



## Traffic Guidelines Manual

ORIGINATOR Director, Bureau of Traffic Operations	4-5-2
CHAPTER 4	Signals
SECTION 5	Beacons
SUBJECT 2	Rectangular Rapid Flashing Beacons

### INTRODUCTION/GENERAL

Reference is made to the *FHWA Interim Approval for Optional use of Rectangular Rapid Flashing Beacons (IA-11)*.

Rectangular Rapid Flashing Beacons (RRFBs) are a special type of beacon used to supplement pedestrian crossing signs at marked crosswalks.

This policy contains provisions for proper application, design, and permitting of RRFBs on the STH system.

### POLICY

#### General

The following general criteria apply to all RRFB installations on the STH system:

1. RRFB installations **shall** be in compliance with the requirements established in the *FHWA Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)*.
2. On February 18, 2010, the Department obtained a blanket approval from the Federal Highway Administration (FHWA) for use of the interim approved device (RRFBs) on the state trunk system. This blanket approval does not cover connecting highways or local roads.
3. RRFBs installed on connecting highways or local roads **shall** require approval by FHWA since these devices only have interim approval. The local municipality **shall** be responsible for contacting FHWA to receive approval and **shall** notify WisDOT if/when approval is received.
4. State-owned and permitted installations:
  - a. The Department *may* determine that RRFBs are needed and *may* install and maintain them at specific sites. In this case, the Regional Traffic Engineer **shall**

make a final determination regarding the use of these devices on behalf of the Department.

- b. At locations where local authorities determine that the use of RRFBs is desirable, a permit *may* be issued for the installation and maintenance of RRFBs. Permitted installations are subject to the approval of the Department and the conditions of this policy. Additionally, permits are revocable at the discretion of the Department.

### **Location Criteria**

It is recognized that the use of RRFBs *may* affect STH traffic operations by increasing delay and reducing mobility, especially if used near existing signalized or stop controlled intersections. The following location criteria should be met:

1. The location is an uncontrolled pedestrian crossing.
2. The following minimum volume\* thresholds *should* be met:
  - 20 or more pedestrians during a single hour (any four consecutive 15-minute periods) of an average day, or
  - 18 or more pedestrians during each of any two hours of an average day, or
  - 15 or more pedestrians during each of any three hours of an average day.

\* Young (<12), elderly (>85) and disable pedestrians count 2X toward volume thresholds. Additionally, seasonal day volumes can be used in place of average day volumes if the crossing is in a known tourist area.

3. A minimum vehicular volume of 1,500 vehicles per day.
4. Maximum of four lanes crossed, unless there is a raised median, in which case it can be five lanes.
5. There exists a minimum of 300 feet between the subject crossing and the nearest controlled pedestrian crossing or intersection traffic control device on the state trunk highway system. Consideration *should* be given to extending this distance beyond 300 feet if the proposed crosswalk location falls within an auxiliary turn lane for the nearby intersection or if the standing queue from the intersection extends over the proposed crosswalk location.
6. The approach speed is posted at 40 mph or less.
7. Adequate stopping sight distance exists based on FDM 11-10-5 or greater than 8 times the posted speed limit.

The use of RRFBs *may not* be appropriate at locations where this is a combination of both high traffic volumes and high pedestrian volumes. In these situations, there *may* be an increase in crashes and/or delay that make the use of the RRFB inappropriate. Instead a traffic signal or Pedestrian Hybrid Beacon (PHB) *should* be considered, if feasible.

Consideration *should* also be given to spacing between pedestrian crossings – both uncontrolled as well as those supplemented with RRFBs. RRFBs are highly visible and therefore can be confusing or distracting to drivers if there are too many within their field of vision at one time. Historically, 1,200 feet has been a rule of thumb for minimum

spacing.

### **RRFB Design & Installation Requirements**

The following provisions pertain to the installation, operation and maintenance of RRFBs on the state trunk highway system.

1. RRFB installations **shall** be in compliance with the requirements established in the *FHWA Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)*.
2. RRFBs within 200 feet of a railroad crossing *should* be interconnected to the railroad bungalow and pre-empted upon approach of a train. A sign stating “LIGHTS DON’T FLASH WHEN TRAIN IS APPROACHING” **shall** be installed above each push button and APS push buttons confirming this message *should* also be installed.
3. Poles **shall** be in conformance with horizontal offsets specified in [FDM 11-15-1](#).
4. Service *may* drop to the top of the support, which would be extended to maintain an 18-foot minimum wire-to-ground clearance as per Wisconsin Electrical code. Service *should* preferably be installed underground. In the latter case the conduit **shall** be run up and attached to the post or pole. The control box *may* be mounted on the post or pole.
5. At the discretion of the Regional Traffic Signal Engineer, solar-powered RRFB installations *may* be allowed on the STH system provided the installation meets applicable electrical and crash standards.
6. Pedestrian push buttons **shall** conform to the push button location requirements in *MUTCD* 4E.08 and 4E.10.
7. The RRFB layout will vary depending on crossing type. Example RRFB layouts are in Figure 1 below.

### **PERMITTING OF FLASHING BEACONS**

Any improperly installed electrical equipment *may* pose a hazard to the general public. As such, the Department spells out general and specific conditions, which are part of the permit agreement. These conditions are incorporated into the permit form, DT1877, a copy of which is appended to this policy. The *FHWA Interim Approval for Optional use of Rectangular Rapid Flashing Beacons (IA-11)* and specific conditions stated above **shall** also be followed for RRFBs installed on all state trunk highways. RRFBs installed on connecting highways **shall not** require a WisDOT permit.

The following information provides conditions and processes related to the issuance of permits.

1. Permit applications **shall** be received by and permits issued by the appropriate Regional Office.

2. Permits for RRFBs *may* only be issued to municipalities, not to private individuals at agencies, or to power companies. This *should* result in working with the most responsible and objective agency associated with the safety problem being addressed.
3. The region *may* rightfully deny the issuance of the permit. Reasons for denial *may* include: lack of need; conflict with other traffic control devices; vulnerable location; lack of confidence in the maintaining ability of the subject agency; knowledge that the request is due to reaction rather than long term need of a safety countermeasure.
4. The region *may* revoke the permit for any of the reasons above, especially in regard to lack of maintenance, as well as for reasons cited on the permit itself.
5. For permitted RRFBs installed on signal standards, Standard Detail Drawings [9C2](#) and [9C3](#) *should* be made part of the permit.
6. **In the event of the reconstruction of the highway, reasonable notice *should* be given to the municipality to allow their removal of the equipment and arranging for disconnecting the electrical service.**

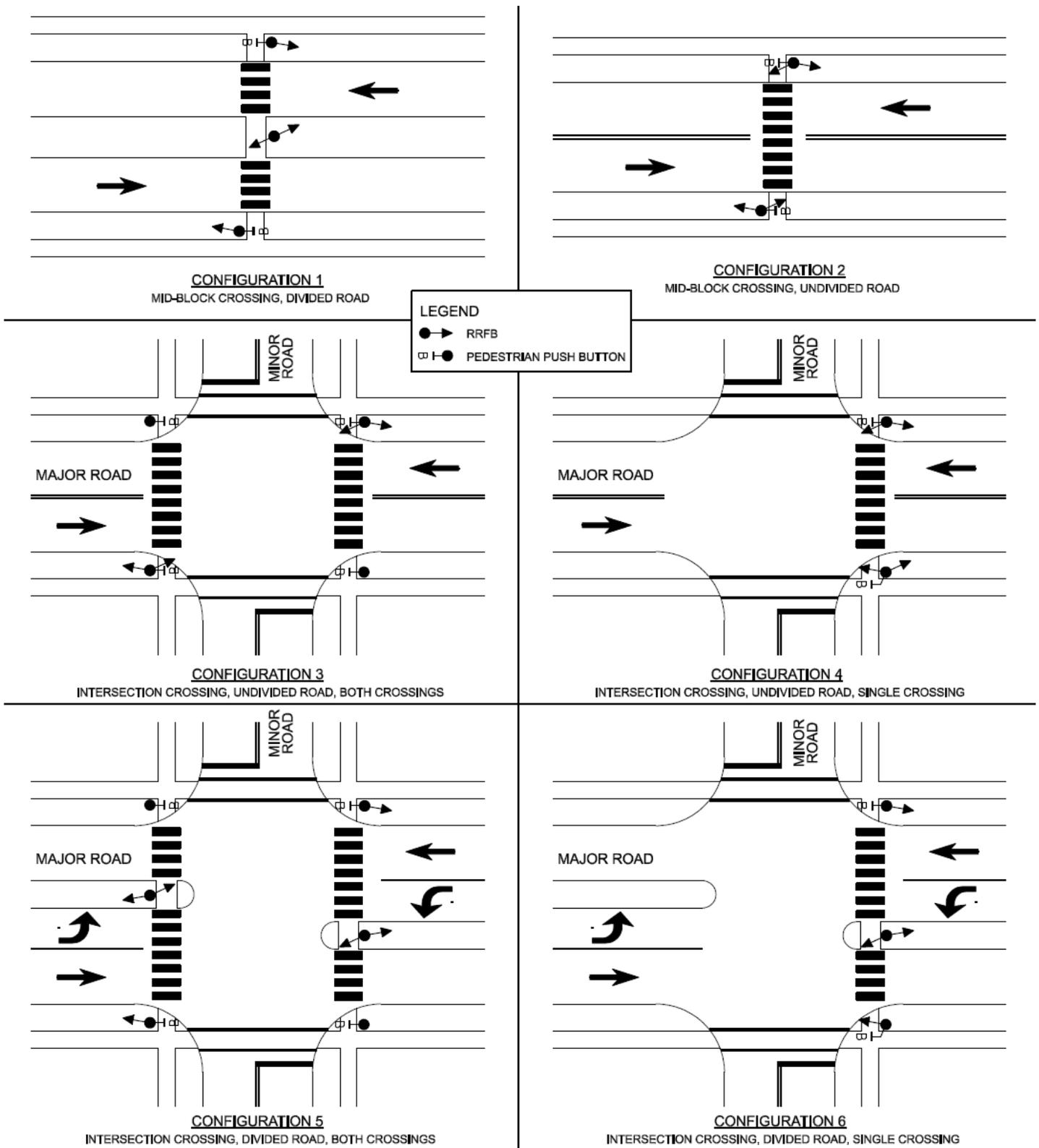


Figure 1. Typical RRFB Layouts