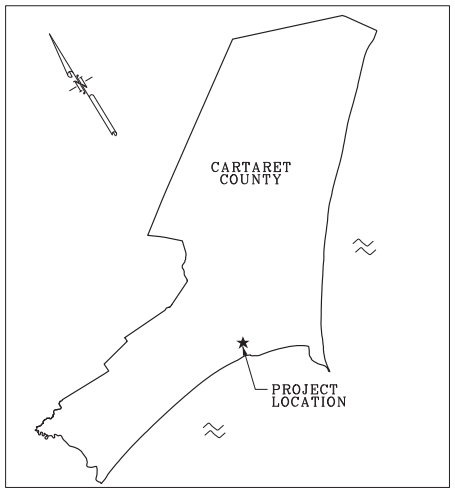
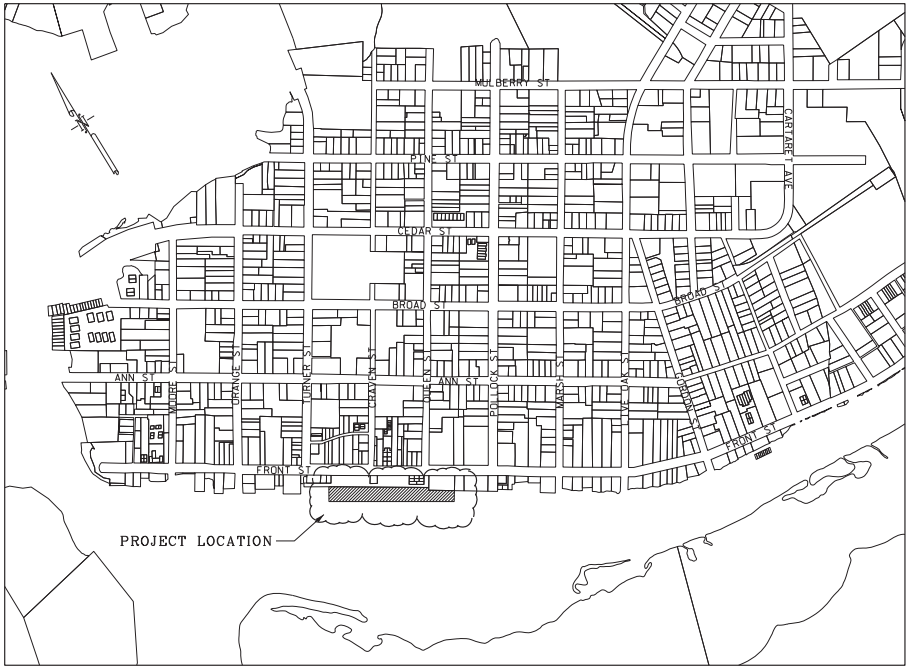
BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTERET COUNTY NORTH CAROLINA



VICINITY MAP



PROJECT LOCATION MAP

SCALE: 1"=400'

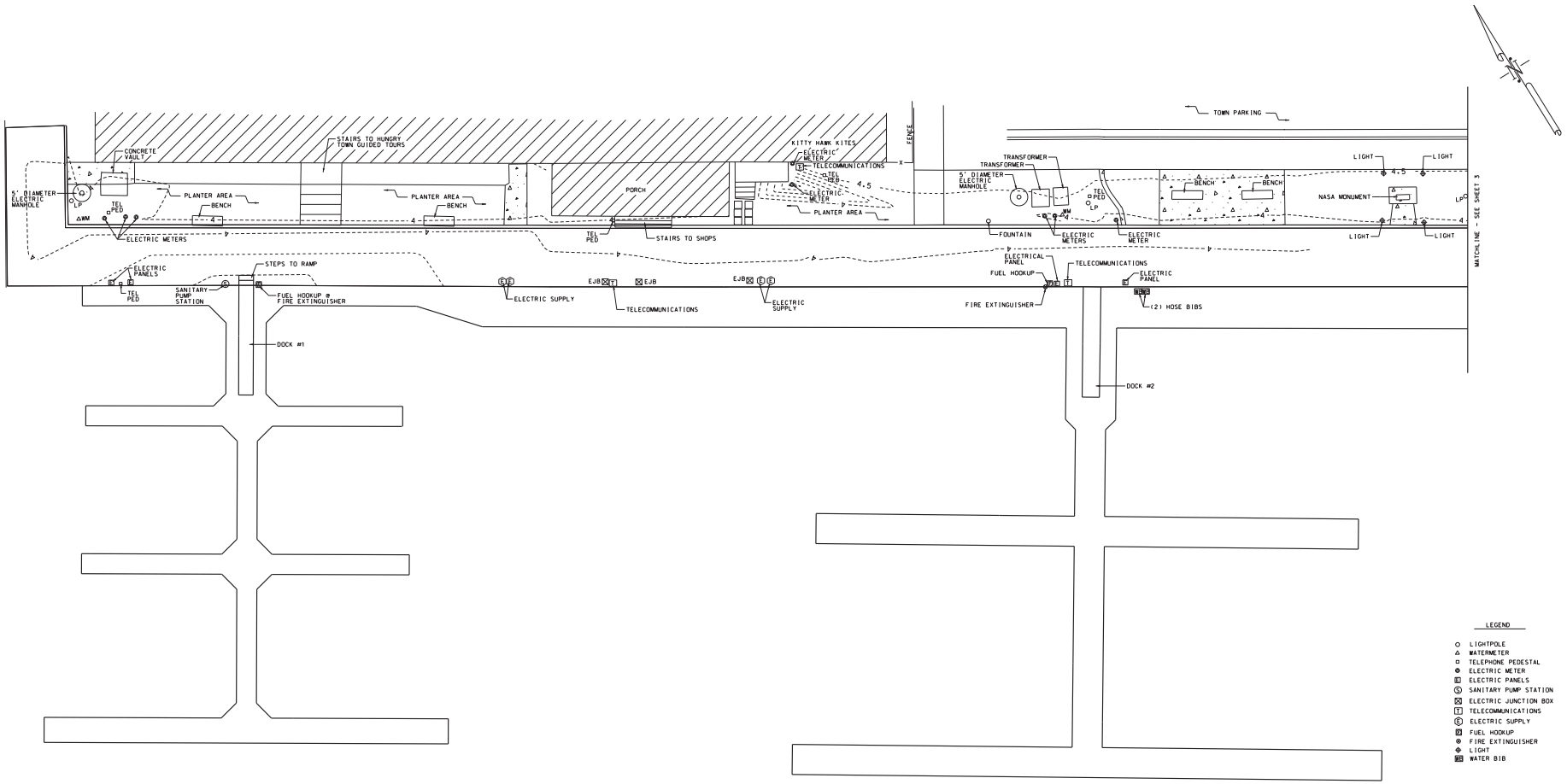
SHEET INDEX

SHEET 1	COVERSHEET
SHEET 2	EXISTING CONDITIONS & DEMOLITION PLAN/ PROPOSED CONDITIONS PLAN
SHEET 3	EXISTING CONDITIONS & DEMOLITION PLAN/ PROPOSED CONDITIONS PLAN
SHEET 4	EXISTING CONDITIONS & DEMOLITION PLAN/ PROPOSED CONDITIONS PLAN

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

PROJECT NO.: PM493-31-001

DRAWING NO.:



LEGEND

- LIGHTPOLE
- WATERMETER
- TELEPHONE PEDESTAL
- ELECTRIC METER
- ELECTRIC PANELS
- SANITARY PUMP STATION
- ELECTRIC JUNCTION BOX
- TELECOMMUNICATIONS
- ELECTRIC SUPPLY
- FUEL HOOKUP
- FIRE EXTINGUISHER
- LIGHT
- WATER BIB

EXISTING CONDITIONS & DEMOLITION PLAN — A/2

SCALE: 1"=10'

BEFORE YOU DIG! IT'S THE LAW! IT'S FREE! 811 (OR 1-800-632-4949) IT'S THE LAW!

REVISIONS

BY	NO.	DATE	DESCRIPTION

EXISTING CONDITIONS & DEMOLITION PLAN

BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTARET COUNTY NORTH CAROLINA

OWNER:
ADDRESS:
PHONE:

STROUD ENGINEERING, P.A.
3502 BRIDGES ST., SUITE C
MOREHEAD CITY, NC 28557
(252) 247-7479
LICENSE NO.C-0647

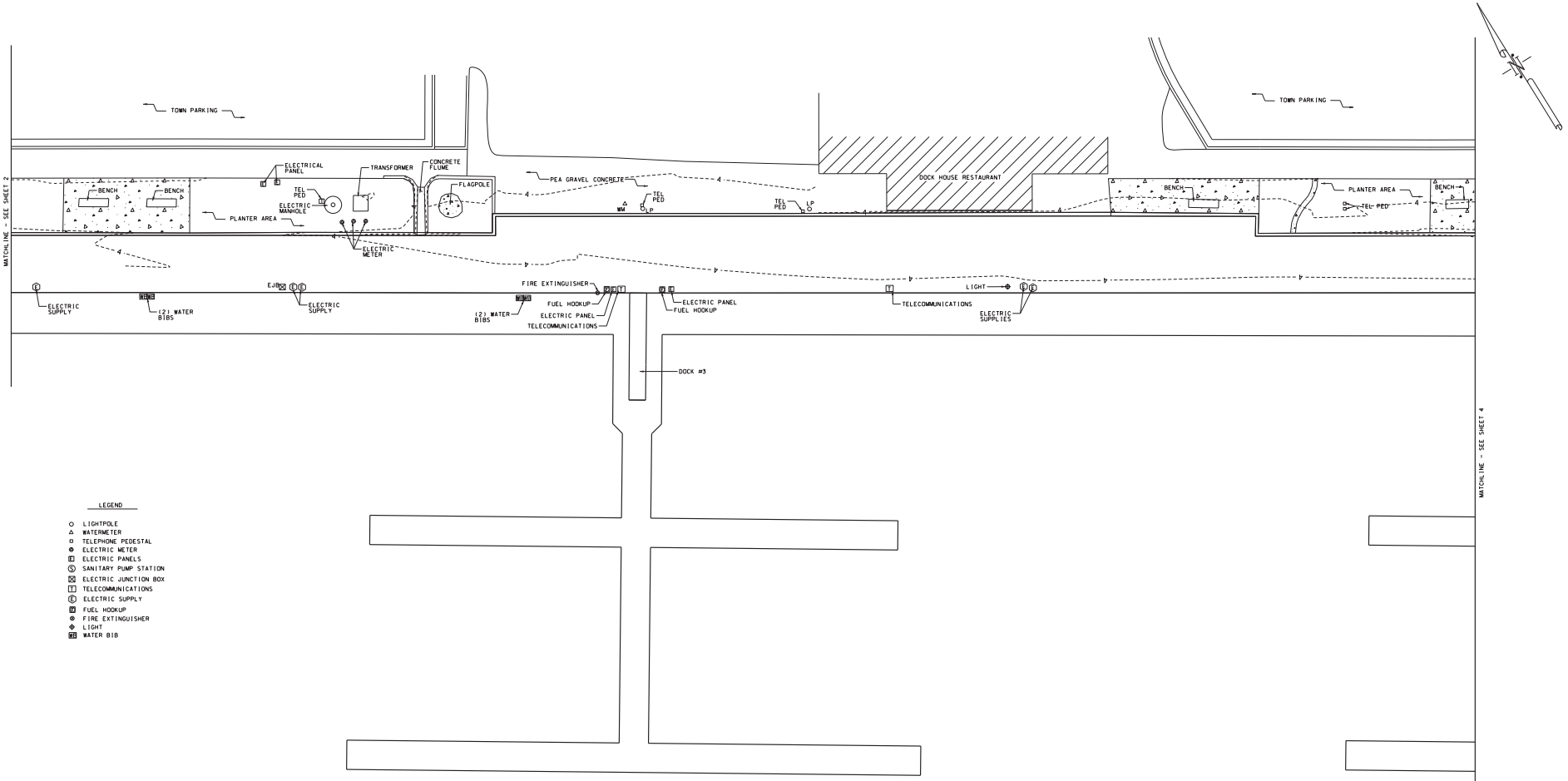
DESIGNED:	LES	DATE:	2/8/18
DRAWN:	LHJ	SCALE:	1"=10'
APPROVED:	LES	SHEET 2 OF ?	

PROJECT NO.: PM493-31-001

DRAWING NO.:

GRAPHIC SCALE: 1"=10'

PRELIMINARY DRAWING DO NOT USE FOR CONSTRUCTION



LEGEND

- LIGHTPOLE
- WATERMETER
- TELEPHONE PEDESTAL
- ELECTRIC METER
- ELECTRIC PANELS
- SANITARY PUMP STATION
- ELECTRIC JUNCTION BOX
- TELECOMMUNICATIONS
- ELECTRIC SUPPLY
- FUEL HOOKUP
- FIRE EXTINGUISHER
- LIGHT
- WATER BIB

EXISTING CONDITIONS & DEMOLITION PLAN

A / 3

SCALE: 1"=10'

GRAPHIC SCALE: 1"=10'

PRELIMINARY DRAWING
DO NOT USE FOR CONSTRUCTION

PROJECT NO.: PM493-31-001

DRAWING NO.: _____

BEFORE YOU DIG
NC ONE CALL
811
(OR 1-800-632-4949)
IT'S THE LAW!

REVISIONS

BY	NO.	DATE	DESCRIPTION

EXISTING CONDITIONS & DEMOLITION PLAN

BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTARET COUNTY NORTH CAROLINA

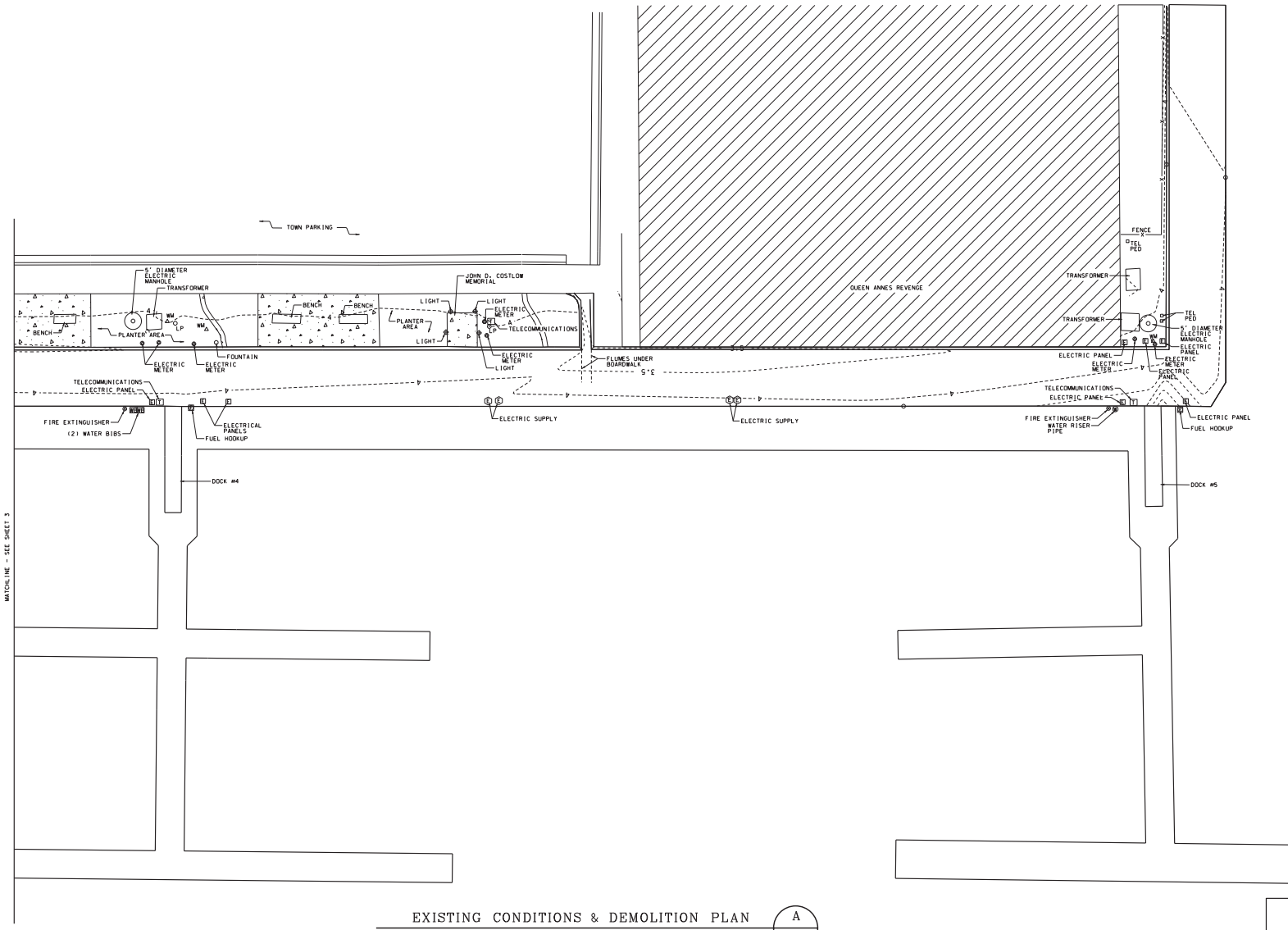
OWNER:

ADDRESS:

PHONE:

STROUD ENGINEERING, P.A.
3502 BRIDGES ST., SUITE C
MOREHEAD CITY, NC 28557
(252) 247-7479
LICENSE NO.C-0647

DESIGNED:	LES	DATE:	2/8/18
DRAWN:	LHJ	SCALE:	1"=10'
APPROVED:	LES	SHEET 3 OF	?



EXISTING CONDITIONS & DEMOLITION PLAN A/4

SCALE: 1"=10'

LEGEND

- LIGHTPOLE
- WATERMETER
- TELEPHONE PEDESTAL
- ELECTRIC METER
- ELECTRIC PANELS
- SANITARY PUMP STATION
- ELECTRIC JUNCTION BOX
- TELECOMMUNICATIONS
- ELECTRIC SUPPLY
- FUEL HOOKUP
- FIRE EXTINGUISHER
- LIGHT
- WATER BIB

10 5 0 10 20

GRAPHIC SCALE: 1"=10'

PRELIMINARY DRAWING
DO NOT USE FOR CONSTRUCTION

BEFORE YOU DIG IN THE FIELD TOLL FREE! 811 (OR 1-800-632-4949) IT'S THE LAW!

REVISIONS

BY	NO.	DATE	DESCRIPTION

EXISTING CONDITIONS & DEMOLITION PLAN

BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTARET COUNTY NORTH CAROLINA

OWNER:
ADDRESS:
PHONE:

STROUD ENGINEERING, P.A.
3502 BRIDGES ST., SUITE C
MOREHEAD CITY, NC 28557
(252) 247-7479
LICENSE NO.C-0647

DESIGNED:	LES	DATE:	2/8/18
DRAWN:	LHJ	SCALE:	1"=10'
APPROVED:	LES	SHEET	4 OF ?

PROJECT NO.: PM493-31-001

DRAWING NO.:

GENERAL NOTES:

1. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL DRAWINGS, AND THE SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERTS, ANCHORS, HOLES, AND ADDITIONAL ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK.
2. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF THE NORTH CAROLINA STATE BUILDING CODE, 2012 EDITION.
3. PORTIONS OF THE STRUCTURE NOT ALTERED AND NOT AFFECTED BY THE ALTERATION HAVE NOT BEEN DESIGNED TO COMPLY WITH THE CODE REQUIREMENTS FOR A NEW STRUCTURE.
4. BEFORE PROCEEDING WITH WORK WITHIN THE EXISTING STRUCTURE, THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING STRUCTURAL CONDITIONS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE DESIGN AND ERECTION OF ANY AND ALL SAFEGUARDS NECESSARY TO PROTECT THE EXISTING STRUCTURE AT ALL TIMES DURING THE PROCESS OF DEMOLITION AND CONSTRUCTION.
5. THE CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS, ELEVATIONS, AND OTHER REQUIREMENTS NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE STRUCTURE TO THE EXISTING. ANY DIMENSIONS SHOWN OF EXISTING STRUCTURES SHALL BE CONSIDERED AS APPROXIMATE AND ADEQUATE FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL MAKE ALL MEASUREMENTS NECESSARY FOR THE FABRICATION AND ERECTION OF STRUCTURAL MEMBERS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. DESIGN CRITERIA:

   LIVE LOADS - UNIFORM:
   DECKS, ... , 100 PSF

DEMOLITION NOTES:

1. SOME TERMS INDICATED ON PLAN ARE DEFINED AS FOLLOWS:

   REMOVE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF-SITE.

   REMOVE AND SALVAGE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND DELIVER THEM TO THE OWNER READY FOR REUSE.

   REMOVE AND REINSTALL: DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE THEM FOR REUSE, AND REINSTALL THEM WHERE INDICATED.

   EXISTING TO REMAIN: EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT TO BE REMOVED.
2. COMPLY WITH LOCAL NOISE, DUST AND EROSION CONTROL REGULATIONS. CONTROL DUST FROM DEMOLITION TO PREVENT IT FROM SPREADING TO OCCUPIED PORTIONS OF BUILDING AND TO AVOID CREATING A NUISANCE IN SURROUNDING AREA.
3. OBTAIN REQUIRED PERMITS FROM GOVERNING AUTHORITIES.
4. PROVIDE TEMPORARY BARRICADES AND OTHER PROTECTION REQUIRED TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT PROPERTY.
5. PROTECT FROM DAMAGE EXISTING ROADS, WALKS, CURBS, LANDSCAPE, AND OTHER SITE AND BUILDING STRUCTURES. REPAIR OR REPLACE DAMAGED ITEMS.
6. REMOVE MATERIAL RESULTING FROM DEMOLITION OPERATIONS AND DISPOSE OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS AS PART OF THE WORK. CONTROL RUBBISH, DEBRIS, AND DUST BY APPROVED METHODS, AS REQUIRED BY LOCAL NOISE, DUST, AND EROSION CONTROL REGULATIONS. SOLID WASTE DISPOSAL, SOLID WASTE MANAGEMENT. DISPOSAL OF SOLID WASTE IN OPEN DUMPS IS PROHIBITED.
7. ALL PIPING AND CONDUIT FOR UTILITIES IN THE AREA OF WORK SHALL BE TEMPORARILY MOVED AND SUPPORTED DURING CONSTRUCTION. ONCE DEMOLITION AND NEW FRAMING WORK IS COMPLETE, REINSTALL ALL PIPING TO ITS ORIGINAL POSITION.

HELICAL PIER NOTES:

1. HELICAL PIERS SHALL CONTAIN HELICAL LEAD SECTIONS AND SQUARE SHAFT EXTENSIONS AS MANUFACTURED BY THE A.B. CHANCE CO. OR EQUIVALENT. (ALTERNATE SUPPLIERS MAY BE ACCEPTABLE PENDING APPROPRIATE SUBMITTALS TO THE STRUCTURAL ENGINEER OF RECORD). HELICAL PIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. HELICAL PIER DESIGN CAPACITIES ARE AS FOLLOWS:
   A. COMPRESSION.....10 KIPS
3. BASE BID LENGTH SHALL BE 20 FEET FOR ALL HELICAL PIERS.
4. HELICAL PIERS SHALL BE INSTALLED TO A MAXIMUM TOLERANCE IN ANY DIRECTION OF 3 INCHES PER PIER. WHERE PIER IS OUT OF POSITION MORE THAN 3 INCHES IN ANY DIRECTION, THE CONTRACTOR MAY BE REQUIRED TO CONSTRUCT OR MODIFY STRUCTURAL ELEMENTS TO COMPENSATE FOR THE ECCENTRICITY OF THE INSTALLED HELICAL PIER. THE COST OF CORRECTIVE WORK, INCLUDING THE COST OF RE-ENGINEERING, SHALL BE PAID BY THE CONTRACTOR.
5. CONTRACTOR SHALL EMPLOY A REGISTERED LAND SURVEYOR TO SURVEY THE TOP ELEVATION OF ALL HELICAL PIERS, THE LOCATION OF THE CENTER OF EACH PIER, AND THE PLUMBNESS OF EACH PIER. TOP ELEVATIONS SHALL BE GIVEN AS DEVIATIONS FROM THE CUTOFF ELEVATION. LOCATIONS OF THE PIERS SHALL BE GIVEN AS A DEVIATION FROM THE INDICATED PLAN LOCATION OF THE PIERS IN EACH OF TWO PERPENDICULAR DIRECTIONS. ALL DIMENSIONS AND ELEVATIONS SHALL BE REPORTED TO WITHIN ⅛ INCH.

CAST-IN-PLACE CONCRETE NOTES:

1. CONCRETE SHALL BE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301, |350|, AND 318.
2. CONCRETE SHALL BE NORMAL WEIGHT AND SHALL OBTAIN 28 DAY COMPRESSIVE STRENGTHS AS FOLLOWS:
   A. PILECAPS AND GRADE BEAMS .....4,000 PSI
3. REINFORCING MATERIALS SHALL BE AS FOLLOWS:
   A. REINFORCING BARS - ASTM A 615, GRADE 60, DEFORMED.
5. ALL REINFORCING BARS AND EMBEDDED ITEMS SUCH AS ANCHOR RODS AND WELD PLATES SHALL BE ACCURATELY PLACED AND ADEQUATELY TIED AND SUPPORTED BEFORE CONCRETE IS PLACED TO PREVENT DISPLACEMENT BEYOND PERMITTED TOLERANCES.
6. CONCRETE COVER TO REINFORCING BARS SHALL CONFORM TO THE MINIMUM COVER RECOMMENDATIONS IN ACI 318, UNLESS THE DRAWINGS SHOW GREATER COVER REQUIREMENTS.
7. LAP CONTINUOUS REINFORCING BARS 57 X BAR DIAMETER, TYPICAL UNLESS OTHERWISE NOTED.

ROUGH CARPENTRY NOTES:

1. ROUGH CARPENTRY SHALL BE IN ACCORDANCE WITH THE AMERICAN FOREST AND PAPER ASSOCIATION (AF&PA) "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION".
2. UNLESS OTHERWISE NOTED, USE "COMMON" NAILS AND ALL NAILING SHALL CONFORM TO THE "FASTENING SCHEDULE" TABLE 2304.9.1 OF THE BUILDING CODE.
3. WOOD FRAMING MEMBERS SHALL COMPLY WITH PS 20 "AMERICAN SOFTWOOD LUMBER STANDARD" AND THE FOLLOWING REQUIREMENTS:
   A. MOISTURE CONTENT - SEASONED, WITH 19 PERCENT MAXIMUM MOISTURE CONTENT.
   B. GRADE - NO. 2, OR BETTER UNLESS OTHERWISE NOTED.
   C. SPECIES - SOUTHERN PINE GRADED UNDER SPIB RULES.
5. ALL WOOD FRAMING MEMBERS SHALL BE PRESERVATIVE-TREATED.
6. ALL CONNECTION HARDWARE IN CONTACT WITH PRESERVATIVE TREATED WOOD SHALL BE HOT DIPPED GALVANIZED COATED.

ABBREVIATIONS:

ALUM	ALUMINUM
ARCH	ARCHITECT
BD	BAR DIAMETER
BM	BEAM
BOD	BOTTOM OF DECK
BRG	BEARING
BTWN	BETWEEN
C TO C	CENTER TO CENTER
CL	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CTR	CENTER
CTRD	CENTERED
CW	CURTAIN WALL
DBL	DOUBLE
DIA	DIAMETER
DWGS	DRAWINGS
EA	EACH
EF	EACH FACE
EL	ELEVATION
EMBED	EMBEDMENT
EOD	EDGE OF DECK
EQ	EQUAL
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
FDN	FOUNDATION
FO	FACE OF
FIN	FINISH
FOC	FACE OF CONCRETE
FRMG	FRAMING
FTG	FOOTING
FV	FIELD VERIFY
GALV	GALVANIZED
GEN	GENERAL
GR BM	GRADE BEAM
H	HIGH
HK	HOOK
HORIZ	HORIZONTAL
HT	HEIGHT
JBE	JOIST BEARING ELEVATION
L	LOW
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MOD	MODIFY
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OPH	OPPOSITE HAND
OPNG	OPENING
PAR	PARALLEL
PC	PIECE
PERP	PERPENDICULAR
PL	PLATE
REF	REFERENCE, REFER TO
REINF	REINFORCE, REINFORCED, REINFORCING
REQD	REQUIRED
SCHED	SCHEDULE
SIM	SIMILAR
SL	SLOPE
T&B	TOP AND BOTTOM
THK	THICKNESS
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
W/	WITH

PLAN LEGEND:

X / SX = SECTION/DETAIL NUMBER/LETTER; SECTION/DETAIL MARK; SHEET NUMBER WHERE SECTION/DETAIL IS DRAWN

GB-X = GRADE BEAM MARK

± = FIELD VERIFY

lynchmykins
Formerly Stroud Pence
Structural Engineers
5032 Rouse Dr., Ste 200
Virginia Beach, VA 23462
757.671.8626 - lynchmykins.com

PROGRESS PRINT
2/2/2018
NOT FOR CONSTRUCTION

REVISIONS

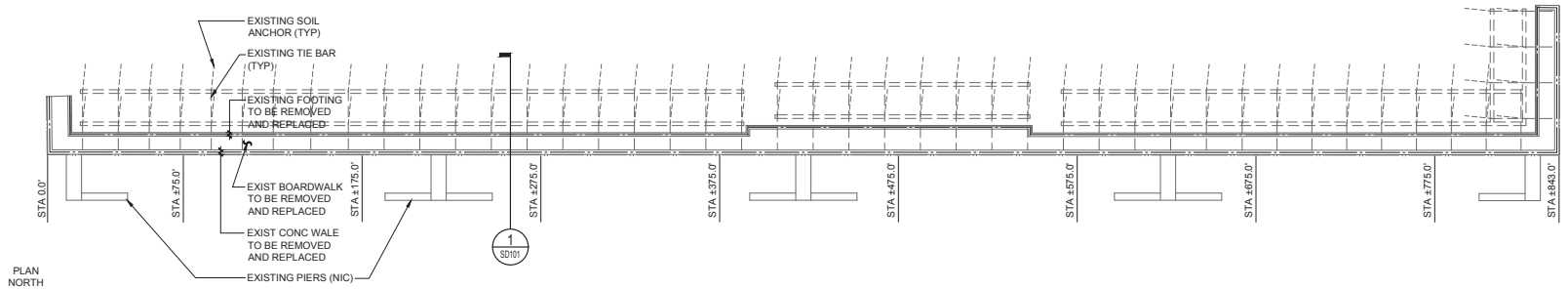
#	DATE	DESCRIPTION

DESIGNED: MEB
DRAWN: WRB
CHECKED:
PROJECT:
DATE: XX XXXXXXX 2018

TOWN OF BEAUFORT
BEAUFORT BULKHEAD AND BOARDWALK REPAIR
BEAUFORT, NORTH CAROLINA 28516

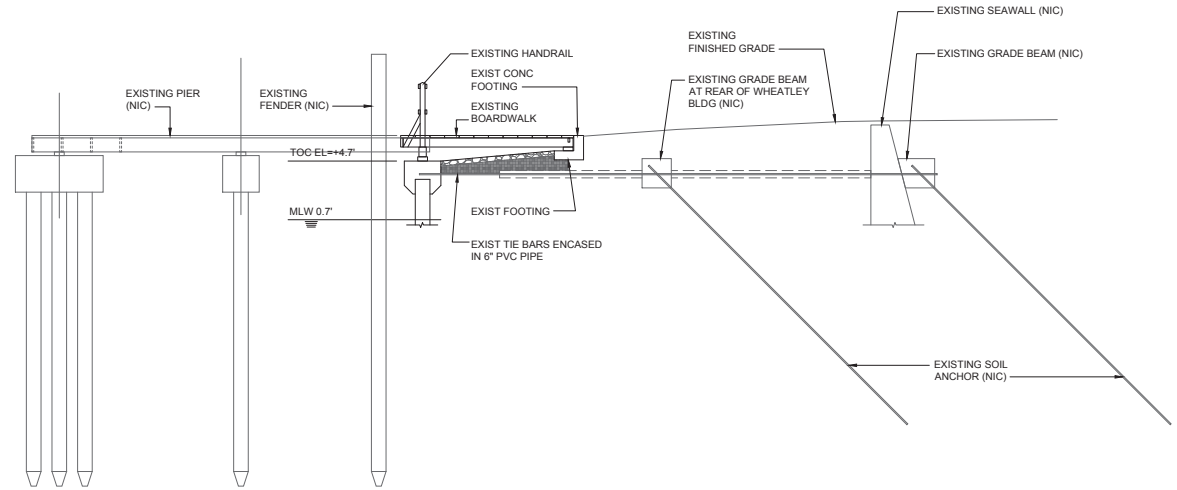
GENERAL NOTES

S001



EXISTING BOARDWALK, TIE BAR AND SOIL ANCHOR PLAN

1/32" = 1'-0"



1 SD101 EXISTING SECTION

3/4" = 1'-0"

lynchmykins
Formerly Stroud Ponce
Structural Engineers
5032 Rouse Dr., Ste 200
Virginia Beach, VA 23462
757.671.8626 - lynchmykins.com

PROGRESS PRINT
2/2/2018
NOT FOR CONSTRUCTION

REVISIONS

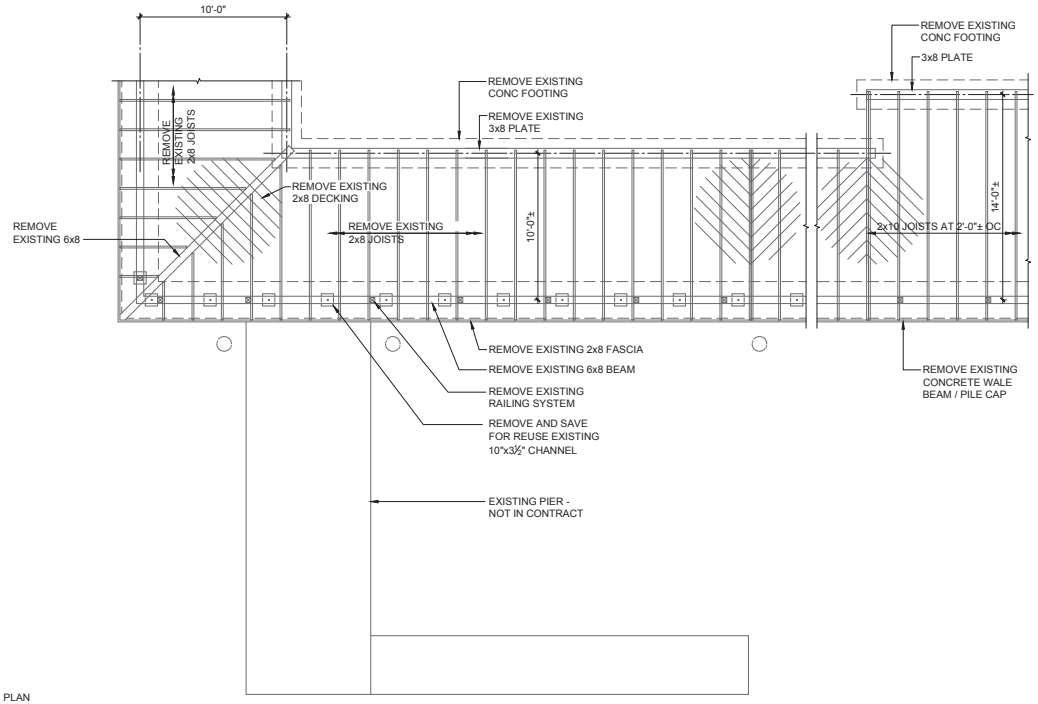
#	DATE	DESCRIPTION

DESIGNED: MEB
DRAWN: WRB
CHECKED:
PROJECT:
DATE: XX XXXXXXX 2018

TOWN OF BEAUFORT
BEAUFORT BULKHEAD AND BOARDWALK REPAIR
BEAUFORT, NORTH CAROLINA 28516

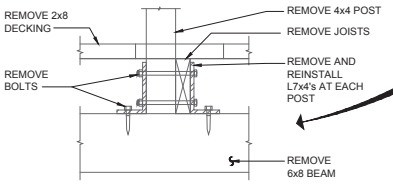
EXISTING TIE BAR AND SOIL ANCHOR PLAN

SD101

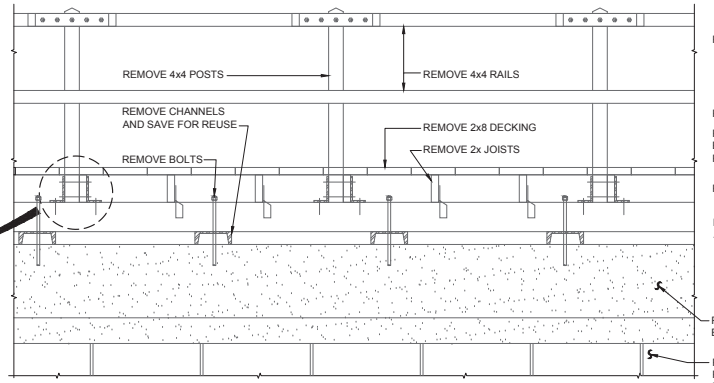


PLAN NORTH

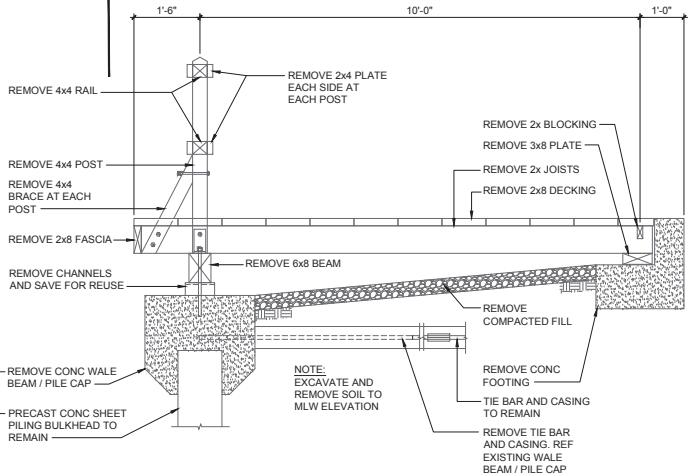
EXISTING BOARDWALK PLAN
1/4" = 1'-0"



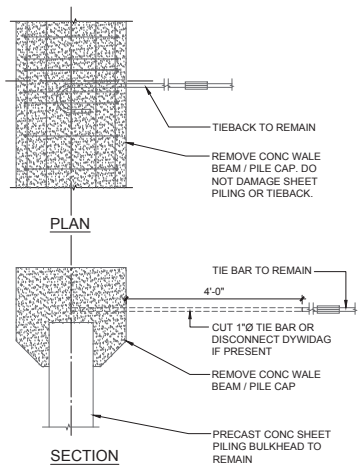
EXISTING POST CONNECTION
1 1/2" = 1'-0"



EXISTING BOARDWALK ELEVATION
3/4" = 1'-0"



EXISTING BOARDWALK SECTION
3/4" = 1'-0"



EXISTING WALE BEAM / PILE CAP
1 1/2" = 1'-0"

lynchmykins
Formerly Stroud Ponce
Structural Engineers
5032 Rouse Dr., Ste 200
Virginia Beach, VA 23462
757.671.8626 - lynchmykins.com

PROGRESS PRINT
2/2/2018
NOT FOR CONSTRUCTION

REVISIONS

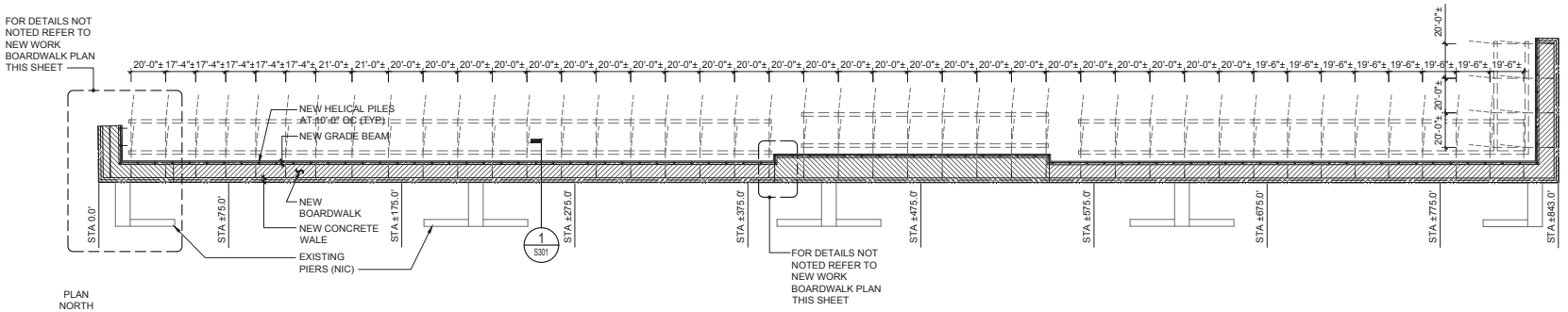
#	DATE	DESCRIPTION

DESIGNED: MEB
DRAWN: WRB
CHECKED:
PROJECT:
DATE: XX XXXXXXX 2018

TOWN OF BEAUFORT
BEAUFORT BULKHEAD AND BOARDWALK REPAIR
BEAUFORT, NORTH CAROLINA 28516

EXISTING BOARDWALK PLAN AND DETAILS

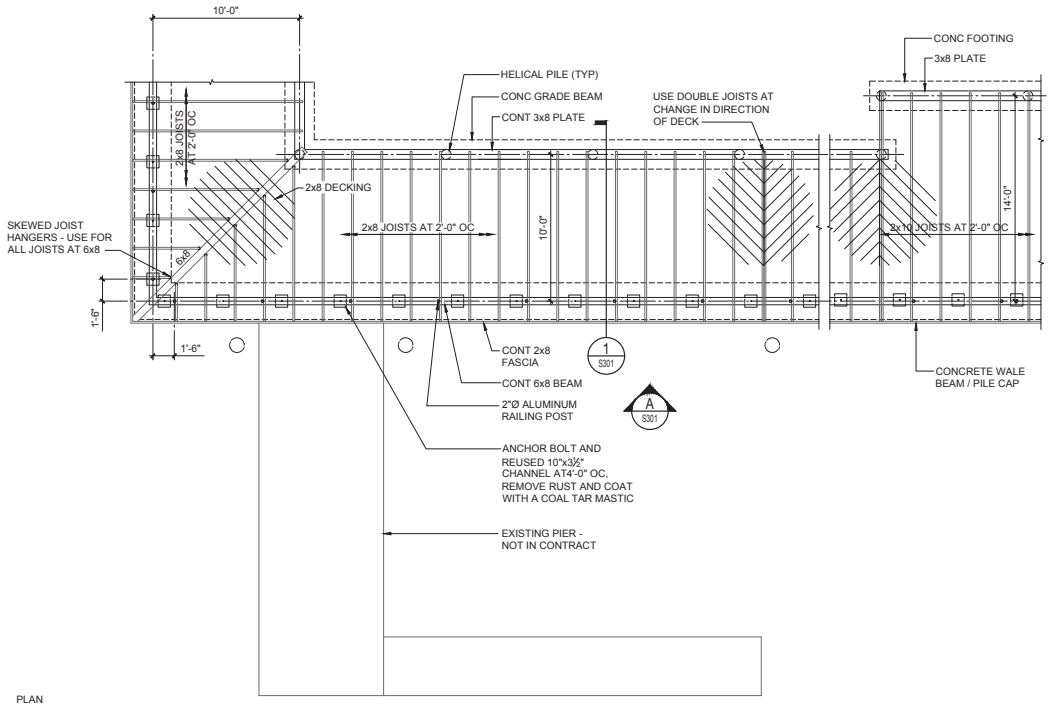
SD102



PLAN NORTH

NEW WORK BOARDWALK, TIE BAR AND SOIL ANCHOR PLAN

1/32" = 1'-0"



PLAN NORTH

NEW WORK BOARDWALK PLAN

1/4" = 1'-0"

lynchmykins
Formerly Stroud Pence
Structural Engineers
5032 Rouse Dr., Ste 200
Virginia Beach, VA 23462
757.671.8626 - lynchmykins.com

PROGRESS PRINT
2/2/2018
NOT FOR CONSTRUCTION

REVISIONS

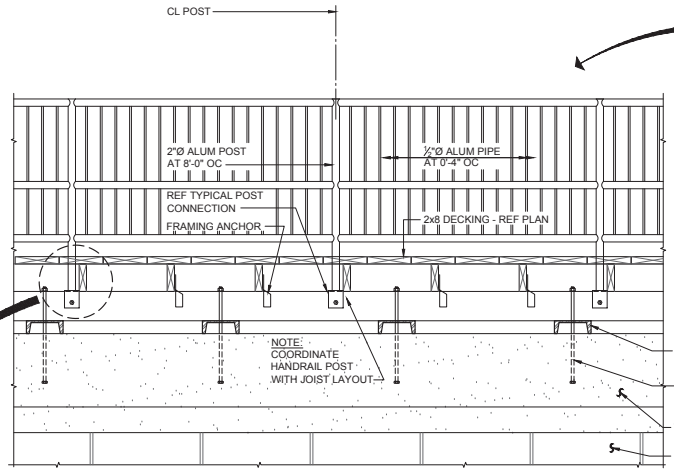
#	DATE	DESCRIPTION

DESIGNED: MEB
DRAWN: WRB
CHECKED:
PROJECT:
DATE: XX XXXXXXX 2018

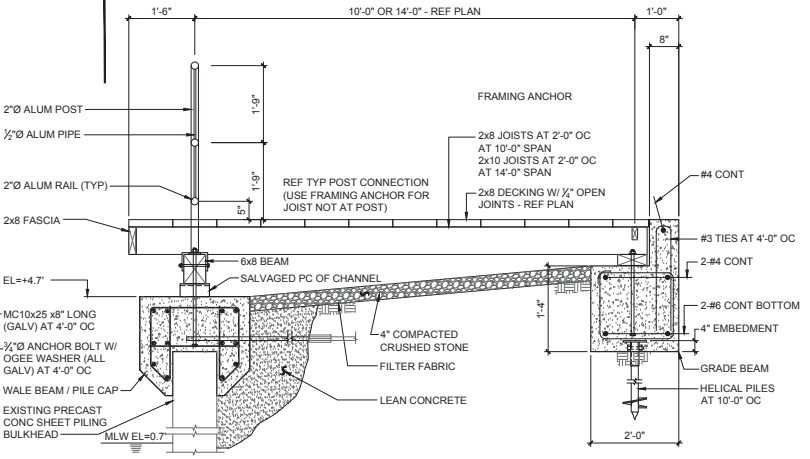
TOWN OF BEAUFORT
BEAUFORT BULKHEAD AND BOARDWALK REPAIR
BEAUFORT, NORTH CAROLINA 28516

BOARDWALK, TIE BAR AND SOIL ANCHOR PLAN

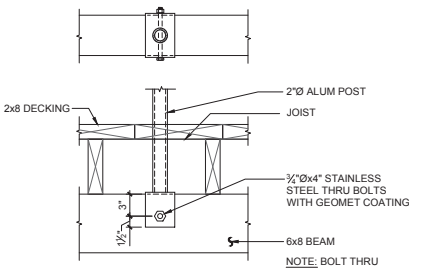
S101



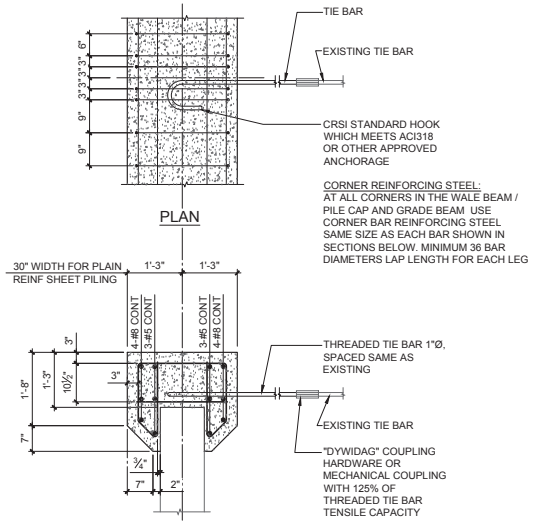
A S301 BOARDWALK ELEVATION
3/4" = 1'-0"



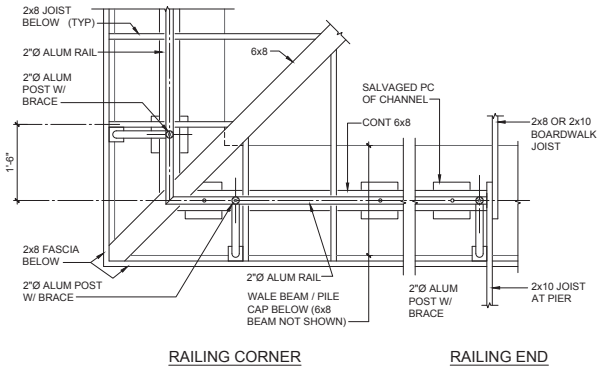
1 S301 BOARDWALK SECTION
3/4" = 1'-0"



TYPICAL POST CONNECTION
1 1/2" = 1'-0"



TYPICAL WALE BEAM / PILE CAP
1 1/2" = 1'-0"



TYPICAL RAILING PLANS
1 1/2" = 1'-0"

lynchmykins
Formerly Stroud Ponce
Structural Engineers
5032 Rouse Dr., Ste 200
Virginia Beach, VA 23462
757.671.8626 - lynchmykins.com

PROGRESS PRINT
2/2/2018
NOT FOR CONSTRUCTION

REVISIONS

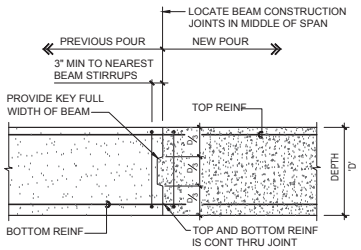
#	DATE	DESCRIPTION

DESIGNED: MEB
DRAWN: WRB
CHECKED:
PROJECT:
DATE: XX XXXXXXX 2018

TOWN OF BEAUFORT
BEAUFORT BULKHEAD AND BOARDWALK REPAIR
BEAUFORT, NORTH CAROLINA 28516

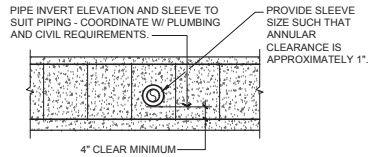
SECTIONS

S301



TYPICAL GRADE BEAM CONSTRUCTION JOINT DETAIL

NTS



UNDER NO CIRCUMSTANCES SHALL ANY TOP OR BOTTOM REINFORCING OR STIRRUPS BE DISCONTINUED TO PLACE GRADE BEAM SLEEVES.

TYPICAL SLEEVED GRADE BEAM DETAIL

NTS

lynchmykins
Formerly Stroud Pence
Structural Engineers
5032 Rouse Dr., Ste 200
Virginia Beach, VA 23462
757.671.8626 - lynchmykins.com

PROGRESS PRINT
2/2/2018
NOT FOR CONSTRUCTION

REVISIONS

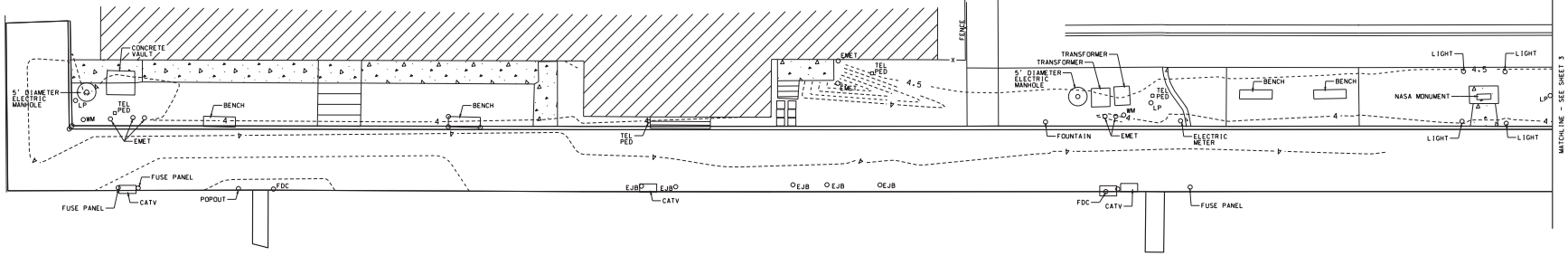
#	DATE	DESCRIPTION

DESIGNED: MEB
DRAWN: WRB
CHECKED:
PROJECT:
DATE: XX XXXXXXX 2018

TOWN OF BEAUFORT
BEAUFORT BULKHEAD AND BOARDWALK REPAIR
BEAUFORT, NORTH CAROLINA 28516

TYPICAL DETAILS

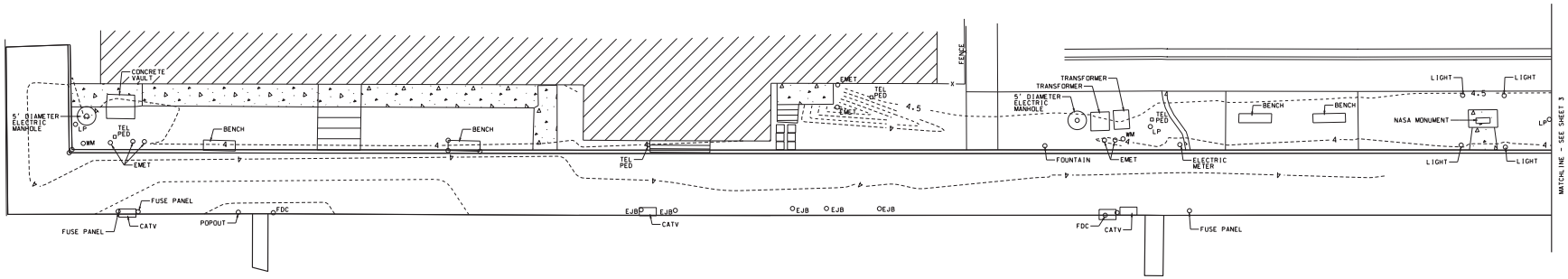
S501



EXISTING CONDITIONS & DEMOLITION PLAN

SCALE: 1"=10'

A
2



PROPOSED CONDITIONS PLAN

SCALE: 1"=10'

B
2

10 5 0 10 20

GRAPHIC SCALE: 1"=10'

PROJECT NO.: PM493-31-001

DRAWING NO.: _____

BEFORE YOU DIG IN THE FIELD DIAL 811 OR 1-800-632-4949 IT'S THE LAW!

REVISIONS

BY	NO.	DATE	DESCRIPTION

SITE PLAN

BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTARET COUNTY NORTH CAROLINA

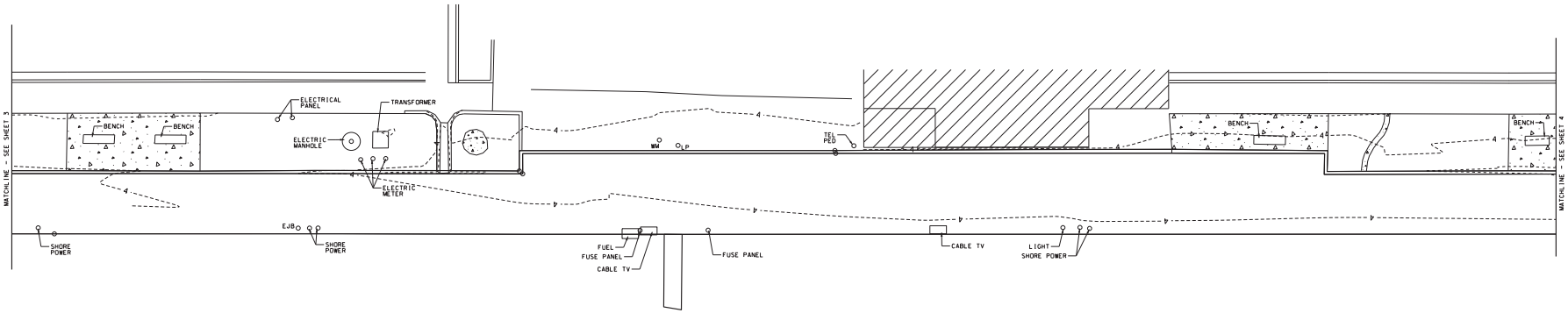
OWNER:

ADDRESS:

PHONE:

STROUD ENGINEERING, P.A.
3502 BRIDGES ST., SUITE C
MOREHEAD CITY, NC 28557
(252) 247-7479
LICENSE NO.C-0647

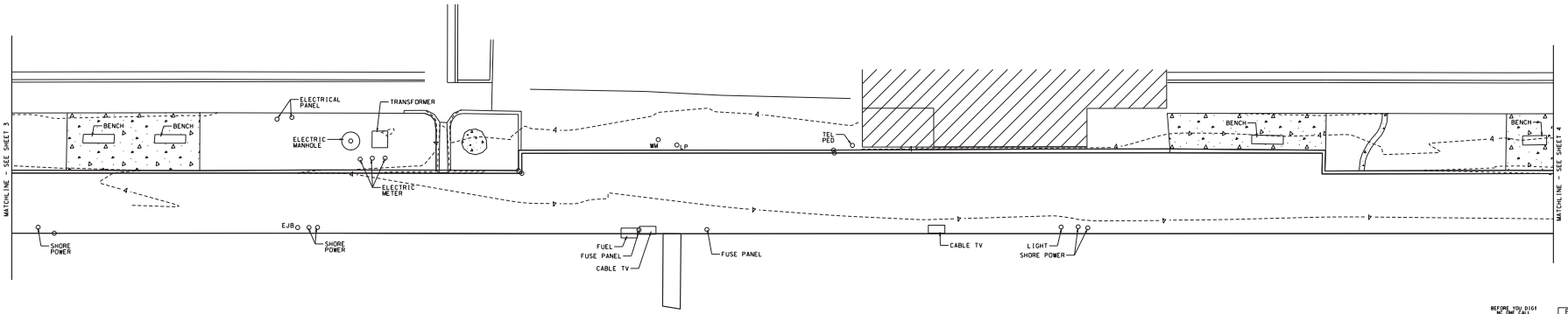
DESIGNED:	LES	DATE:	2/8/18
DRAWN:	LHJ	SCALE:	1"=10'
APPROVED:	LES	SHEET 2 OF 4	



EXISTING CONDITIONS & DEMOLITION PLAN

SCALE: 1"=10'

A
3



PROPOSED CONDITIONS PLAN

SCALE: 1"=10'

B
3

10 5 0 10 20

GRAPHIC SCALE: 1"=10'

PROJECT NO.: PM493-31-001

DRAWING NO.: _____

BEFORE YOU DIG
IN THE FALL
1 TOLL FREE!
811
(OR 1-800-632-4949)
IT'S THE LAW!

REVISIONS

BY	NO.	DATE	DESCRIPTION

SITE PLAN

BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTARET COUNTY NORTH CAROLINA

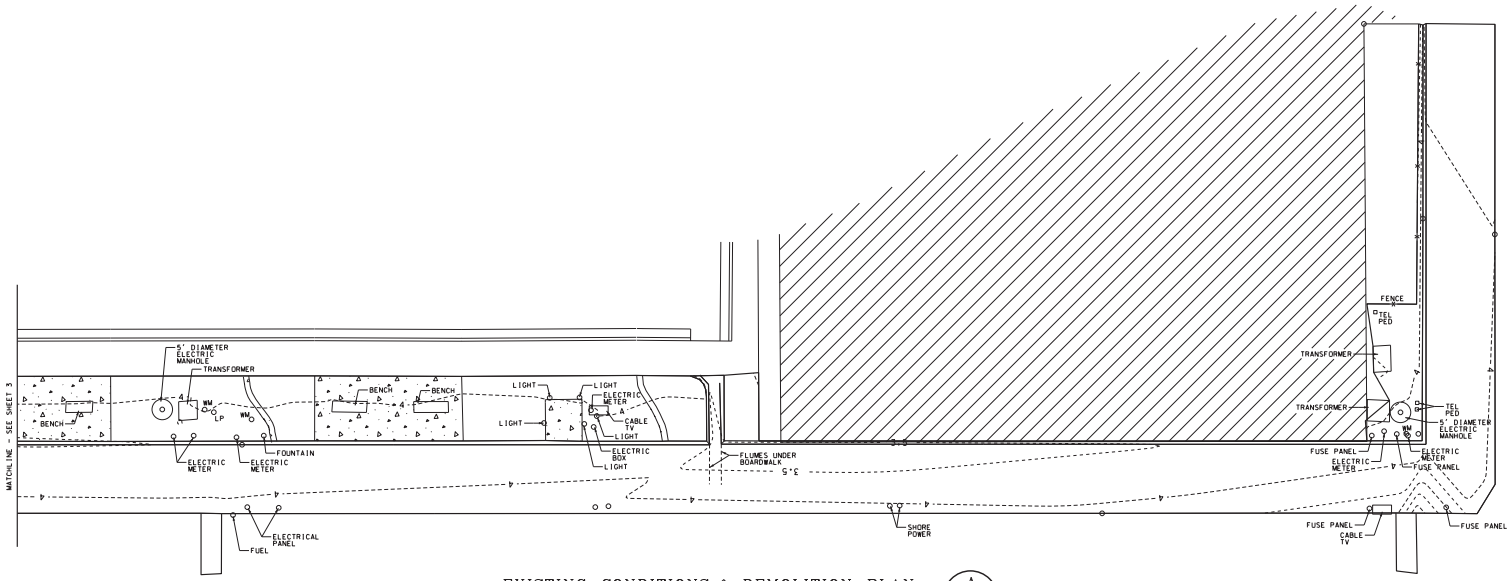
OWNER:

ADDRESS:

PHONE:

STROUD ENGINEERING, P.A.
3502 BRIDGES ST., SUITE C
MOREHEAD CITY, NC 28557
(252) 247-7479
LICENSE NO.C-0647

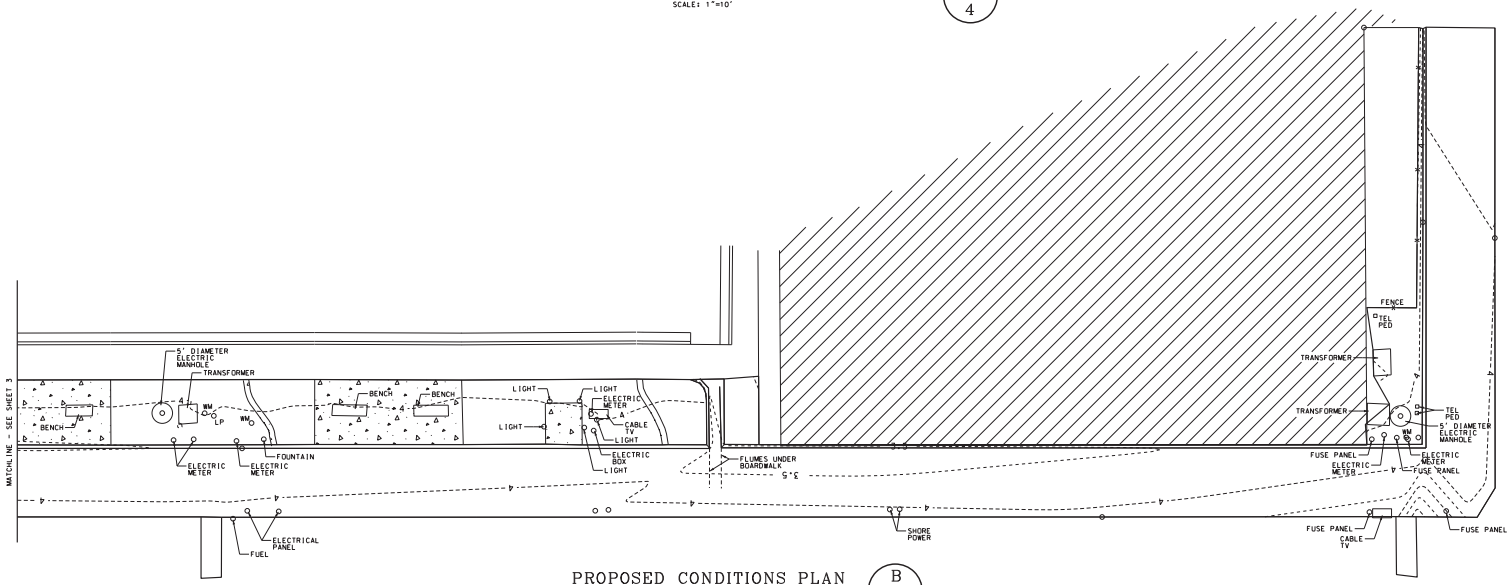
DESIGNED:	LES	DATE:	2/8/18
DRAWN:	LHJ	SCALE:	1"=10'
APPROVED:	LES	SHEET	3 OF 4



EXISTING CONDITIONS & DEMOLITION PLAN

SCALE: 1"=10'

A / 4



PROPOSED CONDITIONS PLAN

SCALE: 1"=10'

B / 4

10 5 0 10 20

GRAPHIC SCALE: 1"=10'

PROJECT NO.: PM493-31-001

DRAWING NO.: _____

BEFORE YOU DIG IN THE FIELD (TOLL FREE) 811 (OR 1-800-632-4949) IT'S THE LAW!

SITE PLAN

REVISIONS

BY	NO.	DATE	DESCRIPTION

BEAUFORT BULKHEAD & BOARDWALK REPAIR

BEAUFORT CARTARET COUNTY NORTH CAROLINA

OWNER:

ADDRESS:

PHONE:

STROUD ENGINEERING, P.A.
3502 BRIDGES ST., SUITE C
MOREHEAD CITY, NC 28557
(252) 247-7479
LICENSE NO.C-0647

DESIGNED:	LES	DATE:	2/8/18
DRAWN:	LHJ	SCALE:	1"=10'
APPROVED:	LES	SHEET	4 OF 4

Project Beaufort Bulkhead and Boardwalk Repair LM Project # V17.065
Date 3/6/2018

Demolition of Existing Boardwalk and Concerte Seawall Pile Cap

Remove Hand Rails	9,000
940 linear feet	
Remove Deck Boards and wood framing	48,000
40,000 board feet	
Remove Concrete spread footing	15,000
940 linear feet	
Remove Pile Cap from Seawall	78,300
Saw cut 5 deep inches each side	
Tempoary construction netting to keep concrete from water	
Break up with jack hammer	
Dispose of Debris	65,000
720 tons Load and Haul to dump (includes dump fee of $38/ton)	
Errosion and Sediment Control	8,000
Temporary Fencing to Close off site (Assume 6 month Duration)	24,000

Construction of New Boardwalk and Concrete Seawall Pile Cap

Helical Piles	67,200
96 Piles 20 feet long	
Concrete for Pile Cap and Grade Beam	208,200
305 cubic yards concrete	
22 tons of rebar	
Formwork	
Clean seawall for form installation	
Concrete Admixture for waterproofing pile cap	10,800
Velosit CA 115	
Excavate behind seawall and backfill with lean concrete	67,500
425 cubic yards of excvation	
425 cubic yards of lean concrete	
Remove 4' of Tie rods and replace	12,000
46 Tie rods	
Regrade soils below boardwalk	17,200
Install crushed stone layer under boardwalk	39,900
15,000 sf of Filter Fabric	
220 cubic yards of crushed stone	
Rebuild Boardwalk	162,200
11860 SF of boardwalk	
Pressure Treated #2 Southern Pine	
Galvanized Bolts and Nails	
Stainless steel deck screws	
Install Gaurdrails	38,200
940' railing (Wire and pressure treated wood)	
Inspections and Testing	14,800
Mobilization	12,000
Total	885,300
Unforseen conditions contingency (20%)	177,060
Overhead and profit	159,354
GRAND TOTAL	1,221,714

STROUD ENGINEERING, P.A.

CONSULTING ENGINEERS
HESTRON PLAZA TWO
151-A HWY. 24
MOREHEAD CITY, NC 28557
(252) 247-7479

April 10, 2017

Mr. Mark Eakes
Town of Beaufort
Public Works Director
701 Front Street
Beaufort, North Carolina 28516

Re: Preliminary Structural Assessment- Town of Beaufort Front Street Waterfront Plaza

Dear Mr. Eakes,

At your request and in your presence, I made a couple of site visits to the boardwalk area to evaluate the issues identified with the settlement in and around the Dock House. On the second visit, we had Mr. Carl Bonner, P.E., Terracon, a geotechnical firm with a branch located in Greenville, with us as well. Without knowing the original proposed construction details, it was difficult to develop a theory on what was happening. Logic was not making sense with the observations we were seeing. With assistance of several people we were able to ascertain that the original design engineering firm was Rivers and Associates, also from Greenville. Mr. Bonner was able to locate those drawings from Rivers and Associates and we have provided a copy of those drawings to you and have saved a set here as well.

The old drawings have a detail that answers the questions to what is happening. The landward support for the deck joists is supported by a concrete footing without vertical support, (we had been led to believe that this was actually a retaining wall) as time passes on, siltation of the underlying material weeps through the bulkhead and allows settlement of this footing. A permanent repair solution would be to replace this footing with a pile supported footing so that in the future should future loss of material occur the footing would not settle and be structurally independent. This solution would not be cheap. Band aid solutions would be to place soil between the outer wall and this footing and provide some type of weep protection thru the seawall, replace the footing at the proper elevation and then blend the sidewalks back into the boardwalk.

Additionally, during our investigation efforts, significant concrete spalling and corrosive rebar was evident on the seawall and those structural repairs need to be initiated soon as well.

Please review and advise how you would like us to move forward. If you have any questions, please let me know.

Sincerely,

NORTH CAROLINA PROFESSIONAL SEAL 13343 ENGINEER RONALD D. CULLIPHER

Ronald D. Cullipher, P.E.

107 COMMERCE ST.
SUITE B
GREENVILLE, NC 27858
(252) 756-9352

1029 PINEMARINE
WILMINGTON, NC 28409
(910) 815-0775

HESTRON PLAZA TWO
151-A HWY. 24
MOREHEAD CITY, NC 28557
(252) 247-7479