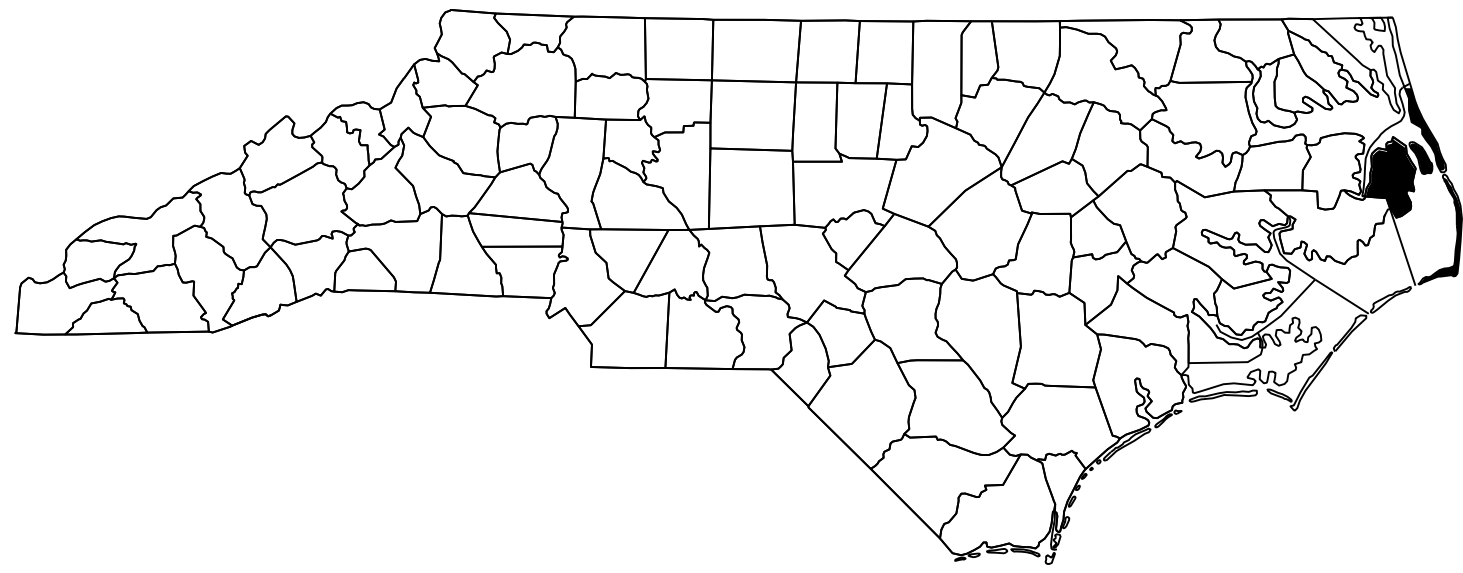


WBS: 15P.10281.27

CONTRACT: DA00355



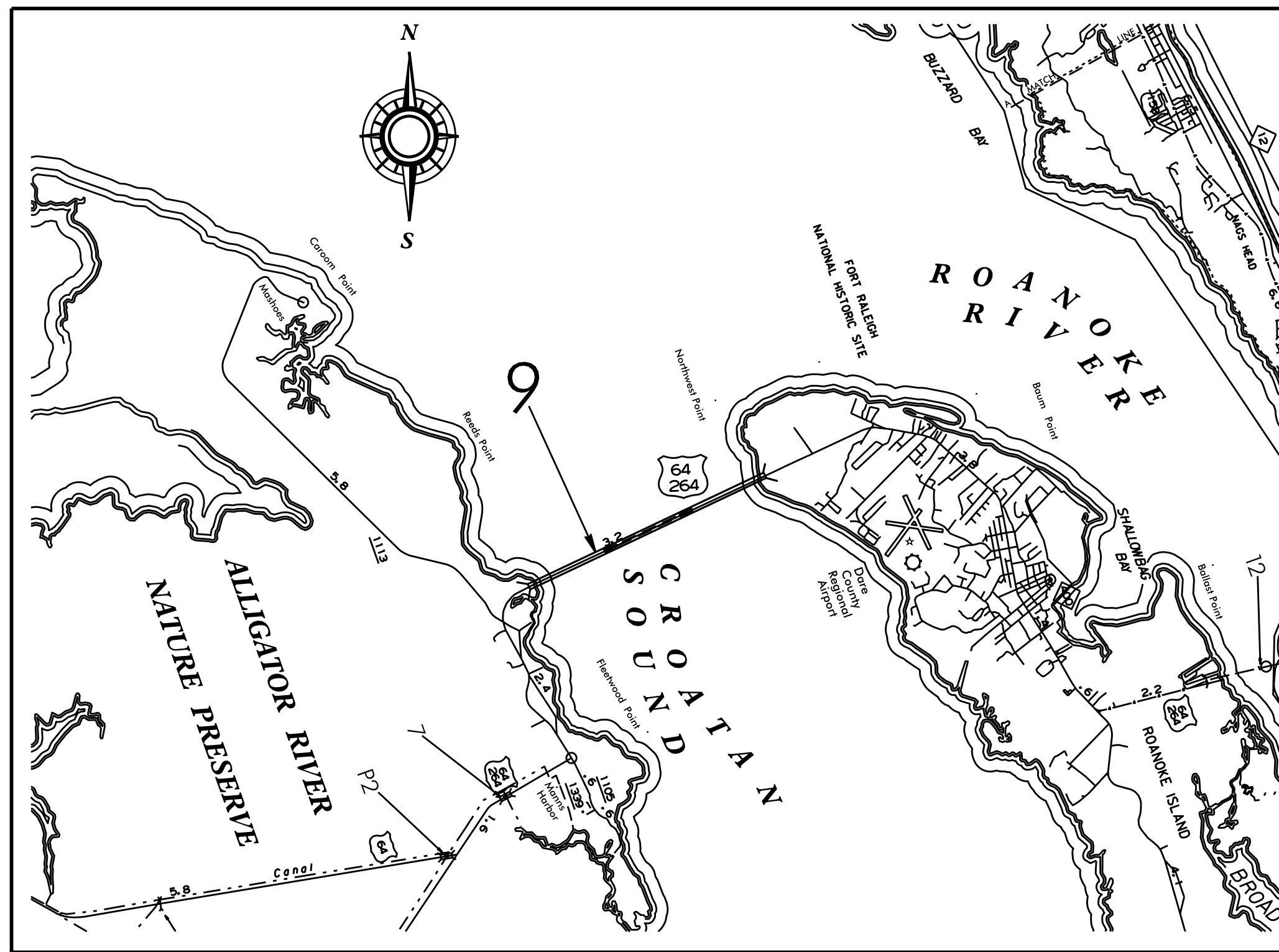
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DARE COUNTY

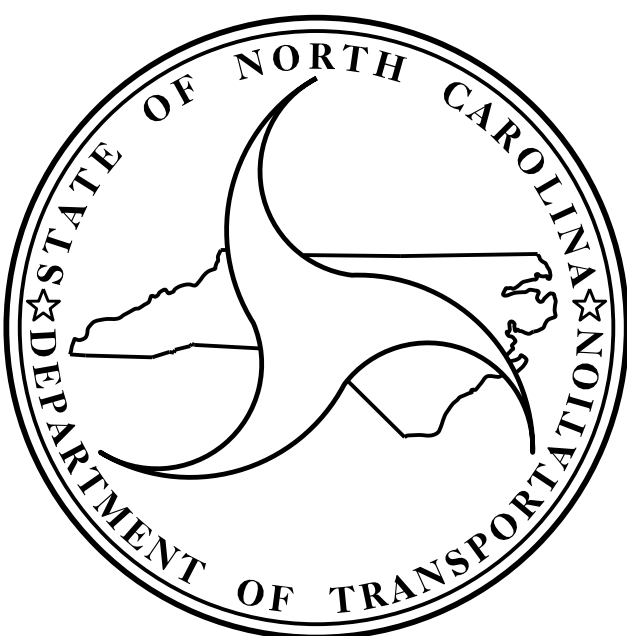
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	1	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
		P.E.	
		CONST.	

LOCATION: DARE COUNTY:
BRIDGE NO. 9 ON US64 ACROSS CROATAN SOUND

TYPE OF WORK: REPAIR OF EXISTING FENDER SYSTEM



VICINITY MAP - DARE CO.



DESIGN DATA

DARE COUNTY
#9 ADT 2012 = 1,800

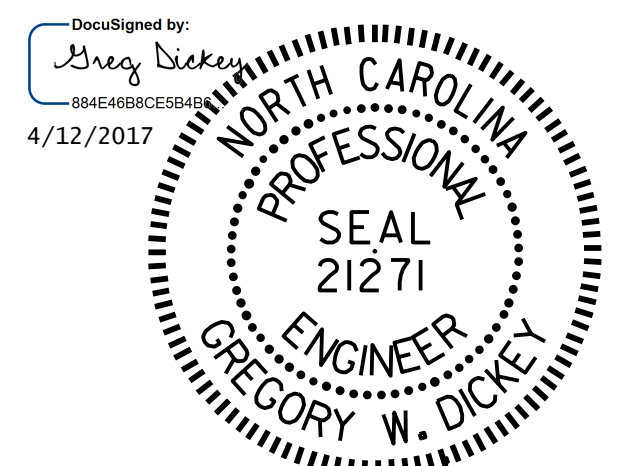
PROJECT LENGTH

DARE COUNTY
BRIDGE #9 = 2.702 MILES

Prepared in the Office of:
**DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**
STRUCTURES MANAGEMENT UNIT - PRESERVATION & REPAIR GROUP
1000 BIRCH RIDGE DR. RALEIGH, N.C. 27610

TIMOTHY M. SHERRILL, P.E.
PROJECT ENGINEER

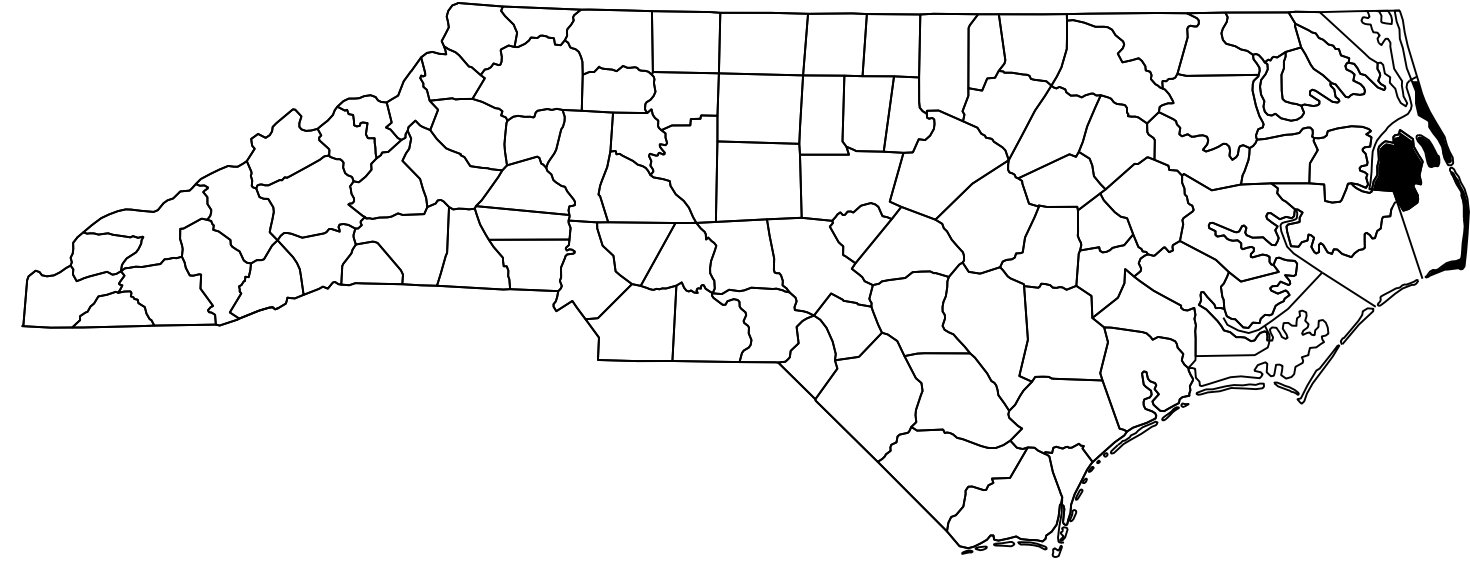
2012 STANDARD SPECIFICATIONS



GREGORY W. DICKEY, P.E.
PROJECT ENGINEER

WBS: 15P.10281.27

CONTRACT: DA00355



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DARE COUNTY

**LOCATION: DARE COUNTY:
BRIDGE NO. 9 ON US64 ACROSS CROATAN SOUND**

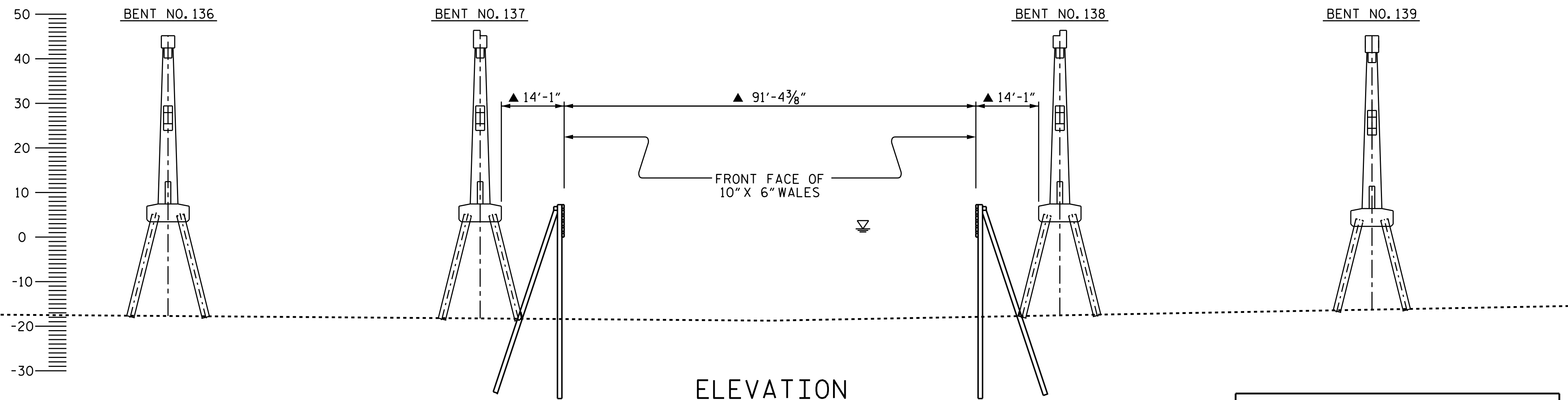
TYPE OF WORK: REPAIR OF EXISTING FENDER SYSTEM

INDEX OF SHEETS

1
1A
F-1 THRU F-5

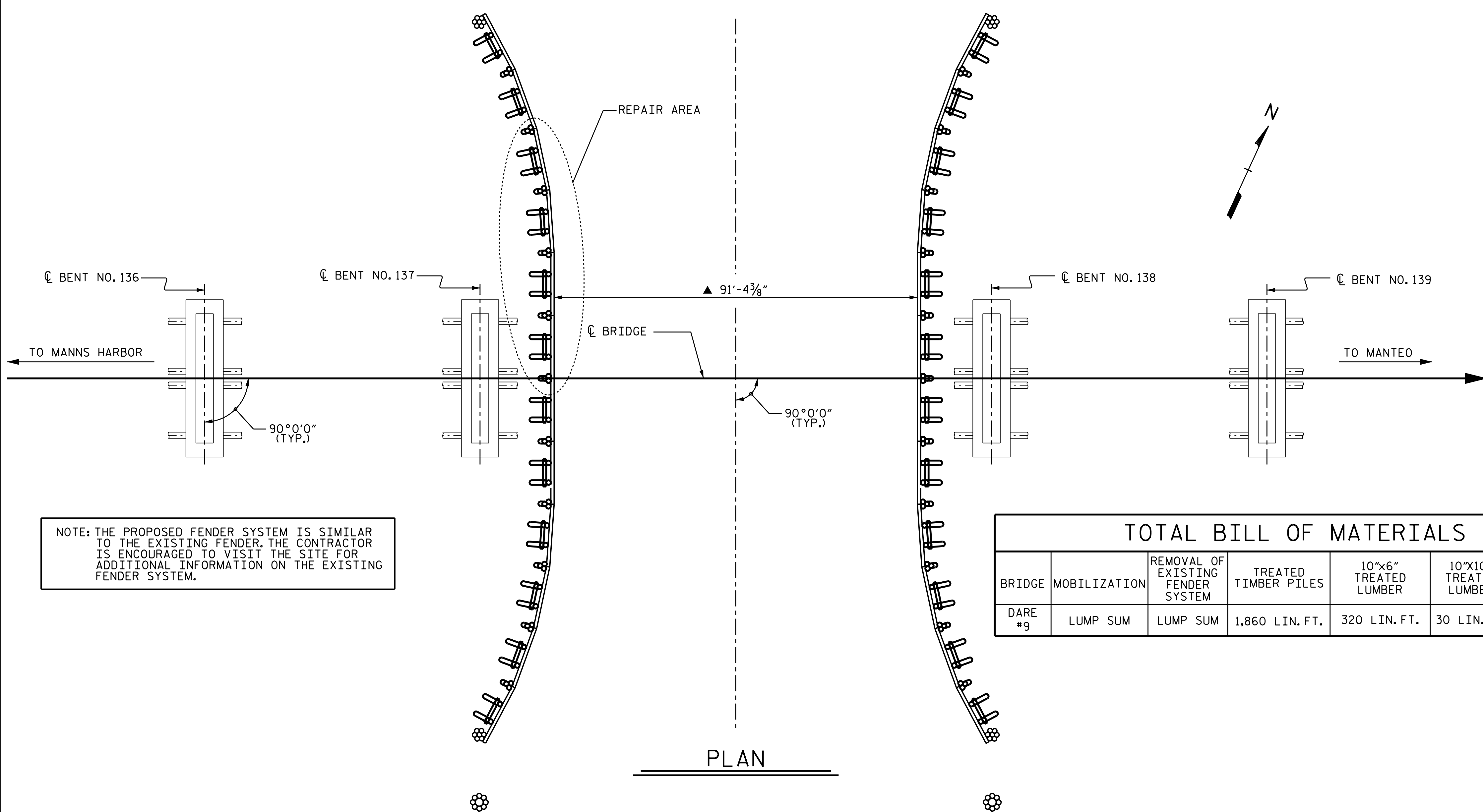
TITLE SHEET
INDEX OF SHEETS
FENDER PLANS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	1A	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
	---	P.E.	
	---	CONST.	



ELEVATION

▲ DIMENSION SHALL BE FIELD VERIFIED



PLAN

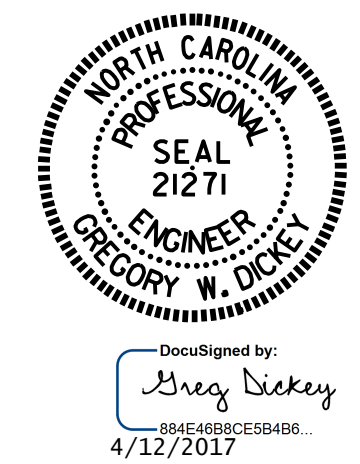
NOTE: THE PROPOSED FENDER SYSTEM IS SIMILAR TO THE EXISTING FENDER. THE CONTRACTOR IS ENCOURAGED TO VISIT THE SITE FOR ADDITIONAL INFORMATION ON THE EXISTING FENDER SYSTEM.

TOTAL BILL OF MATERIALS						
BRIDGE	MOBILIZATION	REMOVAL OF EXISTING FENDER SYSTEM	TREATED TIMBER PILES	10"x6" TREATED LUMBER	10"x10" TREATED LUMBER	HARDWARE
DARE #9	LUMP SUM	LUMP SUM	1,860 LIN. FT.	320 LIN. FT.	30 LIN. FT.	801 LBS.

GENERAL NOTES:

- FOR COORDINATION WITH THE U.S. COAST GUARD, SEE SPECIAL PROVISIONS.
- FOR NAVIGATIONAL LIGHTS, SEE SPECIAL PROVISIONS FOR COORDINATION WITH THE U.S. COAST GUARD.
- FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE OF WATER TRAFFIC, SEE SPECIAL PROVISIONS.
- FOR REMOVAL OF EXISTING FENDER SYSTEM, SEE SPECIAL PROVISIONS.
- FOR PILE DRIVING EQUIPMENT DATA SUBMITTAL, SEE SUBMITTAL OF WORKING DRAWINGS SPECIAL PROVISION.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR WORK IN, OVER OR ADJACENT TO NAVIGABLE WATERS, SEE SPECIAL PROVISIONS.
- FOR WIRE ROPE FOR FENDER SYSTEM, SEE FENDER REPLACEMENT SPECIAL PROVISION.
- FOR FENDER REPLACEMENT, SEE SPECIAL PROVISIONS.
- FOR AS-BUILT PLANS, SEE SPECIAL PROVISIONS.
- FOR LOCATION OF NEW FENDER SYSTEM, SEE SPECIAL PROVISIONS.
- ALL BOLTS, WASHER, NUTS, AND ALL OTHER HARDWARE SHALL BE GALVANIZED AND SHALL BE GRADE A-307.
- GALVANIZING SHALL BE DONE IN ACCORDANCE WITH SECTION 1076 OF NCDOT STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES DATED JANUARY 2012.
- ALL O.G. WASHERS SHALL CONFORM TO ASTM A47 CLASS 30.
- ALL TREATED LUMBER SHALL CONFORM TO SECTION 1082 OF THE STANDARD SPECIFICATIONS OR AS NOTED ON THE PLANS.
- THE CONTRACTOR SHALL RELOCATE THE CLEARANCE MARKER AT BOTH ENDS OF THE FENDER SYSTEM TO THE LOCATION DESIGNATED BY THE ENGINEER.
- THE CONTRACTOR SHALL VISIT THE JOB SITE AND CHECK THE MATERIALS AND THE QUANTITY NEEDED TO COMPLETE ALL THE WORK IN ACCORDANCE WITH THE PLANS, PROJECT SPECIAL PROVISIONS, AND THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2012.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULFILLING ALL THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2012, EXCEPT AS OTHERWISE NOTED ON THE PLANS AND SPECIAL PROVISIONS.
- AT LOCATIONS WHERE EXISTING AND PROPOSED PILING COINCIDE, SOME OR ALL OF EXISTING PILING MAY BE REQUIRED TO BE FULLY REMOVED. IF THE EXISTING PILING BREAKS UPON INITIAL EXTRACTION, WITH THE ENGINEER'S APPROVAL PROPOSED PILING MAY BE SHIFTED NOMINALLY TO AVOID BROKEN, EXISTING PILES.
- THE PROPOSED FENDER FACE OF NEW FENDER SYSTEM SHALL MATCH THE EXISTING FENDER FACE OF THE EXISTING FENDER SYSTEM. DIMENSIONS SHOWN ON THE PLANS ARE FROM PRELIMINARY FIELD MEASUREMENTS AND SHALL BE FIELD VERIFIED PRIOR TO FABRICATING AND/OR OBTAINING MATERIALS.
- ALL DOME HEAD TIMBER BOLTS SHALL BE TIGHTENED TO FULLY ENGAGE THE O.G. WASHER WITHOUT EXCESSIVE CRUSHING OF THE TIMBER FIBERS.

PROJECT NO. 41732.7
 DARE COUNTY
 BRIDGE NO. 9

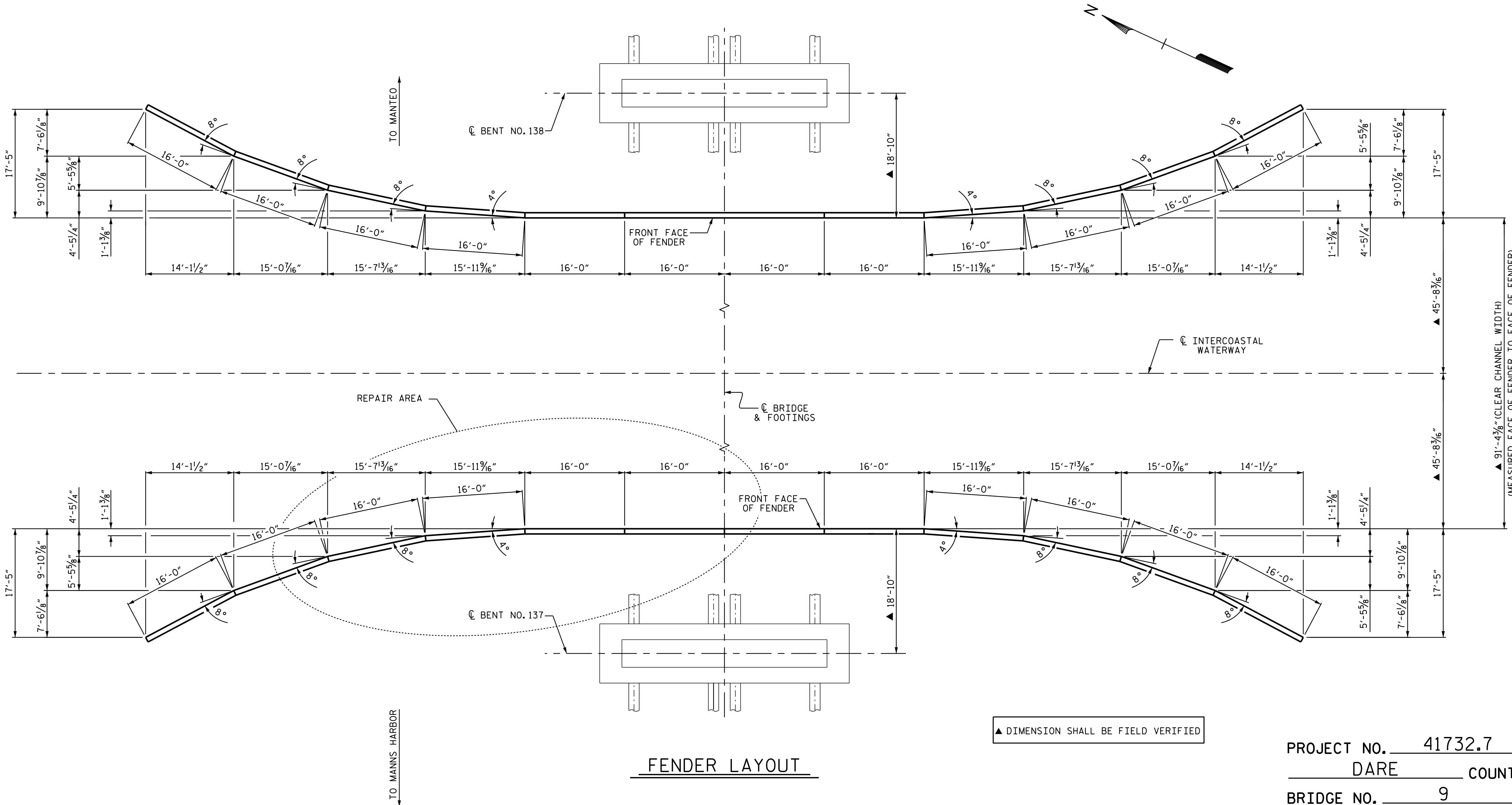


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
FENDER LAYOUT PLAN

DRAWN BY : M.A. LEE DATE : 4/2017
 CHECKED BY : G.W. DICKEY DATE : 4/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	F-1
1			3			TOTAL SHEETS
2			4			7



▲ DIMENSION SHALL BE FIELD VERIFIED

FENDER LAYOUT

PROJECT NO. 41732.7
 DARE COUNTY
 BRIDGE NO. 9



DocuSigned by:
 Gregory W. Dickey
 894E4696CE5848B
 4/12/2017

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FENDER LAYOUT

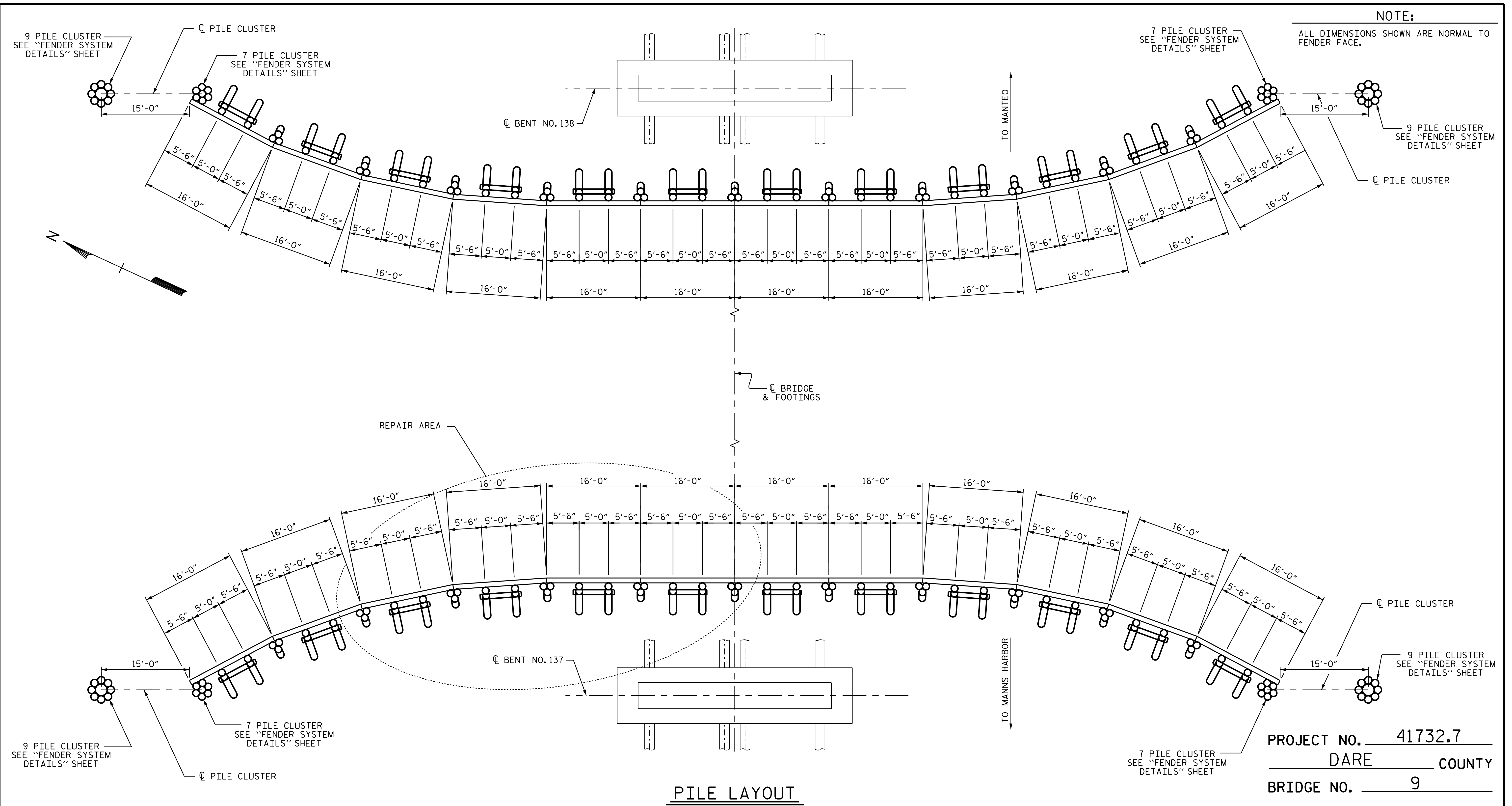
DRAWN BY : M.A. LEE DATE : 4/2017
 CHECKED BY : G.W. DICKEY DATE : 4/2017

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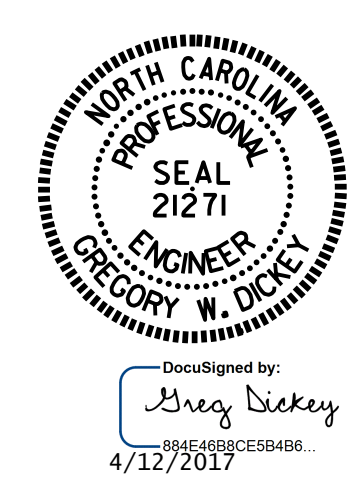
NOTE:

ALL DIMENSIONS SHOWN ARE NORMAL TO FENDER FACE.



PILE LAYOUT

PROJECT NO. 41732.7
DARE COUNTY
 BRIDGE NO. 9



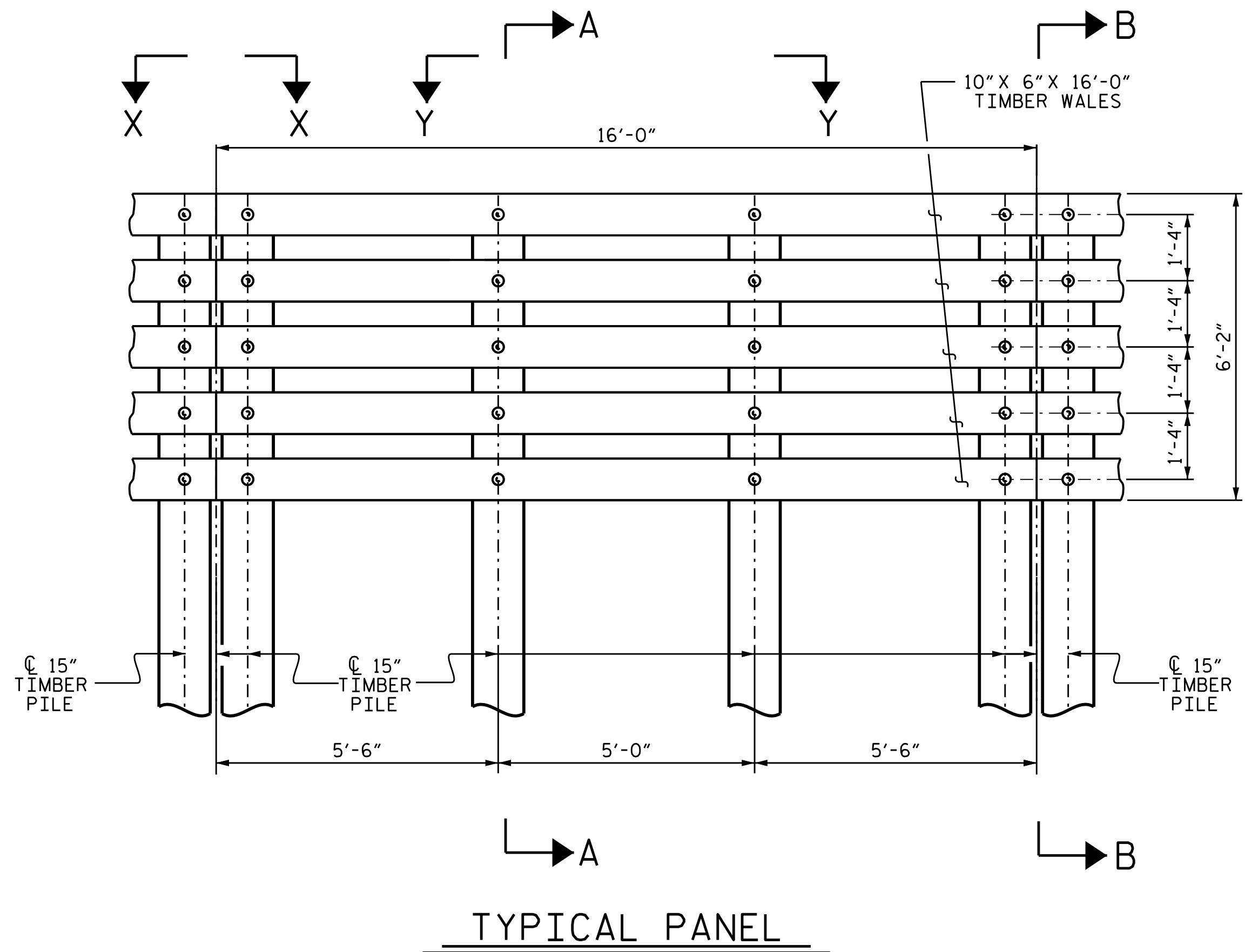
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PILE LAYOUT

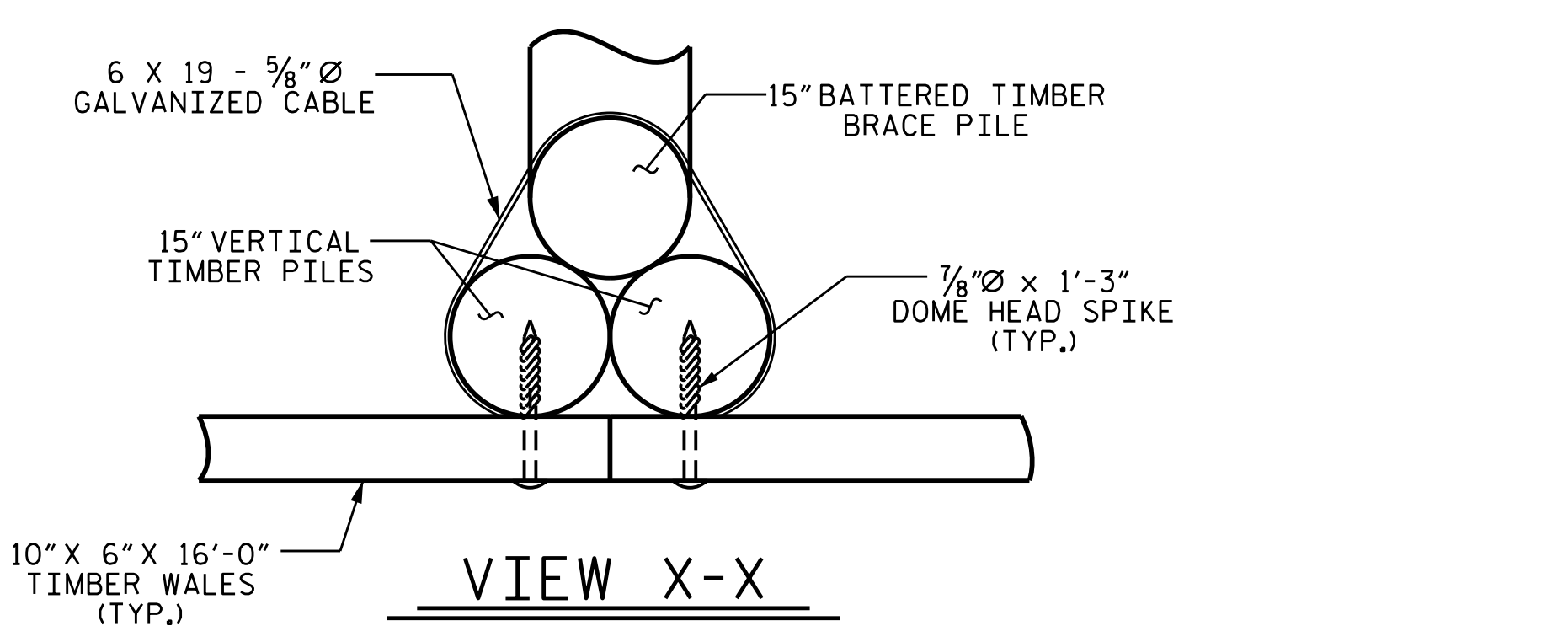
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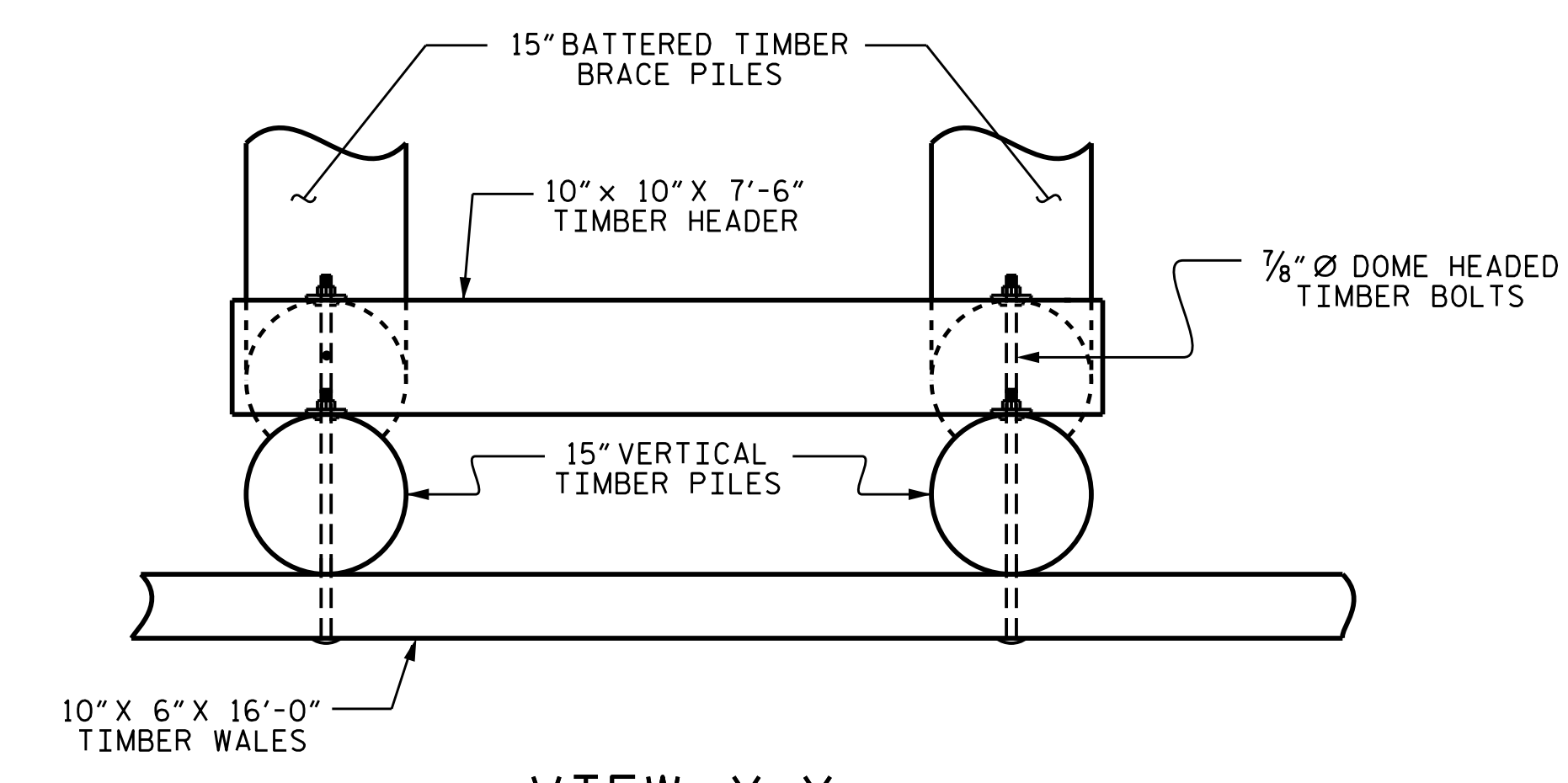
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2			4			7



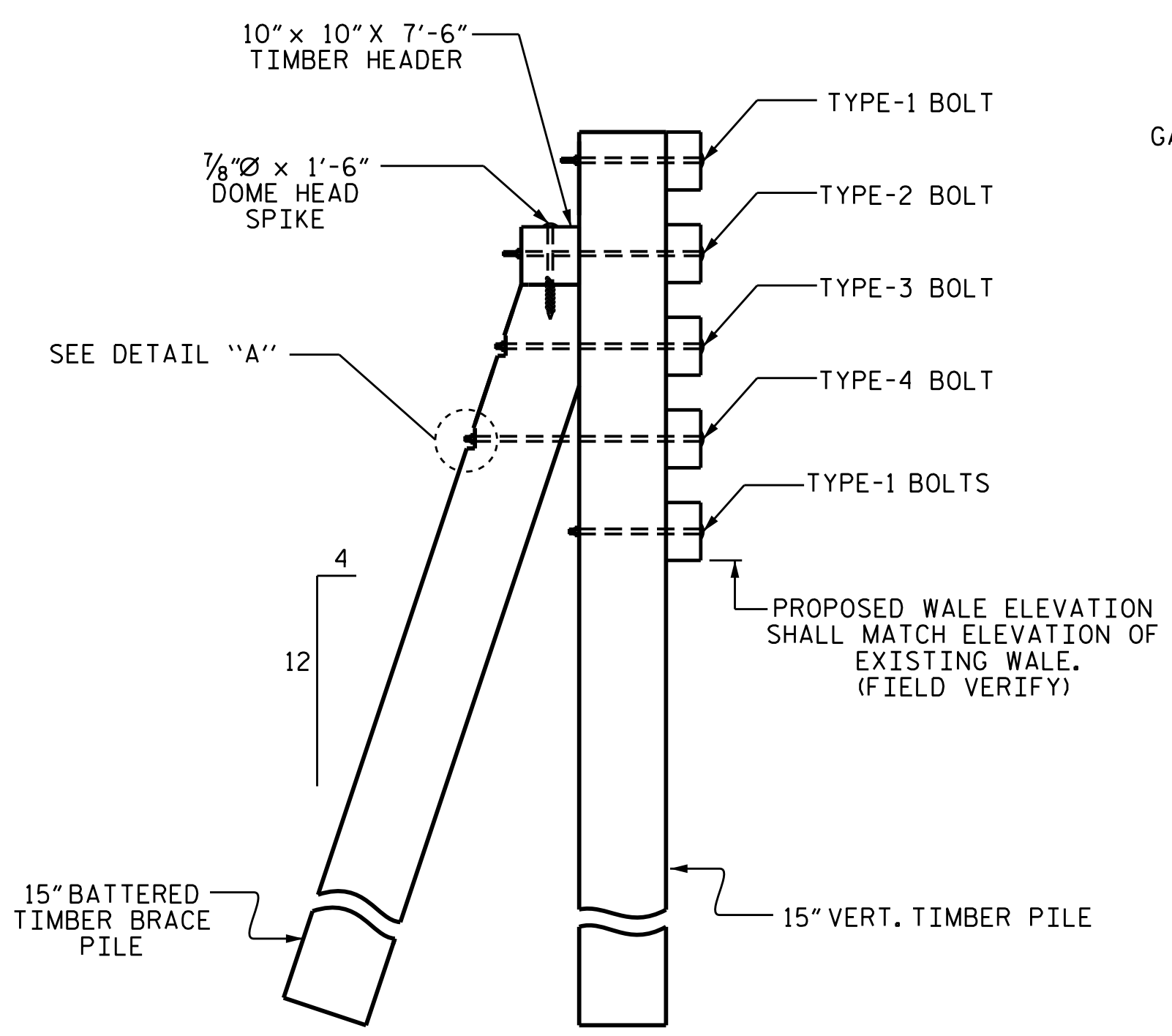
TYPICAL PANEL



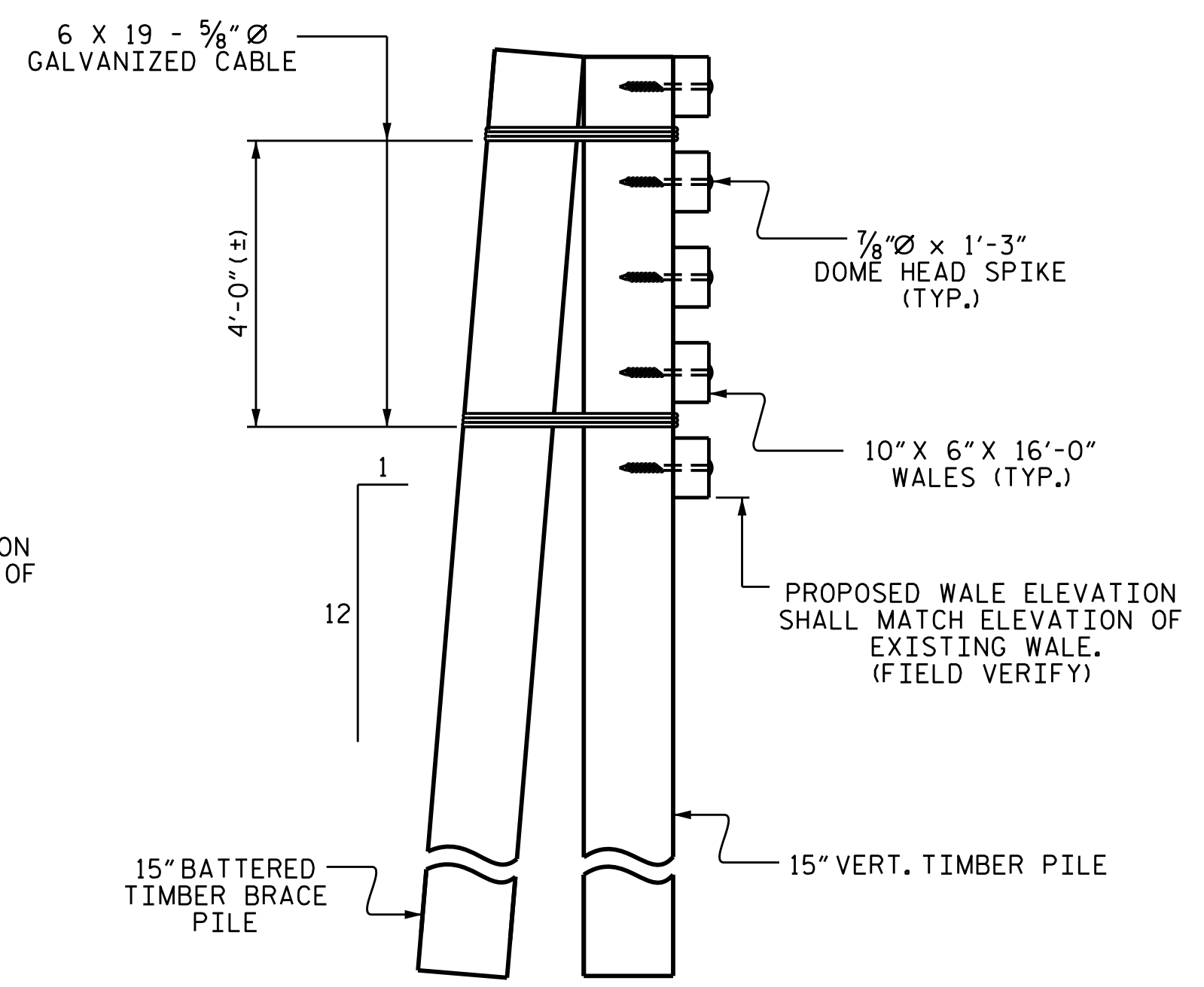
VIEW X-X



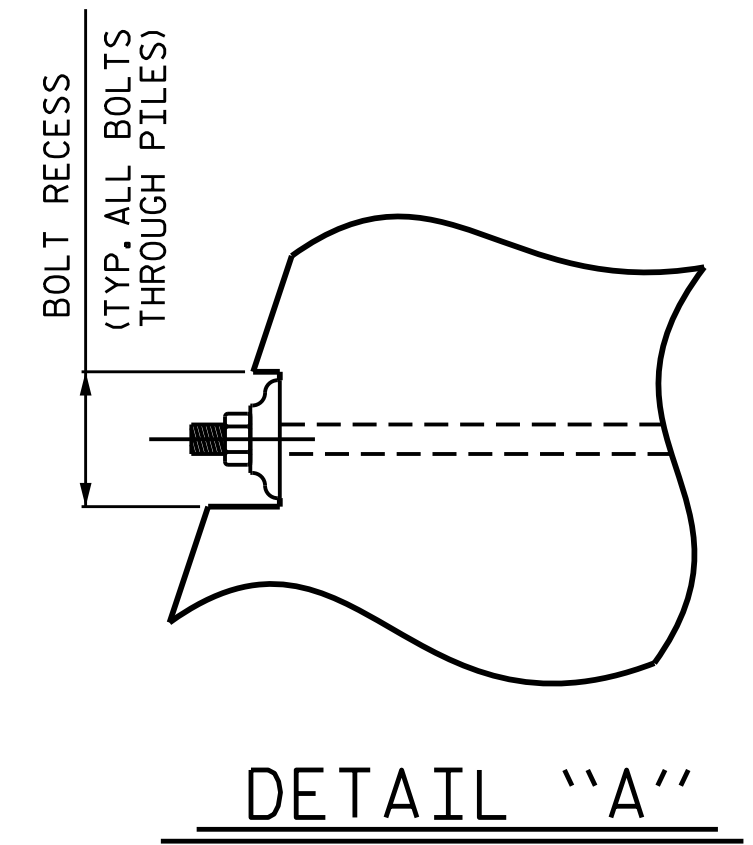
VIEW Y-Y



SECTION A-A



SECTION B-B



DETAIL "A"

NOTES:

ALL DOME HEADS SHALL BE LOCATED AT THE FRONT FACE OF THE FENDER SYSTEM.
 ON THE BACK SIDE OF FENDER SYSTEM THE BOLTS GOING THROUGH VERTICAL AND BATTERED PILES SHALL BE RECESSED TO ALLOW THE WASHER/NUT TO LIE FLUSH AGAINST THE PILE.
 PILE CLUSTERS CONTAINING THREE PILES SHALL BE WRAPPED WITH THREE TURNS OF 6 X 19 - 5/8" Ø GALVANIZED CABLE AT LOCATION SPECIFIED AND SECURED WITH 3/8" Ø X 4" GALVANIZED STAPLES AND TWO WIRE CLAMPS AT EACH END.
 STAGGER TIMBER WALES IN THE MAIN WALL SO THAT ALTERNATE JOINTS BREAK EACH PILE.

BOLT TYPE TABLE	
BOLT TYPE	LENGTH
1	24"
2	34"
3	38"
4	42"

ALL BOLT TYPES ARE 7/8" Ø DOME HEADED TIMBER BOLTS WITH O.G. WASHER & HEAVY HEX NUT

PROJECT NO. 41732.7
 DARE COUNTY
 BRIDGE NO. 9

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FENDER SYSTEM
 DETAILS

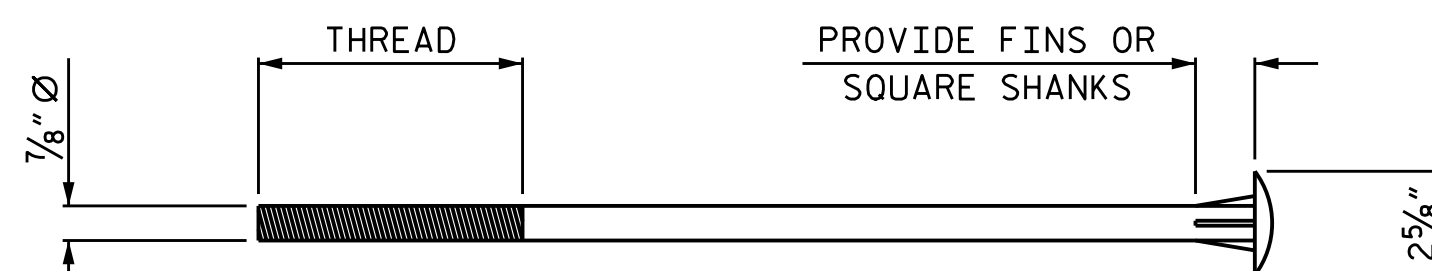
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 CHECKED BY : G.W. DICKEY DATE : 4/2017

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1			3			TOTAL SHEETS
2			4			7

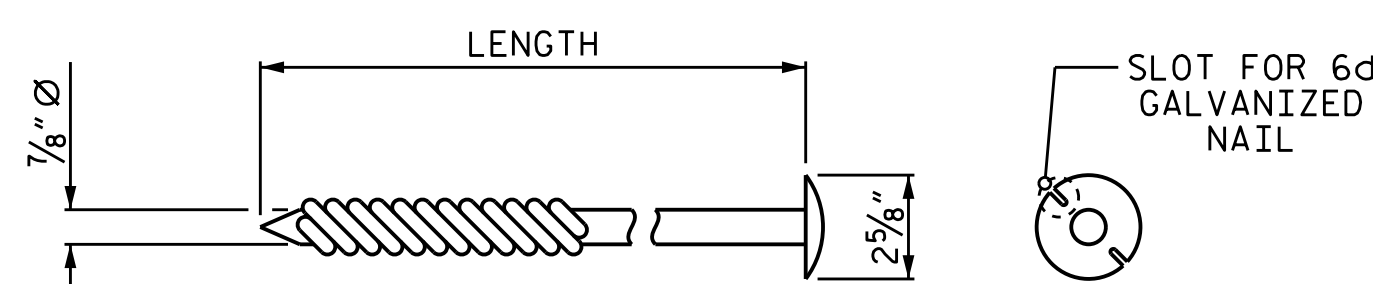
STRUCTURAL TIMBER					
ITEM	UNIT	LENGTH	SIZE	NO.	TOTAL
15" TREATED TIMBER PILE	LIN. FT.	60'-0"	15"	31	1,860'-0"
10" X 6" TREATED TIMBER	LIN. FT.	16'-0"	10" X 6"	20	320'-0"
10" X 10" TREATED TIMBER	LIN. FT.	7'-6"	10" X 10"	4	30'-0"

STRUCTURAL HARDWARE (GALVANIZED)				
ITEM	UNIT	NO.	TOTAL	
6 X 19 - 5/8" Ø GALV. STEEL CABLE	LIN. FT.	—	302'-0"	
5/8" CABLE CLAMPS	LBS.	40	40 LBS.	
3/8" X 4" STAPLES	83 LBS./100	140	117 LBS.	
1/8" Ø X 15" DOME HEAD DRIVE SPIKE	240 LBS./100	40	96 LBS.	
1/8" Ø X 18" DOME HEAD DRIVE SPIKE	337 LBS./100	8	27 LBS.	
6d COMMON NAIL	BOX	1	1	
1/8" Ø X 24" DOME HEAD TIMBER BOLT	427 LBS./100	16	69 LBS.	
1/8" Ø X 34" DOME HEAD TIMBER BOLT	596 LBS./100	8	48 LBS.	
1/8" Ø X 38" DOME HEAD TIMBER BOLT	664 LBS./100	8	54 LBS.	
1/8" Ø X 42" DOME HEAD TIMBER BOLT	731 LBS./100	8	59 LBS.	
O.G. WASHER	150 LBS./100	40	60 LBS.	
1/8" HEAVY HEX NUT	30 LBS./100	40	12 LBS.	



TYPICAL DOME HEAD TIMBER BOLT

ALL BOLT HEADS MUST BE IN FULL CONTACT WITH THE SURFACE OF THE TIMBER PILES OR WALES.



TYPICAL DOME HEAD DRIVE SPIKE

ALL DRIVE SPIKE HEADS MUST BE IN FULL CONTACT WITH THE SURFACE OF THE TIMBER PILES OR WALES.

PROJECT NO. 41732.7
DARE COUNTY
BRIDGE NO. 9

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FENDER SYSTEM
DETAILS



DocuSigned by:
Greg Dickey
884E46BCE5848E
4/12/2017

DRAWN BY : M.A. LEE DATE : 4/2017
CHECKED BY : G.W. DICKEY DATE : 4/2017

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			7