

Spalding Dr @ Chamblee-Dunwoody Rd – Spender Tr – Spalding Club Ct



Executive Summary

The intersection of Spalding Drive with Chamblee-Dunwoody Road, Spender Trace, and Spalding Club Court has some significant challenges. Citizens of both the City of Dunwoody and the City of Sandy Springs have expressed concerns about the safety of the southbound left turn from Spalding Drive onto Chamblee-Dunwoody Road.

Several alternatives have been evaluated to improve the safety of the intersection. As outlined in the study below, diverting the traffic to another intersection and closing Chamblee-Dunwoody Road (Alternative F) should provide the most benefit for the cost. Providing a southbound left turn signal phase (Alternative C) is the next most cost effective option, but does not fully resolve the southbound left turn concerns.

Overview

This intersection is currently a five-leg signalized intersection. Spalding Drive is the main street and the two neighborhood streets are split phased from one another. Chamblee-Dunwoody Road operates as an exclusive phase. This intersection has no turn lanes or pedestrian facilities.

The intersection operates in a less than optimal fashion. The split phase operation on the neighborhood streets introduces delay which is particularly realized when there are detection failures. The southbound left turn from Spalding Drive to Chamblee-Dunwoody Rd has no left turn lane and tight visibility. Modifications are worth considering for the benefit of both the Cities of Dunwoody and Sandy Springs.

Options Under Consideration

We are reviewing many different options for this location as follows:

1. Existing Conditions
2. ALT A: Removal of the neighborhood split-phase operation
3. ALT B: Split-phase operation for Spalding Dr
4. ALT C: Left turn phase on Spalding Dr without left turn lane
5. ALT D: Left turn phase on Spalding Dr with left turn lane
6. ALT E: Roundabout
7. ALT F: Road closure and diversion of traffic to Auden
8. ALT G: Regrade hills to provide greater sight distance

Both morning and evening peak hours were analyzed.

General Considerations

Pedestrian facilities should be considered with any significant modifications to this intersection. There are currently no pedestrian crossing facilities at this location.

The current cabinet and controller would allow us to accommodate any of the considered upgrades to the signalized operation.

ALT A: Removal of the neighborhood split-phase operation

It would be worth considering making the neighborhood streets run concurrently, particularly if pedestrian facilities are to be installed in the near future. The neighborhood streets align fairly well, and visibility to the other neighborhood is clear and in a good cone of visibility. If these side streets are changed from split-phase operation to run concurrently, a "left turn yield on green ball" sign should be considered for each approach. Putting these together would not provide us a large operational benefit without the consideration of providing time for pedestrians to cross. I would not recommend this improvement alone, as many customers are not likely to realize the benefit. However, this split-phase removal should be implemented with every retiming consideration.

ALT B: Split-phase operation for Spalding Dr

This option considers the removal of the neighborhood split phase operation while splitting the operation of northbound and southbound Spalding Drive. The signal would serve Chamblee-Dunwoody Road, then Spalding Dr northbound, the Spalding Dr southbound, then the neighborhood streets. This corrects the concerns about conflicts with the southbound left turning vehicles at the cost of efficiency derived from concurrent operation.

ALT C: Left turn phase on Spalding Dr without left turn lane

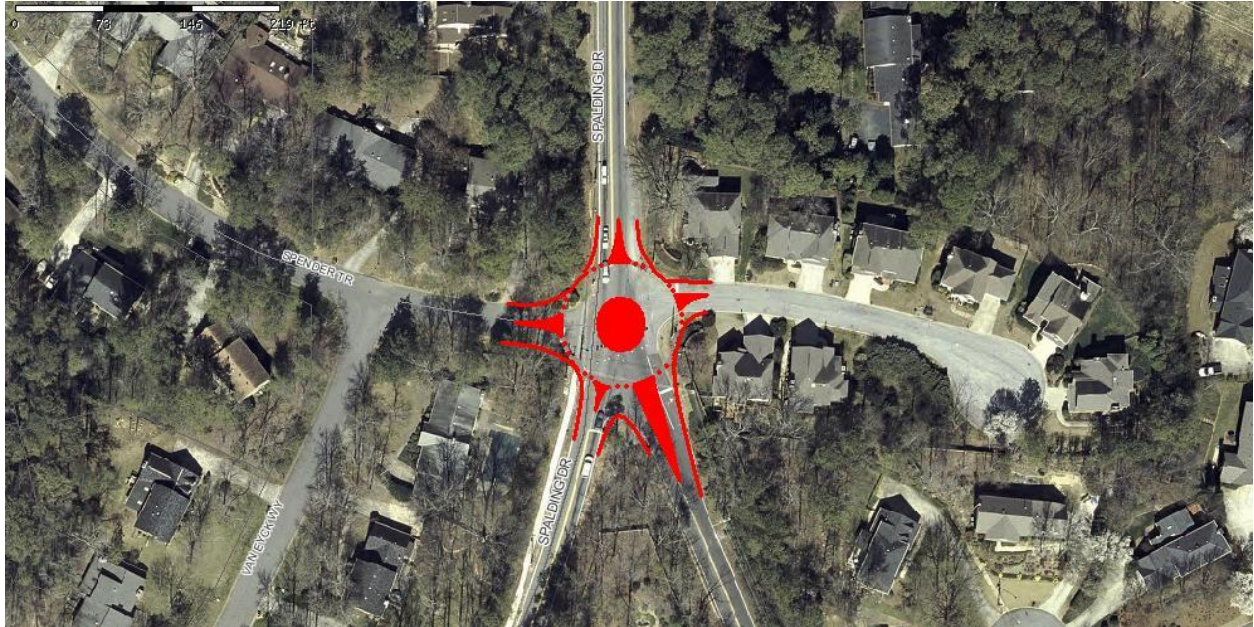
ALT D: Left turn phase on Spalding Dr with left turn lane

With regards to the southbound left turn from Spalding Dr to Chamblee-Dunwoody Rd, we have several options. Installing a "left turn yield on green ball" sign would provide some guidance, but may not resolve the larger issues. Installation of a left turn phase would help operations in the evening peak hour and remove some of the left turners from conflict. However, installation of this phase without a left turn lane suppresses much of the benefit. It would operate similar to the split phase while allowing some concurrent operation. The benefit is diminished by southbound

left turning vehicles arriving after the arrow has finished serving. It would be safer than the current condition, but not necessarily operate better. It would be less safe than the split-phase operation, but likely operate better.

Construction of a left turn lane in addition to the left turn phase was considered. This option would provide greater operational benefit than ALT C, but would require some right of way and easement acquisition.

ALT E: Roundabout



Another construction option for this intersection is a roundabout. The right of way requirements would likely have a similar impact as the left turn lane solutions and would provide a better level of service and good safety performance.

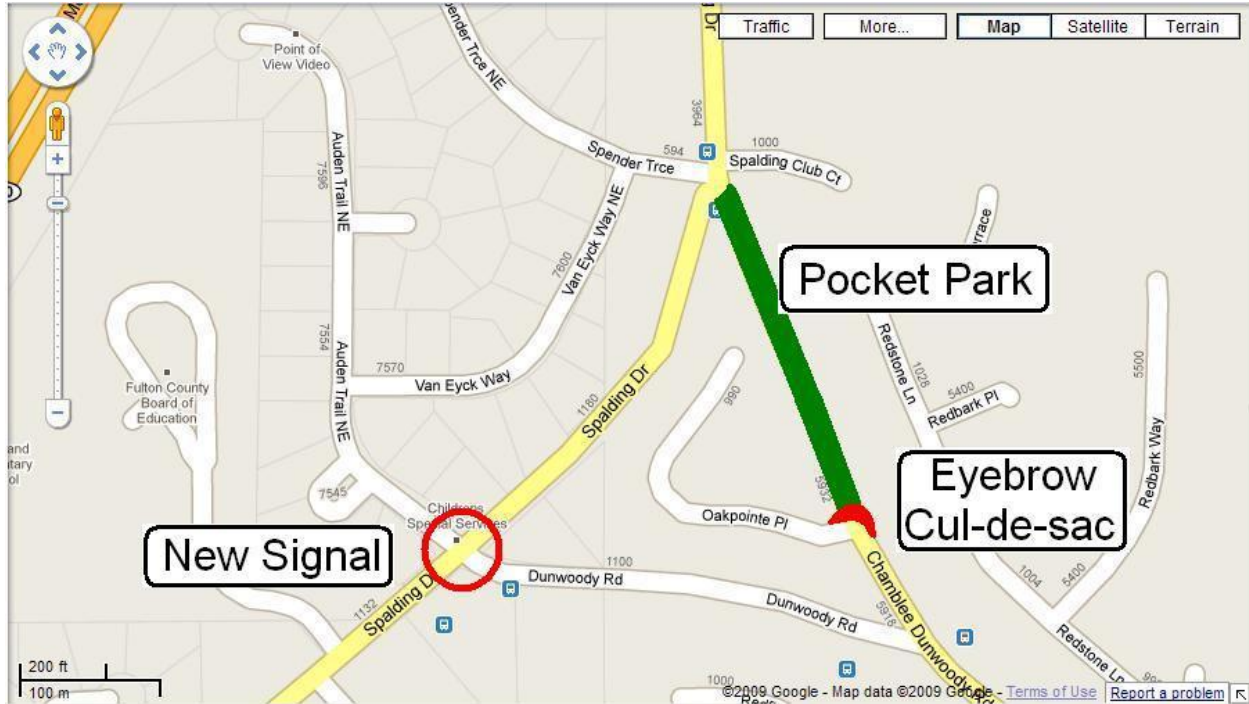
ALT F: Road closure and diversion of traffic to Auden

A larger solution would remove Chamblee-Dunwoody from the intersection and redirect the traffic to the next intersection to the west (Auden Trl and Dunwoody Rd). A traffic shift of this nature would require coordination between Sandy Springs and Dunwoody. Sight distances will need to be considered at all impacted intersections and corrected as feasible.

This alternative would relocate the traffic signal from the Dunwoody intersection and relocate it to the Sandy Springs intersection. The Auden Trl intersection leaves much to be desired (with "Vehicle Approaching when Flashing" beacons due to substandard sight distance), which would be mitigated through the installation of a traffic signal. This conversion takes us from one signalized five-leg intersection and a partially signalized four-leg signal to one signalized four-leg intersection and one unsignalized four-leg intersection.

Chamblee-Dunwoody Road could be closed back to Oakpointe Place, and the remainder of the road could be converted to a pedestrian area or a pocket park. Sight distances out of Spender Tr and Spalding Club Ct should be adequate to be converted to side street stop control. Impact

to Spender Tr would be low, as all the residents of that neighborhood would still have access to a signalized intersection at Auden Trail. Spalding Club Ct would no longer have access to a signalized intersection, but delay should not significantly increase. The overall delay on Spalding Club Ct should be a wash, as the ability to find gaps should be good and the signal delay will be removed.



Minor adjustments may need to be made to the intersection of Dunwoody Road and Chamblee-Dunwoody Road, particularly with pavement markings to redirect the primary flow of traffic. Alternately, minor alignment changes could be made to bring the former main street into more of a side-street configuration.

Road renaming could also be considered. Dunwoody Road could be renamed Chamblee-Dunwoody Road, and the segment of Chamblee Dunwoody Road north of Dunwoody Road could be renamed Oakpoint Place.

The only road access to Chamblee Dunwoody Road between Spalding Dr and Dunwoody Rd is Oakpoint Place. There are no driveways on this segment. No roads and a single property access Dunwoody Road between Spalding Drive and Chamblee-Dunwoody Rd.

ALT G: Regrade hills to provide greater sight distance

If the vertical curves in the road were regraded, adequate sight distance should be attainable so that southbound left turning drivers can determine adequate gaps. Regrading alone will not provide significant operational benefits, so it would be worth considering other construction options, such as a left turn lane on Spalding Drive concurrent to this work. The incremental additional cost would be worthwhile to bundle with the land acquisition and regrading work.

For analysis purposed, the side street split phase was removed, but no additional lanes were constructed.

Operational Analysis

Synchro was used to evaluate the operation of each of the alternatives with the methodology set forth in the *Highway Capacity Manual*. Each alternative was optimized so that the operational comparison is as fair as possible. The table includes Level of Service (LOS) as well as volume to capacity ratios (v/c).

Scenario	AM LOS	v/c	PM LOS	v/c
Existing Conditions	B	0.72	B	0.74
ALT A: Minor S-P adj	B	0.71	B	0.68
ALT B: Split-phase	F	4.36	D	0.88
ALT C: Left turn phase	B	0.69	B	0.67
ALT D: Left turn lane	B	0.57	B	0.64
ALT E: Roundabout	D*	0.59	D*	0.42
ALT F: Traffic diversion	B	0.87	B	0.79
ALT G: Regrading	B	0.71	B	0.68

Alternative E data on the table should be used with caution, as roundabouts and traffic signals are evaluated for operation based on different criteria. Volume to capacity ratios were included to assist with a comparison, but the letter grades are estimates using a methodology other than that published in the HCM. Alternative F shows the signalized operation of the new signalized intersection of Auden Trail – Dunwoody Road. The unsignalized intersection of Spalding Club Ct and Spender Trace would operate at an overall level of service A, with insignificant delays on the neighborhood streets.

Comparative Analysis

This table identifies the safety benefit of the southbound left turn and crosses it with the operational benefit and the construction needs.

Scenario	Operational Change	Safety Benefit	Construction Needs	Land Acquisition Needs
Existing Conditions	N/A	N/A	N/A	N/A
ALT A: Minor S-P adj	Minor Benefit	Minor	Negligible	None
ALT B: Split-phase	Negative	Major	Low	None
ALT C: Left turn phase	Minor Benefit	Moderate	Low	None
ALT D: Left turn lane	Benefit	Moderate	High	Land + Easem't
ALT E: Roundabout	Benefit	Major	High	Land + Easem't
ALT F: Traffic diversion	Minor Negative	Major	High	None
ALT G: Regrading	Minor Benefit	Major	High	Land + Easem't

The four options that fully correct the southbound left turn problem are alternatives B, E, F, and G. The only option not recommended for operational reasons is alternative B; the remaining alternatives are better or not significantly worse. Alternatives D, E, F, and G require significant construction, but alternative F should not require any land or easements.

Alternative F should provide the most benefit for the cost. Alternative C is the next most cost effective option, but does not fully resolve the southbound left turn concerns.