TOWN COUNCIL
WORKSHOP AGENDA DOCUMENTATION

PREPARATION DATE: April 12, 2018
MEETING DATE: June 18, 2018
continued from April 16, 2018

SUBMITTING DEPARTMENT: Department of Public Works
DEPARTMENT DIRECTOR: Larry Pardee
PRESENTER: Larry Pardee and Brian Schilling

SUBJECT: Downtown Pedestrian Signals/Crossings Project

PURPOSE OF WORKSHOP ITEM

The purpose is to discuss the potential for planning and installing signals or other pedestrian crossing features in several downtown locations and seek Council input and direction.

DESIRED OUTCOME

The desired outcome is to have Council direct staff to explore solutions for improving safety and pedestrian access at the various locations and to develop recommendations for Council on location and crossing types.

BACKGROUND/ALTERNATIVES

During the February 2018 Town Council Retreat we briefly discussed a potential Downtown Pedestrian Signaling project to address pedestrian crossing safety and vehicle traffic flow at several downtown locations. Council recommended placing the item on a workshop to discuss further. The Public Works staff made numerous observations on traffic flow and pedestrian movements while doing manual traffic control with crossing guards during the eclipse last summer.

The discussion should establish what problem(s) we are trying to solve—i.e. is the goal to improve flow for motor vehicles, increase speeds for motor vehicles, reduce delay for pedestrians, improve safety for pedestrians, improve the walkability and accessibility in downtown, or something else? The discussion should also explore the range of solutions that are available.

Study Locations and Known Factors

(All intersections are signed 25 mph and have one travel lane in each direction unless noted otherwise)

1. East Broadway at Center Street
    a. Local jurisdiction (not WYDOT) – currently a marked crosswalk on the east leg
    b. Emergency access route, high pedestrian activity, entry point to Town Square area
2. North Cache at Deloney Avenue
    a. WYDOT control – currently a marked crosswalk on the north leg
    b. High volume vehicle traffic, high pedestrian activity, entry point to Town Square, gateway feature
    c. One of the most accessible crossing points for pedestrians to get across Cache in the downtown
3. West Broadway at Glenwood Street
    a. WYDOT control, two travel lanes each direction (classic “double threat” scenario)
    b. No refuge island/median – currently a marked crosswalk on the east leg
    c. High volume vehicle traffic, medium high pedestrian activity, on the cusp of the Town Square.
    d. Cars typically slowing down but still moving fast enough to hurt
    e. Equipped with pedestrian “surrender flags”
    f. Barrier prohibiting ped crossing on west leg considered bad practice for walkable downtowns.

4. West Broadway at Jackson Street
    a. WYDOT, two travel lanes each direction (classic "double threat" scenario), center turn lane
    b. No refuge island/median – currently a marked crosswalk on the east leg
    c. High volume vehicle traffic, medium to low pedestrian activity.
    d. Difficult crossing for peds – cars typically moving faster than 25 mph despite signed speed limit, long crossing distance, gaps in traffic can be infrequent.
5. West Broadway mid-block crossing at El Abuelito/Painted Buffalo
    a. WYDOT, two travel lanes each direction (classic "double threat" scenario), center turn lane
    b. Has the sole refuge island/median on Broadway, marked crosswalk
    c. High volume vehicle traffic, medium to low pedestrian activity.
    d. Difficult crossing for peds – cars typically moving faster than 25 mph despite signed speed limit, double threat factor, gaps in traffic can be infrequent.
6. Mercill Avenue at North Glenwood
    a. Local jurisdiction – currently a marked crosswalk on all the west leg
    b. Truck route, medium high vehicle traffic, low pedestrian activity

Safety for pedestrians has long been an issue at these intersections, notably #3, 4, and 5 where the higher vehicle speeds and multiple lane crossings create a higher risk of injury or death. The crossings at locations #1 and 2 typically see much slower vehicle speeds, and the risk of serious injury is low. The issue here seems to be more a matter of drivers being inconvenienced by having to wait for pedestrians to cross the street. Given that these are the central crossing areas in the primary downtown shopping area and have by far the highest volume of pedestrian activity in the entire town, these crossings have slightly different characteristics and challenges than the others. High vehicle speeds are typically the biggest threat to pedestrian safety and the factor that most degrades the walkability and access of a place, so one of the primary strategies for a walkable downtown should be to decrease vehicle speeds and increase pedestrian visibility.

The Federal Highway Administration (FHWA) recently released a Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations which would be a useful tool for all the proposed locations. While each intersection has its own unique characteristics, the guide provides helpful guidance for different street cross sections, traffic volumes, and vehicle speeds. (A link to the Guide is included below). "Uncontrolled" intersections are intersections where there is no traffic control device present, such as a traffic signal or stop sign. Some options for improving pedestrian safety at uncontrolled crossings include:

- Crosswalk visibility enhancements – high-visibility striping and signage
- Raised crosswalks – extension of the sidewalk through the intersection. Effective for slowing down vehicles, not typically used on emergency access or truck routes.
- Advance Yield/Stop lines – sets the stopping line 30'-50' back from the marked crossing area. Helps address the "double threat" risk on 4-lane roads.
- In-street pedestrian crossing sign – already have these at some locations
- Curb extensions – reduces the crossing distance and puts peds waiting to cross in a protected, more visible location
- Pedestrian refuge islands – allows peds to cross in two stages, only having to navigate traffic from one direction at a time.
- Pedestrian hybrid beacon (RRFB or HAWK)
    - **R**apid **R**ectangular **F**lashing **B**eacon (RRFB) and **H**igh-Intensity **A**ctivated cross**W**al**K** (HAWK) beacons are pedestrian activated signals that activate overhead or side-mounted lights to warn drivers of crossing pedestrians. Can be set up as warning lights (warns drivers, but does not require drivers to stop) or stop lights (same legal requirement to stop as at a red traffic light). Allows free flow of vehicles when not activated.
- Road diet – change cross section from 4-lane (2-lane each direction) to a 3-lane (1-lane each direction with 2-way center turn lane). Shortens crossing distance and eliminates "double threat" risk.

Table 1 below from the FHWA Guide indicates the following:

- Locations 1, 2, and 6: recommends most options as eligible, except for the Pedestrian Hybrid Beacon or Road Diet. Raised crosswalks would likely not be recommended since each location is on either a truck or emergency route.
- Locations 3, 4, and 5 (West Broadway): these are all eligible for, and would be good candidates for, the Pedestrian Hybrid Beacon. Some of the other available options have already been tried, but these are difficult locations, as West Broadway falls into the category of "stroad" which is generally a hostile place for pedestrians.

Table 1. Application of pedestrian crash countermeasures by roadway feature.

Roadway Configuration	Speed Limit								
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
2 lanes*	❶ 2 3 4 5 6	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼	❶ 3 4 5 6	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼	❶ 3 4 5 6 7	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼
3 lanes with raised median*	❶ 2 3 4 5	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ 3 4 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼	❶ ❸ 4 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼
3 lanes w/o raised median†	❶ 2 3 4 5 6 7	❶ ❸ 5 6 7	❶ ❸ 5 6 ❼	❶ 3 4 5 6 7	❶ ❸ 5 6 ❼	❶ ❸ 5 6 ❼	❶ ❸ 4 5 6 7	❶ ❸ 5 6 ❼	❶ ❸ 5 6 ❼
4+ lanes with raised median†	❶ ❸ 5	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ ❸ 5 7	❶ ❸ 5 ❼	❶ ❸ 5 ❼	❶ ❸ 5 ❼	❶ ❸ 5 ❼	❶ ❸ 5 ❼
4+ lanes w/o raised median‡	❶ ❸ 5 6 7 8	❶ ❸ 5 ❻ 7 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ 7 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8	❶ ❸ 5 ❻ ❼ 8

*One lane in each direction †One lane in each direction with two-way left-turn lane ‡Two or more lanes in each direction

Given the set of conditions in a cell,

❶ Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.

\# Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1 High-visibility crosswalk markings, parking restriction on crosswalk approach, adequate nighttime lighting levels
2 Raised crosswalk
3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
4 In-Street Pedestrian Crossing sign
5 Curb extension
6 Pedestrian refuge island
7 Pedestrian Hybrid Beacon
8 Road Diet

This table was developed using information from: Zegeer, C. V., Stewart, J. R., Huang, H. H., Lagerwey, P. A., Feaganes, J., & Campbell, B. J. (2005), Safety effects of marked versus unmarked crosswalks at uncontrolled locations: Final report and recommended guidelines (No. FHWA-HRT-04-100); Manual on Uniform Traffic Control Devices, 2009 Edition, Chapter 4F. Pedestrian Hybrid Beacons; the Crash Modification Factors (CMF) Clearinghouse website (http://www.cmfclearinghouse.org/); and the Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE) website (http://www.pedbikesafe.org/PEDSAFE/).

We recommend that Council direct staff to develop proposals for each location (which would involve reaching out to WYDOT and key stakeholders), and possibly consulting with a licensed traffic engineer to assist with the recommendations. Staff would then bring back the recommendations for Council review prior to proceeding with detailed design.

STAKEHOLDER ANALYSIS

Stakeholder outreach will involve local businesses, planners, WYDOT, and should include representation for drivers, pedestrians and other interested parties to be defined.

FISCAL IMPACT

Fiscal impacts have not been fully identified and would depend on the measures that are selected. At the low end of the cost range are things like crossing visibility enhancements (striping, signage), in-street crossing signs, and advance yield/stop lines (in the under $1,000 range). Curb extensions, refuge islands, and raised crossings

are considerably more expensive (in the $5,000 to $15,000 range depending on the extent of the work). Hybrid signals are the most expensive option and can run $15,000-$30,000 or more.

STAFF IMPACT

Staff impact to explore appropriate options and develop recommendations will be relatively low (10-20 hours). There will be far more impact associated with the permitting process and outreach process. This will require substantial staff time from multiple employees.

LEGAL ISSUES

There are not any known legal issues that currently need input.

ATTACHMENTS

1. Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations link: https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/guide_to_improve_uncontrolled_crossings.pdf