

**LOS ALAMOS**  
 where discoveries are made

**Los Alamos County  
Golf Course Crossing Evaluation**

**Diamond Drive**



Presented to the Los Alamos County Transportation Board

September 6, 2018

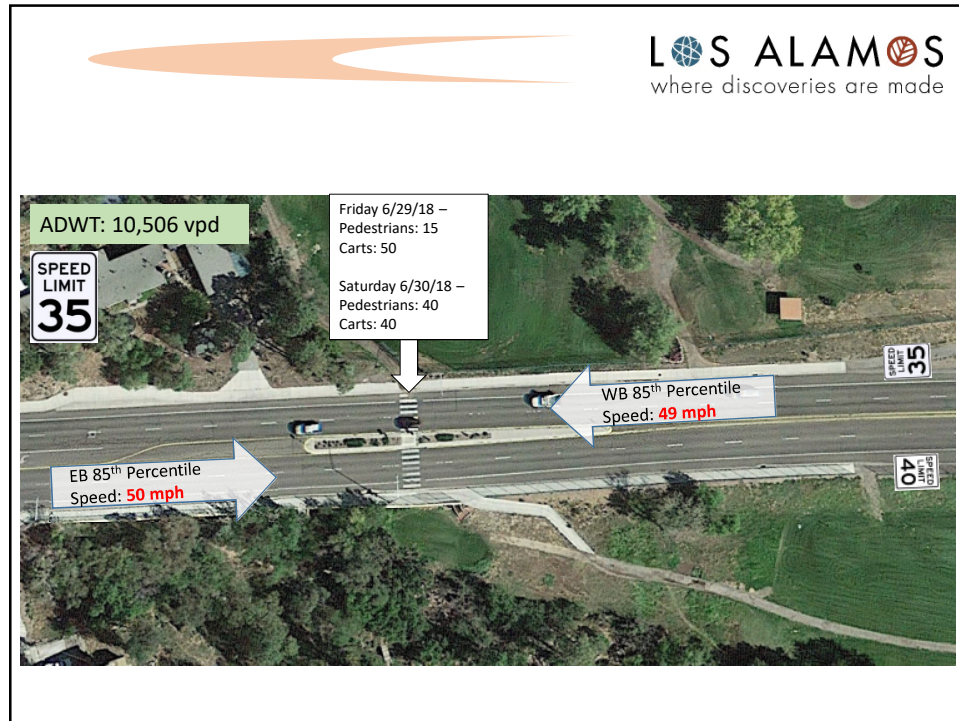

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➤ Data collection parameters: Diamond Drive @ Golf Course

- Data was collected for 12 & 24 hour continuous periods
  - 12 Hr: Golf Cart & Pedestrian crossing counts – 6/29 & 6/30, 2018
  - 24 Hr: Traffic Volume and Speed Counts – 7/11/2018
- Data collection consisted of:
  - Vehicles traveling EB & WB on Diamond Drive, including volume, speed and headway
  - Golf carts crossing Diamond Drive at the marked crosswalk
  - Pedestrians crossing Diamond Drive at the marked crosswalk
- Data was collected using video recording and inductive vehicle counters







**Available Treatments –**

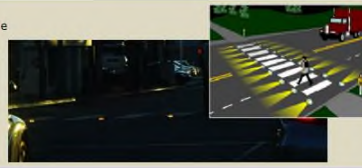
**Yield Here to (or Stop Here for) Pedestrians signs** – [Section 2B.11](#) describes pedestrian crossing signs that may be placed upstream from a crosswalk to inform drivers on multi-lane roadways that they are legally required to stop a specified distance in advance of the crosswalk if a pedestrian is crossing the roadway.

**Pedestrian-activated Flashing LEDs in the Border of a Warning Sign** – [Section 2A.07](#) describes the use of flashing white or yellow LEDs in the border of a pedestrian crossing warning sign. The flashing LEDs may be pedestrian activated to increase their effectiveness in making the crossing sign more conspicuous when a pedestrian desires to cross the roadway.

**Pedestrian-activated Warning Beacons** – [Section 4L.03](#) describes the use of a flashing yellow warning beacon to supplement a pedestrian crossing warning sign. The warning beacon may be pedestrian activated to increase its effectiveness in making the crossing sign more conspicuous when a pedestrian desires to cross the roadway.

## Available Treatments – continued

**In-roadway Warning Lights** – Section 4N.02 describes pedestrian-activated yellow lights that may be installed in the roadway surface at an uncontrolled marked crosswalk location to warn drivers that a pedestrian is waiting to cross or in the process of crossing the roadway.



**Midblock Pedestrian Signals** – Sections 4C.05 and 4C.06 describe warrant criteria that can be used in a signal needs study of a marked crosswalk location to determine if the installation of a midblock pedestrian signal is justified to assist pedestrians or schoolchildren in safely crossing the major street.



**Pedestrian Hybrid Beacons** – Section 4F.01 describes warrant criteria that can be used to determine if the installation of a pedestrian hybrid beacon is justified to assist pedestrians in safely crossing the major street.



## Pedestrian Hybrid Beacon (Hawk Signal)?


Figure 4F-2. Guidelines for the Installation of Pedestrian Hybrid Beacons on **High-Speed** Roadways (>35 mph)


Table for Figure 4F-2

Crosswalk length = 34 ft		Crosswalk length = 50 ft		Crosswalk length = 72 ft		Crosswalk length = 100 ft	
VPH on the major street (Total of both approaches)	PPH for total of all pedestrians crossing the major street	VPH on the major street (Total of both approaches)	PPH for total of all pedestrians crossing the major street	VPH on the major street (Total of both approaches)	PPH for total of all pedestrians crossing the major street	VPH on the major street (Total of both approaches)	PPH for total of all pedestrians crossing the major street
2000	20*	2000	20*	2000	20*	2000	20*
1750	20*	1750	20*	1750	20*	1750	20*
1500	20*	1500	20*	1500	20*	1500	20*
1250	20*	1250	20*	1250	20*	1250	20*
1000	50	1000	50	1000	20*	1000	20*
750	150	750	150	750	20*	750	20*
500	—	500	—	500	20*	500	20*
250	—	250	—	250	100	250	100
225	—	225	—	175	500	100	500

\* Note: 20 pph applies as the lower threshold volume.

Diamond @ Golf Course -  
Average VPH: 438  
Average PPH: 7\*  
\*Includes Golf Carts







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### RRFB:

#### Rectangular Rapid Flashing Beacon:

- RRFBs are user-actuated amber LEDs that supplement warning signs at un-signalized intersections or midblock crosswalks. They can be activated by pedestrians manually by a push button similar to the ones used at a signalized intersection.
- RRFBs use an irregular flash pattern that is similar to emergency flashers on police vehicles. RRFBs may be installed on either two-lane or multi-lane roadways.





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### RRFB: Details

#### Benefits

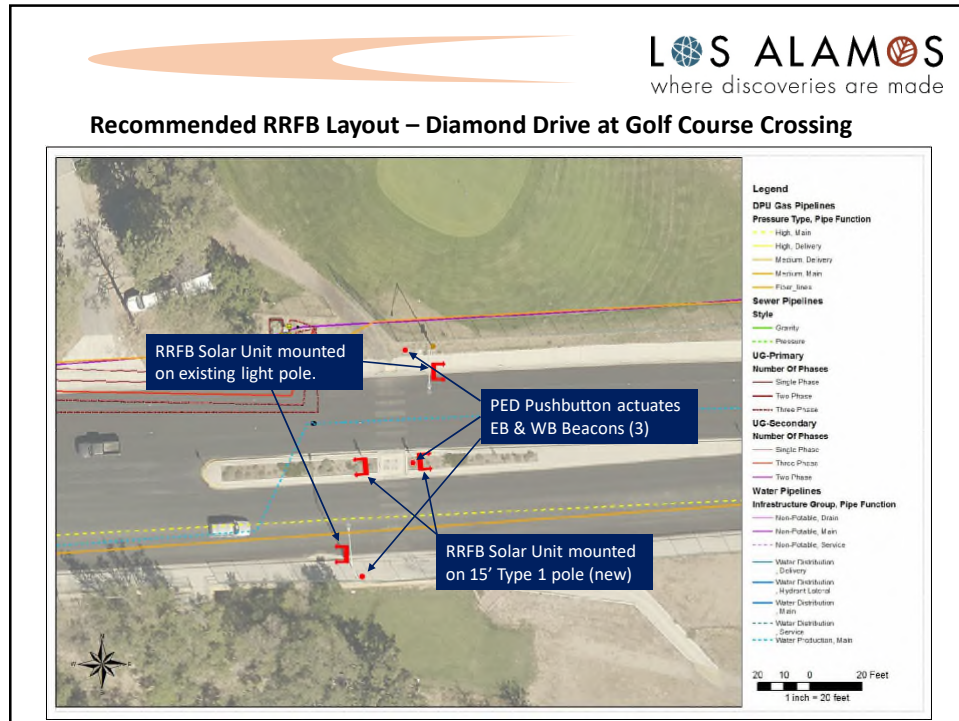
- RRFBs have proven to show an increase in driver yielding behavior at unsignalized crosswalks when supplementing standard pedestrian crossing warning signs and markings. An official Federal Highway Administration (FHWA) sponsored experimental implementation and evaluation showed that RRFBs are more effective at increasing driver yielding rates to pedestrians than traditional overhead or pole mounted beacons.
- RRFBs are a lower cost alternative to traffic signals, pedestrian crossing signals and hybrid signals that are shown to increase driver yielding behavior at crosswalks significantly when supplementing standard pedestrian crossing warning signs and markings.

#### Installation, Operation & Cost

- **Installation:** System is solar powered, eliminating the need for trenching or electrical connections. Installation would require the placement of concrete or helix pole foundations.
- **Operation:** Individual beacons are wirelessly connected via radio signals and would be fully actuated from any of the pedestrian pushbuttons.
- **Cost:** Estimated cost to install the system: \$20,000. Estimated annual operating cost \$300.







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### Next Steps –

- Present to the Golf Course Subcommittee
- Present Parks and Recreation Board
- Return to T-Board for Recommendation to County Council
- Present County Council