LAND
DEVELOPMENT
SOLUTIONS

CIVIL ENGINEERING AND SURVEYING CONSULTANTS

September 18, 2020

Tarren Barrett
Transportation Engineer
Knoxville-Knox County Planning
400 Main Street, Suite 403
Knoxville, TN 37902

Re: Revised TIL for New Corporate Office on Fort Sanders West Boulevard

Dear Tarren,

Covenant Health is planning a new corporate office building (COB) at their Fort Sanders West Campus to replace the existing COB that is located within the campus near the intersection of Kingston Pike and Fort Sanders West Blvd. The current COB at 100 Fort Sanders West Blvd. is approximately 12,600 SF. It will be demolished to make way for a future building. The new COB will be 14,600 SF and will be located at the rear of the campus and served by the existing internal road network. The new site is part of the Fort Sanders West Campus which is over 50 acres and is shown on Exhibit 1.

Trip Generation

Traffic generated by the new COB was determined based on the ITE Trip Generation Manual, 10th Edition. While the existing building will be demolished for a future building at its location you have requested that the amount of additional traffic generated by the new COB be presented rather than just the difference in traffic. We have provided both numbers for your review. It is not anticipated that the new COB will house additional employees. The old COB was converted from a childcare facility and despite renovations, does not serve the function of a corporate headquarters very well.

ITE publishes trip generation data for Corporate Headquarters under land use code 714. Based on this land use, the 14,600 SF office should generate approximately 116 trips per day or 16 trips per day more than the existing COB once it is demolished. Table 1 summarizes the trip generation.

Table 1
Trip Generation

| Land Use | Rate Per 1000 S.F. | Directional Distribution | Square Feet | Daily In | Out | Total |
|---|---|---|---|---|---|---|
| Corporate Headquarters (ITE code 714) | 7.95 | 50% In<br>50% Out | 14,600<br>(2,000 more than ex) | 58<br>(8) | 58<br>(8) | 116<br>(16) |
| AM Peak Hour* | 1.46 | 93% In<br>7% Out | 14,600<br>(2,000 more than ex) | 20<br>(3) | 1<br>(0) | |
| PM Peak Hour* | 1.40 | 10% In<br>90% Out | 14,600<br>(2,000 more than ex) | 2<br>(0) | 18<br>(3) | |
| | | | | | | |

* Note peak hour of generator used due to lack of studies for peak hour of adjacent street traffic

310 Simmons Road, Suite K • Knoxville, TN 37922 • 865-671-2281 • Fax 865-671-2283 • Email: rbaksa@ldstn.com

Prior Traffic Impact Study

In 2009, Wilbur Smith Associated prepared a TIS for a new Medical Office Building on the campus, which is attached as an appendix to this TIL. That study found that the street system was capable of accommodating the additional traffic from the MOB but recommended several improvements to the existing street system. Those improvements were implemented and have benefitted the traffic flow into and out of the Fort Sanders West Campus while mitigating the impact to the traffic on the surrounding street system.

Please give me a call if you have any questions.

Sincerely,

Land Development Solutions

E. J. (Rusty) Baksa, Jr., PE

Attachments

# KOSC BUILDING AT FORT SANDERS WEST

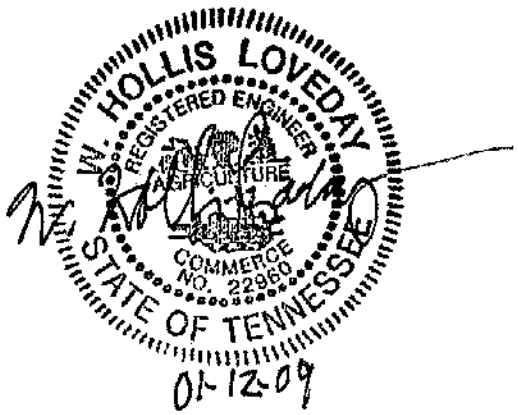
**KNOXVILLE, TENNESSEE**

## TRAFFIC IMPACT STUDY

RETURN TO MPC LIBRARY

**Prepared for:**

**KOSC Properties, LLC**
**260 Fort Sanders West Boulevard, Suite 200**
**Knoxville, Tennessee 37922-3355**




**January 2009**

**Prepared by:**

**WILBUR SMITH ASSOCIATES**
**Alexander Place**
**1100 Marion Street, Suite 200**
**Knoxville, Tennessee 37921**

**Project No. 103244**

Projected future traffic conditions were estimated by generating traffic based on the proposed land use, distributing the trips to the transportation network, and again conducting analyses for capacity and level of service.

## Trip Generation

Traffic generated by the new KOSC Building was determined using the publication, **Trip Generation, 8th Edition**. This reference is published by the Institute of Transportation Engineers (ITE) and represents national data collected for many different land uses including industrial, residential and commercial uses. **Trip Generation** is an essential tool in calculating the traffic, which may be generated by a proposed development. **Trip Generation** provides a medical office building land use (720) to generate trips on a daily and peak hour of adjacent street basis (AM and PM). Using this land use category, this study generated traffic for the proposed 32,468 square foot surgical center/medical office building. From these trip generation calculations, the proposed site should generate approximately 1,540 daily trips with 75 occurring tin the AM peak hour and 105 in the PM peak hour. The **Table 3** presents the trip generation of this proposed site.

**TABLE 3**
**TRIP GENERATION**

| LAND USE | S.F. | DAILY | | | AM PEAK | | | PM PEAK | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total | In | Out | Total |
| Medical Office Building (ITE LUC 720) | 32,468 | 770 | 770 | 1540 | 59 | 16 | 75 | 28 | 77 | 105 |
| Directional Distribution | | 50% | 50% | | 79% | 21% | | 27% | 73% | |

By all accounts, the trip generation estimates derived from data in **Trip Generation** are high. It is understood that the bottom floor of the proposed KOSC Building will be used to perform outpatient surgical procedures and the second floor will be office space. As such, the building will not likely function like a typical medical office building that has doctors offices and sees a steady stream of patients all day. Instead, experts expect that the surgical facilities will accommodate an average of 52 procedures per day, and if an average of 1.5 procedures are performed per patient, the bottom floor of the building would attract an average of 35 patients per day. Patient appointments would be scattered throughout a day, but perhaps be concentrated in the morning. Nevertheless, even when considering doctors, nurses, and administrators, the facility is not likely to generate 75 AM peak hour trips and 105 PM peak hour

## CONCLUSION

The proposed 32,468 SF KOSC Building should generate at most approximately 75 AM peak hour and 105 PM peak hour trips if rates in **Trip Generation** are utilized. It is believed that these trip estimates will more than adequately reflect the new traffic generated by the KOSC Building. It is primarily a surgical center and not a medical office building, but the medical office building rates were used to be conservative. The new trips from the proposed KOSC Building were assigned to the street system and an evaluation undertaken to assess the impact to service levels, delays, and queues.

The analysis found that the street system is capable of accommodating the additional traffic with minimal impact to delays, queues, and service levels. Nevertheless, some improvements are recommended and these are described in detail in the preceding section of this report.

The most noticeable unmitigated condition is westbound queues on Kingston Pike at Fort Sanders West Boulevard, which will continue to exceed the distance between that intersection and the southbound Pellissippi Parkway off ramp. This condition exists today, and the recommendations will allow the queues to be maintained primarily at the current length.

Extensive data were collected and extensive analysis conducted to determine the impact of the KOSC Building on the southbound Pellissippi Parkway off ramp. According to the field studies, queues today extend well up the ramp, but do not typically extend to Pellissippi Parkway. New traffic from the KOSC Building should increase the AM peak hour delay on the 'left' right turn lane from 81 to 101 seconds. This is primarily Fort Sanders West traffic and westbound Kingston Pike traffic in this lane may be encouraged to use the right lane by the striping changes proposed.

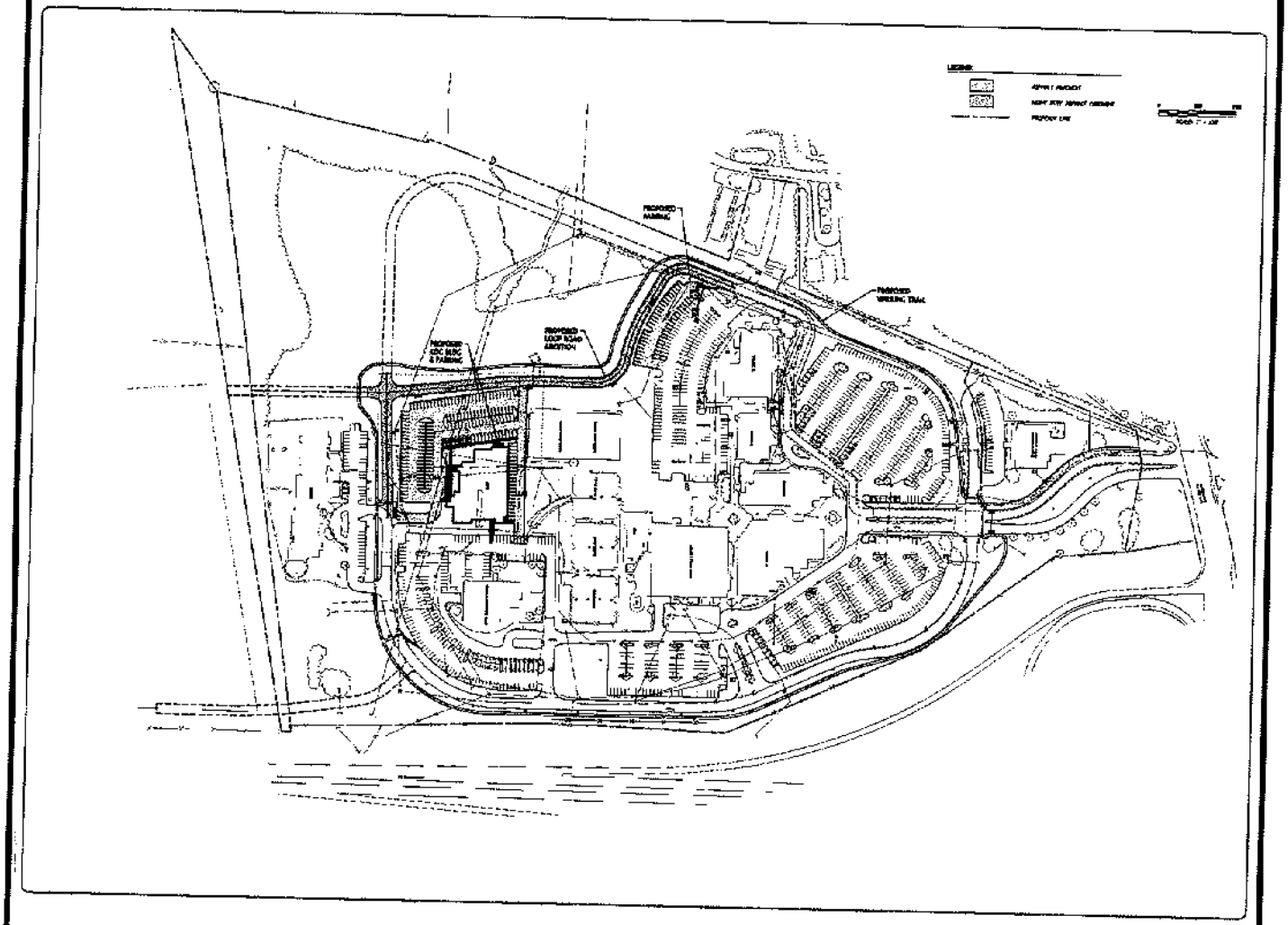
## RECOMMENDATIONS

The alternatives analysis suggests that significant benefit is realized by adding another westbound left turn lane on Kingston Pike at Fort Sanders West Boulevard. Furthermore, it suggests that adding another northbound lane to Fort Sanders West Boulevard will have minimal positive impact, especially considering the cost. Therefore, the following improvements are recommended:

- Optimize the traffic signal splits at the intersections of Kingston Pike with David Lane. At David Lane, the cycle length is 95 seconds and is running free. It should be increased to the current system cycle length of 130 seconds in the AM peak hour and 120 seconds in the PM peak hour and coordinated with the signal at Fort Sanders West Boulevard. Ideally, communication should be added between this signal and the one at Fort Sanders West Boulevard, but if this is not feasible, it should operate in time based coordination.
- Add another westbound left turn lane on westbound Kingston Pike at Fort Sanders West Boulevard, as shown in **Figure 19**, and optimize the traffic signal splits.
- Modify the intersection of Kingston Pike at Fort Sanders West Boulevard to accommodate the second westbound left turn lane.
- Re-strip the southbound Pellissippi Parkway off ramp so that two lanes are provided for the maximum length. Aerial mapping suggest that another 200 to 250 feet of 2 lane section can be added.
- For the new intersection on the Fort Sanders West campus, install pavement markings to allow continuous traffic movement between intersection legs, or modify the design temporarily so that continual flow can occur.

- WB KINGSTON R-TURN LANE ONTO CENTER PARK

**FIGURE 2**
**Site Plan**



ENGINEERS
PLANNERS
ECONOMISTS
WilburSmith
ASSOCIATES