

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: February 7, 1989

TO: Stanley W. Woods, P.E.
State Bridge Engineer for Hwys.
ATTENTION: Larry Graham, Preliminary Bridge Design Engineer

FROM: Gary C. Whited, P.E.
State Materials Engineer for Hwys.

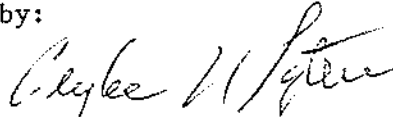
SUBJECT: MATERIALS
SOILS
SITE INVESTIGATION REPORT ADDENDUM
Project No. 8650-06-01
STH 29 Over Sandy Creek - Glenwood City to STH 64
Structure B-55-113
St. Croix County

As your office requested, we have reviewed the report of 6/10/88. The design has been changed from a single span bridge to a box culvert with flow line at 1169.5. There will be some 3± feet of overfill.

The culvert gradeline will be in firm silts with some gravel and sand immediately above firm line sands.

Normal construction in conformance with Standard Specification 206.3.92 will be satisfactory.

by:


Clyde N. Laughter, P.E.
Chief Soils Engineer

GCW:CNL:ml0592

cc: Bridge (Original plus 1)
District 6 (4)
C.O. Design
GCW
C.O. File
✓ Soils File

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: June 10, 1988

File Ref:

To: Fred Ross, District Director
Attention: Bruce Eastenson, District Chief Materials Engineer

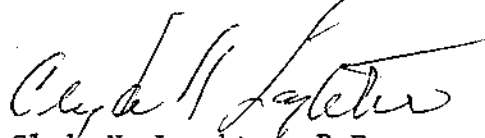
From: Gary C. Whited, P.E.
State Materials Engineer for Hwys.

Subject: MATERIALS
SOILS
SITE INVESTIGATION REPORT
Project ID 8650-06-01
STH 28 over Sandy Creek
Glenwood City to STH 64
Road Structure B-55-113
St. Croix County

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

Please advise us of the complete structure number when one is assigned.

By:


Clyde N. Laughter, P.E.
Chief Soils Engineer

cc: (District 6) Original + 3
Bridge (2)
C.O. Design
GCW
MO File
Soil File ✓

CNL:m60001

SITE INVESTIGATION REPORT
Project ID 8650-06-01
STH 128 over Sandy Creek - Glenwood City to STH 64
Road Structure B-55-117
St. Croix County

1. General

A new single span bridge is proposed to carry STH 128, station 100+, over Sandy Creek to replace Structure B-55-373. The existing timber abutments are tipping in and are braced to the beams. At the time of drilling, May 1988, the creek was dry. The fills are about 9 feet high and the abutment areas have boulder ripraping.

The general area is rolling open and wooded farmland. No marsh or rock outcrops were evident near the site. There are extensive large boulders exposed northeast of the site.

2. Subsurface Conditions

Two borings conforming to AASHTO Method T-206, Standard Penetration Test, were made to evaluate relative soil density, fix presumptive bearing capacity, set out values for pile type selection with accompanying support values, and recover samples for soil textural identification and classification.

Soil texture noted in the drilling logs are driller's field identifications with a subsequent verification in the Central Soils Office.

The borings were made from the existing roadway and logged asphalt and gravel surface course from elevation 1177.7 down to 1176.±. Below this loose brown silty fill, soil was noted to elevation 1167±. Below this, firm brown silt or silty sands with cobbles was logged to elevation 1164±. From elevation 1164± down to 1153±, firm sand predominated although dense zones were noted in Boring 2. Boulders were also encountered in this reach. Below elevation 1153±, dense yellow sand stone and shale was logged down to 1137±, EOB.

No reliable water readings were made in the one day drilling time but samples taken below elevation 1163± were wet.

3. Bearing Capacity

Within workable footing depths, the soils are obviously inadequate to support bridge loads in spaced footings. No detailed analyses have been made.

4. Piles

All pile types would drive to the sandstone and shale bedrock. Displacement piles would fetch up on the sandstone near elevation 1153±. Steel H-piles will penetrate several feet into the sandstone and shale.

5. Alternate Foundation Types

With mobilization fees of \$4-6000 for dynamic methods, vibratory approaches or drilled-in procedures, there is no possibility that these methods can be cost effective for a short single span bridge.

6. Lateral Earth Pressure

Sands that are available in this area will create an active lateral earth pressure (equivalent fluid) of 30 psf on abutment backwalls or other earth retaining structures. This assures adequate compaction and thorough drainage. Similarly placed, a silt will generate 52-56 psf pressure and a clay much more, regardless of placement.

If drainage is not effected, the minimum pressure must be 63 psf.

7. Construction Problems

The boulders may cause problems of drifting out of position and also damage to piles. No other foundation problems are foreseen.

8. Recommendations

Piles are the obvious foundation choice in this soil profile. All types will drive to or at least very close to sandstone/shale bedrock. There is a great possibility of crippling of treated timber piles on the cobbles and boulders. For an optimum situation of length, better driving for least damage, and load, thick wall oil field pipe driven to 8,000 psi in the steel section appear to be the best type here.

FIELD BORING LOG

EL3(S) 385

State of Wisconsin Department of Transportation

Boring No. 1 Structure (Sandy Creek) B-SS-373 County St. Croix Sheet 1 of 1Project 8650-06.00 Road S.T.H. 128Station 100 + 43 Offset 9.5' L + R Surface Elevation 1177.6While drilling 11' wet GROUND WATER OBSERVATIONS DRY Creek Bed Start 1167.7 1000

Before casing removal _____ Depth to water _____

After Boring Completed Used Rammer Depth to case-in _____

Cave in _____ Water Notes _____

MOISTURE _____ DRILLING METHOD _____ Start 5/21/88 Unit IIID = Damp WA = Washhead ST = Shelby tube A = Auger E = Easy M = Moist C = Coring At = Medium H = Hard Finish _____ Chief Meyers

W = Wet RB = Rockbit SS = Split spoon DM = Drilling mud W = Wash

Sample No. Moisture Blows on Sampler _____ VISUAL FIELD CLASSIFICATION AND REMARKS _____

0/5 6/12 _____ Unconfined Strength _____

_____ Blows on _____

_____ Casing _____

_____ Probe _____

_____ Drilling Method _____

LINEED BORING LOG

EL3(5) 385

State of Wisconsin (Department of Transportation)

Boring No. 2 Structure Sandy Creek B-55-373 County St. Croix Sheet Lot 4

Project 865006-01 Road STH. 128

Station 99+82 Offset 10' R+2 Surface Elevation 1177.8

While drilling _____ Time after drilling _____

Before casing removal _____ Depth to water _____

After Boring Completed _____ Depth to cave-in _____

Cave In _____ Water Notes _____

MOISTURE _____ DRILLING METHOD _____ Start 5/31/88 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
		0/5	0/12					Casing Size	Probe Size	
					<u>Asphalt</u> <u>Base Gravel</u> <u>Br SAND and GRAVEL - some STX</u>					<u>A</u>
					<u>Loose</u> <u>Br. SILT - Little Gravel - with layer of Sand</u>					
1	M	1	3		<u>FILL</u>			2		
		4						4		
								4		
								6		
								6		
								8		
2	W	3	11		<u>Firm Br. Silty SAND and GRAVEL</u>					
		15								
3	W	9	12		<u>Firm Br. SAND - some Gravel.</u>					
		18	20		<u>Tr. silt</u> <u>Tr. cobbles.</u>					
4	W	90	28		<u>20 V. Dense</u>					
		31	35/6		<u>ss. Refusal.</u>					
5	W	13	13		<u>Dense Yellow-white weathered</u>					
		20	22		<u>SANDSTONE - SHALE</u>					
6	W	15	20							
		25	21							
7	W	16	15		<u>ss. Refusal</u>					
		(30/3)								
8	W	20	18							
		(35)								

Checked by _____ FIRM _____ Boring No. 2