UNDERTAKING J3.6

Undertaking

TO PREPARE A TABLE SHOWING BOQ BREAKING DOWN THE PIPE BY CATEGORY, AND SHOWING ESTIMATES FOR THAT PIPE; TO FILE A COPY OF THE BOQ

Response

The following response was prepared by Bates White:

To develop this estimate, Bates White reviewed the Bill of Quantities ("BOQ") provided as Attachment 1 and identified the line items (just over 300) that addressed piping. This information was used in two separate analyses. First, it was used to identify the line items in Appendix D of the Bates White Report that involved piping. Bates White extracted from the Appendix D line items the material cost of the piping and reported this value by major system (Sections B through H of the BOQ). Second, Bates White performed a separate assessment that summed the same 300-plus piping line items by material type, grade, and size, and then reported this information by major BOQ system.

The Charts that follow present a breakdown by BOQ section of the overnight material costs of piping, and a summary analysis of the length of piping by type.

Chart 1: Overnight Material Costs, Piping, CAD$

	Overnight Material Costs
Section B, Architectural/Structural (Civil)	$9,057
Section C, Process Systems Tie-in	$23,699
Section D, Process Systems	$2,870,234
Section E, Process Support Systems	$259,768
Section F, Building Support Systems Tie-in	$16,579
Section G, Building Support Systems	$171,193
Section H, Electrical	$15,196
	$3,365,725

1 **Chart 2: Summary Analysis of Piping by Type and BOQ Section (length of piping given in metres, m)**

Stainless Steel Piping													
BOQ Section	**Less than 2-inches**			**2-inches to 3.99-inches**			**4-inches to 5.99-inches**			**More than 6-inches**			**Section Total**
	NC3	NC6	NS	NC3	NC6	NS	NC3	NC6	NS	NC3	NC6	NS	
B-Architectural/Structural	0	0	0	0	0	0	0	0	0	0	0	0	0
C-Process Systems Tie-in	5	18	0	5	9	0	0	0	0	0	0	0	37
D-Process Systems	1,464	1,015	512	2,210	525	759	0	38	25	0	0	0	6,548
E-Process Support Systems	0	0	610	0	0	1	0	0	5	0	125	0	741
F-Building Support Systems Tie-in	0	0	0	0	0	0	0	0	0	0	0	0	0
G-Building Support Systems	0	0	0	0	0	2	0	0	0	0	0	0	2
H-Electrical Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**1,469**	**1,033**	**1,122**	**2,215**	**534**	**762**	**0**	**38**	**30**	**0**	**125**	**0**	**7,328**
Note: Section H contains 1,437 m of SS tubing, all less than 1-inch													
Carbon Steel Piping													
BOQ Section	**Less than 2-inches**			**2-inches to 3.99-inches**			**4-inches to 5.99-inches**			**More than 6-inches**			**Section Total**
	NC3	NC6	NS	NC3	NC6	NS	NC3	NC6	NS	NC3	NC6	NS	
B-Architectural/Structural	0	0	0	0	0	0	0	0	13	0	0	0	13
C-Process Systems Tie-in	0	0	29	0	0	5	0	0	0	0	60	0	94
D-Process Systems	0	0	150	5	0	470	0	0	72	0	0	12	709
E-Process Support Systems	0	0	0	0	0	0	0	0	0	0	0	15	15
F-Building Support Systems Tie-in	0	0	5	0	0	5	0	0	0	0	4	56	70
G-Building Support Systems	0	0	938	0	77	285	0	0	449	0	0	50	1,799
H-Electrical Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**1,122**	**5**	**77**	**765**	**0**	**0**	**534**	**0**	**64**	**133**	**2,700**

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Copper Piping													
BOQ Section	**Less than 2-inches**			**2-inches to 3.99-inches**			**4-inches to 5.99-inches**			**More than 6-inches**			**Section Total**
	NC3	NC6	NS	NC3	NC6	NS	NC3	NC6	NS	NC3	NC6	NS	
B-Architectural/Structural	0	0	0	0	0	0	0	0	0	0	0	0	0
C-Process Systems Tie-in	0	0	0	0	0	0	0	0	0	0	0	0	0
D-Process Systems	0	10	0	0	0	0	0	0	0	0	0	0	10
E-Process Support Systems	0	378	420	0	78	257	0	0	0	0	0	0	1,133
F-Building Support Systems Tie-in	0	0	0	0	0	85	0	0	0	0	0	0	85
G-Building Support Systems	0	0	70	0	0	100	0	0	0	0	0	0	170
H-Electrical Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**388**	**490**	**0**	**78**	**442**	**0**	**0**	**0**	**0**	**0**	**0**	**1,398**
Overall Totals	**1,469**	**1,421**	**2,734**	**2,220**	**689**	**1,969**	**0**	**38**	**564**	**0**	**189**	**133**	**11,426**
"Process Piping"(BOQ C+D+E)	**1,469**	**1,421**	**1,721**	**2,220**	**612**	**1,492**	**0**	**38**	**102**	**0**	**185**	**27**	**9,287**
Piping Other than SS, CS and Cu													
Cast Iron	191 m; 70, 4-in, 121, 6-in or larger, all NS, non-process												
PVC	275 m, all 6-in or more, all NS, non-process												

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