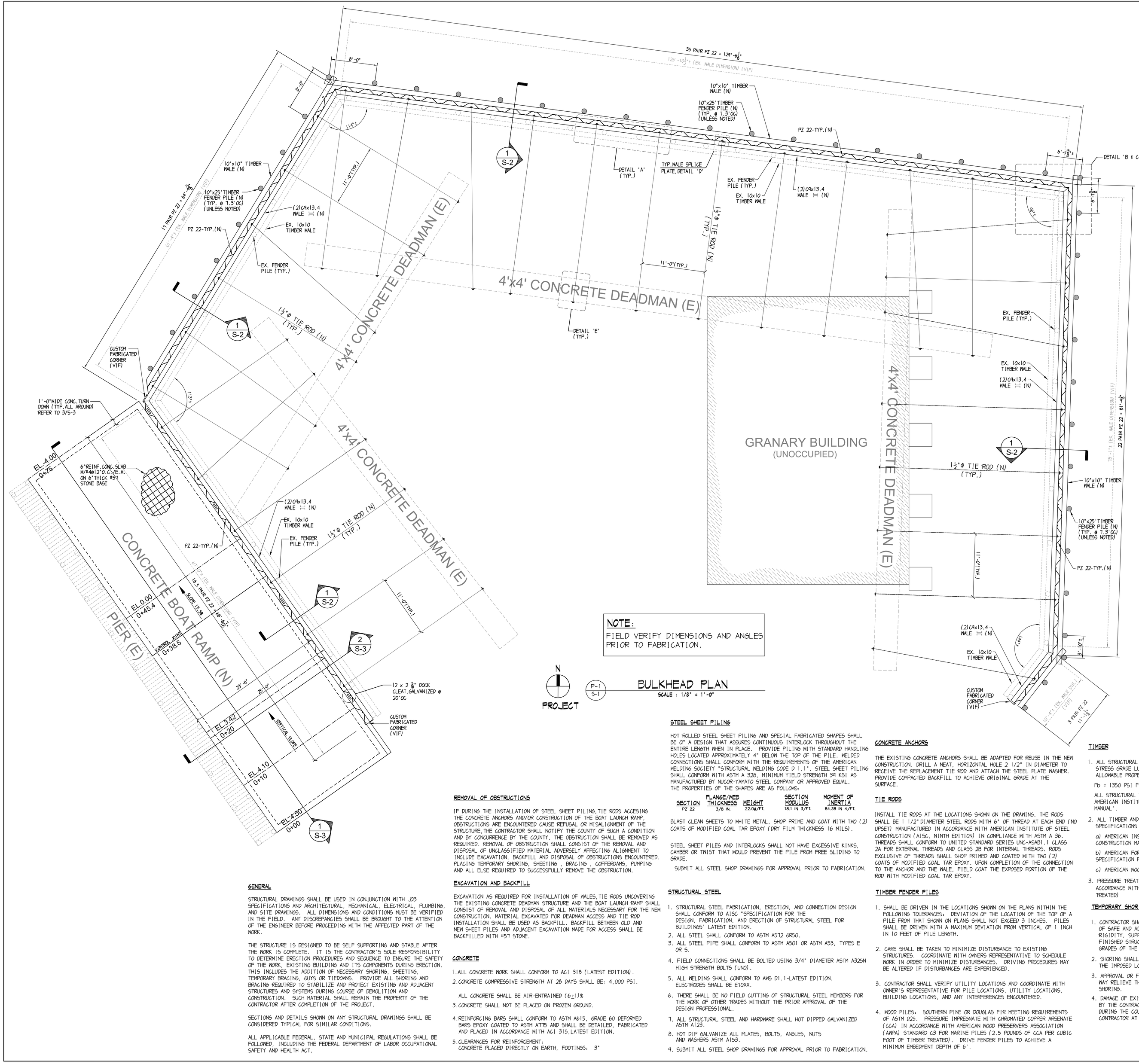

N

PROJECT

P-1 S-1

BULKHEAD PLAN

SCALE : 1/8" = 1'-0"

NOTE:
FIELD VERIFY DIMENSIONS AND ANGLES PRIOR TO FABRICATION.

LOCATION PLAN
TURNERS CREEK LANDING
N.T.S.

GENERAL

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH JOB SPECIFICATIONS AND ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND SITE DRAWINGS. ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.

THE STRUCTURE IS DESIGNED TO BE SELF SUPPORTING AND STABLE AFTER THE WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE WORK, EXISTING BUILDING AND ITS COMPONENTS DURING ERECTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIEDOWNS. PROVIDE ALL SHORING AND BRACING REQUIRED TO STABILIZE AND PROTECT EXISTING AND ADJACENT STRUCTURES AND SYSTEMS DURING COURSE OF DEMOLITION AND CONSTRUCTION. SUCH MATERIAL SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.

SECTIONS AND DETAILS SHOWN ON ANY STRUCTURAL DRAWINGS SHALL BE CONSIDERED TYPICAL FOR SIMILAR CONDITIONS.

ALL APPLICABLE FEDERAL, STATE AND MUNICIPAL REGULATIONS SHALL BE FOLLOWED, INCLUDING THE FEDERAL DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ACT.

REMOVAL OF OBSTRUCTIONS

IF DURING THE INSTALLATION OF STEEL SHEET PILING, TIE RODS ACCESING THE CONCRETE ANCHORS AND/OR CONSTRUCTION OF THE BOAT LAUNCH RAMP, OBSTRUCTIONS ARE ENCOUNTERED CAUSE REFUSAL OR MISALIGNMENT OF THE STRUCTURE, THE CONTRACTOR SHALL NOTIFY THE COUNTY OF SUCH A CONDITION AND BY CONCURRENCE BY THE COUNTY, THE OBSTRUCTION SHALL BE REMOVED AS REQUIRED. REMOVAL OF OBSTRUCTION SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF UNCLASSIFIED MATERIAL ADVERSELY AFFECTING ALIGNMENT TO INCLUDE EXCAVATION, BACKFILL AND DISPOSAL OF OBSTRUCTIONS ENCOUNTERED, PLACING TEMPORARY SHORING, SHEETING , BRACING , COFFERDAMS, PUMPING AND ALL ELSE REQUIRED TO SUCCESSFULLY REMOVE THE OBSTRUCTION.

EXCAVATION AND BACKFILL

EXCAVATION AS REQUIRED FOR INSTALLATION OF WALES, TIE RODS UNCOVERING THE EXISTING CONCRETE DEADMAN STRUCTURE AND THE BOAT LAUNCH RAMP SHALL CONSIST OF REMOVAL AND DISPOSAL OF ALL MATERIALS NECESSARY FOR THE NEW CONSTRUCTION. MATERIAL EXCAVATED FOR DEADMAN ACCESS AND TIE ROD INSTALLATION SHALL BE USED AS BACKFILL. BACKFILL BETWEEN OLD AND NEW SHEET PILES AND ADJACENT EXCAVATION MADE FOR ACCESS SHALL BE BACKFILLED WITH #57 STONE.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318 (LATEST EDITION).
2. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE: 4,000 PSI.

   ALL CONCRETE SHALL BE AIR-ENTRAINED (6±1)%
3. CONCRETE SHALL NOT BE PLACED ON FROZEN GROUND.
4. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60 DEFORMED BARS EPOXY COATED TO ASTM A775 AND SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315, LATEST EDITION.
5. CLEARANCES FOR REINFORCEMENT:
   CONCRETE PLACED DIRECTLY ON EARTH, FOOTINGS: 3"

STEEL SHEET PILING

HOT ROLLED STEEL SHEET PILING AND SPECIAL FABRICATED SHAPES SHALL BE OF A DESIGN THAT ASSURES CONTINUOUS INTERLOCK THROUGHOUT THE ENTIRE LENGTH WHEN IN PLACE. PROVIDE PILING WITH STANDARD HANDLING HOLES LOCATED APPROXIMATELY 4" BELOW THE TOP OF THE PILE. WELDED CONNECTIONS SHALL CONFORM WITH THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE D 1.1". STEEL SHEET PILING SHALL CONFORM WITH ASTM A 328, MINIMUM YIELD STRENGTH 39 KSI AS MANUFACTURED BY NUCOR-YAMATO STEEL COMPANY OR APPROVED EQUAL. THE PROPERTIES OF THE SHAPES ARE AS FOLLOWS:

SECTION	FLANGE/WEB THICKNESS	WEIGHT	SECTION MODULUS	MOMENT OF INERTIA
PZ 22	3/8 IN.	22.0#/FT.	18.1 IN 3/FT.	84.38 IN 4/FT.

BLAST CLEAN SHEETS TO WHITE METAL. SHOP PRIME AND COAT WITH TWO (2) COATS OF MODIFIED COAL TAR EPOXY (DRY FILM THICKNESS 16 MILS).

STEEL SHEET PILES AND INTERLOCKS SHALL NOT HAVE EXCESSIVE KINKS, CAMBER OR TWIST THAT WOULD PREVENT THE PILE FROM FREE SLIDING TO GRADE.

SUBMIT ALL STEEL SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

STRUCTURAL STEEL

1. STRUCTURAL STEEL FABRICATION, ERECTION, AND CONNECTION DESIGN SHALL CONFORM TO AISC "SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" LATEST EDITION.
2. ALL STEEL SHALL CONFORM TO ASTM A572 GR50.
3. ALL STEEL PIPE SHALL CONFORM TO ASTM A501 OR ASTM A53, TYPES E OR S.
4. FIELD CONNECTIONS SHALL BE BOLTED USING 3/4" DIAMETER ASTM A325N HIGH STRENGTH BOLTS (UNO).
5. ALL WELDING SHALL CONFORM TO AWS D1.1-LATEST EDITION. ELECTRODES SHALL BE E70XX.
6. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT THE PRIOR APPROVAL OF THE DESIGN PROFESSIONAL.
7. ALL STRUCTURAL STEEL AND HARDWARE SHALL HOT DIPPED GALVANIZED ASTM A123.
8. HOT DIP GALVANIZE ALL PLATES, BOLTS, ANGLES, NUTS AND WASHERS ASTM A153.
9. SUBMIT ALL STEEL SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

CONCRETE ANCHORS

THE EXISTING CONCRETE ANCHORS SHALL BE ADAPTED FOR REUSE IN THE NEW CONSTRUCTION. DRILL A NEAT, HORIZONTAL HOLE 2 1/2" IN DIAMETER TO RECEIVE THE REPLACEMENT TIE ROD AND ATTACH THE STEEL PLATE WASHER. PROVIDE COMPACTED BACKFILL TO ACHIEVE ORIGINAL GRADE AT THE SURFACE.

TIE RODS

INSTALL TIE RODS AT THE LOCATIONS SHOWN ON THE DRAWING. THE RODS SHALL BE 1 1/2" DIAMETER STEEL RODS WITH 6" OF THREAD AT EACH END (NO UPSET) MANUFACTURED IN ACCORDANCE WITH AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC, NINTH EDITION) IN COMPLIANCE WITH ASTM A 36. THREADS SHALL CONFORM TO UNITED STANDARD SERIES UNC-A5ABI.1 CLASS 2A FOR EXTERNAL THREADS AND CLASS 2B FOR INTERNAL THREADS. RODS EXCLUSIVE OF THREADS SHALL SHOP PRIMED AND COATED WITH TWO (2) COATS OF MODIFIED COAL TAR EPOXY. UPON COMPLETION OF THE CONNECTION TO THE ANCHOR AND THE WALE, FIELD COAT THE EXPOSED PORTION OF THE ROD WITH MODIFIED COAL TAR EPOXY.

TIMBER FENDER PILES

1. SHALL BE DRIVEN IN THE LOCATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING TOLERANCES: DEVIATION OF THE LOCATION OF THE TOP OF A PILE FROM THAT SHOWN ON PLANS SHALL NOT EXCEED 3 INCHES. PILES SHALL BE DRIVEN WITH A MAXIMUM DEVIATION FROM VERTICAL OF 1 INCH IN 10 FEET OF PILE LENGTH.
2. CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO EXISTING STRUCTURES. COORDINATE WITH OWNERS REPRESENTATIVE TO SCHEDULE WORK IN ORDER TO MINIMIZE DISTURBANCES. DRIVING PROCEDURES MAY BE ALTERED IF DISTURBANCES ARE EXPERIENCED.
3. CONTRACTOR SHALL VERIFY UTILITY LOCATIONS AND COORDINATE WITH OWNER'S REPRESENTATIVE FOR PILE LOCATIONS, UTILITY LOCATIONS, BUILDING LOCATIONS, AND ANY INTERFERENCES ENCOUNTERED.
4. WOOD PILES: SOUTHERN PINE OR DOUGLAS FIR MEETING REQUIREMENTS OF ASTM D25. PRESSURE IMPREGNATE WITH CHROMATED COPPER ARSENATE (CCA) IN ACCORDANCE WITH AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) STANDARD C3 FOR MARINE PILES (2.5 POUNDS OF CCA PER CUBIC FOOT OF TIMBER TREATED). DRIVE FENDER PILES TO ACHIEVE A MINIMUM EMBEDMENT DEPTH OF 6'.

TIMBER

1. ALL STRUCTURAL TIMBER SHALL BE DOUGLAS FIR - LARCH #1 OR BETTER STRESS GRADE LUMBER OR APPROVED EQUAL WITH THE FOLLOWING MINIMUM ALLOWABLE PROPERTIES:

   Fb = 1350 PSI Fv = 85 PSI E = 1,600,000 PSI

   ALL STRUCTURAL TIMBER TO BE STAMPED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION'S "CONSTRUCTION MANUAL".
2. ALL TIMBER AND TIMBER CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND CODES AS SPECIFIED BELOW:

   a) AMERICAN INSTITUTE OF TIMBER CONSTRUCTION: TIMBER CONSTRUCTION MANUAL.

   b) AMERICAN FOREST AND PAPER ASSOCIATION. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION.

   c) AMERICAN WOOD PRESERVERS ASSOCIATION STANDARDS.
3. PRESSURE TREAT TIMBER WITH CHROMATED COPPER ARSENATE (CCA) IN ACCORDANCE WITH AWPA C2 (2.5 POUNDS PER CUBIC FOOT OF TIMBER TREATED)

TEMPORARY SHORING

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF SAFE AND ADEQUATE SHORING WHICH PROVIDES THE NECESSARY RIGIDITY, SUPPORTS THE IMPOSED CONSTRUCTION LOADS AND PRODUCES A FINISHED STRUCTURE IN CLOSE CONFORMANCE WITH THE LINES AND GRADES OF THE STRUCTURE AS APPROVED BY THE OWNER.
2. SHORING SHALL BE FOUNDED ON SOLID FOOTINGS CAPABLE OF SUPPORTING THE IMPOSED LOADS.
3. APPROVAL OR FIELD REVIEW OF THE SHORING BY THE OWNER WILL IN NO WAY RELIEVE THE CONTRACTOR OF THE FULL RESPONSIBILITY FOR THE SHORING.
4. DAMAGE OF EXISTING FRAMING OR OTHER ASSEMBLIES AS MAY BE CAUSED BY THE CONTRACTOR'S FAILURE TO TEMPORARILY SUPPORT THE STRUCTURE DURING THE COURSE OF CONSTRUCTION, SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

LEGEND

(E) = EXISTING
(N) = NEW
(VIF) = VERIFY IN FIELD

ISSUED FOR CONSTRUCTION
10 AUGUST 2020

GARY W. GREDELL — No. 19310 — REGISTERED PROFESSIONAL ENGINEER — MARYLAND

BULKHEAD REPAIRS
TURNERS CREEK LANDING
KENNEDYVILLE, MARYLAND

NO.	REVISION	DATE BY

GREDELL & ASSOCIATES
STRUCTURAL ENGINEERS
P.O. BOX 357 · NEWARK, DELAWARE 19715-0357 · 302-731-5060

APPROVED BY

DESIGNED BY: GWG	DATE: 10 AUGUST 2020
DRAWN BY: BWD	SCALE: AS NOTED
CHECKED BY: GWG	W.O.: 3037
DRAWING NO.: S-1	SHEET: 1 of 3

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