



**Washington State
Department of Transportation**

MEMORANDUM

June 19, 2008

TO: Bijan Khaleghi /Mark Anderson
Bridge and Structures, MS 47340

FROM: *For* Tony M. Allen/Donald A. Williams
E&EP Geotechnical Division, MS 47365

SUBJECT: SR-520, MP 11.8, XL-2028
West Lake Sammamish Parkway to SR-202
RWN Bridge
Addendum 2 to Geotechnical Design Recommendations

As requested, we have revised the DFSAP values to ten soil layers and the reduced DFSAP values for the extreme limit state.



Donald A. Williams

Prepared By: Donald A. Williams
Geotechnical Engineer

Reviewed By: Jim Cuthbertson
Chief Foundation Engineer

T.A.

Approval Authority: Tony Allen
State Geotechnical Engineer

TMA: DAW

cc: Loung Tran Bridge and Structures, MS 47340
Asad A. Bushnaq, Bridge and Structures, MS 47340

SIL-Shaft Input Data

Bridge No. or Name West Lake Sammamish Parkway to SR-202 - RWN Bridge

1

Pier No(s).

Ground Surface Elevation 91.3 (ft)

Layer	Soil Type	Layer Thickness (ft)	Btm. Elev. (ft)	Effective Unit Weight (pcf)	Friction ⁽¹⁾ Angle (deg)	ϵ_{50} (%)	Liq.	Soil Cohesion (psf)	s_u at Top of Layer (psf)	s_u at Bottom of Layer (psf)	Rock Comp. Stgth (psf)	SPT Corrected Blowcounts (bpf)	Fines Content (%)	Angularity
1	Sand	28.0	63	128	35	0.4	No							
2	Clay	7	56	120		0.8			1000	1500				
3	Sand	20	36	125	39	0.4	No							
4	Clay	7.6	29	110		0.9			600	800				
5	Clay	4	24	48		0.9			800	1000				
6	Sand	8	16	65	36	1.2	No							
7	Sand	35	-19	69	38	0.6	No							

Bridge No. or Name West Lake Sammamish Parkway to SR-202 - RWN Bridge

2

Pier No(s).

Ground Surface Elevation 41.3 (ft)

Layer	Soil Type	Layer Thickness (ft)	Btm. Elev. (ft)	Effective Unit Weight (pcf)	Friction ⁽¹⁾ Angle (deg)	ϵ_{50} (%)	Liq.	Soil Cohesion (psf)	s_u at Top of Layer (psf)	s_u at Bottom of Layer (psf)	Rock Comp. Stgth (psf)	SPT Corrected Blowcounts (bpf)	Fines Content (%)	Angularity
1	Clay	10	31	114		1.2			600	800				
2	Sand	3	29	95	30	1.5	No							
3	Sand	6	22	43	37	1.5	No							
4	Sand	25	-2	73	38	0.4	No							
5	Sand	25	-28	73	38	0.4	No							
6	Sand	5	-33	73	34	1.5	No							
7	Sand	9	-42	73	45	0.6	No							
8	Sand	5	-47	43	45	0.5	No							
9	Clay	8	-55	53		0.8			4000	4000				
10	Sand	8	-62	58	39	0.7	No							

FIGURE D-33: DFSAP Input Data - RWN Bridge Replacement

SIL-Shaft Input Data

Bridge No. or Name West Lake Sammamish Parkway to SR-202 - RWN Bridge
 Pier No(s) 3

Ground Surface Elevation 40.9 (ft)

Layer	Soil Type	Layer Thickness (ft)	Btm. Elev. (ft)	Effective Unit Weight (pcf)	Friction ⁽¹⁾ Angle (deg)	ε ₅₀ (%)	Liq.	Soil Cohesion (psf)	s _u at Top of Layer (psf)	s _u at Bottom of Layer (psf)	Rock Comp. Stgth (psf)	SPT Corrected Blowcounts (bpf)	Fines Content (%)	Angularity
1	Sand	9	32	105	29	1.1	No							
2	Sand	3	29	95	27	1.5	No							
3	Sand	4	25	33	27	1.5	No							
4	Sand	3	22	58	32	0.4	Yes					20	10	Sub-Rounded
5	Sand	5	17	63	35	0.8	Yes					27	5	Sub-Rounded
6	Sand	5	12	68	38	0.7	No							
7	Sand	36	-24	73	45	0.5	No							
8	Sand	19	-43	63	40	0.5	No							
9	Sand	10	-53	55	38	1.0	No							
10	Sand	6	-59	53	32	1.5	No							

Bridge No. or Name West Lake Sammamish Parkway to SR-202 - RWN Bridge
 Pier No(s) 3A

Ground Surface Elevation 40.9 (ft)

Reduced Values for Extreme Limit State Case

Layer	Soil Type	Layer Thickness (ft)	Btm. Elev. (ft)	Effective Unit Weight (pcf)	Friction ⁽¹⁾ Angle (deg)	ε ₅₀ (%)	Liq.	Soil Cohesion (psf)	s _u at Top of Layer (psf)	s _u at Bottom of Layer (psf)	Rock Comp. Stgth (psf)	SPT Corrected Blowcounts (bpf)	Fines Content (%)	Angularity
1	Sand	9	32	105	29	1.1	No							
2	Sand	3	29	95	27	1.5	No							
3	Sand	4	25	33	27	1.5	No							
4	Sand	3	22	58	17	0.4	No							
5	Sand	5	17	63	22	0.8	No							
6	Sand	5	12	68	38	0.7	No							
7	Sand	36	-24	73	45	0.5	No							
8	Sand	19	-43	63	40	0.5	No							
9	Sand	10	-53	55	38	1.0	No							
10	Sand	6	-59	53	32	1.5	No							

FIGURE D-34: DFSAP Input Data - RWN Bridge Replacement

SIL-Shaft Input Data

Bridge No. or Name
Pier No(s).

West Lake Sammamish Parkway to SR-202 - RWN Bridge

4

Ground Surface Elevation 38.6 (ft)

Layer	Soil Type	Layer Thickness (ft)	Btm. Elev. (ft)	Effective Unit Weight (pcf)	Friction ⁽¹⁾ Angle (deg)	ε ₅₀ (%)	Liq.	Soil Cohesion (psf)	s _u at Top of Layer (psf)	s _u at Bottom of Layer (psf)	Rock Comp. Stgth (psf)	SPT Corrected Blowcounts (bpf)	Fines Content (%)	Angularity
1	Sand	10	29	105	31	1.3	No							
2	Sand	4	25	38	28	1.3	No							
3	Sand	11	14	68	38	0.4	No							
4	Sand	4	10	68	41	0.4	No							
5	Sand	16	-6	78	45	0.3	No							
6	Sand	20	-26	63	35	0.3	No							
7	Sand	15	-41	68	35	0.3	No							
8	Sand	15	-56	58	36	1.5	No		4000					
9	Clay	6	-62	53		0.8			4000	4000				

Bridge No. or Name
Pier No(s).

West Lake Sammamish Parkway to SR-202 - RWN Bridge

5

Ground Surface Elevation 38.6 (ft)

Layer	Soil Type	Layer Thickness (ft)	Btm. Elev. (ft)	Effective Unit Weight (pcf)	Friction ⁽¹⁾ Angle (deg)	ε ₅₀ (%)	Liq.	Soil Cohesion (psf)	s _u at Top of Layer (psf)	s _u at Bottom of Layer (psf)	Rock Comp. Stgth (psf)	SPT Corrected Blowcounts (bpf)	Fines Content (%)	Angularity
1	Sand	9	30	105	31	0.0	No							
2	Sand	4	26	33	28	0.0	No							
3	Sand	12	14	73	40	0.3	No							
4	Sand	4	10	73	42	0.4	No							
5	Sand	6	4	78	45	0.3	No							
6	Sand	10	-6	73	44	0.5	No							
7	Sand	14	-20	78	45	0.4	No							
8	Sand	21	-41	68	39	0.7	No							
9	Sand	15	-56	58	36	1.5	No		4000					
10	Clay	7	-63	53		1.5			4000	4000				

FIGURE D-35: DFSAP Input Data - RWN Bridge Replacement