

Common Inputs for Construction Congestion Cost (CO3)

For work zone related resources, please visit MDOT's [Work Zone Mobility](#) site, and for the latest methodology in estimating work zone capacities, please refer to [MDOT's Work Zone Safety & Mobility Manual](#). An older, simplified approach for estimating work zone capacities is presented below.

WORK ZONE CAPACITIES

NUMBER OF LANES		AVERAGE CAPACITY	
NORMAL	OPEN	VPH	VPHPL
3	1	1,400	1,400
2	1	1,550	1,550
5	2	3,200	1,600
4	2	3,400	1,700
3	2	3,400	1,700
4	3	5,250	1,750

(Standard lane capacity is assumed 2,000 vphpl, but varies with speed. Refer to the *Highway Capacity Manual 2000*, exhibits 12-1, 12-2, 13-2 and 13-3.)

ADJUSTMENTS

1. If percent of commercial traffic > 10%, then reduce VPH by 10%.
2. If an entrance ramp is within the closure zone, reduce freeway lane 1, VPHPL volume by the minimum of either:
 - a. Ramp entering volume in VPHPL; or
 - b. 800 VPHPL.
3. Add (or subtract) 10% of the VPH for above (or below) average work activities. Work activities which are in close proximity and/or involve larger equipment and numbers of workers would decrease capacity. Work activities which involve minimal noise and dust and are remote from open travel lanes would increase capacity.
4. Through signalized areas, use 750 VPHPL

Use the following table to determine the appropriate speed when D=C input for CO³.

Speed when Demand is Low (D~0) (mph)	Speed (when D=C) (mph)		
	Low Volume	Intermediate Volume	Volume Approaching Capacity
30	28	26	25
35	32	30	28
40	36	34	31
45	40	37	34
50	44	41	35
55	48	44	36
60	51	48	37
65	55	51	38
70	58	54	38

Based on Figure II-22, 1990 AASHTO "A Policy on Geometric Design of Highways and Streets"

For traffic counts and other traffic related data, visit MDOT's [Traffic Monitoring Program](#) site.

If hourly traffic distributions are unavailable for a specific location, use the following:

PennDOT AADT Distribution (hourly percentages)

Hour (24-hour clock)	Traffic Pattern Group					
	Interstate		Principal Arterial		Minor Arterial	
	Urban	Rural	Urban	Rural	Urban	Rural
12 – 1	1.3	1.7	0.9	0.9	0.8	0.7
1 – 2	0.9	1.4	0.5	0.5	0.4	0.4
2 – 3	0.8	1.3	0.4	0.5	0.3	0.3
3 – 4	0.8	1.3	0.4	0.5	0.3	0.4
4 – 5	1.1	1.4	0.6	0.9	0.4	0.8
5 – 6	2.1	2.1	1.8	2.3	1.3	2.2
6 – 7	4.7	3.7	4.4	4.9	4.0	4.5
7 – 8	6.4	4.9	6.2	6.2	6.4	5.5
8 – 9	5.6	4.9	5.7	5.5	5.7	5.3
9 – 10	5.1	5.2	5.1	5.3	4.8	5.4
10 – 11	5.2	5.5	5.2	5.4	4.9	5.8
11 – 12	5.4	5.8	5.6	5.6	5.5	6.0
12 – 13	5.5	5.7	6.0	5.7	6.0	6.2
13 – 14	5.5	5.9	5.9	5.9	5.7	6.4
14 – 15	6.1	6.3	6.4	6.6	6.3	7.2
15 – 16	7.3	6.9	7.4	7.7	7.6	8.1
16 – 17	7.8	7.2	7.8	8.0	8.3	8.0
17 – 18	7.2	6.6	7.5	7.4	8.0	7.1
18 – 19	5.4	5.3	5.9	5.5	6.2	5.4
19 – 20	4.3	4.4	4.8	4.3	5.1	4.4
20 – 21	3.7	3.8	4.0	3.6	4.3	3.6
21 – 22	3.2	3.4	3.3	3.0	3.4	2.9
22 – 23	2.6	2.9	2.4	2.3	2.4	2.1
23 – 24	2.0	2.4	1.7	1.5	1.6	1.4