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As contracted by the Town of Signal Mountain, Volkert, Inc. has conducted a Traffic Calming Study for the Hidden Brook neighborhood that includes selected sections of:

- Middle Creek Road,
- Hidden Brook Lane,
- Arden Way and
- Inverness Drive/Glamis Circle

A review of the local road network shows that Inverness Dr., Hidden Brook Ln., and Middle Creek Rd. provide a link between James Boulevard and Timberlinks Drive; more noticeably, the neighborhood streets provide a cut-through between Thrasher Elementary and Signal Mountain Middle High School. The speed limit for these local streets in this residential area is **25 mph**.

### Site Visit/Roadway Inventory

Three site visits were made to the area – Thursday, March 26<sup>th</sup>, Tuesday, April 7 and Thursday, April 9<sup>th</sup>. Speed data was collected on March 26<sup>th</sup> along Hidden Brook Lane between Arden Way and Whispering Pines Dr. The average speed based on the data collected was 34.9 mph. The highest speed recorded was 47 mph, the lowest speed recorded was 22 mph. It was noted that vehicles consistently observed and regarded four-way stop control intersections.

The vertical and horizontal curvature of the roadways were considered in the study. In the study area, Hidden Brook has an estimated 1300' section of roadway between Arden Way and Whispering Pines with gently rolling vertical curvature, particularly near Whispering Pines. There is some horizontal curvature, but the roadway is flat enough and straight enough in this area to allow cars to accelerate between Arden Way and the four-way stop at Whispering Pines.

From Whispering Pines, Hidden Brook travels over a hill and then about 907' to Cool Springs Rd. and continues another 1,294' on a 12% downgrade to Middle Creek Rd. Vehicles must accelerate to climb the hill past Whispering Pines and then brake to slow down while driving toward the Middle Brook intersection.

Inverness Dr. links James Boulevard to Hidden Brook Drive. About 500' from the James Boulevard intersection, Inverness takes a 90 degree turn to the left and –about 100' later, a 90 degree turn back to the right at the intersection of Woodbine Way. The roadway curvature serves to slow traffic along this section. From Woodbine Way, the roadway follows about a 9% grade for about 1000' where it ends at Glamis Circle. Glamis Circle continues on a steep grade – about 15%, and then flattens to a 90 degree left turn becoming Arden Way. Arden Way continues to Hidden Brook Drive

### Traffic Calming Considerations

Various traffic calming measures and practices were reviewed for this study. The *Institute of Transportation Engineers (ITE)* provides recommended policy and practice for traffic calming measures. Other local agencies' policies were also reviewed.

Most of the information reviewed included common factors for consideration in neighborhood traffic calming practices. These included:

- **Type/Use of Facility** – All reviewed literature indicated the use of speed bumps, speed humps, speed tables, choker curb extensions were appropriate for local neighborhood streets and not for major collector or arterial streets. The nature of the traffic – local neighborhood, cut-through, emergency routing, etc. indicates how the facility is used and is also a consideration.

The Hidden Brook neighborhood traffic appears to include a significant amount of cut-through traffic. Though it would be used by emergency vehicles for neighborhood traffic, these streets are neighborhood streets and not primary emergency routes.

- **Roadway Geometrics** – Most literature agrees that roadway width, horizontal and vertical curvature, and drainage are a consideration in traffic management applications. A typical grade limit is 8%. Vertical and horizontal curvature were a significant consideration for Inverness/Glamis and for Hidden Brook Drive from Whispering Pines to Middle Creek.
- **Speed/Accident Data** – Generally, the reason a traffic calming review is requested is a neighborhood concern over the speed of vehicles traveling through the neighborhood and associated safety issues. Some agencies consider an 85<sup>th</sup> percentile speed in excess of 10 mph over the posted speed limit to qualify a location for consideration. The average speed from the data collected at a site on Hidden Brook between Whispering Pines and Arden Way was 34.9 mph.
- **Emergency Vehicles** – The typical intent of traffic calming devices is to slow traffic. Consideration is given to the fact that emergency vehicles could experience some delay with the installation of traffic calming devices. Both the Signal Mountain Police and Fire Departments were consulted for this review and neither agency anticipated significant delay associated with these traffic calming devices.
- **Community Support** – A review of the literature strongly indicates that community support for these devices is significant to the success or failure of the traffic calming measures.

### Options for Traffic Calming

Most applications for traffic calming are geared toward slowing vehicles and there is some variety and some general criteria for selection. A general description of these applications are included in the Appendix.

- **Speed Bumps** – A speed bump is a raised area across the roadway. They generally have a height of 3-6 inches and a travel length of 1-3 feet. Speed bumps typically result in vehicles slowing to 5 mph or less. They are routinely installed on private roadways and in parking lots.



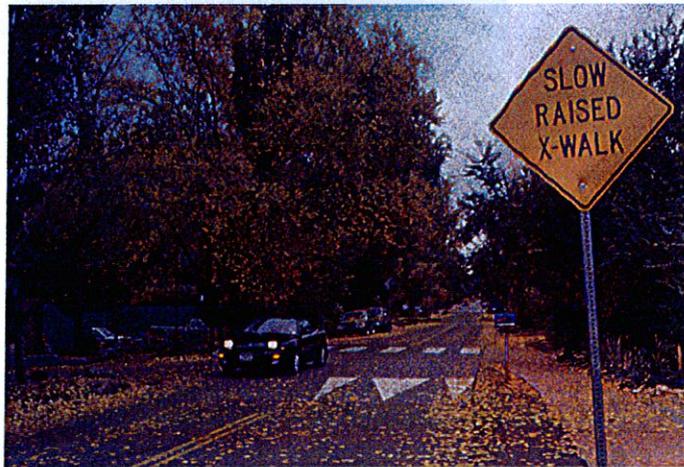
**Speed Bump**

- **Speed Humps** – A speed hump is a raised pavement area in the roadway pavement extending across the travel way. They are typically 3 – 3.5 inches high with a travel length of 12 – 14 feet. A speed hump would typically cause vehicles to slow to about 20 mph to cross.



**Speed Hump**

- **Speed Tables** – A speed table is essentially a flat-topped speed hump. They are typically 3-3.5 inches high with a travel length of 22 feet. Speed tables generally include a 10-foot plateau with 6-foot approaches on either side. They typically result in a vehicle operating speed of 25 – 30 mph.



**Speed Table**

- **Choker Curb Extensions** – These installations extend the curb to narrow the street. Some installations are narrowed to one lane and approaching vehicles must yield to vehicles in the choker. Two lane chokers can be expected to slow vehicles by an average of 4% for two-lane chokers and up to 20% for single lane chokers.



**Single Lane Choker Curb Extensions**

### **Recommendations**

Based on available information and the data collected, it is recommended that a speed hump be installed on Hidden Brook Lane between Windy Way and Shady Lane. It should include appropriate pavement markings and advance signing in accordance with the Manual of Uniform Traffic Control Devices (MUTCD)

It is recommended that the speed bumps on Middle Creek Rd. be removed and speed humps installed. It should include appropriate pavement markings and advance signing compliant with the MUTCD.

During the site visit, minimal traffic was observed on Arden Way. Arden Way is a neighborhood street but not on the “cut-through” path for non-resident vehicles. No action is recommended for Arden Way at this time.

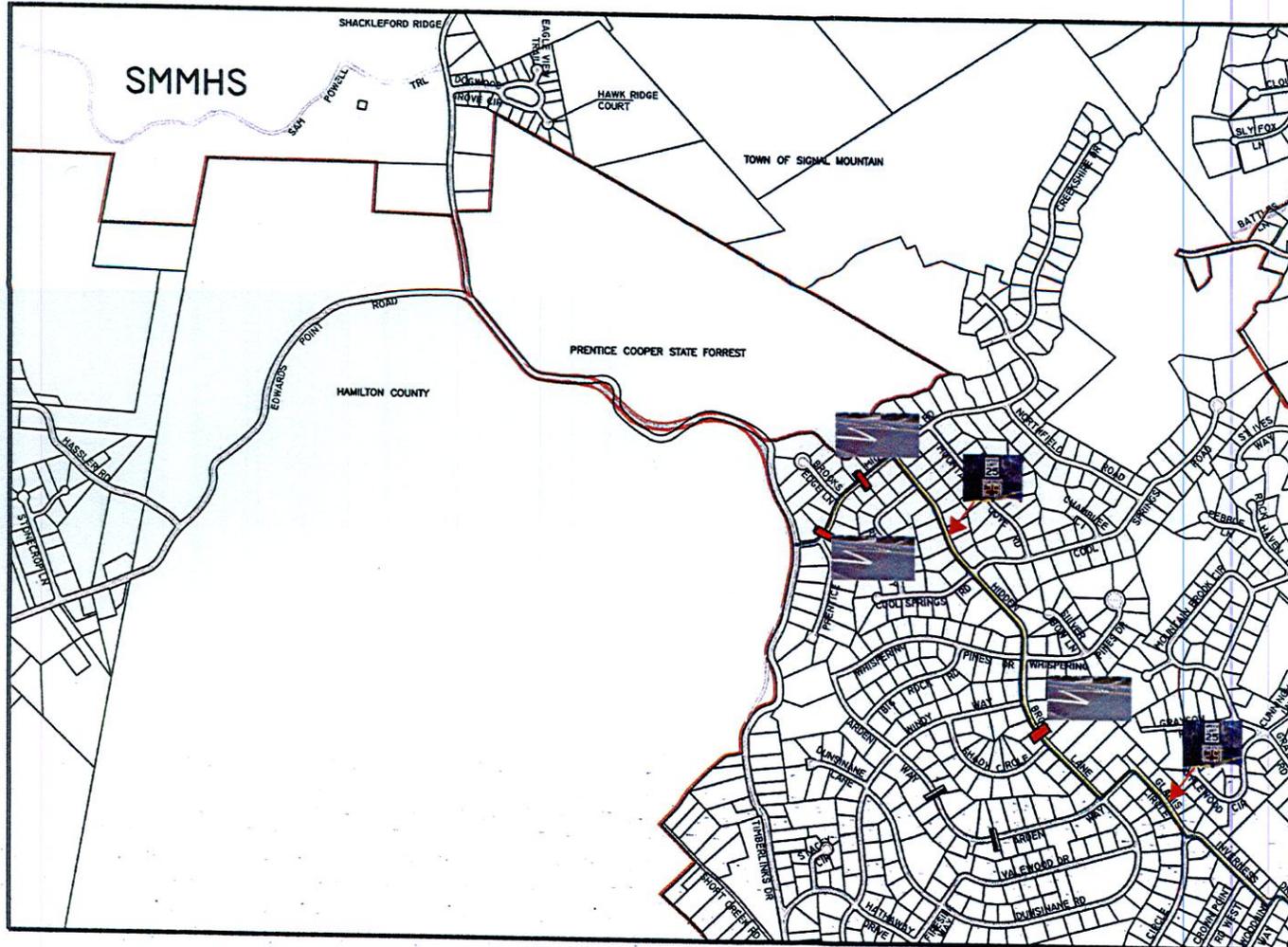
Because of grade concerns, the installations of speed bumps or humps are not recommended for the section of Inverness Dr./Glamis Circle and on Hidden Brook between Whispering Pines and Middle Creek. However, it is recommended that radar speed “feed back” signs be installed in series with the speed limit signs (R2-1) on the downgrade side of the roadway: on Glamis Circle located around 1119 and 1123 Glamis Circle. On Hidden Brook Lane, a recommended location would be in the vicinity of 33-37 Hidden Brook Lane.

The attached map shows approximate locations of recommended improvements.



**Radar Speed “Feed Back” Sign**

# TOWN OF SIGNAL MOUNTAIN MAP SHOWING SPEED BUMP LOCATIONS



- LEGEND**
- EXISTING SPEED BUMP
  - TOWN LIMITS
  - ARDEN WAY - STREET NAMES-typical
  - SMMHS - SIGNAL MTN MIDDLE/HIGH SCHOOL
  - PAVEMENT
  - Parcels
  - PROPOSED SPEED HUMP

**NOTES:**

1. THE ROADS THAT ARE HIGHLIGHTED WITH GREEN REPRESENT THE MAIN ROUTE THAT IS USED TO GET TO AND FROM SIGNAL MOUNTAIN MIDDLE/HIGH SCHOOL.
2. THE GREEN ROUTE IS ALONG LOCAL ROADS AND THROUGH RESIDENTIAL NEIGHBORHOOD AREAS.

