CITY OF Tulsa
A New Kind of Energy

FAX TRANSMITTAL

Date: November 30, 2016

To: Plan Holders

Company: Contractors

Number of Pages: 12 (Including Cover)

From:

RE: Project No.

TMUA ES 2014-01
CONCRETE PIPE REPLACEMENT PROGRAM

ADDENDUM NO. 1

Please fax or email a signed cover sheet to 918 699-3640 or KristaSmith@cityoftulsa.org as acknowledgement of receipt.

Thank you,

Krista Smith

Signature	Company	Date

TULSA METROPOLITAN UTILITY AUTHORITY

2317 SOUTH JACKSON TULSA, OKLAHOMA 74107

November 29, 2016

ADDENDUM NO. 1
TO
PROJECT NO. TMUA ES 2014-01
CONCRETE PIPE REPLACEMENT PROGRAM

This Addendum No. 1 consisting of **ten** (10) items, submitted by Tetra Tech, is hereby made a part of the Contract Documents to the same extent as though it were originally included therein, and shall supersede anything contained in the Plans and Specifications with which it might conflict. **This Addendum shall be attached to the Index Sheet of the Contract Documents and submitted with bid. Failure to do so shall result in the bid being deemed non-responsive.**

All other provisions of the Plans and Specifications shall remain in full force and effect.

CITY OF TULSA

Paul D. Zachary, P.E.
for City Engineer

HAS/AJ/PEB/peb

TETRA TECH

November 28, 2016

ADDENDUM NO. 1
TO
PROJECT NO. TMUA ES 2014 - 01
CONCRETE PIPE REPLACEMENT PROGRAM

This Addendum No. 1, consisting of TEN (10) items, is hereby made a part of the Contract Documents to the same extent as though it were originally included therein, and shall supersede anything contained in the Plans and Specifications with which it might conflict. **This Addendum shall be attached to the Index Sheet of the Contract Documents and submitted with the bid. Failure to do so shall result in the bid being deemed non-responsive.**

SPECIFICATIONS

1. Delete Specification Section 410.12.3 INTERNAL RECONNECTION and replace with the Engineer provided Specification 410.12.3 CIPP LATERAL LINING

CONSTRUCTION PLANS

1. On Plan Sheet 2 of 24, estimated construction quantities have been updated in red to show all plan changes. Pay item notes have also been updated in red. Items added to the estimated quantities include cured-in-place pipe (CIPP), flowable fill, and obstruction removal. Pay item note No. 16 has been added for when the use of flowable fill will be permitted and a maximum permissible quantity per-foot-of-excavated-depth has been added to the pay item note. Pay item note No. 2 has been modified by adding information related to surface restoration when the method of rehabilitation is not open cut and should be reviewed. Also added to the pay item notes is a clarification of the city specifications concerning post-rehabilitation CCTV. A pay item note has been added stating that Fernco Couplings for service connections will not be allowed.

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Tel 918.249.3909 Fax 918.249.3930 www.tetratech.com

2. On Plan Sheet 3 of 24, a note has been added which supersedes vacuum testing of manholes found in the city's specifications. Vacuum testing will only be mandatory when a new manhole has been installed or a full interior wall coating (Type Gg) is completed.

3. On Plan Sheet 10 of 24, line segments set for rehabilitation on atlas sheet 34 may have a method of rehabilitation deemed mandatory. Manholes with topside repairs that are within the existing street construction limits are highlighted in red and have been removed from the project.

4. On Plan Sheet 11 of 24, estimated construction quantities for line rehabilitation associated with atlas sheet 34 have been updated in red.

5. On Plan Sheet 13 and 14 of 24, estimated construction quantities for manhole rehabilitation associated with atlas sheet 34 have been updated in red.

6. On Plan Sheet 16 through 19 of 24, site layout sketches have been updated with a mandatory rehabilitation method for some rehabilitations taking place on atlas page 34.

7. On Plan Sheet 20 of 24, one (1) manhole topside repair has been removed from the project due to street improvement completion. The interior rehabilitation shall remain.

8. On Plan Sheet 22 of 24, estimated construction quantities for manhole rehabilitation associated with atlas sheet 61 have been updated in red.

9. Plan Sheets 25 and 26 have been added to highlight where streets within the project extents have been restored and must not be harmed during construction.

All other provisions of the Plans and Specifications shall remain in full force and effect.

REGISTERED PROFESSIONAL ENGINEER
RYAN L. MITTASCH
11/28/16
21102
OKLAHOMA

BY: _____ DATE/SEAL: _____

Ryan L. Mittasch, P.E.

PART 1 - GENERAL

1.1 GENERAL

A. It is the intent of this portion of this specification to provide the minimum requirements for the rehabilitation of service lateral connections (SLC) and their watertight connection to the main-line Cured-In-Place-Pipe (CIPP) when CIPP main-line installations are performed. These internal service connections are to be reinstated without excavation when main-line rehabilitation was completed with CIPP.

B. The rehabilitation of the lateral connection and a portion of the lateral pipeline are to be accomplished by installation of a resin-impregnated, flexible insert and sealing epoxy element in the form of a tube or top hat that will be installed into the service lateral.

C. The SLC will extend a distance of at least 36" (3 feet) into the service lateral and shall provide a continuous and tight-fitting seal to eliminate any ground water from entering and will mitigate any future root growth.

D. The price bid for service reconnection shall include all costs for furnishing and installing, complete and in-place, the system described in this specification. Prices bid for service connection shall be paid per SLC installed.

E. The Contractor shall provide to the Engineer all required product information for approval prior to issuance of the Notice to Proceed by the AUTHORITY.

F. The Contractor shall provide a physical demonstration, in the presence of the Engineer, to show the assurance of a watertight seal at all service connections.

G. The installation shall be free of defects that will affect the design, service life and operation of the lateral and applicable portion of the main-line.

H. The system shall provide deterrents to corrosion and typical chemicals found in domestic sewerage. The manufacturer shall provide testing data that supports the chemical resistance in accordance with ASTM F1216.

I. All materials furnished as part of this contract shall be stored in a manner specified by the manufacturer.

J. Flow entering the main-line or lateral shall be bypassed, if necessary, for the installation of the system.

1.2 SUMMARY

A. It is the intent of this portion of the specifications to provide the reconstruction of a service lateral and connection in 8" through 24" main-line pipes, without excavation, by the installation of a one-piece resin impregnated, flexible, tube installed into the existing lateral connection utilizing a pressure apparatus positioned in the main-line. Curing shall be accomplished by an

ambient cure resin or other approved method to cure resin into hard and impermeable CIPP liner. Once cured, the liner shall provide a watertight sealed connection at the main-line pipe.

1.3 DEFINITIONS

A. SLC: Service lateral Connection.

B. CIPP: Cured-In-Place-Pipe.

C. CCTV: Closed Circuit Televising

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:
   1. CIPP SLC: Include diagram of how the service lateral liner will be installed.

1.5 INFORMATIONAL SUBMITTALS

A. Product data for the CIPP Product.

B. Resin
   1. Long-term creep data confirming the resin system's 50-year design life in accordance with ASTM D2990
   2. Chemical Resistance per ASTM F1743.
   3. Certificate of Compliance with ASTM F1216.

C. Tube
   1. Certificate of Compliance with ASTM F1216
   2. If glass fiber reinforcement is used, CIPP strain corrosion data in accordance with ASTM D3681

D. CIPP wall thickness design calculation for lateral liner in accordance with ASTM F1216.

E. Contractor Qualifications/ References
   1. The contractor shall provide a list of references including owner name, contact name with phone number, contract name, start and completion dates and quantities of lateral lined. Each project shall include the name of the Contractor's Site Superintendent that completed the work. Contractor's references shall include a minimum of the following:
      a. A five (5) year history with satisfactory performance in the CIPP industry.
      b. A minimum of 5,000 CIPP laterals in a wastewater system application.
      c. License and Certification the proposed installer is approved and qualified to install the proposed product.

F. Product Qualifications/ References
   1. The CIPP lateral lining system proposed for this contract must meet the following minimum requirements:
      a. A five (5) year history in sanitary sewer collections system use.

b. 10,000 CIPP lateral installations in the United States.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle CIPP product according to manufacturer's written instructions.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Sewer Service: Do not interrupt service to facilities unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify ENGINEER and AUTHORITY no fewer than two (2) days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without AUTHORITY'S written permission.

PART 2 - PRODUCTS

2.1 GENERAL

A. Tube and Resin will meet the requirements of ASTM F1216, F1743 and D5813.

B. When cured the system shall seal the connection to the main-line in a continuous tight-fitting, watertight seal to eliminate the possibility of any leakage or any root intrusion.

2.2 CIPP LATERAL MATERIALS

A. The liner shall be fabricated to a size that when installed will neatly fit the internal circumference of the conduit. Allowance shall be made for circumferential stretching during insertion. The liner shall be a one piece joint-less polyester felt, fiberglass, or composite tube that will create a watertight seal at the main-line interface.

B. The minimum length of the SLC shall be 36 inches (3 feet). Lateral lining will be accomplished without a cleanout when possible. In the event a cleanout is required to complete the lining of the lateral, the Contractor is responsible for including the costs associated with the installation of the cleanout in the bid price for service reconnection. When required, an overlap method is performed with a pull-in-process installation from a cleanout or access point back to the main-line. In either case, the lateral liner must provide a watertight seal at the main-line and a structural repair of the lateral over the specified length.

C. The fabric tube should be capable of absorbing and carrying resins, conducted to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments, and stretch into irregular pipe sections.

D. The fabric tube shall have uniform thickness.

E. The outside and/or inside of the fabric tube shall be coated with an impermeable flexible membrane that will contain the resin and facilitate vacuum impregnation and monitoring of the resin saturation during the wet-out procedure.

F. The outside of the fabric tube shall be marked with the manufacturer's name of the lateral lining system and production footage, as applicable. The print must be visible during final CCTV inspection

G. The lateral CIPP shall be designed assuming the following minimum design data:
   1. Factor of Safety = 2
   2. Soil Modulus = 1,000 psi
   3. Soil Density = 120pcf

H. The CIPP material shall, at a minimum, meet or exceed the structural properties defined below:
   1. Flexural modulus of elasticity = 250,000 psi
   2. Flexural Strength = 4,500 psi

I. No CIPP material will be approved for installation that requires bonding to existing pipe material to develop its structural strength.

J. The resin to tube ratio, by volume, shall be furnished as recommended by the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

A. Lateral seals are typically installed from the lined main-line with a lateral CIPP portion that extends up the lateral a distance of 36 inches.

3.2 PREPARATION

A. Preparation, cleaning, inspection, sewage by-passing and public notification are the responsibility of the Contractor, with the assistance of the Authority. The Contractor shall clean the interior of the existing host pipe prior to installation of the system. All debris and obstructions, that will affect the installation and the final product shall be removed and disposed of. All preparation shall be in accordance with the manufacturer's written installation procedures.

B. The system shall be constructed of materials and methods, that when installed, shall provide a joint-less and continuous structurally sound CIPP able to withstand all imposed static and dynamic loads on a long-term basis, as specified by the AUTHORITY.

C. The Contractor may, under the direction of the AUTHORITY, utilize any of the existing manholes in the project area as installation access points or excavate access points at predetermined locations.

D. Pre-Cleaning CCTV – The Contractor shall request utility locating (as required by the AUTHORITY or local Government) to identify potential cross-bore utilities within the proximity of the service lateral to be cleaned for rehabilitation, if applicable. Prior to cleaning, the Contractor shall to all extents possible, televise the service lateral to confirm that cleaning the lateral will not damage or breach a conflicting utility bored through the sewer lateral (such as natural gas or power) when the utility locate indicates a potential conflict.

E. Cleaning of Pipe Lines - The Contractor shall remove all internal debris from the pipe line that will interfere with the installation and the final product delivery of the system as required in these specifications. The Contractor shall make use of commercially available industry standard cleaning equipment to prepare the pipe for system installation. Solid debris and deposits shall be removed from the pipeline, if possible, and disposed of properly by the Contractor. Precaution shall be taken, by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. If the pipe cannot be cleaned sufficiently using industry standard cleaning equipment then additional cleaning will be considered changed conditions.

F. Post-Cleaning CCTV – Upon completion of the cleaning, the Contractor shall then perform a Post-Cleaning CCTV Inspection, which typically acts as the Pre-rehabilitation CCTV Inspection. Only PACP certified personnel trained in locating breaks, obstacles and service connections by closed circuit television shall perform the inspection. The Contractor shall provide the AUTHORITY a copy of the pre-cleaning and post-cleaning video and suitable log, and/or in digital format for review prior to installation of the CIPP and for later reference by the AUTHORITY.

G. Existing Sewage Flows – The Contractor shall provide flow diversion or stoppage requirements to the AUTHORITY to assist in developing plan including notifying upstream users to temporary stop using their water/wastewater during the system installation.

H. Bypass Existing Sewage Flows - When circumstances require continuous service, for the flow of the service connection (such as medical facilities or laboratories), the Contractor will install a temporary sewage by-pass system, if required by the AUTHORITY. Once the rehabilitation process has begun, existing sewage flows shall be maintained, until the system is fully installed. The Contractor shall coordinate sewer bypass and flow interruptions with the AUTHORITY at least 7 days in advance and with the property owners and businesses at least 2 business day in advance. The pump and bypass lines shall be of adequate capacity and size to handle typical flows.

I. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions that will interfere with the installation and long-term performance of the system. If pre-installation inspection reveals an obstruction, misalignment, broken or collapsed section or sag that was not identified as part of the original scope of work and will prohibit proper installation of the system, the Contractor may be directed by the AUTHORITY to correct the problem(s) prior to installing the system by utilizing open cut repair methods. This work will be considered changed conditions, or if there is an existing bid item for this work, the Contractor shall be compensated under the particular pay item designated for open cut point repairs.

J. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing and curing the CIPP. If required in the contract documents, each connection will be dye tested to determine whether or not the connection is live or abandoned. The cost for dye testing of existing service connections shall be compensated at the unit price bid. In the event the status of a service connection cannot be adequately defined, the

AUTHORITY will make the final decision, prior to installation and curing of the liner, as to the status. Typically only service connections deemed "active" shall be reopened by the Contractor. Reinstatement in small diameter pipes typically requires a clean out for external reinstatement.

3.3 INSTALL

A. The entire liner shall be wet-out using vacuum impregnation including the lateral and mainline portions.

B. The system shall be loaded inside and/or on a pressure apparatus. The pressure apparatus, attached to a robotic device, shall be positioned in the mainline pipe at the service connection. The robotic device, together with a CCTV camera, shall be used to align the lateral portion of the system with the service connection opening. Air pressure, supplied to the pressure apparatus through an air hose, shall be used to invert or expand the resin impregnated CIPP into the lateral pipe, and push the main-line portion of the system against the main-line pipe (typically lined pipe). The pressure shall be adjusted to the manufacturer's recommended installation pressure to fully install the CIPP into the lateral pipe and hold the system tight to the pipe walls. Care shall be taken during the curing process not to over-stress the tube.

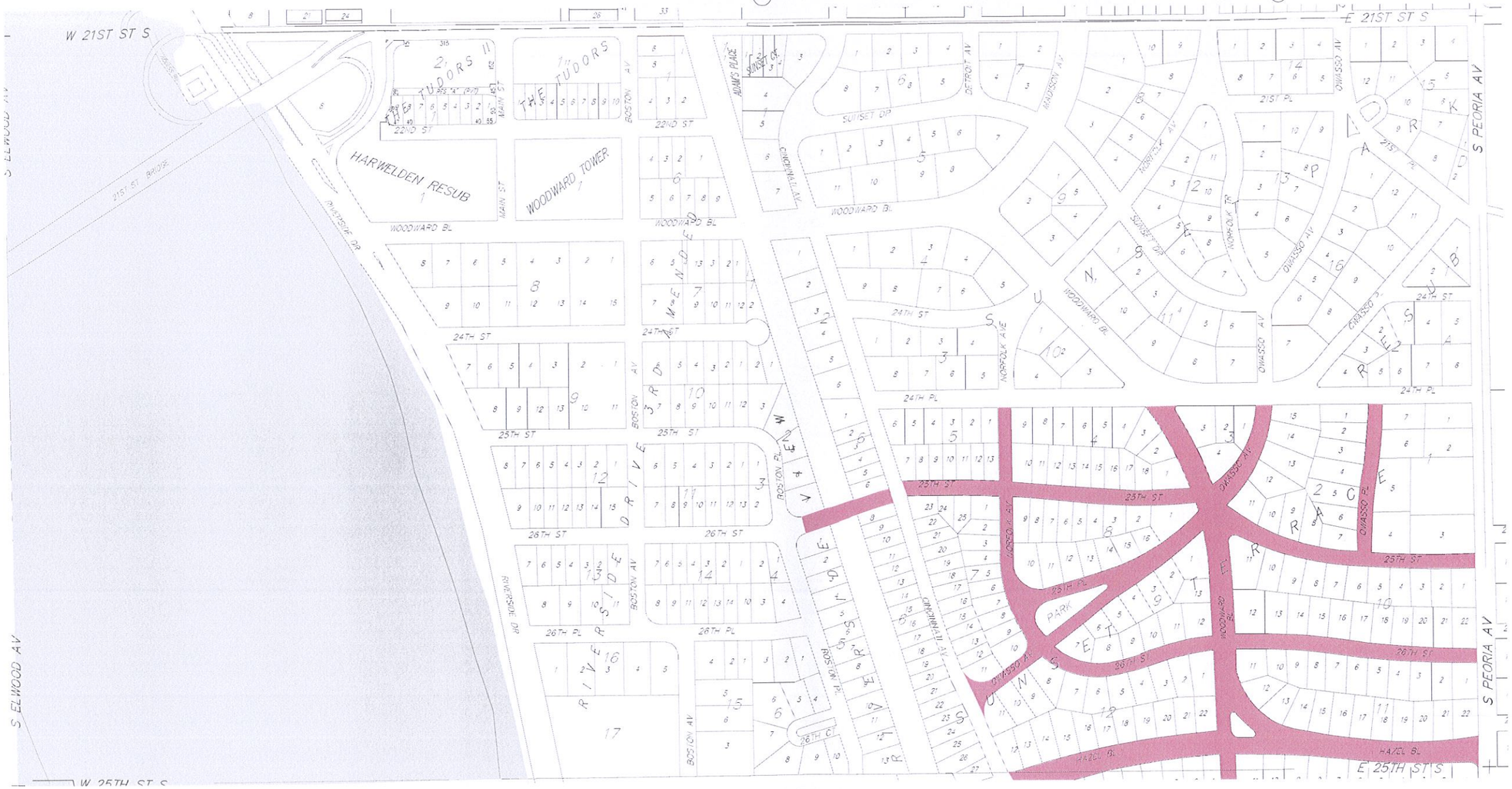
C. After lateral CIPP installation is completed, manufacturer's recommended pressure shall be maintained on the impregnated CIPP for the duration of the curing process. Curing method shall be compatible with the resin selected and shall be in accordance with manufacturer's recommendations. The initial cure shall be deemed to be complete when the CIPP has been exposed to the UV light, heat source or held in place for the time period specified by the manufacturer.

END OF SECTION 410.12.3

SEE ATLAS 15

SEE SHEET 5 (ATLAS 15)

SEE ATLAS 35



SEE ATLAS 33

SEE ATLAS 61

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LEGEND

COMPLETED STREET REHABILITATION AS OF NOVEMBER 18 2016.
NO SURFACE CONSTRUCTION ALLOWED IN THIS AREA.

REGISTERED PROFESSIONAL ENGINEER
RYAN L. MITTASCH
21102
OKLAHOMA

OKIE811 Know what's below. Call before you dig.

ATLAS 34 - STREET REHABILITATION

TMUA PROJECT NO. ES 2014-01

CONCRETE PIPE REPLACEMENT PROGRAM
CONTRACT 1

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:

TETRA TECH
7645 E. 63rd Street, Suite 301, Tulsa, OK 74133
TEL 918.249.3909 FAX 918.249.3930

REVISION	BY	DATE

PLAN SCALE	DRAWN	TT	APPROVED
	DESIGNED	TT	
	SURVEY	TT	
PROFILE SCALE HORIZONTAL	PROJ. MGR.		
	LEAD ENGR.		
	FIELD MGR.		
VERTICAL	RECOMMENDED		
	DESIGN MANAGER		CITY ENGINEER
FILE	DRAWING		DATE
ATLAS PAGE NO.	034		SHEET 25 OF 24 SHEETS

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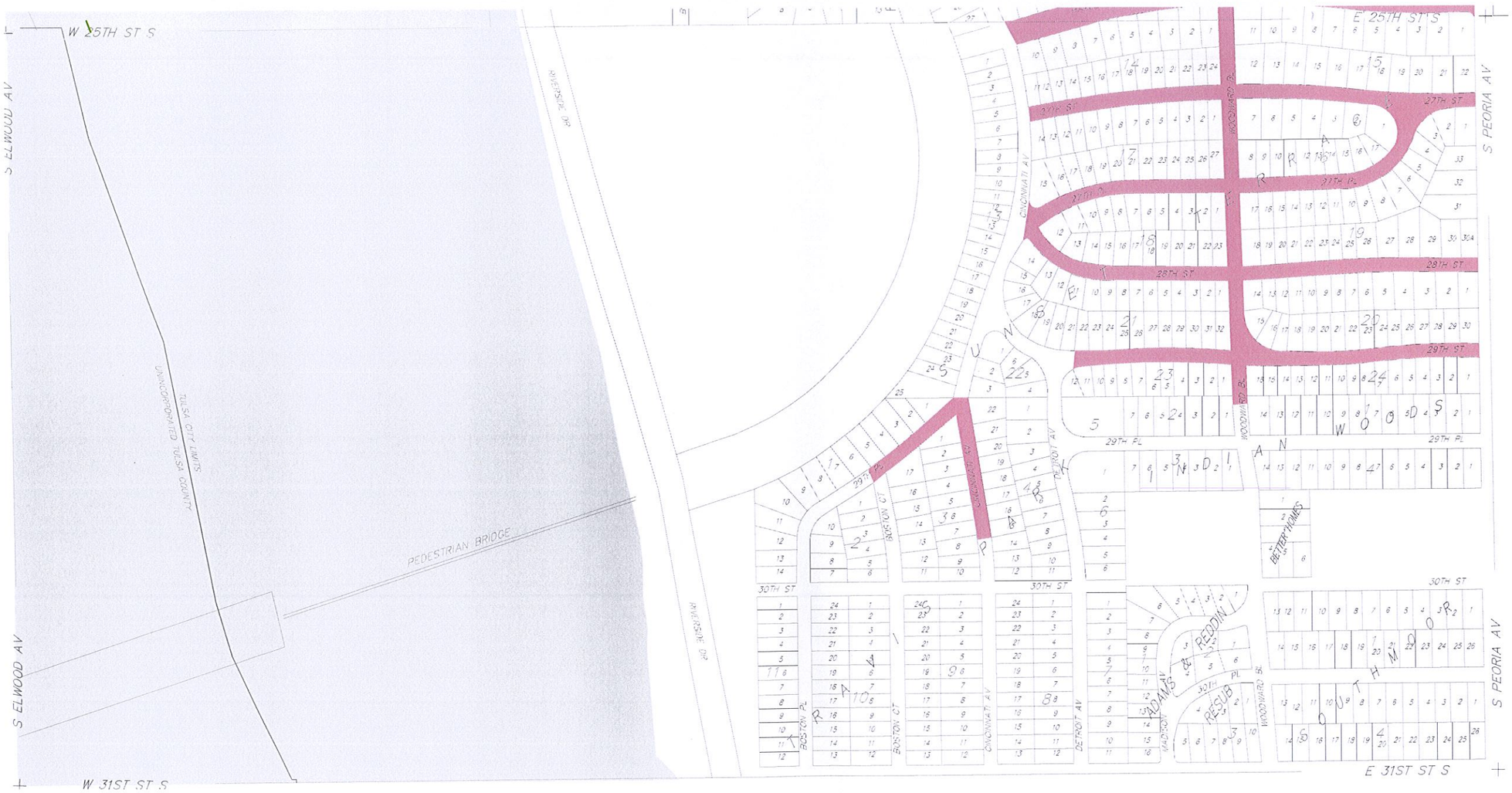
SEE ATLAS 34

SEE ATLAS 62

SEE ATLAS 60



SEE ATLAS 96

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LEGEND

COMPLETED STREET REHABILITATION AS OF NOVEMBER 18 2016.
NO SURFACE CONSTRUCTION ALLOWED IN THIS AREA.

REGISTERED PROFESSIONAL ENGINEER
RYAN L. MITTASCH
21102
OKLAHOMA

OKIE 811
Know what's below. Call before you dig.

ATLAS 61 - STREET REHABILITATION

TMUA PROJECT NO. ES 2014-01

CONCRETE PIPE REPLACEMENT PROGRAM
CONTRACT 1

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

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ATLAS PAGE NO.	061		SHEET 26 OF 24 SHEETS

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