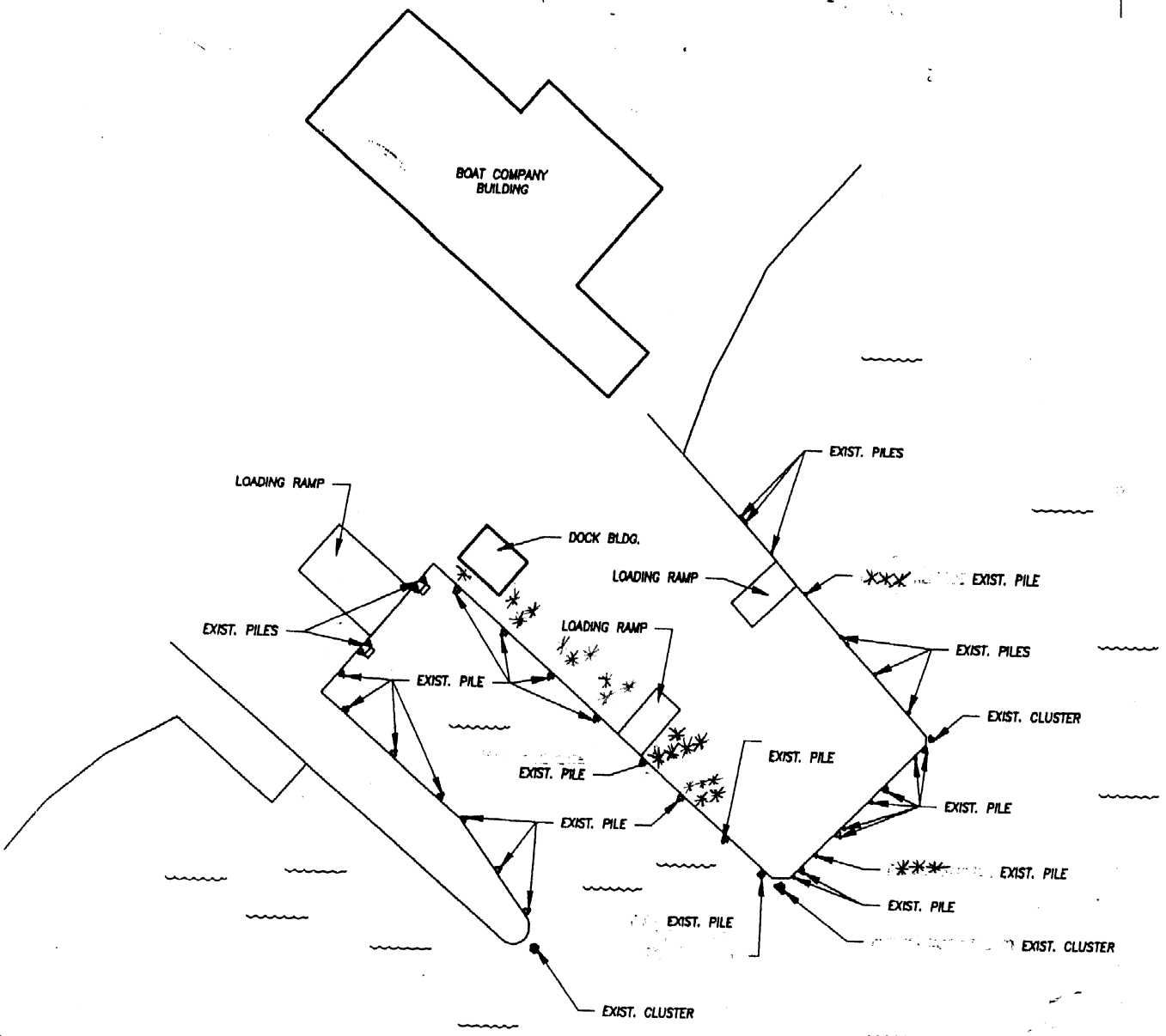

C1 DOCK AREA PLAN

1":30'

0 15' 30' 60'

NORTH

* Add piles and install pileguard fenders (5 piles) (5 fenders)

** raise pileguard fender on existing piles (4 total)

*** install pileguard fender on existing piles (3 fenders)

**** pull + replace existing pile install pileguard fender (1 pile) (1 fender)

PILE NOTES

1. PILES

A. TIMBER PILES: MEET REQUIREMENTS OF ASTM D25, FRICTION PILES. ORDER LENGTH OF PILES SHALL BE 45 (FORTY-FIVE) FEET.

B. TREATED PILES:
   a. THE MINIMUM BUTT CIRCUMFERENCE SHALL BE 38 INCHES.
   b. PILE TREATMENT _ WATERBORNE PRESERVATIVES:
   c. TREATING PROCESS SHALL CONFORM TO AWPA T1, SECTION 8.
   d. WATERBORNE PRESERVATIVE PER UC4C 0.80PCF CCA OR 0.80 PCF ACQ
   e. TREATED PILING SHALL BEAR THE AWPB QUALITY ASSURANCE MARK CFP.

2. FASTENINGS

A. NEW BOLTS, NUTS, WASHERS, AND PINS SHALL BE GALVANIZED, MEETING REQUIREMENTS OF ASTM A307.
   a. GALVANIZING SHALL MEET REQUIREMENTS OF ASTM A153.
   b. RETAP THREADS OF NUTS AFTER GALVANIZING ACCORDING TO ASTM A153.

B. USE GALVANIZED ROOFING NAILS, 2 INCH NO. 11 LARGE FLATHEAD FOR FASTENING PILE HEAD COVERING.

C. WIRE ROPE STAPLES SHALL BE GALVANIZED.

D. WIRE ROPE FOR PILE CLUSTER FASTENING SHALL BE ¾ INCH DIAMETER, CLASS C ZINC COATED THROUGHOUT, IN ACCORDANCE WITH ASTM A603.

E. PILE HEAD COVERING – 24 GAUGE ALUMINUM.

3. PILE DRIVING

A. EQUIPMENT SHALL BE OF ADEQUATE SIZE AND CAPACITY TO HANDLE, PLACE, AND HOLD TO THE DESIGNED ALIGNMENT THE PILES THAT ARE TO BE INSTALLED BY THEIR OPERATION. THIS EQUIPMENT MUST BE ABLE TO MAINTAIN THE ALIGNMENT OF THE PILE BUTT, TIP, AND HAMMER IN THE LEADS WITHOUT DAMAGE TO EITHER.

B. MAINTAIN PILE DRIVING EQUIPMENT IN SAFE OPERATING CONDITION AT ALL TIMES.

C. OPERATE PILE HAMMERS AT THE MANUFACTURER'S RATED NUMBER OF BLOWS PER MINUTE EXCEPT WHEN NECESSARY TO REDUCE THE SPEED TO AVOID DAMAGE TO THE PILES, E.G., AT THE BEGINNING OF DRIVING LONG PILES WITH GREAT UNSUPPORTED LENGTH, OR END OF DRIVING PILES NEAR TIP ELEVATION.

D. EQUIPMENT OR METHODS WHICH RESULT IN REGULAR OR REPEATED DAMAGE TO PILES WILL BE REJECTED BY THE PORT.

E. USE OF JETS IS PROHIBITED.

F. PROVIDE AN ADEQUATE PRESSURE GAUGE AT THE INBOARD END OF THE HOSE FOR THE PURPOSE OF CHECKING THE PRESSURE FOR AIR OR STEAM HAMMER.

G. DRIVING CRITERIA: DRIVE PILES TO TIP ELEVATION SHOWN ON THE DRAWINGS. DRIVING RESISTANCE IS NOT A CRITERION. PILES SPLIT, SHATTERED, OR BROKEN IN DRIVING WILL BE REJECTED AND SHALL BE REPLACED WITH SOUND PILES AT NO ADDED COST TO THE PORT.

4. PILE REMOVAL

A. REMOVE DAMAGED AND BROKEN PILING WHICH ARE TO BE REPLACED.

B. REMOVE THE BROKEN PILE AND ITS STUB.

C. UPON REMOVAL, BROKEN PILING AND PILE STUBS BECOME THE PROPERTY OF THE CONTRACTOR.

D. PILE STUBS SHALL NOT BE PULLED WITH A CLAM BUCKET.

E. PILE STUBS SHALL NOT BE PULLED LATERALLY TO BREAK OFF AT THE MUD LINE. PILE STUBS SHALL BE PULLED IN_LINE WITH THEIR VERTICAL AXIS.

5. PILE REPLACEMENT AND ADDITION

A. PENETRATION SHALL BE AT A REASONABLY QUICK AND UNIFORM RATE TO AN AVERAGE DEPTH OF 15 FEET BELOW MUD LINE OR TO TIP ELEVATION SHOWN ON THE DRAWINGS. USE WHICHEVER METHOD PRODUCES THE GREATEST PENETRATION.

B. FRAME TO PROVIDE TIGHT CONTACT AND BE FLUSH TO SURFACE OF CHOCKS.

C. BOLT PILE IN PROPER ALIGNMENT. BOLT HOLES SHALL NOT EXCEED BOLT DIAMETER PLUS 1/16 INCH. BOLTS SHALL BE SAME DIAMETER AND SPACING AS IN EXISTING CONSTRUCTION.

D. COUNTER BORE ALL HOLES FOR BOLT HEADS THAT ARE IN THE FACE OF THE FENDER SYSTEM.1.1

6. PILE CUT-OFFS

A. FRESH HEAD PILE MINIMUM OF ONE FOOT AFTER DRIVING. PILE HEADS SHALL BE SOUND AT CUT_OFF. NO EXTENSION OF TIMBER PILES ARE ALLOWED.

B. CUT_OFF PILES TO MATCH EXISTING AND AT THE SAME ELEVATION AS ADJACENT PILES. CUT-OFFS BECOME PROPERTY OF THE CONTRACTOR.

C. TREAT PILE HEADS WITHIN SAME WORKING DAY OF CUT_OFF.

D. TREAT BORED HOLES IN PILE AND PILE HEAD AFTER CUT_OFF WITH COPPER NAPTHENATE ACCORDING TO AWPA STANDARD M4, EXCEPT AS NOTED BELOW.

E. COVER TREATED PILE HEAD WITH PILE HEAD COVERING. FOLD EDGES DOWN SIDE OF PILE 3 INCHES AND FASTEN WITH A MINIMUM OF EIGHT GALVANIZED ROOFING NAILS.

7. CLUSTERS

A. PILE CLUSTERS CONTAINING 5 OR LESS PILES SHALL BE WRAPPED WITH ¾ IN. DIAMETER WIRE CABLE IN 2 SEPARATE LOCATIONS A MINIMUM OF 6 WRAPS EACH. FASTEN EACH TURN OF CABLE TO EVERY PILE WITH WIRE STAPLES.

B. PILE CLUSTERS CONTAINING MORE THAN 5 PILES SHALL BE WRAPPED WITH ¾ IN. DIAMETER WIRE CABLE IN 2 SEPARATE LOCATIONS A MINIMUM OF 10 WRAPS EACH. FASTEN EACH TURN OF CABLE TO EVERY PILE WITH WIRE STAPLES.

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CONSULTANTS

ST. JAMES TERMINAL
PILE REPLACEMENT
ST. JAMES, MICHIGAN

OWNER

MARK	DATE	DESCRIPTION
-	3/11/16	OWNER REVIEW
1	3/22/16	INCORPORATED COMMENTS
2	4/1/16	ISSUE FOR STATE SUBMISSION

PROJECT NO:	16-4799
CAD DWG FILE:	4799PLAN.DWG
DRAWN BY:	RWB
DESIGNED BY:	RWB
CHECKED BY:	

SEAL