ROUTE LOCATION
NOISE STUDY AND ANALYSIS
M 275
(I 96 AND I 696 NORTHERLY TO M 59)

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

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Research Laboratory Section
Testing and Research Division
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Michigan State Highway and Transportation Commission
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John P. Woodford, Director
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Introduction

The section of proposed M 275 covered by this report extends from the I 96 - I 696 interchange northerly to M 59 in Oakland County in southeastern Michigan. This project was performed by the Michigan Department of State Highways and Transportation as part of a route location Environmental Impact Statement required for location planning and project design stages, in order to be eligible for Federal-aid participation.

Traffic Data

The traffic data for the proposed alignment and the alternates, for the design year (1990), were selected from the Transportation Survey and Analysis Report, T.A.R. 1000. Table 1 is a compilation of these data. Since vehicle speeds corresponding to the DHV were not available, speed limits were used. As prescribed by PPM 90-2, the lesser of the design hourly volume (DHV) or the maximum volume which can be handled under traffic level of Service C conditions were used in the noise predictions.

Geometric Data

The physical dimensions for the project were selected from Engineering Report No. 1743; associated topographical maps and related information were supplied by the Environmental Liaison Section of the Bureau of Transportation Planning.

Planned Route Location

The recommended route, Alternate A, will begin at the present junction of I 96 and I 696 and then proceed northerly to proposed Northwestern Highway and then northwesterly to M 59.

Alternate B would take the route westerly from the Alternate A junction with proposed Northwestern Highway to just west of South Commerce Rd and then northerly returning to the Alternate A alignment.

Alternate C would take the route westerly from the Alternate A junction with proposed Northwestern Highway to west of Benstein Rd and then northerly returning to the Alternate A alignment.

Figure 1 shows the recommended and alternate alignments.

Discussion and Conclusions

Land use categories in accordance with those of PPM 90-2 were determined for the areas along the proposed route location (Fig. 2). Figures 3 through 6 of the proposed location indicate the general appearance of the existing area.

On June 20, 1974 ambient noise measurements were made at typical sites in the residential and undeveloped areas along the proposed route location. The undeveloped land areas and those residential and school areas with only very lightly traveled roads nearby had ambient noise levels of 42 to 46 dbA. Those areas which are serviced by roads with intermittent traffic, such as Commérce Rd, have typical ambient noise levels of 54 to 72 dbA with traffic present (at a distance of 170 to 30 ft from the roadway) and 44 to 48 dbA without traffic.

The L_{10} noise levels for the design year (1990) were predicted by the method of Research Report No. R-890, "Traffic Noise Level Predictor Computer Program." Table 2 is a tabulation of the design year noise levels at the R-O-W line and the distances from the center of the near lane (DN), at which the L_{10} equals 70 dbA; predictions for typical sites along the proposed route are also included. These predictions were made for the two contingencies of Northwestern Highway being constructed or not.

It appears that both the recommended (Alt. A) and the alternate locations (Alt. B and C) will be fairly noisy (upper 70's at the R-O-W) during the design year and will constitute a severe impact when compared to existing conditions.

In order to meet the noise level requirements of PPM 90-2 for the residential areas, category B (70 dbA), changes must be made in the proposed design of the route, such as acquiring additional R-O-W as indicated by the DN values of Table 2 or the addition of noise barriers in those areas where the PPM 90-2 design noise levels are exceeded.

There are no design noise levels for the undeveloped land, category D, along the proposed route. However, local government units should be made aware of the predicted design year noise levels in regard to future land use plans.

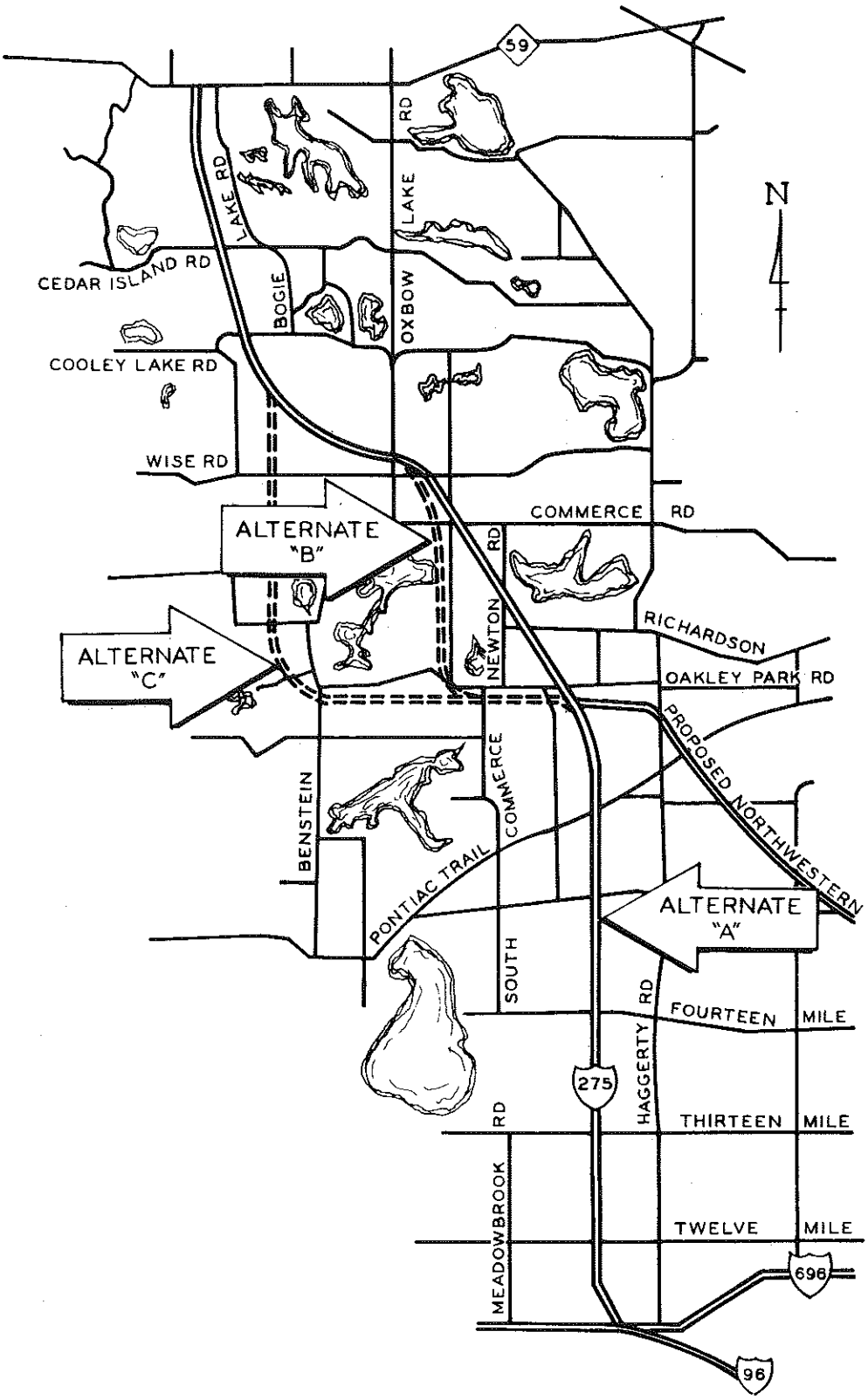

Figure 1. Route location map.

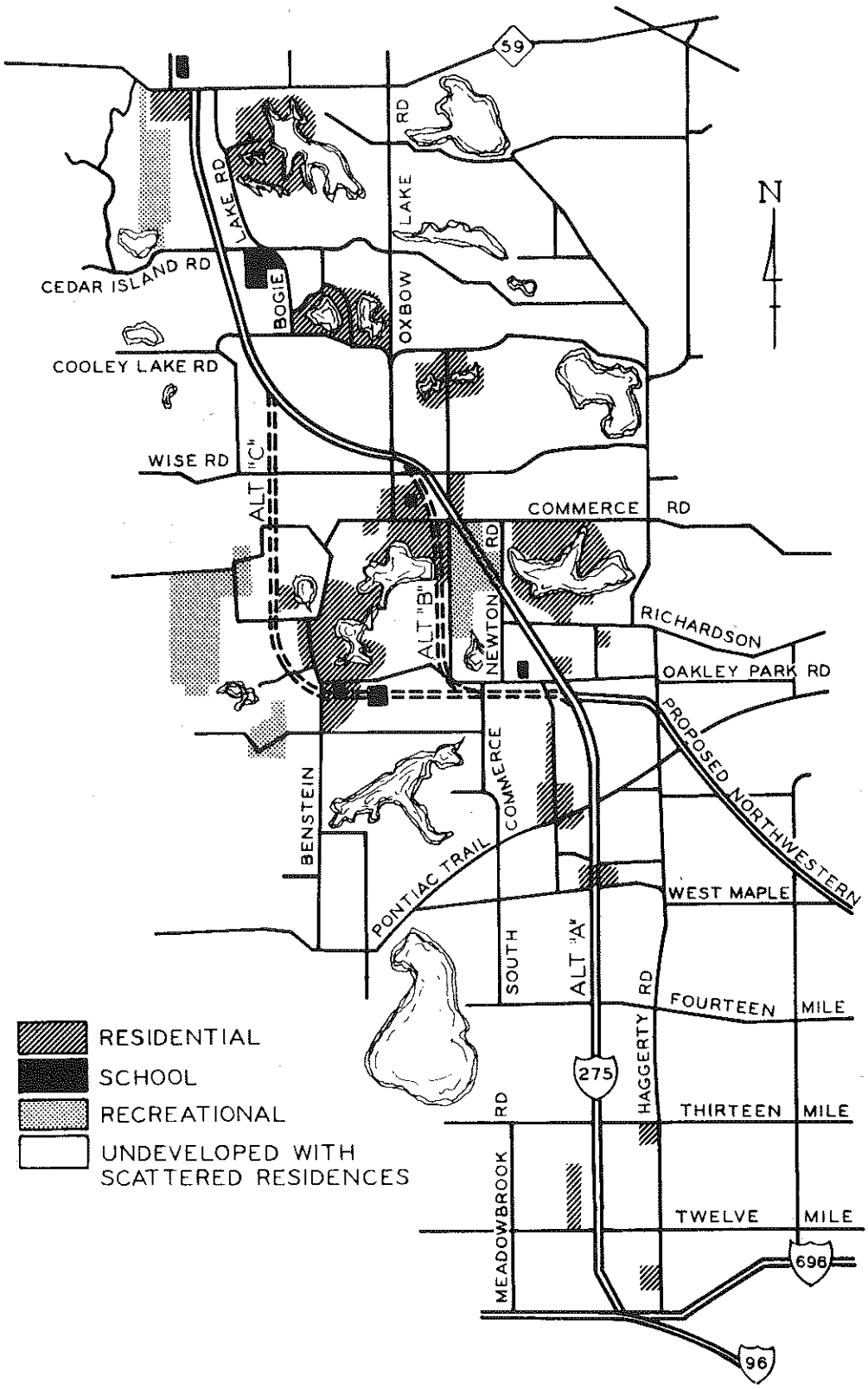

Figure 2. Area land use map.

Figure 3. Undeveloped land northeast of 13 Mile Rd through which proposed M 275 will pass.

Figure 4. Residential area on Laura Lane through which proposed M 275 will pass.

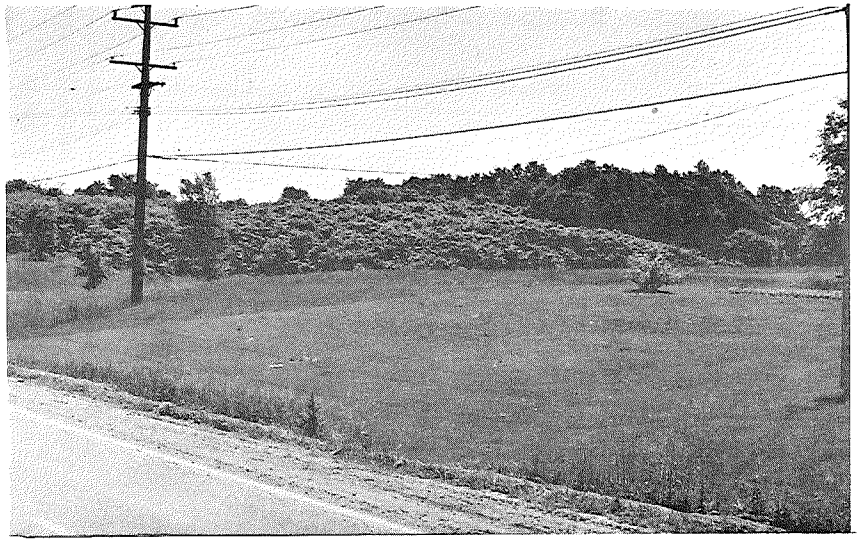

Figure 5. Undeveloped land north of Wise Rd through which proposed M 275 will pass.

Figure 6. Mobile home park south of M 59 which will be taken in part by proposed M 275.

TABLE 1
M 275 1990 DESIGN YEAR TRAFFIC DATA
(Selected from TAR1000)

		M 59 Southerly to Commerce Rd			Commerce Rd to Northwestern Hwy			West Maple to 13 Mile Rd		
		Alt A	Alt B	Alt C	Alt A	Alt B	Alt C	Alt A	Alt B	Alt C
With Northwestern Hwy	Directional DHV	4,500	4,500	4,730	4,800	4,800	5,150	3,800	3,800	3,900
	DHV passenger vehicle speed	55	55	55	55	55	55	55	55	55
	DHV commercial vehicle speed	55	55	55	55	55	55	55	55	55
	Level of Service C hourly volume	4,290	4,290	4,290	5,720	5,720	5,720	4,290	4,290	4,290
	Level of Service C auto speed	45	45	45	45	45	45	45	45	45
Without Northwestern Hwy	Directional DHV	4,160	4,160	4,400	4,470	4,470	4,550	4,220	4,220	4,670
	DHV passenger vehicle speed	55	55	55	55	55	55	55	55	55
	DHV commercial vehicle speed	55	55	55	55	55	55	55	55	55
	Level of Service C hourly volume	4,290	4,290	4,290	5,720	5,720	5,720	4,290	4,290	4,290
	Level of Service C auto speed	45	45	45	45	45	45	45	45	45

TABLE 2

DESIGN NOISE LEVEL IDENTIFICATION AND COMPARISON OF PROPOSED M 275

(Predictions from use of R-890)

	Area	PPM 90-2 Design Noise Level	L_{10} (dbA) Noise Levels for 1990								
			M 59 Southerly to Commerce Rd*			Commerce Rd to Northwestern Hwy			West Maple to 13 Mile Rd		
			Alt A	Alt B	Alt C	Alt A	Alt B	Alt C	Alt A	Alt B	Alt C
With Northwestern Hwy	At R-O-W		75	75	75	76	76	76	78	78	78
	Oakley Park School	B(70)				66					
	Dodge 5 Park	B(70)				76	76				
	Walled Lake High School	B(70)					76	66			
	Mt. Calvary Baptist Church	B(70)					67	72			
	Neighborhood west of Commerce Rd	B(70)					76				
	Commerce Twp. Hall	B(70)						68			
	Glengary Elementary School	B(70)						66			
	Nature Preserve, Proud Lake	B(70)						70			
	Neighborhood south of Bass Lake	B(70)						76			
	DN for L_{10} = 70 dbA, ft		248	248	248	277	277	292	242	242	248
Without Northwestern Hwy	At R-O-W		75	75	75	76	76	76	79	79	79
	Oakley Park School	B(70)				65					
	Dodge 5 Park	B(70)				76	76				
	Walled Lake High School	B(70)					75	66			
	Mt. Calvary Baptist Church	B(70)					67	72			
	Neighborhood west of Commerce Rd	B(70)					76				
	Commerce Twp. Hall	B(70)						67			
	Glengary Elementary School	B(70)						65			
	Nature Preserve, Proud Lake	B(70)						69			
	Neighborhood south of Bass Lake	B(70)						76			
	DN for L_{10} = 70 dbA, ft		254	254	260	265	265	267	261	261	251

* Noise levels for this section were predicted for the minimum R-O-W (400 ft) and minimum median (94 ft). For the maximum R-O-W (500 ft) and maximum median (328 ft) condition, the L_{10} noise level is 80 dbA for all but Alt C, without Northwestern Hwy, which is 81 dbA. The DN for a L_{10} of 70 dbA is 225 ft.