A BYPASS PROPOSAL

FOR

DOVER, NEW HAMPSHIRE

A BYPASS PROPOSAL

FOR

DOVER, NEW HAMPSHIRE

A Thesis submitted to
the Department of Civil Engineering,
University of New Hampshire

by

JOHN E. PETERSON
and
DAVID R. PETTIGREW

as a partial fulfilment of the requirements for
a Bachelor of Science Degree in Civil Engineering.

JUNE, 1949

The Civil Engineering Department of the University of New Hampshire assumes no responsibility for the views or opinions contained herein.

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Grant L. Davis, City Engineer, Dover, N. H.

Homer Richardson, Division Engineer, N. H. State Highway Dept.

Charles O. Dawson, Professor of Civil Engineering, University of New Hampshire

1 Wibird Street
Portsmouth, N. H.
June, 1949

Professor Edmond W. Bowler
Department of Civil Engineering
University of New Hampshire
Durham, New Hampshire

Dear Sir:

Submitted herein is our Thesis entitled "A Bypass Proposal for Dover, New Hampshire". This thesis is presented as a partial fulfilment of requirements for a Bachelor of Science Degree in Civil Engineering.

Respectfully submitted,

John E. Peterson

John E. Peterson

David R. Pettigrew

David R. Pettigrew

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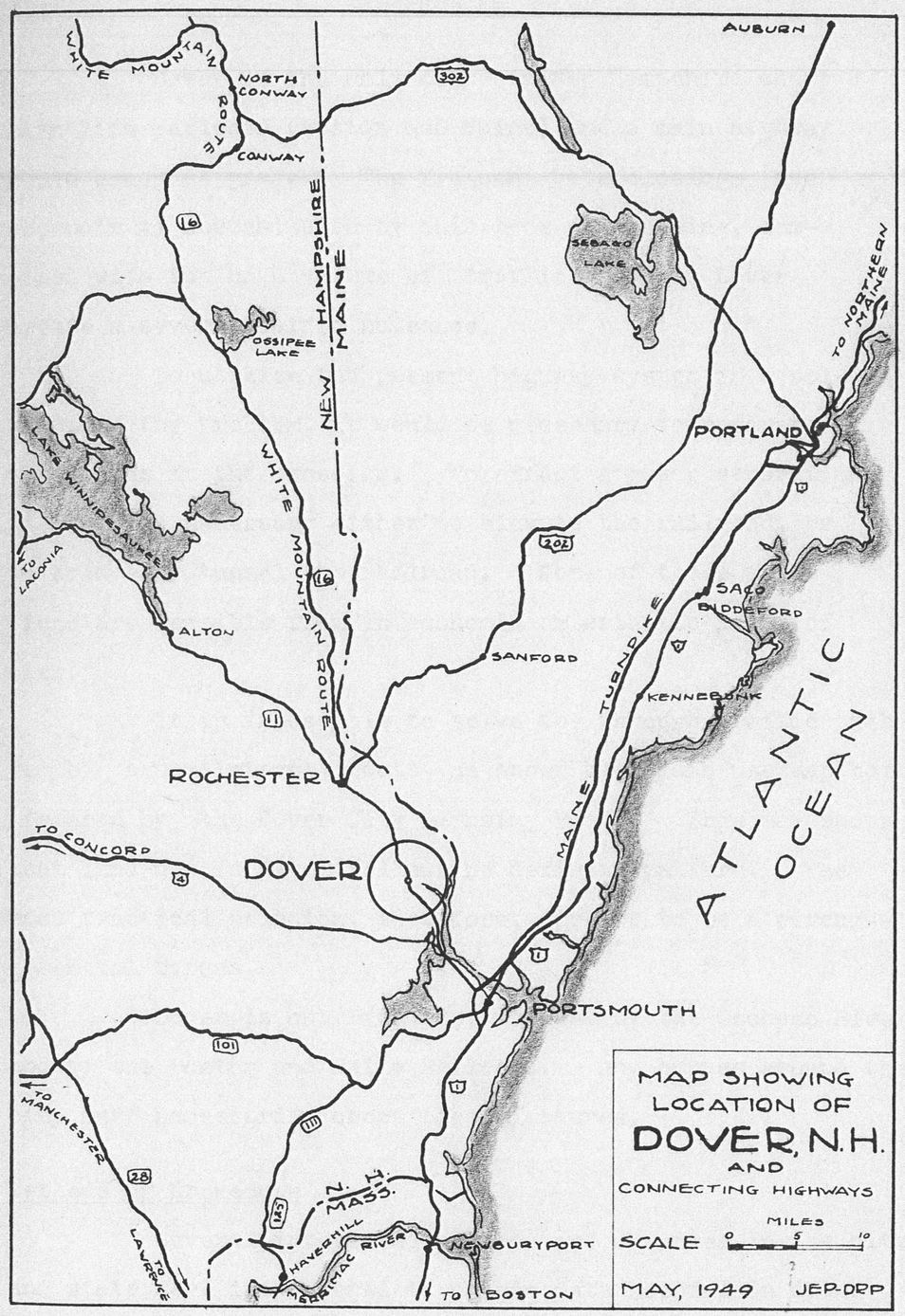
A BYPASS PROPOSAL FOR DOVER, NEW HAMPSHIRE

INTRODUCTION

Dover, N. H. is an industrial city of approximately 18,000 population, located in the southeast section of New Hampshire. It is on New Hampshire Route 16, the main thoroughfare to the White Mountains from the Seacoast Region.

The report which follows is necessarily of a general nature because of the limited amount of data available on the subject. The State Highway Department is presently planning a complete study of Dover's traffic problems and needs. It is hoped that this report will furnish some information to aid in alleviating Dover's traffic problem.


WHITE MOUNTAIN ROUTE
NORTH CONWAY
CONWAY
302
AUBURN
16
SEBAGO LAKE
NEW HAMPSHIRE
MAINE
OSSIPEE LAKE
TO NORTHERN MAINE
PORTLAND
LAKE WINNIPESAUKEE
WHITE MOUNTAIN ROUTE
TO LACONIA
202
SACO
BIDDEFORD
ALTON
SANFORD
TURNPIKE
KENNEBUNK
ATLANTIC OCEAN
ROCHESTER
TO CONCORD
DOVER
MAINE TURNPIKE
PORTSMOUTH
101
TO MANCHESTER
111
28
N. H.
MASS.
125
HAVERHILL
MERRIMAC RIVER
NEWBURYPORT
TO LAWRENCE
TO BOSTON
MAP SHOWING
LOCATION OF
DOVER, N.H.
AND
CONNECTING HIGHWAYS
SCALE
MILES
0
5
10
MAY, 1949
JEP-DRP

THE PROBLEM

Dover is the only city in New Hampshire where a main line railroad (Boston and Maine) and a main highway route cross at grade. The frequent gate closings (see Appendix A) necessitated by this type of crossing, combined with the high volume of traffic found in Dover create a severe traffic nuisance.

To utilize the present highway system in a solution of the problem, it would be necessary to separate the grades at the crossing. To effect a grade separation it would be necessary either to elevate the railroad, or to bridge or tunnel the railroad. None of these solutions are feasible from an economic or esthetic point of view.

It is impossible to solve the through traffic problem by a new internal route, as shown by a land use map being prepared by the Dover City Planning Board. This map shows that land use in Dover follows no definite pattern. The most practical solution, therefore, appears to be a circumferential bypass.

Dover is cut from east to west by the Cocheco River and by the Boston and Maine Railroad. Any bypass around the city must necessarily cross these features.

Methods of Procedure

Several interested persons and agencies in the city and state were interviewed to obtain data helpful in determining the necessity of a bypass, and to discuss various

points of view relative to the problem.

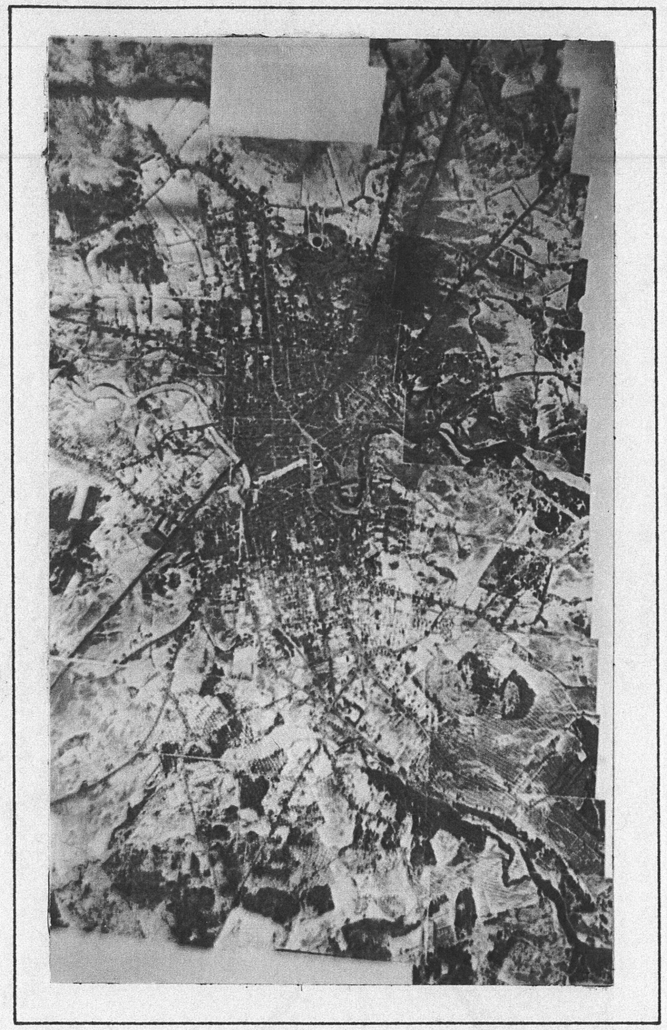
To lay out a preliminary route, it was necessary to know something of topography and land use. Topography was obtained from a 1:25000 scale U. S. Army Engineer Corps map. It was decided that an aerial photograph of the area would furnish sufficient data on land use. No such photograph was available, but through the cooperation of the Planning Survey Division of the State Highway Department three flight strips were flown, and the negatives furnished us. From these negatives a mosaic covering the central section of Dover was prepared (see page 5).

From the topographic map and mosaic, tentative alignments furnishing satisfactory grades were laid out. A personal reconnaissance was then undertaken for the purpose of adjusting these tentative routes to furnish better alignment, grades, and a minimum of property damage.

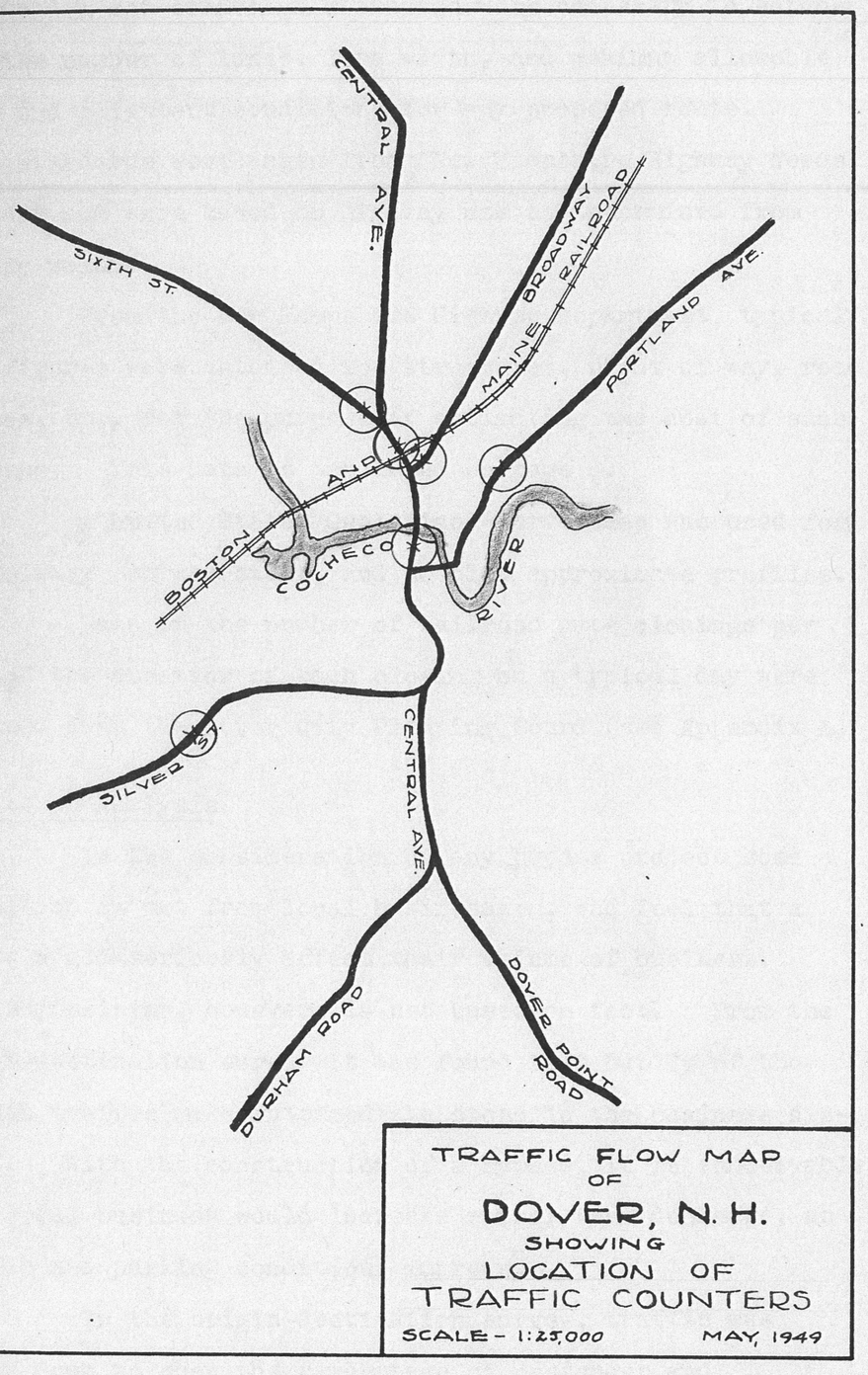
Information required

Traffic recorders, which automatically count and record hourly traffic volumes, were used to determine average and peak traffic volumes. These recorders were located as shown on page 6. The main recorder on Central Avenue is in continuous operation. The remaining recorders were operated on short irregular periods.

An origin- destination survey was necessary to analyze a cross-section of the total Dover traffic. Such a survey was made in the central business district in the summer of 1948.



A photograph of the mosaic used for land use study. The original mosaic is approximately 14 inches by 24 inches, with a scale of 1 inch to 930 feet.



TRAFFIC FLOW MAP
OF
DOVER, N. H.
SHOWING
LOCATION OF
TRAFFIC COUNTERS

SCALE - 1:25,000 MAY, 1949

A set of design standards were necessary to establish the number of lanes, lane width, and maximum allowable grade and alignment conditions for any proposed route. These standards were taken from "New Hampshire Highway Needs of 1948" and were based on highway use as determined from traffic volume.

From the New Hampshire Highway Department, typical cost figures were obtained for structures, right of way, road surface, etc. for the purpose of estimating the cost of such a bypass. This data is tabulated on page 8.

A United States Geological Survey map was used for preliminary survey study, and to plot approximate profiles.

Data on the number of railroad gate closings per day and the duration of each closing on a typical day were obtained from the Dover City Planning Board (see Appendix A).

Results of Analysis

In the consideration of any bypass project some opposition is met from local businessmen, who feel that a bypass would seriously affect their volume of business. This supposition, however, is not based on fact. From the origin-destination survey it was found that but 7% of the through traffic make intermediate stops in the business district. With the construction of a bypass, it is conceivable that local business would increase rather than decrease, as traffic and parking conditions improve.

In the origin-destination survey, traffic was broken down to show the percentage of passenger and

DATA USED IN ESTIMATING COST OF DOVER BYPASS

RURAL RIGHT OF WAY - 200 foot width

Woodland	$3000 per mile
Farmland	6000 " "
Houses	5000 each
Barns	2000 "

TWO LANE PAVEMENT

Pavement Type	Light Earth and Ledge Quantities	Medium Quantities	Heavy Quantities
Bituminous Macadam	$85,000	$130,000	$175,000
Asphaltic Concrete	90,000	135,000	180,000
Reinforced Cement Concrete	120,000	165,000	210,000

Above prices are for 12 foot lanes and 8 foot shoulders.

TRAFFIC CIRCLES $50,000

Cost of Structures in estimates determined from actual cost of comparable completed structures.

commercial vehicles, the trip purpose, origin of registry, etc. Resulting data is shown on the graphs on page 10.

The distribution of traffic flow was determined by analyzing the information obtained from the origin-destination survey. This data must necessarily be adjusted to compensate for inaccuracies inherent in this type of study. Since an insufficient number of permanent State Highway personnel are available for making these studies, temporary employes must be hired to augment their forces. These new employes do not become familiar with the system of compiling the data and with the general street layout until the survey is well under way. The motorist also resents being stopped for an interview, the purpose of which he does not fully understand. The combination of these facts make it extremely difficult for the analyzer to determine the true movement of traffic.

Certain assumptions had to be made in regard to the probable number of vehicles that would use the bypass if available. This was especially true in the case of the East and West feeder routes, and on roads where insufficient data was available. The graphs on pages 11 and 12 show the total traffic found and the flow of northbound through traffic. Thirty-eight per cent of the total traffic was through traffic. This percentage was determined by taking the mean of two separate origin-destination analyses.

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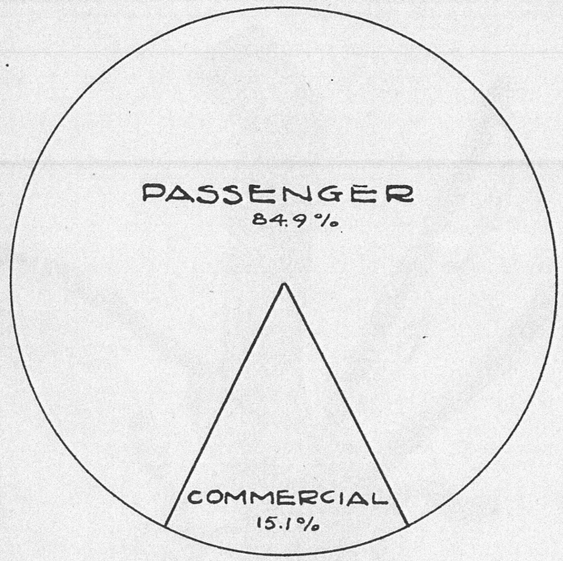
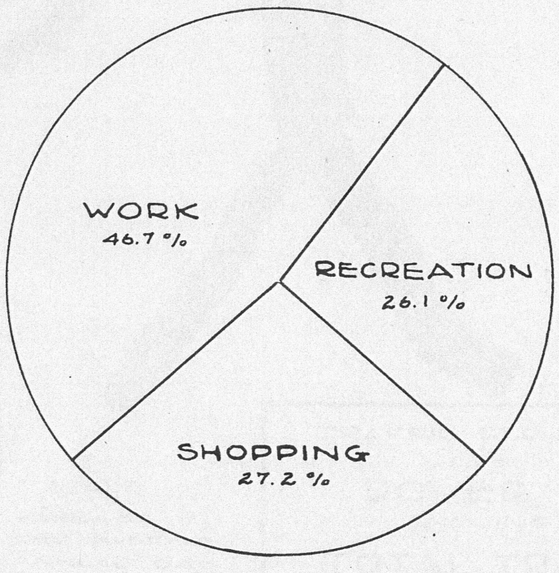
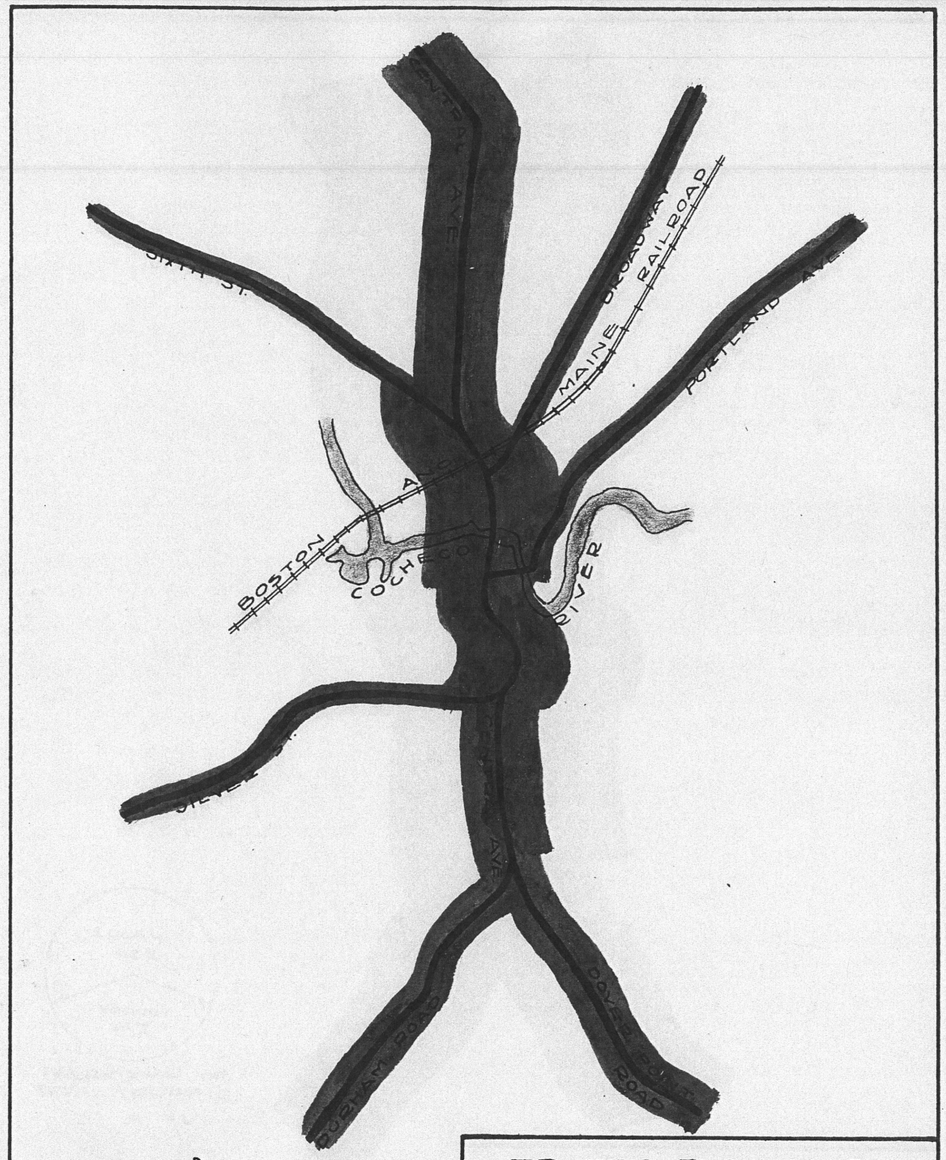
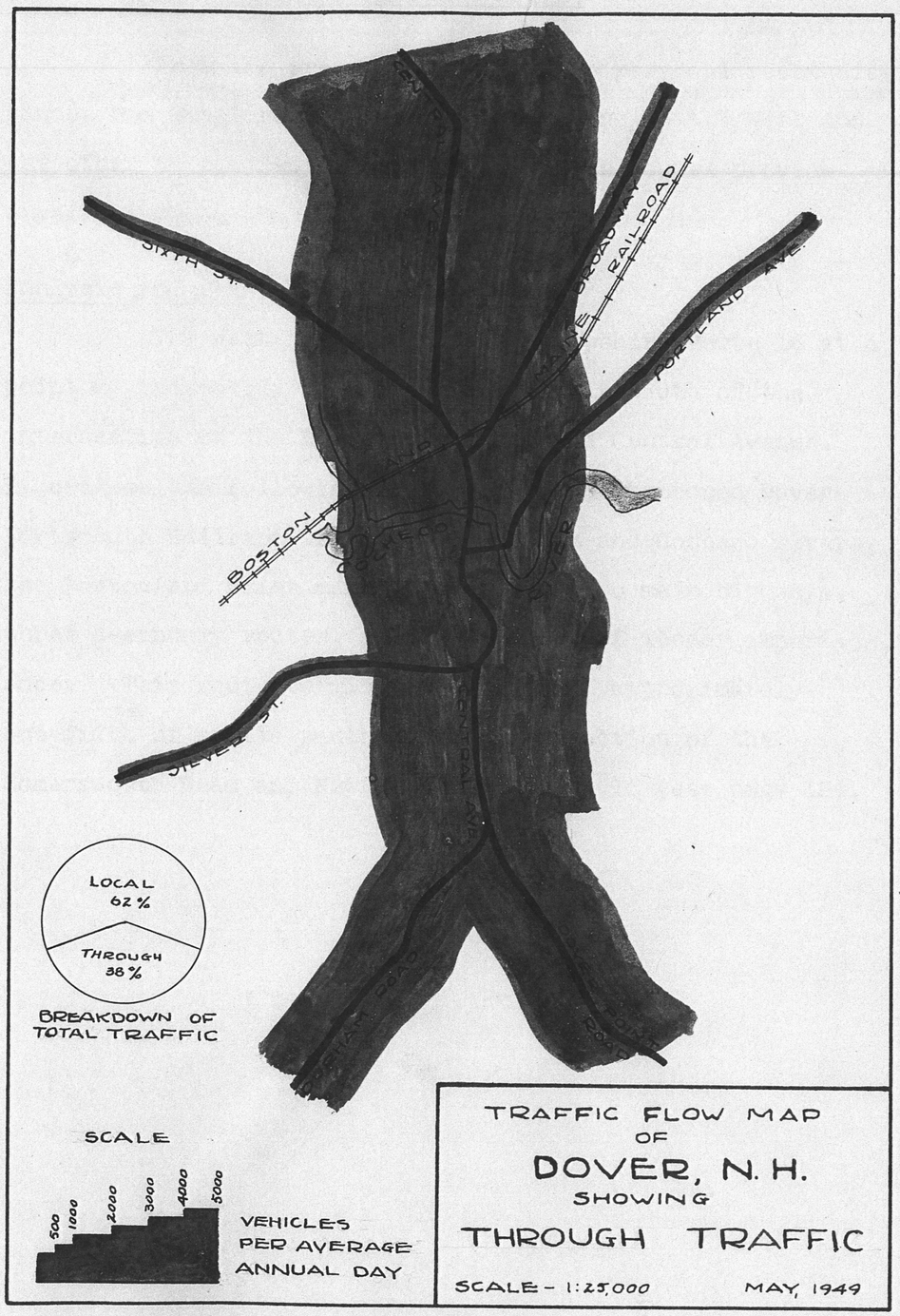


TYPE OF VEHICLE - DOVER, N. H.
FROM ORIGIN-DESTINATION STUDY OF TOTAL TRAFFIC



TRIP PURPOSE - DOVER, N. H.
FROM ORIGIN-DESTINATION STUDY OF TOTAL TRAFFIC


CENTRAL AVE
SIXTH ST.
MAINE
BROADWAY
RAILROAD
PORTLAND
BOSTON
COCHECO
RIVER
DOVER
ROCHESTER
SCALE
VEHICLES
PER AVERAGE
ANNUAL DAY
100
5000
10,000
20,000
TRAFFIC FLOW MAP
OF
DOVER, N. H.
SHOWING
TOTAL TRAFFIC
SCALE - 1:25,000
MAY, 1949


SIXTH ST.
BROADWAY
RAILROAD
PORTLAND AVE.
BOSTON
CENTRAL AVE.
CENTRAL ROAD
LOCAL
62 %
THROUGH
38 %
BREAKDOWN OF
TOTAL TRAFFIC
SCALE
500
1000
2000
3000
4000
5000
VEHICLES
PER AVERAGE
ANNUAL DAY
TRAFFIC FLOW MAP
OF
DOVER, N. H.
SHOWING
THROUGH TRAFFIC
SCALE - 1:25,000
MAY, 1949

TWO POSSIBLE ROUTES

From the preliminary study and personal reconnaissance, two final routes were laid out, one to the West and the other to the East of the city. Both routes provide excellent grade and alignment.

Analysis and Description of West Route

The West route leaves New Hampshire Route 16 at a point approximately five-eights of a mile south of the intersection of the Dover Point Road and Central Avenue. It crosses the following features:- the abandoned Dover-Portsmouth Railraod tracks, the Bellamy and Cocheco rivers, the Boston and Maine main-line tracks, two main highways, three secondary routes, and five routes of lesser importance. This route terminates at a point approximately one-fifth of a mile south of the intersection of the Somersworth Road and New Hampshire Route 16 (see page 15).

Advantages of the West Route

(1) The topography is gently rolling, with the result that cuts, fills, and grades may be kept to a minimum.

(2) This route would serve more vehicles from feeder routes.

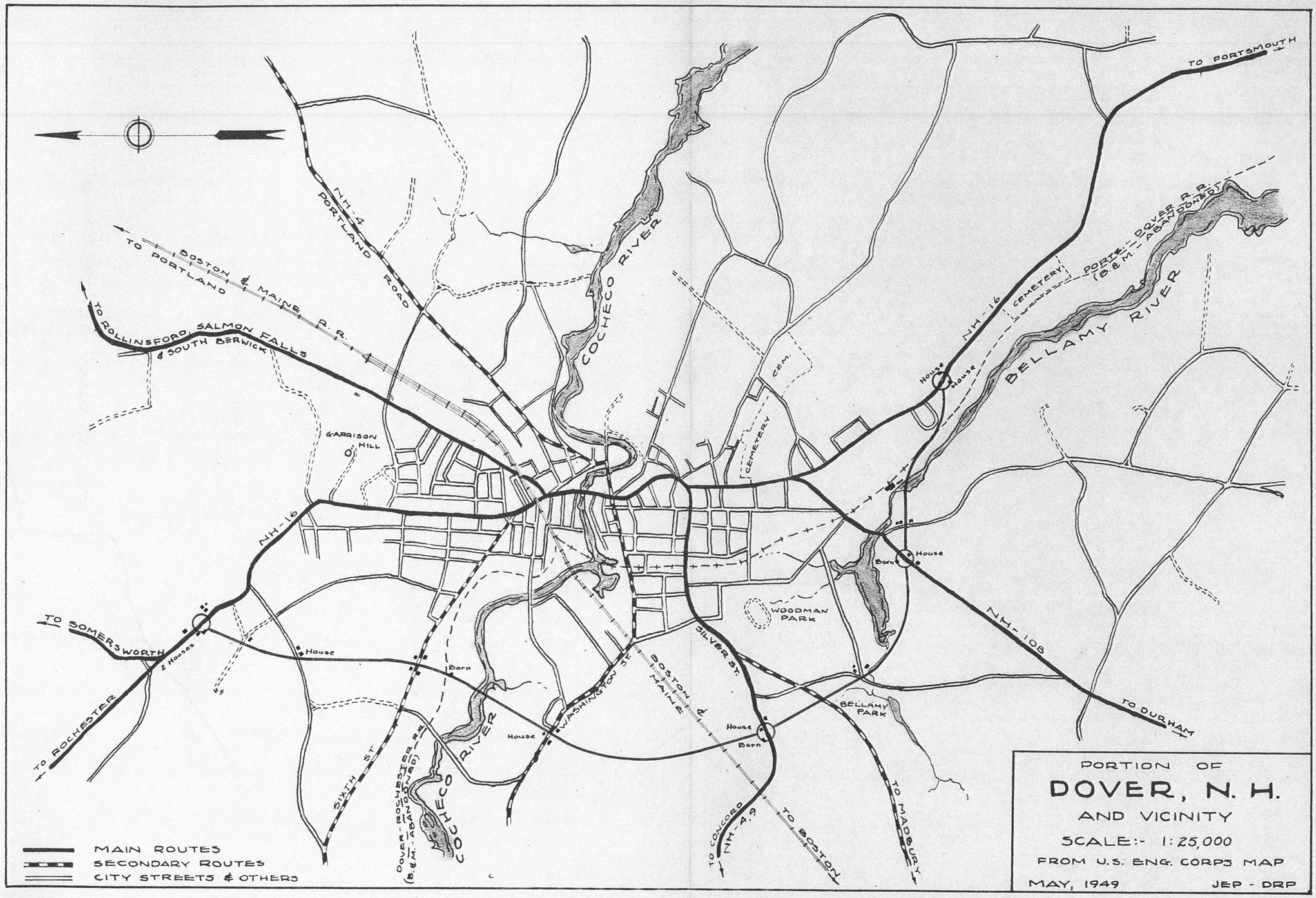
(3) Both rivers are crossed above the point of navigation.

Disadvantages of the West Route

(1) Topography is very flat for the railroad overpass.

(2) The southern approach to the Cocheco River crossing involves questionable soil foundation for fill.

(3) Two secondary roads are crossed at grade.


TO PORTSMOUTH
NH-4
PORTLAND ROAD
BOSTON & MAINE R.R.
TO PORTLAND
TO ROLLINSFORD, SALMON FALLS & SOUTH BERWICK
COCHECO RIVER
GARRISON HILL
CEM.
CEMETERY
PORTS.-DOVER R.R. (B.&M.-ABANDONED)
BELLAMY RIVER
NH-16
House
House
House
Barn
House
Barn
House
Barn
TO SOMERSWORTH
2 Houses
TO ROCHESTER
SIXTH ST.
DOVER-ROCHESTER R.R. (B.&M.-ABANDONED)
COCHECO RIVER
WASHINGTON ST.
BOSTON & MAINE R.R.
SILVER ST.
WOODMAN PARK
BELLAMY PARK
NH-108
TO DURHAM
TO CONCORD
NH-4,9
TO BOSTON
TO MADBURY
MAIN ROUTES
SECONDARY ROUTES
CITY STREETS & OTHERS
PORTION OF
DOVER, N. H.
AND VICINITY
SCALE:- 1:25,000
FROM U.S. ENG. CORPS MAP
MAY, 1949
JEP - DRP

WEST ROUTE

GROUP	ITEM	UNIT	COST PER UNIT	COST	TOTAL
Structures	Rotary at NH 16 (South)			50,000	
	Bridge over road and Bellamy River (410')			200,000	
	Rotary at NH 108 (Durham road)			50,000	
	Large Culvert at Bellamy Park Rd.			15,000	
	Rotary at NH 4 (Concord Road)			50,000	
	Bridge over B & M RR tracks			100,000	
	Bridge over Cocheco River (230')			160,000	
	Underpass at Sixth St.			50,000	
	Rotary at NH 16 (North)			50,000	
	Total Cost of Structures				725,000
ROW	Woodland	1.65 Mi.	3,000	5,000	
	Farmland	2.07 Mi.	6,000	12,500	
	Houses	8	5,000	40,000	
	Barns	3	2,000	6,000	
	Total Right of Way Costs				63,500
Constr.	Construction Mileage exclusive of structures	3.75 Mi.	1130,000	487,000	487,000
	TOTAL COST OF WEST ROUTE				1275,500

Analysis and Description of the East Route

The East route leaves New Hampshire Route 16 at a point approximately 2.1 miles south of the intersection of the Dover Point Road and Central Avenue. This route crosses the following features:- the Cocheco River, the Boston and Maine main-line tracks, one main highway, one secondary route, and five routes of lesser importance. The route crosses gently rolling terrain, with the exception of the river crossing, and terminates approximately one-fifth of a mile south of the intersection of the Somersworth Road and New Hampshire Route 16 (see page 19).

Advantages of the East Route

(1) The topography is gently rolling.

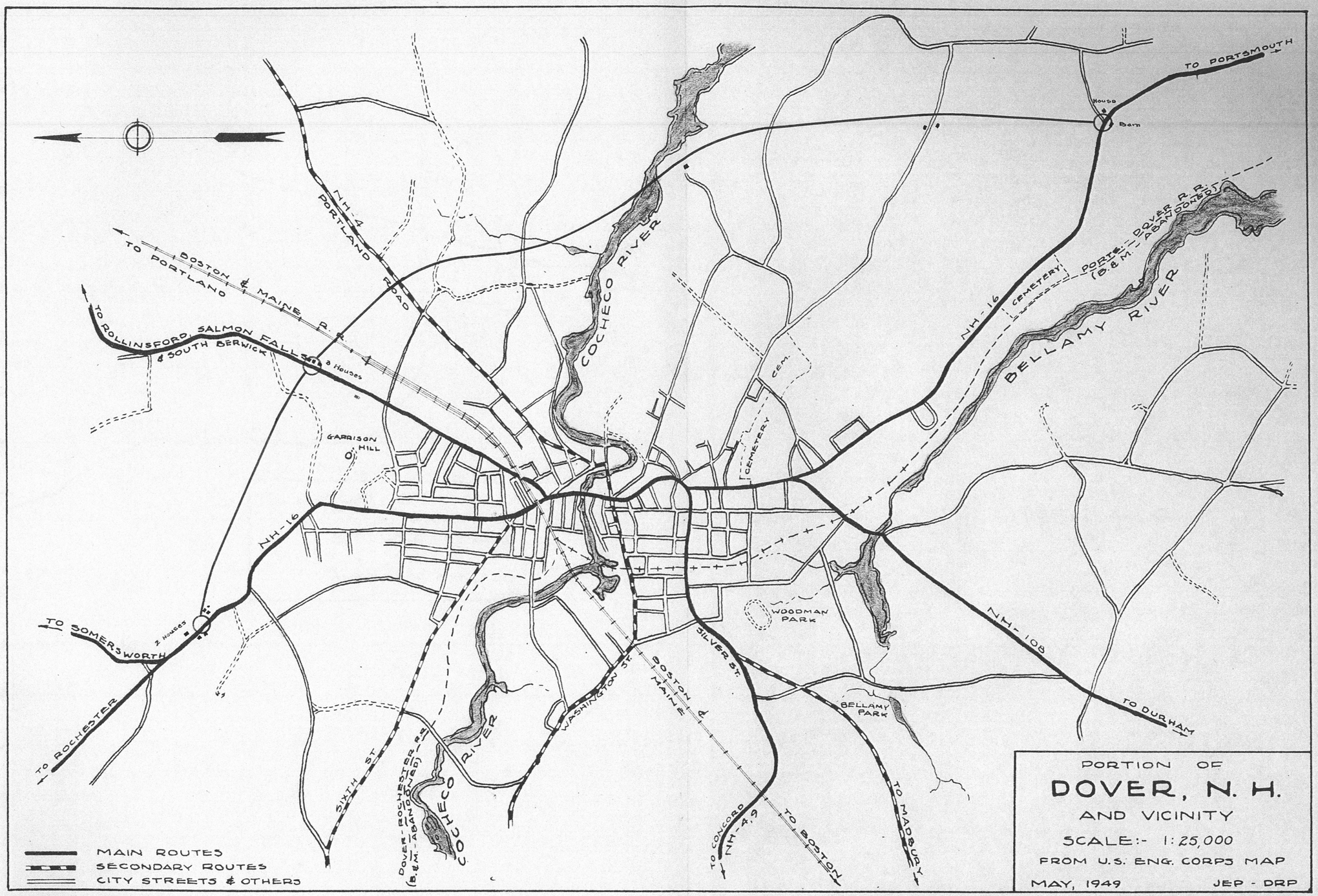
(2) Only one river crossing

(3) Interchanges are provided for all main and secondary route crossings.

(4) The river is crossed above the point of navigation.

Disadvantages of the East Route.

(1) The Durham Road carries the greater percentage of feeder route traffic. It would be impossible for this traffic to utilize the bypass.


TO PORTSMOUTH
House
Barn
NH-4
PORTLAND
ROAD
BOSTON & MAINE R.R.
TO PORTLAND
TO ROLLINSFORD, SALMON FALLS & SOUTH BERWICK
3 Houses
COCHECO RIVER
GARRISON HILL
CEM.
CEMETERY
PORTE. - DOVER R.R. (B.&M. - ABANDONED)
NH-16
BELLAMY RIVER
2 Houses
TO SOMERSWORTH
TO ROCHESTER
SIXTH ST.
DOVER-ROCHESTER R.R. (B.&M. - ABANDONED)
COCHECO RIVER
WASHINGTON ST.
BOSTON & MAINE R.R.
SILVER ST.
WOODMAN PARK
BELLAMY PARK
NH-108
TO DURHAM
TO MADBURY
TO CONCORD
NH-4,9
TO BOSTON
MAIN ROUTES
SECONDARY ROUTES
CITY STREETS & OTHERS
PORTION OF
DOVER, N. H.
AND VICINITY
SCALE:- 1:25,000
FROM U.S. ENG. CORPS MAP
MAY, 1949
JEP - DRP

EAST ROUTE

GROUP	ITEM	UNIT	COST PER UNIT	COST	TOTAL
Structures	Rotary at NH 16 (South)			50,000	
	Bridge over Cocheco River (500')			300,000	
	Under-pass at Portland St.			60,000	
	Bridge over B & M RR tracks			100,000	
	Rotary at Rollinsford Road			50,000	
	Rotary at NH 16 (North)			50,000	
	Total Cost of Structures				610,000
ROW	Woodland	1.63 Mi.	3,000	4,900	
	Farmland	2.65 Mi.	6,000	15,900	
	Houses	6	5,000	30,000	
	Barns	1	2,000	2,000	
	Total Right of Way Costs				52,800
Constr.	Construction Mileage exclusive of structures	4.25 Mi.	130,000	563,000	563,000
	TOTAL COST OF EAST ROUTE				1,225,800

THE PROPOSED SOLUTION

The purpose of any bypass is to efficiently serve the maximum amount of through traffic, and to relieve the traffic congestion within the business district. The controlling factor in this bypass consideration has therefore been its utility. The proposed solution which follows is the one which will serve the greatest number of vehicles most efficiently.

From traffic recorder data, 15,698 vehicles travel the Central Avenue business district per average annual day. Of this total, 38%, or 5960, are through traffic.

Traffic recorders located as shown on page 6 give the total count on feeder routes. The total counts on these routes were relatively small: therefore the percentage of through traffic which would be added to any bypass from these routes was assumed to be negligible. The total traffic count on the Durham Road was not available, but from a turning movement study it was evident that 45% of the total traffic passing the intersection of the Dover Point Road and Central Avenue would travel the Durham Road. It was assumed that the same percentage (45%) held for the through traffic. The lack of any other data made it necessary to use this figure, but it is believed that the actual amount would be somewhat less.

The total cost of the East route as proposed is approximately $50,000 less than that of the West route. This advantage is far outweighed by the utility of the West route, since the Durham Road traffic would not be served by the East route. It is therefore proposed that the West route as described be considered for construction.

RECOMMENDATIONS

In order to effect both an immediate and long range solution to Dover's traffic problem, it is felt that the following recommendations should be considered.

(1) That the State of New Hampshire purchase a 200 foot right of way for the future construction of a dual-lane divided highway over the Western route.

(2) That only two of the four lanes be constructed at present. This construction would provide for the present volume adequately.

(3) That the Bellamy Road be made one-way from the Durham Road (NH 108) to the bypass. This would prevent Durham traffic from crossing the bypass at grade when using the bypass for northerly traffic.

In addition, the following recommendations should be carried out immediately:-

(1) A rerouting study of internal traffic be undertaken with the view of improving traffic conditions in the business district.

(2) That the height of the Broadway underpass be increased by lowering the road grade. At present, the clear height of the underpass is 10 feet. This height prevents most trucks from using this crossing. With the increase in height, all highway users would be afforded an alternate crossing free of delay, and greater utilization of existing features would be made.

APPENDIX A

APPENDIX A

The following figures are compiled from data collected by personnel of the State Highway Department during a Dover traffic survey, September 15-18, 1948.

During a composite day, there were 87 gate closings noted by survey personnel. The time in which these gate closings prevented the free flow of traffic totaled 2 hours and 36 minutes.

Hour	Gate Closings	Hour	Gate Closings
12-1 AM	2	12 noon-1 PM	3
1-2 "	3	1-2 PM	4
2-3 "	3	2-3 "	2
3-4 "	3	3-4 "	6
4-5 "	3	4-5 "	4
5-6 "	4	5-6 "	3
6-7 "	4	6-7 "	7
7-8 "	5	7-8 "	1
8-9, "	4	8-9 "	1
9-10 "	5	9-10 "	7
10-11"	8	10-11"	2
11-12 noon	1	11-12 midnight	2

APPENDIX B

FORM 19A HPS 1947

N.H.H.D. STATE-WIDE HIGHWAY PLANNING SURVEY

IN COOPERATION WITH U.S. PUBLIC ROADS ADMINISTRATION

HOURLY TRAFFIC RECORD

SHEET....OF....

Fixed Recorder ☐

Portable Recorder ☑

Type of Station URBAN

Year 1949

Station A-56A

Town DOVER

Route N.H. 16

System CITY STREET

Day	MON	TUE	WED	THUR	FRI	SAT	SUN	MON	TUE	WED	THUR	FRI	SAT	SUN	MON				
Date	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30	3/31	4/1	4/2	4/3	4/4				
Hour		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M		A.M.	
12-1		193	156	180	218	266	432	114	138	134	158	167	306	387	77				
1-2		71	62	79	76	88	227	59	37	48	57	44	130	215	41				
2-3		26	31	30	35	64	107	30	15	22	35	30	57	86	34				
3-4		15	31	23	29	31	41	17	11	21	22	18	38	35	14				
4-5		27	25	22	24	36	14	26	23	37	41	46	35	42	41				
5-6		84	85	57	54	81	35	76	75	73	83	91	87	59	117				
6-7		435	357	302	252	210	88	411	422	391	499	483	258	121	542				
7-8		886	722	649	711	507	176	738	709	721	903	929	656	241	1026				
8-9		976	945	827	902	831	236	926	842	(899)	941	887	908	301					
9-10	974	913	738	690	757	1003	523	726	816	795	887	841	1060	621					
10-11	710	894	793	844	813	1182	759	892	823	821	945	946	1249	870					
11-12	958	857	750	826	827	1212	788	945	780	922	923	1025	1187	792					
	(13512)														(1892)				
		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M		P.M.	
12-1	1167	946	979	1020	1061	1146	891	1205	1074	1027	1205	1169	1154	985					
1-2	1034	942	1008	1030	1092	1108	701	933	969	986	1130	1091	1107	925					
2-3	935	909	849	1031	950	1173	832	978	846	914	1102	1018	988	946					
3-4	1032	1063	817	1036	1451	1213	889	979	998	938	1096	1092	1221	1053					
4-5	1318	1264	1148	1229	1332	1213	1016	1324	1303	1247	1439	1385	1200	1123					
5-6	1265	1203	1098	1287	1198	1193	927	1160	1220	1166	1285	1288	1217	1080					
6-7	859	840	751	852	1002	900	1010	850	791	799	906	1039	862	1155					
7-8	1018	813	842	932	1150	1117	964	847	811	911	1065	1194	1086	963					
8-9	621	719	719	680	1032	1080	851	585	690	767	(772)	1065	879	915					
9-10	524	505	681	547	775	711	616	592	535	615	(634)	795	614	629					
10-11	586	491	543	508	518	566	642	459	448	526	598	577	575	518					
11-12	369	331	399	428	478	560	329	248	327	326	314	513	480	263					
Total		15407	14689	15119	16739	17491	13094	15130	14794	15247	17040	17723	17374	14275					
8-4																			

FORM 19A HPS 1947

N.H.H.D. STATE-WIDE HIGHWAY PLANNING SURVEY

IN COOPERATION WITH U.S. PUBLIC ROADS ADMINISTRATION

HOURLY TRAFFIC RECORD

SHEET....OF....

Fixed Recorder ☐

Portable Recorder ☑

Type of Station. URBAN

Year 1947

Station SPECIAL No. 1

Town. DAKER

Route SILVER STREET

System. C.I.T. STREET

Day	WED	THUR	FRI	SAT	SUN	MON	TUE	WED	THUR	FRI	SAT	SUN	MON	TUE	WED				
Date	3/16	3/17	3/18	3/19	3/20	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30				
Hour		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.	
12-1		15	25					17	20	16	54	58	10	22	17				
1-2		7	12					13	6	3	23	36	7	5	11				
2-3		4	3					4	2	3	6	22	1	2	4				
3-4		3	2					3	8	2	7	8	2	1	1				
4-5		1	1					1	3	4	1	4	2	2	2				
5-6		9	9					3	5	12	7	9	8	10	7				
6-7		75	59					75	71	69	33	22	72	66	69				
7-8		120	131					116	120	105	76	32	125	124	132				
8-9		127	104					101	125	123	98	56	132	117					
9-10		103	103					98	108	114	119	53	116	133					
10-11		115	135					106	112	97	156	140	119	125					
11-12		122	110					133	100	127	155	123	128	136					
	(1025)		(1641)				(1479)								(241)				
		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.	
12-1		150	140					148	122	154	159	192	157	153	128				
1-2		165	108					157	135	151	141	149	128	141	153				
2-3		146	102					157	142	159	138	178	140	157	139				
3-4	154	154	117					147	150	165	185	209	188	160	175				
4-5	233	211	172					207	197	204	221	213	219	217	224				
5-6	194	201	188					207	193	211	225	214	190	220	227				
6-7	130	99	114					128	121	120	155	150	143	140	118				
7-8	89	80						96	88	113	138	158	124	117	118				
8-9	69	51						77	86	76	106	104	107	73	76				
9-10	47	62						62	74	60	98	83	72	77	56				
10-11	64	46						65	49	61	83	61	80	54	62				
11-12	45	37						37	46	58	58	67	31	34	50				
Total		2111							2073	2218	2382	2513	2172	2265	2269				
8-4																			

FORM 19A HPS 1947

N.H.H.D. STATE-WIDE HIGHWAY PLANNING SURVEY

SHEET....OF....

IN COOPERATION WITH U.S. PUBLIC ROADS ADMINISTRATION

HOURLY TRAFFIC RECORD

Fixed Recorder ☐

Portable Recorder ☒

Type of Station..URBAN....

Year..1949.....

Station..SPECIAL No. 2....

Town..DOVER.....

Route..PORTLAND AVENUE

System..CITY STREET.....

Day	WED	THUR	FRI	SAT	SUN	MON	TUE	WED	THUR	FRI	SAT	SUN	MON	TUE	WED				
Date	3/16	3/17	3/18	3/19	3/20	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30				
Hour		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.		A.M.	
12-1		22	21					37	16	21	53	79	10	21	23				
1-2		11	11					10	15	13	27	43	3	8	6				
2-3		2	2					1	3	4	14	15	3	3	6				
3-4		2	3					4	1	2	9	5	3	1	6				
4-5		5	2					2	2	1	3	4	2	3	4				
5-6		14	19					20	24	22	17	16	29	27	20				
6-7		101	102					107	108	103	63	45	120	121	121				
7-8		186	178					185	186	208	129	55	191	228	230				
8-9		165	182					170	177	168	178	92	216	149					
9-10		129	132					116	157	145	204	135	170	137					
10-11		136	169					130	155	154	253	170	182	144					
11-12		156	193					161	172	182	312	200	198	206					
	(1373)		(1726)				(1912)								(426)				
	P.M.			P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.		P.M.	
12-1		200	209					191	247	209	269	197	216	185					
1-2		171	180				190	154	203	164	262	177	187	184					
2-3		182	158				174	175	214	198	304	185	186	153					
3-4	167	169	155				197	167	202	213	308	198	212	208					
4-5	274	317					287	277	313	316	318	252	309	304					
5-6	238	308					287	251	278	264	311	227	290	238					
6-7	191	196					199	200	215	249	220	214	208	179					
7-8	174	141					162	178	174	224	212	172	162	158					
8-9	116	117					132	157	98	199	197	155	107	114					
9-10	80	100					117	109	114	142	132	115	157	97					
10-11	83	88					95	99	81	93	119	112	81	93					
11-12	50	77					72	64	79	65	97	44	34	86					
Total		2995						2965	3234	3359	4011	2708	3277	3031					
8-4																			

N.H.H.D. State Wide Highway Survey
Analysis of Recorder Counts at Dover 3/16/49 to 3/30/49

	Silver Street	Portland Avenue
Average Week Day for Period	2220	3144
Average Saturday for Period	2513	4011
Average Sunday for Period	2172	2908
Average Day for Period	2255	3234
24 Hour Annual Average	2284	3274
Peak Hour	4 to 5 3/16-233	4 to 5 3/26-318
Peak Day	Sat. 3/26 - 2513	Sat. 3/26 - 4011
30th Highest Hour for Period	160	253

NEW HAMPSHIRE

HIGHWAY PLANNING SURVEY

in cooperation with
U. S. Public Roads Administration

TRAFFIC DENSITY RECORD
MAJOR CONTROL STATION

Location: 390 CENTRAL AVE. (BETWEEN MALDRON + FIRST STS.

Traffic Pattern: NH 16, THROUGH ST.

Year 1948-49
Sta. A-56A
Rural ☐ Urban ☑
DOVER

Month	Days and dates of count	MON	TUE	WED	THU	FRI	SAT	SUN	Average Weekday	Adjusted Ave Day*	Adj AD / AveWkday (%)	Adj Ad / AADT (%)	Month
APR	5-12	14856	15129	14914	14956	16106	(18416)	(14783)	15192	15594	102.65	99.34	APR
MAY	3-10	—	15925	14836	15472	15563	16927	(12095)	15449	15181	98.27	96.71	MAY
JUNE	5/31-6/7	—	16757*	16804	16583	17919	19073	14521	17016	16953	99.63	107.99	JUNE
JULY	26-8/2	16568*	16357	16200	16788	18296	18004	14969	16842	16740	99.39	106.64	JULY
AUG	23-30	16238*	15807	15627	16417	17615	16686	11486	16341	15697	96.06	99.99	AUG
SEPT	20-27	16037*	16206	16071	16011	17713	18462	15378	16528	16640	100.68	106.00	SEPT
OCT	18-25	15224*	15359	15236	16048	16519	17376	12642	15677	15486	98.78	98.65	OCT
NOV	15-22	15819*	15975	15239	16504	17000	17636	13152	16119	15912	98.72	101.36	NOV.
DEC.	13-20	14240	14554	16188	14893	16657	18067	(15845)	15306	15777	103.08	100.50	DEC.
JAN 49	3-10	15882*	15767	14134	14222	14569	17292	12465	15915	15619	98.14	99.50	JAN 49
FEB	14-21	14916*	13705	14560	14360	16658	17012	12996	14840	14887	100.32	94.83	FEB
MAR	21-28	15969*	15407	14689	15119	16739	17491	13094	15585	15501	99.46	98.75	MAR
AVE		15581	15579	15400	15639	17196	16870	13619	15879	15698	98.86		

REMARKS: * OBTAINED BY COMBINING COUNT FOR FIRST AND LAST DAY. *Adj. AD = 5A; B; C

NEW HAMPSHIRE

HIGHWAY PLANNING SURVEY

in cooperation with
U. S. Public Roads Administration

TRAFFIC DENSITY RECORD
MAJOR CONTROL STATION

Location: BROADWAY (OPPOSITE UPTOWN THEATER)
Traffic Pattern: CITY ARTERIAL

Year 1948
Sta. A-56B
Rural ☐ Urban ☒
DOVER

Month	Days and dates of count	MON	TUE	WED	THU	FRI	SAT	SUN	Average Weekday	Adjusted Ave Day*	Adj AD / AveWkday (%)	Adj Ad / AADT (%)	Month
APR	12-19	3192*	3234	3149	3145	3467	3472	2364	3237	3146	97.19	97.10	
MAY	10-17												
JONE	7-14												
JULY	5-12	2713*	3343	3033	3076	3061	2970	2018	3045	2888	94.84	89.14	
AUG	2-9	3274*	3259	3121	3407	3793	3312	2174	3371	3192	94.69	98.52	
SEPT	8/30-9/6	3188*	3496	3287	3417	3726	3644	2252	3423	3287	96.03	101.45	
SEPT OCT	9/27-10/4	3398*	3604	3509	3623	3397	3719	2481	3506	3390	96.69	104.63	
OCT	10/25-11/1	3218*	3432	3375			(2937)	(1939)	3342	3084	92.28	95.19	
NOV	22-29		3731	3833	2536	4089	3672	2452	3547	3408	96.08	105.19	
DEC	20-27			3862*	4190	5035	2540	2392	4362	3820	87.57	117.90	
AVE		3164	3443	3396	3342	3795	3283	2259	3428	3240	94.52		

REMARKS: * obtained by combining count for first and last day.

*Adj. AD = 5A/B/C

NEW HAMPSHIRE

HIGHWAY PLANNING SURVEY

in cooperation with
U. S. Public Roads Administration

TRAFFIC DENSITY RECORD
MAJOR CONTROL STATION

Location: MT. VERNON ST. (near Mill St.)

Traffic Pattern: LOCAL RESIDENTIAL

Year 1948
Sta. A-560

Rural ☐ Urban ☑

DOVER

Month	Days and dates of count	MON -	TUE	WED	THU	FRI	SAT	SUN	Average Weekday	Adjusted Ave Day*	Adj AD / AveWkday (%)	Adj Ad / AADT (%)	Month
APR	19-26	238*	262	265	200	273	276	277	248	256	103.23	76.42	
MAY	17-24	270*	300	349	264	336	304	321	304	306	100.66	91.34	
JUNE	14-21	378*	350	360	352	787	350	731	444	472	106.31	140.90	
JULY	12-19	361*	277	311	334	372	288	248	331	313	94.56	93.43	
AUG	9-16	595*	343	281	276	301	368	253	359	345	96.10	102.99	
SEP	6-13	249*	352	356	310	345	322	299	322	319	99.07	95.22	
OCT	4-11	343*	343	349	320	366	369	331	344	346	100.58	103.28	
NOV.	1-8	374*	476	339	381	396	380	368	393	388	98.73	115.82	
DEC.	27-1/3	244*	292	235	309	352	231	254	286	274	95.80	81.79	
AVE		338	333	316	305	392	321	342	337	335	99.41		

REMARKS: * Obtained by combining count for first and last days

*Adj. AD = 5A/B/C