GEOTEXTILE REINFORCED BRIDGE APPROACH EMBANKMENT

Lost River Bridge - Malin Highway
Klamath County, Oregon

Final Report
 # OR-EF-98-04

by

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Prepared for

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and

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

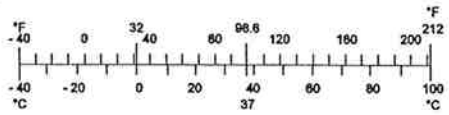
Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	millimeters squared	mm^2
ft^2	square feet	0.093	meters squared	m^2
yd^2	square yards	0.836	meters squared	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	kilometers squared	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	meters cubed	m^3
yd^3	cubic yards	0.765	meters cubed	m^3

NOTE: Volumes greater than 1000 L shall be shown in m^3.

		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
		TEMPERATURE (exact)		
□F	Fahrenheit temperature	5(F-32)/9	Celsius temperature	□C

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	millimeters squared	0.0016	square inches	in^2
m^2	meters squared	10.764	square feet	ft^2
ha	hectares	2.47	acres	ac
km^2	kilometers squared	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	meters cubed	35.315	cubic feet	ft^3
m^3	meters cubed	1.308	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams	1.102	short tons (2000 lb)	T
		TEMPERATURE (exact)		
□C	Celsius temperature	1.8 + 32	Fahrenheit	□F



* SI is the symbol for the International System of Measurement

(4-7-94 jbp)

ABSTRACT

An experimental construction method was evaluated at the Lost River Bridge in Klamath County to reduce the discontinuity between the bridge and the roadway. The method included combining soil in six 300-mm lifts interlaced with geotextile reinforcement. The original plan was to replace the bridge and construct a wider bridge at the site. The final plan included building only sliver fills with no control sections (i.e., no non-reinforced embankments).

The site was surveyed after construction to determine any settlement of the foundation or fill material. One year after construction, no settlement was measured. Due to a lack of a control section, no conclusions or recommendations for this type of construction method can be made.

ACKNOWLEDGEMENTS

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DISCLAIMER

GEOTEXTILE REINFORCED BRIDGE APPROACH EMBANKMENT

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1.0 BACKGROUND

During the winter and spring of 1992, sliver fills were constructed on the Lost River Bridge in Klamath County. The construction method included combining soil in six 300-mm lifts, interlaced with geotextile reinforcement. The method was intended to reduce the discontinuity between the bridge and the roadway due to the settlement and/or consolidation of the approach embankment. The construction report is available through the Research Unit (Groom, 1993).

Settlement plates were installed at each fill location before the first lift was put down to measure the settlement of the original soil under the new fill. The new pavement was also marked at the ground surface to determine the total fill settlement. Settlement of the new fill was to be found by subtracting the original soil settlement from the total fill settlement.

The original plans were to remove the existing bridge and replace it with a wider bridge along the same alignment. The resulting construction would have included four sliver fills, two for the northbound lane and two for the southbound lane. The northbound lane was to serve as the control lane and would have been constructed using conventional construction methods. The southbound lane was to be widened using the geotextile reinforced bridge approach embankment for the test section.

The plans changed prior to construction. The resulting construction included leaving the existing bridge in place and widening the deck three meters on each side. The design still included sliver fills; however, all of the sliver fills were required to have geotextile reinforced embankments. The final construction included geotextile reinforced sliver fills and no control sections.

2.0 MONITORING

Field inspections of the bridge were made in 1992, 1993, and 1994. No visible defects were observed. The pavement-deck connection was smooth and rode very well.

The bridge site was surveyed for one year after construction to determine any settlement in the foundation material or embankment. Through February 1993, no settlement was measured at the site.

3.0 CONCLUSIONS

Due to the lack of a control section, no conclusions as to the use of geotextiles for embankment reinforcement can be made relative to this project. Although no settlement was recorded at the site, it is uncertain whether unreinforced embankments would have performed comparably.

4.0 RECOMMENDATIONS

If research is to be conducted on future projects of this nature, a control embankment shall be constructed for comparison to the test embankment. No recommendations as to the use of this type of construction can be made based on the data collected.

5.0 REFERENCES

Geotextile Reinforced Bridge Approach Embankment: Lost River Bridge, Malin Highway, Klamath County. Kevin M. Groom, March 1993.