



Memorandum

To: Ms. Janet Tutt, District Manager
Sumter Landing Community Development District

From: Richard V. Busche, P.E., Sr. Vice President
Kimley-Horn and Associates, Inc.

Date: July 5, 2017

RE: ***Village of Bridgeport MUT Crossing Recommendations***
Kimley-Horn Project No: 142281002

Per your request, Kimley-Horn performed a field review and evaluation of the multi-use trail (MUT) crossing at the Buena Vista Boulevard entrance to The Village of Bridgeport. This memorandum summarizes our field observations and recommendations.

Existing Conditions and Observations

We visited the site on the morning of June 14, 2017 to document the existing site conditions and observe traffic interactions at the existing MUT crossing. Kimley-Horn has visited this location numerous times previously as well. The MUT runs generally in the east-west direction at this location, and crosses Ternberry Forest Drive at the gated entrance into The Village of Bridgeport. The trail crossing is located approximately 100 feet north of Buena Vista Boulevard.

The MUT has full sized stop signs mounted on aluminum decorative posts in both the eastbound and westbound direction at the crossing. There are "Golf Carts Yield to Vehicular Traffic" warning signs mounted directly below the stop signs.

At each side of the entrance roadway there are speed bumps present for the full width of the MUT. The speed bumps are yellow in color, and are low-profile hard plastic installations that are bolted to the MUT pavement. The MUT crossing itself consists of brick pavers with a concrete ribbon curb.

The vehicular traffic entering The Village of Bridgeport northbound is controlled by a push-button/card reader activated gate before the MUT crossing. The gate arm for entering traffic was recently relocated to its current location.

The vehicular traffic exiting The Village of Bridgeport southbound is controlled by a vehicle/motion sensor activated gate arm. New vehicle detectors have recently been installed to more quickly activate the gate arm for exiting traffic.

Summarized below are some key observations made during our field review:

1. The MUT crossing was observed to have a heavier volume of golf cart traffic than vehicular traffic.
2. Almost all the golf carts crossing Ternberry Forest Drive slow to cross the speed bumps, but few carts actually stop at the stop sign posted at the MUT crossing.
3. The speed bump for westbound golf carts is located such that golf carts must straddle the speed bump to stop at the stop sign located on the MUT prior to crossing the roadway.
4. The speed bumps cross the entire length of the MUT, requiring golf carts exiting the crossing and entering the MUT to slow within the roadway to cross the speed bumps.
5. Almost all the golf carts crossing Ternberry Forest Drive were observed to make a single-stage crossing, without stopping in the median area.
6. When golf carts stopped within the median area, it was generally to make a left-hand turn northbound into The Village of Bridgeport or to yield to northbound entering vehicular traffic at the entry gate. When a golf cart stops within the median to yield to other carts or vehicles, golf carts stack behind them within the travel lanes of the intersection.
7. Bicycles were observed along the MUT and travelling over the existing speed bumps.
8. There is a sign located in advance of the exit gate stating that the gate arm closes after every vehicle. However, the gate arm was observed to remain open during a successive queue of exiting vehicles without closing between vehicles.
9. When a queue of exiting vehicles extends past the exiting gate, it has the potential to block the MUT crossing. This was observed once during the site visit due to a group of realtors exiting The Village of Bridgeport at one time.
10. Some entering vehicles were observed to yield to crossing golf carts and wait to push the gate activation button until the golf carts crossed Ternberry Forest Drive.
11. In general, golf carts disregard the stop signs and “golf carts yield to vehicular traffic” signs posted at the crossing.

Sight Line Observations

The sight lines for some movements are restricted, or fully obstructed, due to physical features and landscaping. The term “sight line” generally refers to the ability for drivers to see all other legs of the intersection, and also to be seen by those carts or vehicles. The sight lines for each approach to the MUT crossing were documented in the field, and summarized below.

1. **Eastbound Golf Carts** – The sight line for southbound exiting vehicular traffic at the gate is slightly limited by the fence adjacent to the crossing, but not obstructed. The sight line for northbound entering traffic is slightly limited by the landscaping and gate activation push button, but not obstructed.



2. **Westbound Golf Carts** – The sight line for southbound exiting traffic at the gate is obstructed by the “Resident Entry” sign and landscaping located within the median adjacent to the gate. When a vehicle is stopped behind the exiting gate it is difficult for the southbound golf cart to see them. The sight line for northbound entering traffic is clear.



- 3. Southbound Exiting Vehicles** – The sight line for westbound golf carts is obstructed by the “Resident Entry” sign and landscaping located within the median adjacent to the gate. When an exiting vehicle is stopped waiting for the gate to open they cannot see westbound golf carts. The sight line for eastbound golf carts is clear.



- 4. Northbound Entering Vehicles** – The sight line for westbound golf carts is clear. The sight line for eastbound golf carts is obstructed by the housing for the gate activation push button. The gate housing is directly in the line of sight of vehicles pushing the gate activation button and entering vehicles have an obstructed view of eastbound golf carts.



Recommendations

In general, we conclude that the restricted sight lines for the various vehicular and cart movements create uncertainty for the users of this crossing. If the sight lines were clear all drivers would be better able to judge when it was safe to make their crossing movement. Though the carts are instructed that they are to yield to vehicular traffic, they cannot clearly see those vehicles from the stop signs on the MUT. Based on our field observations, we offer the following recommendations for improved traffic operations at the MUT crossing.

1. Modify the “Resident Entry” sign to allow visibility for westbound golf carts and southbound exiting vehicles to see each other. Remove / replant any landscaping in this sight line.
2. Modify the entering gate activation push button housing to allow visibility for southbound entering vehicles to see eastbound travelling golf carts.
3. Adjust the timing on the southbound existing gate arm to require a single exiting vehicle to make a full stop before the gate opens. Currently, a car approaching this gate can continue through the gate arm without stopping if they slow down.
4. Modify the median refuge area to improve the two-stage golf cart crossing. Replace and clearly post the stop signs in the median. On the date of our field visit one was missing and the one that was present was obstructed by landscaping.
5. Address the speed bumps on the MUT, as described below.

Speed Bumps on MUT crossing at The Village of Bridgeport



Speed bumps were installed by the VCDD6 in 2007 in an attempt to get carts to stop at the stop signs on the path. Indeed, much of the operation of the intersection would be greatly improved if cart drivers obeyed the posted regulatory signage. Though speed bumps are not recommended by Kimley-Horn at this location and there is widespread consensus in the transportation industry that speed bumps are inappropriate for bicyclists and pedestrians, the decision of whether or not to keep them can be at the discretion of the VCDD6. Kimley-Horn observed that the presence of speed bumps at this location may actually be inducing cart drivers to slow to a roll to navigate the speed bumps instead of coming to a full stop at the stop signs. We observe the following regarding speed bumps at this location:

1. The speed bumps appear to encourage “rolling stops” at these locations.
2. The speed bumps are the full width of the trail, which means that a cart that has just crossed the entrance must then also slow down for another speed bump on the other side. We observed regular backups because of this issue.
3. In the westbound direction, the location of the speed bump is such that the golf carts must actually straddle the bump to obey the posted stop sign.
4. Speed bumps are not appropriate for bicyclists or pedestrians.

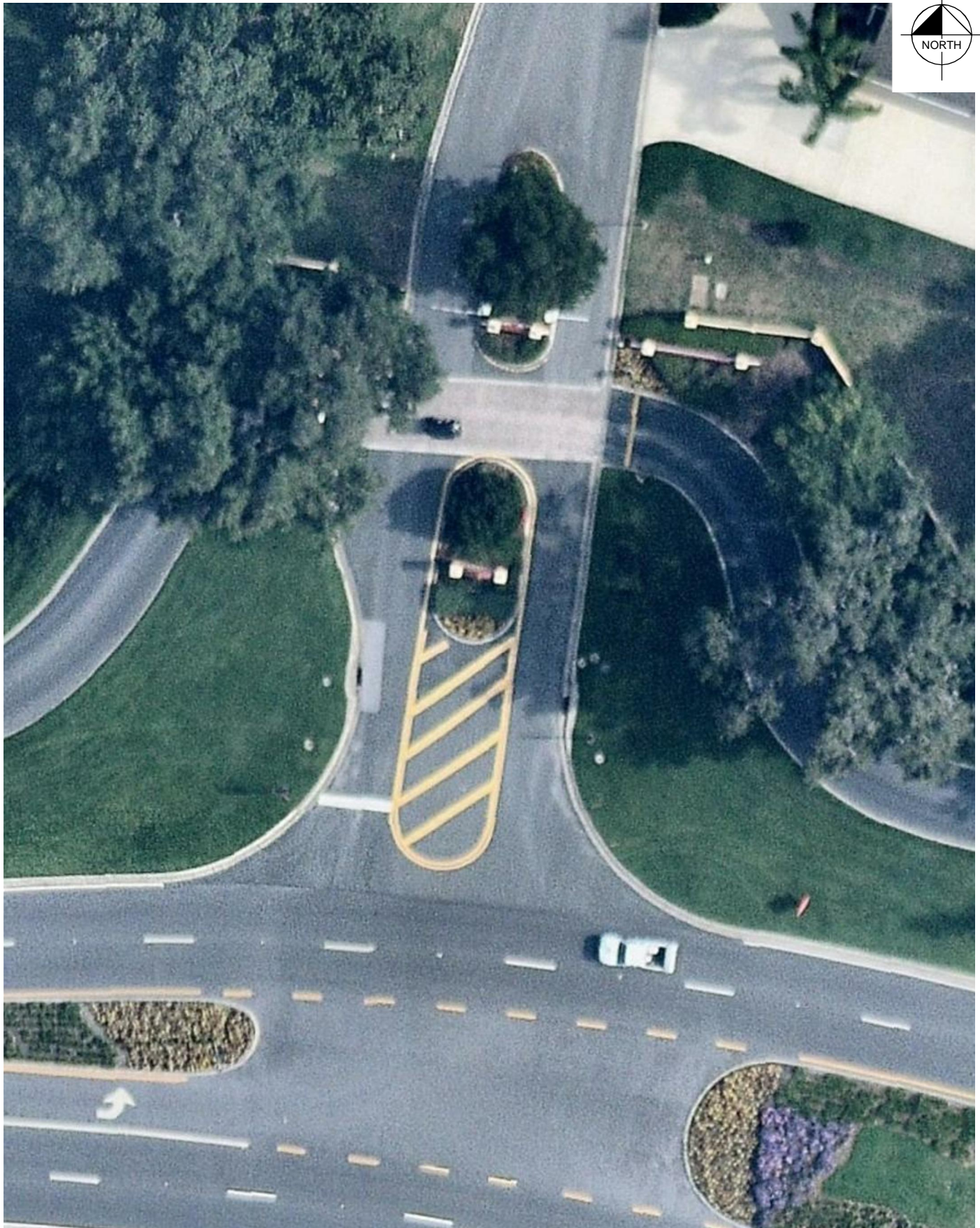
If the District keeps the speed bumps, they should be relocated further from the intersection to allow for a golf cart to stop at the stop sign without having to straddle the speed bump. The speed bump should also be limited to the approaching lane only and removed from the receiving lane so as not to

cause slowing of the golf carts within the vehicular travel lane. If the speed bumps are removed, we recommend that a painted stop bar and "STOP" message be added to the asphalt at this location for enhanced warning for carts to stop.

Please review this information and contact me if you have any questions at (352) 438-3000 or richard.busche@kimley-horn.com.

Attachments: Exhibit 1

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<p>DATE JUNE 2017</p> <p>PROJECT NO. 142281002</p> <p>SHEET NUMBER 01</p>	<p>VILLAGE OF BRIDGEPORT ENTRANCE EVALUATION AERIAL EXHIBIT</p>	<p>SCALE 1" = 30'</p> <p>DESIGNED BY KHA</p> <p>DRAWN BY DSC</p> <p>CHECKED BY RVB</p> <p>DESIGN ENGINEER: RICHARD V. BUSCHE, P.E.</p> <p>FLORIDA P.E. LICENSE NUMBER: 58568</p> <p>DATE:</p>	<p>Kimley»Horn</p> <p>© 2017 KIMLEY-HORN AND ASSOCIATES, INC. 1823 SE FORT KING STREET, SUITE 200, OCALA, FL 34471 PHONE: 352-438-3000 WWW.KIMLEY-HORN.COM CA 00000696</p>
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