A Safe, Convenient and Sustainable Inman Square: Important Re-design Considerations

Cambridge Bicycle Safety (CBS)*

March 2017

CBS has conducted a careful review of the four proposed design options presented by the City of Cambridge on January 24, 2017 (Bend Cambridge, Bend Hampshire, Bend Northside, and Roundabout),† evaluating the options on the metrics of **safety**, **convenience**, and **environmental sustainability.** We examined the positive and negative impacts each option would have on both the intersection and the surrounding community.

All plans meet the basic goal of providing safer bicycle infrastructure, in particular through the use of protected bicycle lanes. The **Roundabout** scores best on our metrics of safety, convenience, and environmental sustainability, with **Bend Cambridge** scoring second best.

Safety

Inman Square has been the site of tragic roadway crashes, most recently in June 2016, when Amanda Phillips was struck and killed by a truck while bicycling on Cambridge Street.

Design metrics:

- ★ **Incorporate protected bike lanes.**
- ★ **Reduce speed and frequency at which bikes, pedestrians and cars interact.**
- ★ **Reduce length of crosswalks to minimize exposure** of pedestrians and bicyclists to vehicles.

Convenience

Inman Square is a vibrant, walkable neighborhood located along the border between Cambridge and Somerville. The wide variety of local businesses attracts visitors arriving by bus, bicycle or car, or on foot. Cambridge Street and Hampshire Street are major transit arteries serving Cambridge, Somerville and Boston. Hampshire Street is a major bicycle corridor; people on bicycles account for 26% of road users.

Design metrics:

- ★ **Reduce travel time through intersection** at both **peak** and **off-peak** times.
- ★ **Reduce impact on neighborhood side streets.**
- ★ Enable pedestrians to **cross the intersection in 60 seconds or less.**

Environmental Sustainability

Inman Square has significant public green space, which should be preserved and improved to provide a healthy, welcoming and attractive amenity for all to enjoy.

Design metrics:

- ★ **Preserve existing mature trees and augment community open space.**
- ★ **Reduce automobile emissions** caused by stopping and starting.
- ★ **Alleviate heat island effect** by reducing total area of asphalt paving.

Matrix

Below, we have scored the designs with respect to their **safety**, **convenience** and **environmental sustainability** impacts.

Green – positive impact
Red – negative impact

Safety	
Incorporate protected bike lanes.	**All** designs incorporate protected bike lanes.
Reduce speed and frequency at which bikes, pedestrians and cars interact.	**Roundabout** reduces vehicle speeds from 25 mph to ~ 15 mph. **Cambridge, Hampshire** and **Northside** maintain current speeds along at least one major travel direction. In *north-south direction*: **Cambridge** does not significantly calm traffic with respect to current conditions; **Hampshire**, **Northside** and **Roundabout** all provide calming. In *east-west direction*: **Hampshire** does not calm traffic with respect to current conditions; **Cambridge**, **Northside** (to some extent) and **Roundabout** provide traffic calming. **Roundabout** has raised pedestrian crossings across major roads; this enforces reduced vehicular speeds, and improves visibility for pedestrians.
Reduce length of crosswalks to minimize exposure of pedestrians and bicyclists to motorized vehicles.	In **Cambridge** and **Roundabout**, pedestrian crossings never span more than two lanes of traffic. In both **Hampshire** and **Northside**, the central pedestrian crossing spans four lanes. In the **Roundabout**, the pedestrian crossing is effectively shortened even more by islands that enable pedestrians to cross one direction of traffic at a time. This further promotes pedestrian circulation in the square.

Convenience	
Reduce travel time through intersection at both peak and off-peak times.	**All** designs have similar peak-hour travel times. **Roundabout** minimizes off-peak travel time by removing timed stoplights. **Roundabout** minimizes road re-alignment.
Reduce impact on neighborhood side streets.	With **Roundabout**, traffic is kept flowing along existing corridors, i.e. the Cambridge/Hampshire cross axes. Cars are not diverted onto side streets.
Enable pedestrians to cross the intersection in 60 seconds or less.	**All** designs allow pedestrians to cross through the middle of the intersection, and require at most one signalized crossing to continue walking along major directions. **Roundabout** minimizes wait time for pedestrians as cars are always required to yield to pedestrians at raised crosswalks.
Environmental Sustainability	
Preserve existing mature trees and augment community open space.	**Cambridge** and **Roundabout** preserve Vellucci Park, while **Hampshire** and **Northside** eliminate it to create open space at northeast corner. **Hampshire**'s open space is split by new bus lane. **Cambridge** creates open space on southern edge of intersection, which could, in long term, lead to re-activation for retail. **Roundabout** adds 10 feet of sidewalk width to north side of Hampshire Street. Because traffic slows as it enters the **Roundabout**, people are more likely to notice Inman Square rather than rushing through it on the way to other 'squares.'
Reduce automobile emissions caused by stopping and starting at intersection.	The traffic lights in **Cambridge**, **Hampshire** and **Northside** will cause cars to frequently stop and accelerate in the middle of the intersection. **Roundabout**, with its slower speeds and smoother flow, produces fewer emissions. **All** designs lead to idling during peak hours at edges of intersection.
Alleviate heat island effect by reducing total area of asphalt paving.	**Cambridge** and **Roundabout** have the smallest area of asphalt paving, a significant heat emitter. **Hampshire** has the largest extent of asphalt. **Roundabout's** central island is not made of asphalt and would incorporate plantings.

* Cambridge Bicycle Safety (CBS) is a group of Cambridge residents interested in promoting safety for cyclists of all ages and abilities in Cambridge, Massachusetts. http://www.cambridgebikesafety.org

†https://www.cambridgema.gov/~/media/Files/publicworksdepartment/Engineering/cityprojects/inmansquare/Inman%20Square%20Design%20Options%20and%20Details%20January%202017%20Web.pdf