Managed Lane Design Exceptions (Mandatory Standards)

Geometric Cross - Section

Reduced Shoulder Widths (Managed Lanes and Inside Mainline)

Location	Shoulder type	Begin Station	End Station	Length	Standard Width	Proposed Width	Cost to make std.	Reason for Exception *
				m	m	m	Dollars (million)	
				SOUTH				
Most Southern N/B Entrance	N/B Inside Mainline	195+36 "11-SD-15R"	211+00 "ML1"	1,564	3	2.4 to 3.0	3.0	Existing Conditions/Environmental Impacts
H Avenue O/C	Right Managed Lanes	195+98 "11-SD-15L"	-	69 (at bent)	3	2.4 to 3.0	4.0	Structure Cost
Route 163/15 Separation	Right Managed Lanes	199+34 "ML1"	-	68 (at bent)	3	2.7	30	Structure Cost
Route 163/15 Separation	S/B Inside Mainline	199+34 "ML1"	210+00 "ML1"	1,066	3	2.4 to 3.0	10	Existing Conditions/Structure Cost
Between Mira Mesa Blvd and Poway Rd	N/B inside Mainline	272+00 "ML1"	299+40 "ML1"	2,740	3	2.4 to 3.0	2.6	Exist.cond. Repl. Ex.Ret.Wall
				MIDDLE				
Sabre Springs DAR	N/B Inside Mainline	311+50 "ML2"	313+50 "ML2"	150	3	2.0 to 3.0	12	Aesthetic Treatment &Tight Geometry
Sabre Springs DAR & 15/56 Separation	S/B Inside Mainline	318+00 "ML2"	324+40 "ML2"	640	3	0.37 to 3.0	5	Aesthetic Treatment &Tight Geometry
Sabre Springs DAR & 15/56 Separation	N/B Inside Mainline	322+00 "ML2"	324+80 "ML2"	280	3	0.6 to 3.0	2.6	ROW & Tight Geometry
Carmel Mountain Road	N/B Inside Mainline	341+54 "ML2"	-	100 (at bent)	3	1.5 to 3.0	9	ROW & Tight Geometry
Carmel Mountain Road	S/B Inside Mainline	341+54 "ML2"	-	100 (at bent)	3	1.5 to 3.0	9	ROW & Tight Geometry
Camino Del Norte	NB Managed Lanes	363+10	363+80	70	3	1.8 to 3.0	6	Structure Cost
Duenda Rd. O/C	N/B Inside Mainline	402+43 "ML2"	403+26 "ML2"	83	3	1.4 to 3.0	2	ROW & Tight Geometry
Duenda Rd. O/C	S/B Inside Mainline	402+47 "ML2"	403+65 "ML2"	83	3	1.5 to 3.0	2	ROW & Tight Geometry
Highland Valley Rd. / West Bernardo Dr. O/C	N/B Inside Mainline	428+92 "ML2"	429+57 "ML2"	71 (at bent)	3	0.6 to 3.0	3	ROW & Tight Geometry
Highland Valley Rd. / West Bernardo Dr. O/C	S/B Inside Mainline	428+88 "ML2"	429+60 "ML2"	72 (at bent)	3	1.5 to 3.0	3	ROW & Tight Geometry
Lake Hodges Bridge	S/B Inside Mainline	431+95 "SB-6"	433+99 "SB-6"	204	3	1.7 to 4.0	40	Structure Cost
Lake Hodges Bridge	S/B Managed Lane	431+98"ML2"	434+00"ML2"	202	3	0.7 to 3.0	40	Structure Cost
Via Rancho Pkwy O/C	N/B Inside Mainline	442+70 "ML2"	449+30 "ML2"	509	3	0.6 to 3.0	20	ROW & Tight Geometry
Via Rancho Pkwy O/C	S/B Inside Mainline	442+64 "ML2"	450+50 "ML2"	786	3	0.6 to 1.5	20	ROW & Tight Geometry
Del Lago O/C	S/B Inside Mainline	450+50 "ML2"	460+59 "ML2"	1009	3	1.5 to 3.0	8	ROW & Tight Geometry
Del Lago O/C	N/B Managed Lane	447+95 "ML2"	449+30 "ML2"	135	3	1.2 to 3.0	7	ROW & Tight Geometry
Del Lago O/C	S/B Managed Lanes	449+45 "ML2"	449+90 "ML2"	45	3	1.2 to 3.6	7	ROW & Tight Geometry
				NORTH				
Citracado Pkwy	HOV Lane	474+00 "MLL1"	477+18 "MLL1"	318	3	2.3 to 3.0	3.0	ROW & Tight Geometry/Structure Cost

* See text for a more detailed discussion.

Reduced Shoulder Widths (Ramps)

Location	Shoulder type	Begin Station	End Station	Length	Standard Width	Proposed Width	Cost to make std.	Reason for Exception *
				m	m	m	Million Dollars	
				SOUTH				
Miramar Road O/C	S/B Loop On Ramp	241+55 "ML2"	-	70	2.4	0.5 to 2.4	0.4	ROW & Tight Geometry
				MIDDLE				
Sabre Springs DAR & 15/56 Separation	N/B Loop On Ramp	323+72 "ML2"	-	80	2.4	1.2 to 3.0	6	ROW & Tight Geometry
Del Lago DAR	N/B Off Ramp	444+15 "ML2"	444+60 "ML2"	45	2.4	3.0 to 0.9	5	ROW & Tight Geometry
Del Lago DAR	N/B Offramp DAR	444+60 "ML2"	446+60 "ML2"	200	2.4	0.9 to 2.4	6	ROW & Tight Geometry
Del Lago DAR	S/B On Ramp	444+04 "ML2"	444+80 "ML2"	76	2.4	3.0 to 1.4	8	ROW & Tight Geometry
Del Lago DAR	S/B Off Ramp	451+56 "ML2"	454+03 "ML2"	248	2.4	2.4 to 1.1	0.7	ROW & Tight Geometry
				NORTH				
Ninth Ave.	S/B On Ramp	493+12 "MLL1"	494+45 "MLL1"	133	2.4	2.4 to 1.7	1.8	ROW & Tight Geometry

Managed Lane Design Exceptions (Mandatory Standards)

Geometric Cross - Section (Continued)

Reduced Shoulder Widths (Due to sign structures/value pricing gantries)

Location	Shoulder type	Begin Station	End Station	Length, m	Standard Width, m	Proposed Width, m	Cost to make std.	Reason for Exception *
Hillery Drive Direct Access Ramps (braided at-grade access ramps)	NB Managed Lanes	258+85	259+15	30	3.0	2.4 to 3.0	5.0	ROW & Tight Geometry
	N/B Inside Mainline	258+85	259+00	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit between Mira Mesa Blvd and Mercy Rd	SB Managed Lanes	286+45	287+75	30	3.0	2.4 to 3.0	3.5	ROW & Tight Geometry
	SB Inside Mainline	286+60	286+75	15	3.0	2.4 to 3.0		
Between Mercy and Poway Rd.	NB Managed Lanes	290+85	291+15	30	3.0	2.4 to 3.0	3.0	ROW & Tight Geometry
	NB Inside Mainline	291+00	291+15	15	3.0	2.4 to 3.0		
Between Mercy and Poway Rd.	SB Managed Lanes	290+85	291+15	30	3.0	2.4 to 3.0	3.0	ROW & Tight Geometry
	SB Inside Mainline	291+00	291+15	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit between Mercy Rd. and Poway Rd.	SB Managed Lanes	300+25	300+65	30	3.0	2.4 to 3.0	4.0	ROW & Tight Geometry
	SB Inside Mainline	300+40	300+65	15	3.0	2.4 to 3.0		
Between Poway Rd. and 15/56	SB Managed Lanes	307+85	308+15	30	3.0	2.4 to 3.0	3.5	ROW & Tight Geometry
	SB Inside Mainline	308+00	308+15	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit at Camino Del Norte	NB Managed Lanes	362+35	362+65	30	3.0	2.4 to 3.0	8.0	ROW & Tight Geometry
	NB Inside Mainline	362+35	362+50	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit at Rancho Bernardo Road	SB Managed Lanes	408+25	408+55	30	3.0	2.4 to 3.0	7.0	ROW & Tight Geometry
	SB Inside Mainline	408+40	408+55	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit at Green Valley Creek	NB Managed Lanes	410+45	410+75	30	3.0	2.4 to 3.0	7.0	ROW & Tight Geometry
	NB Inside Mainline	410+45	410+60	15	3.0	2.4 to 3.0		

Managed Lane Design Exceptions (Mandatory Standards)

Managed Lane Sight Distance

Based on a design speed of 110 km/h, the standard sight distance is 220 m

Location	Section	Station	A (grade difference)	Design Speed	Proposed Sight Dist.	Proposed VC Length	Cost to make std.	Reason for Exception *
				km/hr	m	m	Million Dollars	
Near 163/15 Merge	ML 1 (southern section)	199+65	3.9 (sag)	80	137	120	29	Existing Conditions
Near 163/15 Merge	ML 1 (southern section)	203+47	7.5 (crest)	80	125	290	29	Existing Conditions
North end of exist Reversible Lanes	middle section	316+41	6.1 (crest)	100	188	534	20	Existing Conditions
North end of exist Reversible Lanes	middle section	320+80	3.13 (sag)	85	146	90	20	Existing Conditions
Duenda	middle section	401+37	2.9 (crest)	90	160	182	30	Existing Conditions

Profile: PHS2.dgn and phase3/south1.dgn

Ramp Sight Distance

Based on a design speed of 80 km/h, which requires a sight distance of 130 m.

Location	Section	Station	A (grade difference)	Design Speed	Proposed Sight Dist.	Proposed Length	Cost to make std.	Reason for Exception *
				km/hr	m	m	Million Dollars	
Sabre Springs DAR OC	Slip Ramp	320+40	4 (crest)	60	80	60	35	Existing Conditions

* See text for a more detailed discussion.

Managed Lane Design Exceptions (Mandatory Standards)

Interchange Spacing - CL to CL

Location	Spacing Type			Required Length	Proposed	Existing	Cost to make std.	Reason for Exception *
							Million Dollars	
163/15 Interchange to Miramar Way	CL to CL: FWY to Local			3000 m	2692 m	2692 m	100	Existing Condition/Environmental Impacts/Tight Geometry
Miramar Road to Carroll Canyon Road	CL to CL: Local to Local			1500 m	1150 m	1150 m	150	Existing Condition/Environmental Impacts/Tight Geometry
Mercy Rd to Poway Rd	CL to CL: Local to Local			1500 m	1372 m	1372 m	100	Existing Condition/Environmental Impacts/Tight Geometry
Poway Rd to 15/56 Separation	CL to CL: Local to FWY			3000 m	1954 m	1954 m	200	Existing Condition/Environmental Impacts/Tight Geometry
15/56 Separation to Carmel Mtn Rd	CL to CL: FWY to Local			3000 m	1782 m	1782 m	300	Existing Condition/Environmental Impacts/Tight Geometry
Bernardo Ctr Dr to Rancho Bernardo Rd	CL to CL: Local to Local			1500 m	1204 m	1204 m	160	Existing Condition/Environmental Impacts/Tight Geometry
Via Rancho Pkwy to Centre City Pkwy	CL to CL: Local to Local			1500 m	1113 m	1113 m	200	Existing Condition/Environmental Impacts/Tight Geometry
Ninth Avenue to Valley Pkwy	CL to CL: Local to Local			1500 m	861 m	861 m	150	Existing Condition/Environmental Impacts/Tight Geometry
Valley Parkway to SR 78	CL to CL: Local to FWY			3000 m	1404 m	1404 m	260	Existing Condition/Environmental Impacts/Tight Geometry

* See text for a more detailed discussion.
Note: See text for Direct Access Ramp interchange spacing.

Interchange Spacing - Weaving

Location	Spacing Type			Required Length	Proposed	Existing	Cost to make std.	Reason for Exception *
							Million Dollars	
S/B Miramar Way On to S/B 163/15 Off	Weaving			1500 m	1263 m	1303 m	100	Existing Condition/Environmental Impacts/Tight Geometry
N/B Miramar Way On to N/B Miramar Rd Off	Weaving			600 m	559 m	697 m	3	Existing Intersections/Tight Geometry
N/B Miramar Rd On to N/B C. Cyn Rd Off	Weaving			600 m	542 m	485 m	80	Existing Condition/Environmental Impacts/Tight Geometry
S/B C. Cyn Rd On to S/B Miramar Rd Off	Weaving			600 m	417 m	376 m	160	Existing Condition/Environmental Impacts/Tight Geometry
S/B 15/56 On to S/B RPQ/Poway Rd Off	Weaving			1500 m	437 m	508 m	200	Existing Condition/Environmental Impacts/Tight Geometry
N/B 15/56 On to N/B CMR Off	Weaving			1500 m	1130 m	1065 m	300	Existing Condition/Environmental Impacts/Tight Geometry
S/B CMR On to S/B 15/56 Off	Weaving			1500 m	966 m	1080 m	300	Existing Condition/Environmental Impacts/Tight Geometry
N/B Bernardo Ctr Dr to N/B R.B. Rd Off	Weaving			600m	451 m	534 m	150	Existing Condition/Environmental Impacts/Tight Geometry
S/B Centre City Pkwy. On to S/B V R Pkwy Off	Weaving			600 m	422 m	583 m	100	Existing Condition/Environmental Impacts/Tight Geometry
N/B Ninth Ave On to N/B Valley Pkwy Off	Weaving			600 m	337 m	298 m	150	Existing Condition/Environmental Impacts/Tight Geometry
S/B Valley Pkwy On to S/B Ninth Ave Off	Weaving			600m	580 m	426 m	150	Existing Condition/Environmental Impacts/Tight Geometry
N/B Valley Pkwy On to N/B SR 78 Off	Weaving			1500 m	535 m	531 m	260	Existing Condition/Environmental Impacts/Tight Geometry
S/B SR 78 On to S/B Valley Pkwy Off	Weaving			1500 m	451 m	425 m	260	Existing Condition/Environmental Impacts/Tight Geometry

* See text for a more detailed discussion.
Note: See text for Direct Access Ramp interchange spacing.

Managed Lane Design Exceptions (Mandatory Standards)

Horizontal Clearances

To Fixed Objects CHDM Index 309.1(3)a

Location	Shoulder type	Begin Station	End Station	Length	Standard Width	Proposed Width	Cost to make std.	Reason for Exception *
			-	m	m	m	Million Dollars	
N/B Entrance South of H Ave	N/B Inside Mainline	195+36 "11-SD-15R"	211+00 "ML1"	1,564	3	2.4 to 3.0	3.0	Existing Conditions/Environmental Impacts
H Avenue O/C	Right Managed Lanes	195+98 "11-SD-15L"	-	69 (at bent)	3	2.4 to 3.0	4.0	Structure Cost
SR 163 Interchange O/C	Right Managed Lanes	199+34 "ML1"	-	68 (at bent)	3	2.7	40	Structure Cost
SR 163 Interchange O/C	S/B Inside Mainline	199+34 "ML1"	210+00 "ML1"	1,066	3	2.4 to 3.0	10	Existing Conditions/Structure Cost
Sabre Springs DAR & 15/56 Separation	N/B Inside Mainline	322+00 "ML2"	324+80 "ML2"	280	3	0.6 to 3.0	2.6	ROW & Tight Geometry
Carmel Mountain Road	N/B Inside Mainline	341+54 "ML2"	-	100 (at bent)	3	1.5 to 3.0	9	ROW & Tight Geometry
Carmel Mountain Road	S/B Inside Mainline	341+54 "ML2"	-	100 (at bent)	3	1.5 to 3.0	9	ROW & Tight Geometry
Camino Del Norte	NB Managed Lanes	363+10	363+80	70	3	1.8 to 3.0	6	Structure Cost
Duenda Rd. O/C	N/B Inside Mainline	402+43 "ML2"	403+26 "ML2"	83	3	1.4 to 3.0	3	ROW & Tight Geometry
Duenda Rd. O/C	S/B Inside Mainline	402+47 "ML2"	403+65 "ML2"	83	3	1.5 to 3.0	3	ROW & Tight Geometry
Highland Valley Rd. / West Bernardo Dr. O/C	N/B Inside Mainline	428+92 "ML2"	429+57 "ML2"	71 (at bent)	3	0.6 to 3.0	3	ROW & Tight Geometry
Highland Valley Rd. / West Bernardo Dr. O/C	S/B Inside Mainline	428+88 "ML2"	429+60 "ML2"	72 (at bent)	3	1.5 to 3.0	3	ROW & Tight Geometry
Lake Hodges Bridge	S/B Inside Mainline	431+95 "SB-6"	433+99 "SB-6"	204	3	1.7 to 4.0	40	Structure Cost
Lake Hodges Bridge	S/B Managed Lane	431+98"ML2"	434+00"ML2"	202	3	0.7 to 3.0	40	Structure Cost
Via Rancho Pkwy O/C	N/B Inside Mainline	442+70 "ML2"	449+30 "ML2"	509	3	0.6 to 3.0	20	ROW & Tight Geometry
Via Rancho Pkwy O/C	S/B Inside Mainline	442+64 "ML2"	450+50 "ML2"	786	3	0.6 to 1.5	20	ROW & Tight Geometry
Del Lago O/C	S/B Inside Mainline	450+50 "ML2"	460+59 "ML2"	1009	3	1.5 to 3.0	8	ROW & Tight Geometry
Via Rancho Pkwy O/C	S/B Managed Lane	444+04 "ML2"	444+86 "ML2"	82 (at bent)	3	1.2 to 3.0	16	ROW & Tight Geometry
Del Lago O/C	N/B Managed Lane	447+95 "ML2"	449+30 "ML2"	135	3	1.2 to 3.0	7	ROW & Tight Geometry
Del Lago O/C	S/B Managed Lanes	449+45 "ML2"	449+90 "ML2"	45	3	1.2 to 3.6	7	ROW & Tight Geometry
Citracado Pkwy	HOV Lane	474+00 "MLL1"	477+18 "MLL1"	318	3	2.3 to 3.0	3.0	ROW & Tight Geometry/Structure Cost
Del Lago DAR	N/B Off Ramp	444+15 "ML2"	446+60 "ML2"	45	2.4	3.0 to 0.9	5	ROW & Tight Geometry
Del Lago DAR	N/B Off Ramp	444+20 "ML2"	446+60 "ML2"	240	2.4	0.9 to 2.4	6	ROW & Tight Geometry
Del Lago DAR	S/B On Ramp	444+04 "ML2"	444+80 "ML2"	76	2.4	3.0 to 1.4	8	ROW & Tight Geometry
Del Lago DAR	S/B Off Ramp	451+56 "ML2"	454+03 "ML2"	248	2.4	2.4 to 1.1	8	ROW & Tight Geometry
Ninth Ave.	S/B On Ramp	493+12 "MLL1"	494+45 "MLL1"	133	2.4	2.4 to 1.7	1.8	ROW & Tight Geometry

Horizontal Clearances

Reduced Shoulder Widths (Due to sign structures/value pricing gantries)

Location	Shoulder type	Begin Station	End Station	Length, m	Standard Width, m	Proposed Width, m	Cost to make std.	Reason for Exception *
Hillery Drive Direct Access Ramps (braided at-grade access ramps)	NB Managed Lanes	258+85	259+15	30	3.0	2.4 to 3.0	5.0	ROW & Tight Geometry
	N/B Inside Mainline	258+85	259+00	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit between Mira Mesa Blvd and Mercy Rd	SB Managed Lanes	286+45	287+75	30	3.0	2.4 to 3.0	3.5	ROW & Tight Geometry
	SB Inside Mainline	286+60	286+75	15	3.0	2.4 to 3.0		
Between Mercy and Poway Rd.	NB Managed Lanes	290+85	291+15	30	3.0	2.4 to 3.0	3.0	ROW & Tight Geometry/Environmental Impacts
	NB Inside Mainline	291+00	291+15	15	3.0	2.4 to 3.0		
Between Mercy and Poway Rd.	SB Managed Lanes	290+85	291+15	30	3.0	2.4 to 3.0	3.0	ROW & Tight Geometry
	SB Inside Mainline	291+00	291+15	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit between Mercy Rd. and Poway Rd.	SB Managed Lanes	300+25	300+65	30	3.0	2.4 to 3.0	4.0	ROW & Tight Geometry
	SB Inside Mainline	300+40	300+65	15	3.0	2.4 to 3.0		
Between Poway Rd. and Sabre Springs	SB Managed Lanes	307+85	308+15	30	3.0	2.4 to 3.0	3.5	ROW & Tight Geometry
	SB Inside Mainline	308+00	308+15	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit at Camino Del Norte	NB Managed Lanes	362+35	362+65	30	3.0	2.4 to 3.0	8.0	ROW & Tight Geometry
	NB Inside Mainline	362+35	362+50	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit at Rancho Bernardo Road	SB Managed Lanes	408+25	408+55	30	3.0	2.4 to 3.0	7.0	ROW & Tight Geometry
	SB Inside Mainline	408+40	408+55	15	3.0	2.4 to 3.0		
Managed Lanes at grade access exit at Green Valley Creek	NB Managed Lanes	410+45	410+75	30	3.0	2.4 to 3.0	7.0	ROW & Tight Geometry
	NB Inside Mainline	410+45	410+60	15	3.0	2.4 to 3.0		

Managed Lane Design Exceptions (Mandatory Standards)

Horizontal Clearances (continued)

To Walls CHDM Index 309.1(3)b

Location	Shoulder type	Begin Station	End Station	Length	Standard Width	Proposed Width	Cost to make std.	Reason for Exception *
				m	m	m	Million Dollars	
Miramar Road O/C	S/B Loop On Ramp	241+55 "ML2"	-	70	2.4	0.5 to 2.4	0.4	Bridge Abutement
Between Mira Mesa Blvd and Poway Rd	N/B inside Mainline	272+00 "ML1"	299+40 "ML1"	2,740	3	2.8 to 3.0	2.6	Exist.cond. Repl. Ex.Ret.Wall
Sabre Springs DAR	N/B Inside Mainline	312+00 "ML2"	313+50 "ML2"	150	3	2.0 to 3.0	12	Aesthetic Treatment &Tight Geometry
15/56 Separation	N/B Loop On Ramp	323+72 "ML2"	-	80	2.4	1.2 to 3.0	6	ROW & Tight Geometry
Sabre Springs DAR & 15/56 Separation	S/B Inside Mainline	318+00 "ML2"	324+40 "ML2"	640	3	0.37 to 3.0	5	Aesthetic Treatment &Tight Geometry

Superelevation

Location	Station	Radius	Design Speed	Standard Rate	Proposed Rate	Comfortable Rate	Cost to make std.	Reason for Exception *
		m	km/hr	%	%	CHDM (fig. 203.2)	Million Dollars	
Miramar Rd. / Pomerado Rd. (NB offramp)	243+40	97	50	12	6.6	4	2.3	ROW & Tight Geometry
Poway Rd. (NB offramp)	303+60	231	45	11	8	-2	2.8	ROW & Tight Geometry
Sabre Springs (NB ML offramp)	316+00	203	70	11	8	5	7	ROW & Tight Geometry
Sabre Springs (NB ML offramp)	317+40	260	60	10	8	-1	7	ROW & Tight Geometry
Sabre Springs DAR O/C Bridge	10+88	60	35	12	2	2	40	Outside Vertical Limit for Ramp Tie-in
Sabre Springs DAR/Connector Road	12+22	100	40	12	3	-2	40	ROW & Tight Geometry
Sabre Springs DAR/Connector Road	13+50	200	40	11	3	-2	40	ROW & Tight Geometry
Sabre Springs DAR/Connector Road	14+78	100	40	12	4	-2	40	ROW & Tight Geometry
Sabre Springs DAR/Connector Road	16+50	25	30	12	4	4	40	ROW & Tight Geometry
Carmel Mtn Rd. (offramp)	340+00	715	80	5	3	-2	2.6	ROW & Tight Geometry
Carmel Mtn Rd. (offramp)	341+60	90	45	12	3	2	2.6	ROW & Tight Geometry
Rancho Bernardo Rd. (offramp)	389+60	206	70	11	8.5	5	2.4	ROW & Tight Geometry
Rancho Bernardo Rd. (offramp)	391+40	182	50	12	8.5	-2	2.4	ROW & Tight Geometry
Hale Avenue	508+00	1460	110	2	-2	-2	7	Constrained by existing bridge.

* See text for a more detailed discussion.

Vertical Clearances (temporary)

Location				Required Clearance	Proposed Clearance		Cost to make std.	Reason for Exception *
				m	m		Million Dollars	
Mira Mesa Blvd.				4.6	4.30		2.0	Construction Falsework/Avoid Lowering Road
Felicita				4.6	4.30		1.0	Construction Falsework/Avoid Lowering Road
Citracado				4.6	4.43		1.5	Construction Falsework/Avoid Lowering Road

* See text for a more detailed discussion.

Managed Lane Design Exceptions (Advisory Standards)

Ramp Departure Angles

Location	Lane Type	Station			Standard Angle	Proposed Angle	Cost to make std	Reason for Exception *
					Degrees	Degrees	Dollars (million)	
Miramar Way	NB Off-Ramp	221+00			4.879	3.57	1.5	Existing Conditions/Environmental Impacts
Carol Canyon Rd.	SB Off-Ramp	250+20			4.879	3.95	9.0	ROW & Tight Geometry
Carrol Canyon Rd.	NB Off-Ramp	250+60			4.879	3.93	2.0	ROW & Tight Geometry
Hillery DAR	NB Managed Lane DAR	255+03			4.879	2.48	10	Constrained by N/B lanes
Hillery DAR	SB Managed Lane DAR	269+53			4.879	1.72	38	Constrained by S/B lanes
Poway Rd.	SB Off-Ramp	307+88			4.879	3.08	4.0	ROW & Tight Geometry/Env Impacts
Sabre Springs DAR	NB Off-Ramp	315+00			4.879	4.01	10.0	ROW & Tight Geometry
Sabre Springs DAR	SB Managed Lane DAR	325+00			4.879	3.1	8	Constrained by S/B lanes
15/56 Separation	SB Off-Ramp	328+80			4.879	2.86	15.0	ROW & Tight Geometry
Camino Del Norte	NB Off-Ramp	356+00			4.879	4.12	4.0	ROW & Tight Geometry
Camino Del Norte	SB Off-Ramp	367+00			4.879	3.27	2.6	ROW & Tight Geometry
Rancho Bernardo DAR	NB Managed Lane DAR	379+00			4.879	1.15	15	Constrained by N/B lanes
Rancho Bernardo DAR	SB Managed Lane DAR	390+00			4.879	1.15	13	Constrained by S/B lanes
Ranch Bernardo Rd.	SB Off-Ramp	396+00			4.879	4.367	2.6	ROW & Tight Geometry
Highland Valley Rd / W. Benardo	SB Off-Ramp	430+00			4.879	4.023	5.0	ROW & Tight Geometry/ Env Impacts
Via Rancho PKWY	SB Off-Ramp	446+00			4.879	2.607	7.0	ROW & Tight Geometry
Citracado Parkway	SB Off-Ramp	479+50			4.879	3.316	1.5	ROW & Tight Geometry
Del Lago	NB Managed Lane DAR	444+80			4.879	2.5	26	Constrained by N/B lanes
Del Lago	SB Managed Lane DAR	454+60			4.879	2.79	26	Constrained by S/B lanes

* See text for a more detailed discussion.

Converging Dimensions for Entrance Ramps

Location	Lane Type	Station	Standard 2.0 to 0 pt	Prop 2.0 to 0 pt	Standard 4.25 to 2.0 pt	Prop 4.25 to 2.0 pt	Cost to make std	Reason for Exception *
			m	m	m	m	Dollars (million)	
Near 163/15 Merge **	NB On-Ramp	203+20	100	25	50	11	8	Replace Structure
Miramar Way **	NB On-Ramp	229+00	100	130			1.1	Existing Conditions
Hillery DAR	SB Managed Lane DAR	255+41	100	70	50	64	2.5	ROW & Tight Geometry
Hillery DAR	NB Managed Lane DAR	267+00	100	100	50	165	2.9	ROW & Tight Geometry
Mira Mesa Blvd. **	NB On-Ramp (loop)	269+00	100	82			2.6	Structure Widening
Sabre Springs ***	Temporary Slip Ramp	319+00	100	100	50	78	8	ROW & Tight Geometry
Rancho Bernardo DAR	SB Managed Lane DAR	380+00	100	100	50	116	10	ROW & Tight Geometry
Rancho Bernardo DAR	NB Managed Lane DAR	388+00	100	100	50	114	9	ROW & Tight Geometry
Rancho Bernardo Rd.	NB On-Ramp	395+00	100	100	50	95	1.0	ROW & Tight Geometry
Centre City Pkwy **	SB On-Ramp	450+00	100	117	50	85	1.7	ROW & Tight Geometry
Del Lago	SB Managed Lane DAR	445+00	100	100	50	144	15	ROW & Tight Geometry
Del Lago	NB Managed Lane DAR	453+00	100	100	50	116	15	ROW & Tight Geometry
Citracado Parkway	SB On-Ramp	470+40	100	100	50	82	1.0	ROW & Tight Geometry
Ninth Ave	SB On-Ramp	492+40	100	100	50	130	3.4	ROW & Tight Geometry

* See text for a more detailed discussion.
** This ramp picks up an auxiliary lane
*** Temporary slip ramp will be removed when Southern Segment is constructed.

Managed Lane Design Exceptions (Advisory Standards)

Vertical Alignment

Managed Lane - Minimum length of vertical curve based on design speed of 110 km/h = 68 mph

Location	Section	Station	A (grade difference)	Type	Required Length	Proposed Length	Cost to make std	Reason for Exception *
					m	m	Dollars (million)	
Main Lane - Various Locations *	NB and SB Main Lanes	210+00 to 516+00	Var	N/A	60	PI to PI	420	Existing Pavement / Environmental Impacts
Sabre Springs DAR	SB Off-Ramp	322+55	6.6	Sag	160	80	30	Constrained by Column
Sabre Springs DAR	Slip Ramp **	320+40	4	Crest	160	60	35	Profile must match SB Pave.

* See text for a more detailed discussion.

** Temporary slip ramp will be removed when Southern Segment is constructed.

Minimum Median Width

Location		Begin Station	End Station	Length	Standard Width	Proposed Width	Cost to make std	Reason for Exception *
				m	m	m	Dollars (million)	
Northern Segment		479+40	514+00	3,460	10.8	9.0	26	ROW & Tight Geometry

* See text for a more detailed discussion.

Two Lane Exit Ramp Standard

Location	Ramp Type	Station	Existing Volume	2020 Volume	Required Lanes	Proposed Lanes	Cost to make std	Reason for Exception *
							Dollars (million)	
Reversible HOV lane - SB exit to SR-163	SB Exit	206+00	1250	2150	2	1	15	New Structure and Modify IC
Miramar Way	NB Exit	226+00	1300	1600	2	1	10	Tight Geometry / Rebuild IC
Mira Mesa Blvd	NB Exit	259+00	1600	2200	2	1	4	ROW & Tight Geometry
Mira Mesa Blvd	SB Exit	271+00	1400	2000	2	1	3.0	ROW & Tight Geometry
Carmel Mtn. Road	SB Exit	344+00	1100	1520	2	1	5	ROW & Tight Geometry

Temporary Vertical Clearance (Railroad)

Location				Required Clearance	Proposed Clearance		Cost to make std.	Reason for Exception *
				m	m		Dollars (million)	
W. Washington Ave OH				7.01	6.86		4	Falsework / Avoid Lowering Tracks

Auxiliary Lanes

Location	Direction			Required Length	Proposed Length		Cost to make std.	Reason for Exception *
				m	m		Dollars (million)	
Miramar Rd. to Carroll Canyon	Northbound			600	542		6	ROW & Tight Geometry / Env Impacts

* See text for a more detailed discussion.