

Memo



TO: Jason Dreyer PE, SE, Bruce Schopp PE, SE, Oates Associates, Inc.

FROM: Nesam Balakumaran PE, Andri Kurnia PE, Wang Engineering, Inc.

CC: Brian Smith PE, IDOT D3, Bureau of Bridges & Structures-Geotechnical Unit, Corina T. Farez PE, PG, Wang Engineering, Inc.

DATE: August 5, 2024

RE: Rock-Socketed Drilled Shaft Axial Capacity
US 6 Bridge over Fox River, PR SN 050-0260, FAP 623, Section (E-1)ES
LaSalle County, IL
Wang Ref: KE235272G

Based on the information provided by the bridge designer, Oates Associates, Inc. (Oates) on June 21, 2024, we understand that the estimated loads for US 6 Bridge over Fox River (EX SN 050-0033, PR SN 050-0260) will be higher than what were initially anticipated. Therefore, we have been requested to re-evaluate drilled shaft capacity to satisfy the new design loads. In addition, we understand that Oates is considering revising the east abutment type from integral to semi-integral and using drilled shafts as well.

This memorandum is prepared as an addendum to our IDOT approved Structure Geotechnical Report (SGR) dated November 7, 2023. In this memo, we provide updated drilled shaft capacities and include drilled shaft recommendations for the east abutment.

We evaluated the drilled shaft axial capacities as per IDOT Design Guide "Axial Capacity of Drilled Shaft in Rock-Dolomite, Limestone, Sandstone, and hard shale" and accompanying spreadsheet. As stated in the IDOT Design Guide: per LRFD 10.8.3.5.4a, the factored geotechnical axial resistance of drilled shafts in compression in rock may be determined considering either only side or tip resistance or a combination of both side and tip resistances. Maximum side and tip resistances are typically mobilized at different deformations with maximum side resistance often peaking prior to mobilizing the full tip resistance. This must be taken into consideration when determining capacities based upon a combination of side and tip resistance. The Service Limit State "settlement", or axial displacement of the drilled shaft that occurs as the side and tip resistance is mobilized, should be determined. The estimated displacement should be reported along with the geotechnical axial resistance so that the structural designer can select a drilled shaft depth that provides sufficient factored axial capacity and results in a tolerable service settlement for the structure being designed.

This memo provides estimated drilled shaft capacities utilizing a combination of both side and tip resistances for each substructure. In Table A1, we summarize the estimated drilled shaft socketed lengths at the design axial loads. The estimated shaft settlement can be found in Tables A2 through A6. As shown in Table A1, estimated rock-socketed length varies significantly between east and west abutments. Due to the variable bedrock conditions within the area of the bridge, we recommend the designer selects the longest rock socket presented In Table A 1 and not necessarily the length calculated

based on the soil boring drilled for each substructure. The socket length also needs to be adjusted considering other loads acting on foundations.

Table A1: Summary of Drilled Shaft Rocketed Lengths at Design Axial Loads

Rock-socketed Diameter (feet) ⁽¹⁾	Design Axial Load ⁽¹⁾	Estimated Rock-socketed Length (feet)			
		West Abutment ⁽²⁾	Pier 1	Pier 2	East Abutment
3.5	400	5.0	N/A (for Abutment only)		5.0 ⁽²⁾
4.5	1350	5.0	11.0	11.0	9.0
5.0	1500	5.0	11.0	10.0	9.0
5.5	1650	5.0	10.0	10.0	8.0
6.0	1725	5.0	9.0	8.0	6.0

⁽¹⁾ Provided by the designer, Oates Associates, Inc.

⁽²⁾ Minimum embedment of 5.0-foot length of rock-socketed is considered.

Table A2: Estimated Drilled Shaft Resistance and Settlement for 3.5-foot Dia. Rock-Socketed Shaft

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
West Abutment/ IDOT Boring 3, SB-01	472.8	459.2 (North) 469.7 (South)	4.0	2001	1027	444 (N) /465 (S)	0.90
			5.0	2084	1075	443 (N) /464 (S)	0.91
			6.0	2119	1101	442 (N) /463 (S)	0.87
			7.0	2132	1115	441 (N) /462 (S)	0.83
East Abutment/ IDOT Boring 1 (Rock Core)	461.5	456.8 to 458.2	4.0	1007	518	452	0.53
			5.0	1125	582	451	0.57
			6.0	1244	646	450	0.60
			7.0	1365	711	448	0.64

Table A3: Estimated Drilled Shaft Resistance and Settlement for 4.5-foot Dia. Rock-Socketed Shaft

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
West Abutment/ IDOT Boring 3, SB-01	472.8	459.2 (North) 469.7 (South)	5.0	2900	1509	444 (N) /465 (S)	0.99
			6.0	3030	1579	443 (N) /464 (S)	1.02
			7.0	3168	1653	442 (N) /463 (S)	1.05
			8.0	3311	1730	441 (N) /462 (S)	1.07
Pier 1/ B-01, B-02, and B-03	461.5	443.7 to 445.9	5.0	1561	804	439	0.64
			6.0	1732	895	438	0.69
			7.0	1901	985	437	0.73
			8.0	2070	1075	436	0.77
			9.0	2239	1166	435	0.81
			10.0	2408	1257	434	0.85
			11.0	2578	1348	433	0.89
			12.0	2748	1439	432	0.93
Pier 2/ B-04, B-05, and B-06	461.5	445.1 to 448.0	5.0	1693	870	440	0.65
			6.0	1859	959	439	0.67
			7.0	2023	1048	438	0.69
			8.0	2184	1135	437	0.72
			9.0	2344	1223	436	0.74
			10.0	2502	1309	435	0.77
			11.0	2952	1542	434	0.93

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
East Abutment/ IDOT Boring 1 (Rock Core)	461.5	456.8 to 458.2	12.0	3149	1648	433	0.99
			5.0	1710	879	452	0.72
			6.0	1932	996	451	0.79
			7.0	2158	1115	450	0.85
			8.0	2389	1237	449	0.92
			9.0	2625	1361	448	0.99
			10.0	2865	1488	447	1.06

Table A4: Estimated Drilled Shaft Resistance and Settlement for 5.0-foot Dia. Rock-Socketed Shaft

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
West Abutment/ IDOT Boring 3, SB-01	472.8	459.2 (North) 469.7 (South)	5.0	3438	1784	444 (N) /465 (S)	1.10
			6.0	3585	1863	443 (N) /464 (S)	1.13
			7.0	3740	1947	442 (N) /463 (S)	1.16
			8.0	3901	2034	441 (N) /462 (S)	1.18
Pier 1/ B-01, B-02, and B-03	461.5	443.7 to 445.9	5.0	1865	959	439	0.71
			6.0	2060	1062	438	0.75
			7.0	2253	1165	437	0.80
			8.0	2445	1267	436	0.84
			9.0	2636	1369	435	0.89
			10.0	2827	1471	434	0.93

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
			11.0	3018	1573	433	0.97
			12.0	3209	1676	432	1.01
Pier 2/ B-04, B-05, and B-06	461.5	445.1 to 448.0	5.0	2007	1029	440	0.70
			6.0	2201	1133	439	0.73
			7.0	2388	1234	438	0.76
			8.0	2570	1333	437	0.79
			9.0	2749	1430	436	0.82
			10.0	2926	1527	435	0.84
			11.0	3467	1806	434	1.02
			12.0	3689	1926	433	1.08
East Abutment/ IDOT Boring 1 (Rock Core)	461.5	456.8 to 458.2	5.0	2114	1084	452	0.82
			6.0	2367	1217	451	0.89
			7.0	2624	1352	450	0.96
			8.0	2887	1490	449	1.04
			9.0	3154	1631	448	1.11
			10.0	3425	1774	447	1.18

Table A5: Estimated Drilled Shaft Resistance and Settlement for 5.5-foot Dia. Rock-Socketed Shaft

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
West Abutment/ IDOT Boring 3, SB-01	472.8	459.2 (North) 469.7 (South)	5.0	4020	2082	444 (N) /465 (S)	1.21
			6.0	4184	2170	443 (N) /464 (S)	1.24
			7.0	4357	2263	442 (N) /463 (S)	1.27
			8.0	4537	2360	441 (N) /462 (S)	1.30
Pier 1/ B-01, B-02, and B-03	461.5	443.7 to 445.9	5.0	2196	1126	439	0.77
			6.0	2418	1244	438	0.82
			7.0	2636	1360	437	0.87
			8.0	2852	1474	436	0.92
			9.0	3066	1589	435	0.96
			10.0	3280	1703	434	1.00
Pier 2/ B-04, B-05, and B-06	461.5	445.1 to 448.0	11.0	3493	1817	433	1.05
			5.0	2350	1203	440	0.77
			6.0	2570	1321	439	0.80
			7.0	2782	1435	438	0.84
			8.0	2987	1546	437	0.87
			9.0	3188	1655	436	0.89
East Abutment/ IDOT Boring 1 (Rock Core)	461.5	456.8 to 458.2	10.0	3384	1761	435	0.92
			11.0	4024	2092	434	1.12
			5.0	2560	1310	452	0.93
			6.0	2846	1460	451	1.00

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
			7.0	3136	1612	450	1.08
			8.0	3431	1767	449	1.15
			9.0	3731	1925	448	1.22

Table A6: Estimated Drilled Shaft Resistance and Settlement for 6.0-foot Dia. Rock-Socketed Shaft

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
West Abutment/ IDOT Boring 3, SB-01	472.8	459.2 (North) 469.7 (South)	5.0	4645	2401	444 (N) /465 (S)	1.32
			6.0	4827	2499	443 (N) /464 (S)	1.35
			7.0	5019	2602	442 (N) /463 (S)	1.38
			8.0	5218	2709	441 (N) /462 (S)	1.41
Pier 1/ B-01, B-02, and B-03	461.5	443.7 to 445.9	5.0	2555	1308	439	0.84
			6.0	2804	1440	438	0.89
			7.0	3049	1570	437	0.94
			8.0	3290	1697	436	0.99
			9.0	3529	1825	435	1.04
			10.0	3767	1951	434	1.09
Pier 2/ B-04, B-05, and B-06	461.5	445.1 to 448.0	5.0	2720	1391	440	0.83
			6.0	2968	1523	439	0.87
			7.0	3206	1651	438	0.91
			8.0	3436	1775	437	0.94

Structure/ Reference Boring	Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Rock Socket Length (feet)	Nominal Resistance (kips)	Factored Resistance (kips)	Estimated Shaft Tip Elevation (feet)	Shaft Settlement (inches)
			9.0	3659	1895	436	0.97
			10.0	3877	2013	435	0.99
East Abutment/ IDOT Boring 1 (Rock Core)	461.5	456.8 to 458.2	5.0	3048	1557	452	1.03
			6.0	3369	1725	451	1.11
			7.0	3694	1895	450	1.19
			8.0	4023	2068	449	1.27

Attachments:
 IDOT Drilled Shaft Axial Capacity in Rock



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring 3 (Rock Core)
GROUND SURFACE ELEVATION ===== 483.69 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 469.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 42 IN.
FACTORED AXIAL LOAD ===== 400 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _p /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	468.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	287	287	158	66	0.012	2.803	393.0	1521	760	0.878	0.92	1662	838	88	0.012	0.879
2.00	467.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	287	574	316	133	0.045	2.937	375.7	1517	759	0.880	0.85	1790	909	211	0.045	0.881
3.00	466.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	287	861	473	200	0.064	3.013	358.4	1509	754	0.879	0.79	1912	976	312	0.065	0.883
4.00	465.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	287	1147	631	267	0.078	3.065	331.0	1465	733	0.889	0.73	2001	1027	398	0.080	0.896
5.00	464.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	287	1434	789	335	0.090	3.105	303.6	1415	708	0.912	0.68	2084	1075	479	0.091	0.905
6.00	463.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	354	1788	984	424	0.104	3.101	257.0	1295	648	0.847	0.61	2119	1101	586	0.107	0.870
7.00	462.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	354	2142	1178	514	0.117	3.108	210.4	1160	580	0.777	0.54	2132	1115	690	0.120	0.825
8.00	461.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	354	2496	1373	605	0.129	3.118	163.9	1007	504	0.707	0.47	2125	1118	791	0.132	0.772
9.00	460.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	226	2723	1497	655	0.131	3.156	158.6	1006	503	0.750	0.45	2241	1182	837	0.134	0.807
10.00	459.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	226	2949	1622	706	0.133	3.189	152.6	1001	500	0.750	0.42	2355	1245	884	0.137	0.840
11.00	458.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	182	3131	1722	743	0.136	3.283	156.7	893	447	0.662	0.39	2307	1224	922	0.139	0.796
12.00	457.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	182	3313	1822	780	0.138	3.367	160.9	925	462	0.698	0.38	2425	1288	961	0.142	0.829
13.00	456.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	204	3517	1934	824	0.141	3.441	160.1	938	469	0.730	0.37	2537	1348	1007	0.146	0.856
14.00	455.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	204	3722	2047	868	0.145	3.509										
15.00	454.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	204	3926	2159	912	0.148	3.571										
16.00	453.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	204	4130	2272	956	0.151	3.627										
17.00	452.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	201	4332	2382	1000	0.154	3.680										
18.00	451.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	201	4533	2493	1043	0.157	3.728										
19.00	450.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	201	4734	2604	1087	0.160	3.774										
20.00	449.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	201	4935	2714	1130	0.163	3.816										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring 3 (Rock Core)
GROUND SURFACE ELEVATION ===== 483.69 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 469.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	468.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	369	369	203	85	0.001	3.541	350.1	2321	1161	1.029	0.93	2497	1257	87	0.001	1.042
2.00	467.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	369	738	406	171	0.043	3.714	328.8	2289	1144	1.060	0.87	2632	1333	263	0.043	1.061
3.00	466.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	369	1106	609	257	0.067	3.813	307.4	2247	1123	1.073	0.82	2756	1403	399	0.068	1.076
4.00	465.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	369	1475	811	343	0.085	3.882	289.9	2215	1107	1.115	0.77	2892	1480	518	0.086	1.096
5.00	464.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	369	1844	1014	429	0.099	3.934	272.3	2176	1088	1.102	0.72	3022	1553	627	0.100	1.112
6.00	463.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	455	2299	1265	544	0.117	3.928	236.1	2024	1012	1.080	0.66	3069	1587	771	0.119	1.073
7.00	462.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	455	2754	1515	659	0.132	3.935	199.9	1855	927	1.018	0.60	3088	1606	910	0.135	1.024
8.00	461.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	455	3210	1765	775	0.146	3.947	163.1	1660	830	0.900	0.54	3075	1608	1044	0.149	0.964
9.00	460.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	291	3501	1925	839	0.149	3.998	158.4	1662	831	0.938	0.52	3219	1687	1106	0.152	0.999
10.00	459.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	291	3792	2085	903	0.152	4.042	153.8	1662	831	0.987	0.49	3364	1767	1168	0.155	1.033
11.00	458.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	234	4026	2214	951	0.155	4.162	157.0	1478	739	0.858	0.46	3230	1703	1219	0.158	0.956
12.00	457.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	234	4259	2343	998	0.157	4.270										
13.00	456.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	263	4522	2487	1054	0.161	4.366										
14.00	455.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	263	4785	2632	1110	0.165	4.452										
15.00	454.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	263	5048	2776	1166	0.169	4.530										
16.00	453.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	263	5310	2921	1223	0.172	4.601										
17.00	452.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	259	5569	3063	1278	0.175	4.667										
18.00	451.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	259	5828	3205	1333	0.179	4.728										
19.00	450.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	259	6087	3348	1388	0.182	4.785										
20.00	449.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	259	6345	3490	1443	0.185	4.837										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring 3 (Rock Core)
GROUND SURFACE ELEVATION ===== 483.69 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 469.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	468.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	410	410	225	0	0.000	3.905	328.0	2740	1370	1.163	1.00	2740	1370	0	0.000	1.135
2.00	467.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	410	820	451	190	0.040	4.098	308.8	2707	1354	1.139	0.88	3086	1562	285	0.040	1.154
3.00	466.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	410	1229	676	285	0.068	4.209	293.0	2685	1343	1.175	0.83	3248	1652	441	0.068	1.178
4.00	465.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	410	1639	901	381	0.087	4.286	277.2	2654	1327	1.164	0.78	3402	1738	577	0.088	1.198
5.00	464.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	410	2049	1127	476	0.103	4.344	261.4	2614	1307	1.233	0.74	3548	1821	702	0.104	1.214
6.00	463.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	506	2555	1405	604	0.122	4.336	228.8	2448	1224	1.143	0.68	3603	1859	865	0.124	1.174
7.00	462.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	506	3060	1683	731	0.138	4.344	195.7	2258	1129	1.093	0.62	3622	1879	1022	0.141	1.122
8.00	461.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	506	3566	1961	860	0.153	4.357	162.6	2045	1023	1.042	0.57	3610	1883	1173	0.156	1.061
9.00	460.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	323	3890	2139	931	0.157	4.414	158.4	2052	1026	1.013	0.54	3771	1971	1243	0.160	1.097
10.00	459.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	323	4213	2317	1002	0.160	4.464	154.2	2056	1028	1.068	0.52	3933	2060	1313	0.163	1.132
11.00	458.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	260	4473	2460	1054	0.163	4.598										
12.00	457.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	260	4733	2603	1107	0.166	4.718										
13.00	456.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	292	5025	2764	1169	0.170	4.824										
14.00	455.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	292	5317	2924	1231	0.174	4.920										
15.00	454.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	292	5609	3085	1293	0.178	5.006										
16.00	453.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	292	5901	3245	1356	0.182	5.085										
17.00	452.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	287	6188	3403	1417	0.185	5.158										
18.00	451.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	287	6476	3562	1478	0.189	5.226										
19.00	450.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	287	6763	3720	1539	0.192	5.288										
20.00	449.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	287	7050	3878	1600	0.195	5.346										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring 3 (Rock Core)
GROUND SURFACE ELEVATION ===== 483.69 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 469.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 66 IN.
FACTORED AXIAL LOAD ===== 1650 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	468.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	451	451	248	0	0.000	4.266	309.9	3189	1594	1.225	1.00	3189	1594	0	0.000	1.225
2.00	467.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	451	901	496	209	0.037	4.479	295.5	3180	1590	1.283	0.88	3595	1818	303	0.037	1.253
3.00	466.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	451	1352	744	313	0.067	4.601	281.2	3160	1580	1.275	0.84	3777	1919	481	0.068	1.278
4.00	465.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	451	1803	992	418	0.089	4.686	266.8	3130	1565	1.277	0.79	3950	2016	635	0.090	1.298
5.00	464.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	451	2254	1240	524	0.106	4.751	252.5	3090	1545	1.337	0.75	4114	2108	777	0.107	1.315
6.00	463.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	556	2810	1546	664	0.126	4.742	222.4	2907	1453	1.241	0.70	4172	2149	959	0.128	1.273
7.00	462.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	556	3366	1852	804	0.144	4.749	192.3	2701	1351	1.194	0.64	4196	2173	1134	0.146	1.220
8.00	461.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	556	3923	2158	945	0.160	4.764	162.2	2471	1235	1.147	0.59	4186	2179	1304	0.162	1.158
9.00	460.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	356	4279	2353	1022	0.164	4.828	158.4	2482	1241	1.130	0.57	4365	2277	1382	0.167	1.195
10.00	459.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	356	4634	2549	1100	0.167	4.883										
11.00	458.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	286	4920	2706	1158	0.171	5.031										
12.00	457.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	286	5206	2863	1216	0.175	5.164										
13.00	456.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	321	5527	3040	1284	0.179	5.280										
14.00	455.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	321	5848	3217	1352	0.183	5.385										
15.00	454.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	321	6169	3393	1420	0.187	5.481										
16.00	453.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	321	6491	3570	1489	0.191	5.567										
17.00	452.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	316	6807	3744	1556	0.195	5.647										
18.00	451.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	316	7123	3918	1623	0.199	5.721										
19.00	450.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	316	7439	4092	1690	0.202	5.789										
20.00	449.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	316	7756	4266	1757	0.205	5.853										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring 3 (Rock Core)
GROUND SURFACE ELEVATION ===== 483.69 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 469.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	468.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	492	492	270	0	0.000	4.624	297.7	3692	1846	1.305	1.00	3692	1846	0	0.000	1.322
2.00	467.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	492	983	541	228	0.033	4.857	284.5	3688	1844	1.333	0.89	4140	2093	319	0.034	1.351
3.00	466.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	492	1475	811	342	0.066	4.991	271.3	3671	1836	1.408	0.85	4343	2205	520	0.067	1.376
4.00	465.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	492	1967	1082	456	0.090	5.084	258.2	3644	1822	1.359	0.80	4535	2312	693	0.090	1.398
5.00	464.70	1.00	321.0	Sandstone	32	Normal	73	Open	Yes	492	2459	1352	571	0.108	5.156	244.6	3601	1800	1.389	0.76	4712	2412	851	0.109	1.414
6.00	463.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	607	3066	1686	723	0.130	5.145	217.0	3404	1702	1.357	0.71	4779	2458	1054	0.132	1.371
7.00	462.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	607	3672	2020	876	0.149	5.152	189.4	3183	1592	1.295	0.66	4810	2486	1248	0.151	1.319
8.00	461.70	1.00	489.0	Sandstone	32	Normal	88	Open	Yes	607	4279	2354	1029	0.166	5.168	161.8	2936	1468	1.201	0.61	4803	2495	1435	0.168	1.256
9.00	460.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	388	4667	2567	1114	0.170	5.239										
10.00	459.70	1.00	200.0	Sandstone	32	Normal	88	Open	Yes	388	5056	2781	1199	0.174	5.300										
11.00	458.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	312	5367	2952	1262	0.179	5.462										
12.00	457.70	1.00	129.0	Sandstone	27	Normal	53	Open	No	312	5679	3123	1325	0.182	5.607										
13.00	456.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	350	6029	3316	1399	0.187	5.734										
14.00	455.70	1.00	163.0	Sandstone	27	Normal	53	Open	No	350	6380	3509	1473	0.192	5.849										
15.00	454.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	350	6730	3702	1547	0.196	5.953										
16.00	453.70	1.00	163.0	Sandstone	27	Normal	53	Open	Yes	350	7081	3894	1622	0.200	6.047										
17.00	452.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	345	7426	4084	1695	0.204	6.135										
18.00	451.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	345	7771	4274	1767	0.208	6.215										
19.00	450.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	345	8116	4464	1840	0.212	6.289										
20.00	449.70	1.00	158.0	Sandstone	27	Normal	53	Open	Yes	345	8461	4653	1913	0.215	6.358										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring SB-01
GROUND SURFACE ELEVATION ===== 483.21 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 459.21 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 42 IN.
FACTORED AXIAL LOAD ===== 400 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	458.21	1.00	1030.0	Sandstone	44	Normal	83	Open	Yes	359	359	198	145	0.016	0.746	258.4	1894	947	1.057	0.77	1588	812	173	0.016	0.686
2.00	457.21	1.00	609.0	Sandstone	44	Normal	83	Open	Yes	359	719	395	249	0.049	1.046	200.0	1616	808	0.997	0.69	2288	1180	330	0.049	0.970
3.00	456.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	226	945	520	299	0.056	1.214	200.0	1645	822	1.111	0.64	2578	1336	383	0.056	1.115
4.00	455.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	226	1172	644	348	0.059	1.332	200.0	1673	836	1.228	0.59	2831	1473	431	0.060	1.234
5.00	454.21	1.00	200.0	Sandstone	27	Normal	83	Open	No	226	1398	769	398	0.069	1.593	200.0	1043	522	0.788	0.53	1954	1023	494	0.071	0.784
6.00	453.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	1624	893	447	0.078	1.819	200.0	1062	531	0.785	0.52	2053	1076	554	0.079	0.807
7.00	452.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	1851	1018	497	0.086	2.015	200.0	1080	540	0.791	0.50	2158	1133	613	0.087	0.830
8.00	451.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	2077	1143	547	0.093	2.186	200.0	1098	549	0.817	0.48	2268	1193	672	0.095	0.854
9.00	450.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	2304	1267	597	0.099	2.337	200.0	1115	558	0.853	0.47	2382	1254	729	0.101	0.878
10.00	449.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	2530	1392	647	0.105	2.472	200.0	1132	566	0.848	0.45	2498	1317	785	0.108	0.902
11.00	448.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	2757	1516	697	0.111	2.592	200.0	1149	574	0.854	0.44	2617	1382	842	0.114	0.926
12.00	447.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	226	2983	1641	747	0.116	2.700	200.0	1165	583	0.879	0.43	2738	1448	897	0.119	0.951
13.00	446.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	226	3209	1765	797	0.121	2.798	200.0	1181	591	0.914	0.41	2861	1515	952	0.125	0.976
14.00	445.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	26	3236	1780	848	0.126	2.674										
15.00	444.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	26	3262	1794	898	0.131	2.558										
16.00	443.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	26	3289	1809	949	0.136	2.451										
17.00	442.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	26	3315	1823	1000	0.140	2.351										
18.00	441.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	26	3342	1838	1051	0.145	2.257										
19.00	440.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	26	3368	1853	1102	0.149	2.170										
20.00	439.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	26	3395	1867	1153	0.154	2.089										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring SB-01
GROUND SURFACE ELEVATION ===== 483.21 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 459.21 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	458.21	1.00	1030.0	Sandstone	44	Normal	83	Open	Yes	462	462	254	186	0.001	0.914	245.4	3020	1510	1.385	0.80	2288	1167	188	0.001	0.845
2.00	457.21	1.00	609.0	Sandstone	44	Normal	83	Open	Yes	462	924	508	319	0.046	1.302	200.0	2671	1336	1.331	0.72	3349	1721	413	0.046	1.210
3.00	456.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	291	1215	668	382	0.058	1.526	200.0	2719	1360	1.451	0.69	3882	2002	493	0.059	1.426
4.00	455.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	291	1506	829	446	0.064	1.680	200.0	2765	1383	1.600	0.65	4272	2211	561	0.065	1.579
5.00	454.21	1.00	200.0	Sandstone	27	Normal	83	Open	No	291	1798	989	509	0.076	2.014	200.0	1724	862	0.984	0.59	2900	1509	645	0.077	0.996
6.00	453.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2089	1149	573	0.087	2.303	200.0	1755	878	1.030	0.58	3030	1579	727	0.088	1.022
7.00	452.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2380	1309	636	0.096	2.553	200.0	1785	893	1.050	0.56	3168	1653	806	0.098	1.047
8.00	451.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2671	1469	700	0.104	2.772	200.0	1815	907	1.031	0.55	3311	1730	883	0.106	1.073
9.00	450.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2962	1629	763	0.112	2.965										
10.00	449.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	3253	1789	827	0.119	3.136										
11.00	448.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	3544	1949	891	0.126	3.289										
12.00	447.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	291	3835	2109	955	0.132	3.426										
13.00	446.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	291	4126	2269	1019	0.138	3.551										
14.00	445.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	34	4160	2288	1084	0.143	3.392										
15.00	444.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	34	4194	2307	1148	0.149	3.245										
16.00	443.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	34	4229	2326	1213	0.154	3.107										
17.00	442.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	34	4263	2344	1277	0.159	2.978										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring SB-01
GROUND SURFACE ELEVATION ===== 483.21 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 459.21 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	458.21	1.00	1030.0	Sandstone	44	Normal	83	Open	Yes	513	513	282	0	0.000	0.995	240.9	3680	1840	1.594	1.00	3680	1840	0	0.000	0.921
2.00	457.21	1.00	609.0	Sandstone	44	Normal	83	Open	Yes	513	1027	565	354	0.043	1.427	200.0	3298	1649	1.484	0.74	3944	2023	451	0.044	1.326
3.00	456.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	323	1350	743	424	0.058	1.678	200.0	3357	1678	1.621	0.71	4593	2364	547	0.059	1.569
4.00	455.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	323	1674	921	495	0.066	1.852	200.0	3414	1707	1.719	0.67	5064	2616	626	0.066	1.739
5.00	454.21	1.00	200.0	Sandstone	27	Normal	83	Open	No	323	1997	1098	565	0.079	2.222	200.0	2129	1064	1.120	0.62	3438	1784	722	0.080	1.103
6.00	453.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	2321	1276	635	0.090	2.542	200.0	2167	1083	1.100	0.60	3585	1863	814	0.092	1.130
7.00	452.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	2644	1454	706	0.101	2.819	200.0	2204	1102	1.136	0.59	3740	1947	903	0.102	1.157
8.00	451.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	2968	1632	776	0.110	3.062	200.0	2240	1120	1.186	0.57	3901	2034	991	0.112	1.184
9.00	450.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	3291	1810	847	0.118	3.276	200.0	2276	1138	1.151	0.56	4066	2123	1076	0.120	1.211
10.00	449.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	3614	1988	917	0.125	3.465	200.0	2310	1155	1.200	0.55	4236	2214	1160	0.128	1.239
11.00	448.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	3938	2166	988	0.133	3.634										
12.00	447.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	323	4261	2344	1059	0.139	3.787										
13.00	446.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	323	4585	2522	1130	0.145	3.924										
14.00	445.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	38	4623	2542	1201	0.151	3.749										
15.00	444.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	38	4661	2563	1273	0.157	3.585										
16.00	443.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	38	4698	2584	1344	0.163	3.433										
17.00	442.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	38	4736	2605	1416	0.168	3.291										
18.00	441.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	38	4774	2626	1487	0.173	3.158										
19.00	440.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	38	4812	2647	1559	0.178	3.033										
20.00	439.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	38	4850	2667	1631	0.183	2.917										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring SB-01
GROUND SURFACE ELEVATION ===== 483.21 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 459.21 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	458.21	1.00	1030.0	Sandstone	44	Normal	83	Open	Yes	616	616	339	0	0.000	1.150	234.1	5195	2598	1.884	1.00	5195	2598	0	0.000	1.068
2.00	457.21	1.00	609.0	Sandstone	44	Normal	83	Open	Yes	616	1232	678	424	0.036	1.670	200.0	4749	2375	1.815	0.77	5257	2690	519	0.036	1.554
3.00	456.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	388	1620	891	508	0.057	1.978	200.0	4834	2417	1.995	0.74	6171	3167	651	0.057	1.849
4.00	455.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	388	2009	1105	593	0.067	2.190	200.0	4916	2458	2.059	0.71	6826	3513	753	0.068	2.055
5.00	454.21	1.00	200.0	Sandstone	27	Normal	83	Open	No	388	2397	1318	677	0.083	2.632	200.0	3065	1533	1.291	0.66	4645	2401	874	0.084	1.317
6.00	453.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	2785	1532	761	0.096	3.015	200.0	3120	1560	1.334	0.65	4827	2499	989	0.098	1.347
7.00	452.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3173	1745	845	0.108	3.346	200.0	3174	1587	1.359	0.63	5019	2602	1100	0.110	1.377
8.00	451.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3561	1959	929	0.119	3.636	200.0	3226	1613	1.368	0.62	5218	2709	1209	0.120	1.406
9.00	450.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3949	2172	1013	0.128	3.892										
10.00	449.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	4337	2386	1098	0.137	4.118										
11.00	448.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	4726	2599	1183	0.145	4.320										
12.00	447.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	388	5114	2813	1267	0.152	4.502										
13.00	446.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	388	5502	3026	1352	0.160	4.666										
14.00	445.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5547	3051	1437	0.166	4.457										
15.00	444.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5593	3076	1522	0.173	4.263										
16.00	443.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5638	3101	1608	0.179	4.081										
17.00	442.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5683	3126	1693	0.185	3.911										
18.00	441.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5729	3151	1778	0.190	3.752										
19.00	440.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	45	5774	3176	1864	0.196	3.604										
20.00	439.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	45	5820	3201	1950	0.201	3.465										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== W. Abutment - Boring SB-01
GROUND SURFACE ELEVATION ===== 483.21 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 459.21 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	458.21	1.00	1030.0	Sandstone	44	Normal	83	Open	Yes	616	616	339	0	0.000	1.150	234.1	5195	2598	1.884	1.00	5195	2598	0	0.000	1.068
2.00	457.21	1.00	609.0	Sandstone	44	Normal	83	Open	Yes	616	1232	678	424	0.036	1.670	200.0	4749	2375	1.815	0.77	5257	2690	519	0.036	1.554
3.00	456.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	388	1620	891	508	0.057	1.978	200.0	4834	2417	1.995	0.74	6171	3167	651	0.057	1.849
4.00	455.21	1.00	200.0	Sandstone	44	Normal	83	Open	Yes	388	2009	1105	593	0.067	2.190	200.0	4916	2458	2.059	0.71	6826	3513	753	0.068	2.055
5.00	454.21	1.00	200.0	Sandstone	27	Normal	83	Open	No	388	2397	1318	677	0.083	2.632	200.0	3065	1533	1.291	0.66	4645	2401	874	0.084	1.317
6.00	453.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	2785	1532	761	0.096	3.015	200.0	3120	1560	1.334	0.65	4827	2499	989	0.098	1.347
7.00	452.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3173	1745	845	0.108	3.346	200.0	3174	1587	1.359	0.63	5019	2602	1100	0.110	1.377
8.00	451.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3561	1959	929	0.119	3.636	200.0	3226	1613	1.368	0.62	5218	2709	1209	0.120	1.406
9.00	450.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3949	2172	1013	0.128	3.892										
10.00	449.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	4337	2386	1098	0.137	4.118										
11.00	448.21	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	4726	2599	1183	0.145	4.320										
12.00	447.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	388	5114	2813	1267	0.152	4.502										
13.00	446.21	1.00	200.0	Sandstone	27	Normal	8	Open	No	388	5502	3026	1352	0.160	4.666										
14.00	445.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5547	3051	1437	0.166	4.457										
15.00	444.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5593	3076	1522	0.173	4.263										
16.00	443.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5638	3101	1608	0.179	4.081										
17.00	442.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5683	3126	1693	0.185	3.911										
18.00	441.21	1.00	200.0	Sandstone	27	Fractured	8	Open	No	45	5729	3151	1778	0.190	3.752										
19.00	440.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	45	5774	3176	1864	0.196	3.604										
20.00	439.21	1.00	200.0	Sandstone	27	Fractured	8.0	Open	No	45	5820	3201	1950	0.201	3.465										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-01
GROUND SURFACE ELEVATION ===== 447.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	444.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	291	160	62	0.001	4.929	200.0	736	368	0.403	0.90	820	414	63	0.001	0.416
2.00	443.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	582	320	124	0.039	5.102	200.0	851	426	0.482	0.83	1024	521	194	0.039	0.485
3.00	442.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	873	480	187	0.062	5.202	200.0	943	471	0.535	0.78	1210	618	296	0.062	0.542
4.00	441.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	1164	640	249	0.078	5.271	200.0	1020	510	0.606	0.74	1388	712	387	0.078	0.594
5.00	440.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	1456	801	312	0.090	5.324	200.0	1089	545	0.622	0.70	1561	804	472	0.091	0.641
6.00	439.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	1747	961	375	0.101	5.367	200.0	1151	575	0.684	0.66	1732	895	552	0.102	0.686
7.00	438.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	2038	1121	438	0.110	5.403	200.0	1208	604	0.718	0.64	1901	985	630	0.112	0.729
8.00	437.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	2329	1281	501	0.118	5.434	200.0	1260	630	0.712	0.61	2070	1075	707	0.120	0.770
9.00	436.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	2620	1441	564	0.125	5.461	200.0	1309	655	0.755	0.58	2239	1166	781	0.127	0.810
10.00	435.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	2911	1601	627	0.132	5.486	200.0	1356	678	0.810	0.56	2408	1257	855	0.134	0.849
11.00	434.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	3202	1761	690	0.138	5.508	200.0	1400	700	0.812	0.54	2578	1348	927	0.141	0.887
12.00	433.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	3493	1921	754	0.144	5.528	200.0	1442	721	0.864	0.52	2748	1439	999	0.147	0.925
13.00	432.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	3784	2081	817	0.149	5.546										
14.00	431.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	4075	2241	881	0.154	5.564										
15.00	430.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	291	4367	2402	945	0.159	5.580										
16.00	429.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
17.00	428.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
18.00	427.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
19.00	426.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
20.00	425.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
21.00	424.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-01
GROUND SURFACE ELEVATION ===== 447.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	444.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	323	178	0	0.000	5.447	200.0	909	454	0.490	1.00	909	454	0	0.000	0.462
2.00	443.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	647	356	138	0.037	5.640	200.0	1051	525	0.521	0.85	1242	631	211	0.037	0.538
3.00	442.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	970	534	208	0.062	5.751	200.0	1164	582	0.594	0.80	1460	745	329	0.062	0.600
4.00	441.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	1294	712	277	0.080	5.829	200.0	1260	630	0.616	0.76	1666	853	434	0.080	0.656
5.00	440.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	1617	889	346	0.094	5.888	200.0	1344	672	0.718	0.72	1865	959	531	0.095	0.707
6.00	439.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	1941	1067	416	0.105	5.936	200.0	1421	710	0.717	0.69	2060	1062	623	0.107	0.754
7.00	438.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	2264	1245	486	0.115	5.976	200.0	1491	745	0.769	0.66	2253	1165	711	0.117	0.800
8.00	437.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	2588	1423	556	0.124	6.011	200.0	1556	778	0.832	0.64	2445	1267	797	0.126	0.843
9.00	436.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	2911	1601	626	0.132	6.041	200.0	1616	808	0.809	0.61	2636	1369	882	0.134	0.885
10.00	435.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	3234	1779	696	0.139	6.068	200.0	1674	837	0.869	0.59	2827	1471	965	0.142	0.926
11.00	434.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	3558	1957	766	0.146	6.093	200.0	1728	864	0.885	0.57	3018	1573	1046	0.149	0.966
12.00	433.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	3881	2135	836	0.152	6.115	200.0	1780	890	0.929	0.55	3209	1676	1127	0.155	1.006
13.00	432.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	4205	2313	907	0.158	6.136										
14.00	431.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	4528	2491	977	0.163	6.155										
15.00	430.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	323	4852	2668	1048	0.168	6.173										
16.00	429.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
17.00	428.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
18.00	427.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
19.00	426.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
20.00	425.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
21.00	424.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
22.00	423.70	1.00	200.0	Sandstone	27	Fractured	0.0	Open	No	0															



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-01
GROUND SURFACE ELEVATION ===== 447.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 66 IN.
FACTORED AXIAL LOAD ===== 1650 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	444.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	356	196	0	0.000	5.962	200.0	1100	550	0.508	1.00	1100	550	0	0.000	0.508
2.00	443.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	712	391	152	0.034	6.175	200.0	1271	636	0.619	0.86	1482	752	226	0.034	0.591
3.00	442.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	1067	587	228	0.062	6.298	200.0	1408	704	0.653	0.81	1733	883	362	0.062	0.658
4.00	441.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	1423	783	305	0.081	6.384	200.0	1524	762	0.693	0.77	1969	1007	480	0.082	0.718
5.00	440.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	1779	978	381	0.097	6.449	200.0	1627	813	0.789	0.74	2196	1126	590	0.097	0.773
6.00	439.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	2135	1174	458	0.109	6.502	200.0	1719	860	0.787	0.71	2418	1244	693	0.110	0.823
7.00	438.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	2491	1370	534	0.120	6.547	200.0	1804	902	0.844	0.68	2636	1360	793	0.122	0.872
8.00	437.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	2846	1565	611	0.130	6.585	200.0	1882	941	0.914	0.66	2852	1474	889	0.131	0.918
9.00	436.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	3202	1761	688	0.138	6.618	200.0	1956	978	0.904	0.64	3066	1589	983	0.140	0.962
10.00	435.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	3558	1957	765	0.146	6.648	200.0	2025	1013	0.938	0.62	3280	1703	1076	0.148	1.005
11.00	434.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	3914	2153	842	0.153	6.675	200.0	2091	1045	0.956	0.60	3493	1817	1167	0.156	1.047
12.00	433.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	4269	2348	919	0.160	6.700										
13.00	432.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	4625	2544	997	0.166	6.722										
14.00	431.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	4981	2740	1074	0.172	6.743										
15.00	430.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	356	5337	2935	1152	0.177	6.763										
16.00	429.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
17.00	428.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
18.00	427.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
19.00	426.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
20.00	425.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
21.00	424.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
22.00	423.70	1.00	200.0	Sandstone	27	Fractured	0.0	Open	No	0															



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-01
GROUND SURFACE ELEVATION ===== 447.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	444.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	388	213	0	0.000	6.474	200.0	1309	654	0.537	1.00	1309	654	0	0.000	0.554
2.00	443.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	776	427	166	0.031	6.707	200.0	1513	756	0.625	0.87	1743	883	238	0.031	0.644
3.00	442.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	1164	640	249	0.061	6.842	200.0	1676	838	0.746	0.83	2030	1033	392	0.061	0.717
4.00	441.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	1553	854	332	0.082	6.936	200.0	1814	907	0.739	0.79	2298	1173	526	0.083	0.781
5.00	440.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	1941	1067	415	0.099	7.008	200.0	1936	968	0.809	0.76	2555	1308	649	0.100	0.839
6.00	439.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	2329	1281	499	0.113	7.066	200.0	2046	1023	0.875	0.73	2804	1440	764	0.114	0.893
7.00	438.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	2717	1494	583	0.124	7.115	200.0	2147	1073	0.920	0.70	3049	1570	875	0.126	0.944
8.00	437.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	3105	1708	666	0.135	7.156	200.0	2240	1120	0.945	0.68	3290	1697	982	0.136	0.993
9.00	436.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	3493	1921	750	0.144	7.193	200.0	2328	1164	1.001	0.66	3529	1825	1086	0.146	1.039
10.00	435.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	3881	2135	834	0.152	7.226	200.0	2410	1205	1.073	0.64	3767	1951	1189	0.155	1.085
11.00	434.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	4269	2348	918	0.160	7.255										
12.00	433.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	4658	2562	1002	0.167	7.282										
13.00	432.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	5046	2775	1086	0.174	7.307										
14.00	431.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	5434	2989	1171	0.180	7.329										
15.00	430.70	1.00	200.0	Sandstone	27	Normal	0	Open	Yes	388	5822	3202	1255	0.186	7.351										
16.00	429.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
17.00	428.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
18.00	427.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
19.00	426.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
20.00	425.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
21.00	424.70	1.00	200.0	Sandstone	27	Fractured	0	Open	No	0															
22.00	423.70	1.00	200.0	Sandstone	27	Fractured	0.0	Open	No	0															



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-03
GROUND SURFACE ELEVATION ===== 449.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 443.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	442.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	291	291	160	62	0.001	3.920	200.0	1031	516	0.341	0.92	1117	563	64	0.001	0.354
2.00	441.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	291	582	320	125	0.031	4.057	200.0	1134	567	0.405	0.87	1309	663	212	0.031	0.407
3.00	440.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	291	873	480	187	0.049	4.135	200.0	1221	610	0.454	0.82	1492	760	320	0.050	0.458
4.00	439.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	291	1164	640	250	0.062	4.189	200.0	1298	649	0.527	0.78	1671	854	411	0.063	0.508
5.00	438.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	291	1456	801	312	0.072	4.231	200.0	1367	684	0.548	0.74	1848	948	494	0.073	0.558
6.00	437.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	291	1747	961	376	0.072	3.797	200.0	2076	1038	0.931	0.74	2802	1437	542	0.073	0.915
7.00	436.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	291	2038	1121	439	0.073	3.544	200.0	2150	1075	1.040	0.70	3079	1586	594	0.074	1.027
8.00	435.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	291	2329	1281	503	0.074	3.379	200.0	2220	1110	1.114	0.66	3372	1744	650	0.076	1.143
9.00	434.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	291	2620	1441	567	0.076	3.264	200.0	2286	1143	1.241	0.62	3684	1912	706	0.078	1.261
10.00	433.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	291	2911	1601	631	0.078	3.179	200.0	2349	1174	1.384	0.59	4014	2090	765	0.080	1.382
11.00	432.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	291	3202	1761	695	0.085	3.317	200.0	1442	721	0.836	0.50	2865	1504	839	0.087	0.888
12.00	431.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	291	3493	1921	759	0.092	3.443										
13.00	430.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	291	3784	2081	823	0.098	3.557										
14.00	429.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	291	4075	2241	887	0.104	3.662										
15.00	428.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	291	4367	2402	951	0.110	3.758										
16.00	427.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	291	4658	2562	1015	0.116	3.847										
17.00	426.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	291	4949	2722	1080	0.122	3.929										
18.00	425.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	291	5240	2882	1144	0.127	4.006										
19.00	424.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	291	5531	3042	1209	0.132	4.077										
20.00	423.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	291	5822	3202	1274	0.137	4.144										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-03
GROUND SURFACE ELEVATION ===== 449.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 443.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	442.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	323	323	178	0	0.000	4.332	200.0	1273	637	0.447	1.00	1273	637	0	0.000	0.419
2.00	441.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	323	647	356	138	0.029	4.485	200.0	1399	700	0.462	0.88	1597	808	225	0.029	0.478
3.00	440.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	323	970	534	208	0.049	4.572	200.0	1507	754	0.531	0.83	1812	921	349	0.050	0.534
4.00	439.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	323	1294	712	277	0.063	4.633	200.0	1602	801	0.554	0.79	2021	1031	453	0.064	0.588
5.00	438.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	323	1617	889	347	0.075	4.679	200.0	1688	844	0.662	0.76	2227	1140	548	0.076	0.643
6.00	437.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	323	1941	1067	417	0.075	4.200	200.0	2562	1281	1.022	0.76	3380	1731	604	0.076	1.044
7.00	436.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	323	2264	1245	487	0.076	3.921	200.0	2655	1327	1.149	0.72	3697	1901	665	0.078	1.160
8.00	435.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	323	2588	1423	558	0.078	3.739	200.0	2741	1371	1.294	0.68	4029	2079	728	0.079	1.280
9.00	434.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	323	2911	1601	629	0.080	3.611	200.0	2823	1411	1.356	0.64	4379	2267	792	0.082	1.402
10.00	433.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	323	3234	1779	700	0.082	3.517	200.0	2900	1450	1.506	0.61	4749	2467	857	0.084	1.527
11.00	432.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	323	3558	1957	771	0.090	3.671										
12.00	431.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	323	3881	2135	841	0.097	3.810										
13.00	430.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	323	4205	2313	912	0.104	3.936										
14.00	429.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	323	4528	2491	983	0.110	4.051										
15.00	428.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	323	4852	2668	1054	0.116	4.157										
16.00	427.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	323	5175	2846	1126	0.122	4.255										
17.00	426.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	323	5499	3024	1197	0.128	4.346										
18.00	425.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	323	5822	3202	1268	0.134	4.430										
19.00	424.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	323	6145	3380	1340	0.139	4.509										
20.00	423.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	323	6469	3558	1412	0.145	4.583										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-03
GROUND SURFACE ELEVATION ===== 449.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 443.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 66 IN.
FACTORED AXIAL LOAD ===== 1650 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	442.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	356	356	196	0	0.000	4.742	200.0	1540	770	0.483	1.00	1540	770	0	0.000	0.483
2.00	441.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	356	712	391	152	0.027	4.911	200.0	1693	847	0.578	0.88	1914	968	236	0.027	0.548
3.00	440.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	356	1067	587	228	0.049	5.007	200.0	1824	912	0.607	0.84	2163	1098	376	0.049	0.610
4.00	439.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	356	1423	783	305	0.065	5.074	200.0	1938	969	0.648	0.81	2404	1225	495	0.065	0.669
5.00	438.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	356	1779	978	381	0.077	5.125	200.0	2042	1021	0.750	0.77	2640	1350	602	0.078	0.727
6.00	437.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	356	2135	1174	458	0.078	4.602	200.0	3101	1550	1.150	0.77	4011	2051	667	0.079	1.173
7.00	436.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	356	2491	1370	536	0.079	4.296	200.0	3212	1606	1.284	0.74	4368	2242	736	0.081	1.294
8.00	435.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	356	2846	1565	613	0.082	4.097	200.0	3317	1658	1.436	0.70	4742	2442	806	0.083	1.417
9.00	434.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	356	3202	1761	691	0.084	3.958	200.0	3415	1708	1.512	0.67	5133	2652	878	0.085	1.543
10.00	433.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	356	3558	1957	769	0.086	3.855										
11.00	432.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	356	3914	2153	847	0.094	4.023										
12.00	431.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	356	4269	2348	924	0.102	4.175										
13.00	430.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	356	4625	2544	1002	0.109	4.313										
14.00	429.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	356	4981	2740	1080	0.116	4.440										
15.00	428.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	356	5337	2935	1158	0.122	4.556										
16.00	427.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	356	5693	3131	1236	0.128	4.663										
17.00	426.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	356	6048	3327	1314	0.135	4.762										
18.00	425.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	356	6404	3522	1393	0.141	4.854										
19.00	424.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	356	6760	3718	1471	0.146	4.940										
20.00	423.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	356	7116	3914	1550	0.152	5.020										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 1 - Boring B-03
GROUND SURFACE ELEVATION ===== 449.70 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 443.70 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	442.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	388	388	213	0	0.000	5.150	200.0	1833	917	0.531	1.00	1833	917	0	0.000	0.548
2.00	441.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	388	776	427	166	0.024	5.334	200.0	2015	1008	0.601	0.89	2259	1142	246	0.025	0.619
3.00	440.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	388	1164	640	249	0.048	5.440	200.0	2170	1085	0.717	0.85	2544	1291	403	0.049	0.686
4.00	439.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	388	1553	854	332	0.065	5.513	200.0	2307	1153	0.711	0.82	2819	1435	536	0.066	0.750
5.00	438.70	1.00	200.0	Sandstone	32	Normal	8	Open	Yes	388	1941	1067	416	0.079	5.570	200.0	2430	1215	0.788	0.79	3087	1576	655	0.080	0.812
6.00	437.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	388	2329	1281	500	0.080	5.001	200.0	3690	1845	1.295	0.79	4693	2397	729	0.081	1.302
7.00	436.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	388	2717	1494	584	0.082	4.670	200.0	3823	1911	1.418	0.75	5094	2611	807	0.083	1.427
8.00	435.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	388	3105	1708	668	0.085	4.454	200.0	3947	1974	1.526	0.72	5510	2833	886	0.086	1.555
9.00	434.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	388	3493	1921	753	0.087	4.302										
10.00	433.70	1.00	200.0	Sandstone	44	Normal	80	Open	Yes	388	3881	2135	838	0.090	4.191										
11.00	432.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	388	4269	2348	922	0.098	4.374										
12.00	431.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	388	4658	2562	1007	0.106	4.539										
13.00	430.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	388	5046	2775	1092	0.113	4.689										
14.00	429.70	1.00	200.0	Sandstone	27	Normal	17	Open	Yes	388	5434	2989	1176	0.121	4.827										
15.00	428.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	388	5822	3202	1261	0.128	4.953										
16.00	427.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	388	6210	3416	1346	0.134	5.069										
17.00	426.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	388	6598	3629	1432	0.141	5.176										
18.00	425.70	1.00	200.0	Sandstone	27	Normal	17	Open	No	388	6986	3843	1517	0.147	5.276										
19.00	424.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	388	7375	4056	1602	0.153	5.369										
20.00	423.70	1.00	200.0	Sandstone	27	Normal	17.0	Open	No	388	7763	4269	1688	0.159	5.456										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-04
GROUND SURFACE ELEVATION ===== 459.60 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.10 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _p /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	444.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	291	160	62	0.001	3.920	200.0	1231	616	0.540	0.93	1329	669	63	0.001	0.553
2.00	443.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	582	320	125	0.031	4.057	200.0	1307	654	0.605	0.87	1505	762	192	0.031	0.607
3.00	442.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	873	480	187	0.049	4.135	200.0	1376	688	0.657	0.82	1680	855	290	0.049	0.660
4.00	441.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	1164	640	250	0.062	4.189	200.0	1439	719	0.733	0.78	1855	948	376	0.063	0.714
5.00	440.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	1456	801	312	0.072	4.231	200.0	1497	749	0.758	0.74	2032	1043	456	0.073	0.768
6.00	439.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	1747	961	375	0.081	4.264	200.0	1552	776	0.834	0.70	2212	1139	531	0.082	0.823
7.00	438.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	2038	1121	438	0.088	4.292	200.0	1603	802	0.884	0.67	2394	1237	603	0.089	0.878
8.00	437.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	2329	1281	502	0.094	4.316	200.0	1652	826	0.896	0.64	2579	1336	674	0.096	0.934
9.00	436.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	2620	1441	565	0.100	4.336	200.0	1699	850	0.958	0.61	2768	1437	742	0.102	0.991
10.00	435.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	291	2911	1601	628	0.106	4.355	200.0	1744	872	1.034	0.59	2960	1541	810	0.108	1.047
11.00	434.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	3202	1761	692	0.113	4.456	200.0	1525	763	0.885	0.54	2809	1469	885	0.115	0.943
12.00	433.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	3493	1921	755	0.119	4.544										
13.00	432.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	3784	2081	819	0.125	4.622										
14.00	431.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	4075	2241	883	0.131	4.692										
15.00	430.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	4367	2402	947	0.137	4.756										
16.00	429.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	4658	2562	1011	0.142	4.813										
17.00	428.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	4949	2722	1075	0.148	4.866										
18.00	427.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	5240	2882	1139	0.153	4.915										
19.00	426.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	5531	3042	1204	0.158	4.960										
20.00	425.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	291	5822	3202	1268	0.162	5.001										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-04
GROUND SURFACE ELEVATION ===== 459.60 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.10 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	444.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	323	178	0	0.000	4.332	200.0	1520	760	0.658	1.00	1520	760	0	0.000	0.630
2.00	443.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	647	356	138	0.029	4.485	200.0	1614	807	0.673	0.88	1836	929	207	0.029	0.688
3.00	442.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	970	534	208	0.049	4.572	200.0	1698	849	0.743	0.83	2039	1037	321	0.050	0.746
4.00	441.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	1294	712	277	0.063	4.633	200.0	1776	888	0.770	0.79	2241	1144	420	0.064	0.803
5.00	440.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	1617	889	347	0.075	4.679	200.0	1848	924	0.880	0.76	2444	1252	510	0.076	0.861
6.00	439.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	1941	1067	417	0.084	4.716	200.0	1916	958	0.891	0.72	2649	1361	596	0.085	0.918
7.00	438.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	2264	1245	487	0.092	4.747	200.0	1980	990	0.959	0.69	2857	1472	678	0.093	0.976
8.00	437.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	2588	1423	557	0.099	4.774	200.0	2040	1020	1.040	0.67	3067	1585	757	0.101	1.035
9.00	436.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	2911	1601	627	0.105	4.797	200.0	2098	1049	1.036	0.64	3281	1700	835	0.107	1.093
10.00	435.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	323	3234	1779	697	0.111	4.818	200.0	2153	1076	1.118	0.62	3498	1816	912	0.113	1.152
11.00	434.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	3558	1957	768	0.119	4.929										
12.00	433.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	3881	2135	838	0.126	5.027										
13.00	432.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	4205	2313	909	0.133	5.114										
14.00	431.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	4528	2491	980	0.139	5.191										
15.00	430.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	4852	2668	1050	0.145	5.261										
16.00	429.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	5175	2846	1121	0.151	5.324										
17.00	428.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	5499	3024	1192	0.156	5.382										
18.00	427.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	5822	3202	1264	0.161	5.435										
19.00	426.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	6145	3380	1335	0.167	5.485										
20.00	425.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	323	6469	3558	1406	0.172	5.530										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-04
GROUND SURFACE ELEVATION ===== 459.60 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.10 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 66 IN.
FACTORED AXIAL LOAD ===== 1650 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	444.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	356	196	0	0.000	4.742	200.0	1839	920	0.707	1.00	1839	920	0	0.000	0.707
2.00	443.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	712	391	152	0.027	4.911	200.0	1953	976	0.800	0.89	2199	1112	221	0.027	0.770
3.00	442.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	1067	587	228	0.049	5.007	200.0	2055	1028	0.829	0.85	2432	1235	350	0.049	0.832
4.00	441.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	1423	783	305	0.065	5.074	200.0	2149	1075	0.872	0.81	2663	1357	462	0.065	0.893
5.00	440.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	1779	978	381	0.077	5.125	200.0	2236	1118	0.977	0.77	2894	1480	565	0.078	0.953
6.00	439.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	2135	1174	458	0.087	5.167	200.0	2318	1159	0.987	0.74	3126	1603	661	0.088	1.014
7.00	438.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	2491	1370	535	0.096	5.201	200.0	2395	1198	1.059	0.71	3360	1728	753	0.097	1.075
8.00	437.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	2846	1565	612	0.103	5.231	200.0	2468	1234	1.146	0.69	3597	1855	842	0.105	1.136
9.00	436.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	3202	1761	689	0.110	5.256	200.0	2538	1269	1.155	0.66	3836	1983	929	0.112	1.197
10.00	435.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	356	3558	1957	766	0.117	5.279										
11.00	434.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	3914	2153	844	0.125	5.401										
12.00	433.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	4269	2348	921	0.132	5.508										
13.00	432.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	4625	2544	999	0.139	5.603										
14.00	431.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	4981	2740	1076	0.146	5.688										
15.00	430.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	5337	2935	1154	0.152	5.764										
16.00	429.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	5693	3131	1232	0.158	5.833										
17.00	428.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	6048	3327	1310	0.164	5.897										
18.00	427.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	6404	3522	1388	0.170	5.955										
19.00	426.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	6760	3718	1466	0.175	6.008										
20.00	425.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	356	7116	3914	1544	0.180	6.058										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-04
GROUND SURFACE ELEVATION ===== 459.60 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 445.10 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	444.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	388	213	0	0.000	5.150	200.0	2189	1094	0.767	1.00	2189	1094	0	0.000	0.784
2.00	443.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	776	427	166	0.024	5.334	200.0	2324	1162	0.834	0.90	2594	1311	233	0.025	0.852
3.00	442.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	1164	640	249	0.048	5.440	200.0	2446	1223	0.949	0.86	2859	1450	379	0.049	0.918
4.00	441.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	1553	854	332	0.065	5.513	200.0	2558	1279	0.944	0.82	3121	1589	504	0.066	0.982
5.00	440.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	1941	1067	416	0.079	5.570	200.0	2662	1331	1.022	0.79	3381	1726	619	0.079	1.046
6.00	439.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	2329	1281	499	0.090	5.615	200.0	2759	1379	1.100	0.76	3642	1865	726	0.091	1.110
7.00	438.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	2717	1494	583	0.099	5.653	200.0	2851	1425	1.159	0.73	3904	2005	829	0.100	1.173
8.00	437.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	3105	1708	667	0.107	5.685	200.0	2938	1469	1.201	0.70	4167	2145	928	0.109	1.237
9.00	436.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	3493	1921	751	0.115	5.713										
10.00	435.10	1.00	200.0	Sandstone	32	Normal	22	Open	Yes	388	3881	2135	835	0.122	5.739										
11.00	434.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	4269	2348	920	0.130	5.871										
12.00	433.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	4658	2562	1004	0.138	5.988										
13.00	432.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	5046	2775	1088	0.146	6.091										
14.00	431.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	5434	2989	1173	0.153	6.183										
15.00	430.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	5822	3202	1257	0.159	6.266										
16.00	429.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	6210	3416	1342	0.166	6.341										
17.00	428.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	6598	3629	1427	0.172	6.409										
18.00	427.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	6986	3843	1512	0.178	6.472										
19.00	426.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	7375	4056	1597	0.184	6.530										
20.00	425.10	1.00	200.0	Sandstone	27	Normal	4	Open	No	388	7763	4269	1682	0.189	6.584										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-05
GROUND SURFACE ELEVATION ===== 448.00 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 447.50 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	446.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	291	160	62	0.001	4.929	245.6	797	398	0.437	0.90	882	445	63	0.001	0.450
2.00	445.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	582	320	124	0.039	5.102	245.6	940	470	0.520	0.84	1116	567	195	0.039	0.523
3.00	444.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	873	480	187	0.062	5.202	245.6	1050	525	0.569	0.80	1321	674	301	0.062	0.575
4.00	443.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	1164	640	249	0.078	5.271	245.6	1143	571	0.632	0.76	1511	774	397	0.079	0.616
5.00	442.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	1456	801	312	0.090	5.324	245.6	1223	612	0.635	0.72	1693	870	488	0.092	0.650
6.00	441.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	346	1801	991	391	0.105	5.311	236.4	1262	631	0.667	0.68	1859	959	600	0.107	0.665
7.00	440.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	346	2147	1181	470	0.118	5.312	227.3	1292	646	0.684	0.64	2023	1048	704	0.120	0.693
8.00	439.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	346	2493	1371	549	0.129	5.320	218.2	1314	657	0.659	0.60	2184	1135	805	0.132	0.719
9.00	438.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	346	2838	1561	629	0.140	5.331	209.1	1329	665	0.681	0.57	2344	1223	903	0.143	0.743
10.00	437.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	346	3184	1751	708	0.149	5.343	200.0	1339	669	0.714	0.53	2502	1309	1000	0.152	0.767
11.00	436.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	291	3475	1911	772	0.151	5.254	200.0	1628	814	0.860	0.55	2952	1542	1058	0.154	0.929
12.00	435.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	291	3766	2071	836	0.153	5.185	200.0	1676	838	0.935	0.53	3149	1648	1117	0.157	0.987
13.00	434.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	291	4057	2231	900	0.155	5.129	200.0	1721	861	0.959	0.51	3348	1755	1177	0.159	1.045
14.00	433.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	291	4348	2392	964	0.157	5.085										
15.00	432.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	291	4639	2552	1028	0.160	5.048										
16.00	431.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	4930	2712	1092	0.165	5.094										
17.00	430.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	5222	2872	1157	0.169	5.135										
18.00	429.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	5513	3032	1221	0.174	5.173										
19.00	428.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	5804	3192	1285	0.178	5.209										
20.00	427.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	6095	3352	1350	0.183	5.242										
21.00	426.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	6386	3512	1415	0.187	5.273										
22.00	425.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	6677	3672	1479	0.191	5.302										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-05
GROUND SURFACE ELEVATION ===== 448.00 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 447.50 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	446.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	323	178	0	0.000	5.447	241.0	970	485	0.511	1.00	970	485	0	0.000	0.483
2.00	445.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	647	356	138	0.037	5.640	241.0	1145	572	0.545	0.86	1338	679	214	0.037	0.561
3.00	444.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	970	534	208	0.062	5.751	241.0	1280	640	0.613	0.81	1577	803	337	0.062	0.618
4.00	443.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	1294	712	277	0.080	5.829	241.0	1393	696	0.626	0.77	1798	919	448	0.080	0.663
5.00	442.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	1617	889	346	0.094	5.888	241.0	1491	745	0.715	0.74	2007	1029	552	0.095	0.700
6.00	441.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	384	2001	1101	434	0.110	5.873	232.8	1542	771	0.699	0.70	2201	1133	674	0.111	0.734
7.00	440.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	384	2385	1312	522	0.124	5.873	224.6	1583	791	0.733	0.66	2388	1234	792	0.126	0.764
8.00	439.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	384	2769	1523	610	0.136	5.882	216.4	1614	807	0.778	0.63	2570	1333	906	0.139	0.792
9.00	438.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	384	3154	1734	698	0.147	5.894	208.2	1637	818	0.734	0.60	2749	1430	1017	0.150	0.817
10.00	437.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	384	3538	1946	786	0.157	5.908	200.0	1653	826	0.772	0.56	2926	1527	1126	0.160	0.842
11.00	436.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	323	3861	2124	857	0.159	5.809	200.0	2010	1005	0.948	0.58	3467	1806	1191	0.163	1.023
12.00	435.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	323	4184	2301	928	0.162	5.733	200.0	2069	1034	1.015	0.56	3689	1926	1258	0.165	1.084
13.00	434.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	323	4508	2479	998	0.164	5.672										
14.00	433.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	323	4831	2657	1069	0.167	5.623										
15.00	432.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	323	5155	2835	1141	0.169	5.582										
16.00	431.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	5478	3013	1212	0.174	5.632										
17.00	430.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	5802	3191	1283	0.179	5.678										
18.00	429.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	6125	3369	1354	0.184	5.720										
19.00	428.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	6449	3547	1425	0.189	5.758										
20.00	427.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	6772	3725	1497	0.193	5.794										
21.00	426.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	7096	3903	1568	0.197	5.828										
22.00	425.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	7419	4080	1640	0.202	5.860										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-05
GROUND SURFACE ELEVATION ===== 448.00 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 447.50 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 66 IN.
FACTORED AXIAL LOAD ===== 1650 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	446.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	356	196	0	0.000	5.962	237.3	1160	580	0.515	1.00	1160	580	0	0.000	0.516
2.00	445.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	712	391	152	0.034	6.175	237.3	1370	685	0.630	0.87	1581	801	230	0.034	0.600
3.00	444.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	1067	587	228	0.062	6.298	237.3	1532	766	0.658	0.83	1856	944	372	0.062	0.662
4.00	443.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	1423	783	305	0.081	6.384	237.3	1667	833	0.687	0.79	2109	1077	498	0.082	0.711
5.00	442.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	1779	978	381	0.097	6.449	237.3	1785	892	0.786	0.76	2350	1203	611	0.098	0.767
6.00	441.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	422	2201	1211	477	0.114	6.431	229.8	1850	925	0.769	0.72	2570	1321	749	0.115	0.803
7.00	440.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	422	2624	1443	574	0.129	6.432	222.4	1902	951	0.808	0.68	2782	1435	880	0.131	0.836
8.00	439.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	422	3046	1676	670	0.142	6.441	214.9	1944	972	0.859	0.65	2987	1546	1008	0.144	0.865
9.00	438.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	422	3469	1908	767	0.154	6.454	207.5	1976	988	0.828	0.62	3188	1655	1132	0.157	0.893
10.00	437.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	422	3891	2140	864	0.165	6.469	200.0	2000	1000	0.840	0.59	3384	1761	1253	0.168	0.918
11.00	436.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	356	4247	2336	942	0.167	6.362	200.0	2432	1216	1.033	0.60	4024	2092	1327	0.171	1.119
12.00	435.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	356	4603	2532	1019	0.170	6.279										
13.00	434.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	356	4959	2727	1097	0.173	6.212										
14.00	433.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	356	5315	2923	1175	0.175	6.158										
15.00	432.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	356	5670	3119	1253	0.178	6.114										
16.00	431.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	6026	3314	1331	0.183	6.169										
17.00	430.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	6382	3510	1409	0.189	6.219										
18.00	429.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	6738	3706	1487	0.194	6.264										
19.00	428.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	7093	3901	1565	0.198	6.306										
20.00	427.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	7449	4097	1644	0.203	6.346										
21.00	426.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	7805	4293	1722	0.208	6.382										
22.00	425.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	8161	4488	1801	0.212	6.416										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== Pier 2 - Boring B-05
GROUND SURFACE ELEVATION ===== 448.00 FT
GROUND WATER ELEVATION ===== 460.50 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 447.50 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

42 IN.
48 IN.
54 IN.
60 IN.
66 IN.
72 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	446.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	388	213	0	0.000	6.474	234.2	1366	683	0.532	1.00	1366	683	0	0.000	0.549
2.00	445.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	776	427	166	0.031	6.707	234.2	1615	807	0.621	0.88	1844	933	244	0.031	0.640
3.00	444.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	1164	640	249	0.061	6.842	234.2	1806	903	0.736	0.84	2158	1097	406	0.061	0.706
4.00	443.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	1553	854	332	0.082	6.936	234.2	1966	983	0.732	0.80	2447	1248	544	0.083	0.773
5.00	442.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	1941	1067	415	0.099	7.008	234.2	2105	1053	0.805	0.77	2720	1391	670	0.100	0.833
6.00	441.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	461	2402	1321	520	0.117	6.988	227.3	2186	1093	0.855	0.74	2968	1523	823	0.119	0.872
7.00	440.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	461	2862	1574	626	0.133	6.988	220.5	2251	1126	0.883	0.70	3206	1651	969	0.135	0.908
8.00	439.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	461	3323	1828	731	0.148	6.997	213.7	2304	1152	0.889	0.67	3436	1775	1110	0.150	0.940
9.00	438.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	461	3784	2081	836	0.160	7.011	206.8	2347	1173	0.924	0.64	3659	1895	1248	0.163	0.969
10.00	437.50	1.00	282.0	Sandstone	27	Normal	0	Open	No	461	4245	2335	942	0.172	7.028	200.0	2380	1190	0.973	0.61	3877	2013	1382	0.175	0.996
11.00	436.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	388	4633	2548	1026	0.175	6.912										
12.00	435.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	388	5021	2762	1111	0.178	6.822										
13.00	434.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	388	5410	2975	1196	0.180	6.750										
14.00	433.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	388	5798	3189	1280	0.183	6.692										
15.00	432.50	1.00	200.0	Sandstone	32	Normal	36	Open	No	388	6186	3402	1365	0.186	6.644										
16.00	431.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	6574	3616	1450	0.192	6.703										
17.00	430.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	6962	3829	1535	0.198	6.757										
18.00	429.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	7350	4043	1620	0.203	6.807										
19.00	428.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	7738	4256	1705	0.208	6.853										
20.00	427.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	8126	4470	1791	0.213	6.895										
21.00	426.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	8515	4683	1876	0.218	6.935										
22.00	425.50	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	8903	4897	1962	0.222	6.971										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== E. Abutment - Boring 1 (Rock Core)
GROUND SURFACE ELEVATION ===== 463.10 FT
GROUND WATER ELEVATION ===== 459.20 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 458.20 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 42 IN.
FACTORED AXIAL LOAD ===== 400 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	457.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	226	125	48	0.011	3.883	200.0	587	294	0.427	0.89	657	332	64	0.011	0.427
2.00	456.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	453	249	97	0.041	4.017	200.0	632	316	0.461	0.82	774	394	154	0.041	0.464
3.00	455.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	679	374	145	0.059	4.093	200.0	672	336	0.492	0.76	890	456	226	0.059	0.500
4.00	454.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	906	498	194	0.072	4.146	200.0	709	354	0.520	0.70	1007	518	292	0.072	0.534
5.00	453.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	1132	623	243	0.082	4.187	200.0	742	371	0.566	0.66	1125	582	355	0.083	0.569
6.00	452.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	1358	747	292	0.090	4.220	200.0	773	386	0.571	0.62	1244	646	414	0.092	0.603
7.00	451.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	1585	872	341	0.097	4.248	200.0	802	401	0.585	0.59	1365	711	473	0.099	0.637
8.00	450.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	1811	996	390	0.104	4.272	217.3	876	438	0.652	0.57	1538	802	530	0.106	0.700
9.00	449.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	2038	1121	439	0.110	4.293	234.6	949	475	0.729	0.55	1716	896	586	0.112	0.763
10.00	448.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	226	2264	1245	489	0.115	4.312	251.9	1023	511	0.766	0.54	1897	992	641	0.118	0.827
11.00	447.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	226	2491	1370	538	0.120	4.329	269.1	1096	548	0.814	0.53	2083	1091	696	0.123	0.890
12.00	446.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	226	2717	1494	588	0.125	4.345	286.4	1169	585	0.882	0.51	2273	1192	751	0.129	0.954
13.00	445.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	226	2943	1619	638	0.130	4.361	303.7	1243	621	0.961	0.50	2467	1295	805	0.134	1.018
14.00	444.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	226	3170	1743	688	0.134	4.375										
15.00	443.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	287	3457	1901	756	0.142	4.365										
16.00	442.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	287	3743	2059	825	0.150	4.360										
17.00	441.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	287	4030	2217	894	0.157	4.358										
18.00	440.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	287	4317	2374	963	0.164	4.358										
19.00	439.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	287	4604	2532	1032	0.171	4.360										
20.00	438.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	287	4891	2690	1102	0.177	4.364										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== E. Abutment - Boring 1 (Rock Core)
GROUND SURFACE ELEVATION ===== 463.10 FT
GROUND WATER ELEVATION ===== 459.20 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 458.20 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 54 IN.
FACTORED AXIAL LOAD ===== 1350 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u WIN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	457.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	291	160	62	0.001	4.929	200.0	971	486	0.536	0.92	1061	535	63	0.001	0.549
2.00	456.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	582	320	124	0.039	5.102	200.0	1045	523	0.592	0.85	1227	623	194	0.039	0.594
3.00	455.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	873	480	187	0.062	5.202	200.0	1111	556	0.631	0.80	1389	708	296	0.062	0.636
4.00	454.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	1164	640	249	0.078	5.271	200.0	1171	586	0.692	0.76	1550	794	387	0.078	0.677
5.00	453.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	1456	801	312	0.090	5.324	200.0	1226	613	0.700	0.72	1710	879	472	0.091	0.716
6.00	452.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	1747	961	375	0.101	5.367	213.4	1334	667	0.789	0.69	1932	996	552	0.102	0.785
7.00	451.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2038	1121	438	0.110	5.403	226.9	1440	720	0.852	0.67	2158	1115	630	0.112	0.853
8.00	450.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2329	1281	501	0.118	5.434	240.3	1546	773	0.877	0.65	2389	1237	707	0.120	0.922
9.00	449.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2620	1441	564	0.125	5.461	253.8	1652	826	0.953	0.63	2625	1361	781	0.127	0.991
10.00	448.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	291	2911	1601	627	0.132	5.486	267.2	1757	878	1.042	0.61	2865	1488	855	0.134	1.060
11.00	447.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	291	3202	1761	690	0.138	5.508	280.7	1862	931	1.080	0.60	3111	1618	927	0.141	1.129
12.00	446.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	291	3493	1921	754	0.144	5.528										
13.00	445.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	291	3784	2081	817	0.149	5.546										
14.00	444.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	291	4075	2241	881	0.154	5.564										
15.00	443.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	369	4444	2444	968	0.163	5.549										
16.00	442.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	369	4813	2647	1056	0.171	5.540										
17.00	441.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	369	5182	2850	1144	0.179	5.535										
18.00	440.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	369	5551	3053	1232	0.187	5.532										
19.00	439.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	369	5919	3256	1320	0.195	5.532										
20.00	438.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	369	6288	3459	1409	0.202	5.534										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== E. Abutment - Boring 1 (Rock Core)
GROUND SURFACE ELEVATION ===== 463.10 FT
GROUND WATER ELEVATION ===== 459.20 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 458.20 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 60 IN.
FACTORED AXIAL LOAD ===== 1500 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _p /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	457.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	323	178	0	0.000	5.447	200.0	1199	599	0.637	1.00	1199	599	0	0.000	0.609
2.00	456.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	647	356	138	0.037	5.640	200.0	1290	645	0.643	0.86	1493	757	211	0.037	0.659
3.00	455.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	970	534	208	0.062	5.751	200.0	1372	686	0.700	0.82	1680	855	329	0.062	0.705
4.00	454.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	1294	712	277	0.080	5.829	200.0	1446	723	0.712	0.78	1865	953	434	0.080	0.749
5.00	453.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	1617	889	346	0.094	5.888	212.1	1574	787	0.836	0.74	2114	1084	531	0.095	0.821
6.00	452.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	1941	1067	416	0.105	5.936	224.2	1701	850	0.860	0.72	2367	1217	623	0.107	0.892
7.00	451.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	2264	1245	486	0.115	5.976	236.3	1826	913	0.941	0.70	2624	1352	711	0.117	0.964
8.00	450.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	2588	1423	556	0.124	6.011	248.4	1950	975	1.036	0.68	2887	1490	797	0.126	1.035
9.00	449.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	2911	1601	626	0.132	6.041	260.5	2074	1037	1.046	0.66	3154	1631	882	0.134	1.107
10.00	448.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	323	3234	1779	696	0.139	6.068	272.6	2197	1099	1.141	0.64	3425	1774	965	0.142	1.179
11.00	447.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	323	3558	1957	766	0.146	6.093										
12.00	446.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	323	3881	2135	836	0.152	6.115										
13.00	445.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	323	4205	2313	907	0.158	6.136										
14.00	444.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	323	4528	2491	977	0.163	6.155										
15.00	443.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	410	4938	2716	1074	0.173	6.138										
16.00	442.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	410	5348	2941	1172	0.182	6.127										
17.00	441.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	410	5758	3167	1269	0.190	6.120										
18.00	440.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	410	6167	3392	1366	0.198	6.116										
19.00	439.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	410	6577	3617	1464	0.206	6.115										
20.00	438.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	410	6987	3843	1562	0.214	6.116										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== E. Abutment - Boring 1 (Rock Core)
GROUND SURFACE ELEVATION ===== 463.10 FT
GROUND WATER ELEVATION ===== 459.20 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 458.20 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 66 IN.
FACTORED AXIAL LOAD ===== 1650 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)	Q _{C1} (KIPS)							w _{C1} (IN.)	w _{Rn} (IN.)	
1.00	457.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	356	196	0	0.000	5.962	200.0	1451	725	0.670	1.00	1451	725	0	0.000	0.670
2.00	456.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	712	391	152	0.034	6.175	200.0	1561	781	0.754	0.88	1784	903	226	0.034	0.724
3.00	455.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	1067	587	228	0.062	6.298	200.0	1660	830	0.770	0.83	1999	1016	362	0.062	0.774
4.00	454.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	1423	783	305	0.081	6.384	211.0	1813	907	0.827	0.80	2278	1162	480	0.082	0.850
5.00	453.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	1779	978	381	0.097	6.449	222.0	1963	981	0.946	0.77	2560	1310	590	0.097	0.925
6.00	452.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	2135	1174	458	0.109	6.502	233.0	2111	1055	0.970	0.74	2846	1460	693	0.110	1.000
7.00	451.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	2491	1370	534	0.120	6.547	244.0	2256	1128	1.056	0.72	3136	1612	793	0.122	1.075
8.00	450.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	2846	1565	611	0.130	6.585	255.0	2401	1200	1.157	0.70	3431	1767	889	0.131	1.150
9.00	449.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	3202	1761	688	0.138	6.618	266.0	2544	1272	1.180	0.68	3731	1925	983	0.140	1.224
10.00	448.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	356	3558	1957	765	0.146	6.648										
11.00	447.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	356	3914	2153	842	0.153	6.675										
12.00	446.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	356	4269	2348	919	0.160	6.700										
13.00	445.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	356	4625	2544	997	0.166	6.722										
14.00	444.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	356	4981	2740	1074	0.172	6.743										
15.00	443.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	451	5432	2988	1180	0.182	6.724										
16.00	442.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	451	5883	3235	1287	0.191	6.711										
17.00	441.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	451	6333	3483	1394	0.200	6.703										
18.00	440.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	451	6784	3731	1501	0.209	6.698										
19.00	439.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	451	7235	3979	1608	0.217	6.696										
20.00	438.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	451	7686	4227	1716	0.225	6.697										



DRILLED SHAFT AXIAL CAPACITY IN ROCK -
DOLOMITE, LIMESTONE, SANDSTONE, AND HARD SHALE

STRUCTURE ===== SN 050-0260- US 6 over Fox River
SUBSTRUCTURE & REFERENCE BORING ===== E. Abutment - Boring 1 (Rock Core)
GROUND SURFACE ELEVATION ===== 463.10 FT
GROUND WATER ELEVATION ===== 459.20 FT
ESTIMATED TOP OF ROCK ELEVATION ===== 458.20 FT
DRILLED SHAFT DIAMETER IN ROCK ===== 72 IN.
FACTORED AXIAL LOAD ===== 1725 KIPS
DRILLED SHAFT CONCRETE STRENGTH, f_c ===== 3.5 KSI

FOUNDATION REDUNDANCY === REDUNDANT

Drilled Shaft Dia.'s for Design Table

36 IN.
42 IN.
48 IN.
54 IN.
60 IN.
66 IN.

SOCKET DEPTH (FT)	TIP ELEV. (FT)	LAYER THICK. (FT)	UNCONFINED COMPRESSIVE STRENGTH (q _u) (KSF)	ROCK TYPE	GSI	ROCK CONDITION	RQD (%)	JOINT TYPE	ROCK INTACT OR TIGHTLY JOINTED?	SIDE RESISTANCE						AVG. q _u W/IN 2 - SHAFT DIA. (KSF)	TIP RESISTANCE			COMBINED SIDE & TIP RESISTANCE					
										NOM. RESIST. (KIPS)	Σ NOM. RESIST. (KIPS)	Σ FACT. RESIST. (KIPS)	SETTLEMENT				NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTL. w _{Rn} (IN.)	R _P /R _n	NOM. RESIST. (KIPS)	FACT. RESIST. (KIPS)	SETTLEMENT		
													Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)								Q _{C1} (KIPS)	w _{C1} (IN.)	w _{Rn} (IN.)
1.00	457.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	388	213	0	0.000	6.474	200.0	1726	863	0.714	1.00	1726	863	0	0.000	0.731
2.00	456.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	776	427	166	0.031	6.707	200.0	1858	929	0.771	0.88	2101	1063	238	0.031	0.789
3.00	455.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	1164	640	249	0.061	6.842	210.1	2042	1021	0.902	0.85	2415	1226	392	0.061	0.871
4.00	454.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	1553	854	332	0.082	6.936	220.2	2220	1110	0.911	0.81	2730	1391	526	0.083	0.951
5.00	453.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	1941	1067	415	0.099	7.008	230.3	2393	1197	1.004	0.79	3048	1557	649	0.100	1.030
6.00	452.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	2329	1281	499	0.113	7.066	240.3	2564	1282	1.096	0.76	3369	1725	764	0.114	1.109
7.00	451.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	2717	1494	583	0.124	7.115	250.4	2732	1366	1.170	0.74	3694	1895	875	0.126	1.187
8.00	450.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3105	1708	666	0.135	7.156	260.5	2898	1449	1.227	0.72	4023	2068	982	0.136	1.265
9.00	449.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3493	1921	750	0.144	7.193										
10.00	448.20	1.00	200.0	Sandstone	27	Normal	0	Open	No	388	3881	2135	834	0.152	7.226										
11.00	447.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	388	4269	2348	918	0.160	7.255										
12.00	446.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	388	4658	2562	1002	0.167	7.282										
13.00	445.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	388	5046	2775	1086	0.174	7.307										
14.00	444.20	1.00	200.0	Sandstone	27	Normal	23	Open	No	388	5434	2989	1171	0.180	7.329										
15.00	443.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	492	5926	3259	1287	0.190	7.308										
16.00	442.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	492	6417	3530	1403	0.200	7.293										
17.00	441.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	492	6909	3800	1519	0.210	7.284										
18.00	440.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	492	7401	4070	1635	0.219	7.278										
19.00	439.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	492	7893	4341	1752	0.228	7.275										
20.00	438.20	1.00	321.0	Sandstone	27	Normal	23	Open	No	492	8384	4611	1869	0.236	7.275										