

ROBINSON PRESERVE OBSERVATION TOWER
SARASOTA BAY NATIONAL ESTUARY PROGRAM
MANATEE COUNTY, FLORIDA

STRUCTURAL NOTES

GENERAL

THESE STRUCTURAL NOTES ARE SPECIFIC TO THIS PROJECT AND SHALL NOT BE DUPLICATED ON ANOTHER PROJECT WITHOUT THE WRITTEN PERMISSION OF THE STRUCTURAL ENGINEER.

THE PROFESSIONAL ENGINEER WHOSE SEAL APPEARS ON THESE DRAWINGS IS THE PROJECT STRUCTURAL ENGINEER-OF-RECORD (SER). NO PARTY MAY COMPLETE, REVISE, DELETE FROM OR ADD TO THESE CONSTRUCTION DOCUMENTS WITHOUT THE WRITTEN PERMISSION OF THE SER.

CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD AND TAKE ALL NECESSARY FIELD MEASUREMENTS.

CONTRACTOR SHALL TAKE SUCH ACTION AS NECESSARY TO PREVENT MOVEMENT OF OR DAMAGE TO ADJACENT STRUCTURES DURING CONSTRUCTION.

THE STRUCTURE SHOWN ON THESE DRAWINGS IS STRUCTURALLY SOUND ONLY IN ITS COMPLETED FORM. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING TO STABILIZE THE STRUCTURE DURING CONSTRUCTION.

SCOPE OF STRUCTURAL ENGINEERING SERVICES

THE STRUCTURAL ENGINEER HAS PERFORMED THE STRUCTURAL DESIGN AND PREPARED THE STRUCTURAL WORKING DRAWINGS FOR THIS PROJECT. "CONSTRUCTION REVIEW" SERVICES ARE NOT INCLUDED IN THE CONTRACT. THE CONSTRUCTION MUST BE PERFORMED IN STRICT ACCORDANCE WITH THE STRUCTURAL DRAWINGS. ANY DEVIATION FROM THE DRAWINGS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. ERRORS AND/OR OMISSIONS FOUND ON THE STRUCTURAL DRAWINGS MUST BE BROUGHT TO THE STRUCTURAL ENGINEER'S ATTENTION IMMEDIATELY.

THE STRUCTURAL ENGINEER IS RESPONSIBLE FOR THE DESIGN OF THE PRIMARY STRUCTURAL SYSTEM, EXCEPT FOR THE COMPONENTS NOTED ABOVE. RESPONSIBILITY FOR ANY SECONDARY STRUCTURAL AND NON-STRUCTURAL SYSTEMS NOT SHOWN ON THE STRUCTURAL PLANS RESTS WITH SOMEONE OTHER THAN THE STRUCTURAL ENGINEER.

THE STRUCTURAL ENGINEER HAS NOT DONE A SUBSURFACE INVESTIGATION. THE STRUCTURAL DESIGN IS BASED UPON ASSUMED ALLOWABLE MINIMUM PILE CAPACITIES AS SHOWN IN THE "TIMBER PILING" STRUCTURAL NOTES. THESE ALLOWABLE CAPACITIES MUST BE VERIFIED BY THE OWNER. IF PROBLEMS ARE ENCOUNTERED, A SOILS ENGINEER SHOULD BE RETAINED BY THE OWNER TO EVALUATE THE CONDITIONS AND RECOMMEND THE APPROPRIATE FOUNDATION SYSTEM.

THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR, AND WILL NOT HAVE CONTROL OF, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE CONSTRUCTION WORK; NOR WILL HE BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE CONSTRUCTION WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

FIELD MEASUREMENTS AND THE VERIFICATION OF FIELD DIMENSIONS ARE NOT PART OF THE STRUCTURAL ENGINEER'S RESPONSIBILITY. THE CONTRACTOR MUST CHECK ALL (ASSUMED) EXISTING CONDITIONS SHOWN ON THESE DRAWINGS FOR ACCURACY AND NOTIFY THE STRUCTURAL ENGINEER OF ANY DISCREPANCIES.

DESIGN LOADS

DEAD LOAD	20 PSF
LIVE LOAD	100 PSF UNIFORMLY DISTRIBUTED
WIND LOAD	130 MPH

THE OWNER MUST VERIFY THAT THE DESIGN LOADS SHOWN ARE ADEQUATE FOR THE INTENDED USE.

THE STRUCTURE IS NOT DESIGNED FOR HURRICANE SURGE TIDES.

TIMBER PILING

ALL PILING SHALL BE SOUTHERN PINE TIMBER PILING COMPLYING WITH ASTM STANDARD D25, STANDARD SPECIFICATIONS FOR ROUND TIMBER PILES.

MINIMUM STRUCTURAL PROPERTIES U.N.O.:

ALLOWABLE BENDING STRESS (Fb):	2400 PSI
MODULUS OF ELASTICITY (E):	1500000 PSI
ALLOWABLE COMPRESSIVE STRESS (Fc):	1200 PSI
ALLOWABLE SHEAR STRESS (Fv):	110 PSI

CORNER PILING MINIMUM CAPACITIES SHALL BE 20 TONS (40,000 LB) EACH COMPRESSION AND 10 TONS (20,000LB) EACH TENSION. CORNER PILES SHALL BE DRIVEN TO A MINIMUM EMBEDMENT DEPTH OF 25 FEET OR UNTIL REFUSAL.

OTHER PILING SHALL HAVE A CAPACITY OF 10 TONS (20,000 LB) EACH.

DRIVE ALL PILING WITH VIBRATORY DRIVING HAMMERS OR STEAM OR AIR DRIVING HAMMERS.

STRUCTURAL STEEL & MISCELLANEOUS METAL

ALL STRUCTURAL FASTENERS, ANGLES, BRACKETS AND LARGE BOLTS, NUTS & WASHERS TO BE HOT DIP GALVANIZED STEEL.

SMALL FASTENERS, PICKET SCREWS, DECK ATTACHMENT SCREWS AND STRAPS TO BE 300 SERIES STAINLESS STEEL.

SOLID WOOD FRAMING

ALL SOLID WOOD FRAMING SHALL BE SOUTHERN PINE GRADED IN ACCORDANCE WITH SPIB RULES. ALL PIECES SHALL BEAR THE APPROPRIATE GRADE MARK.

MEMBERS SHALL HAVE THE FOLLOWING MINIMUM STRUCTURAL PROPERTIES:

	GRADE	Fb	Fv	E
STRUCTURAL FRAMING:	#1	1250 PSI	175 PSI	1700000 PSI
DECKING:	#2	1200 PSI	175 PSI	1600000 PSI
OTHER FRAMING:	#1	(DESIGN VALUES VARY BY SIZE)		

ALL MEMBERS SHALL BE FRAMED, ANCHORED, TIED AND BRACED IN ACCORDANCE WITH GOOD CONSTRUCTION PRACTICE AND APPLICABLE CODES.

WOOD DECK

SIZE: 2x8 SOLID S4S No 2 AT WALKWAYS AND PLATFORMS
SPECIES: SOUTHERN YELLOW PINE
LAY-UP: EDGE TO EDGE

MINIMUM STRUCTURAL PROPERTIES:

	GRADE	Fb	Fv	E
	#2	1200 PSI	175 PSI	1600000 PSI

EACH PIECE OF DECKING TO BE INSTALLED BY FASTENING AS INDICATED IN PATTERN SHOWN ON DRAWING S-4.

TREATMENT

MEMBERS SHALL BE PRESSURE TREATED WITH CHROMATED COPPER ARSENATE (CCA) TYPE C TO THE FOLLOWING RETENTION LEVELS:

SUPERSTRUCTURE:	.60 CCA
PILING & GROUND CONTACT:	2.50 CCA

ALL TREATMENT SHALL BE DONE IN ACCORDANCE WITH THE LATEST AWPA STANDARDS APPLICABLE TO THE TYPE OF MEMBER BEING TREATED. PROVIDE A CERTIFICATE OF TREATMENT FOR ALL WOOD MATERIALS INCORPORATED INTO THE STRUCTURE. MATERIALS SHALL BE AIR DRIED TO A MAXIMUM MOISTURE CONTENT OF 19% AFTER TREATMENT AND PRIOR TO INSTALLATION, IF PRACTICAL.



FLORIDA COA: 8210

BRIDGE BUILDERS USA

5942 GEORGIA HIGHWAY
FRANKLIN, NORTH CAROLINA 28734
800-874-9403

PROJECT NO. 547

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SARASOTA BAY NATIONAL ESTUARY PROGRAM
MANATEE COUNTY, FLORIDA

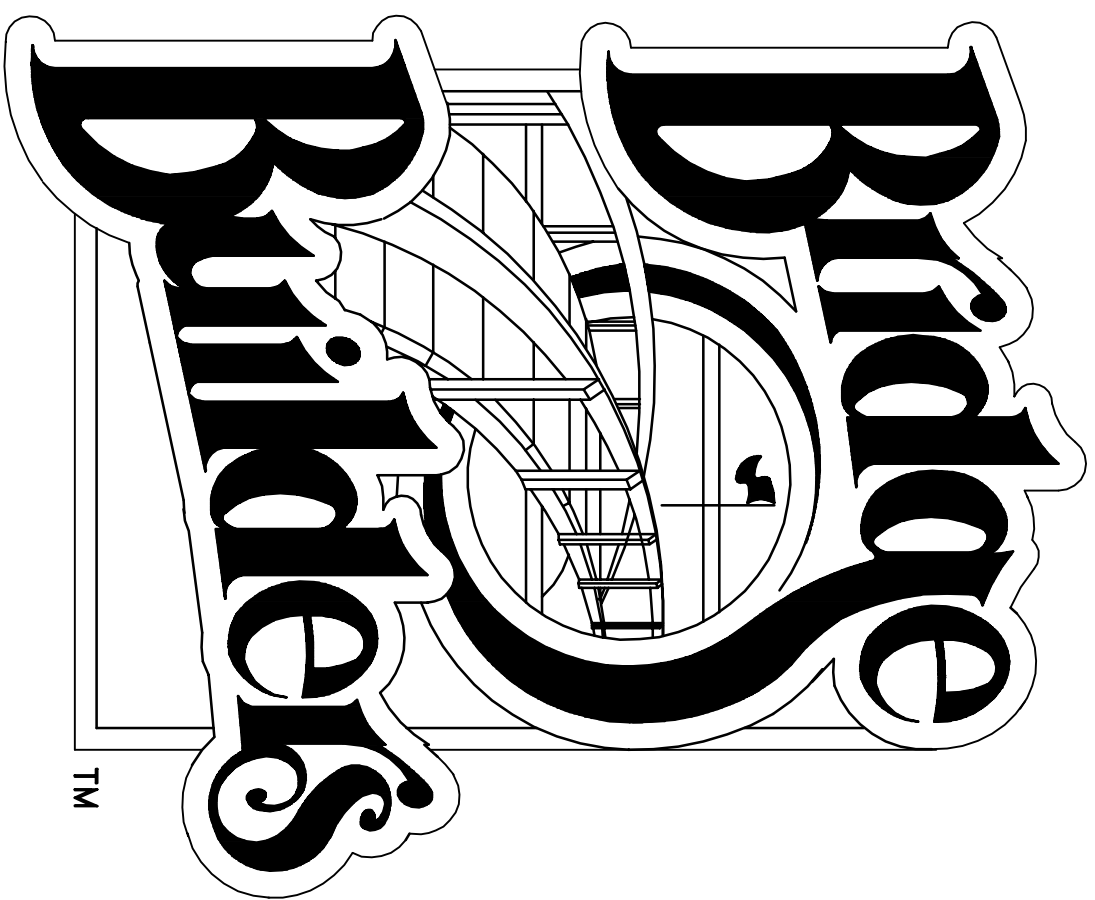
BUL-HED CORPORATION
4401 C.R. 640 WEST
BARTOW, FL 33830
(863) 804-0044

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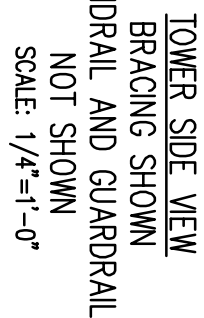
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PROJECT NO. 547



REAR ELEVATION
BRACING SHOWN
HANDRAIL AND GUARDRAIL
NOT SHOWN
SCALE: 1/4"=1'-0"

FRONT ELEVATION
BRACING SHOWN
HANDRAIL AND GUARDRAIL
NOT SHOWN
SCALE: 1/4"=1'-0"

TOWER SIDE VIEW
BRACING NOT SHOWN
PLATFORM GUARDRAIL SHOWN
SCALE: 1/4"=1'-0"

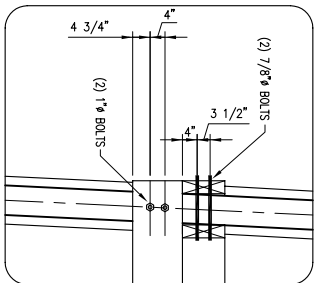
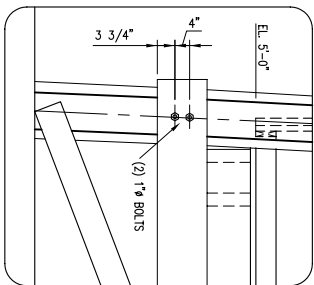
DESIGN NOTES

1. OCCUPANCY: LESS THAN FIFTY PERSONS
2. WIND LOAD: 130 MPH
3. STAR AND PLATFORM LOADS: 100 PSF
4. MAIN PILING: 20 TON MIN. DOWN AND 10TON MIN. UPLIFT – AUX PILING TO TON MIN. DOWN
5. BUILDING CODE: FLORIDA STATE BUILDING CODE, COASTAL LOADS

ROBINSON PRESERVE OBSERVATION TOWER

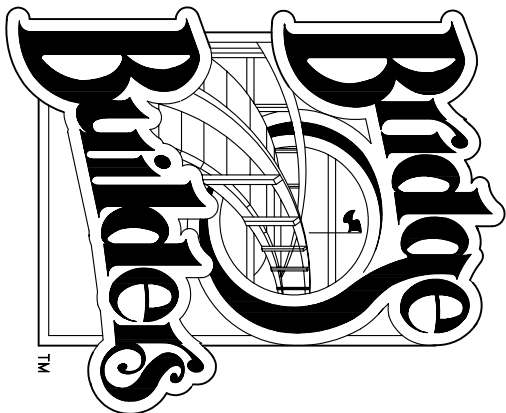
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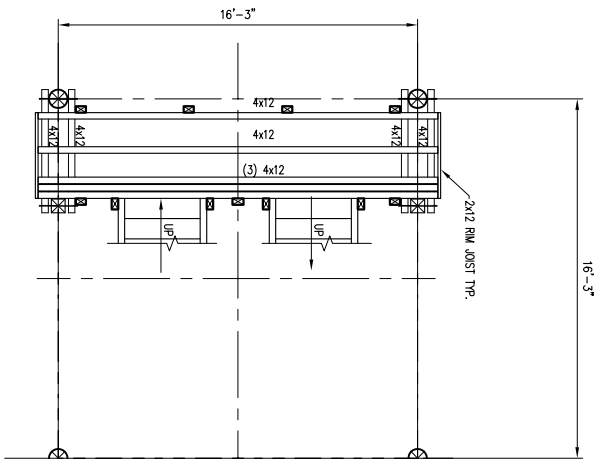


SECTION TYP. AT LEVELS
S-2 5', 15', 25', & 35'
SCALE: 1/2" = 1'-0"

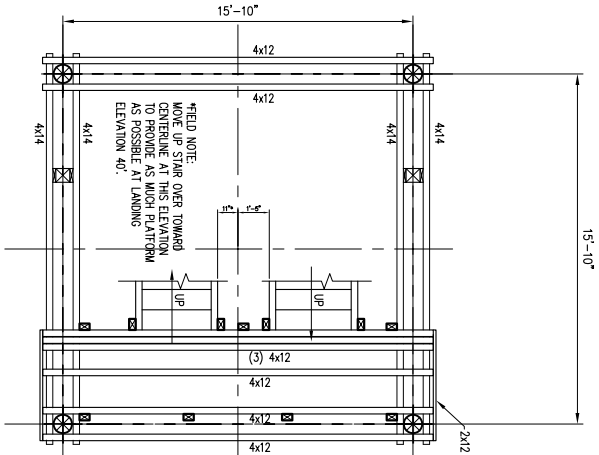
SECTION TYP. AT LEVELS
S-2 5', 15', 25', & 35'
SCALE: 1/2" = 1'-0"



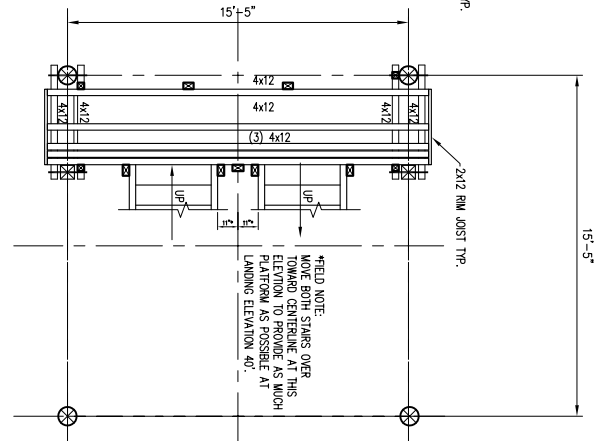
FLORIDA COA: 8210



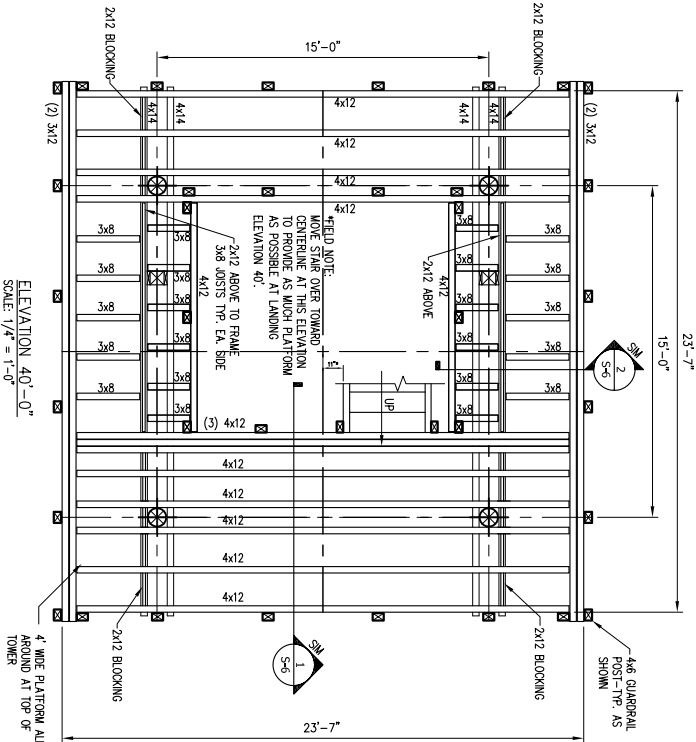
ELEVATION 25'-0"
SCALE: 1/4" = 1'-0"



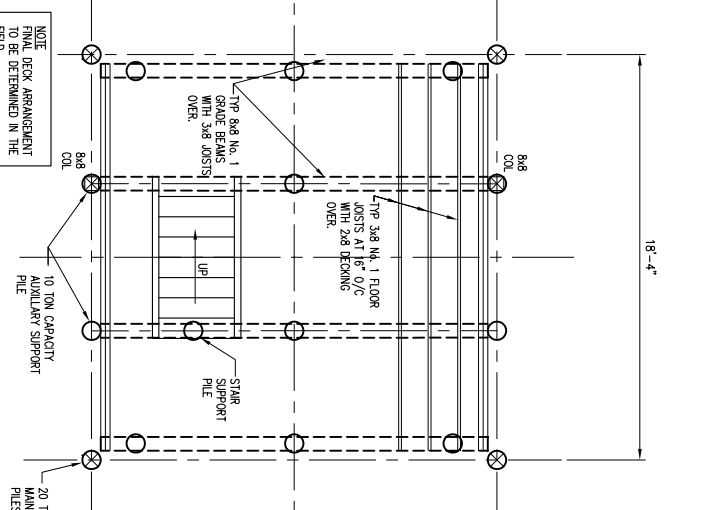
ELEVATION 30'-0"
SCALE: 1/4" = 1'-0"



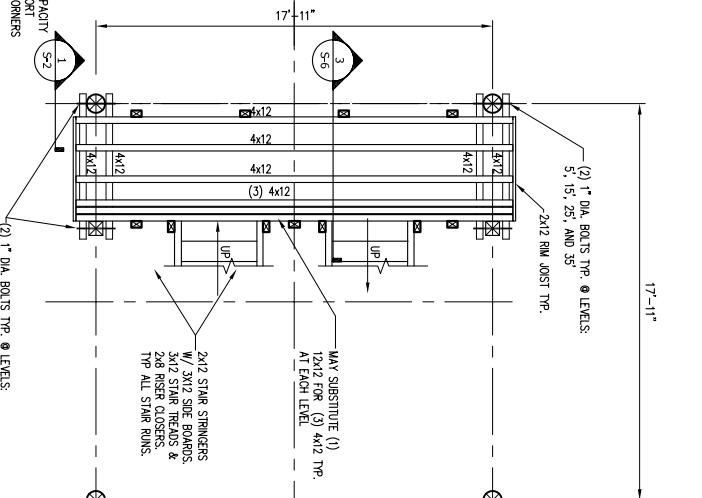
ELEVATION 35'-0"
SCALE: 1/4" = 1'-0"



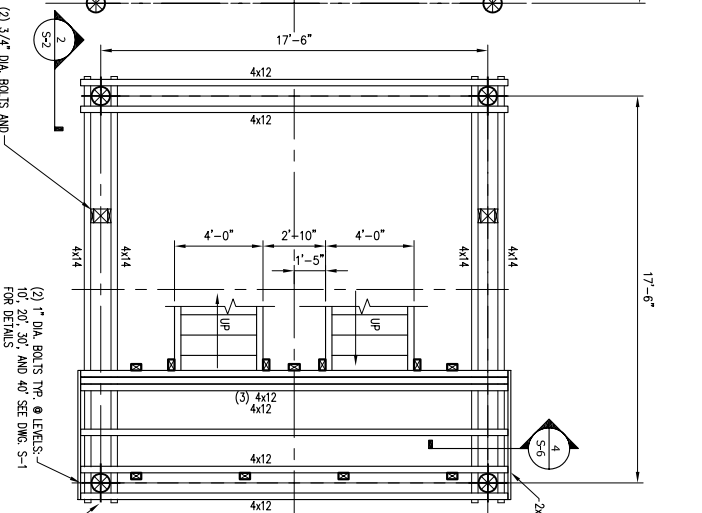
ELEVATION 40'-0"
SCALE: 1/4" = 1'-0"



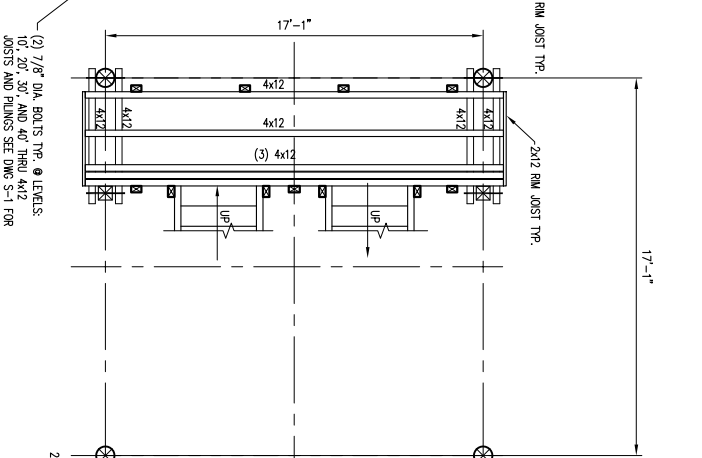
ELEVATION 0'-0" BOTTOM LEVEL
BRACING NOT SHOWN
SCALE: 1/4" = 1'-0"



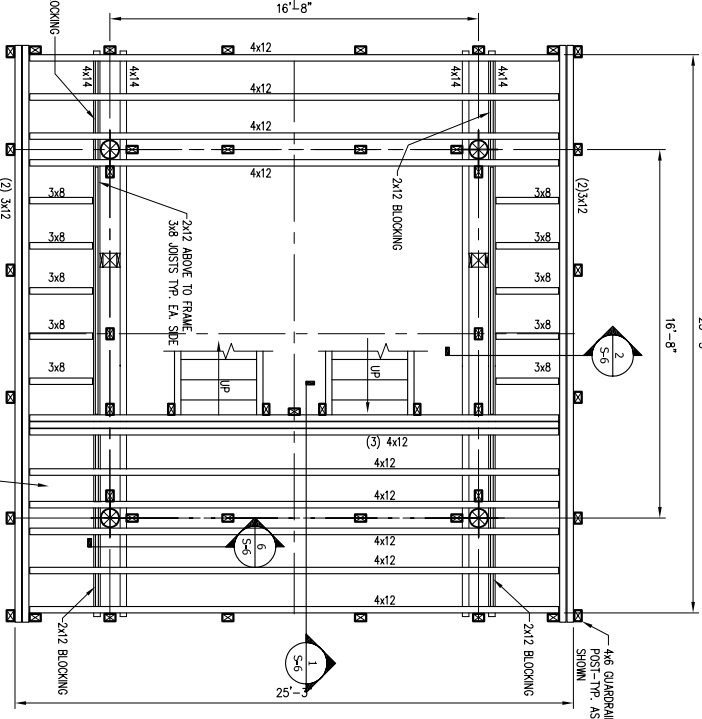
ELEVATION 5'-0"
SCALE: 1/4" = 1'-0"



ELEVATION 10'-0"
SCALE: 1/4" = 1'-0"



ELEVATION 15'-0"
SCALE: 1/4" = 1'-0"



ELEVATION 20'-0"
SCALE: 1/4" = 1'-0"

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GRADE ELEVATION TO BE DETERMINED BY OWNER IN FIELD. ELEVATION TO BE ABOVE MAXIMUM NORMAL HIGH TIDE. STEP FROM GRADE TO LOWER PLATFORM NOT TO EXCEED 7".

PICKETS AND INTERMEDIATE SUPPORTS NOT SHOWN FOR CLARITY. SEE DRAWING S-2 FOR ALL GUARDRAIL SUPPORTS AND LOCATIONS. SEE DETAILS ON DRAWING S-5 FOR PICKET SIZES AND ATTACHMENT

TOWER FRONT ELEVATION
WITH BRACING AND GUARDRAIL
SCALE: 1/4" = 1'-0"

TOWER STAIR ELEVATION
WITH BRACING AND
GUARDRAIL REMOVED
SCALE: 1/4" = 1'-0"

ROBINSON PRESERVE OBSERVATION TOWER

SARASOTA BAY NATIONAL ESTUARY PROGRAM
MANATEE COUNTY, FLORIDA

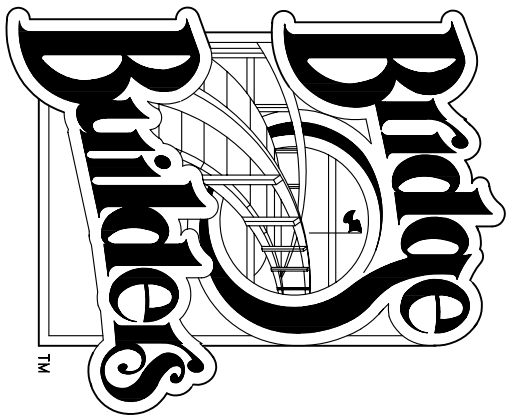
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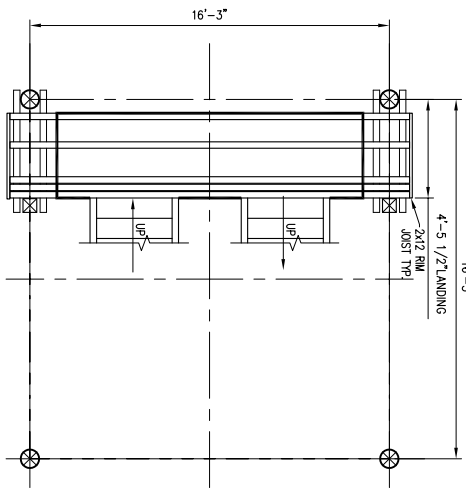
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S-3

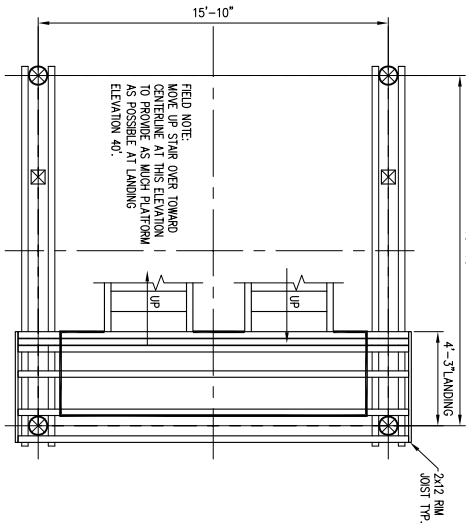
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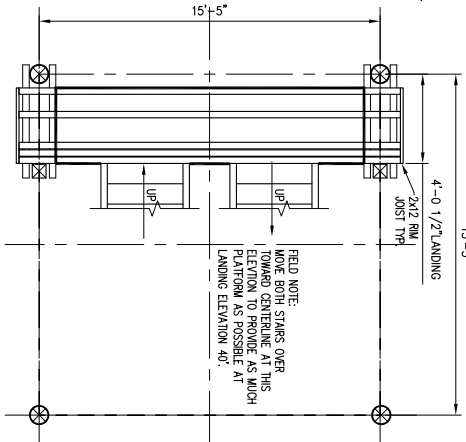
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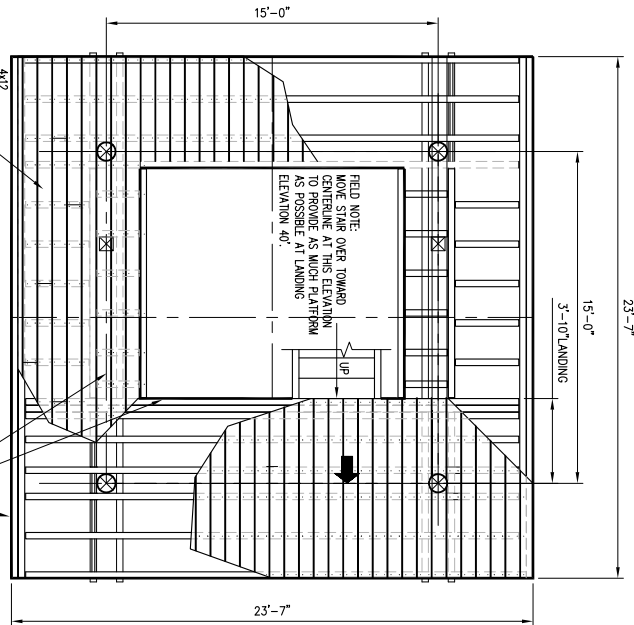
ELEVATION 25'-0"
SCALE: 1/4"=1'-0"



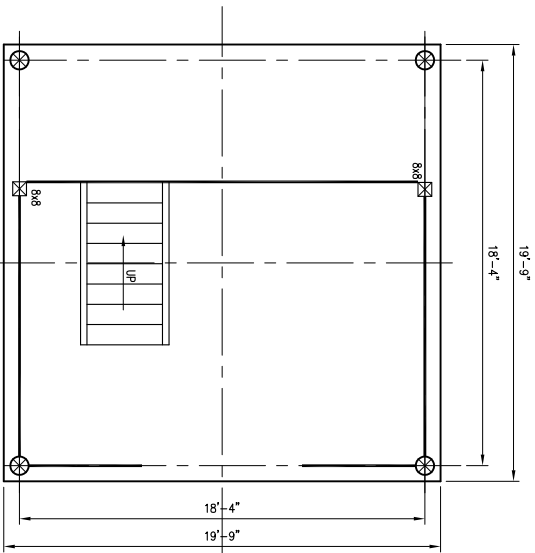
ELEVATION 30'-0"
SCALE: 1/4"=1'-0"



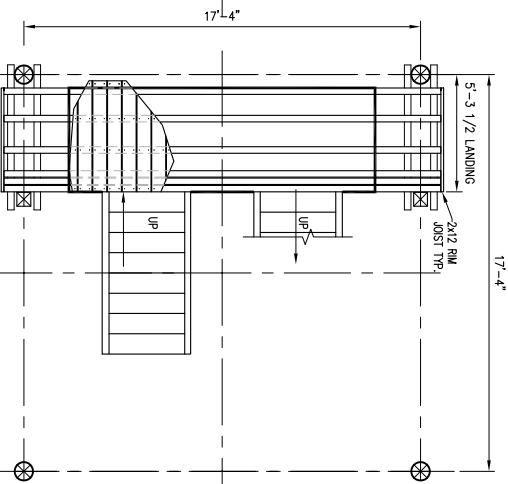
ELEVATION 35'-0"
SCALE: 1/4"=1'-0"



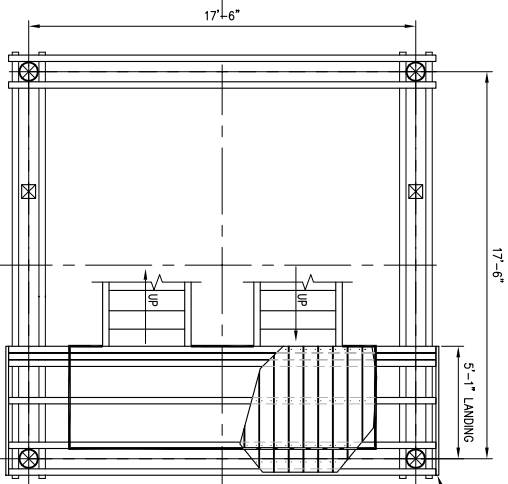
ELEVATION 40'-0"
SCALE: 1/4"=1'-0"



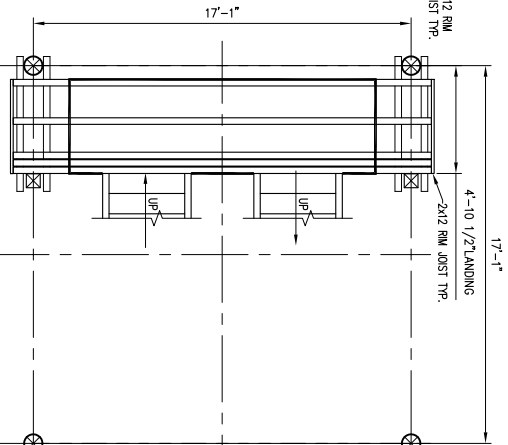
ELEVATION 0'-0" BOTTOM LEVEL
BRACING NOT SHOWN
SCALE: 1/4"=1'-0"



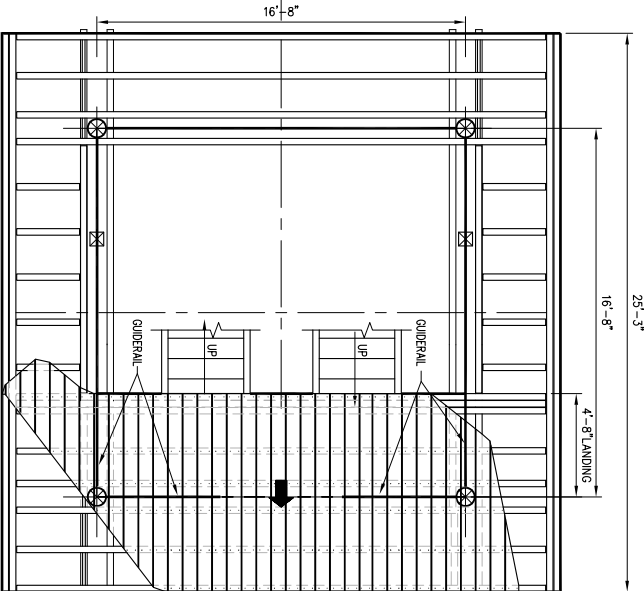
ELEVATION 5'-0"
SCALE: 1/4"=1'-0"



ELEVATION 10'-0"
SCALE: 1/4"=1'-0"



ELEVATION 15'-0"
SCALE: 1/4"=1'-0"



ELEVATION 20'-0"
SCALE: 1/4"=1'-0"

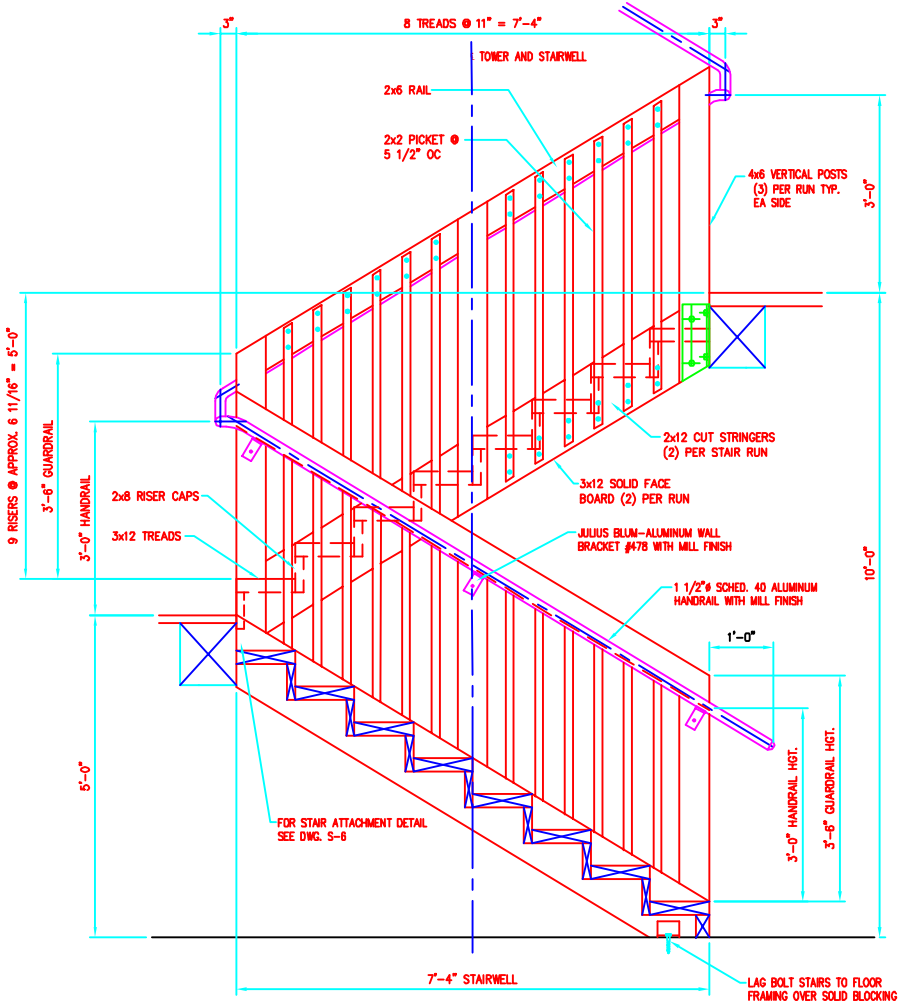
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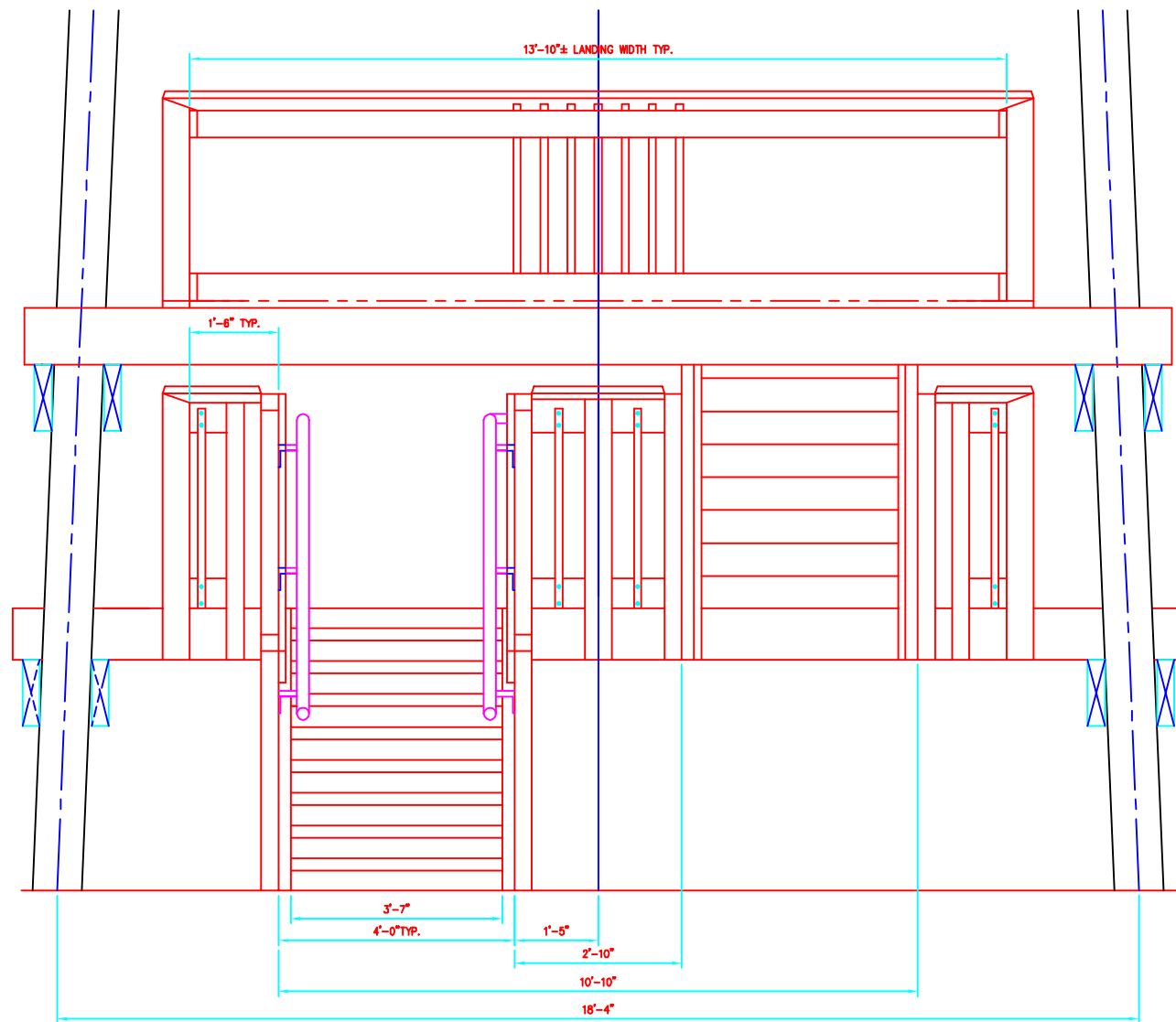
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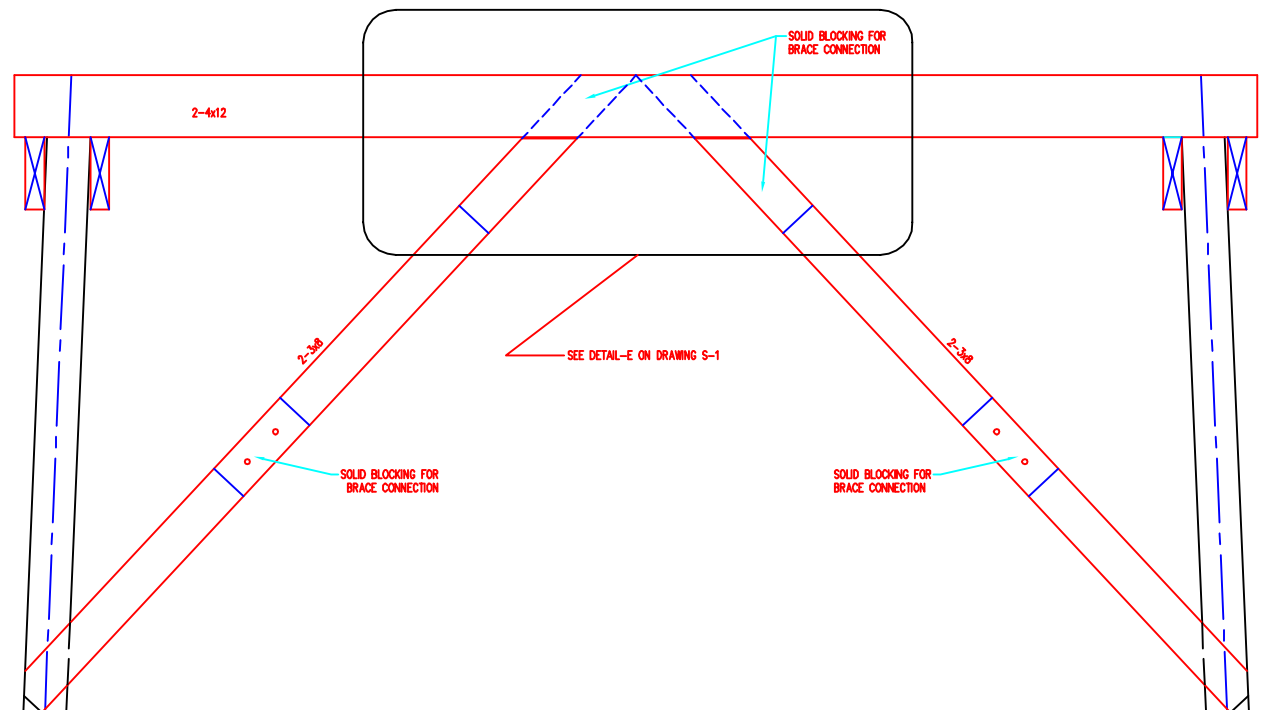
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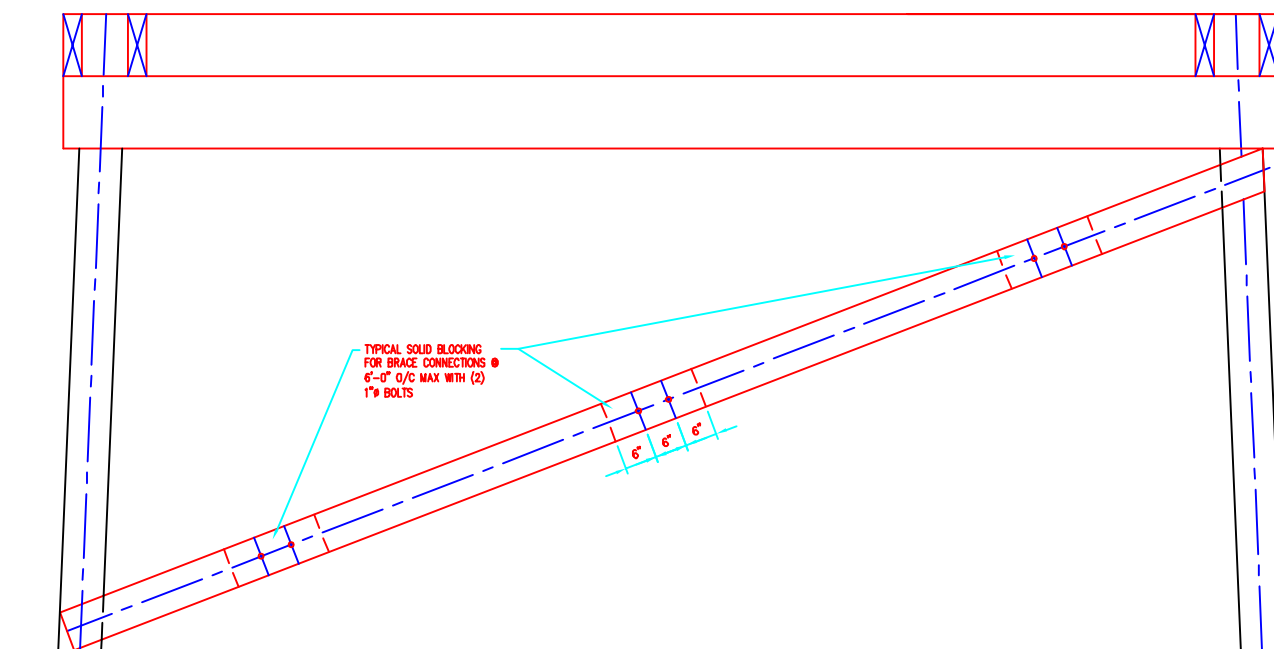
STAIR DETAIL
SCALE: 3/4"=1'-0"



STAIR DETAIL
SCALE: 3/4"=1'-0"



BRACING FOR FRONT AND REAR ELEVATIONS
SCALE: 3/4"=1'-0"



BRACING FOR SIDE ELEVATIONS
SCALE: 3/4"=1'-0"



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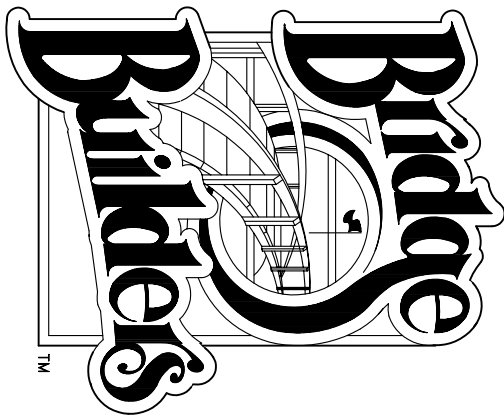
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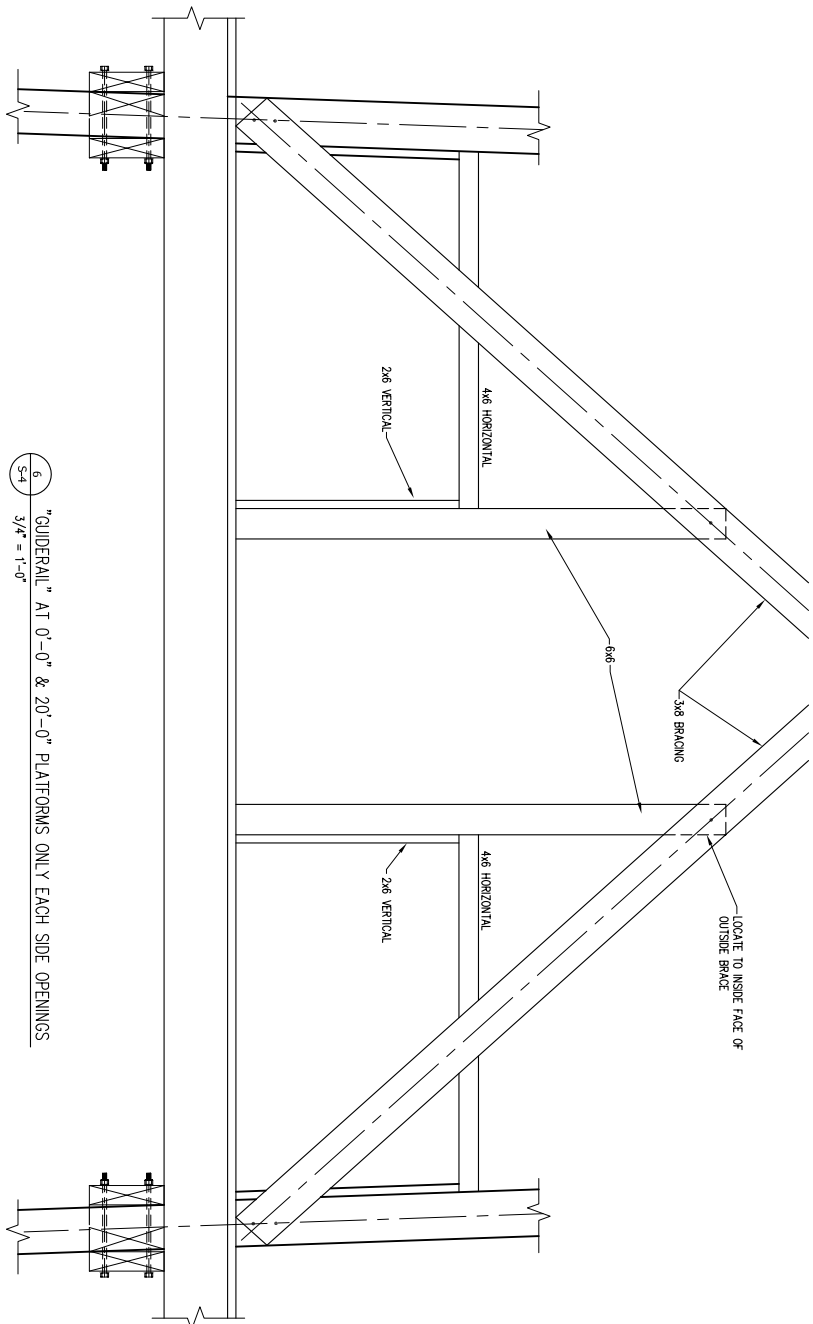
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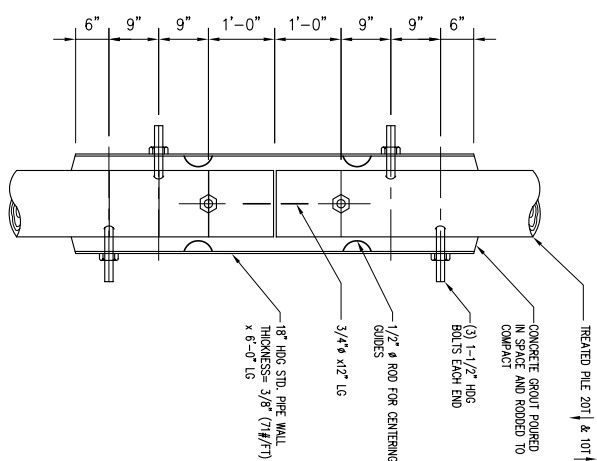
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PEA #2007-085



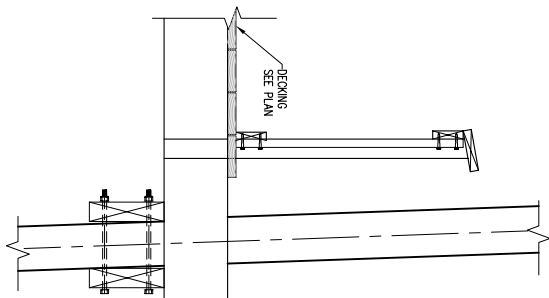
FLORIDA COA: 8210



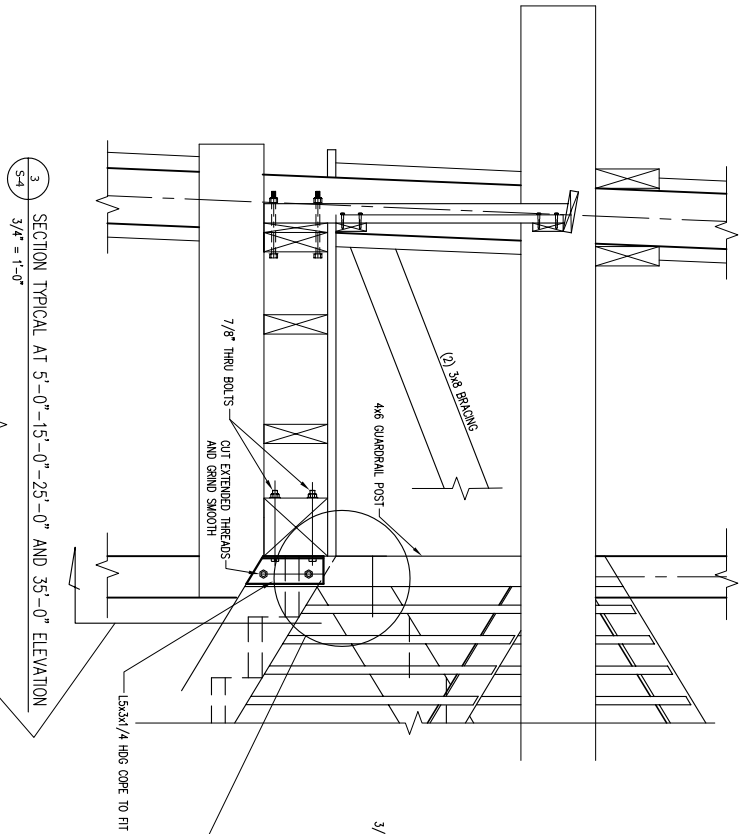
6 "GUIDEWAY" AT 0'-0" & 20'-0" PLATFORMS ONLY EACH SIDE OPENINGS
S-4 3/4" = 1'-0"



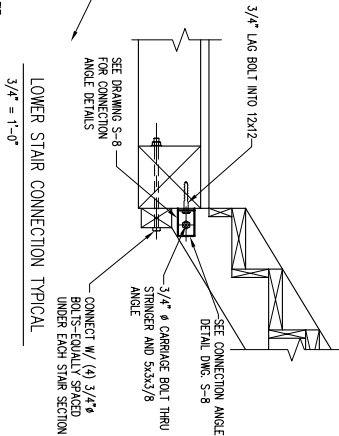
5 DETAIL TYPICAL PILE SLEEVE AT OUTSIDE PILES ONLY
S-4 3/4" = 1'-0"



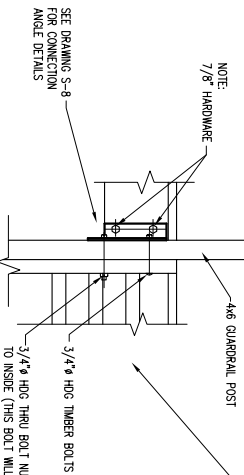
4 SECTION TYPICAL AT 10'-0" AND 30'-0" ELEVATION
S-4 3/4" = 1'-0"



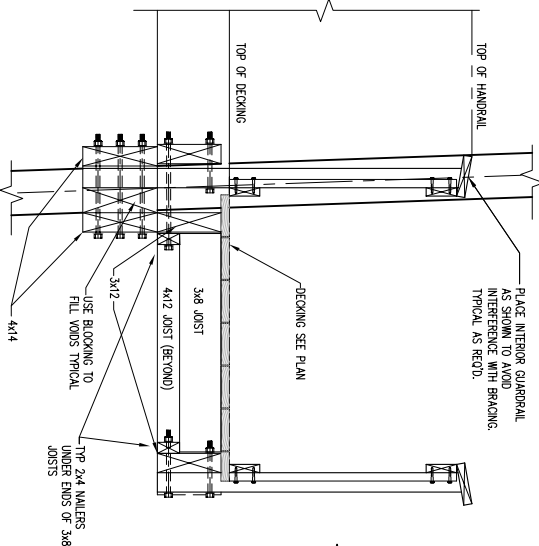
3 SECTION TYPICAL AT 5'-0"-15'-0"-25'-0" AND 35'-0" ELEVATION
S-4 3/4" = 1'-0"



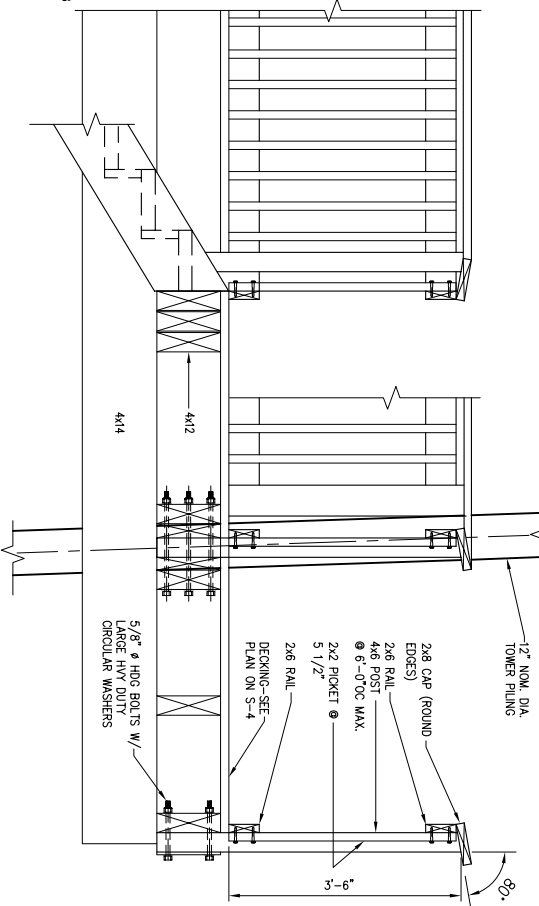
LOWER STAIR CONNECTION TYPICAL
3/4" = 1'-0"



UPPER STAIR CONNECTION TYPICAL
3/4" = 1'-0"



2 SECTION TYPICAL AT 20'-0" AND 40'-0" ELEVATION
S-4 3/4" = 1'-0"
SIMILAR AT EL. 40'-0"



1 SECTION TYPICAL AT 20'-0" AND 40'-0" ELEVATION
S-4 3/4" = 1'-0"

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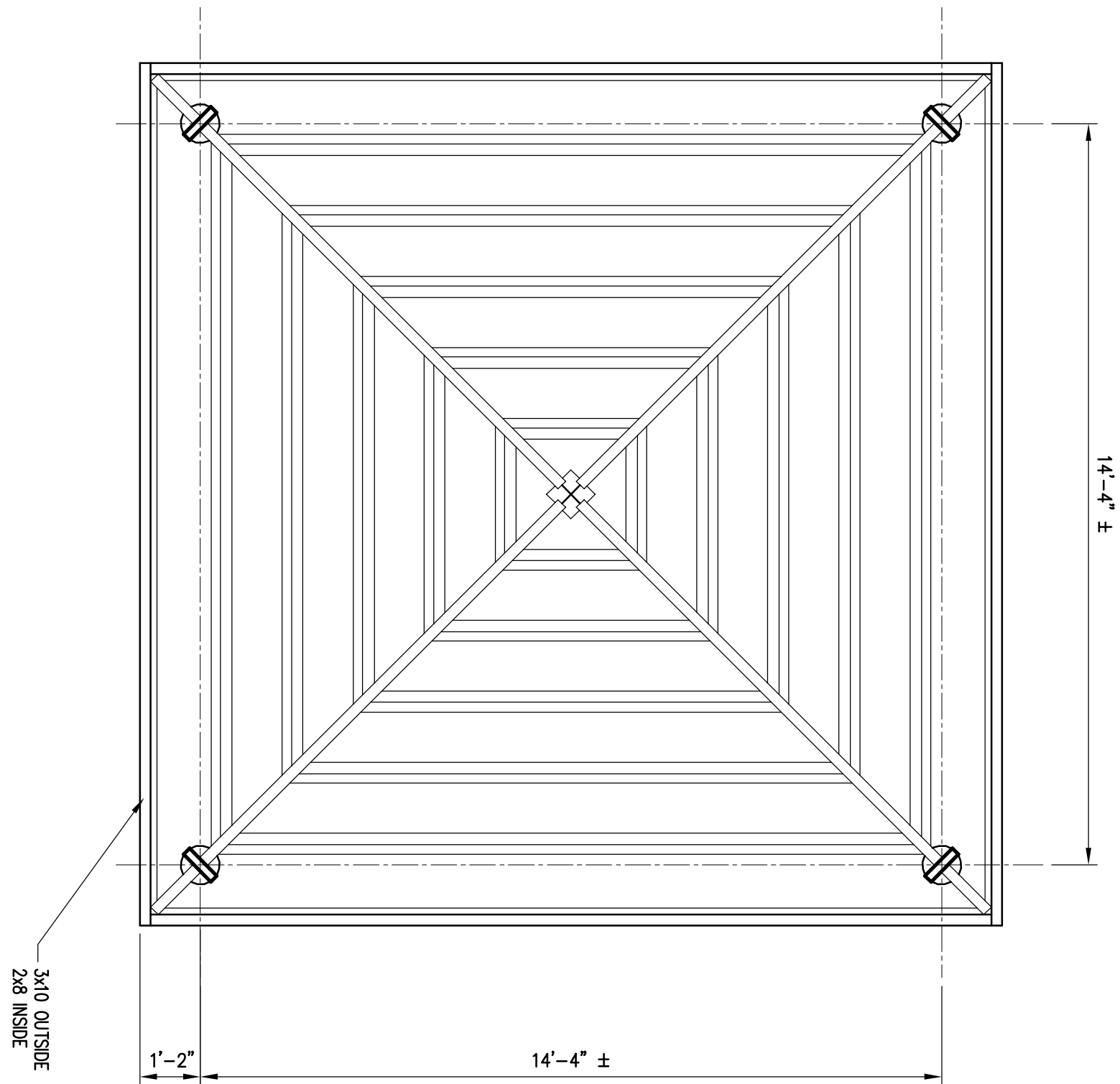
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MANATEE COUNTY, FLORIDA

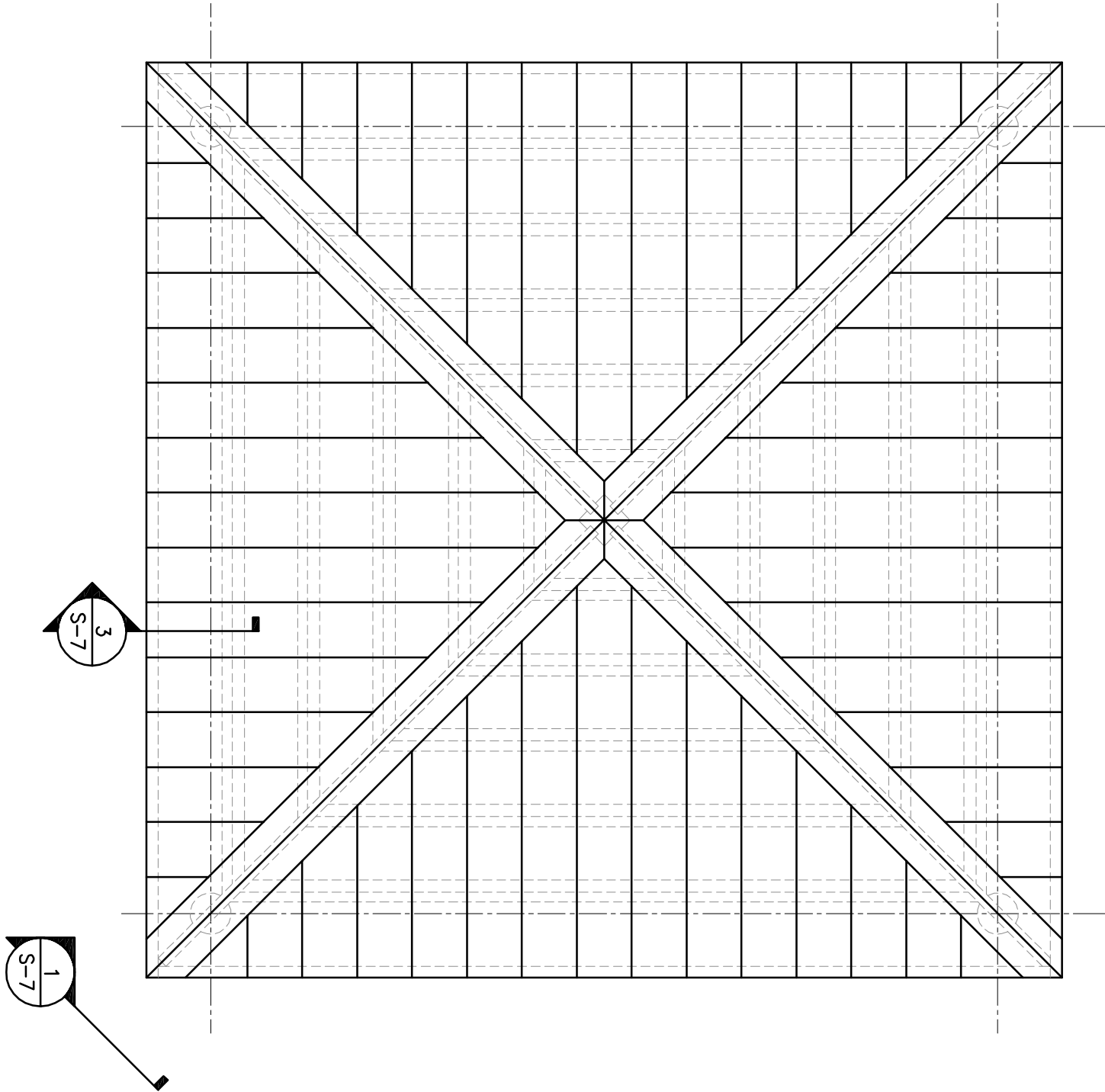
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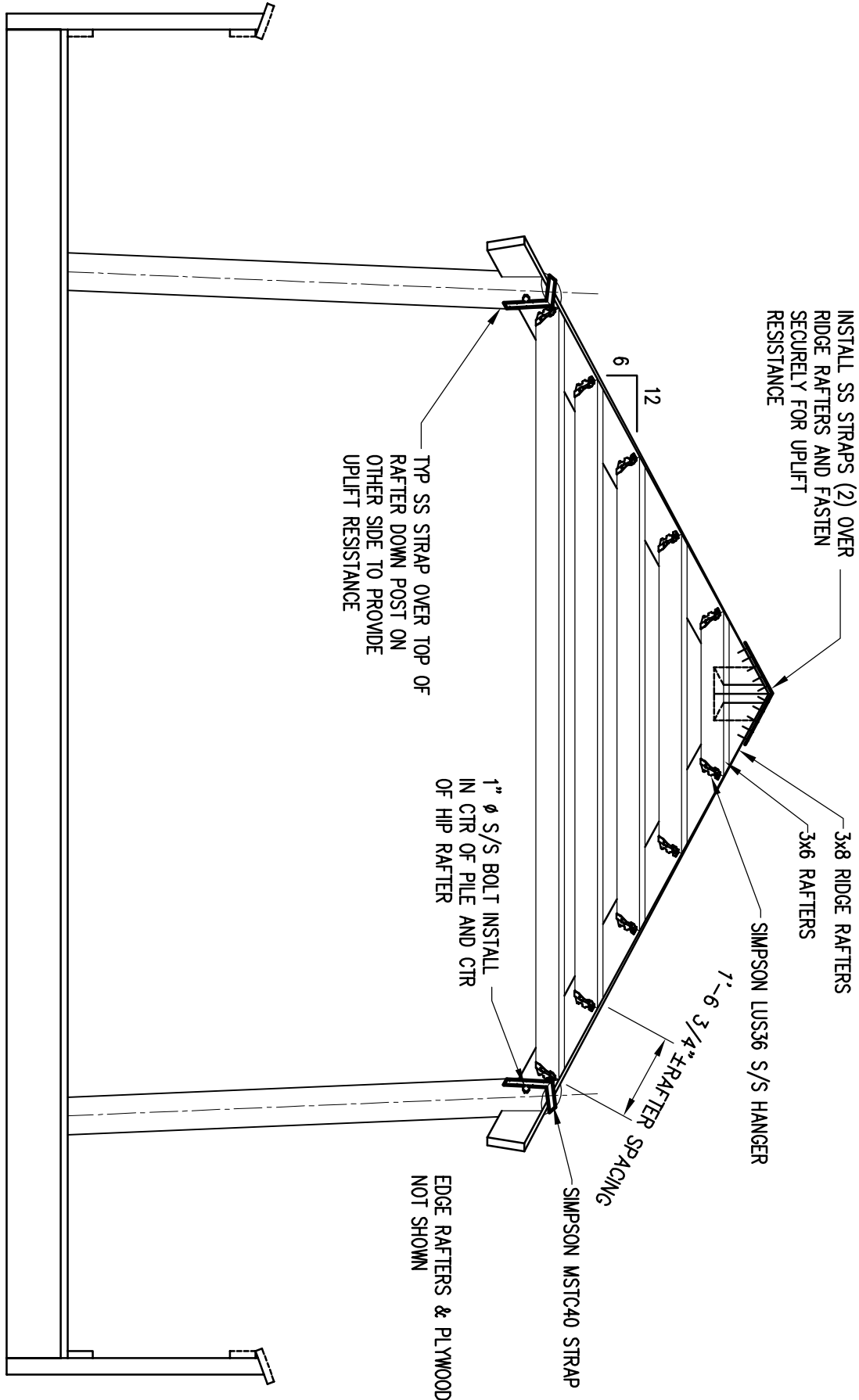
FLA #2007-065



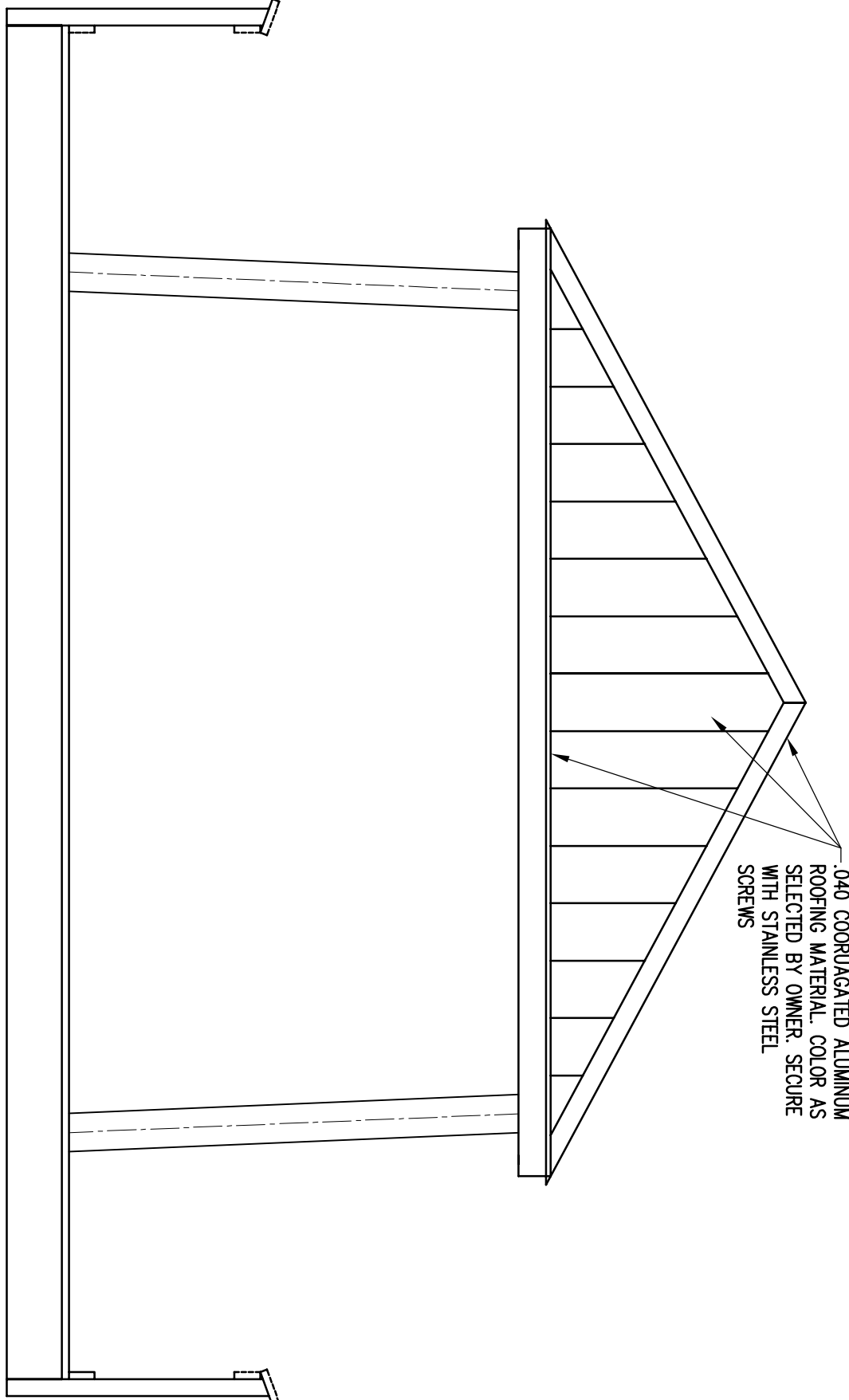
ROOF FRAMING PLAN
SCALE: 3/8" = 1'-0"



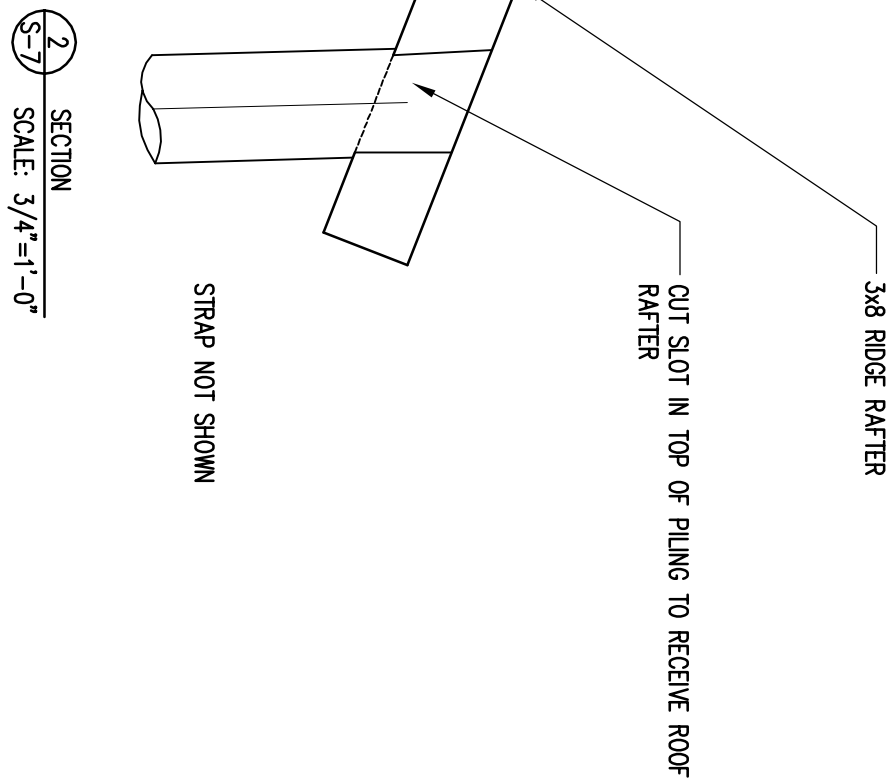
ROOF PLAN SHOWING ROOFING MATERIAL
SCALE: 3/8" = 1'-0"



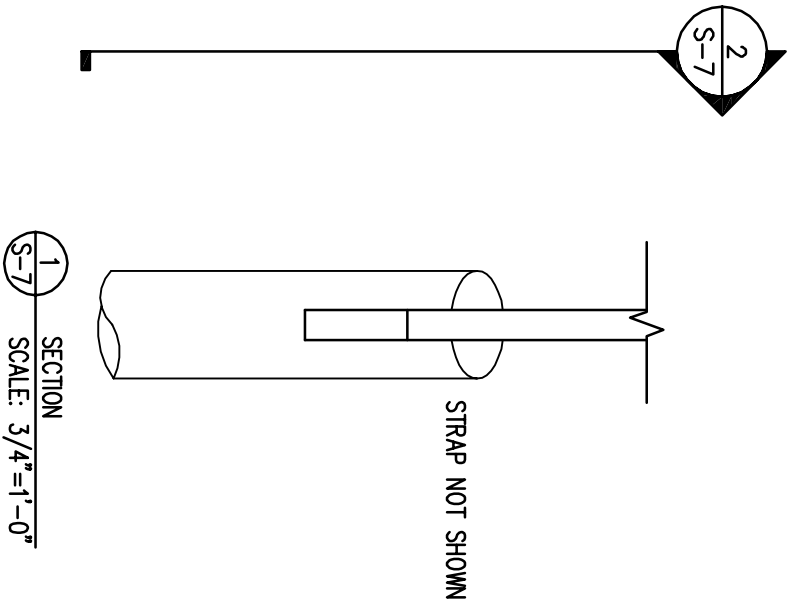
ROOF FRAMING ELEVATION
SCALE: 3/8" = 1'-0"



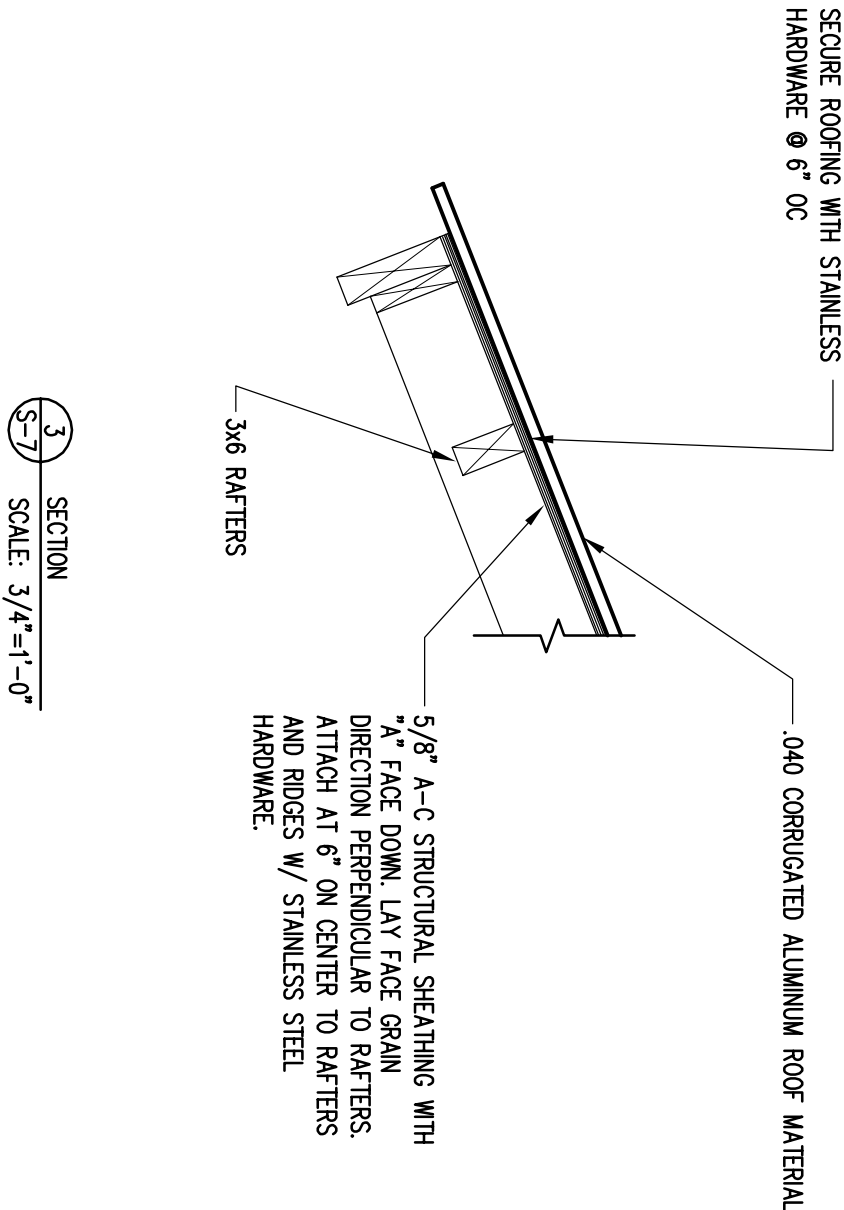
ROOF ELEVATION
SCALE: 3/8" = 1'-0"



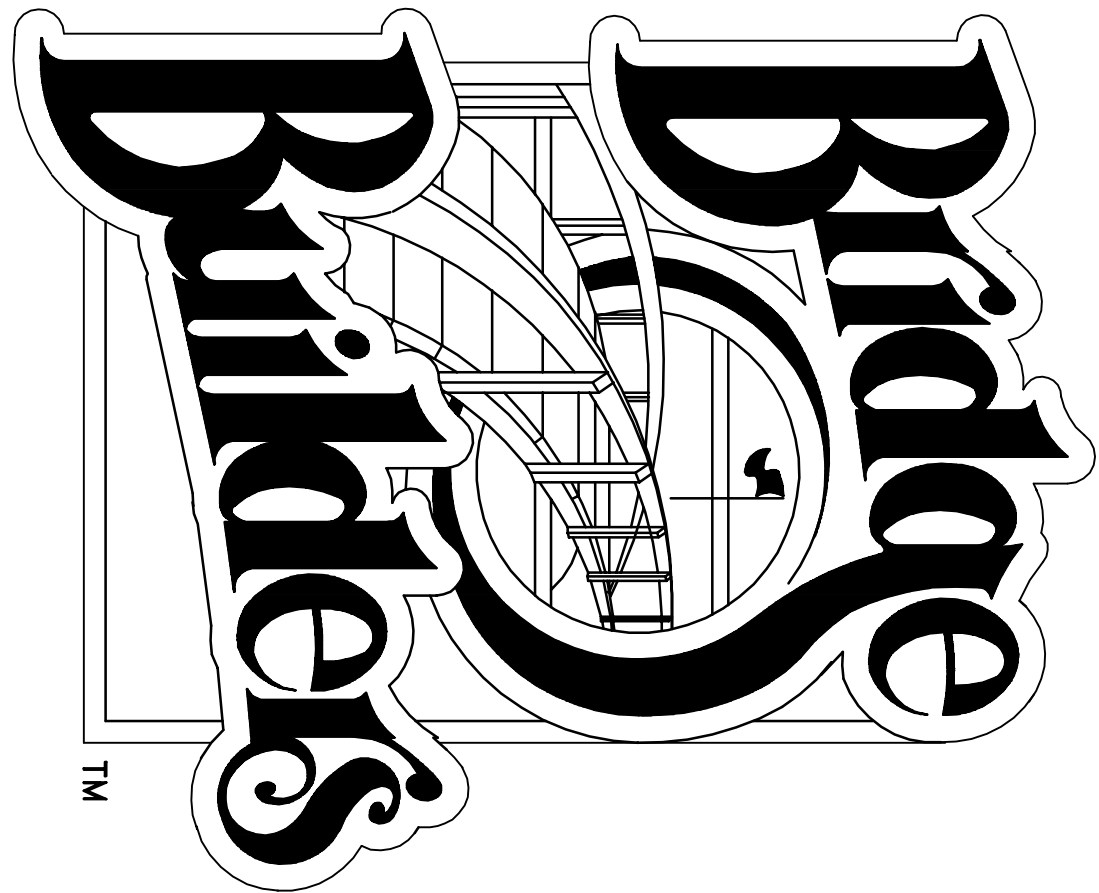
SECTION S-1
SCALE: 3/4" = 1'-0"



SECTION S-2
SCALE: 3/4" = 1'-0"



SECTION S-3
SCALE: 3/4" = 1'-0"



FLORIDA COA: 8210

ROBINSON PRESERVE OBSERVATION TOWER

SARASOTA BAY NATIONAL ESTUARY PROGRAM
MANATEE COUNTY, FLORIDA

BUL-HED CORPORATION
4401 C.R. 640 WEST
BARTOW, FL 33830
(863) 804-0044

BRIDGE BUILDERS USA

5942 GEORGIA HIGHWAY
FRANKLIN, NORTH CAROLINA 28734
800-874-9403

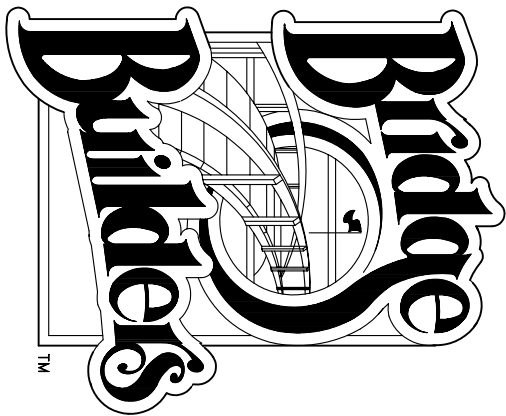
PROJECT NO. 547

DATE: 2/14/07
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S-7

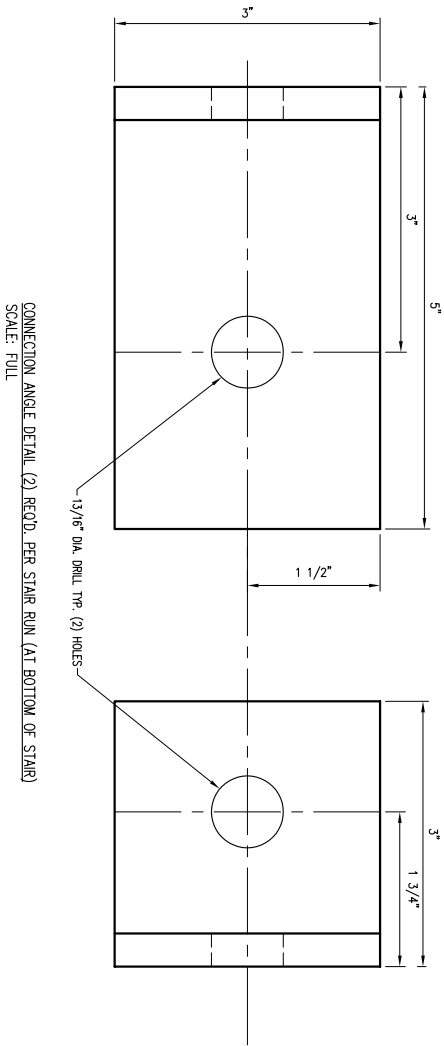
PEA #2007-065



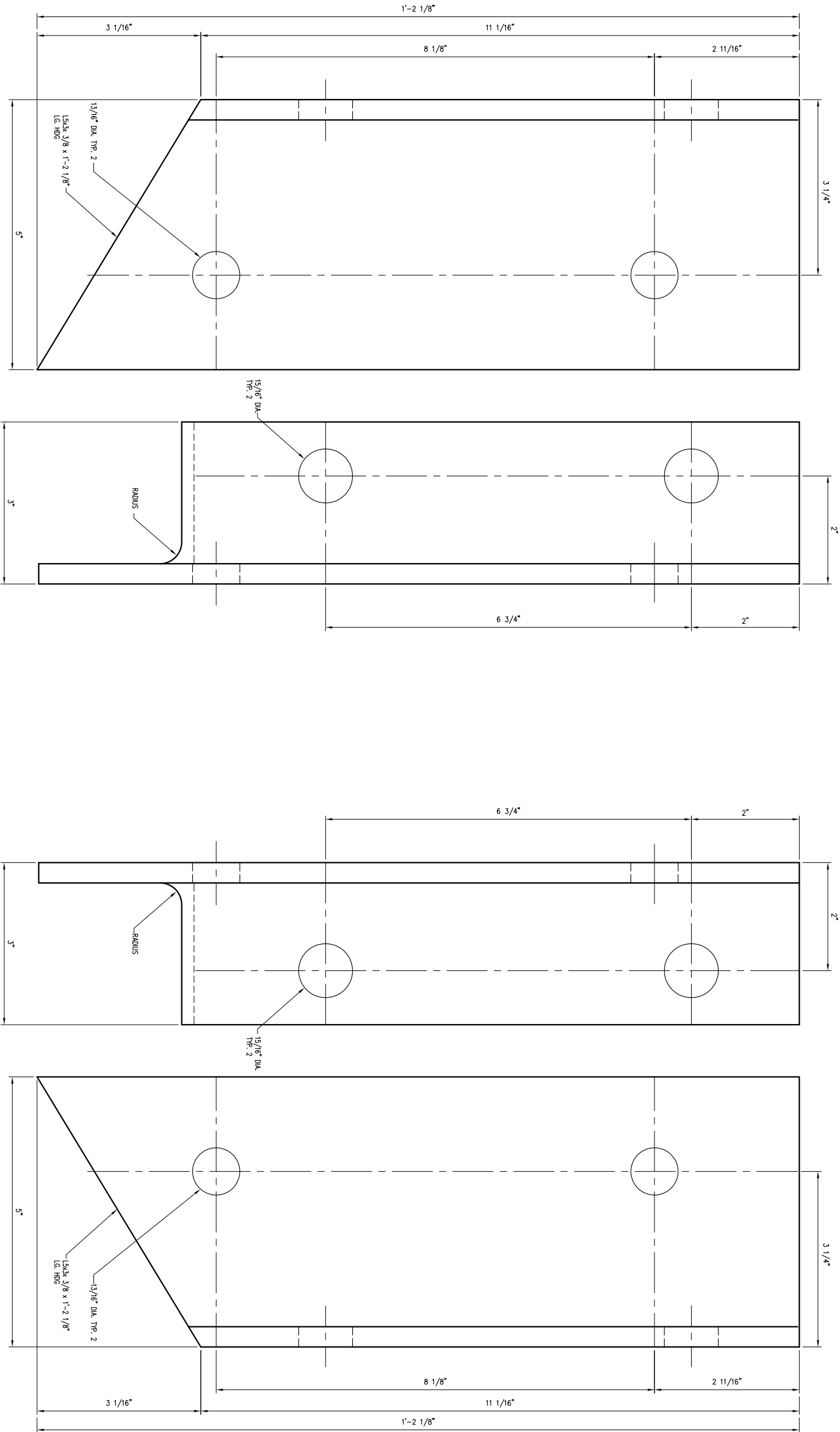
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800-874-9403

PROJECT NO. 547



CONNECTION ANGLE DETAIL (2) RECD. PER STAR RUN (AT BOTTOM OF STAIR)
SCALE: FULL



CONNECTION ANGLE DETAIL (1) RECD. AS SHOWN PER STAR RUN (AT TOP OF STAIR)
SCALE: FULL

CONNECTION ANGLE DETAIL (1) RECD. AS SHOWN PER STAR RUN (AT TOP OF STAIR)
SCALE: FULL

FLORIDA COA: 8210

- NOTES:
1. STEEL: A36 MIN.
 2. DEBURR & ROUND ALL SHARP CORNERS OR DRILLED OR CUT ENDS.
 3. HOT DIP GALVANIZE TO A123 OR A153 TO 2 OZ. PER SQ. FT. MINIMUM PER SIDE.

ROBINSON PRESERVE OBSERVATION TOWER

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