Job:	300197 - South Park Bridge Replacement		
Job Number:	45647		
Alignment:	SPB		
Designed By:	Eric Evans	Date:	6/8/2009
Checked By:	Monty Freas	Date:	6/15/2009
Revised By:	EE/MF	Date:	6/17/2009

Notes:

Criteria	Design Element	Station From	Station To	Offset	Calculation	2007 King County Design and Construction Standards	2008 City of Seattle Right-Of-Way Improvements Manual	2004 AASHTO	Design Deviation
Design Parameters									
Functional Classification	Urban Principal Arterial	23+41.00	47+00.00	-	-	Urban Principal Arterial (KC;2-8)	Principal Arterial (COS; 4.2.1)	Low-Speed Urban (Pg 148)	No
Design Speed	35 mph	-	-	-	Posted = 30 mph	Varies 40 to 60 mph (KC;2-10)	Design speed is 5 mph greater than posted (COS;4.4.2)	20 mph to 45 mph (Pg 71)	No
Design Vehicle	WB-50	23+41.00	47+00.00	-	WB-50	Varies	Single Unit (SU) w/ 42' turning radius (COS;4.8.3)	Depends on facility (Pg 616)	No
Pavement Design	PCC 1.0 ft CSBC 0.5 ft	23+41.00	45+10.00	-	-	Per KC PM (Email dated Nov 10, 2008	-	-	No
Horizontal Alignment									
Minimum Radius With Normal Crown	R = 2200 ft	27+09.36	32+41.70	-	-	460 ft (KC;2-14)	420 ft (COS; 4.4.2)	510 ft (Pg 151)	No
	R = 1250 ft	38+66.92	40+27.71	-					No
	R = 925 ft	41+60.41	45+00.02	-					No
Horizontal Stopping Sight Distance/Horizontal Sightline Offset	10.5 ft (See Horizontal Sight Distance 16th Ave Exhibit, in Calc Book)	27+09.36	32+41.70	-	HSO=R((1-COS 28.65*S/R)) S = 250 ft (Pg 112) R = 2183.50 ft HSO = 3.6'	S=250 ft (KC;2-14)	Not Specified	HSO=R((1-COS 28.65*S/R)) S = Stopping Sight Distance R = CL Radius (AASHTO PG 227)	No
	No Obstruction	38+66.92	40+27.71		HSO=R((1-COS 28.65*S/R)) S = 250 ft (Pg 112) R = 2473.5 HSO = 3.2'				No
	10.5 ft (See Horizontal Sight Distance 16th Ave Exhibit, in Calc Book)	41+60.41	45+00.02		HSO=R((1-COS 28.65*S/R)) S = 250 ft (Pg 112) R = 908.50 ft HSO = 8.6'				No
Taper Length	60 ft	46+00.00	46+60.00	RT & LT	L_{min} = 2ft(35mph)^2/60 = 40.8 ft	L=WS (KC; 4-13)	L=WS^2/60 (COS;4.6.2)	L=WS (Pg 253)	No
Lane Width	15 ft NB Lane 1	23+42.00	26+55.00	RT		11 ft (KC;2-10)	12 ft (CL)(COS;4.6.2)	11 ft for Urban Arterials (Pg 472)	No
	11ft NB Lane 1	26+55.00	46+00.00	RT			12 ft (CL)(COS;4.6.2)		No
	11ft-13ft NB Lane 1	46+00.00	46+60.00	RT			12 ft (CL)(COS;4.6.2)		No
	13ft NB Lane 1	46+60.00	47+00.00	RT	Match Existing		12 ft (CL)(COS;4.6.2)		No
	11ft NB Lane 2	23+42.00	46+00.00	RT			11 ft (TL)(COS;4.6.2)		No
	11ft-9ft NB Lane 2	46+00.00	46+60.00	RT			11 ft (TL)(COS;4.6.2)		No
	9ft NB Lane 2	46+60.00	47+00.00	RT	Match Existing		11 ft (TL)(COS;4.6.2)		No
	12ft SB Lane 1	23+42.00	25+30.00	LT			12 ft (CL)(COS;4.6.2)		No
	12'-14.5' SB Lane 1	25+30.00	27+18.00	LT			12 ft (CL)(COS;4.6.2)		No
	11ft SB Lane 1	27+18.00	46+00.00	RT			12 ft (CL)(COS;4.6.2)		No
	11'-11.5' SB Lane 1	46+00.00	46+60.00	LT			12 ft (CL)(COS;4.6.2)		No
	11.5ft SB Lane 1	46+60.00	47+00.00	LT	Match Existing		11 ft (TL)(COS;4.6.2)		No
	11ft SB Lane 2	23+42.00	46+00.00	LT			11 ft (TL)(COS;4.6.2)		No
	11ft-9ft SB Lane 2	46+00.00	46+60.00	LT			11 ft (TL)(COS;4.6.2)		No
	9ft SB Lane 2	46+60.00	47+00.00	LT	Match Existing		12 ft (CL)(COS;4.6.2)		No
Bike Lane Width	5 ft	26+55.00	47+00.00	RT	-	5 ft (KC; 2-10)	5 ft (COS;4.13.3)	5 ft (AASHTO Bicycle Manual 1999;Pg 23)	No
	5 ft to 7.75 ft	46+00.00	46+60.00	RT	-				No
	7.75 ft	46+60.00	47+00.00	RT	-				No
	5 ft	27+18.00	47+00.00	LT	-				No

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Vertical Alignment									
Grade	-0.40%	23+40.00	24+15.00	-	-	9% Max (KC;2-10)	9% Max (COS;4.4.2)	7% Max (Pg 472)	No
	-0.20%	24+15.00	24+83.00						No
	0.33%	24+83.00	25+50.00						No
	5.00%	28+00.00	31+62.50						No
	-5.00%	36+37.50	40+17.00						No
	-0.20%	42+77.00	44+50.00						No
	-0.47%	44+50.00	45+10.00						No
Vertical Curve (VC) Length	250 ft (Sag)	25+50.00	28+00.00	-	Vc_{min} = 123'	Not Specified	VC_{min} = 3*(DS) DS = Design Speed (mph) (COS;4.4.2)	Sag $VC_{min}=A(DS)^2/46.5$ A = Grade Diff DS = Design Speed (mph) (Pg 274)	No
	475 ft (Crest)	31+62.50	36+37.50		Vc_{min} = 470'			Sag $VC_{min}=AS^2/100(SQRT(2*h1))+(SQRT(2*h2)2)$ A = Grade Diff S = Site Distance (250 ft) h1= Eye Height (3.5ft) h2= Object Height (0.5ft) DS = Design Speed (mph) (Pg 267)	No
	260 ft (Sag)	40+17.00	42+77.00		Vc_{min} = 126'			Sag $VC_{min}=A(DS)^2/46.5$ A = Grade Diff DS = Design Speed (mph) (Pg 274)	No
Rate of Vertical Curvature (K)	50.63 (Sag)	25+90.00	28+40.00	-	-	Not Specified	Not Specified	Crest K_{min}=29 Sag K_{min}=49 (Pg 272 & 277)	No
	32.00 (Crest)	32+40.00	35+60.00						No
	52.18 (Sag)	40+00.00	42+60.00						No
Vertical Stopping Sight Distance	S=256 ft	25+50.00	28+00.00	-	See VSSD Calc Sheet "Vertical Alignment: SPB" in SPB Design Calculations notebook	Not Specified	Not Specified	$VSSD_{min}$ = 250 ft (Sag); (Pg 272 & 277) Sag - S<L; $L=AS^2/(400+3.5S)$ Sag - S>L; L=2S-(400+3.5S/A) S = Stopping Sight Distance L = Vertical Curve Length A = Grade Diff ;(Pg 273)	No
	S=268 ft	31+62.50	36+37.50					$VSSD_{min}$ = 250 ft (Crest);(Pg 272 & 277) Crest - S<L; $L=AS^2/2158$ Crest - S>L; L=2S-2158/A S = Stopping Sight Distance L = Vertical Curve Length A = Grade Diff ; (Pg 268)	No
	S=262 ft	40+17.00	42+77.00					$VSSD_{min}$ = 250 ft (Sag); (Pg 272 & 277) Sag - S<L; $L=AS^2/(400+3.5S)$ Sag - S>L; L=2S-(400+3.5S/A) S = Stopping Sight Distance L = Vertical Curve Length A = Grade Diff ;(Pg 273)	No
Vertical Clearance	N/A	-	-	-		16.5 ft (KC; 6.02)	20 ft (COS; 4.20.2)	16 ft (Pg 472)	N/A
Navigation Channel Vertical Clearance	34.6 ft	-	-	-	Vert Clearance = 50 ft (FinishGrade) - 7.77' (Structure Depth) - 7.64' (MeanHighWaterElevation); Vert Clearance = **34.59 ft**	34 ft	Not Specified	Not Specified	No

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Cross Section									
Superelevation	2% Normal Crown	23+41.00	47+00.00	-	-	6% max (KC;2-10)	4% max (COS;4.4.2)	4%	No
Min Radii w/out Superelevation	R = 2200 ft	27+09.36	32+41.70	-	-	Not Specified	Not Specified	R_{min} = 510 ft (Pg 151)	No
	R = 1250 ft	38+66.92	40+27.71						No
	R = 925 ft	41+62.65	45+03.45						No
Sidewalk Width	11 ft	23+42.00	25+80.00	RT	-	8 ft min (KC;3-4)	6 ft (COS;4.11.2)	4 ft to 8 ft (Pg 358)	No
	10 ft	23+42.00	25+80.00	LT					No
	6 ft	26+54.00	45+10.00	RT		5 ft min (KC;3-3)			No
	6 ft	27+18.00	45+10.00	LT					No
Cut/Fill Slope	2:1	-	-	-	-	2:1 Max (KC;5.03)	2:1 Max (COS;4.4.2)	4:1 (No C/G) (Pg 326)	No
Intersection									
Entering Sight Distance at Intersections	See "Entering Sight Distance Exhibit" in Calc Book	-	-	-	See "Entering Sight Distance Exhibit" in Calc Book	390 ft (KC;2-13)	Not Specified	See AASHTO (Pg 661)	No
Cross Street Angle	70°49'6"	26+36.85	Dallas-E	RT	Match Existing	85° to 95° (KC;2-19)	Not Specified	60° to 120° (Pg 400)	Yes
	68°41'15"	26+38.32	Dallas-W	LT	Match Existing				Yes
Curb Radius	15 ft	23+24.73	23+31.08	RT	Match Existing	35 ft (KC;2-19)	25 ft (COS;4.8.2)	Varies (Pg 611-612)	No
	20 ft	25+78.18	Dallas-E	RT	Use 20 ft per direction from COS PM (pw:\\HNTBW352:PWWestCoast\Documents\Seattle Projects\45647 South Park Bridge\Deliverables\Task11\RoadwayGeom11.1.1\Comments\SPB-Comments_on_Rdwy_Des_14NO				Yes
	20 ft	Boat Access	26+54.16	RT	Radius used to make 11 ft lanes				Yes
	180 ft	25+65.36		LT	Used to accommodate WB-40				No
	25 ft	26+25.37		LT					No
	100 ft	26+37.20	Dallas-W	LT					No
	35 ft	Dallas-W	27+22.92	LT					No
	20 ft	24+55.77	25+85.57	RT	Parking	See COS stds	Fig 4-14 (COS Std Plans)	Not Specified	No
	20 ft	43+12.55	44+04.22	LT	Bridge Tender Parking				No
Parking Stalls	8' x 20'	24+55.77	25+85.57	RT	Parking	See COS stds	Exhibit 23.54.030D (Parking Aisle Dimensions)	See AASHTO (Pg 375)	No
	8' x 20'	43+12.55	44+04.22	LT	Bridge Tender Parking				No
Curb Type	Type 410C	23+41.00	45+15.00	RT/LT	Type 410C	See COS stds	COS Std Plan No 410	-	No
Curb Taper	37:1	25+30.00	25+65.36	RT	35:1 (Minimum Taper Rate)	See WSDOT "Right-Turn Corner" Fig 910-11 (Pg 910-25)			No
Curb Ramp	-	23+41.00	45+15.00	RT/LT	-	See KC Std Plan 3-011, 3-012			No
Driveway Ramp	-	23+41.00	45+15.00	RT/LT	-	See KC Std Plan 3-006, 3-007			No
Pavement Marking	-	23+41.00	45+15.00	RT/LT	-	See KC Std Plan 6-003	-	-	No
Sign Placement	-	23+41.00	45+15.00	RT/LT	-	Not Specified	Not Specified	See MUTCD (Page 2A-10)	No