



Numbers Every Traffic Engineer Should Know, Traffic Corner Tuesday, Traffic Engineering Standards Traffic Facts



By Mike Spack, PE, PTOE

I originally posted this article several years ago. I attend a lot of meetings where I'm seen as the expert on traffic issues and I get asked questions related to basic standards and general practice. You can always respond that you don't know the answer and you need to look it up, but you look better if you're able to rattle off the numbers from memory. To that end, I have updated the list of questions and answers that every traffic engineer should consider memorizing.

**About how much traffic will my development generate?** *(round numbers based on ITE Trip Generation Report, 10th Edition)* **(Corrections were made to these numbers as of Jan 25, 2018 at 10:00 pm)**

- Single Family Houses (per unit): 10 trips per day, 1 per peak hour
- Apartments/Condos/Townhouses (per unit): 7 trips per day, 0.7 per peak hour
- Office (per 1000 sq ft): 10 trips per day, 1.5 per peak hour
- Retail (per 1000 sq ft): 38 trips per day, 4.2 per peak hour
- Industrial (per 1000 sq ft): 5 trips per day, 0.9 per peak hour

**Planning level daily capacity of a road** *(Round numbers based on Level of Service D/E thresholds in HCM 6th Edition)*

- 2 lane local street: 1,000 vehicles per day based on livability
- 2 lane (w/ left turn lanes): 18,300 vehicles per day
- 4 lane (w/ left turn lanes): 36,800 vehicles per day
- 6 lane (w/ left turn lanes): 55,300 vehicles per day

**Peak hour capacity of an intersection** *(Based on Level of Service D/E thresholds in HCM 6th Edition)*

- Stop sign controlled: 35 seconds/vehicle
- Roundabout controlled: 35 seconds/vehicle
- Traffic Signal controlled: 55 seconds/vehicle

**Theoretical maximum saturation flow rate per lane** *(this will allow you to do quick calculations in your head to check reasonableness at big events)*

- 1,900 vehicles per hour per lane

### Threshold for when you need to add a second (dual) left turn lane at a signalized intersection?

- 300 left turning vehicles from that leg of the intersection in the peak hour

### Width of a commercial driveway *(based on NCHRP Report 659)*

- One lane in only: 14 feet curb to curb
- Two lane, bi-directional: 24 feet curb to curb
- Three lane, one lane in with median than two lanes out: 40 feet curb to curb
- Minimum industrial driveway: 26 feet curb to curb

### Size of a footprint that a roundabout can take

- Single lane diameter: 132 foot
- Double lane diameter: 165 foot

### Closeness between driveways and intersections *(these are very rough rules of thumb — other regions are less stringent)*

- On a local street: 150 feet
- On a collector street: 660 feet
- On an arterial: 1,320 feet to 2,640 feet (with medians, right-in/right-outs can be 660 feet away)

### Parking needed for functionality *(these are suburban rules of thumb – urban conditions require less, but that's very situational)*

- Multifamily Residential: 1 per bedroom
- Retail: 4 per 1,000 SF
- Restaurant: 15 per 1,000 SF (varies a lot)

### Interested in learning more about the numbers every traffic engineer should know?

Check out our Traffic Corner Tuesday webinar replay titled *Numbers Every Traffic Engineer Should Know*.

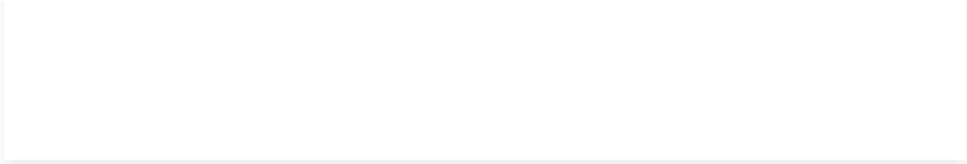


#### Mike Spack, PE, PTOE

Mike is the founder of Spack Enterprise and creative force and principal writer behind MikeOn Traffic.

He is the recognized industry leader of traffic studies and traffic data collection. He is also the author or numerous industry leading guides used by transportation professionals around the world and presenter for Traffic Corner Tuesday webinars.

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Mike Spack

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