

# Planning for Safe Routes to School Pedestrian Road Safety Audit

Hancock Elementary School  
Norristown, Pennsylvania



February 2008

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## Executive Summary

This report documents the process, findings and recommendations of a road safety audit focusing on juvenile pedestrians in the vicinity of Hancock Elementary School, Norristown, Pennsylvania, which took place on March 20, 2007.

The audit team found significant deficiencies in sidewalk conditions, crosswalks, and wheelchair access throughout the study area; and that vehicle speeds and visibility pose unacceptable risks to children crossing Dekalb Street.

Recommendations include minor capital projects to remedy the deficiencies, and “quick fixes” that could be implemented immediately to improve safety. The capital projects may be funded through a National Safe Kids Coalition “Safe Kids Walk This Way” grant recently received by the Safe Kids Coalition of Southeastern Pennsylvania; additional funding may be applied for through the Pennsylvania Department of Transportation (PennDOT) “Safe Routes to School” program.

## 1. Project background

Over the past generation, student travel to primary school by walking and bicycling has declined dramatically across the United States: in 1970, nearly 65 percent of all children walked or biked to school, compared to less than 15 percent in 2000. Simultaneously, childhood obesity has increased to the level of an epidemic. That there is a causal link between the two trends has become widely accepted; and a growing body of research has linked the two trends with fundamental environmental changes which conspire to discourage people from walking including suburban sprawl, an ever-increasing speed and volume of motor traffic which endangers pedestrians, and roads designed and maintained without consideration of pedestrian safety and amenity.

An international movement dedicated to reversing these trends, called "Safe Routes to School," has succeeded in enacting legislation, at the state and federal level, to fund local projects to enable and encourage children, including those with disabilities, to walk and bicycle to school - and to make walking and bicycling to school safe and appealing. A "Safe Routes" provision in the most recent federal surface transportation act, SAFETEA-LU, requires a Safe Routes coordinator in every state, and provides funds for Safe Routes projects administered through the state departments of transportation.

In accordance with this federal emphasis area, the Delaware Valley Regional Planning Commission (DVRPC) has initiated a study project to assist school districts and municipalities in identifying roadway improvements eligible for funding under Safe Routes to School, while demonstrating innovative tools and techniques for Safe Routes planning that may show promise for broader application. Road safety audits (RSAs) are increasingly used by road agencies to identify and correct safety deficiencies proactively, and should prove useful in planning for Safe Routes to School.

An RSA is a type of charrette involving a team of experts in road safety who, with the aid of a checklist, identify and document conditions affecting safety found during a field view of the road being audited. A post-audit debriefing is then held where participants reach consensus on problems and solutions. This project seeks to demonstrate the application of RSAs with a sole focus on the safety of juvenile pedestrians, on streets and highways proximate to primary schools, as a tool to identify projects for Safe Routes to School funding.

The principal goal of Safe Routes to School is to increase the number of trips to school by walking and bicycling. Engineering improvements are an important component of a successful program, but alone, are insufficient to assure success. Successful programs also include enforcement, education, encouragement and evaluation components. For this reason study sites were sought near

schools where parents and administrators are involved in an on-going multi-faceted Safe Routes program, and for which local officials and citizen volunteers expressed interest in the audit process and the implementation of any recommendations resulting from it.

The Safe Kids Southeastern Pennsylvania Coalition invited DVRPC in the fall of 2006, to participate in a task force to develop a proposal to fund pedestrian safety improvements through a \$10,000 "Safe Kids Walk This Way" grant being offered through the National Safe Kids Coalition. The task force included representatives from Children's Hospital of Philadelphia, a regional trauma center for juvenile patients, Montgomery County Health Department and PennDOT District 6. DVRPC agreed to participate in the task force, and to use the site selected by the task force as its RSA demonstration site. The task force chose to focus on Montgomery County for potential sites. Hancock Elementary School in Norristown was selected based on a review of PennDOT-generated data on the locations of crashes involving juvenile pedestrians, local knowledge of hazardous conditions on US 202 one block away and previous involvement by the school and community in Safe Routes programs. The audit was conducted on the afternoon of Tuesday, March 20, 2007. The RSA recommendations presented in this report are intended for use in prioritizing improvements to be implemented with the grant funding which was approved in early 2007.

## **2. Audit area overview**

Hancock Elementary School is located at 1520 Arch Street in Norristown, Montgomery County, Pennsylvania. See Figure 1 on the following page for a street map of the study area. A state highway, designated as US 202 northbound and named Dekalb Street, passes within one block of the school. Arch and East Fornance streets are state-maintained. Full audits were conducted on Arch and Dekalb streets between East Fornance and East Brown streets. Sidewalk conditions only were audited on local streets (East Brown, Summit, and East Freedley) and E. Fornance Street between Arch and Dekalb streets, it's intersections with those streets having been subject to full audits.

The Montgomery County Health and Human Services Center, taking up the north side of East Fornance Street between Arch and Dekalb streets, is the area's predominant non-residential use. Dekalb Street is fronted by large old single family houses adapted for reuse as medical offices with off-street parking accessed from Dekalb or Willow streets. The remaining streets are fronted by twin and single family houses on small lots with on-street parking. See Figure 2, page 5, for an aerial photo of the study area.



**Figure 1: Street map of study area**

DeKalb and East Fornance streets are 45 feet wide. East Freedley and Arch streets are 40 feet wide. East Brown Street is 35 feet wide. All of the streets audited have on-street parking, and all are two-way with the exception of DeKalb Street which is one way northbound. Speed limits, posted at 35 mph on DeKalb Street and 25 mph on Arch and East Fornance streets, are not posted on E. Freedley, Summit and Brown streets. On no street does the daily traffic volume exceed 10,000 vehicles (see Table 1, opposite, for study area traffic counts). SEPTA's Route 98 bus, Norristown to Plymouth Meeting Mall/Willow Grove, operates on DeKalb and Willow streets, hourly off-peak. There are no bus shelters on the route within the study area.

The intersections of East Fornance Street with DeKalb and Arch streets are the only signalized intersections in the study area. Stops are sign-controlled on East Brown, East Freedley and Summit streets at their intersection with DeKalb Street. Four-way sign-controlled stops are found





**Figure 2: Aerial view of study area**

on Arch Street at East Freedley (which continues east of Arch Street as an access drive for an apartment complex), Summit (continuing east of Arch Street as Hancock Elementary’s driveway), and East Brown streets. The only crossing guard on Dekalb Street is stationed at the East Brown Street intersection.

**Table 1: Traffic counts in the study area**

Street name	Year	Direction	From	To	AADT
Dekalb St	2002	North	Spruce St	Fornance St	8738
Dekalb St	1999	North	Spruce St	Fornance St	8796
Fornance St	2000	Both	Dekalb St	Markley St	7892
Fornance St	1998	Both	New Hope Ave	Arch St	9285
Fornance St	2003	Both	New Hope Ave	Arch St	9310
Arch St	1999	Both	Airy St	Fornance St	6519

Source: DVRPC Interactive Mapping, Pennsylvania Traffic Counts, 14 March 2007, <www.dvrpc.org>.

The school directly abuts a large swath of passive linear open space known as Bartasch Park. A paved walkway connects the school's rear parking area with a residential neighborhood on the eastern side of the park.

Six (6) crashes involving pedestrians occurred on Dekalb Street between East Fornance and East Brown streets from 2001 through 2005. Two (2) of those crashes involved juvenile pedestrians; one of those crashes was a hit-and-run incident. Two (2) crashes involved a motorist turning left into a pedestrian who was in the crosswalk; in another crash, the motorist failed to yield. One (1) crash involved a school crossing guard. None of the crashes resulted in a fatality.

The crash data was provided by PennDOT for DVRPC's traffic safety related transportation planning and programming purposes only. The raw data remains the property of PennDOT and its release to third parties is expressly prohibited without the written consent of the Department.

### **3. Audit summary**

The audit was conducted on the afternoon of Tuesday, March 20, 2007. Members of the audit team are listed in Appendix A. See Appendix B for the agenda. The weather was fair and mild. A storm on March 16<sup>th</sup> and 17<sup>th</sup> dumped as much as two inches of sleet onto the area. The subsequent freeze-thaw cycle created a thick, hard crust of ice which many property owners found impossible to remove from sidewalks, driveways and walkways. Ice remnant from the storm was present during the audit, covering some sidewalks and blocking wheelchair ramps where it had been shoveled from sidewalks and plowed from the street. Meltwater covered sidewalks in some locations and ponded at the base of wheelchair ramps where accumulated snow and ice blocked gutters and storm drains. Ground saturation also inhibited proper drainage. Just moments before the start of the audit, a box-type delivery truck became mired in the soft ground of the buffer strip on Dekalb Street in a misguided attempt at street parking. The truck leaned precariously over the sidewalk until it was towed.

The audit team walked each of the streets described in section 2, on each side of the street, and recorded conditions using the audit tool presented in Appendix C. The complete audit tool was used only on Arch and Dekalb streets; the first page only was used on the other streets to note the physical condition of the sidewalks.

Between 3:00 and 3:30 P.M., the audit team split up to observe pedestrian and motorist behavior during school dismissal at the intersections of Summit and Arch streets and Summit and Dekalb

streets. Behavioral observations were recorded using the Pedestrian and Motorist Behavior Observation Sheet presented as Appendix D.

Photographic documentation of conditions taken before and during the audit is presented in appendices E and F.

### **3.1. Audit findings**

Table 2 on the following page presents the findings and recommendations of the audit team as recorded by the facilitator during the post-audit debriefing. For each recommendation the audit team was asked to score, on a scale of -2 to +2, the benefit to pedestrians, the impact on other road users, cost and local impacts (e.g. loss of parking, loss of landscaping, noise, light pollution, etc.). The scoring system presumes that higher scored recommendations should take priority over those receiving lower total scores. The problems, solutions and scores presented in Table 2 reflect a consensus of the audit team. The scoring exercise is intended to assist the audit team in prioritizing actions.

#### **3.1.1. Dekalb Street**

The audit team found these conditions throughout:

- Substandard crosswalks;
- Substandard wheelchair ramps;
- Broken and uneven sidewalk pavement; and
- Broken and deteriorated curbing.

Crosswalk markings were found faded or completely worn away. Approach warning signs are old and obsolete. Wheelchair ramps, in many locations, were found to be not flush at the base with the street pavement, and all of them lack tactile warning devices for the visually impaired.

The intersection of Dekalb and East Farnace streets is signalized, but without pedestrian signal heads. The signals, mounted on straight masts, can easily be lost to motorists in the roadside visual clutter. Because Dekalb Street is one-way northbound, the signals are facing south; therefore pedestrians headed southbound on Dekalb cannot see the signal indication.

**Table 2: Problems and solutions identified by audit team**

Street	Location	Category	Problem	Solution	Priority scores				
					Pedestrian benefit	Impacts: other road users	Cost	Local impacts	Total
Arch	W side S of E Brown	Sidewalks	Poor drainage	Address during next resurfacing	2	1	0	1	4
Arch		Around schools	No school zone	Create 15 mph school zone	2	2	2	0	6
Arch	W side near Brown	Sidewalks	Sidewalks in poor repair	Replace/repair	2	1	2	2	7
Arch	all	Sidewalks	Substandard crosswalks	Mark crosswalks w/ pavement markings, signs	2	2	1	0	5
Arch	Summit; E side	Facilities	No ramp	Install ramp	2	0	2	0	4
Arch	Brown	Signs	Stop sign mounted on telephone pole	Install sign properly	2	2	0	1	5
Dekalb	Through-out	Sidewalks	Broken/uneven pavements/curbs	Replace/repair	1	0	2	Depends: who pays?	3
Dekalb	Through-out	Facilities	Curb ramps substandard	Replace/repair	2	0	2	0	4
Dekalb	W side, n of E Fornance	Facilities	Parking lot entrance	Paint driveway crosswalks	1	0	1	0	2
Dekalb	all	Facilities	Invisible crosswalk markings	Mark crosswalks w/ pavement markings, signs	2	2	1	0	5
Dekalb	Freedley	Facilities	No ramp	Install ramp	2	0	2	0	4
Dekalb	Fornance	Facilities	No ped signal	Install ped signals; upgrade signals w/ overhead mast arm	2	1	2	0	5
Dekalb	Summit	Facilities	Poor drainage	Address during next resurfacing	2	1	0	1	4
Dekalb	Summit	Visibility	Tree obstructs view	Remove tree	2	2	1	Live or dead?	5
Dekalb	Summit	Road environment	On-street parking too close to intersection	Restrict parking	2	-1	1	-1	1
Dekalb		Traffic	High P.M. speeds/volumes	Warning signs w/ flashers	2	2	2	0	6
Dekalb		Traffic	High P.M. speeds/volumes	Curb extensions ("bulb-outs")	2	2	2	2	8
Dekalb	Brown	Behavior	Middle school students playing "chicken"	Assign officer	2	2	2	2	8
Dekalb	Summit	Visibility	Kids entering street to see oncoming traffic	Restrict parking	2	-1	1	-1	1
all		Signs	Old yellow/black warning signs	Upgrade to fluorescent yellow-green	2	2	1	0	5
all		Facilities	Substandard ramps	Replace/repair	2	0	2	0	4
all		Facilities	Substandard crosswalks	Install crosswalks	2	2	1	0	5
all		Behavior	Middle school students playing "chicken"	Pedestrian safety education program	2	2	1	1	6

Source: DVRPC, 2007

The original granite or slate curbing has been worn or depressed over time to the point that they no longer function to prevent motor vehicles from encroaching on the sidewalk or to channel runoff.

Of primary concern to the audit team was the perceived high volume and speed of P.M. peak traffic. Participants also observed that children often must walk out in to the street to be able to see oncoming traffic, their view obscured by parked cars.

Poor drainage along the curb was observed at several locations, but was noted as a particular concern at the intersection of Summit Street. Snow and ice plowed from the street and from parking areas was found obscuring sidewalks and wheelchair ramps.

### **3.1.2. Arch Street**

The audit team found these conditions throughout:

- Substandard crosswalks;
- Substandard wheelchair ramps;
- Broken and uneven sidewalk pavement;
- Intermittent sections of sidewalk with uneven brick pavement;
- Poor drainage of sidewalks and gutters; and
- Broken and deteriorated curbing.

Despite the presence of the school, there is no school zone designation on Arch Street.

### **3.1.3. Other streets**

The same sidewalk conditions found on Dekalb and Arch streets, including broken pavement, deteriorated and uneven brick sections, poor drainage and substandard wheelchair ramps, were found on East Brown, East Freedley and Summit streets. Sidewalks on East Fornance Street, including the sidewalk fronting the Montgomery County Health and Human Services Center, were in good condition. The western half of the pathway linking the school with the neighborhood on the far side of Bartasch Park is in poor condition.

### **3.1.4. Behavior**

Many older students from a nearby middle school were observed walking to Hancock presumably to “pick up” younger siblings. Some of these older students were observed competing with each other in a game of “chicken” with oncoming motorists.

One parent illegally parked in a crosswalk at Summit and Arch streets while picking up a child from school.

### **3.2. Principal recommendations**

Through the scoring exercise and subsequent discussion the audit team reached consensus on priorities for safety improvements. Capital projects in order of priority are:

- Refurbish and upgrade marked crosswalks with longitudinal markings and florescent yellow-green advance warning signs throughout. Install signs with flashers on Dekalb Street.
- Install overhead signal mast arms and pedestrian signal heads at the Dekalb/East Fornance Street intersection.
- Repair or replace sidewalks throughout.
- Upgrade wheelchair ramps to current standards, including tactile warning devices. Install additional ramps as required.
- Reconstruct curbs. Improve drainage in gutters at crosswalks and on sidewalks.
- To calm traffic and increase pedestrian visibility and conspicuity, install curb extensions (bulb-outs) at crosswalks on Dekalb Street

“Quick fixes” in order of priority are:

- Create a 15-mph school zone on Arch Street approaching Summit Street.
- Remove a tree which is obstructing the view at the corner of Dekalb and Summit streets.
- Mark a crosswalk across a wide driveway to a medical office parking lot on the west side of Dekalb Street across from the Health and Human Services Center.
- Properly install a stop sign currently mounted to a utility pole at the corner of Arch and East Brown streets.
- Assign a traffic officer to the corner of Dekalb and East Brown streets during school dismissal times.

#### 4. Next steps

In the month following the audit, PennDOT prepared a signing and striping plan for the portion of Dekalb Street within the study area. PennDOT, Norristown Borough and Safe Kids Coalition of Southeastern Pennsylvania have agreed to negotiate implementation and funding roles and determine how the \$10,000 grant from the National Safe Kids Coalition should be spent.









## Appendix A: Audit Team

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>E-mail</b>
Gina Duchossois	Chairperson	Safe Kids Coalition of SE PA	<a href="mailto:Duchossois@email.chop.edu">Duchossois@email.chop.edu</a>
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**Appendix B: Audit Agenda**

**DELAWARE VALLEY REGIONAL PLANNING COMMISSION  
SAFE KIDS COALITION of SOUTHEASTERN PENNSYLVANIA**

**Safe Routes to School Pedestrian Road Safety Audit  
Hancock Elementary School, Norristown, PA**

**Tuesday, March 20, 2007**

***AGENDA***

- 1. Welcome and introductions**
- 2. Project background and purpose**
- 3. Overview of the audit process**
- 4. Study area background**
- 5. Explanation of the audit checklist**
- 6. Full audits**
  - a. Arch Street
  - b. DeKalb Street
- 7. Sidewalk condition audits**
  - a. Summit Street
  - b. E. Freedley Street
  - c. E. Fornance Street
  - d. E. Brown Street & Bartasch Park pathways
- 8. Observation of pedestrian and motorist behavior during school dismissal**
  - a. Arch Street
  - b. DeKalb Street
- 9. Post-audit findings review and solutions assessment**
- 10. Next steps**
- 11. Safe Kids Walk This Way Task Force business**

**Adjourn**









## Appendix C: Audit Tool

**Location:** E. Brown Street/Bartasch Park pathway

**Auditor:** .....

**Date:** 3/20/07

**Key** N/A = not applicable

Note: If a deficiency in the road and/or surrounding environment is identified, the auditor should specify details of the problem and the location in the Comment column.

Issue	N/A	Yes	No	Comment
<p><b>1 Land use and pedestrian context</b></p> <p>1.1 List the key pedestrian generating land uses along the study route.</p> <p><b>2 Sidewalks/walkways</b></p> <p>2.1 Are sidewalks provided on both sides of the street?</p> <p>2.2 How wide are the sidewalks?</p> <p>2.2.1 Are the sidewalks wide enough (a) for shared use by bicycles? (b) to accommodate persons using mobility aids (e.g. cane, wheelchair)? (c) to accommodate groups of schoolchildren?</p> <p>2.3 Are the sidewalks continuous throughout the route?</p> <p>2.4 Is the sidewalk in good repair?</p> <p>a) clear of obstructions (e.g. poles, awnings, street furniture);</p> <p>b) no broken concrete or damaged paving etc.;</p> <p>c) clean surfaces (free of litter and dog mess);</p> <p>d) limited street furniture (that does not impede pedestrians accessibility). *</p> <p>* Note: Vision impaired pedestrians prefer a free zone next to the building line (if fully paved sidewalk);</p> <p>e) smooth surfaces, but 'anti-skid';</p> <p>f) no uneven surface;</p> <p>g) no protruding tree roots;</p> <p>h) clear of overhanging foliage;</p> <p>i) no discontinuities in level or type/quality of construction.</p> <p>2.5 Are vehicles parking on the sidewalk? If yes, please specify problem and location.</p> <p>2.6 Are pedestrian facilities acceptable where passengers alight, for example, bus stops, school drop-off zones etc.? Is seating and shade provided?</p> <p>2.7 Are vertical clearances sufficient for pedestrians (e.g. road signs are not mounted too low; tree branches are cut back)?</p> <p>2.8 Are there driveways with heavy vehicular traffic (volume or vehicle type) e.g. to parking garages and shopping centers? Are these driveways at the same level as the sidewalk? Are tactile ground surface indicators provided in accordance with ADA? Is there good pedestrian and driver visibility?</p>				

Source: DVRPC, 2007

Issue	N/A	Yes	No	Comment
<p><b>3 Pedestrian facilities and accessibility</b></p> <p>3.1 Are there curbs? Are the curbs in good condition?</p> <p>3.2 Do pedestrians have difficulty in crossing the road safely?</p> <p>3.2.1 Are there marked crosswalks? If yes, what type (e.g. transverse, continental, gore, textured, lit in-pavement)?</p> <p>3.2.2 Are crosswalks sited where people want to cross?</p> <p>3.2.3 Are the marked crosswalks well maintained and legible to motorists day and night?</p> <p>3.2.4 Are crosswalks clearly signed to motorists by the use of pedestrian warning signs? Are the signs high-visibility florescent yellow-green?</p> <p>3.2.5 Do motorists yield to pedestrians in crosswalks?</p> <p>3.2.6 Are there in-road yield-to-pedestrian channelizing devices in place?</p> <p>3.2.7 Does the site have audio tactile devices for vision impaired pedestrians? Are they working and audible?</p> <p>3.3 Are there pedestrian signal heads? If so, which type (man/hand, walk/don't walk, audible, countdown)? Are they working and in good condition?</p> <p>3.3.1 Are they push-button actuated? Are pedestrians likely to use the actuator?</p> <p>3.3.2 Can persons in wheelchairs reach the push button at pedestrian signals?</p> <p>3.3.3 Have pedestrians been given priority at signalized crossings on bus routes?</p> <p>3.3.4 At signalized crossings, do all pedestrians have adequate time to cross the road safely?</p> <p>3.4 Are curb ramps provided on all corners?</p> <p>3.4.1 Can vision impaired people identify the crossing, e.g., are tactile ground surface indicators provided in accordance with ADA?</p> <p>3.4.2 Do the curb ramps provide a smooth change in level between the sidewalk and the road pavement?</p> <p>3.4.3 Are the ramp slopes appropriate?</p> <p>3.4.4 Is there sufficient space to turn wheelchair at top and bottom of ramp?</p> <p>3.4.5 Is drainage at/near curb ramps adequate to prevent water ponding?</p> <p>3.5 Are curb extensions used where appropriate? Are they clearly delineated?</p> <p>3.6 Are signs and pavement markings installed in accordance with MUTCD?</p>				

Source: DVRPC, 2007

Issue	N/A	Yes	No	Comment
<p><b>4 Catering for pedestrian target groups</b></p> <p>4.1 Is there a predominance of special user groups (e.g. intoxicated, seniors, youths, young children, parents with strollers, disabled, tourists)? If yes, what type?</p> <p>4.2 Are there problems specific to these special user groups?</p> <p>4.3 Do pedestrians regularly misuse or ignore the pedestrian facilities? Please specify.</p>				
<p><b>5 Around Schools</b></p> <p>5.1 Is there a school zone?</p> <p>5.2 What is the school zone speed limit?</p> <p>5.3 Is a school crossing provided?</p> <p>5.4 Is the crossing supervised?</p> <p>5.5 Are school entrances appropriately located?</p> <p>5.6 Are appropriate advance warning signs provided?</p> <p>5.7 Is there any parking (legal and illegal) that causes visibility obstruction to the crossing?</p>				
<p><b>6 Traffic and road environment</b></p> <p>6.1 What is the posted speed limit?</p> <p>6.2 How many travel lanes are on the roadway(s) (in each direction)?</p> <p>6.3 Are there parking lanes (or bus lanes) on the side of the road?</p> <p>6.4 Can parking be managed to maximize sight lines?</p> <p>6.5 Is traffic speed or volume a problem for pedestrians? Please specify.</p> <p>6.6 Are there traffic calming devices in place? If so, which type?</p> <p>6.7 Do these devices impede pedestrian movement?</p> <p>6.8 Are there any conflicts between vehicles (or bicycles and/or wheeled recreational devices) and pedestrians on sidewalks?</p> <p>6.9 Is a crash barrier necessary between the road way and the sidewalk for pedestrian safety?</p>				
<p><b>7 Construction zones</b></p> <p>7.1 Are pedestrians warned of obstructions and temporary works hazards on their traveled path?</p> <p>7.2 Are alternative routes provided for pedestrians during construction that provide suitable access for all pedestrians?</p>				

Source: DVRPC, 2007

Issue	N/A	Yes	No	Comment
<p><b>8 Signing</b></p> <p>8.1 Are street names clearly visible to pedestrians?</p> <p>8.2 Is it obvious how to get to the schools, parks or bus stops?</p> <p>8.3 Are the signs visible day and night?</p>				
<p><b>9 Lighting</b></p> <p>9.1 Are crosswalks sufficiently lit for pedestrian and motorist visibility?</p> <p>9.2 Is the sidewalk adequately lit for pedestrians to see and feel safe?</p> <p>9.3 Are there dark places or hiding places which present a personal security issue?</p>				
<p><b>10 Visibility/sight distance</b></p> <p>10.1 Is driver's sight distance to crosswalks adequate?</p> <p>10.2 Are pedestrians (including small pedestrians) waiting to cross the road visible to approaching motorists?</p> <p>10.3 Can pedestrians including small children and persons in wheelchairs see approaching vehicles?</p> <p>10.4 Are there temporary or permanent obstructions near the crossing facility e.g. parked vehicles, roadside furniture, vegetation, fences etc.?</p>				
<p><b>11 Pedestrian fencing</b></p> <p>11.1 Is there a need for pedestrian fencing to channel pedestrians to cross the road safely or to prevent them from crossing the road at a particular location?</p> <p>11.2 Does the pedestrian fencing create a hazard to motorists? (for example, horizontal rails becoming a spearing hazard when impacted by an errant vehicle).</p>				
<p><b>12 Pedestrian amenity</b></p> <p>12.1 Is the pedestrian environment clean and pleasant? If not, please specify.</p> <p>12.2 Is antisocial behavior a problem?</p> <p>12.3 Are there seats and/or rest spots for pedestrians?</p> <p>12.4 Are there drinking fountains for pedestrians?</p> <p>12.5 Is there sufficient shelter and/or shade against the elements?</p> <p>12.6 Is the pedestrian environment integrated with the adjacent land uses?</p>				

Source: DVRPC, 2007







**Appendix D: Pedestrian and Motorist Behavior Observation Sheet**

**Location:** Dekalb Street

**Auditor:** .....

**Date:** 3/20/07

Issue	Yes	No	Comment
Are children walking in the street?			
Are children running across street?			
Are children obeying crossing guards?			
Are children entering the street from between parked cars?			
Are children entering cars from street side?			
Are drivers double parking?			
Are drivers blocking crosswalks?			
Are drivers obeying crossing guards?			
Do unsupervised children look both ways before crossing the street?			
Do children wait for traffic to stop before crossing?			
Are adults supervising the crosswalks?			
Did you witness any conflicts, collisions or near-collisions between motorists and pedestrians?			
Do drivers yield to pedestrians in the crosswalks?			
Do drivers obey the school zone speed limit?			
Other observations			

Source: DVRPC, 2007







**Appendix E: Pre-audit photos, December 2006**



**Counterclockwise from above:**

Dekalb Street looking north across E. Fornance Street

Arch Street at the entrance to Hancock Elementary School

Mid-block on Summit Street

Dekalb Street at E. Freedley Street

Source: Cynthia Cianciulli, Coordinator, Highway Safety Program, Montgomery County Department of Health, 2006











## Appendix F: Audit day photo log



**Top:** Dekalb Street (US 202) looking north from E. Freedley Street.

**Middle:** Dekalb Street looking south from E. Freedley Street

**Bottom:** Arch Street looking south from E. Brown Street

Source: DVRPC, 2007

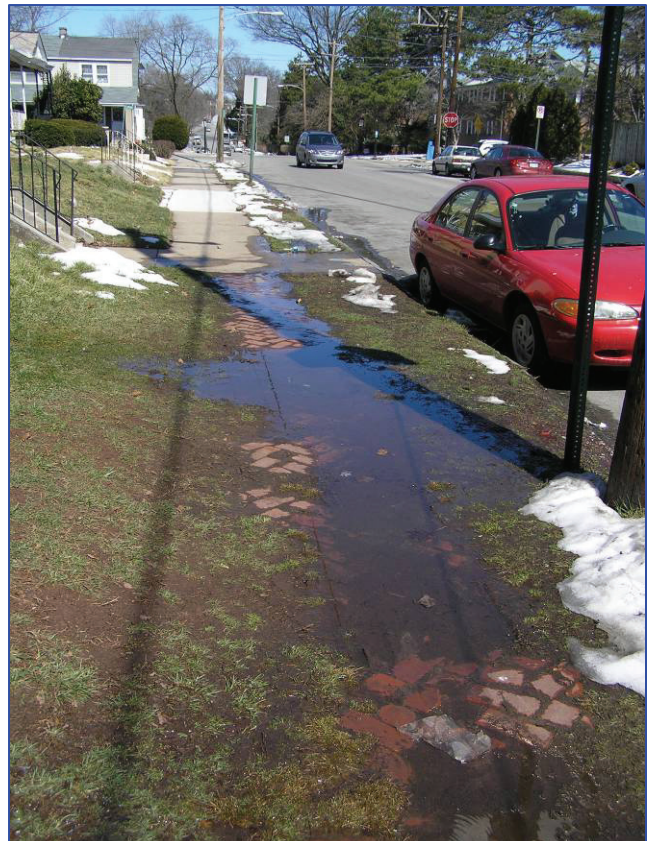


**Right:** Ponding on uneven brick sidewalk, E. Brown Street, south side, between Green Street and Morgan Alley

**Bottom right:** Ponding on uneven, deteriorated brick sidewalk, Arch Street, west side, between E. Brown and Summit streets.

**Below:** Uneven brick sidewalk, E. Brown Street, south side

Source: DVRPC, 2007





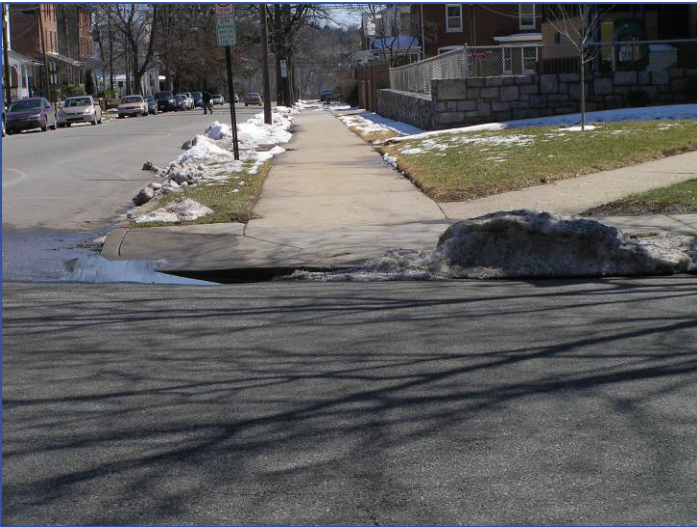
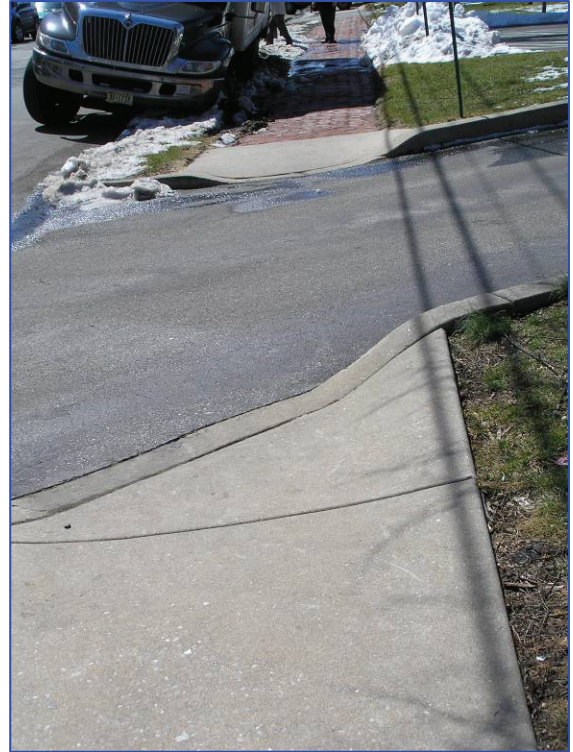
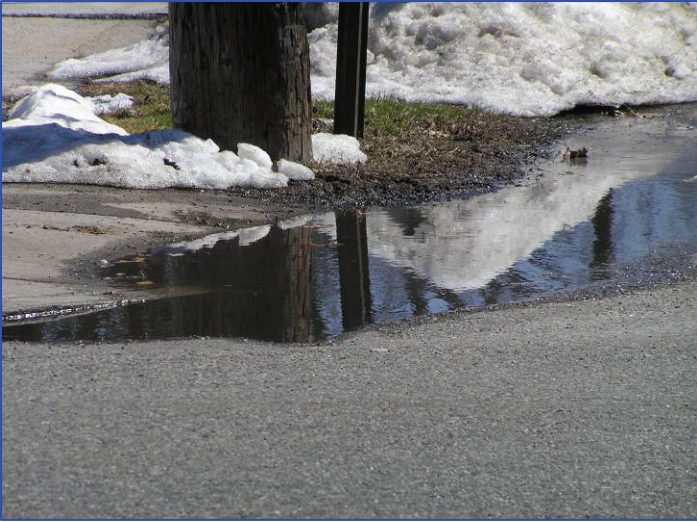
**Top left:** Sidewalk used for snow storage, Willow Street, east side, between E. Freedley and E. Fornance streets

**Center left:** Sidewalk obstructed by snow and vegetation, Willow Street, east side, just north of E. Freedley Street.



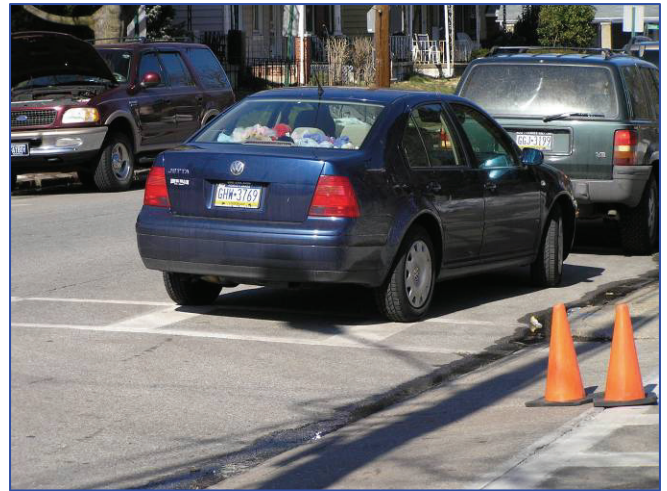
**Above and bottom left:** Broken sidewalk pavement, E. Brown Street

Source: DVRPC, 2007



Dekalb Street. **Top and bottom left:** ponding at base of wheelchair ramps. **Above:** unmarked crosswalk of parking lot entrance; truck mired in the buffer strip can be seen in the background.

Source: DVRPC, 2007



**Top left:** Main building entrance, Hancock Elementary School

**Middle and bottom left:** broken pavement along school entrance walkway

**Top right:** Car parked illegally in crosswalk during school dismissal

**Above:** No wheelchair ramp, southwest corner of E. Freedley and Arch streets

Source: DVRPC, 2007



**Left:** Pathway connecting Hancock Elementary School with High Street across Bartasch Park, progressing eastward from the top to the bottom photo.

Source: DVRPC. 2007





**Left:** Ponding and uncleared snow obstruct wheelchair access, Dekalb Street, various locations

**Above:** This wheelchair ramp is not compliant with ADA regulations because the base is not flush with the roadway, making wheelchair passage difficult; also, there is no tactile warning device for the vision-impaired.

Source: DVRPC, 2007







**Planning for Safe Routes to School, Pedestrian Road Safety Audit:  
Hancock Elementary School, Norristown PA**

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Geographic Area Covered: Norristown Borough (Montgomery County)

Key words: pedestrian, juvenile, road safety audit, Safe Routes to School

Abstract: A road safety audit focusing on juvenile pedestrians was conducted on a portion of US 202 and other streets near Hancock Elementary School, Norristown. Results and recommendations are presented.

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