

# Accident Analysis (Executive Summary)

*for*

## **Penn Avenue**

City of Pittsburgh, Allegheny County, Pennsylvania



*prepared for*

## **City of Pittsburgh**

Pittsburgh, Pennsylvania

*October 2008* ©

## **EXECUTIVE SUMMARY**

### **INTRODUCTION**

As part the Penn Avenue Corridor Phasing Plan, Kimball prepared a comprehensive accident analysis report to assess the overall safety within the project limits along Penn Avenue, focusing on crashes over a three year period between January 2005 and December 2007. The project limits were divided into four districts: Residential Area (34<sup>th</sup> Street to 40<sup>th</sup> Street), Institutional Area (Fisk Street to Mathilda Street), Commercial Area (Millvale Avenue to Atlantic Avenue) and Showroom District (Aiken Avenue to Negley Avenue).

The accident analysis report revealed a total of 84 accidents along Penn Avenue during the three-year period (2005-2007). The intersections along Penn Avenue can be grouped into four levels of accident risk:

- ***Level One Intersections*** (8 accidents each): Main Street, Mathilda Street, Atlantic Avenue, and Negley Avenue;
- ***Level Two Intersections*** (5-6 accidents each): Fisk Street, 45<sup>th</sup> Street, Pacific Avenue, and Gross Street;
- ***Level Three Intersections*** (3-4 accidents each): 38<sup>th</sup> Street, 39<sup>th</sup> Street, 40<sup>th</sup> Street, Graham Avenue, and Fairmount Street; and
- ***Level Four Intersections*** (1-2 accidents each): 35<sup>th</sup> Street, 36<sup>th</sup> Street, 37<sup>th</sup> Street, Cullen Street, Foster Way, and Evaline Street.

The levels and corresponding number of accidents were determined based on the relative number of accidents at the study intersections throughout the corridor. The Level of Risk is not in correlation with any documented state crash data.

### **RESULTS**

Of the 84 accidents that occurred over the three-year analysis period, 40.5% were vehicle/vehicle, of angular type and 20.2% were vehicle/pedestrian accidents. Angle accidents typically occur when drivers are trying to maneuver a turn with restricted sight distance, excessive speed, inadequate or insufficient traffic control devices, or lack of advance intersection warning signs. Probable causes of pedestrian accidents include restricted sight distance, excessive speed, lack of adequate gaps in traffic, drivers not having adequate warning of frequent crossings, and inadequate/improper pavements markings. The remaining 39.3% of accidents were vehicle/bicycle, vehicle/vehicle (head on, rear end and sideswipe) or vehicle/fixed object.

Injuries occurred in 62.7% of the accidents, with one fatality, over the three year period. Seventeen of the recorded accidents involved pedestrian injuries. This accounts for more than 32% of the accidents involving injuries. The accident which involved a fatality was unrelated to the design of the roadway.

**Penn Avenue Corridor Phasing Plan  
Accident Analysis**

Along Penn Avenue, daytime accidents accounted for 66.7% of total accidents and the remaining 31.0% occurred during nighttime hours. After reviewing the causes of the nighttime accidents, lighting was not determined as a probable cause for a majority of the accidents. However, due to the large percentage of accidents occurring at nighttime, the corridor will be closely examined to ensure that sufficient lighting is provided at the study intersections.

Results of the accident analysis identify no contributing weather conditions in 76.2% of the accidents. Rain was the most prominent weather condition in 15.5% of the accidents. Upon review of the accident reports it was determined that design factors of the roadway such as ponding of rainwater or excessive rainwater runoff were not contributing factors in the accidents that occurred during a rain event.

As part of the accident analysis, Kimball also recorded the percentage of accidents that occurred by type of violation. Improper driving actions, including improper or careless turning, accounted for 22% of the accidents. Drivers running red lights and proceeding without clearance after a stop accounted for 16.6% of the accidents. The cause of 19% of accidents is unknown. The remaining 42.4% of accidents were caused by various violations.

The crash rate for the two miles of Penn Avenue is 1.5 times higher than the crash rate for similar urbanized roadway segments in Pennsylvania. Each of the five districts along the Penn Avenue corridor yielded a higher crash rate than the state average. Also, crash rates for the following locations/types were calculated for the Penn Avenue corridor: signalized intersections; unsignalized intersections; pedestrian; bicycle; and fatalities. Crash rates were determined to be fairly equal between signalized and unsignalized intersections along Penn Avenue; however, the rates did appear to be consistently higher than the statewide crash rates for similar routes in Pennsylvania. The crash rate for accidents involving pedestrians and bicycles within the project limits are both more than four times higher than the statewide crash rate. Likewise, the crash rate for accidents involving fatalities is four times higher than the statewide rate.

## **RECOMMENDED COUNTERMEASURES**

Recommended countermeasures are proposed for intersections that have experienced three (3) or more accidents in the past three years. The following presents a summary of the intersections and recommended countermeasures (number of accidents in the past three years in illustrated in parenthesis):

***Penn Avenue / Main Street (8)***

- A new signal was recently installed which includes pedestrian countdown signals, therefore, Kimball is not recommending any further mitigation to accommodate pedestrians at this time.
- Post a regulatory “Left Turn Yield on Green” sign for the eastbound lefts on Penn Avenue.

***Penn Avenue / Mathilda Street (8)***

- Kimball recommends posting a regulatory “Left Turn Yield on Green” sign for the eastbound lefts and extending the left turn lane length to accommodate the required queue.

***Penn Avenue / Atlantic Avenue (8)***

- Kimball recommends providing new pavement marking for the crosswalks and posting regulatory signing per the MUTCD such as “Use Crosswalk”, “Turning Traffic Must Yield to Pedestrians” or “Cross on Walk Signal Only”

***Penn Avenue / Negley Avenue (8)***

- Kimball recommends upgrading the existing 3-section pedestrian signal heads with countdown pedestrian signals and corresponding regulatory signs.

***Penn Avenue / 45<sup>th</sup> Street / Friendship Avenue (6)***

- A new signal was recently installed at this intersection which includes pedestrian countdown signals and appropriate regulatory signage. After a thorough review of the accident reports, Kimball is not recommending countermeasures for this intersection.

***Penn Avenue / Fisk Street (6)***

- Kimball would recommend eliminating a portion of the on-street parking along Penn Avenue to ensure that vehicles stopped on Fisk Street are provided adequate sight distance when trying to cross or turn onto Penn Avenue.
- Sight distance is an issue on both the northbound and southbound approaches of Fisk Street. Other geometric measures should be investigated to help increase sight distance at this intersection.

***Penn Avenue / Pacific Avenue (5)***

- After a thorough review of the accident reports and existing conditions analysis, Kimball is not recommending countermeasures for this intersection.

***Penn Avenue / Gross Street (5)***

- Kimball would recommend eliminating a portion of the on-street parking along Penn Avenue to ensure that vehicles stopped on Gross Street are provided adequate sight distance when trying to maneuver a left or right turn onto Penn Avenue.
- Kimball recommends improving the street lighting at this intersection. This will need to be coordinated with the Street Lighting summary as part of the Needs Analysis.

***Penn Avenue / 39<sup>th</sup> Street (4)***

- After a thorough review of the accident reports and existing conditions analysis, Kimball is not recommending countermeasures for this intersection.

In addition to the above intersections, the intersections along Penn Avenue experiencing three or four crashes were investigated for recommendations. This included the intersection of Penn Avenue with 38<sup>th</sup> Street, 40<sup>th</sup> Street, Graham Avenue and Fairmount Street. After examining the accident data, it was verified there were no reoccurring factors at these intersections contributing to crashes along Penn Avenue. Therefore, Kimball offers no recommendations for these intersections.