
Lake Wheeler Road Widening and Pedestrian Improvements Raleigh Oaks Shopping Center to Centennial Parkway



Public Works Committee

May 8, 2012

Prepared by:

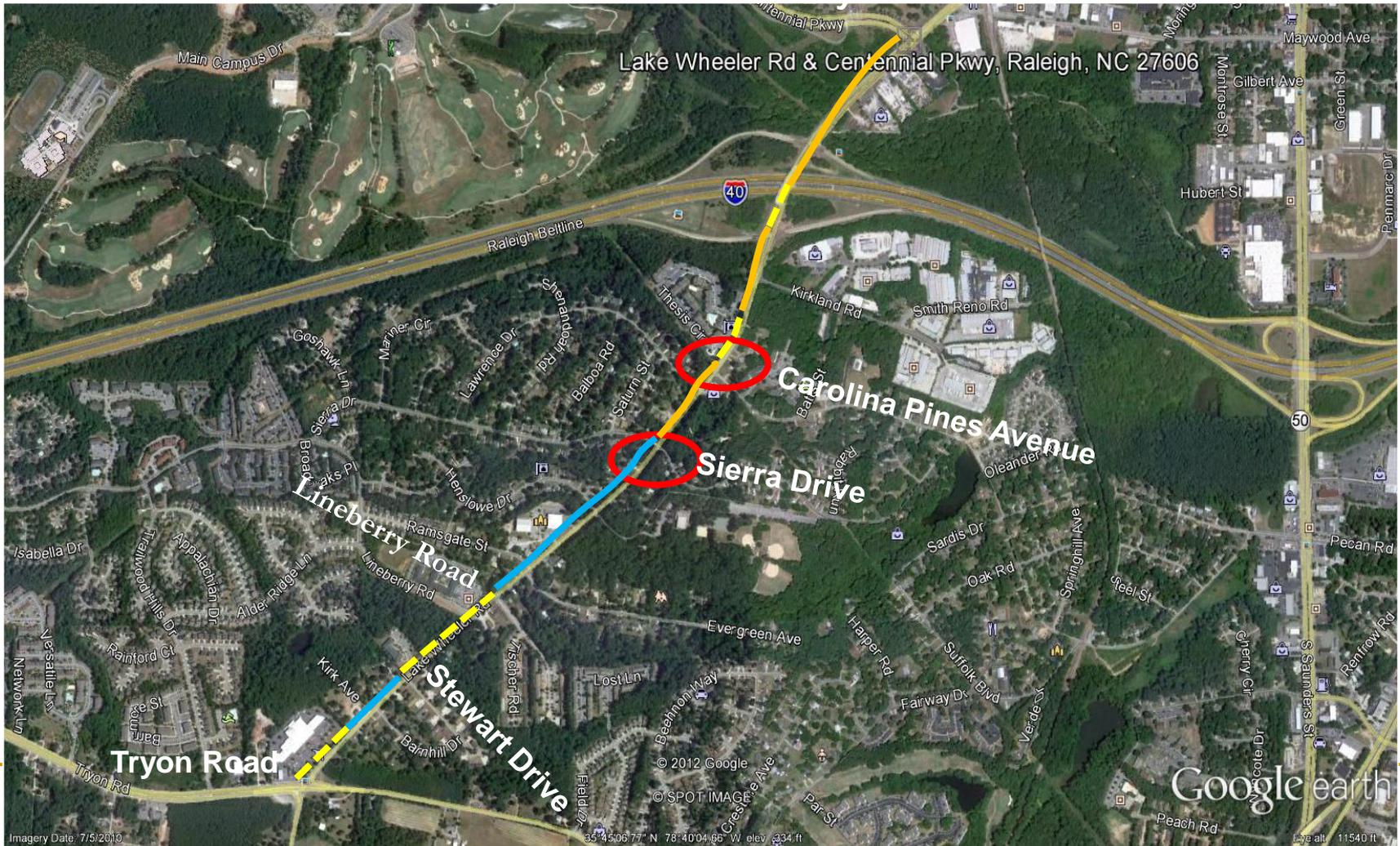
Public Works - Design/Construction Division

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From Raleigh Oaks Shopping Center to Centennial Parkway



■ Project Limits

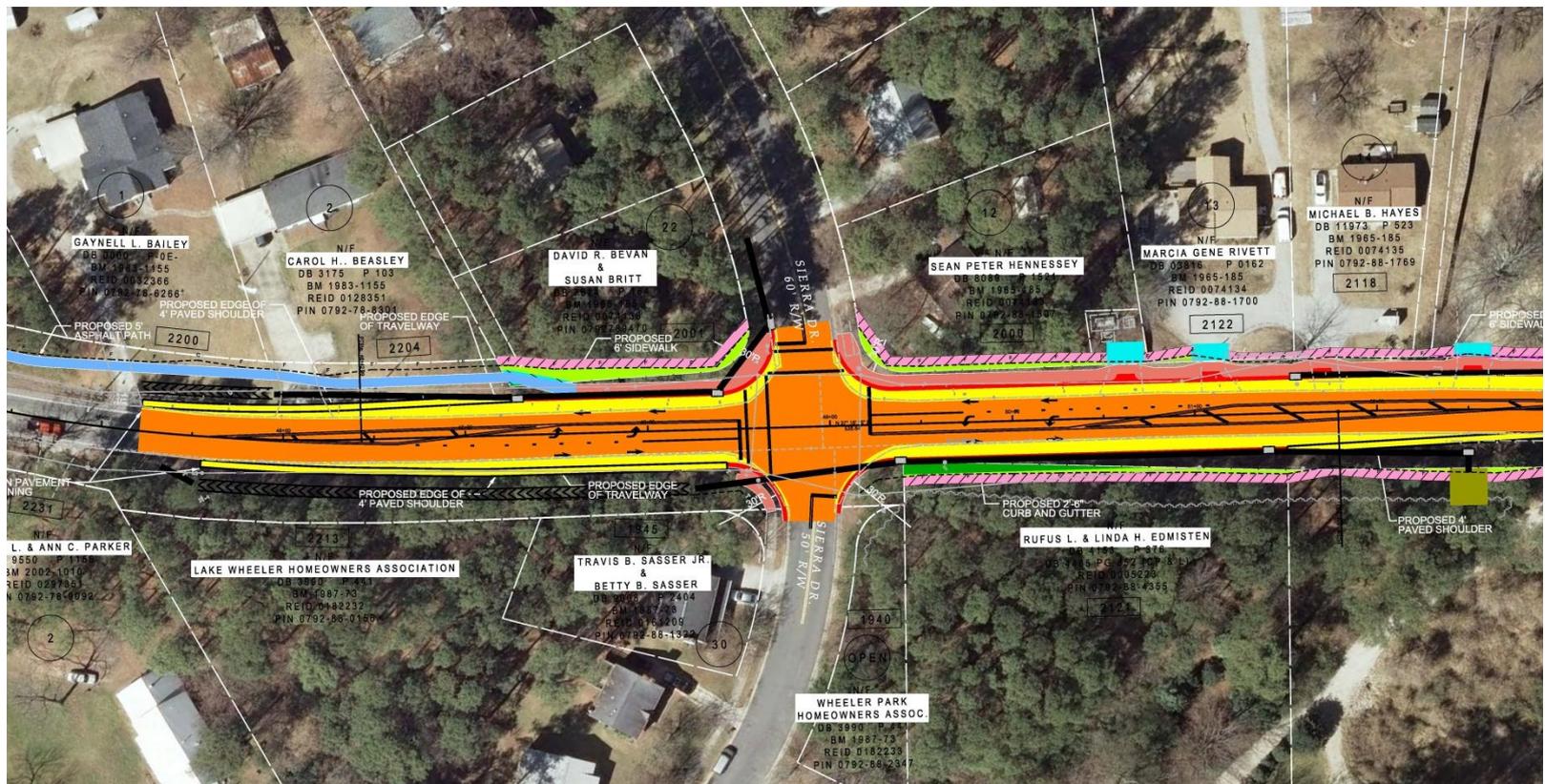


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Proposed Intersection Improvements Sierra Drive



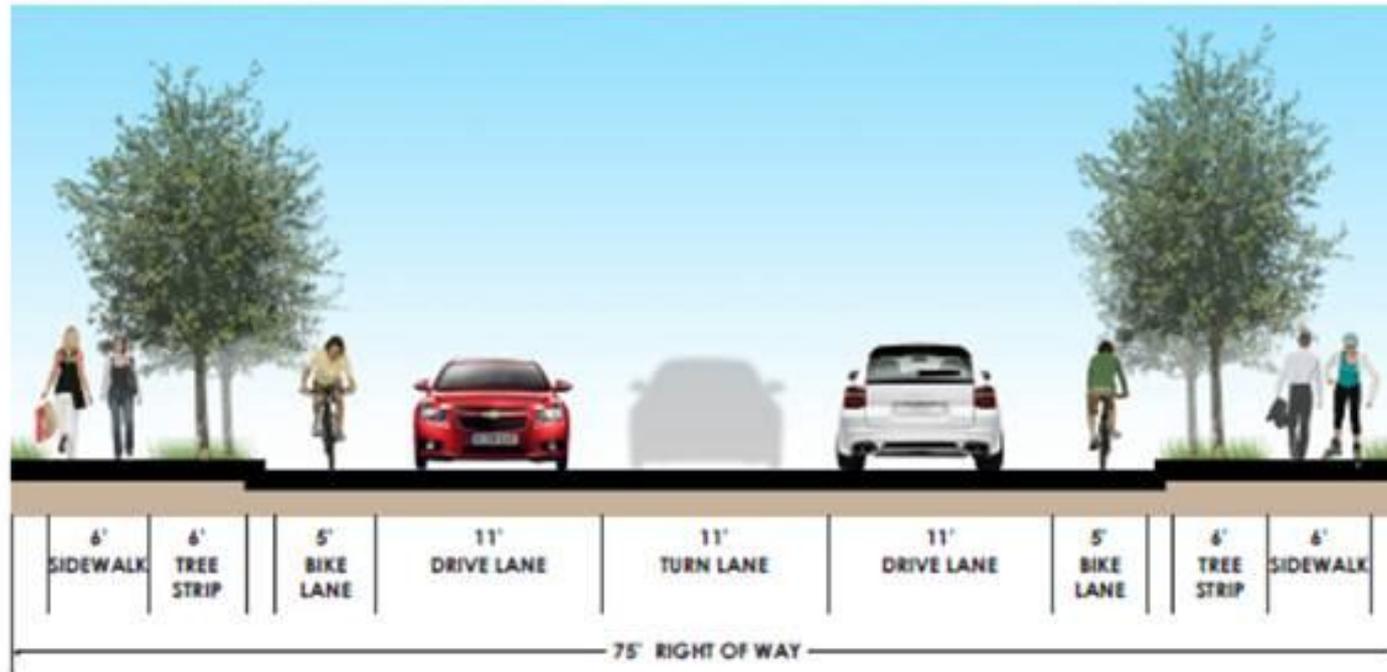
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- Conceptual Typical Section(s) as discussed at Lake Wheeler Corridor Study in Fall 2012
 - Median Undivided Alternative

3-LANE AVENUE – NO MEDIAN



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■ Citizen Concerns from Public Hearing

- Sierra Drive/Carolina Pines Avenue need for left turn lanes
 - As requested at the first public meeting on March 28, City staff provided a brief summary of accident data along corridor.
 - Accident analysis was done between I-40 to just north of Tryon Road intersection (i.e. Tryon Road intersection excluded since it was outside the project limits)
 - 3 year period – March 15, 2009 – March 15, 2012
 - 123 Total crashes
 - 32 injuries
 - 6 pedestrian strikes
 - 45% crashes were rear end collisions (red flag of stop and go traffic congestion)
 - Majority of crashes in PM peak hours (4-7 PM) during work week
 - Highest location of crashes along corridor were at Carolina Pines Avenue, Sierra Drive, and Lineberry Road

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High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	123	100.00
Fatal Crashes	1	0.81
Non-Fatal Injury Crashes	31	25.20
Total Injury Crashes	32	26.02
Property Damage Only Crashes	91	73.98
Night Crashes	27	21.95
Wet Crashes	29	23.58
Alcohol/Drugs Involvement Crashes	7	5.69

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	123	100.00
Fatal Crashes	1	0.81
Class A Crashes	0	0.00
Class B Crashes	10	8.13
Class C Crashes	21	17.07
Property Damage Only Crashes	91	73.98

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	33	26.83
ANIMAL	3	2.44
FIXED OBJECT	1	0.81
HEAD ON	2	1.63
LEFT TURN, DIFFERENT ROADWAYS	6	4.88
LEFT TURN, SAME ROADWAY	9	7.32
MOVABLE OBJECT	1	0.81
PEDESTRIAN	2	1.63
RAN OFF ROAD - LEFT	2	1.63
RAN OFF ROAD - RIGHT	5	4.07
REAR END, SLOW OR STOP	56	45.53
RIGHT TURN, DIFFERENT ROADWAYS	1	0.81
SIDESWIPE, SAME DIRECTION	2	1.63

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	1	1.96
Class A Injuries	1	1.96
Class B Injuries	10	19.61
Class C Injuries	39	76.47
Total Non-Fatal Injuries	50	98.04
Total Injuries	51	100.00

Lake Wheeler Road

From Raleigh Oaks Shopping Center to Centennial Parkway



Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	11	8.94
Feb	13	10.57
Mar	13	10.57
Apr	11	8.94
May	13	10.57
Jun	9	7.32
Jul	5	4.07
Aug	7	5.69
Sep	8	6.50
Oct	15	12.20
Nov	10	8.13
Dec	8	6.50

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	19	15.45
Tue	23	18.70
Wed	25	20.33
Thu	16	13.01
Fri	23	18.70
Sat	8	6.50
Sun	9	7.32

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	2	1.63
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	3	2.44
0400-0459	0	0.00
0500-0559	2	1.63
0600-0659	1	0.81
0700-0759	4	3.25
0800-0859	8	6.50
0900-0959	2	1.63
1000-1059	3	2.44
1100-1159	5	4.07
1200-1259	3	2.44
1300-1359	6	4.88
1400-1459	7	5.69
1500-1559	9	7.32
1600-1659	23	18.70
1700-1759	13	10.57
1800-1859	14	11.38
1900-1959	7	5.69
2000-2059	5	4.07
2100-2159	4	3.25
2200-2259	1	0.81
2300-2359	1	0.81

Object Struck Summary

Object Type	Times Struck	Percent of Total
ANIMAL	3	15.79
CATCH BASIN OR CULVERT ON MEDIAN	1	5.26
DITCH	3	15.79
MOVABLE OBJECT	1	5.26
OTHER FIXED OBJECT	1	5.26
PEDESTRIAN	6	31.58
TREE	2	10.53
UTILITY POLE	2	10.53

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
COMMERCIAL BUS	1	0.40
LIGHT TRUCK (MINI-VAN, PANEL)	4	1.59
MOPED	1	0.40
MOTOR HOME/RECREATIONAL VEHICLE	1	0.40
MOTORCYCLE	1	0.40
PASSENGER CAR	136	54.18
PEDESTRIAN	3	1.20
PICKUP	38	15.14
SCHOOL BUS	2	0.80
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	0.40
SINGLE UNIT TRUCK (3 OR MORE AXLES)	1	0.40
SPORT UTILITY	47	18.73
UNKNOWN	5	1.99
VAN	10	3.98

Lake Wheeler Road

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■ Number of Crashes by Intersection

- ❑ I-40/I-440 – 2 (Existing left turn lanes)
- ❑ Kirkland Road – 2 (Existing left turn lane)
- ❑ Village Bluff Place – 1 (Existing left turn lane)
- ❑ Carolina Pines – 10 (Proposed left turn lane)
- ❑ Lawrence Drive – 4
- ❑ Sierra Drive – 8 (Proposed left turn lane)
- ❑ Henslowe Drive – 3
- ❑ Evergreen Ave/Ramsgate St – 1
- ❑ Peach Creek Ct – 4
- ❑ Lineberry Road – 8 (Left turn lane under construction)
- ❑ Stewart Drive – 4
- ❑ Barnhill Drive/Kirk Ave – 2

Lake Wheeler Road

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■ Citizen Concerns from Public Hearing (cont'd)

□ Sierra Drive and Carolina Pines Avenue need for left turn lanes

■ City Staff's Conclusions:

- Left turn lanes at these intersections comply with the conceptual plan for the corridor.
- Left turn lanes enable turning traffic to move into a dedicated lane, to provide through traffic to continue, and provides turning traffic a “safe haven” while waiting to turn.
 - Turn lanes reduce rear end collisions (most prominent crash type along corridor)
 - Improves traffic congestion by increasing traffic gaps
 - Reduces driver frustrations that can lead to dangerous behavior (ex. Through traffic driving around turning vehicles, even onto the grassed shoulder)
 - Reduces likelihood of crashes at the intersection and approaching the intersection
 - Increases sight distance (which was one of the key issues brought up about the Sierra Drive intersection by citizen at public hearing)
- Although there may be other intersections along the corridor that cause delays, the installation of turn lanes at Sierra Drive and Carolina Pines are also critical steps to reducing congestion along the corridor.
- Sierra Drive and Carolina Pines Avenue had the most crashes within the project limits.
- Staff maintains its initial recommendation for constructing left turn lanes at both intersections.

Lake Wheeler Road

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■ Citizen Concerns from Public Hearing (cont'd)

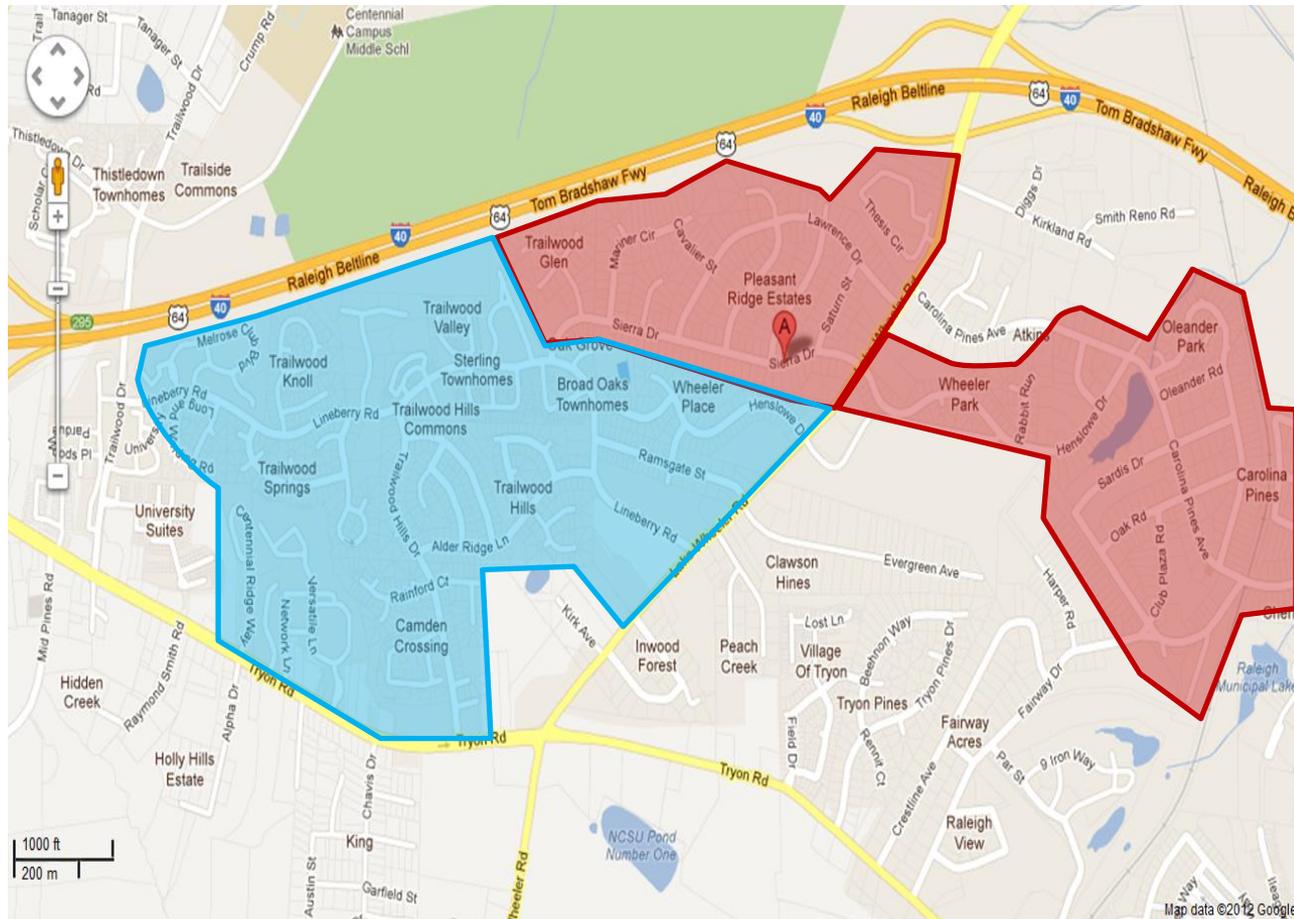
- Can the light at Sierra Drive be relocated to the Lineberry Road intersection?
 - The Lineberry Road intersection is currently under reconstruction for the addition of a northbound left turn lane along with the adjacent townhome development.
 - The Lineberry intersection was analyzed previously by the City and did not meet warrants for a traffic signal. NCDOT concurred with this analysis.
 - MUTCD requires certain signal warrants met prior to installation of traffic signal.
 - Removal of existing traffic signals may be done if a study is performed and the signal no longer meets warrants, however, signal removal is typically a contentious subject as most citizens value them for increased safety.
 - Sierra Drive will continue to be the preferred route for the northern side of Pleasant Ridge Estates Subdivision, especially for traffic exiting the subdivision in AM peak hours heading northbound into downtown.
 - Sierra Drive is the only signalized intersection for residents from Wheeler Park on the east side of Lake Wheeler Road.

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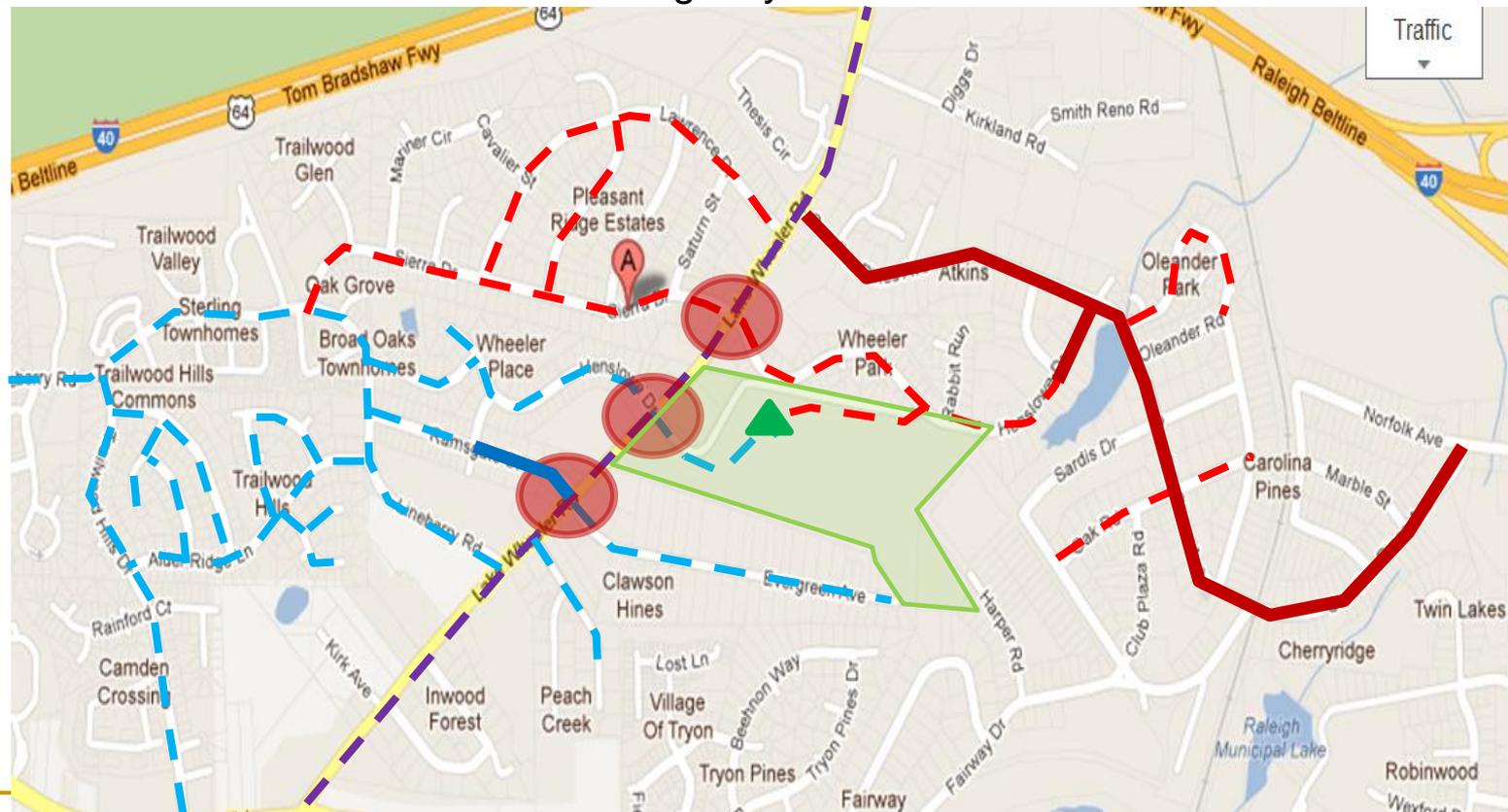


Lake Wheeler Road

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- Sierra Drive/Lineberry Road Signalization Issues (cont'd)
 - Signal at Sierra Drive also provides pedestrians connectivity from both sides of Lake Wheeler Road and allows them to cross safely during the northbound/southbound red light cycle.



Lake Wheeler Road

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■ Citizen Concerns from Public Hearing (cont'd)

- Sierra Drive traffic signal relocation to Lineberry Road (cont'd)
 - Regardless of whether a future signal is warranted at Lineberry Road, there will still be a great need for the Sierra Drive traffic signal to remain in place.
 - Northern half of Pleasant Ridge Estates ingress/egress (especially during AM peak hrs)
 - Lake Wheeler Park traffic ingress/egress (especially during PM peak hrs)
 - Sierra Drive northbound approach is approximately 2.8% grade (not 4.5%-6% grade per citizen's presentation), so road vertical grade should not be a factor.
 - Roadway widening would open corridor and reduce tree canopy at Sierra Drive
 - Would improve sight distance
 - Would improve visual of traffic signal at Sierra Drive
 - Sierra Drive is one of three pedestrian crossings on southern leg of corridor
 - Existing signal provides pedestrians a crossing while traffic is stopped during red light
 - Lineberry Road may eventually warrant a future traffic signal
 - Await build out of the adjacent townhome development
 - Signal study will need to be done as a separate project
 - New traffic signal installation is outside the scope of the municipal agreement
 - Signalization needs to be installed as traffic conditions dictate.

Lake Wheeler Road

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- Citizen Concerns from Public Hearing (cont'd)
 - Sierra Drive traffic signal relocation to Lineberry Road (cont'd)
 - City Staff's Conclusions:
 - Staff maintains its initial recommendations as follows:
 - Retain the traffic signal at Sierra Drive.
 - Following completion of this project, City will continue to monitor Sierra Drive and if warrants for a protected left turn movement are met will coordinate with NCDOT to make signal modifications at that time.
 - Following completion of this project and the build out of the adjacent townhome development, City will continue to monitor Lineberry Road and if warrants for a traffic signal are met will coordinate with NCDOT to install a signal at that time.

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Questions/Comments