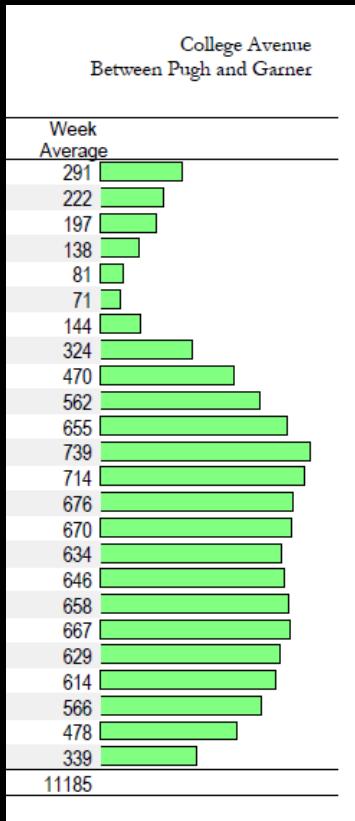# StahlSheaffer Engineering

- **Owner:**
  Borough of State College

- **Services:**
  Traffic Signal Optimization

- **Project Size:**
  22 Signalized Intersections
  Four Corridors

- **Year Completed:**
  Professional Services: 2009
  Construction: 2010

College Avenue Between Pugh and Garner

Week Average	
291	
222	
197	
138	
81	
71	
144	
324	
470	
562	
655	
739	
714	
676	
670	
634	
646	
658	
667	
629	
614	
566	
478	
339	
11185	

stahlsheaffer.com

Traffic Signal Optimization Study

Borough of State College, Central Business District, Centre County, PA

Stahl Sheaffer was contracted to optimize 22 signalized intersections along four corridors (SR 26 EB, SR 26 WB, SR 3014, and SR 3007). Stahl Sheaffer performed peak period traffic counts (AM, Midday, and PM) at the intersections. Turning movements were collected for passenger cars, trucks, bicycles, and pedestrian crossings. Seven-day ATR counts were performed at several locations along each corridor to identify daily and weekly traffic patterns for development of optimum TOD and DOW plans. Existing conditions, GPS travel time studies, and queue observations at critical locations were collected so before-after performance could be evaluated. Existing traffic signal timing databases were downloaded from field controllers and compared to permit drawings as a QA/QC check. Numerous inconsistencies were identified and corrected during the implementation of the proposed signal timings. A Synchro and SimTraffic model was developed for evaluation and optimization of signal timings for the twenty-two-intersection network. The SimTraffic model was calibrated based on existing travel time and queue data.

Prior to optimization, Stahl Sheaffer worked with the municipality and PennDOT to identify the objectives to be achieved. Improvement in traffic flow, travel time, and reduction in stops was important throughout the network. The municipality also requested improvement in pedestrian service and safety in the downtown corridor. To balance the varied objectives between vehicle flow and pedestrian service Stahl Sheaffer recommended cycles, splits, and offsets that optimized vehicle flow and recommended leading pedestrian intervals (LPI) and varied walk interval lengths by TOD (matched to peak pedestrian activity). Since part of the corridor contained transit signal priority (TSP), the Department was concerned about the effect of the proposed timings on its operation. To address the Department's concerns, Stahl Sheaffer developed a VISSIM model of the network and used the Econolite ASC3 software-in-the-loop (SIL) feature to demonstrate the performance of the system pre- and post- optimization. VISSIM with SIL allowed them to model the traffic signal controllers exactly as they operate in the field since the coding in the simulation model and field controllers is the same. With SIL, Stahl Sheaffer was able to model TSP and LPI operation, which is not possible in SYNCHRO/SimTraffic. VISSIM modeling also allowed easy QA/QC checks of the existing controller timing databases and QA/QC checks of the installed optimized timings.