

DRIVE THRU QUEUE STACKING REQUIREMENTS OF VIRGINIA CITIES



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TITLE

Drive-Thru Queue Stacking
Requirements
of Virginia Cities

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ABSTRACT

In its design standards, the City of Virginia Beach currently requires developers to provide space for ten (10) vehicles in drive-thru queues, regardless of the type of commercial use. Having dealt recently with queues at some fast-food restaurants spilling back into adjacent roadways, and understanding that some cities vary their stacking requirements by commercial use (e.g. fast-food, drug store, bank, etc.), the City asked the HRTPO to research and document other cities' queue stacking requirements, by commercial use. Localities evaluating the appropriateness of their stacking requirements can use the above research to compare their stacking requirements to those of other cities.

ACKNOWLEDGMENT & DISCLAIMERS

Prepared in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), and Virginia Department of Transportation (VDOT). The contents of this report reflect the views of the Hampton Roads Transportation Planning Organization (HRTPO). The HRTPO is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, VDOT or Hampton Roads Planning District Commission. This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

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Impetus and Purpose

In its design standards, the City of Virginia Beach currently requires developers to provide space for ten (10) vehicles in drive-thru queues, regardless of the type of commercial use. Having dealt recently with queues at some fast-food restaurants spilling back into adjacent roadways, and understanding that some cities vary their stacking requirements (i.e. space for queuing) by commercial use (e.g. fast-food, drug store, bank, etc.), the City asked the HRTPO to research and document other cities' queue stacking requirements, by commercial use. Localities evaluating the appropriateness of their stacking requirements can use the above research to compare their stacking requirements to those of other cities.



FIGURE 1 Queue Spillback at Local Fast-Food Restaurant

Source: HRTPO

Methodology

To search the ordinances of various cities in Hampton Roads and Virginia to find queue stacking requirements, HRTPO staff used the website of the Municipal Code Corporation (Municode) which publishes legal documents for local governments across the U.S. Due to different cities using different terms, staff searched several terms to isolate the stacking regulations of a given city:

- Drive-up
- Pick-up
- Stacking
- Drive-through
- Drive-thru
- Drive-in

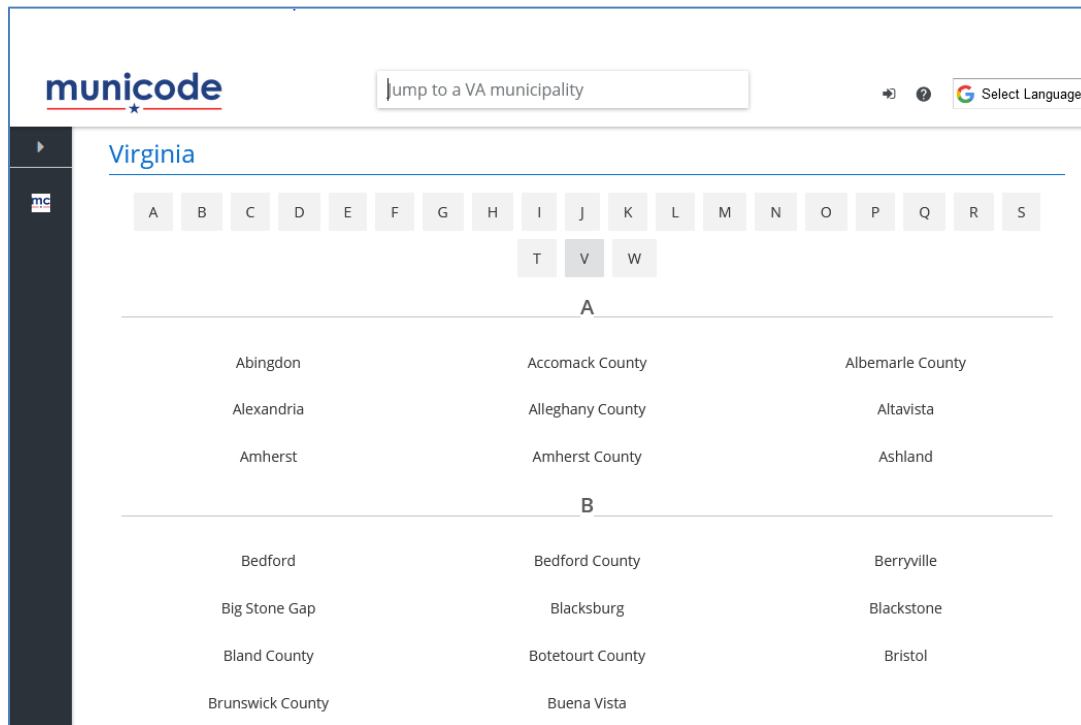


FIGURE 2 Municode Website

Source: library.municode.com/va

After examining the municipal codes of the ten (10) cities in Hampton Roads (Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg), staff searched the subject documents of several key localities around the state- Alexandria, Charlottesville, Fairfax County, Fredericksburg, Richmond, and Roanoke. Staff findings from the review of stacking requirements in municipal codes is presented in the next section.

Stacking Requirements- Hampton Roads Cities

Applicable code excerpts by city follow alphabetically.

Chesapeake

Chesapeake requires five (5) stacking spaces for drive-throughs, regardless of type of commercial use.

§ 19-403. - Parking and traffic circulation area design.

A. *In general.* Parking areas shall be designed to minimize on-site and off-site traffic hazards and conflicts in order to provide safe and convenient access to the travelling public; to reduce or prevent congestion in the public streets; and to facilitate the provision of emergency services.

B. **Stacking** lanes, internal circulation and parking for developments providing drive-through or window pickup service for vehicles.

1. Those developments providing an order and drive-through service on the site shall be designed so that those vehicles engaged in ordering and pickup do not interfere with the parking and movement of other vehicles, including vehicles engaged in loading and off-loading activities at the site. **Stacking** lanes shall be provided to accommodate at least five (5) vehicles, regardless of the number of service windows. The site shall also be designed to include a minimum of two (2) designated extra off-street parking spaces, above the number otherwise required by this zoning ordinance for such developments, for vehicles having to move out of the drive-through line and await service after ordering. Any signs approved by the director of development and permits, or designee, and complying with this zoning ordinance, shall be provided for the spaces.

FIGURE 3 Chesapeake Zoning Ordinance

Source: library.municode.com/va

Franklin

In addition to minimum requirements, Franklin has maximum stacking requirements.

c. Automatic car wash: Minimum of three **stacking** spaces per bay or stall and maximum of four **stacking** spaces per bay or stall.

d. Self-service car wash: Minimum of two **stacking** spaces per bay or stall and maximum of four **stacking** spaces per bay or stall plus one space per employee.

e. Financial institutions with drive-in windows: Minimum of one space per 400 square feet of floor area, plus sufficient area for eight **stacking** spaces for the first drive-in window and two **stacking** spaces for each additional window and maximum of one space per 300 square feet of floor area, plus sufficient area for eight **stacking** spaces for the first drive-in window and two **stacking** spaces for each additional window.

FIGURE 4 Franklin Zoning Ordinance, Article XVIII, § 18.2 (3)

Source: ecode360.com

Hampton

As a requirement for subdivision, Hampton’s Code of Ordinances requires the subdivision agent to make a finding in writing that the proposed development will not generate “auto stacking that blocks driveways or intersections”.

Sec. 35-26.1. - Required findings.

In approving a preliminary plat, the subdivision agent shall make each of the following findings in writing which findings shall be made part of the file on record:

- (A) The proposed development, including its lot sizes, density, access and circulation, and any required buffer areas are consistent with the zoning ordinance and compatible with the existing and/or permissible future use of adjacent property.
- (B) Required public facilities are adequate (or adequate subject to construction and installation of upgrades by the subdivider at the subdivider's cost) to serve the project under consideration and will provide access to adjoining land in a manner that will allow development of those adjoining lands in accord with this chapter. Street system adequacy shall be based on the street system's ability to safely accommodate trips from existing and planned land uses on the existing and proposed street system without creating safety hazards, generating auto **stacking** that blocks driveways or intersections, or disrupting traffic flow on any adjacent street.
- (C) The drainage, erosion, and construction in the area can be handled through normal engineering and construction practices.
- (D) The lot, block, and street layout are consistent with the subdivision design standards contained in this chapter.

FIGURE 5 Hampton Code of Ordinances

Source: library.municode.com/va

Newport News

HRTPO staff found no queue stacking requirements in the city code of Newport News. According to city staff, when queuing is a concern, the transportation division requests a queuing analysis from the developer during site plan review.¹

¹ Stille, Bryan. “Re: question.” Message to Robert Case. 23 December 2020. E-mail.

Norfolk

Norfolk’s Development Standards in the Zoning Ordinance contain the following queue stacking requirements:

TABLE 5.1.7(C): REQUIRED STACKING SPACES FOR CERTAIN USES	
USE TYPE	REQUIRED NUMBER OF STACKING SPACES
<u>Automated teller machine</u>	3 starting at the teller machine
Bank teller lane	3 starting at the teller window/tube
<u>Dry-cleaning/Laundry, with Drive-Through</u>	3 starting at drive-through window
Pharmacy, with Drive Through	3 starting at the first drive-through window
<u>Restaurant or Fast Food Restaurant, with Drive Through</u>	6 starting at the order box/speaker, and 3 between the order box/ speaker and the pickup window
<u>Gas station</u>	1 at each end of the outermost gas pump island
<u>Automatic car wash and auto detailing</u>	3 starting at the bay entrance
<u>Car wash and auto detailing</u>	2 starting at the bay entrance
<u>All personal services uses, with drive-through</u>	3 starting at the drive-through window
Other	To be determined by <u>ZA</u> , based on standards for comparable uses, or alternatively based on a parking demand study prepared by a registered engineer having expertise in transportation engineering

FIGURE 6 Norfolk Zoning Ordinance, Article 5.1.7(B)(7)

Source: library.municode.com/va

Note that Norfolk’s requirements vary by commercial use.

Poquoson

Poquoson’s requirements vary by commercial use:

- l. Restaurants with drive-in or drive-thru windows shall provide sufficient area for eight **stacking** spaces for the drive-in or drive-thru window.
- m. Rental of rooms to a maximum of three shall provide off-street parking totaling one more parking space than the total number of rooms to be rented.
- n. Financial institutions with drive-in windows shall provide sufficient area for eight **stacking** spaces for the first drive-in window and two **stacking** spaces per each additional window.
- o. Car washes shall have four **stacking** spaces per bay/stall, plus one space per employee for self-service establishment or one space per employee, plus sufficient area for ten **stacking** spaces per bay/stall for an automated establishment.

FIGURE 7 Poquoson Code of Ordinances, Appendix C, Article I, Section 1-08 (c) (1)

Source: library.municode.com/va

Portsmouth

Portsmouth’s requirements vary by commercial use:

TABLE 40.1-5.1(N)(1): REQUIRED STACKING/STANDING SPACES		
USE OR ACTIVITY [1]	MINIMUM NUMBER OF STACKING/STANDING SPACES	MEASURED FROM [2]
Automated teller machine	3	Teller machine
Automobile repair and service (all types)	2 per bay	Bay entrance
Bank Teller	3	Teller window
Car wash, automatic	2	Bay entrance
Car wash, self-service	1 per bay	Bay entrance
Drug store or pharmacy, with drive-through service	4 per lane	Agent window
Dry cleaner, with drive-through service	4 per lane	Window
Nursing home	3	Main building entrance
Personal services with drive-through (e.g., laundry/dry-cleaning establishment)	4 per lane	Agent window
Restaurant, with drive-through service	4	Pick-up window
	Plus 3	Menu board
Other	Uses not specifically listed are determined by the Planning Director based on standards for comparable uses, or alternatively based on a parking demand study.	
NOTES:		
[1] See Table 40.1-4.1(A) : Use Table		
[2] Distance measured from window where products are delivered, when more than one window is present.		

FIGURE 8 Portsmouth Code of Ordinances, Article 40.1-5.1

Source: library.municode.com/va

For drive-through restaurants, Portsmouth has stacking requirements for both the pick-up window and the menu board.

Suffolk

Suffolk has general drive-through stacking requirements, i.e. the requirements do not vary by commercial use.

(10) DRIVE-THROUGH FACILITIES .

- A. Location. Drive-through facilities shall not utilize required parking spaces to meet stacking requirements. Facilities shall be designed to minimize conflicts with other on-site vehicular and pedestrian traffic.
- B. Stacking Requirements. A minimum of six (6) vehicles should be accommodated in each stacking lane.
- C. Width. Stacking lanes shall have a minimum width of twelve (12) feet.

FIGURE 9 Suffolk Unified Development Ordinance, Article 6, Sec. 31-606 (a)

Source: library.municode.com/va

Virginia Beach

Although Virginia Beach’s requirements are published in its Public Works “Design Standards Manual” (as opposed to an ordinance), the authority for the standards “is established by the adopted resolutions of the City of Virginia Beach City Council and the ordinances of the City”, according to the forward of the manual.

3.15. Drive-up or Pick-up Windows

For sites with drive-up or pick-up windows, such as fast food restaurants, pharmacies, banks, ATM machines, dry cleaners, etc., a minimum 10 vehicle stacking lane is required from the pick-up window. Each vehicle space shall measure 22 feet from front bumper to front bumper which includes length of vehicle and separation between vehicles. Additional drive-up lanes will not be counted towards meeting this requirement. The stacking lane must ensure adequate on-site stacking that prevents vehicles from obstructing the right-of-way and does not block any required parking spaces.

FIGURE 10 Design Standards Manual, City of Virginia Beach, Public Works, June 2020, p. 3-17

Source: library.municode.com/va

Williamsburg

Staff found no stacking requirements in Williamsburg’s municipal code.

Stacking Requirements- Selected Virginia Localities

Applicable code excerpts for key Virginia localities outside Hampton Roads follow alphabetically.

Alexandria

Staff found no stacking requirements in Alexandria’s municipal code.

Charlottesville

Staff found no stacking requirements in Charlottesville’s municipal code.

Fairfax County

Staff found no stacking requirements in Fairfax County’s code.

Fredericksburg

Table 72-53.1C(7): Required Stacking Spaces		
Use or Activity	Minimum Number of Stacking Spaces	Measured From
Automated teller machine (drive-up)	2	Teller window
Automobile repair and service	2 per bay	Bay entrance
Car wash	1 per bay	Bay entrance
Day-care center, elementary, and middle school	2	Main building entrance
Financial institution or drug store with drive-through service	3 per lane	Agent window
Gasoline sales	1	Each end of the outermost gas pump island
Nursing home or assisted living facility	3	Building entrance
Personal services with drive-through (e.g., laundry/dry-cleaning establishment)	3 per lane	Agent window
Restaurant, with drive-through service	3 per order window + 3 per order board	

FIGURE 11 Design Standards Manual, June 2020, p. 3-17

Source: library.municode.com/va

As shown above, Fredericksburg’s stacking requirements vary by commercial use.

Richmond

Richmond's stacking requirements vary by commercial use.

	<i>Use</i>	<i>Number of Spaces Required</i>
(28)	Restaurant, tearoom or similar food and beverage service establishment	1 per 100 sq. ft. of floor area, plus 5 stacking spaces per restaurant drive-in window
(32)	Bank or savings and loan office, including drive-in	1 per 300 sq. ft. for the first 1,500 sq. ft. of floor area, plus 1 per 400 sq. ft. in excess thereof, plus 5 stacking spaces per drive-in teller

FIGURE 12 Richmond Code of Ordinances, Chapter 30, Article VII, Division 2, Section 30-710.1

Source: library.municode.com/va

Roanoke

Roanoke's stacking requirements vary by commercial use.

Use with Which Drive-Through Facility is Associated	Minimum Number of Stacking Spaces Required per Stacking Lane
Eating establishment	5
Financial institution	3
Car wash, self-service	1
Car wash, automated	5
Drive-through kiosk	2
Others not specifically listed	2

FIGURE 13 Roanoke Code, Chapter 36.2, Section 36.2-409 (d) (1)

Source: library.municode.com/va

Summary and Conclusion

The drive-thru queue stacking requirements of the examined localities fall into three categories:

1. No requirements
(no drive-thru queue stacking requirements found in ordinances)
 - Hampton Roads
 - i. Hampton
 - ii. Newport News
 - iii. Williamsburg
 - Other Virginia
 - i. Alexandria
 - ii. Charlottesville
 - iii. Fairfax County
2. General requirements
(the same drive-thru queue stacking requirement, regardless of commercial use)
 - Chesapeake 5 vehicles
 - Suffolk 6 vehicles
 - Va. Beach 10 vehicles
3. Specific requirements by commercial use
 - 1 to 9 vehicles, depending on commercial use, as shown in the table below:

<u>City</u>	<u>Auto Repair and Service</u>	<u>Bank</u>	<u>Car Wash</u>	<u>Day-care, Element- ary or Middle School</u>	<u>Dry- cleaning</u>	<u>Drug Store</u>	<u>Gas Station</u>	<u>Kiosk</u>	<u>Nursing Home</u>	<u>Personal Services</u>	<u>Rest- aurant</u>	<u>Other</u>
Hampton Roads												
Franklin	n.a.	8 ***	2 or 3*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Norfolk	n.a.	3	3	n.a.	3	3	1	n.a.	n.a.	3	9	n.a.
Portsmouth	n.a.	3	2	n.a.	4	4	n.a.	n.a.	3	4	7	n.a.
Other Virginia												
Fredericksburg	2	2 or 3**	1	2		3	1	n.a.	3	3	6	n.a.
Richmond	n.a.	5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5	n.a.
Roanoke	n.a.	3	5	n.a.	n.a.	n.a.	n.a.	2	n.a.	n.a.	5	2

Notes

* automatic car wash: 3; self-service car wash: 2

** human teller: 3; machine teller: 2

*** 8 for first drive-in window, plus 2 for each additional window

FIGURE 14 Drive-Thru Queue Stacking Requirements of Subject Virginia Localities having Requirements by Commercial Use, number of vehicles

Source: HRPTO staff

The appeal of the general requirements is their simplicity. The appeal of the specific requirements is the logic that a business' attractiveness, and the peaking of the trips that it attracts, vary by type of business.

The above research can be used in the following ways:

- Localities that a) lack existing requirements, and b) have excessive queues may use the above requirements of other localities as a guide for developing a *new* drive-thru queue stacking requirement ordinance.
- Localities that are dissatisfied with their existing requirements may use the above requirements as a guide for developing a *revised* drive-thru queue stacking requirement ordinance.