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Metcalf & Eddy

June 22, 1990

Russell Hart
United States Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

Re: TES X WA# C05011, Master Disposal Service Landfill

Subject Cost Estimate for Sheet Piling Installation

Dear Mr. Hart:

Enclosed please find a copy of our steel sheet piling cost estimate for the master Disposal Service Landfill.

Should you have any questions concerning this deliverable, please feel free to contact Mr. Gary Kruger at (708)228-0900 or myself at (312)427-8752.

Sincerely,

METCALF & EDDY, INC.

Thomas Lentzen
Regional Project Manager

cc: L. Kosik
 RPMO

TL/sw

EPA Region 5 Records Ctr.



233032



June 19, 1990

250011-0001-605

Mr. Russell D. Hart
U.S. Environmental Protection Agency
230 S. Dearborn
Chicago, Illinois 60604

Re: TES X WA# C05011, Master Disposal Service Landfill

Subject: Cost estimate for sheet piling installation

Dear Russ:

As you requested, Metcalf & Eddy, Inc. (M&E) has performed a cost estimate outlining the approximate expense for the installation of a sheet piling ground water barrier at the Master Disposal Services Landfill (MDSL) site. This request was outlined in your letter to M&E dated June 5, 1990. M&E's cost estimate for steel sheet piling installation around the landfill at three depths are presented below, along with an explanation of the estimation methodology used, assumptions made in the cost estimation process, and a comparison between the sheet piling barrier and the slurry wall barrier costed in our previous letter report to you dated June 1, 1990.

Introduction

M&E was tasked to perform a cost estimate for the construction of a sheet piling barrier to surround the MDSL site. Costing for alternate wall depths of 15 feet, 40 feet, and 55 feet were performed.

The layout of the sheet piling barrier for cost estimation purposes has a perimeter of 4076 feet, and surrounds the outer edges of the landfill (see figure in 6/1/90 letter report for approximate location). A sheet piling barrier of this perimeter can contain the landfill entirely, and still assist in the preservation of the marshlands that exist on-site in the southwest corner of the MDSL site.

The two most common materials used as driven sheet piling barriers are wood and steel. The sheet piling barriers costed in this letter report are constructed of steel; wood pilings, although cheaper than steel, are less durable and provide a relatively ineffective barrier to ground water.

As in the case of a slurry wall ground water barrier, the depth of the sheet piling wall impacts both unit costs and total cost of wall construction. Wall depths of 40 feet and 55 feet require thicker steel than the shallow 15-foot wall, and, of course, require more square footage of material due to deeper wall depths.

Methodology and Results

The results of costing the proposed steel sheet piling wall at three depths for the wall perimeter described above are presented in the attached table. The costing procedure used to arrive at these estimates consisted of the calculation of the unit costs (\$/sqft) of the wall by converting the unit costs (\$/ton) for steel sheet piling barrier construction as presented in the 1990 Means Site Work Cost Data handbook. The unit costs for the 15-foot and 40-foot walls were taken directly from the Means handbook, and the unit costs for the deeper, 55-foot wall were assumed to be essentially the same as the unit costs for the 40-foot wall, with economies of scale savings offsetting additional costs due to deeper wall depths.

The unit costs developed for steel sheet pilings using this method (\$12.50 to \$15.86 per square foot, 1990 costs) compare quite favorably to the upper domain of the unit cost range presented in the U.S. EPA's Remedial Action at Waste Disposal Sites Handbook (\$7.40 to \$18.25 per square foot, updated 1990 costs).

The unit costs presented do not include the costs associated with work in a hazardous environment; a 5% health and safety (H&S) contingency was therefore added to the subtotal to account for this factor. A general preliminary cost estimate contingency of 10% was then added to the sum of the subtotal and H&S values to arrive at a final total cost estimate. Operation and maintenance costs associated with the sheet piling barrier are assumed to be negligible.

Discussion

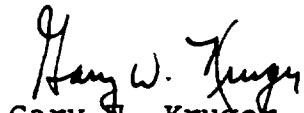
The cost range of approximately \$1.2 million to \$4.1 million to install a steel sheet piling barrier on the MDSL site is higher than the cost estimates for a soil-bentonite slurry wall, but less costly than the cement-bentonite option. The sheet piling is projected to provide a strong, maintenance-free ground water barrier, but is probably less effective in containing ground water flow than either of the slurry wall options.

It should also be noted that the cost estimates for the sheet piling, like the slurry walls, are highly dependent upon sub-surface site conditions at the MDSL site. The presence of frequent boulders beneath the site may, in fact, preclude the installation of sheet piling altogether. The cost estimate given in this letter report can be used to compare costs between the sheet piling and slurry walls at different depths assuming that site conditions allow such an installation.

If you have any questions concerning the above cost estimate, or require additional analysis regarding the proposed remedial actions on-site, please do not hesitate to call.

Very truly yours,

METCALF & EDDY



Gary W. Kruger
Contractor Project Manager

enclosure

cc: T. Lentzen, M&E
File

**APPROXIMATE COST OF STEEL SHEET PILING CUTOFF WALL
CONSTRUCTION AT THE MASTER DISPOSAL SITE**

Wall Type	Jan. 1990 Unit Cost (\$/SQFT)	Perimeter of Wall (FT)	Depth of Wall (FT)	Area of Wall (SQFT)	SUBTOTAL (\$)	5% H&S Contingency (\$)	10% Preliminary Cost Estimate Contingency (\$)	TOTAL COST ESTIMATE (\$)
20' Steel Sheet Piling (27 lb/sqft)	12.50	4076	20	81,520	1,019,000	50,950	106,995	1,176,945
40' Steel Sheet Piling (38 lb/sqft)	15.86	4076	40	163,040	2,585,814	129,291	271,511	2,986,616
55' Steel Sheet Piling (38 lb/sqft)	15.86	4076	55	224,180	3,555,495	177,775	373,327	4,106,596