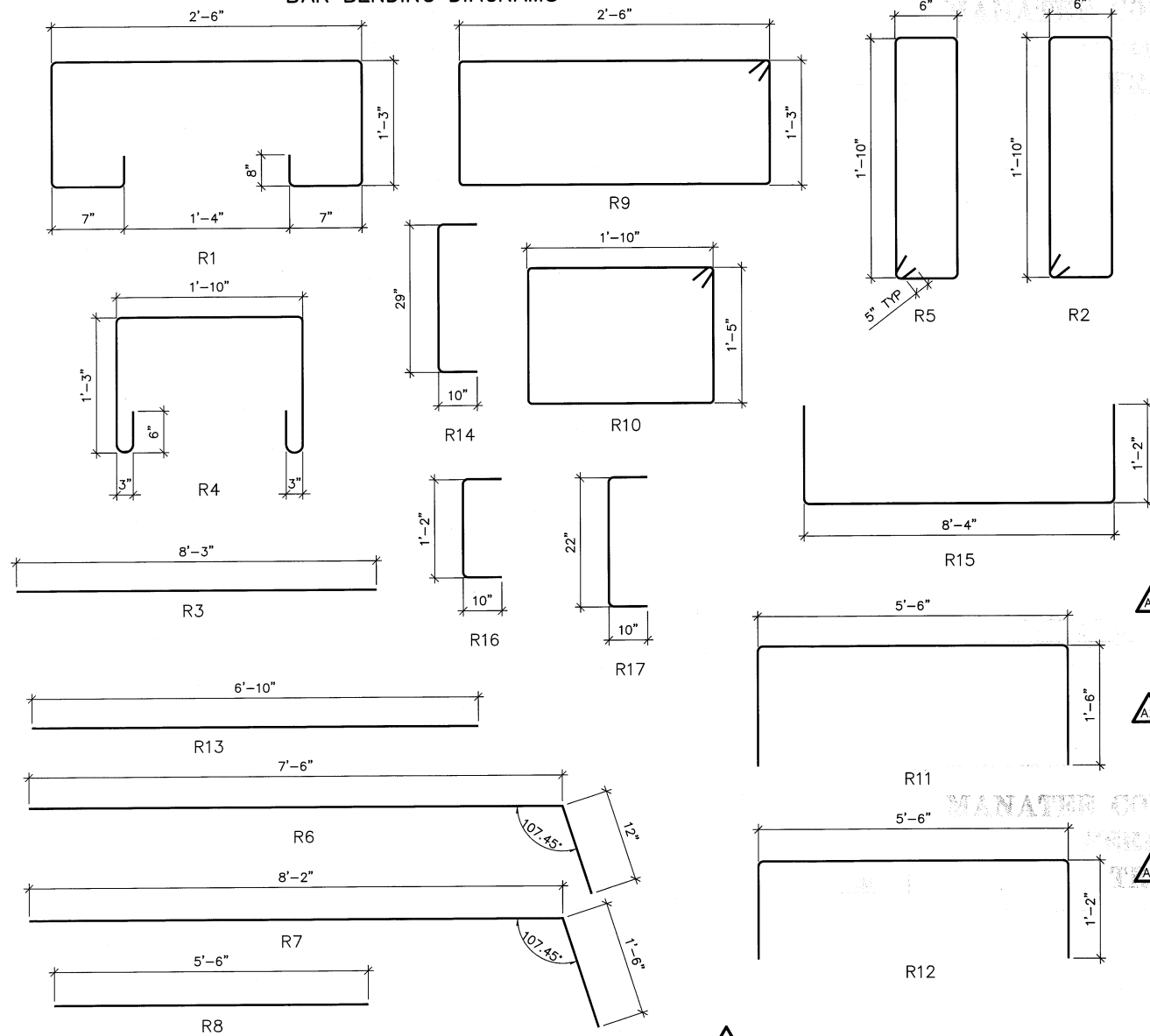


BAR BENDING DIAGRAMS



GENERAL NOTES

TIMBER PILE:

- PILES SHALL BE OF TIMBER WHICH WILL STAND THE DRIVING FOR WHICH THEY ARE INTENDED. THEY SHALL BE SOUND AND SOLID.
- TIMBER PILES SHALL MEET THE REQUIREMENTS OF ASTM D-25 FOR ROUND TIMBER TIP BEARING PILES. THE PILE SHOULD BE CLEAN PEELED AND PRESSURE TREATED IN ACCORDANCE WITH THE REQUIREMENTS OF AWP C3. PILE MOISTURE CONTENT SHALL BE KD (KILN DRIED) 25% OR LESS.
- TIMBER PILES SHALL BE ROUND WITH A BUTT DIAMETER OF ABOUT 10 INCHES, MEASURED AT A SECTION 3 FEET FROM THE END, AND A TIP DIAMETER OF ABOUT 8 INCHES.
- TREATMENT OF PILES IN SALT WATER SHALL CONFORM TO AWP UC5A, 5B, 5C & C18. CUTOFFS SHALL BE TREATED IN ACCORDANCE WITH AWP STANDARD M-4.
- TIMBER PILE PRESERVATIVE APPLICATION SHALL BE DONE WITH CCA. RETAINMENT SHALL BE A MINIMUM OF 2.50 LB/CF OF CCA OXIDES RETAINED IN ZONE 1, OUTER 0.50 INCH AND 1.5 LB/CF IN ZONE 2, OUTER 0.50 TO 2 INCHES.
- IN HANDLING OF PILES THAT HAVE BEEN TREATED WITH CCA CABLE SLINGS SHALL BE USED. MECHANICAL GRABBERS OR POINTED TOOLS SHALL NOT BE PERMITTED. ROUGH OR CARELESS HANDLING SHALL BE AVOIDED.
- THE TREATING PLANT SHALL BRAND, OR PLACE A DISTINCTIVE PERMANENT MARK, ON EACH ROUND PILE, APPROXIMATELY 6 FEET FROM THE BUTT END, SUCH THAT THE PLANT RESPONSIBLE FOR THE TREATMENT CAN BE READILY DETERMINED AT ANY TIME DURING THE SERVICE LIFE OF THE PILING.
- PILE INSTALLATION/DRIVING CRITERIA; USE A SINGLE-ACTING AIR HAMMER WITH 15,000 TO 18,000 FT-LBS ENERGY TO DRIVE THE PILES.
- USING THE ABOVE HAMMER, DRIVING CAN BE TERMINATED AFTER ACHIEVING 5 BLOWS PER FOOT FOR A MINIMUM OF TWO CONSECUTIVE FEET OF PENETRATION OR 15 BLOWS PER FOOT FOR ONE FOOT OF PENETRATION. IF MORE THAN 15 BLOWS ARE REQUIRED TO ADVANCE THE PILE SIX (6) INCHES, DRIVING SHOULD BE TERMINATED.
- THE DEPTH OF PENETRATION SHALL NOT BE LESS THAN 12 FEET BELOW THE EXISTING GROUND SURFACE. FOR HARD DRIVING THE TIP SHALL BE PROTECTED WITH A METAL SHOE.
- DRIVING CAP WITH CUSHION MATERIAL AND METAL STRAPPING AROUND THE PILE BUTT SHALL BE USED TO PROTECT THE PILE DRIVING END. WHEN BROOMING OR SPLITTING OCCURS, SUCH PILES SHALL BE CUT BACK TO SOLID WOOD BEFORE THE FINAL RESISTANCE TO PENETRATIONS IS MEASURED.
- IF THE 2.8 KIPS DESIGN LOAD CAPACITY (PILE DEPTH AND RESISTANCE) IS NOT REACHED WITH ONE PILE, THE PILE SHALL BE REMOVED AND REPLACED WITH A LONGER PILE.
- THE INSTALLATION OF THE TIMBER PILES SHOULD BE IN ACCORDANCE WITH LOCAL BUILDING CODE REQUIREMENTS AND SHOULD BE MONITORED BY A QUALIFIED GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. THE ENGINEER SHALL VERIFY AND RECORD ALL ASPECTS OF THE INSTALLATION.
- AT LEAST THREE INDICATOR PILES SHALL BE INSTALLED PRIOR TO INSTALLATION OF PRODUCTION PILES FOR THE BOARDWALK.
- THE INDICATOR PILES MAY BE INSTALLED AT PRODUCTION PILE LOCATIONS PRIOR TO ORDERING THE PRODUCTION PILES BY CONTRACTOR.
- THE INDICATOR PILES SHALL BE DRIVEN TO SUITABLE DRIVING RESISTANCE AS STATED ABOVE AND AT THE DIRECTION OF THE GEOTECHNICAL ENGINEER.
- THE INSTALLATION OF THE INDICATOR PILES SHOULD ALSO BE PERFORMED IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 455.
- THE GEOTECHNICAL ENGINEER SHOULD MONITOR THE DRIVING OF THE INDICATOR PILES AND ANALYZE THE DRIVING RECORDS, AT WHICH TIME HE MAY REQUEST RETAPPING THE TEST PILES SHORTLY AFTER INITIAL DRIVING.
- IF WHILE DRIVING THE INDICATOR AND PRODUCTION PILES, REFUSAL IS ACHIEVED WITH EMBEDMENT DEPTHS LESS THAN 12 FEET, THEN EACH PILE LOCATION MAY BE PREDRILLED (7 INCH DIAMETER HOLES) TO INSTALL THE PILES TO THE REQUIRED EMBEDMENT. THESE TECHNIQUES SHOULD BE AVOIDED AS MUCH AS POSSIBLE, SINCE THEY WILL REDUCE THE PILE CAPACITY. DO NOT PERFORM JETTING WITHOUT PRIOR APPROVAL BY THE GEOTECHNICAL ENGINEER.

- PRODUCTION PILE LENGTH: WHEN SHOWN IN THE DRAWINGS, THE LENGTHS ARE BASED ON INFORMATION AVAILABLE DURING DESIGN AND ARE APPROXIMATE ONLY. THE ENGINEER WILL DETERMINE FINAL PILE LENGTHS IN THE FIELD WHICH MAY VARY SIGNIFICANTLY FROM THE LENGTHS OR QUANTITIES SHOWN IN THE DRAWINGS.
- AUTHORIZED PILE LENGTHS: THE AUTHORIZED PILE LENGTHS ARE THE LENGTHS DETERMINED BY THE ENGINEER BASED ON ALL INFORMATION AVAILABLE BEFORE THE DRIVING OF THE PERMANENT PILES.
- PILE POSITION: ENSURE THAT THE FINAL POSITION OF THE PILE HEAD AT CUT-OFF ELEVATION IS NO MORE THAN 1 INCH LATERALLY IN THE X OR Y COORDINATE FROM THE PLAN POSITION INDICATED IN THE DRAWINGS.
- PILE AXIAL ALIGNMENT: ENSURE THAT THE AXIAL ALIGNMENT OF THE DRIVEN PILES DOES NOT DEVIATE BY MORE THAN 1/4 IN/FT FROM THE VERTICAL LINE.
- PILE HEAD ELEVATION: ENSURE THAT THE FINAL ELEVATION OF THE PILE HEAD IS NO MORE THAN 1/2 INCHES ABOVE, OR MORE THAN 1 INCH BELOW, THE ELEVATION SHOWN IN THE DRAWINGS.
- SAW OFF THE TOPS OF ALL TIMBER PILES AT THE ELEVATION INDICATED IN THE DRAWINGS. SAW OFF PILES WHICH SUPPORT TIMBER CAPS TO THE EXACT PLANE OF THE SUPERIMPOSED STRUCTURE SO THAT THEY EXACTLY FIT IT. WITHDRAW AND REPLACE BROKEN, SPLIT, OR MISPLACED PILES.
- SPLICES OR BUILD-UPS FOR TIMBER PILES WILL NOT BE PERMITTED. EXTRACT PILES DRIVEN BELOW PLAN ELEVATION AND DRIVE A LONGER PILE.
- THE PRODUCTION PILES LENGTHS SHALL BE NO LESS THAN 20 FEET TO ACCOUNT FOR VARIATIONS IN FINAL TIP DEPTH. IT SHOULD BE NOTED THAT SPLICING IS NOT ALLOWED FOR TIMBER PILES; THEREFORE, SOME CONSERVATISM IN CHOOSING PRODUCTION PILE LENGTHS IS WARRANTED.

CONCRETE

- C-1 CLASS II CONCRETE STRENGTH: 4000 PSI AT 28 DAYS WEIGHT: 145 PCF.
- C-2 BAR REINFORCEMENT: ASTM A615, GRADE 60
- C-3 MESH REINFORCEMENT: ASTM A185 AND A82
- C-4 DETAILS, WORKMANSHIP, AND GENERAL PROCEDURE: ACI 318, ACI 315, ACI 301, UNLESS OTHERWISE NOTED.
- C-5 THE MINIMUM LENGTH OF LAPS FOR SPLICES SHALL BE AS GIVEN IN THE TABLE FOR CLASS "B" LAPS.
- C-6 CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS.
- C-7 CONCRETE COVER FOR REINFORCING SHALL BE 3" MINIMUM, AND 4" ON BOTTOM OF FOOTING.

DESIGN CRITERIA

- FLOOR LIVE LOAD = 85 PSF.
- WIND LOAD
 - A. BASIC WIND SPEED = 120 MPH.
 - B. IMPORTANCE FACTOR, $I_w = 1.0$
 - C. EXPOSURE CATEGORY = C
- DESIGNED IN ACCORDANCE WITH THE FDOT STRUCTURAL DESIGN GUIDELINES.
- PILE DESIGN LOAD CAPACITY 2.8 KIPS.

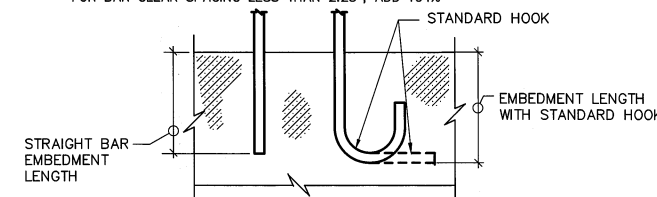
STRUCTURAL TIMBER:

- THIS SPECIFIES THE REQUIREMENTS FOR TIMBER TO BE USED AS STRUCTURAL MEMBERS IN THE BOARDWALK:
- ALL TIMBER SHALL BE MANUFACTURED AND GRADED IN ACCORDANCE WITH THE CURRENT EDITION OF THE STANDARD GRADING RULES FOR SOUTHERN PINE TIMBER, OF THE SOUTHERN PINE INSPECTION BUREAU.
- SPLIT PILE CAPS STRUCTURAL LUMBER SHALL:
 - a. MEET THE REQUIREMENTS OF LUMBER GRADE NO. 1 DENSE
 - b. HAVE MOISTURE CONTENT S-DRY (DRIED BEFORE SURFACING) 19% OR LESS.
 - c. CONFORM TO AWP UC3B & C18.
 - d. HAVE MINIMUM RETENTION OF 0.80 LB/CF OF CCA AS DETERMINED BY CORES FROM THE OUTER 0.6 INCH. (MARINE GRADE)
- FLOOR STRINGERS STRUCTURAL LUMBER SHALL:
 - a. MEET THE REQUIREMENTS OF LUMBER GRADE NO. 1
 - b. HAVE MOISTURE CONTENT S-DRY (DRIED BEFORE SURFACING) 19% OR LESS.
 - c. CONFORM TO AWP UC3A, 5B, 5C & C18.
 - d. HAVE MINIMUM RETENTION OF 0.80 LB/CF OF CCA AS DETERMINED BY CORES FROM THE OUTER 0.6 INCH. (SUBJECT TO SALTWATER SPLASH).
- POSTS STRUCTURAL LUMBER SHALL:
 - a. MEET THE REQUIREMENTS OF LUMBER GRADE SELECT STRUCTURAL. (FB=1300PSI)
 - b. HAVE MOISTURE CONTENT S-DRY (DRIED BEFORE SURFACING) 19% OR LESS.
 - c. CONFORM TO AWP UC3B & C18.
 - d. HAVE MINIMUM RETENTION OF 0.40 LB/CF OF ACQ IN THE OUTER 1 INCH ZONE. (SUBJECT TO SALTWATER SPLASH).
- RAILINGS AND DECKING STRUCTURAL LUMBER SHALL:
 - a. MEET THE REQUIREMENTS OF LUMBER GRADE NO. 1
 - b. HAVE MOISTURE CONTENT S-DRY (DRIED BEFORE SURFACING) 19% OR LESS.
 - c. CONFORM TO AWP UC3B & C18.
 - d. HAVE MINIMUM RETENTION OF 0.40 LB/CF OF ACQ IN THE OUTER 1 INCH ZONE. (SUBJECT TO SALTWATER SPLASH).
- ALL CONNECTION HARDWARE, NAILS, BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL 304 WHICH MAY NOT BE READILY AVAILABLE. CONTRACTOR SHALL ACCOUNT FOR ADDITIONAL TIME REQUIRED FOR MANUFACTURING AND DELIVERY.
- DECKING SCREWS SHALL BE 1/4", 3-1/2" LONG STAINLESS STEEL 304.

REINFORCING LAP SPLICE & EMBEDMENT LENGTH

BAR SIZE	MINIMUM LAP LENGTH (INCHES)				MIN. EMBEDMENT LGTH. (IN.)		
	TOP BARS		OTHER BARS		STRAIGHT BARS		WITH STD. HOOK
	A	B	A	B	TOP BARS	OTHER BARS	
SLABS & WALLS WITH 2" + COVER							
#3	16	21	12	16	16	12	6
#4	16	21	12	16	16	12	7
#5	20	25	15	19	20	15	9
#6	24	30	18	23	24	18	10
#7	33	43	25	33	33	25	12
#8	38	49	29	37	38	29	14
#9	49	63	37	48	49	37	15
#10	60	78	46	60	60	46	17
#11	75	97	57	74	75	57	19
SLABS & WALLS WITH < 2" COVER							
#3	16	21	12	16	16	12	8
#4	16	21	12	16	16	12	10
#5	20	25	15	19	20	15	12
#6	24	30	18	23	24	18	15
#7	38	49	29	37	38	29	17
#8	47	62	36	47	47	36	19
#9	58	76	44	58	58	44	22
#10	71	91	54	70	71	54	25
#11	85	110	65	84	85	65	27
BEAMS & COLUMNS WITH 3.75" CLEAR SPACING*							
#3	16	21	12	16	16	12	6
#4	16	21	12	16	16	12	7
#5	20	25	15	19	20	15	9
#6	24	30	18	23	24	18	10
#7	33	43	25	33	33	25	12
#8	39	51	30	39	39	30	14
#9	50	64	38	49	50	38	15
#10	60	78	46	60	60	46	17
#11	72	94	55	72	72	55	19

* FOR BAR CLEAR SPACING LESS THAN 3.75", ADD 46%
 FOR BAR CLEAR SPACING LESS THAN 2.25", ADD 104%



QUANTITIES SCHEDULE

FDOT ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	400-2-5 CONCRETE, CLASS I	CY	4
2	415-1-5 REINFORCING STEEL	LB	600
3	455-2 TIMBER PILING (10" DIAMETER)	LF	784
4	470-1 TIMBER - 2x4 (Bracing/Blocking)	MB	0.748
	TIMBER - 2x6 (Railing/Decking)	MB	2.888
	TIMBER - 2x12 (Joists/Pile Caps)	MB	2.782
	TIMBER - 4x4 (Posts)	MB	0.628
5	530-3-3 RIPRAP - RUBBLE	TN	1.5
6	550-10-212 FENCING (9 GAUGE GALV. WIRE)	LF	570
7	0120-1 REGULAR EXCAVATION	CY	50
8	MC1 SIMPSON HU 210 (OR EQUAL)	EA	120
9	MC2 SIMPSON DTT2 (OR EQUAL)	EA	140
10	MC3 SIMPSON LTT19 (OR EQUAL)	EA	4
11	MC4 SIMPSON ABE44 (OR EQUAL)	EA	6
12	MC5 SIMPSON H4 (OR EQUAL)	EA	12
13	MC6 1/2" SS304 HILTI HIT-HY150 ADHESIVE ANCHORS	EA	10
14	MC7 FASTENING HARDWARE REMAINDER (BOLTS, SCREWS, NAILS...)	LB	130

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQ'D	LENGTH
R1	4	3	7'-6"
R2	4	12	6'-0"
R3	5	4	8'-3"
R4	4	2	5'-10"
R5	4	10	6'-0"
R6	5	2	8'-6"
R7	5	3	9'-8"
R8	5	8	5'-6"
R9	4	14	8'-10"
R10	4	7	7'-10"
R11	5	4	8'-6"
R12	5	4	8'-2"
R13	5	5	6'-10"
R14	5	6	4'-1"
R15	5	4	10'-8"
R16	5	12	2'-10"
R17	5	6	3'-6"

MALCOLM PIRNIE
 LICENSE
 11/17/11
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER
 No. 11744

NO.	BY	DATE	REVISIONS	REMARKS
AZ	JS	12/13/12	ADDENDUM NO. 2	

MANATEE COUNTY PUBLIC WORKS DEPARTMENT
PERICO BAYOU PARKING AREA
TRAIL ACCESS BOARDWALK

STRUCTURAL
GENERAL NOTES

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 MALCOLM PIRNIE, INC.
 DATE: JULY 2012
 S1
 CAD REF. No. 0132007_S-1

User: dfrerem User: dfrerem Spec: PIRNIE STANDAERD File: V:\CAD\PRG\0132 - MANATEE\007\Struct\0132007_S-1.DWG Scale: 1:1 Date: 07/23/2012 Time: 15:24 Layout: Blank