

*Citywide Traffic Sign Inventory and  
Management System*

*City of Oak Hill*

**Davidson County, Tennessee**

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## **BACKGROUND**

The purpose of this project was to develop a citywide sign inventory system documenting data such as location and current condition of each of the city-maintained traffic signs. The data collection process was also used as an opportunity to assess the existing signage and identify deficiencies and/or improvement recommendations. The identification of deficiencies and recommendations are based on engineering judgment and the new laws and standards required in the Federal Highway Administration's (FHWA) 2009 Manual on Uniform Traffic Control Devices (MUTCD). In addition to assisting the City comply with these new standards, the installation of this system will aid the city in prioritizing future funding for traffic sign maintenance and installation.

## **SIGN MANAGEMENT SOFTWARE**

### **SOFTWARE SELECTION**

In order to efficiently manage and access the traffic sign inventory, an infrastructure management software was researched and selected. After examining the costs and features of several similar programs, the InfrastructureCONSultant (ICON) software suite developed by GoodPointe Technology, Inc. was chosen. This web-based program allows the user to view sign locations using interactive GIS mapping technology, access digital photographs of the signs, summarize current sign conditions, tabulate signs that need attention, track maintenance as it is performed, and return various other queries.

### **SOFTWARE TRAINING AND TUTORIAL**

On April 9-10, 2012, Kimley-Horn staff attended a training seminar presented by GoodPointe Technology. The training demonstrated typical uses and functions of the ICON software and how it can be utilized for the City of Oak Hill specifically. City staff may find access to the program and knowledge of certain functions particularly useful. Accordingly, a short tutorial illustrating the principles behind basic tasks within the program is included in Appendix I.

## DATA COLLECTION

### TRAFFIC SIGN SURVEY

Approximately 49 miles of roadway were reviewed by way of digital survey and field measurements, cataloging all traffic signs within the Oak Hill city limits. This survey included the following data for each existing sign:

- Sign type (MUTCD code, if applicable)
- Sign size
- Mounting height
- Offset from roadway
- Location (GPS coordinates)
- Sign image (digital photograph)
- Sign post type
- Sign condition

Please refer to Appendices A and B for a list of signs by type and also maps showing the overall sign network, regulatory signs, warning signs and school signs.

### FIELD OBSERVATIONS

In addition to the digital survey and field measurements, field observations were made by a team of two on May 1-3, 2012. While taking into account factors such as traffic patterns, roadway layout, sight distance, and MUTCD standards, the team used engineering judgment to assess:

1. the current need of each existing sign
2. the current location of each existing sign
3. the retroreflectivity of each existing sign, and
4. the current need for additional signs.

## **OBSERVATION SUMMARY AND RECOMMENDATIONS**

Based on the digital survey and field observations, recommendations are made to remove, relocate, and / or replace existing signs or install additional signs. Below is a summary of general observations and corresponding recommendations. The complete list of recommendations can be found in Appendices C-F.

### **SPEED LIMIT SIGNS**

There are approximately 130 regulatory Speed Limit (R2-1) signs within the City. Approximately 105 of them are the standard size (24" x 30") while the remaining signs are the minimum allowable size (18" x 24"). For consistency throughout the City and as part of a traffic calming initiative, the 18" x 24" R2-1 signs should be replaced with the 24" x 30" size.

### **STREET NAME SIGNS**

The decorative street name signs within the City do not comply with the current MUTCD. In accordance with Section 2D.43, "the lettering for names of streets and highways on Street Name signs shall be composed of a combination of lower-case letters with initial upper-case letters." Additionally, the only acceptable color combinations for Street Name signs are a green, brown, or blue background with a white legend (text), or a white background with a black legend. If the City wishes to comply with these MUTCD standards, all existing decorative street name signs (approximately 386 with a black background and white capital letters) need to be replaced.

### **STOP SIGNS**

There are approximately 185 regulatory STOP (R1-1) signs within the City. All stop signs are the standard size (30" x 30"). Therefore, no changes are recommended to the R1-1 signs themselves. However, there are approximately 18 all-way stop intersections within the City. Current MUTCD standards require these locations to have an ALL WAY plaque (R1-3P) mounted below each STOP sign. A majority of these locations either lack the required supplemental plaque, or include a supplemental plaque that is now prohibited (i.e. 3-WAY, 4-WAY). For compliance with the MUTCD, an R1-3P sign should be mounted below each STOP sign at every intersection that operates under all-way stop control.

As discussed with the City previously, the excessive use of stop signs or all-way stop controlled intersections often does not reduce speeding in the area and results in various negative consequences such as:

- Increased speeds in the vicinity of the stop sign to compensate for lost time from stopping at the unwarranted stop sign
- Violations of adjacent warranted stop signs or other traffic signs caused by motorist contempt
- Potential increase of rear-end accidents
- Increased pollution

Therefore, it is recommended that unwarranted stop signs be removed. Appendix G contains a map of Oak Hill's traffic signal and all-way stop controlled intersections. By converting unnecessary all-way stop intersections to more appropriate two-way stop intersections, it is estimated that approximately 20 stop signs may be removed (i.e. convert 10 all-way stop intersections to two-way stop intersections). However, additional information is required to properly determine which stop signs are unwarranted.

A more detailed discussion of issues with unwarranted stop signs may be found in the brochure "Will STOP Signs Slow Traffic on Our Streets?" published by Metro Nashville Public Works.

### **SCHOOL ZONE SIGNS**

There are several regulatory and warning signs associated with traffic control for school areas. There are existing yellow signs that indicate the morning time period and afternoon time period during which a school speed zone occurs. There are also existing yellow END SCHOOL ZONE signs. However, yellow signs are considered warning signs and cannot technically be enforced. Therefore, approximately 35 yellow (warning) school signs should be replaced with white (regulatory) school signs.

While general warning signs are to be yellow, the MUTCD requires school-related warning signs to be a distinct color. In accordance with Section 7B.07, "School warning signs...shall have a fluorescent yellow-green background with a black legend and border." There are approximately 30 yellow school warning signs that should be replaced with fluorescent yellow-green signs.

## **WARNING SIGNS**

All roads within the City were driven at the posted speed limit to determine if horizontal warning signs should be removed, relocated, or installed. In addition to the majority of the signs not being retroreflective, some existing warning signs do not effectively portray the upcoming roadway conditions and should be replaced with a more applicable sign. Roads such as Otter Creek Road, Overton Lea Road, North Curtiswood Lane, and South Curtiswood Lane are significantly undersigned. Additionally, many existing warning signs along these roads are misplaced and inappropriate for the conditions. Due to their particularly hazardous nature, the signage recommendations made for these roads should be considered high priority.

A study conducted by KHA and submitted to the City on March 4, 2010 provides a detailed description of signage recommendations for South Curtiswood Lane. The original report is attached in Appendix H. The recommendations found therein still apply and are included with the complete list of recommendations in Appendices C-F.

There are several locations within the City where a motorist travels through a 90-degree turn along the roadway. Examples include (but are not limited to) Cadillac Avenue, Morriswood Drive/Omandale Drive, Lambert Drive, Melville Drive/General Bate Drive, and Hillview Drive/Lambert Drive. Horizontal warning signage is either absent, obstructed by vegetation, and/or in need of additional signs. Many of these do not include a supplemental warning speed limit plaque. These are greatly needed since it is very unsafe for motorists to make the 90-degree turn at posted speed limits. Locations of these 90-degree turns should be evaluated, existing warning sign locations should be removed, and new warning sign locations should be installed. This will accomplish both the retroreflectivity requirements as well as better communicate the upcoming 90-degree turn (and possibly a lower advisory speed) to the motorists.

In addition to the 90-degree turn locations, there are other horizontal curves that have a larger radius but still seem possibly unsafe for a motorist traveling at the posted speed limit. Examples include (but are not limited to) Grassland Lane, Hazelwood Circle, and Glendale Lane/Pasadena Drive. At some locations, a vertical slope is also a contributing factor to a section of roadway possibly being unsafe to drive at the posted speed limit. One example of the combination of horizontal and vertical curvature is Ridgeview Drive. This curve is currently signed with



nonstandard DANGEROUS CURVE AHEAD warning signs, and should be replaced with standard MUTCD signs (W1-11 with W13-1P) to more accurately portray the road geometry as soon as possible. The warning signage should be improved at curve locations where the posted speed limit may be unsafe for motorists.

There are approximately 35 STOP AHEAD (W1-3) warning signs within the City. Only 1 of these signs is the symbol sign as recommended in the MUTCD; the remaining signs consist only of the “STOP AHEAD” text. Since nearly all of these W1-3 signs do not satisfy the retroreflectivity requirements, all ‘text only’ STOP AHEAD signs should be replaced with ‘symbol’ signs that satisfy the MUTCD retroreflectivity requirements.

### **EXCESSIVE WARNING SIGNS**

Some warning signs have been proven to do more harm than good. Warning signs such as Deer Crossing (W11-3), Slippery When Wet (W8-5), and “Blind Drive” or “Hidden Drive” have little effect on driver behavior and tend to breed disrespect for all warning signs. Further, these types of signs set an implied precedent that roads will always be signed in locations where 1) a deer may enter the roadway, 2) roads may become slippery, or 3) driveways may be obstructed. Since it is impossible to sign every location where these types of instances may occur, these existing signs should be removed. Combined, there are approximately 10 of these signs.

Similarly, studies have shown that SLOW CHILDREN AT PLAY signs have little effect on driver behavior and provide a false sense of security to the residents. Therefore, it is recommended that all of the approximately 10 SLOW CHILDREN AT PLAY signs be removed.

Additional information regarding why these signs are not helpful and should be removed may be found in the following references:

- “Will CHILDREN AT PLAY Signs Slow Traffic on Our Streets?”
  - Metro Nashville Public Works
- Traffic Calming Program Handbook
  - City of Oak Hill
- Manual on Uniform Traffic Control Devices (2009), Chapter 2C
  - Federal Highway Administration

- Traffic Control Devices Handbook (2001), page 444
  - Institute of Transportation Engineers
- Synthesis of Highway Practice No. 139: Pedestrians and Traffic-Control Measures (1988)
  - National Cooperative Highway Research Program

### **RETROREFLECTIVITY**

During the field observations, focus was placed on warning and regulatory signage throughout the City. Except for regulatory STOP (R1-1) signs, very few warning or regulatory signs appear to currently satisfy the retroreflectivity requirements found in the MUTCD. After considering the number of signs to be removed, replaced, or added, it is reasonable to conclude that blanket replacement (less the approximately 130 STOP signs) is the most appropriate method for obtaining retroreflectivity compliance. As any work is performed on signs, new sign faces should be installed (if necessary) to meet the current retroreflectivity standards. Any remaining sign faces not flagged for work needed should also be replaced.

## WORK PERFORMED ON SIGNS

It is our recommendation that the City Engineer be consulted before any sign-related work is performed—particularly, the replacement, relocation, or installation of new signs. Discussion with the City Engineer should occur prior to ordering of any materials in order to identify the new sign type. In the case of relocating or installing new signs, the sign installation contractor should meet on site with the City Engineer to properly locate the new signs.

For the sign management program to be of sustained value, it is imperative that *all* work done involving any kind of alteration of traffic signs is documented, reported to the City Engineer, and recorded in the database.

## **APPENDIX A**

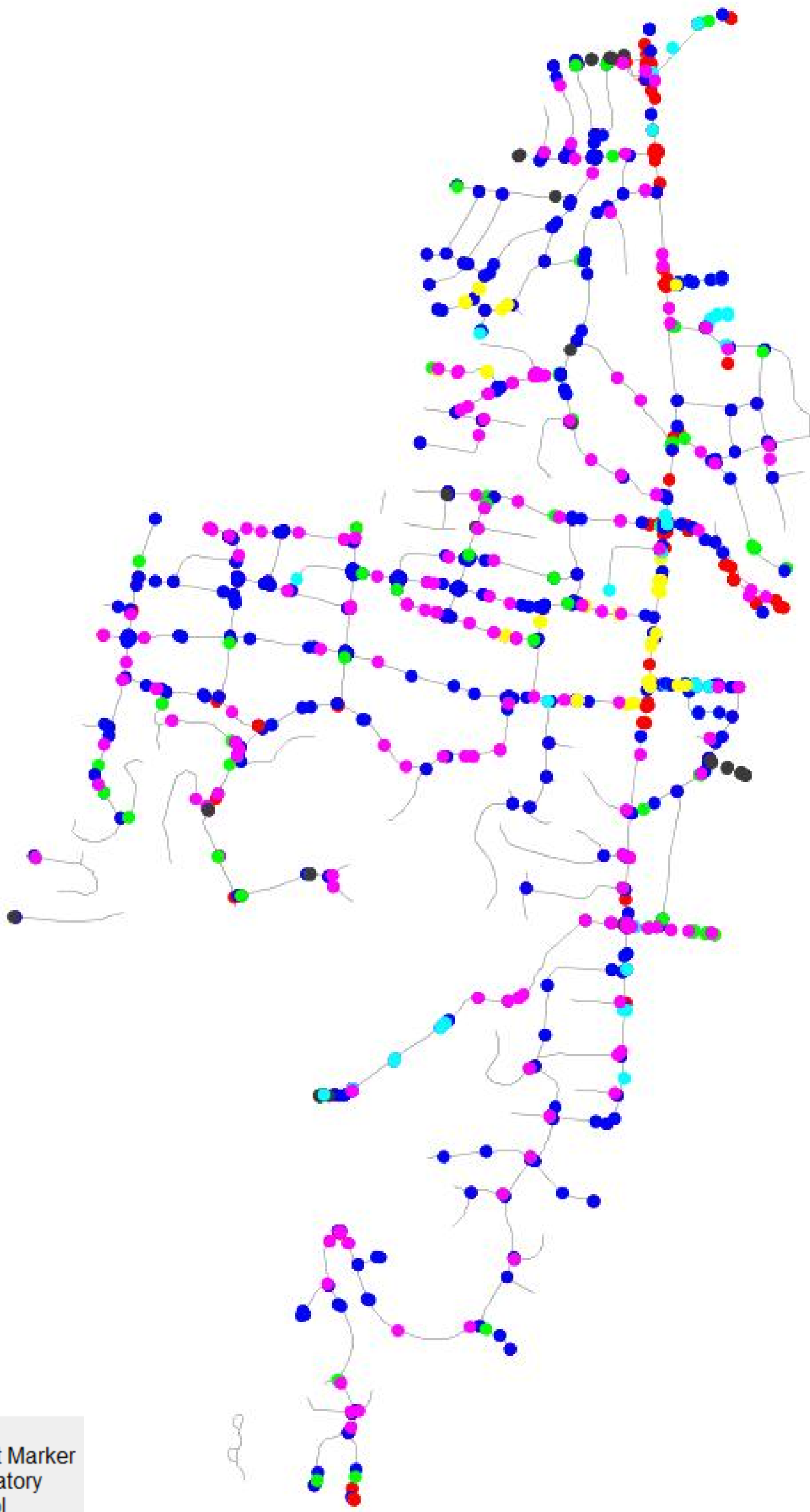
### Summary of Sign Types

<u>Sign Type</u>	<u>Description</u>	<u>Quantity</u>
ARROW	Blue Directional Arrow	1
Bird	Picture of Bird	3
BLIND	Blind Drive Warning Sign	5
Bus	Bus Stop	1
CHURCH	Church Sign	1
CITY LIMIT	City Limit	3
CLAIM	Claim Car Tow Warning	18
CLEAN	Keep It Clean	1
CRIME	Crime Stoppers Cash for Crime	1
CURVE	Dangerous Curve Ahead	2
CW-1	Neighborhood Crime Watch	45
D10-X1		9
D1-1	Directional	15
D11-1	Bike Route	1
D1-2	Directional Sign	6
D1-X4	AIRPORT	1
D3-1	Single ID Sign	24
D3-2	Double ID Sign	181
D7-3	REST INFORMATION	2
D9-2	H (hospital)	1
D9-A	Directional Arrow	1
DUMPING	No Dumping	1
E1-1		1
E5-1	EXIT	2
ELLINGTON	Ellington Agricultural Center	1
ENTRANCE	Entrance Only	2
M-04		2
M1-1	Interstate Route Sign	7
M1-1A	INTERSTATE SIGN	7
M1-4	County Road Sign	11
M2-1	JCT	2
M2-1A	JCT	1
M3-1	North	8
M3-1A	NORTH	1
M3-2	East	1
M3-3	South	5
M3-4	West	1
M4-5A	To	7
M5-1A		1
M5-1I	Right or Left Arrow	2
M5-2A		1
M6-1A	Arrow to Left (picture only)	3
M6-1I	Arrow to Left (picture only)	4
M6-3		1
M6-3A	Arrow Up (picture only)	2
OM-3	Object Marker	2
OTTER PARKING	No Parking Otter Creek Road	5
R10-12	Left Turn Yield on Green	6
R1-1	Stop	185
R1-2	Yield	2
R1-3	4-Way	27
R16-2	No Dumping	3
R2-1	Speed Limit	132
R2-5a	Reduced Speed Ahead	2
R2-6	End X Mile Speed	4
R3-5I		1
R3-7R	Right Lane Must Turn Right	2
R3-8A		1
R5-1	Do Not Enter	3
R5-X4	No Thru Traffic	1
R6-1L	One Way (to the left)	1

<u>Sign Type</u>	<u>Description</u>	<u>Quantity</u>
R6-1R	One Way (to the right)	3
R6-2L	One Way (to the left)	1
R6-2R	One Way (to the right)	4
R7-1	No Parking Anytime	11
R7-100	No Parking Anytime	9
R8-3a	No Parking (picture only)	12
RR099	Adopt-a-Highway	6
S1-1	School Crosswalk (picture only)	12
S2-1	School Crossing	3
S2-1P	School Xing	2
S4-1	Times	28
S4-3	School	14
S5-1	Speed Limit When Flashing	6
S5-2	End School Zone	13
Special	Special	20
SPEED BUMP	Slow Speed Bump	3
TOW ZONE	No Parking Tow-in Zone	9
W1-1	Right or Left Turn	2
W11-3	Deer Crossing (picture only)	2
W1-1L	Turn Left (picture only)	1
W1-1R	Turn Right (picture only)	2
W12-2	Low Clearance	4
W1-2L	Road Curves to Left (picture only)	8
W1-2R	Road Curves to Right (picture only)	4
W13-1	M.P.H.	29
W13-2	Exit _ MPH	4
W14-1	Dead End	33
W14-4	Limited Sight Distance	2
W1-4L	Road Curves to Left (picture only)	2
W1-4R	Road Curves to Right (picture only)	2
W1-5L	Road Winds to Left (picture only)	4
W1-5R	Road Winds to Right (picture only)	1
W16-2	_ Feet	2
W16-7pL	Arrow (picture only)	2
W16-9p	AHEAD text	6
W1-6L	Large Arrow One Direction-Left (picture only)	1
W1-6R	Large Arrow One Direction-Right (picture only)	1
W1-7	Two Directional Large Arrow Sign	1
W17-1		10
W1-8L	Directional-Left (picture only)	3
W1-8R	Directional-Right (picture only)	1
W2-1	Cross Road	1
W2-2R	T-Right	1
W25-2	Oncoming Traffic May Have Extended Green	2
W3-1	Stop Ahead	32
W3-1a	Stop Ahead (picture only)	1
W3-2A	Yield Ahead	1
W3-3	Signal Ahead (picture only)	3
W4-2R	Pavement Width Transition Right	1
W7-1a		4
W7-3a	Next X Miles	1
W8-1	Bump	4
W8-5		2
W8-9		2
W9-12	Slow Children at Play	10
W9-1L	Left Lane Ends	1
X4-11 R/R	End of Roadway Object Marker	2
X4-2 Y/Y	Bridge Abutment Marker Y/Y	3
X4-4L	Clearance Marker-Left	6
X4-4R	Clearance Marker-Right	30
<b>TOTAL</b>		<b>1,163</b>

## **APPENDIX B**

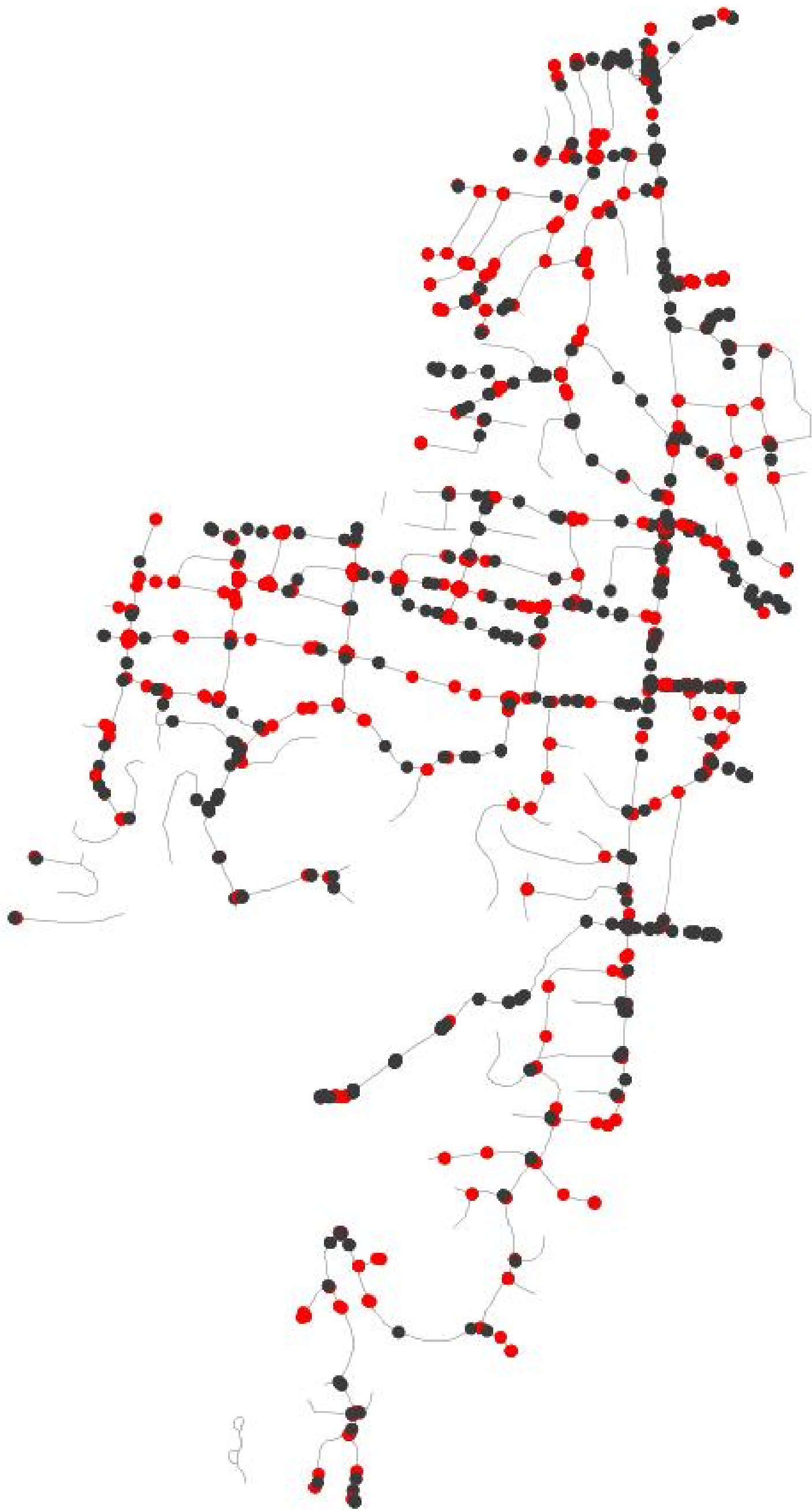
### Map of Existing Signs



- △ Guide
- △ Object Marker
- △ Regulatory
- △ School
- △ Special
- △ Warning

**Signs by Sign Category**



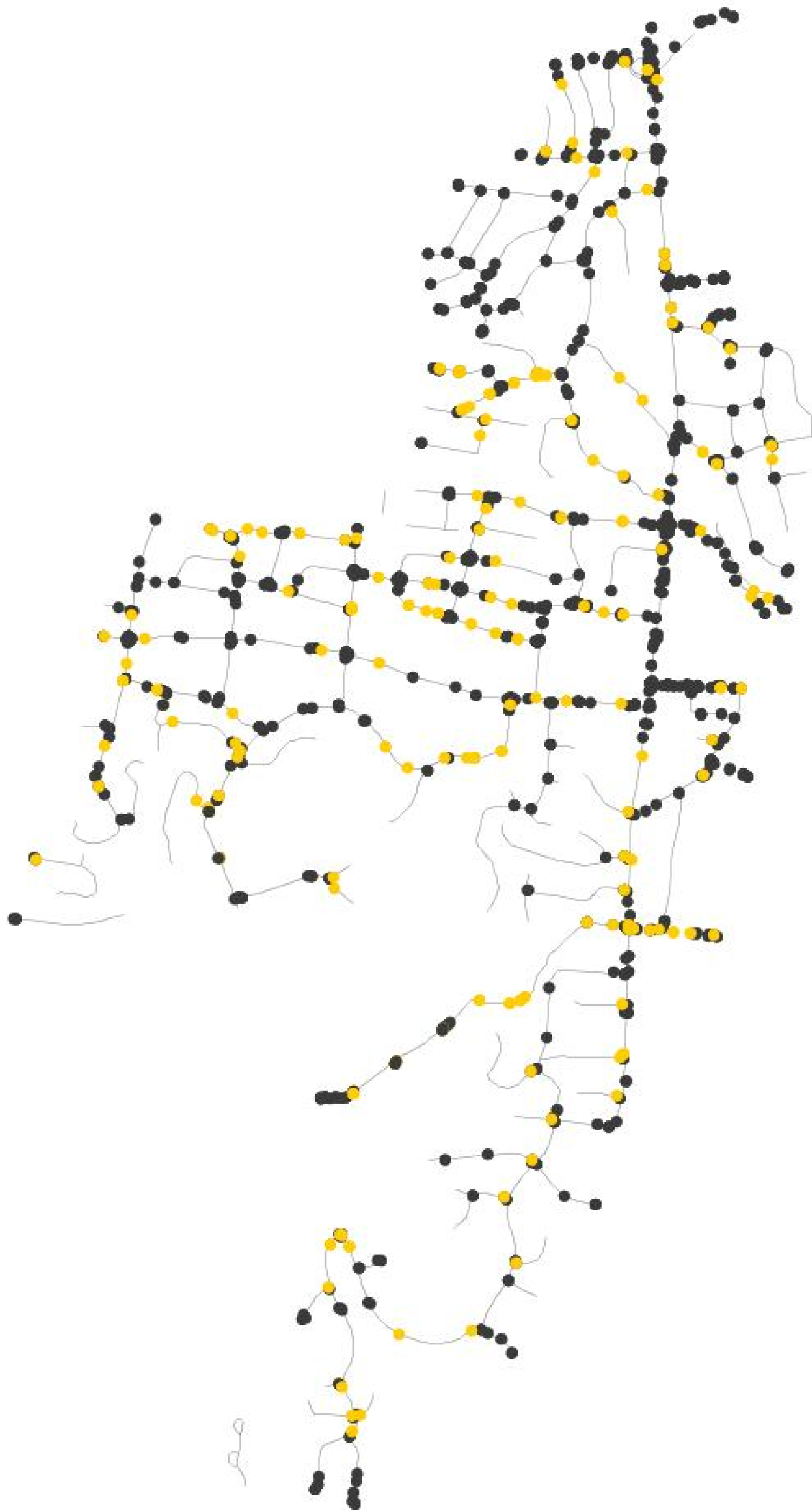


Ad

● Regulatory Signs



● School Signs

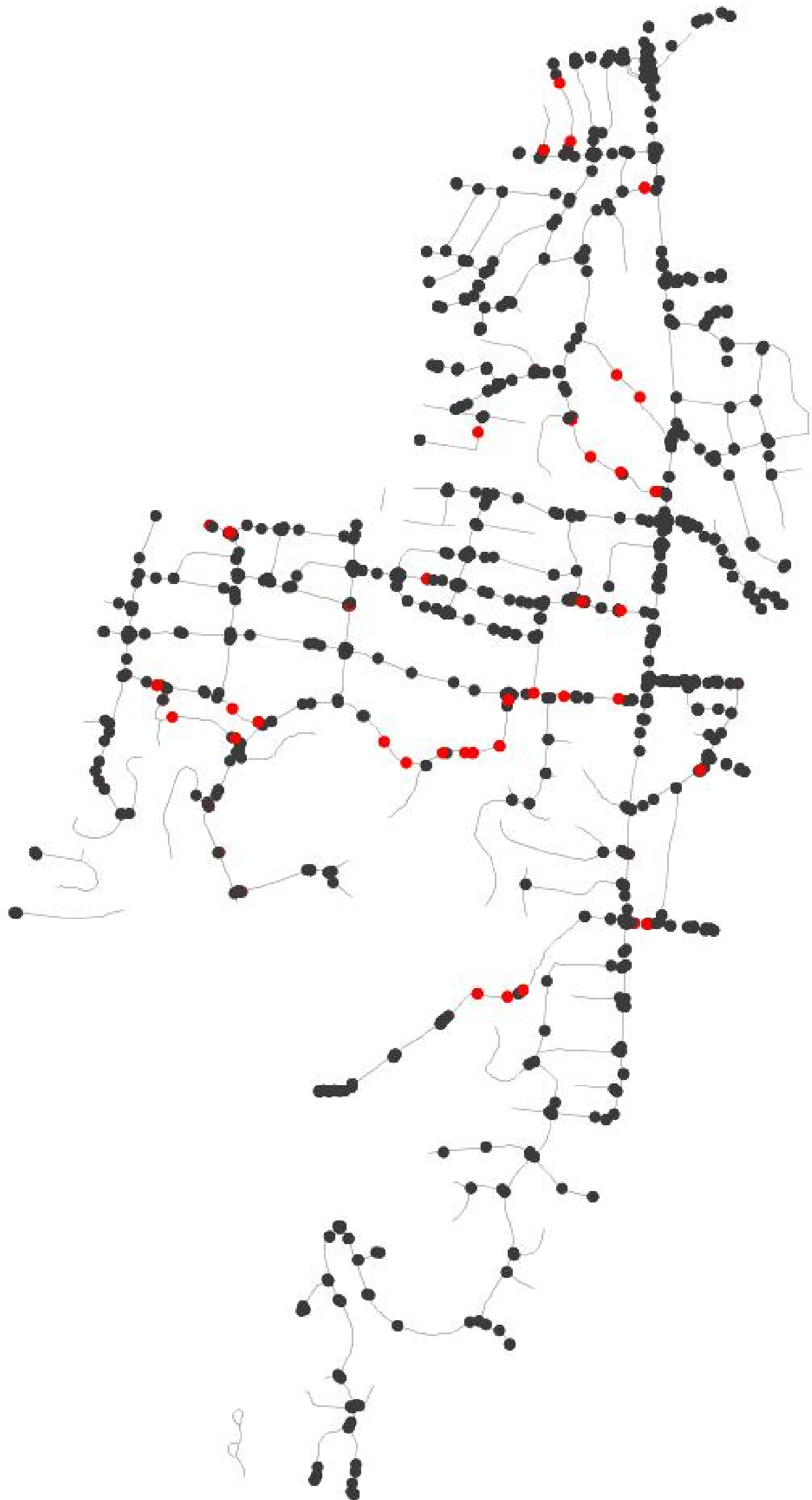


● Warning Signs

## **APPENDIX C**

### **Signs To Be Removed**

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Location (ft)</u>	<u>Sign ID</u>	<u>Sign Type</u>	<u>Side</u>	<u>Description</u>	<u>Action</u>
BLEVINS DR	MORRISWOOD DR	DEAD END	55	380	R5-X4	East	No Thru Traffic	Remove
CADILLAC AVE	PASADENA DR	MID-BLOCK	317	980	W1-2R	West	Road Curves to Right (picture only)	Remove
CRESTWOOD DR	GLENDALE LN	DEAD END	1255	439	Special	East	Special	Remove
CURTISWOOD LN	FRANKLIN PK	GLEN LEVEN DR	1123	990	W1-2L	East	Road Curves to Left (picture only)	Remove
CURTISWOOD LN	FRANKLIN PK	GLEN LEVEN DR	1720	989	W1-4L	West	Road Curves to Left (picture only)	Remove
FARRELL RD	FARRELL PW	RAGLAND DR	569	997	BLIND	West	Blind Drive Warning Sign	Remove
FRANKLIN PIKE	BRENTVIEW DR	EVANSDALE DR	579	1002	W13-1	East	M.P.H.	Remove
GLEN LEVEN DR	FRANKLIN PK	MCCONNELL ST	410	1011	W13-1	North	M.P.H.	Remove
GLEN LEVEN DR	FRANKLIN PK	MCCONNELL ST	410	1012	W1-2L	North	Road Curves to Left (picture only)	Remove
HOGAN RD	RAGLAND DR	FRANKLIN PK	158	931	CRIME	South	Crime Stoppers Cash for Crime	Remove
HOGAN RD	RAGLAND DR	FRANKLIN PK	403	1042	W8-9	South		Remove
LAKEVIEW DR	VILLA CREST DR	NORFLEET DR	25	861	W9-12	West	Slow Children at Play	Remove
LAKEVIEW DR	VILLA CREST DR	NORFLEET DR	788	862	W9-12	East	Slow Children at Play	Remove
LAMBERT DR	MID-BLOCK	BRINDLEY DR	563	372	X4-2 Y/Y	East	Bridge Abutment Marker Y/Y	Remove
LEALAND LN	GATEWAY LN	TYNE BV	769	1060	W13-1	East	M.P.H.	Remove
LEALAND LN	GATEWAY LN	TYNE BV	769	1059	BLIND	East	Blind Drive Warning Sign	Remove
NORFLEET DR	LAKEVIEW DR	PARKWOOD TR	122	599	W9-12	South	Slow Children at Play	Remove
NORFLEET DR	LAKEVIEW DR	PARKWOOD TR	1459	600	W9-12	South	Slow Children at Play	Remove
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	3291	1095	W13-1	North	M.P.H.	Remove
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	3291	1096	W1-2L	North	Road Curves to Left (picture only)	Remove
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	3850	1088	W1-2L	South	Road Curves to Left (picture only)	Remove
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	3850	1087	W8-9	South		Remove
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	4165	1091	W1-2L	East	Road Curves to Left (picture only)	Remove
OVERTON LEA RD	TYNE BV	MID-BLOCK	58	1116	W1-7	Center	Two Directional Large Arrow Sign	Remove
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	371	1119	W1-2R	North	Road Curves to Right (picture only)	Remove
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	787	1113	W1-2L	South	Road Curves to Left (picture only)	Remove
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	930	1117	W13-1	North	M.P.H.	Remove
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	930	1118	W1-5L	North	Road Winds to Left (picture only)	Remove
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	1447	1114	W13-1	South	M.P.H.	Remove
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	1447	1115	W1-2L	South	Road Curves to Left (picture only)	Remove
OVERTON LEA RD	CLONMEL RD	LEALAND LN	1169	1112	W1-5L	West	Road Winds to Left (picture only)	Remove
OVERTON LEA RD	CLONMEL RD	LEALAND LN	1742	1120	W1-2L	South	Road Curves to Left (picture only)	Remove
OVERTON LEA RD	LAKEVIEW DR	SEWANEE RD	351	1111	BLIND	West	Blind Drive Warning Sign	Remove
OVERTON LEA RD	LAKEVIEW DR	SEWANEE RD	928	1121	E1-1	North		Remove
OVERTON LEA RD	RIDGEVIEW DR	GRANNY WHITE PK	641	1109	W13-1	South	M.P.H.	Remove
OVERTON LEA RD	RIDGEVIEW DR	GRANNY WHITE PK	641	1110	W1-5R	South	Road Winds to Right (picture only)	Remove
RAINBOW PL	GENERAL HOOD TL	CALDWELL LN	300	1129	W9-12	East	Slow Children at Play	Remove
RAINBOW PL	GENERAL HOOD TL	CALDWELL LN	1421	1130	W9-12	West	Slow Children at Play	Remove
RIDGEVIEW DR	LAKEVIEW DR	SOUTH RIDGEVIEW DR	230	1133	CURVE	North	Dangerous Curve Ahead	Remove
RIDGEVIEW DR	LAKEVIEW DR	SOUTH RIDGEVIEW DR	1513	1132	W1-5L	East	Road Winds to Left (picture only)	Remove
RIDGEVIEW DR	SOUTH RIDGEVIEW DR	OVERTON LEA RD	244	966	CURVE	East	Dangerous Curve Ahead	Remove
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	155	1138	SPEED BUMP	South	Slow Speed Bump	Remove
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	907	1139	SPEED BUMP	North	Slow Speed Bump	Remove
ROBERTSON ACADEMY RD	DUSTIN LN	VAN LEER DR	522	1135	W9-12	South	Slow Children at Play	Remove
ROBIN RD	MID-BLOCK	CALDWELL LN	143	1142	W9-12	East	Slow Children at Play	Remove
S CURTISWOOD LN	CURTISWOOD CR	FRANKLIN PK	233	1145	W1-2R	North	Road Curves to Right (picture only)	Remove
S CURTISWOOD LN	CURTISWOOD CR	FRANKLIN PK	233	1144	W13-1	North	M.P.H.	Remove
S CURTISWOOD LN	CURTISWOOD CR	FRANKLIN PK	1017	1146	W1-2R	East	Road Curves to Right (picture only)	Remove
S CURTISWOOD LN	CURTISWOOD CR	FRANKLIN PK	1643	1143	W1-4L	West	Road Curves to Left (picture only)	Remove
SEWANEE RD	STONEWALL DR	KIRKMAN LN	11	1148	W9-12	North	Slow Children at Play	Remove
SEWANEE RD	STONEWALL DR	KIRKMAN LN	401	1147	W9-12	East	Slow Children at Play	Remove
TRAVELERS RIDGE DR	GRANNY WHITE PK	TRAVELERS CT	744	754	Special	West	Special	Remove
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	279	1162	W8-5	South		Remove
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	1290	1163	W8-5	North		Remove
TYNE BLVD	TYNE VALLEY BV	KIRKMAN LN	22	1164	W11-3	North	Deer Crossing (picture only)	Remove



● Signs to be Removed

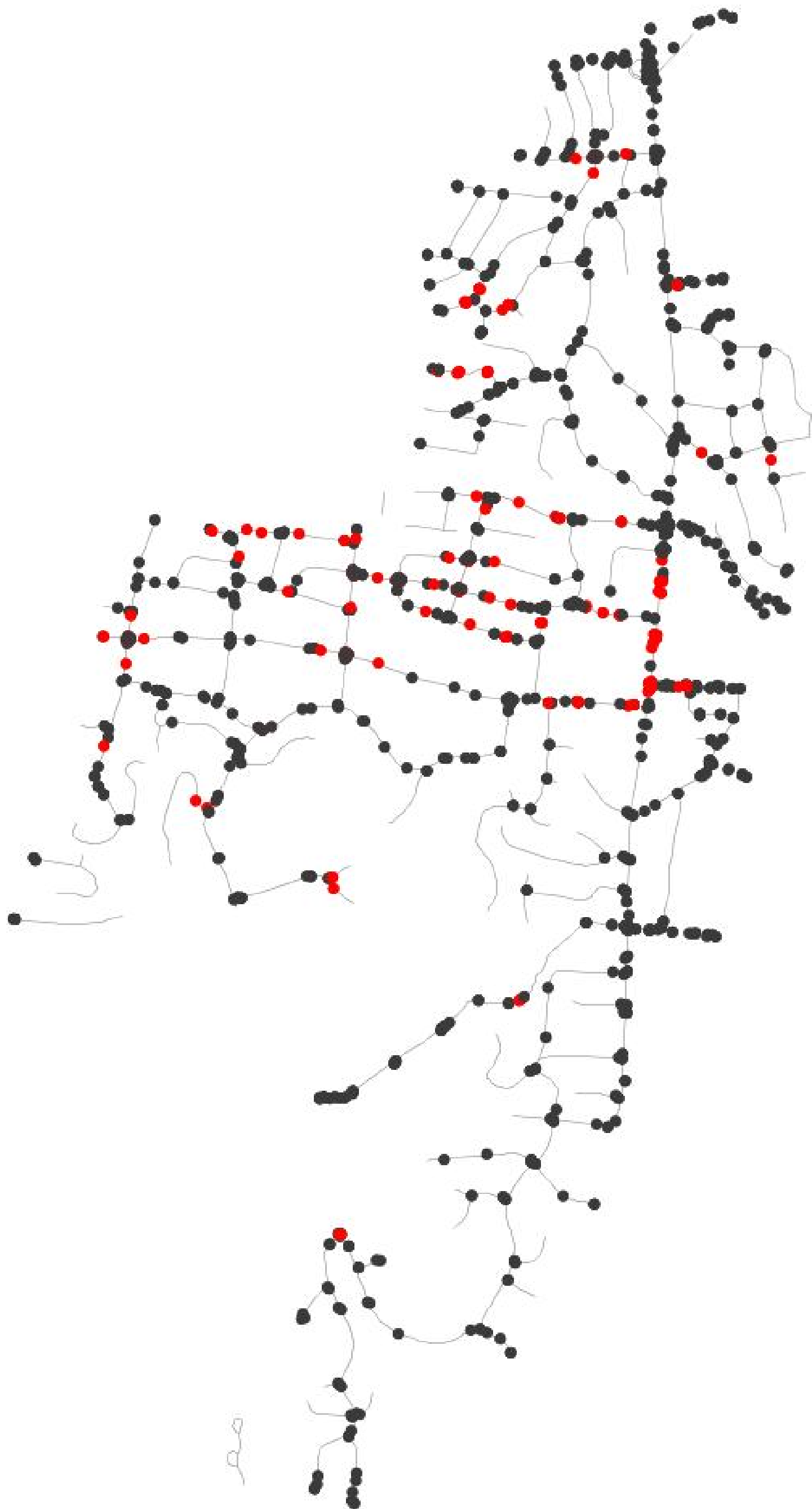
## **APPENDIX D**

### Signs To Be Replaced

Street	From	To	Location (ft)	Sign ID	Sign Type	Side	Description	Action
BATTERY LN	HARDING PL	CHURCHWOOD DR	911	976	W14-4	North	Limited Sight Distance	Replace
BATTERY LN	CHURCHWOOD DR	DUSTIN LN	475	977	BLIND	North	Blind Drive Warning Sign	Replace
BATTERY LN	CHURCHWOOD DR	DUSTIN LN	1200	325	X4-4R	North	Clearance Marker-Right	Replace
BATTERY LN	CHURCHWOOD DR	DUSTIN LN	1290	974	W14-4	South	Limited Sight Distance	Replace
BATTERY LN	DUSTIN LN	WATERSWOOD DR	520	972	BLIND	South	Blind Drive Warning Sign	Replace
CALDWELL LN	MCCONNELL ST	CRESTRIDGE DR	43	408	R1-3	North	4-Way	Replace
CALDWELL LN	MCCONNELL ST	CRESTRIDGE DR	565	983	W3-1	North	Stop Ahead	Replace
CALDWELL LN	CRESTRIDGE DR	RAINBOW PL	186	982	W3-1	South	Stop Ahead	Replace
CHURCHWOOD DR	ROBERTSON ACADEMY RD	OAK VALLEY LN	339	836	S5-2	East	End School Zone	Replace
CHURCHWOOD DR	ROBERTSON ACADEMY RD	OAK VALLEY LN	339	835	S4-3	West	School	Replace
CHURCHWOOD DR	ROBERTSON ACADEMY RD	OAK VALLEY LN	339	833	S4-1	West	Times	Replace
CHURCHWOOD DR	ROBERTSON ACADEMY RD	OAK VALLEY LN	339	834	S4-1	West	Times	Replace
CRESTRIDGE DR	PLEASANT VALLEY RD	CALDWELL LN	37	425	R1-3	West	4-Way	Replace
CRESTRIDGE DR	CALDWELL LN	EVANS RD	633	985	W3-1	East	Stop Ahead	Replace
CRESTRIDGE DR	CALDWELL LN	EVANS RD	901	435	R1-3	East	4-Way	Replace
CRESTRIDGE DR	GREERLAND DR	THOMPSON AV	214	839	S4-3	West	School	Replace
CRESTRIDGE DR	GREERLAND DR	THOMPSON AV	214	837	S4-1	West	Times	Replace
CRESTRIDGE DR	GREERLAND DR	THOMPSON AV	214	838	S4-1	West	Times	Replace
CRESTRIDGE DR	GREERLAND DR	THOMPSON AV	220	844	S5-2	East	End School Zone	Replace
CRESTRIDGE DR	THOMPSON AV	GENERAL BATE DR	564	840	S5-2	West	End School Zone	Replace
CRESTRIDGE DR	THOMPSON AV	GENERAL BATE DR	565	841	S4-1	South	Times	Replace
CRESTRIDGE DR	THOMPSON AV	GENERAL BATE DR	565	842	S4-1	South	Times	Replace
CRESTRIDGE DR	THOMPSON AV	GENERAL BATE DR	565	843	S4-3	South	School	Replace
DUSTIN LN	BATTERY LN	ALDER DR	390	991	W3-1	East	Stop Ahead	Replace
DUSTIN LN	BATTERY LN	ALDER DR	663	45	D3-2	East	Double ID Sign	Replace
DUSTIN LN	ALDER DR	VAN LEER DR	31	450	R1-3	West	4-Way	Replace
DUSTIN LN	VAN LEER DR	ROBERTSON ACADEMY RD	32	806	R1-3	West	4-Way	Replace
DUSTIN LN	VAN LEER DR	ROBERTSON ACADEMY RD	561	455	R1-3	East	4-Way	Replace
DUSTIN LN	ROBERTSON ACADEMY RD	OAK VALLEY LN	530	453	R1-3	East	4-Way	Replace
ELYSIAN FIELDS RD	OMANDALE DR	FRANKLIN PK	594	993	W3-1	West	Stop Ahead	Replace
FRANKLIN PIKE	HAZELWOOD CR	ROBERTSON ACADEMY RD	449	854	S2-1	East	School Crossing	Replace
FRANKLIN PIKE	HAZELWOOD CR	ROBERTSON ACADEMY RD	474	848	S2-1	West	School Crossing	Replace
FRANKLIN PIKE	HAZELWOOD CR	ROBERTSON ACADEMY RD	655	860	S5-1	Center	Speed Limit When Flashing	Replace
FRANKLIN PIKE	HAZELWOOD CR	ROBERTSON ACADEMY RD	662	857	S5-2	East	End School Zone	Replace
FRANKLIN PIKE	HAZELWOOD CR	ROBERTSON ACADEMY RD	1057	847	S1-1	West	School Crosswalk (picture only)	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	12	851	S1-1	West	School Crosswalk (picture only)	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	12	850	S2-1P	West	School Xing	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	56	899	S5-1	Center	Speed Limit When Flashing	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	670	859	S5-1	Center	Speed Limit When Flashing	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	755	849	S1-1	West	School Crosswalk (picture only)	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	842	494	R2-6	East	End X Mile Speed	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	919	858	S5-1	Center	Speed Limit When Flashing	Replace
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	922	487	R2-6	West	End X Mile Speed	Replace
FRANKLIN PIKE	LAMBERT DR	TYNE BV	275	488	R2-6	West	End X Mile Speed	Replace
FRANKLIN PIKE	LAMBERT DR	TYNE BV	352	853	S2-1	East	School Crossing	Replace
FRANKLIN PIKE	LAMBERT DR	TYNE BV	352	852	S2-1P	East	School Xing	Replace
GATEWAY LN	GRASSLAND LN	CLENDENIN RD	396	1010	W3-1	North	Stop Ahead	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	25	NA	S5-2	East	End School Zone	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	40	NA	S4-3	West	School	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	40	NA	S4-1	West	Times	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	40	NA	S4-1	West	Times	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	260	NA	S4-3	East	School	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	260	NA	S4-1	East	Times	Replace
GENERAL BATE DR	CRESTRIDGE DR	TOWER PL	260	NA	S4-1	East	Times	Replace
GENERAL BATE DR	TOWER PL	AUDUBON RD	20	NA	S4-3	West	School	Replace
GENERAL BATE DR	TOWER PL	AUDUBON RD	20	NA	S4-1	West	Times	Replace
GENERAL BATE DR	TOWER PL	AUDUBON RD	20	NA	S4-1	West	Times	Replace
GRANNY WHITE PIKE	GOODLOE DR	TYNE BV	54	524	R1-3	West	4-Way	Replace
GRANNY WHITE PIKE	GOODLOE DR	TYNE BV	439	1024	W3-1	West	Stop Ahead	Replace
GRANNY WHITE PIKE	TYNE BV	OVERTON LEA RD	309	1028	W3-1	East	Stop Ahead	Replace
GRANNY WHITE PIKE	TYNE BV	OVERTON LEA RD	728	528	R1-3	East	4-Way	Replace
GRANNY WHITE PIKE	SAXON DR	OAK HILL	336	1027	W1-4R	West	Road Curves to Right (picture only)	Replace
GRASSLAND LN	LEALAND LN	GATEWAY LN	1390	532	R1-3	South	4-Way	Replace
LAKEMONT DR	LAKEMONT CT	HILLVIEW DR	-36	1181	W1-8R	West	Directional-Right (picture only)	Replace
LAKEMONT DR	LAKEMONT CT	HILLVIEW DR	-5	1051	W1-8L	East	Directional-Left (picture only)	Replace
LAMBERT DR	BRINDLEY DR	FRANKLIN PK	529	863	S1-1	South	School Crosswalk (picture only)	Replace
LAMBERT DR	BRINDLEY DR	FRANKLIN PK	683	864	S5-1	South	Speed Limit When Flashing	Replace
LAMBERT DR	BRINDLEY DR	FRANKLIN PK	690	822	R2-6	North	End X Mile Speed	Replace
LEALAND LN	KIRKMAN LN	STONEWALL DR	69	1058	W3-1a	West	Stop Ahead (picture only)	Replace
LEALAND LN	STONEWALL DR	ROBERTSON ACADEMY RD	49	577	R1-3	West	4-Way	Replace
LEALAND LN	ROBERTSON ACADEMY RD	GATEWAY LN	30	1061	W3-1	East	Stop Ahead	Replace
LEALAND LN	ROBERTSON ACADEMY RD	GATEWAY LN	613	584	R1-3	East	4-Way	Replace
LEALAND LN	GATEWAY LN	TYNE BV	42	579	R1-3	West	4-Way	Replace
LEALAND LN	TYNE BV	OVERTON LEA RD	947	582	R1-3	East	4-Way	Replace
MELVILLE DR	GLENDALE LN	THOMPSON AV	479	870	S5-2	South	End School Zone	Replace
MELVILLE DR	GLENDALE LN	THOMPSON AV	483	872	S4-1	North	Times	Replace
MELVILLE DR	GLENDALE LN	THOMPSON AV	483	871	S4-1	North	Times	Replace
MELVILLE DR	GLENDALE LN	THOMPSON AV	483	873	S4-3	North	School	Replace
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	167	868	S4-3	South	School	Replace
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	167	867	S4-1	South	Times	Replace
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	167	866	S4-1	South	Times	Replace



<u>Street</u>	<u>From</u>	<u>To</u>	<u>Location (ft)</u>	<u>Sign ID</u>	<u>Sign Type</u>	<u>Side</u>	<u>Description</u>	<u>Action</u>
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	526	1065	W16-7pL	South	Arrow (picture only)	Replace
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	526	869	S1-1	South	School Crosswalk (picture only)	Replace
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	552	865	S1-1	North	School Crosswalk (picture only)	Replace
MELVILLE DR	THOMPSON AV	GENERAL BATE DR	552	1062	W16-7pL	North	Arrow (picture only)	Replace
NORFLEET DR	PARKWOOD TR	CUL-DE-SAC	186	1069	W14-1	West	Dead End	Replace
NORWOOD DR	FRANKLIN PK	DEAD END	184	874	S1-1	South	School Crosswalk (picture only)	Replace
OAK VALLEY LN	CHURCHWOOD DR	DUSTIN LN	422	1077	W3-1	North	Stop Ahead	Replace
OAK VALLEY LN	CHURCHWOOD DR	DUSTIN LN	1113	877	S4-3	South	School	Replace
OAK VALLEY LN	CHURCHWOOD DR	DUSTIN LN	1113	875	S4-1	South	Times	Replace
OAK VALLEY LN	CHURCHWOOD DR	DUSTIN LN	1113	876	S4-1	South	Times	Replace
OAK VALLEY LN	CHURCHWOOD DR	DUSTIN LN	1142	878	S5-2	North	End School Zone	Replace
OAK VALLEY LN	DUSTIN LN	KIRKMAN LN	47	625	R1-3	East	4-Way	Replace
OAK VALLEY LN	DUSTIN LN	KIRKMAN LN	895	1072	W3-1	South	Stop Ahead	Replace
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	4049	1089	W1-8L	South	Directional-Left (picture only)	Replace
OTTER CREEK RD	RADNOR PARK ENTRANCE	FRANKLIN PK	4092	1090	W1-8L	South	Directional-Left (picture only)	Replace
OVERBROOK DR	OVERBROOK CT	THOMPSON AV	358	879	S5-2	South	End School Zone	Replace
OVERBROOK DR	OVERBROOK CT	THOMPSON AV	492	880	S4-1	North	Times	Replace
OVERBROOK DR	OVERBROOK CT	THOMPSON AV	492	881	S4-1	North	Times	Replace
OVERBROOK DR	OVERBROOK CT	THOMPSON AV	492	882	S4-3	North	School	Replace
OVERTON LEA RD	LAKEVIEW DR	SEWANEE RD	928	664	R2-1	North	Speed Limit	Replace
PARKWOOD TER	NORFLEET DR	CUL-DE-SAC	114	1123	W14-1	East	Dead End	Replace
PRESCOTT RD	OMANDALE DR	ELYSIAN FIELDS RD	398	1128	W3-1	East	Stop Ahead	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	202	884	S4-1	South	Times	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	202	883	S4-1	South	Times	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	202	885	S4-3	South	School	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	210	890	S5-2	North	End School Zone	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	545	1140	W3-1	North	Stop Ahead	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	864	888	S4-1	North	Times	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	864	887	S4-1	North	Times	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	864	889	S4-3	North	School	Replace
ROBERTSON ACADEMY RD	FRANKLIN PK	CHURCHWOOD DR	867	886	S5-2	South	End School Zone	Replace
ROBERTSON ACADEMY RD	CHURCHWOOD DR	DUSTIN LN	48	709	R1-3	North	4-Way	Replace
ROBERTSON ACADEMY RD	CHURCHWOOD DR	DUSTIN LN	589	1141	W3-1	North	Stop Ahead	Replace
ROBERTSON ACADEMY RD	CHURCHWOOD DR	DUSTIN LN	990	1137	W3-1	South	Stop Ahead	Replace
ROBERTSON ACADEMY RD	DUSTIN LN	VAN LEER DR	36	712	R1-3	North	4-Way	Replace
ROBERTSON ACADEMY RD	DUSTIN LN	VAN LEER DR	647	1136	W3-1	South	Stop Ahead	Replace
ROBERTSON ACADEMY RD	DUSTIN LN	VAN LEER DR	1066	695	R1-3	South	4-Way	Replace
ROBERTSON ACADEMY RD	OAK VALLEY LN	KIRKMAN LN	213	692	R1-3	South	4-Way	Replace
ROBERTSON ACADEMY RD	KIRKMAN LN	GRASSLAND LN	49	714	R1-3	North	4-Way	Replace
ROBERTSON ACADEMY RD	KIRKMAN LN	GRASSLAND LN	455	1134	W3-1	South	Stop Ahead	Replace
SEWANEE RD	STONEWALL DR	KIRKMAN LN	62	1149	W3-1	South	Stop Ahead	Replace
SEWANEE RD	STONEWALL DR	BROOKWOOD LN	108	1150	W3-1	East	Stop Ahead	Replace
STONEWALL DR	LEALAND LN	CLENDENIN RD	326	1155	W3-1	North	Stop Ahead	Replace
STONEWALL DR	LEALAND LN	CLENDENIN RD	1172	1154	W13-1	North	M.P.H.	Replace
STONEWALL DR	CLENDENIN RD	SEWANEE RD	350	1156	W3-1	North	Stop Ahead	Replace
STONEWALL DR	CLENDENIN RD	SEWANEE RD	624	1153	W3-1	South	Stop Ahead	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	517	898	S5-2	North	End School Zone	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	517	893	S4-3	South	School	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	517	891	S4-1	South	Times	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	517	892	S4-1	South	Times	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	1438	894	S5-2	South	End School Zone	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	1545	896	S4-1	North	Times	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	1545	895	S4-1	North	Times	Replace
TYNE BLVD	FRANKLIN PK	TYNE VALLEY BV	1545	897	S4-3	North	School	Replace
TYNE BLVD	OVERTON LEA RD	LEALAND LN	36	771	R1-3	North	4-Way	Replace
TYNE BLVD	OVERTON LEA RD	LEALAND LN	619	1165	W3-1	North	Stop Ahead	Replace
TYNE BLVD	LEALAND LN	SEWANEE RD	1683	1161	W3-1	South	Stop Ahead	Replace
TYNE BLVD	LEALAND LN	SEWANEE RD	2122	779	R1-3	South	4-Way	Replace
TYNE BLVD	SEWANEE RD	GRANNY WHITE PK	51	775	R1-3	North	4-Way	Replace
TYNE BLVD	SEWANEE RD	GRANNY WHITE PK	299	1166	W3-1	North	Stop Ahead	Replace
TYNE BLVD	GRANNY WHITE PK	MID-BLOCK	368	777	R1-3	South	4-Way	Replace
TYNE BLVD	MID-BLOCK	MID-BLOCK	64	1160	W3-1	South	Stop Ahead	Replace
TYNE VALLEY BLVD	TYNE BV	TYNE VALLEY CT	795	957	Special	West	Special	Replace
VAN LEER DR	CHURCHWOOD DR	DUSTIN LN	46	789	R1-3	North	4-Way	Replace
VAN LEER DR	CHURCHWOOD DR	DUSTIN LN	478	1168	W3-1	North	Stop Ahead	Replace
VAN LEER DR	DUSTIN LN	ROBERTSON ACADEMY RD	37	792	R1-3	West	4-Way	Replace
VAN LEER DR	DUSTIN LN	ROBERTSON ACADEMY RD	1258	1167	W3-1	South	Stop Ahead	Replace
VAN LEER DR	DUSTIN LN	ROBERTSON ACADEMY RD	1559	784	R1-3	South	4-Way	Replace
VILLA CREST DR	LAKEVIEW DR	DEAD END	2475	1170	W3-1	West	Stop Ahead	Replace
VILLA CREST DR	LAKEVIEW DR	DEAD END	2736	1169	W14-1	East	Dead End	Replace

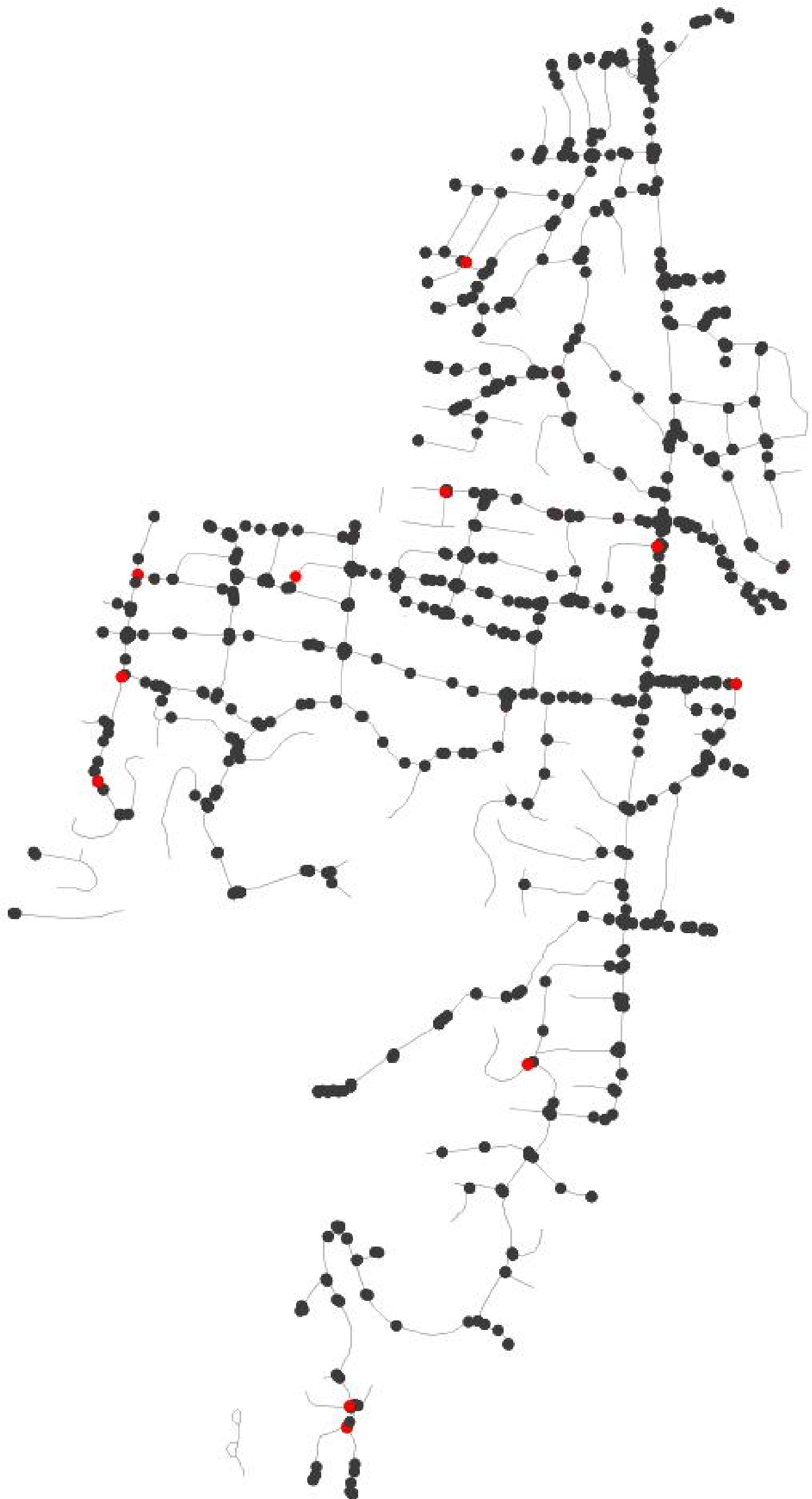


● Signs to be Replaced

## **APPENDIX E**

### **Signs to be Relocated**

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Location (ft)</u>	<u>Sign ID</u>	<u>Sign Type</u>	<u>Side</u>	<u>Description</u>	<u>Action</u>
BATTERY LN	HARDING PL	CHURCHWOOD DR	911	975	W13-1	North	M.P.H.	Relocate
BATTERY LN	CHURCHWOOD DR	DUSTIN LN	1290	973	W13-1	South	M.P.H.	Relocate
ELYSIAN FIELDS RD	CUL-DE-SAC	OMANDALE DR	73	329	X4-11 R/R	South	End of Roadway Object Marker	Relocate
FOREST ACRES CT	FOREST ACRES DR	CUL-DE-SAC	112	998	W14-1	West	Dead End	Relocate
FRANKLIN PIKE	PRIVATE	CALDWELL LN	408	68	M1-4	West	County Road Sign	Relocate
FRANKLIN PIKE	CALDWELL LN	GLEN LEVEN DR	567	72	M1-1A	West	INTERSTATE SIGN	Relocate
FRANKLIN PIKE	GLEN LEVEN DR	NORWOOD DR	305	74	M1-1A	West	INTERSTATE SIGN	Relocate
FRANKLIN PIKE	SOUTH CURTISWOOD LN	BATTERY LN	82	83	M1-1A	West	INTERSTATE SIGN	Relocate
FRANKLIN PIKE	ROBERTSON ACADEMY RD	LAMBERT DR	755	88	CLEAN	West	Keep It Clean	Relocate
GATEWAY LN	BROOKWOOD LN	GRANNY WHITE PK	38	511	R1-1	North	Stop	Relocate
GLENDALE LN	CURTISWOOD LN	CRESTWOOD DR	461	334	X4-4R	North	Clearance Marker-Right	Relocate
GRANNY WHITE PIKE	OVERTON LEA RD	SAXON DR	895	1025	W7-3a	West	Next X Miles	Relocate
GRANNY WHITE PIKE	OVERTON LEA RD	SAXON DR	895	1026	W11-3	West	Deer Crossing (picture only)	Relocate
GRASSLAND LN	LEALAND LN	GATEWAY LN	253	962	DUMPING	West	No Dumping	Relocate
GREERLAND DR	CRESTRIDGE DR	OUTER DR	47	540	R1-1	East	Stop	Relocate
HAZELWOOD CIR	FRANKLIN PK	CUL-DE-SAC	1636	1035	W14-1	North	Dead End	Relocate
LAMBERT DR	MID-BLOCK	BRINDLEY DR	563	1184	W1-6R	East	Large Arrow One Direction-Right (picture only)	Relocate
OVERBROOK DR	GLEN LEVEN DR	BROOKHAVEN DR	690	357	X4-4R	North	Clearance Marker-Right	Relocate
OVERTON LEA RD	MID-BLOCK	CLONMEL RD	2219	660	Special	West	Special	Relocate
S HILLVIEW DR	HILLVIEW DR	MID-BLOCK	1077	726	R1-2	East	Yield	Relocate
STONEWALL DR	LEALAND LN	CLENDENIN RD	1172	263	D11-1	North	Bike Route	Relocate
TRAVELERS RIDGE DR	GRANNY WHITE PK	TRAVELERS CT	744	1159	W14-1	West	Dead End	Relocate
VILLA CREST DR	LAKEVIEW DR	DEAD END	2774	794	R1-1	South	Stop	Relocate
W HILLVIEW DR	HILLVIEW DR	CUL-DE-SAC	963	1173	W14-1	North	Dead End	Relocate



● Signs to be Relocated

## **APPENDIX F**

### **Additional Signs to be Installed**

Summary of New Signs to be Installed - Based on Kimley-Horn Engineering Judgment  
City of Oak Hill, Tennessee

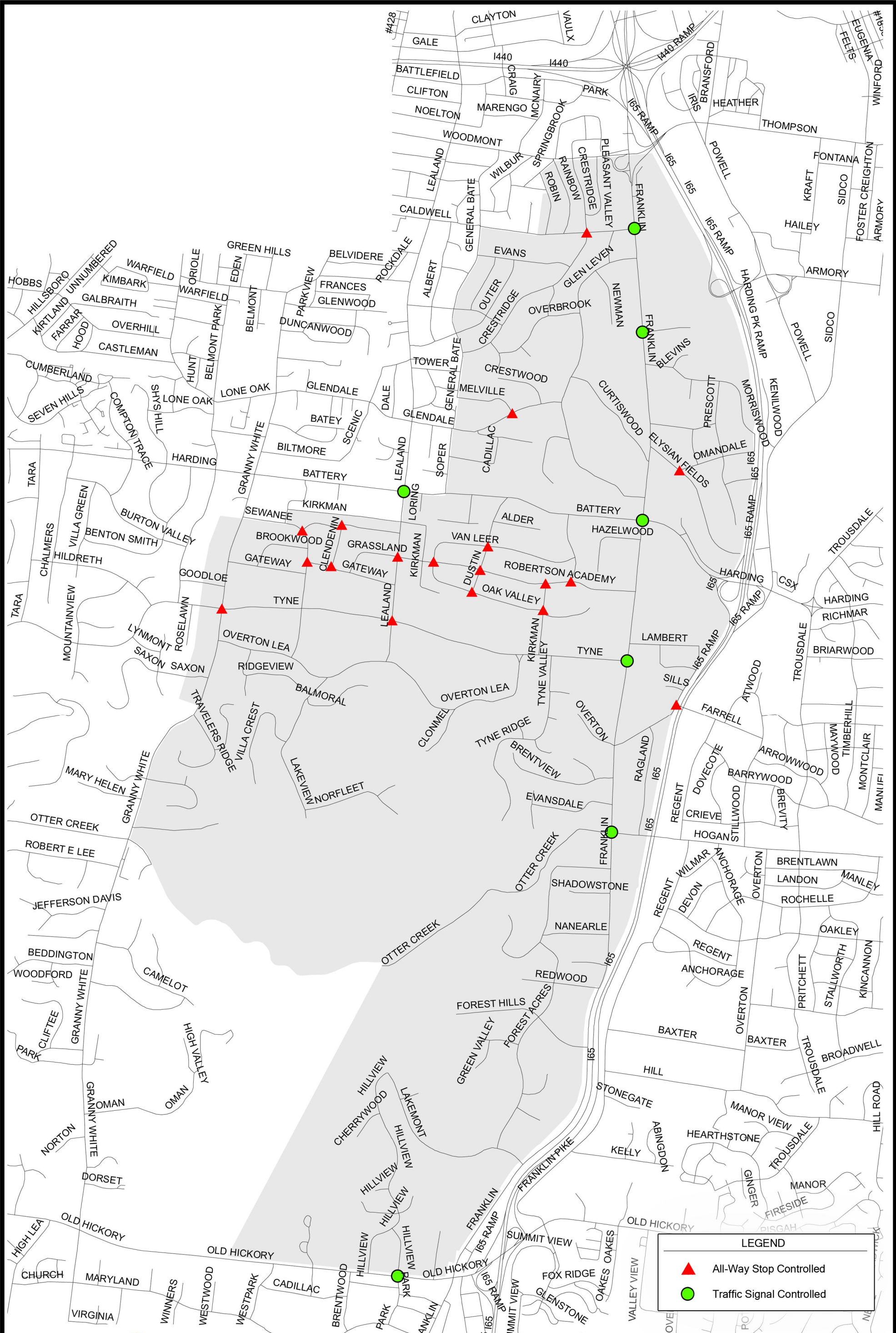
NOTE: The exact locations of new signs have not yet been determined, and an engineer should be consulted prior to deployment of new signage.

<b>Street</b>	<b>Description</b>
Glen Leven Dr	Install W1-2 (Curve) for both directions, at curve between Newman Pl and Overbrook Dr
South Curtiswood Ln	Install W1-2 (Curve) for both directions, at curve to the south of Curtiswood Cir
South Curtiswood Ln	Install W1-4 (Reverse Curve) for both directions, at curve to the south of Curtiswood Cir
North Curtiswood Ln	Install W1-2 (Curve) for both directions, at curve to the west of Franklin Pk
North Curtiswood Ln	Install W1-4 (Reverse Curve) for both directions, in between Franklin Pk and Glen Leven Dr
Cadillac Ave	At 90-degree turn, install W1-1 (Turn) and W1-6 (One-Direction Large Arrow) for both directions
Pasadena Dr	Install W3-1 (STOP Ahead) for westbound Pasadena Dr, just before 90-degree turn that intersects with Glendale Ln
Glendale Ln	Install W1-10 (Combination Horizontal Alignment/Intersection) in both directions approaching intersection with Pasadena Dr
Glendale Elementary	Consider replacing the school signs on General Bate Dr and on the school property
Morriswood Dr	Install W1-1 (Turn) for eastbound direction, two (2) W1-6 (One-Direction Large Arrow) for both directions, at intersection with Omandale Dr
Omandale Dr	Install W1-1 (Turn) for eastbound direction, two (2) W1-6 (One-Direction Large Arrow) for both directions, at intersection with Morriswood Dr
Elysian Fields Rd	Install R1-3P (ALL WAY) at intersection with Omandale Dr
Prescott Ct	Install two (2) OM-4 object markers at end of roadway
Evansdale Drive	Install W1-4 (Reverse Curve) for both directions
Forest Acres Dr	Install W1-10 (Combination Horizontal Alignment/Intersection) in both directions approaching intersection with Forest Acres Ct
Forest Acres Dr	At intersection with Redwood Dr, consider installing W3-1 (STOP Ahead) in both directions
Otter Creek Rd	Install W1-1 (Turn) and W1-6 (One-Direction Large Arrow) for both directions, at curve to the west of Franklin Pk
Otter Creek Rd	Install W1-2 (Curve), install W1-8 (Chevron) within the horizontal curve, at curve to the east of Radnor Lake entrance
Otter Creek Rd	Install W1-5 (Winding Road) for both directions, between the W1-1 curve and the W1-2 curve
Otter Creek Rd	Install W1-8 (Chevron) within multiple horizontal curves, between the W1-5 signs
Otter Creek Rd	Install a warning sign of the upcoming 1st speed bump entering Radnor Lake, to give more advance notice
Hazelwood Cir	At 90-degree turn, install W1-1 (Turn) in both directions, install W1-8 (Chevron) within the horizontal curve
Grassland Ln	At 90-degree turn, install W1-1 (Turn) in both directions, install W1-8 (Chevron) within the horizontal curve
Robertson Academy Rd	Install R1-3P (ALL WAY) at intersection with Churchwood Dr (north)
Robertson Academy Rd	Install R1-3P (ALL WAY) at intersection with Churchwood Dr (south)
Stonewall Dr	Install R1-3P (ALL WAY) at intersection with Clendenin Rd
Stonewall Dr	Install R1-3P (ALL WAY) at intersection with Sewanee Rd
Gateway Ln	Install R1-3P (ALL WAY) at intersection with Clendenin Rd
Gateway Ln	Install R1-3P (ALL WAY) at intersection with Sewanee Rd
Oak Valley Ln	Install R1-3P (ALL WAY) at intersection with Dustin Ln
Oak Valley Ln	Install R1-3P (ALL WAY) at intersection with Churchwood Dr
Oak Valley Ln	Install R1-1 (STOP) for private driveway at intersection with Churchwood Dr
Lealand Ln	Install R2-1 (Speed Limit) along Lealand Ln between Battery Ln and Tyne Blvd
Lealand Ln	Install R2-1 (Speed Limit) along Lealand Ln between Tyne Blvd and Battery Ln
Waterswood Dr	At 90-degree turn, install W1-1 (Turn) and W1-6 (One-Direction Large Arrow) for both directions
Overton Lea Rd	At 90-degree turn south of Tyne Blvd, install W1-1 (Turn) in both directions and W1-8 (Chevron) within the horizontal curve
Overton Lea Rd	Install W1-5 (Winding Road) for both directions between Sewanee Ln and the W1-1 Turn
Overton Lea Rd	Install W1-8 (Chevron) within multiple horizontal curves, between the W1-5 signs
Ridgeview Dr	At 90-degree turn, install W1-1 (Turn) in both directions, install W1-8 (Chevron) within the horizontal curve
Farrell Rd	Replace the missing object marker at the culvert
Farrell Rd	Install R1-3P (ALL WAY) at intersection with Lambert Dr
Farrell Rd	Install W3-1 (STOP Ahead) for northbound Farrell Rd, approaching Lambert Dr, to the south of culvert
Farrell Rd	Install W1-8 (Chevron) in both directions within the horizontal curve between the culvert and Lambert Dr
Lambert Dr	At 90-degree turn, install W1-1 (Turn) and W1-6 (One-Direction Large Arrow) for northbound direction - this will match eastbound direction
Franklin Pk	Install a W2-1 (Cross Road) for southbound Franklin Pk, approaching Farrell Rd - this will match the northbound direction
Hillview Dr	At 90-degree turn with Lakemont Dr, consider replacing the W1-8 (Chevron) with W1-6 (One-Direction Large Arrow)
Melville Dr	At 90-degree turn with General Bate Dr, install W1-1 (Turn) for southbound direction - this will match westbound direction
Melville Dr	At 90-degree turn with General Bate Dr, install W1-6 (One-Direction Large Arrow) for both directions
Farrell Rd	Install R1-1 (STOP) for westbound channelized right-turn at Franklin Pk
Villa Crest Dr	Install two (2) OM-4 object markers at end of roadway
Overton Lea Rd	Install R1-2 (YIELD) and yield pavement markings for southeast approach (western segment of triangle) at the "fork"
Overton Lea Rd	Long Range = Create 90-degree intersection with Tyne Blvd and remove the 2 channelized segments

## **APPENDIX G**

### Intersection Traffic Control Map





**LEGEND**

-  All-Way Stop Controlled
-  Traffic Signal Controlled

**INTERSECTION TRAFFIC CONTROL MAP**  
OAK HILL, TN



## **APPENDIX H**

### South Curtiswood Lane Signage Study

*Memorandum*

To: Mr. Kevin Helms  
City of Oak Hill  
5548 Franklin Pike, Suite 102  
Nashville, Tennessee 37220

From: Chris Rhodes, P.E.  
Julie Wilson, E.I.  
Kimley-Horn and Associates, Inc. (KHA)

Date: March 4, 2010

Subject: Residential Speed and Sight Distance Evaluation  
South Curtiswood Drive  
KHA Project Number: 118028000

■  
Suite 150  
5250 Virginia Way  
Brentwood, Tennessee  
37027

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This memorandum documents the evaluation performed on South Curtiswood Drive in the City of Oak Hill, Tennessee.

In discussions with the City of Oak Hill, it is our understanding that there are two concerns regarding South Curtiswood Drive. The first concern relates to speeding along South Curtiswood Drive. Our understanding of the issue is that some motorists are driving along the residential street at speeds higher than the posted 30 miles per hour (MPH) speed limit. The second concern is associated with the obstructed sight distance for motorists turning left from South Curtiswood Drive onto Franklin Pike. Our understanding of the issue is that during the PM peak period the sight distance for motorists turning left out of South Curtiswood Drive is obstructed by the queued vehicles at the signalized intersection of Franklin Pike at Harding Place / Battery Lane. The City has received a number of citizen complaints regarding both of these issues.

This study will analyze the existing roadway conditions along South Curtiswood Drive to determine what measures could be taken to decrease the speed of motorists traveling in the area and address the sight distance concerns. However, it should be noted that neither a speed study or a crash analysis has been performed by KHA staff; but either could be performed, if deemed necessary.

**Data Collection**

The first step of the analysis consisted of performing field observations and documenting the existing traffic signs along South Curtiswood Drive. This effort was performed by Kimley-Horn and Associates, Inc. (KHA) staff on February 11, 2010. KHA staff made observations during the PM peak period.



South Curtiswood Drive is a narrow roadway (approximately 18 feet wide) with trees and drainage structures in close proximity to the edge of pavement. The narrow roadway with low volumes of oncoming traffic leads motorists to drive in the center of the roadway. Based upon our observations motorists drive towards the center of the roadway for two reasons:

- (1) The narrowness of the roadway coupled with roadside obstructions at or near the edge of pavement causes motorists to move towards the center of the roadway.
- (2) Driving in the center of the roadway allows motorists to 'flatten out' the curves, thereby allowing them to drive at speeds greater than the posted speed limit.

A figure showing the area and the locations of existing traffic signs, **Figure 1**, is attached to this memorandum.

To understand the sight distance concerns, KHA staff made observations at the intersection of Franklin Pike and South Curtiswood Drive during the busiest time of the day (i.e. the PM peak period (4:00 – 6:00 PM)). The signalized intersection of Franklin Pike at Harding Place / Battery Lane experiences significant southbound queuing during this time frame. The queuing is associated with the heavy volume of southbound left turns from Franklin Pike onto Harding Place. Due to the proximity of the signalized intersection, the vehicles frequently queue beyond the storage bay and through the South Curtiswood Drive intersection during the PM peak. The queuing significantly obstructs the sight distance and, at times, blocks the intersection completely. It should be noted that the sight distance obstruction is only associated with the queuing and there appear to be no problems turning left during non-peak times of the day. There were no observed sight obstructions turning right from South Curtiswood Drive onto Franklin Pike.

### **Potential Speed Reduction Options**

Four possible alternatives exist for decreasing the speed of motorists along South Curtiswood Drive. Each alternative is summarized below.

#### *Alternative 1: Sign Modifications and Pavement Markings*

The first option for traffic calming along South Curtiswood Drive is to enhance the driver's understanding of the roadway conditions by providing consistency among sign usage and replacing warning signs with the speed appropriate substitutes. New signage that is retro-reflective and placed at the appropriate locations will enhance the driver's awareness of the upcoming roadway conditions. However, the existing speed limit signs (30 MPH) are in good condition and are adequately spaced to notify the drivers of the speed limit. No changes to the existing speed limit signs are recommended. In addition, the placement of a double yellow line along the center of the roadway should be considered as it will define the intended driving paths for each direction of travel, especially along the sections where the horizontal curves are present. **Figure 2** identifies the proposed signing and pavement marking changes.



We also recommend that police begin patrolling and providing enforcement once the signs and pavement markings are installed to reinforce the speed limit.

*Alternative 2: Patrol and Monitor the Area*

If the installation of new traffic control devices coupled with initial police patrolling does not decrease the speed of motorists along the roadway, the City should devote additional / more frequent police patrolling efforts in this area to make motorists aware of the posted speed limit. The busiest times of the day, most likely in the morning and evening during standard work commute hours, would be the preferred time to increase police patrols along the roadway. Periodic police presence, regardless of whether or not warning tickets or actual speeding tickets are issued, may reduce speeding along the street.

*Alternative 3: Metro Neighborhood Traffic Management Program*

The third option for decreasing motorists' speed through this area is for the City of Oak Hill to request Metro Nashville's assistance by using their traffic calming measures, which may include an introductory neighborhood meeting, the installation of neighborhood signs, speed radar trailers, and additional police enforcement.

*Alternative 4: Consideration of Traffic Calming Devices*

Finally, if all other alternatives have been attempted and the problem still exists, the City of Oak Hill could investigate the need for traffic calming devices on their own. These could include speed humps, speed tables, and chicanes. However, these should only be installed after all other measures have been taken to decrease drivers' speed in the area.

*Use of Stop Signs to Reduce Speeding*

Finally, one option that has been shared with City staff from residents is the introduction of stop signs or multi-way stop signs as a means to reduce speeding in the area. We strongly recommend against the installation of stop signs as speed control measures. The *Manual on Uniform Traffic Control Devices* (MUTCD), which is the federal and state standard for traffic control devices, specifically states that "YIELD or STOP signs should not be used for speed control". This practice often results in a wide range of unintended consequences such as:

- Increased speeds in the vicinity of the stop sign to compensate for lost time from stopping at the unwarranted stop sign
- Violations of adjacent warranted stop signs or other traffic signs caused by motorist contempt
- Potential increase of rear-end accidents
- Increased pollution

A Metro Nashville Public Works brochure does a good job of detailing these issues. A copy of this brochure is included as an attachment to this document and could be used in the future by City of Oak Hill when considering similar requests.



### **Potential Sight Distance Improvement Options**

As noted above, there is a sight distance obstruction for left turning vehicles from South Curtiswood Drive onto Franklin Pike during the PM peak period. The sight distance obstruction is a direct result of the close proximity to the signalized intersection of Franklin Pike at Harding Place / Battery Lane. During the PM peak period, it is very difficult to perform a left turn movement safely due to traffic queuing just south of the intersection. It should be noted that the sight distance obstruction is only associated with the queuing of vehicles to the south and that there do not appear to be problems turning left at less busy times of the day. There are no sight distance obstructions noted turning right from South Curtiswood Drive onto Franklin Pike.

#### *Alternative 1*

Since the sight distance obstruction is associated with a particular time of day, it is possible to prohibit left turns during that time while allowing the left turn movement to occur during all other hours. Installation of a sign stating “Left Turn Prohibited from 4PM-6PM” under the existing stop sign would notify motorists to seek another route. Motorists can use North Curtiswood Drive or Glen Leven as an alternative route which are easily accessible and provide adequate sight distance for performing a left turn onto Franklin Pike during the PM peak.

#### *Alternative 2*

The queuing is a direct result of the volume of southbound left turns at Franklin Pike and Harding Place / Battery Lane. The City could investigate modifying the existing signal timing during the PM peak period to allow for more time for the southbound left turn phase. The City would need to coordinate with Metro Nashville Public Works (Traffic Engineering Division) to determine if signal timing changes could be made. KHA staff could coordinate this effort, if desired.

#### *Alternative 3*

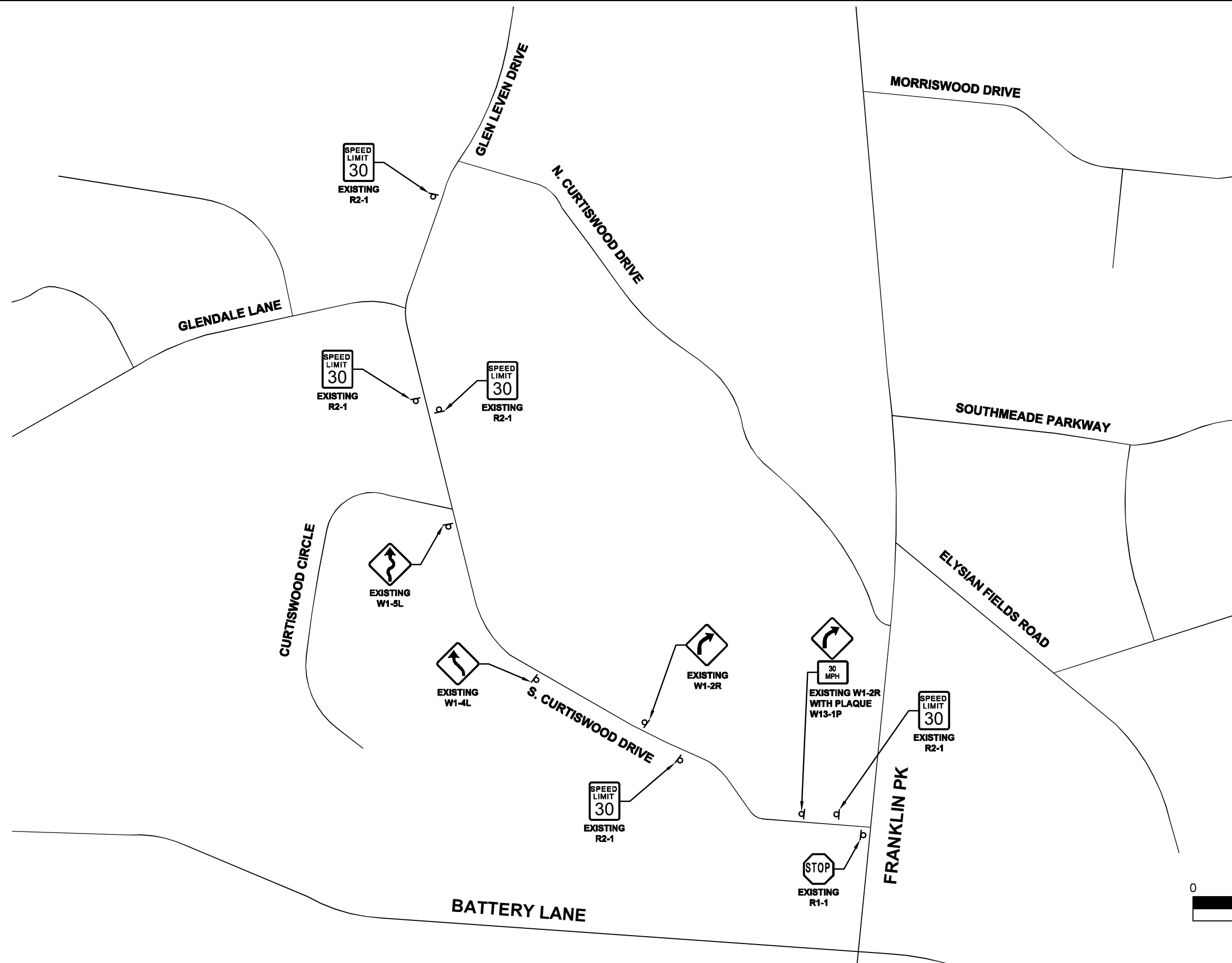
Capital improvements at the signalized intersection of Franklin Pike at Harding Place / Battery Lane could improve the queuing associated with the sight obstruction. The City of Oak Hill is exploring funding opportunities to provide capital improvements that include additional turn lanes and widening. The improvements would provide for congestion alleviation at the intersection and potentially shorten queue lengths. However, waiting for these improvements would not provide a current solution for the sight distance obstruction.

### **Summary**

If desired, we can discuss the results of this study with City staff during the next scheduled staff meeting. In the meantime, if there are questions prior to the staff meeting, please do not hesitate to call.

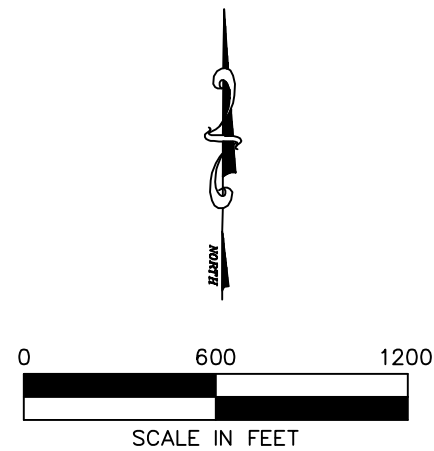
Attachments: Figures 1 and 2  
Metro Nashville Stop Sign Policy Brochure

c: File

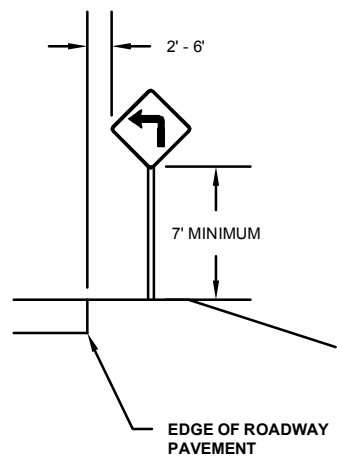


**LEGEND**

p EXISTING SIGN POST



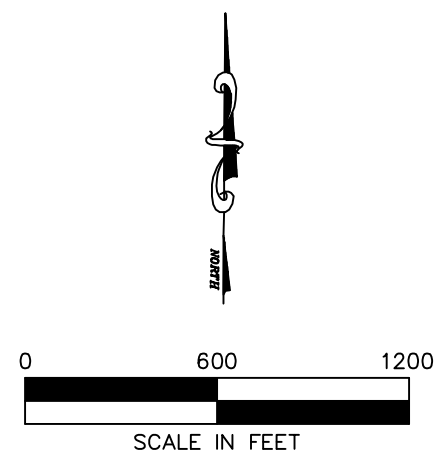
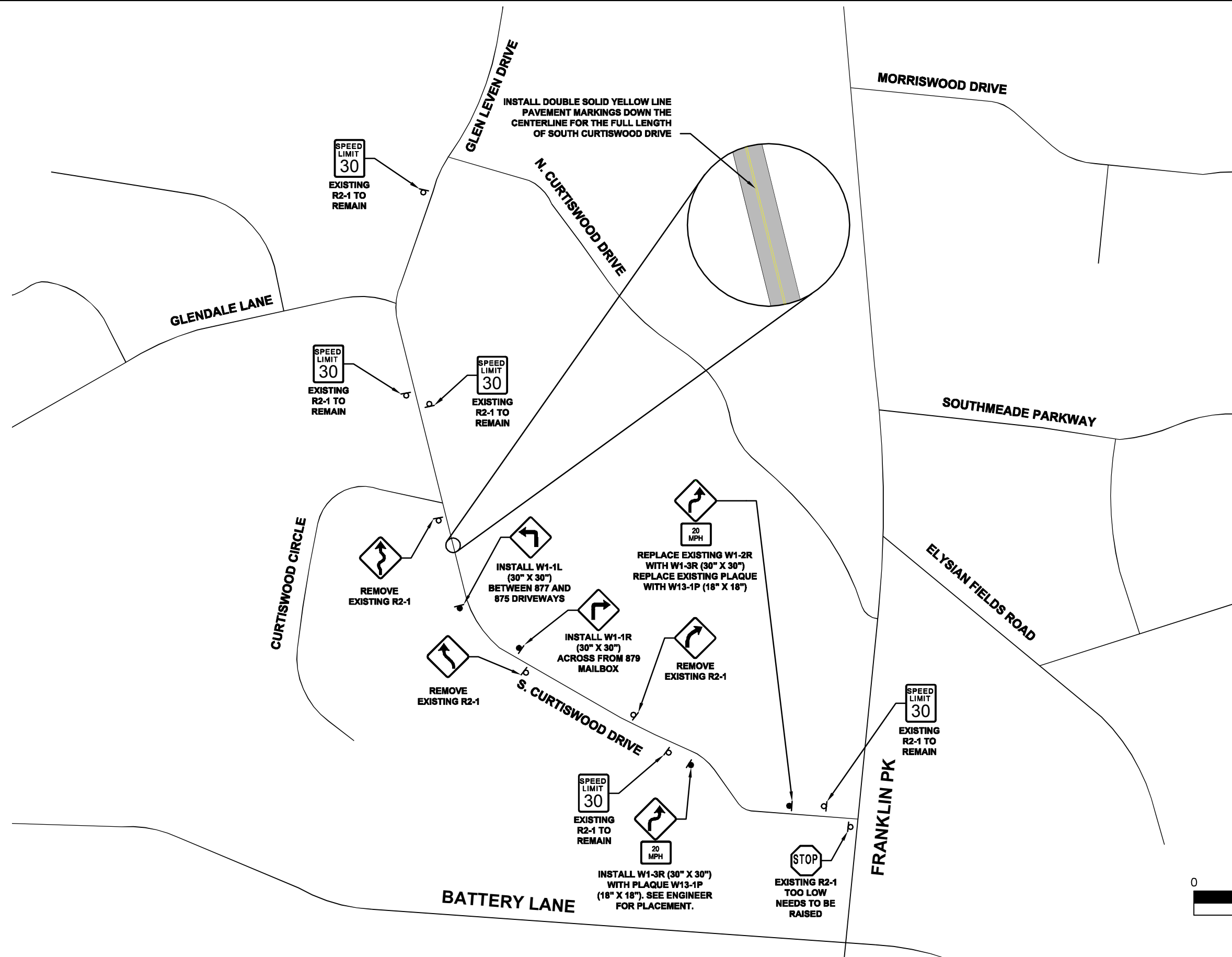
**SOUTH CURTISWOOD DRIVE  
EXISTING TRAFFIC CONTROL DEVICES  
CITY OF OAK HILL, TENNESSEE**



**PROPOSED SIGN  
INSTALLATION DETAIL**  
N.T.S.

**LEGEND**

- ⦿ EXISTING SIGN POST
- ⦿ PROPOSED SIGN POST



**SOUTH CURTISWOOD DRIVE  
PROPOSED TRAFFIC CONTROL DEVICES  
CITY OF OAK HILL, TENNESSEE**



**A traffic safety message  
from the Metro Nashville  
Public Works department's  
Neighborhood Traffic  
Management Program.**

The department of Public Works does not discriminate on the basis of age, race, sex, color, national origin, religion or disability in admission to, access to, or operations of its programs, services, or



activities. The department of Public Works does not discriminate in its hiring or employment practices. The following person has been designated to handle questions, concerns, complaints, requests for accommodation, or requests for additional information regarding the American with Disabilities Act: Lee Kenderdine, ADA Coordinator for Public Works, 720 South Fifth Street, Phone: 615.862.8760, TTY 615.862.6747.

Inquiries concerning Title VI compliance should be forwarded to: Michelle Lane, Department of Finance, 222 3rd Avenue North, Suite 650, Nashville, TN 37201, Phone: 615.862.6170, FAX: 615.862.6175.

**Will STOP  
Signs Slow  
Traffic on  
Our Streets?**



Neighborhood Traffic Management Program

Tel: 615 862 8750

Metro Nashville Public Works  
750 South Fifth Street  
Nashville, Tennessee 37206

Phone: 615.862.8750

Fax: 615.862.8799

Website: [www.nashville.gov/pw/index.htm](http://www.nashville.gov/pw/index.htm)

Gratuitous STOP signs may increase speeding on other intersections.

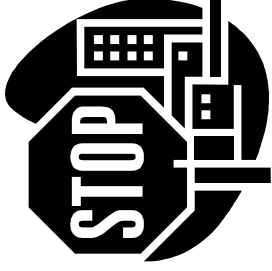
Studies show that speed is reduced in the immediate vicinity of gratuitous STOP signs. However, speeds are higher between intersections than before the signs were installed. This is caused by motorists "making up for lost time."



Gratuitous STOP signs also increase air pollution, waste fuel, and create more traffic noise.

ALL-WAY-STOP signs don't work as "speedbreakers."

All-way STOP signs installed where they are not justified create more problems than they solve.



Most new requests received for STOP signs are intended to interrupt traffic or to slow speeding vehicles. However, studies in Nashville and across the country show that there is a high number of intentional violations when STOP signs are installed as nuisances or "speed breakers".

Justification for STOP signs and ALL-WAY-STOP signs.

When justified, STOP signs and ALL-WAY STOP signs can play an important role in traffic safety. National standards have been established to determine when STOP signs should be installed.

These standards consider traffic speed, the number of vehicles, sight distance, and the frequency of "gaps in traffic" to allow safe vehicle entry or pedestrian crossing.

When STOP signs are necessary, they should stop vehicles on streets with less traffic. Four-way STOP signs are helpful only when traffic is high and approximately equal on all four approaches. At least 500 vehicles per hour for any 8-hours of an average day, are needed to make four-way STOP signs beneficial.

Results of unjustified ALL-WAY STOP signs.

If unjustified ALL-WAY STOP signs are installed, you can expect:

Speeds to increase on the street. As stated previously, people increase their speed to "make up time" for unjustified stops.

Accidents tend to increase. The number of rear-end accidents increase at the intersections where unjustified ALL-WAY STOP signs are installed. An unjustified ALL-WAY STOP forces a driver to stop unnaturally, thus the driver behind them may not stop.

Increases pollution. It's a simple fact that stopping and starting increases pollution, decreases fuel efficiency, and increases wear and tear on your car.

**REMEMBER, STOP signs are not effective tools to decrease speeding. They can increase air pollution and waste fuel, and when used improperly, may even increase speeds and traffic volumes on adjacent streets.**

Metro Nashville  
Public Works

Metro Nashville Public Works  
750 South Fifth Street  
Nashville, Tennessee 37206