

**CITY OF CAMBRIDGE  
WESTERN AVENUE RECONSTRUCTION PROJECT  
ADVISORY COMMITTEE #4, April 27, 2010  
MEETING NOTES**

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**Date, Time & Place:** April 27, 2010, 6:00 PM – 8:00 PM  
Cambridge Senior Center

**Present**

Committee Members

Bill August                      Cathy Cannon                      Caitlin Gallagher                      Marc Leuchner  
Rev. Lawrence Ward

City of Cambridge

Susanne Rasmussen (CDD)                      Jeff Rosenblum (CDD)                      Bill Deignan (CDD)

*CDD = Community Development Department*

Consultant Team:

Jerry Friedman (HDR Engineering, Inc.)                      Cynthia Smith (Halvorson Design Partnership)  
Chris Hart (Institute for Human Centered Design)

Public (signed in)

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**\*\*\*SEE ALSO POWERPOINT SLIDES OF PRESENTATION\*\*\***

**Note: Q=Question A=Answer C= Comment**

**1. WELCOME / GENERAL QUESTIONS (Susanne Rasmussen)**

Susanne welcomed the attendees; reviewed the agenda (which was rearranged slightly); and introduced City and Consultant staff.

**2. RECAP LAST COMMITTEE MEETING (Jeff Rosenblum)**

At the last advisory committee meeting, participants were asked to “think big” and suggest concepts that they would like to see considered in the analysis. Jeff recapped a summary of the key points, acknowledging that this does not indicate that they will work or not work.

- The street feels very wide
- 1-lane configuration for all or part of the street
- Rearrange parking to take better advantage of underutilized parking in the middle section of the street; consider back-in angled parking
- Add a chicane in the middle section of the street
- Utilize raised devices; consider one at Kinniard Street
- Reallocate parking to provide for more meters (short term) parking for businesses
- Consolidate bus stops to make the routes more efficient
- Utilize curb extensions at all (or most) of the intersections
- Cycle track/ raised bike lane to accommodate bicyclists
- Make River and Western 2-way streets again
- Modify the green space by Franklin/Green Streets to make it more accessible and usable

- Add off-street parking lots
- Add more trees and plantings
- Some side streets are narrow, consider making one-way or restricting parking at intersections
- Improve pedestrian and bicycle crossings at Memorial Drive
- Use “hatching” in intersections to reduce “blocking the box”

### **3. GREEN STREETS (Jeff Rosenblum)**

Jeff Rosenblum made a presentation on techniques which can be used to improve stormwater quality as part of a roadway design. Key elements include:

- Reducing the area of paved surface in favor of landscape (or “soft”) surfaces which can infiltrate runoff back into the soil and groundwater
- Using permeable pavements where “hard” surfaces are still required for pedestrian or vehicular needs (permeable asphalt has been installed for a sidewalk on Brookline Street alongside Hastings Square)
- Implementing Low Impact Development (LID) tools such as rain gardens and tree box filters (also being tried on Brookline Street), which filter and treat stormwater runoff before it is infiltrated or released to the storm drain system.

A key underlying principal of the Western Avenue project will be *integrated stormwater management*. This refers to a design which both:

- Reduces the quantity of water entering the storm drain system. This also reduces the quantity of stormwater which is ultimately discharged to the Charles River, and frees up capacity within the storm drain system which can alleviate the impacts of extreme storm events.
- Improves the quality of water which does enter storm drain system and the Charles River.

A variety of rain garden and other LID examples were shown. It is very important to match the design of the system with site specific conditions, including climate, underlying soils, aesthetic preferences, and the amount of maintenance which can realistically be expected to be performed.

Questions/Comments:

*Q: What are some of the ways pavement area can be reduced?*

*A: Good examples include Lafayette Square and Quincy Square. In both cases, it was determined that there were significant areas of “unneeded” pavement, and these were converted, in part, to areas of landscaping which absorb water into the ground. On Western Avenue, this was done several years ago at the intersection with Pleasant Street.*

*Q: Regarding tree box filters, can large trees grow in them? How wide do they need to be? Will they impinge on the clear sidewalk width? Would existing trees need to be removed to accommodate these?*

*A: The City is doing a trial with these on Brookline Street. These are basically concrete boxes of finite size, so they are not used to grow typical large-canopy “street trees”. The plants help filter pollutants from the water, and maintenance requirements include cleaning of sand and salt contaminated soils, and replacing the soil and plants every few years. They would be carefully placed to not impinge on the walking path, and would only be used where there are not existing trees (for example, in empty tree pits, or in new areas of widened sidewalk).*

### **4. URBAN LANDSCAPE “101” (Cynthia Smith)**

Sidewalks and other public realm elements along a roadway corridor are often relatively small areas where lots of different activities and physical elements must co-exist. There are several urban design considerations which must be accounted for during design:

- **Coherence:** On a long corridor like Western Avenue, it is important to maintain the identity of Western Avenue as a whole.
- **Hierarchy of Nodes:** There is a hierarchy of nodes as one moves along Western Avenue, including the major anchors of Central Square and Memorial Drive at the ends, as well as important intermediate nodes at intersections such as Putnam, Howard, Franklin and Green. While maintaining overall coherence of the street, there may also be a recognition that different nodes along the corridor may benefit from different treatments
- **Microclimates** are an important consideration. Western Ave, due to its orientation, has a definite sunny side (north side) and shady side (south side), and the sunset is often visible as a terminating view. It was noted that at present, there are more trees on the shady side than on the sunny side.
- **Sidewalk safety** is very important. This can be enhanced by pruning trees (which is also good for tree health), and ensuring good lighting. Goal is to increase the visibility of pedestrians on the sidewalks.
- **Materials** are critical, particularly choice of sidewalk materials. Sidewalks must be accessible, and connectivity and coherence can be strengthened through consistent use of materials.

Urban design can be thought of as a “kit of parts”, consisting of three major elements: **sidewalks, landscape elements, and street furniture.**

### Sidewalks

- Sidewalk treatments vary widely. In narrow areas, the sidewalk is often paved completely from curb to building face. In other areas, there are planting strips either at the front or back of the sidewalk.
- Materials vary widely, and each material has its own character and accessibility and maintenance issues. It is important to recognize that each seam where one material meets a different material represents a potential trip hazard, due to differential settlement of materials and other construction and maintenance issues.

*Q: What can be done where large tree roots heave the sidewalk, as at several locations on Western Avenue?*

*A: That is a real challenge. Sometimes asphalt sidewalk can be used to “ramp” over the roots, but there is a danger of damaging the tree. It is also not a long-term solution. On Brookline Street, the sidewalk was bumped out around the “street-side” of a large tree. This took a few parking spaces, but provided a good solution for both the tree and pedestrians.*

- Functionally, sidewalks can be thought of as three separate zones:
  - A 2-3 foot “building zone, adjacent to buildings, where pedestrians typically do not walk
  - A “travel zone”, which is more or less clear (8-feet is a good travel zone width on commercial streets
  - A “curb zone” of 2-3 feet, where elements such as trees, lighting, sign posts, control boxes, signals, etc. are located.

## **5. SIDEWALKS FIT FOR PEOPLE (Chris Hart)**

Chris Hart gave a presentation on why it is important to consider the entire population, and their varying abilities, when designing sidewalks.

- Design, in general, must balance ethics and aesthetics for the good of society.
- Designers should keep two core ideas in mind with regards to users:
  - Design powerfully – this influences our sense of confidence, comfort and control
  - Variation in ability is ordinary, not special, and affects most of us at least part of our lives.

- While 3.3 million people in the US use “visible” aids such as wheelchairs and scooters, there are additional millions with arthritis, back problems, heart and respiratory disease, diabetes and other conditions which impact functionality.
- In all, 55 million in the US can be classified as having a disability.
- The US population is aging. In 2000, 16% of North Americans were over 60 years old. This is projected to increase to 30% by 2050, and 40% by 2100.
- Our level of dependency and functional limitations changes throughout our lifetime. While 6.3% of 15-24 year olds have functional limitations (2% severe functional limitations); this increases in the 75+ age group to 72.5% with functional limitations (and 41% with severe limitations).
- Among the specific functions which often deteriorate as we age (and which exacerbate trip hazards and other deficiencies on sidewalks); are our ability to perceive light (a 60 year old perceives ½ of the light of a 40-year old); and our ability to raise our feet and ankles when we walk (so-called “foot drop”).
- It is extra important to provide an environment where we can safely and comfortably be mobile, as mobility has been shown to impact overall health. (Mortality risks in a number of categories are higher for people that are sedentary. Often, especially for the aging, being sedentary is not by choice, but is the result of an unsafe or uncomfortable built environment.)
- Sidewalk surfaces are perhaps the primary determinant of how safe, comfortable, and accessible the public realm actually is for all users. Recognizing this, many countries (Japan for example), now enforce very demanding tolerances for vertical displacement and other criteria for sidewalk construction.
- People’s real – and perceived - health improves with their ability to get around and perform their daily activities on foot.
- The challenges of sidewalk design in an environment like Cambridge include meeting the needs of physically diverse users (as described above), while also providing a surface that holds up well in a winter climate, is easily maintained, and adds to the character of the street.
- While there are variety of potential sidewalk treatments, and most of them can “theoretically” be made accessible initially in terms of ADA compliance, there are other factors that impact users.
- For example, almost all unit pavers introduce more vibrations (at the paver joints) than would a plain poured in place concrete sidewalk. These vibrations can have a very harsh effect on wheelchair users with spinal cord injuries, including inducement of painful spasms, and loss of bladder control.
- Maintenance is an issue with most unit paver installations. Subsequent work by utility companies, for example, or often not repaired with the same care as the original installation, leading to severely out-of-compliance conditions.

*C: 30-35 years ago, most of the Western Avenue sidewalk was brick, and it iced up very quickly in the winter, and was tough to clear of snow.*

## **6. URBAN LANDSCAPE “101” continued (Cynthia Smith)**

### Sidewalks (continued)

- A “continuity strip” is one way to balance the need for sidewalks which are safe and accessible for all users, with the desire to introduce “special” sidewalk treatments such as bricks or other unit pavers.
- In a typical continuity strip, the pavement in the curb zone (where pedestrians typically don’t walk) is a different material from the travel zone. As always, special pavements such as brick and unit pavers require a high degree of craftsmanship during construction, much more so than a poured in place concrete sidewalk.
- Examples of continuity strips can be found on Cambridge Street, Brookline Street, Sidney Street, and a number of other locations in the Boston/Cambridge/Somerville area such as Somerville Avenue.
- In older urban areas like Cambridge which have narrow sidewalks, even a continuity strip may not totally encapsulate potential obstacles such as large trees, lighting or signal control cabinets, etc. Special care must still be taken to remove or mitigate these obstacles.

### Landscape Elements

- Street trees are the most common landscape element along a street.
- In the past, a monoculture of trees (same species of tree) were often used along a street. This provided a coherent and sometimes monumental look, but the entire street could be decimated by a single tree disease, which is what happened to many American “Main Streets” with Dutch Elm Disease.
- Today it is more typical to have a diversity of species along a street, which is the case on Western Avenue.
- In addition to trees in the public right-of-way, trees on private property behind the sidewalk can also make an important contribution to the streetscape, and they often have better growing conditions (more soil volume, less compaction from pedestrians, less salt, etc). Cambridge has a “back of sidewalk tree program” to promote this. The City will approach abutters who have landscaped areas within 20-feet of the back of sidewalk, and if the abutter agrees, the City will plant a tree in this zone at no cost. (The abutter agrees to maintain the tree). The program is strictly voluntary.
- There are currently 110 trees along Western Avenue, in various states of health. As part of this project, the team will go block-by-block and assess the health of the trees.

*Q: How old are the trees on Western Avenue? If some are at the end of their life expectancy, is this an opportunity to replace them with new trees?*

*A: Some of the trees are 60-70 years old. When the older trees were getting established, they were under much less stress than a new tree planted today would be (less traffic, pollution, etc.) A new tree planted today may only last 20-25 years. It is hard to say exactly what the remaining life of a tree is, but we will identify any which are clearly diseased or in decline.*

- The type of tree pit condition is very important to the health of the tree. Trees need both air and water, and different tree pit designs provide these in varying amounts. The type of tree pit will also determine the susceptibility of the soil to compaction from pedestrians, which is detrimental to the tree. Cambridge is now largely using open tree pits, without grates. For urban street trees, a continuous tree way would be an optimal installation, as it maximizes the volume of soil, air, and water that the trees can access.
- In a constrained environment, so-called vest-pocket parks, which optimize the use of small areas can be good contributors to the streetscape. Land for these parks is made available by minor intersection realignments, (as at the Pleasant Street/Western Avenue intersection), or in spaces “left-over” from other developments. The current vest-pocket parks on Western Avenue are somewhat disconnected and random-feeling. An example of a more successful vest pocket park would be the one at Quincy Square, which has good pedestrian flow and interacts naturally with the surrounding street edges.
- Flowers can be a good addition to the streetscape, as they are on Western Avenue. They are easily maintainable by abutters or neighborhood volunteers. They can be provided in stand-alone planters, or included in more permanent planting beds on the street. Depending on the City’s maintenance budget, flowers can be changed seasonally. Flowers generally give good value for the dollar as part of a streetscape design.

#### Street Furniture

- In an urban environment, the emphasis should be on sturdy, low maintenance street furniture. The individual pieces optimally form a coherent family of elements.
- Cambridge currently has a standard street furniture palette, including metal benches, metal trash receptacles, solar trash compactors, recycle receptacles, and bicycle racks.
- Other opportunities to enliven the street and provide neighborhood value include sidewalk cafes, community bulletin boards, or even creative treatments of such standard elements as lighting control boxes.

## **7. COMMITTEE DISCUSSION and PUBLIC COMMENT (Attendees)**

*Q: Are certain sidewalk materials better for permeability?*

*A: Pervious sidewalks can be of asphalt (as on Brookline Street); concrete, or unit pavers. In actuality, the subsurface portion of the installation is more important than the surface material. A pervious "reservoir" must be provided below the sidewalk, and must be adequately sized to hold the rainwater until it percolates into the underlying soil.*

*Q: Are certain sidewalk materials more susceptible to freezing?*

*A: Many people have observed that traditional clay sidewalk brick seems to ice-up more rapidly than concrete or asphalt.*

*Q: Can brick and unit pavers be ranked in order of accessibility?*

*A: Besides the material of the paver itself, there are many other variables which affect the long-term accessibility of sidewalk pavers. These include the initial quality of the installation, the material of the subbase (the City now uses an asphalt or concrete base beneath bricks, which is much better than laying bricks on gravel or soil), and even the weather and moisture conditions when the sidewalk was laid. In theory, almost any type of paver can be "accessible" when it is first constructed. The difficulty comes in keeping it that way over time.*

**8. NEXT STEPS (Jeff Rosenblum)**

- Committee Meeting #5: Tuesday, May 11 (6-8 PM). We hope to be able to discuss some preliminary conceptual design alternatives.