

Cascade Natural Gas Corporation
Washington Utilities and Transportation Commission
WUTC v. Cascade Natural Gas Corporation (2017 General Rate Case)
Docket UG-170929

Request No. 65

Date prepared: December 6, 2017

Preparer: Doug DiJulio, Ryan Privratsky, Jeremy Ogden

Contact: Michael Parvinen

Telephone: 509-734-4593

UTC STAFF DATA REQUEST NO. 65:

RE: PLANT ADDITIONS

Please provide the study that supports the need for each project in service prior to December 31, 2017, and the evaluation of any alternatives to each project.

Response:

The requested information is provided on the disk.

Project Summary – Bob Olsen Parkway, Kennewick District

Submitted by: Kathleen Chirgwin, P.E.

7/11/2016

Background

Bob Olsen Parkway is a new road in Kennewick which will connect Sherman and Hildebrand to 5 corners, which is where 10th Ave, Clodfleter Ave, and Steptoe Ave intersect. The city of Kennewick is currently out to bid on the 5 lane road and is planned to start construction August 1. The road is currently sub graded and several utilities are installing pipe and facilities ahead of the city contractor. When this road is completed this will be a large growth area for residential homes and is zoned in the center for a light commercial area. Installing pipe within ROW of this roadway will allow Cascade to serve this developing area and reinforce Richland and Kennewick with a new high pressure line running from the new Southridge gate.

Proposal

This project involves installing approximately 12,800 feet of 6 in steel high pressure pipe and 6,000 feet of 6 inch PE pipe to serve this new development. The 6 in PE will be installed in a joint trench with the 6 in HP and will be ran in coordination with three future regulator sites to create an IP network in this area.

Timing

Construction is planned to start August 1 and is estimated to be completed in 8-12 weeks. Cascade is currently under pressure from the city to get our pipe installed ahead of the city contractor. The city has also given Cascade an August 18 deadline to have the first 1,200 feet of pipeline route installed, due to the new Clodfleter middle school opening August 30th.

Costs

This project is estimated at \$1,818,038.00. This project went through our formal bid process and Infrasource was selected as the contractor (Jeremy will need to confirm this, but several contractors gave competition bids very close to the same price point which will have no effect on the cost estimate), the bid tabulation has been included in the executive approval submittal for bidding details. A detailed cost estimate has also been included in the executive approval submittal.

Benefits

1. Ability to serve new developing area in Kennewick.
2. Secondary HP line reinforcing Kennewick and Richland from the Southridge Gate.
3. Completing this project before the city installs the road will save Cascade significant money since we have wide open construction with minimal conflicts and no restoration requirements. If we wait until the road is installed it will be much more expensive to install facilities with restoration and we would be limited with the moratorium requirements.

4. District will be benefited by having planned regulator stations and an IP system that they can connect to and serve customer requests.
5. This new high pressure line will give Cascade the opportunity to connect it to the N Richland HP line. This will allow Cascade to provide more capacity to North Richland which is currently an area where we have restricted capacity due to the Johnson Controls contract delivery pressure and pressure loss due to high flows on the N Richland line.

Alternatives

Not constructing this pipeline. Cascade could make the choice not to serve this developing area.

Project Team

Project Manager/Engineer: Kathleen Chirgwin

District Lead: Zach Smith

Division: Bill Danko/Winnie Clemenson/Rick Oliver

Project Summary – Sherman Street 6” HP Reinforcement

Submitted by: Jose Chavez Jr.

07/14/2017

Background

The increasing growth rate in house developments, commercial firms, and industrial corporations has placed a strain on the Kennewick, WA natural gas system. Cascade Natural Gas Corporation (CNGC) proposes to expand their natural gas delivery capacity within the Cities of Kennewick and Richland, in Benton County, Washington. This project will provide additional natural gas capacity as necessary for growth demands, and to reinforce Cascade’s natural gas distribution infrastructure.

Proposal

The Kennewick Sherman Street High Pressure Reinforcement (Project) includes installation of approximately 1410 linear feet of 6-inch diameter, 0.280 wall thickness, Grade X-52, APL 5L, steel pipeline, with an operating pressure of up to 500 pounds per square inch gauge (psig).

The Project is a continuation of a preinstalled section of pipe that is on the south of Sherman St. The extension begins at the intersection of Ridgeline Drive and S. Sherman Street, and continues north on S. Sherman Street and runs for approximately 1300 ft. on the westerly side of the right-of-way, then curves westerly towards the existing Bob Olsen pipeline, where the final tie-in will take place.

Additional work of the Project consists of a slight modification to the Southridge Gate Station. This station is currently not flowing gas and the timing is ideal for the installation of the following: 8”x8”x4” tee, 4”x4”x4” tee, a 4” Ballomax Ball Valve and approximately 20 feet of 4-inch diameter, 0.188 wall thickness, Grade X-42, API 5L, steel pipe. This modification will allow for the usage of an existing 8” high pressure valve that will assist in isolating the high pressure system without having to interrupt the intermediate pressure system. Finally, two existing facilities will be tied in and a disconnection will be made on a separate location, respectively, south and north of the roundabout on S. Clodfelter Road and S. Steptoe Street.

Construction is scheduled to commence in July 2017; completion would be within three weeks of construction commencement.

Timing

Survey and design on the Project began in May 2017 and plans were completed in July 2017 by MacKay Sposito a third party consultant. The plans were finalized through mutual work with Engineering Services from CNGC. Right of way easements and permits have been obtained for all portions of the Project. There was no bid meeting held due to expedited construction deadlines.

Costs

This portion of the Project is part of the 2017 capital budget and it was budgeted for \$2,572,123. Engineering has prepared design plans and estimates for the installation. Materials costs are based on most recent historical cost with a 5% contingency. CNGC labor is for division supervision, clerks, and central stores coordination. The contractor cost is a received bid from Brothers Pipeline Corp. Other direct costs cover miscellaneous charges and resources. Overhead and AFUDC have been calculated through PowerPlan.

Bid Summary		
Contractor	Scope	Bid Amount
Brothers Pipeline Corp	Pipe Installation	\$225,290.00
Brothers Pipeline Corp	Disconnect and Tie-in	*\$70,000.00
Brothers Pipeline Corp	Southridge Gate Modification	\$53,230.00

*Preliminary estimate

Engineering has prepared a cost estimate for the Project with an estimated final cost of **\$TBD** as shown below:

Charge Type	Additions
Materials	\$25,893.72
CNGC Labor	\$10,453.27
Contractor Costs	\$413,249.54
Other Direct	\$3,080.00
Overhead (26.49%)	\$119,913.75
AFUDC Debt/Equity	\$TBD
Total	\$TBD

*A detailed estimate breakdown of the additions can be found on page 3.

Benefits

1. Additional natural gas capacity as necessary for growth demands.
2. Reinforce Cascade's natural gas distribution infrastructure.
3. Optimize the use of an existing 8" high pressure valve.
4. Finalize the reinforcement by completing an essential tie-ins.

Alternatives

Other routes were observed but they were not accounted for due to private land properties, agriculture terrain, and disturbance of an easement by construction development. The Project route is ideal when considering the time factor that is being managed.

Responsible People

Project Manager: Jose Chavez Jr.
 Project Reviewer: Jeremy Ogden
 District Lead: Greg Miller
 Project Foreman: Mike Stone

Hildebrand Blvd. – Sherman Street Extension 6" HP
 WO 246199

MATERIALS DESCRIPTION	PART NO	PROPOSED QUANTITY	UOM	UNIT COST	TOTAL DIRECT COST	CONT. RATE	CONT. \$	TOTAL COST
6" X 0.280" GRADE X-52, API 5L, PSL2, ERW, FBE COATED STEEL LINE PIPE, 14-16 MILS	PFBE-653X52	1410	LF	\$ 16.01	\$ 22,574.10	5.00%	\$ 1,128.71	\$ 23,702.81
6" 90° STANDARD WEIGHT WELD ELBOW GRADE Y52	EL-657X52	4	EA	\$ 97.03	\$ 388.12	5.00%	\$ 19.41	\$ 407.53
SADDLE, 2" X 8" WELD, ASTM A234-07 WPB	SA-370	1	EA	\$ 148.66	\$ 148.66	5.00%	\$ 7.43	\$ 156.09
NIPPLE, 2" X 3" #H17491550, SAV-A-VALVE WITH STEEL CAP	NP-355	1	EA	\$ 55.45	\$ 55.45	5.00%	\$ 2.77	\$ 58.22
TAPE, 4" WRAP #31104-020I, GREENLINE SPECIAL SOFT/ROLL	H-8	12	RL	\$ 24.05	\$ 288.66	5.00%	\$ 14.43	\$ 303.09
PRIMER, #747F ROYBOND, #12131-001G, 1-GAL, ROYSTON	H-12	1	GL	\$ 47.32	\$ 47.32	5.00%	\$ 2.37	\$ 49.69
MARKER, 62" CARSONITE, TYPE #CUM-375 WITH TWO-COLOR	H-99	4	EA	\$ 15.96	\$ 63.84	5.00%	\$ 3.19	\$ 67.03
TEST STATION, 66" WITH, 10-FT LEADS, CARSONITE	H-105	2	EA	\$ 46.80	\$ 93.59	5.00%	\$ 4.68	\$ 98.27
MISCELLANEOUS MATERIALS	N/A	1	EA	\$ 1,000.00	\$ 1,000.00	5.00%	\$ 50.00	\$ 1,050.00
TOTAL: MATERIALS					\$ 23,860		\$ 1,183	\$ 25,043.27
CNGC LABOR								
Installation								
CNGC Construction Supervisor		100	HR	\$46.77	\$4,677			
Sub-Total: Installation		100	HR		\$4,677			
Inspection/Documentation/Management								
Division Supervision & Inspection - Manager Field Operations		30	HR	\$70.00	\$2,100			
Distribution Clerk		30	HR	\$43.76	\$1,313			
Control Equipment Mechanic		0	HR	\$50.84	\$0			
Miscellaneous Labor		1	EA	\$1,000.00	\$1,000			
Sub-Total: Inspection/Documentation/Management		60	HR		\$4,413			
TOTAL: CNGC LABOR		160	HR		\$9,090	15.00%	\$1,363	\$10,453.27
RESOURCES								
CNGC Equipment								
Control Equipment/Tap Truck		0	HR	\$31.80	\$0			
Air Compressors		0	HR	\$11.10	\$0			
Sub-Total: CNGC Equipment		0	HR		\$0			
Travel, Food and Lodging Expenses								
Division Supervision & Inspection - Manager Field Operations		3	WEEK	\$200.00	\$600			
Crew Meals		20	EA	\$10.00	\$200			
Mileage		0	MILE	\$0.51	\$0			
Miscellaneous expenses		1	EA	\$500.00	\$500			
Sub-Total: Travel, Food & Lodging					\$1,300			
Permits/Easements								
Easements		0	EA	\$0.00	\$0			
State Permits		0	EA	\$0.00	\$0			
City of Kennewick Permit		0	EA	\$0.00	\$0			
Pipe Storage		0	EA	\$0.00	\$0			
Sub-Total: Permits/Easements					\$0			
Miscellaneous								
Incidentals		1	EA	\$1,500.00	\$1,500			
Sub-Total: Miscellaneous					\$1,500			
TOTAL: RESOURCES					\$2,800	10.00%	\$280	\$3,080.00
CONTRACTOR/CONSULTANT								
General Contractors (Brothers Pipeline Corp.) - Pipe Installation		1	EA	\$225,290.00	\$225,290			
Survey/Drafting (MacKay Sposito)		1	EA	\$15,000.00	\$15,000			
IP to HP Disconnect and HP Tie-in (Brothers Pipeline Corp)		1	EA	\$70,000.00	\$70,000			
Southridge Gate Station Modification (Brothers Pipeline Corp)		1	EA	\$53,230.00	\$53,230			
Sub-Total: Contractor/Consultant					\$363,520			
Sales Tax		8.7%			\$31,554			
TOTAL: CONTRACTOR/CONSULTANT					\$395,074	5.00%	\$18,176	\$413,249.54
TOTAL MAIN INSTALL COSTS					\$430,623		\$21,002	\$452,675.53
Overhead						26.49%		\$119,913.75
TOTAL PROJECT COST								\$572,589.27
Total estimated cost per foot								\$400.69

Project Summary – Sherman Street 6” HP Reinforcement

Submitted by: Jose Chavez Jr.

05/23/2017

Background

The increasing growth rate in house developments, commercial firms, and industrial corporations has placed a strain on the Kennewick, WA natural gas system. Cascade Natural Gas Corporation (CNGC) proposes to expand their natural gas delivery capacity within the Cities of Kennewick and Richland, in Benton County, Washington. This project will provide additional natural gas capacity as necessary for growth demands, and to reinforce Cascade’s natural gas distribution infrastructure.

Proposal

The Kennewick Sherman Street High Pressure Reinforcement (Project) includes installation of approximately 1190 linear feet of 6-inch diameter, 0.280 wall thickness, Grade X-52, APL 5L, steel pipeline, with an operating pressure of up to 500 pounds per square inch gauge (psig).

The Project would begin at the southeast corner of W. 38th Ave. for approximately 220 feet heading west in an existing Cascade easement, thence northerly along the westerly side of Sherman St. for approximately 970 feet in an existing right-of-way, and terminating at the intersection of Ridgeline Drive and S. Sherman Street.

The Project will potentially tie into existing Cascade facilities. Construction is scheduled to commence in May 2017; completion would be within two weeks of construction commencement.

Timing

Survey and design on the Project began in April 2017 and plans were completed in May 2017 by the following third party consultant: PBS Engineering and Environmental Inc. The plans were finalized through mutual work with Engineering Services from CNGC. Right of way easements and permits have been obtained for all portions of the Project. There was no bid meeting held due to expedited construction deadlines.

Costs

This portion of the Project is part of the 2017 capital budget and it was budgeted for \$2,572,123. Engineering has prepared design plans and estimates for the installation. Materials costs are based on most recent historical cost with a 5% contingency. CNGC labor is for division supervision, clerks, and central stores coordination. The contractor cost is a received bid from Brother’s Pipeline Corp. Other direct costs cover miscellaneous charges and resources. Overhead and AFUDC have been calculated through PowerPlan.

Bid Summary	
Contractor	Bid Amount
Brothers Pipeline Corp	\$220,500.00

Engineering has prepared a cost estimate for the Project with an estimated final cost of \$446,128.36 as shown below:

Charge Type	Additions
Materials	\$28,100.00
CNGC Labor	\$10,475.00
Contractor Costs	\$310,000.00
Other Direct	\$3,060.00
Overhead (26.49%)	\$93,148.12
AFUDC Debt/Equity	\$1,345.24
Total	\$446,128.36

*A detailed estimate breakdown of the additions can be found on page 3.

Benefits

1. Additional natural gas capacity as necessary for growth demands.
2. Reinforce Cascade's natural gas distribution infrastructure.

Alternatives

Other routes were observed, but they were not accounted for due to private land properties and agriculture terrain. The Project route is ideal when considering the time factor that is being managed.

Responsible People

Project Manager: Jose Chavez Jr.

Project Reviewer: Jeremy Ogden

District Lead: Greg Miller

Project Foreman: Mike Stone

Hildebrand Blvd. – Sherman Street 6" HP

WO 243931

MATERIALS DESCRIPTION	PART NO	PROPOSED QUANTITY	UOM	UNIT COST	TOTAL DIRECT COST	CONT. RATE	CONT. \$	TOTAL COST
8" x 0.250" GRADE X-52, API 5L, PSL2, ERW, FBE COATED STEEL LINE PIPE, 14-16 MILS	PFBE-710X52	140	LFT	\$ 17.10	\$ 2,394.25	5.00%	\$ 119.71	\$ 2,513.96
6" x 0.280" GRADE X-52, API 5L, PSL2, ERW, FBE COATED STEEL LINE PIPE, 14-16 MILS	PFBE-653X52	1190	LFT	\$ 12.99	\$ 15,460.12	5.00%	\$ 773.01	\$ 16,233.13
8" X 6" 90° STANDARD WEIGHT REDUCING WELD ELBOW GRADE Y52, LR	EL-702X52	1	EA	\$ 1,754.75	\$ 1,754.75	5.00%	\$ 87.74	\$ 1,842.49
6" 45° STANDARD WEIGHT WELD ELBOW GRADE Y52	EL-656X52	3	EA	\$ 82.79	\$ 248.37	5.00%	\$ 12.42	\$ 260.79
6" 90° STANDARD WEIGHT WELD ELBOW GRADE Y52	EL-657X52	2	EA	\$ 107.16	\$ 214.32	5.00%	\$ 10.72	\$ 225.04
6" STANDARD WEIGHT WELD CAP GRADE Y52	CA-651X52	2	EA	\$ 102.77	\$ 205.54	5.00%	\$ 10.28	\$ 215.82
1" SAV-A-VALVE WITH STEEL CAP (1440 PSIG)	NP-210	2	EA	\$ 31.74	\$ 63.48	5.00%	\$ 3.17	\$ 66.66
4" X 50' ROLL POLYGUARD RD-6	H-1372	35	ROLL	\$ 33.28	\$ 1,164.80	5.00%	\$ 58.24	\$ 1,223.04
POLYGUARD 600 EF PRIMER	H-1370	2	GAL	\$ 65.90	\$ 131.81	5.00%	\$ 6.59	\$ 138.40
TRENTON #1 WAX, 4" X 108"	H-780	15	ROLL	\$ 9.29	\$ 139.42	5.00%	\$ 6.97	\$ 146.39
PRIMER, TRENTON WAX, TAPE, BROWN, 1-GALLON CANS	H-782	1	GAL	\$ 30.43	\$ 30.43	5.00%	\$ 1.52	\$ 31.95
MARKER, 62" CARSONITE, TYPE #CUM-375 WITH TWO-COLOR	H-99	3	EA	\$ 15.96	\$ 47.88	5.00%	\$ 2.39	\$ 50.27
MISCELLANEOUS MATERIALS	N/A	1	EA	\$ 4,907.00	\$ 4,907.00	5.00%	\$ 245.35	\$ 5,152.35
TOTAL: MATERIALS					\$ 21,506		\$ 1,075	\$ 28,100
CNGC LABOR								
Installation								
CNGC Construction Supervisor		100	HR	\$46.77	\$4,677			
Sub-Total: Installation		100	HR		\$4,677			
Inspection/Documentation/Management								
Division Supervision & Inspection - Manager Field Operations		30	HR	\$70.00	\$2,100			
Distribution Clerk		30	HR	\$43.76	\$1,313			
Control Equipment Mechanic		0	HR	\$50.84	\$0			
Miscellaneous Labor		1	EA	\$1,019.00	\$1,019			
Sub-Total: Inspection/Documentation/Management		60	HR		\$4,432			
TOTAL: CNGC LABOR		160	HR		\$9,109	15.00%	\$1,366	\$10,475
RESOURCES								
CNGC Equipment								
Control Equipment/Truck		0	HR	\$31.80	\$0			
Air Compressors		0	HR	\$11.10	\$0			
Sub-Total: CNGC Equipment		0	HR		\$0			
Travel, Food and Lodging Expenses								
Division Supervision & Inspection - Manager Field Operations		3	WEEK	\$200.00	\$600			
Crew Meals		20	EA	\$10.00	\$200			
Mileage		0	MILE	\$0.51	\$0			
Miscellaneous expenses		1	EA	\$500.00	\$500			
Sub-Total: Travel, Food & Lodging					\$1,300			
Permits/Easements								
Easements		0	EA	\$0.00	\$0			
State Permits		0	EA	\$0.00	\$0			
City of Kennebec Permit		0	EA	\$0.00	\$0			
Pipe Storage		0	EA	\$0.00	\$0			
Sub-Total: Permits/Easements					\$0			
Miscellaneous								
Incidentals		1	EA	\$1,482.00	\$1,482			
Sub-Total: Miscellaneous					\$1,482			
TOTAL: RESOURCES					\$2,782	10.00%	\$278	\$3,060
CONTRACTOR/CONSULTANT								
General Contractors (Brothers Pipeline Corp.) - Pipe Installation		1	EA	\$220,500.00	\$220,500			
Survey/Drafting (PBS)		1	EA	\$20,000.00	\$20,000			
Restoration		1	EA	\$32,195.00	\$32,195			
Sub-Total: Contractor/Consultant					\$272,695			
Sales Tax		8.7%			\$23,670			
TOTAL: CONTRACTOR/CONSULTANT					\$296,365	5.00%	\$13,635	\$310,000
TOTAL MAIN INSTALL COSTS					\$329,761		\$16,355	\$351,635
Overhead						26.49%		\$93,148
TOTAL PROJECT COST								\$444,783
Total estimated cost per foot								\$332

Project Summary – Brinkley Road 8” HP Reinforcement

Submitted by: Jose Chavez Jr.

06/12/2017

Background

The increasing growth rate in housing developments, commercial firms, and industrial corporations has placed a strain on the Kennewick, WA natural gas system. Cascade Natural Gas Corporation (CNGC) proposes to expand their natural gas delivery capacity within the Cities of Kennewick and Richland, in Benton County, Washington. This project will provide additional natural gas capacity as necessary for growth demands, and to reinforce Cascade’s natural gas distribution infrastructure.

Proposal

The Kennewick Brinkley Road High Pressure Reinforcement (Project) includes installation of approximately 1960 linear feet of 8-inch diameter, 0.322 wall thickness, Grade X-52, APL 5L, steel pipeline, with an operating pressure of up to 500 pounds per square inch gauge (psig).

The Project begins at the southeast side of the Access Road that crosses over the Kennewick Irrigation District (KID) canal, for approximately 1043 feet heading east in an existing Cascade easement, thence southerly along the westerly side for approximately 397 feet in an existing utility easement, and then turning east on W. Brinkley Road for approximately 546 feet and terminating at the existing Southridge gate station.

The Project will tie into existing Cascade facilities at the Southridge gate station and Bob Olsen Parkway, and is necessary to provide gas for the Steptoe reinforcement project that will serve the new Lamb Weston facility. Construction is scheduled to commence in June 2017; completion would be within three weeks of construction commencement.

Timing

Survey and design on the Project began in May 2017 and plans were completed in June 2017 by PBS Engineering and Environmental Inc. The plans were finalized through mutual work with Engineering Services from CNGC. Right of way easements and permits have been obtained for all portions of the Project. There was no bid meeting held due to expedited construction deadlines.

Costs

Engineering has prepared design plans and estimates for the installation. Materials costs are based on most recent historical cost with a 5% contingency. CNGC labor is for division supervision, clerks, and central stores coordination. The contractor cost is a received bid from Brother’s Pipeline Corp. Other direct costs cover miscellaneous charges and resources. Overhead has been calculated through Power Plan.

Bid Summary	
Contractor	Bid Amount
Brothers Pipeline Corp	\$286,640.00

Engineering has prepared a cost estimate for the Project with an estimated final cost of \$538,785.85 as shown below:

Charge Type	Additions
Materials	\$58,749.00
CNGC Labor	\$14,473.00
Contractor/Consultant Costs	\$348,588.00
Other Direct	\$2,970.00
Overhead (26.49%)	\$112,524.22
AFUDC Debt/Equity	\$1,481.61
Total	\$538,785.85

*A detailed estimate breakdown of the additions can be found on page 3.

During the 2017 budgeting process, this project was originally budgeted for approximately \$1.4MM in FP 302588. Through an error that occurred in the Power Plan system in late fall of 2016, the budgeted amount was reduced to \$566,051. Previous phases of this project in 2017 were approved for a total of \$548,663.32. This phase will bring that total to \$1,087,449.17, which will be \$521,398.17 over the amount in the 2017 approved budget.

Benefits

1. Additional natural gas capacity as necessary for growth demands.
2. Reinforce Cascade’s natural gas distribution infrastructure.

Alternatives

Other routes were observed, but they were not accounted for due to private land properties, close proximity to a KID canal and an elementary school. The Project route is ideal when considering the time factor that is being managed.

Responsible People

Project Manager: Jose Chavez Jr.
 Project Reviewer: Jeremy Ogden
 District Lead: Greg Miller
 Project Foreman: Mike Stone
 Construction Supervisor: TBD

Hildebrand Blvd. – Brinkley RD. 8" HP
 WO 245219

MATERIALS DESCRIPTION	PART NO	PROPOSED QUANTITY	UOM	UNIT COST	TOTAL DIRECT COST	CONT. RATE	CONT. \$	TOTAL COST
8" x 0.322" GRADE X-52, API 5L, PSL2, ERW, FBE COATED STEEL LINE PIPE, 14-16 MILS	PFBE-711X52	1960	LF	\$ 23.70	\$ 46,443.57	5.00%	\$ 2,322.18	\$ 48,765.75
8" 45" STANDARD WEIGHT WELD ELBOW GRADE Y52	EL-700X52	4	EA	\$ 181.03	\$ 724.12	5.00%	\$ 36.21	\$ 760.33
8" 90" STANDARD WEIGHT WELD ELBOW GRADE Y52	EL-701X52	4	EA	\$ 198.95	\$ 799.42	5.00%	\$ 39.67	\$ 833.09
8" STANDARD WEIGHT WELD CAP GRADE Y52	CA-701X52	4	EA	\$ 165.92	\$ 663.68	5.00%	\$ 33.18	\$ 696.86
1" SAV-A-VALVE WITH STEEL CAP (1440 PSIG)	NP-210	4	EA	\$ 31.74	\$ 126.96	5.00%	\$ 6.35	\$ 133.31
4" X 50' ROLL POLYGUARD RD-6	H-1372	75	RL	\$ 36.01	\$ 2,700.60	5.00%	\$ 135.03	\$ 2,835.63
POLYGUARD 600 EF PRIMER	H-1370	3	GL	\$ 65.90	\$ 197.71	5.00%	\$ 9.89	\$ 207.60
TRENTON #1 WAX, 4" X 108"	H-780	24	RL	\$ 9.29	\$ 222.07	5.00%	\$ 11.15	\$ 234.22
PRIMER, TRENTON WAX, TAPE, BROWN, 1-GALLON CANS	H-782	1	GL	\$ 30.43	\$ 30.43	5.00%	\$ 1.52	\$ 31.95
MARKER, 62" CARSONITE, TYPE #CUM-375 WITH TWO-COLOR	H-99	3	EA	\$ 15.96	\$ 47.88	5.00%	\$ 2.39	\$ 50.27
MISCELLANEOUS MATERIALS	N/A	1	EA	\$ 4,000.00	\$ 4,000.00	5.00%	\$ 200.00	\$ 4,200.00
TOTAL: MATERIALS					\$ 51,873		\$ 2,594	\$ 56,749
CNGC LABOR								
Installation								
CNGC Construction Supervisor		150	HR	\$46.77	\$7,016			
Sub-Total: Installation		150	HR		\$7,016			
Inspection/Documentation/Management								
Division Supervision & Inspection - Manager Field Operations		40	HR	\$70.00	\$2,800			
Distribution Clerk		40	HR	\$43.76	\$1,750			
Control Equipment Mechanic		0	HR	\$50.84	\$0			
Miscellaneous Labor		1	EA	\$1,019.00	\$1,019			
Sub-Total: Inspection/Documentation/Management		80	HR		\$5,569			
TOTAL: CNGC LABOR		230	HR		\$12,585	15.00%	\$1,888	\$14,473
RESOURCES								
CNGC Equipment								
Control Equipment/Truck		0	HR	\$31.80	\$0			
Air Compressors		0	HR	\$11.10	\$0			
Sub-Total: CNGC Equipment		0	HR		\$0			
Travel, Food and Lodging Expenses								
Division Supervision & Inspection - Manager Field Operations		3	WEEK	\$200.00	\$600			
Crew Meals		20	EA	\$10.00	\$200			
Mileage		0	MILE	\$0.51	\$0			
Miscellaneous expenses		1	EA	\$500.00	\$500			
Sub-Total: Travel, Food & Lodging					\$1,300			
Permits/Easements								
Easements		0	EA	\$0.00	\$0			
State Permits		0	EA	\$0.00	\$0			
City of Kennewick Permit		0	EA	\$0.00	\$0			
Pipe Storage		0	EA	\$0.00	\$0			
Sub-Total: Permits/Easements					\$0			
Miscellaneous								
Incidentals		1	EA	\$1,400.00	\$1,400			
Sub-Total: Miscellaneous					\$1,400			
TOTAL: RESOURCES					\$2,700	10.00%	\$270	\$2,970
CONTRACTOR/CONSULTANT								
General Contractors (Brothers Pipeline Corp.) - Pipe Installation		1	EA	\$286,640.00	\$286,640			
Survey/Drafting (PBS)		1	EA	\$20,000.00	\$20,000			
Restoration		1	EA	\$0.00	\$0			
Sub-Total: Contractor/Consultant					\$306,640			
Sales Tax		8.7%			\$26,616			
TOTAL: CONTRACTOR/CONSULTANT					\$333,256	5.00%	\$15,332	\$348,588
TOTAL MAIN INSTALL COSTS					\$400,414		\$20,083	\$424,780
Overhead						26.49%		\$112,524
AFUDC Debt/Equity								\$1,482
TOTAL PROJECT COST								\$538,786
Total estimated cost per foot								\$263