

◆ PROJECT CASE STUDY

Designed to show the flow

Software helps design complex traffic solution and gain public acceptance of retail development.

By Todd Lanphear

Project

Exeter Commons shopping center, Exeter, Pa.

Civil engineer

Traffic Planning and Design, Inc.

Product application

Transoft Solution's AutoTURN establishes intersection geometry to relieve existing and expected traffic congestion.

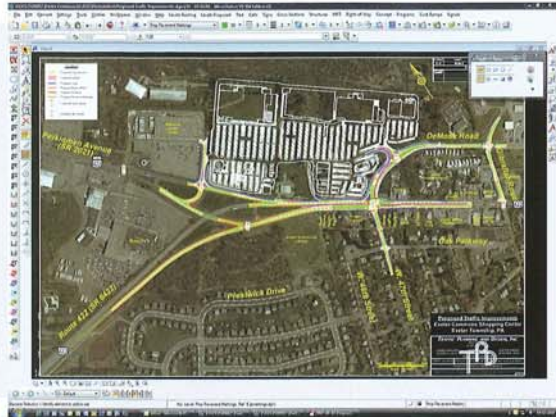


Figure 1: Design elements placed on top of georeferenced aerial photos produce comprehensible visual aids for public meetings.

Traffic congestion is a difficult challenge to tackle regardless of the project. For the Traffic Planning and Design, Inc. (TPD) team, the Exeter Commons shopping center project in Exeter, Pa., required not only a design to keep traffic moving (during and after construction), but also close coordination of complex design aspects with teaming partners and the general public, who would be most affected through all project phases.

Exeter Commons will consist of approximately 500,000 square feet of retail and restaurant space. Exeter J.V. Associates retained TPD to prepare the Traffic Impact Study, Highway Occupancy Permit design, Traffic Signal design, and Construction Management Services.

Roadway and signal improvements were developed to address existing congestion concerns and to accommodate the site-generated traffic. As part of this

plan, TPD determined it was necessary to improve the existing private road at the western end of the site through widening, signalization, and access management. The proposed improvements will maintain, or in many cases improve, Intersection Levels of Service for the study area intersections. TPD's Traffic Impact Study and subsequent Roadway and Signal Design will result in improved roadway safety conditions.

Specific roadway improvements include widening of approximately 0.75 mile of Route 422, extension of DeMoss Road to connect Gibraltar Road to Route 422 opposite 47th Street, and widening of Perkiomen Avenue, W. 47th Street, and Gibraltar Road to provide for additional auxiliary lanes (see Figure 1). The added capacity provided by the turning lanes allows for additional vehicles to pass through

the signalized intersections within the project limits. Access to the center will be provided from a signalized driveway on DeMoss Road at its eastern end, an improved signalized access drive (Exeter Commons Drive) at its western end, and a right-in driveway from westbound Route 422 in the middle.

For the weekday morning and evening peak hours, the extension of DeMoss Road, in conjunction with the site development, will serve to reduce traffic volumes at the Route 422/Gibraltar Road intersection. The retail center is being developed as an in-fill development, designed to give residents a local option for retail shopping. Exeter Commons will provide increased revenue for the Township of Exeter, convenient shopping for residents, and significant improvements in overall traffic volumes.

In the early stages of conceptual horizontal design, Transoft Solutions' AutoTURN software was used to establish intersection geometry as well as site driveways. The design included four new signalized intersections and four existing signalized intersections that were modified with updated permits. The signalized intersections along Route 422 were incorporated into the township's existing coordinated system that includes intersections further to the east along this major arterial roadway.

TPD used multiple design teams to allow for simultaneous development of roadway construction plans, traffic signal plans, erosion and sediment pollution control plans, and right-of-way acquisition plans. To advance the design of the project aggressively, a large amount of file sharing and design coordination with the Pennsylvania

Department of Transportation, Exeter Township, Exeter J.V. Associates, the site engineer, project surveyor, geotechnical firm, and a right-of-way acquisition firm was required.

The true challenge to getting from design to construction was within the public meeting process. TPD and Exeter J.V. Associates attended more than 10 public meetings to discuss the proposed improvements and impacts to local residents and businesses. To communicate the conceptual designs, high-resolution georeferenced aerial photos were downloaded from the Pennsylvania Spatial Data Access (PASDA) website and then brought into TPD's core design software, MicroStation V8 XM Edition, via the robust Raster Manager Tool. MicroStation elements were easily placed on top of the aerial photos to produce

comprehensible visual aids.

TPD's Traffic Impact Study and the graphics developed demonstrated that the proposed Exeter Commons retail development will improve traffic conditions and shopping convenience for the more than 21,000 residents of Exeter Township, providing an economic boost to the community. Considering the scale of the project, impact on the community, and complex, multi-faceted design, it took considerable collaboration and leveraging of technology, but the design of the project was concluded on schedule and within budget. ■

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