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Trunk Highway Corridor Protection Demonstration Project Report

Prepared by Minnesota Department of Transportation and the Highway 55 Corridor Coalition



Required by 2002 Minnesota Legislature

Minnesota Session Laws of 2002

Chapter 364

Section 35

Report Date: April 1, 2004

Cost of Report Preparation

As required by state statute, all reports to the legislature must contain the cost of preparing the report, including any costs incurred by another agency or another level of government. The cost to prepare this report, including reproduction, was approximately \$2,000. However, the costs to Mn/DOT to complete the tasks identified in the report was much more. As of April 2004, it has cost Mn/DOT approximately \$50,000 in direct salary costs. This does not include overhead or benefits. It will still take an undetermined amount of time to complete the tasks as work is ongoing.

I. Issue & Introduction:

The Highway 55 Corridor Coalition was formed to secure right of way (R/W) and related infrastructure improvements to increase safety and provide additional capacity between I-494 in Hennepin County and the western limits of Annandale in Wright County. Coalition membership includes representatives from government, businesses and citizens.

Currently, the need for expansion of Trunk Highway 55 (TH55) is greater than the State's ability to fund projects. Increased development adjacent to corridor will increase future R/W costs. Development of an official map to protect R/W prior to programmed capital improvements could save future R/W costs.

Legislative Directive

The 2002 Minnesota Legislative Session, Chapter 364, Section 35 (see Appendix E) required the Commissioner of Transportation, in cooperation with the Trunk Highway No. 55 joint powers board to conduct several activities. The main activity was to develop an official map of the corridor that could be adopted and used by local units of government to plan for future right of way needs. The Commissioner of Transportation must report the results of the corridor protection to the committees of the Senate and House of Representatives with jurisdiction over transportation policy and finance.

This legislative directive is also consistent with Mn/DOT's Statewide Transportation Plan, Policy 2: Support Land Use Decisions that Preserve Mobility and Enhance the Safety of Transportation Systems. This policy affirms that Mn/DOT is committed to working with local governments to coordinate land use and transportation decisions in order to preserve safety and mobility on state highways, reduce conflicts with landowners, protect right-of-way, and respect community values.

This report documents a process to develop public consent and local government support for developing an official map and fulfills the Legislature's directive to report the findings to the appropriate committees.

II. T.H. 55 Need for Official Mapping

The TH 55 corridor from I-494 to Annandale was selected for official mapping because of the efforts of the Highway 55 Corridor Coalition, the deficiencies of the existing highway, and the lack of funding available. No major projects are programmed for this corridor within the next 10 years even though the conditions of TH 55 warrant the expansion to a four-lane facility from the west limits of Annandale in Wright County to Arrowhead Drive in Hennepin County. From Arrowhead Drive to I-494, TH55 is currently a four-lane expressway, but will require capacity expansion in the future.

Traffic volumes on the existing 2-lane section range from an 11,000 ADT in Annandale to approximately 19,000 ADT in Hennepin County. The existing 4-lane section has an ADT of approximately 40,000 near I-494. In addition to the high traffic volumes, the peak-hour directional flows show a strong commuter shed into the metropolitan area, which will continue to grow. The high traffic volumes contribute to safety problems. Charts documenting the traffic and safety information on the need for an expansion can be seen in the appendix.

The official map would enable local units of government to help make the future expansion of the highway more cost effective while providing a tool for guiding development along the corridor prior to the expansion.

III. Preliminary Plan and Layout

It must first be noted that "preliminary plan and layout" is the terminology used in the Legislation discussed above. It does not refer to the preliminary geometric layout prepared by Mn/DOT and counties for environmental documentation. To be consistent, we will still refer to it as it is stated in the legislation.

The development of the preliminary plan and layout involved several steps and is a prerequisite to the Official Map. First, typical cross sections were selected for both rural areas and also urban/urbanizing areas. Appendix D shows the typical cross sections selected for Wright and Hennepin Counties.

Then, estimated right-of-way limits were chosen for the areas based on the cross section selected. Appendix D also gives the right of way dimension selected for each cross section.

The proposed right of way line should be enough to accommodate the expanded roadway in most areas and still allow sufficient space for placement of utilities along the corridor. Several utility companies are involved in the TH55 Corridor Coalition and their input was valuable in developing the preliminary layout.

Next, design criteria was selected for both rural areas and urban areas. Once again, Mn/DOT, cities, townships and counties discussed the proper design speed to be used in laying out the geometrics for the future improvements. Horizontal curves that did not meet the selected design speed were adjusted in the layout development. The future rural and urban limits were also discussed during these meetings and are reflected in the preliminary plan and layout.

Finally, a surveyed centerline of the existing highway was calculated and used as a guide in developing a proposed new alignment. The future alignment follows the existing alignment as closely as possible to minimize impacts while still meeting the design requirements discussed above. The determination on which way to widen in the rural areas was influenced by the railroad tracks since they parallel each other along a majority of the corridor. This limits us to widening away from the tracks. Once the new centerline was calculated, it was placed on a layout with a photomosaic base map, GIS property lines, and the existing centerline as background. This preliminary plan and layout was used for the public information meetings held and also as an information tool for Mn/DOT, local agencies, and residents for proposed developments along the corridor while the official map was being finalized and adopted.

An example of a section of the preliminary plan and layout is in Appendix B.

IV. Official Map (ongoing)

Mn/DOT staff completed the official maps in Wright County by January of 2004. As of this report date, the official maps have not yet been adopted by the local agencies. Mn/DOT and the counties have met several times to discuss changes needed to zoning, ordinances, or comp plans prior to adopting the map. Currently, Wright County is in the process of adopting a countywide official mapping ordinance. This enabling ordinance would allow the county to use the official mapping process on other transportation corridors. After that is completed, each city or county could then hold a public hearing before adopting the official map. In Hennepin County, the official maps will be adopted individually by each city.

The development of the official maps is relatively straightforward since the corridor was defined previously by the preliminary plan and layout. The following outlines the 5 basic steps used to develop the official map in Wright County.

1. Section breakdowns were obtained from the County and Mn/DOT also shot in approximately two dozen section corners in H.A.R.N. Coordinates. The County section breakdowns were also converted to H.A.R.N. Coordinates.
2. Mn/DOT Surveys computed the in-place alignment for reference.

3. The proposed alignment for the additional two lanes was computed using the in-place alignment and offsets from the in-place. In areas where the in-place alignment did not meet the selected design speed for the area, the proposed alignment was changed to meet all design criteria.
 4. The computed centerline alignment was then tied in at each section corner. This was done by intersecting the new centerline with the section lines and inverted to the section corners. An azimuth and distance from the centerline to the section corner is given at each section line the alignment intersects.
 5. Official maps reviewed by County Surveyor.
- An example of a section of the official map is in Appendix C.

V. Planning & Zoning Workshop

In Wright County, a workshop was held on November 13, 2003 to educate the local officials and planners about the process of adopting the official mapping ordinance and using the official map to guide proposed development along the corridor. The effectiveness of the official map in areas that are already developed was questioned during the workshop and discussed further in a meeting with Mn/DOT and County officials. In Wright County, the cities may decide to not adopt an official map in the areas that are already developed.

VI. Public Involvement

The Highway 55 Corridor Coalition held monthly Full Membership meetings when necessary throughout the development of the Preliminary Plan and Layout and the Official Map. Mn/DOT gave updates to the coalition at each meeting and it also gave Mn/DOT an opportunity to receive feedback on any issues the coalition had regarding the progress being made or the direction taken in the development.

Access management workshops

Prior to developing the preliminary layout, the Highway 55 Corridor Coalition asked Mn/DOT to hold a workshop to discuss access management with local units of government in the summer of 2002. Mn/DOT developed statewide access spacing guidelines to use on State Highways. Spacing guidelines are defined for each classification of State Highway. The use of these guidelines allows Mn/DOT and local governments to plan consistent intersection spacing as projects and developments occur. This information was presented to help educate them on what access management is, access management techniques, and ways for local government to manage access.

This workshop was part of a larger open house the coalition held to inform the public on the purpose and mission of the Highway 55 Corridor Coalition.

Local Community Meetings

Once Mn/DOT developed the preliminary plan and layout, the Highway 55 Corridor Coalition held local community meetings in both Wright and Hennepin County. Community representatives were able to review the typical sections used to estimate the new proposed highway corridor, assumptions made in relation to urban and rural corridors, and also access spacing guidelines that would be applied to the new corridor. Adjustments were then made to the layouts based on the comments and the layouts were then presented at open houses along with additional information.

Open House

After the local community meetings were held and adjustments were made to the layouts, an open house was held in both Wright County and Hennepin County. In addition to displaying the layouts for public comment, information regarding traffic volumes, crashes and access management was presented to document the need for the official map. The Highway 55 Coalition also had information on hand regarding the purpose of the coalition and offered the opportunity to join.

County and Mn/DOT staff helped conduct the open house and were available to answer questions and listen to comments. The open houses were well attended and comments were taken to the Highway 55 Technical Advisory Committee meeting. Comments from open house were discussed and changes made where the TAC felt appropriate.

Public Hearings

As of this report, the local units of government have not held public hearings regarding the adoption of the official maps.

VII. Continuing Action and next steps

The adoption of the official maps is the next step in the process. They are expected to take place after the official map zoning ordinance is adopted.

In the 2003 Federal Omnibus Bill, \$1.5 million dollars was allocated to the Highway 55 Coalition and Mn/DOT. This money will be used to further the mission of the coalition. To date the Highway 55 Coalition and Mn/DOT have decided to use the money on the following activities:

1. Phase I Cultural Resources Investigation to identify any Historical or Archeological sites along the corridor.
2. Phase I Contaminated Property Investigation to identify any areas along the corridor that could have contaminated soils.
3. Traffic Studies to model the corridor. This information can be used for things such as estimating growth along the corridor and the affect different improvements would make if implemented

4. Remaining funds are identified for acquiring small pieces of right of way if possible and also environmental documents.

VIII. Conclusion

The effectiveness of process followed above went very well. The involvement of the members of the coalition played a large role in the success of the process. The townships, cities, counties, businesses, and citizens that are members of the coalition speaking with one voice was helpful in streamlining the process.

Cost savings

Even though the official maps have not been adopted, there have been several examples of where the information developed has been useful.

In Hennepin County, a developer was able to relocate the proposed structure on his plat to a different location. This was done because he attended one of the open houses held in 2003 and saw the future corridor limits. When TH55 is expanded the property will still be acquired, but acquisition of the building was avoided. Cost savings to the state are the cost of the building, which would be several hundred thousand dollars.

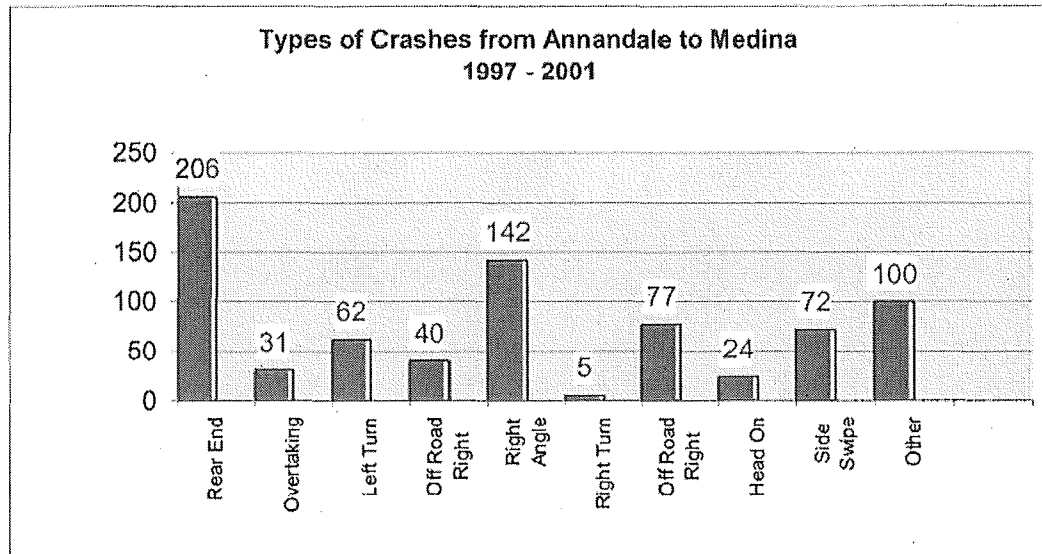
The City of Maple Lake used the draft Official Map to guide them in working with a developer on a proposed plat along TH55. Access was eliminated, access control dedicated, and no future buildings will be impacted by the expansion.

In Buffalo, the future TH55 right of way in a 40 acre parcel was platted as an outlot to avoid any future impacts to the commercial properties. This eliminates the potential taking of 3 buildings. The developer was agreeable to this since he was able to show prospective buyers that any future expansion to TH55 was accounted for in the property they may purchase.

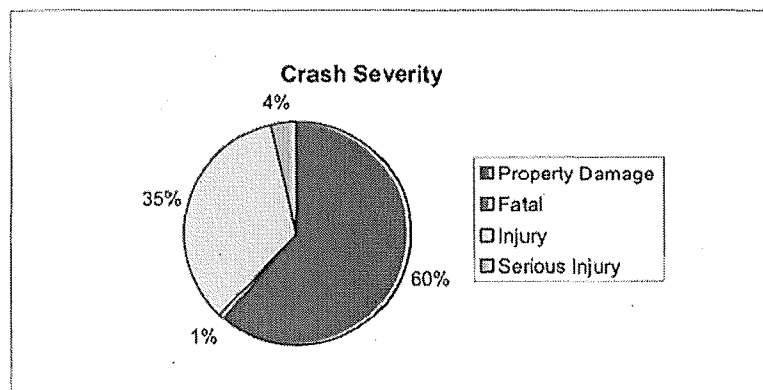
As plats for future developments are prepared along the corridor, both the counties and developers have been contacting Mn/DOT for input on the plats and the impacts a future expansion project would have on the proposed development.

Cost savings will be realized in many ways such as purchasing right of way at today's costs vs. inflated costs. New development and businesses can be built and oriented with regard to the official map thereby eliminating the need for a complete parcel taking in the future. The official map also eliminates many of the questions landowners and potential developers may have in regards to the expansion of the highway and allows them to maximize the use of the remaining parcel.

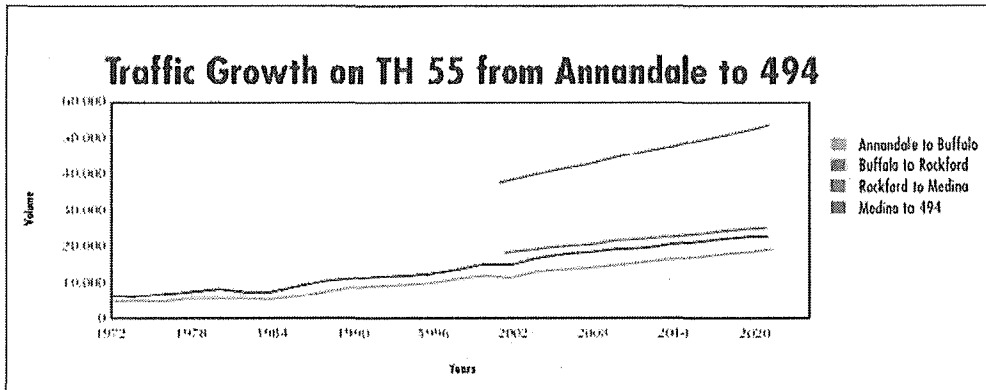
Appendix A Traffic Information



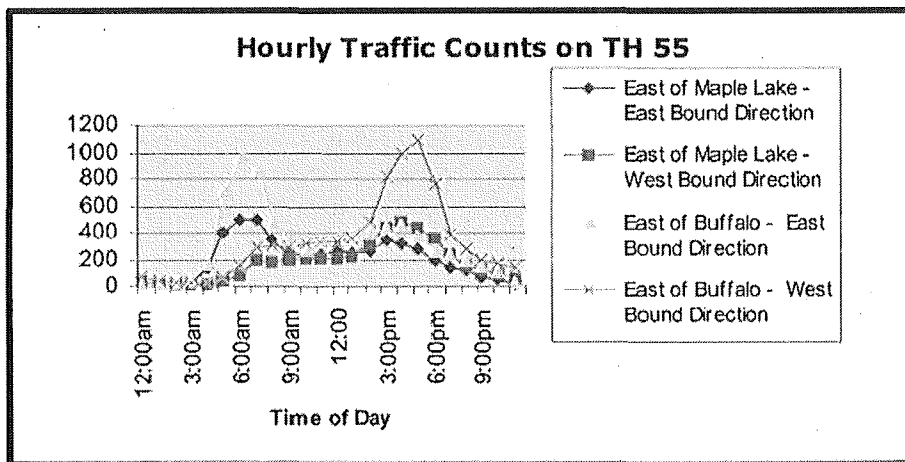
The information in the above chart shows the types of crashes on the corridor. An expansion to a 4-lane will result in the elimination of most of these crash types.



This chart shows that approximately 40% of the crashes resulted in injuries. Expansion will drastically reduce this percentage as the conflicts with oncoming traffic is eliminated. Head-on collisions usually cause the most serious types of crashes, but they rarely occur on divided highways. The Highway 55 corridor averages approximately 8 head on collisions each year.



The traffic volumes above reflect the growth of the corridor using linear regression based on past traffic volumes. These volumes show the traffic is approaching the capacity of a two lane section. The traffic modeling being conducted with the Federal appropriation will be more accurate and most likely be higher as it takes into account growth along the corridor.

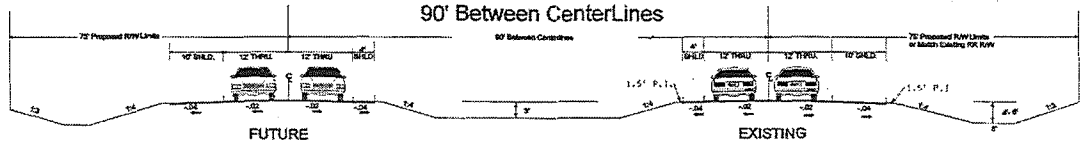


The traffic counts taken on each side of Buffalo in the rural areas shows the hourly distribution along the corridor. There are strong a.m. and p.m. peaks that show a strong commuter shed to the metro area in the morning and into Wright County in the evening.

Trunk Highway 55 Corridor

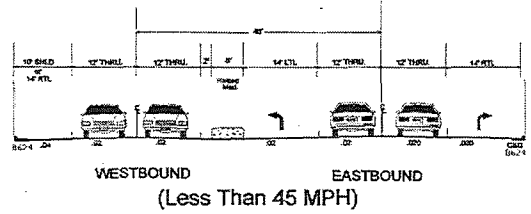
Wright County

Rural Typical



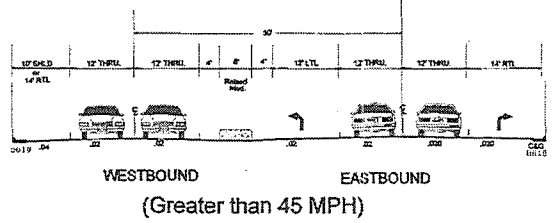
Urban Low Speed Typical

46' Between Centerlines



Urban High Speed Typical

50' Between Centerlines



CHAPTER 364, SENATE FILE No. 3298

Sec. 35. [TRUNK HIGHWAY CORRIDOR-PROTECTION DEMONSTRATION PROJECT.]

Subdivision 1. [ESTABLISHMENT OF PROJECT.] (a) The commissioner of transportation, in cooperation with the trunk highway No. 55 joint powers board, shall establish a corridor-protection demonstration project along the corridor of marked trunk highway No. 55 between marked interstate highway No. 494 in Hennepin county and the city of Annandale in Wright county. The purpose of the corridor-protection demonstration project is to develop a transferable process and methodologies for trunk highway corridor coalitions to use in protecting a corridor for future capacity needs, such as for additional lanes, safety improvements, improved access management, and bus transit services.

(b) The commissioner, or a designee, shall participate as a nonvoting member of the trunk highway No. 55 joint powers

board,

provide technical advice and guidance relating to developing a corridor-protection plan and official map, and may provide a grant to the board to hire a consultant. The grant is

available

only upon the formation of a trunk highway No. 55 joint powers board that, at a minimum, includes the counties of Hennepin and Wright, and a majority of the cities and townships that include or border trunk highway signed No. 55 between interstate

highway

signed No. I-494 and the city of Annandale. The joint powers board shall use the grant to hire a consultant to conduct, at a minimum, the following activities:

(1) develop a preliminary plan and layout for the future boundaries and right-of-way needs of the highway corridor;

(2) develop an official map of the corridor;

(3) conduct at least one official public hearing in the corridor upon completion of the official map;

(4) assist the municipalities in making any necessary comprehensive plan amendments, zoning changes, or ordinance changes; and

(5) educate the municipalities regarding appropriate strategies, procedures, and tools to use to protect the

corridor

for the planned right-of-way needs.

Subd. 2. [REPORT TO LEGISLATURE.] By January 15, 2004, the commissioner shall report the results of the corridor-

protection

demonstration project to the committees of the senate and house of representatives with jurisdiction over transportation policy and finance. The report must include findings regarding the effectiveness of assisting communities in developing a corridor-protection plan and official map and estimates of future right-of-way savings due to early implementation of

right-of-way protection mechanisms.

Appendix F

DATE: OCTOBER 1988

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION

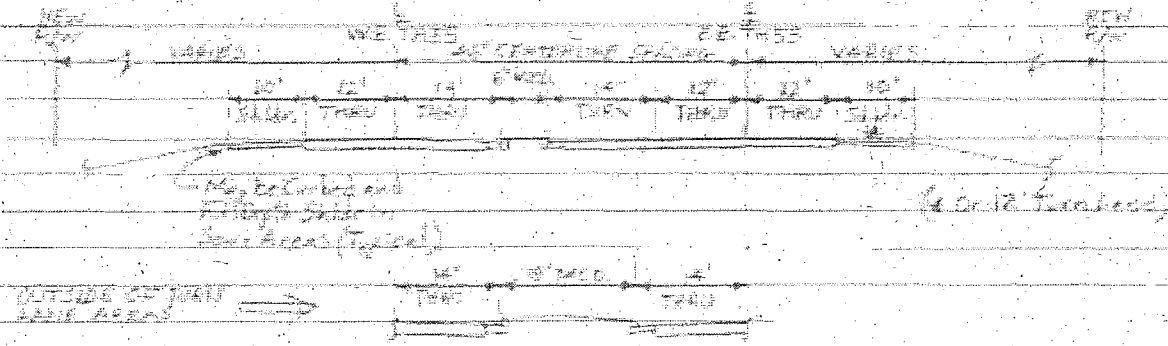
SHEET NO. _____
BRIDGE NO. _____
PROJECT NO. 5MB
DATE: _____
BY: 3/6/03

DESIGN COMPUTATIONS

SECTION: F.H. 53 Proposed Section Info.

Existing 46' Centerline Spacing "Nadon Roadford Section"

- Provides for Single Left Turn Lane
- Provides for 6-foot Raised Median width (or 8-foot in our Other Sections)
- Provides 2-foot Reaction Distances to Median Curb Lines but does not provide for Standard 4-foot shoulders. This may need to be done to provide 4' shoulders in Non-Turn-Lane areas, but it would not be a desirable design.
- Provides only 22-foot Turn Lane to Through Lane which is within the 15' to 25' "Driver Containment Zone" where drivers become unaware of what is in front of them in the median to cross in two steps. (Note that if all intersections are signalized then this becomes a non-issue.)



RECOMMENDED REVISIONS:

- 1) Outside of the River Bridge (to remain 46' Centerline Spacing to avoid need for reconstruction), Reconstruct to provide 50 feet between Centerlines to allow for 4-foot Standard Shoulder.
- 2) Provide 26 feet between Through Lane Edge to get out of 15'-25' Driver Containment Zone
- 3) Provide for 6-foot wide Med in at Intersection to match other proposed sections.

REPORT 2011-12-10

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION

SHEET NO. _____

BRIDGE NO. _____

SECTION 518

CHAS. 27 _____

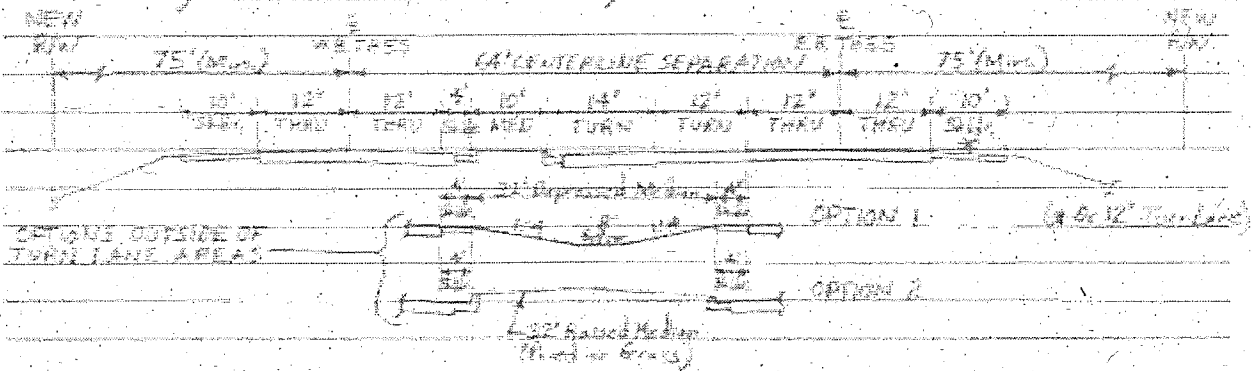
DATE 9/16/08

DESIGN COMPUTATIONS

DESIGN OF T.H. 55 Proposed Section Info.

75-64-75 Desirable Narrow 4-Lane Section

- Provision for Dual Lanes
- 4-foot Standard Inside Shoulder, since 2-Lanes in Each Direction
- 2-foot Reaction Distance to Curb Lines
- Provision for Depressed Median with 2.5 foot Depth (for matching edge at shoulder elevations)



Analysis of Options Outside of Turn Lane Areas for Median Design:

Regarding Option 1:

- Probably go with this option.
- Through Lane to Through Lane separation is 40 feet which is in the very middle of the "Barrier Optional" zone of Fig. 10-7.05A of the RDM. We would choose "No Barrier" due to the sight obstruction issue it would create at intersections.
- Provides 2.68 foot depth median where edge of shoulder elevations match.

Regarding Option 2:

- Probably would not select this option due to it being a fairly wide median and the fact that there would be fairly long lengths of curved full width median between intersections.

Appendix F

PROJECT NO. 10 75

STATE OF MISSISSIPPI
DEPARTMENT OF TRANSPORTATION

PROJECT NO.

BRIDGE NO.

MADE BY

SCIP

DRAWN BY

DATE

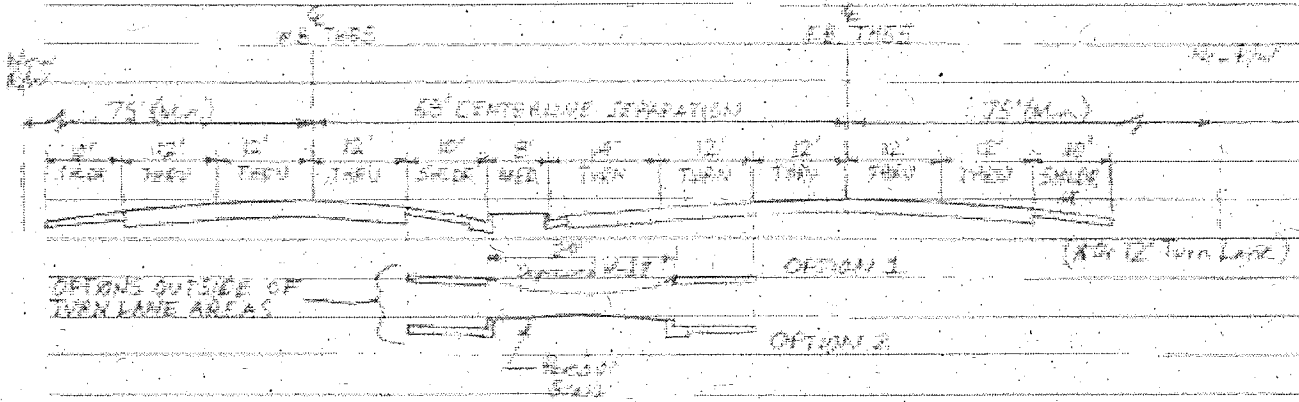
8/15/03

DESIGN COMPUTATIONS

DESIGN OF T.H. 55 Proposed Section Info.

75-68-75 Possible Narrow 6-Lane Section

- Provision For Dual Lefts
- 10 Foot Inside Shoulder since 3-lanes in Each Direction
- 2 Foot Buffer Distance to Curb Lines



Analysis of Options Outside of Turn Lane Areas for Median Design:

Regarding Option 1:

- Probably not a good Option since with perfect profiles (same elev. at side edges) depth @ 4:1 and 8' bottom would be only 1.68 feet depth.
- Would need to increase separation from 68ft to 76 ft to yield a 3.2 ft (side to side) median that would have a "perfect profile" depth of at least 2.5 ft (2.68 ft)

Regarding Option 2:

- Probably go with this option
- With 4" Curb, through lane to through lane separation is 44' which is in the "Barrier Optional" Zone of Fig. 10-7.05A of ROM, but is nearer the "Barrier Not Normally Considered" Zone than the "Equivalent to Barrier" zone.

Appendix F

MD DOT 2001 112-70

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION

PROJECT NO. _____
 ROUTE NO. _____
 SCALE BY SNB
 DATE BY _____
 DATE 2/16/05

DESIGN COMPUTATIONS

SECTION OF IH 35 Proposed Section Info

75-20-75 Desirable Rural 4-Lane Section

- Provide for Storage of a Design WB-50 Semi (55' Length Overall) within the Median Area at Intersections
- 4-foot Standard Top of Shoulder since 2 Lanes in Each Direction
- Rural Design Noise at Intersections

