

To: Planning Board, Town Planner
From: David Robbins (Planning Board Member)
Subject: Intersection Separation
Date: December 14, 2020

The purpose of this memorandum is to briefly review Grafton's current subdivision rules regarding separation between intersections and compare Grafton's rules with those in other Massachusetts municipalities. This can serve as a basis for understanding our current rules and informing discussion about potential changes to our rules.

Grafton's Rules

Our current rules are found in the *Rules and Regulations Regarding the Subdivision of Land*, as last updated April 27, 2009.

Section 4 (Design Requirements) imposes the following rules for intersection separation:

4.1.3 Alignment

- 4.1.3.1 Intersections shall not be disjointed, or separated.
- 4.1.3.6 Streets shall be laid out so as to intersect with adjacent streets or adjacent unsubdivided land at intervals of from six hundred feet (600') to twelve hundred feet (1200'). In special instances the Planning Board may approve a right-of-way for a future street to remain in fee ownership of the applicant, in lieu of actual construction of a cross street.

Review of Similar Rules

We refer to the following sources for some information and context about how the separation of intersections is regulated:

- *Project Development & Design Guide* (MassHighway, 2006)
- *Neighborhood Road Design Guidebook* (American Planning Association – Massachusetts Chapter & Home Builders Association of Massachusetts, 2011)
- Subdivision Rules & Regulations for 27 municipalities in central and eastern Massachusetts

The reference guides and most of the subdivision regulations reviewed make a distinction between two measures of the distance between intersections, illustrated in Figure 1.

- "Intersection Separation" is the distance between intersections on the same side of the street, and is referred to by many different terms in the towns surveyed. Some towns call this "block size" or "block length."
- "Jog" is the distance between intersections on opposite sides of the street; that term is used by most of the towns surveyed.

Note that while the diagram shows the distance measured between roadway centerlines, the referenced subdivision regulations make the measurement variously between centerlines, pavement edges, or right-of-way edges.

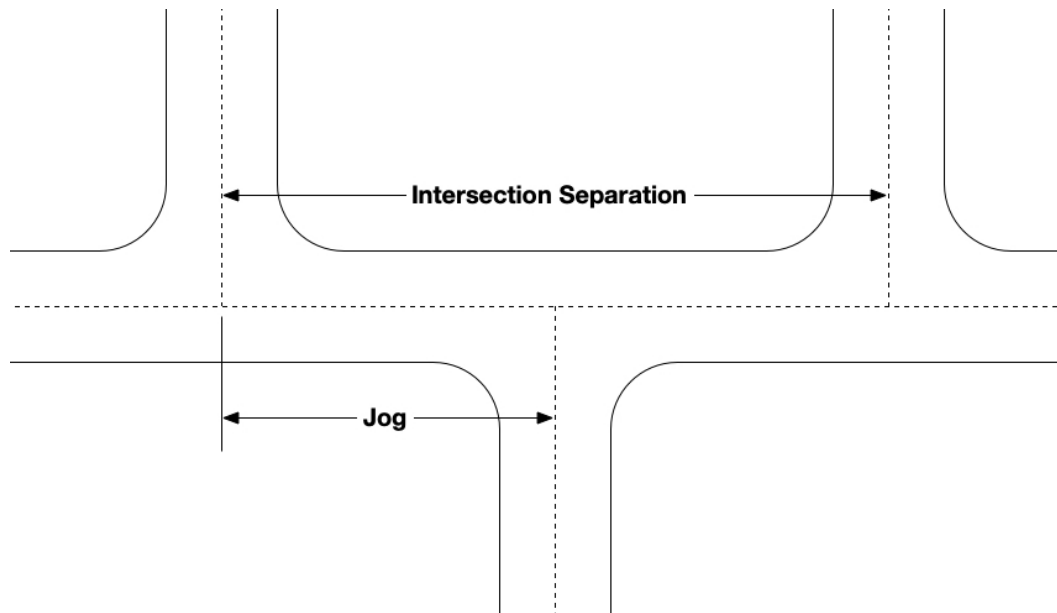


Figure 1 – Intersection Separation Measures

For intersection separation (same side of through street), we find:

- MassHighway design guidelines recommend 200' for a design speed of 15-30 mph, and 250' for a design speed of 35-40 mph.
- The neighborhood design guidebook recommends 300'.
- 19 of the 27 towns surveyed specify minimums ranging from 125' to 600', with an average of 349'.
- 8 of the 27 towns surveyed do not specify a minimum.
- One town specifies the minimum as “providing a minimum frontage for two (2) abutting house lots on the intersected street.”
- One town sets the minimum to be equal to two times the minimum lot frontage for the zoning district.
- 6 of the 27 towns surveyed specify maximums, ranging from 1000' to 2000'.
- 21 of the 27 towns surveyed do not specify a maximum
- Four of the towns specify the same minimum and maximum used by Grafton.

For the jog (opposite side of through street), we find:

- MassHighway design guidelines recommend 50' for a design speed of 15-30 mph, and 75' for a design speed of 35-40 mph.
- The neighborhood design guidebook recommends 115'.
- 22 of the 27 towns surveyed specify a minimum: 125' in 11 towns, 150' in 9 towns, and 250' in one town.
- 5 of the 27 towns surveyed do not specify a minimum. Of those, two do not specify a minimum separation for any intersections; for the other three, one might assume that the jog minimum is the same as the separation minimum.

Discussion

The foregoing review shows that there is considerable variation in whether and how distances between intersections are regulated. Few of the subdivision regulations reviewed address the “why” – the reasons for the existence of the regulations and for the distances chosen.

To ascertain the purpose of such regulations, we look to the two design guideline documents mentioned above and to the few subdivision regulations that state, or at least hint, at the purpose. Our review turns up two distinct purposes:

1. Safety

For intersections that are offset from one another, whether on the same side or opposite sides of the through street, the distance between two intersections must be sufficient to avoid conflicts. If two vehicles enter the through street, one from each side street, at approximately the same time, in such a way as to occupy the same lane, at least temporarily, there must be sufficient distance that one can stop before encountering the other. The stopping distance here is less than the stopping distance for the design speed of the through street, though, because the vehicles in potential conflict are turning onto the through street and will not have accelerated to the design speed when the potential conflict, and thus the need to stop, is recognized.

2. Design

A minimum distance between streets provides for subdivision design that ensures that streets are separated by at least two lots, avoiding the creation of lots surrounded by roads. This is explicit in the subdivision regulations of two of the towns surveyed (see above), and is at least implicit in the use of the terms “block size” and “block length” in another two of the towns surveyed. Note in particular that one town ties this distance directly to the frontage requirement for the zoning district in which the subdivision lies.

Strictly from a safety perspective, the minimum distance would be the same for both cases illustrated in Figure 1. But from a design perspective, a greater distance is appropriate when considering the separation of two streets on the same side of the through street, because the sum of the minimum lot frontages is normally going to be significantly greater than the relevant stopping distance.