

CORRESPONDENCE/MEMORANDUM \_\_\_\_\_ STATE OF WISCONSIN

DATE: December 17, 1992

TO: Hubert Fischer, Area Construction Materials Supervisor  
Transportation District 6

FROM: Bruce J. Pfister, P.E.  
Chief Geotechnical Engineer

SUBJECT: Site Investigation Report  
Project I.D. 1020-05-02  
CTH "B" Over I-94  
Menomonie  
Structure B-17-144/145  
Dunn County

We are attaching copies of a Site Investigation Report for the project noted above.

By:



Dennis G. Althaus

DGA:BJP:a14047

Attachments

cc: District 6 (orig. +3)  
C.O. Bridge (2)  
C.O. Files  
C.O. Design  
SFS  
Geotechnical File

**SITE INVESTIGATION REPORT  
PROJECT I.D. 1020-05-02  
CTH "B" OVER I-94  
MENOMONIE  
STRUCTURE B-17-144/145  
DUNN COUNTY**

1. General.

Six borings were made for the proposed two span twin structures carrying CTH "B" over I-94. The new twin structures will replace the existing four span two lane concrete beam slab bridge. The structure is located about four miles east of the STH 25 and I-94 interchange. The present structure appears to be in good condition with a good PCC deck and fair PCC approaches which are faulted at the abutments. The 15 to 20 foot approach fills look good. Riprap was not used on the fill banks. No marsh, boulders or rock outcrops were observed. The topography consists of grass and cultivated farm fields. The surface soil is a silt.

2. Subsurface Condition.

Six borings were made conforming to AASHTO Method T-206, Standard Penetration Test, to estimate relative density, fix presumptive bearing capacity, investigate soil properties to select suitable pile types with their support values, make a cursory review of alternate foundation possibilities, and recover samples for soil textural identification and classification. Soil textures noted on the drilling logs are drillers field identification with a later check at the Central Geotechnical Section Office.

Boring 1 was taken at Station 414+68, 74 feet left of the reference line. Boring 1 was logged as the following; elevation 902.3 to 901 black silty topsoil, 901 to 899.5 brown silt, 899.5 to 895 loose brown fine to medium sand 895 to 849 firm medium to coarse sand with a trace of gravel, 849 to 847 dense brown sand and gravel, 847 to 844.5 firm brown fine to coarse sand, 844.5 to 835 dense red to brown fine to coarse sand with layers of fine gravel, 835 to 831 very dense gray sand and gravel with some silt, cobbles and boulders, 831 to 822.5 very dense gray sandstone and shale.

Boring 2 was taken at Station 414+66, 48 feet right of the reference line. Boring 2 was logged as the following; Elevation 903.2 to 901.5 black topsoil, 901.5 to 900.5 brown silt, 900.5 to 854.5 firm brown fine to coarse sand with a trace of gravel 854.5 to 827 firm to dense brown-red-gray fine to coarse sand with a trace of gravel, 827 to 823 very dense gray sandstone and shale.

# Site Investigation Report

December 17, 1992

Page 2

Boring 3 was taken at Station 415+72, 74' feet left of the reference line. Boring 2 was logged as the following; Elevation 902 to 900.5 black topsoil, 900.5 black topsoil, 900.5 to 848.5 loose to firm fine to coarse sand with a trace of silt and gravel, 848.5 to 829 dense to very dense red brown gray fine to coarse sand with some gravel and cobbles, 829 to 822.5 very dense gray sandstone and shale (cored from 827.5 to 822.5 with 80% recovery and an RQD of 33%).

Boring 4 was taken at Station 413+72, 74 feet left of the reference line. Boring 4 was logged as the following; Elevation 901.3 to 899.5 black topsoil, 899.5 to 878.5 loose to firm brown fine to medium sand with a trace of silt, 878.5 to 843.5 firm brown fine to coarse sand with a trace of fine gravel, 843.5 to 830 dense reddish brown sand and gravel with a trace of silt and cobbles, 830 to 826.5 very dense gray sandstone and shale.

Boring 5 was taken at Station 413+72, 37 feet right of the reference line. Boring 5 was logged as the following; Elevation 922.3 to 921.8 asphalt, 921.8 to 921 base coarse (gravel), 921 to 899.5 firm brown fine to medium sand with a trace of silt (Fill), 899.5 to 846.5 firm brown fine to coarse sand with layers of gravel, 846.5 to 828.5 dense to very dense reddish brown sand with some gravel and a trace of cobbles, 828.5 to 822 very dense gray sandstone and shale.

Boring 6 was taken at Station 415+72, 37 feet right of the reference line. Boring 6 was logged as the following; Elevation 922.4 to 922 asphalt, 922 to 921.5 base coarse, 921.5 to 903.5 loose brown medium sand with a trace of silt (fill), 903 to 847.5 firm brown fine to coarse sand with a trace of gravel, 847.5 to 832 dense coarse fine to coarse sand with a little gravel, 832 to 828 very dense gray sandstone and shale.

The water table is at Elevation 863. The topsoil is  $1.5 \pm$  feet thick.

## Rock Elevations

<u>Structure Unit</u>	<u>Station</u>	<u>Rock</u>
South Abutment	413+72	829
Pier	414+67	828
North Abutment	415+72	830

3. Bearing Capacity.

A cursory review indicates that the soils within practical footing depths are inadequate for bridge support on spread footings.

4. Piles.

The following charts can be used to set pile lengths.

<u>Structure Unit</u> <u>Elevation</u>	<u>Skin Friction (psf)</u> <u>(SF=2)</u>	<u>End Bearing psf</u> <u>Displ. (SF=2) H-Piles</u>	
South Abutment			
900 to 863	250		
863 to 845	350		
845 to 829	450	48,000	24,000
829 to 822 (rock)	1000	420,000	210,000
Pier			
900 to 863	250		
863 to 850	350		
850 to 828	600	78,000	39,000
828 to 822 (rock)	1000	420,000	210,000
North Abutment			
900 to 863	250		
863 to 845	350		
845 to 830	600	78,000	39,000
830 to 822 (rock)	1000	420,000	210,000

The above pile values are applicable to piles having a normal cross section ranging from 10 to 14 inches.

The approximate pile tip elevation is  $830 \pm$  for displacement piles and  $827 \pm$  for H-piles.

5. Alternate Foundation Type.

Drilled caissons could be used here but the cost would be more. Dynamic and vibratory methods could not be used effectively here.

3. Bearing Capacity.

A cursory review indicates that the soils within practical footing depths are inadequate for bridge support on spread footings.

4. Piles.

The following charts can be used to set pile lengths.

<u>Structure Unit</u> <u>Elevation</u>	<u>Skin Friction (psf)</u> <u>(SF=2)</u>	<u>End Bearing psf</u> <u>Displ. (SF=2) H-Piles</u>	
South Abutment			
900 to 863	250		
863 to 845	350		
845 to 829	450	48,000	24,000
829 to 822 (rock)	1000	420,000	210,000
Pier			
900 to 863	250		
863 to 850	350		
850 to 828	600	78,000	39,000
828 to 822 (rock)	1000	420,000	210,000
North Abutment			
900 to 863	250		
863 to 845	350		
845 to 830	600	78,000	39,000
830 to 822 (rock)	1000	420,000	210,000

The above pile values are applicable to piles having a normal cross section ranging from 10 to 14 inches.

The approximate pile tip elevation is  $830 \pm$  for displacement piles and  $827 \pm$  for H-piles.

5. Alternate Foundation Type.

Drilled caissons could be used here but the cost would be more. Dynamic and vibratory methods could not be used effectively here.

6. Lateral Earth Pressure.

The active lateral earth pressure can be held to a minimum of 30 to 35 psf if the material behind the abutment or other earth retaining structures is a good sand material and adequate compaction and thorough drainage is maintained. If the material is a silty sand it could be 45 psf or more depending on the silt content.

7. Construction Problems.

No unusual, unique or especially difficult construction problems are foreseen.

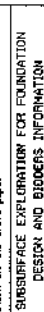
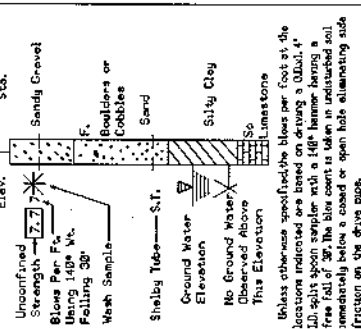
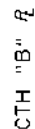
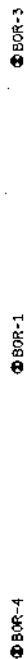
Where new fills are going to be constructed they should be constructed before the piles are driven and at least a couple of months before the approach slabs are laid down.

8. Recommendations.

H-piles or oil field pipe piles driven to Elevation  $827 \pm$  (rock) at 9,000 psi load in the steel section.

Give adequate time (2 months  $\pm$ ) for the approach fills to get the settlement out before the approach slabs are laid down.

If the fill material is not a good sand material put in an adequate drainage system.



To obtain relative data concerning the character of the material in and upon which the foundation might be built, borings and/or soundings were made at points approximately 100 ft apart, and the results are shown in Figure 1. The data presented herein are indicated on this drawing. The data presented herein represents the findings of the subsurface investigations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not consider these data sufficient to establish the general ground conditions below the depths investigated or that the widespread presence of material encountered in these investigations is necessarily typical of the entire site.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS			
STRUCTURE			
CONSTR. SPEC.	1966	DESIGN BY	PLANS DATE
SUBSURFACE		SHEET 1 OF 1	
EXPLORATION		X	

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 1 Structure B-17-145 County Dunn Sheet 1 of 2

Project 1020-05-02 Road I94 & CTH.B

Station 414+68 Offset 74' LT R Surface Elevation 902.3

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
 Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
 After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
 Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 10/26/92 Unit 10  
Finish \_\_\_\_\_ Chief Mogers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	
					Black Topsoil - silty						A
					Br. SILT						
1	M	4	3		Loose Br Fne to Med SAND	5		5			
		6	4					8			
								11			
								24			
					Firm Br. Med to Coarse SAND			31			
								35			
2	AA	6	8			10					RB
		12	14								Altered
											Revert.
3	M	8	8			15					
		13	9								
4	M	8	6			20					
		9	9								
5	M	9	8			25					
		10	10								
					Firm Br. Fne to Coarse SAND - Th. Gravel.						
6	M	9	4			30					
		20	16								
7	M	9	6			35					
		9	8								
8	M	13	8		2" water Table	40					
	W	6									

Checked by

Final

Boring No. 1

902.0



FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 1 Structure B-17-145 County Dunn Sheet 2 of 2

Project 1020-05-02 Road I94 & CTH "B"

Station 414+68 Offset 74' L+R Surface Elevation 902.3

GROUND WATER OBSERVATIONS

While drilling Time after drilling

Before casing removal Depth to water

After Boring Completed Depth to cave-in

Cave In Water Notes

MOISTURE

D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

DRILLING METHOD

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 10/26/92 Unit TV

Finish 10/27/92 Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing	Probe	Size	
8	W	13	8		40' Firm Br. Fine to Coarse SAND - Tr. Gravel.						Bit
		6									Abundant
			8								Revised
9	W	11	9		45'						
		9									
			7								
10	W	8	10		50'						
		11									
			15		Dense Br. Layer of SAND and GRAVEL						
11	W	14	10		55'						
		8			Firm Br. Fine to Coarse SAND						
			16		Dense Red. Br. Fine to Coarse SAND						
12	W	22	23		60'						
		24			Tr. Fine Gravel. layers						
			11								
13	W	19	22		65'						
		28									
					Boulder 1'						
14	W	14	2		70'						
					V. Dense. Gray SAND and GRAVEL - some silt - with cobbles - boulders						
					V. Dense Gray Sandstone - Shale						
15	W	150	30		75'						
					Drilled Ahead Roller Bit to 80' V. Hard						
					80'						
					LB						

Checked by

902.0  
903.2

Final

Boring No.

1

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 2 Structure B-17-144 County Dunn Sheet 1 of 1

Project 102040502 Road I 94 & CTH "B"

Station	4144 66	Offset	48' RT R	Surface Elevation	903.2
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## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_

Before casing removal: \_\_\_\_\_ Depth to water: \_\_\_\_\_

After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_

Cave In Water Notes

## MOÏSTURE

**D = Damp**  
**M = Metal**

W = Wet

HS = Hollowstem

WA = Washhead  
RB = Rockbit

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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## DRILLING METHOD

**ST = Shelby tube**

SS = Split spoon  
DM = Drilling mu

\_\_\_\_\_

**A = Auger**

C = Coring  
W = Wash

1

**E = Easy**

M = Med  
H = Harc

100

Start 10/27/92 Unit IV

Finish \_\_\_\_\_ Chief *Meyers*

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size		
					Black Topsoil Br. SILT						A
1	M	4 5	5 6		Louse Br. Fine to Med. SAND						W
					Firm Br. Fine to Coarse SAND						
2	M	5 8	7 9								R.B. Ahead Revert
3	M	8 13	6 10								
4	M	6 8	5 8								
5	W	7 9	6 8								
6	M	8 12	7 9		Firm Br. Fine to Coarse SAND In Fine Gravel						
7	M	10 14	8 11								
8	W	8 9	8 8		← water Table						

Checked by	Final	Boring No.
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# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 2 Structure B-17-144 County Dunn Sheet 2 of 2

Project 1020-05-02 Road I94 & CTH. "B"

Station 414+66 Offset 45' Rt R Surface Elevation 903.2

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_

Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_

After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_

Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 10/27/92 Unit III  
Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Drilling Method	
8	W	8	8	40	Firm Br. Fine to Coarse SAND Th. fine Gravel.	40					R.B.
9	N	10	10	45		45					Hand Revert
10	W	20	25	50	Dense Br. Fine to Coarse SAND - Little Gravel. with layers of Gravel.	50					
11	W	14	17	55		55					
12	W	15	14	60	Firm to Dense Red Br. Fine to Coarse SAND - Th Gravel layers.	60					
13	W	20	21	65	Dense.	65					
14	W	20	21	70	Dense Gray Fine to Coarse SAND - Little Gravel.	70					
15	W	22	19	75	Dense Gray SAND STONE - SHALE Roller bit down to 80' v. Hard.	75					
				80		80					E.B.

Checked by \_\_\_\_\_

Final

Boring No. 2

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 3 Structure B-17-145 County Dunn Sheet 1 of 2

Project 1020-05-02 Road I94 - CTH. "B"

Station 415+72 Offset 74.25' Lt R Surface Elevation 902.0

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_

Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_

After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_

Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

## DRILLING METHOD

MOISTURE  
D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 10/29/92 Unit IV

Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size		
					Black Topsoil						A
1	M	4	5		Loose Br. med. SAND - To silt						W
		5	7								
2	M	4	5								IV
		5	6								RB
											Actual
											Revert
3	M	6	7		Firm Br. Fine to Coarse SAND						
		7									
4	M	8	8								
		10									
5	M	8	11		Firm Br. Fine to Coarse SAND						
		13			To Gravel. (layers)						
6	M	7	12								
		13									
7	M	6	7								
		9									
8	W	8	9		water Table						
		11									

Checked by \_\_\_\_\_

Final

Boring No. 3

# FIELD BORING LOG

Boring No. 3 Structure B-17-145 EL3(S) 385 State of Wisconsin/Department of Transportation  
 Project 1020-05-02 Road 594 & CT. 13 County Dunn Sheet 2 of 2  
 Station 415 + 72 Offset 74.25' LT R Surface Elevation 902.0

GROUND WATER OBSERVATIONS  
 While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
 Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
 After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
 Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
 D = Damp  
 M = Moist  
 W = Wet  
 HS = Hollowstem  
 WA = Washhead  
 RB = Rockbit  
 DRILLING METHOD  
 ST = Shelby tube  
 SS = Split spoon  
 DM = Drilling mud  
 A = Auger  
 C = Coring  
 W = Wash  
 E = Easy  
 M = Medium  
 H = Hard  
 Start 10/29/92 Unit ft  
 Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	
8	W	8	9	40'	Firm Br. Fine to Coarse SAND - Tr. of Gravel layers	40					RB
9	W	5	9	45'		45					Ahead Report
10	W	9	12	50'		50					
11	W	17	23	55'	Dense Red Br. Fine to Coarse SAND Little Gravel - Tr. S. 1/4	55					
12	W	19	20	60'		60					
13	W	80	60	65'	V. Dense Gray SAND - some Gravel and Boulders	65					
14	W	30	44	70'		70					
15		100/11"		75'	V. Dense Gray Sandstone Shale Cored 5' 80% Recovery	75					
				80'	E.B.	80					

Checked by \_\_\_\_\_ Final \_\_\_\_\_ Boring No. 60

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 4 Structure B-17-145 County Darin Sheet 6 of 2

Project 1020-05-02 Road I 94 & CTH "B"

Station 413+22 Offset 74' L R S. Abut. Surface Elevation 901.3

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
 Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
 After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
 Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
 D = Damp  
 M = Moist  
 W = Wet

HS = Hollowstem  
 WA = Washhead  
 RB = Rockbit

ST = Shelby tube  
 SS = Split spoon  
 DM = Drilling mud

A = Auger  
 C = Coring  
 W = Wash

E = Easy  
 M = Medium  
 H = Hard

Start 10/30/92 Unit IV  
 Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	
					Black Topsoil						A
1	M	4	5		Loose Br. Fine to Med. SAND - Tr. silt.						W
		5	6								
2	M	3	4								RB.
		5	5								Abund.
					Fine Br. Fine to Med SAND Tr. silt.						Revert
3	M	6	6								
		8									
4	M	7	7								
		8									
5	M	8	10		Fine Br. Fine to coarse SAND Tr. Fine Gravel						
		11									
6	M	8	8								
		9									
7	M	8	9								
		11									
8	W	6	8		2 - water Table						
		10									

Checked by \_\_\_\_\_

Final

Boring No. 4

FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 4 Structure B-17-145 County Dunn Sheet 2 of 2

Project 1020-05-02 Road I 94 & CTH. "B"

Station 413 + 72 Offset 74' Lt R S. Abut. Surface Elevation 901.3

GROUND WATER OBSERVATIONS

While drilling Time after drilling  
Before casing removal Depth to water  
After Boring Completed Depth to cave-in  
Cave In Water Notes

MOISTURE  
D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 10/30/92 Unit IV  
Finish 11/9/92 Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	
8	W	6	8	40'	Firm Br. Fine to Coarse SAND - Tr. Fine Gravel.	40					RB
9	W	6	6	45'	Tr. of Gravel layers	45					RB
10	W	9	9	50'		50					RB
11	W	9	12	55'		55					RB
12	W	16	19	60'	Dense Red. Br. SAND - GRAVEL Tr. silt Tr. Cobbles	60					RB
13	W	21	24	65'		65					RB
14	W	29	29	70'	No Recovery	70					RB
15	W	100/4"	100/4"	75'	U. Dense Gray SANDSTONE - SHALE	75					RB
				80'		80					RB

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Final

Boring No. 4

FIELD BORING LOG

EL3(S) 385

State of Wisconsin Department of Transportation

Boring No. 5 Structure B-17-144 County Dunn Sheet 1 of 3

Project 1020-05-02 Road I94 & CTH-"B"

Station 413+72 Offset 37' RT R Surface Elevation 922.3

GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
 Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
 After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
 Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
 D = Damp  
 M = Moist  
 W = Wet

HS = Hollowstem  
 WA = Washahead  
 RB = Rockbit

ST = Shelby tube  
 SS = Split spoon  
 DM = Drilling mud

DRILLING METHOD  
 A = Auger  
 C = Coring  
 W = Wash

E = Easy  
 M = Medium  
 H = Hard

Start 11/4/92 Unit IV  
 Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on		Drilling Method
		0/6	6/12					Casting Size	Probe Size	
					<u>Asphalt</u> <u>Base Gravel</u>					<u>A</u>
<u>1</u>	<u>M</u>	<u>4</u> <u>6</u>	<u>5</u> <u>7</u>		<u>Firm Br. Fine to Med. SAND - Tr. S. &amp; FILL</u>			<u>6</u> <u>12</u> <u>19</u> <u>21</u> <u>26</u> <u>29</u>		<u>W</u>
<u>2</u>	<u>M</u>	<u>5</u> <u>6</u>	<u>5</u> <u>6</u>							<u>RB</u> <u>Ahead</u> <u>Revert</u>
<u>3</u>	<u>M</u>	<u>5</u> <u>8</u>	<u>7</u> <u>8</u>							
<u>4</u>	<u>M</u>	<u>7</u> <u>8</u>	<u>7</u> <u>7</u>							
<u>5</u>	<u>M</u>	<u>10</u> <u>16</u>	<u>13</u> <u>16</u>		<u>Firm Br. Fine to Med SAND</u>					
<u>6</u>	<u>M</u>	<u>8</u> <u>11</u>	<u>9</u> <u>9</u>							
<u>7</u>	<u>M</u>	<u>8</u> <u>14</u>	<u>12</u> <u>12</u>							
<u>8</u>	<u>M</u>	<u>9</u> <u>13</u>	<u>11</u> <u>11</u>		<u>Firm Br. Fine to Coarse SAND</u>					

Checked by \_\_\_\_\_

Final \_\_\_\_\_

Boring No. 5



# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 5 Structure B-17-144 County Dunn Sheet 2 of 3

Project 1020-05-02 Road I 94 & C.T.H. "B"

Station 413+72 Offset 37' Rt R Surface Elevation 922.3

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_

Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_

After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_

Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 11/4/92 Unit 28  
Finish \_\_\_\_\_ Chief MCHERS

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing	Probe	Size	
8	M	9	11	40'	Firm Br. Fine to Coarse SAND						RB
		13									Alcohol
					with layers of Gravel						Revert
9	M	9	11	45'							
		16									
10	M	9	10	50'							
		12									
11	M	8	9	55'							
		10									
12	W	8	8	60'							
		9									
13	W	8	9	65'							
		15									
14	W	10	10	70'							
		16									
15	W	14	26	75'	Dense to V. Dense Red Br. SAND -						
		43			Some Gravel						
					In Cables						
16	W	21	28	80'							
		39									

Checked by \_\_\_\_\_

Boring No. 5

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 5 Structure B-17-144 County Dunn Sheet 2 of 3

Project 1020-05-09 Road I94 & CTH 13

Station 413 + 72 Offset 37' RT R Surface Elevation 922.3

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
 Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
 After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
 Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

### MOISTURE

D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

### DRILLING METHOD

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 11/4/92 Unit IV  
Finish 11/5/92 Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on				Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	Size	
16	W	21 39	28	80'	Dense to U. Dense Red Br. SAND Some Gravel. Tr. Cobbles.	80'						RB
17	W	10 20	17	85' Fin		85'						
18	W	19 39	24	90' Dense.		90'						
19	W	100	48	95' V. Dense Gray SANDSTONE and SHALE	Drilled to 100" Drilled Hard.	95'						
				100'		100'						
				105'		105'						
				110'		110'						
				115'		115'						
				120'		120'						

Checked by \_\_\_\_\_ Final \_\_\_\_\_ Boring No. 5

FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 6 Structure B-17-144 County Dunn Sheet 1 of 3

Project 1020-05-02 Road I94 & CTH "B"

Station 415+72 Offset 37' RT. of R Surface Elevation 922.4

GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 11/6/92 Unit TL

Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	
					<del>Asphalt</del> <del>Loose Br. Med. SAND - Th. S. IL</del> <u>Fill</u>						A
1	M	3	4								↓
		5	6								W
2	M	4	5								↓
		5	6								RB
											Ahead
											Revert
3	M	8	9		<u>Firm</u>						
		13									
4	M	7	9		<u>Firm Br. Fine to Med SAND</u>						
		11									
5	M	8	8								
		8									
6	M	6	10								
		10									
7	M	7	7								
		10									
8	M	8	10								
		14									

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 6 Structure B-17-144 County Dunn Sheet 2 of 3

Project 1020-05-02 Road 594 & CTH. "B"

Station 415+72 Offset 37' RT. R Surface Elevation 922.4

## GROUND WATER OBSERVATIONS

While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_

Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_

After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_

Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

### MOISTURE

D = Damp  
M = Moist  
W = Wet

HS = Hollowstem  
WA = Washhead  
RB = Rockbit

ST = Shelby tube  
SS = Split spoon  
DM = Drilling mud

A = Auger  
C = Coring  
W = Wash

E = Easy  
M = Medium  
H = Hard

Start 11/6/92 Unit RD

Finish \_\_\_\_\_ Chief Meyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size	Size	
8	M	8	10	40'	Firm Br. Fine to Med SAND	40					RB
		14									Ahead Revert
9	M	10	12	45'	Firm Br. Fine to Coarse SAND - In Gravel.	45					
		16									
10	M	9	12	50'		50					
		17									
11	M	8	8	55'		55					
		9									
12	W	8	8	60'		60					
		10									
13	W	9	12	65'		65					
		16									
14	W	14	15	70'		70					
		20									
15	W	13	17	75'		75					
		24									
16	W	20	26	80'	Dense Br. Fine to Coarse SAND Little Gravel.	80					
		31									

Checked by \_\_\_\_\_

Final \_\_\_\_\_

Boring No. 6

# FIELD BORING LOG

EL3(S) 385

State of Wisconsin/Department of Transportation

Boring No. 6 Structure B-17-144 County Dunn Sheet 3 of 3

Project 1020-05-02 Road E94 & CT14 "B"

Station 415+72 Offset 37' RT R Surface Elevation 922.4

GROUND WATER OBSERVATIONS  
 While drilling \_\_\_\_\_ Time after drilling \_\_\_\_\_  
 Before casing removal \_\_\_\_\_ Depth to water \_\_\_\_\_  
 After Boring Completed \_\_\_\_\_ Depth to cave-in \_\_\_\_\_  
 Cave In \_\_\_\_\_ Water Notes \_\_\_\_\_

MOISTURE  
 D = Damp  
 M = Moist  
 W = Wet  
 HS = Hollowstem  
 WA = Washhead  
 RB = Rockbit  
 ST = Shelby tube  
 SS = Split spoon  
 DM = Drilling mud  
 A = Auger  
 C = Coring  
 W = Wash  
 E = Easy  
 M = Medium  
 H = Hard  
 Start 11/6/92 Unit IV  
 Finish 11/9/92 Chief Moyers

Sample No.	Moisture	Blows on Sampler		Sample and Recovery	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6	6/12					Casing Size	Probe Size		
16	W	20 31	26	80'	Dense Br. Fine to Coarse SAND Little Gravel						R.B. Ahead Revert
17	W	20 25	16 27	85'							
18	W	22 120	34 5"	90'	V. Dense Gray SANDSTONE - SHALE R.B. Ahead V. Hard.						
				95'							
				100'							
				105'							
				110'							
				115'							
				120'							

Checked by \_\_\_\_\_ Final \_\_\_\_\_ Boring No. 6