APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

F-1 – EXISTING CONDITIONS

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2579	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	905	pc/h/ln
S	64.5	mi/h
D = V_p / S	14.0	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	6892	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1814	pc/h/ln
S	66.0	mi/h
D = V_p / S	27.5	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7737	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2036	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	30.8	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2896	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1016	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	15.8	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3520	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1235	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	19.1	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9405	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2475	pc/h/ln
S	66.0	mi/h
D = V_p / S	37.5	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7250	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1908	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	28.9	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2714	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	952	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	14.8	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12744	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2236	pc/h/ln
S	67.5	mi/h
D = V_p / S	33.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13475	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2364	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	35.0	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13749	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2412	pc/h/ln
S	67.5	mi/h
D = V_p / S	35.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10663	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1871	pc/h/ln
S	67.5	mi/h
D = V_p / S	27.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10450	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2200	pc/h/ln
S	67.5	mi/h
D = V_p / S	32.6	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9884	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2081	pc/h/ln
S	67.5	mi/h
D = V_p / S	30.8	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9356	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1641	pc/h/ln
S	67.5	mi/h
D = V_p / S	24.3	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9893	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1736	pc/h/ln
S	67.5	mi/h
D = V_p / S	25.7	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10094	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1771	pc/h/ln
S	67.5	mi/h
D = V_p / S	26.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13041	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2288	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	33.9	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12781	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2691	pc/h/ln
S	67.5	mi/h
D = V_p / S	39.9	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12088	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2545	pc/h/ln
S	67.5	mi/h
D = V_p / S	37.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

F-2 – EXISTING CONDITIONS PLUS FULL PROJECT

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2579	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	905	pc/h/ln
S	64.5	mi/h
D = V_p / S	14.0	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	6992	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1840	pc/h/ln
S	66.0	mi/h
D = V_p / S	27.9	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7737	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2036	pc/h/ln
S	66.0	mi/h
D = V_p / S	30.8	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2896	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1016	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	15.8	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3520	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1235	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	19.1	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9450	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2487	pc/h/ln
S	66.0	mi/h
D = V_p / S	37.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7357	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1936	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	29.3	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2714	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	952	pc/h/ln
S	64.5	mi/h
D = V_p / S	14.8	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12755	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2238	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	33.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13504	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2369	pc/h/ln
S	67.5	mi/h
D = V_p / S	35.1	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13824	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2425	pc/h/ln
S	67.5	mi/h
D = V_p / S	35.9	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10672	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1872	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	27.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10447	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2199	pc/h/ln
S	67.5	mi/h
D = V_p / S	32.6	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9959	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2097	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	31.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9435	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h

FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N

67.5 mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1655	pc/h/ln
S	67.5	mi/h
D = V_p / S	24.5	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	9900	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1737	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	25.7	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10125	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1776	pc/h/ln
S	67.5	mi/h
D = V_p / S	26.3	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13119	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2302	pc/h/ln
S	67.5	mi/h
D = V_p / S	34.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12811	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2697	pc/h/ln
S	67.5	mi/h
D = V_p / S	40.0	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	Ex 2011 + Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12123	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2552	pc/h/ln
S	67.5	mi/h
D = V_p / S	37.8	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

F-3 – 2018 CUMULATIVE CONDITIONS WITHOUT PROJECT

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2765	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	970	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	15.0	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7404	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1948	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	29.5	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	8312	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2187	pc/h/ln
S	66.0	mi/h
D = V_p / S	33.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3105	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1089	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	16.9	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3811	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1337	pc/h/ln
S	64.5	mi/h
D = V_p / S	20.7	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10207	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2686	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	40.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7867	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2070	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	31.4	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2939	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1031	pc/h/ln
S	64.5	mi/h
D = V_p / S	16.0	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13688	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2401	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	35.6	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14447	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2535	pc/h/ln
S	67.5	mi/h
D = V_p / S	37.6	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14752	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2588	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	38.3	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11441	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2007	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	29.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11204	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2359	pc/h/ln
S	67.5	mi/h
D = V_p / S	34.9	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10616	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2235	pc/h/ln
S	67.5	mi/h
D = V_p / S	33.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10049	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1763	pc/h/ln
S	67.5	mi/h
D = V_p / S	26.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10607	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1861	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	27.6	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10830	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1900	pc/h/ln
S	67.5	mi/h
D = V_p / S	28.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S - Speed	
V	- Hourly volume	D - Density	
Vp	- Flow rate	FFS - Free-flow speed	
LOS	- Level of service	BFFS - Base FFS	
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13992	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2455	pc/h/ln
S	67.5	mi/h
D = V_p / S	36.4	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13703	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2885	pc/h/ln
S	67.5	mi/h
D = V_p / S	42.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	12985	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2734	pc/h/ln
S	67.5	mi/h
D = V_p / S	40.5	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

F-4 – 2018 CUMULATIVE CONDITIONS WITH PHASE 1

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2765	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	970	pc/h/ln
S	64.5	mi/h
D = V_p / S	15.0	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7459	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1963	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	29.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	8327	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2191	pc/h/ln
S	66.0	mi/h
D = V_p / S	33.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3105	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1089	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	16.9	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3811	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV PHF * N * f_{HV} * f_p	1337	pc/h/ln
S	64.5	mi/h
D = V_p / S	20.7	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10236	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2694	pc/h/ln
S	66.0	mi/h
D = V_p / S	40.8	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7929	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2087	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	31.6	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 With Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2939	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1031	pc/h/ln
S	64.5	mi/h
D = V_p / S	16.0	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13696	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2403	pc/h/ln
S	67.5	mi/h
D = V_p / S	35.6	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14468	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2538	pc/h/ln
S	67.5	mi/h
D = V_p / S	37.6	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14794	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2595	pc/h/ln
S	67.5	mi/h
D = V_p / S	38.4	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11448	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2008	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	29.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11206	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2359	pc/h/ln
S	67.5	mi/h
D = V_p / S	34.9	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10658	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2244	pc/h/ln
S	67.5	mi/h
D = V_p / S	33.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10095	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1771	pc/h/ln
S	67.5	mi/h
D = V_p / S	26.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10616	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1862	pc/h/ln
S	67.5	mi/h
D = V_p / S	27.6	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10851	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1904	pc/h/ln
S	67.5	mi/h
D = V_p / S	28.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14014	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2459	pc/h/ln
S	67.5	mi/h
D = V_p / S	36.4	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13726	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2890	pc/h/ln
S	67.5	mi/h
D = V_p / S	42.8	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2018 w Ph 1

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13031	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2743	pc/h/ln
S	67.5	mi/h
D = V_p / S	40.6	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

F-5 – 2021 CUMULATIVE CONDITIONS WITHOUT PROJECT

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2849	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1000	pc/h/ln
S	64.5	mi/h
D = V_p / S	15.5	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7629	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2008	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	30.4	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	8564	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2254	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	34.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3199	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1122	pc/h/ln
S	64.5	mi/h
D = V_p / S	17.4	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3927	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV PHF * N * f_{HV} * f_p	1378	pc/h/ln
S	64.5	mi/h
D = V_p / S	21.4	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10516	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2767	pc/h/ln
S	66.0	mi/h
D = V_p / S	41.9	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	8106	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2133	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	32.3	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 Without Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3028	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1062	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	16.5	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14103	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2474	pc/h/ln
S	67.5	mi/h
D = V_p / S	36.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14885	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2611	pc/h/ln
S	67.5	mi/h
D = V_p / S	38.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	15198	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2666	pc/h/ln
S	67.5	mi/h
D = V_p / S	39.5	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11787	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2068	pc/h/ln
S	67.5	mi/h
D = V_p / S	30.6	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11543	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2430	pc/h/ln
S	67.5	mi/h
D = V_p / S	36.0	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10938	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h

FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N

67.5 mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2303	pc/h/ln
S	67.5	mi/h
D = V_p / S	34.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10354	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1816	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	26.9	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10928	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h

FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N

67.5 mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1917	pc/h/ln
S	67.5	mi/h
D = V_p / S	28.4	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11158	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1958	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	29.0	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14416	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2529	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	37.5	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14118	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2972	pc/h/ln
S	67.5	mi/h
D = V_p / S	44.0	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WO Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13378	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2816	pc/h/ln
S	67.5	mi/h
D = V_p / S	41.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

APPENDIX F

STATE HIGHWAY ANALYSIS – FREEWAY MAINLINE ANALYSIS WORKSHEETS

F-6 – 2021 CUMULATIVE CONDITIONS WITH FULL PROJECT

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	2849	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1000	pc/h/ln
S	64.5	mi/h
D = V_p / S	15.5	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	7729	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2034	pc/h/ln
S	66.0	mi/h
D = V_p / S	30.8	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	8564	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2254	pc/h/ln
S	66.0	mi/h
D = V_p / S	34.2	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3199	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1122	pc/h/ln
S	64.5	mi/h
D = V_p / S	17.4	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3927	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	64.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	1378	pc/h/ln
S	64.5	mi/h
D = V_p / S	21.4	pc/mi/ln
LOS	C	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-55
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10561	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2779	pc/h/ln
S	66.0	mi/h
D = V_p / S	42.1	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to SR-5
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	8213	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	4	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	1.5	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	66.0	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2161	pc/h/ln
PHF * N * f_{HV} * f_p		
S	66.0	mi/h
D = V_p / S	32.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	SR-73
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Bonita Cyn Dr to Jamb
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 WITH Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	3028	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	3	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	3	mi/h

FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N

64.5 mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1062	pc/h/ln
PHF * N * f_{HV} * f_p		
S	64.5	mi/h
D = V_p / S	16.5	pc/mi/ln
LOS	B	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14114	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2476	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	36.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14914	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2616	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	38.8	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	15273	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2679	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	39.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11796	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2069	pc/h/ln
S	67.5	mi/h
D = V_p / S	30.7	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11540	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2429	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	36.0	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	AM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11013	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2319	pc/h/ln
S	67.5	mi/h
D = V_p / S	34.4	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10433	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1830	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	27.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	10935	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1918	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	28.4	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Northbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	11189	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	1963	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	29.1	pc/mi/ln
LOS	D	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	MacArthur Blvd to SR-
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14494	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV	2543	pc/h/ln
PHF * N * f_{HV} * f_p		
S	67.5	mi/h
D = V_p / S	37.7	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV		pc/h/ln
PHF * N * f_{HV} * f_p		
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV		pc/h/ln
PHF * N * fHV * fp		
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Jamboree Rd to MacA
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	14148	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N		
	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2979	pc/h/ln
S	67.5	mi/h
D = V_p / S	44.1	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

BASIC FREEWAY SEGMENTS OPERATIONAL ANALYSIS

General Information		Site Information	
Anlayst	SSC	Highway	I-405
Agency or Company	KHA	Direction of Travel	Southbound
Date Performed	5/15/2012	To / From	Culver Dr to Jamboree
Analysis Time Period	PM Peak Hour	Jurisdiction	Caltrans
Project Name	Uptown Newport	Analysis Year	2021 w Proj

Operational (LOS) [X] Design [ ] Planning Data [ ]

Flow Inputs

Volume, V	13413	veh/h	Peak Hour Factor, PHF	0.95
Annual Avg. Daily Traffic, AADT	0	veh/day	% Trucks and buses, P_T	0%
Peak Hour Proportion of AADT, K	0		% RV, P_R	0%
Peak Hour direction proportion, D	0		General Terrain	Level
DDHV = AADT * K * D	0	veh/h		
Driver Type	Commuter/Weekday			

Calculate Flow Adjustments

f_p	1	E_R	1.2
E_T	1.5	f_{HV}	1

Speed Inputs

Free-flow Speed	Base free-flow speed, BFFS	
Speed	70	mi/h
Lane Width	12	ft
Rt.-shoulder lateral clearance	>=6	ft
Interchange Density	1	I/mi
Number of Lanes, N	>=5	

Calculate Speed Adjustments and FFS

f_{LW}	0.0	mi/h
f_{LC}	0	mi/h
f_{ID}	2.5	mi/h
f_N	0	mi/h
FFS = BFFS - f_{LW} - f_{LC} - f_{ID} - f_N	67.5	mi/h

LOS and Performance Measures

Operational (LOS) or Planning (LOS)

V_p = V or DDHV / PHF * N * f_{HV} * f_p	2824	pc/h/ln
S	67.5	mi/h
D = V_p / S	41.8	pc/mi/ln
LOS	E	

Design (N) or Planning (N) 1st Iteration

N		assumed
V_p = V or DDHV / PHF * N * f_{HV} * f_p		pc/h/ln
LOS		

Design (Vp) or Planning (Vp)

LOS		
Vp		pc/h/ln
V = V_p * PHF * N * f_{HV} * f_p		veh/h
S		mi/h
D = V_p / S		pc/mi/ln

Design (N) or Planning (N) 2nd Iteration

N		assumed
Vp = V or DDHV / PHF * N * fHV * fp		pc/h/ln
S		mi/h
D = Vp / S		pc/mi/ln
LOS		

Glossary

N	- Number of lanes	S	- Speed
V	- Hourly volume	D	- Density
Vp	- Flow rate	FFS	- Free-flow speed
LOS	- Level of service	BFFS	- Base FFS
DDHV	- Directional design-hour volume		

Factor Location

E_R - Exh. 23-8, 23-10	f_{LW} - Exh. 23-4
E_T - Exh. 23-8, 23-9, 23-11	f_{LC} - Exh. 23-5
f_p - Page 23-12	f_N - Exh. 23-6
LOS,S,FFS,V_p - Exh. 23-2, 23-3	f_{ID} - Exh. 23-7

APPENDIX G
CMP COMPLIANCE

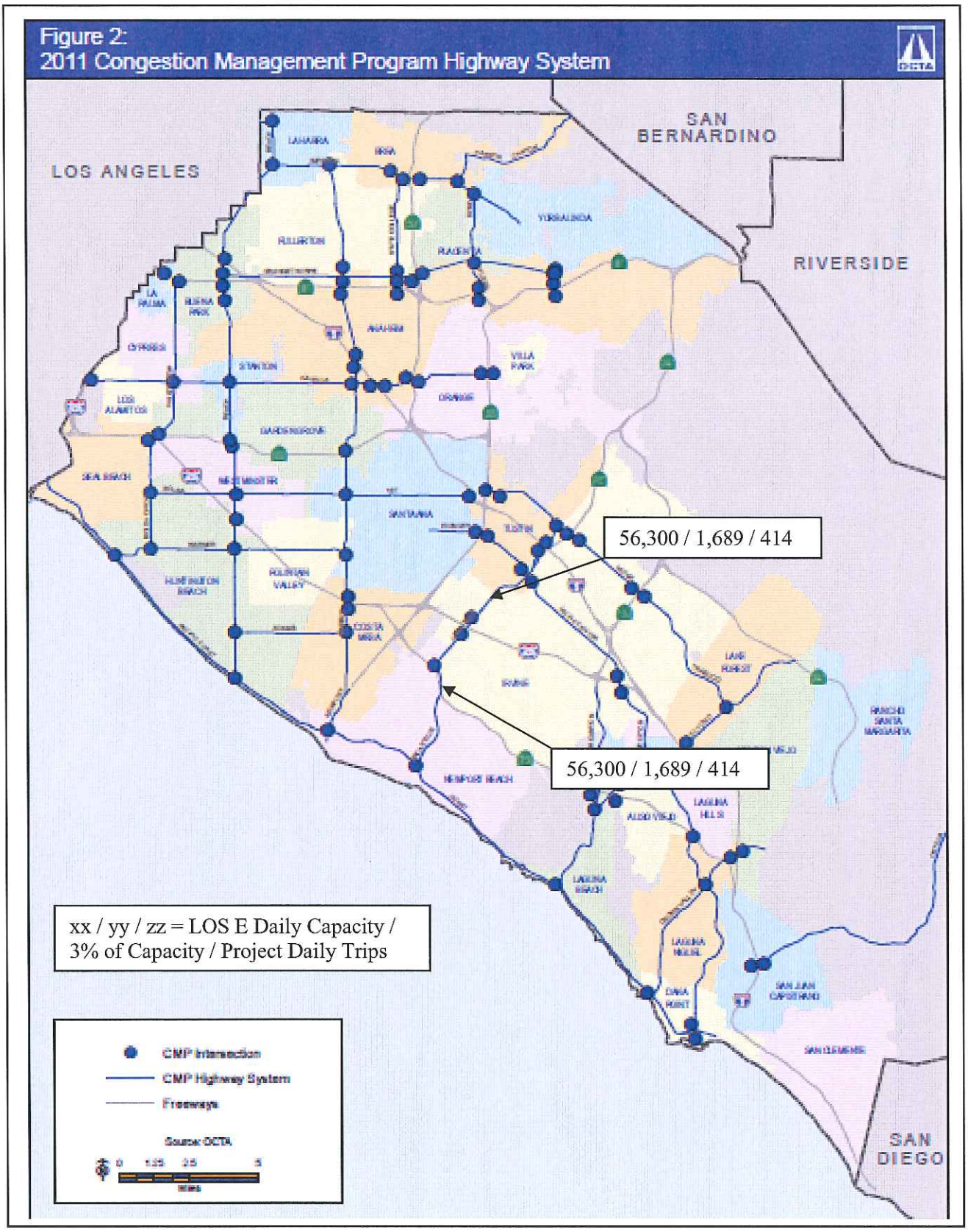


Figure 2:
2011 Congestion Management Program Highway System
LOS ANGELES
SAN BERNARDINO
RIVERSIDE
SAN DIEGO
56,300 / 1,689 / 414
56,300 / 1,689 / 414
xx / yy / zz = LOS E Daily Capacity / 3% of Capacity / Project Daily Trips
CMP Intersection
CMP Highway System
Freeways
Source: OCTA

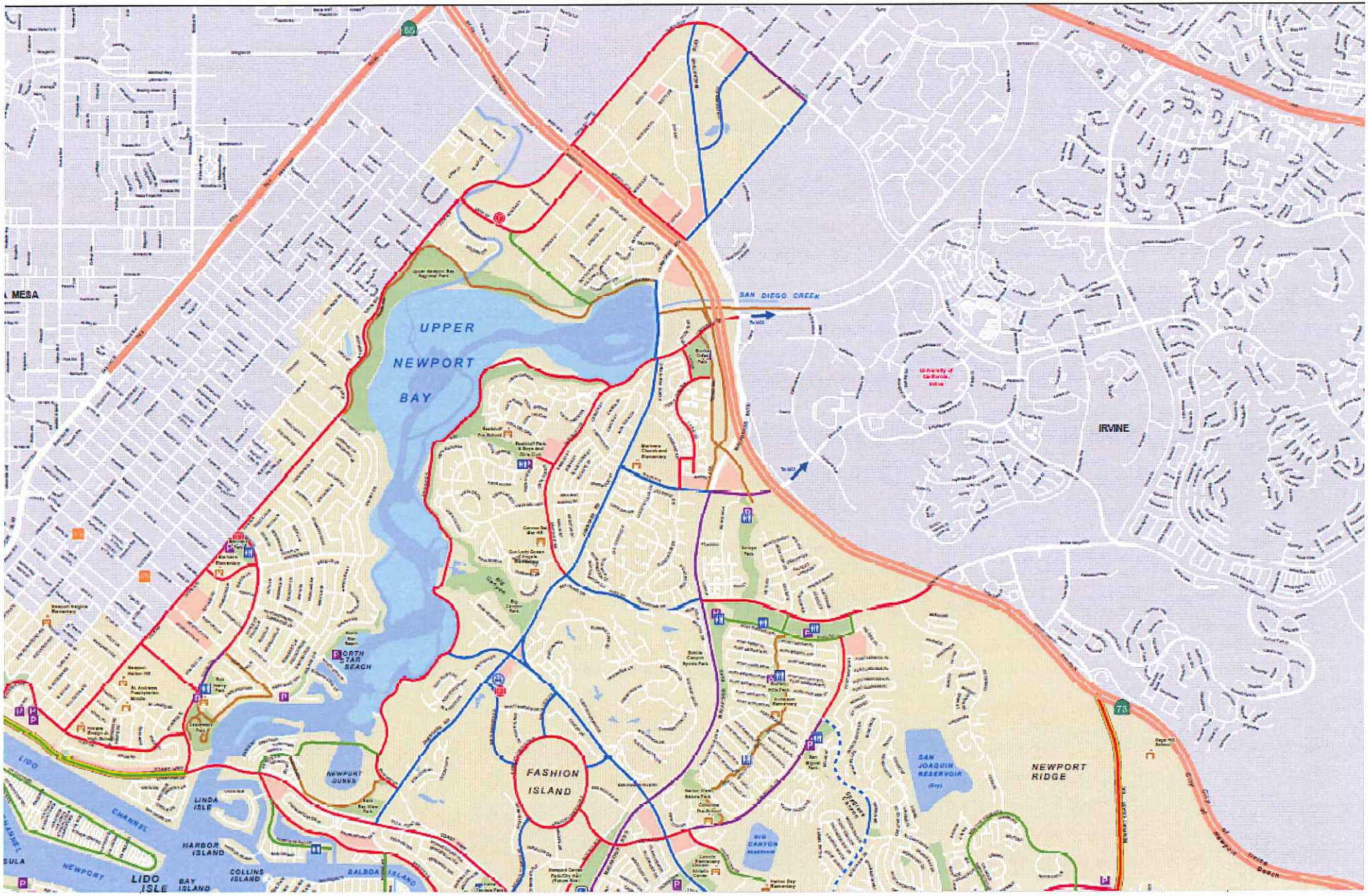
APPENDIX H
CITY OF NEWPORT BEACH
BIKE PLANS

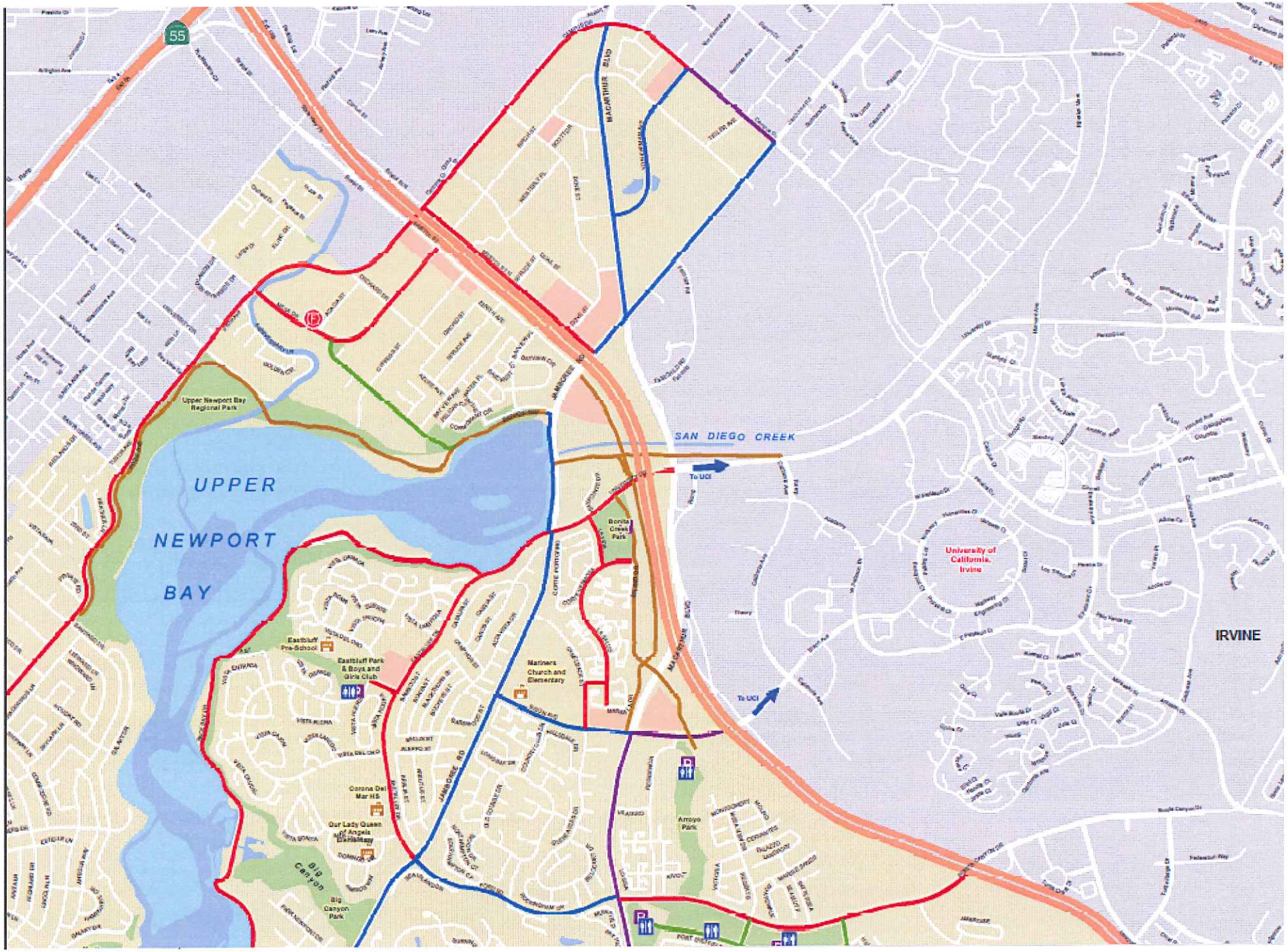
PACIF

Newport Beach Bike Map

- Bike Shop
- Hospital
- Police Station
- Fire Station
- Library
- School
- Public Restroom
- Parking Lot

- Shopping Area/Restaurants
- Park
- Bike Lane Marked on Pavement
- Okay to Ride on Sidewalk
- Bike Lane and Okay to Ride on Sidewalk
- Locals' Favorite Rides
- Paved Path Through Parks
- Steep Grade
- Areas of Extra Caution


UPPER
NEWPORT
BAY
SAN DIEGO CREEK
IRVINE
NEWPORT
RIDGE
SAN
JOAQUIN
RESERVOIR
FASHION
ISLAND
NORTH
STAR
BEACH
NEWPORT
DUNES
LINDA
ISLE
HARBOR
ISLAND
COLLINS
ISLAND
BALBOA
ISLAND
LIDO
ISLE
BAY
ISLAND
LIDO
CHANNEL
NEWPORT
BIG
CANYON
MESA


55
UPPER
NEWPORT
BAY
Upper Newport Bay Regional Park
SAN DIEGO CREEK
To UCI
To UCI
Bonita Creek Park
University of California, Irvine
IRVINE
Eastbluff Pre-School
Eastbluff Park & Boys and Girls Club
Mariners Church and Elementary
Corona Del Mar HS
Our Lady Queen of Angels Elementary
Big Canyon
Big Canyon Park
Arroyo Park
MACARTHUR BLVD
JAMBOREE RD
MAIN ST