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**NORTH DAKOTA SELECTIVE TRAFFIC
ENFORCEMENT PROGRAM (STEP)
Project Director's Report**

Contract No. DOT-HS-224-2-384

April 1976

Final Report

PREPARED FOR:

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

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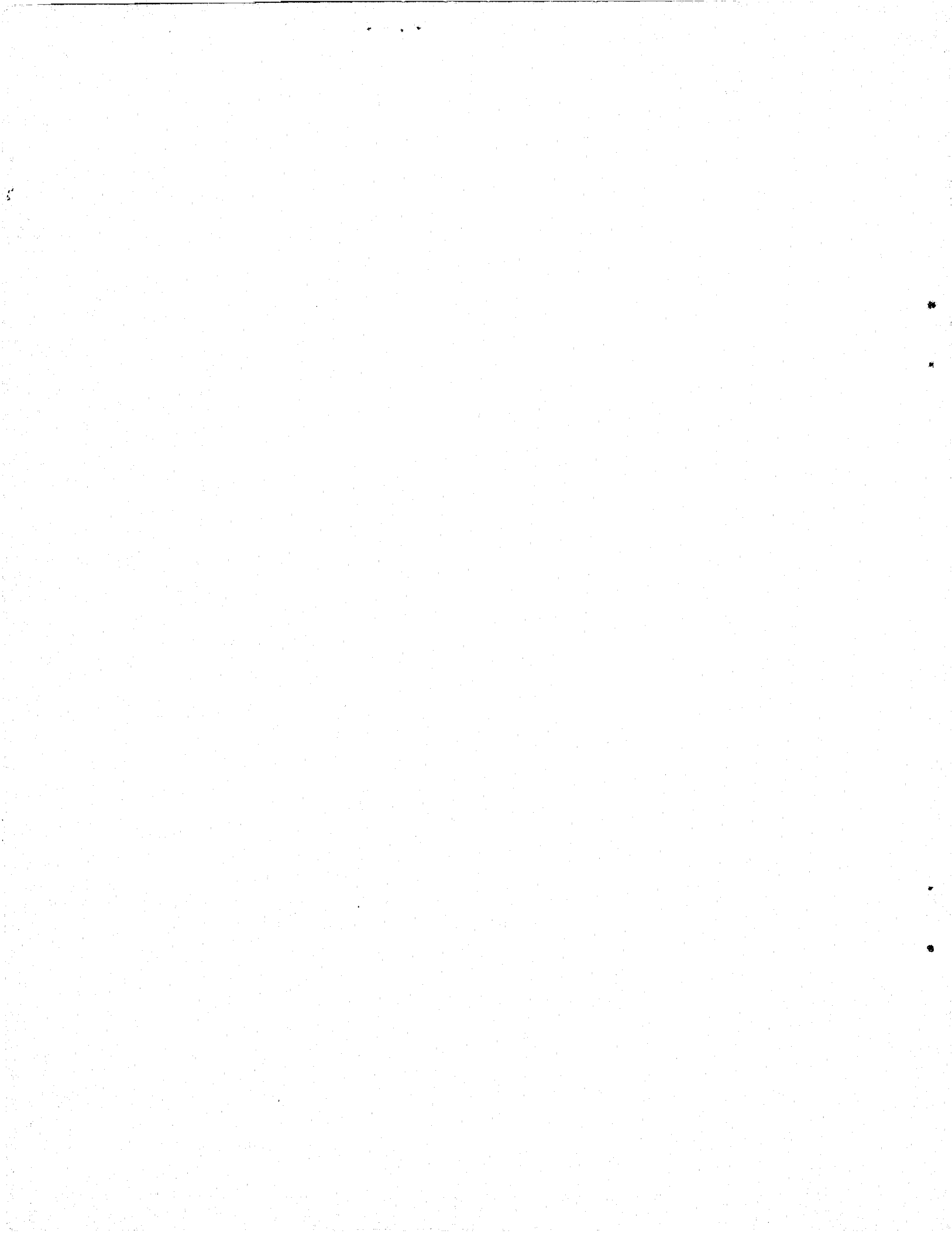
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ACQUISITIONS

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16. Abstract Five experiments were conducted within two counties in North Dakota. This report presents the views of the Project Director as related to the Selective Traffic Enforcement Program. (1) Grand Forks County - line and conspicuous observation patrols were determined to be instrumental in reducing traffic crashes and their severity while the rest of the state indicated a substantial increase. (2) Cass County - a public information program combined with a radar enforcement program was productive in increasing compliance by the motoring public with the speed regulations. (3) A correlation study was made to determine if accidents and injury data would relate to manpower assignments. An inverse relationship existed between manpower assignments and accidents. (4) Pre-arrest breath testing devices were assigned to arresting officers and results compared to a control group. The officers with the device made significantly more arrests with a lower BAC level than those without the device. (5) A special speed study utilizing speed recording equipment and varied manpower allocation appeared to be inconclusive due to equipment problems resulting in inadequate data.					
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FINAL EVALUATION REPORT
ON THE NORTH DAKOTA
SELECTIVE TRAFFIC
ENFORCEMENT PROGRAM (STEP)



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INTRODUCTION

The North Dakota Selective Traffic Enforcement Program (STEP) was conducted over a three year period of time beginning July 1972 through June 1975. Through this period of time the Selective Traffic Enforcement Program task force operated in a rural environment and encompassed the area of two counties, Grand Forks County and Cass County. The overall objective was to secure voluntary compliance with existing traffic laws by the motoring public and provide for a reduction in traffic crashes and their severity.

The North Dakota Highway Patrol, a state law enforcement agency, provided the STEP task force for the operation and data gathering elements of the program. Two counties were selected to test the various experiments. In Grand Forks County, the countermeasures of line patrol and conspicuous stationary observation patrol were employed. In Cass County a highly publicized public information program combined with a radar speed control was designed to bring about compliance by the motoring public with the existing speed limitations.

A second countermeasure was employed in Cass County to determine if a correlation existed between traffic crashes and visible line patrol officers by increasing and decreasing the manpower allocation.

A third experiment in Cass County was to determine the effectiveness of an alcohol roadside screening device operated by selected officers in relationship to a control group not having access to the screening device.

A fourth experiment was to test the compliance of the 55 mph speed limit utilizing electronic speed recording equipment and varying the assignment of levels of enforcement.

DATA CORRELATION

In Grand Forks County three years of historical data, beginning in 1969, was available for the base data. The data was determined to be factual and operational data gathered was adequate for analysis. The data for the speed enforcement campaign in Cass County was gathered by the STEP task force and the vehicle speeds were transcribed by a concealed radar unit, thus providing a profile of vehicle speeds before any special enforcement was initiated.

This data correlation was continued after a public information campaign. A pre-arrest breath test program was initiated in Cass County. Patrol officers were issued the device and recorded each test result on a log sheet and indicated the time of the test, the time of the evidentiary test, and the percent of blood alcohol. Officers in the control group of the BAC level for each arrest in the evidentiary test were obtained from computerized test records. The final speed enforcement experiment was accomplished through the use of digital recorders. The stationary recording devices were designed to record the speed of every vehicle crossing sensors laid in the roadway.

The report would provide summary statistics by the hour and for the eight hour enforcement period, by direction of travel, and provide vehicle speeds in increments of two miles per hour.

PROBLEM AREAS

Operational problems in the Grand Forks County site were of little magnitude. The only problem that really existed occurred during the final enforcement speed experiment in Cass County. Due to technical difficulties with the speed recorders, road and weather conditions, much of the data was destroyed and of no value to the evaluator.

I. PROFILE OF NORTH DAKOTA

North Dakota is predominantly an agricultural state and as such produces the usual cereal grain crops, sugar beets, and potatoes in the central and eastern portions of the state while the western portion tends more toward the production of beef cattle. The state's gross product is supplemented by natural resources such as coal and oil and also by light industry.

The state encompasses an area of 70,655 square miles, and has a population of approximately 617,700 people.

Factors of the state which influence traffic conditions are:

- A. North Dakota registers approximately 461,000 motor vehicles annually, and licenses about 365,000 drivers biannually.
- B. The state enjoys a climate of four distinctive seasons with temperatures ranging from 100 degrees or more during the summer to as low as 40 degrees below zero in the winter.
- C. The state highway network totals approximately 103,481 miles which includes 579 miles of interstate highway, 6,218 miles of other state and federal highways and 96,684 miles of county and township roads. During the year of 1970, this highway system generated approximately 3.8 billion miles of vehicular travel, and 48.7% of this was carried on the rural state highway system.

II. GRAND FORKS COUNTY S.T.E.P.

A. BACKGROUND INFORMATION - PRIOR TO S.T.E.P.

1. Population and Physical Environment

Grand Forks County is located in the Red River Valley in the northeastern portion of the state. The county encompasses an area of 1,433 square miles, and its topography is comprised of virtually level terrain. The population numbers approximately 61,000 persons, or 10% of the state's total. The county highway network contains 2,763 miles of public roadway, 197 miles of which is part of the state and federal system. This highway network generates approximately 275.3 million miles of travel annually, and 172.1 million of this is located on the rural highway system.

Factors of the county which influence traffic conditions are:

- a. The city of Grand Forks, which is the county seat of Grand Forks County, is located on the Minnesota border in the extreme eastern portion of the county. It enjoins the city of East Grand Forks, Minnesota. These two communities have a combined population of approximately 48,000 people.
- b. The University of North Dakota, an academic institution which registers about 8,400 students annually, is also located in the city of Grand Forks. Many of these students reside in dormitories, and are not counted as part of the local population.
- c. A United States Air Force Base, located near the center

of the county, is situated about 13 miles west of the city of Grand Forks. This military installation contains approximately 14,000 personnel, including their dependents. The highway system connecting the city and the Air Force Base tends to produce high volumes of traffic during specific times of the day and night.

- d. U.S. Highway #2 is the major east-west highway in the county, and is intersected by Interstate Highway #29, State Highway #18, and State Highway #32. In addition State Highway #15, an east-west route, carries the bulk of the traffic in the southern portion of the county.
- e. The city of Grand Forks is the largest city in the northeastern part of the state, and studies have indicated that the available facilities attract many people from the surrounding counties. This influences the traffic patterns in rural portions of the county as well as within the city.
- f. There are 32,254 vehicles registered, and approximately 35,500 drivers licensed in Grand Forks County. This does not provide a true picture of the traffic situation, however, because North Dakota does not require military personnel, their dependents, nor out-of-state students to register their vehicles or obtain driver's licenses unless they are gainfully employed within the state or consider it their state of residence. Those vehicles located in the county that are currently registered

are classified as follows:

Passenger vehicles = 22,830

Trucks = 7,560

Trailers, motorcycles, and other miscellaneous vehicles add approximately 3,000 additional units for a total of 33,390. (These figures are from 1971 registration.)

2. Accident Profile of Historical Traffic Situations -

State of North Dakota

The state of North Dakota has experienced a fluxuation in fatal traffic accidents in recent years. During 1971, an all time record of 227 persons died on state roads. This exceeded the previous record set in 1966 of 206 deaths.

A more reliable indicator of the traffic accident situation, however, is rural injury accidents. This category showed a relatively consistent increase of 1,488 in 1966 to 1,967 in 1970.

RURAL ACCIDENTS
GRAND FORKS COUNTY

YEAR	FATAL ACC.	FATALS	INJ. ACC.	INJ.	PROP. DAMAGE	TOTALS
1970	10	11	138	255	508	656
1969	11	15	108	190	474	593
1968	10	17	77	133	386	473
1967	9	10	91	146	464	564
1966	9	11	100	166	399	508
YEAR TOTAL	49	64	514	890	2231	2794

Sixty-four persons died in forty-nine rural traffic accidents in Grand Forks County during the five year period from 1966 through 1970. In addition, 514 accidents injured another 890 people.

Traffic accident experience in the county for the five year period of 1966 through 1970 is indicated on the previous chart.

3. The Allocation and Deployment of Manpower by the North Dakota State Highway Patrol

This was determined by several factors to include population, motor vehicle registration, traffic accident data, and future economic developments.

The specific assignment of personnel to a post within a district was determined by the above criteria, in addition to other services such as driver license examining, Public Service Commission enforcement, etc.

The North Dakota State Highway Patrol is primarily a traffic oriented enforcement branch of state government with limited police powers. The total personnel complement of the North Dakota State Highway Patrol consisted of 80 sworn officers and 21 female employees who perform secretarial and clerical functions. Basically the responsibilities of the North Dakota State Highway Patrol are traffic oriented. However, increased demands for service had seriously affected the routine patrol time available to all officers as evidenced by the reduction in the enforcement of hazardous moving violations during pre-STEP years. The result had been an increase rate

in traffic accidents. The total number of North Dakota State Highway Patrol personnel prior to S.T.E.P. assigned to Grand Forks County consisted of one District Commander, one Sergeant, four Patrolmen, and two female clerks. The duties of these people, however, were utilized throughout a four county district and not confined solely to the Grand Forks area.

4. Description of S.T.E.P. Objectives

The first objective of the S.T.E.P. Program would be to affect a high level of enforcement contact with errant motorists with emphasis placed on the quality of the contact through the use of selective enforcement techniques and an aggressive enforcement policy. We anticipated that traffic law enforcement would create an awareness in the minds of the public. The second objective was to obtain increased public contact through the implementation of a public information program. The third objective was to improve and ascertain the data processing procedure to provide a more comprehensive statistical basis for traffic accidents and traffic enforcement analysis. The fourth objective was to determine whether the counter-measure employed would be effective in reducing traffic accidents. The afore mentioned objectives would be directed towards a goal of providing an effective means and method for reducing traffic accidents, save lives, and reduce property damage.

ANNEX "A"

Explanatory Information for the Proposed STEP Program to be Conducted in Grand Forks County and Specifically on Highway US 2 Grand Forks to the Turtle Lake State Park (18 miles) and the Intersection of Highway US 2 and County Road 3B (14 miles west of Grand Forks).

Exhibit 1 refers to the rural accidents reported for the period of 1966 - 70 on the State and Federal Highway System in Grand Forks County. The data distribution is by quarter (3 months) and sets forth traffic accidents by day of week and by accident severity. In addition, Exhibit 1 indicates the severity of the traffic accidents of the proposed STEP location. It is interesting to note that nearly 50% of the accidents on the State and Federal Highway System occurred on this proposed STEP site location.

Exhibit 2 sets forth the accident causation violations indicated on the accident report for the same period 1966 - 70 on the State and Federal Highway System in Grand Forks County. Supporting data for the STEP location is also listed for the 10 most common violations occurring.

Exhibit 3 indicates the traffic violation charges in the accidents where a citation or arrest was instituted and is supporting data for the STEP location on US Highway 2 from Grand Forks to the Turtle Lake State Park and this exhibit includes accident summation with collision diagram for the period of November 1, 1966 to November 1, 1971.

Exhibit 4 sets forth the total accident distribution by month by year for the period of time November 1966 to November 1971 on the proposed STEP Program site Highway US 2 Grand Forks to the Turtle Lake State Park.

Exhibit 5, 6, 7, and 8 are quarterly hourly distribution of rural traffic accidents by day of week for the proposed STEP site and it is data gathered for the period of 1966 - 70.

Exhibit 9 is an hourly distribution of rural traffic accidents for the intersection Highway US 2 and County Road 3B located 14 miles west of Grand Forks and portrays the accident distribution by time of day and day of week for this period with supporting data in the form of an accident summation intersection collision diagram for a like period.

Rural Accidents Reported for the Period 1966 - 1970

On the State and Federal System in Grand Forks County by Quarter

1st Quarter - November, December, January

2nd Quarter - February, March, April

3rd Quarter - May, June, July

4th Quarter - August, September, October

Distribution by Quarter by Day of Week

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.	Total
1st Qtr.	36	27	26	22	37	44	34	226
2nd Qtr.	18	27	23	40	31	32	24	195
3rd Qtr.	25	22	31	43	27	34	30	212
4th Qtr.	20	13	25	27	36	41	27	189
Total	99	89	105	132	131	151	115	822

Classification of Accidents Severity by Quarter Period 1966 - 1970

	Fatal	Injury	Property Damage	Total
1st Qtr.	3	44	179	226
2nd Qtr.	11	115	139	195
3rd Qtr.	7	52	153	212
4th Qtr.	6	34	149	189
Total	27	175	620	822

Proposed S.T.E.P. Location: Highway US 2 Grand Forks to Turtle Lake State Park (18 Miles)

	Fatal	Injury	Property Damage	Total
1st Qtr.	0	25	100	125
2nd Qtr.	3	26	65	94
3rd Qtr.	3	24	81	108
4th Qtr.	1	12	69	82
Total	7	87	315	409

Exhibit 1

Accident Causation Violations Indicated on the State and Federal System
for the Period 1966 - 1970 in Grand Forks County. (by Quarter)

	1st Qtr.		2nd Qtr.		3rd Qtr.		4th Qtr.	
	CO.	STEP	CO.	STEP	CO.	STEP	CO.	STEP
Speed	95	57	63	37	37	11	50	20
R.O.W.	22	15	27	12	33	19	26	16
D.W.I.	6	4	2	1	3	2	4	0
Wng. Sd. Rd.	10	1	11	4	8	2	8	2
Foll. T. Cl.	7	5	4	1	14	8	6	3
Imp. Pass	4	0	12	4	17	5	7	3
Stop. S.	4	3	8	7	6	3	4	1
Imp. Trn.	4	3	7	6	11	6	3	3
Imp. Start.	4	21	1	0	1	1	1	1
Fail to Sgl.	3	1	1	1	5	1	4	1
Other:	<u>110</u>	<u>63</u>	<u>73</u>	<u>42</u>	<u>92</u>	<u>46</u>	<u>74</u>	<u>42</u>
TOTAL	269	173	209	115	227	104	187	92

Total Causations Violations for County: 892

Total Causation Violations for STEP: 484

Highway U.S. 2 Grand Forks to Turtle River State Park

Accident Period November 1, 1966 - November 1, 1971

Violations Charged in Accidents
By Most Predominate Violation Indicated in the Accident. (Citation or Arrest)

Care Required*	115
Failure to Yield	35
DWI	24
Improper Turning	8
Stop Sign	2
Following to Close	6
Right of Way	3
Lane Changing	6
Other Violations	<u>40</u>
Total Violations Charged	239

A total of 239 citations were issued in 348 accidents or 69% arrests in accidents.

*NOTE - The offense of care required consists of an operation without having regard to the traffic, surface, width of the highway and any other condition then existing. (This would include speed.)

Total Accident Distribution by Month by Year
November 1966 - November 1971

Highway U.S. 2 Grand Forks to Turtle River State Park (18 miles)

Month	1966	1967	1968	1969	1970	1971	Total
Jan.		16	3	8	7	6	40
Feb.		8	6	6	6	5	31
March		9	7	2	10	9	37
April		4	4	4	6	8	26
May		6	8	7	4	5	30
June		9	5	3	7	5	29
July		7	5	2	4	6	24
Aug.		6	4	9	7	7	33
Sept.		3	1	4	6	4	18
Oct.		4	5	3	4	9	25
Nov.	6	3	9	5	4		27
Dec.	6	8	4	8	2		28
Total	12	83	61	61	66	64	348

1st Quarter December, January, February
1966-70

STEP (02-1802) Hourly Distribution of Rural Traffic Accidents by Day of the Week

TIME of DAY	DAY OF WEEK							TOTAL
	SUN.	MON.	TUES.	WED.	THURS.	FRI.	SAT.	
0001 - 0100	1	1		1				3
0101 - 0200	1					1	2	4
0201 - 0300	2			1	1	2	3	9
0301 - 0400			2	1		2	1	6
0401 - 0500			1	2			1	4
0501 - 0600	2	2					1	5
0601 - 0700	1			1				2
0701 - 0800		4		2	3	3		12
0801 - 0900	2	1	1		1	1	1	7
0901 - 1000	1	1					2	4
1001 - 1100		2					2	4
1101 - 1200	1			1			1	3
1201 - 1300	1	1			1	1		4
1301 - 1400		1			1		1	3
1401 - 1500	2	1	1		1		2	7
1501 - 1600	1	2	1	2				6
1601 - 1700		1		2	1	4		8
1701 - 1800		1			1	2	3	7
1801 - 1900	3	1	1					5
1901 - 2000	2	1					1	4
2001 - 2100			1	1				2
2101 - 2200				1		1		2
2201 - 2300	1	3			1	1	3	9
2301 - 2400				4		1		5
TOTAL	21	22	8	20	11	19	24	125

2nd Quarter March, April, May
1966-70

STEP (02-1802) Hourly Distribution of Rural Traffic Accidents by Day of the Week

TIME of DAY	DAY OF WEEK							TOTAL
	SUN.	MON.	TUES.	WED.	THURS.	FRI.	SAT.	
0001 - 0100	1							1
0101 - 0200	1			1	1		2	5
0201 - 0300		1	1	1		1	3	7
0301 - 0400	1		1				2	4
0401 - 0500								0
0501 - 0600					1		1	2
0601 - 0700				1	1			2
0701 - 0800			1					1
0801 - 0900	1	3	4	2	2	2		14
0901 - 1000		2			1			3
1001 - 1100					1			1
1101 - 1200	1	1					1	3
1201 - 1300		2						2
1301 - 1400						1		1
1401 - 1500	1							1
1501 - 1600		1			1	1		3
1601 - 1700	2	1	1		1		1	6
1701 - 1800		2	2	1	2	2		9
1801 - 1900	1	1	1			2	2	7
1901 - 2000	1	1			1			3
2001 - 2100	1					2	1	4
2101 - 2200				1				1
2201 - 2300	1	1		1	1	2		6
2301 - 2400	1	1	1	1	1	1	2	8
TOTAL	13	15	14	9	14	14	15	94

3rd Quarter June, July, August
1966-70

STEP (10-1802) Hourly Distribution of Rural Traffic Accidents by Day of the Week

TIME of DAY	DAY OF WEEK							TOTAL
	SUN.	MON.	TUES.	WED.	THURS.	FRI.	SAT.	
0001 - 0100	1			1	1	1		4
0101 - 0200	1		1	1	2		1	6
0201 - 0300		1	1		2		1	5
0301 - 0400				1			1	2
0401 - 0500	2						1	3
0501 - 0600					1			1
0601 - 0700			1					1
0701 - 0800		2	2	2	1	1	1	9
0801 - 0900				1				1
0901 - 1000				1		1		2
1001 - 1100	1					1	1	3
1101 - 1200					1	1		2
1201 - 1300						1		1
1301 - 1400				2			2	4
1401 - 1500					1		1	2
1501 - 1600	2	1	1	1	1	2	1	9
1601 - 1700			2		3	1		6
1701 - 1800	1	1	2		2		1	7
1801 - 1900	1			3	3		2	9
1901 - 2000	1	1		2		2	1	7
2001 - 2100		3			2		2	7
2101 - 2200		1	1					2
2201 - 2300	1	1	1	1		1	1	6
2301 - 2400	1		1		2	2	2	8
TOTAL	12	11	13	16	22	14	19	107

4th Quarter September, October, November
1966-70

STEP (02-1802) Hourly Distribution of Rural Traffic Accidents by Day of the Week

TIME of DAY	DAY OF WEEK							TOTAL
	SUN.	MON.	TUES.	WED.	THURS.	FRI.	SAT.	
0001 - 0100	2						1	3
0101 - 0200	3		1		1	1	1	7
0201 - 0300	2						2	4
0301 - 0400	2							2
0401 - 0500		1			2		2	5
0501 - 0600	1							1
0601 - 0700	3	1		1				5
0701 - 0800		2		1			1	4
0801 - 0900				2		1		3
0901 - 1000								0
1001 - 1100					1			1
1101 - 1200				1				1
1201 - 1300								0
1301 - 1400						1	3	4
1401 - 1500					1		1	2
1501 - 1600			1	1		1		3
1601 - 1700	1		2	1			1	5
1701 - 1800		1		1	1	3		6
1801 - 1900				1		1	1	3
1901 - 2000				2	1	2	2	7
2001 - 2100		1		1	2		1	5
2101 - 2200							2	2
2201 - 2300	1				1	1	1	4
2301 - 2400		3			1	1		5
TOTAL	15	9	4	12	11	12	19	82

Intersection of Highways US 2 & Co. Rd. #3 B - 14 Miles West of Grand Forks

Accident Period from January 1, 1966 to February 1, 1972

TIME of DAY	DAY OF WEEK							TOTAL
	SUN.	MON.	TUES.	WED.	THURS.	FRI.	SAT.	
0001 - 0100	1		1	1				3
0101 - 0200								
0201 - 0300								
0301 - 0400								
0401 - 0500								
0501 - 0600								
0601 - 0700	1							1
0701 - 0800	1	1						2
0801 - 0900						1		1
0901 - 1000	1	1				1		3
1001 - 1100								
1101 - 1200				1				1
1201 - 1300	1		1					2
1301 - 1400					1	1	1	3
1401 - 1500			1		1	1		3
1501 - 1600	1			2				3
1601 - 1700	1		1		2	1		5
1701 - 1800	1	1	1		1	1	2	7
1801 - 1900	1			1	1			3
1901 - 2000			1	1				2
2001 - 2100				1		1		2
2101 - 2200		1	1					2
2201 - 2300	1							1
2301 - 2400		1		1				2
TOTAL	9	5	7	8	6	7	3	46

B. STEP PLANNING

1. Planning a Program

The selection of the selective traffic enforcement area was based on the identification of traffic accidents and their causes as they relate to other counties in the State. Grand Forks County recorded, for the years of 1969-70-71, 214 persons injured resulting in an average of 112 personal injury accidents, 10 fatal accidents with an average of 12.3 fatalities, and 231 property damage accidents per year for a total average of 353 traffic accidents occurring in Grand Forks County. Specifically, Highway #2 from the city of Grand Forks and West for a distance of 18 miles was determined to be the most hazardous stretch of highway in the State of North Dakota. The base data indicated that 348 traffic accidents occurred on this segment of highway from November 1966 through October 1971. The base data also indicated that for the year of August 1, 1970 through December 31, 1971, nine persons were killed in eight fatal accidents and 93 persons received personal injury in 47 injury accidents. Based on the base data available and in conjunction with the recommendations of the evaluator, a manpower allocation resulted in approximately 50% of the total patrol effort of the S.T.E.P. Task Force to be expended on this stretch of highway. Coverage varied from 21 hours to 24 hours per day based on the historical base data.

Two basic counter-measures were employed.

1. Line patrol
2. Stationary conspicuous observation

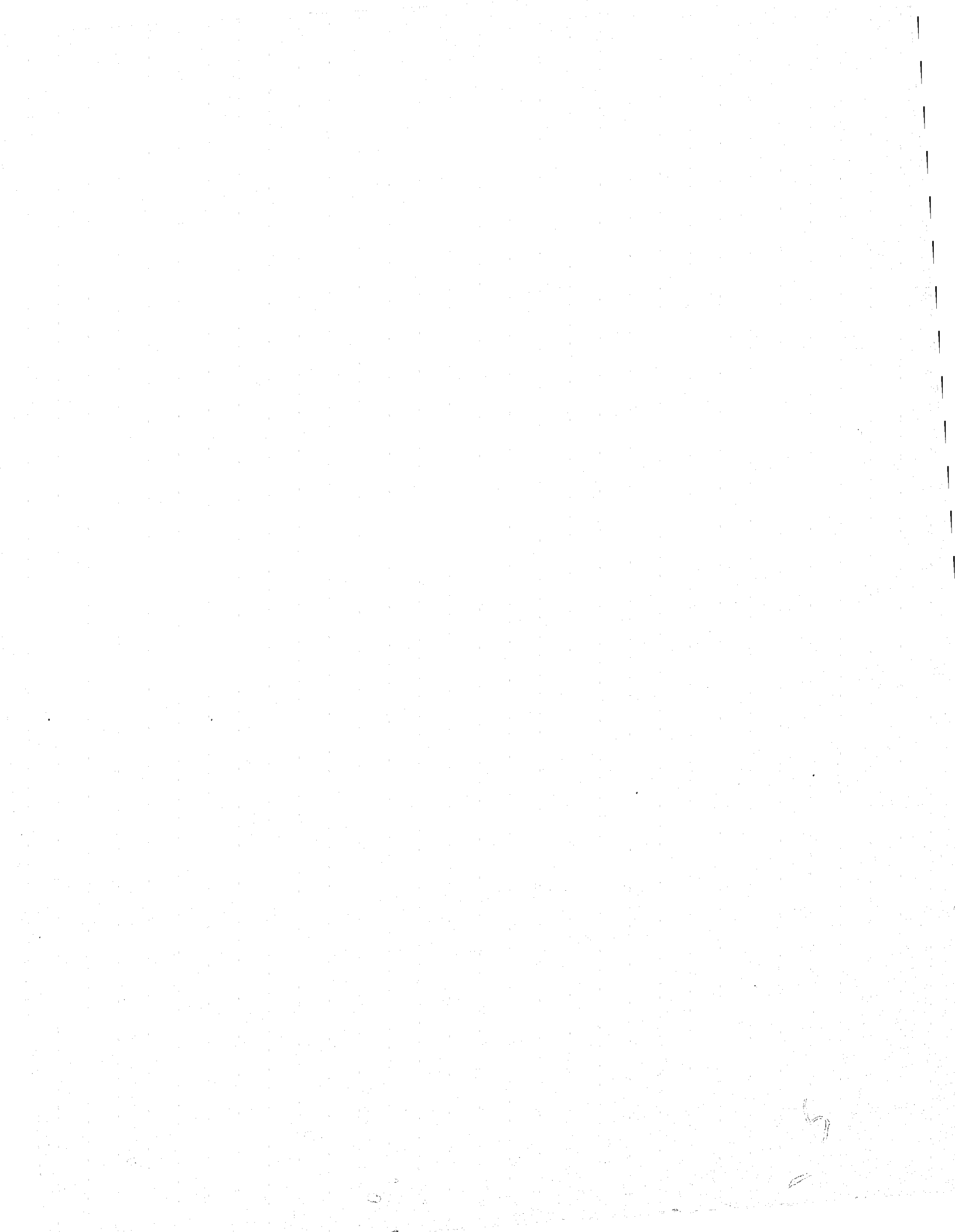
All units of the S.T.E.P. Task Force were well marked and all enforcement would be in accordance with North Dakota Highway Patrol policy.

The line patrol counter-measure was utilized on the entire state and federal highway system within the county. The stationary observation patrol was utilized at the intersection of county road B and US. 2, approximately thirteen (13) miles west of the city of Grand Forks. The accident analysis indicated three specific time periods when accidents were predominant at this intersection.

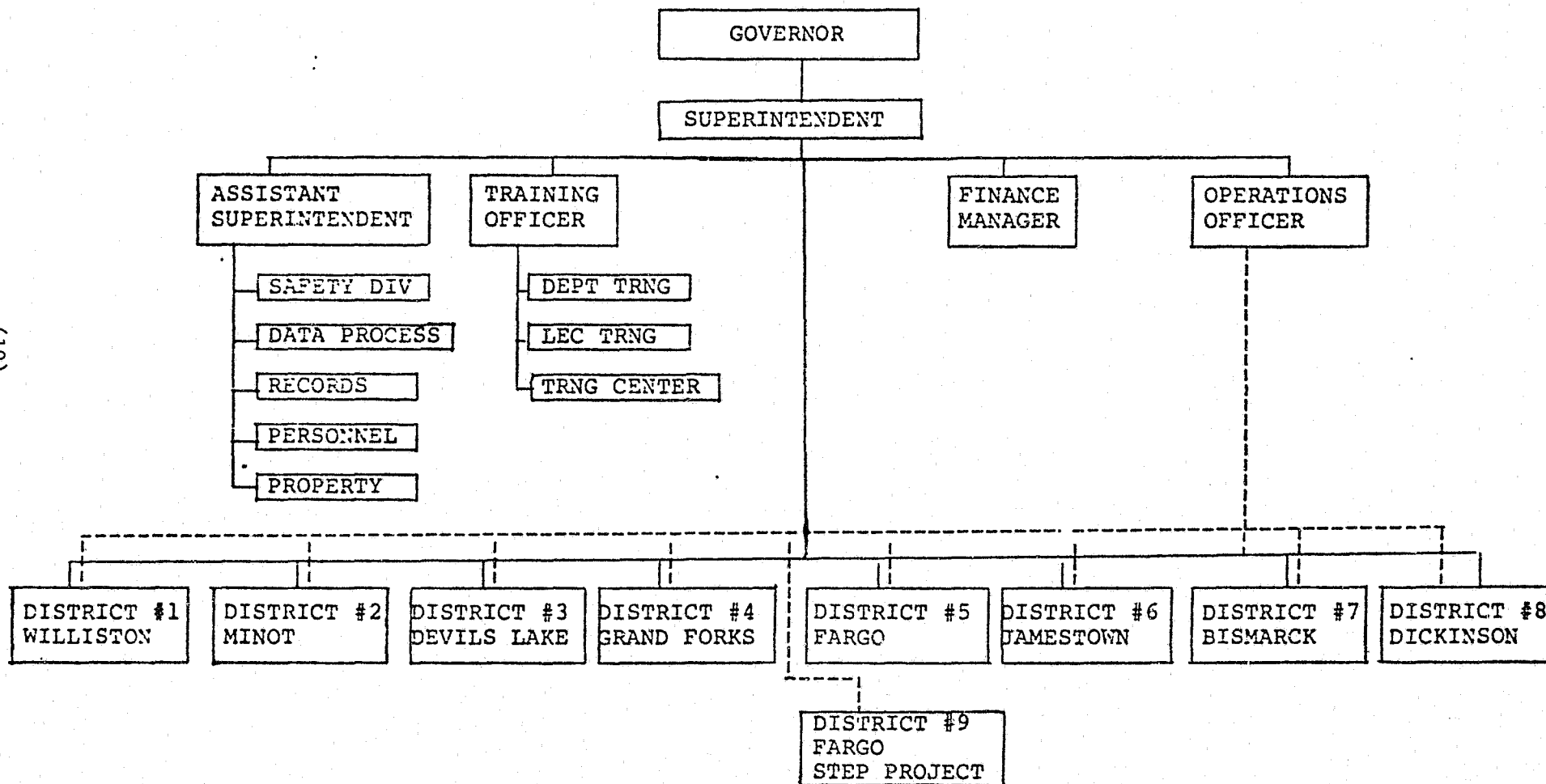
2. Organizational Structure

The North Dakota State Highway Patrol organizational structure is subdivided into administration and operations, with the S.T.E.P. Program assigned to the operational division. Further subdivisions of operations consists of geographical area labeled districts. (See organizational chart)

Grand Forks County is encompassed within North Dakota Highway Patrol District #4, with the District Headquarters located at Grand Forks city. The S.T.E.P. Task Force was designated a position within the organization and identified as District #9 with reporting responsibilities directly to the divisional level at Headquarters.



NORTH DAKOTA HIGHWAY PATROL ORGANIZATIONAL CHART



(19)

---- Indicates Operational Control.

Two field supervisors were selected and assumed the operational authority at field or district level. The intent was to provide a free flow of direct communication from Headquarters to the operational level without layering and delay. The divisional commander assumed the position of project director. Thus, clear lines of supervision and command were established with a limited span of control. It appeared that for the S.T.E.P. Program to be successful, the operational task force and its director would maintain organizational status to effectively carry out its mission.

3. Selection of Personnel

Eleven recruit patrolmen were selected for the S.T.E.P. Program Task Force in North Dakota, with two veteran highly skilled and professionally trained Sergeants serving as field commanders in charge of the field supervision of the S.T.E.P. Task Force. The departmental decision to utilize recruit patrolmen was partially due to the factor of convenience. The recruit officers had just completed twenty weeks of intensive training at the North Dakota Highway Patrol Training Academy. Training received by the Task Force officers included such items as Traffic Law, Traffic Law Enforcement, Accident Investigation, Traffic Direction and Control, and other traffic related subjects. (See North Dakota S.T.E.P. plan regarding selection and training, section 3-C, part 1 administration.) A specific session was

held with the S.T.E.P. Task Force setting forth such items as the programs objectives with emphasis on the part the Task Force would contribute to it's success or failure, the necessity for quality enforcement rather than quantity, and directed at those accident producing violations determined to be predominant and peculiar to the site and counter-measure employed. No ticket production quotas were set. Retraining of the S.T.E.P. Task Force was accomplished through an eight hour monthly meeting with the Project Director and field supervisors being present. At various meetings other interested persons, such as Highway Department engineers, county prosecutors, county judges, Governor's representative, and other interested persons such as the news media, etc., were invited to attend and participate in the discussion of S.T.E.P. with re-emphasis of it's purposes, objectives, and the apparent affects of the program.

Where have we been?

Where are we now?

What direction are we to proceed?

These would be apparent questions that need to be answered in order to maintain the Task Force, Supervisors, and the Project Director all on the same course and direct it toward the same objective.

4. Data Processing for S.T.E.P.

The data requirements for S.T.E.P. were pre-established by the Department of Transportation. The system was

programmed to fit their requirements.

From a managerial standpoint, one of the largest problems facing the S.T.E.P. Program in North Dakota was the lack of control for input data into the computer system. A Central Data Processing Department exists in this State which is controlled by a separate department. It became necessary to develop in-house a system of transferring the data from the source document to a form to be utilized as a vehicle in which the data was punched and placed into the system. This was accomplished through the use of a transfer sheet and proved to be very valuable. Utilizing this system, any decision-making as to coding the source document was decided in-house and number of coding errors were reduced to a minimum. Probably of equal importance, the source document did not leave the Department and it's security is maintained. Base data gathering proved to be most difficult. The system required by the Department of Transportation was in no way compatible with the data being utilized by the Department and resulted in a manual retrieval of the source document for recoding to meet the requirements of the Department of Transportation. On-going historical data prior to S.T.E.P. and its data gathering was designed by the program to meet the needs of the various agencies involved. The North Dakota State Highway Patrol employed a programmer within the organization and as such was in a position to meet the requests

DATA ELEMENTS FOR NECESSARY BASE INFORMATION
FOR PREVIOUS FIVE YEARS

I. ACCIDENTS

A. Time:

1. Date
2. Time of day
3. Day of week

B. Location:

1. Highway number
2. Mile post (nearest 10th)
3. At intersection (County node number)
4. Type of location
 - a. Roadway
 - b. Off roadway
 - c. Intersection
 - d. Bridge
 - e. Railroad crossing
 - f. Ramp

C. Type of Collision:

1. Overturning
2. Other non-collision
3. Pedestrian
4. Other motor vehicle
5. Parked motor vehicle
6. Railroad train
7. Animal
8. Fixed object
9. Other

D. Driver Information:

1. Sex
2. Age
3. Ejected
4. Class injury
5. Restraining device

E. Vehicle Information:

1. Year
2. Model
3. Type
4. Defects
5. Estimate of damage

F. Occupant Information:

1. Seat position
2. Ejected
3. Class injury
4. Restraining device

G. Accident Severity:

1. Fatal
2. Personal injury
3. Property damage

H. Violation Indicated:

1. Collision violation indicated
2. Associated violations
3. Specific offense charged
4. Other offenses charged

I. Weather

J. Light

- K. Road Surface
- L. Road Defects
- M. Visual Obstruction
- N. Traffic Control
- O. Driver Condition
- P. Driver Action

II. TRAFFIC CITATIONS AND ARRESTS

A. Location:

1. Name and number of highway
2. Name and number of intersecting highway, street, or railroad
3. Milepost location or distance to nearest permanent landmark

B. Citation Arrest Information:

1. Date
2. Time of day
3. Day of week
4. Violation
5. In accident (yes or no)
6. Unit number (state patrol, county sheriff)
7. Driver's residence - in state or out of state
8. Under the influence of intoxicating liquor (yes or no)

III. COURT ACTION

A. Citation or Arrest:

1. Citation number
2. Offense:

- a. Charge (with what offense)
 - b. Tried (on what offense)
3. Date of trial
4. Judge
5. Place of judication:
 - a. County court
 - b. District court
 - c. Juvenile court
6. Disposition:
 - a. Fine (the amount)
 - b. Jail (number of days)
 - c. Fine and jail
 - d. Fine suspended
 - e. Jail suspended
 - f. Probation
 - g. Traffic school
7. Not guilty
8. Nolle PROSSED
9. Dismissed
10. Case continued

for data by departmental management. Thus, management had determined it necessary to train an in-house person to present the views of this enforcement agency with an understanding of departmental needs of the source documentation input and designed output rather than to rely on non-police oriented personnel for programming, coding, etc. The development of the data program to fit the requirements of the Department of Transportation were programmed separately and distinct from the North Dakota State Highway Patrol regular format. Interfacing of the two data systems did not appear to be compatible, thus S.T.E.P. data remains separated and without influence from on-going departmental data. We would suggest that where a S.T.E.P. Program is to be implemented, decisions must be arrived at during the planning stages.

1. What are the problems?
2. What are the goals and objectives?
3. What base data is necessary to identify the problem.
4. That on-going data collection is compatible with base data for analysis and evaluation.

Emphasis must be placed on base data and it's validity, if the program is to be effective and used for management and evaluation purposes. The validity in determining effectiveness of a selective enforcement program is dependant upon the base data and data collection.

Management must be able to rely on valid data dissecting the accident problems and their causation factors within their respective jurisdictions. Without this data from which to plan, it is impossible to document the effectiveness or non-effectiveness of their efforts. The part of planning for a selective enforcement program after establishing the objectives, the locations, and the counter-measures to be employed, agencies such as traffic engineers, licensing authorities, prosecutors, courts, and others that would be directly affected, should be brought into the plan for their contribution to the program. For a program to be successful, the fullest co-operation is necessary from all agencies involved. An example is a court that is not convinced of the purpose, objectives, and ultimate goal of the program from the beginning would tend to hamper and virtually destroy the desired affect of an enforcement counter-measure through lack of understanding and adverse adjudication.

5. Public Information

Public information is a part of the planning process and is essential. A program of public information, schedule by time, is of the utmost importance. An ill-informed media can create unfavorable public opinion and hamper the acceptance of the S.T.E.P. Program. Daily information to the news media prior to the actual on the street or highway activity of the Task Force is vital. An informed public is a receptive public. Other forms

of public information such as brochures, civic and public organizational meetings setting further the purposes and objectives of the program, are desirable.

C. Grand Forks County Experiment

1. Enforcement

The Grand Forks County Selective Traffic Enforcement Program began with the Task Force on site and operational 1 August 1972 and continued through 31 December 1973, a total span of 17 months.

The counter-measures of line patrol and stationary conspicuous observation were utilized throughout the experiment. The geographical boundaries encompassed the entire county and the S.T.E.P. Task Force operated on the state and federal highway system, a total of 197 miles of highway. Eleven Patrolmen and two Sergeants (supervisors) were assigned to the S.T.E.P. Task Force. Manpower assignment was subdivided into three basic shifts with overlap time during the high accident time frequency.

1. Shift 1 - 7 a.m. - 4 p.m.
2. Shift 2 - 1 p.m. - 10 p.m.
3. Shift 3 - 6 p.m. - 3 a.m.

Officers were assigned a shift for a two week period of time before rotation. A "location schedule" further reduced the "time schedule", thus indicating the time period and counter-measure to be employed on a specific S.T.E.P. site. The time and volume distribution of accidents

indicated a need for a manpower distribution to match the historical accident problem; i.e. approximately 50% of the rural traffic accidents on the state and federal highway system occurred on Highway #2, designated beat of 18 miles of highway. This stretch of highway included one high accident frequency intersection, thus 50% of the total available man-hours of time for patrol were assigned to this specific section of highway, including the intersection.

The vehicles assigned to the S.T.E.P. Task Force for patrol were visible and conspicuously marked for ready identification by the motoring public.

The enforcement policy for the S.T.E.P. Task Force also commensurated with that of the other districts of the North Dakota State Highway Patrol. Special emphasis was placed on enforcement of identified accident producing violations. A S.T.E.P. officers handbook was developed setting forth:

1. The purposes and objectives of S.T.E.P.
2. The organizational structure indicating the position of S.T.E.P. within the structure.
3. A map indicating the area with boundaries of S.T.E.P. responsibilities.
4. The counter-measures to be employed by site and experiment.
5. The S.T.E.P. Task Force specific duties and responsibilities.

6. Under what circumstances deviation from an assigned schedule would be permitted.

This handbook was also distributed to the District Commander and personnel of the Fourth Highway Patrol District.

2. Public Information

An informational meeting was held approximately 10 days prior to the activation of the S.T.E.P. Task Force with the news media present. Prepared informational sheets were distributed to the various representatives and following a presentation by the Project Director and Superintendent of the North Dakota State Highway Patrol, a question and answer session followed. Emphasis was placed on the problem, why Grand Forks County was selected and what the goals and objectives of the Program were. We would emphasize that an informed media is usually a co-operative media and that periodic meetings were held with the media keeping them informed and abreast of the Program's development throughout the time period of S.T.E.P. A brochure setting forth the goals and objectives, the purposes, and counter-measures to be applied had been developed and as a part of the public information program were distributed at public and civic meetings where a member of the S.T.E.P. Task Force, Field Supervisors, or the Project Director made a presentation on S.T.E.P. Each contact enforcement or service made by a S.T.E.P. officer, the person

contacted received a copy of the brochure as an added awareness, particularly to the errant motorist. 5,000 S.T.E.P. brochures were distributed in Grand Forks County during the 17 months of the S.T.E.P. Task Force operation. The brochure was revised periodically during this period of time tending to up-date it's contents.

3. The Prosecutor and the Courts

Public officials were invited to attend a meeting prior to activating the S.T.E.P. Task Force.

These included:

1. County Commissioners
(The governing body for the county)
2. The Grand Forks City Commissioner
3. The County Prosecutor
who would prosecute S.T.E.P.
violations and arrests.
4. The County Court Judge
who would be responsible for the
judication of S.T.E.P. violations and arrests.

Factual presentation was made to the officials including:

1. The purposes and objectives of S.T.E.P.
2. The counter-measures to be employed in the S.T.E.P. Program.
3. The source of finance for the additional manpower and equipment.
4. The availability of finance assistance

to the prosecutor and the court based on the anticipated impact on the prosecutor and court activities.

5. The Possible Duration of the Experiment. Periodic meetings were scheduled with the S.T.E.P. Task Force present for input from the prosecutor and the court observations. We would stress the importance of obtaining the co-operation of the prosecutors office and the court prior to activating a selective enforcement Task Force in a S.T.E.P. area. It is of the utmost importance that the prosecutor and the court be well informed of the purposes and objectives and the ultimate goal of a S.T.E.P. Program.

4. Problems Encountered

Operational problems in the Grand Forks County experiment were practically non-existent. The organizational status of the Task Force contributed to the lack of operational problems in the field. Radio communications manned by personnel not under the control of the North Dakota State Highway Patrol often requested the assistance of S.T.E.P. Task Force units to investigate accidents and provide non-S.T.E.P. services at locations other than those designated for S.T.E.P. responsibilities. The requests were denied without authority from a field supervisor. Administrative problems developed primarily

in the public information program with the lack of official progressive evaluation and analysis of the S.T.E.P. Program.

We would recommend, in the future for the Selective Traffic Enforcement Programs, that the data be submitted directly to the evaluator for analysis and a copy of that data sent to the Department of Transportation. We would also recommend that the data requirements for a program be jointly developed by the Department of Transportation, the evaluator, and the Project Director. A pre-set gathering format for a municipality would not necessarily apply to a rural environment. As the Grand Forks County experiment progressed, on-going data indicated a reduction in traffic accidents and fatalities over the entire 17 month period of time. It is interesting to note that with the beginning of the second year of S.T.E.P., traffic accidents continued to decline for the remaining period of the active Task Force participation in the Grand Forks County Program. It is the opinion of the Project Director that the curtailment of the Grand Forks County Program was pre-mature and the reduction of accidents had not reached a point of no return. No substantial decrease in the number of speeding violations was noted for the first nine months of the experiment at which time a gradual decline could be observed. Conversely, the apprehension rate of the D.W.I. driver did not appear

to change significantly over the entire 17 month period of time. It is the opinion of the Project Director, by incorporating a well-planned public information program prior to the activating of a S.T.E.P. Program Task Force and creating an awareness on the part of the public of the purposes and objectives of a concentrated enforcement program, that traffic accidents and their severity can be reduced. We would highly recommend that factual historical base data be developed in the planning stages and that on-going data be compatible with the historical for factual evaluation and emphasis. The effectiveness or non-effectiveness of a program cannot be substantiated without a factual base from which to begin. It is the opinion of the writer that the counter-measures of line patrol and conspicuous stationary observation combined with an aggressive enforcement policy aimed at quality rather than quantity can reduce traffic accidents and accident severity.

HEADQUARTERS
NORTH DAKOTA HIGHWAY PATROL
Bismarck, North Dakota

GRAND FORKS COUNTY "STEP" EVALUATION

UNOFFICIAL NEWS RELEASE

Accidents 1969 - 1970 - 1971 (averages)

YEAR	Personal Injury	Persons Killed	Injury Accidents	Fatal Accidents	Property Damage	TOTAL
1969	207	15	91	11	209	311
1970	235	9	129	9	230	368
1971	199	13	115	10	254	379
TOTAL	641	37	335	30	693	1058
Average	214	12.3	112	10	231	353
1972	172	5	106	5	197	308
% of Change	- 14%	-62%	- 05%	-50%	- 14%	- 12%

THE "STEP" TASK FORCE BECAME OPERATIONAL 1 AUGUST 1972.

1973	139	5	90	4	195	289
% of Change	- 34%	-62%	- 19%	-60%	- 15%	- 18%

During the year of 1973 in Grand Forks County a total economic savings of \$ 1,786,000.00 in personal injury, property damage, and fatal accidents have occurred. Economic loss based on Department of Transportation monetary allocation for death, injury, and property damage loss.

Exhibit 11

HEADQUARTERS
NORTH DAKOTA HIGHWAY PATROL
Bismarck, North Dakota

GRAND FORKS COUNTY "STEP" EVALUATION

UNOFFICIAL NEWS RELEASE

Highway No. 2 Grand Forks west 18 miles.

Approximately 50% of the total Patrol effort of "STEP" was expended on this stretch of highway. Coverage varied from 21 hours to 24 hours per day based on the historical base data. Two basic accident counter-measures were employed:

1. Line Patrol and,
2. Stationary conspicuous observation.

All units were well marked and all enforcement in accordance with existing Highway Patrol policy.

A comparison is made for a period of seventeen months from a base - 1 August 1970 through 31 December 1971 with the STEP operational data recorded from 1 August 1972 through 31 December 1973.

YEAR	Personal Injury	Persons Killed	Fatal Accidents	Injury Accidents	Property Damage	TOTAL
1970-71	93	9	8	47	66	120
1972-73	42	1	1	25	57	83
% of Change	-54%	-88%	-87%	-42%	-13%	- 30%

From an economic standpoint the savings in personal injury, death, and property damage would exceed \$1,830,000.00 as related to a cost factor of approximately \$150,000.00 or a ratio of return at \$12.00 for each dollar invested.

Finally it is most interesting to note:

Since 1 May 1973 through 1 July 1974 only two (2) rural traffic fatalities have occurred in Grand Forks County - a period of 15 months. As related to a past 5 year average of 13.5 fatalities per year (12 months) or the equivalent of 16 for this time period based on past statistics.

The Task Force was moved to Cass County 1 January 1974 and to date, no traffic fatalities have been recorded in that county.

Economic loss based on Department of Transportation monetary allocation for death, injury, and property damage loss.

"STEP"

TRAFFIC FATALITIES - GRAND FORKS COUNTY

1970 - 1974

	1970	1971	1972	1973	1974
JANUARY	2	0	1	0	0
FEBRUARY	0	0	0	1	0
MARCH	0	0	0	2	0
APRIL	1	3	2	1	0
MAY	1	3	0	0	1
JUNE	1	1	3	0	0
JULY	1	0	1	0	0
AUGUST	2	2	1	0	0
SEPTEMBER	3	1	1	0	2
OCTOBER	0	4	1	0	0
NOVEMBER	1	2	1	1	3
DECEMBER	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTALS	13	16	12	5	6

Exhibit 13

Grand Forks County

A C C I D E N T S

AUGUST 1972 - 25 accidents - 1 fatality - August 6
SEPTEMBER 1972 - 34 accidents - 1 fatality - September 21
OCTOBER 1972 - 38 accidents - 1 fatality - October 26
NOVEMBER 1972 - 22 accidents - 1 fatality - November 30
DECEMBER 1972 - 38 accidents - no fatalities
JANUARY 1973 - 19 accidents - no fatalities
FEBRUARY 1973 - 31 accidents - 1 fatality - February 2
MARCH 1973 - 17 accidents - 2 fatalities - March 8 and 11
APRIL 1973 - 23 accidents - 1 fatality - April 17
MAY 1973 - 28 accidents - no fatalities
JUNE 1973 - 20 accidents - no fatalities
JULY 1973 - 27 accidents - no fatalities
AUGUST 1973 - 20 accidents - no fatalities
SEPTEMBER 1973 - 31 accidents - no fatalities
OCTOBER 1973 - 25 accidents - no fatalities
NOVEMBER 1973 - 29 accidents - 1 fatality - November 3
DECEMBER 1973 - 34 accidents - no fatalities

(total number of accidents investigated in Grand Forks
County by STEP Task Force and District #4 personnel.)

CITATIONS

August 1972 - December 1973

	SPEED	DWI	OPEN. CONT.	RIGHT O-WAY	IMPR. TURN	STOP SIGN	IMPR. PASS.	FOL. TOO CLOSE	OTHER HAZ.	OTHER NON-HAZ.	DRIVER LICENSE	TTL
August	94	20	17	1	34	28	4	3	22	16	36	275
September	118	26	58	0	1	30	11	3	33	47	45	372
October	91	25	20	0	1	23	2	2	33	28	26	251
November	87	16	18	0	2	24	4	0	24	10	27	212
December	74	12	17	0	1	44	13	4	32	7	22	226
January	114	19	16	0	1	33	6	1	21	20	24	255
February	123	21	19	6	0	20	9	1	17	9	21	246
March	100	34	24	0	2	15	7	2	13	48	33	278
April	86	11	9	2	1	4	8	0	28	67	29	245
May	47	25	26	5	1	16	6	0	34	58	43	261
June	56	29	26	2	0	13	9	0	41	31	36	243
July	54	17	18	5	3	10	6	1	40	15	26	195
August	47	25	12	2	1	19	9	1	40	19	30	205
September	96	21	22	2	0	12	4	0	23	11	39	230
October	41	7	6	1	1	6	2	1	9	0	21	95
November	52	8	6	0	0	2	1	0	5	1	9	84
December	13	7	4	1	0	4	0	0	3	0	4	36
TOTALS	1293	323	318	27	49	303	101	19	418	387	471	3709

Note -- From August to December 1973 the S.T.E.P. Task Force was in the process of a transition to the Cass County program. Manpower was reduced to 7 officers in September to 4 officers in November and one officer in Grand Forks County on December 31, 1973.

Exhibit 15

(40)

III. CASS COUNTY S.T.E.P.

A. Population and Physical Environment of Cass County

1. Population

- a. Cass County (1970 Census) has a total population of 73,653 people.
- b. The city of Fargo, which is the county seat of Cass County, is located on the Minnesota border in the extreme eastern portion of the county. It adjoins the city of Moorhead, Minnesota. The communities have a combined population of approximately 60,000 people.
- c. The North Dakota State University, an academic institution that registers approximately 6,000 students annually, is located in the city of Fargo. Many of the students reside in dormitories and are not counted as part of the local population.

2. Total Highway Mileage

The total highway network contains 3,429 miles of public highway, 179 miles of which is part of the state and federal highway system. Outside of the city of Fargo, the state and federal system would be classified as limited access. The state and federal system in Cass County generates approximately 292.5 miles of travel annually.

3. The Total Registered Vehicles

There are 54,876 vehicles registered in Cass County.

4. Total Licensed Drivers.

There are 47,133 licensed drivers in Cass County, 12.2% of state total.

B. Cass County Experiments

1. Radar Counter-Measure Experiment

a. The Experiment

During the period, 1 September through 31 October 1973, a radar counter-measure combined with a public information counter-measure were to be conducted to determine their affects on vehicle speed. U. S. Highway #81, a two lane through highway, is 15.5 miles in length within the confinement of Cass County and was selected for the second S.T.E.P. site. Historical data suggested speed was a significant factor in a number of accidents on this segment of highway. The posted speed limit, 65 miles per hour in daylight and 55 miles per hour at night, existed during the period under consideration.

b. Radar Counter-Measure

A 17 hour period of time each day was designated as high accident speed related time periods with speed surveys and enforcement to coincide. The objectives of the counter-measures are to determine how a strong public information program coupled with an extensive radar enforcement program would affect the distribution of speed.

c. Operational Counter-Measure Description

Six phases of operation were subdivided by time.

1. First week, 3 September through 9 September 1973, a radar speed and volume survey was conducted at five separate locations within the 15.5 miles of designated highway. The speed survey and vehicle

counts were obtained from unmarked vehicles. Records were maintained by the hour of day and day of the week and the number of vehicles surveyed and their speed.

No public information regarding the operation was released and no speed enforcement resulted during this period of time. 10,417 vehicles were recorded.

2. Second week, 10 September through 16 September, 1973, an extensive public information campaign was launched through the local news media placing emphasis on the fact that radar enforcement would commence. This public information program was conducted concurrently with a second week of volume and speed counts. No enforcement action was taken. 8,306 vehicles were recorded during this period of time.
3. The third phase, radar enforcement, 17 September through 7 October 1973, an intensive radar enforcement program was applied along with a continuing public information campaign utilizing a visible marked radar unit and varying its location approximately once each two hours within the 15.5 mile segment of highway.
4. Interim speed and volume count was conducted during 3 October through 15 October, 1973. During this period of time a speed and volume survey was conducted with a continuing public information campaign and 8,916 vehicles were recorded. The intent of this survey was to constitute a mid-point measurement

of compliance prior to resuming the final two weeks of enforcement. No enforcement action was taken during this period of time.

5. 15 October through 24 October 1973 - during this period of time the public information counter-measures and radar counter-measures were resumed. The visible marked patrol vehicles were also used.
6. 25 October through 31 October 1973, the S.T.H.P. Task Force conducted the final speed and volume count with 9,945 vehicles recorded.

d. Recommendations and Conclusions

From the data gathered indicating a substantial increase in compliance, it is evident that by combining the counter-measures of an extensive public information program coupled with the radar enforcement speed counter-measures, compliance can be attained. The added public awareness and, what would appear to be, the threat of enforcement will directly affect the vehicle speeds on the radar counter-measure section of highway.

A program format might consist of the following:

1. Survey a pre-determined number of vehicles under a three to five day period of time.
2. Announce impending radar speed control and continue this public information program through the entire period of enforcement.
3. Begin radar enforcement not less than two days after the public information program had been initiated.

4. Repeat the survey following a two week period of enforcement.
5. Repeat the survey periodically thereafter to determine the "halo" affect.

2. Cass County Experiment No. 2

a. Objectives

In Cass County, Experiment No. 2 was initially designated to apply selective enforcement techniques on a given stretch of highway utilizing the same counter-measures as applied in the earlier Grand Forks County experiment; line patrol and conspicuous stationary observation. The experiment was begun in September of 1973 and was to conclude in July of 1974. However, with the exception of the state and national 55 mph speed limit, the base data factors would be no longer valid and compatible with the on-going data. In addition, non-state Highway Patrol agencies reporting rural traffic accidents varied their reporting requirements; i.e., to report all accidents reported as opposed to the historical base data of reporting only statutorily those statutorily required as \$200 property damage, injury, or death.

The success or failure of this experiment hinged primarily on the on-going data and required further analysis by the evaluator.

The assignment of the S.T.E.P. Task Force personnel coincided with the historical data as to high accident frequency by time at this specific location. Highway #10, from Fargo west 5.5 miles, had been selected as an experi-

mental S.T.E.P. site. This highway is a four-lane trunk-type highway connecting the cities of West Fargo and Fargo with enforcement responsibility shared by the state and local government. The decision to add a roadside screening device as a DWI counter-measure was approved by the Department of Transportation and incorporated into the program. This counter-measure will be discussed independently. The objective for the Highway #10 experiment was changed by agreement with the evaluator to explore the possibility that if a relationship existed between manhours of time expended on patrol in a conspicuous manner and traffic accidents.

It was determined that by holding constant the effect of other variables, the manpower and accident relationship could be tested.

b. Manpower Assignment

The S.T.E.P. Task Force personnel were assigned on a fluctuating basis.

1. Manhours of time were increased from September 1973 to January 1974 from two officers to a maximum Task Force of 11 officers on patrol.
2. During the month of February 1974 manpower assignment remained at its peak, 11 officers.
3. The manhours were reduced during March and April to a low of six officers on patrol.
4. The month of May, enforcement and assignment was again increased with total strength of 11 officers on patrol.

5. From June through November manpower assignments were stabilized with an area patrol assignment with no specific concentration on Highway #10.

c. Conclusions

It was found that there was significant inverse relationship between the level of enforcement and the number of accidents occurring each month. This relationship held true even when the effects of such things as weather and seasonal trends were eliminated. This tends to support the contention that there was a measurable impact on accidents associated with S.T.E.P. in Cass County.

3. Portable Pre-Arrest Breath Testing Device 1 January - 30 December 1974
(Cass County Experiment No. 3)

a. Objectives

North Dakota State Highway Patrol and the S.T.E.P. Task Force utilized their alcohol pre-arrest screening devices (ALERT) as an aid in the detection and apprehension of drivers operating while under the influence of intoxicating liquor. The intent of the screening device was to remove the subjective judgement of an officer in cases where physical performance or an outward appearance make detection difficult. In the State of North Dakota the pre-arrest screening device can be used only to guide the officer in a determination of whether an arrest should be made. After an arrest is made an evidential test must be performed to determine the actual BAC level of the offender. The objective of the roadside screening device is to

determine its ability to aid officers in the detection and apprehension of two distinct types of DWI offenders.

1. To detect the offender with a BAC at or near the legal presumptuous limit of .10%.
2. To identify the offenders displaying non-visible signs and with a higher BAC level than .10%.

b. Results

A historical performance of the North Dakota State Highway Patrol officers was obtained and subdivided into two similar test groups. The DWI arrests for each officer was plotted on a class by average BAC level and separated by the intersection of the group averages. Seventy-eight officers participated in the experiment, 67 from the Highway Patrol and 11 from the Selective Traffic Enforcement Program. Thirty-four Highway Patrol officers were assigned to Group A and thirty-three to Group B. Group A was issued the ALERT device for the first half of the experiment from January to 18 May 1974. Group B, for the second half, were issued the ALERT device from 19 May through September 1974. The 11 S.T.E.P. Task Force officers were issued the screening device for the entire nine month period of time with the intent to be evaluated separately. Group A, during the first 4½ months, recorded 250 DWI arrests with a mean BAC level of .174%. Group A, from May 19 through September 30, 1974, an additional 240 DWI arrests without the use of the device

had a high BAC level of .1881%.

Group B, for the first 4½ months without the ALERT device, made 200 DWI arrests with a mean BAC level of .1761%.

For the period May 19 through September 30, 1974, 279 DWI arrests with a mean BAC level of .1743% were made.

There appeared to be an increase in the number of DWI apprehensions in the lower BAC level of .05% to .15% by those officers using the ALERT device. There did not appear to be any decrease in the higher blood alcohol level apprehension rate.

It is safe to conclude that through the utilization of a roadside screening device, the detection and apprehension of the DWI driver with lower BAC levels can be improved.

1. Officers with the ALERT device - .1744% BAC level.
2. Officers without the ALERT device - .1827% BAC level.

The total number of DWI apprehensions for the North Dakota State Highway Patrol increased approximately 56% in 1974 as related to 1973.

4. Special Speed Enforcement Study Marcy 3, 1975 - July 4, 1975 (Cass County Experiment No. 4)

A special speed enforcement study was designated to determine the most effective allocation of line patrolling officers needed to reduce speeding violations. A period of 18 weeks was designated to begin March 3, 1975 for the purpose of collecting vehicle speed data on two four-lane highway segments for comparison with different manpower levels. The objective: attempt to identify the optimal manpower levels needed to reduce speed.

a. Operational Plan

Two segments of four-lane highway were patrolled by the S.T.E.P. Task Force during a daytime eight hour shift (11 a.m. to 7 p.m.), five days a week. The segments are located on I-29 North of Fargo (milepost 65.254 to 92.138) and I-94 West of Route 18 (milepost 331.222 to 307:738). The enforcement counter-measure (P03) marked vehicle in moving observation was employed. The patrol units were dispatched at specific equal time intervals and traveled the entire distance of the target highways, in both directions. The patrol unit allocation was based upon all combinations of zero, two and four patrol units on the two selected highway segments, for the 18 week period (Table I). Using this plan, four S.T.E.P. officers were active at all times on the two highways. A fifth officer in an unmarked vehicle patrolled either location when no visible counter-measure was used. This enforcement plan was not used during inclement weather because speed pattern may be altered by weather conditions and not enforcement.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Week
4	0	0	0	2	0	4	2	0	2	2	2	4	4	0	4	2	4	I 29
0	4	4	4	2	4	0	2	4	2	2	2	0	0	4	0	2	0	I 94

TABLE I

The vehicles patrolling the northbound roadway of I-29 travelled at a speed of 50 MPH. The vehicles patrolling the southbound roadway patrolled at a speed of 55 MPH. On I-94, the eastbound patrol travelled at 50 MPH while those on westbound patrolled at 55 MPH. Any vehicles which were travelling at 60-64 MPH were stopped and written warnings were issued to the driver. Vehicles travelling at 65 MPH or greater were stopped and a citation was issued.

Two Traffic Data Recorders were to measure and record vehicle data at specified fixed intervals along both highways. They were to be placed at locations which divided the two target highways into six approximately equal increments. The target segment of Highway I-29 was 26.9 miles long and each segment was approximately 9 miles long. The TDR's were to be placed at or close to the 74 and 83 mileposts. The target segment of Highway I-94 was 23.5 miles long and was divided into segments almost 8 miles long. The TDR's were to be located at or close to the 323 and 315 mileposts. The specific locations were on open road, away from interchanges, rest areas, or inclines which might have influenced vehicle speeds.

b. The Traffic Data Recorders

Each TDR was used to measure and record vehicle speeds, traffic volumes, and various needed information for all

lanes in both directions of travel. No external power source was needed, so the availability of a power supply was not a consideration. The recorders are self-contained and operate with rechargeable batteries. They were equipped with insulation to allow operations in zero degree weather. When nighttime temperatures fell below zero, a S.T.E.P. supervisor was responsible for bringing the equipment inside for the night.

Vehicle data was recorded on magnetic tape cassettes by the TDR's. The North Dakota State Highway Patrol was responsible for collecting the cassettes and changing the batteries twice a week. The cassettes were forwarded to the Transportation Data Corporation to be converted into a workable format for analysis.

In addition to the speed data collected by the TDR's, weekly accident data from the target road segments was collected. Daily, weekly, and time of day speed distributions will be used for comparison with the different manpower levels to test the enforcement effectiveness over different time periods.

c. Conclusions

The Traffic Data Recording units, though functional for the first two or three weeks of time, had intermittent problems that were finally determined and were the result of the censoring part of the unit. Inclement weather in the form of snow, rain, and ice interrupted the data gathering during the later part of March and through the

entire month of April. Two units were initially received and installed. Intermittent problems developed as a result of vehicles with studded tires damaging the censor units and shorting them out. The studded tires also destroyed the tape placed at the leading edge of the censor cable. Moisture also proved to be a problem with the TDR extension cable for the hook-up from the recording unit to the censoring cable. The S.T.E.P. Task Force continued to patrol the designated section of highway as scheduled with the exception of three or four days when blizzard conditions existed.

Without any evaluation from the evaluator and a dissemination of the information on the tape, we are unable to determine whether or not the patrol counter-measures applied were effective in reducing the speed distribution on the two segments of highway.

CONCLUSIONS

In the Grand Forks County project, traffic accidents were significantly reduced. Over the entire 17 month period of time it is evident that by incorporating a well-planned public information program, prior to activating a STEP task force, it created an awareness on the part of the public. The purpose and objectives of a concentrated enforcement program is that traffic accidents and their severity can be reduced with the employment of countermeasures in the form of conspicuous, well-marked patrol vehicles, and employing the countermeasures of line patrol, and conspicuous stationary observation. The enforcement policy of the law enforcement agency must be aimed for quality rather than quantity. In Cass County, with emphasis placed on a well-planned public information program prior to and in connection with a concentrated enforcement effort, it is evident that by combining the countermeasures of an extensive public information program combined with the radar speed countermeasure compliance can be attained. The attitude of public awareness and what would appear to be the dread of enforcement will dramatically affect vehicle speeds and bring about compliance on a radar countermeasure section of highway.

Through the utilization of alcohol roadside screening devices, the detection and apprehension of the DWI driver with lower BAC levels can be improved. The study indicated an increase in the number of DWI apprehensions in the lower BAC level of .05% to .15% by those officers using the screening device. There did not appear to be any decrease in the higher blood alcohol apprehension rate.

In the correlation study of the levels of enforcement and the number of accidents occurring, an inverse relationship held true even when

the effects of such things as weather and seasonal trends were considered and eliminated. This would tend to support the contention there was a measurable impact associated with the levels of enforcement and traffic accidents.

The traffic data recording units were thus functional for the first two or three week period of time; inclement weather in the form of snow, rain, and ice hampered the data gathering to such an extent that the information provided was not sufficient to arrive at any valid conclusion.

(56)

For the STEP Program to be truly effective, it will require the support of YOU the individual motorist. We solicit your cooperation in reducing traffic violations and motor vehicle accidents on this highway.



SELECTIVE
TRAFFIC
ENFORCEMENT
PROGRAM

AUGUST 1, 1972

SELECTIVE TRAFFIC ENFORCEMENT PROGRAM

The National Highway Traffic Safety Administration has awarded the state of North Dakota in general, and the Highway Patrol in particular, a three-year Selective Traffic Enforcement Program contract. The STEP Project is a program which calls for the development of traffic enforcement countermeasures designed to reduce deaths, injury and property damage in areas where accidents are frequent and traffic violations are contributing factors. Statistics show that Grand Forks County is one of the areas in North Dakota which has experienced a high accident frequency rate.

During 1970-1971, 1,045 motor vehicle accidents occurred in rural Grand Forks County. Of these, 268 were classified as injury accidents resulting in various degrees of injuries to 467 people. Twenty-one fatal accidents occurred resulting in twenty-five deaths. The remaining number of accidents were classified as strictly property-damage accidents. The total economic loss is estimated at \$4,812,000. Economic losses are estimated at an average of \$140,000 per death, \$2,000 per injury and \$500 per personal property damage accident. The Selective Traffic Enforcement Program which we will embark upon August 1, 1972, is designed to reduce this tragic and economic loss to our citizens.

Grand Forks County has a large population residency quotient and vehicle registration. Approximately 10 percent of the state's population resides in the county. In addition, approximately 8500 students are enrolled at the University of North Dakota during the academic year. The adjoining city of East Grand Forks, Minnesota, has a population of approximately 7,500 and the Grand Forks Air Base located approximately 13 miles west of Grand Forks brings an additional influx of approximately 14,000 people into the area. Grand Forks is considered the trade area for an estimated 250,000 people. Approximately 35,000 North Dakota vehicles are registered in Grand Forks County. The multitude of people and vehicles located in this county and the commensurate high accident frequency rate justifies implementation in this area of a project such as the Selective Traffic Enforcement Program. The ultimate goal of this project is the reduction of traffic accidents through concentration by the North Dakota Highway Patrol upon those traffic law violations which have proven to be causative factors in traffic accidents.

Specific areas of the county will receive twenty-four hour enforcement coverage. Patrolmen will be assigned nine hour shifts, which will overlap, resulting in continued coverage of any specific area or location. Shift assignments include 7 a.m. - 4 p.m.,

3 p.m. - 12 midnight, and 11 p.m. - 8 a.m.

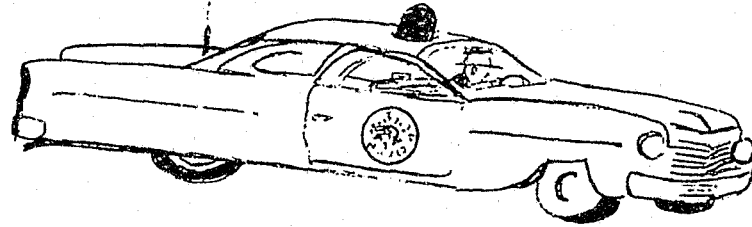
Enforcement efforts will be directed against accident causation violations such as speed too fast for conditions, failure to yield right-of-way, driving while under the influence, following too closely, etc.

Specific enforcement action that may be taken includes written warnings, issuance of citations, or physical arrest depending upon the seriousness of the violation. However, the STEP Project is not to be considered an exclusive police action. Other agencies intimately involved in this project include:

1. The Grand Forks County Court of Increased Jurisdiction
2. The Grand Forks County State's Attorney's Office
3. The Court Administrator
4. The Safety Responsibility Division
5. The Traffic Engineering Division of the North Dakota Highway Department
6. The Traffic Safety Programs Division of the North Dakota Highway Department

Informing the public of accident facts and figures and making them fully aware of a program such as the STEP Project will hopefully lead to voluntary compliance of traffic laws by motorists, resulting in a much-reduced accident-frequency rate.

NORTH DAKOTA HIGHWAY PATROL



SELECTIVE TRAFFIC ENFORCEMENT PROGRAM

CASS COUNTY

YOU ARE A PART OF THIS PROGRAM

WE NEED YOUR SUPPORT

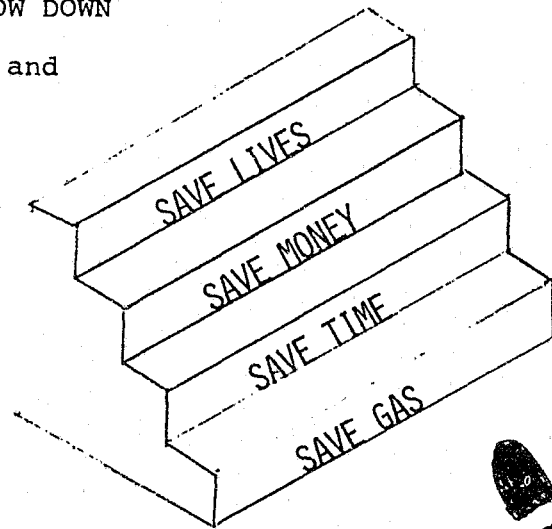
PLEASE DRIVE CAREFULLY

- AVOID ACCIDENTS -

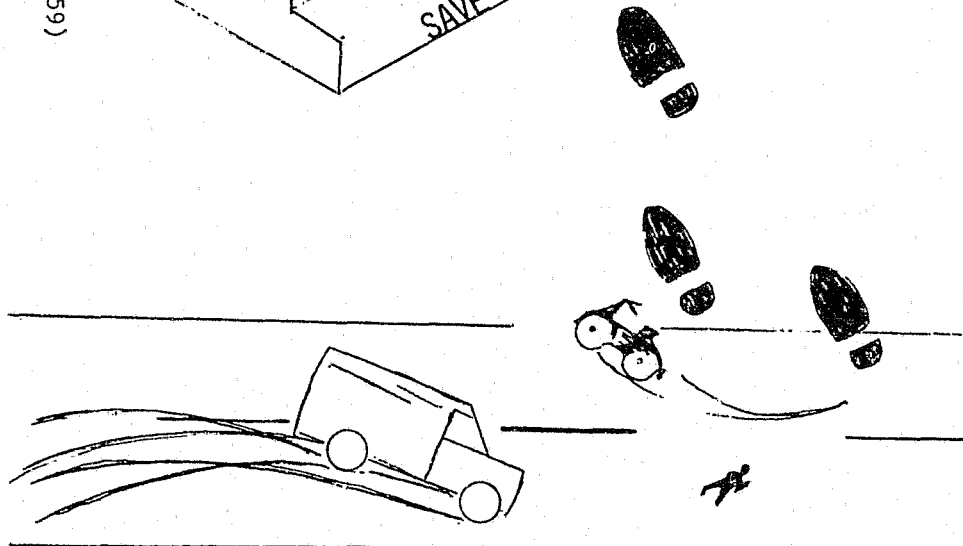
TAKE A STEP TOWARD
TRAFFIC SAFETY
AVOID ACCIDENTS

SLOW DOWN

and



(59)



NORTH DAKOTA HIGHWAY PATROL
SELECTIVE TRAFFIC ENFORCEMENT PROGRAM
CASS COUNTY

Since September 1, 1973, the motorists in Cass County have been involved in a special program known as S.T.E.P. (Selective Traffic Enforcement Program), funded by the National Highway Traffic Safety Administration.

U.S. Highway 81 from Fargo south to the Richland County line is presently a S.T.E.P. site.

In 1972, there were 84 accidents on this stretch of highway including:

- 1 Fatal accident
 - 11 Personal Injury accidents with 14 people injured
 - 72 Property Damage accidents, and
- Over a quarter million dollars in economic loss.

A survey has been conducted on U.S. 81 that reveals 22.5% of the vehicles are exceeding the posted speed limit and speed was a factor in at least 50% of the accidents in 1972.

We are operating Radar 17 hours each day as one of the countermeasures to reduce traffic accidents on this highway.

Please obey the speed limitations. Do YOUR part in reducing traffic accidents on this highway.

TRAFFIC ACCIDENT FACTS

NATIONWIDE - 1972

Total Killed 56,300
 (Pedestrians) (10,900)
 Total Injured 2,000,000
 Property Damage \$5,000,000,000

NORTH DAKOTA - 1972

Total Killed 208
 (Pedestrians) (17)
 Total Injured 5,256
 Property Damage \$7,384,500

CASS COUNTY - 1972

Total Killed 15
 (Pedestrians) (2)
 Total Injured 724
 Property Damage \$362,000

CASS COUNTY-U.S. #10--January 1,
 1972 to June 30, 1973

Total Killed 1
 Total Injured 29
 Property Damage \$53,000

"Current statistics reflect a general increase in the number of accidents... lets cooperate and start a downward trend."

NORTH
 DAKOTA
 STATE
 HIGHWAY
 PATROL

SAFETY

in

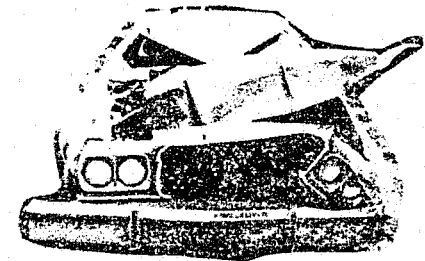
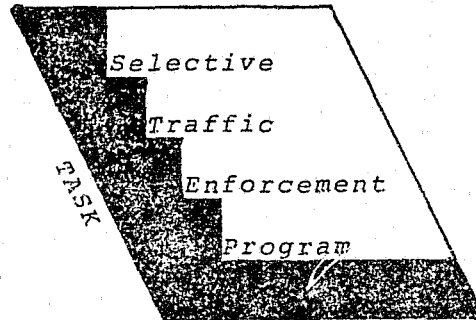
TRAFFIC

is

EMERGENCY

PRIORITY

TRAFFIC



NORTH DAKOTA HIGHWAY PATROL

Yes, safety in traffic is an emergency priority.

The spiraling statistics reflect an increase in property damage, injury, and fatal accidents.

To combat this problem, the state of North Dakota has been awarded a STEP (Selective Traffic Enforcement Program) by the National Highway Traffic Safety Administration.

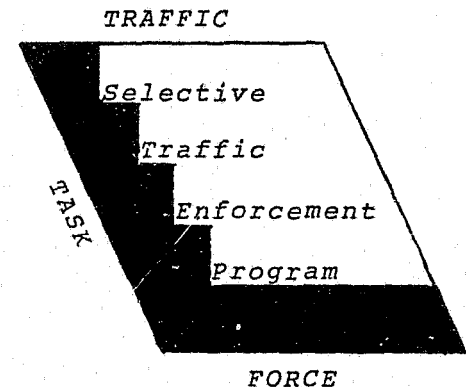
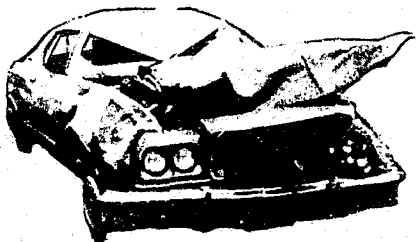
The North Dakota Highway Patrol will concentrate their STEP activities in Cass County, specifically on highway U.S. #10 between Fargo and West Fargo.

A thirteen-man traffic task force has been assigned to the high-accident locations, concentrating on those hazardous violations known to be factors in traffic accidents. Enforcement action will be in the form of written warnings or traffic citations.

Don't become a traffic statistic.

The goal of STEP is to reduce the frequency and severity of traffic accidents. Enforcement and safety officials know that selective enforcement can be effective. STEP methods have been utilized in other areas of the country and the state of North Dakota and a noticeable reduction in the number of accidents was realized.

However, for STEP to be truly effective, we must have your cooperation and support.





END