all damages and fines incurred as a result of a spill.

C. EXPERIENCE:

Contractor shall utilize staff and/or a subcontractor that has been directly responsible for completion of a manhole rehabilitation project that required the bypass pumping of sewage flows in excess of 2 MGD.

D. PERMITS:

Contractor shall obtain authorization for construction and permitting according to Technical Specification Section 01062 – Permits and Easements. Contractor shall be responsible to obtain permits, pay all fees and obtain all bonds and insurance as required by the governing agencies.

Schematic by-pass layout depicting pump locations and discharge pipe corridors that have been reviewed and preliminarily approved by Arizona Department of Transportation (ADOT) in the vicinity of Loop 101 is included

in the design drawings. The Contractor's proposed bypass arrangement and pipe corridors shall be submitted to ADOT for issuance of permit. Contractor shall modify by-pass system and provide necessary modifications to accommodate permitting agency requirements and requests at no additional cost to the City.

Contractor shall coordinate with the City of Glendale Flood Management for routing pipe through the drainage culverts (if applicable) and floodway under their jurisdiction. Contractor shall modify by-pass system and provide necessary modifications to accommodate permitting agency requirements and requests at no additional cost to the City.

1.02 SUBMITTALS

A. The Contractor shall submit, in accordance with Technical Specification Section 01300 - Submittals, drawings and complete design data showing methods and equipment he proposes to utilize in sanitary sewer bypassing for review by the City or City's Engineer. The submittal shall include the following information:

1. Drawings indicating the scheme and location of temporary sewer plugs and by-pass discharge pipes. The drawings shall also show the method, location, and alignment for discharging the by-pass pipes.

2. Capacities of pumps, prime movers, and standby equipment (if utilized).

3. Design calculations proving adequacy of the system and selected equipment, the Contractor shall have a professional civil engineer, registered in the State of Arizona, design and professionally seal the by-pass pumping plan and calculations.

4. Standby power source (if utilized).

5. Staffing plan for pump operation monitoring.

6. Emergency Response Plan for pump or discharge pipe failure along with proposed system monitoring plan.

7. Spill containment plan.

8. Pipe anchorage plans to withstand forces imposed by runoff if discharge pipe is positioned within a floodway.

9. Double pipe containment plans if discharge pipes are proposed within a floodway.

10. Written plan for flushing, draining, and disposal of water during the decommissioning of the by-pass system.

11. Traffic control plan in accordance with Technical Specification Section 02100 – Traffic Control

12. Plugging method and plug restraint proposed for upstream and downstream sanitary sewer pipe segments

13. Restraint system proposed to mitigate forces imposed on the bypass piping system by any flow of surface water drainage.

14. Template of log book proposed for documenting operator name, pump operation performance, fuel levels, and maintenance records along with name and time of hourly discharge pipe leak inspection monitoring.

1.03 JOB CONDITIONS

A. AVAILABLE FLOW DATA:

Contractor is responsible to field verify existing flow data. Flow data (if available) for the sewers to be rehabilitated at the project site is located in Paragraph 3.01.

B. PROTECTION:

1. No bypassing to the ground surface, receiving waters, storm drains, or by-pass which results in soil or groundwater contamination or any potential health hazards shall be permitted.

2. All pumps and fuel storage tanks shall be placed in containment barriers to protect against spills.

3. Contractor shall be responsible to call One-Call "Blue Stake" a minimum of 48 hours prior to excavation to identify and mark utilities prior to any excavation activities.

4. Contractor shall restrain by-pass discharge pipe from detrimental movement caused by any drainage water flow.

C. SCHEDULING:

The bypass 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 City or City's Engineer. The bypass system shall have an attendant monitoring 24 hours a day whose only duty is to maintain the bypass pumping system until the bypass of that specific pipe is no longer required.

PART 2 – PRODUCTS

2.01 MATERIALS

A. The Contractor shall furnish all necessary labor and supervision to set up, operate and remove the temporary above ground bypass piping system.

Contractor shall provide sketches indicating the scheme and alignment of temporary sewer by-pass discharge pipes and anticipated discharge point for approval and permitting prior to start of work.

B. If the Contractor proposes to utilize a by-pass pumping system, he shall provide temporary pumps, conduits, and other equipment to bypass sewer flow around the Contractor's work area as required by the rehabilitation method, and cleaning activities. Contractor shall furnish all necessary labor and supervision to set up, operate and remove the pumping and bypass system.

Sound attenuated pumps shall be provided for the bypass pumping. The sound attenuated pumps shall be capable of achieving an operating noise level of 70 decibels or less, measured at a distance of 50 feet from the operating pump. 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 in accordance with American National Standard S. 13-1971. Pumps and bypass pipes shall be of adequate capacity and size to handle the required capacity.

C. Contractor shall maintain on site, sufficient equipment and materials to ensure continuous and successful operation of the bypass and dewatering systems. The Contractor shall have the total number of standby pumps on site and operable for a minimum of **50% redundancy in the number of pumps** necessary to accommodate peak flow at all times. 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 (or energized) and operational at all times.

D. 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 bypass system as necessary.

E. All electrical generators (if applicable) and other stationary combustion equipment shall be placed in a containment barrier to protect against diesel, gasoline, oil, and hydraulic fluid spills.

F. All pumps and other equipment, such as but not limited to, air release valves and sealed burp tank equipment, shall be placed in a containment barrier to protect against sanitary sewer spills.

G. All bypass pumps shall include at a minimum, one (1) check valve and one (1) isolation valve immediately downstream from the pump outlet, prior to any other bypass piping system fittings or appurtenances.

PART 3 – EXECUTION

3.01 ESTIMATED FLOWS IN THE PROJECT PIPES

Use of flow data depicted in Table 1 – FLOW DATA in no way relieves the Contractor from his responsibilities for monitoring existing flows and the design, installation and operation of an adequately sized sanitary sewer by-pass system that prevents sanitary sewer overflows. On-site monitoring of current flow data and incorporation of additional by-pass pumping capacity is the responsibility of the Contractor.

A. Peak flow in the 27-inch diameter sewer has been estimated based on flow measurements taken by the City in 2006. Copies of the flow data collected can be provided by the City upon request.

B. Midwestern University is currently under construction. Flow within the 8-inch diameter servicing Midwestern University may increase depending upon time of construction and students in attendance. Sanitary sewer flow has been estimated based on design capacity for pipes of this size.

TABLE 1 – FLOW DATA*	
Location	**Estimated Peak Flow (GPM)**
27-inch diameter (under Loop 101)	940
8-inch diameter (from Midwestern University system)	Records not available (assume 175)
10-inch Diameter (Residential Area)	Records not available
8-inch Diameter (Residential Area)	Records not available

* Contractor responsible to field verify

C. FLOW CONDITIONS:

Higher flows may be encountered depending on weather and other upstream conditions. The Contractor is responsible for obtaining current flow condition information at the time of construction. The City or City's Engineer is not responsible for any deviations in quantity of sewage flow at any time during the construction period.

D. SERVICE LATERALS:

Sewer service to customers must be maintained during the course of the work, unless other acceptable arrangements are made with the customer. No matter what arrangement is made, the Contractor must cooperate with the City or City's Engineer to provide 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.

E. NOTIFICATIONS:

The Contractor shall cooperate fully in providing the City or City's Engineer with advance notice and details pertaining to work schedule per Technical Specification Section 01310 – Progress Schedule and Section 01400 – Public Notification.

3.02 PROTECTION

In areas where flows are bypassed, all bypass flow shall be discharged as described above or approved by the City. Wastewater spills, overflows, and backups into customer's properties are not allowed. No bypassing to the ground surface, receiving waters, storm drains, or by-passing which results in groundwater contamination or potential health hazards shall be permitted.

The Contractor shall erect and maintain spill containment barriers around all pump and appurtenance facilities to contain spilled sewage and/or fuel. Containment structure shall be routinely monitored for the presence of a spill and cleaned immediately if a spill occurs.

The Contractor shall on intervals of no more than 60 minutes, inspect and maintain the entire by-pass 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 City or City's Engineer.

Contractor shall provide protective barriers around pumps and discharge pipes when working within close proximity to vehicular travel corridors.

Contractor shall maintain a cover over manholes which are used as bypass pumping system suction and discharge points to contain odors. This cover shall, to the maximum extent possible, provide a vapor seal between the interior of the manhole and the atmosphere.

3.03 DAMAGES

The Contractor shall repair or pay for repair, without cost to the City, any damage as a result of construction activities and/or damage that may result from his negligence, inadequate or improper design, installation, maintenance and/or operation of the bypass pump 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 sewer pipe, sewer manholes and structures prior to remote visual inspection, observation, and pipe or manhole rehabilitation.

B. REQUIREMENTS:

The work to be done consists of furnishing all labor, materials, and equipment to remove accumulated sediments and debris down to sound, solid structural material of the sanitary sewer pipes and sewer structures. The Contractor shall grit blast or hydro blast with a minimum 1000 PSI water pressure for duration sufficient to clean to coating or lining manufacturer's recommendations the pipe or structure surface receiving a protective coating or lining.

The Contractor shall remove existing coatings, sediment, debris, roots, scale, encrustations, and grease accumulations from the sanitary sewer pipes and sewer structures to be inspected and/or rehabilitated and adequately prepare the surfaces for CIPP liner installation, coating system and/or repair grout. All materials dislodged during cleaning and surface preparation shall be removed from the pipe and work area and delivered to an approved disposal site.

1.02 SUBMITTALS

A. The following submittal shall be provided in accordance with Technical Specification Section 01300 - Submittals:

1. A letter report identifying the methods the Contractor anticipates employing to remove coatings (if applicable) sediment, debris, grease, scale, encrustations, and roots throughout the sanitary sewer pipe to be rehabilitated and in the sanitary sewer structures to be repaired or coated. The letter report shall include a detailed explanation of the surface preparation process and a schedule of activities and references where the Contractor has used the identified cleaning method successfully in the past.

2. A letter identifying the location the Contractor proposes to legally disposal of debris off-site.

3. Written acknowledgement from receiving agency or treatment facility accepting the debris materials removed.

4. Copies of all disposal receipts.

PART 2 - MATERIALS

2.01 CHEMICAL ADDITIVES

No chemicals shall be used without written approval of the City. In no case shall any chemical additive be used which might be considered hazardous, or might be considered detrimental to organisms or equipment of a wastewater treatment plant, or detrimental to old or new pipe materials.

A Material Safety Data Sheet (MSDS) shall be posted onsite with a copy supplied to the City for all chemicals anticipated to be used in the project or brought on-site.

PART 3 - EXECUTION

3.01 GENERAL

The Contractor shall at all times conduct work so as to prevent any detrimental sewage blockage and minimize surcharging in the sewer manholes or connecting sanitary sewer system. Damage to existing facilities as a result of the Contractor's work shall be promptly repaired at the Contractor's expense.

3.02 SEWER BYPASSING AND DEWATERING

Sewer flow shall be bypassed during the cleaning and rehabilitation of the sewers per Technical Specification Section 02145 - Diversion of Sewage Flow and Dewatering

3.03 CLEANING

Cleaning shall remove all loose coatings previously applied, sediment, rocks, debris, roots, grease accumulations and obstructions from the sewer to be rehabilitated and from the structures to be coated (if applicable). Cleaning of

the sewer and structure interior surfaces shall remove all grease, scale, encrustation, and any other coating material from the surface, as recommended by the proposed coating manufacturer that may impede application or performance of applied coatings. Multiple passes with cleaning equipment or grit blasting may be required, at no additional cost to the City.

Sediment, material or debris from cleaning operations larger than U.S. #8 sieve shall not be deposited downstream in the sewer main. Sedimentation deposited downstream shall be removed at no cost to the City.

The Contractor shall be thoroughly familiar with all phases of sewer pipe and structure cleaning to ensure that surface preparation is adequate for coating or pipe rehabilitation to be installed without causing a health hazard or damage to the sanitary sewage system, public and private properties.

The Contractor shall clean the sanitary sewer pipe and structures so that there are no visible residue, rocks, debris, roots, grease accumulation and/or obstructions. The Contractor shall clean the pipe adequately for proper installation of the sewer rehabilitation method proposed.

It shall be the responsibility of the Contractor to repeat the cleaning process if root re-growth or other detrimental obstructions or residue is present at no additional cost to the City.

Pipe discovered by the Contractor or his Subcontractor to be physically deteriorated to the extent where cleaning may detrimentally impact the structural integrity of the existing pipe shall be brought to the attention of the City prior to conducting cleaning operations. Once cleaning operations commence, Contractor accepts all liability and responsibility for damage to existing pipes and structures.

3.04 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.

All sediment and debris removed from the sewer shall be disposed off-site in a lawful manner. Hauling containers shall be watertight. On-site stockpiling of removed material will not be permitted.

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 City.

**** END OF SECTION ****

SECTION 02761
REMOTE CCTV INSPECTION OF EXISTING AND REHABILITATED SEWERS

PART 1 - GENERAL

1.01 DESCRIPTION

This specification defines the requirements for internal remote closed circuit (CCTV) television inspection of the existing sanitary sewer pipe before and after rehabilitation construction activities.

The Contractor shall be responsible for properly inspecting and documenting the interior condition prior to CIPP lining to detect any conditions that may be detrimental to liner installation and accurately map existing service lateral locations along with final condition of the rehabilitated pipes.

The Contractor shall inspect the sewer interior using a camera or process capable of producing a color 360 degree image of the pipe interior for permanent record and documentation of inspection with audio annotation, date and location information, and title information according to the National Association of Sanitary Service Companies (NASSCO) standards. Final video documentation shall be used to determine final payment.

1.02 QUALIFICATIONS AND EXPERIENCE

The Contractor shall utilize a NASSCO certified technician to operate the CCTV camera to document the interior sewer pipe condition. Certification numbers of operators shall be submitted for verification with NASSCO.

1.03 SUBMITTALS

A. PRELIMINARY

1. At the preconstruction conference the Contractor shall submit the following information for review per Technical Specification Section 01300 – Submittals following notification of award of the Contract.

2. The Contractor shall submit the CCTV camera operator's current "User" certification number issued by NASSCO. Any CCTV operator personnel change will require an updated certification number submitted for operator approval prior to work being completed by that individual.

3. Example of his work consisting of one remote visual inspection record in digital format of previous sewer inspection work complete with audio commentary and inspection log(s). The submitted record shall show operational and structural defects in 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 inspection procedures are acceptable and if defects were properly identified and documented. Samples shall be with the same camera, lighting equipment, and data handling procedures proposed for this work.

4. The City's Engineer will review the records, not for accuracy of content, but to make sure that the required information is provided and the recording is of acceptable quality. If the City's Engineer determines that the records are defective or not of adequate quality, the Contractor shall repeat the inspection documentation at the Contractor's expense.

5. The Contractor shall be responsible for modifications to his 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 format material by the City's Engineer. Once accepted, the report material shall serve as a standard for the remaining work.

6. The Contractor shall submit a final video showing a post inspection, after all punch list deficiencies have been addressed for approval. The Contractor shall submit post CCTV of segments within 10 working days from the date of installation.

7. Digital Video Disk (DVD) records shall include labels containing project titles, dates, including City and Contractor company names. Contractor shall maintain a copy of all inspection documentation (disks, tapes, databases, and logs) for the duration of the work and warranty period.

B. OTHER SUBMITTALS

1. One copy of the CCTV inspection stored on Digital Video Disk (DVD) media or portable USB storage device, showing the existing sewer pipe and manholes after cleaning, just prior to rehabilitation, along with a final inspection video after pipes have been rehabilitated and service to laterals restored following lateral seal installation (if utilized). Final video shall be submitted to the City's Engineer within 10 working days from the time the video was created.

2. The Contractor shall submit written inspection logs and CCTV procedures according to NASSCO – PACP standards for the sewer pipes inspected and/or rehabilitated.

3. GPS coordinate system that is to be used for documenting manhole locations.

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 tilt and zoom capabilities to view 90 degrees to the pipe centerline for the entire 360 degrees of the pipe circumference.

2. Contractor shall utilize equipment that allows for CCTV to be performed within conditions noted in these Technical Specifications. Contractor's equipment shall be sized to fit within sewer segments. Any scrapes or damages to the manhole and pipe rehabilitation resulting from CCTV equipment or cables use shall be addressed and corrected as directed by the City's Engineer at the Contractor's expense.

B. STORAGE MEDIA OR DEVICE

Video recordings of all sewer pipe inspections shall be stored on Digital Video Disk (DVD) disks or portable USB storage devices. The audio portion of the composite video shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of the oral report. A copy of the video recordings shall be consolidated on DVD media or digital hard drive storage device identified by City quarter section number and pipe segment number as provided by the City or City's Engineer.

All recordings shall be capable of being reviewed using Windows 8® Media Player software. Any recording not viewable shall be rejected and a new CCTV recording produced at the Contractor's expense.

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 shall include genlocking capabilities to the extent that computer generated data, (i.e., footage, date, size, address and location, etc.) cannot be modified following completion of the recording and permanently documented on the inspection record. 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 investigation recording completed by a non-certified CCTV operator shall be grounds for rejection of video documentation recording. Costs to recreate the investigation video documentation by a certified CCTV operator shall be the responsibility of the Contractor.

E. SEWAGE FLOWS IN SEWERS

During remote visual inspections, and continuously until completion of manholes and pipe rehabilitation installation and final documentation inspection, the Contractor shall provide temporary dry conditions in the sewer pipes.

F. GPS MANHOLE LOCATION

Contractor shall provide GPS coordinates of the upstream and downstream manholes of each pipe inspected and documented in corresponding CCTV reports. GPS equipment utilized shall have be capable of recording coordinates within 2 foot accuracy. Coordinate system reported shall be as directed by the City with which the records are being collected.

PART 3 - EXECUTION

3.01 INSPECTION METHODS

The remote visual inspection shall be performed after the rehabilitation of the

sewer pipes and manholes has been completed but prior to putting the sewer pipe and manholes back into service.

A. VERBAL COMMENTARY

The Contractor shall audio record narrative on the remote visual inspection the location, upstream and downstream control points, date, and time of the inspection.

B. ACCESS

The City and City's Engineer 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 be transported through the sewer from the upstream manhole to the downstream manhole direction to document the entire pipe length. Maximum rate of travel shall be 30 feet per minute when recording. Camera advancement shall be stopped at each joint, service lateral, defect and pipe repair location to obtain a 360 degree view.

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.

3. Each individual sanitary sewer lateral opening to the sewer main shall be remote visually inspected. Camera shall first pan and tilt to the joint repair, spot repair and lateral opening prior to zoom. Full 360 degrees of the lateral opening shall be documented without zoom. Contractor shall not utilize pan, tilt and/or zoom simultaneously.

E. SEWER IDENTIFICATION

All inspection documentation shall include the sewer location identified by City quarter section and manhole numbers.

F. QUALITY CONTROL

The City or City's Engineer will review data contained on the DVDs to ensure compliance with the requirements listed in this Technical Specification and Construction Documents. If the sanitary sewer is determined not to be adequately cleaned, as required in this section, it shall be re-cleaned and remote visual inspection repeated by the Contractor at no additional cost to the City. If any portion of the rehabilitation work is determined not acceptable, the unacceptable work shall be repaired or replaced, whichever the City deems appropriate, and re-inspected and documented.

Final CCTV video documentation of the pipe interior following rehabilitation shall be one continuous recording documenting the entire length of the pipe segment from upstream manhole to downstream 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. No additional cost to the City will be allowed for video recreation.

G. AS-BUILT LOG

Contractor shall document, in Microsoft Excel format, the thickness, diameter, and length of CIPP liner installed within each segment of pipe.

**** END OF SECTION ****

PART 1- GENERAL

1.01 DESCRIPTION

This section specifies the cured-in-place pipe (CIPP) rehabilitation lining, sets acceptable material and experience parameters, defines minimum performance requirements for the finished, installed product and details testing requirements for the completed product.

The Contractor shall provide and install a resin impregnated needled polyester felt non-woven material tube with a plastic coated wearing surface in all sewers identified for CIPP lining in accordance with American Society for Testing and Materials (ASTM) F1216 for the inversion installation method, ASTM F1743 for winched installation method. The resin is cured by exposure to water, air and/or steam. When cured, the cured-in-place pipe (CIPP) shall be continuous and tight fitting.

1.02 CLIMATIC CONDITIONS

The Contractor is made aware that the lining of the sewers may occur during the summer months with temperatures exceeding 115 degrees Fahrenheit. The Contractor shall be prepared for these conditions and alter storage and installation procedures accordingly to protect the liner from damage. The City shall not be responsible for damages due to inclement weather prior to or during liner installation or construction delays as a result of excessive heat. Damaged liner shall be replaced by the Contractor at no additional cost to the City.

Severe thunderstorms can also occur that may increase flow rates in sewers. The Contractor shall be prepared for these conditions and alter his installation procedures and by-pass pumping capabilities accordingly. Contractor shall review the weather forecast prior to commencement of liner installation. When the anticipated weather conditions are such that the resulting sewer flow may impact the capacity of the bypass pumping system or otherwise adversely affect the liner installation then the City or City's Engineer shall be informed and the installation shall be delayed until favorable weather is forecast.

1.03 EXPERIENCE RECORD OF CONTRACTOR

Contractor shall provide to the satisfaction of the City or City's Engineer written documentation from the CIPP lining manufacturer that Contractor's personnel have been adequately informed and trained in the installation procedures of CIPP liner process proposed. Such written documentation shall describe manufacturer's procedures for installers, training program and, if applicable, licensing policies.

Contractor shall have a representative on-site, full time, that has been responsible for the successful installation in the United States of a minimum of 50,000 linear feet of CIPP pipe lining for the diameter being installed utilizing the installation technique proposed.

1.04 REFERENCES:

This section contains references to the latest addition of 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 most stringent requirements shall prevail.

AASHTO Loading	Anticipated external load to be placed on the pipe
ASTM F412	Definitions of Terms Relating to Plastic Piping Systems
ASTM F1216 (including Appendix XI)	Standard practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube.
ASTM F1743	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
ASTM D543	Test Method for resistance of plastics to chemical reagents.
ASTM D638	Standard Test Method for Tensile Properties of Plastics.
ASTM D790	Test Method(s) for flexural properties of unreinforced and reinforced plastics and electrical insulating materials.
ASTM D883	Definitions and Terms Relating to Plastics.

ASTM D903	Standard Rest Method for Peel or Stripping Strength of Adhesive Bonds
ASTM D1600	Abbreviations, Acronyms, and Codes for Terms Relating to Plastics
ASTM D 1682	Test Method for Breaking Load and Elongation of Textile Fabrics
ASTM D 2990	Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
ASTM D 3039/D 3039M	Test Method for Tensile Properties of Polymer Matrix Composite Materials
ASTM D 3567	Practice for Determining Dimensions of Reinforced Thermosetting Resin Pipe (RTRP) and Fittings
ASTM D 5813	Specification for Cured-in-Place Thermosetting Resin Sewer Pipe APS Standard – Water tightness standard for cured-in-place thermo-setting resin pipe Porosity Test protocol.
EPA	Quality Assurance & Quality Control Practices for rehabilitation of sewer and water mains
NASSCO Standards	Recommended Specifications for Sewer Collection System Rehabilitation

1.05 SUBMITTALS:

The following submittals shall be provided in accordance with Section 01300–Submittals:

1. Shop drawings which detail short and long term properties (providing all supporting test data) of all component materials.

2. Representative cured liner sample (1-foot in length) for each diameter size of the same resin and felt liner proposed for the project.

3. Structural calculations of each CIPP diameter size and depth. CIPP liner calculations shall be stamped by a Professional Engineer in the State of Arizona.

4. 10,000-hour third party, 50-year Flexural Creep Modulus test data. Test shall be in accordance with ASTM D-2990 at 10,000 hours. If approved 10,000 hour tests are not available, Contractor shall use a minimum 50%

reduction (50% retention) of Flexural Modulus of Elasticity (per ASTM F-1216) for all formula calculations.

5. Independent laboratory test reports of CIPP sample(s) and tests as specified in Paragraph 1.06. A chain of custody, signed by all those that handled the test sample, including, but not limited to the City Engineer Inspector, Contractor, and independent testing laboratory person(s) receiving and testing the sample, verified and signed by the City's Engineer.

6. Test report of CIPP sample(s) and tests as specified in paragraph 1.04.B and paragraph 2.04. Testing for chemical resistance shall be performed on a previously prepared sample of the finished product, proposed for this project. Chemical resistance performance shall be performed per ASTM D 5813, Section 6.4.1 and Section 6.4.3. Strain corrosion performance shall be performed per ASTM D 5813, Section 6.4.2 and Section 6.4.3.

7. Remote visual inspection video and reports as specified in Paragraph 3.1.C.

8. Liner manufacturer's recommended installation procedures per ASTM F1216, recommendations for material storage and temperature control, CIPP liner handling, insertion, curing, trimming and finishing.

9. Felt manufacturer's recommended maximum pulling force to be applied to the liner (if winched-in method employed).

10. Resin manufacturer's proposed rate of cure temperature change (heating and cooling) and the target temperature and duration for cure of resin along with the maximum rate and target temperature for cool down prior to the termination of the cure process.

11. Certification showing the Contractor is currently licensed by the appropriate licensor to perform CIPP installation. Certification shall be given to the City's Engineer before any materials are delivered to the job site.

12. Contractor on-site representative experience including project name(s) with linear footage, diameter, and installation method of CIPP installed on the project, project owner reference name and phone number who is familiar with the representative and referenced project.

13. A certified affidavit, signed by an officer of the installation Company, shall be provided stating that the on-site superintendent has received proper training in the manufacturer's recommendations for CIPP liner installation methods and procedures.

14. Certification stating CIPP tube has been manufactured in accordance with ASTM F1216 and resin ASTM D5813 is suitable for its intended use. Contractor shall submit a certified affidavit, signed by an officer of the company, stating that the resin the tests apply to and the resin supplied for this project are the same.

15. Contractor shall submit method of measuring defects and an outline of specific repair or replacement procedures as recommended by the tube manufacturer for potential defects removal that may occur in the installed CIPP. Potential defects within the CIPP that cannot be repaired shall be clearly defined by the Contractor based on the manufacture's recommendations, and a proposal for compensation to the City.

16. Manhole connection (liner termination) detail and material proposed to seal any annular space between the liner and host pipe.

17. Lateral seal material and installation methods proposed for use. Certification showing the Contractor is currently licensed by the appropriate licensor to perform lateral seal installation. Certification shall be given to the City's Engineer before any materials are delivered to the job site.

18. Warranty information and certificates.

19. Material safety data sheets 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.

20. Contractor to submit baseline resin spectrograph for resin material proposed.

21. Contractor shall submit proposed fiber optic cable temperature monitoring system

1.06 CIPP LINER QUALITY ASSURANCE:

A. LABORATORY TEST SAMPLE:

1. Sample should be cut from a section of cured CIPP at an intermediate manhole or at the termination point that has been inverted through a similar diameter pipe which has been held in place by a suitable heat sink, such as sandbags. For larger diameter CIPP liners, a flat plate sample shall be cured on-site within the liner being installed and collected for testing once liner installation is complete.

2. All CIPP liner samples that are to be sent to an independent laboratory for quality control testing shall be signed by the City's Engineer and accompanied by a Chain of Custody form, reference Section 01999-Reference Forms, FORM 01999-D.

3. SAMPLING 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 lineal feet or one semi-trailer load of liner whichever is less. City's Engineer reserves the right to request the Contractor to perform one additional test for every 3,000 lineal feet or one semi-trailer load of liner whichever is less.

4. Grounds for rejection of installed CIPP liner include, but not limited to the following:

   a. CIPP sample sent to laboratory that is missing City's Engineer signature;

   b. CIPP samples missing the Chain of Custody forms;

   c. Chain of Custody form missing information or signatures of all those who handled or processed the sample, including the signature of the laboratory technician performing the testing.

   d. Laboratory test results not meeting minimum specification requirements.

B. 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,
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 felt "dry"
10. Liner thickness,
11. Liner diameter.

1.07 WARRANTY:

The work performed under this Project shall be warranted to be free from defects in material and workmanship for a period of two (2) years from the date of Final Acceptance. The City's Engineer, 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 this work. If the City's Engineer determines that the process/material/installation has failed during the warranty period, the Contractor shall perform any and all repairs at no additional cost to the City.

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.

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 Section 5 of ASTM F1216 and Sections 5 and 7 of ASTM F1743.

B. Wrinkles in the finished liner pipe which cause a backwater of one (1) inch or more in depth or reduce the hydraulic capacity of the pipe (wrinkles which exceed 5 percent of the host pipe diameter) are unacceptable and shall be removed or repaired by the Contractor at no additional cost to the City. Wrinkles in the finished lined pipe that reduce the structural stability of the pipe are unacceptable. If a void between the wrinkle and the existing host pipe exists, the Contractor shall repair or replace that section of the pipe at no additional cost to the City. Methods of repair shall be proposed by the Contractor and submitted to the City or City's Engineer for review.

C. Separations of liner seams in the finished lined pipe are unacceptable and shall be removed or repaired by the Contractor at no additional cost to the City. If a separation of a liner seam exists, the Contractor shall repair or replace that section of the pipe at no additional cost to the City. Methods of repair shall be proposed by the Contractor and submitted to the City or City's Engineer for approval.

D. 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.

2.02 COMPONENT PROPERTIES

A. FELT LINER MATERIAL

The liner tube shall consist of one or more layers of flexible needled felt or an equivalent non-woven and/or woven material meeting ASTM 1216 Section 5 or ASTM F1743 Section 5.2.1 and capable of carrying resin, withstanding installation pressures and curing temperatures, and is compatible with the resin system used.

B. RESIN

The resin system to be used shall be manufactured by an approved company selected by the CIPP process manufacturer. Only corrosion resistant polyester or vinyl ester resins shall be used.

The resin used shall produce a properly cured-in-place pipe system, 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 the existing residential, commercial, and industrial effluents, liquids and/or gases.

The chemical corrosion resistance of the actual resin system used by the Contractor shall be tested by the resin manufacturer in accordance with ASTM F1216, D-543, or C-581 as applicable. Exposure to the chemical solutions listed below shall result in a loss of not more than twenty percent (20%) of the initial physical properties when tested in accordance with ASTM C-581-87:

C. CHEMICAL RESISTANCE

The chemical resistance tests should be completed in accordance with Test Method ASTM D 543. Exposure should be for a minimum of one month at 73.4 degrees F. During this period, the CIPP test specimens should lose no more than 20 percent 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 City's Engineer for approval at least seven (7) days prior to commencement of work.

D. LINER TUBE

1. The liner tube shall be fabricated to a size that, when installed, will fit the internal circumference of the existing sanitary sewer main without any annular space between liner and walls of host pipe. Allowances shall be made for circumferential stretching due to insertion of liner and deterioration of host pipe walls.

2. The minimum liner tube length shall be that deemed necessary by the Contractor to effectively and continuously span the distance 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 tube. Individual insertion runs may be made over one or more manhole sections as determined in the field by the Contractor.

3. Measure the overall elongation of the fabric tube after pull-in completion and report to the City's Engineer.

4. Contractor shall utilize a dynamometer or load cell per ASTM F1743 Section 6.4.1 or other approved method to monitor winch or cable pulling force.

5. Prior to insertion, the liner tube shall be free of all visible tears, holes, cuts, foreign materials, and other defects.

6. The physical properties quoted in Paragraph 2.3 applies to CIPP

manufactured polyester, vinyl-ester, or epoxy resin. Resins shall be tinted for visibility and provide positive indication of adequate liner wet-out. Resins should be appropriate for conditions encountered.

E. DIMENSIONS

1. The 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 felt tube is cut and impregnated. Individual installation runs may include one or more manhole-to-manhole sections as approved by the City's Engineer.

2. The diameter of the host pipe may be larger than the nominal inside diameter due to corrosion of the existing host pipe. It is the Contractor's responsibility to determine the required diameter of the liner.

3. "Minimum Design" thickness is defined as the CIPP calculated thickness according to ASTM F1216 or ASTM F1743 using design criteria plus an additional "Owners Premium" thickness as outlined in Paragraph 2.04 then rounded up to next manufactured increment. Calculations of liner thickness shall be submitted to the City's Engineer according to Section 01999–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 resin to pass during impregnation. The measurement of installed dry cured liner thickness shall be determined at a minimum of three 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.

2.03 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.

Test Property	Test Value	Test Method
Flexural strength	5,000 psi	ASTM D790
Flexural modulus	300,000 psi	ASTM D790
50-year flexural creep modulus	150,000 psi	ASTM D2990

2.04 DESIGN CRITERIA

A. The liner thickness shall be designed in accordance with the procedures of ASTM F 1216, Appendix XI and these specifications. All material properties used in design calculations shall be long-term (time-corrected) values. Contractor shall familiarize himself with site conditions when preparing liner design.

B. The following parameters shall be assumed for the liner design:

1. Modulus of soil reaction, E'_s = 1,000 psi (fully deteriorated)
2. Unit weight of soil = 140 pcf
3. The minimum ovality shall be 2.0 percent
4. No allowance for ground water
5. AASHTO H20 Traffic loads
6. Safety Factor = 2.0
7. "Owners premium" thickness = 20%

2.05 PAYMENT PENALTY / REDUCTION

A penalty will be assessed by the City 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 Paragraph 2.2.E.3. 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:

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 including10%
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	

2.06 CIPP TERMINATION POINTS

The Contractor shall provide CIPP liner terminations. If the CIPP fails to make a tight seal at the manhole walls, a seal consisting of a resin mixture compatible with the liner/resin system shall be applied in accordance with manufacturer specifications and approved by the City's Engineer.

2.07 LATERAL SEALS

Lateral connections shall be sealed using a resin impregnated laminate manufactured by "Cosmic - Top Hat Systems" or approved equal in locations as directed by the City or depicted in Design Drawings.

2.08 FIBER OPTIC TEMPERATURE MONITORING / DOCUMENTATION

The Contractor shall utilize fiber optic remote temperature monitoring system as supplied by ZIA Systems, LLC, 250 Veronia Drive, Springfield, Ohio or approved equal, for use along the entire length of 27-inch diameter CIPP liner during cure.

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, and the bypass diversion pumping system, including back-up pumps, shall be tested and running per Technical Specification Section 02145 – Diversion of Sewage Flow and Dewatering.

Every effort should be made to protect the environment from any contamination from sanitary sewer.

B. SEWER AND LATERAL SERVICE CLEANING

Prior to CIPP tube installation, the Contractor shall clean the existing sewer in accordance with Section 02760 – Sewer and Sewer Structure Cleaning. The Contractor shall clear the existing sewer of obstructions such as solids that will prevent or hinder CIPP liner or lateral seal installation. The Contractor shall utilize a spinning nozzle as to ensure that the host pipe is free from any residual sediment prior to lining. A time lapse no greater

than 30 calendar days shall be allowed between initial host pipe cleaning and liner installation.

C. CCTV INSPECTION

The interior of the sewer shall be inspected in accordance with Section 02761 – Remote CCTV Inspection of Existing and Rehabilitated Sewers to determine the location of conditions which may prevent proper installation of CIPP.

The Contractor shall furnish the cleaning CCTV and report to the City's Engineer for host pipe segments that the Contractor determines existing conditions may impact the final operation of the lined pipe, either grade or condition. If existing host pipe defects or voids exist, the Contractor shall repair or replace that section of the host pipe.

The Contractor shall not line over any offset that is greater than 5% of the lined pipe internal diameter without first notifying the City's Engineer.

D. 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.

E. PRE-CONSTRUCTION SITE CONDITION DOCUMENTATION:

Contractor shall take pre-construction videos of work areas before beginning work, in accordance with Section 01380 – Photographs and Video Recordings, to the satisfaction of the City or City's Engineer. The purpose of these videos is to document existing surface features and conditions prior to bringing any equipment in or performing any work. It shall be responsibility of the Contractor to review the video and bring it to the attention of the City or City's Engineer any site conditions that are not conducive to liner system 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:

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. The Contractor shall make suitable precautions to eliminate hazards to personnel near construction activities when pressurized air or hot water is being used.

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 City or City's Engineer and applicable local agencies. The Contractor shall allow the City or City's Engineer 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 site under controlled environmental conditions. Transport vehicles shall include a tamper resistant, sealed temperature-recording device which records the temperature of the liner at all time after leaving the wet-out site. The Contractor shall decide when to transport the impregnated CIPP tube to site and when to commence insertion with respect to weather conditions.

The Contractor is responsible for obtaining construction hydrant meters from the City and for paying all applicable deposit fees and water usage fees.

B. PRE-INSTALLATION

Prior to installation of the liner, the following activities are required to be completed:

1. Receipt and approval of pre-installation submittals by the City's Engineer.

2. Verification of pipe condition and any obstructions by video inspection.

3. Verification of existing laterals 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 liner. The Contractor shall obtain the approval of the point repairs from the City's Engineer prior to proceeding with the liner installation. The Contractor assumes all responsibility of liner

quality once installation begins if prior written notification is not received and acknowledged by the City's Engineer.

6. The Contractor is to ensure liner 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 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 City's Engineer before proceeding further; and at the Contractor's expense.

D. INSTALLATION PROCESS

No CIPP installations will be undertaken in weather conditions that could jeopardize the installation of the CIPP, or be detrimental to the long-term performance of the CIPP. The liner will be installed by the inversion tube method or winching method as follows.

1. INVERSION METHOD: The tube shall be impregnated with a liquid thermosetting resin and lowered into the insertion pit through an inversion tube. The inversion tube will then be inverted into the existing sewer by air pressure which will push the tube through the host pipe inside out, while pressing the resin impregnated side firmly against the inside walls of the host pipe. The smooth coated side of the liner shall become the new interior surface of the host pipe. After the tube is inverted through the host pipe section, the Contractor shall cure the liner by introducing steam or a combination of compressed air and steam to initiate the curing process.

2. WINCHING METHOD: The wet out liner shall be inserted through the upstream manhole and pulled through the section through the use of a power winch attached to the end of the liner with an appropriate pulling head.

   A monitoring device shall be provided to measure the pulling force. Should the pulling force exceed the manufacture recommendations, the tube shall be rejected, removed, and replaced. Maximum manufacturer's pulling force shall be submitted according to Technical Specification Section 01300 –Submittals.

Rollers shall be installed in the upstream and downstream manholes to guide the liner into and out of the host pipe and to guard against chafing of the crowns at the entry and exit.

The sewer invert throughout the section to be lined shall be covered with a polyethylene foil or other suitable material to facilitate threading of the liner and reduce the risk of damage to the liner material. The CIPP shall be formed with a polyurethane, polyethylene, or polypropylene coating on its interior surface.

During insertion of the resin impregnated tube into the host pipe, the maximum allowable longitudinal elongation, or stretch, of the liner tube shall be 5%. The longitudinal stretch of the tube shall be gauged by comparing the fully inserted tube to the actual length of host pipe being rehabilitated. Contractor shall field measure within the interior of the pipe the actual host pipe length and submit to the City's Engineer.

The Contractor shall use a flexible and impermeable calibration hose to inflate the tube. The calibration hose may or may not remain in the complete installation. Any dry tube or inflation hose material that enters the existing pipe that has not been previously impregnated with resin under controlled conditions cannot be included in the structural wall of the CIPP. The nominal thickness of this material shall be deducted from the field sample thickness measured in order to verify that the minimum specified wall thickness is achieved. Hose material remaining in the installation shall be compatible with the resin system used, shall bond permanently with the tube, and shall be translucent to facilitate post installation inspection. Hose materials which are to be removed after curing shall be of non-bondable material.

The Contractor shall introduce air and/or steam into the liner and expand with pressure inflating and pressing the liner material in a tight fit against the inner walls of the host pipe producing dimples at lateral and side connections and flared ends at manholes. 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. 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 vice versa.

E. CURING

The curing process shall be per ASTM F1216 or similar approach

recommended by the manufacturer and approved by the City's Engineer, to ensure that the liner design physical properties are attained. Circulation water shall be cool down to at least 100 degrees Fahrenheit before releasing the hydrostatic head.

The rate of temperature rise and fall during heating and cooling shall not exceed 2 degrees Fahrenheit per minute or manufacturer's recommendation. Contractor shall submit per 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, and maximum rate of cool down of temperature.

F. CURE TEMPERATURE MONITORING

The Contractor shall monitor the temperature of the liner wall along the entire length of CIPP liner to verify correct curing temperatures 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. To monitor the temperatures outside the tube wall and to verify proper curing, temperature sensors shall be placed between the host pipe and the liner in the bottom of the host pipe (invert) throughout the pipe reach to record the heating and cooling that takes place on the outside of the liner during resin processing. The sensors shall be spaced at intervals no greater than 20-feet for pipe sizes up to 15-inches in diameter; and no greater than 10-feet for pipe sizes 18-inches and larger. Additionally, sensors shall be strategically placed at points where a significant heat sink is likely to be anticipated.

The remote monitoring of these sensors shall be by a computer which can record the temperatures at this interface throughout the processing of the CIPP utilizing a tamper-proof database. The Contractor shall provide the City and City's Engineer with remote real time assess to the computer through a password protected internet connection.

Prior to installing the CIPP liner in the host pipe, the temperature monitoring system's proper functioning shall be confirmed by connection to a 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 functioning.

G. REINSTATEMENT OF LATERAL CONNECTIONS

It is the intent of this project that all service lateral connections be reopened.

Service laterals shall be reopened to 100% without excavation, utilizing a remotely controlled cutting device, monitored by CCTV. The cut liner shall have no jagged edges and shall be brushed smooth with a wire brush. Contractor shall reinstate laterals back to a smooth finish with the lateral opening free of debris or obstruction to flow. Contractor shall remove any "coupons" that fall within laterals prior to performing a post-installation CIPP CCTV. The Contractor shall certify he has a minimum of two (2) complete working cutter units plus spare key components on the site before the insertion of the liner. No additional payment shall be made for excavations for the purpose of reopening connections unless previously approved by the City's Engineer prior to the start of work. The Contractor is responsible for all costs and liability associated with such excavations and restoration work.

H. LATERAL SEAL CONNECTIONS:

The Contractor shall install a lateral seal connection within five (5) working days of sewer main liner installation. Surface preparation of installed liner and/or existing lateral shall be per lateral seal manufacturer recommendations. Surface preparation costs, including additional cleaning, shall be at no additional cost to the City.

I. CIPP TERMINATION POINTS

CIPP lining shall extend into the manhole and terminated a minimum of one (1) inch from the manhole wall and trimmed square and sanded or brushed smooth or as directed by the City's Engineer. The bell shape at the end of the cured CIPP shall be remaining to produce a watertight seal with no annular gaps and mechanical lock with the existing host pipe.

If the CIPP fails to make a tight seal at the manhole walls, a seal consisting of a resin mixture compatible with the liner/resin system shall be applied in accordance with manufacturer specifications and approved by the City's Engineer. Materials and procedures used shall be submitted for approval per Technical Specification Section 01300 - SUBMITTALS.

3.03 FINISHED PRODUCT

A. FINISH:

The finished CIPP shall be continuous over the entire length of an installation run.

B. MANHOLE CONNECTION

After the curing of CIPP liner or coating of manhole (if required) is complete, the existing sewer connections shall be re-established at the manholes to the satisfaction of the City or City's Engineer. The cut liner shall have no jagged edges and shall be sanded or brushed smooth. The Contractor shall epoxy seal the sewer/manhole connection so that no leakage of fluids may infiltrate/exfiltrate between the liner and the existing sewer surface/manhole.

C. LATERAL SEAL QUALITY

Protruding seal material (resin slugs, improperly seated seal edge) within the opening of the lateral shall be removed to ensure no potential of material to be caught. Lateral seal surface shall not contain any resin voids that may pose potential for material to catch. These areas shall be repaired as per approved method.

D. INSPECTION:

The Contractor shall inspect the CIPP after installation. The inspection will be performed and recorded using remote visual television inspection equipment in accordance with Section 02761 –Remote CCTV Inspection of Existing and Rehabilitated Sewers. If defects exist within the liner, the Contractor shall repair or replace that section of liner at no additional cost to the City. Methods of repair shall be proposed by the Contractor and submitted to the City's Engineer for review and approval prior to initiating repair work. City's Engineer shall be notified a minimum of 24 hours prior to performing repair work.

The Contractor shall resubmit a final video showing a post inspection after the liner issues have been addressed and approved.

E. REPAIR OF DEFECTS

Defects such as foreign inclusions, dry spots, pinholes, delamination, seam separation and wrinkling beyond the specification allowances or as

determined by the City's Engineer as affecting the integrity or structural stability of the CIPP pipe, or as adversely affecting the hydraulic capacity of the CIPP lined pipe are unacceptable and shall be repaired or replaced at the Contractor's expense.

1. Wrinkles in the finished lined pipe which cause a backwater of one (1) inch or more or reduce the hydraulic capacity of the lined pipe (wrinkle height that exceed 5 percent of the lined pipe internal diameter) are unacceptable and shall be removed and/or repaired by the Contractor at no additional cost to the City.

2. Voids or annular space that exists between a wrinkle and the host pipe shall be repaired or pipe section replaced and relined by the Contractor at no additional cost to the City. Methods of repair shall be proposed by the Contractor and submitted to the City's Engineer for review and approval prior to initiating work.

3. Separations of CIPP liner seam in the finish lined pipe are unacceptable and shall be removed or repaired by the Contractor at no additional cost to the City. If a separation of a liner seam exists, the Contractor shall remove the CIPP liner or replace that section of pipe. Methods of repair shall be proposed by the Contractor and submitted to the City's Engineer for approval. If City or City's Engineer deems repairable, repair defect. If City or City's Engineer deems it to be not repairable, replace liner or install new service at no additional cost to the City.

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.

**** 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 structures to provide protection against chemical or gas corrosion of the interior of sewer structures. The coating shall yield a hard, durable chemical resistant coating and provide a water and gas tight seal to concrete, ductile iron pipe and other components within existing sanitary sewer collection system infrastructure.

B. DEFINITIONS

In this Technical Specification, the words "coating" (or "coatings") and "lining" (or "linings") are used interchangeably. Similarly, "to coat" is used interchangeably with "to line" (or other variations of these words).

In this Technical Specification, unless otherwise specifically noted, the word "manhole" shall mean "sewer structure" and shall encompass sewer manholes, sewer junction structures, and other sewer structures. 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.

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:

1. Cleaning the manhole, removing corroded/deteriorated materials from the manhole, and otherwise preparing the manhole for one of the approved coating systems.
2. Applying one of the approved coating systems, as specified herein.
3. Testing the finished surface coating, as required herein.
4. Other related activities, as noted herein.

Where required by the approved Design Drawings, 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 within the manhole, bench-to-pipe transitions, channels, bench, barrel riser, cones, 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.

Reference	Title
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
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
ASTM D4787	Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete 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 Association - Arizona Division of Occupational Safety and Health (ADOSH)

NACE — National Association of Corrosion Engineers Published Standards

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.

C. INSPECTION:

A representative from the coating system manufacturer, authorized to act on behalf of the company regarding technical and commercial issues, shall provide a minimum of 8-hours of on-site observation of surface preparation, mixing, application, and curing of their coating system product. The Manufacturer's Representative shall inspect the prepared surface of the first manhole to be coated prior to placement of the coating system and verify that the surface meets the requirements for the coating material. The Manufacturer's Representative shall provide field inspection of the coating installation, and shall verify in writing that the proper procedures and equipment are being applied per the manufacturer's specifications and application instructions.

All work shall be performed in presence of the City or City's Engineer, unless City has granted prior approval to perform work in their absence. The Contractor shall provide testing as approved by the City. Cost of this inspection and testing shall be the responsibility of the Contractor. Inspection by City or waiver of inspection in any particular portion of work shall not relieve Contractor of responsibility to perform work in accordance with this Technical Specification.

Scaffolding shall be erected and moved by the Contractor to locations to facilitate inspection by the City or City's Engineer. Additional illumination shall be furnished when the City or City's Engineer requests. Contractor shall furnish (until final acceptance of coatings) inspection devices in good working condition for detection of holidays. Contractor shall furnish services of trained operator in holiday detection devices until final acceptance of coatings. Holiday detection devices shall be tested and operated in the presence of the City or City's Engineer. Contractor shall perform holiday test in the presence of the City or City's Engineer on all coated surfaces.

Contractor shall furnish services of trained operator in pull test devices until final acceptance of coatings. Pull test devices shall be tested and operated in the presence of the City's Engineer. Contractor shall perform pull test in the presence of the City's Engineer on all coated surfaces for each layer of material applied.

Contractor shall conduct measurements of wet and dry-film thickness of protective coatings in the presence of the City or City's Engineer. Wet and dry-film thickness gauges shall be available for use by the City or City's Engineer until acceptance of coating process is complete and final acceptance of coatings made.

SUMMARY REPORT: Wet film thickness measurements shall be documented and reported in a Summary Report produced by the Contractor and submitted to the City. 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. City shall have option of requiring Contractor to document number of units (coating materials) on hand before and after coating operations to verify actual minimum dry film thickness applied. All film thicknesses not meeting required minimums will be re-coated per manufacturer's recommendations.

D. INSPECTION MILESTONES

Contractor shall keep City or City's Engineer informed of his progress on each structure. At each manhole, the City or City's Engineer shall observe the work at the completion of each of the milestone listed below before the Contractor shall commence work on the next milestone. Milestones are:

1. Completion of the cleaning and surface preparation activities required by these Technical Specifications.
2. pH testing of concrete surface prior to repair and coating.
3. Completion of all void-filling activities and underlayment application, prior to surface coating application, with the associated adhesion testing of the underlayment layer.
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 summit 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.

E. PRODUCT TESTING

The Contractor shall submit the following test results to the City or City's Engineer:

1. pH Testing: pH levels of the surfaces being rehabilitated shall be tested per ASTM D4262 and adjusted to levels acceptable to product manufacturer recommendations.

2. Adhesion Testing: Adhesion of the coating to the substrate shall be tested per ASTM D4541, and the mode of failure shall be such that the substrate fails before the coating separates from the substrate.

3. Spark 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 to verify cured coating meets the minimum dry mil thickness.

1.03 CERTIFIED APPLICATOR

A. The coating system shall be applied by an Applicator certified by the coatings system manufacturer. A training outline for the certification program shall be submitted to the City or City's Engineer, for review. The Contractor shall provide evidence that the personnel performing the product application received the manufacturer's training for certification.

B. The Contractor shall appoint a representative of the product manufacturer as Quality Assurance Manager who shall take full responsibility for the quality of the work. The Quality Assurance Manager shall be fully certified by the product manufacturer and have a minimum of five (5) years of application experience with the particular coating system.

C. 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 shall be removed from the site.

1.05 WARRANTY

A. A non-prorated written warranty against coating failure shall be provided for the entire coating system, including all repair material, defect fillers, primers, intermediate, and finish coats. The minimum duration of the warranty shall be **five (5) years** following final acceptance of project. The product and the installation are both to be covered by the Contractor's warranty. The Contractor shall be responsible for administration, performance and all costs associated with implementation of the warranty.

B. Inspection shall be conducted during the eleventh/fifty ninth (11/59) months (for 12/60 month warranty items) following completion of all coating work. Contractor and representative of coating manufacturer shall attend inspection. Defective work shall be repaired in accordance with specifications and satisfaction of the City. The City may, by written notice to Contractor, reschedule warranty inspection to another date within the one-year correction period, or may cancel warranty inspection altogether. If warranty inspection is not held, 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, racking, 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 items associated with coating repair includes, but is not limited to, by-pass pumping, traffic control, etc. are the Contractor's responsibility and are to be included in and are incidental to the cost(s) of warranty 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 of Quality Assurance Manager, certification, and previous project references per paragraph 1.03.

2. Applicator qualifications and Certification per paragraph 1.03.

3. Schedule identifying sequence and approximate dates Contractor will be working on each structure. When Contractor is prepared to start work at a structure he shall inform the City, or City's Engineer, of his schedule of inspection points for that structure.

4. Current Arizona Contractor's AE license or equivalent (specifically for the rehabilitation of concrete manholes). If the manhole(s) to be rehabilitated is (are) brick, then the AE license or equivalent shall state for the rehabilitation of concrete and brick manholes.

5. Certification of applicator.

6. For the filler, primer and finish coating, the Contractor shall furnish a Material Safety Data Sheet (MSDS).

7. 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.
   b. Primer type, where required.
   c. Maximum mil thickness per coat.
   d. Mixing and proportioning requirements (as applicable).
   e. Minimum and maximum curing time between coats, including atmospheric conditions for each.
   f. Curing time before submergence in liquid.
   g. Thinners (if allowed) that are acceptable with coating material.
   h. Environmental requirements for application and worker safety, including ventilation, humidity, and temperature ranges.
   i. Allowable application methods.
   j. Maximum allowable surface moisture content.
   k. Maximum storage life.

l. Sample of finished product showing final color.

8. List of materials proposed to be used under this section and manufacturer's technical literature and data for each material.

9. A letter or manufacturer's technical literature and product data identifying the procedures recommended for repair of defect of each proposed material.

10. Testing Summary Report per paragraph 1.02 C.

11. Written warranty per paragraph 1.05.

12. Contractor shall provide procedures and products proposed for use to repair deteriorated steel reinforcement bars.

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 City or City's Engineer, prior to surface preparation.

2. Epoxy based coatings shall be applied within two months of their date of manufacture (unless the manufacturer's requirements are more stringent), or otherwise approved in writing by the City or City's Engineer.

3. Thicknesses specified herein is the minimum dry film thickness required and do not include the primer thickness, unless otherwise noted. Provide greater thickness where recommended by the 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 COATING PRODUCTS

A. APPROVED CORROSION PROTECTIVE COATING SYSTEMS FOR MANHOLES:

1. The protective coating to be used to rehabilitate structures shall be:

- **Sewer Shield 100** (trowelable) topcoat with C120 calcium aluminate cement underlayment as manufactured by Environmental Coatings, Mesa, AZ. The underlayment shall be used to repair and re-profile 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 3.15 herein 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 re-profile 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 3.15 prior to application.

- **Sauereisen Sewergard Lining No. 210** (trowelable) 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 3.15 prior to application.

- Or approved equal.

2. The coating shall be light in color as approved by the City.

B. PRIMER:

Primer shall be as recommended by the manufacturer for each application.

C. DEFECT FILLER:

Defect filler shall be as recommended by the manufacturer for each application.

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. Contractor shall be responsible to verify that the corrosion inhibitor product is compatible with proposed coating system materials.

2.04 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.

2.05 BENCH REPAIR

Acid-resistant non-shrink grout mortar shall be used for bench restoration. The grout mortar shall be applied to a depth of at least ¾-inches on the bench. The finish surface shall be hand-troweled smooth to finish the bench and channel.

2.06 UNDERLAYMENT FOR STRUCTURE WALL REPAIR

Underlayment for manhole wall repair shall be provided when required for manhole walls and re-profiling, or as recommended by underlayment and coating manufacturers.

PART 3 - EXECUTION

3.01 HAZARDOUS LOCATIONS:

The City or City's Engineer may need to enter the manhole under the Contractor's safety program to perform observations and/or testing. The Contractor shall provide the necessary safety equipment, monitoring and safe working atmosphere to allow the Inspector to safely enter the manhole, at no additional cost to the City.

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 City. The City or City's Engineer shall not be responsible for safety or for safety monitoring of the job site.

3.02 SEWAGE FLOW AND DIVERSION

Provide means, labor, and equipment to divert flow from pipes entering the manhole as necessary to prevent sewage flow from contacting surfaces to be coated per Technical Specification Section 02145 – Diversion of Sewage Flow and Dewatering.

3.03 MANHOLE PREPARATION AND CLEANING

Surfaces preparation shall be in accordance with manufacturer's recommendations or the specific requirement of the coating specification sheet (COATSPEC). Contractor shall inspect all surfaces specified to receive a coating system prior to surface preparation. Contractor shall notify City or City's Engineer, 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, walls, and bench shall be cleaned prior to rehabilitation using both abrasive blasting and 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 methods to prevent debris from entering sewers.

3.04 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.

B. The Contractor shall use the repair and fill material recommended by the coating manufacturer and approved by the City or City's Engineer, 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 undamaged concrete or brick.

C. Concrete with honeycombing which exposes the reinforcing steel or with defects that affect the structural strength shall be repaired. The exposed reinforcing steel shall be mechanically cleaned and coated in accordance with Technical Specification Section 02760 – Sewer and Sewer Structure Cleaning, Paragraph 3.05. The proposed repair method shall be approved by the City or City's Engineer.

D. Extend all existing control and expansion joint through any patch or repair area.

3.05 STRUCTURAL REINFORCING REPAIR

Structural repairs shall include splicing new reinforcing steel to existing reinforcing steel and providing additional reinforcing steel as directed or identified in the work plan or job order. 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 section area loss of reinforcing steel.
3. Contractor shall bring to the attention of the City or City's Engineer the areas where reinforcing steel cross section area loss exceeds 15% of the original reinforcing steel and then perform structural repair.
4. Abrasive blast all exposed reinforcing steel surfaces to remove all contaminants and corrosion products.
5. Apply a 20 mil (wet) coat of corrosion inhibitor to all surfaces of the clean, exposed reinforcing steel with stiff brush or spray equipment. Cure to tack free 2 to 3 hours.
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 REPAIR MANHOLE BENCH AND CHANNEL

The Contractor shall repair manhole bench and channel with acid-resistant mortar. As a minimum, Contractor shall raise manhole bench to the same elevation as the crown of the pipe. Manhole bench shall be sloped a minimum ½-inch per foot to channel. Minimum mortar thickness shall be ¾-inch.

3.08 CHIMNEY REPAIR

Brick chimneys shall he repaired through re-pointing or replacement as necessary to ensure structural integrity.

3.09 PREPARATION

A. GENERAL:

Surfaces to be coated shall be clean and dry according to Technical Specification Section 02760 – Sewer and Sewer Structure Cleaning.

The Contractor shall grit blast the piping within the structure to white metal prior to applying the coating.

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).

3.10 COATINGS

A. GENERAL:

Coating products shall not be used until the City or City's Engineer has inspected the materials and the coating manufacturer's Technical Representative has instructed and trained the Contractor and City or City's Engineer in the proper surface preparation and recommended mixing and application procedures 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.

C. COATING REQUIREMENTS:

The approved surface coating shall be mixed in a clean, dry mixing container. Compounds that have begun to set shall not recovered by adding additional liquids and 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.

3.11 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 cosmetic trowel marks and other surface irregularities shall be removed by using a short nap mohair paint roller. The short nap mohair shall be damped 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 of the dew point, the surfaces shall be heated to prevent moisture condensation thereon. During coating, and for a period of at least 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 Fahrenheit and 10 degrees Fahrenheit above the dew point. When applied, coating shall be approximately the same temperature as that of the surface on which it is applied. Fans or heaters shall be used inside enclosed areas where conditions causing condensation are present.

Structures shall be continuously ventilated to prevent condensation. Contractor shall be responsible for providing, installing, maintaining and removal of all safety apparatus safeguarding open structure being ventilated.

C. 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. The Contractor shall not allow flowing water, chemicals or other liquids on the approved, applied coating for a minimum of 4 hours after installation.

D. THICKNESS AND CONTINUITY:

Coating system thickness is the total thickness of 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 Specifications.

In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the City or City's Engineer 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.

E. SAFETY AND VENTILATION REQUIREMENTS:

Requirements for safety and ventilation shall be in accordance with manufacturer's recommendations.

3.12 ADHESION / BOND TEST

A. The Contractor shall perform an adhesion test in accordance with ASTM D7234 after proper cure to demonstrate that the specified field coatings adhere to the substrate. The surface material being tested for adhesion shall be scored down to substrate material prior to test being performed. Where unacceptable test results are obtained, the Contractor shall be responsible for removing and reapplying the specified coatings at no expense to the City.

Where unacceptable test results are obtained, the Contractor shall be responsible for removing and reapplying the specified coatings at no additional expense to the City.

B. FREQUENCY OF TESTING

1. Adhesion testing shall be performed at two different stages of the work:

a. Adhesion of the underlayment layer to the underlying substrate shall be tested before the surface coating layer(s) are applied;

b. 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. Contractor shall perform adhesion tests on 25% of the manholes coated, or at least one manhole if 25% of the manholes coated is equal to less than one.

2. The adhesion/bond testing is in addition to the spark testing discussed elsewhere in these Technical Specifications:

   a. 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.

   b. Specific test locations within each manhole shall be selected by the City or City's Engineer. The City or City's Engineer shall be present to observe all adhesion testing.

   c. 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".

   d. Adhesion testing of the underlayment layer shall conform to the following: 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. 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.

   e. Adhesion testing of the finished coating system shall conform to the following: 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.

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, one dolly for each adhesion test, not re-usable) and adhesive for the dollies to perform all of the required tests. The Contractor shall also provide the equipment and tools to core drill around the test location, as discussed later in this section. The contractor shall provide proof that the adhesion tester has been calibrated within the last six (6) months.

D. ADHESION TEST PROCEDURES:

Adhesion testing shall be conducted after the coating system has cured per manufacturer instruction and in accordance with ASTM D4541 (for metal) or ASTM D-7234 (for concrete). Adhesion shall be completed per ASTM or as described as follows:

1. The Contractor shall first glue the test dolly to the surface of the manhole at the test location selected by the City or City's Engineer. 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 core drill 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.

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, sustained (for 30 seconds minimum) test 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 City.

   The test can be discontinued if the testing pressure reaches a sustained (for 30 seconds minimum) at 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 but only when the sustained, 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 City or City's Engineer 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 City or City's Engineer. 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 City.

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 City. 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.

3.13 HIGH VOLTAGE SPARK TEST

A. 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 RPO188-99 or ASTM D5162).

In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the City or City's Engineer 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 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 D-4787. 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 City may require the Contractor to drill a hole through the coating system into the underlying concrete substrate and to demonstrate to the City or City's Engineer 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 City or City's Engineer discretion, one such quality control test may be required for each manhole. Unless otherwise determined by the City or City's Engineer, 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 City. 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 City or City's Engineer 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.

3.14 SURFACE pH TEST

The Contractor shall wash the interior surface of the manhole to neutralize the acidity of the substrate surface and subsequent protective coatings are being applied. Litmus paper shall be applied to the surface to test that the pH substrate is within the coating manufacturer recommendations. This test will be considered obligatory.

3.15 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 grit blasting and high pressure water 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.

3.16 REPAIRS OF COATING SYSTEMS

All pinholes, uncured coating, blisters, surface imperfections and damage to the coating resulting from testing 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 City or City's Engineer.

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 150 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.

3.17 INSPECTIONS

A. The Contractor shall notify City or City's Engineer, of impending completion of surface repairs, re-profiling, and prior to application of epoxy coating,

B. The notifications shall be given a minimum 72-hours in advance of completion of the surface repairs and re-profiling, and 72-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 City or City's Engineer.

3.18 CLEANUP

Upon completion of coating, the Contractor shall remove surplus materials, protective coverings, and accumulated rubbish, and thoroughly clean all surfaces and repair any other coating-related damage.

3.19 COATING SYSTEM SPECIFICATION SHEETS (COATSPEC – Alternate 1)

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

Coating System Identification:	Sewer Shield 100 (Trowelable)
Surface:	Concrete/Masonry
Surface Preparation:	Abrasive Blasting and Hydro Blasting
Concrete:	Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by grit abrasive and high pressure water hydro- blasting. Voids and cracks shall be repaired as specified in Section 09710, paragraph 3.04 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 compatible water stop, waterproofing, or urethane grout.
Existing Epoxy Coating:	Except as otherwise specified, existing epoxy coating shall be removed from surfaces by abrasive and hydro blasting and chipping if required.
Underlayment:	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 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:	Underlayment shall dry a minimum of 5 hours at 70 degrees Fahrenheit 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.

Coating shall be applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Total System Thickness:	125 mils dry thickness.
Coatings:	Coats at manufacturer's recommended dry thickness per coat to the specified total system thickness.
Color:	Beige

3.19 COATING SYSTEM SPECIFICATION SHEETS (COATSPEC – Alternate 2)

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

Coating System Identification:	Raven 405 (Trowelable)
Surface:	Concrete/Masonry
Surface Preparation:	Abrasive blasting or hydro-blasting
Concrete:	Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, laitance oils, grease, dust, chemical contaminants and any previously applied coatings shall be removed from surfaces by abrasive blasting or hydro blasting. Voids and cracks shall be repaired as specified in Section 09710, paragraph 3.04 and as indicated by the underlayment paragraph. After blasting, concrete should be detergent washed to remove all oil, grease and other contaminants. All active hydrostatic leaks must be stopped by use of an appropriate compatible water stop, waterproofing, or urethane grout, as recommended by the manufacturer.
Existing Epoxy Coating:	Except as otherwise specified, existing epoxy coating shall be removed from surfaces by abrasive and hydro blasting and chipping if required.
Underlayment:	Holes and undulations in the concrete surfaces found or created during the cleaning process shall be filled with C-120 calcium aluminate cement (as manufactured by Raven Lining Systems, Tulsa, Oklahoma) or approved equal to restore structural integrity. Sufficient material shall be used to build the concrete surface back to original dimensions prior to protective coating or lining installation. Underlayment shall be used to fill holes and any other defects (if applicable) and applied as recommended by the manufacturer. Loose or splattered underlayment shall be removed by scraping and chipping.
Application:	Underlayment shall dry a minimum of 5 hours at 70 degrees Fahrenheit prior to the application. 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.

Total System Thickness:	125 mils dry thickness.
Coatings:	Coats at manufacturer's recommended dry thickness per coat to the specified total system thickness.
Color:	Light Blue

3.19 COATING SUSTEM SPECIFICATION SHEETS (COATSPEC – Alternate 3)

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

Coating System Identification:	Sauereisen SewerGard No. 210 (Trowelable)
Surface:	Concrete/Masonry
Surface Preparation:	Abrasive blasting or hydro-blasting
Concrete:	Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, laitance oils, grease, dust, chemical contaminants and any previously applied coatings shall be removed from surfaces by abrasive blasting or hydro-blasting. Voids and cracks shall be repaired as specified in Section 09710, paragraph 3.04 and as indicated by the underlayment paragraph. After blasting, concrete should be detergent washed to remove all oil, grease and other contaminants. All active hydrostatic leaks must be stopped by use of an appropriate Sauereisen compatible water stop, waterproofing, or urethane grout, as recommended by the manufacturer.
Existing Epoxy Coating:	Except as otherwise specified, existing epoxy coating shall be removed from surfaces by abrasive and hydro blasting and chipping if required.
Underlayment:	Sauereisen RestoKrete substrate resurfacer No. F-120 shall be used to fill holes and undulations in the concrete surfaces 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 Sauereisen RestoKrete substrate Resurfacer No. F-120. If the defects are larger than 2 inches deep, a high early cement fill shall be used. Loose or splattered underlayment shall be removed by scraping and chipping. Sauereisen RestoKrete substrate Resurfacer No. F-120 shall be applied according to manufacturer's recommendations.

Application:	Underlayment shall dry a minimum of 5 hours at 70 degrees Fahrenheit prior to the application of Sauereisen SewerGard No. 210. 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.
Total System Thickness:	125 mils dry thickness.
Coatings:	Coats at manufacturer's recommended dry thickness per coat to the specified total system thickness.
Color:	Ivory White

****END OF SECTION****

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