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CITY OF LAKE GENEVA SPECIAL WORK SESSION-PUBLIC WORKS COMMITTEE

FRIDAY, AUGUST 16, 2024 - 10:00 AM

LAKE GENEVA CITY HALL; COUNCIL CHAMBERS (MAIN LEVEL)

Members:

Chairperson Mary Jo Fesenmaier, Alderpersons: Shari Straube, Joel Hoiland, Peg Esposito, and Cindy Yager

WORK SESSION AGENDA

1. Meeting called to order by Chairperson Fesenmaier
2. Roll Call
3. Presentation: Stoplights and Crosswalk Signals; Rick Kline, TAPCO
4. Open Question and Answer Session for Committee Members and the Public
5. **Adjournment**

This is a meeting of the Public Works Committee. No official Council action will be taken; however, a quorum of the Council may be present.



The Washington, DC region is great >> and it can be greater.

An engineer's defense of the pedestrian push button

WALKING OPINION By **Craig Hinnners** (Guest Contributor) August 11, 2022 49



[Pedestrian signal with push button and instructions on use posted above button](#) by Kenny Eliason used with permission.

Editor's note: This opinion piece was written as a response to an opinion piece [published](#) on August 23, 2021.

Ever wonder how [pedestrian push buttons](#)—popularly known as “beg buttons”—work? Why do we need them and how can they be improved? I’m

a traffic engineer specializing in signals who would love to help you understand these buttons and their strengths, weaknesses, and possibilities.

Let's talk about how buttons work

A traffic signal is a regulatory traffic control device that alternates the right of way between conflicting streams of traffic. Simple, or so one would think. Green, yellow, red ... repeat.

And, indeed, some signals are *fixed time*: they do the same thing continually despite changing traffic conditions, whether it is 2:00 am in the dead of morning or 4:30 pm at the peak of the evening rush.

A degree of variability can be added to fixed time signals by time of day. The most common scheme divides the day into three periods, each with its own timing: morning rush, evening rush, and everything else.

This is good enough for cities—humans are relatively predictable creatures when viewed en masse—and in central business districts where there's always traffic.

Push buttons come into play at *actuated signals*, which are used where traffic is more variable. Their timing varies based on who (or what) is there using information from sensors called detectors. Vehicle detectors range from simple loops of wires embedded in the pavement to sophisticated cameras, lasers, and radar mounted above the street.

However, while vehicles get the luxury of space-age detection, pedestrians get a button on a pole, sometimes only accessible via a trek through weeds and mud. And while vehicles get the luxury of being detected automatically, pedestrians must proactively press a button.

Granted, buttons have evolved from basic mechanical plungers to touch-sensitive and, recently, touch-free sensors. The latter types are more resistant to damage and don't get stuck in the depressed position. They have microprocessors and firmware. Apps to configure them. They vibrate.

They speak. They light up. They have Bluetooth capabilities. They can be connected to Wi-Fi. With costs approaching \$10,000 per intersection, these intelligent push buttons represent a significant investment in pedestrians.

Despite the evolution of the button itself and even some forays into detecting pedestrians using radar and video, buttons are here to stay. They play a vital role in accessibility by providing audible and vibrotactile indications to those with visual impairments. Keep this in mind before satirizing or ridiculing them as “beg buttons” or advocating for their removal.

And no matter how sophisticated pedestrian detectors get, they still only provide simple “somebody’s waiting/nobody’s waiting” data to the computer that runs signals, called a signal controller. And not because pedestrians are thought of any less; rather, there are fundamental practical matters.

While motor vehicles line up in tidy queues (lanes) depending on their route through the intersection, pedestrians don’t. Is the person coming down the sidewalk going to cross, or are they going to turn the corner and not cross at all? Which of the two crosswalks does the person waiting at the corner want to use? No computer can read minds.

There are emerging technologies that hold some promise here, such as apps that transmit a pedestrian’s location and destination. Imagine knowing that someone intending to cross from corner “A” to corner “B” will be arriving in 45 seconds.

Until then, we’re best served by buttons. But as last [August’s article on buttons here on GGWash revealed](#), there are those who want to take them out of the equation. Doing so would decrease the information available to the signal controller and would require timing the Walk every cycle for every crosswalk, regardless of whether anyone is waiting—a form of operation called *recall*.

Why removing buttons is not the answer

I generally don't like using recall. And I'm fair on this: I don't like recall for vehicles either (timing the green when there are no cars) and have [written articles](#) to discourage my colleagues from using it.

To understand why, it helps to understand the first axiom of signal timing: “there is no free lunch”. Barring a way to transcend the time-space continuum, every second of Green/Walk for Person A is an additional second of Red/Don't Walk for Person B—or, put another way, another second of Green/Walk taken away from Person B. This is why I don't like the phrase “give more Green (Walk)” in the context of signal timing, preferring instead “transfer Green (Walk)”. This makes it clear that, when it comes to signals, one person's convenience always comes at the expense of somebody else's.

To illustrate this, imagine an intersection where the Walk is timed every cycle. Now imagine someone arriving at the intersection wanting to cross in the direction that is currently Don't Walk because the adjacent Walk is playing to an empty house. This delays them unnecessarily and increases their exposure. On average, this will happen half the time.

How can we improve things for pedestrians at signals?

Fortunately, there are plenty of ways to benefit pedestrians without unnecessarily timing Walk every cycle:

- **Time the Walk automatically at certain times of day when pedestrian traffic is high.** At other times, use push buttons.
- **Dedicate a portion of the cycle to pedestrians.** These “Barnes dances”, where a button press ensures a period of exclusive Walk without any Greens for vehicles, are actually standard in New England.
- **Prohibit right turns on red.** A [recent effort in DC](#) to implement right turn on red restrictions and red right arrow signals showed a marked improvement in crosswalk safety. And, in fact, [DC is considering a city-wide prohibition on right turns on red](#).
- **Use “pedestrian delay”—the amount of time between the button press and Walk appearing—to understand the effect**

of signal timing on pedestrians. Pedestrian delay can only be measured if there are buttons, though. And even then, someone needs to look at the results. A [recent survey of 35 traffic agencies published in a traffic engineering journal](#) revealed that only one monitored pedestrian delay.

And that's just signal timing. Intersection geometry can be improved, too, by providing crosswalks over all legs, decreasing curb radii and crossing widths, and more.

Clearly, optimizing pedestrian safety and experience at signals is too complex and nuanced to be solved by simply getting rid of all buttons and timing the Walk every cycle. And, in fact, doing so can be counterproductive. So until technology provides a better way to virtually press buttons for us, we need to keep pressing them ourselves. For this, I beg your understanding.

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Growing up in Rockville, Craig Hinnert was fascinated by signals and would make detailed drawings of nearby intersections, improving them for pedestrians, bikes, and buses. After 25 years of working on signal systems internationally, he founded Intsignia, which develops signals that better serve all road users using emerging connected