Mn/DOT Celebrates
the
50th Anniversary
of the
Interstate Highway System

A compilation of articles regarding the planning and building of the Interstate Highway System in Minnesota
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A compilation of articles regarding the planning and building of the Interstate Highway System in Minnesota selected from the following Mn/DOT publications:

MINNESOTA HIGHWAYS
DOT SCENE
Mn/DOT EXPRESS

July 1952 - December 1992

Compiled by Pamela Gonzalez
Mn/DOT Library
Minnesota Department of Transportation
395 John Ireland Boulevard
Saint Paul, MN 55155
http://www.dot.state.mn.us/library/

August 2006
MINNESOTA HIGHWAYS
Minnesota's Share of New U. S. Road Aid $13,744,000

Minnesota will receive approximately $13,744,000 in federal aid road-building funds during each of the next two fiscal years as a result of Congressional legislation recently signed by the President. This is an increase of almost two million dollars over the $11,900,000 which the state was allotted this year.

A substantial item of the increase, however, is represented by a new allocation of $654,000 for expediting development of crucial highways on the Interstate System. In Minnesota, these comprise some 700 miles of strategic highways, including all of T.H. 16 from LaCrescent to Mankey, T.H. 69 from Emmons to Albert Lea and T.H. 65 from Albert Lea to Minneapolis with T.H. 13 from its junction with T.H. 65 to Minneapolis designated as an alternate route.

Other Minnesota highways included in the Interstate System are T.H. 12 from the Hudson bridge to St. Paul, T.H. 8 from Minneapolis to Jct. T.H. 61, T.H. 61 from St. Paul to Duluth, T.H.s. 218, 152 and 52 from Minneapolis to Moorhead and T.H. 53 from Duluth to International Falls.

Other annual allotments, all to be available as of July 1, 1953, are $6,405,000 for rural primary trunk highways, $4,517,000 for secondary rural highways, and $2,168,000 for improvements of arterial routes in urban areas.

Traffic Deaths Less In 1952

While still presenting a tragic picture, traffic fatalities in Minnesota were less for the first six months of the year over the same period in 1951. The reduction in deaths for the same period shows about 25 per cent lower for 1952. During the first half of 1951, 254 lives were lost in traffic accidents, while this year, for the same period, just 188 have been killed in traffic.

The above map shows a comparison by counties of the record for this year. All of the counties in white have contributed to the better record of 1952 by having fewer fatalities than during the similar period of 1951. The high number of counties, more than half in the state, that have fewer traffic deaths is an important factor in the overall reduction in deaths. There are 46 counties that have reported a reduction in deaths. There are 46 counties that have reported a reduction in deaths.

The dark picture, though, is shown by 20 counties who reached last-year mark with poorer records than they had a year ago.

In these counties, there were more fatalities this year. While most of the individual counties' increases were very slight, two—Blue Earth and Dakota—have had 14 more deaths than they had in the first six months of last year. An ironical side of this is that both counties received honors for their achievements in preventing traffic deaths during 1951.

However, traffic accidents with multiple deaths, for example in Blue Earth county where 7 persons died in 3 accidents, made the total very high.

On the map, those counties (Continued on page 2)
**Patrol Team Wins First Place**

Two first-place awards is the record for this pistol team at the annual competition of the Minnesota Peace and Police Officers convention, St. Cloud, last month. Ably coached, managed, and shepherded by Sgt. Chet O'Toole, Mankato, (L) the team was composed of (L to R) Earl Saign, Brainerd; Ken Strohl, Fairmont; Norman Storvick, Caledonia; and Neil Dee mer, Thief River Falls.

Together they won individual silver panel awards in the Marksman classification with a team score of 1068 out of a possible 1200. This was a higher score than any made in the Sharpshooter classification. High shooter was Strohl with 269.

The other top award went to Earl Saign. Shooting at silhouette targets on the F. B. I. course, he garnered a score of 98.8 out of a possible 100.

**MAGRAW WINNER IN GM CONTEST**

Experiences gained during his work in the Department of Highways evidently were of value to Dan Magraw. He won top honors in the state division of the General Motors better highways contest, netting a $1,500 prize.

His ideas for organizing a national highway administration were in response to the question asked by the General Motors Corporation—"How to Plan and Pay For the Safe and Adequate Highways We Need."

More than 44,000 entries were received in the national essay contest which was won by Robert Moses, New York, city parks commissioner.

Magraw presented a 15 page booklet incorporating an organization of an American highway coordinating council which would meet the need for proper relationship between the many groups concerned with the nation’s highways.

This council would develop plans for a long range national integrated highway system extending beyond the national defense system, strive to coordinate activities of various highway agencies, conduct continuing research on construction methods, materials and standards, and aid in smoothing and simplifying inter-governmental relations.

Magraw had been a familiar figure around the highway personnel office until he joined the Department of Conservation.

**Lost And Found Dept.**

Vic Benson, DME at Duluth, has lost two books and asks our help in finding them. The books are U. S. Manual on Surveys, black cover, size about 5½" by 9" and Surveys and Boundaries, red cover, size 6" by 9".

Quoting Vic: "I sent two books with one of our men who went to the Central Shop to pick up a new truck. He said they were left at the shop to be sent to the Central Office for the use of a couple of engineers who needed them for study in connection with registration examinations for engineers. They have not received the books."

The books were placed in a large MHD envelope addressed to Stanley A. Axtell, Construction Plans. They are valuable to Benson, one is out of print, the other was given to him as a birthday present.

**Air Force Gets Driver Training**

One hundred consecutive accident-free days of road operation, a new record, is the happy result of combining the talents of the Drivers License examiners with that of the 514th Air Defense Group installation near Fort Snelling.

Examinations of all drivers at the 514th motor pool were given by state examiners, indicating that 20% were not sufficiently well trained to cope with local driving conditions.

Further analysis revealed that the same group of drivers who failed to pass the tests were responsible for a high percent of the accidents previously charged against the organization.

The idea for utilizing the department’s examiners came as a result of mounting traffic accidents throughout the Air Defense Command of which the 514th is a part.

The project was further proof of the necessity of training and examining persons before issuing them permits to drive vehicles in traffic. The high safety record reflects in the rapid decrease in accidents. After the positive tests, drivers proved their ability to handle vehicles before they were permitted to operate them.

**Governor, from page 1**

Stressing the need for conscientious efforts to avoid waste of any kind Governor Anderson said: "Too often there is a tendency on the part of people in public positions to forget that they have a very special trust. They are handling someone else’s money. I know that there are things which I would do in my own business that I would hesitate to do as Governor. In my business I am spending my own money. As a public official, I am handling someone else’s business and money. The consequences affect many people. We have a most serious obligation to place the proper values on these duties and to see that we can deliver a full dollar’s worth of governmental service for each of them we spend."

The Governor concluded his talk to department heads with the observation, equally applicable to all department employees, that: "It is good that occasionally we make a self-appraisal—take inventory of our faults and our good points—and then try to be the best we can. Somewhere I have heard that our goal in this world is not to be better than our fellow men but to be better than ourselves."

"That sergeant! I’ve never heard a man talk so fast in my life."

"Why shouldn’t he? His father was a tobacco auctioneer and his mother was a woman."
First Free-way for Minnesota

Construction of the initial section of Minnesota's first stretch of "free-way" is anticipated for next year. It is a five-mile section of highway to be built along the north outskirts of Austin, as a part of the new interstate highway network.

(A generally accepted definition of the term free-way is a highway with no grade intersections and no left turns.)

Plans for the new route at Austin were outlined by Walter Schultz, assistant engineer of plans and surveys.

Austin's free-way, to be designated T. H. 252, will be an alternate route for that section of U. S. 16 which bisects Austin from east to west, Schultz said. Highway 252 will join U. S. 16 east and west of the city. From the east junction, it will have a two-mile extension southward to T. H. 218, a north and south route through Austin.

Total cost of the seven miles is estimated at about $2 million, with the construction to extend over several years.

The free-way, to be a four-lane divided highway, ultimately will have nine traffic interchanges, two road grade separations, and three stream bridges. Besides relieving the present heavy volume of U. S. 16 traffic through Austin's congested areas, it will eliminate intersection traffic problems over its entire length.

The south extension will be a two-lane highway. This link will permit traffic transfers between U. S. 16 and T. H. 218 without going into the city's congested business area.

The nine interchanges on the free-way, according to Schultz, will be at the following points:

- Initial construction on the five-mile link is expected to be at the railroad crossings, where the highway will underpass the railroad tracks.

- Construction of T. H. 252 as a "high type" highway link had been scheduled before plans were announced by the federal government to contribute to the financing of construction of a national network of interstate highways. With this announcement, putting emphasis on the development of the interstate system of highways, including U. S. 16, further studies were made by the Minnesota Highway department which indicated the feasibility of integrating into the system the five-mile portion of T. H. 252 lying north of U. S. 16.

- Schultz reported that under existing statutes, 60 per cent of the cost of T. H. 252 is scheduled to be paid by the federal government and the remaining 40 per cent from state highway funds. Pending legislation in congress may provide for financing on a basis considerably more advantageous to the state.

- Recent approval by the Highway department and the City of Austin of a revised general layout plan for T. H. 252 cleared the way for preparation of detailed plans and the start of construction.

The heavily marked section of the projected T. H. 252 at Austin shows where Minnesota will have its first free-way. Traffic interchanges, railroad grade separations, and stream bridges are marked in brackets.
DESIGN STANDARDS DESCRIBED FOR NEW NETWORK

Following is an abstract of salient provisions in the new Design Standards for the National System of Interstate and Defense Highways (Interstate network), as adopted by the U.S. Bureau of Public Roads, Department of Commerce. The presentation is by direct quotes except for two condensations, in parentheses.

The 41,000 miles included in the projected Interstate network is approximately one per cent of the nation's total mileage of public highways and roads of all types, but carries approximately 12 per cent of the traffic.

The network's 936 miles located in Minnesota is somewhat less than one per cent of the state's total highway mileage. But it is expected that when it is constructed, it will carry greater than 10 per cent of Minnesota traffic.

GENERAL

The highways of this system must be designed in keeping with their importance as the backbone of the Nation's highway systems. To this end they must be designed with control of access to insure their safety, permanence and utility and with flexibility to provide for possible future expansion. Two-lane highways should be designed so that passing of slower moving vehicles can be accomplished with ease and safety at practically all times. Divided highways should be designed as two separate one-way roads to take advantage of terrain or other conditions for safe and relaxed driving, economy and pleasing appearance.

Traffic Basis

Interstate highways shall be designed to serve safely and efficiently the volumes of passenger vehicles, buses, and trucks, including tractor-trailer and semitrailer combinations and corresponding military equipment, estimated to be that which will exist in 1975, including attracted, generated, and development traffic on the basis that the entire system is completed.

The peak-hour traffic used as a basis for design shall be as high as the thirtieth highest hourly volume of the year 1975, hereafter referred to as the design hourly volume, "DHV (1975)." Unless otherwise specified, DHV is the total two-direction volume of mixed traffic.

Control of Access

On all sections of the Interstate System, access shall be controlled by acquiring access rights outright prior to construction or by the construction of frontage roads, or both. Control of access is required for all sections of the Interstate System.

Railroad Crossings

Railroad grade crossings shall be eliminated for all through traffic lanes.

Intersections

All at-grade intersections of public highways and private driveways shall be eliminated, or the connecting road terminated, rerouted, or intercepted by frontage roads, except as otherwise provided under Control of Access (for sparsely settled rural areas).

Design Speed

The design speed of all highways on the system shall be at least 70, 60, and 50 miles per hour for flat, rolling, and mountainous topography, respectively, and depending upon the nature of terrain and development. The design speed in urban areas should be at least 50 miles per hour.

Gradients

For design speeds of 70, 60, and 50 miles per hour, gradients generally shall be not steeper than three, four, and five per cent, respectively. Gradients two per cent steeper may be provided in rugged terrain.

Width and Number of Lanes

Traffic lanes shall not be less than 12 feet wide.

Where the DVH (1975) exceeds 700 or exceeds a lower two-lane design capacity applicable for the conditions on a particular section, the highway shall be a divided highway. For lower volumes, the highway shall be a two-lane highway so designed and located on the right of way that an additional two-lane pavement can be added in the future to form a divided highway.

Medians

Medians in rural areas in flat and rolling topography shall be at least 36 feet wide. Medians in urban and mountainous areas shall be at least 16 feet wide. Narrower medians may be provided in urban areas of high right-of-way cost, on long and costly bridges, and in rugged mountainous terrain, but no median shall be less than four feet wide.

Shoulders

Shoulders usable by all classes of vehicles in all weather shall be provided on the right of traffic. The usable width of shoulder shall not be less than 10 feet.

Slopes

Side slopes should be 4:1 or flatter where feasible and not steeper than 2:1 except in rock excavation or other special conditions.

Right-of-Way

Fixed minimum widths of right-of-way are not given because wide widths are desirable, conditions may make narrow widths necessary, and right-of-way need not be of constant width.

(The statement of standards includes a table of recommended minimum widths ranging from 150 feet for two lanes without frontage roads to 300 feet for multiple, divided roads with frontage roads.)

Bridges and Other Structures

The following standards apply to Interstate highway bridges, overpasses, and underpasses. Standards for crossroad overpasses and underpasses are to be those for the crossroad.

Bridges and overpasses, preferably of deck construction, should be located to fit the over-all alignment and profile of the highway.

The clear height of structures shall be not less than 14 feet over the entire roadway width, including the usable width of shoulders. Allowance should be made for any contemplated resurfacing.

The width of all bridges, including grade separation structures, of a length of 150 feet or less between abutments or end supporting piers shall equal the full roadway width on the approaches, including the usable width of shoulders.

PROGRESS REPORT By early November, construction of the new Highway department headquarters building, near the state capitol, had reached this stage. As pictured, the building faces to the left (east) on John Ireland boulevard.

In the foreground, are foundation walls enclosing the subbasement and flanked by piers which will support the structure's greater total area. In the background is the ramp leading to the basement garage wing. Including the basement and subbasement, the central building will have eight levels, while the wing containing the garage and other facilities will have two stories above ground. In the far background is the St. Paul cathedral.
Safety Head, Assistant Patrol Chief Named

Harry A. Sieben of Hastings, Minnesota state liquor control commissioner for the past two years, is the new state director of highway safety. His appointment was announced January 4 by Commissioner Hoffmann.

The commissioner at the same time announced the promotion of Captain Leo M. Smith of Rochester, to assistant chief of the Minnesota Highway patrol.

The appointment of Sieben, who was to assume his new duties later this month, fills the vacancy which has existed since the resignation of Earl M. Larimer October 15, 1956. Sieben rated highest in the civil service examination conducted for the appointment.

Prior to his appointment by Governor Freeman as liquor control chief, Sieben held a number of prominent and governmental positions in the Twin Cities area, including that of state director of the federal Office of Price Stabilization from 1951 to 1953.

In his liquor control post, Sieben has gained a wide acquaintance with local peace officers and county sheriffs throughout the state, a factor which will be of value in his state-wide promotion of highway safety through education and traffic law enforcement.

Captain Smith, a 14-year veteran in the Highway patrol, has been stationed at Rochester since September, 1954, when he was promoted from sergeant to captain. Previous to his appointment as a patrol officer in 1942, he was a...

F. W. Thorstenson Is Chosen As New Hydraulics Engineer

The Highway department has a new hydraulics engineer, Frederick W. Thorstenson of St. Paul, former assistant regional (hydraulic) engineer of the U. S. Fish and Wildlife Service and a former employee of the department.

Thorstenson, who assumed his new position December 17, succeeds Marvin E. Hermanson who in September was named assistant engineer of surveys and design.

After his graduation from the University of Minnesota as a civil engineer in 1937, Thorstenson worked for the Highway department for 18 months as a draftsman. He held various positions until 1946 when he became assistant regional engineer for the Fish and Wildlife service.

In that capacity, he was in charge of technical engineering services for fish stations, refuges and federal aid programs in 11 states. This and previous employment has given him extensive experience and responsibility in hydraulic engineering. Thorstenson is a registered professional engineer in Minnesota and president this...
Chief Congratulates Cummings

Retired after 26 years' service in the Highway patrol, Cal Cummings, left, of Detroit Lakes, was congratulated by Chief Paul Martz, right, at the recent retirement party given by the patrol. With them are Mrs. Cummings and Inspector Otto Daugher.

Laws Sought on Safety, New Interstate Routes

(Continued from page 1)

Some higher type roads, particularly of the type contemplated for the interstate system.

One legislative proposal would make it unlawful to enter or leave an access controlled highway at locations other than officially designated and constructed approaches. Another proposal asks consideration of the adoption of a law by which a person accepting a driver's license thereby gives consent to a chemical test, in case of an accident, of his competency to drive.

Requirement is asked for renewal of drivers' licenses every two years, instead of every four years, as at present, primarily to make this activity self-supporting.

"A material increase in the personnel strength" of the Highway patrol is recommended to "more effectively deal with the increasingly serious problem of traffic, in the interest of accident prevention and aid to highway users, and also for the protection of the highways themselves."

Authorization for establishment of a patrol training center near the Twin Cities metropolitan area is suggested on the basis that present available facilities are inadequate for needed training of new patrol members and for in-service training.

Recommendation is made that the law with respect to vehicle sizes and weights be amended to conform "more closely to the recommendations of the American Association of State Highway Officials." The association recommends an over-all length limitation of 100 feet, as compared to the present 45-foot limit in Minnesota.

In recommending competitive salaries for all grades and classes in the Highway department, Commissioner Hoffmann stated: "Our skilled engineers, designers, draftsmen, technicians, maintenance employees and clerks are seriously underpaid in relation to industry and local governments."

The department also asks extension for another two years of its present authority to employ consulting (private) engineers on highway and bridge design.

HERE'S WHO

The man in the Who? photo on page 4 is

G. G. GLADMAN

plans, surveys and design engineer, as he looked in about 1922 when he was chief of surveys.

Disconcerting Approach

Love Your Enemies. It will drive them nuts.
6-Month Program Covers 530 Miles

Improvement of more than 530 miles of Minnesota trunk highways at an estimated total cost of $37,817,000 is called for in a record shattering revised construction program adopted by the Highway department for the last half of the fiscal year ending June 30.

Added to the $28,278,000 of work contracted during the first half of the fiscal year, July 1 to December 31, 1956, the fiscal year's program will total the sizeable sum of more than $66 million, the biggest 12 months’ contract total in the department's history.

The $37,817,000 total for the current six months represents 86 projects. As listed by Commissioner Hoffmann, they include:

- 74 miles of concrete pavement.
- 156 miles of plant-mixed bituminous surfacing.
- 112 miles of grading, base and bituminous.
- 74 miles of base and bituminous surfacing.
- 102 miles of grading and base.
- 47 structures to be built.

In turn, the structures include 22 traffic separations, 19 stream crossings and six railroad over- and underpasses.

The largest single river bridge to be built is a new one over the Mississippi at Newport, on T.H. 100. It will replace the present crossing at nearby Inver Grove, which is being used on a lease basis.

Some Work from 1956

In addition to the $37,817,000 in contemplated new construction projects, Commissioner Hoffmann stated that there is being carried over for completion this year a total of $29,090,000 in contracts awarded in 1956.

Regarding the revision of the program for the 1956-57 fiscal year, the Commissioner said it was found necessary at the close of the 1956 construction season to revise our program for the balance of the year to better utilize the various funds available to the department for construction purposes.

He noted that although some of the projects announced last spring as part of the program have been deferred, they will be undertaken as soon as possible.

It has been found necessary, because of the department's limited engineering staff, to proceed now with those projects for which plans are ready or can be completed in the very near future. This will permit continuance of construction work at a high level while department and consulting engineers hasten preparation of plans for a balanced program giving full consideration to all classes of trunk highways,” Commissioner Hoffmann said.

An important added feature, he said, is the inclusion of several projects on the newly designated Interstate highway network.

How extensive is to be the construction for the state's network routes is shown in five projects listed to be contracted before June 30 on T.H. 252, in Mower county.

Read: Network Routes Will Have Big Impact . . . . Page 5

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(Continued on page 10)
6-Month Program Covers 530 Miles

(Continued from page 1)

They include 2.7 miles of grading from Jct. T. H. 16 to Jct. T. H. 218 in Austin, 2.4 miles of grading, base, and bituminous surfacing from Jct. T. H. 218 in Austin to one-quarter mile east of Jct. T. H. 16, and six bridges—three grade separation structures at Jct. T. H. 218 and 252 in Austin, three bridges over the Red Cedar river a quarter mile east of T. H. 218, and two bridges .6 mile east of Jct. T. H. 218.

Trunk highway 10 is assigned three network projects in Ramsey county, a grade separation bridge to carry Lexington Ave. over the highway, two traffic separation bridges at Island Lake, and a grade separation to carry Maryland Ave. over the highway along Mississippi St. in St. Paul.

Other network projects listed for contracting during the current six months include:

On T. H. 52, two interstate bridges near Moorhead (to be let by North Dakota) and 8.4 miles of base and bituminous surfacing from Melrose to Sauk Centre.

On T. H. 65, a grade separation bridge at Ninety-fourth St. in Bloomington, and 5.3 miles of concrete paving, base and bituminous ramps from Jct. T. H. 14 at Owatonna to Jct. T. H. 165.

On T. H. 100, an overhead bridge in South St. Paul, a bridge over the Mississippi river at Newport, and .2 mile of grading east of the bridge in Newport.

Several Paving Jobs Listed

On T. H. 5, traffic separation bridges carrying T. H. 100 over Thirty-fourth Ave. S. south of Minneapolis, and carrying T. H. 5 (eastbound) over T. H. 100 (westbound) and a mile of grading in the vicinity of Thirty-fourth Avenue.

Important among the projects not on network routes are several for major sections of concrete paving. They include these:

On T. H. 75, 10.4 miles of paving from Madison to Bellingham; on T. H. 93, 13.1 miles of paving from St. Peter to Le Center; on T. H. 59, 12.9 miles of paving from Fulda to Slayton; and on T. H. 61, 9.8 miles from Newport to Jct. T. H. 10. The project for T. H. 61 also includes a mile of grading, base and bituminous surfacing from Jct. T. H. 10 to the overhead bridge, and bituminous surfacing from the overhead bridge to the Hastings bridge.

Another important project for T. H. 61 is in Winona county, 6.4 miles of grading, base, and bituminous surfacing from Homer to a point two miles east of Lamoille, and three bridges, one near Lamoille and two 3.4 miles southeast of Homer.

Retirement Proposals

Discount for Age Provision Noted

The proposal of the SERA (State Employees' Retirement association) for coordination of its present retirement program with the federal Social Security program includes a "discount for age" provision in the case of voluntary retirement before the age of 65 years.

Several Highway department employees have pointed out that the article on the project in last month's Minnesota Highways did not include this particular provision. In substance they pointed out the following regarding optional retirement before the age of 65 years.

After 35 years' service irrespective of age, or after 20 years' service and attainment of age 58, the retirement allowance, under the plan proposed, would be reduced approximately one-half of one percent for each month the person was under the age of 65.

A reduction of approximately one-half percent per month (six percent a year) is thus the cost of retirement at an age under 65. In a seven-year period, for example, this would be equivalent to a 42 percent reduction in retirement benefits.

Under the proposed plan, the member could, at his option, have the retirement allowance actuarially adjusted so as to provide a greater monthly payment than otherwise from the retirement fund prior to attaining age 65, or for women prior to attaining age 62, and a lesser amount from the retirement fund thereafter. This gives the employee the right to obtain the greater annuity until he is eligible for social security benefits.

Highway Dept. Family Has Five Generations

Maintenance district 5 is proud of its family with five generations of women. Mrs. Fred Hollander of Thief River Falls, upper right, is the wife of one of the district's maintenance men. Shown with her are her mother, Mrs. Mattie Sorenson, lower right, Thief River Falls, aged 91, her daughter, Miss Morris Brodabii, upper left, Grand Forks, N. D.; her granddaughter, Mrs. Kenneth Clacher, Grand Forks; and her great granddaughter, Cory Ann Clacher.

Driver Examiners Have 3-Day Review Training

Minnesota's 54 driver license examiners attended a review school in St. Paul during January, their first in nine years. Two three-day meetings were conducted, one half the group being present Jan. 21-23 and the other half, January 28-30. Subjects of study included the state driver's manual, driver testing procedures and other factors concerned with license examination.

Refugee Joins Department

On Vida's application form for employment in the Highway department, he listed his last three years of employment as a union organizer with the International Brotherhood of Teamsters. He had previously been a machinist for a state enterprise on the purchase and distribution of raw materials and collection of manufactured articles for exhibit.

Previous to that he had been a technical draftsman for a Budapest construction engineering firm and had done two years of forced labor after World War II on the nation's reconstruction program.

Vida had six years' service in World War II. As the war ended, Vida's hatred for the Russians was so great that he maneuvered the surrender of his company to a British unit, rather than suffer the humiliation of capture by the Communists.

In the previous employment sequences on his application Vida put down as his reason for leaving his job as a machine shop foreman, "Part of a strike." He had worked 18 years in the machine shop before joining the Army.

To Vida, a trained and experienced soldier and civilian fighter for democracy, the plans on which he now works for the new interstate network are far more than plans for a system of freeways for easy travel. They, are, as their title states, a National System of Interstate and DEFENSE Highways, to be ready to perform an important service if and when any one tries to over-run the United States as his country was over-run and enslaved.

MINNESOTA HIGHW. Feb. 1957
A radically new look in highways is coming to Minnesota.

The new look will be freeways—936 miles of them in the new Interstate Highway network.

These wider, divided highways with controlled access for safer, uninterrupted travel at from 50 to 70 miles an hour will span the state with three principal routes—east to west from north of La Crescent to Luverne, north to south from Duluth to Albert Lea and the Iowa border, and northward from the Twin Cities to Moorhead. One hundred thirty-five miles of the construction will be in and encircling the Twin Cities metropolitan area.

The complete national network will total some 41,000 miles to connect major cities and industrial and defense areas throughout the United States.

Impact of the freeways on community life and planning in a large area of the state, as well as upon motor traffic and upon the Highway department, itself, is just beginning to be realized as the design engineers continue to unveil additional details of their size, design and potential service. They will provide a new and challenging outlook to highway engineering in Minnesota for years to come.

Construction on a major scale will start this year and the 936 now planned is expected to be completed in about 13 years.

A telling measure of the impact of the freeways on the state is seen in a quick review of their cost and size.

In the next 13 years, the National Highway Act of 1956, which authorized construction of the 40,000-mile National Highway network, will furnish $570 million to $600 million of federal aid to Minnesota for its network links, plus $270 million of federal aid for other highways.

Costs of the network highways in Minnesota are expected to range from $500,000 to $2 million per mile, including the cost of interchanges and right of way. Including the interchanges, there will be about 675 grade separation structures in the 936 miles of network freeways, costing in excess of $100 million.

Freeway costs will be determined by the types and size of construction and the amount and value of property required for right of way.

Wider Right of Way

In place of present trunk highway rights of way varying in rural

(Continued on page 6)
Network Routes Will Have Impact

(Continued from page 5)

areas from 100 to 150 feet in width and in urban areas from 150 to 200 feet, network rights of way will range from 150 to 200 feet in country sections and from 250 to 350 feet in the cities, according to the need to relieve congestion and the extent of property which is practically available.

The main objective of freeways, expressways and similar high standard highways is to permit a free flowing, rapid traffic—not through excessive speed, but through sustained, safe speeds.

To provide this free, safe flow, the network freeways will be of bigger and more variable design than any highways ever built before in Minnesota. For their purpose, they will be as good as any ever built or now building in the United States.

Here are some of their distinctive features:

As compared with the present general two-lane width in rural sections and four lanes in many congested areas in the state, the new freeways will generally have four lanes in the country and from six to eight lanes in the urban areas, each lane to be at least 12 feet wide.

Controlled Access Provided

As true freeways, the network links in Minnesota will have controlled access throughout all of their length, probably the most revolutionary change in highway design in modern times. Controlled access, sometimes called limited or designed, is the limitation to designated locations of all entrance to or exit from a highway.

It will, for the first time in history, free the motorist from the delay and accident hazard of hundreds of grade intersections and traffic moving to or from the highways connecting private driveways.

Intersecting roads which connect with the freeways will do so through interchange links between the intersecting roads, which will cross each other at separate levels. Interchanges will be located in accordance with major intersecting roads, averaging three miles apart in rural sections and one-half mile apart in urban areas.

The network freeways will have no grade level highway intersections or railroad grade crossings in their entire length.

A single freeway may be elevated, depressed, or at surface level, or a combination of elevations. The network freeways in Minnesota will be mostly at surface level for their long rural distances, passing either over or under intersecting roads.

As another step toward an unimpeded flow of traffic and greater safety, the freeways, in closely settled areas, will be fenced and prohibited to pedestrian traffic, tractors, and similarly slow moving vehicles. Safety and ease of driving also will be increased by night lighting in closely settled areas and at interchanges.

Median Barriers Included

In areas of comparatively high traffic volumes the traffic moving in opposite directions will be separated by median barriers, fences, or land strips. Median strips in Minnesota are planned to have minimum widths of 40 feet in flat and rolling rural country and four feet in urban sections.

In many urban areas, the appearance of the freeways will be enhanced by attractive landscaping designed, as far as possible, to fit them into their surroundings.

Some of the other design standards include the following:

- Design for speeds of at least 50 to 70 miles per hour in open areas, depending on topography, and at least 50 miles per hour in urban areas; adequate sight distances and sweeping curves for ample driver vision; gradients not steeper than three to five per cent, except on rugged terrain; all-weather shoulders with outer shoulders having a 10-foot minimum usable width for parking; and bridges and overpasses preferably of deck construction, with clearance heights of at least 14 feet.

The foregoing design standards for the Interstate network were formulated by the American Association of Highway Officials and adopted by the U.S. Bureau of Public Roads.

To Have Big Impact

The revolutionary freeways, through their size and design, large sums of federal aid, and increased volumes of traffic, are bound to have great impact upon the state, particularly the areas in which they will be located. Their construction, alone, will provide direct and indirect employment for thousands of men for more than a decade. Also, their superior type of design undoubtedly will be extended to other principal highways in the state which are not now adequate for their needs.

The freeways will become a dominant factor in settlement and community planning. Location and layout of industrial and residential areas and public institutions will bear a great deal of determining the location and types of highways. The freeways will not lead directly to stores, hospitals, or neighborhoods, but to communities and their supporting areas.

The interchanges, of various patterns according to local requirements, will, in many instances though not all, become the centers of commercial and industrial development and of residential areas. Paralleling service roads will serve locations near the freeways in many sections, feeding to access roads and interchanges.

Indication of the economic effect of the freeways in the communities they will serve is given by the experience of cities in other states which have had freeways for some time.

Property values in the vicinity of the Gulf freeway at Houston, Texas, went up an average of 65 per cent in the first five years after it was built. In communities along Boston's circumference, a toll freeway, a link such as the Twin Cities will have, property values increased as high as 700 per cent.

In Atlanta, Ga., undeveloped land along the freeway route, which formerly sold from $100 to $400 an acre, now is selling at from $1,200 to $1,400 per acre.

In San Antonio, not only has freeway construction prompted new residential development, but it has produced an increased leasing rate for rental properties served by the new facilities, reports the Automotive Foundation.

Can Benefit Blighted Areas

Also, points out the foundation, experience shows that freeways help convert blighted areas to new

MINNESOTA HIGHW

Feb, 1957
Industrial areas, civic centers, and similar uses. The association calls attention to the relationship between the redevelopment of the state capitol approach area in St. Paul and the projected freeway construction in that vicinity as an example of how freeways and redevelopment can go hand in hand.

The tendency of a freeway to separate the through from the local traffic of a community has been shown to have an economic advantage in permitting a faster turnover of customers and making the shopping area more convenient to those living in the fast and therefore more profitable travel time of commercial vehicles, including buses, and in the material reduction of accident costs for car and truck owners.

Some Handy Definitions of Highway Terms

To make easier the identification of the increasing number of classes of highways in Minnesota, here are non-technical definitions of some of them, and of some of terms associated with them.

ROADWAY - The traveling width of a highway from shoulder to shoulder, or, in the case of divided highways, from shoulder to median barrier. Thus, divided highways have two roadways.

TRAFFIC LANE - The width of that part of a roadway which accommodates a single line of vehicles.

DIVIDED OR DUAL HIGHWAY - A highway on which traffic moving in opposite directions is separated by a barrier, fence, or median strip of land.

MEDITAN - The part of a highway separating traffic moving in opposite directions.

GRADE INTERSECTION, CROSSING, AND SEPARATION - A grade intersection is the crossing of highways at the same grade level; a grade crossing is that of a highway over a railroad track at track level; and a grade separation is a crossing of highways, or of a highway and railroad tracks at separate levels.

INTERCHANGE - A highway grade separation designed to permit transfer of traffic between the intersecting highways via connecting lanes.

DIRECTIONAL FLOW INTERCHANGE - A type of interchange in which traffic may transfer between the intersecting highways on right or left turning lanes which pass over or under opposite traffic.

ACCESS - Points at which vehicles may enter or leave a highway.

CONTROLLED ACCESS - Restriction of points for entering or leaving a highway to a limited number of designated locations. (Also called limited or designed access.)

FRONTAGE ROAD - A local road or street beside an arterial highway for the service of adjoining property.

TRUNK HIGHWAY - A principal highway; in Minnesota, a segment of the designated highway system controlled by the state.

Because Minnesota is a state of considerable distances, the freeways’ faster travel time will have particular importance, economically and socially. Farmers and business and professional men will save working time, vacationers will have more “free” time, and people generally will be encouraged to visit relatives and friends at distant points more often.

Tourist Business Will Benefit

What freeways, with less travel time, will do to stimulate tourist travel is bound to be reflected in Minnesota in one of the state’s biggest businesses.

Present day highway congestion and higher speed vehicles made provision for faster travel, with safety, the major objective of freeway design. Even though speed has about doubled on rural highways in the past three decades, free flow of traffic is still blocked in many places, particularly in urban areas, by narrow roads, dangerous gradients, sharp curves, numerous traffic control devices, and free access from grade crossings and roadside business places and residences. Travel speed on

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urban streets has not increased materially in many years.

Minnesota's projected freeways will largely solve the traffic congestion problem for a good many years, being designed to accommodate normal traffic needs until the year 1975.

An idea of the freeways' affect in congestion reduction is gained from the following:

Under favorable conditions, the conventional city street can carry approximately 600 vehicles per lane per hour. One-way operation and elimination of curb parking increases the limit somewhat.

Modern freeways are generally divided, and will be so designed in Minnesota, for the movement of 1,500 vehicles per lane per hour. At that rate, the present 24-hour volume of traffic, about 30,000 vehicles, on St. Paul's six-lane University Ave. could be handled in 3-1/3 hours on a six-lane freeway.

A four-lane divided freeway will carry as much traffic as three 60-foot conventional streets, according to recorded traffic counts.

Traffic counts on some freeways now in operation show the following daily volumes are being achieved:

Two lanes each direction... 50,000 vehicles per day.
Three lanes each direction... 110,000 vehicles per day.
Four lanes each direction... 160,000 vehicles per day.

These volumes usually are attained without appreciable congestion or reduction in speed.

At the same time the freeways, themselves, provide faster travel, they will, particularly in urban districts, relieve the congestion on nearby parallel roads, thereby speeding the safe movement of traffic on these roads.

Safety Factor Increased

Faster movement of traffic on the freeways will be accomplished with a material gain in traffic safety. Accident records for existing freeways show that they are twice as safe as city streets in regard to fatalities and five times as safe regarding accidents. Rural traffic safety will be increased by improved curves and gradients, controlled access and elimination of left turns at grade level.

If the impact of the network freeways on the state as a whole appears big, consider what it will be on the state's Highway department which must handle their location and design, acquire right of way, let the contracts, and supervise construction.

The 13-year program, already entering the construction stage, will require increased manpower not only in the varied engineering phases, but in acquisition of right of way, accounting of the vast monies involved, and related supplementary activities, even to blue printing, testing, and typing operations.

The right of way division already has acquired additional personnel and efforts are under way to recruit additional engineers in the state and elsewhere.

And the increased manpower will have need for more field and office equipment if production bottlenecks are to be avoided.

The problem of engineering personnel is a striking example of what confronts the department in the matter of manpower.

Up to now, the department has employed not more than 550 engineers for the state's 11,500-mile trunk highway system. Now, in the face of one of the nation's greatest shortages of qualified civil engineers, the network program, coupled with the expansion improvement of other trunk highways under the enlarged federal aid provided by the 1956 National Highway act, calls for the services of 250 additional engineers. That is the estimate of L. P. Zimmerman, the department's chief engineer. In the present competitive situation, it poses a bottleneck capable of creating still more bottlenecks.

As one step to free engineers as much as possible from time consuming detailed computations, the department has leased a Univac 120 electronic computer. Extensive use will be made of aerial photogrammetry to survey network routes faster and with fewer men than ground surveying requires.

By their extent, size, and improved design, the Minnesota network freeways provide a challenge to the highway engineer's knowledge and ingenuity to chart new paths in design and construction. Their affect on community planning will lead him into a broader conception of highway planning as it relates to community development, as well as traffic movement. He will deal more closely with public officials and community leaders.

The state's increased dependence on high standard highway transportation will give him a professional stature and opportunity far beyond anything in the past.

In the same degree that the nearly 1,000 miles of network highways in Minnesota provide a present challenge to the Highway department and its personnel, they will provide a new high standard of service to the public and a pattern for future highways.

**HIGHWAY CROSS SECTION.** Comparative space relationships of a network rural highway are shown in this diagram. Limited right of way available in urban areas will narrow the space between traffic in opposite directions.
New Training Head Chosen

Development of the Highway department's expanding training program was boosted in February by the appointment of a full-time training officer. He is Gunnar Pederson of St. Paul.

a member of the personnel, he will plan, organize and administer a varied training program designed to extend throughout the department with in-service instruction and courses arranged in co-

operation with various educational institutions and industrial concerns.

Pederson has been a department manager and buyer at the Emporium, St. Paul department store, for the past 7½ years and before that he managed a store in Minneapolis and served 3½ years in the Marine corps during World War II. In the corps, he was a master technical sergeant, supervising the receiving and issuing of military property on the west coast and in the South Pacific theater.

He received his higher education at Augsburg college, Minneapolis; St. Olaf college, Northfield, where

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Zimmerman Named Commissioner

New Chief Is Well Qualified

Recent appointment of Chief Engineer L. P. Zimmerman to succeed M. J. Hoffmann as Minnesota Commissioner of Highways retains the Highway department's top administration in the hands of a professional engineer who, like Commissioner Hoffmann, has had wide experience in highway construction and maintenance in Minnesota, including extended service in the department.

Governor Freeman named Zimmerman to the post, effective April 21, after Commissioner Hoffmann notified the governor that he did not wish to be considered for reappointment. Governor Freeman asked Commissioner Hoffmann to continue with the department in the capacity of special adviser. Hoffmann has been commissioner since 1939.

Both Commissioner Hoffmann and Zimmerman are natives and lifelong residents of Minnesota, both are engineering alumni of the University of Minnesota, and both have spent most of their adult lives in highway engineering in the state.

Native of Wadena

Zimmerman is a native of Wadena and a 1916 graduate of the University of Minnesota; was Wadena village engineer in 1916-18, and served in World War I in the United States and France with the 45th Engineers, a railroad construction and maintenance regiment.

After being Big Stone county highway engineer 1919-21, he entered the Highway department, where he served successively until 1933 as maintenance superintendent in the Morris district, and as Southwestern and Metropolitan di-
10 New Captains, Two New Sergeants Named in Patrol

Commissioner Hoffmann this month promoted two Highway patrol sergeants, Thomas M. Gilpin and Lawrence W. Nelson, to the rank of captain. He also elevated Patrol Officers Bert W. Johnson and Stanley L. Dickinson to sergeant.

With two existing vacancies for captains, filing of which would create two sergeant vacancies, the four appointments were recommended by Chief Paul R. Martz on the basis of the results of recent promotional examinations. The four men promoted placed highest in the qualification tests for the two levels.

Gilpin and Nelson most recently have been stationed at Detroit Lakes and Willmar, respectively, and Johnson and Dickinson at Thief River Falls and St. Cloud.

Following the promotions, Sergeant Johnson was assigned to Willmar to replace Captain Nelson, and Sergeant Dickinson was assigned to Rochester. Dickinson will succeed James Stevens, now instructing at the patrol training school at Camp Ripley.

Assignment of the captains was not made immediately. They are currently instructors at the patrol school. Captain vacancies exist at Rochester and Virginia.

Captain Nelson joined the Highway patrol in 1941 and Captain Gilpin, in 1942. Both were promoted to sergeant in 1955. Sergeants Dickinson and Johnson both joined the patrol in 1942.

Hoffman Cites Gains

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He said the road building industry and the allied equipment manufacturers will enjoy a boom in increased activity for their services and products.

Considering economic factors outside the actual construction program, Commissioner Hoffmann said: “It is most likely that new industrial sites will be developed along segments of these interstate highways to provide better locations for light and medium industries which will depend upon modern highway transportation.”

Though Minnesota has not had any real experience with the so-called super-highways, the Commissioner pointed out that the experience of other states is that where the super-highways by-pass local business districts “Removal of through traffic from the business districts has invariably brought an increase in local business.”

“Customers under such conditions find it possible to drive into the business area without combatting the impatient drivers of numerous cars and trucks who are anxious only to get through the town and be on their way,” he said.

He also cited reduced operating costs for motor vehicles on superhighways as a further economic advantage in store with the introduction of the freeways. Lower operating costs result from shorter routes, elimination of stop-and-go traffic and other features of the improved highways, he pointed out.

Then there was the termite who boasted to his buddie, “This’ll bring down the house.”

Vacation—a short period of time during which you go broke trying to make strangers believe you can’t.

Silverstein Leaves Highway Department

Max Silverstein, a quarter-century veteran of the Highway department and a picnic promoter of exceptional talents, retired from the department February 28. Employed in the Maintenance division central office most of the time, Max has worked largely on coding, inventory and payrolls.

Picnic-wise, Max has been a mainstay of the Hiwayan club for many years in rounding up prizes and favors. He was a long-time councilman in the club and a “willing worker” in its social and sports activities. Max also was something of a utility man in the department, working at a variety of tasks when a quick hand was needed to unplug a bottleneck.

At a dinner in his honor February 26 at the Town House in St. Paul, Silverstein was presented with a traveling bag, cigars, and other gifts, including a varied collection of household remedies, a gold brick, and a “heep” bearing folding money (non-negotiable). Max expressed his appreciation to those present and to his other fellow employees for their gifts and expressions of goodwill.

If, as the saying goes, it is better to smoke here than hereafter, then Max Silverstein appears well insured against any heat treatment in the hereafter. His slow burners, complete with holder, have been his trademark in the Highway department for many years. With customary stoic in place, Max “lavenstorioued” an inventory report just before his retirement.

Max Silverstein leaves the Highway Department and his fellow employees for their gifts and expressions of good will.