

DeIDOT DC Manual

Chapter 1 Access Standards



May 18, 2015

What's New in this Chapter?

- ▶ Placement – Moved to front of Manual
- ▶ Minimum Driveway Spacing on Local and Minor Collector Roads: 150 Feet
- ▶ Signal Spacing Criteria removed
- ▶ Design standards for arterial and collector roads revised to reflect current practice

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So, what's new in Chapter 1? The first thing is that it is now Chapter 1. It used to be Chapter 9, the last chapter. In making revisions, however, we realized that we were burying the lead!

This chapter talks about whether you can get an access on a particular road and, if you can get one, where it should be. These things are fundamental to any design decisions, so we think it should be the first chapter.

The first content change is the minimum driveway spacing on local and minor collector roads, which we moved from 200 feet to 150 feet. This was a practical consideration based on the minimum lot width in the Sussex County Code.

We've removed a section on signal spacing criteria, that identified 2,500 feet as a minimum spacing, I think because we weren't following it. In some contexts that's a good number but signal spacing is a complex subject and there are places where that number should be higher or lower.

Finally, we revised the sections on design standards for arterial and collector roads to reflect our current practice.

Access Rights

- ▶ Every parcel of land has an associated right to access that land in a safe manner.
- ▶ That right can be transferred to others by deed.
- ▶ If no one has deeded that right to someone else, for example, if no one has sold the access rights to the State, then the current owner can access their property.
- ▶ On State-maintained roads, DeIDOT administers access to provide for safety and operations.
- ▶ Location, volume and vehicle type all matter in determining safety and operations.

Section 1.2.2

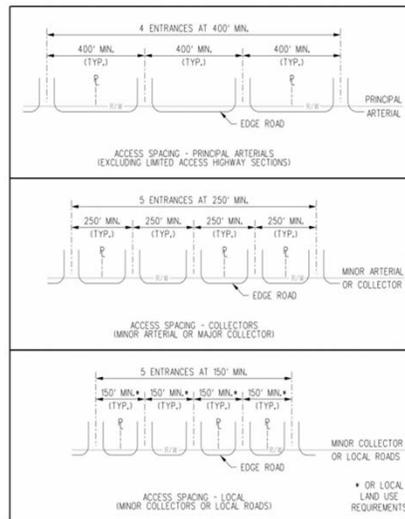
Having given you the overview of what's changed, I'd now like to go over what the chapter says. It's only eight pages and I recommend that you read it yourselves, but realizing that some of you won't, here is the summary.

Read slide.

Entrance Location

- ▶ General Considerations
 - Sight distance
 - Location of adjacent entrances
 - Length of auxiliary lanes
 - Distance from intersecting streets
 - Adjacent street queue lengths
 - Adjacent street speed limits
 - Site circulation
 - ▶ Functional Classification
- Section 1.2.1

Figure 1.2.1-a Spacing of Driveways and Entrances



How do we determine whether a proposed access will be safe and allow for smooth traffic flow? Much of Chapters 3 and 5 are devoted to describing that in detail, but I'll outline some basic considerations here.

Sight distance: people entering and exiting the site must be able to see and be seen.

Location of existing entrances: your entrance can't interfere with your neighbor's existing entrance. Note the minimum distances shown in Figure 1.2.1-a. Note also that these distances apply if you have a long frontage and are proposing multiple entrances to one parcel. While we also have a minimum requirement for distance from property line, the spacing requirements in this figure are irrespective of property lines.

Length of auxiliary lanes: traffic entering your site can't interfere with through traffic.

Distance from intersecting streets: your site traffic can't interfere with turning traffic either.

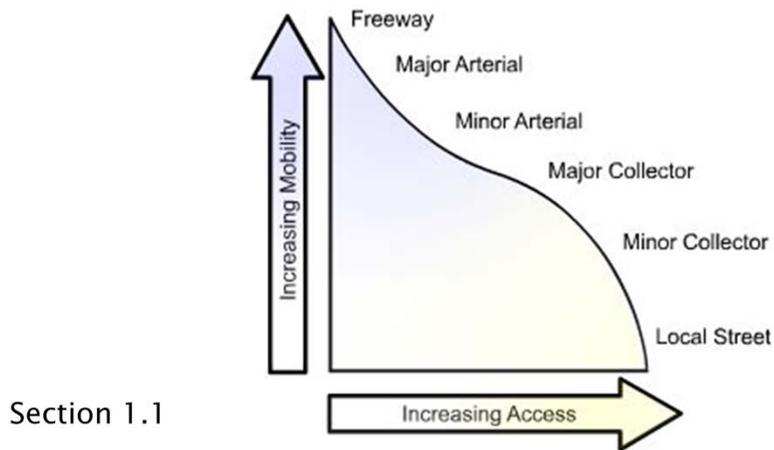
Adjacent street queue lengths: if your entrance would be regularly be blocked by traffic queuing back from an intersection, that's a problem.

Adjacent street speed limits: again traffic entering your site can't interfere with through traffic.

Site circulation: while your site traffic can't interfere with traffic on the adjacent street, it must also enter your site at a safe speed; also if drivers then must stop or slow because of conditions on the site, they can't queue back onto the street.

Beyond these general considerations, there are other considerations specific to the functional classification of the adjacent street..

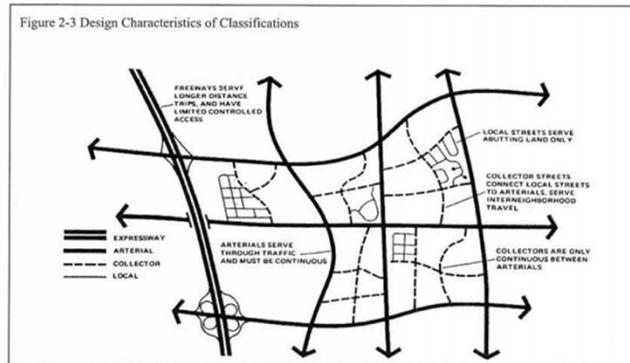
Functional Classification



What is functional classification? Some of you may remember this diagram from school. It describes something we all know, that roads exist on a continuum or spectrum. At one end we have freeways, which exist to provide mobility. Almost no one gets direct access on a freeway. At the other end, we have local streets, which exist to provide access.

Functional Classification

Figure 1.1-a Roadway Functionality in Serving Traffic Mobility and Land Access

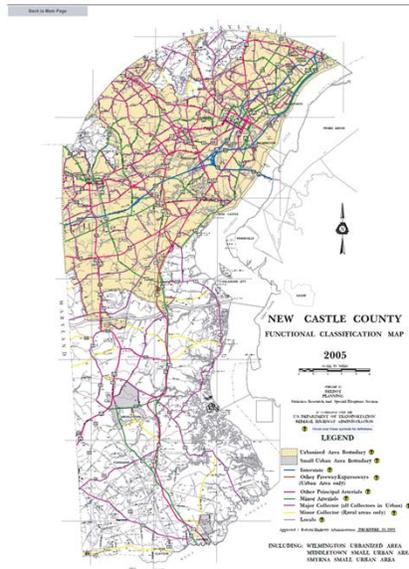


Source for Figure 2-2 and 2-3: *Arterial Street Access Control Study*, Tri County Regional Planning Commission, 1981, p.3.

Section 1.1

This figure shows that same concept translated into map of a hypothetical area. Do you see the hierarchy of roads and streets?

Functional Classification



Section 1.1

Finally, here's that hypothetical map translated a real location in Delaware.

Functional Classification

- ▶ Limited Access Highways (Section 1.4)
 - Interstate, freeways, expressways and some sections of principal arterials
 - Access only by directional ramp
 - Access requires approval of Chief Engineer and (for interstate highways) FHWA
- ▶ Arterials (Section 1.5)
 - Private direct access is permitted only where there is no reasonable access from a lower classification road.
 - Commercial developments and major residential subdivisions: No additional access rights accrue.
 - Minimum entrance spacing is 400 feet on principal arterials, 250 feet on minor arterials.

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Now, how does functional classification bear on the access your client can get?

At the top of the scale, limited access highways, it means they probably can't get access. In most cases, the access rights will have been bought by the State, either from them or from a previous owner. Getting access would mean demonstrating to us that granting this access is in the public interest and reimbursing us for our purchase of the access rights.

On arterial highways, if we haven't bought the access rights, we will be looking for other possible access, either through suitable frontage on another road or an easement through an adjoining property. Also, we're looking to limit left turn access. If there is a median, you'll need to show us that permitting a left turn movement in or out is better than having your client's traffic make U-turns.

For commercial or major residential subdivisions, plan to serve all of the parcels along a road through a single access. Depending on the situation, this could be done with subdivision streets, service roads or easements.

Finally on arterials, per Figure 1.2.1-a, the minimum acceptable entrance spacing is 400 feet on center for principal arterials and 250 feet on center for minor arterials.

Functional Classification

- ▶ Collectors (Section 1.6)
 - Commercial developments and major residential subdivisions: No additional access rights accrue.
 - Minimum entrance spacing is 250 feet (150 feet on minor collectors).
- ▶ Locals (Section 1.7)
 - Only one access will be permitted on any road for a parcel or assemblage (Exception in Section 7.2.3.1)
 - Minimum entrance spacing is 150 feet.
- ▶ Service (Section 1.8)
 - Any safe access that fits with your neighbors' access.

On major collector roads, the situation is similar to minor arterials except that we will be more inclined to allow left turn movements.

On minor collector roads, the minimum entrance spacing drops to 150 feet.

The reference to Section 7.2.3.1 you see there refers to U-shaped residential driveways. For many years, our regulations have said they're illegal; you can't have one; certainly you can't create a new one. However, we all know places where they are practical measures that improve safety and do no real harm. Section 7.2.3.1 is our attempt bring some rationality to the matter by outlining where they are permissible and where they aren't. For Chapter 1, you only need to know that we still don't allow new U-shaped driveways on arterial roads.

On local roads, speeds will be lower, at least in urban and suburban areas, and through traffic is less of a concern as these roads should be serving only local traffic, but that local traffic may still be substantial. The minimum entrance spacing is 150 feet.

Service roads exist to provide access. We're still concerned about safety and operations, but we expect speeds to be low and through traffic to be minimal.

Signalized Access (Sections 1.3 and 2.6)

- ▶ Signal Justification Study (SJS) required whenever signalized access is proposed.
- ▶ SJS must include:
 - DE MUTCD Warrant Analysis (Section 2.6.1.D)
 - Capacity Analysis (Section 2.6.1.E)
 - Bandwidth Analysis (Section 2.6.2)
- ▶ If warrants are met and bandwidth is insufficient, access shall be limited to right turns. (Section 1.3)
- ▶ If you want a signal, provide ≥ 2 exiting lanes.

Finally for this chapter, Section 1.3 of the Manual addresses signalized access and most of the section is about Signal Justification Studies. Details of what we need in these studies are provided in Section 2.6 but I'll cover both sections here.

To summarize, if you want a signal, you will need to submit a Signal Justification Study and there are three elements to a typical study: a warrant analysis to determine whether installation of a signal is appropriate to consider; a capacity analysis to determine whether there will be sufficient capacity, meaning enough lanes for each movement and adequate queue storage; and a bandwidth analysis to determine whether the flow of through traffic will be disrupted.

Please note: if your site has enough volume to warrant a signal but there is not enough bandwidth, we will limit your client's access to right turns in and out.

In closing, and this is not in Chapter 1, and may not be in the Manual, if you want a signal, plan for at least two exiting lanes. Having two exiting lanes gives us flexibility on how to phase the signal and allows us to dedicate a lane to right or left turns. Having only one exiting lane means that your entrance has to have a signal phase dedicated to it; left turns and through traffic across the intersection from your site can't move then; and every exiting vehicle must use the signal, if only for a right turn on red. That means the signal would need more bandwidth, which increases the chance that there won't be enough bandwidth and we'll limit you to right turns only.