

***Elias Brookings Elementary
School Walk Audit
Springfield, MA***

July 1, 2013

Centers for Disease Control and Prevention Division of
Community Health/Community Transformation Grant

Mass in Motion, an initiative of the MA Department of Public
Health

MAKING MASSACHUSETTS MORE WALKABLE

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Background on Brookings School

The Elias Brookings School was severely damaged in the June 1, 2011, tornado that struck Springfield. Since the storm, Brookings students have attended school in temporary buildings constructed adjacent to the damaged school building in Ruth Elizabeth Park. Construction of the new Brookings School is expected to begin in December 2013, on a site across Walnut Street from Ruth Elizabeth Park.

Brookings School enrolls approximately 365 children ranging in age from pre-K to 5th grade. Close to 50 students ride on buses. Some local day care centers also drop off and pick up children using minivans that pull up to the school entrance. The vast majority of students walk to school from the surrounding neighborhoods. Children come to the school from all directions and cross many complicated intersections before arriving at Brookings.

This is an important moment to address the walking conditions at Brookings School. The school is to be rebuilt, the City of Springfield is studying several of the dangerous intersections around the school, and the school administration is dedicated to improving student safety and health.

Principal Terry Powe is an energetic, knowledgeable and positive force for her students and their families. She wants her students to be able to walk to school safely and easily. She knows the specific routes her students take and understands the obstacles they face on a daily basis. Her support will serve the students well as they move to a new location and have the opportunity to improve their physical surroundings.



Brookings School damaged by 2011 tornado



Brookings School temporary buildings



photo credit: MassLive.com



photo credit: wwlp.com

Overall Findings

In general, the walking conditions around the school are challenging, both in terms of the layout of intersections and the quality of the sidewalks. The intersection design gives priority to cars with free right turn lanes and generous turning radii, which facilitate higher driving speeds (Figure 1). While sidewalks do exist on most of the streets we surveyed, in many cases they are too narrow, not separated from the roadway (no verge - Figure 2), and interrupted with multiple large curb cuts and driveways. Many infrastructure improvements are planned for this area of the city and we encourage school officials to actively participate in the design process to ensure that pedestrian issues are addressed. Below is our assessment of the walking route and key intersections, as well as recommendations for improvement.

In addition to the existing conditions, we analyzed the new traffic pattern and site design planned for the new school building. We concluded that the proposed plans should address the safety of children walking to school more comprehensively. We submitted our comments and recommendations in a separate memorandum dated May 16, 2013, and attached it to this report as an appendix.

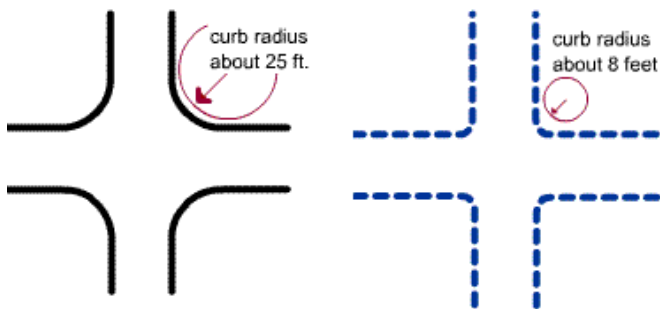


Figure 1. A longer curb radius (left) allows vehicles to turn more quickly and creates longer crossing distance for pedestrians. A shorter curb radius (right) slows turning speeds and provides pedestrians shorter crossing distances.



Figure 2. A verge (left) separates the pedestrian from the roadway. No verge (right) provides no distance between curb edge and the sidewalk.

- Reduce speed of traffic along walking route, particularly on Walnut Street
- Improve intersection designs to ensure safer crossing points and sidewalks, and limit the number of vehicular lanes (particularly free-right turning lanes)
- Encourage the use of a verge (zone between the curb and sidewalk) to provide additional space between pedestrians and cars. Verges are particularly important for snow storage in winter
- Place the major crossing point on Walnut Street at the safest location based on view corridors, travel speeds and walking patterns. Use traffic calming measures such as a traffic table, bulb-outs, flashing pedestrian crossing signs or other proven technique to slow cars down and draw attention to pedestrians.

Walk Audit

WalkBoston conducted a walk audit on May 9, 2013, at the request of the Springfield Mass in Motion coordinator, Nicole Bourdon. The following people participated in the audit:

- Principal Terry Powe – Brookings School
- Gianna Allentuck – Brookings School
- Tom Jenkins – GZA Engineers
- Karen Pohlman – Baystate
- Nicole Bourdon – Mass in Motion, DPH
- Yetunde Ogunneye – UMASS Intern
- Kelvin Molina – HAP Housing
- Jeff McCollough – Pioneer Valley Planning Commission
- Kathy Wicks – Partners for a Healthier Community
- Dorothea Hass – WalkBoston
- Stacey Beuttell – WalkBoston

The weather was cloudy with rain showers and a temperature of approximately 60 degrees. We observed traffic patterns between 10:30 and noon.

The walk audit route began at the proposed site of the new school and proceeded down Marshall Street to Melrose Street until it intersected with Eastern Avenue. The group walked south down Eastern Avenue to Hickory Street; went west on Hickory Street and observed both the Hickory/Walnut/Allen Street intersection and the Hickory/Hancock/Central Street intersection. We then proceeded up the hill on Hancock Street through Ruth Elizabeth Park and back to the temporary school buildings. A smaller group then walked north on Walnut Street to observe the traffic patterns at the six corners intersection (Hancock/Walnut/Ashley/Alden).



Walk audit route of Brookings Elementary School

Overall Recommendations

A low cost, relatively simple way to make improvements to the pedestrian infrastructure is to add paint to the existing roadway. All crosswalks along the walk audit route consist of two lines running perpendicular to the roadway (Figure 3). WalkBoston recommends a ladder style crosswalk, which includes diagonal or horizontal lines connecting the parallel lines, because it increases drivers' visibility of the crossing. Greater awareness of crosswalks increases the possibility that drivers will be conscious of pedestrians and stop for them.

In addition to enhancing the crosswalks, painting solid white lines parallel to the curb (fog lines) will help decrease the speed of traffic because drivers will perceive narrower lanes. Slower traffic will improve pedestrian safety and make for a more enjoyable walking experience. Walnut Street and Hancock Street are perfect candidates for these solid white lines.

The majority of sidewalks on the walk audit route have no roadside verge, which is a narrow strip of grass located between the roadway curb and the edge of the sidewalk (Figure 2). The verge is particularly important in geographic areas where snow is a factor because it provides a space for snow to be stored between the roadway and the sidewalk. Also, the additional distance from the curb further separates walkers from vehicles traveling in the roadway. When sidewalks and streetscapes are replaced, the provision of space for a verge should be considered.



Figure 3. The parallel lines (above) are adequate for low-traffic areas, while the ladder (below) is more visible and should be used in higher-traffic areas.



Figure 4. A solid white line (fog line) painted along the roadside curb defines the driving lane and narrows the driver's perspective.

Specific Recommendations

Below are some specific recommendations for key intersections along walking routes to the school. The diagram below indicates the intersections addressed during the walk audit. The logic and recommendations are transferable to similar intersections throughout the Six Corners neighborhood.

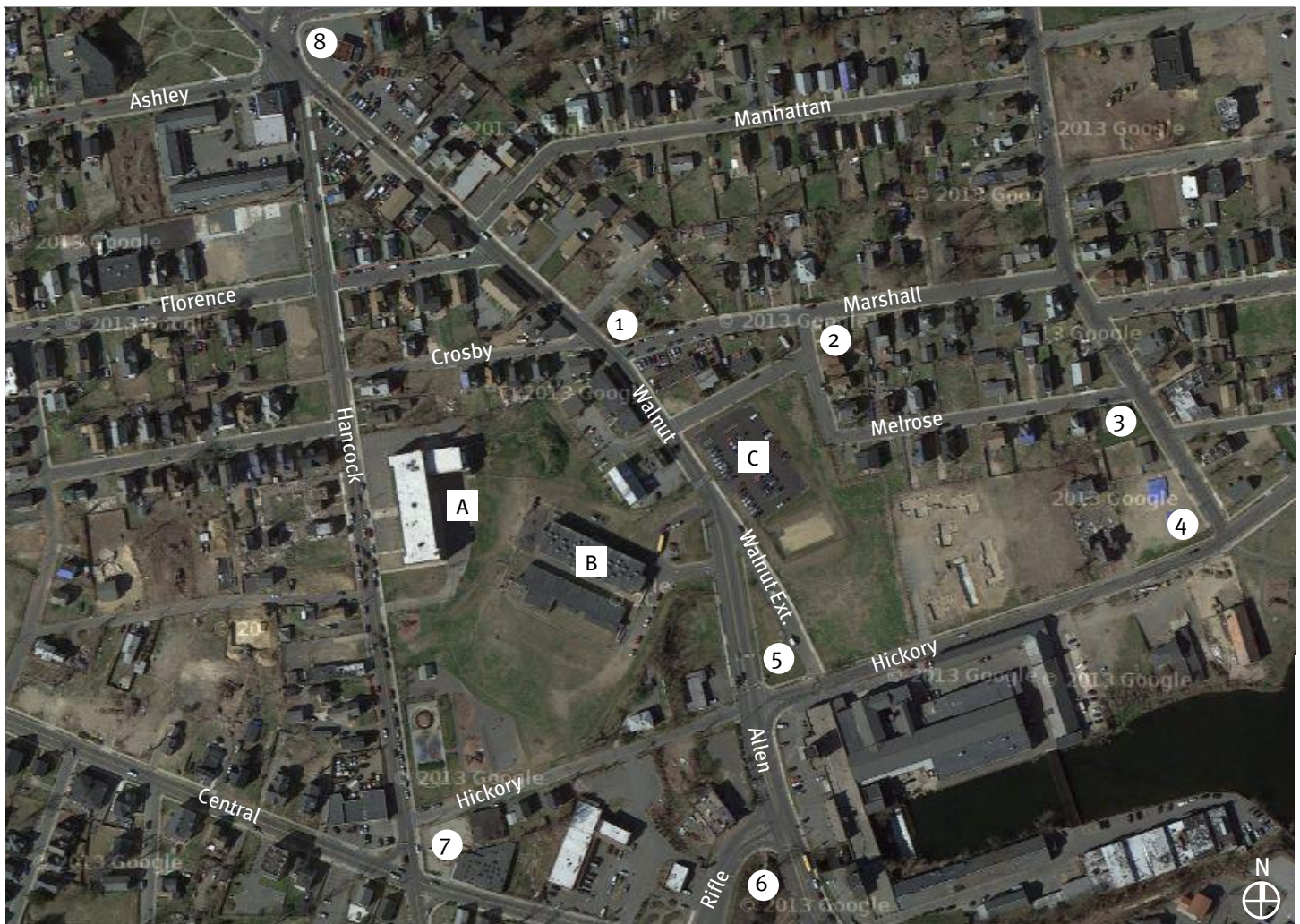


Figure 5. Intesections surveyed during walk audit.

Intersections

1. Walnut/Marshall/Crosby Streets
2. Marshall/Melrose Streets
3. Melrose Street/Eastern Avenue
4. Eastern Avenue/Hickory Street
5. Hickory/Walnut/Walnut Street Extension
6. Allen/Rifle/Central Streets
7. Hickory/Central/Hancock Streets
8. Hancock/Walnut/Ashley/Alden (Six Corners intersection)

Key Buildings

- A. Original Brookings School
- B. Current Brookings School temporary buildings
- C. Proposed Brookings School site

Recommendations for intersections

1. WALNUT/MARSHALL/CROSBY STREETS

- Paint crosswalk
- Install sidewalks

2. MARSHALL/MELROSE STREETS

- Paint crosswalk and parking stalls
- Install roadside verge when street is redesigned

3. MELROSE STREET/EASTERN AVENUE

- Paint crosswalk, if appropriate
- Upgrade sidewalks

4. EASTERN AVENUE/HICKORY STREET

- Install sidewalks
- Improve roadway

5. HICKORY/WALNUT/WALNUT STREET EXTENSION

- Enforce traffic rules
- Tighten curb radii
- Add SCHOOL zone signage

6. ALLEN/RIFLE/CENTRAL STREETS

- Maintain vegetation along sidewalks
- Tighten curb radii

7. HICKORY/CENTRAL/HANCOCK STREETS

- Paint crosswalks
- Eliminate free-right turn lanes

8. HANCOCK/WALNUT/ASHLEY/ALDEN (SIX CORNERS INTERSECTION)

- Tighten curb radii
- Add pedestrian signals
- Regularize overall traffic pattern

1. WALNUT/MARSHALL/CROSBY INTERSECTION

The location of the new school on the opposite side of Walnut Street has necessitated a change in the traffic pattern on Marshall Street. Marshall, once a one-way street with traffic moving from east to west, will now host two-way traffic until it intersects with Melrose Street. The conversion of this section of roadway will allow cars and emergency personnel to access all sides of the school.

There is no crosswalk across Walnut Street at this intersection, and we do not recommend that one be painted here. We do recommend that children from the west side of the neighborhood walk along Walnut Street to the main crosswalk in front of the planned school.

Crosby Street has incomplete sidewalks along both sides of the roadway. The new school location will bring more students down Crosby Street to reach Walnut Street. We recommend that sidewalks of uniform width be installed on both sides of the street to provide children with a safe walking route.

2. MARSHALL/MELROSE INTERSECTION

Students walking on Marshall and Melrose will most likely experience an increase in the volume of cars given the new traffic patterns and the new school location. While a crosswalk across Melrose at the Marshall intersection is not necessary now, we recommend that one be painted to make drivers aware of students walking to school.

Marshall and Melrose Streets have sidewalks on both sides of the road. Neither street has a roadside verge, which suggests that children walking to school in the snow will most likely be forced to walk in the street. Snow removal should be prioritized in this area. Delineating parking stalls would better organize the cars on the street and may help to slow traffic moving through this residential area. With parking limited to 40 cars in the proposed school parking lot, regularizing parking on these streets may increase the overall capacity and help meet the needs of the school and residents.



View looking west down Marshall Street to Walnut Street. Sidewalks are present, but are narrow with no roadside verge.



View looking east down Melrose Street. This narrow residential street may see more vehicular traffic once the new school is completed.

3. MELROSE/EASTERN INTERSECTION

Unlike most streets in the district, Eastern Avenue does not have a roadside verge. There are no crosswalks across Eastern Avenue in this section. If there is a significant number of children crossing at the Eastern/Melrose intersection and traffic volumes warrant it, then a painted crosswalk should be considered. This section of Eastern was hit hard by the tornado. As the area is rebuilt, sidewalk upgrades should be considered.



View looking south down Eastern Avenue to Hickory Street

4. HICKORY/EASTERN INTERSECTION

This section of Hickory Street was also devastated by the 2011 tornado. The sidewalk network is incomplete on both sides and the roadway is crumbling and in disrepair. Given its proximity to the new Brookings School, Ruth Elizabeth Park, Springfield College, and the Connecticut River, this road, if improved, could be an important link for walkers.



View looking west down Hickory Street

5. HICKORY/WALNUT/WALNUT ST. EXTENSION

The Walnut Street extension is used and will continue to be used as a school drop-off zone with parking on both sides of the one-way street. The Pioneer Valley Planning Commission (PVPC) conducted an evaluation of the current student drop-off/pick-up process and found that after dropping off, some parents would make an illegal u-turn to reverse direction on Walnut Street. This practice needs to be discouraged, and as more parents use the Walnut Street extension for drop-off, specific procedures should be established and enforced to ensure safety for all users and walkers.



View looking north up the Walnut Street extension. Once the new school is built, this road section will officially be used as a drop off zone. Consult the appendix for additional recommendations for this area.

Other than the painted word SCHOOL on Walnut Street just north of the Hickory Street intersection, all other school zone markings, including a flashing school zone sign, are on the Walnut Street extension. Since traffic moves much faster up the hill on Walnut Street, we would encourage additional school zone signage on Walnut to bring more attention to the school's presence.

At the intersection of Hickory and Walnut Streets, the curb radii on Hickory are excessive. Tightening the radii as shown on Figure 1 on page 4, would require cars to slow down when turning onto Hickory and Walnut Streets.

6. ALLEN/RIFLE/CENTRAL

Many students live in apartment complexes on Central Street and walk from Central to Rifle and then onto Allen Street. A shrub border on the west side of Allen Street impedes pedestrian circulation forcing walkers into the road when moving around a curve. The shrubs should either be maintained appropriately or removed. The Central/Rifle intersection and the Rifle/Allen intersection have excessively wide crossings with large curb radii. As the infrastructure is upgraded, we would recommend that the changes be made similar to those diagrammed below.



Figure 6. Diagram of suggested narrower lane widths and curb radii reductions.



Shrubs along Allen Street obstruct the sidewalk forcing walkers into the street.

7. HICKORY/CENTRAL/HANCOCK

This intersection is particularly complicated for pedestrians to cross. The crosswalks are incomplete and exist on only a few roads of the intersection. South of Central Street, there is no crosswalk marked across Hancock. West of Hancock Street, there is no crosswalk marked across Central Street. Both Hancock Street and Central Street have free right turns that facilitate vehicular movement, but potentially jeopardize pedestrians as drivers move quickly through the intersection.

We understand that this intersection has been studied by the Springfield Department of Public Works and that improvements are planned. We would recommend that in addition to painting crosswalks, the city consider the elimination of the free right turn lanes. While this change may increase wait times at the traffic signals, it could significantly improve the pedestrian safety at the intersection.



Figure 7. Diagram of the elimination of free right turns at the Hancock and Central intersection.



View of free right onto Central Street from Hancock Street

8. HANCOCK/WALNUT/ASHLEY/ALDEN (SIX CORNERS INTERSECTION)

Well known in the city for its confusing layout, the six corners intersection includes five streets merging at irregular angles. Crosswalks lead across each street, but they are minimal with just two parallel white lines. There are no pedestrian traffic signals. A small traffic island sits in the center of the intersection, but it is unclear as to how vehicles are to circulate around it. As a pedestrian, it is difficult to anticipate where cars are coming from and when it is appropriate to cross the street.

There is a substantial amount of undifferentiated pavement at the gas stations on the north and south sides of Alden Street, as well as around the vacant pizza establishment between Hancock and Walnut Streets. The school administration told us that children frequent the Dunkin Donuts and walk through the parking lots because it is the shortest route to school.

The City is in the process of studying multiple ways of solving the traffic problems and addressing pedestrian issues at this intersection. We would recommend the following infrastructure changes:

- Curb radii be tightened to discourage wide, sweeping turns
- Pedestrian signals be added, and the
- Overall traffic pattern be regularized so there is a clear process for moving through the intersection for cars, bikes, and pedestrians.



Aerial view of the six corners intersection



Vast stretches of asphalt characterize the pedestrian experience at the six corners intersection.



In addition to the asphalt in the roadway, large paved areas around two gas stations flank Alden Street.

