

FAC 8221 Heat Distribution Line

RUC: \$193.10 LF

Source: USACE PAX Newsletter 3.2.2 dated 20 Mar 09
Average of all catcode 82210 & 82220
Deflated to FY-09 using Appendix C of newsletter
In V12, Tri-Service and USACE PAX Newsletter values were updated while all
other values were inflated only.

SUC: \$2.40 LF

Source: Cost Works model.
Inflated to FY-09 using Green Book Table 5-6 (O&M less DHP)
In V12, values were inflated only.

Model follows:

FAC 8221
Heat
Distributi
on Line

\$218.00
\$199.00
\$189.00
\$187.00
\$119.00
\$129.00
\$131.00
\$157.00
\$168.00
\$203.00
\$233.00
\$170.00
\$208.00
\$256.00
\$281.00
\$326.00
\$3,174.00
\$198.38

FAC 8221, Heat Distribution Line

Concrete Trench Systems

Calculation after: "Comparative Life-Cycle Cost Analysis of Underground Heat Distribution Systems",
Journal of Transportation Engineering, Nov/Dec 1998. Prices updated to 2008

Cost = Scheduled Maintenance + Leak Location & Repair

Scheduled Maintenance

6 hours/manhole
1 manhole / 311 feet
0.003215 manholes per foot
0.019293 hours/foot
\$73.20 pipefitter hourly rate
\$ 1.41 per foot

Leak Detection & Repair

Activity	Skilled Manhours			Unskilled Manhours		
	6 in	8 in	10 in	6 in	8 in	10 in
Notice failure				0.3	0.31	0.33
Report to supervisor				1	1.04	1.09
Move backhoe to site				0.52	0.54	0.59
Remove topsoil				1.5	1.56	1.63
Remove 10 ft slab				0.5	0.52	0.54
Reseal slab				0.5	0.52	0.54
Landscape				0.5	0.52	0.54
Remove insulation				0.5	0.52	0.54
Cut line	2	2.48	2.96			
Pull failed pipe from trench				1	1.04	1.09
Place new	1	1.24	1.48			
Align and tape	4	4.96	5.93			
Weld both ends	6	7.44	8.89			
Pressure test	4	4.96	5.93			
Install insulation	1.5	1.56	1.63			
	18.5	22.64	26.82	6.32	6.57	6.89
Percent of each size in system	50%	30%	20%	50%	30%	20%
Weighted hours	9.25	6.792	5.364	3.16	1.971	1.378
Hours by skill level		21.406			6.509	
Hourly Rate		\$73.20			\$50.10	
		\$1,566.92			\$326.10	

Backhoe pe \$314
Backhoe us 27.915 hrs
3.489375 per 8 hour day

Backhoe ch 1095.454

Total \$2,988.47 Cost per Failure & Repair

Failure Rate:

Steel Pipe 0.947 failures/mile/year (from study)
0.000179 failures/ft/year
0.536001 Annual Cost

1.072002 Times 2 for supply and return, assuming HW systems

SubTotal C \$ 2.48