

112

KANSAS HIGHWAY SAFETY DESIGN

STATE-OF-THE-ART

by

Edward Lee Wilson

B.S., Kansas State University, 1968

A MASTER'S REPORT

submitted in partial fulfillment of
the requirements for the degree

MASTER OF SCIENCE

Department of Civil Engineering

KANSAS STATE UNIVERSITY

Manhattan, Kansas

1978

Approved by:



Major Professor

Document
LD
2668
.R4
1978
W54
c.2

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.	1
ROADWAY SURFACE	3
GEOMETRICS.	6
TRAFFIC BARRIERS.	9
ROADSIDE.	15
MISCELLANEOUS	20
RECOMMENDATIONS	21
APPENDIX A - Project History , I-35	A-1
APPENDIX B - Project History, I-635	B-1
APPENDIX C - Project History, K-132	C-1
APPENDIX D - Project History, US-56	D-1
REFERENCES	

ACKNOWLEDGMENTS

The author wishes to thank Mr. Geoff Nairn and Mr. John Latterell of the Federal Highway Administration for their active participation and assistance as review team members. A special thanks is extended to Mr. Glenn Anschutz, Engineer of Design, Kansas Department of Transportation, for his assistance in providing the various documents and resource materials required by the review team. The efforts of personnel within the Kansas Department of Transportation's Planning and Development, Safety, Construction, and Maintenance Departments in supplying data was also appreciated.

DISCLAIMER

The contents of this report reflect the views of the review team and the author who is responsible for the facts and the accuracy of the data presented herein. The contents do not reflect the official views or policy of the Department of Transportation, Federal Highway Administration.

INTRODUCTION

In 1967, the American Association of State Highway Officials (AASHO), now the American Association of State Highway and Transportation Officials (AASHTO), published a report entitled "Highway Design and Operational Practices Related to Highway Safety" (2). The report, commonly known in the highway engineering field as the "Yellow Book," contained highway safety principles and recommendations which, when implemented, would create a safer roadway environment for the traveling public. A Second Edition of the "Yellow Book" updating and expanding the earlier publication was published in 1974 (10).

It is now just over ten years since the original issuance of the "Yellow Book." The highway sector responsible for designing, constructing and maintaining highways has been seriously criticized by private sector safety groups for failure to include the highest possible safety features in the construction of new highways and in the safety upgrading of existing roads.

In view of the criticism and controversy regarding the implementation of the "Yellow Book" principles and recommendations, the Federal Highway Administration (FHWA) initiated a program in late 1977 to determine the State-of-the-Art in Highway Safety Design in each of the fifty States. The State-of-the-Art determination in each State was based upon an office review and a number of site reviews of recently completed highway construction projects by a FHWA Review Team. The author was a member of the review team in Kansas and was responsible for the coordination of the review and preparing the subsequent report of findings and recommendations.

In Kansas, the office review consisted of a review of current State Standard Plans, State Design Manuals, project plans and specifications,

and other appropriate documents as related to practices described in the "Yellow Book." Site reviews were conducted on four roadway sections selected at random meeting the following criteria:

- A. Design speed equal to or greater than 50 miles per hour (80.47 kilometers per hour).
- B. Sufficient length and complexity to illustrate typical practices related to traffic operations, interchange or intersection design, and roadside design including both cuts and fills.
- C. Plans, Specifications and Estimate (PS&E) were approved by FHWA after 1970.
- D. Roadways represent rural and urban Interstate highways and rural and urban arterial highway facilities.

The roadway sections selected for review are shown in Table I. Project histories for each roadway section are included in the Appendix.

TABLE I

Site Review Roadway Locations

<u>Route</u>	<u>Location</u>
I-35	Franklin Co., W. County Line to US-50 Spur
I-635	Wyandotte Co., U.S. 24 (State Ave.) to Ks.-Mo. State Line
K-132	Wyandotte Co., From 0.35 mile east I-635, thence east 0.48 mile to the Kansas River Bridge
US-56	Morris Co., E. City Limits Council Grove to E. County Line