



# Transportation Project Highlights

**Project:** Monroe County Audible/Tactile Pedestrian Device Study

**Client:** Monroe County Department of Transportation

**Location:** Rochester, NY

**Project Description:** T.Y. Lin International (TYLI) was retained by the Monroe County Department of Transportation (MCDOT) to review and modify the current process for MCDOT to evaluate the need for audible and tactile pedestrian traffic signal devices in Monroe County that provide guidance and assistance for the blind and visually impaired, and improve pedestrian safety and accessibility. TYLI selected an advisory committee representing the blind and elderly pedestrian communities who provided valuable input into the project.

This study consisted of a three-step process in order to identify the highest priority crosswalks where Audible Tactile Pedestrian Device Study (ATPSD) are in need of installation. For each step, a 'Filter' was created to narrow the candidate locations based on the 2006 NCHRP Project 3-62: Guidelines for Accessible Pedestrian Signals criteria. Three filters were designed to reduce the number of signalized intersections and, more specifically crosswalks, as each one was applied. Each Filter used a unique scoring system to rank the locations in order of priority. Statistical analysis was then used to group the remaining locations from each Filter into high, medium and low priority. For the statistical grouping, the scores were plotted on a graph, and then separated into these three categories. The locations with the highest priority moved through to the next Filter.

At the conclusion of the study, the MCDOT guidelines were updated for identifying locations for APTSD's in the future.





# Transportation Project Highlights

## Filter A - Activity Analysis

The first step looked at the broad influences of Origin, Transportation, Destination, and Signal Type data that was reviewed in order to develop an initial list of the highest priority signalized intersections based on the level of approximated pedestrian activity. Origins included ZIP Codes with high concentrations of Association for the Blind and Visually Impaired (ABVI) consumers as well as Lift Line passengers. Transportation included bus routes and the concentration of ridership. Destinations included: residential complexes; assisted living complexes; hospitals and health care centers; support service centers; civic and municipal buildings; food and shopping centers; entertainment locations; and other locations such as Universities, and the airport. The signal timing type was reviewed and identified as pre-timed, actuated or semi-actuated. Each influence was given a point value and the points for each of the traffic signals evaluated was totaled. Using statistical analysis the intersections with the highest scores (ranging from 22 to 57 points) were identified as candidates for further review. Through this process 103 out of 628 (17%) intersections were identified as high priority candidates and applied to Filter B.

## Filter B - Intersection Analysis

The second step further reduced the 103 intersections by evaluating the existing pedestrian accommodations including intersection geometrics, signal phasing, and nearby influences. These factors helped to identify the relative difficulty of crossing at each location. The geometric analysis included the intersection configuration noting the number of legs, and the presence/lack of skew in each leg. The signal phasing analysis determined what type of signalization was present at each intersection with the order rising in influence from pre-timed, to actuated, to split phasing, and finally the highest influence of exclusive pedestrian phasing. Also taken into consideration for this Filter was the distance to support service facilities, distance to inaccessible destinations – locations with unfriendly pedestrian access or no sidewalks, and distance to pedestrian attractions. Each of the Intersection Analysis criteria was given a point value and the points for each of the 103 intersections evaluated was totaled. Using statistical analysis, the intersections with highest scores (ranging from 18 to 47 points) were identified as high priority intersections for further review of their crosswalks (Filter C). This Filter found 28 intersections (83 crosswalks – 6 of which are already equipped with ATPSD devices) as high priority locations that potentially meet the needs for ATPSD.





# Transportation Project Highlights

## Filter C - Crosswalk Analysis

The third step developed criteria to rank each of the 83 crosswalks in order of priority. Six of the crosswalks were already equipped with ATPSD devices. Therefore only the remaining 77 crosswalks were analyzed. Each crosswalk was inspected in the field to assign a value to each ranking criteria of detailed intersection geometry and crosswalk amenities. Criteria analyzed in Filter C were:

- Important roadway network features such as posted speed limits, off-peak traffic presence distances to alternative ATPSD devices, and availability of alternate crosswalks within the intersection;
- Specific intersection/crosswalk geometrics such as curb radius, islands or medians, traverse (cross) slope, apex curb ramps, channelized right turn islands, and skewed crosswalks; and
- Signal operation specifics such as push-button actuation requirements, non-concurrent walk intervals, leading pedestrian intervals, right-turn-on-red permission, protected left-turn phases, protected right-turn phases or right-turn overlap, signalization of channelized right-turn lanes, and pushbutton locations.

Each of the Crosswalk Analysis criteria was given a point value and the points for each of the crosswalks evaluated was totaled. The highest possible crosswalk score was 75 points.

## Summary of Priority Crosswalks & Study Recommendations

The final priority list of crosswalks that were the first locations recommended to be equipped with ATPSD was determined by the Total Crosswalk Score. This Total Score is the sum of the Intersection Score (Intersection Analysis - Filter B) and the Crosswalk Score (Crosswalk Analysis - Filter C), ranging from zero to 122 points. Using statistical analysis the crosswalks with the highest scores were identified as candidates for the installation of ATPSD devices.

The study concluded that 33 crosswalks (at 19 intersections) were found to be in the highest priority for the installation of ATPSD. The MCDOT will also consider adding ATPSD's to additional crosswalks at each priority intersection, as they deem necessary.

