


Date May 25, 2016
To Nathaniel Strosburg, Ashland Town Planner
From Philip Paradis, PE 
Project 73 Olive Street
Subject Site Distance Review

At the request of the Planning Board, Professional Services Corporation, PC (PSC) independently verified the site distance at the proposed new road on Olive Street as part of the 73 Olive Street Subdivision. PSC also reviewed a set of 6 plans entitled: “No 73 Olive Street Sight Distance Plan” dated April 14, 2016 and prepared by The Jillson Company, Inc., Framingham MA.

On May 24, 2016 PSC field measured site distances 14.5 ft. off the existing pavement with the following results:

- 400± feet measured from the center of the southbound lane to the new road.
- 270± feet measured from the center of the northbound lane to the new road.

Speed limit for the road is posted 25 miles per hour in both directions. Based on the observations the maximum safe speed relative to stopping sight distance is (see attached worksheet):

- 50.2 MPH southbound
- 35.6 MPH northbound

PSC reviewed the submitted plans and offer the following comment:

1. Internal to the site, the design sight distance should be 150 ft. minimum. The minimum length of vertical curves required to provide a 150 ft. minimum sight distance is calculated by multiplying the algebraic difference “A” times the rate of vertical curvature “Ka”). For crest vertical curves $Ka = 12$ and for sag vertical curves $Ka = 26$.



Calculate maximum speed for safe stopping for observed sight distance:

Southbound travel on Olive Street:

400 feet - observed

Stopping Sight Distance for Level Ground 410 ft. Observed

$$d = 1.47Vt + 1.075 V^2 / a$$

t = break reaction time = 2.5 seconds
 V = speed MPH
 a = deceleration rate = 11.2 ft./s²

V = **50.2** MPH d = **426.4** ft.

Stopping Sight Distance adjusted for grade

$$d = 1.47Vt + V^2 / (30 * ((a/32.2) + G))$$

G = grade in %/100 in direction of travel = **0.044** ft./ft.

V_{max} = **50.2** MPH d = **398.9** ft.

Northbound travel on Olive Street:

270 feet - observed

Stopping Sight Distance for Level Ground

$$d = 1.47Vt + 1.075 V^2 / a$$

t = break reaction time = 2.5 seconds
 V = speed MPH
 a = deceleration rate = 11.2 ft./s²

V = **35.6** MPH d = **252.5** ft.

Stopping Sight Distance adjusted for grade

$$d = 1.47Vt + V^2 / (30 * ((a/32.2) + G))$$

G = grade in %/100 in direction of travel = **(0.044)** ft./ft.

V_{max} = **35.6** MPH d = **269.9** ft.