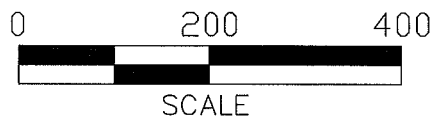


CITY OF FRONTENAC

 STORMWATER SYSTEM MASTER IMPROVEMENT PLAN

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UPDATE NO.	DATE
	11/12/08
FIGURE NO.	6-4

City of Frontenac
Stormwater System Master Improvement Plan
CONCEPTUAL LEVEL ANALYSIS

Project Name: FIGURE 6-4 - STREAM CROSSING
Solutions By: EDM INC. 11-5-08

Problem: Undersized culverts under Lynnbrook Rd.

Strategy: Replace existing twin 60" RCP with new Conspan Culverts

Description	Unit	Quantity	Unit Cost	Alternative 1
24x6 Conspan Culvert	LF	60	\$3,900	\$234,000
Associated Erosion Protection	LS	1	\$25,000	\$25,000
18x6 Conspan Culvert	LF	60	\$3,900	\$234,000
Associated Erosion Protection	LS	1	\$25,000	\$25,000

Subtotal \$518,000

Total Benefit Points 60

Individual Benefit Point Ratio 0.06

Estimated Increased Property Values \$0

Problem: Yard Ponding at Q294 - 3 Lynnbrook Rd.

Strategy: Add yard drains to collect water and pipe under driveway.

Description	Unit	Quantity	Unit Cost	Alternative 1
Yard Drain	EA	2	\$500	\$1,000
6" PVC	LF	129	\$15	\$1,935
Restoration	LS	1	\$2,000	\$2,000

Subtotal \$4,935

Total Benefit Points 30

Individual Benefit Point Ratio 2.90

Estimated Increased Property Values \$3,000

Total \$522,935

Utility Relocation 20% \$104,587

Clearing 5% \$26,147

Mobilization 4% \$20,917

Total with Percent Allowances \$674,586

Contingency 25% \$168,647

Probable Construction Cost Estimate \$843,233

Design Engineering and Geotechnical 30% \$252,970

Total Conceptual Cost Estimate \$1,097,000

Total Benefit Points 120

Total Benefit Point Ratio 0.11

Additional Comments: Unit prices based on MSD Unit Prices January 2006 Construction Costs
 Conceptual Cost are rounded to the nearest \$1000

City of Frontenac
Stormwater System Master Improvement Plan
CONCEPTUAL LEVEL ANALYSIS

Project Name: FIGURE 6-4 CHANNEL FDCST
Solutions By: EDM INC. **DATE:** 11/5/2008

Problem: Creek erosion MSD 20 - 25 Lynnbrook, MSD 21 - 31 Lynnbrook. Creek incision SR-9, Q297, Q298, Q299, Q295 - 10, 12, 21, 23, 25, 18, 29, 31 Lynnbrook.FR-21, Q297 - 31 Lynnbrook.

Strategy: 1) Install bank protection on FDCST from station 15+50 to 19+00 (350 LF) and from 20+50 to 28+00 (750 LF).

Description	Unit	Quantity	Unit Cost	ALT 1	ALT 2
Hard stabilization (L)	LF	1,100	\$300	\$330,000	\$0
Soft stabilization (L)	LF	1,100	\$200	\$0	\$220,000
Geomorphic Study	Ea.	3	\$10,000		\$30,000
Subtotal				\$330,000	\$250,000
Total				\$330,000	\$250,000
Utility Relocation					
Clearing			20%	\$66,000	\$50,000
Mobilization			5%	\$16,500	\$12,500
			4%	\$13,200	\$10,000
Total with Percent Allowances				\$425,700	\$322,500
Contingency			25%	\$106,425	\$80,625
Probable Construction Cost Estimate				\$532,125	\$403,125
Design Engineering and Geotechnical			30%	\$159,638	\$120,938
Total Conceptual Cost Estimate				\$692,000	\$525,000
Benefit Points				360	730
Benefit/Cost Ratio				0.52	1.39

Additional Comments: Unit prices based on MSD January 2006 Construction Costs and EDM Experience. Conceptual Cost are rounded to the nearest \$1000