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TRAFFIC ENGINEERING  
TRANSPORTATION PLANNING  
SIGNAL SYSTEMS/DESIGN

MEMORANDUM

TO: Mr. Dennis Clark  
West-Win Homeowners Association

FROM: Lynn M. Means, P.E.  
Senior Transportation Engineer

Jennifer A. Mitchell, P.E., PTOE  
Principal

DATE: September 17, 2008

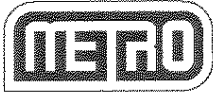
SUBJECT: Traffic Review  
Church of the Resurrection Development  
Winfield Township, DuPage County, Illinois



Jennifer A. Mitchell

Metro Transportation Group, Inc. (Metro) has reviewed the *Traffic Impact Study* (TIS) and *Supplemental Traffic Impact Study* (STIS) analyzing the expected impacts of the proposed Church of the Resurrection development to be located in Winfield Township, DuPage County, Illinois. The traffic studies were prepared by CEMCON, Ltd., dated February 5, 2008 and August 1, 2008, respectively.

The existing 21.19-acre site is located on the north side of Purnell Road, west of Cantigny Drive, and is currently undeveloped. As proposed, the development consists of constructing a 1,500-seat church; a sending center containing a 300-seat chapel, a 24-person guest residence, and a meeting facility; and a landscaped overlook with seating for 75 to 100 people. However, based



on testimony provided at the DuPage County Zoning Board of Appeals on July 9, 2008, the core capacity of the proposed church is 1,900 seats, which is assumed for special occasions. Access to the site will be provided via a full access driveway onto Purnell Road and a gated, egress only driveway onto Indian Knoll Road. The proposed Church of the Resurrection is projected to be completed and occupied by the year 2018.

After reviewing the submitted documentation with regards to traffic, we have some concerns and/or comments regarding existing traffic volumes, traffic growth, trip generation, parking analysis, capacity analysis, and recommendations. Our comments and concerns, which we feel need to be addressed, are described below:

1. Automatic traffic recorder (ATR) counts were conducted from Sunday, June 29, 2008 through Tuesday, July 1, 2008 along Illinois Route 59, Gary's Mill Road, Illinois Route 38, Purnell Road, and Winfield Road. However, only traffic data collected in the vicinity of the intersection of Winfield Road and Purnell Road was provided. Therefore, only the existing conditions at this location can be verified.

Based on a review of the traffic data provided and *Figure 1. Existing Traffic Volumes (2008)* contained in the STIS, a discrepancy exists on all volumes depicted on Figure 1. For example, weekday and Sunday daily traffic volumes for Winfield Road north of Purnell Road were presented on Figure 1 as 24,600 and 12,600 vehicles per day (vpd), respectively, while actual count data provided indicates these volumes to be 27,800 and 14,800, respectively. Since the existing traffic volumes are the basis for future year traffic volume projections, which assess the proposed development's impacts on the surrounding roadway network, all existing traffic volumes should be verified and revised as necessary or documentation should be provided to account for the discrepancies.

2. The STIS indicates that "traffic volumes are based on automated approach counts, not turning movement counts – so turning volumes were estimates for these analyses." To be consistent with standard traffic engineering practices, intersection turning movement



counts should be conducted during the peak hours analyzed at the study area intersections to adequately assess the impacts of the proposed development.

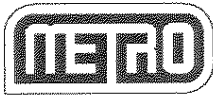
3. A discrepancy exists in the assumed growth rate contained in the STIS and the TIS. The STIS assumes a background growth rate of 1% per year, while the TIS assumes a background growth rate of 2% per year. A comparison of the historical IDOT traffic volume data that was conducted in 2005 and the recent CEMCON, Ltd. conducted counts in 2008 along Winfield Road north of Purnell Road and on Purnell Road west of Winfield Road indicates that a growth rate of 5% to 12% per year had occurred over the last three years. The basis for the assumed growth rate should be further supported.
4. The estimates of traffic to be generated by the proposed 1,500-seat church on a typical Sunday were based on the Institute of Transportation Engineers (ITE) report, *Trip Generation, 7<sup>th</sup> Edition*<sup>1</sup>. While the methodology of these analyses are consistent with standard traffic engineering practices, since the Church of the Resurrection currently holds two Sunday morning services at 9:00 AM and 10:45 AM at the Glenbard West High School (GWHS), which is consistent with the schedule of Sunday services at the proposed facility, observations at the existing facility should have been conducted to quantify the existing trip generation characteristics to more accurately project future development operations.

Furthermore, based on Metro's previous experience with vehicle occupancy for church service within the Chicago metropolitan area, average vehicle occupancy rates are typically approximately 2 persons per vehicle. For a 1,500-seat facility, this equates to a trip generation of 1,500 vehicle trips (750 entering and 750 exiting) during the Sunday peak hour. The basis for not collecting existing data should be further supported.

5. Trip generation for a "special holiday service" was calculated based on the parking lot capacity of 584 spaces. While the methodology for this assumption is not consistent with standard engineering practices, the assumed total Sunday peak hour trips of 1,168 vehicles

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<sup>1</sup> Trip Generation, 7<sup>th</sup> Edition, Institute of Transportation Engineers (ITE), Washington, D.C., 2003.



(584 entering and 584 exiting) does not vary significantly from the ITE Sunday peak hour estimates using the overflow church capacity of 1,900 seats, which is estimated at 1,171 vehicles (609 entering and 562 exiting). However, again using the empirical data collected by Metro, the 1,900-seat church equates to a Sunday peak hour trip generation of 1,900 vehicles (950 entering and 950 exiting).

6. Future parking demand for the 1,500-seat church was estimated in the TIS utilizing the DuPage County zoning regulations of 1 parking space per 4 seats, equating to 375 spaces. However, based on Metro's experience, the parking requirements for the proposed development appear to be insufficient for the peak parking demand that may be generated. Accordingly, in order to project the peak parking demand for the proposed development, it is recommended that the peak parking demand for the proposed development be quantified utilizing two sources: the Institute of Transportation Engineers (ITE) manual titled *Trip Generation, 3<sup>rd</sup> Edition* and parking counts conducted at the existing Church of the Resurrection services held at GWHS. A comparison of the parking demand utilizing ITE rates and the parking spaces provided indicates a shortfall of 76 spaces and 252 spaces for a 1,500-seat and 1,900-seat facility, respectfully. The basis for not collecting existing data as well as utilizing ITE parking rates should be further supported.
7. The TSIS indicates, "the two locations where LOS E is indicated in Table 3 are both left turns from a minor street onto a major arterial, where the low LOS is due to estimated existing turning volumes, not due to site-generated traffic." Accordingly and in accordance with standard traffic engineering practices, capacity analysis under existing and/or future year design hour conditions (without development) should be provided to adequately access the impacts of the proposed development on the surrounding roadway network.

A capacity analysis at the intersection of Purnell Road and Winfield Road under 2018 estimated design hour conditions (Figure 2) using the methodologies outlined in the *Highway Capacity Manual*<sup>2</sup>, indicates that the Purnell Road eastbound left-turns operate at a

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<sup>2</sup>Highway Capacity Manual, Transportation Research Board, National Research Council, Washington, D.C., 2000.



level of service (LOS) "C," the eastbound right-turns operate at a LOS "B," and the Winfield Road northbound left-turns operate at a LOS "A." The corresponding levels of service for these movements under future 2018 typical Sunday conditions (with the proposed development), as reported in the STIS, are LOS "E," LOS "B," and LOS "B." This clearly indicates that this intersection is impacted as a direct result of the proposed development.

8. The TSIS states that under 2018 holiday traffic conditions the poor LOS for Purnell Road eastbound left-turning movements onto Winfield Road are "more attributable to estimated existing traffic than to site traffic." However, a comparison of Table 3 (Typical Sunday) and Table 5 (Holiday Traffic) shows a degradation of LOS from an "E" to "F," with the additional traffic associated with a holiday. This would indicate that the holiday traffic further impacts the operations of the Purnell Road and Winfield Road intersection.
9. Levels of service for the site driveway westbound approach at Purnell Road and the Indian Knoll Road northbound approach at Illinois Route 38 may be overstated. A review of the capacity analysis contained in the Appendix of the STIS indicates that a peak hour factor (PHF) of 0.90 was utilized for the exiting movements at the Purnell Road access driveway, while a PHF of 0.60 and 0.70 was utilized for the exiting movements from Indian Knoll Road onto Illinois Route 38 under typical Sunday and holiday conditions, respectively. Based on Metro's previous experience for church service within the Chicago metropolitan area, PHF of less than 0.50 can be expected on egress driveways during the Sunday peak period. This is further substantiated by the likelihood that the majority of exiting Sunday peak hour traffic will egress the site within less than 30 minutes following the conclusion of service.
10. Metro concurs with the recommended intersection geometry at the intersection of Purnell Road and the proposed full access driveway. Based on Illinois Department of Transportation (IDOT) requirements, an auxiliary right-turn lane is warranted for the Purnell Road northbound approach at the site driveway. In addition, providing a separate left- and right-turn lane on the site driveway westbound approach will serve to facilitate site traffic operations.



However, the TSIS fails to clearly comment on the suitability of Indian Knoll Road to accommodate the heavy additional site egress volumes. In addition, the intersection of Winfield Road and Purnell Road under both typical Sunday and holiday conditions is impacted by the proposed development. Based on IDOT's requirements (Figure 36-3B of the *Bureau of Design and Environment Manual*), a southbound right-turn lane is warranted on Winfield Road at Purnell Road. This improvement as well as additional improvements, which are directly attributable to the proposed development, should be implemented.