

- 5. Replace the existing "STOP" sign on the northbound approach of Legacy Trail to Legacy Circle with a new 30-inch by 30-inch R1-1 "STOP" sign at a mounted height of 7 feet from the ground to the bottom of the sign.

Upon a motion duly made and seconded, the foregoing resolution was adopted by the following vote.



ROBERT ROWLAND, CHAIRMAN AYE



LARRY ROSS, VICE CHAIR AYE



KURT SCHLEGEL, COMMISSIONER AYE

ATTEST: DALLAS SCHROEDER
COUNTY CLERK

BY: 

DEPUTY, CLERK TO THE BOARD





December 20, 2013

■
Suite 200
990 South Broadway
Denver, Colorado
80209

Ms. Carol Farr
Elbert County
Foreman of Road & Bridge
P.O. Box 116
Kiowa, CO 80117

Re: Legacy Circle Speed and Signage Study
Elbert County, Colorado

Dear Ms. Farr:

This letter has been prepared presenting the results of the Speed and Signage Study conducted along Legacy Circle in Elbert County, Colorado. The limits of this study were along Legacy Circle from its west and east intersections with SH 86. The west intersection aligns with Pinto Trail to the north, whereas the east intersection aligns with Cimarron Trail to the north. The length of the studied roadway segment is approximately 0.75 miles. This speed and signage study was prepared per the Manual on Uniform Traffic Control Devices (MUTCD), 2009 edition, standards and requirements.

A detailed field visit of the roadway conditions was conducted on Monday, December 9, 2013. This field visit measured expected travel speeds and other roadside characteristics as identified by the MUTCD when setting a speed limit including:

- A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
- B. The pace;
- C. Roadside development and environment; and
- D. Parking practices and pedestrian activity.

Legacy Circle is an undesignated, paved roadway, with a 35 mile per hour (mph) posted speed limit. Two R2-1 "SPEED LIMIT 35" signs are located along Legacy Circle, both just south of the SH 86 intersections for southbound traffic. The "T" intersection with Legacy Trail and the driveways for Legacy Academy and the Wal-Mart development are stop controlled. An exhibit showing the existing signage along Legacy Circle is attached to this letter.

Based on the speed evaluation of existing roadway characteristics, it is believed that the roadway should be posted at 30 mph instead of the existing 35 mph speed limit. Colorado State Statutes indicate that speed limits through



residential areas shall be posted at 30 mph and at 25 mph through business areas. The horizontal curves along Legacy Circle have a radius of approximately 500 feet, which equates to a design speed of 35 mph. It is customary to post the roadway at a speed less than the design speed. With the slower speed limit, a 5 mph reduction from design speed seems appropriate. In addition, there is a ridge or high point along the straightaway of Legacy Circle between Legacy Trail and the Walmart driveways. This ridge results in a fairly steep hill and reduced sight distance. This factor also supports lowering the speed limit to 30 mph. It is also recommended that Legacy Trail be posted at 30 mph instead of the existing 35 mph. The 30 mph speed limit is recommended due to its location through an existing residential area, roadway characteristics, shoulder condition, lack of centerline striping, and roadside environment.

A signage study was also conducted to evaluate the existing school zone signage along Legacy Circle for Legacy Academy. Two custom school speed limit assembly signs are located along Legacy Circle, both consisting of a custom school "SPEED LIMIT 20" sign with a S4-2P "WHEN CHILDREN ARE PRESENT" plaque below. The signs specify the timing of the school zone as Monday – Friday, 7:30am – 4:00pm. However, these two messages actually conflict. The "When Children are Present" message is intended to indicate that the school zone is in effect when school age children are arriving to and departing from school, not during the entire school day when they are within the building and school grounds. Additionally, a S1-1 School with W16-9P "AHEAD" plaque sign is installed approximately 275 feet in advance of the school speed limit sign for westbound traffic along Legacy Circle. There are two S5-2 "END SCHOOL ZONE" signs located for westbound and eastbound traffic leaving the school zones. See the attached exhibit for locations of the signs.

Based on a review of the existing school zone signage, the following are our recommendations:

- A S1-1 School Warning Sign with W16-9P "AHEAD" plaque is recommended to be installed along southeast bound Legacy Circle prior to the School Speed Limit Assembly as shown on the attached exhibit. This new sign assembly shall have a fluorescent yellow-green background with a black legend and border.
- The existing S1-1 School Warning Signs with W16-9P "AHEAD" plaques along westbound Legacy Circle and southbound Legacy Trail are yellow in color. The new 2009 MUTCD identifies the new school warning signs and plaques "shall" have a fluorescent yellow-green background with a black legend and border. Therefore, it is recommended that these two existing sign assemblies be replaced.
- Three new School Speed Limit Assembly signs are recommended, two along Legacy Circle and a third along Legacy Trail as shown on the attached exhibit. The "SCHOOL" portion of the signs shall have a fluorescent yellow-green background with a black legend and border.



Further, it is believed that the “WHEN CHILDREN ARE PRESENT” plaque on the existing School Speed Limit Assembly signs doesn’t work as well as a flashing beacon or a plaque that contains the actual times of school arrival and departure activity. If the budget doesn’t support the installation of flashing beacon assemblies, then it is recommended that plaques indicating the peak 30 minute arrival and departure intervals for Legacy Academy be added to the signs.

In addition, it was observed that the “STOP” sign on the northbound approach of Legacy Trail to Legacy Circle has been mounted too high above the adjacent roadway and is also likely substandard in size. Figure 1 below shows the existing sign.



Figure 1 - Stop Sign at Legacy Circle/Legacy Trail Intersection

When a sign is mounted higher than the standard height of 7 feet, there can be retro-reflectivity issues. The MUTCD recommends signs are mounted such that the bottom of the sign is located 7 feet above the ground surface in urban areas (due to pedestrian activity). For reference, in rural areas without pedestrian activity, signs can be mounted 5 feet above the ground. Further, the minimum “STOP” sign dimensions are 30-inch by 30-inch. Therefore, it is recommended that this substandard “STOP” sign be removed and a new 30-inch by 30-inch R1-1 “STOP” sign be installed at a mounting height of 7 feet from the ground to the bottom of the sign.

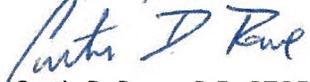


**Kimley-Horn
and Associates, Inc.**

*Ms. Carol Farr,
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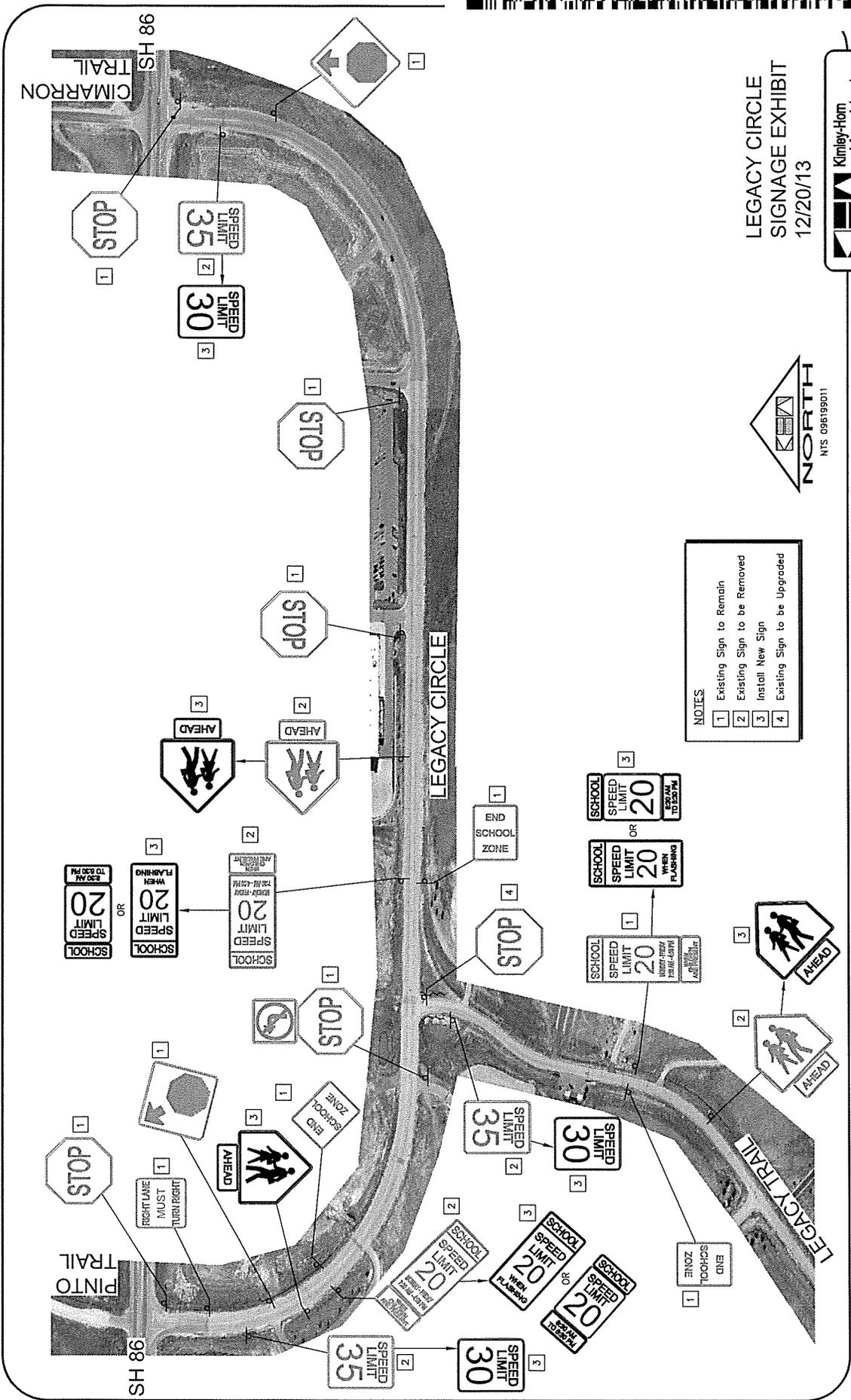
The sign recommendations described in this letter are also shown on the attached signage exhibit. We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Sincerely,
KIMLEY-HORN AND ASSOCIATES, INC.


Curtis D. Rowe, P.E., PTOE
Vice President

Attachment – Legacy Circle Signage Exhibit





- NOTES**
- 1 Existing Sign to Remain
 - 2 Existing Sign to be Removed
 - 3 Install New Sign
 - 4 Existing Sign to be Upgraded

LEGACY CIRCLE
 SIGNAGE EXHIBIT
 12/20/13

