



Z-17-10-002

City of Greensboro Planning Department Zoning Staff Report and Plan Amendment Evaluation

Zoning Commission Hearing Date: October 16, 2017

GENERAL INFORMATION

| | |
|----------------------------|---|
| APPLICANT | Henry Isaacson for T. Cooper James and Associates |
| HEARING TYPE | Rezoning Request |
| REQUEST | Rezone from R-5 (Residential Single Family) and RM-18 (Residential Multifamily) to CD-C-M (Conditional District Commercial-Medium). |
| CONDITIONS | <ol style="list-style-type: none">1. All uses allowed in C-M District except the following:<ol style="list-style-type: none">a. Religious Assemblyb. Shelters (Temporary and Emergency)c. Minor Utilitiesd. Movie Theater and Other Theatere. Hotel/Motelf. Commercial Parkingg. Pawn Shopsh. Sexually Oriented Businessesi. Funeral Homes and Crematoriumsj. Junked Motor Vehiclesk. Land Clearing & Inert Debris Landfillsl. Eating and Drinking Establishments with Drive-through Facilities as a principal or accessory use2. The height of all freestanding signs oriented to Baylor Street and Greenbriar Drive shall not exceed 15 feet. |
| LOCATION | 3900-3908 Baylor Street, 504-510 Greenbriar Road and 3501 North Elm Street |
| PARCEL ID NUMBER(S) | Multiple |
| PUBLIC NOTIFICATION | The notification area for this public hearing was 600 feet (Chapter 30-4-1.4 of the Land Development Ordinance requires notification of the owner of that parcel of land and the owners of all parcels of land adjoining and contiguous to that parcel of land as shown on the County tax listing). 71 notices were mailed to those property owners in the mailing area. |
| TRACT SIZE | 7.3 Acres |

TOPOGRAPHY Sloping to south and east
VEGETATION Residential

SITE DATA

| | | |
|---------------------|---|--|
| Existing Use | | Multifamily and Single family dwellings |
| | Adjacent Zoning | Adjacent Land Uses |
| N | R-5 (Residential Single Family) | Single family dwellings |
| | CD-C-M (Conditional District Commercial Medium) | Retail |
| E | CD-O (Conditional District Office) | Undeveloped and Single family dwelling |
| W | R-5 (Residential Single Family) | Single family dwellings |
| S | RM-18 (Residential Multifamily) | Multifamily dwellings |
| | R-5 (Residential Single Family) | Single family dwellings |

Zoning History

| Case # | Date | Request Summary |
|--------|------|--|
| N/A | N/A | The property is currently zoned R-3 (Residential Single-Family) and RM-18 (Residential Multifamily) and has been since the adoption of the Land Development Ordinance in July 2010. Prior to the LDO, the subject property was zoned RS-9 (Residential Single-Family) and RM-18 (Residential Multifamily). |

ZONING DISTRICT STANDARDS

District Summary *

| Zoning District Designation: | Existing (R-5) | Existing (RM-18) | Requested (CD-C-M) |
|------------------------------|---|---|---|
| Max. Density: | 5.0 units per gross acre | 18.0 units per gross acre | N/A |
| Typical Uses | Primarily intended to accommodate low to medium density single-family detached residential development. | Primarily intended to accommodate multifamily and similar residential uses. | Limited to retail, restaurants, offices and personal service uses |

**These regulations may not reflect all requirements for all situations; see the City of Greensboro Land Development Ordinance for all applicable regulations for site requirements for this zoning district.*

SPECIAL INFORMATION

Overlay District Ordinance/Historic Preservation

Subject site is located in the North Elm Street Visual Corridor Overlay Zone, which prohibits establishment of new outdoor advertising signs therein.

Environmental/Soils

Water Supply Watershed If site drains to the South, site will drain to N.Buffalo Creek, Non-watersupply watershed

Floodplains >2000FT

Streams N/A

Other: If site drains to the South, North Buffalo Creek, non-watersupply watershed and >1acre is disturbed AND the impervious (BUA) amount is increased, site must meet Phase 2 requirements – Water Quality and Water Quantity Control must be addressed.

Utilities

Potable Water Available

Waste Water Available

Airport Overlay District & Noise Cone

N/A

Landscaping & Tree Conservation Requirements

Landscaping:

Street Yard: Street planting yards must be installed abutting public street rights-of-way. The required street planting yard must have a minimum width of 10 feet (as measured from the outside edge of the right-of-way or the back of the sidewalk, whichever is further from the street centerline) and include at least 2 canopy trees and 17 shrubs per 100 linear feet of required street planting yard, not including allowed driveways.

Buffer Yard:

Adjacent to single-family residential: Type B buffer yard, with an average width of 25', a minimum width of 20', and a planting rate of 3 canopy trees, 5 understory trees, and 25 shrubs per 100 l.f.

Adjacent to vacant property or commercial uses: Vehicular Use Area buffer yard (see below) between any parking lot or drive aisle and the adjacent property line.

Parking lot: When a parking lot or other vehicular use area abuts a vacant site or a site with the same land use classification as the subject site, a planting yard with a

minimum width of 5 feet must be provided between the parking lot/vehicular use area and the abutting (interior) property line. This required planting area must be landscaped with at least 2 understory trees and 18 evergreen shrubs per 100 linear feet.

Trees for required parking spaces: 1 canopy tree per 12 spaces, in islands or medians within the parking lot.

Tree Conservation:

For 7.3 acres, 10% of parcel size in critical root zone to be dedicated for Tree Conservation, if disturbed area is greater than 3,000 s.f.

Transportation

| | |
|-----------------------------|--|
| Street Classification: | N. Elm Street - Major Thoroughfare. Baylor Street – Collector Street. Greenbriar Road – Collector Street. |
| Site Access: | All access(s) must be designed and constructed to the City of Greensboro standards. |
| Traffic Counts: | N. Elm Street ADT = 18,376 (GDOT, 2017). |
| Trip Generation: | 24 Hour = 6,706, AM Peak Hour = 210, PM Peak Hour = 608. |
| Sidewalks: | Sidewalks are a requirement of the Development Ordinance. 5' sidewalk with a 5' grass strip is required along both sides of thoroughfares. 5' sidewalk with a 3' grass strip is required along one side (at a minimum, collectors may require sidewalk on both sides) of all other street types. Sidewalk does exist along a portion of the frontage of this property. |
| Transit in Vicinity: | Yes, GTA Route 3 (North Elm Street) is adjacent to subject site, along N. Elm Street. |
| Traffic Impact Study: (TIS) | Yes, required per TIS Ordinance. Please see the end of this staff report for the Executive Summary of the TIS. |
| Street Connectivity: | N/A. |
| Other: | N/A. |

IMPACT/POLICY ANALYSIS

Land Use Compatibility

The proposed **CD-C-M (Conditional District – Commercial – Medium)** zoning, as conditioned, would allow land uses that are compatible with the general character of the area.

Connections 2025 Comprehensive Plan Policies

The Generalized Future Land Use Map designates this location as **Moderate Residential (5-12 d.u./acre)**. The requested **CD-C-M (Conditional District – Commercial – Medium)** zoning district, as conditioned, is generally inconsistent with the **Moderate Residential (5-12 d.u./acre)** GFLUM designation, however the applicant has concurrently submitted a request (CP 17-08) to amend the GFLUM designation on the subject site to **Mixed Use Commercial** which, if approved, would resolve this inconsistency. The Growth Strategy Map designates the subject site as being located in the North Elm Street / Pisgah Church Road Activity Center.

Connections 2025 Written Policies

Land Use Goal 4.1 – Growth Strategy: Promote sound investment in Greensboro's urban areas, including Center City, commercial and industrial areas, and neighborhoods.

Policy 4A: Remove present impediments to infill and investment in urban areas.

Policy 4B: Target capital investments to leverage private investment in urban areas.

Policy 4C: Promote new patterns and intensities of use to increase economic competitiveness and enhance quality of life in urban areas.

Policy 4D: Identify potential opportunities and selectively target, plan and promote development/reuse initiatives.

Community Character, Goal 5.2 – Man-Made Environment: Preserve and enhance the character and visual quality of Greensboro's built environment, including historic resources, private developments, and public landscapes.

Policy 5E: Improve the aesthetic quality of publicly owned and maintained landscapes.

Policy 5F: Implement and improve design standards governing the appearance of development from public roadways.

Housing and Neighborhoods, Goal 6: Meet the needs of present and future Greensboro citizens for a choice of decent, affordable housing in stable, livable neighborhoods that offer security, quality of life, and the necessary array of services and facilities.

Policy 6C: Promote the diversification of new housing stock to meet the needs of all citizens for suitable, affordable housing.

Economic Development, Goal 7: Promote a healthy, diversified economy with a strong tax base and opportunities for employment, entrepreneurship and for-profit and non-profit economic development for all segments of the community, including under-served areas such as East Greensboro.

Policy 7A: Target city investment and regulatory policies for economic development.

Policy 7C: Ensure that city land use policies and regulations allow for an adequate supply of land to accommodate economic development.

Transportation, Goal 8: Develop and maintain a safe, efficient, and environmentally sound transportation system that provides convenient choices for accessing destinations throughout Greensboro and the Triad, including a range of well-integrated transit, pedestrian, and bicycle linkages.

Policy 8A: Maintain a roadway network that safely and efficiently accommodates vehicular traffic while supporting other community objectives defined in the Comprehensive Plan.

Connections 2025 Map Policies

Moderate Residential (5-12 d.u./acre): This category accommodates housing types ranging from small-lot, single-family detached and attached single-family dwellings such as townhomes to moderate density, low-rise apartment dwellings.

Mixed Use Commercial: This designation is intended to promote a mix of uses, of which various commercial uses remain predominant, but where residential, service, and other uses are complementary. Where applied to older highway corridors characterized by “strip” commercial uses, the intent is to encourage infill and redevelopment for a more diverse and attractive mix of uses over time. Examples include residential units over commercial uses or a wider array of economically viable uses to replace obsolete uses. Such areas also may represent opportunities for the introduction of substantial higher density and/or mixed-income housing, with negligible impacts on, or resistance from, nearby single-family neighborhoods. Ensuring that buildings are of the appropriate scale and intensity is critical, as is ensuring that sites are designed in a coordinated, as opposed to a lot-by-lot, manner. New “strip” commercial development is discouraged.

Activity Center: Activity Centers are existing or anticipated future concentrations of uses that function as destinations or hubs of activity for the surrounding area. Typically located in areas of mixed use shown on the Generalized Future Land Use Map, such centers are intended to include features such as a mix of higher intensity uses (housing, retail, office, etc.), compact development patterns, and pedestrian and transit linkages. A one-half mile radius (considered the limit of a comfortable walk) is shown around each activity center except for the Downtown, which functions as an activity center for the entire City. It should be noted that the locations shown on the Generalized Future Land Use Map are conceptual and do not preclude the development of Activity Centers in other locations where they would support the goals and policies of the Comprehensive Plan.

Comprehensive Plan Amendment History

| Case # | Date | Request Summary |
|--------|------|-----------------|
| n/a | n/a | n/a |

Applicant Stated Reasons for Request

“During the past twenty years or so, this side of the block has seen a steady change from residential apartments to commercial, except for the subject property. There is currently commercial development on both the east side and much of the western side of N. Elm Street in this area. This change would allow the western side of North Elm Street to become consistent with the remaining properties in this block.

Also, this property is located in one of the city’s Activity Circles as shown on the existing Comprehensive Land Use Plan.”

Explain in detail the conditions that you think may warrant a Plan Amendment – Per Applicant and Application

“This area which houses low rent apartments has given rise to a substantial amount of crime. The development plan would eliminate those remaining low rent crime ridden apartments and replace them with new commercial construction, similar to the remainder of the block.”

COMPREHENSIVE PLAN POLICY ANALYSIS

Need for Proposed Change

The requested **CD-C-M (Conditional District – Commercial – Medium)** zoning, as conditioned, would allow uses that are incompatible with the subject site’s current GFLUM designation as **Moderate Residential (5-12 d.u./acre)**. If approved, the requested GFLUM amendment (**CP 17-08**) to **Mixed Use Commercial** would resolve this inconsistency.

Effect of the proposed Change on the Need for City Services and Facilities (e.g. roadway level of service).

n/a

Implications, if any, the Amendment may have for Other Parts of the Plan

n/a

Unforeseen Circumstances or the Emergence of New Information (e.g. significant economic opportunity in Tier 2 or 3)

n/a

PLANNING BOARD COMMENTS

The Planning Board reviewed the GFLUM amendment request CP 17-08 during its meeting on September 20, 2017. The Planning Board expressed concern about the request in context of the update to the Comprehensive Plan, pointing out that the North Elm Street Corridor is under pressure. The Board had concerns generally about where the line would stop, and where non-residential development stops. Further concern was expressed about the impact to established neighborhoods in the vicinity. The Board stated that this location should be considered for further evaluation as an area ripe for development. The Board concluded that the requested change is in keeping with development trends; that the requested location is an example of a mixed use node; and that mixed use in this location is needed to meet growing demand for services in an area in dire need of additional development.

CONFORMITY WITH OTHER PLANS**City Plans*****Sustainability Action Plan*****Element 1) Transportation and Land Use:**

Policy 1) Encourage increased density, a mix of land uses and more integrated links between transportation and land use through changes to Greensboro's Comprehensive Plan, Development Ordinance and other related plans.

Element 2) Green Jobs and Buildings:

Policy 3) Develop a coordinated City program to provide technical support, energy audits and education and outreach to increase energy efficiency and conservation in commercial and residential buildings.

Policy 4) Use a combination of code changes, incentives, partnerships and education to promote green building in Greensboro.

Policy 6) Promote more efficient use of water through education, partnerships and pilot projects.

Element 3) Waste Reduction and Recycling:

Policy 7) Employ a combination of expanded recycling infrastructure, regulations and incentives to increase Greensboro's solid waste diversion and recycling rates.

Element 6) Education and Outreach:

Policy 11) Provide technical support, awards and recognition to individuals and organizations furthering Greensboro's energy and sustainability efforts.

Other Plans

n/a

STAFF ANALYSIS AND RECOMMENDATION**Community Outreach**

Applicant is strongly encouraged to discuss this proposed rezoning and development with owners of surrounding properties and with representatives of the Spicewood Neighborhood and the New Irving Park Neighborhood, within which the subject site is located.

Staff Analysis

The 7.3 acre subject site currently contains single family and multifamily residential dwellings. Uses to the north are residential single family dwellings (zoned R-5) and retail (zoned CD-C-H), with additional restaurant, service and retail uses located further north (zoned CD-C-H and CD-C-M). To the east is a single family dwelling and undeveloped property (zoned CD-O), to the south are single family and multifamily dwellings (zoned R-5 and RM-18) and to the west are single family dwellings (zoned R-5).

The Comprehensive Plan's Future Land Use Map currently designates this area as Moderate Residential. The Moderate Residential designation accommodates housing types ranging from small-lot, single-family detached and attached single-family dwellings such as townhomes to moderate density, low-rise apartment dwellings, generally in a density range of 5-12 dwelling units per acre. As part of this request the applicant has requested to change the future land use designation to Mixed Use Commercial. The Mixed Use Commercial designation applies to neighborhoods or districts where the predominant use is residential and where substantial, compatible local-serving nonresidential uses may be introduced.

The proposed request does support the Comprehensive Plan's Reinvestment/Infill goal to promote sound investment in Greensboro's urban areas and the Economic Development Goal to promote a healthy, diversified economy with a strong tax base and opportunities for employment, entrepreneurship and for-profit and non-profit economic development for all segments of the community. This request does contain conditions related to use restrictions and signage to reduce potential impacts on nearby residential uses.

This request is consistent with the intent and purpose of the zoning code, the Comprehensive Plan (Connections 2025) and is generally compatible with the existing development and trend in the surrounding area.

Staff Recommendation

Staff recommends **approval** of the requested **CD-C-M** (Conditional District Commercial Medium) zoning district.

Additional Information
N. Elm Street Development – Transportation Impact Analysis
Greensboro, NC
Prepared for T. Cooper James & Associates
October 5, 2017

Executive Summary

The North Elm Street Development is located between Pisgah Church Road, N. Elm Street, Greenbriar Road and Baylor Street in Greensboro, North Carolina. The site plan consist of 49,358 square feet of supermarket and 11,440 square feet of retail. The site plan currently shows three (3) accesses, one (1) on N. Elm Street, one (1) on Greenbriar Road and one (1) on Baylor Street.

DAVENPORT was retained to determine the potential traffic impacts of this development and to identify transportation improvements that may be required to accommodate the impacts of both background traffic and new development traffic. The following intersections were included in the study:

- Pisgah Church Road at Baylor Street
- Pisgah Church Road at N. Elm Street
- Greenbriar Road at Baylor Street
- Greenbriar Road at N. Elm Street
- Spicewood Drive at N. Elm Street
- Baylor Street at Site Access
- N. Elm Street at Site Access (right-in/ right-out)
- Greenbriar Road at Site Access

The intersections were analyzed during the AM (7-9 am) and PM (4-6 pm) peaks for the following conditions:

- 2017 Existing Conditions
- 2019 Future No Build Conditions
- 2019 Future Build Conditions
- 2019 Future Build Condition with Mitigation (if necessary)

The Greensboro Department of Transportation (GDOT) and the North Carolina Department of Transportation (NCDOT) were contacted to obtain background information and to ascertain the elements to be covered in this Transportation Impact Analysis (TIA). Information regarding the property was provided by the T. Cooper James & Associates.

Discussion of Results

The following section discusses level of service for each intersection.

Pisgah Church Road at Baylor Street

This signalized intersection currently operates at LOS B during the AM and PM peaks. In 2019 future no build conditions and with addition of proposed site traffic, LOS B is expected to remain in the AM and PM peaks. Therefore, no improvements are recommended.

Pisgah Church Road at N. Elm Street

This signalized intersection currently operates at LOS D during the AM and PM peaks. In 2019 future no build condition, LOS D is expected in the AM peak and LOS E in the peak. With the addition of proposed site traffic, LOS E is expected in the AM peak and LOS F in the PM peak. This intersection is part of a NCDOT project, U-5842, that will improve the existing intersection. Though the design plans have not been completed, with the improvements to this intersection, it should improve the level of service without any additional recommendations. Therefore, no improvements are recommended for the developer to construct.

Greenbriar Road at Baylor Street

This unsignalized intersection currently operates at LOS A during the AM and PM peaks. In 2019 future no build condition and with the addition of proposed site traffic, LOS A is expected to remain in the AM and PM peaks. No improvements are recommended for this intersection.

Greenbriar Road at N. Elm Street

This unsignalized intersection currently operates at LOS C during the AM and PM peaks. In 2019 future no build condition, LOS C is expected in the AM and PM peaks. With the addition of proposed site traffic, LOS E is expected in the AM peak and LOS F in the PM peak. This intersection was assessed for a signal warrant, discussed in the following section, and it was determined that a signal is warranted. Therefore, it is recommended to signalize when warranted.

With these improvements, LOS A is expected in the AM peak and LOS B in the PM peak.

Spicewood Drive at N. Elm Street

This unsignalized intersection currently operates at LOS C during the AM peak and LOS B in the PM peak. In 2019 future no build condition and with addition of proposed site traffic, LOS C is expected to remain in the AM peak and LOS B in the PM peak. No improvements are recommended.

Baylor Street at Site Access

In 2019 future build condition, LOS A is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary turn lane would not be warranted. Therefore, no improvements are recommended.

N. Elm Street at Site Access

In 2019 future build condition, LOS A is expected in the AM and PM peaks. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary turn lane would be warranted. It is recommended to provide a southbound right turn lane of 100 feet of storage and appropriate taper. The median at this access will be design based on GDOT standards.

Greenbriar Road at Site Access

In 2019 future build condition, LOS A is expected in the AM and LOS B in the PM peak. This site access was assessed for the need of turn lanes. It was determined based on GDOT Driveway Manual, that an auxiliary would not be warranted. Therefore, no improvements are recommended.

The recommended improvements are illustrated in Figure 9 in the report.

Level of Service Summary

Table A summarizes the level of service analysis at the study intersections:

| Table A - Level of Service Summary | | | | |
|---|-------------------------|-------------------------|-------------------------|------------------------------|
| AM Peak | 2017 Existing | 2019 No Build | 2019 Build | 2019 Build with Improvements |
| Pisgah Church Road at Baylor Street | B (13.6) | B (14.6) | B (15.1) | |
| Pisgah Church Road at N. Elm Street | D (40.9) | D (54.3) | E (60.5) | |
| Greenbriar Road at Baylor Street | A (8.7) WB Approach | A (8.7) WB Approach | A (8.7) WB Approach | |
| Greenbriar Road at N. Elm Street | C (18.9) EB Approach | C (19.7) EB Approach | E (43.5) EB Approach | A (6.0) Signalized |
| Spicewood Drive at N. Elm Street | C (15.3) WB Approach | C (15.8) WB Approach | C (15.0) EB Approach | |
| Baylor Street at Site Access | | | A (8.5) WB Approach | |
| N. Elm Street at Site Access | | | A (9.7) EB Approach | A (9.6) EB Approach |
| Greenbriar Road at Site Access | | | A (9.2) SB Approach | |
| LOS (delay in seconds) Note for unsignalized conditions, LOS and delay indicates only minor street approach with longest delay | | | | |

| Table A - Level of Service Summary cont. | | | | |
|---|-------------------------|-------------------------|--------------------------|-------------------------------------|
| PM Peak | 2017 Existing | 2019 No Build | 2019 Build | 2019 Build with Improvements |
| Pisgah Church Road at Baylor Street | B (11.6) | B (11.9) | B (13.5) | |
| Pisgah Church Road at N. Elm Street | D (47.9) | E (67.2) | F (87.1) | |
| Greenbriar Road at Baylor Street | A (8.8) WB Approach | A (8.9) WB Approach | A (8.9) WB Approach | |
| Greenbriar Road at N. Elm Street | C (17.2) WB Approach | C (17.8) WB Approach | F (319.2) EB Approach | B (14.1) Signalized |
| Spicewood Drive at N. Elm Street | B (14.4) WB Approach | B (14.8) WB Approach | B (14.4) WB Approach | |
| Baylor Street at Site Access | | | A (8.7) WB Approach | |
| N. Elm Street at Site Access | | | A (9.7) EB Approach | B (11.7) EB Approach |
| Greenbriar Road at Site Access | | | B (10.7) SB Approach | |
| LOS (delay in seconds) Note for unsignalized conditions, LOS and delay indicates only minor street approach with longest delay | | | | |

Proposed Site Access Throat Distances

The internal throat distances for the site accesses were reviewed using the GDOT Driveway Manual, which states that the distance from the adjacent street right of way to the near side of any internal service drive or parking aisle should be 25 feet, or greater than the expected inbound queue at the location. To determine the inbound queues, internal intersections were modeled for each access and queue reports generated using SimTraffic 9. Based on the number of vehicles entering Site Access on Baylor Street during the AM and PM peaks (25 and 41 vehicles, respectively), a minimum throat distance of 50 feet will be required. For Site Access on Greenbriar Road, with 43 vehicles entering in the AM peak and 126 vehicles entering in the PM peak, a minimum throat distance of 60 feet will be required. For Site Access on N. Elm Street, with 62 vehicles entering in the AM peak and 140 vehicles entering in the PM peak, a minimum throat distance of 60 feet will be required. The queuing reports can be found in the Appendix. The access points should be designed according to the GDOT Driveway Manual.

| Table B – Site Access Throat Queuing | | | |
|---|---|---------|--|
| Intersection Movement | SimTraffic 95th Percentile Queue (feet) | | Minimum Recommended Throat Distance (Feet) |
| | AM Peak | PM Peak | |
| Site Access (Baylor) EB Through-Right | 43 | 50 | 50 |
| Site Access (Greenbriar) NB Through-Right | 49 | 58 | 60* |
| Site Access (N. Elm) WB Left-Through-Right | 47 | 52 | 60* |

*Note: Based on the maximum queues observed in SimTraffic simulation.

Pedestrian Accommodations

At the intersection of N. Elm Street and Greenbriar Road, 84 pedestrians were counted to have crossed this intersection over a 13-hour time period. There are currently sidewalks on both sides of N. Elm Street. However, there are no sidewalks along Greenbriar Road.

The proposed development will construct sidewalks along the frontage of the property.

It is recommended that as part of the installation of the signal at N. Elm Street and Greenbriar Road, pedestrian signal accommodations should also be installed.

It is also recommended that GDOT consider constructing sidewalks on the east leg of Greenbriar Road as pedestrians were observed along the road.

Signal Warrant Analysis

The signal warrant analysis was conducted for the intersection of Greenbriar Road and N. Elm Street. This intersection is currently an unsignalized intersection. The intersection of Spicewood Drive and N. Elm Street was also counted for 13-hours to estimate the amount of vehicles that would reroute to use the signalized intersection versus utilizing an unsignalized intersection. The analysis was conducted using PC-Warrants software. The Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD 2009 Edition), has established nine criteria that can be used to justify the installation of a Traffic signal, which are the following:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

The applicable warrants were measured for existing conditions, and future build conditions. Warrants 4, 5, 6, 7, 8 and 9 were not applicable for this analysis.

Existing Conditions

Warrants 1-3, Traffic Volumes

Warrants 1-3 are related to traffic volumes and were considered for existing conditions. The 85th percentile speed on N. Elm Street was assumed to be less than 40 mph for this analysis; therefore, the 100% volumes were utilized for the warrants.

Based on the existing traffic volumes at this intersection, Warrants 1-3 are currently not satisfied.

Future Build Conditions

Warrants 1-3, Traffic Volumes

Warrants 1-3 are related to traffic volumes and were considered for future build conditions. The site trips were distributed over the 13-hour time period based on the ITE percentages of shopping center traffic.

Based on the future build traffic volumes at this intersection, Warrants 1, 2 and 3 are satisfied.

Signal Warrant Analysis Results

The results of the signal warrant analysis are summarized in Table C, below. As shown, none of the MUTCD signal warrants are currently met under existing conditions. Additional information and reports from PC-Warrants can be found in the Appendix.

| Table C – Signal Warrant Analysis | | | | | | |
|---|----------------------------|---------|-----|--------------------------------|---------|-----|
| Warrant | Existing Conditions | | | Future Build Conditions | | |
| | Status | | | Status | | |
| | N/A | Not Met | Met | N/A | Not Met | Met |
| Warrant 1: Eight-Hour Vehicular Volume | | X | | | | X |
| Warrant 1A – Minimum Vehicular Volume | | X | | | | X |
| Warrant 1B – Interruption of Continuous Traffic | | X | | | | X |
| Warrant 1C – Combination of Warrants | | X | | | | X |
| Warrant 2: Four-Hour Vehicular Volume | | X | | | | X |
| Warrant 3: Peak Hour | | X | | | | X |
| Warrant 4: Pedestrian Volume | X | | | X | | |
| Warrant 5: School Crossing | X | | | X | | |
| Warrant 6: Coordinated Signal System | X | | | X | | |
| Warrant 7: Crash Experience | X | | | X | | |
| Warrant 8: Roadway Network | X | | | X | | |
| Warrant 9: Intersection Near a Grade Crossing | X | | | X | | |

Summary and Conclusion

The North Elm Street Development is located between Pisgah Church Road, N. Elm Street, Greenbriar Road and Baylor Street in Greensboro, North Carolina. The site plan consist of 49,358 square feet of supermarket and 11,440 square feet of retail. The site plan currently shows three (3) accesses, one (1) on N. Elm Street, one (1) on Greenbriar Road and one (1) on Baylor Street.

Based on trip generation rates and equations published in Trip Generation (Institute of Transportation Engineers, 9th Edition), this development has a trip generation potential of 210 trips in the AM peak and 425 trips in the PM peak.

Based on the analysis, it is expected that each study intersection is to operate at LOS C or better in the AM and PM peaks with recommended improvements with the exception of Pisgah Church Road at N. Elm Street. This intersection is expected to operate at LOS E/F. This intersection is planned for improvements by NCDOT and should be able to accommodate future capacity when constructed.

A signal warrant analysis was conducted on the intersection of N. Elm Street at Greenbriar Road for a 13-hour time period. It was determined that Warrants 1, 2 and 3 were met in the future build conditions. Since three volume based warrants are met, it is recommended to signalize when warranted.

The recommended improvements are summarized in Table D on the following page.

In conclusion, this study has reviewed the impacts of both background traffic and this development traffic, and has determined that with the recommended improvements in place, there will be adequate capacity to accommodate future traffic. The final design of these improvements will need to be coordinated during the site plan approval process. Please note that all accesses to the site and medians are required to be constructed to GDOT standards.

| Table D – Recommended Improvement Summary | |
|--|---|
| Pisgah Church Road at Baylor Street | No improvements recommended |
| Pisgah Church Road at N. Elm Street | No improvements recommended |
| Greenbriar Road at Baylor Street | No improvements recommended |
| Greenbriar Road at N. Elm Street | Signalize when warranted |
| Spicewood Drive at N. Elm Street | No improvements recommended |
| Baylor Street at Site Access | No improvements recommended |
| N. Elm Street at Site Access | Provide southbound right turn lane of 100 feet of storage and appropriate taper. Median will be constructed to GDOT standards |
| Greenbriar Road at Site Access | No improvements recommended |
| Pedestrian Accommodations | Provide pedestrian signal accommodations |