

**TRAFFIC IMPACT STUDY FOR
THE RIVERWALK AT CENTRAL PARK
FLOWER MOUND, TEXAS**

Prepared for:

Town of Flower Mound
2121 Cross Timbers Road
Flower Mound, Texas 75028



Prepared by:

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EXECUTIVE SUMMARY

A Traffic Impact Analysis (TIA) was performed for the Town of Flower Mound by Lee Engineering, LLC for The Riverwalk at Central Park Development in Flower Mound, Texas. The proposed development will be located north of FM 1171 between FM 2499 and Morriss Road.

The study area for this traffic study included the intersections of FM 1171 with FM 2499 and Morriss Road, the intersections of College Parkway with FM 2499 and Morriss Road, and all existing intersections on FM 2499 (between FM 1171 and Windsor Drive), FM 1171 (between FM 2499 and Morriss Road), and Morriss Road (between FM 1171 and Eaton).

The proposed development is planned to be constructed in seven (7) phases. However, as part of this study, traffic analyses were only performed for phase 1, build-out, and horizon year (5 years after build-out) conditions. It is our understanding that the developer will be required to submit a traffic impact study for each subsequent phase of the development as part of site plan approval process. At site build-out (2015), the proposed development will consist of a total of approximately 630,396 square feet of retail space, 1.08 million square feet of office space, 299,670 square of medical-office space, a 100 bed hospital, three hotels with a total of 639 rooms, 1,016 multi-family residential units, 557 senior living units, and 145 town homes.

The following short-term and long-term improvements were assumed in the area:

- A TxDOT project is underway to widen FM 2499 to a six-lane divided roadway from FM 1171 to FM 407 by 2010.

AM and PM peak period turning movement volumes were collected on Thursday, February 7, 2008 at the following intersections:

- FM 1171 (Cross Timbers Road) at FM 2499 (Long Prairie Road)
- FM 1171 at Yucca Drive
- FM 1171 at Forums Drive
- FM 1171 at Morriss Road
- Morriss Road at Acropolis Drive
- Morriss Road at Buckeye Drive
- Morriss Road at Apartment Complex Drive
- Morriss Road at Eaton
- Morriss Road at College Parkway
- FM 2499 at Euclid Street
- FM 2499 at College Parkway
- FM 2499 at Windsor Drive
- Forums Drive at Olympia Drive

- Forums Drive at Euclid Street
- Euclid Avenue at Alpha Drive
- Acropolis Drive at Olympia Drive

In addition, bi-directional 24-hour machine counts were collected at the following locations:

- FM 1171 between FM 2499 and Morriss Road
- Morriss Road north of FM 1171
- FM 2499 north of FM 1171
- College Parkway between Morriss Road and FM 2499

A growth rate of five (5) percent was applied to the existing traffic volumes on FM 2499. For all other study area roadways, a growth rate of two (2) percent was applied to estimate the background (non-site) traffic volumes at site build-out (2015). The projected 2015 background traffic volumes were grown at an annual rate of two (2) percent to obtain the projected 2020 background traffic volumes for all study area roadways.

Site generated trips were estimated using ITE's *Trip Generation, Seventh Edition*. The estimated trips expected to be generated by the proposed development were assigned to the study area roadways, intersections, and driveways based in the assumed directional distribution. The total traffic volumes for 2008 (phase 1), 2015 (build-out), and 2020 (horizon year) were obtained by adding the existing, 2015 background, and 2030 background traffic volumes to the traffic generated by the site during the corresponding years.

Traffic Analysis and Recommended Improvements

Synchro 7, a macroscopic traffic analysis software package, was utilized to conduct capacity analyses for the study area intersections and driveways. The following sections identify recommended improvements to operate the study area intersections at acceptable levels of service under each analysis phase.

Phase 1 (2008) Conditions

Phase 1 of the development is expected to include approximately 177,910 square feet of retail space, 43,900 of office space, 167,370 square feet of medical-office space, 232 multi family units, 145 town homes, and a 100 bed hospital. The following improvements are recommended to operate the study area intersections and site access points at acceptable levels of service under 2008 traffic conditions.

- Provide an additional eastbound left turn deceleration lane to provide dual left turn lanes, and a westbound right turn deceleration lane at the intersection of FM 2499 and FM 1171.
- At the intersection of FM 1171 and Morriss Road, provide an additional eastbound left turn deceleration lane to provide dual left turn lanes, an additional northbound through lane (from 300 feet south of FM 1171 to Acropolis Drive), and an exclusive right turn deceleration lane on all approaches.
- A traffic signal will be installed at the intersection of FM 2499 and Windsor Drive as part of FM 2499 widening project by TxDOT.
- Install traffic signal at the intersections FM 1171 at Forums Drive and Morriss Road at Buckeye Drive. However, before the installation of a traffic signal, actual count data should be collected and traffic signal warrants should be evaluated.
- A northbound right turn deceleration lane is recommended at each of the following locations:
 - FM 2499 at Driveway A
 - FM 2499 at Driveway B
 - FM 2499 at Central Park Avenue
 - FM 2499 at Hospital Road
 - FM 2499 at Driveway C
- A southbound right turn deceleration lane is recommended at each of the following locations:

- Morriss Road at 6th Avenue/Eaton
 - Morriss Road at 5th Avenue
 - Morriss Road at 4th Avenue
- A northbound left turn deceleration lane is recommended at the intersection of Morriss Road at 4th Avenue.
 - An eastbound left turn deceleration lane is recommended at the intersection of FM 1171 at Yucca Drive. With the implementation of this improvement, the existing median opening on FM 1171 west of Yucca Drive will need to be closed.

Build-Out (2015) Conditions

The proposed development will consist of a total of approximately 630,396 square feet of retail space, 1.08 million square feet of office space, 299,670 square of medical-office space, a 100 bed hospital, three hotels with a total of 639 rooms, 1,016 multi-family residential units, 557 senior living units, and 145 town homes at site build-out (2015).

The intersections of FM 1171 at FM 2499 and FM 1171 at Morriss Road are expected to operate at poor levels of service under 2015 total traffic conditions. Major infrastructure improvements such as grade separation would be required to significantly improve traffic operations at these intersections.

The following improvements are recommended based on the capacity analysis and link analysis results to improve traffic operations under 2015 total traffic conditions.

- At the intersection of FM 1171 and Morriss Road, provide an additional northbound left turn lane and southbound left turn lane to provide dual left turn lanes on both approaches.
- Install traffic signals at the intersections of Morriss Road at Eaton, and FM 2499 at Driveway A.
- At the intersection of FM 2499 and Windsor Drive, provide an additional southbound left turn lane to provide dual left turn lanes.
- At the intersection of FM 1171 and Forums Drive, provide an additional southbound left turn lane and westbound left turn lane to provide dual left turn lanes on both approaches.
- Consider a multi-lane roundabout with two lane approaches/departure in the north-south direction and one lane approach/departure in the east-west direction at the intersection of

Forums Drive and Olympia Drive.

- Provide a channelized southbound right turn at the intersection of Royal Crescent Drive and Central Park Drive.
- A northbound right turn deceleration lane is recommended at the intersection of FM 2499 at Driveway D
- A southbound right turn deceleration lane is recommended at each of the following locations:
 - Morriss Road at Park Avenue
 - Morriss Road at 7th Avenue
 - Morriss Road at 3rd Avenue
 - Morriss Road at 2nd Avenue
 - Morriss Road at 1st Avenue
 - Morriss Road at Driveway E
- A northbound left turn deceleration lane is recommended at the intersection of Morriss Road at 1st Avenue
- Most of the proposed internal intersections are expected to operate at acceptable levels of service.
- Widen Morriss Road from FM 3040 to FM 407 to a six-lane divided roadway.

Horizon Year (2020) Conditions

Major study area intersections are expected to continue to operate at poor levels of service under horizon year traffic conditions. In addition to the improvements identified above, the following improvement is recommended to improve traffic operations under horizon year traffic conditions:

- At the intersection of FM 2499 and FM 1171, provide an additional westbound through lane so that the westbound approach has three through lanes, two left turn lanes, and a right turn lane.