

TECHNICAL MEMORANDUM

To: Wendy Block Sanford, Transportation Director City of Fairfax
CC: TDC Acquisitions Cozen
From: Shashwat Anant, EIT Gorove Slade
Pankaj Singla
Kevin Sitzman, P.E.
Date: September 27, 2023

Subject: 4131 Chain Bridge Road – Compact Parking Space Ratio Memo

Introduction

This memorandum presents justification for the proposed parking program for 4131 Chain Bridge Road development in the City of Fairfax, Virginia. The site location is shown in Figure 1. This memorandum requests the use of a 30% compact parking space ratio for the proposed mixed-use development. The development will consist of 355 residential units, including 86 studio units, 152 one-bedroom units, 93 two-bedroom units, and 24 three-bedroom units. The development will also include 4,810 square feet of retail space.

A total of 494 parking spaces are planned to be provided on-site in a new below-grade parking garage. The garage floorplan exhibits are included in the Appendix.

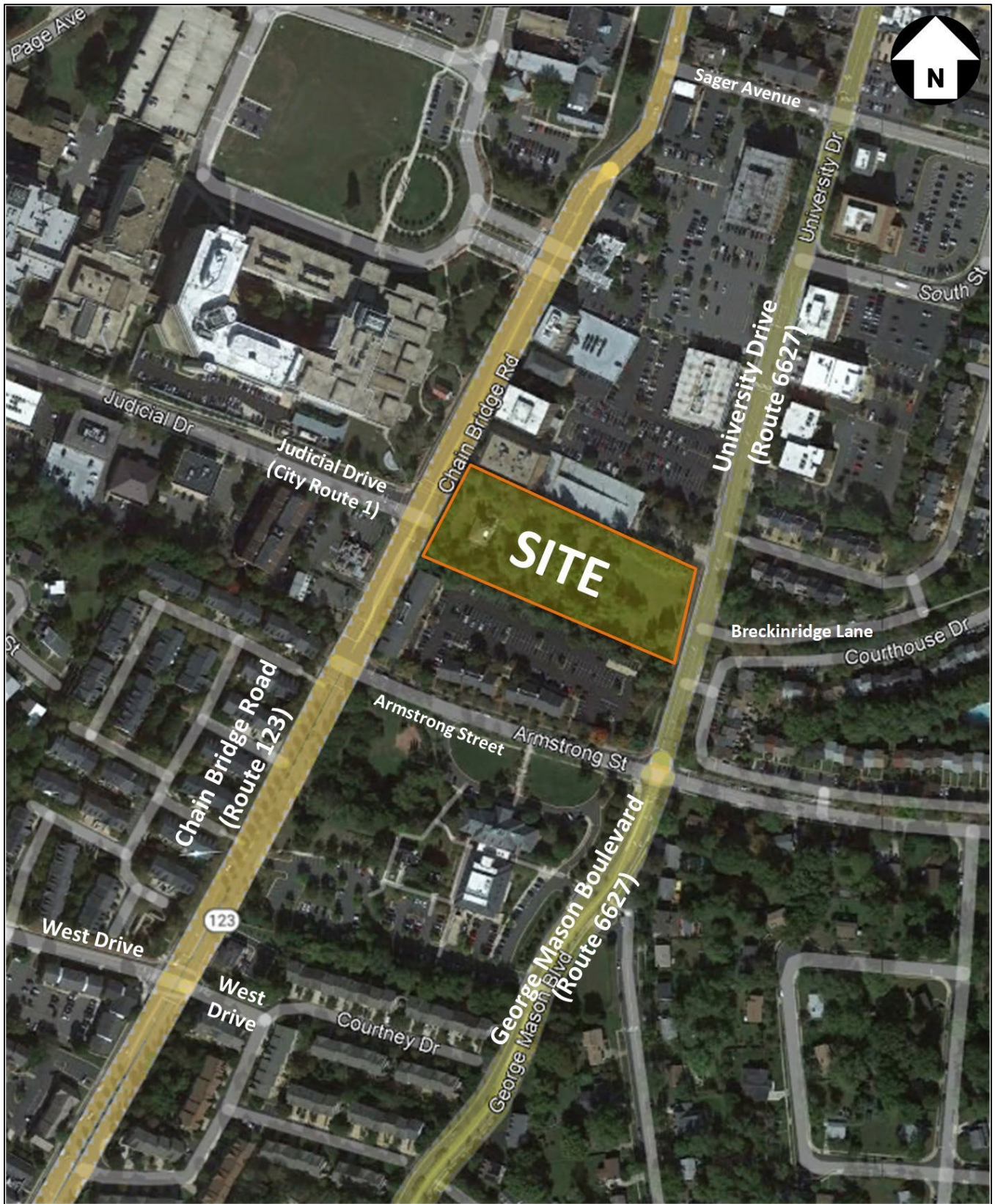


Figure 1: Site Location

Required Parking Supply Ratios

The parking supply requirement for each use was determined by using the City of Fairfax *Zoning Ordinance* (Section 4.2.3). The required parking ratio for each use is listed below:

- Residential:
 - Studios: 1.25 spaces per unit
 - 1-Bedrooms: 1 space per unit
 - 2-Bedrooms or more: 2 spaces per unit
- Retail: 1 space required per 200 Square Feet

Based on the required parking supply ratios listed above, the site would require 595 spaces. After applying reductions as illustrated in Table 1, the site would require a total of 490 spaces. The site is currently designed to provide a total of 494 spaces which exceeds the required parking space requirements.

Table 1: Parking Required per City of Fairfax Zoning Ordinance

Proposed Use	Development	Parking Requirements	% Proposed	Parking Spaces Required (c)	Parking Spaces Required after reductions
		(a)	(b)		
Residential Portion					
Studio	86 units	1.25	24.23%	108	97 ^d
1 Bedroom	152 units	1.50	42.82%	228	206 ^d
2 Bedroom +	117 units	2.00	32.96%	234	176 ^e
Site Total	355 units		100%		
Residential Parking Spaces Required				570	479
Retail Portion					
Retail Use	4,810 Square Feet			1 Space per 200 SF of Floor Area	
Retail Parking Spaces Required				24	
Applying 10% Reduction for CU per 4.2.3.D of City of Fairfax Zoning Ordinance				-2	
Applying 50% reduction per 3.7.3 of City of Fairfax Zoning Ordinance				-11	
Retail Parking Spaces Required with Reductions				11	
Total Residential + Retail Parking Spaces Required with reductions				490	

Notes:

- (a) Per 4.2.3(E) of City of Fairfax Zoning Ordinance
- (b) Proposed unit mix - subject to change
- (c) Required Parking before Reduction
- (d) Applying 10% Reduction for CU per 4.2.3.D of City of Fairfax Zoning Ordinance
- (e) Applying 1.5 per DU for TOD

Compact Parking Spaces

Compact parking spaces, which typically measure 8 feet in width by 16 feet in length, are smaller than the City-standard parking spaces of 9 feet in width by 18 feet in length. These compact spaces are particularly beneficial in constrained urban areas with limited available land for parking infrastructure.

The Applicant is proposing that 30% of the parking spaces be compact, which equates to a total of 154 compact parking spaces within the development.

Advantages for Providing Compact Parking Spaces

The adoption of compact parking spaces offers several advantages:

- Reduced land use: Compact parking spaces can help to reduce the amount of land required for parking, which can be valuable in urban areas with limited space.
- Increased parking capacity: Compact parking spaces can help to increase the parking capacity of a site without requiring additional land.

- Reduced environmental impact: Compact parking spaces can help to reduce the environmental impact of parking by reducing the amount of impervious surface and air pollution.
- Reduced construction costs: Compact parking spaces can help to reduce the construction costs of a parking lot by requiring less asphalt and concrete.
- The Compact spaces would be suitable for various vehicle types, including subcompact cars, compact and mid-size cars, and SUVs.

By reducing the amount of asphalt and concrete, compact parking spaces can create more green space and make a neighborhood more inviting and pedestrian friendly.

Overall, the proposed 30% compact parking space ratio is a positive step towards a more sustainable and livable city.

Local Jurisdiction's Compact Space Requirements

Many jurisdictions have revised zoning regulations to be more sustainable. A focus on reduced parking and electric vehicle use has become prominent and most jurisdictions allow for a percentage of required parking to be utilized as compact parking spaces. Smaller cars tend to be more fuel-efficient and environmentally friendly, which aligns with the goals of many urban planning agencies. Utilizing compact parking spaces reduces the need for additional excavation to accommodate the required parking and creates a more efficient and feasible parking structure.

In addition to the benefits listed above, compact parking spaces can also help to promote walkability, bike friendliness, and public transit use. By reducing the amount of land devoted to parking, compact parking spaces can create more space for pedestrian and bicycle infrastructure, as well as public transit stops. This can make it easier and more convenient for people to get around without using a car.

Several neighboring jurisdictions have similar urban natures as the City of Fairfax and have implemented an ordinance that allows for compact parking spaces. The compact parking space allowance in these jurisdictions include:

Washington DC: Washington DC allows up to 50% compact parking space. *(Source: DC Zoning Regulations - Subtitle C, Chapter 7, Section 712.3).*

City of Alexandria, VA: City of Alexandria allows up to 75% compact parking space. *(Source: Article VIII Off-Street Parking and Loading, Section 8-200).*

Baltimore County, MD: Baltimore County allows up to 40% compact parking space. *(Source: Baltimore County Zoning Ordinance - §409.5 Number of Small car spaces).*

These examples demonstrate that compact parking space provisions are in line with urban development trends and also adhere to regional standards established by neighboring jurisdictions. The excerpts of sources of referred jurisdictions are included in the appendix.

Site- Specific Compact Space Justification

The geometric configuration of the site and the significant grade change between Chain Bridge and University Drive create challenges for designing an efficient building and parking structure. Additionally, the requirements to add a Service Drive connecting University Drive/Chain Bridge Road and create a Greenway that meets the desired future finished grade elevations of the northern and southern adjacent properties adds complexity to the development.

These combined challenges create an inefficient garage that is a few feet short of the minimum width for three City-standard parking modules (space/aisle/space). With the inclusion of compact spaces along the north and south faces of the garage, an entire extra row of spaces can be provided without the need for a partial additional parking floorplate and the associated expense.

AutoTURN

Multiple vehicle turning maneuvers into and out of compact parking spaces were created using AutoTURN on all parking levels. The vehicle used to check maneuverability was a Toyota Prius. The car is 14.9 feet long and 5.77 feet wide, which is similar to the national average. The maneuver paths show that the model car can easily park back-in into compact spaces without going over any other parking spot. One of the maneuvers is shown in Figure 2, and additional graphics are provided in the appendix.

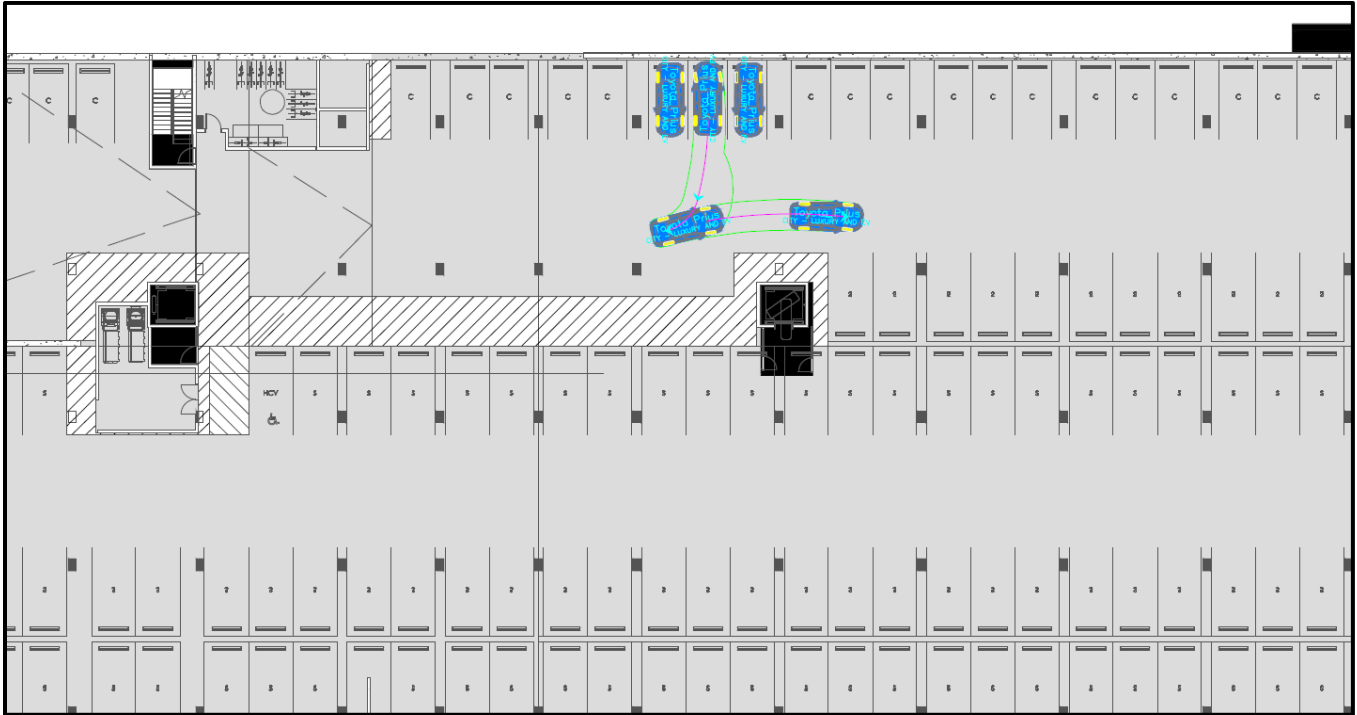


Figure 2: Vehicle Maneuverability using AutoTURN (Level P2)

Conclusion

This memorandum presented a justification for the proposed parking program for 4131 Chain Bridge Road development in the City of Fairfax, Virginia. This memorandum requests a 30% compact parking space ratio for the proposed mixed-use development due to multiple challenges including width of the site and elevation differences along Chain Bridge Road and University Boulevard. The adoption of compact parking spaces offers numerous advantages, including efficient land use, increased parking capacity, reduced environmental impact, cost-effectiveness, and adaptability to various vehicle types. Furthermore, this proposal aligns with the practices of several local jurisdictions in Virginia, demonstrating its relevance and appropriateness for the City of Fairfax's urban development goals and shows the cars can maneuver easily into compact parking spaces.

TECHNICAL APPENDIX

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- **Local Jurisdiction zoning ordinance excerpts**

DC Zoning Regulations Excerpt:

712 SIZE AND LAYOUT REQUIREMENTS

712.1 All required parking spaces and parking aisles shall conform to the dimension requirements of this section, except as provided in Subtitle C § 717.

712.2 An automated parking garage is exempt from the requirements of this section.

Subtitle C-48

712.3 At least fifty percent (50%) of the required parking spaces must meet the minimum full-sized parking space standards of Subtitle C § 712.5. All other spaces must meet the minimum compact parking space standards in Subtitle C § 712.6.

712.4 Parking spaces provided on the same lot as a historic resource shall meet the minimum dimensional requirements of Subtitle C § 712.6.

712.5 The minimum dimensions for full-sized parking spaces and aisles are as follows:

TABLE C § 712.5: MINIMUM DIMENSIONS FOR FULL-SIZED PARKING SPACES AND AISLES

Parking Angle	Stall Width	Depth of Stalls Perpendicular to Aisle	One-Way Drive Aisle Width	Two-Way Drive Aisle Width
45°	9 ft.	17.5 ft.	17 ft.	N/A
60°	9 ft.	19 ft.	17 ft.	N/A
90°	9 ft.	18 ft.	20 ft.	20 ft.
Parallel	22 ft.	8 ft.	12 ft.	20 ft.

712.6 The minimum dimensions for spaces and aisles exclusively for compact parking spaces are as follows:

TABLE C § 712.6: MINIMUM DIMENSIONS FOR COMPACT PARKING SPACES AND AISLES

Parking Angle	Stall Width	Depth of Stalls Perpendicular to Aisle	One-Way Drive Aisle Width	Two-Way Drive Aisle Width
45°	8 ft.	16.5 ft.	16 ft.	N/A
60°	8 ft.	17 ft.	16 ft.	N/A
90°	8 ft.	16 ft.	20 ft.	20 ft.
Parallel	20 ft.	8 ft.	12 ft.	20 ft.

712.7 All parking spaces and access ways to and from spaces shall have a minimum vertical clearance of six feet, six inches (6 ft., 6 in.).

712.8 Above grade parking areas shall be designed so that no vehicle shall project over any lot line, front setback line, or building restriction line.

712.9 Except on a lot that only has one (1) or two (2) dwelling units:

- (a) Wheel bumper guards, curbs, guard rails, or screening shall be installed between the property line and the perimeter of the parking area; and
- (b) All parking areas and spaces shall be designed and operated so that sufficient access and maneuvering space is available to permit the

City of Alexandria Zoning Regulation Excerpt:

(E) *Provision of compact car spaces.*

- (1) Parking facilities providing for ten or more required off-street parking spaces for a non-retail use may provide up to 75 percent of the required spaces as compact car parking spaces. Parking facilities providing ten or more required off-street parking spaces for a specific commercial, restaurant, or miscellaneous commercial use may provide up to 30 percent of the required spaces as compact car parking spaces. Each compact car parking space shall be adequately signed to indicate the intended use any parking facility for which a preliminary site plan has been submitted to the director on or before June 24, 1975, shall be treated as an existing parking facility subject to [section 8-200\(E\)\(2\)](#).
- (2) Nonstructured surface parking facilities in existence on June 24, 1975, may be restriped for compact car parking spaces in conformance with these regulations; provided that compliance with [section 11-410\(CC\)\(5\)](#) of the site plan regulations, except for the setback requirement for a parking facility abutting a public road or sidewalk, is demonstrated to the director. If the director determines that the facility does not so comply, said nonstructured surface parking facilities may be restriped for compact car parking spaces only if a site plan has been submitted and approved in accordance with [section 11-400](#) of this ordinance.
- (3) Structured parking facilities in existence on June 24, 1975, may be restriped for compact car parking spaces in conformance with these regulations without the necessity of complying with [section 11-410\(CC\)\(5\)](#) of the site plan regulations.
- (4) For purposes of this section, a compact car shall mean an automotive vehicle having a width of less than six feet and a length of less than 16 feet.

Baltimore County Zoning Regulation Excerpt:

§ 409.5. - Number of small car spaces.



- A. In off-street parking facilities where more than 50 parking spaces are provided, small car spaces shall be permitted as specified below.
1. In facilities serving office or industrial uses: up to 40 percent of the number of spaces required for such uses.
 2. In parking structures serving residential or lodging uses: up to 40 percent of the number of spaces required for such uses. In surface parking facilities serving residential or lodging uses: no small car spaces permitted.
 3. In structured parking facilities serving a state-designated transit-oriented development: up to 40 percent of the number of spaces required for any uses within the boundaries of the plan of development.

[Bill No. 16-2015]

- B. Notwithstanding the provisions of Section 409.5.A., for any nonresidential development, all parking spaces provided which exceed the requirements of [Section 409.6](#) may be small car spaces at the discretion of the developer.

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- Garage Floor Plan (Separate attachment)
 - Auto Turn Exhibits (Separate attachment)