

ILLEGIBLE

**THE FOLLOWING
DOCUMENT (S) IS
ILLEGIBLE DUE
TO THE
PRINTING ON
THE ORIGINAL
BEING CUT OFF**

ILLEGIBLE

COMPUTER SOLUTIONS TO THE URBAN
TRANSPORTATION PLANNING PROCESS

by

CHRIS E. COVERT

B. S., Kansas State University, 1973

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

1975

Approved by:


Major Professor

LD
2668
R4
1975
CGF
C.2
Document

TABLE OF CONTENTS

	Page
List of Figures	iii
List of Tables	iv
Acknowledgments	v
Introduction	1
Urban Transportation Process	8
Introduction	8
Inventories	8
Trip Generation Models	11
Trip Distribution Models	16
Traffic Assignment	22
Modal Assignment	26
Conclusion	26
Purdue Teaching Package	30
Introduction	30
Trip Generation	31
Trip Distribution	38
Network Assignment	45
Summary.	48
"Skokie, Illinois" Transportation Study	52
Introduction	52
Trip Generation Analysis Using the Zonal Rates and Zonal Totals Regression Models	55
Trip Distribution Analysis	61
Traffic Assignment and Skokie Plan Formulation	73

	Page
"Pittsburg, Kansas" Transportation Study	77
Trip Distribution	79
Traffic Assignment	79
Other Urban Transportation Analysis Programs	80
UMTA Transportation Planning System (UTPS)	81
Urban Planning System 360 (FHWA)	83
California Teaching Package	84
Conclusions.	86
References	88
Appendices	
Appendix A	89
Appendix B	115
Appendix C	123
Appendix D	132
Appendix E	138
Appendix F	156

LIST OF FIGURES

	Page
1. Urban Travel Forecasting Process	4
2. FHWA System Flow Chart	6
3. Trip End Modal Split Model	27
4. Trip Interchange Modal Split Model	28
5. Input for SPSS Multiple Regression	36
6. Tabulation of Trip Frequency Intervals	40
7. Calcomp Plot of Trip Frequency Intervals	41
8. Distributed Final Total Trip Matrix	42
9. Computer and Calcomp Output for Final Calibrated F(t)	43
10. Summary of Input and Output for Purdue Teaching Package	50
11. Skokie Zone Plan	53
12. Skokie Coded Network	54
13. Total Workers vs. Total Trips Data Plot	62
14. Total Autos vs. Total Trips Data Plot	63
15. Total Households vs. Total Trips Data Plot	64
16. Average Workers/D.U. vs. Average Trips/D.U. Data Plot	65
17. Average Income/D.U. vs. Average Trips/D.U. Data Plot	66
18. Average Autos/D.U. vs. Average Trips/D.U. Data Plot.	67
19. Average Density/D.U. vs. Average Trips/D.U. Data Plot	68
20. Average Income/Worker vs. Average Trips/D.U. Data Plot	69

LIST OF TABLES

	Page
1. Data Used in Zonal Rates Regression Model	56
2. Data Used in Zonal Totals	57
3. Forecasted Future Trips	70
4. Summary of Chi-Square Tests on Trip Length Frequency Distribution.	72
5. Internal Driver Trip Ends by Zones.	78

ACKNOWLEDGMENTS

I wish to acknowledge and thank Dr. Bob L. Smith, my major professor, and Dr. Eugene R. Russell who worked closely with me on this project. I would also like to thank the Civil Engineering Department for their financial assistance.