West Washington Avenue at Southwest Commuter Path—Intersection Update

Presentation Preview

- Intersection Background
- Lane Reduction Test
- Traffic Volumes
- Railroad Concerns
- TE Staff Recommendation
- Next Steps

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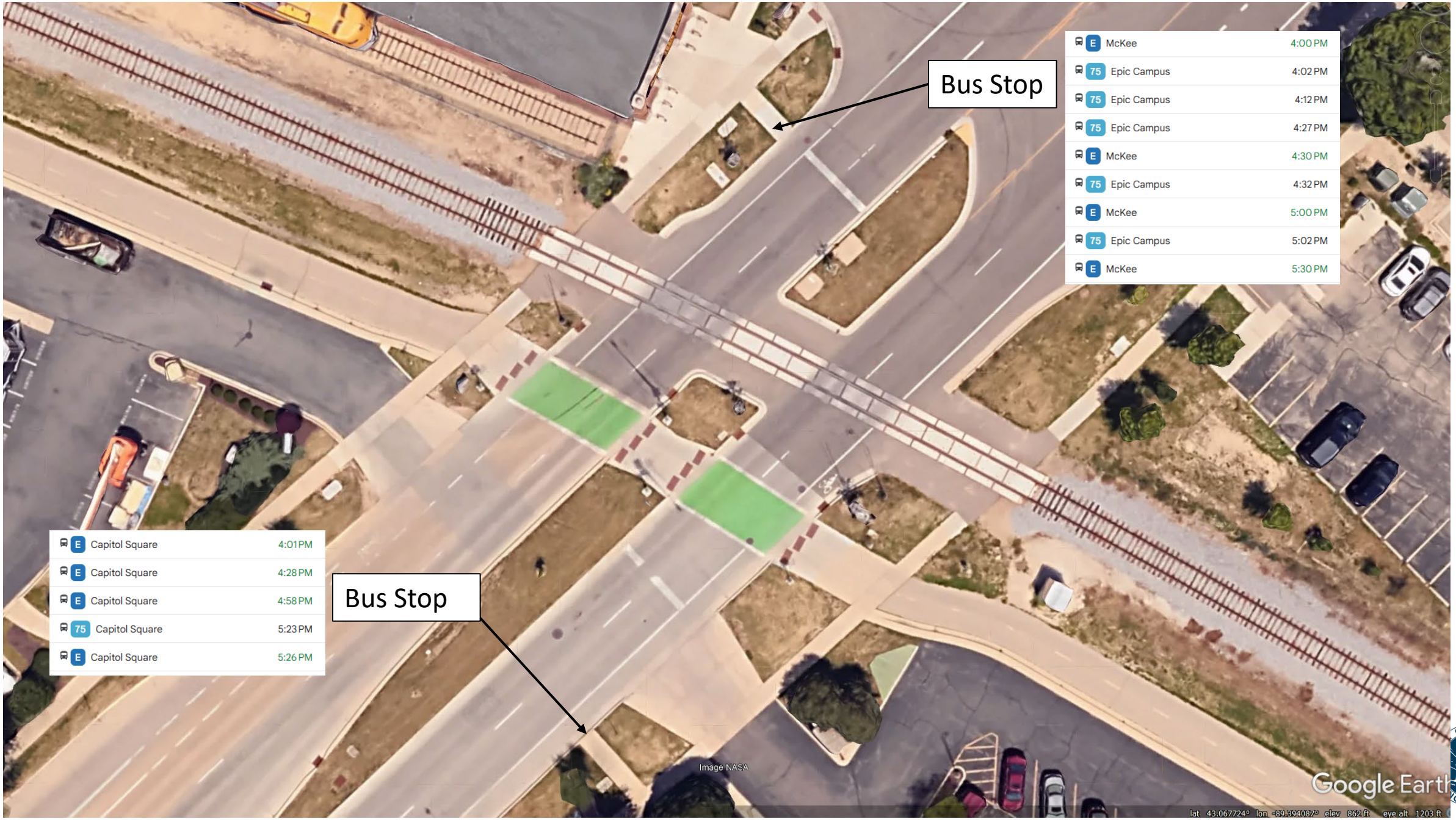
Intersection Background

Intersection Background



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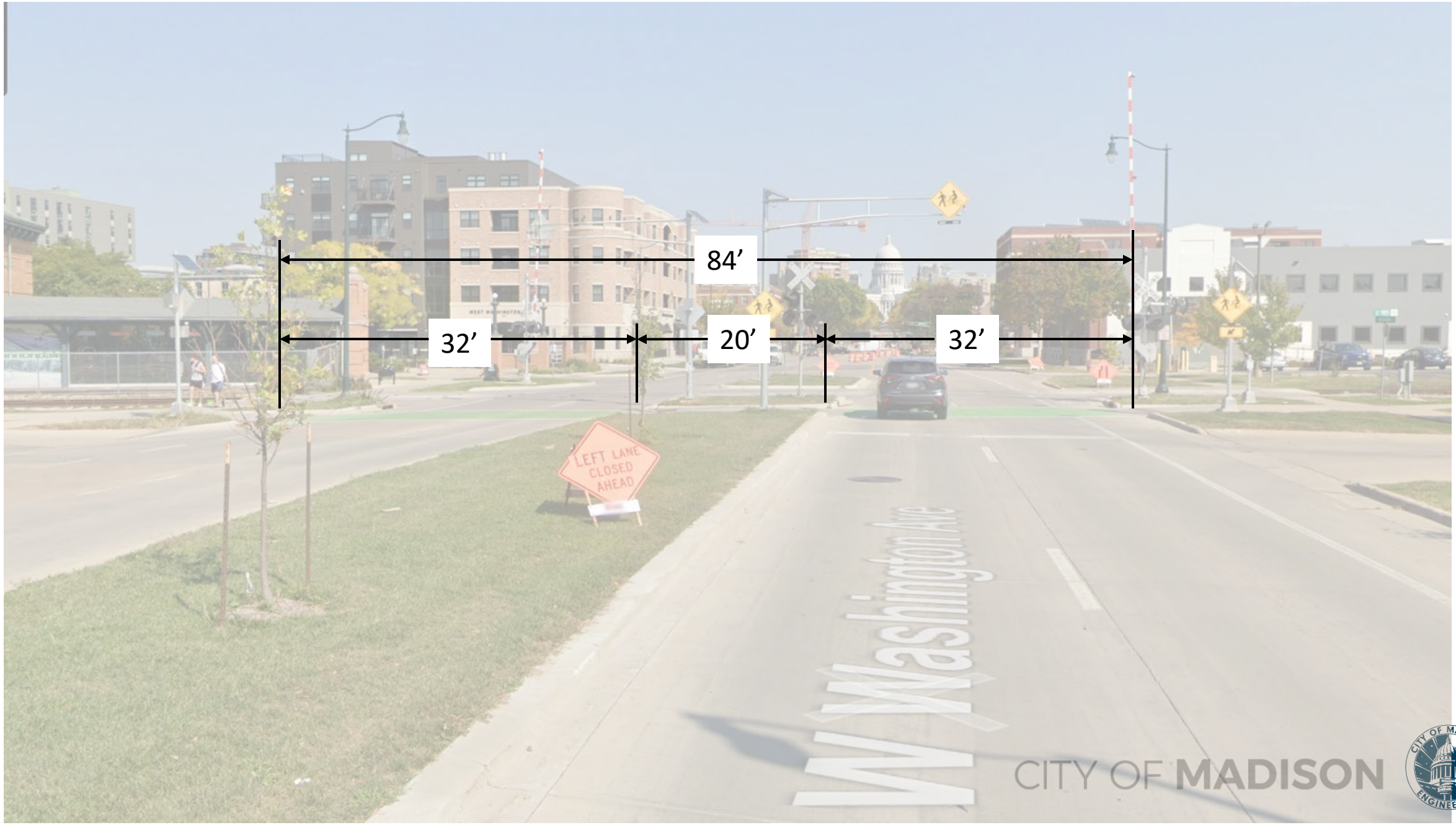


RRFB Background

- RRFB installed August 25, 2017
- RRFB push-button activated
- Flashes for 30 seconds (both directions simultaneously)
- 30 second flash allows for crossing at 2.8 ft/sec speed
- Average walker crosses one direction in 10 seconds

Intersection Background

Crash History

West Washington Avenue at SW Path

Date	Crash Severity	Type of crash
9/7/2010	No injuries	rear end when stopped for bike
12/3/2012	No injuries	rear end when stopped for bike
10/18/2013	No injuries	rear end when stopped for bike
12/11/2013	No injuries	rear end related to erratic lane change
8/4/2014	Serious Injury	vehicle passed stopped cars while driving in bike lane
8/12/2014	No injuries	rear end when stopped for bike
9/2/2014	No injuries	rear end when stopped for bike
11/11/2015	Possible injury	rear end when stopped for bike
4/11/2016	Possible injury	rear end when stopped for pedestrian
6/7/2016	Possible injury	rear end when stopped for bike
6/15/2016	Serious Injury	one lane stopped; other lane hit bike
7/8/2016	No injuries	rear end when stopped for bike
12/14/2016	No injuries	rear end when stopped for bike
6/29/2017	No injuries	rear end when stopped for path user
7/7/2017	Possible injury	one lane stopped; other lane hit bike
8/10/2017	Minor Injury	rear end when stopped for bike
8/25/2017	**RRFB INSTALLED**	
10/7/2017	Minor Injury	one lane stopped; other lane hit bike
1/15/2018	No injuries	rear end when stopped for bike
3/16/2018	Possible injury	one lane stopped; other lane hit bike
8/30/2018	Possible injury	rear end when stopped for pedestrian
9/22/2018	Possible injury	rear end when stopped for bike
7/15/2019	No injuries	swerve to avoid bicyclist in crosswalk
7/17/2019	No injuries	rear end when stopped for pedestrian
11/18/2021	Minor Injury	one lane stopped; other lane hit bike
2/13/2023	Minor Injury	one lane stopped; other lane hit bike
3/30/2023	No injuries	rear end when stopped for bike
6/13/2023	Possible injury	one lane stopped; other lane hit bike
10/30/2023	Minor Injury	one lane stopped; other lane hit bike
11/18/2023	Serious Injury	2:40 a.m. hit and run on bicyclist
12/22/2023	Minor Injury	ped hit in crosswalk. Light activated
7/29/2024	Minor Injury	motorist struck bike--fail to yield
7/31/2024	Possible injury	rear end when stopped for bike
8/11/2024	Possible injury	one lane stopped; other lane hit bike
8/17/2024	Serious Injury	no specific info in crash report

Crash History

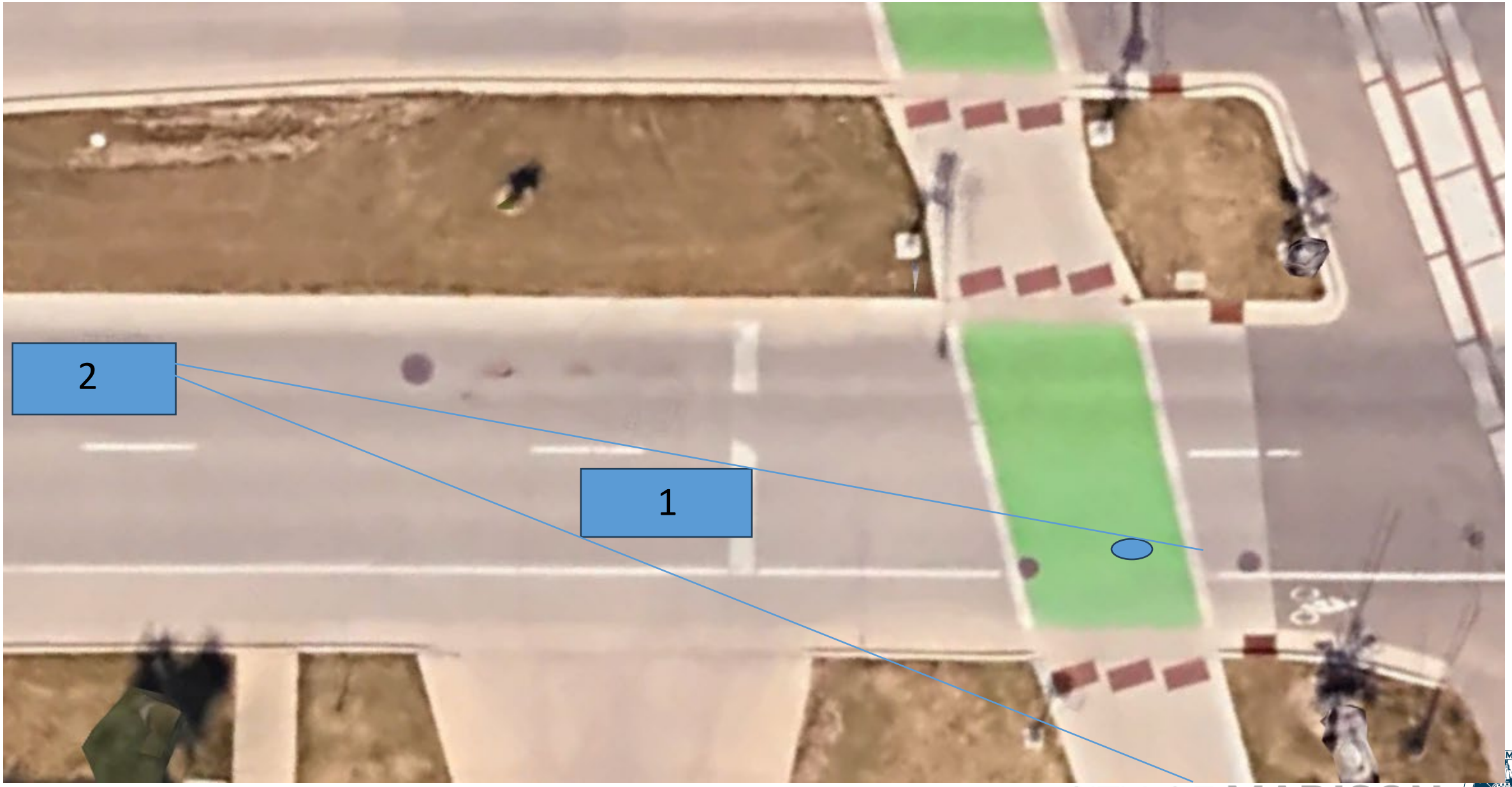
- 7 years prior to RRFB
  - 3 bicyclists struck
  - 0 pedestrians struck
  - 0 involving RR tracks or gates
  - 1 minor injury
  - 2 serious injuries

- 7 years with RRFB
  - 9 bicyclists struck
  - 1 pedestrian struck
  - 0 involving RR tracks or gates
  - 6 minor injuries
  - 2 serious injuries

Lane Reduction Test

- Lane reduction test installed on Tuesday, September 3, 2024
- Response to four crashes during 20-day period
  - Review of crash history showed “dual-lane threat” in which one driver yields and the driver in adjacent lane does not yield to path user

Lane Reduction Test



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Lane Reduction Test

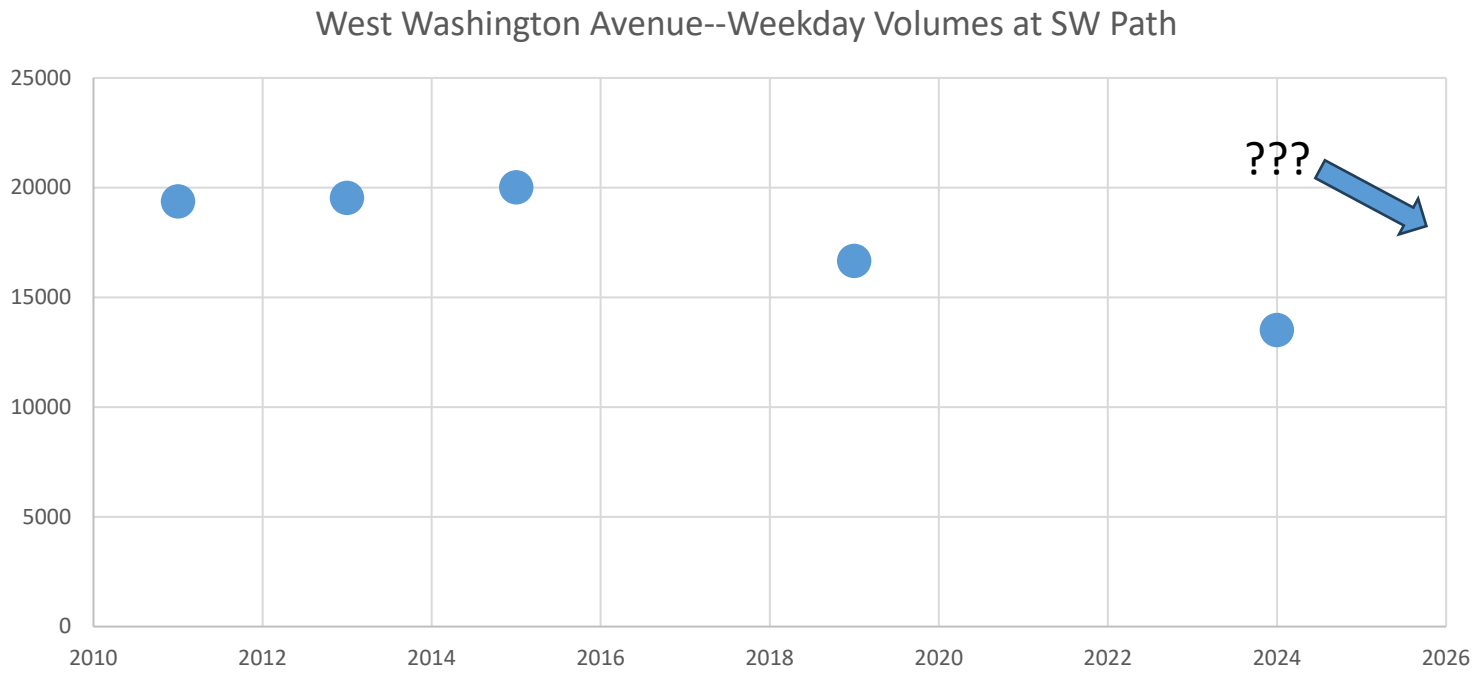
- Feedback and Observations
  - Path users
    - Positive response. Feel safer. Better yielding by drivers
  - Drivers
    - Both positive and negative feedback
    - Additional delay
    - Longer queues, backing up into Bedford and into Regent/Proudfit intersections

Lane Reduction Test

- Additional Observations of RRFB operations
  - Advantages
    - Reduces delay for path users
    - Clarifies right-of-way when used properly
    - Increased comfort and usage of path crossing
  - Disadvantages
    - Can create false sense of security for path users and drivers
    - Often not activated by bicyclists and runners
    - Long duration of flash leads to piggybacking by bicyclists—driver doesn't see the second bicycle
    - Long duration of flash desensitizes drivers, leading to lower effectiveness at other RRFBs
    - Leads to traffic backing up into Bedford St intersection and Regent St intersection during busy times—current volume on W Washington Ave is historically low
    - During multi-lane operation, the dual-threat remains (one driver yields, adjacent lane does not yield)
  - Overall—while an RRFB improves user comfort, it may not be a good solution for some locations, especially where street volume and path volumes are high (not all locations, site specific)

Traffic Volumes

- W Washington Ave traffic volumes are historically low
  - 2024 Construction between Broom Street and Fairchild Street
  - COVID & work from home
- Expect an increase during John Nolen Drive reconstruction in 2025-2030



Railroad Concerns

- Office of the Commissioner of Railroads (OCR) issued order on 11/26/2024

Order

1. The **City of Madison** shall file a plan to remove and replace the RRFBs near the crossings of the WSOR tracks with West Washington Avenue and North Shore Drive with pedestrian hybrid beacons, pedestrian signals, or other traffic control device capable of being interconnected with the active warning devices at the crossings to keep the tracks and crosswalk clear of vehicles while providing a clear signal to drivers to be prepared to, and to stop, **within 120 days** of the effective date of this Final Decision.

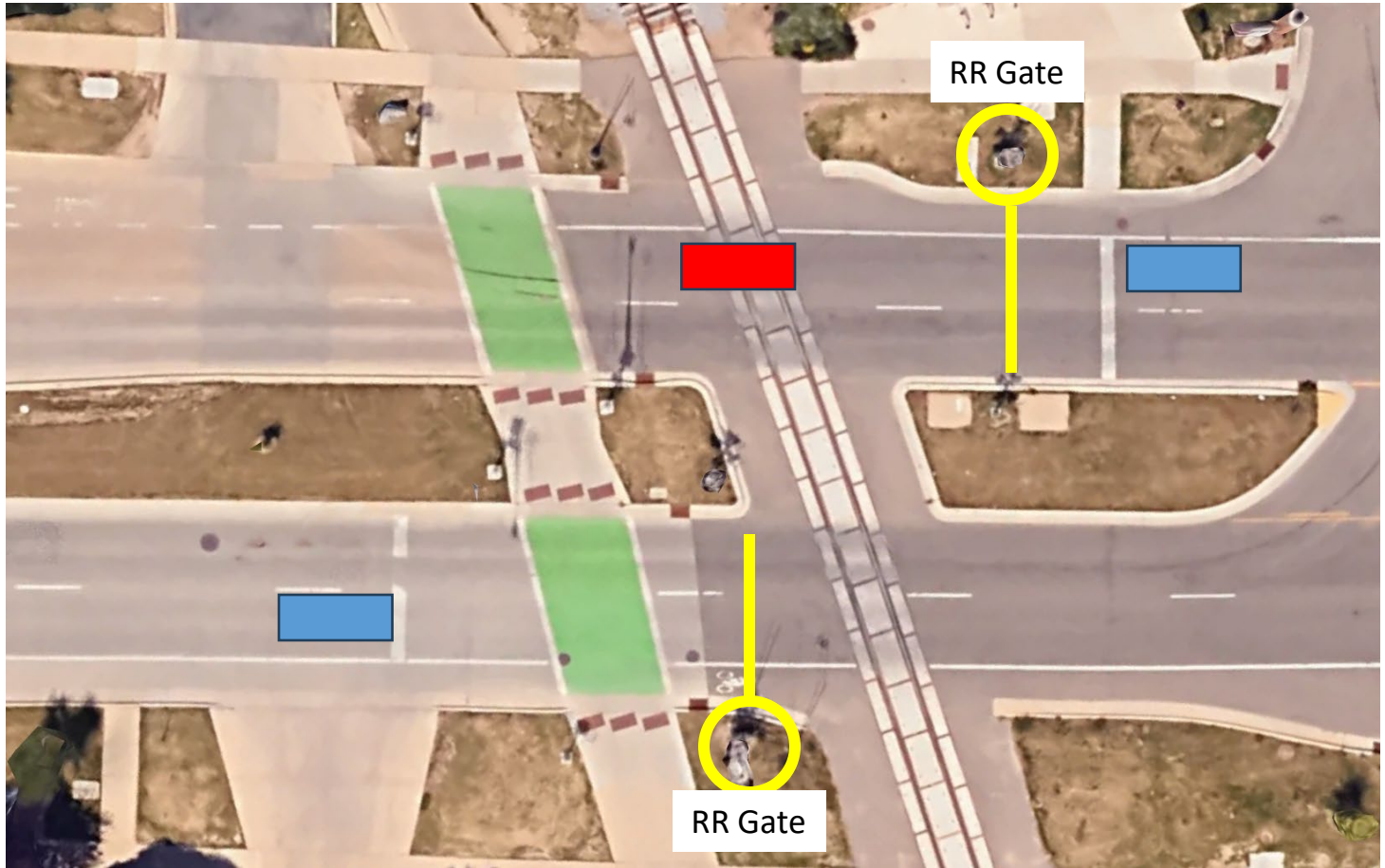
- Safety data does not support the railroad related safety concerns
- City staff do not agree with OCR reasoning to remove RRFB

Railroad Concerns

- **Wisconsin & Southern Railroad (WSOR) is**
  - A private, regional railroad company that operates in Madison and southern Wisconsin, and parts of Illinois
  - Delivers freight to longer nationwide railroad routes
  - Maintains the tracks and infrastructure in Madison
- **Office of the Commissioner of Railroads (OCR)**
  - an independent state agency that regulates and oversees railroads throughout the state
  - Ensures safety at rail crossings
  - The Commissioner is appointed by the Governor

Railroad Concerns

- Summary of OCR reasoning to remove the RRFB:
  - RRFB leads to drivers unprepared to stop at a safe distance
  - RRFB leads to vehicles stopped on the tracks to yield to path users
  - RRFB has contributed to crashes at the crossing



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Railroad Concerns

- City staff does not agree with the general opposition to RRFBs at any railroad crossing
- City staff does agree with removing this specific RRFB, assuming additional improvements are added

Alternatives to RRFB

1. Pedestrian Hybrid Beacon
2. Fully signalized intersection
3. Removal of RRFB with street lanes remaining (2 each direction)
4. Removal of RRFB with permanent lane reduction (1 lane each direction)

Alternatives to RRFB

Pedestrian Hybrid Beacon

Alternatives to RRFB

Pedestrian Hybrid Beacon

https://www.youtube.com/watch?v=F0AiiSk2AqM

- Pros
  - Interconnectable with Railroad gate system
  - Generally good driver compliance
  - Appropriate in certain situations—high volume, multi lane streets with low pedestrian volume
  - Reduces path user delay compared to a full signal—according to FHWA

- Cons
  - Delay and long time to operate compared to RRFB
  - Relatively expensive
    - $100,000 - $200,000
  - Path users may not activate it
  - Poor compliance by runners/bicyclists
  - Not ideal for high volume pedestrian locations
  - Confusing to drivers (legal implications)
  - Flashing wig-wag conflicts with RR

Alternatives to RRFB

Pedestrian Hybrid Beacon

PHASES	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
MOTORIST SIGNAL		 FLASHING			 FLASHING
MOTORIST ACTION	**PROCEED WITH CAUTION**	**SLOW DOWN** A PEDESTRIAN HAS ACTIVATED THE SIGNAL WITH THE PUSH BUTTON.	**PREPARE TO STOP**	**STOP** A PEDESTRIAN IS IN THE CROSSWALK	**STOP** PROCEED WITH CAUTION WHEN CLEAR
PEDESTRIAN SIGNAL					FLASHING 
PEDESTRIAN ACTION	**PUSH BUTTON TO CROSS**	**WAIT**	**KEEP WAITING**	**START CROSSING**	**FINISH CROSSING** DO NOT START CROSSING DURING COUNTDOWN

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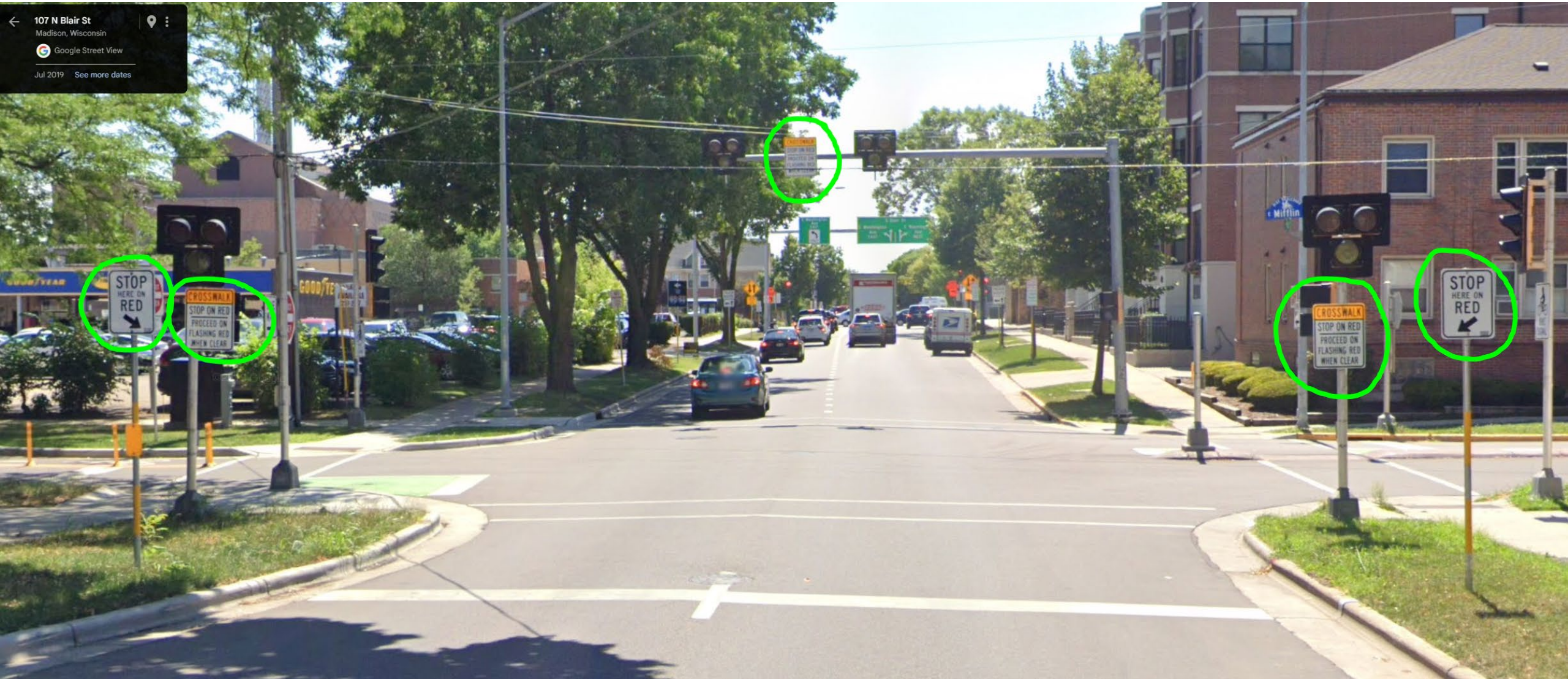
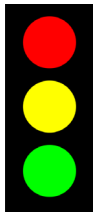
Alternatives to RRFB

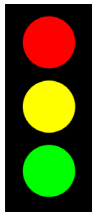
Pedestrian Hybrid Beacon



Alternatives to RRFB



Fully Signalized Intersection



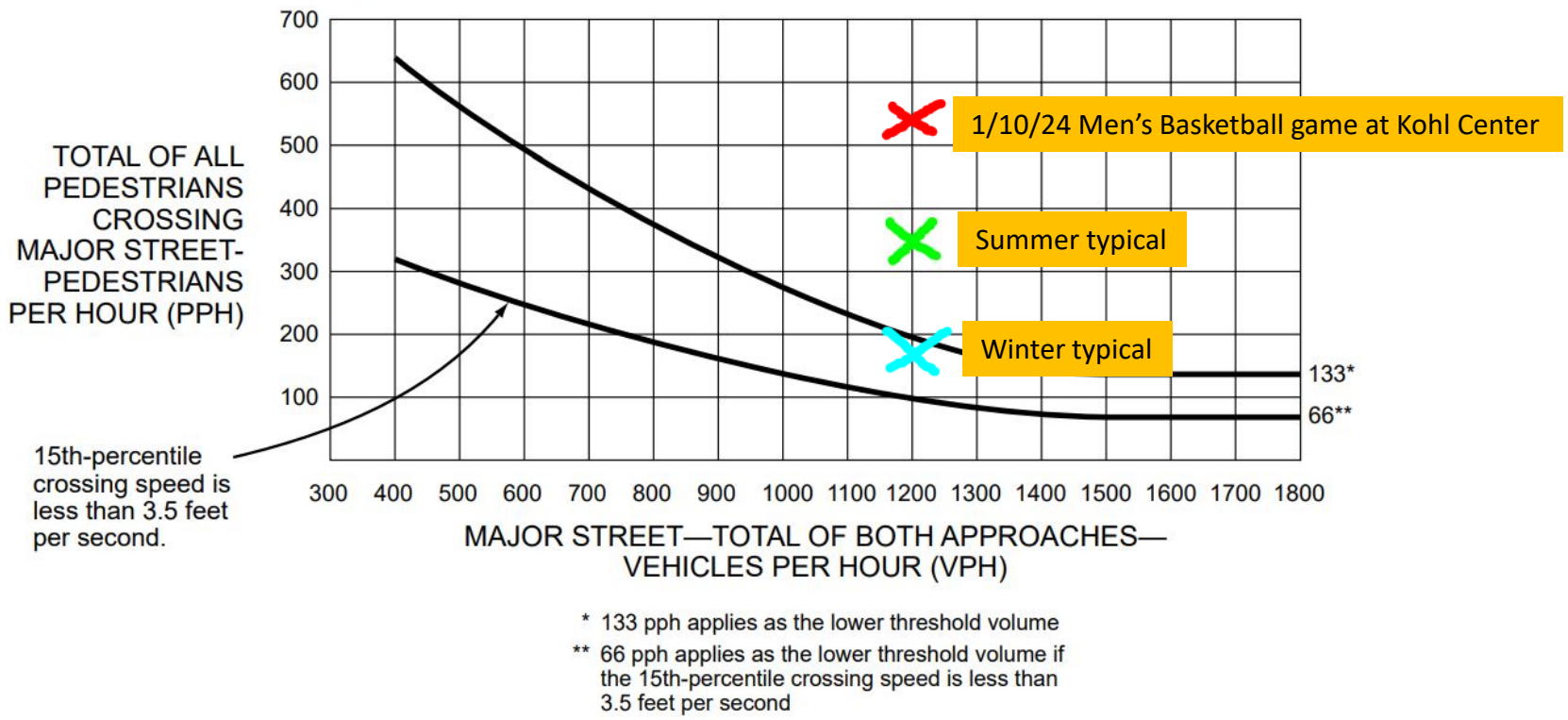
- Pros
  - Interconnectable with Railroad gate system
  - Generally good driver compliance
  - Good path user compliance
  - Clear distinction of right of way
  - Allows for four lanes on W Washington Ave

- Cons
  - Would add delay to path users during peak travel times
  - Expensive
    - $200,000 to $300,000
  - Uncertainty with plans/constructability

Alternatives to RRFB

Fully Signalized Intersection

Figure 4C-6. Warrant 4, Pedestrian Peak Hour



* 133 pph applies as the lower threshold volume

** 66 pph applies as the lower threshold volume if the 15th-percentile crossing speed is less than 3.5 feet per second

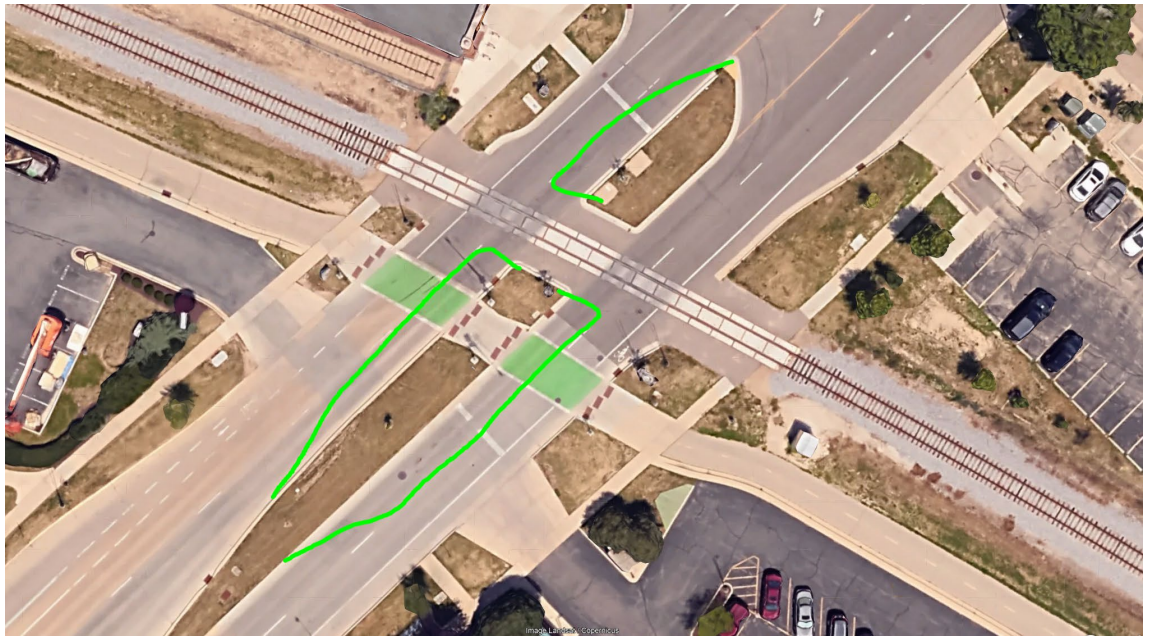
Removal of RRFB with existing 4 lanes

- Pros
  - Reduction of traffic congestion on West Washington Ave
  - Removes false sense of security
  - Potential reduction in bicycle crashes
  - Inexpensive
  - Easy to implement

- Cons
  - Dual-threat crashes remain
  - Uncomfortable crossing for path users
  - Lower driver yield rates
  - Extra delay for path users
  - Additional rear-end crashes than signal options

Alternatives to RRFB

Removal of RRFB with permanent lane reduction



- Pros
  - Removes false sense of security
  - Likely reduction in bicycle crashes
  - Shorter, easier crossing for path users

- Cons
  - Still an uncomfortable crossing for path users
  - Lower driver yield rates
  - Fewer and shorter gaps in traffic
  - Congestion and queuing to intersections on W Washington Ave with increased traffic volume
  - Delays to drivers and to Metro Transit
  - Expensive
  - Additional rear-end crashes compared to signal

TE Staff Recommendation

- Pedestrian Hybrid Beacon
- Fully signalized intersection
- Removal of RRFB with street lanes remaining (2 each direction)
- Removal of RRFB with permanent lane reduction (1 lane each direction)

Next Steps

- Move forward with full signal design and construction
- File plan to OCR by March 26, 2025
- Interim?? Maintain current lane closure and RRFB until spring??
- Add signs for path users and drivers

R1-5d

- Ideally install signal ASAP (summer 2025) in preparation for John Nolen Drive reconstruction (October 2025) and diverted traffic