

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. ALL DISCREPANCIES SHALL BE PROMPTLY REPORTED TO THE ENGINEER.
2. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXIST'G UTILITY LINES AND NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING WITH WORK.
4. UNLESS SPECIFICALLY DETAILED ELSEWHERE, CONTRACTOR SHALL FOLLOW TYPICAL DETAILS ON THIS SHEET.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318-77.
2. SLEEVES EXCEEDING ON THIRD THE SLAB OR WALL THICKNESS SHALL NOT BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. PIPE MAY PASS THROUGH STRUCTURAL CONCRETE IN SLEEVES BUT, SHALL NOT BE EMBEDDED THEREIN.
3. SECURE ALL BOLTS, ANCHORS, INSERTS, ETC. AND VERIFY ALL GROOVES, SLOTS, AND FINISHES PRIOR TO PLACING CONCRETE.
4. IN GENERAL, ALL BEAMS, GIRDERS AND SUSPENDED SLABS OR TOPPING SHALL BE POURED MONOLITHICALLY.
5. 48 HOURS PRIOR TO THE POURING OF ANY STRUCTURAL CONCRETE THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO AN INSPECTION CAN BE MADE OF ALL FORMS AND REINFORCING STEEL.
6. CONCRETE STRENGTH
COLUMNS $f_c = 4000$ PSI
BRIDGE DECK CLASS BD
ALL OTHER CONCRETE CLASS A

DESIGN SPECIFICATION AND STANDARDS

1. ASSHTO 1983 STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (13TH EDITION) AND ITS SUBSEQUENT INTERIM SPECIFICATIONS.
2. ACI STANDARD 318-83 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
3. HAWAII STANDARD SPECIFICATION FOR ROAD & BRIDGE CONSTRUCTION 1985.

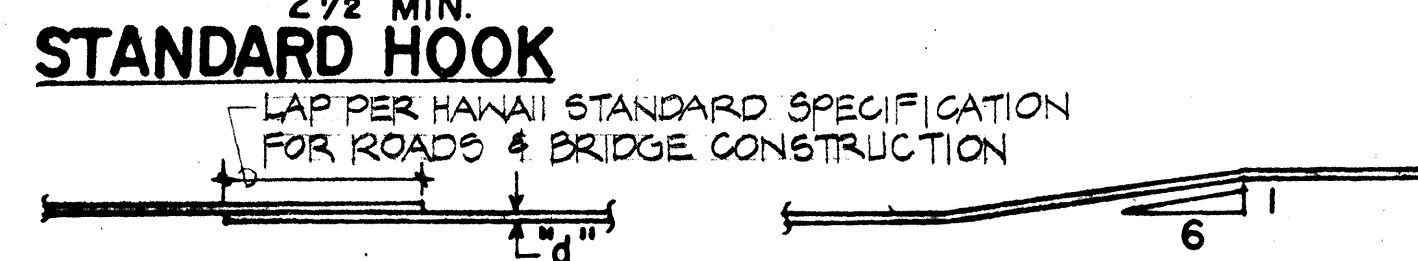
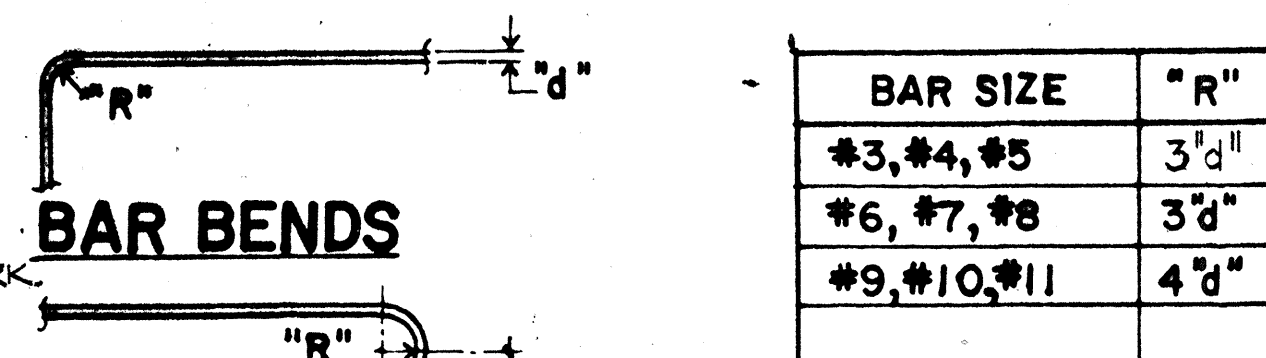
MISCELLANEOUS MATERIALS:

1. ALL STRUCTURAL STEEL ITEMS SHALL BE ASTM A588. ENTIRE FABRICATED ASSEMBLY INCLUDING ANCHORS SHALL BE HOT DIP GALVANIZED.
2. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 AND HOT DIP GALVANIZED.
3. ALL ELASTOMERIC BEARING PADS SHALL BE 60 HARDNESS PADS AND SHALL BE SECURED WITH APPROVED ADHESIVES.

REINFORCING STEEL

1. LOW HYDROGEN WELDING RODS SHALL BE USED FOR ALL WELDING TO REINFORCING BARS.
2. REINFORCING SHALL BE SPLICED ONLY AS NOTED IN DRAWINGS. ALL OTHER SPLICES SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
3. BARS NOTED "CONT." SHALL HAVE A MINIMUM SPLICE LENGTH AS SPECIFIED IN HAWAII STANDARD SPECIFICATION.
4. PROVIDE DOWELS IN FOOTINGS AND/OR GRADE BEAMS THE SAME SIZE AND SPACING AS COLUMN AND WALL REINFORCING. UNLESS NOTED OTHERWISE PROVIDE A MINIMUM PROJECTION AS SPECIFIED IN HAWAII STANDARD SPECIFICATION.
5. MINIMUM CONCRETE COVER FOR REINFORCING BARS SHALL BE:
CONCRETE CAST AGAINST EARTH 3"
EXPOSED TO EARTH OR WEATHER 1-1/2"
BEAMS AND COLUMNS 1-1/2"
FORMED SURFACE BELOW GRADE 2"
ABUTMENT WALLS 2"
DECK SLAB TOP BARS 1/2"
DECK SLAB BOTTOM BARS 1/4"
6. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615
COLUMNS VERTICAL BARS GRADE 60
ALL OTHERS GRADE 40

DESIGN LIVE LOADS HS 20-44

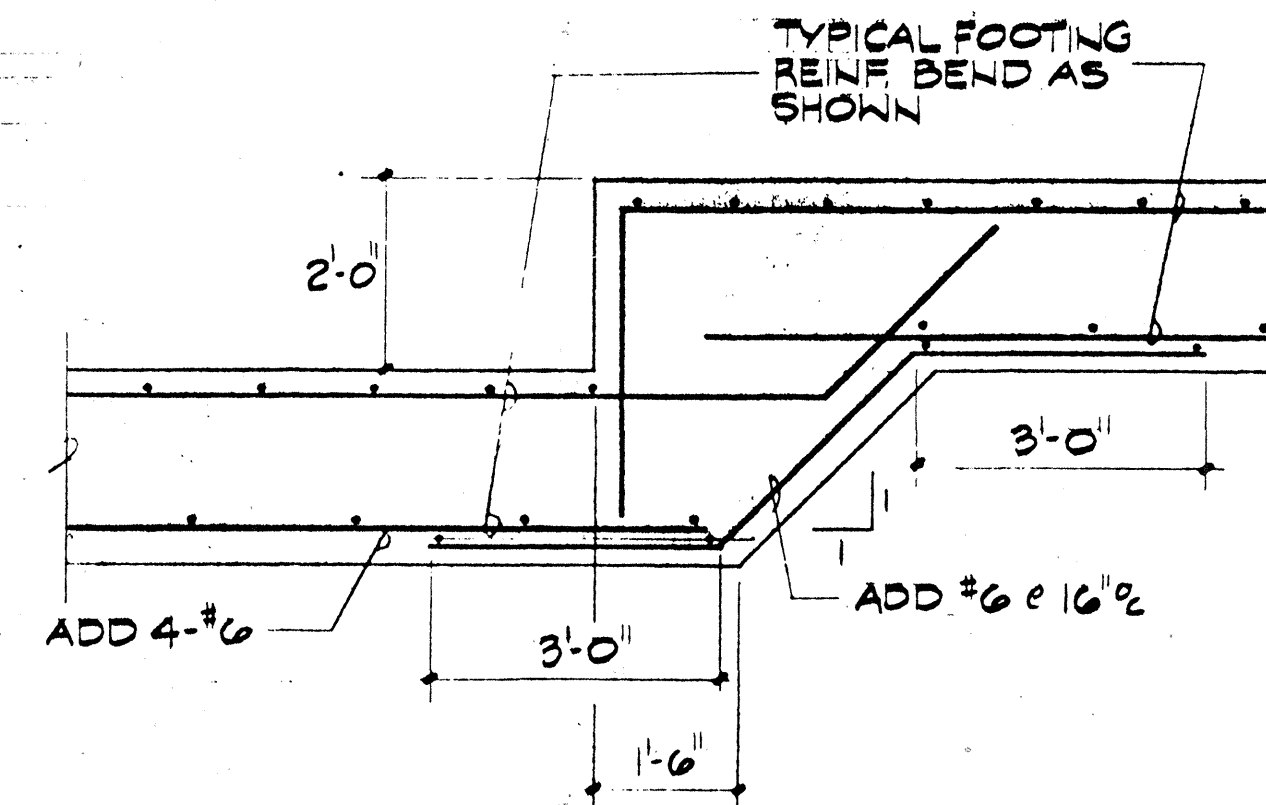


BAR OFFSET

TYPICAL REBAR BENDING DETAIL

NO SCALE

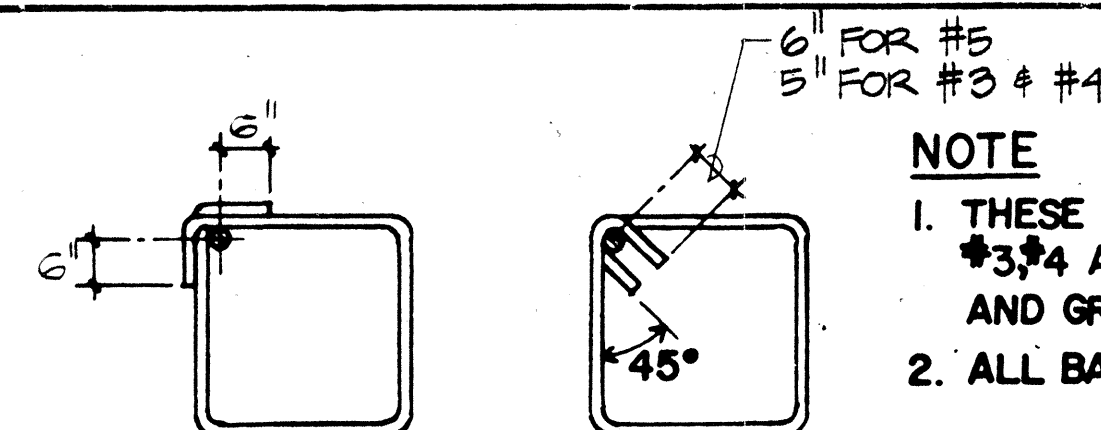
A
S-1



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

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

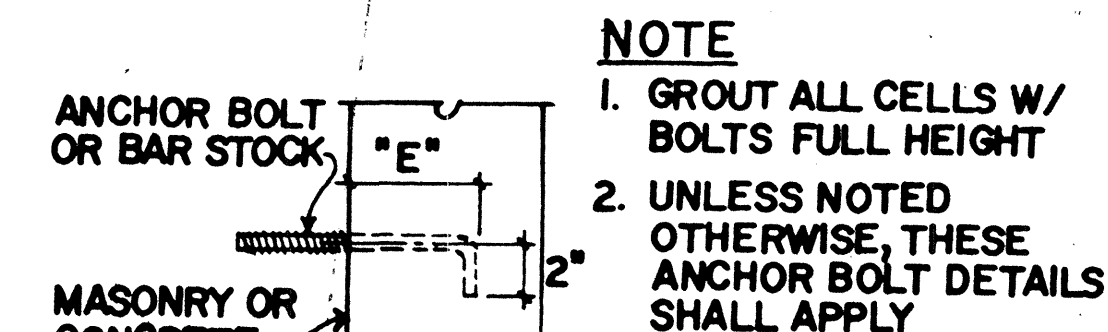
D
S-1



TYPICAL STIRRUP & TIE DETAIL

NO SCALE

B
S-1

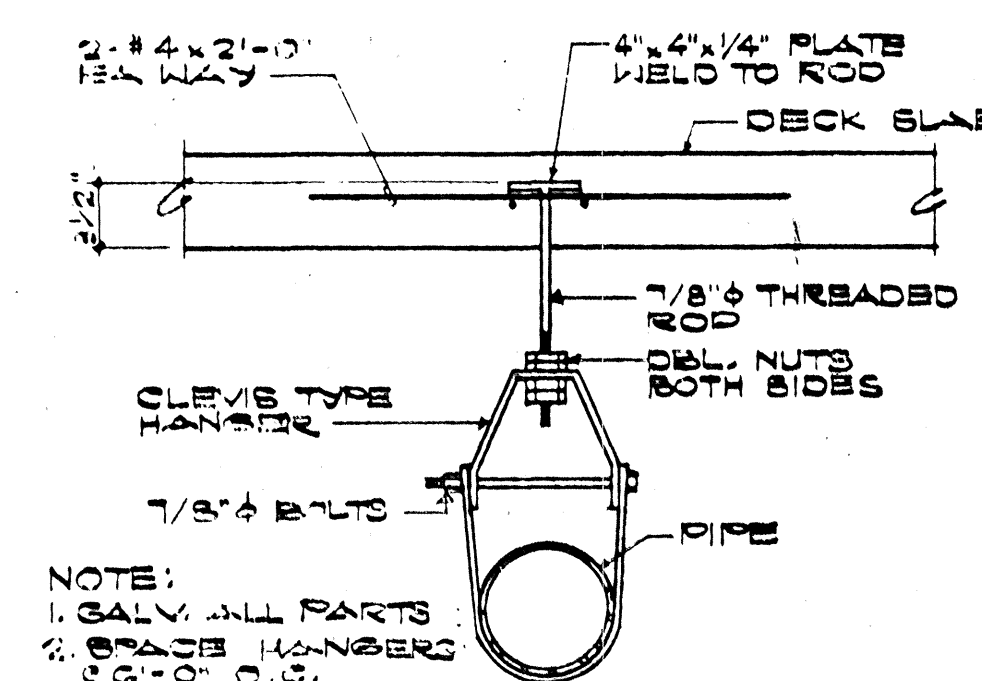


BOLT SIZE	MINIMUM EMBEDMENT "E"
1/2" φ	4"
5/8" φ	4"
3/4" φ	5"
7/8" φ	6"
1" φ	7"

TYP. ANCHOR BOLT DET.

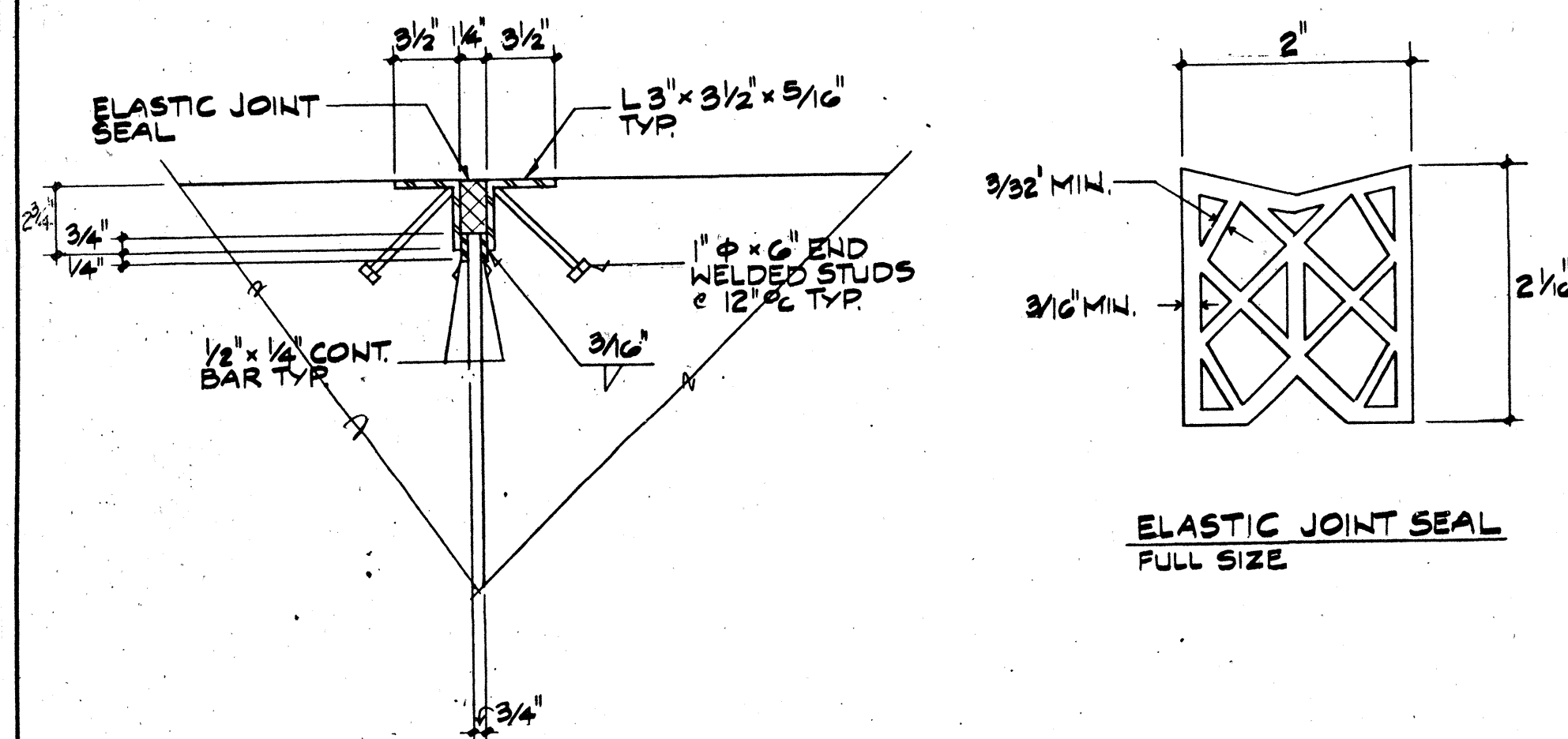
NO SCALE

C
S-1



TYPICAL HANGER DET.

F
S-1



EXPANSION JOINT DETAIL

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

G
S-1

CONSTRUCTION METHODS

1. ALL VERTICAL DIMENSIONS SHALL BE MEASURED PLUMB UNLESS OTHERWISE NOTED.
2. GIRDER CONCRETE SEATS RECEIVING ELASTOMERIC BEARING PADS SHALL BE POURED MONOLITHICALLY WITH SUPPORTING STRUCTURE. BEARING AREA DEVIATION FROM PLANE SHALL NOT EXCEED 1/16 INCH. THE PAD SHALL BE CONSTRUCTED HIGHER THAN SHOWN ON THE PLANE AND SHALL THEN BE GROUND DOWN TO THE REQUIRED ELEVATION.

GENERAL

1. ALL ITEMS NOTED INCIDENTAL WILL NOT BE PAID FOR SEPARATELY.
2. THE FOLLOWING ITEMS SHALL BE CONSIDERED AS INCIDENTAL TO CONCRETE:
 - A. HINGE BEARING ASSEMBLY, INCLUDING ELASTOMERIC BEARING PADS, STEEL PLATES, ANCHORS AND ANCHOR BOLTS, NUTS AND WASHERS.
 - B. DECK EXPANSION JOINT, INCLUDING PROTECTIVE NOSING, STEEL ANGLES AND PREFORMED COMPRESSION JOINT SEAL.
 - C. DECK DRAINS.
3. FOR DECKS SUPPORTED ON PRECAST CONCRETE GIRDERS, THE INTERMEDIATE AND END DIAPHRAGMS SHALL BE PLACED AT LEAST FIVE (5) DAYS BEFORE THE DECK.

SHIGEMURA, YAMAMOTO
LAU & ASSOCIATES, INC.
1251 South King Street, Suite C
HONOLULU, HAWAII 96814

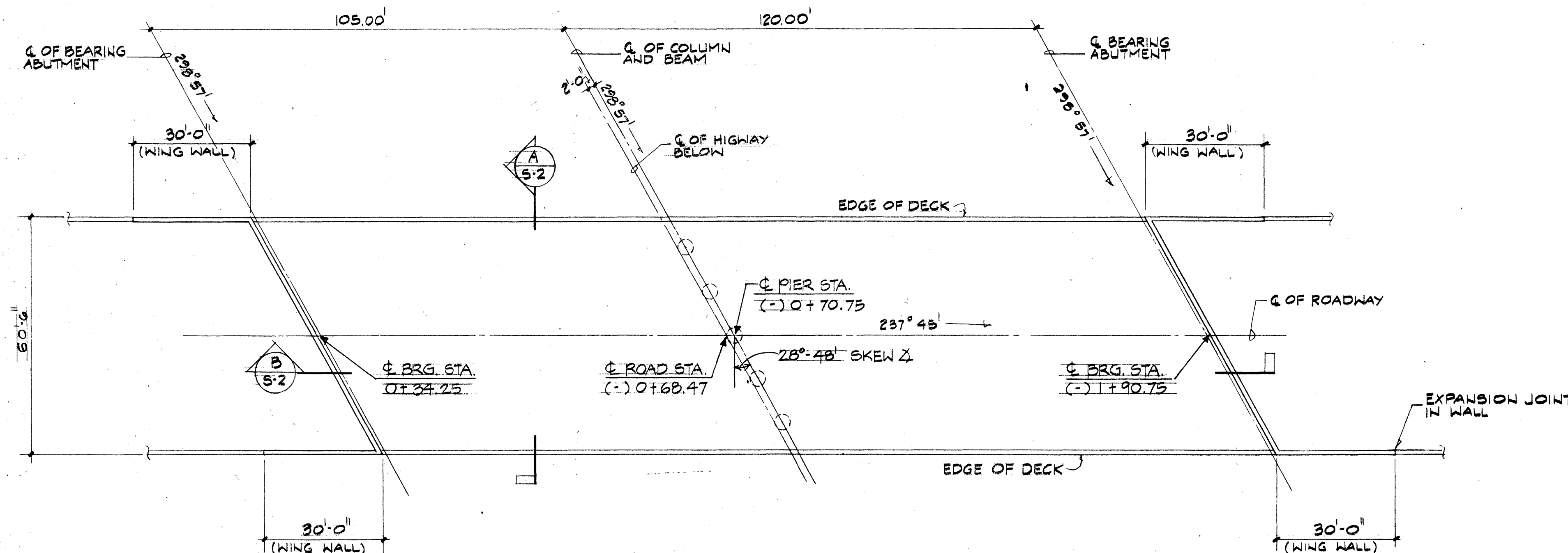
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CHIEF, DIVISION OF ENGINEERING, D.P.W.
DATE: *Edward P. Koa*
REGISTERED PROFESSIONAL ENGINEER

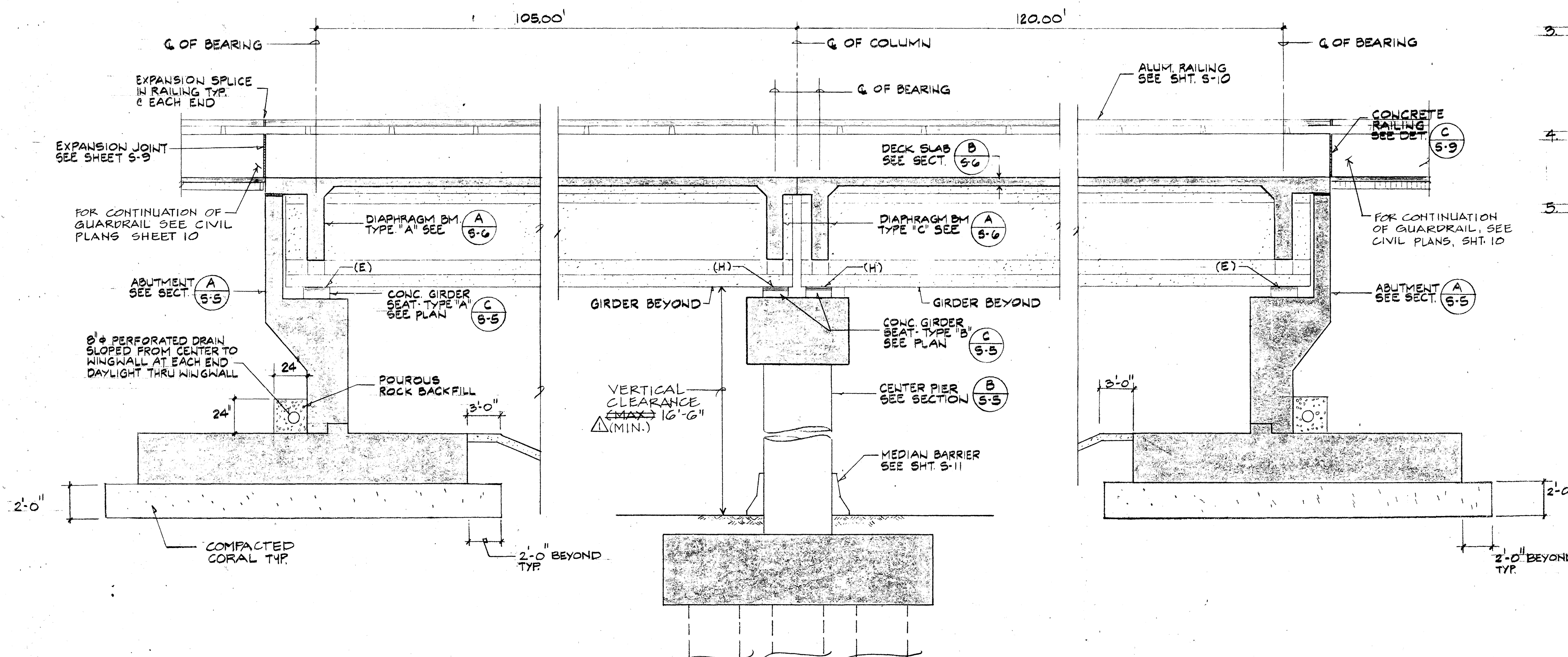
RECORD DRAWINGS

SHEET 62 OF 22 SHEETS

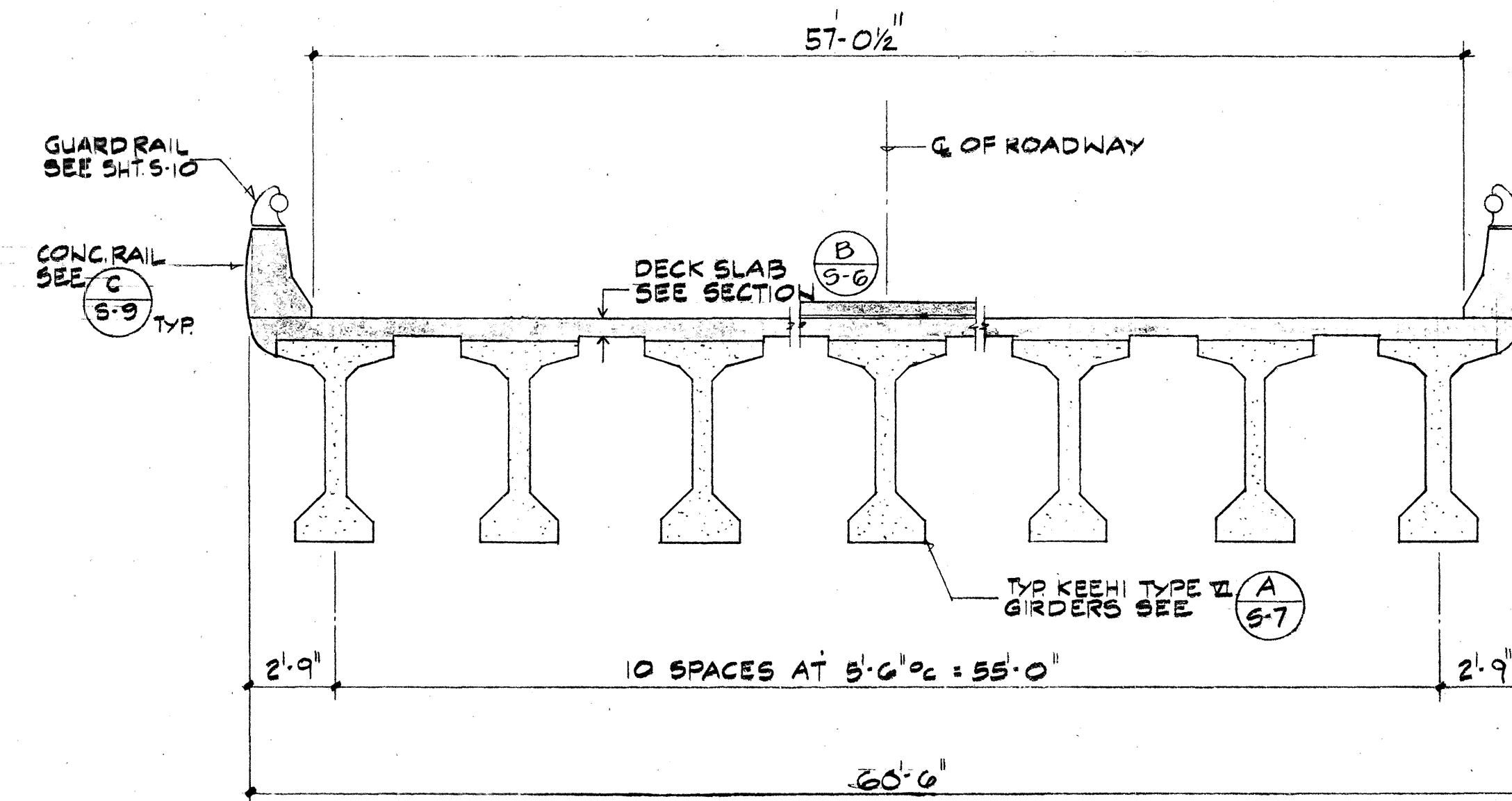
70



BRIDGE LAYOUT PLAN
SCALE: 1" = 20'-0"



BRIDGE LONGITUDINAL SECTION
SCALE: 1/4" = 1'-0"

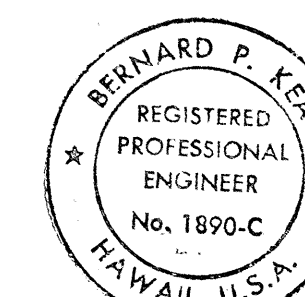


BRIDGE CROSS SECTION
SCALE: 1/4" = 1'-0"

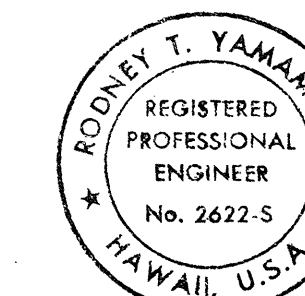
FOUNDATION NOTES:

1. FOUNDATION DESIGN IS BASED ON SOILS REPORT DONE BY GEOLABS - HAWAII DATED MAY 14, 1986 AND SUPPLEMENTAL LETTER DATED MAY 29, 1987.
2. THE MAUKA AND MAKAI ABUTMENTS WERE DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 4,000 P.S.F. BOTH ABUTMENT FOOTINGS SHALL BE FOUNDED ON WELL-COMPACTED GRANULAR CORAL BACKFILL. THE SETBACK DISTANCE FROM THE OUTSIDE EDGE OF THE FOOTING TO THE FACE OF THE SLOPE SHALL BE A MINIMUM OF 8 FEET.
3. THE CENTRAL PIER SHALL BE FOUNDED ON THE BASALT FORMATION APPROXIMATELY 21 FEET BELOW THE SURFACE. DRILLED CAISSONS, 3 FOOT IN DIAMETER WITH AN ALLOWABLE LOAD CAPACITY OF 90 TONS SHALL BE USED. CAISSONS SHALL EXTEND INTO THE COMPETENT BASALT FORMATION AT LEAST 2 FEET. CAISSON DRILLING AND CASTING SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER. COST TO RETAIN A GEOTECHNICAL ENGINEER SHALL BE BORNE BY CONTRACTOR.
4. FILL MATERIAL SHALL CONSIST OF GRANULAR DREDGED CORAL OR WELL-GRADED EXCAVATED ROCK LESS THAN 6 INCHES IN SIZE. FILLS SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS AND COMPACTED TO A MINIMUM OF 90% OF ITS MAXIMUM DRY DENSITY PER ASTM D-1557-78.
5. ALL ABUTMENT WALLS AND RETAINING WALLS WERE DESIGNED WITH THE FOLLOWING ALLOWABLE VALUES:

UNRESTRAINED ACTIVE PRESSURE	37 P.C.F.
ALLOWABLE BEARING PRESSURE	4,000 P.S.F. (GROUP VI LOADING)
COEFFICIENT OF FRICTION	0.40
3'-0" ϕ CAISSONS	90 TONS



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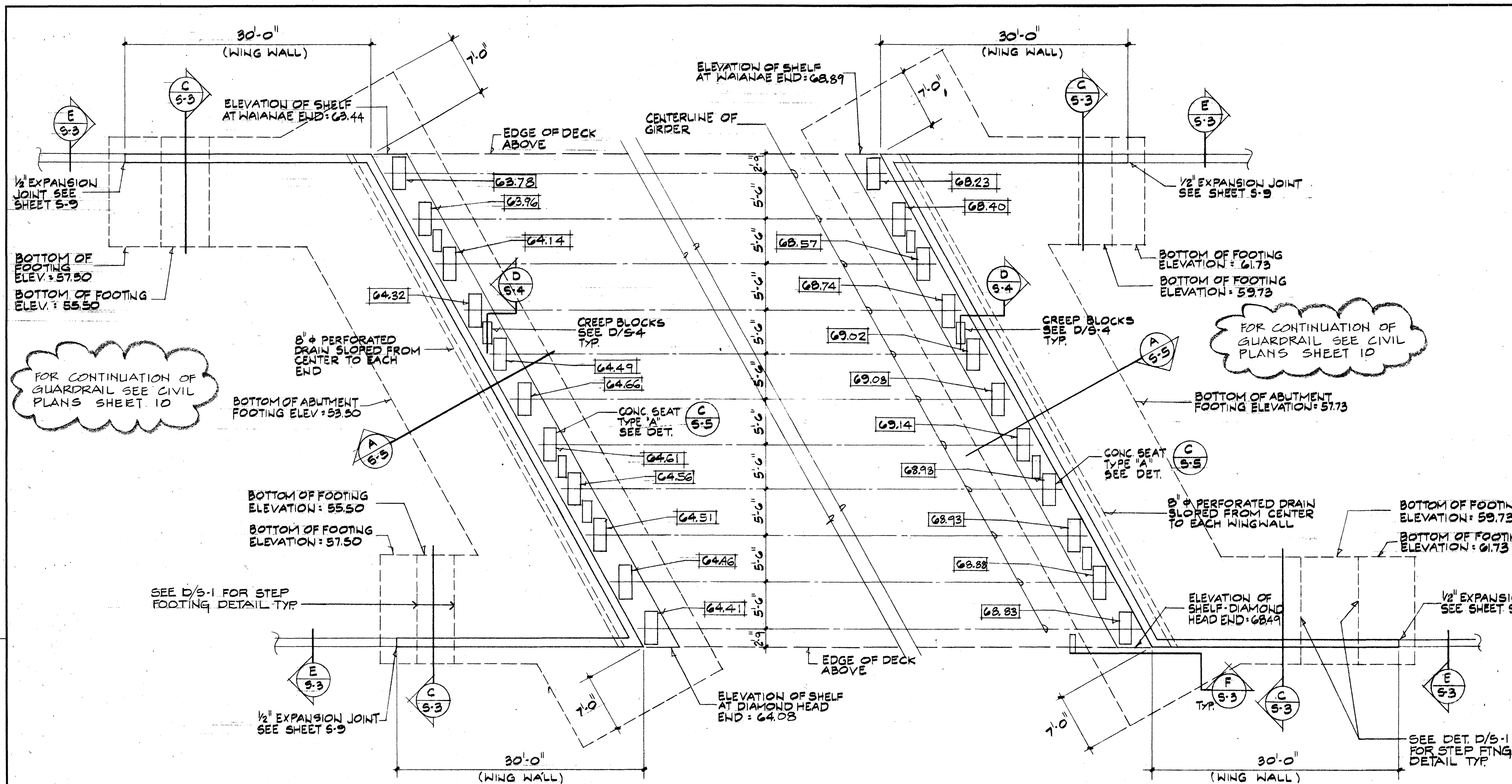
SHIGEMURA, YAMAMOTO
LAU & ASSOCIATES, INC.
1251 South King Street, Suite C
HONOLULU, HAWAII 96814

7-10-88	CHANGED (MAX) TO (MIN.)	CPI	
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS			
WEST BEACH RESORT			
HONOLULU, EWA, OAHU, HAWAII			
DEVELOPER: WEST BEACH ESTATES			
TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69			
FARRINGTON HIGHWAY INTERCHANGE			
BRIDGE LAYOUT PLAN, TYPICAL CROSS SECTION AND TYPICAL LONGITUDINAL SECTION			
APPROVED:			
CHIEF, DIVISION OF ENGINEERING, D.P.W.		DATE	
Bernard P. Koa			
REGISTERED PROFESSIONAL ENGINEER			

RECORD DRAWINGS S-2

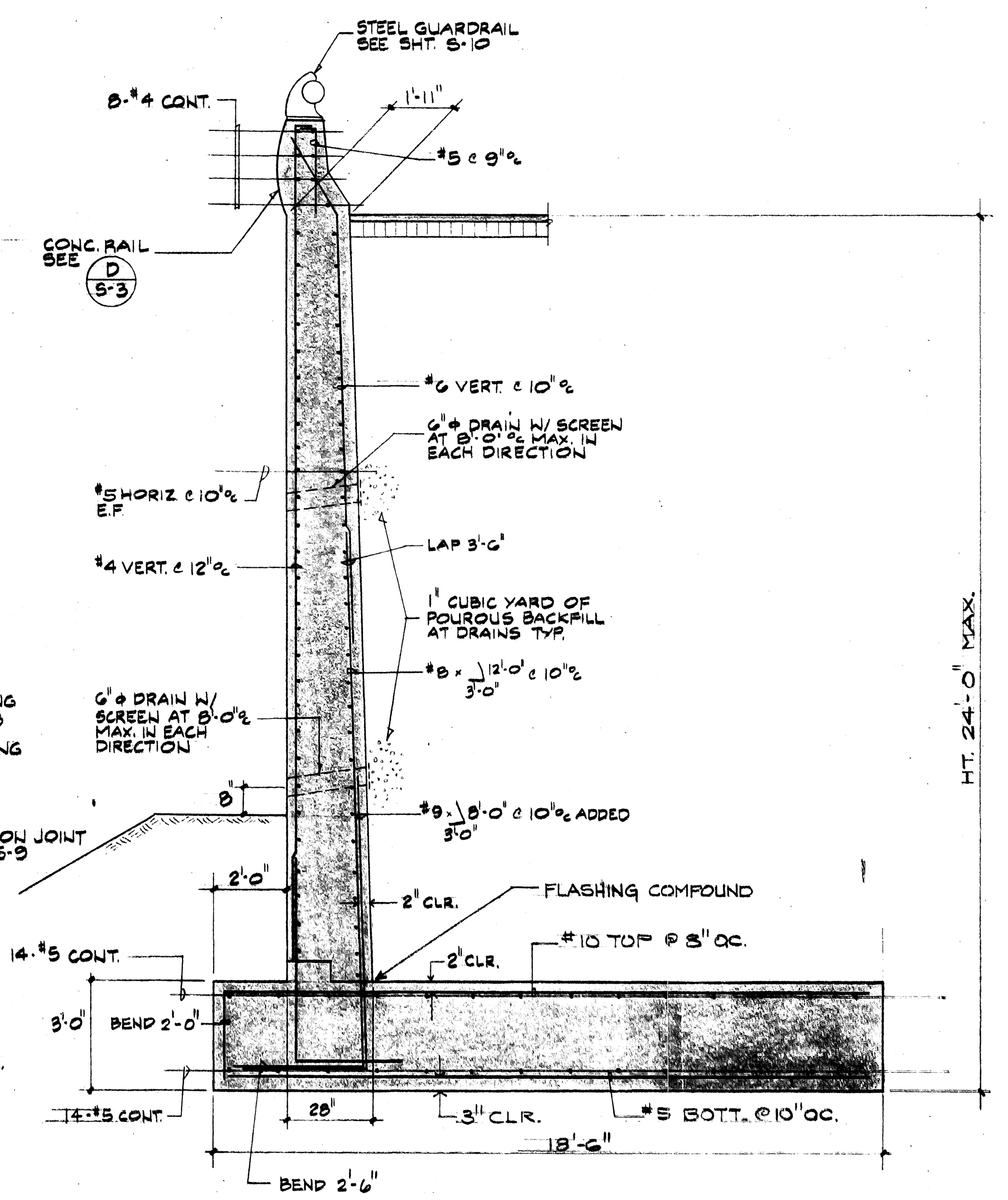
SHEET 10 OF 22 SHEETS

FILE	POCKET	FOLDER	NO.
			71

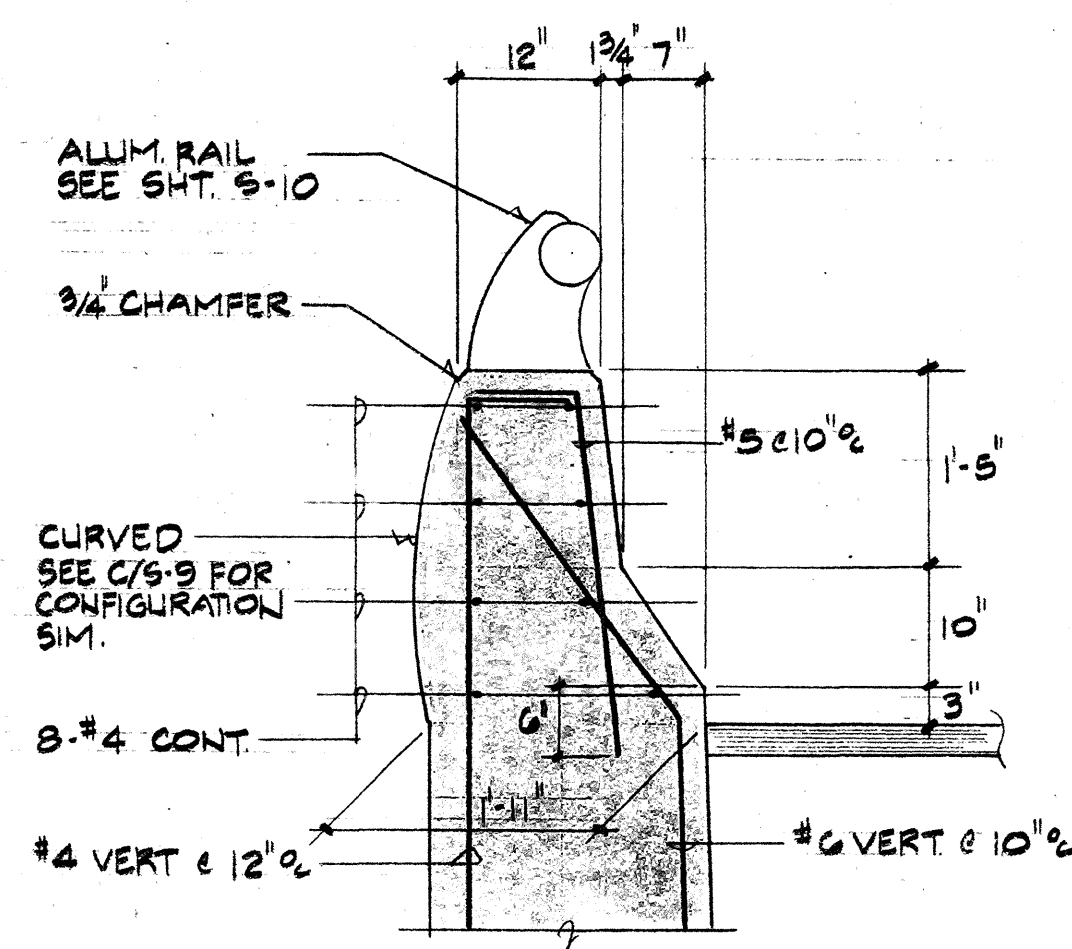


MAKAI ABUTMENT WALL PLAN A
SCALE: 1/8" = 1'-0"

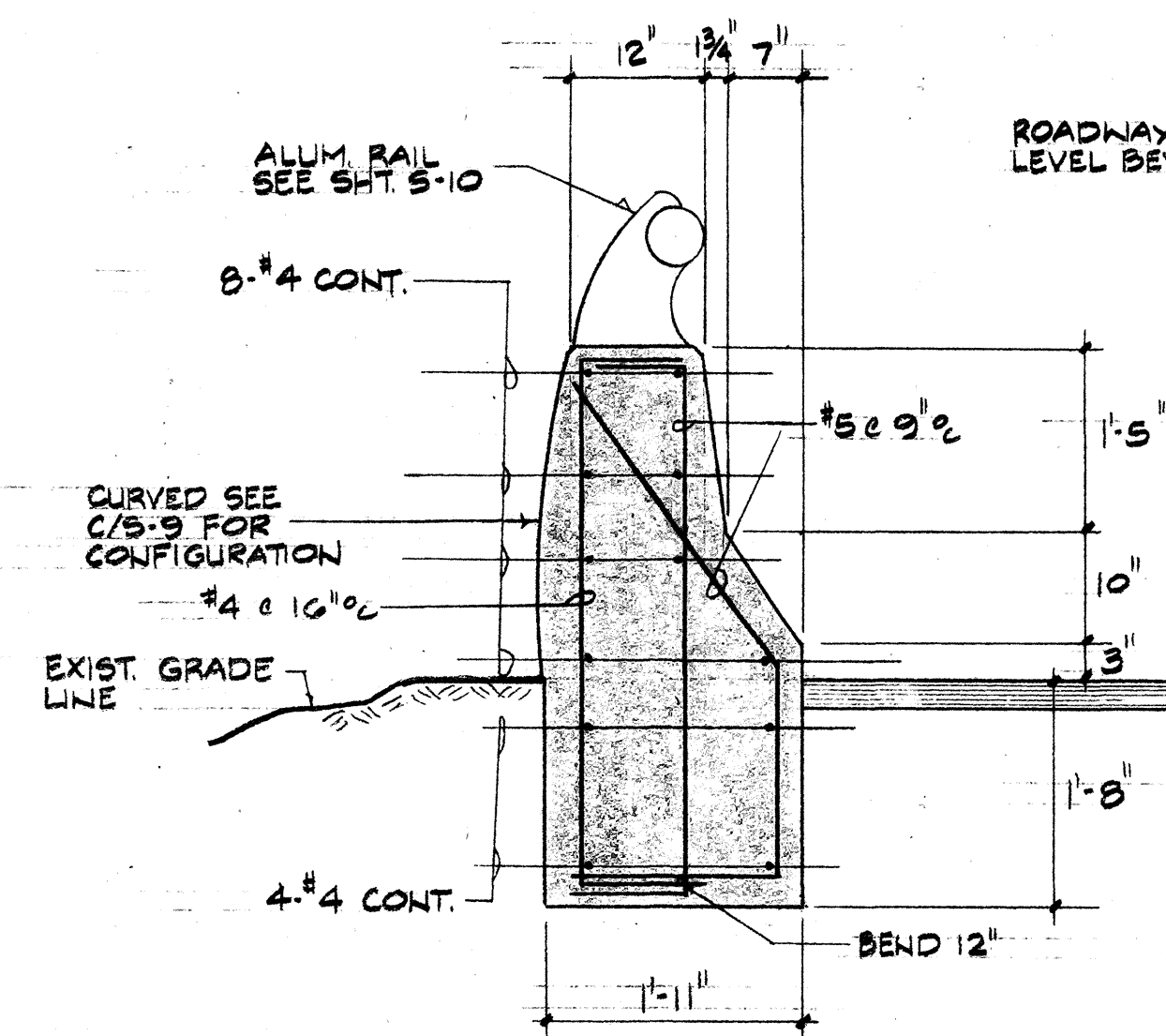
MAUKA ABUTMENT WALL PLAN B
SCALE: 1/8" = 1'-0"



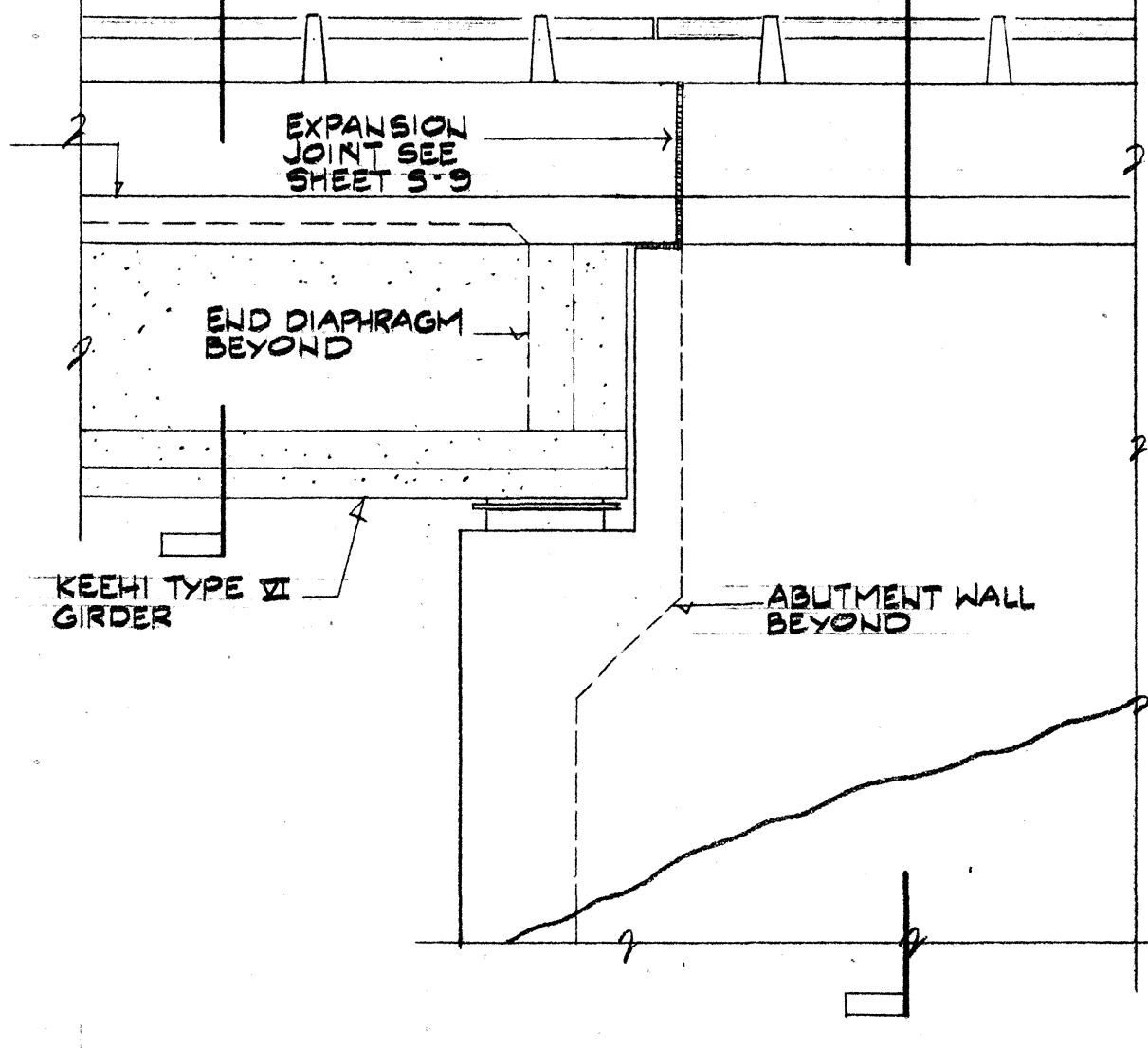
WING WALL SECTION C
SCALE: 3/8" = 1'-0"



CONC. RAIL DETAIL D
SCALE: 3/4" = 1'-0"



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



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

BERNARD P. KEA
REGISTERED PROFESSIONAL ENGINEER
No. 1890-C
HAWAII, U.S.A.

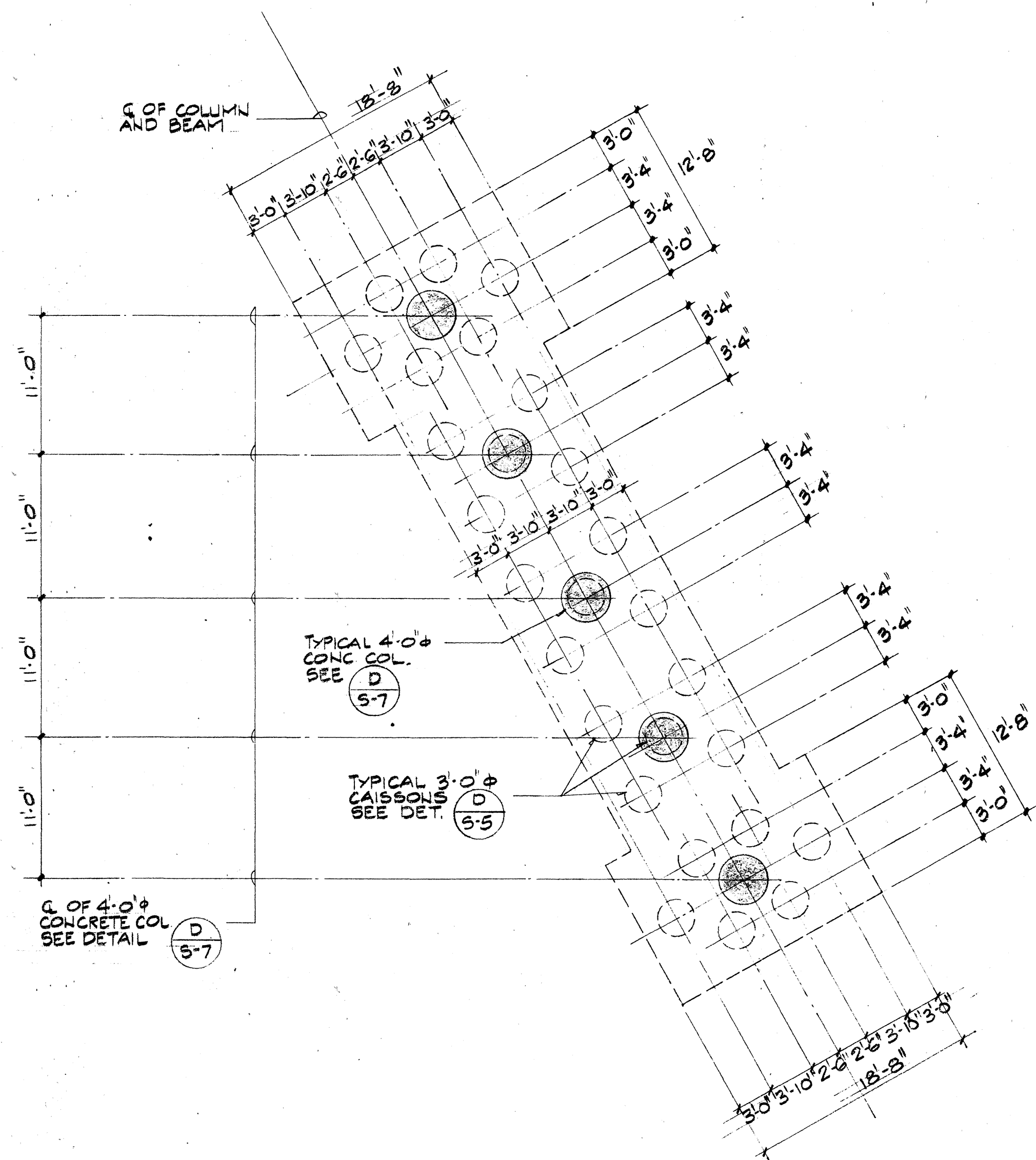
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RODNEY T. YAMAMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 2622-S
HAWAII, U.S.A.

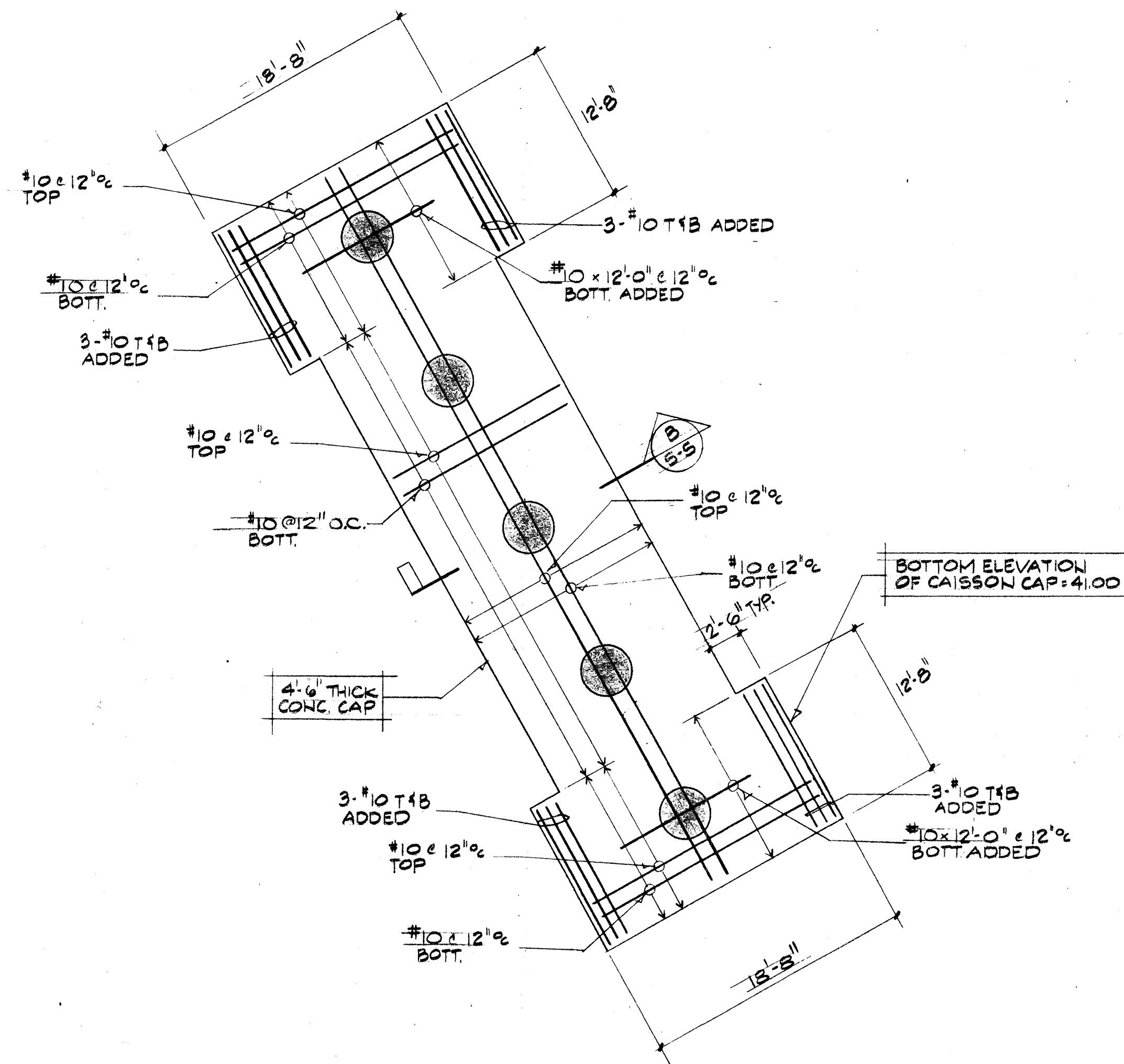
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Remy Yamamoto

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LAU & ASSOCIATES, INC.
1251 South King Street, Suite C
HONOLULU, HAWAII 96814

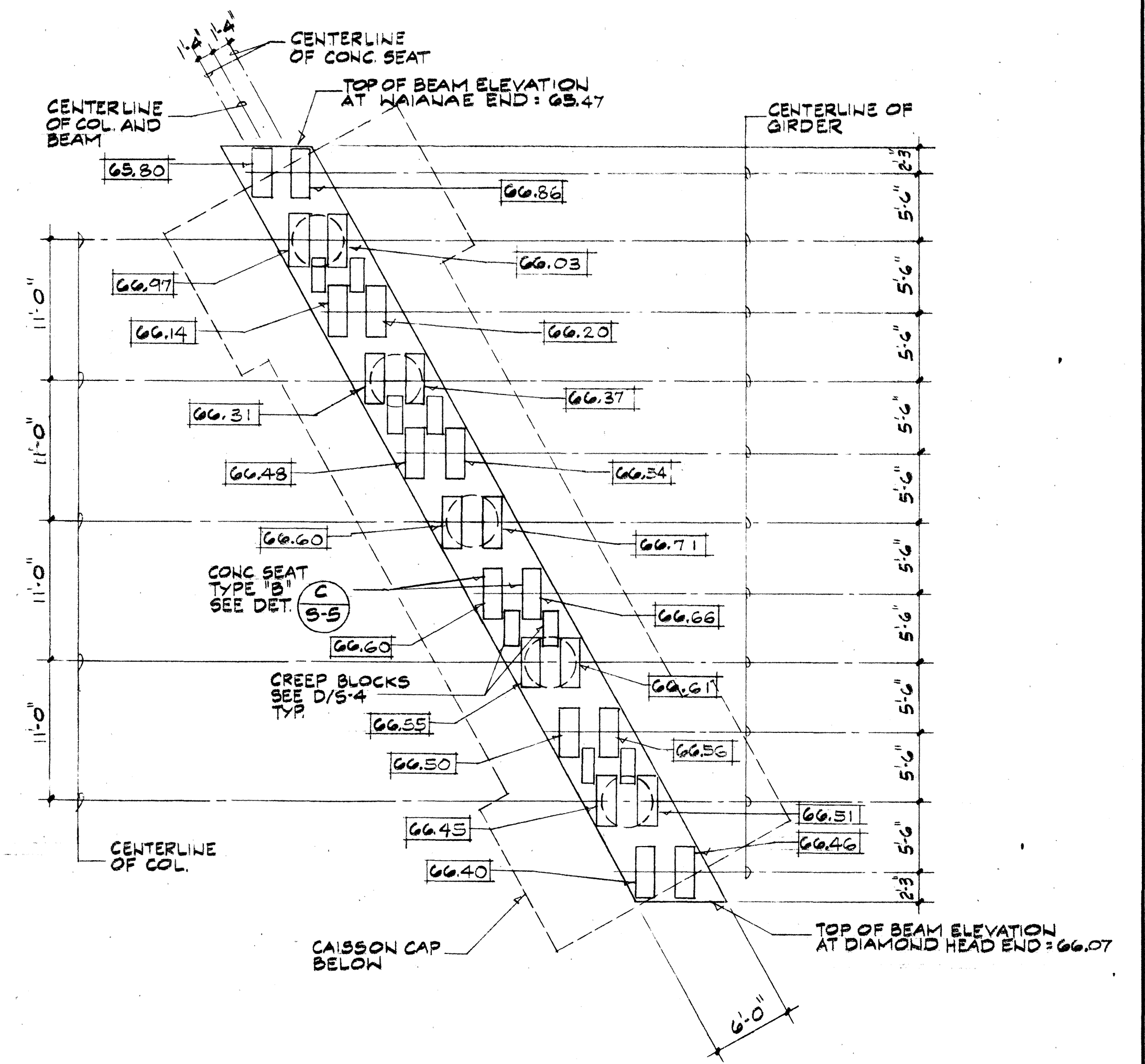
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COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS WEST BEACH RESORT HONOLULU, EWA, OAHU, HAWAII DEVELOPER: WEST BEACH ESTATES TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69 FARRINGTON HIGHWAY INTERCHANGE MAUKA ABUTMENT WALL PLAN, MAKAI ABUTMENT WALL PLAN, SECTIONS AND DETAILS			
APPROVED: CHIEF, DIVISION OF ENGINEERING, D.P.W. <i>Bernard P. Kea</i> REGISTERED PROFESSIONAL ENGINEER			



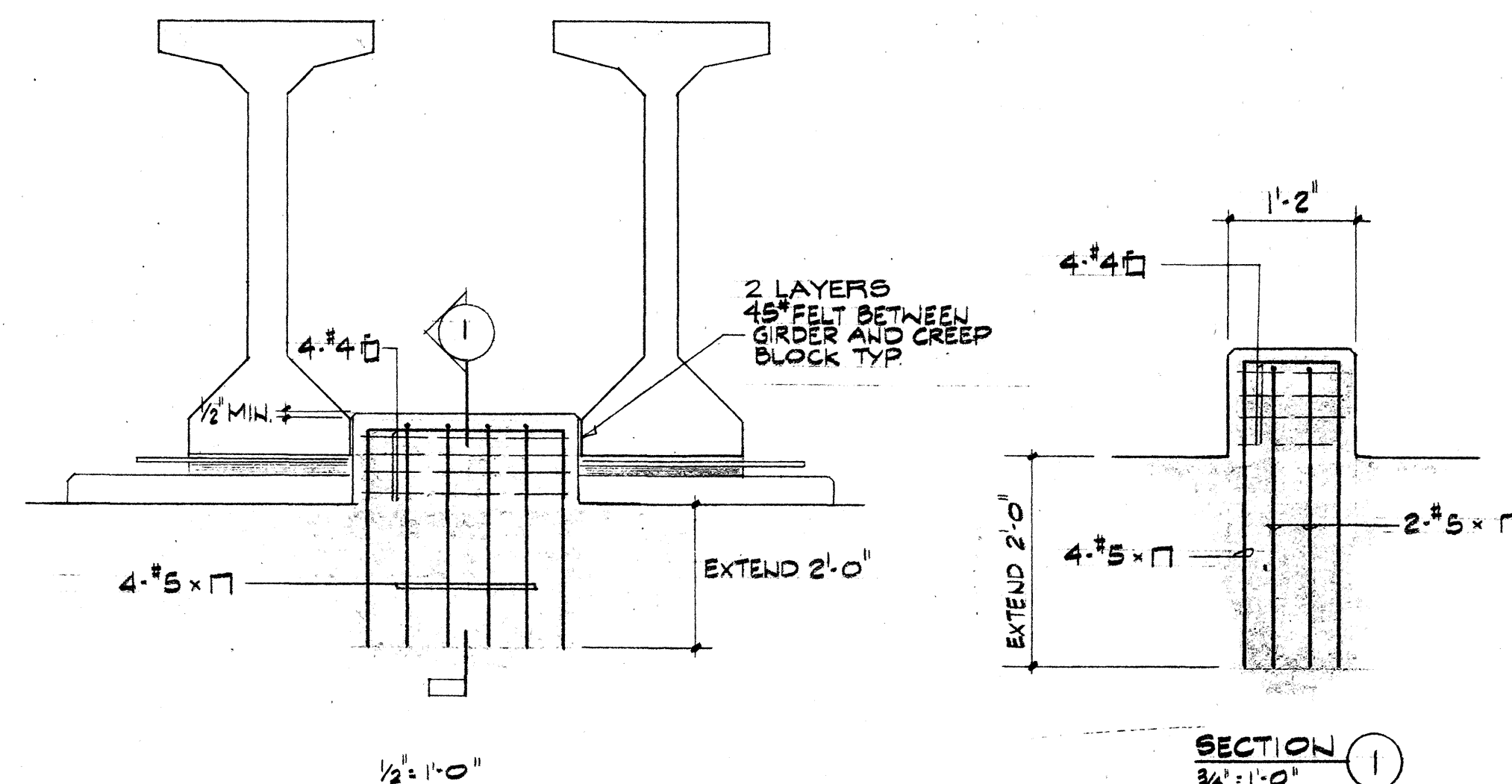
CENTER PIER CAISSON LAYOUT PLAN (A)
SCALE: 1/8" = 1'-0"



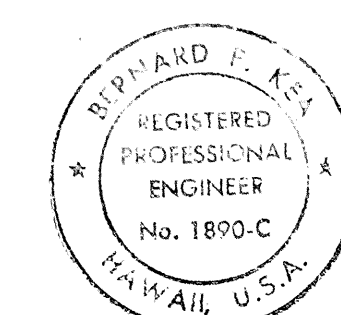
CENTER PIER CAISSON CAP REINFORCEMENT PLAN (B)
SCALE: 1/8" = 1'-0"



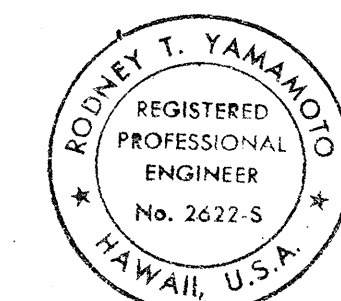
CENTER PIER BEAM AND GIRDER SEAT PLAN (C)
SCALE: 1/8" = 1'-0"



CREEP BLOCK DETAIL (D)
AS NOTED



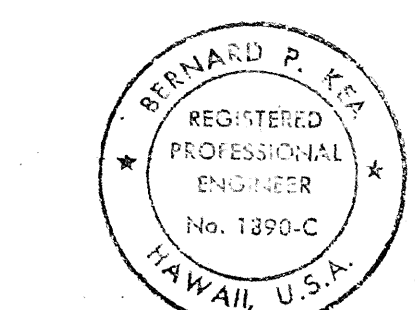
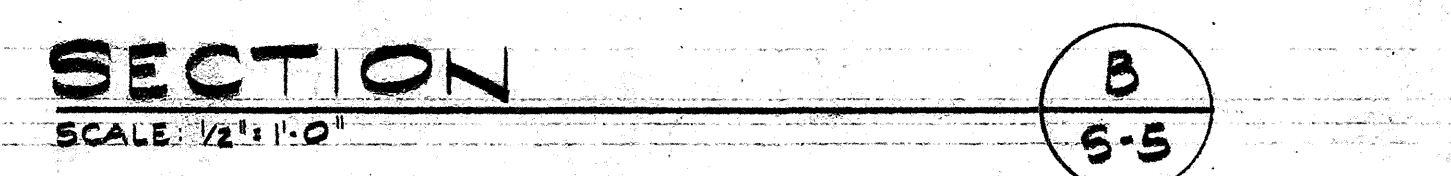
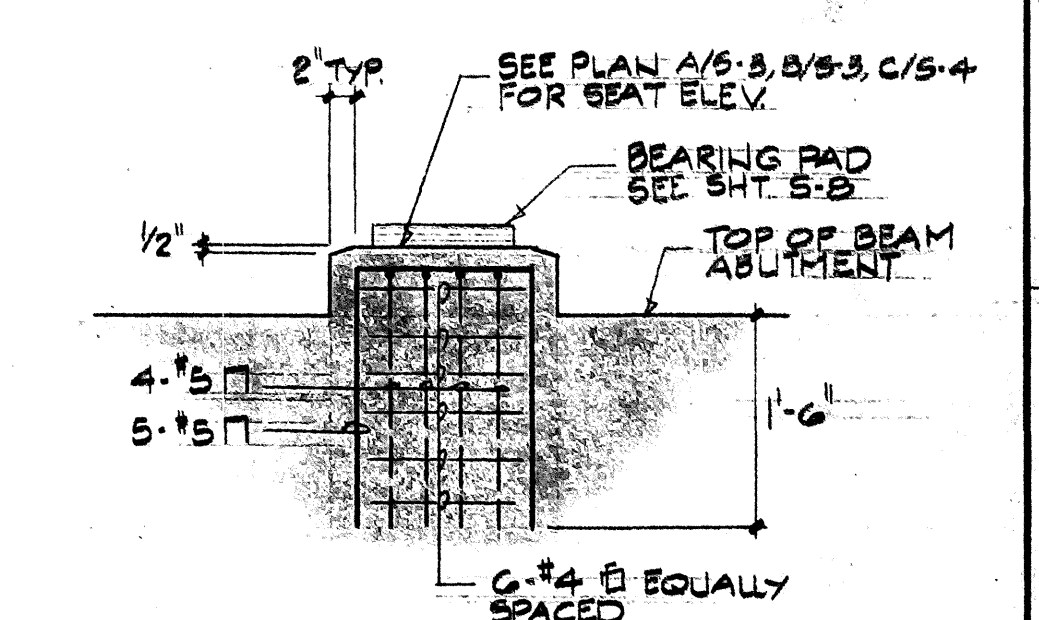
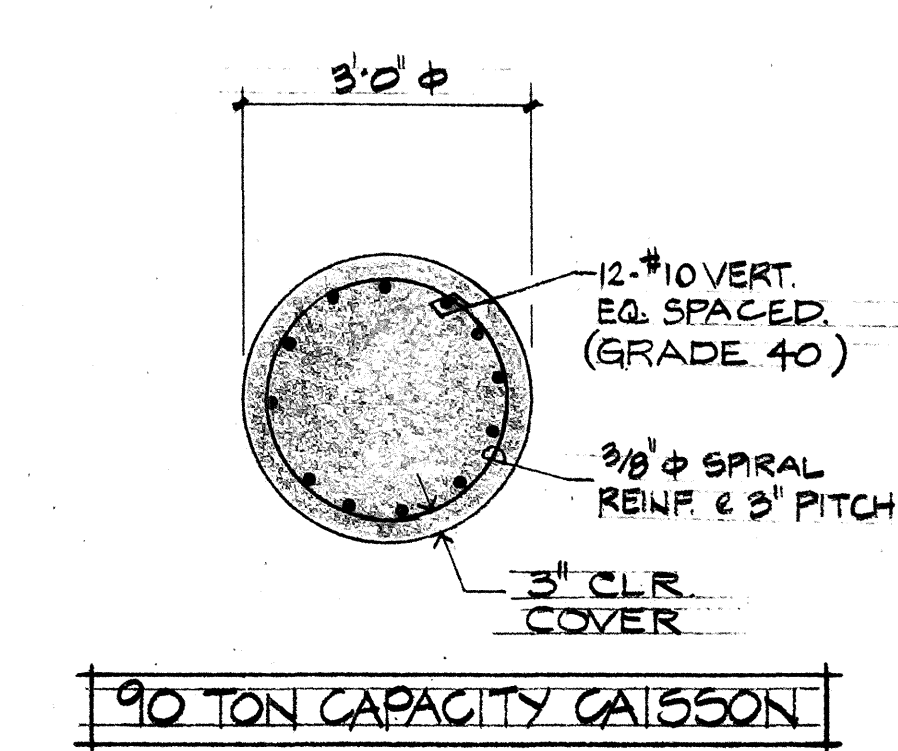
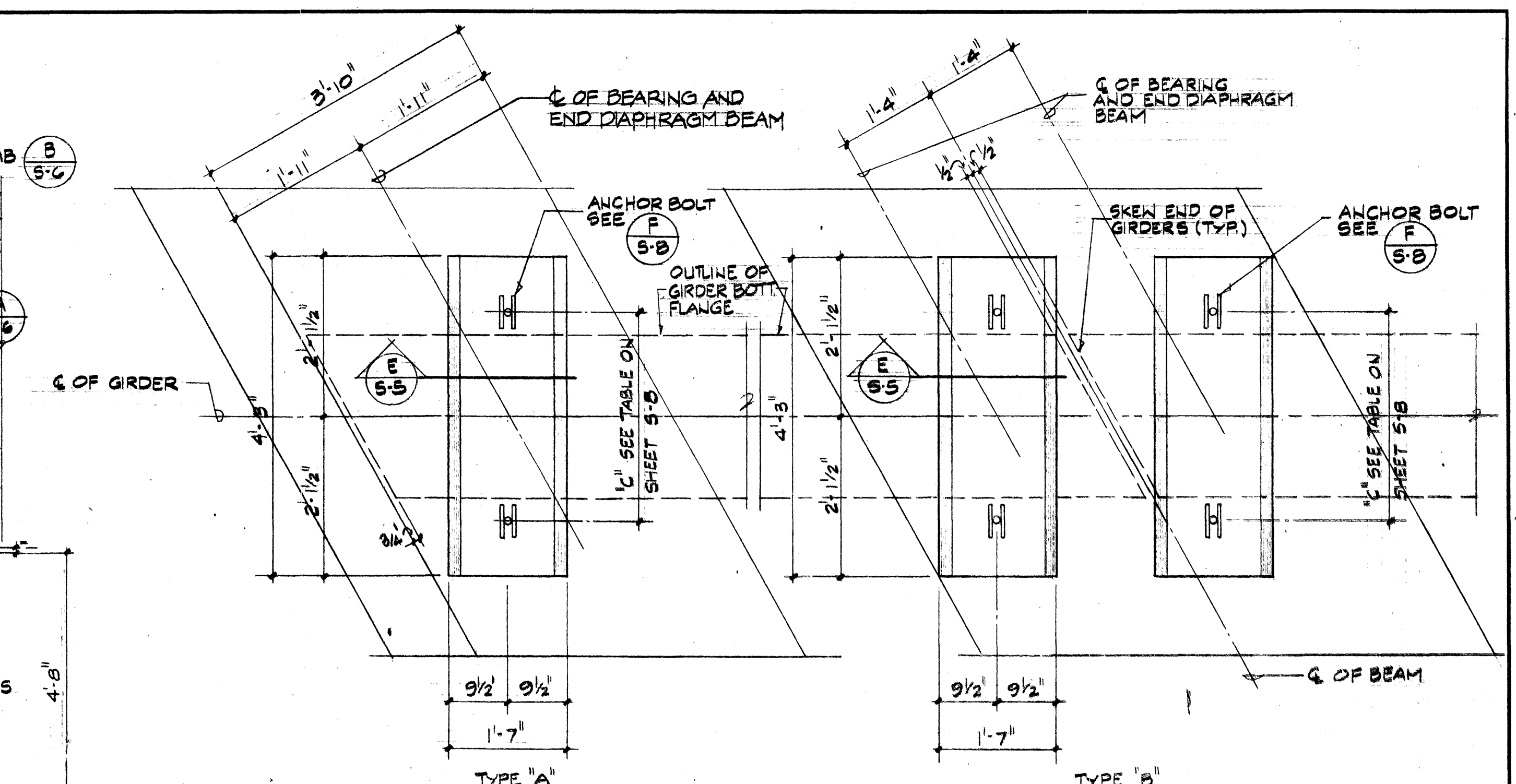
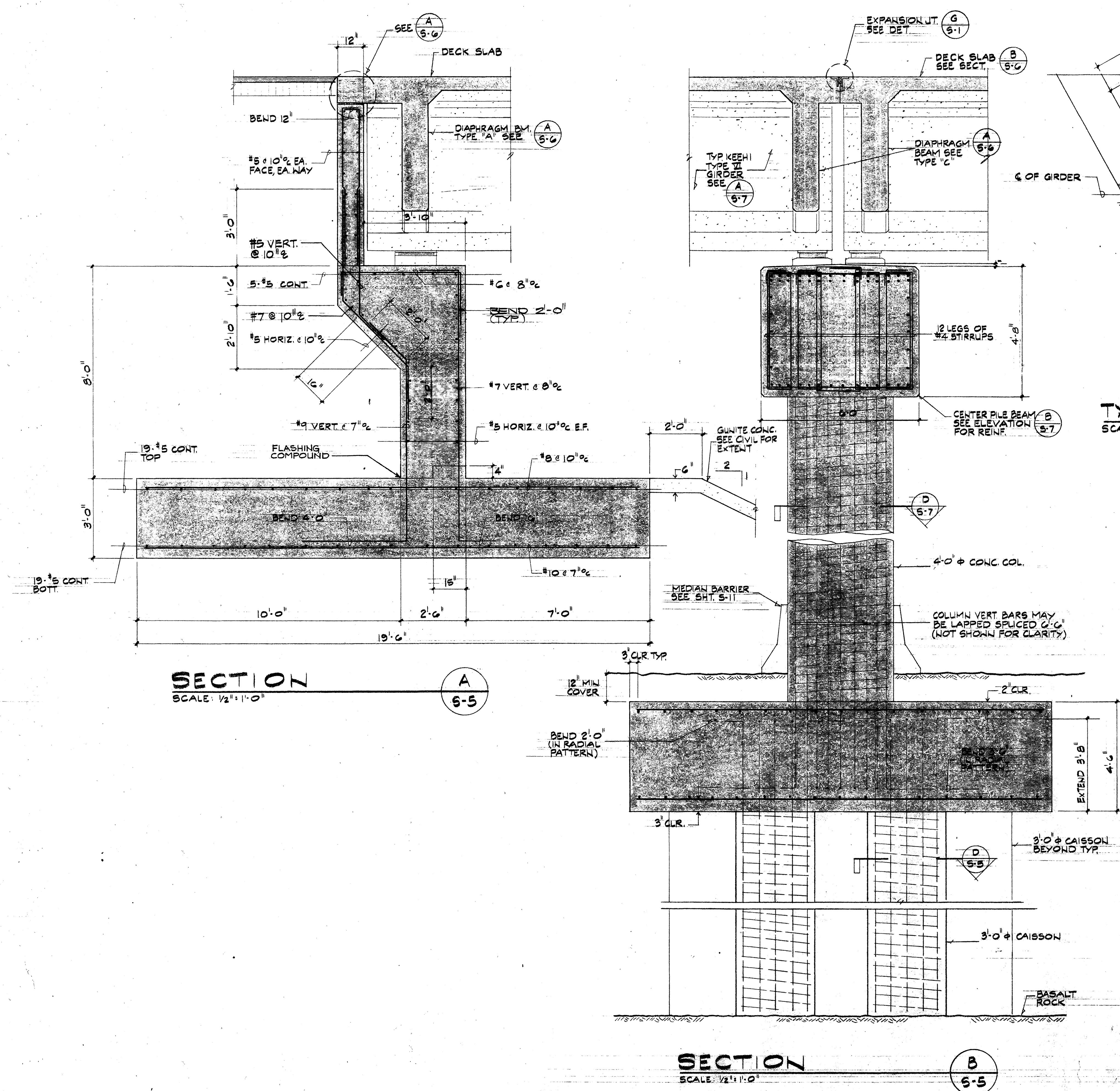
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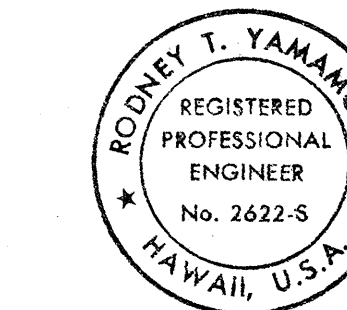
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COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS WEST BEACH RESORT HONOLULU, EWA, OAHU, HAWAII DEVELOPER: WEST BEACH ESTATES TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69 FARRINGTON HIGHWAY INTERCHANGE CENTER PIER CAISSON LAYOUT PLAN, CENTER PIER CAISSON CAP REINFORCEMENT PLAN, CENTER PIER BEAM AND GIRDER SEAT PLAN			
APPROVED: CHIEF, DIVISION OF ENGINEERING, D.P.W. DATE <i>Bernard F. Kier</i> REGISTERED PROFESSIONAL ENGINEER			

RECORD DRAWINGS S-4



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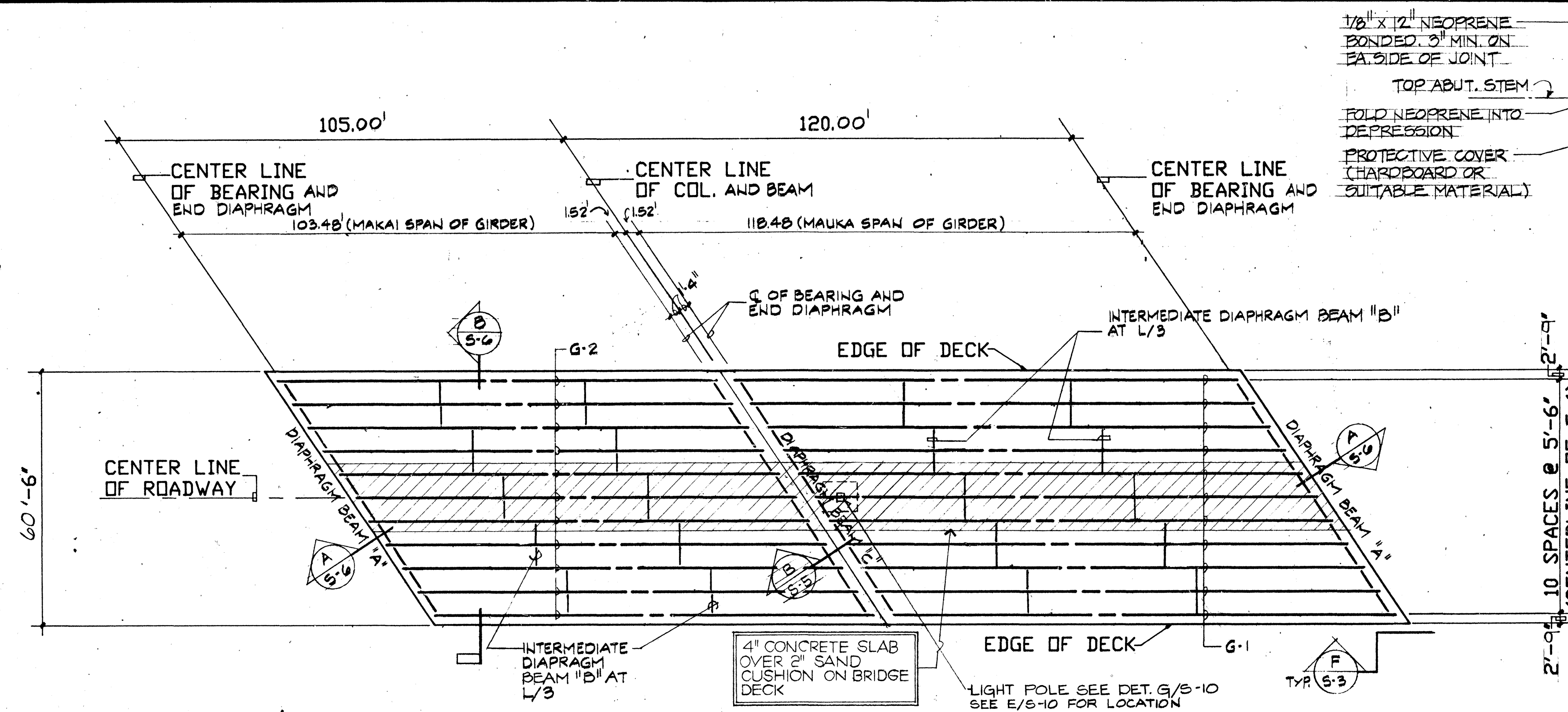
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HONOLULU, HAWAII 96814

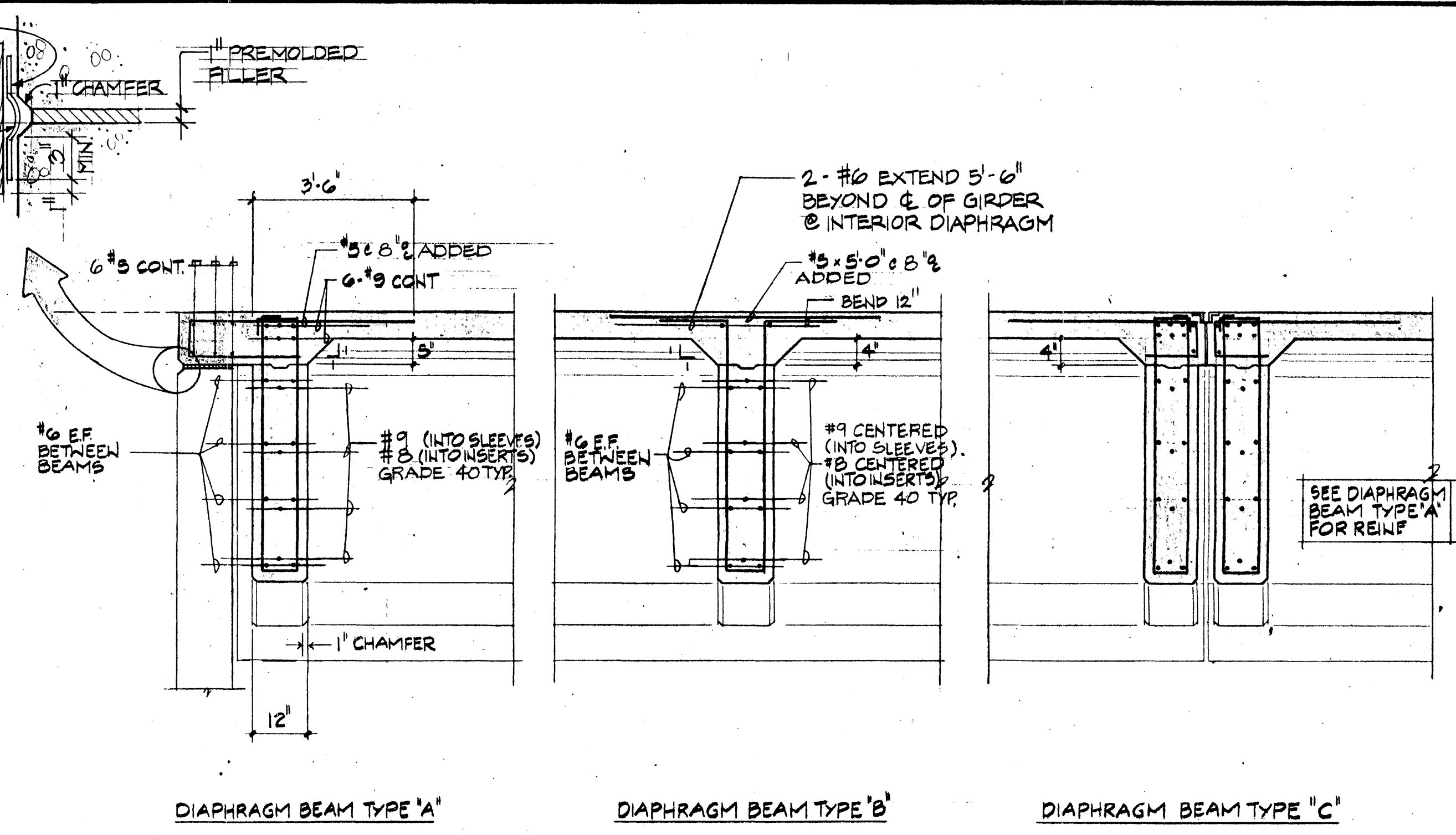
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Shigemura, Yamamoto Lau & Associates, Inc.

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS WEST BEACH RESORT MANAULULU, HAWAII, OAHU, HAWAII DEVELOPER: WEST BEACH ESTATES TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69 FARRINGTON HIGHWAY INTERCHANGE TYPICAL ABUTMENT WALL SECTION, TYPICAL CENTER PIER SECTION, AND CONCRETE GIRDER SEAT PLAN APPROVED: <i>Bernard P. Kua</i> CHIEF, DIVISION OF ENGINEERING, D.P.N. DATE REGISTERED PROFESSIONAL ENGINEER			

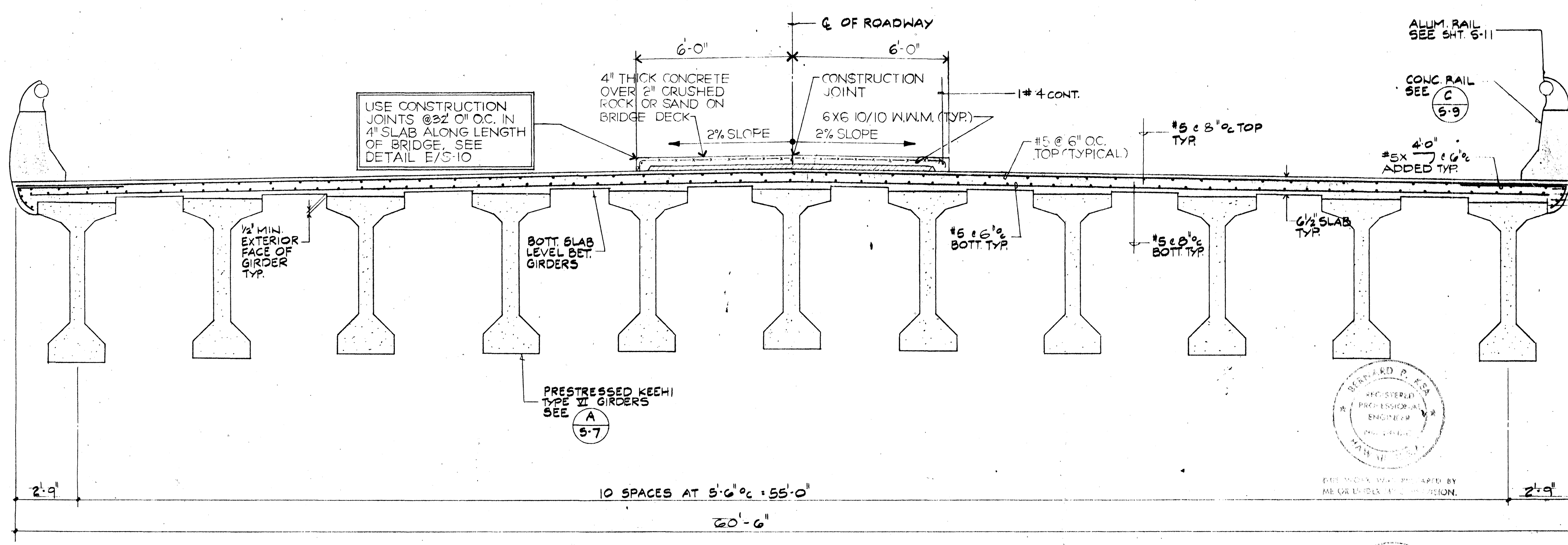
RECORD DRAWINGS 5-5



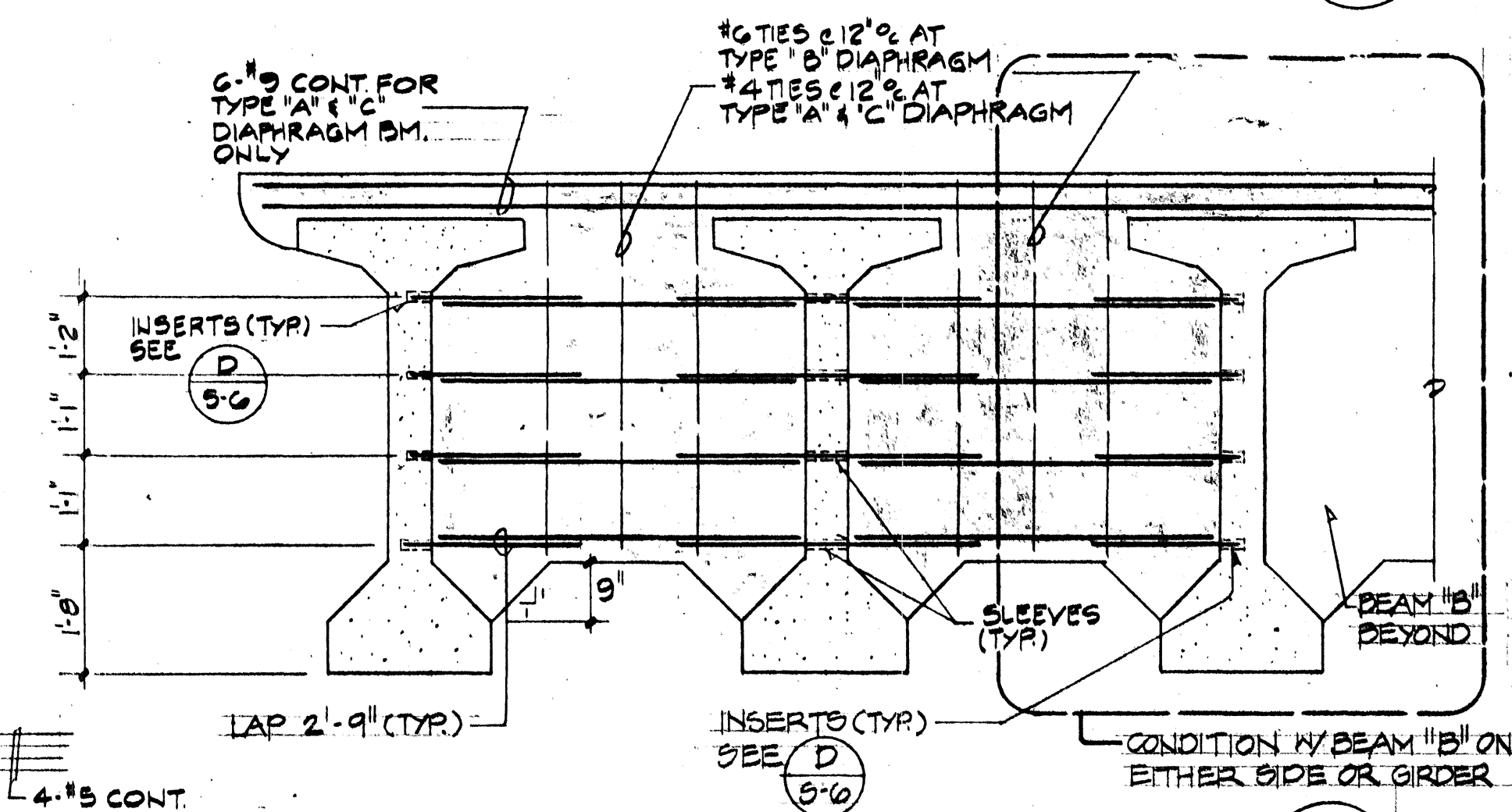
BRIDGE GIRDER AND BEAM LAYOUT PLAN
SCALE: 1"=20'-0"



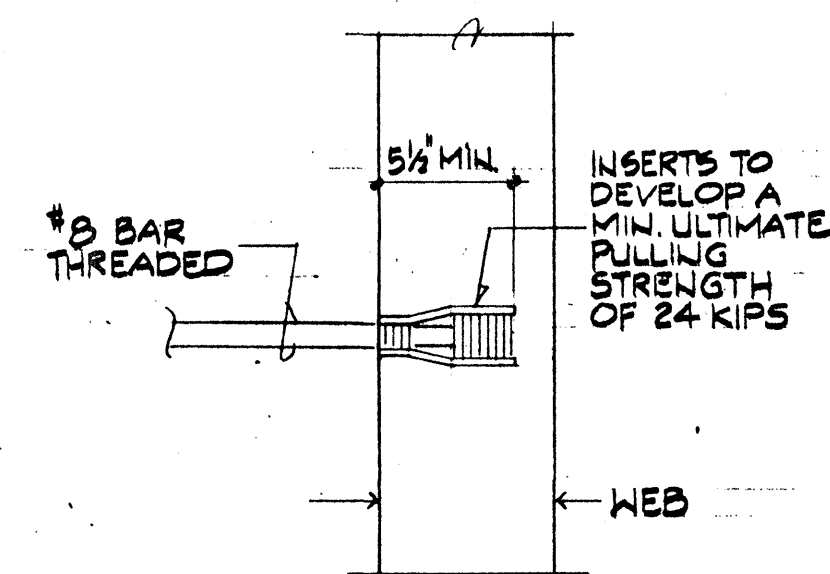
TYPICAL DIAPHRAGM BEAM DETAILS
SCALE: 1/2"=1'-0"



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



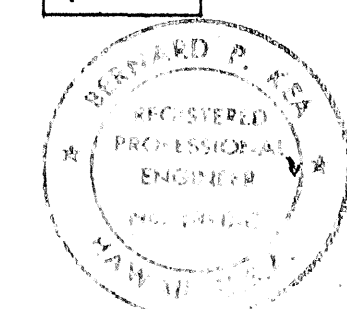
DIAPHRAGM BEAM ELEVATION
SCALE: 1/2"=1'-0"



INSERT DETAIL

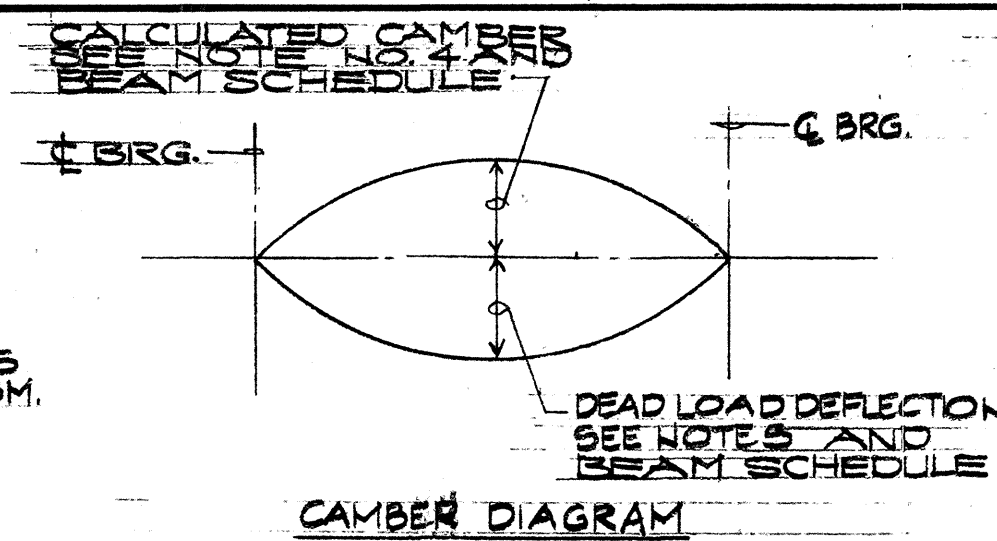
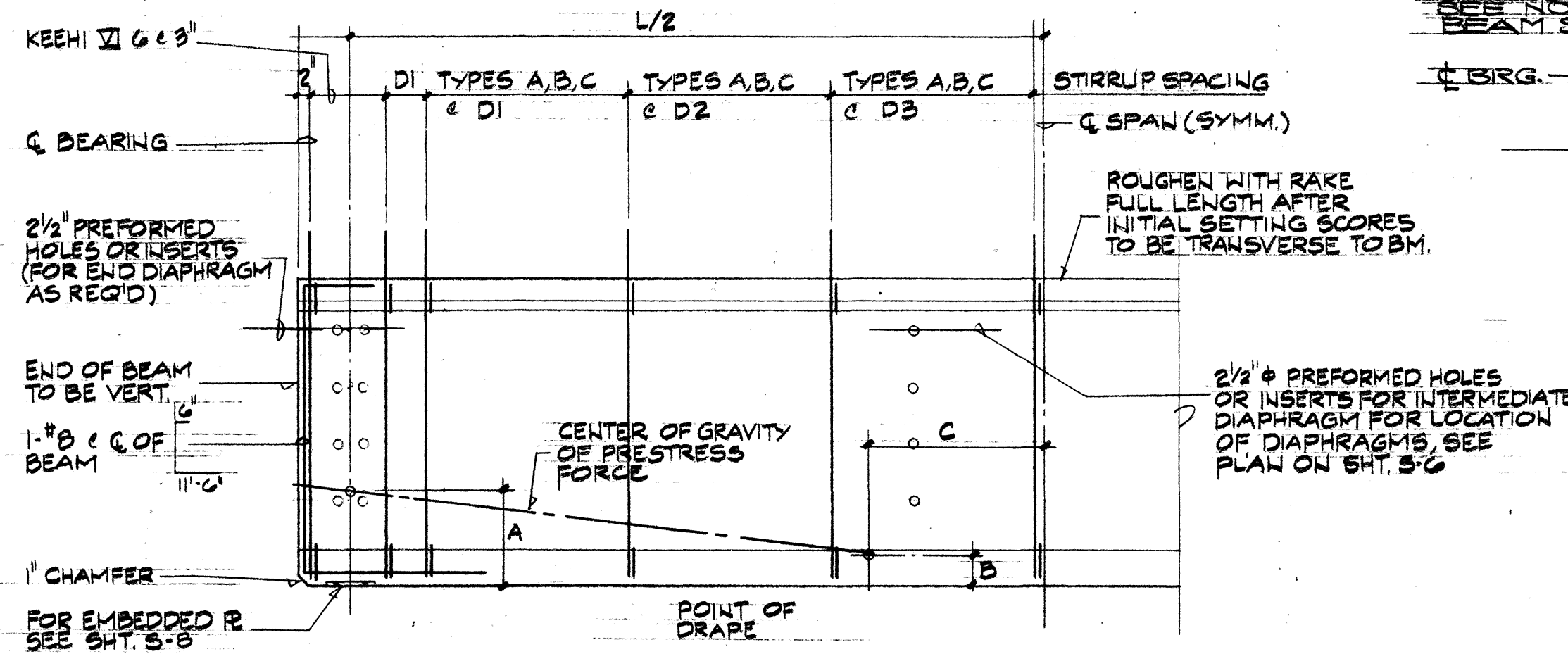
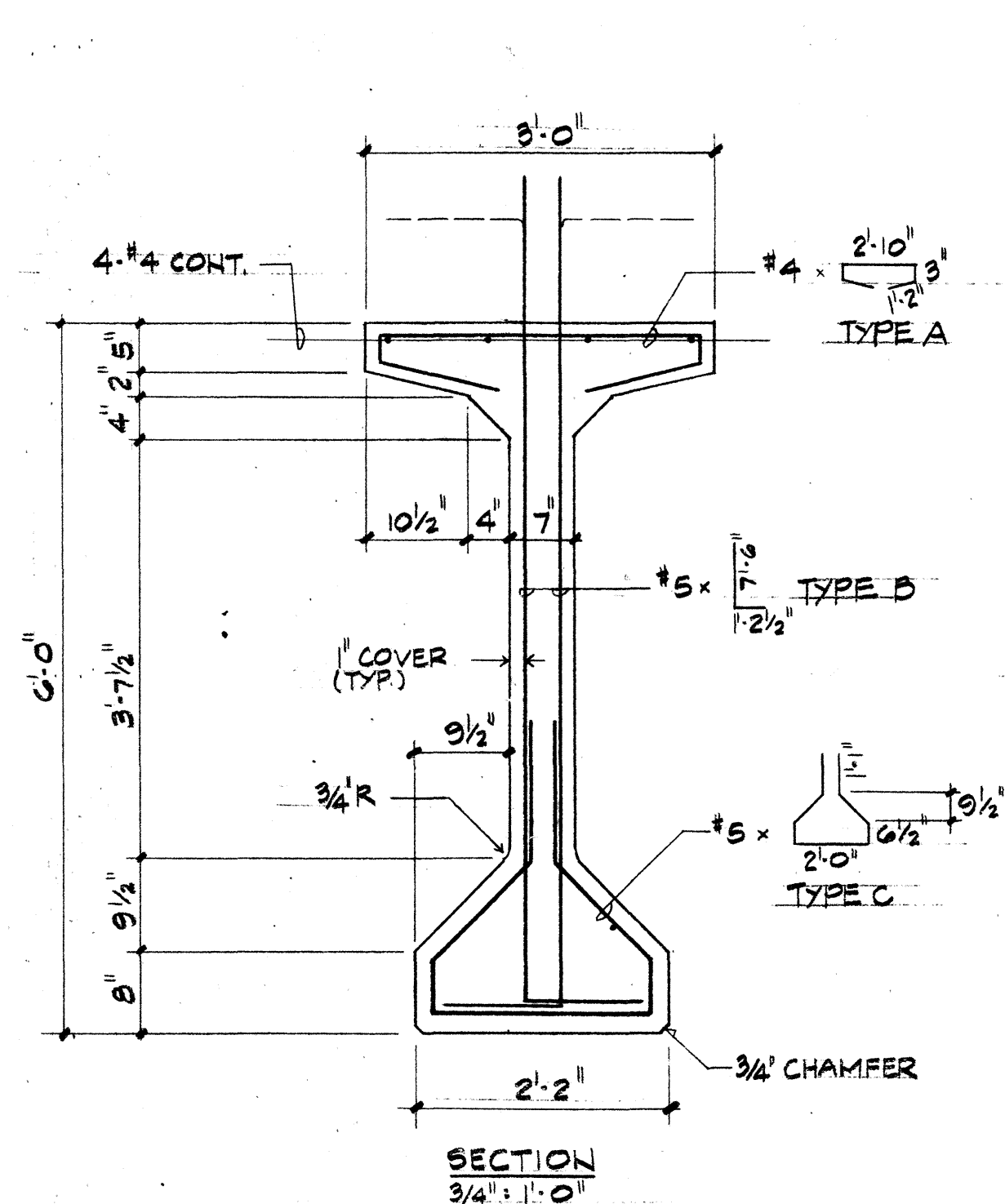
DETAIL D
SCALE: 1/2"=1'-0"

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LAU & ASSOCIATES, INC.
1251 South King Street, Suite C
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Robert O. P. Lau

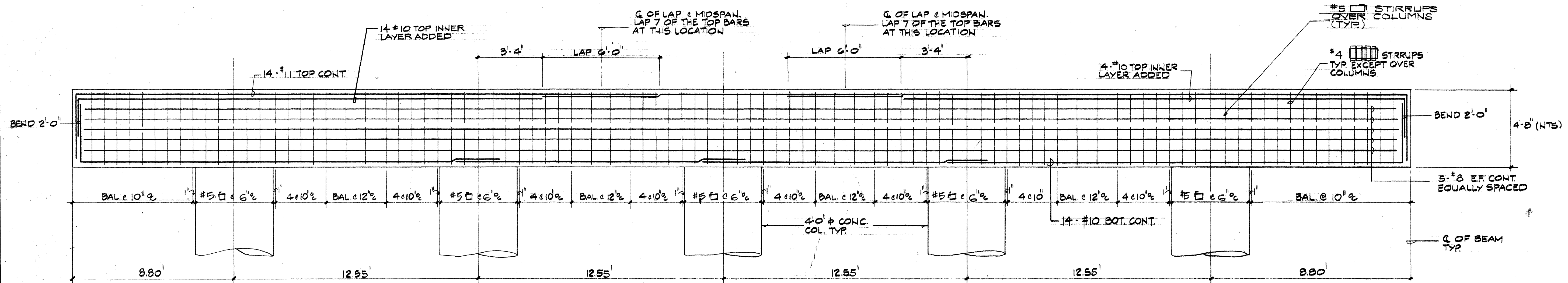
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS			
WEST BEACH RESORT			
HONOLULU, EWA, OAHU, HAWAII			
DEVELOPER: WEST BEACH ESTATES			
TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69			
WASHINGTON HIGHWAY INTERCHANGE			
BRIDGE GIRDER AND BEAM LAYOUT PLAN			
DIAPHRAGM BEAM DETAILS			
APPROVED: <i>Robert O. P. Lau</i> REGISTERED PROFESSIONAL ENGINEER			
CHIEF, DIVISION OF ENGINEERING, D.P.W. DATE			
FILE	POCKET	FOLDER	NO.



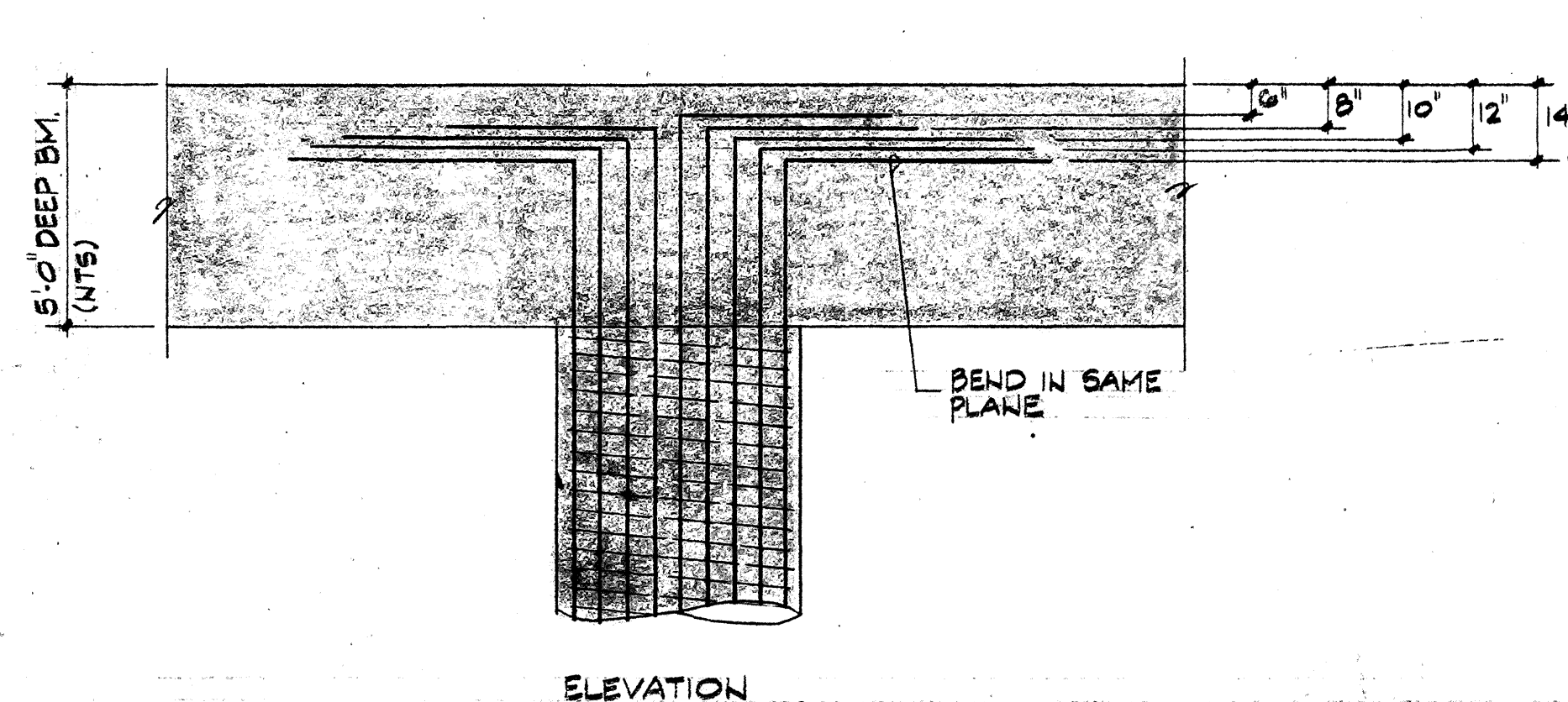
BEAM TYPE	INITIAL FORCE (KIPS)	WORKING FORCE (KIPS)	CALCULATED CAMBER (INCHES)	DEAD LOAD DEFLECTION (INCHES)	LOCATION OF CENTER OF GRAVITY OF PRESTRESS FORCE			STIRRUPS			REMARKS
					DIST. A	DIST. B	DIST. TO POINT OF DRAPE C	NO. OF STIRRUP SPACING D1	NO. OF STIRRUP SPACING D2	SPACING D3	
G-1	1523	1190	-1 7/8	1 3/8	1'-11"	7 1/2"	13'-0"	23 x 6"	24 x 9"	12"	4500
G-2	1242	1058	-1 1/4	1"	1'-10"	7 1/2"	13'-0"	24 x 7"	21 x 9"	12"	4500

- NOTES FOR PRESTRESSED BEAMS (PRETENSIONING)**
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 6000 PSI.
 - A. PRETENSIONED STRANDS IN KEEHL BEAMS TYPE VI, VII SHALL BE 7 WIRE 1/2" DIAMETER STRESS RELIEVED STEEL STRANDS (AREA: 0.93 IN²) WITH AN ULTIMATE STRENGTH OF 270 KSI. FOR PROPERTIES SEE STATE STANDARD SPECIFICATIONS.
TOTAL LOSS DUE TO CREEP, SHRINKAGE, ELASTIC SHORTENING AND RELAXATION OF STEEL = 45,000 PSI.
 - NON-PRESTRESSED REINFORCING STEEL SHALL BE GRADE 40 UNLESS OTHERWISE NOTED. FOR PROPERTIES SEE STATE STANDARD SPECIFICATIONS.
 - THE CALCULATED CAMBER INCLUDES THE EFFECT OF THE INITIAL PRESTRESS FORCE AND THE WEIGHT OF THE BEAM AFTER REMOVAL FROM BED. NEGATIVE VALUES SHOWN FOR CALCULATED CAMBER INDICATE A NET UPWARD DEFLECTION. CALCULATED CAMBER VALUES SHOWN DO NOT ACCOUNT FOR ANY CAMBER GROWTH OF THE BEAM. THE ACTUAL CAMBER SHALL NOT EXCEED THE CALCULATED CAMBER SHOWN ON THE PLANS BY MORE THAN 100% AT TIME OF INSTALLATION.
 - THE DEAD LOAD DEFLECTION INCLUDES THE COMBINED EFFECTS OF THE WEIGHT OF SLAB, HAUNCH, AND DIAPHRAGM.
 - STRAND PATTERN SHALL BE SYMMETRICAL ABOUT THE LONGITUDINAL CENTERLINE OF THE BEAM.
 - STRAND RELEASE SEQUENCE SHALL NOT INDUCE ANY LATERAL DEFLECTION OF THE BEAM.
 - CONTRACTOR SHALL SUBMIT HIS PROPOSED STRAND PATTERN AND RELEASE SEQUENCE TO THE ENGINEER FOR APPROVAL.
 - DURING CURING CARE SHALL BE TAKEN TO AVOID ANY LATERAL DEFLECTION OF THE BEAM DUE TO IMPROPER ORIENTATION.
 - LIFTING DEVICES SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE CENTER LINE OF BEARINGS OF THE BEAM. DETAILS AND LOCATIONS OF LIFTING DEVICES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. SUCH APPROVAL DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY IF THE BEAM IS DAMAGE DUE TO FAILURE OF THE LIFTING DEVICE.
 - SEE FRAMING PLANS FOR LOCATIONS OF DIAPHRAGMS AND BEAM MARK NUMBERS. FOR BEAM TYPES AND LENGTH SEE BEAM TYPE SCHEDULE. LENGTHS SHOWN DO NOT INCLUDE EFFECT OF ELASTIC SHORTENING.
 - IN LIEU OF THE 7 WIRE 1/2" DIAMETER STRESS-RELIEVED STEEL STRANDS (AREA: 0.93 IN²) WITH AN ULTIMATE STRENGTH OF 270 KSI, THE CONTRACTOR AT HIS OPTION MAY USE 7 WIRE 7/16" DIAMETER STRESS-RELIEVED STEEL STRANDS (AREA: 0.115 IN²) WITH AN ULTIMATE STRENGTH OF 270 KSI. FOR PROPERTIES OF 7/16" DIAMETER STRAND, SEE SPEC PROVISIONS. HOWEVER THE WORKING FORCE AND ITS CENTER OF GRAVITY AS STATED, SHALL NOT BE REVISED UNLESS APPROVED BY THE ENGINEER.

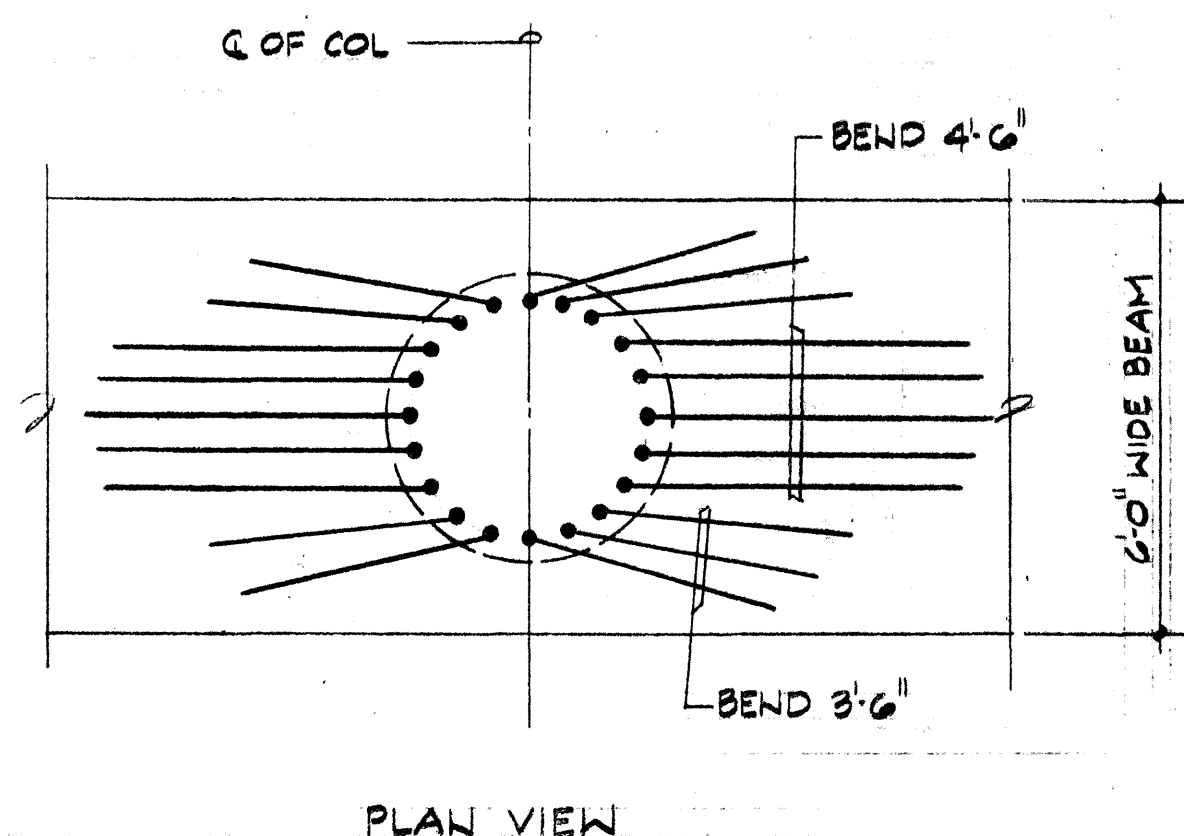
TYPICAL PRESTRESSED PRECAST KEEHL TYPE VI GIRDER DETAIL
AS NOTED



CENTER PIER BEAM ELEVATION
SCALE: 3/8" = 1'-0"

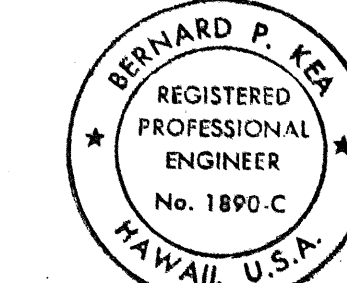


COLUMN REINFORCING BEND DETAIL
SCALE: 3/8" = 1'-0"

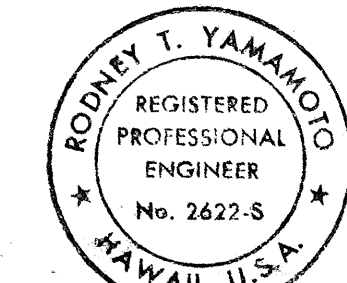


PLAN VIEW

4'-0" COLUMN DETAIL
SCALE: 3/8" = 1'-0"

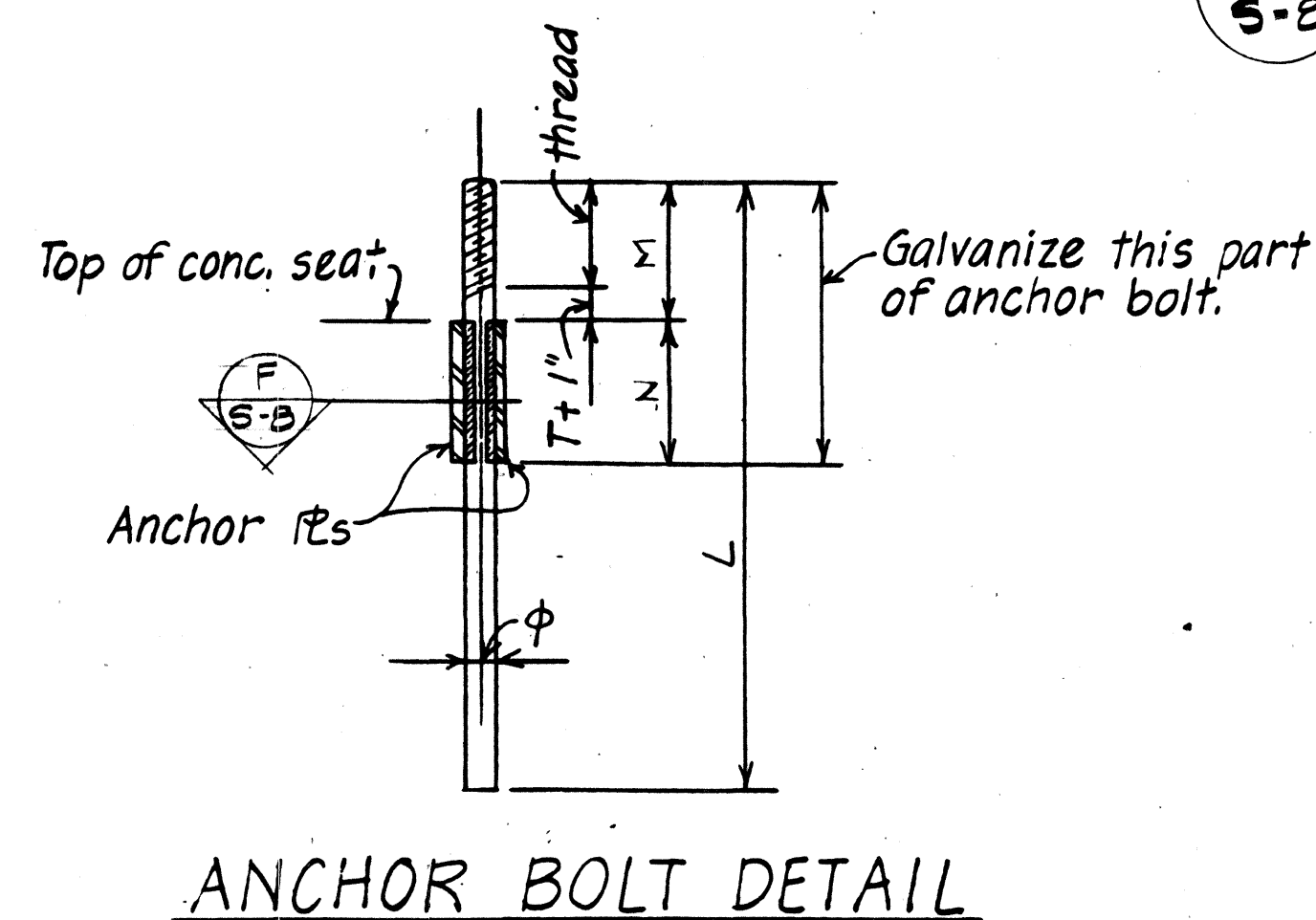
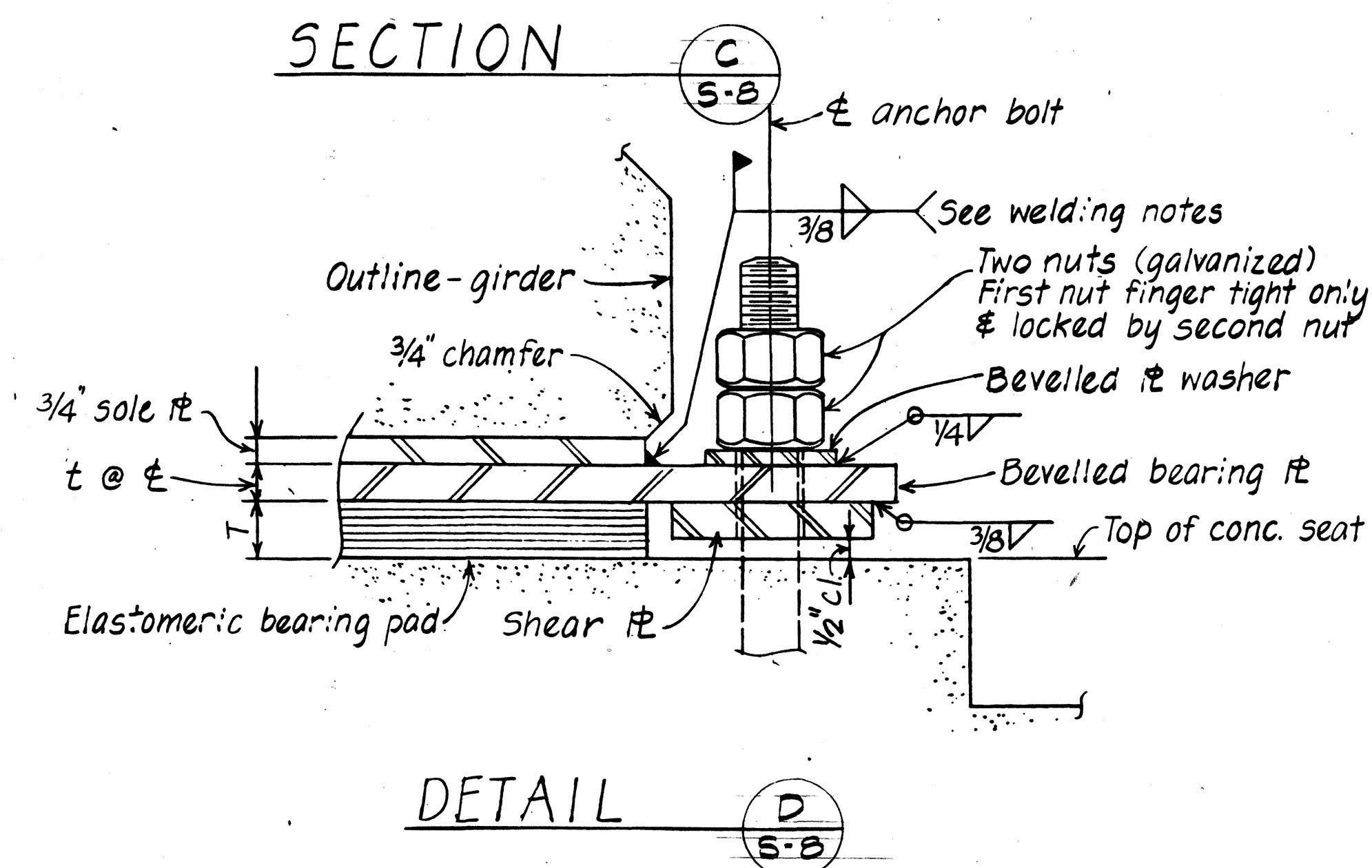
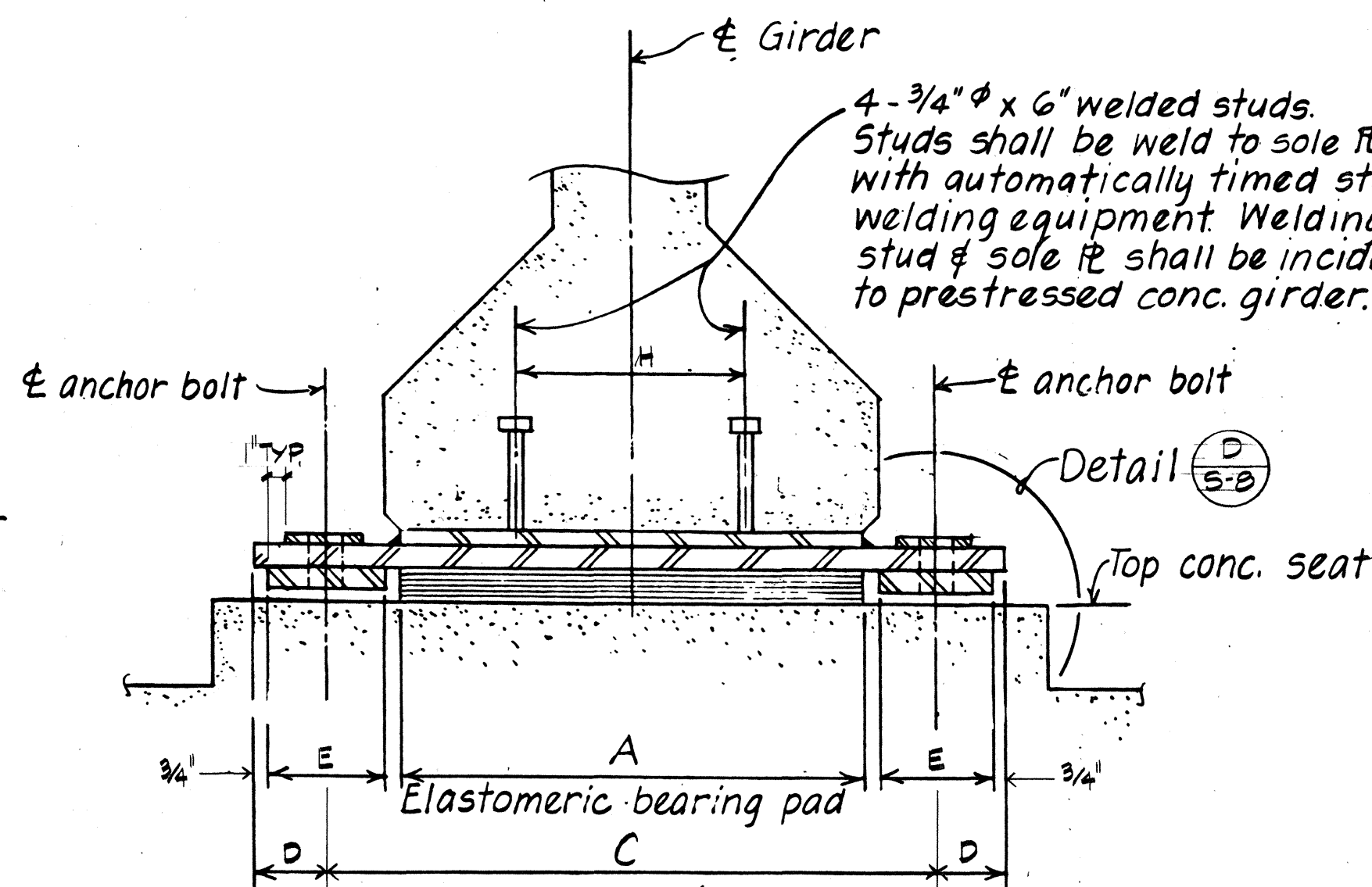


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REVISION DATE	DESCRIPTION	MADE BY	APPROVED
COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS WEST BEACH RESORT HONOLULU, EWA, OAHU, HAWAII DEVELOPER: WEST BEACH ESTATES TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69 FARRINGTON HIGHWAY INTERCHANGE TYPICAL PRECAST KEEHL GIRDER DETAIL CENTER PIER BEAM ELEVATION			
APPROVED:		DATE	
 RODNEY T. YAMAMOTO REGISTERED PROFESSIONAL ENGINEER		CHIEF, DIVISION OF ENGINEERING, D.P.W. BERNARD P. KERI REGISTERED PROFESSIONAL ENGINEER	



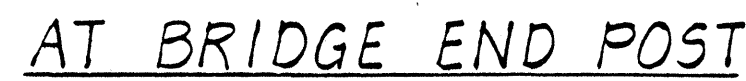
SECTION

SECTION

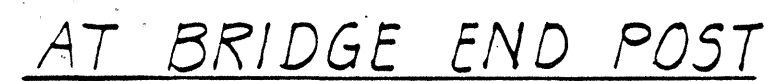
1. ELASTOMERIC BEARING PADS, ANCHOR BOLTS AND BEVELED BEARING PLATES ARE INCIDENTAL TO CONCRETE IN BRIDGES.
2. SOLE PLATES WELDED STUDS ARE INCIDENTAL TO BEAM.
3. DUROMETER HARDNESS OF ELASTOMERIC PAD SHALL BE 60 $\pm$ 5.
4. STUDS SHALL BE WELDED TO SOLE PLATE WITH AUTOMATICALLY TIMED STUD WELDING EQUIPMENT.



REVISION DATE	DESCRIPTION	MADE BY	APPROVED
COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS — SURVEYORS — CONSULTANT PLANNERS			
WEST BEACH RESORT			
HONOLULU, EWA, OAHU, HAWAII DEVELOPER: WEST BEACH ESTATES TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69			
FARRINGTON HIGHWAY INTERCHANGE GIRDER BEARING DETAILS			
APPROVED: _____			
CHIEF, DIVISION OF ENGINEERING, DPW			
DATE			
<i>Bernard P. Kea</i> REGISTERED PROFESSIONAL ENGINEER			



AT RETAINING WALL OR
WING WALL END POST



AT RETAINING WALL OR
WING WALL END POST

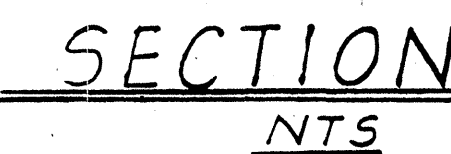


AT EXPANSION JOINT

TYPICAL JOINT DETAILS

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

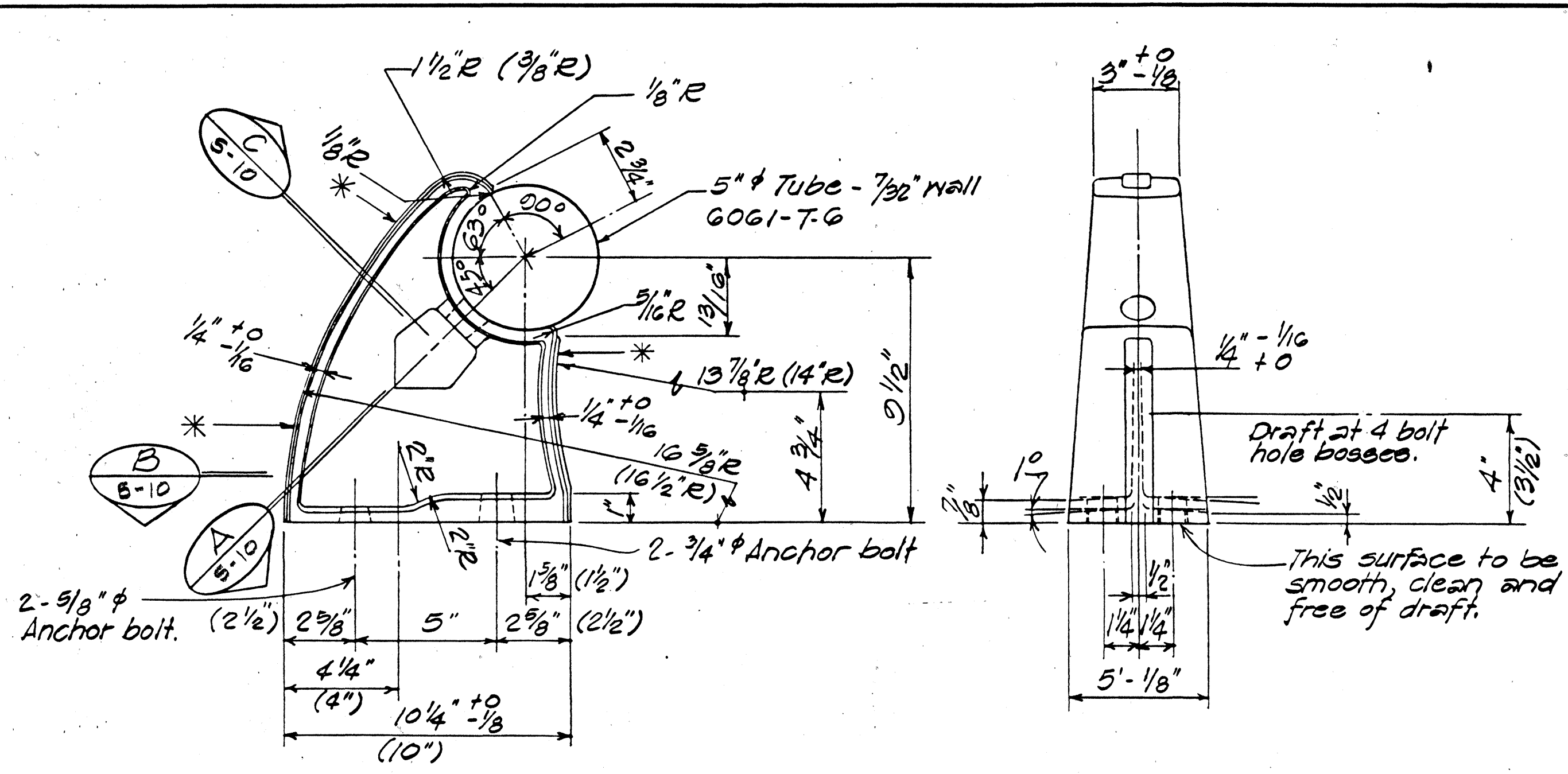
1. Tubing shall be continuous over not less than 4 posts unless otherwise noted.
2. All rails shall be spliced in the panel spanning deck expansion joints. Increase joint width between tube to 1 1/2" and increase sleeve length by 1".
3. Rail post shall be normal to grade.
4. No more than one tube splice per panel shall be permitted except as otherwise noted.
5. 1/8" thick, full size elastomeric pads shall be placed between every post base and concrete surface.
6. Delete non-applicable provisions and details.



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Robert E. Leonard

CHIEF, DIVISION OF ENGINEERING, DPW

Bernard P. Kea
REGISTERED PROFESSIONAL ENGINEER



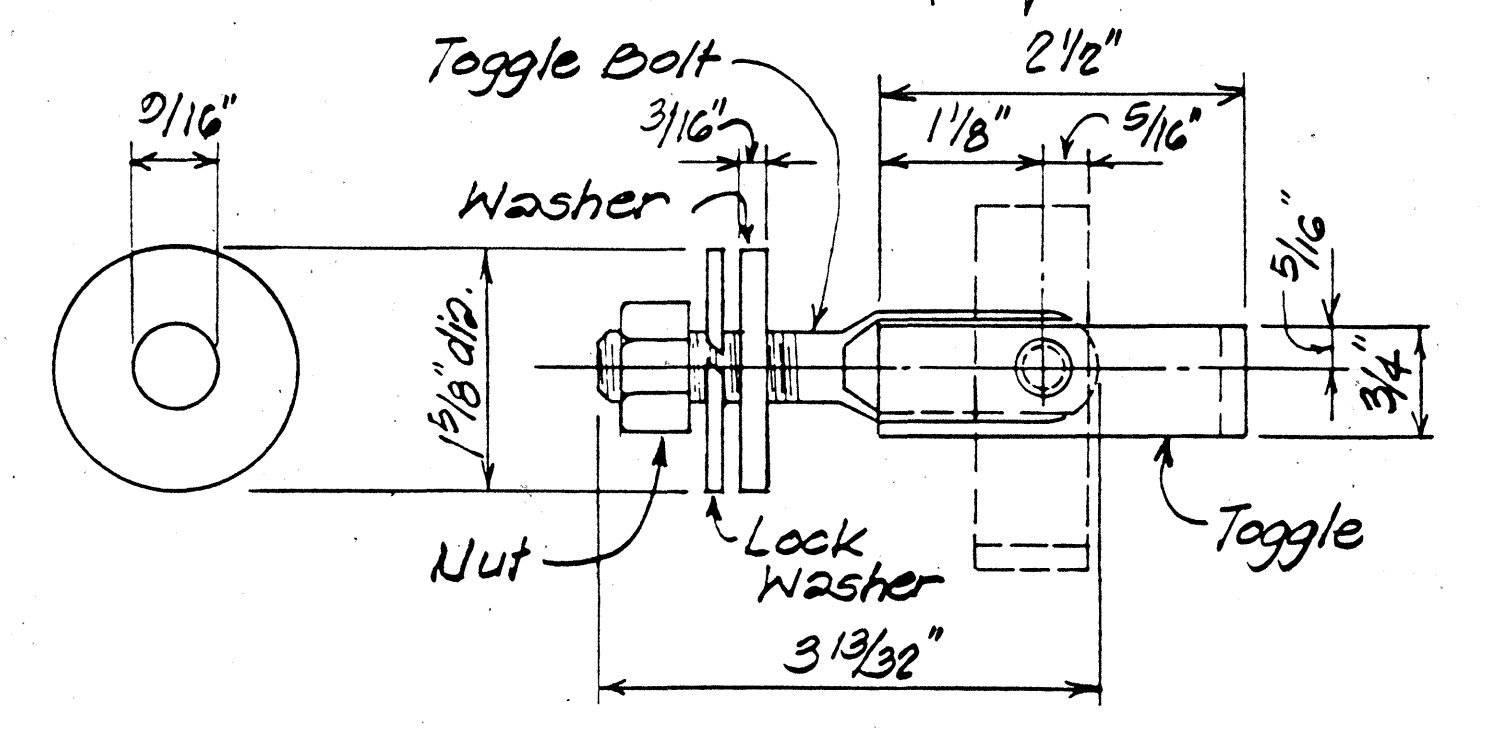
SIDE ELEVATION

END ELEVATION

NOTE:
 * Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (*). Finish shall be approved by the Engineer.
 Casting to be neatly trimmed and any protruding flash to be broken off.
 Unless otherwise specified, draft angles to be 3° corner radii to be ± 3/16" R, fillet radii to be 3/8" R, casting tol. to be ± 1/16", wall thickness to be ± 1/32".
 Dimensions may be as shown or as shown in parenthesis ().

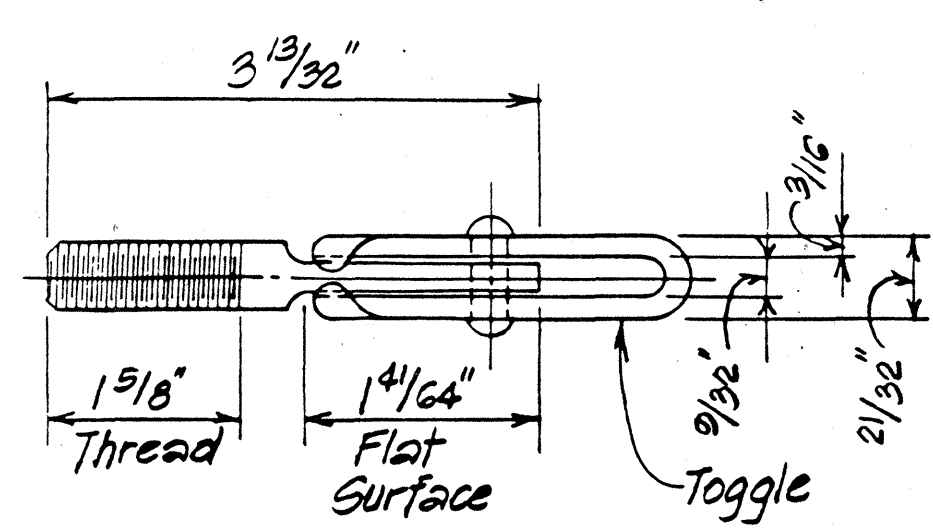
TYPICAL RAIL POST DETAILS
 Scale: 3" = 1'-0"

NOTE:
 Toggle Bolt - Cadmium plating on steel - Type NS 0.0005 thick ASTM-A165 (all parts).



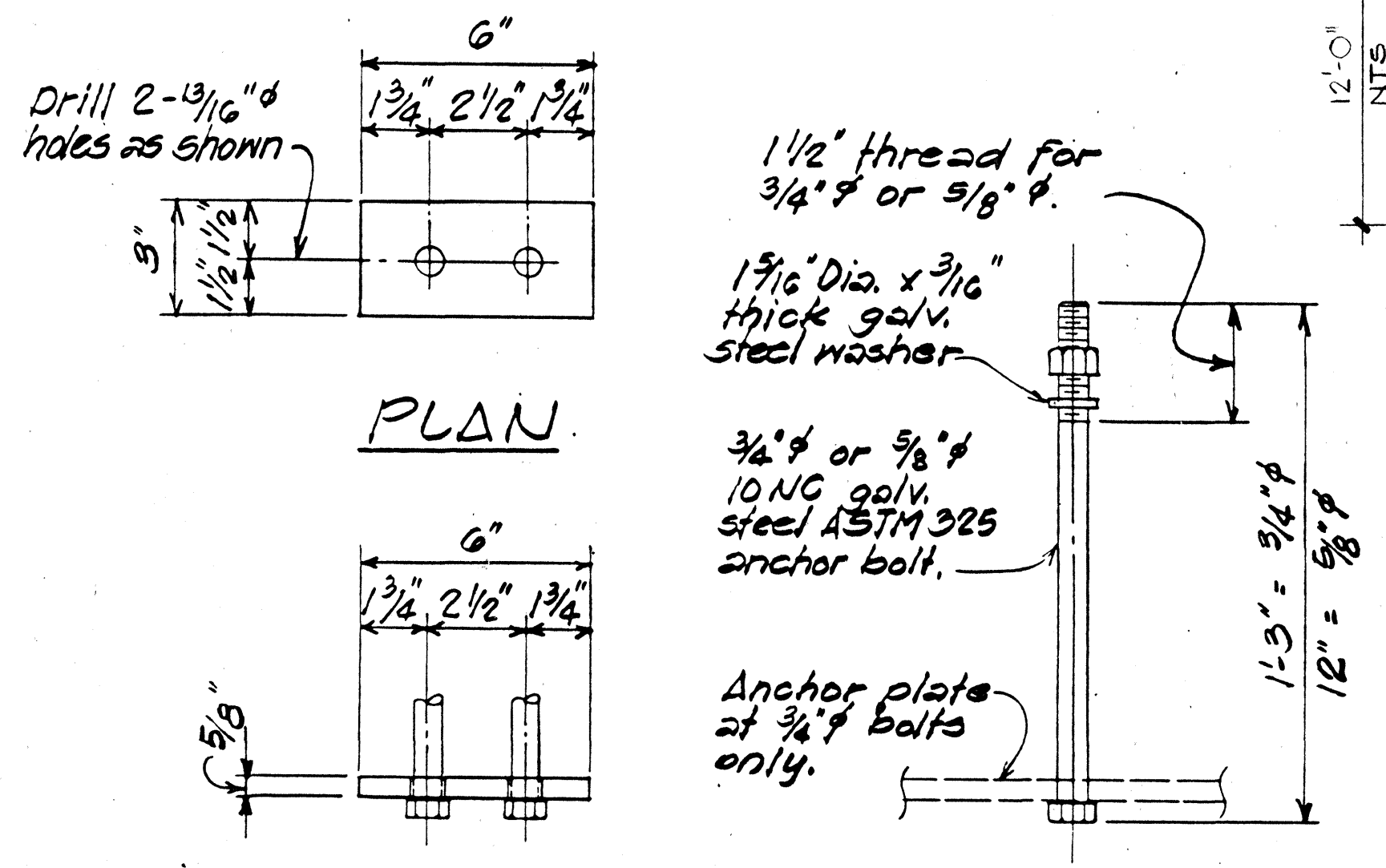
WASHER SIDE ELEVATION ASSEMBLY

Special rivet - material 1038 C.R. steel, heat treated, ASTM A195

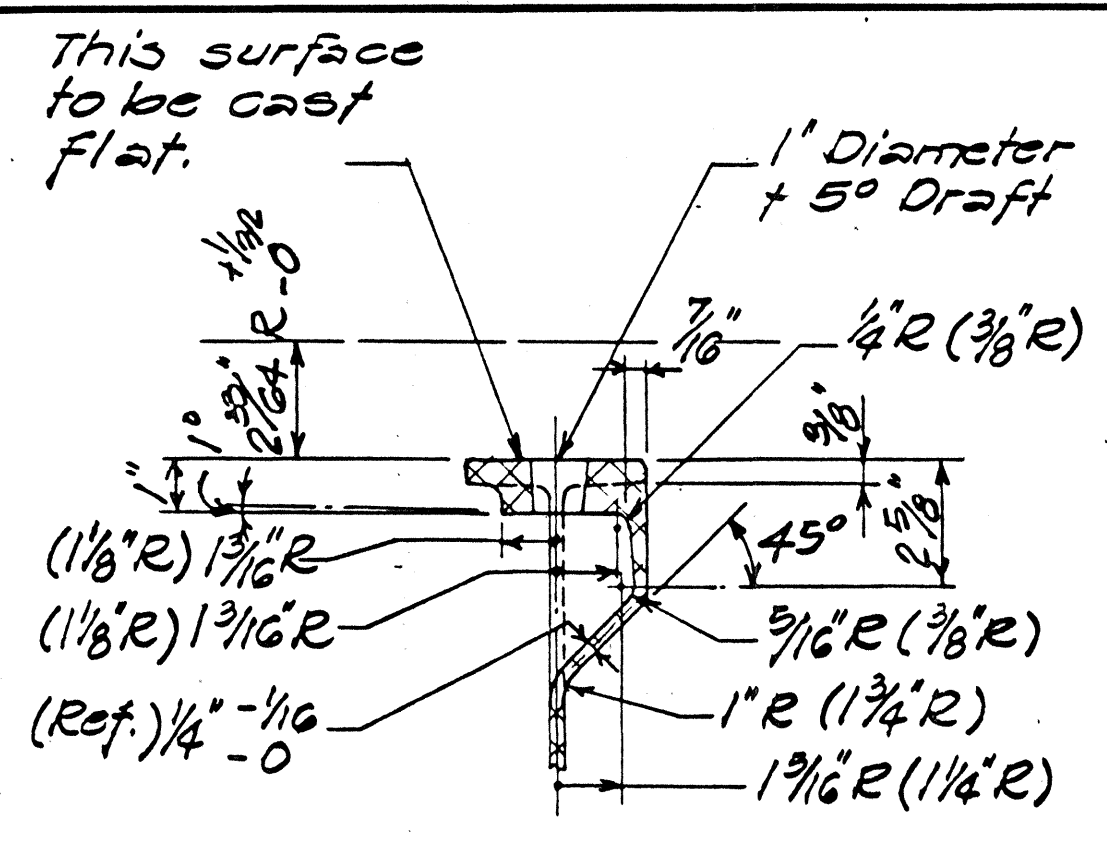


TOP PLAN
 1/2" φ STEEL TOGGLE BOLT DETAIL

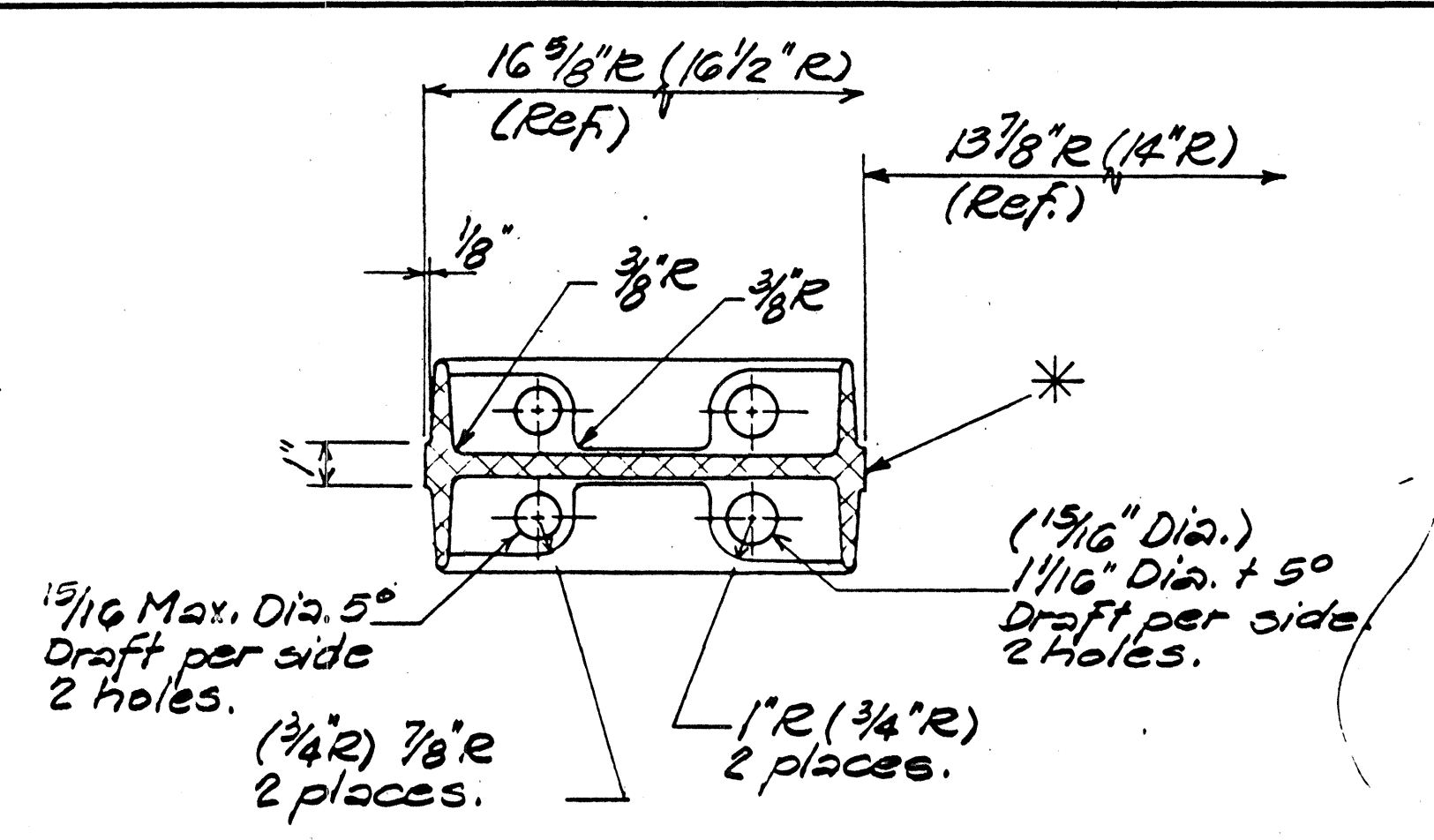
NOTE:
 Anchor bolts shall be embedded such that the thread are excluded from the shear plane & approximately 2 threads are exposed above the nut.



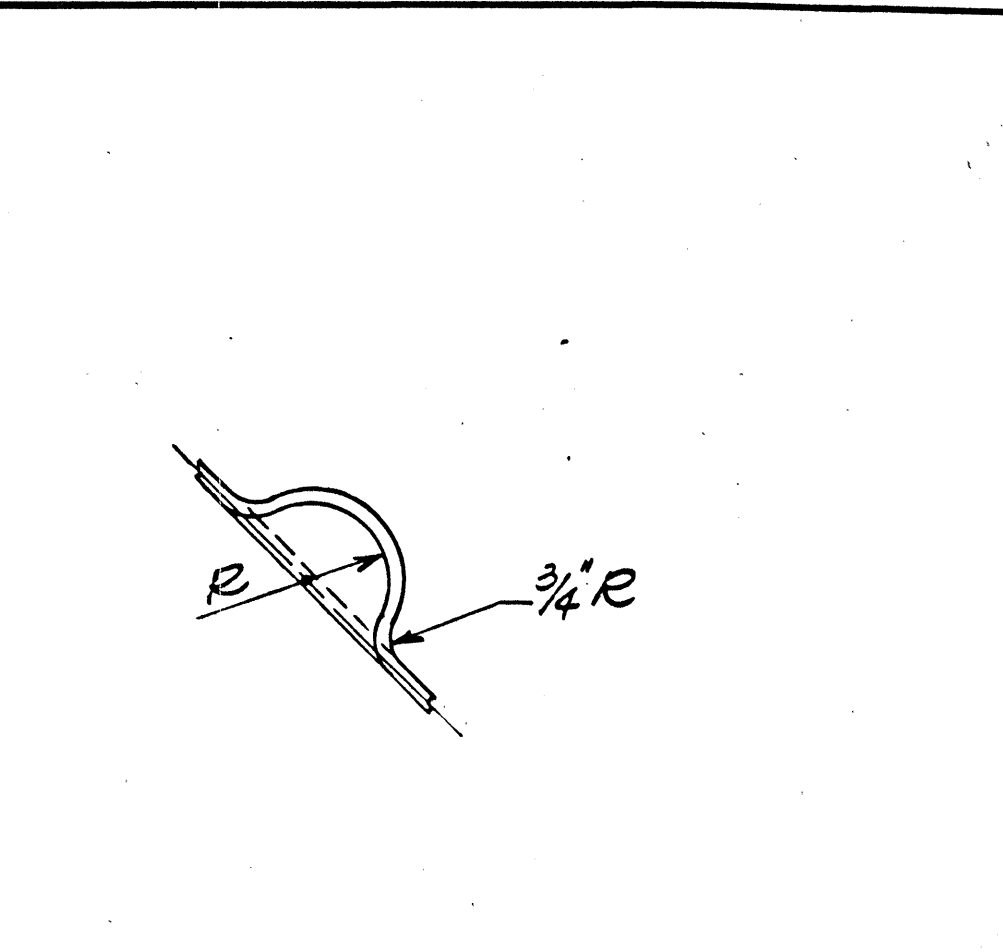
PLAN
 ELEVATION
 ANCHOR PLATE DETAIL ANCHOR BOLT
 TYPICAL RAIL POST
 STEEL ANCHOR BOLT ASSEMBLY



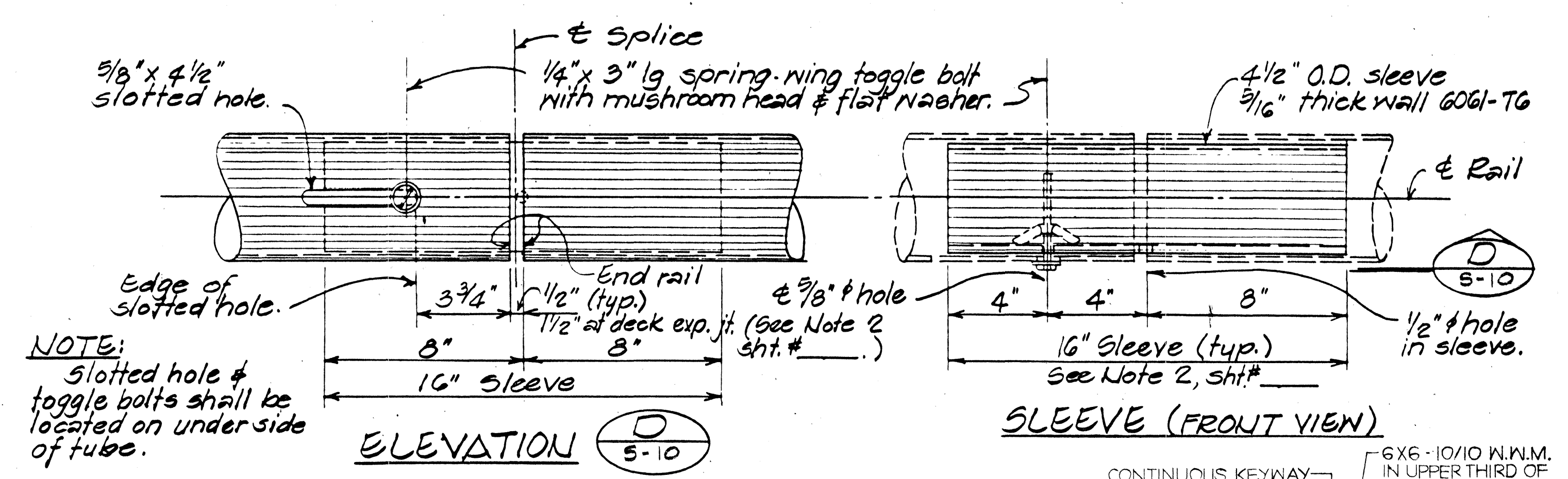
SECTION A
 S-10



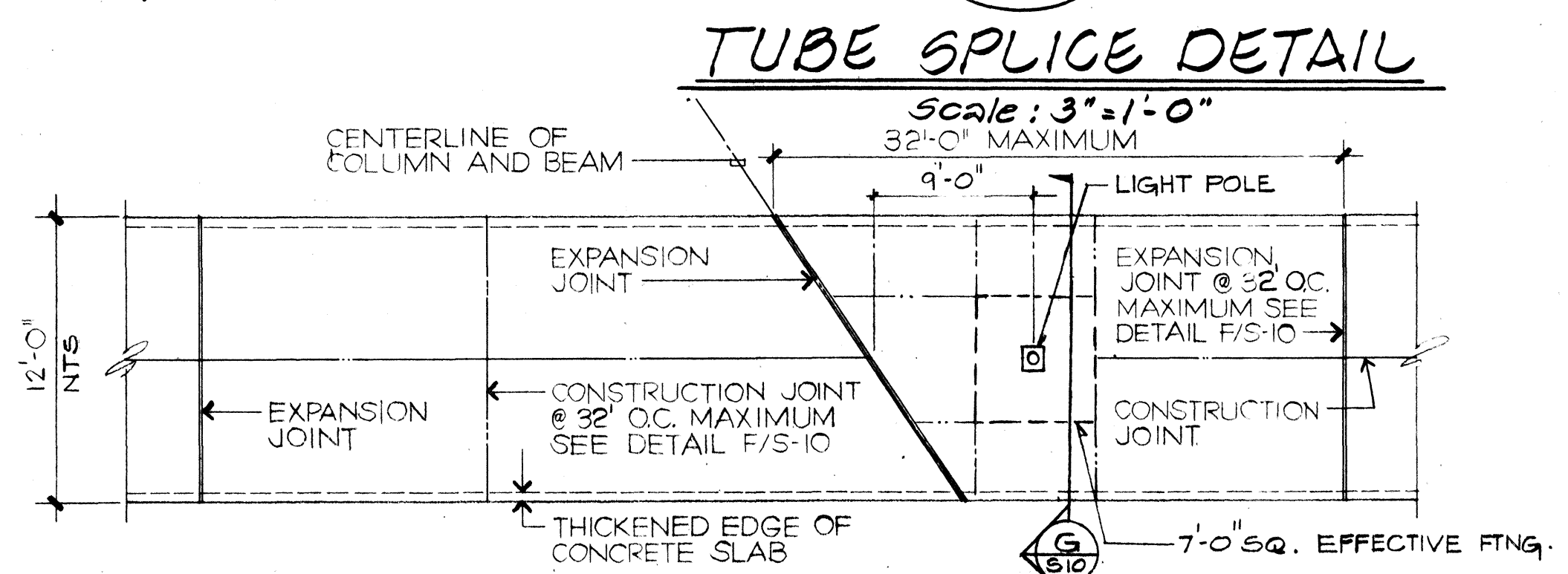
SECTION B
 S-10



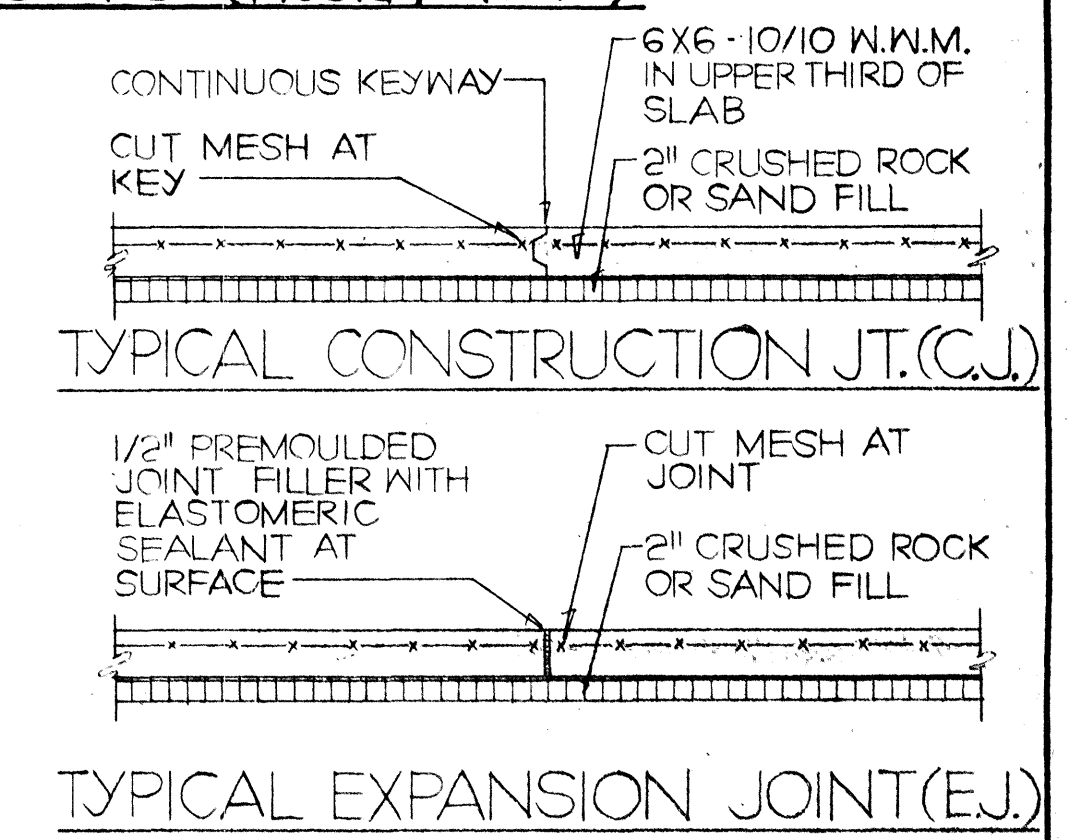
SECTION C
 S-10



ELEVATION D
 S-10
 SLEEVE (FRONT VIEW)

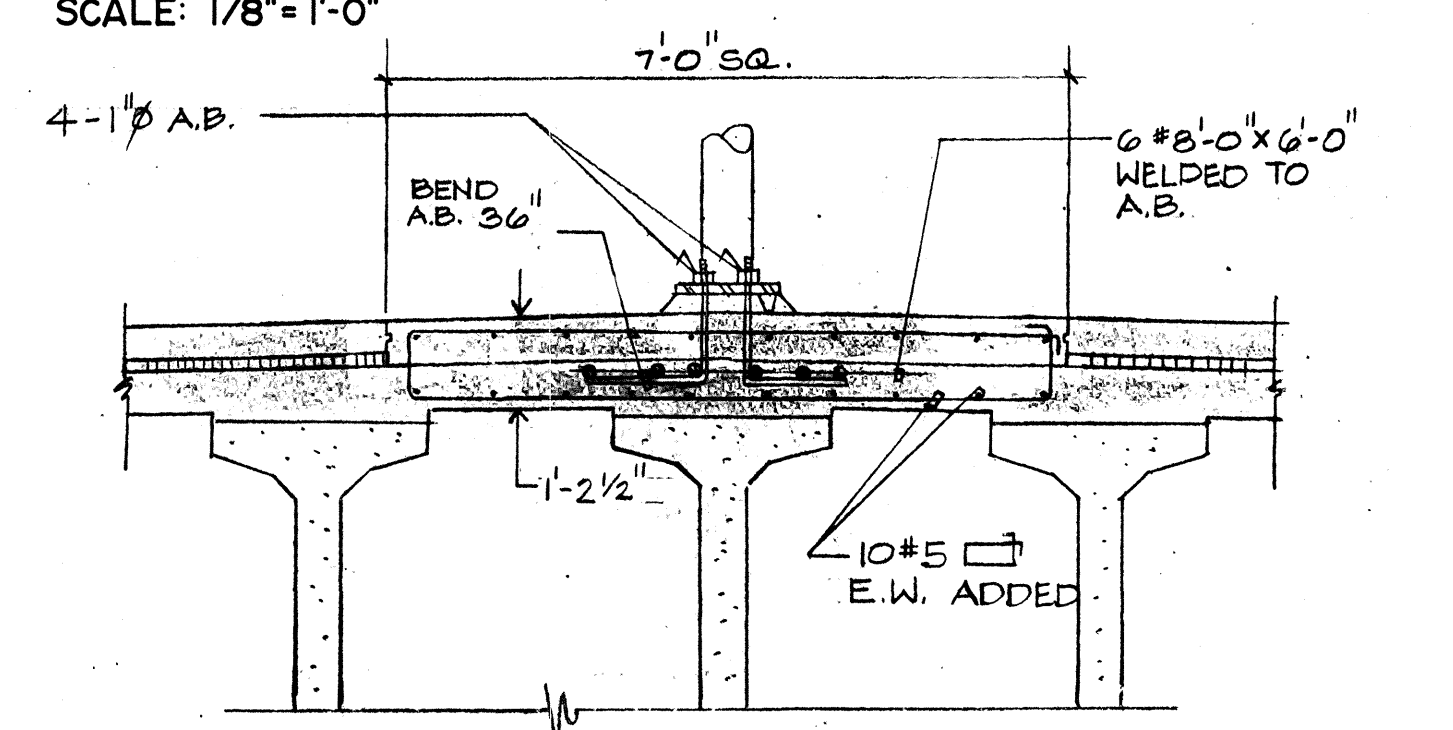


TUBE SPLICE DETAIL
 Scale: 3" = 1'-0"



TYPICAL CONSTRUCTION JT.(CJ)
 TYPICAL EXPANSION JOINT (EJ)

E PLAN OF EXPANSION AND CONSTRUCTION JOINT
 S-10
 IN 4" THICK CONCRETE SLAB FOR MEDIAN
 SCALE: 1/8" = 1'-0"



SECTION G
 S-10
 SECTION THRU LIGHT POLE BASE

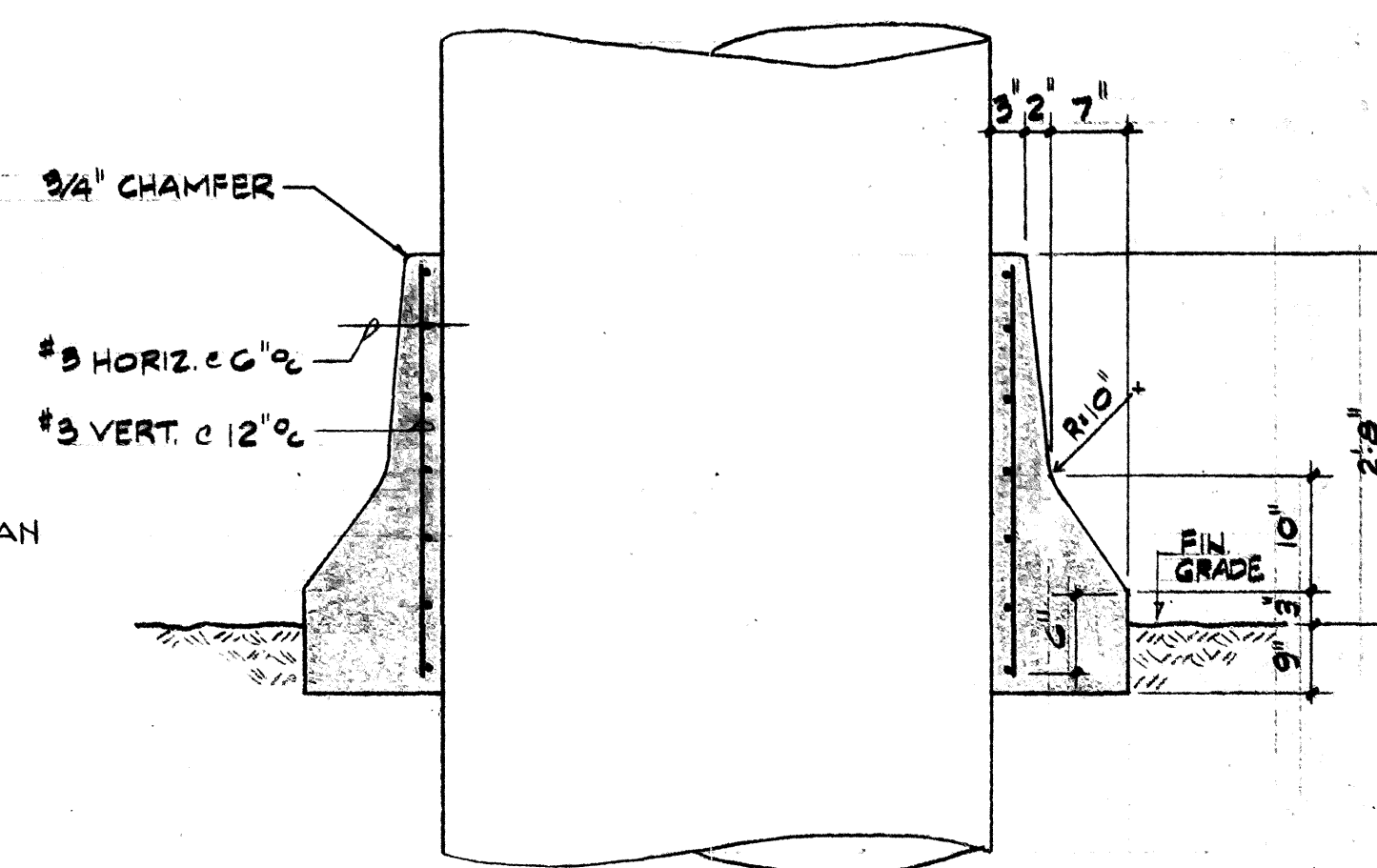
BERNARD P. KEO
 REGISTERED PROFESSIONAL ENGINEER
 No. 1890-C
 HAWAII, U.S.A.

ROONEY T. YAMAMOTO
 REGISTERED PROFESSIONAL ENGINEER
 No. 2622-S
 HAWAII, U.S.A.

SHIGEMURA, YAMAMOTO
 LAU & ASSOCIATES, INC.
 1251 South King Street, Suite C
 HONOLULU, HAWAII 96814

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 Bernard P. Keo

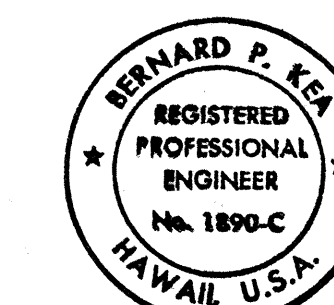
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COMMUNITY PLANNING INCORPORATED CIVIL ENGINEERS - SURVEYORS - CONSULTANT PLANNERS WEST BEACH RESORT HONOLULU, EWA, OAHU, HAWAII DEVELOPER: WEST BEACH ESTATES TMK: 9-1-15:POR. 3, 9-2-03:POR. 2 & 69 FARRINGTON HIGHWAY INTERCHANGE RAILPOST DETAILS			
APPROVED: <i>Bernard P. Keo</i> CHIEF, DIVISION OF ENGINEERING, DPW REGISTERED PROFESSIONAL ENGINEER			



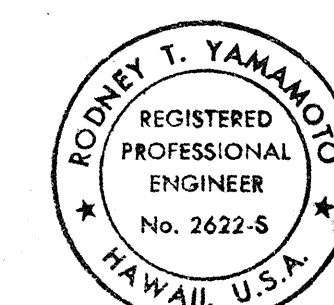
SECTION
SCALE: 3/4" = 1'-0"



IMPACT ATTENUATORS



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11-30-80	Reversed Barrier Taper	CPI	
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

COMMUNITY PLANNING INCORPORATED
CIVIL ENGINEERS — SURVEYORS — CONSULTANT PLANNERS

WEST BEACH RESORT

HONOLULU, EWA, OAHU, HAWAII

DEVELOPER: WEST BEACH ESTATES

TMK: 9-1-15:POR. 3 9-2-03:POR. 2 & 3

FARRINGTON HIGHWAY INTERCHANGE

MEDIAN BARRIER DETAIL

APPROVED:

CHIEF, DIVISION OF ENGINEERING, D.P.W. DATE

Edward P. Pless

REGISTERED PROFESSIONAL ENGINEER

**SHIGEMURA, YAMAMOTO
LAU & ASSOCIATES, INC.**
1251 South King Street, Suite C
HONOLULU, HAWAII 96814

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RECORD DRAWINGS S-1