

I-35/I-40/I-235 Dallas Junction OKC Preliminary Lane Capacity Analysis

Summary

Thirty-three (33) points throughout the subject interchange were analyzed for lane capacity using equation 12-9 from the Highway Capacity Manual (HCM) and evaluated based on Level of Service (LOS) according to Exhibit 12-37 from the HCM during the AM and PM peak hours. The number of lanes of each segment includes auxiliary lanes or lanes that exit downstream of the segment for simplicity, so results may be slightly generous compared to a more in-depth analysis. Additionally, each segment was analyzed individually in a vacuum, so queueing and congestion impacts on upstream segments are not accounted for. An annual growth rate of 1.5% was used to determine 2035 and 2050 design traffic volumes. Results for each design year are presented in list and table format.

The thirteen (13) locations identified in the 2020 & 2050 analyses should be considered higher priority for lane modifications while the additional five identified in the 2035 analysis should be considered lower priority. Lane recommendations are based on preliminary data only and should be analyzed further before commitment to design.

The following is a list of each of the 33 analyzed points and their descriptions. Point L was omitted because it is not located on a highway or ramp.

- Point A: I-235 SB Mainline north of the interchange
- Point B: I-235 SB Mainline immediately after the OKC Blvd. exit and before the I-40 WB exit
- Point C: I-235 SB ramp to OKC Boulevard
- Point D: I-235 SB Mainline after the I-40 WB exit and before the I-40 EB exit
- Point E: I-235 SB to I-40 WB ramp
- Point F: I-35 NB to I-40 WB ramp
- Point G: I-40 WB Mainline before the SB I-235/NB I-35 on ramp
- Point H: I-40 WB Mainline west of the interchange
- Point J: I-40 EB Mainline west of the interchange
- Point K: OKC Boulevard ramp onto I-40 EB
- Point M: I-40 EB Mainline before the I-35 SB off ramp
- Point N: I-40 EB Mainline after the I-35 SB off ramp and before the I-235 SB on ramp
- Point O: I-235 SB Mainline before the I-40 EB on ramp
- Point P: I-40 EB to I-35 SB Ramp
- Point Q: I-235 SB Mainline after the I-40 EB on ramp and before the I-35 SB/I-40 WB ramp
- Point R: I-35 SB Mainline south of the interchange
- Point S: I-35 NB Mainline south of the interchange

- Point T: I-40 WB to I-35 SB ramp
- Point U: I-235 NB Mainline after the I-35 NB/I-40 EB exit
- Point V: I-35 NB to I-40 WB ramp
- Point W: I-35 NB to I-40 EB ramp
- Point X: I-40 EB Mainline after the I-235 NB off ramp and before the I-35 NB on ramp
- Point Y: I-40 EB Mainline east of the interchange
- Point Z: I-40 WB Mainline east of the interchange
- Point AA: I-40 EB to I-235 NB ramp
- Point AB: I-40 EB Mainline after the I-235 SB on ramp and before the I-235 NB off ramp
- Point AC: I-40 WB Mainline after the I-35 SB off ramp
- Point AD: I-235 NB Mainline after the I-40 EB on ramp and before the I-40 WB exit
- Point AE: I-40 WB to I-235 NB Ramp
- Point AF: I-235 NB Mainline after the I-40 WB exit and before the I-40 WB on ramp
- Point AG: I-235 SB to I-40 EB Ramp
- Point AH: I-40 WB off ramp to OKC Boulevard
- Point AJ: I-235 NB Mainline north of the interchange

2020 Design Traffic

The following points on the I-35/I-40/I-235 Dallas Junction in Oklahoma City were marked as areas of concern based on 2020 design traffic data, having either an AM or PM peak hour LOS D or worse. Lane recommendations are provided based on the number of lanes needed to obtain **LOS C** or better for both AM and PM peak hours. These results are summarized in Table 1 in the Analysis Results Summary.

- Point A: I-235 SB Mainline north of the interchange
 - LOS C/E
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
- Point B: I-235 SB Mainline immediately after the OKC Blvd. exit and before the I-40 WB exit
 - LOS C/E
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
- Point D: I-235 SB Mainline after the I-40 WB exit and before the I-40 EB exit
 - LOS C/E
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
- Point E: I-235 SB to I-40 WB ramp
 - LOS B/D
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
- Point O: I-235 SB Mainline before the I-40 EB on ramp

- LOS C/F
- 2 lanes existing
- Number of lanes required to obtain LOS C or better for both peaks: 4
- Point Q: I-235 SB Mainline after the I-40 EB on ramp and before the I-35 SB/I-40 WB ramp
 - LOS C/E
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
- Point R: I-35 SB Mainline south of the interchange
 - LOS C/D
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
- Point S: I-35 NB Mainline south of the interchange
 - LOS D/C
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
- Point U: I-235 NB Mainline after the I-35 NB/I-40 EB exit
 - LOS E/C
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
- Point AA: I-40 EB to I-235 NB ramp
 - LOS D/B
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
- Point AD: I-235 NB Mainline after the I-40 EB on ramp and before the I-40 WB exit
 - LOS E/B
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
- Point AF: I-235 NB Mainline after the I-40 WB exit and before the I-40 WB on ramp
 - LOS F/B
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
- Point AJ: I-235 NB Mainline north of the interchange
 - LOS E/C
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6

2035 Design Traffic

The following points on the I-35/I-40/I-235 Dallas Junction in Oklahoma City were marked as areas of concern based on 2035 design traffic data, having either an AM or PM peak hour LOS D or worse. Lane recommendations are provided based on the number of lanes needed to obtain **LOS C** or better or to maintain **LOS D** or better for

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both AM and PM peak hours. Highlighted items are newly identified problem points compared to the 2020 analysis; these additional points are considered lower priority. These results are summarized in Table 2 in the Analysis Results Summary.

- Point A: I-235 SB Mainline north of the interchange
 - LOS C/F
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 7
 - Number of lanes required to obtain LOS D or better for both peaks: 6
- Point B: I-235 SB Mainline immediately after the OKC Blvd. exit and before the I-40 WB exit
 - LOS C/F
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 7
 - Number of lanes required to obtain LOS D or better for both peaks: 6
- Point D: I-235 SB Mainline after the I-40 WB exit and before the I-40 EB exit
 - LOS C/F
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
 - Number of lanes required to obtain LOS D or better for both peaks: 4
- Point E: I-235 SB to I-40 WB ramp
 - LOS B/E
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
 - Number of lanes required to obtain LOS D or better for both peaks: 2
- **Point J:** I-40 EB Mainline west of the interchange
 - LOS C/D
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 5
 - Number of lanes required to obtain LOS D or better for both peaks: 4
- Point O: I-235 SB Mainline before the I-40 EB on ramp
 - LOS C/F
 - 2 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 4
 - Number of lanes required to obtain LOS D or better for both peaks: 4
- **Point P:** I-40 EB to I-35 SB Ramp
 - LOS C/D
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
 - Number of lanes required to obtain LOS D or better for both peaks: 1
- Point Q: I-235 SB Mainline after the I-40 EB on ramp and before the I-35 SB/I-40 WB ramp
 - LOS C/E
 - 3 lanes existing

- Number of lanes required to obtain LOS C or better for both peaks: 5
 - Number of lanes required to obtain LOS D or better for both peaks: 4
- Point R: I-35 SB Mainline south of the interchange
 - LOS C/D
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
 - Number of lanes required to obtain LOS D or better for both peaks: 5
- Point S: I-35 NB Mainline south of the interchange
 - LOS D/C
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
 - Number of lanes required to obtain LOS D or better for both peaks: 5
- Point U: I-235 NB Mainline after the I-35 NB/I-40 EB exit
 - LOS E/C
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
 - Number of lanes required to obtain LOS D or better for both peaks: 5
- **Point Z:** I-40 WB Mainline east of the interchange
 - LOS D/C
 - 5 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6
 - Number of lanes required to obtain LOS D or better for both peaks: 5
- Point AA: I-40 EB to I-235 NB ramp
 - LOS D/B
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
 - Number of lanes required to obtain LOS D or better for both peaks: 2
- Point AD: I-235 NB Mainline after the I-40 EB on ramp and before the I-40 WB exit
 - LOS E/B
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 7
 - Number of lanes required to obtain LOS D or better for both peaks: 6
- **Point AE:** I-40 WB to I-235 NB Ramp
 - LOS D/C
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
 - Number of lanes required to obtain LOS D or better for both peaks: 1
- Point AF: I-235 NB Mainline after the I-40 WB exit and before the I-40 WB on ramp
 - LOS F/B
 - 3 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 6

- Number of lanes required to obtain LOS D or better for both peaks: 5
- **Point AG:** I-235 SB to I-40 EB Ramp
 - LOS C/D
 - 1 lane existing
 - Number of lanes required to obtain LOS C or better for both peaks: 2
 - Number of lanes required to obtain LOS D or better for both peaks: 1
- **Point AJ:** I-235 NB Mainline north of the interchange
 - LOS E/C
 - 4 lanes existing
 - Number of lanes required to obtain LOS C or better for both peaks: 7
 - Number of lanes required to obtain LOS D or better for both peaks: 6

2050 Design Traffic

The following points on the I-35/I-40/I-235 Dallas Junction in Oklahoma City were marked as areas of concern based on 2050 design traffic data, having either an AM or PM peak hour LOS F. Lane recommendations are provided based on the number of lanes needed to obtain **LOS E** or better for both AM and PM peak hours. These are the same points identified in the 2020 analysis. These results are summarized in Table 3 in Analysis Results Summary.

- **Point A:** I-235 SB Mainline north of the interchange
 - LOS D/F
 - 4 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 6
- **Point B:** I-235 SB Mainline immediately after the OKC Blvd. exit and before the I-40 WB exit
 - LOS D/F
 - 4 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 6
- **Point D:** I-235 SB Mainline after the I-40 WB exit and before the I-40 EB exit
 - LOS D/F
 - 3 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 5
- **Point E:** I-235 SB to I-40 WB ramp
 - LOS C/F
 - 1 lane existing
 - Number of lanes required to obtain LOS E or better for both peaks: 2
- **Point O:** I-235 SB Mainline before the I-40 EB on ramp
 - LOS E/F
 - 2 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 4
- **Point Q:** I-235 SB Mainline after the I-40 EB on ramp and before the I-35 SB/I-40 WB ramp

- LOS D/F
 - 3 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 5
- Point R: I-35 SB Mainline south of the interchange
 - LOS E/F
 - 4 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 5
- Point S: I-35 NB Mainline south of the interchange
 - LOS F/E
 - 4 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 5
- Point U: I-235 NB Mainline after the I-35 NB/I-40 EB exit
 - LOS F/D
 - 3 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 5
- Point AA: I-40 EB to I-235 NB ramp
 - LOS F/C
 - 1 lane existing
 - Number of lanes required to obtain LOS E or better for both peaks: 2
- Point AD: I-235 NB Mainline after the I-40 EB on ramp and before the I-40 WB exit
 - LOS F/D
 - 4 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 6
- Point AF: I-235 NB Mainline after the I-40 WB exit and before the I-40 WB on ramp
 - LOS F/C
 - 3 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 5
- Point AJ: I-235 NB Mainline north of the interchange
 - LOS F/E
 - 4 lanes existing
 - Number of lanes required to obtain LOS E or better for both peaks: 6

Analysis Results Summary

Table 1: 2020 Lane Capacity Analysis

Point	Existing Lanes	AM LOS	PM LOS	Lanes Needed for LOS C or better
A	4	C	E	6
B	4	C	E	6
C	1	A	A	
D	3	C	E	5
E	1	B	D	2
F	2	B	B	
G	3	B	B	
H	6	B	B	
J	4	C	C	
K	1	A	A	
L	3	D	F	
M	5	B	C	
N	4	B	C	
O	2	C	F	4
P	1	C	C	
Q	3	C	E	5
R	4	C	D	5
S	4	D	C	5
T	2	B	A	
U	3	E	C	5
V	1	A	A	
W	2	A	B	
X	5	A	B	
Y	6	A	C	
Z	5	C	C	
AA	1	D	B	2
AB	6	B	B	
AC	3	C	C	
AD	4	E	B	6
AE	1	C	B	
AF	3	F	B	5
AG	1	B	C	
AH	1	A	A	
AJ	4	E	C	6

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Table 2: 2035 Lane Capacity Analysis

Point	Existing Lanes	AM LOS	PM LOS	Lanes Needed for LOS C or better	Lanes Needed for LOS D or better
A	4	C	F	7	6
B	4	C	F	7	6
C	1	A	A		
D	3	C	F	5	4
E	1	B	E	2	2
F	2	B	B		
G	3	C	C		
H	6	B	C		
J	4	C	D	5	4
K	1	A	B		
L	3	F	F		
M	5	C	C		
N	4	C	C		
O	2	D	F	4	4
P	1	C	D	2	1
Q	3	D	F	5	4
R	4	D	E	6	5
S	4	F	D	6	5
T	2	B	A		
U	3	F	C	6	5
V	1	A	A		
W	2	A	B		
X	5	B	C		
Y	6	B	C		
Z	5	D	C	6	5
AA	1	F	B	2	2
AB	6	B	C		
AC	3	C	C		
AD	4	F	C	7	6
AE	1	D	C	2	1
AF	3	F	C	6	5
AG	1	C	D	2	1
AH	1	B	A		
AJ	4	F	D	7	6

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Table 3: 2050 Lane Capacity Analysis

Point	Existing Lanes	AM LOS	PM LOS	Lanes Needed for LOS E or better
A	4	D	F	6
B	4	D	F	6
C	1	A	A	
D	3	D	F	5
E	1	C	F	2
F	2	B	B	
G	3	C	D	
H	6	C	D	
J	4	D	E	
K	1	A	B	
L	3	F	F	
M	5	C	D	
N	4	C	D	
O	2	E	F	4
P	1	D	E	
Q	3	D	F	5
R	4	E	F	5
S	4	F	E	5
T	2	C	B	
U	3	F	D	5
V	1	A	A	
W	2	A	C	
X	5	B	D	
Y	6	B	D	
Z	5	E	D	
AA	1	F	C	2
AB	6	C	C	
AC	3	D	D	
AD	4	F	D	6
AE	1	E	D	
AF	3	F	C	5
AG	1	C	E	
AH	1	B	A	
AJ	4	F	E	6

Note: Lanes Needed values are identical to Table 1

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