

Town of Lexington  
Center Streetscape Design Review Ad Hoc Committee  
**PUBLIC HEARING**

Tuesday September 13, 2016  
7:30 PM

Estabrook Hall, Cary Memorial Building



Center Streetscape Design Review Ad Hoc Committee

Public Hearing September 13, 2016

# Appointed by the Board of Selectmen

## Members

- Victoria C. Buckley, Commission on Disability
- Nancy Corcoran-Ronchetti, Planning Board
- Anne Laurin Eccles, Historic Districts Commission
- Margaret S. Enders, Bicycle Advisory
- John W. Frey, Tree Committee
- Jonathan A. Himmel, Tourism Committee
- Wendall C. Kalsow, Historical Commission
- Timothy D. Lee, Design Advisory Committee
- Pamela F. Shadley, Center Committee
  
- Howard L. Levin, Chair

## Liaisons

- Elaine Doran, Garden Club
- Wendy Manz, Capital Expenditures
- Eric J. Michelson, Retailers Association
- Glenn P. Parker, Appropriation
- David Wells, Historical Society
- Ada Wong, Chamber of Commerce



## COMMITTEE CHARGE FROM BOARD OF SELECTMEN

“To evaluate and make a recommendation on the various design elements (excluding engineering items related to traffic) for the Center Streetscape Project.”

“The Center Streetscape Project is envisioned as a capital improvement effort that, when completed, will enable Lexington Center to achieve its many objectives of providing an inclusive, vibrant, welcoming Environment . . . preserving the Center’s historic resources, addressing much needed maintenance, and augmenting streetscape amenities to support and expand commerce, tourism, and leisure activities.

Mission: To ensure that Lexington Center continues to be the hub of Lexington’s commercial, social and leisure activity.”



# THREE TIERS

## *Core Elements*

**Tier 1:** Sidewalks and Lighting

**Tier 2:** Overall Layout (pedestrian, bicycle, cars), Landscaping and Hardscape, Street Furnishings, Buffers and Edges

**Tier 3:** Educational and Interpretive Elements, Signage and Wayfinding, Roadway Features, Budgeting and Project Management



# TIER 1: *Sidewalks and Lighting* Public Process

- Seven Full Committee Meetings
- Subcommittee and Workgroup Meetings
- Independent Research into Materials and Lighting

## *Expert Presentations:*

- Town Engineer and BETA Group, Inc.
- Characteristics of Brick and Concrete Materials
- Tom Hopkins, Director, Mass Architectural Access Board
- Commission on Disability
- History and Vision of the Center
- Illumination



# *CORE CONSIDERATIONS:*



SAFETY, ACCESSIBILITY, DURABILITY

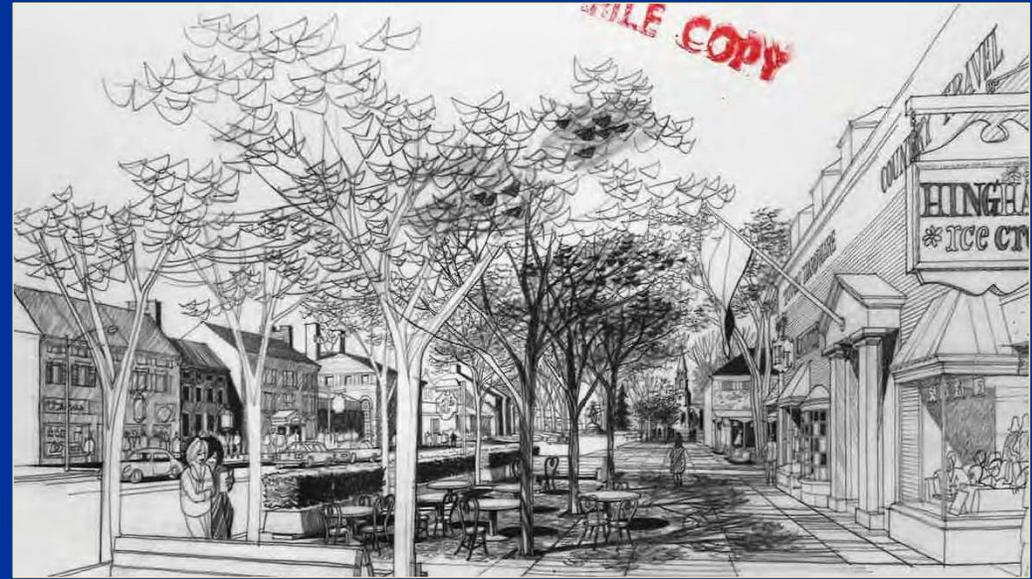
HISTORICAL CONTEXT, CHARACTER

INSTALLATION, COST, MAINTENANCE

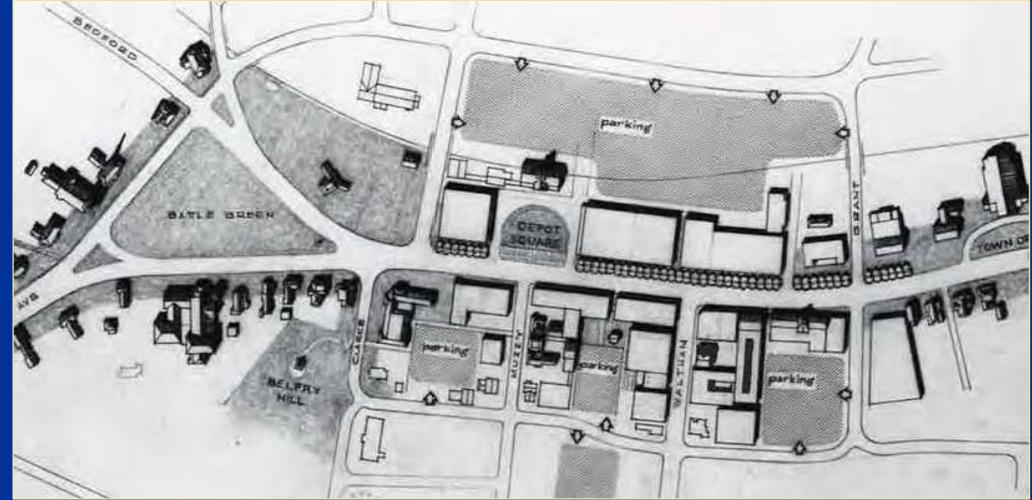
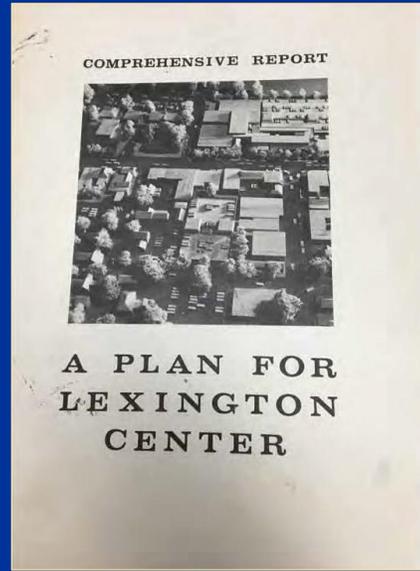


# Existing Conditions : *History*

**Our Center has a long and diverse history, and many, many people that care about it.**



1966 Plan for Lexington Center:  
*This plan created our large north-side sidewalk and the pedestrian gathering areas*



# Existing Conditions : *History*

## 2005 Lexington Center Collaborative Charrette

*“Lexington Center will be a warm and friendly place, geared towards providing a walkable and aesthetically pleasing and active center ..... Where residents of all ages can stroll, and site and gather and feel at home.”*



*From the openness of the Battle Green to the weekly farmers market, Lexington Center is the Town's Living Room. Tree lined streets and open spaces have areas for families to relax and connect with neighbors and where the families, residents, visitors and employees shop and dine. It's mixed use, walkable character, shaded seating, and areas of green open space are places to gather and connect. Neighborhood residents and families throughout the town come to the center for library, entertainment and municipal services and find unique and vibrant retailers.*



# History and Our Charge

- Maintain overall goals of previous community workshops and plans
- Consider materials with our current understandings of:
  - Public safety and universal accessibility
  - Construction costs, maintenance costs
  - Multiple uses of our public space
  - Flexibility and future adaptations
  - Aesthetics and character
  - Sustainability
- Arrive at a balanced recommendation that protects and enhances our beloved Center, for ourselves and for the future



# Sidewalk Materials

## Proposal for the Entire Center

### Consistent Treatment from the Minuteman Statue To Woburn Street



Center Streetscape Design Review Ad Hoc Committee

Public Hearing September 13, 2016

# Sidewalk Materials: *Existing Conditions*

## *Old City Hall Pavers*



Wide joints



Lack of  
regrouting  
maintenance



# Sidewalk Materials: *Existing Conditions*

## *Failed Concrete*



Heaving, due to the freeze/thaw cycle



Cracking and spalling



# Sidewalk Materials: *Ad Hoc Committee Findings*

- Failing sidewalk examples abound in concrete and brick
- Existing brick is not on a stable setting bed



# Sidewalk Materials: *Ad Hoc Committee Findings*

- Concrete sidewalks

- Smooth when first installed, with wide expansion joints and smaller control joints to control cracking
- Installs bright white but ages rapidly to dark gray
- Heaving happens due to roots or freeze-thaw
- Spalling is due to water infiltrating the surface
- Highly susceptible to winter salting and frost
- Concrete repairs never blend in
- Concrete repairs involve entire panels
- Concrete repairs typically done in volume and have to wait
- Concrete repairs involve large crews with a high per-day cost



# Sidewalk Materials: *Ad Hoc Committee Findings*

- Brick sidewalks
  - Needs to be on a solid base
  - Should be installed with virtually no gap
  - Can be salted in snow and ice
  - Single brick can be repaired if there's a crack or shift
  - Brick repairs blend easily
  - Brick repairs involve only the effected area
  - Brick repairs involve a single tradesman and can be done more immediately



# Materials Considered

The Ad Hoc Committee reviewed sidewalk materials, including

- Cement concrete
- Cement concrete with brick borders
- Molded clay brick (City Hall Pavers)
- Wire-cut (square-edge) clay brick
- Asphalt



# Sidewalk Material Recommendation

After careful consideration, the majority of the Committee voted to recommend the sidewalk material to be wire-cut, square-edge brick, with the stipulation that it needs to be precisely installed on a stable base and meticulously maintained.



# Sidewalk Materials

“Smooth, firm and level surface with no rise greater than ¼” as the ideal; wire-cut [*square-edge*] pavers can and do meet that requirement.”

Tom Hopkins, Director  
Massachusetts Architectural Access Board (AAB)  
*28 June 2016, Lexington Ad Hoc Meeting*



# Sidewalk Materials: *Recommendation*

## New Square-Edge, Tight-Laid Brick Pavers



# Sidewalk Materials: *Reasons for Our Recommendation*



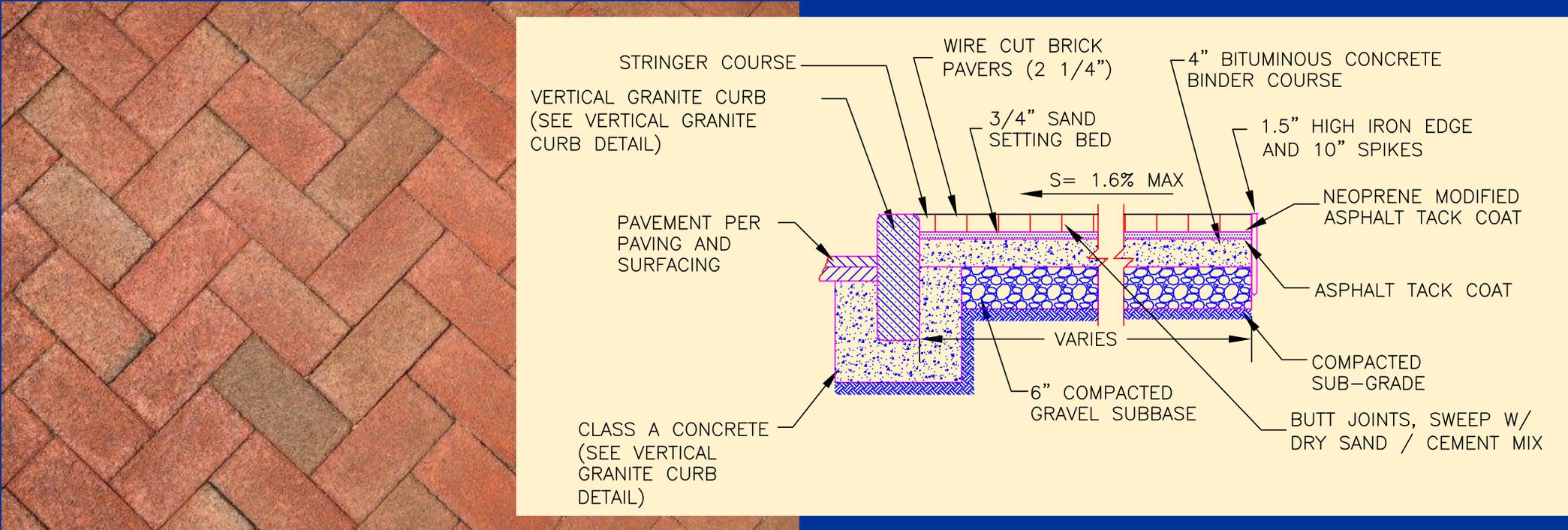
- Square-edge brick pavers in a herringbone pattern can provide a low level of vibration\*
- Easy material to repair over time (Lower Life Cycle Cost)
- Combines safety and accessibility while being compatible with the historic character of the center of Lexington

\*University of Pittsburgh: HERL



# Sidewalk Materials

## Herringbone Pattern & Brick installation detail with asphalt base & setting bed For slip-resistant, firm and level surface



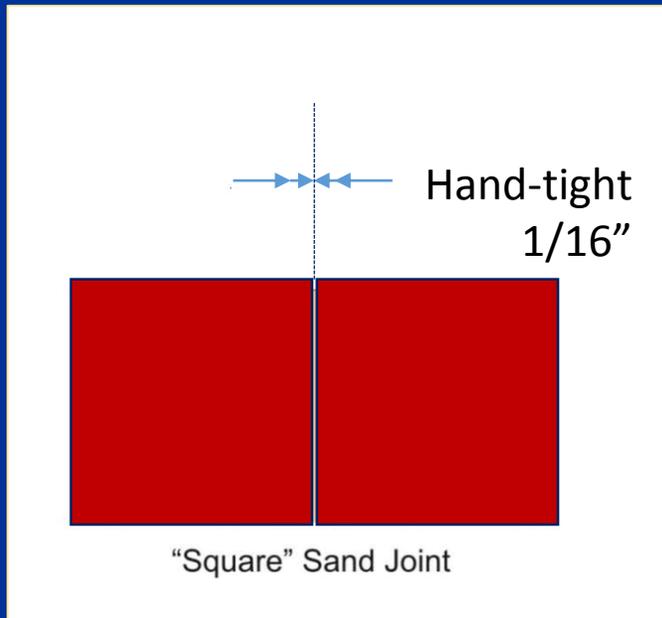
# Sidewalk Materials

## Best Setting Practices for Smooth & Durable Installation

- Hand Tight Joint Profile

- Sub-Base Compaction  
(minimum 95%)

- 90° Herringbone on asphalt  
setting bed and tack coat



# Sidewalk Materials

## Examples in Historic Settings in New England: Harvard Square, Cambridge



# Sidewalk Materials: *Winter Safety*

Note the white efflorescence on the pavers as these photos were taken last winter. Cambridge engineers explained it was from salt used during ice and snow on this much-trafficked area and would clear with rain. They added that the ability to salt brick pavers, unlike concrete which cannot be salted, increases the safety of this sidewalk material.



JFK Street, Cambridge's Oldest Setting of Square-Edge Brick Pavers  
12+ year old Installation



# Sidewalk Materials

## Other Historically-Sensitive Settings for Square-Edge Brick Pavers



Boston Waterfront



# Sidewalk Materials



Charlestown, MA



# Sidewalk Materials: *Curb Ramps*



Light colored pavers  
for visual contrast

Dark paver band at  
edge of ramp



Cast iron detectable  
warning strip for  
durability



# Sidewalk Standards

## **Pertinent legal guidelines for sidewalks, including:**

- Massachusetts AAB Guidelines (2006)
- PROWAG (Public Rights-of-Way Accessibility Guidelines, 2010) - US Access Board – best practice guidelines
- ADA (Department of Justice) 2010 Guidelines

## **Sidewalks need to be:**

- continuous with no changes in *level* greater than  $\frac{1}{4}$  inch ( $\frac{1}{4}$ " = 6mm)
- stable and firm with a minimum of surface warping
- constructed with no greater cross slope than 2%



# Sidewalk Standards

The 2015 Town Meeting voted unanimously in favor of Article 42:

“To provide a welcoming and comfortable experience for individuals of all abilities, the Town will endeavor at all times to use smooth, safe and aesthetically appropriate materials when constructing sidewalks and other passageways on town-owned walkways. Bricks and other small discrete pavers may be used as decorative edge treatments, but shall always be installed to create the smoothest surface possible, ensuring safety for citizens who have trouble traversing uneven surfaces.”



# Sidewalk Standards

Newly developed “Wheelchair Pathway Roughness Index” from University of Pittsburgh research:

- enables evaluation of sidewalks and pedestrian pathways in an objective manner
- enables the quantification of roughness of sidewalks and other pedestrian surfaces for wheelchairs using the international roughness index approach similar to that for vehicular pavements
- is awaiting adoption by the U.S. Access Board and/or other federal, state and private agencies/organizations to address the accessibility of sidewalk surfaces



# Sidewalk Materials

Although the Commission on Disability prefers concrete with bricks on the side, we are willing to accept straight-sided wire-cut brick with very precise installation and maintenance specifications.

The Ad Hoc Subcommittee has worked on providing those detailed specifications.



# Sidewalk Materials: *Recommended Detailed Specifications for Sidewalk*

- Wire-cut, straight-edged clay brick paver with no spacers, full 4"x8" without bevels or chamfers
- Color - red to dark brown, no orange. Contrasting trim and lighter brick for ramps
- Setting bed - bituminous concrete compacted to minimum 95% density, 3"-4" thick
- Tack coat – asphalt and adhesive, beneath pavers
- Pavers set according to industry standards
- Joints hand-tight, in the 1/16" range, swept with a sand
- Bricks - 90 degree herringbone pattern to minimize vibration.
- Sidewalk - to be pitched adequately to provide necessary drainage with weep holes as necessary



# Sidewalk Standards: *Additional Recommendations for Oversight*

- Project Oversight Committee
- ACCESSIBLE route of travel for pedestrians during construction
- Mockup of 8'x8' of sidewalk with a curb cut
- Easy way to let DPW know of problems once installed
- Protocol for annual inspections



## Existing Conditions

There are *many* light styles in Lexington Center



# Lighting : *Existing Conditions*

Roadway lights are generally “cobraheads”, either free-standing or mounted on utility poles

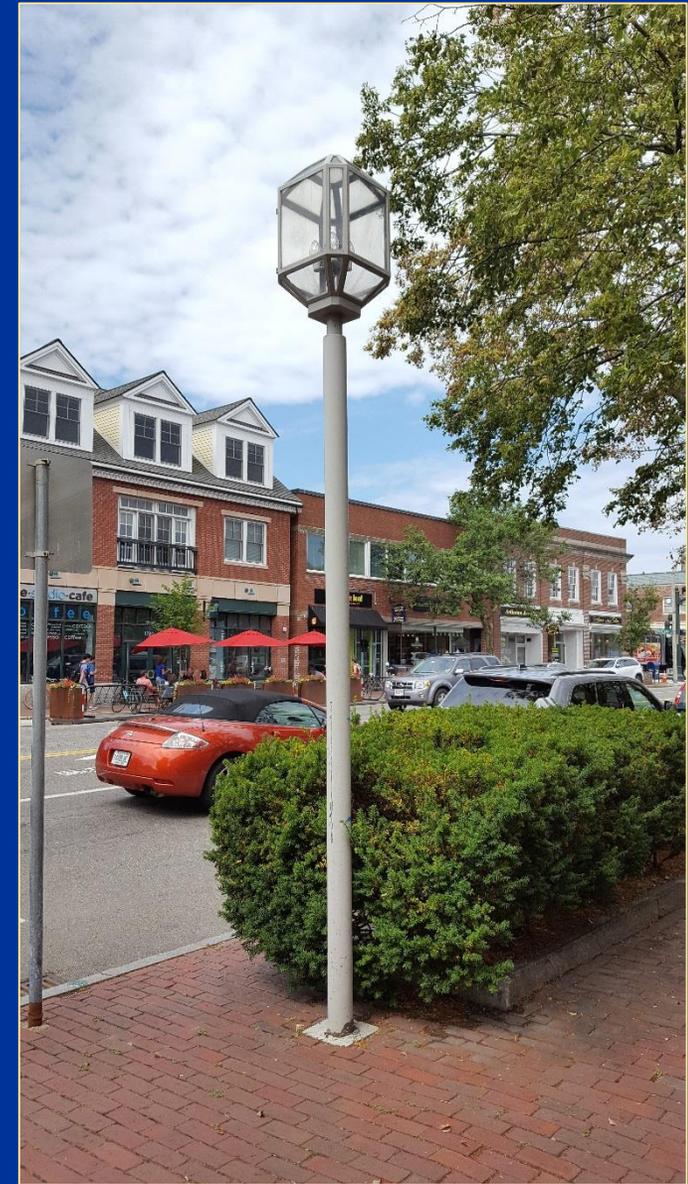
Necessary to light six lanes of Massachusetts Avenue



# Lighting : *Existing Conditions*

Pedestrian-scale lights are varied;

These are on the sidewalks in front of CVS and Lexx



# Lighting : *Existing Conditions*

Beyond the public sidewalk there are more styles



*Town Offices*



*Cary Hall*



*Post Office*



*Emery Park*



*Building Mounted*



# Lighting : *Existing Conditions*

## At night

- Tall roadway lights illuminate the street and crosswalks



# Lighting : *Existing Conditions*



## At night

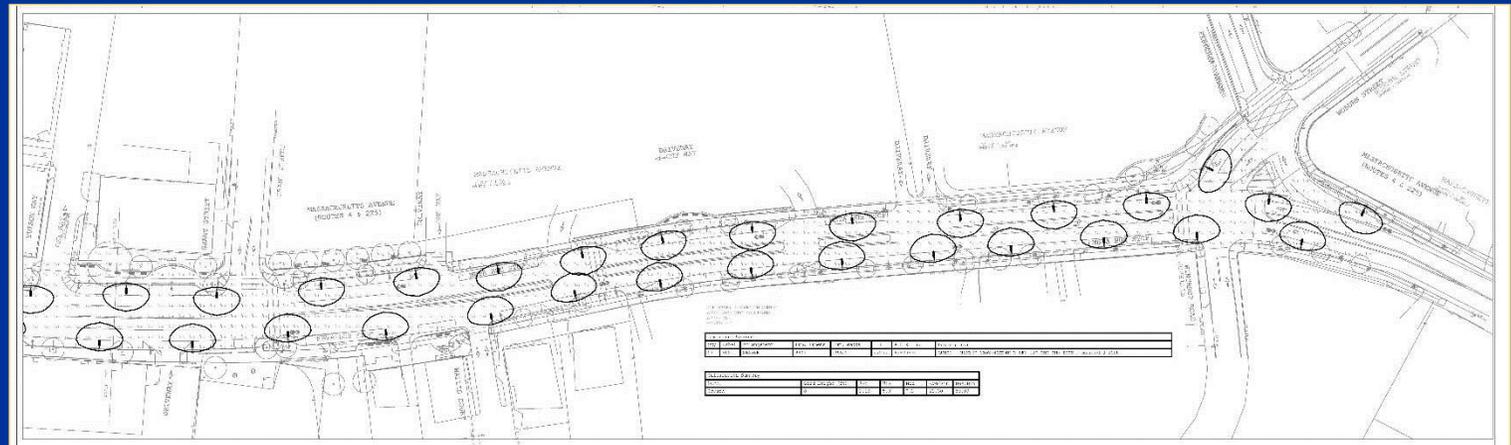
- Pedestrian lights illuminate the wide sidewalks, add to character
- Light spill from the buildings is significant



# Lighting : *Lighting Standards*

- American National Standard Practice for Roadway Lighting
- Illuminating Engineering Society of North America (**IESNA**)
- Use standards for public safety, and to protect the Town's liability
- Wide roadway width will result in need for additional pedestrian lights for wide sidewalks

	WIDE SECTION	NARROW SECTION	INTERSECTION
	Major/High	Major/Medium	Major-Collector/Medium
Average Maintained Footcandles (FC):	1.7 FC	1.3 FC	2.2 FC
Average to Minimum Uniformity Ratio:	3:1 or <	3:1 or <	3:1 or <



*Example of a Photometric Plan*



# Lighting : *Lighting Standards*

## Recommended Criteria for Lighting Selection

- Must meet national standards for illumination levels
  - Special focus on crosswalks



# Lighting : *Lighting Standards*

## Recommended Criteria for Lighting Selection

- Must meet national standards for illumination levels
  - Special focus on crosswalks
- Roadway lights
  - Should “disappear” visually
  - Should be LED, easy to maintain, low cost to run, available as free-standing and mounted on utility pole



# Lighting : *Lighting Standards*

## Recommended Criteria for Lighting Selection

- Must meet national standards for illumination levels
  - Special focus on crosswalks
- Roadway lights
  - Should “disappear” visually
  - Should be LED, easy to maintain, low cost to run, available as free-standing and mounted on utility pole
- Pedestrian lights
  - Should be similar to the existing lights in style
  - Should be LED, easy to maintain, low cost to run
  - Should be located to contribute to the creation of vibrant, pedestrian-scale space and to avoid trees



# Lighting : *Lighting Standards*

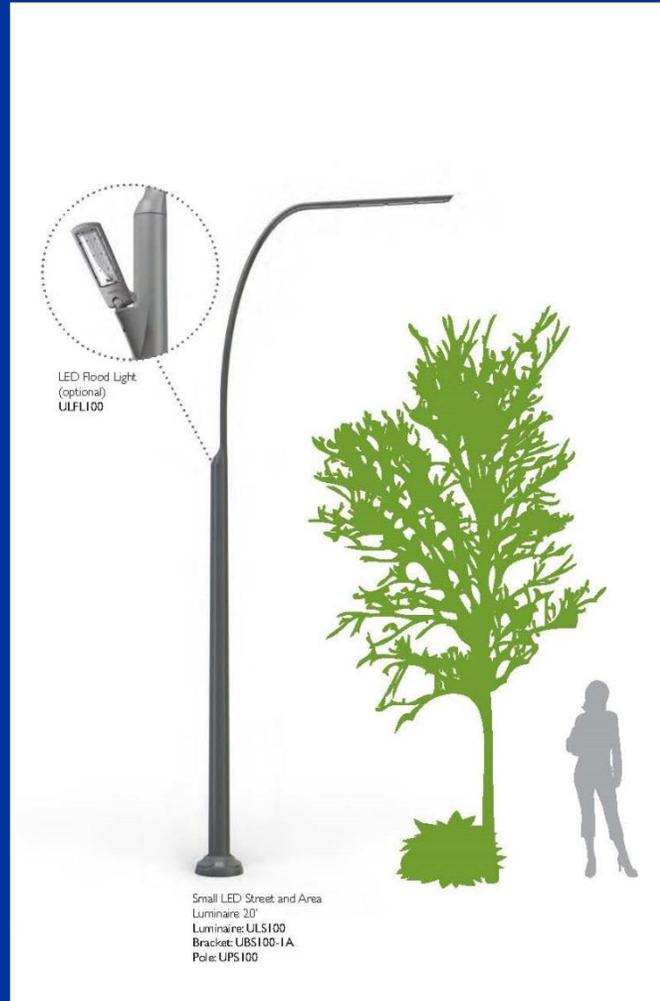
## Recommended Criteria for Lighting Selection

- Must meet national standards for illumination levels
  - Special focus on crosswalks
- Roadway lights
  - Should “disappear” visually
  - Should be LED, easy to maintain, low cost to run, available as free-standing and mounted on utility pole
- Pedestrian lights
  - Should be similar to the existing lights in style
  - Should be LED, easy to maintain, low cost to run
  - Should be located to contribute to the creation of vibrant, pedestrian-scale space and to avoid trees
- Lights beyond the Public Sidewalk
  - Can be varied in style; building mounted lights contribute to sidewalk character



# Lighting : *Roadway Light Recommendation*

- Slender profile, unobtrusive
- LED Roadway light
- Minimizes its visual presence overhead and on the sidewalk
- Has a small base to reduce pedestrian conflicts
- Height in the range of 22' - 30'
- Painted black for ease of maintenance



# Lighting : *Pedestrian Light Recommendation*

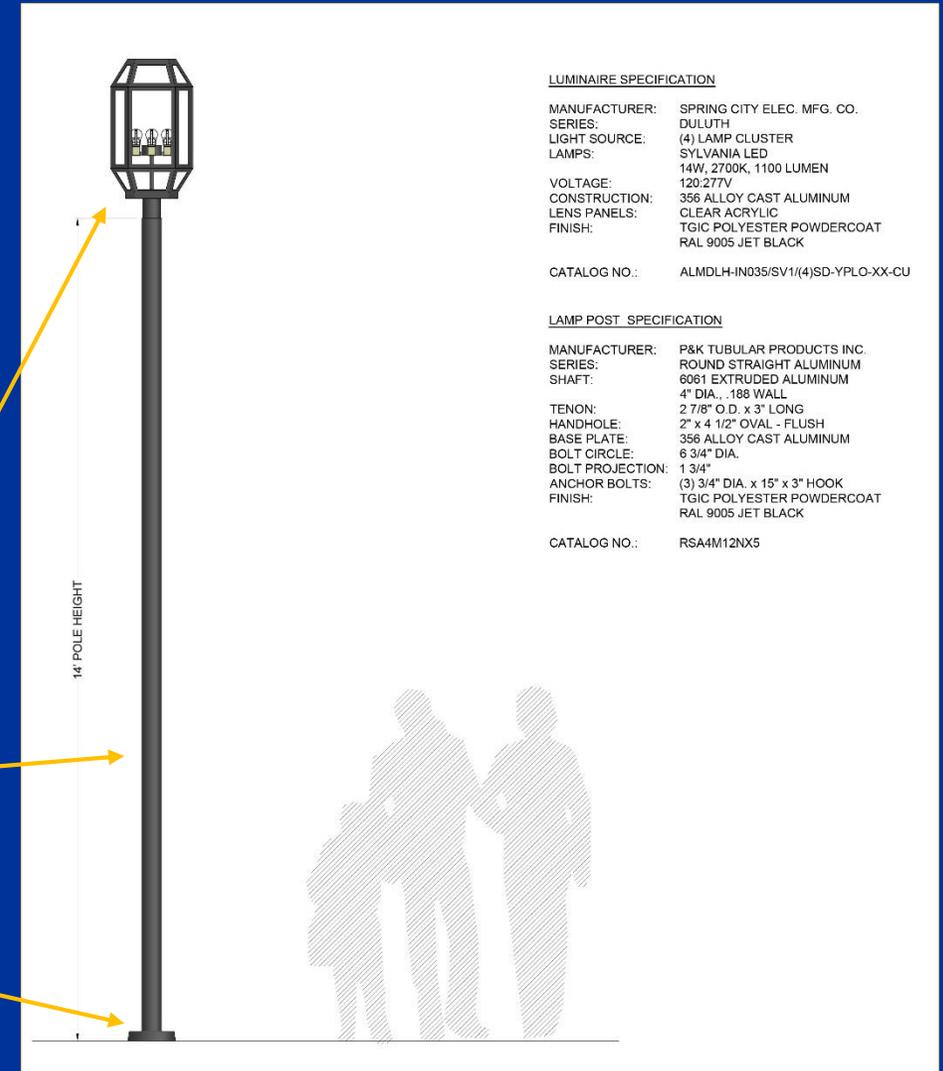
- Is consistent with the existing light
- Slender, simple pole and base
- Luminaire and pole are black to match street lights, other lights in the area
- Top shield to prevent light from going up
- LED bulbs, can be shielded on top



Luminaire

Pole

Base



# Lighting : *Accessibility Considerations*

- Encourage additional, focused lighting on signage
- Design lighting specifically for its purpose; for example, lighting crosswalks is different than lighting straight pedestrian pathways
- Appropriate lighting for pedestrian pathways is crucial, as brick is a darker material than concrete
- Special considerations include reducing glare as much as possible and locating light poles/bases to minimize obstacles



# Lighting : *Requirements / Next Steps*

- Recommend the consultant team hire a LIGHTING DESIGNER
- Designer would work on overall lighting design, locating site lights in conjunction with crosswalks, seating areas, trees
  - Designer can also provide input on possible moonlighting (lights in trees) or uplighting
- Recommend Committee oversight in DESIGN and CONSTRUCTION

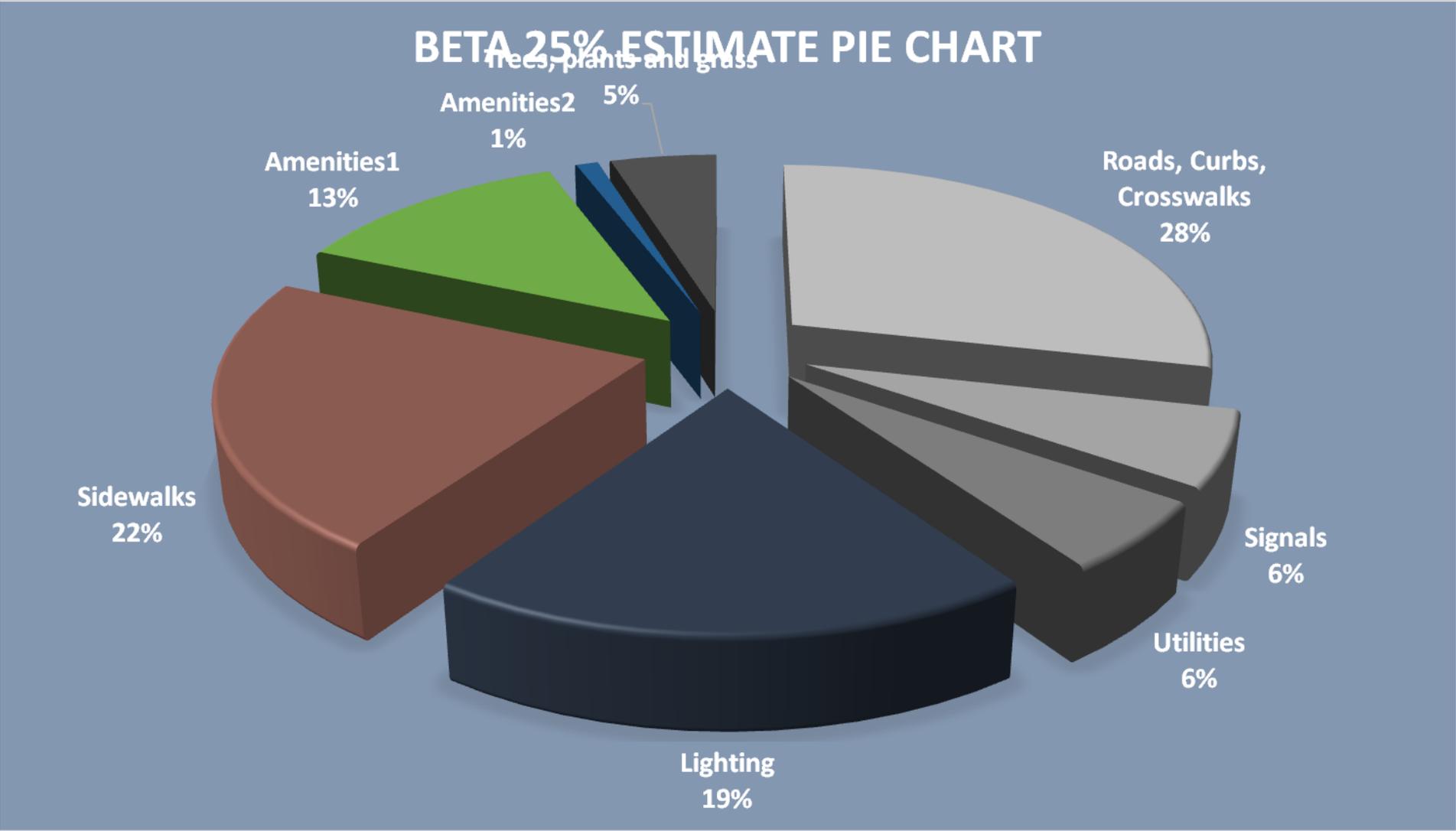


## Beginning Budget Considerations

Understanding all the Variables



## COST SNAPSHOT



# Costs

The Committee has discussed cost considerations at each of our meetings. Cost is a critical part of our discussions. Overall project costs have several components.

Installation Cost – This is the cost to purchase and install the material.

Maintenance Cost – This is the cost to maintain the material over time.

Together they comprise the “Life Cycle Cost”. Often, better quality materials that have a higher installation cost, will have a lower maintenance cost.



# Costs

## BRICK ON A STABLE BASE

1. Has a higher installation cost than cement concrete.
2. Tolerates winter salt better than cement concrete.
3. Maintenance costs include resetting sections of brick that settle or move. Better setting beds will require less maintenance than less expensive setting beds.
4. Full life cycle cost of properly installed brick may well be comparable to properly installed cement concrete.



## SIDEWALK PERSPECTIVE

	Concrete	Brick
<b>US Access Board, ADA &amp; ABA Requirements</b>	●	●
<b>Additional Attributes</b>		
Roughness (Vibration)	●	●
Flatness	●	●
Lippage (Trip Hazard)	●	●
Visual Character of finished product	●	●
Historic Relevance	●	●
Effects of Winter Salting	●	●
Repair & Maintenance Costs	●	●
Character of Repair	●	●
First Cost	●	●
Durability	●	●



# Costs

## LIGHTING

1. In comparison with the historically-styled ornamental roadway and pedestrian lights in the current plans, we believe our solution will be less costly per fixture.
2. Lighting cost will depend heavily on the number of fixtures required, as determined by the illumination and illuminance calculations done by the professional lighting designer. The taller the pole, the fewer number of fixtures will be required.
3. We do not have any reason to believe our recommendation will be more expensive than any other option we have seen.

We assume that after the Ad Hoc Committee completes ALL its recommendations, that the consultant team will incorporate the recommendations into a revised overall plan and construction cost estimate.



*The Ad Hoc Committee will be responding to tonight's  
public conversation for preparation of this presentation for  
the Board of Selectmen*

*Open to the Public*

*[www.lexingtonma.gov/planning-office/centerstreetscape-design-review-committee](http://www.lexingtonma.gov/planning-office/centerstreetscape-design-review-committee)*



**Center Streetscape Design Review Ad Hoc Committee**

**Public Hearing September 13, 2016**



Center Streetscape Design Review Ad Hoc Committee

Public Hearing September 13, 2016