

HORIZON SIGNAL

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What is a Driveway Assistance Device?



DADs, what are they?

- Solves a longstanding work zone dilemma: **How do you efficiently control traffic in residential driveways within a work zone?**
- Traditional methods include: flaggers, or standard R-Y-G signals at each driveway
- Both of these methods create long cycle times, as you must hold mainline traffic to service one driveway.



The Driveway Assistance Device, or

- “DAD,” safely alerts motorists to the direction of traffic flow in one-lane, alternating workzones.
- It is designed specifically for residential driveway use, and improves traffic flow efficiency by keeping cycle lengths at a minimum with out compromising safety.









NO
TURN
ON RED



PROCEED
ON
FLASHING
RED ARROW
AFTER STOP





NO
TURN
ON RED

PROCEED
ON
FLASHING
RED ARROW
AFTER STOP


COLORADO

CE 14570

DADs

How they started

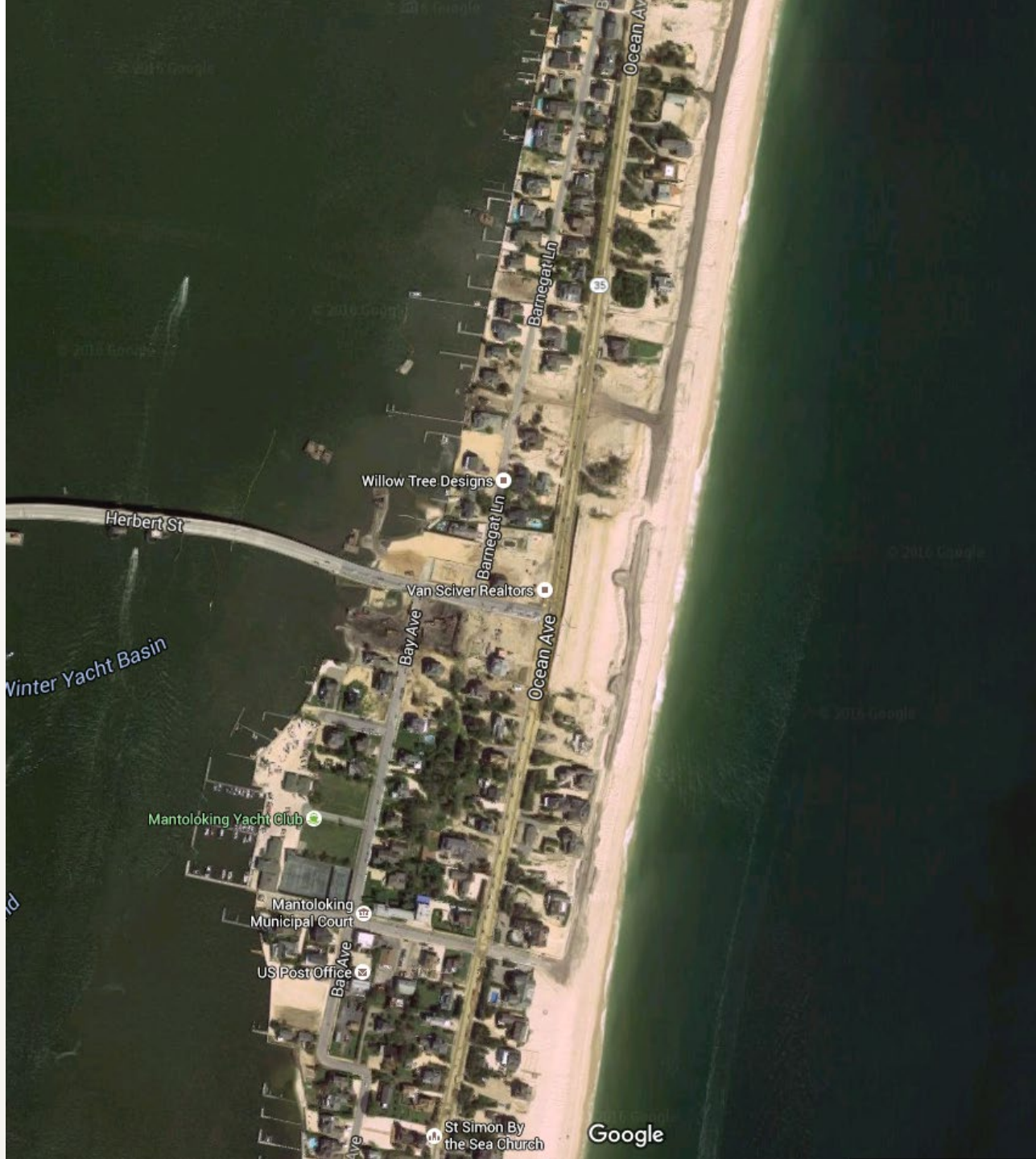


A satellite image of Hurricane Sandy, showing a well-defined eye and spiral cloud bands over the Atlantic Ocean. The hurricane is positioned in the lower right quadrant of the frame. The text is overlaid on the left side of the image.

October 29, 2012
Hurricane Sandy



NJ Route 35 - a heavily traveled road - was to be reduced to a single lane in a residential area.



Horizon worked with NJDOT based on the prototypes that had been developed previously with TTI.



DADs on NJ 35 were in operation during winter months and required regular charging. Solar panels were later added to prolong battery life.





- **SQ2T Version**
- Provides larger battery bank and increased solar capacity.



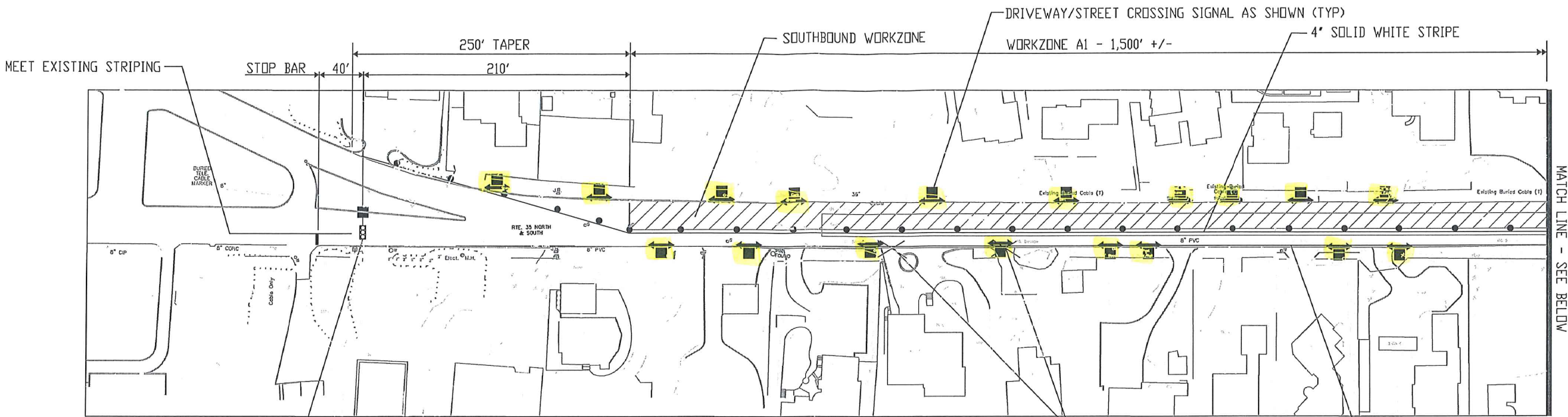
NO
TURN
ON RED

KEEP
RIGHT
FLANK
BEHIND
STOP

DEERE

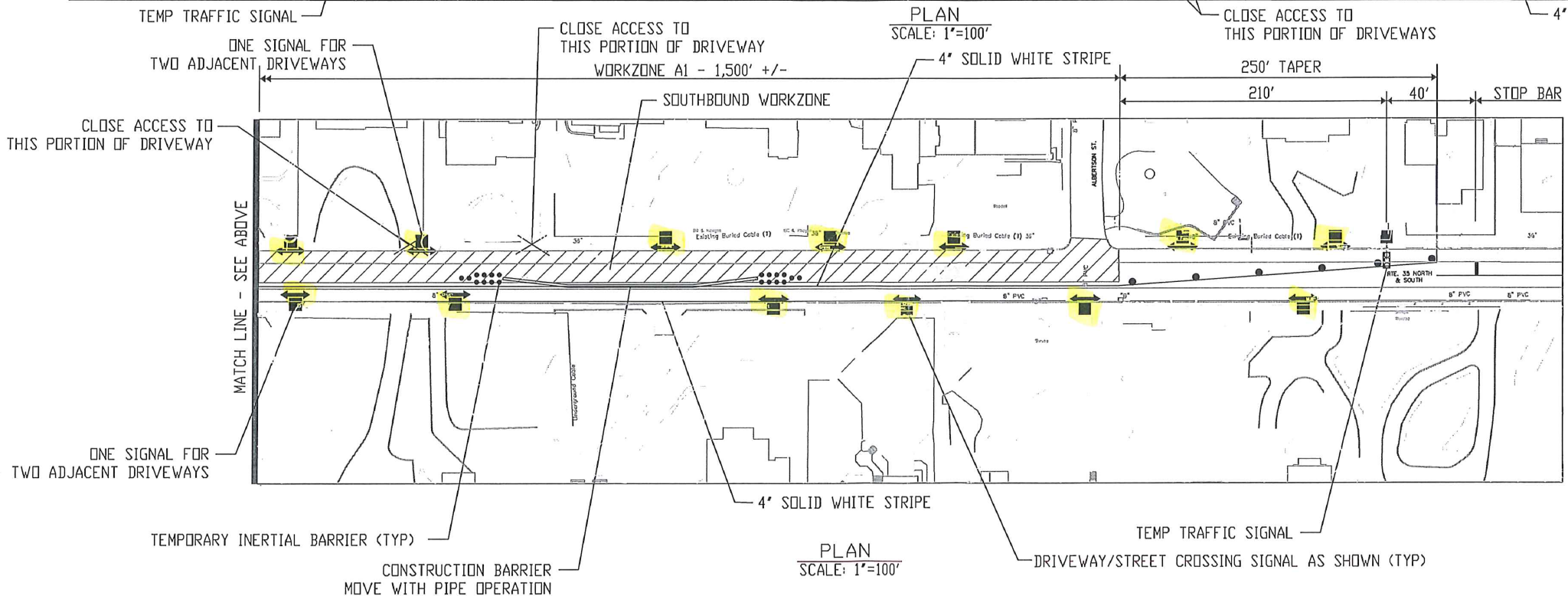


DADs are all wirelessly interconnected, with no limit to the number of devices used.



MATCH LINE - SEE BELOW

PLAN
SCALE: 1"=100'



PLAN
SCALE: 1"=100'

249
2482

DADs
How it's Going?

**An Update from June National Committee
Meeting**



Configuration: Layout

- Four-section box/square
- Three-section doghouse
- Three section horizontal



Configuration: Layout

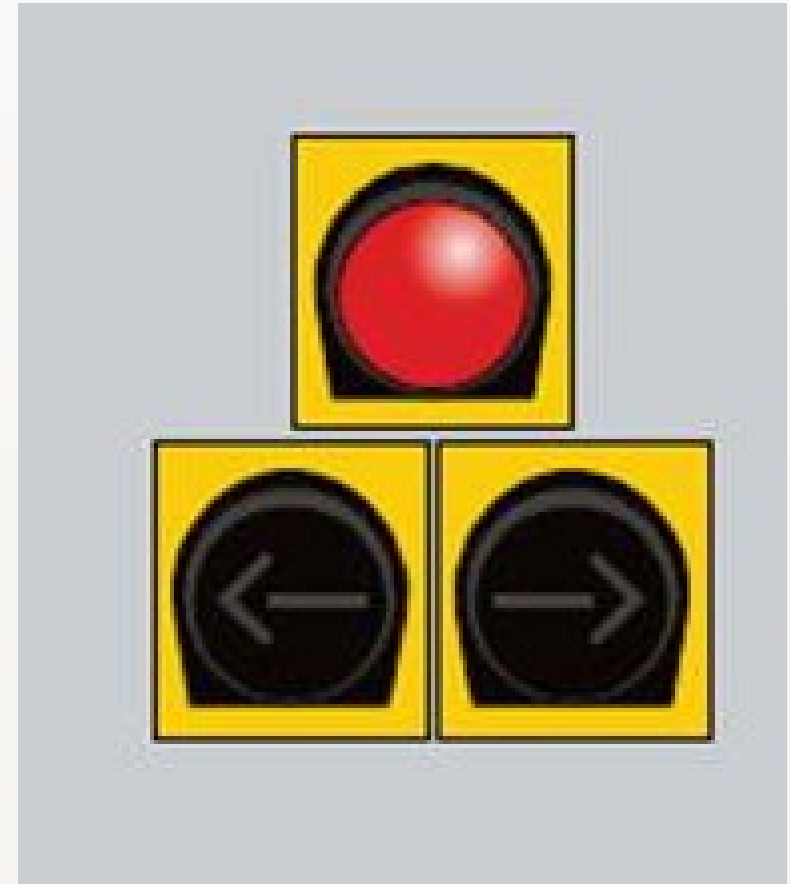
- Three-section doghouse has proven effective in motorist recognition and comprehension.
- The four-section box/square layout was also tested. It was found to have a high level of understanding similar to the doghouse configuration. However, drivers that performed a violation while viewing the box/square configuration were more likely to turn into oncoming traffic. This was observed at a much higher rate than for the doghouse configuration providing justification for not recommending the box/square configuration.
- The horizontal three-section configuration has been determined to cause confusion and is too closely related to a traffic signal. The DAD is a temporary traffic control device not a traffic signal which provides justification for not considering the horizontal layout.



Configuration Layout

Recommendation

- Three-section doghouse



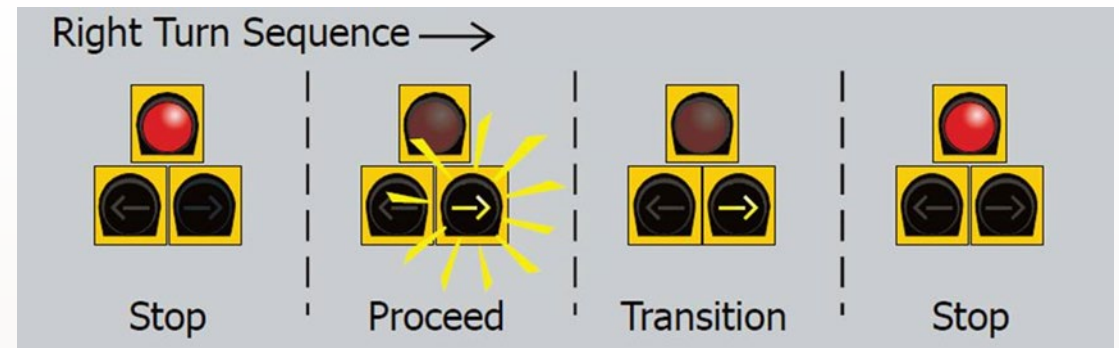
Configuration: Color

Recommendation

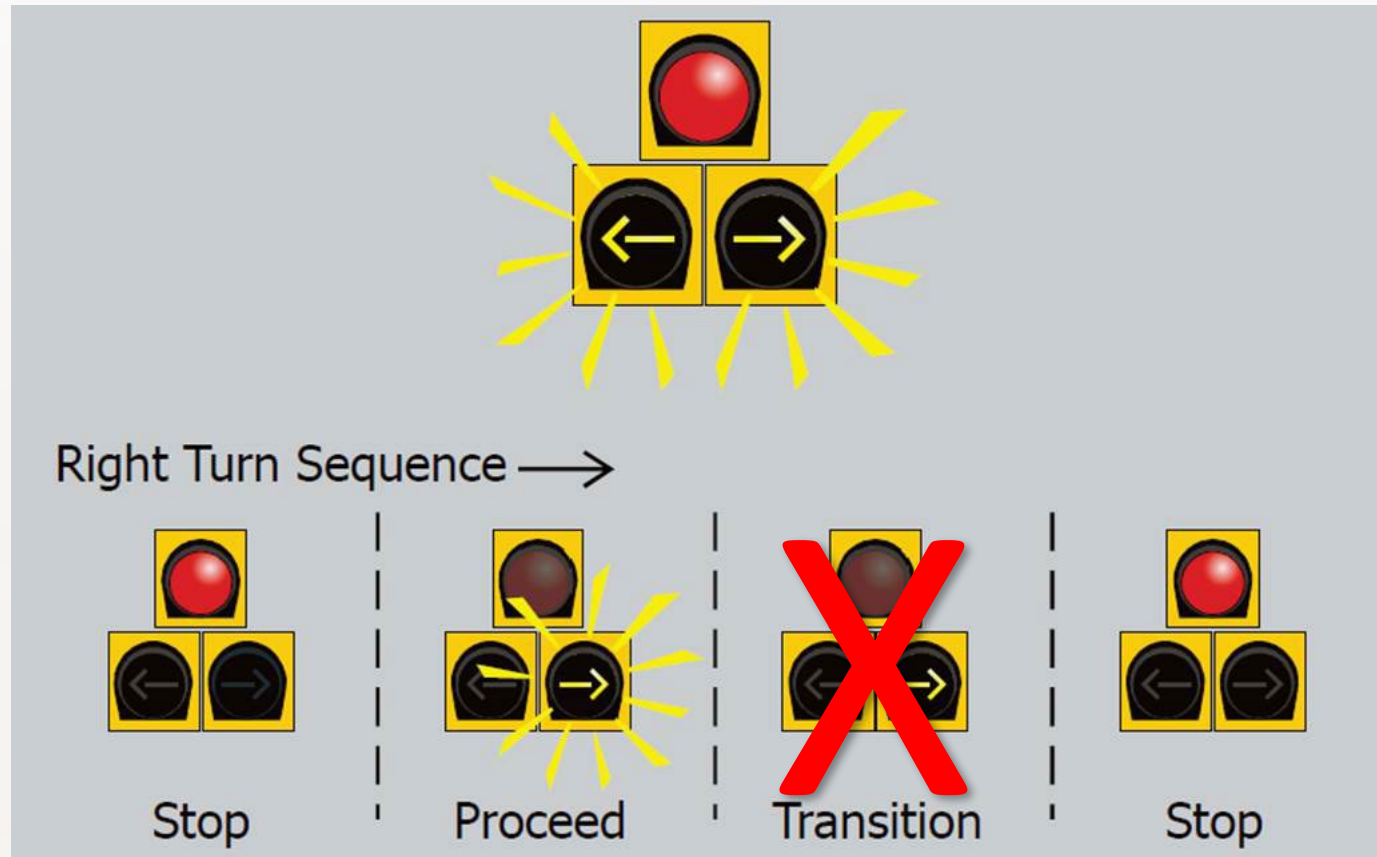
- Steady circular red indication centered over two flashing yellow arrow
- One arrow pointing to the left and one pointing to the right
- The flashing yellow arrows caution the motorist to yield the right-of-way to any vehicle on the through street and turn when it is safe to do so. This is an indication that is commonly used and understood

Testing

- The need for a transition indication between the flashing yellow arrow and the steady circular red indications was studied and determined to have no effect on the compliance rate. Therefore, it is not being recommended



Configuration: Operation



Configuration: Location

Recommendation

- It is recommended that DADs be placed on the near side of the intersection of the main road and driveway. If near side placement is not practical due to sight conditions, far side placement should be considered.
- If placing the DAD on the far side of the intersection (i.e., across the main road) the work intensity should be considered.
- If there is heavy construction traffic and/or materials being placed within 50 ft of the DAD, then near side placement is recommended and conditions should be adjusted to allow near side placement.

Testing

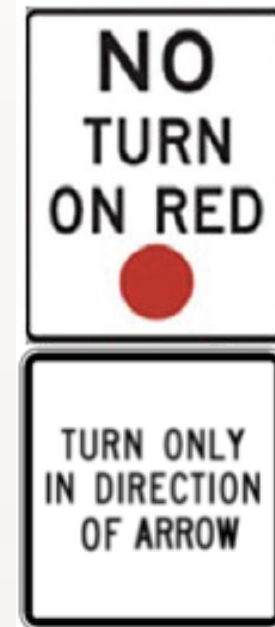
Studies have shown that placement on the near side improves compliance rates



Configuration: Signing

Recommendation

- It is recommended that a NO TURN ON RED sign always be included at each DAD location.
- It is recommended that a TURN ONLY IN DIRECTION OF ARROW sign is used.
- It is recommended that after the DAD operation has been defined the joint TTC & Sign Task Forces provide appropriate sign guidance



Testing

Studies have determined that this sign is understood by drivers and performed well in field tests. Other options have been used with acceptable results, but the TURN ONLY IN DIRECTION OF ARROW sign is being recommended to create a consistent simple design and uniform layout for all state DOTs to follow



Public Information

Recommendation

- It is recommended that information concerning the operation of the DAD be communicated to residents with a driveway that will be controlled by the DAD prior to beginning work.

Driveway Assistance Device (DAD)

Beach Road will be under construction in early Spring 2023 and at times reduced to one lane of traffic. During this time, traffic will be controlled by temporary traffic signals that will allow alternating traffic to proceed through the work area. Driveway traffic will be controlled by Driveway Assistance Devices (see examples below).

Traffic on Beach Road has the right of way. You must come to a full and complete stop before turning onto Beach Rd.

- To turn left onto Beach Road, wait until you have a **flashing red left arrow (Image #1)** and can turn safely.
- To take a right onto Beach Road, wait until you have a **flashing red right arrow (Image #3)** and can turn safely.
- Do not attempt to make any turns to Beach Road on a **solid red indication (Image #2)**.



Image #1

LEFT TURN PERMITTED

Proceed in this direction after stop.
Do not turn right on red.



Image #2

WAIT

Please stop when seeing two red arrows. Do not turn right on red.



Image #3

RIGHT TURN PERMITTED

Proceed in this direction after stop.

The Driveway Assistance Device will help to reduce queues and delays along Beach Rd during construction. Your cooperation in obeying the signals will help keep the work area safe for both the workers, and you, the drivers. Thank you for your cooperation.

Question about the project? Please Contact :

Michael King, Resident Engineer
Phone: 774-470-2249

MassDOT District 5 Construction
Phone: 857-368-5099

Email: DOT.FeedbackDistrict5@dot.state.ma.us



Daniel Tyger, Traffic Operations Manager
PennDOT Engineering District 10



A BETTER APPROACH

- ✓ DADs service ALL driveways in the work zone during EVERY cycle
- ✓ Flashing arrows show drivers which way traffic is flowing
- ✓ Drivers can join the flow of traffic in the direction of the flashing arrow
- ✓ Reduced queues on mainline by keeping cycle times to a minimum



APPLICATION

- It is recommended that DADs only be used at residential driveways that fall within a one-lane two-way work zone
- DADs only to be used in conjunction with temporary traffic signals on the mainline.
- There is no limit to the number of DADs that can be used in a work zone



APPLICATION

- Residential driveways controlled by DADs should be spaced a minimum of 250 ft from the temporary traffic signal location.
 - If this distance cannot be achieved, the mainline limits can be extended so that space is provided to allow a motorist to exit the driveway ahead of the traffic queue traveling on the mainline



a. Steady Stop Indication.



b. Flashing Proceed Indication.

SIGNAL OPERATION & TIMING

- Temporary traffic signals used with DADs may be programmed in a fixed time or actuated mode.
- If an actuated mode is used the signals should not rest in red.
- Cycle times should be considered to ensure DAD compliance.
- The timing programs should account for traffic traveling at a lower speed.
- When setting the clearance time on the mainline signal a lower factor should be considered to allow for clearance of vehicles entering mainline traffic from a residential driveway using a DAD.
- Steep grades and sight conditions should be considered to determine if additional clearance time should be added.

