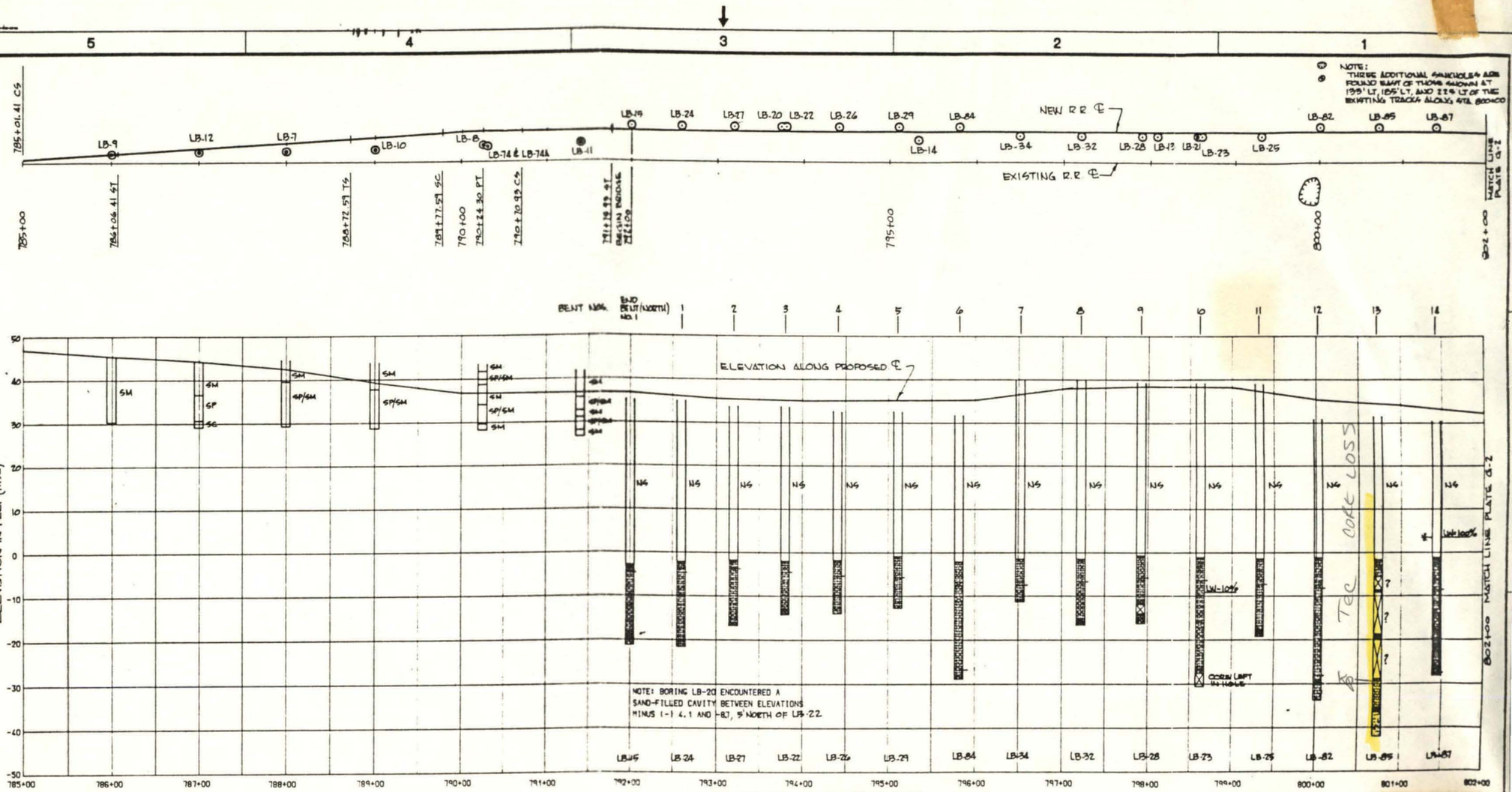
BRUNSWICK CO.
C-1-85

BW-C-1-85



BORING PLAN AND PROFILE A-A'

G-1

LEGEND

- ⊙ OR ⊙ COREBORING - LB-32 OR LB-96/LB-96A
- ⊙ SPLITSPOON BORING-LB-1
- ⊙ SPLITSPOON & CORE BORING, LB-70
- ● UNDISTURBED SOIL BORING, LB-70A
- LW=100% LOSS OF DRILLING FLUID, PERCENT INDICATED
- SOIL/OVERBURDEN CAVITY
- SINKHOLES, ACTIVE AND INACTIVE
- CAVITY, OPEN OR SAND FILLED
- CORE LOSS DURING DRILLING, ≥ ½ FOOT
- ? CORE LOSS, POSSIBLE SAND FILLED CAVITY
- LIMESTONE, SHELLY, SOLUTION PRONED
- LIMESTONE, ARGILLACEOUS (CLAYEY)
- LIMESTONE, SANDY
- SANDSTONE, CALCAREOUS (LIMEY)
- SANDSTONE, BEDDED, FINE GRAIN
- NR NO RECOVERY
- NS NOT SAMPLED
- SP SANDY, POORLY GRADED
- SM SAND, SILTY
- SC SAND, CLAYEY
- CL CLAY, LEAN TO SANDY
- CH CLAY, FAT

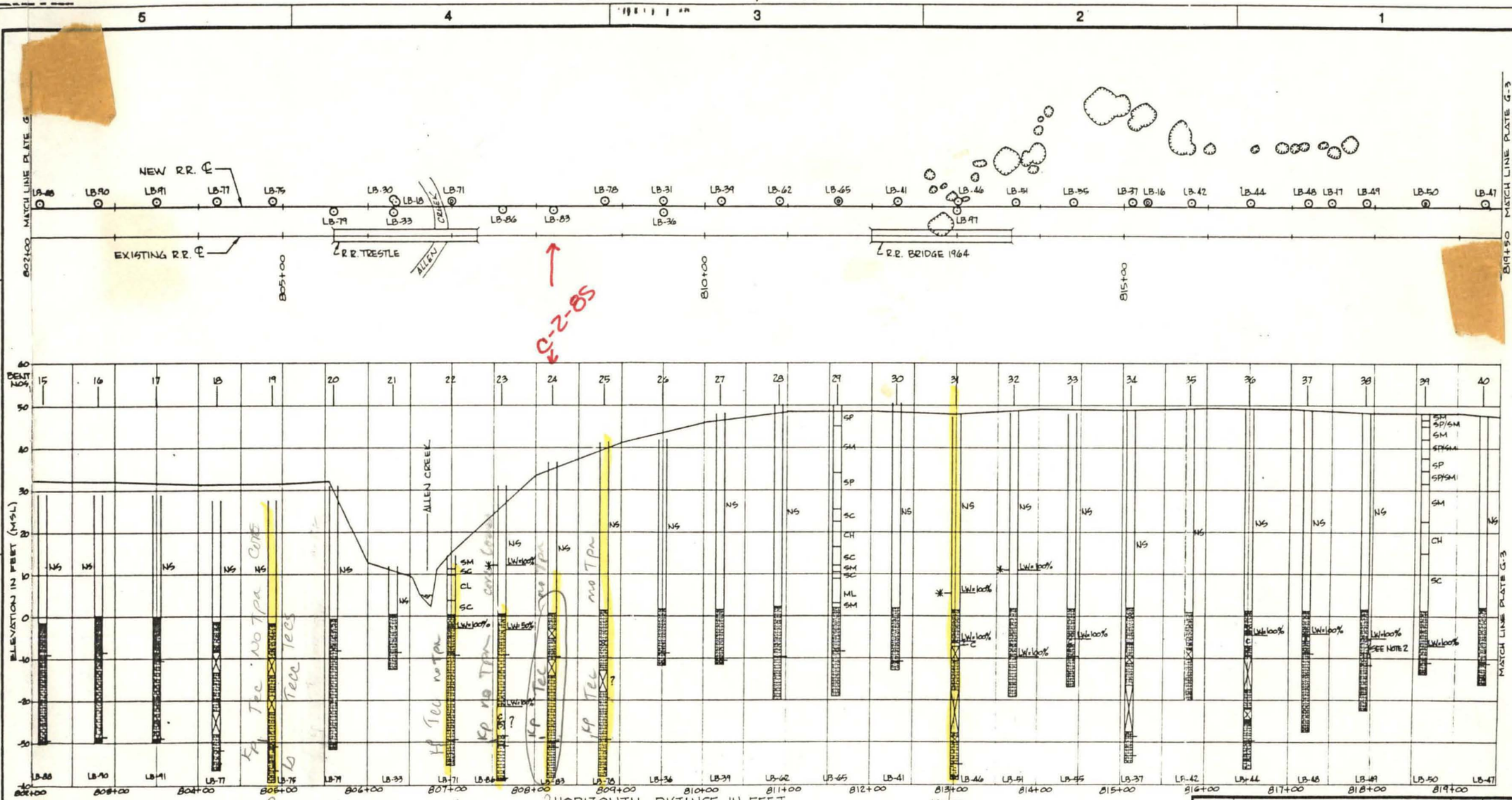
Symbol	Revisions: Description	Date	Approved

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

Designed by: WPM
Drawn by: WHW
Checked by: MAF

MILITARY OCEAN TERMINAL, SUNNY POINT
SOUTHPORT, NORTH CAROLINA

RAILROAD LAND BRIDGE
SUBSURFACE BORING PLAN AND PROFILE A-A'



BORING PLAN AND PROFILE A-A' (CONTINUED)

NOTE:
LB-97 IS SIMILAR TO LB-46

NOTES:
1. SEE PLATE G-1 FOR LEGEND.
2. LB-49, 0.2' CAVITY AT 53.7', 1.0' CORE LOSS BETWEEN 53.9' AND 58.1' DUE TO SMALL CAVITIES ON SAND LENSES.

Symbol	Descriptions	Date	Approved
	Revisions		

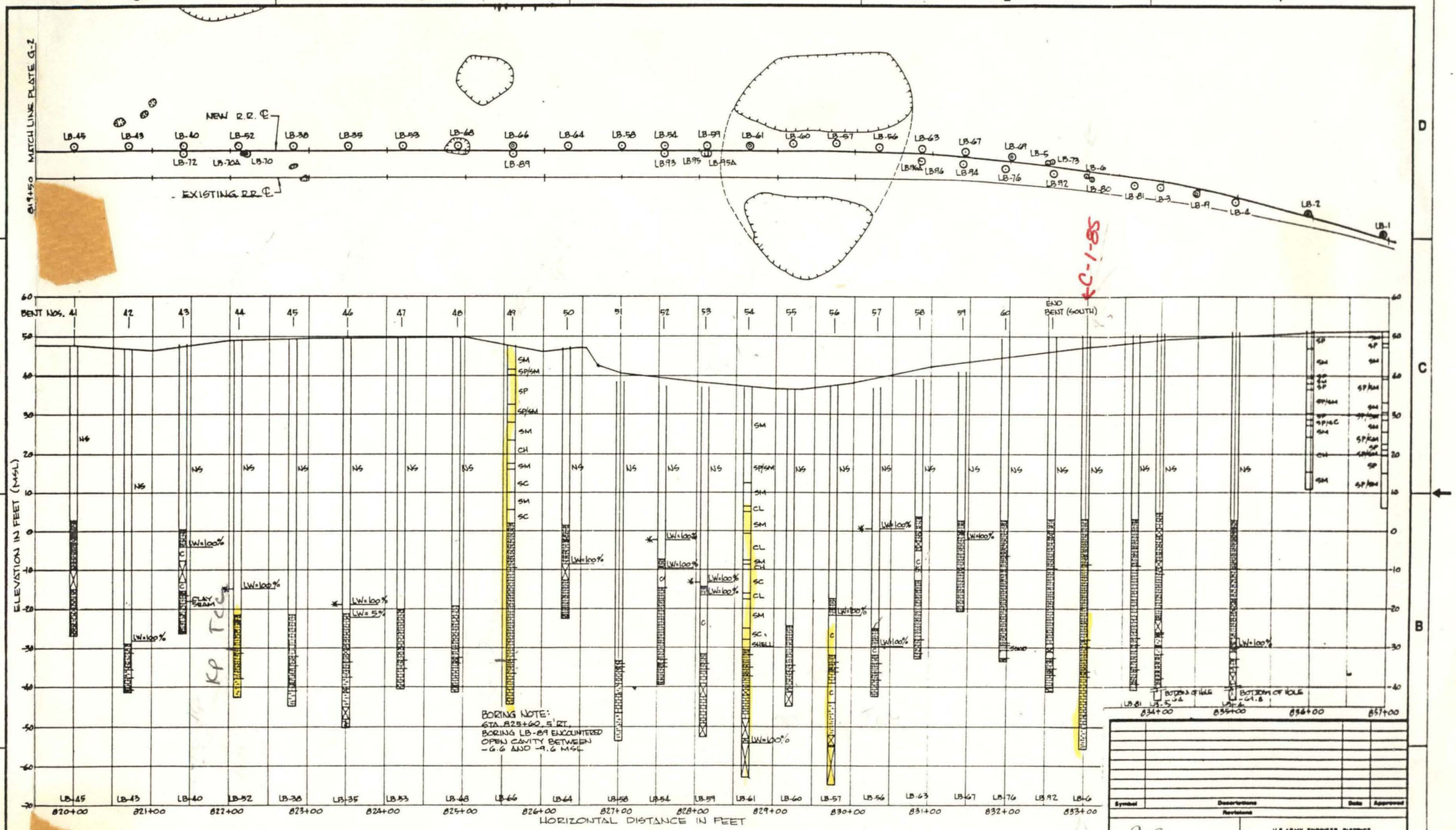
G-2

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

Designed by: WPM
Drawn by: WHW
Checked by: HAF

MILITARY OCEAN TERMINAL, SUNNY POINT
SOUTHPORT, NORTH CAROLINA

RAILROAD LAND BRIDGE
SUBSURFACE BORING PLAN AND PROFILE A-A'



NOTES:

1. SEE PLATE G-1 FOR LEGEND
2. CURVE IN TRACK HAS BEEN LAID OUT FLAT FOR DRAWING DRILL HOLES ON PROFILE A-A'; THEREFORE DRILL HOLES ON PROFILE DO NOT PROJECT TO LOCATIONS ON PLAN IN CURVE.

BORING PLAN AND PROFILE A-A' (CONTINUED)

Symbol	Descriptions / Revisions	Date	Approved

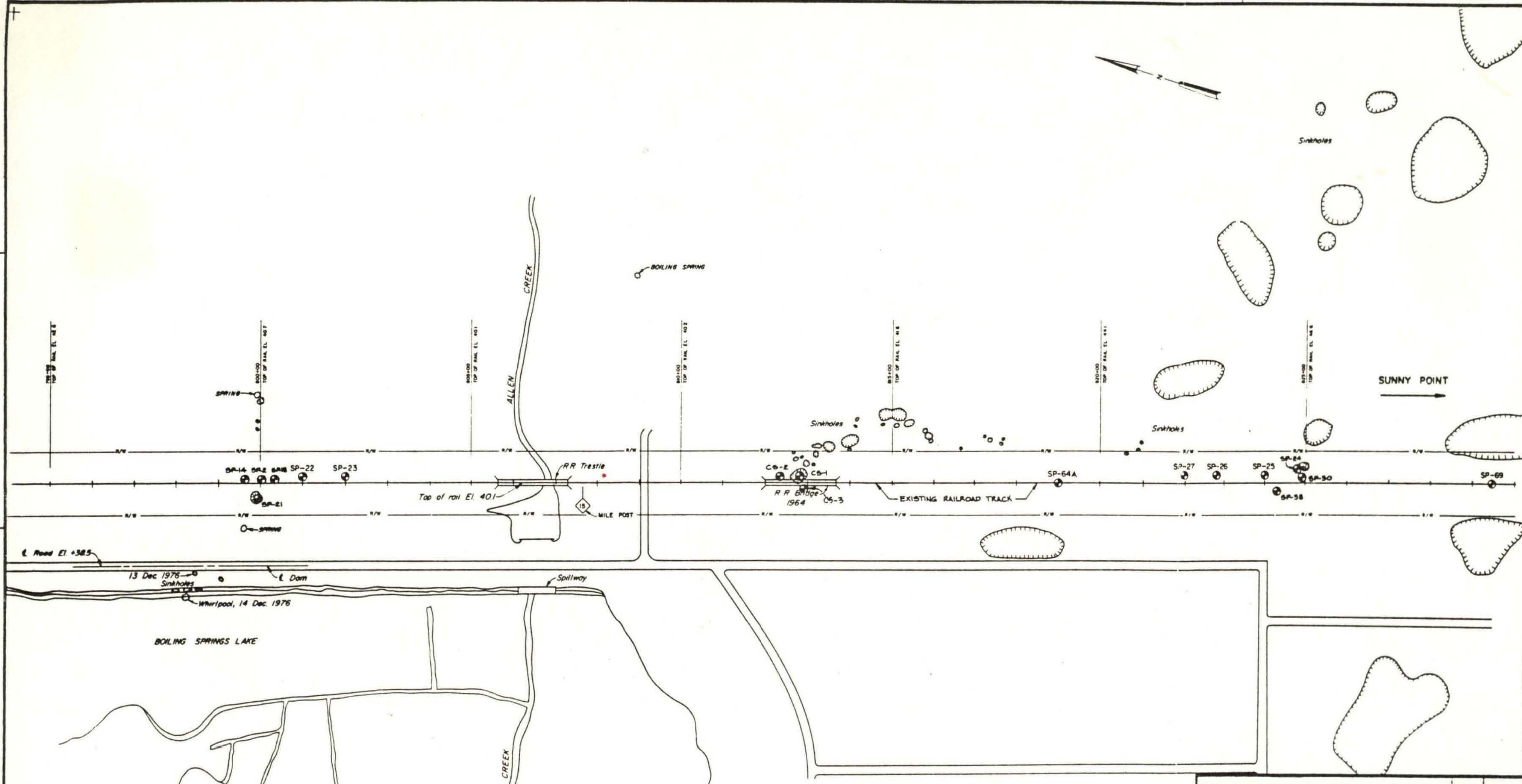
G-3

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

Designed by: WPM
Drawn by: WJW
Checked by: HAF

MILITARY OCEAN TERMINAL, SUNNY POINT
SOUTHPORT, NORTH CAROLINA

RAILROAD LAND BRIDGE
SUBSURFACE BORING PLAN AND PROFILE A-A'



⊕ – SPLITSPOON AND CORE BORINGS [CS SERIES-1962; SP SERIES-1976-77]

◌ – SINKHOLES (ACTIVE AND INACTIVE)

NOTE: THE BORINGS IN THE CS AND SP SERIES WERE DRILLED ON OR ADJACENT TO THE EXISTING RAILROAD FOR INVESTIGATIONS RELATED TO SINKHOLE CONDITIONS AFFECTING THE EXISTING TRACKS SELECTED BORINGS FROM THESE GROUPS ARE FURNISHED AS ADDITIONAL INFORMATION IN THE APPENDIX WITH LOGS OF BORINGS. ALL SP DESIGNATED BORINGS ARE FOUND IN THE REPORT ON SINKHOLE DEVELOPMENT AS PER SECTION 2H OF THE SPECIFICATIONS

SCALE 1" = 100'

100 0 100 200 300

SCALE IN FEET

Symbol	Descriptions	Date	Approved
Revisions			

G-4

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

Designed by: WPM

Drawn by: KBP

Checked by:

US Army Corps of Engineers

MILITARY OCEAN TERMINAL, SUNNY POINT
SOUTHPORT, NORTH CAROLINA

RAILROAD LAND BRIDGE
BORING LOCATIONS–CS & SP SERIES
1962–1962 AND 1976–1977

STATE	COMPANY BW-C-1-85
COUNTY	FARM WELL NO.
BLOCK	SURVEY
SEC.	O'el @ 50'
T. R.	TOTAL DEPTH
	Note: See COE Lith log IN
	COMMENCED files for description
	COMPLETED of complete core.
ALTITUDE	REMARKS
PRODUCTION	

CASING RECORD

= - core sample

XX'XX" (X") - thickness of core sample

top of core sample

SHOT QUARTS BETWEEN

Kraftbilt 186-B TULSA 74101 PRINTED IN U.S.A.

10'

20'

30'

40'

46'7" (4") DARK grey dense fossiliferous limestone - top of core is bored hardground

C.H. S.C.

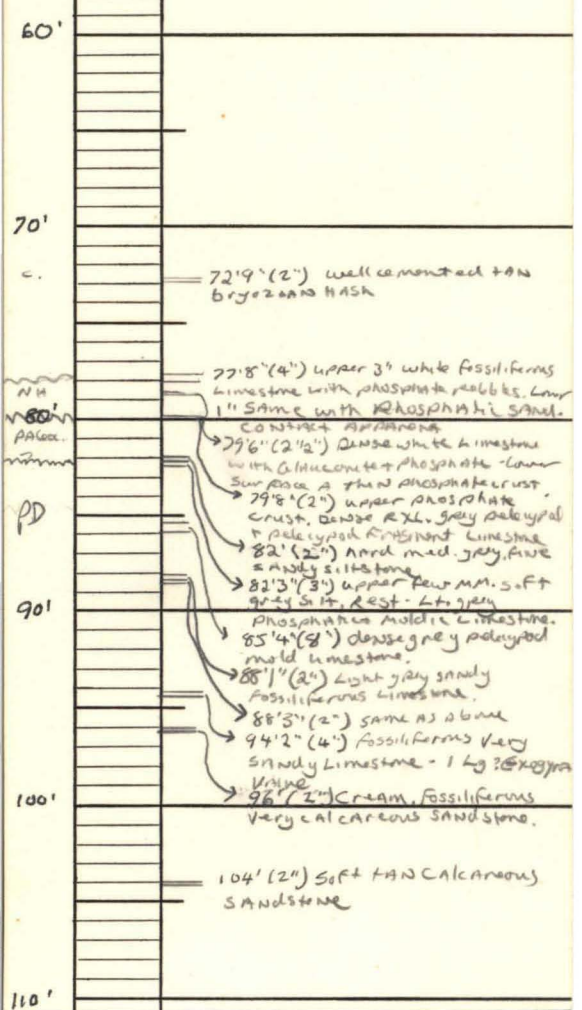
50'4" (2") Medium grey Algal and Bryozoan Limestone.

50'6" (2") SAME AS ABOVE

54'6" (1') SAME AS ABOVE but white.

57' (5') SAME AS ABOVE

60'


60'
70'
c.
72'9" (2") well cemented TAN bryozoan HASH
77'8" (4") upper 3" white fossiliferous Limestone with phosphate pebbles. Lower 1" same with phosphatic sand. CONTACT APPARENT
NH
80'
PAleoc.
79'6" (2½") dense white limestone with Glauconite + phosphate - Lower surface a thin phosphate crust.
79'8" (2") upper phosphate crust. dense RXL. gray pelecypod & pelecypod fragment limestone
82' (2") hard med. gray, fine sandy siltstone
82'3" (3") upper few MM. soft gray silt. Rest - Lt. gray phosphatic Molluscan Limestone.
pD
90'
85'4" (8") dense grey pelecypod mold limestone.
88'1" (2") Light gray sandy fossiliferous limestone
88'3" (2") SAME AS ABOVE
94'2" (4") fossiliferous Very sandy Limestone - 1 Lg ? Exogyra Valve
100'
96' (2") Cream, fossiliferous Very calcareous SANDstone.
104' (2") Soft TAN Calcareous SANDstone
110'

(BW-C-1-85)

Hole No. LB-6

DRILLING LOG	DIVISION SOUTH ATLANTIC	INSTALLATION WILMINGTON DISTRICT	SHEET 1 OF 5 SHEETS

1. PROJECT: MOBSU RR LAND BRIDGE
2. LOCATION (Coordinates or Station): 832 + 98, 5' R. of ℄
3. DRILLING AGENCY: MOBILE DISTRICT
4. HOLE NO. (As shown on drawing title and file number): LB-6
5. NAME OF DRILLER: J. Sanders
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 46.7'
8. DEPTH DRILLED INTO ROCK: 58.8'
9. TOTAL DEPTH OF HOLE: 105.5'
10. SIZE AND TYPE OF BIT: 4" Auger, 5 3/8" fishtail
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL, and 2 3/4" X 3 7/8" diamond.
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 314
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 6
15. ELEVATION GROUND WATER: 38.4±, 1/19/85
16. DATE HOLE: STARTED 19 JAN 85; COMPLETED 22 JAN 85
17. ELEVATION TOP OF HOLE: 49.9±
18. TOTAL CORE RECOVERY FOR BORING: 97.3 %
19. SIGNATURE OF INSPECTOR: Ted Zielonka, Geologist

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
49.9	0'		OVERBURDEN (Not sampled.)			Note: 4" auger from 0.0' to 12.0'. Mixed mud. 5 3/8" fishtail from 12.0' to 46.7'.
W.L. 38.4 ▽						
	15'					
	30'					W.L. 11.5' Date 1-19-85 Depth to water during drilling.
			Gray clay.			
			Clay with shell fragments.			Note: Scale changed at 45.0 ft. Core logged 4 Apr 85 by T. Haw, geologist
	45'					
3.2			Top of Rock @ 46.7'.			
	47'		LIMESTONE, CASTLE HAYNE FM.: Gray to dark gray, hard, phosphatic throughout, with sc-filled vugs.	100%	Box 1	Pull #1: From 46.7' To 56.0' Run 9.3' Rec 9.1' CL 0.2' U.L. 0.0'
	49'		Gray, moderately hard, mainly well-cemented fossil fragments.			
	51'		Limestone, (continued)			
			Continued on Sheet 2.			
			Soils field classified in accordance with the Unified Soil Classification Systems.			

OWNER - US Corps of Engineers

NCGS C-1-85

sample interval

46.7 - 46.9

50.4 - 50.8

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 49.9± | Hole No. LB-6

PROJECT MOTSU RR LAND BRIDGE | INSTALLATION WILMINGTON DISTRICT | SHEET 2 OF 5 SHEETS

ELEVATION a	DEPTH 51' b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			LIMESTONE, (Cont.) Moderately well cemented predominantly medium grained with occasional coarse grained fossil fragments; probably slightly argillaceous; limy in places; occasional small vugs; moderately hard.			Pull #1: (Cont.)
	53'			100%	Box 1 of 6	
54.6 54.7						57.2' to 57.9', fragmented; length of core estimated.
	55'					CD 55.8'
						Pull #2: From 56.0' To 66.2' Run 10.2' Rec 9.6' CL 0.6' U.L. 0.1'
57.0 57.5	57'					
			transitional to bryozoan hash	100%	58.4'	
-8.5			Limestone (bryozoan hash): Moderately to poorly cemented; medium grained fossil fragments; argillaceous; light brownish-gray, moderately hard to moderately soft.			58.4' to 69.2' 15 horizontal breaks
	59'					
	61'				Box 2 of 6	
						65.4' to 65.5' accumulative unaccountable loss through Pull 2.
	63'					
	65'					CD 65.5'
				100%		Pull #3: (See sheet 3.)
	67'		Continued on Sheet 3.			

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 49.9±	Hole No. LB-6
PROJECT MOTSU RR LAND BRIDGE	INSTALLATION WILMINGTON DISTRICT	SHEET 3 OF 5 SHEETS

ELEVATION a	DEPTH 67' b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			LIMESTONE, (Cont.) as above.		Box 2	Pull #3: (Cont.) From 66.2' To 75.4' Run 9.2' Rec 9.9' CG 0.7' U.L. 0.0'
	69'				69.2'	
				100%		
	71'					
					Box 3 of 6	
72.9 73.1	73'					
	75'					CD 75.4'
			transitional zone to New Hanover member of Castle Hayne Limestone.	100%		Pull #4: From 75.4' To 85.4' Run 10.0' Rec 10.0' CL 0.0' U.L. 0.0'
	77'					
-27.9 77.8 78.0			New Hanover member - Limestone: Well cemented; pebble to cobble size intraclasts, hard.			
	79'					
-29.8			BOTTOM OF CASTLE HAYNE.			
79.6 80.0	81'		Paleocene Limestone: Moderately well cemented; fine to medium grained; dark gray to gray, moderately hard.		80.7'	
			Fine to very fine grained		Box 4	
82.0 82.5			Paleocene Limestone: Moderately well cemented			
	83'		(Continued)	—	Cont	— — — — —
			Continued on Sheet 4.			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 49.9± | Hole No. LB-6

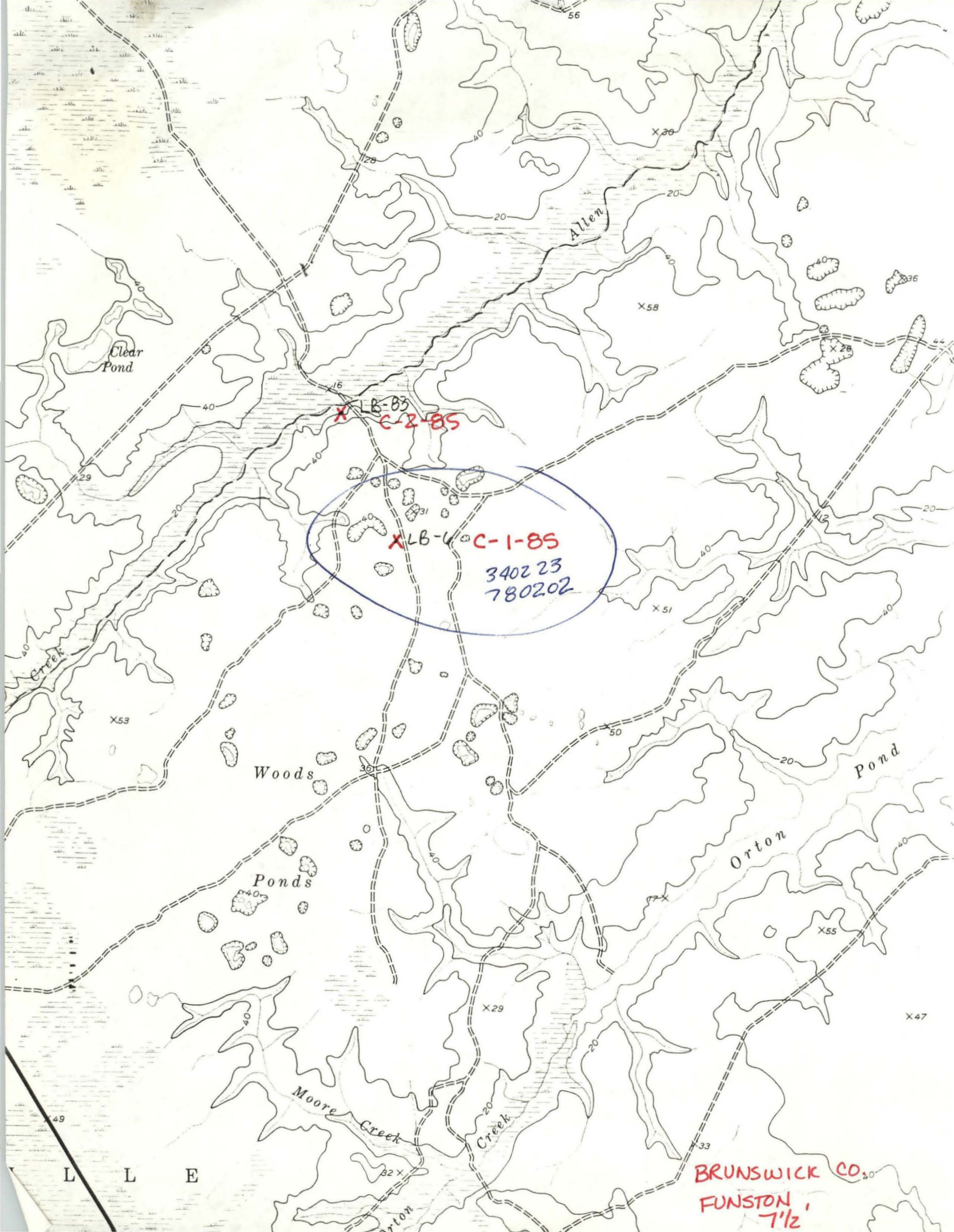
PROJECT: MOTSU RR LAND BRIDGE | INSTALLATION: WILMINGTON DISTRICT | SHEET 4 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	83'		(Limestone continued from above) coarse grained fossil fragments and abundant internal fossil molds; high porosity; dark gray	100%		Pull #4: (Cont.)
85.4	85'		transitional zone to			CD 85.4'
86.0			Pee Dee; vuggy, moderately hard.		Box 4 of 6	Pull #5: From 85.4' To 95.4' Run 10.0' Rec 10.0' CL 0.0' U.L. 0.0'
-36.1			Pee Dee Fm: Limestone well cemented; fine grained; gray; hard			
	87'		arenaceous; moderately hard.			
88.1			Arenaceous Limestone:	100%		
88.5	89'		light brownish-gray; medium to fine grained; moderately to poorly cemented; some limy zones; moderately hard.			
	91'					
					92.4'	
	93'				Box 5 of 6	
94.2			sample			
94.4	95'					CD 95.4'
96.0			transitional to calcareous			Pull #6: From 95.4' To 105.5' Run 10.1' Rec 8.6' CL 1.5' U.L. 0.5'
96.2			sandstone sample	94.5%		
	97'					
-49.1	99'		Continued on Sheet 5.	—	— — —	— — — — — — —

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 49.9± | **Hole No.** LB-6

PROJECT: MOTSU RR LAND BRIDGE | INSTALLATION: WILMINGTON DISTRICT | SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	99'		Calcareous Sandstone: light brown to tan; moderately to poorly cemented, moderately hard to soft.			Pull #6:(Cont.)
	101'			94.5%	Box 5 of 6	
	103'				103.3' Box 6 of 6	
104.0 104.2		X				CD 104.5'
	105'		Left in hole.			
-55.6	105.5		BOTTOM OF HOLE @ 105.5'.			

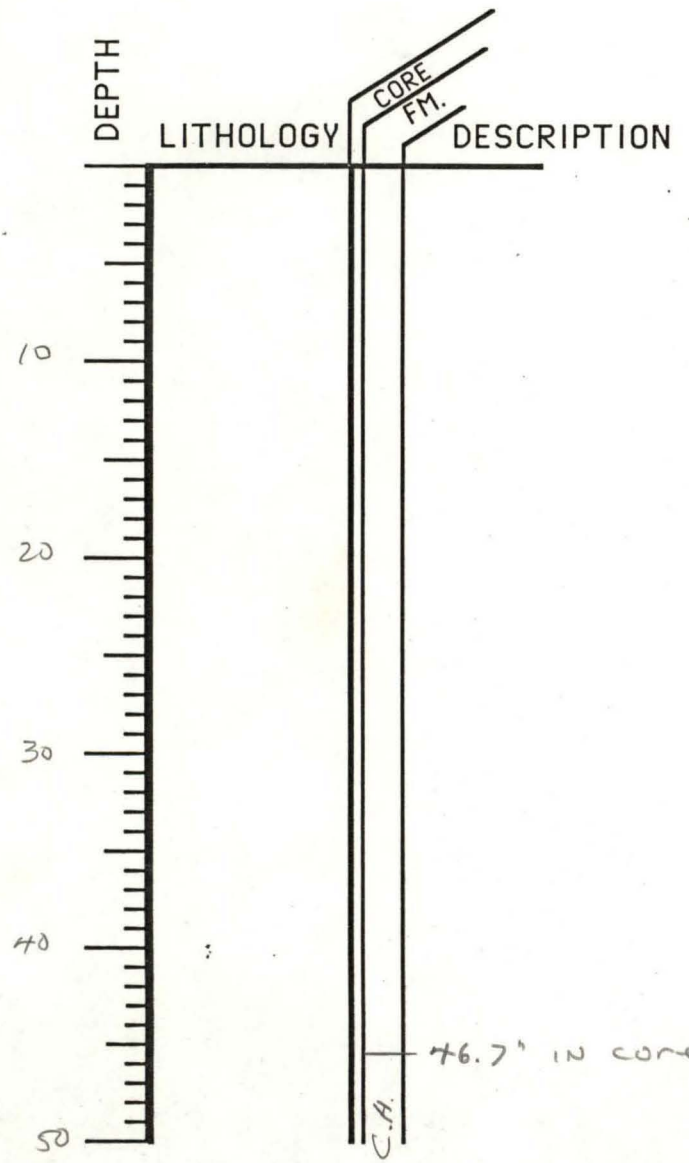

Clear Pond
LB-83
C-2-85
LB-84
C-1-85
340223
780202
Allen
Creek
Woods
Ponds
Pond
Orton
Moore Creek
Creek
BRUNSWICK CO.
FUNSTON
7½'

WELL CODE BW-C-1-85

ELEVATION 50'

T.D. 105'

Note: Skeletonized conventional core. NO logs. - see strip log for lith descriptions.



WELL CODE
BW-C-1-85
PAGE # 2