TABLE C TASK FORCE

SUMMARY REPORT

OF TASK FORCE'S FINDINGS AND RECOMMENDATIONS

September, 2002

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INTRODUCTION

In April, 1999, the Table C Task Force was formed with the purpose of improving the criteria or mechanism used for identifying high collision concentration locations for safety improvements. Table C is a data report table extract from TASAS. Task Force members included representatives from both Headquarters (HQ) and District Traffic Safety Investigations, Multidisciplinary Accident Investigation Team, HQ Traffic Safety Program, and HQ Traffic Accident Surveillance and Analysis System (TASAS).

The Task Force studied the current TASAS Table C methodology and considered possible improvements. The results of the study are a number of short-term recommendations to improve the existing Table C. An additional recommendation is that research be done on determining what criteria or mechanism should be used for identifying high collision concentration locations for safety improvements and that the research effort should not be constrained to the Table C methodology but should consider alternate ways of identifying high collision concentrations.

BACKGROUND

There are approximately 170,000 reported collisions on California highways annually. The Department's goal is to reduce the rate and severity of collisions and minimize property damage. To achieve this goal, high collision concentration locations are investigated to determine probable causes and to recommend safety improvements for each specific location.

All reported collisions are filed by the California Highway Patrol (CHP) on a Traffic Collision Report 555 and entered into the Statewide Integrated Traffic Records System (SWITRS). Collision data for collisions occurring on the State highway system are submitted for TASAS input. Table C is a quarterly report, which uses segmental selection criteria combined with statistical analysis to identify the high collision concentration locations on the State highway system. Table C report is run on TASAS to generate a list of collision concentrations. Traffic investigators receive a Table C report quarterly and review the high collision concentration locations then recommend safety improvements as appropriate. There are 170 traffic safety investigators in Caltrans who process 10,000 locations annually and initiate 700 improvements annually. Traffic investigators also receive an annual Wet Table C that identifies high wet pavement collision concentration locations.

COMMITTEE'S PROCESS

The Table C Task Force used the basic tools available in a standard Total Quality Management process. The following actions were undertaken by this task force:

- The current Table C screening process was identified and documented including the different factors used in the analysis (see attachment 1).
- The Task Force identified deficiencies of the current Table C process.
- Using the identified deficiencies as a guide, a questionnaire was developed and distributed to the 12 District Traffic Safety units for their input.
- The results from the survey were analyzed, categorized, and prioritized.
- Several brainstorming sessions were held to develop solutions to the survey results.
- The solutions were then categorized into two groups – easy to address, or short term issues, and long term, or more difficult to address, issues.
- The Task Force agreed to adopt the short-term solutions and to move forward on finding long-term solutions through research projects.
- A presentation has been developed to promote the Task Force's findings and recommendations.
- Research proposals have been submitted by the Task Force.

RECOMMENDATIONS

The Table C Task Force has developed short-term and long-term recommendations to help develop the Department's methodology to be more effective in identifying the locations with the highest need for investigations and safety improvements. The short-term recommendations are termed as such because there is not any modification needed to the selection of collision locations in the existing Table C program. These short-term recommendations will be implemented by utilizing additional screening processes after the selection of the identified locations.

Short-term Table C recommendations:

1. Identify and Eliminate Repeat Locations

Repeat locations are defined as 100% the same postmile limits as any "required" location identified during the previous 3 quarters. Repeat locations will be screened out and will not be included in the list sent to the districts for investigations.

2. Identify and Eliminate Overlap Locations

Overlap locations are defined as an overlapping segment of 51% to 99.99% with any "required" location identified during the previous 3 quarters. Overlap locations will be screened out and not sent to the districts.

3. Combine Adjacent Highway Locations

These locations are defined as highway segments that are adjacent to one another. The adjacent locations will be combined in the report to the districts and will be done in a single investigation. Combined locations will not exceed 1 mile in length.

4. Send out only "Required" Locations

Only those locations marked with a "Req" will be sent to the districts.

5. Update Intersection Traffic Volume

Update intersection traffic volume.

Another recommendation is to update the % wet-time table. This table is utilized in the generation of the Wet Table C and was established using an 11-year weather record period from 1957-1967. This has been submitted as a research proposal.

Long-term Table C Recommendations:

The team also developed a list of long-term Table C recommendations. These are defined as long- term because these recommendations will need further research performed to see if Table C is correctly identifying the locations with the greatest need for safety improvements.

Recommendations requiring future research on how to modify the selection criteria to make Table C a more effective tool are listed below;

1. Modify the selection criteria – Minimum number of collisions and statistical significance threshold could be evaluated.

2. Weigh the severity of collisions: fatal, injury, property damage only – Should there be a prioritization for investigations by placing a weighted factor on collisions by severity?

3. Analyze the segment by collision or revise length – Should the selection of location be made on the location of collisions and/or collision rate and not constrained by the segment length of 0.2 mile?

Attachments

1. Table C and Wet Table C Overview
   - Appendix A: "N" Area Diagram
   - Appendix B: Intersection Rate Groups
   - Appendix C: Ramp Rate Groups
   - Appendix D: Highway Rate Groups
   - Appendix E: Wet Pavement Factors for Safety Evaluation

2. Table C Web-Based Survey and Results

3. Table C Time and Cost Estimate

4. Preliminary Review of Required Highway Locations

5. Table C Proposed Improvement Locations

6. Table C Combined Adjacent Required Locations

7. TASAS Table C Potential Investigation Locations Report

Attachment #1

TABLE C AND WET TABLE C (TASAS LEGACY SYSTEM) - OVERVIEW

I. Purpose

The purpose of this document is to educate the reader on the analytical procedure of Table C and Wet Table C on TASAS database.

II. Introduction

The purpose of Table C is to identify the ramps, intersections and highway segments with accident rates which are significantly higher than the statewide average in 36, 24, 12, 6, and 3 months period. The purpose and the analysis procedure of Wet Table C is same as Table C but Wet Table C is a separate report which analyze the wet accident data only. Normal business practice is to generate the Table C quarterly and Wet Table C annually, but it can also be generated by special request.

III. Analysis Procedure

The significance test is performed for intersections, ramps and highway segments. The process begins at the beginning of the route within a district and the first 0.2 miles segment is analyzed. The analysis process continues until the end of the route is reached. See the Flow Chart 1 for Analysis Process of Table C and Wet Table C.

The established criteria for Table C and Wet Table C is:

- analyzes 0.2 miles segments of highway at a time
- 99.5 percent of significance factor

Output

If the locations have *4 or more accidents and are significant* in either the 3, 6, or 12 months period then the locations are labeled "REQ" in the output table. Accident investigators are required to investigate those locations.

Intersection Analysis

When the intersections are encountered on the roadway, the accident data within the "N" Area (usually 250'), Zone 5 and Zone 6 will be included in the intersection analysis, see the definition of "N" Area, Zone 5 and Zone 6 in Appendix A. The program will determine the appropriate Intersection Rate Group and perform the significance test. If the intersection is found to be significant, it is added to an output table. Currently, there are 30 types of Intersection Rate Groups, see Appendix B.

Ramp Analysis

When ramps are encountered on the roadway, only ramp accident data will be included in the Ramp Analysis. The program will determine the appropriate Ramp Rate Group and perform the significance test. If the ramp is found to be significant, it is added to an output table. Currently, there are 80 types of Ramp Rate Groups, see Appendix C.

Highway Analysis

The accidents, not included in Intersection Analysis and Ramp Analysis, will be used in Highway Analysis. Same as Ramp and Intersection Analysis, the program will identify the Highway Rate Group and perform the significance test.

When the segment is not found to be significant, it moves ahead 0.1 of the 0.2 mile segment length (0.02 miles) and continues the analysis process, see Flow Chart 1 for Analysis Process of Table C. When the segment is found to be significant, it is added to an output table and it moves ahead to the end of that segment and begins a new segment (See Figure III-1).

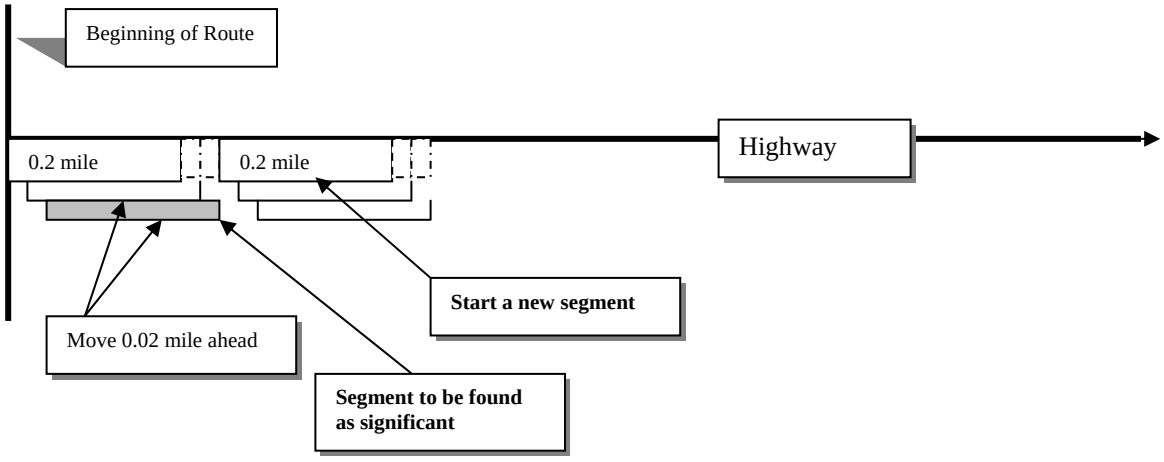


Figure III-1

When the Highway Rate Group (type of highway) changes along the highway, the analysis process will stop and restart at the beginning segment of next Highway Rate Group (See Figure III-2). Currently, there are 67 types of Highway Rate Groups, see Appendix D.

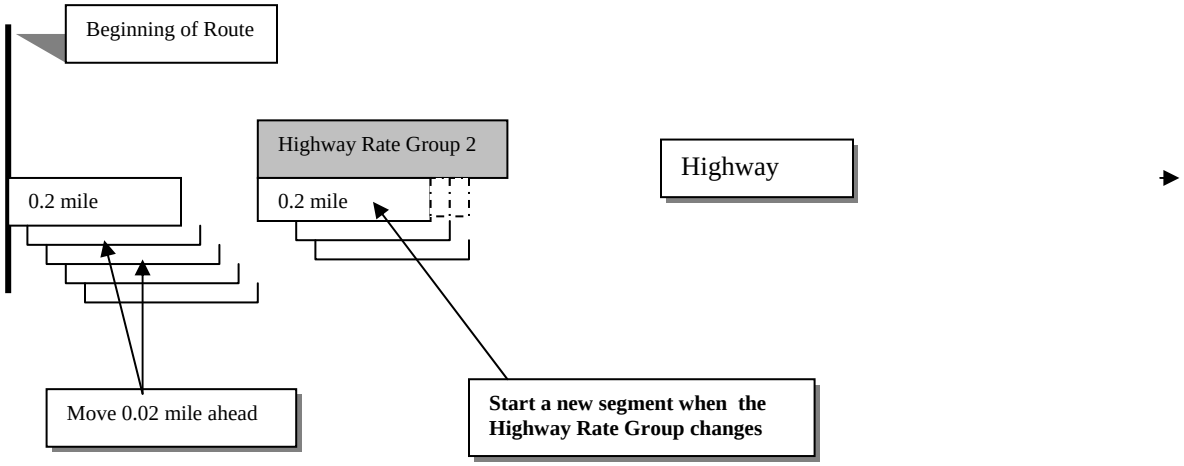


Figure III-2

The accidents, in the "N" area, have already been analyzed in Intersection Analysis and will not be analyzed in the Highway Analysis. When the segment reaches the "N" area of an intersection, the analysis process will stop and restart beyond the "N" area (See Figure III-3).

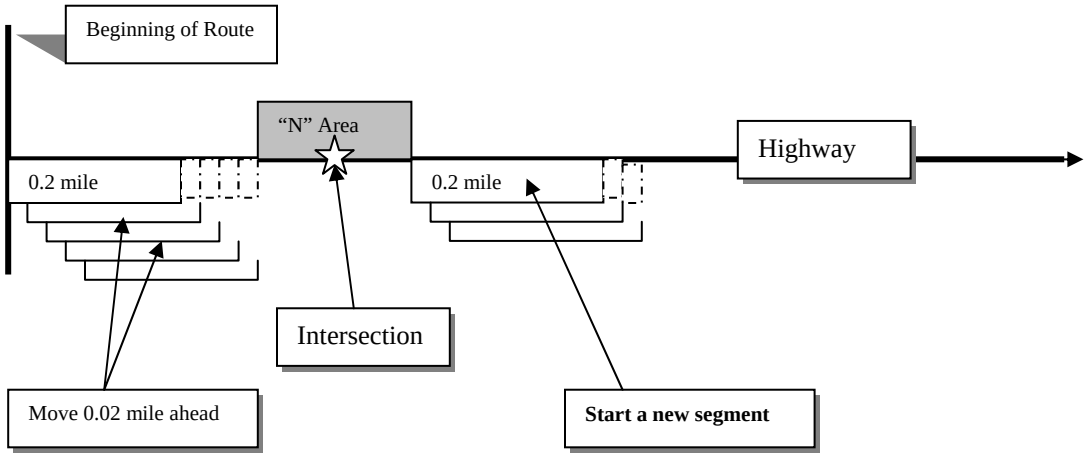
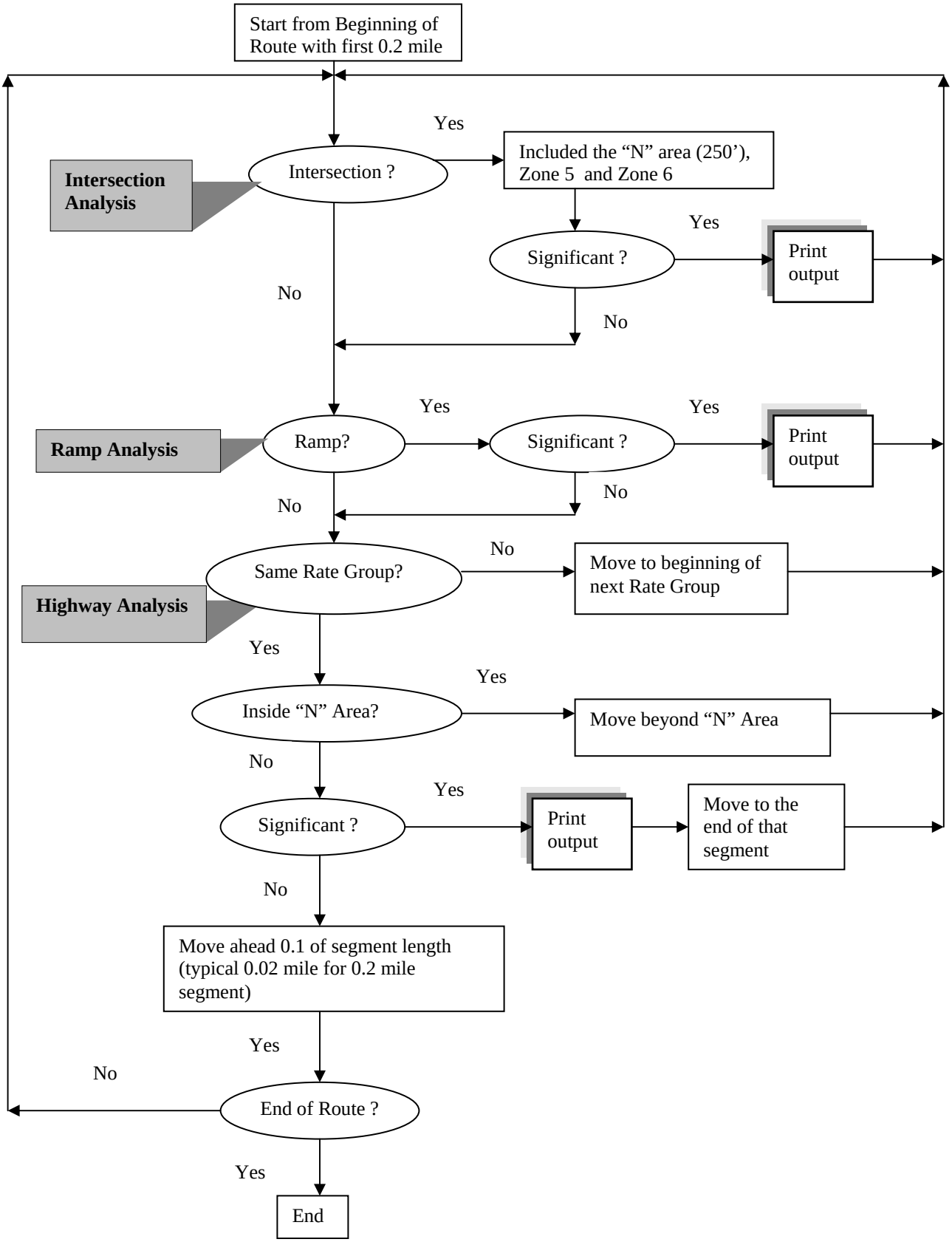


Figure III-3

Flow Chart 1: Analysis Process of Table C and Wet Table C



IV. Significance Test & Number of Accidents Required for Significance (High N_R)

Significance test is to determine if the defined highway segments, ramps or intersections have an accident count which is significantly higher than the *Number of Accidents Required for Significance* (N_R).

Number of Accidents Required for Significance (N_R) is found for each confidence level to be tested using the following formulae, which were derived from the Poisson's Distribution One-Tail Test with appropriate correction factor. 99.5% confidence level is used for Table C and Wet Table C.

% Confidence Level	High N_R	Comment
90%	$N_E + 1.282(N_E)^{1/2} + 0.705$	
92.5%	$N_E + 1.440(N_E)^{1/2} + 0.795$	
95%	$N_E + 1.645(N_E)^{1/2} + 0.838$	
97.5%	$N_E + 1.960(N_E)^{1/2} + 0.980$	
99.5%	$\mathbf{N_E + 2.576(N_E)^{1/2} + 1.329}$	**Use for Table C**

Thus, to be significantly high, an accident count must be equal to or larger than High N_R.

Calculation for Average Number of Accidents (N_E)
$N_E = ADT \times t \times L \times R_E \div 10^6$

ADT = Average Daily Traffic, vehicle per day

t = time, in days = #quarters x days/quarter (Table C)
x days/time period (Table B)

L = length, in miles
(= l for Ramps and Intersections)

R_E = Average Accident Rate, in accident/million vehicle(ACCS/MV) or accident/million vehicle mile (ACCS/MVM)
= Base Rate + ADT factor
Based on the type of facility, each type of highway, ramp or intersection is placed in a Rate Group. Each Rate Group has Base Rate and ADT factor that are determined by looking at all accidents in a three year time period. (See Appendix B, C, &D for the Rate Group of Intersection, Ramp, and Highway).

Note, that Average Number of Accidents (N_E) is a linear function of several variables, each equally affecting N_E. If time and rate are equal, then N_E's are equal if:

ADT = 10,000 and L=0.2
And if ADT = 20,000 and L = 0.1

For Wet Table C

The significance test is same as Table C except the R_E converts to $R_{E(Wet)}$ to include the wet factor.

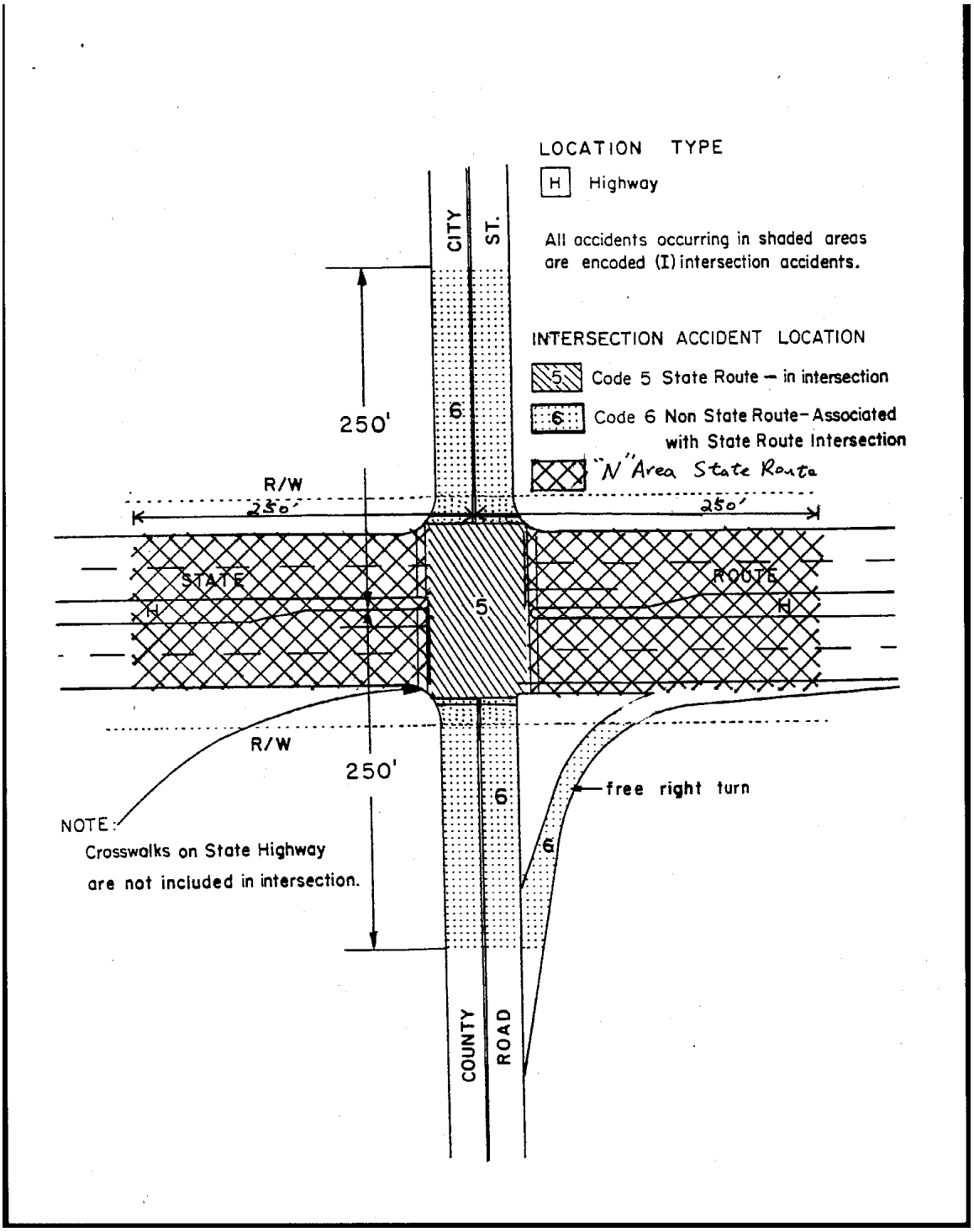
$R_{E(wet)}$ = Average Wet Accident Rate, in wet accident/million vehicle(ACCS/MV) or wet accident/million vehicle mile (ACCS/MVM)

$$= \frac{0.3(1\text{-wt\%})+3.2(R_E)}{1+2.2(\text{wt\%})}$$

wt% = percentage of wet time, in decimal. See Appendix E for % wet time of different county.

Then N_E and High N_R should be calculated by the $R_{E(Wet)}$.

Appendix A:
"N" Area Diagram



APPENDIX B:
Intersection Rate Groups

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	INTERSECTION TYPE *	CONTROL TYPE	AREA	ACC COSTS ($1000) F+ I	ACC COSTS ($1000) ALL
I 01	0.11	0.0000	3.5	42.0	45.5	F, M AND S	NO CONTROL	RURAL	371.4	171.2
I 02	0.33	0.0000	2.4	45.3	47.7	F, M AND S	STOP & YIELD SIGNS (EXC 4 WAY)	RURAL	269.7	130.8
I 03	0.76	0.0000	0.8	41.4	42.2	F, M AND S	4 WAY STOP	RURAL	149.9	65.6
I 04	0.70	0.0000	1.0	45.5	46.5	F, M AND S	SIGNALS	RURAL	159.6	76.4
I 05	0.70	0.0000	1.3	43.3	44.5	F, M AND S	4 WAY FLASHERS	RURAL	189.2	86.4
I 06	0.35	0.0000	0.8	32.3	33.1	F, M AND S	NO CONTROL	SUBURBAN	147.9	51.6
I 07	0.34	0.0000	1.2	40.4	41.5	F, M AND S	STOP & YIELD SIGNS (EXC 4 WAY)	SUBURBAN	164.8	70.7
I 08	0.51	0.0000	0.4	36.4	36.8	F, M AND S	4 WAY STOP	SUBURBAN	100.9	39.6
I 09	0.58	0.0000	0.5	39.3	39.7	F, M AND S	SIGNALS	SUBURBAN	107.1	44.9
I 10	0.55	0.0000	1.3	30.7	32.0	F, M AND S	4 WAY FLASHERS	SUBURBAN	206.1	68.7
I 11	0.06	0.0000	2.6	42.8	45.4	F, M AND S	NO CONTROL	URBAN	249.7	115.5
I 12	0.22	0.0000	0.7	42.2	42.9	F, M AND S	STOP & YIELD SIGNS (EXC 4 WAY)	URBAN	108.5	48.8
I 13	0.41	0.0000	0.5	45.0	45.5	F, M AND S	4 WAY STOP	URBAN	90.1	43.2
I 14	0.43	0.0000	0.4	43.9	44.3	F, M AND S	SIGNALS	URBAN	83.3	39.1
I 15	0.62	0.0000	0.7	39.6	40.3	F, M AND S	4 WAY FLASHERS	URBAN	112.1	47.6
I 16	0.14	0.0000	1.8	43.5	45.3	T, Y AND Z	NO CONTROL	RURAL	229.3	106.1
I 17	0.22	0.0000	1.8	42.6	44.3	T, Y AND Z	STOP & YIELD SIGNS (EXC 4 WAY)	RURAL	232.9	105.4
I 18	0.60	0.0000	0.5	47.8	48.4	T, Y AND Z	4 WAY STOP	RURAL	116.7	58.6
I 19	0.50	0.0000	0.2	37.9	38.1	T, Y AND Z	SIGNALS	RURAL	97.5	39.6
I 20	0.58	0.0000	2.2	39.4	41.7	T, Y AND Z	4 WAY FLASHERS	RURAL	278.9	118.6
I 21	0.13	0.0000	0.4	40.0	40.5	T, Y AND Z	NO CONTROL	SUBURBAN	97.2	41.7
I 22	0.19	0.0000	0.9	40.5	41.4	T, Y AND Z	STOP & YIELD SIGNS (EXC 4 WAY)	SUBURBAN	139.3	60.0
I 23	0.54	0.0000	0.5	33.3	33.8	T, Y AND Z	4 WAY STOP	SUBURBAN	114.7	41.4
I 24	0.43	0.0000	0.2	38.9	39.1	T, Y AND Z	SIGNALS	SUBURBAN	80.5	33.9
I 25	0.55	0.0000	2.9	48.3	51.2	T, Y AND Z	4 WAY FLASHERS	SUBURBAN	262.8	136.5
I 26	0.10	0.0000	0.8	41.2	42.0	T, Y AND Z	NO CONTROL	URBAN	117.9	51.8
I 27	0.14	0.0000	0.8	42.4	43.2	T, Y AND Z	STOP & YIELD SIGNS (EXC 4 WAY)	URBAN	116.0	52.4
I 28	0.18	0.0000	1.1	34.1	35.2	T, Y AND Z	4 WAY STOP	URBAN	159.9	58.9
I 29	0.28	0.0000	0.4	43.3	43.7	T, Y AND Z	SIGNALS	URBAN	83.8	38.9
I 30	0.35	0.0000	0.7	47.5	48.2	T, Y AND Z	4 WAY FLASHERS	URBAN	102.3	51.4

* INTERSECTION TYPES
- F - FOUR-LEGGED
- M - MULTI-LEGGED
- S - OFFSET
- T - TEE
- Y - Y WYE
- Z - OTHERS

APPENDIX C:
Ramp Rate Groups

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	RAMP TYPE	RAMP AREAS	ON/ OFF	AREA	ACC COSTS ($1000) F+ I	ALL
R 01	0.30	0.0000	1.5	48.5	50.0	FRONTAGE ROAD	1-4	N/A	RURAL	192.1	98.0
R 02	1.20	0.0000	0.5	28.6	29.1	FRONTAGE ROAD	1-4	N/A	URBAN	111.4	35.3
R 03	0.35	0.0000	1.5	48.5	50.0	COLLECTOR ROAD	1-4	N/A	RURAL	192.1	98.0
R 04	0.35	0.0000	0.5	28.6	29.1	COLLECTOR ROAD	1-4	N/A	URBAN	111.4	35.3
R 05	0.70	0.0000	1.0	33.7	34.7	DIRECT, SEMI-DIR CONN (LT TRN TRAF)	1-4	OFF	RURAL	187.6	67.7
R 06	0.60	0.0000	1.0	33.7	34.7	DIRECT, SEMI-DIR CONN (LT TRN TRAF)	1-4	OFF	URBAN	151.6	55.2
R 07	0.35	0.0000	1.0	33.7	34.7	DIRECT, SEMI-DIR CONN (LT TRN TRAF)	1-4	ON	RURAL	187.6	67.7
R 08	0.55	0.0000	1.0	33.7	34.7	DIRECT, SEMI-DIR-CONN (LT TRN TRAF)	1-4	ON	URBAN	151.6	55.2
R 09	1.15	0.0000	1.2	36.1	37.3	DIAMOND	1-4	OFF	RURAL	200.4	77.2
R 10	1.50	0.0000	0.3	40.1	40.4	DIAMOND	1-4	OFF	URBAN	77.8	33.8
R 11	0.55	0.0000	1.2	36.1	37.3	DIAMOND	1-4	ON	RURAL	200.4	77.2
R 12	0.80	0.0000	0.3	40.1	40.4	DIAMOND	1-4	ON	URBAN	77.8	33.8
R 13	0.45	0.0000	1.3	35.0	36.3	SLIP	1-4	OFF	RURAL	214.3	80.3
R 14	0.40	0.0000	0.4	38.3	38.7	SLIP	1-4	OFF	URBAN	87.8	36.4
R 15	0.35	0.0000	1.3	45.0	46.3	SLIP	1-4	ON	RURAL	184.7	87.7
R 16	0.35	0.0000	0.4	38.3	38.7	SLIP	1-4	ON	URBAN	87.8	36.4
R 17	0.60	0.0000	1.0	31.2	32.2	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-4	OFF	RURAL	196.1	65.9
R 18	0.90	0.0000	0.7	35.5	36.2	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-4	OFF	URBAN	118.9	45.6
R 19	0.45	0.0000	1.1	34.2	35.3	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-4	ON	RURAL	196.5	72.0
R 20	0.60	0.0000	0.5	35.5	36.0	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-4	ON	URBAN	100.1	38.6
R 21	1.75	0.0000	0.9	42.2	43.1	LOOP WITH LEFT TURN	1-4	OFF	RURAL	157.2	70.0
R 22	1.35	0.0000	0.3	36.9	37.2	LOOP WITH LEFT TURN	1-4	OFF	URBAN	80.0	32.3
R 23	0.60	0.0000	0.9	42.2	43.1	LOOP WITH LEFT TURN	1-4	ON	RURAL	157.2	70.0
R 24	0.85	0.0000	0.3	36.9	37.2	LOOP WITH LEFT TURN	1-4	ON	URBAN	80.0	32.3
R 25	1.90	0.0000	0.7	34.8	35.5	BUTTONHOOK	1-4	OFF	RURAL	152.8	56.8
R 26	1.15	0.0000	0.4	33.6	34.0	BUTTONHOOK	1-4	OFF	URBAN	92.8	34.2
R 27	0.60	0.0000	0.7	34.8	35.5	BUTTONHOOK	1-4	ON	RURAL	152.8	56.8
R 28	0.60	0.0000	0.4	33.6	34.0	BUTTONHOOK	1-4	ON	URBAN	92.8	34.2
R 29	1.05	0.0000	1.5	36.2	37.7	SCISSORS	1-4	OFF	RURAL	229.5	89.0
R 30	0.90	0.0000	0.3	34.6	34.9	SCISSORS	1-4	OFF	URBAN	81.8	31.2
R 31	0.50	0.0000	1.5	36.2	37.7	SCISSORS	1-4	ON	RURAL	229.5	89.0
R 32	0.55	0.0000	0.3	34.6	34.9	SCISSORS	1-4	ON	URBAN	81.8	31.2
R 33	0.30	0.0000	2.0	64.7	66.7	SPLIT	1-4	OFF	RURAL	192.0	129.4
R 34	0.25	0.0000	0.6	31.7	32.3	SPLIT	1-4	OFF	URBAN	116.2	40.3
R 35	0.20	0.0000	2.0	48.0	50.0	SPLIT	1-4	ON	RURAL	230.3	117.2
R 36	0.25	0.0000	0.6	31.7	32.3	SPLIT	1-4	ON	URBAN	116.2	40.3

APPENDIX C:
Ramp Rate Groups (Continuous)

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	RAMP TYPE	RAMP AREAS	ON/ OFF	AREA	ACC COSTS ($1000) F+ I	ALL
R 37	1.25	0.0000	2.0	53.6	55.6	LOOP WITHOUT LEFT TURN	1-4	OFF	RURAL	214.9	121.3
R 38	1.25	0.0000	0.2	33.7	33.9	LOOP WITHOUT LEFT TURN	1-4	OFF	URBAN	72.5	27.2
R 39	0.65	0.0000	1.7	21.4	23.1	LOOP WITHOUT LEFT TURN	1-4	ON	RURAL	358.7	85.9
R 40	0.70	0.0000	0.2	33.7	33.9	LOOP WITHOUT LEFT TURN	1-4	ON	URBAN	72.5	27.2
R 41	1.20	0.0000	1.0	34.7	35.7	TWO-WAY RAMP SEGMENT	1-4	N/A	RURAL	184.5	68.4
R 42	0.70	0.0000	1.0	34.7	35.7	TWO-WAY RAMP SEGMENT	1-4	N/A	URBAN	148.8	55.7
R 43	1.25	0.0000	0.9	13.2	14.1	REST AREA, VISTA PT, TRK SCALE	1-4	OFF	RURAL	321.4	48.8
R 44	1.15	0.0000	0.9	13.2	14.1	REST AREA, VISTA PT, TRK SCALE	1-4	OFF	URBAN	272.3	41.8
R 45	0.35	0.0000	0.9	13.2	14.1	REST AREA, VISTA PT, TRK SCALE	1-4	ON	RURAL	321.4	48.8
R 46	0.55	0.0000	0.9	13.2	14.1	REST AREA, VISTA PT, TRK SCALE	1-4	ON	URBAN	272.3	41.8
R 47	1.35	0.0000	0.5	49.5	50.0	OTHER	1-4	OFF	RURAL	115.6	59.8
R 48	0.80	0.0000	0.5	34.5	35.0	OTHER	1-4	OFF	URBAN	101.5	38.1
R 49	0.40	0.0000	0.5	49.5	50.0	OTHER	1-4	ON	RURAL	115.6	59.8
R 50	1.05	0.0000	0.5	34.5	35.0	OTHER	1-4	ON	URBAN	101.5	38.1
R 51	2.50	0.0000	0.5	61.0	61.5	OTHER	1-4	N/A	RURAL	108.5	68.3
R 52	0.95	0.0000	0.5	61.0	61.5	OTHER	1-4	N/A	URBAN	80.2	50.9
R 53	0.75	0.0000	0.4	33.6	34.0	DIAMOND	1-3	OFF	RURAL	122.4	44.2
R 54	0.90	0.0000	0.7	37.7	38.4	DIAMOND	1-3	OFF	URBAN	115.1	46.6
R 55	0.50	0.0000	0.4	33.6	34.0	DIAMOND	1-3	ON	RURAL	122.4	44.2
R 56	0.45	0.0000	0.7	37.7	38.4	DIAMOND	1-3	ON	URBAN	115.1	46.6
R 57	0.30	0.0000	0.6	30.7	31.3	SLIP	1-3	OFF	RURAL	150.7	49.9
R 58	0.20	0.0000	0.6	30.7	31.3	SLIP	1-3	OFF	URBAN	118.3	39.8
R 59	0.15	0.0000	0.6	30.7	31.3	SLIP	1-3	ON	RURAL	150.7	49.9
R 60	0.20	0.0000	0.6	30.7	31.3	SLIP	1-3	ON	URBAN	118.3	39.8
R 61	0.30	0.0000	0.9	43.8	44.7	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-3	OFF	RURAL	154.4	71.2
R 62	0.45	0.0000	0.9	31.5	32.4	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-3	OFF	URBAN	148.0	50.6
R 63	0.40	0.0000	0.9	43.8	44.7	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-3	ON	RURAL	154.4	71.2
R 64	0.40	0.0000	0.9	31.5	32.4	DIRECT, SEMI-DIR CONN (RT TRN TRAF)	1-3	ON	URBAN	148.0	50.6
R 65	3.20	0.0000	0.3	28.1	28.4	LOOP WITH LEFT TURN	1-3	OFF	RURAL	117.8	36.3
R 66	1.20	0.0000	0.3	28.1	28.4	LOOP WITH LEFT TURN	1-3	OFF	URBAN	88.6	28.0
R 67	0.45	0.0000	0.3	28.1	28.4	LOOP WITH LEFT TURN	1-3	ON	RURAL	117.8	36.3
R 68	0.90	0.0000	0.3	28.1	28.4	LOOP WITH LEFT TURN	1-3	ON	URBAN	88.6	28.0
R 69	1.20	0.0000	1.0	40.2	41.2	LOOP WITHOUT LEFT TURN	1-3	OFF	RURAL	170.2	72.5
R 70	0.90	0.0000	0.4	28.3	28.7	LOOP WITHOUT LEFT TURN	1-3	OFF	URBAN	100.3	31.6
R 71	0.85	0.0000	1.0	40.2	41.2	LOOP WITHOUT LEFT TURN	1-3	ON	RURAL	170.2	72.5
R 72	0.75	0.0000	0.4	28.3	28.7	LOOP WITHOUT LEFT TURN	1-3	ON	URBAN	100.3	31.6
R 73	0.50	0.0000	0.4	50.0	50.4	TWO-WAY RAMP SEGMENT	1-3	N/A	RURAL	107.7	56.3

APPENDIX C:
Ramp Rate Groups (Continuous)

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	RAMP TYPE	RAMP AREAS	ON/ OFF	AREA	ACC COSTS ($1000) F+ I	ALL
R 74	0.70	0.0000	0.4	50.0	50.4	TWO-WAY RAMP SEGMENT	1-3	N/A	URBAN	79.6	42.1
R 75	0.50	0.0000	0.3	38.2	38.5	OTHER	1-3	OFF	RURAL	107.2	43.7
R 76	0.55	0.0000	0.3	35.0	35.3	OTHER	1-3	OFF	URBAN	81.5	31.4
R 77	0.50	0.0000	0.3	38.2	38.5	OTHER	1-3	ON	RURAL	107.2	43.7
R 78	0.50	0.0000	0.3	35.0	35.3	OTHER	1-3	ON	URBAN	81.5	31.4
R 79	0.55	0.0000	0.3	33.0	33.3	OTHER	1-3	N/A	RURAL	111.8	39.9
R 80	0.55	0.0000	0.3	33.0	33.3	OTHER	1-3	N/A	URBAN	83.3	30.4

APPENDIX D:
Highway Rate Groups

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	HIGHWAY TYPE	TERRAIN OR ADT	DESIGN SPEED	AREA	ACC COSTS ($1000) F+ I	ACC COSTS ($1000) ALL
H 01	1.15	0.3500 /	3.4	45.1	48.5	CONVENTIONAL 2 LANES OR LESS	FLAT	≤55	RURAL	345.4	169.6
H 02	0.90	0.3500 /	3.8	44.6	48.5	CONVENTIONAL 2 LANES OR LESS	FLAT	>55	RURAL	376.7	184.8
H 03	1.30	0.3500 /	2.2	46.0	48.2	CONVENTIONAL 2 LANES OR LESS	ROLL	≤55	RURAL	251.9	123.5
H 04	0.80	0.3500 /	3.7	46.2	49.9	CONVENTIONAL 2 LANES OR LESS	ROLL	>55	RURAL	360.8	182.1
H 05	1.65	0.4000 /	2.1	48.2	50.3	CONVENTIONAL 2 LANES OR LESS	MTN	≤55	RURAL	237.0	121.2
H 06	1.25	0.4000 /	2.7	44.8	47.5	CONVENTIONAL 2 LANES OR LESS	MTN	>55	RURAL	294.7	142.1
H 07	2.95	0.0000	0.4	38.3	38.7	CONVENTIONAL 2 LANES OR LESS		<45	SUBURBAN	99.0	40.8
H 08	1.90	0.0000	1.0	41.4	42.4	CONVENTIONAL 2 LANES OR LESS		45-55	SUBURBAN	145.8	64.1
H 09	1.50	0.0000	1.7	40.8	42.5	CONVENTIONAL 2 LANES OR LESS		>55	SUBURBAN	203.9	89.0
H 10	3.05	0.0000	0.4	40.5	41.0	CONVENTIONAL 2 LANES OR LESS		<45	URBAN	95.6	41.6
H 11	1.75	0.0000	1.3	45.2	46.6	CONVENTIONAL 2 LANES OR LESS		≥45	URBAN	158.0	75.8
H 12	1.00	0.0000	3.1	45.0	48.1	CONVENTIONAL 3 LANES			RURAL	323.8	157.8
H 13	1.30	0.0000	2.2	42.2	44.4	CONVENTIONAL 3 LANES			SUBURBAN	237.7	107.8
H 14	2.05	0.0000	0.9	38.0	38.9	CONVENTIONAL 3 LANES			URBAN	132.0	53.8
H 15	0.60	0.0000	6.0	46.6	52.7	EXPRESSWAY 3 LANES OR LESS	FLAT		RURAL	512.5	272.0
H 16	0.60	0.0000	3.8	42.9	46.7	EXPRESSWAY 3 LANES OR LESS	ROLL		RURAL	388.4	183.5
H 17	1.20	0.0000	1.5	42.5	44.0	EXPRESSWAY 3 LANES OR LESS	MTN		RURAL	207.7	93.6
H 18	0.90	0.0000	5.6	52.8	58.3	EXPRESSWAY 3 LANES OR LESS		≤55	SUBURBAN	402.3	236.2
H 19	0.90	0.0000	5.6	42.1	47.7	EXPRESSWAY 3 LANES OR LESS		>55	SUBURBAN	477.7	230.0
H 20	1.00	0.0000	1.5	44.9	46.4	EXPRESSWAY 3 LANES OR LESS			URBAN	163.9	78.2
H 21	1.20	0.0000	2.8	49.8	52.6	UNDIVIDED 4 LANES	FLAT		RURAL	280.9	149.6
H 22	1.65	0.0000	2.2	38.4	40.6	UNDIVIDED 4 LANES	ROLL/MTN		RURAL	284.5	117.9
H 23	2.55	0.0000	1.1	37.1	38.3	UNDIVIDED 4 LANES		≤55	SUBURBAN	163.8	65.2
H 24	2.55	0.0000	2.0	41.1	43.1	UNDIVIDED 4 LANES		>55	SUBURBAN	226.6	99.9
H 25	4.95	0.0000	0.4	39.4	39.8	UNDIVIDED 4 LANES		<45	URBAN	86.9	37.0
H 26	3.35	0.0000	0.6	42.5	43.2	UNDIVIDED 4 LANES		≥45	URBAN	100.0	45.5
H 27	1.50	0.0000	2.0	37.0	39.0	UNDIVIDED 5-6 LANES	FLAT		RURAL	273.4	109.1
H 28	2.85	0.0000	1.7	50.0	51.7	UNDIVIDED 5-6 LANES	ROLL/MTN		RURAL	203.1	106.9
H 29	0.95	0.0000	3.1	46.9	50.0	UNDIVIDED 5-6 LANES		≤55	SUBURBAN	281.7	142.9
H 30	0.95	0.0000	1.0	32.8	33.8	UNDIVIDED 5-6 LANES		>55	SUBURBAN	167.1	59.1
H 31	4.45	0.0000	1.0	26.1	27.1	UNDIVIDED 5-6 LANES		<45	URBAN	179.4	51.5
H 32	1.95	0.0000	0.4	45.1	45.6	UNDIVIDED 5-6 LANES		≥45	URBAN	82.3	39.7

APPENDIX D:
Highway Rate Groups (Continuous)

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	HIGHWAY TYPE	TERRAIN OR ADT	DESIGN SPEED	AREA	ACC COSTS ($1000) F+ I	ACC COSTS ($1000) ALL
H 33	0.90	0.0000	2.9	43.9	46.8	DIVIDED 4 LANES	FLAT		RURAL	314.3	149.2
H 34	1.65	0.0000	1.0	35.5	36.5	DIVIDED 4 LANES	ROLL/MTN		RURAL	182.1	69.0
H 35	1.85	0.0000	0.7	43.1	43.8	DIVIDED 4 LANES		≤55	SUBURBAN	118.9	54.3
H 36	1.70	0.0000	1.8	40.4	42.2	DIVIDED 4 LANES		>55	SUBURBAN	213.3	92.3
H 37	3.35	0.0000	0.5	42.3	42.8	DIVIDED 4 LANES		<45	URBAN	92.5	41.9
H 38	2.10	0.0000	0.7	43.8	44.4	DIVIDED 4 LANES		≥45	URBAN	106.7	49.6
H 39	1.05	0.0000	2.4	30.0	32.4	DIVIDED 5 LANES OR MORE	FLAT		RURAL	360.6	119.5
H 40	1.50	0.0000	1.6	50.0	51.6	DIVIDED 5 LANES OR MORE	ROLL/MTN		RURAL	195.9	103.0
H 41	2.75	0.0000	1.2	43.1	44.4	DIVIDED 5 LANES OR MORE		≤55	SUBURBAN	157.9	72.3
H 42	2.10	0.0000	0.9	33.3	34.3	DIVIDED 5 LANES OR MORE		>55	SUBURBAN	155.0	55.8
H 43	2.40	0.0000	0.7	56.8	57.5	DIVIDED 5 LANES OR MORE		<45	URBAN	94.2	55.8
H 44	2.40	0.0000	0.7	46.1	46.8	DIVIDED 5 LANES OR MORE		≥45	URBAN	103.8	50.7
H 45	0.50	0.0070	2.6	42.6	45.2	DIV. EXPRESSWAY 4 LNS OR MORE		≤65	RURAL	297.3	136.6
H 46	0.50	0.0070	3.0	44.7	47.6	DIV. EXPRESSWAY 4 LNS OR MORE		>65	RURAL	318.5	153.7
H 47	0.90	0.0170	1.5	43.2	44.8	DIV. EXPRESSWAY 4 LNS OR MORE		≤65	SUBURBAN	180.7	83.2
H 48	0.75	0.0100	0.8	40.8	41.5	DIV. EXPRESSWAY 4 LNS OR MORE		>65	SUBURBAN	130.7	56.6
H 49	1.75	0.0000	0.5	40.7	41.2	DIV. EXPRESSWAY 4 LNS OR MORE		≤55	URBAN	94.0	41.1
H 50	1.35	0.0000	1.3	44.5	45.9	DIV. EXPRESSWAY 4 LNS OR MORE		>55	URBAN	149.7	70.9
H 51	0.45	0.5000 /	2.4	40.2	42.6	FREEWAY 4 LANES OR LESS	≤15000	≤65	RURAL	292.8	127.0
H 52	0.45	0.5500 /	4.0	44.9	48.8	FREEWAY 4 LANES OR LESS	≤15000	>65	RURAL	390.9	192.8
H 53	0.45	0.0035	3.4	40.1	43.4	FREEWAY 4 LANES OR LESS	>15000	≤65	RURAL	377.0	165.9
H 54	0.40	0.0035	3.1	40.3	43.4	FREEWAY 4 LANES OR LESS	>15000	>65	RURAL	350.4	154.4
H 55	0.25	0.0050	2.2	40.1	42.3	FREEWAY 5-6 LANES			RURAL	276.2	119.1
H 56	0.20	0.0035	1.5	36.7	38.2	FREEWAY 7 LANES OR MORE			RURAL	227.5	89.4
H 57	0.50	0.5000 /	3.6	43.6	47.2	FREEWAY 4 LANES OR LESS	≤15000	≤65	SUBURBAN	332.2	158.9
H 58	0.45	0.5500 /	2.7	39.0	41.7	FREEWAY 4 LANES OR LESS	≤15000	>65	SUBURBAN	291.5	123.9
H 59	0.75	0.0050	1.2	36.8	38.0	FREEWAY 4 LANES OR LESS	>15000	≤65	SUBURBAN	174.1	68.6
H 60	0.50	0.0035	1.3	35.7	37.0	FREEWAY 4 LANES OR LESS	>15000	>65	SUBURBAN	186.7	71.6
H 61	0.20	0.0060	1.5	33.8	35.3	FREEWAY 5-6 LANES			SUBURBAN	212.7	77.7
H 62	0.25	0.0035	0.6	32.2	32.7	FREEWAY 7 LANES OR MORE			SUBURBAN	127.5	44.4
H 63	0.40	0.0100	1.1	35.5	36.6	FREEWAY 4 LANES OR LESS			URBAN	155.8	59.6
H 64	0.40	0.0055	0.6	30.4	31.0	FREEWAY 5-6 LANES			URBAN	118.9	39.6

APPENDIX D:
Highway Rate Groups (Continuous)

RATE GROUP	BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	HIGHWAY TYPE	TERRAIN OR ADT	DESIGN SPEED	AREA	ACC COSTS ($1000) F+ I	ACC COSTS ($1000) ALL
H 65	0.40	0.0035	0.5	31.0	31.5	FREEWAY 7-8 LANES			URBAN	106.9	36.4
H 66	0.35	0.0030	0.5	30.6	31.1	FREEWAY 9-10 LANES			URBAN	107.6	36.2
H 67	0.35	0.0025	0.4	29.8	30.2	FREEWAY 11 LANES OR MORE			URBAN	97.9	32.3

BASE RATES:

HIGHWAY SEGMENTS	ACCIDENTS/MILLION VEHICLE MILES (MVM)
INTERSECTIONS	ACCIDENTS/MILLION VEHICLE (MV) ENTERING THE INTERSECTION
RAMPS	ACCIDENTS/MILLION VEHICLE (MV) TRAVERSING THE RAMPS

ADT FACTOR:

VALUE TO BE ADDED TO THE BASE RATE.

"0.60/" MEANS 0.60 DIVIDED BY ADT IN THOUSANDS;
I.E., WITH 5,000 ADT, 0.12 WOULD BE ADDED TO THE BASE RATE.

"0.017" MEANS 0.017 TIMES ADT IN THOUSANDS;
I.E., WITH 20,000 ADT, ADD 0.34 TO THE BASE RATE.

	ACCIDENT COSTS ($1,000) F	I	PDO	AVG
RURAL	3900.0	77.4	4.0	139.4
URBAN	3500.0	52.2	4.0	40.4
SUBURBAN	3600.0	62.4	4.0	58.9
AVERAGE	3700.0	58.7	4.0	60.1

Appendix E:
Wet Pavement Factors for Safety Evaluation

Dist	County	% Wet Time	Dist	County	% Wet Time
1	Del Norte	11	6	Fresno	3
	Humbolt	10		Kern	2
	Lake	6		Kings	2
	Mendocino	8		Madera	4
				Tulare	3
2	Lassen	4			
	Modoc	5	7	Los Angeles	2
	Plumas	6		Ventura	3
	Shasta	7			
	Siskiyou	7	8	Riverside	2
	Tehama	6		San Bernardino	2
	Trinity	9			
			9	Inyo	1
3	Butte	5		Mono	2
	Colusa	3			
	El Dorado	6	10	Alpine	5
	Glenn	4		Amador	5
	Nevada	8		Calaveras	6
	Placer	6		Mariposa	5
	Sacramento	4		Merced	3
	Sierra	7		San Joaquin	3
	Sutter	4		Stanislaus	3
	Yolo	4		Tuolumne	5
	Yuba	6			
			11	Imperial	1
4	Alameda	4		San Diego	3
	Contra Costa	4			
	Marin	6	12	Orange	2
	Napa	5			
	San Francisco	5			
	San Mateo	5			
	Santa Clara	4			
	Solano	4			
	Sonoma	7			
5	Monterey	3			
	San Benito	3			
	San Luis Obispo	3			
	Santa Barbara	2			
	Santa Cruz	6			

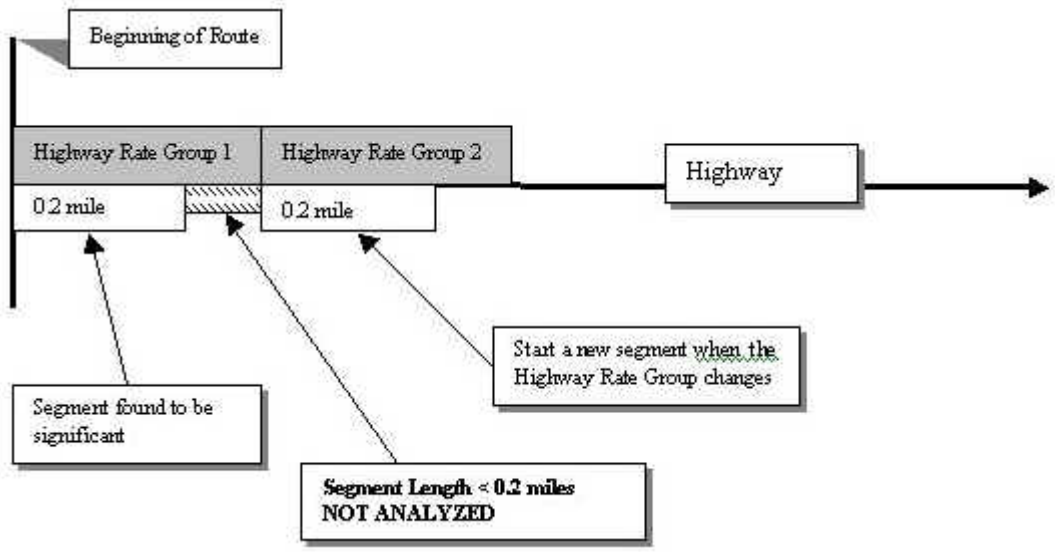
The % Wet Time is based on an 11-year weather record (1957-1967). Also, refer to Figure 2, page 9, of Traffic Department booklet entitled "A Method to Determine the Exposure of Vehicles to Wet Pavements", dated January 1972 and Evaluation of Minor Improvements (grooved pavements, Part 8) dated December 1972.
Use this value for calculating projected wet travel.

Attachment #2

TABLE C
SURVEY RESULTS

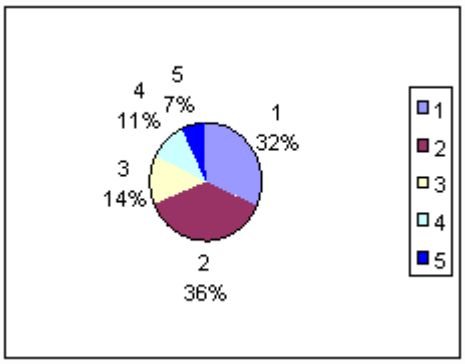
A TOTAL OF 44 PEOPLE FROM THE TWELVE DISTRICTS RESPONDED TO THIS SURVEY DATED MARCH 30, 2000. THE FOLLOWING ARE THE SURVEY QUESTIONS AND THE ANSWERS FOR EACH QUESTION. THE RESULTS ARE THE NUMBER OF RESPONDENTS WHO CHOSE THE ANSWER ABOVE IT.

1. The Table C program does not analyze Highway Segments less than 0.2 miles. Examples include just before intersections, route breaks and district boundaries and at changes in rate group (see diagram).



The Table C program needs to include these segments in the analysis.

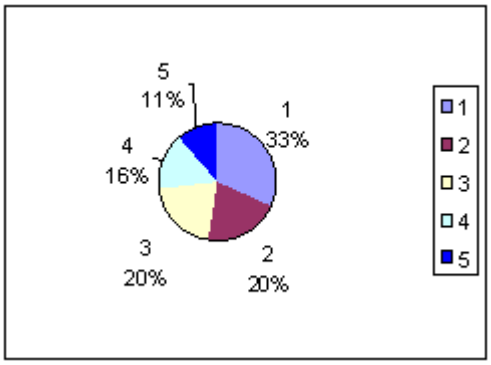
Strongly Agree	1☐	2☐	3☐	4☐	5☐	Strongly Disagree
RESULTS:	**14**	**16**	**6**	**5**	**3**	



2. I frequently investigate "Required" locations that result in ‘No Action’ due to the peak hour congestion related collisions.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

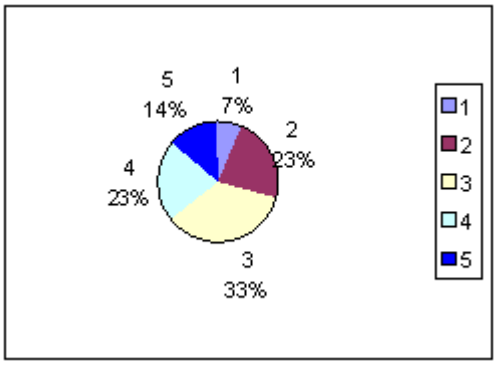
RESULTS: 14 9 9 7 5



3. I frequently investigate "Required" locations that result in ‘No Action’ due to increased traffic volume during the seasonal peaks.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

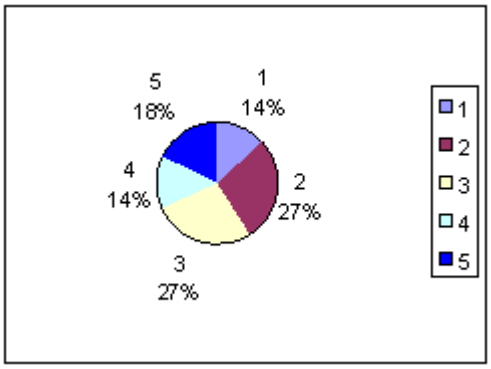
RESULTS: 3 10 15 10 6



4. I frequently investigate "Required" Ramp locations that result in ‘No Action’ due to cross street traffic volumes not being considered.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

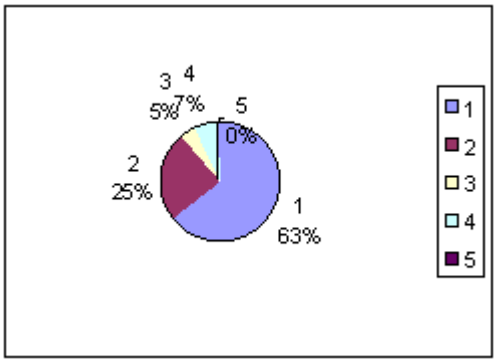
RESULTS: 6 12 12 6 8



5. The Table C program does not identify recent repeat locations. Table C should identify these locations as ‘Repeat’ locations instead of "Required" locations.

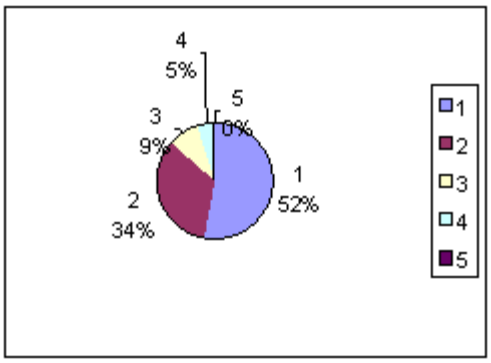
Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

RESULTS: 28 11 2 3 0



6. Table C locations sometime overlap with previous quarter required locations. Table C should identify these locations as ‘Overlap’ locations instead of "Required" locations.

Strongly Agree	1☐	2☐	3☐	4☐	5☐	Strongly Disagree
RESULTS:	**23**	**15**	**4**	**2**	**0**	



7. For one quarter Table C, you can have two or more 0.2 mile segments adjacent to each other and they are treated as separate investigation locations (see diagram).

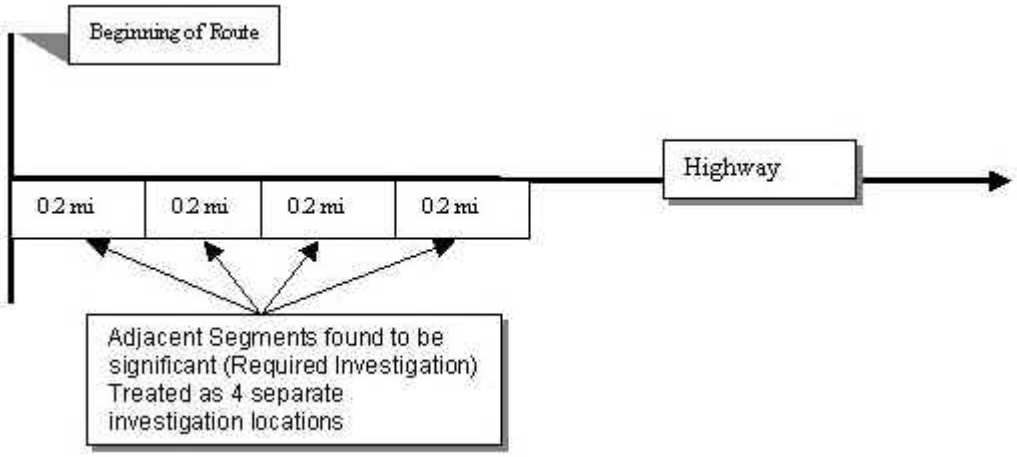
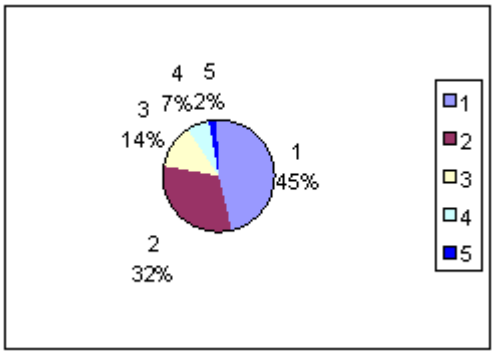


Table C should combine these locations as one investigation location.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

RESULTS: 20 14 6 3 1

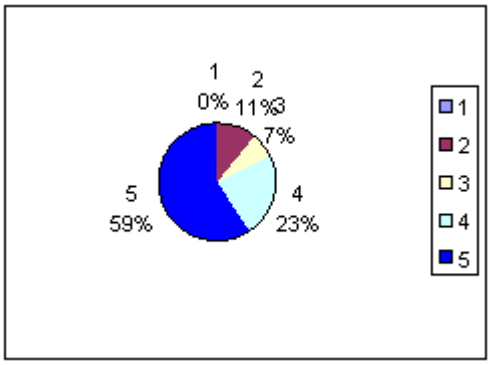


8. Table C is sent out on a quarterly basis.

A. Table C should be sent out every month.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

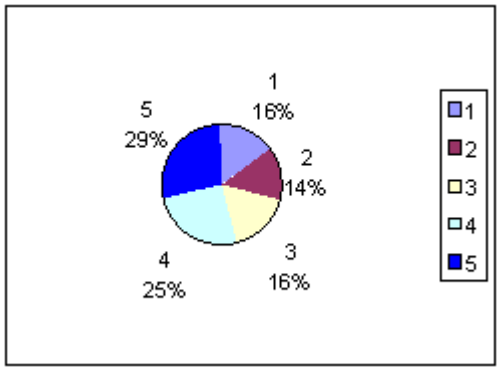
RESULTS: 0 5 3 10 26



B. Table C should be sent out twice a year.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

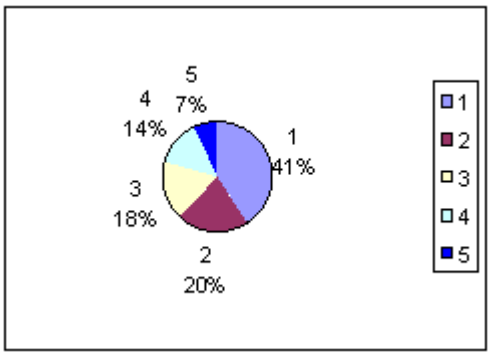
RESULTS: 7 6 7 11 13



C. Table C should continue to be sent out quarterly.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

RESULTS: 18 9 8 6 3

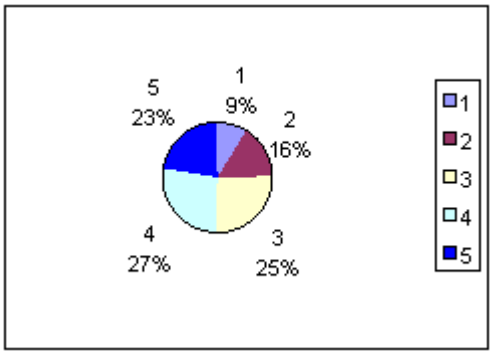


9. Wet Table C is sent out annually, usually in October.

A. Wet Table C should be sent out in January.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

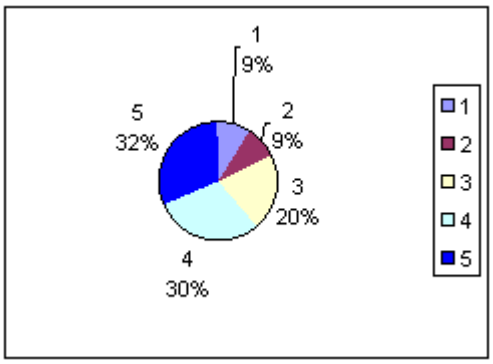
RESULTS: 4 7 11 12 10



B. Wet Table C should be sent out in April.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

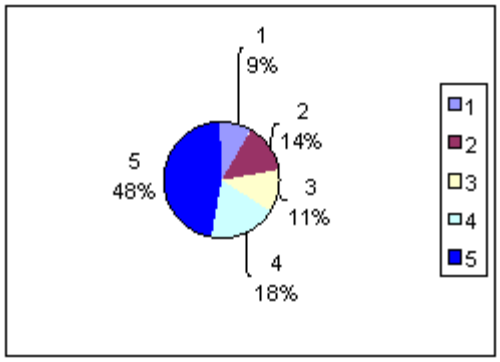
RESULTS: 4 4 9 13 14



C. Wet Table C should be sent out in July.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

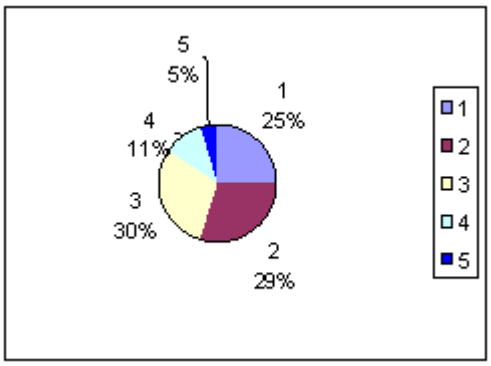
RESULTS: 4 6 5 8 21



D. Wet Table C should continue to be sent out in October.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

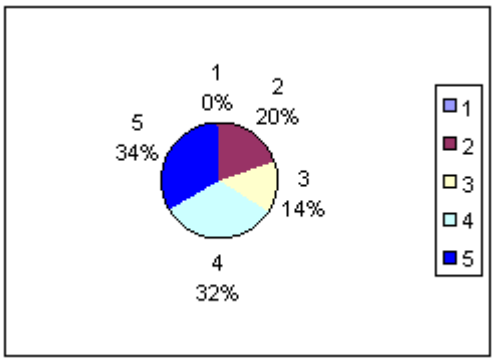
RESULTS: 11 13 13 5 2



10. Table C required investigation locations adequately identify only the locations that need improvements.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

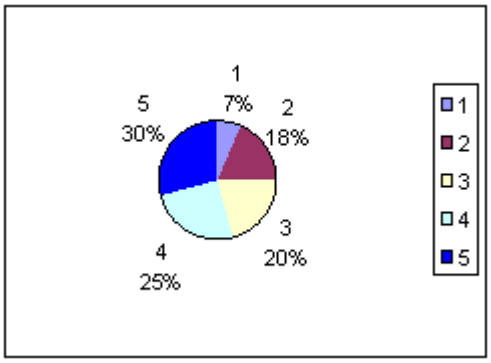
RESULTS: 0 9 6 14 15



11. Wet Table C required investigation locations adequately identify only the locations that need improvement.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

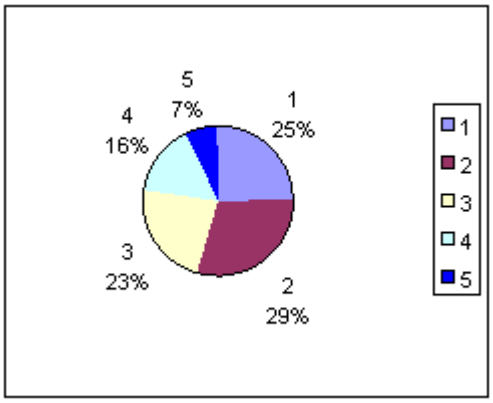
RESULTS: 3 8 9 11 13



12. There are 67 Highway, 30 Intersection and 80 Ramp Collision Rate Groups. Criteria should be developed for establishing Collision Rate Groups.

Strongly Agree 1☐ 2☐ 3☐ 4☐ 5☐ Strongly Disagree

RESULTS: 11 13 10 7 3



Attachment #3

Table C Time and Cost Estimate

Background

Neither the staff in Traffic Operations nor IT has thoroughly tested TSN Table C process before. The assumption is that the TSN Table C is working properly for IT to come up with the time estimate: the task will be done by one of our current consultants who has knowledge on TSN application. The estimate is based on IT will be able to use/modify the existing process/program to do the enhancements.

Tasks

- Analyze the existing programs/process		8 weeks
- Analyze the existing table structure/data		2 weeks
- Analyze the existing form		2 weeks
- Modify programs/report		
1. Repeat locations	3 weeks	
Unit test	2 weeks	5 weeks
2. Overlap locations	3 weeks	
Unit test	2 weeks	5 weeks
3. Combine adjacent locations	4 weeks	
Unit test	2 weeks	6 weeks
- Apply logic to repeat overlap to Highway only		2 weeks
- Apply logic to required printing to Ramp/Intersection/Highway		2 weeks
- Integrated Test		2 weeks
Total Time Estimate		22 weeks
Total Cost Estimate		
880 hours @$90.00 per hour		$79,200.00

Attachment #4

Preliminary Review of Required Highway Locations

After preliminary review of the comparison of 1st quarter to 2nd quarter and 3rd quarter to 4th quarter, it was found that 65% - 70% of the required highway locations were either exact duplicates or overlaps. Similar results were found for Ramp and Intersection required locations.

Note: There was not a comparison between 2nd quarter and 3rd quarter or 1st quarter and 4th quarter, which would result in a higher percentage of duplicates and overlaps.

TABLE C
ALL ACCIDENTS
REQUIRED HIGHWAY LOCATIONS

1ST AND 2ND QUARTER COMPARISON

	1ST QTR 1998			2ND QTR 1998			
DISTRICT	MISSING	DUPLICATE	OVERLAP	NEW	DUPLICATE	OVERLAP	TOTAL
1	9	13	4	15	13	5	59
2	10	4	0	11	4	0	29
3	45	38	25	45	38	32	223
4	141	149	227	131	149	243	1040
5	29	18	17	29	18	19	130
6	51	24	38	50	24	32	219
7	145	134	180	155	134	191	939
8	80	78	42	89	78	56	423
9	0	0	0	2	0	0	2
10	26	29	21	36	29	14	155
11	37	24	26	32	24	17	160
12	36	41	60	44	41	53	275
Statewide	609	552	640	639	552	662	3654
		1801			1853		
	33.8%	30.6%	35.5%	34.5%	29.8%	35.7%	

3RD AND 4TH QUARTER COMPARISON

	3RD QTR 1998			4TH QTR 1998			
DISTRICT	MISSING	DUPLICATE	OVERLAP	NEW	DUPLICATE	OVERLAP	TOTAL
1	14	10	7	26	10	5	72
2	10	5	1	9	5	0	30
3	51	45	50	54	45	47	292
4	124	137	259	103	137	255	1015
5	26	27	15	25	27	23	143
6	52	36	29	51	36	19	223
7	118	159	222	93	159	227	978
8	86	75	49	80	75	53	418
9	2	1	0	0	1	0	4
10	43	37	19	36	37	19	191
11	36	16	29	23	16	27	147
12	46	49	63	55	49	58	320
Statewide	608	597	743	555	597	733	3833
		1948			1885		
	31.2%	30.6%	38.1%	29.4%	31.7%	38.9%	

TABLE C
ALL ACCIDENTS
REQUIRED RAMP LOCATIONS

1ST AND 2ND QUARTER COMPARISON

	1ST QTR 1998		2ND QTR 1998		
DISTRICT	MISSING	DUPLICATE	NEW	DUPLICATE	TOTAL
1	0	1	0	1	2
2	2	1	2	1	6
3	11	25	6	25	67
4	30	96	52	96	274
5	4	3	3	3	13
6	6	21	3	21	51
7	43	93	53	93	282
8	19	25	23	25	92
9	0	0	0	0	0
10	3	14	4	14	35
11	9	22	9	22	62
12	12	36	13	36	97
Statewide	139	337	168	337	981

476 505

29.2% 70.8% 33.3% 66.7%

3RD AND 4TH QUARTER COMPARISON

	3RD QTR 1998		4TH QTR 1998		
DISTRICT	MISSING	DUPLICATE	NEW	DUPLICATE	TOTAL
1	0	0	0	0	0
2	1	1	0	1	3
3	6	22	13	22	63
4	46	110	42	110	308
5	5	6	1	6	18
6	9	13	7	13	42
7	36	104	43	104	287
8	15	31	16	31	93
9	0	0	0	0	0
10	7	15	4	15	41
11	12	12	11	12	47
12	11	32	12	32	87
Statewide	148	346	149	346	989

494 495

30.0% 70.0% 30.1% 69.9%

TABLE C
ALL ACCIDENTS
REQUIRED RAMP LOCATIONS

1ST AND 2ND QUARTER COMPARISON

	1ST QTR 1998		2ND QTR 1998		
DISTRICT	MISSING	DUPLICATE	NEW	DUPLICATE	TOTAL
1	0	1	0	1	2
2	2	1	2	1	6
3	11	25	6	25	67
4	30	96	52	96	274
5	4	3	3	3	13
6	6	21	3	21	51
7	43	93	53	93	282
8	19	25	23	25	92
9	0	0	0	0	0
10	3	14	4	14	35
11	9	22	9	22	62
12	12	36	13	36	97
Statewide	139	337	168	337	981

476 505

29.2% 70.8% 33.3% 66.7%

3RD AND 4TH QUARTER COMPARISON

	3RD QTR 1998		4TH QTR 1998		
DISTRICT	MISSING	DUPLICATE	NEW	DUPLICATE	TOTAL
1	0	0	0	0	0
2	1	1	0	1	3
3	6	22	13	22	63
4	46	110	42	110	308
5	5	6	1	6	18
6	9	13	7	13	42
7	36	104	43	104	287
8	15	31	16	31	93
9	0	0	0	0	0
10	7	15	4	15	41
11	12	12	11	12	47
12	11	32	12	32	87
Statewide	148	346	149	346	989

494 495

30.0% 70.0% 30.1% 69.9%

Table C
PROPOSED IMPROVEMENT LOCATIONS
1/1/98 – 6/13/01

District Table C's	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
All	245	124	411	2783	456	1368	2690	1131	23	397	366	1064
All IMPROVEMENT RECOMMENDED	116	44	85	68	128	36	252	74	5	129	123	198
WET	43	16	122	1382	144	37	1207	255	0	40	45	158
WET IMPROVEMENT RECOMMENDED	19	8	48	36	42	0	70	14	0	16	13	42
PERCENTAGES OF IMPROVEMENTS												
ALL - IMPROVEMENTS RECOMMENDED	47.35%	35.48%	20.68%	2.44%	28.07%	2.63%	9.37%	6.54%	21.74%	32.49%	33.61%	18.61%
WET- IMPROVEMENTS RECOMMENDED	44.19%	50.00%	39.34%	2.60%	29.17%	0.00%	5.80%	5.49%	0.00%	40.00%	28.89%	26.58%

Statewide Totals	
All	11058
All Improvement Recommended	1258
Wet	3449
Wet Improvement Recommended	308
Statewide Percentage of Improvements	
All - Improvements Recommended	11.38%
Wet - Improvements Recommended	8.93%

Table C
Combined Adjacent Required Highway Locations

District 2 Required Highway Locations

	Required Locations on Table C	Number of Repeat Locations		Remaining Locations after Step 1	Number of Overlap Locations		Remaining Locations after Step 2	Reduction due to Combining Adjacent Loc.		Total Locations after Step 3
1st Qtr.	**14**	-10	=	**4**	-1	=	**3**	- 0	=	**3**
2nd Qtr.	**15**	-4	=	**11**	-1	=	**10**	- 0	=	**10**
3rd Qtr.	**16**	-6	=	**10**	-4	=	**6**	- 0	=	**6**
4th Qtr.	**14**	-5	=	**9**	-1	=	**8**	- 0	=	**8**

District 4 Required Highway Locations

	Required Locations on Table C	Number of Repeat Locations		Remaining Locations after Step 1	Number of Overlap Locations		Remaining Locations after Step 2	Reduction due to Combining Adjacent Loc.		Total Locations after Step 3
1st Qtr.	**517**	-209	=	**308**	-185	=	**123**	-8	=	**115**
2nd Qtr.	**523**	-222	=	**301**	-198	=	**103**	-2	=	**101**
3rd Qtr.	**520**	-249	=	**271**	-183	=	**88**	-2	=	**86**
4th Qtr.	**494**	-209	=	**285**	-183	=	**102**	-8	=	**94**

Step # 1 = Total "Required Locations" remaining after subtracting "Repeat Locations".
Step # 2 = Total "Required Locations" remaining after subtracting "Repeat" & "Overlap Locations".
Step # 3 = Total "Required Locations" remaining after subtracting "Repeat Locations", "Overlap Locations" and combining "Adjacent Locations".

*** * * S A M P L E * * ***

TASAS TABLE C POTENTIAL INVESTIGATION LOCATIONS .2 MILE

AXR254-A 04-08-97 DISTRICT 04 DATA FOR 94-01-01 THRU 96-12-31 PAGE 10

ALL ACCIDENTS

CONFIDENCE LEVEL 99.5 PERCENT

					SCL	R	RATE*	TOTAL ACCIDENTS				*	AVE ADT-*		*12 MOS RATE ACCS/MV-MVM-*				
			LOCATION DESCRIPTION		RMP	U	GRP	36 MO	24 MO	12 MO	6 MO	3 MO	1000 VEH		ACTUAL		AVERAGE		INV
					LNS	S		ACCS	ACCS	ACCS	ACCS	ACCS	MAIN	X-ST	F+I	TOT	F+I	TOT	REQ
037	SOL	8.445	SACRAMENTO ST		XXX	S	I24	29 Y	19 Y	8 N	4 N	0 N	27.9	4.0	0.00	0.69	0.18	0.39 +	
037	SOL	9.287	TO 9.487 EAST		02D	U	H14	17 Y	11 Y	5 N	3 N	1 N	14.6	-	0.94	4.68	0.78	2.00	
037	SOL	9.844	BROADWAY		XXX	U	I14	64 Y	41 Y	22 Y	16 Y	10 Y	45.0	8.9	0.36	1.12	0.20	0.45 +	REQ
037	SOL	R 11.147	TO R 11.347 EAST		03D	U	H64	15 Y	12 Y	4 N	2 N	1 N	37.0	-	0.37	1.48	0.28	0.81	
037	SOL	R 11.497	EB OFF TO COLUMBUS PKWY		F F	U	R18	18 Y	12 Y	6 Y	3 N	2 N	3.8	-	0.00	4.33	0.36	0.90 +	REQ
037	SON	2.109	TO 2.309 WEST		02D	R	H45	11 Y	7 Y	2 N	1 N	1 N	15.0	-	1.82	1.82	0.34	0.71	
037	SON	R 6.109	TO R 0.064		02U	R	H02	11 N	10 Y	1 N	1 N	1 N	24.9	-	0.55	0.55	0.48	0.91	
061	ALA	19.070	HIGH ST RT B'VIEW DR LT		X-X	U	I14	29 Y	19 Y	10 N	7 N	5 N	21.2	7.9	0.28	0.94	0.20	0.45 +	
061	ALA	19.440	OTIS DR & BROADWAY		X-X	U	I14	25 Y	18 Y	9 N	4 N	1 N	9.8	17.1	0.41	0.92	0.20	0.45 +	
061	ALA	20.080	PARK ST.		X-X	U	I14	27 Y	20 Y	9 N	3 N	1 N	10.3	17.5	0.30	0.89	0.20	0.45 +	
061	ALA	20.150	OAK ST.		X-X	U	I14	15 Y	12 Y	4 N	3 N	2 N	10.2	2.6	0.43	0.85	0.20	0.45 +	
080	ALA	0.000	TO 0.200 EAST		05R	U	H66	36 Y	27 Y	16 Y	6 N	1 N	137.0	-	0.20	1.60	0.21	0.63	REQ
080	ALA	0.340	TO 0.540 EAST		05R	U	H66	28 N	24 Y	11 N	9 N	6 N	137.0	-	0.10	1.10	0.21	0.63	
080	ALA	0.538	TO 0.738 WEST		05L	U	H66	31 Y	22 N	6 N	3 N	0 N	137.0	-	0.10	0.60	0.21	0.63	
080	ALA	0.900	TO 1.100 EAST		05R	U	H66	53 Y	38 Y	23 Y	16 Y	7 Y	137.0	-	0.80	2.30	0.21	0.63	REQ
080	ALA	1.078	TO 1.278 WEST		05L	U	H66	39 Y	25 Y	17 Y	10 Y	5 N	142.5	-	0.40	1.70	0.22	0.65	REQ
080	ALA	1.310	TO 1.510 EAST		05D	U	H66	35 N	27 N	19 N	13 Y	6 N	137.0	-	0.80	1.90	0.35	1.04	REQ
080	ALA	1.338	TO 1.538 WEST		05D	U	H66	55 Y	43 Y	25 Y	16 Y	5 N	137.0	-	0.40	2.50	0.35	1.04	REQ
080	ALA	1.778	TO 1.978 WEST		11D	U	H67	128 Y	92 Y	50 Y	30 Y	18 Y	137.0	-	1.30	5.00	0.26	0.84	REQ
080	ALA	1.978	TO 2.178 WEST		18D	U	H67	203 Y	151 Y	79 Y	40 Y	20 Y	137.0	-	1.70	7.90	0.26	0.84	REQ
080	ALA	2.090	TO 2.290 EAST		06D	U	H67	31 N	25 N	16 N	12 Y	9 Y	137.0	-	0.70	1.60	0.26	0.84	REQ
080	ALA	2.170	WB ON FR GRAND AVE		O C	U	R08	27 Y	11 Y	1 N	0 N	0 N	8.4	-	0.33	0.33	0.16	0.50 +	
080	ALA	2.258	TO 2.458 WEST		07D	U	H67	65 Y	47 Y	29 Y	15 Y	8 Y	135.1	-	0.81	2.94	0.26	0.83	REQ
080	ALA	2.290	EB OFF TO GRAND-MARITME		F F	U	R62	4 N	4 N	4 N	4 Y	2 N	6.9	-	0.40	1.59	0.16	0.40 +	REQ

REQ=INVESTIGATION REQUIRED (4 OR MORE ACCS. & SIGNIFICANT IN 12,6 OR 3 MONTHS) + DENOTES MV USED IN RATES