

**T2**Center  
Training and Technical Assistance

# TRAFFIC SIGNAL BRIEF

Tech Brief Series

Tech Brief - 2019-4

## Rectangle Rapid Flashing Beacons

There is some confusion around the terms Rectangular Rapid Flashing Beacon (RRFB), Pedestrian Hybrid Beacon (PHB) and High-intensity Activated crossWalk (HAWK). We will first discuss what each of these terms mean.

### RRFB



An RRFB is a warning device that provides an irregular flashing pattern using amber light emitting diodes when activated by either a push button or pedestrian detection system. It serves as a supplement to a warning sign at an uncontrolled crossing location by directing the driver's attention to the need to yield to a pedestrian. It does not assign right of way.

It may be mounted with a roadside sign or an overhead sign. RRFBs are not included in the 2009 Edition of the MUTCD, but they are currently approved for use in Connecticut under an FHWA interim approval.

RRFBs can be installed on two-lane or multi-lane roadways.

### PHB or HAWK



A PHB is a traffic control device used to help pedestrians safely cross at uncontrolled intersections and mid-block crosswalks. It is often referred to in Connecticut as a HAWK signal. The beacon head consists of two red lenses above a single yellow lens. The lenses remain "dark" until a pedestrian desiring to cross the street pushes the call button to activate the beacon. The signal then initiates a yellow to red lighting sequence consisting of steady and flashing lights that directs motorists to slow and come to a stop. The pedestrian signal then flashes a WALK display to assign the right of way to the pedestrian. Once the pedestrian has safely crossed, the hybrid beacon again goes dark. Pedestrian Hybrid Beacons are MUTCD-approved traffic control devices.

PHBs may be used on roads consistent with the criteria defined in the MUTCD.

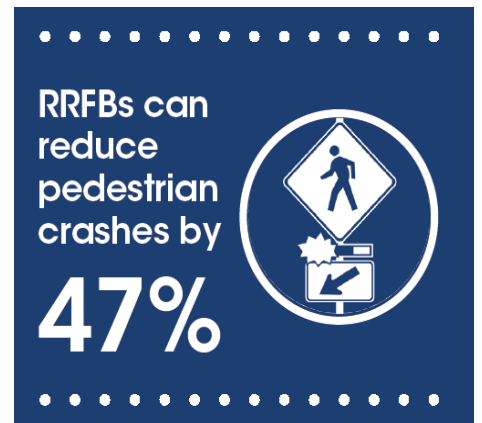
***If you are looking for information on PHBs, please see the resources section at the end of this brief. For more information on RRFBs, keep reading.***

## How Does an RRFB Work?

RRFBs are user-actuated amber LEDs that supplement warning signs at uncontrolled intersections or mid-block crosswalks. They can be activated by pedestrians manually by a push button or passively by a pedestrian detection system. RRFBs use an irregular flash pattern similar to emergency flashers on police vehicles. They may be installed on either two-lane or multi-lane roadways. A video of an RRFB in operation in New Haven, Connecticut is provided in the resources at the end of this brief.

## Potential Benefits

- ⇒ Lower cost than a traffic signal or PHB.
- ⇒ Increase driver yielding behavior at crosswalks significantly when supplementing standard pedestrian crossing warning signs and markings.
- ⇒ More effective at increasing driver yielding rates to pedestrians than traditional overhead beacons. *(St. Petersburg, FL efficacy study)*
- ⇒ The addition of an RRFB may also increase the safety effectiveness of other treatments, such as the use of advance yield markings with YIELD (or STOP) HERE FOR PEDESTRIANS signs.



## Considerations for Implementation

RRFBs can use manual push-buttons or automated passive (e.g., video or infrared) pedestrian detection, and should be unlit when not activated. RRFBs typically receive power by standalone solar panel units but may also be wired to a traditional power source.

RRFBs are placed on both ends of a crosswalk. If the crosswalk contains a pedestrian refuge island or other type of median, an RRFB should be placed to the right of the crosswalk and on the median (instead of the left side of the crosswalk). Refer to Interim Approval 21 for details on the use of accessible pedestrian features with the RRFB assembly.

RRFB installations on state roadways in Connecticut require an encroachment permit from the appropriate District office and submission of a checklist CTDOT provides, sample plans and specifications for use in encroachment permit applications. Links to these documents are provided in the resources at the end of this brief. When RRFBs are not in common use in a community, consider conducting an outreach effort to educate the public and law enforcement officers on their purpose and use.

RRFBs are not currently included in the MUTCD but their use is allowed in accordance with FHWA Interim Approval 21. Interim Approval 21 requires CTDOT to maintain a list of all RRFB implementations in the state. Towns must notify CTDOT of the installation or removal of any RRFB via email to [DOT.TrafficEngineering@ct.gov](mailto:DOT.TrafficEngineering@ct.gov).

# 96% Driver Yield Rate



Source: Carmanah Traffic

## Costs

FHWA estimates the cost associated with RRFB installation ranging from \$4,500 to \$52,000 each, with the average cost estimated at \$22,250. These costs include the complete system installation with labor and materials. This is less expensive than a full traffic signal or a Pedestrian Hybrid Beacon (PHB) which is estimated by FHWA to cost between \$21,000 and \$128,000.



Source: FHWA

## Resources:

**FHWA Interim Approval 21:** [https://mutcd.fhwa.dot.gov/resources/interim\\_approval/ia21/ia21.pdf](https://mutcd.fhwa.dot.gov/resources/interim_approval/ia21/ia21.pdf)

**STEP Countermeasure Tech Sheet: RRFB:** [https://safety.fhwa.dot.gov/ped\\_bike/step/docs/TechSheet\\_RRFB\\_508compliant.pdf](https://safety.fhwa.dot.gov/ped_bike/step/docs/TechSheet_RRFB_508compliant.pdf)

**CT DOT RRFB Brochure:** [https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/rectangular\\_rapid\\_flash\\_beacon\\_brochure.pdf](https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/rectangular_rapid_flash_beacon_brochure.pdf)

**Video of RRFB installed in New Haven (Source: New Haven Independent):** [https://www.youtube.com/watch?v=RN1PGkkotmw#action=shareNew Haven Independent](https://www.youtube.com/watch?v=RN1PGkkotmw#action=shareNew%20Haven%20Independent)

**RRFB Checklist for CT DOT Encroachment Permits:** [https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/rrfb\\_checklist.pdf](https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/rrfb_checklist.pdf)





## CT Department of Transportation Sample Plans and Special Provisions:

- **Plan – Solar Powered:** [https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/solar\\_-\\_rfb\\_sample\\_plan.pdf](https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/solar_-_rfb_sample_plan.pdf)
- **Plan – Hard Wired:** [https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/hard\\_wired\\_-\\_rfb\\_sample\\_plan.pdf](https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/hard_wired_-_rfb_sample_plan.pdf)
- **Special Provisions:** [https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/rfb\\_special\\_provisions.pdf](https://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/safety/rfb_special_provisions.pdf)

**St. Petersburg, Florida Efficacy Study:** [http://www.stpete.org/pdf/ite\\_paper\\_07.pdf](http://www.stpete.org/pdf/ite_paper_07.pdf)

**Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations – FHWA:** [https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/guide\\_to\\_improve\\_uncontrolled\\_crossings.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/guide_to_improve_uncontrolled_crossings.pdf)



## For More Information on PHBs and Other Pedestrian Treatments:

**T2 Center Tech Brief on Pedestrian Hybrid Beacons:** [https://www.t2center.uconn.edu/pdfs/Traffic%20Signal%20Brief\\_Pedestrian%20Hybrid%20Beacon\\_2019\\_3.pdf](https://www.t2center.uconn.edu/pdfs/Traffic%20Signal%20Brief_Pedestrian%20Hybrid%20Beacon_2019_3.pdf)

**PedBikeInfo.com:** [http://www.pedbikeinfo.org/webinars/webinar\\_details.cfm?id=9](http://www.pedbikeinfo.org/webinars/webinar_details.cfm?id=9)

**Informational Brief: Treatments for Uncontrolled Marked Crosswalks – FHWA:** [https://mutcd.fhwa.dot.gov/resources/interim\\_approval/ia11/informationalbrief/informationalbrief.pdf](https://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/informationalbrief/informationalbrief.pdf)

**CTDOT Safety Spotlight's HAWK Pedestrian Signals:** <http://www.t2center.uconn.edu/pdfs/shsp/HAWK%20Flyer%20-%20Final%20-%20hi%20res.pdf>

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