Bridge Foundation Investigation

Project Number: CSNHS-0008-00(256)
P.I. Number: 0008256
I-575 Bridge over Little River
Cherokee County, Georgia

Prepared for:
Georgia Transportation Partners
Atlanta, Georgia

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psi *Information To Build On*
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Attachments: **Bridge Foundation Investigation**

Special Provision

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Section 524	Drilled Caisson Foundations

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Test Procedures

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Existing BFI Report Boring Logs

Revision History:

Revision	Issue Date	Document Status
A	December 10, 2007	Issued for Review
0	January 7, 2008	Issued for Use
1	September 4, 2008	Issued for Use
2	November 14, 2008	Issued for Use

BRIDGE FOUNDATION INVESTIGATION	
GDOT Project Number	CSNHS-0008-00(256)
Project P.I. Number	0008256
Location	I-575 Bridge over Little River, Cherokee County, Georgia (see Figure 1)
GENERAL INFORMATION	
Project Description	Current bridge foundation investigation was performed for the proposed widening of I-575 Bridge Over Little River. The widening involves adding one new parallel bridge in the center median. The new bridge will be a reinforced concrete structure with six spans totaling 534 feet long. The design length is 89 feet for each span. The left bridge will not be widened. The existing bridges are supported on H-piles and spread footings. End bents on the south side of the bridges are supported with spread footings. The existing BFI report and pile driving data dated October 11, 1979 were provided by GDOT. Eleven old and four new borings were performed in the existing and current BFI studies, respectively. The subsurface information from the existing borings was incorporated in the current BFI report and recommendations.
Geologic Information	The project alignment is geologically sited within the Piedmont Physiographic Province of Georgia, and is underlain by Biotite Gneiss, Mica Schist, and Amphibolite Formation.
Subsurface Features	Subsurface information for this bridge was obtained from 4 borings (BD-5, BD-6, BD-8 and BD-9) as part of the present study and 11 borings performed by GDOT in year 1979 for the existing bridges. The subsurface conditions include silty sand fill underlain by residuum and alluvium consisting of silty sand, clayey sand and sandy silt. The alluvium and residuum are underlain by hard and partially weathered rock. Groundwater was encountered from EL. 820 to EL. 830 in the current borings BD-5 and BD-6 performed in October, 2007. Groundwater was encountered from EL. 840 to EL. 852 in the borings performed in August, 1979.

PWR AND AUGER REFUSAL ELEVATIONS (feet)			
Bent No.	**Reference Boring No.**	**Top of PWR**	**Auger Refusal**
1	B-14	---	798
	BD-5	823	805
2	B-15	805	802
3	B-17	826	811
	B-4	846	839
4	B-19	---	822
	B-6	---	826
5	B-21	---	823
	B-7	---	824
6	B-23	843	841
	B-10	842	838
7	B-25	860	---
	BD-9	892	855

MAXIMUM PILE DESIGN LOADS			
Pile Type	**Load Transfer (%)**		**Design Load**
	Friction	**End Bearing**	
H-Piles	20	80	10 BP 42 = 55 Tons
			12 BP 53 = 70 Tons
			14 BP 73 = 96 Tons
			14 BP 89 = 117 Tons

FOUNDATION RECOMMENDATIONS				
Bent No.	**Drilled Shaft (Bearing)**	**Spread Footing (Bearing)**	**Pile FTG (Type)**	**Pile Bent (Type)**
1L	---	---	---	Steel H
1R				
2L	---	---	Steel H	---
2R				
3L	100 ksf on Rock	10 ksf on PWR (ALT)	---	---
3R	---	20 ksf on Rock (ALT)	Steel H	
4L	100 ksf on Rock	20 ksf on Rock (ALT)	---	---
4R				
5L	100 ksf on Rock	20 ksf on Rock (ALT)	---	---
5R				
6L	100 ksf on Rock	10 ksf on PWR (ALT)	---	---
6R				
7L	---	8 ksf on very dense soil/PWR	---	Steel H (ALT)
7R				

ELEVATIONS (feet)				
Bent No.	Bottom of FTG	Bottom of Shaft	H-Pile Tip Elevations	
			Minimum Tip	Estimated Tip
1L	---	---	840	820
1R	---		820	800
2L	---	---	840	815
2R	---		820	800
3L	838 (ALT)	832	---	---
3R	820 (ALT)	---	825	815
4L	821 (ALT)	814	---	---
4R	820 (ALT)	812		
5L	822 (ALT)	815	---	---
5R	822 (ALT)	814		
6L	839 (ALT)	832	---	---
6R				
7L	888	---	859 (ALT)	857 (ALT)
7R				

NOTES: GENERAL	
Theoretical Scour	The theoretical scour line may be raised to Elevation 822 and 823 feet at Bents 4 and 5, respectively, because of the presence of scour-resistant rock that was encountered in the borings at these bent locations.
Erosion	We recommend the use of 24 inches of Type I riprap and filter fabric.
As-built Information	As-built information should be forwarded to the Geotechnical Engineering Bureau upon completion of the foundation system.

NOTES: SPREAD FOOTINGS	
Embedment	Spread footings (if used) should be embedded three feet into partially weathered rock or a minimum of one foot into hard rock to protect the footing from scour. The footing elevations reflect this embedment.
Excavation	Spread footings at the intermediate bents (if used) should be protected from standing water and surface runoff. Footings should be poured as soon as practical after excavation.
Temporary Shoring	Temporary shoring may be required to construct spread footings if used. Care should be exercised not to undermine the spread footings for the existing bridges. Because groundwater was encountered above the possible footing bottom elevations at Bents 4, 5 and 6, dewatering of the excavations will also be required at these locations.

Cofferdams	Cofferdams may also be needed to construct the spread footings at bents 3-6 if used. Seal concrete and dewatering of the excavations will also be required if they fall within the stream crossing.
NOTES: PILE BENTS/FOOTING	
PDO	Driving resistance after Minimum Tip Elevations are achieved.
Waiting Period	None required.
Groundwater	Due to the high groundwater elevations near the footing elevations, we recommend that 12 inches of Type II Foundation Backfill Material be set up for use in the footing area. The use of this material should be at the direction of the Engineer and may be eliminated on construction if the footing area is dry.
Pilot Holes	Pilot Holes should be set up for H-piles due to the potential for hard driving at Bent 7. This work should be done at the direction of the Engineer if the Minimum Tip Elevations cannot be achieved. The diameter of the holes should be determined from the table given below. The holes should be filled with concrete to the top of the rock after the piles are driven.

Pile Size	**Maximum Pilot Hole Size**
10"	24 "
12"	24 "
14"	24 "

NOTES: DRILLED SHAFTS	
Drilled Shaft Special Provision	The drilled shafts should be constructed as per Special Provision Section 524: Drilled Caisson Foundations.
Rock Socket	A minimum 10-foot socket into sound rock will be required for all drilled shafts at this site.
Minimum Shaft Diameter	A minimum shaft diameter of 48 inches shall be used to allow for inspection of the bearing surface.
Temporary Casing	Temporary steel casing may be needed at drilled shaft locations to provide for inspection of the rock bearing surface and test hole. If needed, the casing should be extended below the top of the bedrock surface if the bedrock is fractured and/or broken. The casing should be of sufficient strength to withstand handling stresses, concrete pressure, and surrounding earth and/or fluid pressures.

Permanent Casing	Permanent casing will be needed at all shafts that fall in the stream.
Ground Water	At locations adjacent to the river, groundwater should be expected at or slightly above the river water level. Thus, seepage into the shaft excavations should be expected. It is anticipated that this seepage can be handled by pumping from the shaft excavations. Also, if the soil-bedrock interface becomes a conduit for groundwater infiltration or if fractures and/or voids in the rock produce groundwater seepage into the drilled shaft excavation, the temporary steel casing should be extended into the rock to seal off the groundwater flow.
Special Problems	Erratic pile lengths can be expected.

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Senior Review By	GEORGIA REGISTERED 11/13/08 No 19002 PROFESSIONAL ENGINEER KARL E. SUTER Karl E. Suter, P.E.

SPECIAL PROVISION

Section 520 – Piling

Section 524 – Drilled Caisson Foundations

Revised: May 8, 2006

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

PROJECT NO. CSNHS-0008-00(256)
P.I. NO. 0008256

SECTION 520—PILING

Delete Sub-Section 520.3.05.B and substitute the following:

520.3.05.B. Drill Pilot Holes

When pilot holes are required, drill them to the diameter and approximate depth specified on the Plans.

Backfill voids and holes with Class A or better concrete. Furnishing and placing backfill concrete is an incidental part of the work.

The following are not considered pilot holes:

- Holes created by spudding (punching)
- Holes dug to drive piling that is too long to fit leads
- Holes dug to replace a template (if permitted)

Where pilot holes are required in granular material and the material cannot be sealed off using "mudding" drilling methods, drill the pilot hole as follows:

1. Place a casing pipe with a large enough diameter around the boring device.
2. Hold the casing in position until the pilot hole is completed and the pile driving progresses deep enough into the hard material to keep loose material out of the pilot hole.

Drilling pilot holes using casing is incidental to the work.

Revised: November 9, 2006

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

PROJECT NO. CSNHS-0008-00(256)
P.I. NO. 0008256

SECTION 524 – DRILLED CAISSON FOUNDATIONS

524.1 General Description

This Work consists of furnishing all labor, materials, equipment, tools and services necessary for construction of drilled caisson foundations and includes all incidentals and additional work in conjunction therewith. Adhere to the Department's Plans, Special Provisions and Standard and Supplemental Specifications for all Work.

524.2 Materials

Use materials that meet the requirements of the Standard Specifications with the following exceptions:

- Use non-air-entrained Class AA concrete with a coarse aggregate size of No. 67 stone and a slump at time of placement of between 7 and 9 inches (178 mm and 229 mm). Use 10 percent additional cement and a retarder or water reducing agent in all concrete.
- Use Grade 60 (Grade 420) reinforcing bars that conform to ASTM 615 (ASTM A 615M). If wire spirals are used, use spirals that conform to ASTM A 82.
- Use Grade 2 steel casing that conforms to ASTM A 252.

524.3 Construction Requirements

524.3.01 Personnel

Construct drilled caissons and supervise the work with personnel who are experienced in this type work. Visit and examine the work site and all conditions, and take into consideration all such

conditions that may affect the work. At least 30 days prior to beginning drilled caisson work, submit to the Engineer for review and approval the following proof of the ability of the personnel to construct drilled caisson foundations:

1. Evidence of the successful completion of at least five projects similar in concept and scope to the proposed foundation. Include names, addresses and telephone numbers of the owners' representatives for verification.
2. Résumés of foreman and drilling operators to be employed on this project. Provide evidence showing that the drill operator has experience and knowledge of the drill rig to be used on the project. The Department will be sole judge of the qualifications of the foreman and drill rig operator.
3. A detailed sequence of construction for drilled caisson work that describes all materials, methods and equipment to be used, including, but not limited to the following:
    - casing sizes with proposed top and tip elevations
    - drilling equipment including the manufacturer's specifications on the drill rig
    - methods and equipment for stabilizing and cleaning shaft excavations
    - methods of materials handling and disposal
    - methods and equipment for placing concrete
    - details of tremie and sealing methods, if required
    - details of reinforcement placement, including support and centralization methods

Do not begin drilled caisson construction until the qualifications, construction plan and methods have been approved in writing by the Engineer.

524.3.02 Equipment

Use excavation and drilling equipment with a rated capacity (including power, torque and downward thrust) to excavate a caisson of the maximum specified diameter to a depth of 30 feet (9.1 meters) or 20 percent deeper than the deepest caisson indicated on the Plans, as measured from the ground or water surface elevation, whichever is higher.

524.3.03 Casing

Use casing that is a metal shell of a thickness to withstand handling, internal and external pressures, and that is watertight, smooth and clean. If the elevation of the top of the caisson is below ground level or water level at the time of concrete placement, use an oversize casing from ground elevation to a point below the top of the caisson to prevent caving into the fresh concrete. Do not allow the top of the permanent casing, if required, to extend above the top of the drilled caisson. Use casing in all

materials that do not have sufficient strength to safely remain open and stable during and after excavation.

When casing is used, do not use casing with an outside diameter less than the specified diameter of the caisson. That portion of the caisson below the casing may be slightly smaller than the normal outside diameter of the caisson. However, use drilling tools to excavate the caisson below the casing that are no smaller than the outside diameter of the casing minus 2 inches (51 mm). Do not leave casing in place unless permitted by the Engineer, and cut off any permanent casing as shown on the Plans.

Provide adequate equipment during concrete placement to prevent pulling up the reinforcing cage during casing extraction. The casing may be pulled in partial stages. Maintain a sufficient head of concrete above the bottom of the casing to overcome hydrostatic pressure. Extract the casing at a slow uniform rate with pull in line with the center of the caisson.

524.3.04 Protection of Existing Structures

Monitor structures for settlement that are within a distance of ten shaft diameters or the estimated shaft depth, whichever is greater, in a manner approved by the Engineer. Record elevations to an accuracy of 0.01 foot (3 mm). Record elevations before construction begins, during the driving of any required casings, during excavation or blasting, or as directed by the Engineer.

Document thoroughly the condition of the structures with descriptions and photographs made both before and after drilled caissons are constructed. Document all existing cracks, and provide copies of all documentation to the Engineer.

At any time settlement of 0.05 foot (15 mm) or damage to the structure is detected, immediately stop the source of vibrations, backfill any open drilled shaft excavations and contact the Engineer for instructions.

524.3.05 Excavation

Drill and excavate all caissons through whatever substances and to the elevations required. Excavate near the tip elevation in the presence of the Engineer. The Engineer may adjust the tip elevations depending on the quality of the bearing material found. Embed the caisson tips 10 feet (3 meters) into and on top of sound rock in accordance with Plan requirements and as determined by the Engineer. Sound rock is indicated by material that cannot be drilled with a conventional earth auger, and requires the use of special rock augers, core barrels, air tools, blasting and/or other methods of hand excavation. Sound rock is defined as material on which the rock auger penetration is equal to or less than 2 inches (51 mm) per five minutes of drilling with the auger subjected to a torque of 600,000 inch-pounds (67,791 kN-m) with a down thrust of 37,000 pounds (165 kN). There will be no additional compensation for removal of rock.

The Engineer will inspect the bottom of each caisson prior to setting the reinforcing cage and placing concrete. Obtain the Engineer's approval prior to placing the reinforcing cage. Remove water, sediment and debris from the bottom of the caissons to allow for a down-hole inspection. Bore the bottom of the caisson excavation a minimum of 6 feet (1.8 meters) into rock as outlined in

Specification 211.3.05.C, "Boring of Foundations and Seals". The Engineer will make a determination of the soundness and consistency of the rock and may adjust the tips of the caissons based on this information.

Where drilled caissons are located in other than open water areas, use casings or other methods approved by the Engineer to stabilize the excavation and control the hole size. When casing is not specifically required on the plans, fill in any over-excavations with Class AA concrete at no additional cost to the Department. Dispose of excess concrete, grout, displaced water and materials removed from the caisson excavation in areas approved by the Engineer, and in accordance with any Federal, State, or local code or ordinance. Verify the accuracy and existence of all applicable codes, ordinances or other regulations prior to disposing materials.

524.3.06 Reinforcing Steel

Assemble a cage of reinforcing steel and place it as a unit immediately prior to concrete placement. Assemble the cage so that the clearance between the cage and side of the caisson will be at least 5 inches (127 mm), and the clearance between the cage and bottom of the caisson will be 3 inches (76 mm).

If the caisson is lengthened, extend all reinforcement to within 3 inches (76 mm) of the bottom. If a splice is required, place it in the lower one-third of the caisson, or as shown on the Plans. Tie hoops or spirals to the caisson and column steel (vertical bars) at 100% of the junctions with double wire figure-eight ties. Do not weld the reinforcing steel. Support the cage from the top in a concentric manner to minimize its slumping downward during concrete placement and/or extracting the casing.

Check the elevation of the top of the steel cage before and after casing extraction. Any upward movement of the steel not exceeding 2 inches (51 mm) or any downward movement thereof not exceeding 6 inches (152 mm) will be acceptable. Any upward movement of the concrete or displacement of the steel beyond the above limits will be cause for rejection. Tie and support the reinforcing steel in the caisson so that the reinforcing steel will remain within allowable tolerances. In uncased caissons, use only heavy-duty plastic rollers (wheels). In cased caissons, use heavy-duty non-corrosive plastic rollers (wheels) or steel chairs. Place rollers at maximum intervals of 8 feet (2.4 meters) along the cage to ensure concentric spacing for the entire cage length. Use one roller for each one foot (305 mm) of diameter of the cage, with a minimum of four rollers at each interval. Do not use concrete spacer blocks. Use rollers that are constructed of a material approved by the Engineer and that have sufficient bearing surface to provide lateral support to the reinforcing cage.

Use rollers of adequate dimension to provide the annular spacing between the outside of the reinforcing cage and the side of the excavated hole or casing as shown on the Plans. If an oversize casing is used, use rollers that will provide concentric spacing. Use pre-cast concrete or heavy-duty plastic bottom supports (feet/boots) to provide a spacing of 3 inches (76 mm) between the cage and caisson bottom.

524.3.07 Concrete

Mix and place all concrete in accordance with Section 500 of the Specifications where applicable and the requirements herein stated.

Place concrete as soon as possible after all excavation is completed and reinforcing placed and supported. Place concrete continuously in the caisson to the top elevation of the caisson. The Engineer may allow free falling of concrete to a maximum of 60 feet (18.3 meters), if satisfactory methods are demonstrated.

If ground water is encountered and the hole can not be pumped dry, or if the Engineer does not approve free fall of concrete, place concrete using a gravity feed watertight tremie. Use a tremie pipe of at least 8 inches (203 mm) in diameter with a concrete hopper at the top. The Engineer may allow concrete to be placed by pumping through a supply line if satisfactory methods are demonstrated. If this method is allowed, use pump supply lines with watertight couplings. Seal the end of the pump line with a foam plug or other device approved by the Engineer to prevent concrete within the tremie or pump supply line from mixing with fluid in the excavation.

If a tremie is used, place it on the bottom of the excavation at the beginning of concrete placement, and keep it there until the tremie pipe and hopper are filled with concrete. Then raise the tremie only enough to induce concrete flow and do not lift the tremie further until the discharge end is immersed at least 10 feet (3.1 meters) into the deposited concrete. If concrete placement by pumping is used, secure the supply line in place so that the discharge end will not lift off the bottom of the excavation more than 6 inches (152 mm) until at least 10 feet (3.1 meters) of concrete has been placed. Embed the discharge end of the tremie or pump supply line a minimum of 10 feet (3.1 meters) in the concrete throughout the remainder of the concrete pour.

Complete the placement of all concrete in the caisson in two hours. Adjusted the retarder or water reducing agent as approved by the Engineer for the conditions encountered on the job so the concrete remains in a workable plastic state throughout the pour.

Prepare and cure the top surface of the construction joint in accordance with the requirements of Section 500. Locate construction joints as indicated on the Plans.

Do not place concrete under water in the caisson excavation without the permission of the Engineer. When permission is granted, place the concrete in accordance with the requirements of Section 500. Provide a sump to channel displaced water away from the caisson. Contain all displaced water to prevent water from entering into any body of water.

During the twenty-four hour period immediately following the completion of the placement of concrete in the caisson, do not install or extract casing within 50 feet (15.2 meters) of the completed caisson, and do not excavate any caissons within 15 feet (4.6 meters) of the completed caisson. If the Engineer determines that any construction adversely affects the recently constructed caisson, cease such activities immediately.

Protect any portion of drilled caissons exposed to a body of water from the action of water by leaving the forms in place for a minimum of seven days after pouring the concrete. Remove the forms prior to 7 days only if the concrete strength has reached 3000 psi (20.7 Mpa) or greater as tested by cylinder breaks.

524.3.08 Inspection and Safety

1. Check the dimensions and alignment of the caisson excavation under the observation of the Engineer.

2. Provide, use and maintain in good working order the following safety devices for the purpose of entering the caisson excavation for cleaning or inspection work:

   a. A safety harness attached to a separate safety line.

   b. OSHA-approved personnel lifting devices. Do not suspend any crane weights, blocks or other heavy weights above the head of any person entering the caisson excavation.

   c. Approved gas-testing equipment that tests for both oxygen level and percent explosion level. Provide and use an approved blower for fresh air if the testing equipment indicates the need.

   d. Casing of adequate thickness, size and depth to safely support the excavation.

   e. Non-electric pump(s) to adequately remove water from the excavation.

In addition, prior to entering the excavation, remove all loose and unnecessary objects from around the top of the caisson. Secure any caissons that will not be immediately poured after inspection and approval to prevent persons or objects from falling into the excavation.

524.3.08 Tolerances

Adhere to the following construction tolerances for drilled caissons:

1. Construct the drilled caisson to within 3 inches (76 mm) of the plan position plane, at the top-of-caisson elevation. Adhere to a vertical alignment tolerance of ¼-inch per 12 inches (6 mm per 305 mm) of depth.

2. Place reinforcement in accordance with the requirements of Section 511 of the Standard Specifications and Sub-section 524.3.06. Tie column steel (vertical bars) to hoops and spirals at 100% of the junctions with double wire figure-eight ties.

3. Placed vertical caisson reinforcing bars, including bars extending into columns or footings to within ½-inch (13 mm) of plan location. Place hoops or spirals to within 1 inch (25 mm) of their specified location. Adhere to a side form clearance of within ¼-inch (6 mm) of plan requirements.

4. Place the construction joint of the top of caissons used as caisson/column intermediate bents to within a tolerance of plus or minus 3 inches (76 mm) of the plan elevation.

524.4 Acceptability

In the event that significant voids are suspected in the concrete that were created during placement, verify the integrity of the caisson using a method that has been approved by the Engineer. If the caisson in question is found to be structurally deficient or out of tolerance in any way, the caisson will not be accepted unless corrective measures as approved by the Engineer are accomplished. Furnish additional materials and work necessary to effect corrections at no cost to the Department and with no increase in contract time.

524.5 Measurement

The length of accepted caisson foundation is measured in linear feet (meters) of caisson in place in the completed work. The length is measured from the final approved bottom elevation to 1 foot (305 mm) above the bottom of the footing cap where caissons are used in a footing or to the top of the caisson elevation detailed in the plans.

524.6 Payment

Drilled in place caisson foundations is paid for at the unit price bid per linear feet (meters) complete and in place as specified. The payment is full compensation for all excavation, furnishing and placement of reinforcing steel and concrete in the caisson, all temporary and permanent casing, disposal of excavated materials, and the cost of furnishing all tools, safety devices, labor, equipment and all other necessary items to complete the work.

Payment will be made under:

Item No. 524 DRILLED CAISSON_____INCHES (mm) DIA.....PER LINEAR FOOT (METER)

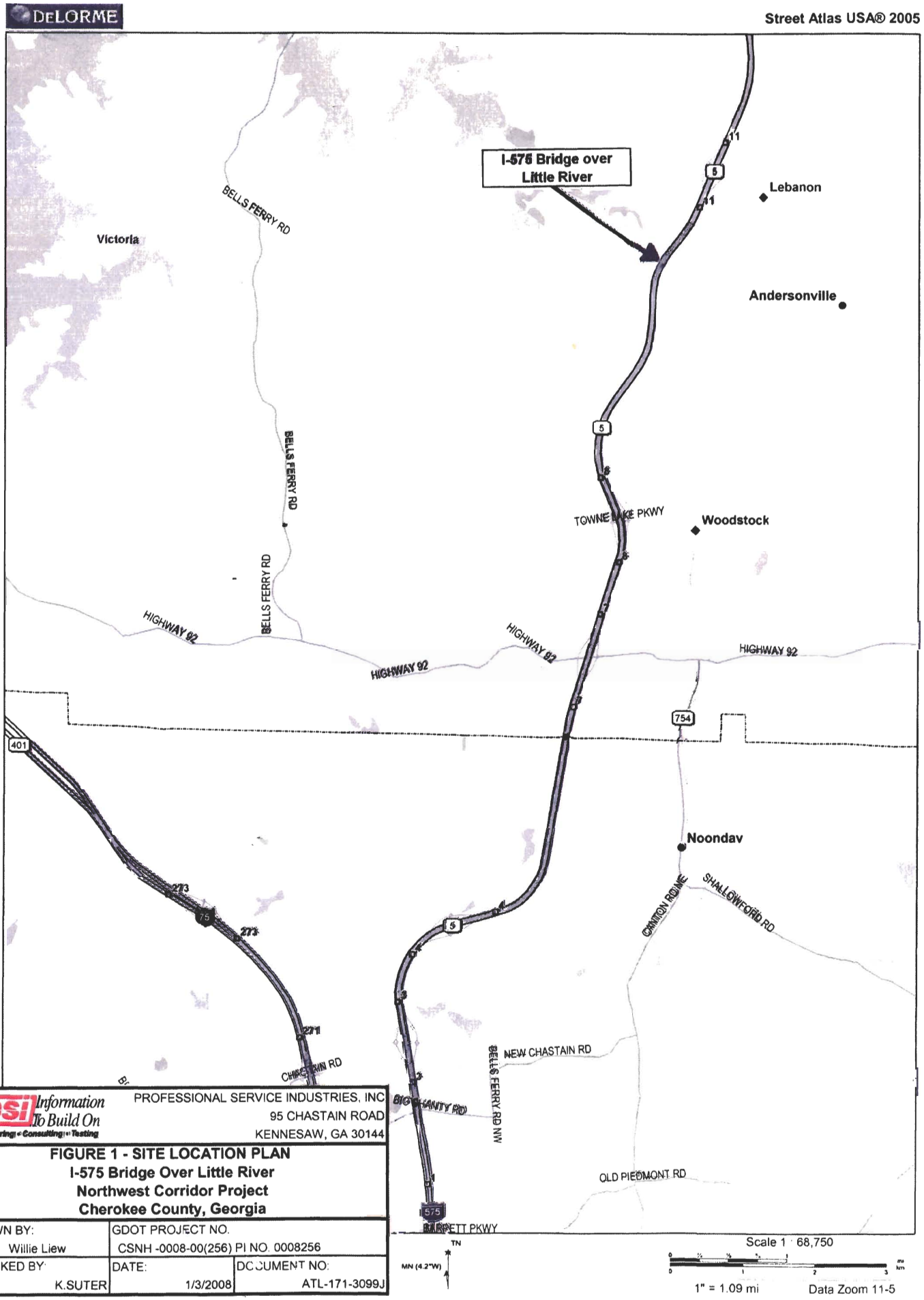
FIGURES

Site Location Plan

Boring Location Plan

Generalized Subsurface Profile A-A'

Generalized Subsurface Profile B-B'



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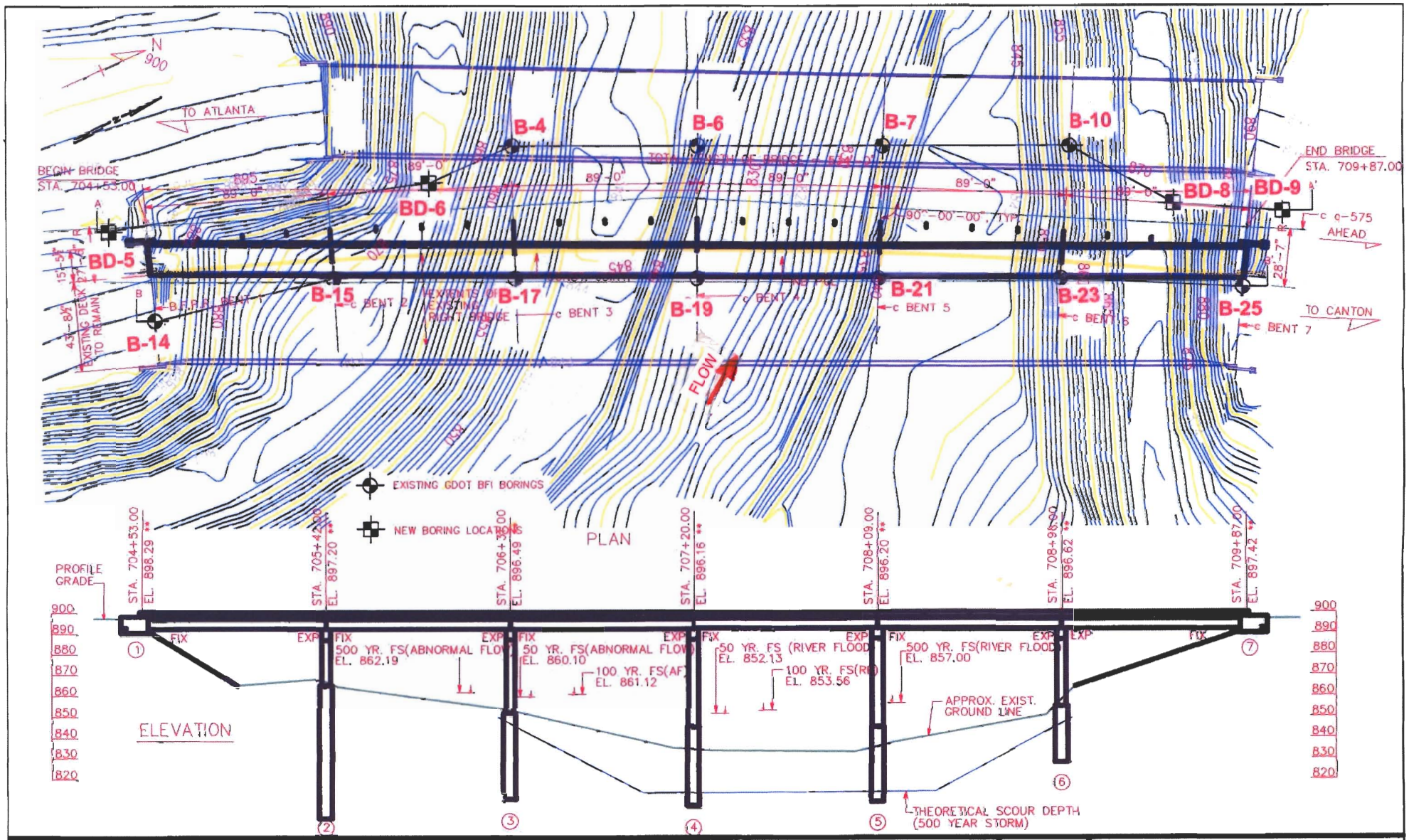
95 CHASTAIN ROAD
KENNESAW, GA 30144

FIGURE 1 - SITE LOCATION PLAN
I-575 Bridge Over Little River
Northwest Corridor Project
Cherokee County, Georgia

DRAWN BY:	GDOT PROJECT NO.	
Willie Liew	CSNH -0008-00(256) PI NO. 0008256	
CHECKED BY:	DATE:	DOCUMENT NO:
K.SUTER	1/3/2008	ATL-171-3099J



DRAWING NOT TO SCALE

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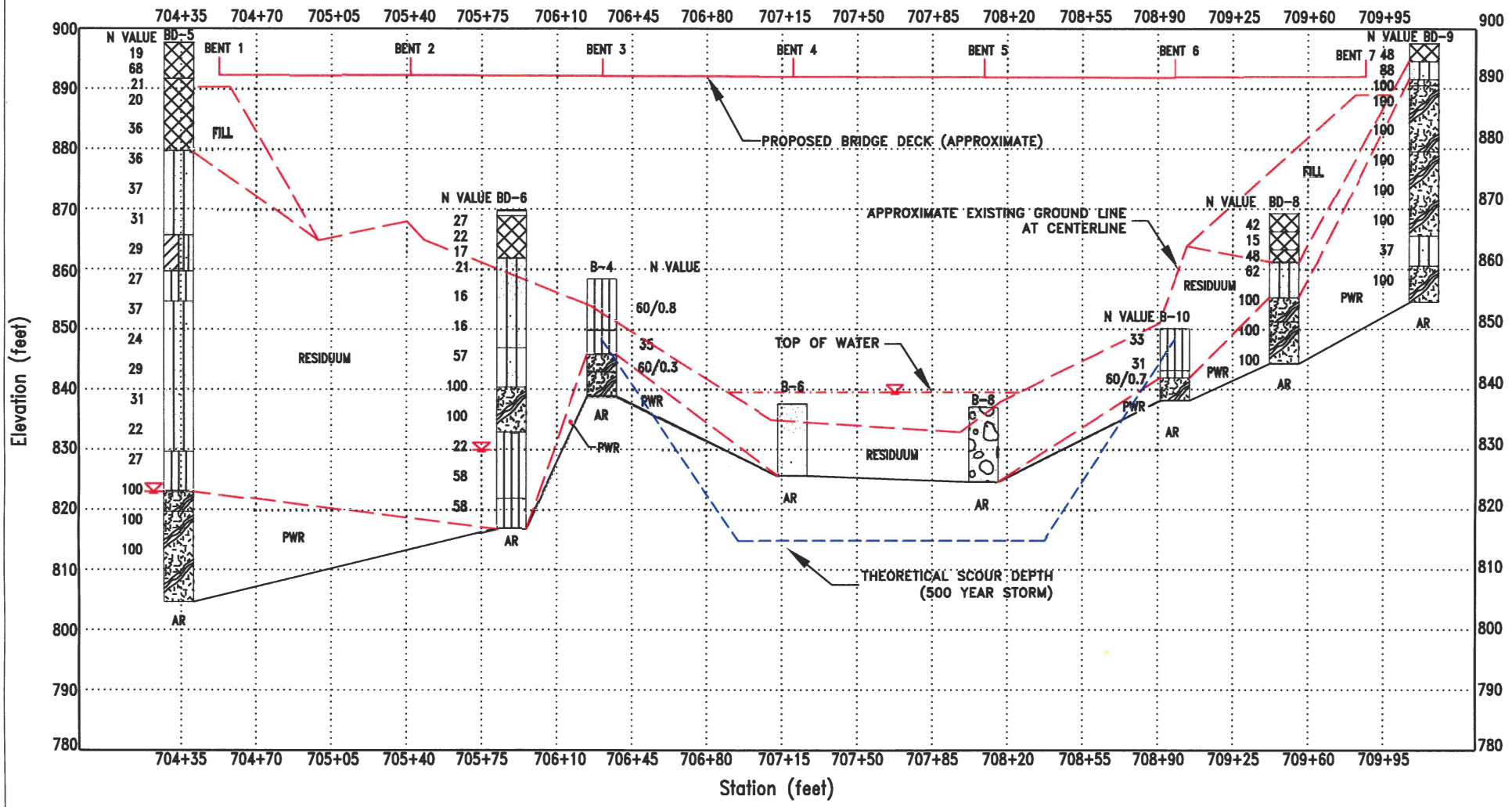
KENNESAW, GA 30144

FIGURE 2 – BORING LOCATION PLAN

I-575 BRIDGE OVER LITTLE RIVER
I-575 NORTHWEST CORRIDOR PROJECT
CHEROKEE COUNTY, GA

GDOT NO:
CSNHS-0008-00(238) PI NO. 0008256



LEGEND:

- ⧖ GROUNDWATER TABLE AT TIME OF BORING
- AR AUGER REFUSAL
- BT BORING TERMINATED
- PWR PARTIALLY WEATHERED ROCK

SCALE: 1 INCH = 25' (VERTICAL)
1 INCH = 70' (HORIZONTAL)

NOTES:
1. BORINGS B-4, B-6, B-7 AND B-10 WERE PERFORMED BY GDOT IN 1979.
2. BORINGS B-6 AND B-7 WERE WASH BORINGS. N-VALUE NOT AVAILABLE.

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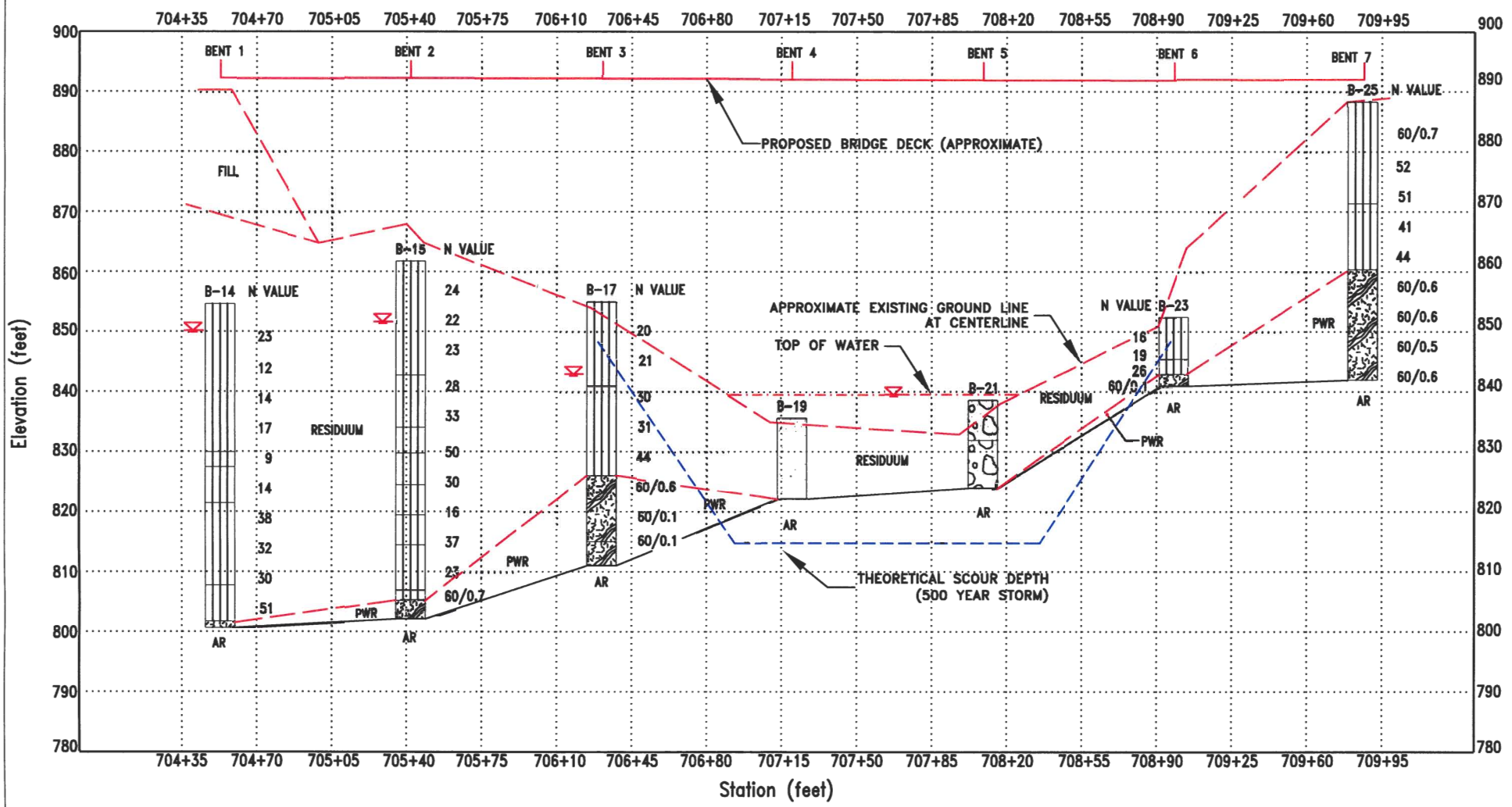
KENNESAW, GA 30144

FIGURE 3 - GENERALIZED SUBSURFACE PROFILE A-A'
I-575 Bridge Over Little River
Northwest Corridor Project
Cherokee County, Georgia

DRAWN BY:	GDOT PROJECT NO.	
W. Donaldson	CSNH -0008-00(256) PI NO. 0008256	
CHECKED BY:	DATE:	DOCUMENT NO:
K.SUTER	Revised 11/07/08	ATL-171-3099J



LEGEND:

- GROUNDWATER TABLE AT TIME OF BORING
- AR AUGER REFUSAL
- BT BORING TERMINATED
- PWR PARTIALLY WEATHERED ROCK

SCALE: 1 INCH = 25' (VERTICAL)
1 INCH = 70' (HORIZONTAL)

NOTES:
1. BORINGS B-14, B-15, B-17, B-19, B-21 AND B-23 WERE PERFORMED BY GDOT IN 1979.
2. BORINGS B-19 AND B-21 WERE WASH BORINGS. N-VALUE NOT AVAILABLE.

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FIGURE 4 - GENERALIZED SUBSURFACE PROFILE B-B'
I-575 Bridge Over Little River
Northwest Corridor Project
Cherokee County, Georgia

DRAWN BY:	GDOT PROJECT NO.	
W. Donaldson	CSNH -0008-00(256) PI NO. 0008256	
CHECKED BY:	DATE:	DOCUMENT NO:
K.SUTER	Revised 11/07/08	ATL-171-3099J

APPENDIX I

New Boring Logs – BD-5 through BD-9

Laboratory Test Results

Test Procedures

BORING LOG

PSI No.: **476-65003 (Document No. ATL-171-3099J)**

Client: **Willmer Engineering/Georgia Transportation Partners** GDOT Project No.: CSNHS-0008-00(256) PI No.: 0008256

Project: **I-575 Bridge Over Little River Cherokee County, Georgia**

Boring No.: **BD-5 (1 of 2)** Total Depth **93.0'** Elev: **898 ±** Location: **Sta. 704+34 at CL**

Type of Boring: **Hollow Stem Auger** Started: **10/4/07** Completed: **10/4/07** Driller: **Gable Drilling**

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows REC/RQD	Sample Depth (Feet)	N VALUE (bpf) PL %MC LL 10 20 30 40 50 60 70 80 90	N
897.6	0.1	Topsoil Thickness = 1 inch		1.0		
		FILL: Medium Dense to Very Dense Tan Moist Silty SAND (SM), with rock fragments	9-10-9	2.5	●	19
				3.5		
			22-26-42	5.0	●	68
891.7	6.0			6.0		
		FILL: Medium Dense to Dense Tan Moist Silty SAND (SM), with rock fragments (Non-Plastic)	9-9-12	7.5	●	21
				8.5		
			8-10-10	10.0	●	20
				13.5		
			7-14-22	15.0	▲ ●	36
879.7	18.0			18.5		
		RESIDUUM: Dense Brown to Black/Tan Moist Silty SAND (SM), with rock fragments	12-14-22	20.0	●	36
				23.5		
			14-16-21	25.0	●	37
				28.5		
			13-14-17	30.0	●	31
865.7	32.0					
		Medium Dense Reddish Brown Moist Silty Clayey SAND (SC-SM), with rock fragments		33.5		
			9-11-18	35.0	●	29
859.7	38.0			38.5		
		Very Stiff Red Moist Clayey Sandy SILT (ML)	10-11-16	40.0	●	27
854.7	43.0			43.5		
		Dense to Medium Dense Red/Tan Moist Silty SAND (SM)	15-17-20	45.0	●	37
				48.5		
			11-11-13	50.0	●	24
				53.5		
			11-11-18	55.0	●	29
				58.5		
			9-13-18	60.0	●	31
				63.5		
			6-10-12	65.0	●	22

BL_STD 47665003.GPJ PSI_CORP.GDT 1/3/08

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.

BORING LOG

PSI No.: **476-65003 (Document No. ATL-171-3099J)**

Client: **Willmer Engineering/Georgia Transportation Partners** GDOT Project No.: CSNHS-0008-00(256) PI No.: 0008256

Project: **I-575 Bridge Over Little River Cherokee County, Georgia**

Boring No.: **BD-5 (2 of 2)** Total Depth **93.0'** Elev: **898±** Location: **Sta. 704+34 at CL**

Type of Boring: **Hollow Stem Auger** Started: **10/4/07** Completed: **10/4/07** Driller: **Gable Drilling**

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows REC/RQD	Sample Depth (Feet)	N VALUE (bpf) PL %MC LL (10 20 30 40 50 60 70 80 90)	N
829.7	68.0	Hard to Very Stiff Brown/Tan Moist Sandy SILT (ML)	5-11-16	68.5 70.0		27
823.2	74.5	PARTIALLY WEATHERED ROCK: Sampled as Hard to Very Stiff Brown/Tan Wet Sandy SILT (ML)	22-30-50/2	73.5 75.0		100
819.7	78.0	PARTIALLY WEATHERED ROCK: Sampled as Very Dense Brown/Orange Silty SAND (SM)	50/4	78.5 80.0		100
			50/4	83.5 85.0		100
804.7	93.0	Auger Refusal at 93 feet Groundwater at Time of Drilling = 73 feet				

BL_STD 47665003.GPJ PSI_CORP.GDT 1/3/08

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.

BORING LOG

PSI No.: **476-65003 (Document No. ATL-171-3099J)**

Client: **Willmer Engineering/Georgia Transportation Partners** GDOT Project No.: CSNHS-0008-00(256) PI No.: 0008256

Project: **I-575 Bridge Over Little River Cherokee County, Georgia**

Boring No.: **BD-6 (1 of 1)** Total Depth **53.0'** Elev: **870 ±** Location: **Sta. 705+89, 10' LT CL**

Type of Boring: **Hollow Stem Auger** Started: **10/5/07** Completed: **10/5/07** Driller: **Gable Drilling**

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows / REC/RQD	Sample Depth (Feet)	N VALUE (bpf) PL %MC LL (10 20 30 40 50 60 70 80 90)	N
869.7	0.2	Asphalt Thickness = 2 inches		1.0		
868.9	1.0	Auger Refusal at 1 foot Offset Boring 10 feet West	9-15-12	2.5 3.5	●	27
		FILL: Medium Dense Brown/Red Moist Silty SAND (SM), with rock fragments	6-10-12	5.0 6.0	●	22
			7-8-9	7.5 8.5	●	17
861.9	8.0	RESIDUUM: Medium Dense Red/Orange/Green Moist Micaceous Silty SAND (SM) (Non-Plastic)	6-9-12	10.0	● ▲	21
			5-7-9	13.5 15.0	●	16
			5-7-9	18.5 20.0	●	16
846.9	23.0	Very Dense Gray/Orange/Tan Moist Micaceous Silty SAND (SM)	15-22-35	23.5 25.0	●	57
840.4	29.5	PARTIALLY WEATHERED ROCK: Sampled as Very Dense Gray/Orange/Tan Moist Micaceous Silty SAND (SM)	28-32-50/5	28.5 30.0	●	100
			50/4	33.5 35.0	●	100
832.9	37.0	Very Stiff Brown/Orange Wet Micaceous Sandy SILT (ML)	6-9-13	38.5 40.0	●	22
			17-24-34	43.5 45.0	●	58
821.9	48.0	Very Stiff Brown/Orange Wet Micaceous Sandy SILT (ML), with quartz fragments	7-27-31	48.5 50.0	●	58
816.9	53.0	Auger Refusal at 53 feet Groundwater at Time of Drilling = 40 feet				

BL_STD 47665003.GPJ PSI_CORP.GDT 1/3/08

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.

BORING LOG

PSI No.: **476-65003 (Document No. ATL-171-3099J)**

Client: **Willmer Engineering/Georgia Transportation Partners** GDOT Project No.: CSNHS-0008-00(256) PI No.: 0008256

Project: **I-575 Bridge Over Little River Cherokee County, Georgia**

Boring No.: **BD-8 (1 of 1)** Total Depth **25.0'** Elev: **869±** Location: **Sta. 709+49 at CL**

Type of Boring: **Hollow Stem Auger** Started: **10/3/07** Completed: **10/3/07** Driller: **Gable Drilling**

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows / REC/RQD	Sample Depth (Feet)	N VALUE (bpf) PL %MC LL (10 20 30 40 50 60 70 80 90)	N
		FILL: Dense Reddish Brown Moist Silty SAND (SM)		1.0		
			16-18-24	2.5		42
866.3	3.0			3.5		
		FILL: Medium Dense Reddish Brown Moist Silty SAND (SM), with rock fragments	9-8-7	5.0		15
863.3	6.0			6.0		
		FILL: Dense Tan Moist Silty SAND (SM), with rock fragments	13-23-25	7.5		48
861.3	8.0			8.5		
		RESIDUUM: Very Dense Tan Moist Silty SAND (SM)	25-28-34	10.0		62
855.3	14.0			13.5		
		PARTIALLY WEATHERED ROCK: Sampled as Very Dense Brown Moist Silty SAND (SM)	14-50/5	15.0		100
851.3	18.0			18.5		
		PARTIALLY WEATHERED ROCK: Sampled as Very Dense Gray Silty GRAVEL (GP)	50/5	20.0		100
				23.5		
844.3	25.0		50/1	25.0		100
		Auger Refusal at 25 feet Groundwater at Time of Drilling = Not Encountered				

BL_STD 47665003.GPJ PSI_CORP.GDT 1/3/08

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.

BORING LOG

PSI No.: **476-65003 (Document No. ATL-171-3099J)**

Client: **Willmer Engineering/Georgia Transportation Partners** GDOT Project No.: CSNHS-0008-00(256) PI No.: 0008256

Project: **I-575 Bridge Over Little River Cherokee County, Georgia**

Boring No.: **BD-9 (1 of 1)** Total Depth **43.0'** Elev: **898±** Location: **Sta. 710+14, 10' LT CL**

Type of Boring: **Hollow Stem Auger** Started: **10/3/07** Completed: **10/3/07** Driller: **Gable Drilling**

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows REC/RQD	Sample Depth (Feet)	N VALUE (bpf) PL %MC LL 10 20 30 40 50 60 70 80 90	N
897.5	0.1	Topsoil Thickness = 1 inch		1.0		
		FILL: Dense Red/Tan Moist Silty SAND (SM), with rock fragments	17-20-28	2.5	●	48
894.6	3.0			3.5		
		RESIDUUM: Very Dense Brown/Orange/White Moist Silty SAND (SM), with rock fragments	38-47-41	5.0	●	88
891.6	6.0			6.0		
890.6	7.0	PARTIALLY WEATHERED ROCK: Sampled as Very Dense Red Moist Silty SAND (SM), with rock fragments	50/5	7.5		●100
				8.5		
			21-28-50/1	10.0	▲	●100
		Auger Refusal at 7 feet Offset 10 feet North Auger Refusal at 2 feet Offset 15 feet Southwest to 710+10 10 feet Left		13.5		
			50/5	15.0		●100
		PARTIALLY WEATHERED ROCK: Sampled as Very Dense Orange/Gray/Brown Moist Silty SAND (SM), with rock fragments				
879.6	18.0			18.5		
		PARTIALLY WEATHERED ROCK: Sampled as Very Dense Orange/Tan/Black Moist Silty SAND (SM), with rock fragments	2-30-50/3	20.0		●100
				23.5		
			49-50/5	25.0		●100
				28.5		
			50/5	30.0		●100
865.6	32.0					
		Dense Brown/Black/Tan Moist Silty SAND (SM), with rock fragments		33.5		
			8-16-21	35.0	●	37
860.6	37.0					
		PARTIALLY WEATHERED ROCK: Sampled as Very Dense Orange/Brown/White Moist Silty SAND (SM), with quartz fragments		38.5		
			13-23-50/4	40.0		●100
854.6	43.0					
		Auger Refusal at 43 feet Groundwater at Time of Drilling = Not Encountered				

BL_STD 47665003.GPJ PSI_CORP.GDT 1/3/08

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.

LIQUID AND PLASTIC LIMIT TEST DATA

Client:
Project: Northwest Corridor Metro Atlanta
Project Number: 476-65003

Sample Data

Source:
Sample No.: B-1/S-5
Elev. or Depth: 13.5-15.0' **Sample Length(in./cm.):**
Location: I-575 Over Little River
Description: Brown micaceous Silty SAND
Water Content: 14.5 % **USCS:** SM **AASHTO:**
Testing Remarks: % Passing Sieve #200 = 20.7

Liquid Limit= _____
Plastic Limit= NP
Plasticity Index= NP

LIQUID AND PLASTIC LIMIT TEST DATA

Client:
Project: Northwest Corridor Metro Atlanta
Project Number: 476-65003

Sample Data

Source:
Sample No.: B-2/S-4
Elev. or Depth: 8.5-10.0' **Sample Length(in./cm.):**
Location: I-575 Over Little River
Description: Red Silty SAND
Water Content: 38.6 % **USCS:** SM **AASHTO:**
Testing Remarks: % Passing Sieve #200 = 42.6

Liquid Limit= _____
Plastic Limit= NP
Plasticity Index= NP

TEST PROCEDURES

The general field procedures employed by Professional Service Industries, Inc. (PSI) are summarized in the American Society for Testing and Materials (ASTM) Standard D420 which is entitled "Investigating and Sampling Soil and Rock". This recommended practice lists recognized methods for determining soil and rock distribution and groundwater conditions. These methods include geophysical and in-situ methods as well as borings.

Standard Drilling Techniques

To obtain subsurface samples, borings are drilled using one of several alternate techniques depending upon the subsurface conditions. Some of these techniques are:

In Soils:

a) Continuous hollow stem augers.
b) Rotary borings using roller cone bits or drag bits, and water or drilling mud to flush the hole.
c) "Hand" augers.

In Rock:

a) Core drilling with diamond-faced, double or triple tube core barrels.
b) Core boring with roller cone bits.

The drilling method used during this exploration is presented in the following paragraph.

Hollow Stem Augering: A hollow stem augers consists of a hollow steel tube with a continuous exterior spiral flange termed a flight. The auger is turned into the ground, returning the cuttings along the flights. The hollow center permits a variety of sampling and testing tools to be used without removing the auger.

Sampling and Testing in Boreholes

Several techniques are used to obtain samples and data in soils in the field; however the most common methods in this area are:

a) Standard Penetrating Testing
b) Undisturbed Sampling
c) Dynamic Cone Penetrometer Testing
d) Water Level Readings

The procedures utilized for this project are presented below.

Standard Penetration Testing: At regular intervals, the drilling tools are removed and soil samples obtained with a standard 2 inch diameter split tube sampler connected to an A or N-size rod. The sampler is first seated 6 inches to penetrate any loose cuttings, and then driven an additional 12 inches with blows of a 140 pound safety hammer falling 30 inches. Generally, the number of hammer blows required to drive the sampler the final 12 inches is designated the "penetration resistance" or "N" value, in blows per foot (bpf).

The split barrel sampler is designed to retain the soil penetrated, so that it may be returned to the surface for observation. Representative portions of the soil samples obtained from each split barrel sample are placed in jars, sealed and transported to our laboratory.

The standard penetration test, when properly evaluated, provides an indication of the soil strength and compressibility. The tests are conducted according to ASTM Standard D1586. The depths and N-values of standard penetration tests are shown on the Boring Logs. Split barrel samples are suitable for visual observation and classification tests but are not sufficiently intact for quantitative laboratory testing.

Water Level Readings: Water table readings are normally taken in the borings and are recorded on the Boring Logs. In sandy soils, these readings indicate the approximate location of the hydrostatic water table at the time of our field exploration. In clayey soils, the rate of water seepage into the borings is low and it is generally not possible to establish the location of the hydrostatic water table through short term water level readings. Also, fluctuation in the water table should be expected with variations in precipitation, surface run-off, evaporation, and other factors. For long-term monitoring of water levels, it is necessary to install piezometers.

The water levels reported on the Boring Logs are determined by field crews immediately after the drilling tools are removed, and several hours after the borings are completed, if possible. The time lag is intended to permit stabilization of the groundwater table which may have been disrupted by the drilling operation.

Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the cave-in zone. The cave-in depth is measured and recorded on the Boring Logs.

BORING LOGS

The subsurface conditions encountered during drilling are reported on a field boring log prepared by the Driller. The log contains information concerning the boring method, samples attempted and recovered, indications of the presence of coarse gravel, cobbles, etc., and observations of groundwater. It also contains the driller's interpretation of the soil conditions between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are kept on file in our office.

After the drilling is completed, a geotechnical professional classifies the soil samples and prepares the final Boring Logs which are the basis for our evaluations and recommendations.

SOIL CLASSIFICATION

Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply his past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our Boring Logs.

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary; grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D-2487). Each of these

classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties are presented in this report.

The table below presents criteria that are typically utilized in the classification and description of soil and rock samples for preparation of the Boring Logs.

Relative Density of Cohesionless Soils From Standard Penetration Test		**Consistency of Cohesive Soils**	
Very Loose	≤ 4 bpf	Very Soft	≤ 2 bpf
Loose	5 - 10 bpf	Soft	3 - 4 bpf
Medium Dense	11 - 30 bpf	Medium Stiff	5 - 8 bpf
Dense	31 - 50 bpf	Stiff	9 - 15 bpf
Very Dense	> 50 bpf	Very Stiff	16 - 30 bpf
		Hard	31 – 50 bpf
(bpf = blows per foot, ASTM D 1586)		Very Hard	> 50 bpf
Relative Hardness of Rock		**Particle Size Identification**	
Very Soft	Hard Rock disintegrates or easily compresses to touch; can be hard to very hard soil.	Boulders	Larger than 12"
Soft	May be broken with fingers.	Cobbles	3" - 12"
Moderately Soft	May be scratched with a nail, Corners and edges may be broken with fingers.	Gravel	
		Coarse	3/4" - 3"
		Fine	4.76mm - 3/4"
		Sand	
Moderately Hard	Light blow of hammer required to break samples.	Coarse	2.0 - 4.76 mm
		Medium	0.42 - 2.00 mm
		Fine	0.42 - 0.074 mm
Hard	Hard blow of hammer required to break sample.	Fines (Silt or Clay)	Smaller than 0.074 mm
Rock Continuity		**Relative Quality of Rocks**	
RECOVERY = Total Length of Core / Length of Core Run x 100 %		**RQD** = Total core, counting only pieces > 4" long / Length of Core Run x 100%	
Description	Core Recovery %	Description	RQD %
Incompetent	Less than 40	Very Poor	0 - 25 %
Competent	40 - 70	Poor	26 - 50 %
Fairly Continuous	71 - 90	Fair	51 - 75 %
Continuous	91 -100	Good	76 - 90 %
		Excellent	91 - 100 %

APPENDIX II

Existing BFI Report Boring logs

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

GDOT Project No.: CSNHS-0008-00(256)

PROJECT PI No.: 0008256 COUNTY CHEROKEE DATE 8/14/79

LOCATION I-575 Bridge over Little River BORING NO B-4

BENT NO. 2 FOOTING GROUND ELEV. 858.41

PROPOSED FOOTING ELEV. PARTY CHIEF HOLLIS

ELEV.	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
	GR. EL. 7												
	V. Dense Mltc Micas Sandy Silt W/ Weath. Rock	1s	60=.8'										
850													
	Dense Same	2s	35										
	V. Dense Same	3s	60=.3'										
840	V. Dense Rock												
	Refusal												
830													
820													

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No claim will be considered if the contra... or relies on this information in his bidding... in his construction operations and finds t... it is inaccurate...

This foundation investigation report is considered as a part of the Plans and Sp... for the contract on the job...

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DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

GDOT Project No.: CSNHS-0008-00(256)
PI No.: 0008256

PROJECT _____ COUNTY CHEROKEE DATE 8/16/79

LOCATION I-575 Bridge over Little River BORING NO B-6

BENT NO. 3 FOOTING _____ GROUND ELEV. 837.64

PROPOSED FOOTING ELEV. _____ PARTY CHIEF HOLLIS

WASHBORING

ELEV.	BORING LOG	BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
840	Top Water ▽											
	GR. EL. ▽											
830	Loose to Med. Dense Sand											
	Washboring Refusal on Rock											
820												
810												

...he Department of Transportation in making ... to contractors ... accuracy ... of the contract ... boring or ... and that ... investigation report is not ... part of the Plans and Specifications ... on the job

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DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

GDOT Project No.: CSNHS-0008-00(256)

PROJECT PI No.: 0008256 COUNTY CHEROKEE DATE 8/15/79

LOCATION I-575 Bridge over Little River BORING NO. B-7

BENT NO. 4 FOOTING — GROUND ELEV. 837.14

PROPOSED FOOTING ELEV. — PARTY CHIEF HOLLIS

WASHBORING

ELEV.	BORING LOG	BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
840	Top Water											
	GR. EL.											
	Loose to Med. Dense Sand & Gravel											
830												
	Washboring Refusal on Rock											
820												
810												

The Department of Transportation in making this foundation report available to contractors assumes no responsibility for its accuracy

No claim will be considered if based upon any use or reliance on this information or any interpretation of it in his construction operations if it is inaccurate

This foundation investigation report is not considered as a part of the Plans and Specifications or Contract on the job

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

GDOT Project No.: CSNHS-0008-00(256)

PROJECT PI No.: 0008256 COUNTY CHEROKEE DATE 8/15/79

LOCATION I-575 Bridge over Little River BORING NO B-10

BENT NO. 5 FOOTING GROUND ELEV. 850.19

PROPOSED FOOTING ELEV. PARTY CHIEF HOLLIS

ELEV.	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
850	GR. EL.												
	Dense Mltc Micas Sandy Silt W/ Weath. Rock	1s	33										
		2s	31										
	V. Dense Same	3s	60=.7'										
840	V. Hard Rock												
	Refusal												
830													
820													

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

PROJECT GDOT Project No.: CSNHS-0008-00(256) PI No.: 0008256 COUNTY CHEROKEE DATE 5/1/79

LOCATION I-575 Bridge over Little River BORING NO B-14

BENT NO. 1 FOOTING ____ GROUND ELEV. 854.68

PROPOSED FOOTING ELEV. ____ PARTY CHIEF HOLLIS

ELEV	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	Ø
	GR. EL.												
GWT 850		1s	23										
	Med. Mltc Micas Sandy Silt	2s	12										
840		3s	14										
		4s	17										
830		5s	9										
	Loose Same												
	Med. Dense Same	6s	14										
820		7s	38										
	Dense Same W/ Weath. Rock	8s	32										
810		9s	30										
	V. Dense Same	10s	51										
800	V. Hard Rock												
	Refusal												

The Department of Transportation in making this foundation [illegible] to contractors assumes no re[illegible] No claim [illegible] or relies o[illegible] in his co[illegible] it is in[illegible] This [illegible] consider[illegible] that [illegible]

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

GDOT Project No.: CSNHS-0008-00(256)

PROJECT PI No.: 0008256 COUNTY CHEROKEE DATE 5/2/79

LOCATION I-575 Bridge over Little River BORING NO B-15

BENT NO. 2 FOOTING — GROUND ELEV. 861.76

PROPOSED FOOTING ELEV. — PARTY CHIEF HOLLIS

ELEV.	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
	GR. EL.												
860		1s	24										
	Med. Dense Mltc Micas Sandy Silt												
GWT		2s	22										
850													
		3s	23										
		4s	28										
840	Dense Same W/ Weath. Rock												
		5s	33										
	V. Dense Same	6s	50										
830													
	Dense Same	7s	30										
	Med. Dense Mltc Micas Sandy Silt	8s	16										
820													
	Dense Same	9s	37										
	Med Dense Same	10s	23										
810													
	V. Dense Same W/ Weg. Rock	11s	60=.7'										
	V. Hard Rock												
	Refusal												
800													

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OFFICE OF MATERIALS AND RESEARCH, FOREST PARK, GEORGIA

GEOTECHNICAL ENGINEERING

BRIDGE SUBSURFACE INVESTIGATION

GDOT Project No.: CSNHS-0008-00(256)

PROJECT PI No.: 0008256 COUNTY CHEROKEE DATE 8/13/79

LOCATION I-575 Bridge over Little River BORING NO B-17

BENT NO. 3 FOOTING ——— GROUND ELEV. 855.02

PROPOSED FOOTING ELEV. ——— PARTY CHIEF HOLLIS

ELEV.	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
	GR. EL.												
850	Med. Dense Mltc Micas Sandy Silt W/ Weath. Rock	1s	20										
		2s	21										
GWT													
840		3s	30										
	Dense Same	4s	31										
830		5s	44										
		6s	60=.6'										
820	V Dense Same	7s	60=.1'										
		8s	60=.1'										
	V. Hard Rock												
810	Refusal												
800													

DOT 590

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LOCATION I-575 Bridge over Little River BORING NO B-19

BENT NO. FOOTING GROUND ELEV. 836.64

PROPOSED FOOTING ELEV. PARTY CHIEF HOLLIS

WASHBORING

ELEV.	BORING LOG	BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
840	Top Water ▽											
	GR. EL. ▽											
830	Loose to Med. Dense Sand											
820	Washboring Refusal on Rock											
810												

DOT 490

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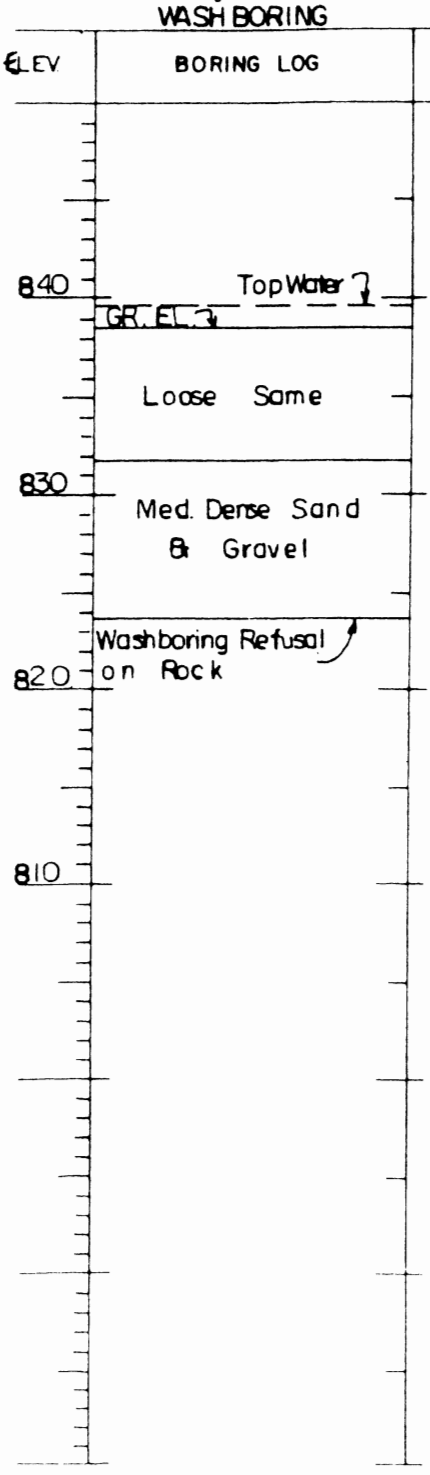
LOCATION I-575 Bridge over Little River BORING NO B-21

BENT NO. 5 FOOTING _____ GROUND ELEV. 838 64

PROPOSED FOOTING ELEV. _____ PARTY CHIEF HOLLIS

WASH BORING



BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø

DOT 490

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LOCATION I-575 Bridge over Little River BORING NO B-23

BENT NO. 6 FOOTING ——— GROUND ELEV. 852.49

PROPOSED FOOTING ELEV. ——— PARTY CHIEF HOLLIS

ELEV.	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	Ø
	GR.EL.												
850	Med. Dense Mltc Micas Sandy Silt W/ Weath. Rock	1s	16										
		2s	19										
	Dense Same	3s	26										
	V. Hard Rock	4s	60=.1'										
840	Refusal												
830													
820													

DOT 490

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LOCATION I-575 Bridge over Little River BORING NO B-25

BENT NO. 7 FOOTING — GROUND ELEV. 888.47

PROPOSED FOOTING ELEV. — PARTY CHIEF HOLLIS

ELEV.	BORING LOG		BLOW	UNIFIED	γ	W	Gs	% 200	% CLAY	LL	PI	C	ø
	GR. EL. 7												
		1s	60=.7'										
880	V. Dense Mltc Micas Sandy Silt W/ Weath. Rock	2s	52										
		3s	51										
870		4s	41										
	Dense Same	5s	44										
860		6s	60=.6'										
	V Dense Same	7s	60=.6'										
850		8s	60=.5'										
		9s	60=.6'										
840	End Drilling												
830													