

Rectangular Rapid Flashing Beacon (RRFB) Specifications

Part #

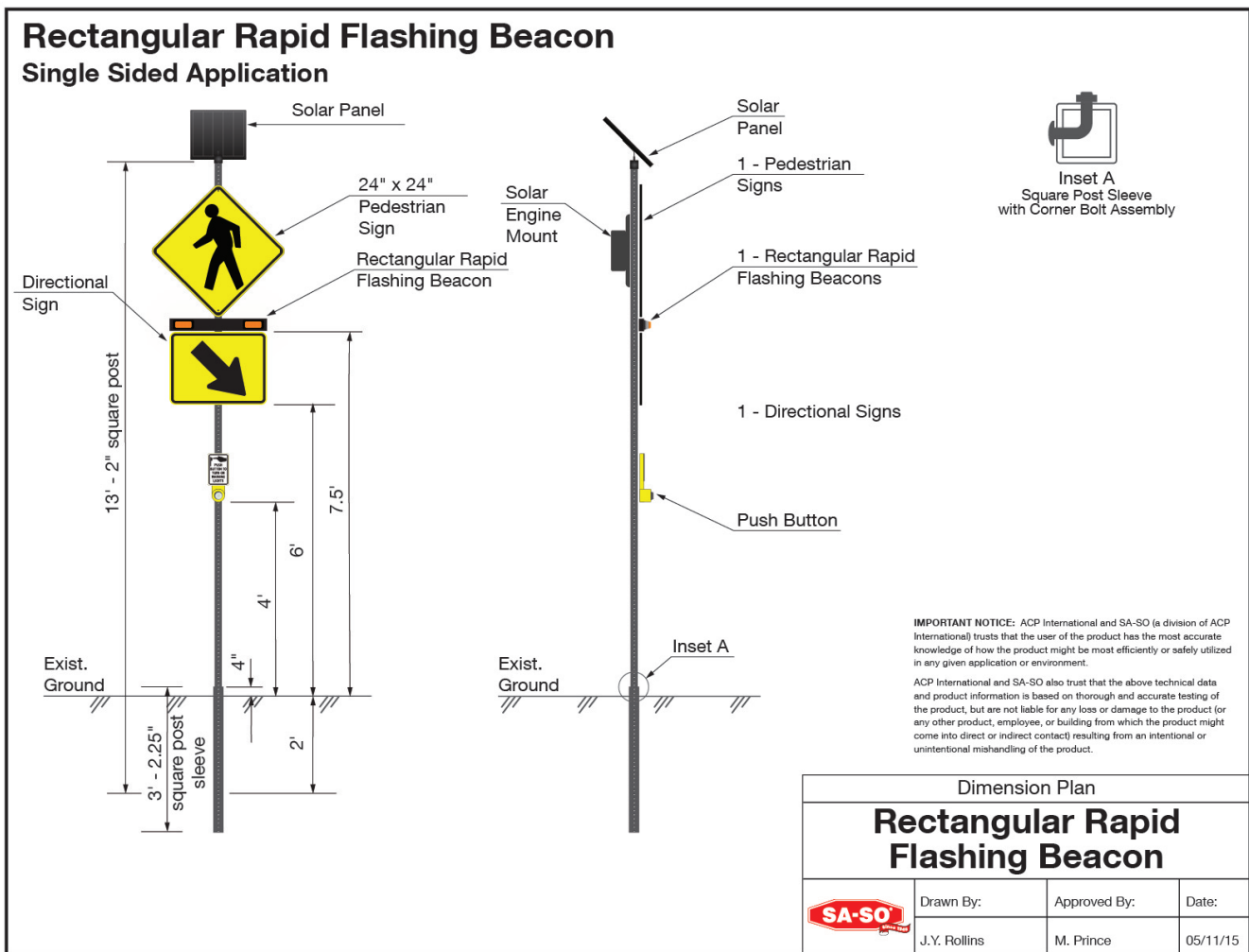
RRFB101 Single Sided Solar RRFB102 Double Sided Solar
 RRFB103 Single Sided AC RRFB104 Double Sided AC

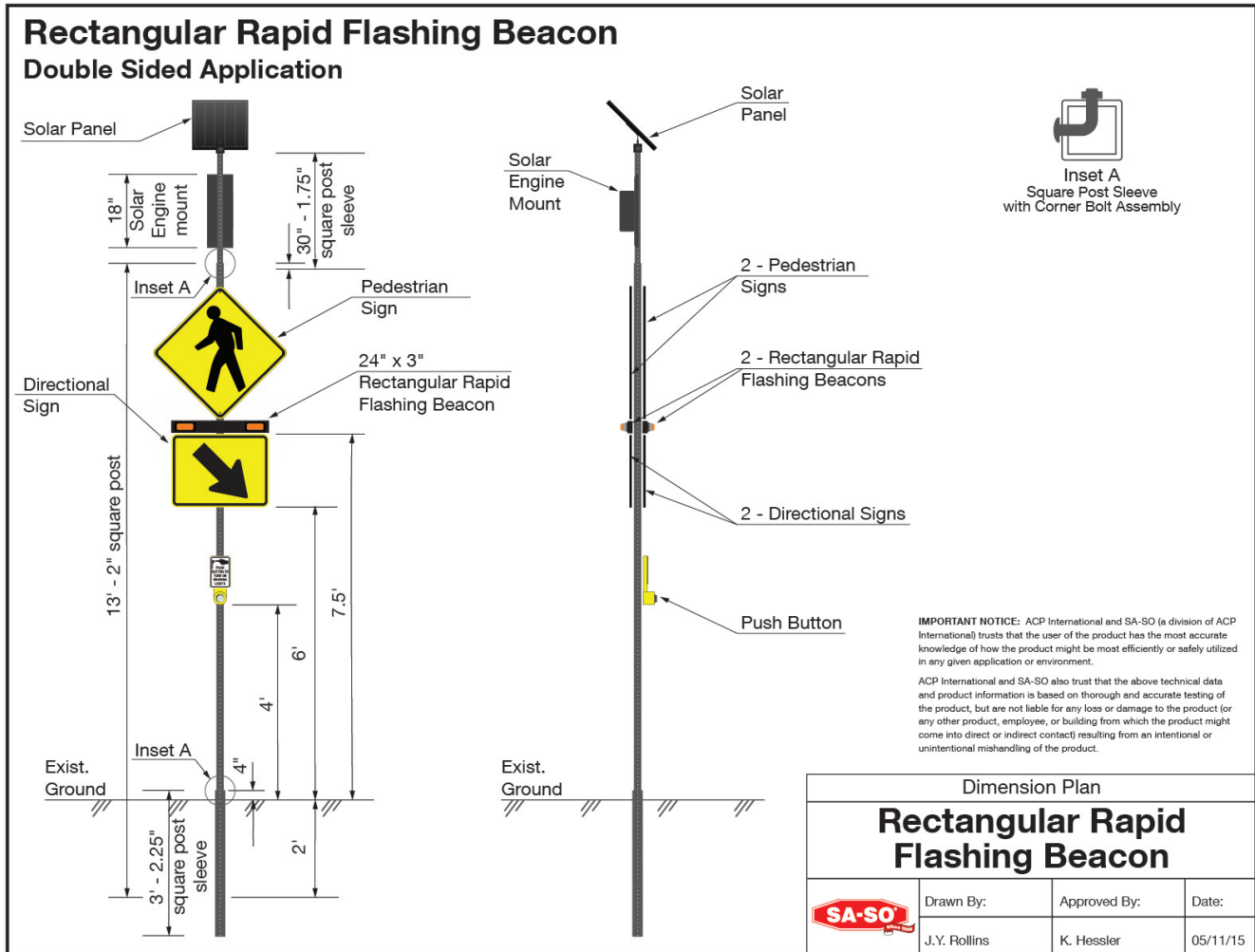
Technical Data Sheet

Scope

This specification covers the method and procedures of the manufacturing process, physical dimensions, and properties of the Rectangular Rapid Flashing Beacon (RRFB) as manufactured by SA-SO.

The SA-SO RRFB meets the specifications of FHWA Interim Approval IA-21, from March 20, 2018, which replaces previous IA-11 from 2008.





Technical Description, Design, and Material

Technical Description:

The RRFB is a pedestrian-actuated (push button) conspicuity enhancement used in combination with a pedestrian, school, or trail crossing warning sign to improve safety at uncontrolled, marked crosswalks. They are powered by a 12v Lithium Ion Battery and 30 watt Solar Panel, or alternatively with AC power. The visibility enhancing feature consists of a light bar with alternatively flashing LED lights that flash in an attention-getting pattern.

Application:

RRFBs are generally used in pairs, with one being on each side of a crosswalk. In boulevard situations, a third RRFB can be used if desirable.

Push buttons are located on both sides of the crosswalk. They activate their respective RRFB, and a wireless signal activates the RRFB across the street.

MUTCD Requirements:

An RRFB shall only be installed to function as a pedestrian-actuated conspicuity enhancement. It is not a traffic control device. Pedestrians should still utilize standard precautions when crossing the street.

An RRFB shall only be used to supplement a post-mounted W11-2 (Pedestrian), S1-1 (School), or W11-15 (Trail) crossing warning sign with a diagonal downward arrow (W16-7P) plaque, or an overhead-mounted W11-2, S1-1, or W11-15 crossing warning sign, located at or immediately adjacent to an uncontrolled marked crosswalk.

Except for crosswalks across the approach to or egress from a roundabout, an RRFB shall not be used for crosswalks across approaches controlled by YIELD signs, STOP signs, traffic control signals, or pedestrian hybrid beacons.

In the event sight distance approaching the crosswalk at which RRFBs are used is less than deemed necessary by the engineer, an additional RRFB may be installed on that approach in advance of the crosswalk, as a pedestrian-actuated conspicuity enhancement to supplement a W11-2 (Pedestrian), S1-1 (School), or W11-15 (Trail) crossing warning sign with an AHEAD (W16-9P) or distance (W16-2P or W16-2aP) plaque. If an additional RRFB is installed on the approach in advance of the crosswalk, it shall be supplemental to and not a replacement for the RRFBs at the crosswalk itself.

References:

FHWA Interim Approval IA-21, from March 20, 2018

Regarding the Buy America Act and the American Iron and Steel (AIS) requirements:

This product is manufactured locally in the USA. Regarding steel content, this product is made primarily of components other than steel. The total steel content falls under the De Minimus waiver of the AIS requirements.

Dimensions

Independent Study Results:

The Federal Highway Administration (FHWA) conducted Report Number FHWA-HRT-10-043 the effectiveness of Rectangular Rapid Flashing Beacons in September of 2010. The title of the report: *Effects of Yellow Rectangular Rapid-Flashing Beacons on Yielding at Multilane Uncontrolled Crosswalks.*

The primary finding: The two-beacon RRFB increased yielding compliance from 18 to 81 percent.

The entire report can be found at:

<https://www.fhwa.dotgov/publications/research/safety/pedbike/10043/10043.pdf>

Mechanical Properties

Solar Panel Properties:

Monocrystalline 30W Panel

Maximum Power: 30W

Optimum Operating Voltage (Vmp): 17.5V

Optimum Operating Current (Imp): 1.71A

Weight: 6.2 lbs.

Maximum System Voltage: 600V DC (UL)

Open-Circuit Voltage (Voc): 21.6V

Short-Circuit Current (Isc): 1.85A

Dimensions: 13.5 X 23.8 X 1.0 In
Glass: 3.2 mm tempered glass,
Resists 5400 PA snow loads and 2400 PA wind load.
Film: main component is 30%-33% EVA, coated with fluoro-resin to prevent aging.
Frame: Corrosion-resistant aluminum
Mounting Bracket: Corrosion-resistant aluminum

Battery Properties:

12.6v Rechargeable Lithium-Ion (Li-ion) battery pack
20.8 Ah Capacity
Built in IC chip to prevent over charge and over discharge
3000 Cycle Life Expectancy
8 month Shelf Life exceeds NiMH batteries
High Temperature Tolerance: 60C
Charge rate = 1C, Discharge rate = 2C
Weight = 2.4 lb, Dimensions = 5.79 L x 2.9 H x 2.2 W

Solar Charge Controller Properties:

99% efficient MPPT tracking (15Hz Speed)
Operating Consumption of 0.150mA (150uA)
CC-CV Charging Profile
-40°C to 85°C Operating Temperature
99.85% Electrical Efficiency

Solar Engine Housing:

Corrosion resistant Polycarbonate.
Lockable Latches.
Cover has a recessed Silicon Sponge Gasket.
Meets IP65 of IED529 and NEMA 1, 2, 3, 4, 4x, 12, and 13 specifications.

Light Bar and Flashing Lights:

6061 Powder Coated Aluminum, 2" x 4" x 24"
Rectangular tubing plugs on both ends
IP68 Rated for long-term dust and water-intrusion
Flashing Light Dimension: 7" x 3"
Current Draw: 1.25a Average

Remote Power Setup (optional):

Monocrystalline 100 Watt solar panel (17.7V x 5.7A) 40.9" x 21" x 1.4"
Genasun GV-10 Lithium Battery Charge Controller (rated for 140W)
Tenergy 41.2aH 12.6V Lithium Ion Battery
Max cable runs: 12AWG-25FT, 10AWG-40FT, 8AWG-60FT, 6AWG-100FT (All distances assume a 2% Vmp loss)

Push Button Properties:

ADA Compliant
303 Stainless Steel Button
3-5 lb. Operating Force
Diameter: 2" minimum
Maximum Travel of button: 1/8"
Heat Treated Aluminum Housing

Flashing Specifications:

The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.
Both RRFB indications shall be dark for approximately 50 milliseconds.

The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
Both RRFB indications shall be dark for approximately 50 milliseconds.

The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.
Both RRFB indications shall be dark for approximately 50 milliseconds.

The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
Both RRFB indications shall be dark for approximately 50 milliseconds.

Both RRFB indications shall be illuminated for approximately 50 milliseconds.
Both RRFB indications shall be dark for approximately 50 milliseconds.

Both RRFB indications shall be illuminated for approximately 50 milliseconds.
Both RRFB indications shall be dark for approximately 250 milliseconds.

IMPORTANT NOTICE: ACP International and SA-SO (a division of ACP International) trusts that the user of the product has the most accurate knowledge of how the product might be most efficiently or safely utilized in any given application or environment.

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