

→ > 6 fps

STERLING RANCH SAND CREEK



River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Max Chl Dpth (ft)	E.G. Slope (ft/ft)	Vel Left (ft/s)	Vel Right (ft/s)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)	Flow Area (sq ft)	Froude #	Chl
SL-153	6800	2600	7000	7005.53	5.53	0.006942	4.22	4.34	0.69	0.72	279.39	0.93
SL-154	6900	2600	7001.99	7005.42	3.43	0.022476	4.89	8	1.15	2.41	204.22	1.57
SL-155	7000	2600	7002	7008.13	6.13	0.006372	5.26	4.67	0.94	0.79	291.22	0.91
SL-156	7100	2600	7003.82	7008.14	4.32	0.016779	6.74	7.3	1.74	1.96	231.91	1.43
SL-157	7200	2600	7006	7011.03	5.03	0.007149	4.63	4	0.8	0.64	334.88	0.93
SL-158	7300	2600	7005.9	7011.41	5.51	0.009412	4.25	5.21	0.75	1.43	295.38	1.09
SL-159	7400	2600	7008	7012.06	4.06	0.016948	5.13	4.97	1.16	1.1	222.53	1.39
SL-160	7500	2600	7010.07	7013.34	3.27	0.03875	13.51	9.55	6.07	3.61	176.79	2.08
SL-161	7600	2600	7011.9	7015.93	4.03	0.030353	6.9	5.5	2.08	1.49	143.94	1.85
SL-162	7700	2600	7013.04	7020.11	7.07	0.010598	7.63	7.52	1.87	1.82	217.51	1.21
SL-163	7800	2600	7016.91	7022.44	5.53	0.007086	5.89	5.96	1.14	1.16	256.17	0.97
SL-164	7900	2600	7018.37	7023.78	5.41	0.005095	4.42	3.85	0.68	0.56	303.19	0.81
SL-165	8000	2600	7019.99	7022.94	2.95	0.028467	8.82	7.17	2.97	2.17	169.88	1.76
SL-166	8100	2600	7021.38	7023.48	2.1	0.133055	12.39	10.75	7.26	5.87	104.98	3.54
SL-167	8300	2600	7035.4	7039.17	6.36	0.010345	5.73	6.71	1.21	1.53	328.88	1.09
SL-168	8400	2600	7037.23	7040.61	3.38	0.002127	1.23	2	0.08	0.17	815.58	0.49
SL-169	8600	2600	7037.98	7041.06	3.08	0.001098	1.53	1.69	0.09	0.11	778.36	0.35
SL-170	8700	2600	7037.99	7041.05	3.06	0.002593	2.3	2.51	0.22	0.25	520.44	0.54
SL-171	8800	2600	7038	7041.04	3.04	0.006271	3.08	3.86	0.42	0.59	347.58	0.83
SL-172	8900	2600	7038	7041.99	3.99	0.002914	1.98	1.95	0.18	0.17	466.51	0.57
SL-173	9000	2600	7038.44	7041.01	2.57	0.023377	3.6	3.57	0.74	0.73	231.31	1.48
SL-174	9100	2600	7039.93	7043.19	3.26	0.014497	6.67	4.14	1.65	0.81	284.81	1.26
SL-175	9200	2600	7041.69	7044.39	2.7	0.018859	6.21	5.75	1.58	1.41	230.29	1.41
SL-176	9300	2600	7043.26	7045.18	1.92	0.079241	7.71	7.51	3.13	3.01	135.03	2.69
SL-177	9410	2600	7050.66	7053.07	2.41	0.008741	4.05	3.11	0.69	0.46	400.5	0.94
SL-178	9500	2600	7044.3	7053.92	9.62	0.000234	1.22	1.05	0.05	0.04	973.46	0.19
SL-179	9600	2600	7044.9	7053.89	8.99	0.000422	1.62	1.84	0.08	0.1	760.09	0.26
SL-180	9700	2600	7045.8	7053.77	7.97	0.001504	2.29	3.63	0.19	0.38	532.46	0.47
SL-285	9800	2600	7046.5	7053.94	7.44	0.001492	2.18	2.22	0.17	0.18	504.86	0.45
SL-181	9900	2600	7048	7053.71	5.71	0.003848	3.55	3.04	0.46	0.36	326.47	0.71
SL-182	10000	2600	7050	7054.28	4.28	0.007182	2.47	3.57	0.31	0.54	289.9	0.91
SL-183	10100	2600	7051	7053.83	2.83	0.028945	4.57	5.71	1.11	1.55	176.74	1.74
SL-184	10204	2600	7052	7057.35	5.35	0.006613	4.69	3.77	0.8	0.58	284.17	0.91
SL-185	10300	2600	7053.3	7058.88	5.58	0.002631	3.46	2.2	0.4	0.2	462	0.58
SL-186	10386	2600	7055.77	7059.75	3.98	0.008651	4.94	4.93	0.92	0.92	303.65	1.02
SL-187	10500	2600	7056.67	7060.87	4.2	0.009895	2.07	3.08	0.26	0.47	294.28	1.03
SL-188	10600	2600	7058	7061.26	3.26	0.02874	3.18	7.71	0.65	2.43	231.82	1.72
SL-189	10700	2600	7058.14	7062.57	4.43	0.022988	5.1	3.71	1.24	0.77	163.93	1.63
SL-190	10800	2600	7059.99	7066.13	6.14	0.009254	5.08	4.91	0.98	0.93	255.2	1.09
SL-191	10900	2600	7061.91	7067.86	5.95	0.005406	2.86	4.09	0.36	0.62	290.5	0.84
SL-192	11000	2600	7062	7066.73	4.73	0.019088	4.53	4.38	0.99	0.94	159.84	1.52
SL-193	11100	2600	7063.98	7070.24	6.26	0.006452	3.38	3.63	0.49	0.54	229.93	0.93
SL-194	11200	2600	7065.98	7072.19	6.21	0.002792	3.26	2.93	0.37	0.32	361.65	0.62
SL-195	11300	2600	7067.97	7071.24	3.26	0.035035	8.12	8.59	2.76	3	174.87	1.9
SL-196	11400	2600	7069.57	7074.26	4.69	0.016415	6.55	5.3	1.65	1.21	211.29	1.44
SL-197	11500	2600	7071.93	7076.67	4.74	0.019238	7.58	6.48	2.14	1.69	239.08	1.53
SL-198	11600	2600	7074	7078.17	4.17	0.017051	4.78	5.32	1.04	1.22	185.79	1.41
SL-199	11700	2600	7078.09	7082.22	4.13	0.005616	3.41	3.49	0.48	0.49	411.91	0.8
SL-200	11800	2600	7079.98	7083.74	3.76	0.003443	3.45	3.46	0.43	0.43	575.69	0.63
SL-201	11900	2600	7080	7084.05	4.05	0.018132	5.76	2.48	1.4	0.4	269.15	1.4
SL-202	12000	2600	7081.48	7085.54	4.06	0.020722	5.49	4.22	1.35	0.91	217.41	1.48
SL-203	12100	2600	7084.54	7088.25	3.71	0.008736	3.55	3.78	0.56	0.62	279.56	0.98
SL-204	12200	2600	7086	7088.37	2.36	0.033088	5.24	4.08	1.41	0.97	212.91	1.74
SL-205	12300	2600	7088.42	7091.27	2.85	0.021739	4.12	3.93	0.88	0.83	221.17	1.47
SL-206	12400	2600	7089.96	7093.05	3.09	0.015151	5.88	4.46	1.38	0.91	235.42	1.3
SL-207	12500	2600	7091.14	7094.96	3.82	0.00863	4.68	4.16	0.85	0.71	273.33	1
SL-208	12600	2600	7092	7095.46	3.46	0.015528	3.64	3.47	0.67	0.63	214.71	1.29
SL-209	12700	2600	7093.09	7097.12	4.03	0.011898	6.34	5.3	1.45	1.11	254.29	1.18
SL-210	12800	2600	7094	7098.31	4.31	0.010666	4.41	4.08	0.82	0.73	246.99	1.11
SL-211	12900	2600	7095.97	7099.7	3.73	0.008251	3.48	2.92	0.54	0.41	266.11	0.97
SL-212	13000	2600	7096.23	7099.6	3.37	0.025813	5.01	4.64	1.24	1.1	185.63	1.64

6.5.2 Channel Velocity

Concrete, riprap, or soil cement linings as approved by the City/County shall be used where channel bottom velocities exceed 6.0 ft/sec. Grass lined channels shall not be used where velocity exceeds permissible velocities in Table 10-4 or the Froude number is greater than 0.9 for the 100-year storm.

6.5.7 Riprap

The use of riprap shall be limited to erosion protection at structures, and channel areas where grass lining is not possible due to right-of-way constraints or excessive velocities. Riprap gradation shall be determined by the Urban Drainage and Flood Control District procedure for Froude numbers less than 0.8, and by the Office of Surface Mining method for steep slopes for Froude numbers greater than 0.8 (see Section 10, Reference 5).

Riprap protection for flood control channels and appurtenant structures should be designed so that storm damage requiring substantial reconstruction will not result from any flood that could reasonably be expected to occur during the service life (minimum 50 years) of the channel or structure. Nominal periodic maintenance as determined by the City/County is **excepted**.

Most of these segments are supercritical. Even if bank stabilization is provided on one side it will be subject to potentially damaging forces and undermining due to the overall channel velocity and curvature.

conditions. To minimize the potential for unstable flow (transitioning uncontrollably from subcritical to supercritical), channels should be designed for Froude numbers less than 0.9.

Supercritical flow in an open channel, particularly in an urbanized area creates certain hazards which the designer must take into consideration. From a practical standpoint, it is generally good design practice to avoid curvature in such a channel. Careful attention must be taken to ensure against excessive oscillatory waves (unstable flow) which may extend along the entire length of the channel from only minor obstructions upstream. Imperfections at joints of lined channels may rapidly cause a deterioration of the joints, in which case a complete failure of the channel may occur. In addition, high-velocity flow entering cracks or joints creates an uplift force by the conversion of velocity head to pressure head which can damage the channel lining. It is evident that when designing a lined channel with supercritical flow, the designer must use the utmost care and judgement and consider all relevant factors.

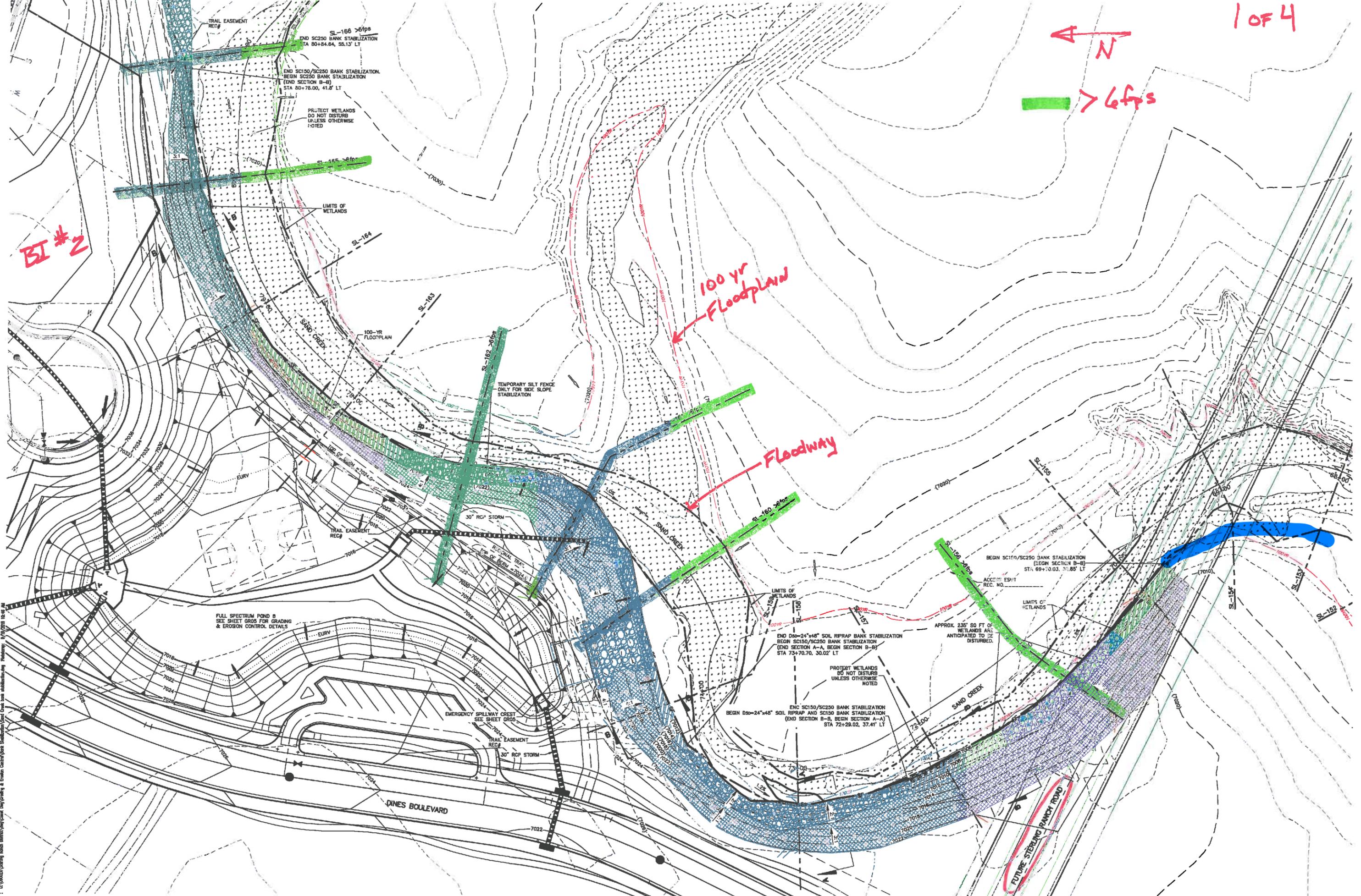


6ftps

BI #2

100 yr Floodplain

Floodway



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