6.

# Freeway Analysis

- o 2012 Existing
- o 2035 No Build
- o 2035 Build Alternatives

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VHB, Inc

VHB

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Operational Analysi	s
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Analyst: NBS (93-Ex7 SB AM)

Agency or Company: VHB Date Performed: 7/2/2012 Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / SB

I-93 / Exit 7

Jurisdiction:

From/To:

NHDOT

Analysis Year: 2012 Existing

Description: FEET I-293

Flow	Inputs	and	Adju	stments

Volume, V	1830	veh/h
Peak-hour factor, PHF	0.89	
Peak 15-min volume, v15	514	V
Trucks and buses	4	용
Recreational vehicles	0	*
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	1049	pc/h/ln

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	_
Free-flow speed:	Measured	•
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1049	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	17.5	pc/mi/ln

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Operational Analysis_
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Analyst: NBS (Ex7-Ex6\_SB\_AM)

Agency or Company: Date Performed:

VHB 7/2/2012

Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / SB From/To: Exit 7 - Exit 6

Jurisdiction: NHDOT
Analysis Year: 2012 Existing

Description: FEET I-293

	FLOW	Inputs	and	Adju	stments_
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			_
Volume, V		2485	veh/h
Peak-hour factor, PHF		0.89	
Peak 15-min volume, v15		698	v
Trucks and buses		4	<b>%</b>
Recreational vehicles		0	왕
Terrain type:		Level	
Grade	•	0.00	· •
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp	-	1424	pc/h/ln

#### \_\_\_\_\_Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Ereeway	

Flow rate, vp		1424	pc/h/ln
Free-flow speed, FFS Average passenger-car speed,	S	60.0 60.0	mi/h mi/h
Number of lanes, N Density, D		2 23.7	pc/mi/ln
Delibicy, D		23.7	DC/mr/rn

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Operational	Analysis

Analyst: NBS (Ex6-Ex5\_SB\_AM)

Agency or Company:

VHB

Date Performed:

7/2/2012 Analysis Time Period: AM Peak Hour

Freeway/Direction: I-293 / SB From/To:

Exit 6 - Exit 5

Jurisdiction:

NHDOT

Analysis Year: 2012 Existing

Description: FEET I-293

Flow	Inputs	and	Adjustments	

Volume, V	2935	veh/h
Peak-hour factor, PHF	0.89	
Peak 15-min volume, v15	824	v .
Trucks and buses	4	8
Recreational vehicles	0	왕
Terrain type:	Level	
Grade	0.00	용
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	1682	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1682	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	28.0	pc/mi/ln

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Operational	Analysis_
 Operational	Analysis_

Analyst: NBS (Ex5-Ex6 NB AM)

Agency or Company:
Date Performed: Date Performed: Analysis Time Period: AM Peak Hour

7/2/2012

Freeway/Direction: I-293 / NB From/To: Exit 5 / Exit 6

NHDOT

VHB

Jurisdiction: Analysis Year:

2012 Existing

Description: FEET I-293

F.TOM	Inputs	and	Adjus	tments

Volume, V		1825	veh/h
Peak-hour factor, PHF		0.91	
Peak 15-min volume, v15		501	V
Trucks and buses		5	00
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		1028	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	_ ,
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1028	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	17.1	pc/mi/ln

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_Operational	Analysis

Analyst: NBS (Ex6-Ex7\_NB\_AM)

Agency or Company: VHB Date Performed: 7/2/2012 Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction: NHDOT
Analysis Year: 2012 Existing

Description: FEET I-293

Flow Inputs and Adjustments	ents	ustme	Adjı	and	Inputs	FLOW
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Volume, V	1480	veh/h	
Peak-hour factor, PHF	0.91		
Peak 15-min volume, v15	407	v	
Trucks and buses	5	9	
Recreational vehicles	0	용	
Terrain type:	Level		
Grade	0.00	용	
Segment length	0.00	mi .	
Trucks and buses PCE, ET	1.5		
Recreational vehicle PCE, ER	1.2		
Heavy vehicle adjustment, fHV	0.976	•	
Driver population factor, fp	1.00		•
Flow rate, vp	834	pc/h/ln	
		<del>-</del> · · · · ·	
Speed Inputs	and Adjustments	•	

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<b>.</b>
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	834	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	13.9	pc/mi/ln

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Analyst: NBS (Ex7-93 NB AM)

Agency or Company: Date Performed:

VHB 7/2/2012

Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / NB From/To:

Exit 7 / I-93

Jurisdiction:

NHDOT

Analysis Year:

2012 Existing

Description: FEET I-293

	Flow	Inputs	and	Adjus	tments
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Volume, V		935	veh/h
Peak-hour factor, PHF		0.91	
Peak 15-min volume, v15		257	V
Trucks and buses		5	9
Recreational vehicles		0	<del>,</del>
Terrain type:		Level	
Grade		0.00	8
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		527	pc/h/ln

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<del>-</del> '
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	527	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	8.8	pc/mi/ln

Level of service, LOS

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Analyst: NBS (93-Ex7 SB PM)

Agency or Company: VHB
Date Performed: 7/2/2012
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2012 Existing

Description: FEET I-293

	_Flow	Inputs	and	Adjustmen	.ts_
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Volume, V Peak-hour factor, PHF	1585 0.92	veh/h
Peak 15-min volume, v15	431	v
Trucks and buses	5	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	•
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	883	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft .
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	883 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	14.7	pc/mi/ln

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	Operational	Analysis	
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Analyst: NBS (Ex7-Ex6\_SB\_PM)

Agency or Company: VHB Date Performed: Analysis Time Period: PM Peak Hour Freeway/Direction:

7/2/2012 I-293 / SB

From/To:

Exit 7 - Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2012 Existing

Description: FEET I-293

	Flow	Inputs	and	Adjustments
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Volume, V	1975	veh/h
Peak-hour factor, PHF	0.92	·
Peak 15-min volume, v15	537	v
Trucks and buses	5	용
Recreational vehicles	0	ૢ
Terrain type:	Level	
Grade	0.00	왕
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1100	pc/h/ln

# Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	5 .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1100	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	18.3	pc/mi/ln

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Operational	Analysis
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Analyst: NBS (Ex6-Ex5\_SB\_PM)

Agency or Company: VHB
Date Performed: 7/2/2012
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT

Analysis Year: 2012 Existing

Description: FEET I-293

Flow	Inputs	and Ad	justments

Volume, V	2410	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	655	v
Trucks and buses	5	00
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1343	pc/h/ln

# \_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	1343 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	/ 1/7
Density, D	22.4	pc/mi/ln

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Operational	Analysis	

Analyst: NBS (Ex5-Ex6 NB PM)

Agency or Company: VHB Date Performed: Analysis Time Period: PM Peak Hour

7/2/2012

Freeway/Direction: I-293 / NB From/To: Exit 5 / Exit 6

Jurisdiction: NHDOT
Analysis Year: 2012 Existing

Description: FEET I-293

_Flow Inputs and Adjustments
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3310	veh/h
0.91	
909	v ·
5	%
0	9
Level	
0.00	용
0.00	mi
1.5	
1.2	
0.976	
1.00	
1864	pc/h/ln
	0.91 909 5 0 Level 0.00 0.00 1.5 1.2 0.976 1.00

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<b>J</b> .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	•

Flow rate, vp	1864	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	59.3	mi/h
Number of lanes, N	2	,
Density, D	31.4	pc/mi/ln

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Operational Analysis\_\_\_\_\_

Analyst: NBS (Ex6-Ex7\_NB\_PM)

Agency or Company: VHB
Date Performed: 7/2/2012
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2012 Existing

Description: FEET I-293

Fl	OW	Inputs	and	Adji	ustments	

Volume, V	3150	veh/h	
Peak-hour factor, PHF	0.91		
Peak 15-min volume, v15	865	v	
Trucks and buses	5	왕	
Recreational vehicles	0	્ર	
Terrain type:	Level		
Grade	0.00	%	
Segment length	0.00	mi	
Trucks and buses PCE, ET	1.5		
Recreational vehicle PCE, ER	1.2		
Heavy vehicle adjustment, fHV	0.976		
Driver population factor, fp	1.00		
Flow rate, vp	1774	pc/h/ln	

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1774	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	59.8	mi/h
Number of lanes, N	2	
Density, D	29.7	pc/mi/ln

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Operational Analysis
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Analyst: NBS (Ex7-93 NB PM)

Agency or Company: Date Performed:

VHB 7/2/2012

Analysis Time Period: PM Peak Hour Freeway/Direction: From/To:

I-293 / NB Exit 7 / I-93

Jurisdiction: Analysis Year: NHDOT

2012 Existing

Description: FEET I-293

T TOW TIPECO GILC TIG GOUNCIEC	Flow	Inputs	and	Adjustment	s
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Volume, V Peak-hour factor, PHF	2200 0.91	veh/h
Peak 15-min volume, v15	604	v
Trucks and buses	5	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	. %
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1239	pc/h/ln

# Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	3 .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	1239	pc/h/ln
Average passenger-car speed, S	60.0 60.0	mi/h mi/h
Number of lanes, N Density, D	2 20.6	pc/mi/ln

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Analyst: NBS (93-Ex7\_SB\_AM)

Agency or Company:

Date Performed: 7/31/2012
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction: Analysis Year: NHDOT 2035 No Build

Description: FEET I-293

Flow	Inputs	and	Adjustments	

Volume, V		2300	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		639	v
Trucks and buses		4	왕
Recreational vehicles		0	용
Terrain type:		Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,		1.2	
Heavy vehicle adjustment,		0.980	
Driver population factor,	fp .	1.00	
Flow rate, vp		1303	pc/h/ln

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
_	Urban Freeway	·

Flow rate, vp	1303	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	21.7	pc/mi/ln

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Analyst: NBS (Ex7-Ex6 SB AM)

Agency or Company:

VHB

Date Performed: Analysis Time Period: AM Peak Hour

7/31/2012 I-293 / SB

Freeway/Direction: From/To:

Exit 7 - Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2035 No Build

Description: FEET I-293

Flow	Inputs	and	Adj	ustments	

Volume, V	3125	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	868	v
Trucks and buses	4	%
Recreational vehicles	0	96
Terrain type:	Level	
Grade	0.00	90
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	1771	pc/h/ln

# Speed Inputs and Adjustments

Lane width	12.0	ft .
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS		1771	pc/h/ln mi/h
Average passenger-car speed,	S	60.0 59.8	mi/h mi/h
Number of lanes, N		2	, , , , .
Density, D		29.6	pc/mi/ln

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Operational An	alvsis
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Analyst: NBS (Ex6-Ex5\_SB\_AM)
Agency or Company: VHB
Date Performed: 7/31/2012

Analysis Time Period: AM Peak Hour

Freeway/Direction: I-293 / SB From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT
Analysis Year: 2035 No Build

Description: FEET I-293

	Flow	Inputs	and	Adj	ustments	
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		•	
Volume, V		3690	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		1025	v
Trucks and buses		4	ે
Recreational vehicles		0	0/0
Terrain type:		Level	
Grade	•	0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp		2091	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	_
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	2091	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	56.5	mi/h
Number of lanes; N	2	
Density, D	37.0	pc/mi/ln

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Analyst: NBS (Ex5-Ex6\_NB AM)

Agency or Company:

VHB

Date Performed:

7/31/2012 Analysis Time Period: AM Peak Hour

Freeway/Direction: From/To:

I-293 / NB Exit 5 / Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2035 No Build

Description: FEET I-293

Flow Inputs and Adjustments_	FTO	w Inpu	ts and	Adju	stments_
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Volume, V		2205	
·		2295	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		638	v
Trucks and buses		5	%
Recreational vehicles		0	. %
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		1307	pc/h/ln
			***

# \_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	3 .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	· · · · · · · · · · · · · · · · · · ·

Flow rate, vp	1307	pc/h/ln
Free-flow speed, FFS Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	60.0 2	mi/h
Density, D	21.8	pc/mi/ln

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Operational Analysis\_\_\_\_\_

Analyst:	NRS	(Ex6-Ex7	MR	Z\ IVI \

Analyst: NBS (Ex6-Ex7\_NB\_AM)
Agency or Company: VHB
Date Performed: 7/31/2012

Analysis Time Period: AM Peak Hour

Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction: NHDOT
Analysis Year: 2035 No Build

Description: FEET I-293

Flow Inputs and Adjustments
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Volume, V	1860	veh/h
Peak-hour factor, PHF	0.90	•
Peak 15-min volume, v15	517	v
Trucks and buses	5	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	•
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1059	pc/h/ln

# Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<b>J</b> .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	45	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1059	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	17.6	pc/mi/ln

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Analyst: NBS (Ex7-93 NB AM)

Agency or Company:

VHB

Date Performed: Analysis Time Period: AM Peak Hour

7/31/2012

Freeway/Direction: I-293 / NB From/To:

Exit 7 / I-93

Jurisdiction:

NHDOT

Analysis Year:

2035 No Build

Description: FEET I-293

	Flow	Inputs	and	Adj	us	tmen	ts_
--	------	--------	-----	-----	----	------	-----

Volume, V	1175	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	326	v
Trucks and buses	5	양
Recreational vehicles	0	왕
Terrain type:	Level	
Grade	0.00	왕
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	669	pc/h/ln

# Speed Inputs and Adjustments

Lane width Right-shoulder lateral clearance Interchange density Number of lanes, N	12.0 6.0 0.50 2	ft ft interchange/mi
Free-flow speed: FFS or BFFS	Measured 60.0	mi/h
Lane width adjustment, fLW Lateral clearance adjustment, fLC	0.0 0.0	mi/h mi/h
Interchange density adjustment, fID Number of lanes adjustment, fN	0.0 4.5	mi/h mi/h
Free-flow speed, FFS	60.0 Urban Freeway	mi/h

Flow rate, vp	669	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	11.1	pc/mi/ln

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	Operational Analy	sis	
Analyst:	NBS (93-Ex7 SB PM)		•
Agency or Company:	VHB		
Date Performed:	7/7/2012		
Analysis Time Period:	PM Peak Hour		
Freeway/Direction:	I-293 / SB		
From/To:	I-93 / Exit 7		
Jurisdiction:	NHDOT		
Analysis Year:	2035 No Build	•	
Description: FEET I-2	93		
	Flow Inputs and A	djustments	
Volume, V		1995	veh/h
Peak-hour factor, PHF		0.90	ve11/11
Peak 15-min volume, v1	5	554	77
Trucks and buses	5	5	V 용
Recreational vehicles		0	· o
Terrain type:		Level	6
Grade		0.00	00
Segment length		0.00	mi
Trucks and buses PCE,	R.T.	1.5	ЩТ
Recreational vehicle P		1.2	
Heavy vehicle adjustme		0.976	
Driver population fact		1.00	
Flow rate, vp	or, rp	1136	pc/h/ln
· •	Constant and a	<b>7</b> . 7. 1	<b>1</b>
	Speed Inputs and	Adjustments	
Lane width		12.0	ft
Right-shoulder lateral	clearance	6.0	ft
Interchange density		0.50	interchange/mi
Number of lanes, N		2	<i>J.</i>
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment,	fLW	0.0	mi/h
Lateral clearance adjus	stment, fLC	0.0	mi/h
Interchange density ad	justment, fID	0.0	mi/h
Number of lanes adjusti	ment, fN	4.5	mi/h
Free-flow speed, FFS		60.0	mi/h
		Urban Freeway	
	LOS and Performan	ce Measures	
Flow rate, vp		1136	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car	zneed S	60.0	mi/h
Number of lanes, N	opeca, b	2	mr / II
Density. D		18 9	nc/mi/ln

18.9

pc/mi/ln

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Analyst: NBS (Ex7-Ex6 SB PM)

Agency or Company:

VHB

Date Performed: Analysis Time Period: PM Peak Hour

7/31/2012 Freeway/Direction: I-293 / SB

\_\_\_\_\_Operational Analysis

From/To:

Exit 7 - Exit 6

Jurisdiction: Analysis Year:

NHDOT

2035 No Build

Description: FEET I-293

_Flow Inputs and Adjustments
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Volume, V		2485	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		690	v
Trucks and buses		5	્ર
Recreational vehicles		0	ે
Terrain type:		Level	
Grade		0.00	96
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		1415	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<b>5</b> .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	•

Flow rate, vp	1415	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	23.6	pc/mi/ln

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Analyst: NBS (Ex6-Ex5\_SB\_PM)

Agency or Company:

VHB 7/31/2012

Date Performed: Analysis Time Period: PM Peak Hour Freeway/Direction:

I-293 / SB

From/To:

Exit 6 - Exit 5

Jurisdiction:

NHDOT

Analysis Year:

2035 No Build

Description: FEET I-293

Flow inputs and Adjustment	. 8	3 -
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Volume, V	3030	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	842	v
Trucks and buses	5	ૄ
Recreational vehicles	0	96
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1725	pc/h/ln

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<u> </u>
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1725	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	59.9	mi/h
Number of lanes, N	2	
Density, D	28.8	pc/mi/ln

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\_\_\_\_Operational Analysis\_\_\_\_\_

•	•	
Analyst:	NBS (Ex5-Ex6 NB PM)	
Agency or Company:	VHB	*
Date Performed:	7/31/2012	
	11 4 1 4 4 4 4	

Date Performed: Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB

7/31/2012

From/To:

Exit 5 / Exit 6

Jurisdiction:

NHDOT

Analysis Year: 2035 No Build

Description: FEET I-293

Flow	Inputs	and	Adjustments

Volume, V	4160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1156	v
Trucks and buses	5	용
Recreational vehicles	0	ૄ
Terrain type:	Level	
Grade	0.00	. %
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	2369	pc/h/ln

# \_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<b>.</b>
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	2369	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S		mi/h
Number of lanes, N	2	·
Density, D		pc/mi/ln

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_Operational	Analysis
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Analyst: NBS (Ex6-Ex7 NB PM)

Agency or Company:

VHB7/31/2012

Date Performed: Analysis Time Period: PM Peak Hour

Freeway/Direction: I-293 / NB From/To: Exit 6 / Exit 7

Jurisdiction:

NHDOT

Analysis Year:

2035 No Build

Description: FEET I-293

Flow	Inputs	and	Adjus	tments

Volume, V		3960	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		1100	v
Trucks and buses		5	%
Recreational vehicles		0	o <sub>0</sub>
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi ·
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	•
Flow rate, vp		2255	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	<u> </u>
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	2255	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	52.5	mi/h
Number of lanes, N	2	
Density, D	42.9	pc/mi/ln

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Operational Analysis	
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Analyst: NBS (Ex7-93 NB PM)

Agency or Company:

VHB

Date Performed: Analysis Time Period: PM Peak Hour

7/31/2012 Freeway/Direction: I-293 / NB Exit 7 / I-93

From/To:

NHDOT

Jurisdiction: Analysis Year:

2035 No Build

Description: FEET I-293

F.TOM	Inputs	and	Adj	ustn	nents	3 ·

Volume, V	2765	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	768	v
Trucks and buses	5	%
Recreational vehicles	0	용
Terrain type:	Level	
Grade	0.00	96
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1575	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	4.5	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1575	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	26.3	pc/mi/ln

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Operational Analysis
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Analyst: NBS (93-Ex7\_SB\_AM\_Alt-4&8)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build (Alt4&8)

Description: FEET I-293

F1	OW	Inputs	and	Adj	ustments

Volume, V		2240	veh/h
Peak-hour factor, PHF		0.90	V C11/ 11
Peak 15-min volume, v15		622	v
Trucks and buses		4	<b>%</b>
Recreational vehicles		0	양
Terrain type:	•	Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	•.
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp		846	pc/h/ln
	•		

# Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	846	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	14.1	pc/mi/ln

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Operational Analys
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Analyst: NBS (93-Ex7 SB AM Alt-4&9)

Agency or Company:

VHB

Date Performed:
Analysis Time Period:

Freeway/Direction:

3/12/2013 AM Peak Hour I-293 / SB I-93 / Exit 7

Jurisdiction:

From/To:

NHDOT

Analysis Year:

2035 Build (Alt4&9)

Description: FEET I-293

F.	Low	Inputs	and	Adju	stments

Volume, V	2590	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	719	v
Trucks and buses	4	%
Recreational vehicles	0	<b>ે</b>
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	•
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	978	pc/h/ln

# \_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	•

Flow rate, vp	978	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	16.3	pc/mi/ln

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# \_\_\_Operational Analysis\_

Analyst: NBS (93-Ex7 SB AM Alt-4&10)

Agency or Company: VHB

3/12/2013 Date Performed: Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / SB

From/To:

I-93 / Exit 7

Jurisdiction:

NHDOT

Analysis Year:

2035 Build (Alt4&10)

Description: FEET I-293

Flow	Inputs	and	Adjus	stments

Volume, V		2690	veh/h
Peak-hour factor, PHF	•	0.90	,
Peak 15-min volume, v15		747	v
Trucks and buses		4	%
Recreational vehicles		0 ·	%
Terrain type:		Level	
Grade		0.00	00
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp		1016	pc/h/ln

# \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

•		
Flow rate, vp	1016	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	16.9	pc/mi/ln

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_Operational Analysi	s_
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Analyst: NBS (93-Ex7\_SB\_AM\_Alt-5&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2035 Build (Alt-5&9)

Description: FEET I-293

Flow	Inputs	and	Adjus	tments

Volume, V		2590	veh/h
Peak-hour factor, PHF	•	0.90	•
Peak 15-min volume, v15		719	v
Trucks and buses		4	<del>ଷ</del> ୍ଟ
Recreational vehicles		0	<b>ે</b>
Terrain type:		Level	
Grade		0.00	양
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp		978	pc/h/ln
	•		

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	.978	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	16.3	pc/mi/ln

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Analyst: NBS (93-Ex7\_SB\_AM\_Alt-6&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2035 Build (Alt-6&9)

Description: FEET I-293

Flow :	Inputs	and	Adjı	ustments
--------	--------	-----	------	----------

Volume, V		2590	veh/h
Peak-hour factor, PHF	•	0.90	
Peak 15-min volume, v15	•	719	v
Trucks and buses		4	0,
Recreational vehicles		0	00
Terrain type:	•	Level	
Grade	•	0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp	_	978	pc/h/ln

# Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	·
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp		978	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car speed, \$	S	60.0	mi/h
Number of lanes, N	•	3	
Density, D		16.3	pc/mi/ln

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Analyst: NBS (93-Ex7\_SB\_AM\_Alt-7&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2035 Build (Alt-7&9)

Description: FEET I-293

FI	OW	Inputs	and	Adjus	tments

Volume, V		2590	veh/h
Peak-hour factor, PHF		0.90	·
Peak 15-min volume, v15		719	v
Trucks and buses		4	ે
Recreational vehicles		0	સ
Terrain type:		Level	•
Grade		0.00	<b>ે</b>
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.980	
Driver population factor,	fp	1.00	
Flow rate, vp		978	pc/h/ln
	•		

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	978	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	16.3	pc/mi/ln

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Analyst: NBS (93-Ex7\_SB PM Alt-4&8)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build - Alt 4&8

Description: FEET I-293

_Flow Inputs and	l Adjustments <sub>.</sub>
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Volume, V		2120	veh/h
Peak-hour factor, PHF		0.90	V C11/ 11
Peak 15-min volume, v15		589	v
Trucks and buses		5	°
Recreational vehicles		0 .	9
Terrain type:		Level	•
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		805	pc/h/ln
	•		

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
e de la companya de La companya de la co	Urban Freeway	

Flow rate, vp	805	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	13.4	pc/mi/ln

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Analyst: NBS (93-Ex7 SB PM Alt-4&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: I-93 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&9

Description: FEET I-293

Flow	Inputs	and	Adj	ustments	

Volume, V		2310	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		642	V
Trucks and buses		5	%
Recreational vehicles		0	용
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, F	ER	1.2	
Heavy vehicle adjustment, f	EHV	0.976	
Driver population factor, f	fp	1.00	
Flow rate, vp		877	pc/h/ln
	•		

# \_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	877	pc/h/ln
• 4.		-
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	14.6	pc/mi/ln

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Free-flow speed, FFS

Number of lanes, N

Density, D

Average passenger-car speed, S

Fax:

E-mail.

E-mail:		
Operational Ana	alysis	
Analyst: NBS (93-Ex7_SB_1	PM_Alt-4&10)	
Agency or Company: VHB	_	
Date Performed: 3/12/2013		
Analysis Time Period: PM Peak Hour		
Freeway/Direction: I-293 / SB		
From/To: I-93 / Exit 7	•	
Jurisdiction: NHDOT		
Analysis Year: 2035 Build - Alt Description: FEET I-293	t 4&10	
Flow Inputs and	d Adjustments	
Volume, V	2460	veh/h
Peak-hour factor, PHF	0.90	V C11/ 11
Peak 15-min volume, v15	683	V
Trucks and buses	5	%
Recreational vehicles	0	ે
Terrain type:	Level	
Grade	0.00	9
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	934	pc/h/ln
Speed Inputs an	nd Adjustments	
Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	<b>5</b> .
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	
LOS and Perform	mance Measures	
Flow rate, vp	934	pc/h/ln
Error flow grood EEC	CO 0	mi /h

60.0

60.0

15.6

3

mi/h

mi/h

pc/mi/ln

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Opera	tional Analys	sis

Analyst: NBS (93-Ex7 SB PM Alt-5&9)

Agency or Company:

VHB

Date Performed:

3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / SB

From/To:

I-93 / Exit 7

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 5&9

Description: FEET I-293

Flow	Inputs	and	Adjus	tments

Volume, V		2330	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		647	v
Trucks and buses		5	8
Recreational vehicles		0 .	용
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		885	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	885	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	. 60.0	mi/h
Number of lanes, N	3	
Density, D	14.8	pc/mi/ln

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Analyst: NBS (93-Ex7\_SB\_PM\_Alt-6&9)

Agency or Company:

VHB

Date Performed: Analysis Time Period: PM Peak Hour Freeway/Direction:

3/12/2013 I-293 / SB

From/To:

I-93 / Exit 7

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 6&9

Description: FEET I-293

F.	TOM	Inputs	and	Adjus	tments
-					

Volume, V	2330	veh/h
Peak-hour factor, PHF	0.90	·
Peak 15-min volume, v15	647	v
Trucks and buses	5	<b>%</b>
Recreational vehicles	0	<b>ે</b>
Terrain type:	Level	
Grade	0.00	<b>ે</b>
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	•
Flow rate, vp	885	pc/h/ln

# \_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	885	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	14.8	pc/mi/ln

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Operational Analysis Analyst: NBS (93-Ex7 SB PM Alt-7&9) Agency or Company: · VHB Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / SB From/To: I-93 / Exit 7 Jurisdiction: NHDOT Analysis Year: 2035 Build - Alt 7&9 Description: FEET I-293 Flow Inputs and Adjustments

		J		
Volume, V		2330	veh/h	
Peak-hour factor, PHF		0.90	veii/ii	
Peak 15-min volume, v15		647	v	
Trucks and buses		5	96	
Recreational vehicles		0	%	
Terrain type:		Level	·	
Grade		0.00	용	
Segment length		0.00	mi	
Trucks and buses PCE, ET		1.5		
Recreational vehicle PCE,	ER	1.2	•	
Heavy vehicle adjustment,	fHV	0.976		
Driver population factor,	fp	1.00	•	
Flow rate, vp	,	885	pc/h/ln	

Flow rate, vp	885	pc/h/ln
Speed Inputs	and Adjustments_	
Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h <sup>.</sup>
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freev	way

LOS and Peri	ormance Measures_		
Flow rate, vp	885	pc/h/ln	
Free-flow speed, FFS	60.0	mi/h	
Average passenger-car speed, S	60.0	mi/h	
Number of lanes, N	. 3		
Density, D	14.8	pc/mi/ln	

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NBS (Ex7-93\_NB\_AM\_Alt-4&8) Analyst:

Agency or Company: VHB

Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 7 / I-93

Jurisdiction:

NHDOT Analysis Year: 2035 Build - Alt 4&8

Description: FEET I-293

Flow I	Inputs	and Adj	ustments
--------	--------	---------	----------

Volume, V		1090	veh/h
· · · · · · · · · · · · · · · · · · ·			VE11/11
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		303	v
Trucks and buses		5	96
Recreational vehicles		0	양
Terrain type:		Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, F	ER	1.2	
Heavy vehicle adjustment, f	EHV	0.976	
Driver population factor, f	fp	1.00	
Flow rate, vp		414	pc/h/ln
•			

### \_\_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	414 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	6.9	pc/mi/ln

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Analyst: NBS (Ex7-93\_NB\_AM\_Alt-4&9) VHB

Agency or Company:

3/12/2013 Date Performed: Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / NB

From/To:

Exit 7 / I-93

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&9

Description: FEET I-293

	Flow	Inputs	and Ad-	justments
--	------	--------	---------	-----------

Volume, V		1490	veh/h
Peak-hour factor, PHF		0.90	•
Peak 15-min volume, v15		414	v
Trucks and buses		5	ે
Recreational vehicles		0	೪
Terrain type:		Level	
Grade		0.00	9
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		566	pc/h/ln
Heavy vehicle adjustment, Driver population factor,	fHV	0.976 1.00	pc/h/ln

# 

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	566	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	9.4	pc/mi/ln

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Density, D

Fax:

E-mail:			
0	perational Anal	lysis	
Analyst: NB	S (Ex7-93_NB_AM	M_Alt-4&10)	
Agency or Company: VH	В		
Date Performed: 3/	12/2013		•
Analysis Time Period: AM	Peak Hour		
Freeway/Direction: I-	293 / NB		
From/To: Ex	it 7 / I-93		•
Jurisdiction: NH	DOT		
Analysis Year: 20	35 Build - Alt	4&10	
Description: FEET I-293			
F	low Inputs and	Adjustments	•
Volume, V		1640	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15	•	456	v
Trucks and buses		5	%
Recreational vehicles		0	8
Terrain type:		Level	
Grade	•	0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,		1.00	
Flow rate, vp	_	623	pc/h/ln
s	peed Inputs and	d Adjustments	
Lane width		12.0	ft
Right-shoulder lateral cle	arance	6.0	ft
Interchange density	ar arrec	0.50	interchange/mi
Number of lanes, N		3	in a contraction of the
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment, fLW		0.0	mi/h
Lateral clearance adjustme		0.0	mi/h
Interchange density adjust		0.0	mi/h
Number of lanes adjustment		3.0	mi/h
Free-flow speed, FFS	,	60.0	mi/h
· · · · · · · · · · · · · · · · · · ·		Urban Freeway	-
L	OS and Performa	ance Measures	
Flow rate, vp		623	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car spee	d d	60.0	mi/h
Number of lanes, N	α, υ	3	111 T T T
Dengity D		10 4	ng/mi/ln

pc/mi/ln

10.4

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Analyst: NBS (Ex7-93\_NB\_AM\_Alt-5&9)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 7 / I-93

Jurisdiction:

Analysis Year: 2035 Build - Alt 5&9

Description: FEET I-293

	Flow	Inputs	and	Adi	ustments
--	------	--------	-----	-----	----------

Volume, V	1490	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	414	v
Trucks and buses	5	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	8
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	566	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
•	Urban Freeway	

Flow rate, vp	566	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	9.4	pc/mi/ln

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### Operational Analysis

Analyst: NBS (Ex7-93 NB AM Alt-6&9)

Agency or Company: VHB

Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour Freeway/Direction:

I-293 / NB Exit 7 / I-93

Jurisdiction:

From/To:

NHDOT

Analysis Year:

2035 Build - Alt 6&9

Description: FEET I-293

Flow Inpu	ıts	and	Adj	us	tments
-----------	-----	-----	-----	----	--------

Volume, V	,	1490	veh/h
Peak-hour factor, PHF		0.90	,
Peak 15-min volume, v15		414	v
Trucks and buses	·	5	%
Recreational vehicles		0 .	%
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, I	ER .	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor, i	fp	1.00	
Flow rate, vp		566	pc/h/ln

### Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	566	pc/h/ln
· •	<del></del>	
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	9.4	pc/mi/ln

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Analyst: NBS (Ex7-93\_NB\_AM\_Alt-7&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 7 / I-93

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 7&9

Description: FEET I-293

|--|

Volume, V		1490	veh/h
Peak-hour factor, PHF		0.90	·
Peak 15-min volume, v15		414	v
Trucks and buses		5	%
Recreational vehicles		0 -	용
Terrain type:		Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		566	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	566	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	9.4	pc/mi/ln

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Operational A	nalys.	is
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Analyst: NBS (Ex7-93\_NB\_PM\_Alt-4&8)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 7 / I-93

Jurisdiction:

Analysis Year: 2035 Build - Alt 4&8

Description: FEET I-293

Flow Inputs and Adjustmen
---------------------------

Volume, V		2860	veh/h
Peak-hour factor, PHF	•	0.90	
Peak 15-min volume, v15		794	$\mathbf{v}$
Trucks and buses		5	%
Recreational vehicles		0	00
Terrain type:		Level	
Grade		0.00	90
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, E	ER .	1.2	
Heavy vehicle adjustment, f	HV	0.976	
Driver population factor, f	Ep .	1.00	
Flow rate, vp		1086	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3 .	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1086	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.1	pc/mi/ln

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Analyst: NBS (Ex7-93\_NB\_PM\_Alt-4&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 7 / I-93

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&9

Description: FEET I-293

$_{\rm FTov}$	v Inputs	and Adj	justments_

Volume, V		3160	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		878	V
Trucks and buses		5	%
Recreational vehicles	•	0	96
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	· .
Driver population factor,	fp	1.00	
Flow rate, vp		1200	pc/h/ln ·
- <b>-</b>			

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp		1200	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car speed,	S	60.0	mi/h
Number of lanes, N		3	
Density, D		20.0	pc/mi/ln

Level of service, LOS

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Analyst: NBS (Ex7-93\_NB\_PM\_Alt-4&10)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 7 / I-93

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&10

Description: FEET I-293

F1	OW	Inputs	and	Adjus	tments

Volume, V		3260	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		906	v
Trucks and buses		5	%
Recreational vehicles		0	ક
Terrain type:		Level	
Grade		0.00	양
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		1238	pc/h/ln
•			

### \_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1238	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	20.6	pc/mi/ln

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Analyst: NBS (Ex7-93\_NB\_PM\_Alt-5&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 7 / I-93

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 5&9

Description: FEET I-293

F'.	Low	Input	is a	ind .	Adj	usi	tmen	CS.

Volume, V Peak-hour factor, PHF	3160 0.90	veh/h
Peak 15-min volume, v15	878	V
Trucks and buses	5	v %
Recreational vehicles	0	%
Terrain type:	Level	6
Grade		ુ. જ
	0.00	
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1200	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	•

Flow rate, vp	1200	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	20.0	pc/mi/ln

Level of service, LOS

Operational Analysis

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Analyst: NBS (Ex7-93\_NB\_PM\_Alt-6&9) VHB

Agency or Company:

Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 7 / I-93

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 6&9

Description: FEET I-293

Flow	Inputs	and	Adjus	tments
-				

Volume, V Peak-hour factor, PHF	3160 0.90	veh/h
Peak 15-min volume, v15	878	v
Trucks and buses	5 .	% .
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	ે
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1200	pc/h/ln

### \_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	1200 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	20.0	pc/mi/ln

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Operational Analysis NBS (Ex7-93\_NB\_PM\_Alt-7&9) Analyst: Agency or Company: VHB Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 7 / I-93 Jurisdiction: NHDOT Analysis Year: 2035 Build - Alt 7&9 Description: FEET I-293 Flow Inputs and Adjustments Volume, V veh/h 3160 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 878 v Trucks and buses 5 Recreational vehicles 0 Terrain type: Level Grade 0.00 Segment length 0.00 mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.976 Driver population factor, fp 1.00 Flow rate, vp 1200 pc/h/ln Speed Inputs and Adjustments\_\_\_\_\_ Lane width 12.0 ft. Right-shoulder lateral clearance ft 6.0 Interchange density 0.50 interchange/mi Number of lanes, N 3 Free-flow speed: Measured FFS or BFFS 60.0 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 Interchange density adjustment, fID 0.0 mi/h Number of lanes adjustment, fN 3.0 mi/h Free-flow speed, FFS 60.0 mi/h Urban Freeway LOS and Performance Measures

Flow rate, vp Free-flow speed, FFS	1200 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	20.0	pc/mi/ln

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Operational A	Analysis
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Analyst: NBS (Ex7-Ex6\_SB\_AM\_Alt-4&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 7 - Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&9

Description: FEET I-293

Flow	Inputs	and	Adjustments

Volume, V	3005	veh/h
Peak-hour factor, PHF	0.90	·
Peak 15-min volume, v15	835	V
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	8
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	1135	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft·
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Elev mate m	1125	/1- /3
Flow rate, vp	1135	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.9	pc/mi/ln

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Density, D

Fax:

E-mail:			·
	Operational Ana	alysis	
Analyst:	NBS (Ex7-Ex6 SB	ΔM Δ]+-4ε10)	
Agency or Company:	VHB	_m_mc falo,	•
Date Performed:	3/12/2013		
Analysis Time Period:	AM Peak Hour		
Freeway/Direction:	I-293 / SB		
From/To:	Exit 7 - Exit 6		
Jurisdiction:	NHDOT		
Analysis Year:	2035 Build - Alt	- 4£10	
Description: FEET I-2			
	Flow Inputs and	d Adjustments	•
Volume, V		2955	veh/h
Peak-hour factor, PHF		0.90	veii/ ii
Peak 15-min volume, v1	<u> </u>	821	
Trucks and buses	5	4	V 용
Recreational vehicles		0	· 당
Terrain type:		Level	6
Grade		0.00	. %
· · · · · · · · · · · · · · · · · · ·			•
Segment length Trucks and buses PCE,	T7 CT	0.00	mi
		1.5	
Recreational vehicle P		1.2	
Heavy vehicle adjustme		0.980	
Driver population fact Flow rate, vp	or, ip	1.00 1116	pc/h/ln
			pc/11/111
	Speed Inputs an	nd Adjustments	
Lane width	,	12.0	ft ·
Right-shoulder lateral	clearance	6.0	ft
Interchange density		0.50	interchange/mi
Number of lanes, N		3	
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment,	fLW	0.0	mi/h
Lateral clearance adju	stment, fLC	0.0	mi/h
Interchange density ad	justment, fID	0.0	mi/h
Number of lanes adjust	ment, fN	3.0	mi/h
Free-flow speed, FFS		60.0	mi/h
		Urban Freewa	У
	LOS and Perform	mance Measures	
Flow rate, vp		1116	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car	gneed S	60.0	mi/h
Number of lanes, N	opeca, b	3	::: 1 / 11
TAUMOCT OT TAILED, IN		J	/ 1 / 7

18.6

pc/mi/ln

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	Operational Ana	lysis	record to the second first course for the second first base and strong was been finded as a second strong was t
Analyst: Agency or Company:	NBS (Ex7-Ex6_SB_AVHB	AM_Alt-5&9)	
Date Performed: Analysis Time Period: Freeway/Direction:	3/12/2013 AM Peak Hour I-293 / SB		
From/To:	Exit 7 - Exit 6		
Jurisdiction: Analysis Year: Description: FEET I-29	NHDOT 2035 Build - Alt 3	5&9	
•	Flow Inputs and	Adjustments	
Volume, V Peak-hour factor, PHF		3005 0.90	veh/h
Peak 15-min volume, v15		835	v
Trucks and buses		4	<b>્</b>
Recreational vehicles		0	ે
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, E		1.5	
Recreational vehicle PC		1.2	
Heavy vehicle adjustmen		0.980	
Driver population facto	er, fp	1.00	
Flow rate, vp		1135	pc/h/ln
	Speed Inputs and	d Adjustments	
Lane width		12.0	ft
Right-shoulder lateral	clearance	6.0	ft
Interchange density		0.50	interchange/mi
Number of lanes, N		3	
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment,		0.0	mi/h
Lateral clearance adjus		0.0	mi/h
Interchange density adj		0.0	mi/h
Number of lanes adjustm	ent, fN	3.0	mi/h
Free-flow speed, FFS		60.0	mi/h
		Urban Freeway	

Flow rate, vp Free-flow speed, FFS	1135 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.9	pc/mi/ln

Level of service, LOS

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_Operational Analysis
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Analyst: NBS (Ex7-Ex6\_SB\_AM\_Alt-6&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 6&9

Description: FEET I-293

\_Flow Inputs and Adjustments\_\_

Volume, V	•	3005	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		835	$\mathbf{v}$
Trucks and buses		4	%
Recreational vehicles		0	ે
Terrain type:		Level	•
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET	•	1.5	
Recreational vehicle PCE, E	≅R	1.2	
Heavy vehicle adjustment, f	EHV	0.980	
Driver population factor, f	Ēp	1.00	
Flow rate, vp		1135	pc/h/ln

### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	•
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	•

· · · · · · · · · · · · · · · · · · ·		
Flow rate, vp	1135	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.9	pc/mi/ln

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Analyst: NBS (Ex7-Ex6\_SB AM Alt-7&9)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 7 - Exit 6

Jurisdiction:

Analysis Year: 2035 Build - Alt 7&9

Description: FEET I-293

Flow	Inputs	and	Adj	ustments	

Volume, V		3005	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		835	ν .
Trucks and buses		4	8
Recreational vehicles		0	8
Terrain type:		Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, 1	ER	1.2	
Heavy vehicle adjustment, :	fHV	0.980	
Driver population factor, :	fp .	1.00	
Flow rate, vp		1135	pc/h/ln

## Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1135	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	, 22
Density, D	18.9	pc/mi/ln

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Opera	tional	Analy	sis

Analyst: NBS (Ex7-Ex6\_SB\_PM\_Alt-4&9) VHB

Agency or Company:

Date Performed: 3/12/2013

Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / SB From/To:

Jurisdiction:

Analysis Year:

Exit 7 - Exit 6

NHDOT

2035 Build - Alt 4&9

Description: FEET I-293

_Flow inputs and Adjustments	tments_
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Volume, V Peak-hour factor, PHF	2385 0.90	veh/h
Peak 15-min volume, v15	663	v
Trucks and buses	5	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	용
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	905	pc/h/ln
·		

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	905	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	15.1	pc/mi/ln

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_Operational	Analysis

Analyst: NBS (Ex7-Ex6\_SB\_PM\_Alt-4&10)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour

Freeway/Direction:

3/12/2013 PM Peak Hour I-293 / SB Exit 7 - Exit 6

From/To:
Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&10

Description: FEET I-293

Flow Inputs and Adjustments

Volume, V		2300	veh/h
Peak-hour factor, PHF		0.90	·
Peak 15-min volume, v15		639	v
Trucks and buses		5	8
Recreational vehicles		0	્ર
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET	•	1.5	·
Recreational vehicle PCE, I	ER	1.2	
Heavy vehicle adjustment, :	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		873	pc/h/ln
•			

# Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	873	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	. 3	
Density, D	14.6	pc/mi/ln

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Operational Analysis
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Analyst: NBS (Ex7-Ex6 SB PM Alt-5&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 7 - Exit 6

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 5&9

Description: FEET I-293

Flow	Inputs	and Ad	justments

Volume, V		2405	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		668	v
Trucks and buses		5	용
Recreational vehicles		0	용
Terrain type:		Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		913	pc/h/ln

# \_Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	· ,
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	913	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3 .	
Density, D	15.2	pc/mi/ln

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Analyst: NBS (Ex7-Ex6\_SB\_PM\_Alt-6&9)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 7 - Exit 6

Jurisdiction:

Analysis Year: 2035 Build - Alt 6&9

Description: FEET I-293

Flow	Inputs	and	Adj	ustments

Volume, V		2405	veh-/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		668	v
Trucks and buses		5	૾
Recreational vehicles		0 .	%
Terrain type:		Level	
Grade		0.00	96
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, El	R	1.2	
Heavy vehicle adjustment, fl	HV	0.976	•
Driver population factor, fy	p .	1.00	
Flow rate, vp		913	pc/h/ln

#### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	913	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	15.2	pc/mi/ln

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Analyst: NBS (Ex7-Ex6\_SB\_PM\_Alt-7&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 7&9

Description: FEET I-293

\_\_\_\_Flow Inputs and Adjustments\_

•			
Volume, V		2405	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		668	V
Trucks and buses		5	90
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, I	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		913	pc/h/ln
		- •	

## Speed Inputs and Adjustments

12.0	ft
6.0	ft
0.50	interchange/mi
3	
Measured	
60.0	mi/h
0.0	mi/h
0.0	mi/h
0.0	mi/h
3.0	mi/h
60.0	mi/h
Urban Freeway	
	6.0 0.50 3 Measured 60.0 0.0 0.0 3.0

Flow rate, vp	913	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	15.2	pc/mi/ln

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Average passenger-car speed, S

Number of lanes, N

Density, D

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	Operational Ana	alysis	
Analyst:	NBS (Ex6-Ex7 NB	AM Al+4&9)	
Agency or Company:	VHB		
Date Performed:	3/12/2013	•	
Analysis Time Period:			
Freeway/Direction:	I-293 / NB		
From/To:	Exit 6 / Exit 7		
Jurisdiction:	NHDOT		
Analysis Year:	2035 Build - Alt	4 & 9	
Description: FEET I-2			
	Flow Inputs and	d Adjustments	
Volume, V		1755	veh/h
Peak-hour factor, PHF		0.90	,
Peak 15-min volume, v1	5	488	v
Trucks and buses	-	5	ે
Recreational vehicles		0	00
Terrain type:		Level	
Grade		0.00	<b>ે</b>
Segment length		0.00	mi
Trucks and buses PCE, I	ET	1.5	
Recreational vehicle Po		1.2	
Heavy vehicle adjustmen		0.976	•
Driver population facto		1.00	
Flow rate, vp		666	pc/h/ln
, <u>-</u>			
	Speed Inputs an	id Adjustments	
Lane width	•	12.0	ft
Right-shoulder lateral	clearance	6.0	ft
Interchange density		0.50	interchange/mi
Number of lanes, N		3	
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment,	fLW	0.0	mi/h
Lateral clearance adjus		0.0	mi/ḥ
Interchange density ad		0.0	mi/h
Number of lanes adjusti	ment, fN	3.0	mi/h
Free-flow speed, FFS		60.0	mi/h
		Urban Freeway	Y
	LOS and Perform	nance Measures	
Flow rate, vp		666	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
<del>-</del>			

60.0

11.1

3

mi/h

pc/mi/ln

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 Operational	Analysis

Analyst: NBS (Ex6-Ex7 NB AM Alt4&10)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build - Alt 4&10

Description: FEET I-293

_Flow inputs and Adjustments_
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Volume, V			1665	veh/h
Peak-hour factor, PHF			0.90	
Peak 15-min volume, v15		•	463	v
Trucks and buses	•		5	%
Recreational vehicles			0	ે
Terrain type:			Level	
Grade			0.00	8
Segment length			0.00	.mi
Trucks and buses PCE, ET			1.5	
Recreational vehicle PCE,	ER		1.2	
Heavy vehicle adjustment,	fHV		0.976	,
Driver population factor,	fp		1.00	
Flow rate, vp			632	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	632	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	10.5	pc/mi/ln

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Opera	tional	Analy	sis

Analyst: NBS (Ex6-Ex7\_NB\_AM\_Alt5&9)

Agency or Company: VHB

Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour I-293 / NB

Freeway/Direction: From/To:

Exit 6 / Exit 7

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 5&9

Description: FEET I-293

FI	OW	Input	s a	ind .	Adj	usi	tmen	ts

Volume, V		1755	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		488	v
Trucks and buses		5	%
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, E	ER	1.2	
Heavy vehicle adjustment, f	EHV	0.976	•
Driver population factor, f	fp	1.00	
Flow rate, vp		666	pc/h/ln
			•

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	666	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3 .	
Density, D	11.1	pc/mi/ln

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Analyst: NBS (Ex6-Ex7\_NB\_AM\_Alt-6&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build - Alt 6&9

NHDOT

Description: FEET I-293

\_\_Flow Inputs and Adjustments\_\_\_\_

Volume, V		1755	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		488	v
Trucks and buses		5	રુ
Recreational vehicles		0	00
Terrain type:		Level	
Grade		0.00	્
Segment length	•	0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		666	pc/h/ln

# \_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	666 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	11.1	pc/mi/ln

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Analyst: NBS (Ex6-Ex7 NB AM Alt-7&9)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build - Alt 7&9

Description: FEET I-293

_F]	LOW	Inputs	and Adjustments

Volume, V	1755	veh/h
Peak-hour factor, PHF	0.90	,
Peak 15-min volume, v15	488	v
Trucks and buses	5 .	%
Recreational vehicles	0	%
Terrain type:	Level	•
Grade	0.00	8
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	•
Flow rate, vp	666	pc/h/ln

## \_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3 .	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	666	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	11.1	pc/mi/ln

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Analyst: NBS (Ex6-Ex7\_NB\_PM\_Alt4&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&9

Description: FEET I-293

F.TOM	Inputs	and	AαŢ	ustn	ients
			_		-

Volume, V	· ·	3800	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		1056	v
Trucks and buses		5	용
Recreational vehicles		0	8
Terrain type:		Level	
Grade		0.00	양
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	EŖ	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		1443	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	•
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
•	Urban Freeway	
		•

Flow rate, vp	1443	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	24.0	pc/mi/ln

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NHDOT

Analyst: NBS (Ex6-Ex7\_NB\_PM\_Alt4&10)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build - Alt 4&10

Description: FEET I-293

Flow	Inputs	and Ad	justments

Volume, V		3740	veh/h
Peak-hour factor, PHF		0.90	,
Peak 15-min volume, v15		1039	V
Trucks and buses		5	8
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	<u>ે</u>
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	•
Driver population factor,	fp	1.00	
Flow rate, vp		1420	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	•

Flow rate, vp	1420	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	23.7	pc/mi/ln

Level of service, LOS

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Analyst: NBS (Ex6-Ex7\_NB\_PM\_Alt-5&9)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour

Freeway/Direction: I-293 / NB From/To:

Jurisdiction:

Analysis Year:

Exit 6 / Exit 7

2035 Build - Alt 5&9

Description: FEET I-293

_Flow inputs and Adjustments	-F. Т.С	ow Ir.	puts	and	Adj	us	tmen	ts_
------------------------------	---------	--------	------	-----	-----	----	------	-----

Volume, V	3800	veh/h
Peak-hour factor, PHF	0.90	,
Peak 15-min volume, v15	1056	v
Trucks and buses	5	ું જ
Recreational vehicles	. 0	왕
Terrain type:	Level	
Grade	0.00	. %
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1443	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft	
Right-shoulder lateral clearance	6.0	ft .	
Interchange density	0.50	interchange/mi	
Number of lanes, N	3		
Free-flow speed:	Measured		100
FFS or BFFS	60.0	mi/h	
Lane width adjustment, fLW	0.0	mi/h	
Lateral clearance adjustment, fLC	0.0	mi/h	
Interchange density adjustment, fID	0.0	mi/h	
Number of lanes adjustment, fN	3.0	mi/h	
Free-flow speed, FFS	60.0	mi/h	
	Urban Freeway		

Flow rate, vp	1443	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	24.0	pc/mi/ln

Operational Analysis

VHB, Inc

VHB

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Analyst: NBS (Ex6-Ex7\_NB\_PM\_Alt-6&9)

NHDOT

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction:

Analysis Year: 2035 Build - Alt 6&9

Description: FEET I-293

FL	OW	Inpu	cs	and	Ad	jus	tmen	ts

Volume, V	3800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1056	V
Trucks and buses	5	90
Recreational vehicles	0	%
Terrain type:	Level	•
Grade	0.00	90
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1443	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1443	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	24.0	pc/mi/ln

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	Operational Analysis	
Analwet:	NBS (Ex6-Ex7 NB PM Alt-789)	

Analyst: NBS (Ex6-Ex7\_NB\_PM\_Alt-7&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 6 / Exit 7

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 7&9

Description: FEET I-293

	Flow Inputs	and A	Adjustments_	· · · · · · · · · · · · · · · · · · ·
Volume, V			3800	veh/h
Peak-hour factor, PHF			0.90	·
Peak 15-min volume, v15			1056	v
Trucks and buses			5	%
Recreational vehicles			0	%
Terrain type:			Level	
Grade			0.00	% · · · ·
Segment length			0.00	mi
Trucks and buses PCE, ET			1.5	
Recreational vehicle PCE,	ER		1.2	•
Heavy vehicle adjustment,	fHV		0.976	•
Driver population factor,	£р		1.00	
Flow rate, vp			1443	pc/h/ln

# Speed Inputs and Adjustments Lane width Right-shoulder lateral clearance Interchange density Speed Inputs and Adjustments ft 0.50 ft interchange/mi

Interchange density	0.50	interd
Number of lanes, N	3	•
Free-flow speed:	Measured	
FFS or BFFS	60.0	$\mathtt{mi/h}$
Lane width adjustment, fLW	0.0	$\mathtt{mi/h}$
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	$\mathtt{mi/h}$
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	7

	LOS	and	Perf	ormance	Measures
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Flow rate, vp	1443	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	24.0	pc/mi/ln

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Density, D

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E-mail:

	Operational A	Analysis	
Analyst:	NBS (Ex6-Ex5_S	SB AM Alt-4&8)	
Agency or Company:	VHB		
Date Performed:	3/12/2013		
Analysis Time Period:	AM Peak Hour	·	
Freeway/Direction:	I-293 / SB		
From/To:	Exit 6 - Exit	5	
Jurisdiction:	NHDOT		
Analysis Year:	2035 Build - A	Alt 4&8	
Description: FEET I-29		•	* · ·
-	•	•	e e
	Flow Inputs a	and Adjustments	
Volume, V		3715	veh/h
Peak-hour factor, PHF		0.90	,
Peak 15-min volume, v15	5	1032	V
Trucks and buses		4	ે
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	<b>ે</b>
Segment length	•	0.00	mi
Trucks and buses PCE, I	<b>T</b>	1.5	
Recreational vehicle PO		1.2	
Heavy vehicle adjustmer		0.980	
Driver population factor		1.00	
Flow rate, vp	, 1	1403	pc/h/ln
<del>-</del>			
	Speed Inputs	and Adjustments	
Lane width		12.0	ft
Right-shoulder lateral	clearance	6.0	ft
Interchange density		0.50	interchange/mi
Number of lanes, N		3	
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment,		0.0	mi/h
Lateral clearance adjus		0.0	mi/h
Interchange density ad		0.0	mi/h
Number of lanes adjustm	ment, fN	3.0	mi/h
Free-flow speed, FFS		60.0	mi/h
		Urban Freeway	
	LOS and Perfo	ormance Measures	
Flow rate, vp		1403	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car s	speed S	60.0	mi/h
Number of lanes, N	- F - C - C - C - C - C - C - C - C - C	3	/ 11
		•	

pc/mi/ln

23.4

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Operational Analysis_
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Analyst: NBS (Ex6-Ex5\_SB\_AM\_Alt-4&9)
Agency or Company: VHB

Agency or Company:
Date Performed:

Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour

Freeway/Direction: From/To:

I-293 / SB Exit 6 - Exit 5

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&9

Description: FEET I-293

Flow Inputs and Adjustment	S	_
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	3715	veh/h
	0.90	·
	1032	v
	4	ે
	0	ે
	Level	
	0.00	8
	0.00	mi
	1.5	
ER	1.2	
fHV	0.980	
fp	1.00	
	1403	pc/h/ln
,	, ER , fHV , fp	0.90 1032 4 0 Level 0.00 0.00 1.5 ER 1.2 fHV 0.980 1.00

#### \_\_\_\_\_Speed Inputs and Adjustments\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	1403 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	23.4	pc/mi/ln

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Analyst: NBS (Ex6-Ex5\_SB\_AM\_Alt-4&10) VHB

Agency or Company:

Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / SB

From/To:

Exit 6 - Exit 5 Jurisdiction: NHDOT

Analysis Year: Description: FEET I-293

2035 Build - Alt 4&10

Flow	Inputs	and	Adj	ustments

Volume, V	3665	veh/h
Peak-hour factor, PHF	0.90	· •
Peak 15-min volume, v15	1018	v
Trucks and buses	4	용
Recreational vehicles	0 .	8
Terrain type:	Level	
Grade	0.00	왕
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	•
Flow rate, vp	1385	pc/h/ln
		<b>-</b>

#### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1385	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	$\mathtt{mi/h}$
Number of lanes, N	3	
Density, D	23.1	pc/mi/ln

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Operational	Analysis

Analyst: NBS (Ex6-Ex5 SB AM Alt-5&9)

Agency or Company:

VHB

Date Performed:

3/12/2013 Analysis Time Period: AM Peak Hour I-293 / SB

Freeway/Direction: From/To:

Exit 6 - Exit 5

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 5&9

Description: FEET I-293

F1	.OW	Inputs	and	Adju	stments

Volume, V Peak-hour factor, PHF	3715	veh/h
••	0.90	
Peak 15-min volume, v15	1032	v
Trucks and buses	4	<b>ે</b>
Recreational vehicles	. 0	96
Terrain type:	Level	
Grade	0.00	96
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	1403	pc/h/ln

## \_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h·
Free-flow speed, FFS	60.0	mi/h
•	Urban Freeway	

Flow rate, vp	1403	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	23,4	pc/mi/ln

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Operational Analysis	
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Analyst: NBS (Ex6-Ex5 SB AM Alt-6&9)

Agency or Company:

VHB

Date Performed:

3/12/2013 Analysis Time Period: AM Peak Hour

Freeway/Direction:

I-293 / SB

From/To:

Exit 6 - Exit 5

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 6&9

Description: FEET I-293

_Flow Inputs and Adjustments_
-------------------------------

Volume, V	•	3715	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		1032	v .
Trucks and buses		4	용
Recreational vehicles		0	용
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, El	R	1.2	
Heavy vehicle adjustment, fl	HV .	0.980	
Driver population factor, f	p ·	1.00	
Flow rate, vp		1403	pc/h/ln

#### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1403	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	23.4	pc/mi/ln

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	Operational Analysis	
Analyst: Agency or Company:	NBS (Ex6-Ex5_SB_AM_Alt-7&9) VHB	
Date Performed:	3/12/2013	
Analysis Time Period:	AM Peak Hour	
Freeway/Direction:	I-293 / SB	

From/To:
Jurisdiction:

I-293 / SB Exit 6 - Exit 5

Jurisaiction:

NHDOT

Analysis Year:

2035 Build - Alt 7&9

Description: FEET I-293

Flow Inputs and	l Adjustments	
Volume, V	3715	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1032	v
Trucks and buses	4	96
Recreational vehicles	0	00
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	·
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, fp	1.00	
Flow rate, vp	1403	pc/h/ln
Speed Inputs ar	nd Adjustments	
Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	<b>3</b> .,
Free-flow speed:	Measured	•
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	
LOS and Perform	nance Measures	

Flow rate, vp	1403	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	23.4	pc/mi/ln

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 				_		

Analyst: NBS (Ex6-Ex5 SB PM Alt-4&8) VHB

Agency or Company:

Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / SB Exit 6 - Exit 5

From/To: Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&8

Description: FEET I-293

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HIOW	IDDUES	and Adi	justments
		oraco aron	,

Volume, V	2910	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	808	V
Trucks and buses	5 .	%
Recreational vehicles	0	<del>ુ</del> ં
Terrain type:	Level	
Grade	0.00	왕
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	•
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	•
Flow rate, vp	1105	pc/h/ln

#### Speed Inputs and Adjustments\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1105	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.4	pc/mi/ln

Fax:

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#### Operational Analysis

Analyst: NBS (Ex6-Ex5 SB PM Alt-4&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&9

Déscription: FEET I-293

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			•
Volume, V		2910	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		808	v
Trucks and buses		5	8
Recreational vehicles		0	· %
Terrain type:		Level	
Grade		0.00	<b>%</b>
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	•
Driver population factor,		1.00	**
Flow rate, vp	- -	1105	pc/h/ln
			<del>-</del>

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1105	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.4	pc/mi/ln

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	Operational Analysis	
Analyst:	NBS (Ex6-Ex5 SB PM Alt-4&10)	
Agency or Company:	VHB	
Date Performed:	3/12/2013	

Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / SB From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&10

Description: FEET I-293

Flow Inputs and		
Volume, V	2860	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	794	v
Trucks and buses	5	8
Recreational vehicles	0	ું •
'errain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
rucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Meavy vehicle adjustment, fHV	0.976	
leavy venicie adjustment, inv		
	1.00	
Priver population factor, fp	1086	pc/h/ln
Oriver population factor, fp Flow rate, vp	1086 nd Adjustments_	· · · · · · · · · · · · · · · · · · ·
Priver population factor, fp Flow rate, vp Speed Inputs as	1086	pc/h/ln  ft ft
Priver population factor, fp Flow rate, vp Speed Inputs and an evidth Right-shoulder lateral clearance	1086 nd Adjustments_ 12.0	ft ft
Priver population factor, fp Flow rate, vp Speed Inputs and sight-shoulder lateral clearance interchange density	1086 nd Adjustments_ 12.0 6.0	ft
Speed Inputs at Speed Inputs a	1086  nd Adjustments_  12.0  6.0  0.50	ft ft
Speed Inputs at Speed Inputs a	1086  nd Adjustments_  12.0  6.0  0.50  3	ft ft
Priver population factor, fp Flow rate, vp Speed Inputs and Speed Inputs a	1086  nd Adjustments_  12.0 6.0 0.50 3 Measured	ft ft interchange/mi
Speed Inputs and Inputs	1086  nd Adjustments_  12.0 6.0 0.50 3 Measured 60.0	ft ft interchange/mi mi/h
Speed Inputs and In	1086  nd Adjustments_  12.0 6.0 0.50 3 Measured 60.0 0.0	ft ft interchange/mi mi/h mi/h
Speed Inputs at Speed Inputs a	1086  nd Adjustments_  12.0 6.0 0.50 3 Measured 60.0 0.0	ft ft interchange/mi mi/h mi/h mi/h
Priver population factor, fp Flow rate, vp Speed Inputs and Sight-shoulder lateral clearance Interchange density Jumber of lanes, N Free-flow speed: FFS or BFFS	1086  nd Adjustments_  12.0 6.0 0.50 3 Measured 60.0 0.0 0.0	ft ft interchange/mi mi/h mi/h mi/h mi/h

		<del></del>	
Flow rate, vp		1086	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car spe	eed, S	60.0	mi/h
Number of lanes, N		3	
Density, D		18.1	pc/mi/ln

Level of service, LOS

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Operational	Analysis
-	<u> </u>

Analyst: NBS (Ex6-Ex5\_SB\_PM\_Alt-5&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 5&9

Description: FEET I-293

Flow	Inputs	and	Adj	ustments

Volume, V		2930	veh/h
Peak-hour factor, PHF		0.90	•
Peak 15-min volume, v15		814	v
Trucks and buses		5	%
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	%
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fhV .	0.976	
Driver population factor,	fp	1.00	·
Flow rate, vp		1112	pc/h/ln

# Speed Inputs and Adjustments\_\_\_\_

/mi
1

Flow rate, vp Free-flow speed, FFS	1112	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.5	pc/mi/ln

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Analyst: NBS (Ex6-Ex5\_SB\_PM\_Alt-6&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 6&9

Description: FEET I-293

	Flow	Inputs	and Ad-	ustments
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77-7			2020	1- /3-
Volume, V			2930	veh/h
Peak-hour factor, PHF			0.90	
Peak 15-min volume, v15			814	v
Trucks and buses			5	%
Recreational vehicles			0	%
Terrain type:			Level	•
Grade			0.00	%
Segment length			0.00	mi
Trucks and buses PCE, ET	•		1.5	
Recreational vehicle PCE,	ER		1.2	
Heavy vehicle adjustment,	fHV		0.976	
Driver population factor,	fp	•	1.00	
Flow rate, vp			1112	pc/h/ln
	•			

# Speed Inputs and Adjustments\_\_\_\_

·		
Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1112	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.5	pc/mi/ln

Level of service, LOS

Operational Analysis

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Analyst: NBS (Ex6-Ex5 SB PM Alt-7&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / SB
From/To: Exit 6 - Exit 5

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 7&9

Description: FEET I-293

Flow Inputs and	Adjustments
-----------------	-------------

Volume, V		2930	veh/h
Peak-hour factor, PHF	•	0.90	
Peak 15-min volume, v15		814	v
Trucks and buses		5	용
Recreational vehicles		0	양
Terrain type:		Level	
Grade		0.00	8
Segment length		0.00	mi
Trucks and buses PCE, ET	•	1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		1112	pc/h/ln

# \_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3 .	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1112	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	18.5	pc/mi/ln

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Analyst: NBS (Ex5-Ex6\_NB\_AM\_Alt-4&8)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 5 / Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&8

Description: FEET I-293

Flow Inputs and Adjustment	S	_
----------------------------	---	---

Volume, V	,	2270	veh/h
Peak-hour factor, PHF		0.90	,
Peak 15-min volume, v15		631	v
Trucks and buses		5	%
Recreational vehicles		0	00
Terrain type:		Level	
Grade	•	0.00	8
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, E	lr.	1.2	
Heavy vehicle adjustment, f	HV	0.976	
Driver population factor, f	ip	1.00	
Flow rate, vp		862	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	862	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	14.4	pc/mi/ln

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Analyst: NBS (Ex5-Ex6\_NB\_AM\_Alt-4&9)

Agency or Company:

VHB

Date Performed:
Analysis Time Period:

3/12/2013 AM Peak Hour

Freeway/Direction:

I-293 / NB

From/To:
Jurisdiction:

Exit 5 / Exit 6 NHDOT

Analysis Year:

2035 Build - Alt 4&9

Description: FEET I-293

${}_{ t E}$ Flow Inputs and Adjustments	ijustments
---	------------

Volume, V		2270	veh/h
Peak-hour factor, PHF		0.90	•
Peak 15-min volume, v15		631	v
Trucks and buses		5	90
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	양
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,		0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		862	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	862	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	· 3	
Density, D	14.4	pc/mi/ln

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Operational A	Analysis
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Analyst: NBS (Ex5-Ex6\_NB\_AM\_Alt-4&10) Agency or Company: VHB Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 5 / Exit 6 Jurisdiction: NHDOT 2035 Build - Alt 4&10

Analysis Year:

Description: FEET I-293

Flow Inputs and Adjustment	S	_
----------------------------	---	---

Volume, V	2270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	631	v
Trucks and buses	5	%
Recreational vehicles	0	00
Terrain type:	Level	
Grade	0.00	9
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	•
Driver population factor, fp	1.00	
Flow rate, vp	862	pc/h/ln

# \_\_\_\_Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	862 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	14.4	pc/mi/ln

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_Operational Analy	S	is	<b>.</b> _
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Analyst: NBS (Ex5-Ex6 NB AM Alt-5&9)

Agency or Company: VHB

Date Performed: 3/12/2013
Analysis Time Period: AM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 5 / Exit 6

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 5&9

Description: FEET I-293

Flow	Inputs	and	Adjustments

Volume, V		2270	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		631	v
Trucks and buses		5	%
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	용
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,	fHV	0.976	
Driver population factor,	fp	1.00	
Flow rate, vp		862	pc/h/ln
. ·		•	

## Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	862	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	·
Density, D	14.4	pc/mi/ln

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Analyst: NBS (Ex5-Ex6 NB AM Alt-6&9) VHB

Agency or Company:

Date Performed: 3/12/2013 Analysis Time Period: AM Peak Hour I-293 / NB

Freeway/Direction: From/To:

Jurisdiction:

Analysis Year:

Exit 5 / Exit 6 NHDOT

2035 Build - Alt 6&9

Description: FEET I-293

Flow Inputs	and P	Adjusi	tments_
-------------	-------	--------	---------

Volume, V	2270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	631	v
Trucks and buses	5	8
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	862	pc/h/ln

#### Speed Inputs and Adjustments\_\_\_\_\_

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp Free-flow speed, FFS	862 60.0	pc/h/ln mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	14.4	pc/mi/ln

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Average passenger-car speed, S

Number of lanes, N

Density, D

E-mail:

Fax:

	Operational An	alysis	
7			
Analyst:	NBS (Ex5-Ex6_NB	_AM_AIC-/&9)	
Agency or Company: Date Performed:	VHB		•
	3/12/2013		
Analysis Time Period:			•
<pre>Freeway/Direction: From/To:</pre>	I-293 / NB		•
Jurisdiction:	Exit 5 / Exit 6		
Analysis Year:	NHDOT 2035 Build - Al	+ 750	
Description: FEET I-29		L 7&9	•
	Flow Inputs an	d Adjustments	
Volume, V		2270	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v1	5	631	V
Trucks and buses		5	%
Recreational vehicles		0	%
Terrain type:		Level	
Grade		0.00	. %
Segment length		0.00	mi
Trucks and buses PCE, I	ET	1.5	
Recreational vehicle Po	CE, ER	1.2	
Heavy vehicle adjustmen	nt, fHV	0.976	
Driver population factor	or, fp	1.00	
Flow rate, vp		862	pc/h/ln
	Speed Inputs a	nd Adjustments	
Lane width	1	12.0	ft
Right-shoulder lateral	clearance	6.0	ft
Interchange density		0.50	interchange/mi
Number of lanes, N		3	
Free-flow speed:		Measured	
FFS or BFFS		60.0	mi/h
Lane width adjustment,	fLW	0.0	mi/h
Lateral clearance adjus		0.0	mi/h
Interchange density ad		0.0	mi/h
Number of lanes adjusts	ment, fN	3.0	mi/h
Free-flow speed, FFS		60.0	mi/h
		Urban Freewa	ay
	LOS and Perfor	mance Measures	
Flow rate, vp		862	pc/h/ln
Free-flow speed, FFS	•	60.0	mi/h
7			1 /1

60.0

14.4

3

mi/h

pc/mi/ln

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5

Analyst: NBS (Ex5-Ex6 NB PM Alt-4&8) Agency or Company: VHB

Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 5 / Exit 6

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 4&8

Description: FEET I-293

Flow	Inputs	and	Adjustments

	4000	veh/h
	0.90	·
	1111	v
	5	%
	0	9
	Level	
	0.00	%
	0.00	mi
	1.5	
ER	1.2	
fHV	0.976	
fp	1.00	
	1519	pc/h/ln
	fHV	0.90 1111 5 0 Level 0.00 0.00 1.5 ER 1.2 fHV 0.976 fp 1.00

#### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

Flow rate, vp	1519	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	•
Density, D	25.3	pc/mi/ln

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Analwet.	MRC /FVK_FVK MR	$(0.2 \text{ N}_{-} + \Gamma \text{ K})$	

\_\_Operational Analysis\_

Analyst: NBS (Ex5-Ex6\_NB\_PM\_Alt-4&9) VHB

Agency or Company:

Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB

From/To:

Exit 5 / Exit 6

Jurisdiction:

NHDOT

Analysis Year:

2035 Build - Alt 4&9

Description: FEET I-293

Flow	Inputs	and	Adjus	tments

Volume, V		4000	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		1111	V
Trucks and buses		5	용
Recreational vehicles		0	용
Terrain type:		Level	
Grade		0.00	8
Segment length		0.00	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE,	ER	1.2	
Heavy vehicle adjustment,		0.976	
Driver population factor,	fp	1.00	·
Flow rate, vp		1519	pc/h/ln

#### Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	• .

Flow rate, vp	1519	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density, D	25.3	pc/mi/ln

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4000

veh/h

Analyst: NBS (Ex5-Ex6 NB PM Alt-4&10) VHB

NHDOT

Agency or Company:

Date Performed: 3/12/2013 Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 5 / Exit 6

Jurisdiction:

Volume, V

Analysis Year: 2035 Build - Alt 4&10

Description: FEET I-293

Flow	Inputs	and	Ad	ustments

Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1111	v
Trucks and buses	5	왕
Recreational vehicles	0	ે
Terrain type:	Level	
Grade	0.00	망
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1519	pc/h/ln

## Speed Inputs and Adjustments

Lane width	12.0	ft.
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
•	Urban Freeway	

Flow rate, vp		1519	pc/h/ln
Free-flow speed, FFS		60.0	mi/h
Average passenger-car speed,	S	60.0	mi/h
Number of lanes, N		3	
Density, D		25.3	pc/mi/ln

Level of service, LOS

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Number of lanes, N

Density, D

Fax:

E-mail:	L CLIL.		4.5
Operation	nal Analysis		
Analyst: NBS (Ex5-E	Ex6 NB PM Alt-5&9)		
Agency or Company: VHB	,		
Date Performed: 3/12/2013			
Analysis Time Period: PM Peak Ho	our		
Freeway/Direction: I-293 / NE			٠.
From/To: Exit 5 / E			
Jurisdiction: NHDOT	TATE 0		
	l - Alt 5&9		
Description: FEET I-293	1 - AIC 509		
Flow Inpu	ıts and Adjustments		
Volume, V	4000	veh/h	
Peak-hour factor, PHF	0.90	Ve11/11	
Peak 15-min volume, v15	1111		
		V •	
Trucks and buses	5	% o.	
Recreational vehicles	0	%	
Terrain type:	Level		
Grade	0.00	% .	
Segment length	0.00	mi	
Trucks and buses PCE, ET	1.5	•	
Recreational vehicle PCE, ER	1.2		
Heavy vehicle adjustment, fHV	0.976		
Driver population factor, fp	1.00		
Flow rate, vp	1519	pc/h/ln	
Speed Ing	outs and Adjustments		
Lane width	12.0	ft	
Right-shoulder lateral clearance	6.0	ft	
Interchange density	0.50	interchange/mi	
Number of lanes, N	3		
Free-flow speed:	Measured		
FFS or BFFS	60.0	mi/h	
Lane width adjustment, fLW	0.0	mi/h	
Lateral clearance adjustment, fLC	0.0	mi/h	
Interchange density adjustment, fl		mi/h	
Number of lanes adjustment, fN	3.0	mi/h	
Free-flow speed, FFS	60.0	mi/h	
	Urban Freeway	,	
LOS and E	Performance Measures		
Flow rate, vp	1519	pc/h/ln	
Free-flow speed, FFS	60.0	mi/h	
Average passenger-car speed, S	60.0	mi/h	
Number of large N	2	<b></b> / <b></b>	

25.3

3

pc/mi/ln

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Analyst:	NBS (Ex5-Ex6 NB PM Alt-6&9)	
Agency or Company:	VHB	
Data Barfarmad.	2/12/2012	

\_\_Operational Analysis\_\_\_

Date Performed: 3/12/2013
Analysis Time Period: PM Peak Hour
Freeway/Direction: I-293 / NB
From/To: Exit 5 / Exit 6

Jurisdiction: NHDOT

Analysis Year: 2035 Build - Alt 6&9

Description: FEET I-293		
Flow Inputs and A	Adjustments	
Volume, V	4000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1111	V
Trucks and buses	5	8
Recreational vehicles	0	ob a second seco
Terrain type:	Level	
Grade	0.00	8
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
Driver population factor, fp	1.00	
Flow rate, vp	1519	pc/h/ln
Speed Inputs and	Adjustments	
Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Number of lanes adjustment, fN	3.0	mi/h
Free-flow speed, FFS	60.0	mi/h
	Urban Freeway	

LOS and	Performance Measures	
Flow rate, vp	1519	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	3	
Density. D	25.3	pc/mi/ln

VHB, Inc VHB

101 Walnut St. Watertown MA

Phone: 617-924-1770

E-mail:

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\_Operational Analysis\_\_\_\_\_

Analyst:	NBS (Ex5-Ex6_NB_PM_Alt-7&9)	
Agency or Company:	VHB	
Date Performed:	3/12/2013	

Analysis Time Period: PM Peak Hour Freeway/Direction: I-293 / NB From/To: Exit 5 / Exit 6

Jurisdiction: Analysis Year: NHDOT

2035 Build - Alt 7&9

Description: FEET I-293

Free-flow speed, FFS

Number of lanes, N

Density, D

Average passenger-car speed, S

Flow Inputs and	l Adjustments	
Volume, V	4000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1111	V
Trucks and buses	5	%
Recreational vehicles	0	용
Cerrain type:	Level	•
Grade	0.00	용
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.976	
river population factor, fp	1.00	
low rate, vp	1519	pc/h/ln
lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.50	interchange/mi
Number of lanes, N	3	incoronary (mi
ree-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
ane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
Interchange density adjustment, fID	0.0	mi/h
Jumber of lanes adjustment, fN	3.0	mi/h
ree-flow speed, FFS	60.0	mi/h
-	Urban Freewa	У
LOS and Perform		
Flow rate, vp	1519	pc/h/ln
TOW Tace, vp	1313	DC/II/III

60.0

60.0

3

25.3

mi/h

mi/h

pc/mi/ln