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New England Environmental Finance Center

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CULVERT MATERIAL COST COMPARISON

Prepared by: The New England Environmental Finance Center
For the Maine Department of Transportation Office of Environmental Planning

November 1, 2010

The following tables provide a detailed look at the role that culvert material and culvert diameter play in the overall cost of a culvert replacement project. Table 1 displays the cost per foot purchase price arranged by diameter size for the various culvert materials that are currently available. Table 2 displays the average additional culvert pipe material cost (increased cost to upsize minus original in-kind replacement cost) that would be incurred when upsizing a given diameter of culvert with a 50 foot length by factors of: 200%, 250% and 300%.

Notes: Table 1 displays cost information for Corrugated Metal Pipe (CMP) Culvert, Corrugated Metal Pipe (CMP) Elliptical Arch Culvert, Corrugated Metal Structural Plate (Bottomless) Culvert and Concrete Box Culvert. Table 2 uses a combined averaged cost of CMP Elliptical Arch Culvert and Corrugated Metal Bottomless Arch Culvert for diameters greater than 6 feet. Costs current as of August 2010.

Cost/Lineal Foot					
DIAM/SPAN (feet)	CMP Culvert	HDPE Culvert	CMP Elliptical Arch	Corrugated Metal Bottomless Arch (incl. foundation)	Concrete Box Culvert
2	\$ 22	\$ 22	\$ -	\$ -	\$ -
3	\$ 45	\$ 44	\$ -	\$ -	\$ -
4	\$ 65	\$ 68	\$ -	\$ -	\$ -
5	\$ 115	\$ 93	\$ 120.00	\$ -	\$ 200
6	\$ 138	\$ 92	\$ 150	\$ 182	\$ 250
7	\$ 162	\$ -	\$ 213	\$ 205	\$ 375
8	\$ 210	\$ -	\$ 225	\$ 248	\$ 450
9	\$ 240	\$ -	\$ 267	\$ 260	\$ -
10	\$ 270	\$ -	\$ 299	\$ 291	\$ 760
12	\$ 330	\$ -	\$ -	\$ 327	\$ 900
14	\$ -	\$ -	\$ -	\$ 430	\$ 1,050
16	\$ -	\$ -	\$ -	\$ 481	\$ 1,200
18	\$ -	\$ -	\$ -	\$ 506	\$ 1,450
LEGEND:	\$ - (blank) = material not available at this dimension				

Average Material Upsize Additional Cost per 50 Foot Span							
DIAM/SPAN (feet)	CMP CULVERT In-Kind Replace	2X Upsize Additional Cost	2X Upsize % Cost Increase	2.5X Upsize Additional Cost	2.5X Upsize % Cost Increase	3X Upsize Additional Cost	3X Upsize % Cost Increase
2	\$ 1,100	\$ 2,300	309%	\$ 4,650	523%	\$ 6,400	682%
3	\$ 2,250	\$ 4,773	312%	\$ 9,138	506%	\$ 10,524	568%
4	\$ 3,250	\$ 8,138	350%	\$ 11,089	441%	\$ 13,178	505%
5	\$ 5,200	\$ 14,339	376%	\$ 12,502	340%	\$ 17,310	433%
6	\$ 5,750	\$ 10,678	286%	\$ 11,560	301%	\$ 19,556	440%
7	\$ 8,100	\$ 13,410	266%	\$ 16,173	300%	\$ 28,553	453%
8	\$ 10,500	\$ 13,543.33	229%	\$ 25,623.33	344%	\$ 29,783	384%
9	\$ 12,000	\$ 13,305.83	211%	\$ 11,250	194%	\$ -	
10	\$ 13,500	\$ -		\$ -		\$ -	
12	\$ 16,500	\$ -		\$ -		\$ -	
14	\$ -	\$ -		\$ -		\$ -	
16	\$ -	\$ -		\$ -		\$ -	
18	\$ -	\$ -		\$ -		\$ -	

Table displays additional cost (above and beyond in-kind replacement) for purchasing 50 lineal feet of pipe material in various typical diameters to meet potential upsize requirements.

% Cost Increase= [In-Kind Replace \$ + Upsize Additional Cost \$]/In-Kind Replace \$

Source: Contech Construction Products, Inc., WH Shurtleff & Co., and American Concrete Industries

Note: Concrete Box Culvert costs were not include in upsize average costs due to excessive costs