

**MONDAY, JUNE 16, 2008
COMMISSIONERS COURT MET IN REGULAR MEETING
AT 9:32 A.M.
WITH THE FOLLOWING MEMBERS PRESENT**

**LUIS G. SARIÑANA,
VERONICA ESCOBAR,
MIGUEL A. TERAN, PRESIDING**

**COMMISSIONER, PCT. # 1
COMMISSIONER, PCT. # 2
COMMISSIONER, PCT. # 3**

**HON. ANTHONY COBOS, COUNTY JUDGE - ABSENT
DANIEL R. HAGGERTY, COMMISSIONER, PCT. # 4 - ABSENT**

CESAR O. NAVA, DEPUTY CLERK

**APPROVED - INTERLOCAL AGREEMENT
WITH WATER IMPROVEMENT DISTRICT NO. 1;
APPROVED - COUNTY ATTORNEY'S OFFICE TO NEGOTIATE
REGARDING EASEMENTS VALUE**

JUNE 23, 2008

MOTION # 31 (Item # 24)

On this day, on motion of County Judge Cobos, seconded by Commissioner Escobar, it is the order of the Court to approve the Interlocal Agreement with the El Paso County Water Improvement District # 1 and further, to authorize the County Attorney's Office to negotiate the value of the easements.

VOTE: YES – Judge Cobos, Escobar, Teran, Haggerty

NO – None

1 **Whereas**, this Interlocal will allow EPCWID to assist the County by providing cost
2 effective engineering and construction services to the County in relation to placing a
3 portion of the T-131 canal underground, and constructing maintenance road crossings at
4 six locations;

5 **NOW, THEREFORE** in consideration of the mutual terms and conditions hereinafter
6 set forth, the Parties contract and agree as follows:

7

8

AGREEMENT

9 **1. ENGINEER’S COST ESTIMATE AND DESIGN DRAWINGS**

10 EPCWID shall prepare engineering construction drawings and an engineer’s cost
11 estimate sealed by an engineer licensed in the State of Texas that show the engineering
12 design required for placement of approximately 1,700 feet of EPCWID’s T-131 Lateral
13 Canal underground and the construction of a total six maintenance road crossings and
14 drainage canals (the “Construction Work”). The estimated cost for preparing for the
15 engineering construction drawings and engineer’s cost estimate is \$30,000, and shall be
16 included in the total cost identified in Section 3 below. The estimated time to complete
17 the engineering construction drawings and engineer’s cost estimate is no more than 90
18 calendar days after execution of this Agreement by both parties.

19 **2. TERM**

20 Subject to applicable law, the term of this Agreement shall commence upon the date of
21 execution hereof by both parties and shall terminate 1 year thereafter. The estimated time
22 to complete the Construction Work for the T-131 Irrigation Canal is 6 months from the
23 date of execution of this Agreement by both parties (“Agreement Execution Date”). The
24 remaining Construction Work shall be complete within 1 year from the Agreement
25 Execution Date. This Agreement was approved by EPCWID Board of Directors on June
26 11, 2008 and shall be executed by the County prior to September 1, 2008. If the County
27 fails to approve and execute this Agreement by September 1, 2008, the offer of this

1 Agreement by EPCWID is rescinded and this Agreement is terminated. All Easements
2 granted pursuant to this Agreement shall be permanent.

3 **3. COST AND PAYMENT FOR ENGINEERING, CONSTRUCTION**
4 **WORK AND EASEMENT**

5 Pursuant to this Agreement, EPCWID agrees to perform the engineering and construction
6 services required to design and place a portion of the T-131 and the six maintenance road
7 crossings. The preliminary cost estimate for the engineering and construction work is
8 approximately \$780,000. At the time this Agreement is executed by the County, the
9 County shall pay the District \$30,000 for work related to the preparation of the
10 engineering construction drawings and engineering cost estimate. After the Engineer's
11 Cost Estimate is complete, and if approved in writing by the County and EPCWID, the
12 County shall pay EPCWID an amount not to exceed the total cost shown in the
13 Engineer's Cost Estimate for the work to be performed by EPCWID or its agents,
14 contractors, or consultants under this Agreement. If after consultation with EPCWID ,the
15 County does not accept the Engineer's Cost Estimate, this Agreement may be terminated
16 by either party. Upon approval and acceptance of the Engineer's Cost Estimate, the
17 County shall deposit with the District a sum equal to 50% of the Engineer's Cost
18 Estimate. The deposit shall be placed in an escrow account with a mutually agreed upon
19 bank or similar depository. EPCWID shall not perform any construction work until
20 EPCWID receives the required deposit. The actual cost for all work performed by
21 EPCWID under this Agreement shall be based on the hourly cost of EPCWID's
22 employees and equipment at the rates shown in Exhibit C, and the actual purchase or
23 invoiced price of items (including concrete, pipe, steel, plywood, and all other
24 construction supplies or materials) or services. EPCWID shall provide the County with
25 accurate documentation of all expenses, employee time, equipment use time of the actual
26 cost to perform the Construction Work. EPCWID shall bill as work and construction
27 progresses, and the County shall pay each billing within thirty (30) days of receipt. All
28 engineering, geotechnical, and surveying work required by EPCWID to prepare the

1 Construction Work shall be paid for by the County on a reimbursement basis within 30
2 days after EPCWID submits an invoice to the County for such work. In addition to the
3 cost for the work performed by EPCWID under this agreement, the County agrees to pay
4 EPCWID an amount equal to \$40,000 as consideration for the value of the easements and
5 any damage to EPCWID caused by such easements. The County shall not claim or
6 represent that any consideration or payments for easements under this Agreement
7 constitute an offer or basis for consideration of any other easements or use of EPCWID
8 real property sought by the County or other parties.

9 **4. GRANT OF EASEMENT**

10 Upon completion of all work by EPCWID and payment by the County to EPCWID for
11 all cost under this Agreement, EPCWID shall grant to the County permanent easements
12 upon and across the portions of the identified easements locations as shown on the survey
13 maps attached as Exhibit B. Such maps show portions of the T-131 Irrigation Lateral
14 Canal, Alamo Alto Drainage Canal, Upper Tornillo Drainage Canal, Tornillo Intercepting
15 Drainage Canal No. 2 that total 2.918 acres in size. The form of the easements shall be
16 substantially as provided in the Exhibit C herein and such easement shall be a permanent
17 easements. Pursuant to such easements, the County, or its assigns or successors, shall
18 have the right to use the surface for vehicular and pedestrian crossings, roads, driveways
19 and similar uses. The County, or its assigns or successors, shall not be authorized to
20 construct buildings or similar improvements upon the surface of the easement.
21 Notwithstanding the grant of the easements, EPCWID shall have the right to enter upon
22 the easement at such times as may be necessary for maintenance, repair, construction, and
23 reconstruction of the EPCWID facilities or other improvements.

24 **5. OWNERSHIP OF DESIGN DRAWINGS**

25 Any design drawings, cost estimated, technical material or other information, drawings,
26 digital files prepared by EPCWID or its consultants shall remain the property of
27 EPCWID or its consultants and shall not be used by the County for any purpose other
28 than for the County to review and provide EPCWID comments regarding such design

1 drawings, cost estimates, technical material or other information, drawings, or digital
2 files.

3 **6. CULTURAL VALUES**

4 Should evidence of historical, archeological, or paleontological sites be discovered in the
5 course of the Construction Work, EPCWID shall immediately suspend work and advise
6 the County. The County acknowledges the existence of an agreement between the
7 District and the State of Texas and/or the State Historical Preservation Officer for the
8 State of Texas and accepts this Agreement subject to all provisions of such agreement.

9 **7. EFFECT OF ANY DETERMINATION OF INVALIDITY**

10 If any court of competent jurisdiction or any regulatory agency of the State of Texas
11 enters a finding, order, or judgment that is final that either EPCWID or the County does
12 not have the authority to enter into this Agreement or any part of this Agreement, or that
13 this Agreement is in violation of law or any legal obligation of EPCWID, this Agreement
14 shall be void as of the date of entry of any final order or judgment and neither party shall
15 be liable to the other party for any claim, cause of action, loss, damages, cost or other
16 expense arising from or in connection with this Agreement, except that the County shall
17 be liable to pay EPCWID for any services or construction work performed under this
18 Agreement prior to such finding, order, or judgment.

19 **8. NO LIABILITY**

20 EPCWID shall not be liable for any damages caused by its failure to do the Construction
21 Work, or its delay in supplying the Construction Work under this Agreement. EPCWID
22 makes no warranty as to the quality or utility of the Construction Work that is the subject
23 of this Agreement.

24 **9. FORCE MAJEURE**

25 If a Party, through no fault of its own, is rendered unable, wholly or in part, by force
26 majeure to carry out its obligations under this Agreement, then the obligations of the
27 Party, so far as they are affected by such force majeure, shall be suspended during the

1 time reasonably necessary to remedy such inability, but for no longer period. "Force
2 majeure" means acts of God, wars, insurrections, riots, epidemics, landslides, lightning,
3 earthquakes, fires, storms, floods, hazardous spills, explosions, and unforeseeable failure
4 of machinery, structures or other water conveyance facilities.

5 **10. VENUE AND CHOICE OF LAW**

6 Any civil action based upon, concerning or arising from this Agreement shall be filed
7 only in a court of competent jurisdiction in El Paso County, Texas. This Agreement shall
8 be construed in accordance with the laws of Texas.

9 **IN WITNESS WHEREOF**, the parties hereto have caused this Agreement to be
10 duly executed, and this Agreement becomes effective on the final date of execution
11 by both parties.

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**EL PASO COUNTY WATER
IMPROVEMENT DISTRICT NO. 1**

By:  Date 7/18/09
Johnny Stubbs
President of the Board of Directors

**EL PASO COUNTY
STATE OF TEXAS**

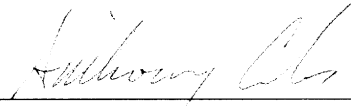
By:  Date _____
County Judge

EXHIBIT C
EPCWID Equipment Rates and Wages

Model	Make	Type	Quant.	HP	Comments	Day	Weekly	Monthly
240C	Caterpillar	Track	1	85	2.0 yd	\$845	\$2,525	\$6,025
312CL	Caterpillar	Track	1	90	2.0 yd	\$845	\$2,525	\$6,025
320CC	Caterpillar	Track	1	140	2.5 yd	\$1,125	\$3,400	\$7,600
EC210BLR	Volvo	Track	2	159	2.5 yd	\$1,125	\$3,400	\$7,600
EW170B	Volvo	Rubber Tire	2	145	1.5 yd	\$670	\$2,000	\$6,025
XL5100	Gradall	Rubber Tire	1	245	2 0 yd	\$845	\$2,525	\$6,025
310SG	John Deere	Rubber Tire	1	88	1.0 yd	\$246	\$735	\$2,225
410E	John Deere	Rubber Tire	1	90	1.0 yd	\$246	\$735	\$2,225
590L	Case	Rubber Tire	1	85	1.0 yd	\$246	\$735	\$2,225
426C	Cat	Rubber Tire	1	85	1.0 yd	\$246	\$735	\$2,225
710D	John Deere	Rubber Tire	1	120	1.5 yd	\$355	\$1,075	\$3,200
WA180-1	Komatsu	Rubber Tire	1	50		\$206	\$615	\$1,850
85XT	Case	Skids Track	1	50		\$206	\$615	\$1,850
D3CXL	Cat	Track	1	70		\$280	\$835	\$2,500
650G	John Deere	Track	1	66		\$280	\$835	\$2,500
F750	Ford	N/A	2		6 Yard Dumps	\$375	\$1,125	\$3,375
C8500	GMC	N/A	4		6 Yard Dumps	\$375	\$1,125	\$3,375
	Sterling	N/A	1		12 Yard Dump	\$375	\$1,125	\$3,375
Columbia	Freightliner	N/A	1		15 Yard Dump	\$375	\$1,125	\$3,375
FL112	Freightliner	N/A	1		10 Ton Crane	\$525	\$1,575	\$4,725
F350	Ford	N/A	1		Welding Rig	\$48	\$142	\$425
3500HD	Chevrolet	N/A	2		Welding Rig	\$48	\$142	\$425
2500HD	Chevrolet	N/A	2		Service Trucks	\$48	\$142	\$425
F350	Ford	N/A	1		Service Trucks	\$48	\$142	\$425
F350	Ford	N/A	3		Pick Ups	\$48	\$142	\$425
	Eager Beaver					\$80	\$240	\$720
Air Compressor	IR	Diesel	1		125 cfm	\$42	\$124	\$375
Cement	Generic	Gas	2		1 Cubic Yard	\$114	\$340	\$1,025
4"	Generic	Gas	2			\$49	\$147	\$440

	Hourly Rate	Overtime Rate	FICA 7.65%	W/C 7%	LIABILITY 1%	MEDICAL 9%	REIRE- MENT	G&A HR 68%	G&A OR 68%	Total HR	Total OR
HERBICIDE	14.50	21.75	1.11	1.02	0.15	1.38		9.86	14.79	28.01	40.19
DITCHRIDER	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
DIESEL MECHANIC	15.50	23.25	1.19	1.09	0.16	1.47		10.54	15.81	29.94	42.96
EQUIPMENT OPERATOR	11.14	16.70	0.85	0.78	0.11	1.06		7.58	11.36	21.52	30.86
EQUIPMENT OPERATOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
EQUIPMENT OPERATOR	15.65	23.47	1.20	1.10	0.16	1.49		10.64	15.96	30.23	43.37
DITCHRIDER	11.53	17.29	0.88	0.81	0.12	1.10		7.84	11.76	22.27	31.95
SENIOR DITCHRIDER 7B	15.50	23.25	1.19	1.09	0.16	1.47	2.0%	10.54	15.81	30.25	42.26
OPERATOR 1	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
DITCHRIDER	11.99	17.98	0.92	0.84	0.12	1.14		8.15	12.23	23.16	33.22
MAINTENANCE SUPERVISOR	20.79	20.79	1.59	1.46	0.21	1.98	3.0%	14.14	14.14	40.78	39.22
EQUIPMENT OPERATOR	12.31	18.46	0.94	0.86	0.12	1.17	6.0%	8.37	12.55	24.52	34.33
EQUIPMENT OPERATOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
DITCHRIDER	11.14	16.70	0.85	0.78	0.11	1.06		7.58	11.36	21.52	30.86
OPERATOR	11.14	16.70	0.85	0.78	0.11	1.06	2.5%	7.58	11.36	21.80	30.45
EQUIPMENT OPERATOR	15.30	22.95	1.17	1.07	0.15	1.45		10.40	15.61	29.55	42.40
DITCHRIDER	11.53	17.29	0.88	0.81	0.12	1.10		7.84	11.76	22.27	31.95
MECHANIC SUPERVISOR	20.79	20.79	1.59	1.46	0.21	1.98	1.5%	14.14	14.14	40.47	38.89
SWINGMAN UNIT 7	13.50	20.25	1.03	0.95	0.14	1.28		9.18	13.77	26.08	37.42
SENIOR UTILITIES	15.50	23.25	1.19	1.09	0.16	1.47	4.0%	10.54	15.81	30.56	42.74
DITCHRIDER	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
WAREHOUSE PARTS SPECIALIST	14.50	21.75	1.11	1.02	0.15	1.38		9.86	14.79	28.01	40.19
REPAIRMAN/WELLS	15.50	23.25	1.19	1.09	0.16	1.47		10.54	15.81	29.94	42.96
DITCHRIDER	14.80	22.20	1.13	1.04	0.15	1.41		10.06	15.10	28.59	41.02
EQUIPMENT OPERATOR	12.31	18.46	0.94	0.86	0.12	1.17		8.37	12.55	23.78	34.11
PURCHASING AGENT	18.12	27.18	1.39	1.27	0.18	1.72	5.3%	12.32	18.48	35.96	50.33
EQUIPMENT OPERATOR	11.99	17.98	0.92	0.84	0.12	1.14	1.0%	8.15	12.23	23.28	32.49
DITCHRIDER	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
DITCHRIDER	15.84	23.75	1.21	1.11	0.16	1.50	6.0%	10.77	16.15	31.55	44.16
MAINTENANCE SUPERVISOR	31.33	31.33	2.40	2.19	0.31	2.98	4.0%	21.30	21.30	61.77	59.41
HERBICIDE/EQUIPMENT OPERATOR	11.67	17.51	0.89	0.82	0.12	1.11	1.0%	7.94	11.91	22.66	31.64
EQUIPMENT OPERATOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
MECHANIC IV	14.50	21.75	1.11	1.02	0.15	1.38		9.86	14.79	28.01	40.19
EQUIPMENT OPERATOR	11.14	16.70	0.85	0.78	0.11	1.06		7.58	11.36	21.52	30.86
WELDER/ TURNOUT CREW	15.65	23.47	1.20	1.10	0.16	1.49	2.0%	10.64	15.96	30.54	42.66
OPERATOR III	13.50	20.25	1.03	0.95	0.14	1.28		9.18	13.77	26.08	37.42
OPERATOR III	13.50	20.25	1.03	0.95	0.14	1.28		9.18	13.77	26.08	37.42
OPERATOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	26.25
OPERATOR III	13.50	20.25	1.03	0.95	0.14	1.28	2.0%	9.18	13.77	26.35	36.81
REPAIRMAN, WELDER	15.50	23.25	1.19	1.09	0.16	1.47		10.54	15.81	29.94	42.96
DITCHRIDER	11.53	17.29	0.88	0.81	0.12	1.10		7.84	11.76	22.27	31.95
MAINTENANCE SUPERVISOR	20.79	20.79	1.59	1.46	0.21	1.98	3.0%	14.14	14.14	40.78	39.22
EQUIPMENT OPERATOR	11.99	17.98	0.92	0.84	0.12	1.14		8.15	12.23	23.16	33.22



JOSÉ R. RODRÍGUEZ
COUNTY ATTORNEY

EL PASO COUNTY TEXAS
COUNTY COURTHOUSE
500 E. SAN ANTONIO, ROOM 503
EL PASO, TX 79901

(915) 546-2050
FAX: (915) 546-2133

July 15, 2008

Jesus Reyes
Water Improvement District No. 1
294 Candelaria
El Paso, Texas 79907

VIA HAND DELIVERY

**RE: INTERLOCAL AGREEMENT FOR GRANTING OF EASEMENT AND CONSTRUCTION OF
UNDERGROUND PLACEMENT OF A PORTION OF T-131 LATERAL CANAL AND
OTHER WORK**

Dear Mr. Reyes:

Enclosed is check number 1166106 in the amount of \$30,000 as stipulated in Section 3 of the above-referenced agreement for work related to the preparation of construction drawings and the engineering cost estimate. Thank you for your cooperation in this matter.

Should you have any questions or concerns, feel free to contact me at 546.2081.

Sincerely,

Erich A. Morales
Assistant County Attorney

Cc: Commissioner Miguel Teran
Jessie Acosta, Road and Bridge

Enclosure

From: Al Blair [awblair@axiomblair.com]
Sent: Friday, November 07, 2008 11:38 AM
To: Jesse J. Acosta
Cc: Erich Morales; mteranpme@sbcglobal.net; 'Jesus Reyes'
Subject: FW: Review Draft of Estimate of Cost for T131

Attachments: EPCWID_T131_Cost_Estimate.pdf

Attached is the draft report I sent to everyone on Oct. 13. I have not received any comments, so I will finalize the report. The cost for the T-131 work was estimated at \$391,100 and the deposit for 50% is \$195,550. I need a letter authorizing EPCWID to proceed with the construction of the T-131. Soon as we get the T-131 job started, I will send you similar information on the six maintenance crossing. EPCWID would like to wait to start construction of the maintenance crossing until late spring or summer.

A.Blair, P.E.
6012 William Cannon Dr, Suite B102
Austin, Texas 78749
Office: 512-394-1011 Fax: 512-394-1016
Home Office:512-858-1997 Fax: 512-858-2843
Cell Phone: 512-415-1421

REVIEW DRAFT Cost Estimate for

Placement of a Portion of the T-131 Irrigation Canal Underground



Prepared for

El Paso County Water Improvement District No. 1

October 13, 2008

Prepared by:
Axiom-Blair Engineering, L.P.
P.O. Box 150069
Austin, TX 78715
(512) 394-1011



A handwritten signature in black ink, appearing to read "Allie Blair".

Table of Contents

1.0 Introduction	1
1.1 Construction Cost Estimate	1
2.0 Procedure	2
2.1 Project Schedule	2
2.2 Labor Costs.....	2
2.3 Construction Quantities.....	3
2.3.1 Berm Excavation.....	3
2.3.2 Trench Excavation.....	3
2.3.3 Sand for Pipe Bedding.....	3
2.3.4 Backfill of Excavated Trench.....	3
2.3.5 Haulage.....	4
2.3.6 Cemented Flowable Fill	4
2.3.7 Concrete in Place.....	4
2.3.8 36” PVC Pipe	4
2.3.9 Pickup Trucks.....	4
2.4 Unit Construction Costs.....	4
2.4.1 Means CostWorks 2008	5
2.4.2 Prefabricated Manholes.....	5
2.4.3 PVC Pipe	5
2.4.4 Known Unit Costs	5
2.4.5 Lump Sum Estimates	5
2.5 Administration and Contingencies.....	6

1.0 Introduction

1.1 Construction Cost Estimate

The cost estimate for the EPCWID's T-131 canal replacement project is based on current equipment and labor unit costs for El Paso County. Material quantities and haul distances were computed from the construction drawings to within a design accuracy of +/- 10%. Contingency and Administration allowances are provided to account for full implementation of the project.

Table 1: Construction Cost Estimate

Item	Quant	Unit	Price	Price
Construction Surveying	80	hours	\$ 100	\$ 8,000
Demolition & Removal of Structures	20	crew day	\$ 2,100	\$ 42,000
Concrete Work and Forms	12	crew day	\$ 2,100	\$ 25,200
Pipe Installation	10	crew day	\$ 2,100	\$ 21,000
Engineering, PE	90	hours	\$ 150	\$ 13,500
Engineering and Survey, EIT	150	hours	\$ 100	\$ 15,000
Berm Excavation, 1-yd loader	2767	B.C.Y.	\$ 2.03	\$ 5,617
Trench Excavation, 1-yd backhoe	3250	B.C.Y.	\$ 3.39	\$ 11,018
Sand for pipe bedding, loose	394	L.C.Y.	\$ 16.20	\$ 6,383
Compaction of bedding sand	303	E.C.Y.	\$3.88	\$ 1,176
Backfill of excavated sand/gravel (dozer)	5330	L.C.Y.	\$ 0.97	\$ 5,170
Compaction of trench backfill	4100	E.C.Y.	\$ 0.60	\$ 2,460
Haulage, 4 mi. RT, loose.	244	L.C.Y.	\$ 8.80	\$ 2,147
Cemented flowable fill	81	C.Y.	\$ 71.40	\$ 5,783
Concrete	16	yrds	\$ 79	\$ 1,264
Forms and Misc. Supplies	1	unit	\$ 5,000	\$ 5,000
36" PVC Pipe Contech A200	1780	lf	\$ 50	\$ 88,519
Inlet Structures	1	unit	\$ 6,000	\$ 6,000
Fresno Canal Gates Medium Duty 36"	1	unit	\$ 6,850	\$ 6,850
Gate and 11x5 Turnout Box (30" Turnout)	1	unit	\$15,000	\$ 15,000
15" Inserta Tee Turnout with Valve (sealed)	2	each	\$ 5,000	\$ 10,000
Prefabricated 5x5 Box Manhole	4	each	\$ 5,500	\$ 22,000
Outlet Structure	1	each	\$ 6,000	\$ 6,000
Wheeled Crane (10 Ton)	10	days	\$ 550	\$ 5,500
Pickup Trucks	90	days	\$ 50	\$ 4,500
Mobilization/Demobilization	1	Unit	\$ 5,000	\$ 5,000
Subtotal Cost Estimate				\$ 340,087
Administration	5	percent		\$ 17,004
Contingency	10	percent		34,009
Subtotal Cost Estimate				\$ 391,100

2.0 Procedure

2.1 Project Schedule

The construction project is scheduled to be completed within approximately six weeks from the beginning of construction surveying through mobilization, demolition, excavation, structure and pipe installation, cleanup, demobilization and commissioning. All construction must be complete prior to February 15, 2009 to insure that the T-131 canal can be returned to operation prior to the start of the 2009 irrigation season.

2.2 Labor Costs

The daily cost of a construction crew is estimated based on current human resources data for District personnel. The following table provides details of the estimated labor costs required for one 9-man crew working a 10-hour day. The project estimate uses a rounded cost of \$2,100/crew/day.

Table 2: Typical Daily Labor Cost 9-man Construction Crew, El Paso County (2008)

Removal Installation of Gates	Hourly Rate	Overtime Rate	FICA 7.65%	W/C 7%	LIABILITY 1%	MEDICAL 9%	RETIRE-MENT	G&A HR 68%	G&A OR 68%	Total HR	Time Hours	Total OR
EQUIPMENT OPERATOR/LABOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	8.00	26.25
EQUIPMENT OPERATOR/LABOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	8.00	26.25
EQUIPMENT OPERATOR/LABOR	9.47	14.21	0.72	0.66	0.09	0.90		6.44	9.66	18.29	8.00	26.25
EQUIPMENT OPERATOR/LABOR	11.14	16.70	0.85	0.78	0.11	1.06		7.58	11.36	21.52	8.00	30.86
EQUIPMENT OPERATOR/LABOR	11.14	16.70	0.85	0.78	0.11	1.06		7.58	11.36	21.52	8.00	30.86
OPERATOR III	13.50	20.25	1.03	0.95	0.14	1.28	2.0%	9.18	13.77	26.35	8.00	36.81
OPERATOR III	13.50	20.25	1.03	0.95	0.14	1.28		9.18	13.77	26.08	8.00	37.42
EQUIPMENT OPERATOR	15.30	22.95	1.17	1.07	0.15	1.45		10.40	15.61	29.55	8.00	42.40
MAINTENANCE SUPERVISOR	31.33	31.33	2.40	2.19	0.31	2.98	4.0%	21.30	21.30	60.51	2.00	60.51

The Surveying crew consists of a surveyor and rodman costing a total of \$100 per hour with benefits. The total billed cost for a junior Engineer-in-Training (EIT) is \$100 per hour, and the cost for a senior Registered Professional Engineer (PE) is \$150 per hour.

2.3 Construction Quantities

The project consists of a number of activities involving removal or placement of quantifiable volumes of material. An accurate estimate of the quantities involved is required to produce an accurate cost estimate. Projected quantities were calculated from the design plans and surveys. The individual operations and corresponding quantities are described below:

2.3.1 Berm Excavation

The existing canal is bordered on the south side by a 12-foot-wide earth embankment (berm) rising 4-6 feet above the natural ground. The canal replacement design removes the earth berm and places the excavated material as backfill over the proposed 36" PVC pipe. A typical cross-section of the existing canal shows that the cross-sectional area of the above-ground berm is 31.5 square feet, representing 2,767 bank cubic yards (B.C.Y.) over the 1780-foot length of the canal to be replaced. Excavation will be carried out using a 1-cubic-yard-capacity wheel loader similar to a Caterpillar 430E.

2.3.2 Trench Excavation

According to the engineering plans, a 36" PVC pipe having an outer diameter of approximately 42 inches will be placed in a trench to be excavated beneath the of the existing canal T-131. The trench will be excavated to a depth of 7.5 feet to accommodate a sand bedding layer while allowing for more than 3 feet of cover over the top of the pipes. It is estimated that a 4.5-foot bottom width will be required to the full 7.5-foot depth, while an 9.5-foot-wide security bench will be needed to a depth of 3 feet, resulting in a trench cross-section of 48.75 square feet. This trench requires 3,250 B.C.Y. of excavation. Excavation will be carried out with a 1-cubic-yard backhoe similar to a Caterpillar 420E.

2.3.3 Sand for Pipe Bedding

A 4" layer of clean sand will be placed at the bottom of the trench to serve as a bedding for the 36" pipes. The volume required is 303 cubic yards compacted in place (E.C.Y.). Applying a swell factor, the loose volume of bedding sand required is 394 L.C.Y. Placement and compaction will be carried out by the sand supplier.

2.3.4 Backfill of Excavated Trench

A cross-sectional area of 61.5 square feet will be backfilled to achieve a finished grade above the proposed pipe high enough to provide prevent water from the S.H. 20 right of way from flowing into the land south of the T-131 canal. Including a 30% swell factor to the fill volume, 5,330 L.C.Y of backfill are required. A track

dozer similar to a Caterpillar D3G will be used to backfill the trench material. Compaction will be performed in 12-inch lifts.

2.3.5 Haulage

Part of the existing berm is currently used as an access road for residences near the existing check structure at sta. 16+70. For this reason, 244 L.C.Y of fill material will be hauled to the site from sta. 16+30 to sta. 17+80 to allow the berm to remain in place. The fill material will be hauled from available soil stockpiles near Fabens. Standard 6-cubic-yard dump trucks will be used.

2.3.6 Cemented Flowable Fill

Additional bedding support is provided for the portion of the pipe that underlies the future roads that will cross the trench near stations 2+10 and 15+80. Cemented fill will be placed around the 36" pipes to the haunch. This equates to 5.3 square feet in cross-section. The cemented fill will be applied under 90-foot lengths of the proposed pipe beneath and adjacent to the future roadways. The total amount of flowable fill required is 81 C.Y. The fill material will be purchased from a local cement supplier.

2.3.7 Concrete in Place

A total of 16 cubic yards of concrete will be required for the check manhole structure and turnouts. Concrete delivery will be scheduled from a local supplier.

2.3.8 36" PVC Pipe

The 36" pipe will be laid over the 1780-foot length of the project. Eighty-nine 20-foot joints of pipe are required. Delivery is in trucks with an 8-joint load capacity, so 12 truckloads of pipe will be ordered. A 10-ton wheeled crane will be required during the five days that the pipe is being laid.

2.3.9 Pickup Trucks

Two pickup trucks will be dedicated to the project for the 30 work days from start to finish, and three additional trucks will be needed for the 10 work days of construction during weeks two and three. Therefore, a total of 90 truck-days are needed for the project.

2.4 Unit Construction Costs

Most of the total cost estimates were obtained by multiplying the material quantities by a unit cost obtained from a reliable source or know from experience.

2.4.1 Means CostWorks 2008

Unit costs for certain common construction materials and activities were obtained from the current edition of the standard construction cost estimation publication Means CostWorks 2008 (Means). Means provides current unit cost estimates broken down on a county-by-county basis. Means was used to estimate costs for materials required for the construction as well as those earth movement activities that are planned to be contracted out. When the unit price category refers to an activity, the unit price includes the machine and operator performing the activity.

2.4.2 Prefabricated Manholes

EPCWID No.1 obtained a quotation of \$5,500 from a local supplier for the 5'x5' prefabricated manholes to be installed at 400' intervals.

2.4.3 PVC Pipe

A quoted unit price of \$50 per linear foot for Contech A2000 36" PVC pipe was used in the estimate. Specifications for Contech A2000 pipe.

2.4.4 Known Unit Costs

EPCWID No.1 has accumulated a database of unit costs for some of its common activities and installations. We were able to estimate unit costs for the following items based on recent contracts.

Structural concrete in place: \$79 per cubic yard

Wheeled Crane (10 ton) rental: \$550 per day

Pickup Truck rental: \$50 per day

Inlet Structures: \$6,000 each

Fresno Canal Gates Medium Duty 36": \$6,850 each

Gate and Turnout Box (30" turnout): \$15,000 each

Sealed Inserta Tee Turnout Connections: \$5,000 each

Outlet Structure: \$6,000 each

2.4.5 Lump Sum Estimates

Certain project costs are not quantifiable in terms of unit costs but must be estimated by referring to past projects of similar size. The \$5,000 estimates for concrete forms

and miscellaneous supplies and the \$5,000 for mobilization and demobilization fall in this category.

2.5 Administration and Contingencies

The cost of administering and managing the project is estimated at 5% of the construction subtotal. An additional 10% of the construction subtotal is included to cover unanticipated incidental costs.