



BOARD OF SUPERVISORS AGENDA ITEM REPORT
CONTRACTS / AWARDS / GRANTS

Requested Board Meeting Date: June 7, 2016

or Procurement Director Award

Contractor/Vendor Name (DBA): KE&G Construction, Inc.

Project Title/Description:

Construction Manager At Risk Services Southeast Interceptor Augmentation Project No. 3SEI13.

Purpose:

Amendment of Award: Contract No. CT-WW-15-532, Amendment No. One (1). This amendment increases the award amount from \$520,000.00 to \$16,006,195.41 and incorporates Guaranteed Maximum Price No 1 (GMP-1).

GMP-1 provides for the purchase of long lead time equipment or materials, all construction services and coordination of community relations prior to the commencement of construction and during construction. The Contractor will meet a five percent (5%) Small Business Enterprise (SBE) goal for this GMP.

Administering Department: Regional Wastewater Reclamation.

Procurement Method:

Pursuant to Solicitation For Qualifications No. 160784, the Board of Supervisors awarded a contract for this project on July 7, 2015 in the amount of \$520,000.00 for preconstruction services for a contract term of July 7, 2015 to December 31, 2017. Total costs for this project were not to exceed \$520,000.00 for preconstruction services and not to exceed \$10,400,000.00 for construction services.

Attachments: Amendment No. One (1) with GMP-1 attached as "APPENDIX "C": Construction Manager at Risk (CMAR) Services for Southeast Interceptor Sewer Augmentation Project No. 3SEI13, GMP-1 Construction Proposal Dated April 20, 2016" and Memo to County Administrator.

Program Goals/Predicted Outcomes:

Construction of augmentation infrastructure to accommodate increased flow in the Southeast Interceptor. Specifically, the Pima County Wastewater Reclamation Department (RWRD) is experiencing capacity issues in the Southeast Interceptor (SEI) which conveys flows from Rita Ranch in southeast Tucson to the Agua Nueva Wastewater Reclamation Facility, a distance of approximately 10 miles. This SEI begins as a 27-inch pipe and gradually expands to a 60-inch pipe and, in 2010, the RWRD hydraulic model indicated flows in the SEI from Park Avenue and I-10 to Euclid Avenue and 18th Street at greater than 85% of the pipe's capacity. Subsequent hydraulic modeling indicated surcharging and potential sanitary overflows in the reach along Euclid during a 10-year, 24-hour storm event. RWRD Capital Planning also anticipates the addition of 6.1 million gallons per day in additional flow attributed to growth along the I-10 corridor.

Public Benefit:

The new interceptor will provide the additional capacity needed for the anticipated future growth and as is required to comply with the Department's Capacity Management, Operations and Maintenance (CMOM) Plan and the Arizona Administrative Code R18-9C305.2.05 General Permit Capacity, Management, Operation and Maintenance of a Sewage Collection System (E)(1)(d).

Metrics Available to Measure Performance:

Earned Value Analysis will be utilized to compare ongoing monthly costs with construction progress up to project completion.

Retroactive:

No

10: Cob 5-24-16- (1)
Pgs. 90

Procure Dept 05/23/16 PM0423

Original Information

Document Type: _____ Department Code: _____ Contract Number (i.e., 15-123): _____
Effective Date: _____ Termination Date: _____ Prior Contract Number (Synergen/CMS): _____
 Expense Amount: \$ _____ Revenue Amount: \$ _____
Funding Source(s): _____

Cost to Pima County General Fund: _____

Contract is fully or partially funded with Federal Funds? Yes No Not Applicable to Grant Awards

Were insurance or indemnity clauses modified? Yes No Not Applicable to Grant Awards

Vendor is using a Social Security Number? Yes No Not Applicable to Grant Awards

If Yes, attach the required form per Administrative Procedure 22-73.

Amendment Information

Document Type: CT Department Code: WW Contract Number (i.e., 15-123): 15-532
Amendment No.: One (1) AMS Version No.: Four (4)
Effective Date: June 7, 2016 New Termination Date: _____
 Expense Revenue Increase Decrease Amount This Amendment: \$ 15,486,195.41
Funding Source(s): RWRD Obligations

Cost to Pima County General Fund: \$0.00

Contact: Keith E. Rogers

Department: Procurement

Department Director Signature/Date:

Deputy County Administrator Signature/Date:

County Administrator Signature/Date:

(Required for Board Agenda/Addendum Items)

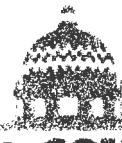
Telephone: 724-3542

5/18/16

5/20/16

5/23/16

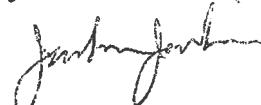
5/23/16


PIMA COUNTY
REGIONAL WASTEWATER RECLAMATION DEPARTMENT
201 NORTH STONE AVENUE
TUCSON, ARIZONA 85701-1207

JACKSON JENKINS
DIRECTOR

PH: (520) 724-6500
FAX: (520) 724-9635

April 20, 2016

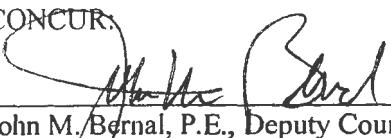
MEMO TO: C. H. Huckelberry, County Administrator
THRU: John M. Bernal, P.E., Deputy County Administrator – Public Works
FROM: Jackson Jenkins, Director – RWRD 
SUBJECT: South East Interceptor (SEI) Augmentation – Project 3SEI13
Guaranteed Maximum Price (GMP) #1

The Regional Wastewater Reclamation Department (RWRD) has completed negotiations with KE&G, Construction Manager at Risk (CMAR) for the SEI augmentation project. RWRD staff and the CMAR Contractor employed a number of cost saving measures that reduced the initial construction GMP from \$19.7M at the 60% stage of design to the current amount of \$15,486,195.41. Cost saving measures included substituting alternate materials, reducing the scope of work where feasible, requesting variances to RWRD standards to reduce the number of manhole and by evaluating all possible sewer alignment options. The construction is scheduled to begin June 2016 with the mobilization of the contractor on site and it is scheduled to be completed September 2017.

The GMP construction costs are \$5M higher than the original planning estimate of \$10.5M. Items identified during the design and CMAR pre-construction effort that were not accounted for during the planning stage include several high pressure gas line and large diameter water line crossings that will require jack and bore casing installations. Waterline relocations were also not identified during the planning estimate development. Other items that have been added to the project include the historical UPRR railroad which must not be disturbed, again requiring a jack and bore installation to cross this feature, site security, additional concrete junction structures, removal and replacement of asphalt pavement, additional traffic control and the on-site monitoring of construction within 25 ft. of Kinder-Morgan gas lines and in sensitive historic areas.

RWRD would like to request your concurrence to proceed with BOS approval of GMP#1 for the SEI Augmentation project in the amount of \$15,486,195.41.

CONCUR:


John M. Bernal, P.E., Deputy County Administrator

5/23/16
Date

APPROVED:


C. H. Huckelberry, Pima County Administrator

5/23/16
Date

cc: John Warner, RWRD Deputy Director – Conveyance 
Jaime Rivera, Program Manager – Conveyance CIP
Glen Peterson, Civil Engineer Manager – Conveyance CIP

**PIMA COUNTY REGIONAL WASTEWATER
RECLAMATION DEPARTMENT**

PROJECT: Construction Manager At Risk Services
for Southeast Interceptor Augmentation
Project No 3SEI13

CONTRACTOR: KE & G Construction, Inc.
5100 S. Alvernon Way
Tucson, AZ 85706

CONTRACT NO.: CT-WW-15-532

AMENDMENT NO.: One (1)

FUNDING: Regional Wastewater Reclamation Department
Obligations

CONTRACT

NO. CT-WW-15-532
AMENDMENT NO. 01

This number must appear on all
invoices, correspondence and
documents pertaining to this
contract.

CONTRACT TERM: 07/07/2015 - 12/31/2017

ORIGINAL CONTRACT AMOUNT: \$ 520,000.00

TERMINATION PRIOR AMENDMENT: NA

PRIOR AMENDMENT(S): \$ -

TERMINATION THIS AMENDMENT: 12/31/2017

AMOUNT THIS AMENDMENT: \$ 15,486,195.41

REVISED CONTRACT AMOUNT: \$ 16,006,195.41

CONSTRUCTION CONTRACT AMENDMENT

WHEREAS, COUNTY and CONTRACTOR have entered into the Contract for the project referenced above; and

WHEREAS, COUNTY and CONTRACTOR, pursuant to Article II, have agreed to incorporate Guaranteed Maximum Price-1 (GMP-1) into the contract for the purchase of long lead equipment, all construction activity and coordination of community relations prior to the commencement of construction and during construction; and,

WHEREAS, COUNTY's acceptance of GMP-1 is subject to the understanding of the Parties that all other elements of future GMPs, if any, are and remain negotiable; and,

WHEREAS, COUNTY and CONTRACTOR pursuant to Article III have agreed to increase the Contract amount as identified in GMP-1.

NOW, THEREFORE, it is agreed as follows:

CHANGE: ARTICLE III – PRECONSTRUCTION PHASE FEE AND GUARANTEED MAXIMUM PRICE

Insert after Paragraph B:

Guaranteed Maximum Price-1 (GMP-1) for the purchase of long lead equipment or materials, all construction activities and coordination of community relations prior to the commencement of construction and during construction as identified in APPENDIX "C" is Fifteen Million Four Hundred Eight-Six Thousand One Hundred Ninety-Five Dollars and Forty-One Cents (\$15,486,195.41). COUNTY reserves the right to negotiate the construction fee, overhead rate, and all other elements of future GMPs, if any.

ADD: AS APPENDIX "C"

APPENDIX "C": Construction Manager at Risk (CMAR) Services for Southeast Interceptor Sewer Augmentation Project No. 3SEI13 GMP-1 Construction Proposal Dated April 20, 2016, including Plan Set "SEI AUGMENTATION SEWER REPLACEMENT PROJECT G-2016-014 (3SEI13), pages 1 – 50, dated February 29, 2016 (76 total pages, attached).

This Amendment shall be effective on June 7, 2016.

All other provisions of the Contract, not specifically changed by this amendment, shall remain in effect and be binding upon the parties.

IN WITNESS WHEREOF, the parties have affixed their signatures to this Amendment on the dates written below.

APPROVED:

Chair, Board of Supervisors

Date

CONTRACTOR:

Signature

Christopher W. Albright, President
Name and Title (Please Print)

5/23/2016

Date

ATTEST:

Clerk of the Board

APPROVED AS TO FORM:
Deputy County Attorney
CHARLES WESSELHOFT

Printed Name

MAY 23 2016

Date

APPENDIX "C":

Construction Manager at Risk (CMAR) Services for Southeast Interceptor Augmentation Project
No. SEI13, GMP-1 Construction Proposal Dated April 20, 2016



5100 S. ALVERNON WAY
TUCSON, ARIZONA 85706
(520) 748-0188
FAX (520) 748 8975

April 20, 2016

Glen Peterson
Pima County Regional Wastewater Reclamation Department
201 N Stone, 3rd Floor
Tucson, AZ 85701

Contract No.: CT-WW-150000000000000000532
Job Name: Construction Manager at Risk Services for Southeast Interceptor
Sewer Augmentation Project
Project No.: 3SEI13
KE&G Job No.: 150216
Subject: FINAL GMP Proposal

Dear Mr. Peterson,

KE&G Construction, Inc. is pleased to submit the Guaranteed Maximum Price Proposal (GMP) for the Southeast Interceptor Sewer Augmentation, project number 3SEI13. Attached you will find KE&G Construction's GMP Construction Price Proposal.

KE&G Construction, Inc. would like to thank Pima County RWRD for the opportunity to provide a GMP proposal on this CMAR. Should you require additional information feel free to call me at (520) 748-0188.

Regards,
KE&G Construction, Inc.

A handwritten signature in blue ink, appearing to read "C.W. Albright".

Chris Albright
President

Summary of the GMP
Construction Manager at Risk for Pima County RWRD
Southeast Interceptor Sewer Augmentation Project (3SEI13)

Cost of Construction	\$ 11,224,731.31
CMAR Contingency	\$ 280,618.28
Subtotal Direct Construction Costs	\$ 11,505,349.59
General Conditions	\$ 713,970.00
Overhead	\$ 1,099,738.76
Insurance	\$ 134,203.74
Payment and Performance Bonds	\$ 101,316.00
Subtotal Direct Construction Cost + Gen Cond, Overhead, Bonds, Insurance	\$ 13,554,578.09
Construction Fee (As a percentage of Subtotal above or to exclude any items above)	\$ 745,501.79
Subtotal Direct Construction Cost + Gen Cond, Overhead, Bonds, Insurance and Fee	\$ 14,300,079.88
Arizona Gross Receipts Tax	\$ 850,497.25
Subtotal Direct Construction Cost + Gen Cond, Overhead, Bonds, Insurance, Fee and Tax	\$ 15,150,577.13
OTHER PROJECT COSTS:	\$ -
Owner Contingency	\$ 335,618.28

Scope of Work
Construction Manager at Risk for Pima County RWRD
Southeast Interceptor Sewer Augmentation Project

Project Overview

The scope of the project includes the costs associated with the installation of a new sanitary sewer interceptor. The interceptor is to be installed from the existing sanitary sewer Southeast and Old Nogales interceptor located near 36th Street and Euclid Avenue and progressing westward to 7th Avenue, turning to the north to ultimately tie into the existing Santa Cruz interceptor near 17th Street and the northwest corner of the Tucson Water property.

GMP Scope of Work

The scope of the project includes the installation of approximately 490 lineal feet of 48 inch sanitary sewer pipe, 7,476 lineal feet of 42 inch sanitary sewer pipe, 4,395 lineal feet of 36 inch sanitary sewer pipe, 331 lineal feet of 30 inch sanitary sewer pipe, 165 lineal feet, 1,325 lineal feet of 8 inch sanitary sewer pipe, and 265 lineal feet of 4 inch sanitary sewer. To complete this project it is anticipated that there will be eleven installations of steel casing using jack and bore tunneling, ranging in size from 18 inches to 72 inches. This project will require the installation of four junction structures and one diversion structure. There will be 42 manholes installed on this project. Also included in this GMP is the installation of all necessary demolition and replacement of demolished/damaged asphaltic concrete pavement, curb, sidewalk, slope paving, trench drain, and other miscellaneous obstructions along the alignment. To facilitate the interceptor installation, several waterlines are also required to be relocated. Bypass pumping will be required to complete the interceptor tie-ins and also several locations of contributing lines throughout the project. To minimize the overall impact of the flow management setups, four construction phases will be utilized. Phase 1 will be located at the downstream tie in point, phase 2 from 18th street to 5th avenue, phase 3 from 5th avenue to Euclid avenue in addition to the Osborne sewer realignment, and phase 4 completing the existing SEI tie in at 18th avenue and Osborne.

Southeast Interceptor Sewer Augmentation Project No. 3SEI13

CMAR - Final GMP 04.20.16

KE&G Construction, Inc.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	GMP VALUE
1.00	Mobilization	1	LS	\$33,400.00	\$33,400.00
1.10	SWPPP	17	MOS	\$4,773.50	\$81,149.50
1.20	Clear And Grub	5.5	ACRE	\$3,461.41	\$19,037.76
1.30	NPPO - Transplant On Site	2	EACH	\$2,250.00	\$4,500.00
2.00	Remove - Asphaltic Pavement	67,725	SF	\$1.48	\$100,233.00
2.10	Remove Concrete Curb	1,082	LF	\$5.26	\$5,691.32
2.20	Remove Sidewalk	2,465	SF	\$1.85	\$4,580.25
2.30	Remove Driveway	292	SF	\$2.39	\$697.88
2.40	Remove Slope Paving	13,330	SF	\$2.31	\$30,792.30
2.50	Remove/Abandon - Existing Sewer Line (8")	1,746	LF	\$9.67	\$16,883.82
2.51	Remove/Abandon - Existing Sewer Line (30")	110	LF	\$31.66	\$3,482.60
2.52	Remove/Abandon - Existing Sewer Line (36")	930	LF	\$34.48	\$32,066.40
2.53	Remove/Abandon - Existing Sewer Manholes	17	EACH	\$2,774.56	\$47,167.52
2.60	Remove - Fencing	550	LF	\$8.00	\$4,400.00
2.80	Remove - Stockpile From A&S Paving	5,700	CY	\$5.43	\$30,951.00
3.00	Purchase Pipe	12,724	LF	\$135.80	\$1,727,919.20
3.01	Purchase / Deliver Sewer Bedding Sand	24,883	TON	\$11.03	\$274,458.49
3.10	Install 30 Inch Sanitary Sewer Interceptor	321	LF	\$117.04	\$37,569.84
3.11	Install 36 Inch Sanitary Sewer Interceptor	4,395	LF	\$117.05	\$514,434.75
3.12	Install 42 Inch Sanitary Sewer Interceptor	7,476	LF	\$117.66	\$879,626.16
3.13	Install 48 Inch Sanitary Sewer Interceptor	491	LF	\$118.47	\$58,168.77
3.20	Repair Small Diameter Sewer Crossings	60	LF	\$216.90	\$13,014.00
3.30	Install 8 Inch Sanitary Sewer Main	1,360	LF	\$45.44	\$61,798.40
3.40	Install 4 Inch House Connection Services	3	EACH	\$2,448.50	\$7,345.50
3.50	Testing Sanitary Sewer Lines	14,043	LF	\$6.48	\$90,998.84
3.60	Furnish And Install CIPP Liner Into Existing 60-inch Diameter	572	LF	\$527.10	\$301,501.20
3.70	Furnish And Install CIPP Liner Into New 8" DIP	363	LF	\$49.82	\$18,084.66
4.10	Jack And Bore 18" Casing And Install Carrier Pipe	60	LF	\$783.47	\$47,008.20
4.20	Jack And Bore 42" Casing And Install Carrier Pipe	60	LF	\$1,228.38	\$73,702.80
4.30	Jack And Bore 54" Casing And Install Carrier Pipe	400	LF	\$1,453.40	\$581,360.00
4.40	Jack And Bore 60" Casing And Install Carrier Pipe	430	LF	\$1,381.30	\$593,959.00
4.50	Jack And Bore 72" Casing And Install Carrier Pipe	90	LF	\$2,401.78	\$216,160.20
4.60	32 LB Magnesium Anodes	66	EACH	\$363.12	\$23,965.92
4.70	Type 5 Corrosion Test Stations	10	EACH	\$4,129.00	\$41,290.00
4.80	Corrosion Testing / Report	1	LS	\$3,000.00	\$3,000.00
5.00	Utility Potholing	67	EACH	\$443.13	\$29,889.71
5.01	Junction Structures	4	EACH	\$77,162.40	\$308,649.60
5.02	Diversion Structure	1	EACH	\$83,569.47	\$83,569.47
5.10	48" Sanitary Sewer Manhole	8	EACH	\$6,348.65	\$50,789.20
5.20	60" Coated Sanitary Sewer Manhole	1	EACH	\$22,818.51	\$22,818.51
5.30	72" Coated Sanitary Sewer Manhole	3	EACH	\$27,876.31	\$83,628.93
5.40	72" Corrosion Resistant Manhole (LF Manufacturing)	8	EACH	\$25,798.70	\$206,389.60
5.50	72" Corrosion Resistant Manhole (Metering) (LF Manufacturing)	1	EACH	\$33,393.21	\$33,393.21
5.60	84" Corrosion Resistant Manhole (LF Manufacturing)	13	EACH	\$31,108.07	\$404,404.91
5.70	Manhole Connections	3	EACH	\$7,167.00	\$21,501.00
5.71	Concrete Manhole Collar (211)	27	EACH	\$500.00	\$13,500.00
5.72	Concrete Manhole Collar (212)	17	EACH	\$600.00	\$10,200.00
5.80	Sanitary Sewer Manhole Testing	44	EACH	\$1,054.32	\$46,390.08
5.90	Odor Control - Install Bio-filter	2	EACH	\$244,200.00	\$488,400.00
5.95	Purchase Metering Equipment	1	EACH	\$10,605.00	\$10,605.00
6.00	Existing SEI Gravity Bypass at 18th Street	90	LF	\$669.86	\$60,287.40
6.10	Contributing Line/Crossing Line Bypass Pumping	58	DY	\$3,758.85	\$218,013.30

6.20	ONI Tie-In Bypass Pumping	45	DY	\$6,543.47	\$284,456.15
6.30	SEI Tie-In Gravity Bypass	45	DY	\$524.12	\$23,585.40
6.40	18th St. Tie-In Bypass Pumping	45	DY	\$5,513.70	\$248,116.50
7.00	Mill / Plate Excavation	3,600	LF	\$17.27	\$62,172.00
7.10	Aggregate Base	2,305	TON	\$30.68	\$70,702.00
7.20	Pathway Paving 2" AC	5,000	SY	\$22.48	\$112,400.00
7.21	Asphalt Paving 3"	1,327	SY	\$14.50	\$19,241.50
7.22	Trench Paving	6,309	SY	\$28.60	\$180,437.40
7.23	Mill / Overlay	16,725	SY	\$11.00	\$183,975.00
7.29	Concrete Curb	1,082	LF	\$30.44	\$32,936.08
7.30	Concrete Sidewalk	2,465	SF	\$8.42	\$20,755.30
7.31	Concrete Driveway	292	SF	\$18.47	\$5,393.24
7.32	Concrete ADA Ramps	2	EACH	\$2,519.76	\$5,039.52
7.33	Concrete ADA Ramps (Multi Use Path)	8	EACH	\$2,261.04	\$18,088.32
7.34	Concrete Channel Lining	26,235	SF	\$9.09	\$238,476.15
7.35	2' Concrete Channel Toe Down	1,020	LF	\$26.07	\$26,591.40
7.36	4' Concrete Channel Cut-Off Wall	70.5	LF	\$49.46	\$3,486.93
7.37	6' Concrete Channel Cut-Off Wall	36	LF	\$64.65	\$2,327.40
7.38	Concrete Headwall	38	LF	\$309.86	\$11,774.68
7.39	Decorative Concrete Wall	40	LF	\$128.25	\$5,130.00
7.40	Concrete Trench Drain	100	LF	\$331.29	\$33,129.00
7.50	Dumped Rip Rap D50=6"	74	CY	\$263.57	\$19,504.18
7.51	Repair Geo-Cell Bank Protection at Airport Wash	800	SF	\$8.61	\$6,888.00
7.52	10th Street Drainage - 24" RCP	164	LF	\$61.12	\$10,023.68
7.53	10th Street Drainage - 24" End Sections	1	EACH	\$2,342.04	\$2,342.04
7.54	10th Street Drainage - Storm Drain Manholes	2	EACH	\$10,547.73	\$21,095.46
7.70	Electrical Signal / Light Pole Removal / Replacement	4	EACH	\$2,299.00	\$9,196.00
7.71	Electrical Signal Loop Replacement	8	EACH	\$906.00	\$7,248.00
7.72	Electrical Service Relocation	1	EACH	\$8,693.00	\$8,693.00
7.80	Striping	1	LS	\$17,516.50	\$17,516.50
7.90	Seeding (Mix #2)	12	ACRE	\$1,839.20	\$22,070.40
8.00	Surveying / As-Built	1	LS	\$71,125.00	\$71,125.00
8.01	Survey Monument	19	EACH	\$126.50	\$2,403.50
8.02	RWRD Abandonment / Location Mounument	7	EACH	\$306.81	\$2,147.67
8.10	Contractor QC	18	MO	\$10,595.65	\$169,530.40
8.30	Relocate 6" PVC Water at 29th St / 12th Ave	165	LF	\$110.90	\$18,298.50
8.40	Relocate 16" PVC at 36th St & 7th Ave	287	LF	\$393.00	\$112,791.00
8.60	Relocate 16" Reclaimed Waterline	830	LF	\$161.64	\$134,161.20
9.00	Existing Fence Replacement	550	LF	\$7.75	\$4,262.50
9.01	Existing Handrail Replacement	336	LF	\$13.65	\$4,586.40
9.02	New Handrail Installation	618	LF	\$19.86	\$12,273.48
9.03	New Post & Cable Barrier	414	LF	\$13.42	\$5,555.88
9.04	Manual Entry Gate Replacement	2	EACH	\$1,275.00	\$2,550.00
9.05	Electric Entry Gate Replacement	2	EACH	\$2,650.00	\$5,300.00
9.15	Remove & Replace Decomposed Granite	4,611	SY	\$5.00	\$23,055.55
9.20	Track Protection	2,930	LF	\$25.83	\$75,681.90
9.30	Traffic Control	400,000	ALLOWANCE	\$1.00	\$400,000.00
9.35	Uniformed Officers	200	HR	\$62.00	\$12,400.00
9.40	Public Relations	16	MO	\$10,034.69	\$160,555.04
9.50	Kinder Morgan Standby/Observation	600	HR	\$75.00	\$45,000.00
9.60	UPRR Railroad Flaggers	40	HR	\$300.00	\$12,000.00
9.70	Utilities - Electrical Pole Support	3	EACH	\$3,000.00	\$9,000.00
9.80	Site Security	7,800	HR	\$16.50	\$128,700.00
9.90	Root Barrier	2,400	LF	\$7.48	\$17,952.00
	CONSTRUCTION TOTAL	1	LS		\$11,224,731.31
10.00	Construction Contingency			2.50%	\$280,618.26

11.00	General Conditions	70	WKS	\$10,199.57	\$713,970.00
	PROJECT MANAGER	35	WK	\$3,370.00	\$117,950.00
	FIELD ENGINEER	70	WK	\$2,290.00	\$160,300.00
	SUPERINTENDENT	70	WK	\$2,560.00	\$179,200.00
	DRINKING WATER / ICE	70	WK	\$25.00	\$1,750.00
	SMALL TOOLS	70	WK	\$600.00	\$42,000.00
	SANITATION / RESTROOMS	140	WK	\$85.00	\$11,900.00
	CONSTRUCTION WATER	7,000	MGAL	\$9.86	\$69,020.00
	LAND RENTAL	32	MOS	\$2,500.00	\$80,000.00
	TEMPORARY FENCING	16	MOS	\$1,075.00	\$17,200.00
	PRINTING / OFFICE SUPPLIES	16	MOS	\$150.00	\$2,400.00
	DUMPSTERS / REFUSE HAULING	32	LDS	\$350.00	\$11,200.00
	CONSTRUCTION FIELD OFFICE	16	MOS	\$600.00	\$9,600.00
	PERMITS	1	LS	\$11,450.00	\$11,450.00
12.00	CMAR Overhead			9.00%	\$1,099,738.76
	Construction + General Conditions Total				\$13,319,058.35
13.00	Payment & Performance Bonds @ 0.8%	1	LS	\$101,318.00	\$101,316.00
	GMP + BOND SUBTOTAL				\$13,420,374.35
14.00	General Liability Insurance @ 1.00%	1	LS	\$134,203.74	\$134,203.74
	SUBTOTAL				\$13,554,578.09
15.00	CMAR Fee			5.50%	\$745,501.79
	SUBTOTAL				\$14,300,079.88
16.00	City of Tucson Sales Tax @ 5.265%	58	PERCENT	\$436,681.54	\$436,681.54
16.01	City of South Tucson Sales Tax @ 6.89%	42	PERCENT	\$413,815.71	\$413,815.71
	TOTAL CONSTRUCTION				\$15,150,577.13
17.00	Owner's Contingency	1	LS	\$335,618.28	\$335,618.28
	TOTAL CONTRACT				\$15,486,195.41

List of Plans & Specifications
Construction Manager at Risk for Pima County RWRD
Southeast Interceptor Sewer Augmentation Project

The GMP submittal is based upon the following plan set:

- Preliminary plans prepared by Westland Resources for Pima County Regional Wastewater Reclamation Department project number G-2016-014 3SEI13 (not sealed). The drawings include sheets numbering 1 through 50, with cover sheet dated February 29, 2016 and labeled: SEI Augmentation Sewer Replacement Project.

The GMP submittal is based up on the following specifications:

- PCRWRD Standard Specifications and Details for Construction 2012 Edition
- PAG Standard Specifications for Public Improvements 2015 Edition
- PC/COT Standard Specifications for Public Improvements 2003 Edition
- PC/COT Standard Details for Public Improvements 2003 Edition
- Tucson Water Standard Specifications and Details for Construction 2011 Edition
- Manual on Uniform Traffic Control Devices 2009 Edition
- Pima County Natural Resources, Parks and Recreation Department Standard Specifications and Details for Park Development 2016 Edition
- ADOT Standard B11.11
- ADOT As-Built Drainage Plans, i-98-010_164, i-98-010_165, i-98-010_166, i-98-010_167, I-2002-047_0076, I-2002-047_0413, I-2002-047_0437

Clarifications & Assumptions
Construction Manager at Risk for Pima County RWRD
Southeast Interceptor Sewer Augmentation Project

SEWER INSTALLATION

Item 1.00 – Mobilization

Equipment mobilization from KE&G Construction, Inc.'s facility location to the project site, and equipment transportation movement throughout the project.

Item 1.10 – SWPPP

Installation, maintenance, and inspection per the general permit to included rock track out pads in 5 locations, stockpile protection, catch basin protection, dirt berms along alignment, and other best management practices.

Item 1.20 – Clear And Grub

Removal, stockpiling, hauling, and disposing, at approved offsite disposal location, of trees and vegetation in conflict with the sewer installation. Does not include salvage relocation or protection in place of existing plants.

Item 1.30 – NPPO – Transplant On Site

Transplant two existing trees identified in the plant inventory to location on site. Includes 1 year warranty on transplanted trees. Does not include irrigation once planted.

Item 2.00 – Remove – Asphaltic Pavement

Removal, stockpiling, hauling, and disposing of asphalt debris generated from the project based upon varied asphalt thickness. Excludes any costs for the testing and removal of hazardous materials.

Item 2.10 – Remove Concrete Curb

Removal, stockpiling, hauling, and disposing of concrete curb generated due to the construction alignment crossing roadways. Excludes any costs for the testing and removal of hazardous materials.

Item 2.20 – Remove Sidewalk

Removal, stockpiling, hauling, and disposing of concrete sidewalk generated due to conflicts with construction alignment. Excludes any costs for the testing and removal of hazardous materials.

Item 2.30 – Remove Driveway

Removal, stockpiling, hauling, and disposing of concrete driveway generated due to the construction alignment crossing roadways. Excludes any costs for the testing and removal of hazardous materials.

Item 2.40 – Remove Slope Paving

Removal, stockpiling, hauling, and disposing of concrete slope paving generated at the ADOT drainage basin located at 29th street east of the frontage road due to the construction alignment. Excludes any costs for the testing and removal of hazardous materials.

Item 2.50 – Remove/Abandon – Existing Sewer Line (8")

Removal of approximately 1,321 LF existing VCP sewer mainline along the Osborne sewer alignment and within Tucson Water's property due to a conflict within the construction alignment. Removal of approximately 425 LF existing CPP sewer mainline along 36th Street in between 6th Avenue and 5th Avenue due to a conflict within the construction alignment. Excludes any costs for the testing and removal of hazardous materials (asbestos cement pipe).

Item 2.51 – Remove/Abandon – Existing Sewer Line (30")

Removal of approximately 110 LF of existing Old Nogales Highway Interceptor sewer mainline due to relocation or conflict with the new sewer mainline location. This item is a not to exceed price for the pipe size. Excludes any costs for the testing and removal of hazardous materials.

Item 2.52 – Remove/Abandon – Existing Sewer Line (36")

Removal of approximately 385 LF of existing sewer mainline due to conflict with new sewer mainline location. Abandon by concrete filling of approximately 545 LF of existing sewer mainline where the lines cross beneath utilities or drainage features. Price for removal and abandonment is a not to exceed amount based upon pipe size. Excludes any costs for the testing and removal of hazardous materials.

Item 2.53 – Remove/Abandon – Existing Sewer Manholes

Removal of 17 existing sewer manholes and structures due to conflict with new sewer mainline location. Nine of the manholes and structures are within the SEI alignment, five are within the Osborne Avenue alignment, and three are associated with flow management pumping. Excludes any costs for the testing and removal of hazardous materials.

Item 2.60 – Remove – Fencing

Removal and salvage for reuse approximately 550 LF of existing fencing at locations in conflict with the construction alignment. This item is a not to exceed amount for the removal of the fencing.

Item 2.80 – Remove – Stock Pile From A&S Paving

Removal, storage, and restoration of approximately 2,850 CY of aggregate stock pile located in A&S Paving's yard. This item is a not to exceed amount for the removal of the aggregate.

Item 3.00 – Purchase Pipe

Includes purchasing 30", 36", 42" and 48" HOBAS pipe, fittings, mitered bends, and freight to the jobsite. Also includes de-nesting and offloading by KE&G.

Item 3.01 – Purchase / Deliver Sewer Bedding Sand

Purchase and delivery of sewer bedding sand.

Item 3.10 – Install 30 Inch Sanitary Sewer Interceptor

Installation of approximately 321 lineal feet of 30" of HOBAS flush reline SN (130) Class PN (0) pipe through casing and SN (46) Class PN (25) in open excavations.

Item 3.11 – Install 36 Inch Sanitary Sewer Interceptor

Installation of approximately 4,395 lineal feet of 36" of HOBAS flush reline SN (90) Class PN (0) pipe through casing and SN (46) Class PN (25) in open excavations.

Item 3.12 – Install 42 Inch Sanitary Sewer Interceptor

Installation of approximately 7,476 lineal feet of 42" of HOBAS flush reline SN (82) Class PN (0) pipe through casing and SN (46) Class PN (25) in open excavations

Item 3.13 – Install 48 Inch Sanitary Sewer Interceptor

Installation of approximately 491 lineal feet of 48" of HOBAS flush reline SN (74) Class PN (0) pipe through casing and SN (46) Class PN (25) in open excavations

Item 3.20 – Repair Small Diameter Sewer Crossings

Repair of small diameter sewer line crossings removed during construction per RWRD Standard Detail 102.

Item 3.30 – Install 8 Inch Sanitary Sewer Main

Installation of approximately 957 lineal feet of 8" of SDR 35 PVC and 368 LF of 8" bare CL350 DIP.

Item 3.40 – Install 4 Inch House Connections Services

Reconnection of existing HCS lines to existing mainlines or the new interceptor. The 4 inch sewer services will be extended to the property line with a cleanout assembly installed at the property line. Existing services will tie into the new cleanout assembly. New services shall continue to a manhole with an internal drop.

Item 3.50 – Testing Sanitary Sewer Lines

Includes pressure testing and deflection testing of pipelines per ARS Title 18 guidelines. CCTV inspection of completed pipelines is to be provided by RWRD.

Item 3.60 – Furnish And Install CIPP Liner Into Existing 60-inch Diameter

Includes the cleaning and installation of approximately 572 LF of 60 inch diameter cured in place pipe liner downstream of project tie-in. Due to fiberglass bottom of new structure, epoxy will be utilized to provide 6" transition for flow channel up to pipe spring line on each end. This item is a not to exceed amount for the liner.

Item 3.70 – Furnish And Install CIPP Liner Into New 8" DIP

Includes the cleaning and installation of approximately 363 LF of 8 inch diameter, 6mm thickness, cured in place pipe liner from upstream MH #28 to downstream MH #7. This item is a not to exceed amount for the liner.

Item 4.10 – Jack And Bore 18" Casing And Install Carrier Pipe

This item is based on an approximate length of 60 LF of .5 inch wall steel casing pipe to be auger bored, unrestrained carrier pipe to be placed on casing spacers inside of the 18 inch casing, ends will be brink and mortared, annular space to be filled with pea gravel, and end seals to be installed.

Item 4.20 – Jack And Bore 42" Casing And Install Carrier Pipe

This item is based on an approximate length of 60 LF of .562 inch wall steel casing pipe to be auger bored, unrestrained carrier pipe to be placed on casing spacers inside of the 42 inch casing, ends will be brink and mortared, annular space to be filled with pea gravel, and end seals to be installed.

Item 4.30 – Jack And Bore 54" Casing And Install Carrier Pipe

This item is based on an approximate length of 400 LF of .75 inch wall steel casing pipe to be auger bored, unrestrained carrier pipe to be placed on casing spacers inside of the 54 inch casing, ends will be brink and mortared, annular space to be filled with pea gravel, and end seals to be installed.

Item 4.40 – Jack and Bore 60" Casing And Install Carrier Pipe

This item is based on an approximate length of 430 LF of .781 inch wall steel casing pipe to be auger bored, unrestrained carrier pipe to be placed on casing spacers inside of the 60 inch casing, ends will be brink and mortared, annular space to be filled with pea gravel, and end seals to be installed.

Item 4.50 – Jack and Bore 72" Casing And Install Carrier Pipe

This item is based on an approximate length of 90 LF of 1 inch wall steel casing to be auger bored, unrestrained carrier pipe to be placed on casing spacers inside of the 72 inch casing, ends will be brink and mortared, annular space to be filled with pea gravel, and end seals to be installed.

Item 4.60 – 32 LB Magnesium Anodes

Included purchase and installation at casing ends.

Item 4.70 – Type 5 Corrosion Test Stations

Includes purchase and installation above pipe with a maximum of 40 foot leads.

Item 4.80 – Corrosion Testing / Report

Reporting and testing performed by certified NACE technician.

Item 5.00 – Utility Potholing

Verification of utilities within the alignment through potholing.

Item 5.01 – Junction Structures

Junction structures shall be single piece fiberglass structure manufactured by LF Manufacturing. Junction structures will have downstream HOBAS pipe stubs cast with an ADOT pipe collar and lined with CIPP. Designer is to provide structural design for base slabs where applicable.

Item 5.02 – Diversion Structure

Lf Manufacturing provided fiberglass structure with redwood stop logs. This item is based on the installation of a diversion structure that will allow for the connection of large diameter lines. Based upon the flow configuration, this structure will allow for future diversion of flows as needed. Designer is to provide structural design for base slab if applicable.

Item 5.10 – 48" Sanitary Sewer Manhole

Installation of 8 new concrete manholes per RWRD Std. Dtl. 205. Concrete collar installation is included in Items 5.71 and 5.72.

Item 5.20 – 60" Coated Sanitary Sewer Manhole

Installation of a new concrete manhole per RWRD Std. Dtl. 206. Includes Raven interior corrosion protection coating. Concrete collar installation is included in Item 5.71.

Item 5.30 – 72" Coated Sanitary Sewer Manhole

Installation of 3 new 72 inch cast-in-place concrete manholes. Includes Raven interior corrosion protection coating. Concrete collar installation is included in Items 5.71 and 5.72.

Item 5.40 – 72" Corrosion Resistant Manhole (LF Manufacturing)

Installation of 8 new 72 inch corrosion resistant manholes. Manholes to have eccentric cones and ladder based upon project drawings and shop approved shop drawings. If field conditions change ladder location, relocation shall be performed by owner. Concrete collar installation is included in Items 5.71 and 5.72.

Item 5.50 – 72" Corrosion Resistant Manhole (Metering) (LF Manufacturing)

Installation of a new 72 inch corrosion resistant metering manhole, MH#6. Manholes to have eccentric cones and ladder based upon project drawings and shop approved shop drawings. If field conditions change ladder location, relocation shall be performed by owner. Concrete collar installation is included in Items 5.72. The purchase of metering equipment is included in Item 5.95.

Item 5.60 – 84" Corrosion Resistant Manhole (LF Manufacturing)

Installation of 13 new 84 inch corrosion resistant manholes. Manholes to have eccentric cones and ladder based upon project drawings and shop approved shop drawings. If field conditions change ladder location, relocation shall be performed by owner. Concrete collar installation is included in Items 5.71 and 5.72.

Item 5.70 – Manholes Connections

Connection to existing manholes on small diameter connecting lines and existing SEI diversion structure, including modifications of base as necessary.

Item 5.71 – Concrete Manhole Collar (211)

Installation of 27 concrete collars per RWRD Std. Dtl. 211 as necessary on 24" diameter covers.

Item 5.72 – Concrete Manhole Collar (212)

Installation of 17 concrete collars per RWRD Std. Dtl. 212 as necessary on 24" diameter covers.

Item 5.80 – Sanitary Sewer Manhole Testing

Vacuum testing of sanitary sewer manholes per Arizona Administrative Code Title 18, Ch.9 Section 3.e. Structure with hatch shall be water tested.

Item 5.90 – Odor Control – Install Biofilter

Includes the installation of two new biofilters. Not to exceed anticipated for all biofilter associated work, not limited to: concrete, electrical, purchase and installation of media, fans, excavation, suction/discharge piping, restoration, removals, etc.

Item 5.95 – Purchase Metering Equipment

Provided as an allowance including procurement of new metering equipment as specified by RWRD to be installed by RWRD in the new metering manhole, MH#6. Corresponding pole, electrical, foundation, and conduits to be provided and installed by Pima County.

Item 6.00 – Existing SEI Gravity Bypass at 18th Street

Installation of 2 new uncoated, precast risers over a CIP base manholes and approximately 90 LF of F679 PVC. This line is to be abandoned in Phase 4 of construction.

Item 6.10 – Contributing Line/Crossing Line Bypass Pumping

Bypass pumping of small diameter lines that will be tied into the new line or lines that will be crossing the excavation and will need to be bypassed to allow for installation of the new pipeline. Hydrostatic pressure testing of flow management main-line discharge lines to be tested at 30 PSI. Suction and discharge hoses connected directly to pumps are exempt from these pressure tests. HDPE discharge lines to be disinfected and cleaned prior to removal using 12.5% Hypochlorite solution, the use of Bauer or Victaulic type couplings are assumed to be allowed.

Item 6.20 – ONI Tie-In Bypass Pumping

Bypass pumping of large diameter lines at the tie-in locations to allow for installation of the new pipeline. Hydrostatic pressure testing of flow management main-line discharge lines to be tested at 1.5 times the operating pressure of the system or at 45 PSI, whichever is greater. Suction and discharge hoses connected directly to pumps are exempt from these pressure tests. HDPE discharge lines to be disinfected and cleaned prior to removal using 12.5% Hypochlorite solution. Only includes bypass pumping for the upstream tie-in, the downstream tie-in.

Item 6.30 – SEI Tie-In Gravity Bypass

A flow through disk plug and rigid pipe bypass shall be used upstream and inflatable bypass plug downstream. Air pressure inflation assumed to be monitored once daily.

Item 6.40 – 18th Street Tie-In Bypass Pumping

Bypass pumping of large diameter lines at the tie-in locations to allow for installation of the new pipeline. Hydrostatic pressure testing of flow management main-line discharge lines to be tested at 1.5 times the operating pressure of the system or at 45 PSI, whichever is greater. Suction and discharge hoses connected directly to pumps are exempt from these pressure tests. HDPE

discharge lines to be disinfected and cleaned prior to removal using 12.5% Hypochlorite solution. Only includes bypass pumping for the upstream tie-in, the downstream tie-in.

Item 7.00 – Mill / Plate Excavation

Trenches will be plated for protection of traffic while crews are not working. Per the City of Tucson Standard, the plates will be milled to a depth flush with existing asphalt and cold mix applied in place.

Item 7.10 – Aggregate Base

Delivery and installation of PAG specification aggregate base materials for permanent trench patching in addition to new ABC beneath the Greenway path from 25th street to 36th street.

Item 7.20 – Pathway Paving 2" AC

Installation of up to 2 inches of PAG specification mix no. 3 arterial. Pathway paving is bid to pave the Greenway path from 25th St. to 36th St. 12 feet wide with thickened edge . Included is the installation of pathway striping, concrete approaches, and post barricades.

Item 7.21 – Asphalt Paving 3"

Installation of up to 3 inches of PAG specification mix no. 2 arterial. Asphalt paving is bid to match the existing pavement areas along 12th Ave. and A&S Paving's yard that will need to be restored after construction. Excludes cost of any chip sealing, crack sealing, or fog coating.

Item 7.22 – Trench Patching

Installation of up to 5 inches of PAG specification mix no. 2 arterial. Trench patching or restoration is bid to match the existing for any pavement areas disrupted. Replacement per PC/COT Std. Dtl. 216 Type 2. Excludes cost of any chip sealing, crack sealing, or fog coating.

Item 7.23 – Mill / Overlay

Milling and installation of up to 2 inches of PAG specification mix no. 2 arterial. Mill and overlay will take place along 36th St. starting just east of 7th Ave. to Euclid Ave. Excludes cost of any chip sealing, crack sealing, or fog coating.

Item 7.29 – Concrete Curb

Replacement of approximately 1,082 LF of concrete curb per PC/COT Std. Dtl. 209 in various locations through the project alignment. This item is intended to be a not to exceed amount for the replacement of concrete curb.

Item 7.30 – Concrete Sidewalk

Replacement of approximately 2,465 SF of concrete sidewalk per PC/COT Std. Dtl. 200 in various locations through the project alignment. This item is intended to be a not to exceed amount for the replacement of concrete sidewalk.

Item 7.31 – Concrete Driveway

Replacement of approximately 292 SF of concrete driveway per PC/COT Std. Dtl 206 in various locations through the project alignment. This item is intended to be a not to exceed amount for the replacement of concrete driveway.

Item 7.32 – Concrete ADA Ramps

Replacement of approximately 2 concrete ADA ramps per PC/COT Std. Dtl. 207 in various locations through the project alignment. This item is intended to be a not to exceed amount for the replacement of concrete ADA ramps.

Item 7.33 – Concrete ADA Ramps (Multi Use Path)

Installation of 8 concrete ADA ramps per ADOT Dwg. No. C-05.30, modified sidewalk ramp type E.

Item 7.34 – Concrete Channel Lining

Installation of approximately 26,235 SF of concrete slope paving per project drawings. Approximately 12,250 square feet is located at the ADOT retention basin with the remaining at the outlet for 10th street drainage and greyhound wash improvements. This item is intended to be a not to exceed amount for the installation of concrete channel lining.

Item 7.35 – 2' Concrete Channel Toe Down

Installation of approximately 1,020 LF of concrete toe down per project drawings located at the top of slope along drainage improvements. This item is intended to be a not to exceed amount for the installation of concrete toe down.

Item 7.36 – 4' Concrete Channel Cut-Off Wall

Installation of approximately 70.5 LF of 4 foot concrete cut-off wall per project drawings located in greyhound wash. This item is intended to be a not to exceed amount for the installation of concrete channel cut-off wall.

Item 7.37 – 6' Concrete Channel Cut-Off Wall

Installation of approximately 36 LF of 6 foot concrete cut-off wall project drawings located in greyhound wash. This item is intended to be a not to exceed amount for the installation of concrete channel cut-off wall.

Item 7.38 – Concrete Headwall

Replacement of approximately 38 LF of concrete headwall per ADOT plan I-2002-047 located at the drainage outlet near 29th street into the ADOT retention basin. This item is intended to be a not to exceed amount for the installation of concrete headwall.

Item 7.39 – Decorative Concrete Wall

Replacement of approximately 40 LF of decorative wall where the future ONI augmentation sewer connects with the new SEI augmentation sewer. This item is intended to be a not to exceed amount for the replacement of decorative concrete wall.

Item 7.40 – Concrete Trench Drain

Replacement of approximately 100 LF of concrete trench drain crossing 36th St. Grating is to be salvaged and reused. This item is intended to be a not to exceed amount for the replacement of concrete trench drain.

Item 7.50 – Dumped Rip Rap D50=6”

Installation of approximately 75 CY of 6 inch rip rap located at greyhound wash and headwall outlet at the ADOT retention basin. This item is intended to be a not to exceed amount for the installation of rip rap.

Item 7.51 – Repair Geo-Cell Bank Protection at Airport Wash

Includes approximately 800 SF of Geo-Cell material to be wire back to the existing bank protection. This item is intended to be a not to exceed amount for the repair of geo-cell bank protection.

Item 7.52 – 10th Street Drainage 24” RCP

Installation of approximately 164 LF of 24 inch Class V RCP near 10th Street. This item is intended to be a not to exceed amount for the installation of 24" RCP.

Item 7.53 – 10th Street Drainage 24” End Section

Installation of a 24 inch RCP end section.

Item 7.54 – 10th Street Drainage – Storm Drain Manholes

Installation of 2 storm drain manholes per PC/DOT Std. Dtl. 302.

Item 7.70 – Electrical Signal / Light Pole Removal / Replacement

The removal and replacement of 4 signal / light poles that are required in conjunction with the sewer installation.

Item 7.71 – Electrical Signal Loop Replacement

Includes replacing advance loops and stop loops at the intersections that are damaged due to the pipeline installation.

Item 7.72 – Electrical Service Relocation

The relocation, up to 20 feet along the current electrical trench alignment, of the existing electrical service located within the new SEI alignment on 22nd St. Land's property.

Item 7.80 – Striping

Striping that is demolished or damaged by equipment and trench plates throughout the project. Temporary paint as well as thermoplastic replacement of stop bars, skip lines, reflective pavement markers, crosswalks, and legends are included.

Item 7.90 – Seeding (Mix #2)

Placement of standard PC/COT seed mix #2 in areas disturbed by construction activities. Includes approximately 22 LB of seed, 1,500 LB of mulch, and 100 LB of fertilizer per acre as accepted by PCDOT on past roadway projects. This item is intended to be a not to exceed amount for the placement of seeding.

Item 8.00 – Survey / As-Builts

Includes construction survey, control verification, utility potholing verification, and as-built survey for the work in place.

Item 8.01 – Survey Monument

Replacement of survey monuments that are disturbed in conjunction with the sewer installation.

Item 8.02 – RWRD Abandonment / Location Monument

Installation of abandonment and locations monuments that are required in conjunction with the sewer installation.

Item 8.10 – Contractor QC

Includes full time inspection to achieve testing every 2 vertical feet, beginning 4 feet above top of pipe of new sewer installation and compaction tests every 2 vertical feet of manhole backfill. It is anticipated that concrete to be tested except curb, sidewalk, ADA ramps, and concrete flatwork.

Item 8.30 – Relocate 6" PVC Water at 29th Street & 12th Ave.

Includes the removal / relocation of an existing 6" water line at the intersection of 12th Avenue and 29th Street in the city of South Tucson.

Item 8.40 – Relocate 16" PVC Water at 36th Street

Includes the relocation of an existing 16" reclaimed water line in the city of South Tucson.

Item 8.60 – Relocate 16" Reclaimed Water Line

Includes relocation of existing 16 inch reclaimed water main with 60" of cover along 36th St. between 6th Ave. and 4th Ave. to facilitate installation of the new SEI augmentation sewer.

Item 9.00 – Existing Fence Replacement

Replacement of approximately 550 LF of fencing that is disturbed in conjunction with the sewer installation. This item is intended to be a not to exceed amount for the replacement of existing fencing.

Item 9.01 – Existing Handrail Replacement

Replacement of approximately 336 LF handrail along sewer alignment that is disturbed in conjunction with the sewer installation. Includes salvaging, repainting, and installation of existing handrail. This item is intended to be a not to exceed amount for the replacement of existing handrail.

Item 9.02 – New Handrail Installation

Installation of approximately 618 LF of new handrail along the Greyhound Wash Drainage Improvements. Pima County 105 detail with mid rail. Mid rail is to be face welded to vertical posts. This item is intended to be a not to exceed amount for the installation of new handrail.

Item 9.03 – New Post & Cable Barrier

Installation of approximately 414 LF of new post and cable barrier per Pima County Natural Resources, Parks and Recreation Department Std. Dtls. 400, 401 & 403. This item is intended to be a not to exceed amount for the installation of new post & cable barrier.

Item 9.04 – Manual Entry Gate Replacement

Replacement of manual entry gates that are disturbed in conjunction with the sewer installation.

Item 9.05– Electric Entry Gate Replacement

Replacement of electrified entry gates that are disturbed in conjunction with the sewer installation.

Item 9.15 – Remove And Replace Decomposed Granite

Removal and replacement of decorative decomposed granite landscaping that is disturbed during the project.

Item 9.20 – Track Protection

Installation of high survivability filter fabric followed by a 2 inch layer of sand to protect existing abandoned railroad tracks from construction activities.

Item 9.30 – Traffic Control

Includes daily setup and takedown of traffic control devices as needed for the duration of the project.

Item 9.35 – Uniformed Officers

City of Tucson off duty officers utilized for point control while crossing the intersections as needed.

Item 9.40 – Public Relations

Need for public relations outreach to businesses, public meetings, website construction updates, and hotline phone monitoring for the anticipated project duration.

Item 9.50 – Kinder Morgan Standby/Observation

Due to the proximity of the new sewer main to the existing Kinder Morgan pipeline, an inspector from Kinder Morgan will need to be present for the crossing and also an area that parallels the Kinder Morgan line west of 10th Street.

Item 9.60 – UP RR Railroad Flaggers

To be used during jack and bore at 36th St. and the UP RR crossing. Pricing includes track monitoring based upon past jack and bore approved methods.

Item 9.70 – Utilities – Electrical Pole Support

It is anticipated that there will be 3 locations that will require the existing utility poles to be supported with A-frames to allow excavation in the vicinity.

Item 9.80 – Site Security

Security for the project area during off work hours.

Item 9.90 – Root Barrier

Installation of root barrier each pipe joint along the Greenway alignment between 17th St. and 22nd St.

General

1. Normal weather conditions are expected on this project, as such, KE&G expects average rainfall to equal 1 day per month. Weather related days can be claimed during rainfall events or after rainfall events on days no rain has occurred. The project is expected to last 16 months, so we can anticipate sixteen (16) rain days.
2. Clarifications and Assumptions included in this Exhibit or others take precedence over all Special Provisions or Contract Requirements on this project.
3. Excludes cost for existing utility relocation other than indicated above.
4. Excludes NPPO relocation/mitigation cost other than the two (2) trees provided.
5. Excludes temporary construction easement cost.
6. Excludes dewatering of ground water.
7. Excludes ADEQ review fees.
8. Soil conditions of native soil indicates expansive clay material. KE&G has made Designer and Owner aware of future trench consolidation once water is introduced along the Greenway. KE&G is not liable for future re=compaction necessary beyond 1 year warranty along the alignment, as inspections, compaction, and testing procedures will be completed to the best of Contractor's ability.
9. Removal and disposal or restoration of miscellaneous items such as bollards, signs, water meters, or miscellaneous landscaping plantings at locations in conflict with the construction alignment are to be completed on an as needed basis are anticipated to be covered utilizing the owner's contingency.

Subcontractor Selection / SBE
Construction Manager at Risk for Pima County RWRD
Southeast Interceptor Sewer Augmentation Project

Subcontractor Selection

KE&G performed subcontractor selection based upon the subcontractor selection plan as submitted under the project Statement of Qualifications. The following firms were selected based upon price and qualification for the associated scopes of work.

A&S Paving, Inc.	- Asphalt Patching / Aggregate Base Course
ATL, Inc.	- Quality Control
BBK Fencing, LLC.	- Fencing / Handrail
Custom Saw Cuts, Inc.	- Concrete – Asphalt / Sawcutting and Coring
Desert Trucking	- Hauling
Dowl	- Surveying
Harvey Trucking	- Hauling
Insituform Technologies, Inc.	- CIPP Pipe Lining
Jenco Construction, LLC	- Manhole Construction
Kaneen Advertising & PR	- Public Relations
Leyland Stevens Trucking	- Hauling
P.A.C.E. Construction, LLC	- Electrical / Traffic Signals
Peak Corrosion Control	- Corrosion Testing
Professional Pipe Services	- Pipe Cleaning / CCTV
RoadSafe Traffic Systems	- Traffic Control / Striping
Southwest Environmental	- Manhole Coatings
Specialized Services Company	- Jack & Bore
Sunrise Trucking	- Hauling
Revegetation Services	- Hydroseeding

SBE Utilization

KE&G Construction is proposing to meet a 5% Small Business Utilization by way of the following contractors and associated value.

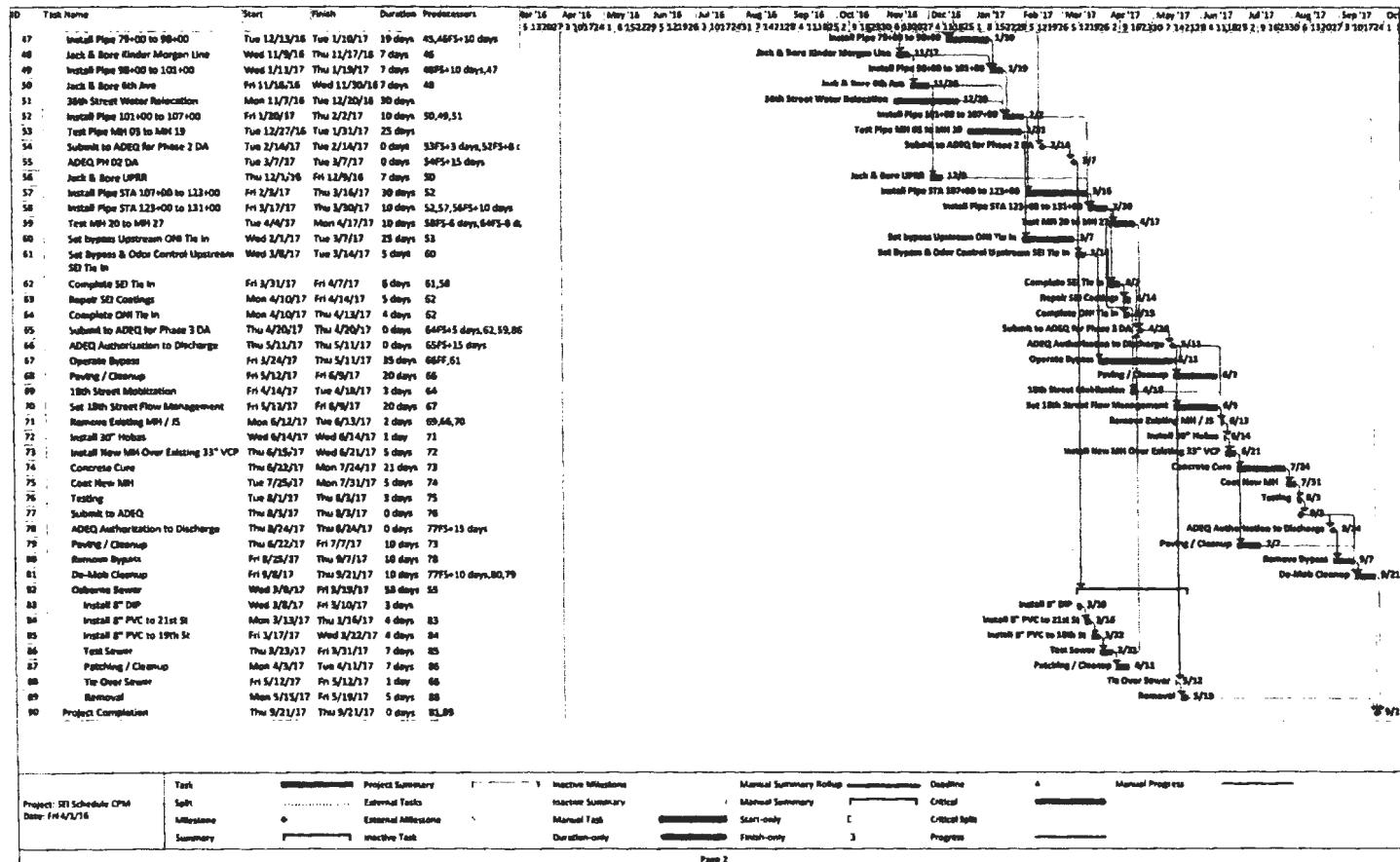
A&S Paving - \$ 480,372.00

Kaneen Advertising & PR - \$ 118,000.00

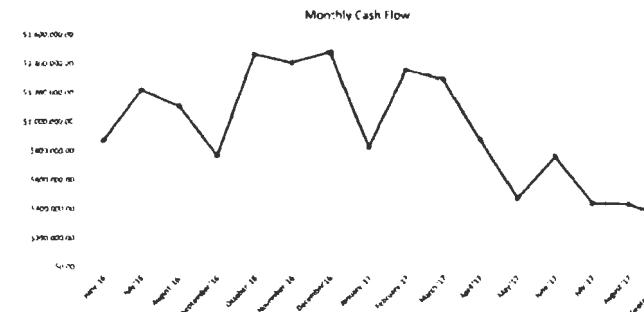
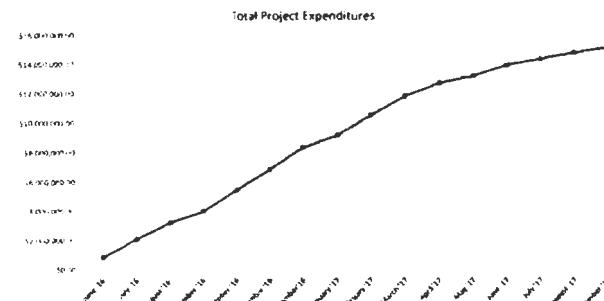
Desert Trucking - \$ 136,025.35

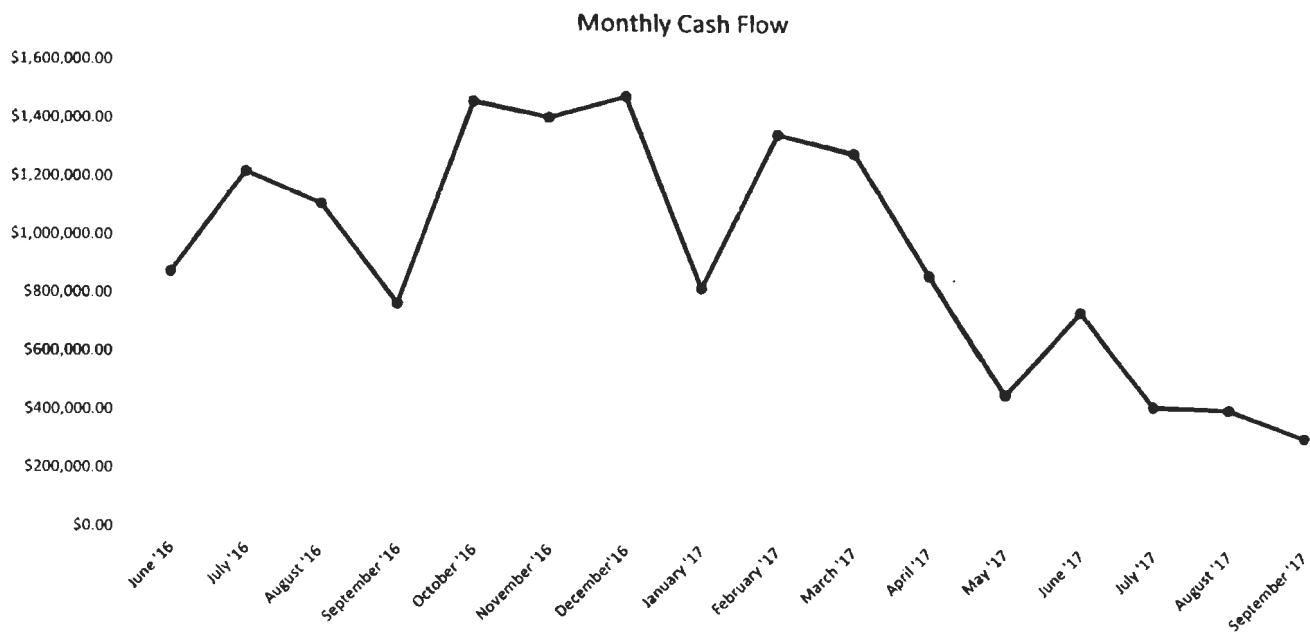
Leyland Stevens Trucking - \$ 23,131.51

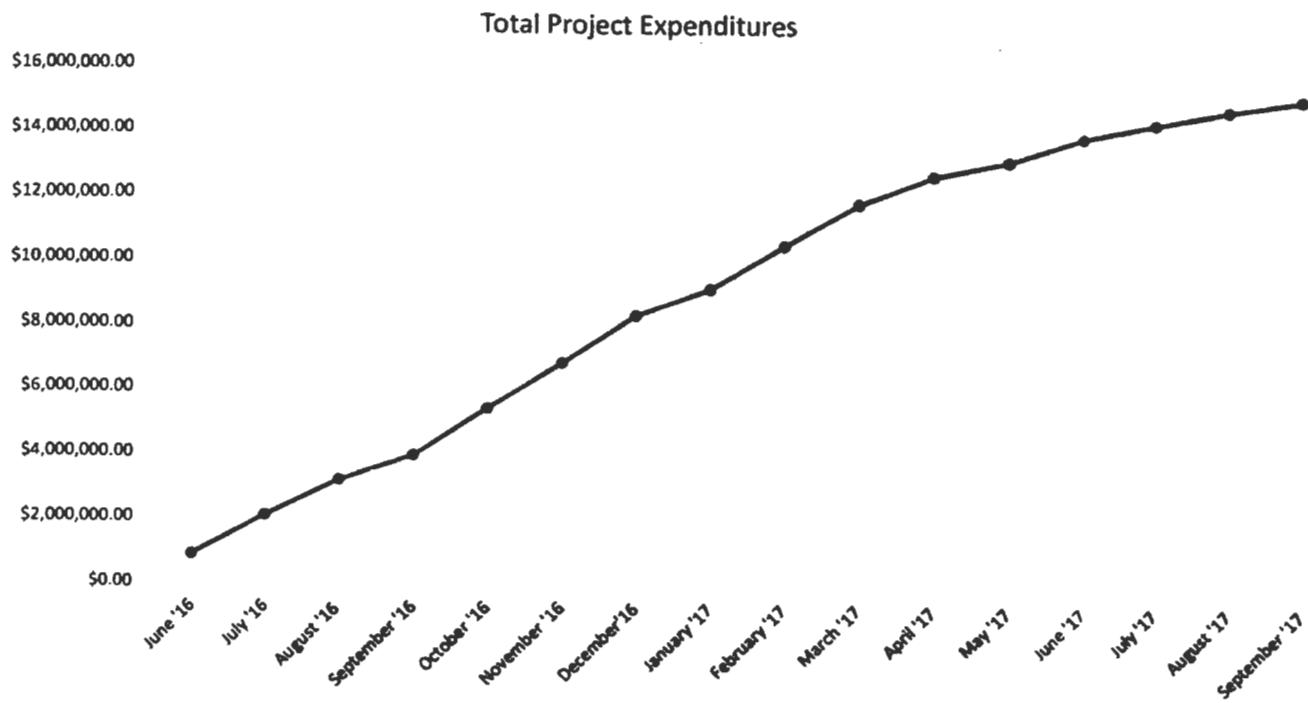
TOTAL - **\$ 757,528.86**



Month	June '16	July '16	August '16	September '16	October '16	November '16	December '16	January '17	February '17	March '17	April '17	May '17	June '17	July '17	August '17	September '17
Monthly Cash Flow	\$673,540.36	\$7,718,464.73	\$1,110,408.58	\$769,517.09	\$1,464,589.34	\$1,409,914.83	\$1,487,661.80	\$830,499.99	\$1,356,777.21	\$1,295,757.62	\$680,733.18	\$477,032.40	\$762,322.60	\$441,891.69	\$433,914.16	\$339,447.41
Total Project Expenditures	\$873,540.36	\$7,092,005.10	\$3,302,413.67	\$1,971,930.77	\$5,436,620.11	\$6,846,538.94	\$8,330,200.74	\$9,160,700.67	\$10,519,477.88	\$11,015,235.70	\$12,695,968.88	\$12,173,001.28	\$11,935,373.87	\$14,377,215.54	\$14,811,179.72	\$15,350,577.13







GENERAL SEWER NOTES

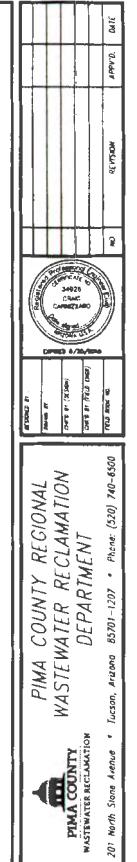
- ALL DESIGN STANDARDS, MATERIALS, AND WORKMANSHIP FOR PUBLIC SANITARY SEWERS SHALL BE IN ACCORDANCE WITH THE PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT (PWRD) ENGINEERING DESIGN STANDARDS 2012 (EDS 2012) AND THE STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION 2012 (SSC 2012) SAID DOCUMENTS ARE AVAILABLE THROUGH THE PWRD WEBSITE (www.pwrw.gov/www/edss2012.htm).
- THE CONTRACTOR SHALL CONTACT "ARIZONA RPT" (DIA 111 PR 1-200-720-5348) A MINIMUM OF TWO (2) BUSINESS DAYS PRIOR TO COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE FACILITY RECAUTION PROVIDED IN THE PWRD AND COMPLY WITH APPLICABLE ARIZONA REVESED STATUTES (A.R.S.) TITLE 40, CHAPTER 1, ARTICLE 6, SECTION 40-360.22 CONCERNING THE ACCURACY BETWEEN THE UNDERGROUND FACILITY MARKINGS AND THE PROJECT PLANS SHALL BE REPORTED IMMEDIATELY TO THE REGULATORY ENTITY.
- THE CONTRACTOR SHALL FIELD VERIFY EXISTING SEWER LINE ELEVATIONS AND ALIGNMENTS PRIOR TO CONSTRUCTION AND IMPLEMENTATION; VERIFICATION MAY REQUIRE PDR-1 YOUTHING.
- HOUSE OR BUSINESS CONNECTION SEWERS (HCS OR BCS) ARE NOT PART OF THE PUBLIC SANITARY SEWER CONVEYANCE SYSTEM. PRIVATE CONNECTION SEWERS CONSTRUCTED PRIOR TO JANUARY 2006 ARE NOT REQUIRED TO BE BLUE STAKED. ANY HCS/BCS ENCODED DURING CONSTRUCTION SHALL BE PROTECTED, REPAIRED, OR REROUTED, AS THE REGULATORY ENTITY PERMITS. PERMITS, IF ISSUED, DUE TO 2012, DETAILED PAGE 400 AND AT NO EXPENSE TO THE PROPERTY OWNER OR PWRD.
- ANY ACTIVITY THAT MIGHT AFFECT THE SANITARY SEWER SYSTEM (MATERIALS ENTERING THE SYSTEM, CONSTRUCTION, AND TREATMENT) REQUIRES APPROVAL AND/OR PERM* BY PWRD PRIOR TO ANY ACTIVITY.
- SEWER CONSTRUCTION ACTIVITIES THAT CONCERN (A) THE ENVIRONMENTAL QUALITY (WHO HAS ISSUED A LICENSE TO OPERATE) OR (B) THE AUTHORITY FOR THIS PROJECT AND (B) THE CONTRACTOR HAS OBTAINED A PUBLIC SEWER CONSTRUCTION PERMIT FROM PWRD (510-724-6389) AS A PRE-CONSTRUCTION MEETING WITH THE ASSIGNED PIMA COUNTY PROJECT FIELD INSPECTOR IS SCHEDULED AT LEAST THREE (3) WORKING DAYS PRIOR TO THE START OF SEWER CONSTRUCTION. FLOW MANAGEMENT PLANS SHALL BE SUBMITTED TO FIELD ENGINEERING THIRTY (30) DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.
- IMMEDIATELY REPORT ANY OF THE FOLLOWING TO EITHER PWRD FIELD ENGINEERING (520-740-2651) OR PWRD CONVEYANCE DIVISION (520-740-2651). ANY RELEASE OF SEWER, WHETHER IN THE PWD, THE PWD'S MASTERS, OR THE WORK AREA, OR THE DEPOSIT OF DEBRIS INTO THE PUBLIC SANITARY SEWER SYSTEM ON WEEKENDS, HOLIDAYS, OR BETWEEN 5 P.M. AND 7:00 A.M. IMMEDIATELY CALL PWRD OPERATIONS CONTROL CENTER AT 520-740-2640 AND REQUEST A PWRD REPRESENTATIVE TO BE DISPATCHED TO THE WORK AREA. THE CONTRACTOR SHALL NOT RELEASE SEWER OVERFLOW (SSO) FROM THE SEWER SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO REPAIR THE SYSTEM. FOR ALL EXPENSES TO MITIGATE THE RELEASE AND TO INFECT THE RELEASING AREAS AND FOR ANY REGULATORY PENALTIES FIRED ON DUE TO THE RELEASE. THE SSO ENTERED A NATURAL DRAWAGE WAY OR SANITARY SEWER SYSTEM, THE CONTRACTOR SHALL REPAIR ALL DAMAGE AS DIRECTED AND APPROVED BY PWRD.
- THE INSPECTION OF THE CONTRACTOR'S WORK BY A BUREAU AND/OR PWRD STAFF SHALL IN NO WAY RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, CONSTRUCTION PLANS AND/OR SPECIFICATIONS. IF THE ENTHROPE OF RECORD OR PWRD STAFF FAIL TO POINT OUT A DEFECT, DILEMMA, OR PROBLEM, THE CONTRACTOR SHALL NOT DISCOVER OR FOR ANY OTHER REASON, FAIL TO NOTICED THE DEFECT, DILEMMA, OR PROBLEM. THE CONTRACTOR, ONCE DISCOVERED, SHALL MAKE CORRECTIVE REPAIRS TO THE UNSATISFACTORY WORK WHEN DISCOVERED. THE CONTRACTOR SHALL NOT FILE A CLAIM FOR LOSSES SUFFERED DUE TO ANY INEFFECTIVE REPAIRS OR OF REPAIRS RESULTING FROM THE UNSATISFACTORY WORK.
- THE CONTRACTOR SHALL COMPLY WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS AT ALL TIMES AND PWRD MANHOLE ENTRY GUIDELINES.
- ALL ROUGH DRAINAGE, INCLUDING FILL, SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF SANITARY SEWERS TO A MINIMUM OF 4 FEET OVER THE TEE OF THE NEW PIPE AND COMPLIANCE AS INDICATED IN THE PLANS OR OTHERWISE UNLEACTED BY PWRD.
- BEDDING, SHADING, AND TRENCH BACKFILL COMPACTION SHALL BE IN ACCORDANCE WITH THE GEOTEXTILE CONTRACTOR (CONTRACTOR) JOB NO. 14-2400, 5000 SECTION 3 AND 5000 SECTION NO. 5000-1400, AS SHOWN ON THE PLANS. SHADING (GROUND WATER OR UNMANAGED SOIL CONDITIONS) BE UNCONDITONED. THE BEDDING SHALL BE MODIFIED BY THE ENGINEER OF RECORD AND APPROVED BY PWRD.
- THE SANITARY SEWER CONSTRUCTION SHALL START AT THE LOWEST DOWNTOWN POINT AND PROGRESS UPWARD, REGARDLESS OF THE DOWNTOWN GRADE ON THE PLANS. IF NOT, THE CONTRACTOR SHALL PROVIDE AN OUT OF SEQUENCE LETTER FOR APPROVAL BY PWRD.
- NEW PUBLIC SEWER FACILITIES MUST BE TESTED, INSPECTED AND AUTHORIZED FOR IN-SERVICE BY PWRD PRIOR TO RECHARGING INTO THE EXISTING PUBLIC SANITARY SEWER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN ARIZONA REGISTERED LAND SURVEYOR TO IDENTIFY THE EXACT FINAL LOCATION AND LAYOUT OF NEW SANITARY SEWERS AND PREPARE THE SEWER AS-BUILT PLANS. SEWER AS-BUILT PLANS SHALL CONFORM TO SUBSECTION 1.4.7 OF THE PWRD STANDARD SPECIFICATIONS AND DETAILS (EDS 2012) ON THE DATE OF RELEASE AND RELEASE OF THE PLANS. ON THE DATE OF CONSTRUCTION, PWRD SHALL SUBMIT THREE (3) COPIES AND A FIFTH EDITION VERSION TO PWRD FIELD ENGINEERING (520-740-2651) FOR REVIEW AT LEAST 30 DAYS PRIOR TO OBTAINING A DISCHARGE AUTHORIZATION FROM PWRD.
- ONLY PLANS ACCEPTED BY PWRD SHALL BE USED FOR INSTALLATION OF SANITARY SEWER FACILITIES. PLANS ACCEPTED BY PWRD DURING PLSION SHALL BE SUBMITTED FOR REVIEW AND RE-ACCEPTANCE BY PWRD PRIOR TO THE START OF THE REvised WORK.
- SEWER CONSTRUCTION WILL NOT BE ACCEPTED BY PWRD IF IT INCLUDES ADDITIONAL WORK ACT PREMULD IN THE APPROVED SET OF PLANS. SEE PWRD SS-2012, SUBSECTION 1.4.5 OF THE REGARDING THE APPROVAL OF FIELD CHANGES.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL SANITARY SEWER MANHOLE STRUCTURES AT ALL TIMES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE, MAINTENANCE, REPAIR OR RE-ACEMENT OF EXISTING IMPROVEMENTS IN THE WORK AREA WHICH HAVE BEEN PLACED OR DAMAGED DURING THE COURSE OF CONSTRUCTION. ALL REPAIR, RE-ACEMENT, OR CLEANUP SHALL BE DONE TO THE SATISFACTION OF THE OWNER.
- ALL CONSTRUCTION AND TEST METHODS SHALL BE IN CONFORMANCE WITH PIMA COUNTY/CITY OF TUCSON STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS (P.C./C.T. SSP), LATEST EDITION

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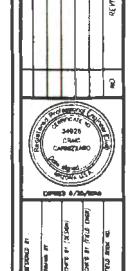


SEI AUGMENTATION SEWER REPLACEMENT PROJECT (3SETS)

GENERAL NOTES



SECTION	APPROVED	DATE



APPROVED
4/10/2012
Tucson, Arizona
Tucson, Arizona
Tucson, Arizona

APPROVED
4/10/201

KINDER MORGAN NOTES:

- CONTRACTORS SHALL BE ADVISED OF KINDER MORGAN'S (KM) REQUIREMENTS TO BE IMMEDIATELY OBLIGATED TO COMPLY.
- THE DUTY TO COVER OVER KM PIPELINES SHALL NOT BE REDUCED NOR DISSAUCED ALTHOUGH KM'S FACILITY HAS NOT BEEN APPROVED.
- PLACEMENT OF SHARS AND TIEOFFS IS NOT PERMITTED ON KM PIPE OR FACILITY.
- DO NOT APPROVE PIPELINE MARKERS SHALL BE INSTALLED SO AS TO INDICATE THE ROUTE OF THE FOREIGN PIPELINE ACROSS THE KM RIGHT OF WAY.
- THE CONTINUED INTEGRITY OF KM'S PIPELINES AND THE SAFETY OF ALL INDIVIDUALS IN THE AREA OF PROPOSED WORK NEAR KM'S FACILITIES ARE OF THE UTMOST IMPORTANCE. THEREFORE, CONTRACTOR MUST MEET WITH KM'S REPRESENTATIVES PRIOR TO CONSTRUCTION TO REVIEW AND RECEIVE NOTIFICATION LISTINGS FOR APPROPRIATE AREA OPERATIONS AND EMERGENCY PERSONNEL. KM'S ON-SITE REPRESENTATIVE WILL REQUIRE DISCONTINUATION OF ANY WORK THAT, IN HIS OPINION, ENDANGERES THE OPERATIONS OR SAFETY OF PERSONNEL, PIPELINES, FACILITIES, OR EQUIPMENT.
- THE CONTRACTOR SHALL NOT EXPOSE ALL KM PIPELINES PRIOR TO CROSSING TO DETERMINE THE EXACT ALIGNMENT AND DEPTH OF THE LINES. A KM REPRESENTATIVE MUST BE PRESENT IN THE EVENT OF PARALLEL LINES, UNTIL ONE DIRECTION CAN BE TAKEN ALL AT A TIME.
- KM WILL NOT ALLOW PIPELINES TO REMAIN EXPOSED OVERNIGHT WITHOUT CONSENT OF KM DESIGNATED HAZARDOUS CONTRACTOR MAY BE REQUIRED TO BACKfill PIPELINES AT THE END OF EACH DAY.
- A KM REPRESENTATIVE SHALL DO ALL LINE LOCATING. A KM REPRESENTATIVE SHALL BE PRESENT FOR HYDRAULIC EXCAVATION. THE USE OF PROBING RODS FOR PIPELINE LOCATING SHALL NOT BE ALLOWED. KM REPRESENTATIVES ONLY, TO PREVENT UNNECESSARY DAMAGE TO THE PIPELINE DURING EXCAVATION.
- NOTIFICATION SHALL BE GIVEN TO KM AT LEAST 72 HOURS BEFORE START OF CONSTRUCTION. A SCHEDULE OF ACTIVITIES FOR THE DURATION OF THE PROJECT MUST BE MADE AVAILABLE AT THAT TIME TO FACILITATE THE SCHEDULING OF KINDER MORGAN, INC. SITE REPRESENTATIVE. ANY CONTRACTOR SCHEDULE CHANGES SHALL BE PROVIDED TO KINDER MORGAN, INC. IMMEDIATELY.
- HEAVY EQUIPMENT WILL NOT BE ALLOWED TO OPERATE DIRECTLY OVER KM PIPELINES OR IN KM ROW AREAS UNTIL APPROVAL IS OBTAINED FROM PORTER HEAVY EQUIPMENT SHALL NOT OPERATE IN KM ROW AREAS UNTIL APPROVAL IS OBTAINED FROM PORTER HEAVY EQUIPMENT. CONTRACTOR SHALL COMPLY WITH ALL PRECAUTIONARY MEASURES REQUIRED BY KM TO PROTECT ITS PIPELINES. WHEN INEQUITY MEASURE EXISTS, PROVISIONS MUST BE MADE TO COMPENSATE FOR SOIL DISPLACEMENT DUE TO SUBSIDENCE OF THIS COMPANY EXCAVATING WITH TEN (10) FEET OF KM PIPELINES WILL HAVE A PLATE GUARD INSTALLED OVER THE TEETH TO PROTECT THE PIPELINE.
- EXCAVATING OR GRADING WHICH MIGHT RESULT IN FRISON, OR WHICH COULD RENDER THE KM ROW INACCESSIBLE SHALL NOT BE PERMITTED UNLESS THE CONTRACT/DEVELOPER/OWNER AGREES TO RESTORE THE AREA TO ITS ORIG. CONDITION AND PROVIDE PROTECTION TO KM'S FACILITY.
- A KM REPRESENTATIVE SHALL BE ON-SITE TO PRECISE ANY CONSTRUCTION ACTIVITIES WITHIN THE (10) FEET OF A KM PIPELINE OR ABOVE/GROUND. APPROXIMATELY 10 FEET FROM THE EXPOSED PIPELINE. THE DISTANCE WITHOUT A KM REPRESENTATIVE BEING ON-SITE, ONLY HAND EXCAVATION SHALL BE PERMITTED WITHIN TWO (2) FEET OF KM PIPELINES, VALVES AND FITTING. UNLESS STATE REQUIREMENTS ARE MORE STRINGENT. HOWEVER PROCEEDED WITH EXTREME CAUTION WHEN WITHIN THREE (3) FEET OF THE PIPE.
- A KM REPRESENTATIVE WILL MONITOR CONSTRUCTION ACTIVITY WITHIN 25 FEET OF KM PIPELINE DURING AND AFTER THE ACTIVITIES TO VERIFY THE INTEGRITY OF THE PIPELINE AND TO ENSURE THE SCOPE AND CONDITIONS AGREED TO HAVE NOT CHANGED. MONITORING MAY BE CONDUCTED BY THE CONTRACTOR OR BY KM. DAILY OR FREQUENCY BASED ON ITEMS SUCH AS SCOPE OF WORK, DURATION OF EXCAVATION, NUMBER OF TYPE OF EQUIPMENT, POTENTIAL IMPACT ON PIPELINE, COMPLIANTITY OF WORK AND/OR NUMBER OF EXCAVATORS INVOLVED.
- REPAIRING IS ONLY ALLOWED WHEN THE POSITION OF THE PIPE IS KNOWN AND NOT WITHIN TEN (10) FEET OF KM FACILITY UNLESS COMPANY REPRESENTATIVE IS PRESENT.
- IMMEDIATE SUPPORT OF ANY EXPOSED KM PIPELINE BY CONTRACTOR MAY BE NECESSARY IF REQUIRED BY KM'S ON-SITE REPRESENTATIVE. BACKFILL BELOW THE EXPOSED LINES AND 12 ABOVE THE LINES SHALL BE REPLETED WITH SAND OR OTHER SELECTED MATERIAL AS APPROVED BY KM'S ON-SITE REPRESENTATIVE AND THOROUGHLY COMPACTED IN 12' LOTS TO 95% OF STANDARD PROCTOR DRY DENSITY MINIMUM OR AS APPROVED BY KM'S ON-SITE REPRESENTATIVE. THIS IS TO ADEQUATELY PROTECT AGAINST STRESSES THAT MAY BE CAUSED BY THE SETTING OF THE PIPELINE.
- NO BLASTING SHALL BE CONDUCTED WITHIN 100 FEET OF KM'S FACILITIES UNLESS BLASTING NOTIFICATION IS GIVEN TO KM A MINIMUM OF ONE WEEK BEFORE BLASTING. (NOTE: PRE-BLAST MEETING SHALL BE CONDUCTED BY THE ORGANIZATION RESPONSIBLE FOR BLASTING KM SHALL BE INFORMED AND HELD HARMLESS FROM ANY LOSS, COST, OR LIABILITY FOR PERSONAL INJURIES RECEIVED, DEATH CAUSED OR PROPERTY DAMAGE SUFFERED OR SUSTAINED BY ANY PERSON RESULTING FROM ANY BLASTING OPERATIONS UNDERTAKEN WITHIN 100 FEET OF ITS FACILITIES. THE ORGANIZATION RESPONSIBLE FOR BLASTING SHALL REHIRE FOR ANY AND ALL DAMAGES CAUSED TO KM'S FACILITIES AS A RESULT OF THE BLASTING. IF KM'S FACILITIES OR NOT KM'S REPRESENTATIVES ARE PRESENT, KM SHALL HAVE A SIGNED AND EXECUTED BLASTING INDEMNIFICATION AGREEMENT BEFORE AUTHORIZED PERMISSION TO BLAST CAN BE GIVEN).
- NO BLASTING SHALL BE ALLOWED WITHIN 300 FEET OF KM'S FACILITIES UNLESS BLASTING NOTIFICATION IS GIVEN TO KM A MINIMUM OF ONE WEEK BEFORE BLASTING. (NOTE: COVERED ABOVE) KM SHALL REVIEW AND ANALYZE THE BLASTING METHODS. A WRITTEN BLASTING PLAN SHALL BE PROVIDED BY THE ORGANIZATION RESPONSIBLE FOR BLASTING AND AGREED TO IN WRITING BY KM IN ADDITION TO MEETING REQUIREMENTS FOR 500 AND 1000' BLASTING MFT ABOVE. A WRITTEN EMERGENCY PLAN SHALL BE PROVIDED BY THE ORGANIZATION RESPONSIBLE FOR BLASTING (NOTE: COVERED ABOVE).

KINDER MORGAN NOTES CONT'D. INSURANCE REQUIREMENTS:

20. **19. CONTRACTORS, AND THEIR SUBCONTRACTORS, WORKING ON COMPANY FACILITIES OR MAINTAIN THE FOLLOWING TYPES OF INSURANCE POLICIES AND MINIMUM LIMITS OF COVERAGE FOR ALL INSURANCE CERTIFICATES ISSUED BY CONTRACTOR AND GRANTEE SHALL INCLUDE "HOLD HARMLESS" AND "EXEMPTION OF INDEMNITY" PROVISIONS APPLICABLE TO THE CONTRACTOR COMPANIES AND MAH AS ADDENDUM INCLUDED ON ALL POLICIES (EXCEPT COMPANY'S COMPENSATION) AND WAIVER OF SUBROGATION IN FAVOR OF KROGER MORGAN AND ITS AFFILIATED OR SUBSIDIARY COMPANIES, FOR 8 DIRECTORS, OFFICERS, AGENTS AND EMPLOYEES APPLIES AS REQUIRED BY WRITTEN CONTRACT.**

CONTRACTOR SHALL UNQUOTE CERTIFICATES OF INSURANCE EVIDENCING INSURANCE COVERAGE PRIOR TO COMMENCEMENT OF WORK AND SHALL PROVIDE THIRTY (30) DAYS NOTICE PRIOR TO THE TERMINATION OR CANCELLATION OF ANY POLICY.

21. **STATUTORY COVERAGE WORKERS' COMPENSATION INSURANCE IN ACCORDANCE WITH THE LAWS OF THE STATE WHERE THE WORK IS TO BE PERFORMED IF CONTRACTOR PERFORMS WORK ON THE ADJACENT TO NAVIGABLE WATERWAYS CONTRACTOR SHALL FURNISH A CERTIFICATE OF INSURANCE SHOWING COMPLIANCE WITH THE PROVISIONS OF THE FEDERAL LONGSHOREMEN'S AND HARBOUR WORKERS' COMPENSATION LAW.**

22. **EMPLOYER'S LIABILITY INSURANCE WITH LIMITS OF NOT LESS THAN \$1,000,000.00 PER OCCURRENCE AND \$100,000.00 EACH EMPLOYEE.**

23. **COMMERCIAL GENERAL LIABILITY INSURANCE WITH A COMBINED SINGLE LIMIT OF NOT LESS THAN \$10,000,000.00 AND IN THE APPROPRIATE POLICIES SHALL INCLUDE COVERAGE FOR BLANKET CONTRACTUAL LIABILITY ASSUMED.**

24. **COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE WITH A COMBINED SINGLE LIMIT OF NOT LESS THAN \$1,000,000.00 IF NECESSARY THE POLICY SHALL BE ENDORSED TO PROVIDE CONTRACTUAL LIABILITY COVERAGE.**

25. **IF NECESSARY COMPREHENSIVE AIRCRAFT LIABILITY INSURANCE WITH COMBINED BODY INJURY, INCLUDING PASSENGERS, AND PROPERTY DAMAGE LIABILITY SINGLE LIMITS OF NOT LESS THAN \$5,000,000.00 EACH OCCURRENCE.**

26. **CONTRACTOR'S POLLUTION LIABILITY INSURANCE THIS COVERAGE SHALL BE MAINTAINED IN FORCE FOR THE FULL PERIOD OF THIS AGREEMENT WITH AVAILABLE LIMITS OF NOT LESS THAN \$2,000,000.00 PER OCCURRENCE.**

27. **POLLUTION LEGAL LIABILITY INSURANCE THIS COVERAGE MUST BE MAINTAINED IN A MINIMUM AMOUNT OF \$5,000,000.00 PER OCCURRENCE.**

UPRR GENERAL NOTES

1 EXCAVATING OR GRADING, WHICH MIGHT RESULT IN FRICKON OR WHICH COULD RENDER THE KM ROW INACCESSIBLE, SHALL NOT BE PERMITTED UNLESS THE CONTRACT/DEVELOPER/OWNER AGREES TO RESTORE THE AREA TO ITS ORIGNAL CONDITION AND PROMISE PROTECTION TO KM'S FACILITY.

2 A KM REPRESENTATIVE SHALL BE ON-SITE TO OBSERVE ANY CONSTRUCTION ACTIVITIES WITHIN TEN (10) FEET OF A KM PIPELINE OR ARROYO/GRADING APPURTENANCE. THE CONTRACTOR SHALL NOT WORK WITHIN THIS DISTANCE WITHOUT A KM REPRESENTATIVE BEING ON SITE. ONLY HAND EXCAVATION SHALL BE PERMITTED WITHIN TWO (2) FEET OF KM PIPELINE AND FITTING UNLESS STATE REQUIREMENTS ARE MORE STRINGENT. CONTRACTOR PERSONNEL SHALL NOT WORK WITHIN 10 FEET OF THE PIPE.

3 A KM REPRESENTATIVE WILL MONITOR CONSTRUCTION ACTIVITIES WITHIN ONE (1) KM FACILITIES DURING AND AFTER THE ACTIVITIES TO VERIFY THE INTEGRITY OF THE PIPELINE AND TO ENSURE THE SCOPE AND CONDITIONS AGREED TO HAVE NOT CHANGED. MONITORING MEANS TO CONDUCT SITE INSPECTIONS ON A PRE-DETERMINED FREQUENCY BASED ON ITEMS SUCH AS: SCOPE OF WORK, DURATION OF EXPECTED EXCAVATION WORK, TYPE OF EQUIPMENT, POTENTIAL IMPACT ON PIPELINE, COMPLEXITY OF WORK AND/OR NUMBER OF EXCAVATORS INVOLVED.

4 RIPPING IS ONLY ALLOWED WHEN THE POSITION OF THE PIPE IS KNOWN AND NOT WITHIN TEN (10) FEET OF KM FACILITY UNLESS COMPANY REPRESENTATIVE IS PRESENT.

5 TEMPORARY SUPPORT OF ANY EXPOSED KM PIPELINE BY CONTRACTOR MAY BE NECESSARY IF REQUIRED BY KM'S ON SITE REPARATION. BACKFILL ON THE EXPOSED LINES AND TO ARROYO/GRADING SHALL BE REPLACED WITH SOIL OR OTHER SELECTED MATERIAL AS APPROVED BY KM'S ON-SITE REPRESENTATIVE. THE BACKFILL MATERIAL SHALL BE DRIED IN 12' LOTS TO 60% BY STANDARD PROCTOR DRY DENSITY MINIMUM OR AS APPROVED BY KM'S ON-SITE REPRESENTATIVE. THIS IS TO ADEQUATELY PROTECT AGAINST STRESSES THAT MAY BE CAUSED BY THE SETTING OF THE PIPELINE.

6 NO BLASTING SHALL BE ALLOWED WITHIN 1000 FEET OF KM'S FACILITIES UNLESS BLASTING NOTIFICATION IS GIVEN TO KM INCLUDING COMPLETE BLASTING PLAN DATA. A PRE-BLAST MEETING SHALL BE CONDUCTED BY THE ORGANIZATION RESPONSIBLE FOR BLASTING.

KM SHALL BE INDEMNIFIED AND HELD HARMLESS FROM ANY LOSS, COST, OR LIABILITY FOR PERSONAL INJURES RECEIVED, DEATH CAUSED OR PROPERTY DAMAGE SUFFERED OR SUSTAINED BY ANY PERSON RESULTING FROM ANY BLASTING OPERATIONS UNDERTAKEN WITHIN 500 FEET OF ITS FACILITIES. THE ORGANIZATION RESPONSIBLE FOR BLASTING SHALL PROVIDE KM AND ITS DRAWR'S CALLER TO KM'S FACILITIES AS A RESULT OF THEIR ACTIVITIES WITH WHOM KM'S ON-SITE REPRESENTATIVE ARE PRESENT. KM SHALL HAVE A SIGN AND EXCLUDE BLASTING INDEMNIFICATION AGREEMENTS BEFORE AUTHORIZED PERMISSION TO BLAST CAN BE GIVEN.

NO BLASTING SHALL BE ALLOWED WITHIN 500 FEET OF KM'S FACILITIES UNLESS BLASTING NOTIFICATION IS GIVEN TO KM A MINIMUM OF ONE WEEK BEFORE BLASTING (NOTE: COVERED ABOVE) KM SHALL REVIEW AND ANALYZE THE BLASTING METHODS. A WRITTEN BLASTING PLAN SHALL BE PROVIDED BY THE ORGANIZATION RESPONSIBLE FOR BLASTING AND AGREED TO IN WRITING BY KM IN ADDITION TO MEETING REQUIREMENTS 1 FOR 500 AND 1000' BEING MET ABOVE. A WRITTEN EMERGENCY PLAN SHALL BE PROVIDED BY THE ORGANIZATION RESPONSIBLE FOR BLASTING (NOTE: COVERED ABOVE).

1 ALL EXCAVATIONS AND BACKFILLING IN RAILROAD RIGHT-OF-WAY MUST BE DONE USING WORKMANSHIP ACCEPTABLE TO THE RAILROAD. THE BACK-FILL LINE MUST BE PLACED IN A MAXIMUM OF 6" INCHES LAYERS AND COMPACTED TO 90% OF MAXIMUM STANDARD DENSITY AS DETERMINED BY ASME T 94.9 ON 50 MM T 650.

2 TRACK BOLES MUST BE A MINIMUM OF 60 INCHES BELOW BASE OF RAIL. METAL BOLES ARE NOT PERMITTED ON UNION PACIFIC PROPERTY. THE ENDS OF STEEL CASING (SEE UNION PACIFIC STANDARD 1029) WILL HAVE TO BE AT LEAST 10 FEET FROM THE CENTERLINE OF THE TRACK AND MEASURED FROM THE ADJACENT END OF THE TRACK. NO BORE PITS MUST BE A MINIMUM OF 10 FEET FROM THE CENTERLINE OF TRACK AND MEASURED AT RIGHT ANGLE TO THE TRACK IN ADDITION. NO RIPPER PITS CAN BE LOCATED IN THE SLOPE OF A CUT OR FILL SECTION OF THE TRACK. THE BORE PIT SIZE MUST BE KEPT TO A MINIMUM.

3 BEFORE WORK CAN BEGUN ON RAILROAD RIGHTS OF WAY, THE AGREEMENT BETWEEN UNION PACIFIC AND THE APPLICANT MUST BE FULLY EXECUTED. ALSO, EMPLOYEES OF THE APPLICANT AND ITS CONTRACTOR PERSONNEL THAT WILL BE ON AND ABOUT RAILROAD PROPERTY MUST HAVE A COPY OF MINIMUM SAFETY REQUIREMENTS FOR CONTRACTORS EXHIBIT B AND BE SAFELY TRAINED BY A UNION PACIFIC PROJECT INSPECTOR.

4 ADEQUATE BARRIER PROTECTION IS REQUIRED FOR ALL EXCAVATION ON RAILROAD RIGHT-OF-WAY TO PROTECT INDIVIDUALS FROM FALLING INTO HOLES.

5 ALL GRADES DISTURBED THROUGHOUT THE CONSTRUCTION PROCESS SHALL BE RESTORED TO MATCH EXISTING CONDITIONS. ANS SHALL BE GRADED TO DRAIN AWAY FROM RAILROAD TRACKS.

6 ALL PROJECTS WILL REQUIRE A PROJECT INSPECTOR AND FLAG MAN. WHEN REQUIRED FOR PROTECTION OF TRAIN OPERATIONS, A FLAG MAN SHALL BE NOTIFIED BY THE CONTRACTOR THAT IT WILL TAKE THREE WEEKS TO HIRE AN APPROPRIATE FLAG MAN FOR A PROJECT. THEREFORE, WORK SCHEDULES MAY HAVE TO BE PLANNED ACCORDINGLY.

7 STEEL CASING FOR THE RAILROAD CROSSING JACK AND BORE SHALL BE 54" O.D. SMOOTH STEEL CASING PIPE WITH MINIMUM YIELD STRENGTH OF 35,000 PSI AND 0.75" MINIMUM WALL THICKNESS.

CITY OF TUCSON AND CITY OF SOUTH TUCSON NOTES:

- 1 THE CITY SHALL NOT BE HELD LIABLE FOR ANY ERRORS AND/OR OMISSIONS ON THESE PLANS. ITEMS NOT MEETING CITY STANDARDS SHALL BE REPAIRED/REPLACED AT NO COST TO THE CITY.
- 2 AN EXCAVATION PERMIT SHALL BE OBTAINED FROM THE CITY TRANSPORTATION DEPARTMENT PRIOR TO ANY WORK WITHIN THE PUBLIC RIGHT OF WAY.
- 3 A PRE CONSTRUCTION FIELD MEETING SHALL BE CONDUCTED WITH THE CITY TRANSPORTATION INSPECTOR PRIOR TO ANY WORK WITHIN THE PUBLIC RIGHT OF WAY.
- 4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL PAYMENT RPT ACCEPTANCE IN KIND, INCLUDING REPAIRS AND SURFACE TREATMENTS IN ACCORDANCE WITH PIMA ASSOCIATION OF GOVERNMENTS STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS. LATEST EDITION.

ADOT NOTES:

1. AN ADOT ENCROACHMENT PERMIT IS REQUIRED PRIOR TO ANY WORK IN ADOT RIGHT OF WAY
2. ANY EXCAVATION WITH ADOT RIGHT OF WAY WILL REQUIRE COMPLIANCE WITH THE ARIZONA STATE HISTORIC PRESERVATION ACT

ADEQ REQUIRED NOTES:

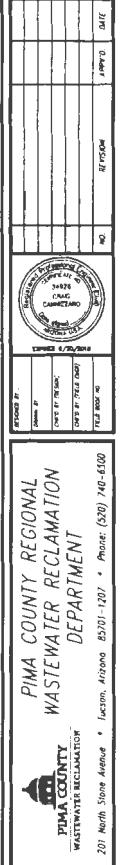
1. ALL SEWER LINES SHALL BE COVERED AT LEAST 4 FEET OF BACK FILL, PER MUNICIPAL CODE.
2. ALL SEWER MAIN TRENCHING AND BACK FILL SHALL BE IN ACCORDANCE WITH AAC RIB-9-E10(X) (2018) AND PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT STANDARD DETAIL RWRD-104.
3. THE FURNITURE OF SEWER MAIN SHALL BE DEFLECTION TESTED PER AAC RIB 9 E30(X)(D2X).
4. EACH SEGMENT OF THE SEWER MAIN SHALL BE LEAN TESTED IN ACCORDANCE WITH AAC RIB 9-E10(D)(2X).
5. THE FURNITURE OF SEWER MAIN SHALL BE TESTED FOR UNIFORM SLOPE PER AAC RIB-9-E10(D)(2X).
6. ALL MANHOLES SHALL BE LEAK TESTED PER AAC RIB-9-E10(D)(3X).
7. THE HORIZONTAL AND VERTICAL SEPARATION BETWEEN PUBLIC WATER MAINS AND PUBLIC SEWER LINES SHALL BE IN ACCORDANCE WITH AAC MIB-9-130(D)(1) AND SOHRO 108.
8. ALL MANHOLES SHALL BE IN ACCORDANCE WITH AAC MIB-9-130(D)(1).

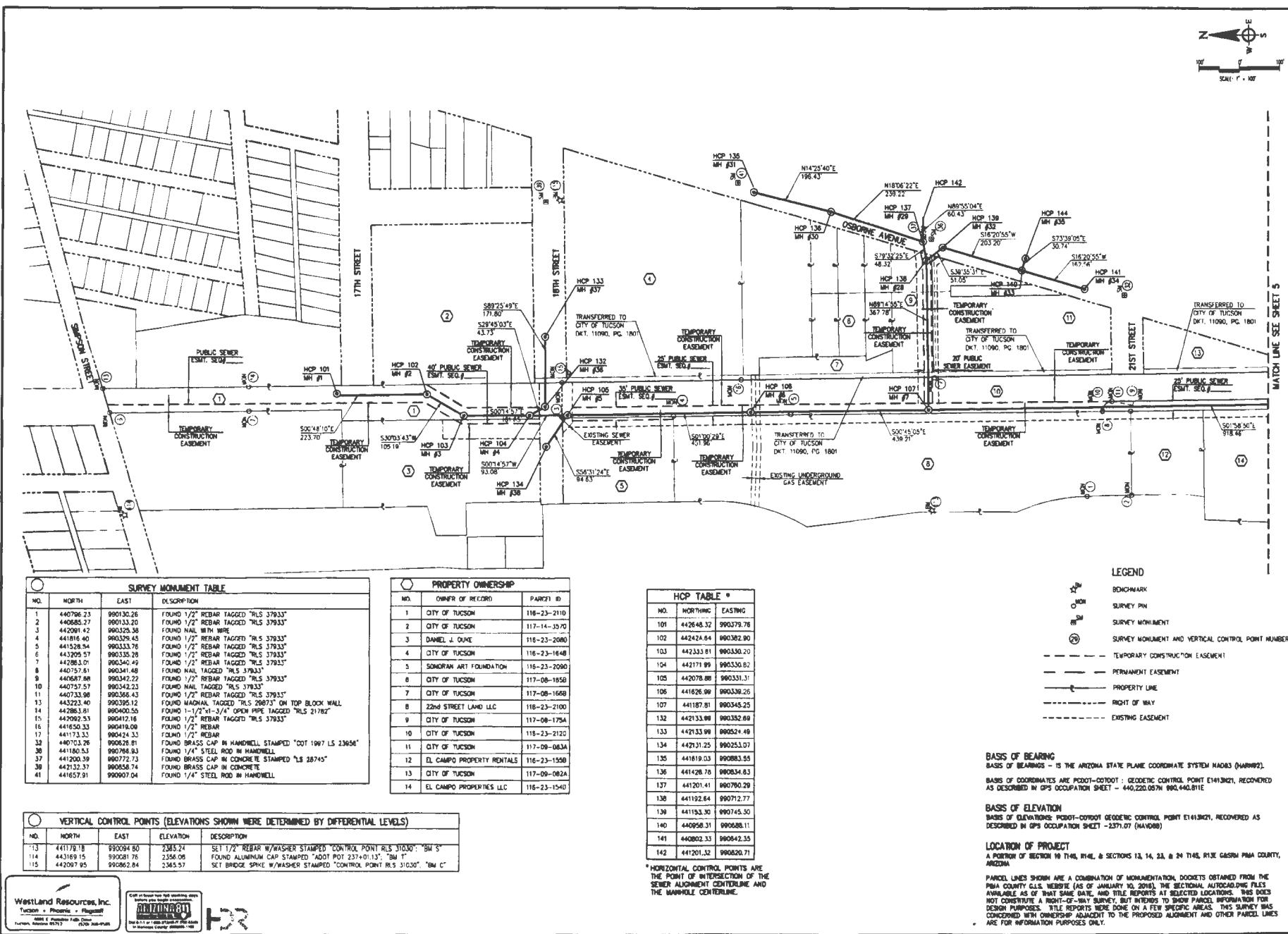
Existing Sewer Line Abandonment and Removal Summary Table

Wellbore Device and Wellbore Summary Table						
Plan No.	Upstream I/M/S MH No	Downstream I/M/S MH No	Pipe Size	Abandon/Remove	Length of Abandonment/Removal	
G-62-044	9910_20	9910_19	36	Remove	230	
G-62-044	9910_20	9910_19	36	Abandon	240	
G-67-044	3152_02	9910_20	36	Abandon	75	
G-2010-017	3152-DIV01	3152_02	36	Remove	25	
G-62-044	3152-DIV01	9910_21	33	Remove	12	
G-62-044	9910_21	9917_04	33	Abandon	53	
G-62-044	9917_04	9917_03	36	Abandon	160	
G-62-044	9917_03	9917_02	36	Remove	70	
G-217A	8817_39	5986_11	8	Remove	423	
G-217A	8817_39	5986_11	8	Abandon	100	
G-148	8911-15E	8180_01	8	Abandon	62	
G-68-033	1779_01	9917_31	30	Abandon	80	
G-62-044	9917_31	3193_01	30	Abandon	50	
G-030	9864_06	9864_04	8	Remove	825	
G-99-020	4359_17	4359_09	8	Remove	80	
G-99-020	4359_07	9982_01	8	Abandon	36	
G-99-020	9892_01	9864_05	8	Abandon	72	
G-99-020	9892_01	9864_05	8	Remove	89	
G-99-020	4359_04	4359_03	8	Remove	200	
G-99-020	4359_01	4359_16	8	Abandon	25	

ABBREVIATIONS LIST

AAC	ARIZONA ADMINISTRATIVE CODE	MON	MONUMENT
ADP	ASBESTOS, DURMANT PIPE	OCEN	ON CENTER EACH WAY
ADEQ	ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY	C&M	OPERATION AND MAINTENANCE
ADOT	ARIZONA DEPARTMENT OF TRANSPORTATION	DR	OLD NOGALAS INTERCEPTOR
AKS	ARIZONA REWORLD STATUTES	DSHA	OCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
ATM	AMERICAN SOCIETY FOR IRONWARE AND MATERIALS	DTW	DEPARTMENT OF TRANSPORTATION
AWWA	AMERICAN WATER WORKS ASSOCIATION	PAC	PIMA ASSOCIATION OF GOVERNMENTS
BCS	BUSINESS CONNECTION CENTER	PC/CD/SSP	PIMA COUNTY UNION STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS
BM	BENCH MARK	PERMARD	PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT
CFE	CURB FEET PER SECOND	PERDO	PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY
CHPP	CHAMBER OF COMMERCE	PT	POLYETHYLENE TUBING
COT	CITY OF TUCSON	PL	POLYIMIDE
DIA	DIAMETER	PS	POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPE	PTC	PIPE THREAD CONVENTIONAL
EDS	ENGINEERING DESIGN STANDARDS	RCBEB	REINFORCED CONCRETE BOX CULVER
EMP	ENVIRONMENTAL MANAGEMENT PLAN	RCFB	REINFORCED CONCRETE PIPE
FT	FEET	PLS	REGISTERED LAND SURVEYOR
HE	HORIZONTAL ELLIPTICAL	RWARD	REGIONAL WATER WASTE RECLAMATION DEPARTMENT
HOPE	HIGH DENSITY POLYETHYLENE	SD	SEWER DRAIN INCEPTOR
HSCE	HOUSING CODE, SENIOR	SEQ#	SEQUENCE NUMBER
HCP	HORIZONTAL CONTROL POINT	S"	SOUTHEAST INTERCEPTOR
IMS	INFRASTRUCTURE MANAGEMENT SYSTEM	SI	SURVEY MONUMENT
LN	LINEAR FOOT	SS	SURVEY STATION
MAN	MANUFACTURE	SSC&C	STANDARDS SPECIFICATIONS AND DETAILS FOR CONSTRUCTION
MGD	MILLION GALLONS PER DAY	S"	SOLAR FOOT
MIN	MANHOLE	SSP&P	STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS
MN	MINIMUM	STW&P	STORM WATER WASTE RECLAMATION PLAN
		TIC	TIME IN CONSTRUCTION ELEMENT





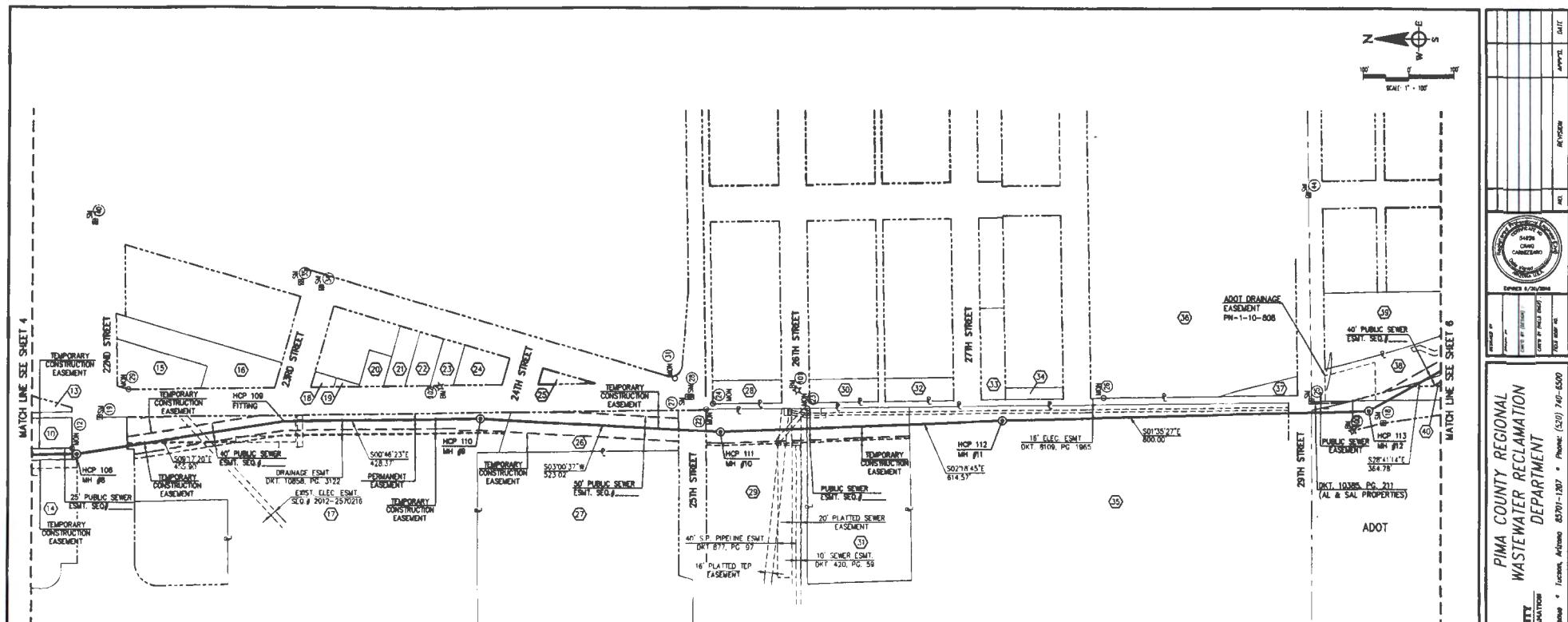
SEI AUGMENTATION SEWER
REPLACEMENT PROJECT
(3SERV)
SURVEY CONTROL SHEET

Q-2018-014

DATE: FEBRUARY 29, 2018

HOHNA: 5'-10"
PERF: 1

SHEET NO: 4 or 50



SURVEY MONUMENT TABLE			
NO.	NORTH	EAST	DESCRIPTION
12	440279.42	990373.33	FOUND 1/2" REBAR TAGGED "RLS 37943"
13	437412.29	990453.53	FOUND 1/2" REBAR STAMPED "ADOT RLS 2008 226 15-81-27, 1-10-4-BUL, LSL222"
22	436900.29	990451.53	FOUND 1/2" REBAR TAGGED "RLS 18547"
23	436880.56	990454.15	FOUND 1/2" REBAR TAGGED "RLS 13187"
74	436885.21	990453.73	FOUND 1/2" REBAR
25	437580.25	990458.00	FOUND BRASS CAP IN CONCRETE STAMPED "LS 36786"
26	436930.99	990458.99	FOUND ALUMINUM CAP STAMPED "ADOT RLS 17479"
27	436930.50	990459.07	FOUND ALUMINUM CAP STAMPED "ADOT RLS 25088"
28	436932.75	990459.22	FOUND ALUMINUM CAP
29	436956.47	990528.85	FOUND SCREWS IN CONCRETE TAGGED "REC LS 17479"
31	436956.47	990528.85	FOUND 1/2" REBAR TAGGED "REC LS 17479"
34	436781.55	990528.85	FOUND ALUMINUM CAP STAMPED "ADOT RLS 20073"
35	436781.55	990529.79	FOUND BRASS CAP IN CONCRETE STAMPED "COT RLS 17479"
40	440231.73	990586.81	FOUND BRASS CAP IN CONCRETE STAMPED "COT RLS 29073"
44	437587.33	990599.60	FOUND BRASS CAP IN CONCRETE

PROPERTY OWNERSHIP		
NO.	OWNER OF RECORD	PARCEL ID
10	CITY OF TUCSON	118-23-2120
13	EL CAMPO PROPERTIES LLC	117-09-082A
14	EL CAMPO PROPERTIES LLC	118-73-1540
15	18TH & EUCID LLC	118-20-048A
16	18TH & EUCID	118-20-048B
17	JIMM RIAL ESTATE OF TUCSON LLC	118-89-0021
18	CITY OF TUCSON	118-20-0800
19	CITY OF TUCSON	118-20-0810
20	ERNESTO RODRIGUEZ	118-20-0860
21	CITY OF TUCSON	118-20-0870
22	CITY OF TUCSON	118-20-0880
23	MARIANNA LEONARD	118-20-0980
24	CITY OF TUCSON	118-20-1000
25	CITY OF TUCSON	118-20-0710
26	CITY OF TUCSON	118-08-001A

PROPERTY OWNERSHIP		
NO.	OWNER OF RECORD	PARCEL ID
27	ATKINSON LAND HOLDINGS	118-08-002A
28	R. & E. RANGLE	118-22-1330
29	J. DANIISON	118-08-136A
30	CORTINAS HSPEL	118-22-1420
31	DYING PIMA COUNTY LLC	118-08-156A
32	J. & T. TERAN	118-22-1570
33	M. & A. MIRANDA	118-22-3700
34	LA FRONTERA CENTER INC.	118-22-3720
35A	A.D.O.T.	NO DATA
36	LA FRONTERA CENTER INC.	118-22-412C
37	LA FRONTERA CENTER INC.	118-22-412B
38	AL & SAL PROPERTIES LLC	118-23-207B
39	AL & SAL PROPERTIES LLC	118-23-005A
40	AL & SAL PROPERTIES LLC	118-23-000A

* ELEVATION PERMIT REQUIRED FOR ALL WORK WITHIN
ADOT RIGHT OF WAY. SEE ADOT NOTES SHEET 3.

HOP TABLE *		
NO.	NORTHING	EASTING
108	440299.49	980360.74
109	439819.57	990454.33
110	438391.36	990440.10
111	439885.84	980412.63
112	438254.87	980437.43
113	437455.17	990459.64

* HORIZONTAL CONTROL POINTS ARE
THE POINT OF INTERSECTION OF THE
SEWER ALIGNMENT CENTERLINE AND
THE MANHOLE CENTERLINE.

LEGEND

BENCHMARK	NO.
SURVEY PIN	○
SURVEY MONUMENT	◎
SURVEY MONUMENT AND VERTICAL CONTROL POINT NUMBERS	◎

TEMPORARY CONSTRUCTION EASEMENT
PERMANENT EASEMENT
PROPERTY LINE
RIGHT OF WAY
EXISTING EASEMENT

BASIS of BEARING

BASIS of BEARING - IS THE ARIZONA STATE PLANE COORDINATE SYSTEM NAMES (NAD83).
BASIS of COORDINATES ARE DOT01-DOT02; GEODETIC CONTROL POINT E1413M21, RECOVERED
AS DESCRIBED IN GPS OCCUPATION SHEET - 440.220.0579 990.440.0116
BASIS of ELEVATION
BASIS of ELEVATIONS: DOT00-DOT01 GEODETIC CONTROL POINT E1413M21, RECOVERED AS
DESCRIBED IN GPS OCCUPATION SHEET - 2371.07 (NAVD88)

LOCATION OF PROJECT
A PORTION OF SECTION 10 THE 4TH & SECTIONS 13, 14, 23, & 24 T14S R13E GEMINI PIMA COUNTY,
ARIZONA

PARCEL LINES SHOWN ARE A COMBINATION OF MONUMENTATION DOCKETS OBTAINED FROM THE
PIMA COUNTY GLS. WEBSITE (AS OF JANUARY 10, 2010). THE SECTIONAL AUTOCAD FILE
AVAILABLE ON THE PIMA COUNTY GLS. WEBSITE IS FOR INFORMATION PURPOSES ONLY. THESE
LINES DO NOT CONSTITUTE A RIGHT-OF-WAY SURVEY, BUT INTENDS TO SHOW PARCEL INFORMATION FOR
DESIGN PURPOSES. TITLE REPORTS WERE DONE ON A FEW SPECIFIC AREAS. THIS SURVEY WAS
CONCERNED WITH OWNERSHIP ADJACENT TO THE PROPOSED ALIGNMENT AND OTHER PARCEL LINES
ARE FOR INFORMATION PURPOSES ONLY.

SEI AUGMENTATION SEWER
REPLACEMENT PROJECT
(SESR)
SURVEY CONTROL SHEET

0-2016-014

FEBRUARY 27, 2015

SCALE: 1" = 100'

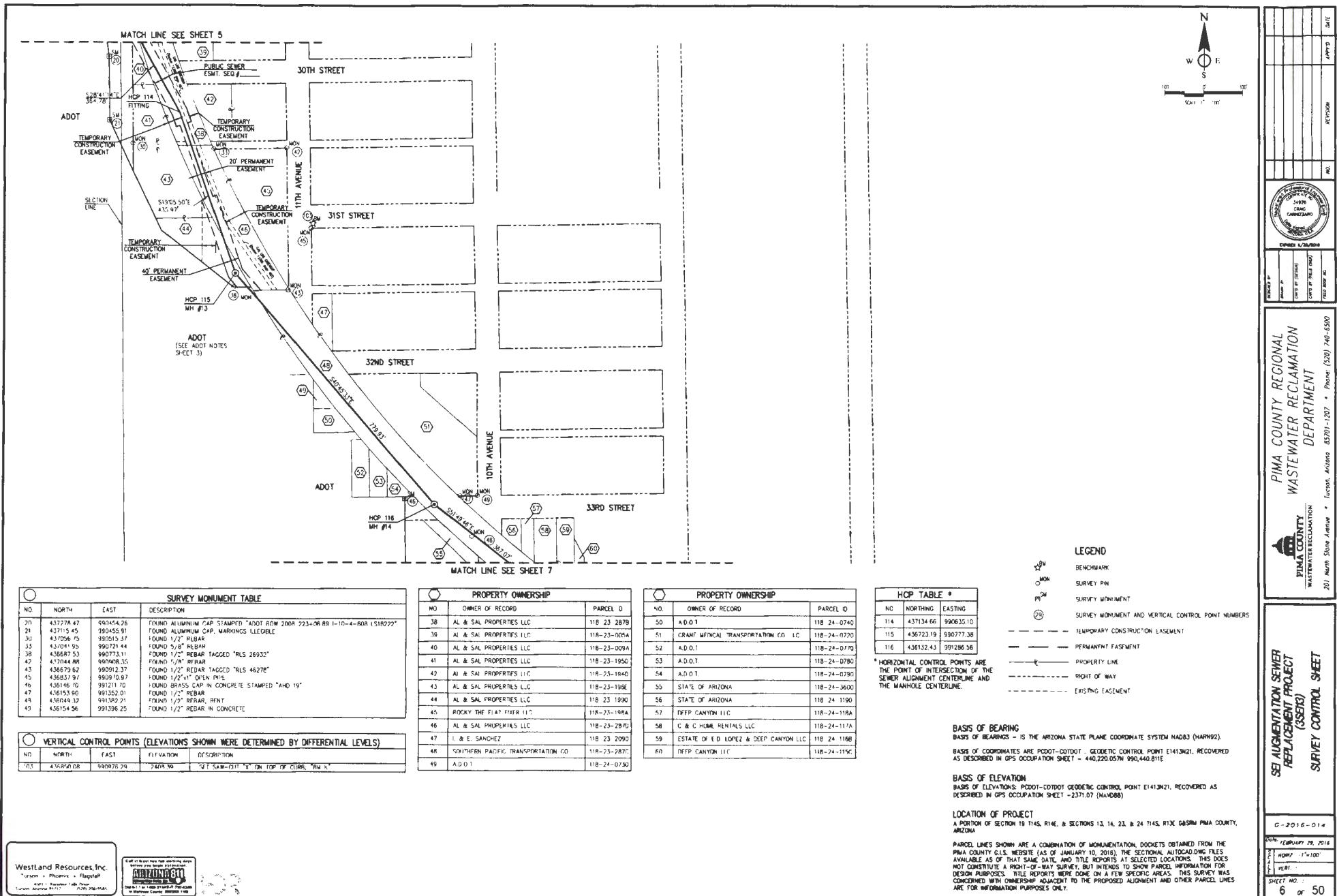
PERIOD: 1

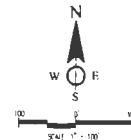
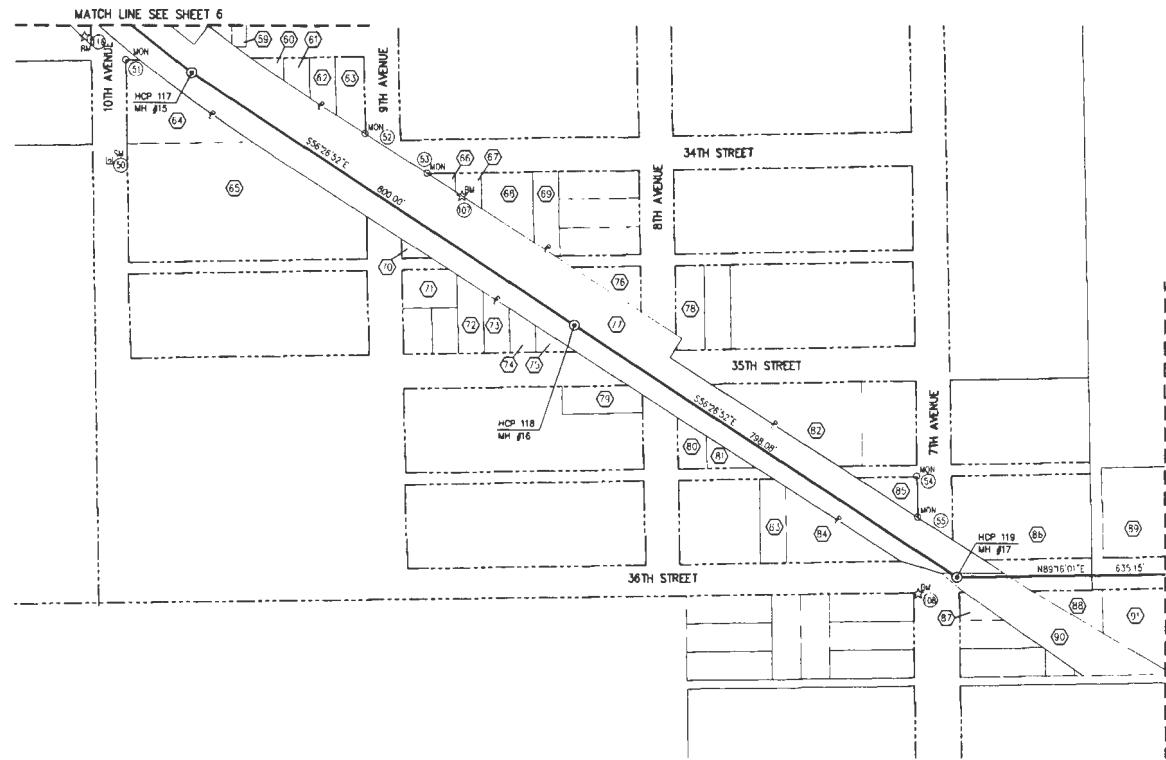
SHEET NO.: 5 of 50

RECEIVED BY	DATE
DR. CARLOS GARCIA	02/28/2016

PIMA COUNTY REGIONAL
WASTEWATER RECLAMATION
DEPARTMENT
WASTEWATER RECLAMATION
PIMA COUNTY

20 North Stone Avenue • Tucson, Arizona 85701-2027 • Phone: (520) 740-5500





SURVEY MONUMENT TABLE			
NO.	WRTI ¹	LAST	DESCRIPTION
50	+35750.23	991432.75	FOUND 1/2" REBAR
51	+49589.24	991498.74	FOUND 1/2" REBAR TADED "RS 2178"
52	+15788.67	991470.00	FOUND 1/2" REBAR TADED "RS 2540"
53	+15788.67	992815.56	FOUND 5/8" REBAR TADED "RS 2275"
54	+15200.07	992815.03	FOUND 5/8" REBAR TADED "RS 2973"
55	+45128.61	992836.17	FOUND 5/8" REBAR TADED "RS 2973"

VERTICAL CONTROL POINTS (ELEVATIONS SHOWN WERE DETERMINED BY DIFFERENTIAL LEVELING)				
NAME	NORTH	EAST	ELEVATION	DESCRIPTION
107 435688.88	992045.68	24713.48	SET 1/2" REBAR W/WASHER STAMPED "CONTROL POINT RLS 31030", "BM J"	
108 434993.73	99238.25	2427.00	FOUND CHISELED "*" ON TOP OF CURB OF HANCOCK RAMP, "BM J"	
116 152968.00	99189.83	2414.95	SCT BRIDGE, SPKE W/WASHER STAMPED "CONTROL POINT RLS 31030", "BM E"	



CP TABLE *

* HORIZONTAL CONTROL POINTS ARE THE POINT OF INTERSECTION OF THE SEWER ALIGNMENT CENTERLINE AND THE MANHOLE CENTERLINE.

PROPERTY OWNERSHIP		
NO.	OWNER OF RECORD	PARCEL ID
59	DEPP CANYON LLC	118-24-115
60	SOMJA FLORES	118-24-121

PROPERTY OWNERSHIP		
NO.	OWNER OF RECORD	PARCEL #
76	JESUS VALENZUELA	118-24-22
77	SOUTHERN PACIFIC TRANSPORTATION CO.	118-23-28

OF BEARING
OF BEARINGS - IS THE ARIZONA STATE PLANE COORDINATE SYSTEM NAD83 (HARN92)

BASIS OF COORDINATES ARE PCDOT-COTDOT : GEODETIC CONTROL POINT E1413N21, RECOVERED AS DESCRIBED IN GPS OCCUPATION SHEET - 440.220.057N 890.440.811E

BASIS OF ELEVATION
BASIS OF ELEVATIONS: PCDOT-COTDOT GEODETIC CONTROL POINT E1413N21, RECOVERED AS

LOCATION OF PROJECT
A PORTION OF SECTION 19 T14S, R14E, & SECTIONS 13, 14, 23, & 24 T14S, R13E GASTON COUNTY,

PARCEL LINES SHOWN ARE A COMBINATION OF MONUMENTATION, DOCKETS OBTAINED FROM THE PINA COUNTY G.L.S. WEBSITE (AS OF JANUARY 10, 2016), THE SECTIONAL AUTOCAD FILES AVAILABLE AS OF THAT SAME DATE, AND TITLE REPORTS AT SELECTED LOCATIONS. THIS DOES NOT CONSTITUTE A RIGHT-OF-WAY SURVEY, BUT INTENDS TO SHOW PARCEL INFORMATION FOR DESIGN PURPOSES. TITLE REPORTS WERE DONE ON A FEW SPECIFIC AREAS. THIS SURVEY WAS CONCERNED WITH OWNERSHIP ADJACENT TO THE PROPOSED ALIGNMENT AND OTHER PARCEL LINES ARE FOR INFORMATION PURPOSES ONLY.

**SEI AUGMENTATION SEWER
REPLACEMENT PROJECT
(3SER1)**

63

G-2016-014

Page 100 of 100

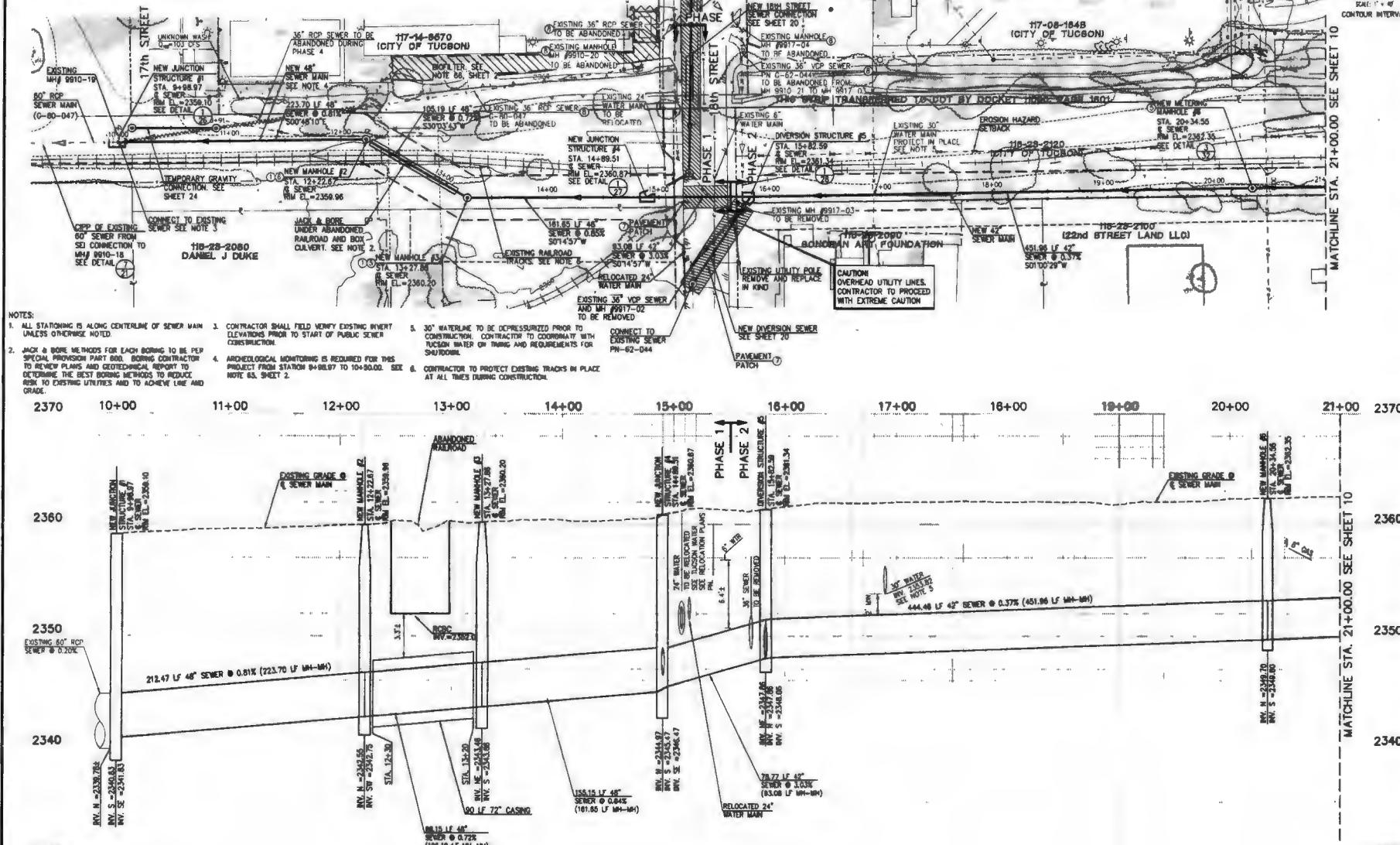
SC MARY. - 1° = 300°

VERI

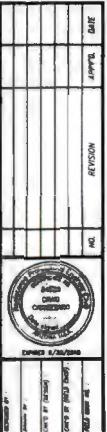
SEARCH NO.:

KEYNOTES:

① CONSTRUCT 7" DIA. MANHOLE PER DETAILS 1 OR 2, SHEET 31
 ② PAVEMENT PATCH PER PAG STANDARD DETAIL 218. SEE DETAILS SHEET 25
 ⑤ CONSTRUCT CONCRETE COLLAR PER PWD STANDARD DETAIL 212
 ALL SERVER MANHOLES AND SERVER MAPS ABANDONMENT TO BE IN PLACE PER
 PWD 3.3.5(E) AND 3.3.7(M). ABANDONMENT WORKMENTS NOT REQUIRED.
 ⑥ CONSTRUCT CONCRETE COLLAR PER PWD STANDARD DETAIL 211



123



KEYNOTES:

① CONSTRUCT 7' DIA. MANHOLE PER DETAILS 1 OR 2, SHEET 31
⑤ CONSTRUCT CONCRETE COLLAR PER FIGD STANDARD DETAIL 21

A compass rose at the top left indicates cardinal directions (N, S, E, W) and intermediate points (NE, SE, SW, NW). Below it is a scale bar with markings for 100, 200, and 300 meters, labeled 'SCALE 1:40' and 'CONTOUR INTERVAL = 1'.

NOTES:

1. ALL STATIONING IS ALONG CENTERLINE OF SEWER MAIN UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO PROTECT EXISTING TRACKS IN PLACE AT ALL TIMES DURING CONSTRUCTION.

2380 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 2380

2370 1961-1962 2370

2360 + 1 2360 + 1 2360 + 1

2350 MATTATI

2340

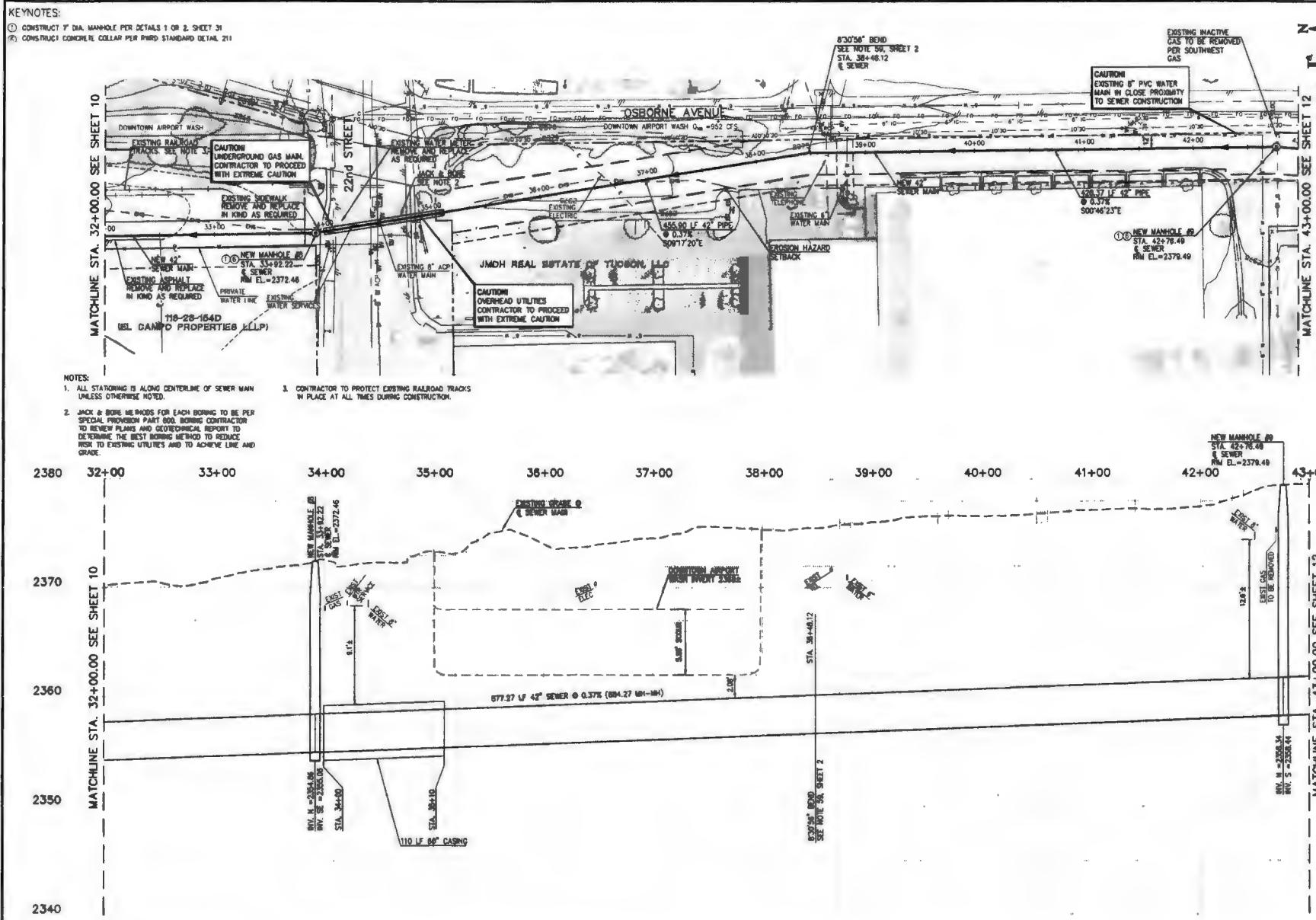


NAME	ADDRESS	APARTMENT	DATE
JOHN	12345 CHENG CHENGZIAO	APT 101	NOV 1998
			
EXPIRED 4/2010/09			

SEI AUGMENTATION SEMI REPLACEMENT PROJECT (3SER3)	
PLAN AND PROFILE SHEET	
0-2015-014	
02/06/2016 20, 2016	
HORZ. 27' 7" - 60"	
VERT. 1' - 10"	
SHEET NO. 10 or 50	

KEYNOTES:

① CONSTRUCT 7" DIA. MANHOLE PER DETAILS 1 OR 2 SHEET 31
② CONSTRUCT CONCRETE COLLAR PER PWD STANDARD DETAIL 21

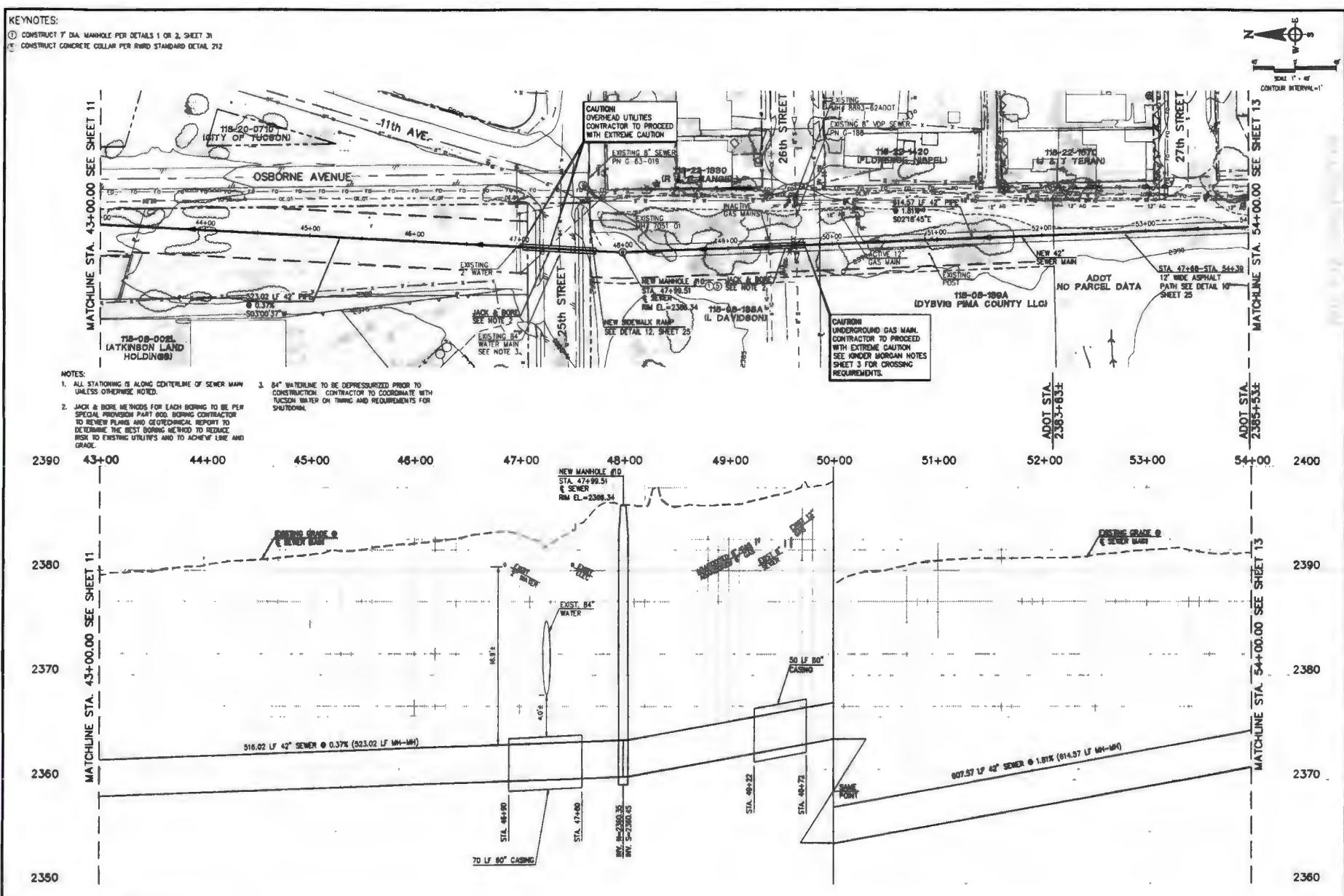


HDR



KEYNOTES:

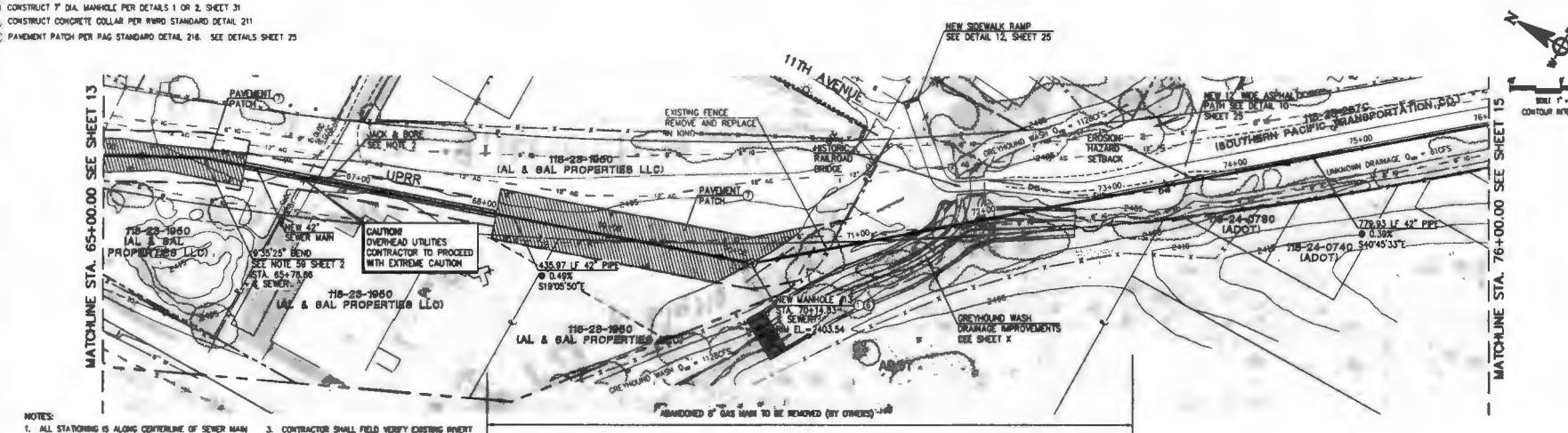
① CONSTRUCT 7' DIA. MANHOLE PER DETAILS 1 OR 2, SHEET 31
② CONSTRUCT CONCRETE COLLAR PER RWB STANDARD DETAIL 212



SEI AUGMENTATION SERVER REPLACEMENT PROJECT (33SETS)	
PLAN AND PROFILE SHEET	
0-2016-014	
DATE	02/26/2016
MEASUREMENT	1" = 40'
VERT. 1"	1" = 4"
SHEET NO. 1 12 of 50	

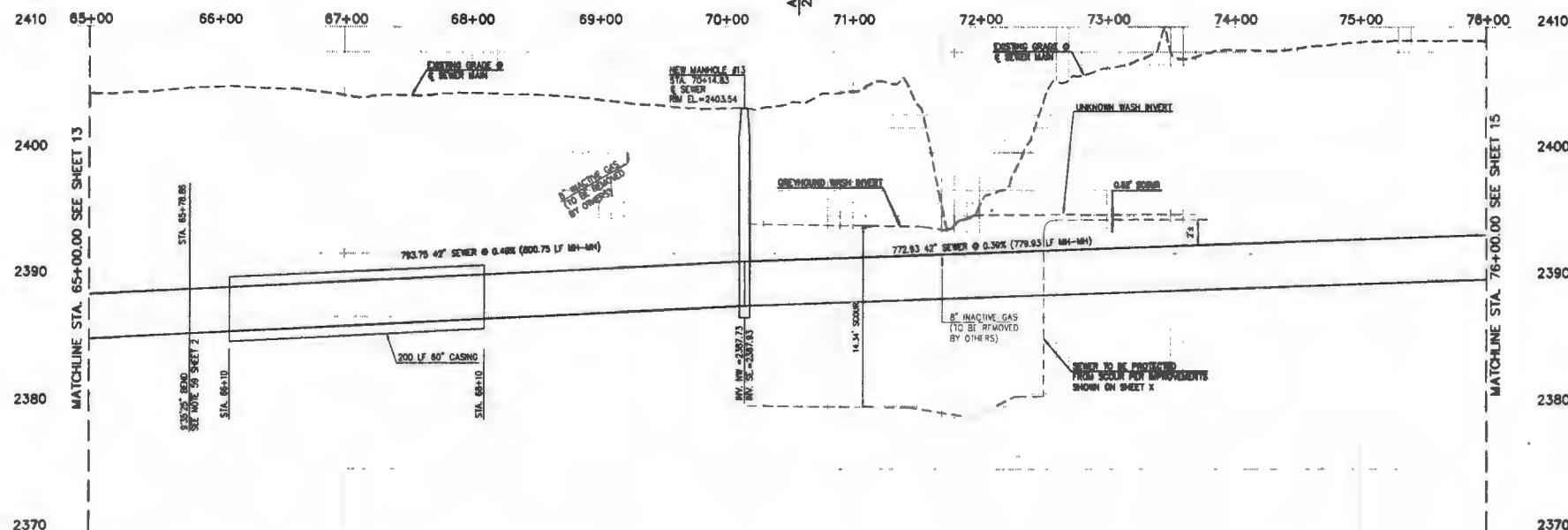
KEYNOTES:

- ① CONSTRUCT 7' DIA. MANHOLE PER DETAILS 1 OR 2 SHEET 31
- ⑥ CONSTRUCT CONCRETE COLLAR PER RRWD STANDARD DETAIL 211
- ⑦ PAVEMENT PATCH PER PAG STANDARD DETAIL 216. SEE DETAILS SHEET 25



NOTE

1. ALL STATIONING IS ALONG CENTERLINE OF SEWER MAIN UNLESS OTHERWISE NOTED.
2. JACK & BORE METHODS FOR EACH BORING TO BE PER SPEC. PROVISION PART BOD. BORING CONTRACTOR TO DETERMINE THE BEST BORING METHOD TO DETERMINE THE BEST BORING METHOD TO MINIMIZE RISK TO EXISTING UTILITIES AND TO ACHIEVE LINE AND GRADE.
3. CONTRACTOR SHALL FIELD VERIFY EXISTING INFRASTRUCTURE PRIOR TO START OF PUBLIC SEWER CONSTRUCTION.
4. CONTRACTOR TO COORDINATE WITH ABS PAVING TO MAINTAIN ACCESS WITHIN THEIR PROPERTY AT ALL TIMES.



122



KEYNOTES:

- ① CONSTRUCT 7' DIA. MANHOLE PER DETAILS 1 OR 2, SHEET 31
- ② CONSTRUCT 8' DIA. MANHOLE PER DETAILS 1 OR 2, SHEET 32
- ⑤ CONSTRUCT CONCRETE COLLAR PER RWHD STANDARD DETAIL 212
- ⑥ CONSTRUCT CONCRETE COLLAR PER RWHD STANDARD DETAIL 211

118-24-117A
G A G HOME RENTALS LLC

NOTE:

1. ALL STANDING IS ALONG CENTERLINE OF SEWER MAIN LINES AS OTHERWISE NOTED.
2. JACK & BORE METHODS FOR EACH BORING TO BE PERformed BY A PROFESSIONAL PART 600 BORING CONTRACTOR TO THE PLANS AND SPECIFICATIONS. CONTRACTOR TO DETERMINE THE BEST BORING METHOD TO REDUCE RISK TO EXISTING UTILITIES AND TO ACHIEVE LINE AND ALIGNMENT AS NOTED.
3. EXISTING RAISED RAILROAD BED FROM SIDER STATION #10-00 TO #10-60 TO BE RE-CONSTRUCTED TO PRE-CONSTRUCTION GRADE. SURVEY REQUIRED BEFORE AND AFTER CONSTRUCTION.

76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00

2420 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 2420

2410

2400

2390

2380

MATCHLINE STA. 76+00.00 SEE SHEET 14

MATCHLINE STA. 87+00.00 SEE SHEET 16

NEW MANHOLE STA. 76+00.00

NEW MANHOLE STA. 81+61.83

30' WIDE 36" SEWER @ 0.94%

(387.07 LF MH-MH)

30' WIDE 36" RECLAIMED

12.5'

30' WIDE 36" SEWER @ 1.14% (800.00 LF MH-MH)

100 LF 54" CASING

STA 76+20

STA 80+20

STA 82+43

STA 83+53

STA 81+61.83

6" SEWER @ 0.94%

(387.07 LF MH-MH)

NEW MH = 2384.54
NEW SW = 2380.04

NEW MH = 2384.53
NEW SW = 2384.53



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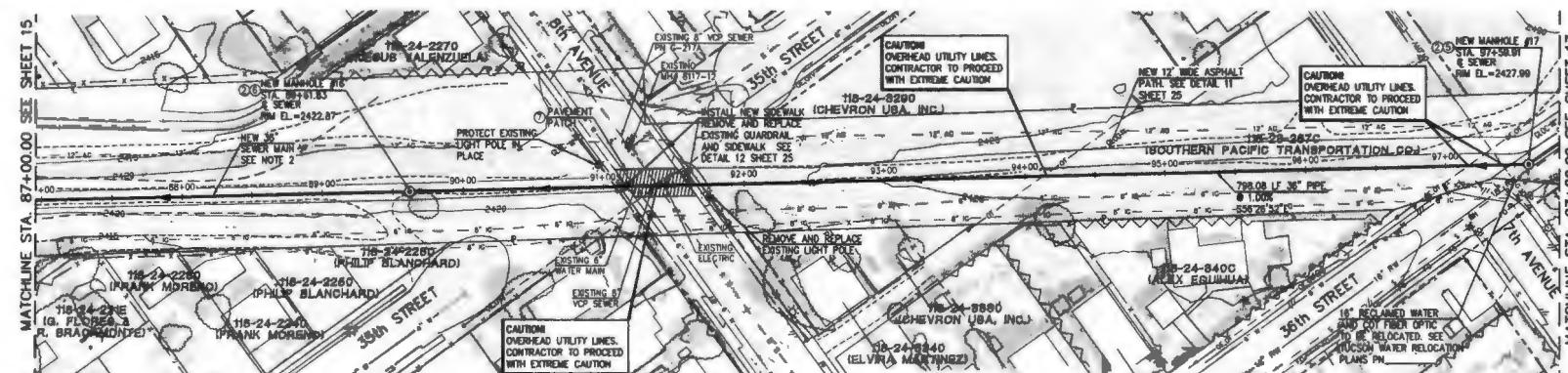
**SEI AUGMENTATION SEWER
REPLACEMENT PROJECT
(3SE112)**

**PIMA COUNTY REGIONAL
WASTEWATER RECLAMATION
DEPARTMENT**

G-2018-D14
Date: FEBRUARY 28, 2018
Scale: HORIZ 1" = 40'
Scale: VERT 1" = 24'
SHEET NO. 1
15 of 50

KEYNOTES:

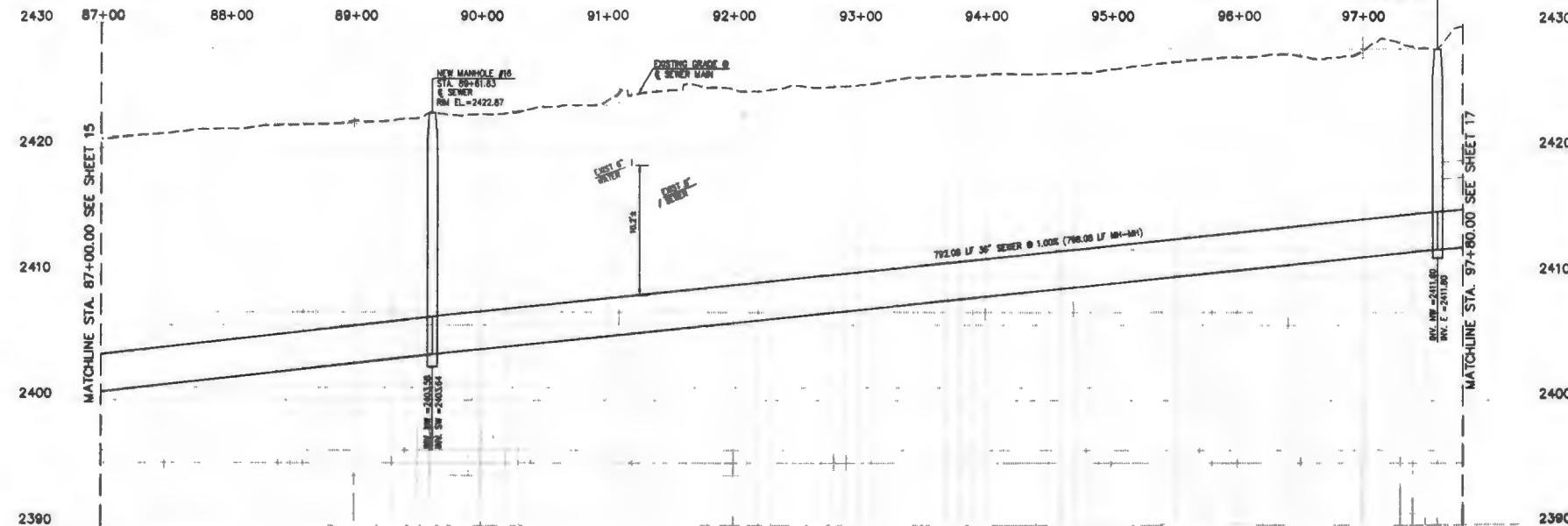
- ② CONSTRUCT 8" DIA. MANHOLE PER DETAILS 1 OR 2, SHEET 32
- ③ CONSTRUCT CONCRETE COLLAR PER RWD STANDARD DETAIL 212
- ④ CONSTRUCT CONCRETE COLLAR PER RWD STANDARD DETAIL 211
- ⑤ PAVEMENT PATCH PER PWD STANDARD DETAIL 216. SEE DETAILS SHEET 23



NOTES:

1. ALL STATIONING IS ALONG CENTERLINE OF SEWER MAIN UNLESS OTHERWISE NOTED.

2. EXISTING RAILED RAILROAD BED FROM SEWER STATION 80+00 TO 86+00 TO BE RE-CONSTRUCTED TO PRE-CONSTRUCTION GRADE. SURVEY REQUIRED BEFORE AND AFTER CONSTRUCTION.



DATE	APR 07 2016
REVISION	1
EXPIRES	5/20/2016
APPROVED BY	CRAG GARDNER
FOR	CONSTRUCTION
APPROVED BY	CRAG GARDNER
FOR	CONSTRUCTION

PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT
WASTEWATER RECLAMATION
PIMA COUNTY
Tucson, Arizona • (520) 740-4500

**SEWER AUGMENTATION
REPLACEMENT PROJECT
(SARP)
PLAN AND PROFILE SHEET**

0-2016-014

DRAFT: FEBRUARY 26, 2016

HORIS: 1" x 40'

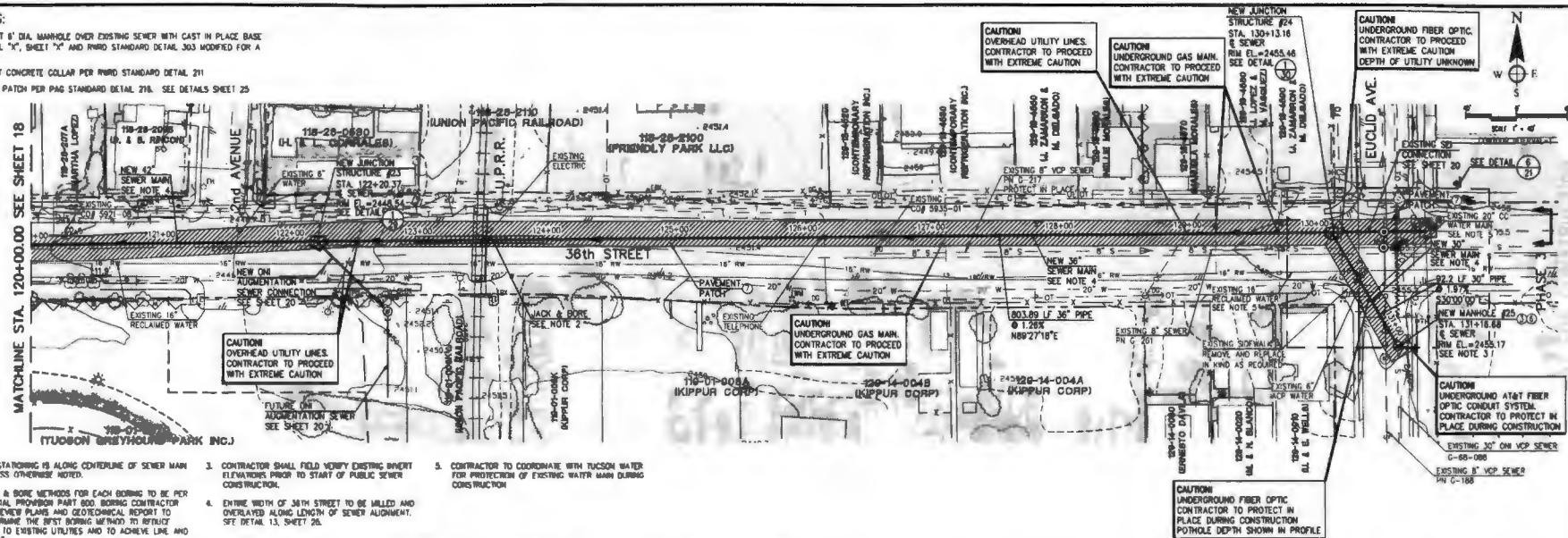
VERT: 1" x 4"

SHEET NO:

16 of 50

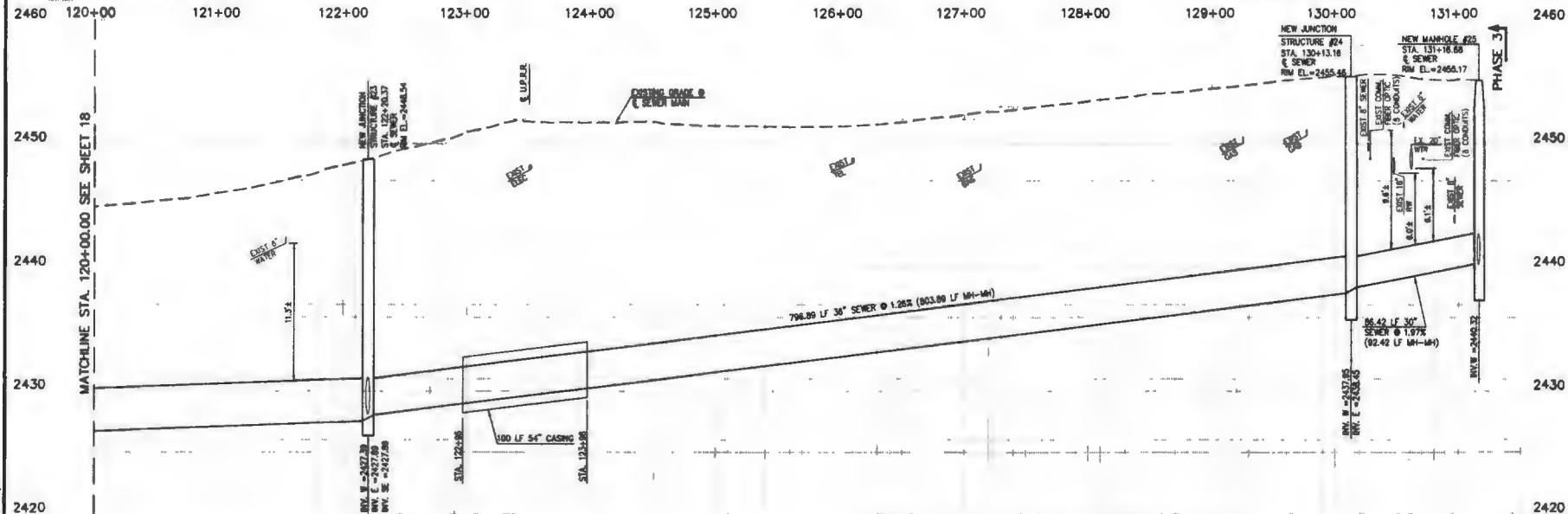
KEYNOTES:

- ① CONSTRUCT 8" DIA. MANHOLE OVER EXISTING SEWER WITH CAST IN PLACE BASE PER DETAIL "X" SHEET "Y" AND PWD STANDARD DETAIL 303 MODIFIED FOR A 72" RISER.
- ② CONSTRUCT CONCRETE COLLAR PER PWD STANDARD DETAIL 211
- ③ PAVEMENT PATCH PER PWD STANDARD DETAIL 216. SEE DETAILS SHEET 25



NOTES:

1. ALL STATIONING IS ALONG CENTERLINE OF SEWER MAIN 100' FSS. OWNER NOTED.
2. JACK & BORE METHODS FOR EACH BORING TO BE PER SPECIAL PROPOSAL PART 600 BORING CONTRACTOR TO REVIEW PLANS AND GEOTECHNICAL REPORT TO DETERMINE THE BEST BORING METHOD TO REDUCE RISK TO EXISTING UTILITIES AND TO ACHIEVE LINE AND GRADE.
3. CONTRACTOR SHALL NOTIFY EXISTING IRVET ELEVATORS PRIOR TO START OF PUBLIC SEWER CONSTRUCTION.
4. EXISTING WIDTH OF 36TH STREET TO BE MILLED AND OVERLAYER ALONG LENGTH OF SEWER ALIGNMENT. SEE DETAIL 13, SHEET 25.



PIMA COUNTY REGIONAL
WASTEWATER RECLAMATION
DEPARTMENT

PIMA COUNTY
Wastewater Reclamation
Division of Water Resources

SE AUGMENTATION SEWER
REPLACEMENT PROJECT
(SSER)
PLAN AND PROFILE SHEET

G-2016-014

DATE: FEBRUARY 19, 2016

HORZ. 1" = 40'

VERT. 1" = 4"

SHEET NO.:

19 of 50



