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HARDIN VALLEY SUBDIVISION
Traffic Impact Study
Hardin Valley Road
Knoxville, TN

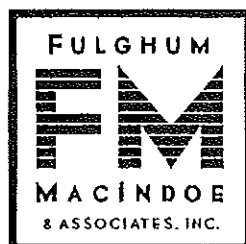
**A Traffic Impact Study for the Proposed Hardin Valley
Subdivision**

Submitted to

**Knoxville – Knox County Metropolitan
Planning Commission**

Revised August 24, 2015
Revised July 29, 2015
Revised June 24, 2015
June 8, 2015
FMA Project No. 330.009

Submitted By:



Executive Summary

Shady Glen, LLC proposes a residential development with apartments and single family homes. The project is located at 10105 Hardin Valley Road near the intersection of Hardin Valley Road and Westcott Boulevard in West Knox County, Tennessee. The development will consist of 248 apartment units and 170 single family homes. Construction is proposed to take place this year and this study assumes full build out for the development will occur in 2018.

The public street for the proposed development will tie into Hardin Valley Road 805-ft east of the intersection of Hardin Valley Road and Westcott Boulevard. The proposed lane configuration is a right and left turn lane out of the development.

In order to maintain or provide an acceptable level-of-service for each of the intersections studied, some recommendations are presented.

Hardin Valley Road @ Project Entrance

An eastbound right turn lane is warranted at the intersection of Hardin Valley Road and the proposed project entrance. This warrant is met only during the PM peak hour due to the high volume of traffic on Hardin Valley Road. For a right turn lane on an arterial road the AASHTO "A Policy on Geometric Design of Highways and Streets" recommends the installation of a minimum 100-ft right-turn taper and a minimum storage length of 50-ft.

A westbound left turn lane is warranted at the intersection of Hardin Valley Road and the proposed project entrance. The existing left turn lane has a taper length of 175-ft and a storage length of 100-ft.

Signal Warrants 1 eight-hr vehicular volume, 2 four-hr vehicular volume and 3 peak hour were all met after the full build out of the Hardin Valley Subdivision. It was determined that the Hardin Valley Subdivision will not meet Warrant 2 until it reaches 60% build out and it will not meet Warrant 3 until it reaches 75% build out. FMA recommends that the need for a signal at the project entrance be re-evaluated after the Hardin Valley Subdivision reaches 75% build out.

Hardin Valley Road @ Westcott Boulevard

The intersection is expected to operate at a LOS D during the AM peak hour and a LOS C during the PM peak hour after the completion of the Hardin Valley Subdivision. FMA recommends that the signal timing at this intersection be monitored.

Hardin Valley Road @ Ball Camp Byington Road

The intersection is expected to operate at a LOS D after the completion of the Hardin Valley Subdivision. FMA recommends that the signal timing at this intersection be monitored.

8 Conclusions and Recommendations

8.1 Hardin Valley Road @ Westcott Boulevard

The intersection of Hardin Valley Road and Westcott Boulevard currently operates at a LOS C during the AM peak hour and a LOS B during the PM peak hour. The intersection is expected to operate at a LOS D during the AM peak hour and a LOS B during the PM peak hour after the completion of the Hardin Valley Subdivision. All approaches will continue to operate at an acceptable LOS except the Westcott Boulevard southbound right turning movement which will operate at a LOS F both before and after the completion of the Hardin Valley Subdivision. FMA recommends that the signal timing at this intersection be monitored.

8.2 Hardin Valley Road @ Project Entrance

Hardin Valley Road is classified as a minor arterial. The minimum intersection spacing required for an arterial is 400-ft per the "Minimum Subdivision Regulations" for Knoxville and Knox County. The nearest road intersection to the project entrance is currently 650-ft east at the intersection of Hardin Valley Road and Windflower Way. This intersection exceeds the typical minimum separation of 400 feet between roads on an arterial; therefore, no change is necessary.

An eastbound right turn lane is warranted at the intersection of Hardin Valley Road and the proposed project entrance. This warrant is met only during the PM peak hour due to the high volume of traffic on Hardin Valley Road. For a right turn lane on an arterial road the AASHTO "A Policy on Geometric Design of Highways and Streets" recommends the installation of a minimum 100-ft right-turn taper and a minimum storage length of 50-ft.

A westbound left turn lane is warranted at the intersection of Hardin Valley Road and the proposed project entrance. The existing left turn lane has a taper length of 175-ft and a storage length of 100-ft. The Unsignalized intersection capacity analyses show a 95% queue length for the westbound left turning movement of less than one car length during both the AM and PM peak hours; therefore the existing storage length will be adequate.

The minimum required sight distance for a road with a posted speed limit of 45 mph is 450 feet in each direction in accordance with the "Minimum Subdivision Regulations" for Knoxville and Knox County. The existing intersection of Hardin Valley Road and the project entrance has a measured sight distance that exceeds 450-ft east and west of the intersection, which meets the requirement. FMA

recommends any necessary landscaping that may be involved to maintain this sight distance and continue to comply with Knox County Engineering & Public Works.

The Northbound approach of the proposed intersection of Hardin Valley Road and the Project Entrance is expected to operate at a LOS E during the AM peak hour and a LOS F during PM peak hour after the completion of the Hardin Valley Subdivision. The proposed lane configuration is a right and left turn out of the subdivision.

Signal Warrants 1 eight-hr vehicular volume, 2 four-hr vehicular volume and 3 peak hour were all met after the full build out of the Hardin Valley Subdivision. It was determined that the Hardin Valley Subdivision will not meet Warrant 2 until it reaches 60% build out and it will not meet Warrant 3 until it reaches 75% build out. FMA recommends that the need for a signal at the project entrance be re-evaluated after the Hardin Valley Subdivision reaches 75% build out.

8.3 Hardin Valley Road @ Ball Camp Byington Road

The intersection of Hardin Valley Road and Ball Camp Byington Road currently operates at a LOS C during both the AM and PM peak hours. The intersection is expected to operate at a LOS D during both the AM and PM peak hours after full buildout of the Hardin Valley Subdivision. All approaches will continue to operate at an acceptable LOS except the Ball Camp Byington Road southbound left turning movement which will operate at a LOS F both before and after the completion of the Hardin Valley Subdivision. FMA recommends that the signal timing at this intersection be monitored.