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Speed Limit Study

VILLAGES RESIDENTIAL ROADS

Sumter County, Florida

Prepared for:

Sumter County Board of County Commissioners

Prepared by:

Kimley-Horn and Associates, Inc.

142109022
October 2011
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INTRODUCTION

Kimley-Horn and Associates, Inc. was retained by Sumter County to evaluate the existing streets within the Sumter County portion of the Villages Development of Regional Impact (DRI) to identify cases where a 20 mph speed limit would not be appropriate. The speed limit study was initiated to support Ordinance 17-5 of the Sumter County Code, which was passed by the Sumter County Board of County Commissioners in July 2011. The following new section was added to Chapter 17 of the Code:

Section 17-5 Villages Speed Limits

All roads within The Villages of Sumter, Tri-County Villages of Sumter, and Villages of Wildwood, collectively referred to as "The Villages DRI", shall have a speed limit of 20 miles per hour, unless otherwise posted.

All roads within the Villages DRI located within Sumter County were reviewed to determine if the county-wide 20 mph speed limit is appropriate. General speed limit criteria were developed for different roadway categories. All of the roadways were driven and evaluated against the criteria to determine the appropriate speed limit. This report provides recommendations to install new speed limit signs or remove existing speed limit signs at specific locations based on the general speed limit criteria developed.

The overall objective of the study was to support the ordinance and the intent to limit the amount of location-specific speed limit signs within The Villages. In total, this study recommends 16 speed limit signs be installed, 11 neighborhood plaques be added to existing signs, and 50 speed limit signs be removed. In addition, Sumter County has identified 12 locations along the perimeter of The Villages for installation of county-wide speed limit signs.



EVALUATION CRITERIA

General criteria were developed to provide a recommended speed limit for different roadway categories. Per the Manual of Uniform Traffic Control Devices (MUTCD) section 2B.13, the following factors may be considered when establishing or reevaluating speed limits:

- A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
- B. The pace;
- C. Roadside development and environment;
- D. Parking practices and pedestrian activity; and
- E. Reported crash experience for at least a 12-month period.

These factors, in addition to the design criteria outlined in the 2007 Florida Greenbook for Residential Street design, were evaluated to develop general speed limit criteria for the residential roadways within the Villages DRI. The criteria included a 75 foot allowable centerline curve radius for a 20 mph design speed based on the County exception to the Florida Greenbook minimum of 89 feet.

Prior to adoption of Ordinance 17-5, the speed limit on all roadways without a posted speed limit sign was 30 mph. The intent of Ordinance 17-5 was to limit the amount of location specific signage. Generally, a 20 mph speed limit is appropriate for the residential streets within The Villages because golf carts share the road with automobiles. However, there are specific roadway types where a different speed is appropriate.

There are minor collector roadways that are used to connect neighborhoods. These roadways do not have houses directly on them and generally have dedicated on-street golf cart lanes. The pace and characteristics of these roadways dictate a posted speed greater than 20 mph. Generally, vehicles expect to travel faster than golf carts on this type of roadway. Therefore, the recommended speed limit for this type of roadway is 30 mph. Most of these roadways are currently signed between 25 and 35 mph, which is an acceptable range of speeds for this type of road.

There are residential streets within neighborhoods that have dedicated on-street golf cart lanes but also have driveways directly accessing the road. The driveways introduce additional turning conflicts and the potential for parking on the roadway, so a speed limit less than 30 is desirable. Vehicles will still expect to travel faster than golf carts on this type of roadway, so a 25 mph speed limit is recommended. In some instances, to reduce the amount of location specific signage, the 20 mph default speed limit is acceptable.



There are some residential streets where a speed limit less than 20 mph is appropriate. Some roadways have short driveways where street parking is common. Some roadways have horizontal curves that are difficult to maneuver at 20 mph. For these roadways, a 15 mph speed is recommended. Some locations require only an advisory sign approaching the curve (MUTCD sign W13-1P). If a roadway is a loop or contains several curves, a regulatory speed limit sign is recommended to reduce the number of advisory signs needed.

In some instances, a neighborhood has several roadways that have horizontal curvature that requires a lower speed. For this scenario, a regulatory speed limit sign is recommended with a “Neighborhood” (MUTCD sign R2-5bP) plaque installed above and “Unless Otherwise Posted” (MUTCD sign R2-5P) plaque installed under the speed limit plaque. This will reduce the number of required signs. The applicable section of the MUTCD outlining the use of these signs is included as an attachment to this document.

Table 1 summarizes the general speed limit criteria developed for different roadway classifications, as outlined above.

Table 1 – General Speed Limit Criteria

<i>Roadway Classification</i>	<i>Recommended Speed Limit</i>
Residential Streets	20 mph
Residential Streets with restricting horizontal curvature	10-15 mph
Minor Collectors with on-street dedicated golf cart lanes and no driveways on the road	25-30 mph
Residential Streets with on-street dedicated golf cart lanes and driveways on the road	20-25 mph
Villas	10-15 mph



RECOMMENDATIONS

A windshield review was performed for all streets within the Villages DRI. All roadways were driven and evaluated against the criteria to determine the appropriate speed limit. The existing posted speed limits were inventoried. Listed below are the recommendations from the speed limit study. The attached **Exhibit A** illustrates each recommendation along with the corresponding recommendation number from **Table 2** below.

Table 2 outlines the locations where a speed limit sign is recommended to be installed. The installation includes the sign panel and post assembly. The table outlines the existing speed limit, proposed speed limit, sign type recommended (regulatory, advisory, or neighborhood) and the criteria used to evaluate the recommended speed limit.

Table 2 – Recommended Sign Installation Locations

	Roadway	Existing Speed Limit	Proposed Speed Limit	Sign Type	Criteria
1	Bedford Way	30 mph (unposted)	15 mph	Neighborhood	Horizontal Curvature
2	Carriage Houses	30 mph (unposted)	10 mph	Regulatory	Close Driveway Spacing, Narrow Roadways
3	Summerchase	30 mph (unposted)	10 mph	Neighborhood	Close Driveway Spacing, Narrow Roadways
4	Merida Cir, N of Enrique Dr	30 mph (unposted)	15 mph	Neighborhood	Horizontal Curvature
5	Tamarindo Dr, approaching circle	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
6	Enrique Dr, west of Cazaras Ave	25 mph (signed EB)	25 mph	Regulatory	Sign Missing in Westbound Direction
7	Salido Avenue, west of Saldivar Rd	30 mph (unposted)	15 mph	Advisory	Horizontal Curvature
8	Zargoza Place, south of Madero Dr	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
9	Cimmaron, south of San Marino Dr	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
10	Weston Manor, S of Anniston Drive	25 mph	15 mph	Regulatory	Horizontal Curvature



Table 2 cont. – Recommended Sign Installation Locations

	<i>Roadway</i>	<i>Existing Speed Limit</i>	<i>Proposed Speed Limit</i>	<i>Sign Type</i>	<i>Criteria</i>
11	Pennecamp Drive, E of Pennecamp Dr	25 mph (signed WB)	25 mph	Regulatory (decorative)	Sign Missing in Eastbound Direction
12	Markridge Loop	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
13	Greenville Way, approaching circle	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
14	Isle of Palms Path, west of Canal Street	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
15	Poppy Circle, N of Shellbark Way	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature
16	Ainsworth Circle	30 mph (unposted)	15 mph	Regulatory	Horizontal Curvature

Table 3 outlines the locations where neighborhood plaques are recommended to be installed on existing 15 mph speed limit signs.

Table 3 – Recommended Neighborhood Plaque Installation Locations

	<i>Roadway</i>	<i>Location</i>
17	Pennecamp Road, westbound	East of Harding Path
18	Nobleton Lane, westbound	West of Pennecamp Road
19	Albion Way, southbound	South of Pennecamp Road
20	Grenadier Way, northbound	North of Tamarind Grove Run
21	Southwood Drive, northbound	North of Tamarind Grove Run
22	Tamarind Grove Run, westbound	West of Southwood Drive
23	Adelphi Ave, northbound	North of St. Charles Place
24	Neptune Drive, northbound	North of St. Charles Place
25	Dove Hollow Run, southbound	South of St. Charles Place
26	Reedy Creek Place, westbound	West of Bailey Trail
27	Parksville Path, eastbound	East of Canal Street



Table 4 outlines the locations where an existing speed limit sign is recommended to be removed. Where speed limit signs are recommended to be removed, the roadway will have a default speed limit of 20 mph based on Ordinance 17-5. The roadways listed in **Table 4** were evaluated to be acceptable for a 20 mph speed limit. In some cases a higher speed is acceptable, but based on discussions with Sumter County staff, the default 20 mph speed is recommended to reduce the number of location specific signs.

Table 4 – Recommended Sign Removal Locations

	<i>Roadway</i>	<i>Existing Speed</i>		<i>Roadway</i>	<i>Existing Speed</i>
28	Oak Forest Drive N	25 mph	52	Abordale Lane	15 mph
29	Oak Forest Drive S	25 mph	53	Arrobes Place	15 mph
30	Davenport Drive	15 mph	54	Bluffton Road	10 mph
31	Palo Alto Avenue	25 mph	55	Southern Star Way	15 mph
32	Soledad Way	25 mph	56	Barksdale Drive	15 mph
33	Navarro Court	25 mph	57	Ridgeland Path	15 mph
34	Carrera Drive	25 mph	58	Shellbark Way	15 mph
35	Morven Park Way (2 signs)	25 mph	59	Abner Street	15 mph
36	Ternberry Forest Dr	15 mph	60	Harston Trail	15 mph
37	Woodruff Street	15 mph	61	Ambrosia Place	15 mph
38	Thompson Avenue	15 mph	62	Dunkirk Trail	15 mph
39	Lockhart Avenue	15 mph	63	Havana Trail	15 mph
40	Lodge Place	15 mph	64	Homeland Park Street	15 mph
41	Goose Creek	15 mph	65	Raintree Drive	15 mph
42	Timmons ville Way (2 signs)	15 mph	66	Heath Springs Drive	15 mph
43	Pomaria Place	15 mph	67	Alandari Lane	15 mph
44	Intersection of Starr & Hardeeville	15 mph	68	Ardson Ave	15 mph
45	Bishopville Loop	25 mph	69	Gatsby Lane	15 mph
46	Mt Groghan Trail	15 mph	70	Barnsdale Run	15 mph
47	Ridgeville Road	15 mph	71	Rhapsody Path, E of Dunkirk	15 mph
48	Murphy’s Estate Drive	15 mph	72	Rhapsody Path, E of Beaumont	15 mph
49	Swordfish Terrace	25 mph	73	French Oak Avenue	15 mph
50	Triggerfish Run (2 signs)	15 mph	74	Bonifay Path	15 mph
51	Queen Palm Place	15 mph			



In addition, there were several villas identified that do not have a posted speed limit sign. Because the villas have close driveway spacing and narrow roadways, all villas should be posted at 10 mph. Furthermore, the MUTCD neighborhood plaques (R2-5bP and R2-5P) should be installed on the villa speed limit signs, since the signs are posted only at the entrance to each villa.

The villas are under the maintenance of the VCCDD; therefore, it is not within Sumter County’s jurisdiction to install the recommended signage. A copy of this report will be provided to the VCCDD for their review and possible implementation. The villas with missing speed limit signs were identified and are listed in **Table 5** below for reference.

Table 5 – Villas without a posted speed limit (not under Sumter County maintenance)

<i>Villa Name</i>	<i>Intersecting Road 1</i>	<i>Intersecting Road 2</i>
Carriage Houses	Glenview	
Santo Domingo	Cazaras Ave	Almanza Drive
Belmont	Thistledown Way	Leicester Terr
Cherry Hill	Belvedere Blvd	Green Hill Trail
Ezel	Callaway Drive	Valverda Dr
Clifton	Belvedere Blvd	Clifton Hill Drive
Bellamy	Lynnhaven Lane	Bellamy Ln
Collington	Evelynton Loop	Collington Dr
San Miguel	Morse Blvd	Medina Ave
De La Vista West	Morse Blvd	Moreno Place
Apalachee	Buttonwood Run	Apalachee Ave
Hickory Grove	Lakewood Dr	Hickory Grove Ln
Hampton	Odell Circle	Red Hill Road
Carlton	Odell Circle	Carlton Lane
Katherine	Stillwater Trail	Katherine Place
Alexa	Timmons ville Way	Alexa Place
Montbrook	Ansley Path	Montbrook Pl
Bailey Ridge	Bailey Trail	Flemings Pl
Audrey	Inner Circle	Audrey Ln
Groewood	Dunkirk Trail	Groewood Pl



SUMMARY

This document summarizes the evaluation criteria and recommendations from the speed limit study performed for Sumter County roadways within the Villages DRI. The purpose of the study was to determine areas where a 20 mph speed limit is not appropriate and recommend an alternate speed limit. Locations were identified for installation and/or removal of appropriate signage to support the recommended speed limits. The intent of the study is to support Ordinance 17-5 of the Sumter County Code and to limit the number of location specific signs within the Villages DRI.

In total, 16 speed limit signs are recommended to be installed, 11 neighborhood plaques are recommended to be added to existing signs, and 50 speed limit signs are recommended to be removed. In addition, Sumter County has identified 12 locations around the perimeter of the Villages DRI where citywide regulatory speed limit signs will be posted to notify drivers of the citywide 20 mph speed limit. In summary, 22 more signs will be removed than installed. Furthermore, the signs that will be removed can be relocated to the locations where signs are recommended to be installed. **Table 6** below summarizes the study recommendations.

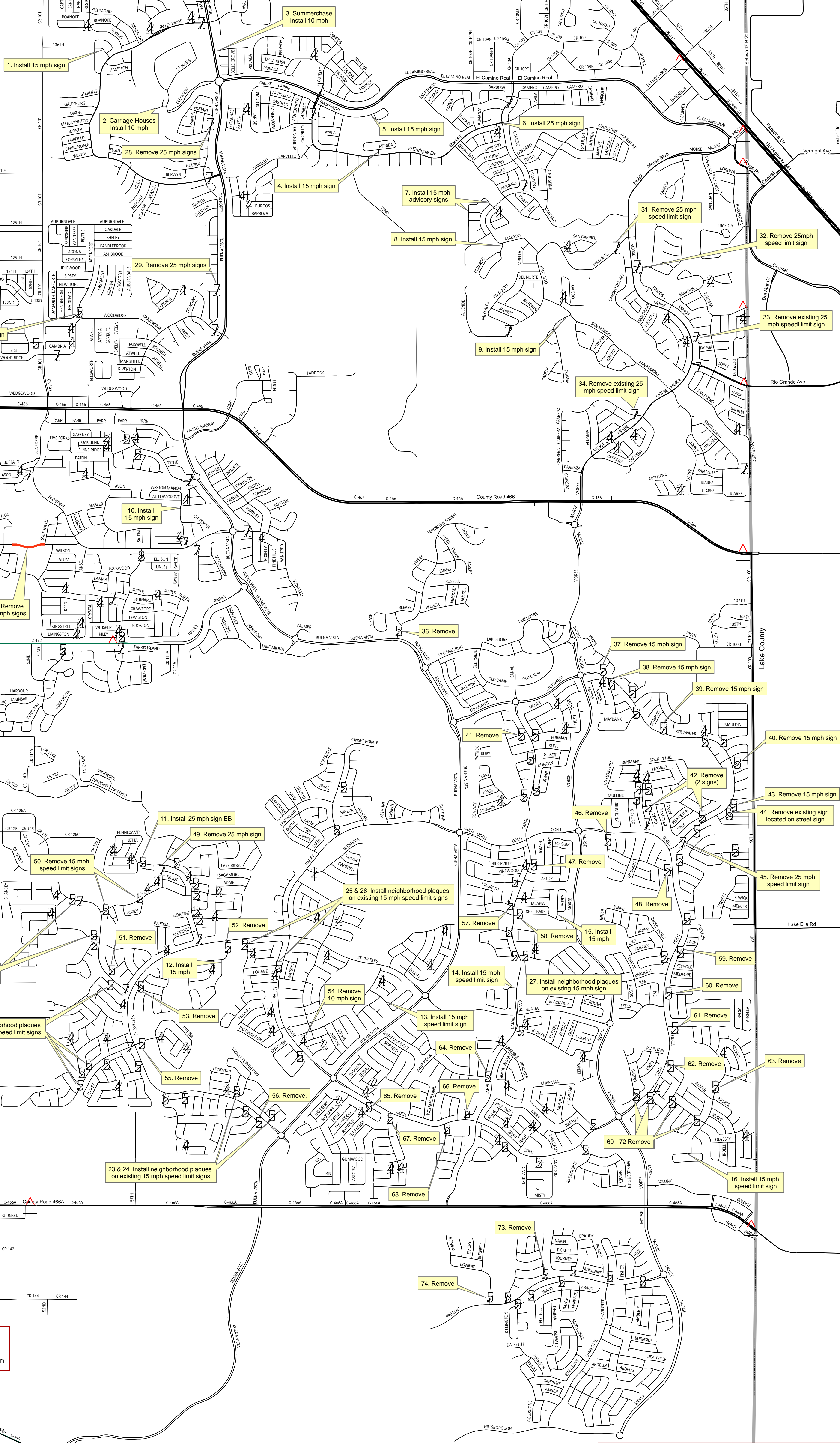
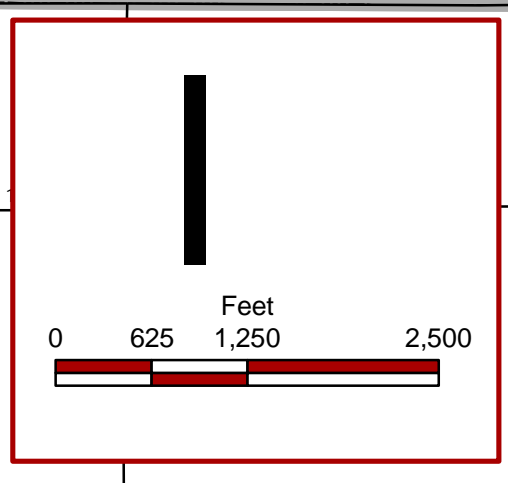
Table 6 – Study Recommendations Summary

<i>Action</i>	<i>Total</i>
Install Citywide Speed Limit Signs	12
Install Speed Limit Signs	16
Add Neighborhood Plaques	11
Remove Speed Limit Signs	50
Net Signs Reduced (Remove – Install)	22



EXHIBIT A

RECOMMENDATIONS MAP



Legend:
 Sumter County Identified Location of New Citywide 20mph Speed Limit Sign

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Exhibit A: Recommendations Villages Residential Speed Study



EXCERPT FROM THE MUTCD

02 Highway agencies may develop and apply criteria for determining the applicability of In-Street Pedestrian Crossing signs.

Standard:

03 **If used, the In-Street Pedestrian Crossing sign shall be placed in the roadway at the crosswalk location on the center line, on a lane line, or on a median island. The In-Street Pedestrian Crossing sign shall not be post-mounted on the left-hand or right-hand side of the roadway.**

04 **If used, the Overhead Pedestrian Crossing sign shall be placed over the roadway at the crosswalk location.**

05 **An In-Street or Overhead Pedestrian Crossing sign shall not be placed in advance of the crosswalk to educate road users about the State law prior to reaching the crosswalk, nor shall it be installed as an educational display that is not near any crosswalk.**

Guidance:

06 *If an island (see Chapter 3I) is available, the In-Street Pedestrian Crossing sign, if used, should be placed on the island.*

Option:

07 If a Pedestrian Crossing (W11-2) warning sign is used in combination with an In-Street or an Overhead Pedestrian Crossing sign, the W11-2 sign with a diagonal downward pointing arrow (W16-7P) plaque may be post-mounted on the right-hand side of the roadway at the crosswalk location.

Standard:

08 **The In-Street Pedestrian Crossing sign and the Overhead Pedestrian Crossing sign shall not be used at signalized locations.**

09 **The STOP FOR legend shall only be used in States where the State law specifically requires that a driver must stop for a pedestrian in a crosswalk.**

10 **The In-Street Pedestrian Crossing sign shall have a black legend (except for the red STOP or YIELD sign symbols) and border on a white background, surrounded by an outer yellow or fluorescent yellow-green background area (see Figure 2B-2). The Overhead Pedestrian Crossing sign shall have a black legend and border on a yellow or fluorescent yellow-green background at the top of the sign and a black legend and border on a white background at the bottom of the sign (see Figure 2B-2).**

11 **Unless the In-Street Pedestrian Crossing sign is placed on a physical island, the sign support shall be designed to bend over and then bounce back to its normal vertical position when struck by a vehicle.**

Support:

12 The Provisions of Section 2A.18 concerning mounting height are not applicable for the In-Street Pedestrian Crossing sign.

Standard:

13 **The top of an In-Street Pedestrian Crossing sign shall be a maximum of 4 feet above the pavement surface. The top of an In-Street Pedestrian Crossing sign placed in an island shall be a maximum of 4 feet above the island surface.**

Option:

14 The In-Street Pedestrian Crossing sign may be used seasonably to prevent damage in winter because of plowing operations, and may be removed at night if the pedestrian activity at night is minimal.

15 In-Street Pedestrian Crossing signs, Overhead Pedestrian Crossing signs, and Yield Here To (Stop Here For) Pedestrians signs may be used together at the same crosswalk.

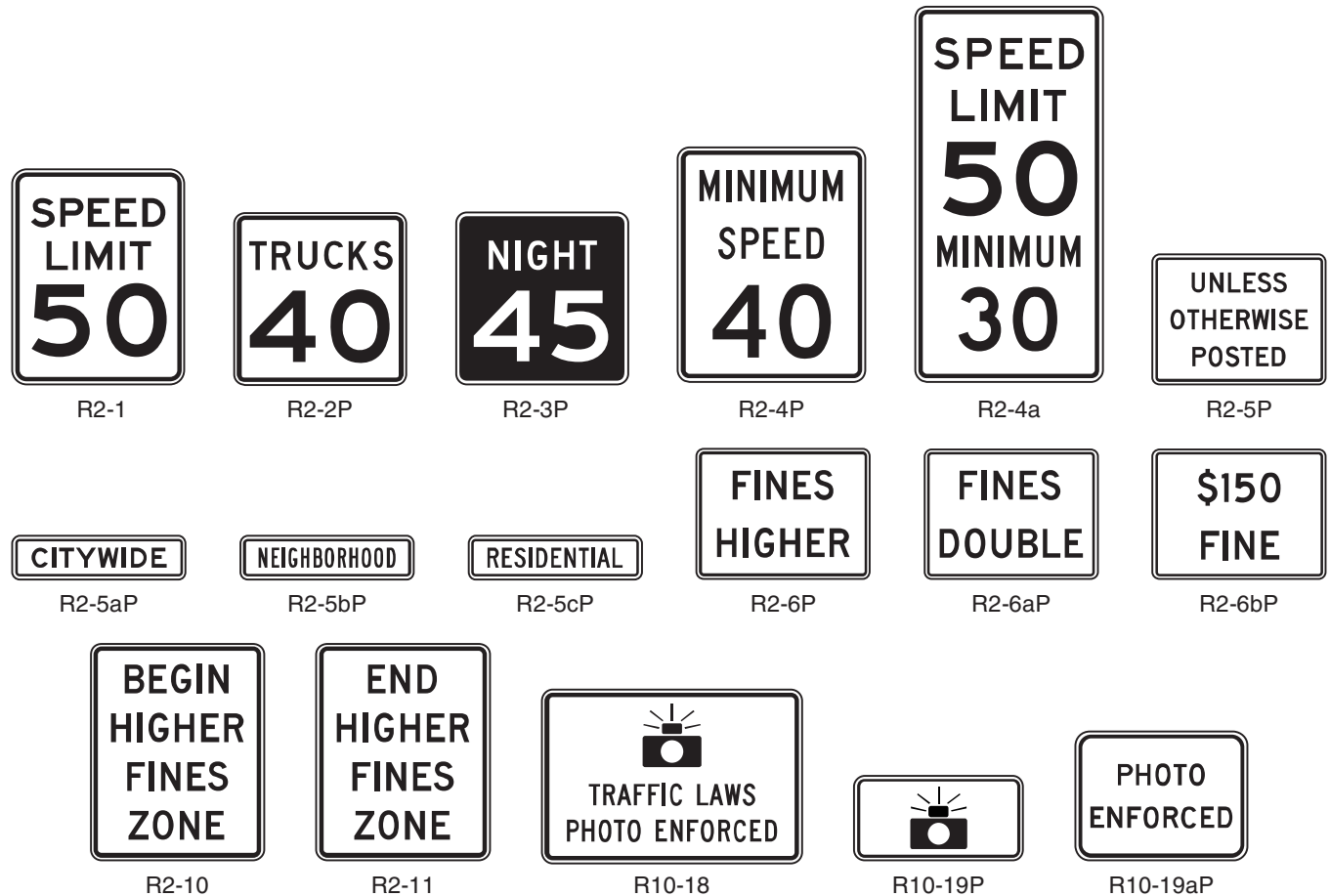
Section 2B.13 Speed Limit Sign (R2-1)

Standard:

01 **Speed zones (other than statutory speed limits) shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices. The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles.**

02 **The Speed Limit (R2-1) sign (see Figure 2B-3) shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency based on the engineering study. The speed limits displayed shall be in multiples of 5 mph.**

03 **Speed Limit (R2-1) signs, indicating speed limits for which posting is required by law, shall be located at the points of change from one speed limit to another.**

Figure 2B-3. Speed Limit and Photo Enforcement Signs and Plaques

- 04 **At the downstream end of the section to which a speed limit applies, a Speed Limit sign showing the next speed limit shall be installed. Additional Speed Limit signs shall be installed beyond major intersections and at other locations where it is necessary to remind road users of the speed limit that is applicable.**
- 05 **Speed Limit signs indicating the statutory speed limits shall be installed at entrances to the State and, where appropriate, at jurisdictional boundaries in urban areas.**
Support:
- 06 In general, the maximum speed limits applicable to rural and urban roads are established:
- A. Statutorily – a maximum speed limit applicable to a particular class of road, such as freeways or city streets, that is established by State law; or
 - B. As altered speed zones – based on engineering studies.
- 07 State statutory limits might restrict the maximum speed limit that can be established on a particular road, notwithstanding what an engineering study might indicate.
- Option:
- 08 If a jurisdiction has a policy of installing Speed Limit signs in accordance with statutory requirements only on the streets that enter a city, neighborhood, or residential area to indicate the speed limit that is applicable to the entire city, neighborhood, or residential area unless otherwise posted, a CITYWIDE (R2-5aP), NEIGHBORHOOD (R2-5bP), or RESIDENTIAL (R2-5cP) plaque may be mounted above the Speed Limit sign and an UNLESS OTHERWISE POSTED (R2-5P) plaque may be mounted below the Speed Limit sign (see Figure 2B-3).

Guidance:

- 09 *A Reduced Speed Limit Ahead (W3-5 or W3-5a) sign (see Section 2C.38) should be used to inform road users of a reduced speed zone where the speed limit is being reduced by more than 10 mph, or where engineering judgment indicates the need for advance notice to comply with the posted speed limit ahead.*
- 10 *States and local agencies should conduct engineering studies to reevaluate non-statutory speed limits on segments of their roadways that have undergone significant changes since the last review, such as the addition or elimination of parking or driveways, changes in the number of travel lanes, changes in the configuration of bicycle lanes, changes in traffic control signal coordination, or significant changes in traffic volumes.*
- 11 *No more than three speed limits should be displayed on any one Speed Limit sign or assembly.*
- 12 *When a speed limit within a speed zone is posted, it should be within 5 mph of the 85th-percentile speed of free-flowing traffic.*
- 13 *Speed studies for signalized intersection approaches should be taken outside the influence area of the traffic control signal, which is generally considered to be approximately 1/2 mile, to avoid obtaining skewed results for the 85th-percentile speed.*

Support:

- 14 Advance warning signs and other traffic control devices to attract the motorist's attention to a signalized intersection are usually more effective than a reduced speed limit zone.

Guidance:

- 15 *An advisory speed plaque (see Section 2C.08) mounted below a warning sign should be used to warn road users of an advisory speed for a roadway condition. A Speed Limit sign should not be used for this situation.*

Option:

- 16 Other factors that may be considered when establishing or reevaluating speed limits are the following:
- A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
 - B. The pace;
 - C. Roadside development and environment;
 - D. Parking practices and pedestrian activity; and
 - E. Reported crash experience for at least a 12-month period.
- 17 Two types of Speed Limit signs may be used: one to designate passenger car speeds, including any nighttime information or minimum speed limit that might apply; and the other to show any special speed limits for trucks and other vehicles.
- 18 A changeable message sign that changes the speed limit for traffic and ambient conditions may be installed provided that the appropriate speed limit is displayed at the proper times.
- 19 A changeable message sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit sign.

Guidance:

- 20 *If a changeable message sign displaying approach speeds is installed, the legend YOUR SPEED XX MPH or such similar legend should be displayed. The color of the changeable message legend should be a yellow legend on a black background or the reverse of these colors.*

Support:

- 21 Advisory Speed signs and plaques are discussed in Sections 2C.08 and 2C.14. Temporary Traffic Control Zone Speed signs are discussed in Part 6. The WORK ZONE (G20-5aP) plaque intended for installation above a Speed Limit sign is discussed in Section 6F.12. School Speed Limit signs are discussed in Section 7B.15.

Section 2B.14 Truck Speed Limit Plaque (R2-2P)**Standard:**

- 01 **Where a special speed limit applies to trucks or other vehicles, the legend TRUCKS XX or such similar legend shall be displayed below the legend Speed Limit XX on the same sign or on a separate R2-2P plaque (see Figure 2B-3) below the standard legend.**

Section 2B.15 Night Speed Limit Plaque (R2-3P)**Standard:**

- 01 **Where different speed limits are prescribed for day and night, both limits shall be posted.**