

REPORT OF SUB-COMMITTEE
ON
HIGHWAY TYPES AND ROADSIDE AREAS*

Chairman - Wilbur H. Simonson,
Senior Landscape Engineer, U. S. Bureau of Public Roads

T. B. Massie, Florida State Highway Department.
A. R. Nichols, Minnesota State Highway Department.
George H. Otten, Oregon State Highway Department.
Torbert Slack, Louisiana State Highway Department.
Philip Troeger, Michigan State Highway Department.
John L. Wright, Connecticut State Highway Department.

* * *

About 50,000 typical cross-sections of highway projects submitted since 1930 by the several State highway departments to the U. S. Bureau of Public Roads were examined. Taking a $3\frac{1}{2}$ to 4 per cent sample of these for study and analysis, 2,000 representative designs were selected. Since the 2-lane highways represent 95 per cent of all types of highway mileage in the United States, 1,300 primary 2-lane rural highways in this group of 2,000 cross-sections were considered for the initial study.

Figures in the summary table on the next page showing trends in construction on roads under State control are based on the relative dominances of the item in use in each State and then summarized according to the relative number of States utilizing similar practice. The figures have no reference to mileage constructed.

The findings definitely indicate a progressive widening of roadbed surfaces and shoulders, the flattening of crowns and of slopes of shoulders and gutters, as well as the flattening and rounding of cut and fill slopes and increasing right-of-way widths.

These trends are indicative of the growing emphasis now placed on principles of landscape architecture in the development of America's highways.

*Also see "Design of the Highway Cross-Section" by W. H. Simonson, Proceedings, Highway Research Board, Vol. 17, 1938.

**SUMMARY TABULATION SHOWING TRENDS IN CONSTRUCTION
ON PRIMARY TWO-LANE HIGHWAYS UNDER STATE CONTROL**

TABLE	LOW TYPE TREND				HIGH TYPE TREND			
	1932	1934	1936	1938	1932	1934	1936	1938
I - Roadbed (feet)	28) 27.0 26) 27.0 24)	:30) 31.1 :26) 31.1 :36)	:30) 29.7 :32) 29.7 :36)	:(32) :(36) :	30) 30.6 28) 30.6 26)	:30) 33.6 :32) 33.6 :36)	:40) 36.1 :36) 36.1 :30)	:(40) :(36) :
II - Lanes (feet)	9) 8.9 8) 8.9 10)	:10) 9.9 :9) 9.9 :11)	:10) 10.2 :11) 10.2 :9)	:(11) :(12) :	10) 9.6 9) 9.6 8)	:10) 10.6 :11) 10.6 :9)	:10) 10.4 :11) 10.4 :12)	:(11) :(12) :
Surfacing (feet)	17.8	: 19.8	: 20.4	:(22) :(24)	18.5	: 20.5	: 20.6	:(22)
III - Crowns (inches per foot)	1/2 7/16 1/4 7/16 3/8	:1/4 1/8 :1/8 1/8 :1/2 3/16	:1/4 1/8 :1/8 1/8 :3/16 1/4	:(3/16) : :	1/4 3/16 1/8 3/16 3/16	:1/8 3/16 :1/4 3/16 :3/16 3/16	:1/8 3/16 :1/4 3/16 :3/16 3/16	:(1/8) : :
IV - Shoulders (feet)	4) 4.3 3) 4.3 5)	:5) 5.6 :4) 5.6 :3)	:5) 5.4 :3) 5.4 :6)	:(6) :(8) :	5) 5.9 6) 5.9 4)	:10) 6.45 :8) 6.45 :6)	:10) 6.6 :8) 6.6 :6)	:(10) :(11) :(12)
V - Slope (rate per foot)	1" 3/4 3/4 1" 1/2	:1/2) 3/4 :1) 3/4 :3/4)	:1/2) 3/4 :1) 3/4 :3/4)	:(1/2") : :	1/2) 3/4 1 3/4 3/4	:1/2) 3/4 :3/4 1/2 :1) 3/4	:1/2) 3/4 :3/4 1/2 :1/4 1/2	:(1/2") : :
VI - Surface (type)	Br.Sh. S.Exc. Gr.Un.	:Br.Sh. :S.Exc. :T.S.	:Br.Sh. :S.Exc. :Sd.	:(Sd.) :(T.S.) :	Br.Sh. Gr.Un. S.Exc.	:Br.Sh. :S.Exc. :Sd.	:Br.Sh. :Sd. :T.S.	:(Sd.) :(T.S.) :
VII - Gutter Slopes (feet)	3) 4.0 4) 4.0 2)	:4) 6.3 :6) 6.3 :8)	:6) 6.7 :4) 6.7 :8)	:(8) :(10) :	3) 4.0 4) 4.0 6)	:4) 6.0 :6) 6.0 :10)	:6) 5.7 :4) 5.7 :3)	:(8) :(10) :
VIII - Gutter Slope Ratios	3:1) 1/2.4 2:1) 1/2.4 4:1) 2.4	:4:1) 1/3.8 :3:1) 1/3.8 :6:1) 3.8	:4:1) 1/4.0 :3:1) 1/4.0 :6:1) 4.0	:(6:1) : :	3:1) 1/3.1 2:1) 1/3.1 4:1) 3.1	:4:1) 1/4.0 :3:1) 1/4.0 :6:1) 4.0	:4:1) 1/3.8 :3:1) 1/3.8 :6:1) 3.8	:(6:1) : :
IX - Min. Depth Gutters (inches)	12) 15.7 18) 15.7 24)	:12) 16.0 :18) 16.0 :24)	:12) 14.9 :24) 14.9 :18)	:(12) : :(24)	12) 15.6 18) 15.6 24)	:12) 16.4 :24) 16.4 :18)	:12) 16.0 :18) 16.0 :24)	:(12) : :(24)
X - Gutter Section (feet)	0) 1.1 2) 1.1 1)	:0) 1.35 :2) 1.35 :1)	:0) 1.15 :2) 1.15 :6)	:(0) : :(6)	0) 1.2 2) 1.2 1)	:0) 1.3 :2) 1.3 :6)	:0) 1.5 :2) 1.5 :6)	:(0) : :(6)
XI - Gutter Offset (feet)	18) 18.7 20) 18.7 16)	:20) 23.4 :24) 23.4 :25)	:20) 23.8 :25) 23.8 :30)	:(25) : :(30)	20) 21.3 18) 21.3 25)	:20) 24.6 :30) 24.6 :24)	:20) 24.8 :30) 24.8 :27)	:(30) : :
XII - Cut Slope Ratios	1:1) 1/1.2 1 1/2:1) 1/1.2 2:1) 1.2	:1:1) 1/1.5 :1 1/2:1) 1/1.5 :2:1) 1.5	:2:1) 1/1.6 :1 1/2:1) 1/1.6 :1:1) 1.6	:(3:1) :(4:1) :	1:1) 1/1.35 1 1/2:1) 1/1.35 2:1) 1.35	:1 1/2:1) 1/1.56 :1:1) 1/1.56 :2:1) 1.56	:2:1) 1/1.8 :3:1) 1/1.8 :1 1/2:1) 1.8	:(3:1) :(4:1) :
XIII - Fill Slope Ratios	1 1/2:1) 1/1.8 3:1) 1/1.8 2:1) 1.8	:1 1/2:1) 1/2.2 :3:1) 1/2.2 :4:1) 2.2	:1 1/2:1) 1/2.35 :4:1) 1/2.35 :3:1) 2.35	:(4:1) :(10:1) :(6:1)	1 1/2:1) 1/1.9 3:1) 1/1.9 2:1) 1.9	:1 1/2:1) 1/2.3 :3:1) 1/2.3 :4:1) 2.3	:1 1/2:1) 1/2.4 :4:1) 1/2.4 :3:1) 2.4	:(4:1) :(6:1) :(10:1)
XIV - Flatten- ing of Fills	3:1 3' or Under	:4:1 :3' or :Under	:4:1 :3', 4', 5': :& under	:(4:1) :on 5' :Fills	High Type similar to Low Type Trend Shown, and on up to 6' depth.			
XV - R.O.W. widths (feet)	80 66 (75) 100	:100 :80(100-) :66	:100 :80(100+) :120	:(120+)				
No. States	(4)	: (12)	: (16)	:				

Notes: Figures grouped in vertical columns with parentheses at right represent the relative use of each in order; for instance, in Table I, 28' was the most used width of graded roadbed, 26' was second and 24' was the third most used width in low type construction during the 1932 period. Similarly, in Table II, 9' lanes were most used, 8' lanes were second, and 10' lanes were third in use, based on the number of typical cross-sections submitted by the States to the Bureau of Public Roads, as explained in detail in the report. The figures underlined thus 27.0, represent averages of all sections used for the respective period shown. The indicated trends for 1938 and 1940 are enclosed in parentheses thus, (32), for low type and high type for corresponding periods.