CLIENT:- City of Columbia Water & Light Department

PROJECT:- Mill Creek 161-kV Transmission Line Project
PREPARED BY:- KAK/JLT, Sega, Inc.
DOCUMENT:- Engineering Opinion of Cost
DATE:- 6-Jul-2018
REVISION:- Rev 2 - BMCD

REV. NOTES:

Rev. 0: Costs below are intended to account for 7.7 miles of OH Line Construction only. No costs are included that may additonally account for:
a. Substation
b. Any portion of the line that may be routed underground, distribution or otherwise.
c. Existing 69-kV along route has been considered for double circuit.
Rev. 1 update costs
Rev. 2 remove wood tab per City, update costs

Design, 161-kV using Self-Supporting Steel Structures on Foundations, 7.7 Miles

Item No.	Item	Foundations	Material - Pole	Material - Assemblies	Construction T&D	Quantity	Subtotal per Structure	Notes
Structures								
1	Double Circuit Steel Dead End Structure	$198,715	$125,068	$7,910	$16,045	6	$2,086,425	
2	Steel Running Angle (5-15)	$83,695	$31,470	$1,375	$9,525	12	$1,512,783	
3	Double Circuit Steel Running Angle (5-15)	$125,695	$67,661	$2,500	$12,175	2	$416,063	
4	Steel Running Angle (16-30)	$94,855	$45,419	$1,525	$8,235	6	$900,202	
5	Double Circuit Steel Running Angle (16-30)	$145,900	$58,625	$2,650	$10,885	1	$218,060	
6	Steel Tangent	$400	$24,553	$1,375	$9,525	52	$1,864,350	Assumed direct embed foundation
7	Double Circuit Steel Tangent	$400	$46,708	$2,500	$12,175	10	$617,834	Assumed direct embed foundation
	Subtotals -->	$3,187,850	$3,338,342	$177,260	$912,265	89	$7,615,717	
Conductor & Shield Wire								
7	Conductor, 795 kcmil ACSR "Drake", 123,650-ft		$197,840		$727,500	1	$925,340.00	
8	Shield Wire, 0.506" 24-Fiber OPGW, 41,200-ft		$67,980		$323,200	1	$391,180.00	
9	Splice Boxes at Substations and Junction Points		$8,000		$2,865	4	$43,460.00	4 locations for splice boxes
10	Misc.: Stringing Setups, Xings, Etc.		$35,000		$131,510	1	$166,510.00	Est. LS for 7.7 mile design; Includes setups for stringing, contractor-provided guard structures for road & line xings, etc.
	Subtotals -->		$332,820		$1,193,670		$1,526,490	
Other Construction-Related Costs								
11	Mobilization / De-Mobilization				Estmated Lump Sum Cost =		$36,100	
12	Construction Yard Setup, Security, Material Storage				Estmated Lump Sum Cost =		$208,430	
13	ROW Access, SWPPP				Estmated Lump Sum Cost =		$366,040	
14	ROW Restoration				Estmated Lump Sum Cost =		$171,935	
	Subtotals -->						$782,505	
					Summary of Material & Construction Costs Only =		9,142,207	
					20% Material Contingency =		1,407,254	Also is intended to account for any markup costs (~10%)
					30% Construction Contingency =		631,781	Contingency on Structure & Wire labor only: Construction costs may vary significantly based on market conditions, contractor availability, & overall schedule requirements
					Subtotal with Contingencies =		11,181,242	
					Per Mile Base Cost =		**1,553,733**	Divide previous "Subtotal with Contingencies" by 7.7 + Construction-Other costs by 7.7
					Cost for 7.7 Mile OH Line, Base Cost =		**11,963,747**	Multiply previous "Per Mile Base Cost" by 7.7
Client-Mgmt Costs & Consultants (Engg, Public Involvement, Real Estate Assessment and Acquisition)								
15	Complete Engineering (Line Design, Fdtns, Constr Docs & Dwgs)				% of Base Cost =	10%	$1,196,375	
16	Surveying				Survey Lump Sum Cost=		$40,000	Staking
17	Stakeholder Engagement & Public Relations				% of Base Cost =	8%	$957,100	
18	Real Estate				% of Base Cost =	10%	$1,196,375	
19	Proj Mgmt, Field Coordination & Inspection, Etc.				% of Base Cost =	8%	$957,100	Assumes 12-week construction schedule w/ NO full-time on-site safety coordinator
20	EPC Construction Contract Adder				% of Construction Cost =	10.0%	$352,022	Assume based on construction-labor, other-, & contingency cost only; Adder may +/- based on overall amount
21	Eng & Proj Mgmt				% of Base Cost =	2.5%	$299,094	
	Subtotals -->						$4,998,065	
ROW (Acquisitions & Permits)								
22	Title Searches				Estmated Lump Sum Cost =		$50,000	
23	Acquisitions				Estmated Lump Sum Cost =		$550,000	
24	Crossing Permits				Estmated Lump Sum Cost =		$30,000	
25	Environmental Permits, SWPPP Preparation, Monitoring				Estmated Lump Sum Cost =		$112,000	
	Subtotals -->						$742,000	
					Summary of PM, Engr, Surveying, & Geotech; and ROW, Permitting, Etc. Costs Only =		$5,740,065	
					10% Contingency =		$574,006	
					Cost for 7.7 OH Line, Total Project =		**$18,277,818**	
					Per Mile Cost =		**$2,373,743**	