

Memorandum

To: Matt Lowder
Branch Manager / Bowman Consulting NC Ltd

From: Andrew J. Petersen, P.E.- Chief Engineer / Bowman Consulting
Rodrigo Meirelles - Analyst/ Bowman Consulting
Daniela Jurado - Analyst/ Bowman Consulting

Date: 04/27/2022

Re: Tractor Supply Store - Parking Demand Assessment 04/27/2022

As requested, Bowman has completed the Parking Analysis for the proposed 21,147 SF Tractor Supply Store. The proposed development is located along Old US-264 Hwy east of the intersection of Old US-264 Hwy and E Gannon Ave, in the Town of Zebulon, North Carolina.

The purpose of this memorandum is to determine the number of parking spaces required according to the applicable land use of the proposed site, and to evaluate if the number of proposed parking spaces for the site will be adequate to support the anticipated parking demand.

Figure 1 depicts the location of the proposed site. The latest conceptual site plan is presented in **Appendix A**.



Figure 1 Location of Site

Background Information

As mentioned before, the applicant is proposing to develop the site with a 21,147 SF Tractor Supply Company Store with a total of 79 parking spaces. This store sells products for home improvement, agriculture, lawn and garden maintenance, livestock, equine and pet care.

Section 5.8.4 of the City of Zebulon Unified Development Ordinances establishes the minimum parking spaces required for *Agriculture Support Services* as 1 per each 800 SF of Principal Building Floor Area. However, the city has requested the use of *Retail use, other* category for the calculation of the required number of off-street parking for this site. Section 5.8.4 of the City of Zebulon Unified Development Ordinances establishes the minimum parking spaces required for *Retail uses* as 1 per each 200 SF of Building Area.

This parking study was conducted in order to determine the number of parking spaces required according to the applicable land use of the proposed site, and to evaluate if the number of proposed parking spaces for the site will be adequate to support the anticipated parking demand.

Land Use

The Town of Zebulon Unified Development Ordinances Article 5: Development Standards, and the Institute of Transportation Engineers (ITE) *Parking Generation Manual*, 5th Edition provide minimum requirements of parking spaces by land use and size. The purpose for these parking provisions is to provide an adequate planning tool to anticipate parking needs based on specific land uses. These guidelines are often developed based on actual data collected for similar type land uses and grouped together to develop average ratios based on gross square footage or other site characteristics. The ratios are often used to estimate parking needs for a planned development.

The Town of Zebulon Development Standards provides minimum off-street parking spaces required by land use on Table 5.8.4.H, see **Appendix B**. The best fit land use, and requirements extracted from table 5.4.8.H are listed below:

- *Agriculture Support Services*
Required parking: 1 space per 800 SF of Principal Building Floor Area

- *Retail Use, Other*
Required parking: 1 space per 200 SF of Principal Building Floor Area

Comparable land uses for the proposed development as per the Institute of Transportation Engineers (ITE) *Parking Generation Manual*, 5th Edition were considered. The ITE defines Land Use 810 – Tractor Supply Store as:

ITE Land Use 810 – Tractor Supply Store definition

A tractor supply store is a free-standing facility that specializes in the sale of agricultural and garden equipment, power tools, vehicle maintenance parts, and heavy-duty outdoor machinery. It may also offer ancillary items such as clothing, footwear, and other accessories.

The Institute of Transportation Engineers (ITE) *Parking Generation Manual*, 5th Edition does not provide parking rates for Land Use 810 – Tractor Supply Store, therefore for a conservative approach and consistent with the use of the *Retail use, Other* as per the Town of Zebulon code of ordinances, the parking demand rate of general retail, Land Use 820, was used to calculate the minimum parking space requirements.

- *Land Use 820*
Required parking: 1.95 spaces per 1,000 SF of Gross Floor Area

The ITE *Parking Generation Manual*, 5th Edition excerpts are included in **Appendix C**.

Parking Demand

Based on the Town of Zebulon Development ITE Standards Table 5.4.8.H the anticipated parking demand of the proposed site was calculated. **Table 1** presents a summary of the results of the parking provisions based the Town of Zebulon Development Standards.

Table 1. Town of Zebulon Parking recommendation

Land Use	Period	Required Parking Rate	Required Parking Spaces
Agriculture Support Services	All	1 per 800 Sq. Ft. GFA	27
Retail Use, Other	All	1 per 200 Sq. Ft. GFA	106

The results presented in **Table 1** indicate that while the 80 parking spaces proposed on the Site Plan exceed the 27 parking spaces required for land use *Agriculture Support Services*, this number is below the 106-space threshold given by the City of Zebulon code of Ordinances for Retail, Other use type.

The anticipated parking demand for the proposed development was calculated based on the ITE Parking Generation Manual for Land Use 820, see **Table 2**.

Table 2. ITE Parking recommendation

Land Use	Period	Parking Demand Rate	Parking Demand
820	Weekday Peak	1.95 per 1000 Sq. Ft. GFA	42

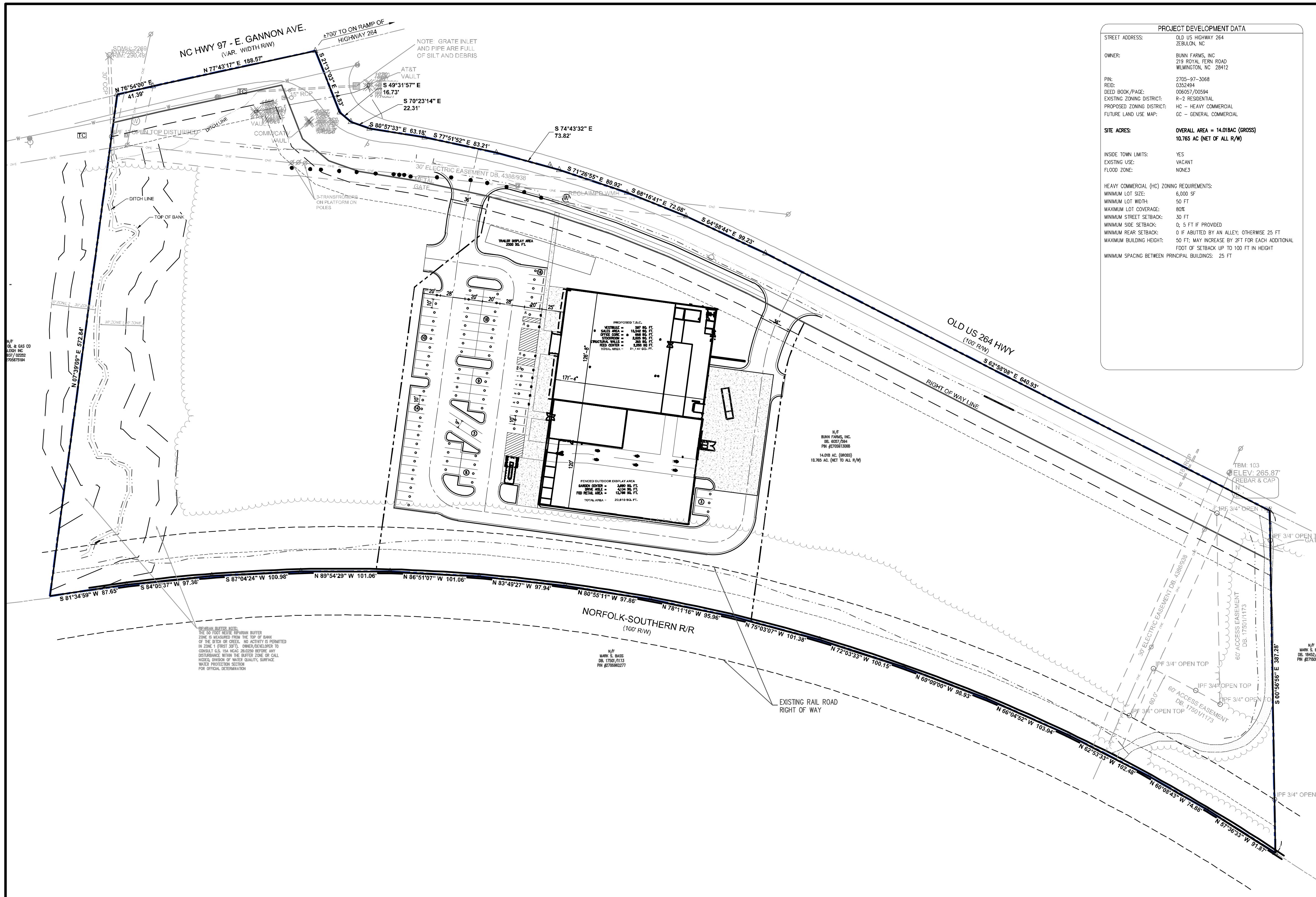
Based on the ITE Parking Generation Manual, the anticipated parking demand of the site is 42 parking spaces.

The results presented in **Table 2** indicate that the proposed 79 parking spaces would exceed the anticipated parking demand based on the ITE Parking Generation Manual recommendations.

Summary of Findings and Conclusions

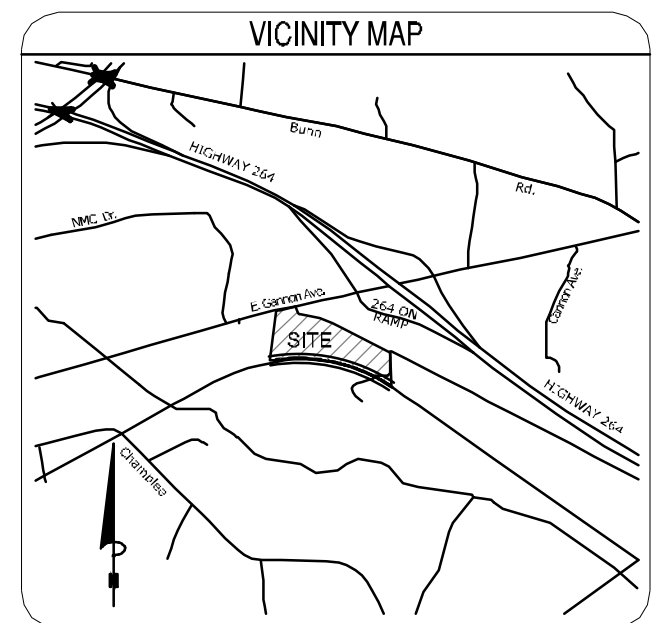
- Per the Town of Zebulon Development Standards, 27 parking spaces will be required for land use *Agriculture Support Services*, and 106 parking spaces are required for Retail, Other use type.
- The anticipated parking demand of the proposed site based on the ITE Parking Demand Manual 5th Edition for retail use is 42 parking spaces.
- The proposed parking spaces exceed the 52 spaces required by the Town of Zebulon Development Standards for Agricultural Agriculture Support Services. The proposed site also provides 37 parking spaces more than the anticipated parking demand calculated based on the ITE Parking Generation Manual 5th Edition for retail uses.
- Based on this analysis, the proposed 79 parking spaces on the Tractor Supply Store are expected to provide adequate number of parking spaces for the site demand.

Appendix A



- GENERAL NOTES**
- THE CONTRACTOR SHALL EMPLOY ALL NECESSARY BARRICADES, SIGNS, FENCES, FLASHING LIGHTS, FLAGMEN, ETC. FOR MAINTENANCE AND PROTECTION OF TRAFFIC AS REQUIRED BY TOWN OF ZEBULON AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, FOR DETAILS OF TRAFFIC CONTROL STANDARDS AND DEVICES.
 - THE CONTRACTOR SHALL PROTECT ALL MONUMENTS, IRON PINS, AND PROPERTY CORNERS DURING CONSTRUCTION.
 - APPROVAL OF THESE PLANS IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED FROM THE AFFECTED PROPERTY OWNERS.
 - COORDINATE ALL CURB AND STREET GRADES IN INTERSECTIONS WITH INSPECTOR.
 - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "STANDARD DETAILS AND SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND APPLICABLE TOWN OF ZEBULON CODES AND ORDINANCES. THE CONTRACTOR SHALL MAINTAIN A CURRENT EDITION OF THE STATE AND LOCAL CODES, ORDINANCES, STANDARD SPECIFICATION AND STANDARD DETAILS ON THE PROJECT SITE FOR REFERENCE DURING CONSTRUCTION OF THE PROJECT.
 - THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND SHALL REPORT ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS TO THE OWNER OR OWNER'S REPRESENTATIVE IMMEDIATELY. CONTRACTOR SHALL WAIT FOR INSTRUCTION PRIOR TO PROCEEDING WITH WORK.
 - THE CONTRACTOR SHALL PROVIDE SMOOTH TRANSITIONS FROM PROPOSED FEATURES TO EXISTING FEATURES AS NECESSARY.
 - THE CONTRACTOR SHALL SEAL THE EDGE OF EXISTING ASPHALT PAVEMENT WITH TACK COAT IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS WHERE NEW PAVEMENT JOINS EXISTING PAVEMENT.
 - THE CONTRACTOR SHALL REPAIR, RESURFACE, RECONSTRUCT OR REFURBISH ANY AREAS DAMAGED DURING CONSTRUCTION BY THE CONTRACTOR, HIS SUBCONTRACTORS OR SUPPLIERS AT NO ADDITIONAL COST TO THE OWNER.
 - ALL PAVEMENT JOINTS SHALL BE SAW-CUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
 - CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF TRUCK DOCKS, EXIT DOORS, SIDEWALKS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
 - ALL PAINT STRIPING, PAVEMENT MARKINGS, AND SIGNAGE SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" OR AS OTHERWISE SPECIFIED. ALL REFERENCED SIGN STANDARDS ARE TAKEN FROM THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". ALL NEW SIGNS SHALL BE MOUNTED ON GALVANIZED POSTS AND IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.
 - CONTRACTOR SHALL INSTALL ACCESSIBLE RAMPS PER LOCAL MUNICIPALITY AND ADA STANDARDS AT ALL DRIVE AND BUILDING LOCATIONS AS REQUIRED.
 - THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. AT LEAST 48 HOURS PRIOR TO ANY DEMOLITION, GRADING, OR CONSTRUCTION ACTIVITY THE CONTRACTOR SHALL NOTIFY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENTS FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE PROJECT SITE.
 - ACCESSIBLE RAMPS TO BE PROVIDED IN ACCORDANCE WITH NCDOT AND TOWN OF ZEBULON STANDARDS.
 - ALL PLANTING ISLANDS WITH A SHADE TREE SHALL BE A MINIMUM OF 350 SQUARE FEET.
 - ALL SIDEWALKS MUST BE ACCESSIBLE TO PERSONS WHO ARE BLIND, HAVE LOW VISION AND PEOPLE WITH MOBILITY DISABILITIES. PEDESTRIAN EXISTING ROUTES AND ALTERNATE PEDESTRIAN ROUTES DURING CONSTRUCTION WILL BE REQUIRED TO BE COMPLIANT WITH THE PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG), 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

- KEYNOTES**
- STEEL DOCK/RAMP - REFER TO ARCHITECTURAL DRAWINGS FOR DETAIL
 - CONCRETE PAVEMENT DESIGN AS PER GEOTECHNICAL REPORT SPECIFICATIONS - SEE DETAIL SHEET C1.4 EXPANSION AND CONTROL JOINTS - SEE DETAILS SHEET C1.4
 - ASPHALT PAVEMENT DESIGN AS PER GEOTECHNICAL REPORT SPECIFICATIONS - SEE DETAIL SHEET C1.4
 STANDARD DUTY PAVEMENT
 HEAVY DUTY PAVEMENT
 NDOT PAVEMENT SECTION
 - HANDICAP PARKING SIGN - SEE DETAIL SHEET C1.4
 - VETERANS PARKING SIGN - SEE DETAIL SHEET C1.4
 - ON-LINE PARKING SIGN - SEE DETAIL SHEET C1.4
 - BOLLARD - SEE DETAIL SHEET C1.4
 - CONCRETE LIGHT POLE BASE
 - CONCRETE SIDEWALK - SEE DETAIL SHEET C1.4 FOR SIDEWALKS AROUND BUILDING.
 - DUMPSTER ENCLOSURE - REFER TO SHEET C1.4
 - 6'-0" LONG CONCRETE WHEEL STOP, PINNED TO PAVEMENT - SEE DETAIL SHEET C1.4. LOCATE 2'-6" FROM FACE OF CURB OR SIDEWALK.
 - SIGN (UNDER SEPARATE PERMIT)
 - 4" WIDE PARKING STRIPE PAINTED WHITE (TYP)
 - 4" WIDE PARKING DIAGONAL STRIPES
 - ACCESSIBLE PARKING AREA - (PER A.D.A. REQUIREMENTS)
 - NEW GRASS/LANDSCAPE AREA
 - CONCRETE CURB AND GUTTER - SEE DETAIL SHEET C1.4
 - STOP SIGN - SEE DETAIL SHEET C1.4
 - PAVEMENT MARKINGS
 - NEW CURB OUT, MATCH EXISTING EOP & APPROACH PER LOCAL CODES & SPECS.
 - CONCRETE FLUME - REFER TO DETAIL ON SHEET C1.4 (NOT USED)
 - PROPOSED PARKING COUNT



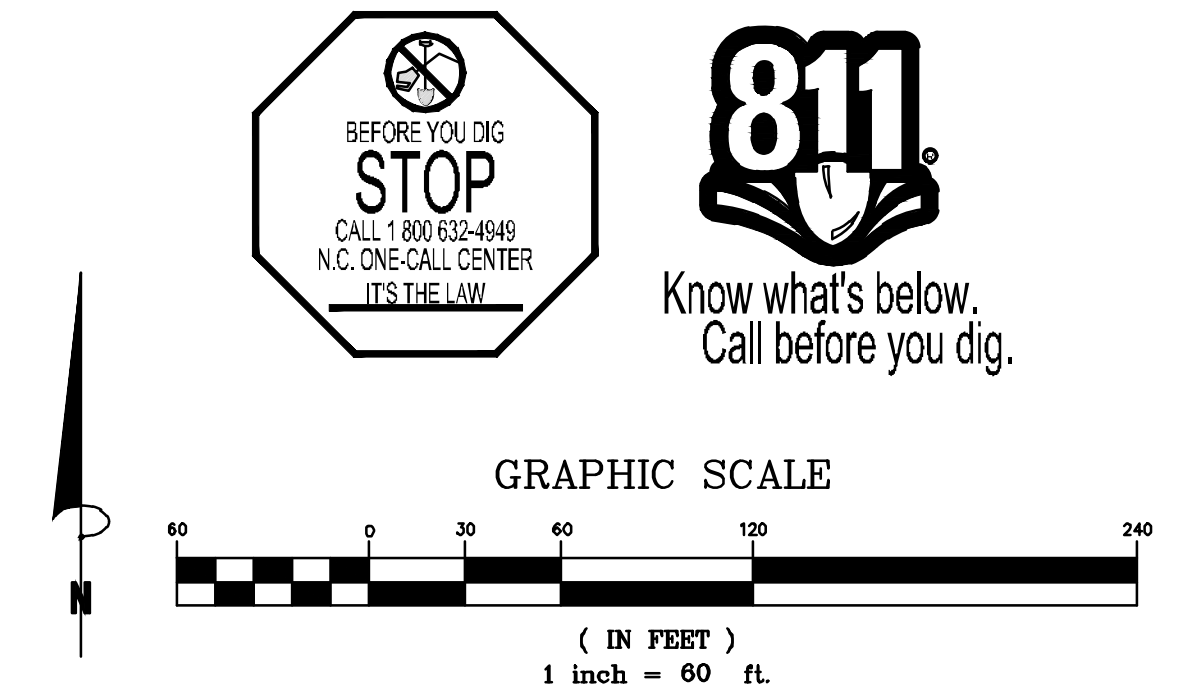
SIGHT TRIANGLE NOTE

WITHIN THE SIGHT TRIANGLES SHOWN ON THIS PLAN, NO OBSTRUCTION BETWEEN TWO (2) FEET AND EIGHT (8) FEET IN HEIGHT ABOVE THE CURB LINE ELEVATION OR THE NEAREST TRAVELED WAY, IF NO CURBING EXISTS.

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ZEBULON STANDARDS AND SPECIFICATIONS

SIGN LEGEND

LEGEND	MUTCD R1-1	NO STOPPING STANDING PARKING FIRE LANE	RESERVED PARKING	RESERVED PARKING
QTY:	4	3	N/A	2



Bowman

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TSC
 TRACTOR SUPPLY COMPANY

SITE PLAN

Tractor Supply
 Old US Highway 264
 Zebulon, NC Wake County

PRIMA X
 PROPERTIES, LLC

PRELIMINARY
 DO NOT
 USE FOR
 CONSTRUCTION

PLAN STATUS	
DATE	DESCRIPTION
MEL DESIGN	MEL DRAWN XXX CHKD
SCALE	H: 1" = 60' V:
JOB No.	TSD-001-057
DATE	March 2022
FILE No.	000000-D-CP-000
SHEET	C3.0

Appendix B

5.8. PARKING AND LOADING

5.8.1. PURPOSE AND INTENT

The purpose of this section is to ensure provision of off-street parking and loading facilities in proportion to the generalized parking, loading, and transportation demand of the different uses allowed by this Ordinance. The standards are further intended to:

- A. Provide for adequate off-street parking, off-street loading, and safe movement of vehicles into, out of, and through parking areas;
- B. Allow for flexibility to accommodate alternative solutions to off-street parking and loading needs, where such flexibility is consistent with the Town's adopted policy guidance;
- C. Reduce the aesthetic impact of surface parking lots in gateway corridors, downtown, and mixed-use areas through standards addressing on-site parking lot locations;
- D. Avoid excessive paved surface areas and the resulting problems associated with stormwater runoff and urban heat islands; and
- E. Protecting compatibility between adjacent uses of land and historic resources.

5.8.2. APPLICABILITY

The standards in this section shall apply to all development in the Town's planning jurisdiction, unless exempted in accordance with [Section 5.8.3, Exemptions](#).

A. GENERALLY

Whenever a building is constructed, an open-air use of land is conducted, or a principal or accessory use is established, the development shall meet the requirements of this section.

B. ADDITIONS AND EXPANSIONS

Whenever a building, open air use of land, or principal or accessory use is enlarged or increased in capacity, the development shall comply with the requirements in [Section 7.4, Nonconforming Sites](#).

C. CHANGES IN USE

1. If the principal use changes, then the new principal use shall meet the requirements of this section, except that if the use change results in an increase of less than five percent in the required number of parking spaces, or less than two additional parking spaces, no additional parking spaces are required.
2. In cases where an existing parking lot does not comply with the parking lot configuration requirements of this section, changes in use shall require the parking lot's configuration to be brought into compliance with these standards to the maximum extent practicable.

D. PRE-EXISTING DEVELOPMENT

Lawfully-established off-street parking and loading areas established prior to January 1, 2020, that do not comply with these standards shall be subject to the applicable standards in [Article 7: Nonconformities](#).

5.8.3. EXEMPTIONS

- A. The following forms of development are exempt from the requirements of this section:
 1. Lawfully-established lots of record existing prior to January 1, 2020, that are 33 feet wide or less, contain a single-family detached residential structure, and are not served by an alley;
 2. Re-striping an existing parking lot which does not create a deficient number of parking spaces or a nonconforming situation; and
 3. Rehabilitation or re-use of an historic structure in an LHO district.
- B. Development located in the DTC and DTP districts is exempted from the minimum off-street parking requirements in [Table 5.8.4.H, Minimum Off-Street Parking Requirements Table](#), but any off-street parking spaces shall comply with the standards in [Section 5.8.5, Parking Lot Configuration](#), and development is subject to the other standards in this section.

5.8.4. OFF-STREET PARKING REQUIREMENTS**A. PARKING PLAN REQUIRED**

Every application for a site plan or building permit shall include a parking plan or plot plan drawn to scale and fully-dimensioned as necessary in order to demonstrate compliance with the standards in this Ordinance.

B. MINIMUM OFF-STREET PARKING SPACES REQUIRED

1. The minimum number of off-street parking spaces required for development shall be in accordance with Table 5.8.4.H, Minimum Off-Street Parking Requirements Table.
2. Off-street parking shall be provided to meet the parking demand without the use of streets, except as specifically allowed by this section.

C. OFF-STREET PARKING SPACE MAXIMUM

1. Retail use types subject to the standards in Section 5.3.1.G, Standards for Large Format Retail Uses, shall limit the total number of off-street parking spaces provided to not more than 125 percent of the minimum parking spaces required in Table 5.8.4.H, Minimum Off-Street Parking Requirements Table.
2. Deviations from this standard may be requested in accordance with Section 5.8.11, Parking Alternatives.

D. USE TYPE NOT LISTED

1. For use types that do not correspond to the use types listed in Table 5.8.4.H, Minimum Off-Street Parking Requirements Table, any one of the following actions may be taken as part of determining the applicable off-street parking requirements:
 - a. The applicant may provide a parking study for the use(s) prepared by a professional engineer licensed by the State of North Carolina;
 - b. The applicant may propose a text amendment to this UDO in accordance with Section 2.2.20, UDO Text Amendment;
 - c. The applicant may request a formal interpretation of these off-street parking standards in accordance with Section 2.2.12, Interpretation; or
 - d. The Planning Director may determine the minimum parking space requirement based on a similar use in accordance with the standards of this Ordinance.
2. In cases where the applicant desires the Planning Director to make a determination, the application shall provide adequate information for review, which includes, but is not limited to: the type of use(s), number of employees, the availability of transit, the occupancy of the building, square feet of sales, service and office area, parking spaces proposed, and hours of operation.

E. DEVELOPMENTS WITH MULTIPLE USE TYPES OR LOTS

1. Development containing more than one principal use shall provide the minimum number of off-street parking spaces in an amount equal to the total required for all individual principal uses in the development, except as allowed by Section 5.8.11, Parking Alternatives.
2. Developments consisting of multiple lots that are planned and developed as a single, unified, or consolidated project may be configured to locate a portion of the required parking for one lot on another in the same development as allowed by Section 5.8.11, Parking Alternatives.

F. USE OF REQUIRED OFF-STREET PARKING SPACES

1. Off-street parking areas used for any of the following vehicles are not credited towards the minimum number of required off-street parking spaces in Table 5.8.4.H, Minimum Off-Street Parking Requirements Table, and such vehicles shall be located outside required off-street parking spaces and any street right-of-way:
 - a. Vehicles for sale or lease;
 - b. Vehicles being stored, serviced, or repaired; or
 - c. Vehicles belonging to the use, such as company vehicles.
2. Required off-street parking spaces shall not be used for any purpose other than the temporary parking of operable vehicles.

ARTICLE 5: DEVELOPMENT STANDARDS

5.8. Parking and Loading

5.8.4. Off-Street Parking Requirements

3. In no instance shall motor vehicle servicing or repair of a vehicle take place within a required off-street parking space except for washing and emergency service necessary to start the vehicle.

G. DRIVEWAYS USED TO MEET PARKING REQUIREMENTS

1. Driveways may be used to accommodate required off-street parking spaces only for the following uses:
 - a. Boarding/rooming houses;
 - b. Duplex dwellings;
 - c. Cemeteries;
 - d. Family care homes;
 - e. Group homes;
 - f. Live/work dwellings;
 - g. Manufactured dwellings;
 - h. Mobile homes;
 - i. Single-family attached dwellings when located in developments of six or fewer dwellings;
 - j. Single-family detached dwellings, including those in bungalow courts and pocket neighborhoods; and
 - k. Triplex/quadplex dwellings.
2. Driveways shall be of sufficient size to accommodate all the off-street parking spaces required by Table 5.8.4.H, Minimum Off-Street Parking Requirements Table. In no instance shall accommodation of vehicle parking in accordance with this subsection result in parked vehicles protruding into or over street rights-of-way, sidewalks, greenways, required sight distance triangles, areas used for refuse collection, or required landscaping areas.

H. MINIMUM OFF-STREET PARKING REQUIREMENTS TABLE

TABLE 5.8.4.H: MINIMUM OFF-STREET PARKING SPACES REQUIRED

USE TYPE	MINIMUM NUMBER OF REQUIRED OFF-STREET PARKING SPACES [1] [2]
RESIDENTIAL USE TYPES	
Assisted Living Facility	1 per employee on the largest shift + 0.25 per bed
Boarding/Rooming House	2 + 1 per each rental room
Bungalow Court	1 + 0.25 guest spaces per dwelling unit
Continuing Care Retirement Community	1.5 per every individual dwelling unit + 1 per every employee on the largest shift + per every 200 sf used by the public
Duplex Dwelling	2 per every dwelling unit
Family Care Home	2 + 1 per bedroom
Group Home	2 + 1 per bedroom
Halfway House	2 per bedroom
Live/Work Dwelling	2 + 1 per every 500 sf of non-residential floor area
Manufactured Dwelling	2 per dwelling unit
Manufactured Dwelling Park	2 per every home site
Mobile Home	2 per dwelling unit
Mobile Home Park	2 per every mobile home site
Multi-Family Dwelling	1.5 per every dwelling unit + 0.25 guest spaces per unit
Pocket Neighborhood	1 + 0.25 guest spaces per dwelling unit
Nursing Home	1 per employee on largest shift + 0.25 per bed
Single-Family Attached Dwelling	2 per every dwelling unit + 0.25 guest spaces per unit
Single-Family Detached Dwelling	2 per dwelling unit + 0.25 guest spaces per unit

ARTICLE 5: DEVELOPMENT STANDARDS

TABLE 5.8.4.H: MINIMUM OFF-STREET PARKING SPACES REQUIRED

USE TYPE	MINIMUM NUMBER OF REQUIRED OFF-STREET PARKING SPACES [1] [2]
Triplex/Quadriplex	2 per every dwelling unit
Upper-Story Residential	1 per dwelling unit
INSTITUTIONAL USE TYPES	
Adult Day Care Center	1 + 1 per every employee on largest shift
Airport and Related Facilities	1 per every 200 sf used by public + 1 per every 600 sf not used by the public [3]
Antenna Collocation, Major	None
Antenna Collocation, Minor	None
Arboretum or Formal Garden	1 per employee on largest shift + 1 per 5,000 sf of garden area
Auditorium	Greater of: 1 per every 4 seats or 1 per every 40 sf of seating area with moveable seating
Blood/Tissue Collection	1 per every 200 sf
Broadcasting Studio	1 per every 2 employees
Cemetery, Columbarium, or Mausoleum	1 per employee on the largest shift
Child Day Care Center	1 per every employee + 1 per every 10 children
College or University	5 per every classroom and office
Community/Youth/Senior Center	1 per every 300 sf
Community Garden	None
Coliseum or Arena	Greater of: 1 per every 4 seats or 1 per every 40 sf of seating area with moveable seating
Conference or Convention Center	Greater of: 1 per every 4 seats or 1 per every 40 sf of seating area with moveable seating
Cultural Facility, Library, or Museum	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Drug/Alcohol Treatment	Greater of: 1 per every 400 sf or 1 per bed
Fire/EMS/Police Station	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Fraternal Club or Lodge	1 per every 300 sf
Government Office	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Government Maintenance, Storage, Distribution	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Helicopter Landing Pad	2 per landing pad
Hospital	1 per every 2 beds + 1 per every doctor and nurse + 1 per every 4 other employees
Indoor Private Recreation	1 per every 200 sf
Outdoor Private Recreation	1 per every 1,000 sf of activity area
Park (public or private)	1 per employee on largest shift + 1 per acre
Passenger Terminal (rail or bus)	1 per every 200 sf [3]
Post Office	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Psychiatric Treatment Facility	1 per every 3 patient beds
Religious Institution	Greater of: 1 per every 6 seats or 1 per every 50 sf of floor area in main assembly room
School, Elementary	1 per employee
School, High/Middle	5 per every classroom and office
School, Vocational	5 per every classroom and office
Small Wireless Facility	None

ARTICLE 5: DEVELOPMENT STANDARDS

TABLE 5.8.4.H: MINIMUM OFF-STREET PARKING SPACES REQUIRED

USE TYPE	MINIMUM NUMBER OF REQUIRED OFF-STREET PARKING SPACES [1] [2]
Telecommunications Tower, Major	None
Telecommunications Tower, Minor or Concealed	None
Temporary Wireless Facility	None
Urgent Care Facility	1 per employee on the largest shift + 1 per every 300 sf
Utility, Major	1 per every 1,500 sf
Utility, Minor	None
COMMERCIAL USE TYPES	
ABC Store	1 per every 250 sf
Adult Business	1 per every 150 sf
Aircraft Parts, Sales, and Maintenance	1 per every 600 sf
Animal Day Care/Grooming	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Animal Shelter	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Auction House	1 per every 300 sf of seating area + 1 per employee
Automobile Repair and Servicing (without painting/bodywork)	2 + 1 per every service bay
Automobile Sales and Rentals	1 per every 200 sf
Automotive Painting/Body Shop	2 + 1 per every service bay
Automotive Parts and Accessories Sales	1 per every 200 sf
Automotive Wrecker Yard	1 per employee on the largest shift
Bar, Cocktail Lounge, or Private Club	1 per every 150 sf
Bed and Breakfast	2 + 1 per every rental unit
Boat and Marine Rental, Sales, and Service	1 per every 600 sf
Bottle Shop (with on premise consumption)	1 per every 4 seats
Business Incubator	1 per every 450 sf
Campground	1 + 1 per every camping space
Car Wash or Automobile Detailing	2 per every washing bay
Catering Establishment	1 per every 300 sf
Check Cashing/Payday Lending Establishment	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Clothing Rental	1 per every 200 sf
Coffee Shop	1 per every 150 sf
Commercial Recreation, Indoor	1 per every 200 sf
Commercial Recreation, Outdoor	1 per every 1,000 sf of activity area (including building sf)
Computer-related Services	1 per every 600 sf
Convenience Store (no gasoline sales)	1 per every 200 sf
Convenience Store (with gasoline sales)	1 per every 200 sf
Co-Working Space	1 per every 250 sf
Equipment and Tool Rental	1 per every 600 sf
Event Venue	1 per every 150 sf
Fairgrounds	1 per every 600 sf of use area

ARTICLE 5: DEVELOPMENT STANDARDS

TABLE 5.8.4.H: MINIMUM OFF-STREET PARKING SPACES REQUIRED

USE TYPE	MINIMUM NUMBER OF REQUIRED OFF-STREET PARKING SPACES [1] [2]
Financial Services Establishment	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Flea Market	1 per every 200 sf
Funeral-related Services	Greater of: 1 per every 200 sf used by public, or 1 per every 4 seats in chapel
Games of Skill	1 per every 200 sf
Golf Course or Driving Range	1 per every 4 persons of design capacity or 2 + 1 per every tee
Grocery Store	1 per every 250 sf
Gymnasium/Fitness Center	1 per every 200 sf
Hair, Nails, and Skin-related Services	1 per every 200 sf
Heavy Equipment Sales, Rental, and Repair	1 per every 600 sf
Hotel or Motel	5 + 1 per every rental unit
Kennel, Indoor/Outdoor	1 per every 200 sf
Laundry or Cleaning Service	1 per every 200 sf used by the public
Microbrewery, Microwinery, or Microdistillery	1 per every 150 sf
Nightclub or Dance Hall	1 per every 150 sf
Office, Medical	4 per every doctor/practitioner
Office, Professional	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Office, Sales or Service	1 per every 200 sf used by public + 1 per every 600 sf not used by the public
Outdoor Storage	1 + 1 per employee on largest shift
Package and Printing Service	1 per every 200 sf
Park and Ride Facility	1 per employee on the largest shift
Parking Lot	1 per employee on largest shift
Parking Structure	1 per employee on largest shift
Pharmacy	1 per every 200 sf
Pool Hall	1 per every 150 sf
Racetrack	1 per every 4 persons of design capacity
Recreational Vehicle Park	1 per employee on largest shift + 0.25 per every recreational vehicle space
Repair Shop	1 per every 600 sf
Restaurant, Indoor/Outdoor Seating	1 per every 4 seats
Restaurant with Drive-Through/Drive-up Service	1 per every 4 seats
Restaurant, Walk-up Only	1 per employee on largest shift + 1 per every two outdoor seating locations
Retail, Bulky Item	1 per every 600 sf
Retail, Large Format	1 per every 200 sf
Retail Use, Other	1 per every 200 sf
Self Service Storage, External Access Only	1 + 1 per employee on largest shift
Self Service Storage, Internal Access Only	1 per every 5,000 sf
Shooting Range, Indoor	1 per firing station + 3
Specialty Eating Establishment	1 per every 4 seats
Tattoo and Piercing Establishment	1 per every 600 sf
Theatre	Greater of: 1 per every 4 seats or 1 per every 40 sf of seating area with moveable seating
Truck Stop	1 per every 200 sf + separate truck/trailer parking

ARTICLE 5: DEVELOPMENT STANDARDS

TABLE 5.8.4.H: MINIMUM OFF-STREET PARKING SPACES REQUIRED

USE TYPE	MINIMUM NUMBER OF REQUIRED OFF-STREET PARKING SPACES [1] [2]
Veterinary Clinic	4 per every doctor
INDUSTRIAL USE TYPES	
Asphalt or Concrete Plant	2 per every 3 employees on major shift
Contractor Services/Yard	Greater of: 1 per every 300 sf or 1 per every 1,000 sf of outdoor area
Electrical, Plastic, or Plumbing Fabrication	2 per every 3 employees on major shift
Extractive Industry	1 + 1 per employee on largest shift
Flex Space	1 per every 200 sf
Fuel Oil/Bottled Gas Distributor	1 per every 200 sf used by public + 1 per employee on largest shift
Gas Energy Conversion	1 + 1 per employee on largest shift
General Industrial Services	2 per every 3 employees on major shift
Landfill	2+ 1 per employee on largest shift
Makerspace	1 per every 400 sf
Manufacturing, Heavy	2 per every 3 employees on largest shift
Manufacturing, Light	2 per every 3 employees on largest shift
Metal Fabrication	2 per every 3 employees on major shift
Public Convenience Center/Transfer Station	10 + 1 per employee on the largest shift
Recycling Center	1 per every 1,000 sf (min. of 2 spaces)
Research and Development	1 per every 300 sf of office area + 1 per every 500 sf of other floor area
Salvage or Junkyard	3+ 1 per employee on the largest shift
Solar Farm	None
Truck or Freight Terminal	2 per every 3 employees on largest shift
Warehouse, Distribution	2 per every 3 employees on largest shift
Warehouse, Storage	2 per every 3 employees on largest shift
Waste Composting	1 per employee on the largest shift
Wholesale Sales	1 per every 900 sf
Wind Energy Conversion	None
AGRICULTURAL USE TYPES	
Agriculture and Horticulture	1 per every 1,500 sf of principal building floor area
Agriculture Support Services	1 per every 800 sf of principal building floor area
Animal Husbandry	1 per every 2,000 sf of principal building floor area
Farmer’s Market	1 per every 300 sf
Plant Nursery	5 + 1 per employee on the largest shift

NOTES:

- [1] See Section 9.3.11 Parking Space Computation, for details on how required parking spaces are computed.
- [2] “sf” means square feet.
- [3] Does not include long-term parking for travelers.
- [4] Excludes bona fide farm uses.

Appendix C

Land Use: 820

Shopping Center (>150k)

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has at least 150,000 square feet of gross leasable area (GLA). It often has more than one anchor store. Various names can be assigned to a shopping center within this size range, depending on its specific size and tenants, such as community center, regional center, superregional center, fashion center, and power center.

A shopping center of this size typically contains more than retail merchandising facilities. Office space, a movie theater, restaurants, a post office, banks, a health club, and recreational facilities are common tenants.

A shopping center of this size can be enclosed or open-air. The vehicle trips generated at a shopping center are based upon the total GLA of the center. In the case of a smaller center without an enclosed mall or peripheral buildings, the GLA is the same as the gross floor area of the building.

The 150,000 square feet GLA threshold value between community/regional shopping center and shopping plaza (Land Use 821) is based on an examination of trip generation data. For a shopping plaza that is smaller than the threshold value, the presence or absence of a supermarket within the plaza has a measurable effect on site trip generation. For a shopping center that is larger than the threshold value, the trips generated by its other major tenants mask any effects of the presence or absence of an on-site supermarket.

Shopping plaza (40-150k) (Land Use 821), strip retail plaza (<40k) (Land Use 822), and factory outlet center (Land Use 823) are related uses.

Additional Data

Many shopping centers—in addition to the integrated unit of shops in one building or enclosed around a mall—include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied include peripheral buildings, it can be assumed that some of the data show their effect.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky,

Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

77, 110, 154, 156, 159, 190, 199, 202, 204, 213, 251, 269, 294, 295, 299, 304, 305, 307, 308, 309, 311, 314, 315, 316, 317, 319, 365, 385, 404, 414, 423, 442, 446, 562, 629, 702, 715, 728, 868, 871, 880, 899, 912, 926, 946, 962, 973, 974, 978, 1034, 1040, 1067

Shopping Center - Non-December (820)

Peak Period Parking Demand vs: 1000 Sq. Ft. GLA

On a: Weekday (Monday - Thursday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 12:00 - 6:00 p.m.

Number of Studies: 46

Avg. 1000 Sq. Ft. GLA: 218

Peak Period Parking Demand per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.95	1.27 - 7.98	1.99 / 3.68	1.73 - 2.17	0.75 (38%)

Data Plot and Equation

