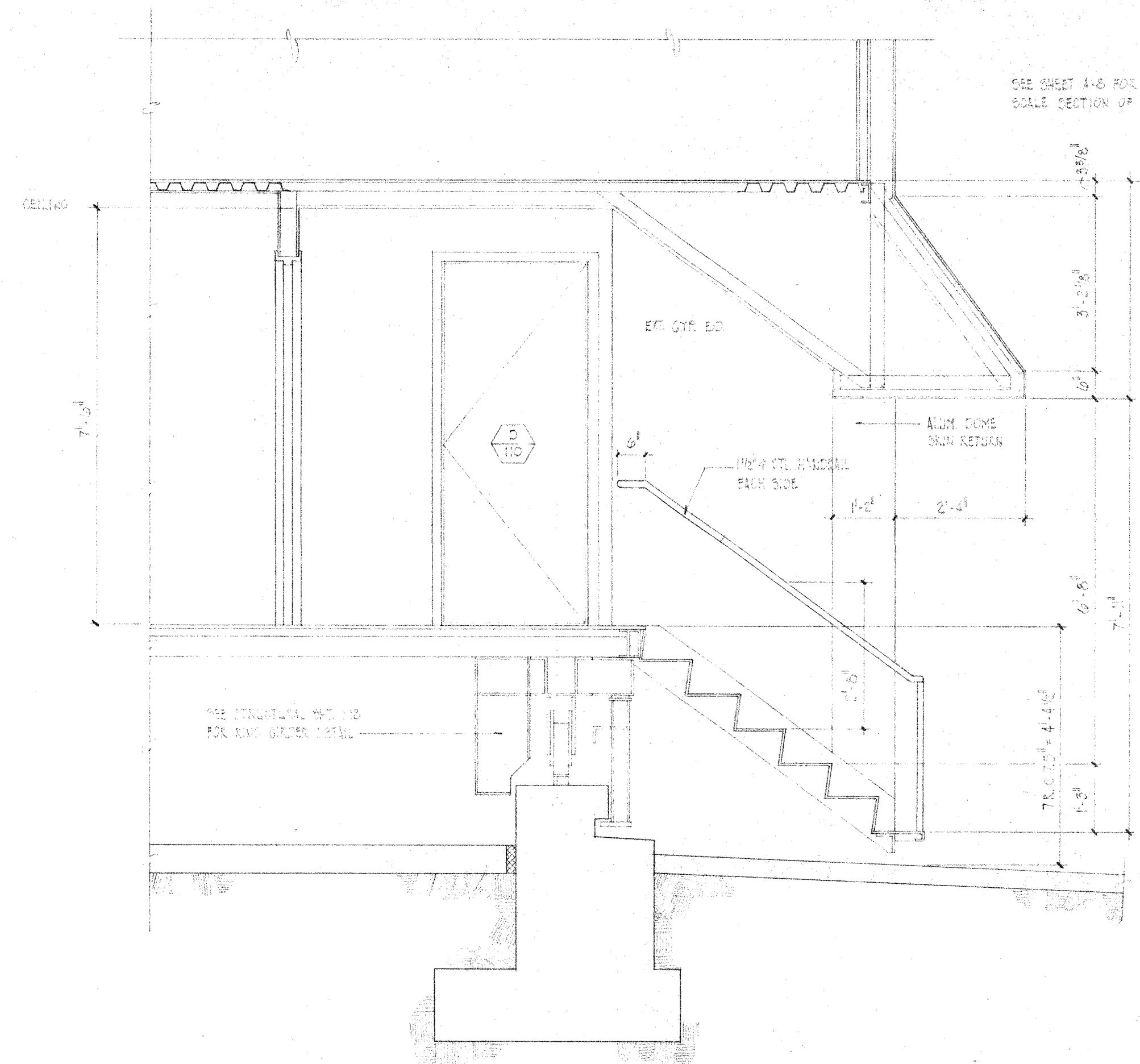
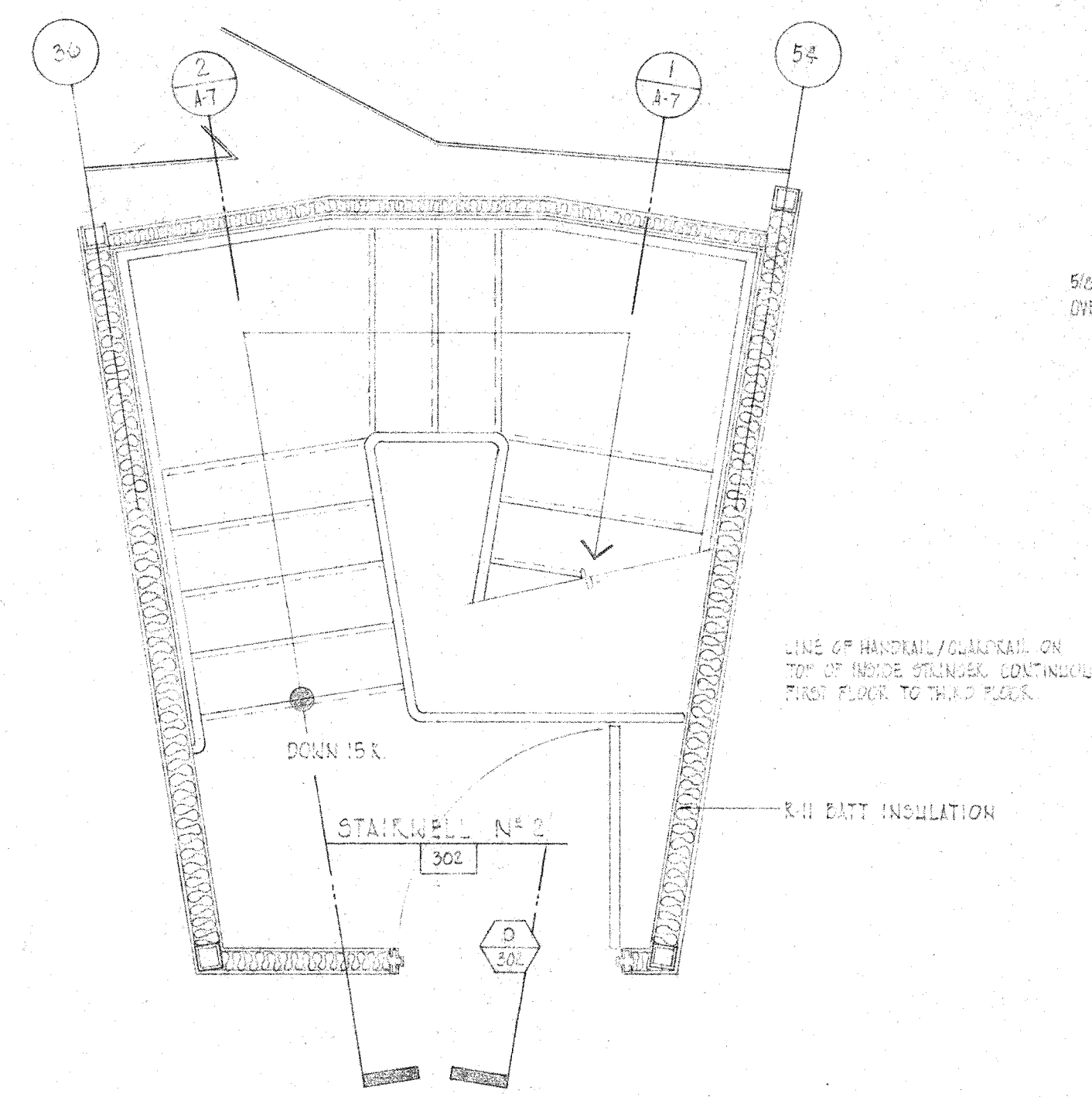


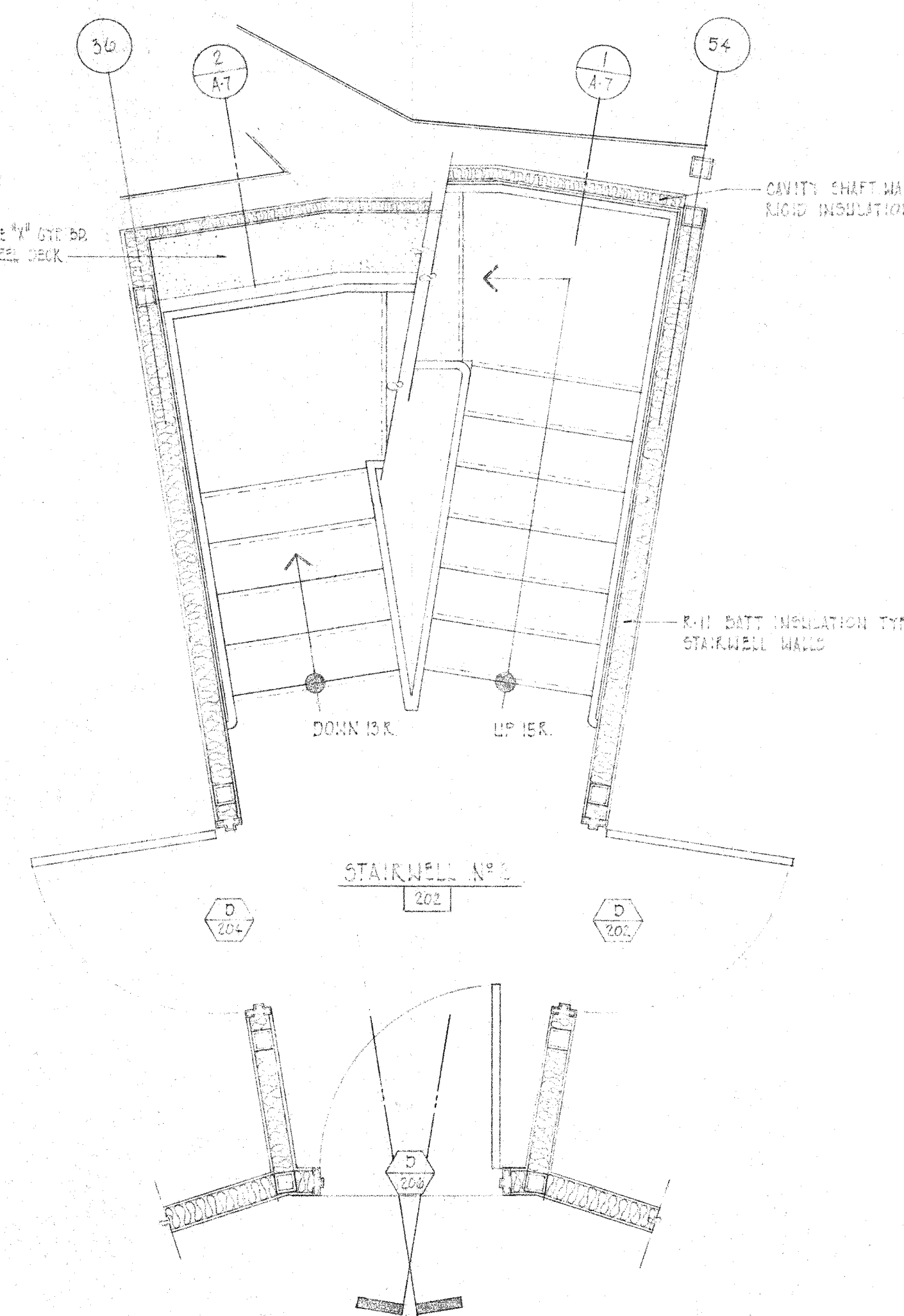
CALTECH SUBMILLIMETER TELESCOPE BUILDING
MAUNA KEA OBSERVATORY, HAWAII



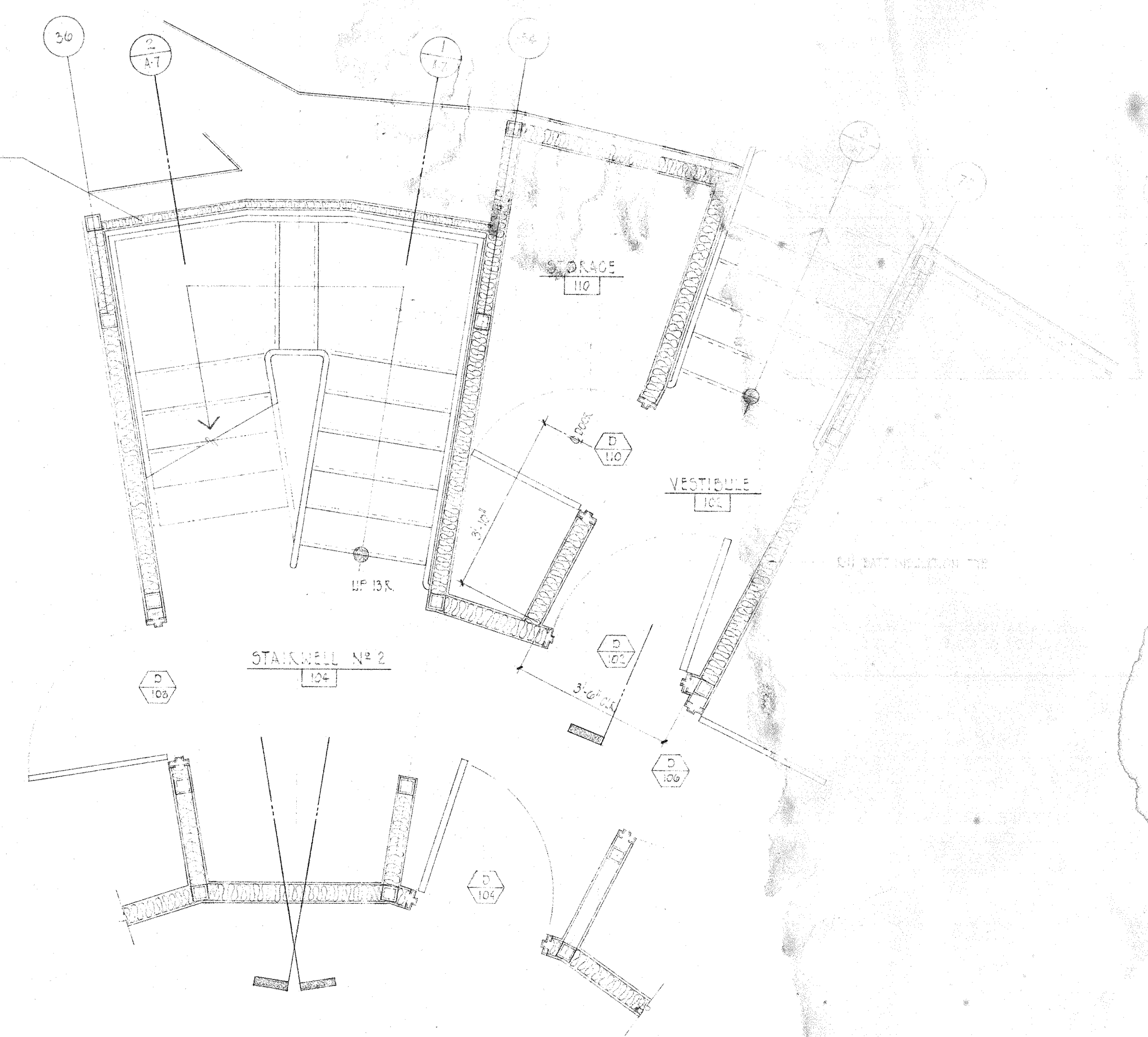
3 SECTION - STAIRWELL NO. 2 ENTRY
SCALE: 1/2" = 1'-0"



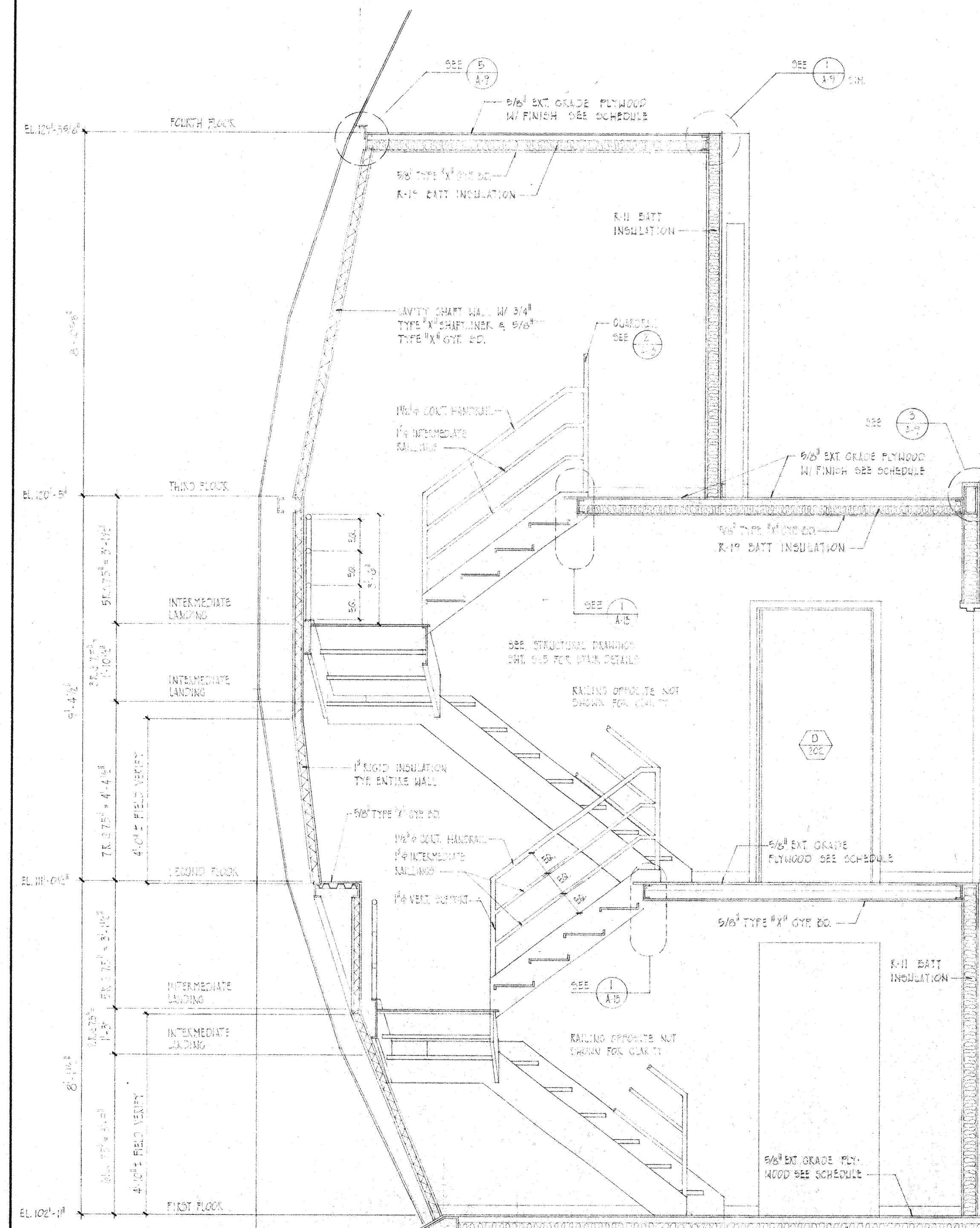
PLAN - STAIRWELL NO. 2 THIRD FLOOR
SCALE: 1/2" = 1'-0"



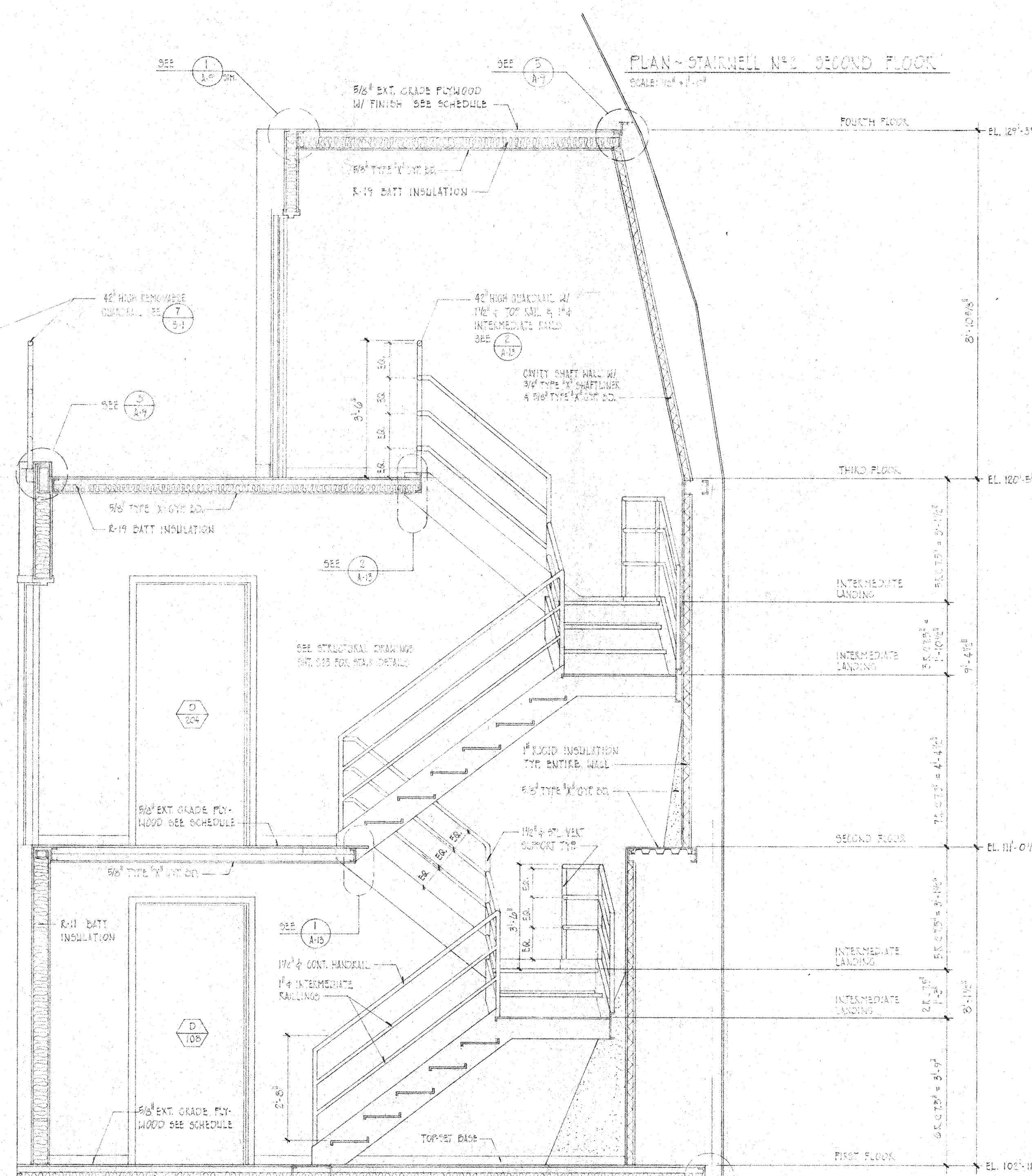
PLAN - STAIRWELL NO. 2 SECOND FLOOR
SCALE: 1/2" = 1'-0"



PLAN - STAIRWELL NO. 2 FIRST FLOOR
SCALE: 1/2" = 1'-0"

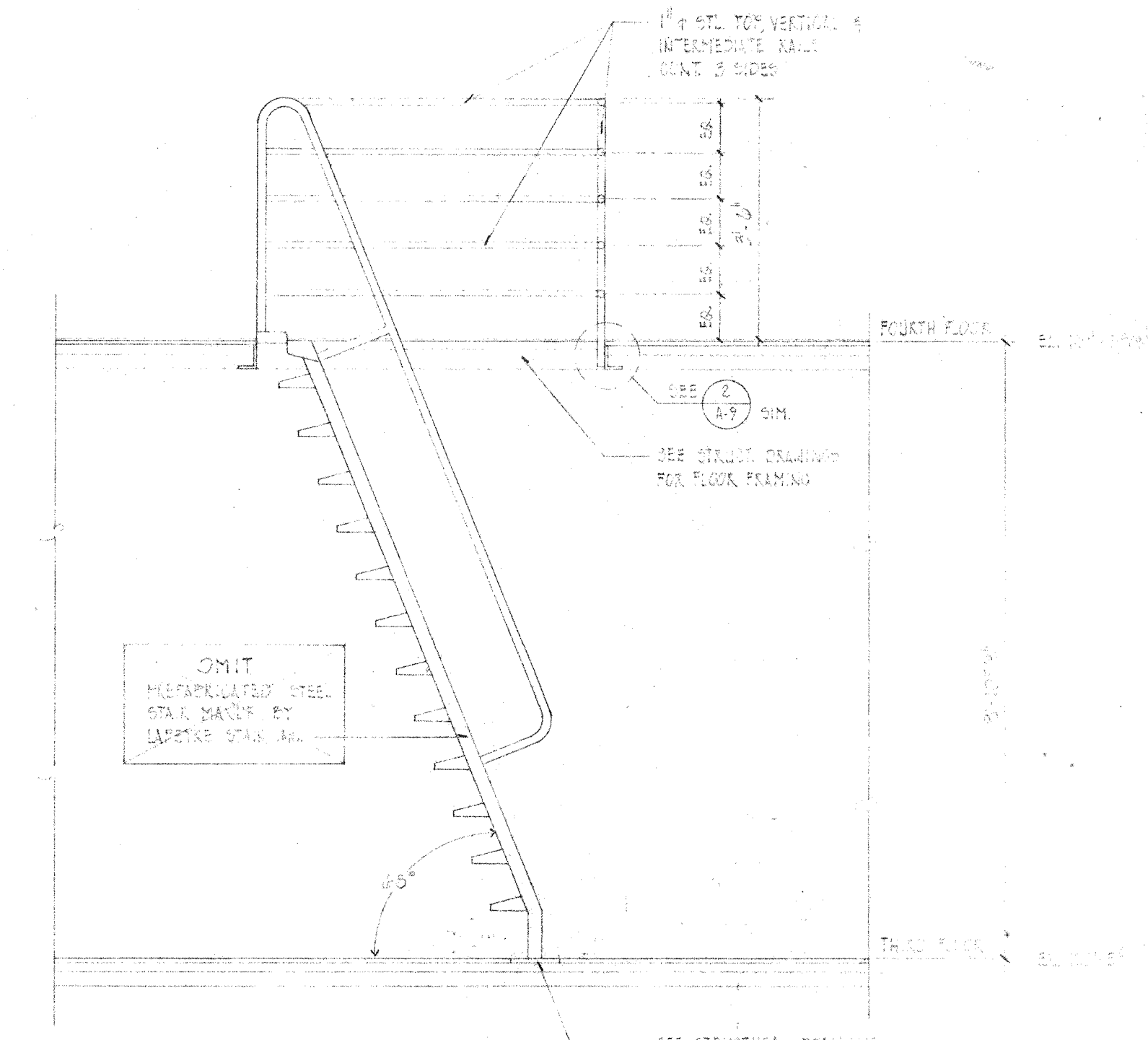


2 STAIRWELL SECTION - ELEVATION
SCALE: 1/2" = 1'-0"



1 STAIRWELL SECTION - ELEVATION
SCALE: 1/2" = 1'-0"

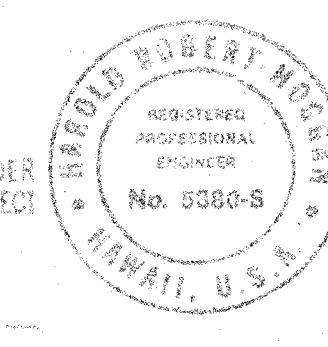
NOTE: NORTH ALL PLANS



NOTE: SEE STRUCTURAL CHG. SHEET FOR SHIP LIDDER.

SERVICE STAIR SECTION - ELEVATION
SCALE: 1/2" = 1'-0"

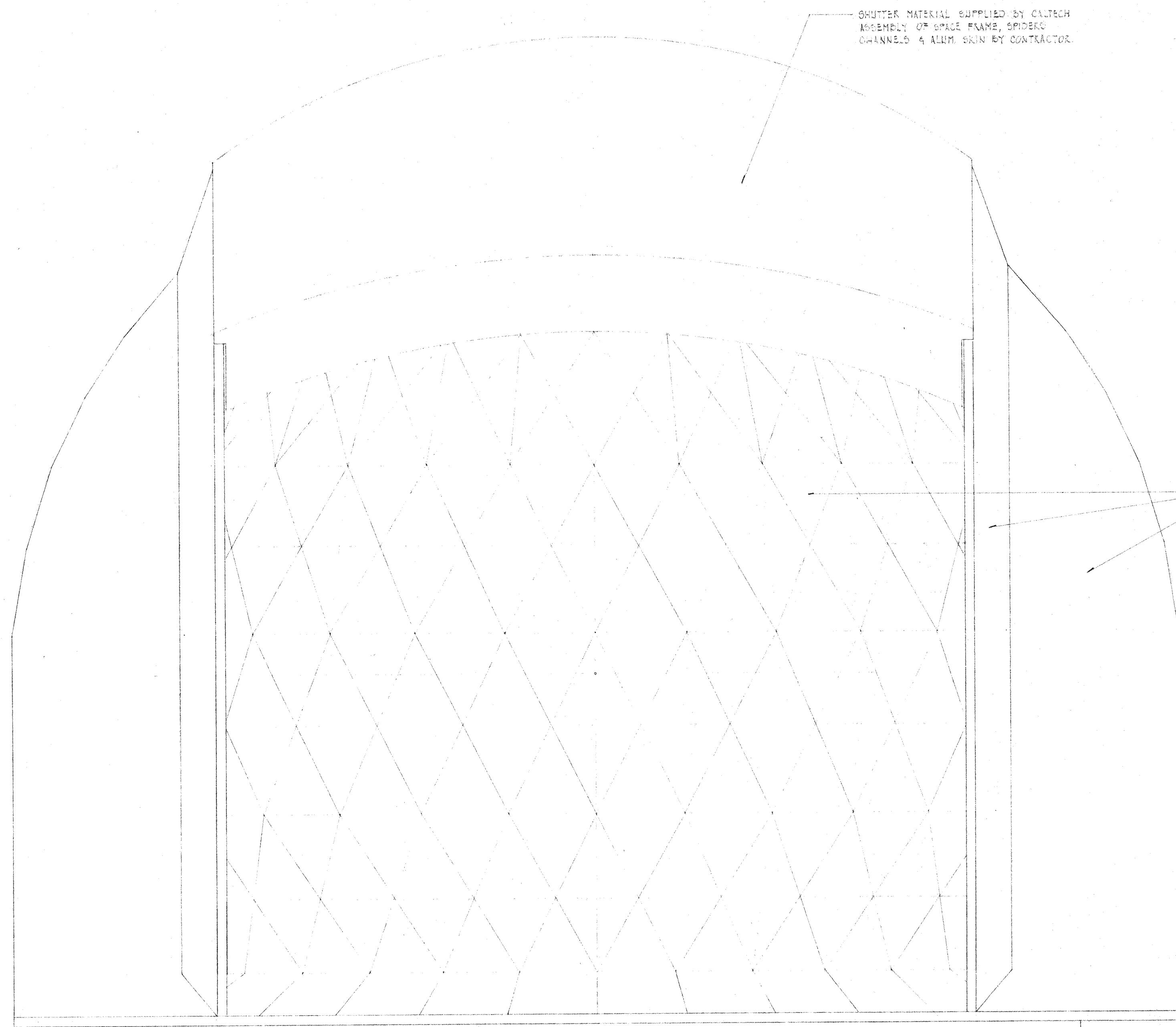
THIS WORK WAS PREPARED BY ME OR UNDER SUPERVISION AND ORIGINATOR'S NAME AND TITLE WILL BE UNDER MY SUPERVISION.



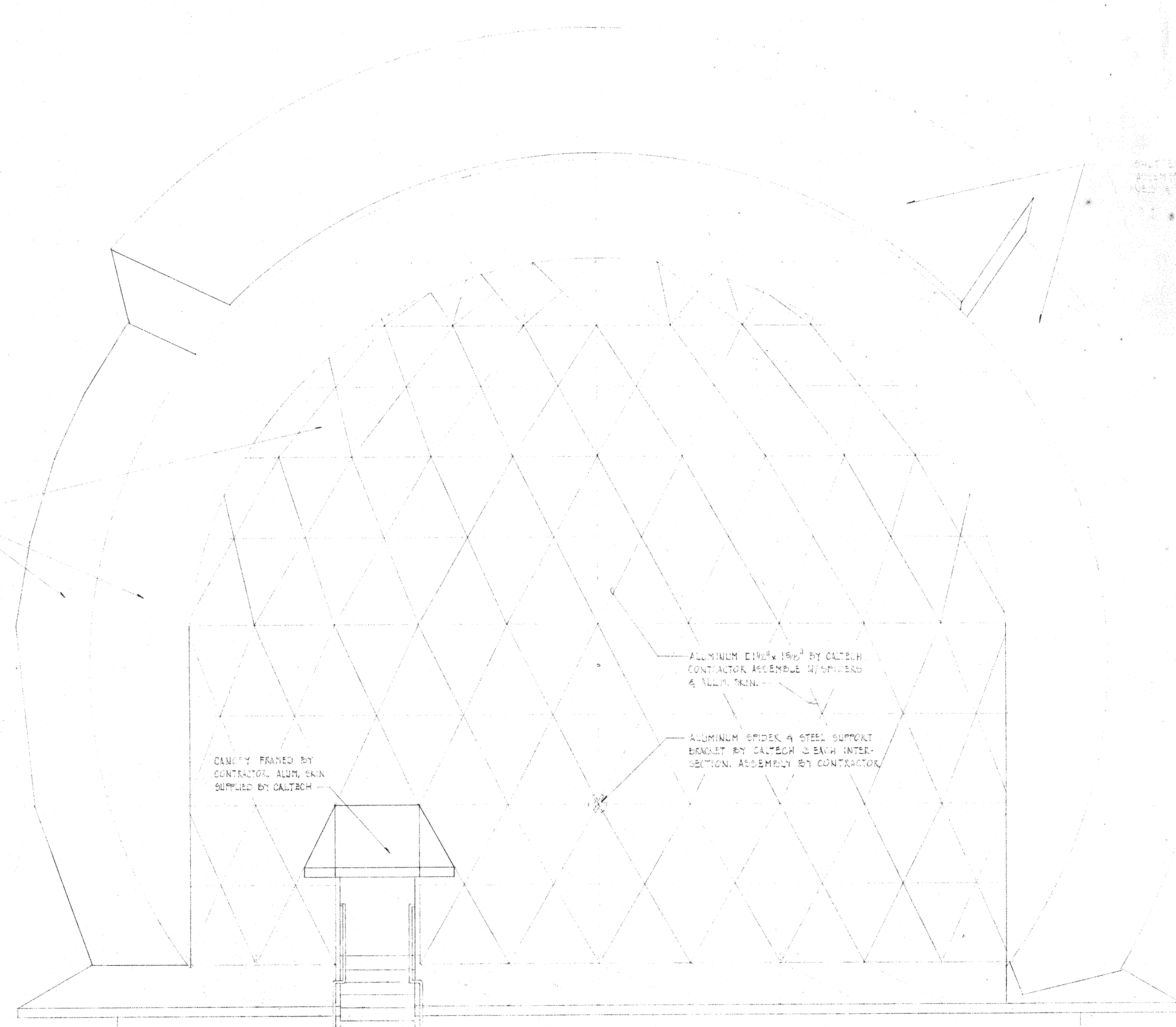
UNLESS OTHERWISE NOTED
DIMENSIONS ARE IN INCHES
TOLERANCE ON DECIMALS
XX = ± .03 ANGULAR = ± 1/2°
XXX = ± .005
TOLERANCE ON FRACTIONS = 1/16
MACHINE FINISH 1/2"

DRAWING NO. ITEM QTY WEIGHT
SPECIALLY DESIGNED

HAWAII ERECTION DIV. SET 4 12-20-04
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.
TITLE
STAIRWELL SECTION-ELEVATIONS STAIRWELL ENTRY SECTION
SUBMILLIMETER OBSERVATORY
MAUNAE KEA, HAWAII
DWG. NO. E10MD A-7
FILE NO. W.O. DEPT. SHEET A-7 OF 10



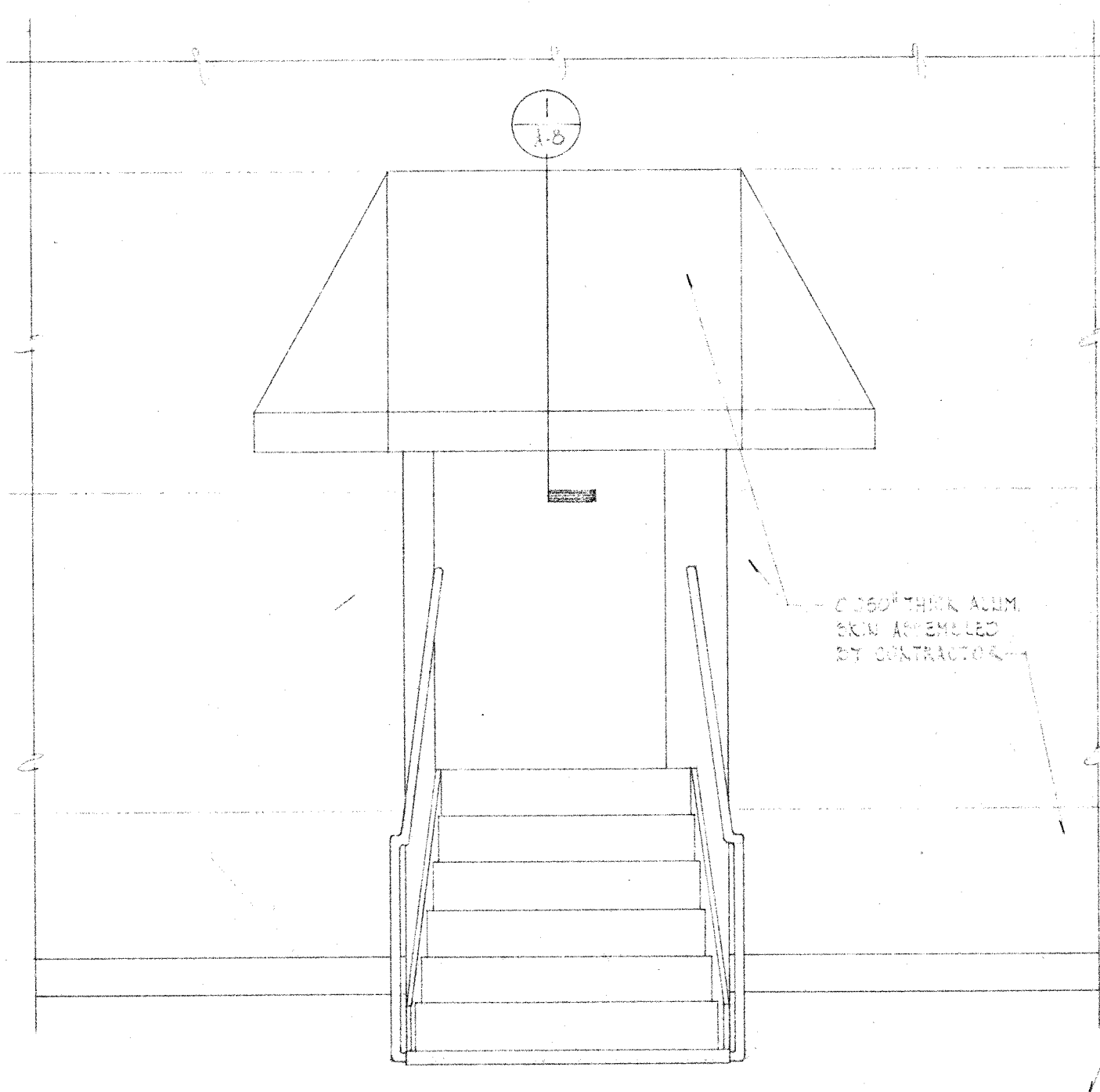
NORTH ELEVATION
SCALE: 1/8" = 1'-0"



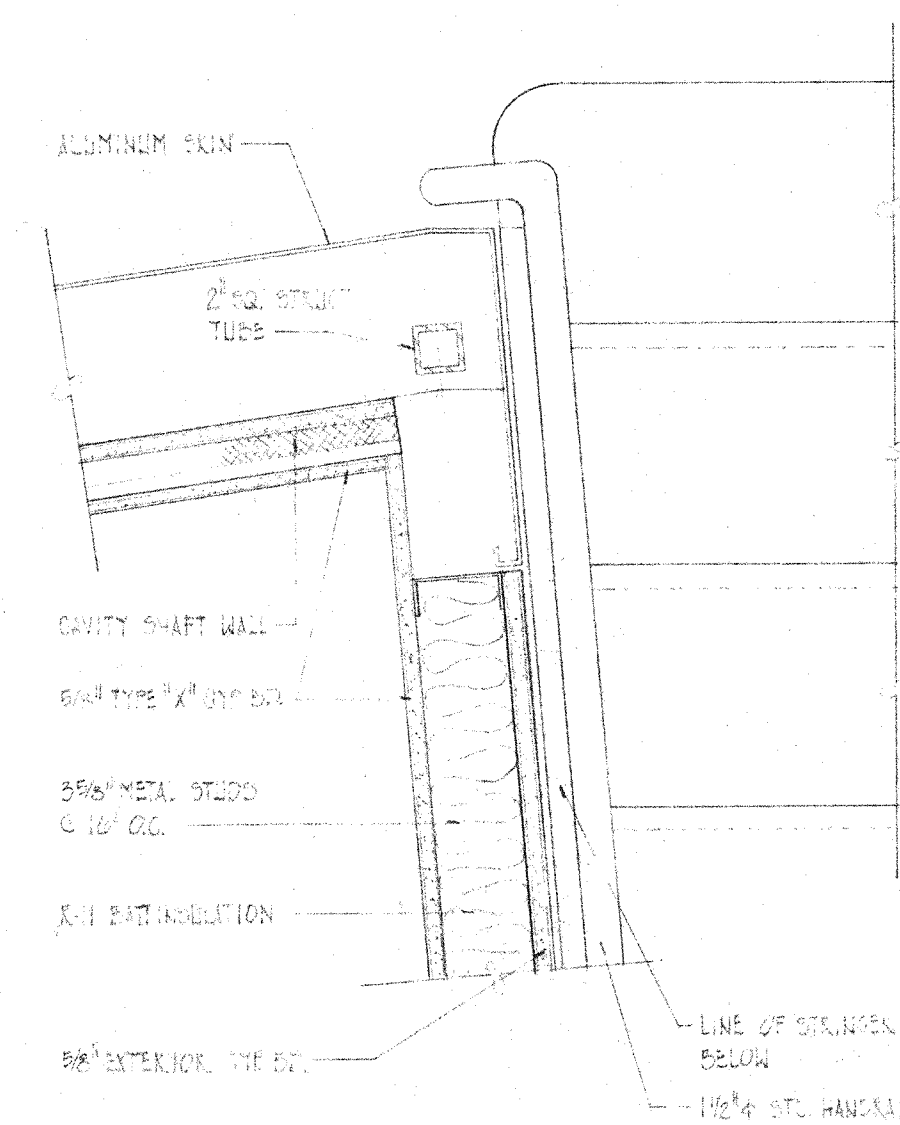
WEST ELEVATION
SCALE: 1/8" = 1'-0"

EXTERIOR ELEVATIONS ARE SCHEMATIC ONLY.
CONTRACTOR COORDINATE WITH STRUCTURAL
DRAWINGS & DRAWINGS SUPPLIED BY CALTECH.

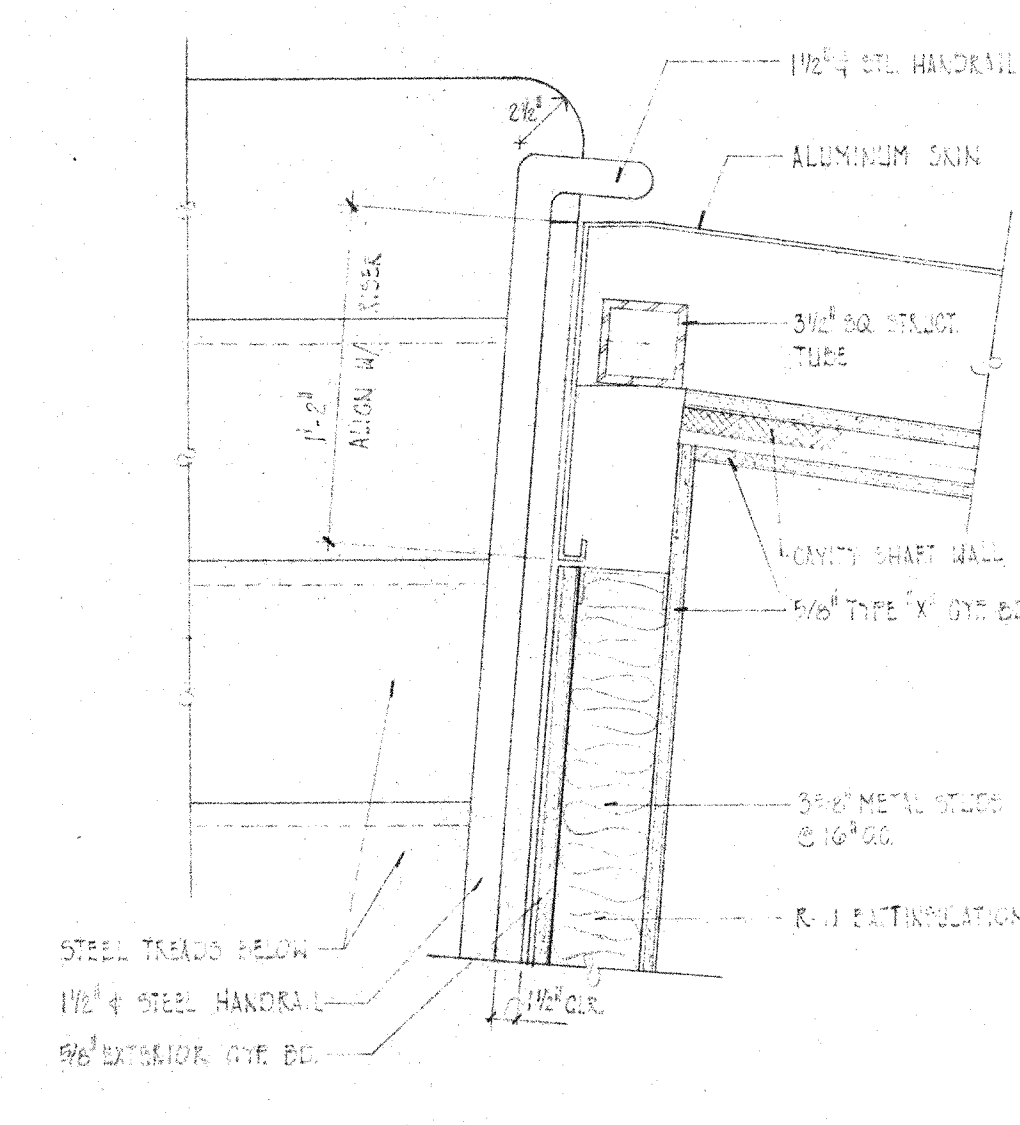
EXTERIOR ELEVATIONS ARE SCHEMATIC ONLY.
CONTRACTOR COORDINATE WITH STRUCTURAL
DRAWINGS & DRAWINGS SUPPLIED BY CALTECH.



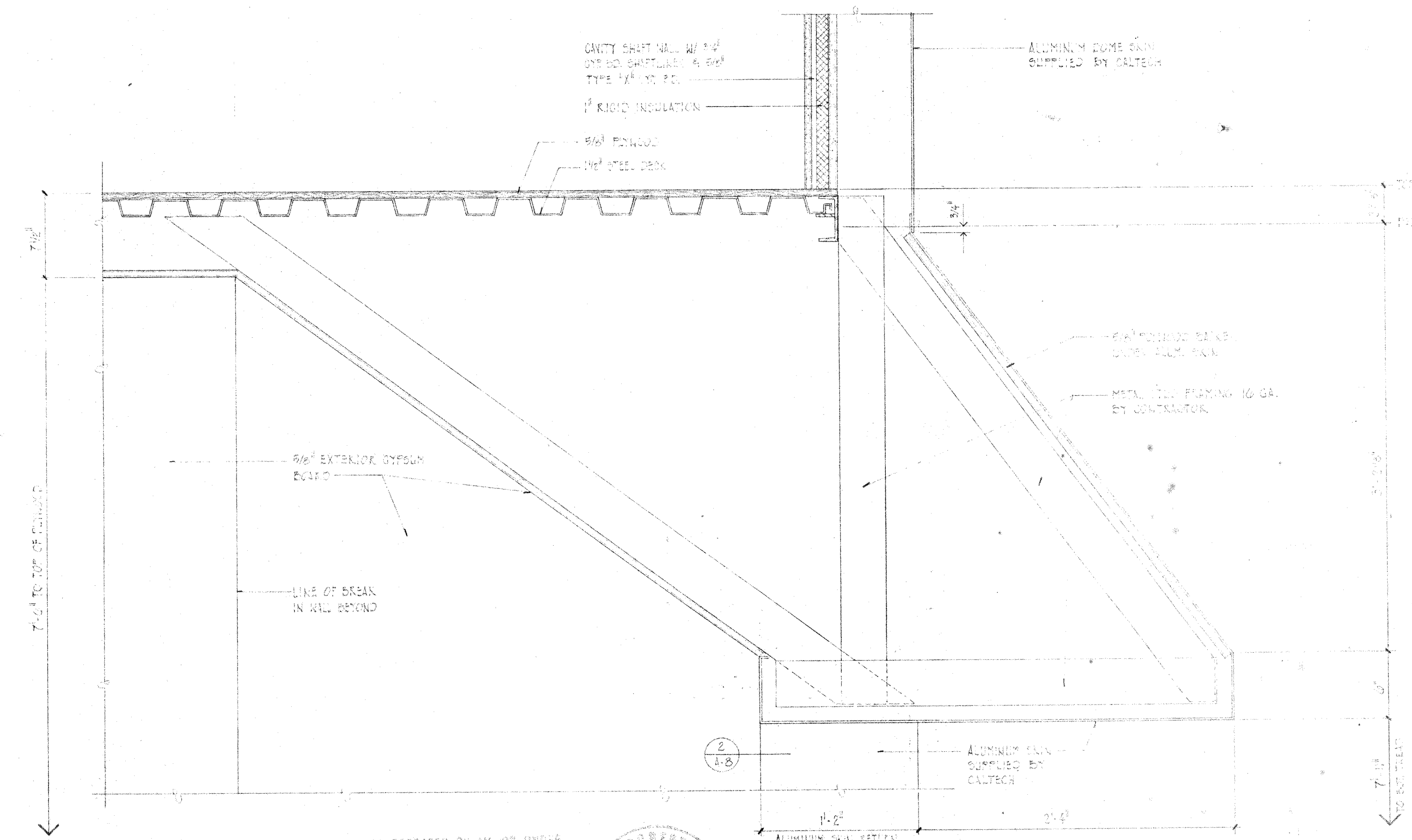
PARTIAL ELEVATION @ DOME ENTRY
SCALE: 1/8" = 1'-0"



2 PARTIAL PLAN @ DOME ENTRY
SCALE: 1/8" = 1'-0"

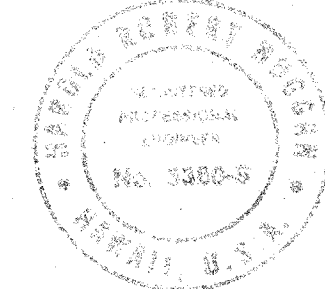


2 PARTIAL PLAN @ DOME ENTRY
SCALE: 1/8" = 1'-0"



1 SECTION THRU ENTRY CANOPY
SCALE: 1/8" = 1'-0"

THIS WORK WAS PREPARED BY ME OR UNDER
SUPERVISION AND CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY SUPERVISION.
White House
Signature

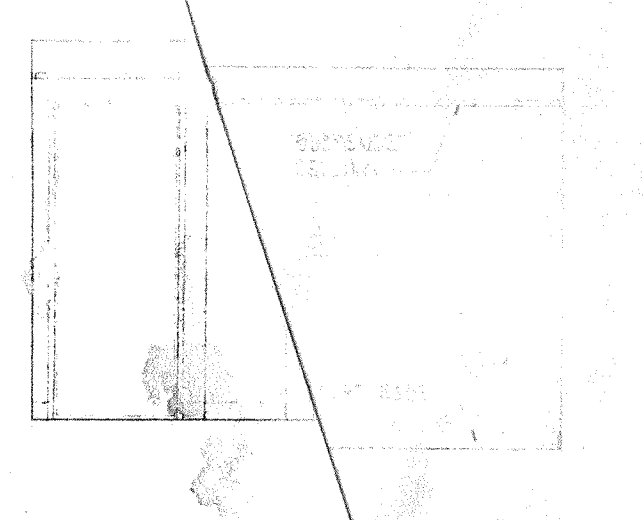
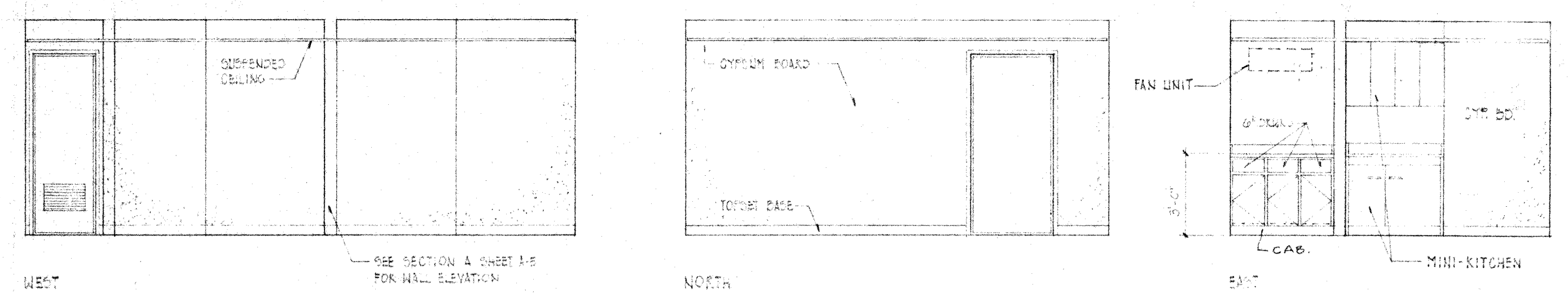
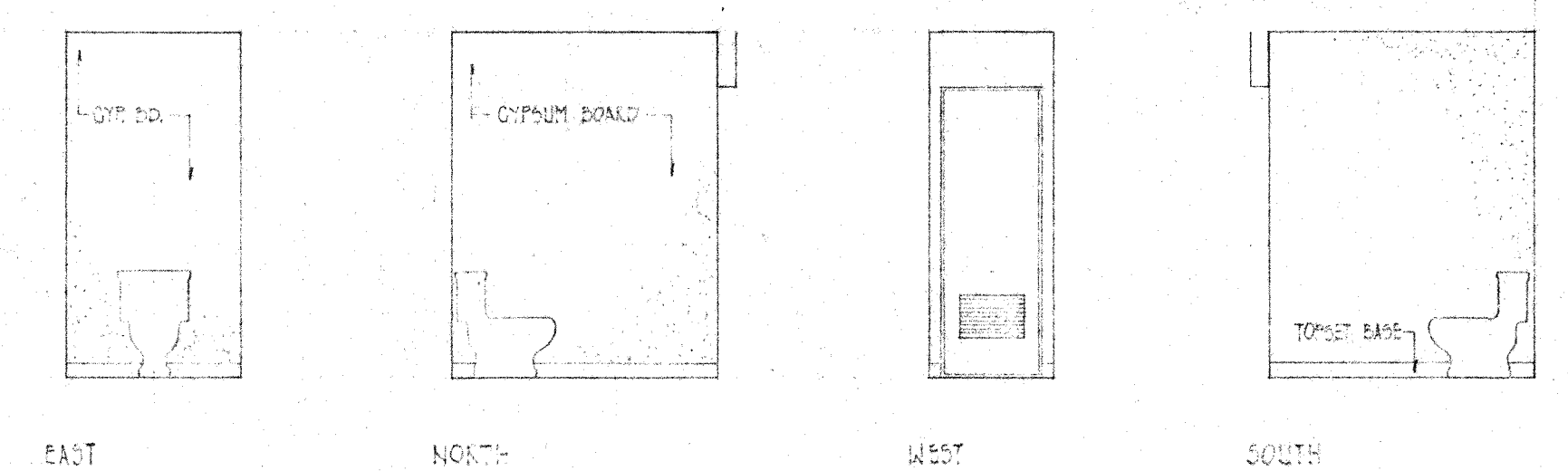
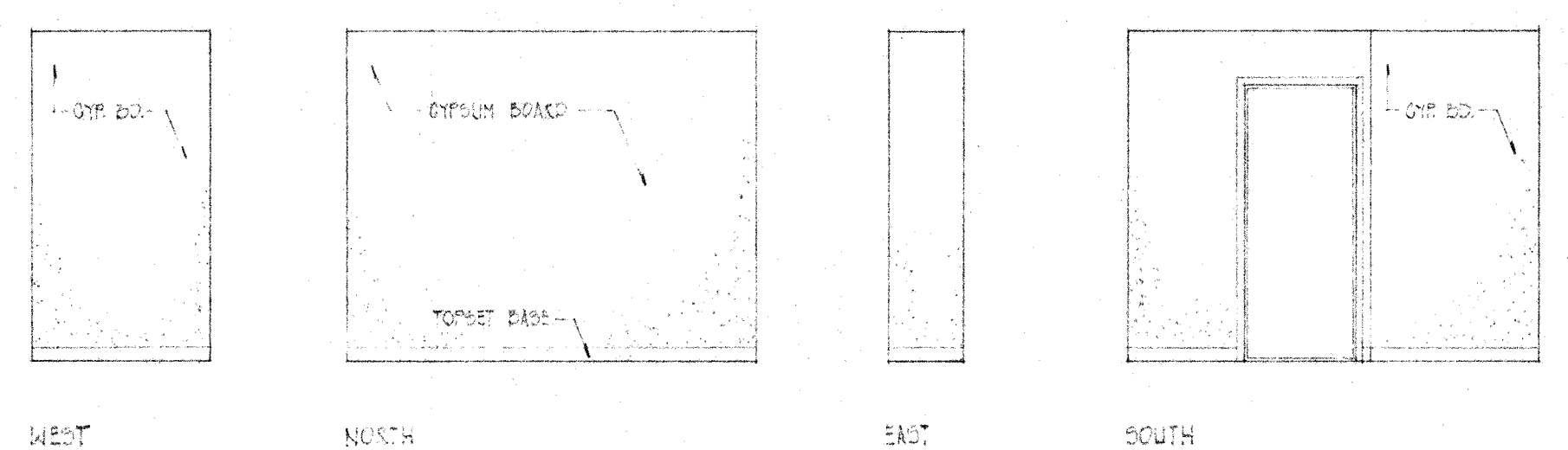


DRAWN		DATE	HAWAII ERECTION BID SET		12/20/84	1/8/85			
CHECKED		DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY						
APPROVED		DATE	PASADENA, CALIF.						
APPROVED		DATE	TITLE						
WEIGHT		DWG. SIZE		SCALE	DWG. NO.	E10MD A-5			
APPLICABLE DOC.		D		AS NOTED					
FILE NO.		W. O.		DEPT.	SHEET 4-5 OF 5				

3
A9

NEXT ASSEMBLY			WEIGHT	DWG SIZE			SCALE	DWG. NO.	
DRAWING NO.	ITEM	QTY		E	AS NOTED	E10MD A-9			
APPLICABLE DOC			FILE NO.	W. O.	DEPT	SHEET 1 OF 13			

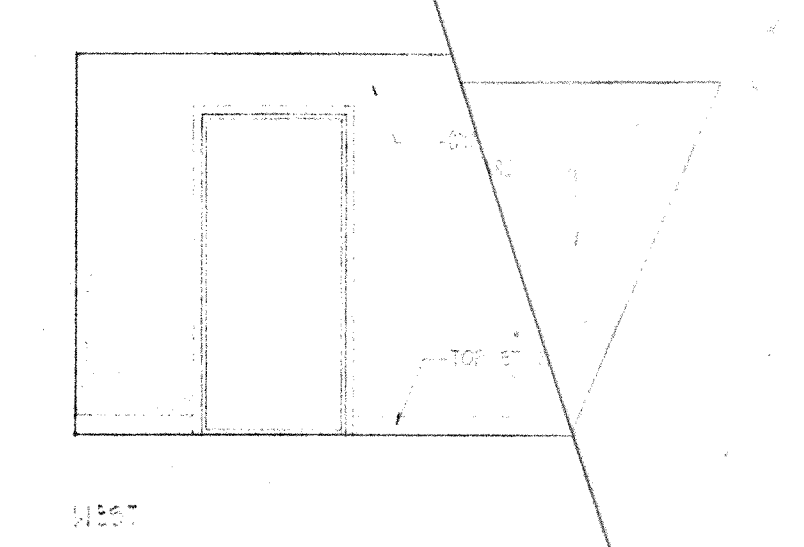
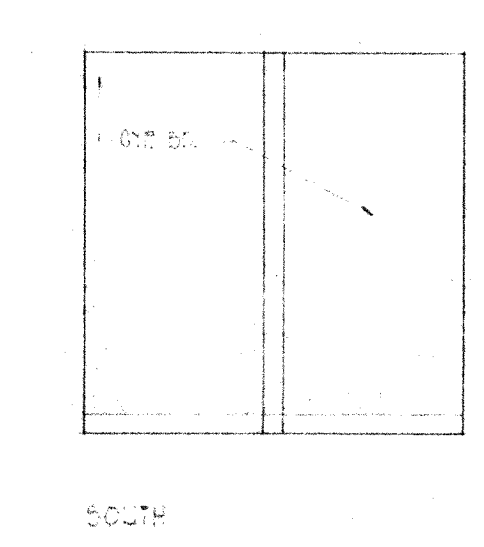
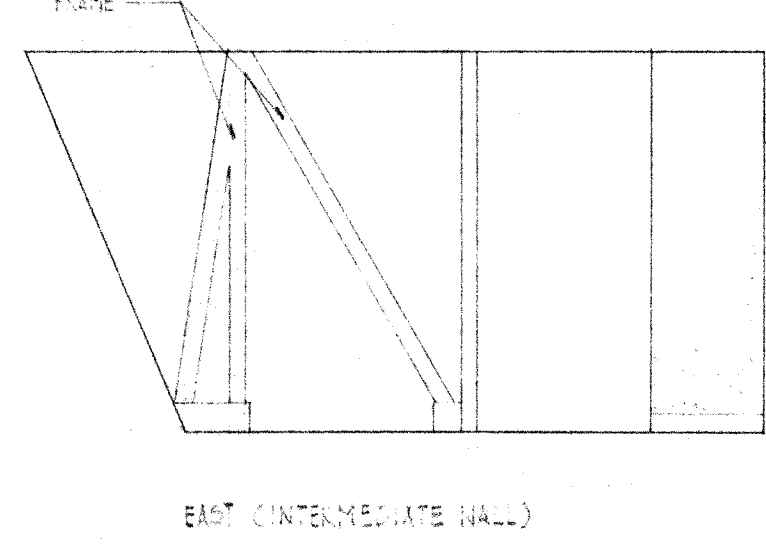
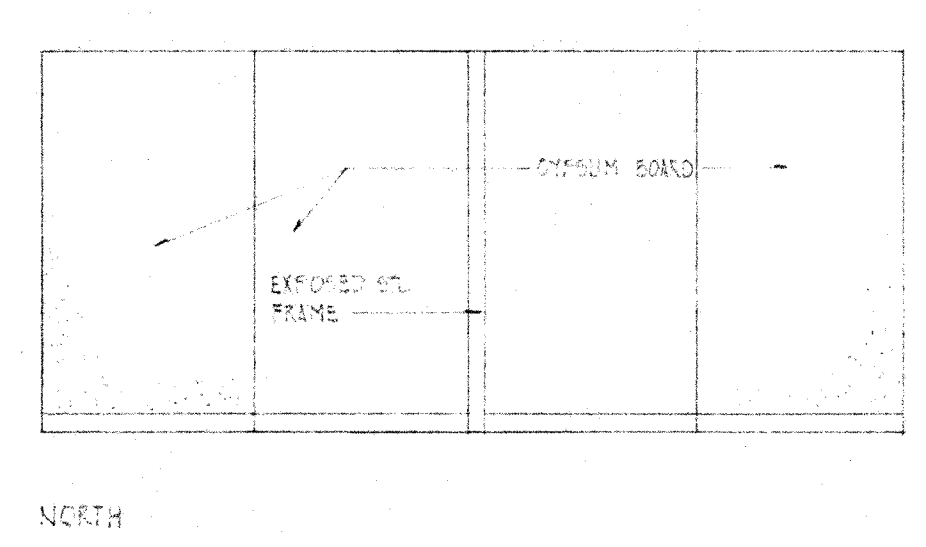
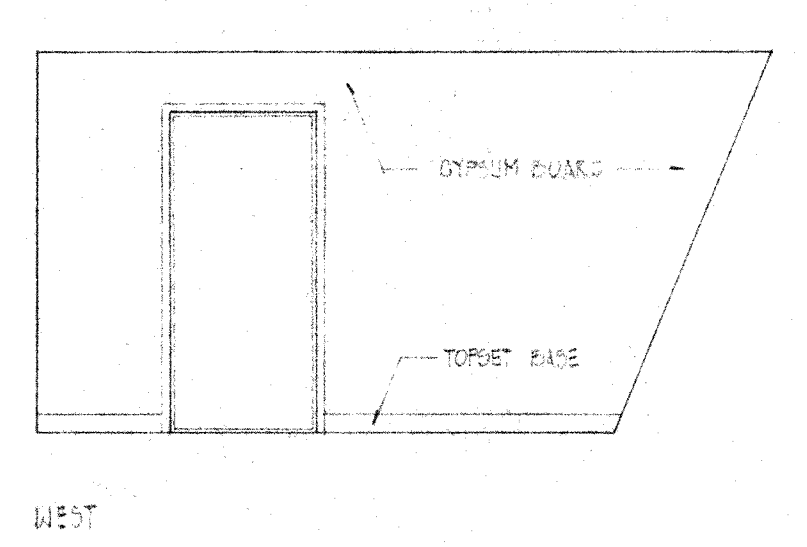
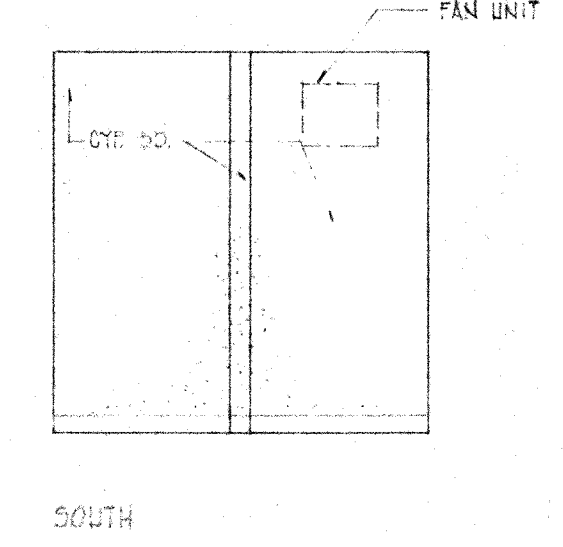
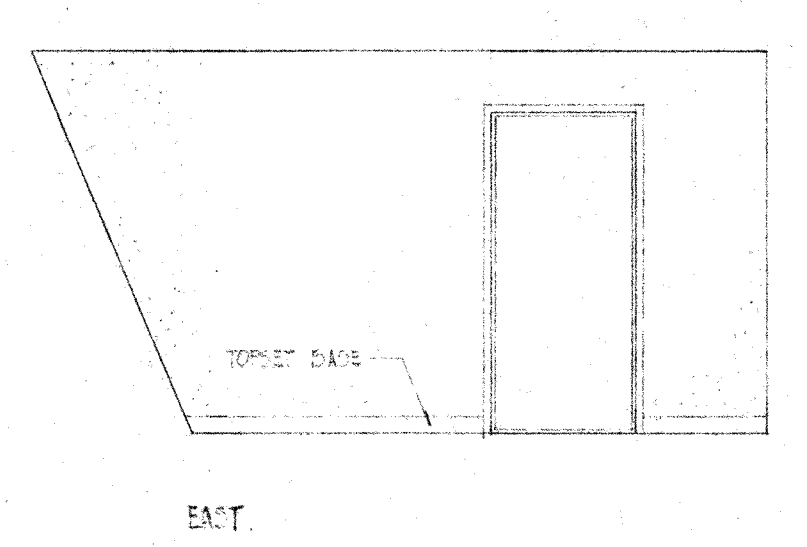
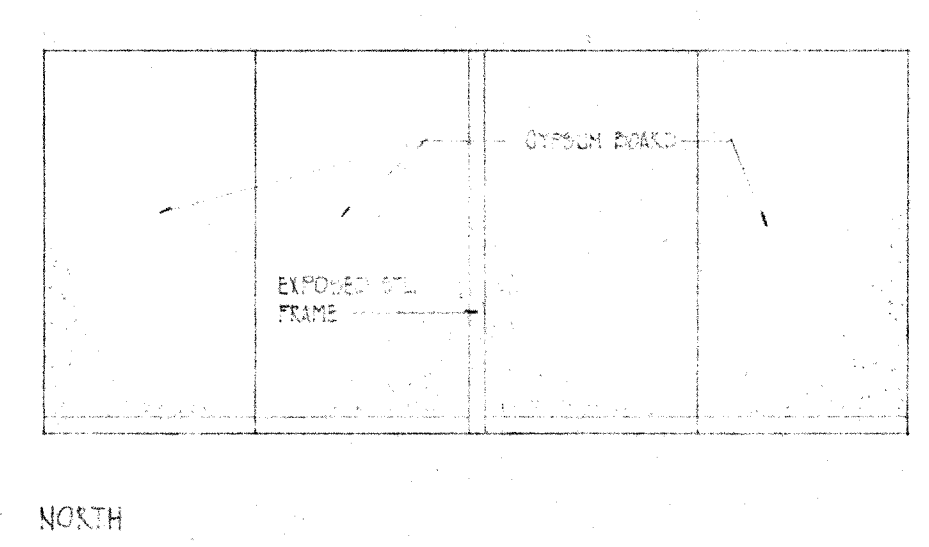
ITEM	QTY	DESCRIPTION	MATERIALS	
			MATERIAL OR SOURCE OF SUPPLY	UNIT WT



ROOM No. 107 STORAGE
STORAGE ROOM NO. 110 OFF HAND

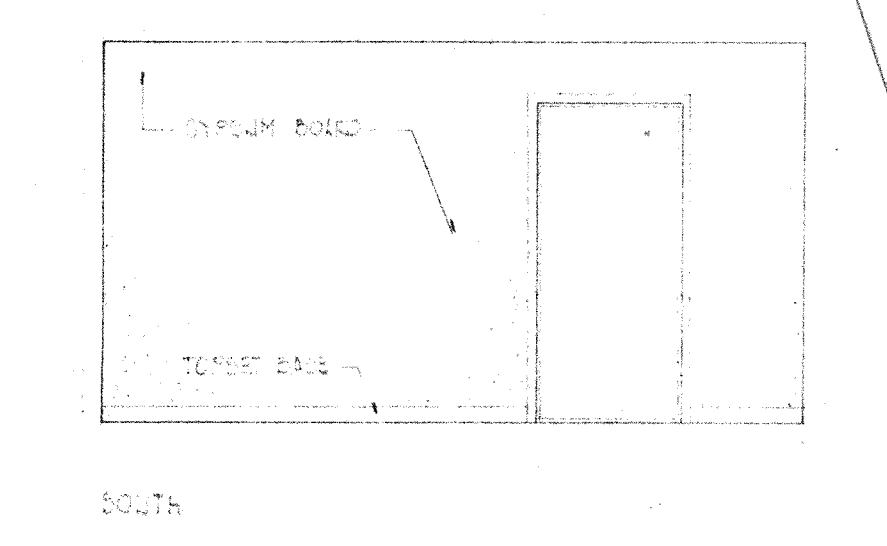
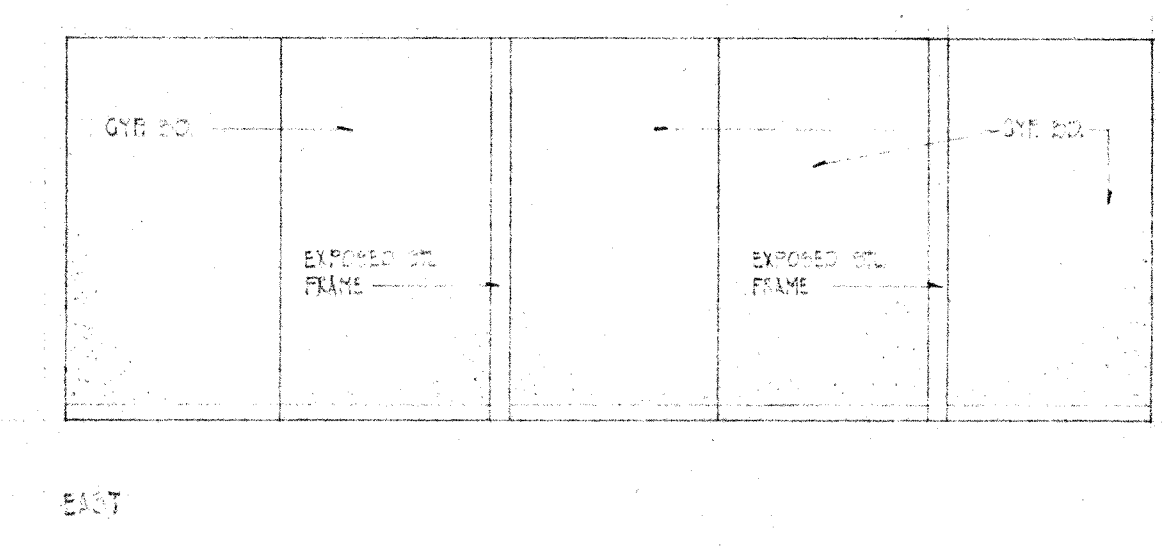
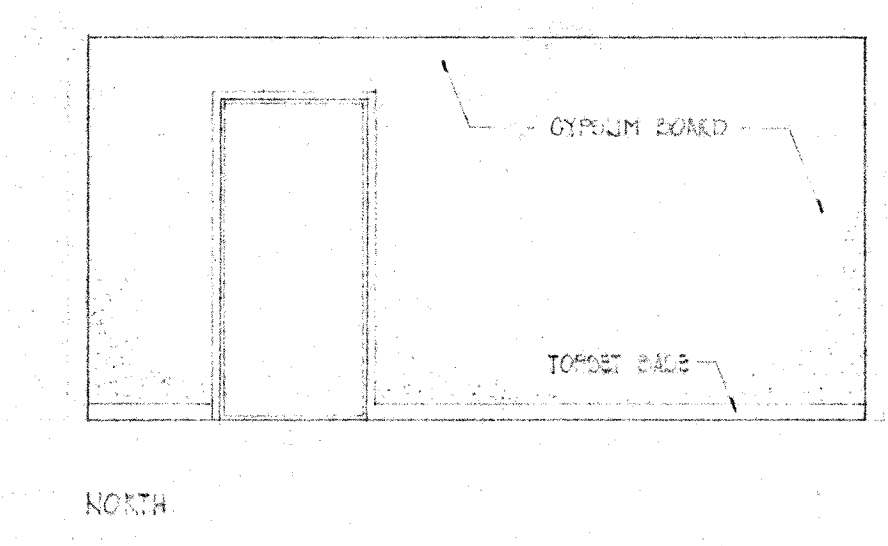
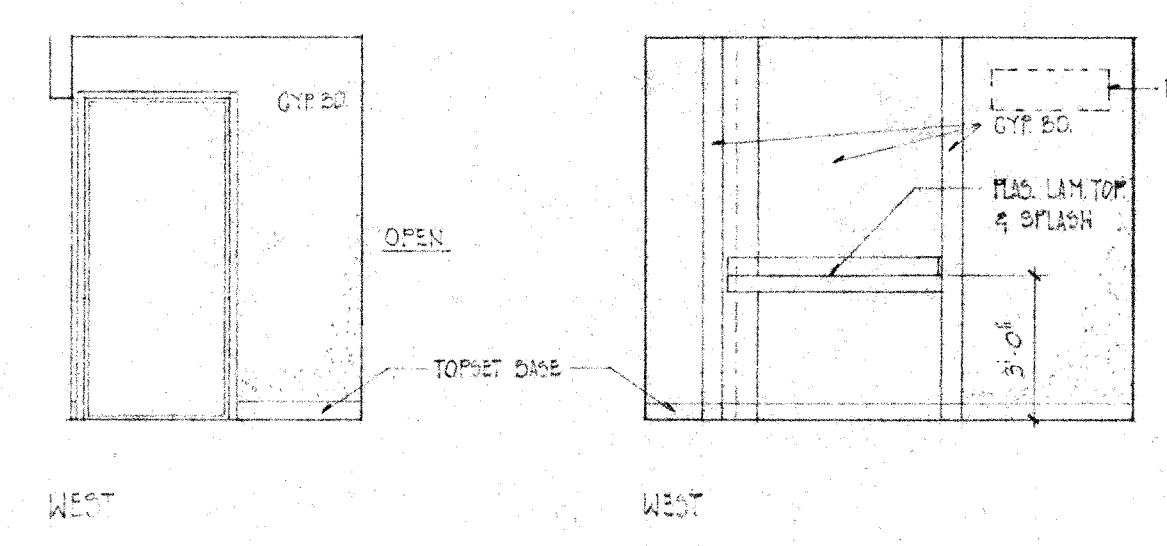
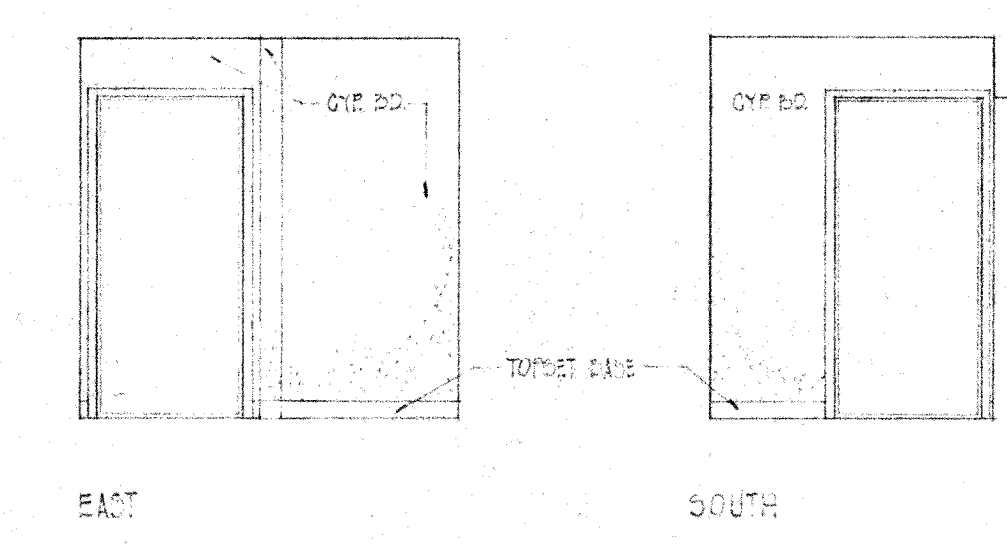
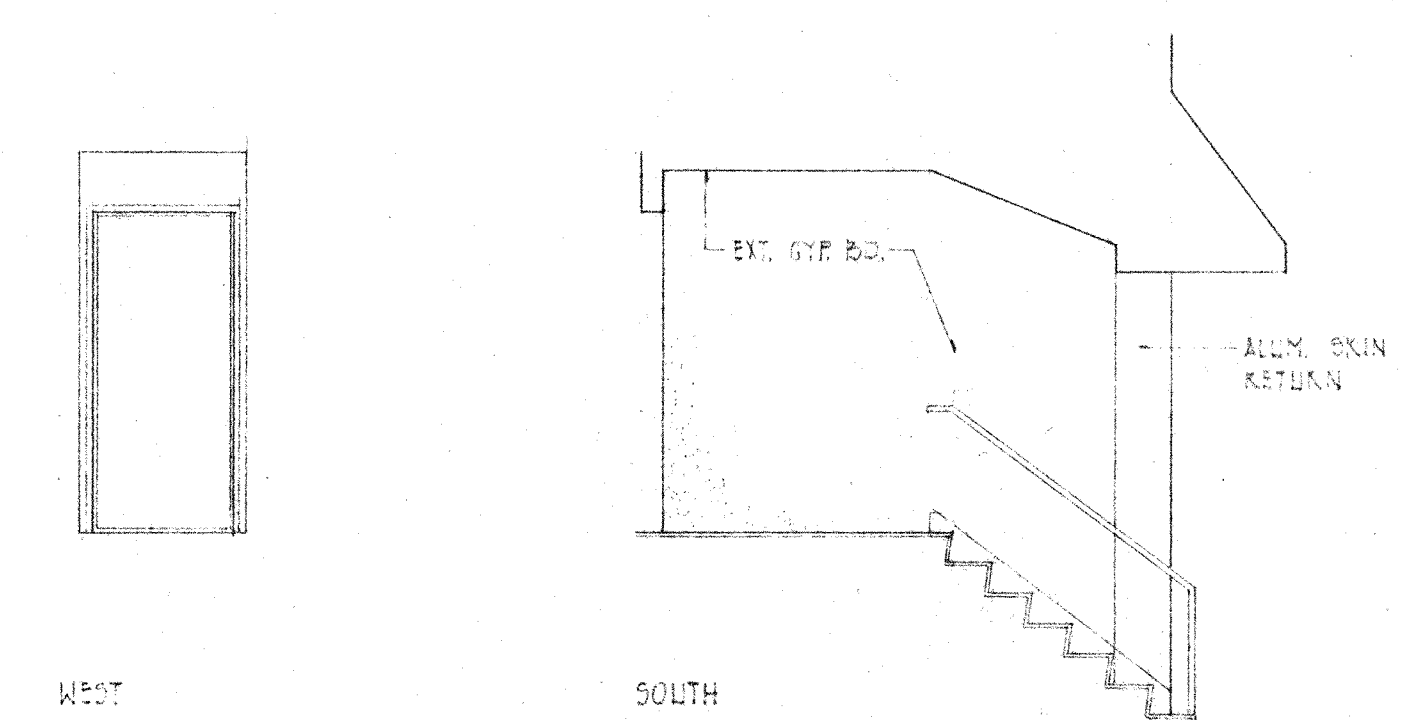
ROOM No. 108 TOILET ROOM

ROOM No. 109 GALLERY & LOUNGE



ROOM No. 108 ELECTRICAL & MECHANICAL EQUIPMENT

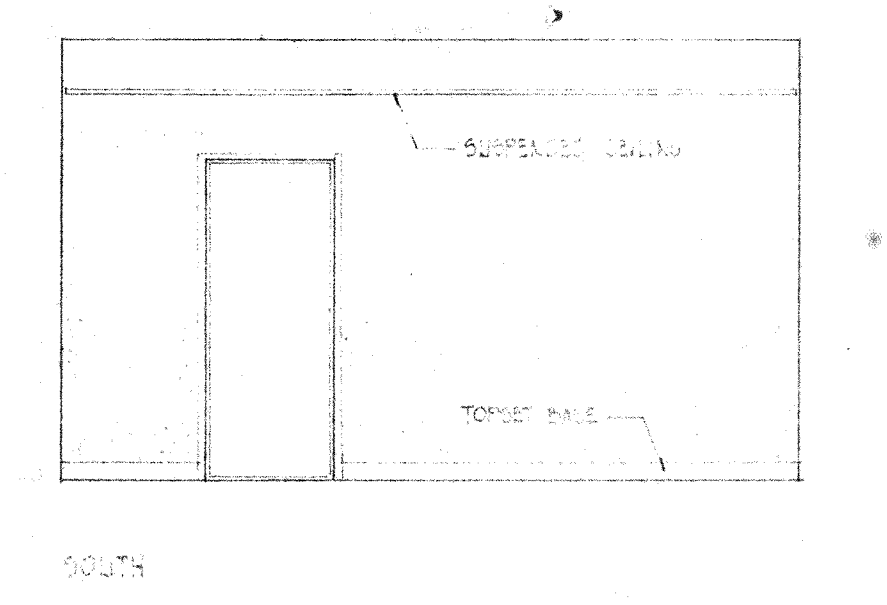
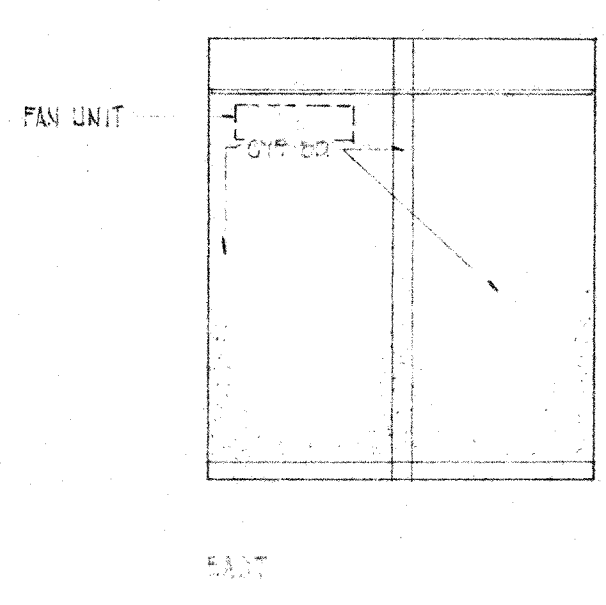
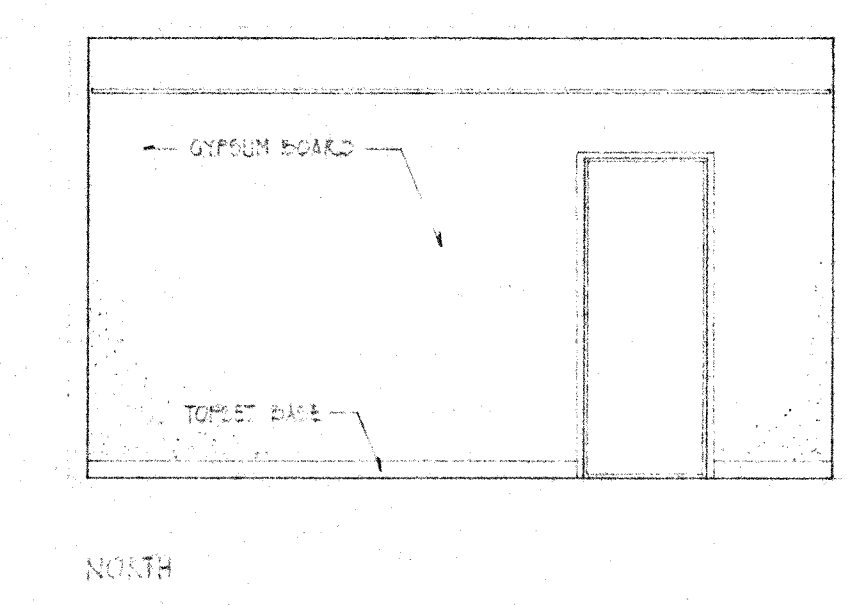
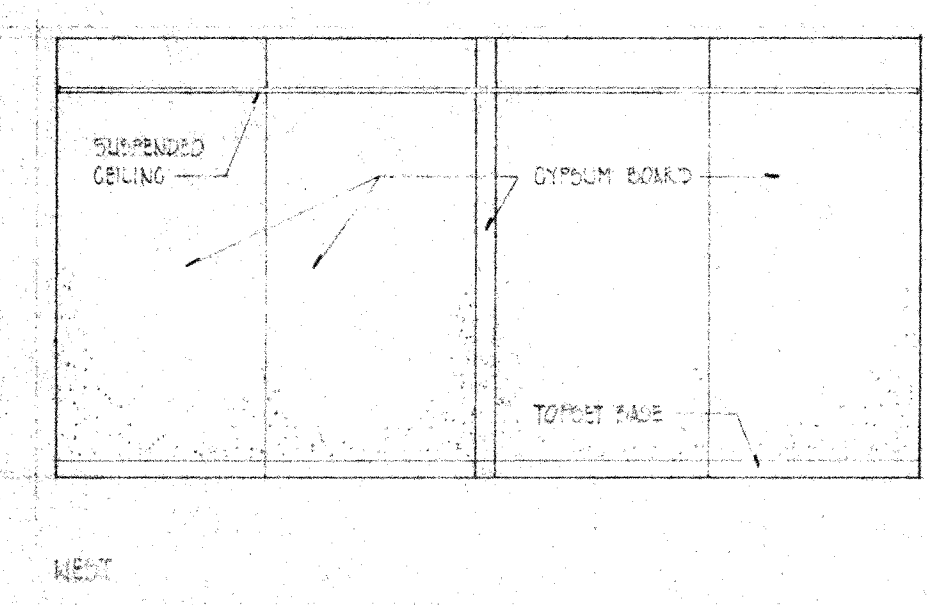
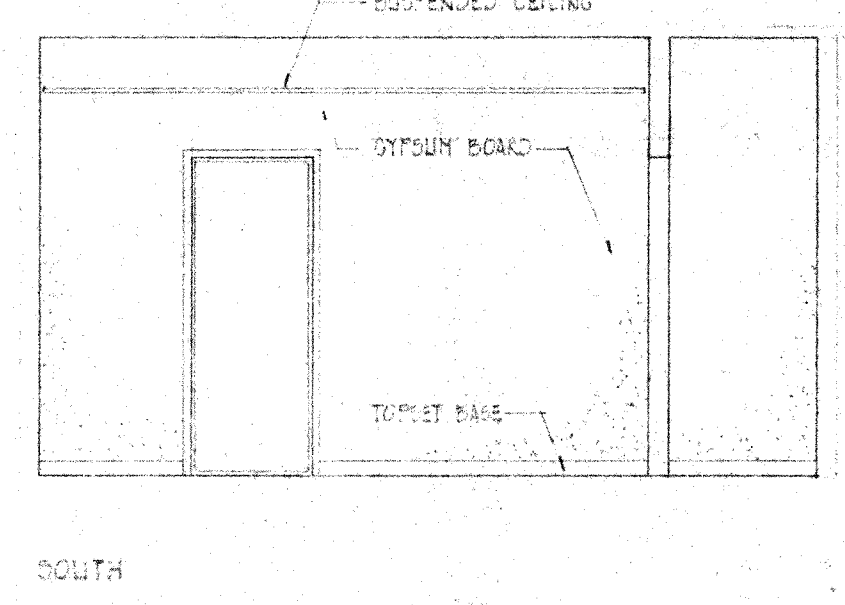
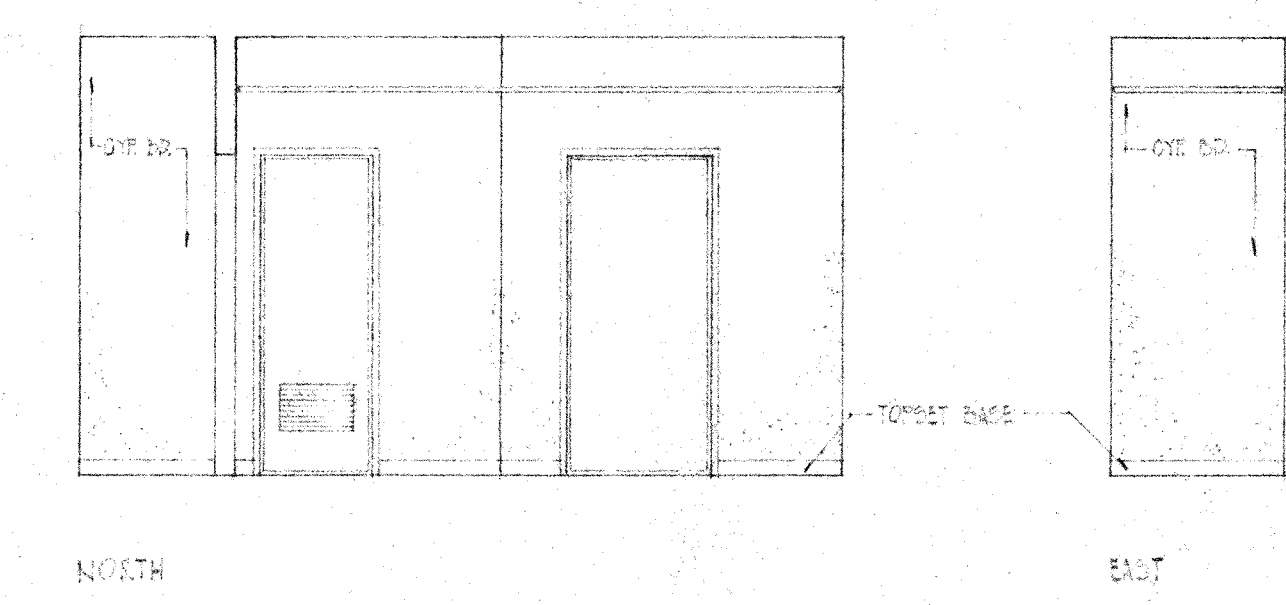
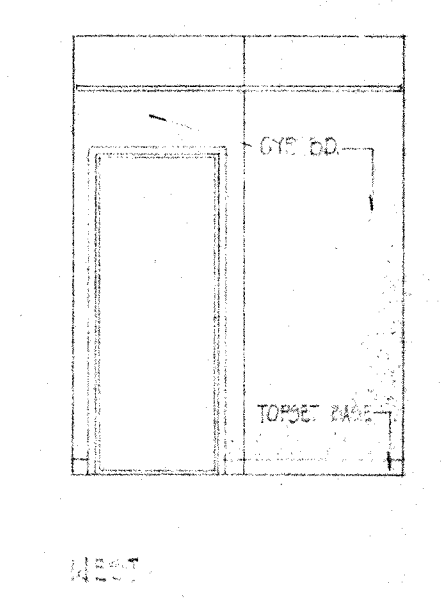
ROOM No. 107 STORAGE



ROOM No. 109 STAIRWELL NO. 1
ROOM NO. 110 STAIRWELL NO. 2 OFF HAND

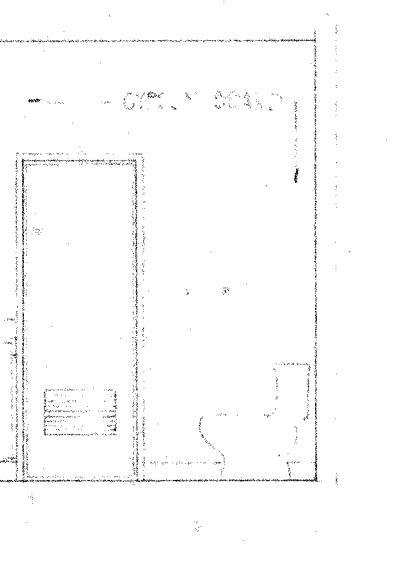
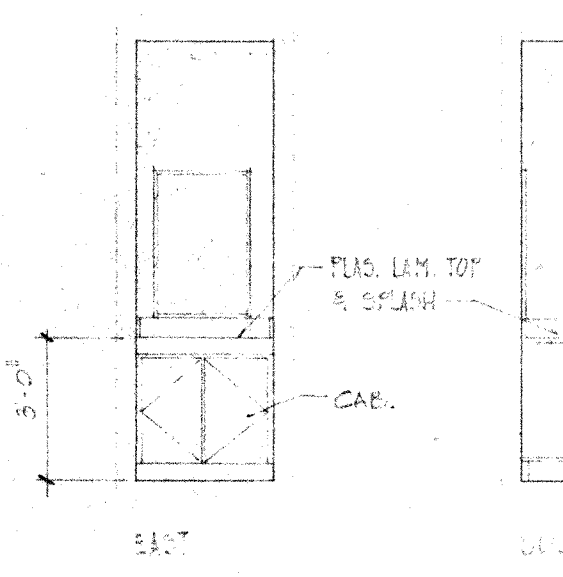
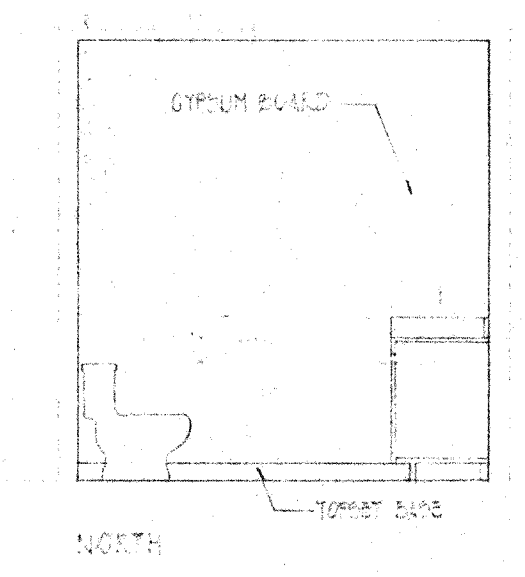
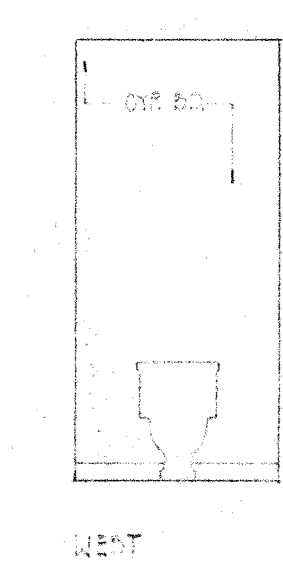
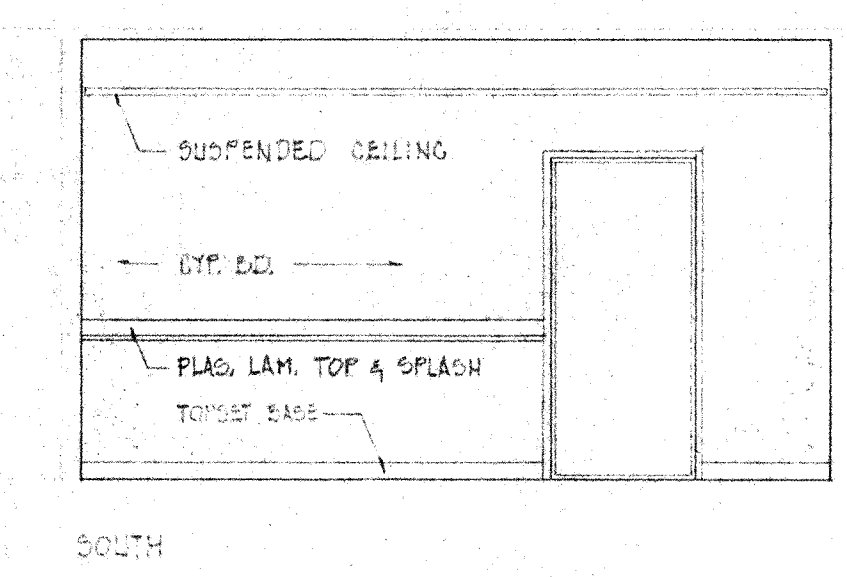
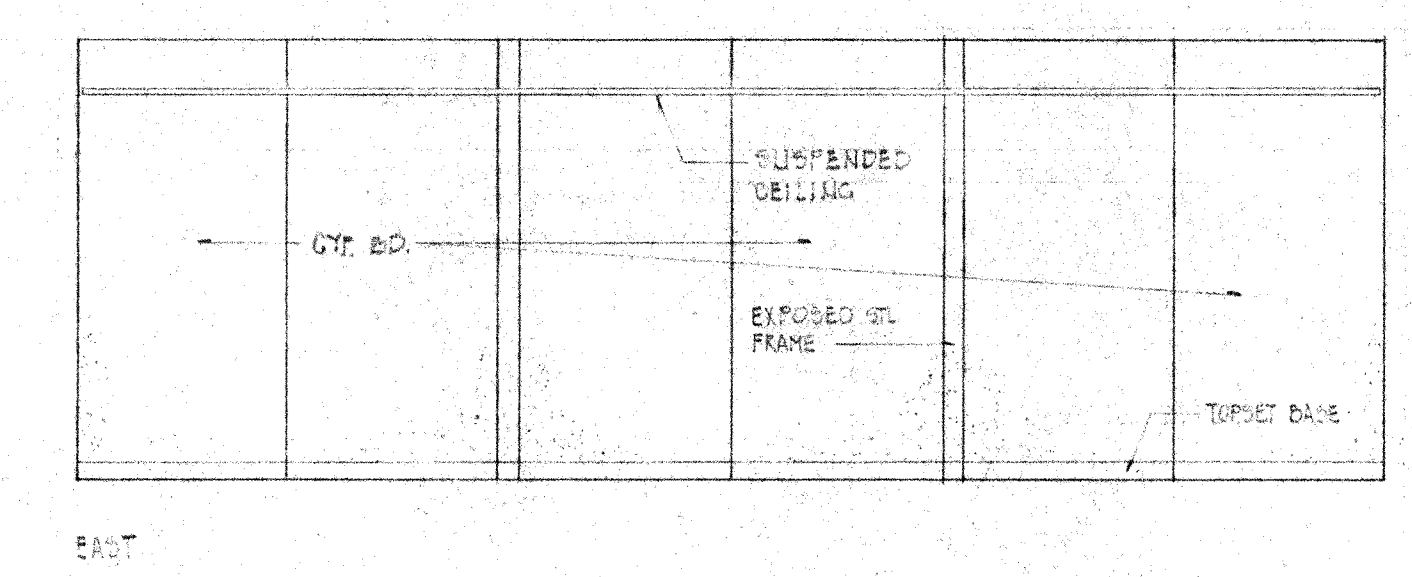
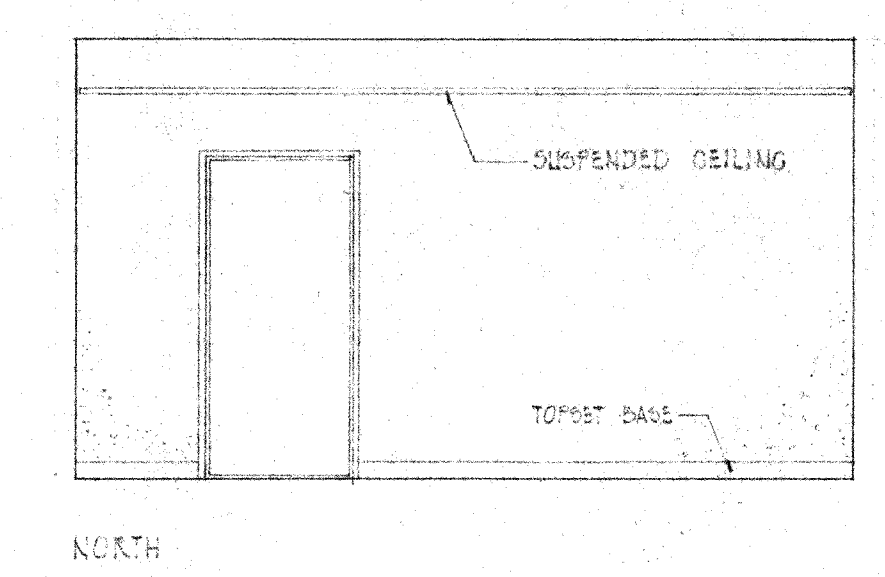
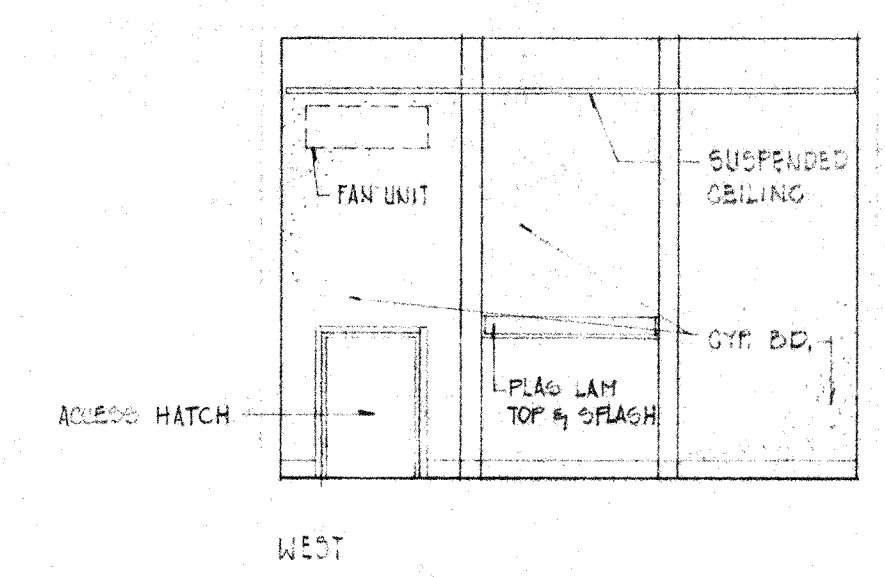
ROOM No. 106 SHOP

ROOM No. 101 VESTIBULE



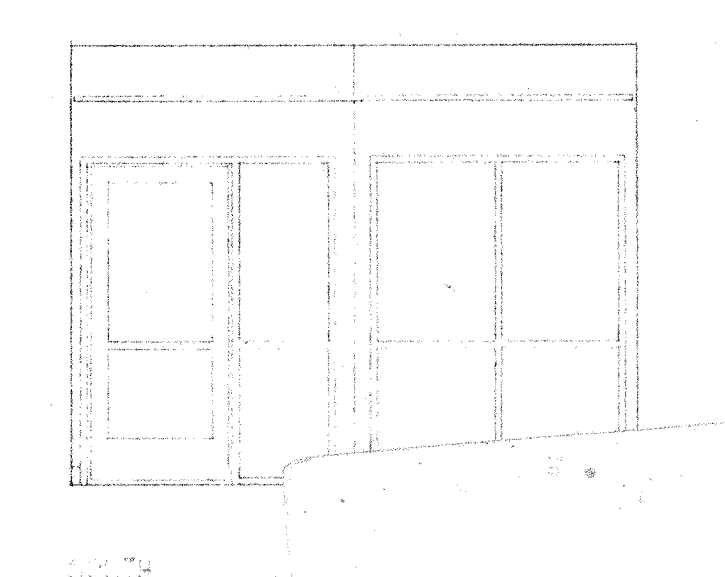
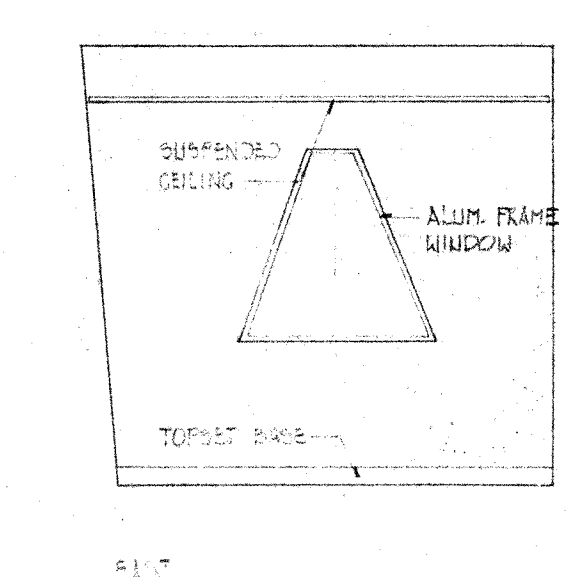
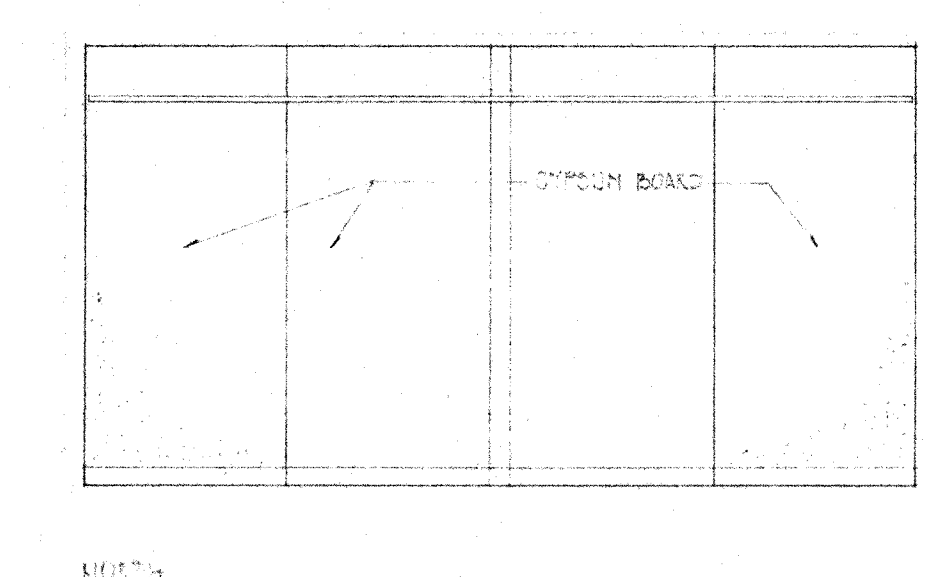
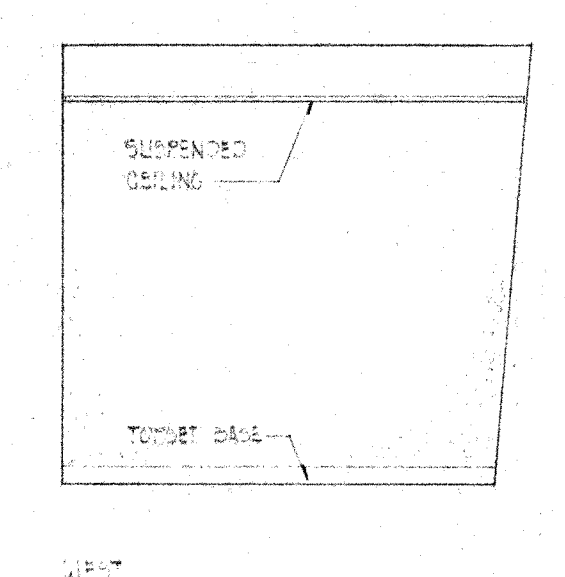
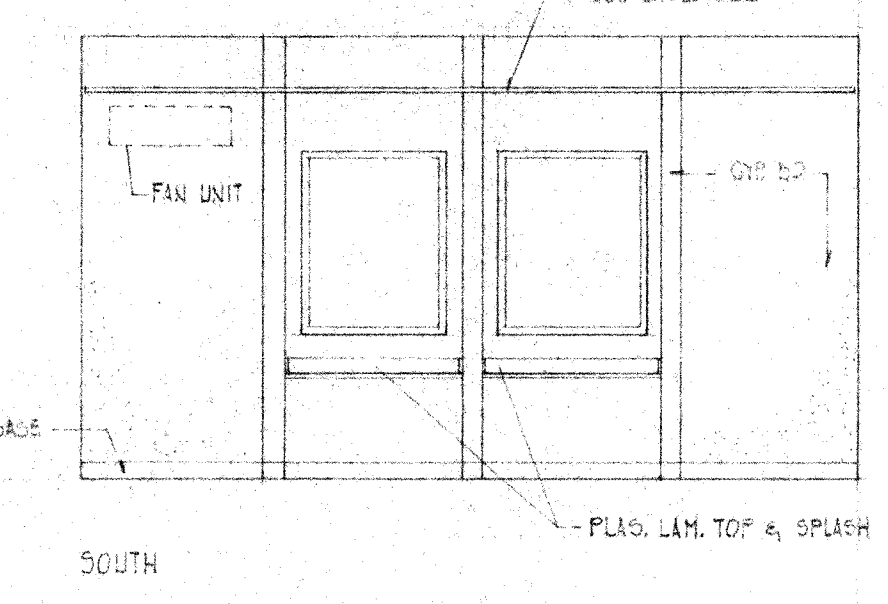
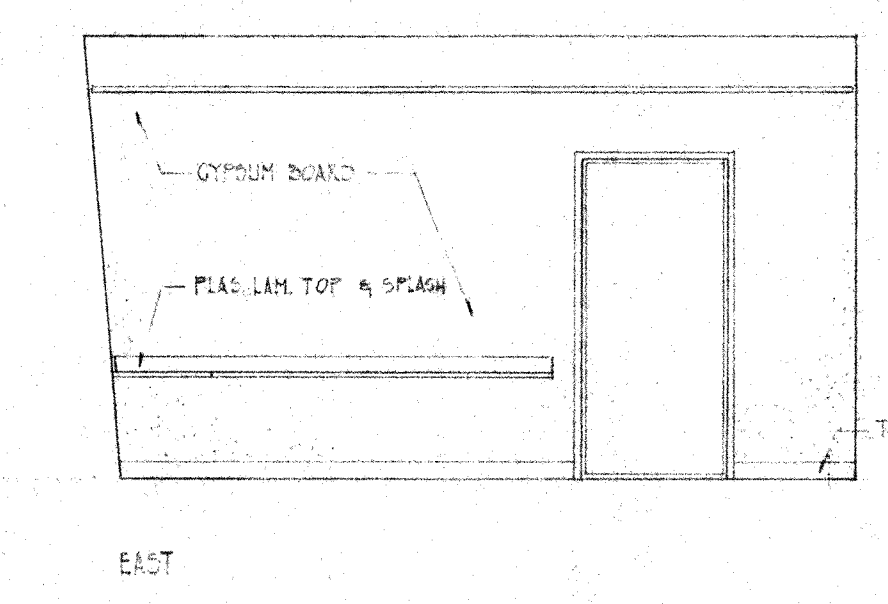
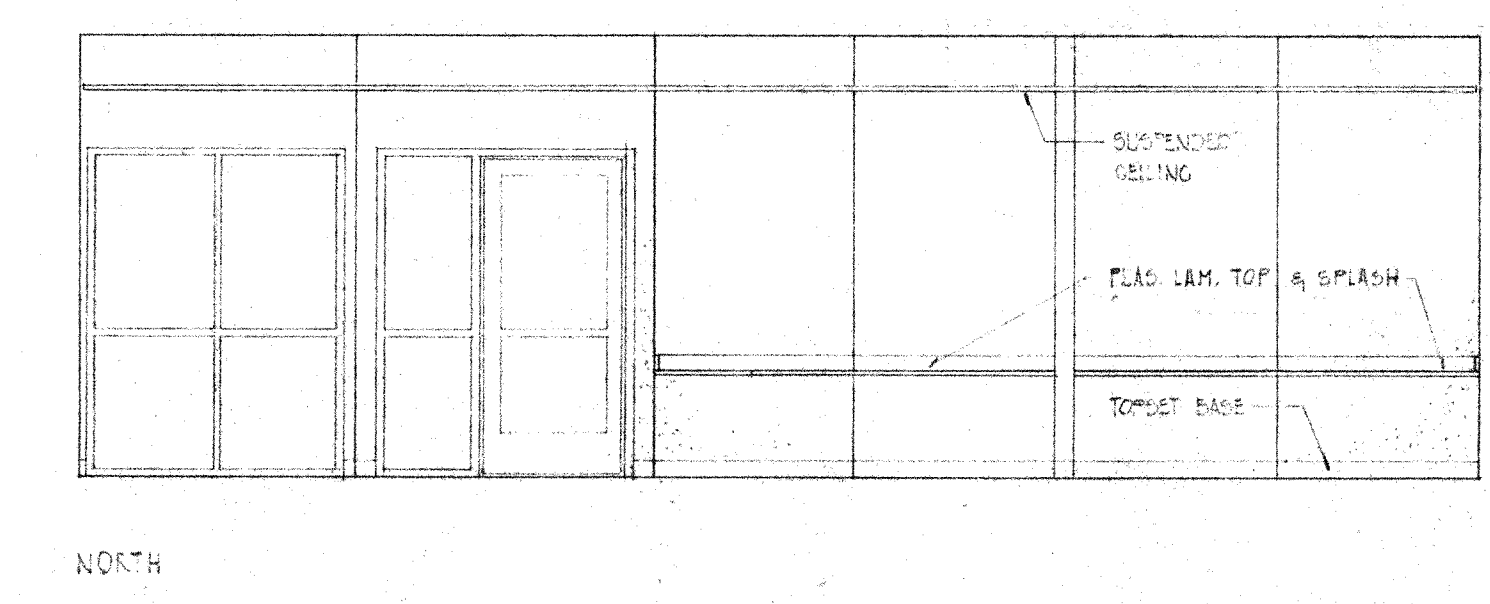
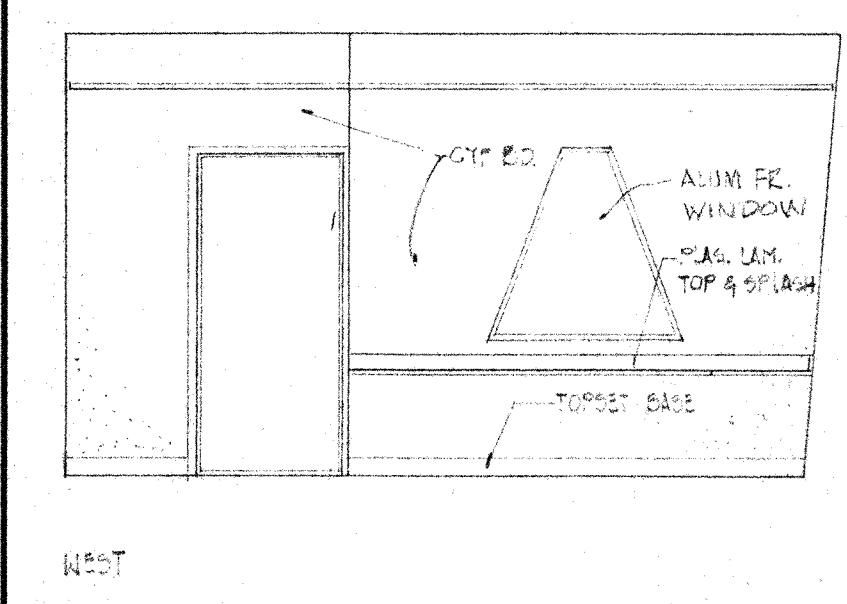
ROOM No. 208

ROOM No. 203 BUNK ROOM



ROOM No. 204 ELECTRONIC RECEIVER LAB

ROOM No. 207 TOILET ROOM

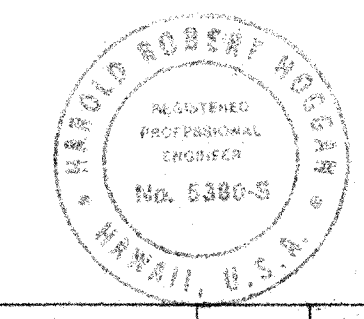


ROOM No. 206 COMPUTER ROOM

ROOM No. 205 CONTROL/COMPUTER DATA FACILITIES

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS

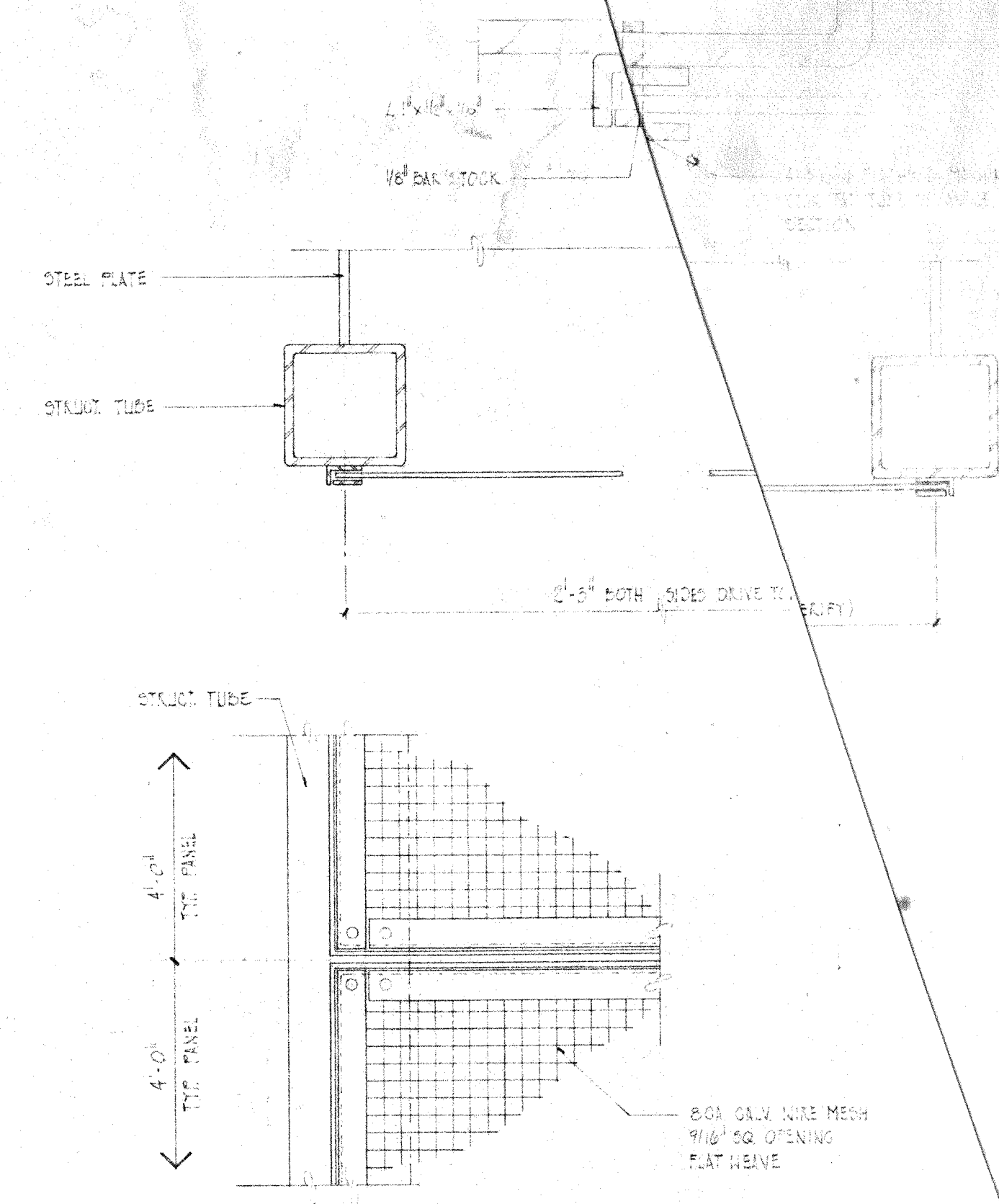
THIS WORK WAS PREPARED BY ME OR UNDER SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.
Robert H. Hays
Signature



HAWAII ERECTION BID SET		12-20-84	11/11/84
LTR	DESCRIPTION	DATE	APPD

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES		DRAWN de Vecer		DATE 11/11/84		CALIFORN	
TOLERANCE ON DECIMALS		CHECKED <i>Robert H. Hays</i>		DATE 11/11/84		TITLE INTERIOR SUBMITTING MAQUA REF	
XX = ± .03		APPROVED <i>Robert H. Hays</i>		DATE 11/11/84		DWG SIZE SCALE 1/4"	
XXX = ± .005		APPROVED <i>Robert H. Hays</i>		DATE 11/11/84		FILE NO. W. G.	
TOLERANCE ON FRACTIONS ± 1/16		NEXT ASSEMBLY		DRAWING NO.			
MACHINE FINISH 1/8"		ITEM		QTY			
		WEIGHT					
		APPLICABLE DOC					

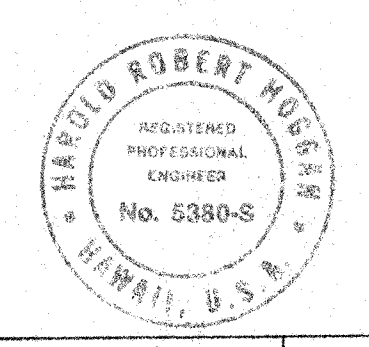
LIST			MATERIALS	
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT.



PARTIAL ELEVATION

1 PROTECTIVE SCREEN @ SHUTTER DRIVE
SCALE: 3" = 4'-0"

THIS WORK WAS PREPARED BY ME OR UNDER
SUPERVISION AND CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY SUPERVISION.
[Signature]
SIGNATURE



HAWAII ERECTION BID SET		12/20/04	APPD	NEXT ASSEMBLY		WEIGHT	DWG SIZE		SCALE	DWG. NO.	
LTR	DESCRIPTION	DATE	APPD	DRAWING NO.	ITEM	QTY	APPLICABLE DOC	FILE NO.	W.O.	DEPT	
REVISION				REVISION		REVISION		REVISION		REVISION	

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .05 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/		CHECKED <i>[Signature]</i> DATE 11/24/04	DATE 11/24/04	CALIFORNIA, INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
APPROVED <i>[Signature]</i> DATE 11/24/04		DATE 11/24/04	DATE 11/24/04	TITLE DOME DEALS MISCELLANEOUS DETAILS SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII	
DWG SIZE		SCALE	DWG. NO.	E10MD A-12	
FILE NO.		W.O.	DEPT	SHEET 1 OF 2	

CEILING SPECIFICATIONS & SCHEDULE

- TYPE:
- I SUSPENDED CEILING: CELOTEX MINERAL FIBER PROTECTONE STIPPLED PERFORATED TRIM EDGE SUSPENSION SYSTEM: DOWN PRODUCTS DXL #P-204
 - II SUSPENDED CEILING: CELOTEX MINERAL FIBER PROTECTONE STIPPLED TRIM EDGE SUSPENSION SYSTEM: DOWN PRODUCTS DXL #P-204
 - III SUSPENDED CEILING: CELOTEX MINERAL FIBER SAFETONE STIPPLED TRIM EDGE SUSPENSION SYSTEM: DOWN PRODUCTS DX-24

SUSPENDED CEILING SUSPENSION SYSTEM

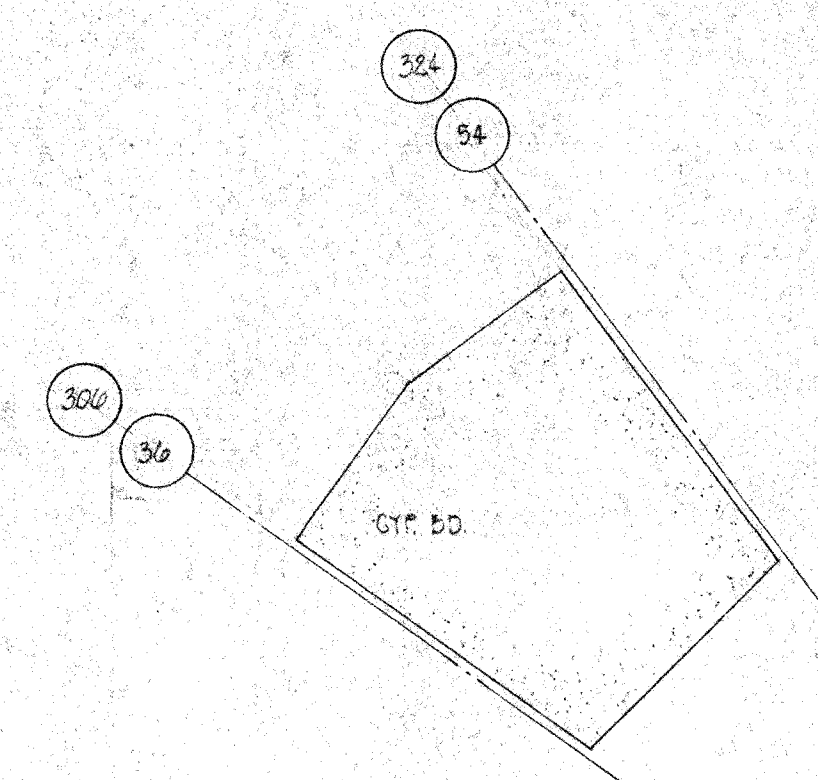
Suspended ceiling framing system shall be designed to resist a lateral force of 25% of the weight of the ceiling assembly and any loads tributary to the system for purposes of determining the lateral force, a minimum ceiling weight of 5 pounds per square foot shall be used.

Where the ceiling loads do not exceed 5 pounds per square foot and where partitions are not connected to the ceiling system, the following bracing method may be employed:

- Lateral support may be provided by four wires of minimum No. 12 gage spaced in four directions 90° apart, and connected to the main runner within 2" of the crossrunner and to the structure above at 45° angle not exceeding 30" from the plane of the ceiling. These lateral support points shall be placed 12" o.c. in each direction with the first point within 4" from each wall.
- Allowance shall be made for lateral movement of the system. Main runners and cross runners may be attached at two adjacent walls with clearance between the wall and the runners maintained at the other two walls.
- Vertical support shall be provided as required in UBC Chapter 47 with the added requirement that discontinuous ends of cross runners and main runners be vertically supported within 8" of such discontinuities in any case where the ceiling is supported by a wall.
- Lighting fixtures and air diffusers shall be supported directly by wires to the structure above.

EXCEPTION:

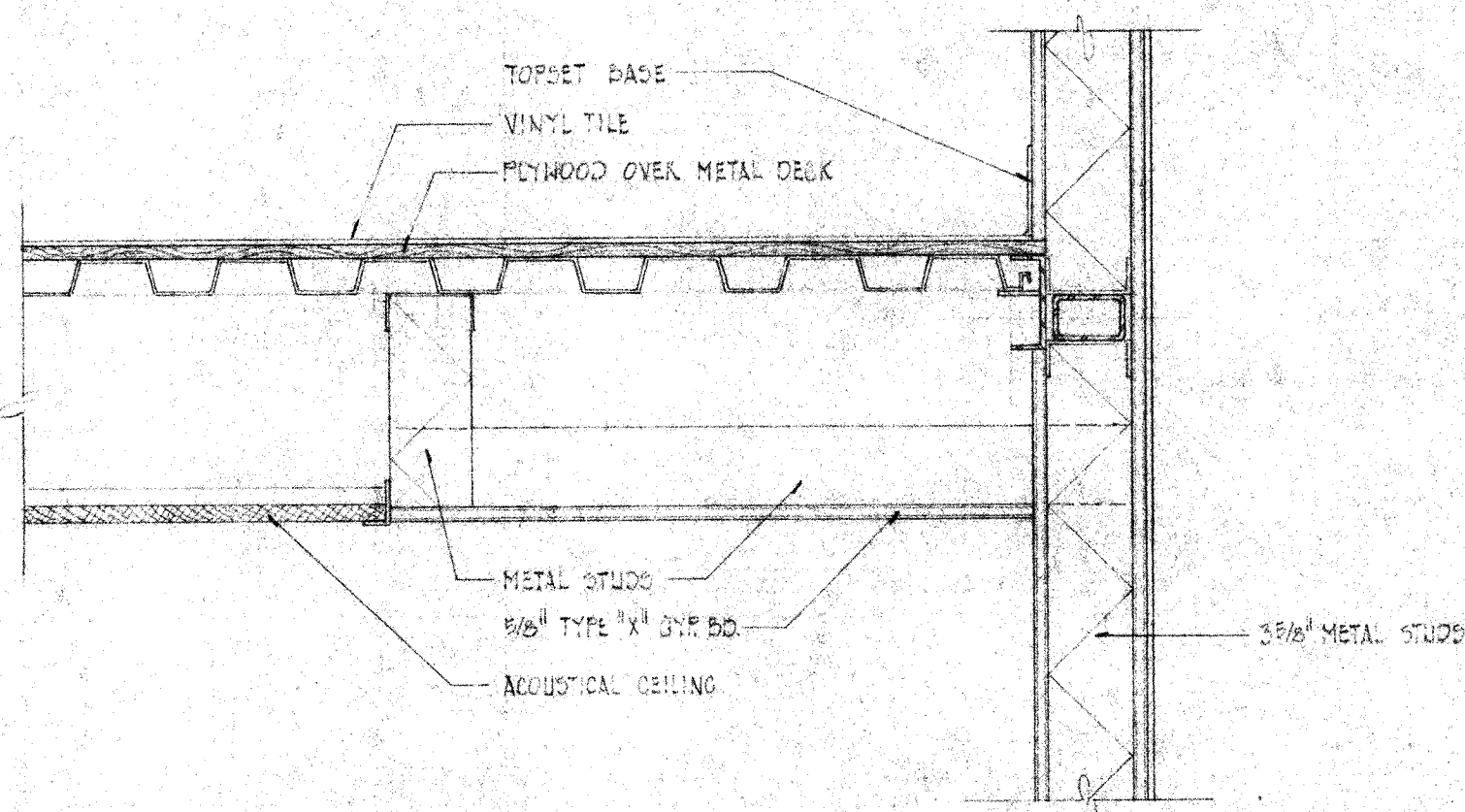
- Recessed lighting fixtures not over 66 lbs. in weight, and suspended pendant lamp fixtures not over 30 lbs. in weight, may be supported and attached directly to the ceiling system runners by a positive attachment such as screws or bolts.
- Air diffusers which weigh not more than 20 lbs., and which receive no tributary loading from duct work may be positively attached to and supported by the ceiling runners.



THIRD FLOOR REFLECTED CEILING PLAN

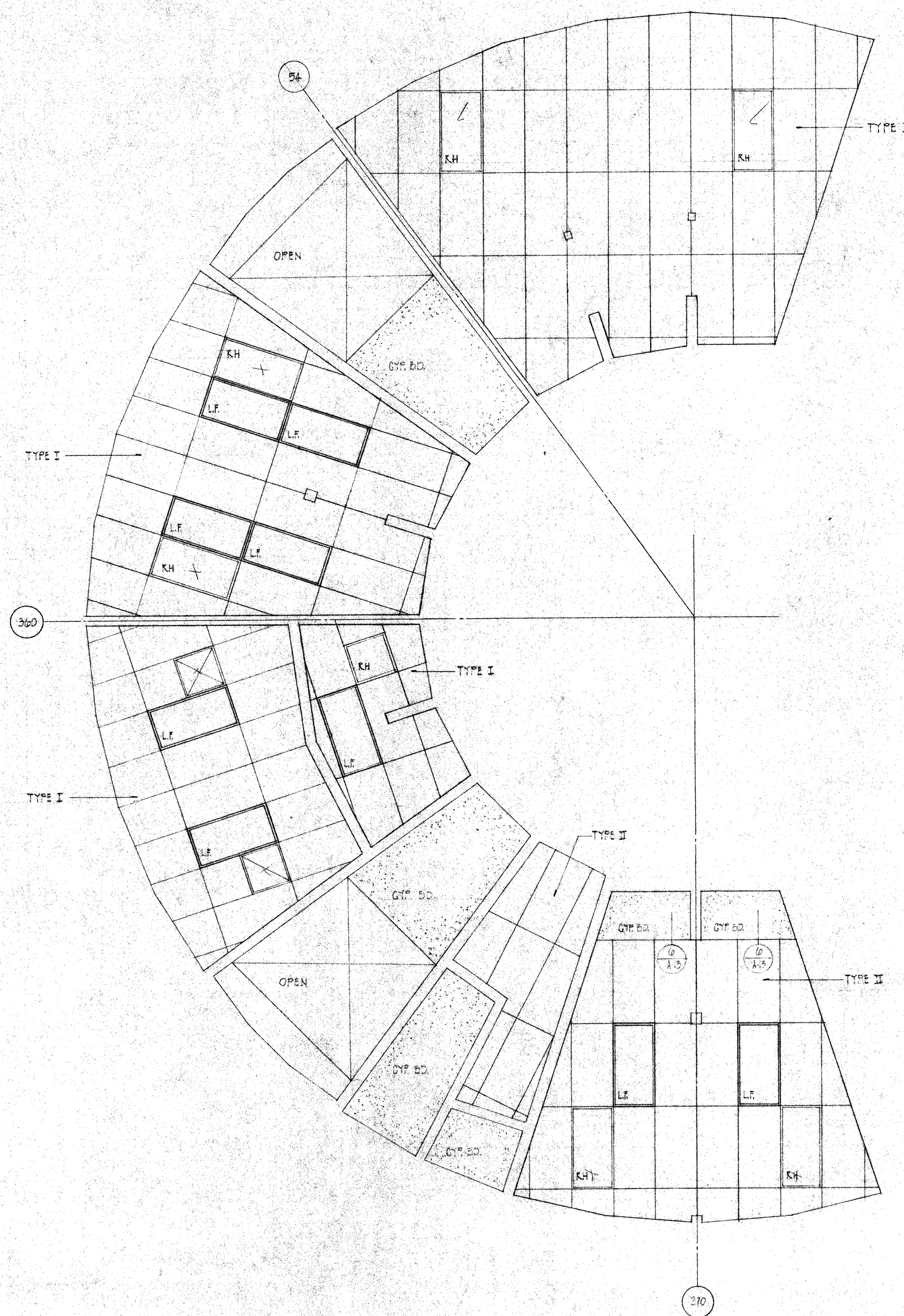
SCALE: 1/4" = 1'-0"

STAIRWELL NFI OPPOSITE HAND



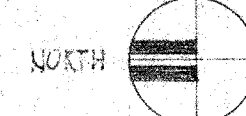
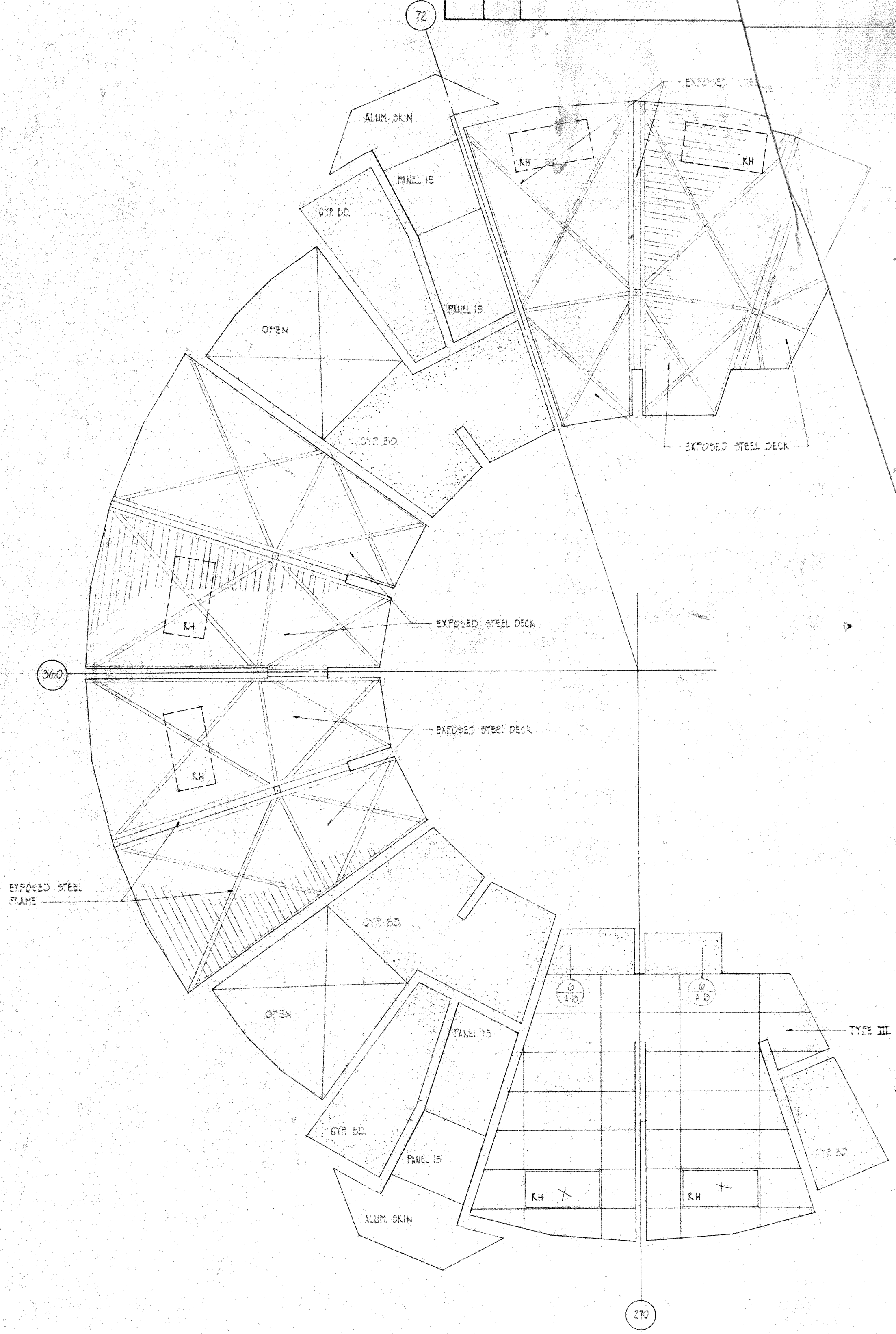
TYPICAL SOFFIT DETAIL

SCALE: 1/2" = 1'-0"



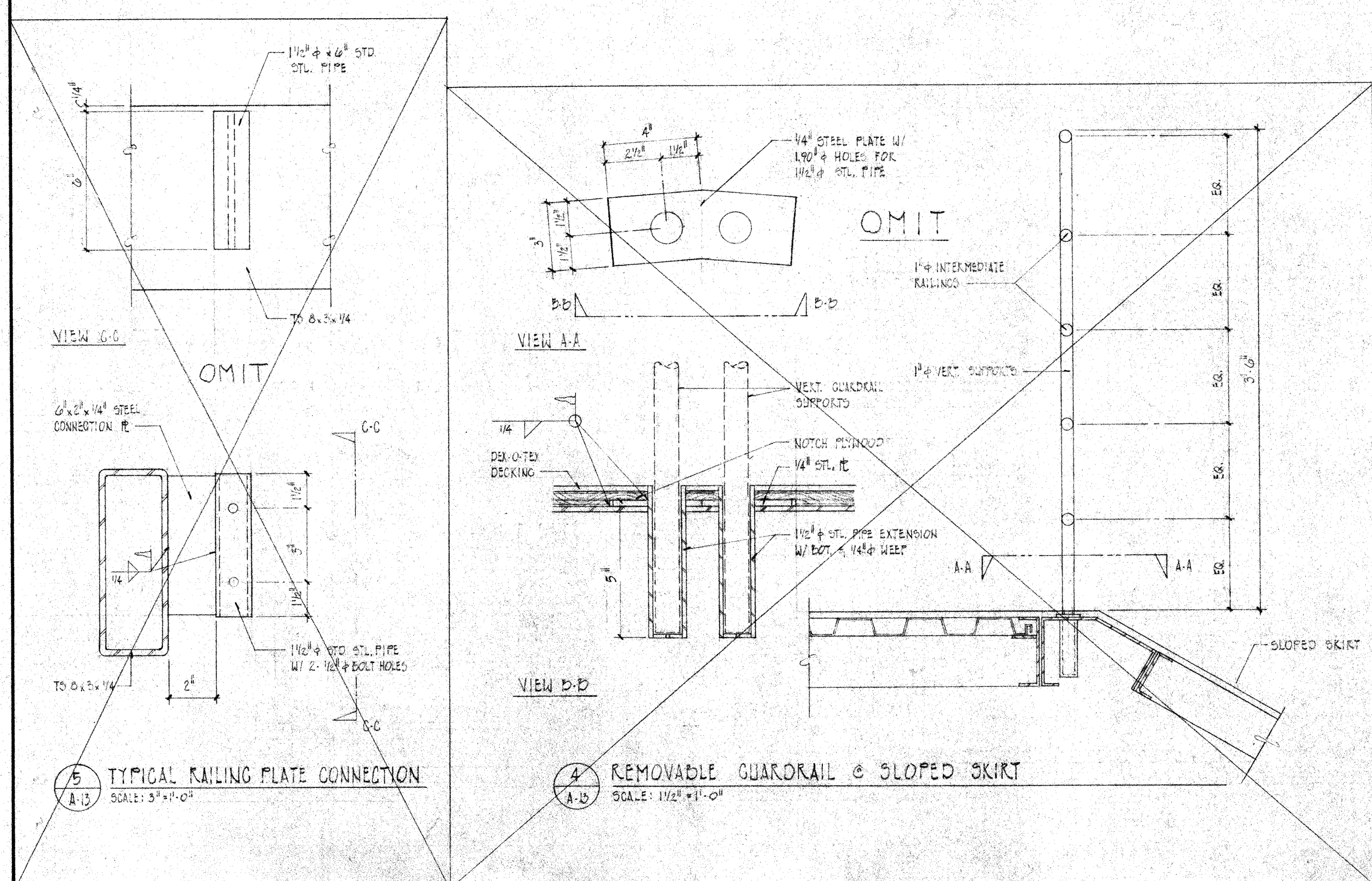
SECOND FLOOR REFLECTED CEILING PLAN

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



FIRST FLOOR REFLECTED CEILING PLAN

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

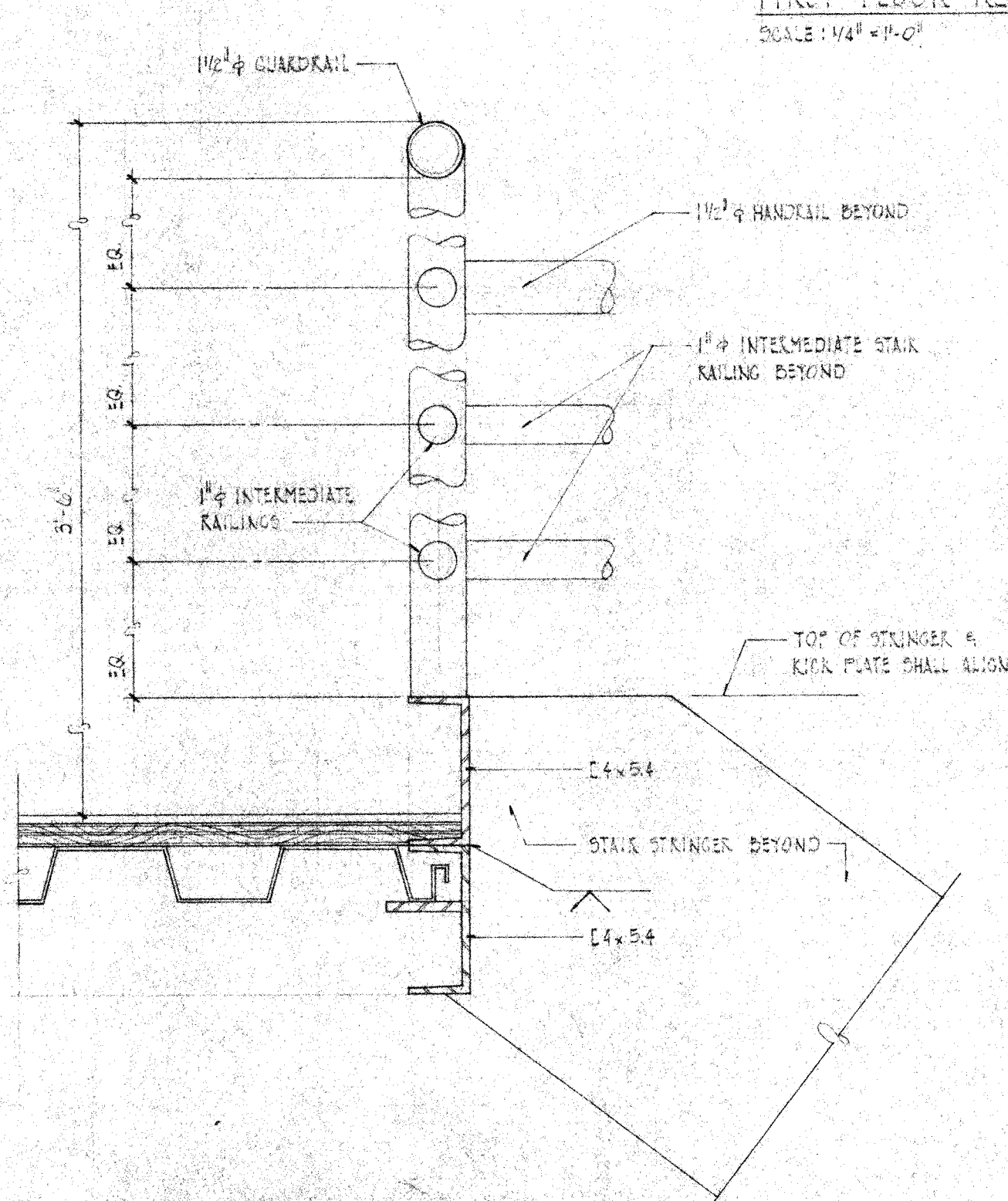


SLOPED GUARDRAIL

SCALE: 1/2" = 1'-0"

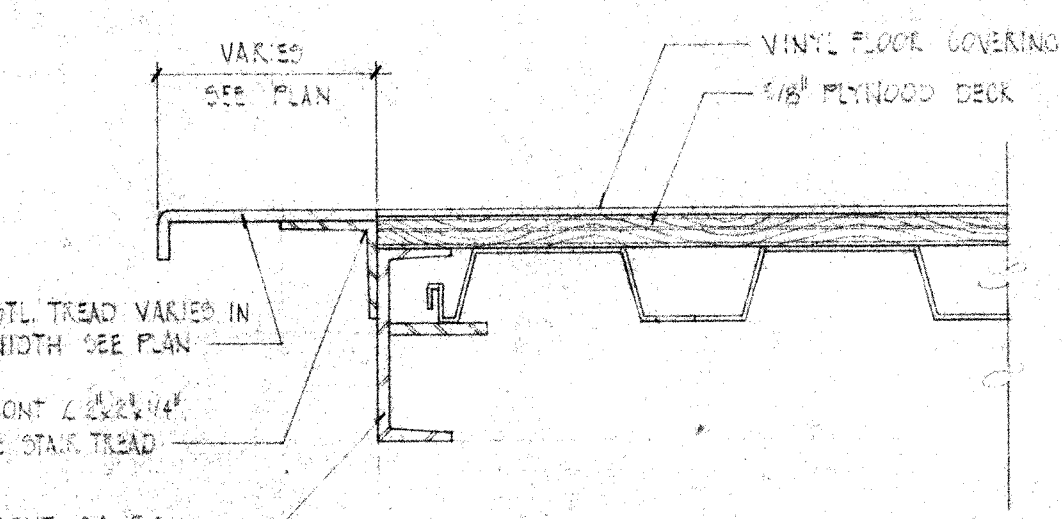
STAIRWELL GUARDRAIL THIRD FLOOR LANDING

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



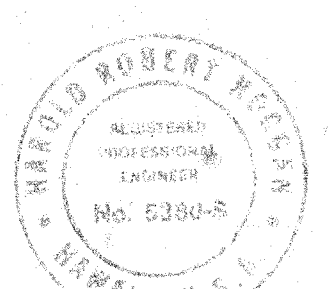
TYPICAL STAIR TREAD & LANDING

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



2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES				DRAWN BY: [Signature]				DATE: [Date]			
TOLERANCE ON DECIMALS: .005				CHECKED BY: [Signature]				DATE: [Date]			
TOLERANCE ON ANGLES: ± 1/2°				APPROVED BY: [Signature]				DATE: [Date]			
TOLERANCE ON FRACTIONS: ± 1/16				APPROVED BY: [Signature]				DATE: [Date]			
MACHINE FINISH 12/				NEXT ASSEMBLY				DRAWING NO. [Number]			
				ITEM				QTY			
				APPLICABLE DOC				DWG. NO. [Number]			
				FILE NO. [Number]				I.W.O. [Number]			
				DEPT. [Number]				SHEET [Number] OF [Number]			



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[Signature]

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.

TITLE: REFLECTED CEILING PLAN DETAILS

SUBMITTAL: OBSERVATORY MAUNA KEA, HAWAII

DWG. NO. [Number]

AS NOTED

FILE NO. [Number]

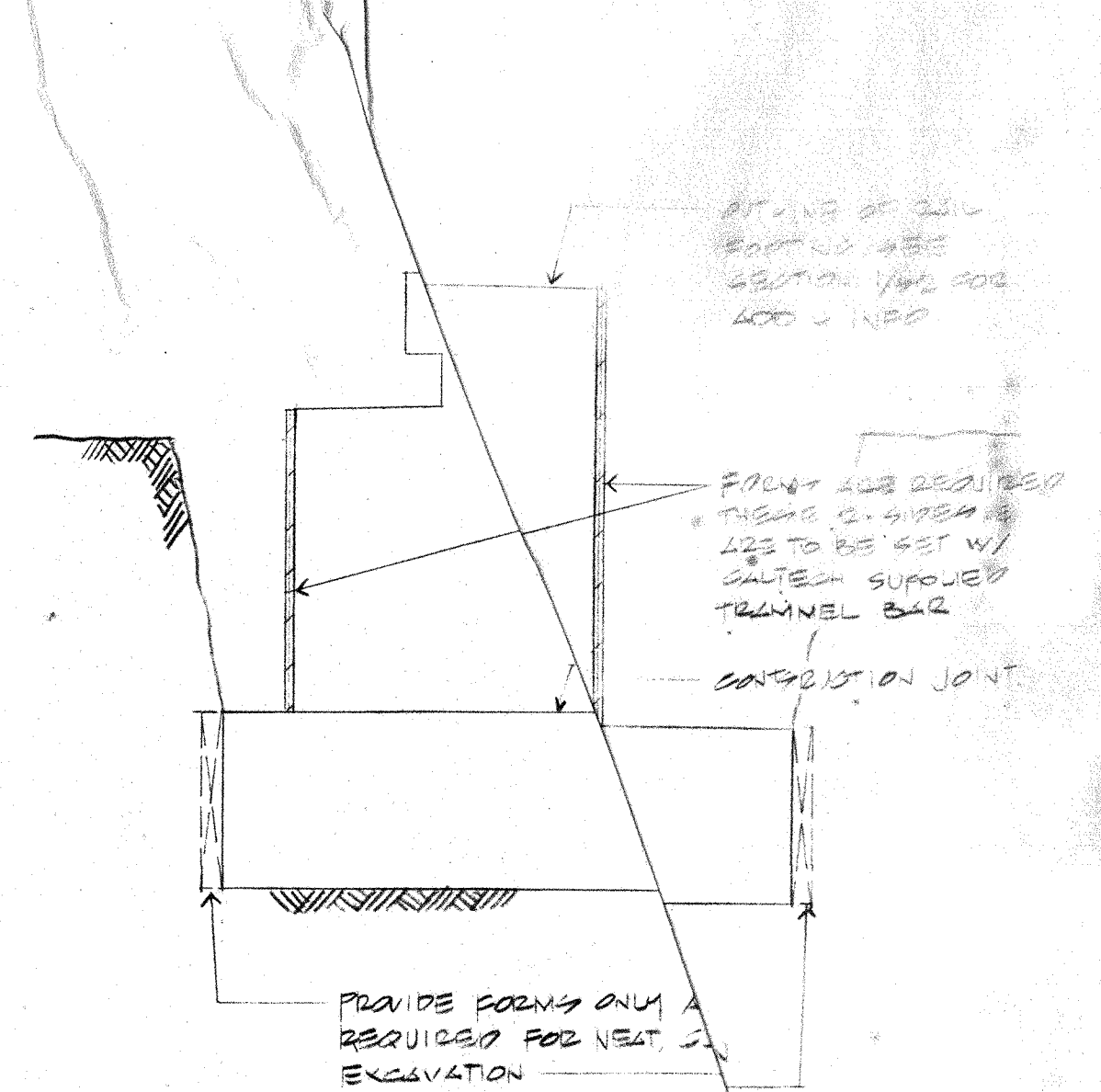
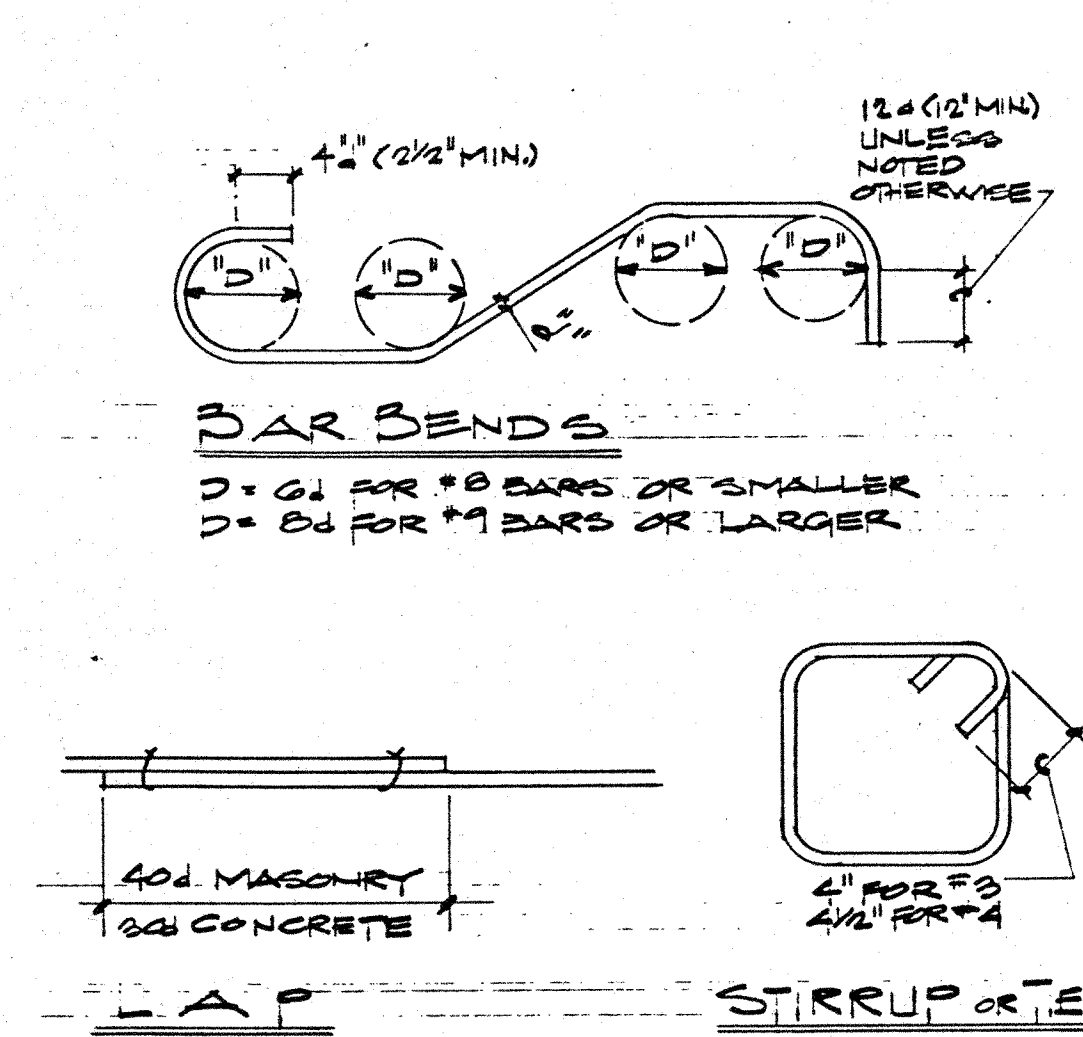
I.W.O. [Number]

DEPT. [Number]

SHEET [Number] OF [Number]

All materials and workmanship shall conform to the 1982 edition of the Uniform Building Code.

Contractor to submit shop drawings for approval by the Structural Engineer.

[illegible]

Prior to pouring concrete the foundation excavations shall be inspected and approved by the structural engineer.

SEE DRAWINGS & SPECIFICATIONS FOR ITEMS
TO BE PROVIDED BY CONTRACTOR.

[illegible]

CLIP OR GRIND ROOT TO SOUND METAL BEFORE WELDING SECOND SIDE.

45°

1/8"

60°

1/8"

VERTICAL BARS HORIZONTAL BARS

NOTE:--

A PRE-QUALIFICATION TENSION TEST SHALL BE MADE BY AN APPROVED TESTING LABORATORY OF SAMPLES OF EVERY SIZE BAR BEING WELDED UTILIZING MATERIALS, CONDITIONS AND WELDING PROCEDURES TO COMPLY WITH 1180 LOS ANGELES BUILDING CODE AND GOVERNING INSPECTION AGENCY.

DOME RAIL FOUNDATION
FORMING REQUIREMENTS

Because of the long haul of the concrete trucks, the Contractor shall submit a plan for approval by the structural engineer, showing how the concrete is delivered to the site. Dry batching of some type is required to keep the cement from taking an initial set before being poured.

1. Robertson
2. Inryco
3. Verco
4. Equal, specifically approved by the Engineer.

1. TRAMMEL BAR FOR RAIL ALIGNMENT
2. ANCHOR BOLT TEMPLATE FOR TRAMMEL BAR.
3. ANCHOR BOLT TEMPLATE FOR RAIL SUPPORT P'S
4. SHUTTER RAIL GAGE BAR.

Contractor to submit shop drawings for approval by the Structural Engineer.

[illegible]

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SUPERVISION AND CONTROL OF THIS PROJECT
MANAGER AT THE FOLLOWING OFFICE:

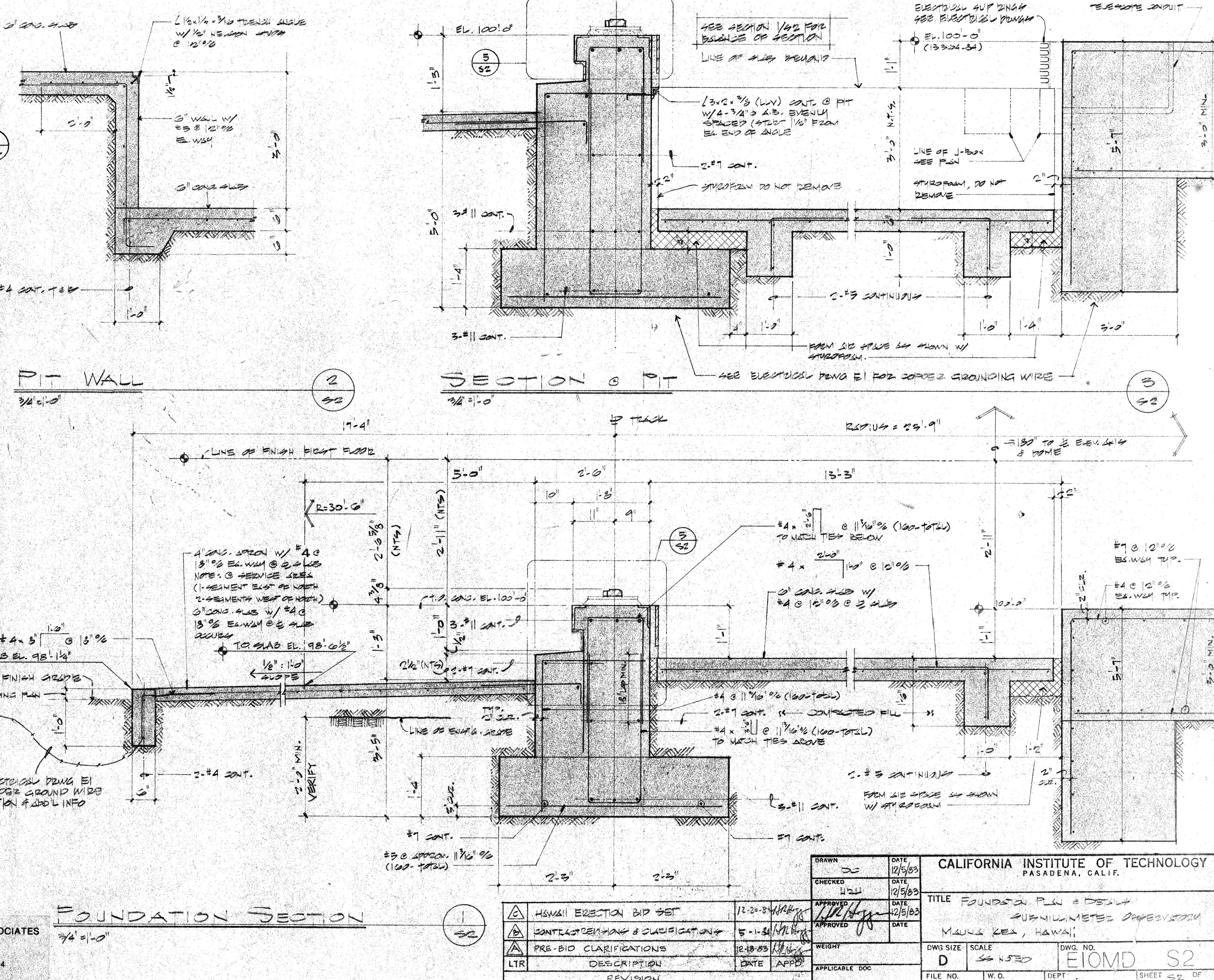
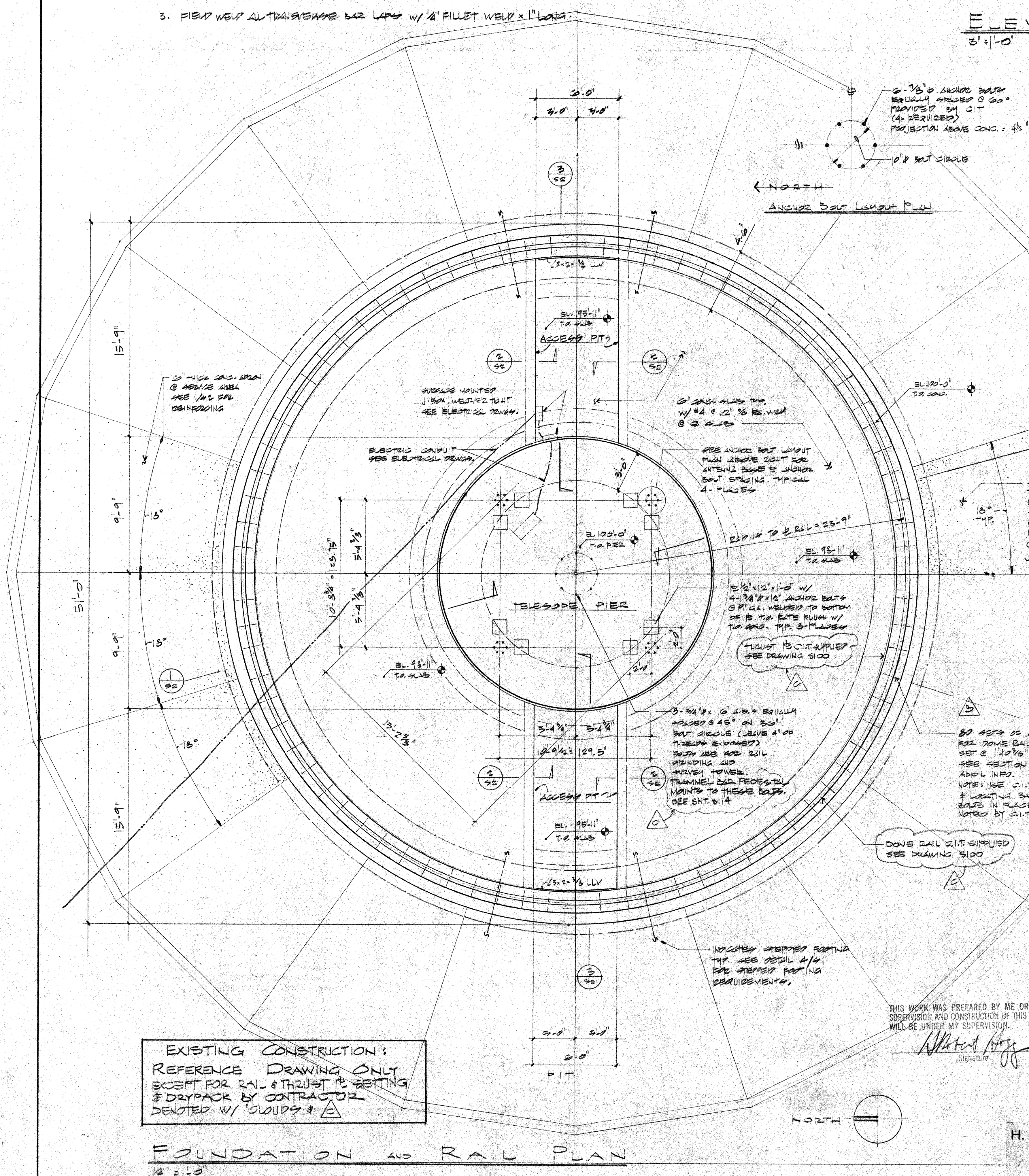
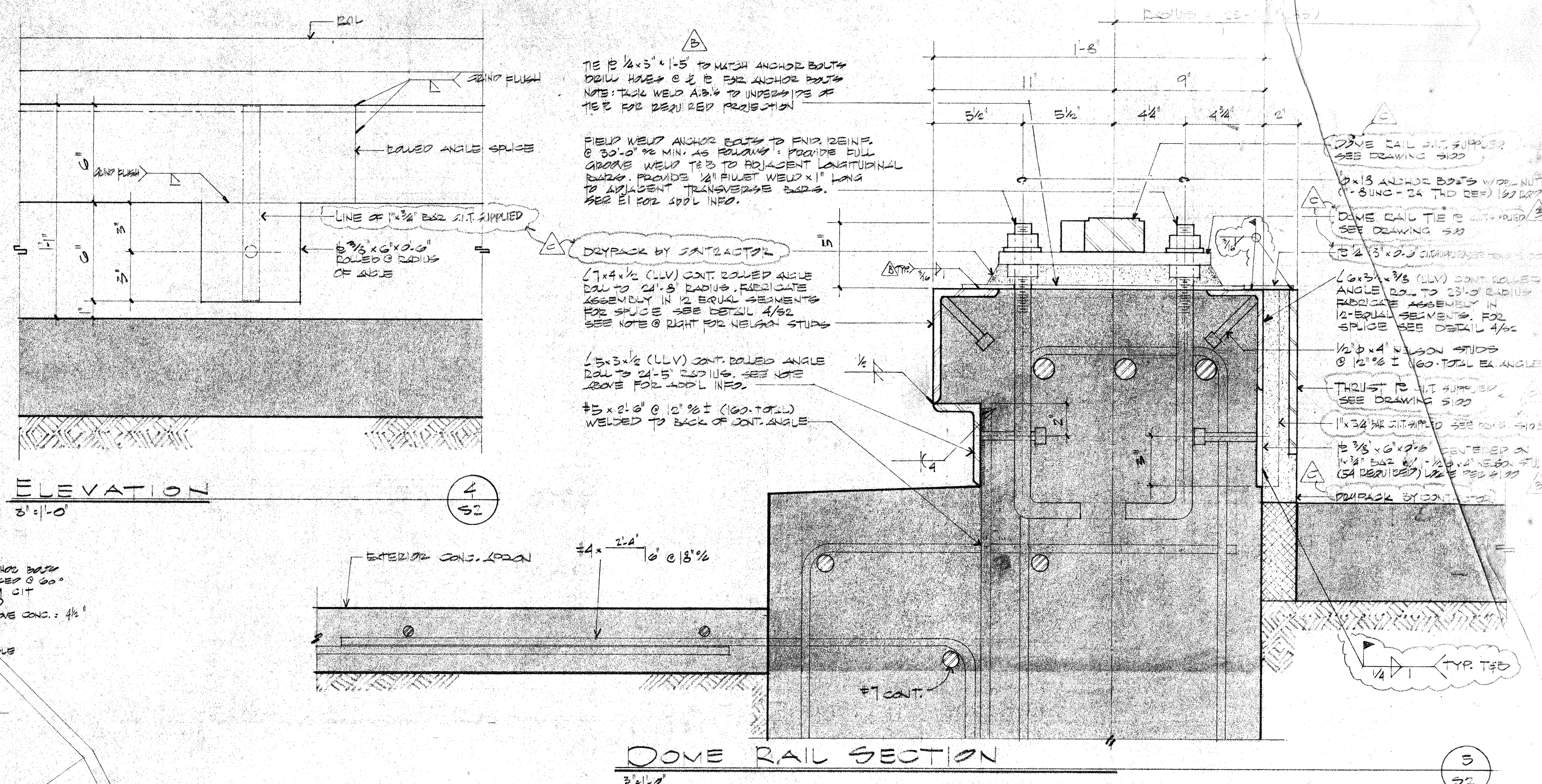
H. Robert Hoggan

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 694-2917

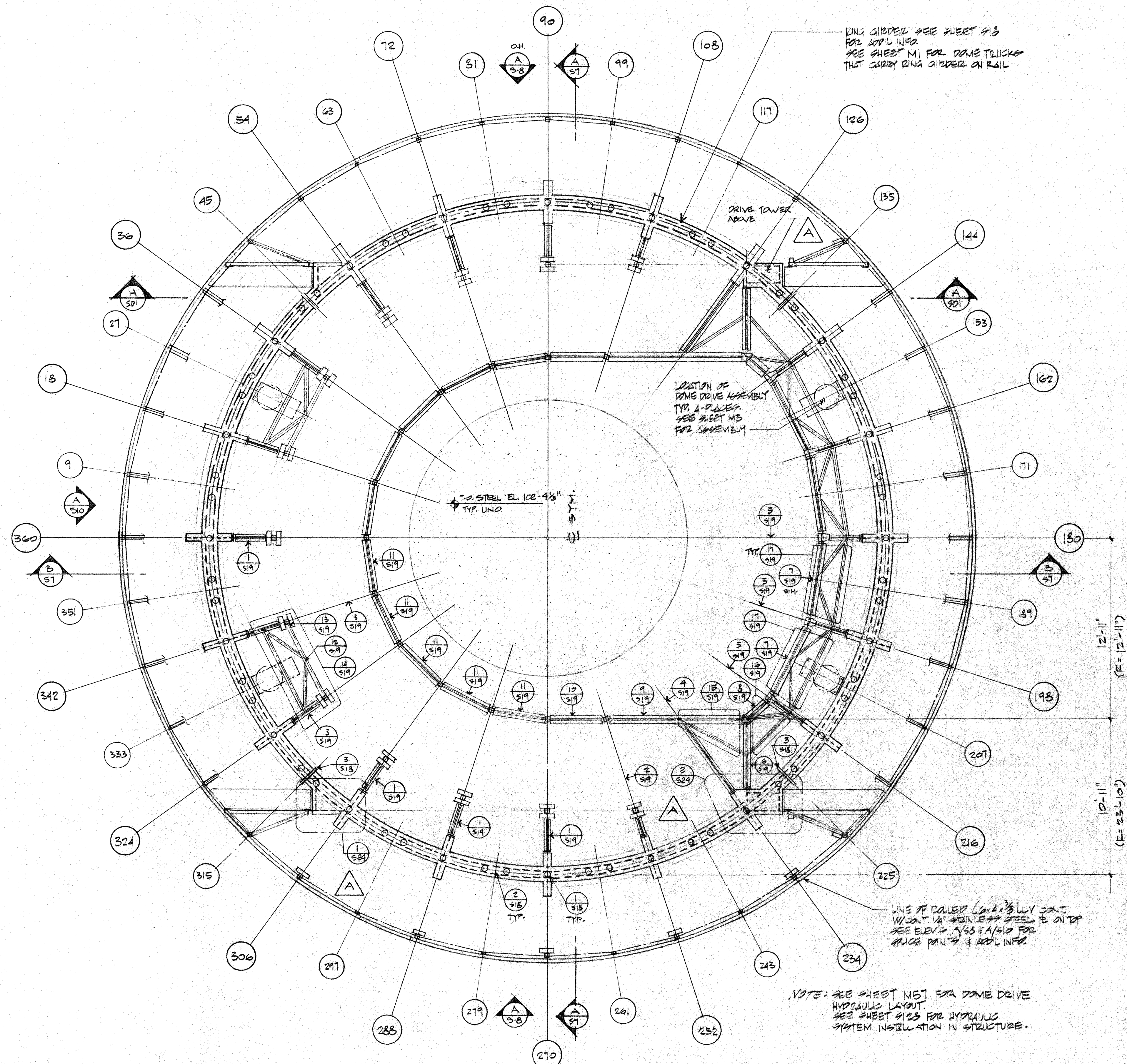
REGISTERED PROFESSIONAL ENGINEER
NO. 63620-S
CALIFORNIA
PASADENA, U.S.A.

DRAWN <i>DN</i>	DATE 12/9/55	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
CHECKED <i>HEA</i>	DATE 4/16/55	TITLE GENERAL NOTES & TYPICAL DETAILS SUBMITTAL SPECIFICATIONS STEEL KEEL, HANGAR	
APPROVED <i>[Signature]</i>	DATE 12/9/55		
APPROVED	DATE		
WEIGHT	DWG. SIZE	SCALE	DWG. NO.
	E	1/8" = 1'	E10MD SI
APPLICABLE DOC.	FILE NO.	W. G.	DEPT. [SHEET 1] OF 1

1. THE FORMS ARE REQUIRED ABOVE THE 4'6" WIDE FOOTING. SEE DETAIL 8/41 FOR ADD'L INFORMATION.
2. THE 4'6" WIDE FOOTING & THE TELESCOPE PIER ARE TO BE POURED PRIOR TO AUGURING PILES FOR RAIL WALL W/ TRAMMEL BAR.
3. THE STRUCTURAL ENGINEER & SOILS ENGINEER ARE TO INSPECT FOOTING EXCAVATIONS PRIOR TO SETTING REBAR. THE CONTRACTOR SHALL GIVE AMPLE NOTICE TO CALTECH TO ALLOW FOR INSPECTION.
4. SEE SPECIFICATIONS FOR CONCRETE FINISHES.
5. SETTING TOLERANCES:
 - A. THE RAIL SUPPORT ANGLES ARE TO BE SET WITHIN $\pm 1/8"$ OF TRUE RADIUS & ELEVATION. THE CONTRACTOR IS TO ERECT THE CALTECH SUPPLIED TRAMMEL BAR CENTERED ON THE TELESCOPE PIER. HE IS TO USE TRAMMEL BAR FOR SETTING ANGLES.
 - B. ANCHOR BOLTS FOR RAIL SUPPORT PLATES ARE TO BE SET WITHIN $\pm 1/8"$ OF TRUE RADIUS & RADIAL POSITION. THE CONTRACTOR IS TO USE CALTECH SUPPLIED TEMPLATE.
6. THE REINFORCING STEEL IN THE GAVE RAIL FOUNDATION AND EXTERIOR CONSP. APRON SHALL BE WELDED TOGETHER AS FOLLOWS FOR ELECTRICAL GROUNDING. SEE ELECTRICAL DET. 81 FOR ADD'L INFO.
 1. FIELD WELD ALL LONGITUDINAL LAPS EVERY REBAR W/ $1/4"$ FILLET WELD $\times 1"$ LONG
 2. FIELD WELD ALL TRANSVERSE LAPS TO LONGITUDINAL ENDS W/ $1/4"$ TACK WELD EA. SIDE OF EA. INTERSECTION
 3. FIELD WELD ALL TRANSVERSE BAR LAPS W/ $1/4"$ FILLET WELD $\times 1"$ LONG.

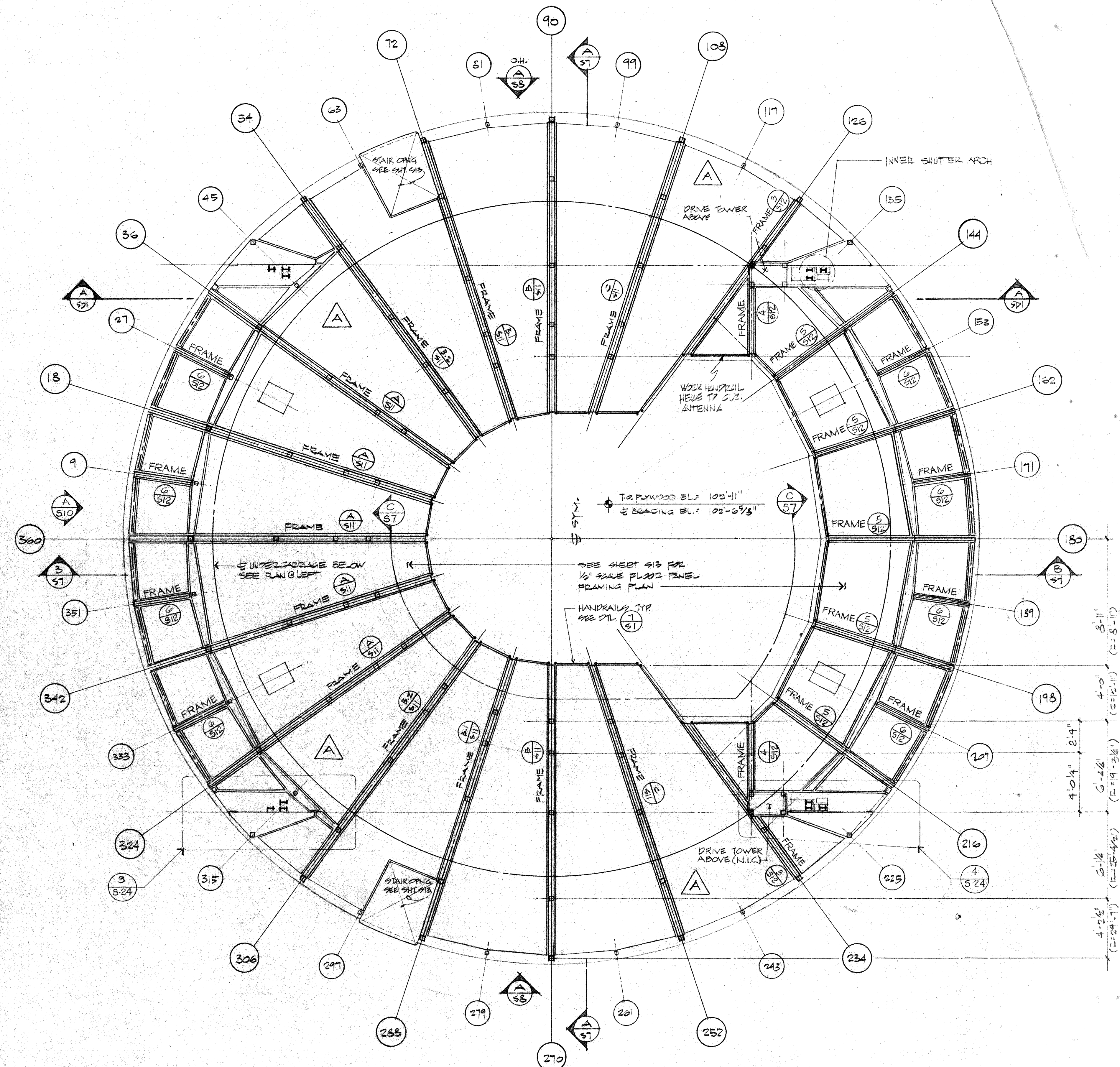
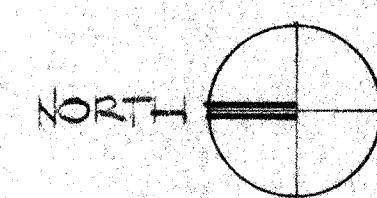


LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



UNDERCARRIAGE PLAN

SCALE: $\frac{1}{4}'' = 1'-0''$



FIRST LEVEL FRAMING PLAN

SCALE: $\frac{1}{4}'' = 1'-0''$



2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE UNDERCARRIAGE & FIRST LEVEL PLANS
50 MILLIMETER OBSERVATORY

MAUNA KEA, HAWAII

DWG. SIZE	SCALE	DWG. NO.

E	NO. 3	ETUIMD	33

FILE NO.	W. O. *	DEPT	SHEET: 53 OF
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UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES	
TOLERANCE ON DECIMALS	
.XX = ± .03	ANGULAR = ±
.XXX = ± .005	
TOLERANCE ON FRACTIONS ±	
MACHINE FINISH 125/	
NEXT ASSEMBLY	
DRAWING NO.	IT

	DRAWN R
	CHECKED AB
	APPROVED <i>[Signature]</i>
	APPROVED <i>[Signature]</i>
QTY	WEIGHT
	APPLICABLE DOC

	DATE 12/5/83
	DATE 12/5/83
	DATE 12/6/83
	DATE

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TITLE
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THIS WORK WAS PREPARED BY ME OR UNDER
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WILL BE UNDER MY SUPERVISION.

Robert Higgs
Signature

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

	HAWAII ERECTION BID SET	12-20-84	HR
	PRE-BID CLARIFICATION	12-13-83	
LTR	DESCRIPTION	DATE	APPR

TOLERANCE ON FRACTIONS $\pm 1/16$	
MACHINE FINISH $\frac{125}{\checkmark}$	
NEXT ASSEMBLY	
DRAWING NO.	ITEM

	APPROVED
QTY	WEIGHT
	APPLICABLE DOC

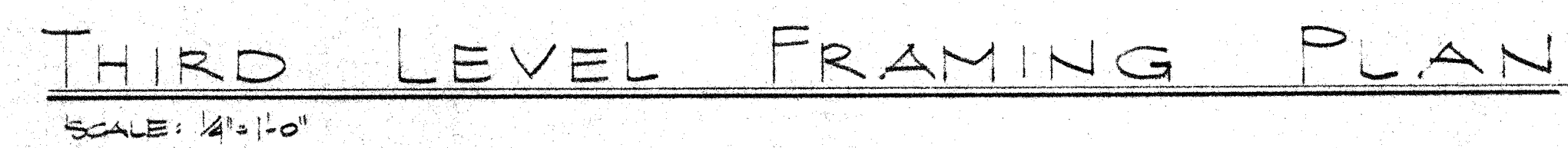
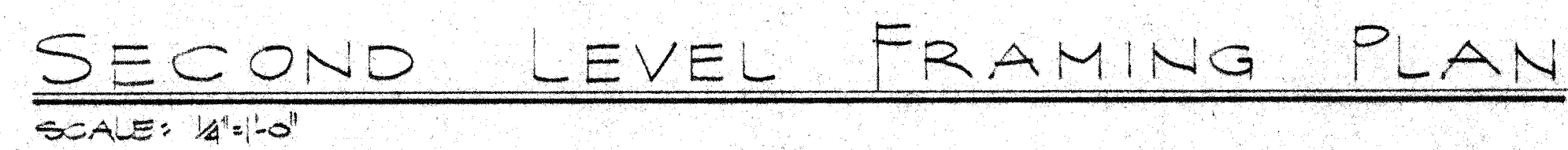
DATE	MAUNA	
DWG SIZE	SCALE	
E	NOT	
FILE NO	W. C	

8 MILLIMETER 034	
KEA, HAWAII	
ED	DWG. NO. E10MD
DEPT	

LABORATORY

S3

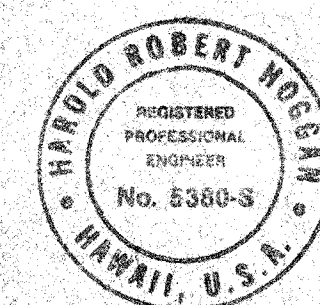
SHEET 52 OF





UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS $\pm .005$ ANGULAR $\pm 1/2^\circ$ JAX = .005 TOLERANCES ON FRACTIONS $\pm 1/16$ MACHINE FINISH 1/8"	DRAWN 2	DATE 12/9/83	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.				
	CHECKED AB	DATE 10/19/83	TITLE SECOND AND THIRD LEVEL PLANNING PLANS FOR THE UNIVERSITY OBSERVATORY				
	APPROVED [Signature]	DATE 12/19/83	NAHAT KES, HAWAII				
	NEXT ASSEMBLY	WEIGHT	DWG SIZE SCALE	DWG NO.			
	DRAWING NO.	ITEM	QTY	E	NOTED		
	PD			FILE NO.	W.D.	DEPT.	SHEET 54 OF 54
	APPLICABLE DOC.						

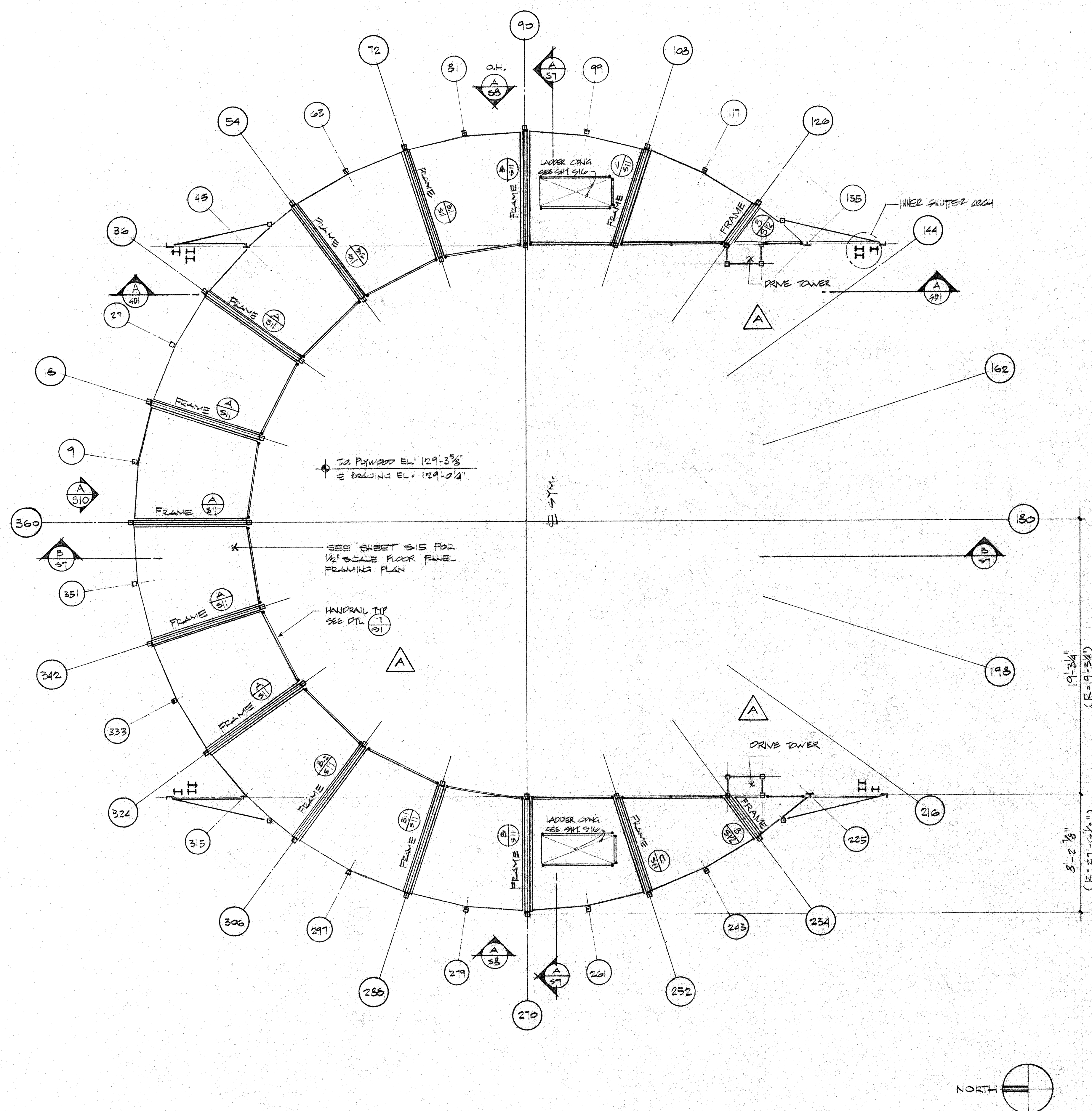
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WILL BE UNDER MY SUPERVISION.

[Signature]
Signature

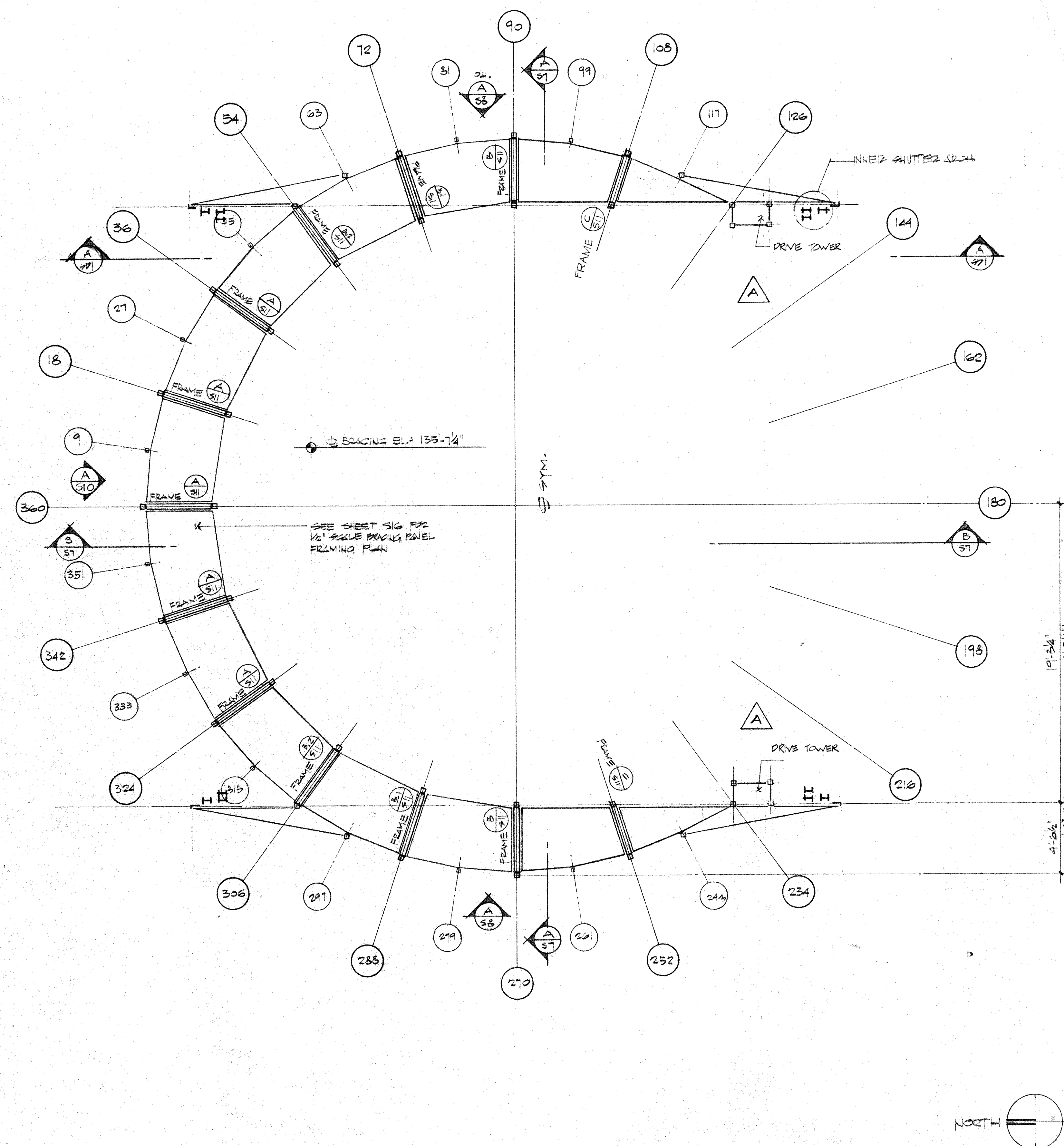


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	44W811 ERECTION BID SET	12-24-84	HR
	PRE-BID CLARIFICATION	12-13-83	
LTR	DESCRIPTION	DATE	AP
REVISION			



FOURTH LEVEL FRAMING PLAN
SCALE: $\frac{1}{4}" = 1'-0"$



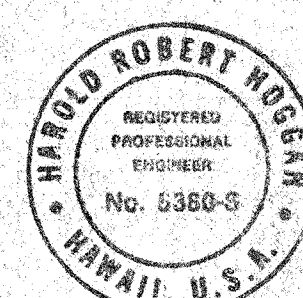
FIFTH LEVEL FRAMING PLAN

2. PROTECTIVE FINISH:



NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.



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Robert Higgs
Signature



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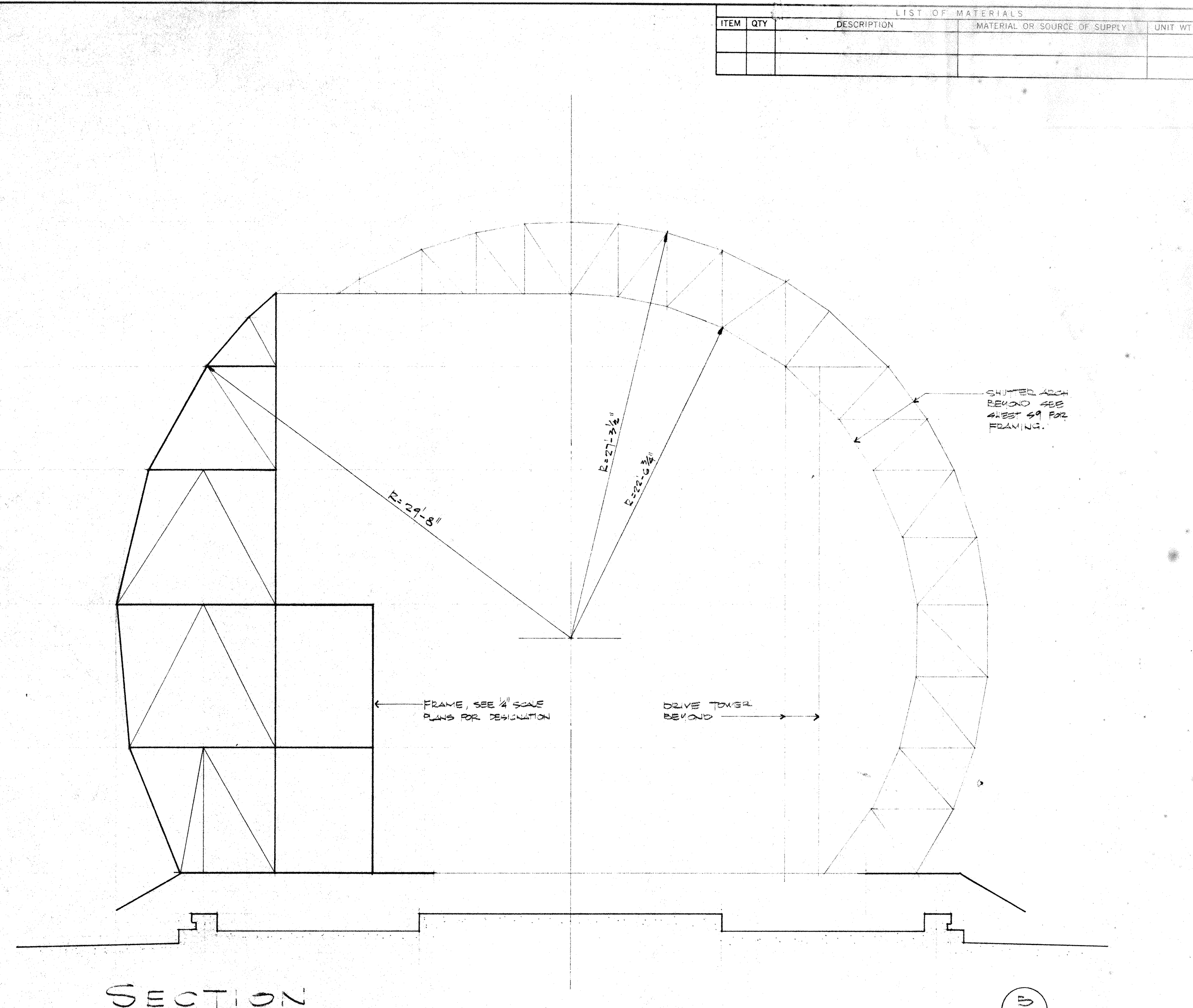
CS		HAWAII ERECTION BID SET	12-20-84	HW
		PRE-BID CLARIFICATION	12-13-83	
	LTR	DESCRIPTION	DATE	APPRO
		REVISION		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = $\pm .03$ ANGULAR = $\pm 1/2^\circ$ XXX = $\pm .005$ TOLERANCE ON FRACTIONS $\pm 1/16$ MACHINE FINISH $\frac{1}{32}$				DRAWN DC DATE 8/15
CHECKED AB DATE 12/5/88				
APPROVED  DATE 12/8/88				
APPROVED  DATE				
NEXT ASSEMBLY				
DRAWING NO.	ITEM	QTY	WEIGHT	
			APPLICABLE DOC	

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE FOURTH & FIFTH LEVEL FRAMING PLANS
SUBMILLIMETER OBSERVATORY
MAUNA KEA, HAWAII

DWG SIZE E	SCALE NOTED	DWG. NO. E10MD S5	
FILE NO.	W. O.	DEPT	SHEET 5 OF


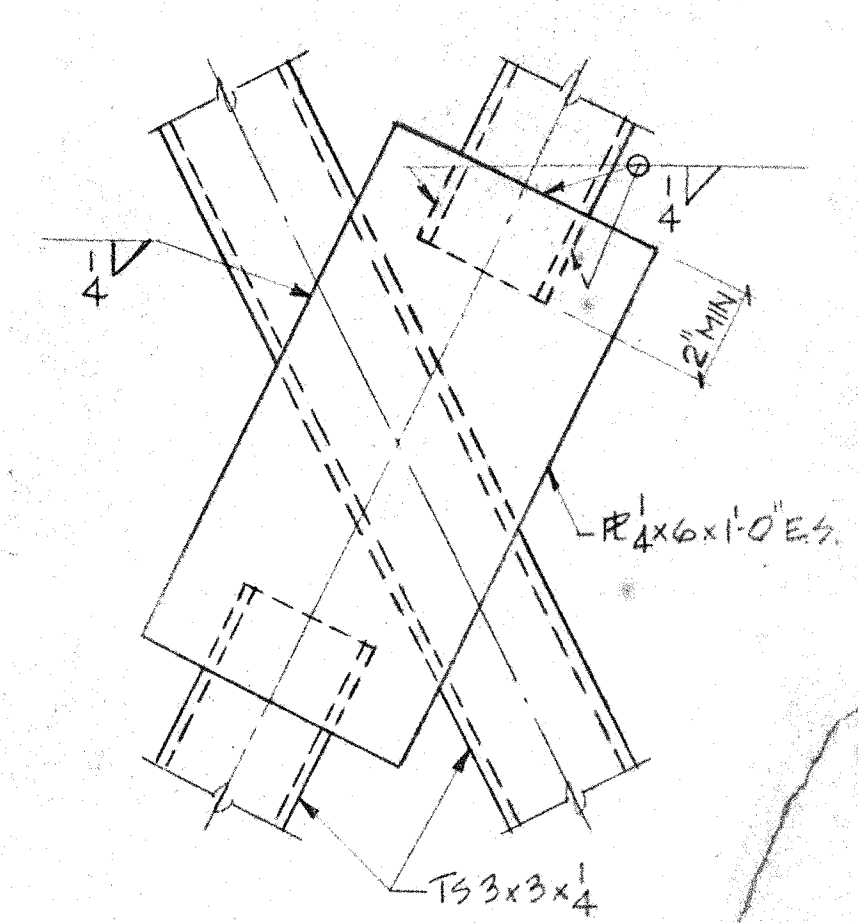


SECTION
SCALE 4"=1'-0"

DETAIL

Technical drawing of a rectangular frame assembly. The drawing includes the following dimensions and annotations:

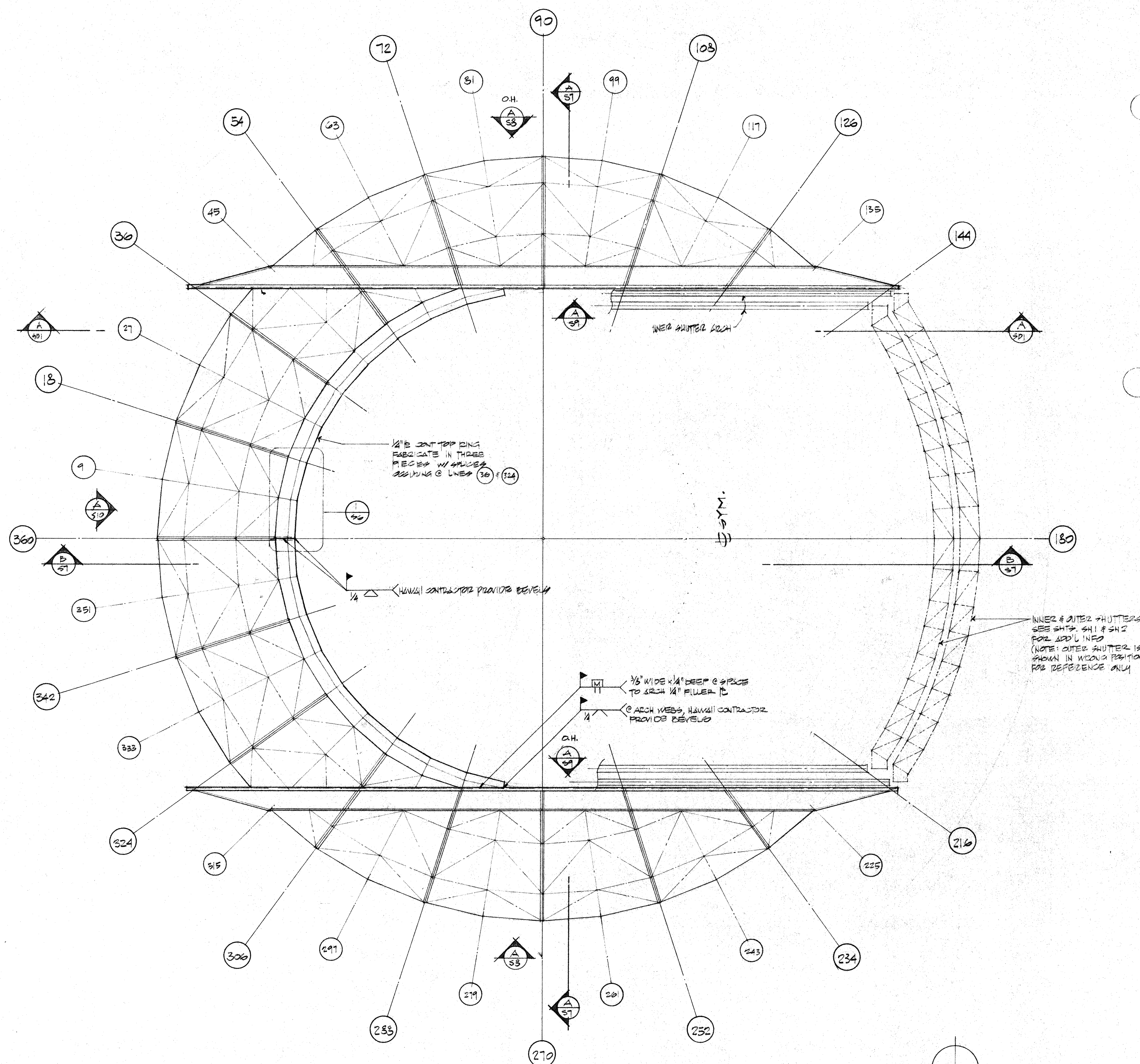
- Top Left:** $\frac{1}{4}$ SHIM
- Top Center:** $\frac{1}{4}$
- Top Right:** 2
- Right Side (Top):** BEND LINE (EA SIDE WHERE OCCURS)
- Center:** FRAME W/ITS $\frac{3}{8} \times 1 \frac{1}{2}$ END COWLS, SEE ELEVATIONS
- Right Side (Middle):** $1" \phi$ H & B. E 16" O.G., PER "C/57"
- Right Side (Bottom):** 9" FROM BEND LINE
- Bottom Left:** ACCESS HOLES, $\frac{1}{2} \times 1 \frac{1}{2}$
- Bottom Center:** BENT R OR L $\frac{3}{8} \times 2 \times 4$ AS REQ'D



UNLESS OTHERWISE NOTED				DRAWN		DATE	
DIMENSIONS ARE IN INCHES				D.C.		12/5/83	
TOLERANCE ON DECIMALS				CHECKED		DATE	
.XXX $\pm .03$ ANGULAR $\pm \pm 1/2^\circ$				A.B.		12/5/83	
.XXX $\pm .005$				APPROVED		DATE	
TOLERANCE ON FRACTIONS $\pm 1/16$				APPROVED		12/5/83	
MACHINE FINISH 125μ						DATE	
NEXT ASSEMBLY							
DRAWING NO.		ITEM		WEIGHT			
				APPLICABLE DOC			

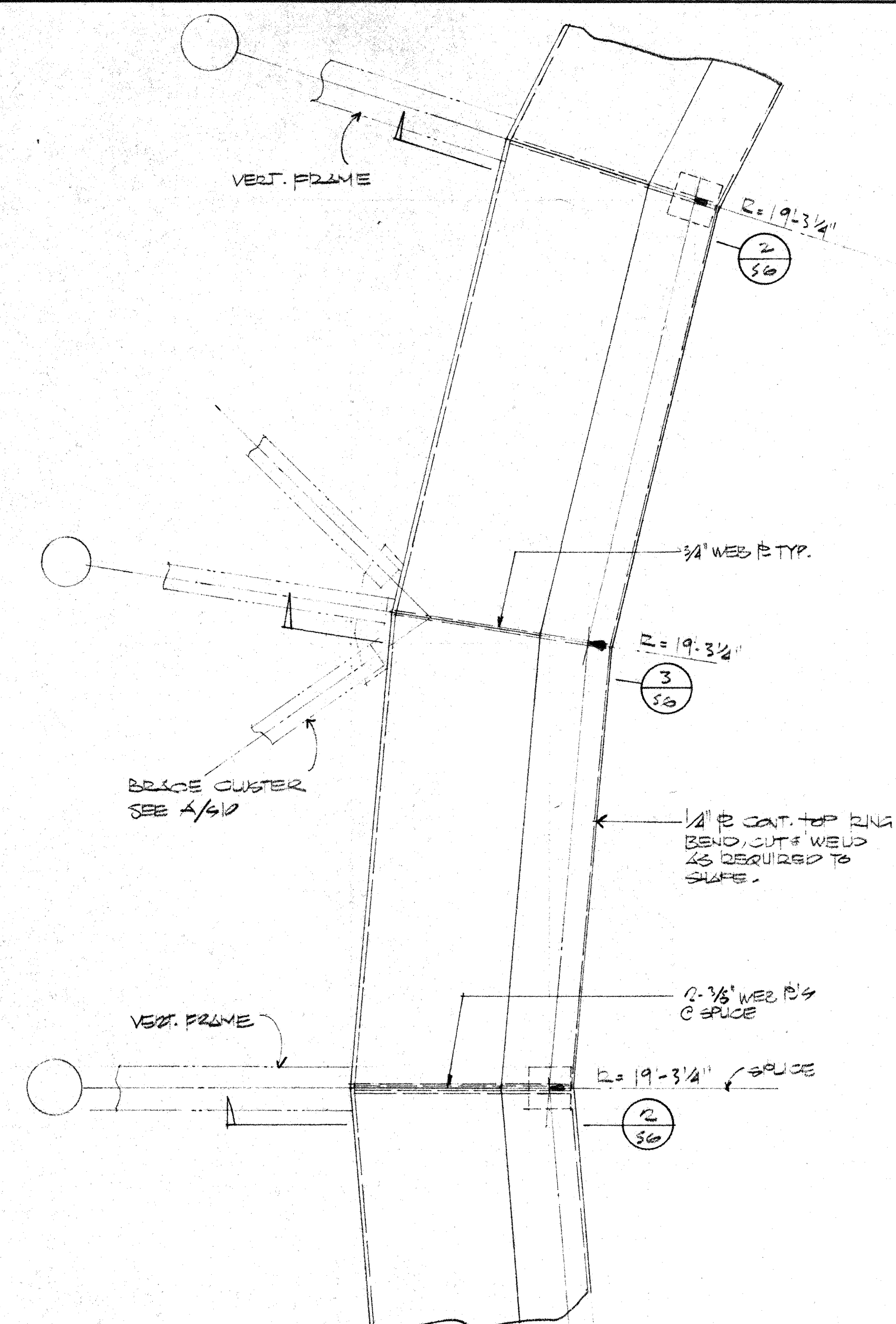
CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
TITLE <u>THE EFFECT OF INTRINSIC POLARIZABILITY</u> <u>ON THE VISCOSITY OF POLYMER</u> <u>SOLUTIONS</u>			
AUTHOR <u>WILLIAM KILPATRICK</u>			
DWG. NO. <u>57</u>			
DWG. SIZE	SCALE	DWG. NO.	
<u>E</u>	<u>NOTED</u>	<u>E10MD</u>	<u>S7</u>
FILE NO.	W. O.	DEPT.	SHEET <u>57</u> OF

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT

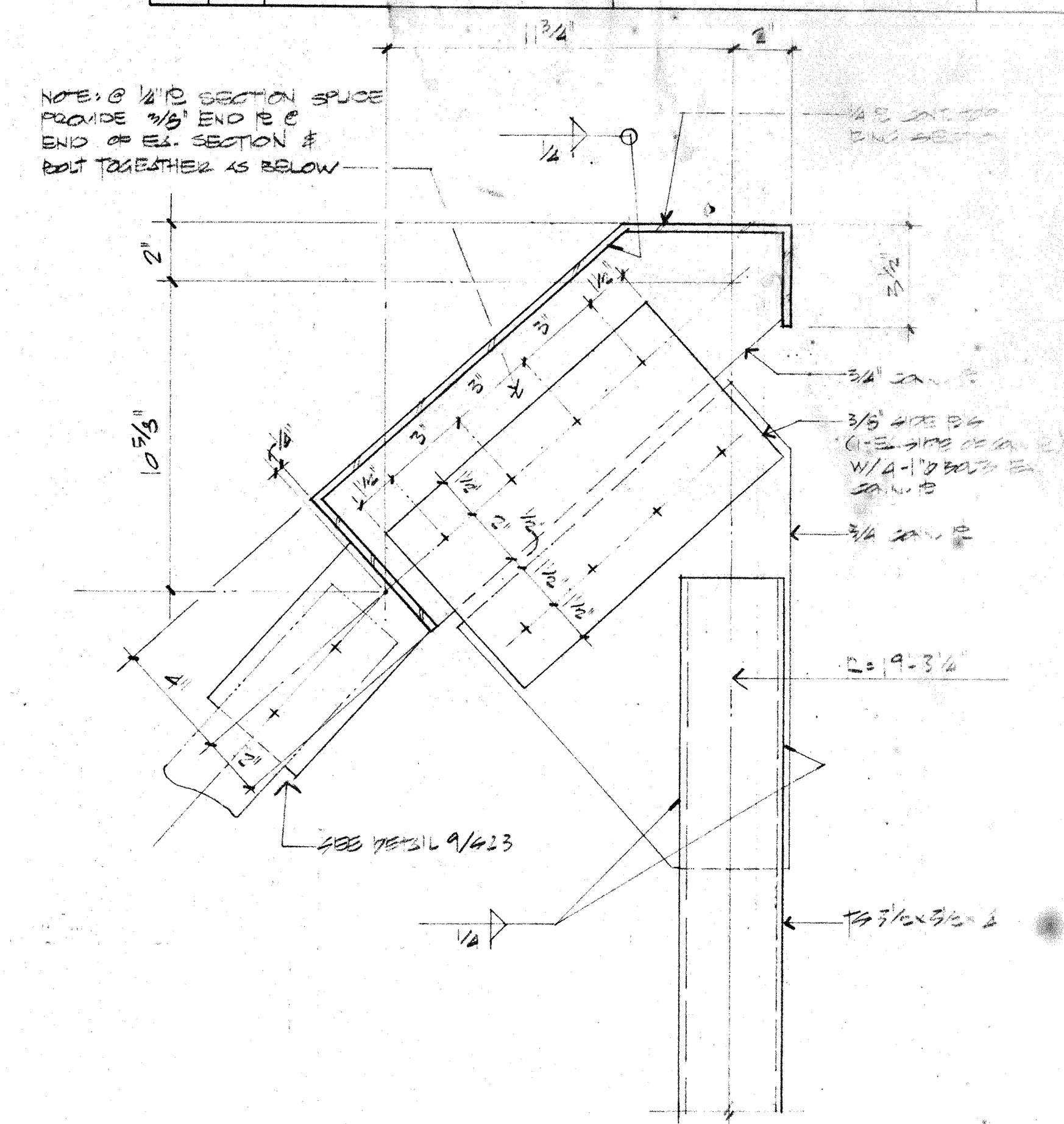


TOP OF DOME PLAN

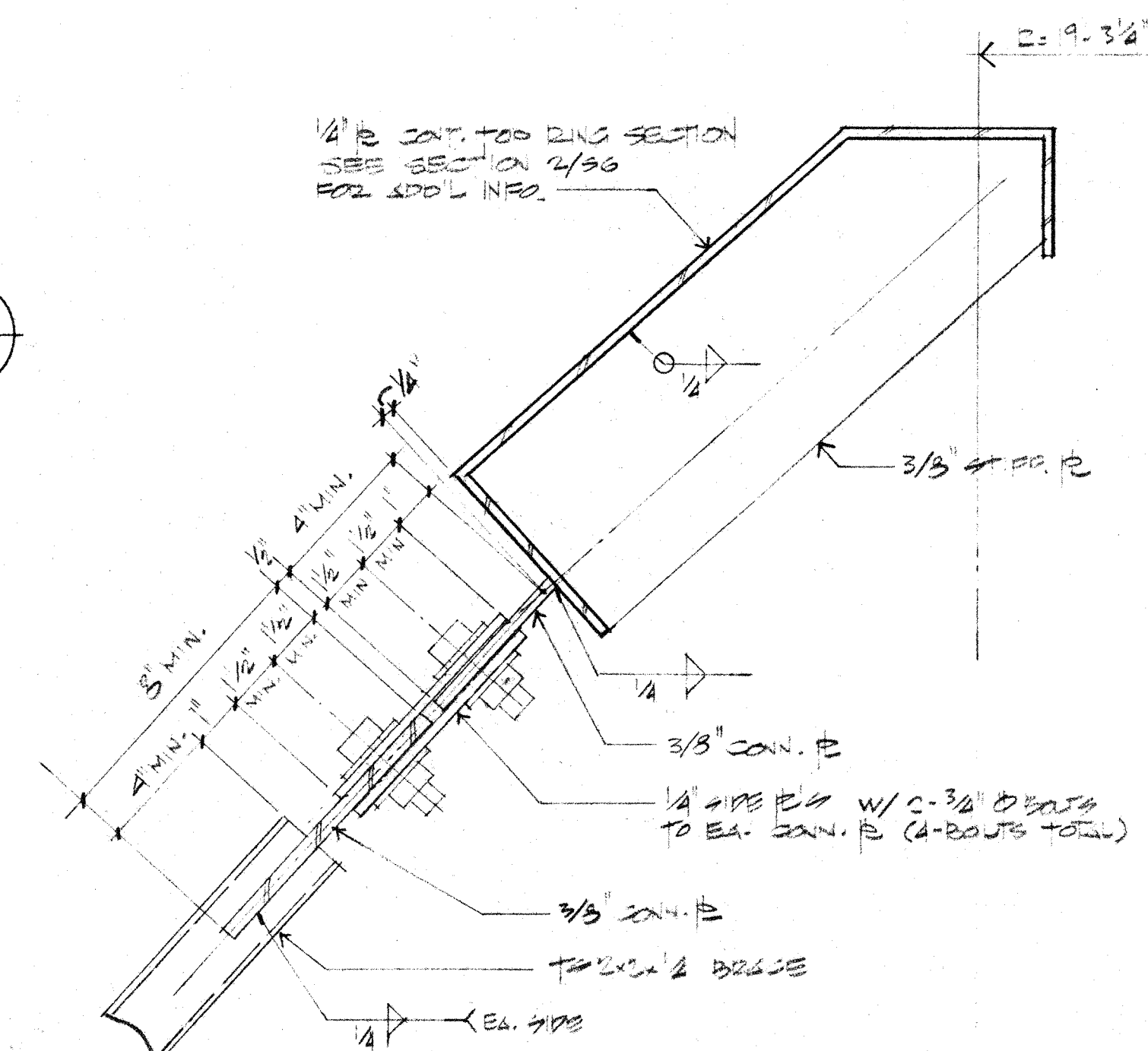
SCALE: 1/4" = 1'-0"



PLAN



SECTION

$$3^{11} = 177147$$


SECTION

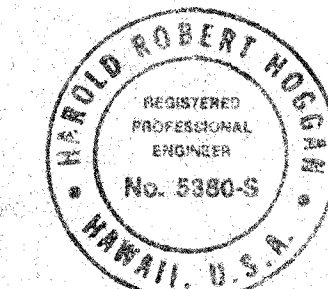
3110

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

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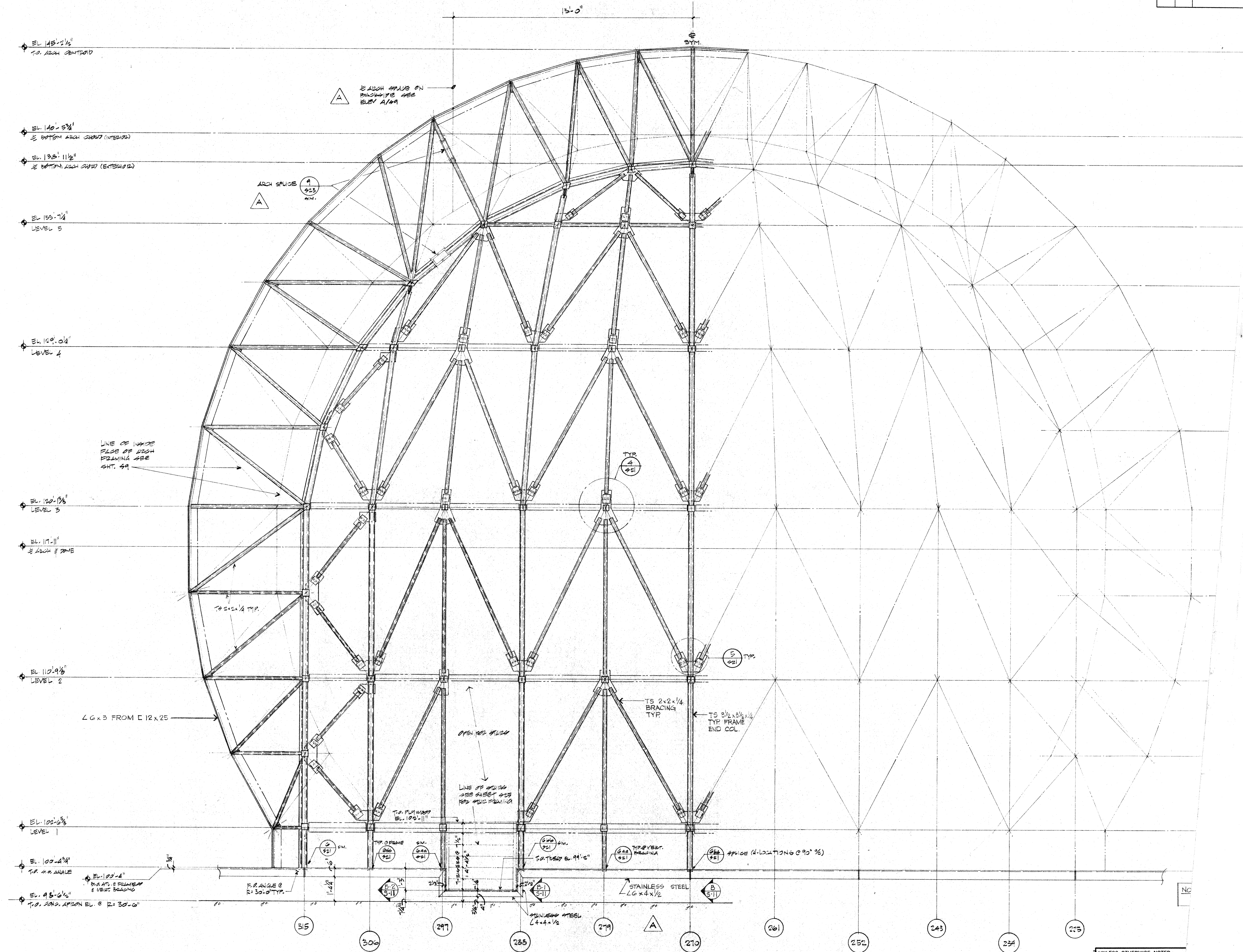
H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

YES	A	HAWAII ERECTION BID SET	12-20-84	HA
	LTR	DESCRIPTION	DATE	AP
		REVISION		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES				DRAWN D.C.		DATE 12/5/57
TOLERANCE ON DECIMALS XX = ± .03 ANGULAR = ± 1/2° XXX = ± .005				CHECKED A.B.		DATE 12/5/57
TOLERANCE ON FRACTIONS ± 1/16				APPROVED <i>[Signature]</i>		DATE 12/5/57
MACHINE FINISH 12/				APPROVED <i>[Signature]</i>		DATE
NEXT ASSEMBLY				WEIGHT		
DRAWING NO.		ITEM	QTY			
				APPLICABLE DOC		

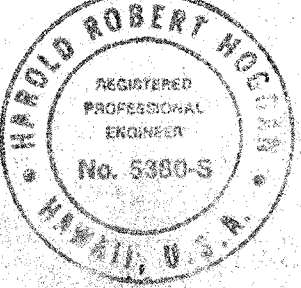
95	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
93	TITLE T.O. DAVE PLAN			
93	SUBMILLIMETER OBSERVATORY			
93	MAUNA KEA, HAWAII			
DWG. SIZE		SCALE	DWG. NO.	
E		NOTED	E10MD 5	
FILE NO.	W.O.	DEPT	SHEET NO.	

ITEM	QTY	DESCRIPTION



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H. Robert Hoggan
Signature



EXTERIOR FRAMING ELEVATION - WEST SIDE (EAST SIDE IS OPPOSITE HAND)

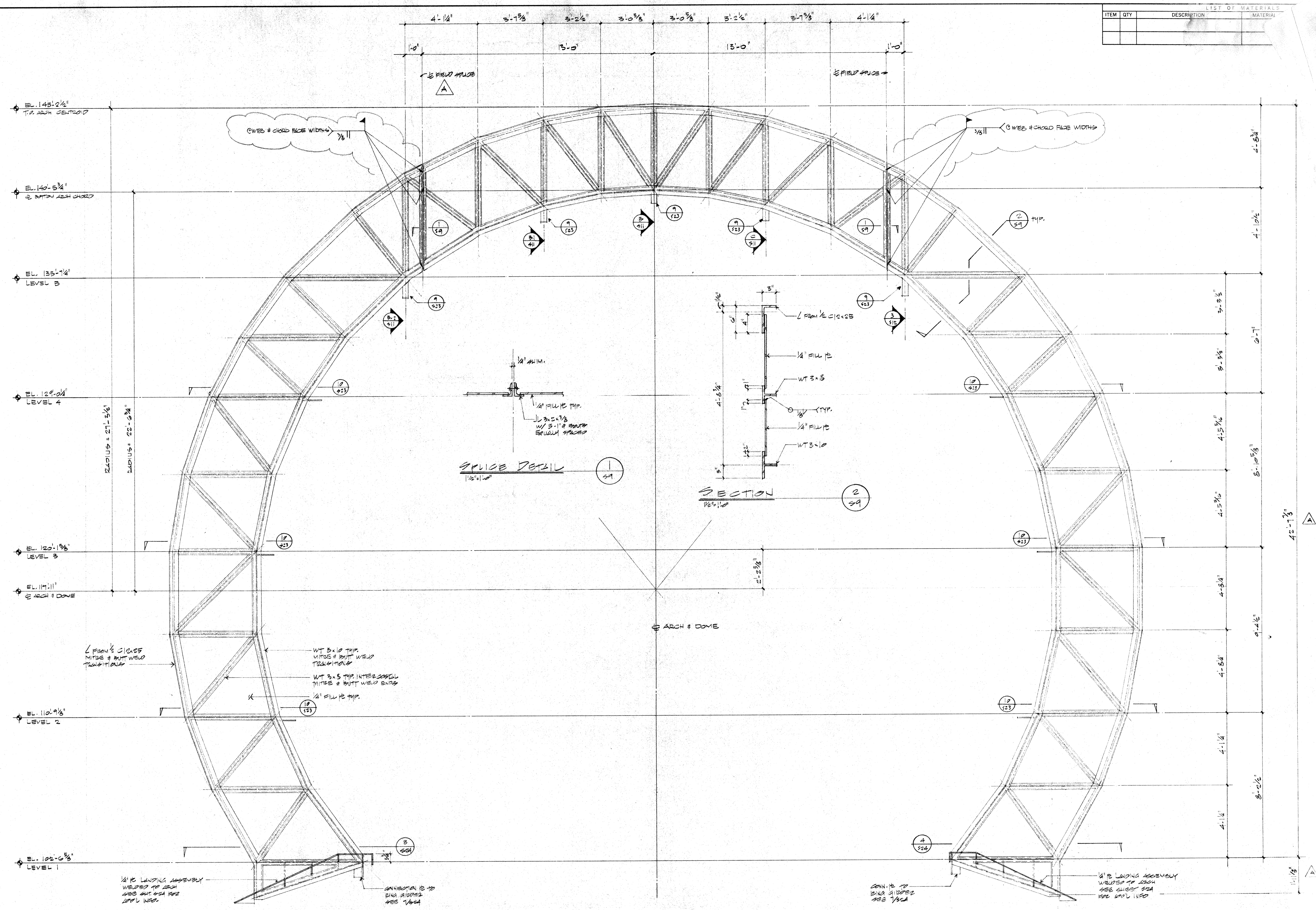
SCALE: 1/2" = 1'-0"

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1385 NORTH LAKE AVENUE
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58

REVISION	DESCRIPTION	DATE	APPD
1	REVISION		
2			
3			

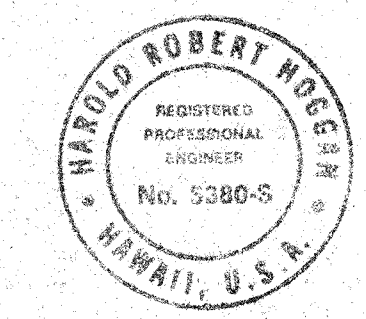
UNLESS OTHERWISE NOTED
DIMENSIONS ARE IN INCHES
TOLERANCE ON DECIMALS
XX = ± .01 ANGULAR = ± 1/2°
XXX = ± .005
TOLERANCE ON FRACTIONS ± 1/16
MACHINE FINISH 15°
NEXT ASSEMBLY
DRAWING NO. ITEM



LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	MATERIAL

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Harold Robert Hoggan
Signature



SHUTTER ARCH INTERIOR ELEVATION

1/2" = 1'-0"

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1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

REVISION	DATE	APPD
1. HAWAII ERECTION BID SET	10-20-84	HRH
2. PRE-BID SUBMITTALS	12-13-83	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES			
TOLERANCE ON DECIMALS	XX = ± .03	ANGULAR = ± 1/2°	
XXX = ± .005	TOLERANCE ON FRACTIONS = 1/16	MACHINE FINISH 12/	
NEXT ASSEMBLY			
DRAWING NO.	ITEM	QTY	WEIGHT

DATE 12/5/83	D.C. A.B.	CHECKED A.B.
DATE 12/5/83	APPROVED HRH	DATE 12/5/83
APPROVED DATE		
FILE NO.		
W.D.		
DEF.		

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE: SHUTTER ARCH INTERIOR ELEVATION
SUBMITTALS: SUBMITTALS
DRAWING NO.: 1020-84/10-10-84
SCALE: NOTED
DWG. NO.: E1020

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

EL. 145'-2 1/4"
T.O. ARCH CENTROID

EL. 140'-5 3/4"
T.O. DOME

EL. 135'-7 1/4"
LEVEL 5

EL. 129'-0 1/4"
LEVEL 4

EL. 120'-1 9/8"
LEVEL 3

EL. 110'-9 1/8"
LEVEL 2

EL. 102'-6 3/8"
LEVEL 1

EL. 100'-4 1/4"
T.O. ARCH BASE

ARCH CORNER WT 3 x 10

ARCH CORNER L 3 1/2 x 3 1/2 x 1/4
W/C 5 x 6.7

TS 2 x 2 x 1/4
ARCH BRACING
ON SPHERE &
BETWEEN SPHERE
AND CYLINDRICAL
PORTIONS

TYP 4
521

5
521

TS 3 1/2 x 3 1/2 x 1/4
TYP FRAME
END COL.

TS 2 x 2 x 1/4
BRACING
TYP

STAINLESS
STEEL
2 6 x 4 x 1/2

TYP 6
FRAMES
U.N.O.

TYP 6
FRAMES
U.N.O.

TYP 6
FRAMES
U.N.O.

TYP 6
FRAMES
U.N.O.

TYP 6
FRAMES
U.N.O.

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42

351

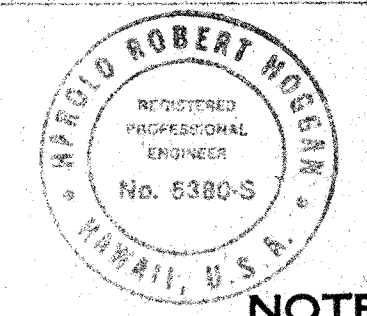
342

333

324

315

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SUPERVISION AND CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY SUPERVISION.
Robert Hoggan
SIGNATURE



NOTE: MEMBERS SHOWN ON ELEVATION
ARE NOT SHOWN IN TRUE PLANE

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

EXTERIOR FRAMING ELEVATION - BACKSIDE

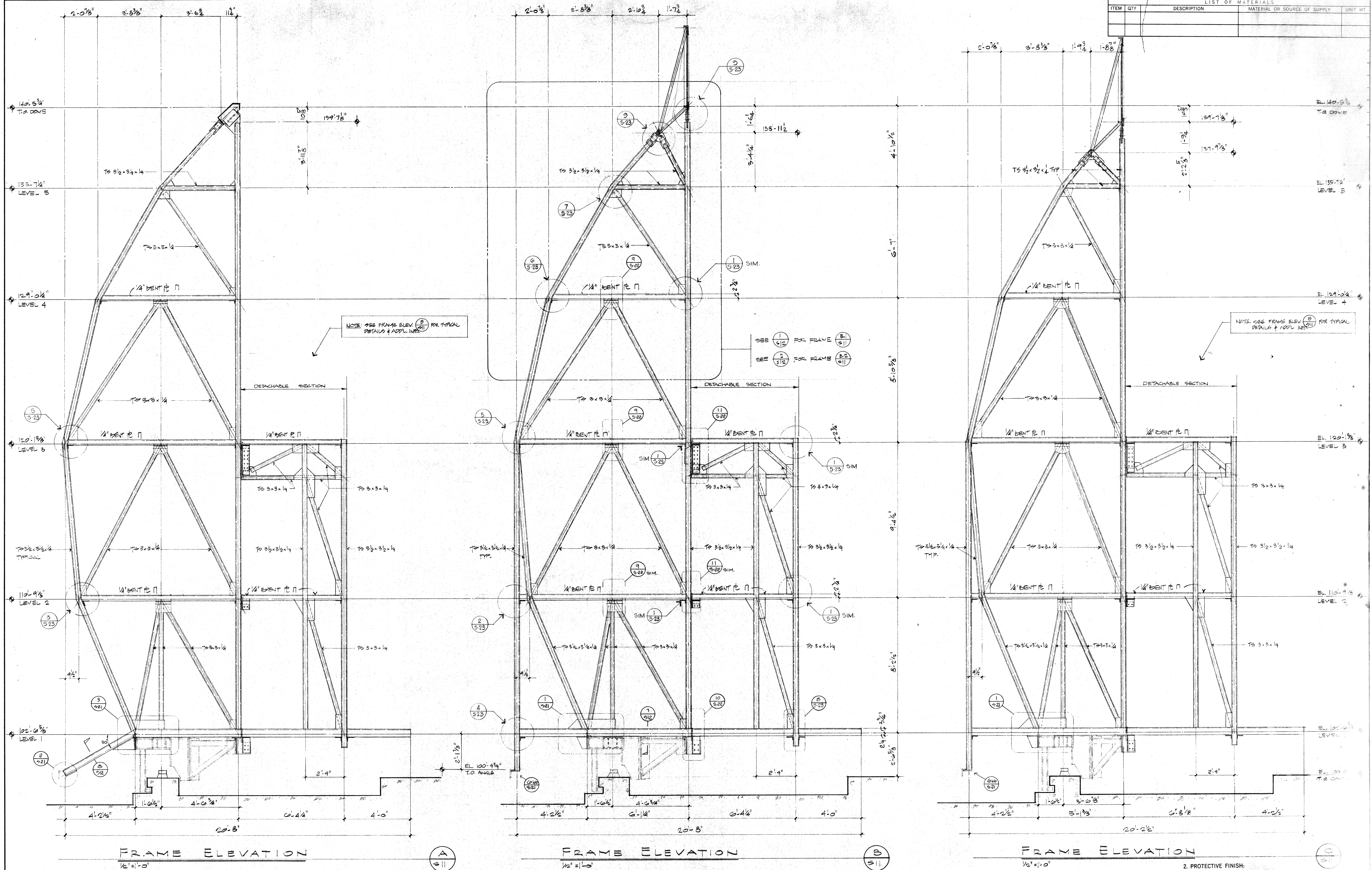
SCALE: 1/2" = 1'-0"

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA, CALIFORNIA 91104
(213) 684-2917

DATE	12-20-84	BY	PHH
DESCRIPTION	FOR BID SUBMITTALS	DATE	12-13-84
REVISION		DATE	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/	DRAWN D.C. 12/5/82	CHECKED A.B. 12/5/82	DATE 12/5/82
NEXT ASSEMBLY	DRAWING NO.	ITEM	QTY
WEIGHT	APPLICABLE DOC	FILE NO.	W.G.

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	TITLE EXTERIOR FRAMING ELEVATION SUBMITTED FOR REVIEW KAYLA REA, M.A.S.C.	DWG. NO. E1010	DATE 12/5/82
--	--	-------------------	-----------------

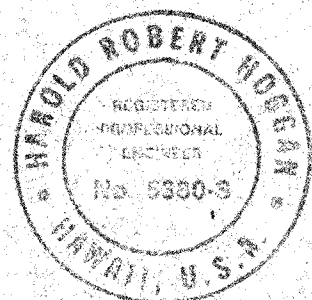


GENERAL FRAME ELEVATION NOTES:

1. SEE DETAIL (A) FOR TYPICAL CONN. OF TS 3x3x1/4 BRACES TO VERTICAL COL'S. & HORIZ. MEMBERS
2. SEE DETAIL (B) FOR TYPICAL COL. SPICES CONN.
3. SEE DETAIL (C) FOR TYPICAL CONNECTION ANGLE OF FLOOR PANEL TO FRAME.
4. ALL COLUMN & HORIZ. MEMBERS ENDS, NOT BUTTING INTO OTHER MEMBERS SHALL HAVE 1/4" CAP PL'S. WELDED ALL AROUND UNLESS DETAILED OTHERWISE

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H. Robert Hoggan
SIGNATURE



H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1555 NORTH LAKE AVENUE
PASADENA, CALIFORNIA 91104
(213) 684-2917

REVISION	DATE	APPD
1. NEW ERECTION BID SET	12-20-84	H. Hoggan

UNLESS OTHERWISE NOTED
DIMENSIONS ARE IN INCHES
TOLERANCE ON DECIMALS
XX = ± .03 ANGLUAR = ± 1/2°
XXX = ± .005
TOLERANCE ON FRACTIONS ± 1/16
MACHINE FINISH 16

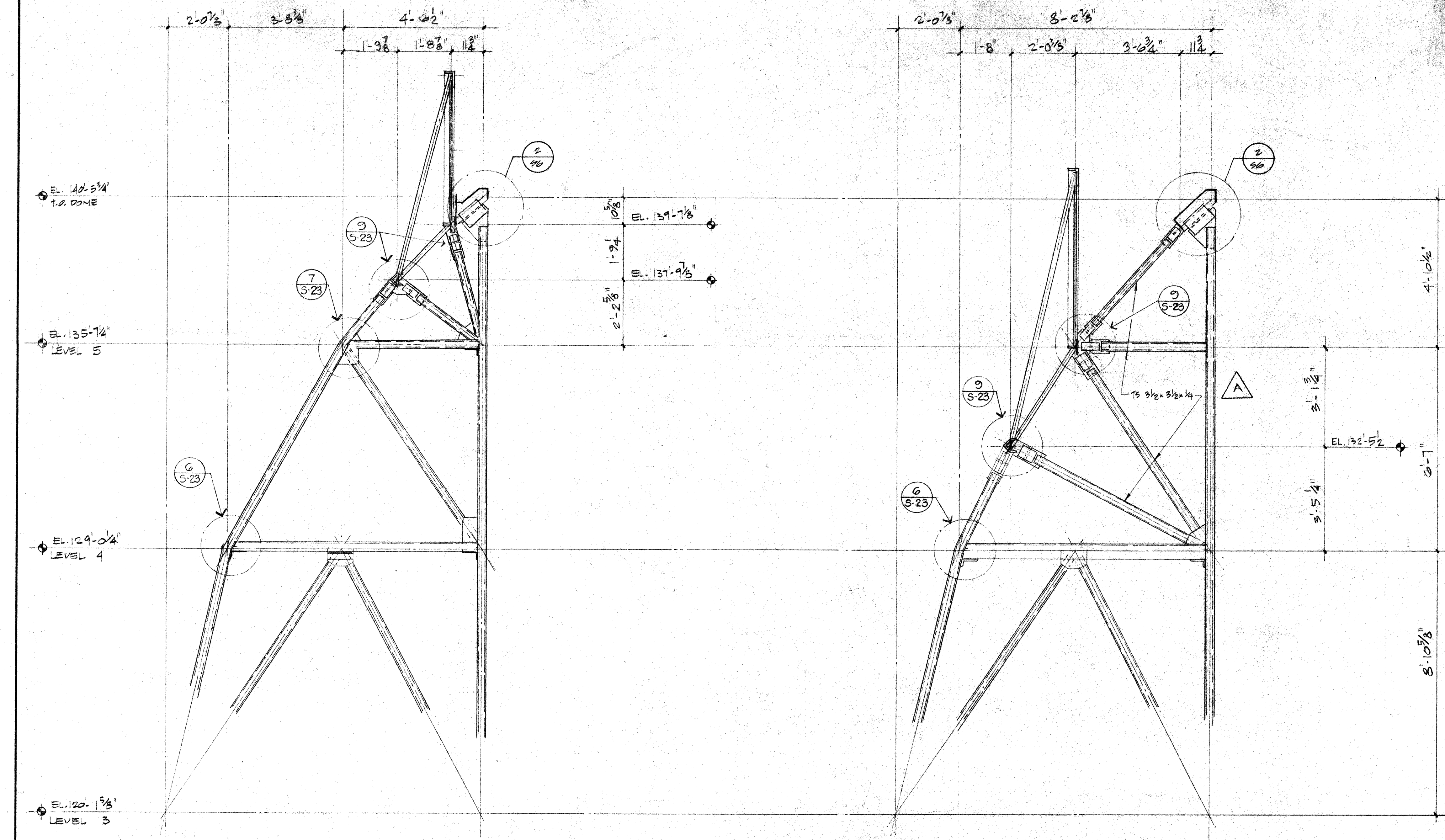
DRAWING NO.	ITEM	QTY	WEIGHT

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

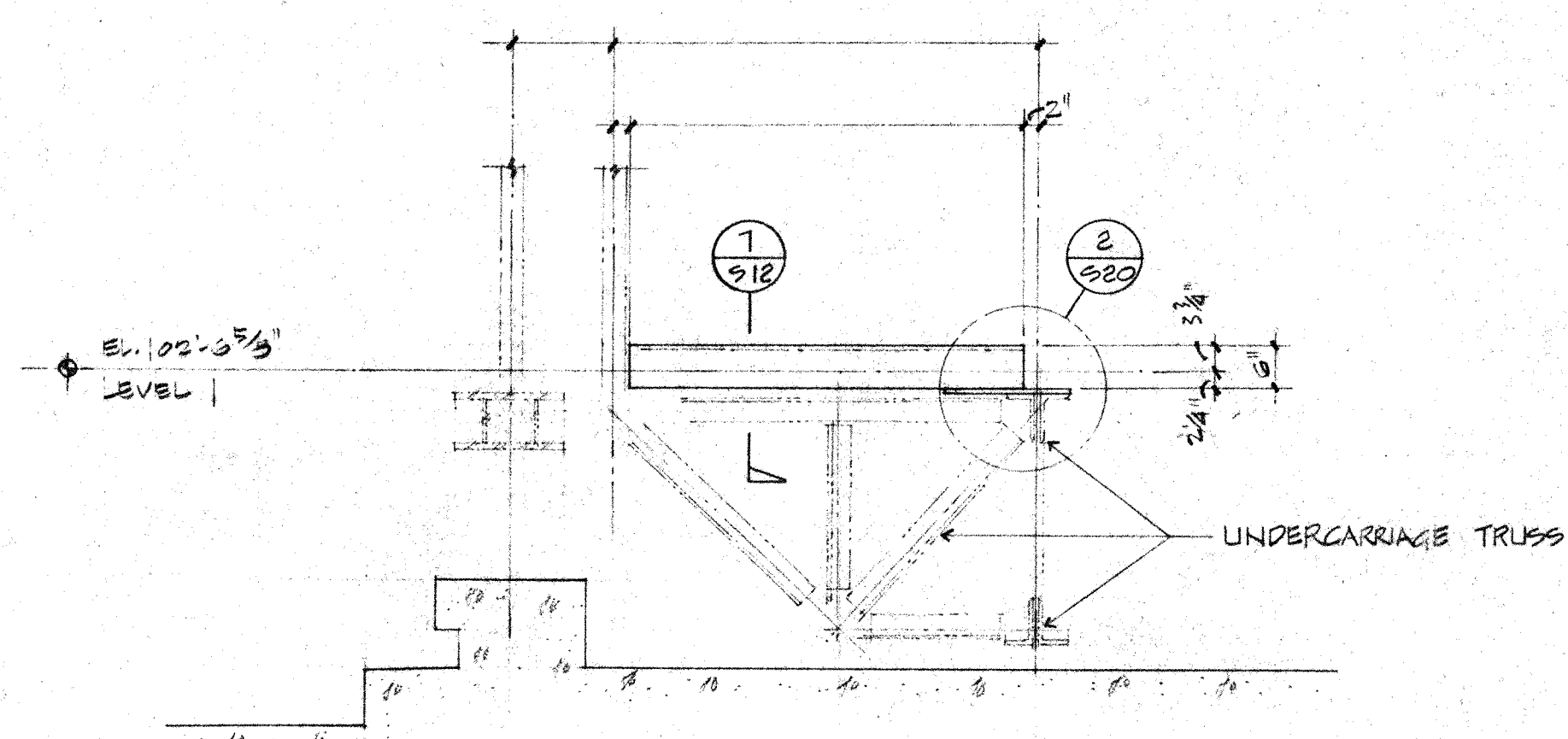
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE: VERTICAL FRAME ELEVATIONS
SUBMITTED: 12/15/84
DRAWN BY: H. HOGGAN
SCALE: 1/2" = 1'-0"
DWG. NO.: E1010
FILE NO.: W. O. DEPT.

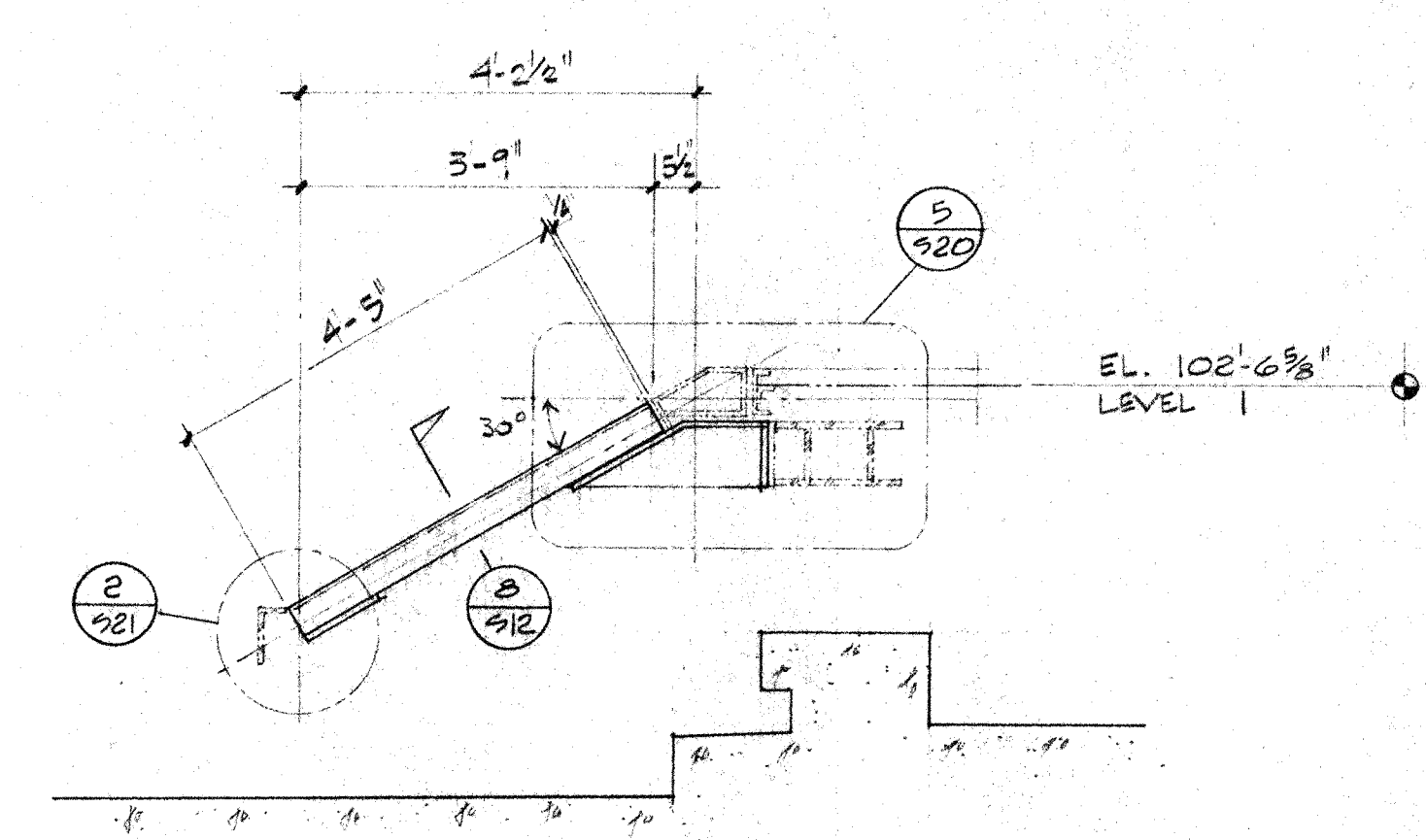
LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



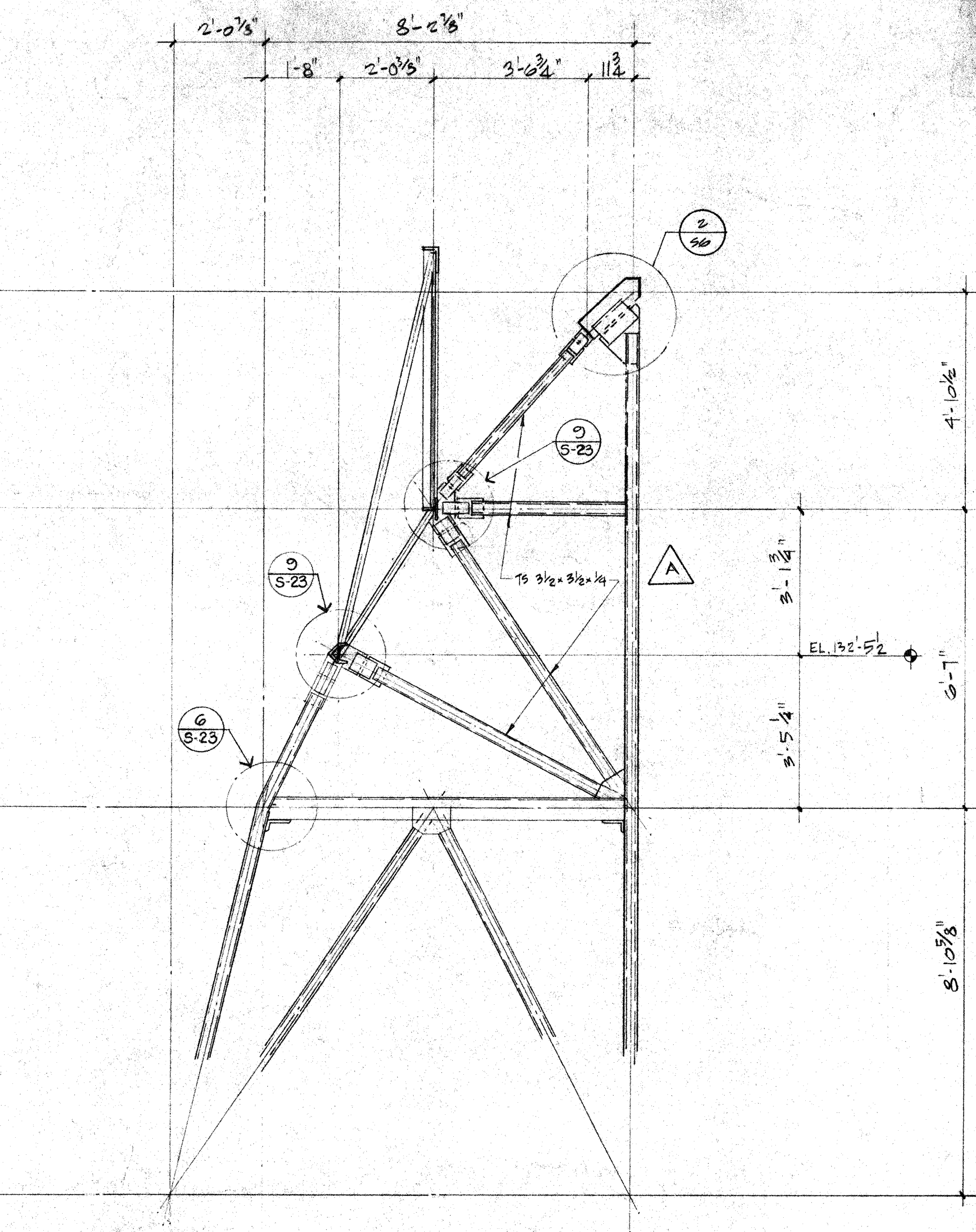
PARTIAL FRAME $\left(\frac{3.1}{11} \right)$ ELEVATION



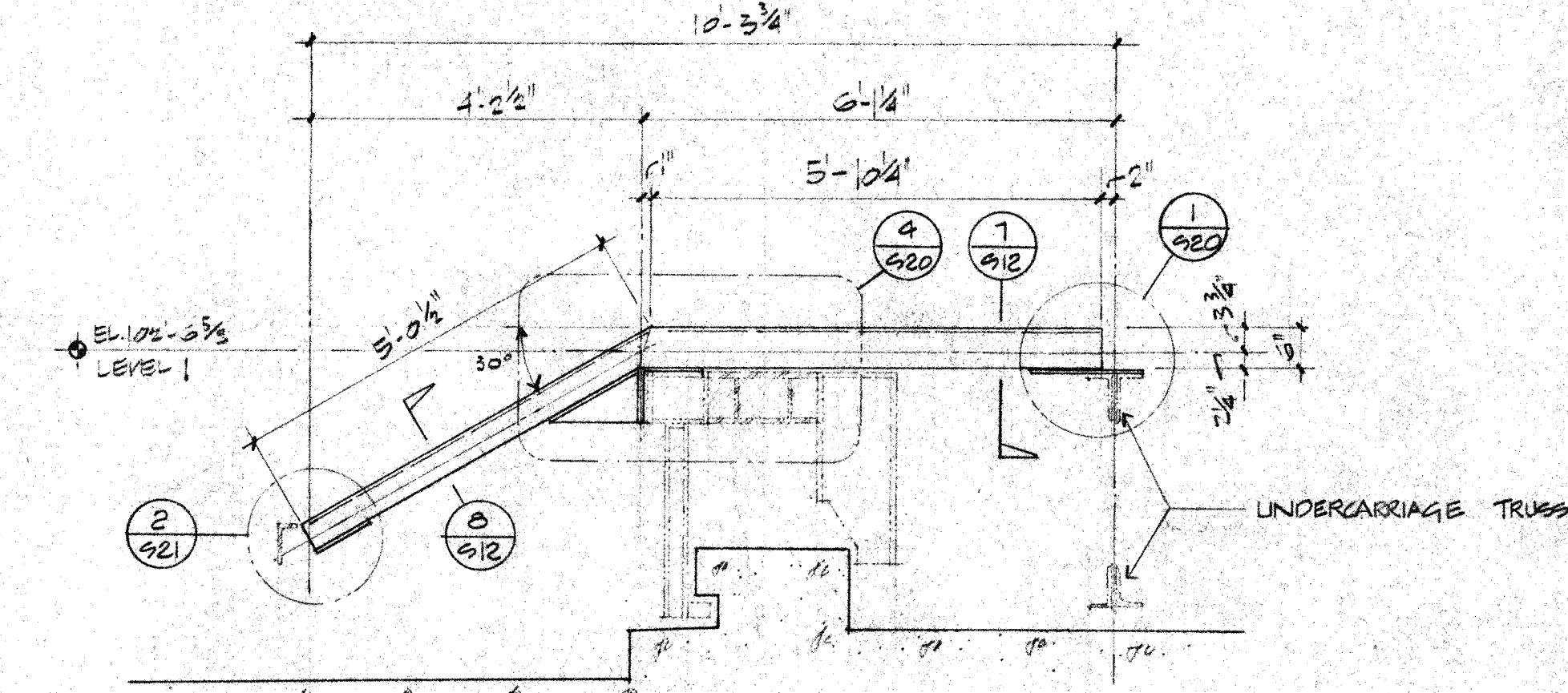
FRAME ELEVATION



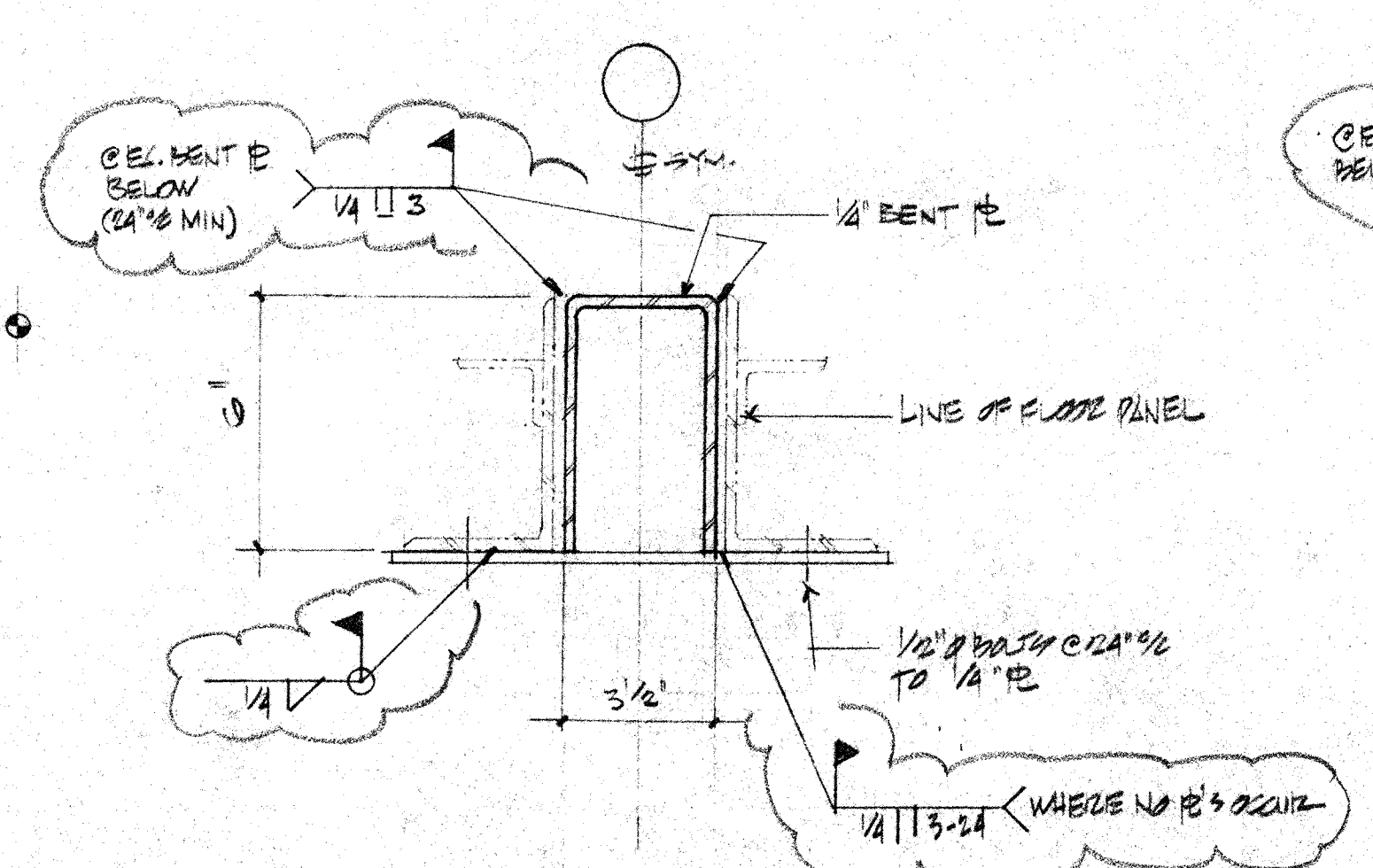
IRANE ELEVATION



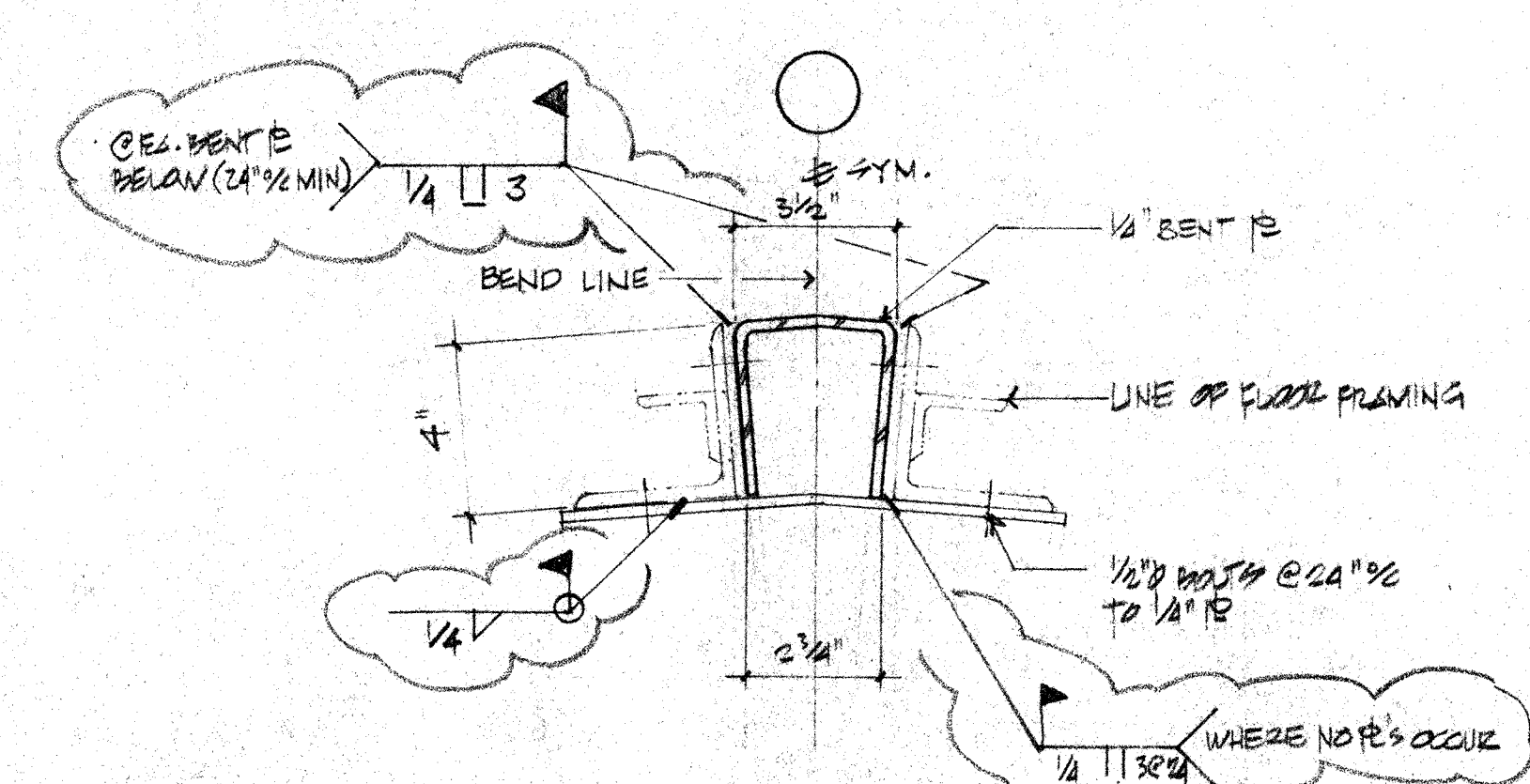
PARTIAL FRAME B.2
S11 ELEVATION



FRAME ELEVATION



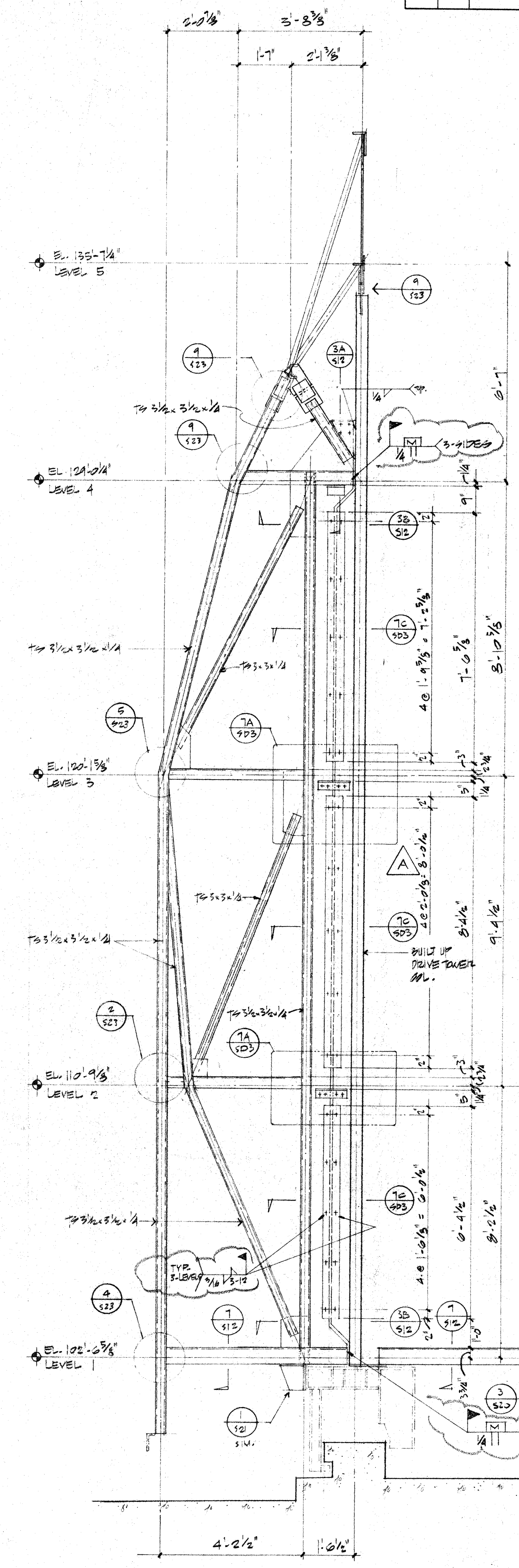
SECTION



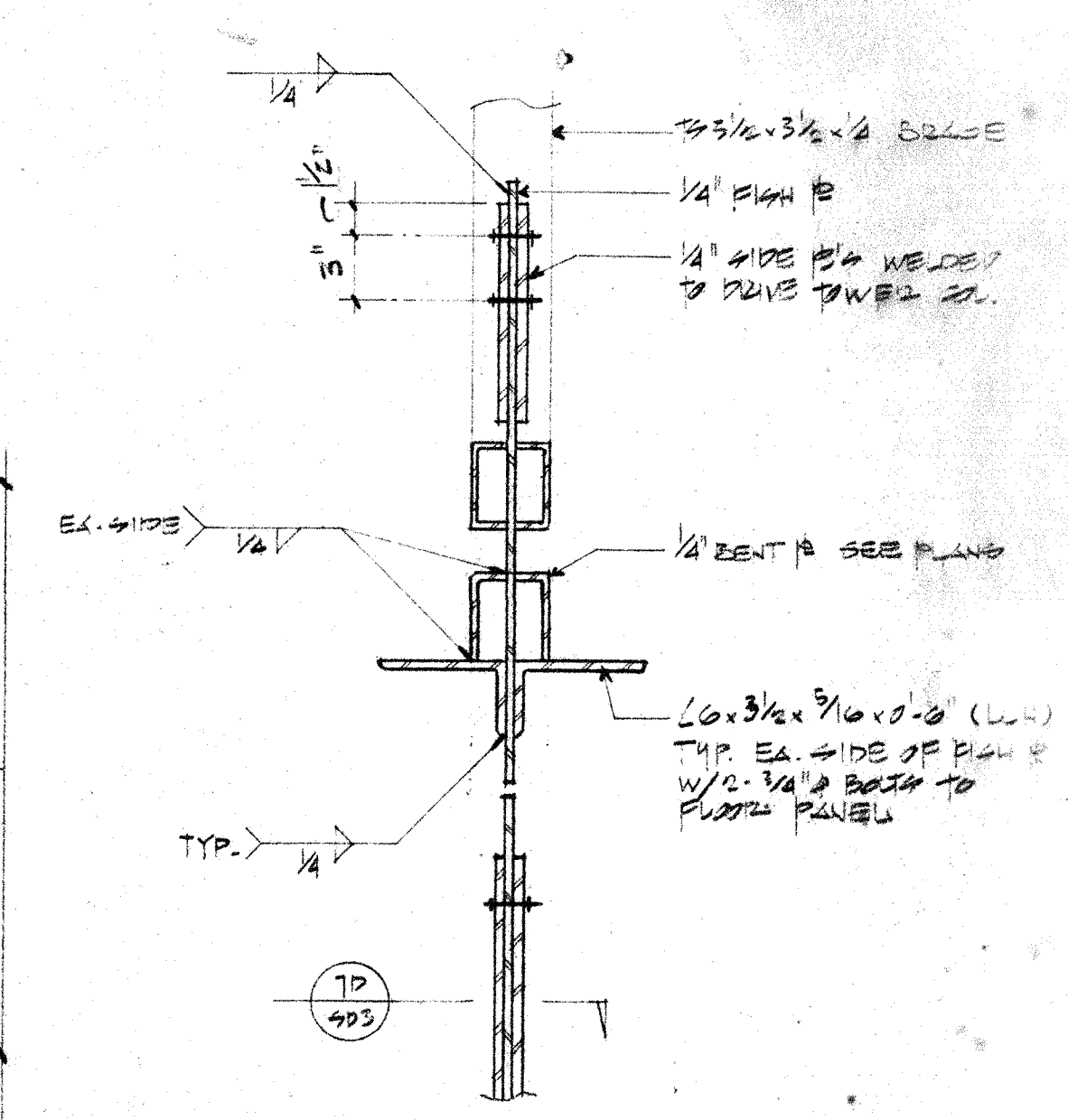
SECTION

THIS WORK WAS PREPARED BY ME OR UNDER
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WILL BE UNDER MY SUPERVISION.

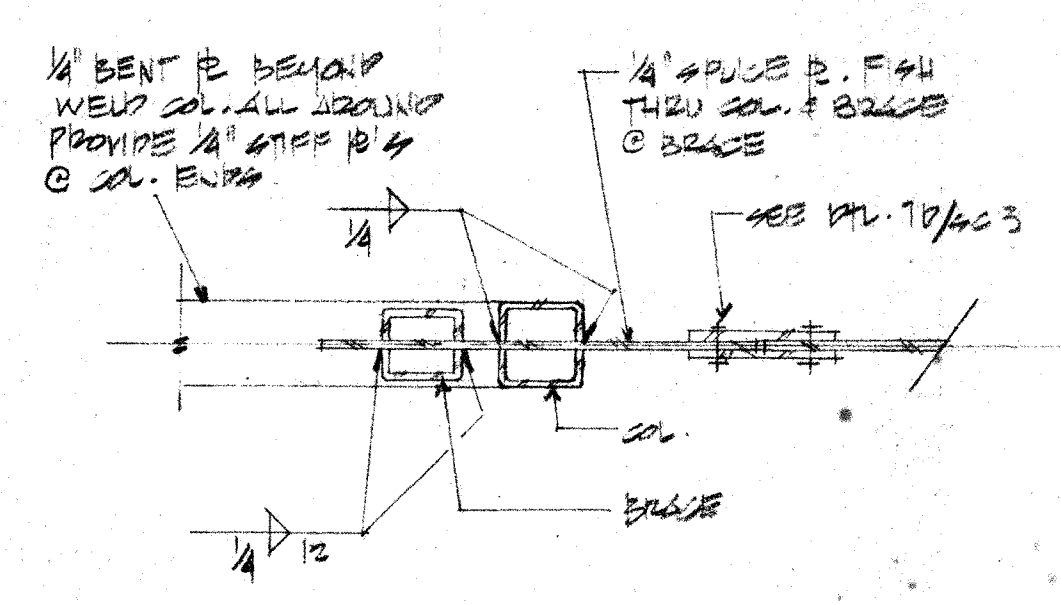
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STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917



FRAME ELEVATION



SECTION
1/2" = 1' 0"



SECTION

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED
DIMENSIONS ARE IN INCHES

TOLERANCE ON DECIMALS
.XX = $\pm .03$ ANGULAR = $\pm 1/2^\circ$
.XXX = $\pm .005$

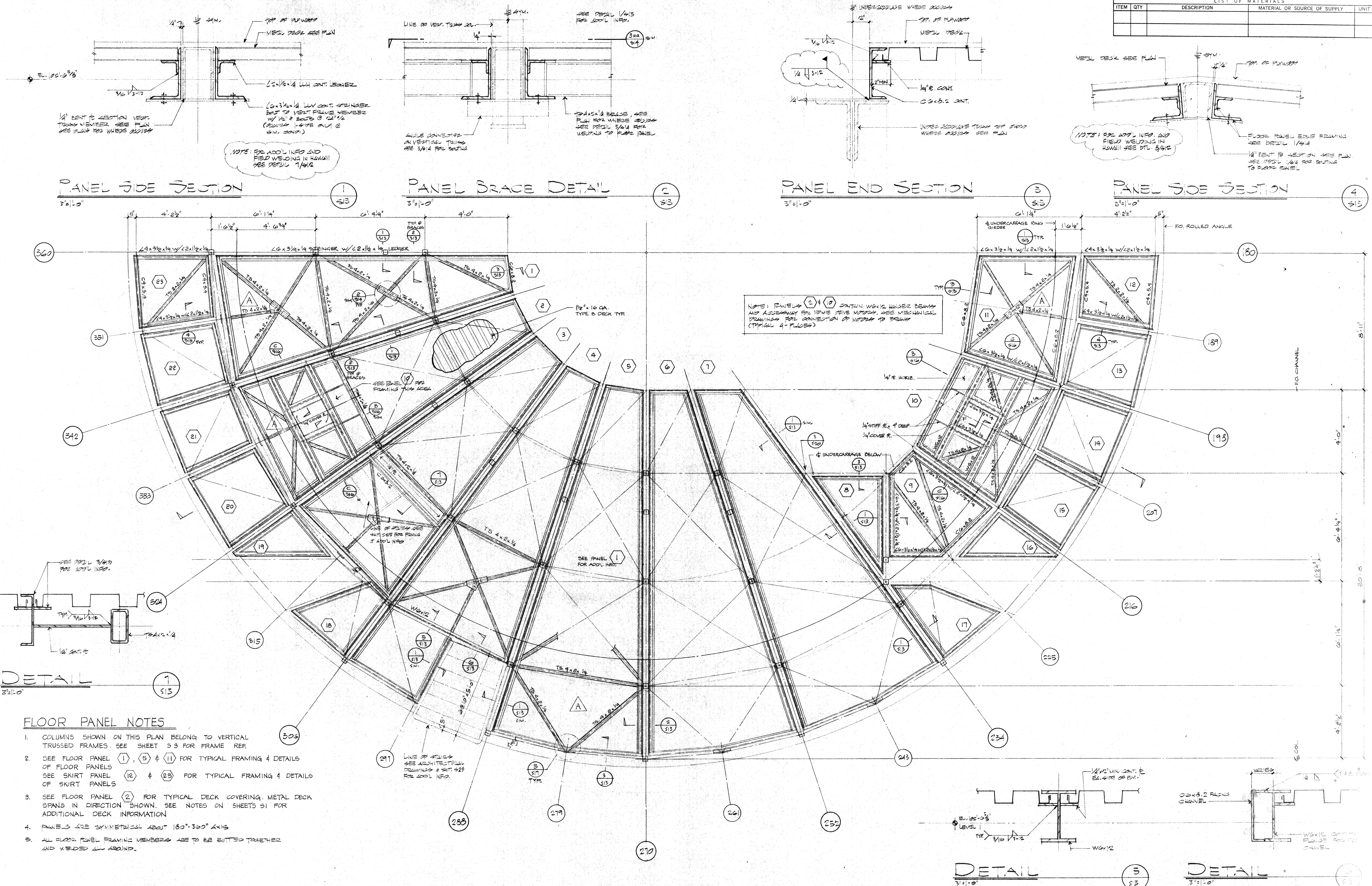
TOLERANCE ON FRACTIONS $\pm 1/16$
MACHINE FINISH $\frac{325}{\sqrt{}}$

NEXT ASSEMBLY

DRAWING NO.	ITEM	Q

DATE		12/5/88		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
DR	DATE	12/5/88		TITLE MEDICAL FRAME SUBV SEMI-INSTATED OBSERVED VANG KEE, HANH!!			
CHECKED	DATE	12/5/88					
AB	DATE	12/5/88					
APPROVED	DATE	12/5/88					
<i>[Signature]</i>	DATE	12/5/88					
APPROVED	DATE	12/5/88		DWG SIZE E			
WEIGHT	DWG SCALE		NOTED		DWG. NO.		
APPLICABLE DOC	FILE NO.		I. O. C.		DEPT		
					E10MD		
					SECRET		



LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



FIRST LEVEL FLOOR PANEL FRAMING PLAN

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1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

S		HAWAII ERECTION BID SET	12/29/84	12/29/84
		PREFID CLARIFICATIONS	12/13/83	
	LTR	DESCRIPTION	DATE	APPR
	REVISION			

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES				DRAWN	DATE
TOLERANCE ON DECIMALS				CHECKED	DATE
XX = ± .03 ANGULAR = ± 1/2°				APPROVED	DATE
XXX = ± .005				APPROVED	DATE
TOLERANCE ON FRACTIONS ± 1/16				APPROVED	DATE
MACHINE FINISH 125°					
NEXT ASSEMBLY				WEIGHT	
DRAWING NO.	ITEM	QTY			
			APPLICABLE DOC		

CALIFORNIA INSTITUTE OF TECHNOLOGY

3 TITLE FIRST LEVEL FLOOR PLAN

SUBMILLIMETER OBSERVATION

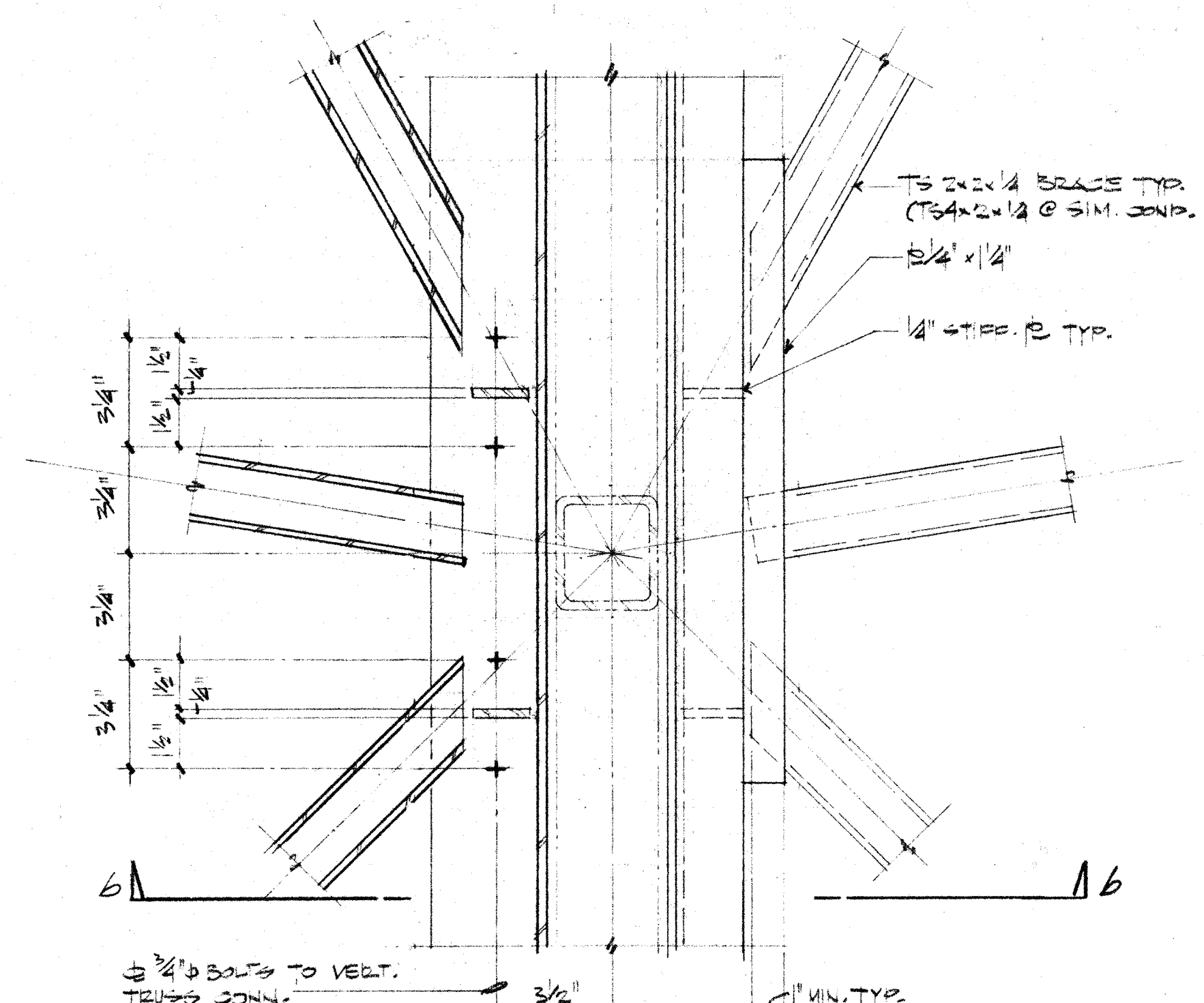
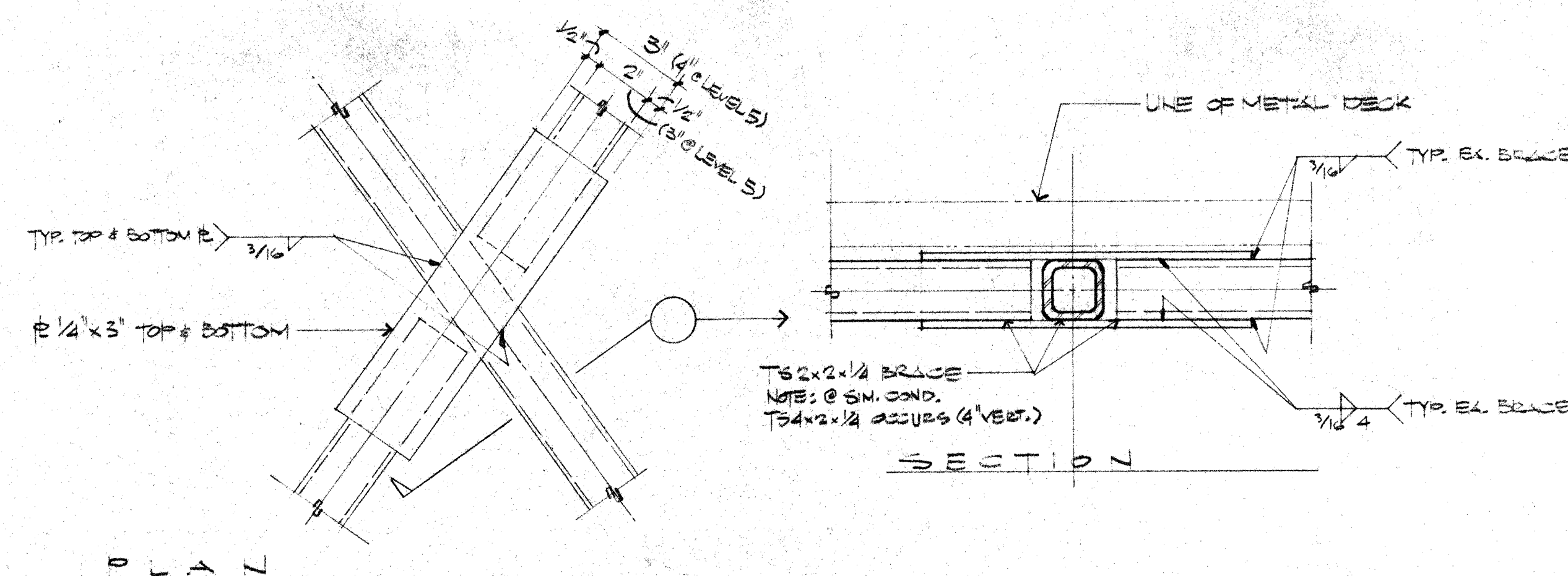
NAME	MBUNG KEE, HAWAII
DATE	
TIME	

DWG. SIZE	SCALE	DWG. NO.
F	NOTED	E10M

FILE NO.	W. O.	DEPT	SHE
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2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.



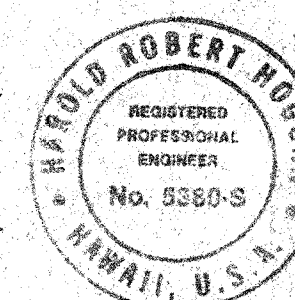
BRACE INTERSECTION DETAIL



- ## SECOND LEVEL FLOOR PANEL FRAMING PLAN

SCALE: $\frac{1}{2}" = 1' - 0"$

Signature



A	HAWAII ERECTION BID SET	12-20-84	HPL/ML
A	PRE-BID CLARIFICATIONS	12/13/83	
LTR	DESCRIPTION	DATE	APPD
REVISION			

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES	
TOLERANCE ON DECIMALS	
.XX = ± .03	ANGULAR = ±
.XXX = ± .005	
TOLERANCE ON FRACTIONS ±	
MACHINE FINISH 125/	
NEXT ASSEMBLY	
DRAWING NO.	ITI

2. PROTECTIVE FINISH:

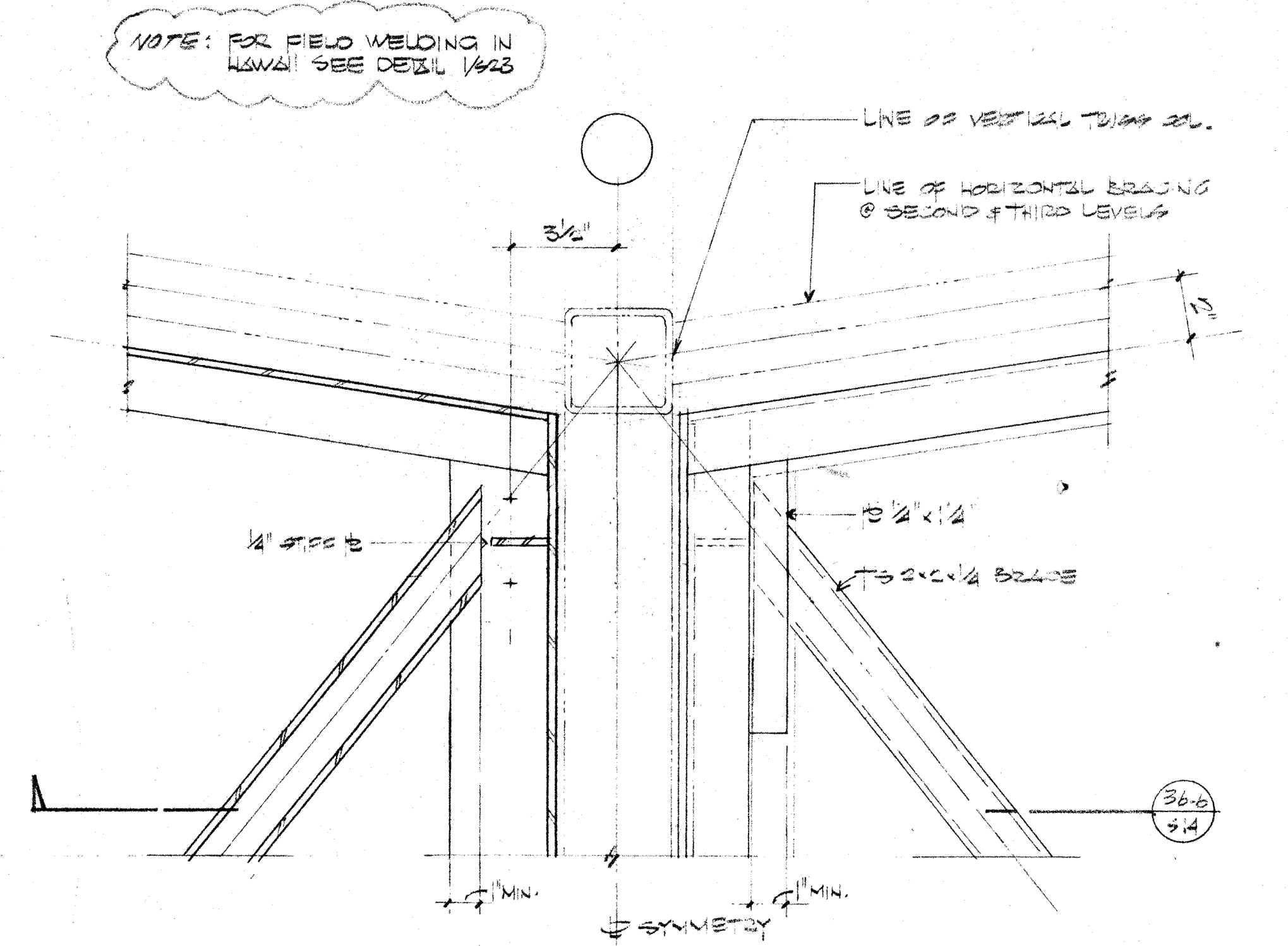
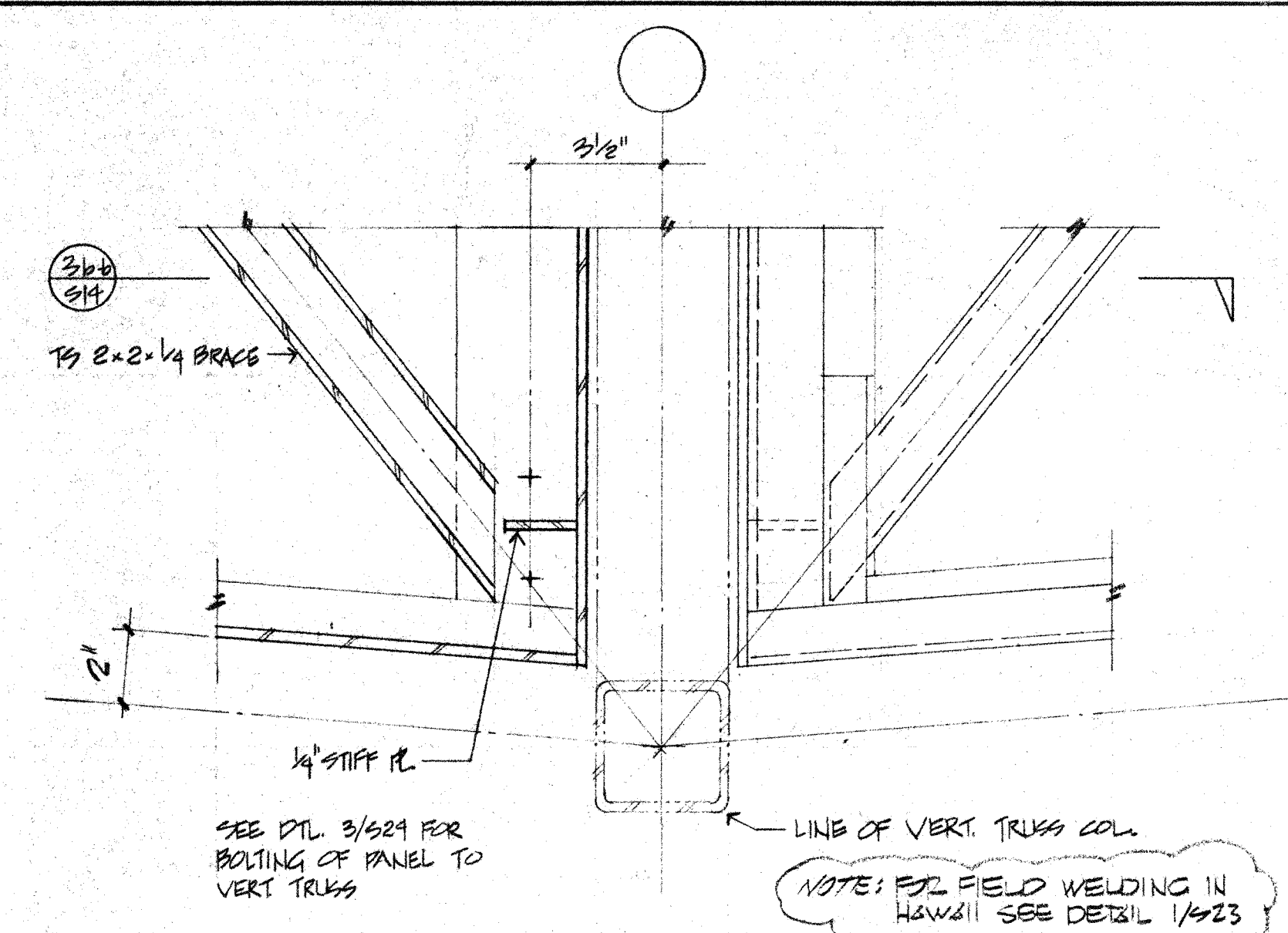
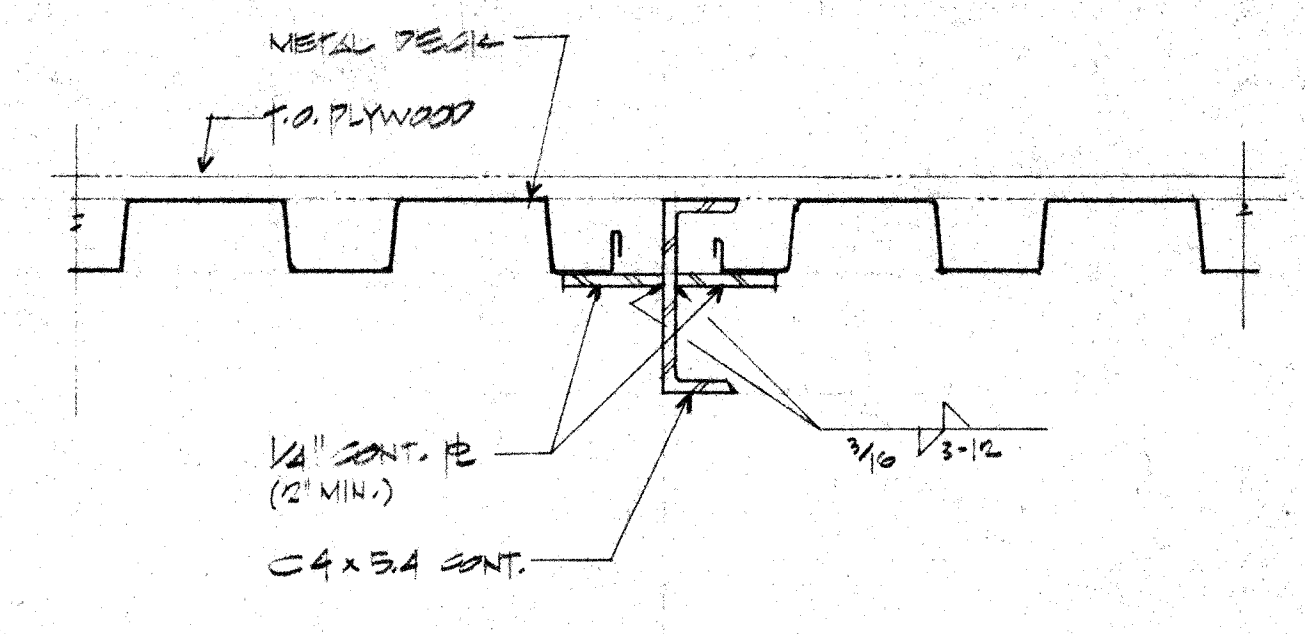
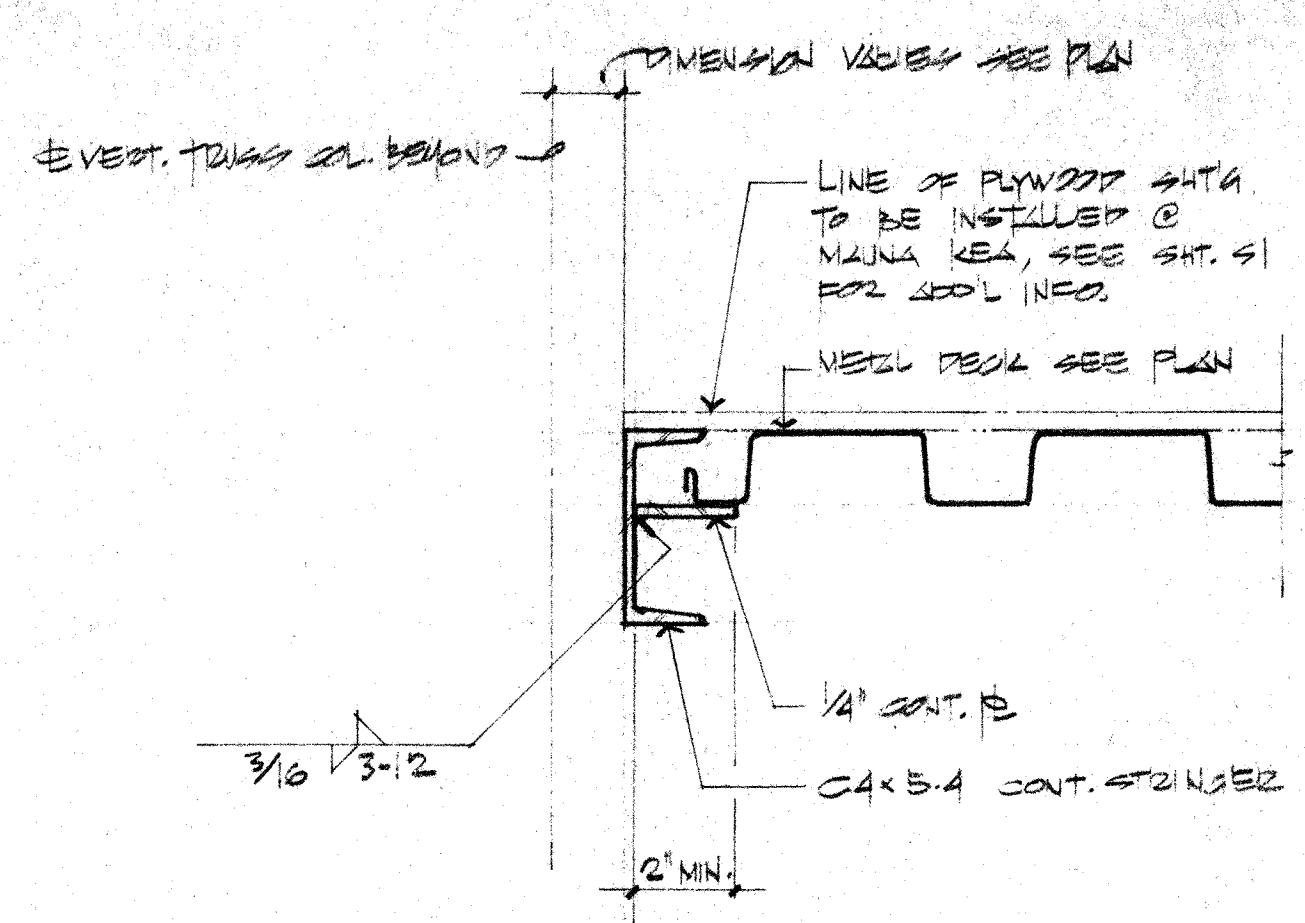
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE SE-AND LEVEL PRED PANEL
SUBMILLIMETER OBSERVATION
MAY 1964, 1965

DWG. SIZE E	SCALE NOTED	DWG. NO. E1010
FILE NO.	W. O.	DEPT
		SHEET

LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	UNIT WT



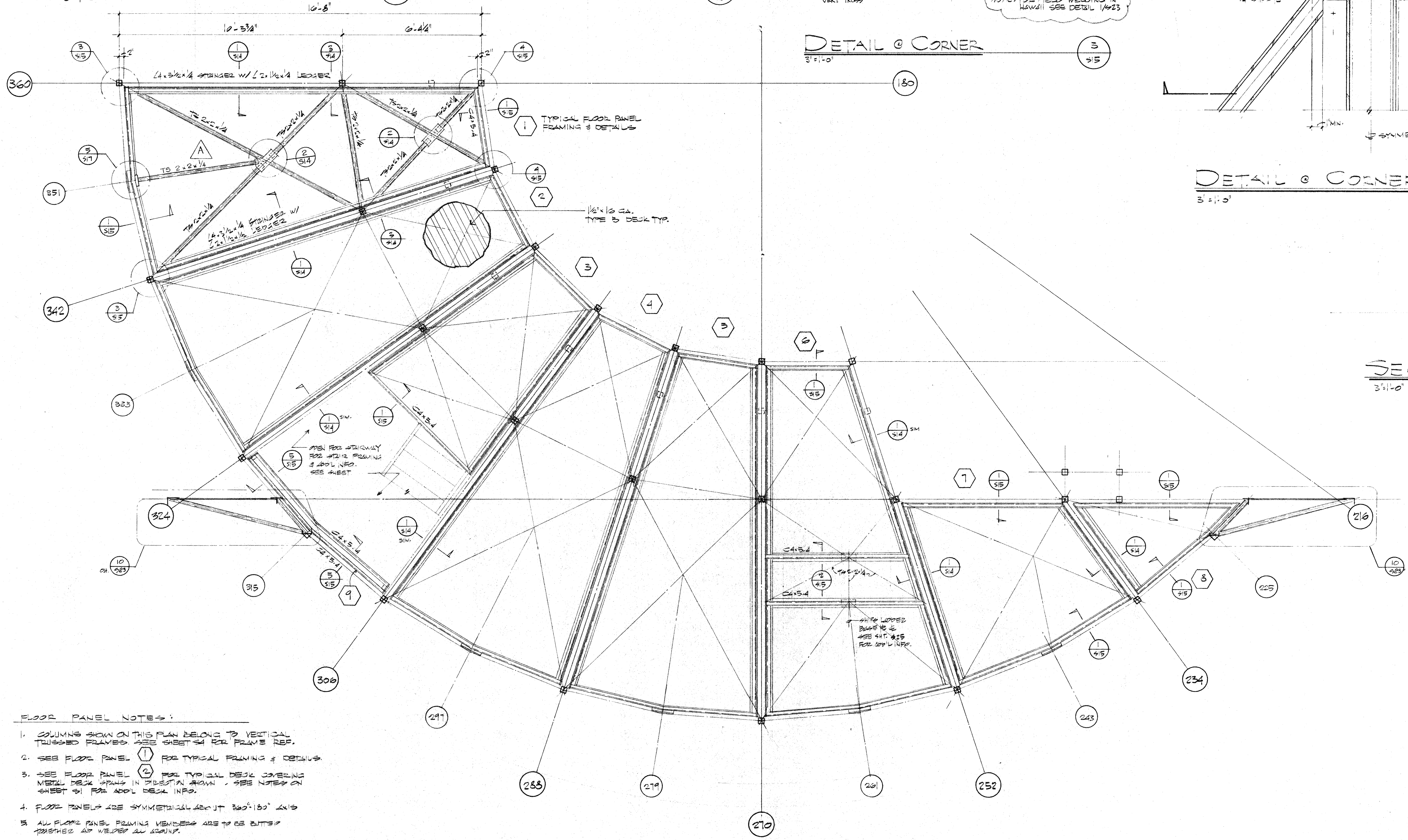
PANEL END SECTION
3'-10"

DETAIL
3'-10"

DETAIL @ CORNER
3'-10"

DETAIL @ CORNER
3'-10"

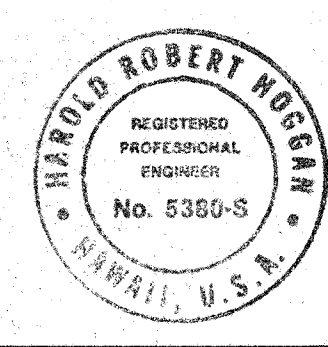
SECTION
3'-10"



- FLOOR PANEL NOTES:
1. COLUMNS SHOWN ON THIS PLAN BELONG TO VERTICAL TRUSSED FRAMES. SEE SHEET 54 FOR FRAME REF.
 2. SEE FLOOR PANEL ① FOR TYPICAL FRAMING & DETAILS.
 3. SEE FLOOR PANEL ② FOR TYPICAL DECK COVERING METAL DECK FRAMING IN POSITION SHOWN. SEE NOTES ON SHEET 51 FOR ADD. DECK INFO.
 4. FLOOR PANELS ARE SYMMETRICAL ABOUT 330°-180° AXIS.
 5. ALL FLOOR PANEL FRAMING MEMBERS ARE TO BE BUTTED TOGETHER AND WELDED ALL AROUND.

THIRD LEVEL FLOOR PANEL FRAMING PLAN
SCALE: 1/2" = 1'-0"

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Signature



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(213) 884-2917

DESCRIPTION	DATE	APPD
HAWAII ERECTION BID SET	12/14/1977	
PRE-BID CLARIFICATION	12/15/73	
LTR		
REVISION		

DRAWING NO.	ITEM	QTY	WEIGHT

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
TITLE	DATE	SCALE	DWG. NO.
THIRD LEVEL FLOOR PANEL FRAMING	12/15/73	1/2" = 1'-0"	
SUBMITTER			

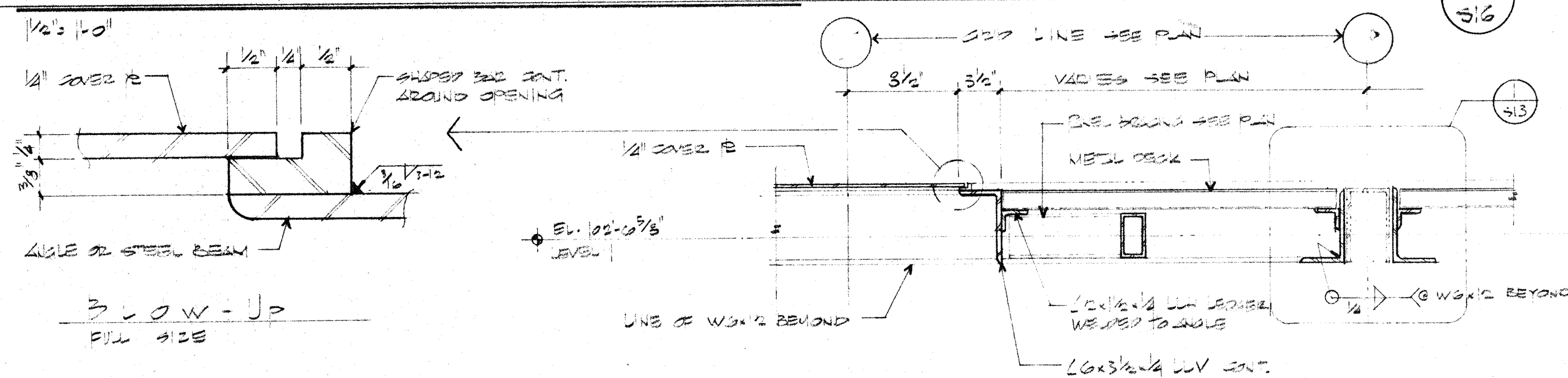
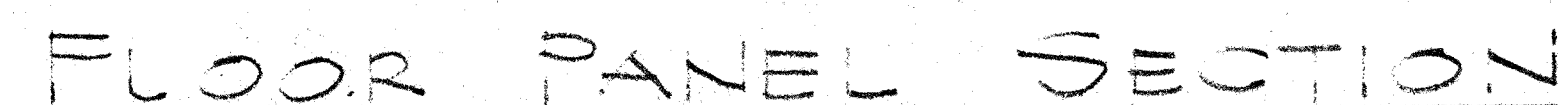
2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.



1. JOINTS SHOWN ON THIS PLAN BELONG TO VERTICAL TRUSSED FRAME. SEE SHEET 35 FOR FRAME REF.
2. SEE FLOOR PANEL (1) FOR TYPICAL PANEL FRAMING & DETAILS
3. SEE FLOOR PANEL (2) FOR TYPICAL DECK COVERING. MEAL DECK FRAMING IN SECTION SHOWN. SEE NOTES ON SHEET 31 FOR ADDL DECK INFO.
4. FLOOR PANELS ARE SYMMETRICAL ABOUT 300'-150" AXIS.
5. ALL PANEL FRAMING MEMBERS AS TO BE BUTTED TOGETHER AND WELDED ALL AROUND.

FOURTH LEVEL FLOOR PANEL FRAMING PLAN

SCALE: 1/2" = 1'-0"



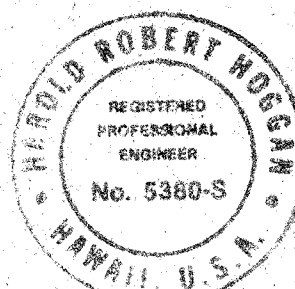
FLOOR PANEL SECTION



NOTE: PANEL 6 CONTAINS
OPENING FOR SHIP LADDER
DOWN TO THIRD LEVEL. SEE
ARCH'L DRAWING FOR GOOD INFO



Signature



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1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

A	HAWAII ERECTION BID SET	12/20/84	1/2/85
A	PRE-BID CLARIFICATIONS	12/13/83	
LTR	DESCRIPTION	DATE	APPD
	REVISION		

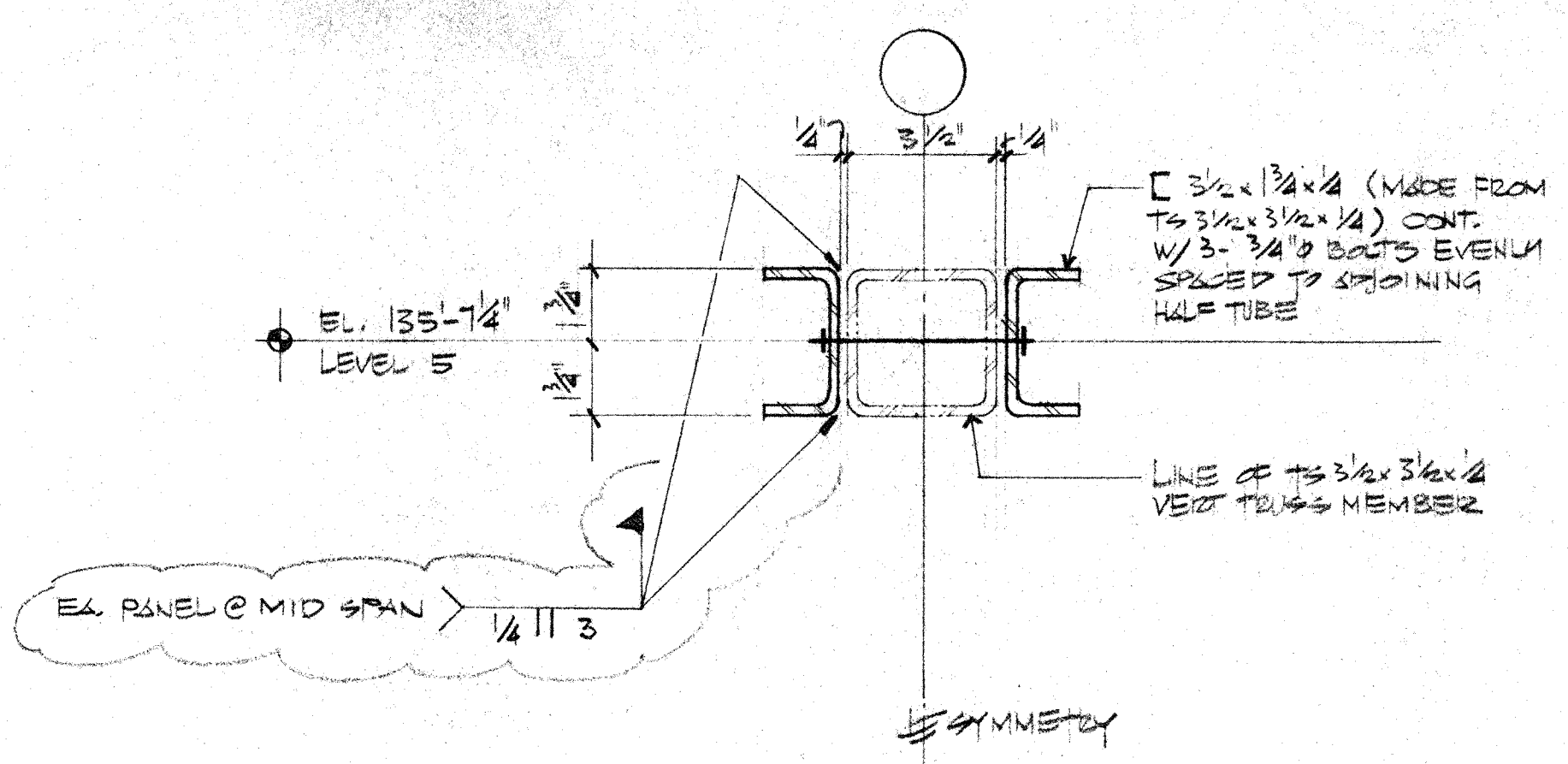
UNLESS OTHERWISE NOTED				DRAWN <i>RE</i>	
DIMENSIONS ARE IN INCHES				CHECKED <i>NS</i>	
TOLERANCE ON DECIMALS				APPROVED <i>[Signature]</i>	
XX = ± .03		ANGULAR = ± 1/2°		APPROVED <i>[Signature]</i>	
XXX = ± .005					
TOLERANCE ON FRACTIONS ± 1/16					
MACHINE FINISH 1/8"				APPROVED <i>[Signature]</i>	
NEXT ASSEMBLY					
DRAWING NO.		ITEM		QTY	
				WEIGHT	
				APPLICABLE DOC	

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES

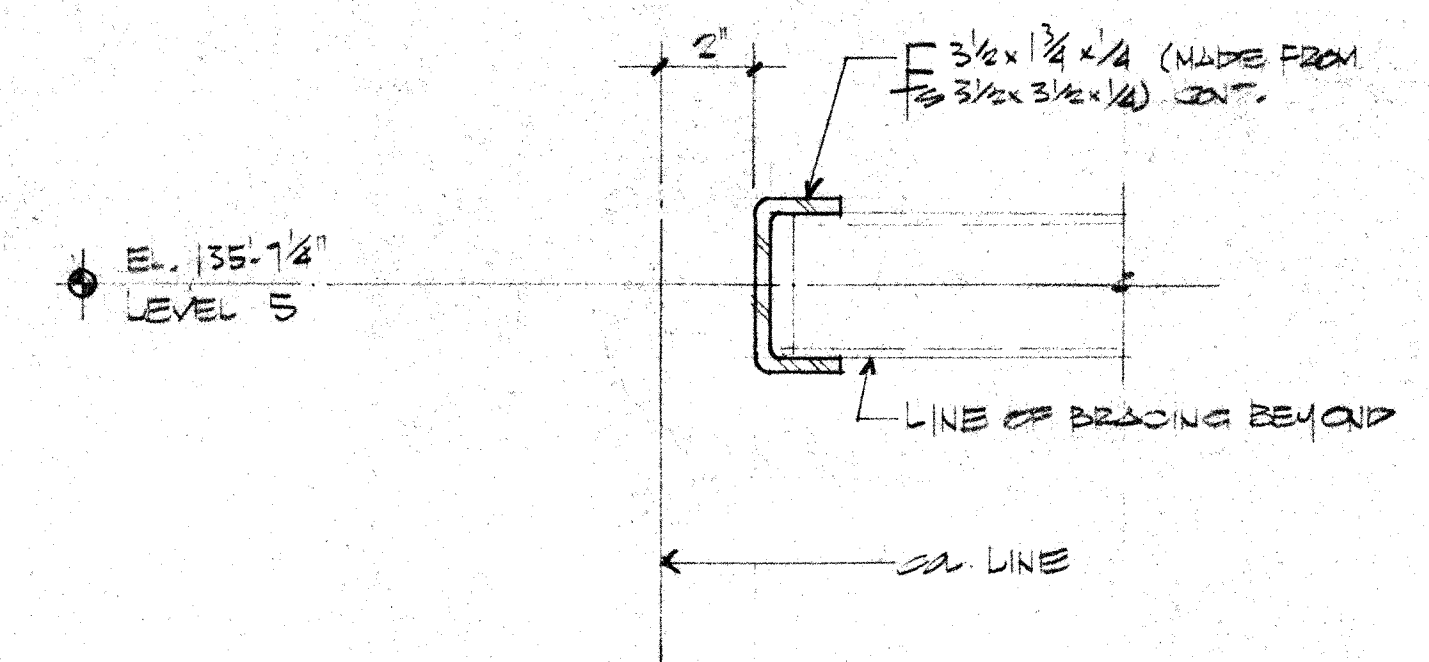
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE			
FOURTH LEVEL FLOOR PANEL PLANNING PLAN SURV. JUNE 72 OBSERVATION VANCE REA, HAWAII			
DWG. SIZE	SCALE	DWG. NO.	
E	NOTED	E10MD	
FILE NO.	W.O.	DEPT	SHEET 2 OF 2



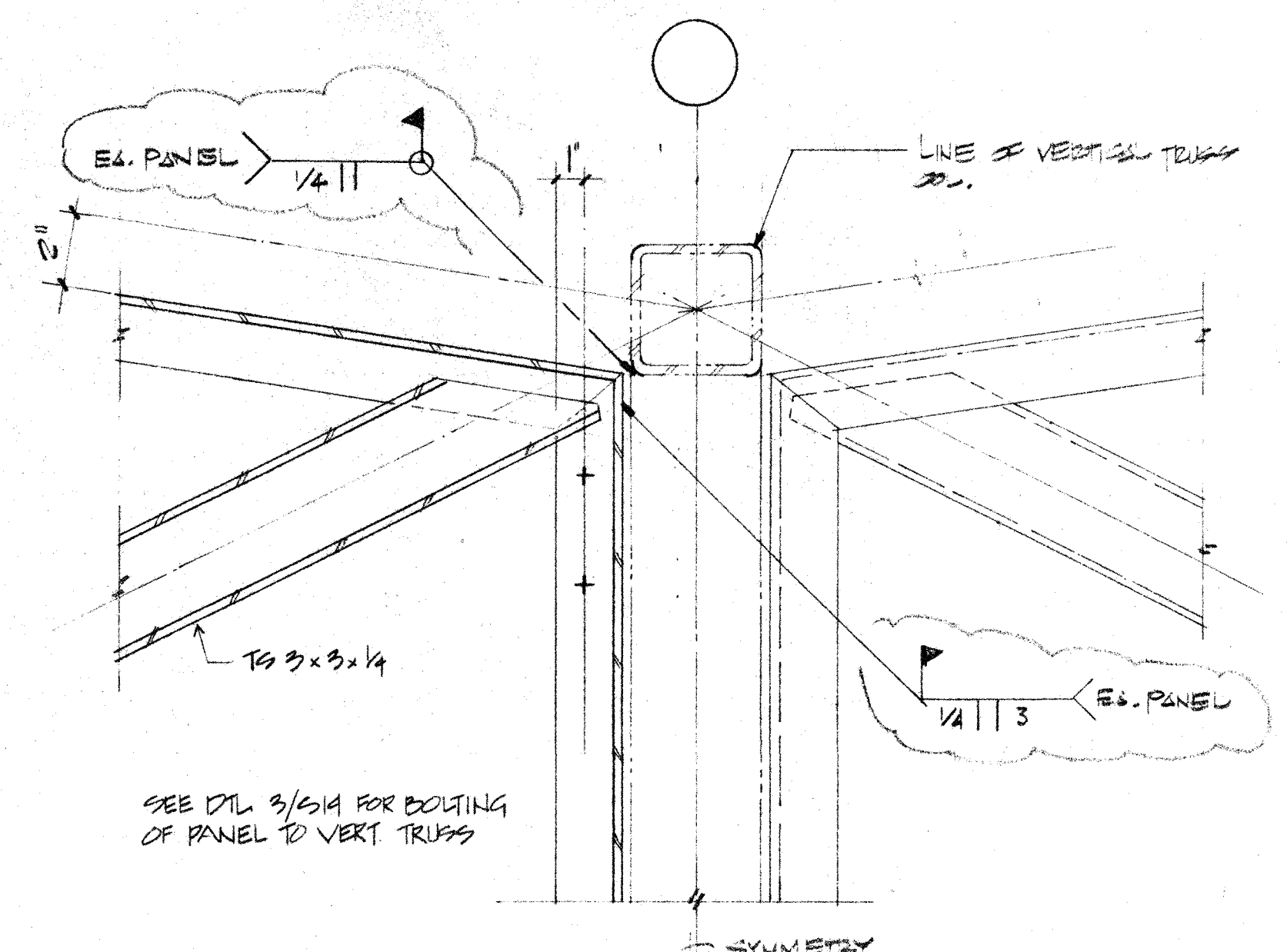
PANEL SIDE SECTION

1
5/16



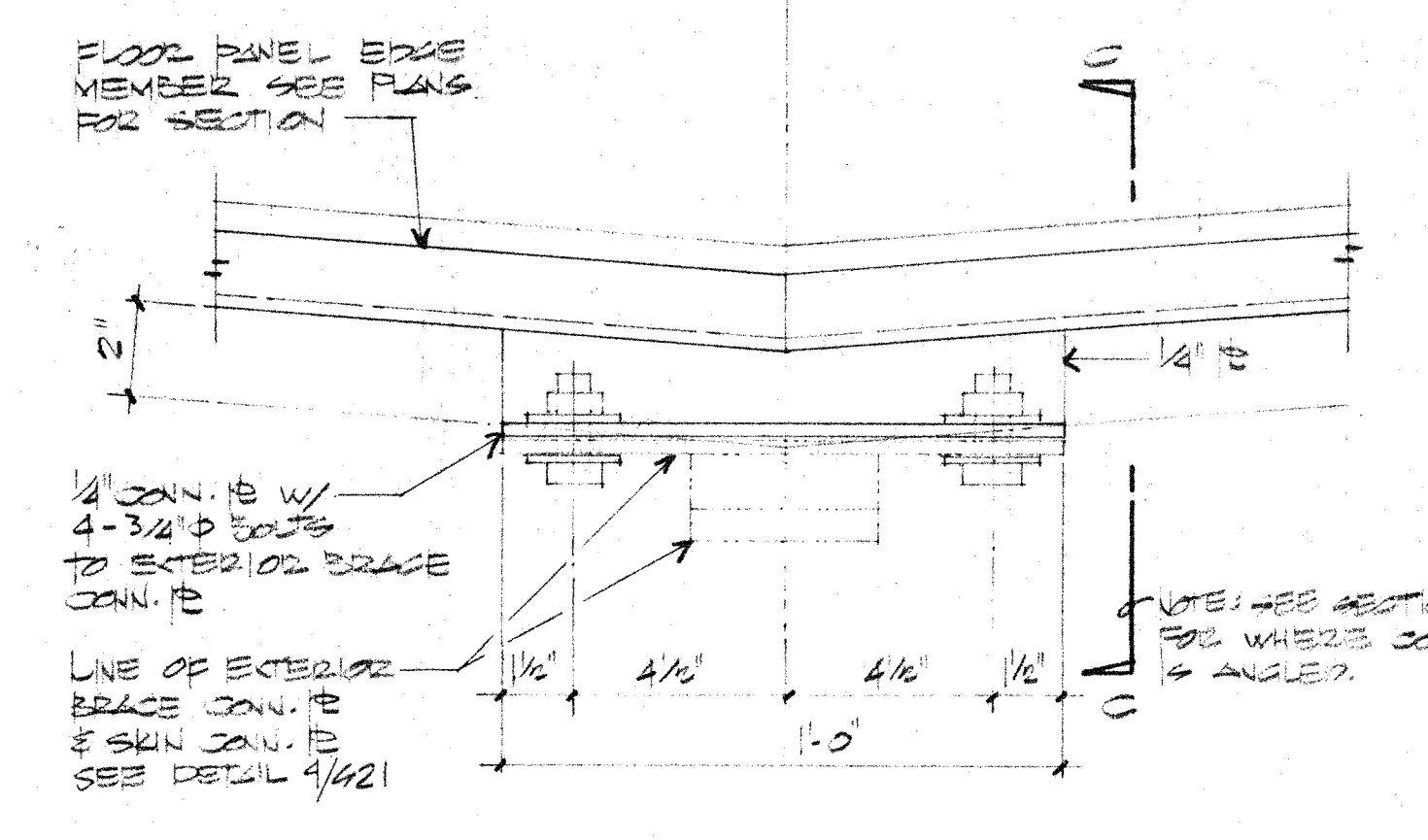
PANEL END SECTION

2
5/16



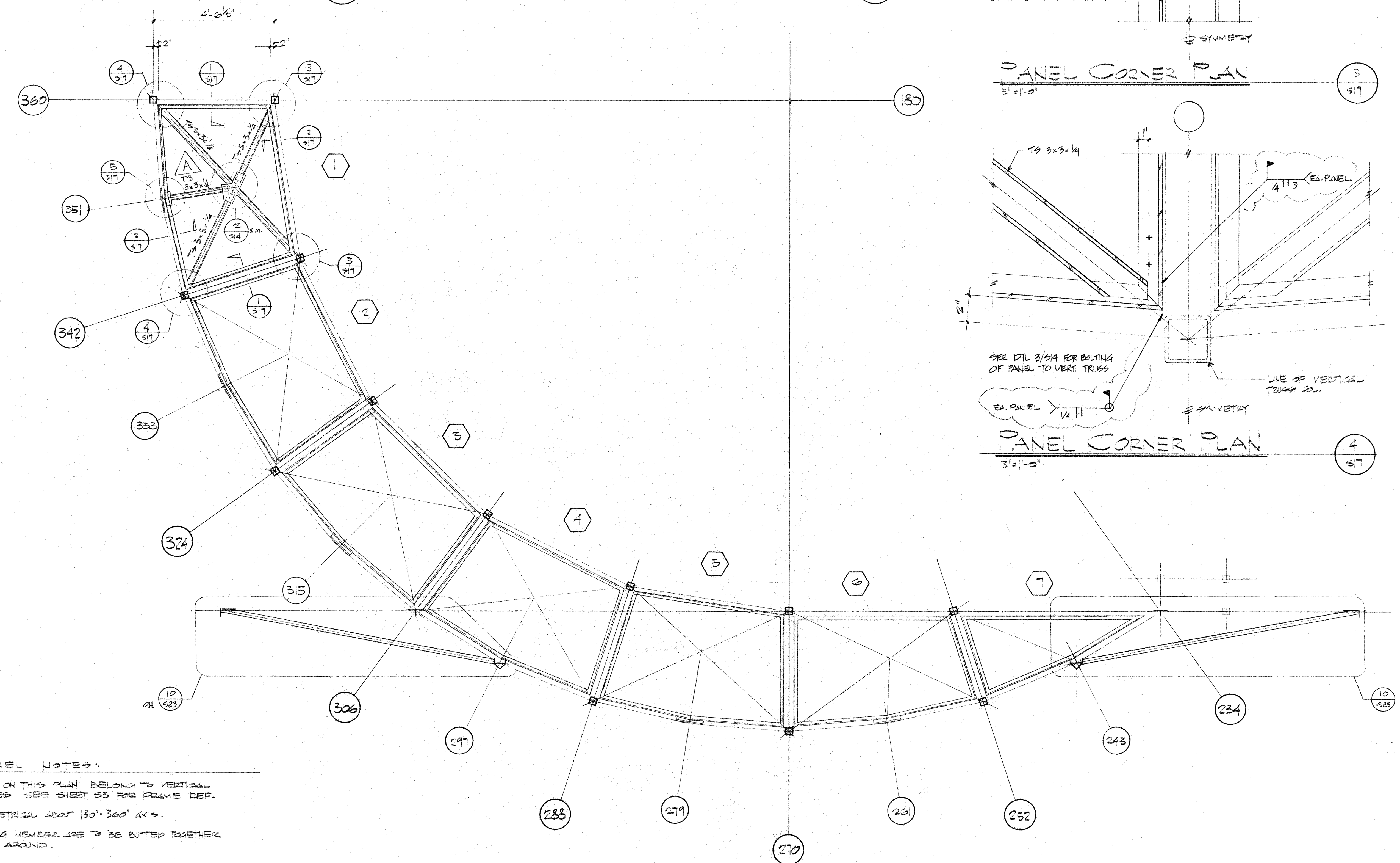
PANEL CORNER PLAN

3
5/16



FLOOR PANEL EDGE MEMBER

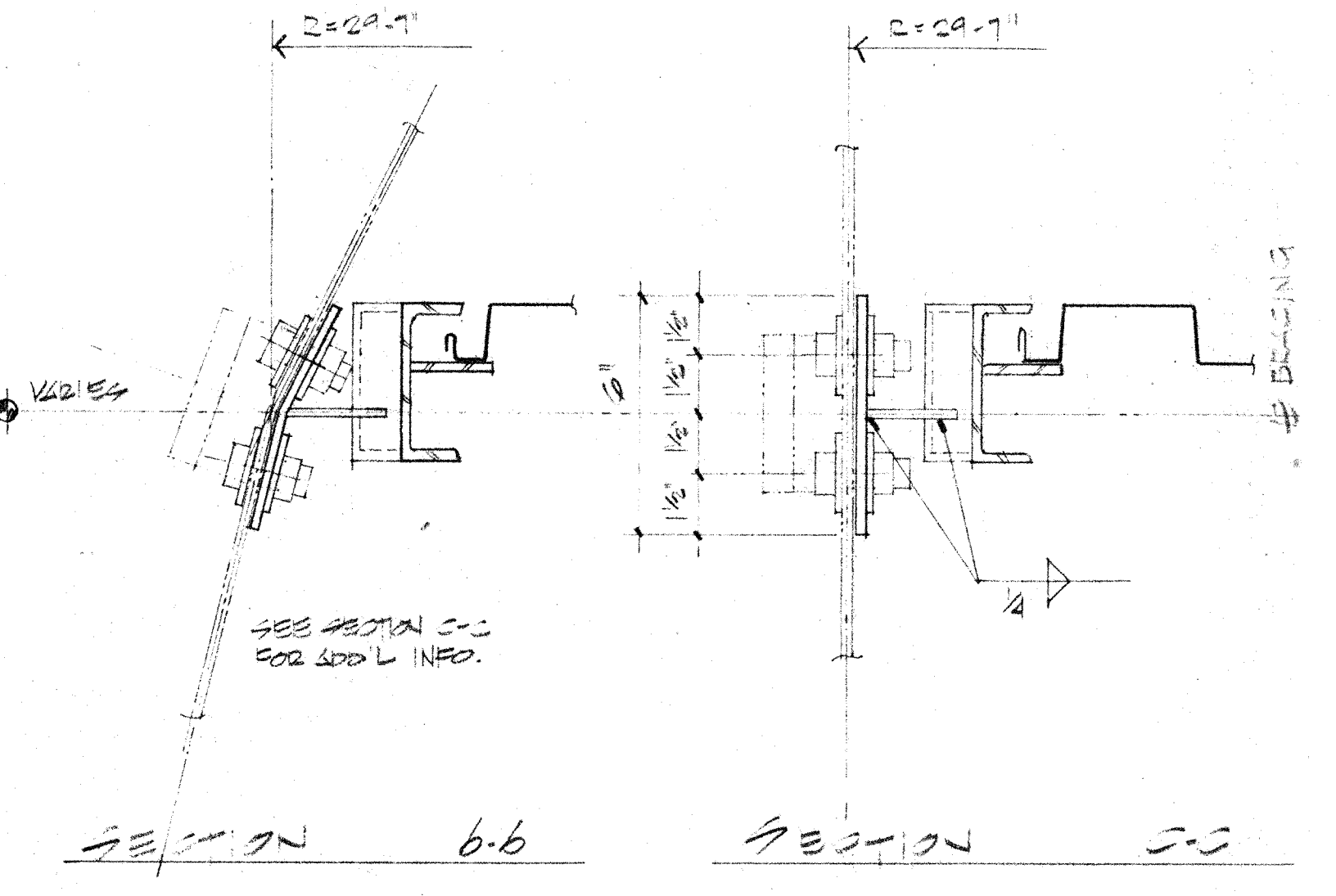
4
5/16



FIFTH LEVEL BRACING PANEL FRAMING PLAN

5
5/16

- DRAWING PANEL NOTES:
1. DIMENSIONS SHOWN ON THIS PLAN BELONG TO VERTICAL TRUSSED FRAMES. SEE SHEET 55 FOR FRAME DET.
 2. PANELS ARE SYMMETRICAL ABOUT 130°-360° AXIS.
 3. ALL PANEL FRAMING MEMBERS ARE TO BE BUTTED TOGETHER AND WELDED ALL AROUND.



PANEL CORNER PLAN

6
5/16

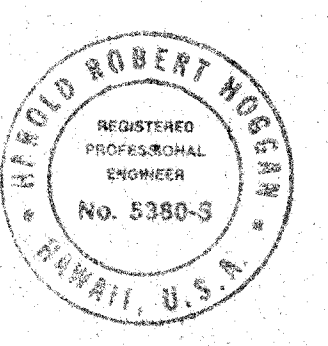
PANEL CONT. TO EXTERIOR BRACE

7
5/16

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Robert Hoggan

Signature



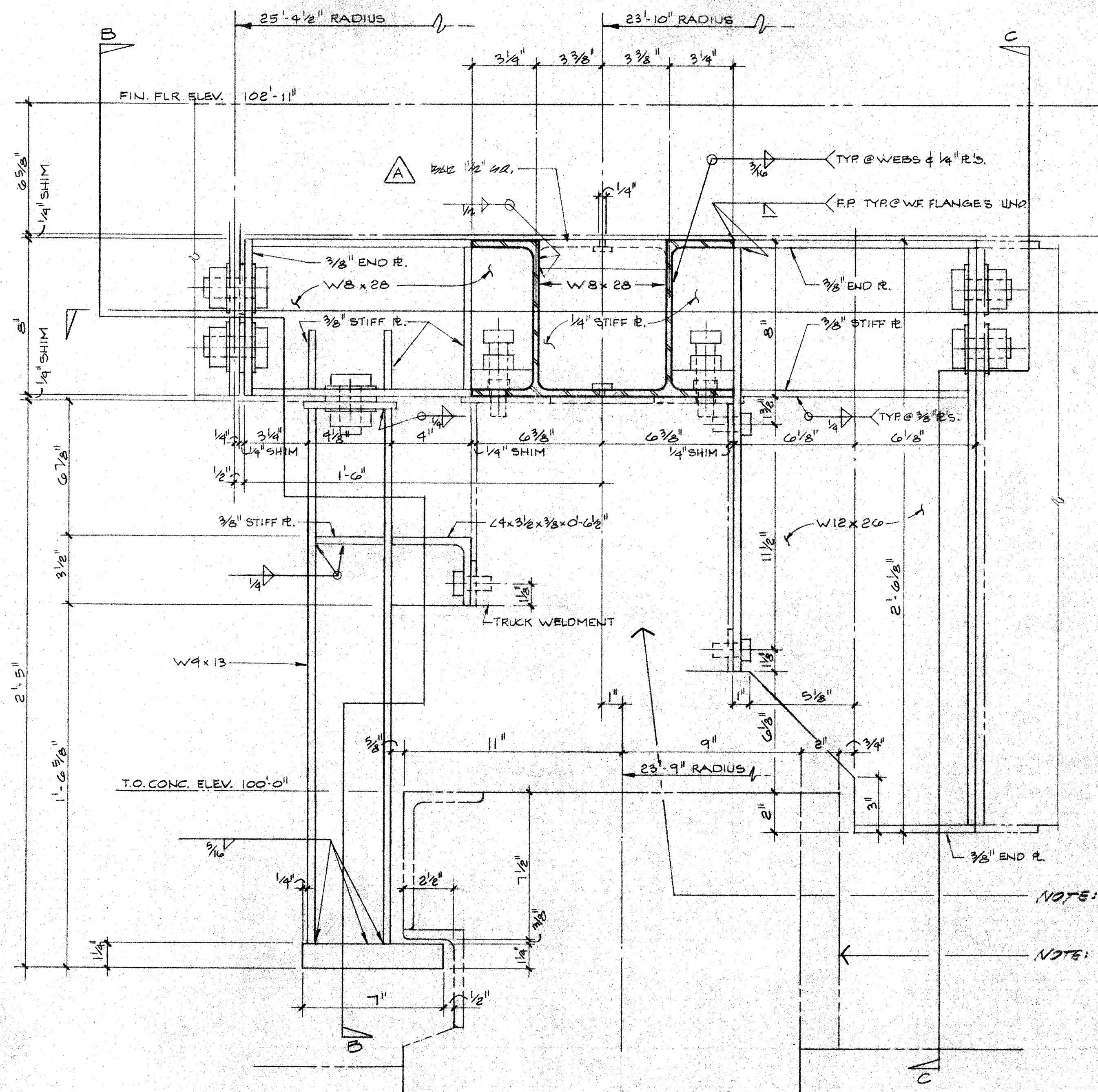
H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA, CALIFORNIA 91104
(213) 684-2917

REVISION	DATE	APPRO
PRE-BID CLARIFICATIONS	12/13/83	
DESCRIPTION		

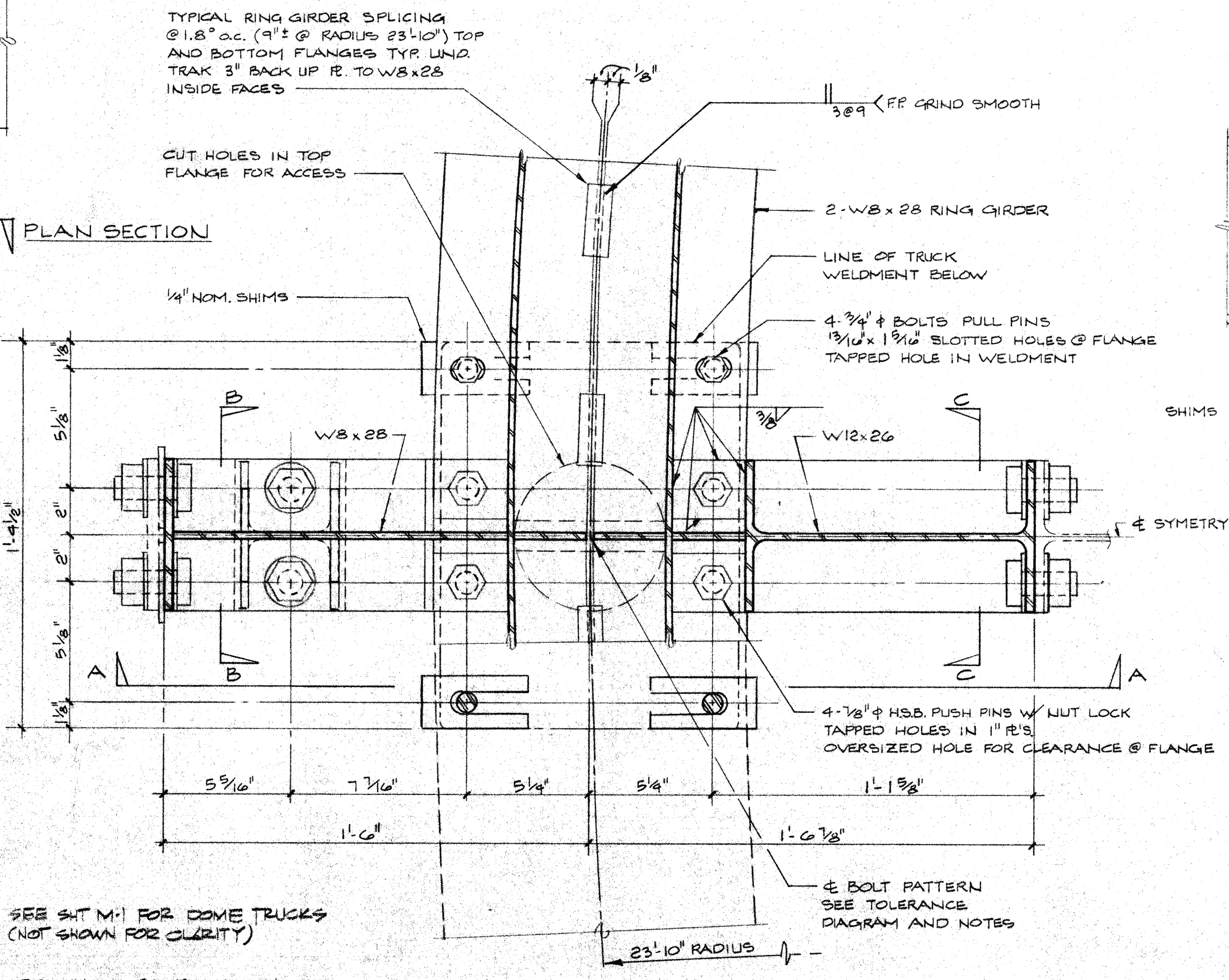
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES	DATE	DATE
TOLERANCE ON DECIMALS	12/15/83	
XX = ± .03		
XXX = ± .005		
TOLERANCE ON FRACTIONS ± 1/16		
MACHINE FINISH 12/1		

CALIFORNIA INSTITUTE OF TECHNOLOGY	DATE	DATE
PASADENA, CALIF.	12/15/83	
TITLE		
SUBMITTER		
MAIN		
FILE NO.		
W.O.		
DEPT		

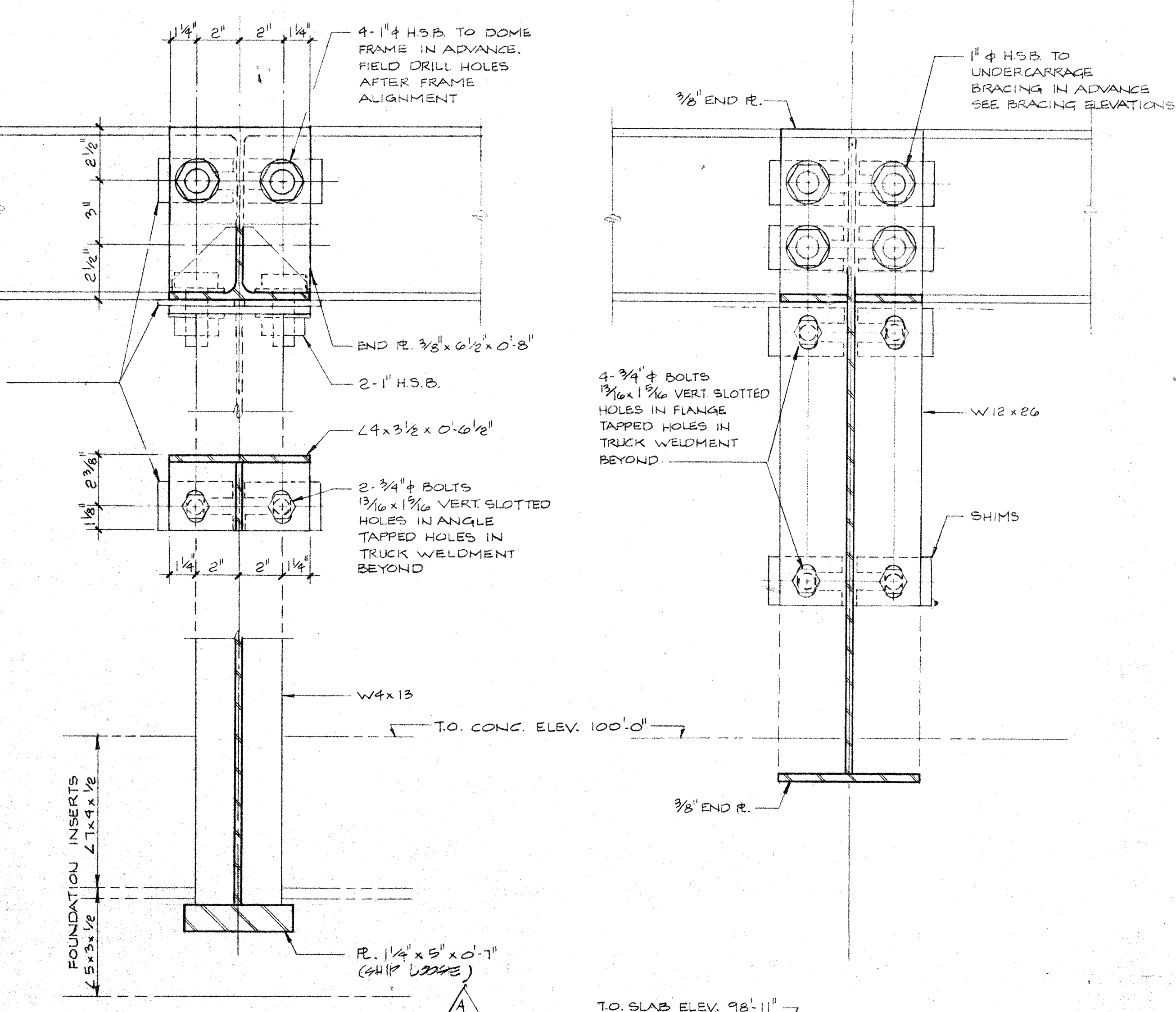
2. PROTECTIVE FINISH
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.



SECTION A-A

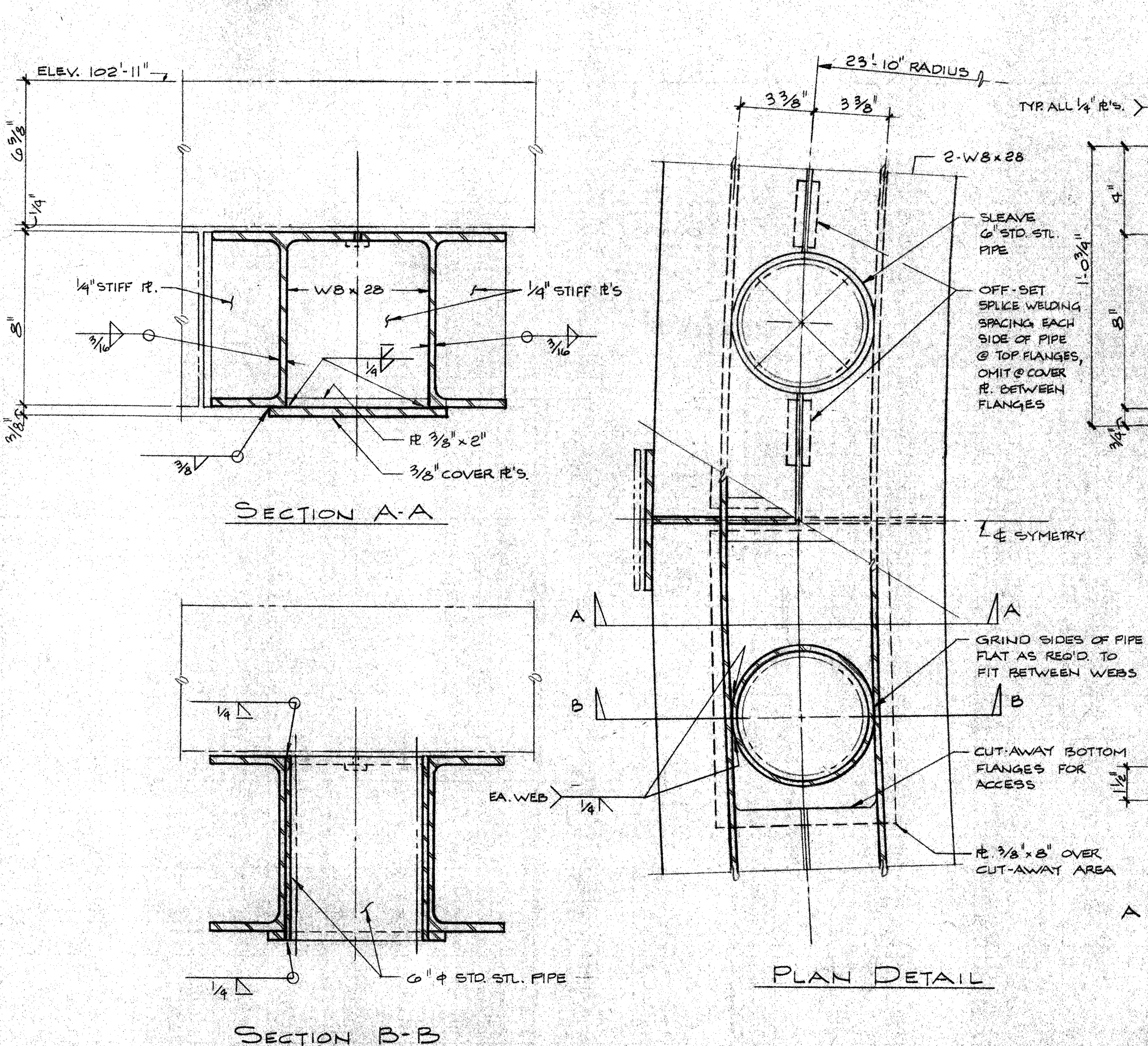


PRIMARY RING GIRDER DETAIL @ 18° OC
SCALE 3/8\"/>



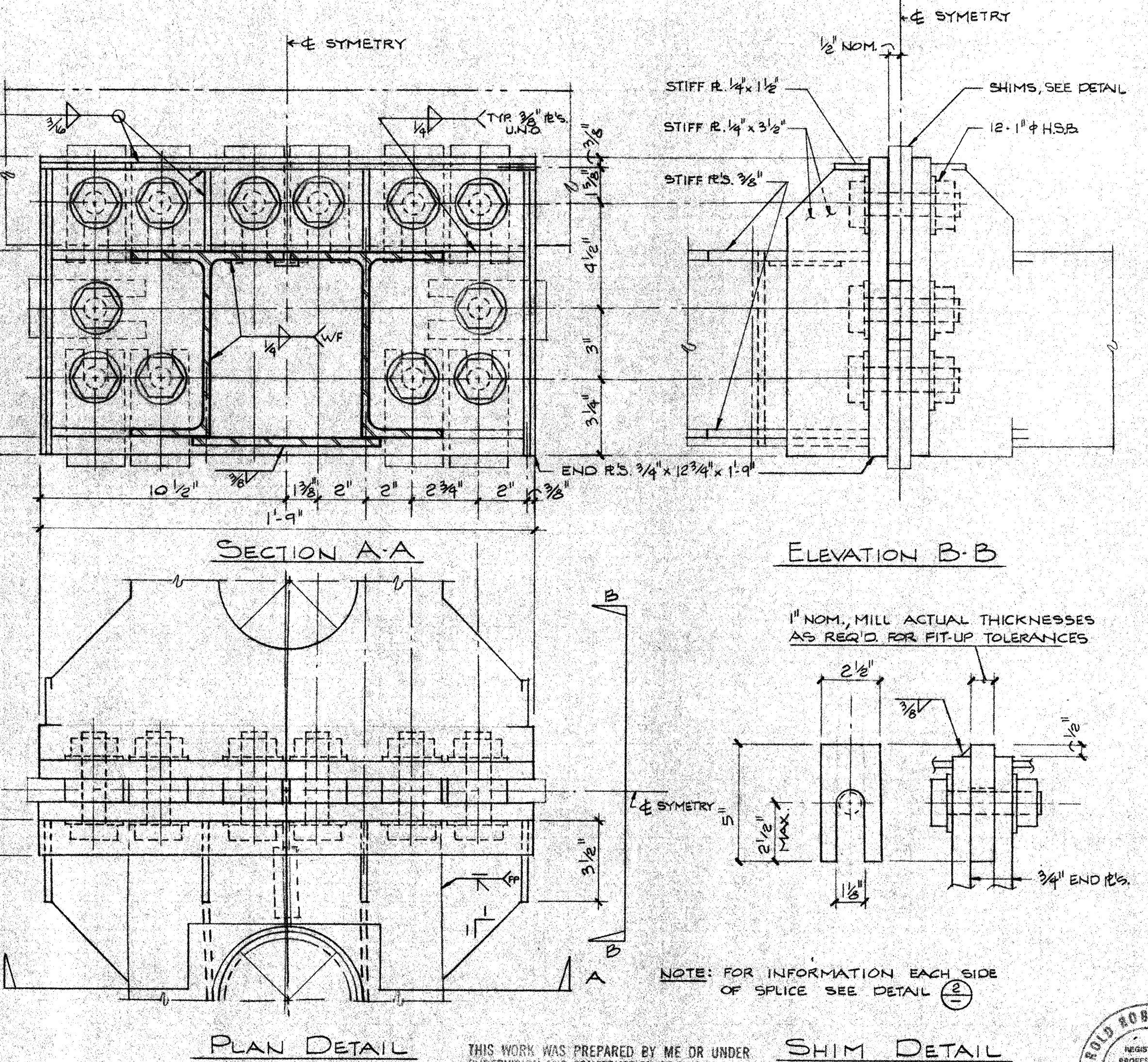
SECTION B-B

SECTION C-C



SECTION B-B

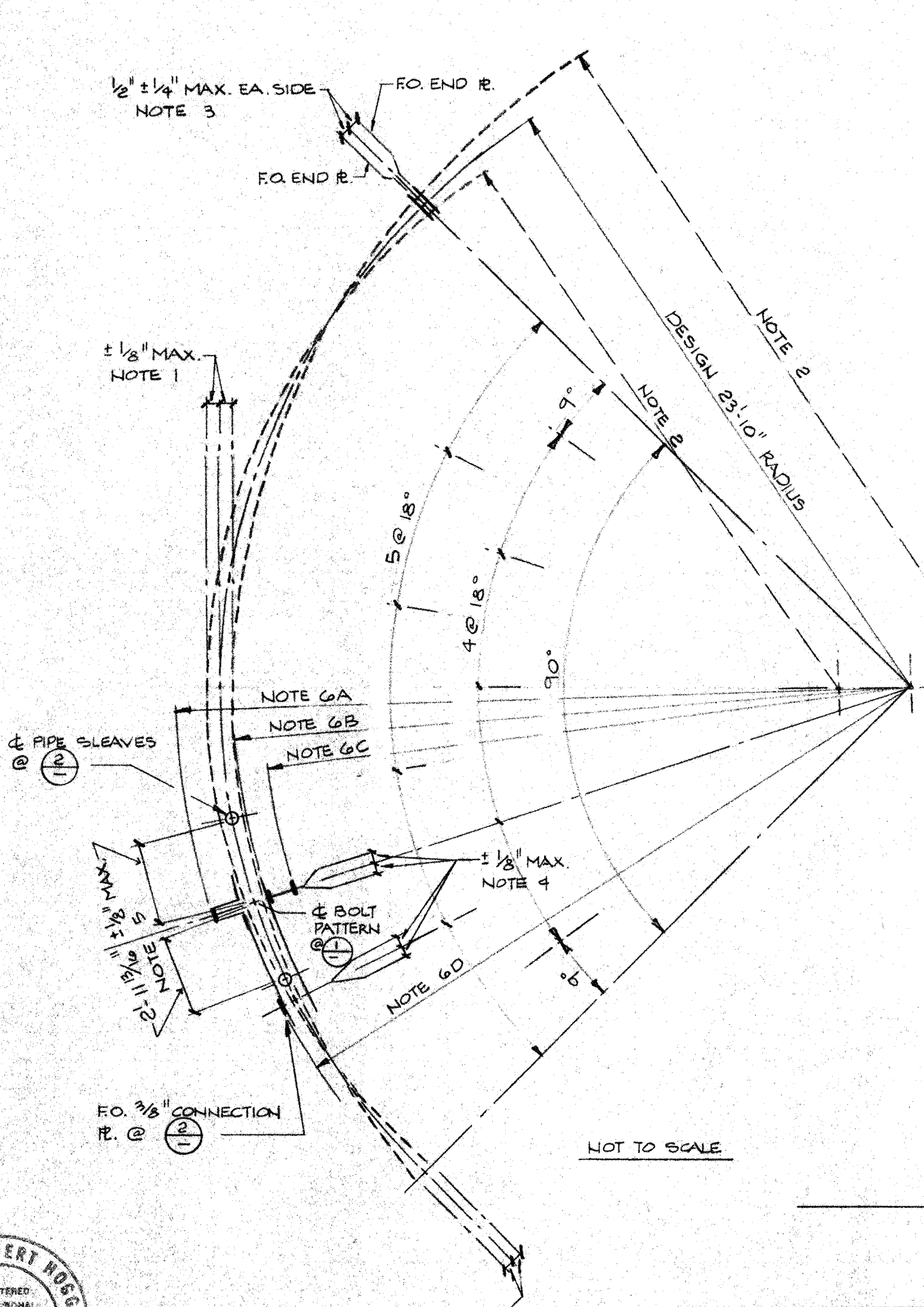
INTERMEDIATE DETAIL @ 18° OC
SCALE 3/8\"/>



PLAN DETAIL

SHIM DETAIL

INTERMEDIATE DETAIL @ 90° SPICES
SCALE 3/8\"/>



RING GIRDER TOLERANCES
NOTES AND DIAGRAM

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

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Robert Hoggan
Signature

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PASADENA, CALIFORNIA 91104
(213) 684-2917

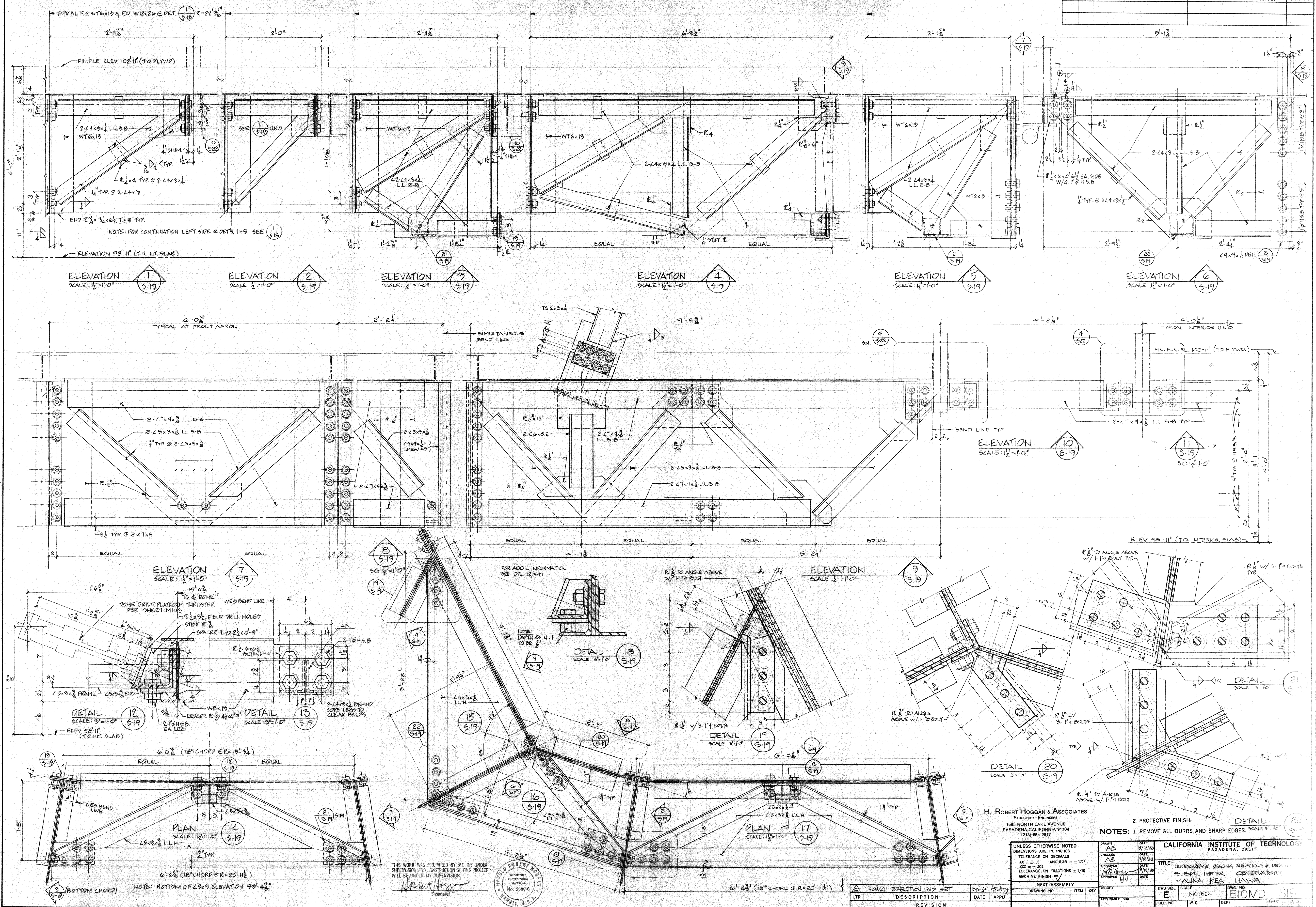
REVISION	DESCRIPTION	DATE	APPROVED
1	ISSUED FOR CONSTRUCTION	12-13-83	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 - MACHINE FINISH 1/16			DRAWN	DATE
			D.C.	12/5/83
			CHECKED	DATE
			A.B.	12/5/83
			APPROVED	DATE
			<i>RAH</i>	12/5/83
			APPROVED	DATE
NEXT ASSEMBLY				
DRAWING NO.	ITEM	QTY	WEIGHT	
			APPLICABLE DOC	

CALIFORNIA INSTITUTE OF TECHNOLOGY	PASADENA, CALIF.
TITLE	RING GIRDER DETAILS
DESIGNED BY	SEBASTIAN M. HOGGAN
CHECKED BY	MAURICE K. HOGGAN
APPROVED BY	
DATE	12/6/83
DWG. NO.	1010MD
FILE NO.	
DEPT.	
SHEET NO.	

- TOLERANCE NOTES:**
- OUT OF RADIUS APPLIES TO E OF DOUBLE WF GIRDER BETWEEN WELDS E OF BOLT PATTERN @ DETAIL 11 AND E OF PIPE SLEEVES @ DETAIL 12. MAXIMUM OUT OF RADIUS SHALL BE ± 1/8\"/>

LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	UNIT WT



H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 884-2917

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES. SCALE 5'-10"

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE: UNDERCARRIAGE BRACING ELEVATIONS & DETAILS
SUPPLEMENTARY OBSERVATORY
MALINA KEA, HAWAII

DWG. NO.: E
SCALE: NOTED
FILE NO.: W.O.
DEPT.: EIOMD
SIS: SIS

UNLESS OTHERWISE NOTED
DIMENSIONS ARE IN INCHES
TOLERANCE ON DECIMALS
XXX = ± .005
TOLERANCE ON FRACTIONS ± 1/16
MACHINE FINISH 12/

NEXT ASSEMBLY

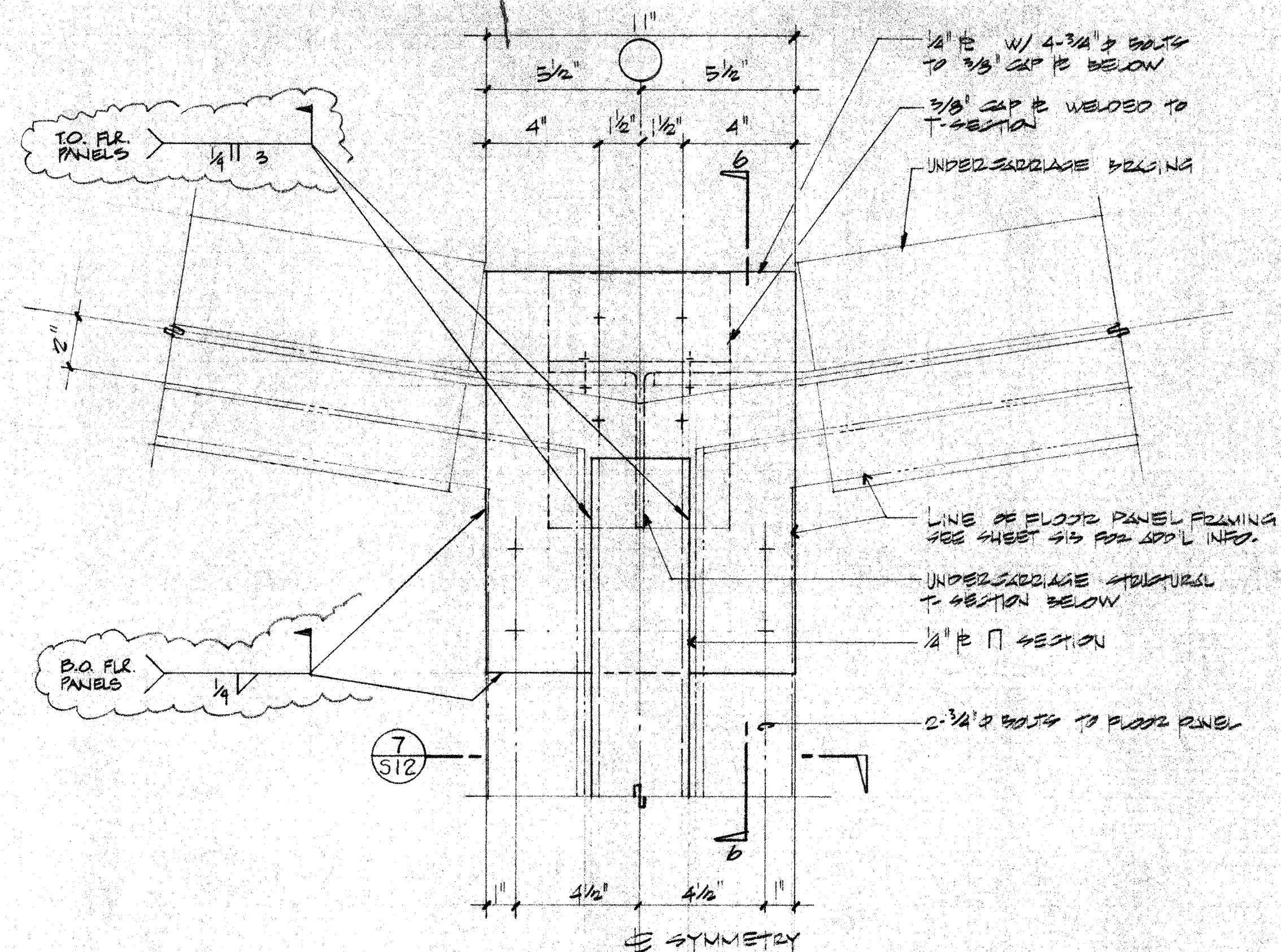
DRAWING NO.	ITEM	QTY	WEIGHT

APPLICABLE DOC:

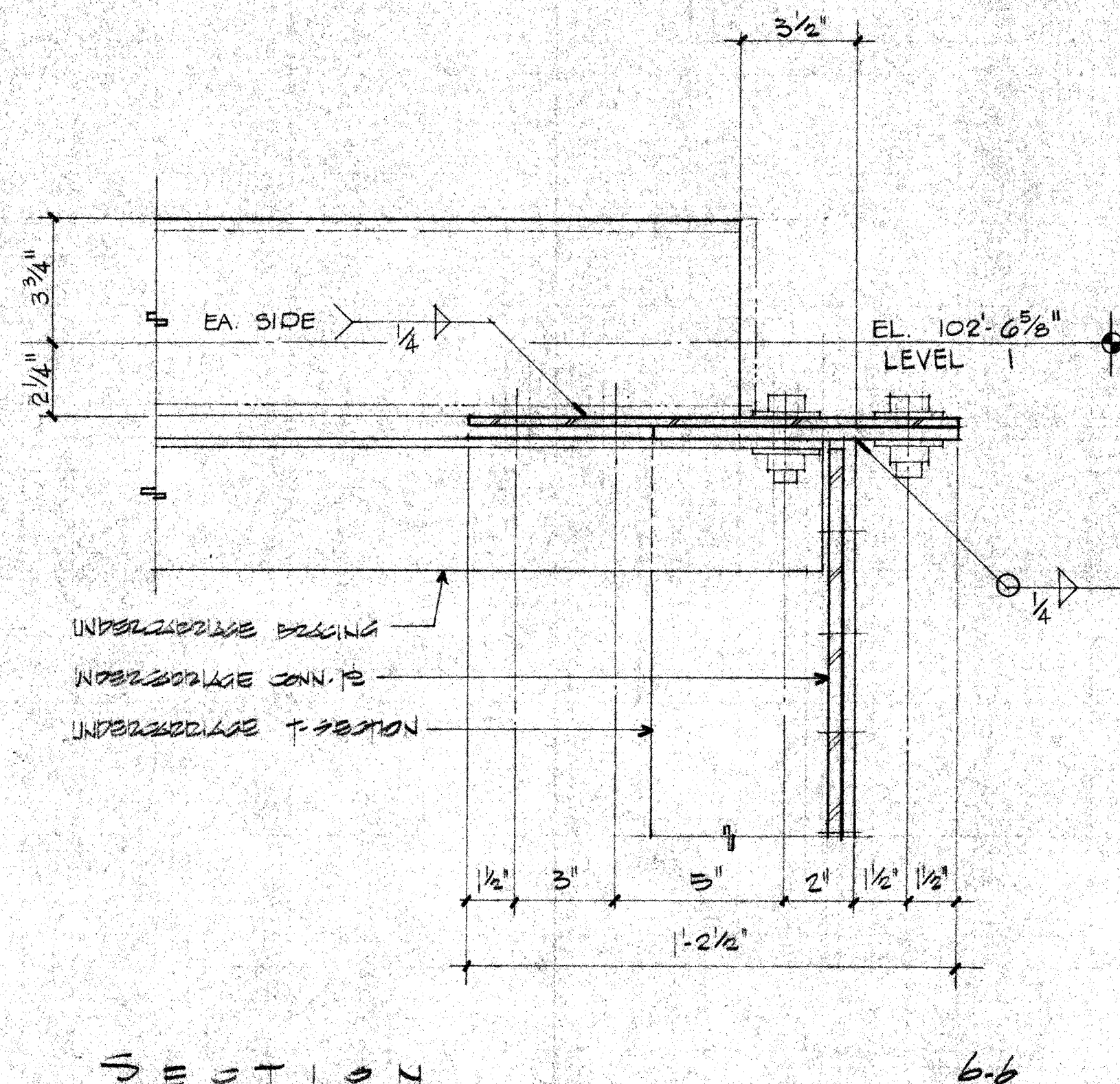
REVISION

DATE	APPRO

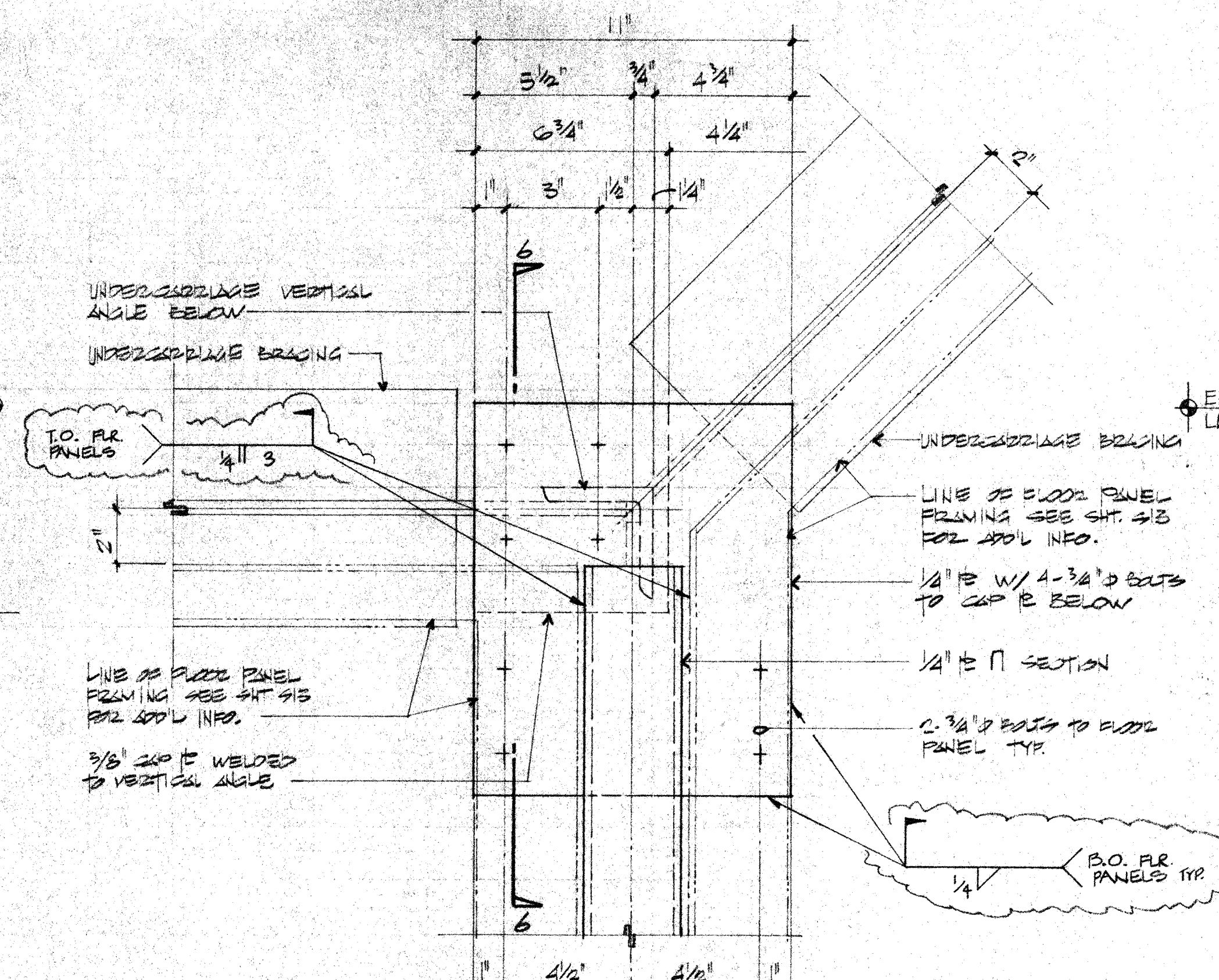
LIST OF MATERIALS*				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



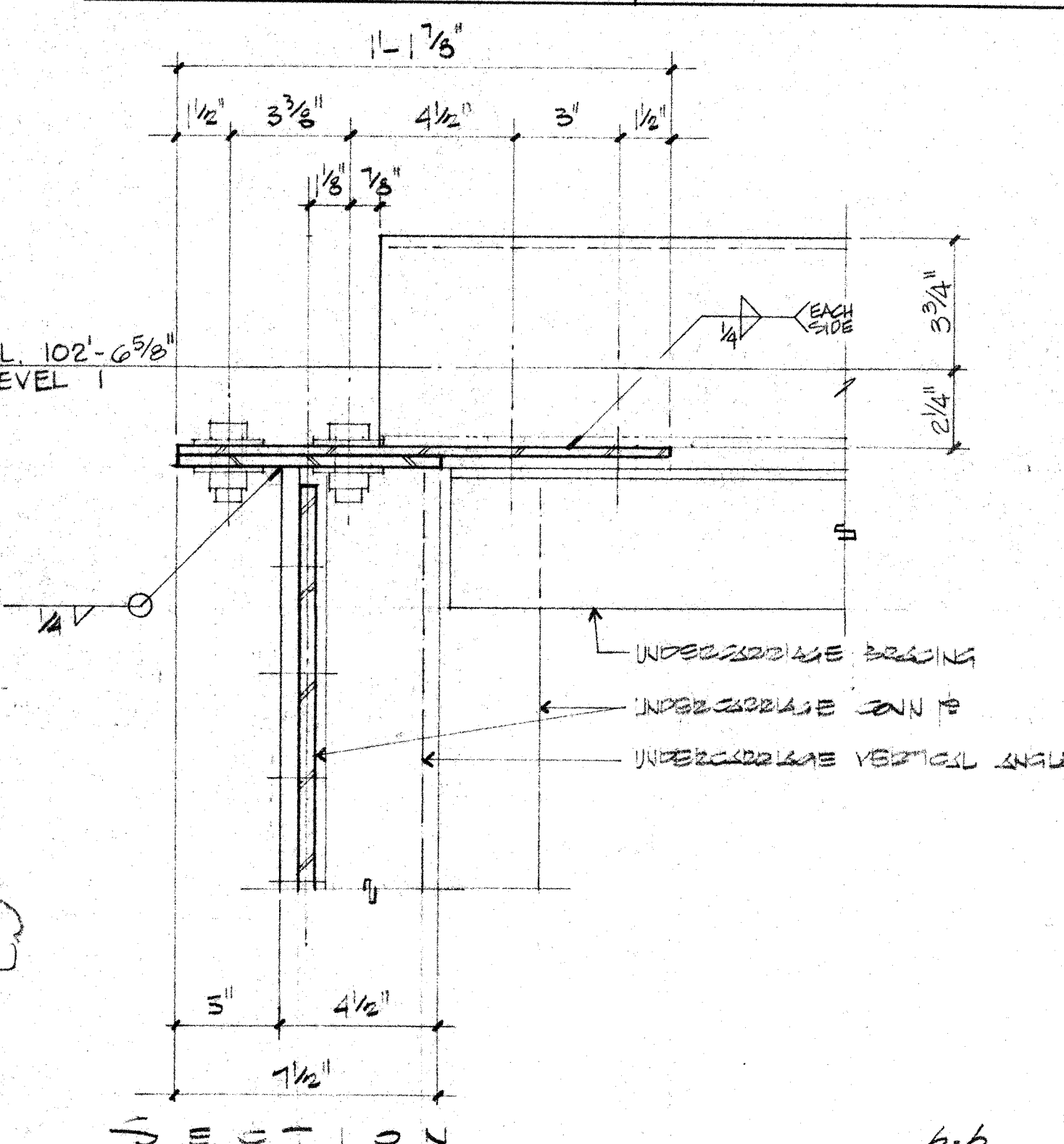
PLAN
DETAIL



Smut - 6



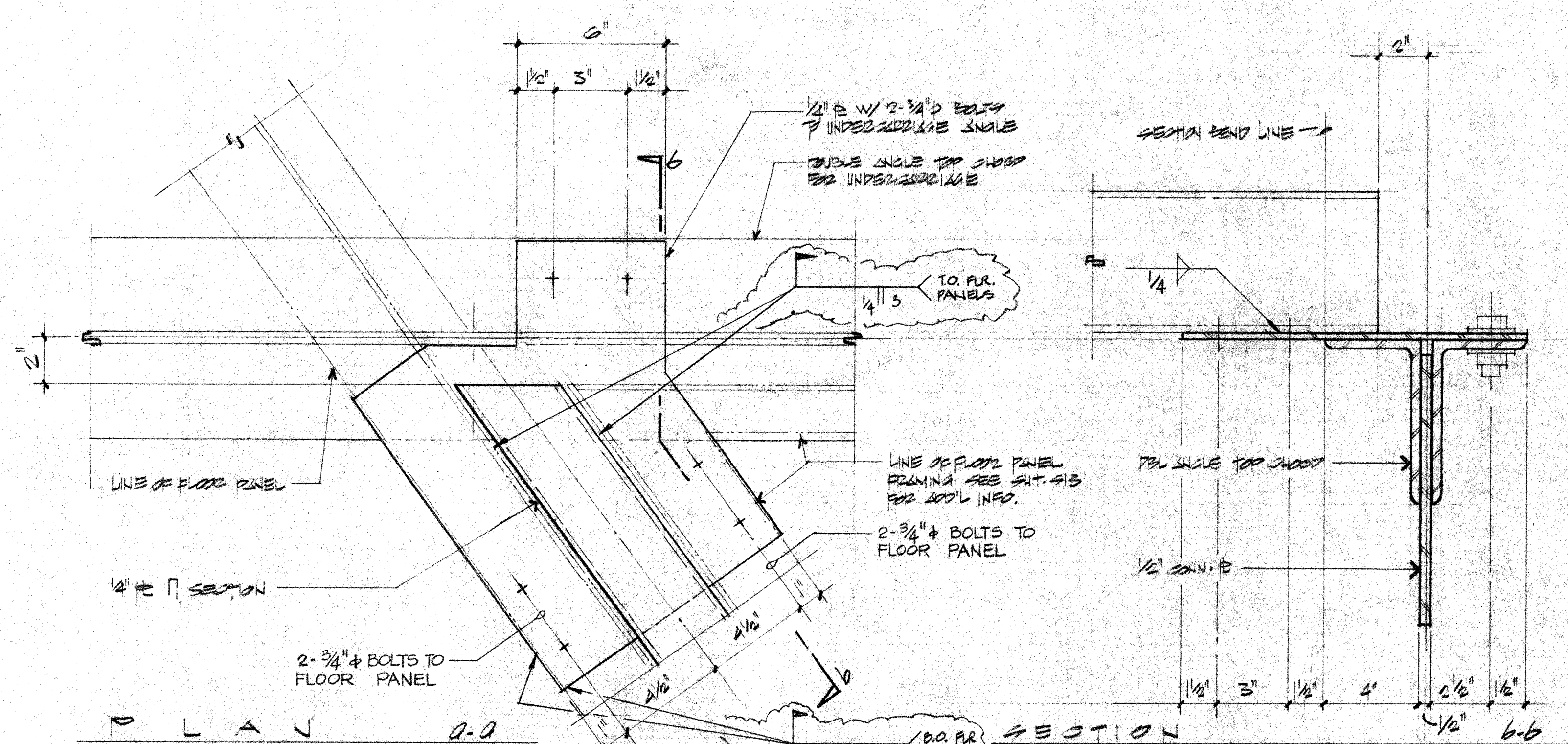
PLAN
DETAIL
3'-0"



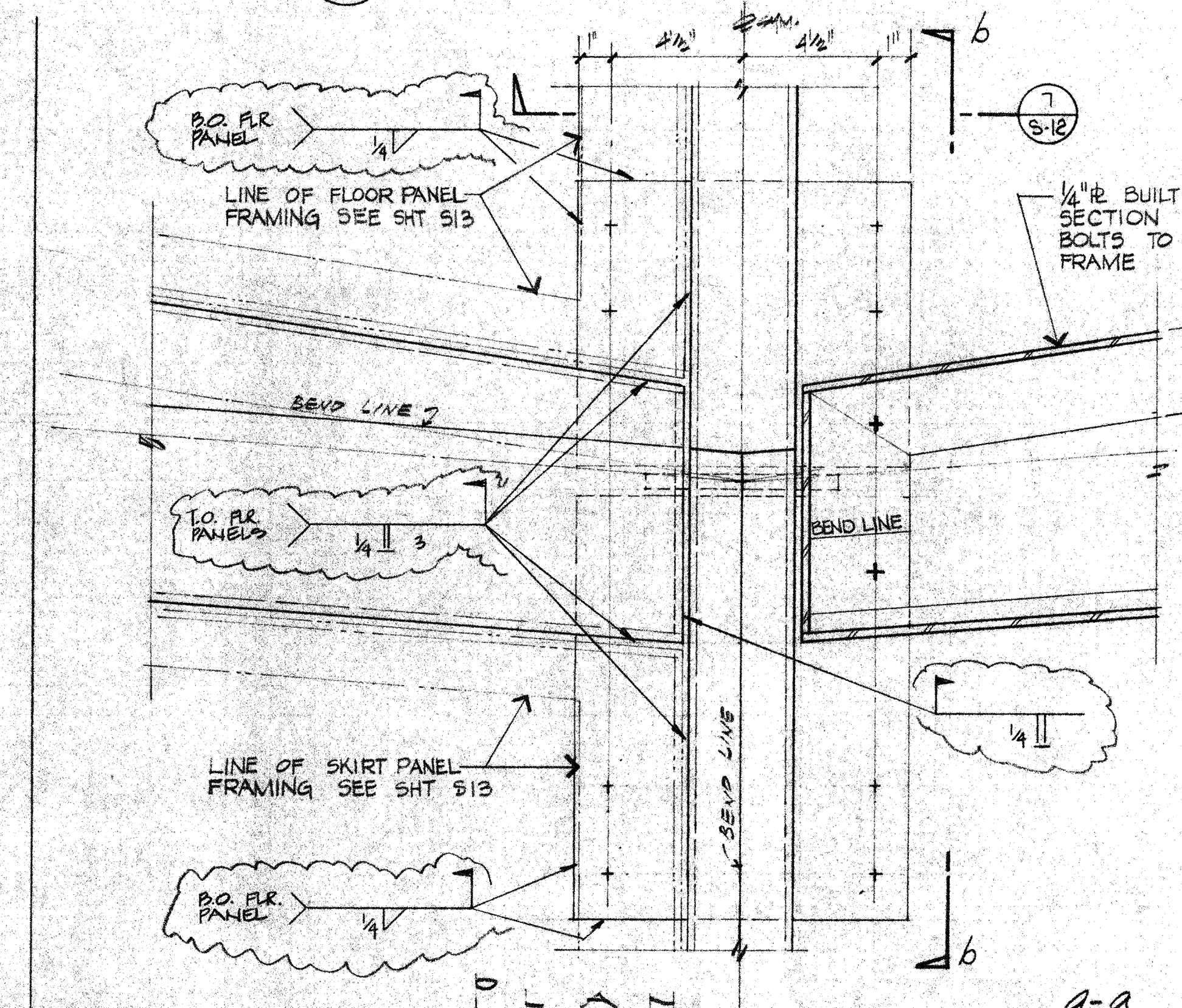
Section 6.

2

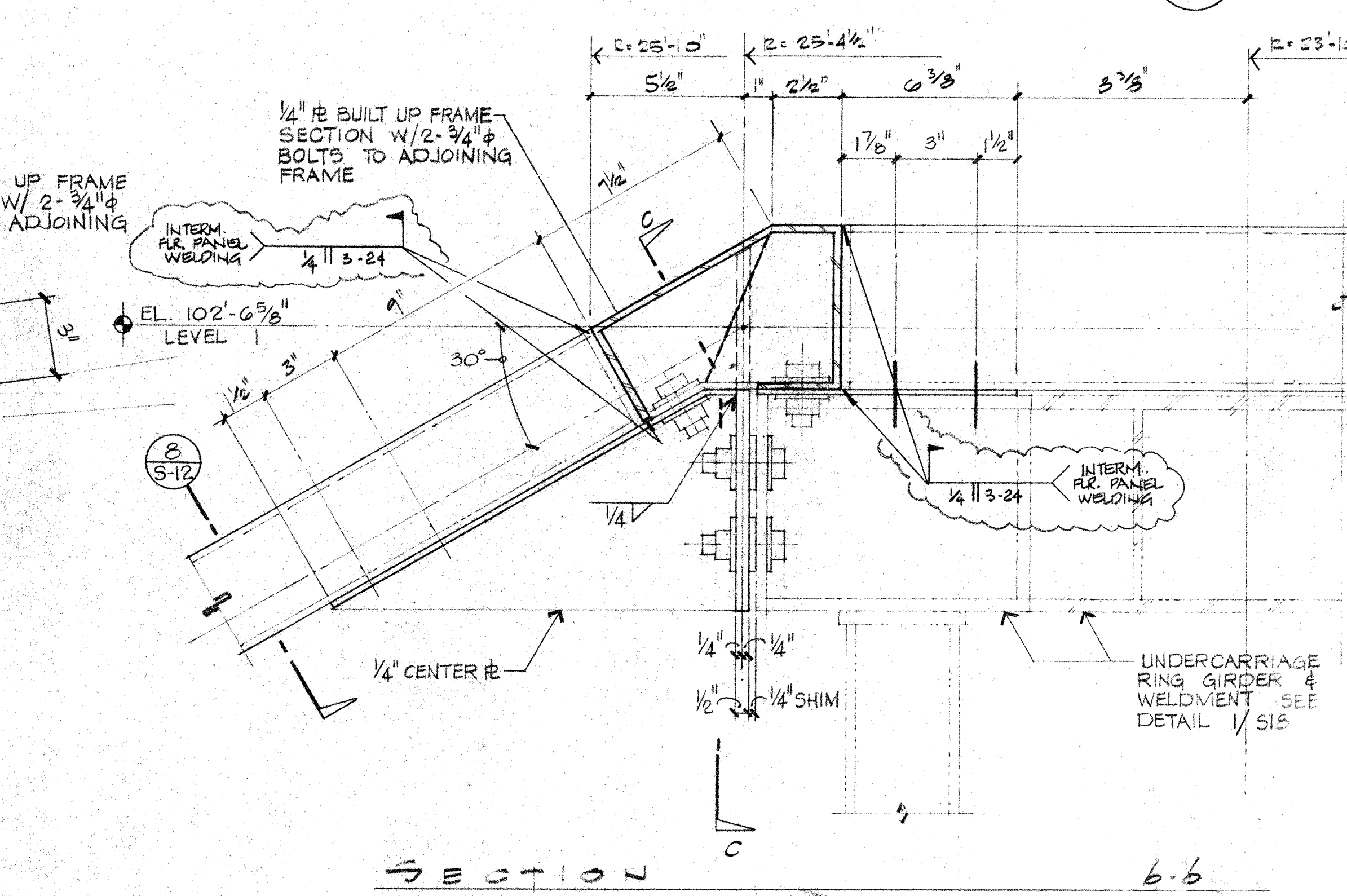
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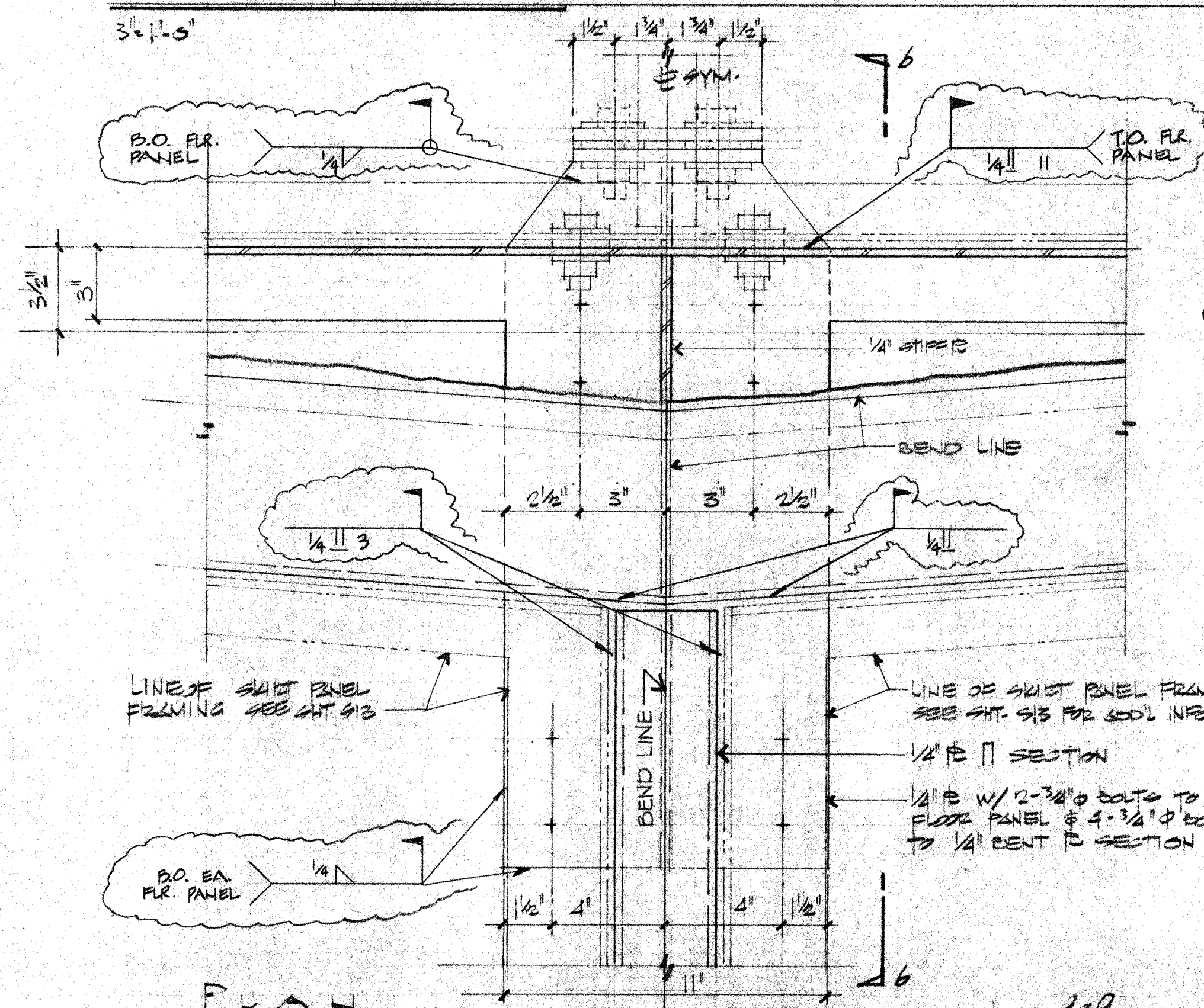
DETAIL



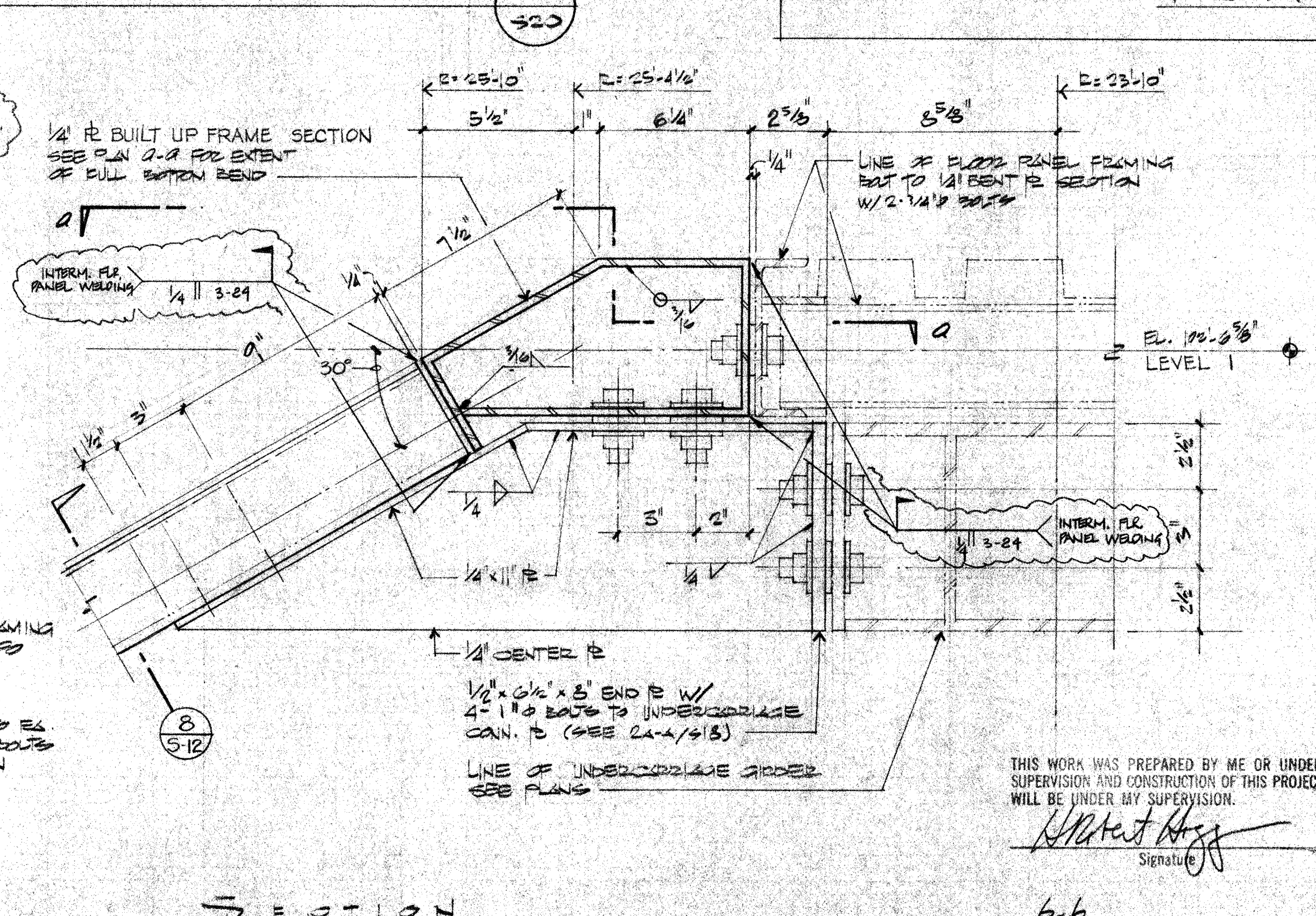
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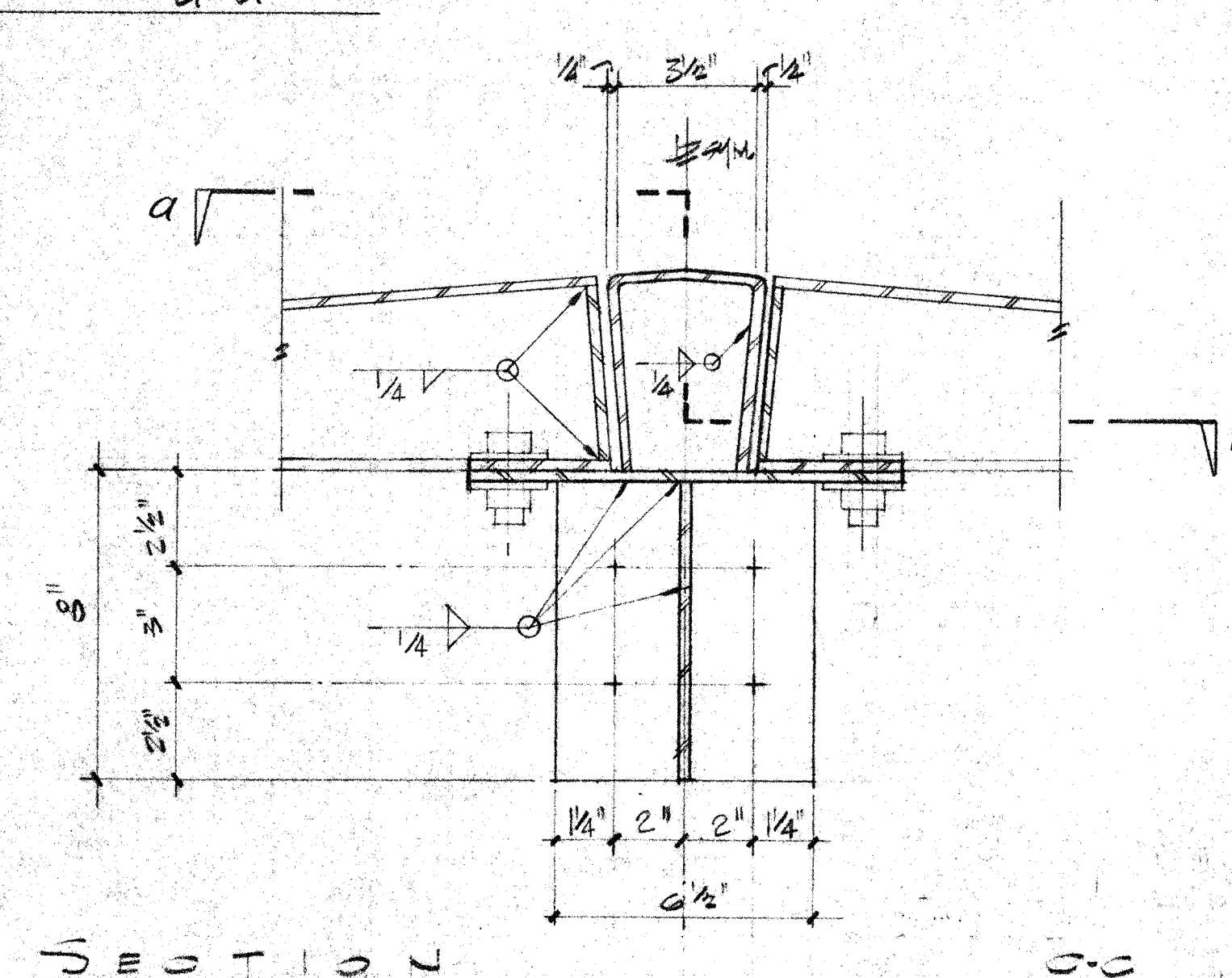
7010105 6-6



PLAN
DETAIL




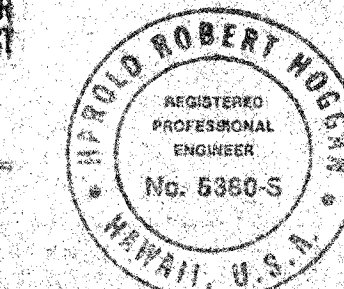
6-6




DETAIL

THIS WORK WAS PREPARED BY ME OR UNDER
SUPERVISION AND CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY SUPERVISION.


Signature



H. ROBERT HOGGAN & ASSOCIATE
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

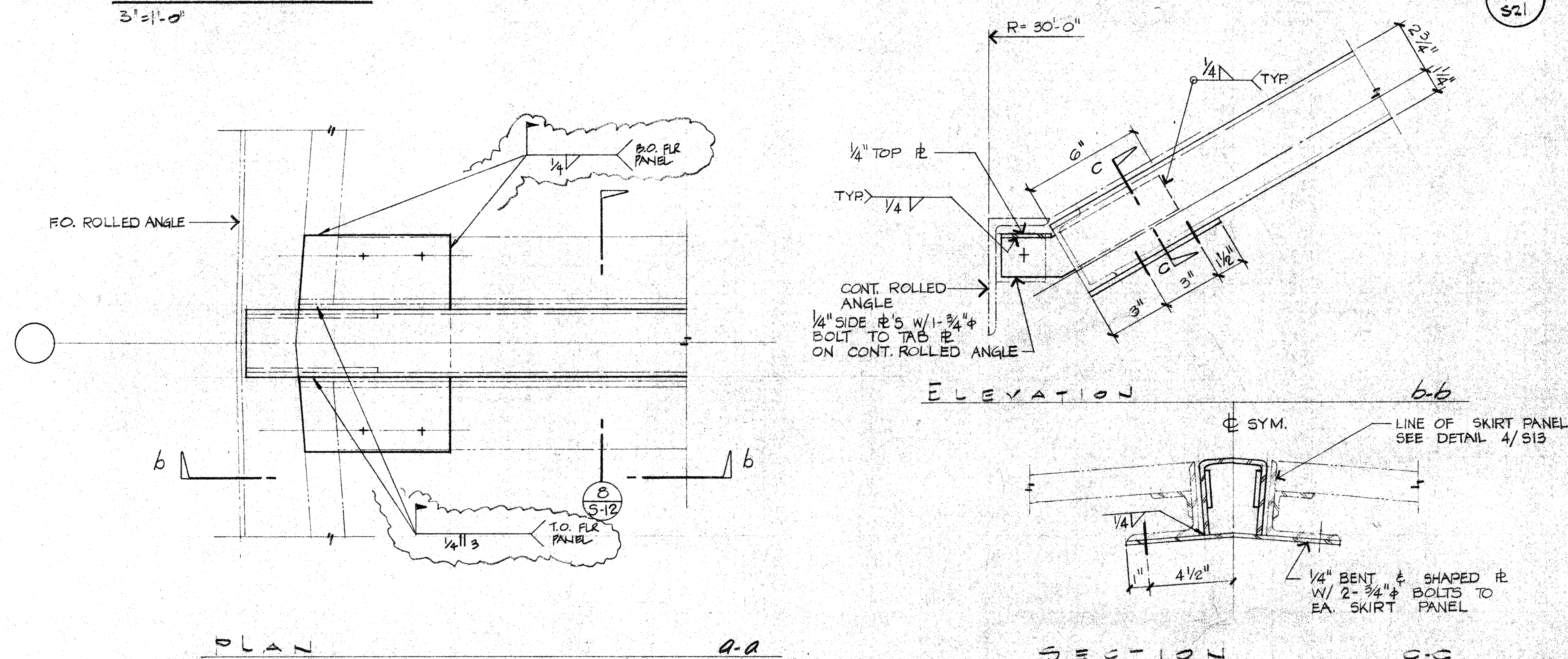
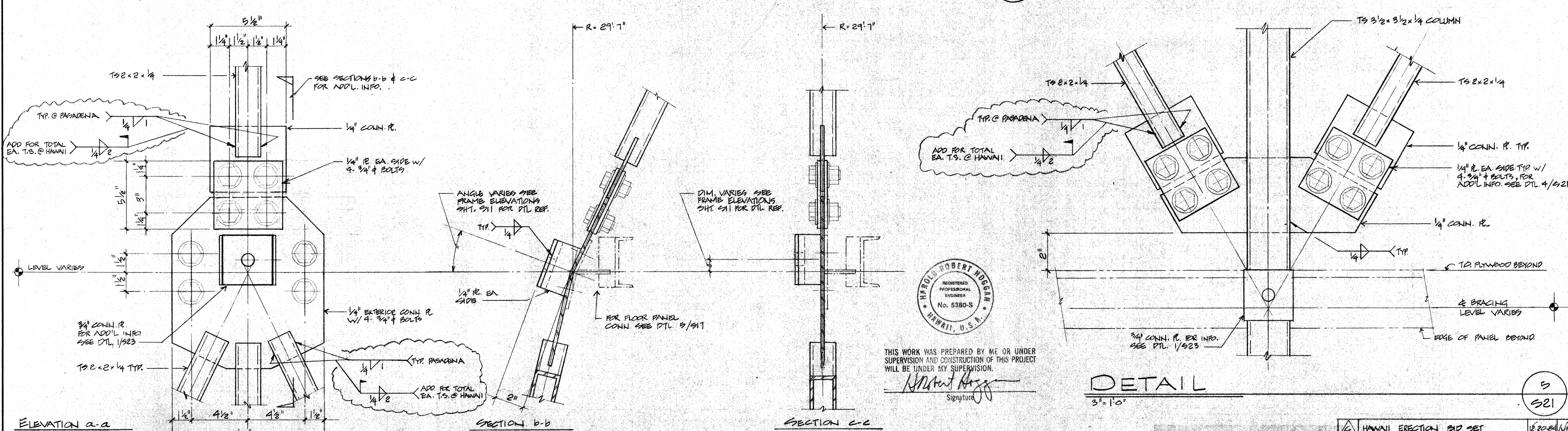
	HAWAII ERECTION LTD EST		12-20-84	<i>H. H. H.</i>
	LTR	DESCRIPTION	DATE	APPROVED
REVISION				

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES		
TOLERANCE ON DECIMALS		
.XX = ± .03 ANGULAR = ±		
.XXX = ± .005		
TOLERANCE ON FRACTIONS ±		
MACHINE FINISH 125/		
NEXT ASSEMBLY		
DRAWING NO.	IT	

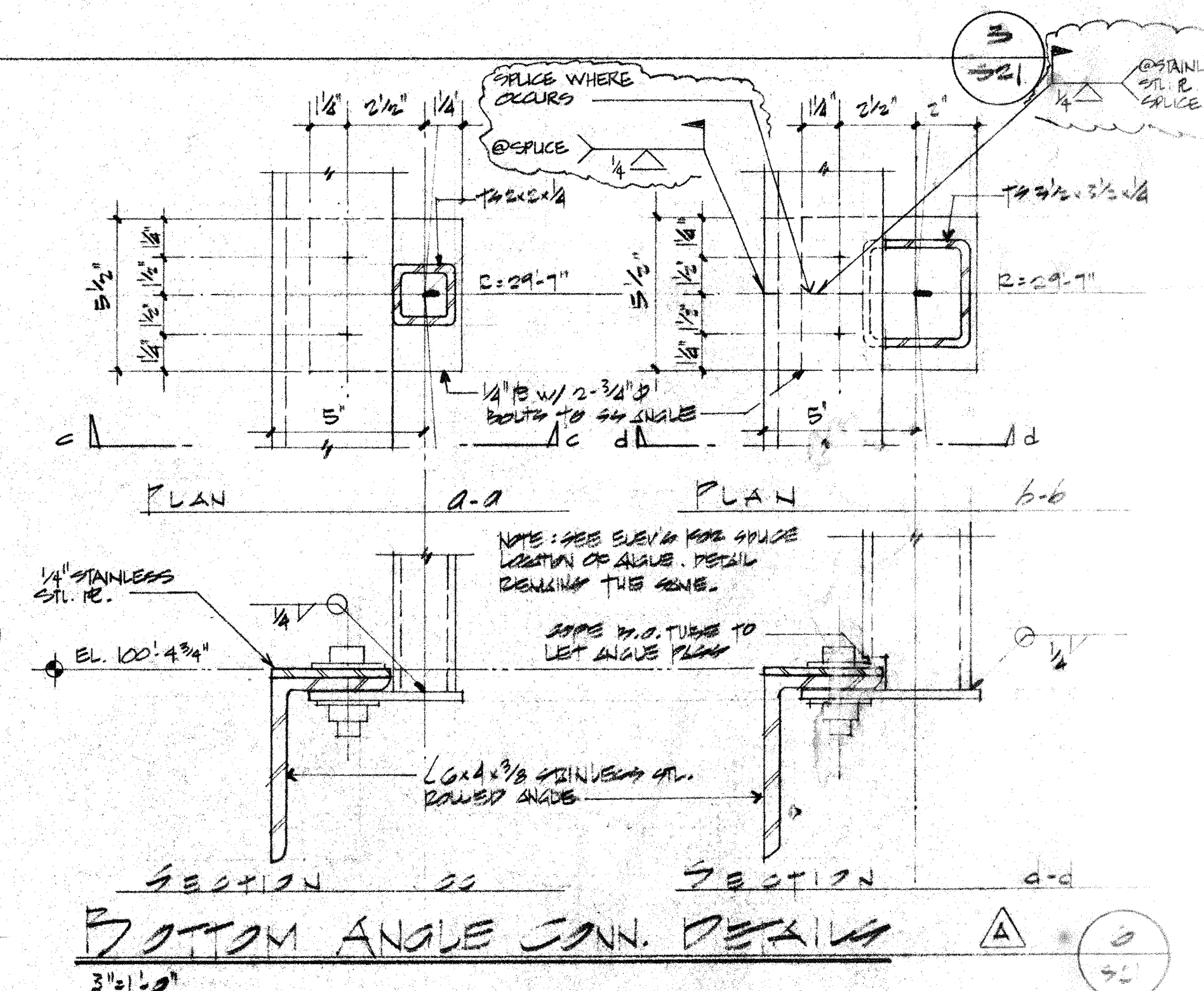
2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

DRAWN		D C	DATE	12/5/83	CALIFORNIA INSTITUTE OF TECHNOLOGY	
CHECKED		A B	DATE	12/5/83	PASADENA, CALIF.	
APPROVED		<i>[Signature]</i>	DATE	12/9/83	TITLE	
APPROVED		<i>[Signature]</i>	DATE		FRAME DETAILS	
					500 MILLIMETER OBSERVATOR	
					MAUNA KEA, HAWAII	
QTY	WEIGHT	DWG SIZE	SCALE	DWG NO.	SP	
		E	NOTED	EIOMD		
APPLICABLE DOC		FILE NO.	W. O.	DEPT	SHEET 60-C OF 60	

$$3^0 = 1 - 0^0$$

$$3 \equiv -0$$


3-10



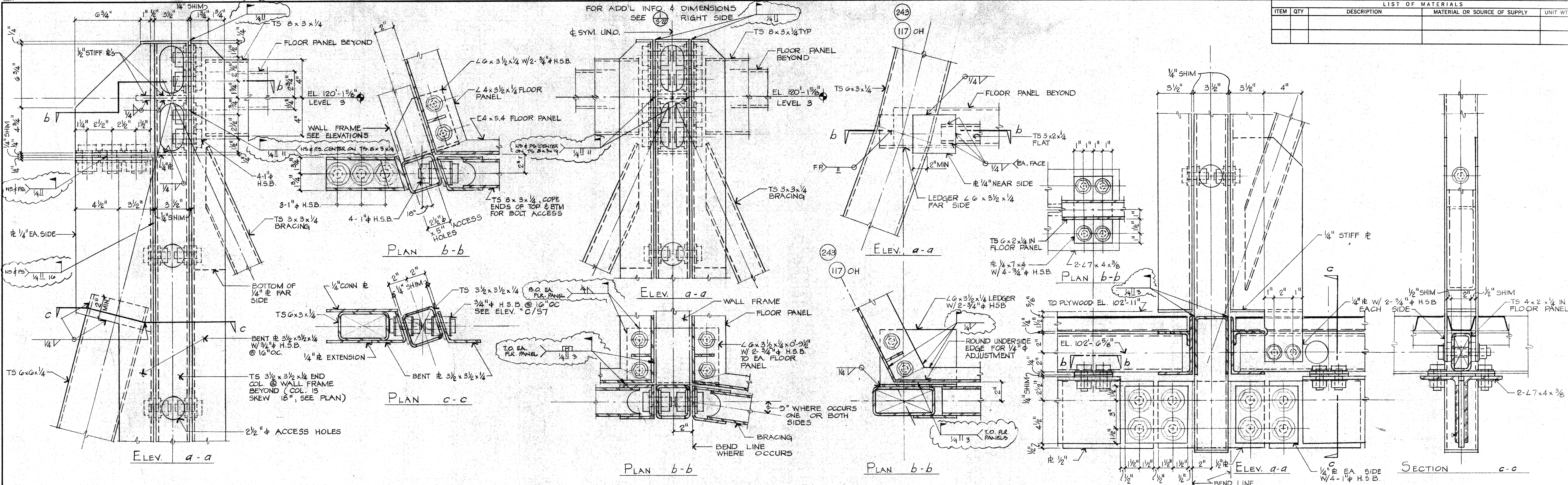
2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

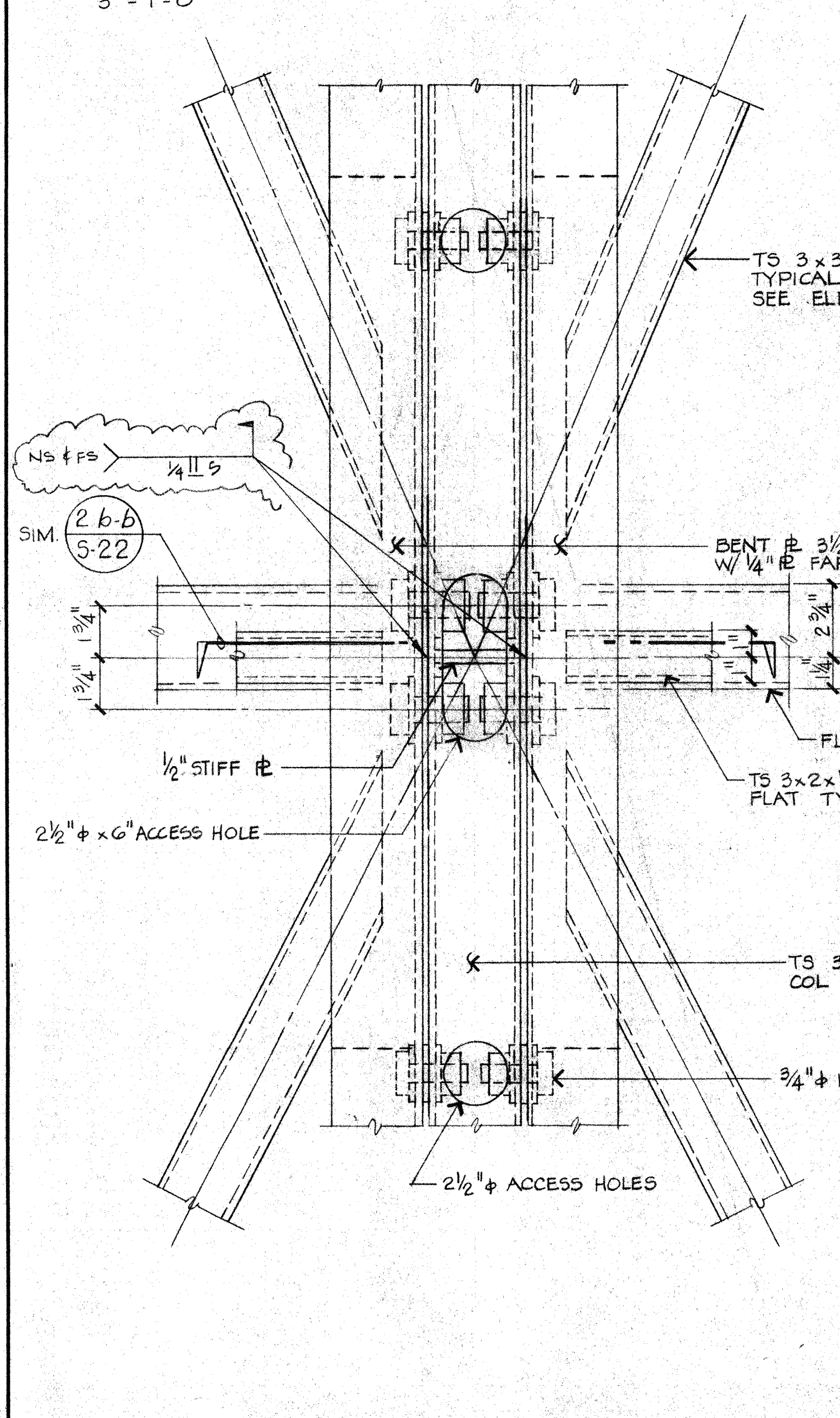
<u>C</u>	HAWAII ERECTION BID SET	12-20-83
<u>A</u>	PSE-BID SPECIFICATION	12-13-83
LTR	DESCRIPTION	DATE
	REVISION	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX ± .02 XXX ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH UP			DRAWN D.C.		DATE 12/5/62		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
			CHECKED A.B.		DATE 12/5/62		TITLE	
			APPROVED <i>[Signature]</i>		DATE 12/5/62		FRAME DETAILS SUBMILLIMETER OBSERVATORY	
			REVIEWED		DATE		MAUNA KEA, HAWAII	
NEXT ASSEMBLY			WEIGHT		DWG SIZE		DWG. NO.	
DRAWING NO.			ITEM QTY		E		NOTED	
APPLICABLE DOC					FILE NO.		W.O. DEPT.	
							SHEET 32 OF	

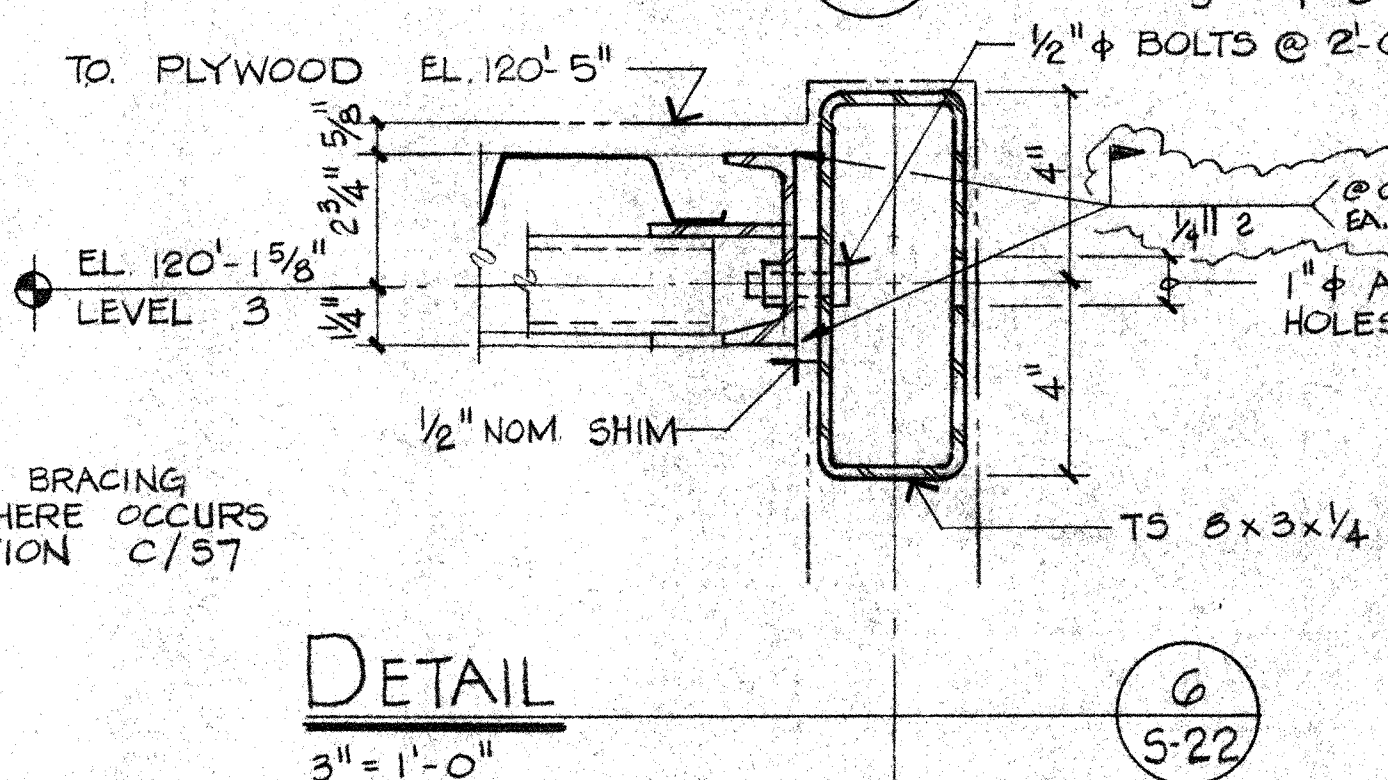


LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY

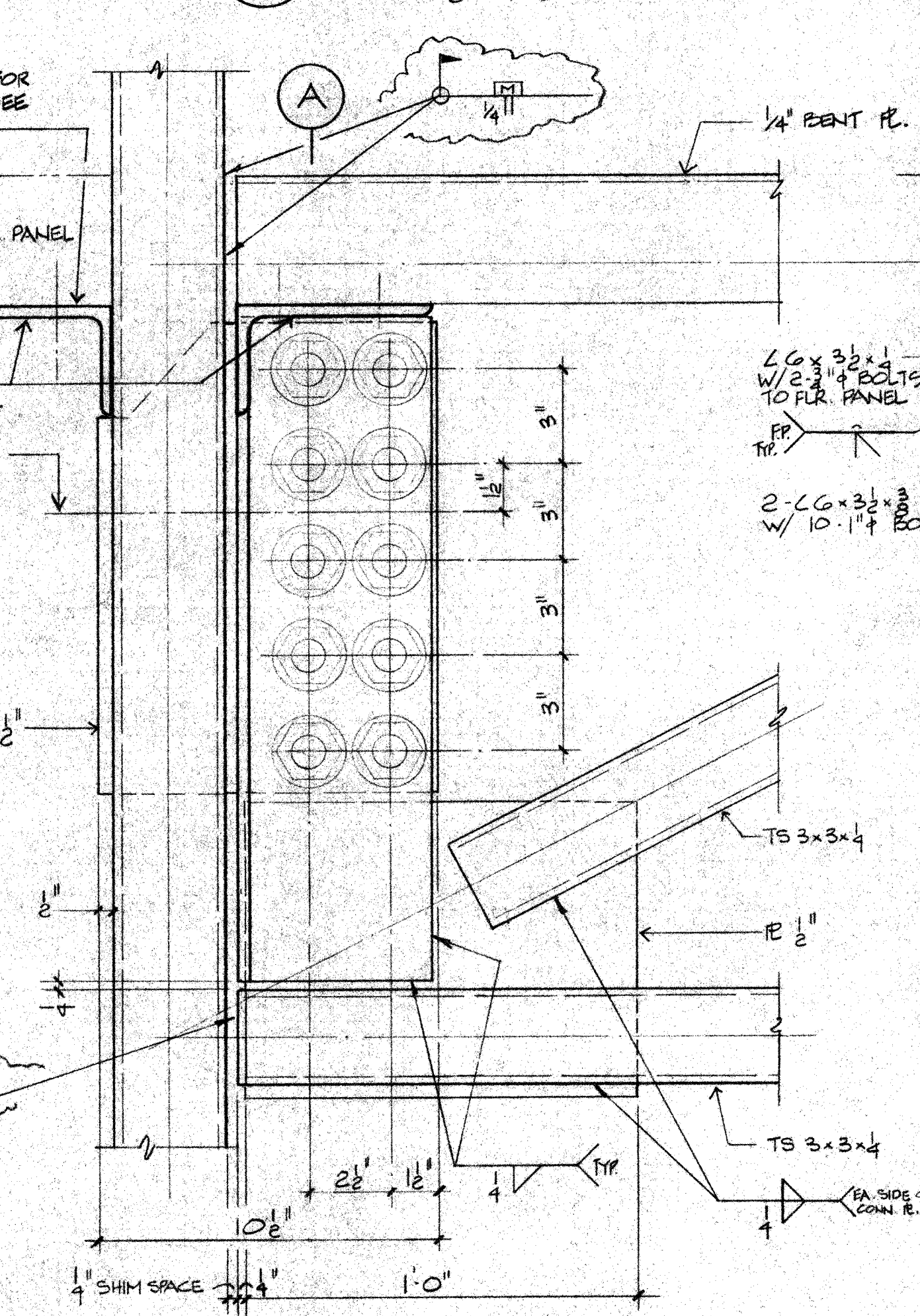
DETAIL



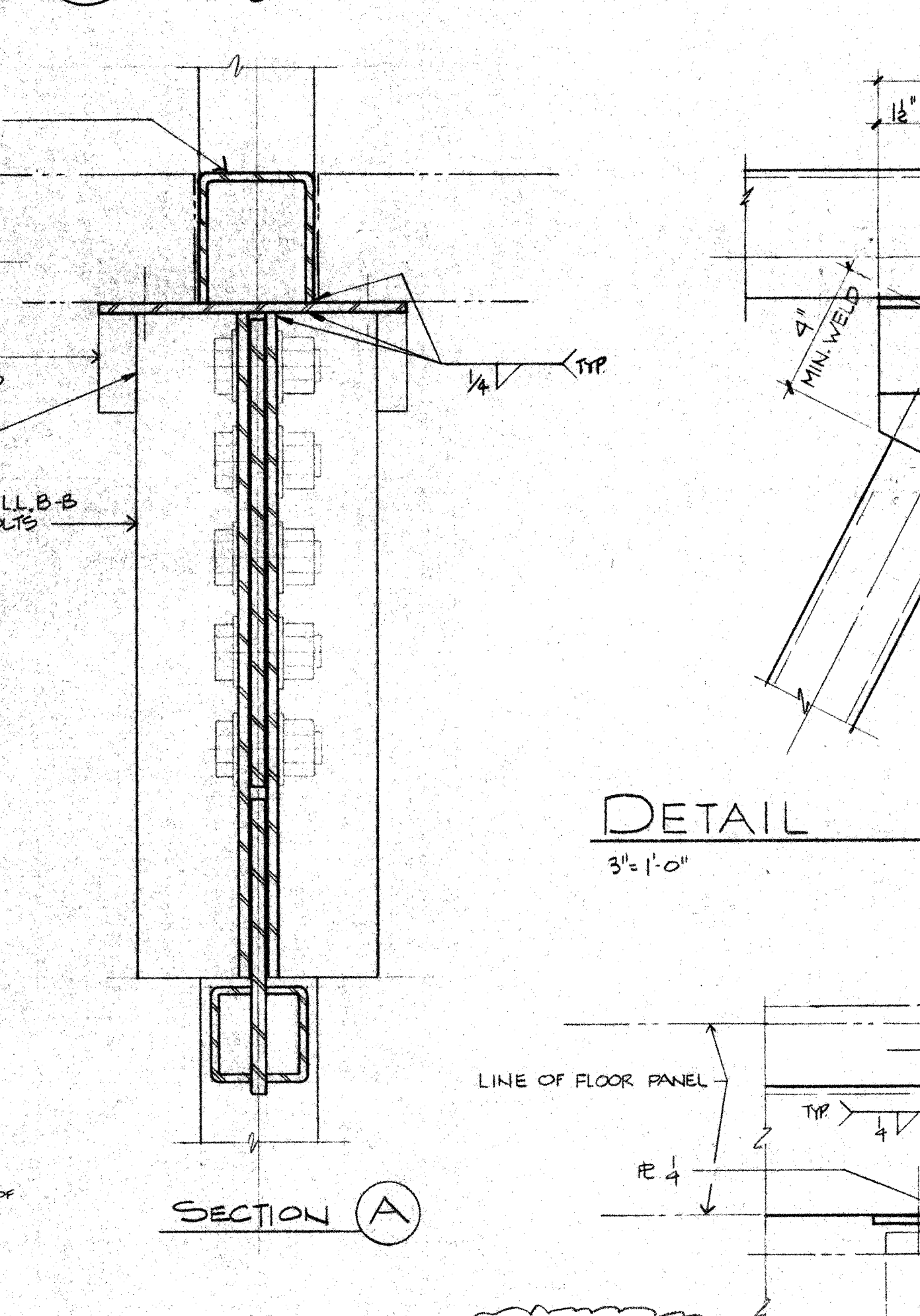
DETAIL



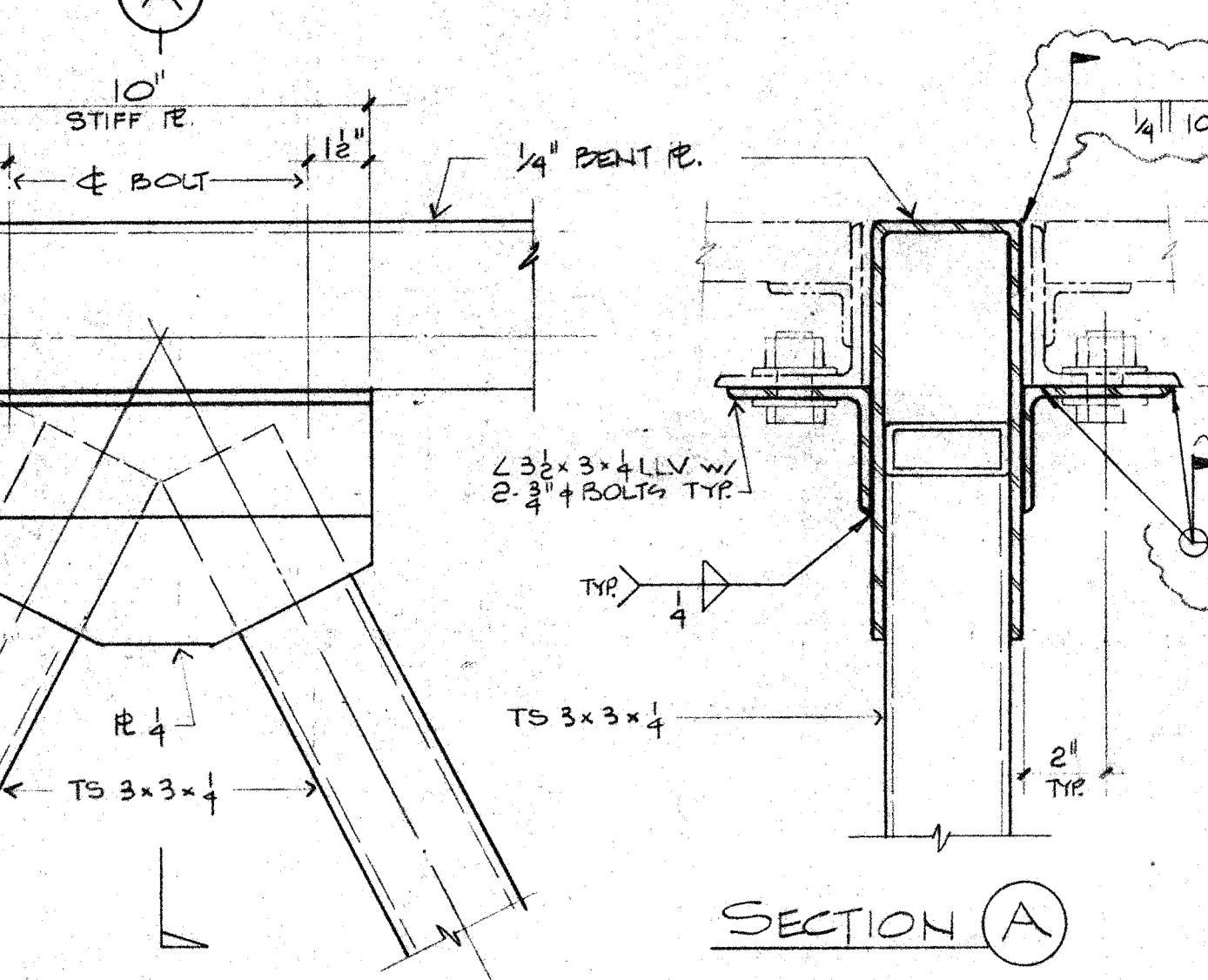
DETAIL



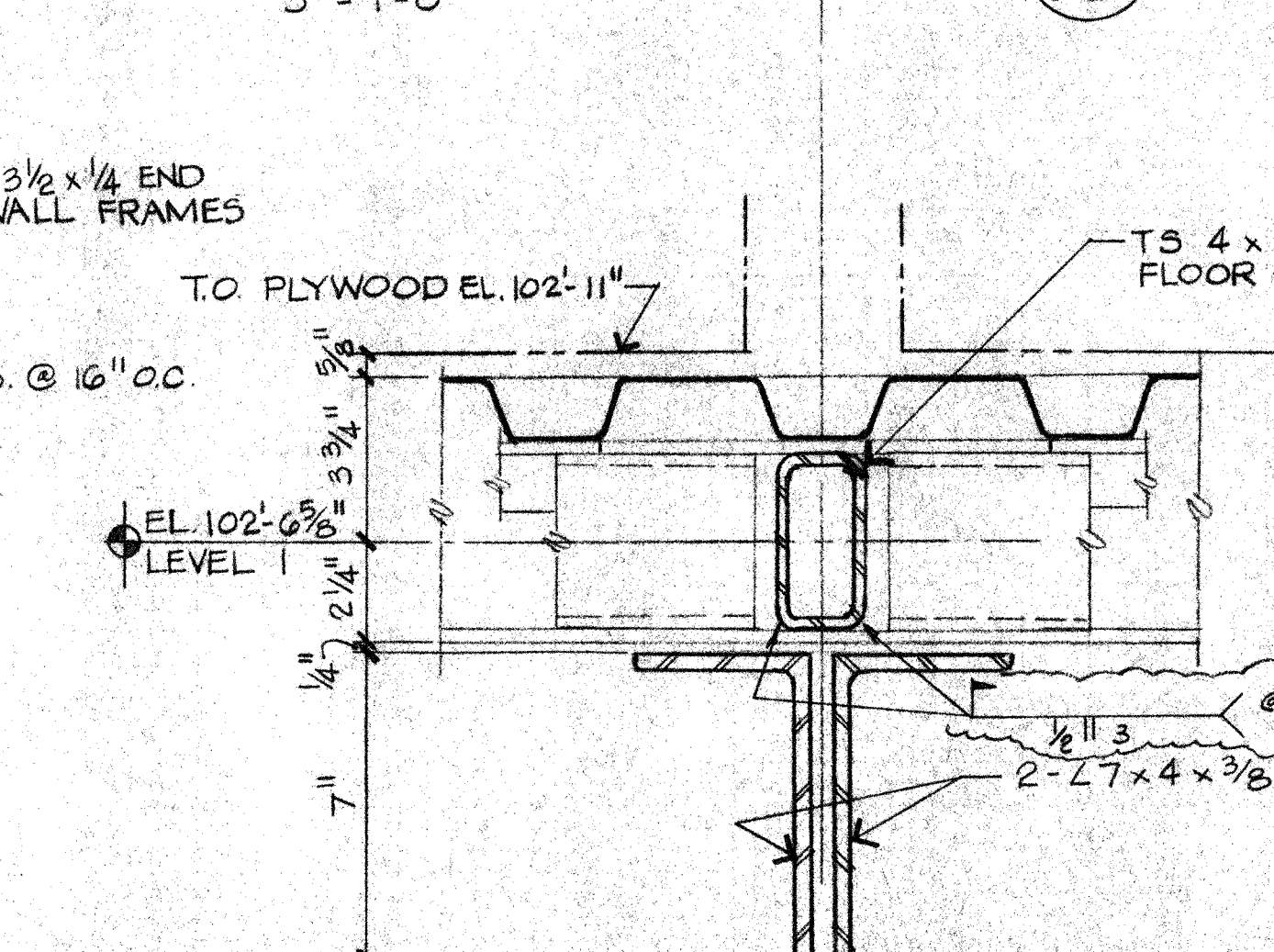
DETAIL



DETAIL



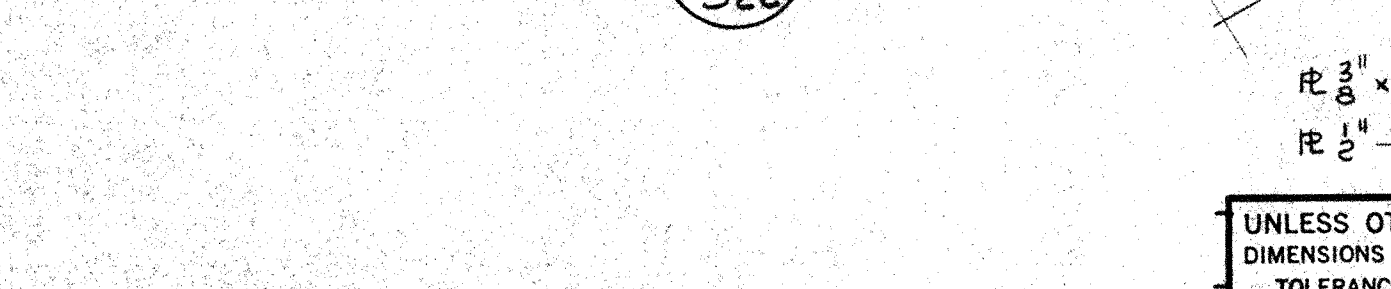
DETAIL



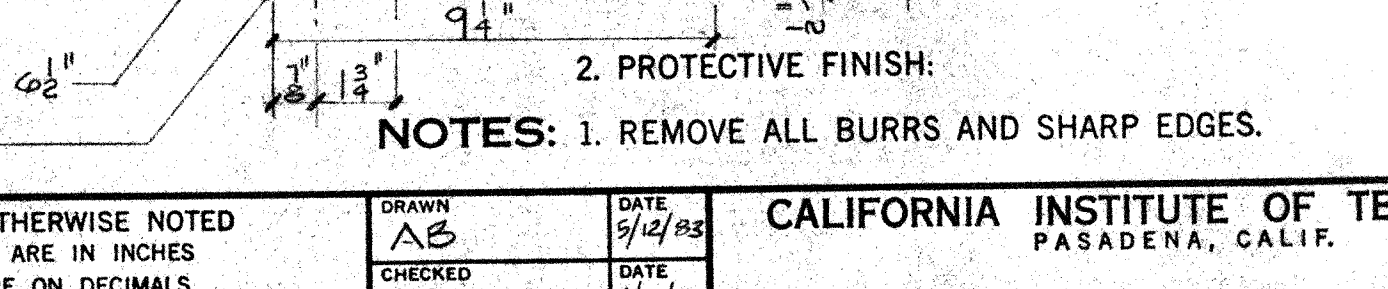
DETAIL



DETAIL



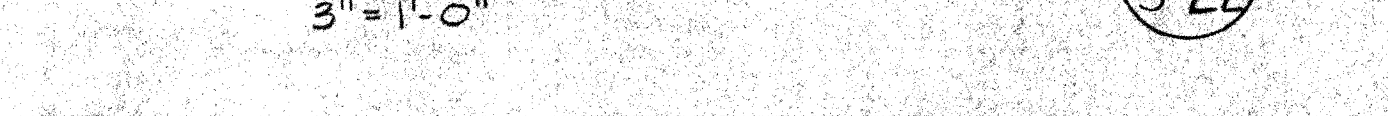
DETAIL



DETAIL



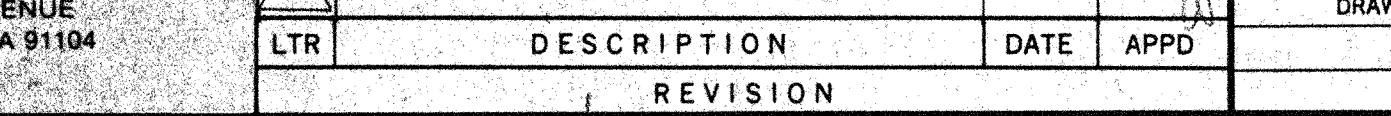
DETAIL



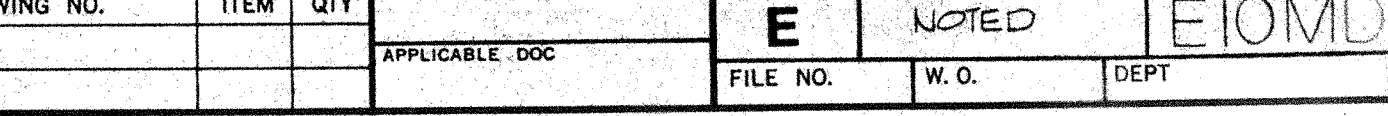
DETAIL



DETAIL

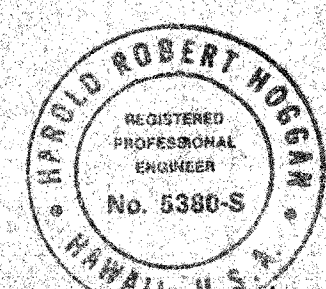


DETAIL



THIS WORK WAS PREPARED BY ME OR UNDER SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.

Signature

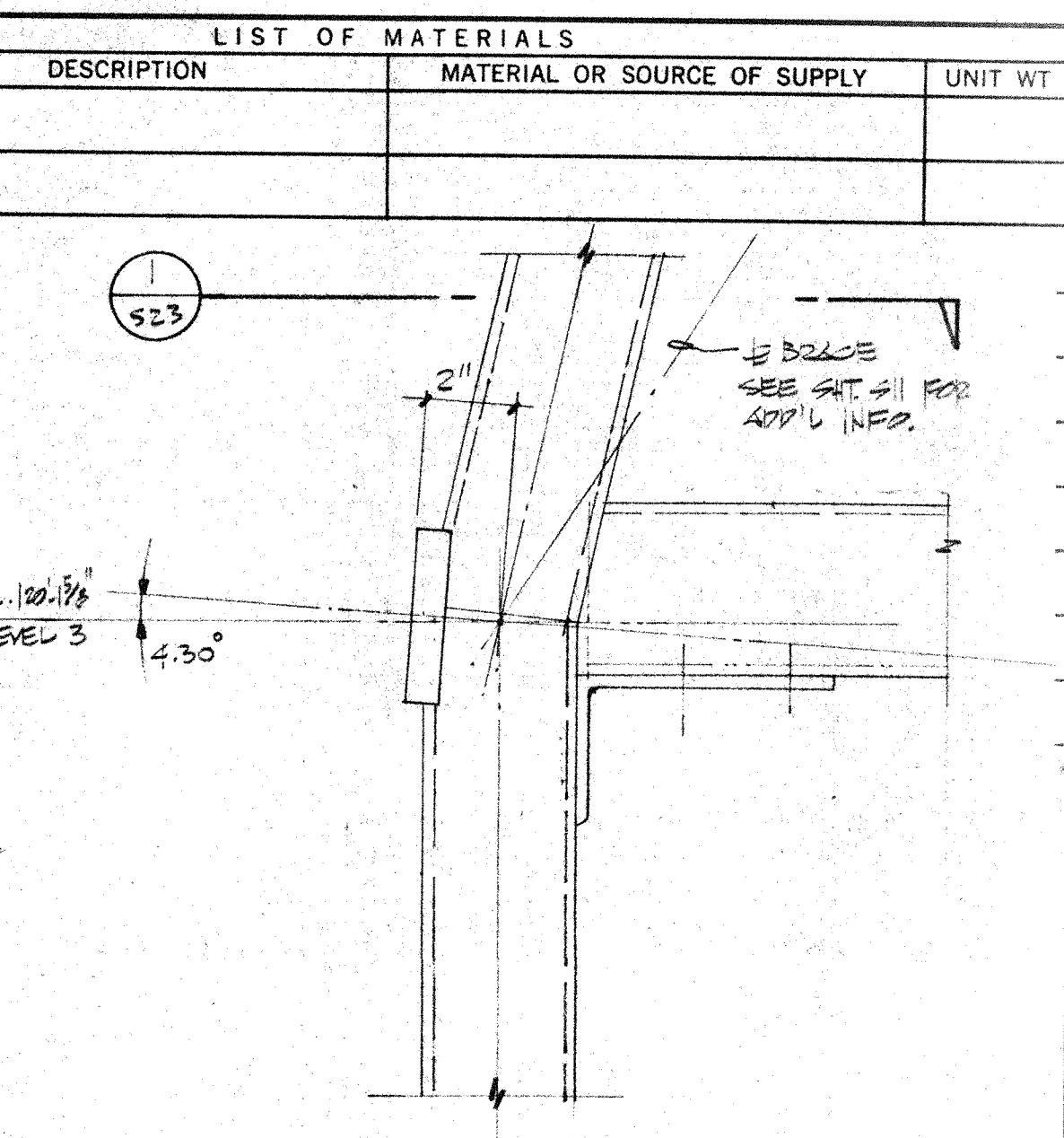


H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 884-2817

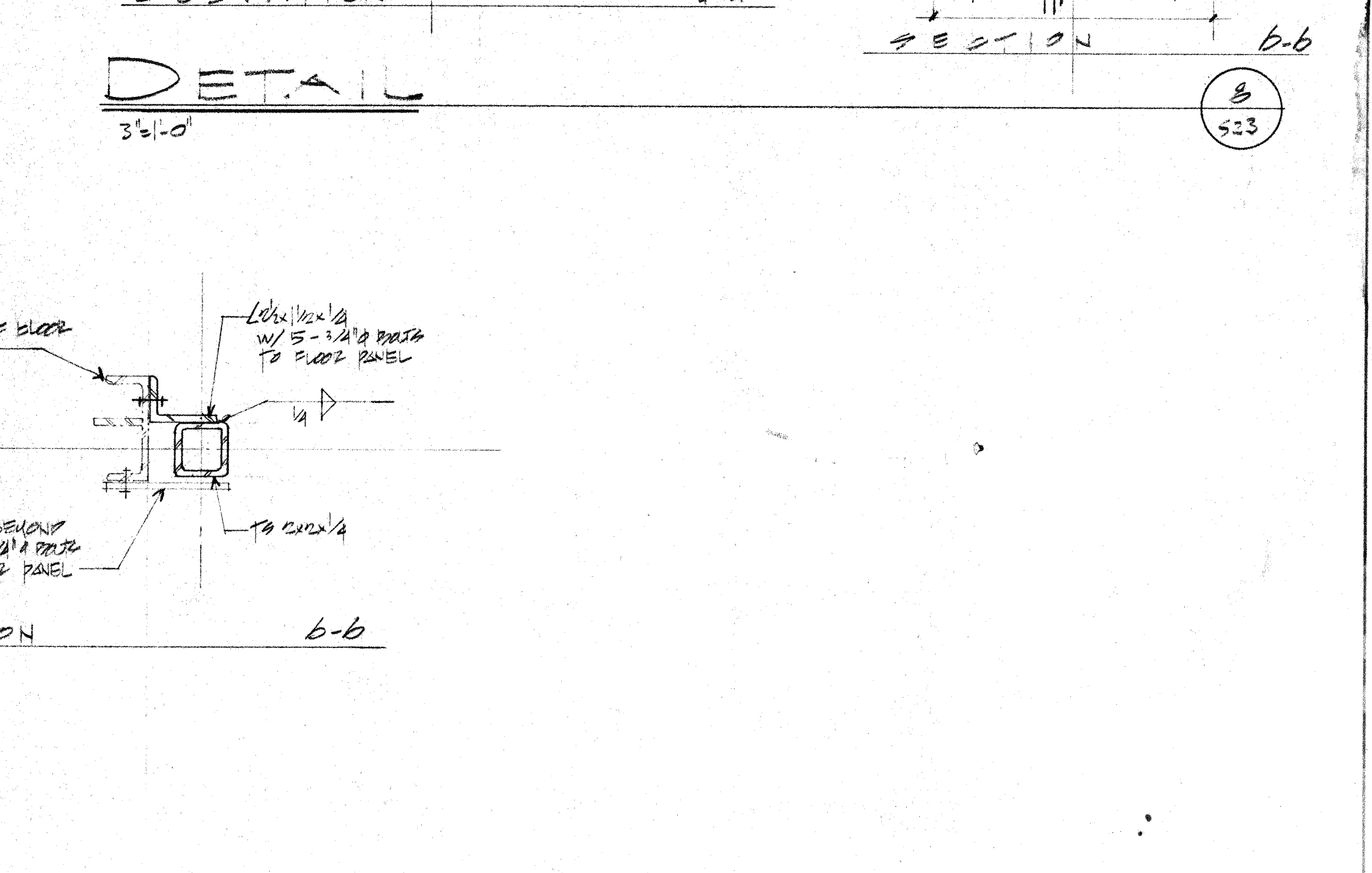
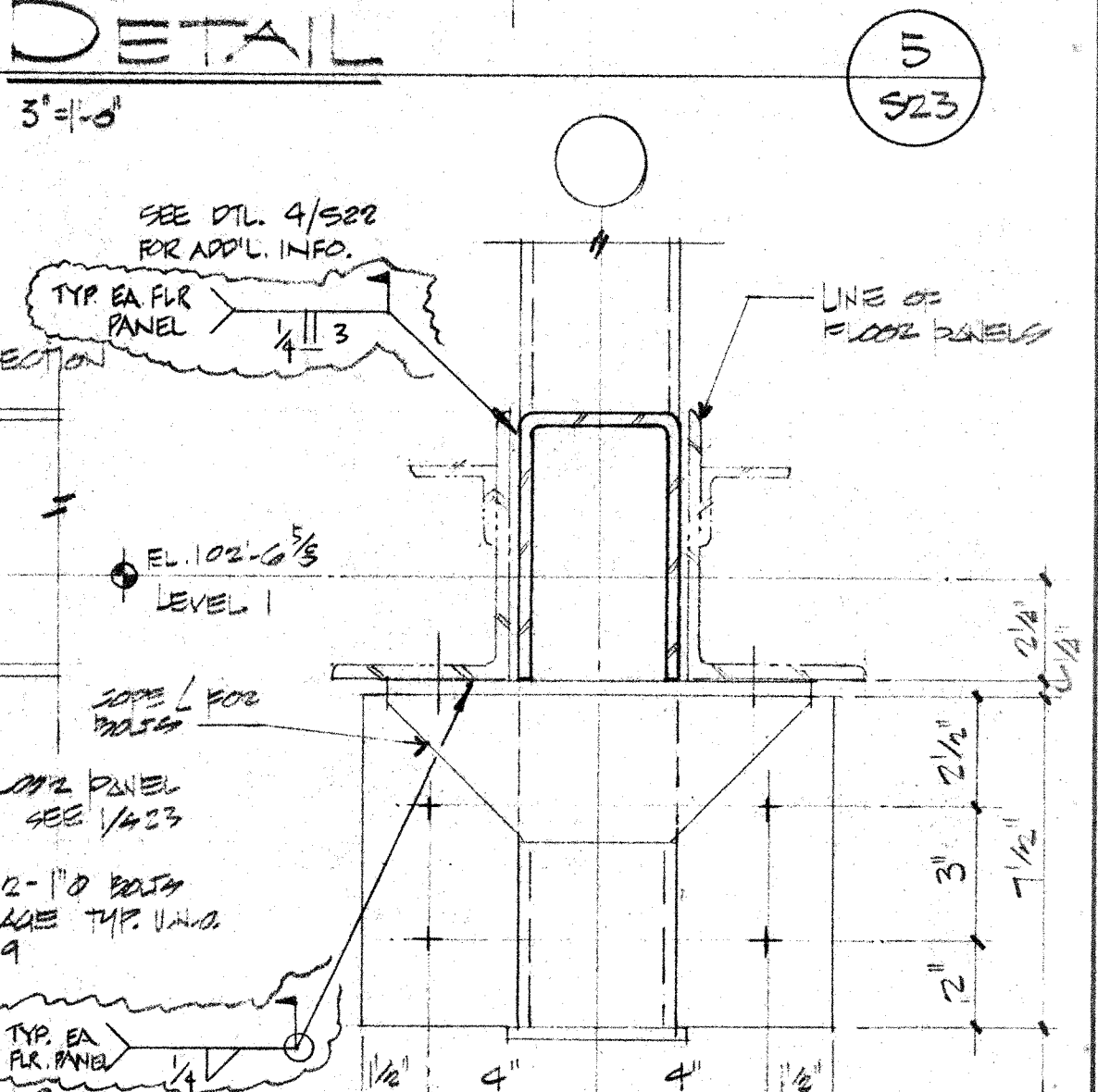
HAWAII ERECTION BID SET	18-20-24	1/1/83
DESCRIPTION	DATE	APPD
REVISION		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 ANGULAR = ± 1/2° XXX = ± .05 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 125	DRAWING NO. 	DATE 	APPD
REVISION			

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
TITLE FRAME AND INTERIOR BRACING DETAIL SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII			
DWG SIZE E	SCALE NOTED	DWG NO. EIOMD S22	SHEET 22 OF 22



5
923




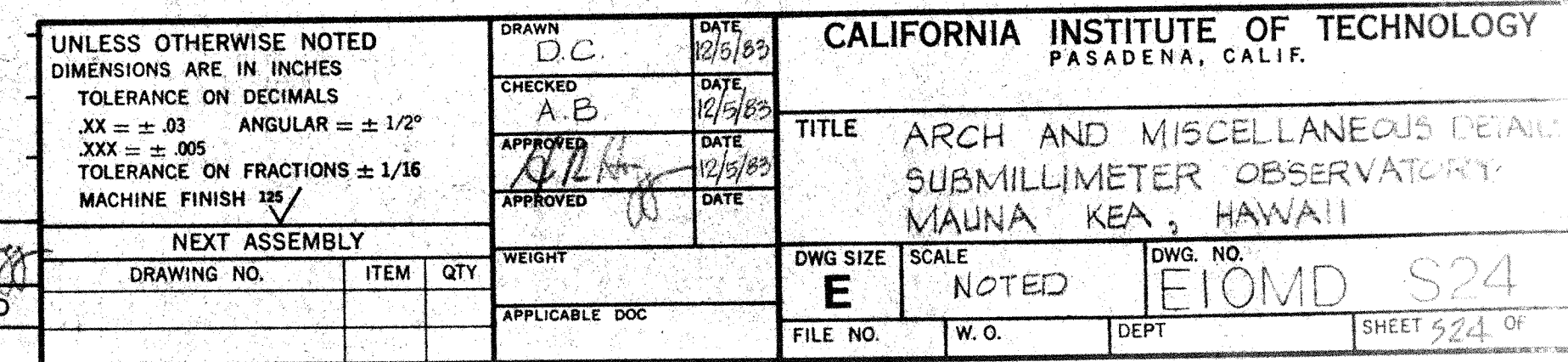
b-b

10

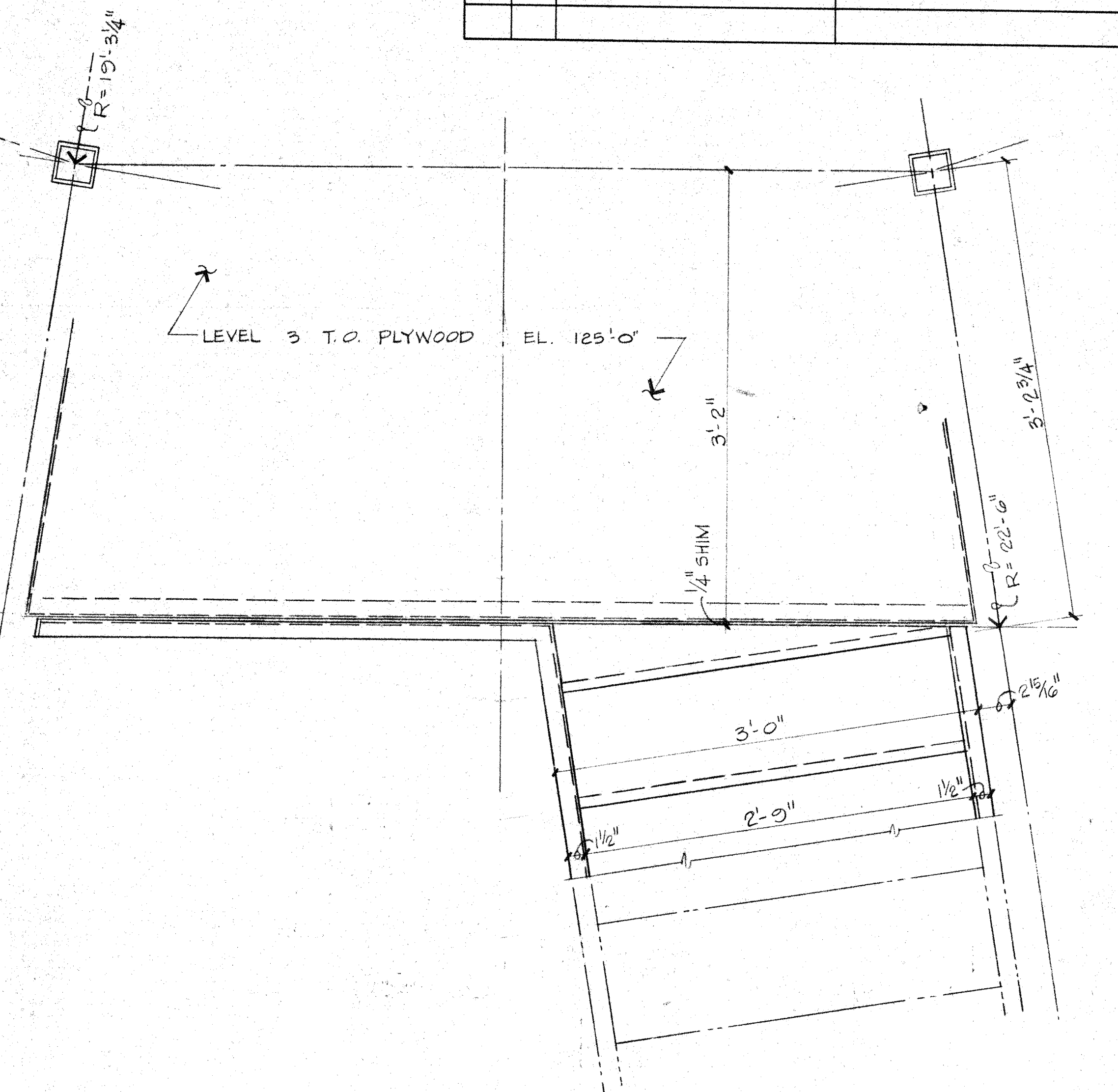
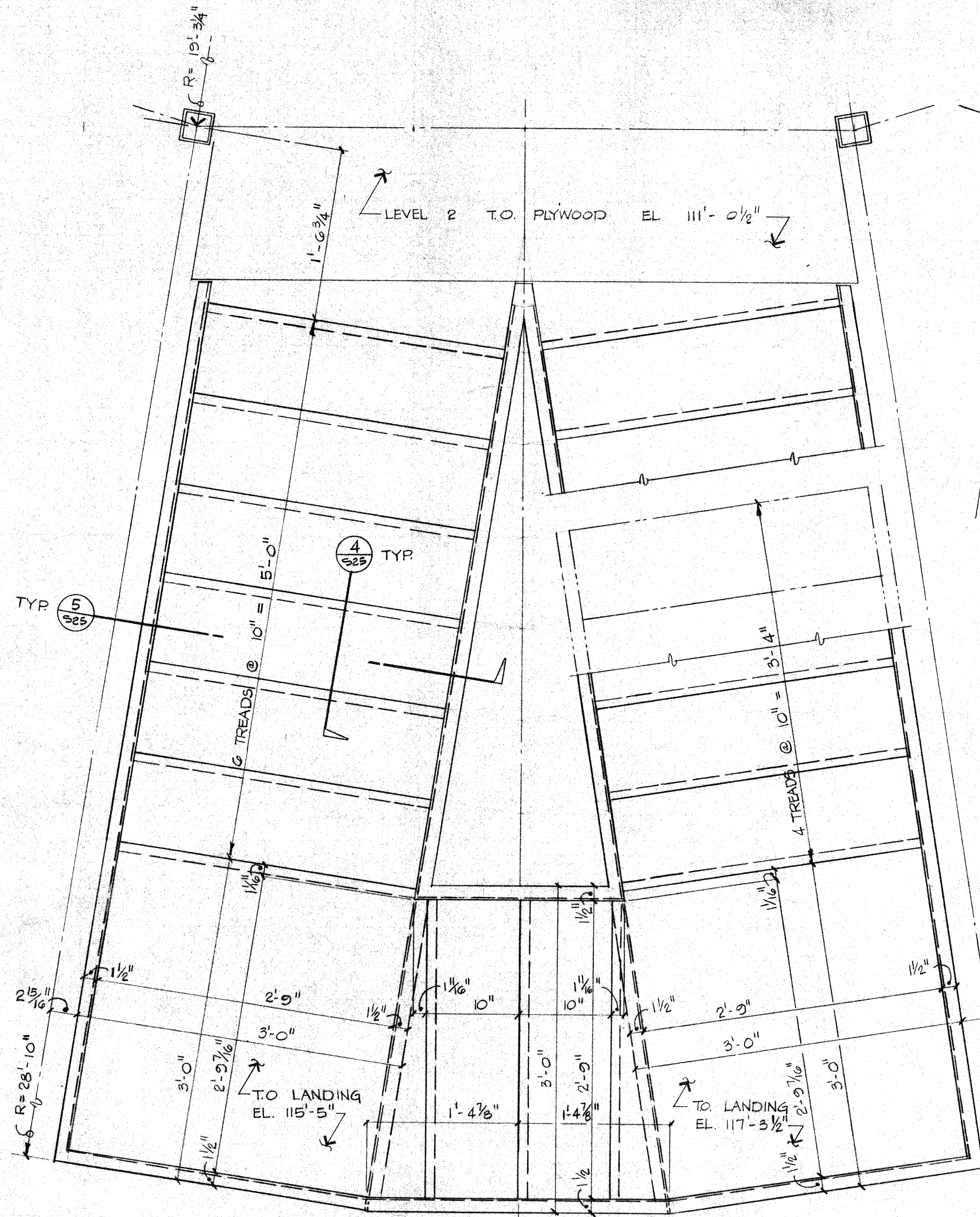
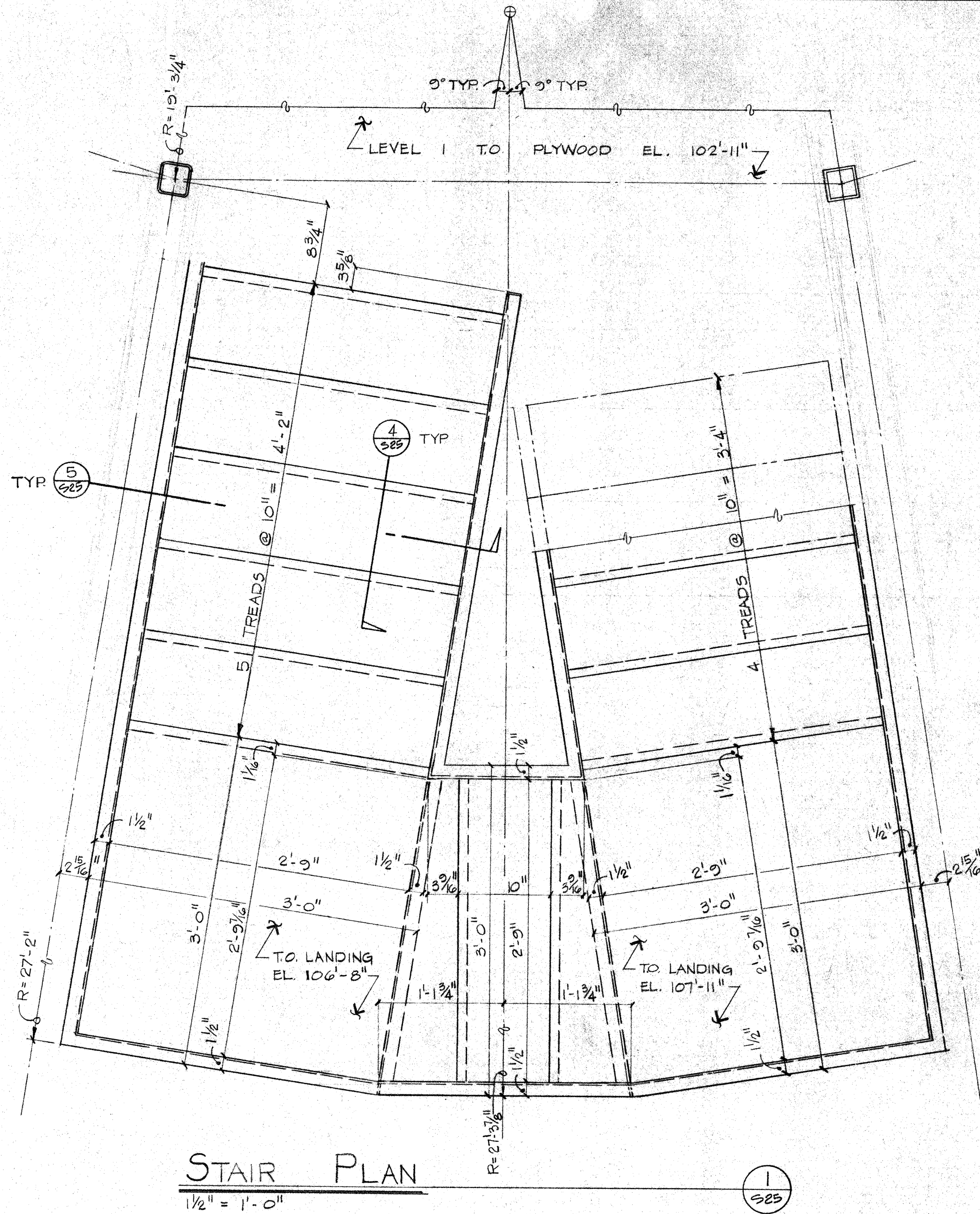
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES			DRAWN <i>SP</i>		DATE <i>8-2-52</i>		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.				
TOLERANCE ON DECIMALS XX = ± .03 ANGULAR = ± 1/2° XXX = ± .005			CHECKED <i>AB</i>		DATE <i>7-2-51</i>		TITLE <i>FRAME AND LICH DESIGN</i> <i>SUBMITTING SECRETORY</i> <i>MAINT. LOG, HAND!</i>				
TOLERANCE ON FRACTIONS ± 1/16			APPROVED <i>AB</i>		DATE <i>8-2-52</i>						
MACHINE FINISH <i>12</i>			APPROVED <i>AB</i>		DATE						
NEXT ASSEMBLY			WEIGHT		DWG. SIZE		SCALE		DWG. NO.		
DRAWING NO.		ITEM	QTY	APPLICABLE DOC.		E		Notes		E10MD S23	
FILE NO.		W.O.		DEPT.		SHEET #		OF			

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

	HAWAII ERECTION BID SET	12-20-04	<i>[Signature]</i>
LTR	DESCRIPTION	DATE	APPRO
REVISION			



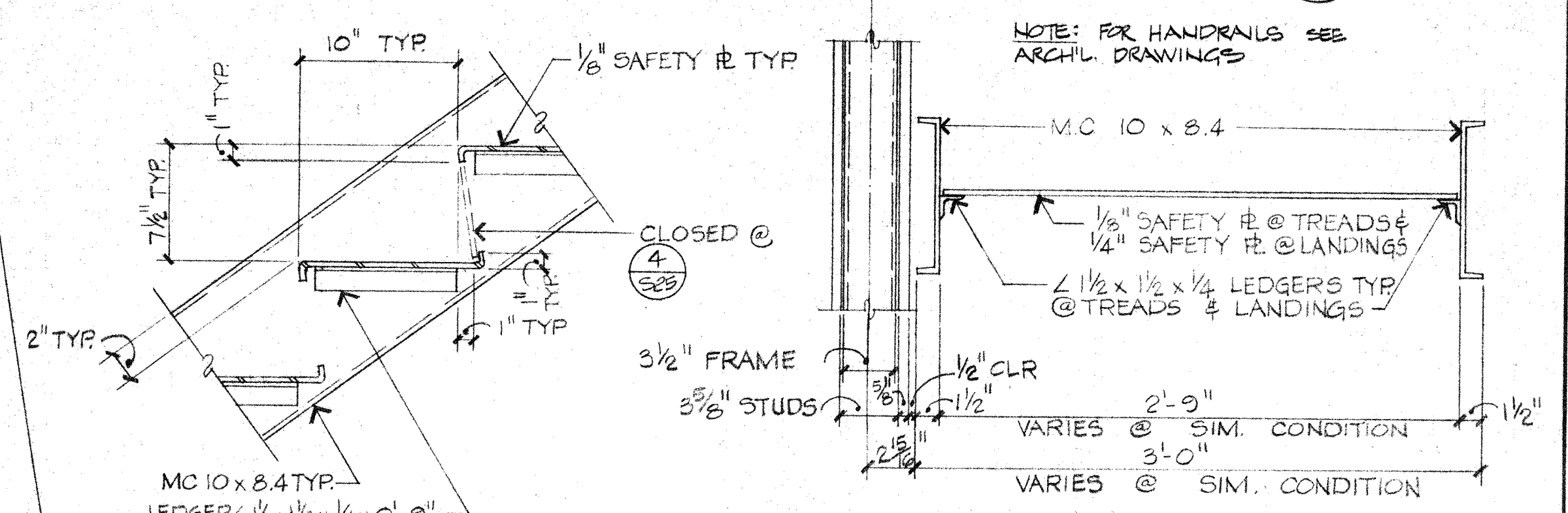
LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY



STAIR PLAN

1/2" = 1'-0"

3
S25



DETAIL

1/2" = 1'-0"

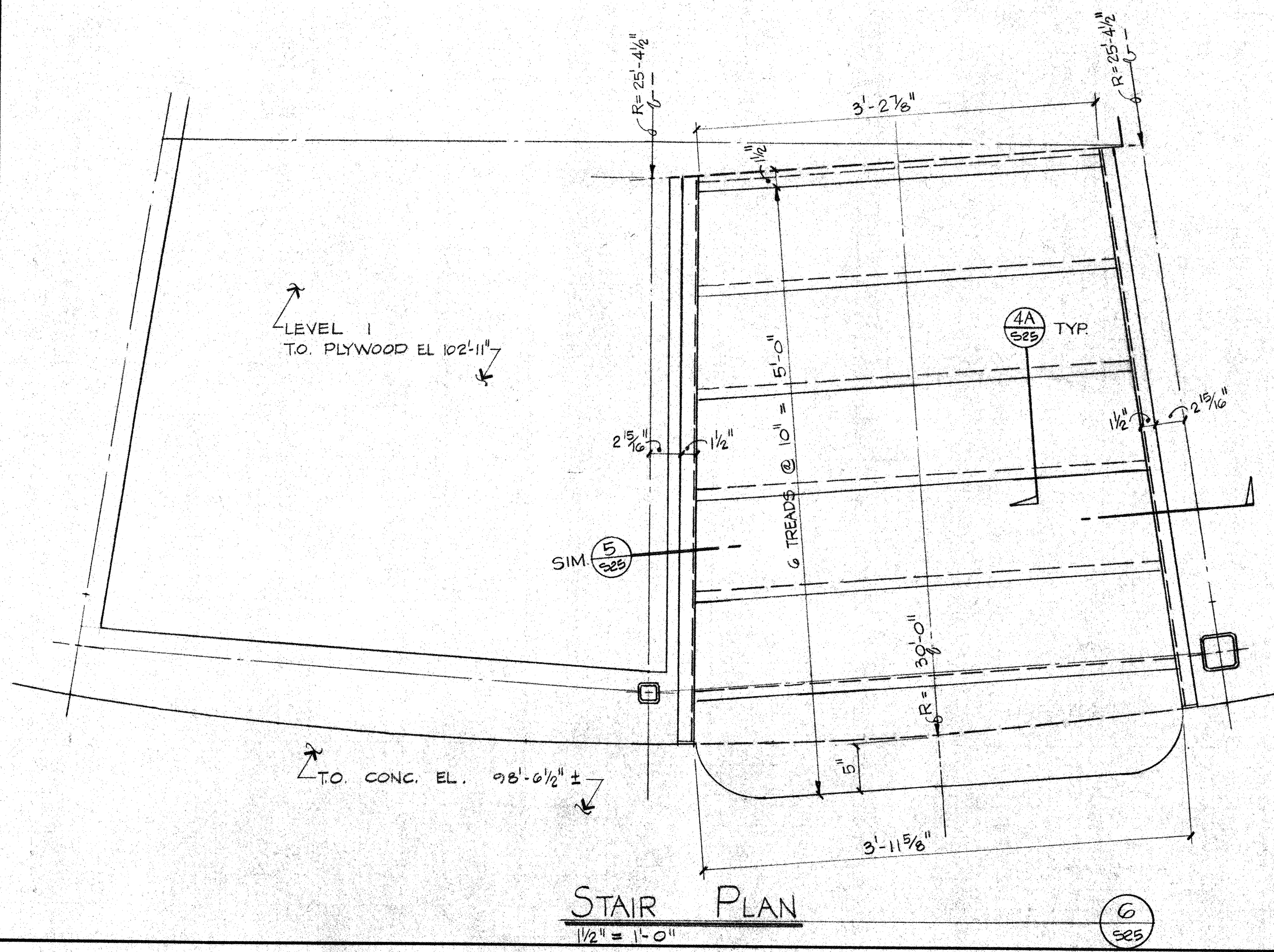
4
S25

4A
S25

DETAIL

1/2" = 1'-0"

5
S25



STAIR PLAN

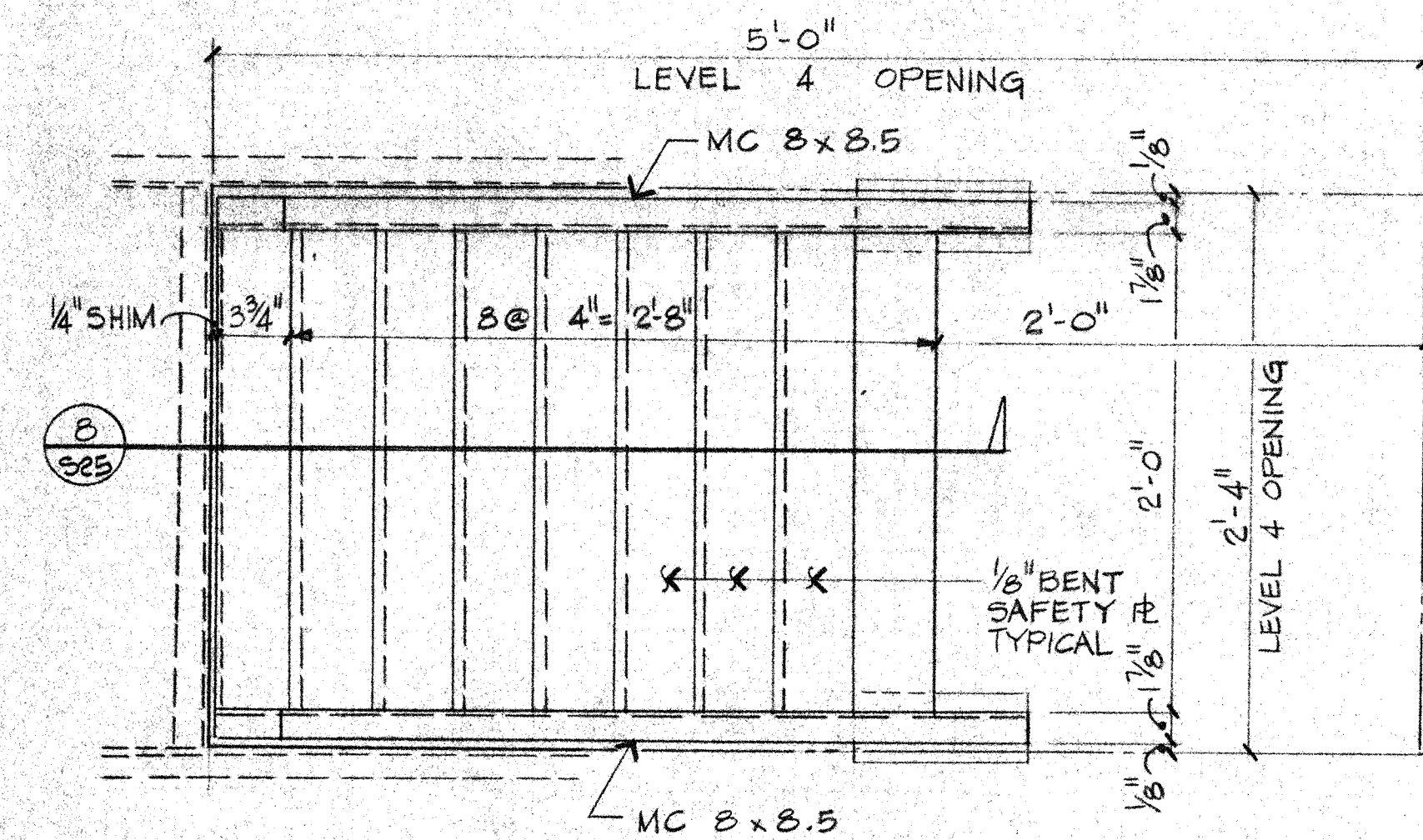
1/2" = 1'-0"

6
S25

STAIR PLAN

1/2" = 1'-0"

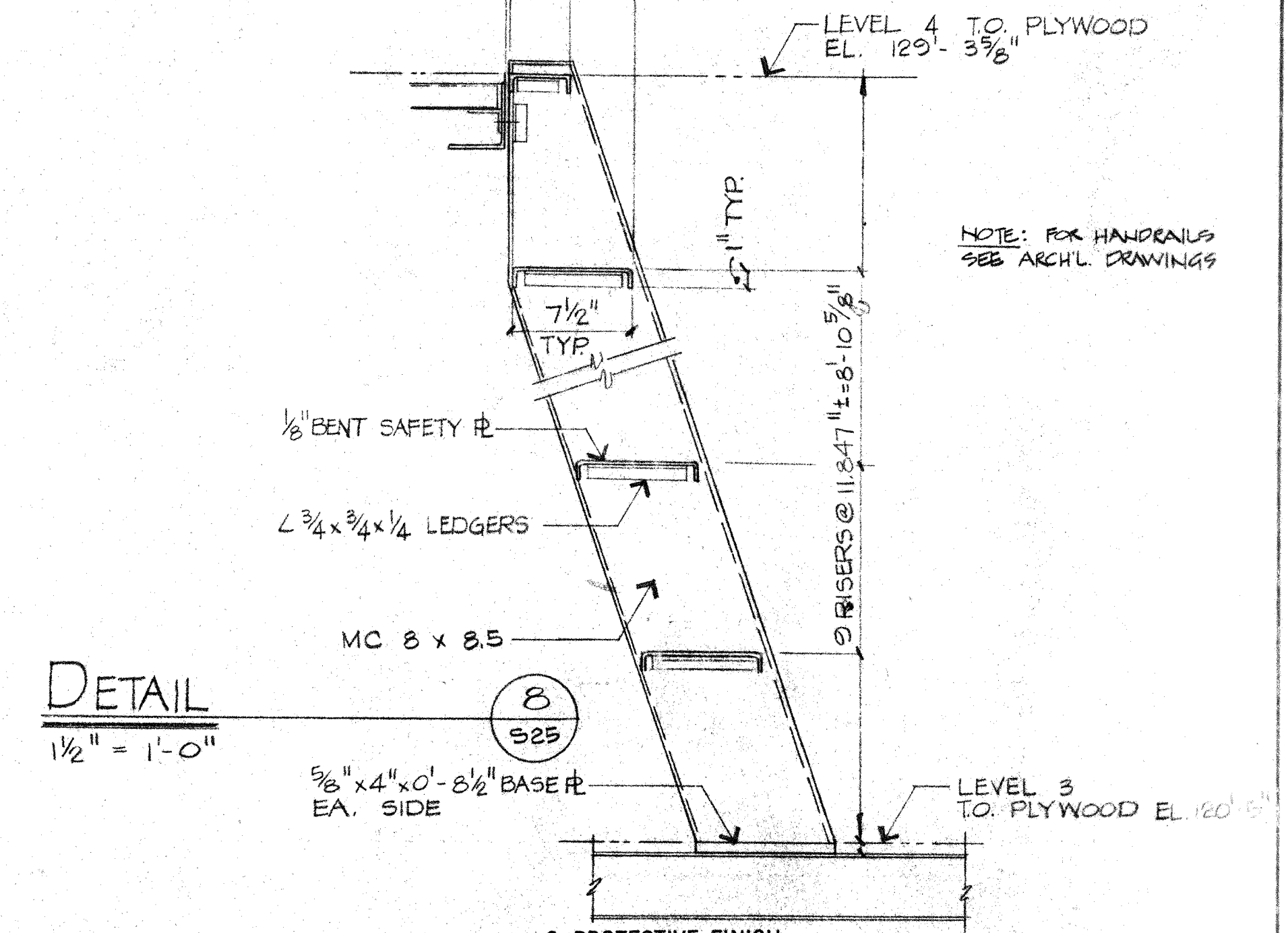
2
S25



LADDER PLAN

1/2" = 1'-0"

7
S25

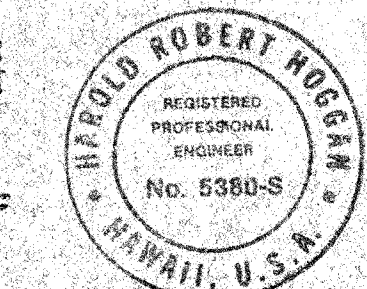


DETAIL

1/2" = 1'-0"

8
S25

THIS WORK WAS PREPARED BY ME OR UNDER SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.

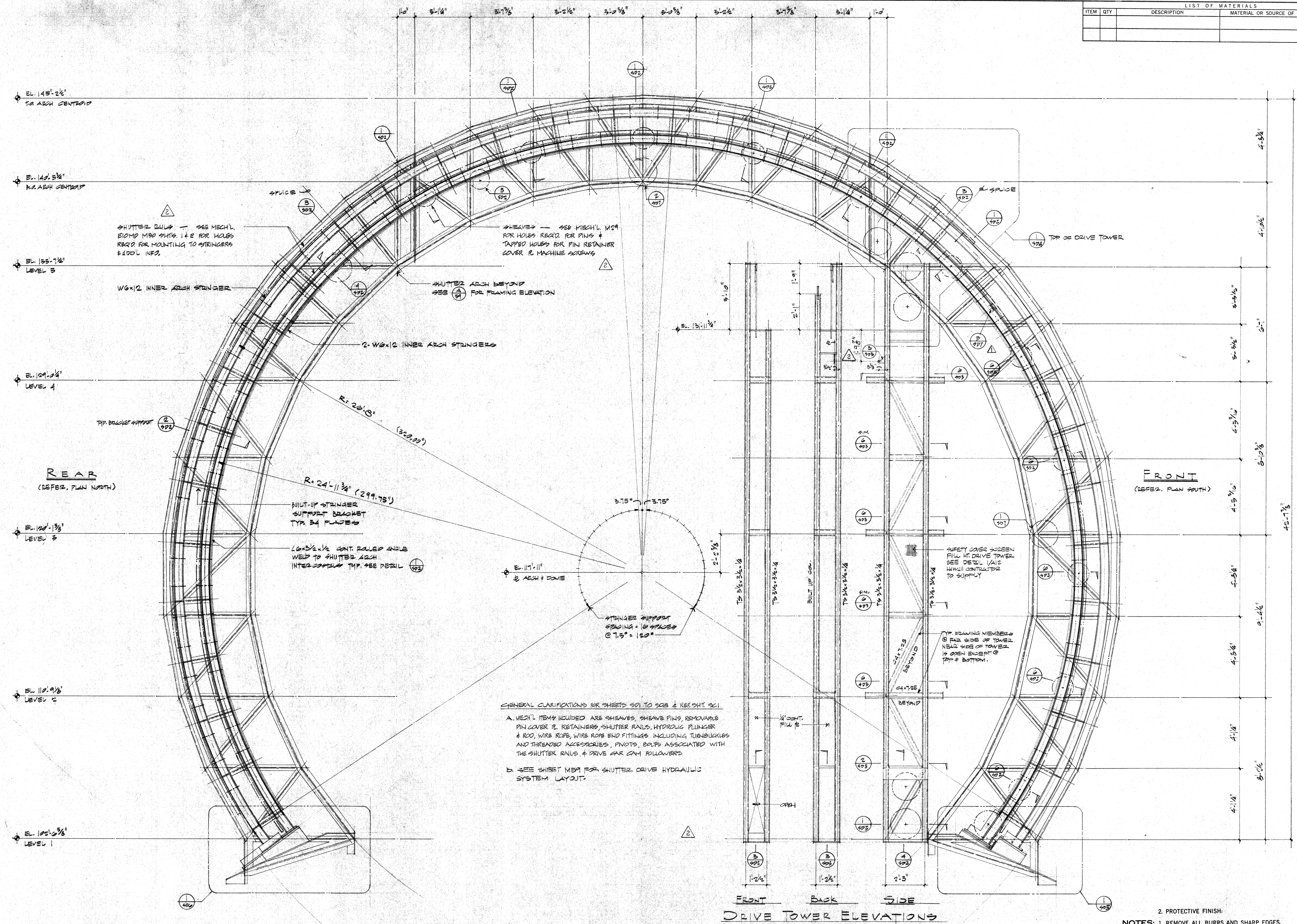


H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

ITEM	DESCRIPTION	DATE	APPROVED
1	HAWAII ERECTION BID SET	12-20-84	H. Hoggan
2	DESCRIPTION	DATE	APPROVED
3	REVISION	DATE	APPROVED

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 1/16"		DRAWN D.C. 12/15/83	CHECKED A.B. 12/15/83	DATE 12/15/83	DATE 12/15/83
NEXT ASSEMBLY DRAWING NO.		ITEM	QTY	WEIGHT	APPLICABLE DOC
DWG SIZE		SCALE	NOTED	FILE NO.	W.O.
CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.		TITLE STAIR PLANS AND DETAILS SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII		DWG. NO. E	DWG. NO. S25
DEPT.		SHEET		S25 OF	

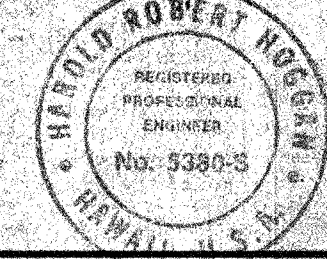
LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	UNIT WT



INNER ARCH AND DRIVE TOWER FRAMING ELEVATION

1/2" = 1'-0"

THIS WORK WAS PREPARED BY ME OR UNDER SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.
H. Robert Hoggan
REGISTERED PROFESSIONAL ENGINEER
No. 5380-3
HAWAII, U.S.A.



H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 884-2917

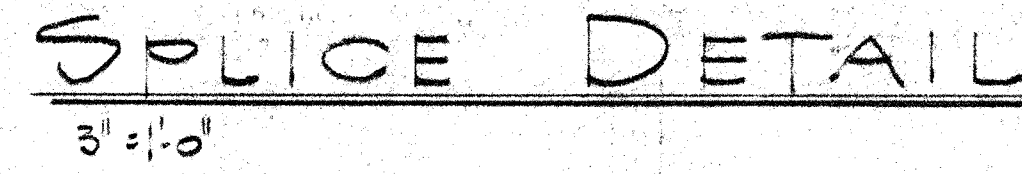
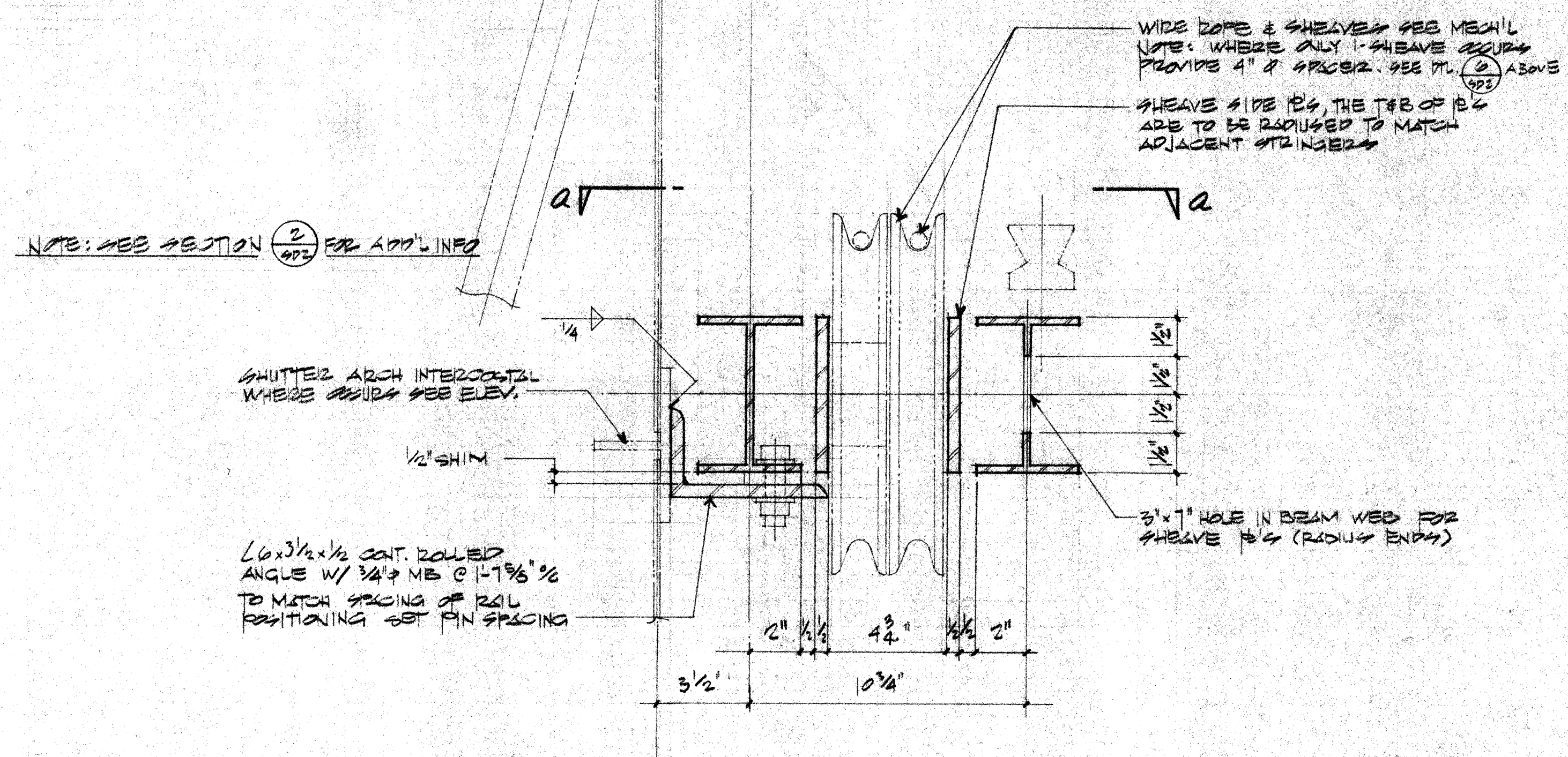
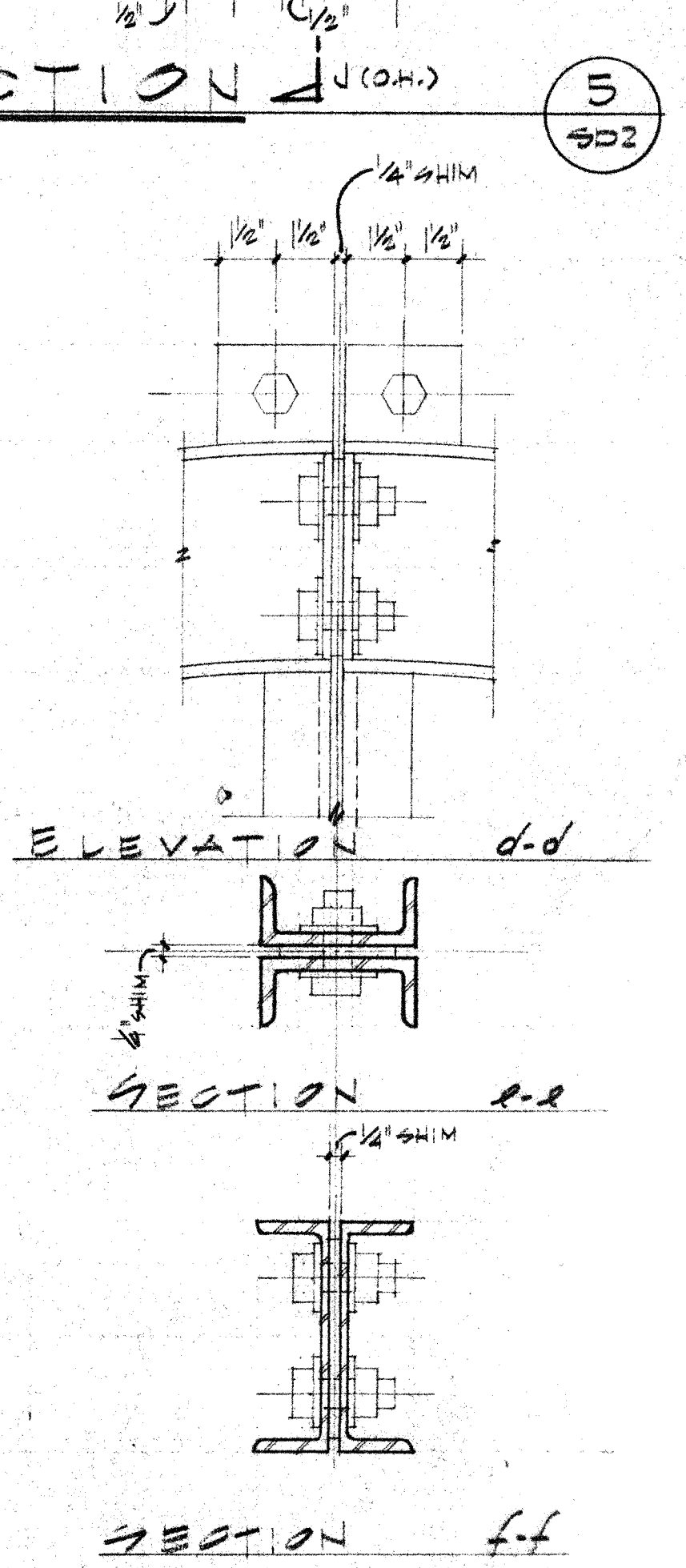
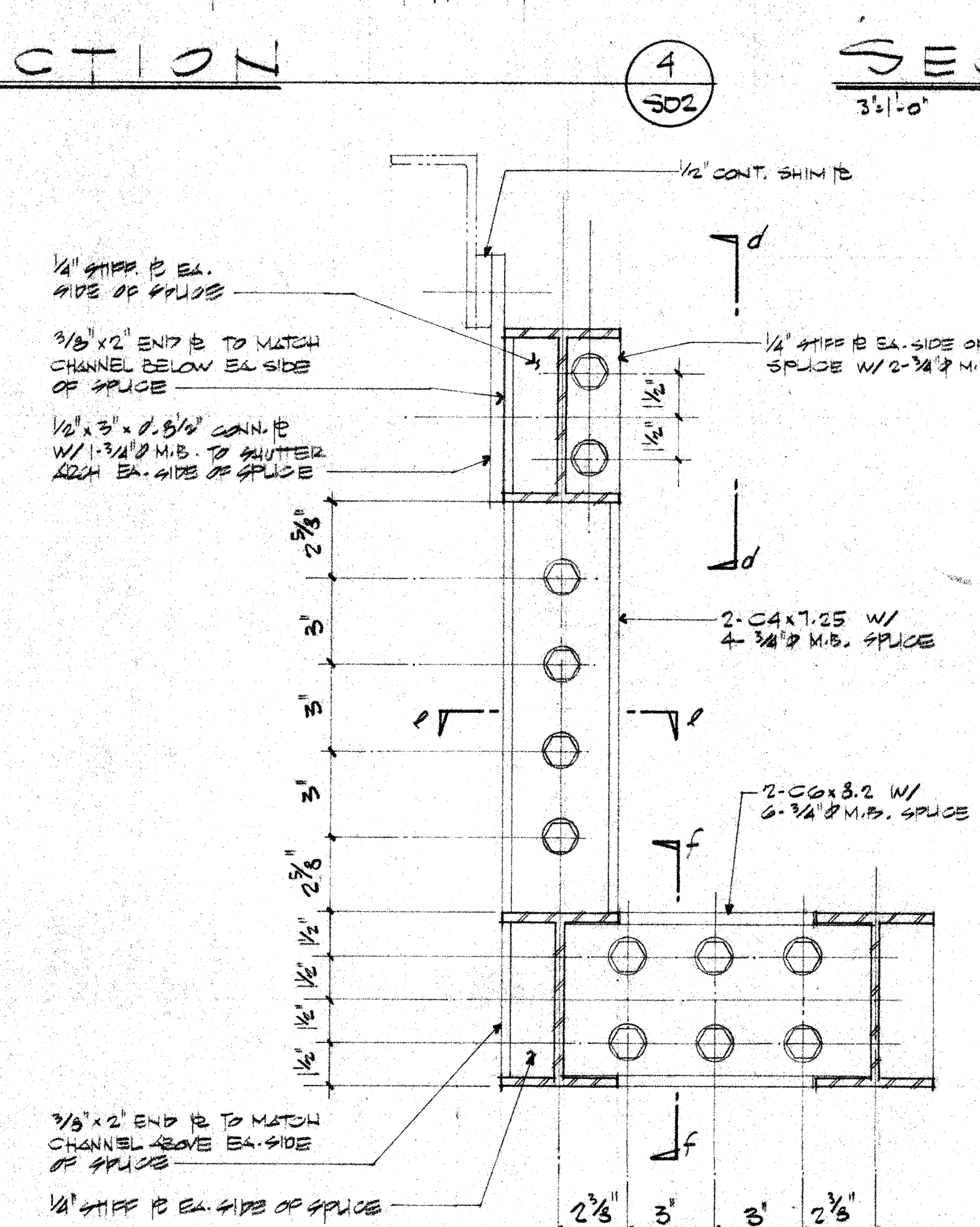
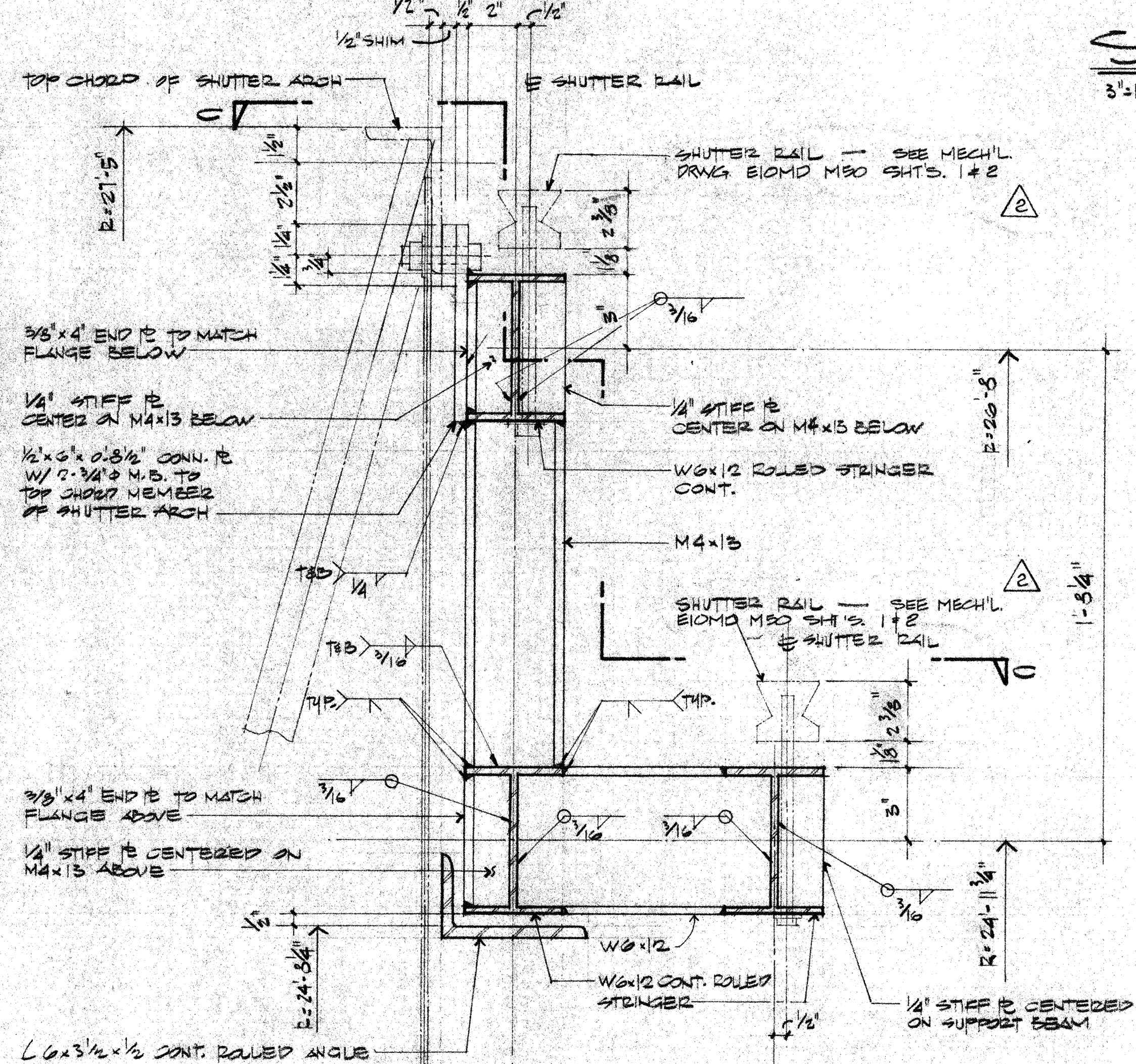
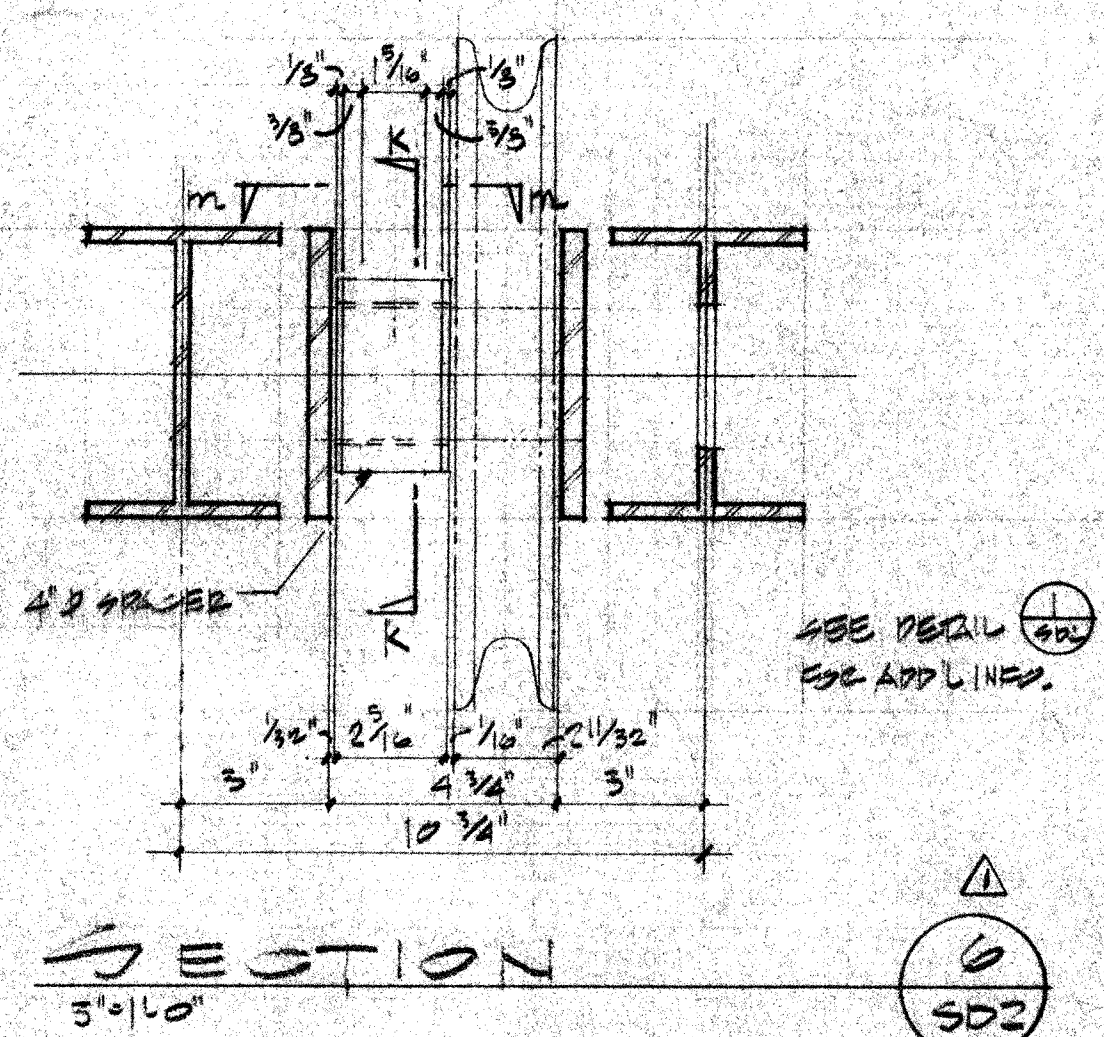
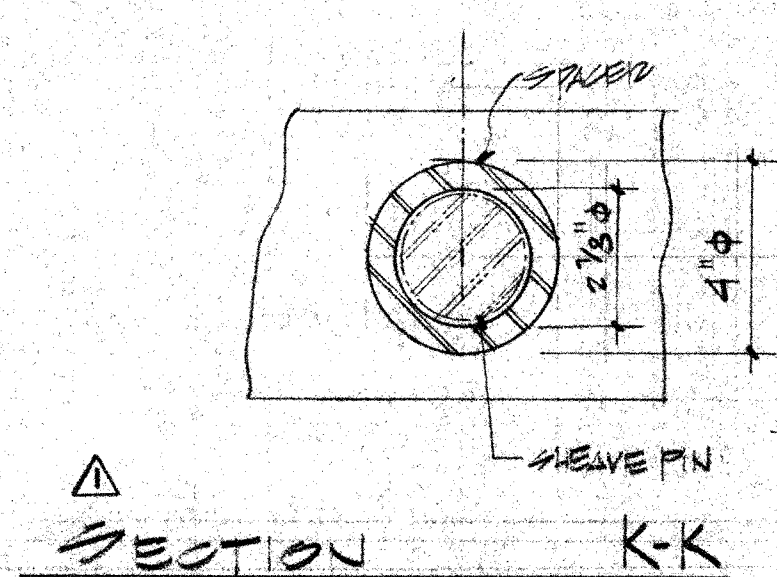
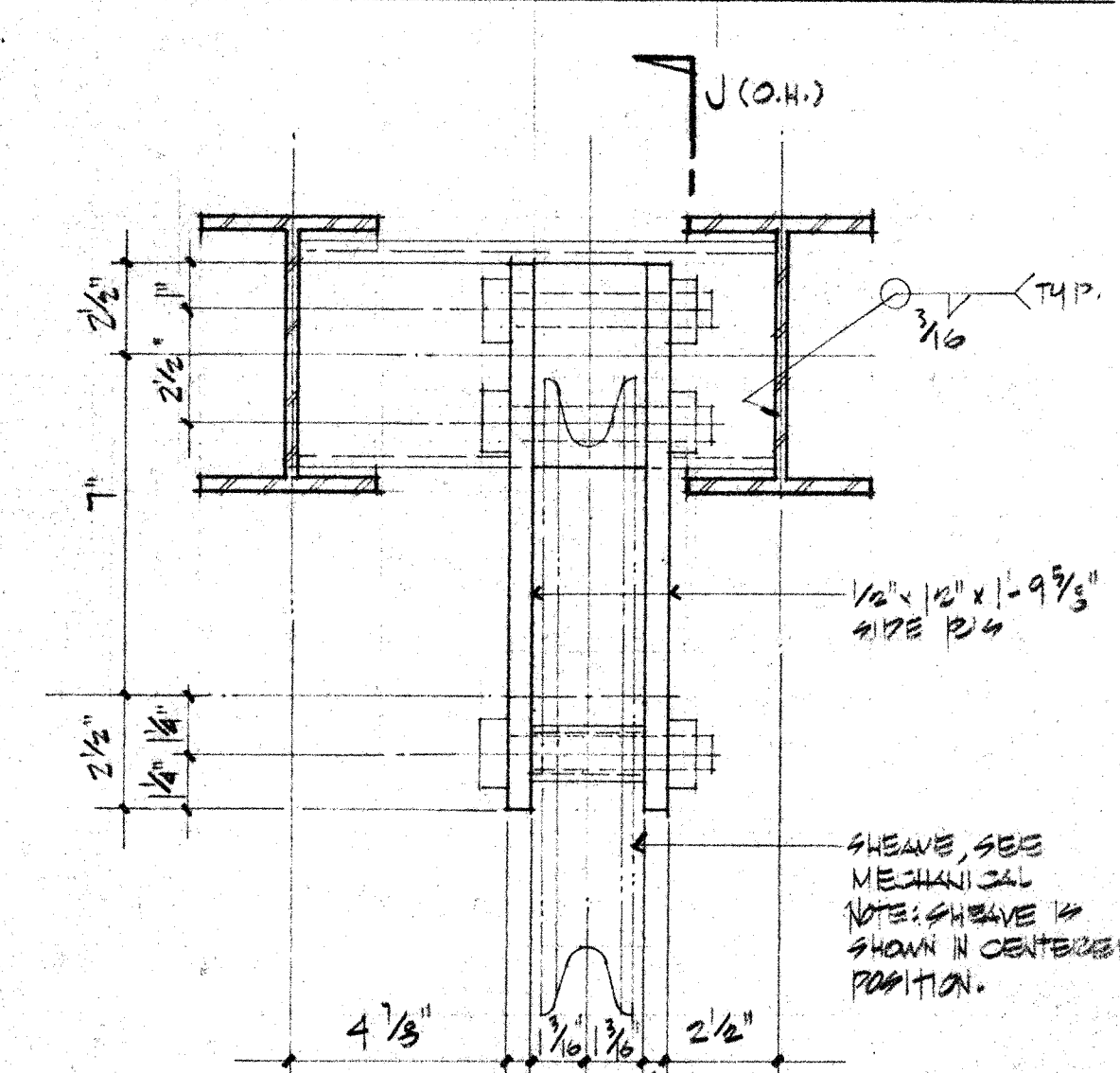
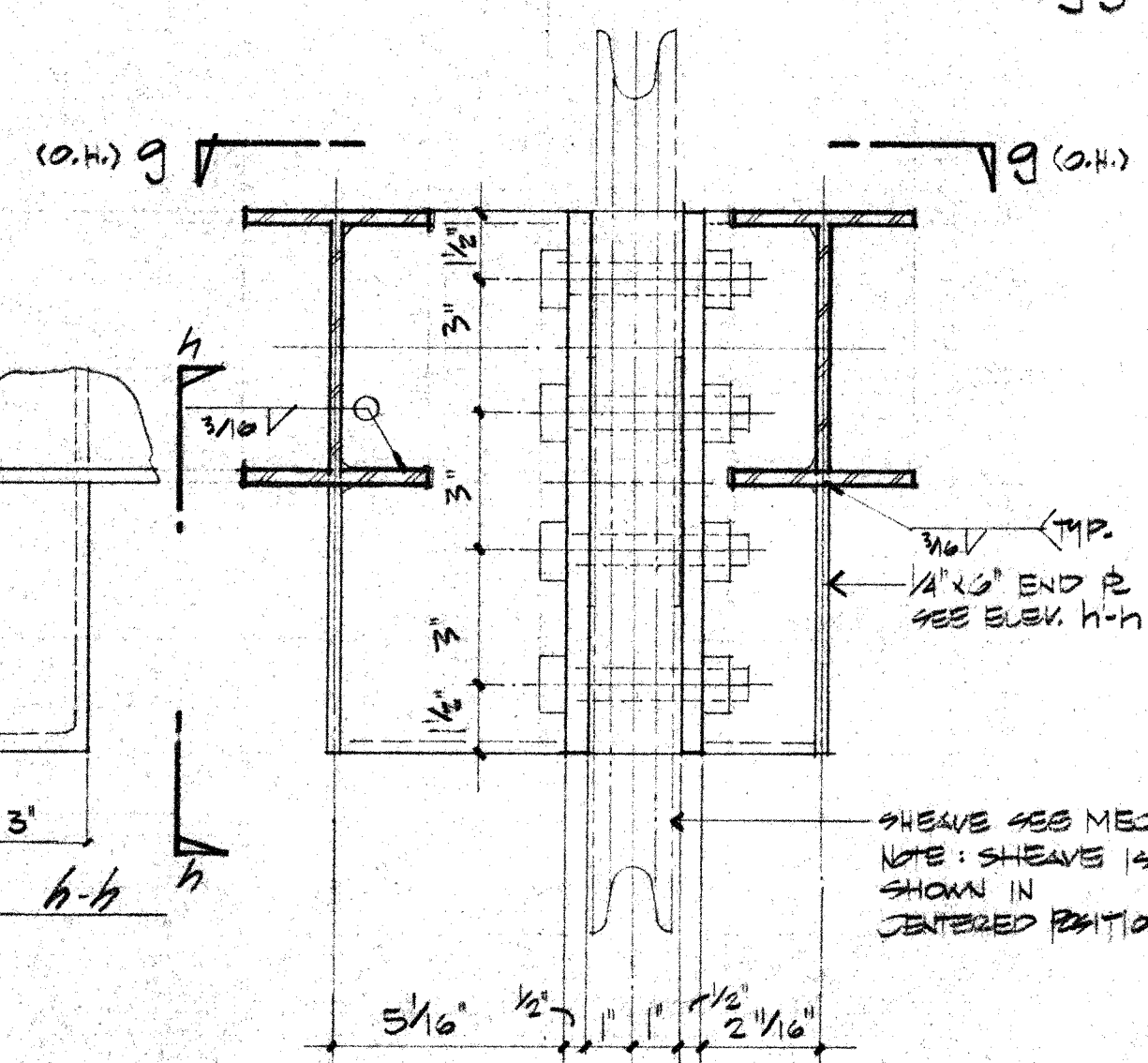
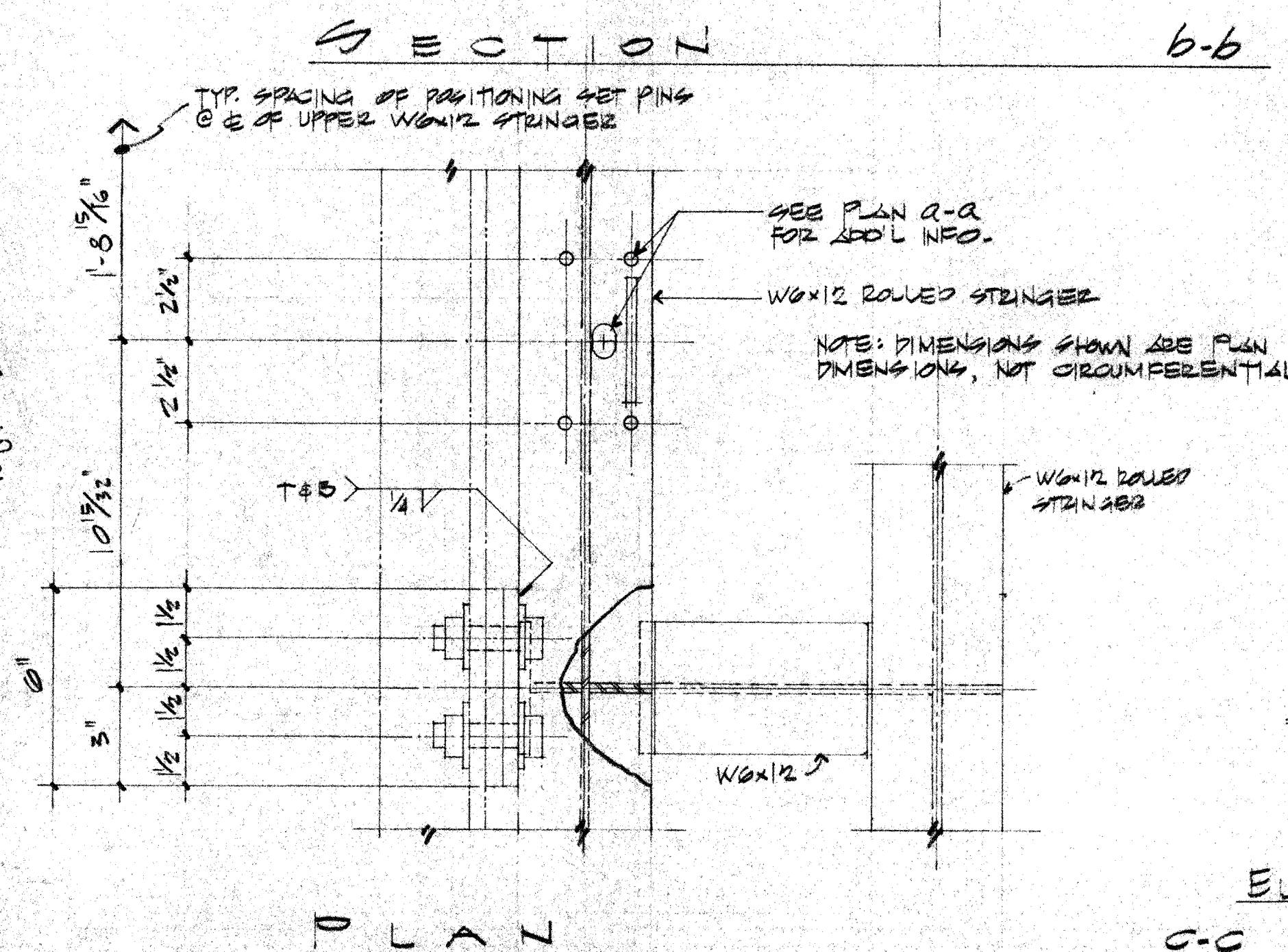
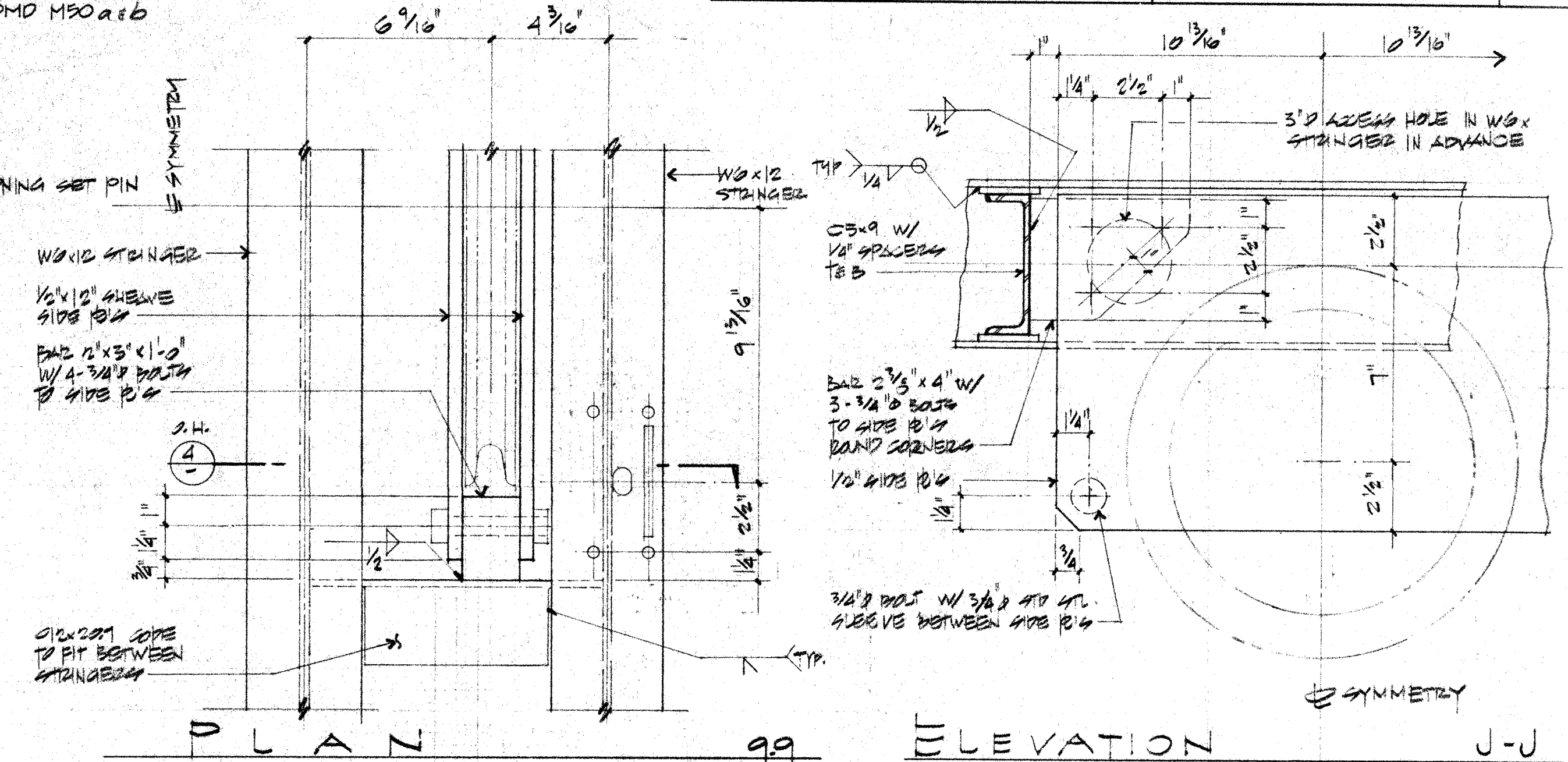
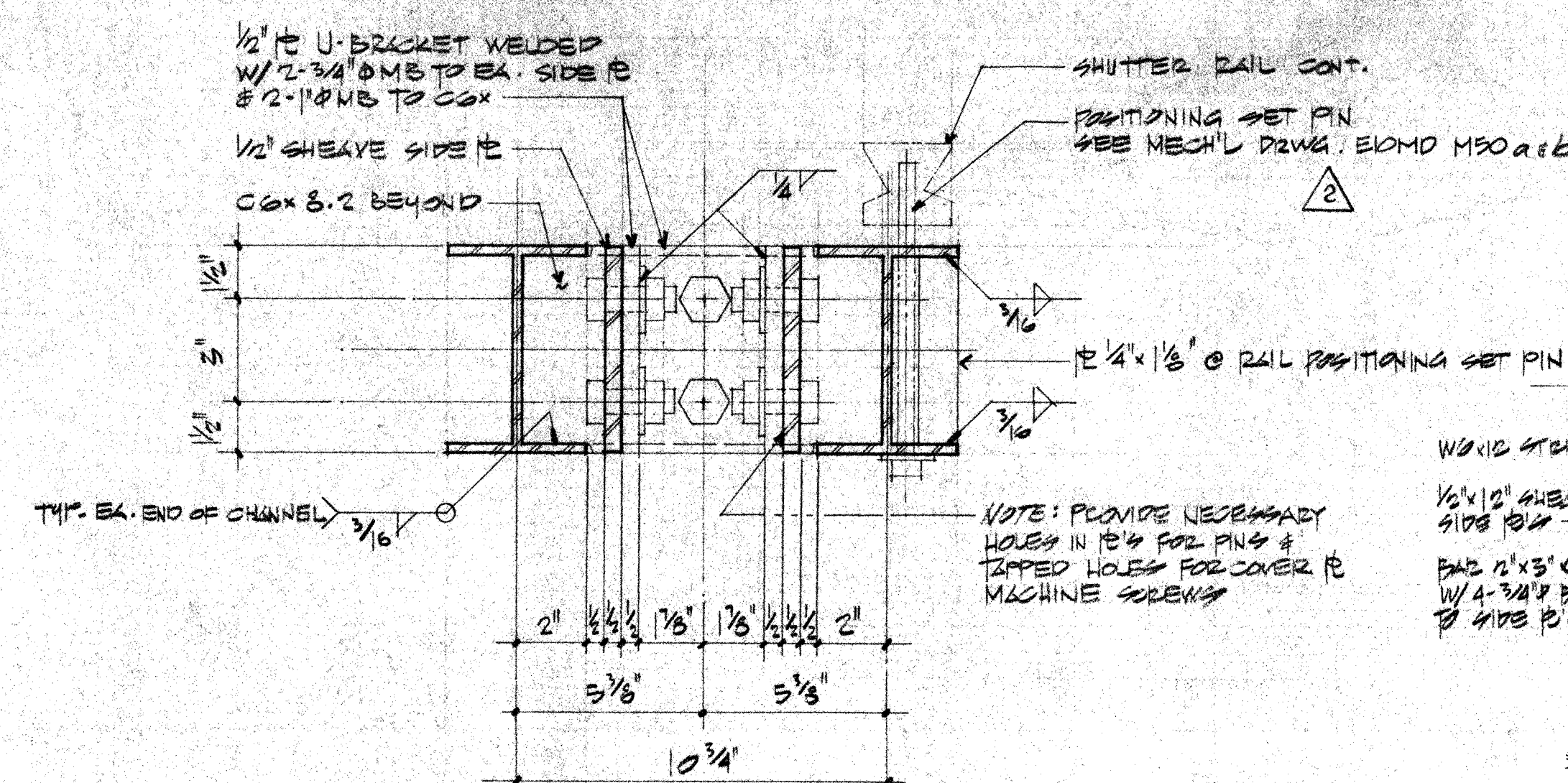
A
SD1

DESCRIPTION	DATE	APPD
1. HAWAII EDITION BID SET	12-20-84	W.H.H.
2. CLARIFICATIONS	2-7-84	W.H.H.
3. BID SUBMITTALS	5-30-84	W.H.H.
REVISION		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX ± .03 ANGULAR ± 1/2° XXX ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 16/	DRAWN DC	DATE
CHECKED AD	DATE	
APPROVED H.H.H.	DATE	
	DATE	

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
TITLE INNER ARCH & DRIVE TOWER FRAMING ELEVATION SUBMITTAL OBSERVATORY MAUNA KEA, HAWAII			
DWG. NO. E	SCALE NOTED	DWG. NO. E	DEPT.
FILE NO. 	W.O. 		


2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.



SECTION AT SHEAVES

SECTION AT RAIL SUPPORT

H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917



1	HAWAII ERECTION BID SET	12-20-84	MM
2	CLARIFICATIONS	6-7-84	
1	BID CLARIFICATIONS	5-30-84	MM
LTR	DESCRIPTION	DATE	APPRO
REVISION			

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES		
TOLERANCE ON DECIMALS		
.XX = ± .03	ANGULAR = ±	
.XXX = ± .005		
TOLERANCE ON FRACTIONS ±		
MACHINE FINISH $\frac{125}{\sqrt{\quad}}$		
NEXT ASSEMBLY		
DRAWING NO.		ITEM

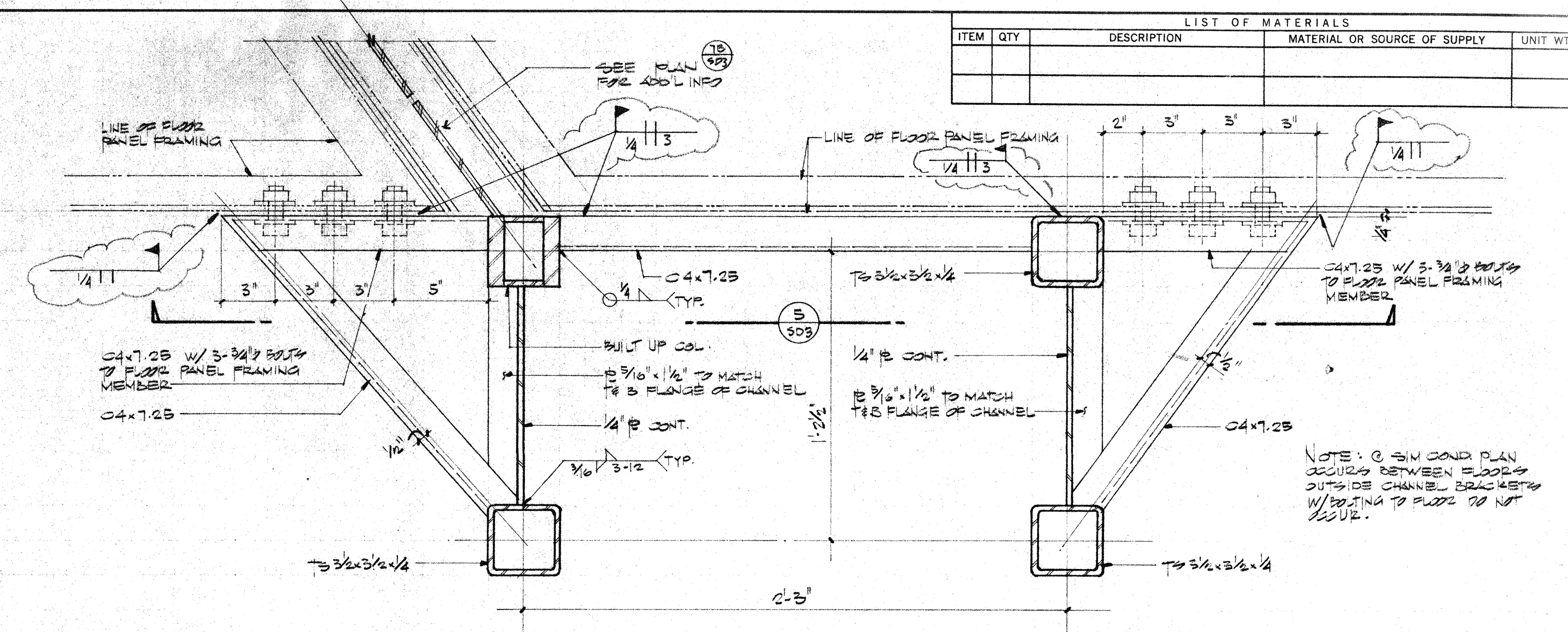
2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

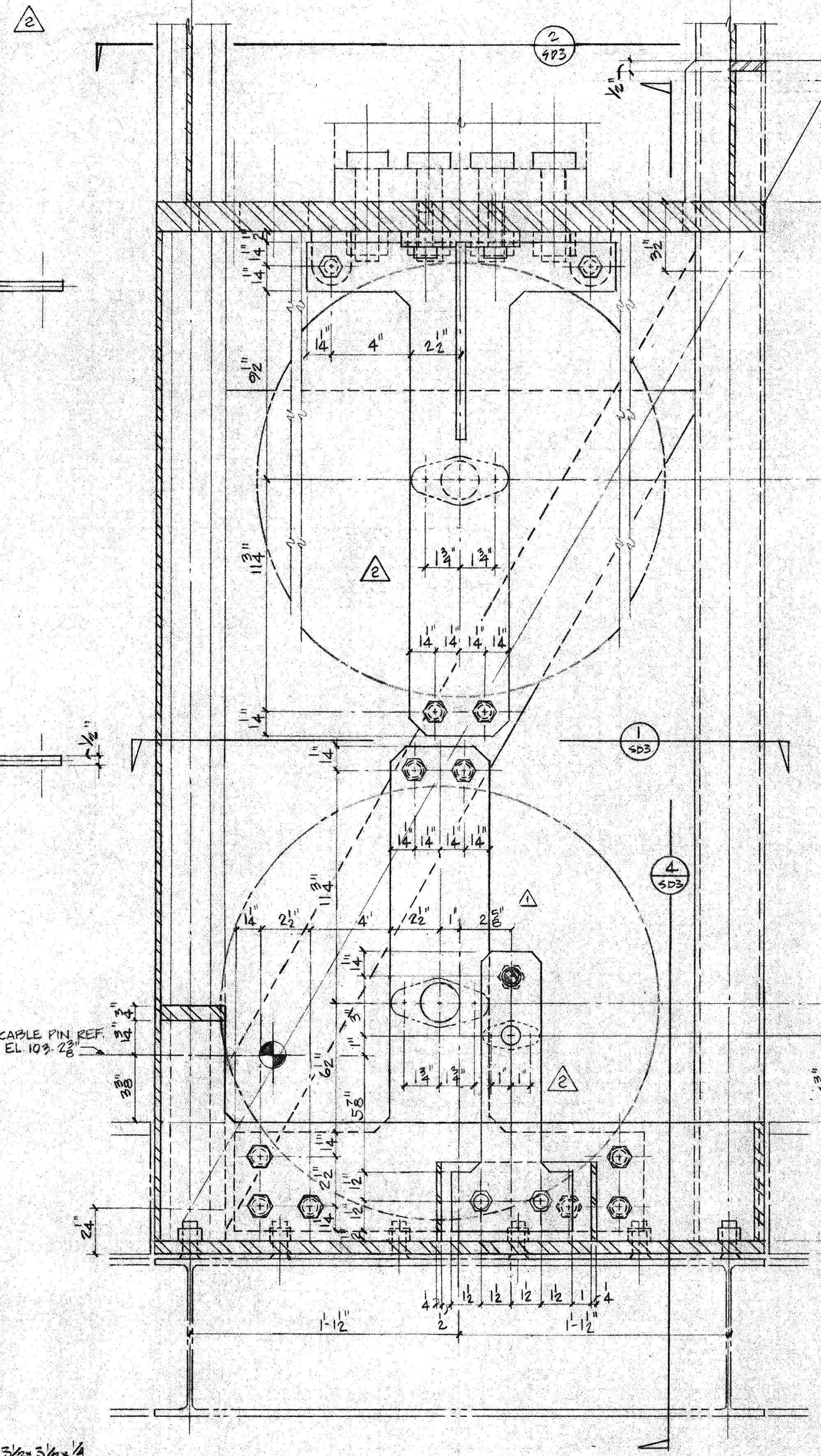
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE			
INNER ARCH DETAILS SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII			
DWG. SIZE	SCALE	DWG. NO.	
E	NOTED	E10MD SD2	
FILE NO.	W.O.	DEPT	SHEET 302 OF 4

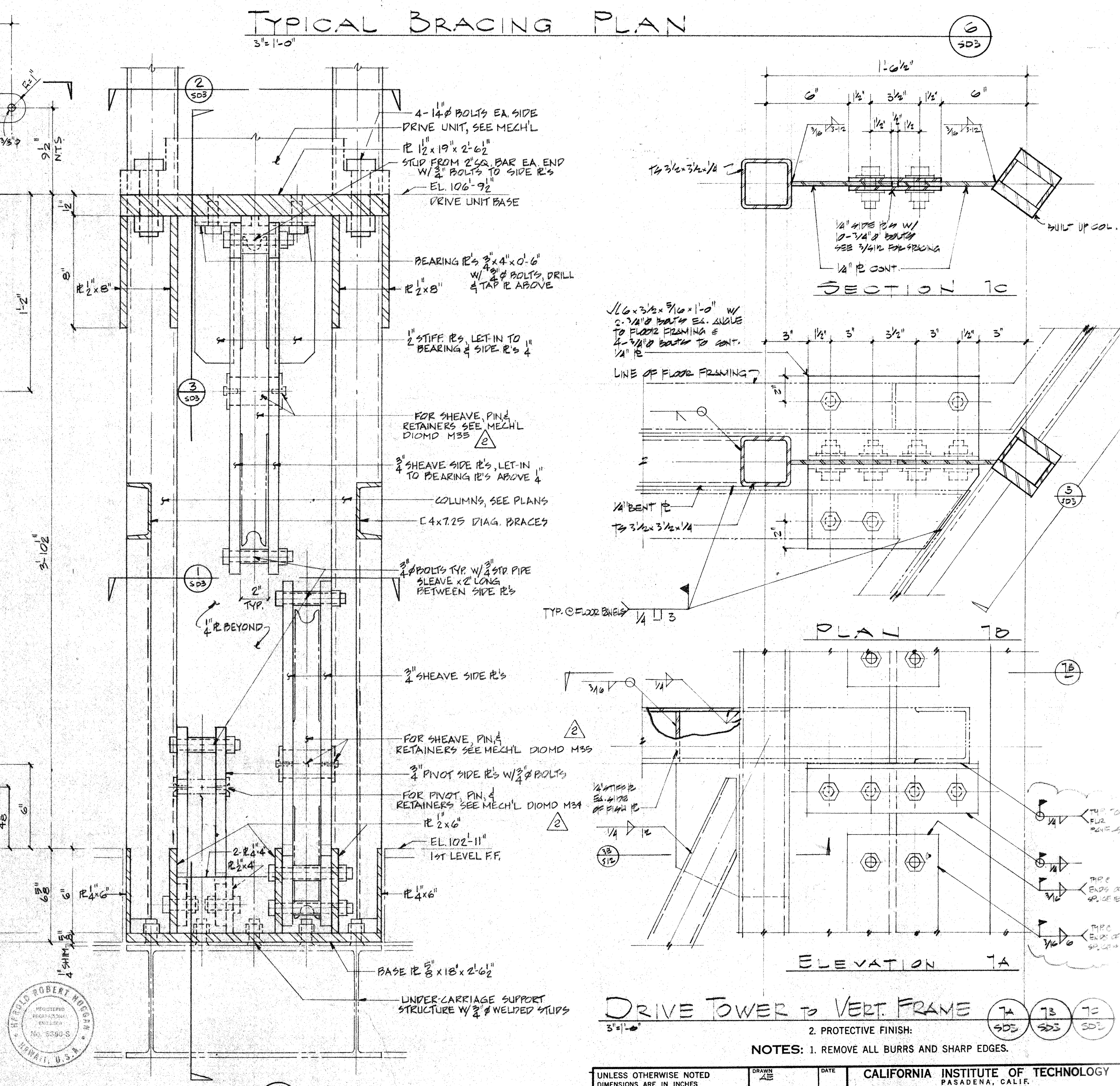
MD SD2
SHEET 402 OF 4



'BUILT UP' GAL. SECTION



LOWER TOWER SECTION
SCALE: 3" = 1'-0"



DRIVE TOWER to VERT. FRAME

3" x 1" x 1/2"

2. PROTECTIVE FINISH:

7A	7B	7C
SOS	SOS	SOS

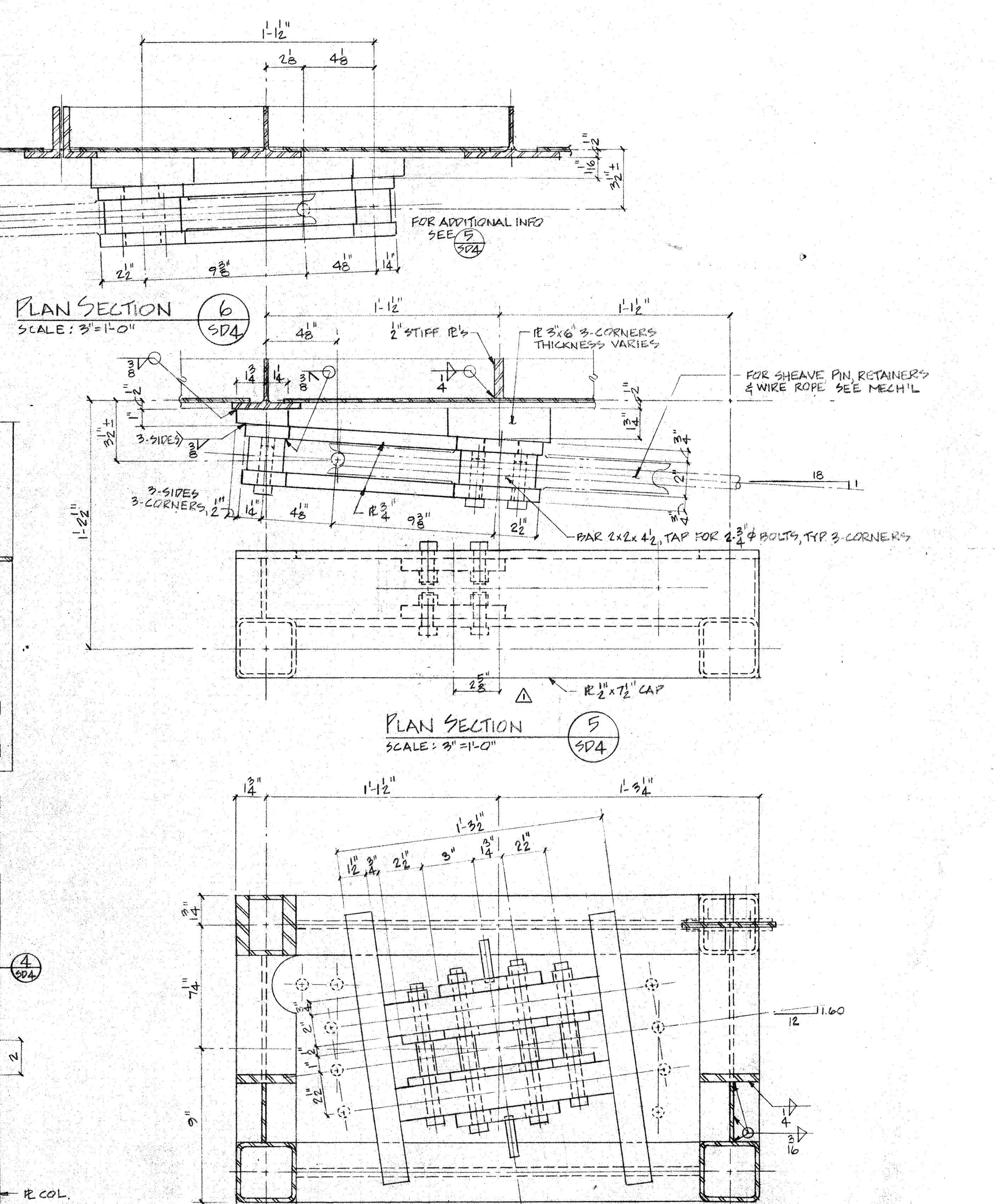
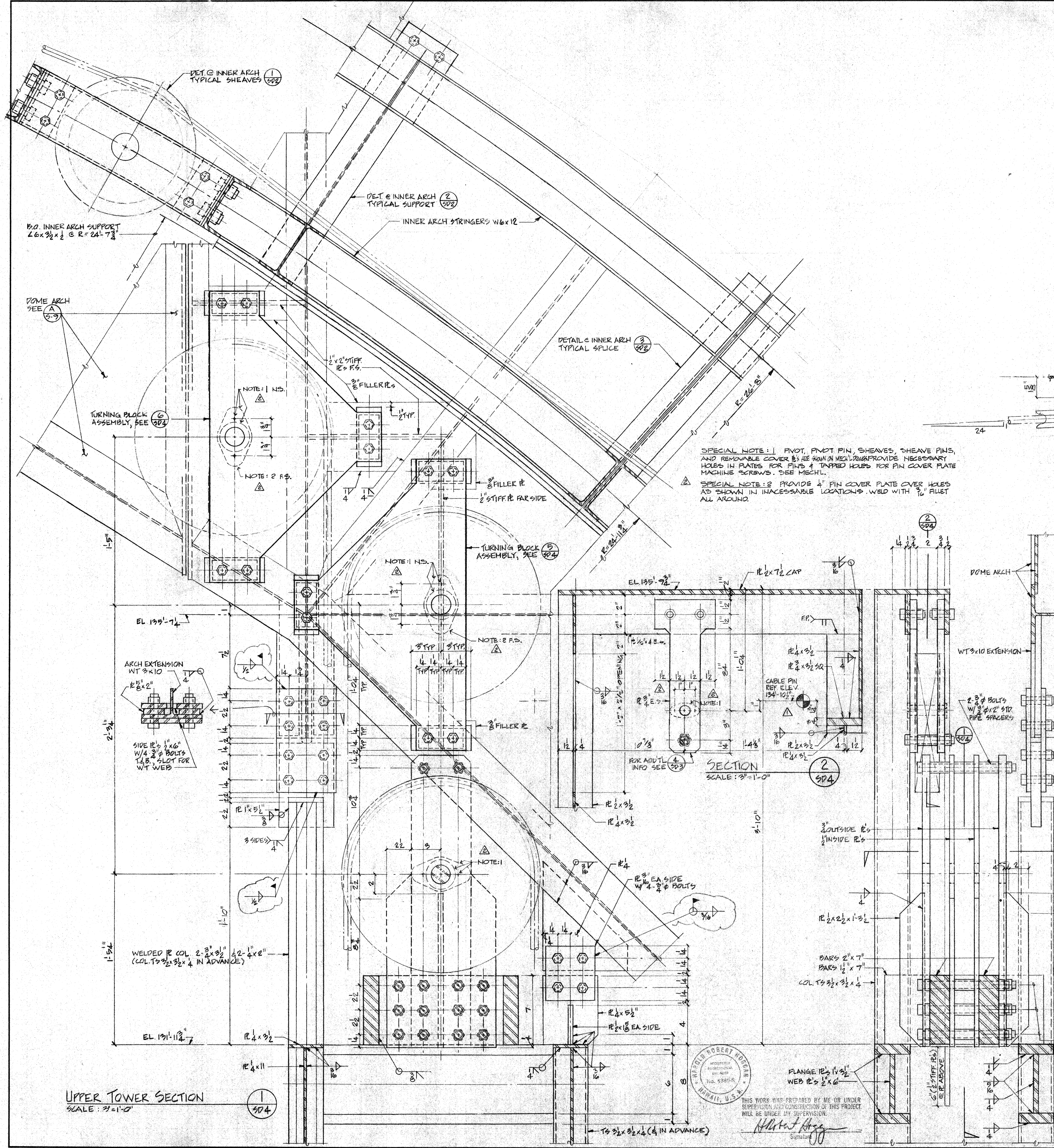
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES				DRAWN <u>AE</u>		DATE		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
TOLERANCE ON DECIMALS XX ± .03 ANGULAR ± 1/2°				CHECKED <u>AE</u>		DATE		TITLE <u>PAVE TOWER PLANS & SECTIONS</u> <u>SUEMILL METER OBSERVATORY</u> <u>MAUNA KEA, HAWAII</u>			
TOLERANCE ON FRACTIONS ± 1/16				APPROVED <u>[Signature]</u>		DATE <u>5/2/78</u>					
MACHINE FINISH <u>1X</u>				WEIGHT <u>[Signature]</u>							
NEXT ASSEMBLY				DRAWING NO.		ITEM		QTY		DWG. NO.	
				APPLICABLE DOC		SCALE <u>NOTED</u>		DWG. NO. <u>EIOMD SD3</u>		SHEET <u>205</u> OF <u>2</u>	
						FILE NO.		W. O.		DEPT	

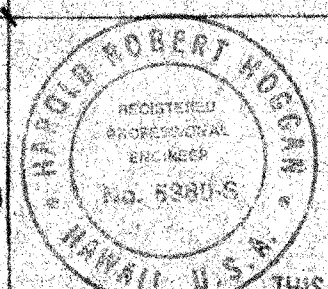
THIS WORK WAS PREPARED BY ME OR UNDER
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H. ROBERT HOGGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



UPPER TOWER SECTION
SCALE: 3/8"=1'-0"



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H. Robert Hoggan
Signature

SECTION 3
SCALE: 3/8"=1'-0"

PLAN SECTION 4
SCALE: 3/8"=1'-0"

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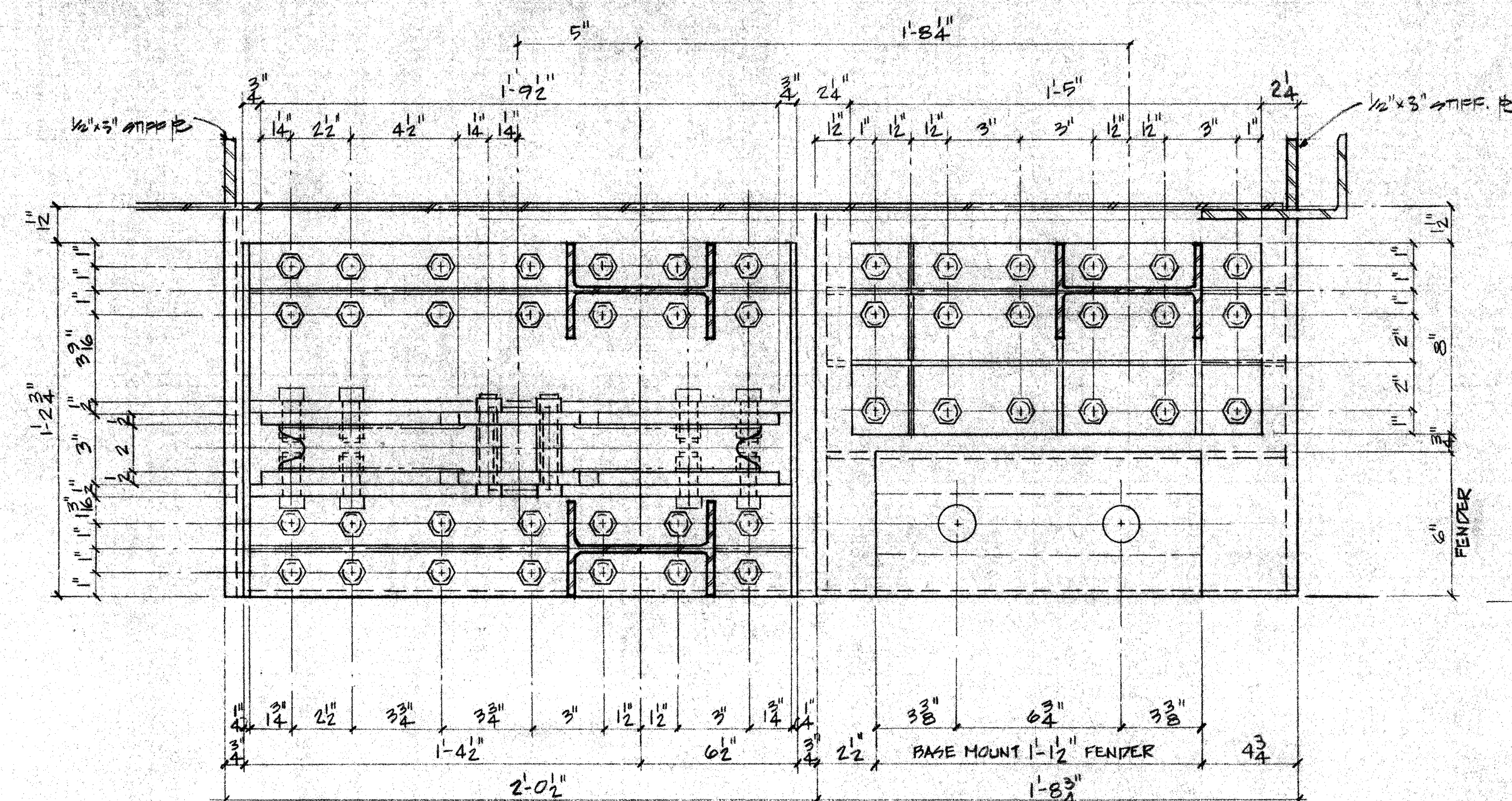
2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

REVISION		DATE		APPROVED	
1	HAUWII ERECTION BID SET	12-20-84	12/20/84		
2	CLARIFICATIONS	6-7-84	6/7/84		
3	POST BID CLARIFICATIONS	5-30-84	5/30/84		
LTR	DESCRIPTION	DATE	APPD		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX ± .03 ANGULAR ± 1/2° XXX ± .05 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 125/	DRAWING NO.	ITEM	QTY	WEIGHT	APPLICABLE DOC
NEXT ASSEMBLY					

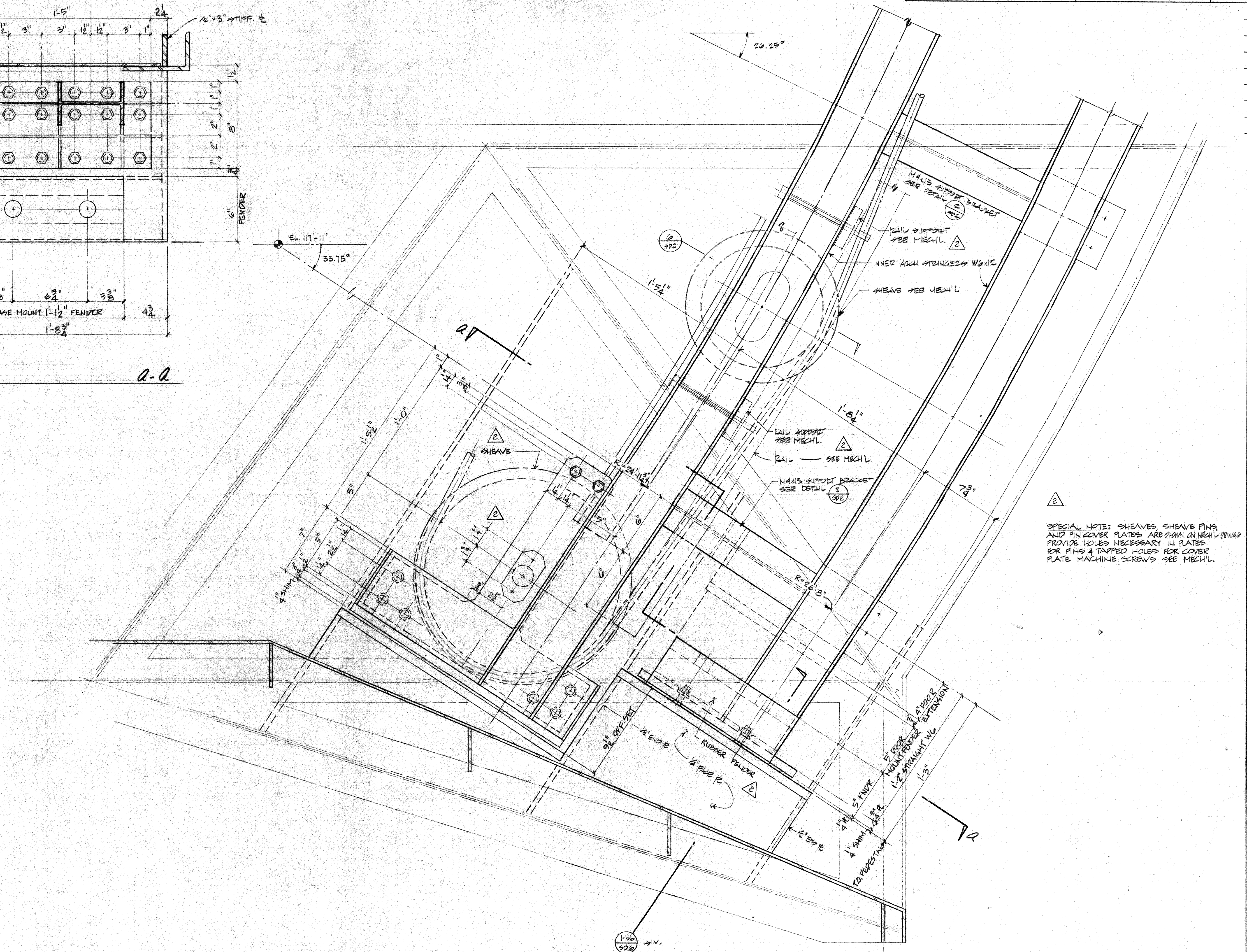
DRAWN AB		DATE		CHECKED HAH		DATE	
APPROVED HAH		DATE		DATE		DATE	
APPROVED HAH		DATE		DATE		DATE	

TITLE		DWG. NO.		SHEET	
OF 10 DRIVE TOWER DETAIL		E10MD SD4		525 OF 7	
SUBMITTAL FOR CONSTRUCTION		FILE NO.		DEPT	
MAINT. KEA, HAWAII					



PLAN SECTION

Q-Q



SPECIAL NOTE: SHEAVES, SHEAVE PINS, AND PIN COVER PLATES ARE SHOWN ON MECH. L DRAWING PROVIDE HOLES NECESSARY IN PLATES FOR PINS & TAPPED HOLES FOR COVER PLATE MACHINE SCREWS SEE MECH. L.

FRONT SHUTTER PEDESTAL DETAIL

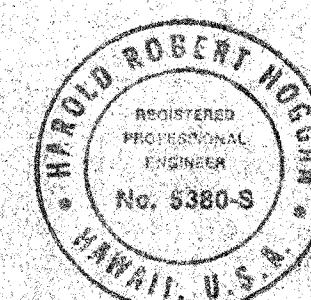
SCALE: 3" = 1'-0"

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES

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[Handwritten Signature]
Signature



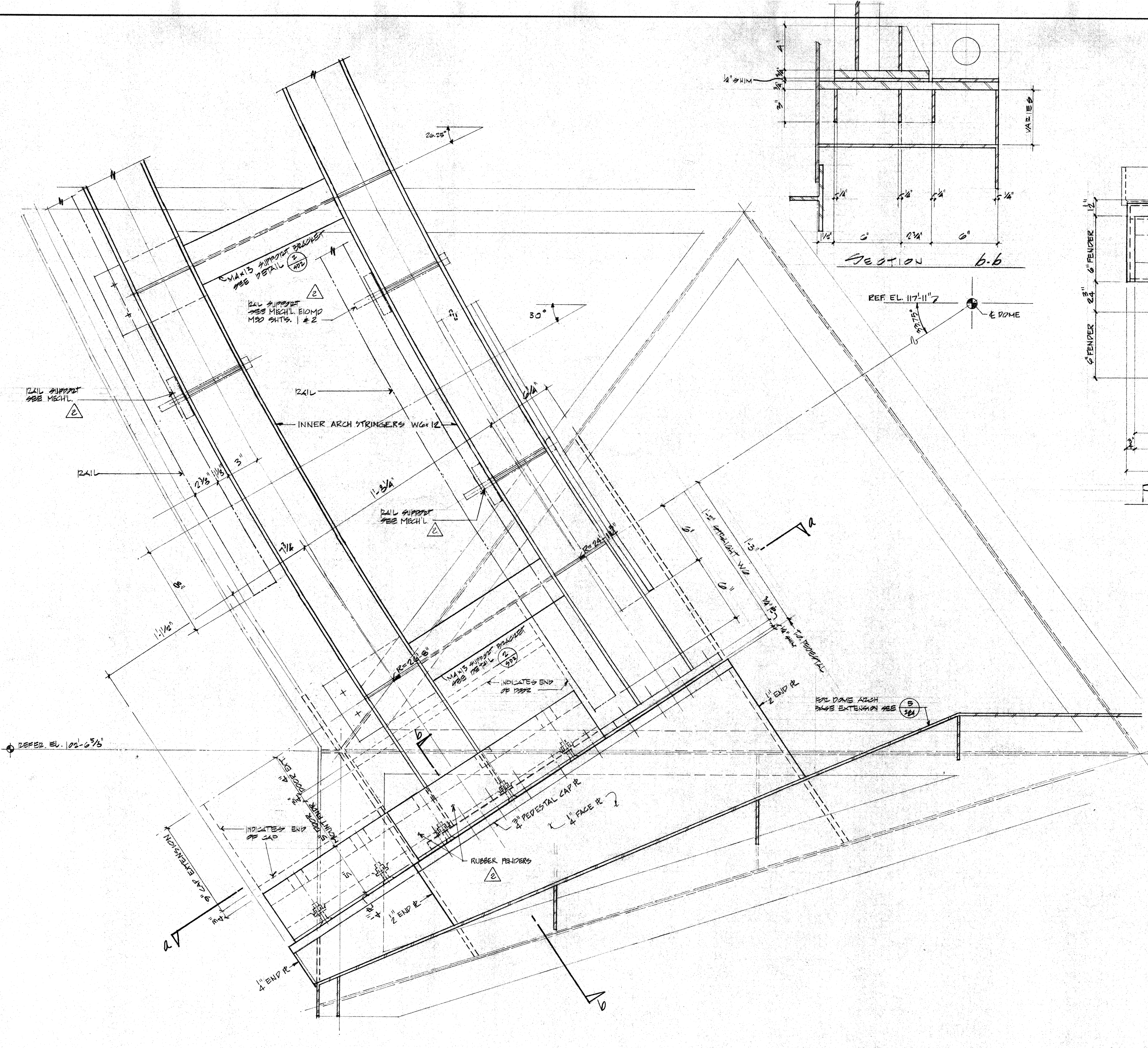
H. ROBERT HOGGAN & ASSOCIATES
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1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

ES	1	144211 ERECTION BID SET	1-20-84	144211
	2	CLARIFICATIONS	6-18-84	
	LTR	DESCRIPTION	DATE	APPRO
		REVISION		

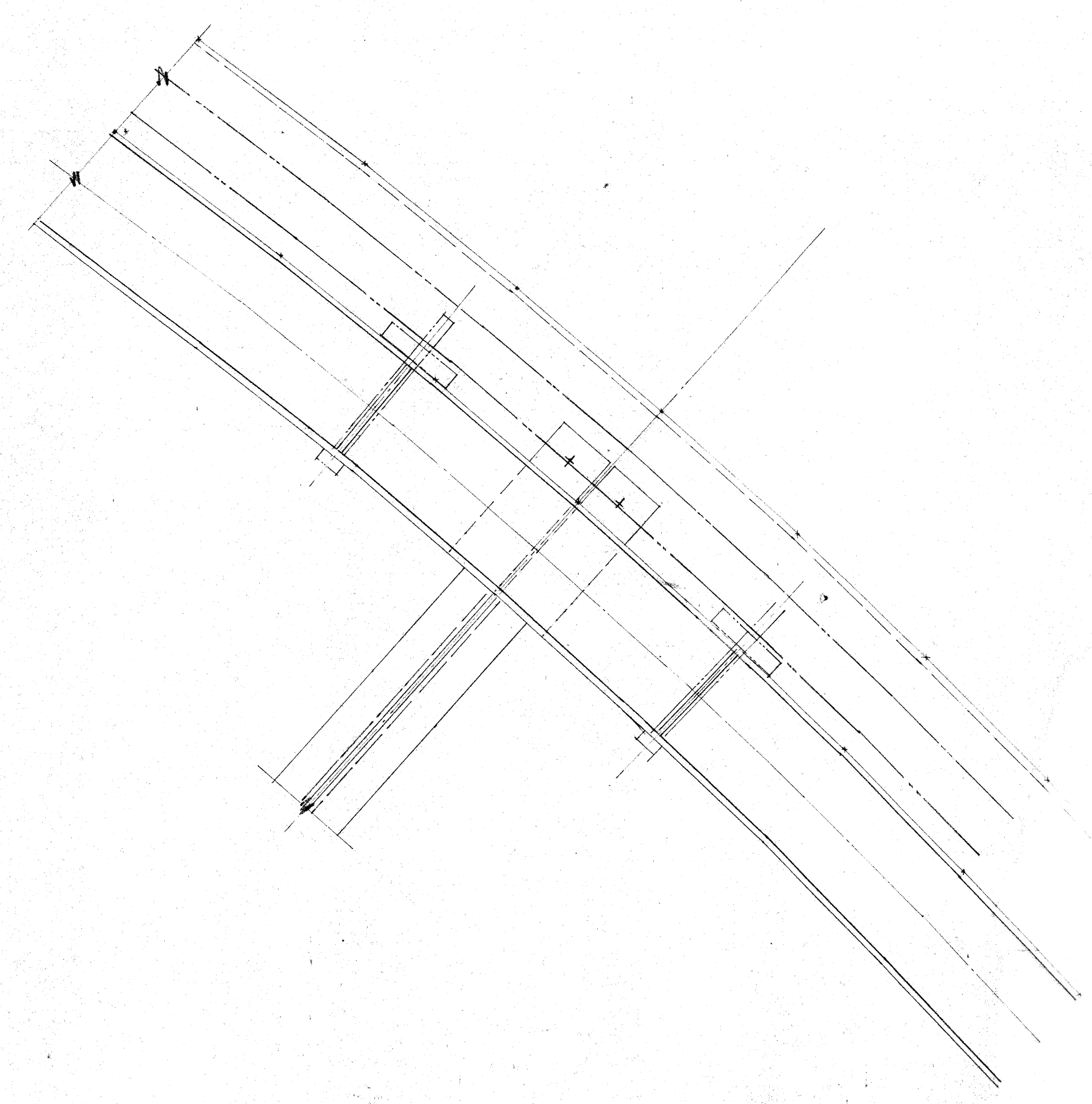
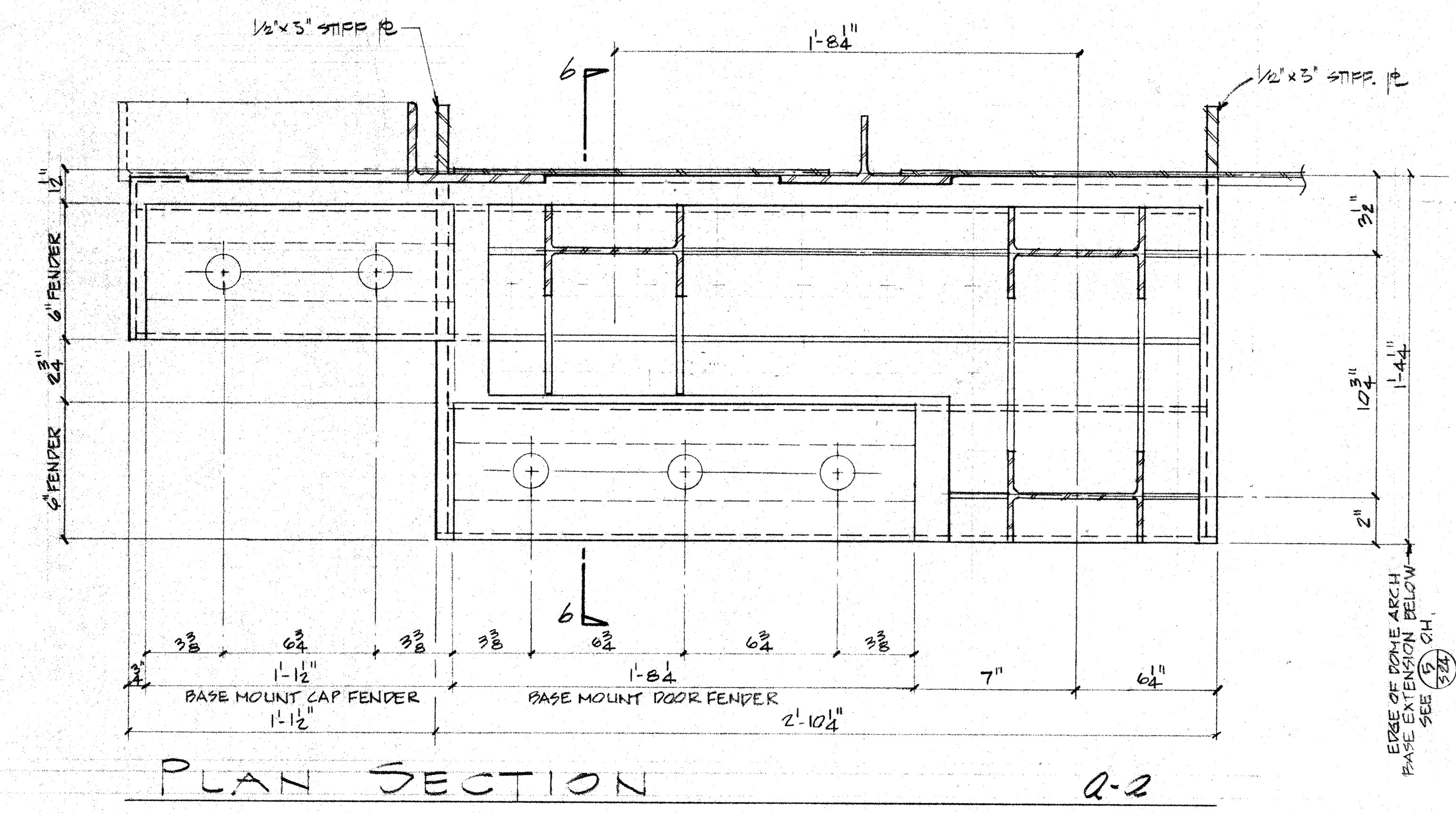
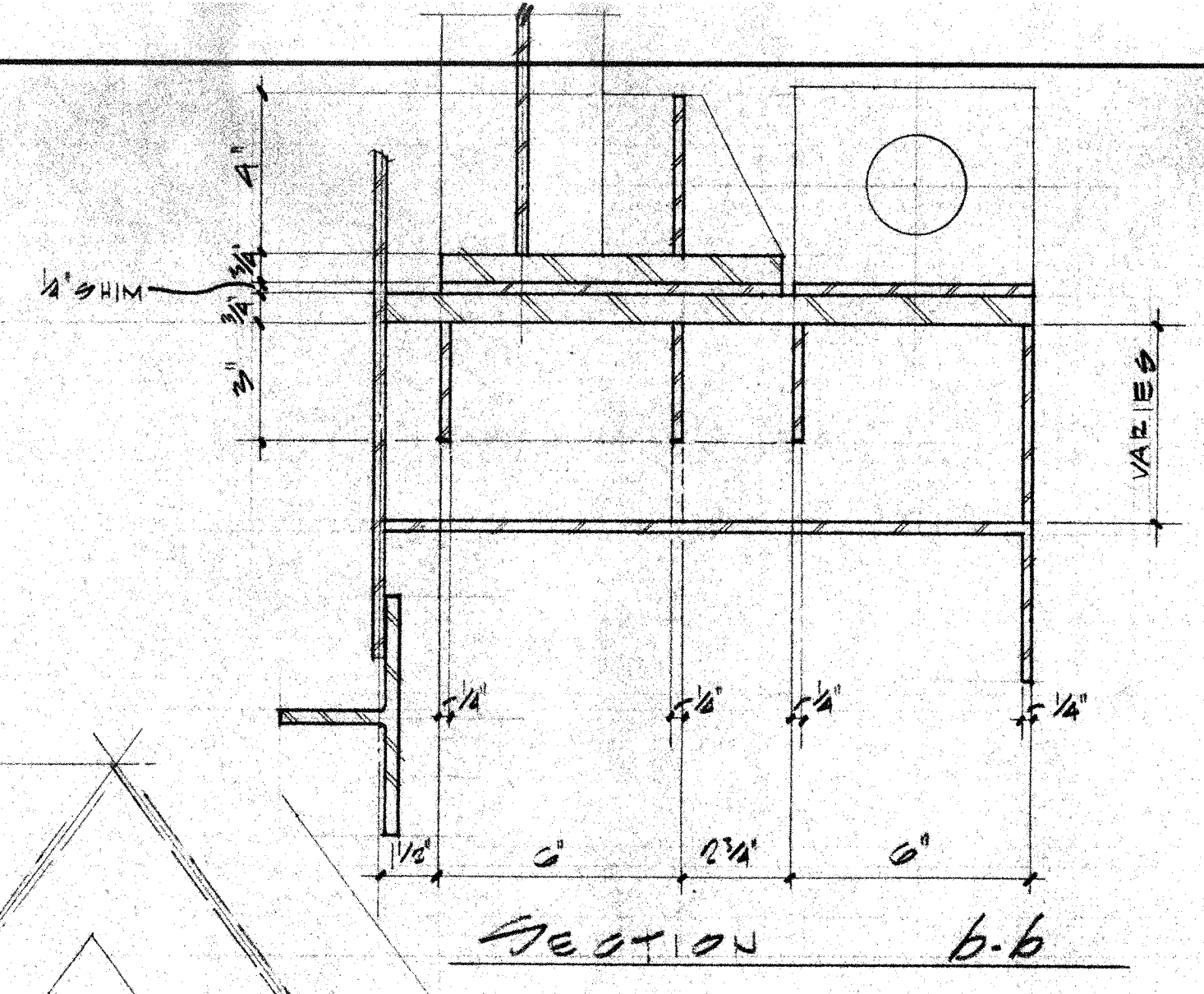
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES		
TOLERANCE ON DECIMALS		
.XX = ± .03	ANGULAR = ± 1/2°	
.XXX = ± .005		
TOLERANCE ON FRACTIONS = 1/16		
MACHINE FINISH $\frac{125}{\sqrt{\quad}}$		
NEXT ASSEMBLY		
DRAWING NO.	ITEM	
D		

DRAWN <u>AB</u>		DATE		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.			
CHECKED <u>24</u>		DATE		TITLE FRONT SHOOTER PERIODIC DETAIL SUBMILLIMETER OBSERVATORY MAINNA KSA HAWAII			
APPROVED <u>AB</u>		DATE <u>2/24</u>					
APPROVED <u>AB</u>		DATE					
WEIGHT		DOW SIZE		SCALE		DOW NO.	
QTY		E		NOTED		E10MD SD5	
APPLICABLE DOC		FILE NO.		I. W. O.		DEPT	
						SHEET <u>20</u> OF <u>2</u>	

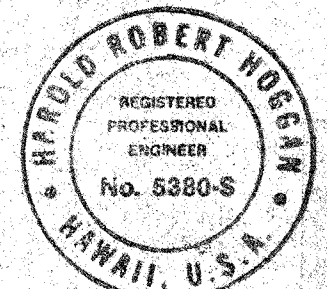
LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



REAR SHUTTER PEDESTAL DETAIL
SCALE: 3/8"=1'-0"



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H. Robert Hoggan
Signature



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DATE	APPROVED	DESCRIPTION
10-20-84	[Signature]	HAWAII ERECTION END SET
10-1-84	[Signature]	CLARIFICATIONS
DATE	APPROVED	DESCRIPTION

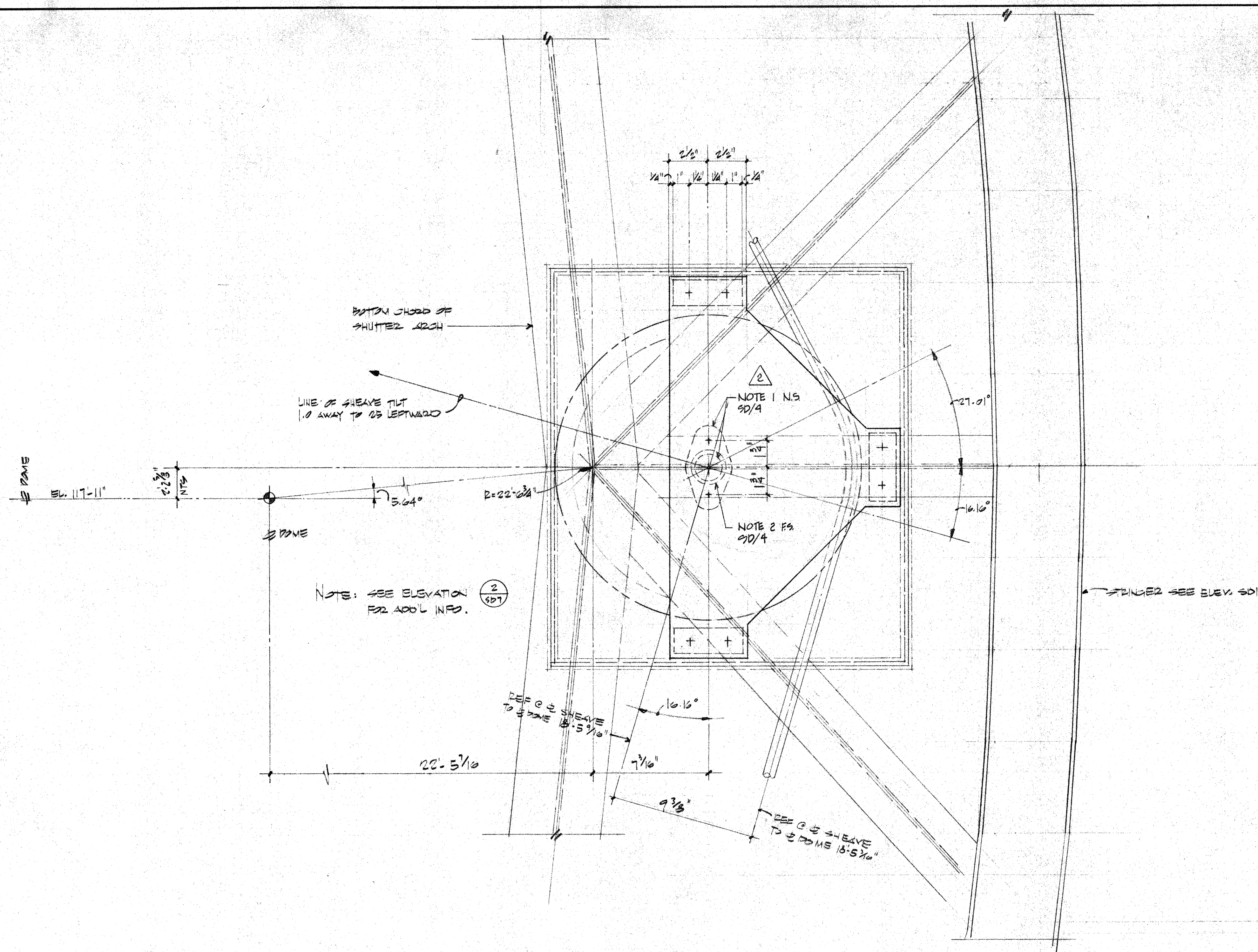
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .06 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/	DRAWN RB	DATE 10-20-84
CHECKED HJH	DATE 10-20-84	DATE 10-20-84
APPROVED [Signature]	DATE 10-20-84	DATE 10-20-84

NEXT ASSEMBLY		WEIGHT	FILE NO.	W.O.	DEPT
DRAWING NO.	ITEM	QTY			

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

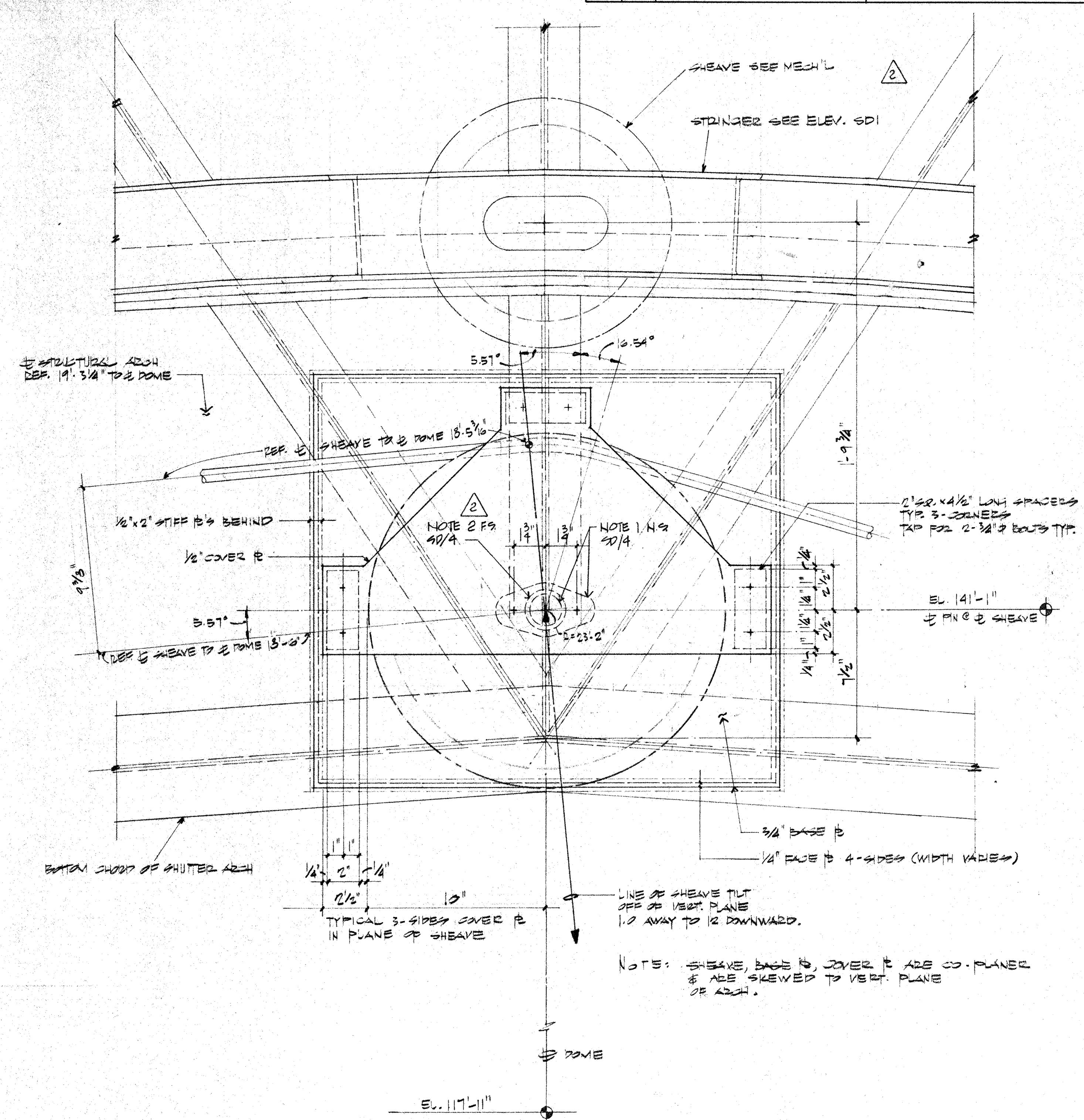
CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.		TITLE REAR SHUTTER PEDESTAL DETAIL SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII	DWG. NO. E10MD SD6
DWG. SIZE E	SCALE 1/8"=1'-0"	FILE NO.	SHEET 2 OF 2

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



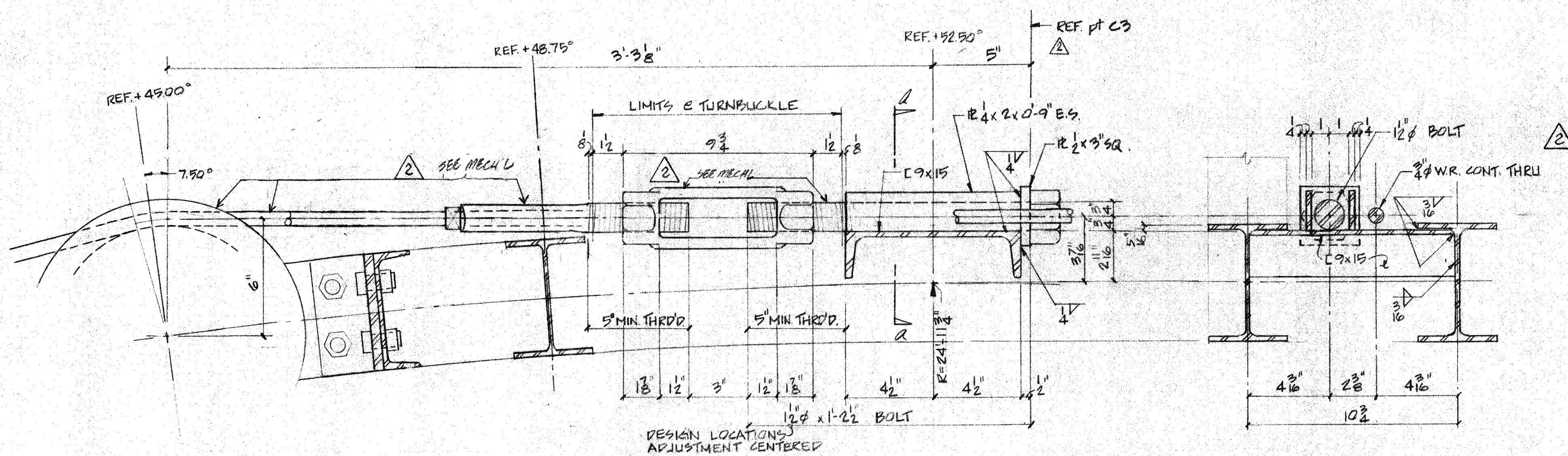
SHEAVE SUPPORT ELEVATION

SD1



SHEAVE SUPPORT ELEVATION

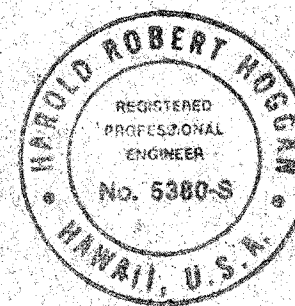
SD1



CENTER CABLE ANCHOR DETAIL

SD1

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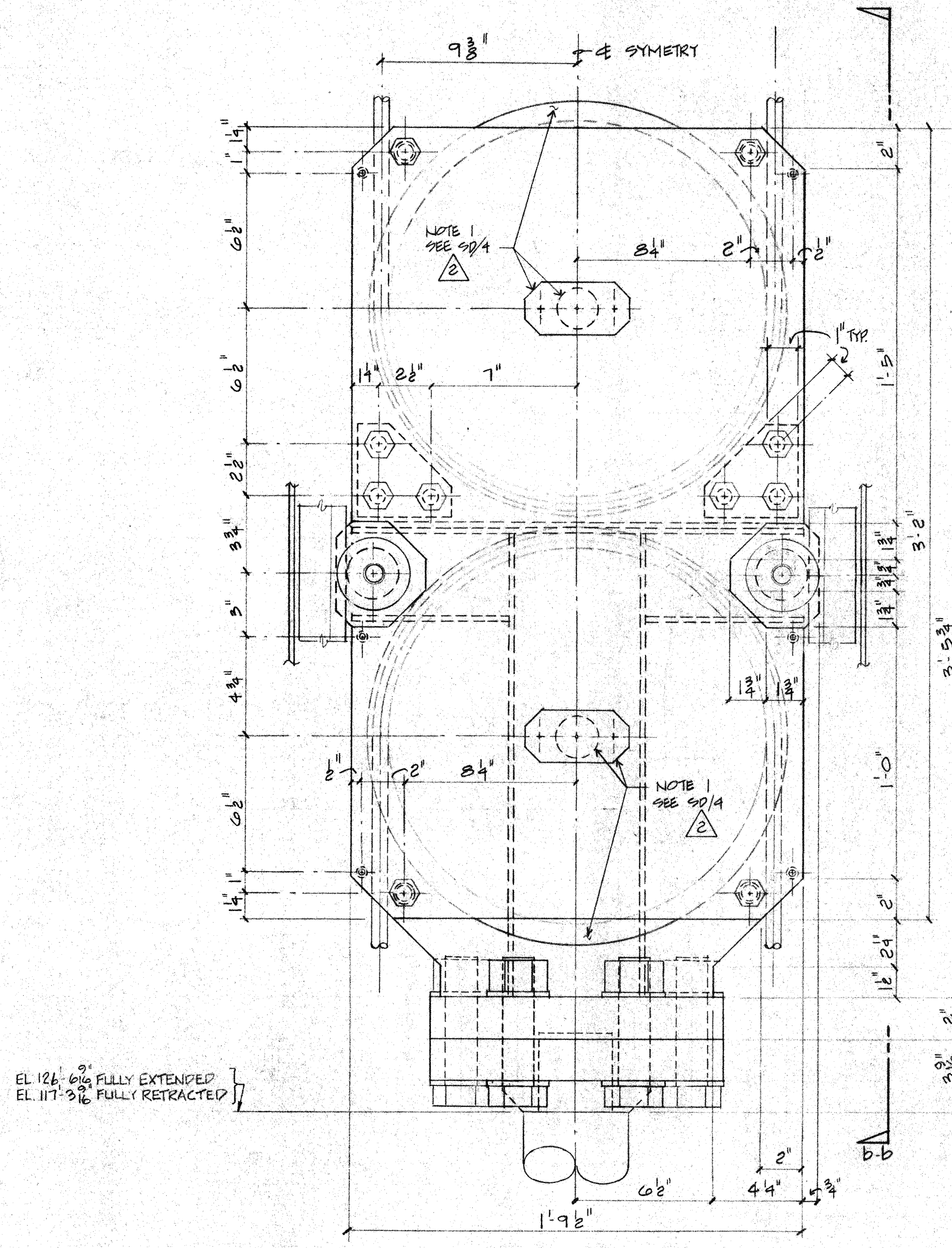
REVISION	DESCRIPTION	DATE	APPD
1	HAUWAI ERECTION BID SET	10-20-84	NRH
2	CLARIFICATIONS	6-7-84	NRH
3	POST BID CLARIFICATION	5-30-84	NRH

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 ANGULAR = ± 1/2° XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH	DRAWING NO.	ITEM	QTY

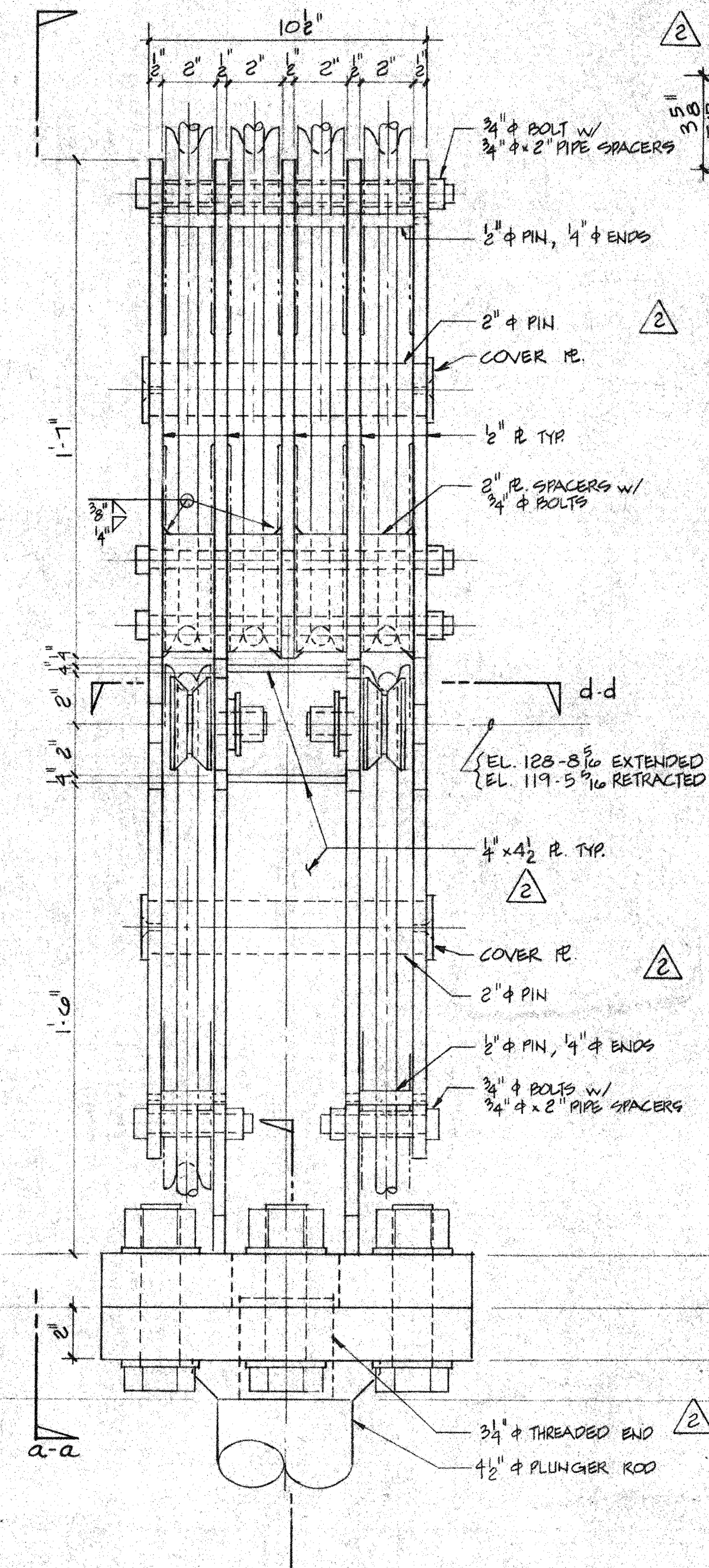
CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	DATE	FILE NO.	W.G.	DEPT	SHEET	OF

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

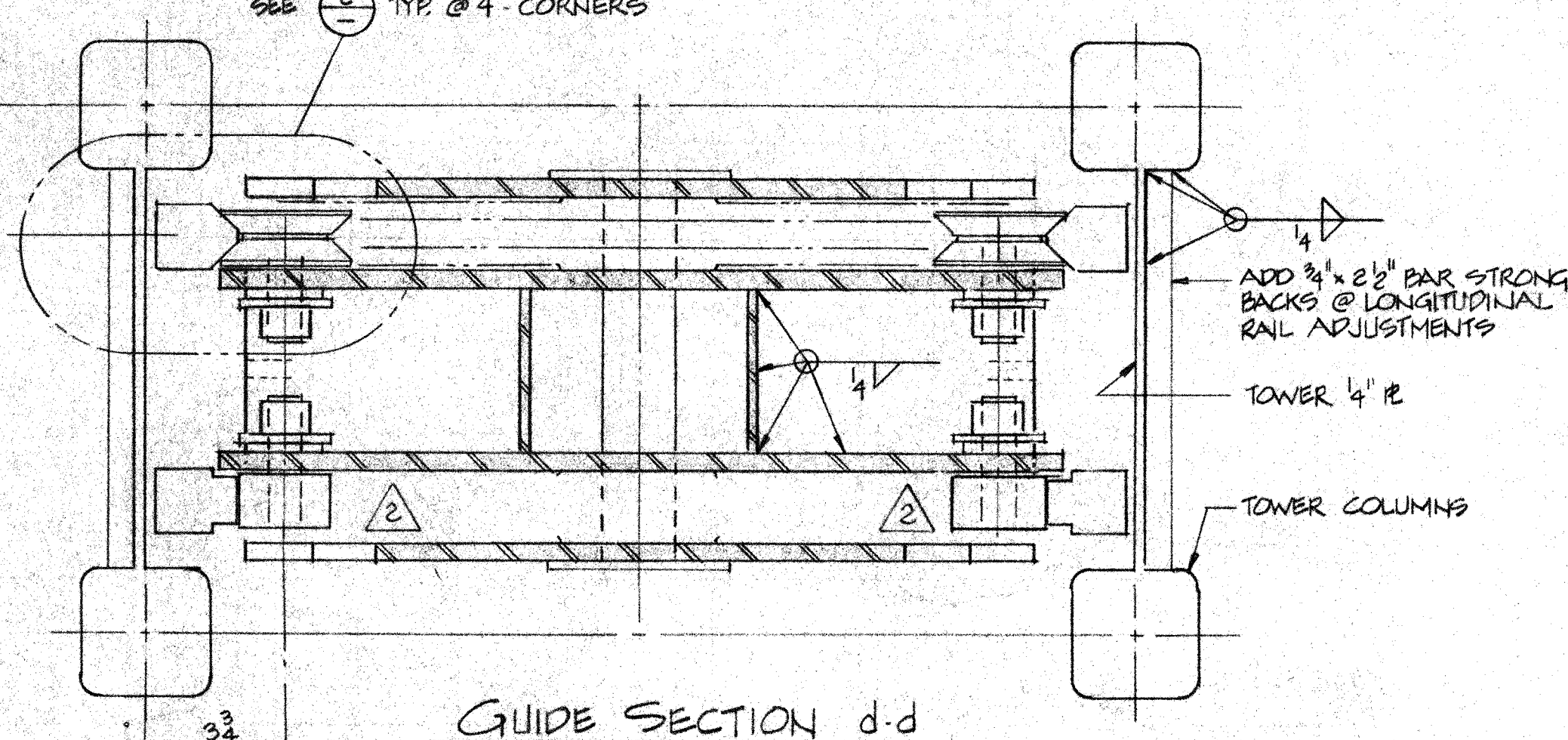
LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



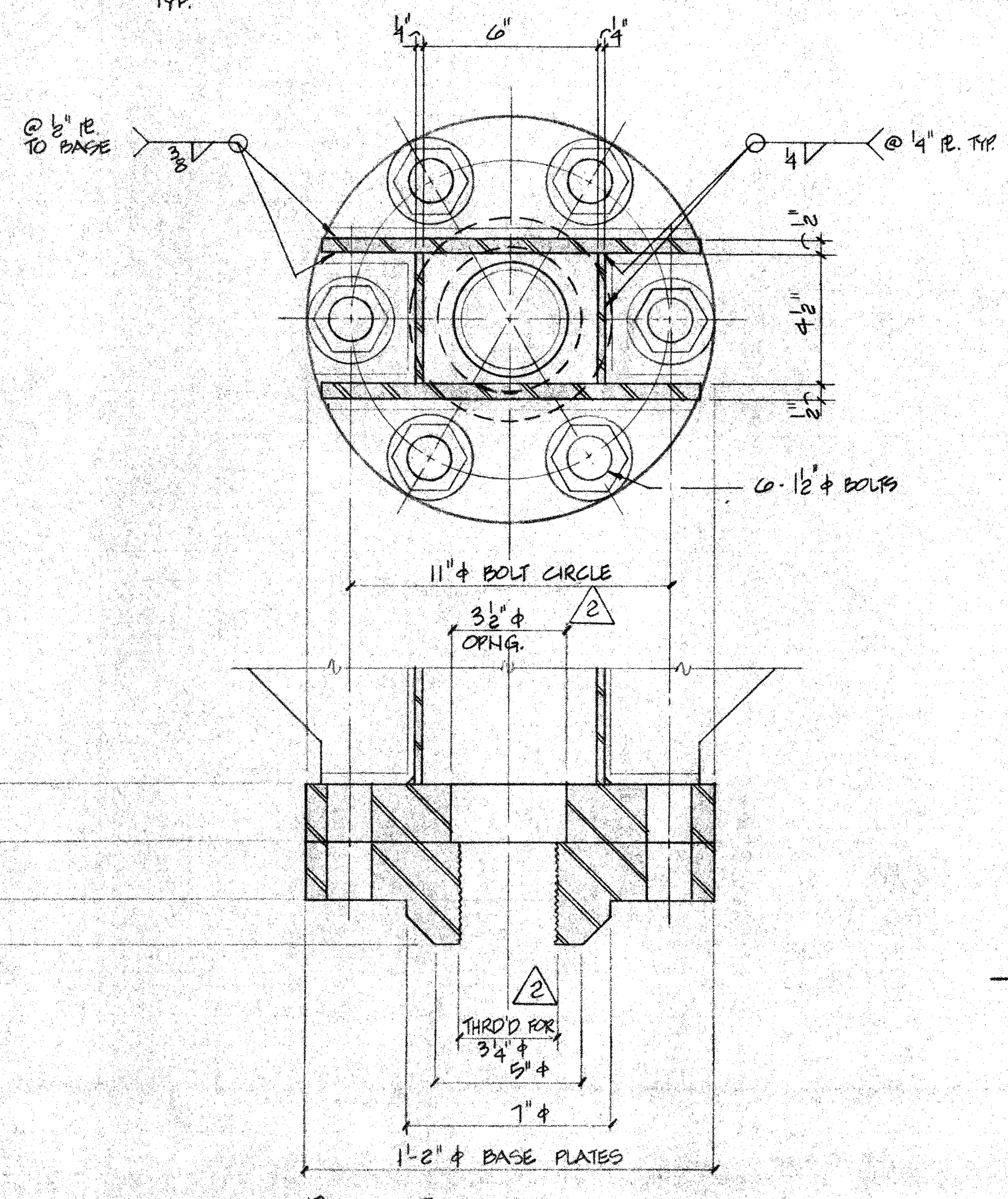
ELEVATION a-a



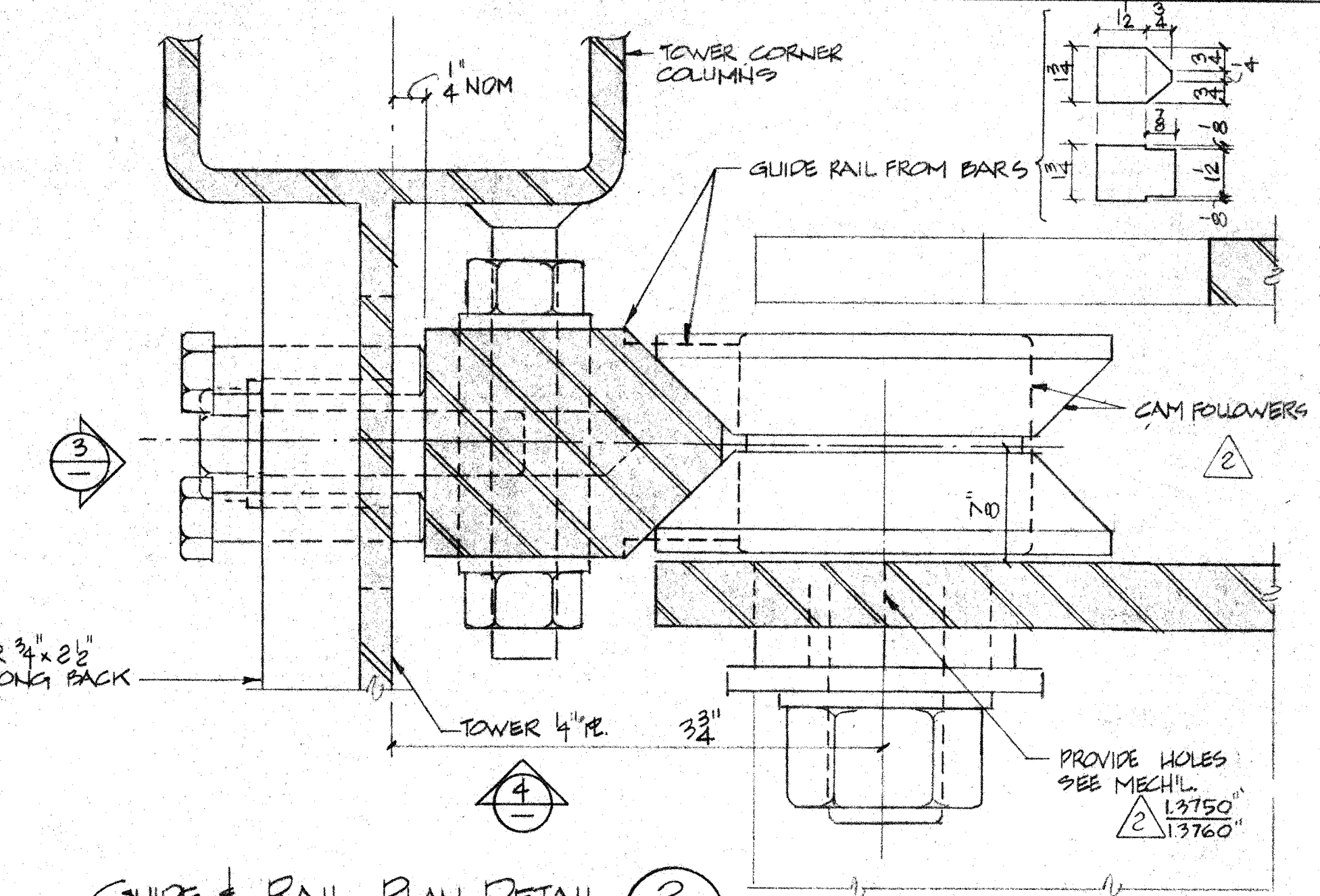
ELEVATION b-b



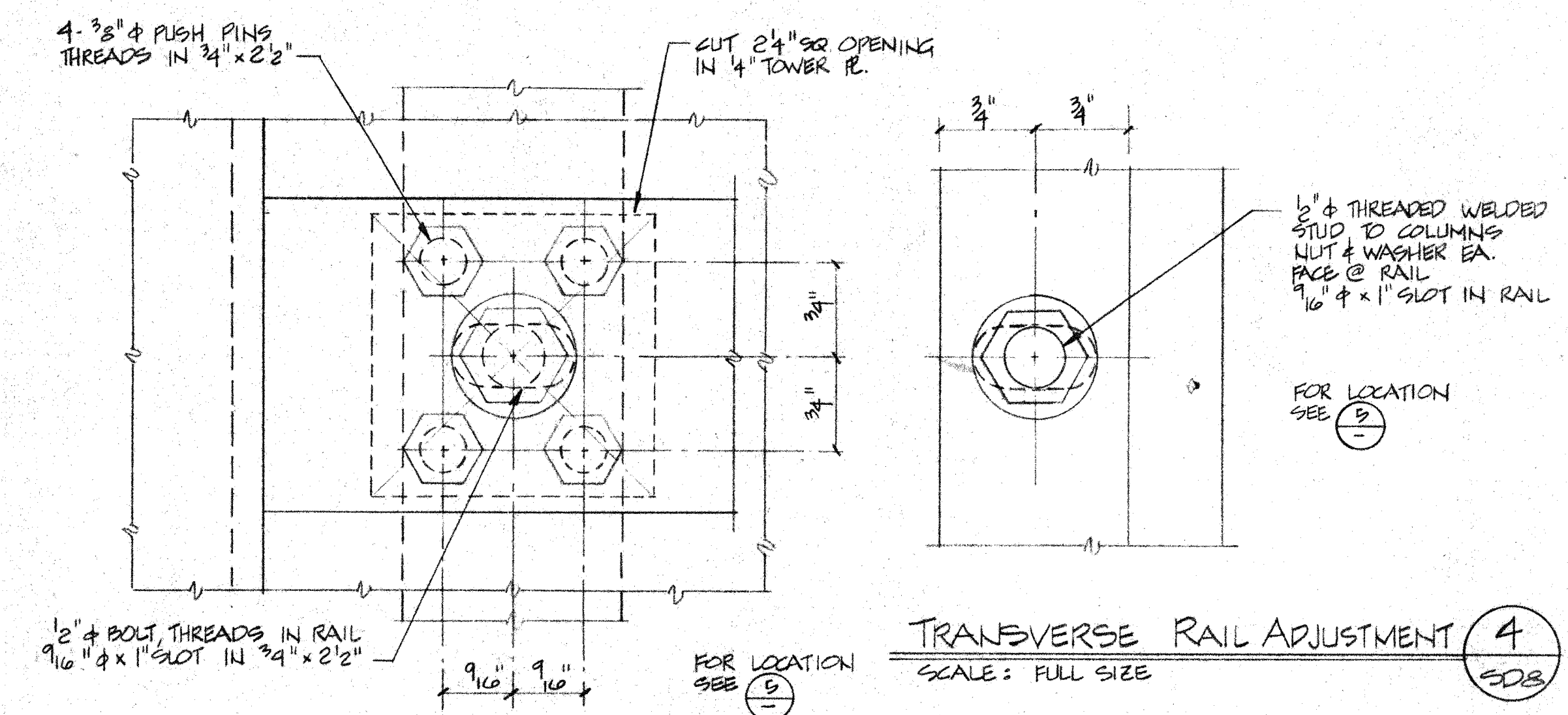
GUIDE SECTION d-d



BASE SECTION c-c

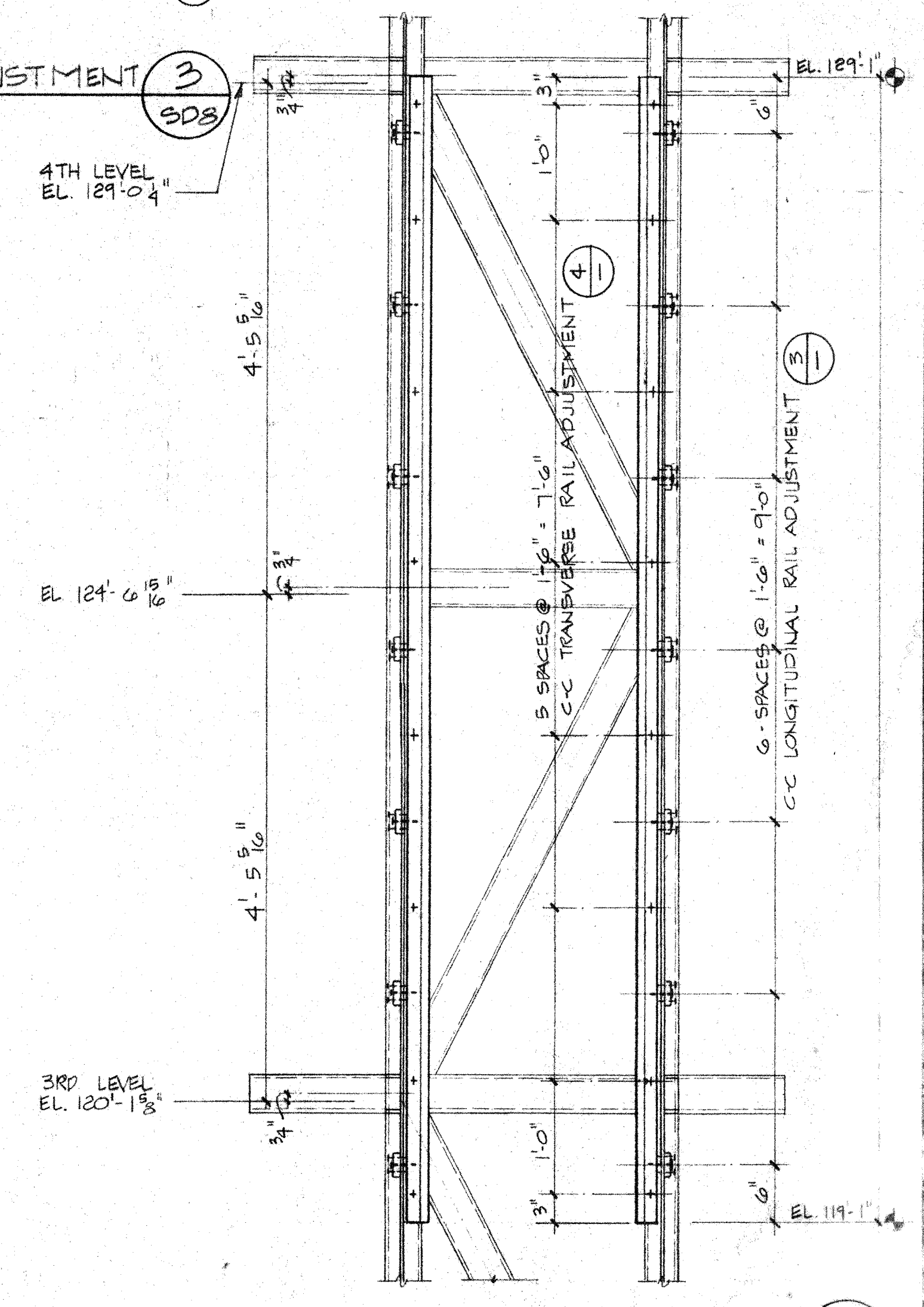


GUIDE & RAIL PLAN DETAIL 2
SCALE: FULL SIZE



LONGITUDINAL RAIL ADJUSTMENT 3
SCALE: FULL SIZE

TRANSVERSE RAIL ADJUSTMENT 4
SCALE: FULL SIZE

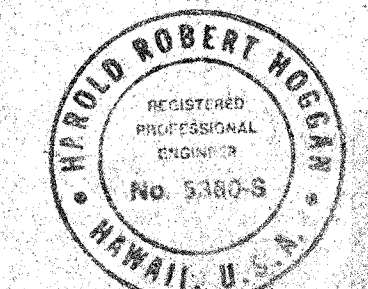


GUIDE RAIL ELEVATION 5
2. PROTECTIVE FINISH; SCALE: 1"=10'

DRIVE CAR & BLOCK ASSEMBLY
SCALE: 3/8"=1'-0"

1
SDB

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H. Robert Hoggan
Signature

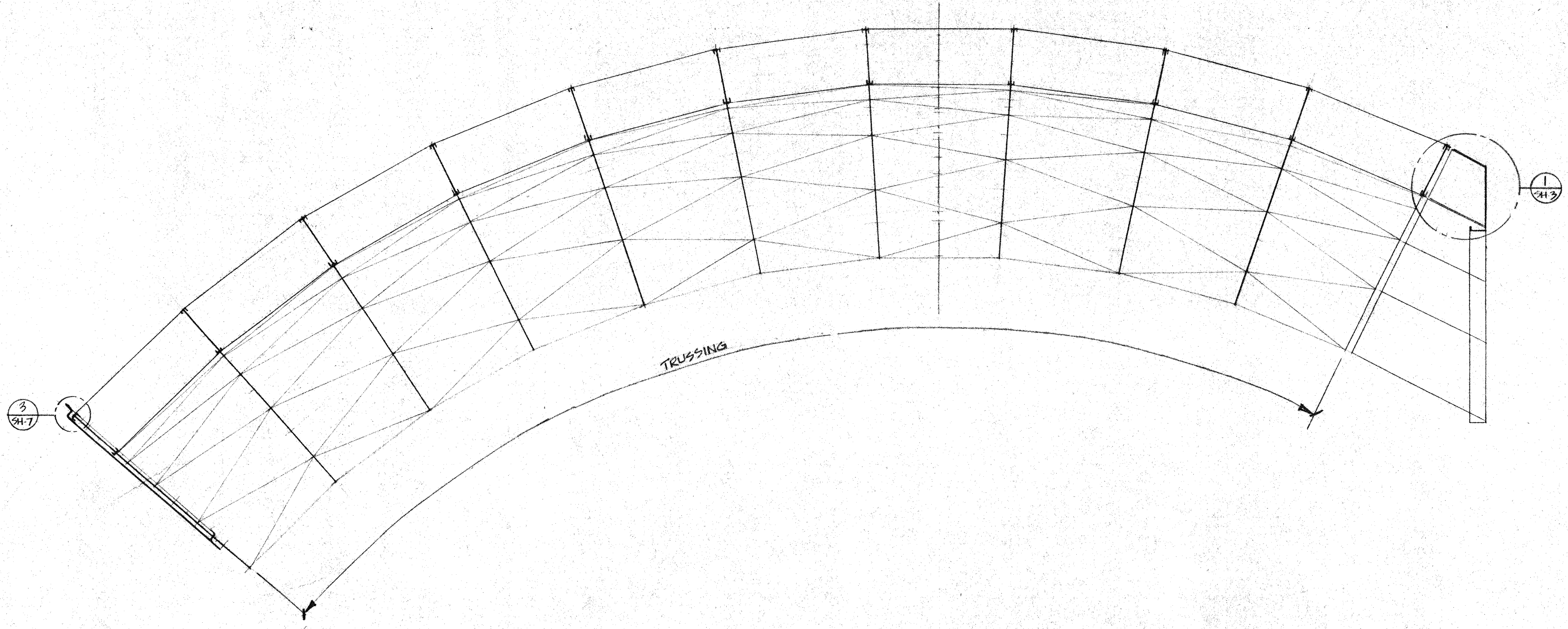


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REVISION	DESCRIPTION	DATE	APPROD
1	HAWAII ERECTION BID SET	12-20-84	H. R. Hoggan
2	CLARIFICATIONS	6-7-84	H. R. Hoggan

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES	DRAWN	DATE
TOLERANCE ON DECIMALS .XX = ± .03	CHECKED	DATE
TOLERANCE ON ANGULARS ± 1/2°	APPROVED	DATE
TOLERANCE ON FRACTIONS ± 1/16	APPROVED	DATE
MACHINE FINISH 125		

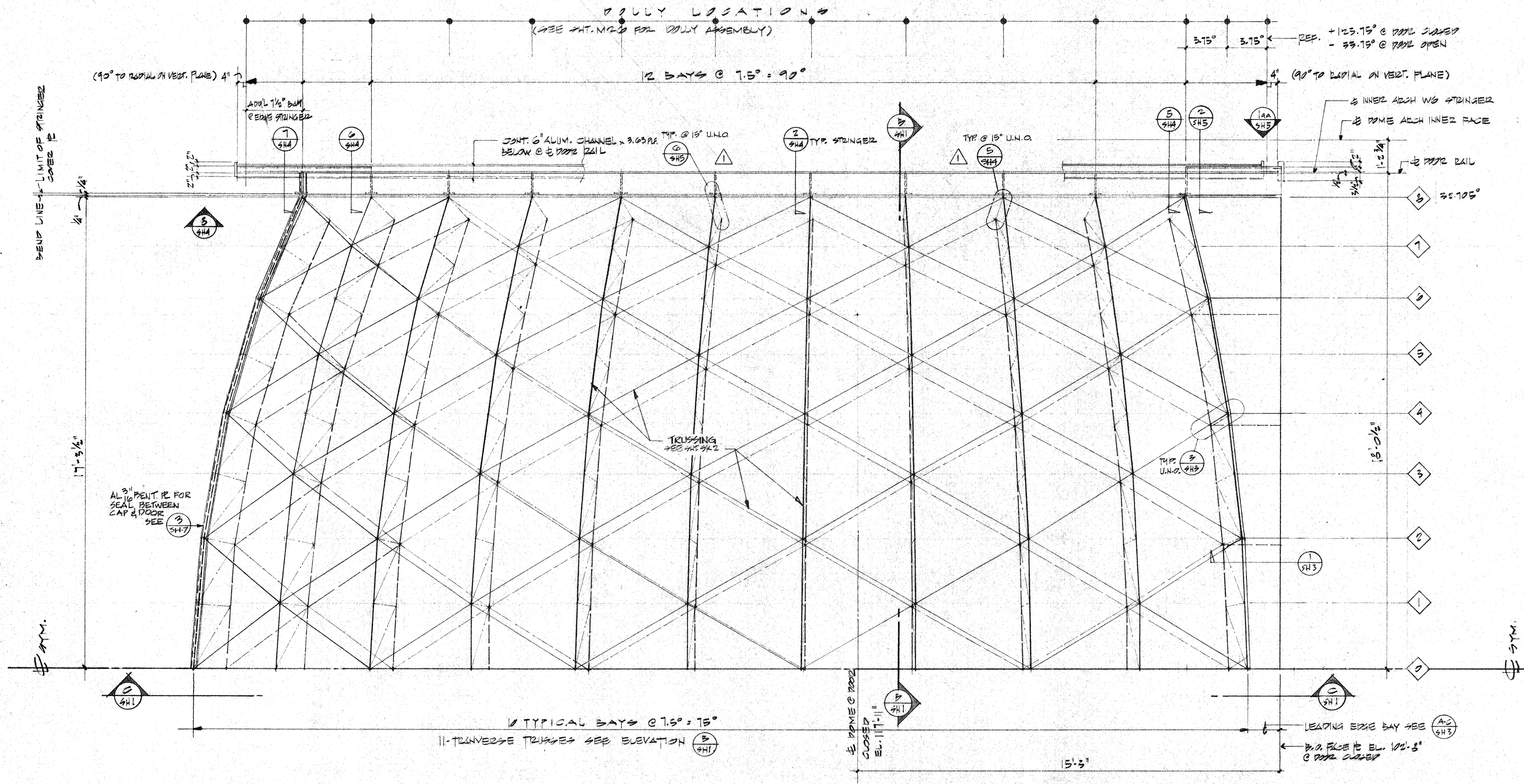
CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	TITLE DRIVE CAR DETAILS
DWG SIZE E	SCALE 1"=10'
FILE NO.	W.G.
DEPT	SHEET



LONGITUDINAL SECTION

1/2" = 1'-0"

SH1

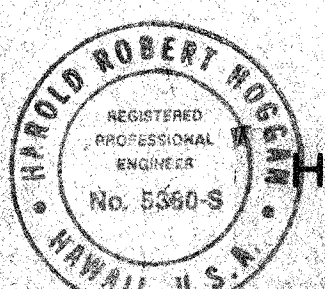


INNER SHUTTER HALF PLAN (DOOR)

1/2" = 1'-0"

A
SH1

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No. 5360-S



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DESCRIPTION	DATE	APPD
HAWAII ERECTION BID SET	1-20-84	1/1/84
BIDDING CLARIFICATIONS & REVISIONS	2-21-84	2-21-84
DRAWING ISSUED FOR CONSTRUCTION	2-21-84	2-21-84
LTR	DESCRIPTION	DATE
REVISION		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 16/	DRAWN PC CHECKED AES APPROVED DATE DATE DATE	DATE 1-2-84 2-21-84 2-21-84
NEXT ASSEMBLY	DRAWING NO.	ITEM
		QTY
		WEIGHT
		APPLICABLE DOC

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	TITLE INNER SHUTTER PLAN & SECTIONS SUBMILLIMETER OBSERVATORY MALINA KEA, HAWAII	DWG. NO. NOTED E10MD SH1
FILE NO.	W.O.	DEPT.
		SHEET 1 OF 1

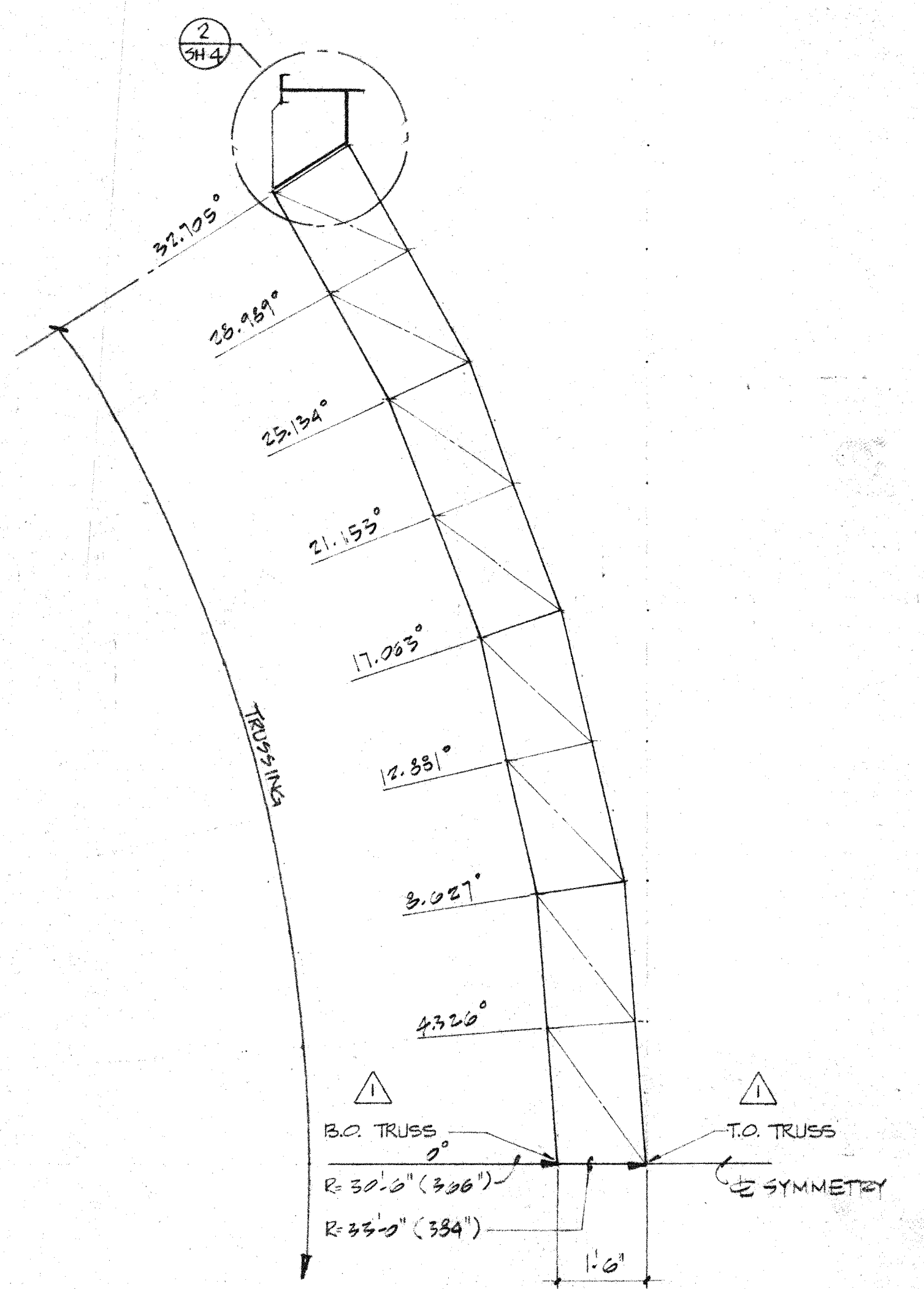
LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	UNIT WT

GENERAL FABRICATION NOTES:

1. GENERALLY, ALL SHUTTER EDGE MEMBERS ARE TO BE PROVIDED BY THE CONTRACTOR AND ALL SHUTTER TRUSSING IS TO BE PROVIDED BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY (C.I.T.) SEE DETAILS AND NOTES FOR ADDITIONAL INFORMATION. ALSO SEE PLANS AND DETAILS FOR ITEMS TO BE PROVIDED TO THE CONTRACTOR BY C.I.T. FOR ASSEMBLY ON SHUTTER EDGES.
2. ALL ALUMINUM SHALL BE AL6061T6
3. ALL WELDING SHALL BE DONE IN AN APPROVED SHOP AND SHALL CONFORM TO AWS D1.1. ALL WELDING FILL MATERIAL SHALL BE TYPE 4043. PROGRAM WELDING TO AVOID DISTORTIONS AND INDUCED STRESSES.
4. ALL ALUMINUM PARTS THAT ARE TO RECEIVE THREADED FASTENERS SHALL HAVE 'KEENSERTE' PROVIDED TO ACCEPT THEM.
5. ALL EDGE PIECES ARE TO BE INDIVIDUALLY FABRICATED IN ONE ASSEMBLY. NO SPLICES.
6. ALL BOLTS SHOWN ON THESE PLANS ARE TO BE PROVIDED BY C.I.T. TYP. UNLESS NOTED OTHERWISE.
7. EDGE MEMBER TOLERANCES ARE AS FOLLOWS:
CAMBER AND SWEEP: ± 1/8"
ANGULAR ALIGNMENT TO SHUTTER TRUSSES: ± 1/4"
8. SHOP DRAWINGS ARE TO BE APPROVED BY C.I.T. PRIOR TO FABRICATION.
9. FABRICATOR IS TO BE PREPARED TO CUT ACCESS HOLES WHERE REQUIRED AFTER FABRICATION. SEE DRAWINGS FOR ACCESS HOLE LOCATIONS.

HAWAII ERECTION NOTE:

1. ALL SHUTTER PARTS & MATERIALS ARE FABRICATED.
2. NO FIELD CUTTING OR WELDING OF ALUM. WILL BE ALLOWED IN HAWAII WITHOUT WRITTEN APPROVAL BY CALTECH.



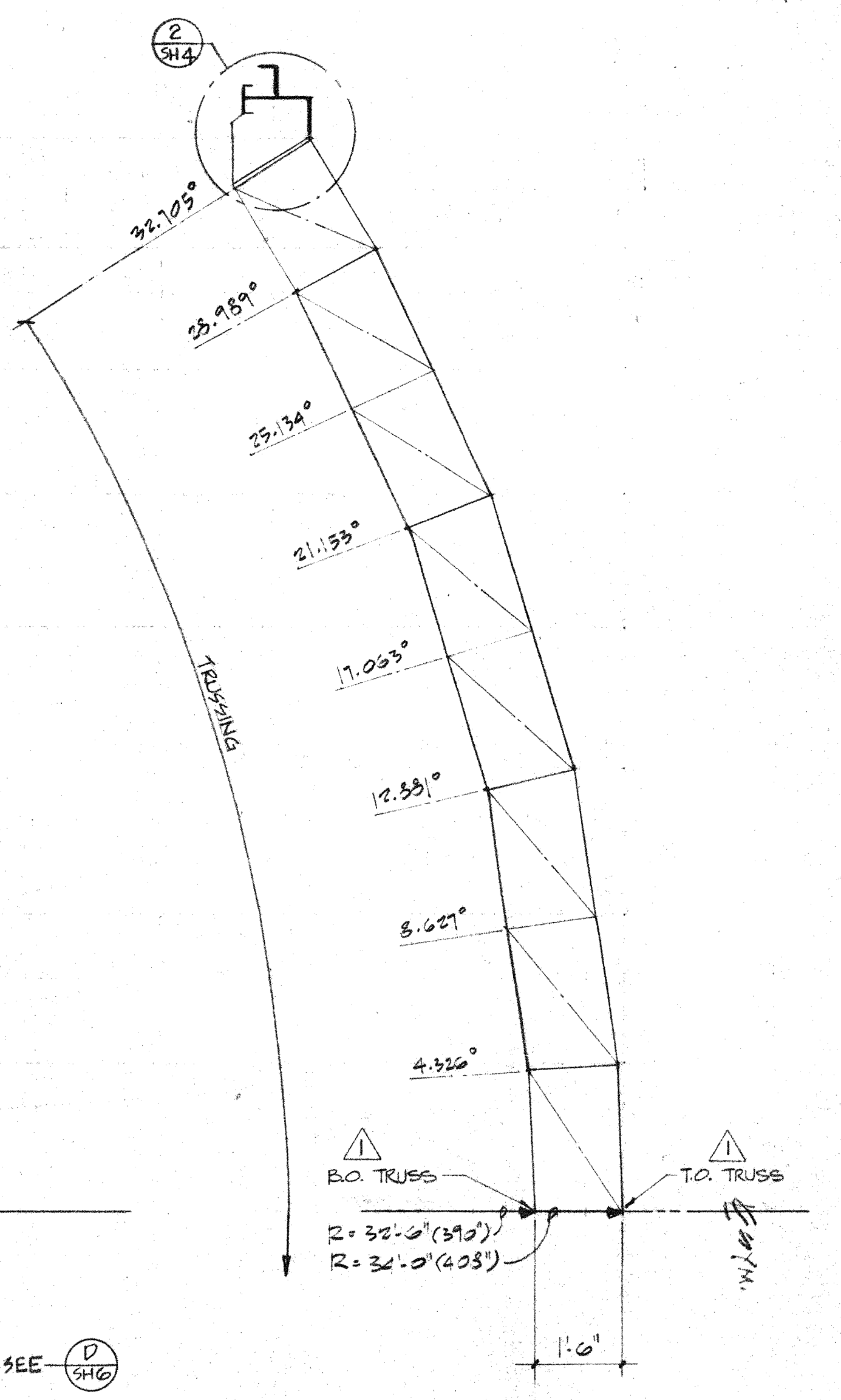
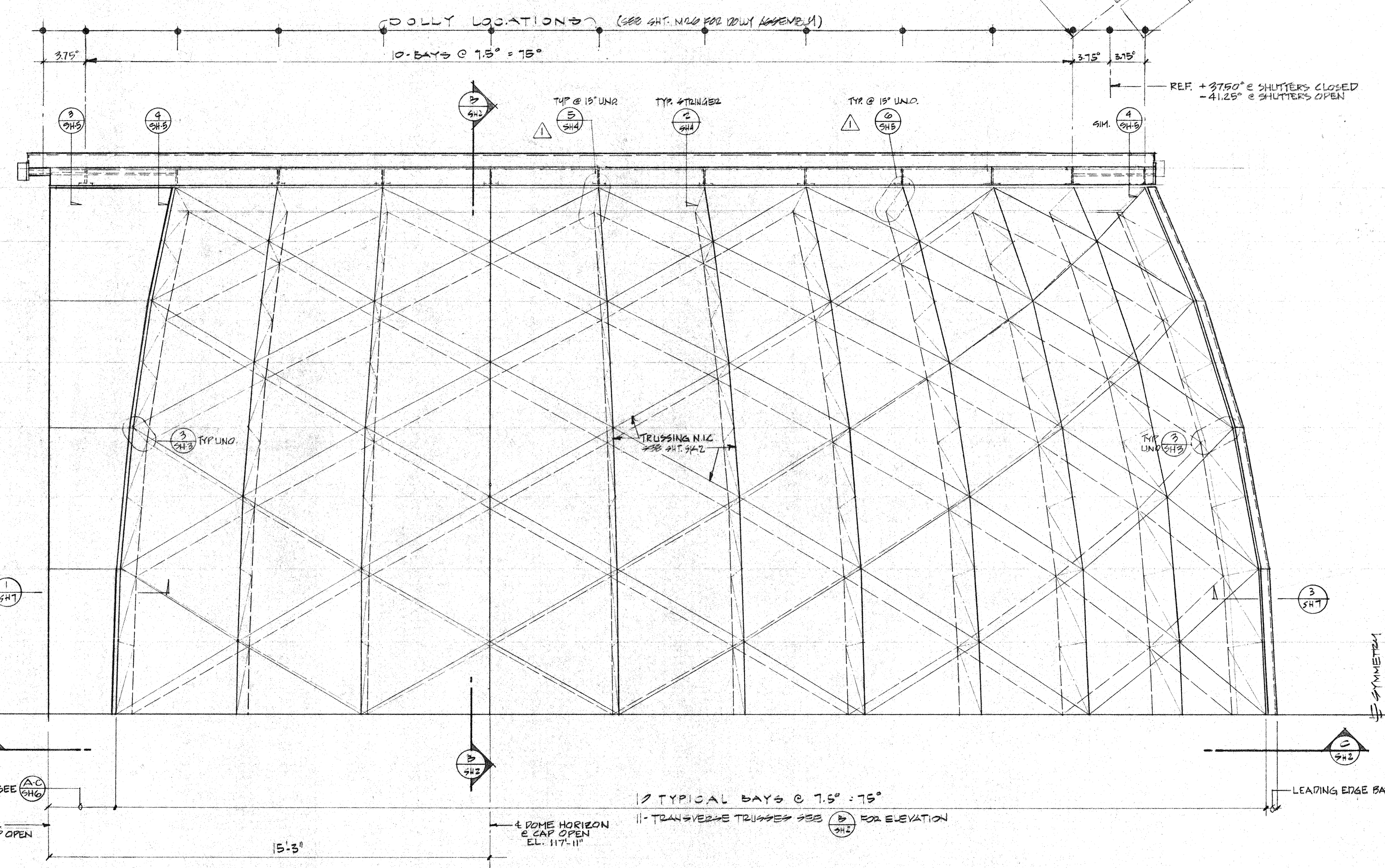
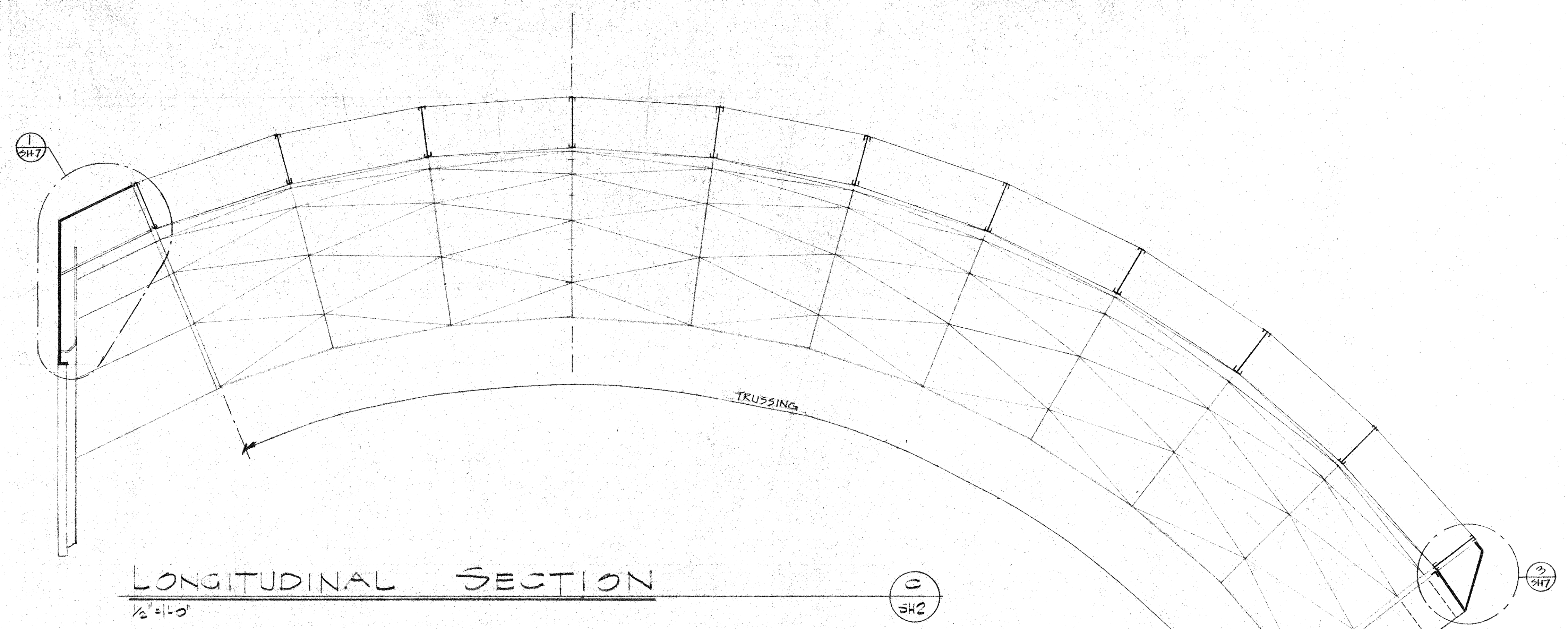
TYP. TRUSS ELEVATION

1/2" = 1'-0"

B
SH1

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT

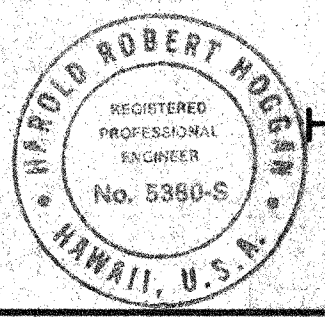


OUTER SHUTTER HALF PLAN (CAP)
1/2" = 1'-0"

TYP TRUSS ELEVATION
1/2" = 1'-0"

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

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[Signature]
Signature



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PASADENA CALIFORNIA 91104
(818) 864-2917

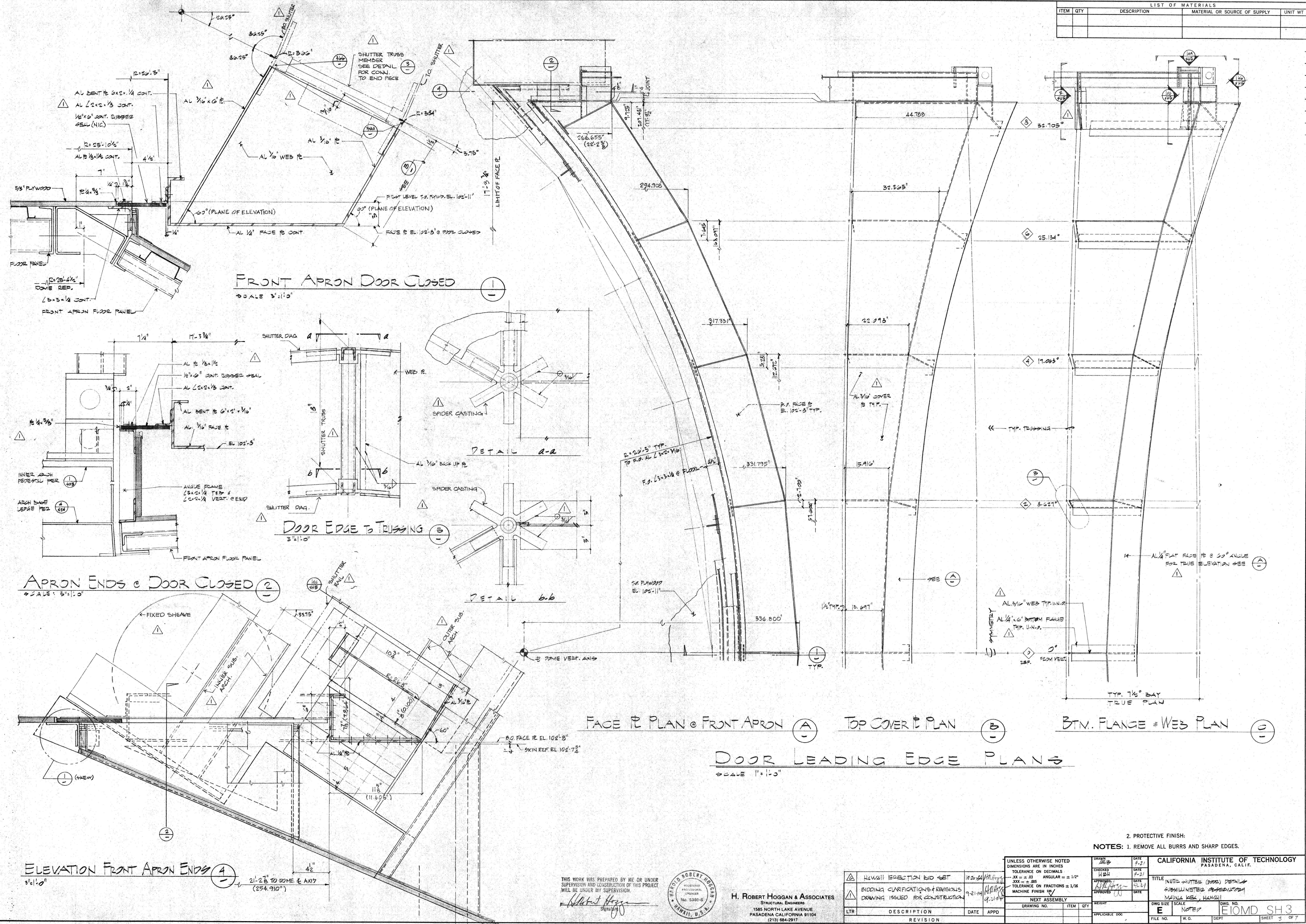
DESCRIPTION	DATE	APPD
HAWAII ELEVATION BID SET	12-20-84	[Signature]
BIDDING CLARIFICATIONS & REVISIONS	9-21-84	[Signature]
DRAWING ISSUED FOR CONSTRUCTION	9-21-84	[Signature]

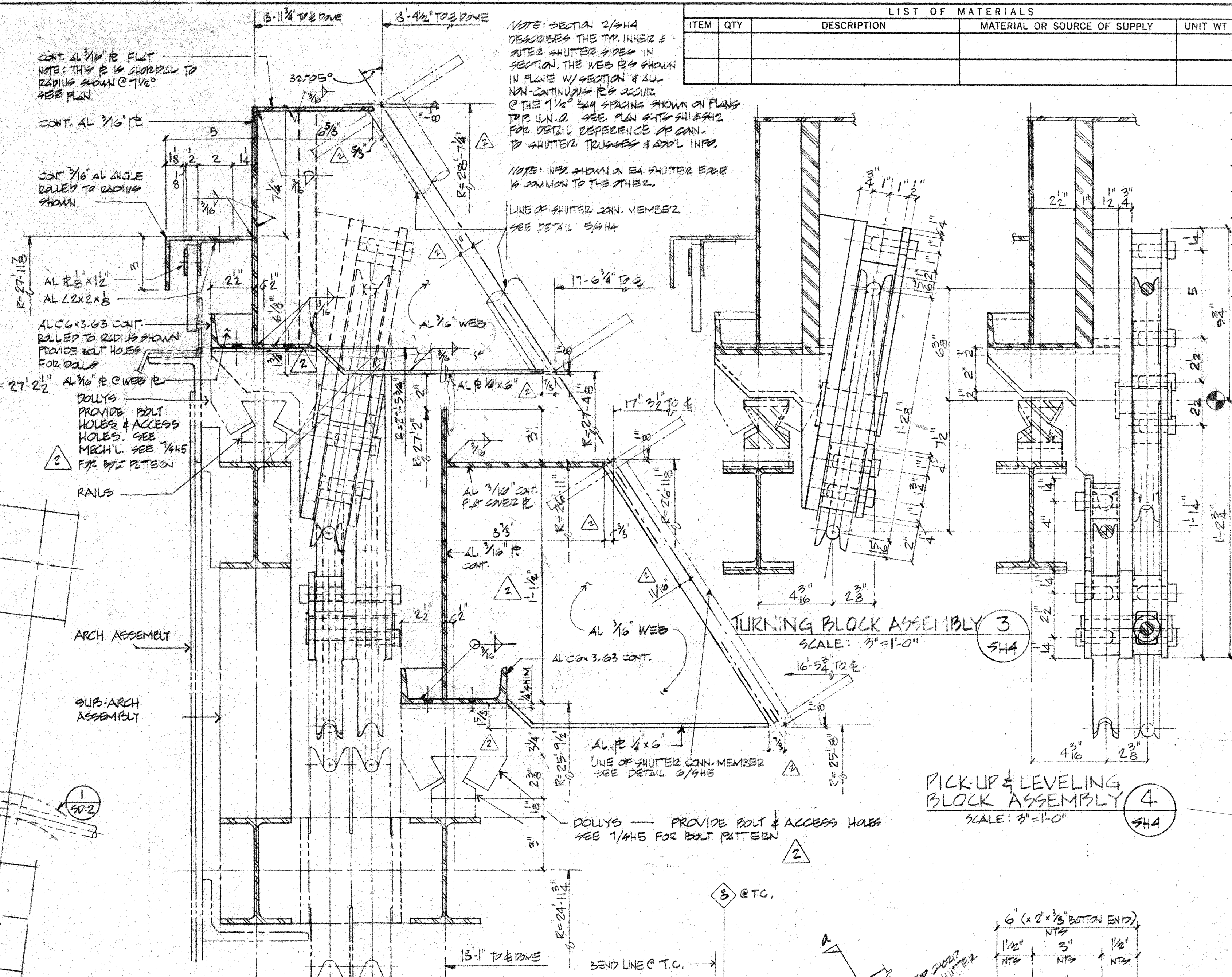
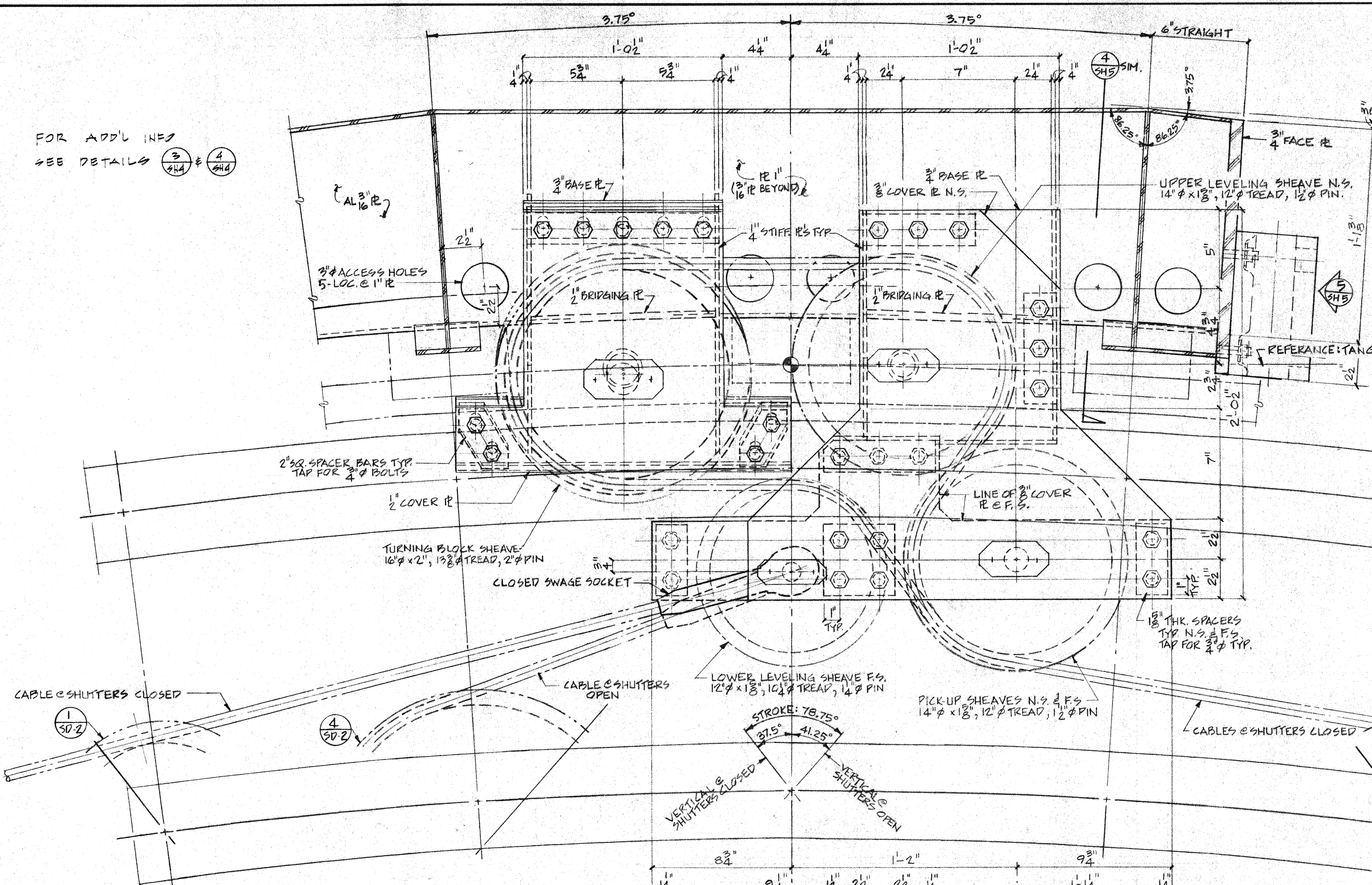
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES	
TOLERANCE ON DECIMALS	
XX ± .03	ANGULAR ± 1/2°
TOLERANCE ON FRACTIONS ± 1/16	
MACHINE FINISH 1/16"	

DRAWN	DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY	
CHECKED	DATE	PASADENA, CALIF.	
APPROVED	DATE	TITLE	
APPROVED	DATE	SUBMILLIMETER OBSERVATORY	
APPROVED	DATE	MAUNA KEA, HAWAII	
NEXT ASSEMBLY		DWG. NO.	NOTED
DRAWING NO.	ITEM	QTY	FILE NO.
WEIGHT	SCALE	DEPT	SHEET 2 OF 7

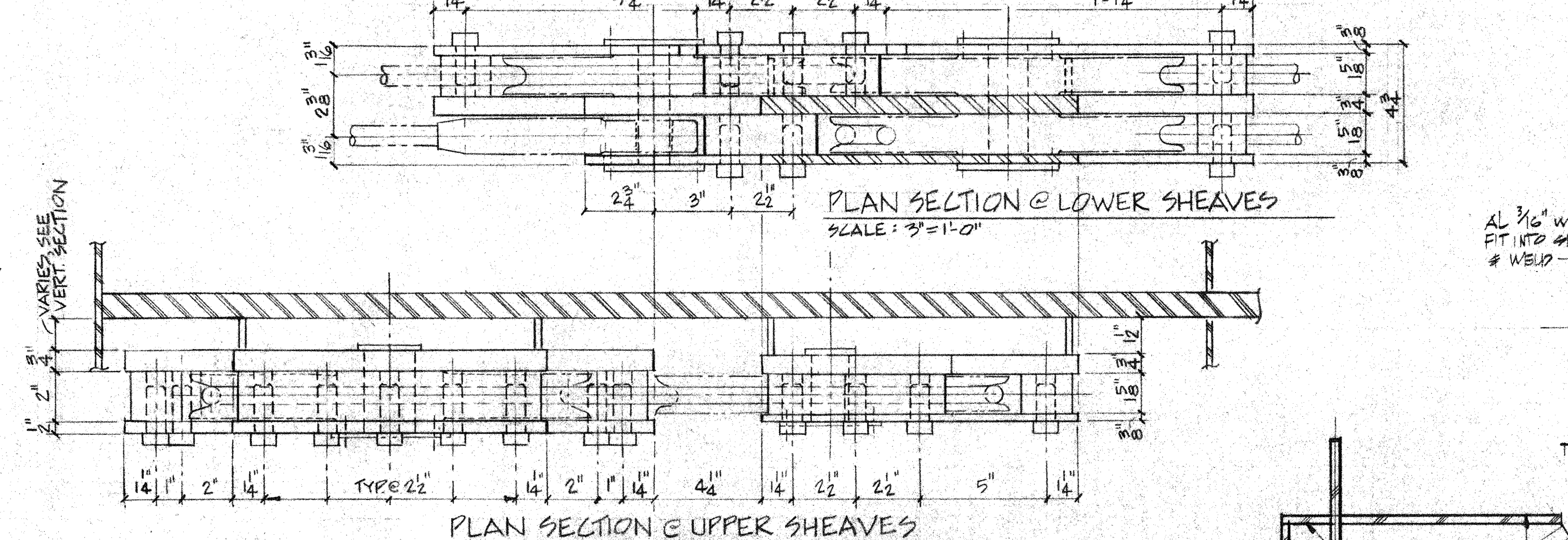
53254

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT

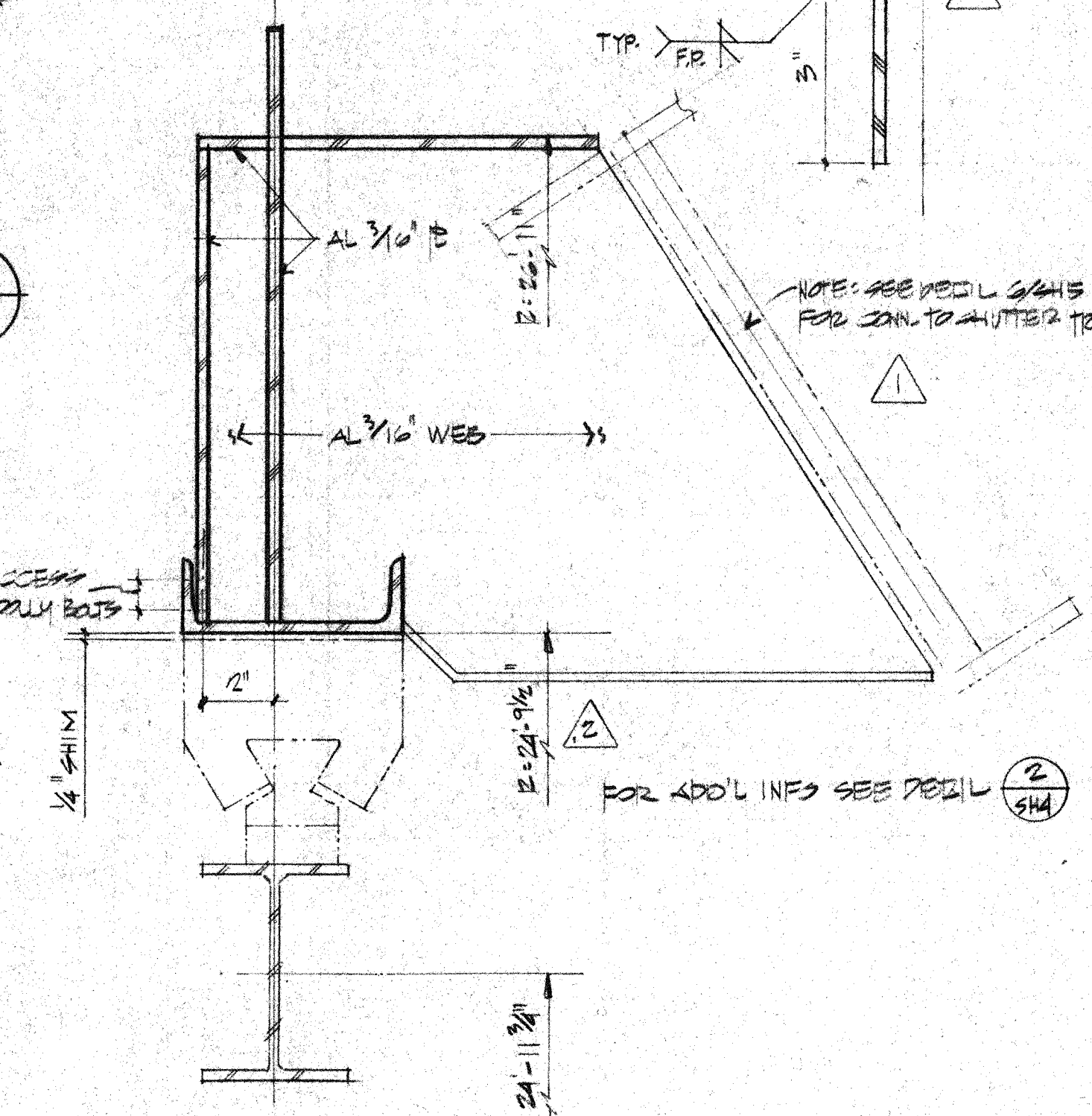
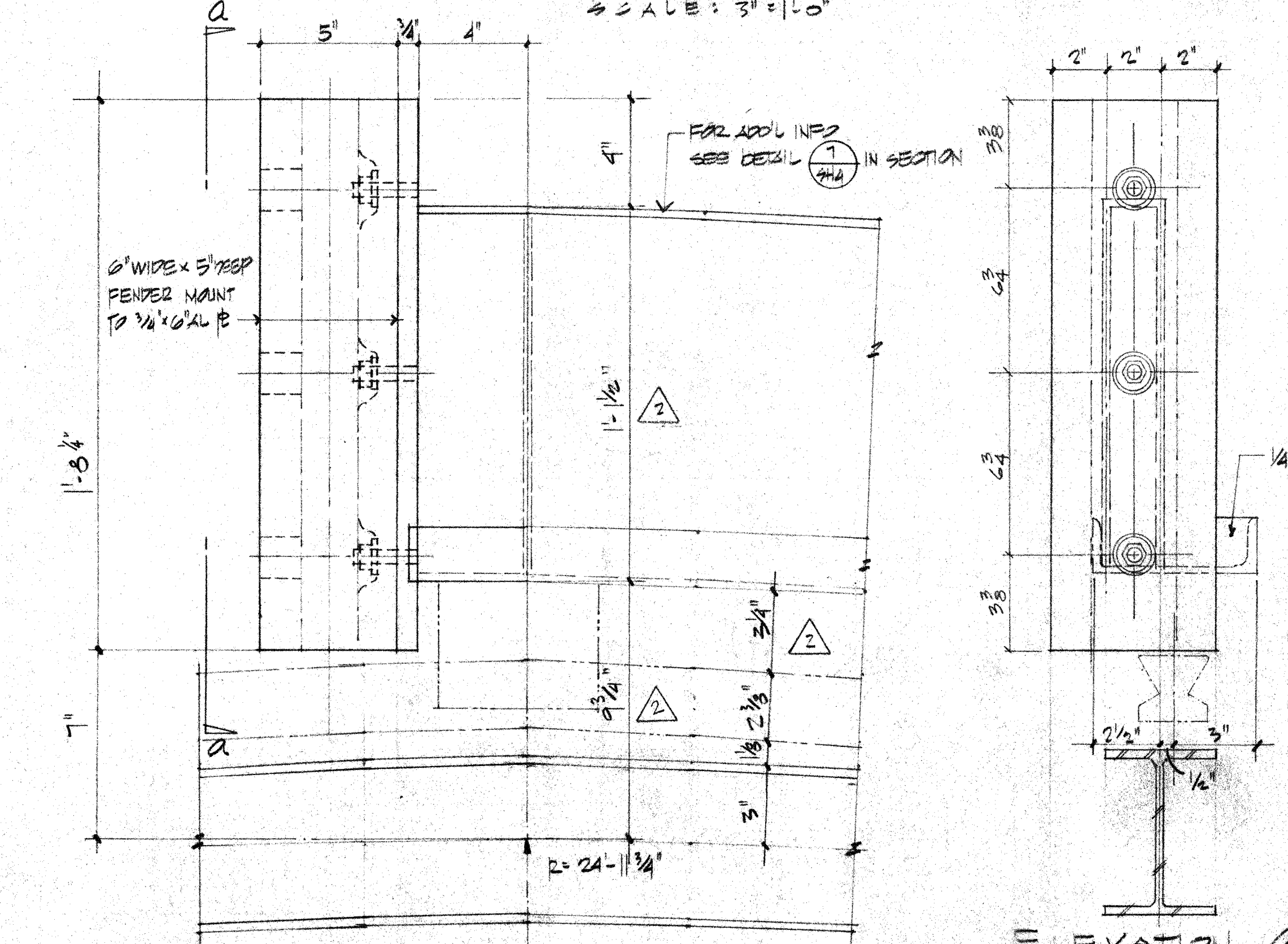




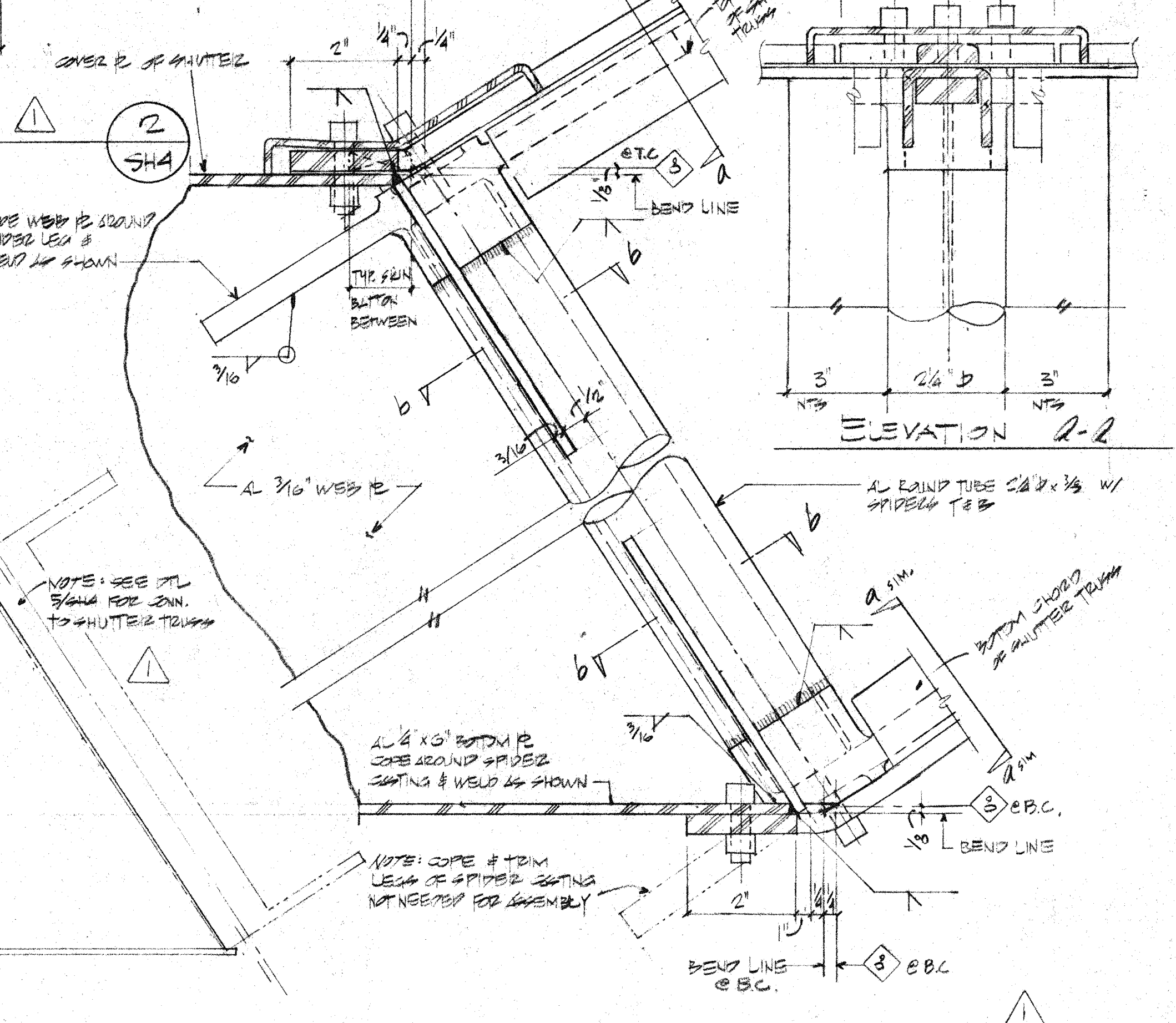
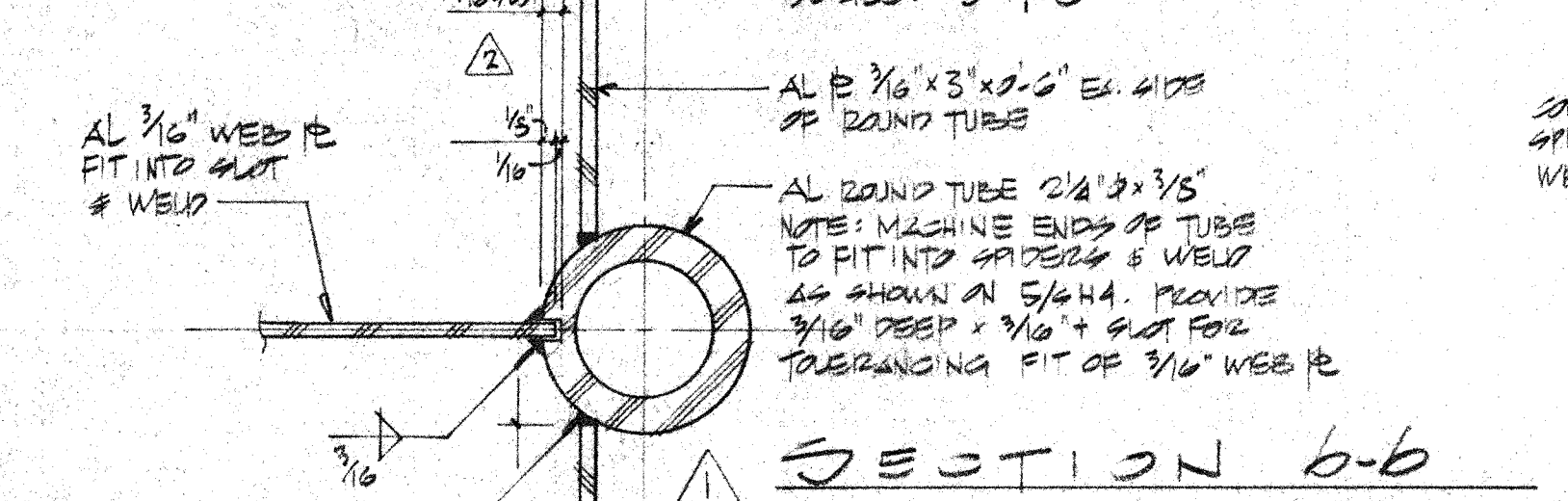
NOTE:
ALL CONSTRUCTION INDICATED IS
ALUMINUM W/ STAINLESS STEEL BOLTS.
SPECIAL ITEMS
PULLEY, PULLEY PIN, PIN COVER, RETAINERS,
CABLE, CABLE END FITTINGS, END FITTING
PINS & COVER C. RETAINERS, & RUBBER
FENDERS & SEALS.
SEE MECHL. FOR HOLE SIZES, TAPPED
THREADS, HOLE TOLERANCES & LOCATIONS.
PROVIDE WEAR SURF. FOR ALL ALUM. BOOTS
TO RECEIVE THREADED PLUGS.



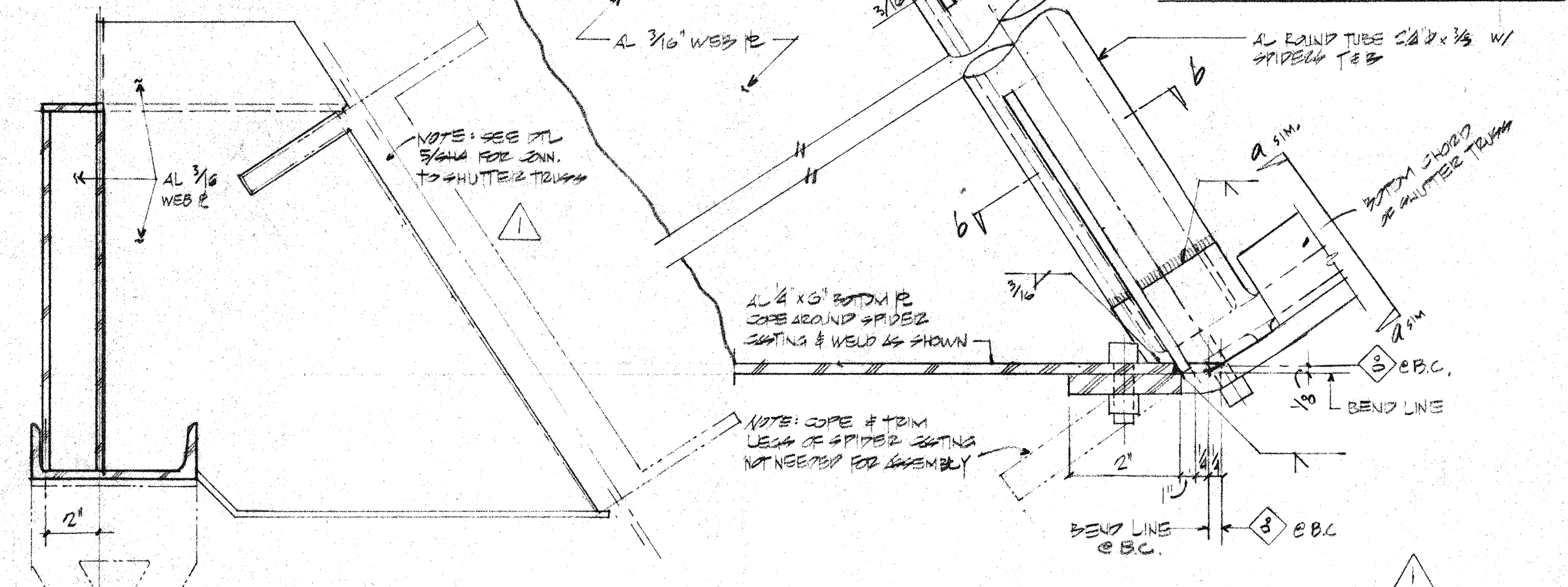
CAP CABLE PICK-UP ASSEMBLY



TYP. STRINGER DETAILS



TYP. TRUSSING TO STRINGERS



DETAIL

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H. ROBERT HOGAN & ASSOCIATES
STRUCTURAL ENGINEERS
1585 NORTH LAKE AVENUE
PASADENA CALIFORNIA 91104
(213) 684-2917

DETAIL

THIS WORK WAS PREPARED BY ME OR UNDER
SUPERVISION AND CONSTRUCTION OF THIS PROJECT
WILL BE UNDER MY SUPERVISION.
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2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT
1	1	ALUMINUM PICK-UP ASSEMBLY	ALUMINUM	1.00
2	1	TURNING BLOCK ASSEMBLY	ALUMINUM	1.00
3	1	PICK-UP & LEVELING BLOCK ASSEMBLY	ALUMINUM	1.00
4	1	DOOR REAR FENDER	ALUMINUM	1.00
5	1	TYP. STRINGER DETAILS	ALUMINUM	1.00
6	1	TYP. TRUSSING TO STRINGERS	ALUMINUM	1.00

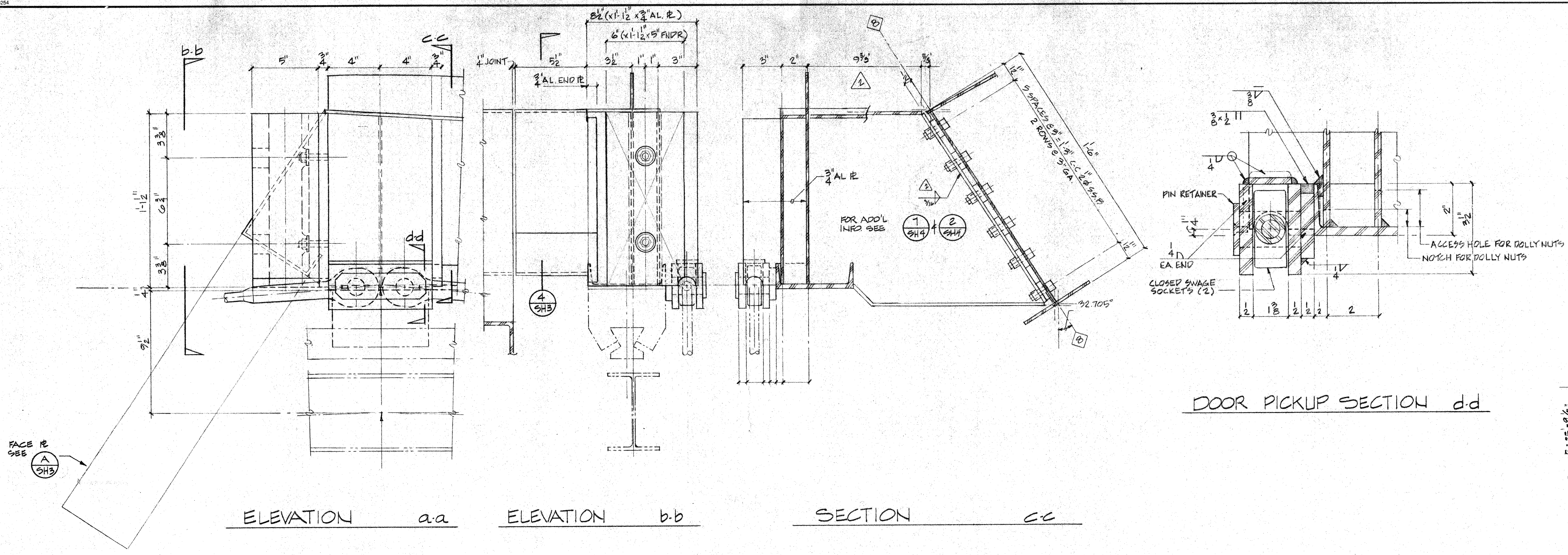
DATE	9-21	DATE	9-21
CHECKED	HRH	CHECKED	HRH
APPROVED	HRH	APPROVED	HRH
DATE	9-21	DATE	9-21

REVISION	DESCRIPTION	DATE	APPROVED
1	REVISION	DATE	APPROVED

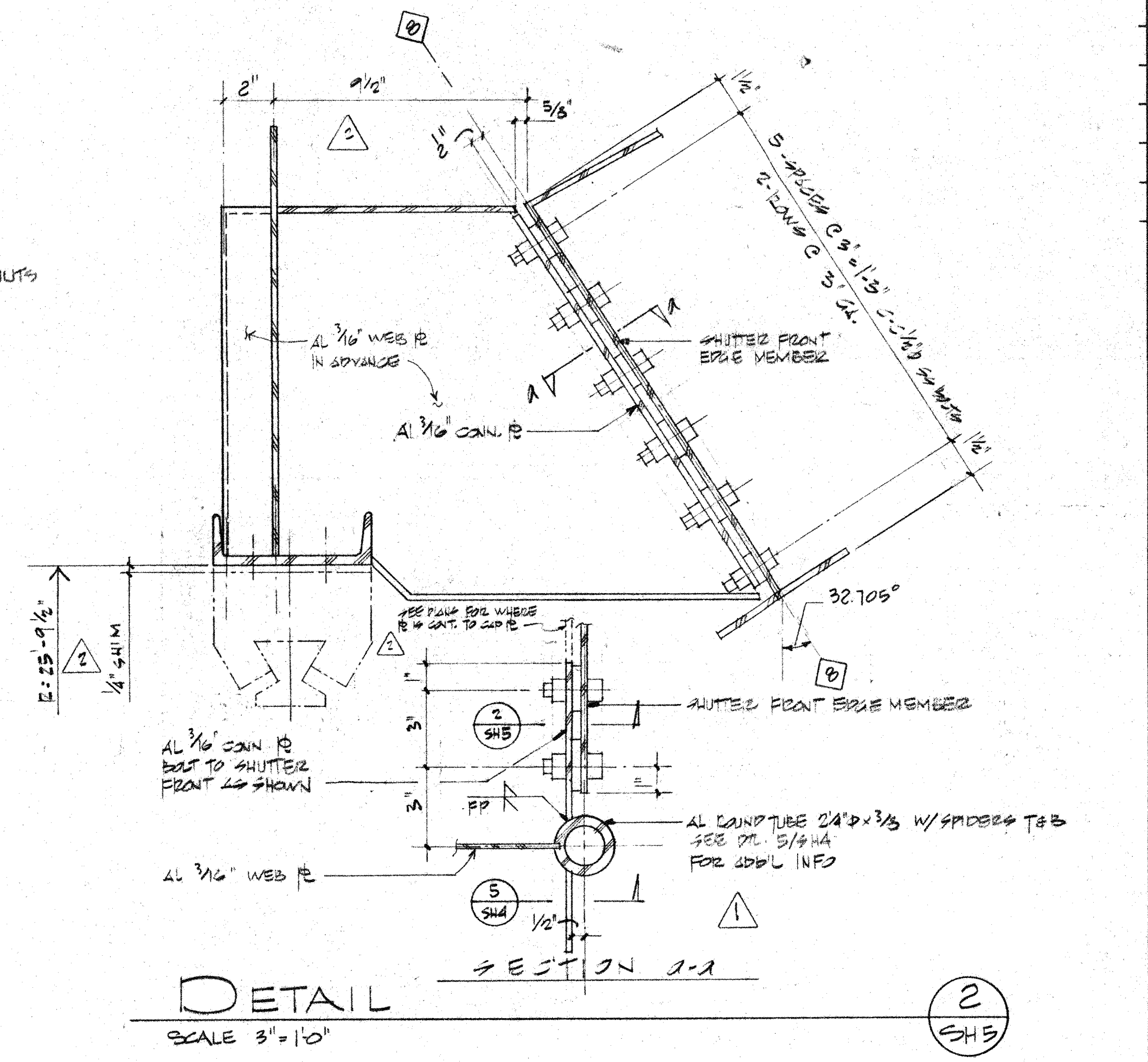
DRAWING NO.	ITEM	QTY	WEIGHT
1	1	1	1.00

FILE NO.	W.D.	DEPT.	SHEET
1	1	1	1

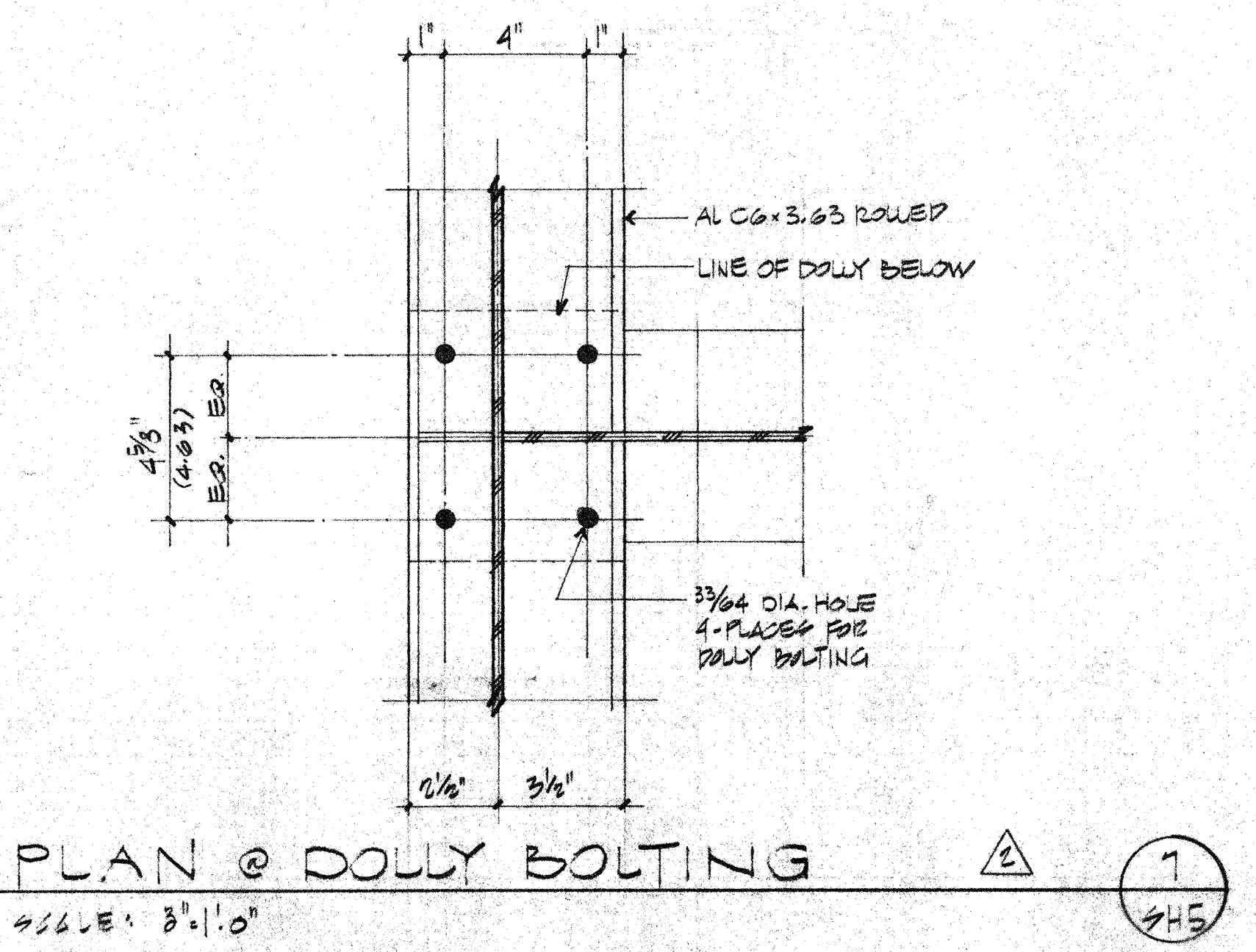
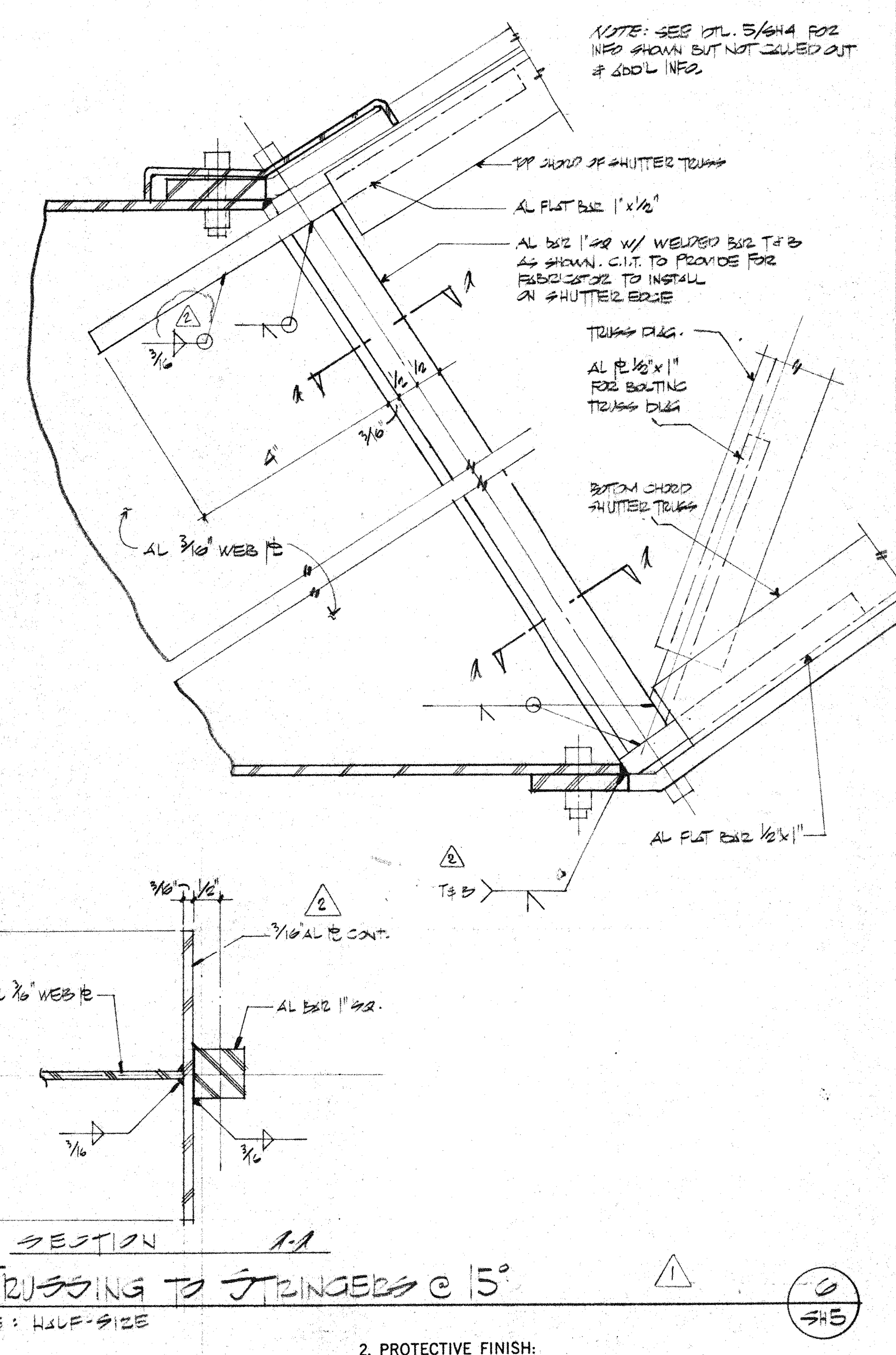
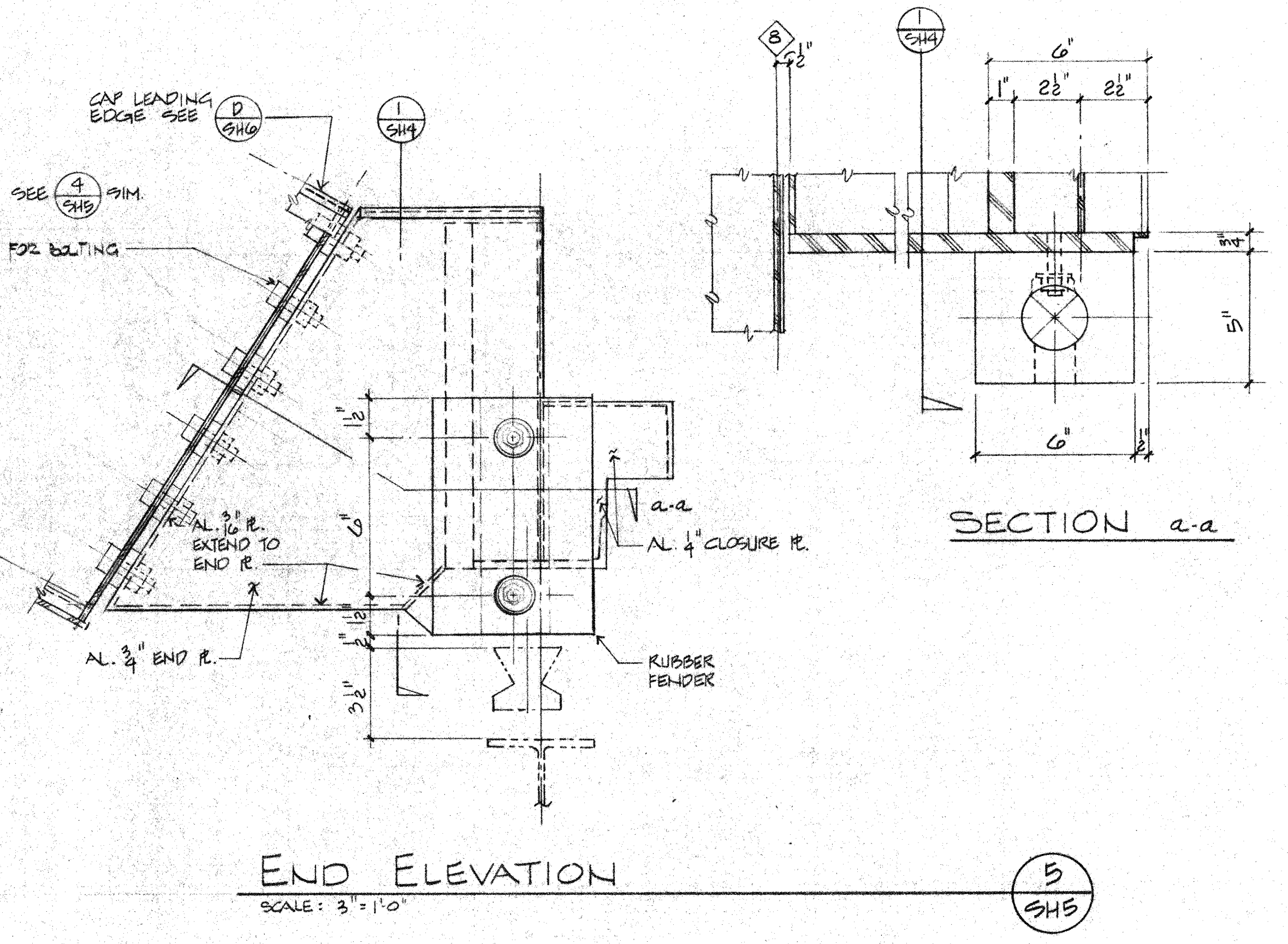
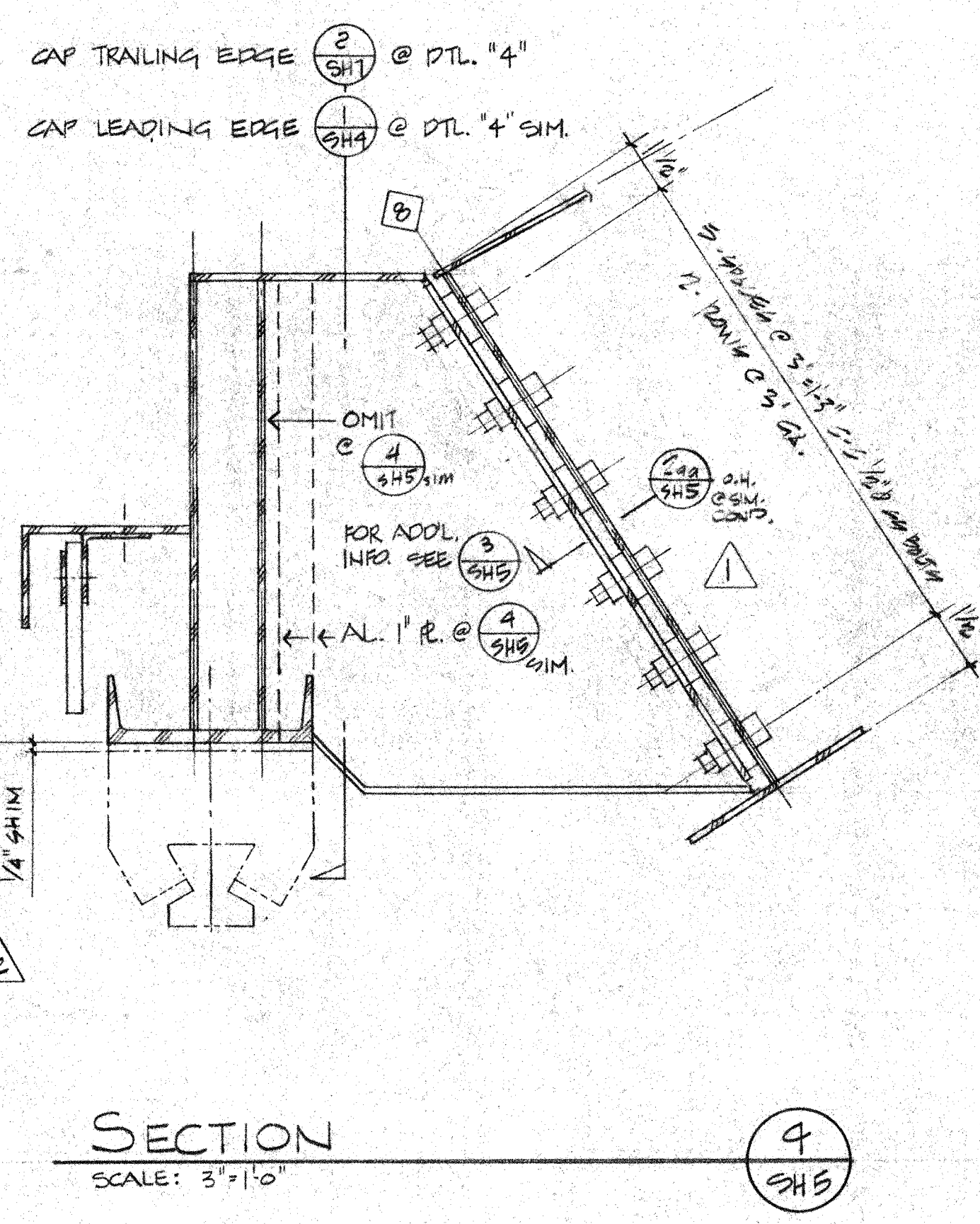
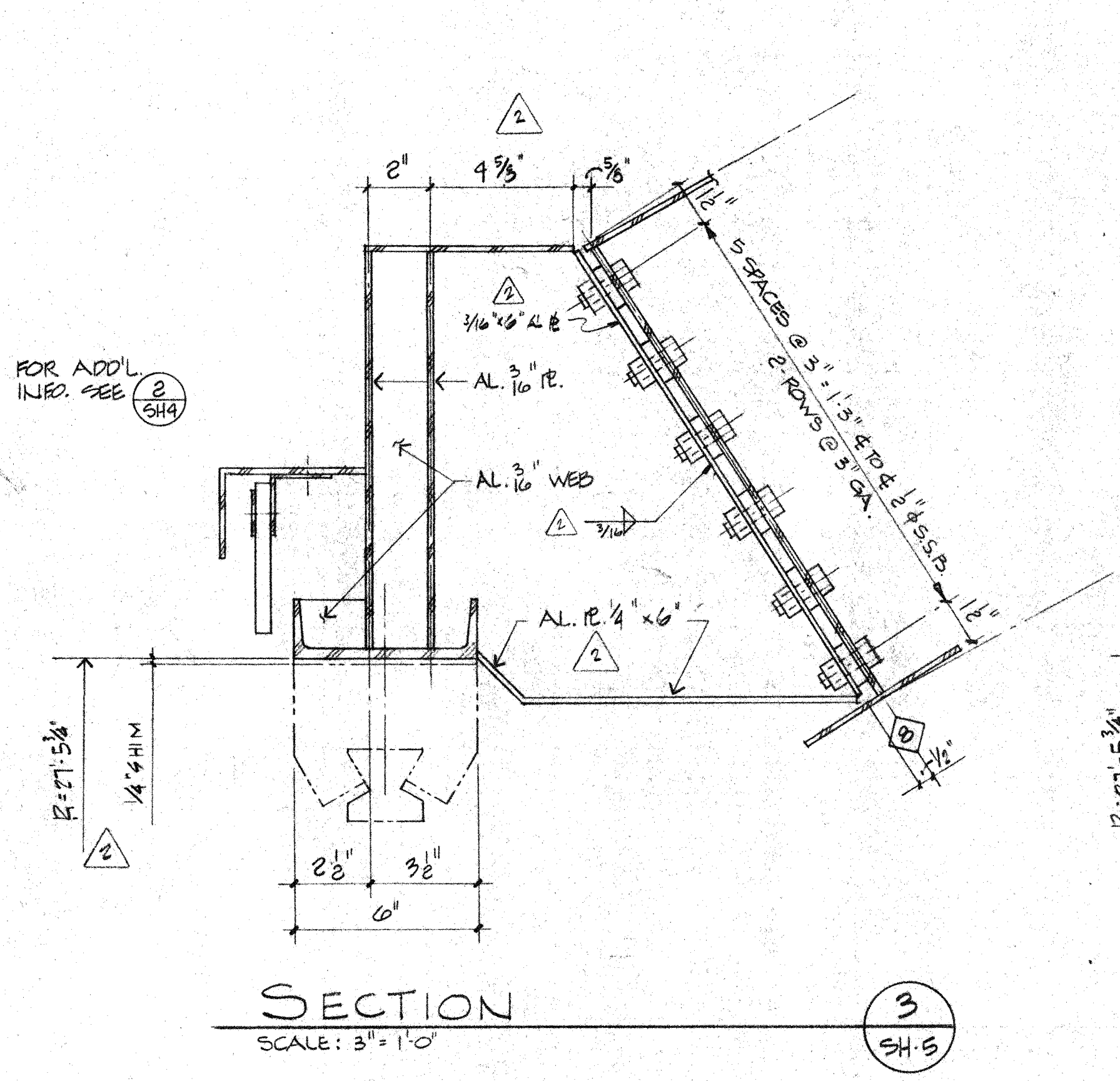
LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY



DOOR PICKUP SECTION d-d



SEE NOTES: DETAIL 1 SHS
DOOR STRINGER LEADING END DETAILS
SCALE: 3"=1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.
Signature: *Robert Hoggan*

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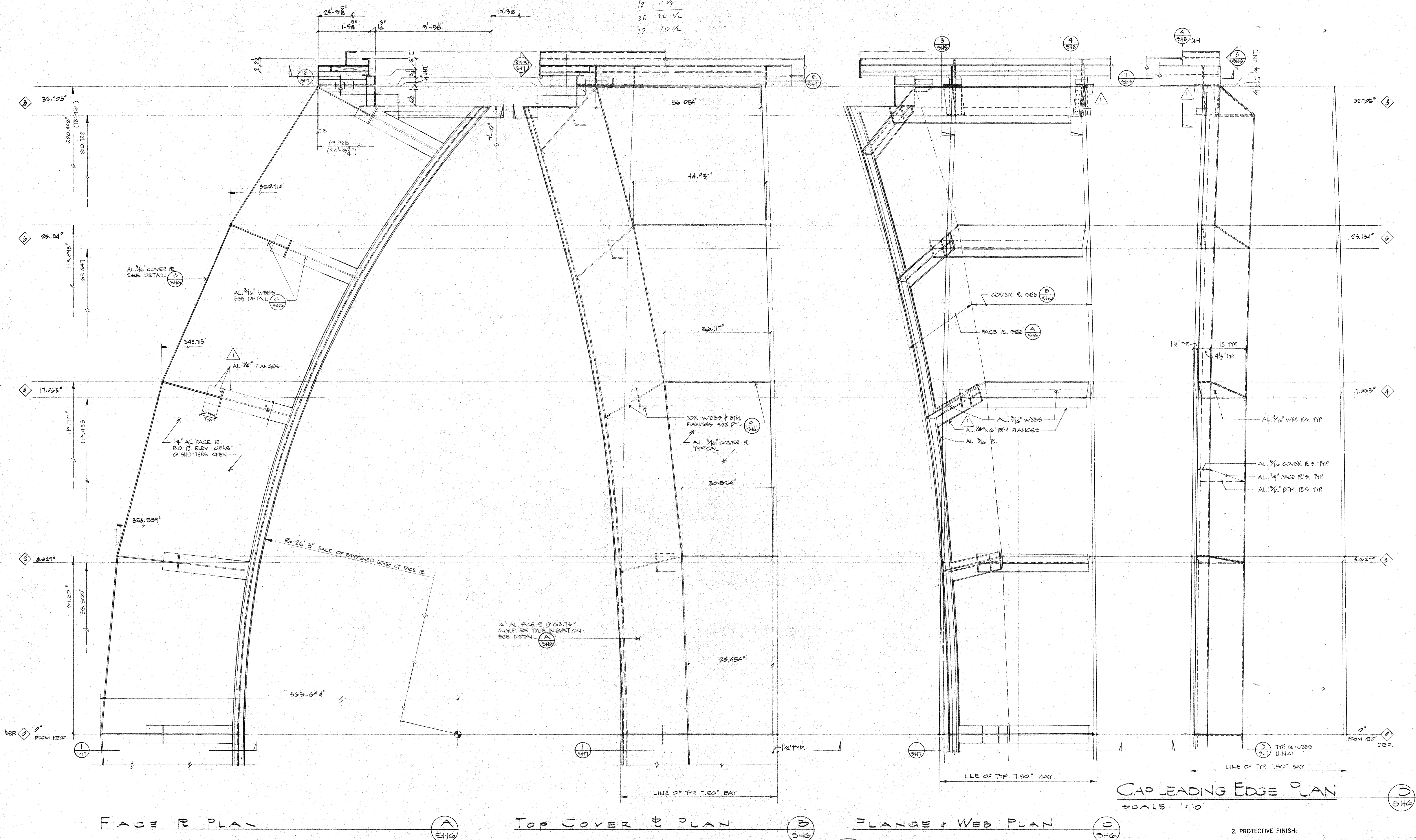
1	HAWAII ERECTION BID SET	8-20-84	1/2	HRH
2	ADD DOLLY SHIM SPACE & BOLT PATTERN	9-9-84	1/2	HRH
3	REVISIONS	9-21-84	1/2	HRH
4	REVISIONS	9-21-84	1/2	HRH

DRAWING NO.	ITEM	QTY	WEIGHT

DWG SIZE	SCALE	NOTED	DWG NO.
E	NOTED		E10MD SH5
FILE NO.	W.O.	DEPT	SHEET 5 OF 7

17	10
	6 1/2
	1/2
	3 1/4
	3
17	23 1/4
18	11 1/4
18	11 1/4
36	22 1/2
37	10 1/2

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



CAP LEADING EDGE PLAN
SCALE: 1"=10"

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

CAP TRAILING EDGE PLANS

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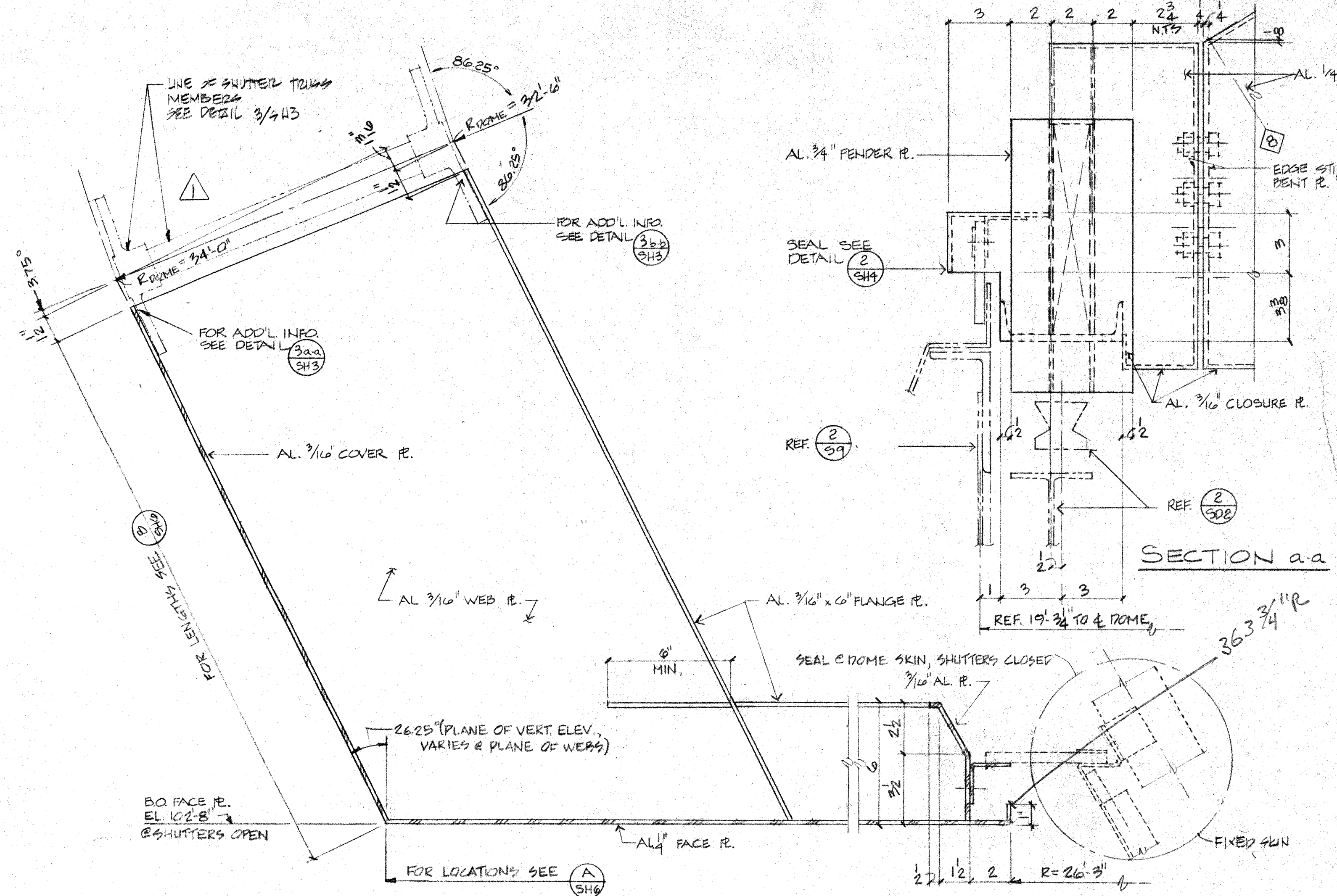
UNLESS OTHERWISE NOTED
DIMENSIONS ARE IN INCHES
TOLERANCE ON DECIMALS
XX = $\pm .03$ ANGULAR = \pm
XXX = $\pm .005$
TOLERANCE ON FRACTIONS \pm
MACHINE FINISH 125 ✓

	NEXT ASSEMBLY	
	DRAWING NO.	1
PD		

DRAWN DC	DATE 9-21-54	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.
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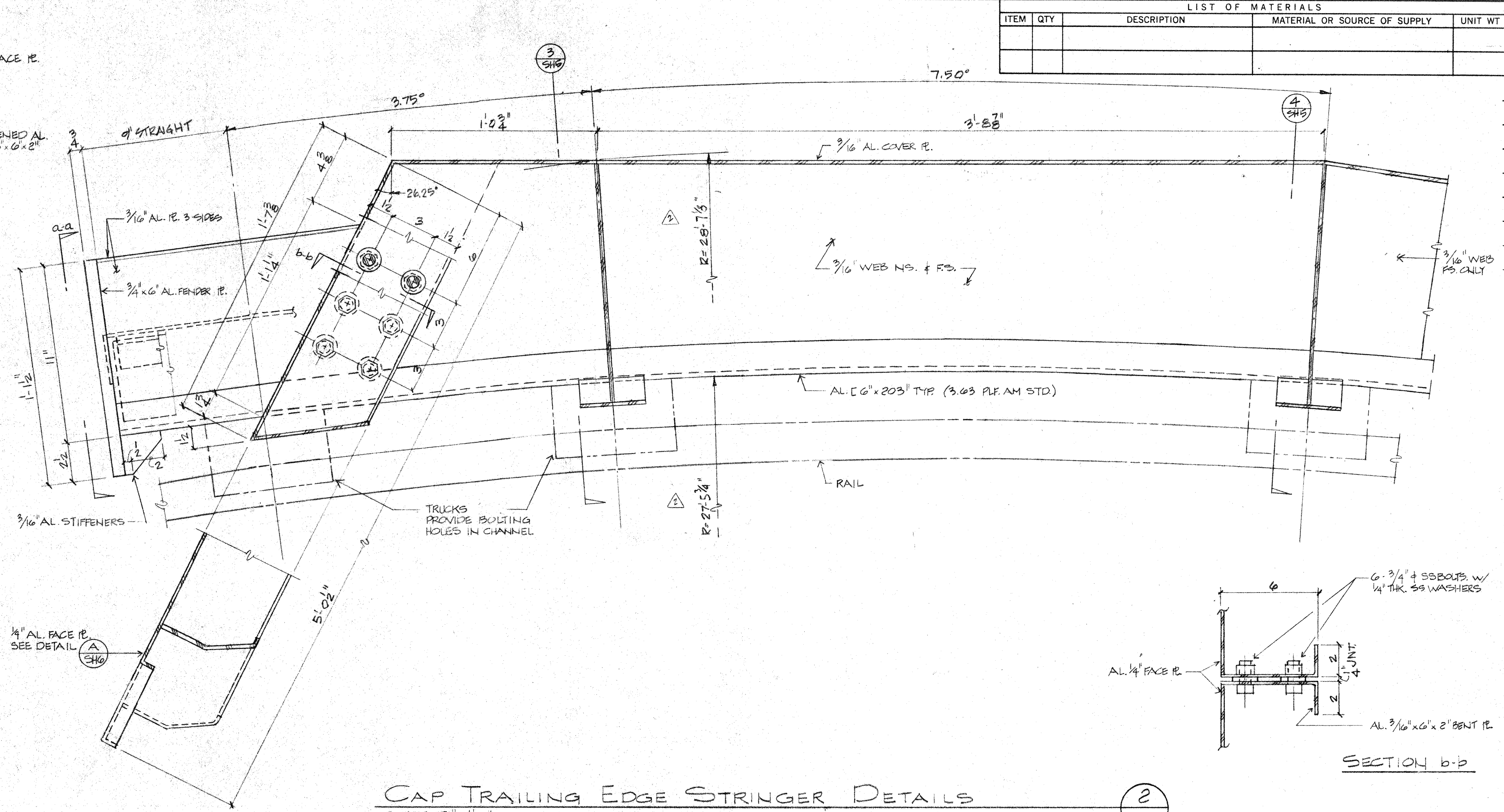
TITLE OUTER SHUTTER (CAP) EDGE PLING
SUBMILLIMETER OBSERVATORY

DWG. SIZE E				SCALE NOTED		DWG. NO. E10MD SH6	
FILE NO.		W. O.		DEPT		SHEET 6 OF 7	



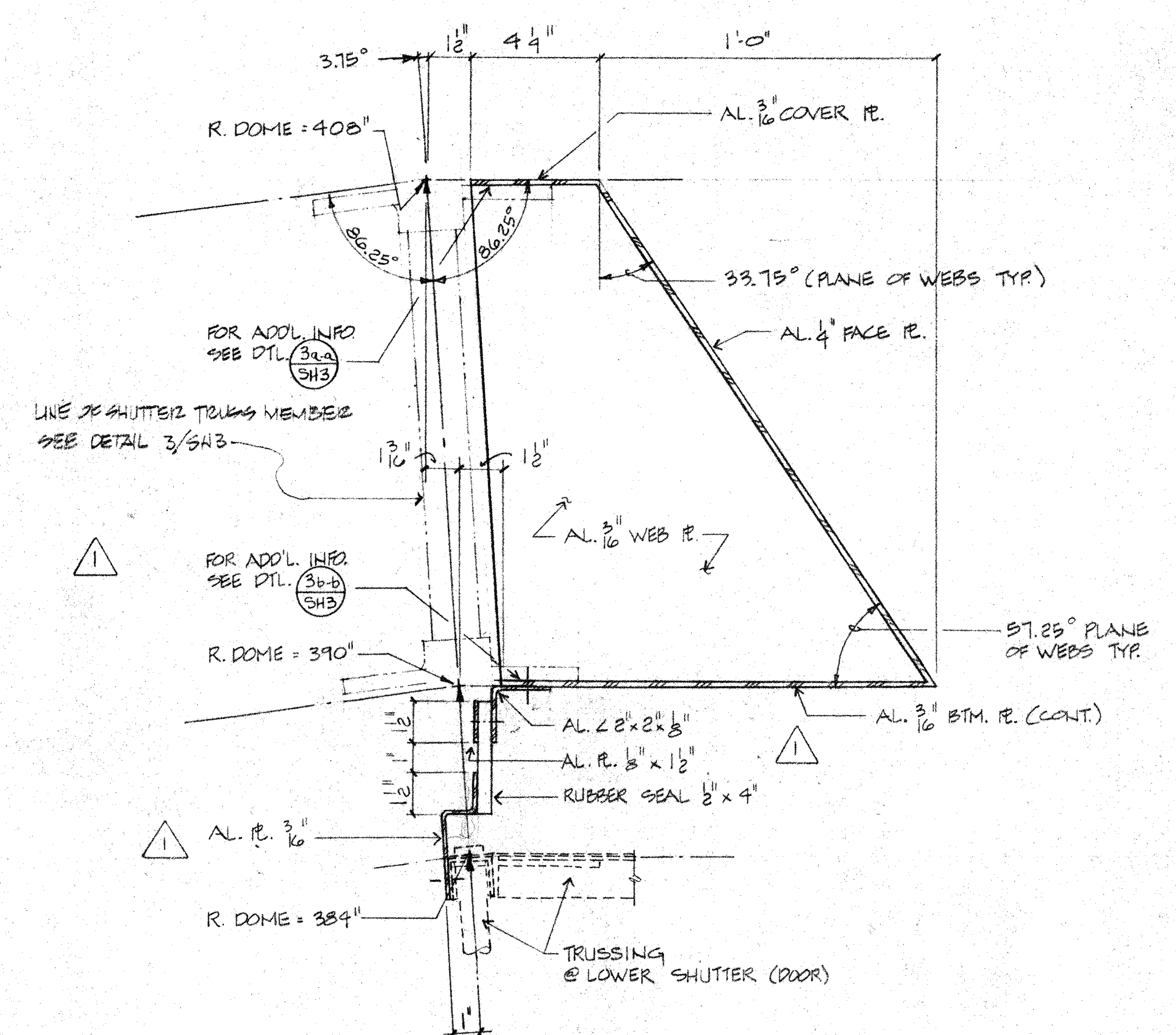
TRAILING EDGE SECTION @ CAP
SCALE 3" = 1'-0"

1 SH7



CAP TRAILING EDGE STRINGER DETAILS
SCALE 3" = 1'-0"

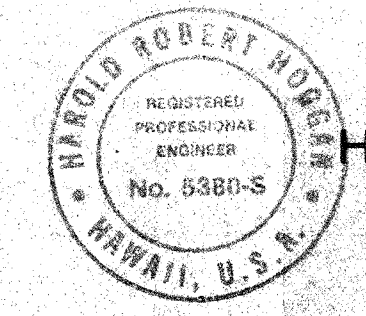
2 SH7



LEADING EDGE SECTION @ CAP
SCALE 3" = 1'-0"

3 SH7

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Signature



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REVISION	DESCRIPTION	DATE	APPD.
1	HAWAII ERECTION BO SET	10-20-84	MR. HOGGAN
2	ADD ONLY SHUTTER & BOLT PATTERN	10-24-84	MR. HOGGAN
3	SHUTTER CALCULATIONS & DETAILS ADDED FOR CONSTRUCTION	10-25-84	MR. HOGGAN

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS .XX = ± .03 .XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/	DRAWN 2/ES DATE 9-21
CHECKED HCH DATE 9-21	APPROVED DATE 9-21
DATE 9-21	DATE 9-21
NEXT ASSEMBLY	
DRAWING NO.	ITEM QTY
WEIGHT	
APPLICABLE DOC	

CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
TITLE OUTER SHUTTER (CAP) DETAILS SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII	
DWG. NO. E	SCALE NOTED
FILE NO.	W.O. DEPT.
SHEET 7 OF 7	

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

CAP RETURN pt C1 N.S. TO pt C1 F.S.

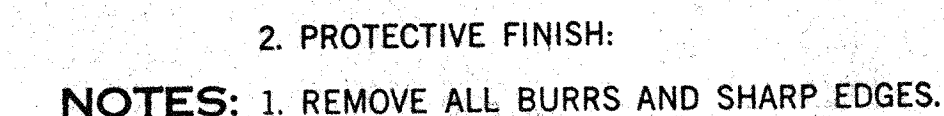
PICKUP N.S. $12.75' \times 79.90' = 8,890'$
L = 6,041'
 $12.75' \times 124.90' = 13,897'$
L = 17,500'

TURNING BLK H. $12.5' \times 180.00' = 22,187'$
L = 10,500'

$11.00' \times 54.82' = 5,262'$
L = 7,453'

PICKUP F.S. $12.75' \times 9.82' = 1,093'$

$\Sigma = 92,823'$



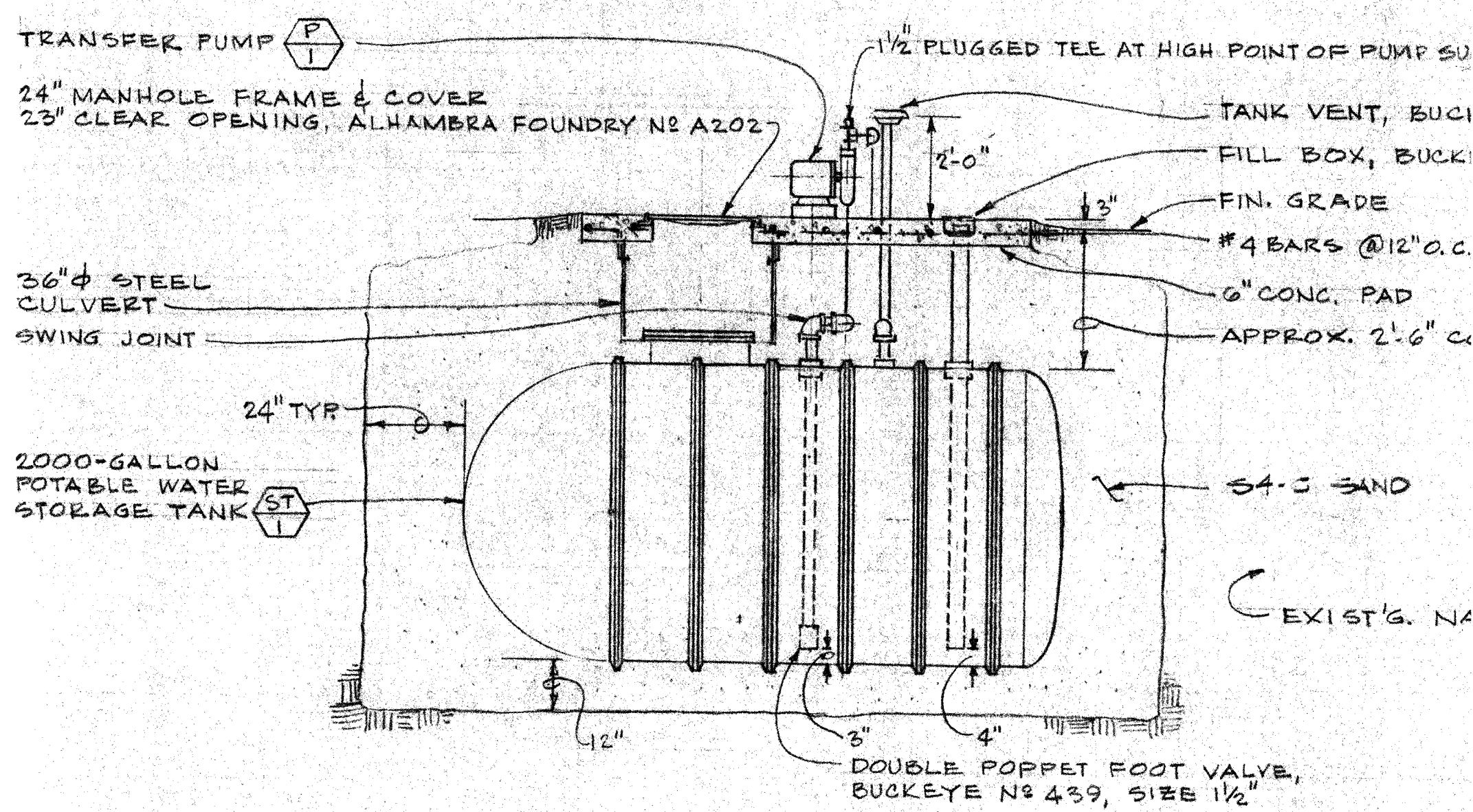
DRAWN AEB	DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.
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APPROVED	DATE	TITLE
		CABLE LENGTHS REFERENCE DRWS

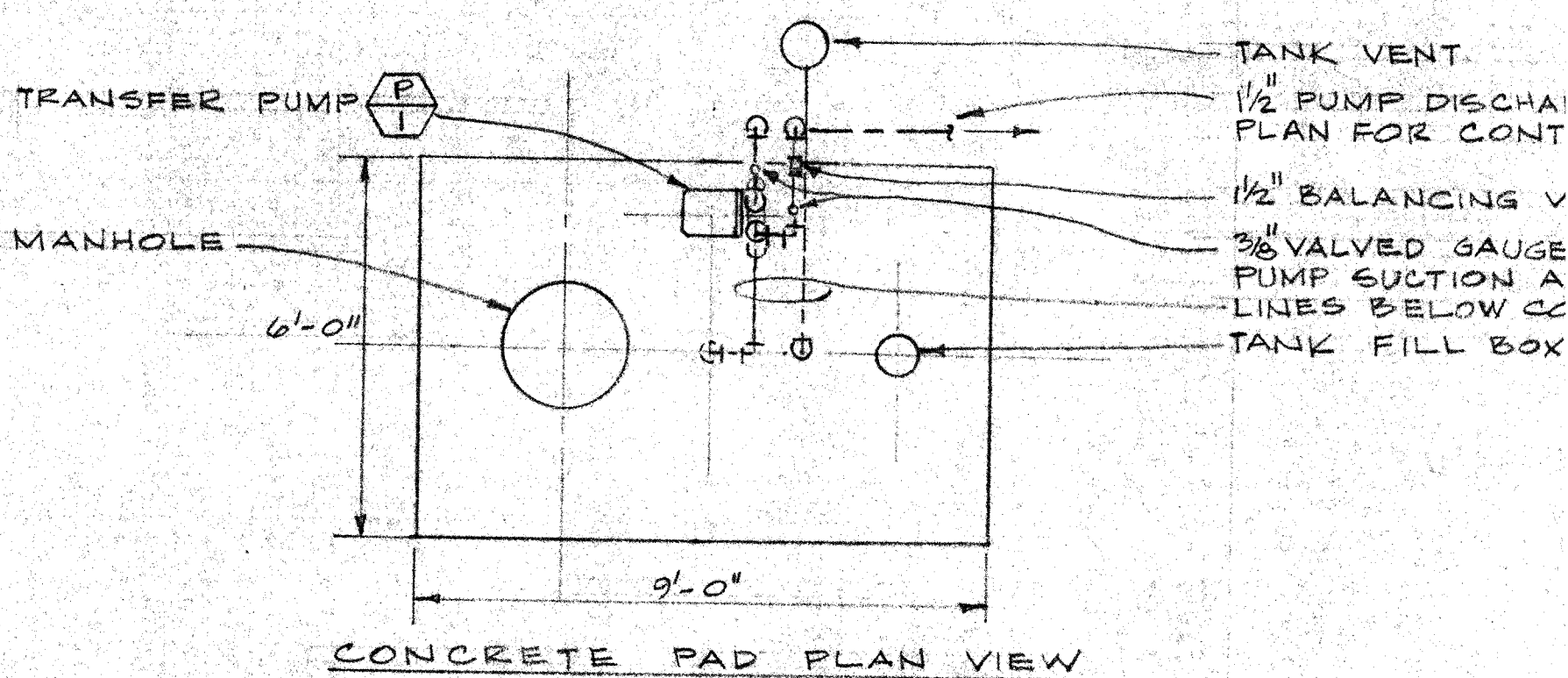
WEIGHT	DWG SIZE	SCALE	DWG. NO.
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	E	NOTED	ETOMD 30
APPLICABLE DOG			

	FILE NO.	W. O.	DEPT	SHEET 50 OF 1
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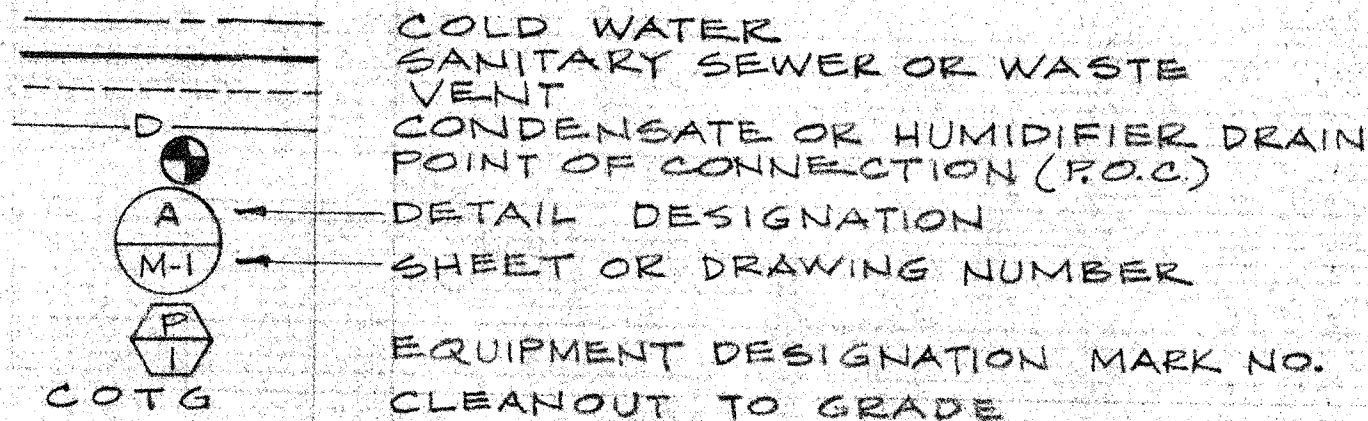
TANK ELEVATION



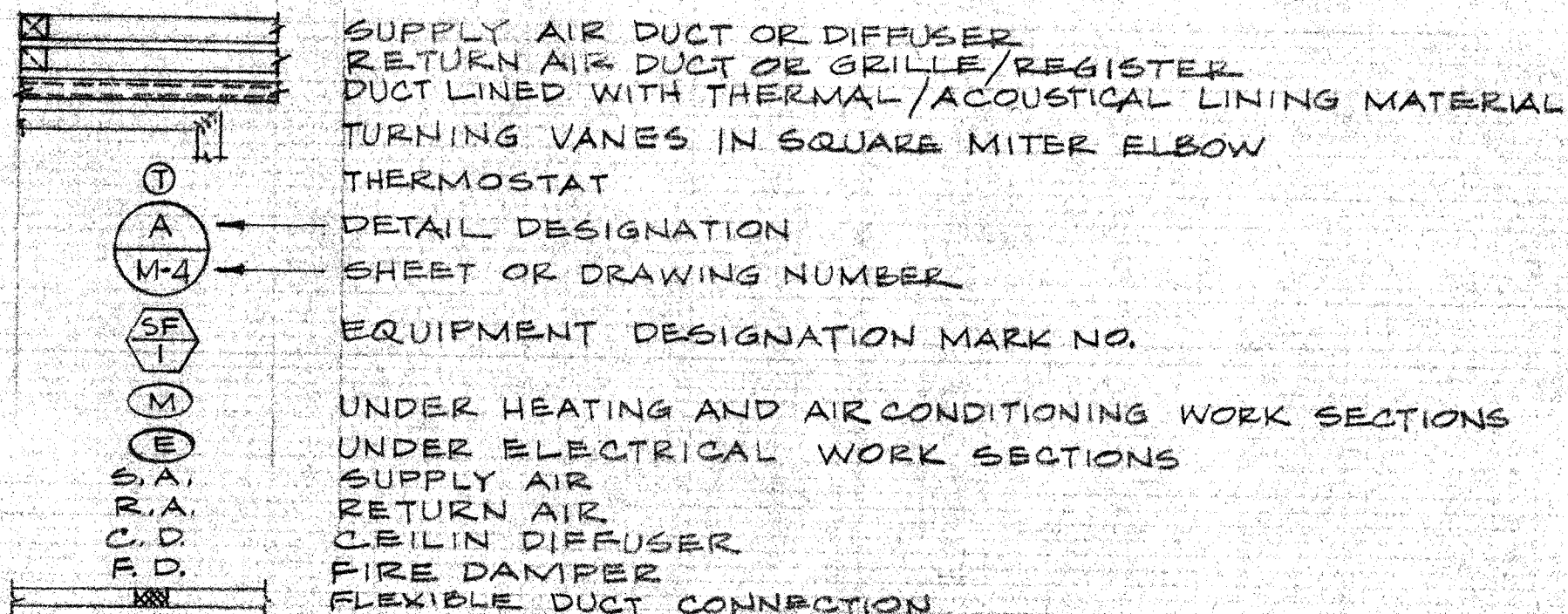
POTABLE WATER STORAGE TANK
NOT TO SCALE

MECHANICAL SYMBOLS

PLUMBING



HEATING, VENTILATING AND AIR CONDITIONING (HVAC)



LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT

HVAC EQUIPMENT SCHEDULE

MARK NUMBER	DESCRIPTION	AREA SERVED	CAPACITY	ELECTRICAL	OPERATING WEIGHT, LBS.
SE 1	DUAL ELECTRIC HEAT SUPPLY FAN UNIT, HORIZONTAL CABINET, INTEGRAL FRONT GRILLE OUTLET, BACK DUCT COIL AS INLET, OFF-VENT-H-L-LO WALL-MOUNTED SWITCH, TAP-MOUNT PERMANENT SPLIT CAPACITOR HIGH EFFICIENCY MOTOR, 1-INCH REPLAC-EABLE MEDIA AIR FILTER, TRANS CO. POWER FLO, MODE D, TYPE E.O. ELECTRIC COIL, SIZE 02, WITH TRANSFORMER, SUSPEND EA. UNIT WITH FOUR (4) VIBRATION ISO. HANGERS, MASON NG. DNHS-A	GALLERY-LOUNGE 108, SHOP 109, BUNK ROOM 203, ELECTRONICS LAB CRYO-GENICS 204, CONTROL COMP DATA FACIL. 205	220 CFM, 1.25 KW. LO HEAT, 2.75 KW. HI HEAT - FOR OPER-ATION AT 15,400 FT. ABOVE MEAN SEA LEVEL	ELECTRIC COIL - 208 VOLT, 3 PHASE, 3 WIRE, 9 ELEMENT, DUAL HEAT, 9 ELEMENT LO HEAT, 9 ELEMENT HI HEAT, MOTOR - 115 VOLT, 1 PHASE, 1/20 HP, TRANSFORMER - TOTALLY ENCLOSED, CLASS A, 115 VOLTS.	65
RH 1	LOW TEMPERATURE ELECTRIC RADIANT CEILING HEATING PANEL, T-BAR INSTALLATION, AZTEC CAT. NO. ATL-66-4, 2X4 FT. IN ROOMS WITH FURRED CEILINGS. IN ROOMS WITHOUT FURRED CEILINGS, INSTALL AZTEC CAT. NO. ASL-66-4, 2X4 FT.	GALLERY-LOUNGE 108, SHOP 109, BUNK ROOM 203, ELECTRONICS RE-CEIVER LAB CRYO-GENICS 204, STORAGE 107, MECH & ELEC EQUIPT. 108	N.A.	120 VOLTS, 500 WATTS	24
RH 2	LOW TEMPERATURE ELECTRIC RADIANT CEILING HEATING PANEL, T-BAR INSTALLATION, AZTEC CAT. NO. ATL-66-3, 2X3 FT.	CONTROL COMP. DATA FACIL. 205	N.A.	120 VOLTS, 375 WATTS	19
AP 1	AIR-TO-AIR HEAT PUMP CONDENSING UNIT, CARRIER 38R3020, WITH MAX. SOUND RATING NO. 19, U.L. APPROVED, AUTOMATIC CHANGE-OVER INDOOR THERMO-STAT W/ SERVICE ENTRY CONTROL, WARNING LIGHT, SOLID STATE TIME GUARD, TIME DELAY DEVICE, BLOW LIQUID LINE FILTER, DEER, START CAPACITOR AND RELAY, FLAKE TO COMPATIBLE COUPLER, 20-FT. LENGTH PRECHARGED TUBING PACKAGES, SERVO 30 MOTOR MASTER SOLID STATE HEAD PRESSURE CONTROL.	COMPUTER ROOM 206	18,700 BTUH TOTAL NET COOLING CAPACITY, 19,100 BTUH TOTAL NET HI-TEMP HEAT'S, AND 10,000 BTUH TOTAL NET LO-TEMP HEAT'S. CAPACITY @ 45° STAND. RATING, USING CARRIER 40AQ24 INDOOR UNIT DELIVER-ING 690 CFM.	60 HZ., 208-230V/1Ø, 11.7 COMPRESSION RATED LOAD AMPS, 1.5 FAN FULL-LOAD AMPS.	180
EA 1	DIRECT-EXPANSION HORIZONTAL FAN-COIL UNIT, CARRIER 40AQ24, PERMANENT 1-INCH THICK FILTER, 2 CONDENSATE PANS W/ PRIMARY & AUXILIARY DRAIN CONNE-CTIONS, 24-V. CONTROL CIRCUIT TRANS-FORMER AND INDOOR FAN RELAY, * (USED AS PRE-FILTER FOR AP-1)	COMPUTER ROOM 206	600-1000 CFM RANGE.	1/4 HP, 115 VOLT, 1 PHASE, PERMANENT SPLIT CAPACITOR MOTOR	78
AF 1	DISPOSABLE MEDIA AIR FILTER, SIZE 24" X 24" X 12" DEEP, 60-65% ASHRAE 52-76 TEST STANDARD EFFICIENCY AT 97% ARRESTANCE, FARE CO. RIGA-FLOW 15, INSTALLED IN A FARE CO. 3P UNIVERSAL GLIDE/PACK SIDE ACCESS FILTER HOUSING	COMPUTER ROOM 206	0.15 INCHES W.G. RESISTANCE @ 1000 CFM CAPACITY	N.A.	119
H 1	SELF-CONTAINED HUMIDIFIER, DRI-STEAM HUMIDIFIER CO. VAPOR FAN MODEL VF20, FOR WALL MOUNTING	COMPUTER ROOM 206	6 POUNDS WATER PER HOUR	208 VOLT/1 PHASE, 9.6 AMPS	130
RH 3	LOW TEMPERATURE ELECTRIC RADIANT CEILING HEATING PANEL, T-BAR INSTALLATION, AZTEC CAT. NO. ATL-66-2, 2X2 FT.	CONTROL COMP. DATA FACIL. 205	N.A.	120 VOLTS, 250 WATTS	14
VF 1	IN-LINE DIRECT-DRIVE CENTRIFUGAL VENTILATING FAN, ILG NO. CCH500, 162 CFM @ 1/8" S.P., 670 RPM, 1/25 HP, 120V, 1Ø, 60 HZ. MOTOR, WITH E7556 SOLID STATE SPEED CONTROL	MECHANICAL & ELECTRICAL EQUIPMENT 108	91-417 CFM RANGE	120 VOLTS, 1/25 HP	45

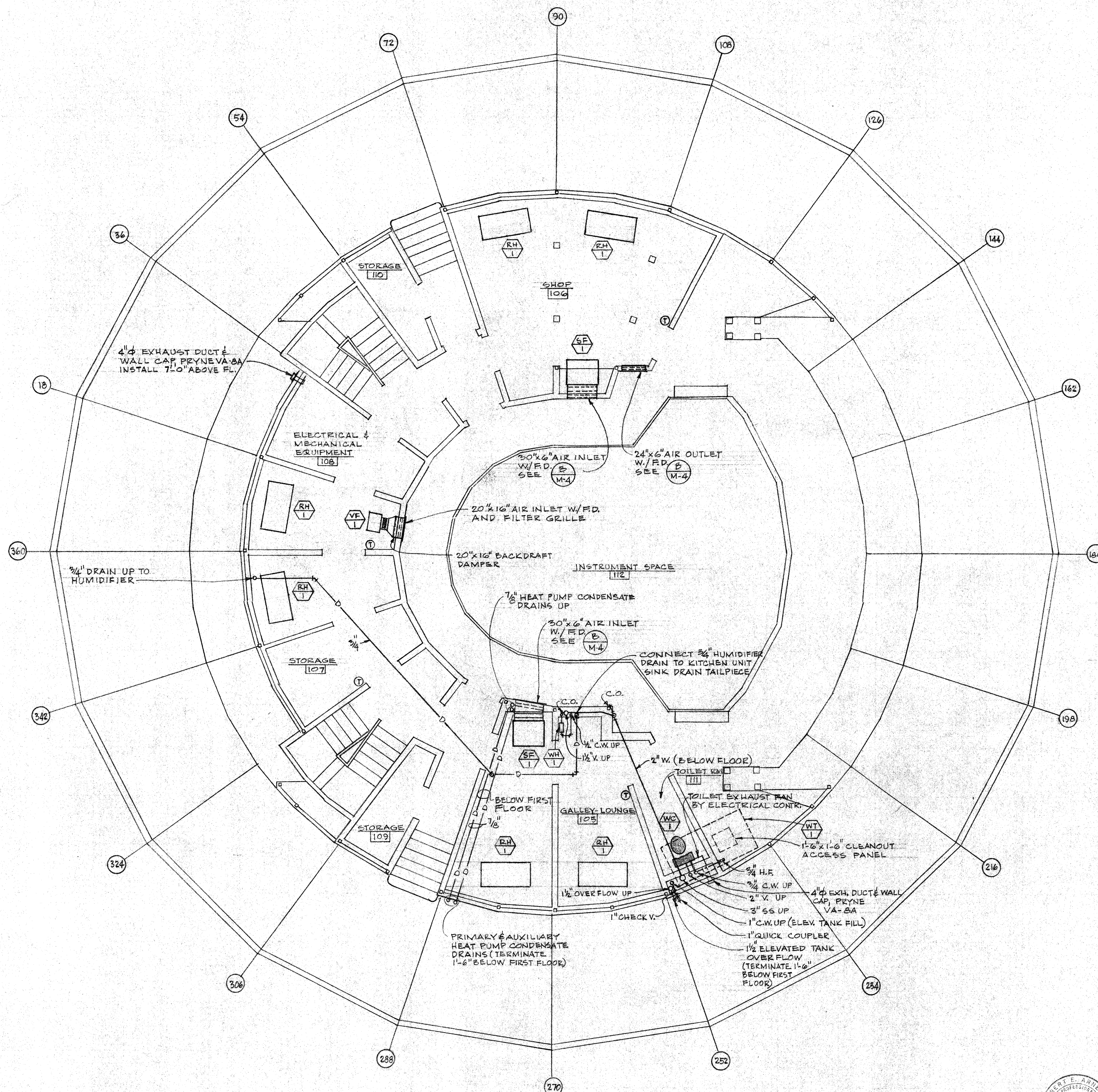
PLUMBING EQUIPMENT SCHEDULE

MARK NUMBER	ITEM	CONNECTIONS	DESCRIPTION	OPERATING WEIGHT, LBS.
		S/W V CW HW		
WC 1	WATER CLOSET	3" 2" 1/2" -	WATER SAVING TOILET, (ONE GALLON OF WATER PER FLUSH), VITREOUS CHINA BOWL AND TANK, ANTI-SIPHON FILL VALVE AND CONVENTIONAL PLUG VALVE, TWELVE- INCH ROUGH-IN CLOSET FLANGE, THERFORD CORP. "SUPERIOR" MODEL N815502, ELONGATED BOWL, W/ TANK ASSEMBLY, SEAT W/ CLOSED FRONT, LID. COLOR: PRESIDENTIAL WHITE	150
L 1	LAVATORY	2" 1 1/2" 1/2" 1/2"	VITREOUS CHINA COUNTERTOP LAVATORY, AMERICAN- STANDARD "OVALYN" N8 0470, 021, 19" X 16" W/ METAL MOUNTING FRAME, HOT AND COLD N8 2285, 062 SELF- CLOSING FAUCETS, N8 2411, 015 GRID DRAIN W/ 1/4" TAILPIECE, 1/4" X 1/2" LA PATTERN CHROME PLATED TRAP, 3/8" FLANGE-TYPE STOP VALVES, COLOR: WHITE	25
WH 1	WATER HEATER	- - 1/2" 1/2"	INSTANTANEOUS TYPE ELECTRIC HEATER, CHROMOMITE LABS, INC. MODEL N8 5-23, 2300 WATTS, 120 VOLTS, 32 OF RISE @ 0.5 GPM FLOW	6
ST 1	POTABLE WATER STORAGE TANK	- 2" - -	2000 GALLONS NOM. CAP (2,200 GALLONS ACTUAL CAP) FIBER GLASS REINFORCED PLASTIC, NATIONAL SANITATION FOUNDATION, STANDARD 14, LABELED, UNDERGROUND POTABLE WATER STORAGE TANK, XERXES CORP. CENTURY CAST, W/ 22" ID. FLANGED MANWAY #4" FILL TUBE	19,370 (1000 LBS. EMPTY)
ST 2	POTABLE WATER ELEVATED TANK	- 1 1/2" 1 1/2" -	300 GALLONS NOM. CAP, FIBER GLASS REINFORCED PLASTIC, PREMIUM RESIN, NATIONAL SANITATION FOUNDATION, APPROVED FOR POTABLE WATER STORAGE, RYAN HERCO PRODUCTS CORP. N8 060, W/ SUPPORT SADDLE, TOP 1 1/2" FILL, OVERFLOW & VENT, BOTTOM 1 1/2" DRAIN FITTINGS.	2,650 (120 LBS. EMPTY)
WT 1	WASTE WATER HOLDING TANK	3" 2" - -	300 GALLONS NOM. CAP, INDUSTRIAL HEAVY-DUTY, CONVENTIONAL POLYETHYLENE, 3/8" WALL THICKNESS, 3'-0" X 7'-0" X 10'-0" HEIGHT VARIATION, END-TO-END, PUMP AND DUMP VALVE AT LOW END, RYAN HERCO PRODUCTS CORP. 16" X 16" CLEANOUT ACCESS PANEL IN TOP OF TANK.	2,700
P 1	POTABLE WATER TRANSFER PUMP	- - 1 1/2" -	LIQUID RING TYPE CLOSE-COUPLED CENTRIFUGAL PUMP FOR SANITARY DRINKING WATER SERVICE, CASING, CASING COVER AND IMPELLER ALL 32-CONSTRUCTION, WITH MECHANICAL SHAFT SEAL, WEINMAN NO. 6Y15P, 12 GPM @ 100 FT. TDH, 5.5 FT. NET POSITIVE SUCTION HEAD WITH 2HP, 1750 RPM, 208V, 3Ø 60 HZ. TOTALLY ENCLOSED MOTOR	

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX ± .03 ANGULAR ± 1/2° TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/		DRAWN: REA CHECKED: [Signature] DATE: 11/20/84 APPROVED: [Signature] DATE: 11/20/84	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF. TITLE: MECHANICAL-FIRST FLOOR PLAN SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII
LTR: [Signature] DESCRIPTION: [Signature] DATE: [Signature] APPD: [Signature]	NEXT ASSEMBLY DRAWING NO. [Signature] ITEM: [Signature] QTY: [Signature]	WEIGHT APPLICABLE DOC: [Signature]	DWG. SIZE: [Signature] SCALE: [Signature] E: AS NOTED W.G.: [Signature] DEPT: [Signature]



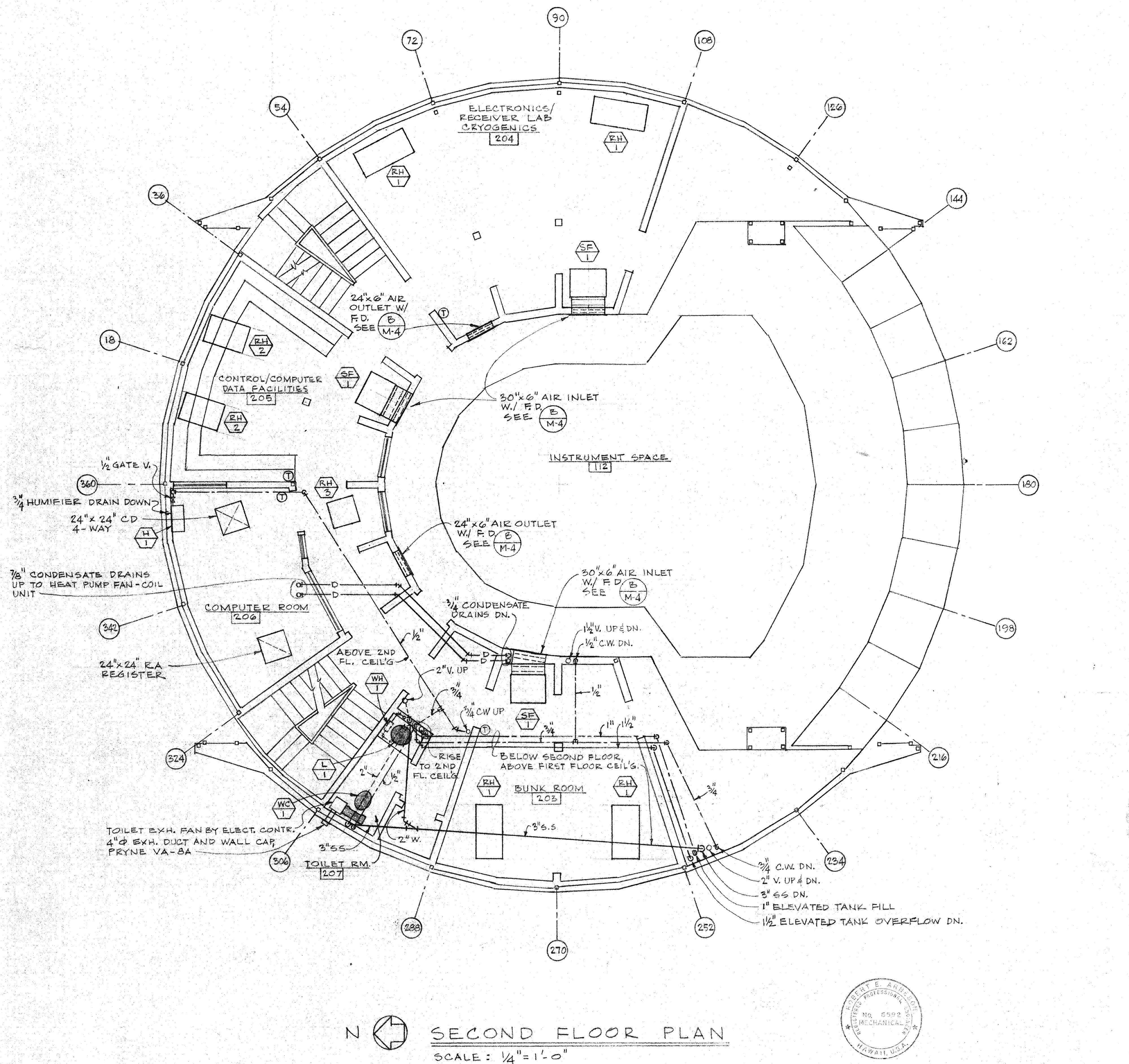
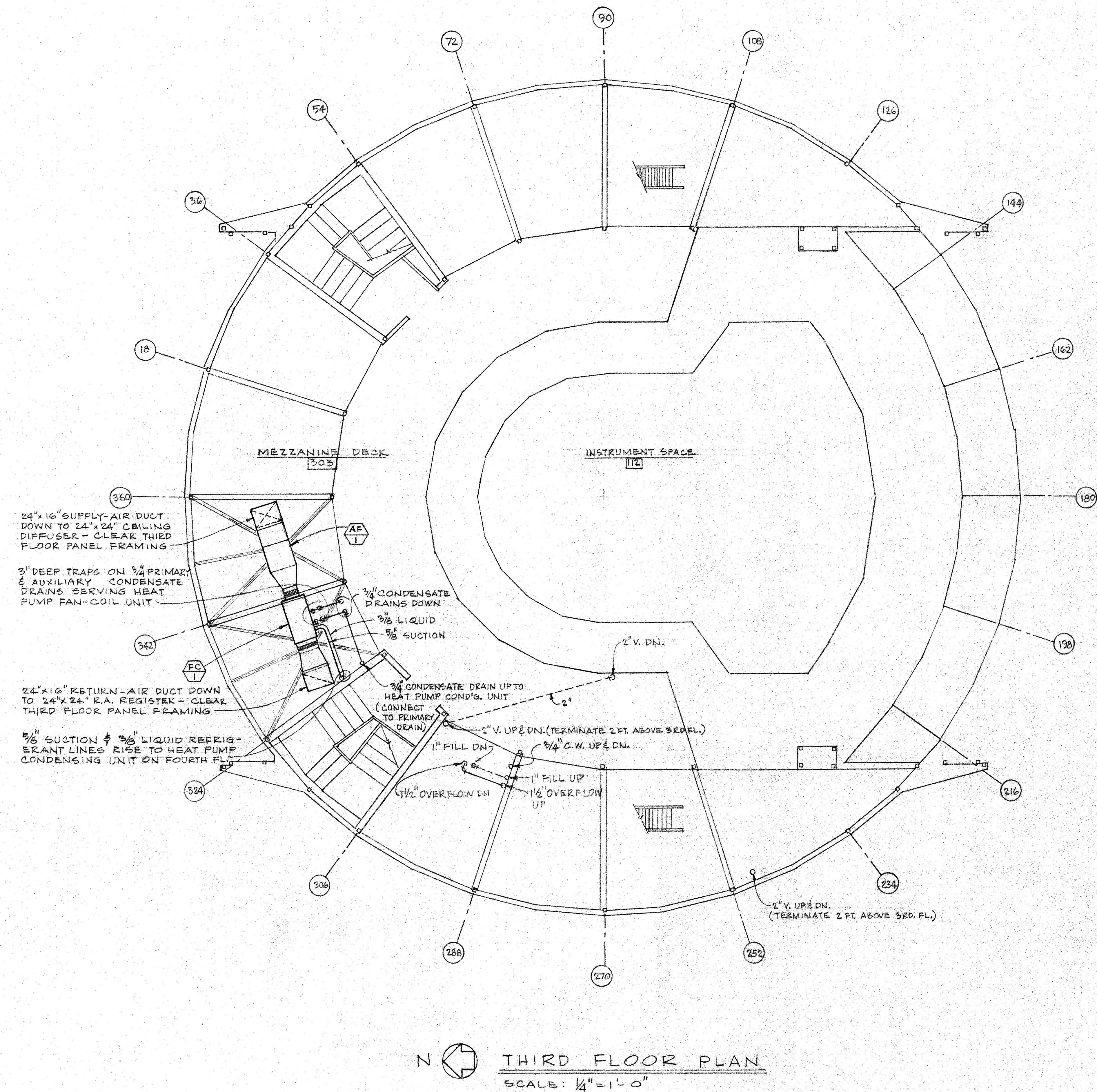
N FIRST FLOOR
SCALE: 1/4" = 1'-0"

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

[Signature]

LTR: [Signature] DESCRIPTION: [Signature] DATE: [Signature] APPD: [Signature]	NEXT ASSEMBLY DRAWING NO. [Signature] ITEM: [Signature] QTY: [Signature]	WEIGHT APPLICABLE DOC: [Signature]	DWG. SIZE: [Signature] SCALE: [Signature] E: AS NOTED W.G.: [Signature] DEPT: [Signature]
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LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT



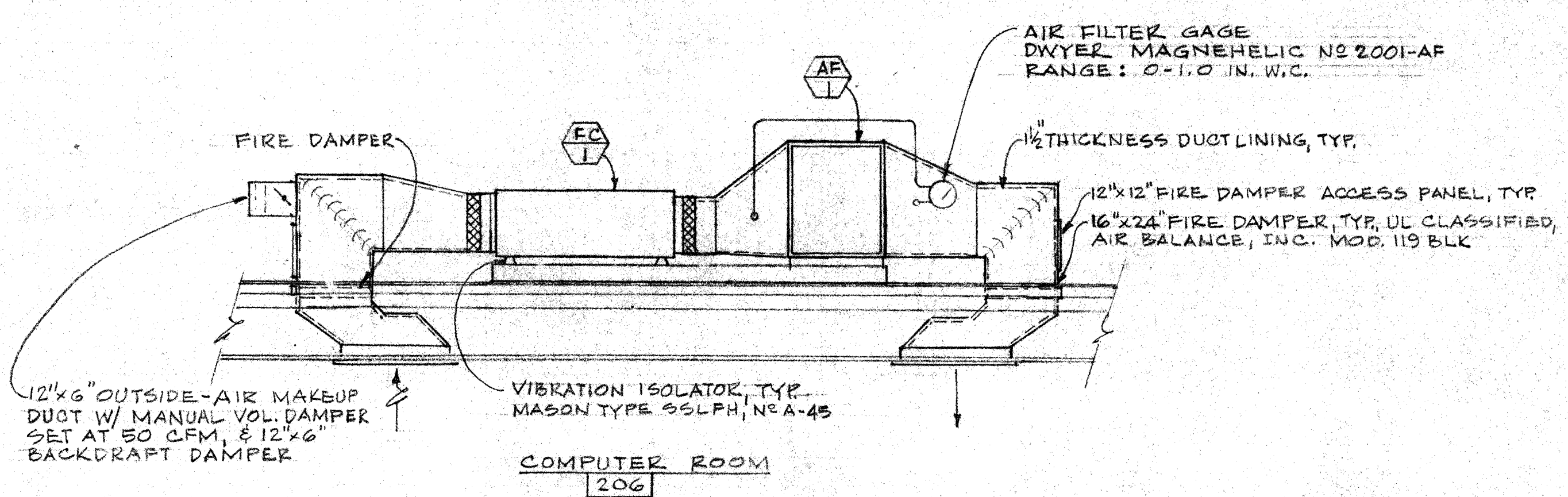
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

2. PROTECTIVE FINISH:

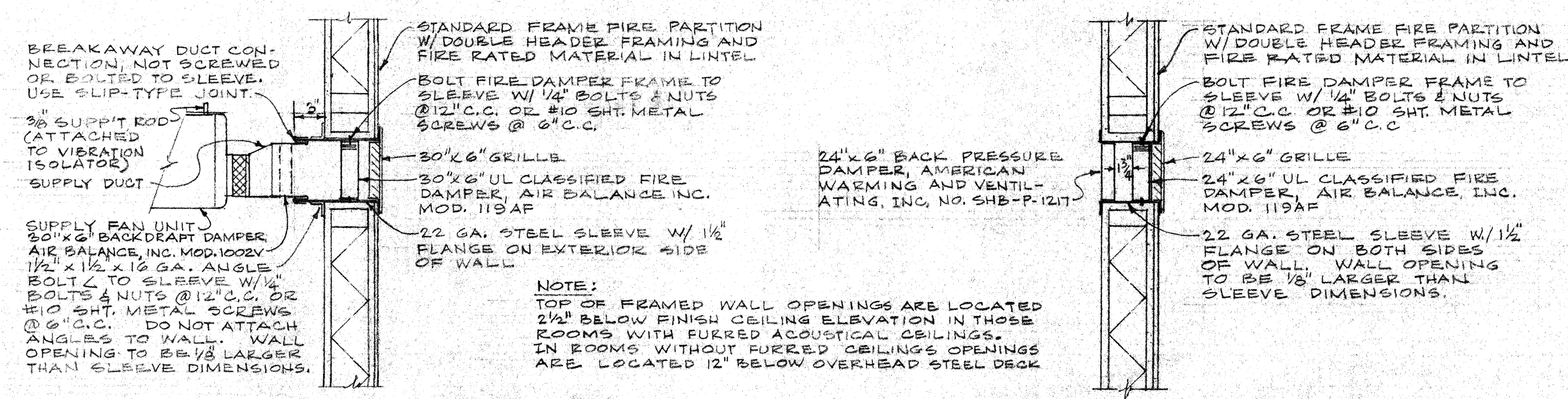
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/		DRAWN KEA DATE 11/14/79 CHECKED DATE 11/14/79 APPROVED DATE 11/14/79 APPROVED DATE 11/14/79	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF. TITLE MECHANICAL-SECOND & THIRD FLOOR PLANS SUBMILLIMETER OBSERVATORY MAUNA KEA, HAWAII DWG. NO. E10MD SHM3 FILE NO. W.O. DEPT. SHEET 1 OF 1
HAWAII ERECTION BID SET LTR DESCRIPTION DATE APPROD	11-20-84 11/14/79 NEXT ASSEMBLY DRAWING NO. ITEM QTY WEIGHT APPLICABLE DOC	REVISION DATE APPROD	

LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY

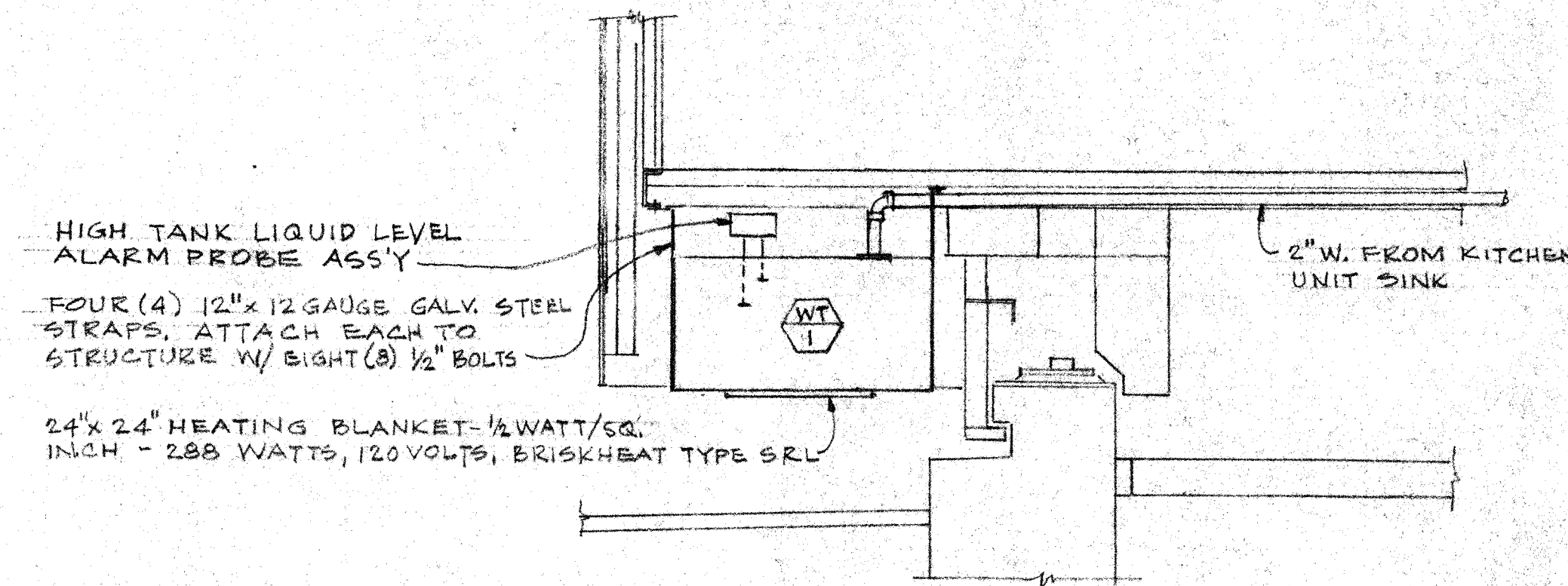


(A) COMPUTER RM. HEAT PUMP FAN-COIL UNIT & AIR FILTER ASSEMBLY
NOT TO SCALE

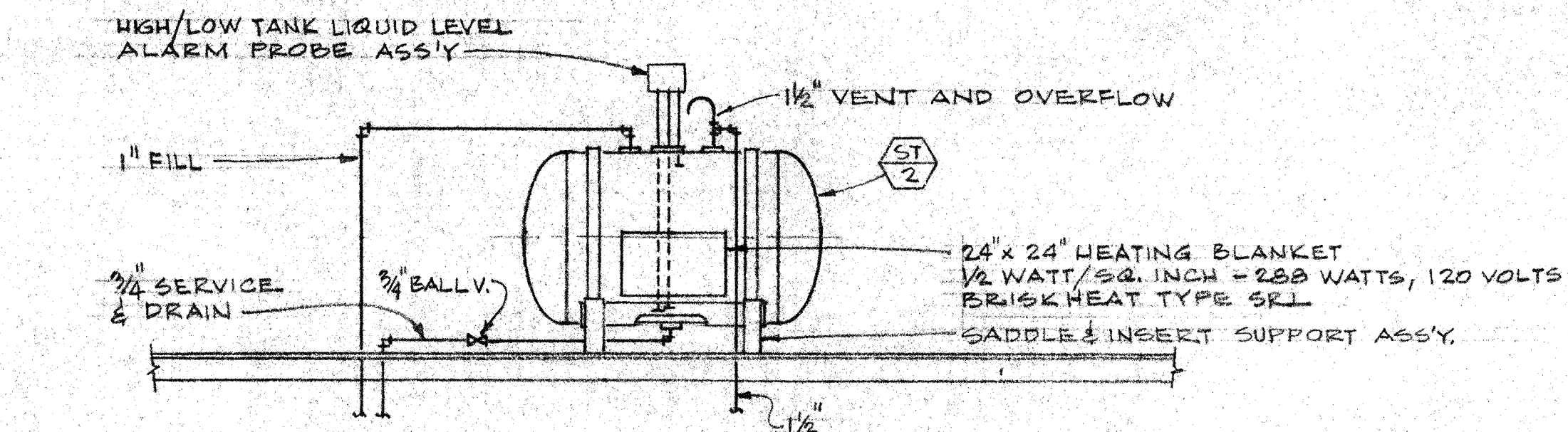


AIR INLET FIRE DAMPER DETAIL **AIR OUTLET FIRE DAMPER DETAIL**

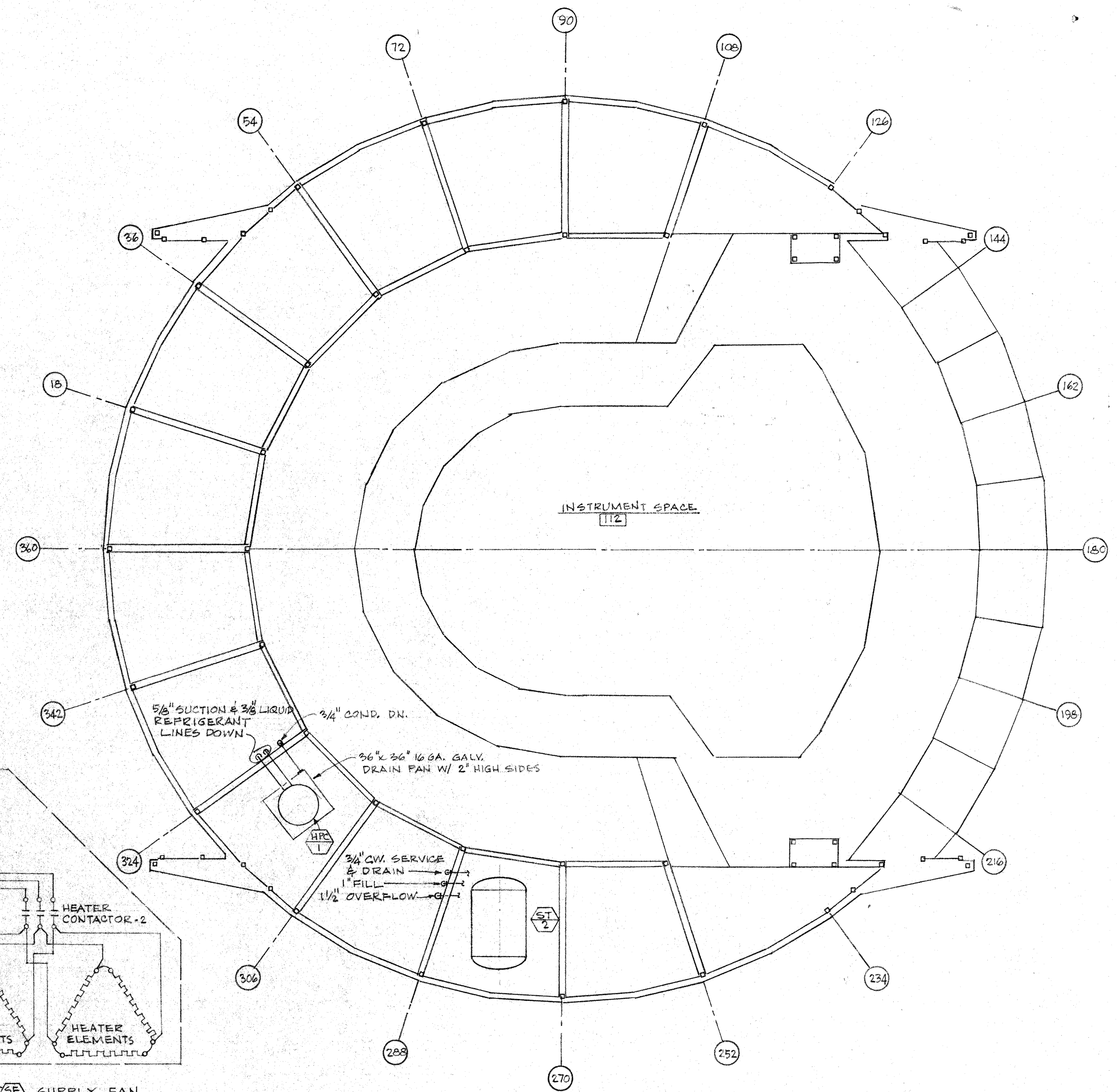
(B) TYPICAL WALL PENETRATION FIRE DAMPER DETAILS
NOT TO SCALE



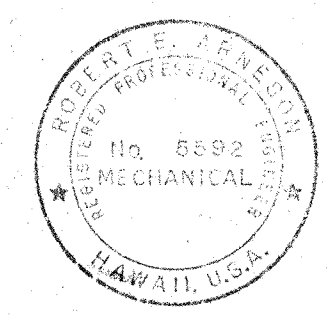
(C) WASTE WATER HOLDING TANK
NOT TO SCALE



(D) POTABLE WATER ELEVATED TANK
NOT TO SCALE



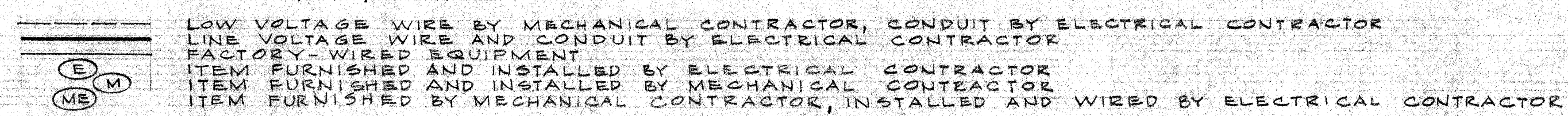
FOURTH FLOOR PLAN
SCALE: 1/4" = 1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Robert E. Hansen

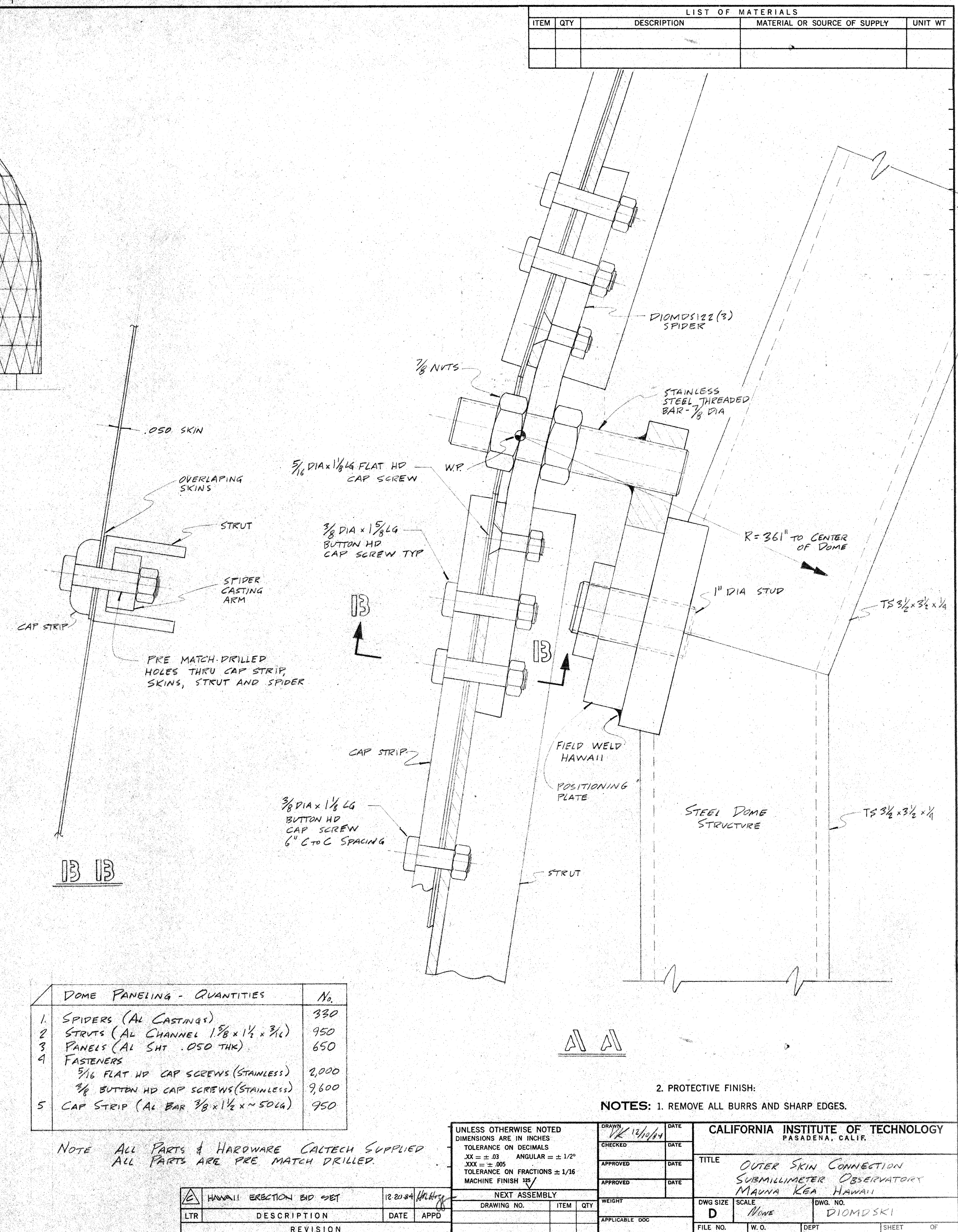
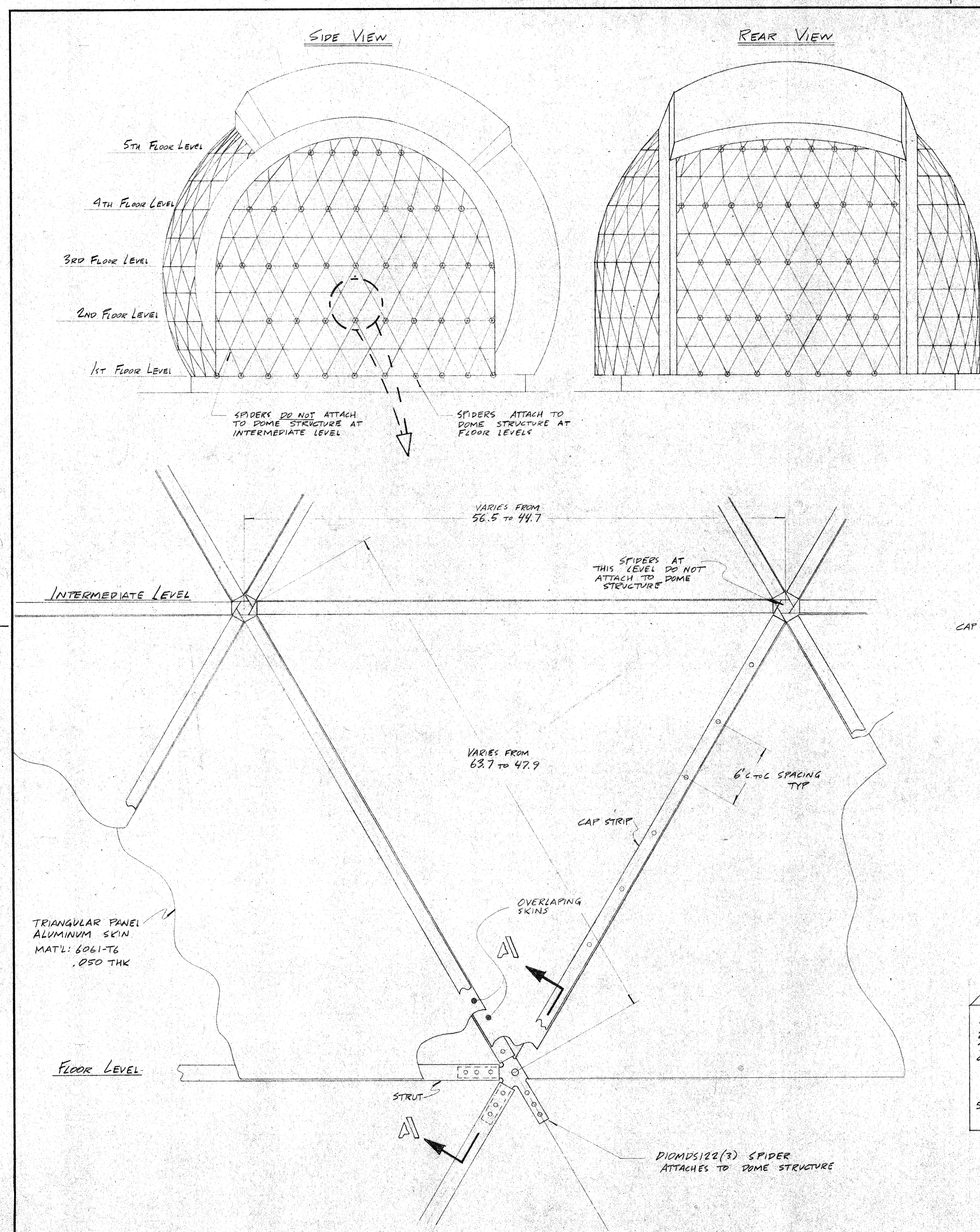
2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

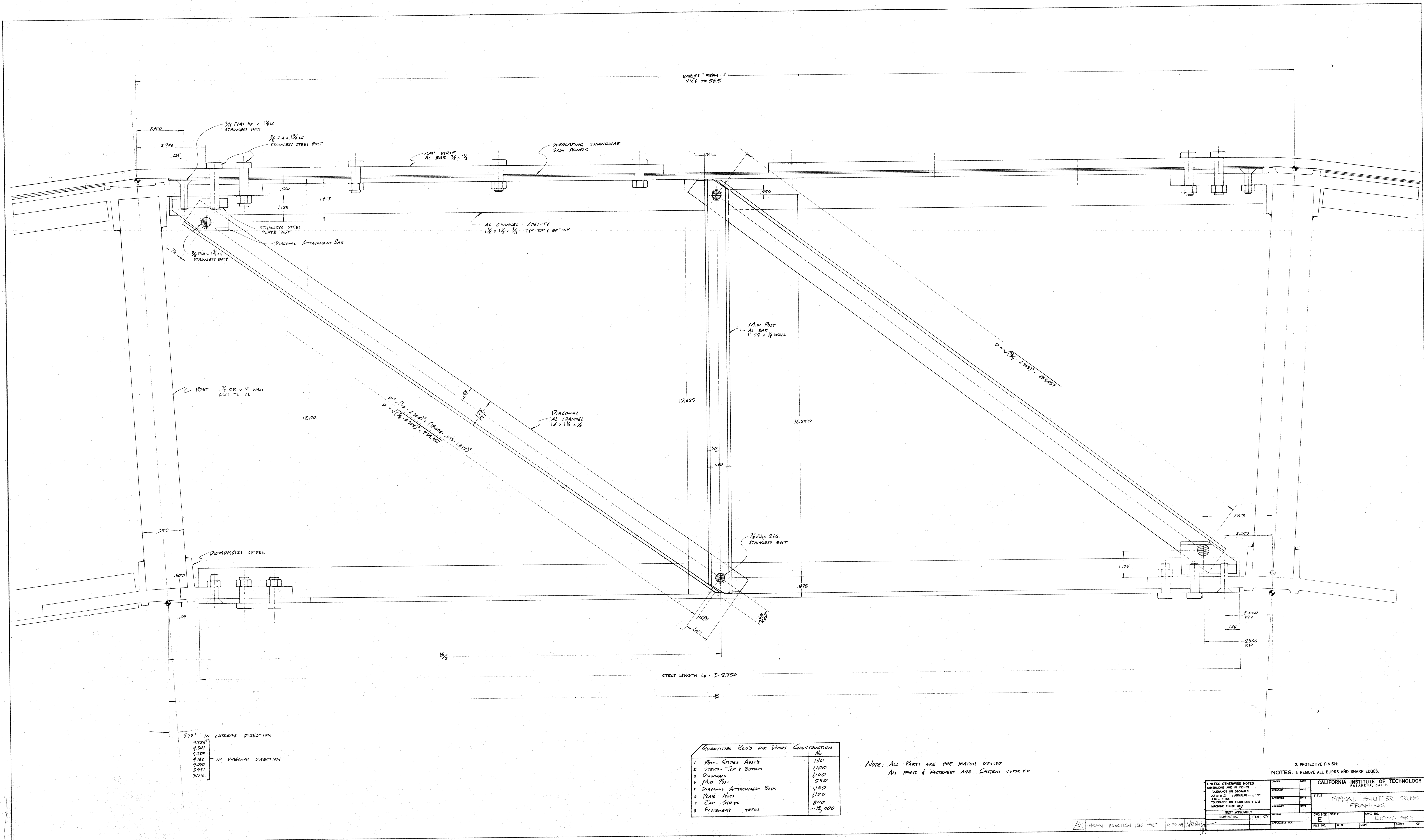
CONTROL WIRING DIAGRAMS
NOT TO SCALE



LOW VOLTAGE WIRE BY MECHANICAL CONTRACTOR, CONDUIT BY ELECTRICAL CONTRACTOR
LINE VOLTAGE WIRE AND CONDUIT BY ELECTRICAL CONTRACTOR
FACTORY WIRING EQUIPMENT
ITEM FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR
ITEM FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR
ITEM FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR

HAWAII ELECTRIC INC.		12/20/84	DATE	APPROVED	MAUNA KEA, HAWAII
NEXT ASSEMBLY		DRAWING NO.		ITEM	QTY
WEIGHT		APPLICABLE DOC		DWG. SIZE	SCALE
E		AS NOTED		DWG. NO.	E10MD SH114
FILE NO.		W. O.		DEPT	
REVISION		SHEET 14 OF 4			

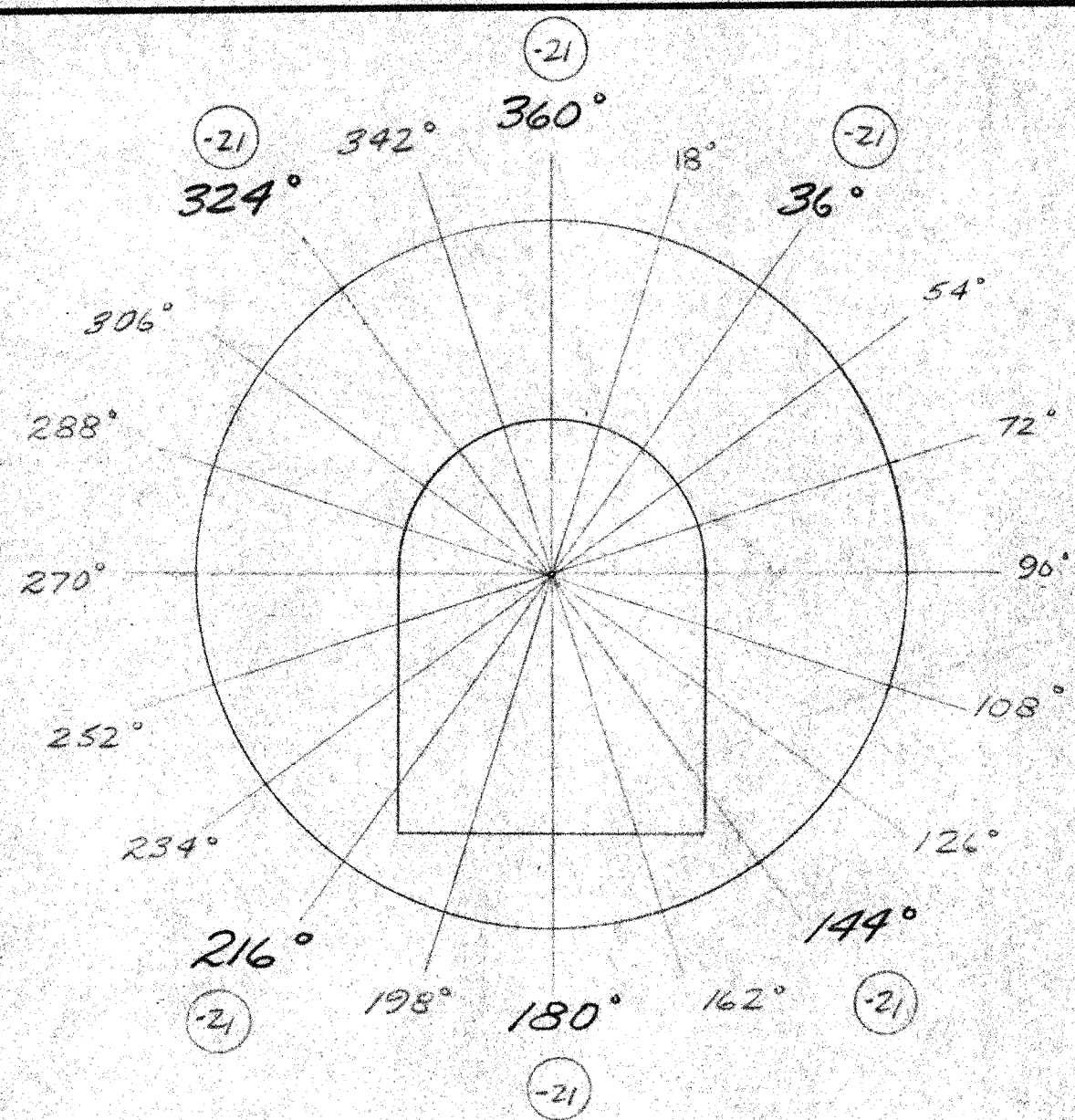




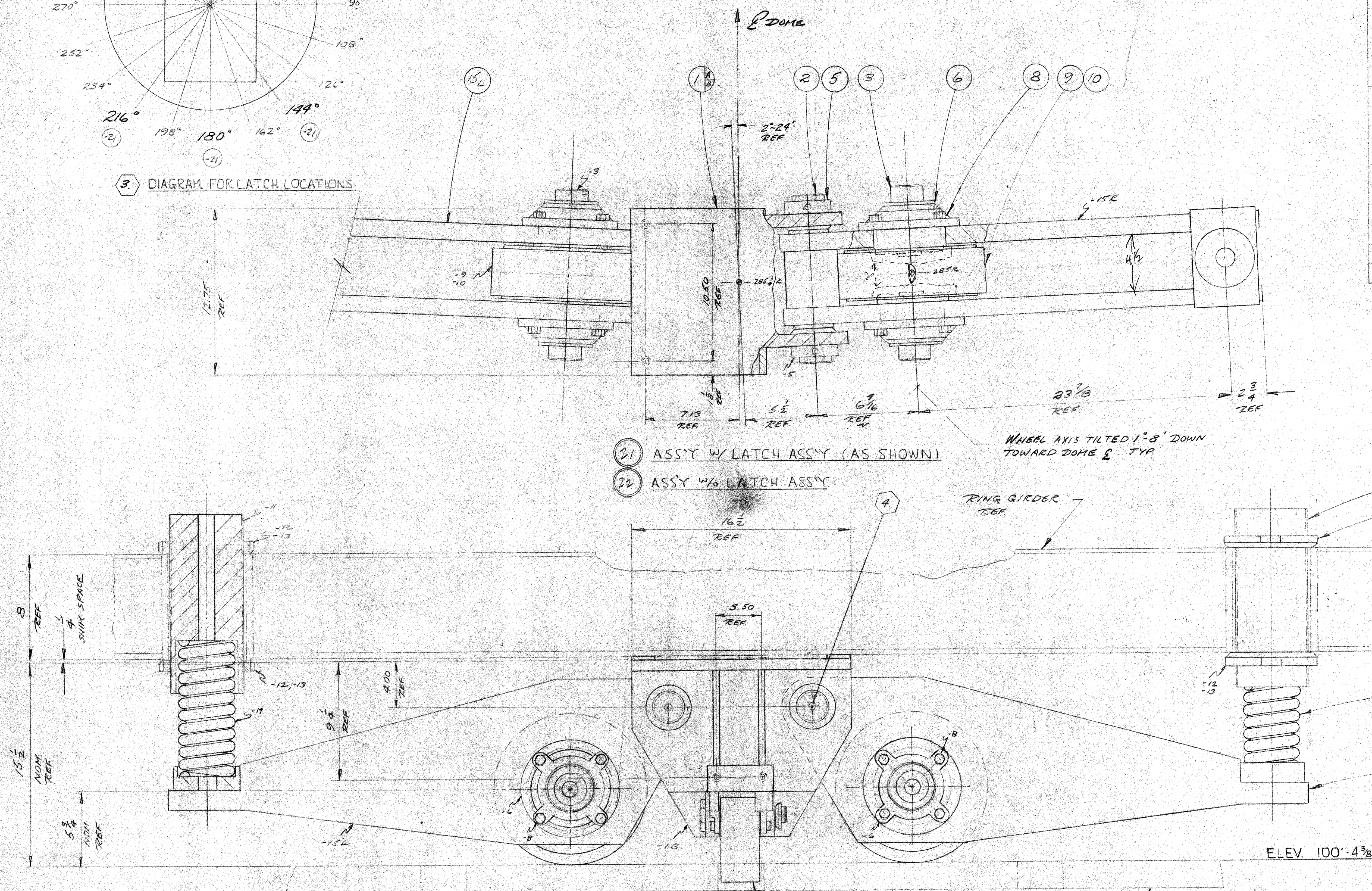
QUANTITIES REQ'D FOR DOORS CONSTRUCTION	
No.	
1	POST, SPIDER ASSEMBLY
2	STRUTS - TOP & BOTTOM
3	DIAGONALS
4	MID POST
5	DIAGONAL ATTACHMENT BARS
6	PLATE NUTS
7	CAP STRIPS
8	FASTENERS TOTAL
	180
	1100
	1100
	550
	1100
	1100
	800
	12,000

NOTE: ALL PARTS ARE PRE MATCH DRILLED
ALL PARTS & FASTENERS ARE CUSTOM SUPPLIED

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS ±.015" (ANGULAR ±.1°) TOLERANCE ON FRACTIONS ± 1/16" MACHINE FINISH 10/1		DRAWING NO. ITEM QUANTITY UNIT PRICE	DATE SITE APPROVED DATE APPROVED DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF. TITLE TYPICAL SHUTTER TRUSS FRAMING SCALE 1" = 1'-0" SHEET NO. 15010-002 SHEET OF
---	--	--	--	--



3 DIAGRAM FOR LATCH LOCATIONS



21 ASSY W/ LATCH ASSY (AS SHOWN)

22 ASSY W/ LATCH ASSY

RING GIRDER REF

ELEV. 102'-4 1/8"

ELEV. 101'-8 3/8"

ELEV. 100'-4 3/8"

TIE ROD FOR SPRING ADJUSTMENT

4 USE 1/4" - 28 TAPERED TH'D GREASE FTG TO SUIT. FOUR (4) REQ'D PER ASSY.

3 - 21 ASSY TO BE SET AT TRUSSES INDICATED ON DIAGRAM.

2. PROTECTIVE FINISH: SEE DETAIL DWGS.

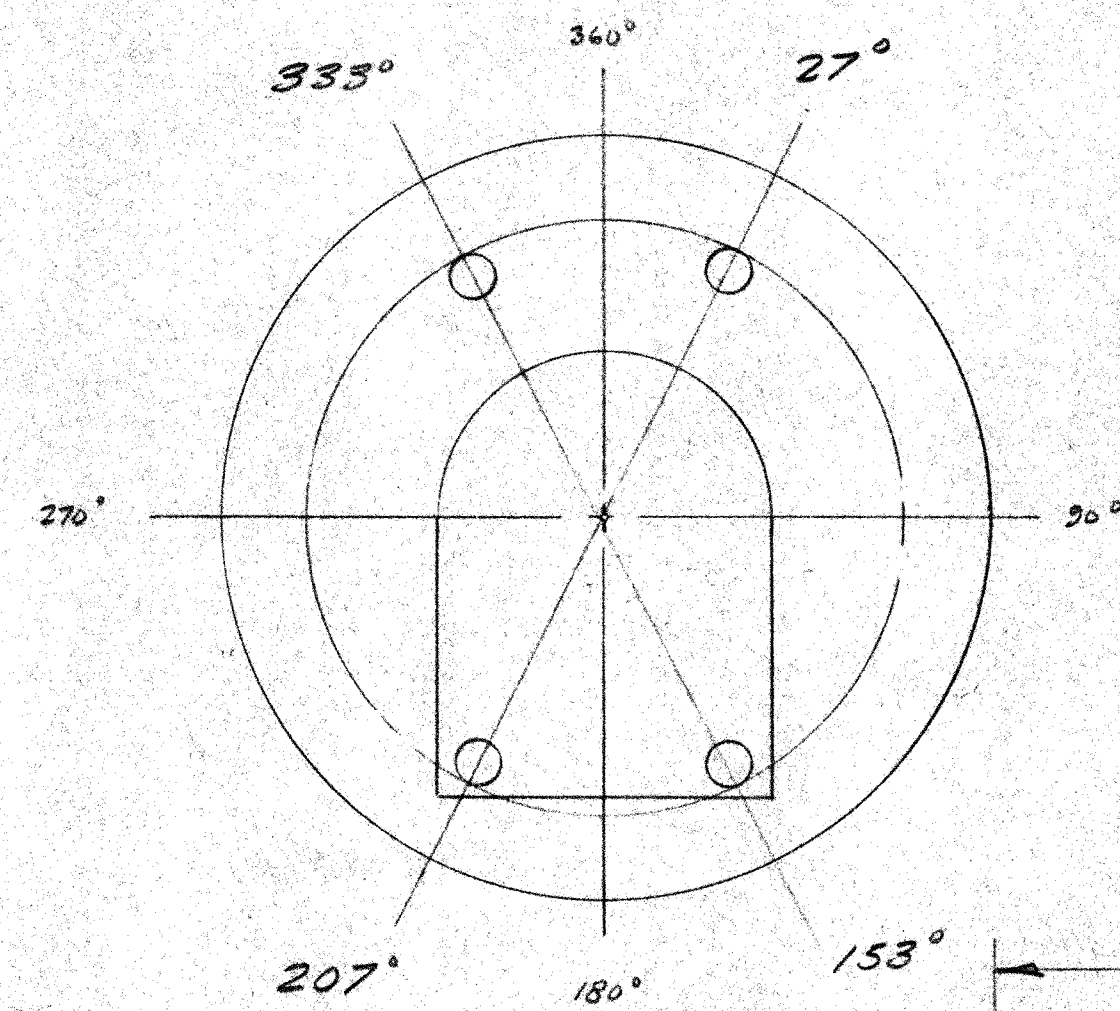
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

RELEASED

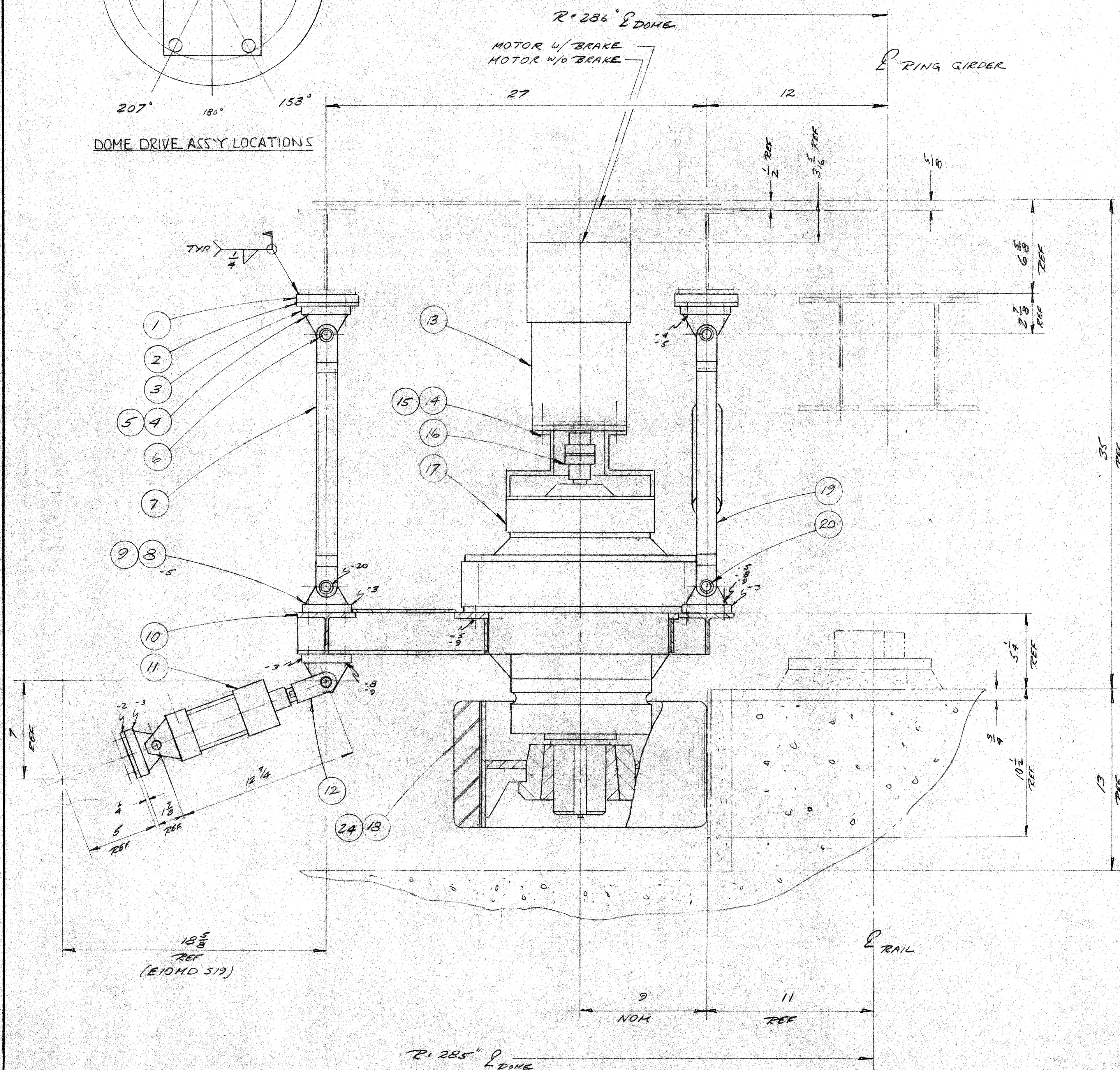
RAIL DIOMD5107 (REV)				UNLESS OTHERWISE NOTED				CALIFORNIA INSTITUTE OF TECHNOLOGY			
HAWAII ERECTION BID SET				DIMENSIONS ARE IN INCHES				PASADENA, CALIF.			
B DETAIL W/ 5, ITEM 91-30				TOLERANCE ON DECIMALS				TITLE			
ONE D. FOR EACH IS TO TYPE				XX ± .03				DOME TRUCK W/ LATCH			
A DETAIL ITEM 10				XXX ± .000				ASSEMBLY			
ITEM 10: 1" DIA. HX. DIOMD-2				TOLERANCE ON FRACTIONS ± 1/16				DWG. NO.			
LTR DESCRIPTION DATE APPD				MACHINE FINISH 12/				DIOMD M1			
REVISION				NEXT ASSEMBLY				DWG. NO.			
				DRAWING NO. ITEM QTY WEIGHT 2334 LBS				SCALE			
				APPLICABLE DOC				3" = 1'-0"			
				FILE NO. W.O. DEPT SHEET / OF /							

DO NOT SCALE

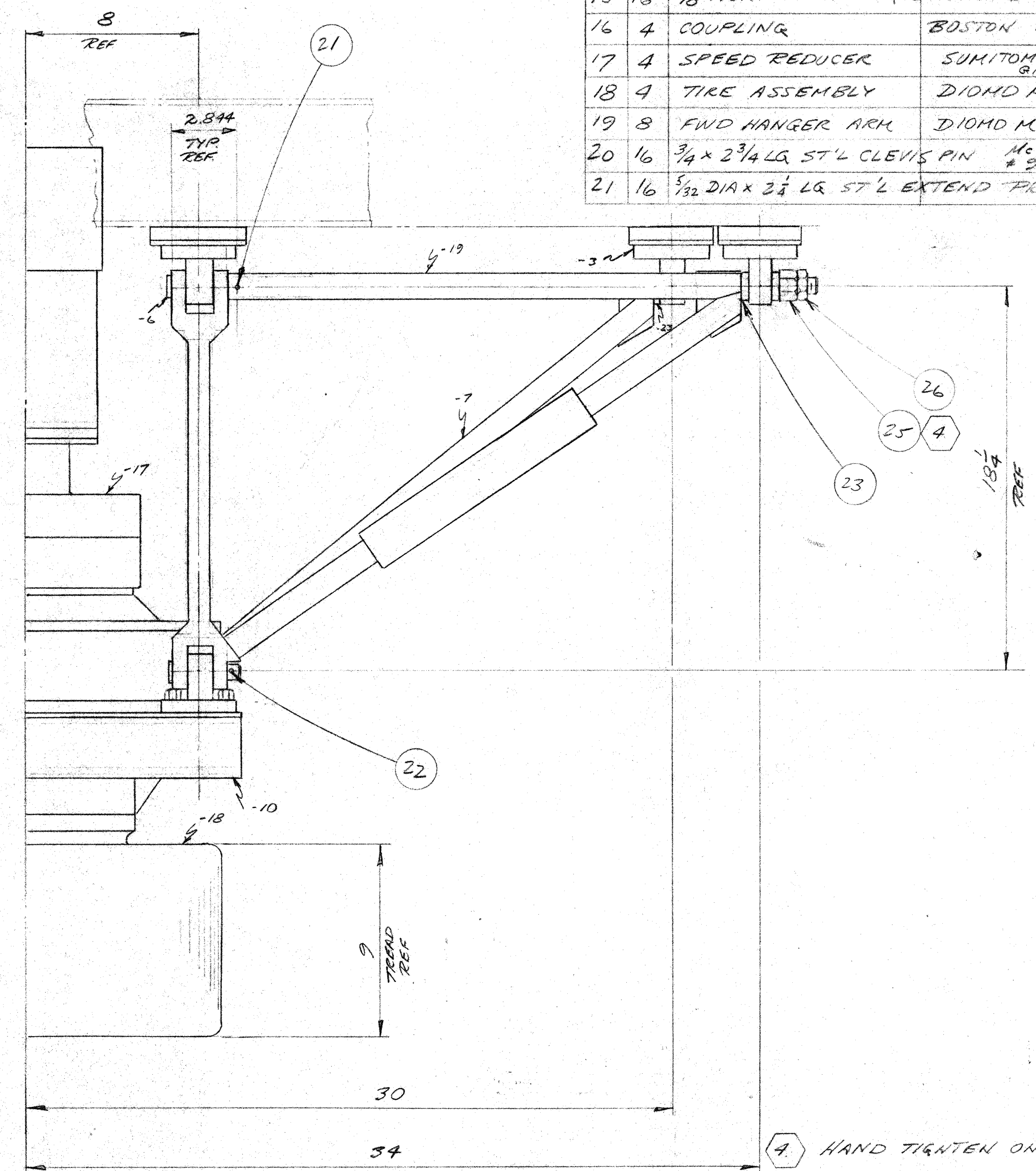
DIOMD M1



DOME DRIVE ASS'Y LOCATIONS



LIST OF MATERIALS				LIST OF MATERIALS			
ITEM	QTY	DESCRIPTION	MATERIAL	UNIT WT	ITEM	QTY	DESCRIPTION
22	16	5/8" DIA X 2 LG 18-8 CRES EXT PRONG COTTEC PIN	-	1	32	MTG BLOCK	D10MD 5103 ITEM-1
23	32	3/4" ID X 1 1/2" OD X 3/16" THK THRST WSKR BOSTON 18958	-	2	72	SHIM	D10MD 5103 ITEM-2
24	4	3 1/2" DIA *4040 TAPERLOCK BUSHING	-	3	66	MTG EYE BRLT	TOMKINS-JOHNSON 2-3-452-14
25	16	3/4"-10 AX NUT	USASI 818.2.2	4	28	1/2"-13 X 1 3/4" LG AX HD CAP SCREW	ASTM A335
26	16	3/4"-10 AX JAM NUT	USASI 818.2.2	5	272	1/2" NOM DIA SPRING LOCKWHR	USASI 827.1
				6	16	3/4" X 3 LG ST'L CLEVIS PIN	MCMASTER-CARR 28306A362
				7	8	REAR HANGER ARM	D10MD M23 ITEM-2
				8	26	1/2"-13 X 1 3/4" LG AX HD CAP SCREW	USASI 818.6.2
				9	1/2	1/2"-13 AX NUT	USASI 818.2.2
				10	4	FRAME	D10MD M22
				11	4	2 1/2" DIA X 2" STROKE	PARKER 2 1/2"-25
				12	4	ROD CLEVIS	TOMKINS-JOHNSON 2-962
				13	4	SERVO MOTOR 1/4" BLHR	CONTRAVES F561
				14	16	3/8"-16 X 1" LG SOC HD CAP SCREW	USASI 818.3
				15	16	3/8" NOM DIA SPRING LOCKWHR	USASI 827.1
				16	4	COUPLER	BOSTON FOR 20-2 1/2" X 3 1/4"
				17	4	SPEED REDUCER	SUMITOMO VEC 18730 8:1 355-1
				18	4	TIRE ASSEMBLY	D10MD M10
				19	8	FWD HANGER ARM	D10MD M23 ITEM-1
				20	16	3/4" X 2 3/4" LG ST'L CLEVIS PIN	MCMASTER-CARR 28306D360
				21	16	5/32" DIA X 3 1/2" LG ST'L EXTEND PRONG COTTEC PIN	-

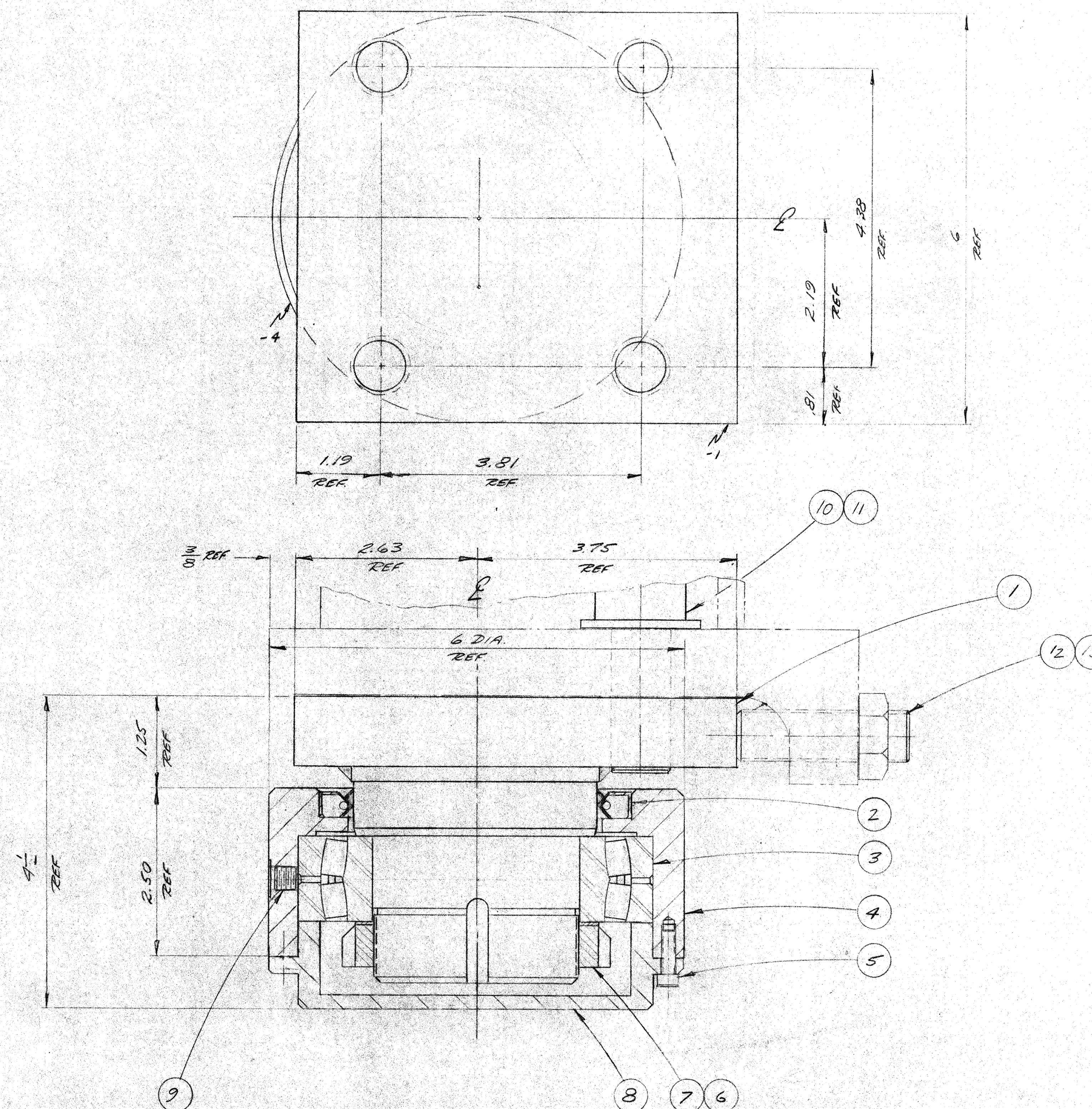


4 HAND TIGHTEN ONLY.
8 4/14 MAKE FOUR (4) ASS'YS.
2. PROTECTIVE FINISH: SEE DETAIL DWGS.

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .01 ANGULAR = ± 1/2° XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH		DRAWN: M.S. CHECKED: VV APPROVED: [Signature] DATE: 7/29/84	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF. TITLE: DOME DRIVE ASSEMBLY DWG. NO.: D10MDM3
HAWTH ERECTION B/D SET 12/20/84 ITEM 4 15: 1/2"-13 NUT 1/2"-20X1 1/2" 10/16/84 CHG PICTURE FID 5/13/84		NEXT ASSEMBLY DRAWING NO. ITEM QTY WEIGHT: 374.3 LB APPLICABLE DOC:	DWG. SIZE: 3" x 10" SCALE: 3" = 1'-0" FILE NO.: W.O. DEPT. SHEET 1 OF 1

E D10MDM3



LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT
1	20	POST	D10HDM13	20
2	20	GREASE SEAL	NATIONAL 417492	—
3	20	ROLLER BRG (75MM)	SKF 22215C	4
4	20	WHEEL	D10HDM16	12
5	160	10-32x5/8 LG. SOC HD CAP SCREW, CRES	—	—
6	20	LOCK WSHR	SKF W15	—
7	20	LOCK NUT	SKF AN15	—
8	20	CAP	D10HDM17	7
9	20	HOLLOW HX PLUG, 1/8 NPT FLODR PFH 60-2	—	—
10	80	3/8-14x2 LG SOCKET HD CAP SCREWS USAS1 B13.3	—	—
11	80	1/8 NOK DIA PLAIN SER N' WSHR USAS1 B27.2	—	—
12	80	3/4-10x2 1/2 LG. HX SOC HD SET SCREW USAS1 B13.3	—	—
13	80	3/4-10 HX JAM NUT USAS1 B13.2.2	—	—

5. LUBRICATE USING:
MOLY E.P. GREASE
STALUBE, INC
COHPTON, CA
4. TO GREASE REMOVE ITEM 9 AND
INSTALL ALEMITE 1/8 NPT GRSE FTR
STYLE TO SUIT.
3. MISALIGNMENT CAPABILITY: 1.5°

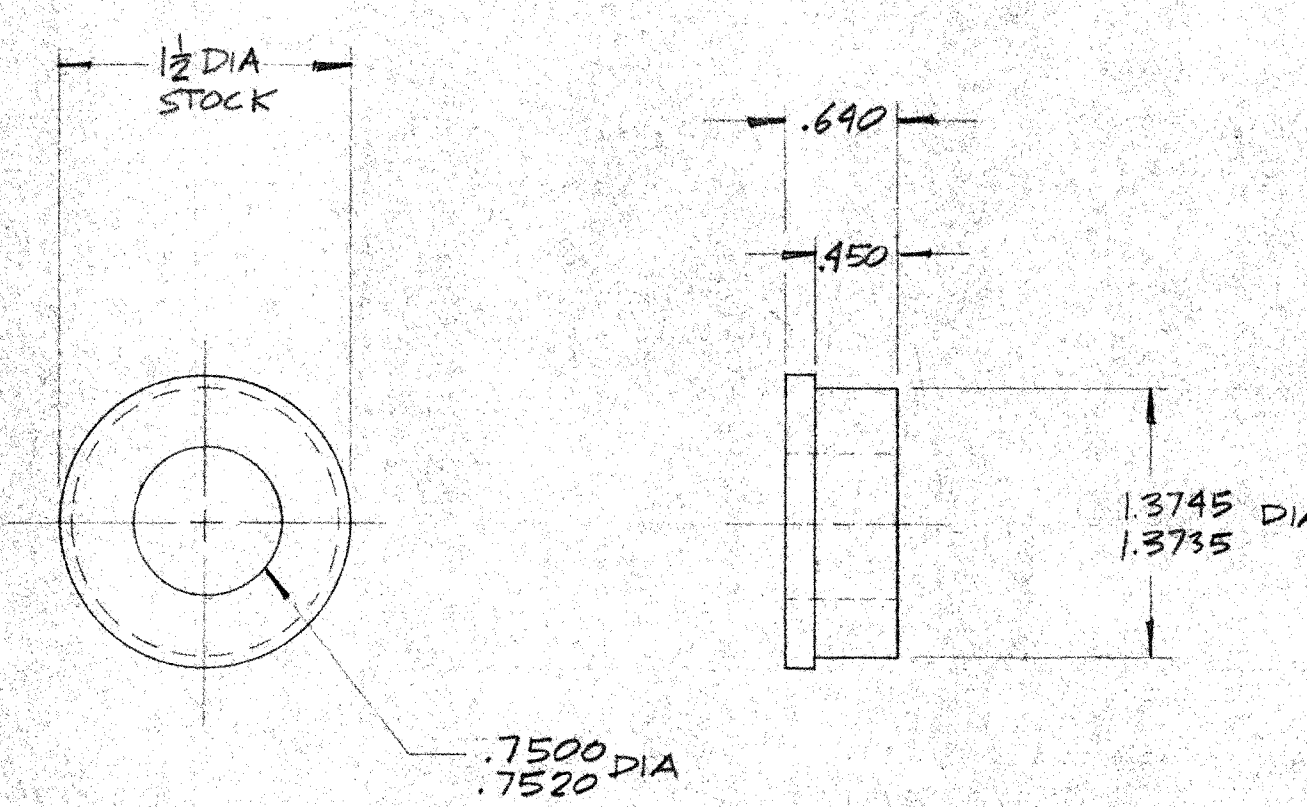
2. PROTECTIVE FINISH: SEE DETAILS

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

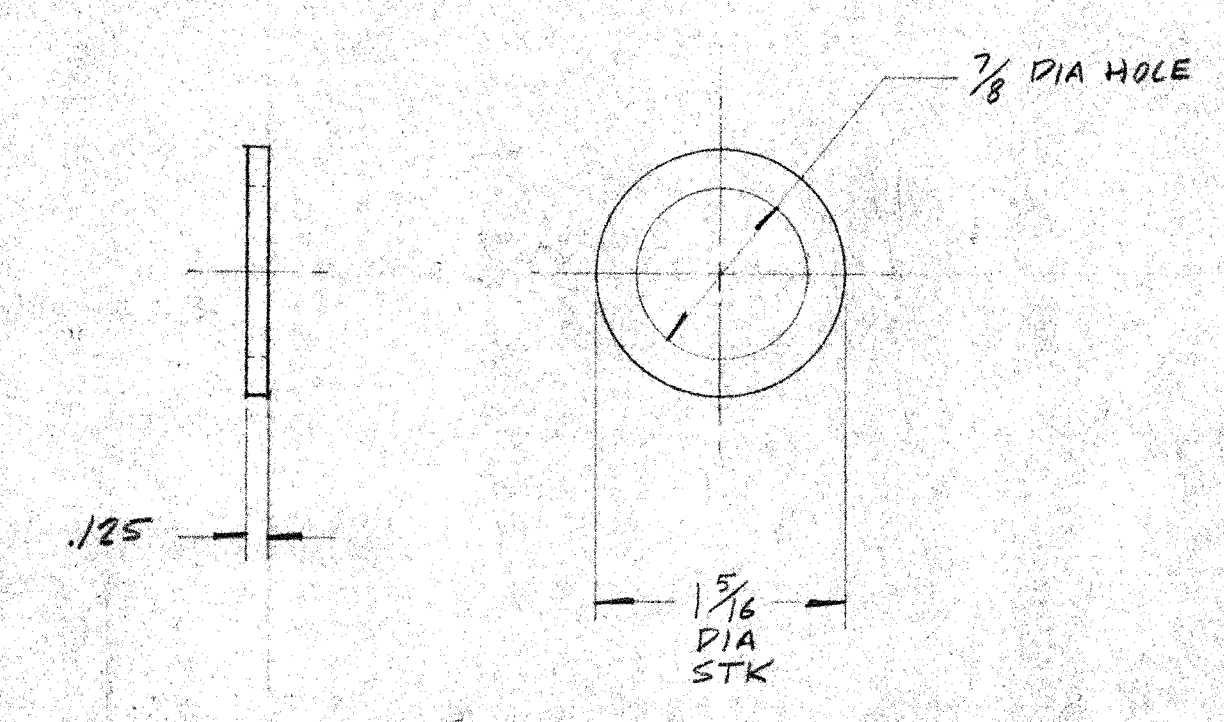
HAWAII ERECTION B/D SET	12-20-84	1/11/84
B ADD 6/11/85	4/24/85	1/11/85
A ITEM 12: WAS 3/4-10x2 HX SOC HD SET SCREW WITH A 25°	3/20/84	1/11/84
DESCRIPTION	DATE	APPD
REVISION		

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES		DRAWN	DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
TOLERANCE ON DECIMALS	XX = ± .01	CHECKED	DATE	TITLE	
TOLERANCE ON ANGULARS	XX = ± .01	APPROVED	DATE	THRUST ROLLER ASSEMBLY	
TOLERANCE ON FRACTIONS	XX = ± 1/16	APPROVED	DATE	DWG. NO. D10HDM15	
MACHINE FINISH	XX = ± .005	APPROVED	DATE	DWG. SIZE FULL	
NEXT ASSEMBLY		WEIGHT		DWG. NO. D10HDM15	
DRAWING NO.	ITEM	QTY	860 LBS	FILE NO.	
APPLICABLE DOC		APPLICABLE DOC		SHEET 1 OF 1	

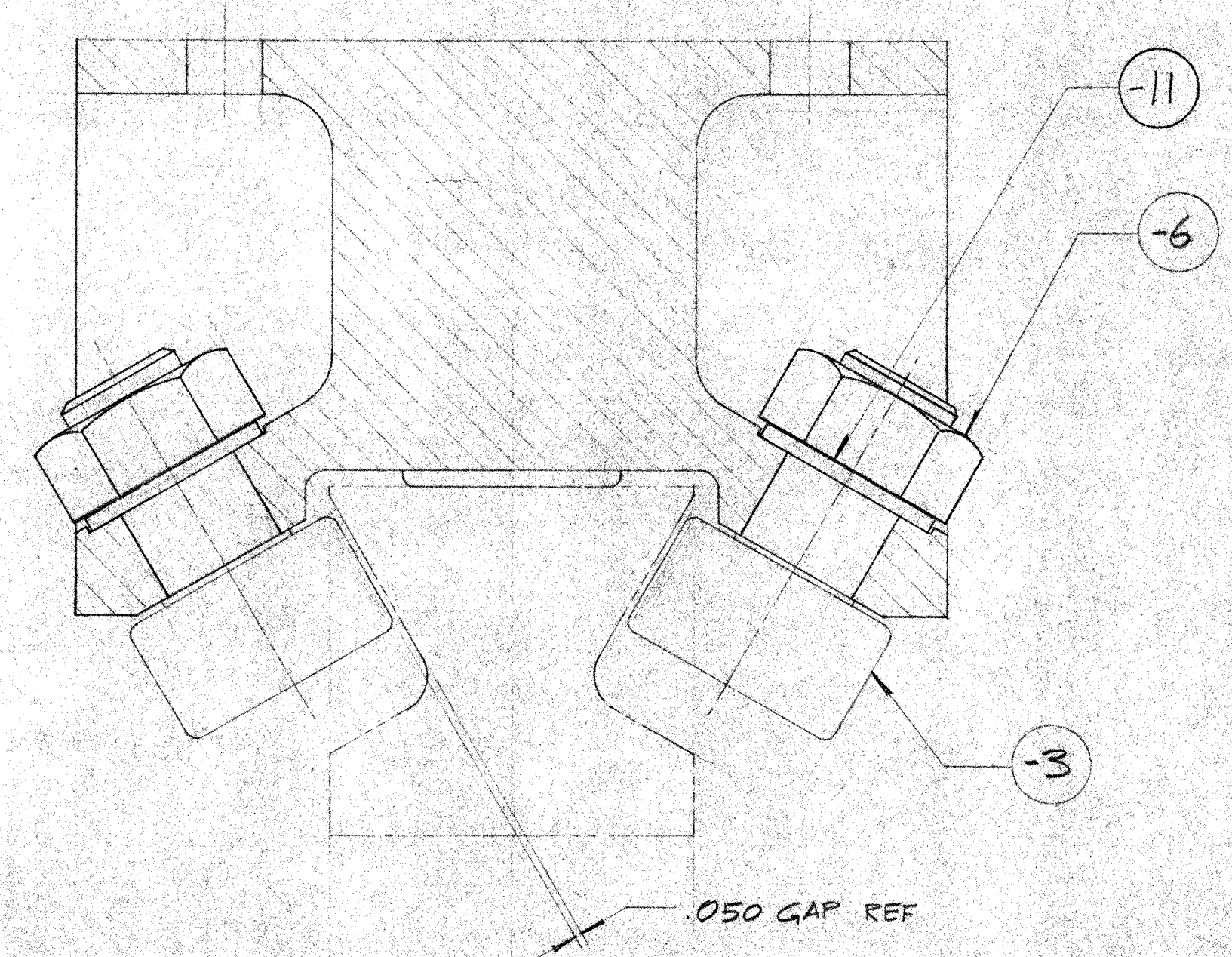
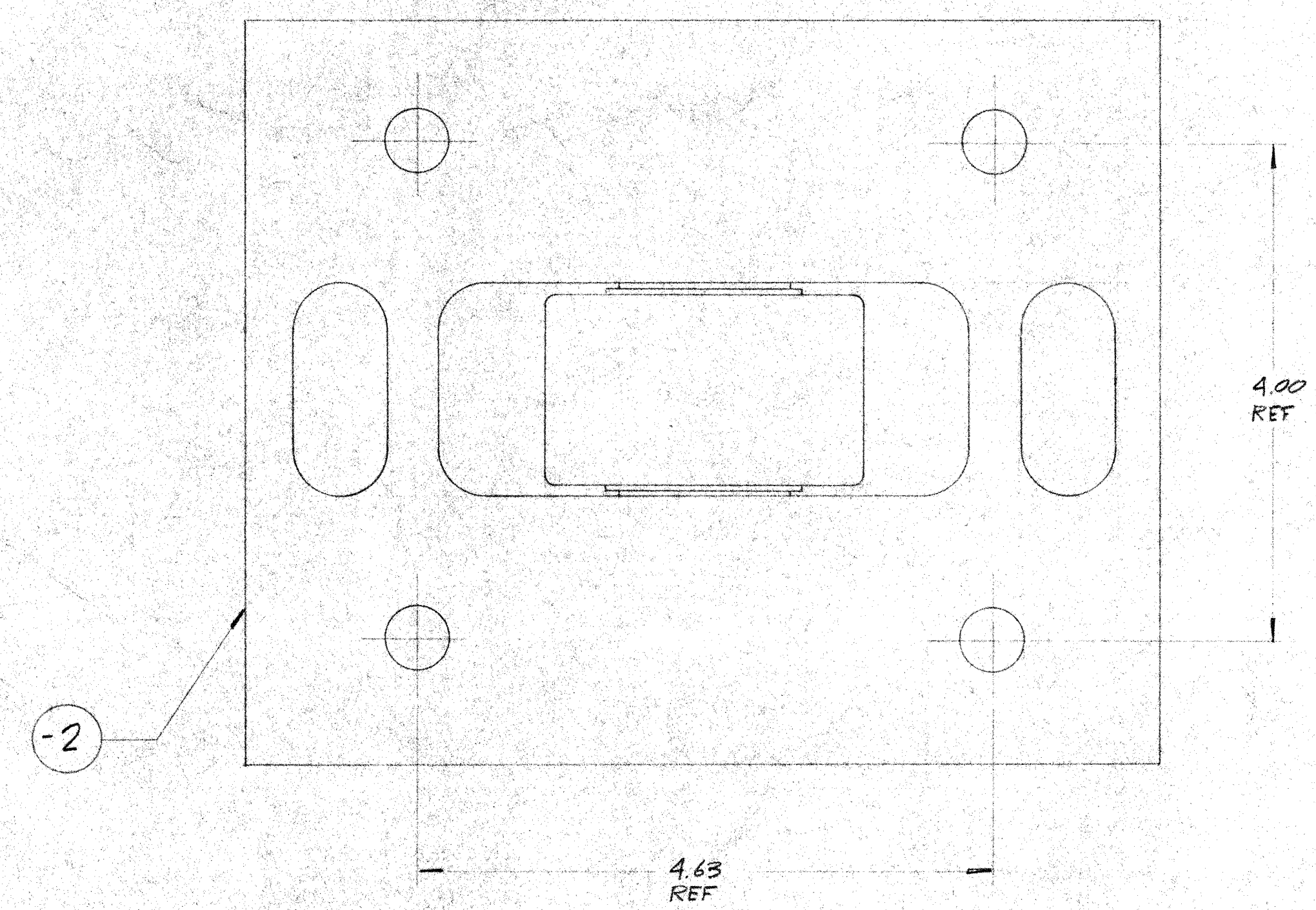
E D10HDM15 9



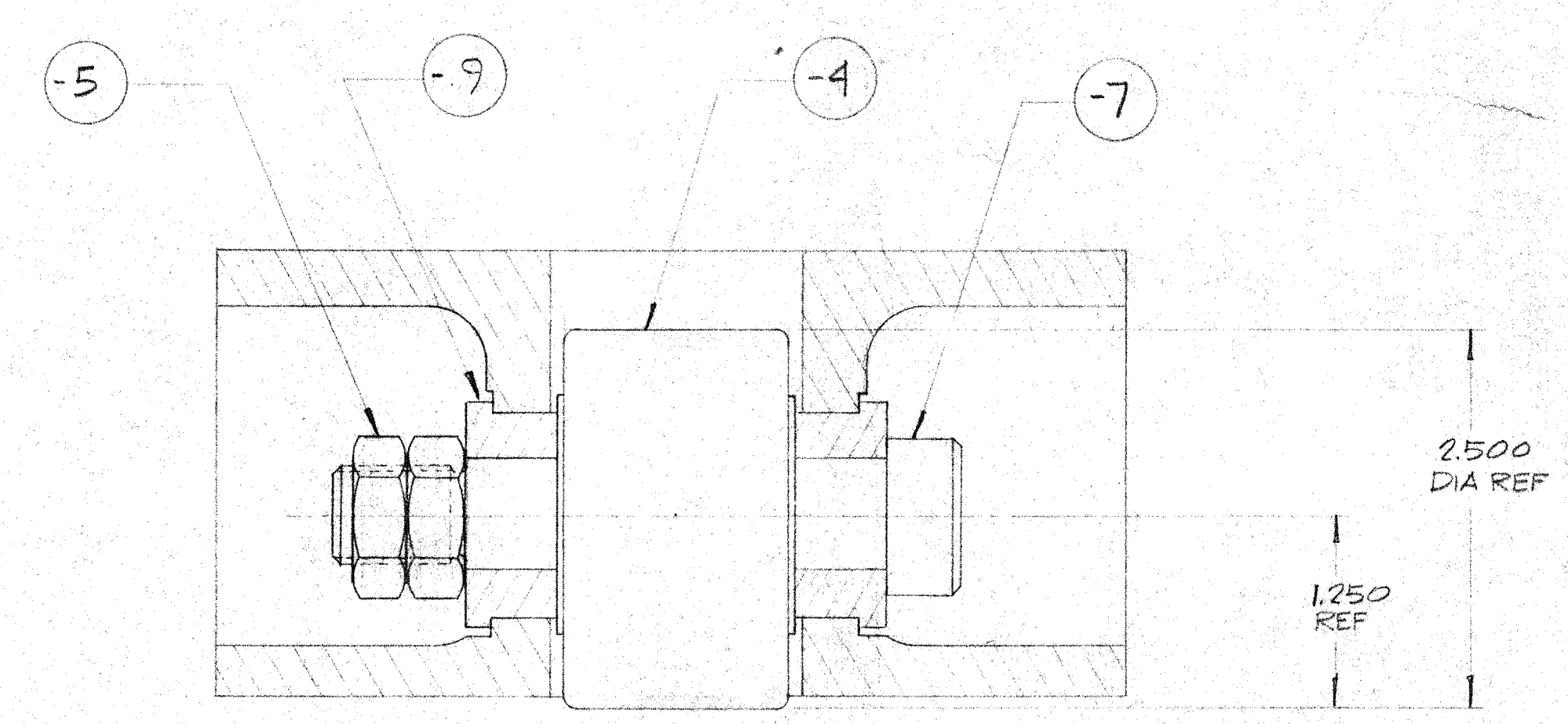
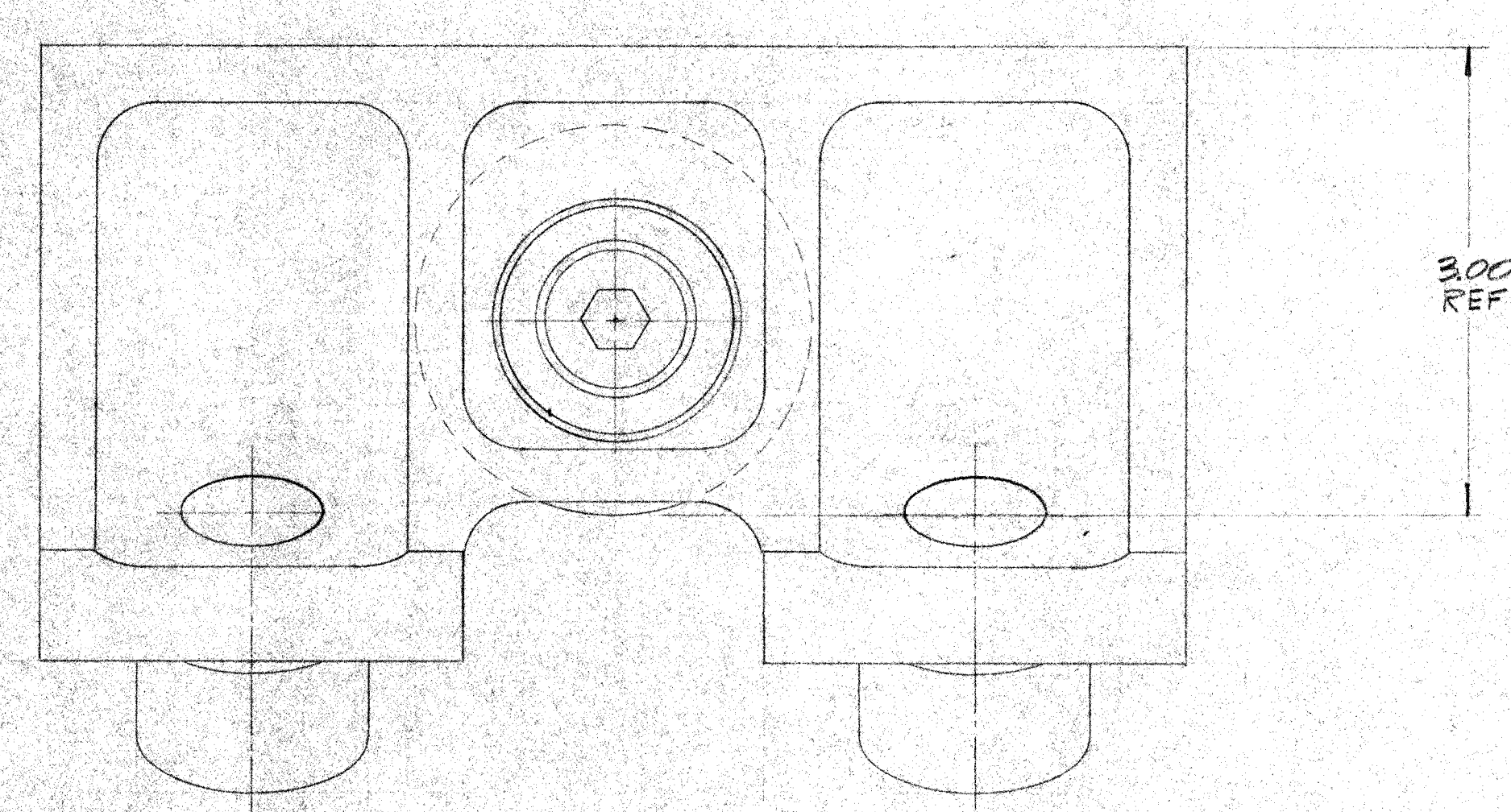
-9 BUSHING DETAIL (2)



-11 WASHER DETAIL



SECTION A A

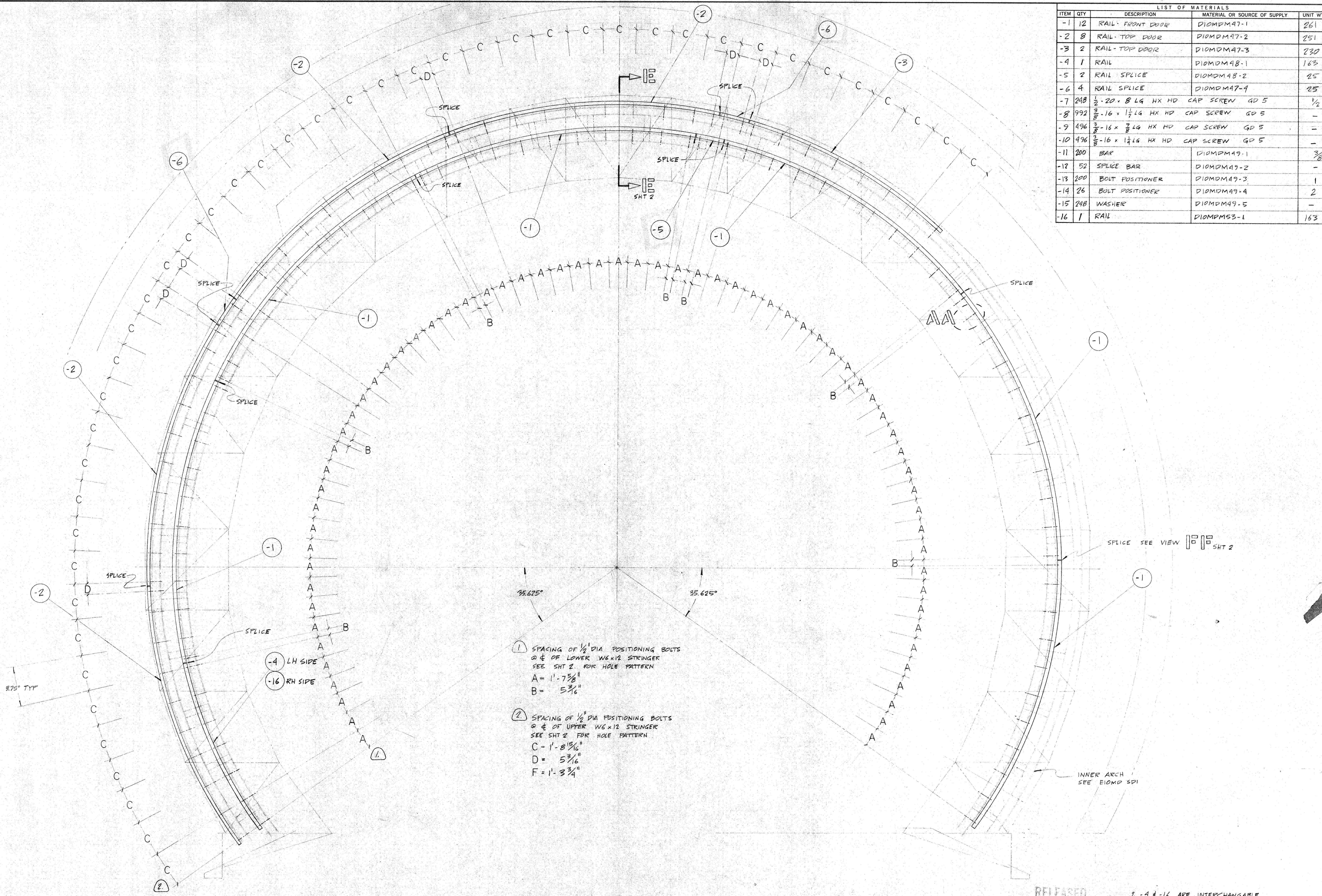


SECTION B B

4. ITEM NOT SHOWN. LOCATE ON STUD END OF ITEM -7.
3. ITEMS NOT SHOWN. LOCATE FOR ACCESSIBILITY ON STUD END OF ITEMS -3.
2. PROTECTIVE FINISH: ZINC IRRIDITE: .0002" THK
- NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT
1	56	DOOR DOLLIE ASSY	CONSISTS OF 1 EA -2, -4, -7, 2 EA -5, -9, 4 EA -3, -6, 5 EA -8	14
2	56	CASTING	DIOMDM28	7
3	224	CAM FOLLOWER	MCGILL CCFH - 1 1/8" - 5B	1
4	56	CAM FOLLOWER	MCGILL CYR - 2 1/2" - 5	2
5	112	5/8 x 11 HEX JAM NUT	USASI B18.2.2	-
6	224	1/8 x 14 STEEL INSERT JAM LOCK NUTS		-
7	56	SHOULDER BOLT	A10MDM40	1
8	56	ALEMITE DRIVE FTG 3/16 DIA, 65%		-
9	112	BUSHING 1/2 OD x 1" LONG	1018 C.D. BAR	-
10	224	ALEMITE DRIVE FTG 3/16 DIA, STRAIGHT		-
11	224	WASHER 1 3/4 DIA x 1/8 THK	1018 C.D. BAR	-

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 125		DRAWN: V. K. K. / 10/68 CHECKED: / APPROVED: / DATE: / /	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF. TITLE: DOOR DOLLIE ASSY # DETAIL DWG. NO.: DIOMDM28 FILE NO.: / W.O.: / DEPT: / SHEET: / OF: /
HAWAII ERECTION BID SET LTR: / DESCRIPTION: / DATE: / / APPD: /		NEXT ASSEMBLY DRAWING NO.: / ITEM: / QTY: / WEIGHT: / Lbs APPLICABLE DOC: /	



LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT
-1	12	RAIL - FRONT DOOR	DIOMDMA7-1	261
-2	8	RAIL - TOP DOOR	DIOMDMA7-2	251
-3	2	RAIL - TOP DOOR	DIOMDMA7-3	230
-4	1	RAIL	DIOMDMA8-1	163
-5	2	RAIL SPLICE	DIOMDMA8-2	25
-6	4	RAIL SPLICE	DIOMDMA7-4	25
-7	248	1/2-20 x 8 LG HX HD CAP SCREW GD 5		1/2
-8	992	3/8-16 x 1 1/2 LG HX HD CAP SCREW GD 5		-
-9	496	3/8-16 x 7/8 LG HX HD CAP SCREW GD 5		-
-10	496	3/8-16 x 1 1/4 LG HX HD CAP SCREW GD 5		-
-11	200	BAR	DIOMDMA9-1	3/8
-12	52	SPLICE BAR	DIOMDMA9-2	-
-13	200	BOLT POSITIONER	DIOMDMA9-3	1
-14	26	BOLT POSITIONER	DIOMDMA9-4	2
-15	248	WASHER	DIOMDMA9-5	-
-16	1	RAIL	DIOMDMA3-1	163

- 1 SPACING OF 1/2" DIA POSITIONING BOLTS @ 4" OF LOWER W6x12 STRINGER SEE SHT 2 FOR HOLE PATTERN
A = 1'-7 5/8"
B = 5 3/16"
- 2 SPACING OF 1/2" DIA POSITIONING BOLTS @ 4" OF UPPER W6x12 STRINGER SEE SHT 2 FOR HOLE PATTERN
C = 1'-8 5/16"
D = 5 3/16"
F = 1'-3 3/4"

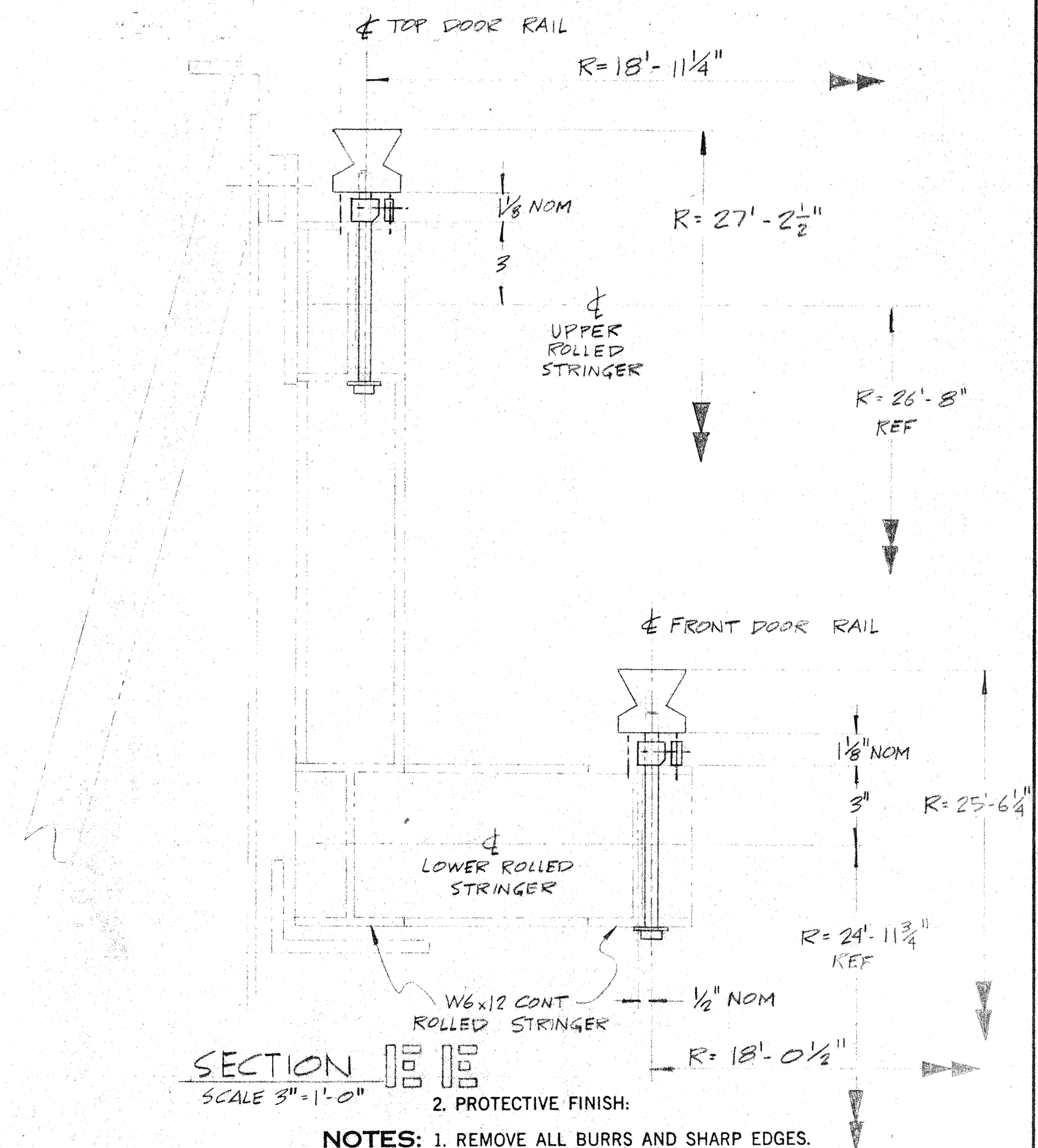
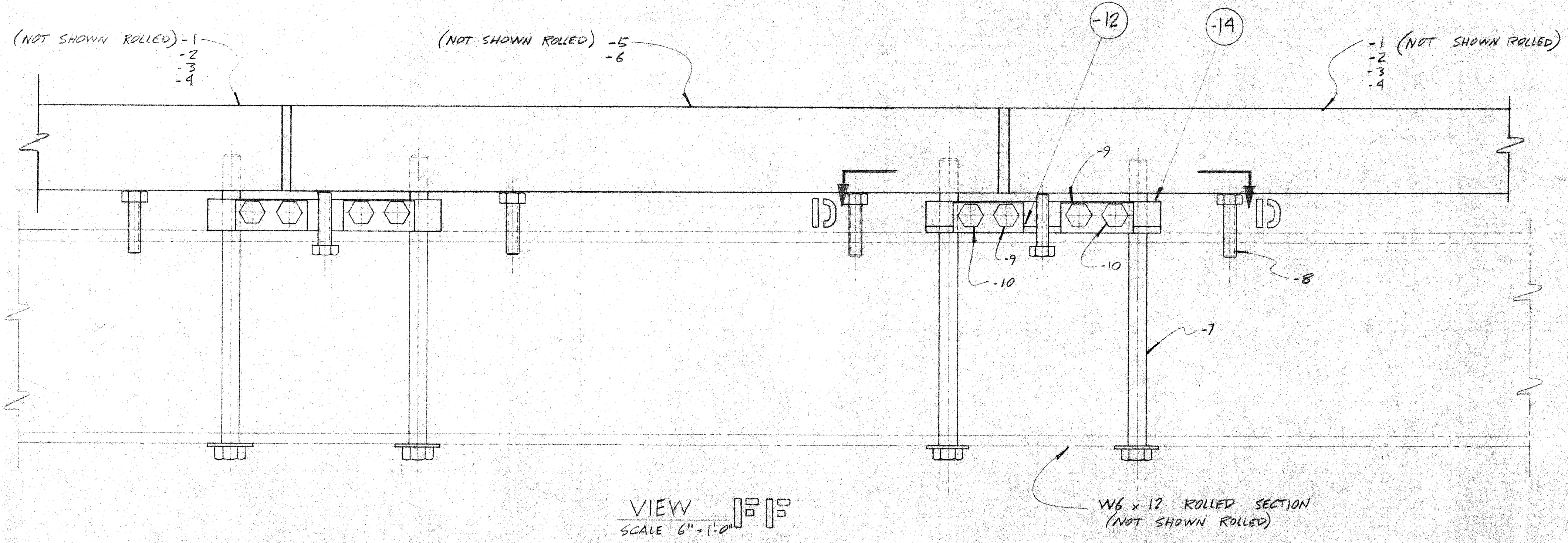
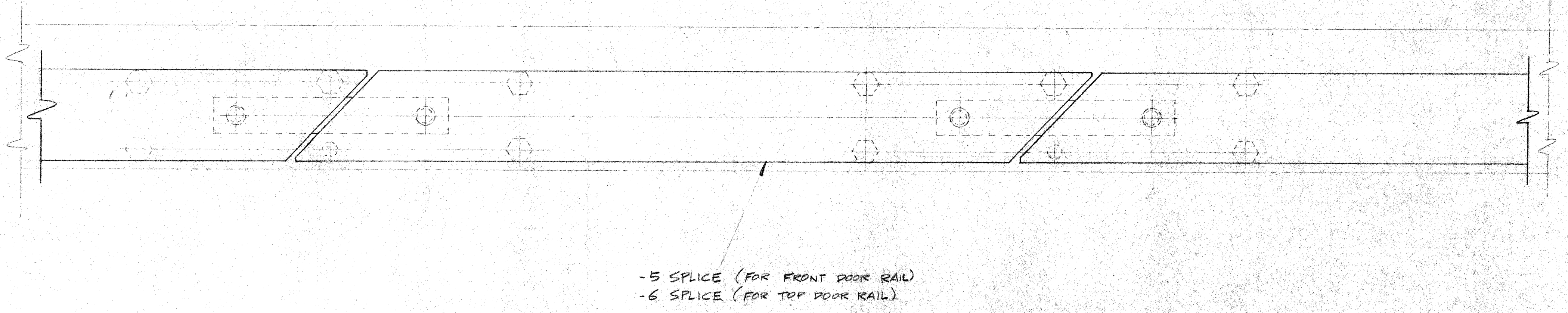
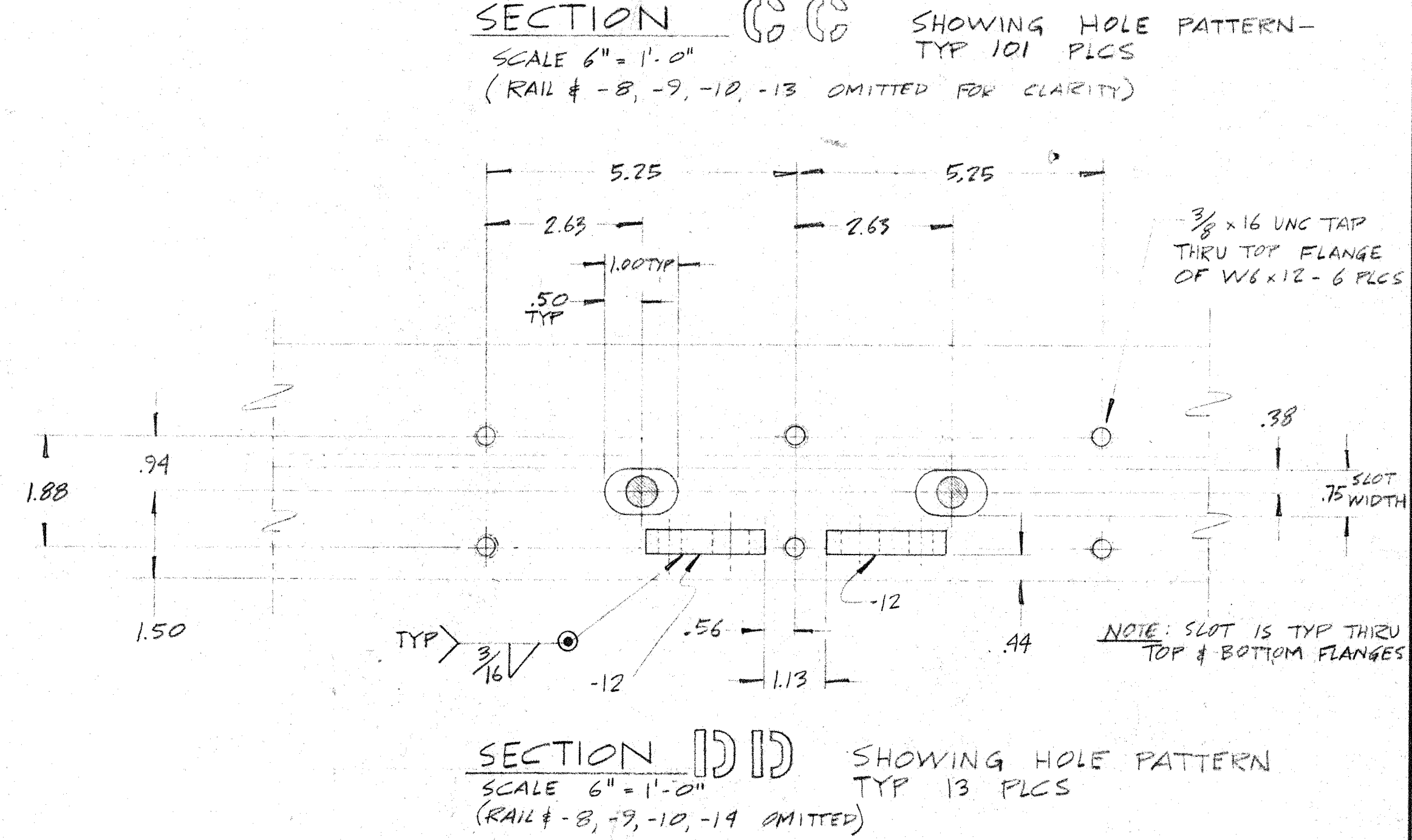
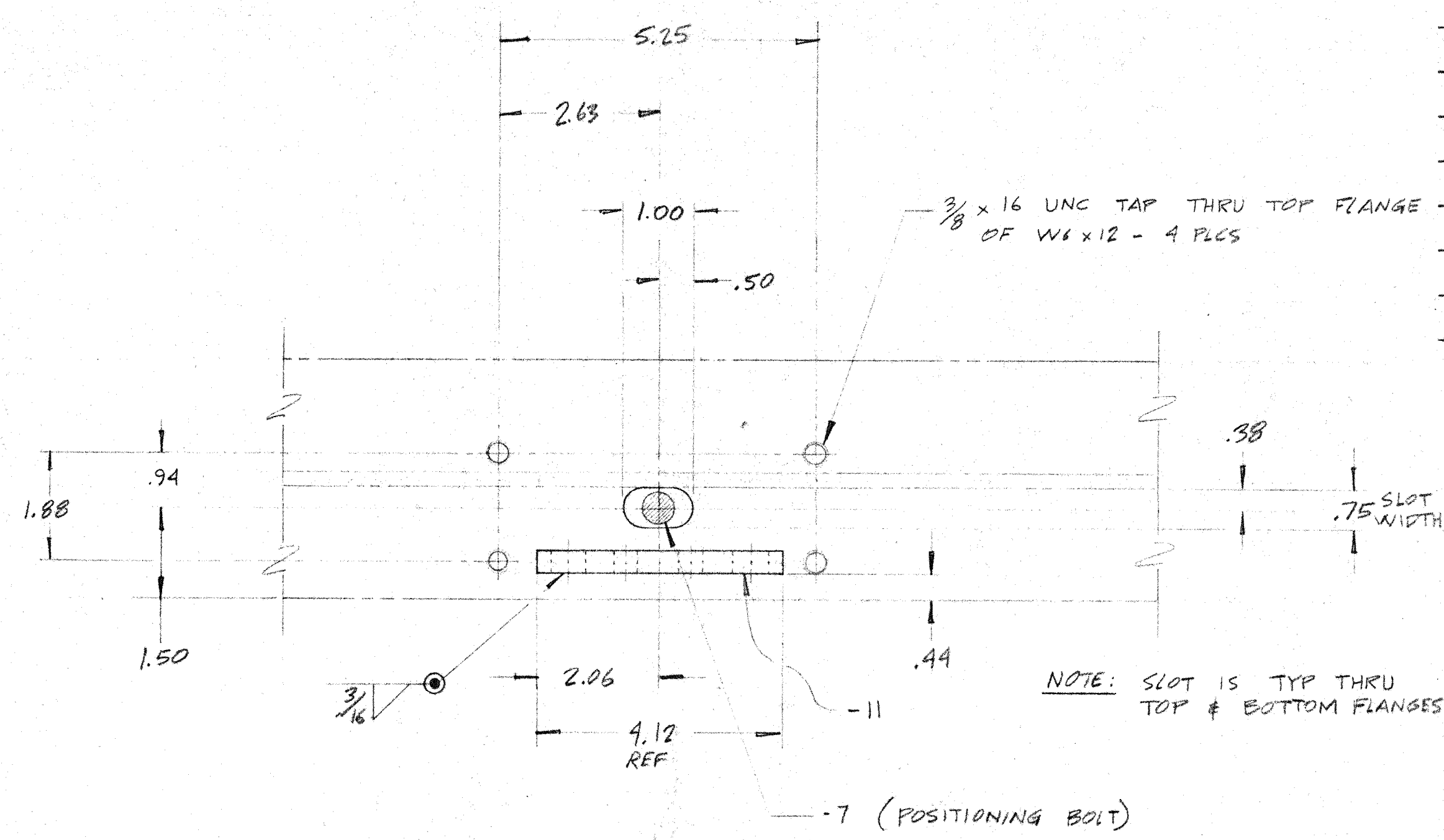
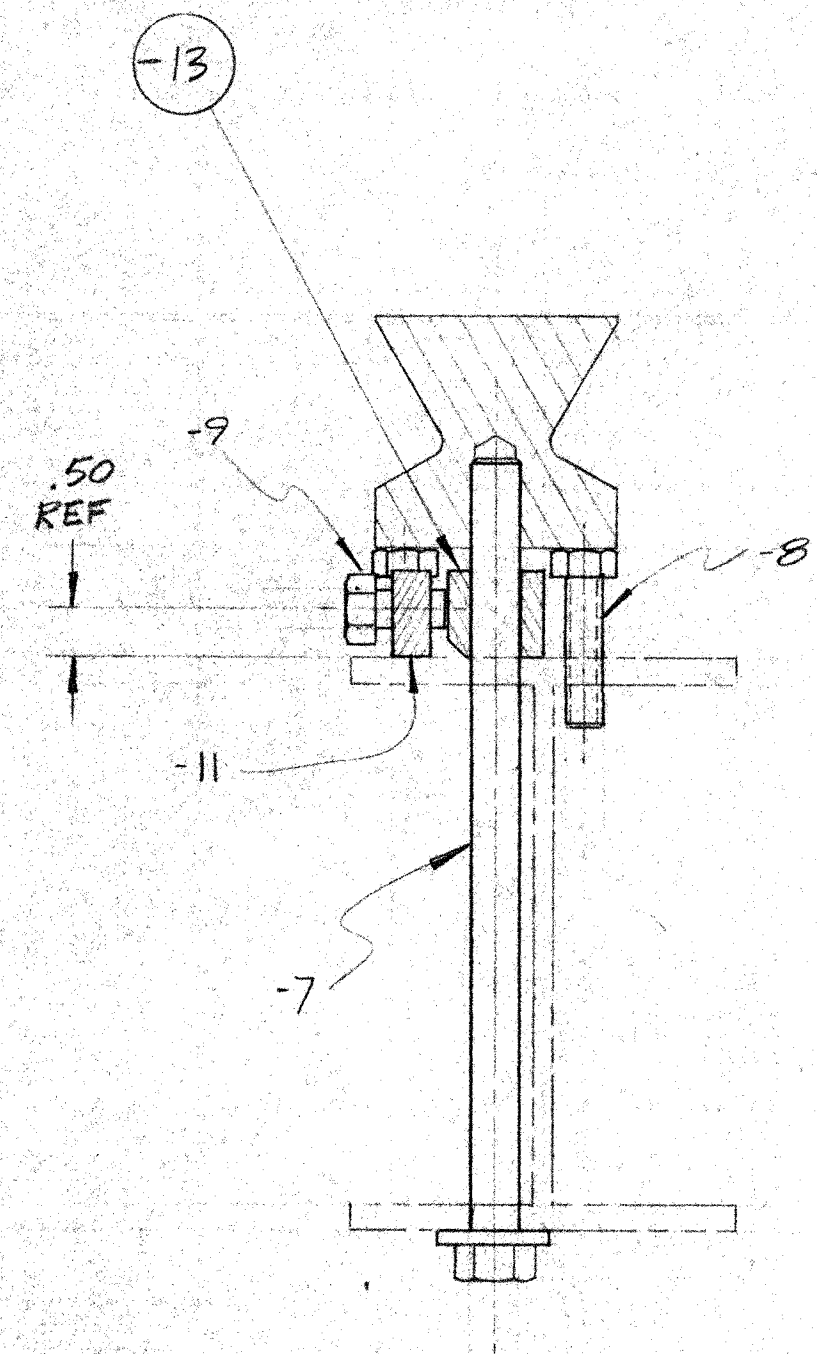
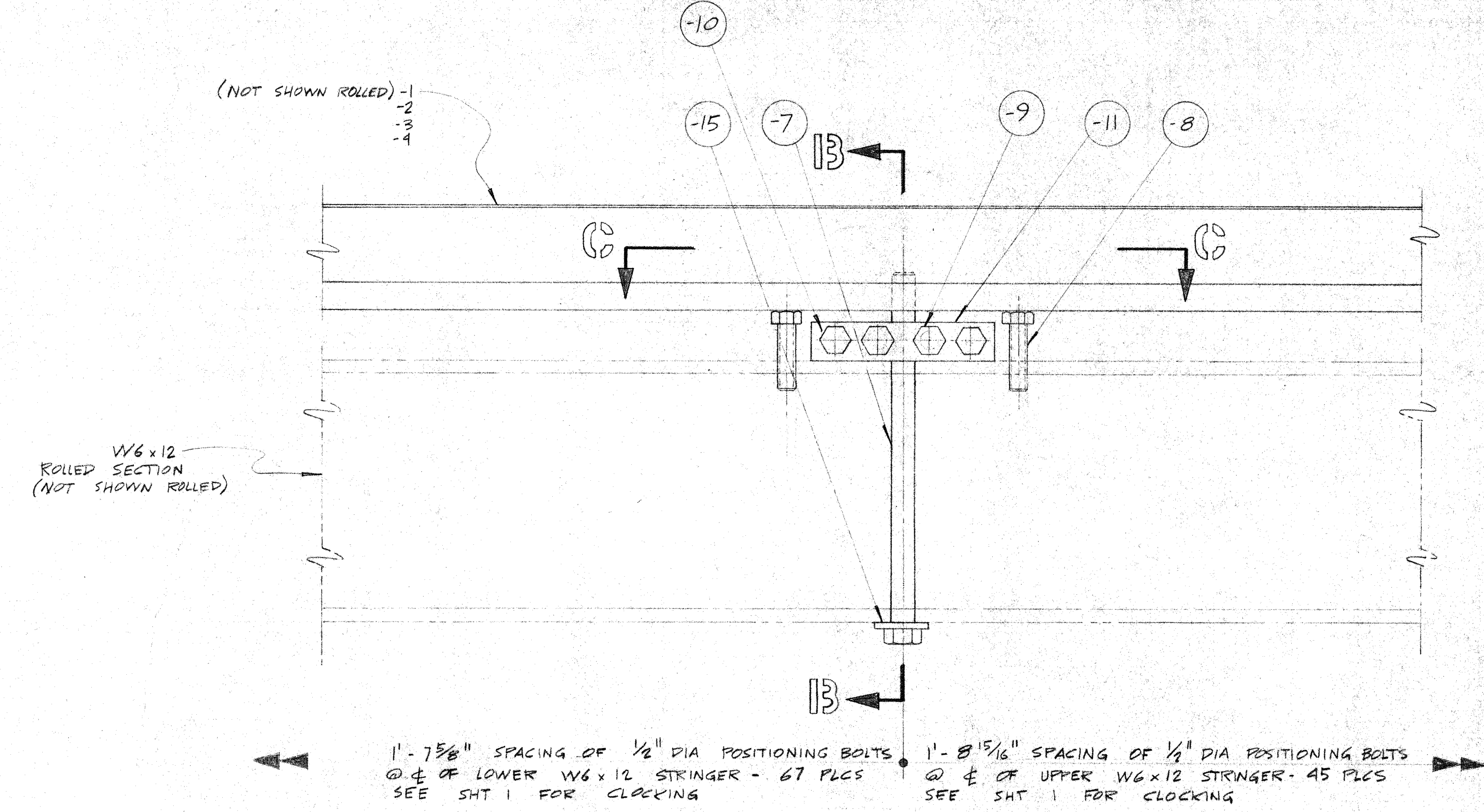
RAIL INSTALLATION LH SIDE OF DOME SHOWN
RH OPPOSITE
SCALE 1/2" = 1'-0"

RELEASED
AUG 23 1984

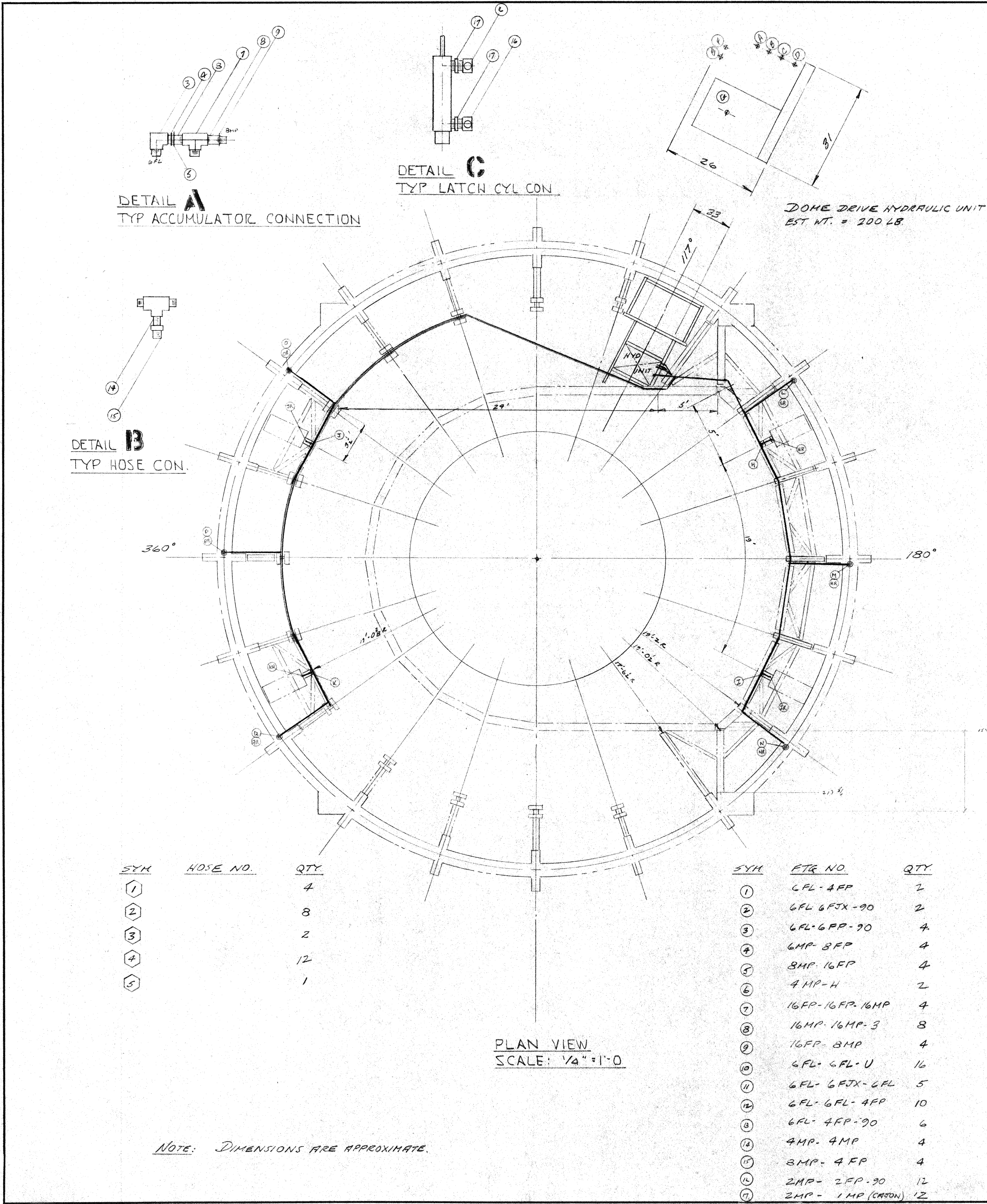
1. -4 & -16 ARE INTERCHANGABLE.
2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 ANGULAR = ± 1/2° XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/		DRAWN VLC CHECKED DATE APPROVED DATE APPROVED DATE	DATE DATE DATE DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
TITLE SHUTTER DOOR RAIL INSTALLATION		DWG. NO. E10MDM50a		SHEET OF 2	
DRAWING NO. ITEM QTY		WEIGHT APPLICABLE DOC		FILE NO. W.O. DEPT	
HAWAII ERECTION BID SET LTR DESCRIPTION DATE APPD		2004/11/4 DATE APPD			

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT

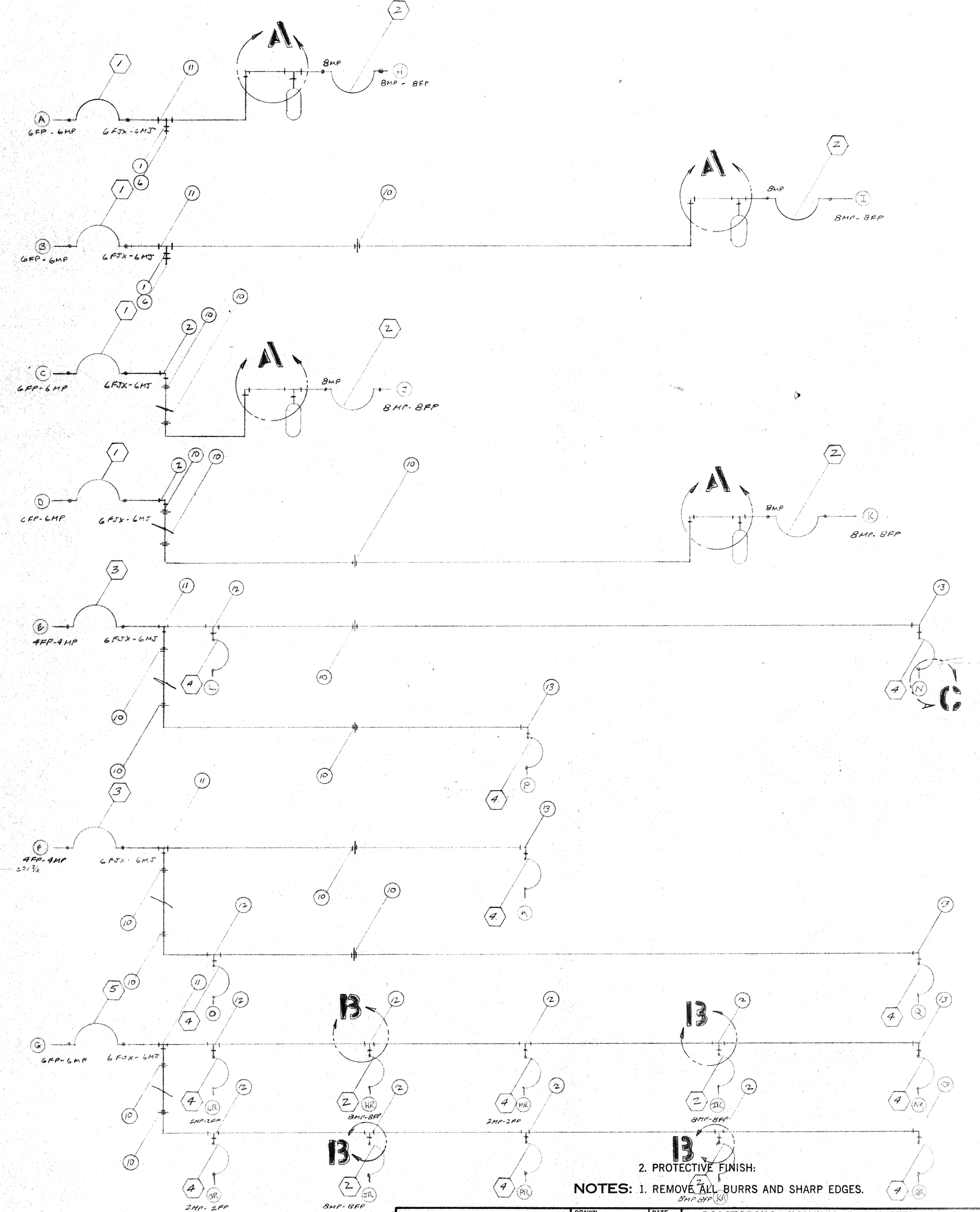


UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .05 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/		DRAWN V/K CHECKED DATE APPROVED DATE APPROVED DATE		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
HAWAII ERECTION BID SET 12/20/84 DATE APP'D		NEXT ASSEMBLY DRAWING NO. ITEM QTY WEIGHT APPLICABLE DOC		TITLE SHUTTER DOOR RAIL INSTALLATION DWG. NO. E101MM506 FILE NO. W.O. DEPT. SHEET 2 OF 2	



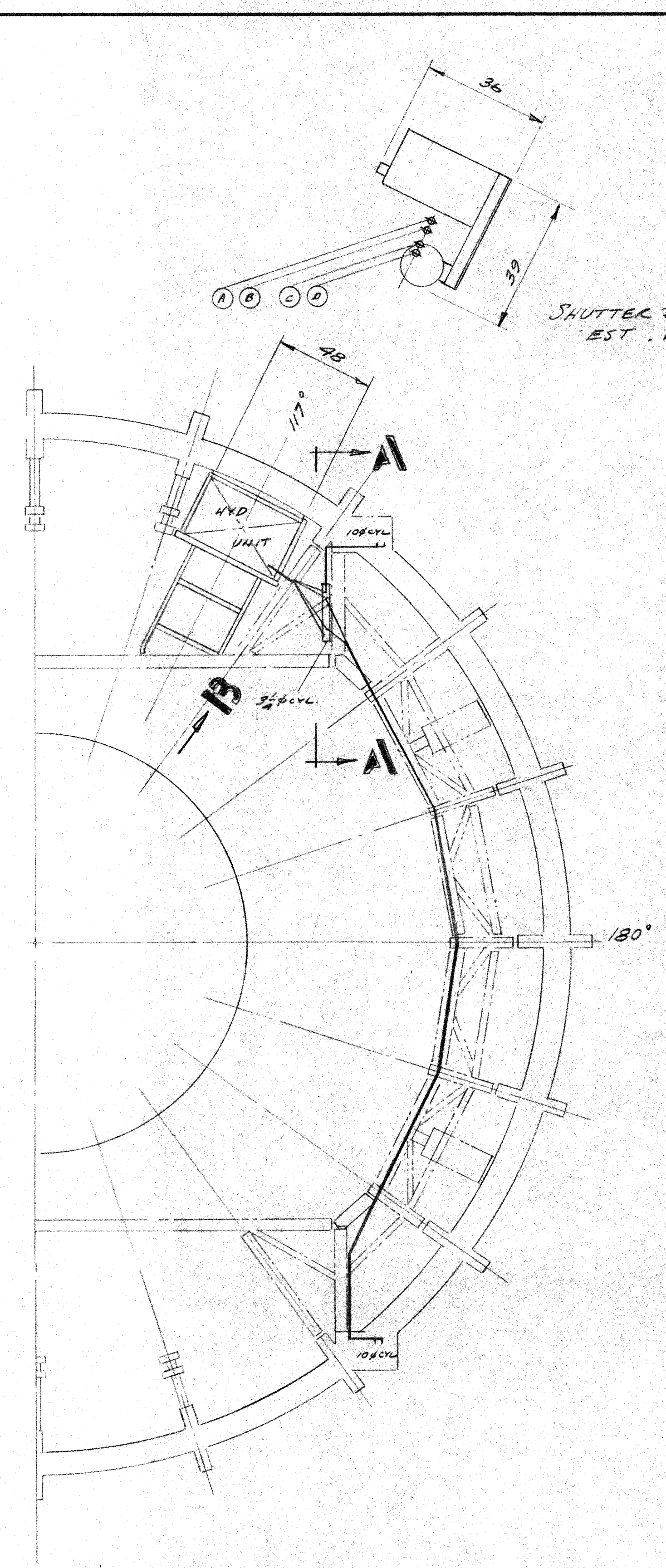
SYM	HOSE NO.	QTY
1		4
2		8
3		2
4		12
5		1

SYM	ETR NO.	QTY
1	6FL-4FP	2
2	6FL-6FTX-90	2
3	6FL-6FP-90	4
4	6MP-8FP	4
5	8MP-16FP	4
6	4MP-H	2
7	16FP-16FP-16MP	4
8	16MP-16MP-3	8
9	16FP-8MP	4
10	6FL-6FL-U	16
11	6FL-6FTX-6FL	5
12	6FL-6FL-4FP	10
13	6FL-4FP-90	6
14	4MP-4MP	4
15	8MP-4FP	4
16	2MP-2FP-90	12
17	2MP-1MP (CASON)	12



UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .03 XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH		DRAWN	DATE	CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF.	
CHECKED		DATE	TITLE DOME DRIVE HYD. SYS. LAYOUT		
APPROVED		DATE	DWG. NO. D10KDM57		
APPROVED		DATE	FILE NO. W. G. DEPT. SHEET 1 OF 1		
APPLICABLE DOC					

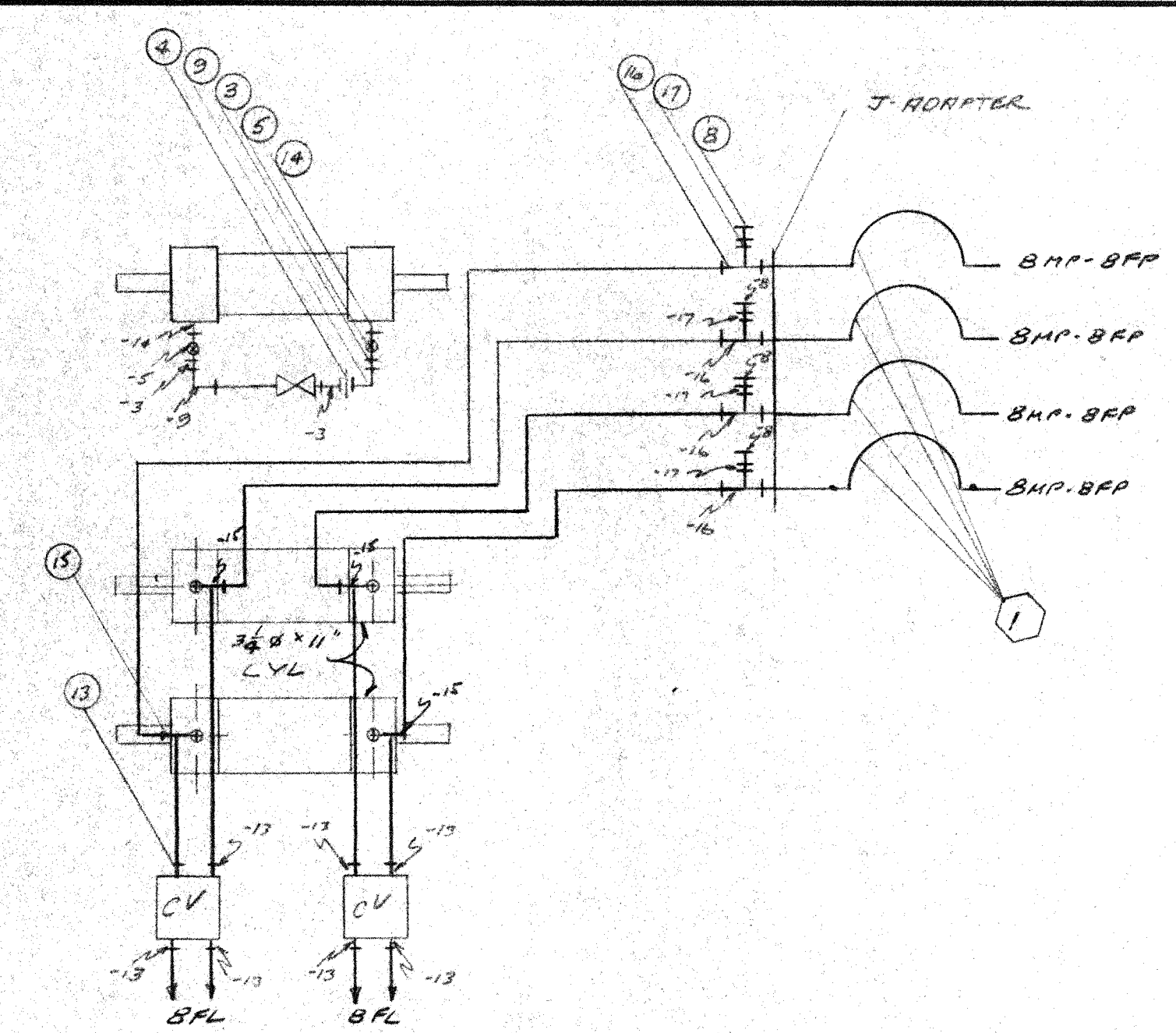
HAWAII ERECTION BLD SET	12/20/84	1/1/85	NEXT ASSEMBLY	
LTR	DESCRIPTION	DATE	APPD	DRAWING NO.
	REVISION			ITEM QTY



PLAN VIEW
SCALE: 1/4" = 1'-0"

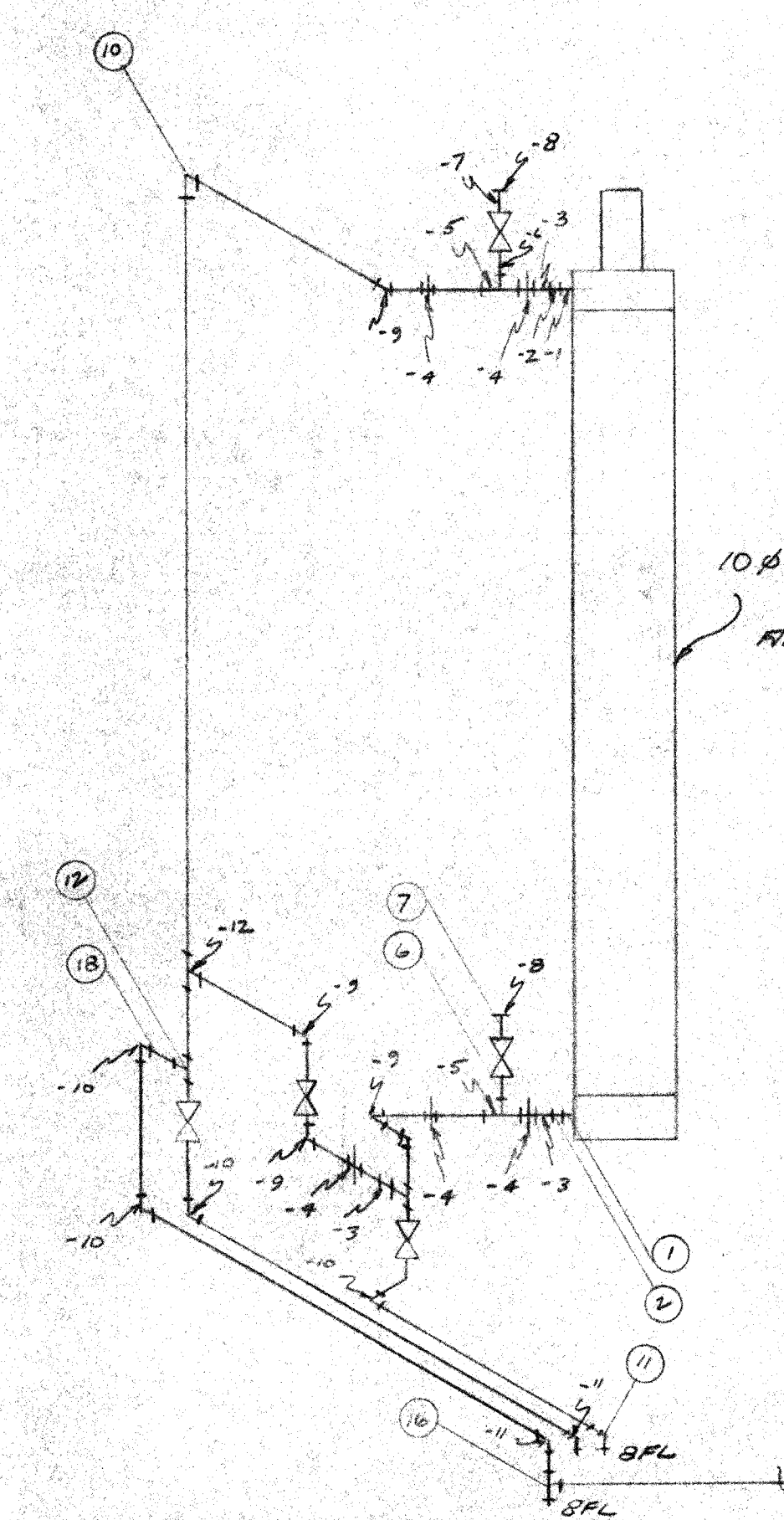
NOTE: DIMENSIONS ARE APPROXIMATE.

SHUTTER DRIVE HYDRAULIC UNIT
EST. WT. = 800 LB.



VIEW AA
SCALE: NONE

SYM	HOSE NO	QTY
1		4



VIEW B DRIVE CYL LAYOUT
1 - AS SHOWN
1 - OPPOSITE HAND

SCALE: NONE

10.6 x 111" STROKE
CYLINDER
APPROX. WT. = 2311 LB

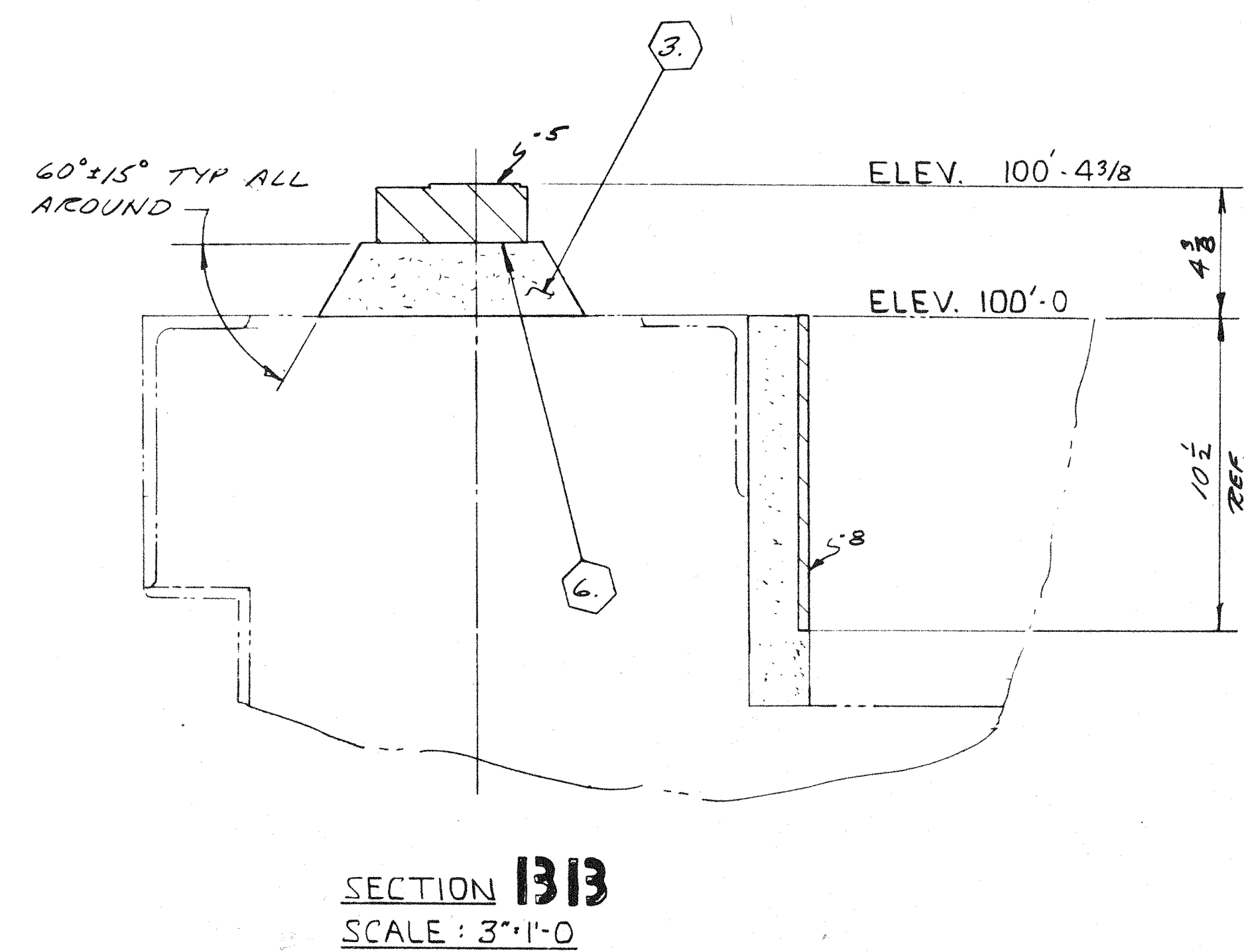
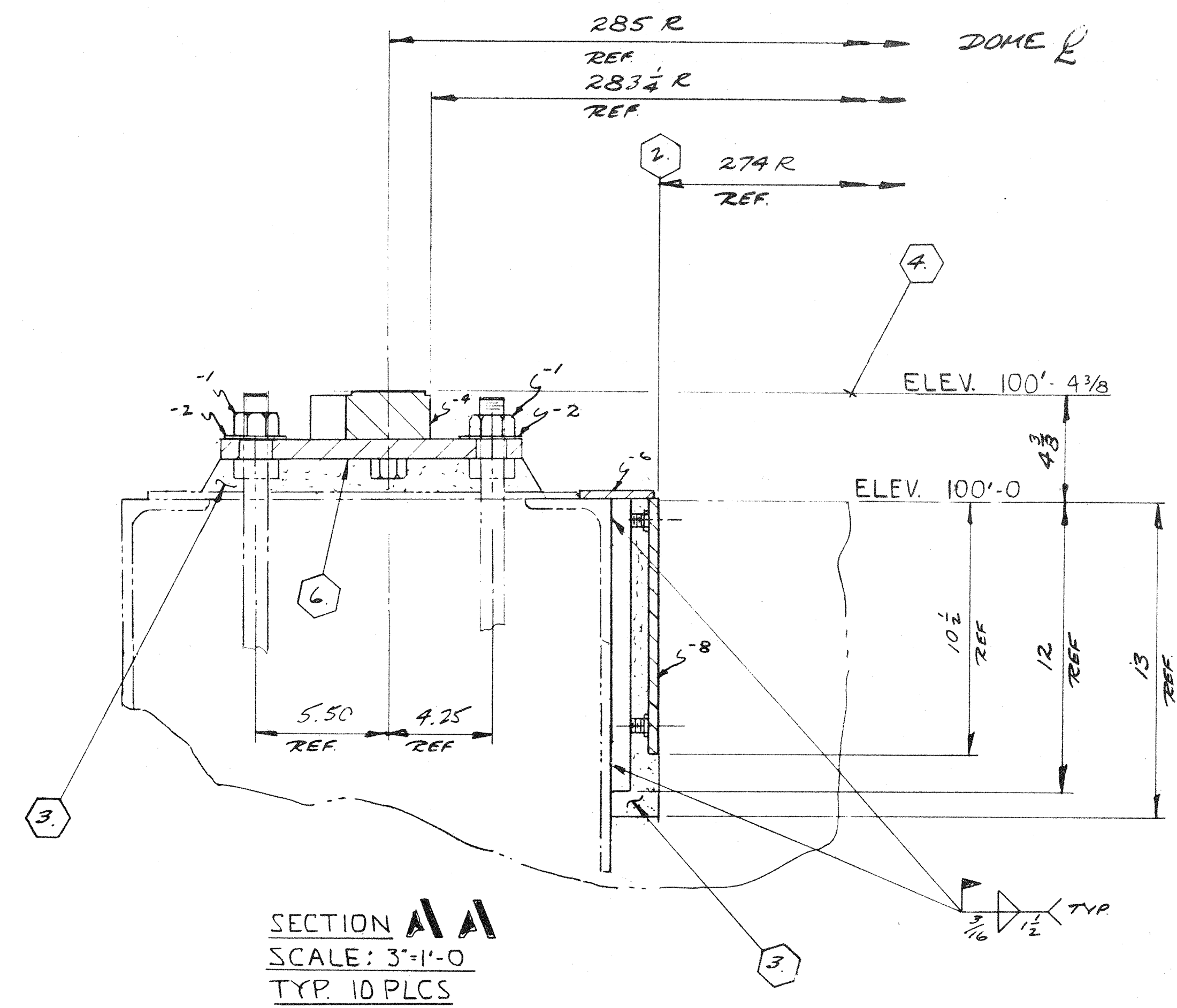
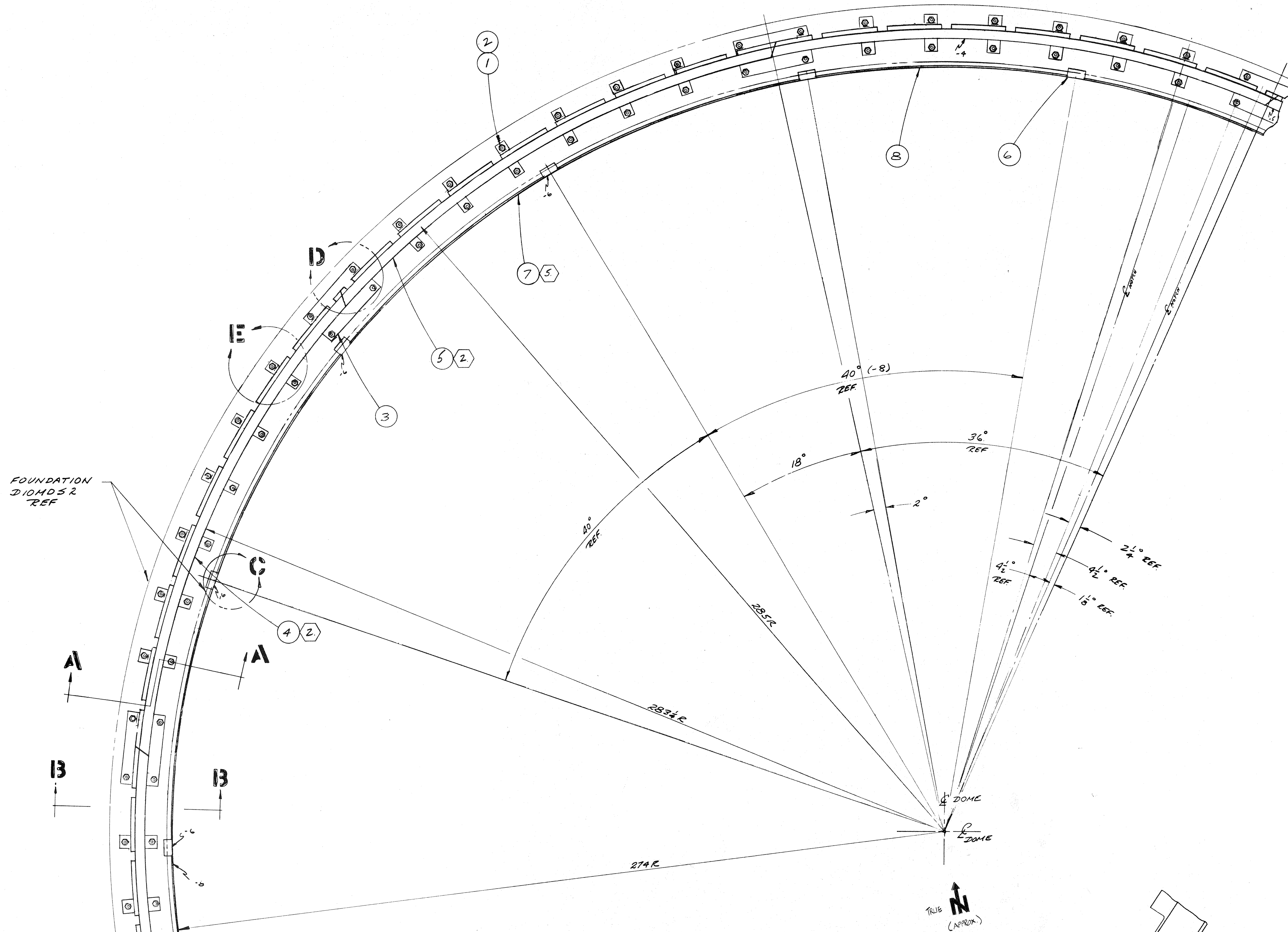
SYM	FTG NO.	QTY
1	32HP-16FP	4
2	16HP-8FP	4
3	8MP-8MP	12
4	8FP-8FP-U	14
5	8MP-8FP-8FP	3
6	8FP-4MP	4
7	4MP-4FP	4
8	4MP-H	3
9	8MP-8FP-90	12
10	8FP-8FP-90	22
11	8FL-8FP-90	4
12	8FP-8FP-8FP	6
13	8FL-8MP	3
14	12MP-8FP	4
15	8MP-8FL-8FL	4
16	8FL-8FTX-8FL	6
17	8FL-4FP	4
18	8MP-8MP-CL	4

LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT

2. PROTECTIVE FINISH:
NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

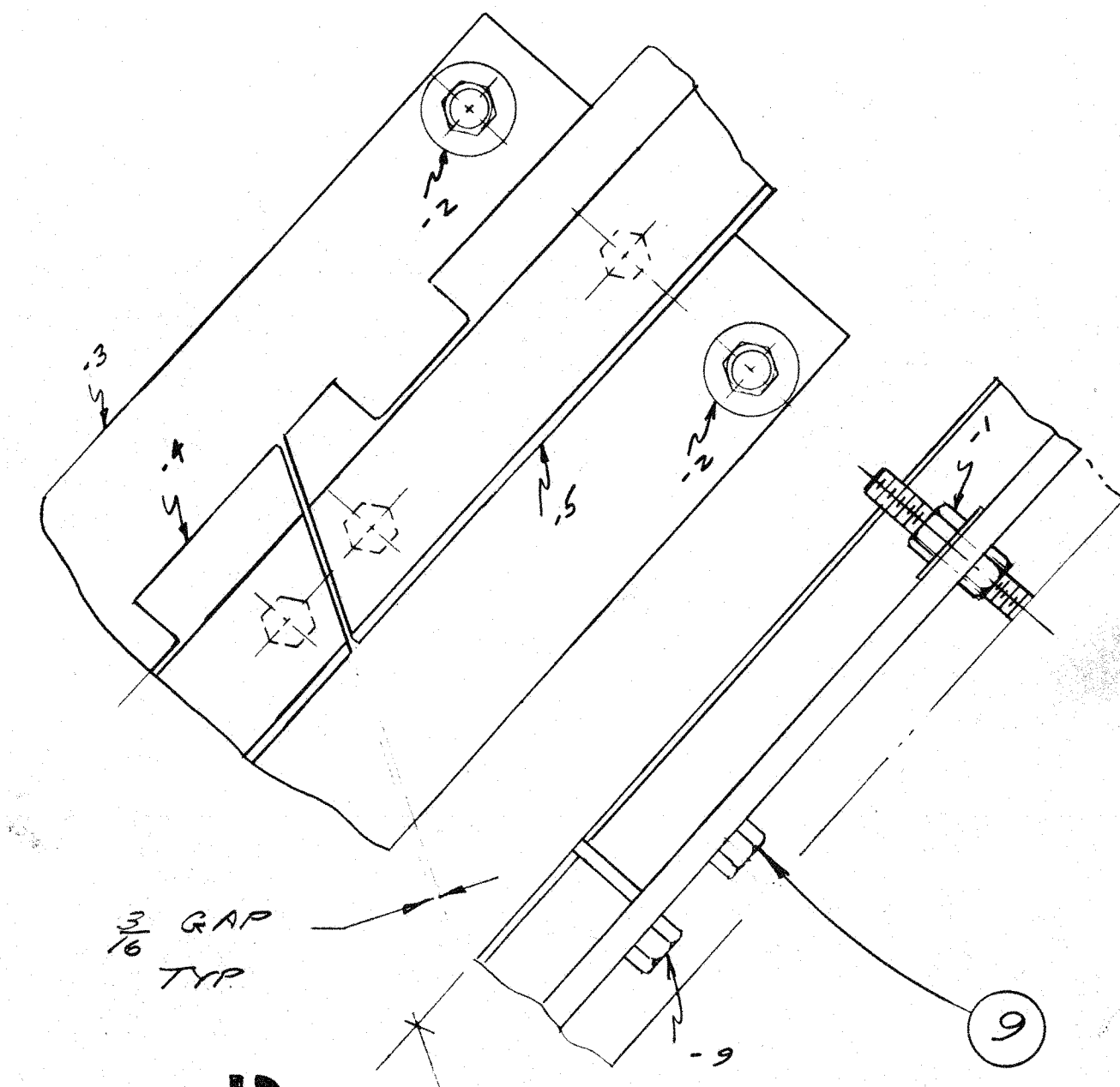
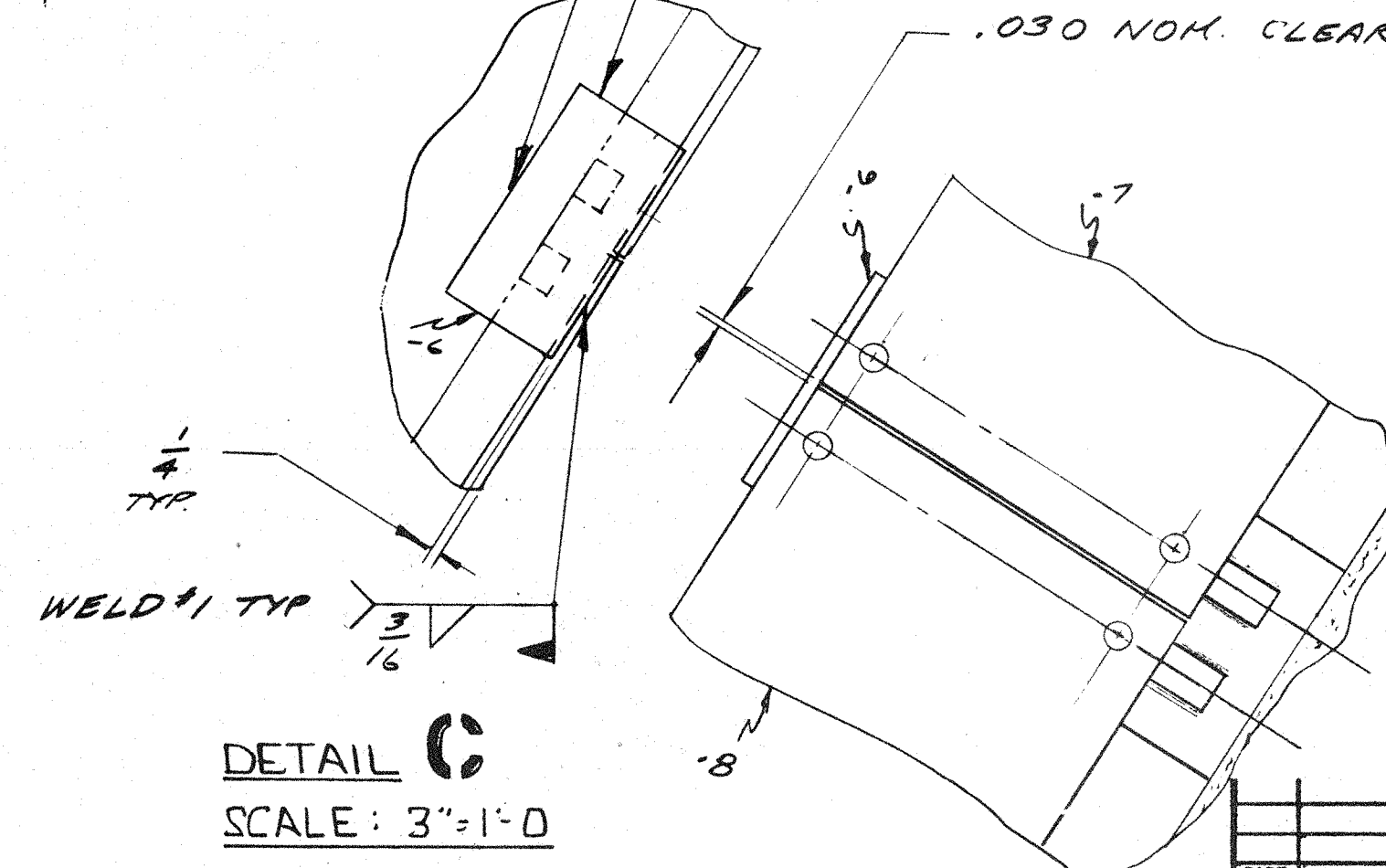
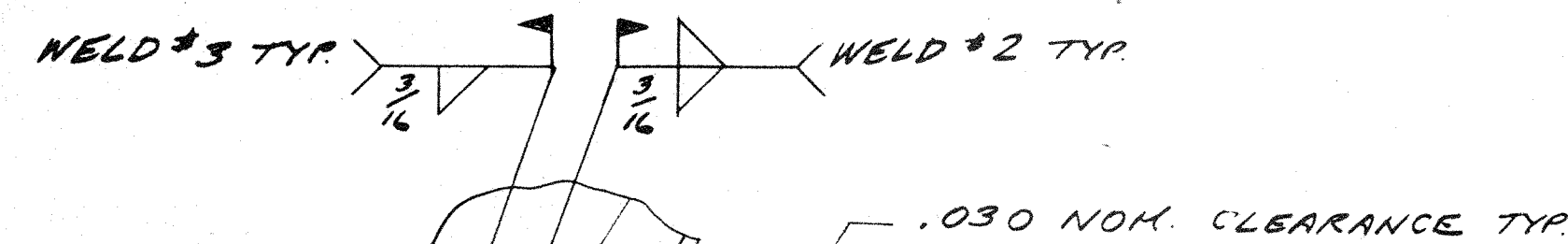
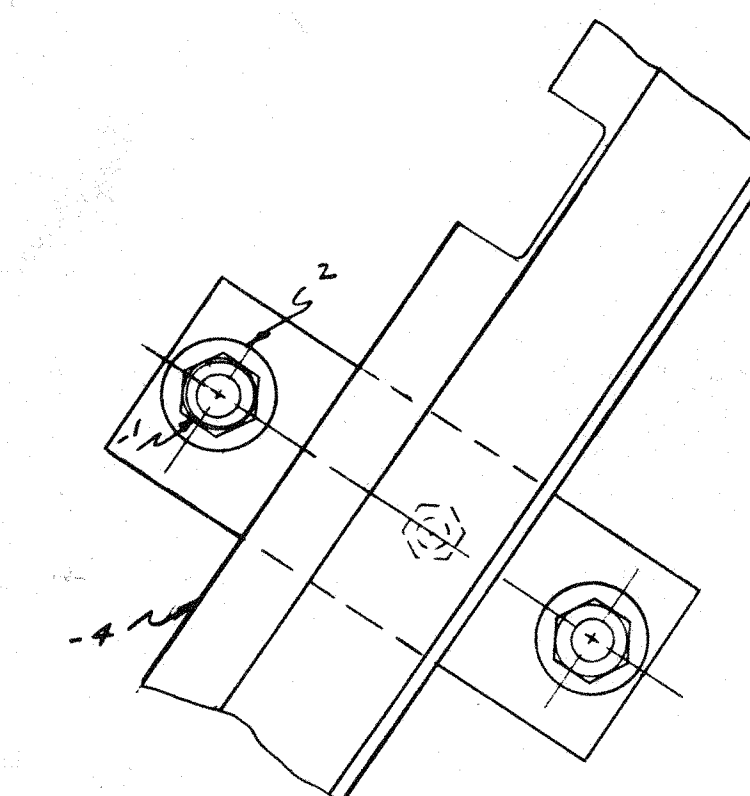
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES TOLERANCE ON DECIMALS XX = ± .05 ANGULAR = ± 1/2° XXX = ± .005 TOLERANCE ON FRACTIONS ± 1/16 MACHINE FINISH 12/				DRAWN W.I. CHECKED DATE APPROVED DATE APPROVED DATE		CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CALIF. TITLE SHUTTER DRIVE HYD SYS LAYOUT DWG. NO. D10MDH59 D NOTED			
HAWAII ERECTION B/D SET 12/20/84 DATE APPD.		NEXT ASSEMBLY DRAWING NO. ITEM QTY REVISION		WEIGHT APPLICABLE DOC		FILE NO. W.O. DEPT. SHEET 1 OF 1			

D10MDH59



RAIL ASS'Y PLAN (~40% SEGMENT SHOWN)
SCALE: 3/4"=1'-0

DETAIL E
SCALE: 3"=1'-0
TYP



DETAIL D
SCALE: 3"=1'-0

LOCAL GRINDING PERMITTED TO BLEND JOINT. TYP

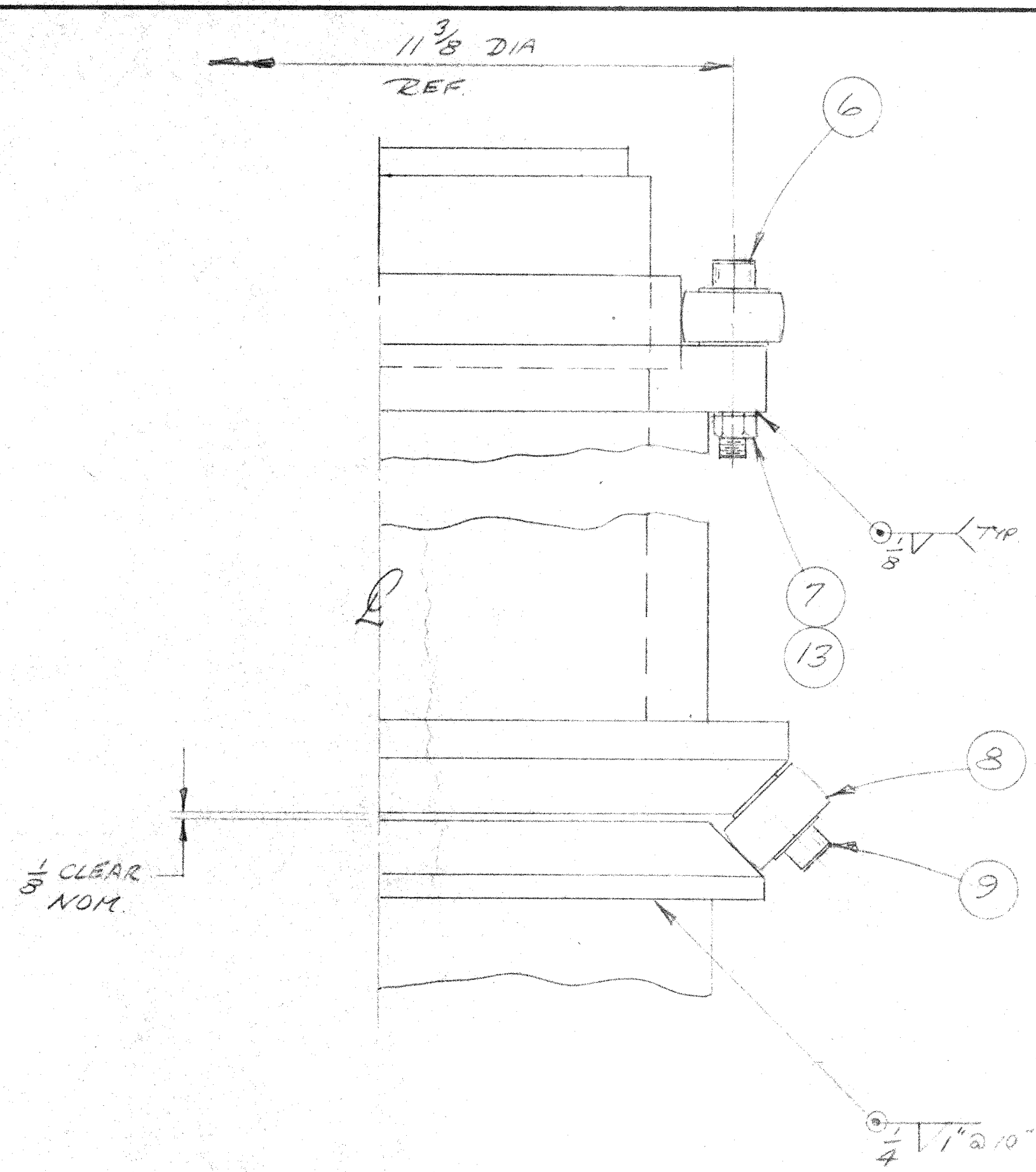
7. THRUST PLATE (ITEM 7-1-B) TO BE SET TO R=274.00 ±.030. NO COMPASS ORIENTATION REQ'D.
6. COAT UNDER SIDE OF RAIL & THE PLATE WITH BURKE METAL FORM COATING # 96-318.
5. INSTALL ITEM 7 LAST & TRIM FOR PROPER FIT.
4. RAIL (ITEM 5) TO BE SET LEVEL TO .020" ACROSS DIAMETER (570" ± 47.50').
3. AFTER ALIGNING & WELDING TACK WITH BURKE NON-FERROUS, NON-SHRINK GROUT, ORDER NO. (324) 57-100. MAY BE PURCHASED FROM:
THE BURKE CO
1625 W WASHINGTON BLVD
MONTBELLO, CA.
2. INSTALL -4 & -5 RAIL ASS'Y'S ALTERNATELY AROUND FOUNDATION RING AS SHOWN.

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

				HAWAII SECTION END 657		12/20/84		12/21/84	
40				3/4-10X1 1/2 LG HX WD BOLT GR 8		-	9		
8				THRUST PLATE D10MDS108 ITEM-1		302	8		
1				THRUST PLATE D10MDS108 ITEM-2		306	7		
18				1/2 X 3 X 6 ASTM A36		1	6		
5				RAIL ASS'Y D10MDS107 ITEM-1		752	5		
5				RAIL ASS'Y D10MDS107 ITEM-2		752	4		
10				RAIL SPLICE PLATE D10MDS107 ITEM-3		71	3		
160				1" NOM DIA. PLAIN WSHR USAS1 B27.2		-	2		
160				1"-8 HX NUT ANSI B18.2.2		-	1		
QTY REQD		PART NO.		DESCRIPTION		MATERIAL OR SOURCE OF SUPPLY		UNIT WT	ITEM NO.
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES				CALIFORNIA INSTITUTE OF TECHNOLOGY					
TOLERANCE ON DECIMALS .XX = ± .05				PASADENA, CALIF.					
TOLERANCE ON ANGULARS ± 1'				TITLE					
TOLERANCE ON FRACTIONS ± 1/16				DOME RAIL					
MACHINE FINISH 16				ASSEMBLY					
DRAWN		W.S.		DATE		10/16/83			
CHECKED		VK		DATE		10/16/83			
APPROVED		MICHAEL		DATE					
CURRENT W.O.		DATE		DWG. SIZE		CODE IDENT NO.		DWG. NO.	
CUSTOMER		E		E				E10MDS100	

RELEASED

E10MDS100



LIST OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL OR SOURCE OF SUPPLY	UNIT WT
1	1	CNT ARM	D10MD 5117 ITEM-4	
2	1	POST	D10MD 5115 ITEM-6	
3	1	ARM	D10MD 5117 ITEM-13	
4	1	TURBO	D10MD 5116 ITEM-5	
5	1	BASE	D10MD 5115 ITEM-1	
6	3	7/16-14x2 3/4 LG STL SKT HD CAP SCREW		
7	3	7/16-14 STL NX NUT		
8	6	CAN FLWR M. GILL CCYR-18-5		
9	3	7/16-14x1 1/2 LG STL SKT HD CAP SCREW		
10	16	3/16-15x1 1/2 LG STL NX HD BOLT		
11	16	5/16-18 STL NX NUT		
12	1	POINTER ASSY	D10MD 5119	
13	3	7/16 NOM DIA PLAN WSKR , STL		
14	1	MAST, UPPER	D10MD 5127 ITEM-1	
15	8	3/4-10 x 2LG NX HD CAP SCREW, STL		
16	1	L2x2x1/8 x 72 LG	ASTM A36	
17	3	1/4-20x2LG NX HD CAP SCREW, STL		
18	3	1/4-20 NX NUT, STL		
19	1	ADJUSTMENT	D10MD 5125 ITEM-1	
20	1	BASE	D10MD 5124 ITEM-1	
21	1	MAST, LWR	D10MD 5116 ITEM-1	
22	4	3/4-10 x 2 3/4 LG HD HD BOLT		
23	4	3/4-10 STL NX NUT		
24	1	PLATE	D10MD 5117 ITEM-5	

DETAIL A
SCALE: FULL

USE $\frac{1}{8}$ " DIA. CABLE W/ TURNBUCKLE
FOR HORIZONTAL STABILIZATION
SYMMETRICAL ABOUT TRUSS.

ASSEMBLY
SCALE: $\frac{3}{4}" = 1'-0"$

A		DESCRIPTION	DATE	APPD
LTR				
REVISION				

RELEASED

2. PROTECTIVE FINISH:

NOTES: 1. REMOVE ALL BURRS AND SHARP EDGES.

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIF.

TITLE SURVEY TOWER
ASSEMBLY

DWG SIZE D	SCALE <i>NOTED</i>	DWG. NO. D10MD S114
FILE NO.	W. O.	DEPT
		SHEET OF

E DIOMDSI 4 E

