



PORT OF TACOMA

1990-1991 MODIFICATION & RELOCATION OF I.H.I. CRANE No.s 2401 & 2078 & 2402 PEINER CRANE No. 2042 CONTRACT No. 681

CONSULTANTS:

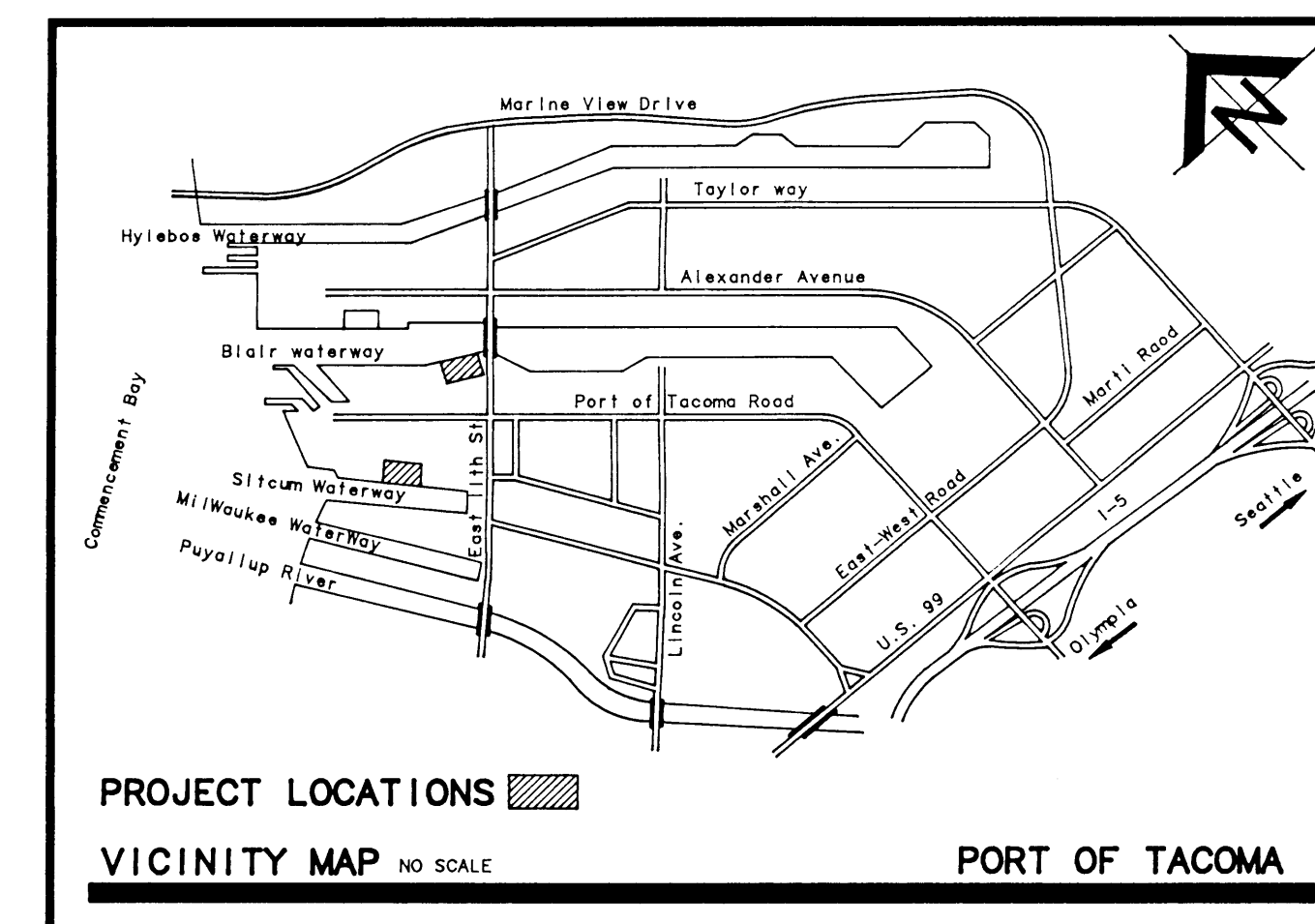
NORPAC ENGINEERING INC.
932A INDUSTRY DRIVE
SEATTLE, WASHINGTON 98188

PORT COMMISSION:

ROBERT G. EARLEY
JACK A. FABULICH
JOHN A. McCARTHY
PATRICK O'MALLEY
NED SHERA

PORT STAFF:

JOHN J. TERPSTRA
EXECUTIVE DIRECTOR
CURTIS L. RATCLIFFE, P.E.
CHIEF ENGINEER



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1691 1/1



APPROVED
Curtis L. Ratcliffe
CHIEF ENGINEER
DATE 10-21-91

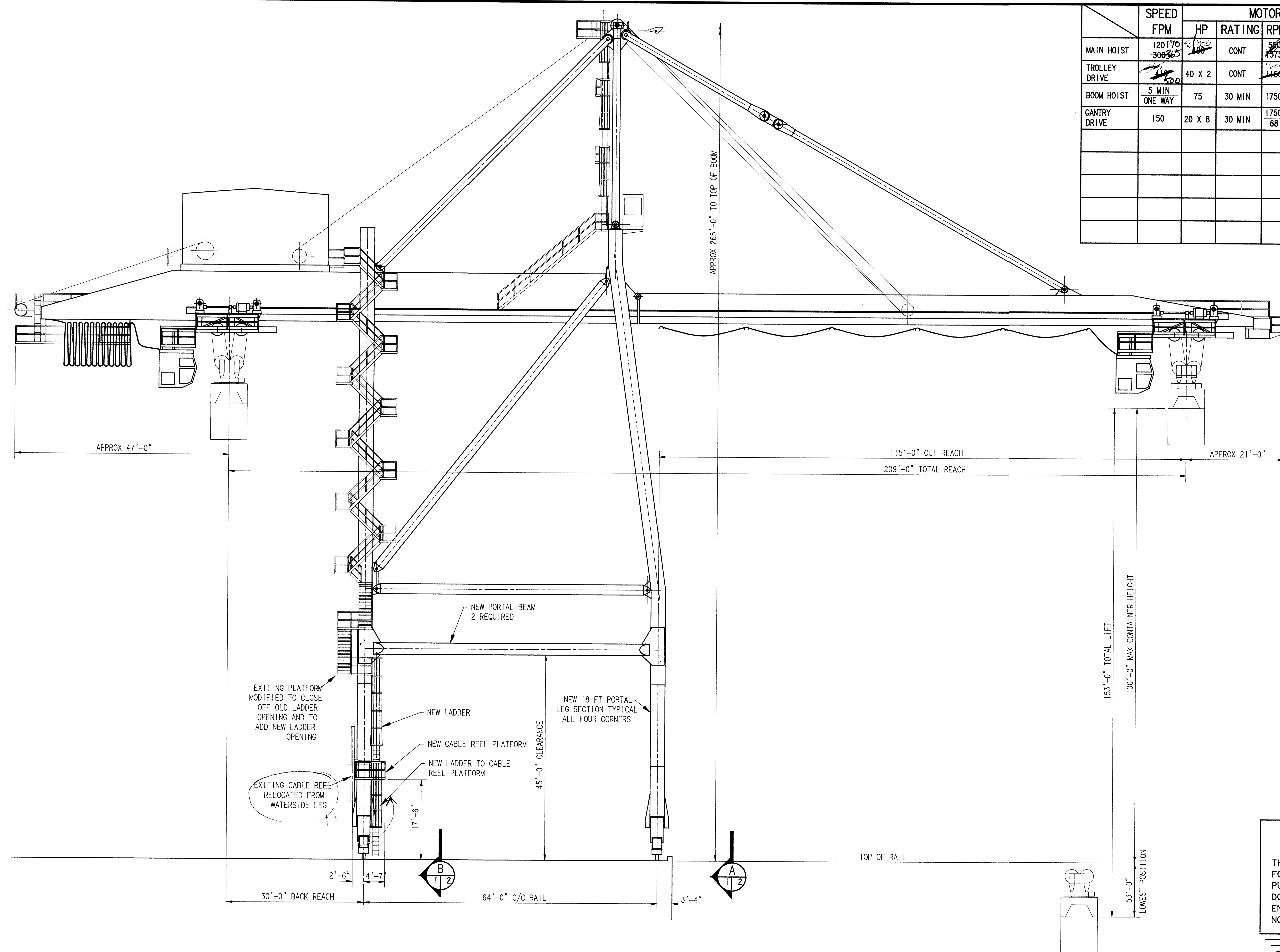
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DRAWN BY	DATE	CHECKED BY	DATE
C.R.	10/21/91	JLA	10/21/91
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		11/2/91

MODIFICATION & RELOCATION OF
I.H.I. CRANES No.s 2401, 2078 & 2402
PEINER CRANE No. 2042

COVER SHEET

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 1.1 OF 54

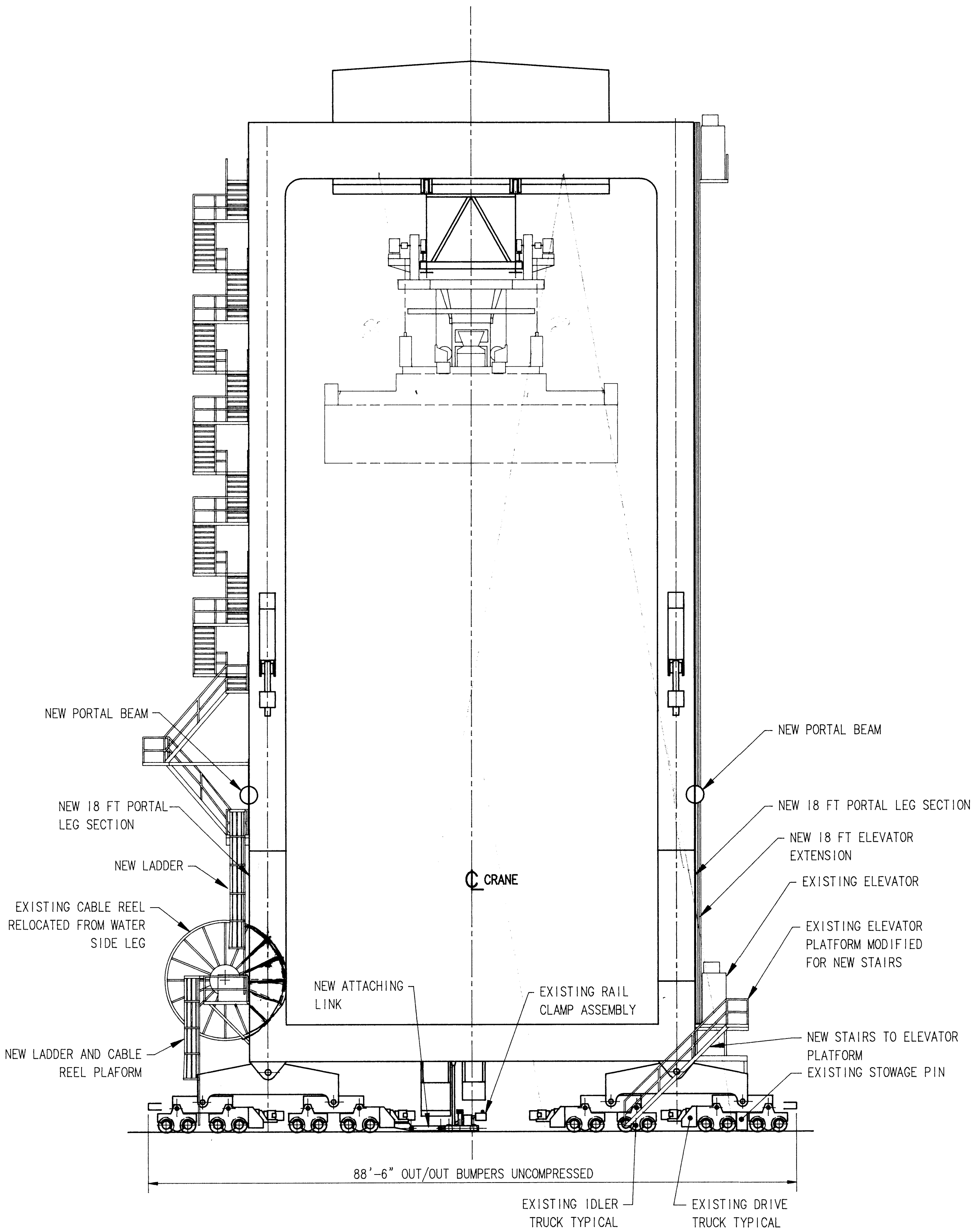


	SPEED FPM	MOTOR				BRAKE	CONTROL	REMARKS
		HP	RATING	RPM	TYPE			
MAIN HOIST	120170 306365	21300 400	CONT	580 1375	780 1215 D.C.	DC MAGNETIC	THYRISTER WARD LEONARD	
TROLLEY DRIVE	500 500	40 X 2	CONT	1180 1180	D.C.	DC MAGNETIC	THYRISTER WARD LEONARD	
BOOM HOIST	5 MIN ONE WAY	75	30 MIN	1750	D.C.	DC MAGNETIC	THYRISTER WARD LEONARD	
GANTRY DRIVE	150	20 X 8	30 MIN	1750 68	D.C.	DC MAGNETIC	THYRISTER WARD LEONARD	

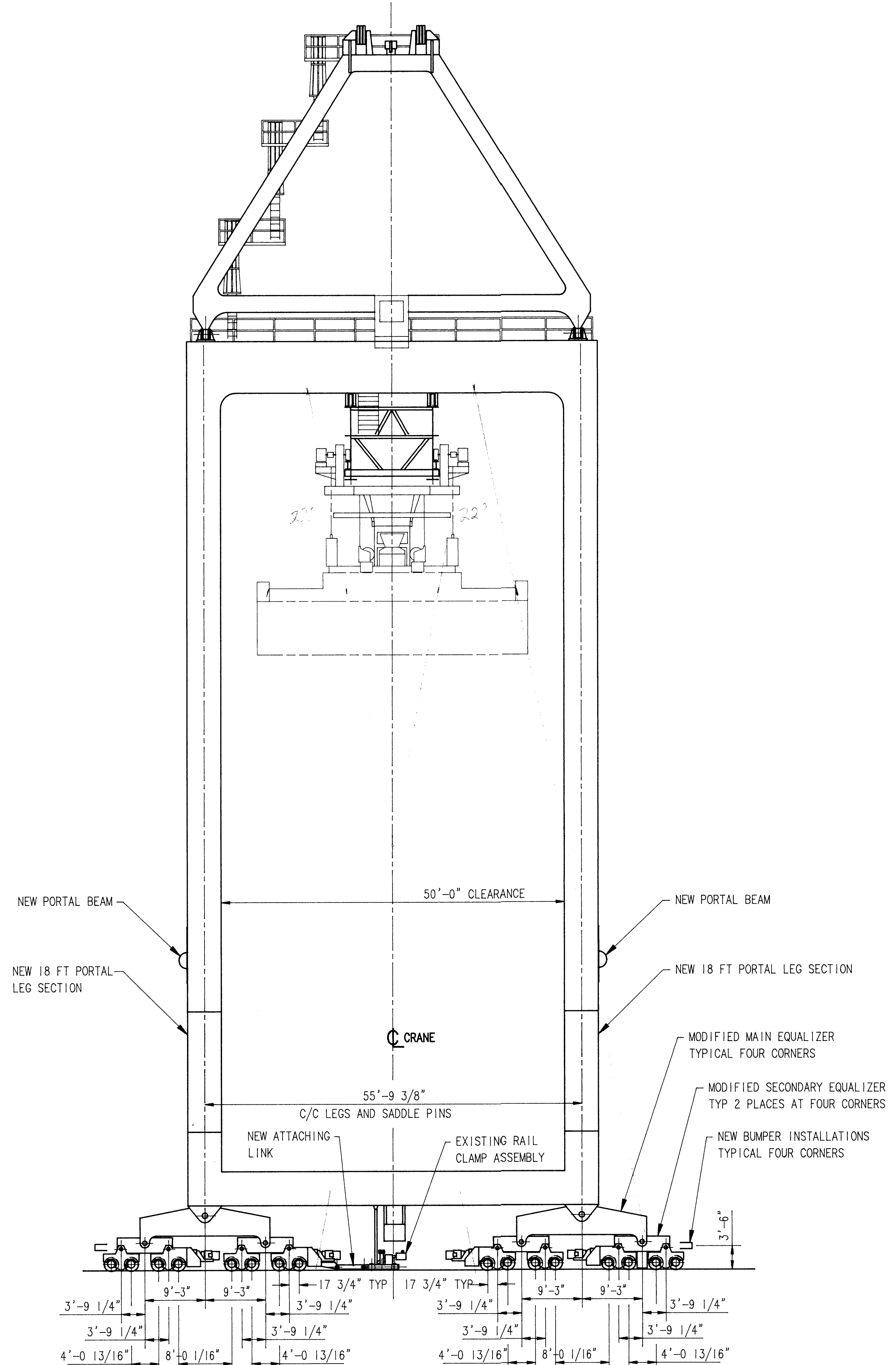
2401-2078

CAUTION:

THESE DRAWINGS HAVE BEEN PREPARED FOR DEMONSTRATIVE AND DISCUSSION PURPOSES ONLY. DO NOT USE THESE DOCUMENTS FOR ANY OTHER PURPOSE. ENGINEERING AND SAFETY REVIEW HAS NOT BEEN COMPLETED.



SECTION B-B



SECTION A-A

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JOB: 2486 DWG: 1679 2/2

SEAL

APPROVED

CHIEF ENGINEER DATE

R BAKER 1/16/90
DRAWN BY DATE
AS-BUILT BY DATE

CHECKED BY DATE
PROJ. ENGR. DATE

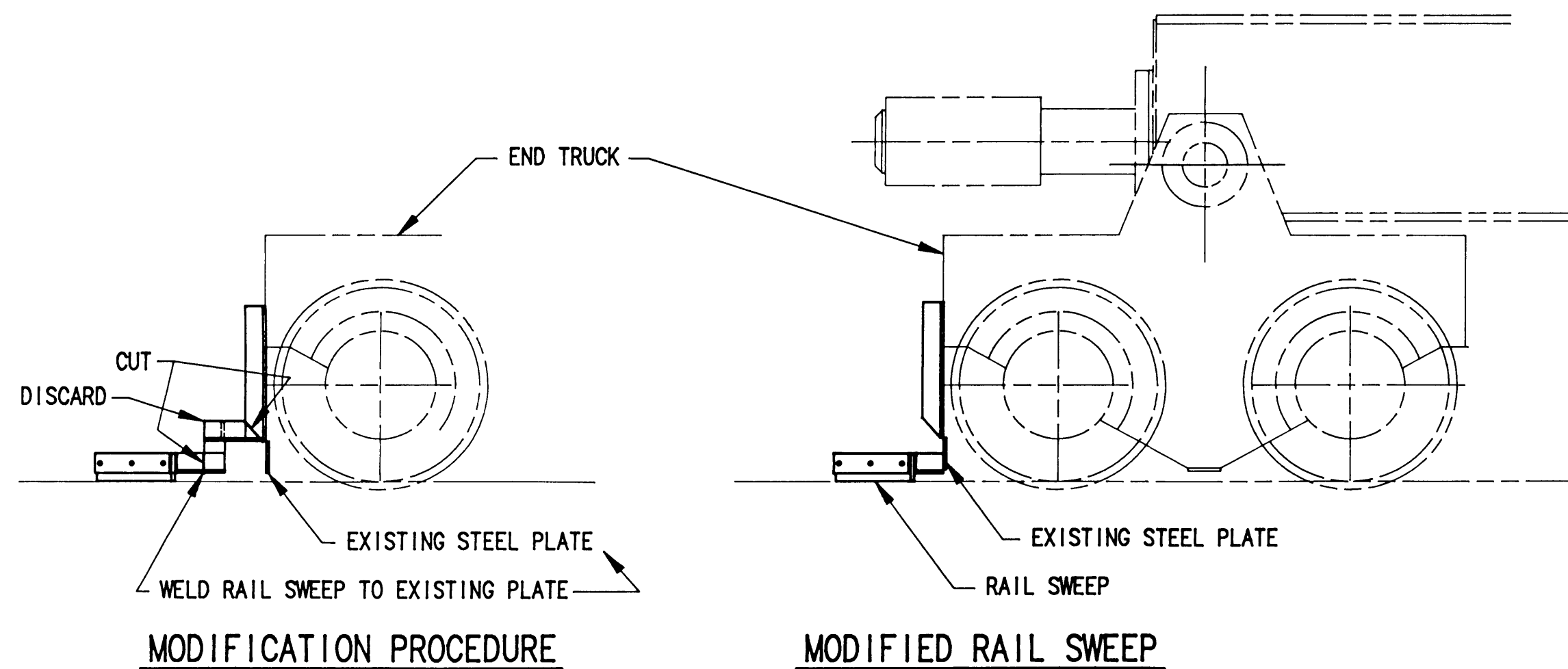
MARK	REVISION	BY	APP.	DATE

RAISING & RELOCATING I.H.I CRANE #2401
GENERAL ARRANGEMENT

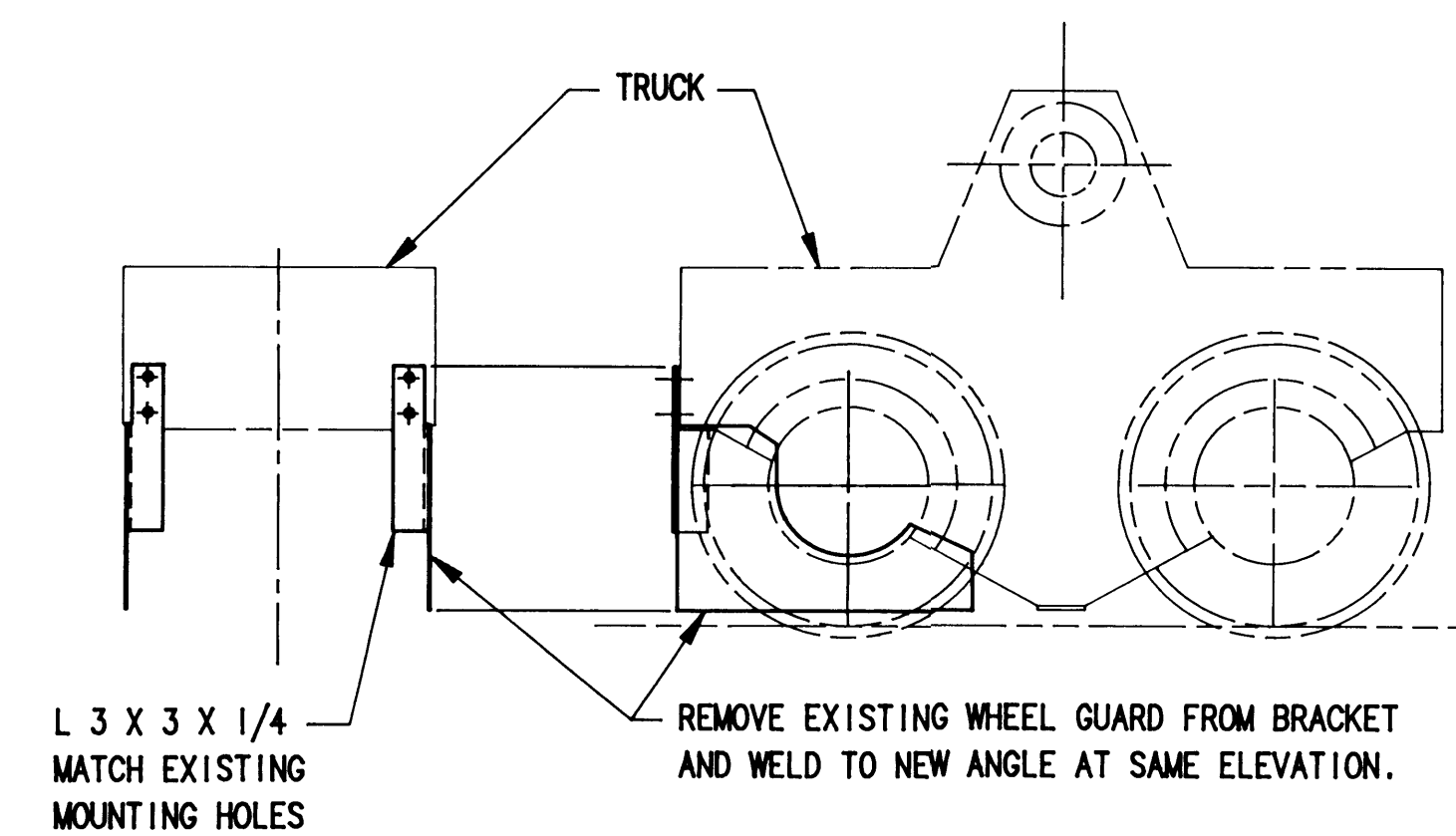
DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 2 OF

NOTES:

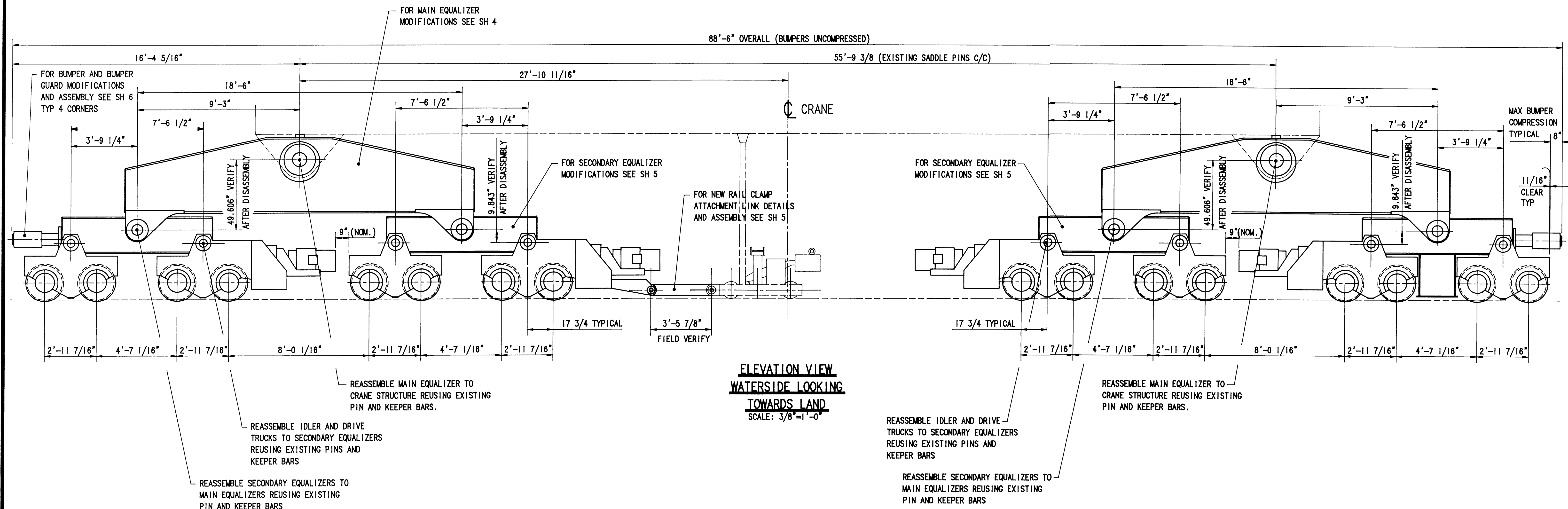
- DO NOT SCALE THIS DRAWING.
- THE CONTRACTOR MUST VERIFY ALL FIELD DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
- ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
- EXISTING WELD SIZES OF MODIFIED PIECES SHALL BE RECORDED AND THOSE SAME WELD SIZES USED IN THE NEW CONSTRUCTION PORTION OF THE MODIFICATION.
- WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
- PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
- VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
- ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.
- LINE BORES SHALL BE PARALLEL WITHIN .005 (FIVE THOUSANDTHS) INCHES.



**MODIFICATION OF RAIL SWEEPS
TYPICAL AT 4 CORNERS OF CRANE**
SCALE: 3/4"=1'-0"



**MODIFICATION OF WHEEL GUARDS
ON END OF TRUCKS FACING STOWAGE PIN**
SCALE: 3/4"=1'-0"



**ELEVATION VIEW
WATERSIDE LOOKING
TOWARDS LAND**
SCALE: 3/8"=1'-0"

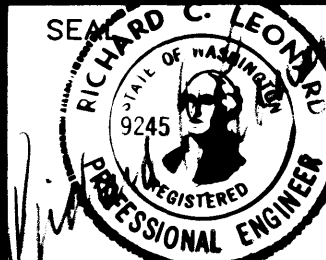
REASSEMBLE IDLER AND DRIVE TRUCKS TO SECONDARY EQUALIZERS REUSING EXISTING PINS AND KEEPER BARS

REASSEMBLE SECONDARY EQUALIZERS TO MAIN EQUALIZERS REUSING EXISTING PIN AND KEEPER BARS



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SEATTLE WA 98188
JOB: 2486 DWG: 1680 1/4



APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

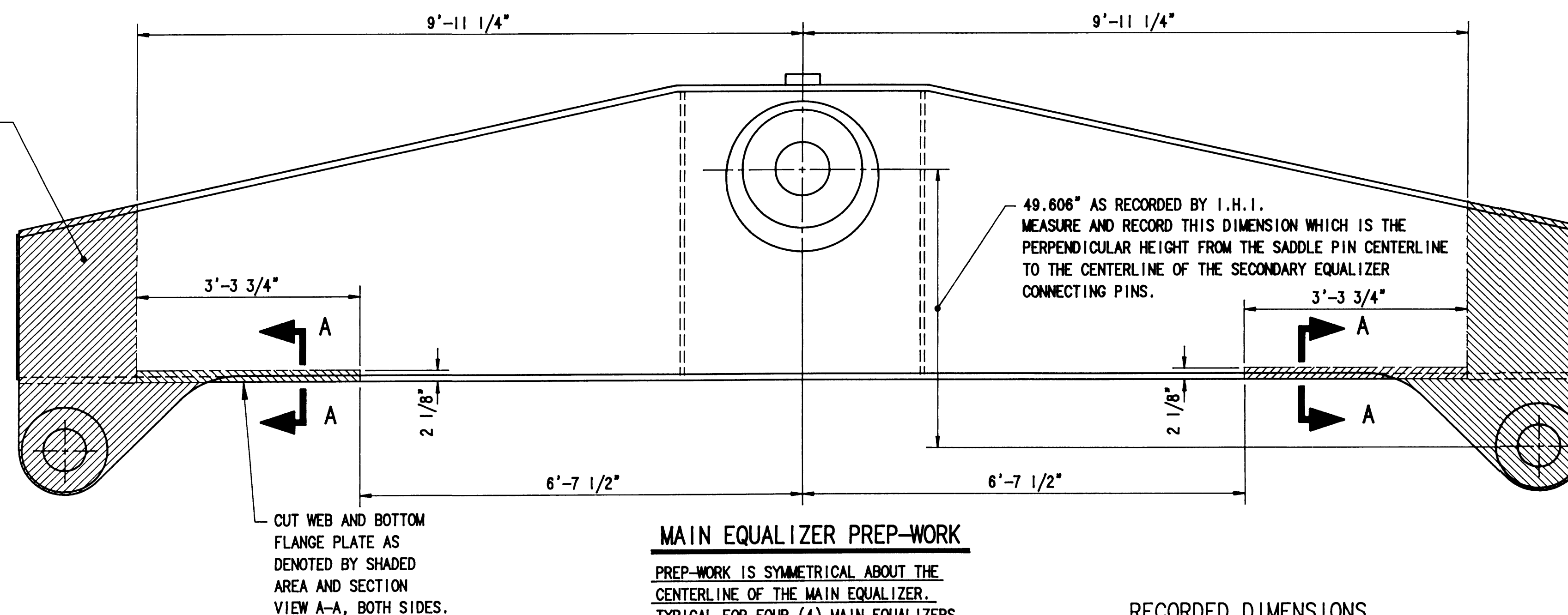
R BAKER	1/26/90	213	3/1/92
DRAWN BY	DATE	CHECKED BY	DATE
C.R.	10/21/91	J.L.A.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

A	AS BUILT	K.H.	2-13-91
MARK	REVISION	BY	APP. DATE

RAISING & RELOCATING I.H.I CRANE #2401
**ASSEMBLY
GANTRY DRIVE MODIFICATIONS**

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 3 OF 54

CUT OFF AND DISCARD
END SECTION AS DENOTED
BY SHADED AREA.



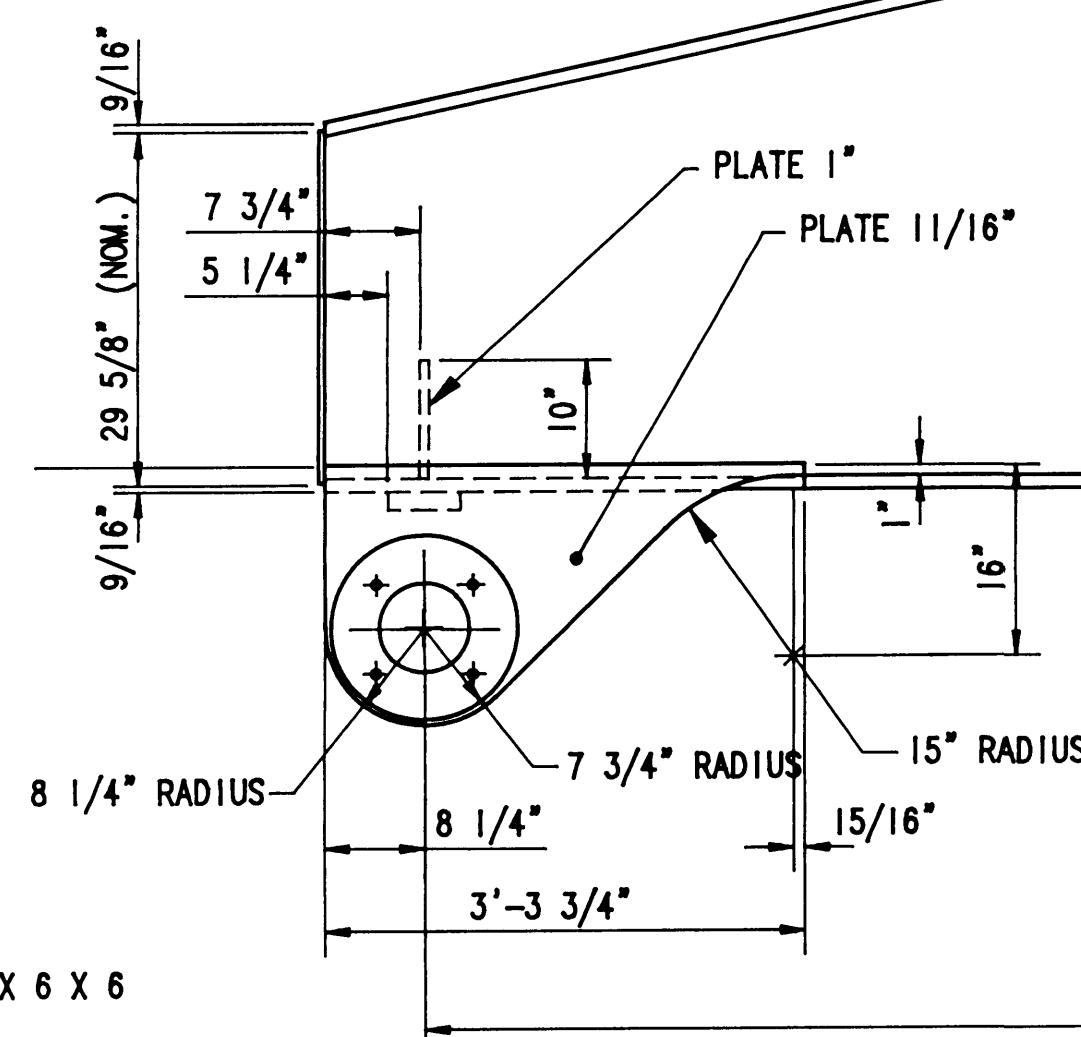
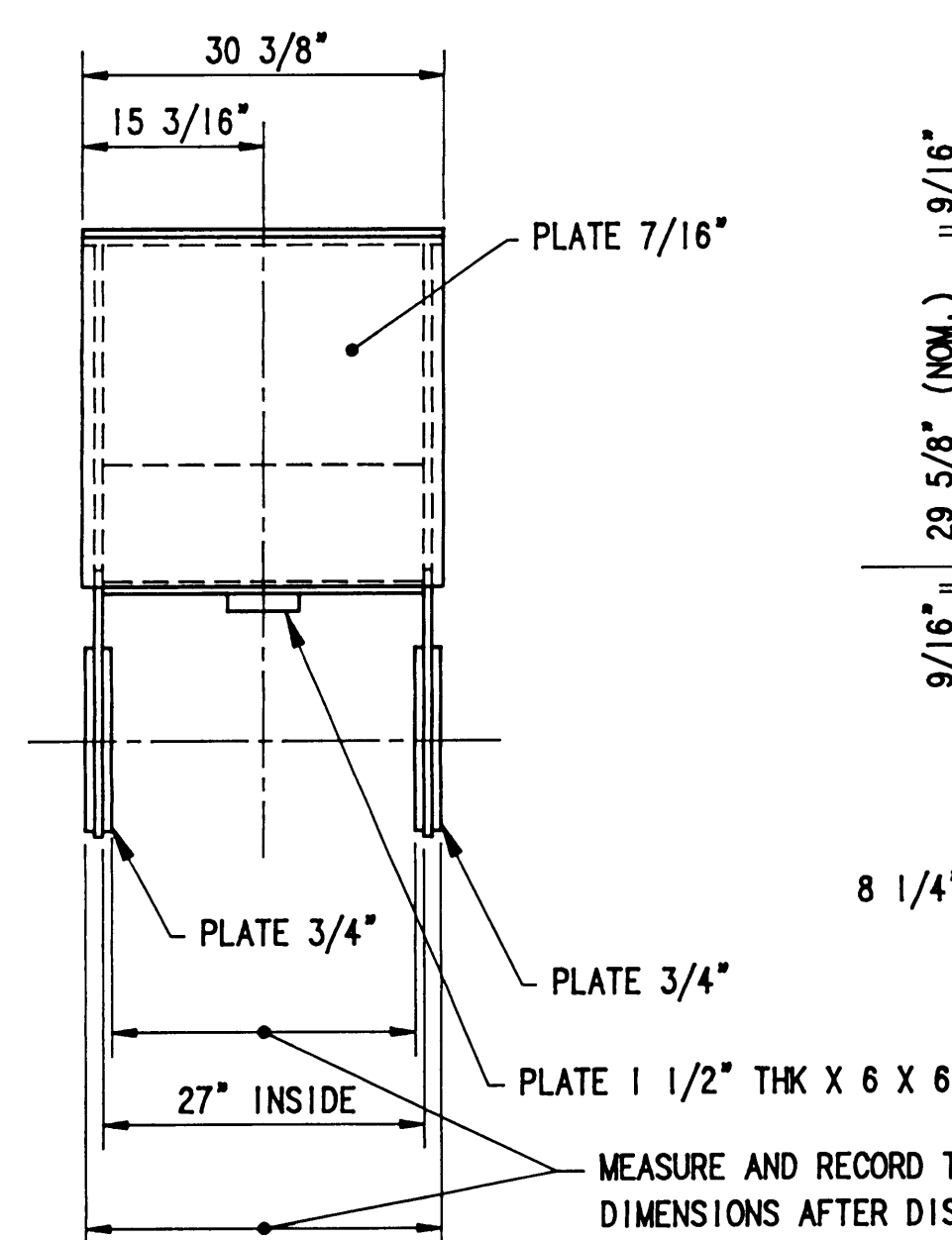
RECORDED DIMENSIONS

LOOKING TOWARD THE WATER
49.623" @ RIGHT LANDSIDE CORNER
49.626" @ LEFT WATERSIDE CORNER
49.621" @ LEFT LANDSIDE CORNER
49.623" @ RIGHT WATERSIDE CORNER

THIS DIMENSION TO BE THE SAME AS
ORIGINALLY MEASURED AND RECORDED
DURING PREP-WORK OF THE MAIN
EQUALIZER.

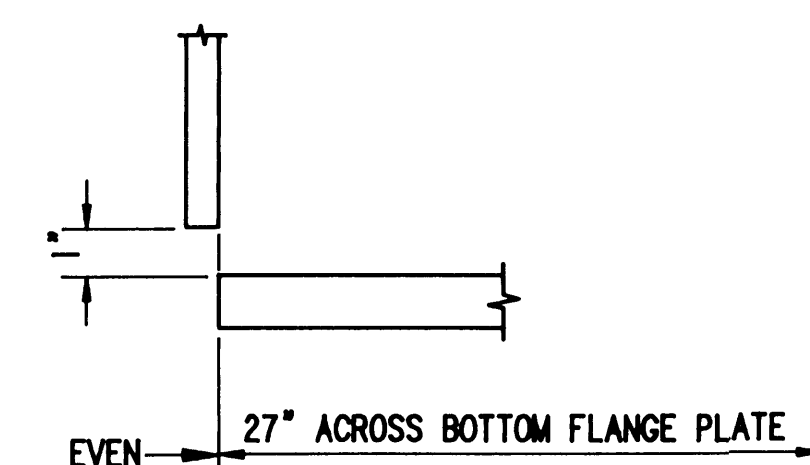
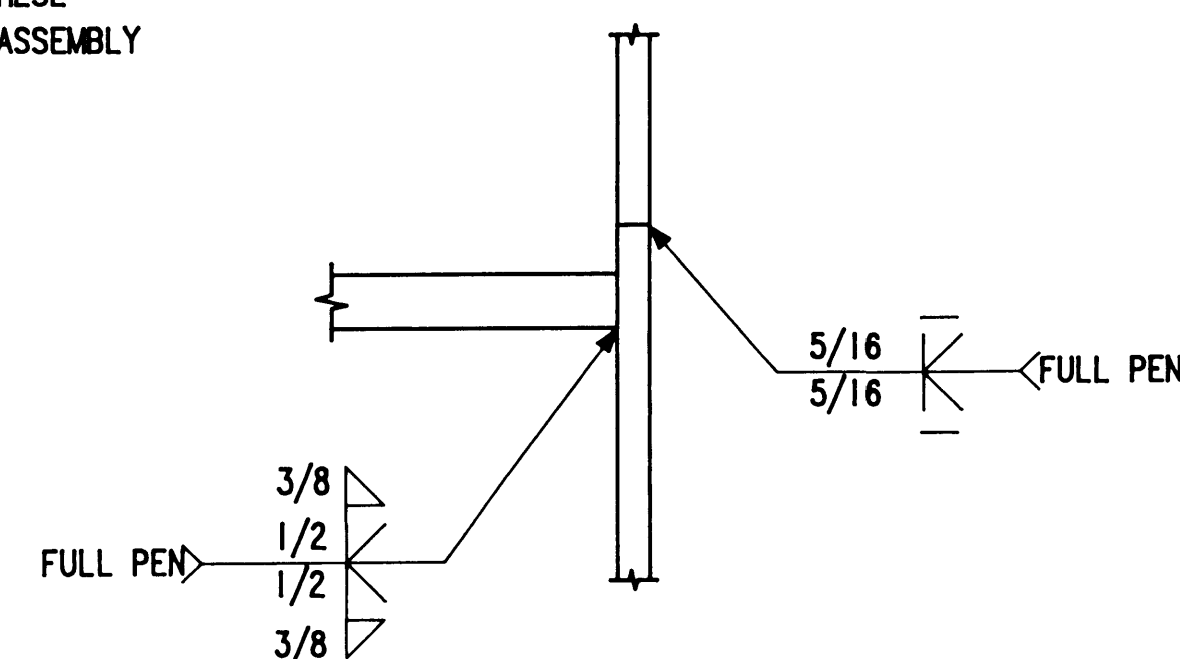
TEMPLATE, DRILL AND
TAP TO MATCH
EXISTING KEEPER
BARS HOLES.

LINE BORE TO EXISTING BORE
DIAMETER (7 1/2" NOM.)



MAIN EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE
CENTERLINE OF THE MAIN EQUALIZER.
TYPICAL FOR FOUR (4) MAIN EQUALIZERS.
SCALE: 3/4"=1'-0"



FOR GENERAL NOTES SEE SHEET 3

RAISING & RELOCATING I.H.I CRANE #2401

MAIN EQUALIZER MODIFICATIONS

DRAWING No. EP4365-32

CONTRACT No. 681

SHEET No. 4 OF 54

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JOB: 2486 DWG: 1680 2/4

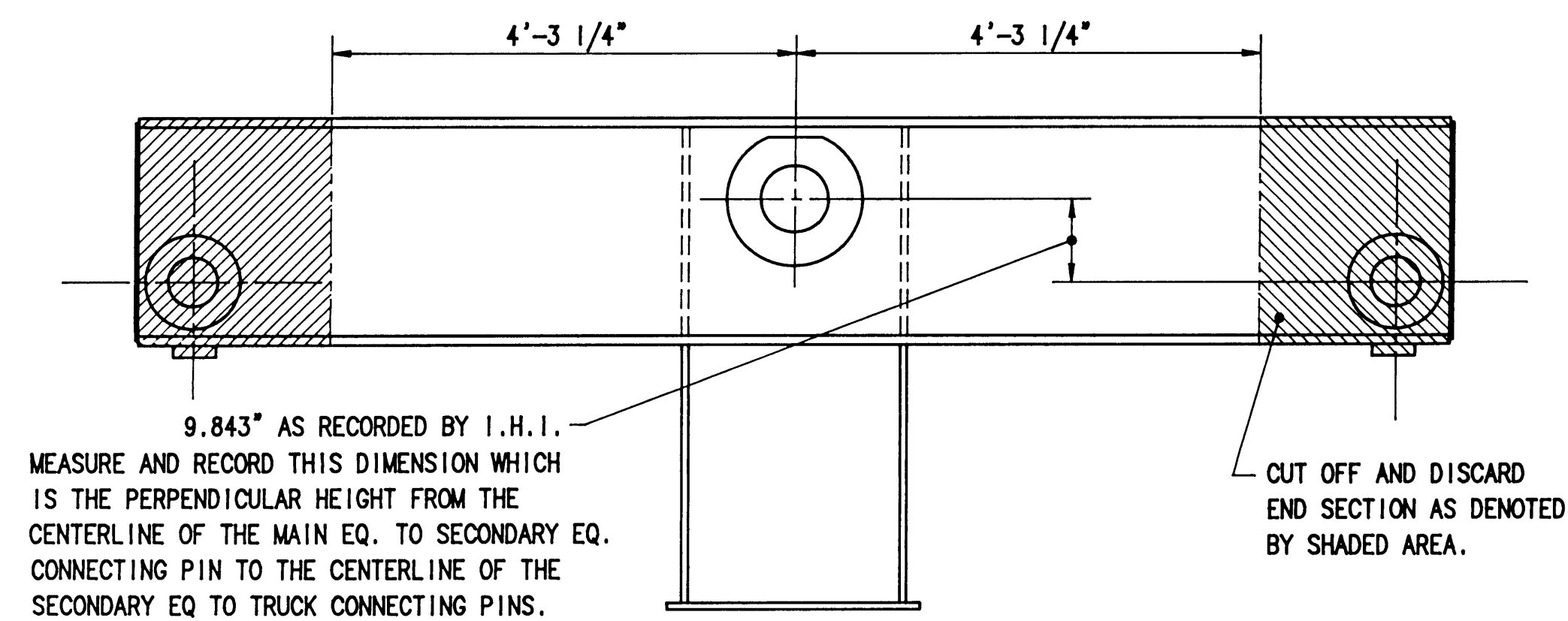
SEALED
RICHARD C. LLOYD
9245
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

APPROVED
[Signature]
CHIEF ENGINEER

R BAKER 1/29/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

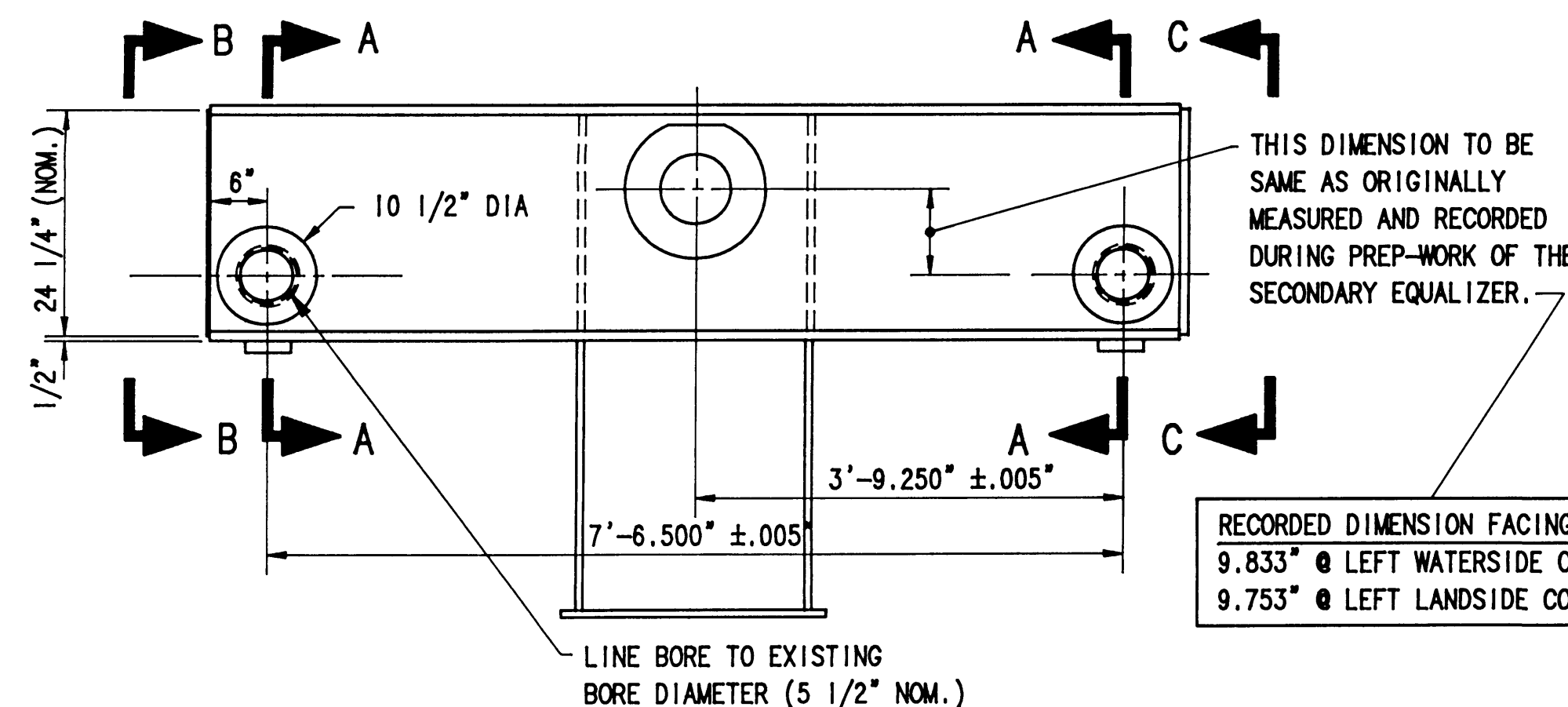
J.L.A. 3/10/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

MARK	AS BUILT	K.H.	2-13
BY	REVISION	APP.	DATE



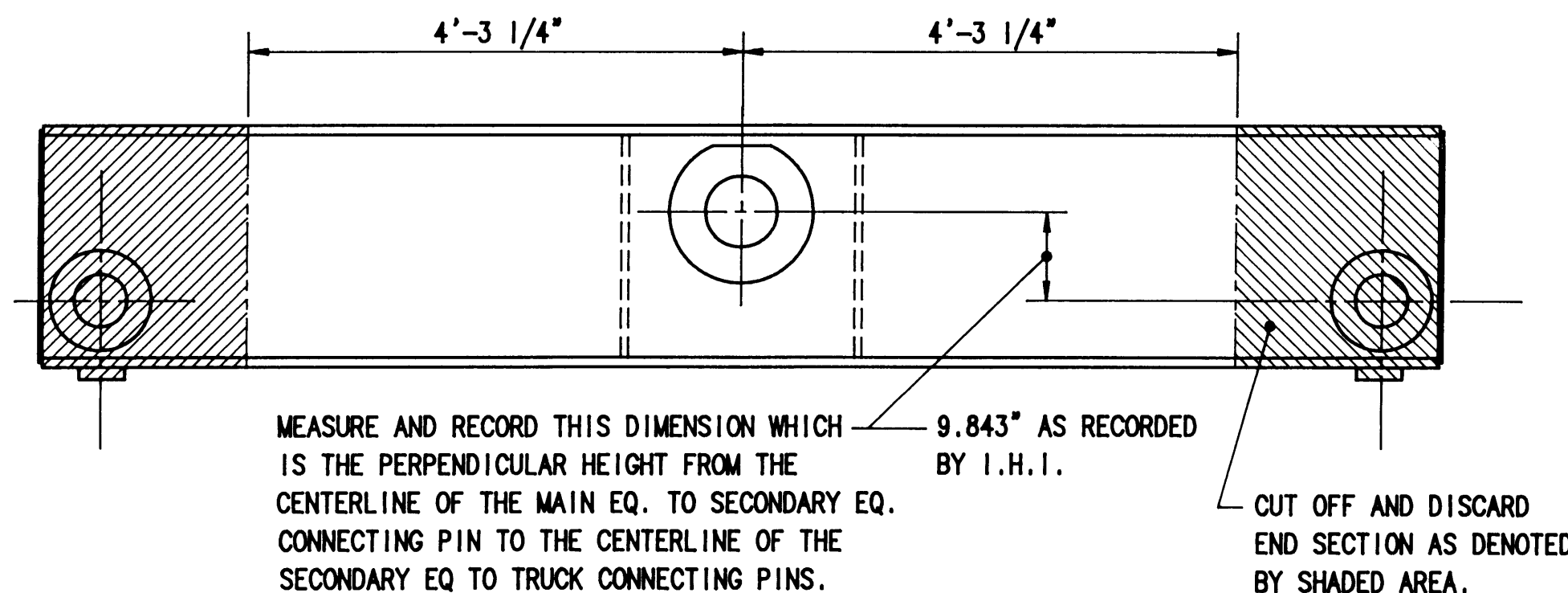
STOWAGE PIN SECONDARY EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER.
TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.
SCALE: 3/4"=1'-0"



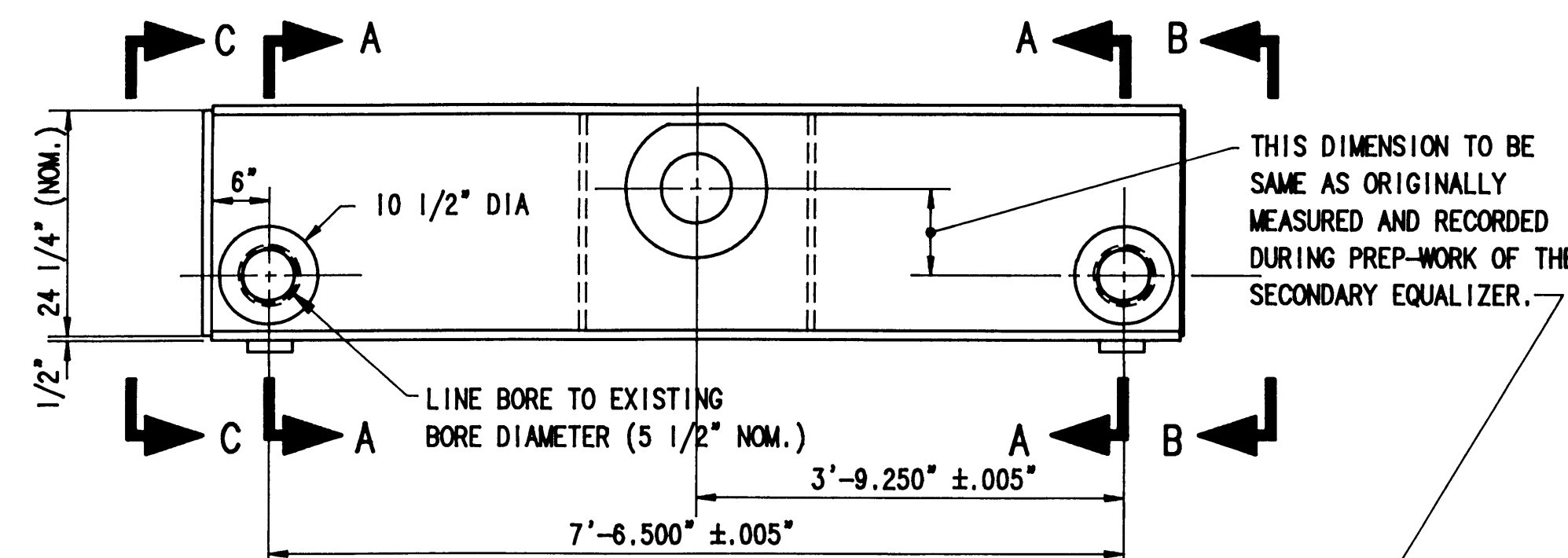
STOWAGE PIN SECONDARY EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER.
TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.
SCALE: 3/4"=1'-0"



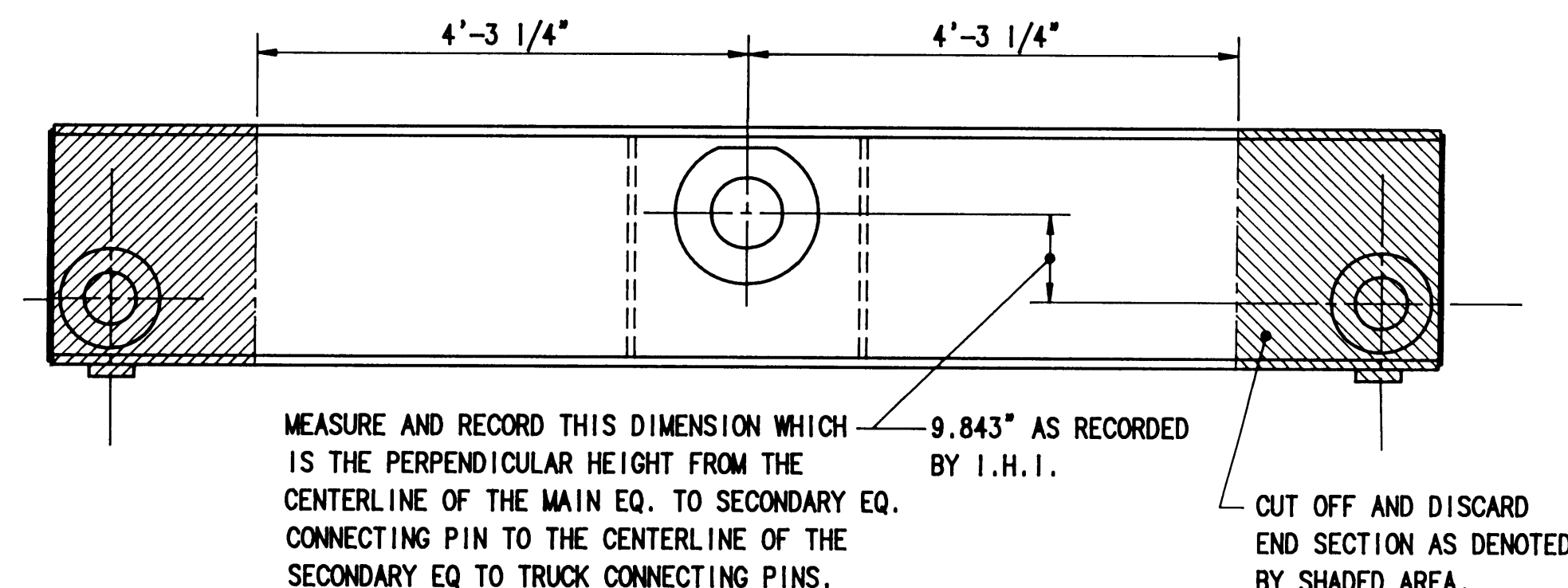
OUTBOARD SECONDARY EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER.
TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.
SCALE: 3/4"=1'-0"



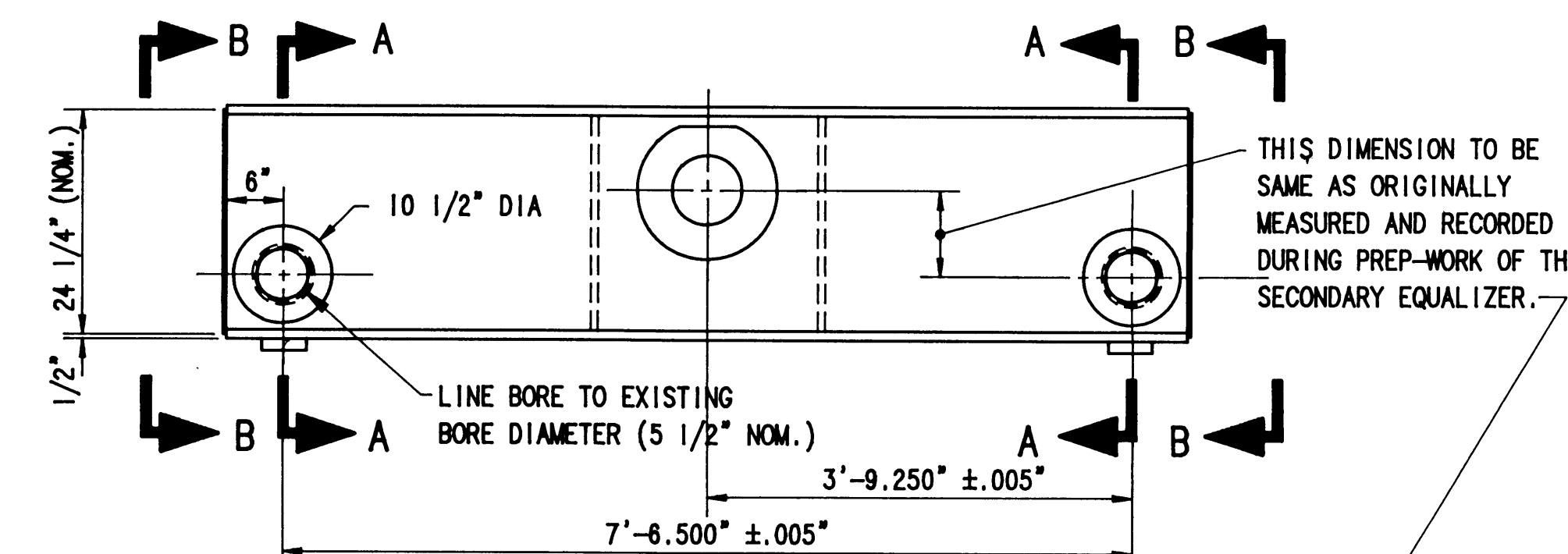
OUTBOARD SECONDARY EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER.
TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.
SCALE: 3/4"=1'-0"



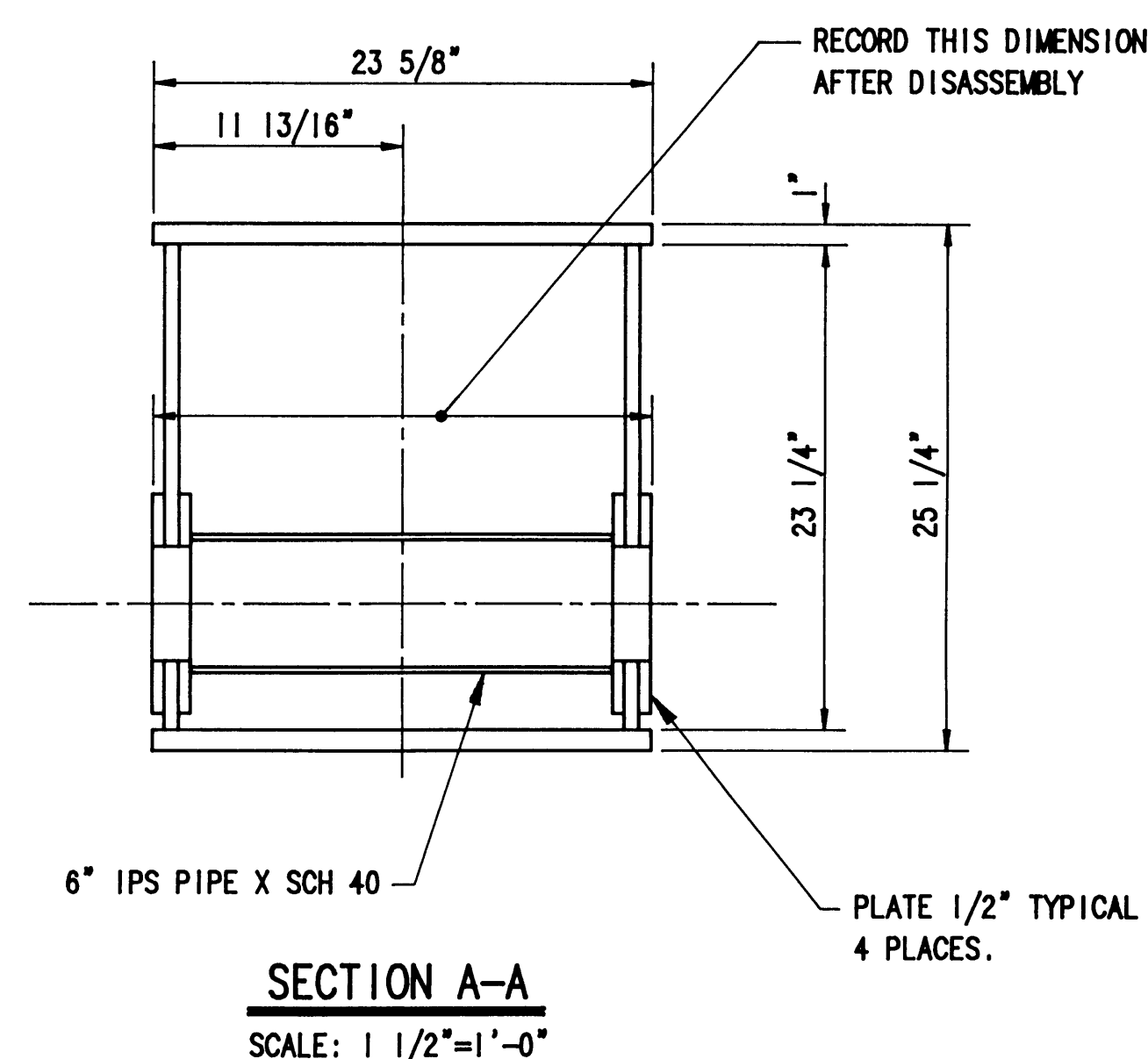
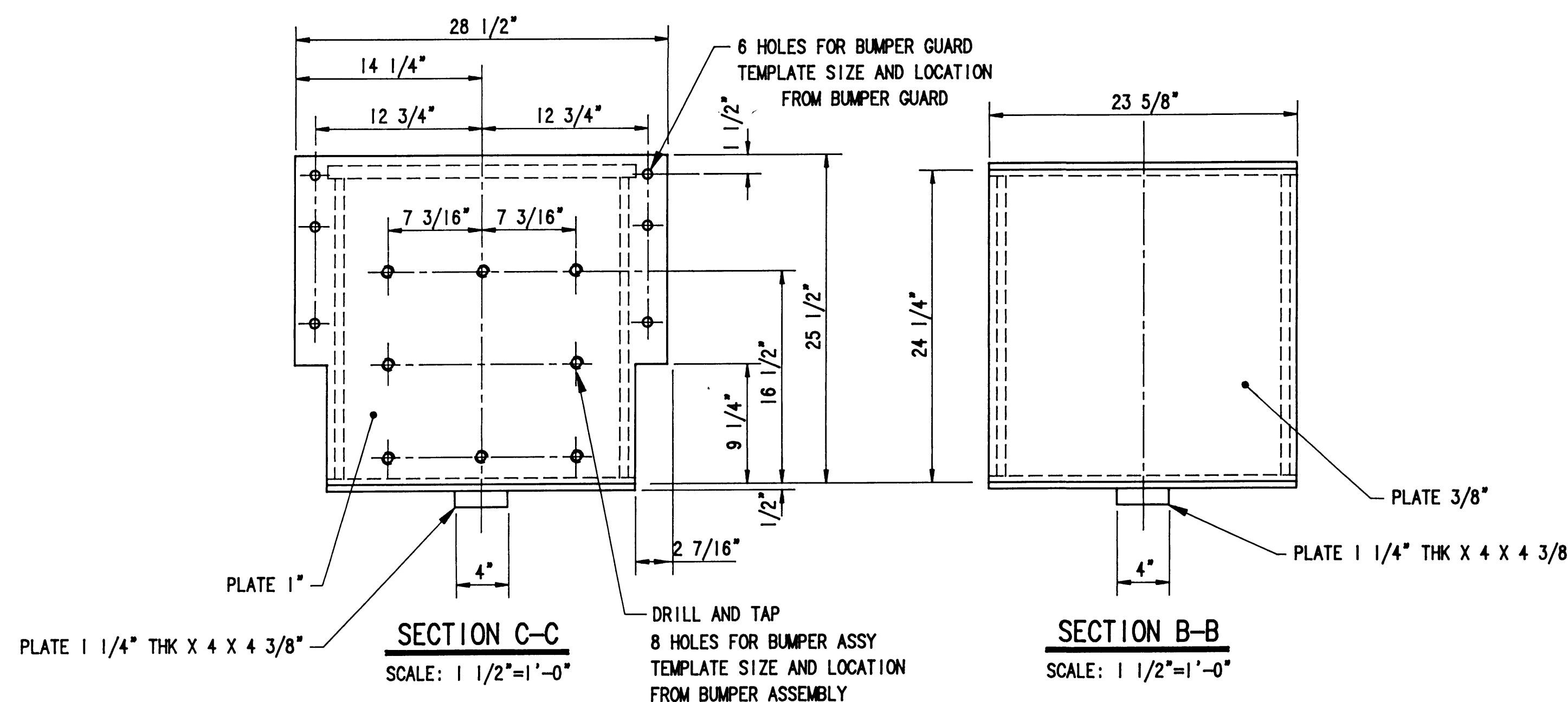
INBOARD SECONDARY EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER.
TYPICAL FOR FOUR (4) SECONDARY EQUALIZERS.
SCALE: 3/4"=1'-0"



INBOARD SECONDARY EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER.
TYPICAL FOR FOUR (4) SECONDARY EQUALIZERS.
SCALE: 3/4"=1'-0"

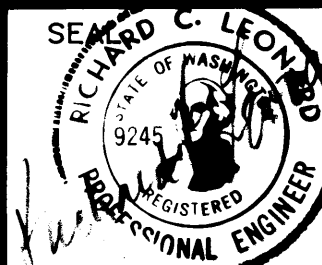


FOR GENERAL NOTES SEE SHEET 3



PORT OF TACOMA
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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1680 3/4



APPROVED
CHIEF ENGINEER
DATE

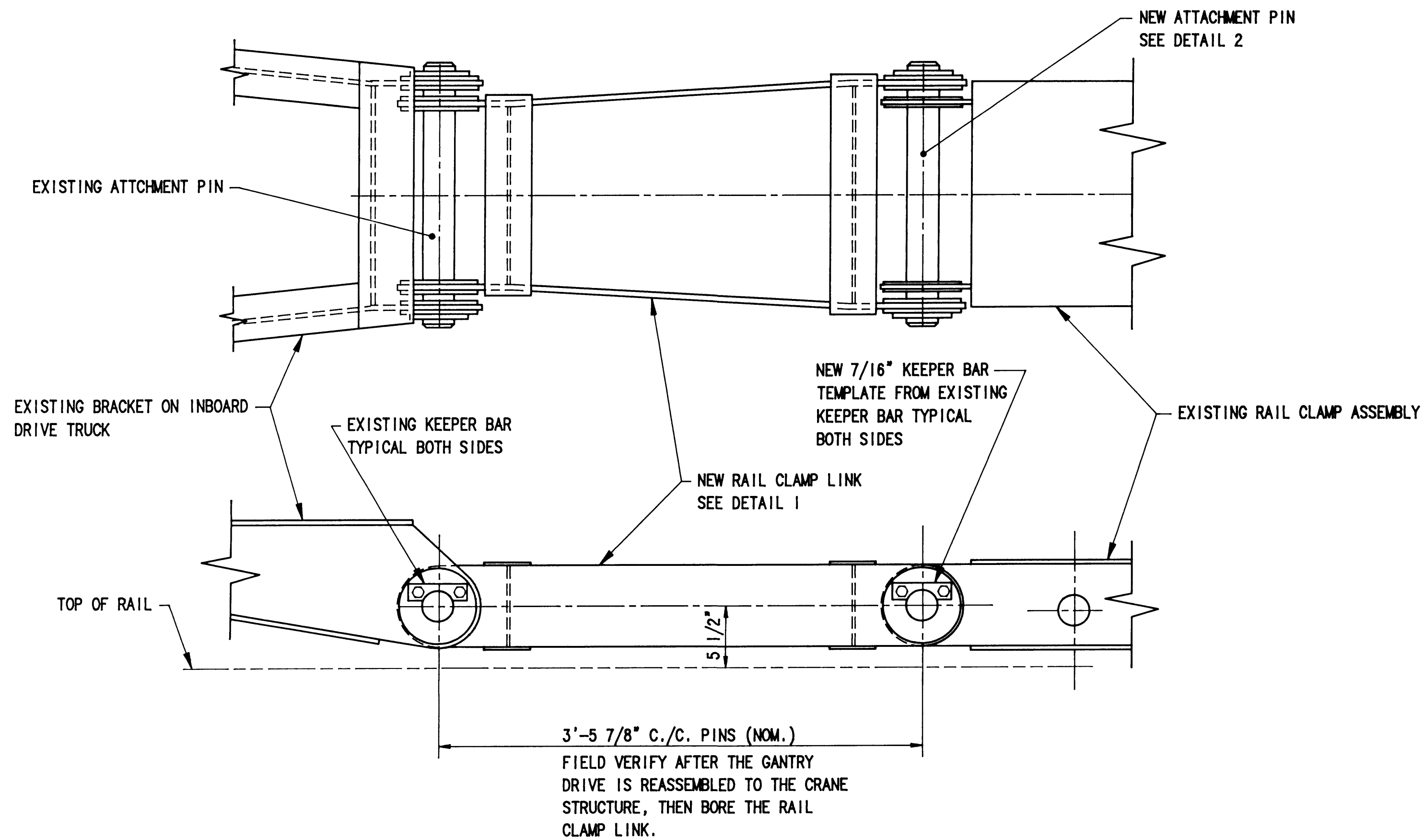
R. BAKER 1/30/90
DRAWN BY DATE
AS-BUILT BY DATE

J. A. 3/10/90
CHECKED BY DATE
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	K.H.		2-13-91

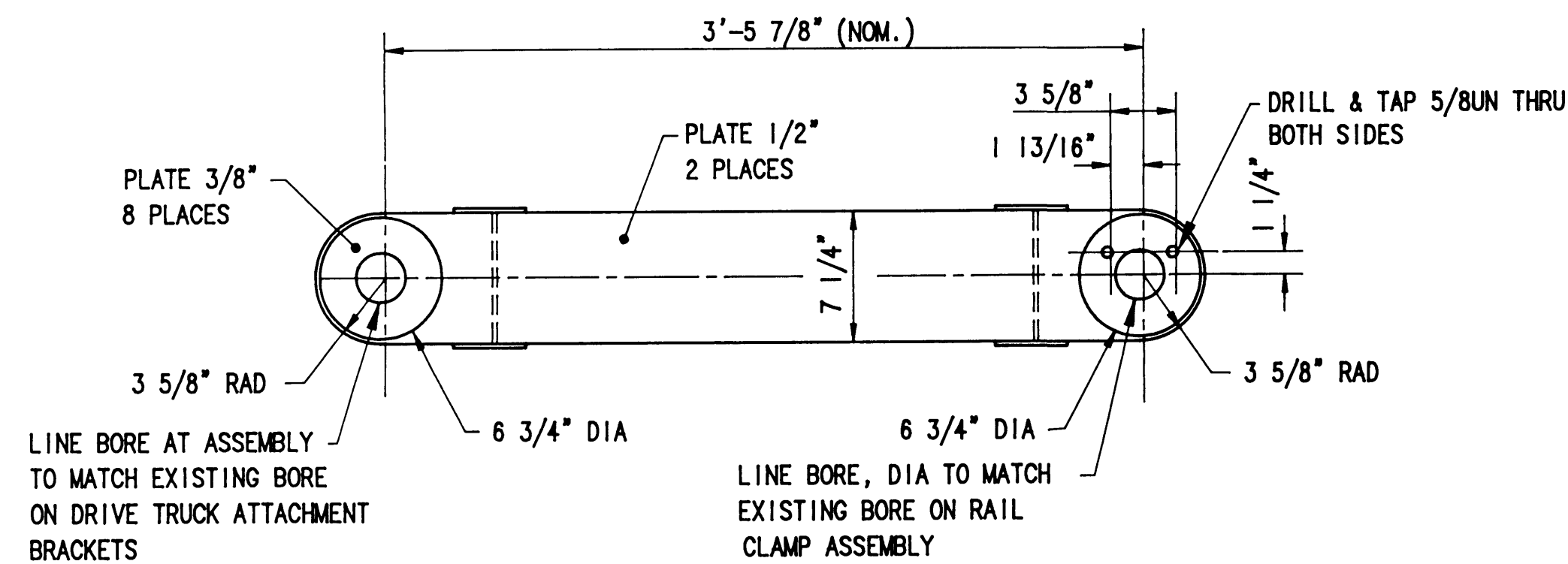
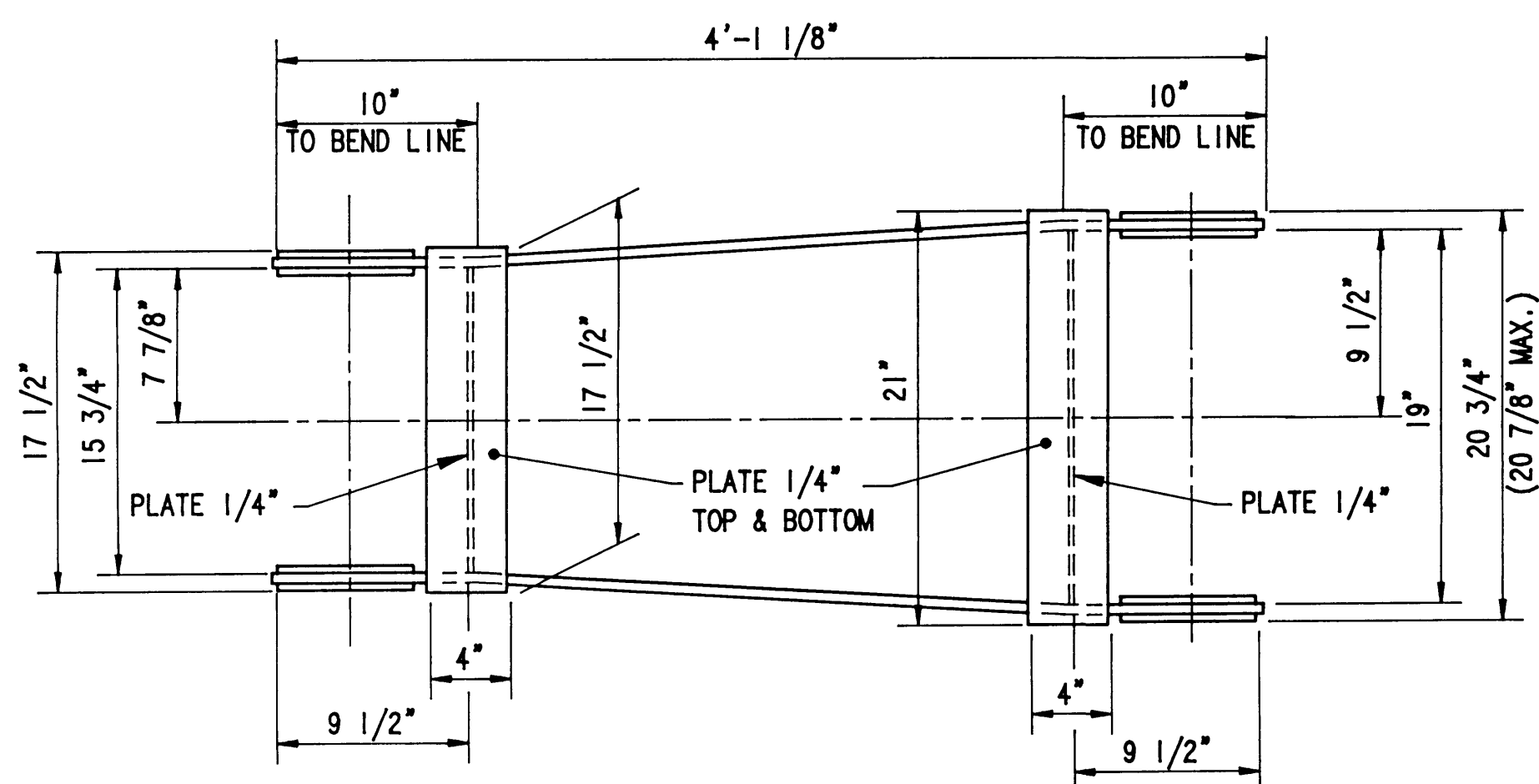
RAISING & RELOCATING I.H.I CRANE #2401
SECONDARY EQUALIZER MODIFICATIONS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 5 OF 54



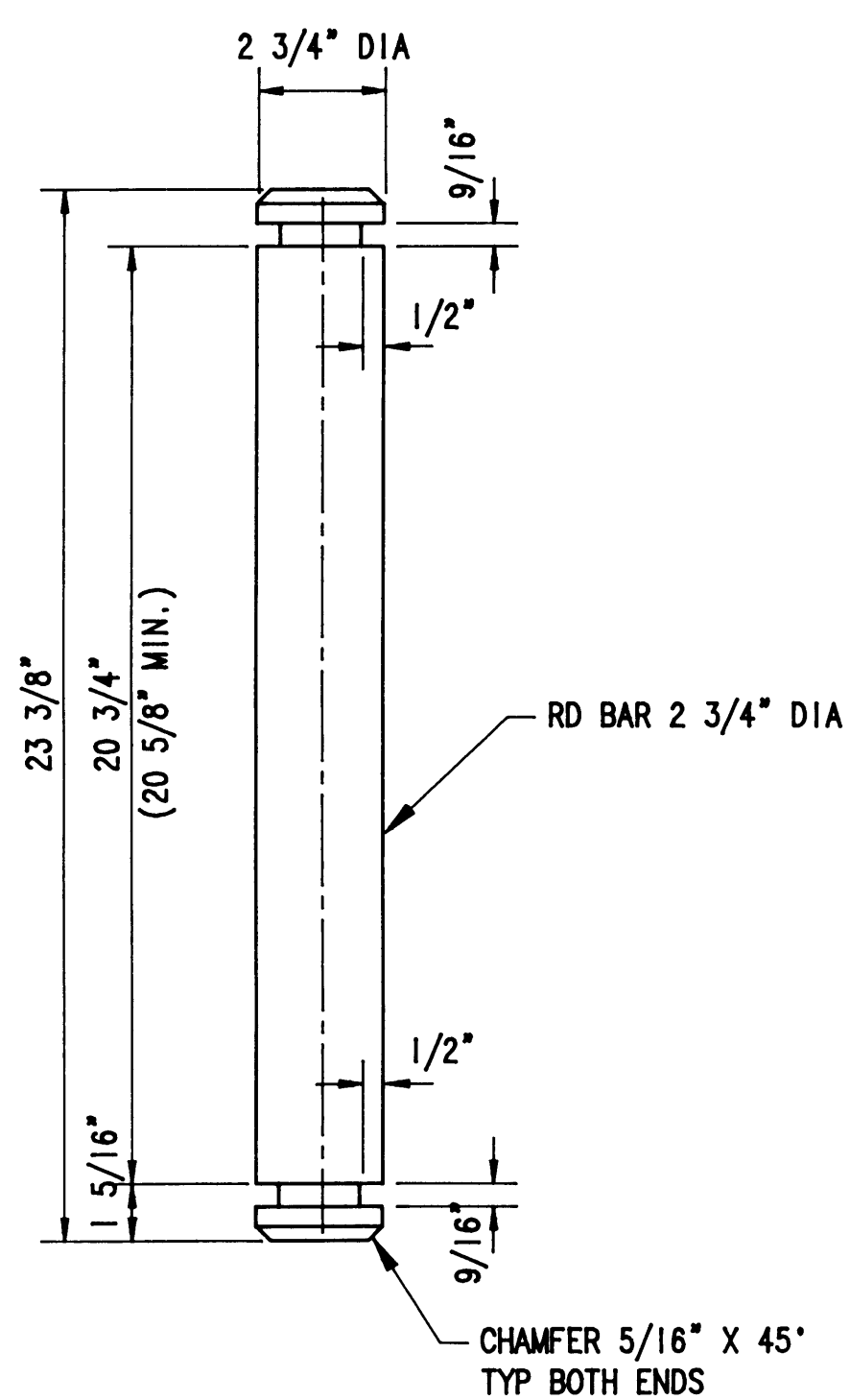
RAIL CLAMP ATTACHING LINK ASSEMBLY

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



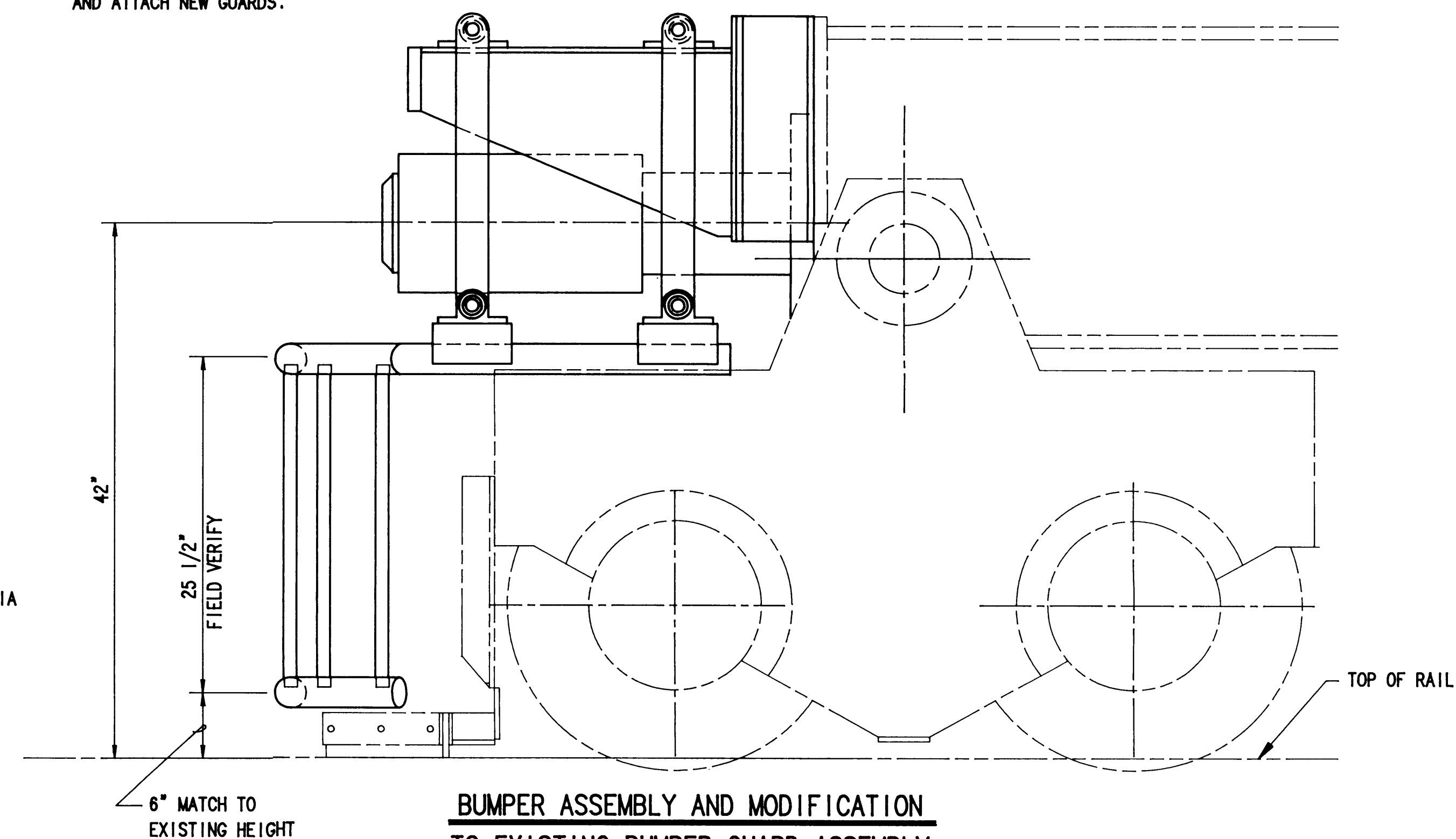
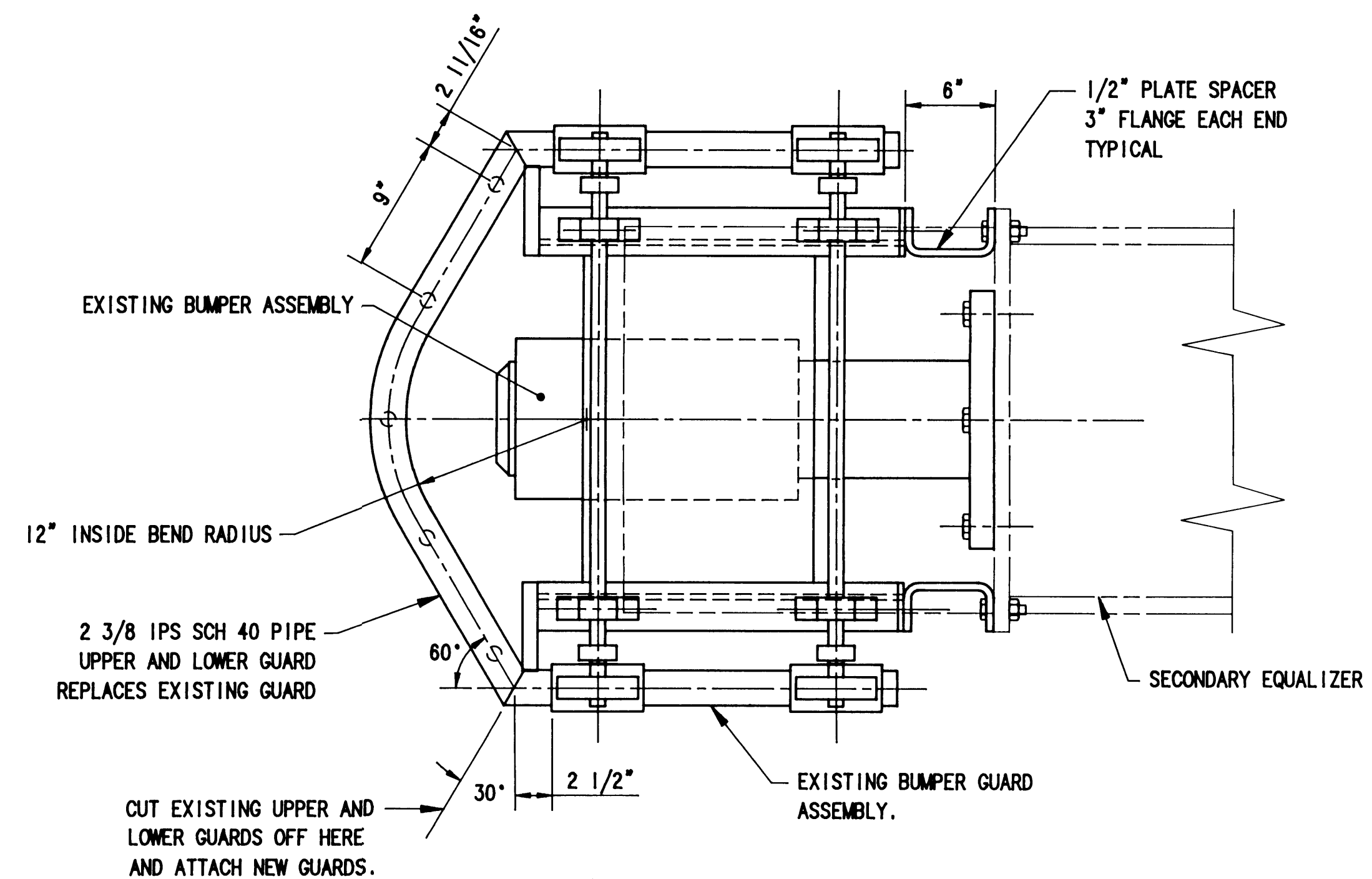
**DETAIL 1
RAIL CLAMP LINK**

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



**DETAIL 2
RAIL CLAMP LINK
ATTACHMENT PIN**

SCALE: 3"=1'-0"



**BUMPER ASSEMBLY AND MODIFICATION
TO EXISTING BUMPER GUARD ASSEMBLY**

(TYPICAL ALL 4 CORNERS)
SCALE: 1 1/2"=1'-0"

FOR GENERAL NOTES SEE SHEET 3



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932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1680 4/4



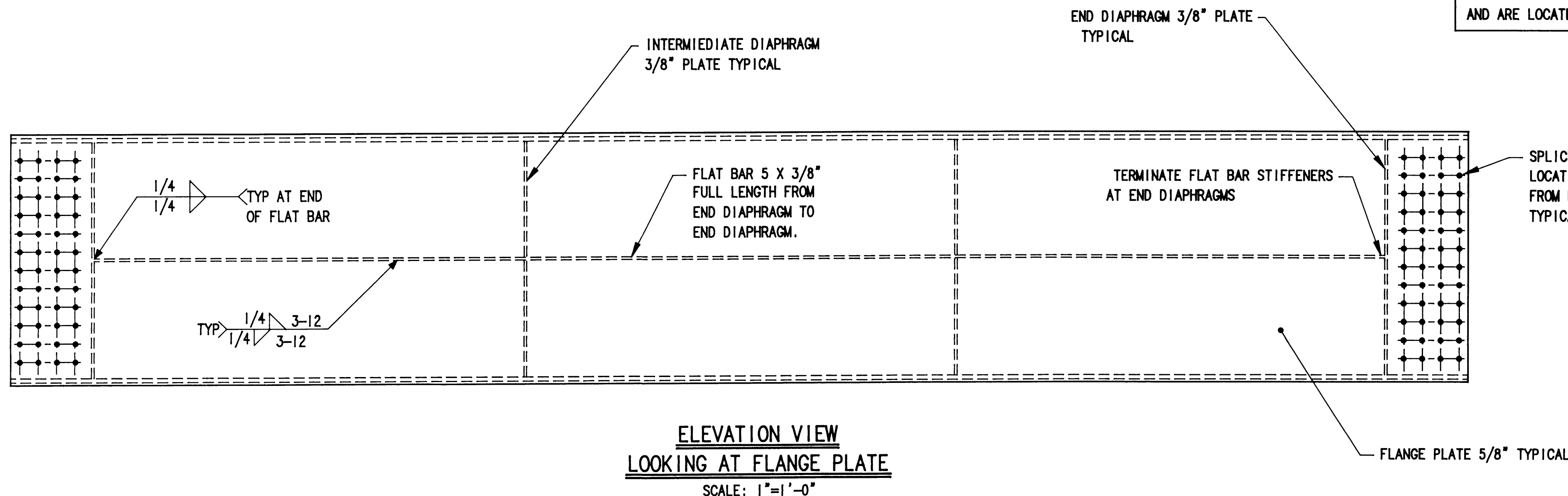
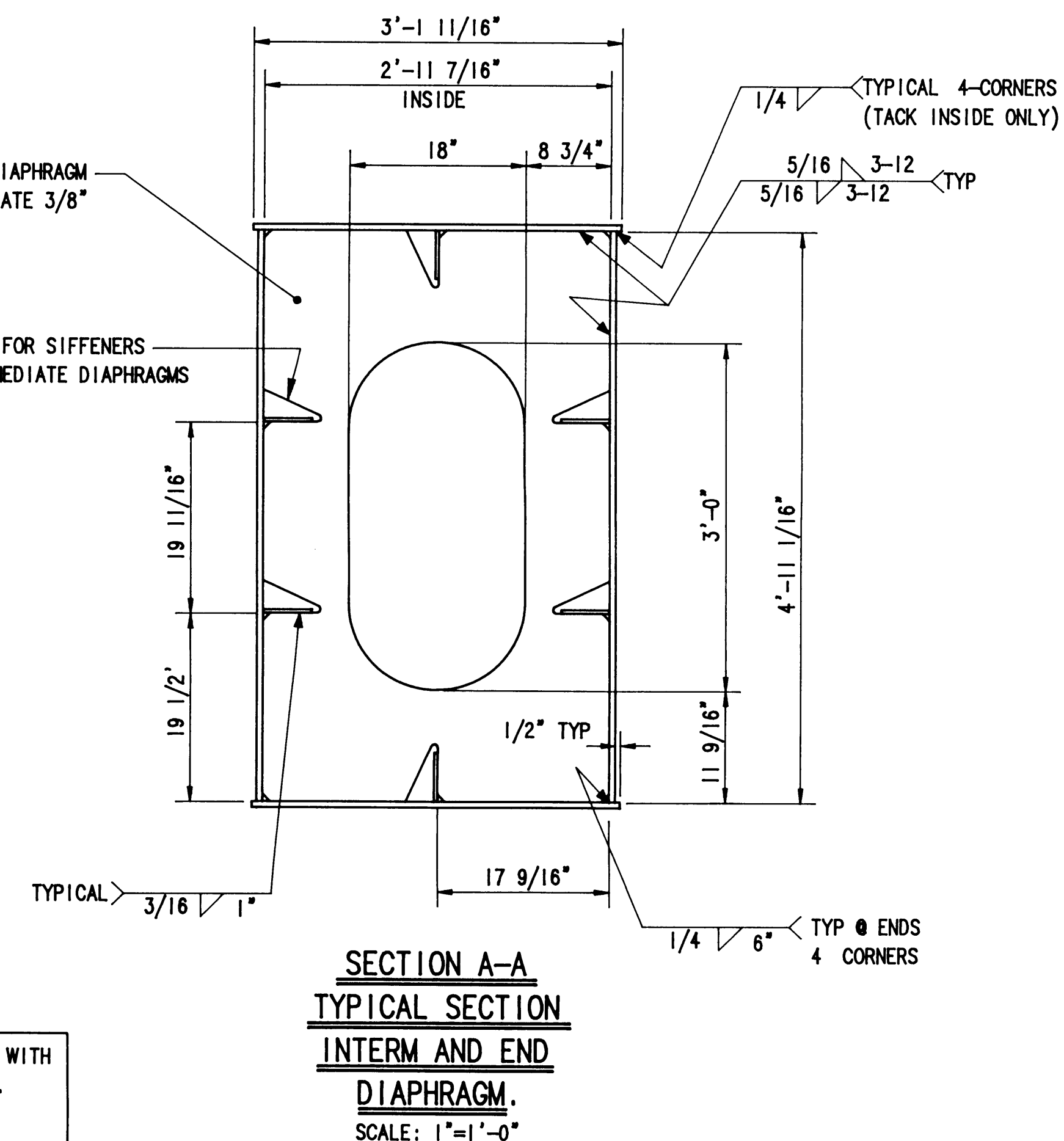
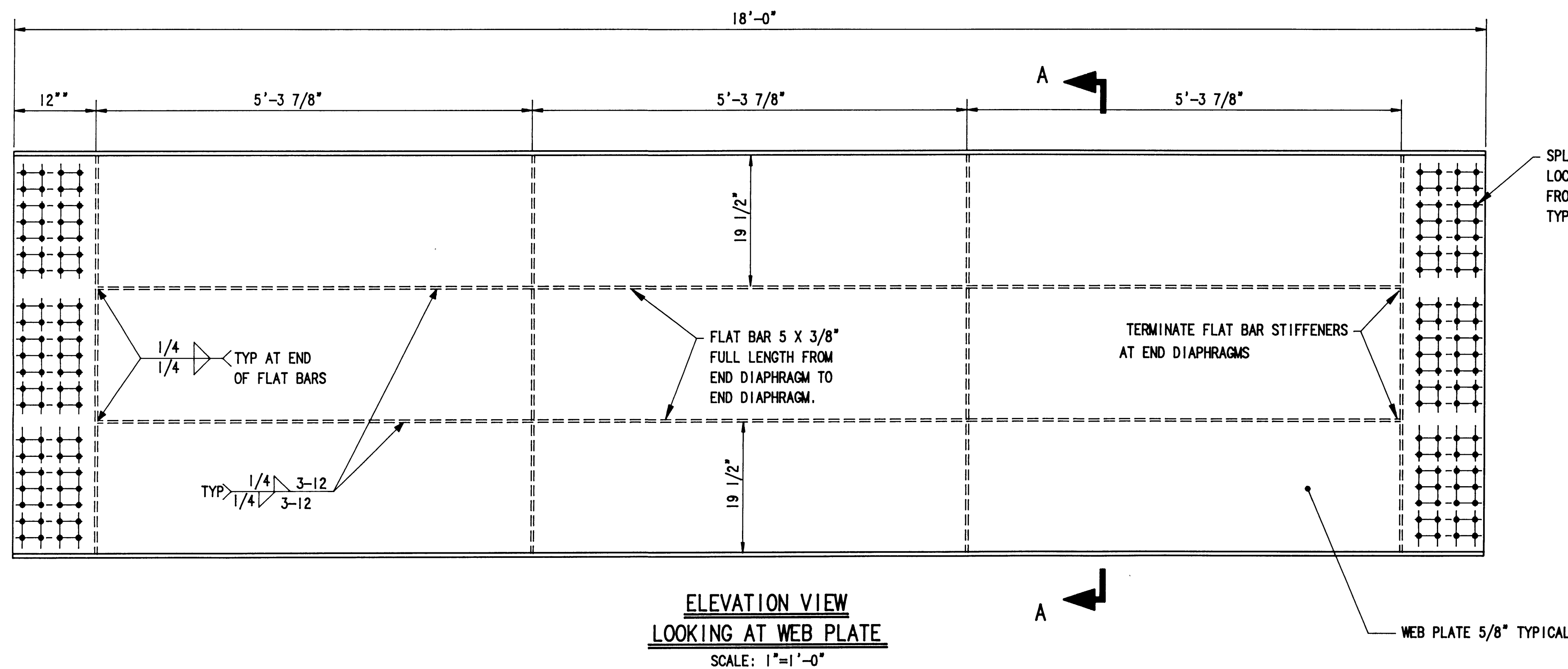
APPROVED
Richard C. Leonard
CHIEF ENGINEER

R BAKER	2/5/90	KRH	3/5/90
DRAWN BY	DATE	CHECKED BY	DATE
C.R.	10/21/91	J.L.A.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	K.H.		2-13-91

RAISING & RELOCATING I.H.I CRANE #2401
BUMPER GUARD / RAIL CLAMP MODIFICATION

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 6 OF 54



ALL BOLTS TO BE NEW 3/4" ASTM A325 WITH HARD ROUND WASHER AND HEAVY HEX NUT.
4224 BOLTS REQUIRED
EXISTING SPLICE PLATES ARE 3/8" (10 mm) AND ARE LOCATED ON EXTERIOR AND INTERIOR.

NOTES:

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- ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD
- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.
- THE FABRICATION TOLERANCE SHALL NOT EXCEED 1/8" IN 20' FOR CAMBER, SWEEP OR TWIST.



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SEATTLE WA 98188
JOB: 2486 DWG: 1681 1/1



APPROVED
CHIEF ENGINEER
DATE

R BAKER 2/6/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

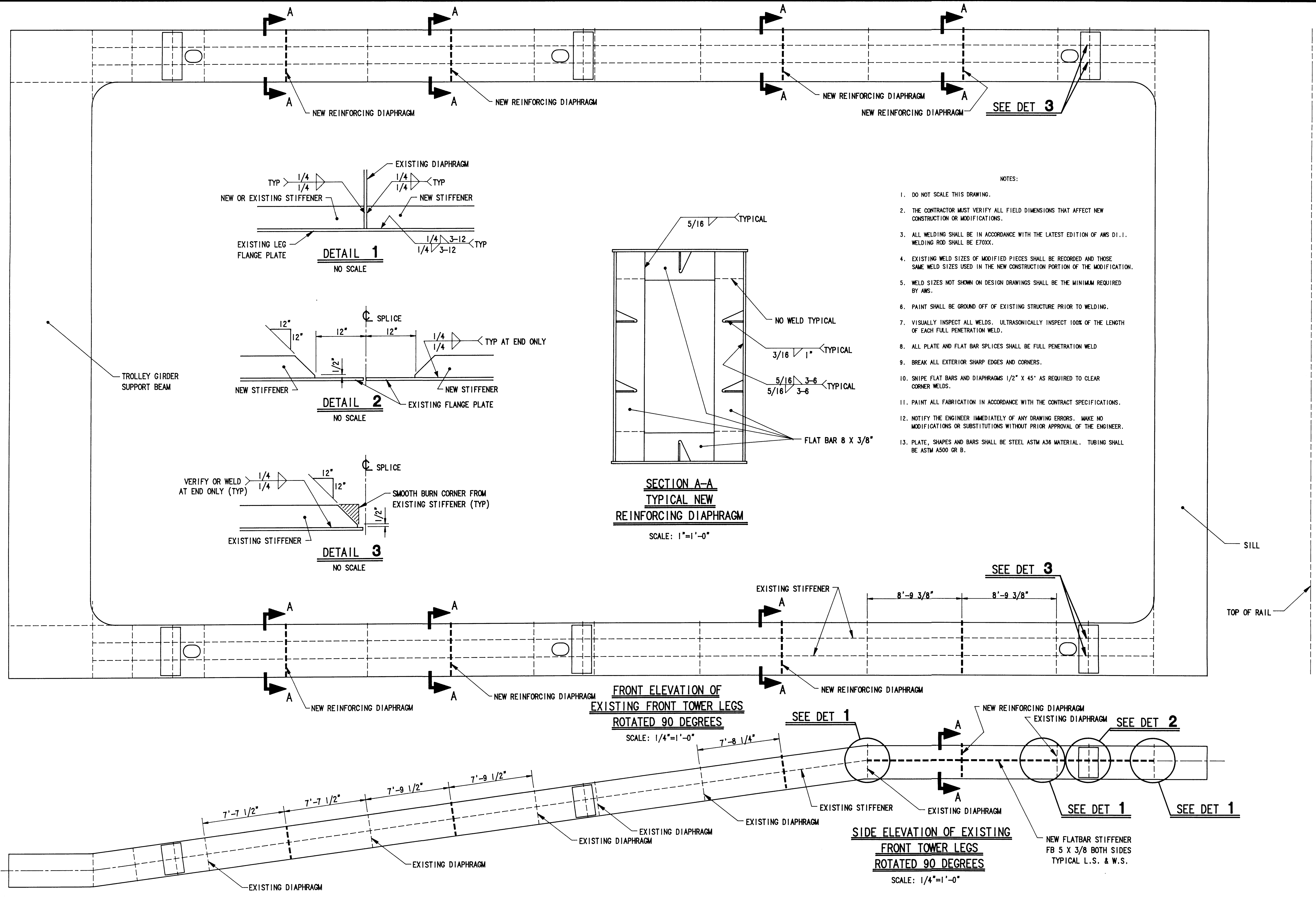
JMK 3/15/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

MARK	AS BUILT	K.H.	2-13 91
REVISION	BY	APP.	DATE

RAISING & RELOCATING I.H.I CRANE #2401

18 FOOT LEG EXTENSION

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 7 OF 54

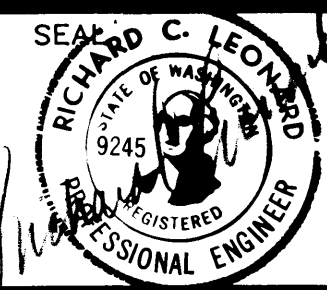


- NOTES:
1. DO NOT SCALE THIS DRAWING.
 2. THE CONTRACTOR MUST VERIFY ALL FIELD DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
 3. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
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 6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
 7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
 8. ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
 9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
 10. SNIP FLAT BARS AND DIAPHRAGMS 1/2" X 45° AS REQUIRED TO CLEAR CORNER WELDS.
 11. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
 12. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
 13. PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR. B.



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JOB: 2486 DWG: 1682 1/2



APPROVED
Richard C. Leonard
CHIEF ENGINEER

DATE
AS-BUILT BY DATE

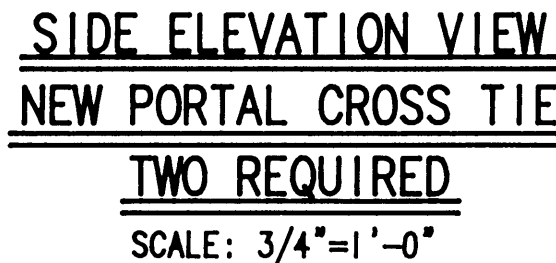
2/7/90
DATE
3/5/90
CHECKED BY DATE
J.M.K.
J.L.A.
PROJ. ENGR. DATE

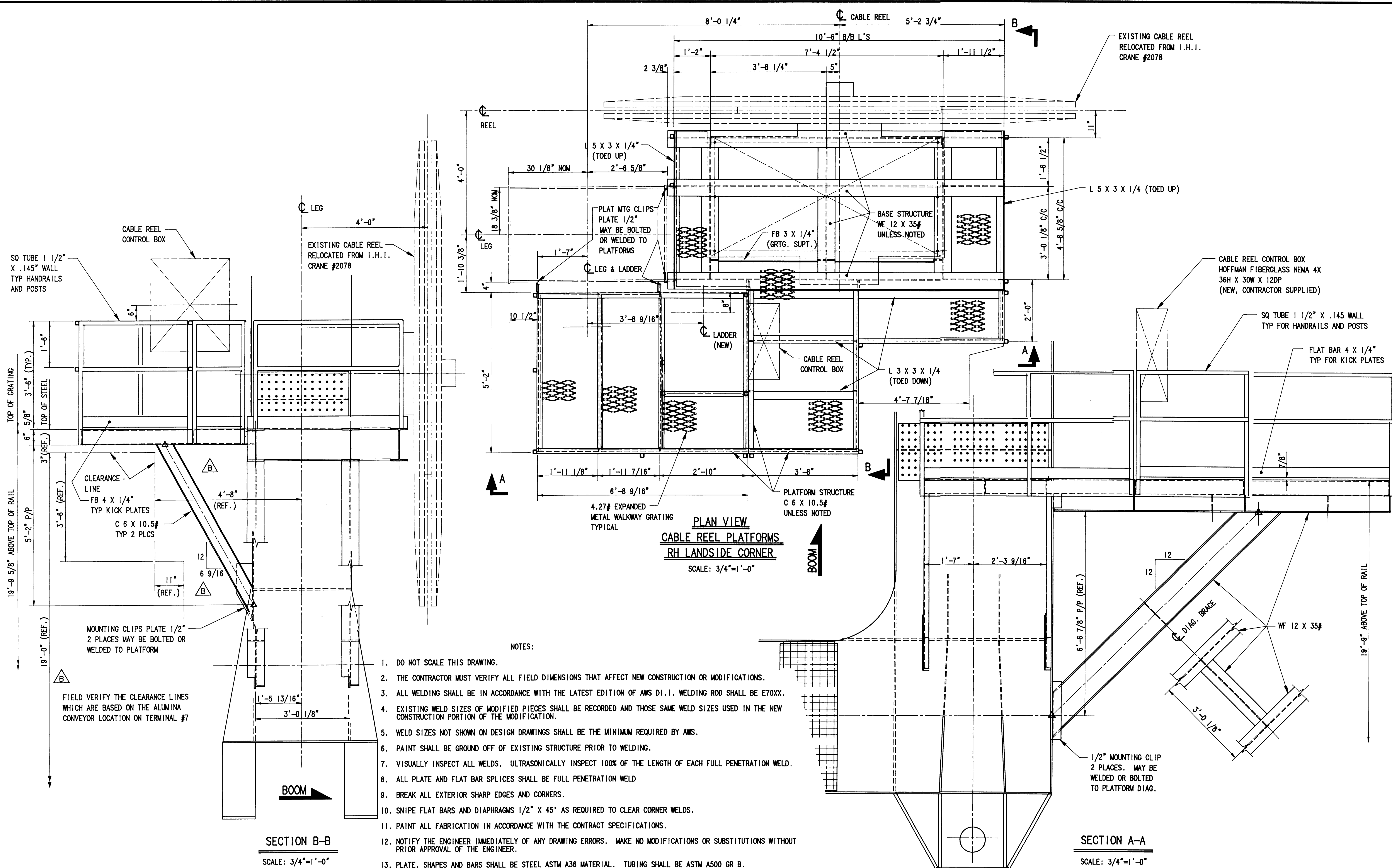
MARK	REVISION	BY	APP.	DATE
A	AS BUILT	K.H.		2-13-91

RAISING & RELOCATING I.H.I CRANE #2401
REINFORCEMENT OF FRONT TOWER LEGS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 8 OF 54

1. DO NOT SCALE THIS DRAWING.
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3. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
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5. WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
8. ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45° AS REQUIRED TO CLEAR CORNER WELDS.
11. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
12. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
13. PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.





PORT OF TACOMA
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SEATTLE WA 98188
JOB: 2486 DWG: 1684 1/1



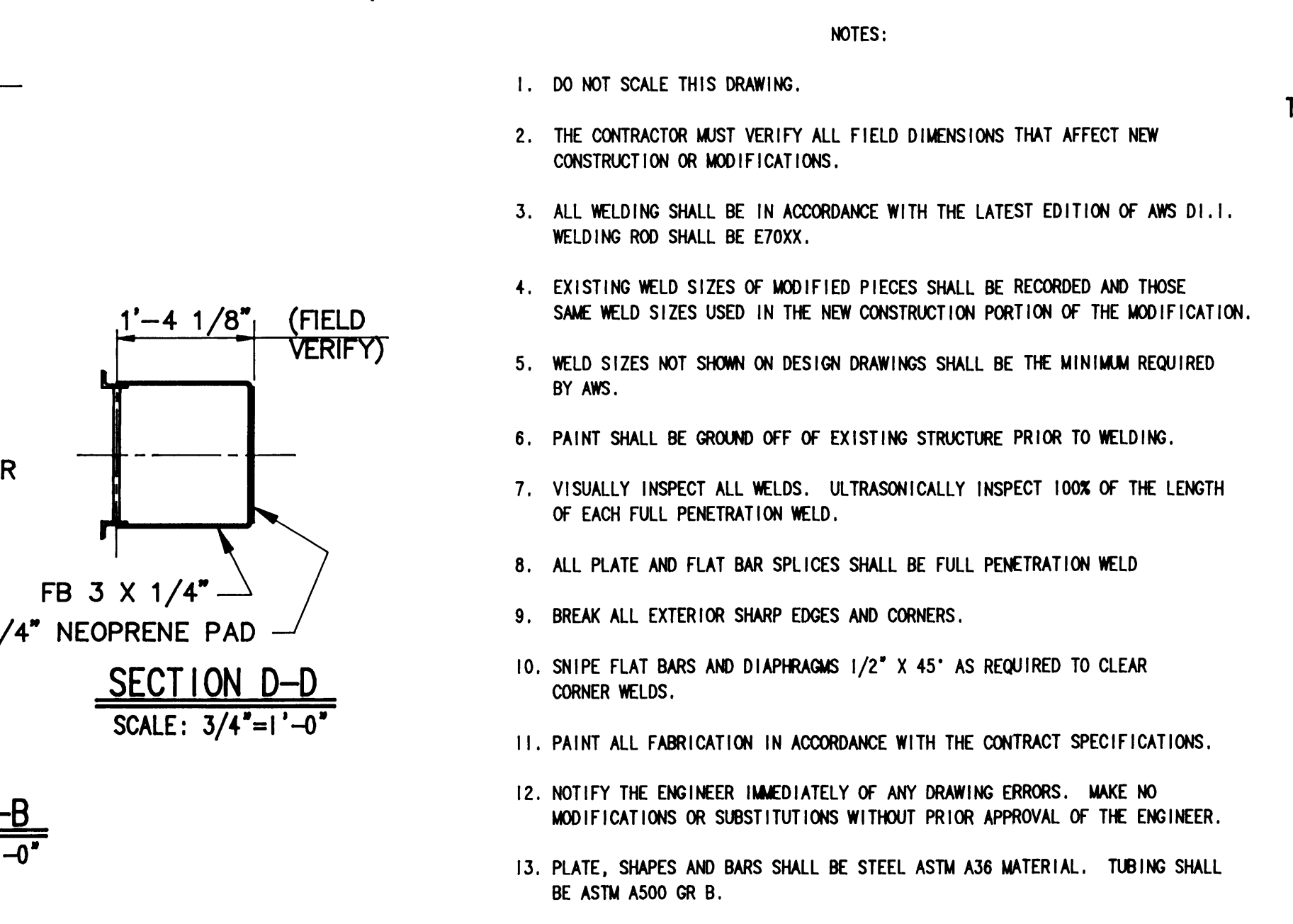
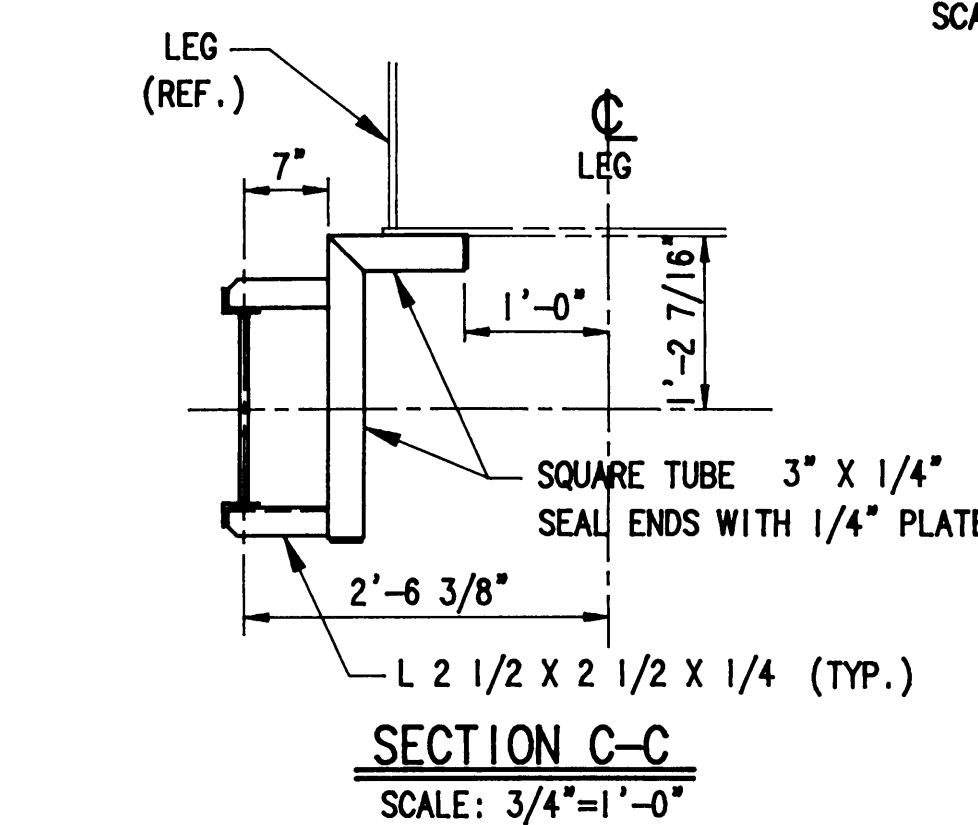
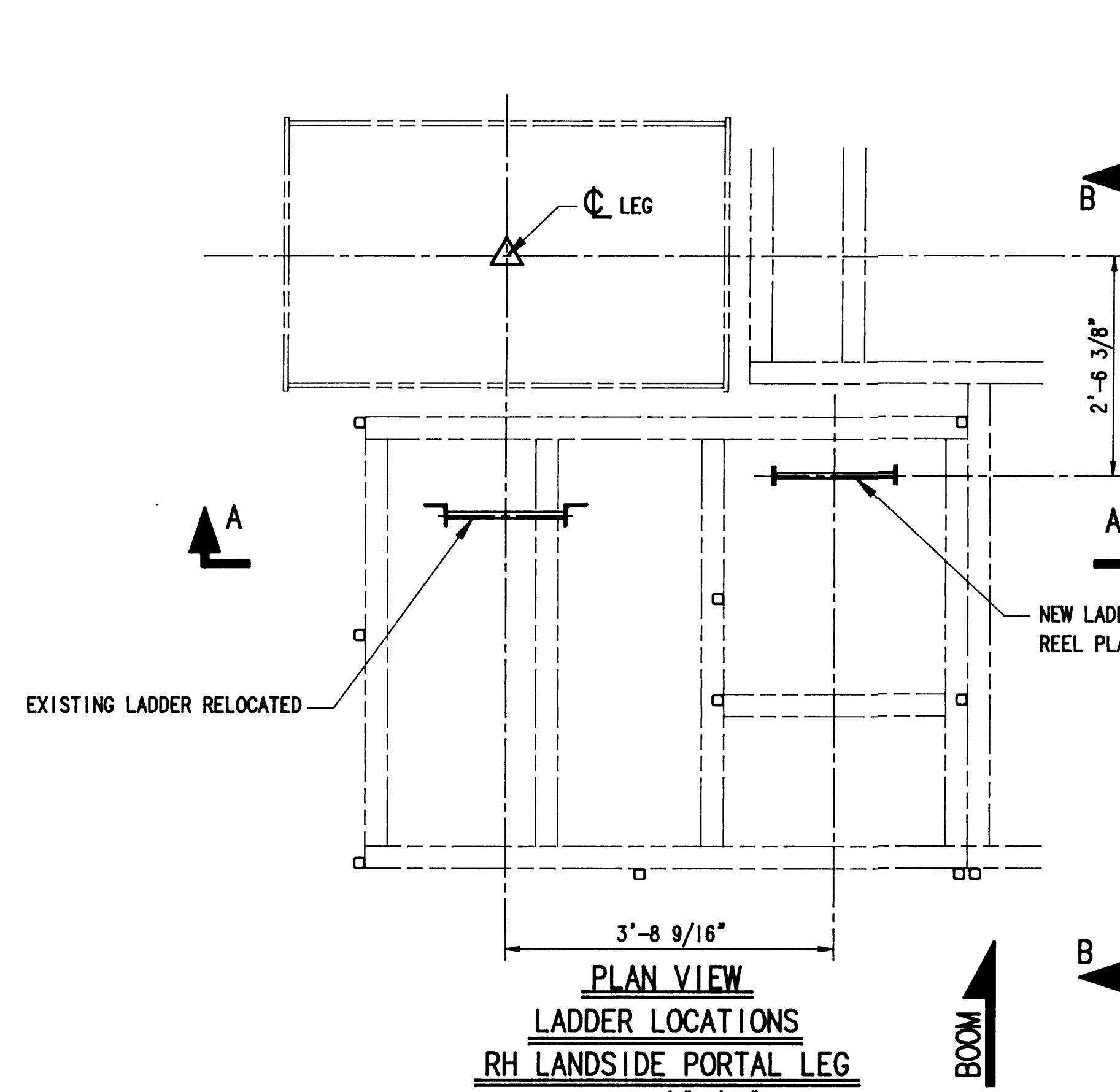
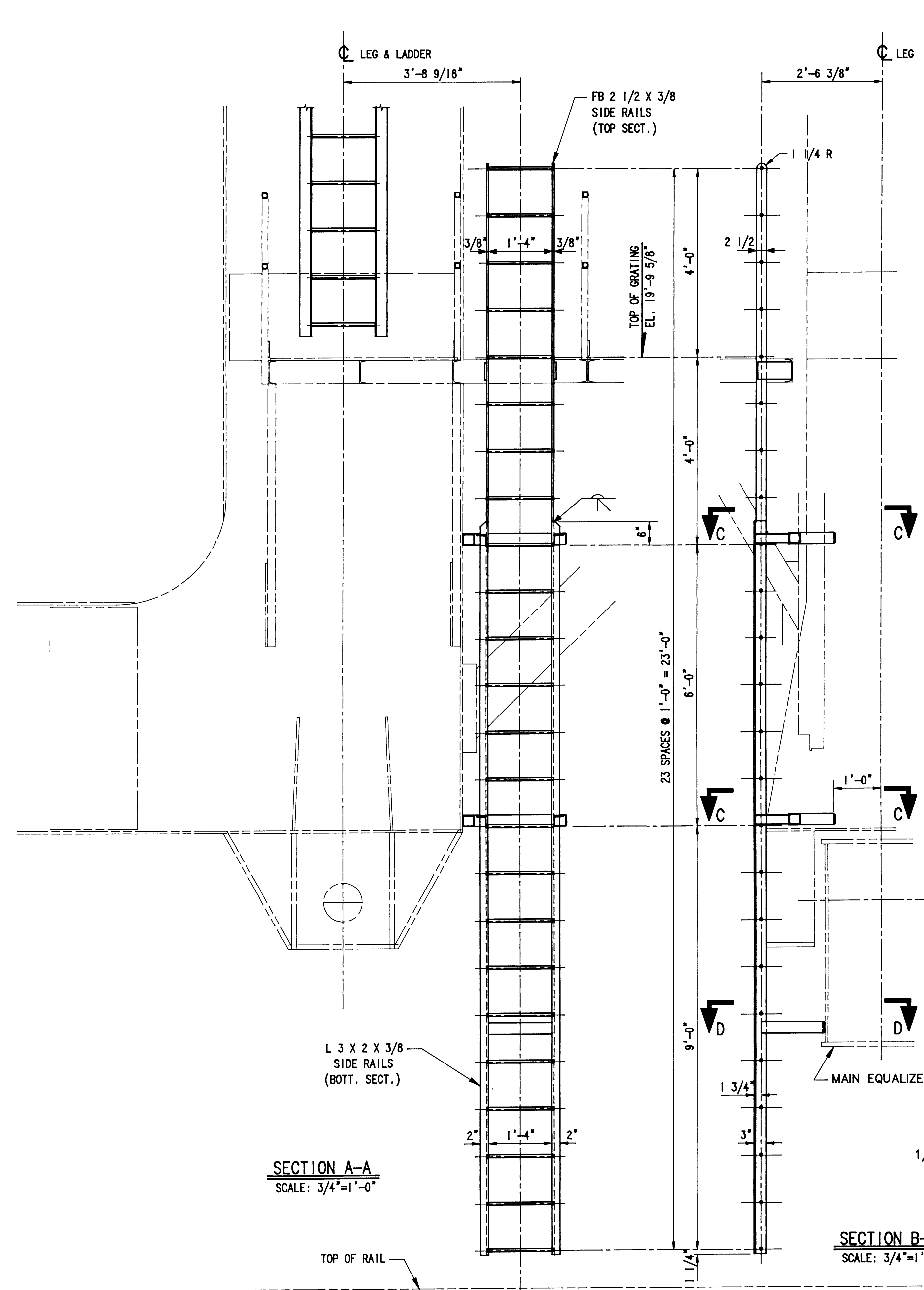
APPROVED
Richard C. Leonard
REGISTERED PROFESSIONAL ENGINEER
CHIEF ENGINEER

R BAKER	2/16/90	KRH	2/16/90
DRAWN BY	DATE	CHECKED BY	DATE
C.R.	10/21/91	J.L.A.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

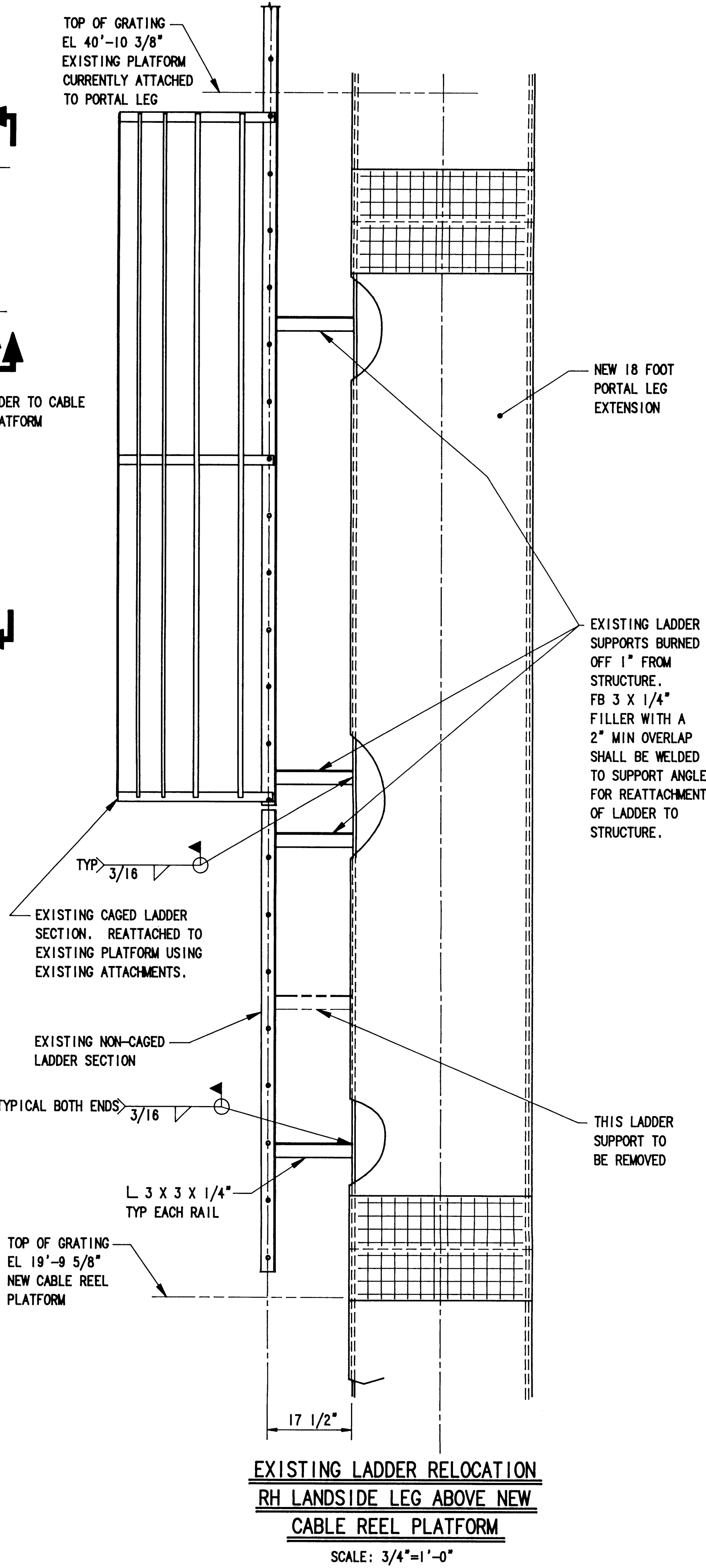
C	AS BUILT	K.H.	2-13
B	REV. CLEARANCE LINE, DIAG.	K.H.	91
A	CHNG'D. CABLE REEL, REV. PLATF.	K.H.	90
MARK	REVISION	BY	APP. DATE

RAISING & RELOCATING I.H.I CRANE #2401
CABLE REEL RELOCATION &
NEW PLATFORM

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 11 OF 54



- NOTES:
- DO NOT SCALE THIS DRAWING.
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PORT OF TACOMA

*SHEET No.	REV.	TITLE	REMARKS
1.1	A	COVER SHEET	MODIFICATION & RELOCATION OF CRANES IHI No.s 2401, 2078, & 2402 PEINER CRANE No. 2042
1.2	A	DRAWING INDEX	MODIFICATION & RELOCATION OF CRANES IHI No.s 2401, 2078, & 2402 PEINER CRANE No. 2042
2.1	B	GENERAL ARRANGEMENT	RAISING & RELOCATING I.H.I. CRANE No. 2401
2.2	C	GENERAL ARRANGEMENT	RAISING & RELOCATING I.H.I. CRANE No. 2401
2.3	A	GENERAL ARRANGEMENT	MODIFICATIONS TO I.H.I. CRANE No. 2078
2.4	A	GENERAL ARRANGEMENT	MODIFICATIONS TO I.H.I. CRANE No. 2078
3	A	ASSEMBLY - GANTRY DRIVE MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2401
4	A	MAIN EQUALIZER MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2401
5	A	SECONDARY EQUALIZER MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2401
6	A	BUMPER GUARD / RAIL CLAMP MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2401
7	A	18 FOOT LEG EXTENSION	RAISING & RELOCATING I.H.I. CRANE No. 2401
8	A	REINFORCEMENT OF FRONT TOWER LEGS	RAISING & RELOCATING I.H.I. CRANE No. 2401
9	A	REINFORCEMENT OF REAR TOWER LEGS AND TROLLEY GIRDER SUPPORT BEAM	RAISING & RELOCATING I.H.I. CRANE No. 2401
10	A	PORTAL CROSS TIE	RAISING & RELOCATING I.H.I. CRANE No. 2401
11	C	CABLE REEL RELOCATION & NEW PLATFORM	RAISING & RELOCATING I.H.I. CRANE No. 2401
12	C	RELOCATION OF EXISTING LADDER & NEW LADDER TO CABLE REEL PLATFORM	RAISING & RELOCATING I.H.I. CRANE No. 2401
13	A	RELOCATION OF CABLE GUIDE	RAISING & RELOCATING I.H.I. CRANE No. 2401
14	C	NEW ELEVATOR STAIR AND PLATFORM	RAISING & RELOCATING I.H.I. CRANE No. 2401
15	C	NEW ELEVATOR STAIR AND PLATFORM	RAISING & RELOCATING I.H.I. CRANE No. 2401
16	C	CABLE REEL RELOCATION AND NEW LADDERS & PLATFORMS - R.H. WATERSIDE CORNER	RELOCATION I.H.I. CRANE No. 2078
17	C	NEW CABLE REEL PLATFORM	RELOCATION I.H.I. CRANE No. 2078
18	B	NEW INTERMEDIATE PLATFORMS	RELOCATION I.H.I. CRANE No. 2078
19	A	NEW LADDERS	RELOCATION I.H.I. CRANE No. 2078
20	A	R.H. LANDSIDE CORNER EXISTING CABLE REEL PLATFORM MODIFICATION AND NEW LADDERS	RELOCATION I.H.I. CRANES No. 2078 & 2401
21		MODIFICATION BUMPER EXTENSION - #2078 & NEW BUMPER EXTENSION - #2401	RELOCATING I.H.I. CRANES No. 2401 & 2078
22	A	MACHINERY HOUSE ARRANGEMENT - MODIFIED FOR MAIN HOIST SPEED INCREASE	RELOCATING I.H.I. CRANES No. 2401 & 2078
23	A	MACHINERY HOUSE ARRANGEMENT - MODIFIED FOR MAIN HOIST SPEED INCREASE	RAISING & RELOCATING I.H.I. CRANE No. 2078
24	A	ASSEMBLY - GANTRY DRIVE MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2078
25	A	MAIN EQUALIZER MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2078
26	A	SECONDARY EQUALIZER MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2078
27	A	BUMPER GUARD / RAIL CLAMP MODIFICATIONS	RAISING & RELOCATING I.H.I. CRANE No. 2078
28	A	18 FOOT LEG EXTENSION	RAISING & RELOCATING I.H.I. CRANE No. 2078
29	A	REINFORCEMENT OF FRONT TOWER LEGS	RAISING & RELOCATING I.H.I. CRANE No. 2078
30	A	REINFORCEMENT OF REAR TOWER LEGS AND TROLLEY GIRDER SUPPORT BEAM	RAISING & RELOCATING I.H.I. CRANE No. 2078
31	A	PORTAL CROSS TIE	RAISING & RELOCATING I.H.I. CRANE No. 2078
32	A	MODIFICATIONS TO ELEVATOR STAIRS & TRACKS	RAISING & RELOCATING I.H.I. CRANE No. 2078
33	A	MODIFICATIONS TO ELEVATOR STAIRS & TRACKS	RAISING & RELOCATING I.H.I. CRANES No. 2401 & 2078
34	A	MAIN HOIST DECK STIFFENING	RAISING PORTAL BEAM I.H.I. CRANE No. 2402
35	A	NEW PORTAL BEAMS INSTALLATION	RAISING PORTAL BEAM I.H.I. CRANE No. 2402
36	A	REINFORCEMENT OF TOWER LEGS	RAISING PORTAL BEAM I.H.I. CRANE No. 2402
37	A	NEW PORTAL BEAM	RAISING PORTAL BEAM PEINER CRANE No. 2042
38	B	PORTAL BEAM REINSTALLATION	RAISING PORTAL BEAM PEINER CRANE No. 2042
39	B	REINFORCEMENT OF TOWER LEGS	RAISING PORTAL BEAM PEINER CRANE No. 2042
40	B	REINFORCEMENT OF TOWER LEGS	RELOCATION OF I.H.I. CRANE No. 2078 TO PIER 7
41	B	NEW PLATFORMS & LADDERS - GENERAL ARRANGEMENT	RELOCATION OF I.H.I. CRANE No. 2078 TO PIER 7
42	B	CABLE REEL RELOCATION & NEW PLATFORM	RELOCATION OF I.H.I. CRANE No. 2078 TO PIER 7
43	B	NEW CABLE REEL PLATFORM & PLATFORM MODIFICATION AT 40'-10 3/8"	RELOCATION OF I.H.I. CRANE No. 2078 TO PIER 7
44	B	NEW LADDERS	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
45	A	GENERAL ARRANGEMENT OF CABLE REEL	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
46	A	NEW CABLE REEL PLATFORM EXTENSION & SUPPORTS	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
47	A	PLATFORM MODIFICATION & MISC HANDRAILS	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
48	A	NEW LADDERS	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
49	A	CROSSOVER ROLLERS & CABLE GUIDES	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
50	A	BUMPER EXTENSIONS	RELOCATION OF PEINER CRANE No. 2042 TO PIER 4
* 51 THRU 54		SEE NOTE	

REPLACED BY SHEETS 41
REPLACED BY SHEETS 42 & 43
REPLACED BY SHEETS 42 & 43
REPLACED BY SHEET 44
REPLACED BY SHEET 41
REPLACED BY SHEET 50

REPLACES SHEET 16 & 20
REPLACES SHEETS 17, 18, & 19
REPLACES SHEETS 17, 18, & 19
REPLACES SHEET 19

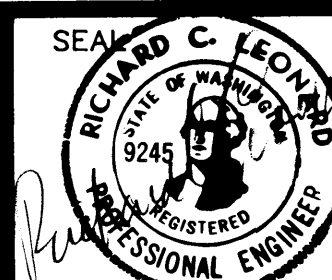
RELACES SHEET 21

* NOTE: SHEETS 1.2, 2.2, 2.3 & 2.4 BRING THE TOTAL SHEET COUNT TO 54.



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SEATTLE WA 98188
JOB: 2486 DWG: 1701 1/1



APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

H. CONNACHER 5/22/91
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

J.L.A. 5/22/91
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

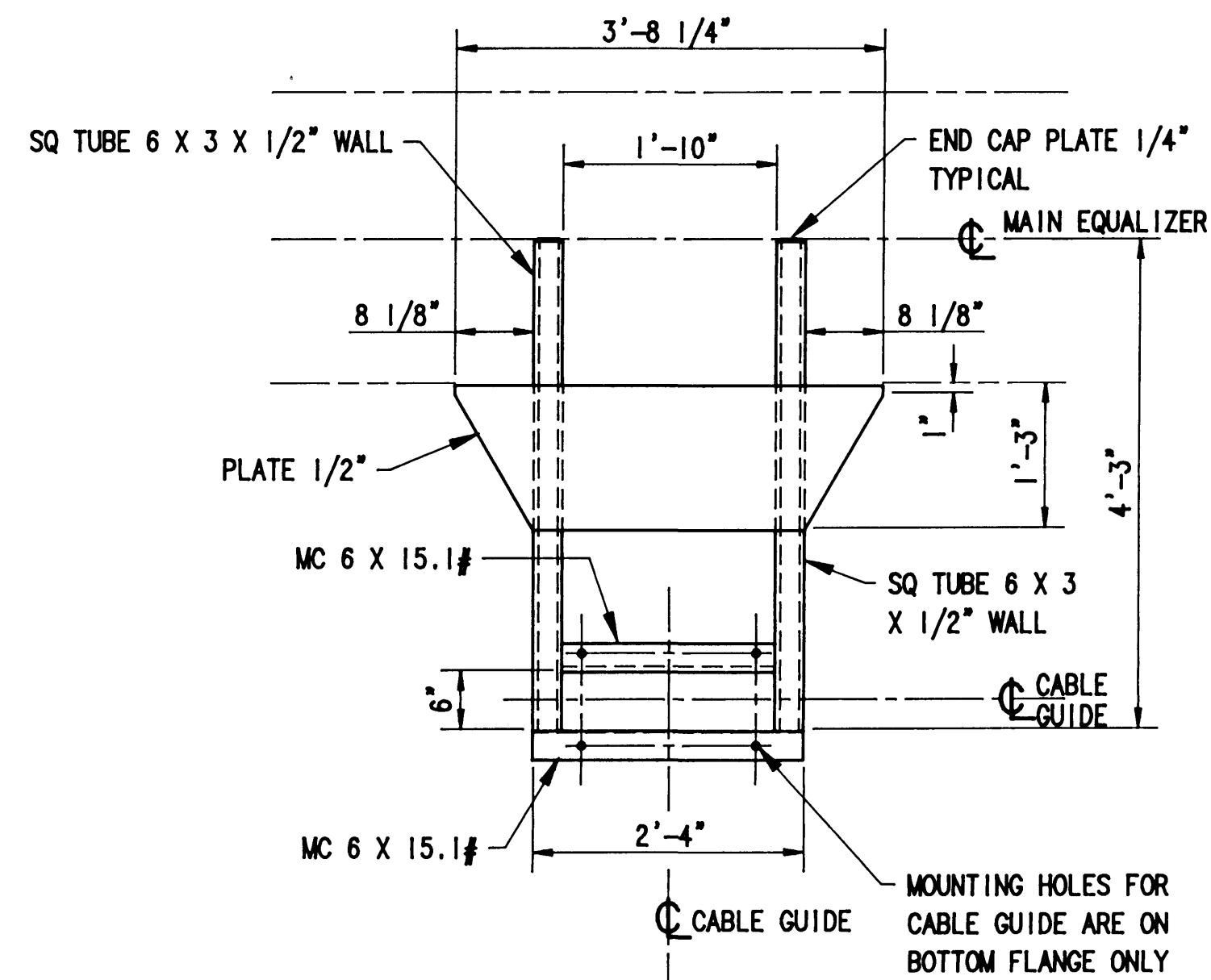
MARK	AS BUILT (NEW DRAWING)	RJB	7/1/91
BY	REVISION	APP.	DATE

MODIFICATION & RELOCATION OF
IHI CRANES NO.s 2401, 2078, & 2402
PEINER CRANE No. 2042
DRAWING INDEX

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 1.2A OF 54

NOTES:

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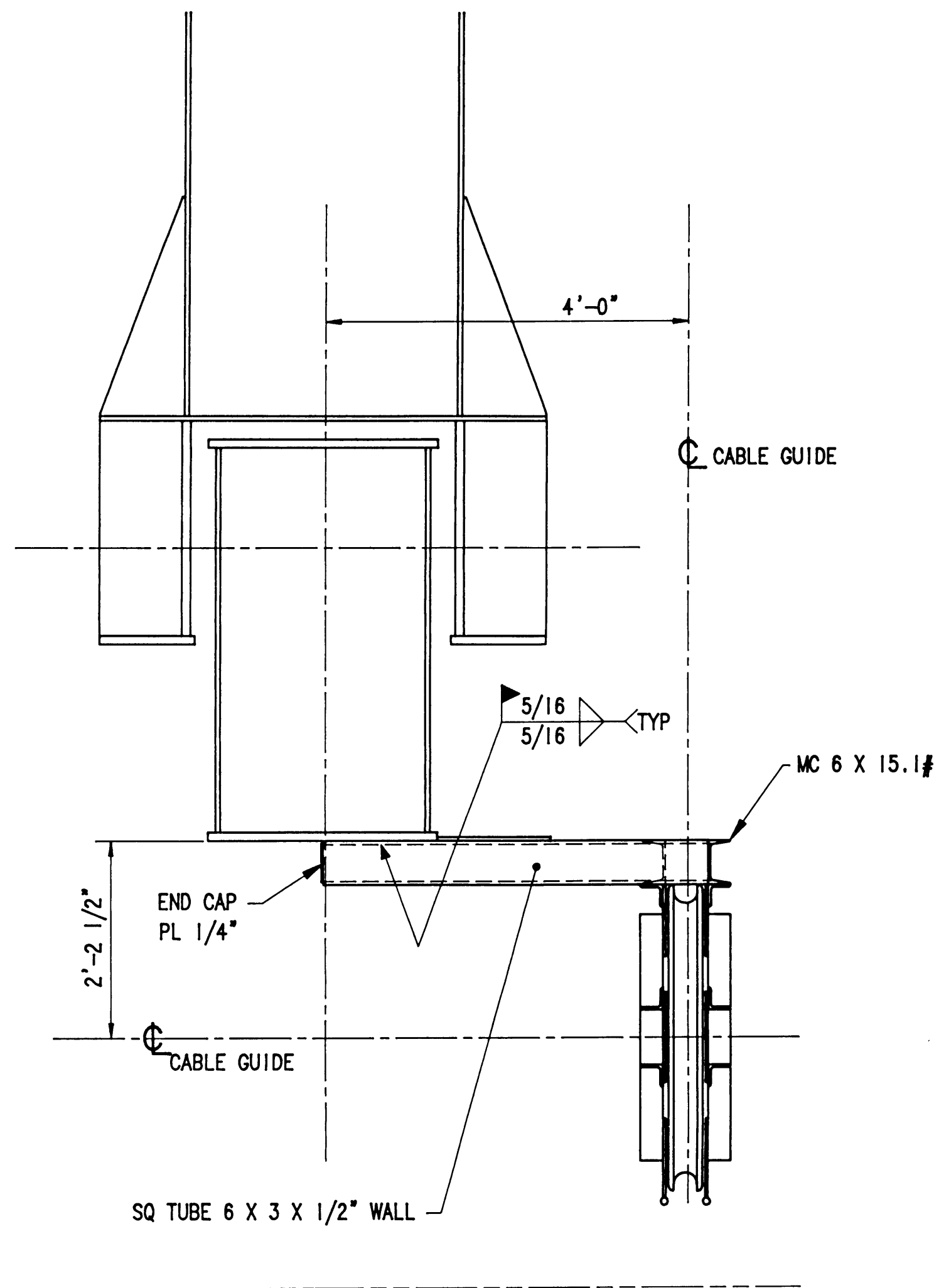


**PLAN VIEW
CABLE GUIDE
MOUNTING BRACKET**

CABLE GUIDE BRACKET DESIGN IS FOR REPLACEMENT OF EXISTING CABLE GUIDE ASSY WITH AN "INDUSTRIAL ELECTRICAL REEL" CAT. NO. C36S TWO-WAY PAY CABLE GUIDE.

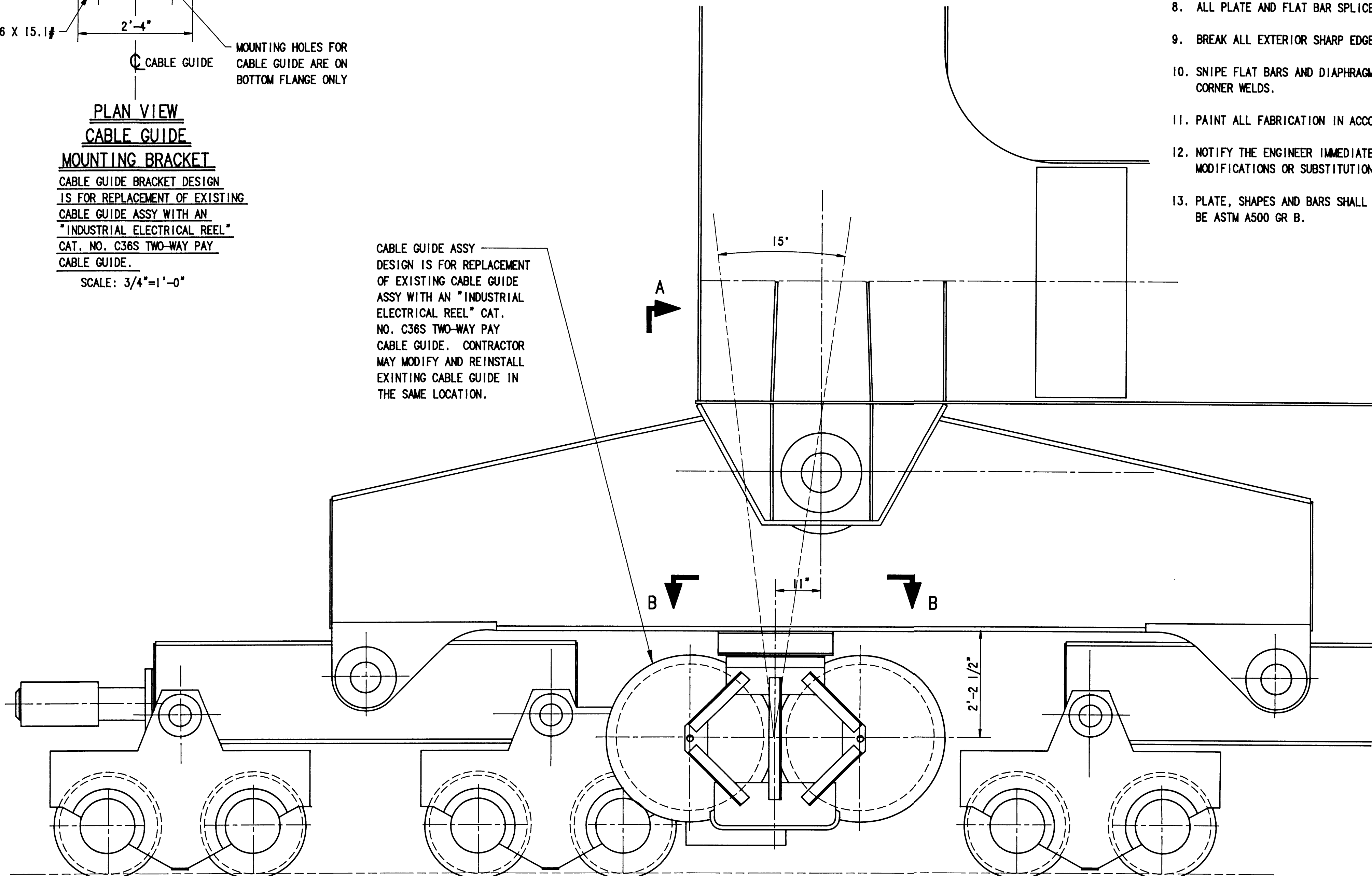
SCALE: 3/4"=1'-0"

CABLE GUIDE ASSY DESIGN IS FOR REPLACEMENT OF EXISTING CABLE GUIDE ASSY WITH AN "INDUSTRIAL ELECTRICAL REEL" CAT. NO. C36S TWO-WAY PAY CABLE GUIDE. CONTRACTOR MAY MODIFY AND REINSTALL EXISTING CABLE GUIDE IN THE SAME LOCATION.



SECTION A-A

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



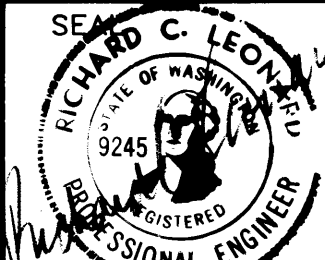
**ELEVATION VIEW
INSIDE RH LANDSIDE CORNER
LOOKING AWAY FROM WATER**

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



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JOB: 2486 DWG: 1686 1/1



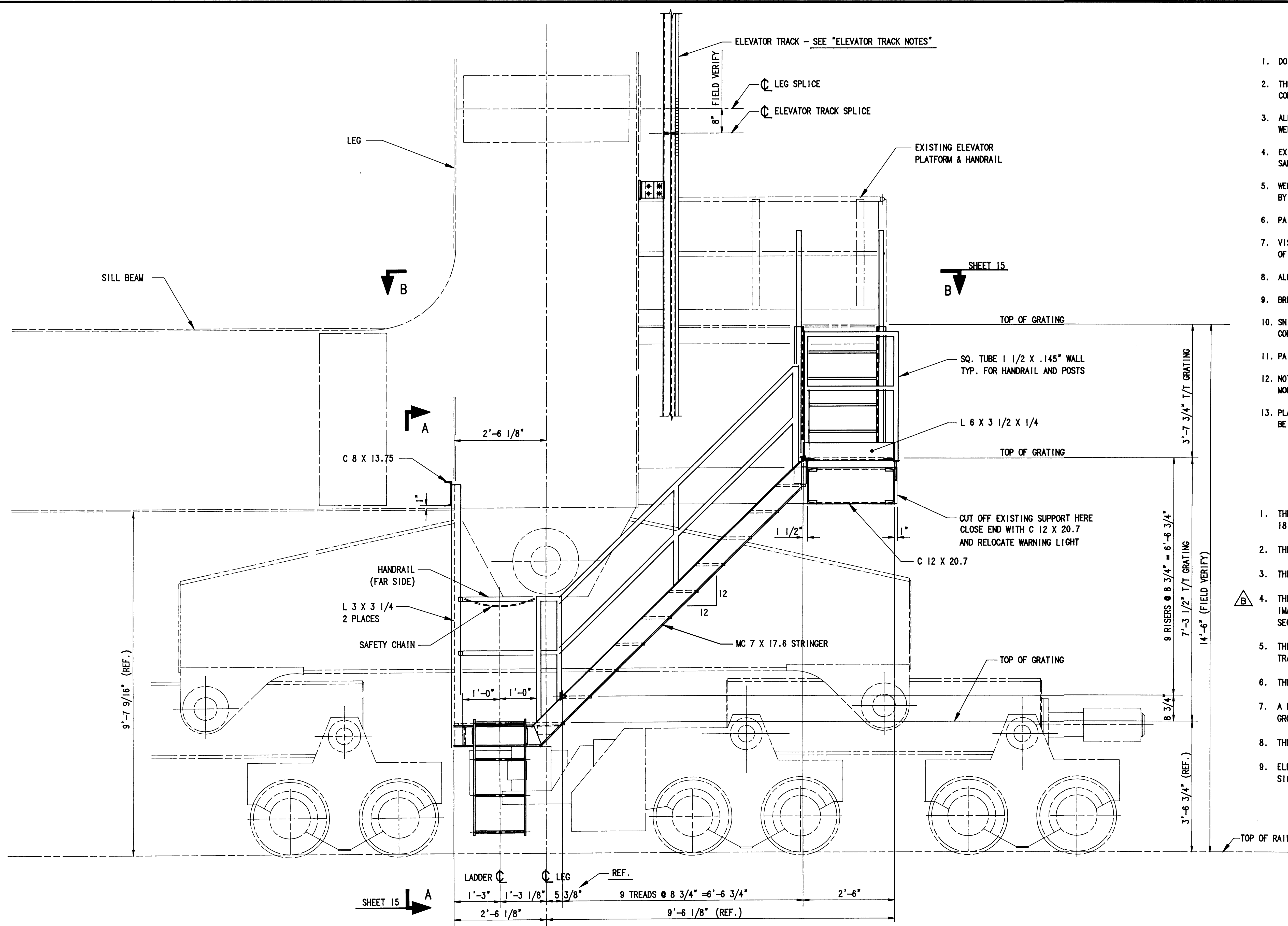
APPROVED
[Signature]
CHIEF ENGINEER

R BAKER	2/18/90	KRH	2/22/90
DRAWN BY	DATE	CHECKED BY	DATE
C.R.	10/21/91	J.L.H.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

A	AS BUILT	K.H.	2-13-91
MARK	REVISION	BY	APP. DATE

RAISING & RELOCATING I.H.I CRANE #2401
RELOCATION OF CABLE GUIDE

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 13 OF 54



ELEVATION VIEW
NEW ELEVATOR STAIR AND PLATFORM
LH LANDSIDE CORNER LOOKING TOWARD LAND
 SCALE: 3/4" = 1'-0"

NOTES:

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- SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
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ELEVATOR TRACK NOTES

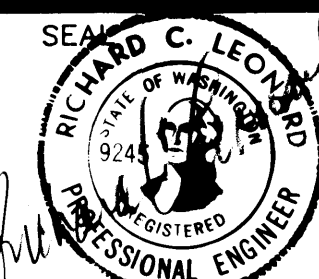
- THE PRESENT ELEVATOR LIFT IS 100 FT. AND THE CRANE MODIFICATION ADDS 18 FT. TO THE LIFT.
- THE TRACK SHALL BE SPLIT AT THE TRACK SPLICE AS SHOWN.
- THE TRACK ABOVE THE SPLICE SHALL REMAIN ON THE RAISED PORTION OF THE LEG.
- THE TRACK SECTION BELOW THE SPLICE SHALL BE CUT OFF AND LOWERED APPROXIMATELY 20" AND (2) NEW 9'-10" TRACK SECTIONS INSTALLED ABOVE THIS SECTION.
- THE MODIFICATION OF THE TRACK SECTIONS AND INSTALLATION OF THE NEW TRACK SECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURES INSTRUCTIONS.
- THE PORT HAS ONE NEW TRACK SECTION THAT CAN BE USED IN THIS INSTALLATION.
- A NEW ELECTRICAL ELEVATOR CABLE MUST BE INSTALLED, A 3 WIRE NO. 8 WITH GROUND, TYPE G.
- THE OLD CABLE IS TO BE RETURNED TO THE PORT.
- ELEVATOR REFERENCE DRAWINGS: EMPCO DWGS. S1600437-1, S1600473-1, S1600474-1 AND S1600494-1.

WORK THIS DRAWING WITH SHEET 15



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 JOB: 2486 DWG: 1687 1/2



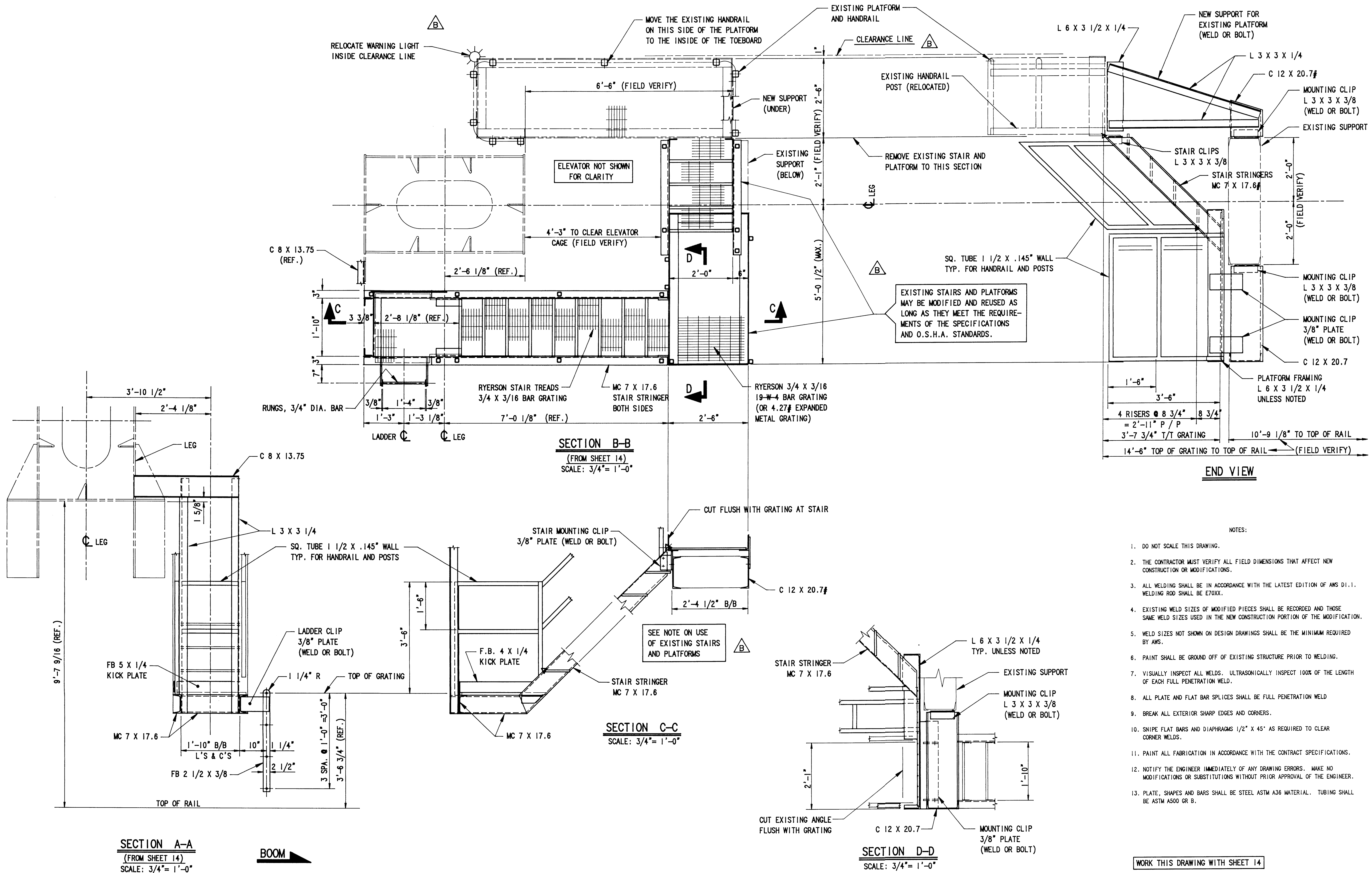
APPROVED
[Signature]
 CHIEF ENGINEER

HARVEY	2/18/90	R.J.B.	2/20/90
DRAWN BY	DATE	CHECKED BY	DATE
C.R.	10/21/91	J.L.M.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

C	AS BUILT	K.H.	2-13 91
B	NOTE 4, "AND" WAS "OR"	K.H.	5-8 90
A	REV. STAIR & PLATF. PER CUST.	K.H.	7-8 90
MARK	REVISION	BY	APP. DATE

RAISING & RELOCATING I.H.I CRANE #2401
NEW ELEVATOR STAIR AND PLATFORM

DRAWING No. EP4365-32
 CONTRACT No. 681
 SHEET No. 14 OF 54



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932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1687 2/2



APPROVED
[Signature]
CHIEF ENGINEER
DATE

HARVEY 2/23/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

R.B. 2/23/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

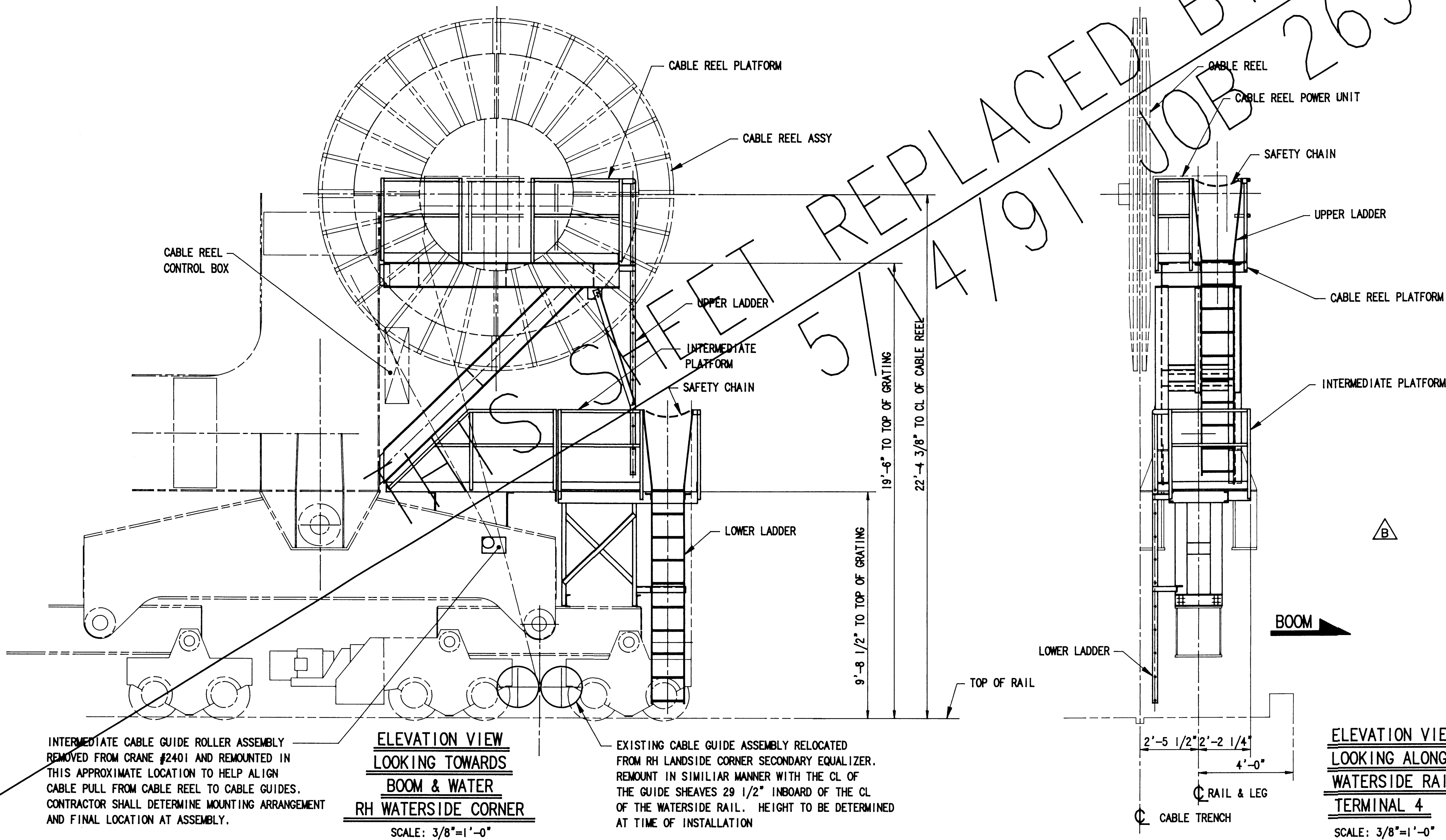
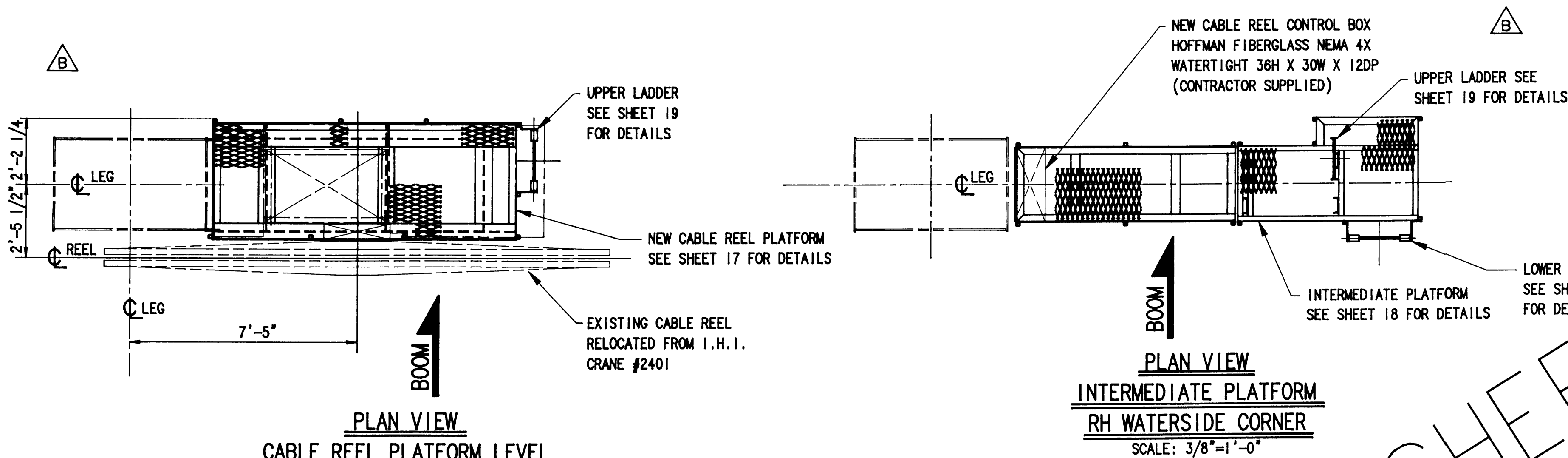
MARK	REVISION	BY	APP.	DATE
C	AS BUILT	K.H.		2-13-91
B	ADD CLEAR. LINE, STAIR NOTES	K.H.		5-8-90
A	REV. STAIRS & PLATF'S. PER CUST.	K.H.		4-16-90

RAISING & RELOCATING I.H.I CRANE #2401
NEW ELEVATOR STAIR AND PLATFORM

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 15 OF 54

NOTES:

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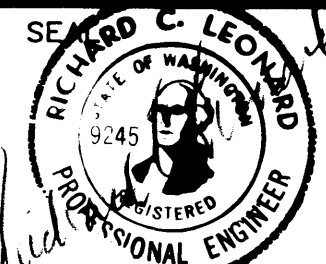
INTERMEDIATE CABLE GUIDE ROLLER ASSEMBLY REMOVED FROM CRANE #2401 AND REMOUNTED IN THIS APPROXIMATE LOCATION TO HELP ALIGN CABLE PULL FROM CABLE REEL TO CABLE GUIDES. CONTRACTOR SHALL DETERMINE MOUNTING ARRANGEMENT AND FINAL LOCATION AT ASSEMBLY.

EXISTING CABLE GUIDE ASSEMBLY RELOCATED FROM RH LANDSIDE CORNER SECONDARY EQUALIZER. REMOUNT IN SIMILAR MANNER WITH THE CL OF THE GUIDE SHEAVES 29 1/2" INBOARD OF THE CL OF THE WATERSIDE RAIL. HEIGHT TO BE DETERMINED AT TIME OF INSTALLATION



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JOB: 2590 DWG: 1774 1/5



APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

R BAKER 2/24/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

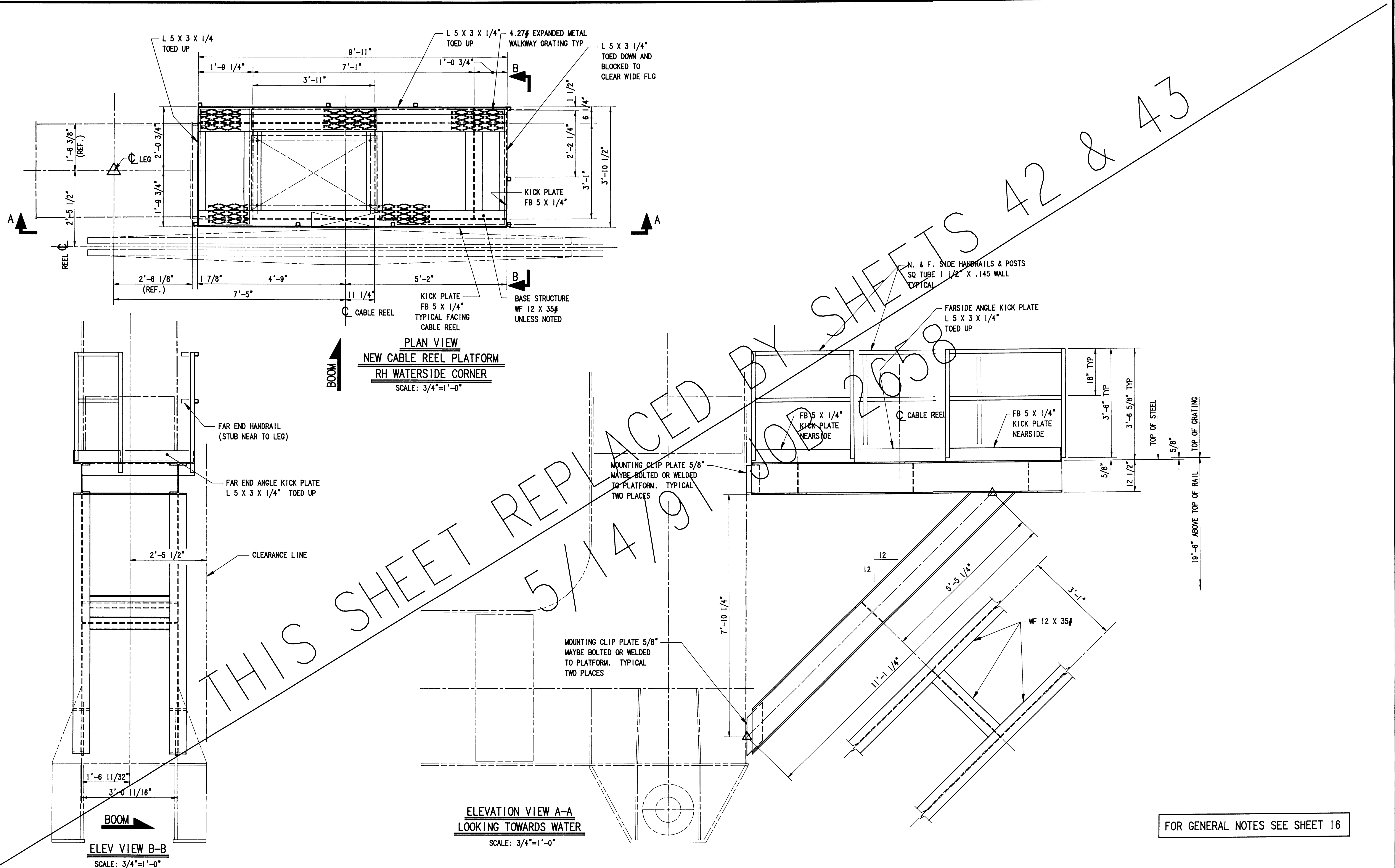
J.L.A. 2/24/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

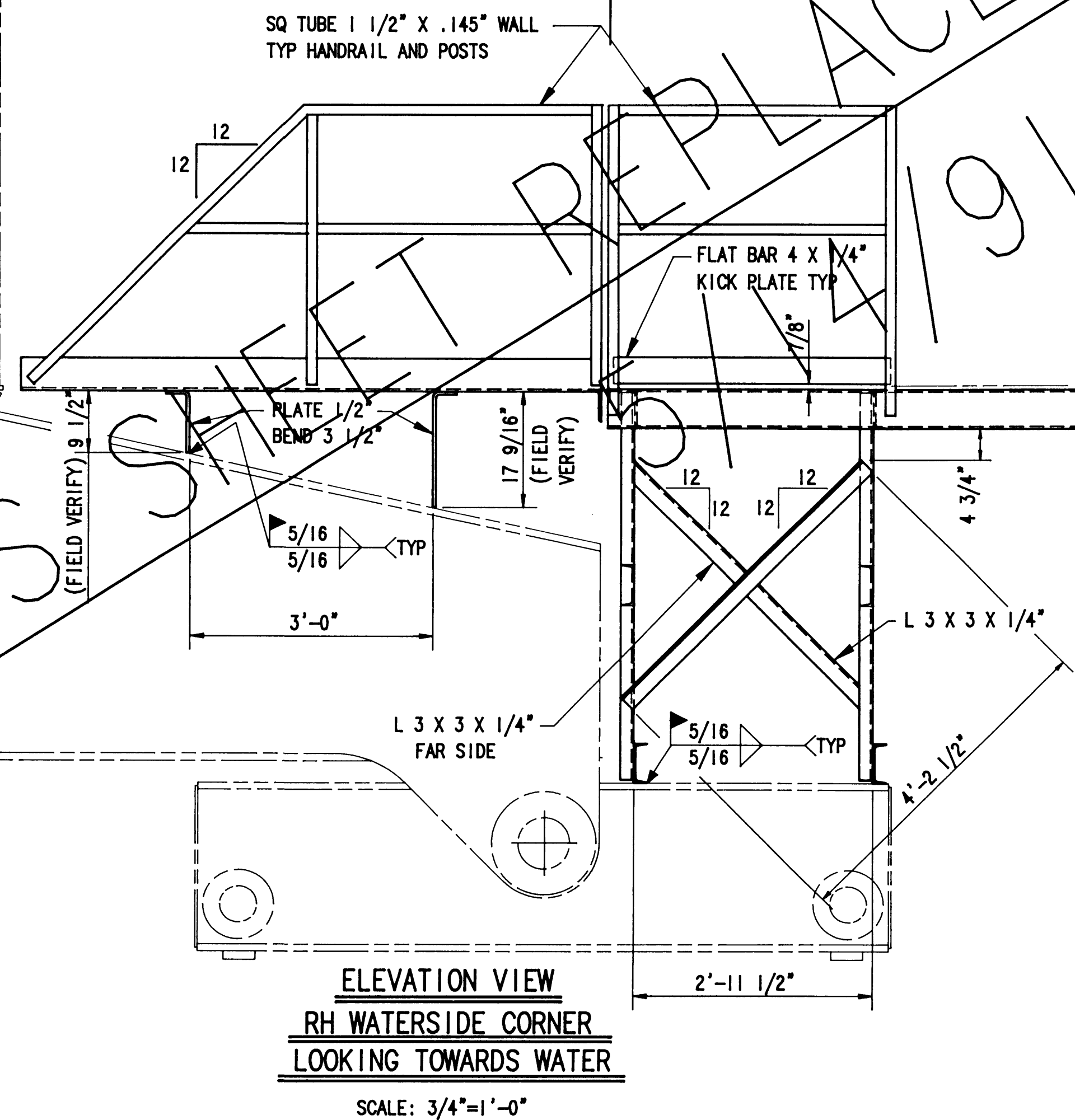
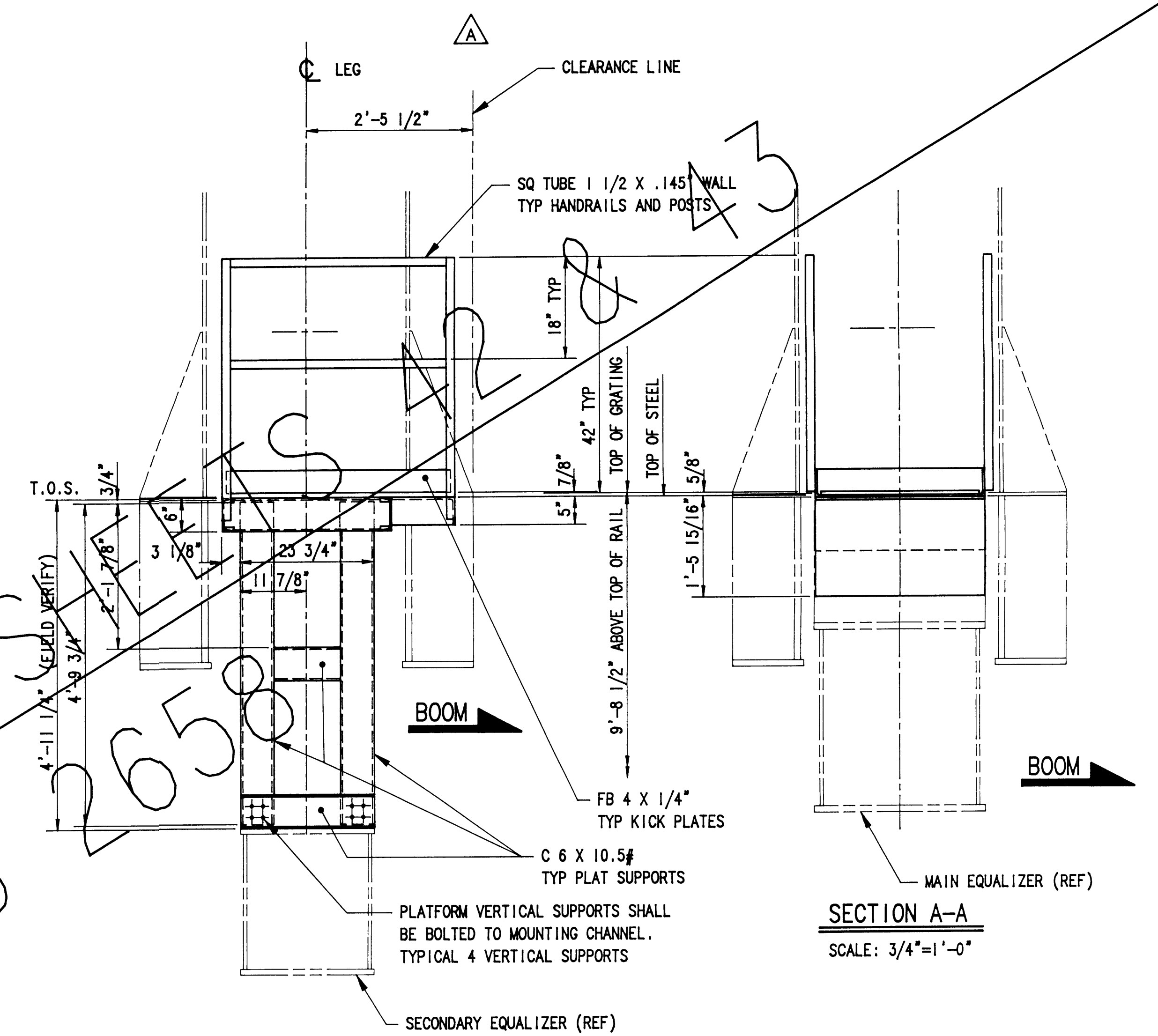
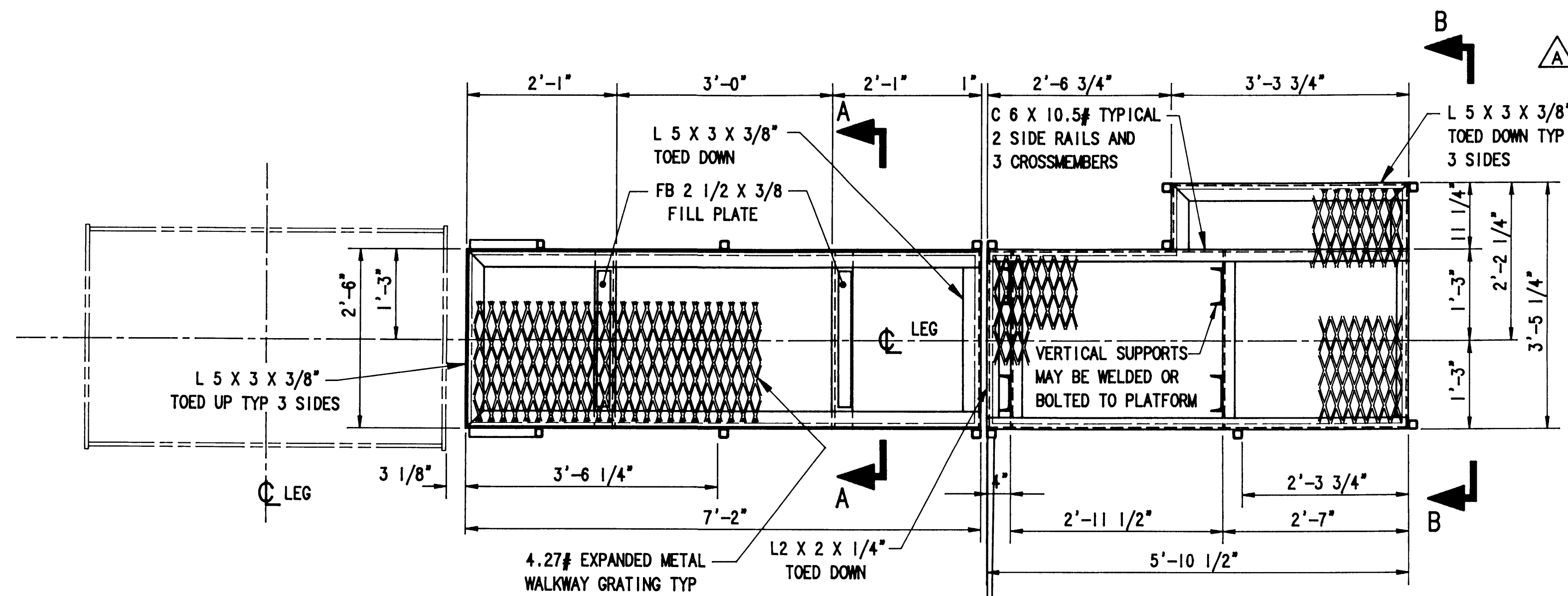
MARK	REVISION	BY	APP.	DATE
C	GEN. REV. FOR CRANE MODIF. HT. & WT.	R.W.		10-11-90
B	ADD CLEARANCE LINE, REV. PLATF.	K.H.		5-8-90
A	CHANGED CABLE REEL, REV. PLATF.	K.H.		4-11-90

BY APP. DATE

RELOCATION I.H.I. CRANE #2078
CABLE REEL RELOCATION
AND NEW LADDERS & PLATFORMS
R.H. WATERSIDE CORNER

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 16 OF 54





FOR GENERAL NOTES SEE SHEET 16



PORT OF TACOMA
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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1774 3/5



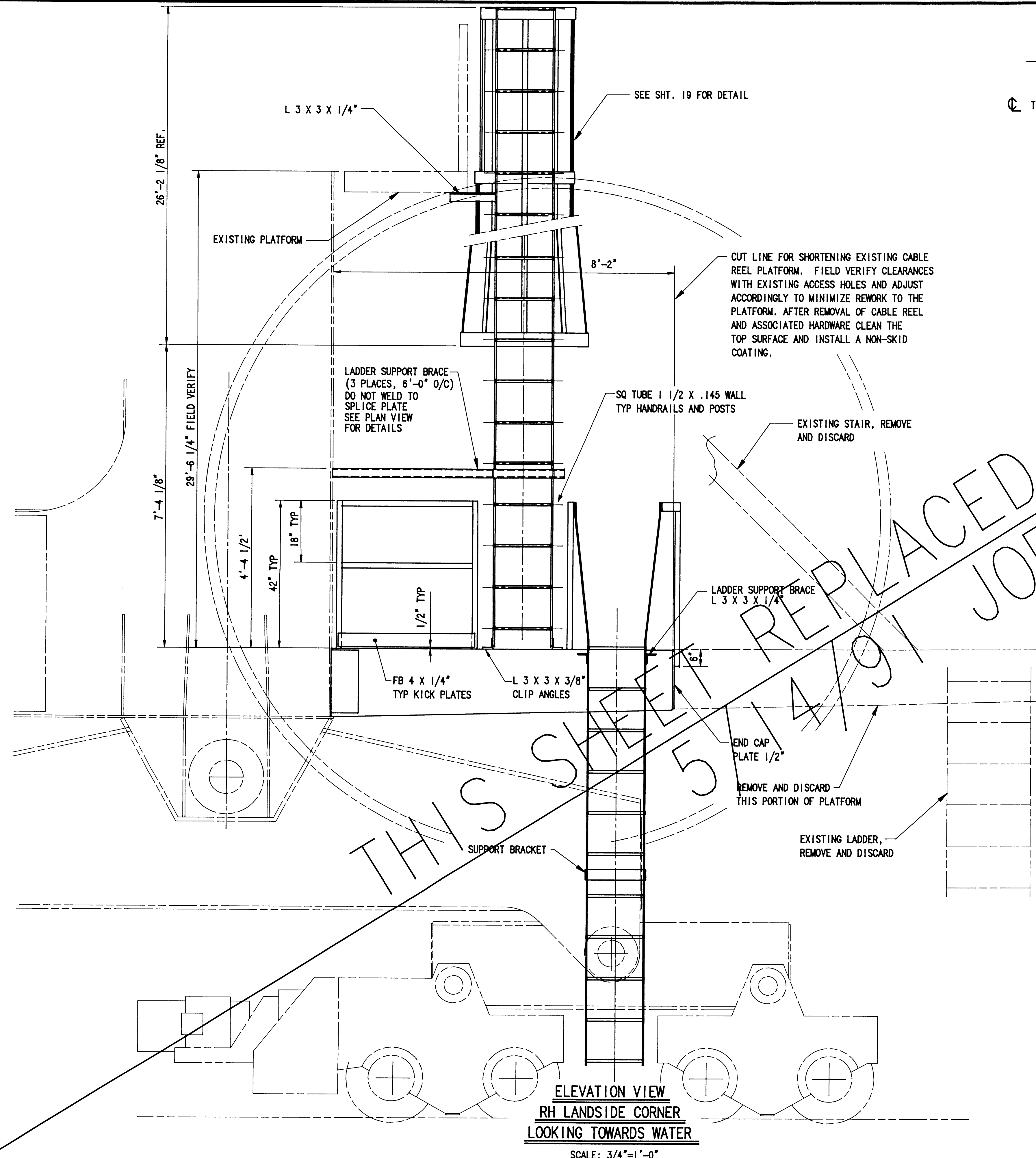
APPROVED
R. BAKER
CHIEF ENGINEER
DATE

R. BAKER 2/22/90
DRAWN BY DATE
J. L. A. 2/22/90
CHECKED BY DATE
J. L. A.
PROJ. ENGR. DATE

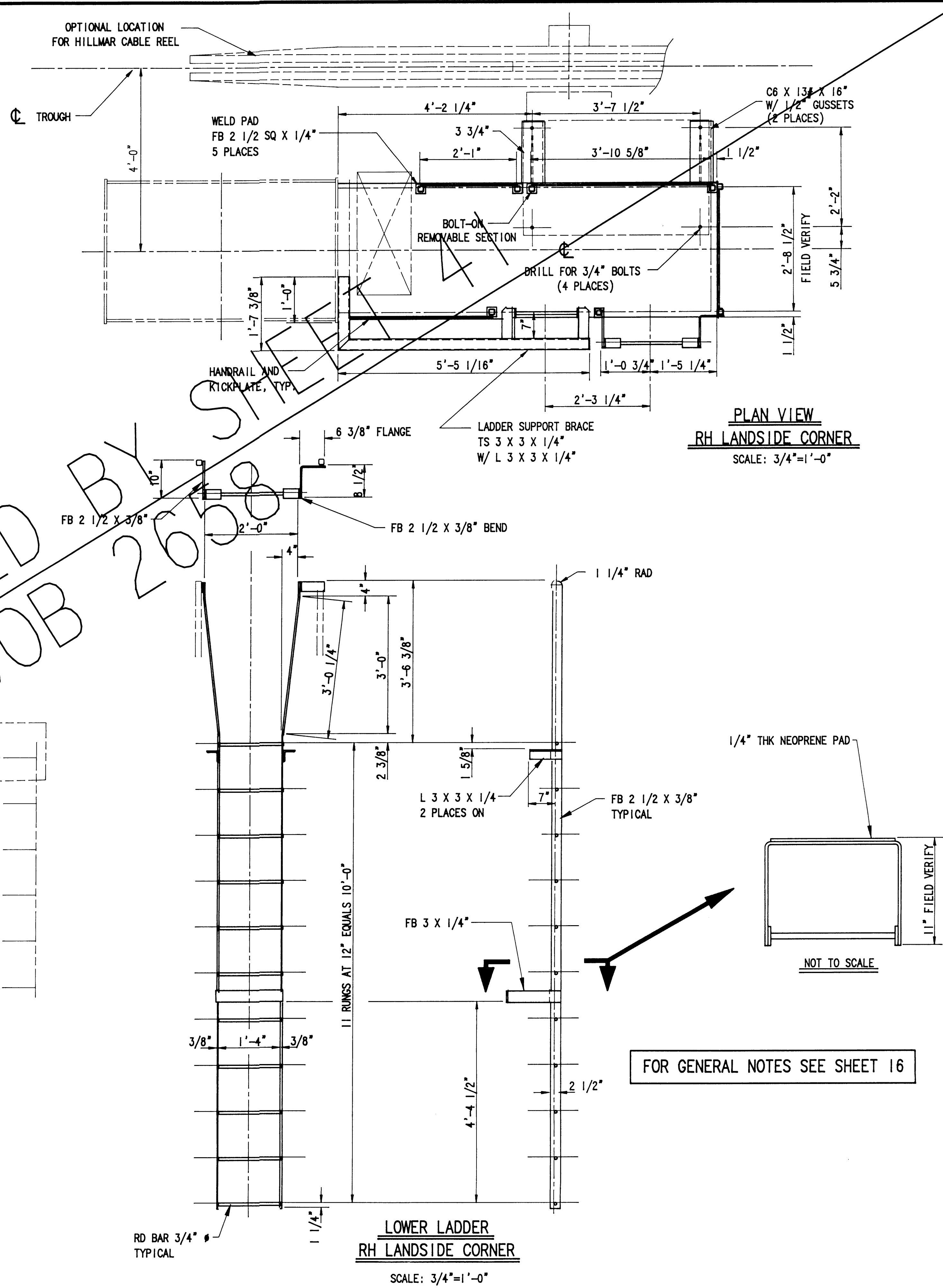
MARK	REVISION	BY	APP.	DATE
B	GEN. REV. FOR CRANE MODIF. HT. & WT.	R.W.		12/1/89
A	ADD CLEARANCE LINE, REV. PLATF.	K.H.		5/90

RELOCATION I.H.I. CRANE #2078
NEW INTERMEDIATE PLATFORMS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 18 OF 54



**ELEVATION VIEW
RH LANDSIDE CORNER
LOOKING TOWARDS WATER**
SCALE: 3/4"=1'-0"



**PLAN VIEW
RH LANDSIDE CORNER**
SCALE: 3/4"=1'-0"

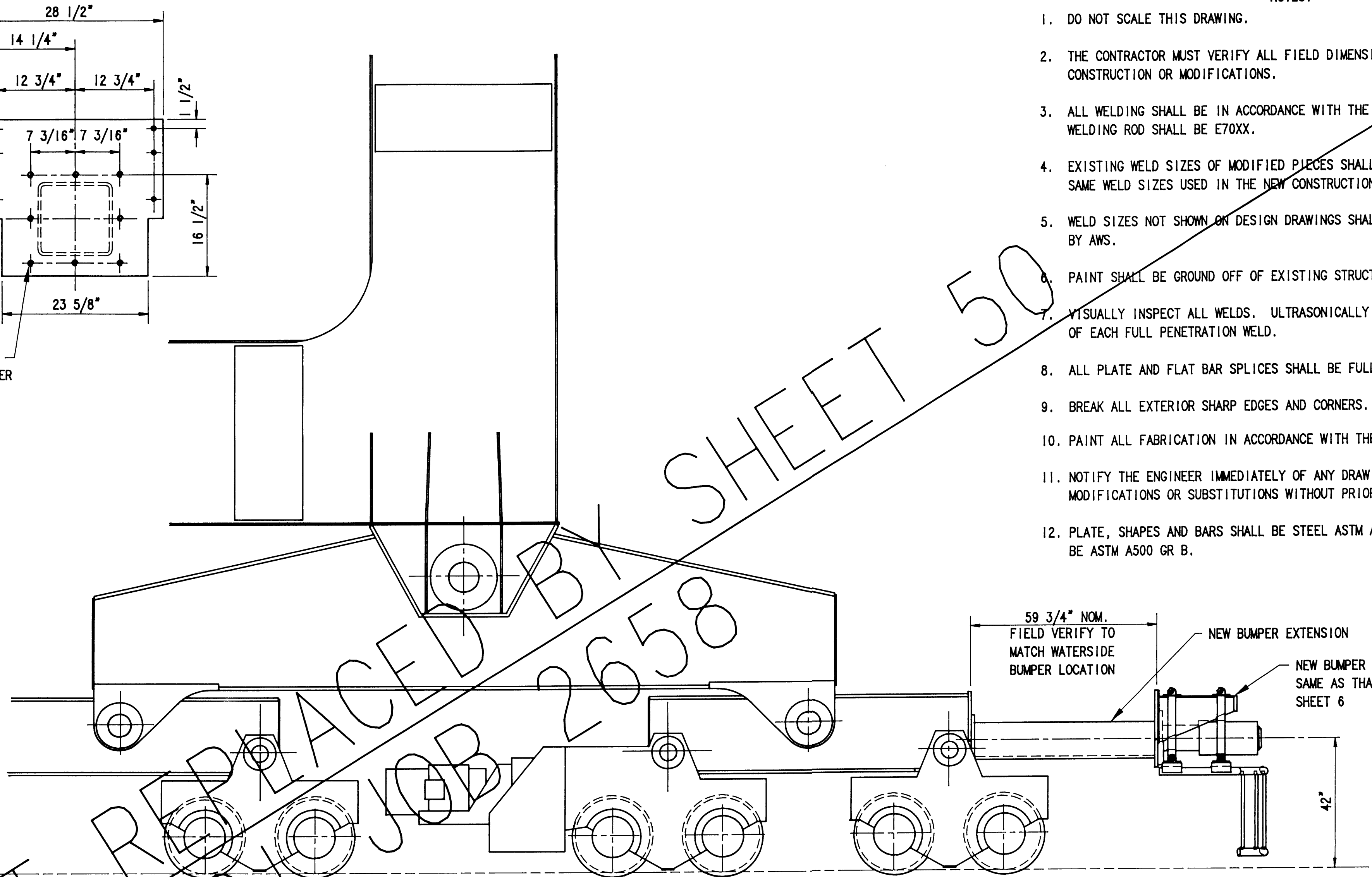
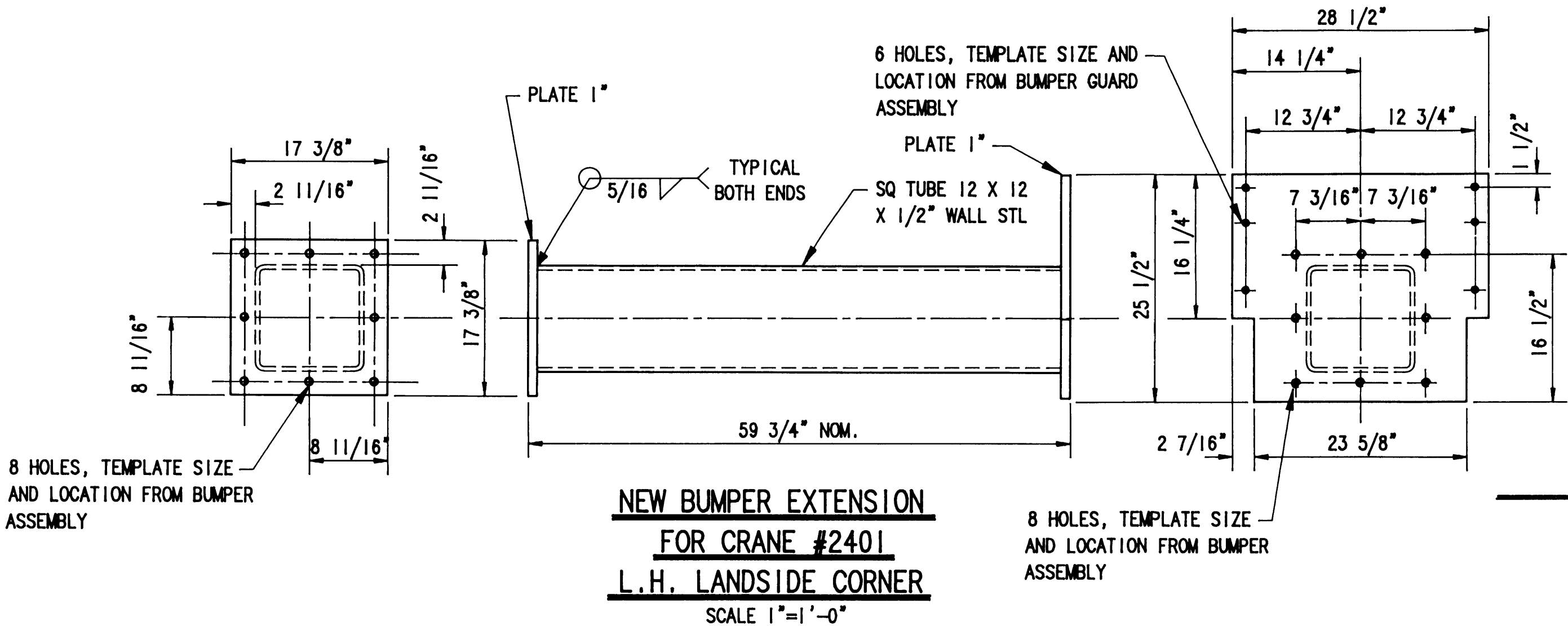
**LOWER LADDER
RH LANDSIDE CORNER**
SCALE: 3/4"=1'-0"

FOR GENERAL NOTES SEE SHEET 16

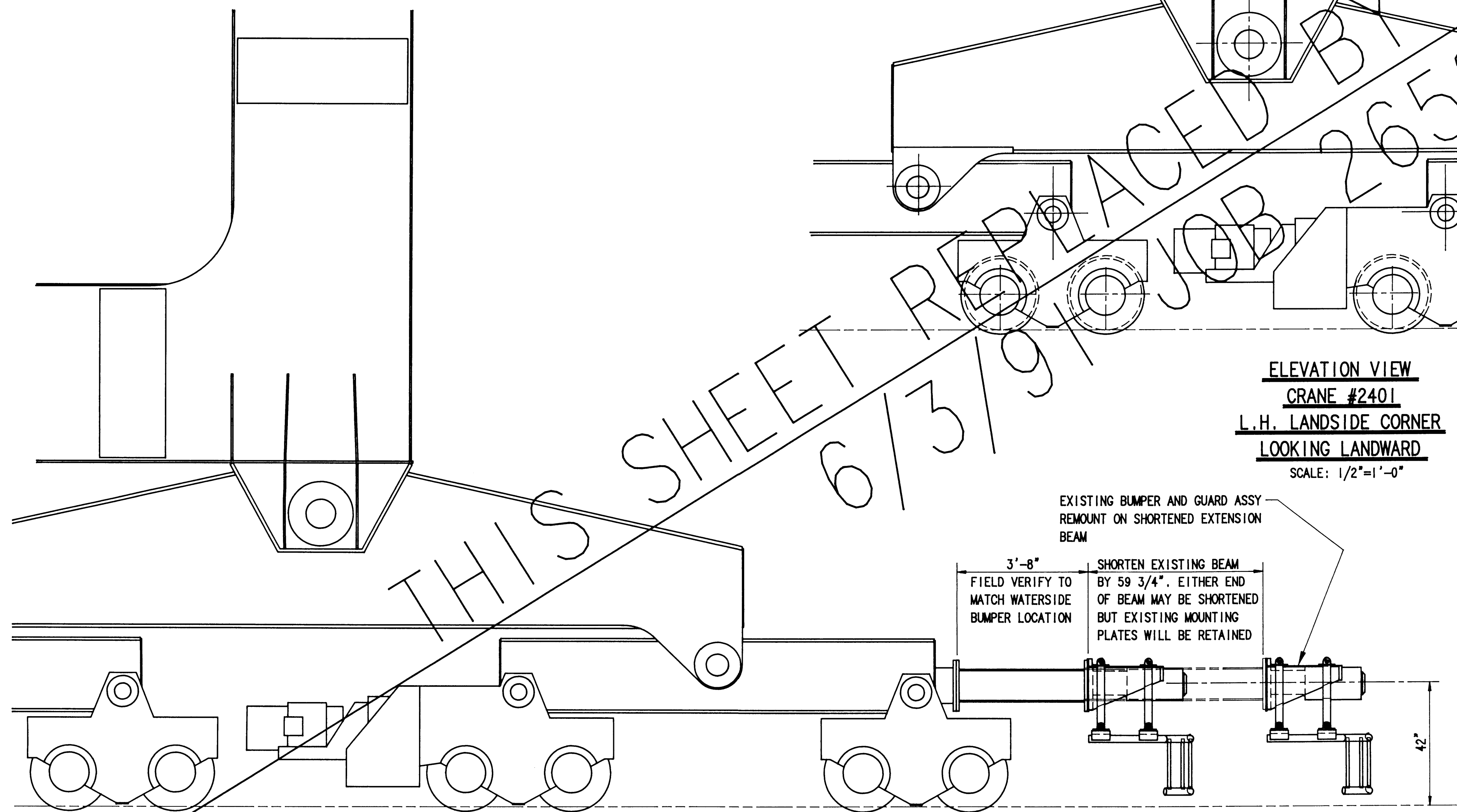
NOT TO SCALE

NOTES:

1. DO NOT SCALE THIS DRAWING.
2. THE CONTRACTOR MUST VERIFY ALL FIELD DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
3. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
4. EXISTING WELD SIZES OF MODIFIED PIECES SHALL BE RECORDED AND THOSE SAME WELD SIZES USED IN THE NEW CONSTRUCTION PORTION OF THE MODIFICATION.
5. WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
8. ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
11. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
12. PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.



ELEVATION VIEW
CRANE #2401
L.H. LANDSIDE CORNER
LOOKING LANDWARD
SCALE: 1/2"=1'-0"



ELEVATION VIEW
CRANE #2078
L.H. LANDSIDE CORNER
LOOKING LANDWARD
SCALE: 1/2"=1'-0"



PORT OF TACOMA
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CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1690 1/1



APPROVED
Richard C. Leonard
CHIEF ENGINEER

R BAKER 2/12/90
DRAWN BY DATE

J.L.A. 2/12/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE

RELOCATION I.H.I. CRANES #2078 & #2401
MODIFICATION BUMPER EXTENSION - #2078
NEW BUMPER EXTENSION - #2401

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 21 OF 54

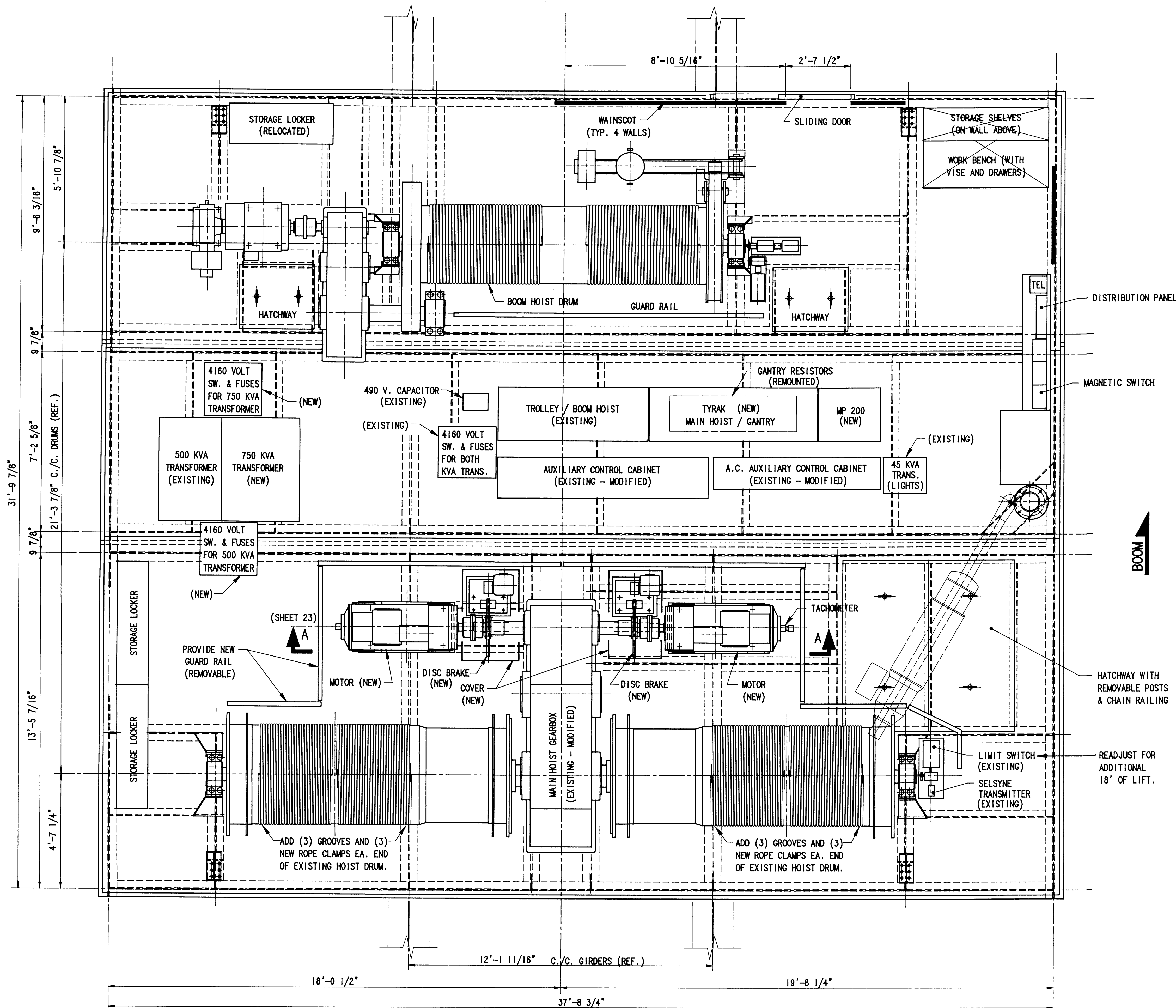
MAIN HOIST MODIFICATION NOTES

1. THE CONTRACTOR SHALL SUPPLY AND INSTALL NEW MOTORS, CONTROLS, BRAKES, TRANSFORMERS AND OTHER ELECTRICAL ITEMS IN ACCORDANCE WITH THE BILL OF MATERIAL SHOWN IN ADDENDUM #1. ASEA BROWN BOVERI IS SOLE SOURCE FOR THESE ITEMS.
2. THE CONTRACTOR SHALL SUPPLY AND INSTALL (2) NEW MOTOR COUPLINGS, FALK 1040G OR EQUAL.
3. THE CONTRACTOR SHALL SUPPLY AND INSTALL (2) NEW HIGH SPEED REDUCER SHAFT BEARINGS, BEARING NUMBER 22228 CC/W33.
4. THE CONTRACTOR SHALL SUPPLY AND INSTALL (1) HIGH SPEED REDUCER SHAFT WITH INTEGRAL PINION. SEE SHEET #23 OF THE CONTRACT DRAWINGS AND ADDENDUM #1 FOR SPECIFICATIONS.
5. THE CONTRACTOR SHALL SUPPLY AND INSTALL NEW SUPPORT STRUCTURE FOR THE MOTORS AND BRAKES.
6. THE CONTRACTOR SHALL SUPPLY AND INSTALL AN EXHAUST DUCT, WITH SCREENS, FROM THE MOTOR THRU THE MACHINERY HOUSE FLOOR. ONE DUCT PER MOTOR.
7. THE CONTRACTOR WILL SUPPLY A COVER FOR THE BRAKE AND COUPLING MADE FROM EXPANDED METAL.
8. THE CONTRACTOR SHALL SUPPLY AND INSTALL A REMOVABLE GUARD RAIL IN FRONT OF THE MAIN HOIST MACHINERY.

NOTES:

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8. ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
11. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
12. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
13. PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.

WORK THIS DRAWING WITH SHEET 23 & 34



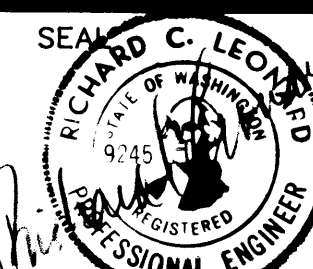
PLAN VIEW

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



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JOB: 2486 DWG: 1692 1/2



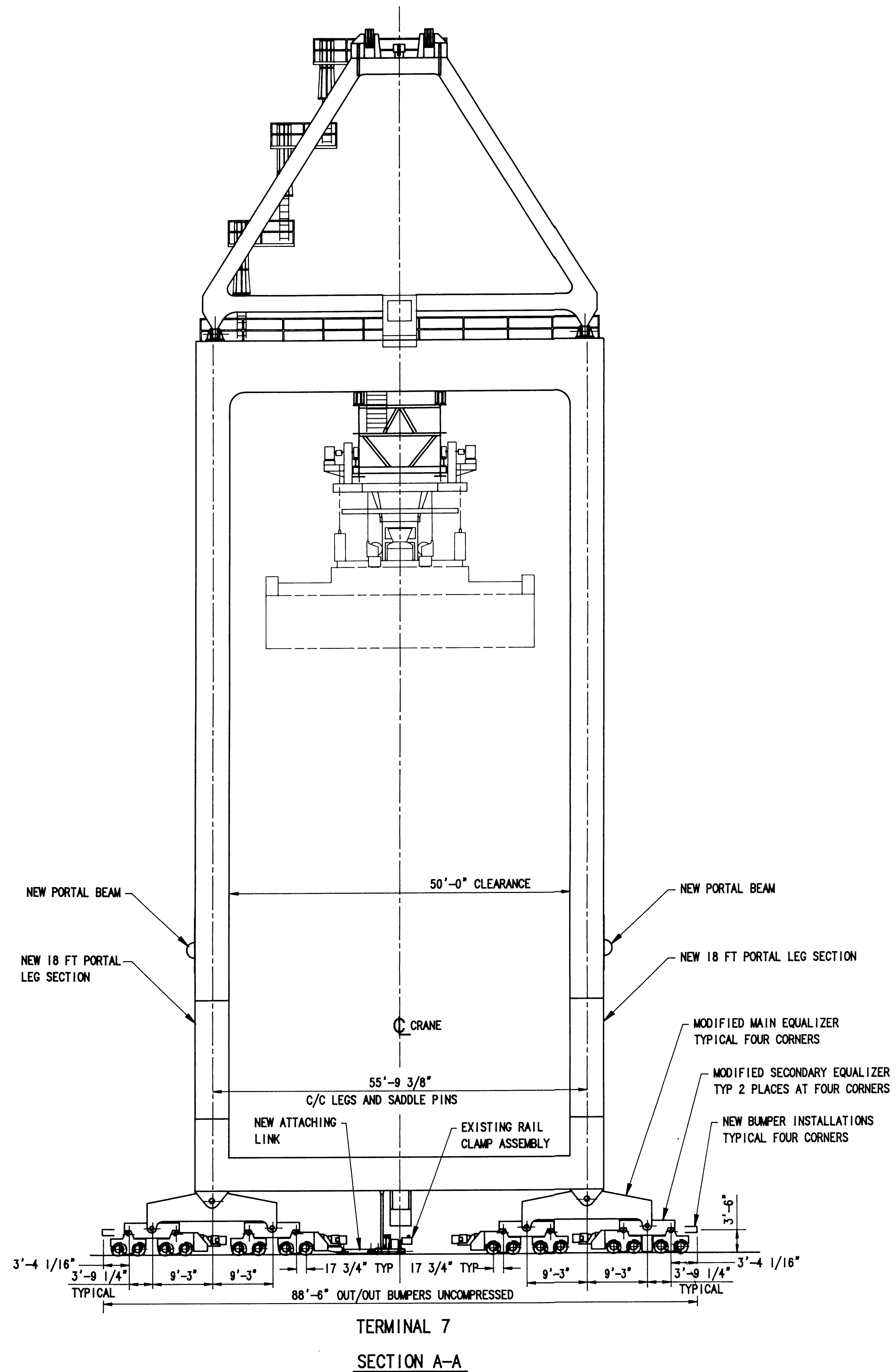
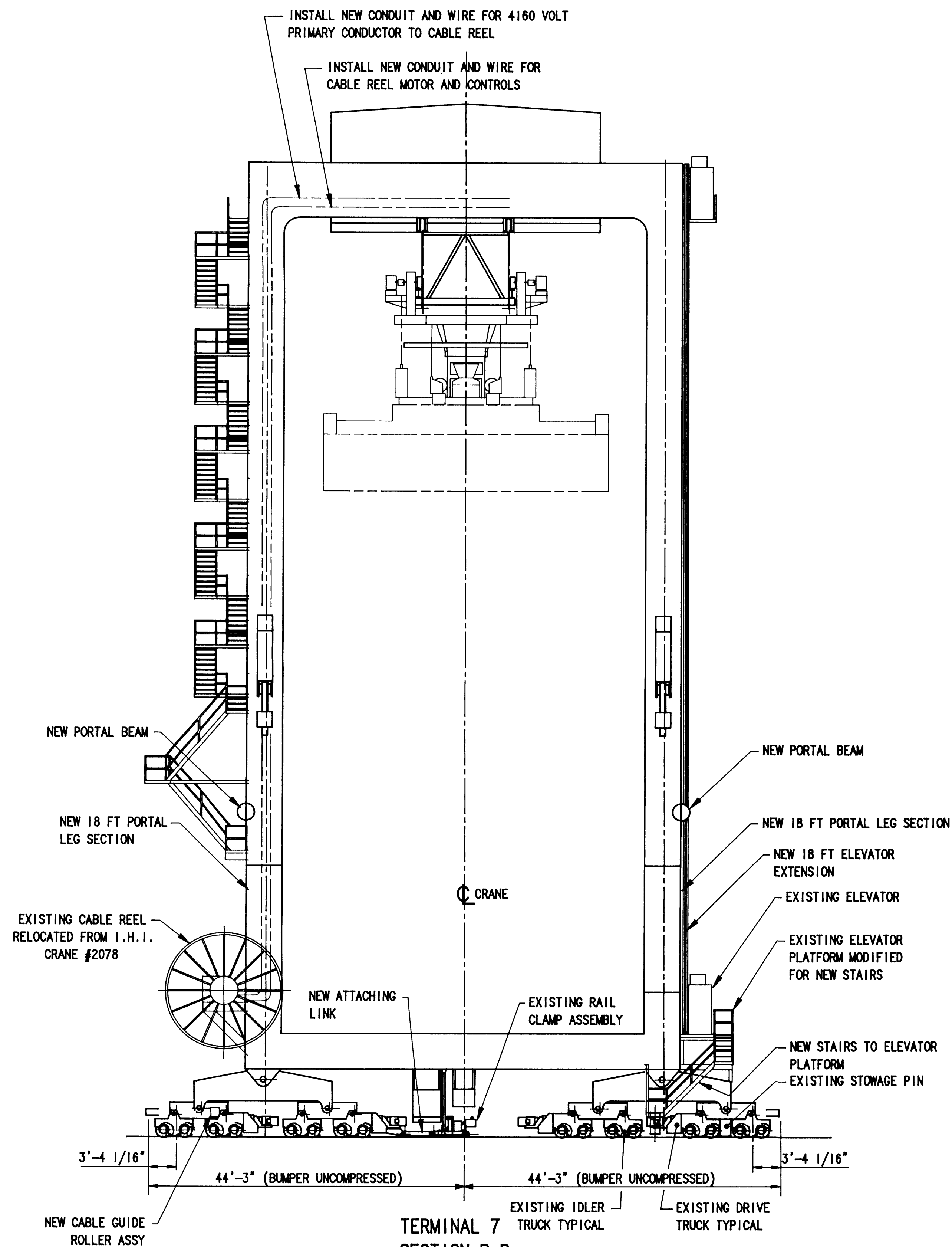
APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

HARVEY 3/19/90
DRAWN BY DATE
J.L.A. 3/19/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

AS BUILT	K.H.	2-13
BY	APP.	DATE

RELOCATION I.H.I. CRANES #2078 & #2401
MACHINERY HOUSE ARRANGEMENT
MODIFIED FOR MAIN HOIST SPEED INCREASE
(120 FPM TO 170 FPM)

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 22 OF 54



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CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1679 2/5



APPROVED
Richard C. Hedner
REGISTERED PROFESSIONAL ENGINEER
CHIEF ENGINEER

R BAKER 1/16/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

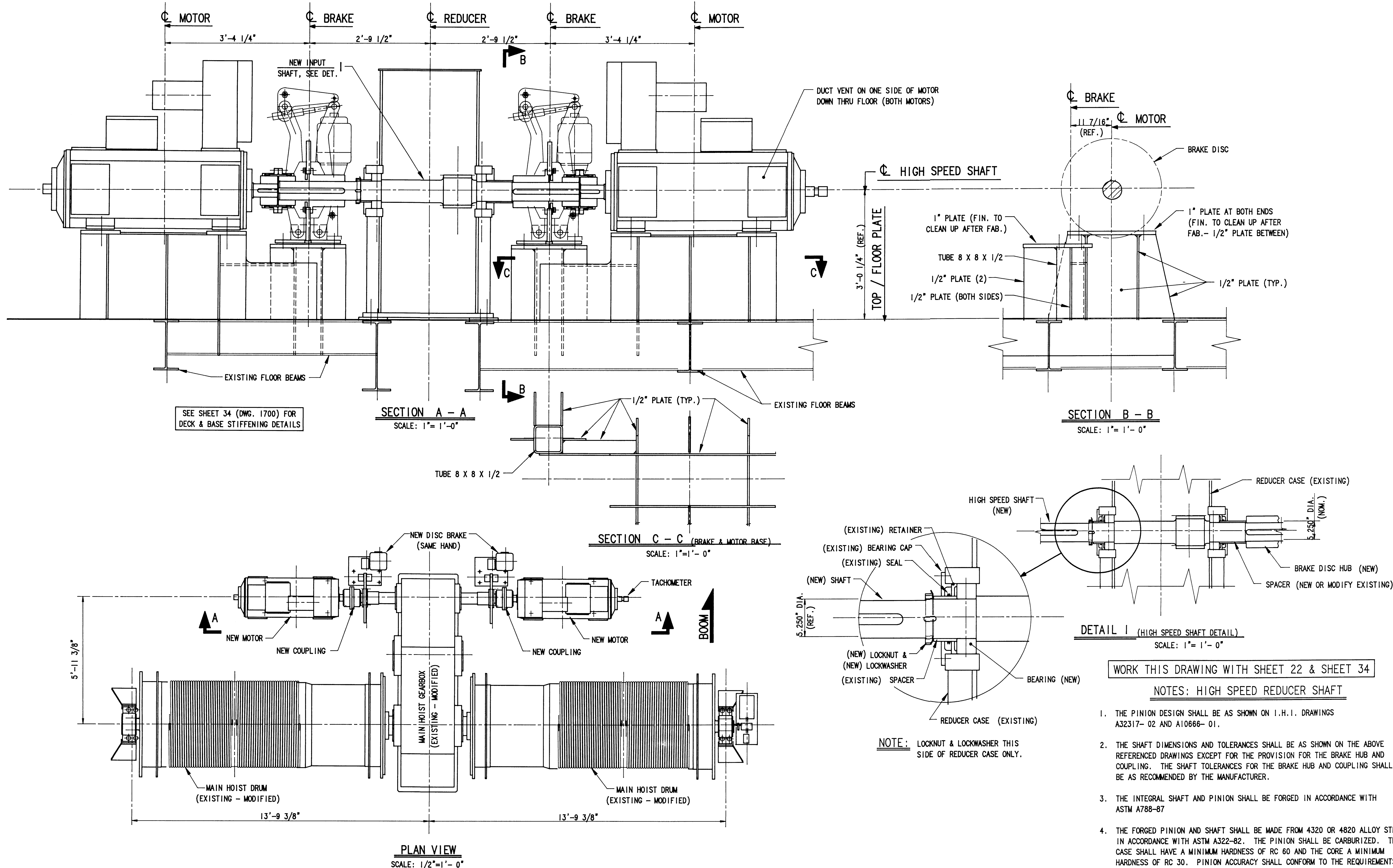
J.L.A. 1/16/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

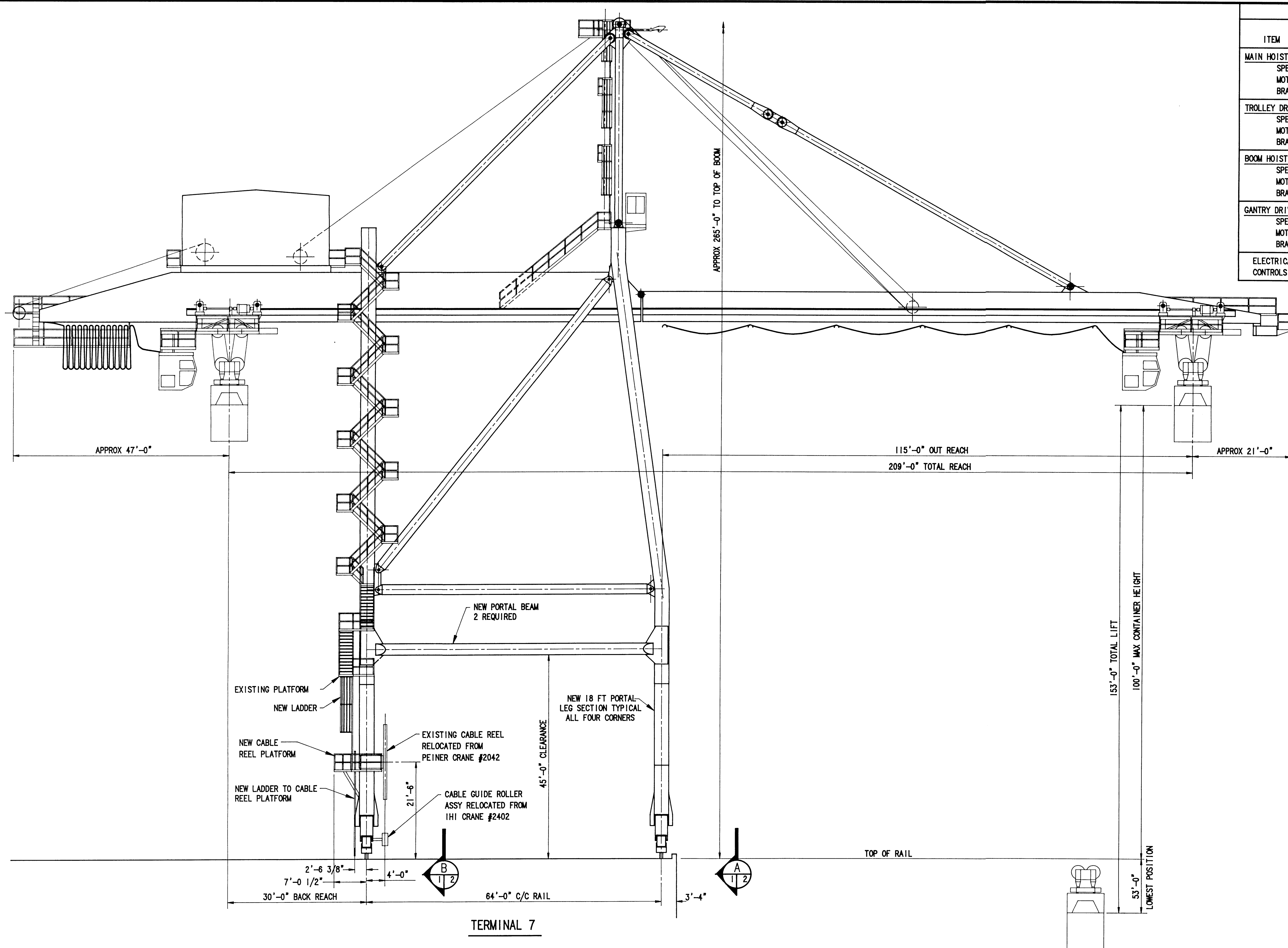
MARK	REVISION	BY	APP.	DATE
C	AS BUILT	K.H.		2-13-91
B	ADDED BUMPER DIMENSIONS	K.H.		5-7-90
A	REV CABLE REEL AND ELEV. STAIRS	K.H.		4-18-90

BY	APP.	DATE
K.H.		2-13-91
K.H.		5-7-90
K.H.		4-18-90

RAISING & RELOCATING I.H.I CRANE #2401
GENERAL ARRANGEMENT

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 2.2A OF 54



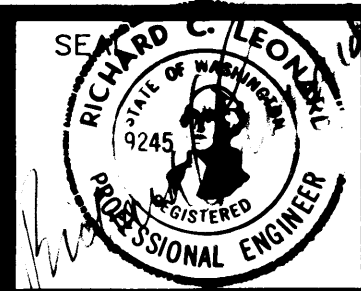


DATA TABLE		
ITEM	IHI ORIGINAL DESIGN	MODIFICATION IN 1990
MAIN HOIST		
SPEED	120/300 F.P.M.	170/365 F.P.M.
MOTORS	(1) 400 HP	(2) 300 HP
BRAKES	(2) SHOE TYPE	(2) DISC (CALIPER TYPE)
TROLLEY DRIVE		
SPEED	410 F.P.M.	500 F.P.M.
MOTORS	(2) 40 HP	NO CHANGE
BRAKES	SHOE TYPE	NO CHANGE
BOOM HOIST		
SPEED	5 MIN	NO CHANGE
MOTORS	(1) 75 HP	NO CHANGE
BRAKES	SHOE TYPE	NO CHANGE
GANTRY DRIVE		
SPEED	150 F.P.M.	NO CHANGE
MOTORS	(8) 20 HP	NO CHANGE
BRAKES	DISC TYPE	NO CHANGE
ELECTRICAL CONTROLS	P & H	ASEA FOR HOIST & GANTRY



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SEATTLE WA 98188
JOB: 2486 DWG: 1679 3/5



APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

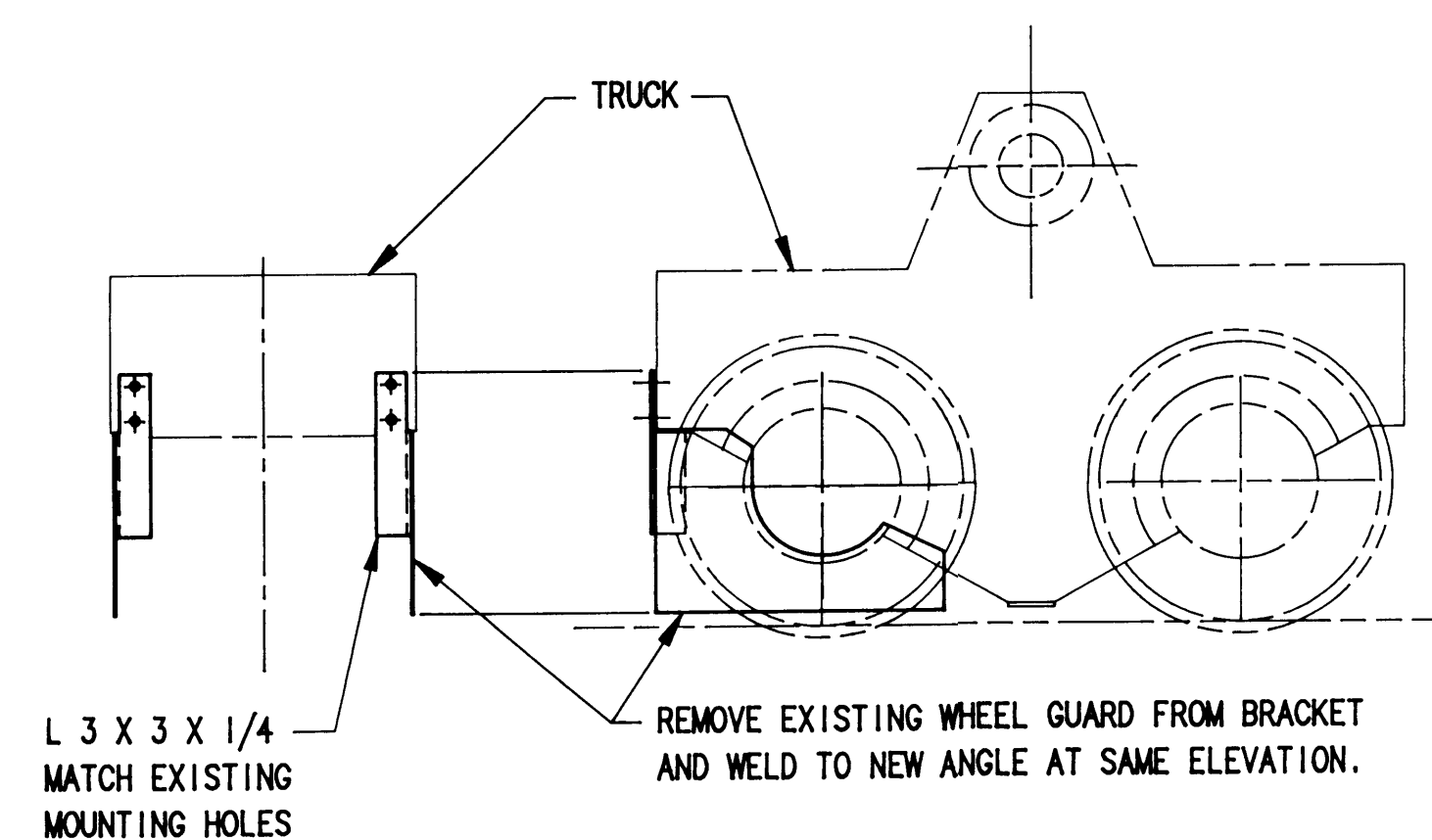
R BAKER 1/15/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE
J.L.A. 1/15/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT (NEW DRAWING)	RJB		7/2/91

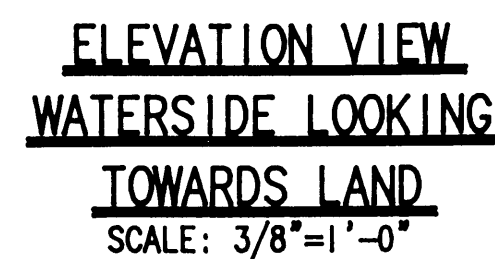
MODIFICATIONS TO I.H.I. CRANE No. 2078
GENERAL ARRANGEMENT

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 2.3A OF 54

1. DO NOT SCALE THIS DRAWING.
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9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45' AS REQUIRED TO CLEAR CORNER WELDS.
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12. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
13. PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.
14. LINE BORES SHALL BE PARALLEL WITHIN .005 (FIVE THOUSANDTHS) INCHES.



MODIFICATION OF WHEEL GUARDS
ON END OF TRUCKS FACING STOWAGE PIN
SCALE: $\frac{3}{4}" = 1'-0"$



INSTALL NEW CONDUIT AND WIRE FOR 4160 VOLT
PRIMARY CONDUCTOR TO CABLE REEL

INSTALL NEW CONDUIT AND WIRE FOR
CABLE REEL MOTOR AND CONTROLS

NEW PORTAL BEAM

NEW 18 FT PORTAL
LEG SECTION

EXISTING CABLE REEL
RELOCATED FROM PEINER
CRANE #2042

NEW ATTACHING
LINK

EXISTING RAIL
CLAMP ASSEMBLY

CABLE GUIDE ROLLER
ASSY RELOCATED FROM
IHI CRANE #2402

TERMINAL 7
SECTION B-B

EXISTING IDLER
TRUCK TYPICAL

EXISTING DRIVE
TRUCK TYPICAL

NEW PORTAL BEAM

NEW 18 FT PORTAL LEG SECTION

NEW 18 FT ELEVATOR
EXTENSION

EXISTING ELEVATOR

EXISTING ELEVATOR
PLATFORM MODIFIED
FOR NEW STAIRS

NEW STAIRS TO ELEVATOR
PLATFORM
EXISTING STOWAGE PIN

BECAUSE OF A CONTRACTOR FABRICATION ERROR,
THE BOTTOM ROW OF BOLTS ON THE NEW LEG
EXTENSION ARE INEFFECTIVE. ENGINEERING
CALCULATIONS HAVE DETERMINED THAT THESE
BOLTS MAY BE DELETED FROM ANY STRESS
CONSIDERATIONS. TYPICAL 4 SIDES OF LEG
AT ALL FOUR CORNERS.

NEW PORTAL BEAM

NEW 18 FT PORTAL
LEG SECTION

50'-0" CLEARANCE

CRANE

NEW ATTACHING
LINK

EXISTING RAIL
CLAMP ASSEMBLY

NEW PORTAL BEAM

NEW 18 FT PORTAL LEG SECTION

MODIFIED MAIN EQUALIZER
TYPICAL FOUR CORNERS

MODIFIED SECONDARY EQUALIZER
TYP 2 PLACES AT FOUR CORNERS

NEW BUMPER INSTALLATIONS
TYPICAL FOUR CORNERS

TERMINAL 7
SECTION A-A

3'-4 1/16"
3'-9 1/4"
TYPICAL

9'-3"
9'-3"
17 3/4" TYP

17 3/4" TYP

9'-3"
9'-3"
88'-6" OUT/OUT BUMPERS UNCOMPRESSED

3'-9 1/4"
3'-4 1/16"
TYPICAL

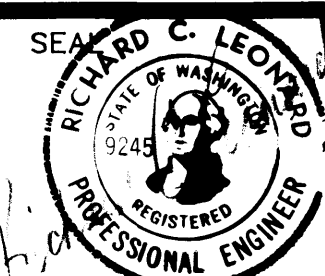
3'-9 1/4"
3'-4 1/16"
TYPICAL

3'-9 1/4"
3'-4 1/16"
TYPICAL



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932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1679 4/5



APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

R BAKER 1/16/90
DRAWN BY DATE
C.R. 10/2/91
AS-BUILT BY DATE

J.L.A. 1/16/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

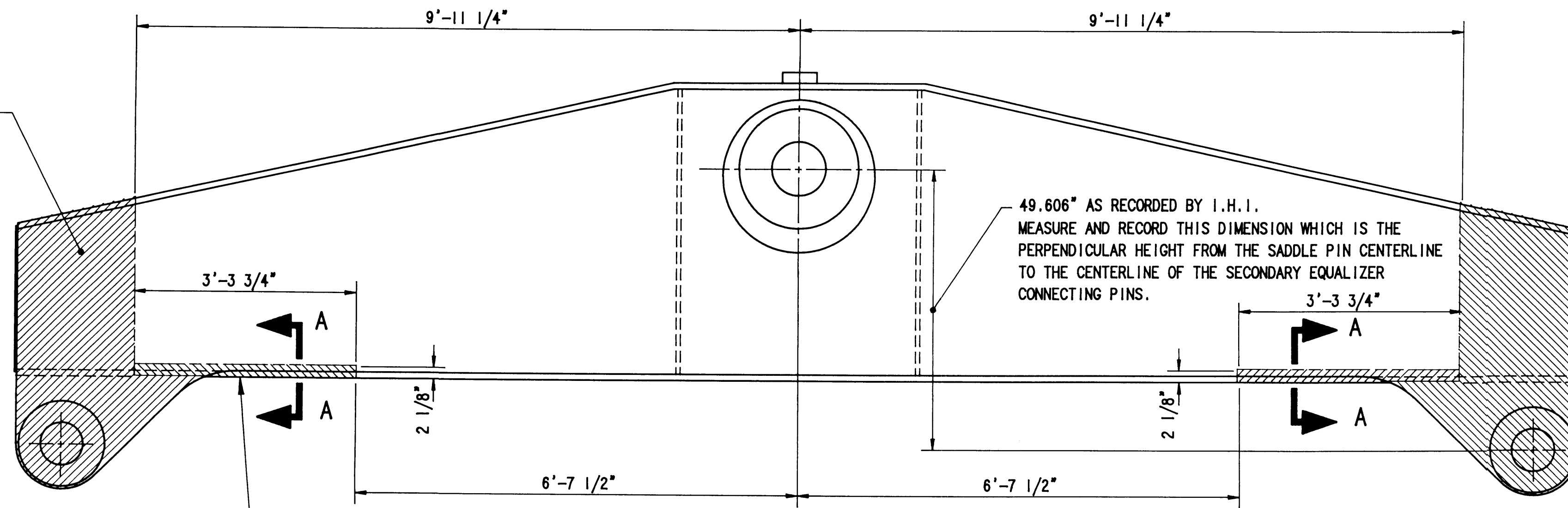
MARK	REVISION	BY	APP.	DATE
A	AS BUILT (NEW DRAWING)	RJB		7/2/91

MODIFICATIONS TO I.H.I. CRANE No. 2078

GENERAL ARRANGEMENT

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 2.4a OF 54

CUT OFF AND DISCARD
END SECTION AS DENOTED
BY SHADED AREA.

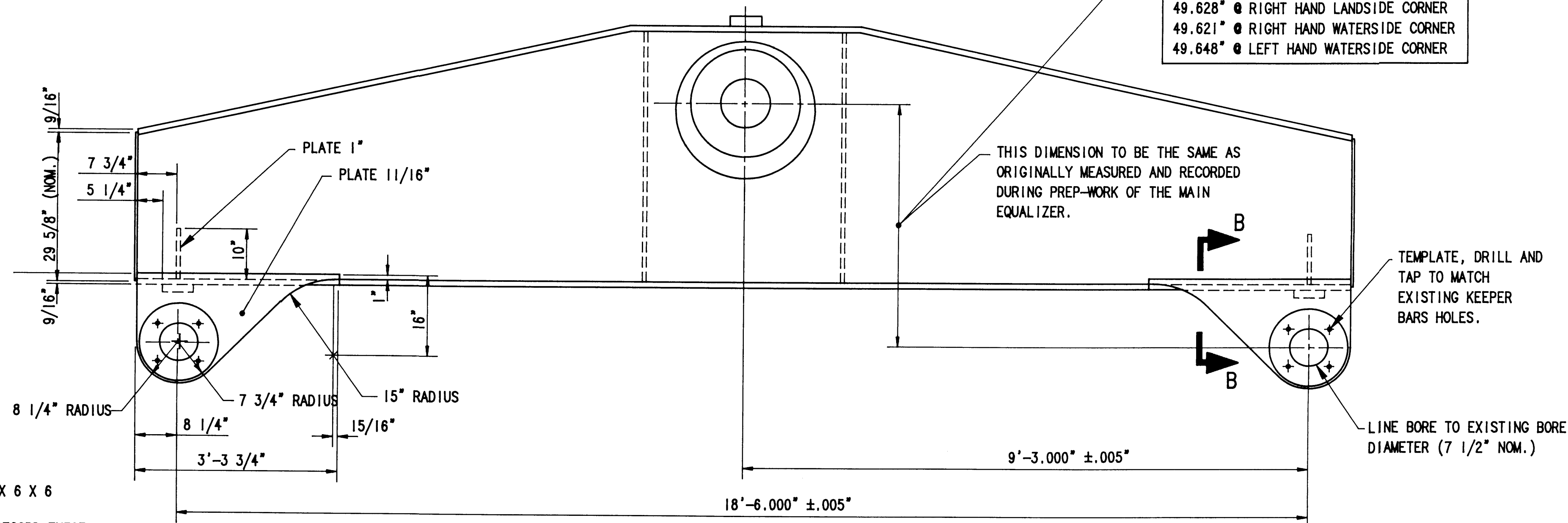
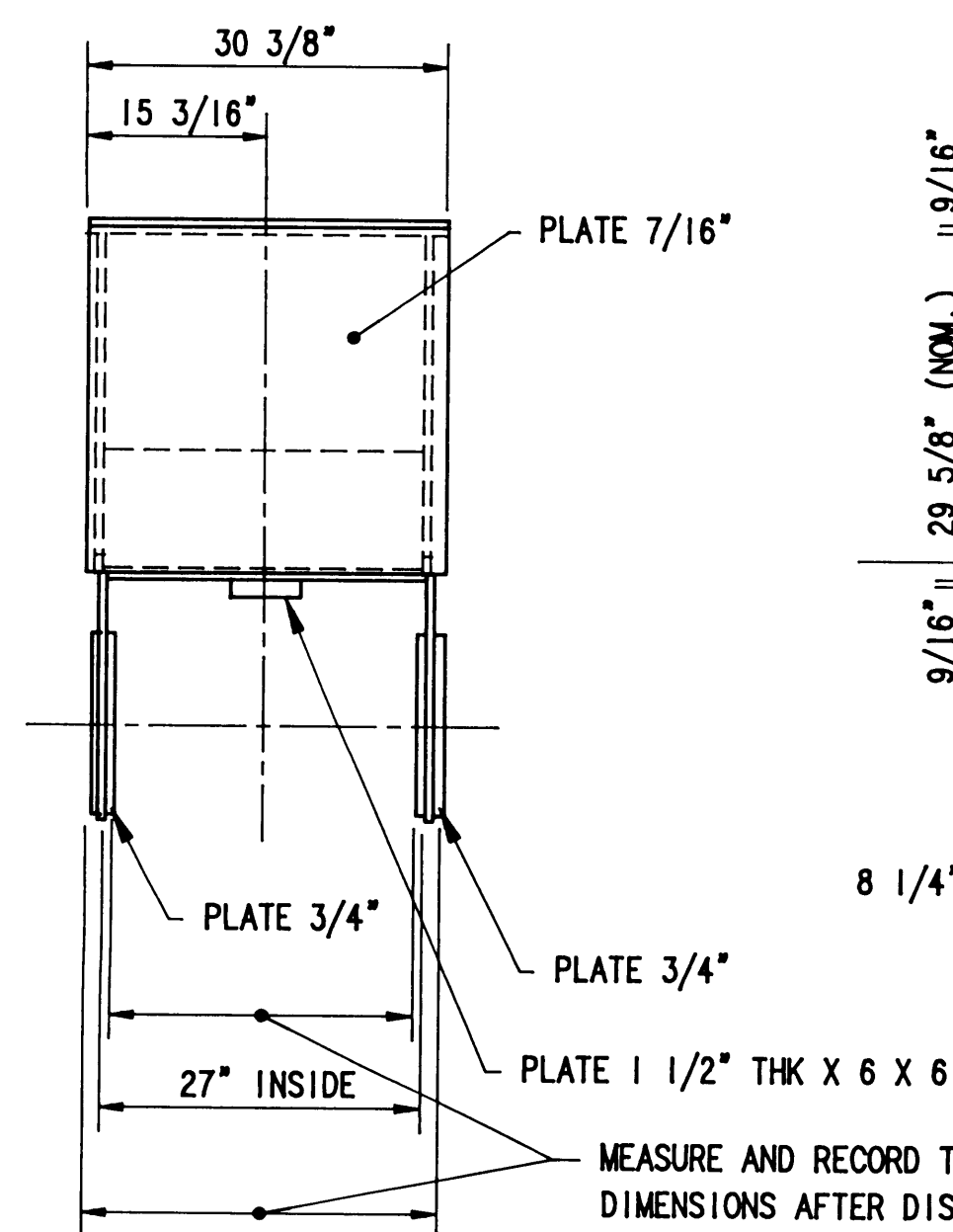


MAIN EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE
CENTERLINE OF THE MAIN EQUALIZER.
TYPICAL FOR FOUR (4) MAIN EQUALIZERS.
SCALE: 3/4"=1'-0"

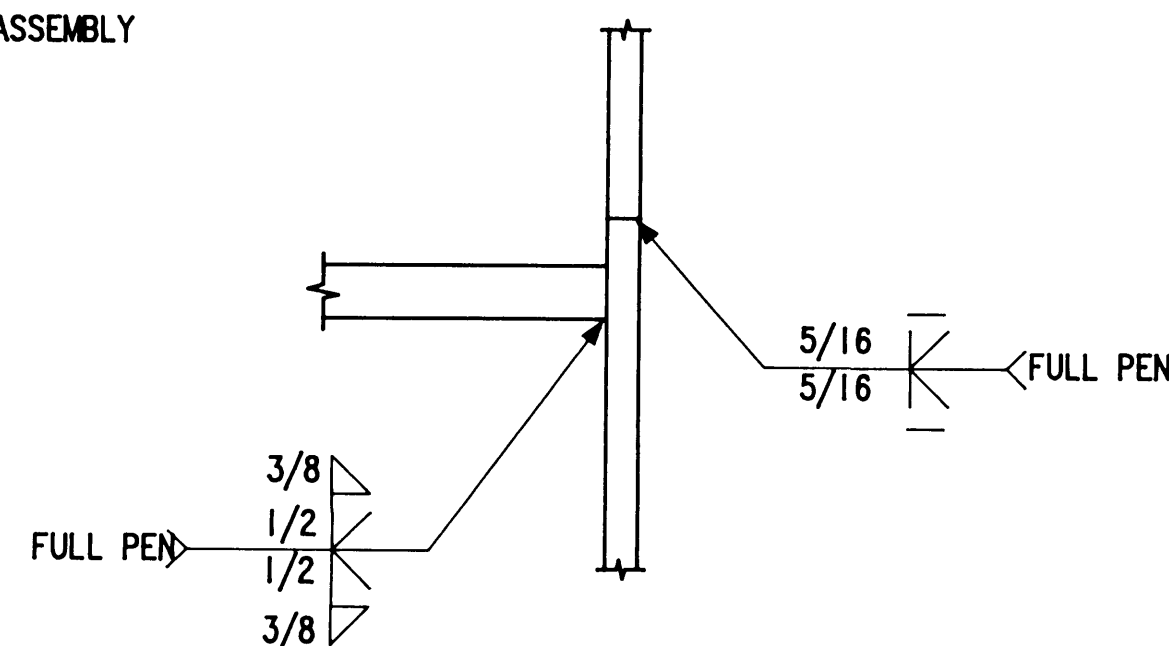
RECORDED DIMENSION

LOOKING TOWARDS THE WATER
49.657" @ LEFT HAND LANDSIDE CORNER
49.628" @ RIGHT HAND LANDSIDE CORNER
49.621" @ RIGHT HAND WATERSIDE CORNER
49.648" @ LEFT HAND WATERSIDE CORNER



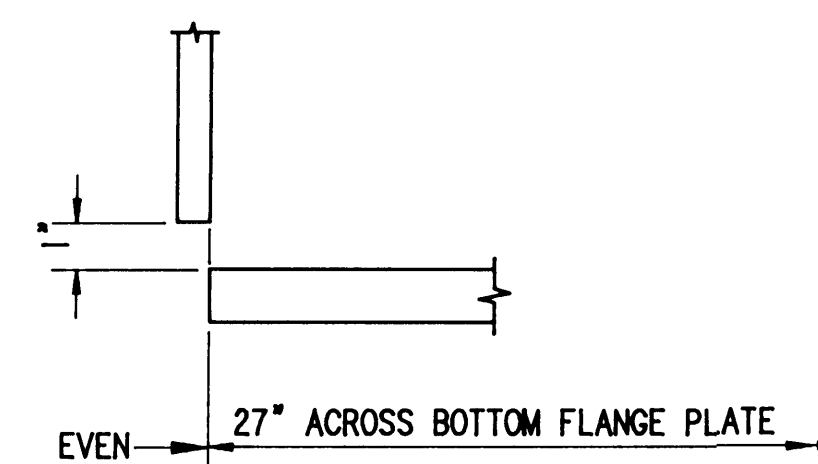
MAIN EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE
CENTERLINE OF THE MAIN EQUALIZER.
TYPICAL FOR FOUR (4) MAIN EQUALIZERS.
SCALE: 3/4"=1'-0"



SECTION B-B

SCALE: 3"=1'-0"



SECTION A-A

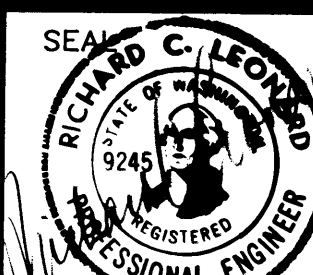
SCALE: 3"=1'-0"

FOR GENERAL NOTES SEE SHEET 24



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932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1769 2/4



APPROVED
Richard C. Leonard
CHIEF ENGINEER
DATE

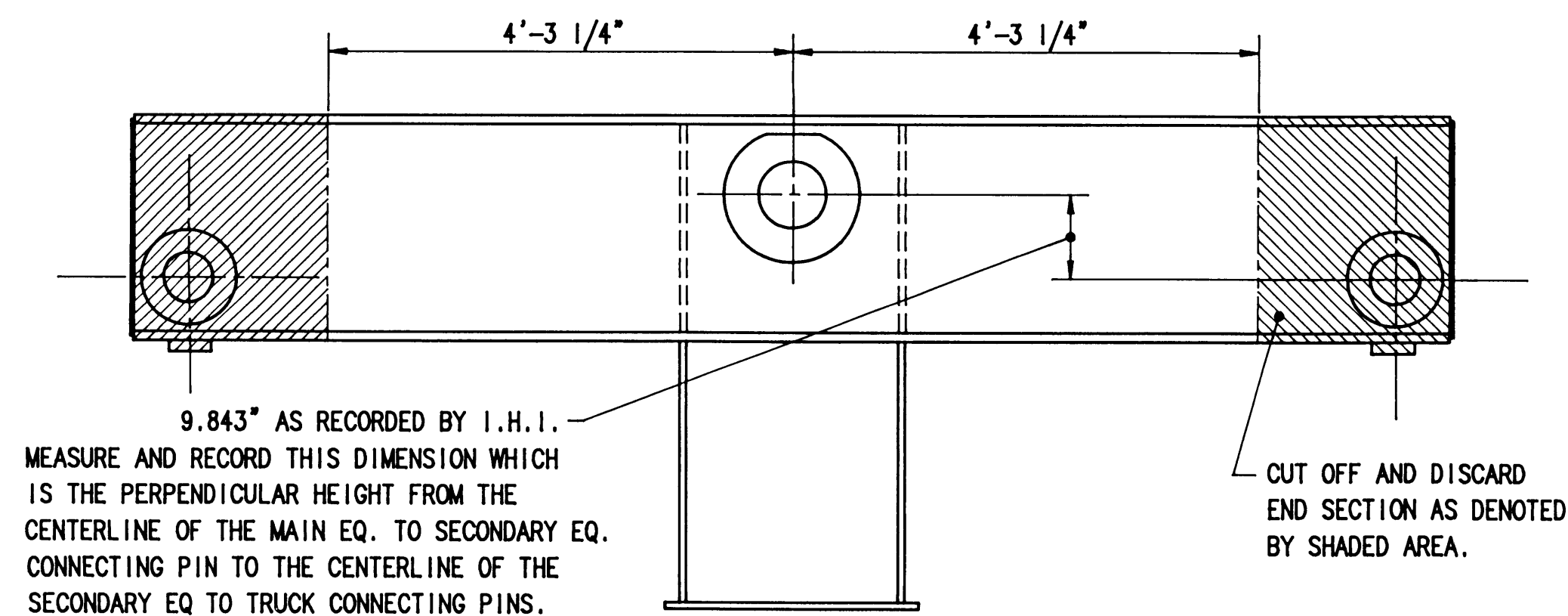
R.WENS 9/4/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE
J.L.A. 7/2/90
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		7/15/90

RAISING & RELOCATING I.H.I. CRANE #2078

MAIN EQUALIZER MODIFICATIONS

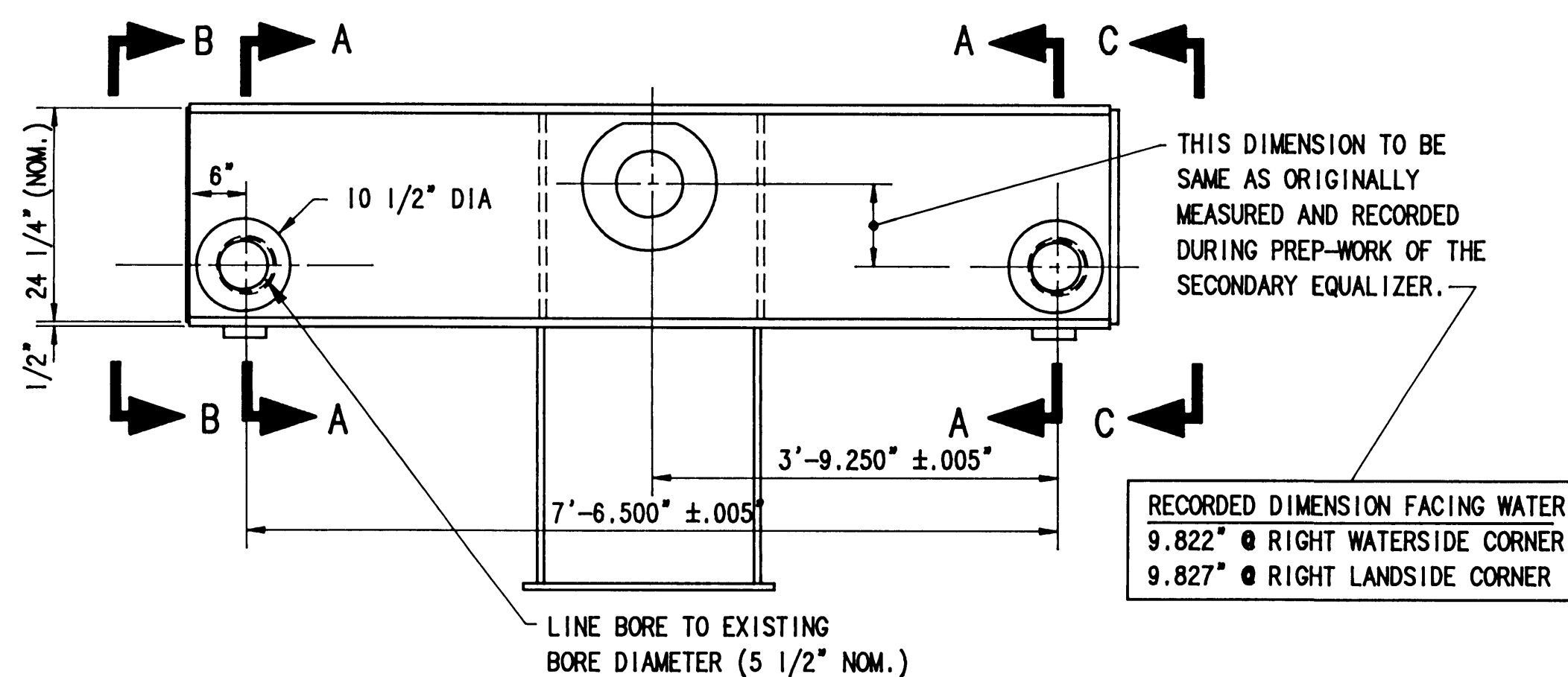
DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 25 OF 54



STOWAGE PIN SECONDARY EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER. TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.

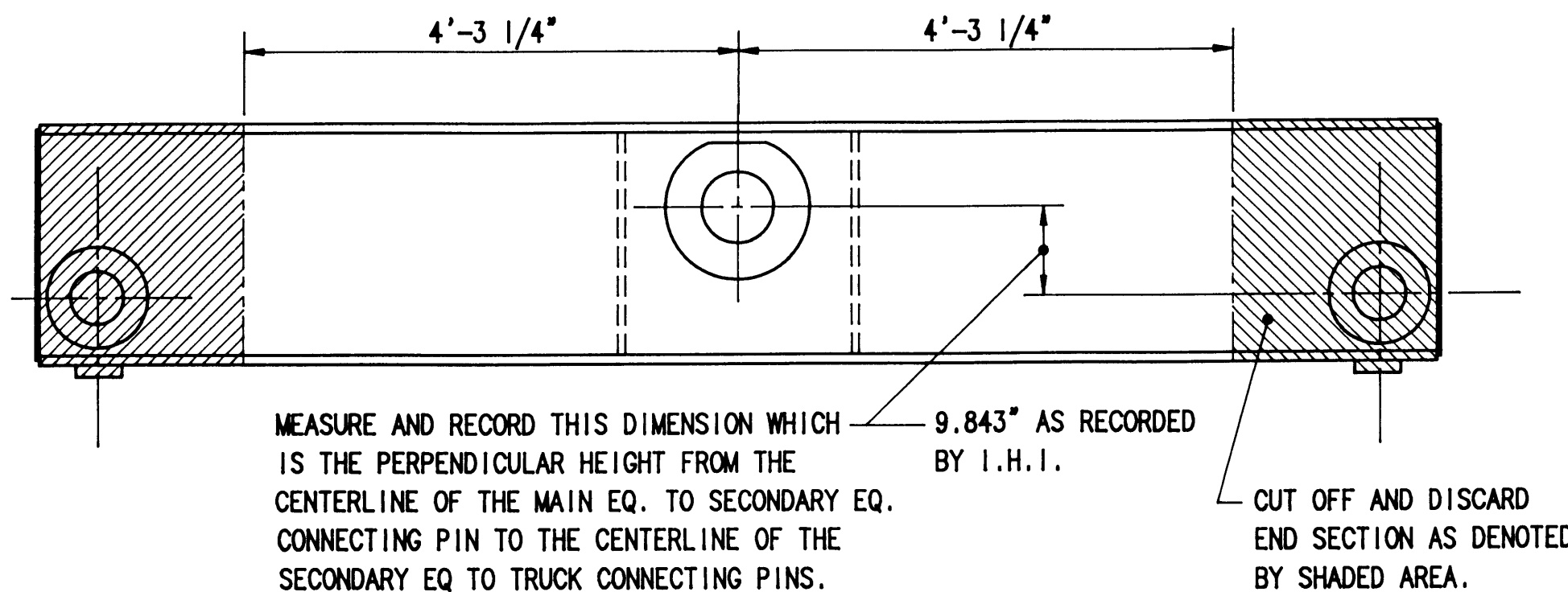
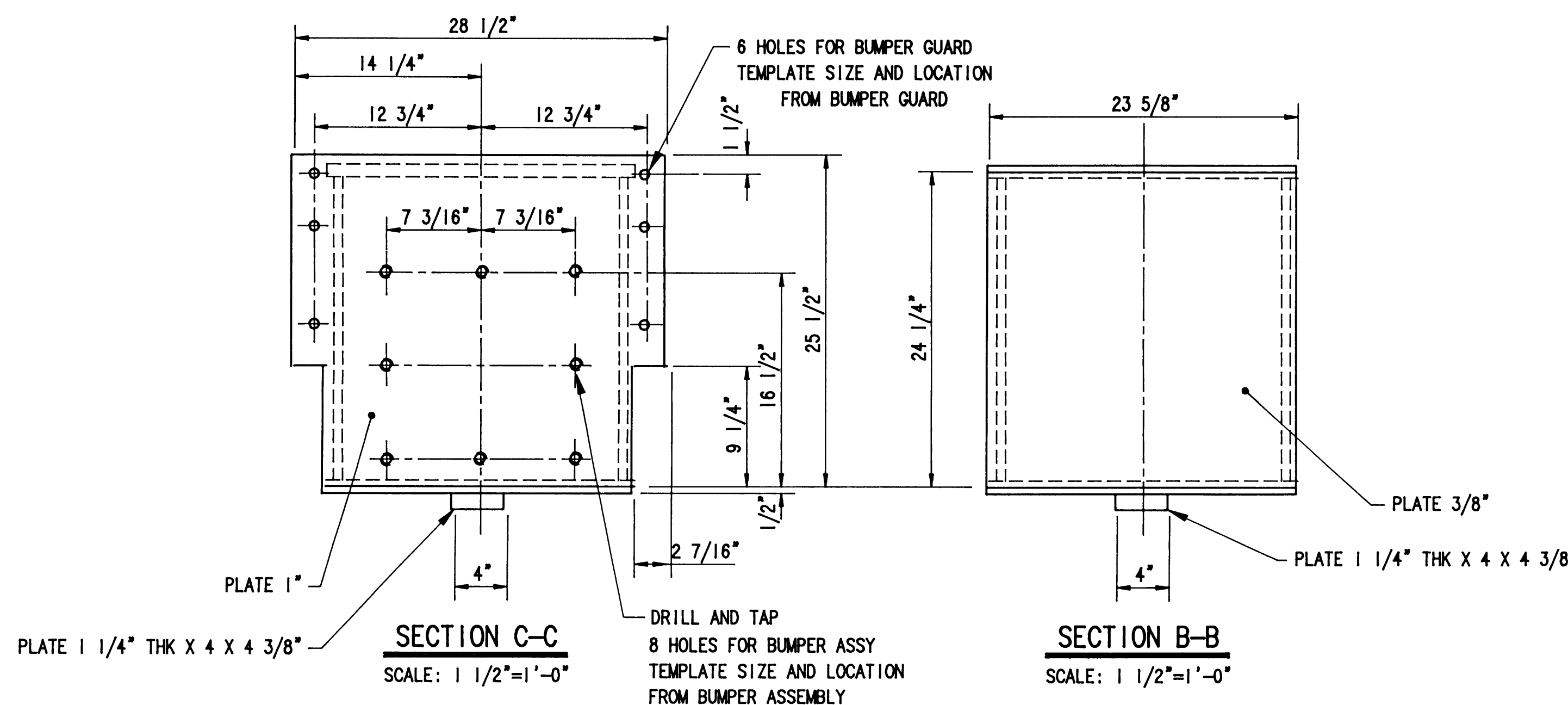
SCALE: 3/4"=1'-0"



STOWAGE PIN SECONDARY EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER. TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.

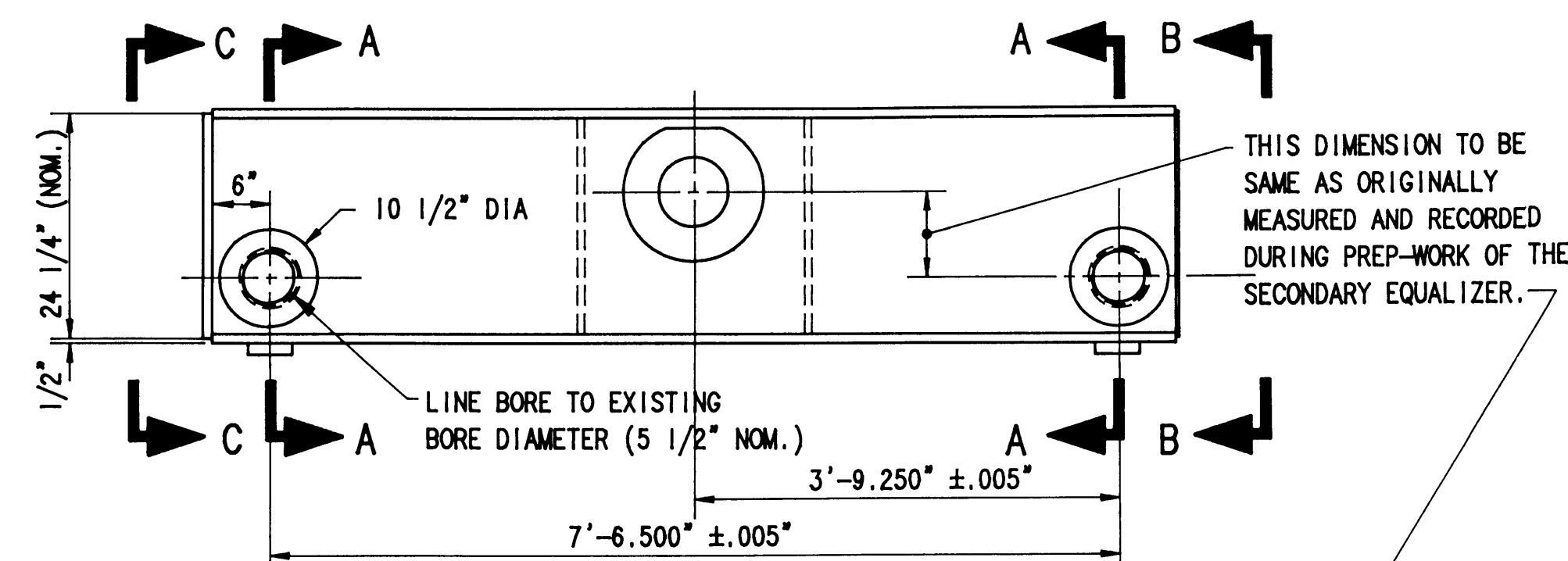
SCALE: 3/4"=1'-0"



OUTBOARD SECONDARY EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER. TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.

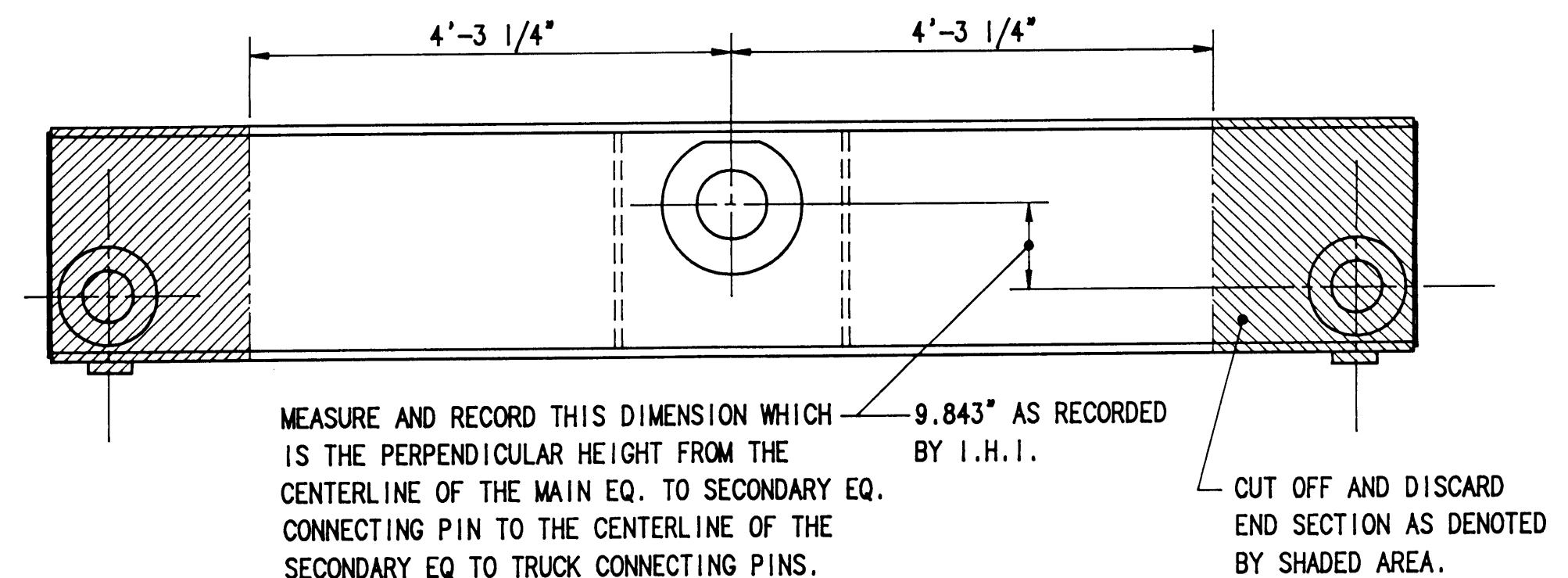
SCALE: 3/4"=1'-0"



OUTBOARD SECONDARY EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER. TYPICAL FOR TWO (2) SECONDARY EQUALIZERS.

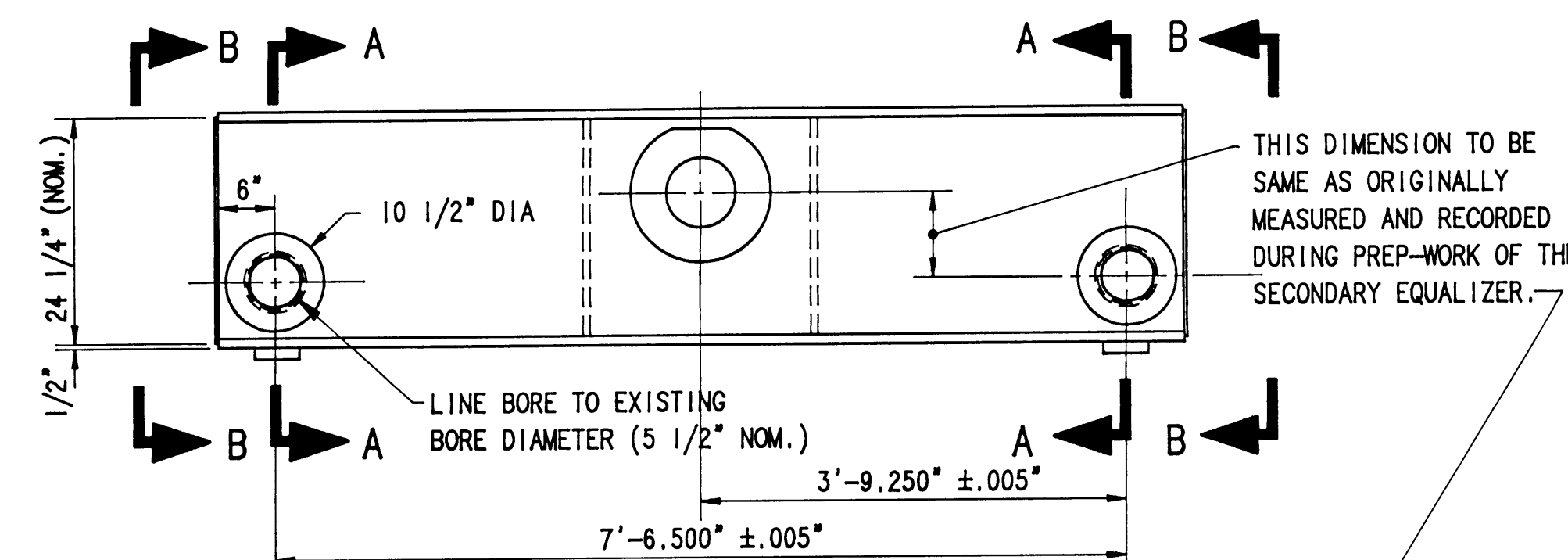
SCALE: 3/4"=1'-0"



INBOARD SECONDARY EQUALIZER PREP-WORK

PREP-WORK IS SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER. TYPICAL FOR FOUR (4) SECONDARY EQUALIZERS.

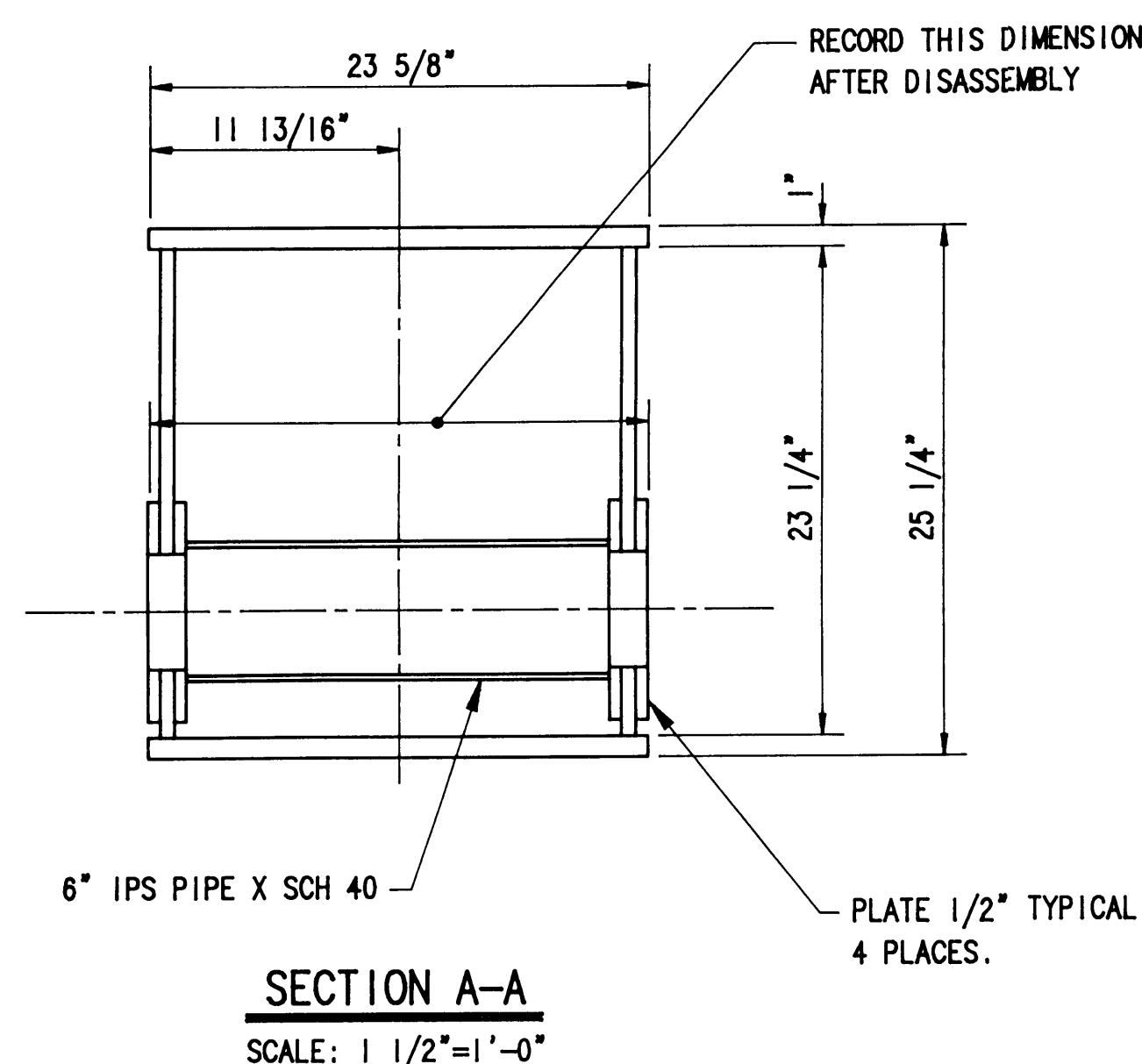
SCALE: 3/4"=1'-0"



INBOARD SECONDARY EQUALIZER MODIFICATIONS

MODIFICATIONS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE SECONDARY EQUALIZER. TYPICAL FOR FOUR (4) SECONDARY EQUALIZERS.

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

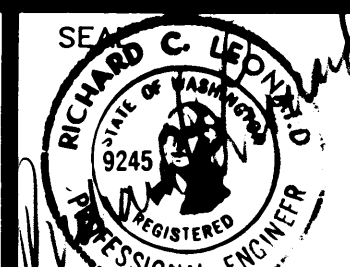


FOR GENERAL NOTES SEE SHEET 24



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1769 3/4



APPROVED
Richard C. Wens
CHIEF ENGINEER
DATE

R. WENS 9/4/90
DRAWN BY DATE
C. R. 10/21/91
AS-BUILT BY DATE

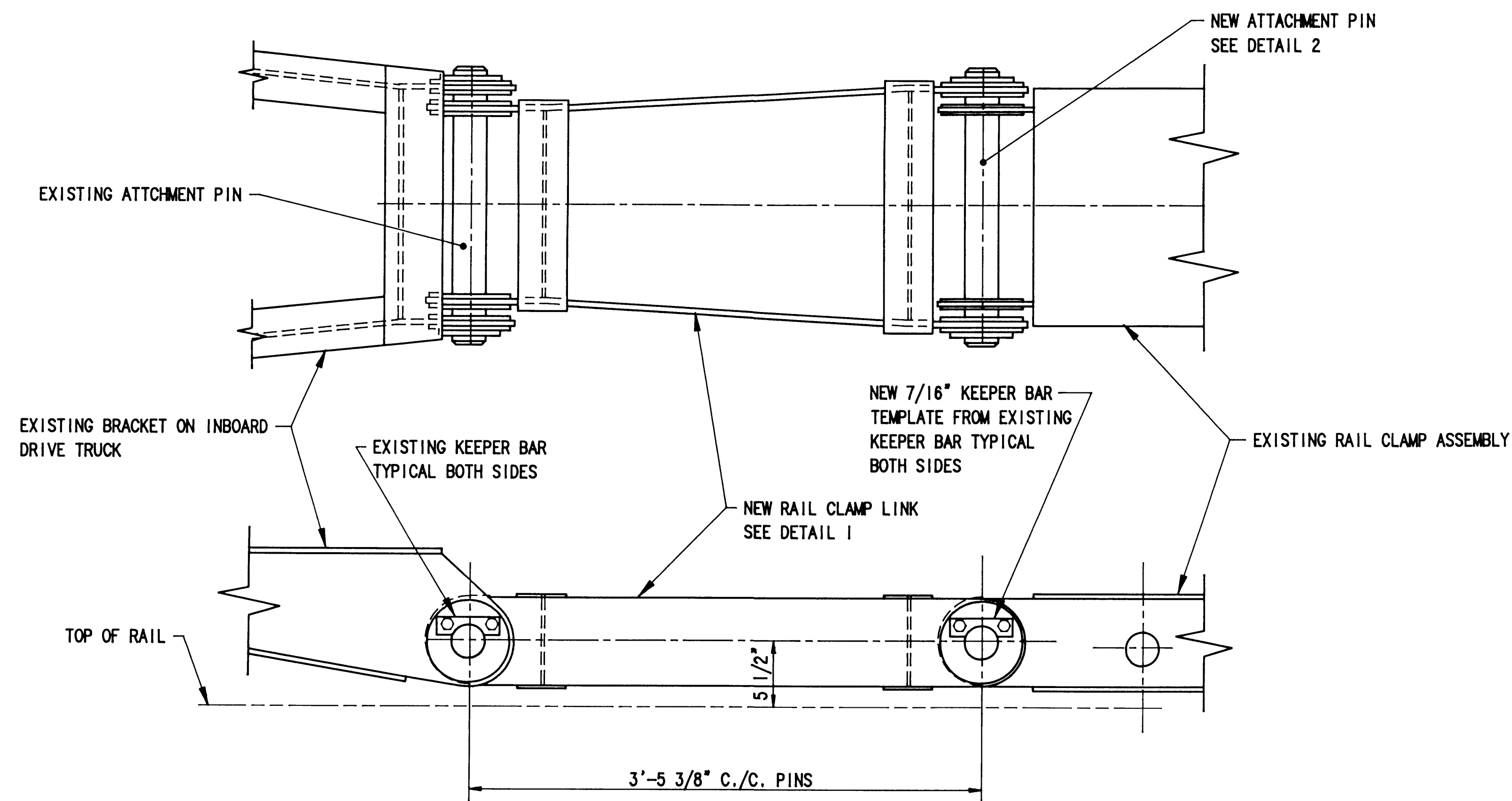
J. L. A. 9/4/90
CHECKED BY DATE
J. L. A.
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		7/15/91

RAISING & RELOCATING I.H.I. CRANE #2078

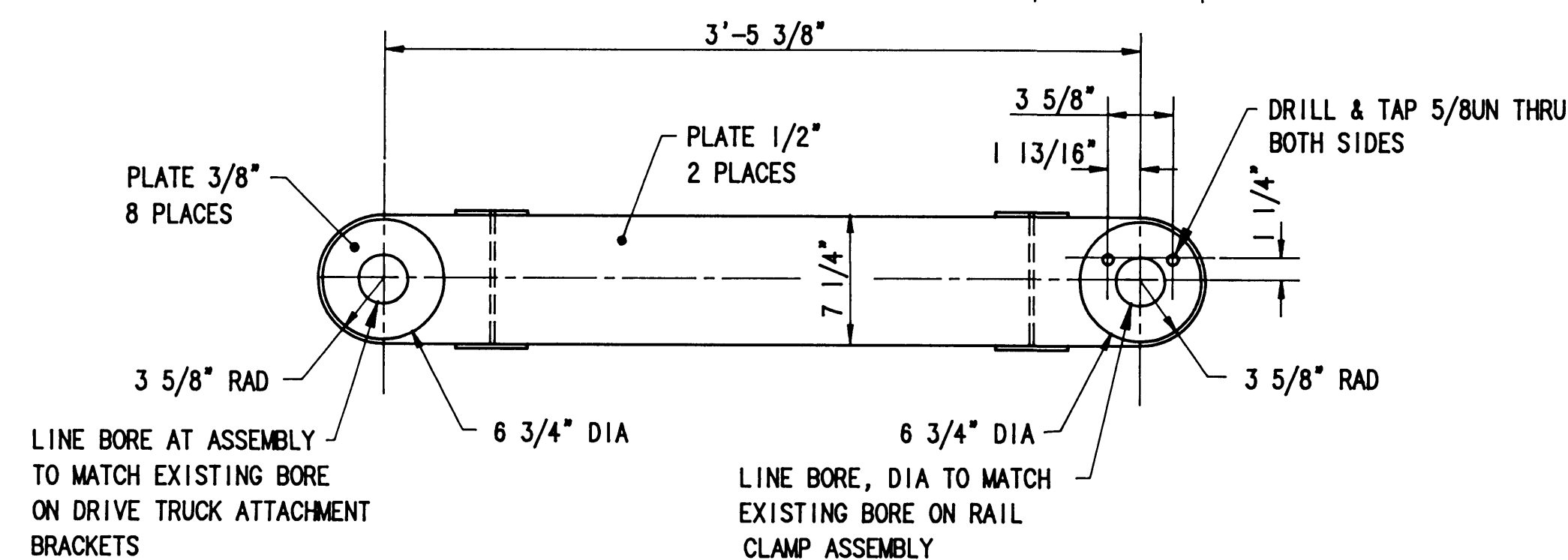
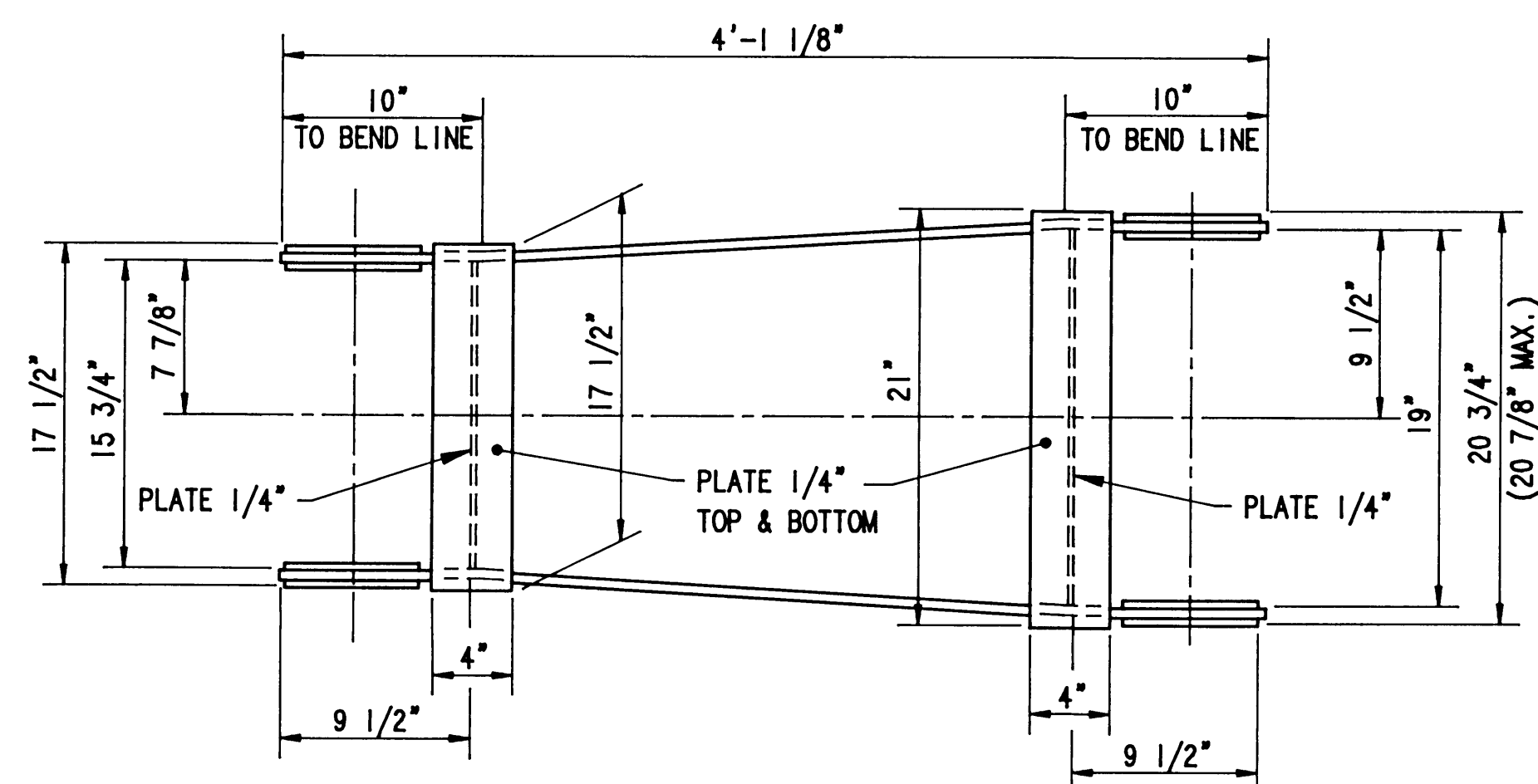
SECONDARY EQUALIZER MODIFICATIONS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 26 OF 54



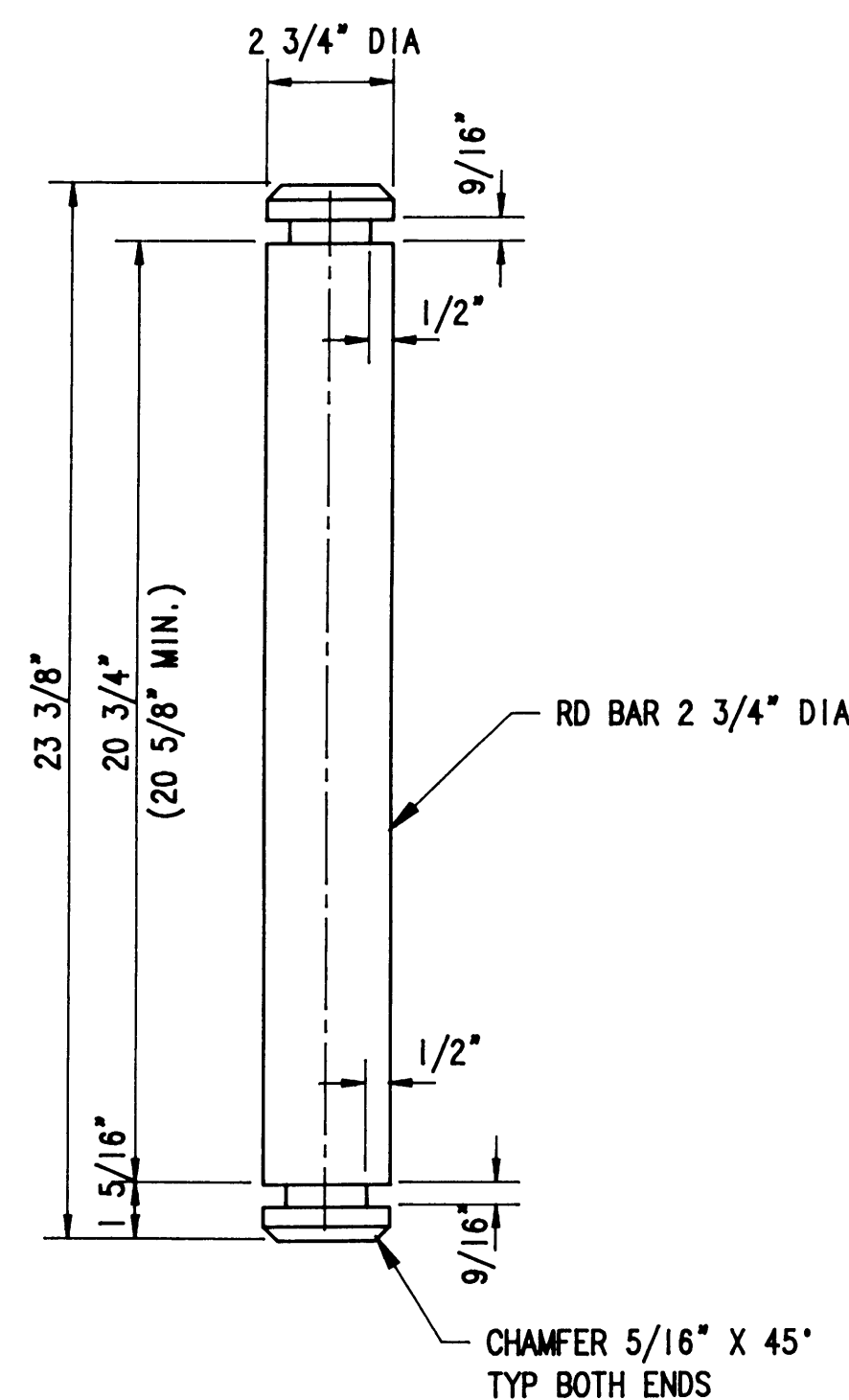
RAIL CLAMP ATTACHING LINK ASSEMBLY

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



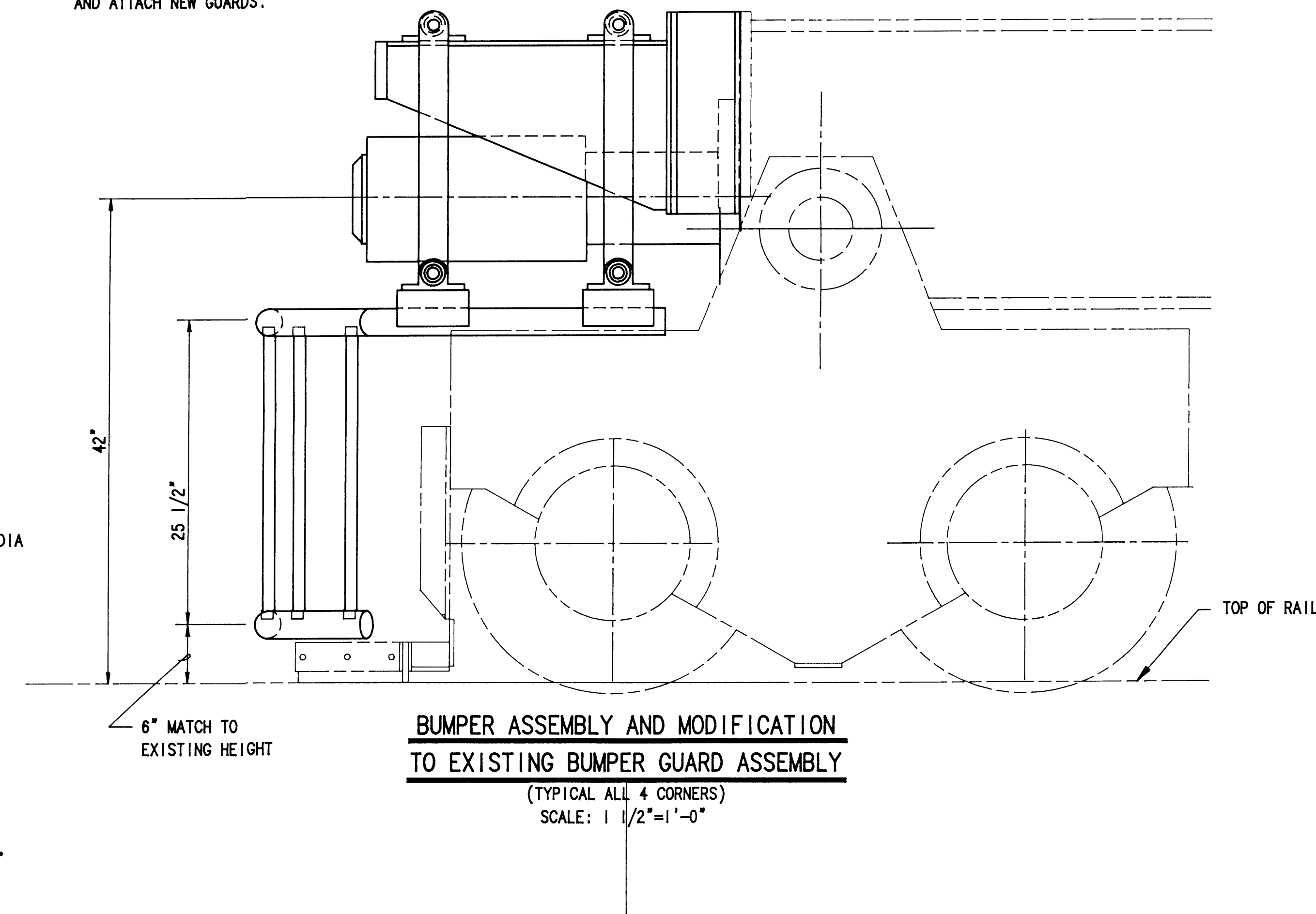
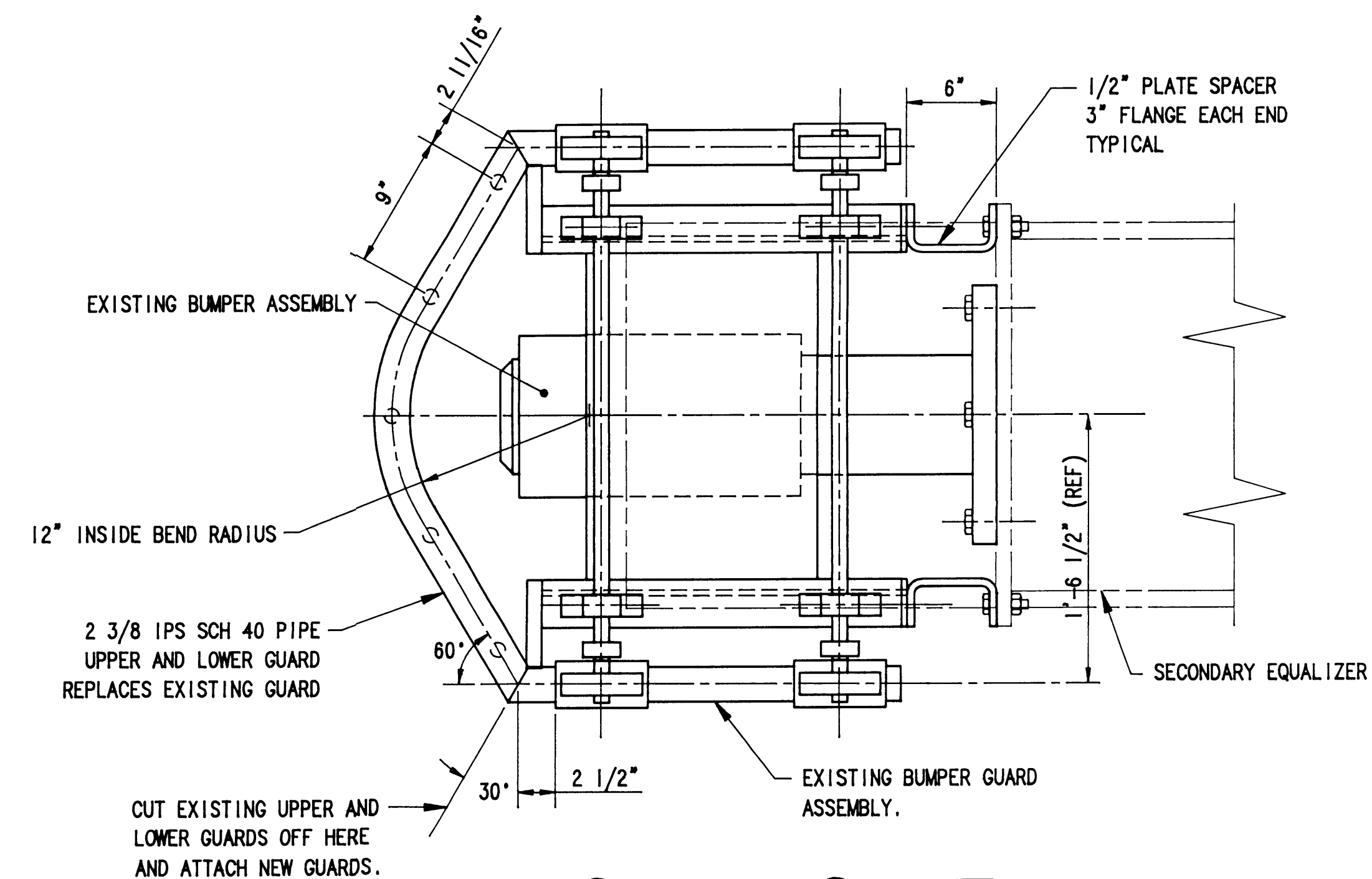
**DETAIL 1
RAIL CLAMP LINK**

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



**DETAIL 2
RAIL CLAMP LINK
ATTACHMENT PIN**

SCALE: 3"=1'-0"



**BUMPER ASSEMBLY AND MODIFICATION
TO EXISTING BUMPER GUARD ASSEMBLY**

(TYPICAL ALL 4 CORNERS)

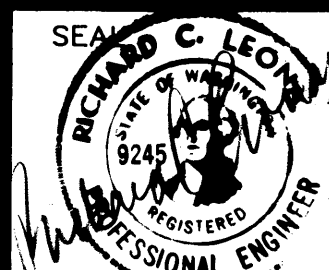
SCALE: 1 1/2"=1'-0"

FOR GENERAL NOTES SEE SHEET 24



PORT OF TACOMA
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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1769 4/4



APPROVED
Richard C. Leonard
CHIEF ENGINEER

DATE

R. WENS 9/4/90
DRAWN BY DATE
J. L. A. / CR 10/21/91
AS-BUILT BY DATE

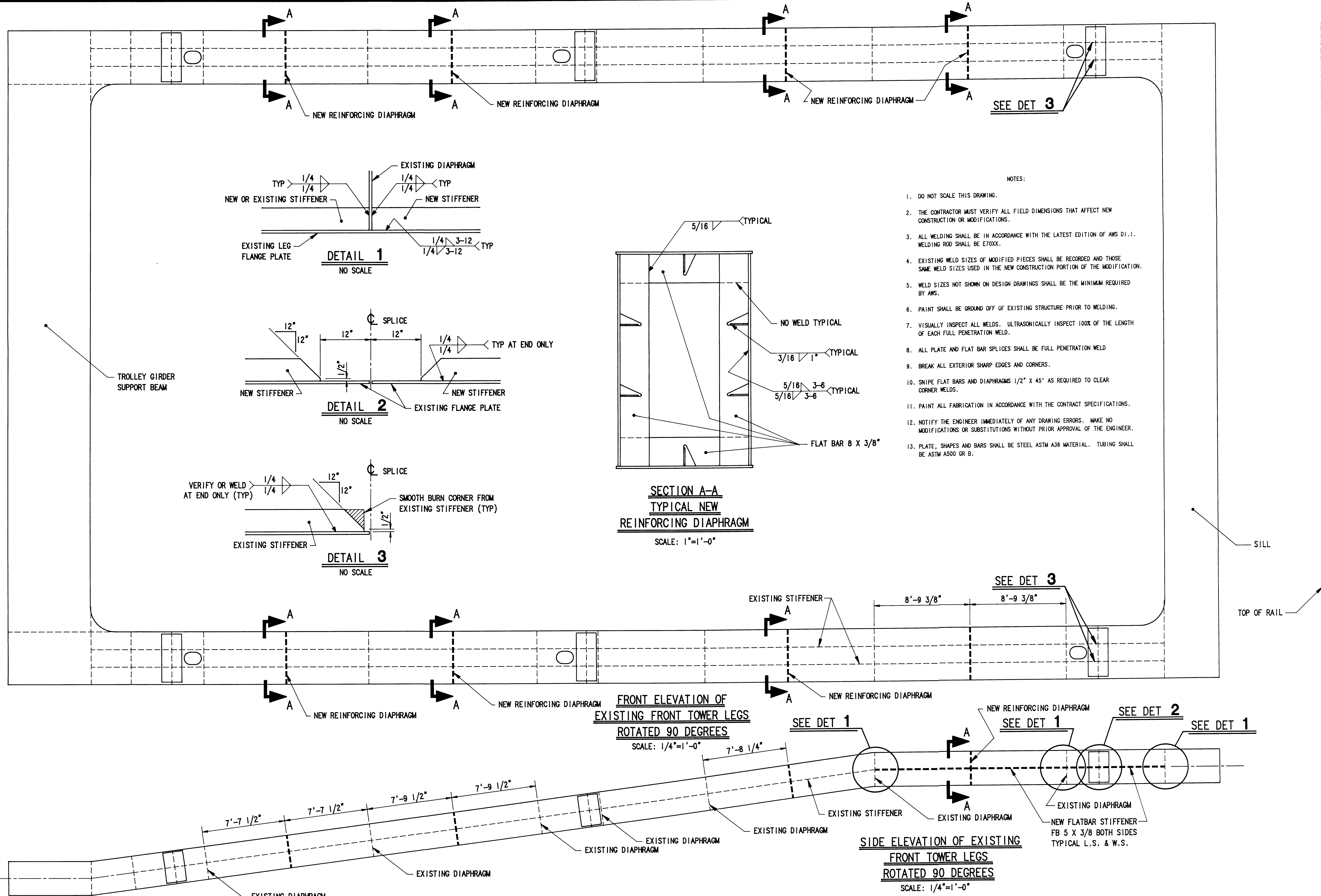
J. L. A. 9/6/90
CHECKED BY DATE
PROJ. ENGR. DATE

MARK REVISION

K.H. 7/2/91
BY APP. DATE

RAISING & RELOCATING I.H.I. CRANE #2078
BUMPER GUARD / RAIL CLAMP MODIFICATION

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 27 OF 54



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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1771 1/2



APPROVED
[Signature]
CHIEF ENGINEER
DATE

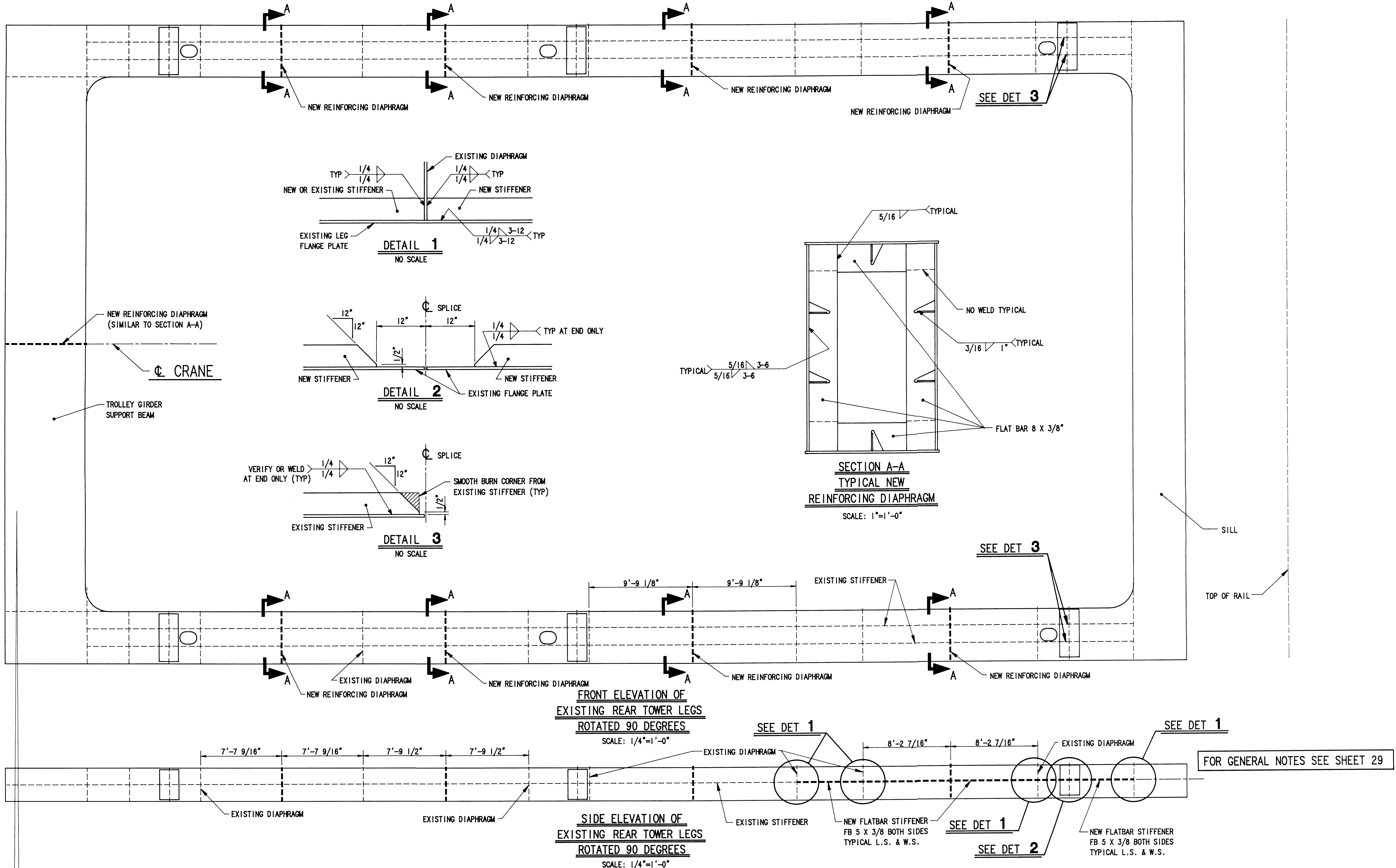
R.WENS 9/4/90
DRAWN BY DATE
J.L.M/CR 10/21/91
AS-BUILT BY DATE

J.K. 9/13/90
CHECKED BY DATE
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT (NO CHANGE)	K.H.		7/3/91

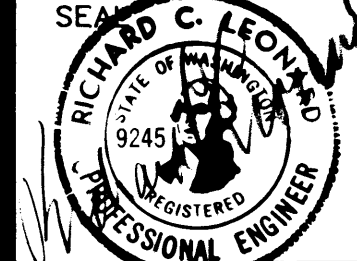
RAISING & RELOCATING I.H.I. CRANE #2078
REINFORCEMENT OF FRONT TOWER LEGS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 29 OF 54



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1771 2/2



APPROVED
[Signature]
CHIEF ENGINEER
DATE

R. WENS 9/4/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

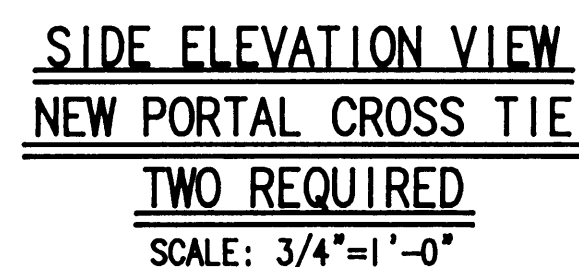
J.K. 9/4/93
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

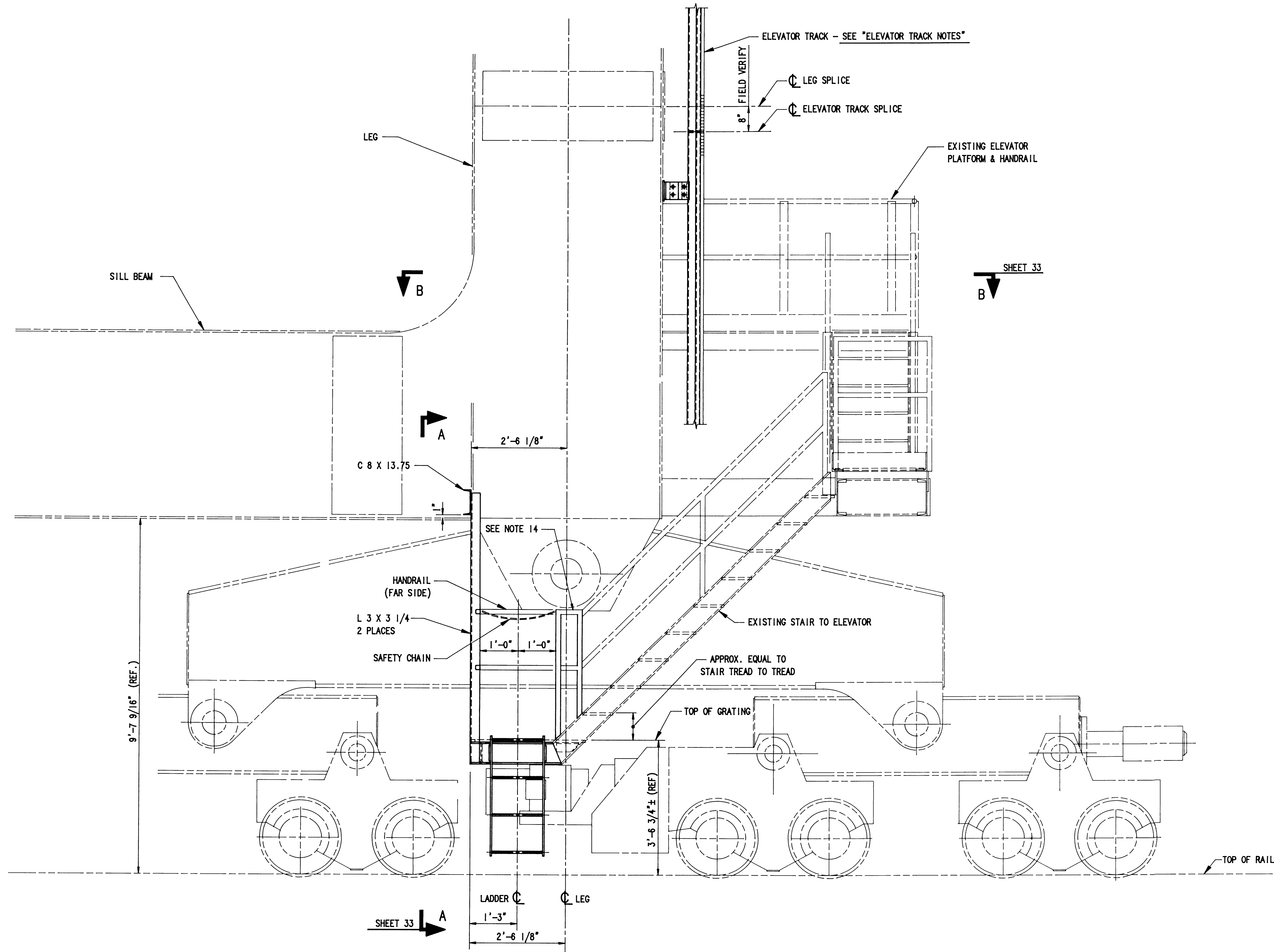
MARK	REVISION	BY	APP.	DATE
A	AS BUILT (NO CHANGE)	K.H.		7/3/91

RAISING & RELOCATING I.H.I. CRANE #2078
REINFORCEMENT OF REAR TOWER LEGS
AND TROLLEY GIRDER SUPPORT BEAM

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 30 OF 54

1. DO NOT SCALE THIS DRAWING.
2. THE CONTRACTOR MUST VERIFY ALL FIELD DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
3. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
4. EXISTING WELD SIZES OF MODIFIED PIECES SHALL BE RECORDED AND THOSE SAME WELD SIZES USED IN THE NEW CONSTRUCTION PORTION OF THE MODIFICATION.
5. WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
8. ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
11. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
12. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
13. PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.





- NOTES:
- DO NOT SCALE THIS DRAWING.
 - THE CONTRACTOR MUST VERIFY ALL FIELD DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
 - ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
 - EXISTING WELD SIZES OF MODIFIED PIECES SHALL BE RECORDED AND THOSE SAME WELD SIZES USED IN THE NEW CONSTRUCTION PORTION OF THE MODIFICATION.
 - WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
 - PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
 - VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
 - ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
 - BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
 - SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
 - PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
 - NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
 - PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.
 - MODIFY EXISTING HANDRAILS, STRINGERS & RISERS AS SHOWN. NEW HANDRAIL MATERIAL TO MATCH EXISTING.

ELEVATOR TRACK NOTES

- THE PRESENT ELEVATOR LIFT IS 100 FT. AND THE CRANE MODIFICATION ADDS 18 FT. TO THE LIFT.
- THE TRACK SHALL BE SPLIT AT THE TRACK SPLICE AS SHOWN.
- THE TRACK ABOVE THE SPLICE SHALL REMAIN ON THE RAISED PORTION OF THE LEG.
- THE TRACK SECTION BELOW THE SPLICE SHALL BE CUT OFF AND LOWERED APPROXIMATELY 20" AND (2) NEW 9'-10" TRACK SECTIONS INSTALLED ABOVE THIS SECTION.
- THE MODIFICATION OF THE TRACK SECTIONS AND INSTALLATION OF THE NEW TRACK SECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
- ~~THE PORT HAS ONE NEW TRACK SECTION THAT CAN BE USED IN THIS INSTALLATION.~~
- A NEW ELECTRICAL ELEVATOR CABLE MUST BE INSTALLED, A 3 WIRE NO. 8 WITH GROUND, TYPE G.
- THE OLD CABLE IS TO BE RETURNED TO THE PORT.
- ELEVATOR REFERENCE DRAWINGS: EMPCO DWGS. S1600437-1, S1600473-1, S1600474-1 AND S1600494-1.

ELEVATION VIEW
NEW ELEVATOR STAIR PLATFORM & LADDER
LH LANDSIDE CORNER LOOKING TOWARD LAND
 SCALE: 3/4" = 1'-0"

WORK THIS DRAWING WITH SHEET 33



PORT OF TACOMA
 P.O. BOX 1837 TACOMA, WASHINGTON 98401
 (206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
 932A INDUSTRY DRIVE
 SEATTLE WA 98188
 JOB: 2590 DWG: 1773 1/2



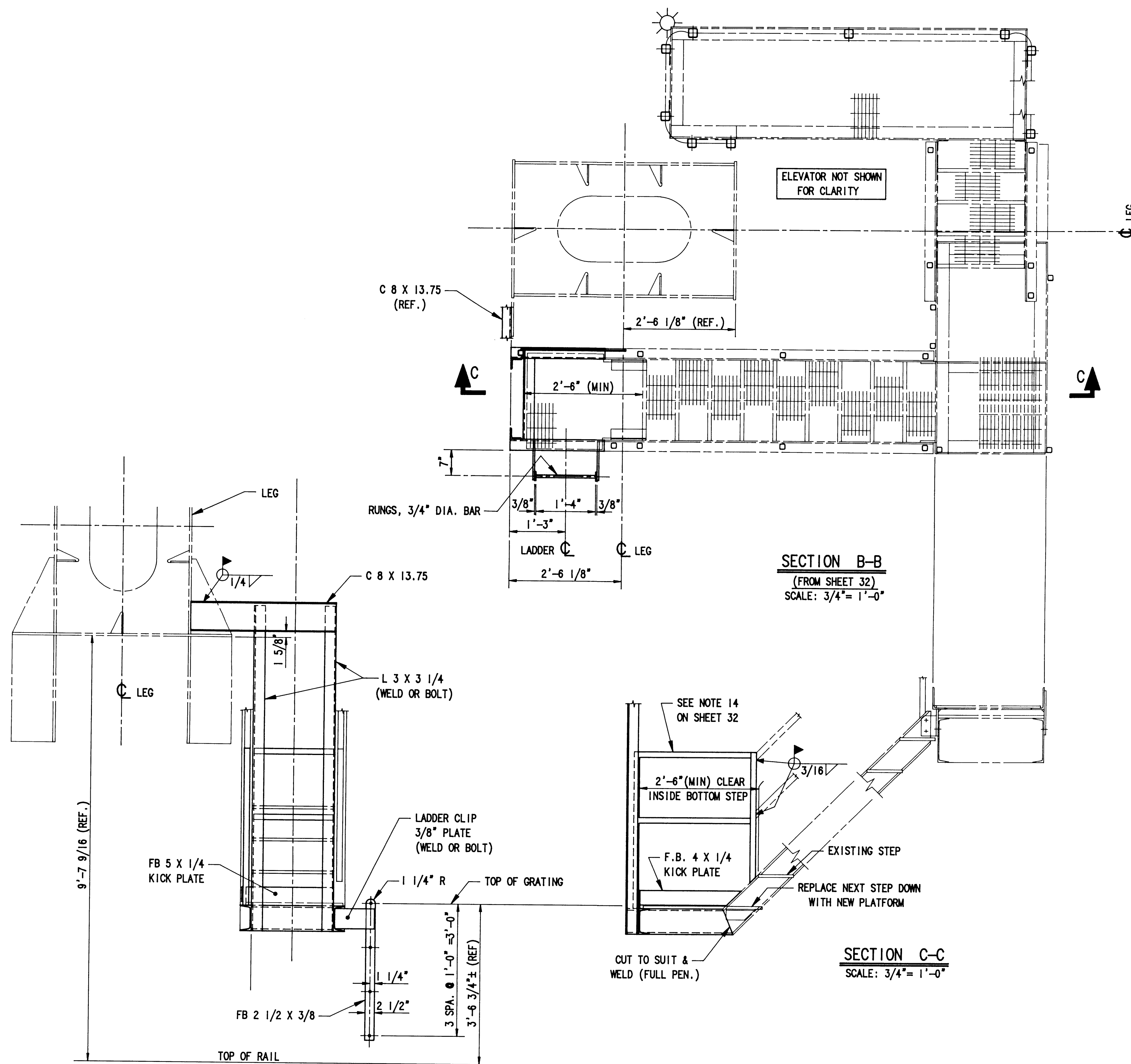
APPROVED
Richard C. Leonard
 CHIEF ENGINEER
 DATE

R. WENS	9/4/90	K. H.	9/6/90
DRAWN BY	DATE	CHECKED BY	DATE
C. R.	10/21/91	J. L. A.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT (NO CHANGE)	K. H.		7/3/91

RAISING & RELOCATING I.H.I. CRANE #2078
 MODIFICATIONS TO ELEVATOR
 STAIRS & TRACKS

DRAWING No. EP4365-32
 CONTRACT No. 681
 SHEET No. 32 OF 54



SECTION A-A
(FROM SHEET 32)
SCALE: 3/4" = 1'-0"

BOOM

SECTION B-B
(FROM SHEET 32)
SCALE: 3/4" = 1'-0"

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

NOTES:

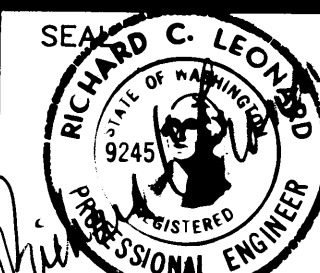
- DO NOT SCALE THIS DRAWING.
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- WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
- PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
- VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
- ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- SNIP FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.

WORK THIS DRAWING WITH SHEET 32



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2590 DWG: 1773 2/2



APPROVED
CHIEF ENGINEER
DATE

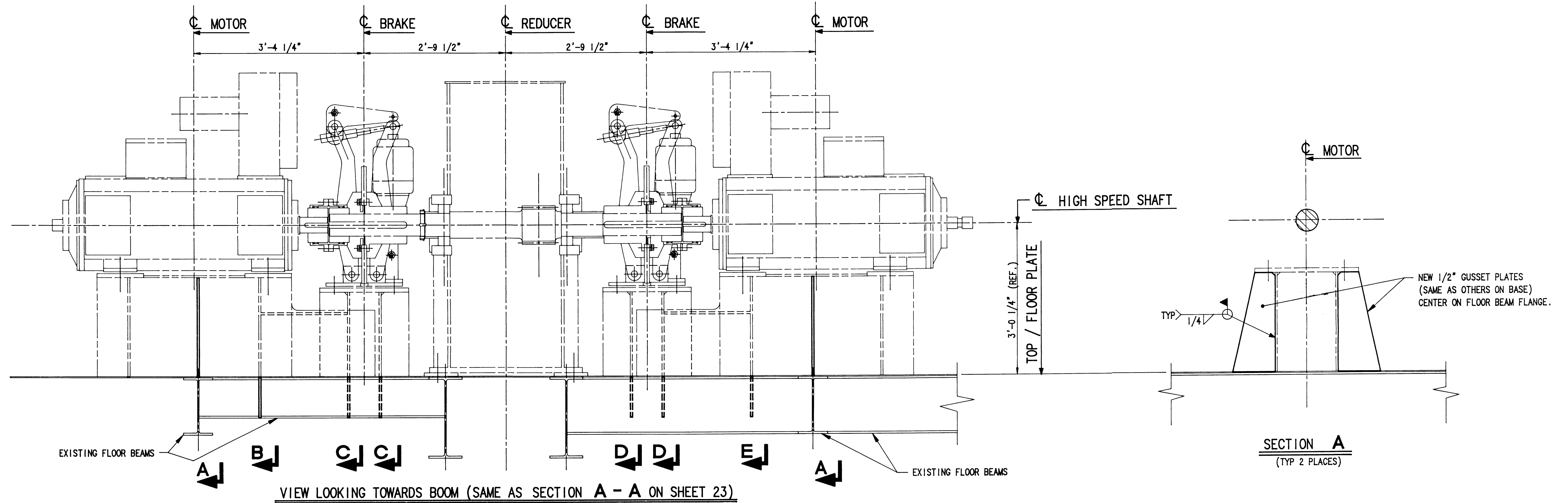
R. WENS
DRAWN BY
DATE
AS-BUILT BY
DATE

K.H.
CHECKED BY
DATE
J.L.A.
PROJ. ENGR.
DATE

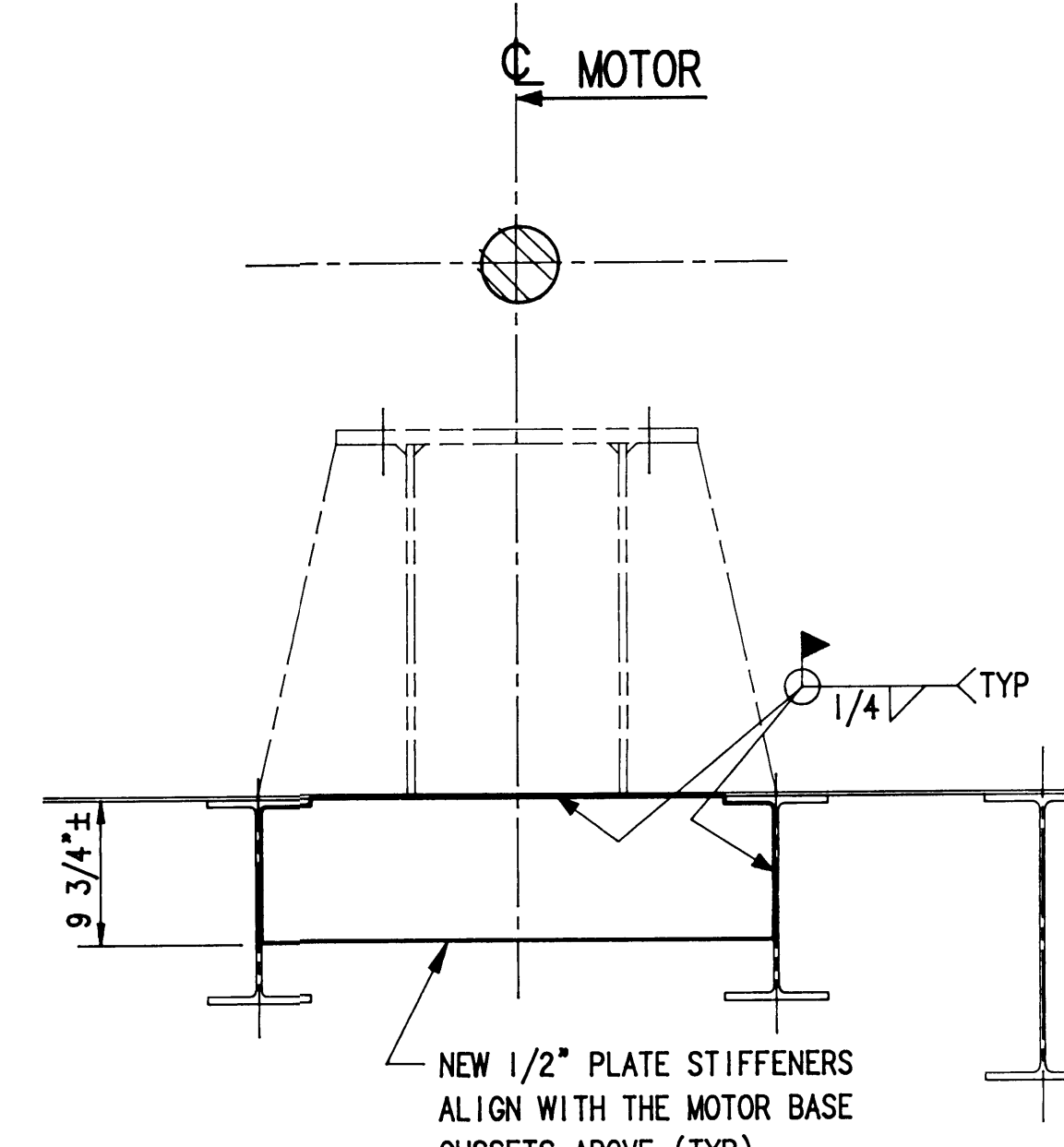
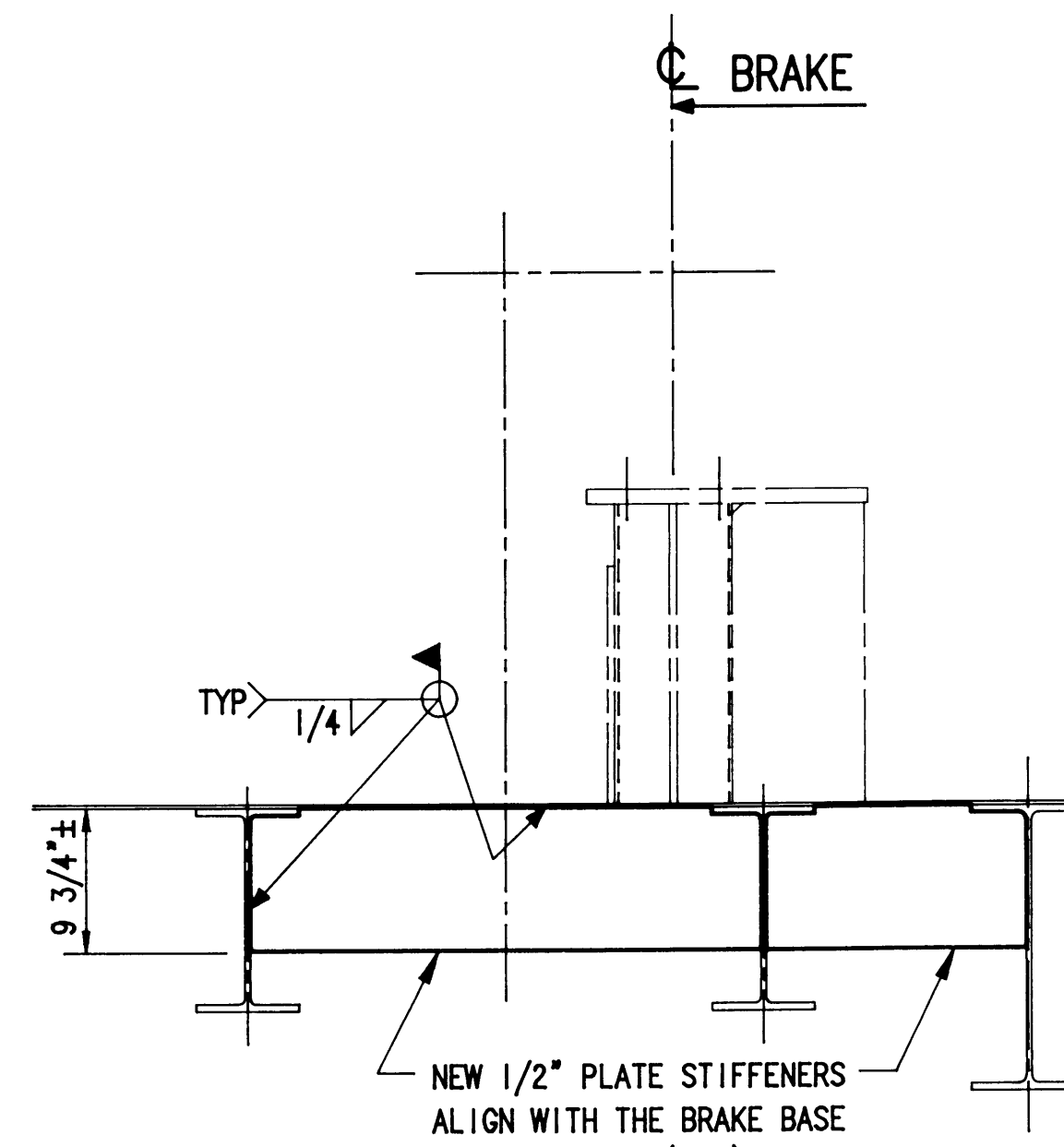
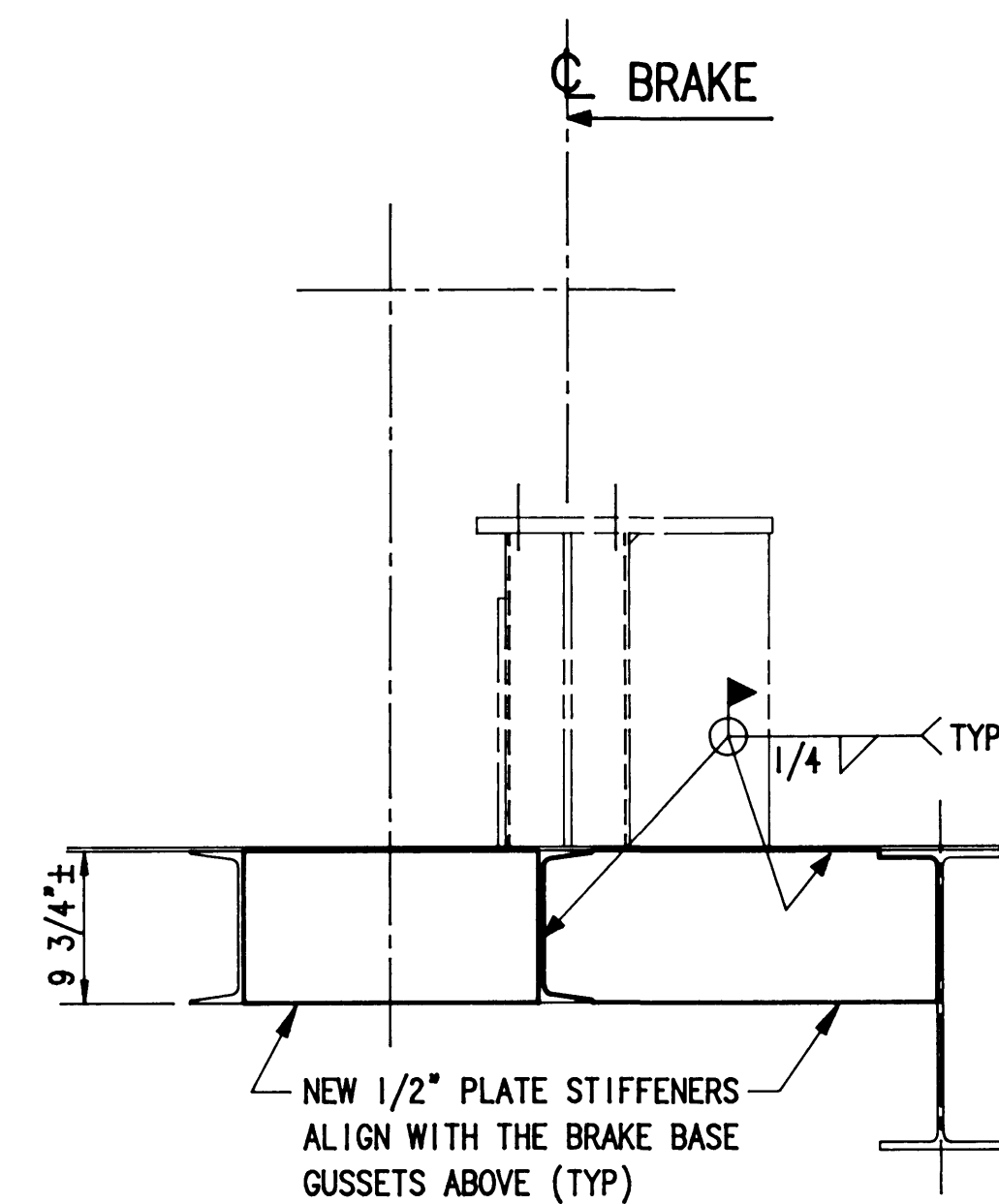
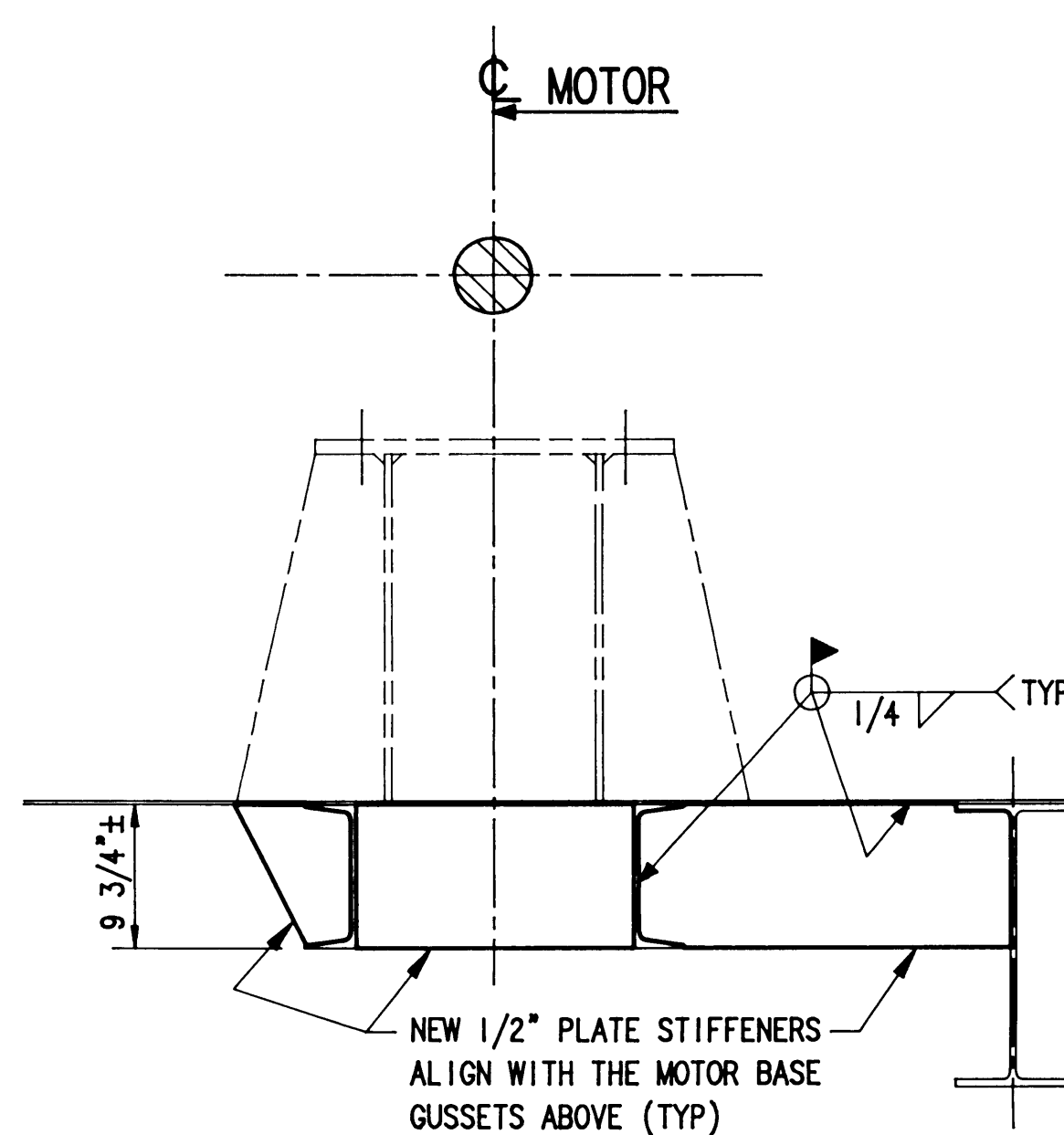
MARK	REVISION	BY	APP.	DATE
A	AS BUILT (NO CHANGE)	K.H.		7/3/91

RAISING & RELOCATING I.H.I. CRANE #2078
MODIFICATIONS TO ELEVATOR
STAIRS & TRACKS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 33 OF 54



- NOTES
1. REFERENCE GUSSET LOCATIONS ABOVE BY BURN MARKS ON UNDERSIDE OF FLOOR PLATE.
 2. CUT & FIT MATERIAL TO SUIT AT FIELD ASSEMBLY.

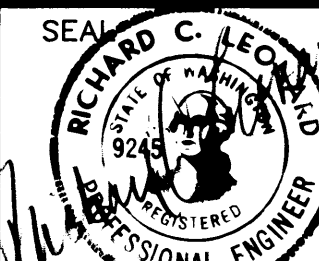


FOR GENERAL NOTES SEE SHEET 22
WORK THIS DRAWING WITH SHEET 22 & 23



PORT OF TACOMA
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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2486 DWG: 1700 1/1



APPROVED
CHIEF ENGINEER
DATE

HARVEY
DRAWN BY
DATE
2/6/91

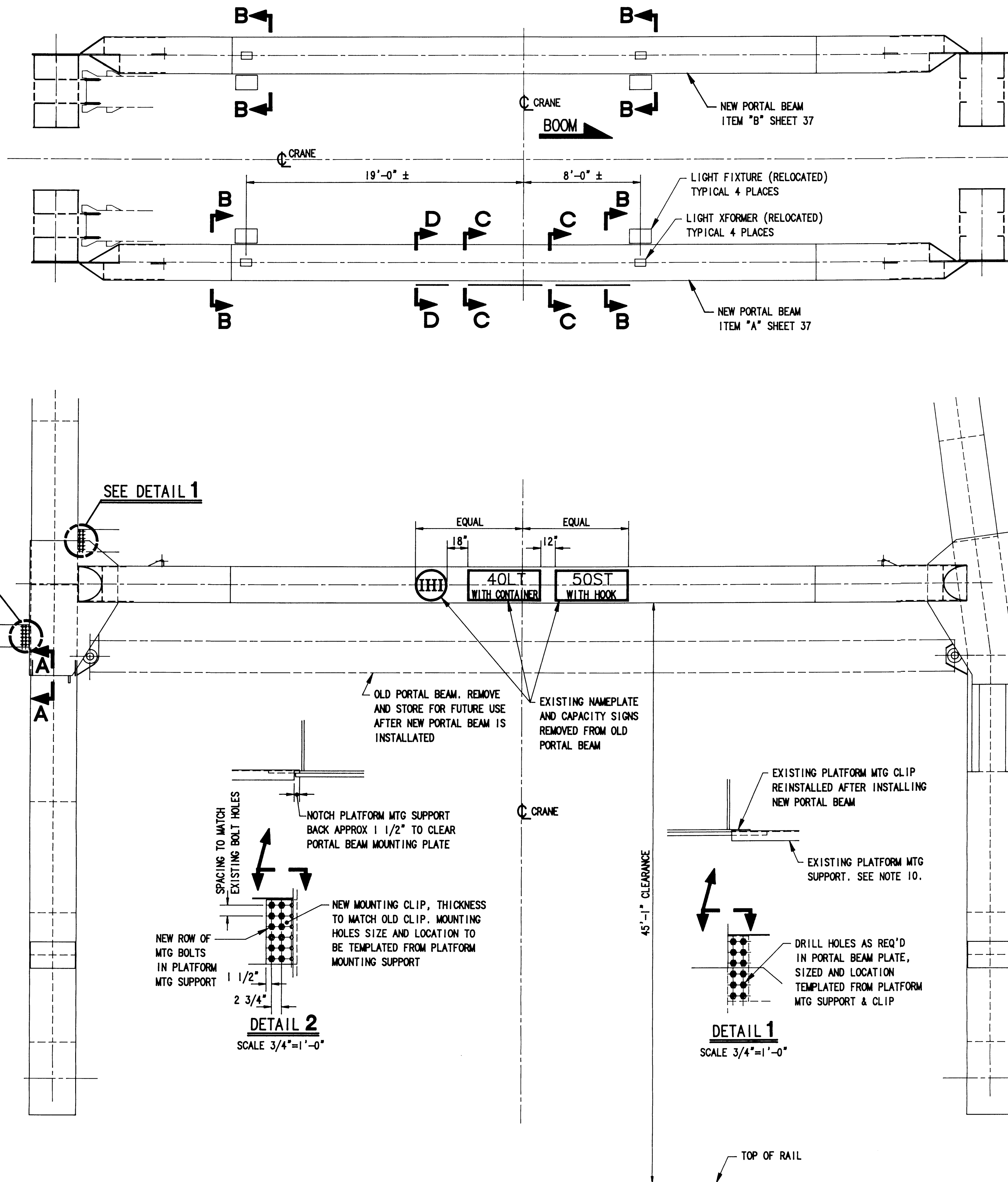
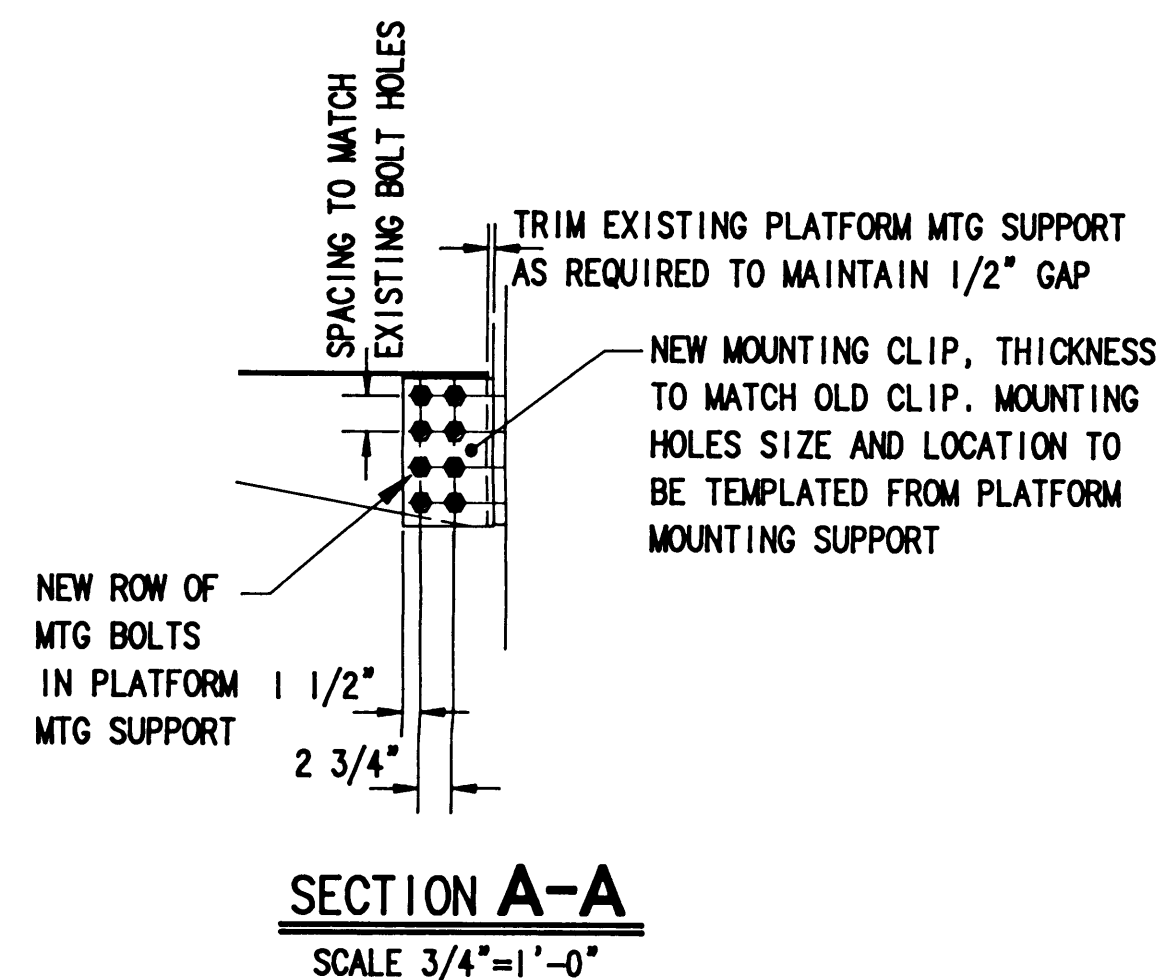
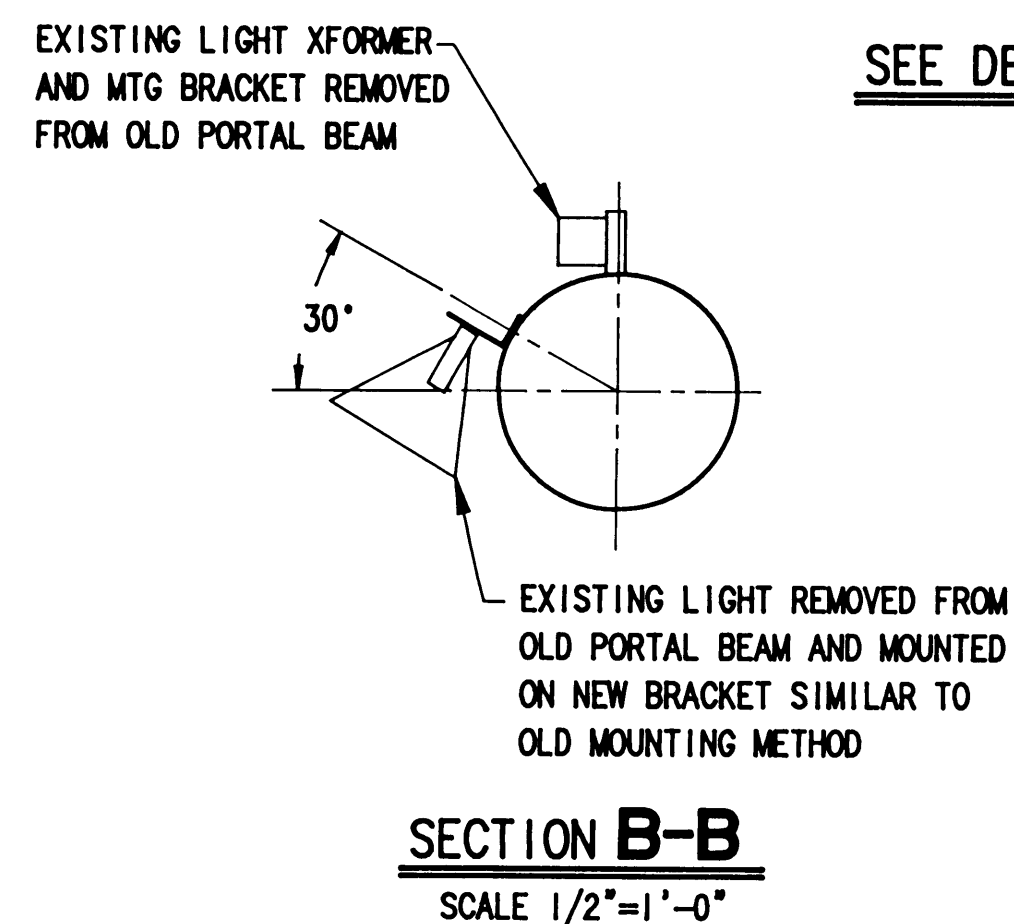
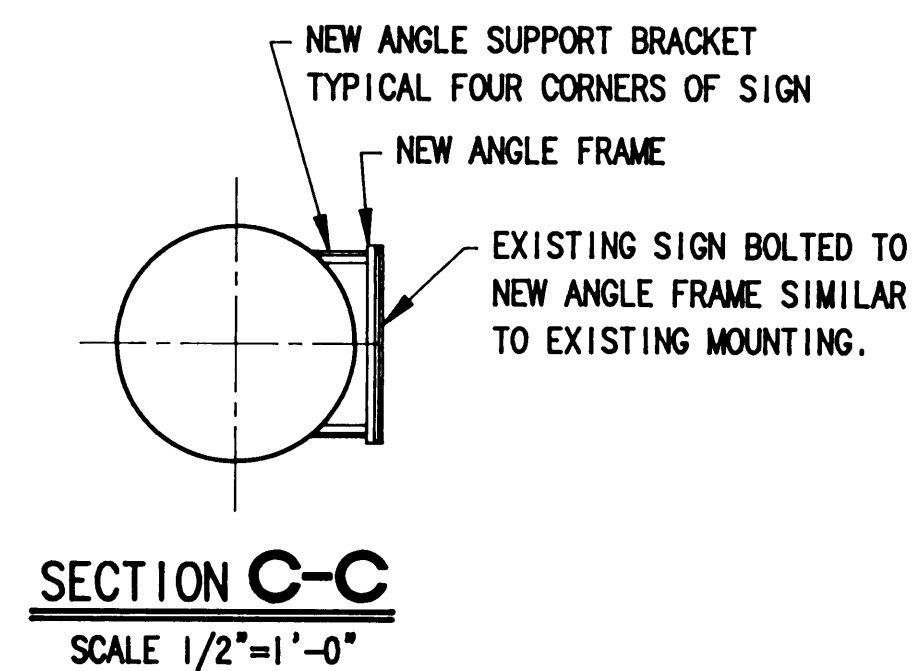
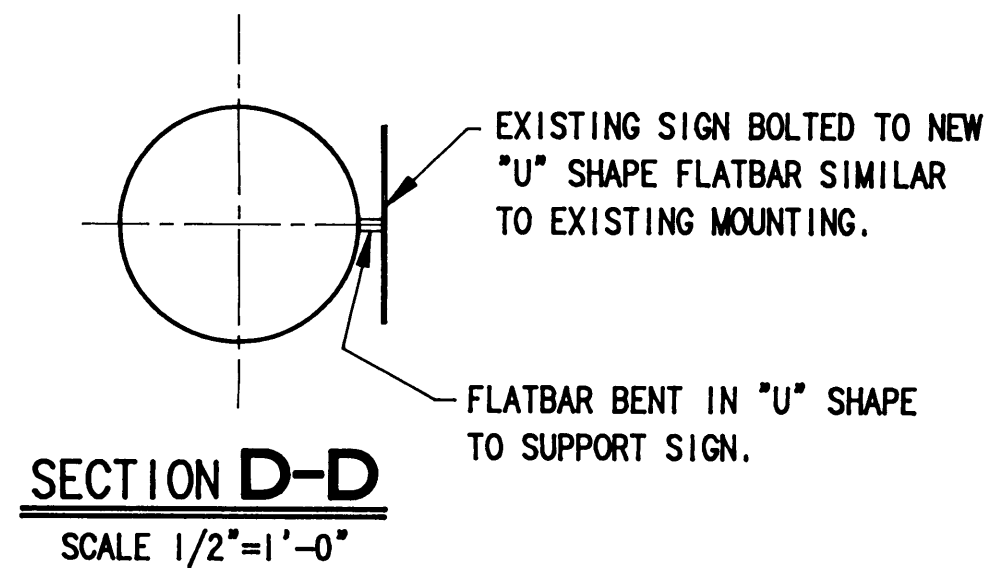
J. L. A.
CHECKED BY
DATE
2/6/91

A
AS BUILT (NEW DWG.)
MARK REVISION

K.H.
BY
DATE
2/6/91

RAISING & RELOCATING I.H.I CRANE #2401
RAISING & RELOCATING I.H.I. CRANE #2078
MAIN HOIST DECK STIFFENING

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 34 OF 54



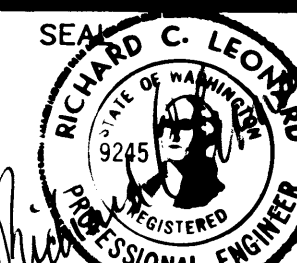
NOTES:

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- ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
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- WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
- PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
- VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
- ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- THE INBOARD PLATFORM MOUNTING SUPPORTS SHALL BE STRAIGHTENED PRIOR TO REINSTALLATION.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL.
- THE ELEVATOR MOUNTING CLIPS IN WAY OF NEW PORTAL BEAM MOUNTING PLATE SHALL BE MODIFIED IN A MANNER SIMILAR TO THAT PERFORMED ON I.H.I. CRANE NO. 2078.
- THE DETAILS PROVIDED FOR THE REMOUNTING OF THE SIGNS, LIGHTS AND THEIR TRANSFORMERS ARE FOR ILLUSTRATION PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACTUAL METHOD OF INSTALLATION.
- ALL ELECTRICAL CONDUIT AND ITS ASSOCIATED FITTINGS, MOUNTING BRACKETS, ETC SHALL BE REMOVED FROM THE OLD PORTAL BEAMS AND MOUNTED ON THE NEW PORTAL BEAMS. THE EXISTING CONDUIT RUNS ON THE LEGS SHALL BE EXTENDED AS REQUIRED TO REACH THE RELOCATED CONDUIT RUNS ON THE NEW PORTAL BEAMS. ALL WIRING SHALL BE REPLACED FROM THE NEAREST TERMINAL BOX TO THE ELECTRICAL EQUIPMENT PLACED ON THE PORTAL BEAMS.
- INSTALLING THE NEW PORTAL BEAMS WILL REQUIRE THE REMOVAL OF SEVERAL LUGS, CLIPS AND CLEATS. ALL ITEMS REMOVED SHALL BE PUT BACK IN PLACE AFTER THE PORTAL BEAMS INSTALLATION IS COMPLETE.



PORT OF TACOMA
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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2651 DWG: 1775 1/1



APPROVED
Richard C. Leonard
CHIEF ENGINEER DATE

R BAKER 4/16/91
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

N.E.C. 4/19/91
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

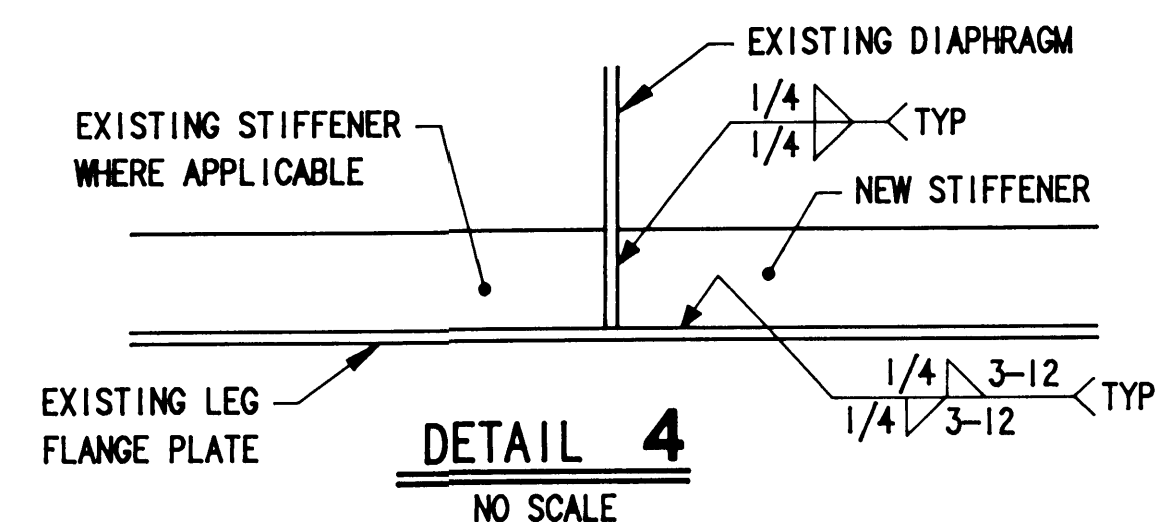
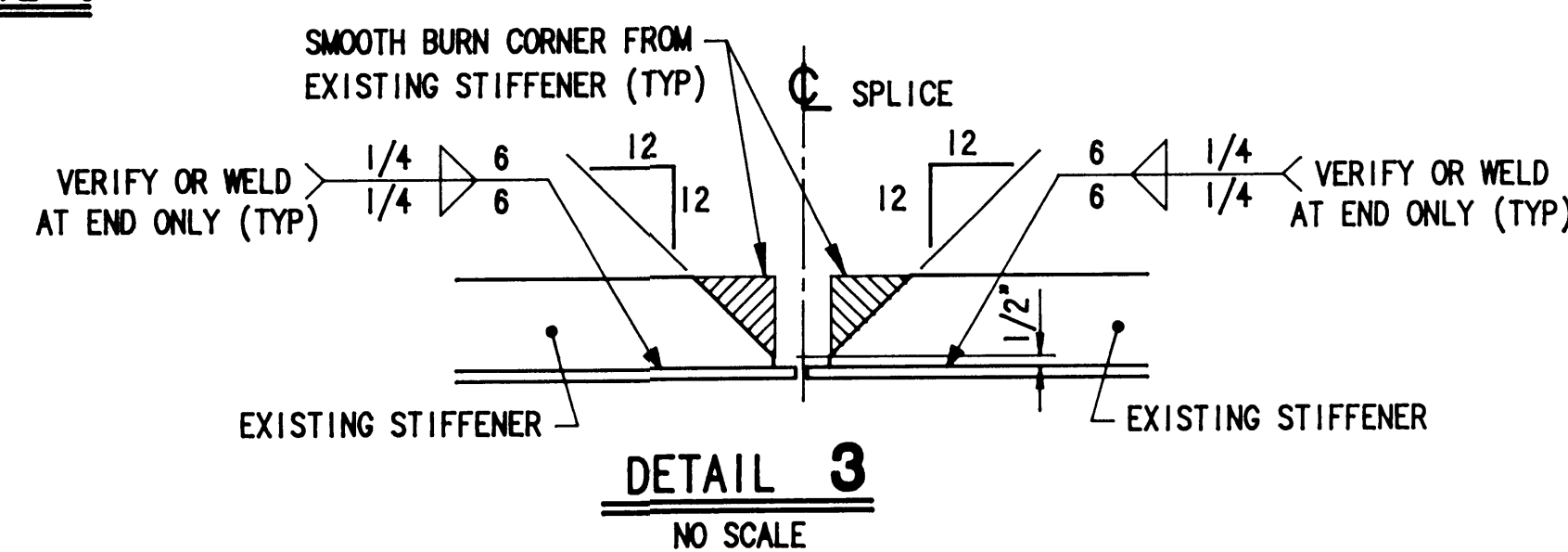
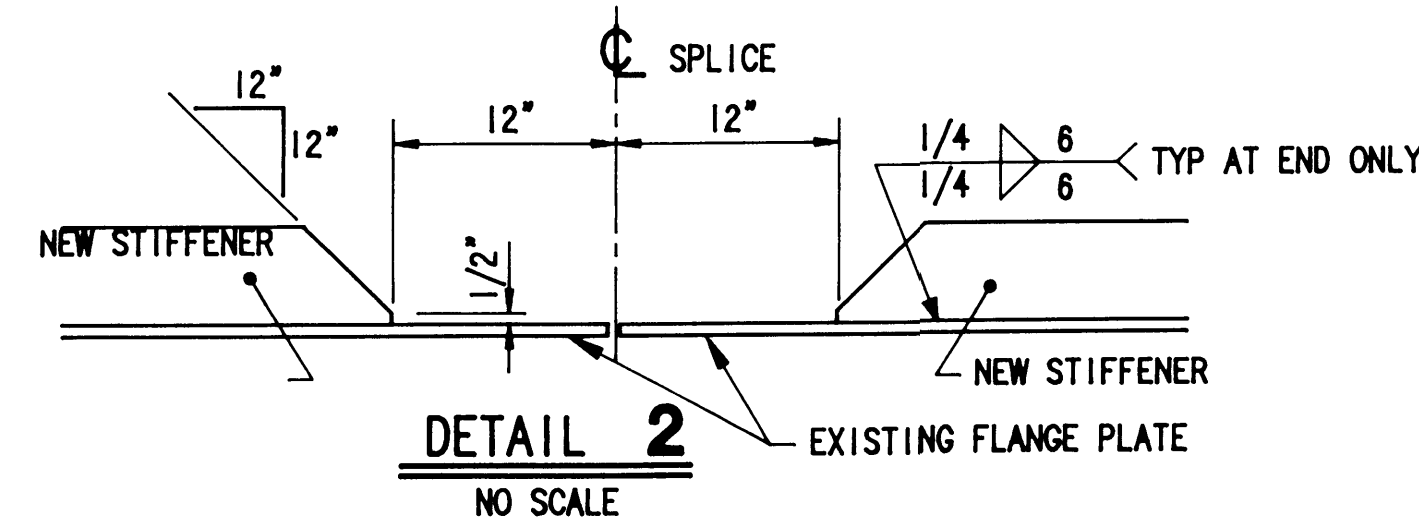
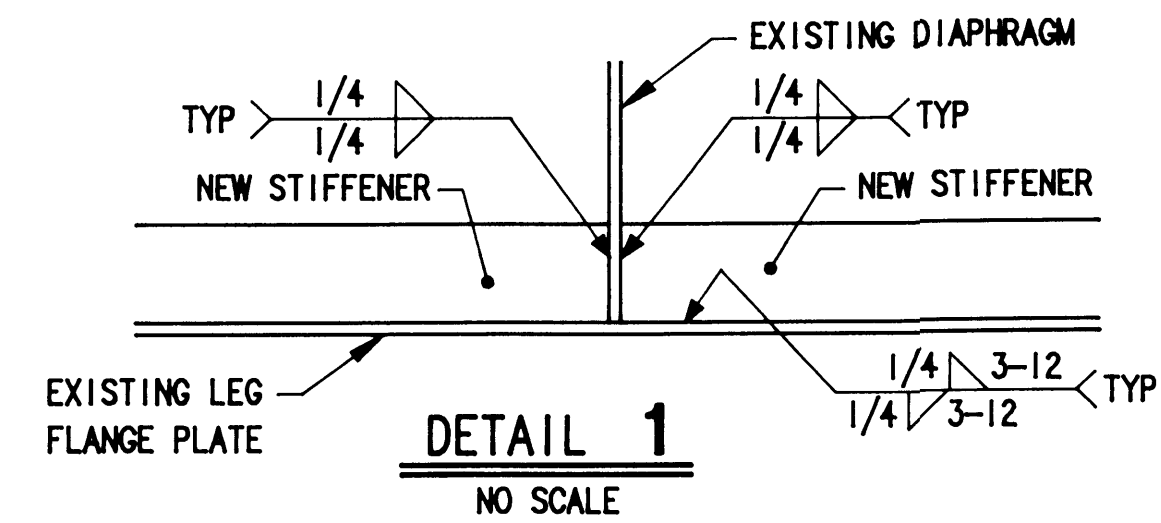
MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		7/15/91

RAISING PORTAL BEAM I.H.I. CRANE #2402
NEW PORTAL BEAMS INSTALLATION

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 35 OF 54

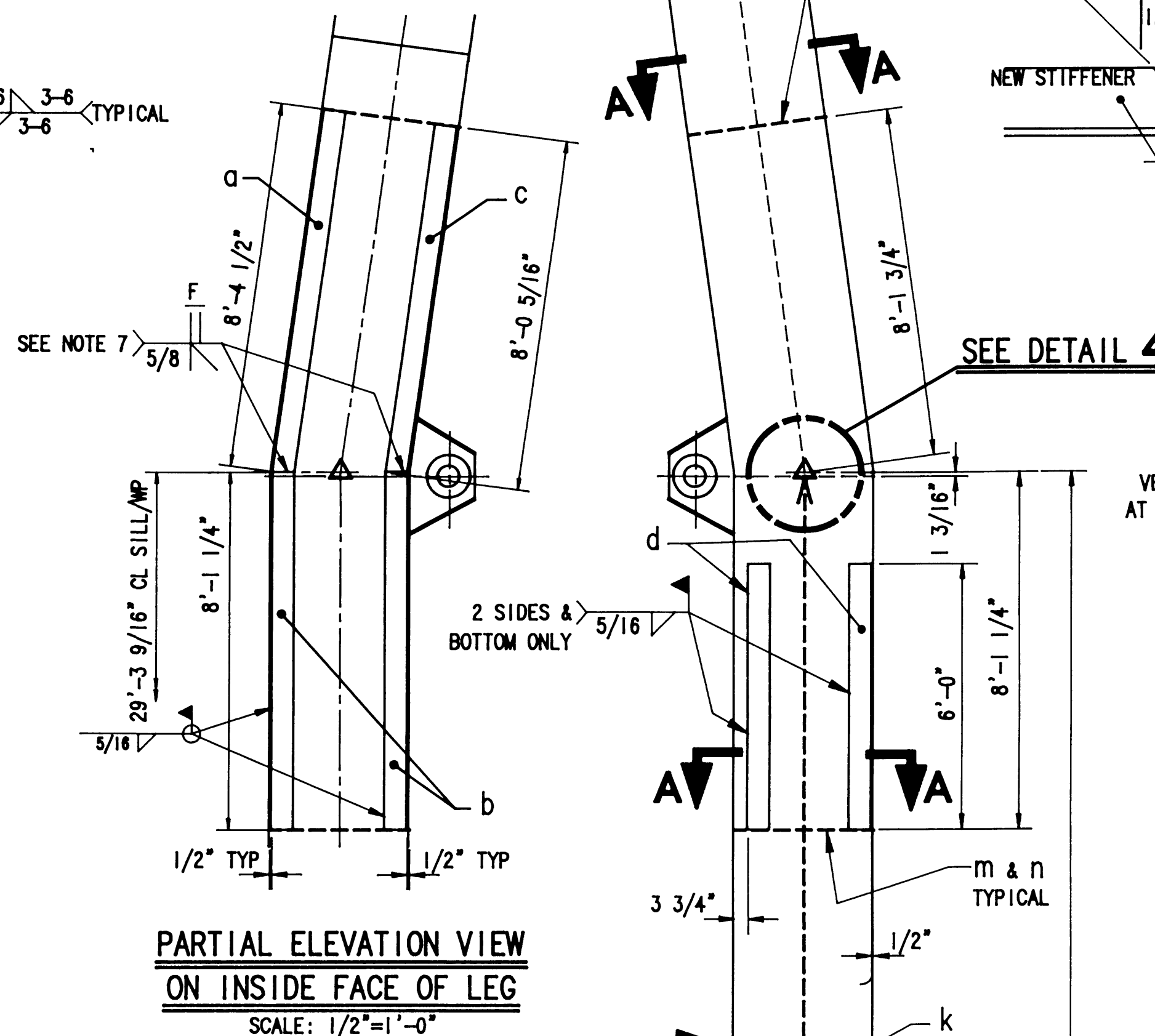
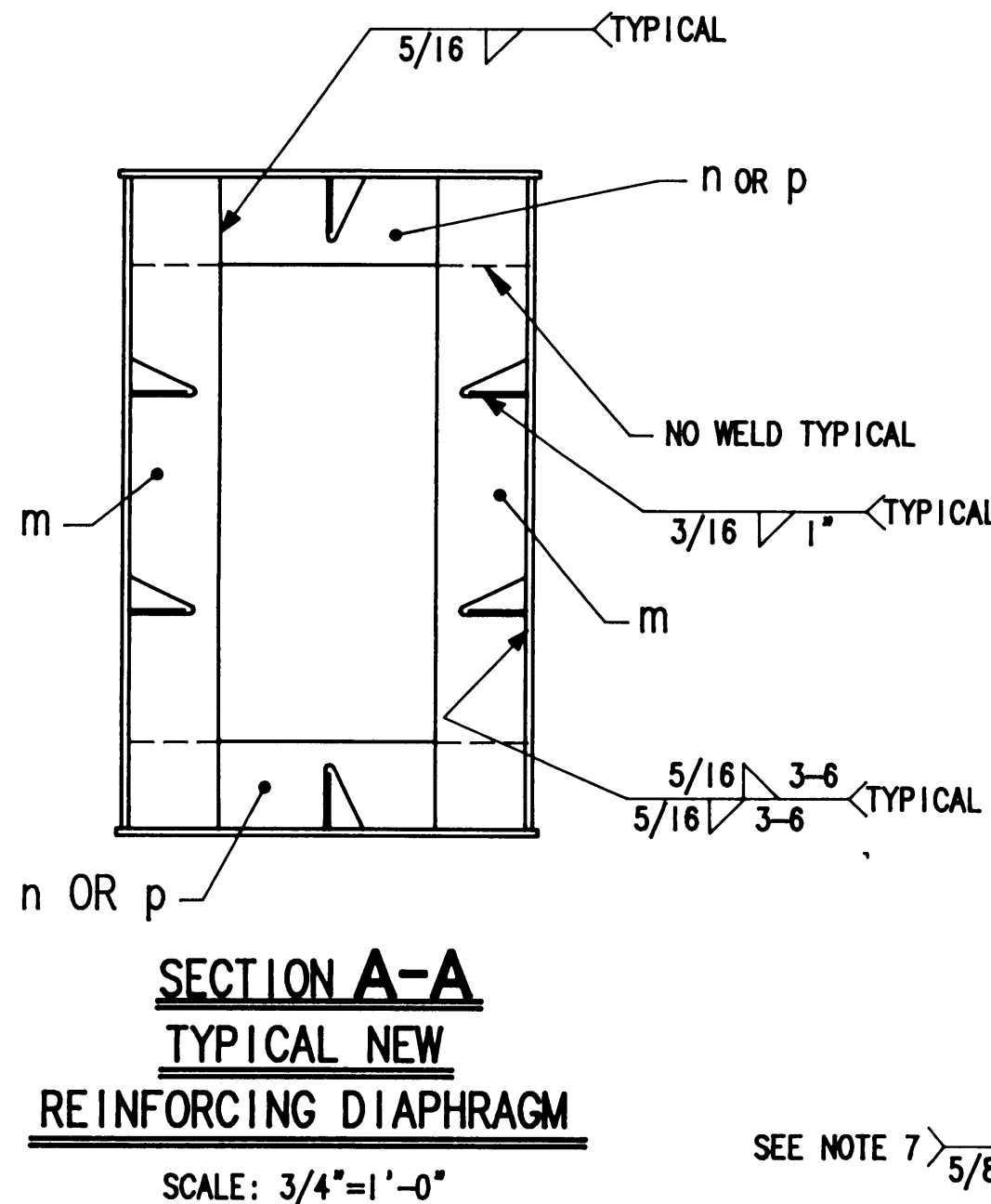
LIST OF MATERIALS

ITEM	DESCRIPTION	QTY	MATERIAL	WEIGHT
a	FB 6 X 3/4 8'-4 1/2" LONG	2	STEEL A36	251
b	FB 6 X 3/4 8'-1 1/4" LONG	4	STEEL A36	496
c	FB 6 X 3/4 8'-0 5/16" LONG	2	STEEL A36	240
d	FB 6 X 3/4 6'-0" LONG	4	STEEL A36	367
f	FB 5 X 3/8 6'-0 1/4" LONG	8	STEEL A36	307
g	FB 5 X 3/8 2'-11 3/8" LONG	8	STEEL A36	150
h	FB 5 X 3/8 16'-4 1/8" LONG	4	STEEL A36	417
j	FB 5 X 3/8 6'-2 3/4" LONG	4	STEEL A36	159
k	FB 5 X 3/8 17'-8" LONG	4	STEEL A36	451
m	FB 8 X 3/8 4'-11" LONG	20	STEEL A36	1003
n	FB 8 X 3/8 2'-11 3/8" LONG	16	STEEL A36	481
p	FB 8 X 3/8 2'-11" LONG	4	STEEL A36	119

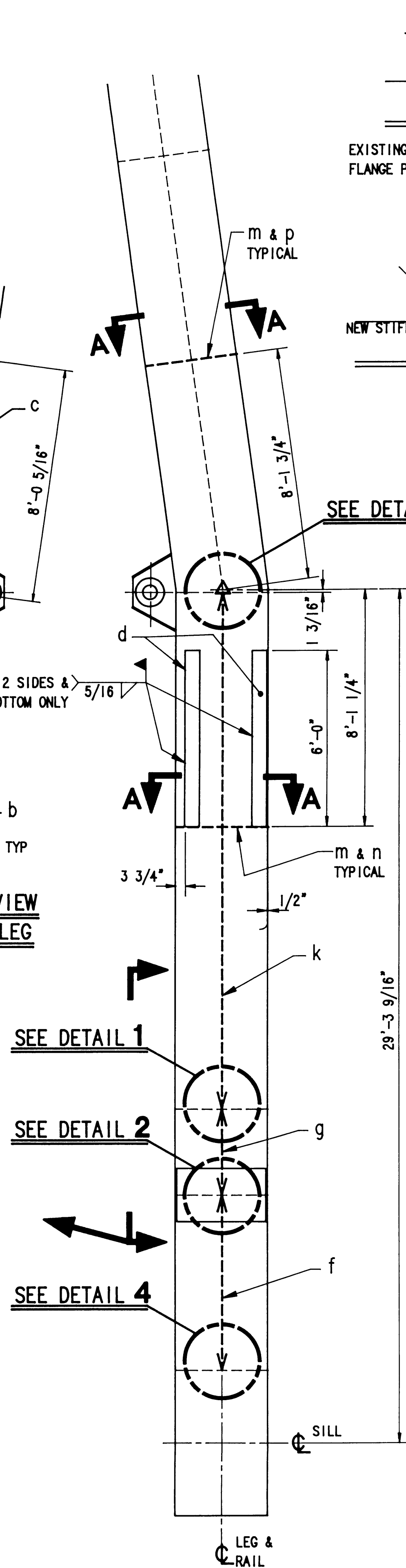
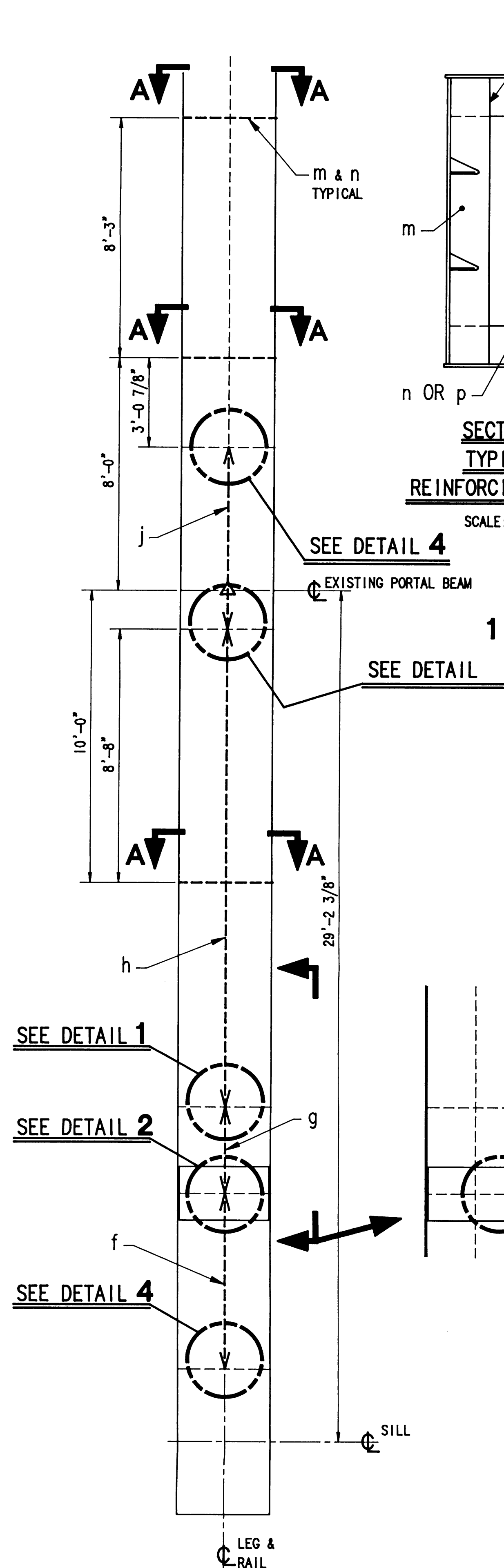


NOTES:

- DO NOT SCALE THIS DRAWING.
- THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
- ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
- WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
- PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
- VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
- ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- SNIPE FLAT BARS AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.



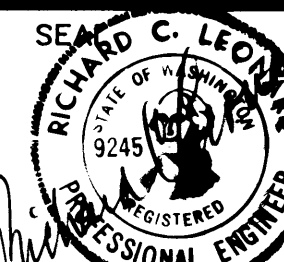
ELEVATION VIEW
LOOKING AT RIGHTSIDE TOWER LEGS
LEFT SIDE TOWER LEGS SIMILAR &
OPPOSITE HAND
SCALE 3/8"=1'-0"



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188

JOB: 2651 DWG: 1776 1/1



APPROVED
C. R. Baker
CHIEF ENGINEER
DATE

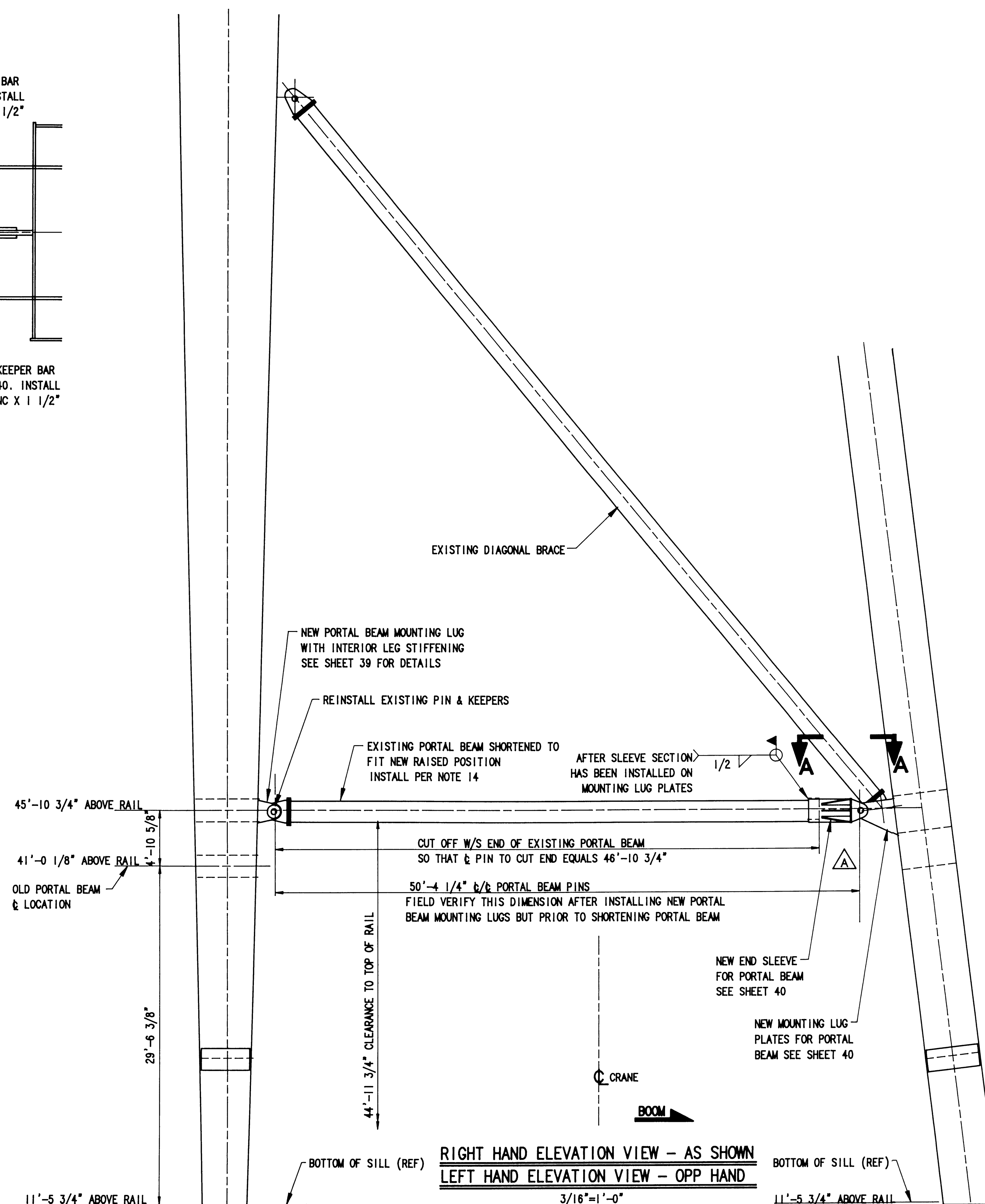
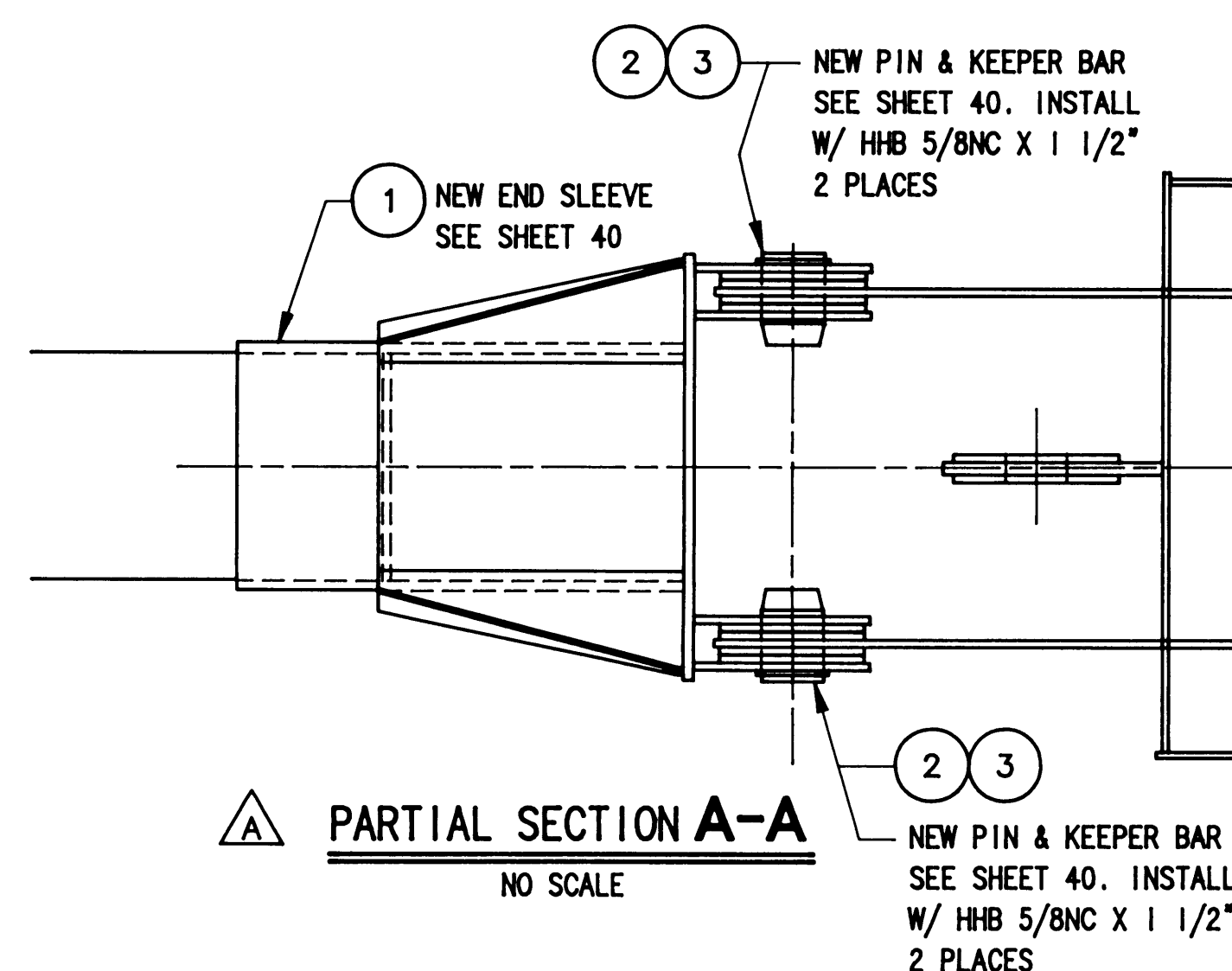
R BAKER 4/15/91
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

N.E.C. 4/22/91
CHECKED BY DATE
J.L.M.
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		7/15/91

RAISING PORTAL BEAM I.H.I. CRANE #2402
REINFORCEMENT OF TOWER LEGS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 36 OF 54



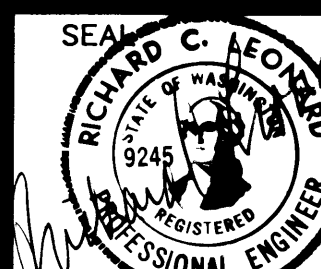
NOTES:

- DO NOT SCALE THIS DRAWING.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
- PRIOR TO CUTTING, THE PIN TO PIN DISTANCE OF THE EXISTING PORTAL BEAMS SHALL BE MEASURED AND RECORDED. THIS SAME DIMENSION SHALL BE HELD FOR REINSTALLATION OF THE MODIFIED PORTAL BEAMS AND DIAGONAL BRACES.
- TEMPORARY BRACING SHALL BE PROVIDED TO REPLACE THE DIAGONALS DURING REMOVAL AND MODIFICATION. THESE BRACES MAY CONSIST OF STEEL MEMBERS OR WIRE ROPES CROSSING DIAGONALLY IN THE PLANE OF THE LEGS. THE BRACING METHOD SELECTED MUST BE APPROVED BY THE ENGINEER.
- ONLY ONE STRUCTURAL MEMBER MAY BE REMOVED FROM THE CRANE AT ANY ONE TIME.
- ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
- WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
- PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
- PORTAL BEAM AND DIAGONAL BRACE SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELDS.
- VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
- VARIOUS ELECTRICAL ITEMS WILL NEED TO BE DISCONNECTED. THE EXISTING CONDUIT RUNS ON THE PORTAL BEAM MAY BE REUSED. ALL ELECTRICAL ITEMS ON THE PORTAL BEAM SHALL REMAIN IN THEIR ORIGINAL LOCATION. AN APPROVED JUNCTION BOX MAY BE ADDED ON THE LANDSIDE LEG WITH NEW WIRES RUNNING FROM THERE TO THE EXISTING ELECTRICAL ITEMS ON THE PORTAL BEAM AND WATERSIDE LEG. THE NEW WIRING SHALL BE MARKED IN A MANNER SIMILAR TO THE EXISTING WIRING. NEW SEALTITE FLEX CONDUIT WILL BE USED TO GO FROM THE JUNCTION BOX TO THE PORTAL BEAM CONDUIT ON THE LANDSIDE LEG AND BETWEEN THE CONDUITS ON THE WATERSIDE LEG.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- MEASURE AND RECORD EXISTING AND AS-MODIFIED PIN TO PIN CENTERLINE DISTANCES FOR BOTH PORTAL BEAMS AND BOTH DIAGONAL BRACES.



PORT OF TACOMA
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932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2655 DWG: 1778 1/1



APPROVED
Richard C. McCallister
CHIEF ENGINEER DATE

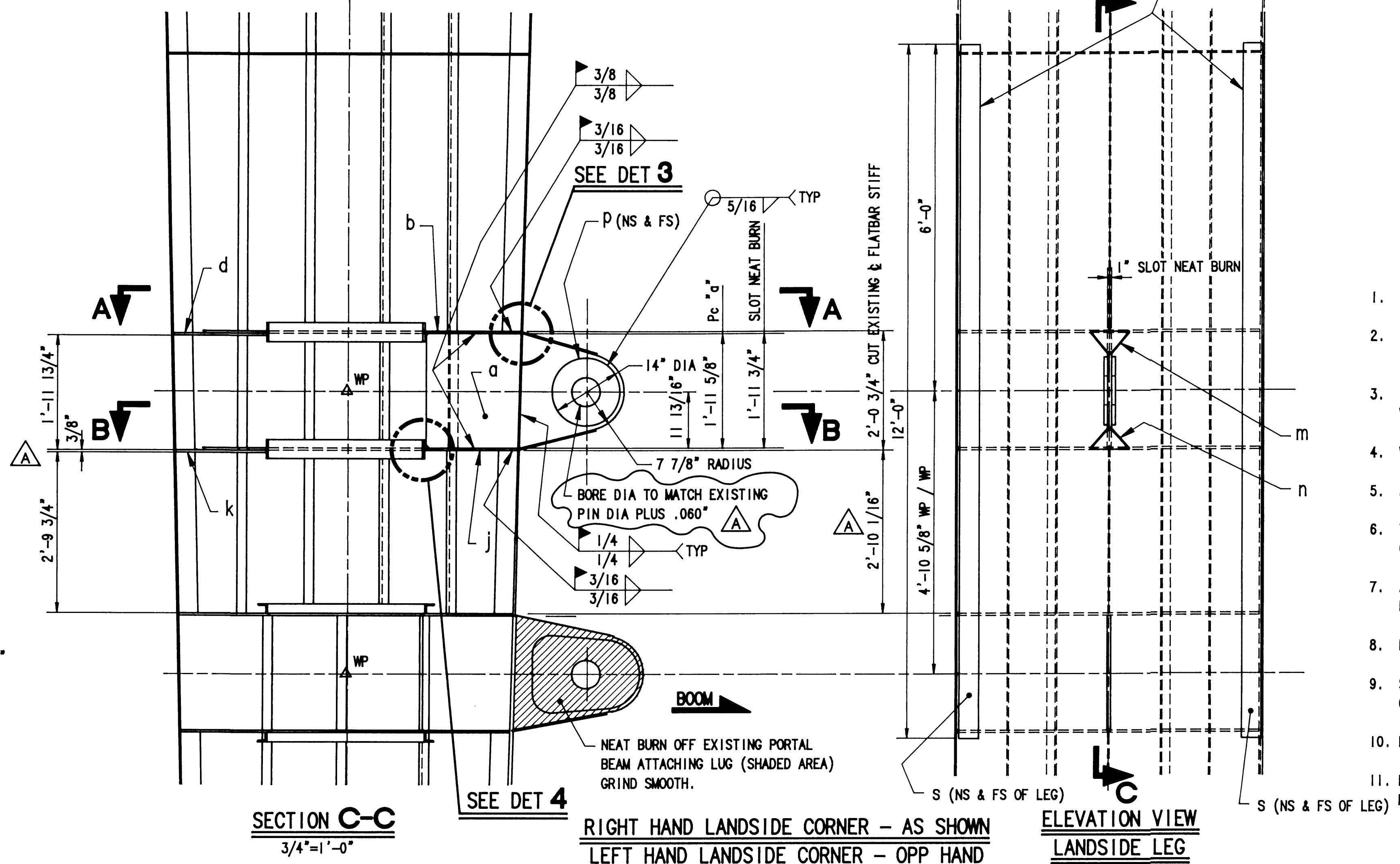
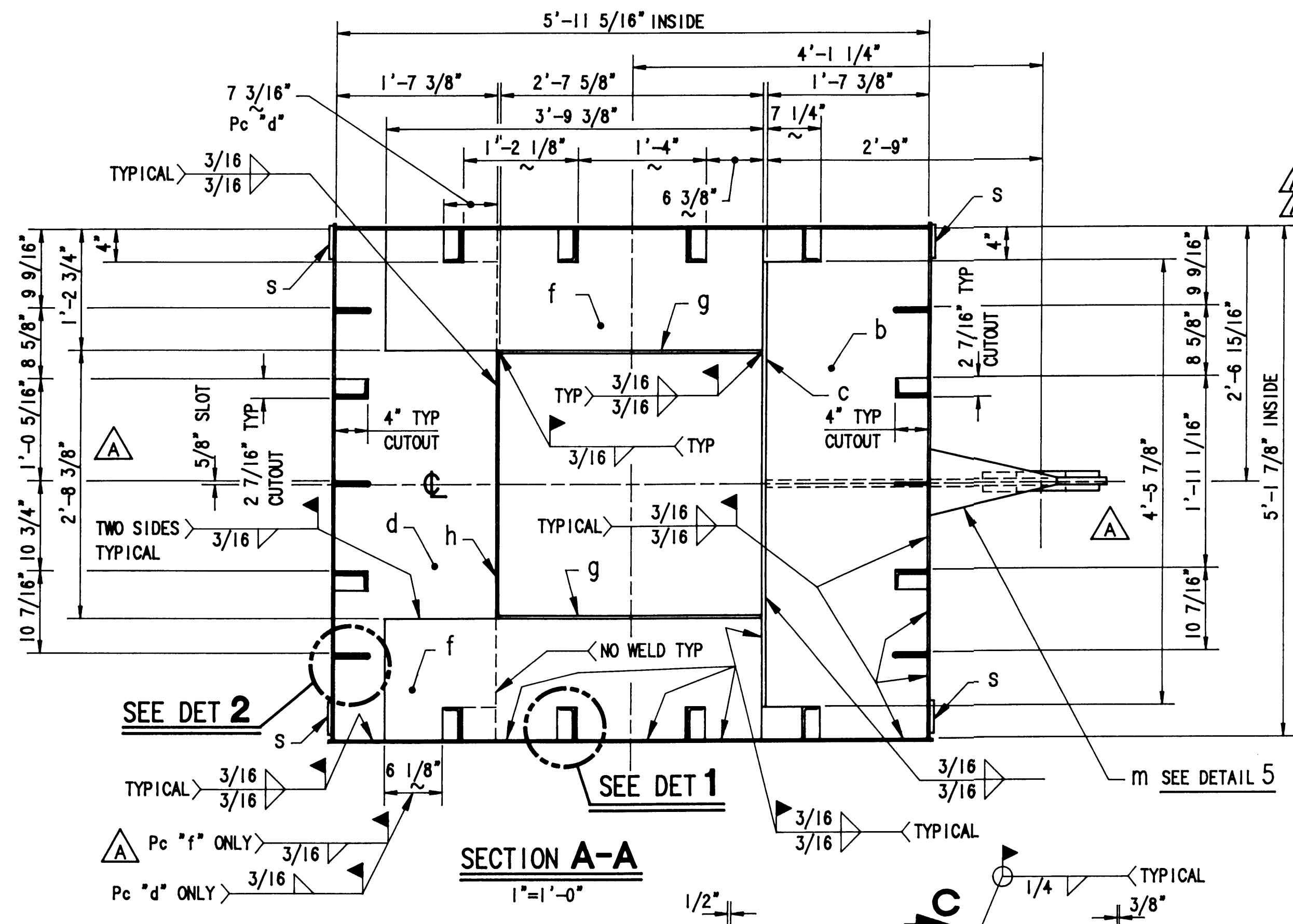
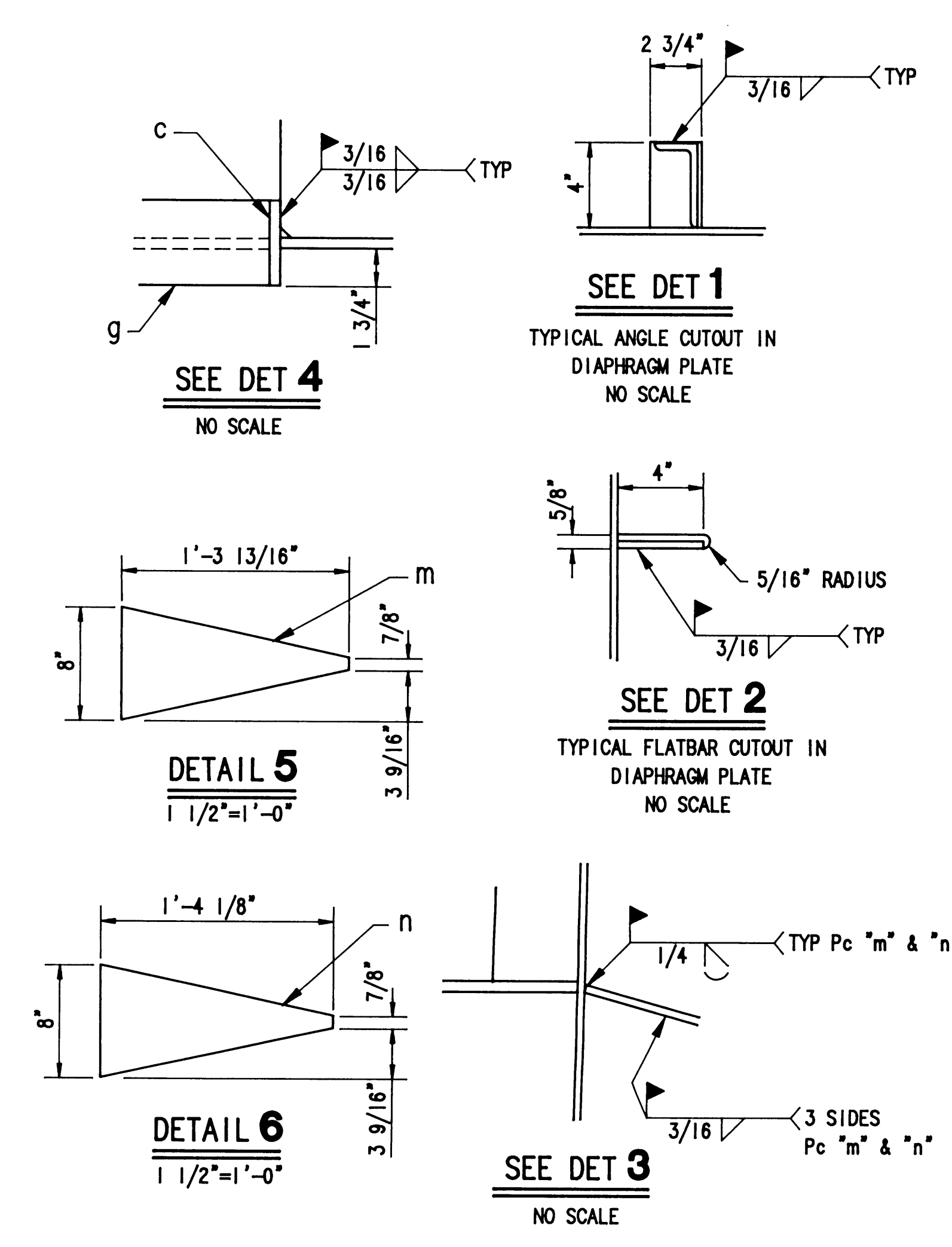
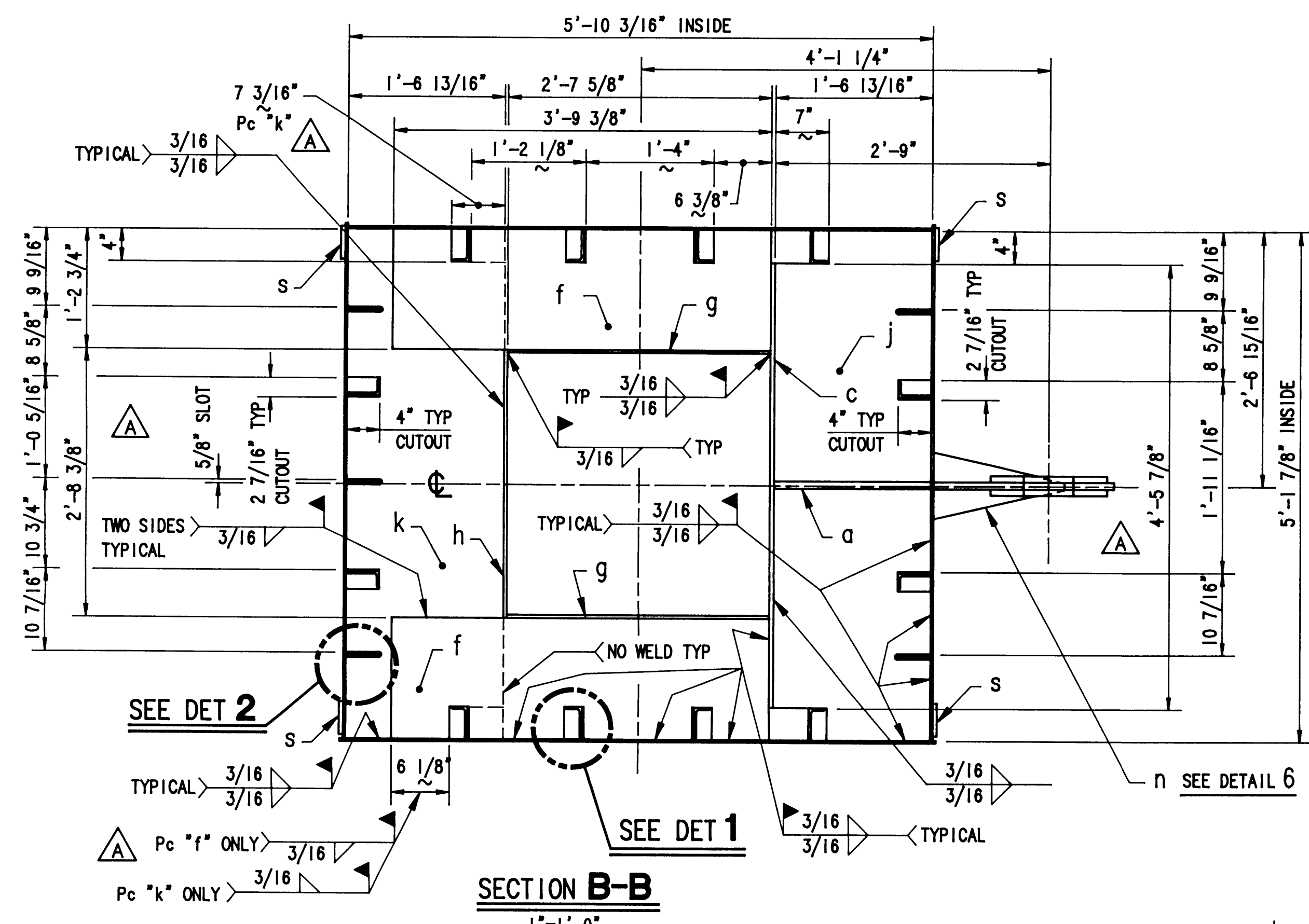
R BAKER 5/1/91
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

K.H. 6/19/91
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
B	AS BUILT	RJB		7/15/91
A	REDESIGN W/S PORTAL BM CONN	RJB		9/12/91

RAISING PORTAL BEAM PEINER CRANE #2042
PORTAL BEAM REINSTALLATION

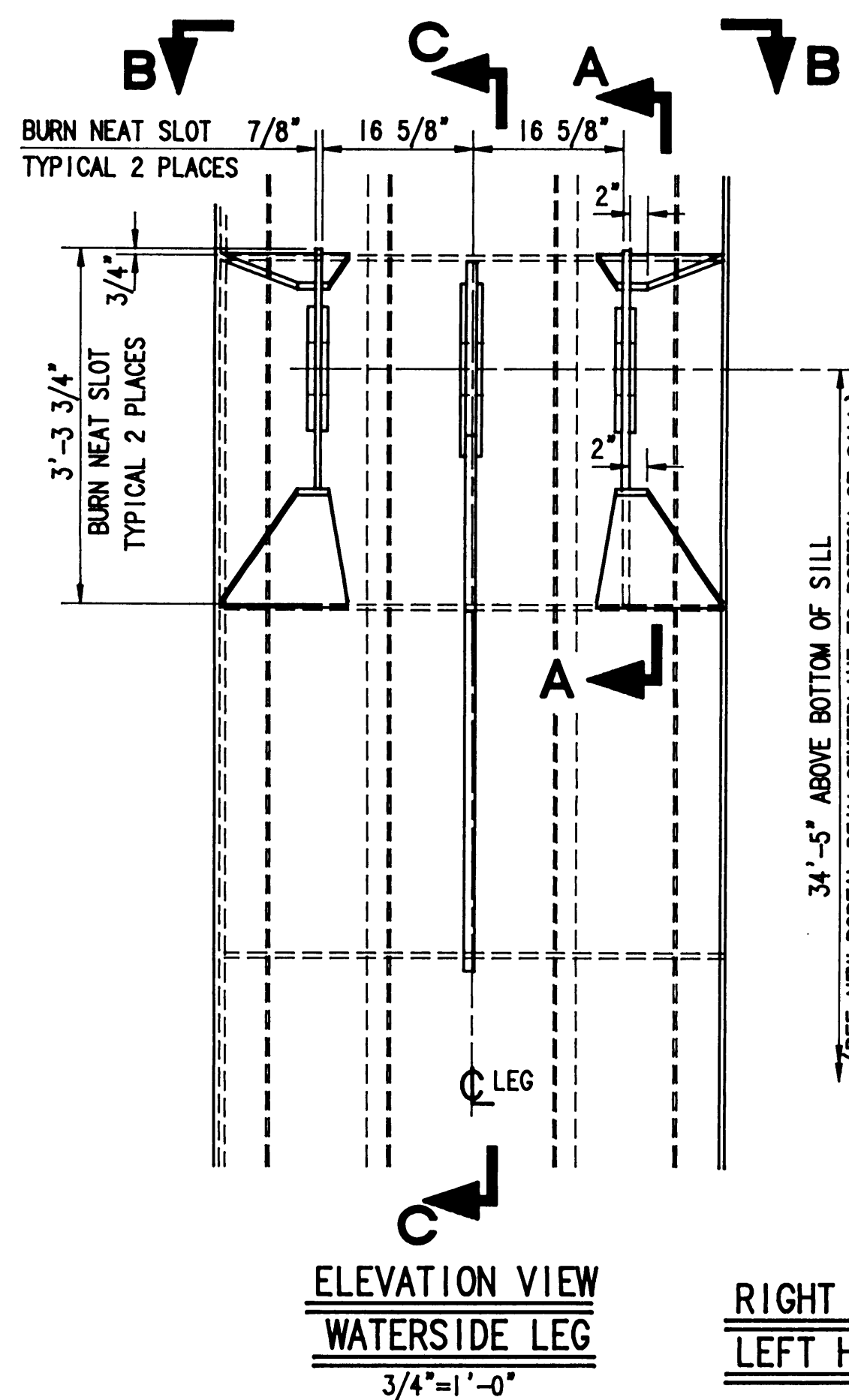
DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 38 OF 54



LIST OF MATERIALS				
ITEM	DESCRIPTION	QTY	MATERIAL	WEIGHT
a	PL 7/8 23 5/8 X 3'-4 7/8"	2	STEEL A572 50000 YIELD	304 #
b	PL 1/2 19 3/8 X 5'-1 7/8"	2	STEEL A572 50000 YIELD	340
c	PL 1/2 4 X 4'-5 7/8"	4	STEEL A572 50000 YIELD	122
d	PL 3/8 19 3/8 X 5'-1 7/8"	2	STEEL A572 50000 YIELD	255
f	PL 3/8 14 3/4 X 3'-9 3/8"	8	STEEL A572 50000 YIELD	570
g	PL 3/8 4 X 2'-7 5/8"	8	STEEL A572 50000 YIELD	108
h	PL 3/8 4 X 2'-8 3/8"	4	STEEL A572 50000 YIELD	52
j	PL 1/2 18 13/16 X 5'-1 7/8"	2	STEEL A572 50000 YIELD	330
k	PL 3/8 18 13/16 X 5'-1 7/8"	2	STEEL A572 50000 YIELD	248
m	PL 3/8 8 X 1'-3 13/16"	2	STEEL A572 50000 YIELD	15
n	PL 3/8 8 X 1'-4 1/8"	2	STEEL A572 50000 YIELD	16
p	PL 3/4 14" DIAMETER	4	STEEL A572 50000 YIELD	107
s	PL 1/2 4 X 12'-0"	8	STEEL A572 50000 YIELD	653
TOTAL NET WT				2865#

MATERIAL QUANTITIES ARE FOR ONE CRANE

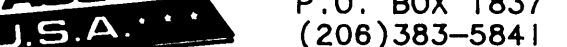
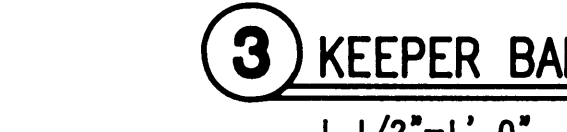
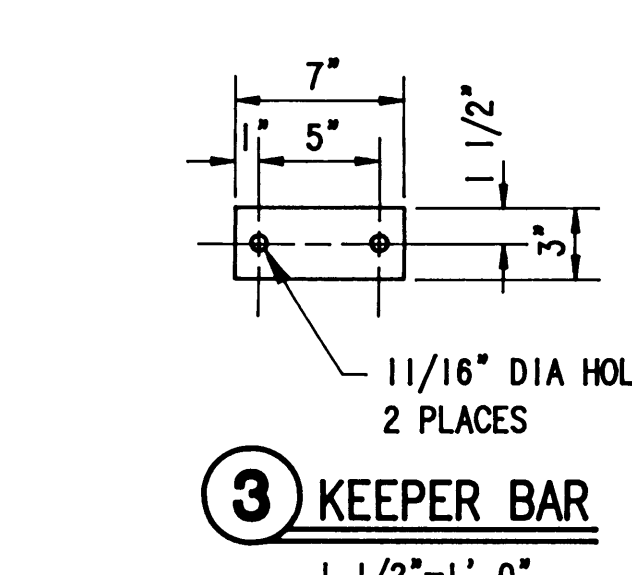
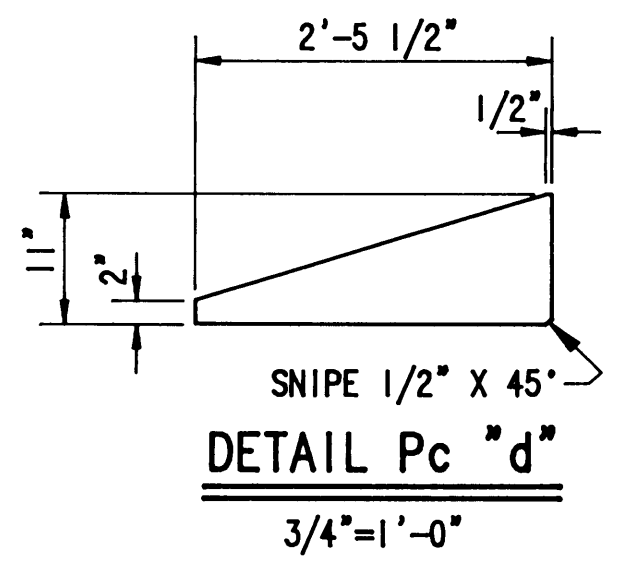
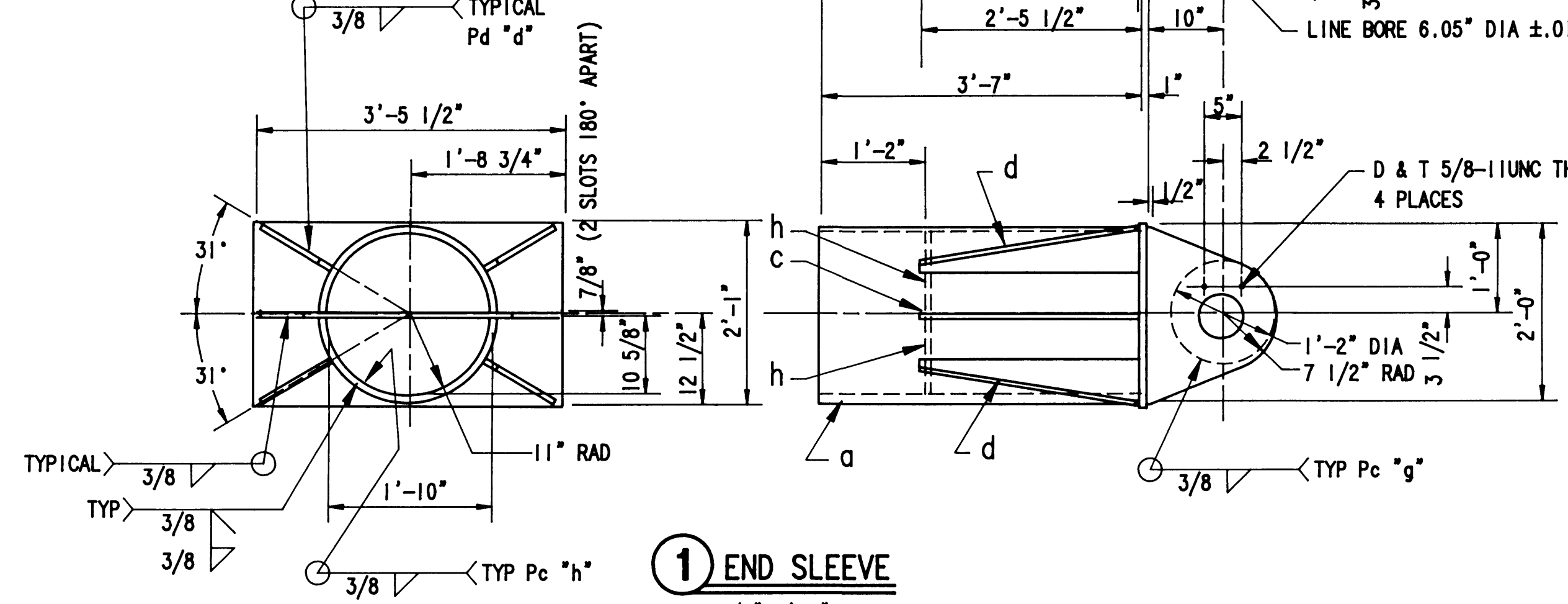
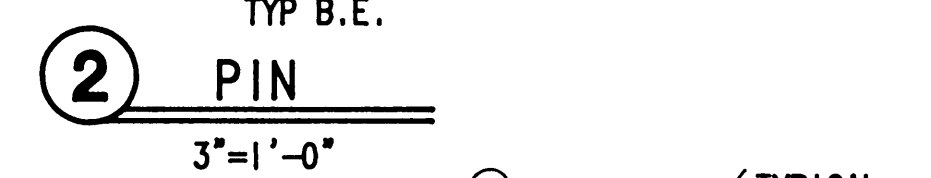
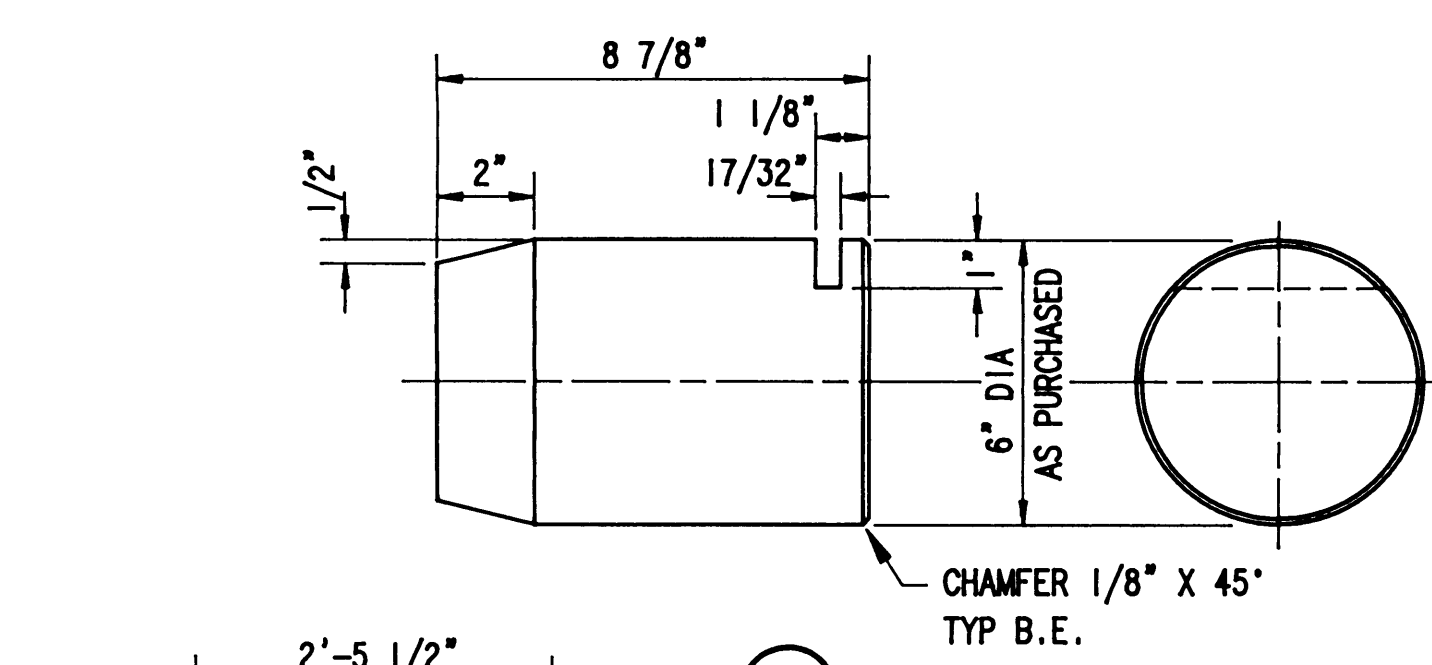
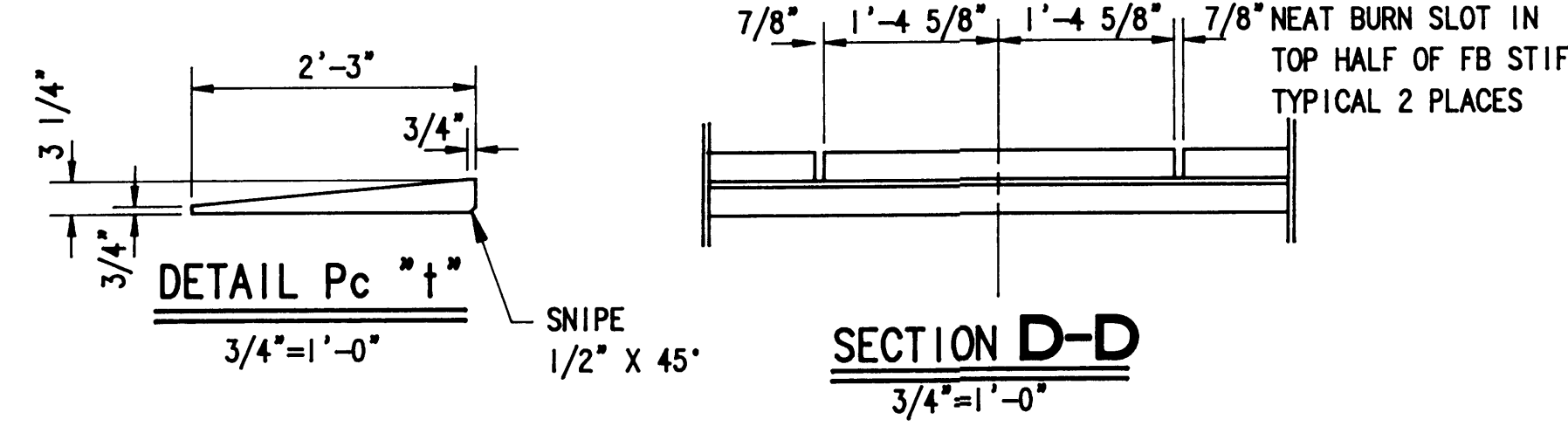
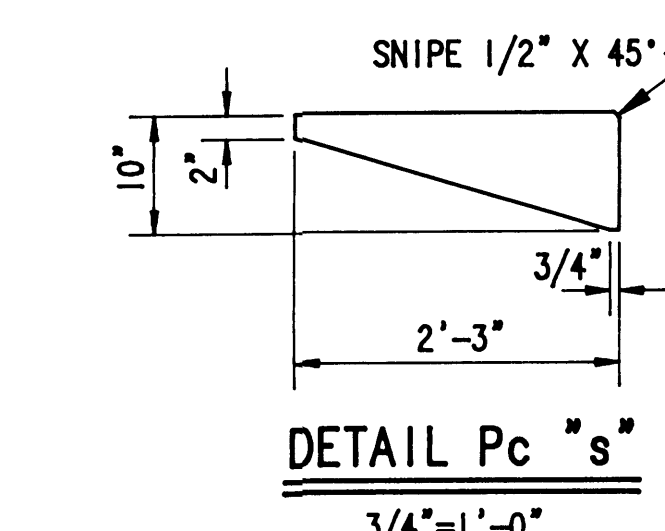
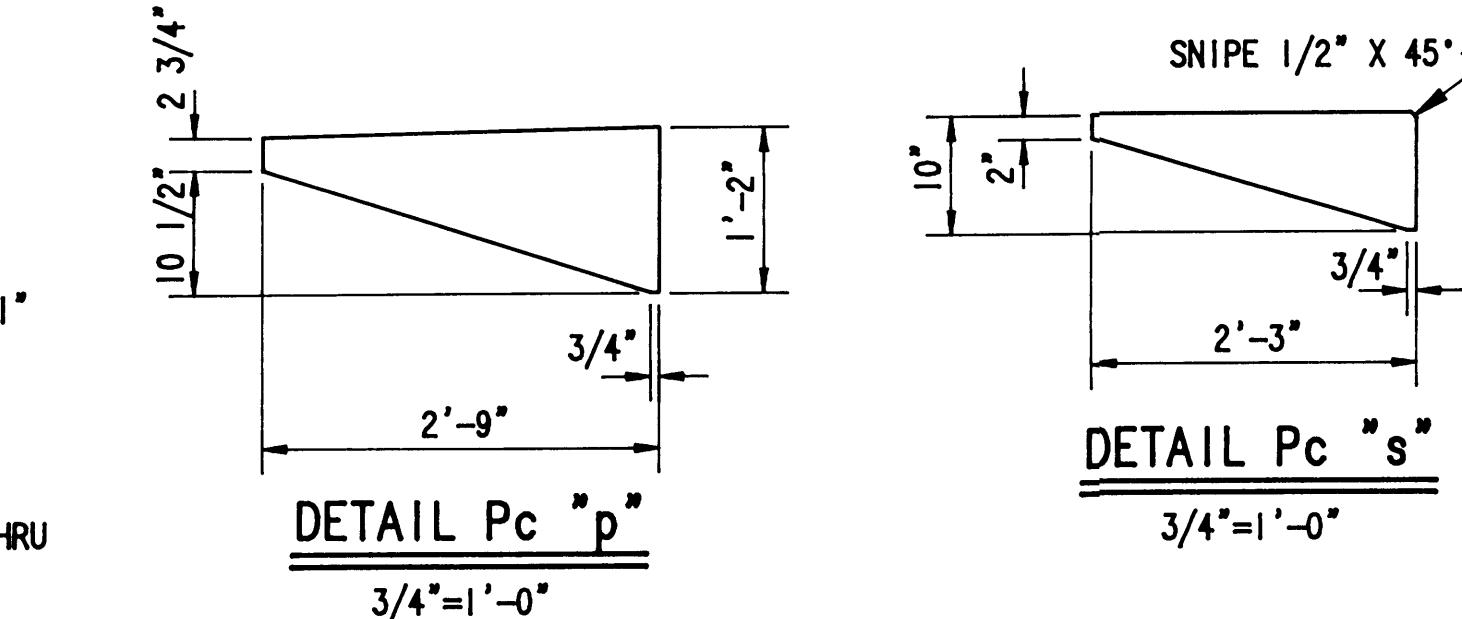
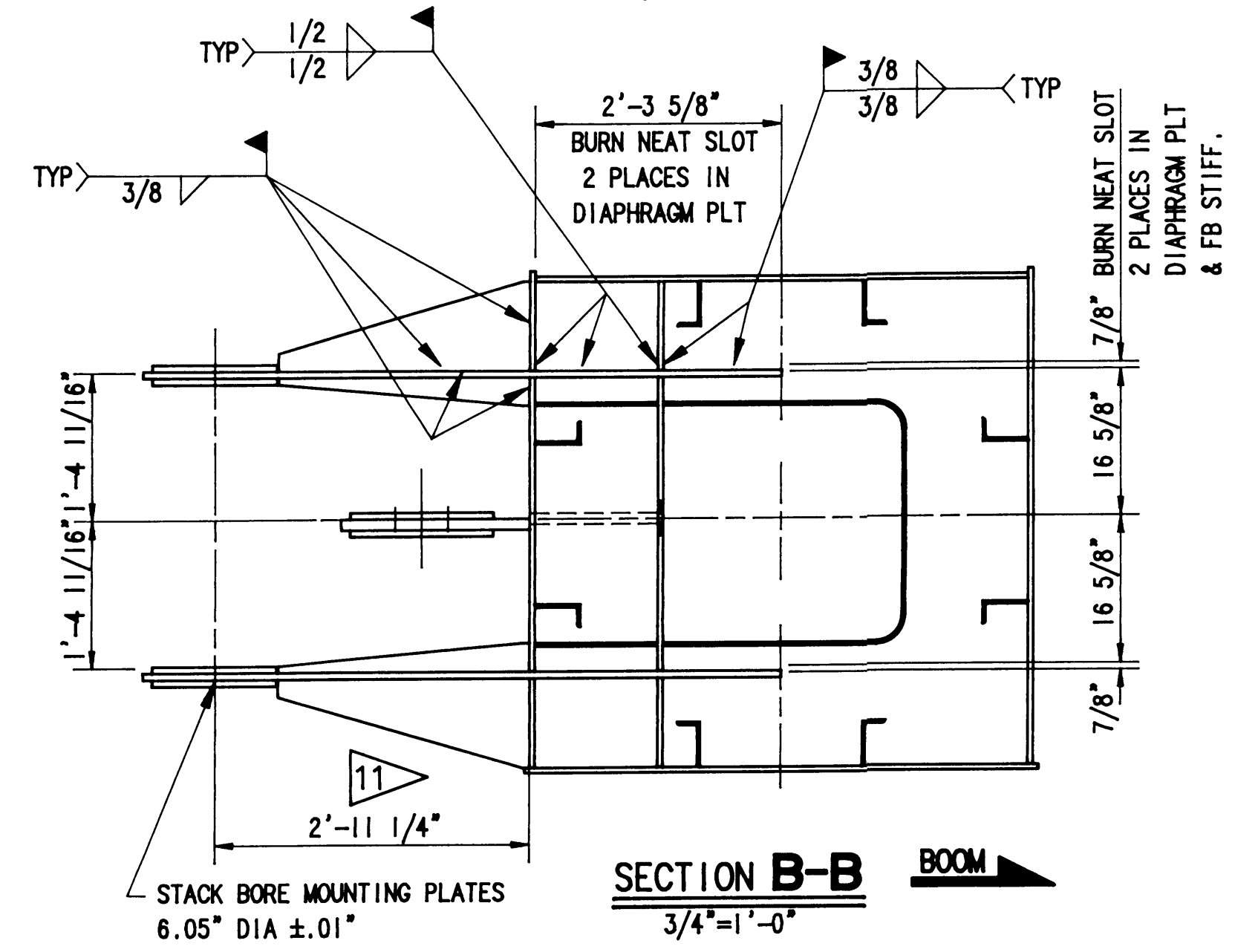
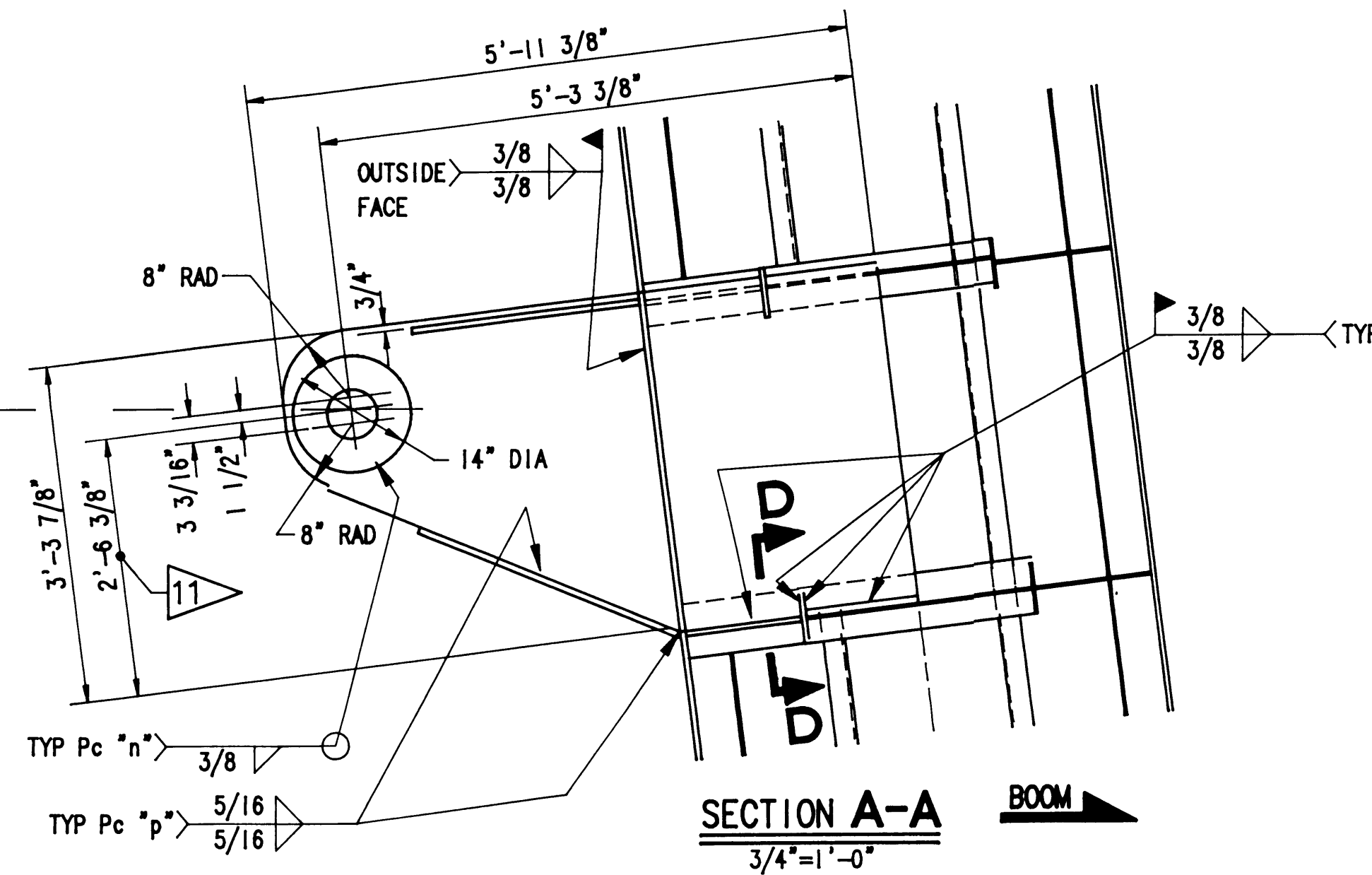
- NOTES:
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 - WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
 - PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
 - VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
 - ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
 - BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
 - SNIPE FLAT BARS, PLATES AND DIAPHRAGMS 1/2" X 45" AS REQUIRED TO CLEAR CORNER WELDS.
 - PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
 - MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.



NEAT BURN OFF PORTAL BEAM
MOUNTING LUG PLATE (SHADED AREA),
INLINE WITH NEW MOUNTING LUG
PLATES, GRIND SMOOTH

RIGHT HAND WATERSIDE CORNER - AS SHOWN
LEFT HAND WATERSIDE CORNER - OPP HAND

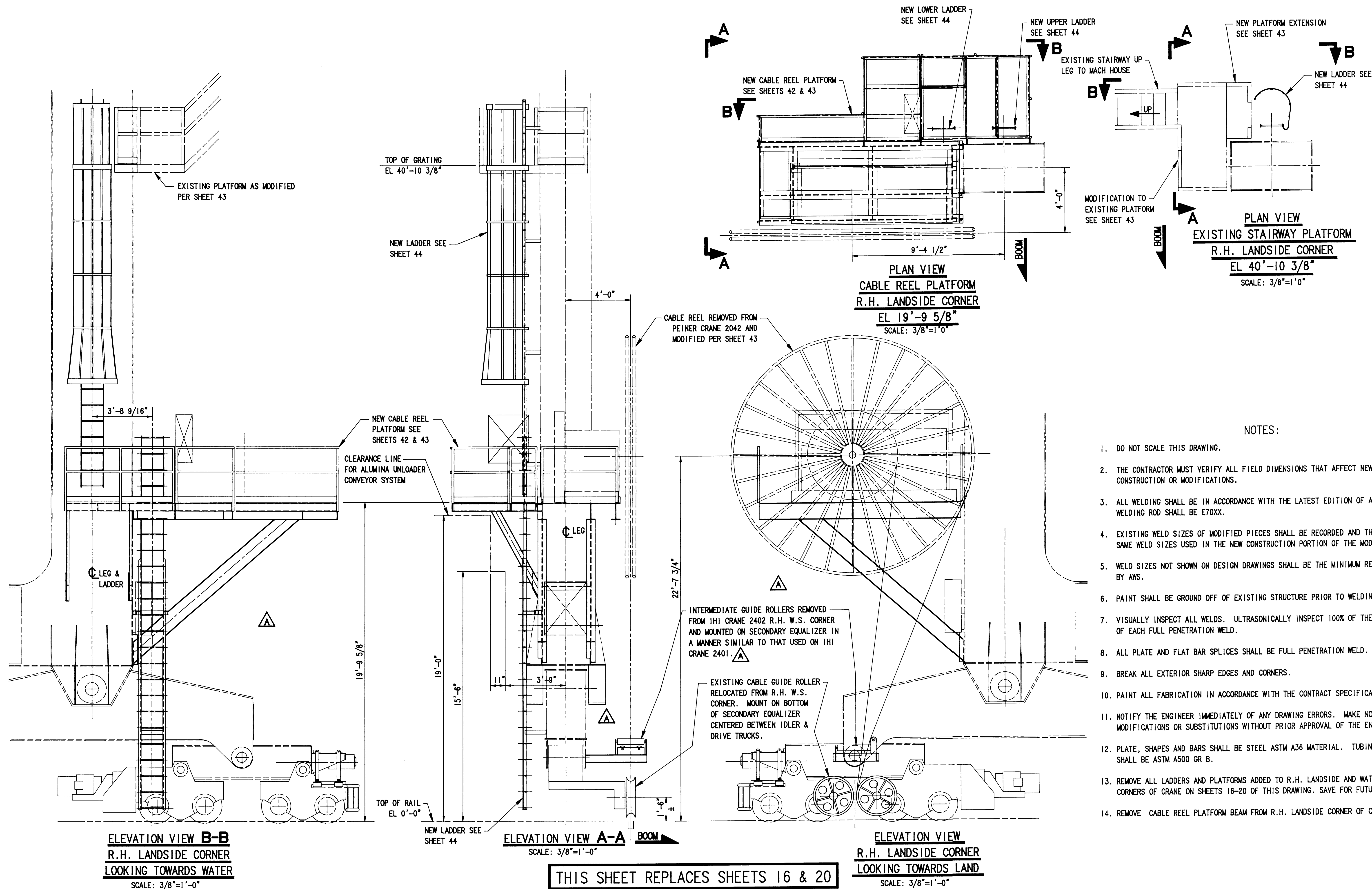
SECTION C-C BOOM
3/4"=1'-0"



LIST OF MATERIALS				
ITEM	DESCRIPTION	QTY	MATERIAL	WEIGHT
-1	END SLEEVE	2		
a	RD TUBE 24" DIA X 3'-7" LG	2	STEEL A500 GR B	
b	PL 1 25 X 3'-5 1/2"	2	STEEL A572 50000 YIELD	
c	PL 3/4 29 1/2 X 3'-4 1/2"	2	STEEL A572 50000 YIELD	
d	PL 3/4 11 X 2'-5 1/2"	8	STEEL A572 50000 YIELD	
f	PL 3/4 17 1/2 X 2'-0"	8	STEEL A572 50000 YIELD	
g	PL 3/4 14" DIAMETER	8	STEEL A572 50000 YIELD	
h	PL 3/4 10 1/2 X 1'-10"	4	STEEL A572 50000 YIELD	
-2	PIN	4		
	RD BAR 6" DIA. X 0'-8 7/8" LG	4	STEEL 1018 CD TG&P	
-3	KEEPER BAR	4		
	FB 3 X 1/2 0'-7" LG	4	STEEL A36	
MISC PLATES				
m	PL 3/4 39 7/8 X 5'-11 3/8"	8	STEEL A572 50000 YIELD	
n	PL 3/4 14" DIAMETER	8	STEEL A572 50000 YIELD	
p	PL 3/4 14 X 2'-9"	8	STEEL A572 50000 YIELD	
s	PL 3/4 10 X 2'-3"	8	STEEL A572 50000 YIELD	
t	PL 3/4 3 1/4 X 2'-3"	8	STEEL A572 50000 YIELD	
				TOTAL NET WEIGHT

MATERIAL QUANTITIES ARE FOR ONE CRANE

- NOTES:
- DO NOT SCALE THIS DRAWING.
 - THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
 - NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
 - ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
 - WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
 - PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
 - VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
 - ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
 - BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
 - PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- 11 MOUNTING PLATES SHALL BE INSTALLED TOGETHER WITH THE PIN HOLES HELD IN ALIGNMENT AS SHOWN ON DETAILS TO ENSURE PROPER FIT UP WITH PORTAL BEAM END SLEEVE.



THIS SHEET REPLACES SHEETS 16 & 20



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188

JOB: 2658 DWG: 1852 1/4



APPROVED
[Signature]
CHIEF ENGINEER DATE

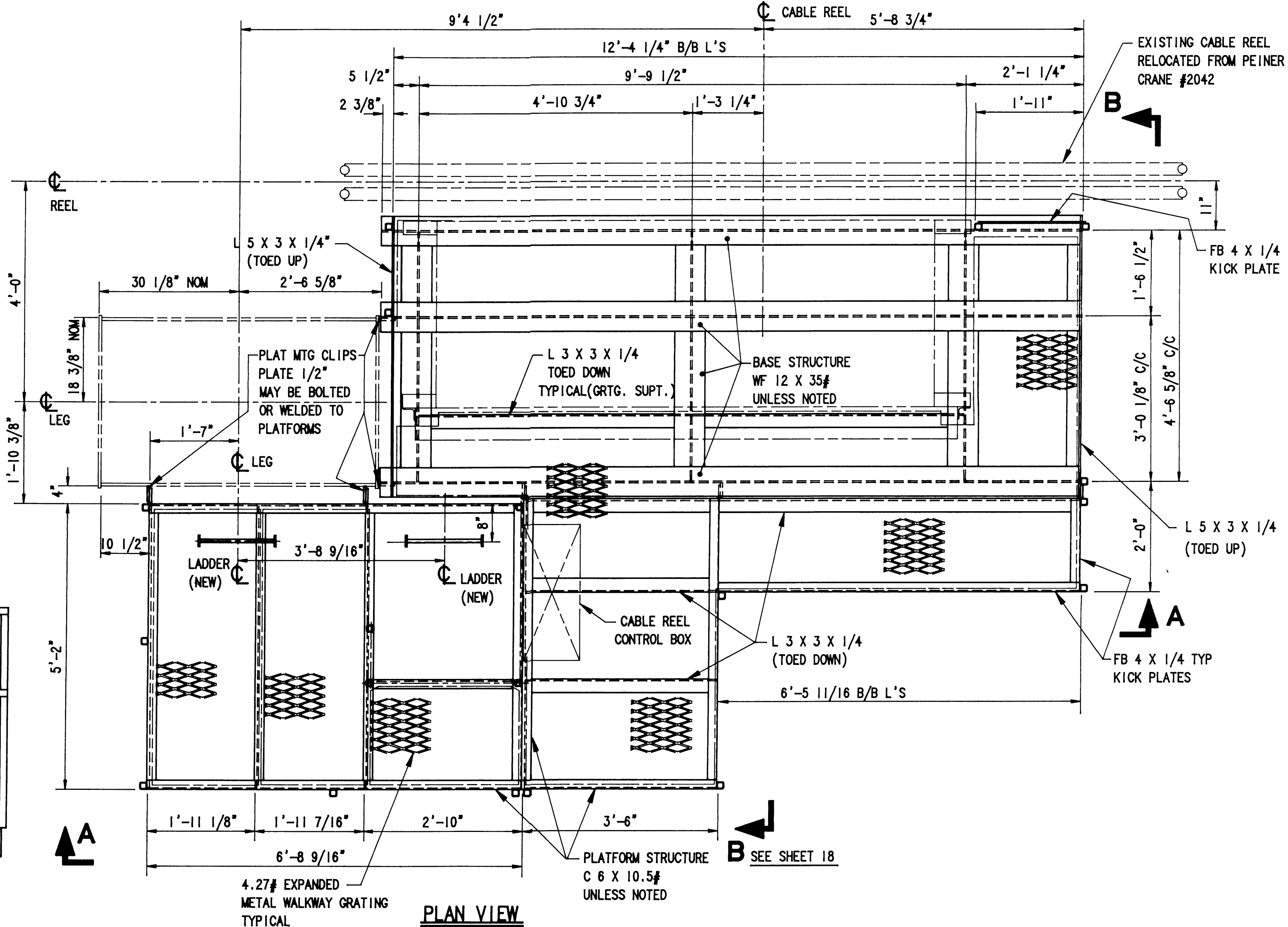
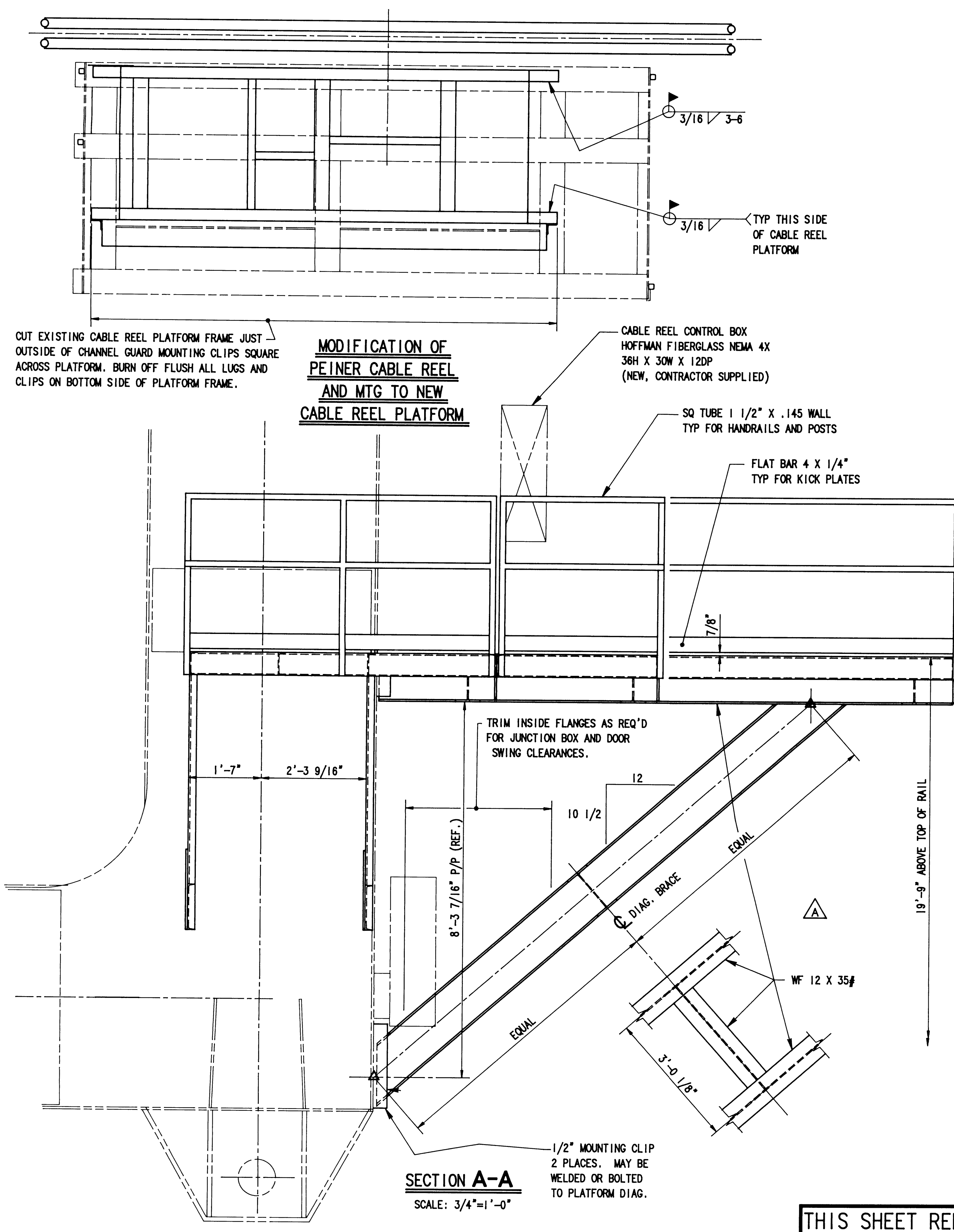
R BAKER 5/8/90
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

G ANDRUS 5/13/91
CHECKED BY DATE
JLA 5/13/91
PROJ. ENGR. DATE

B	AS BUILT	RJB	7/16/91
A	RELOC SUPPT BMS & LAD SUPPT	HC	GRA 5/20
	FOR JUNCT BOX CLEAR & RELOC		
	GUIDE ROLLERS.		
MARK	REVISION	BY	APP. DATE

RELOCATION OF IHI CRANE #2078 TO PIER 7
NEW PLATFORMS & LADDERS
GENERAL ARRANGEMENT

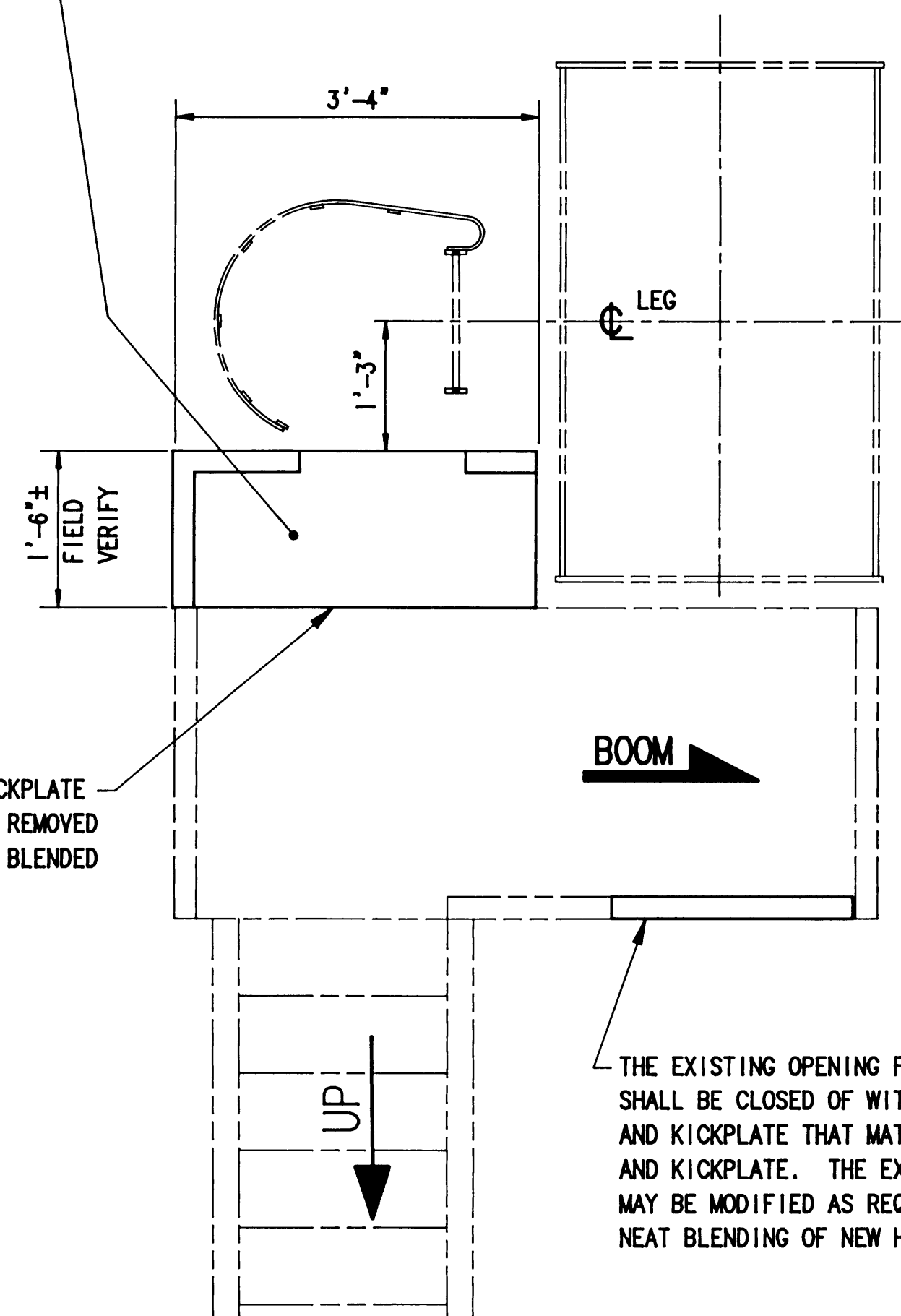
DRAWING No. EP-4365-32
CONTRACT No. 681
SHEET No. 41 OF 54



- NOTES:**
- DO NOT SCALE THIS DRAWING.
 - THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
 - ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
 - EXISTING WELD SIZES OF MODIFIED PIECES SHALL BE RECORDED AND THOSE SAME WELD SIZES USED IN THE NEW CONSTRUCTION PORTION OF THE MODIFICATIONS.
 - WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
 - PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
 - VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
 - ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
 - BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
 - PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
 - NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
 - PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.

THIS SHEET REPLACES SHEETS 17, 18 & 19

THIS PLATFORM SHALL BE FIELD FITTED TO EXISTING PLATFORM. ITS CONSTRUCTION SHALL MATCH THAT OF THE EXISTING PLATFORM AND SHALL BE ATTACHED TO THE EXISTING PLATFORM BY ANY METHOD OF THE CONTRACTOR'S CHOICE. METHOD AND MANNER OF ATTACHMENT SHALL FIRST BE APPROVED BY THE ENGINEER. HANDRAILS AND KICK PLATES SHALL MATCH THE EXISTING HANDRAILS AND KICKPLATES. THE GRATING SHALL BE AT THE SAME HEIGHT AS THE EXISTING PLATFORM GRATING AND SHALL BE A REASONABLE MATCH.

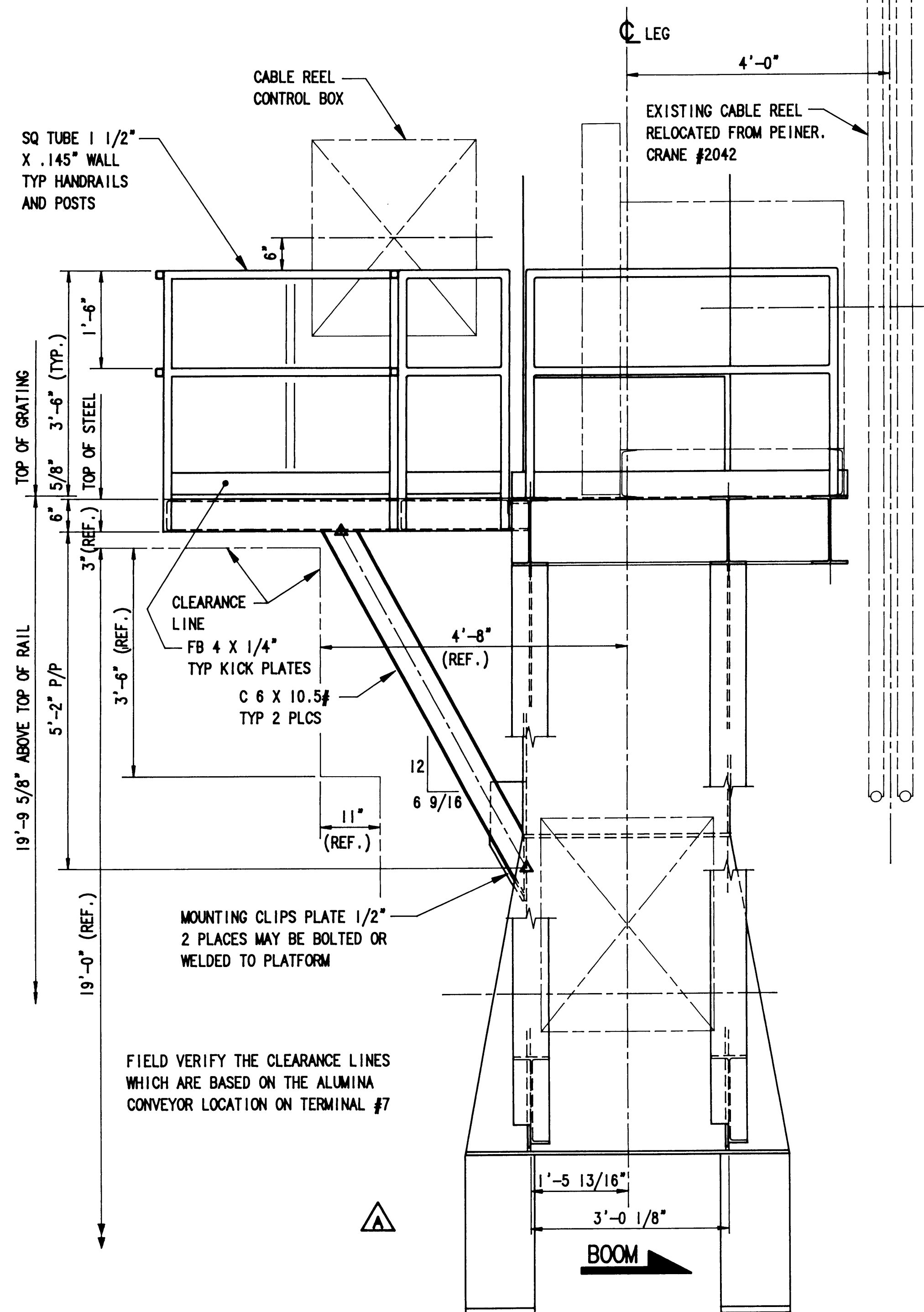


PLAN VIEW
RIGHT HAND LANDSIDE NEW PLATFORM
AND MODIFICATION TO EXISTING PLATFORM
AT 40'-10 3/8" ABOVE RAILS

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

THE EXISTING HANDRAIL AND KICKPLATE IN THIS AREA SHALL BE NEATLY REMOVED SO THAT NEW HANDRAILS MAY BE BLENDED INTO THE EXISTING HANDRAILS.

THE EXISTING OPENING FOR THE STAIRWAY SHALL BE CLOSED OF WITH NEW HANDRAILS AND KICKPLATE THAT MATCH EXISTING HANDRAILS AND KICKPLATE. THE EXISTING HANDRAILS MAY BE MODIFIED AS REQUIRED TO PROVIDE A NEAT BLENDING OF NEW HANDRAILS.



SECTION B-B

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

NOTES:

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- ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
- EXISTING WELD SIZES OF MODIFIED PIECES SHALL BE RECORDED AND THOSE SAME WELD SIZES USED IN THE NEW CONSTRUCTION PORTION OF THE MODIFICATIONS.
- WELD SIZES NOT SHOWN ON DESIGN DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
- PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
- VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
- ALL PLATE AND FLAT BAR SPLICES SHALL BE FULL PENETRATION WELD.
- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- PLATE, SHAPES AND BARS SHALL BE STEEL ASTM A36 MATERIAL. TUBING SHALL BE ASTM A500 GR B.

THIS SHEET REPLACES SHEETS 17, 18 & 19



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(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188

JOB: 2658 DWG: 1852 3/4



APPROVED
Richard C. Lippert
CHIEF ENGINEER DATE

R BAKER 5/10/91
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

G ANDRUS 5/14/91
CHECKED BY DATE
JLA 5/14/91
PROJ. ENGR. DATE

B	AS BUILT	RJB	7/18/91
A	RELOCATED SUPPORT BEAMS FOR JUNCTION BOX CLEARANCE.	HC	5/20
MARK	REVISION	BY	APP. DATE

RELOCATION OF IHI CRANE #2078 TO PIER 7
NEW CABLE REEL PLATFORM &
PLATFORM MODIFICATION AT 40'-10 3/8"

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 43 OF 54

NEW CABLE REEL
PLATFORM EXTENSION
AND SUPPORT BRACES
SEE SHEET 46

HILLMAR CABLE REEL ASSY
REMOVED FROM IHI CRANE #2401

CABLE REEL PLATFORM MADE
FABRICATED FOR IHI CRANE
#2078 AND MODIFIED PER
SHEET 47

20" DIA CROSSOVER ROLLER ASSY
(SUPPLIED BY THE PORT) AND
MOUNTING FRAME. SEE SHEET 49

CROSSOVER ROLLER

24" DIA CROSSOVER ROLLER ASSY
(SUPPLIED BY THE PORT)
SEE SHEET 49

CROSSOVER ROLLER

CABLE GUIDE ASSY
(SUPPLIED BY THE PORT)
SEE SHEET 49

NEW HANDRAILS
SEE SHEET 47

16'-2 3/8"
8'-5 5/16"

TOP OF RAIL

SADDLE PIN

16'-10 1/2"

17'-8 9/16"

17'-9 13/16"

UPPER CROSSOVER ROLLER ASSY

CABLE GUIDE ASSY

LOWER CROSSOVER ROLLER ASSY

ELEVATION VIEW
L.H. WATERSIDE CORNER
LOOKING TOWARDS LAND
SCALE: 3/8"=1'-0"

8. ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
11. THE CABLE REEL PLATFORM AND CABLE REEL UNIT MUST BE INSTALLED PRIOR TO INSTALLING THE UPPER CROSSOVER ROLLER ASSEMBLY.
12. THE CABLE GUIDE ASSEMBLY MUST BE INSTALLED PRIOR TO INSTALLING THE LOWER CROSSOVER ROLLER ASSEMBLY.
13. DIMENSIONS SHOWN ON THIS DRAWING ARE FOR REFERENCE USE ONLY. SEE DETAIL SHEETS 46 THRU 49 FOR ACTUAL INSTALLATION DIMENSIONS.

NOTES:

1. DO NOT SCALE THIS DRAWING.
2. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DRAWING ERRORS. MAKE NO MODIFICATIONS OR SUBSTITUTIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
3. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS THAT AFFECT NEW CONSTRUCTION OR MODIFICATIONS.
4. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1. WELDING ROD SHALL BE E70XX.
5. WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.

END VIEW
SCALE: 3/8"=1'-0"

CABLE REEL

TOP OF GRATING

REROUTE ELECTRICAL CONDUIT LINES
TO ENTER ON TOP AND BOTTOM
OF ELECTRICAL BOX, TO CLEAR
PLATFORM SUPPORT BRACE.

REROUTE ELECTRICAL CONDUIT FROM
ELECTRICAL OUTLET TO CRANE LEG,
TO CLEAR NEW WALKWAY AND CROSSOVER
ROLLER STRUCTURE

TOP OF MAIN EQUALIZER

TOP OF SECONDARY EQUALIZER

25'-5"
22'-5 5/8"
10'-1 1/4"
7'-3 3/16"

RAIL

CABLE REEL

CABLE GUIDE ASSY

21 1/2" 3'-0"

BOOM

TRIM BACK MOTOR GUARD AS REQUIRED
BEHIND LADDER TO PROVIDE FOOT
CLEARANCE.

UPPER LADDER 5'-7"

LOWER LADDER 9'-9 3/4"

CABLE REEL

12'-0"

NEW LADDER
SEE SHEET 48

NEW HANDRAILS
SEE SHEET 47

NEW LADDER
SEE SHEET 48

ELEVATION VIEW
L.H. WATERSIDE CORNER
LOOKING TOWARDS WATER
SCALE: 3/8"=1'-0"

WATERSIDE
L.H.

R.H.

LANDSIDE

KEY PLAN



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2658 DWG: 1583 1/5



APPROVED
R. Baker
CHIEF ENGINEER DATE

R BAKER 6/3/91
DRAWN BY DATE
C.R. 10/2/91
AS-BUILT BY DATE

K.H. 6/4/91
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

A	AS BUILT	RJB	7/15/91
MARK	REVISION	BY	APP. DATE

RELOCATION OF PEINER CRANE #2042 TO PIER 4
GENERAL ARRANGEMENT
OF CABLE REEL

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 45 OF 54

NEW CABLE REEL
PLATFORM EXTENSION
AND SUPPORT BRACES
SEE SHEET 48

HILLMAR CABLE REEL ASSY
REMOVED FROM 1H1 CRANE #2401

CABLE REEL PLATFORM MADE
FABRICATED FOR 1H1 CRANE
#2078 AND MODIFIED PER
SHEET 47

20" DIA CROSSOVER ROLLER ASSY
(SUPPLIED BY THE PORT) AND
MOUNTING FRAME. SEE SHEET 49

CROSSOVER ROLLER

24" DIA CROSSOVER ROLLER ASSY
(SUPPLIED BY THE PORT)
SEE SHEET 49

CROSSOVER ROLLER

CABLE GUIDE ASSY
(SUPPLIED BY THE PORT)
SEE SHEET 49

NEW HANDRAILS
SEE SHEET 47

TOP OF RAIL

SADDLE PIN

16'-10 1/2"

UPPER CROSSOVER ROLLER ASSY

17'-8 9/16"

CABLE GUIDE ASSY

17'-9 13/16"

LOWER CROSSOVER ROLLER ASSY

ELEVATION VIEW
L.H. WATERSIDE CORNER
LOOKING TOWARDS LAND
SCALE: 3/8"=1'-0"

8. ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
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13. DIMENSIONS SHOWN ON THIS DRAWING ARE FOR REFERENCE USE ONLY. SEE DETAIL SHEETS 48 THRU 49 FOR ACTUAL INSTALLATION DIMENSIONS.

NOTES:

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5. WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
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7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.

END VIEW
SCALE: 3/8"=1'-0"

CABLE REEL

TOP OF GRATING

REROUTE ELECTRICAL CONDUIT LINES
TO ENTER ON TOP AND BOTTOM
OF ELECTRICAL BOX, TO CLEAR
PLATFORM SUPPORT BRACE.

REROUTE ELECTRICAL CONDUIT FROM
ELECTRICAL OUTLET TO CRANE LEG,
TO CLEAR NEW WALKWAY AND CROSSOVER
ROLLER STRUCTURE

TOP OF MAIN EQUALIZER

TOP OF SECONDARY EQUALIZER

25'-5"

22'-5 5/8"

10'-1 1/4"

7'-3 3/16"

RAIL

CABLE REEL

CABLE GUIDE ASSY
21 1/2" 3'-0"

BOOM

ELEVATION VIEW
L.H. WATERSIDE CORNER
LOOKING TOWARDS WATER
SCALE: 3/8"=1'-0"

TRIM BACK MOTOR GUARD AS REQUIRED
BEHIND LADDER TO PROVIDE FOOT
CLEARANCE.

UPPER LADDER 5'-7"

LOWER LADDER 9'-9 3/4"

CABLE REEL

12'-0"

NEW LADDER
SEE SHEET 48

NEW HANDRAILS
SEE SHEET 47

NEW LADDER
SEE SHEET 48

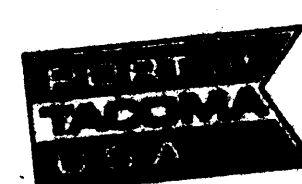
SADDLE PIN

WATERSIDE
L.H.

R.H.

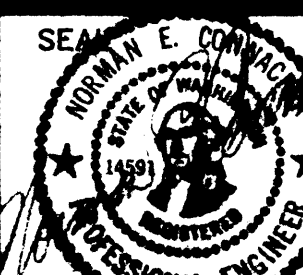
LANDSIDE

KEY PLAN



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2658 DWG: 1583 1/5



APPROVED

CHIEF ENGINEER DATE

R BAKER 8/3/91
DRAWN BY DATE

AS-BUILT BY DATE

K.H. 8/4/91
CHECKED BY DATE

PROJ. ENGR. DATE

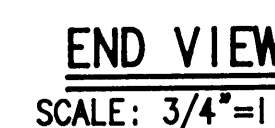
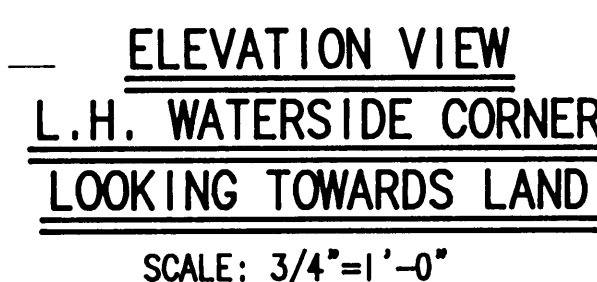
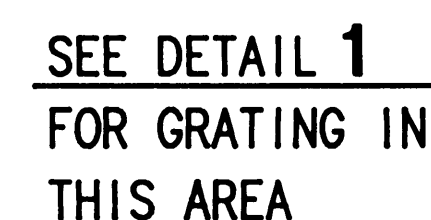
MARK REVISION

BY APP. DATE

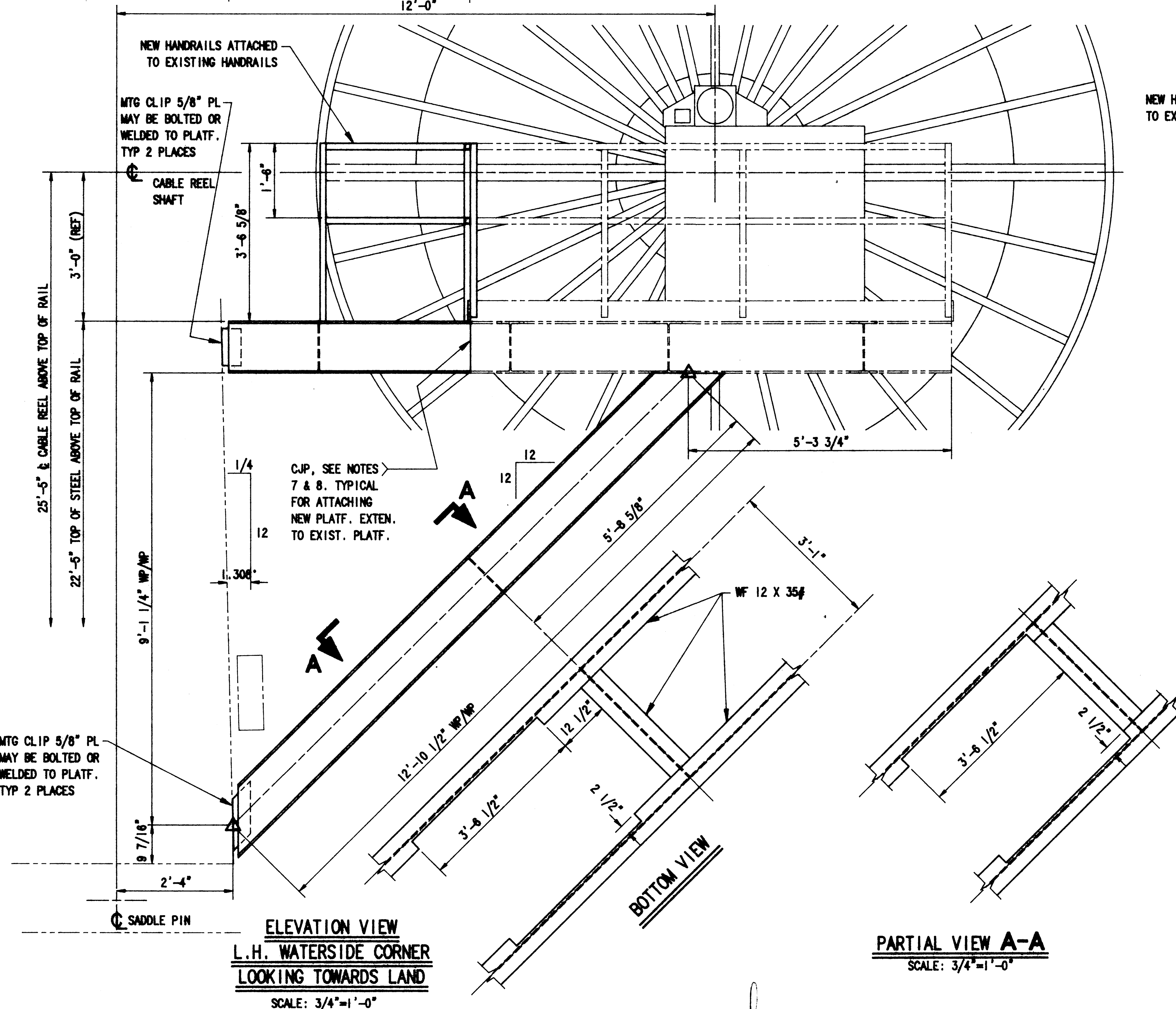
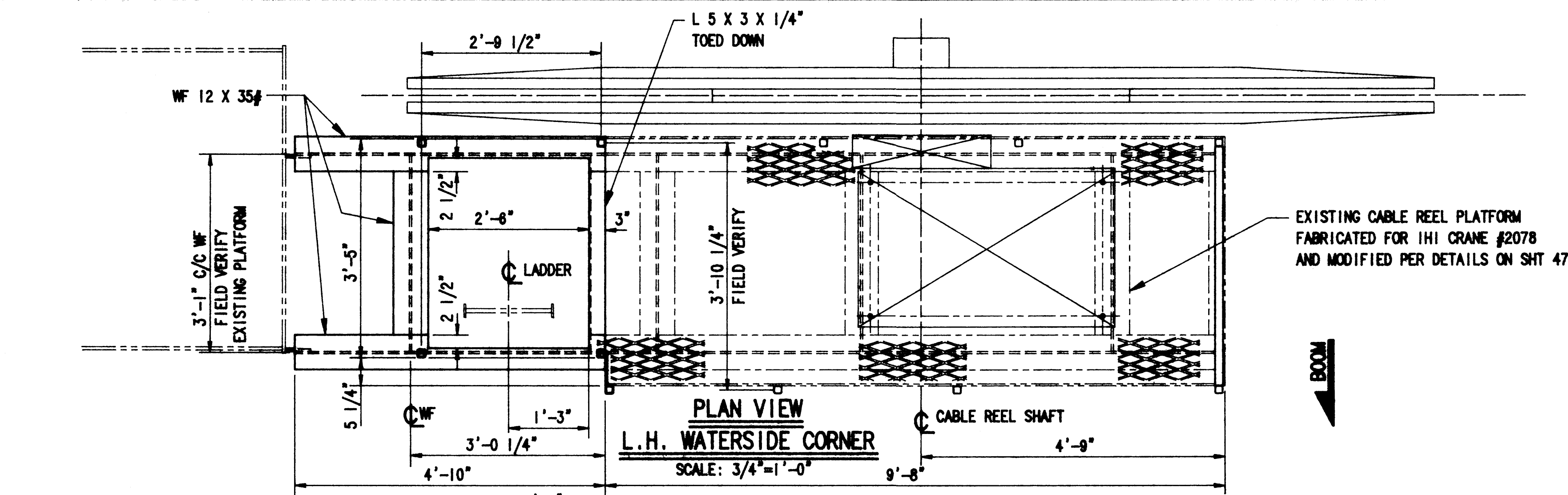
RELOCATION OF PEINER CRANE #2042 TO PIER 4
**GENERAL ARRANGEMENT
OF CABLE REEL**

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 45A OF

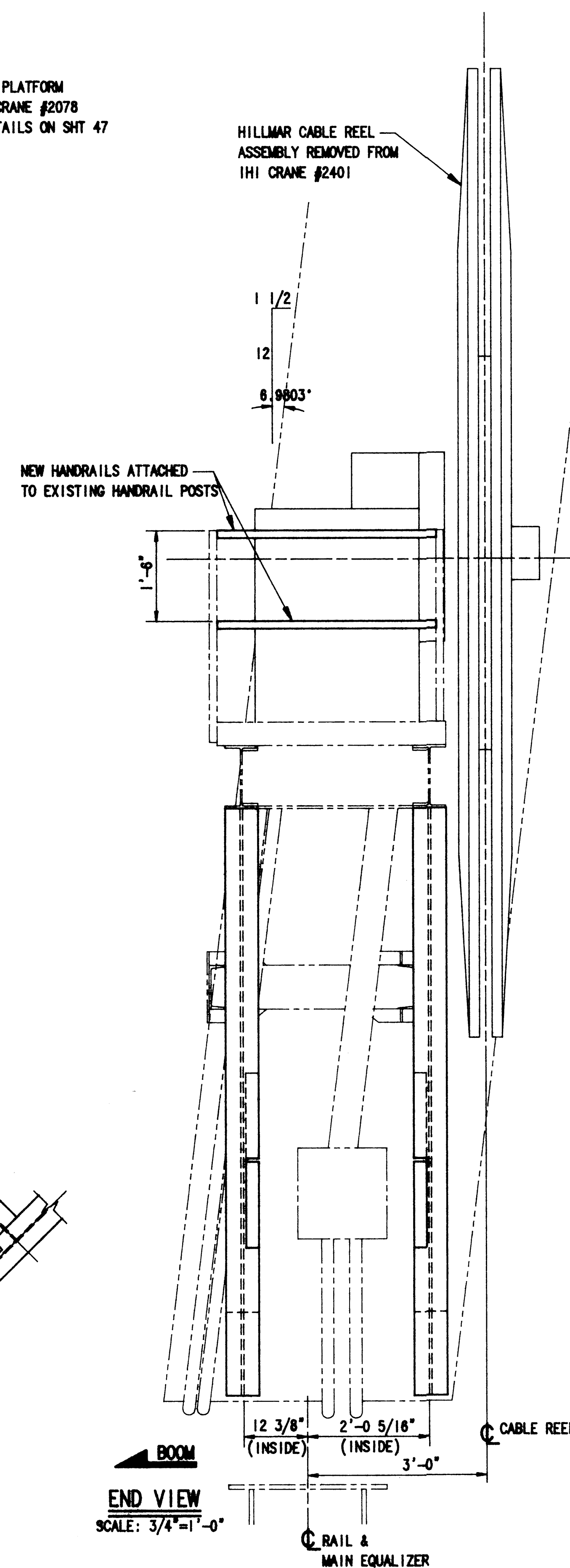
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5. WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
8. ALL PLATE, SHAPES AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
11. ALL MATERIAL SHALL BE STEEL A36 EXCEPT HANDRAILS AND POSTS WHICH SHALL BE SQUARE TUBE 1 1/2 X .145 WALL STEEL A500 GRADE B.



DETAIL 1
HINGED GRATING SECTION
& ADDITIONAL GRATING
SCALE: 3/4" = 1'-0"



PARTIAL VIEW A-A
SCALE: 3/4"=1'-0"



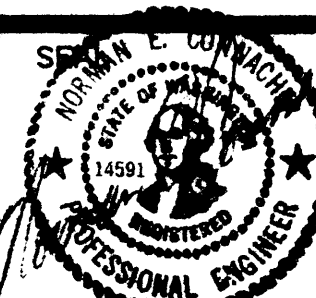
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PORT OF TACOMA
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(206)383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2658 DWG: 1853 2/5



APPROVED

CHIEF ENGINEER

DATE

R BAKER 5/28/91
DRAWN BY DATE

AS-BUILT BY DATE

K. H. 6/4/91
CHECKED BY DATE

PROJ. ENGR. DATE

MARK REVISION

BY APP. DATE

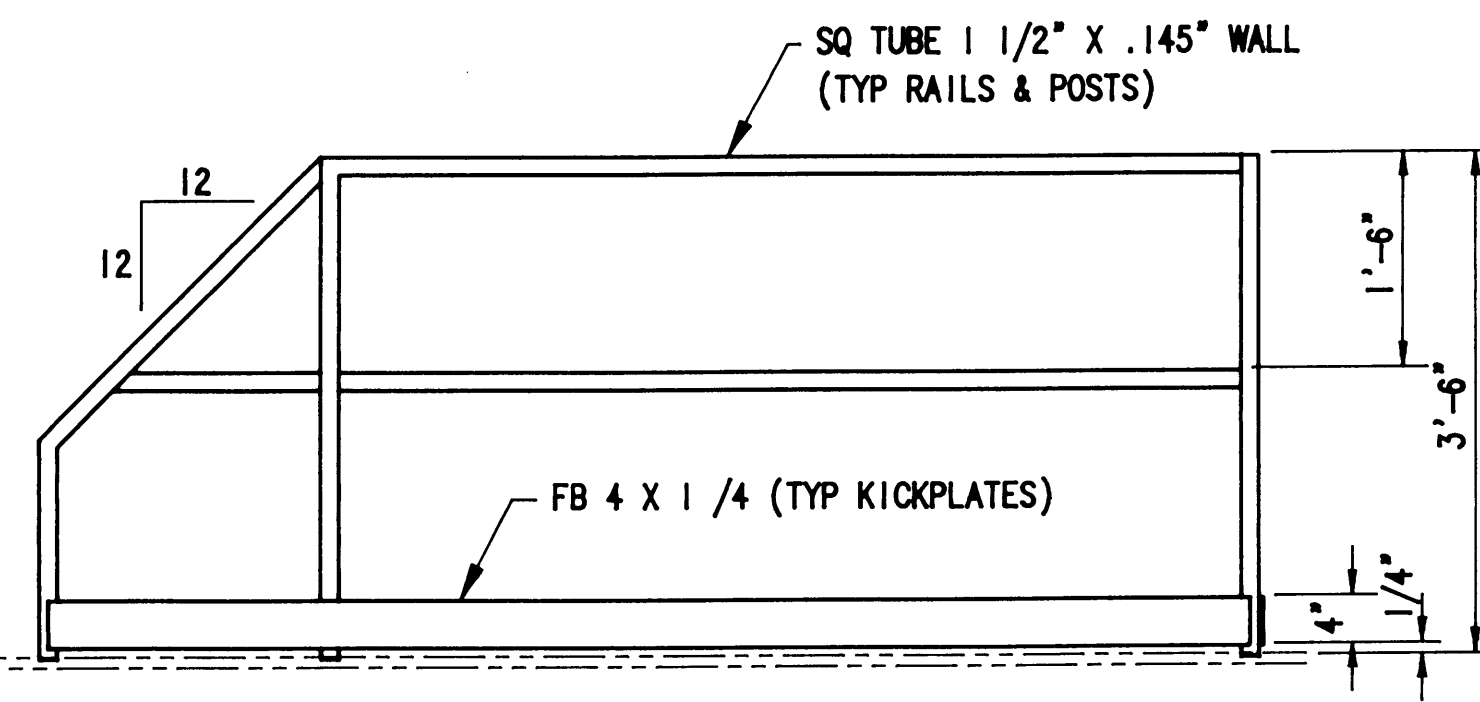
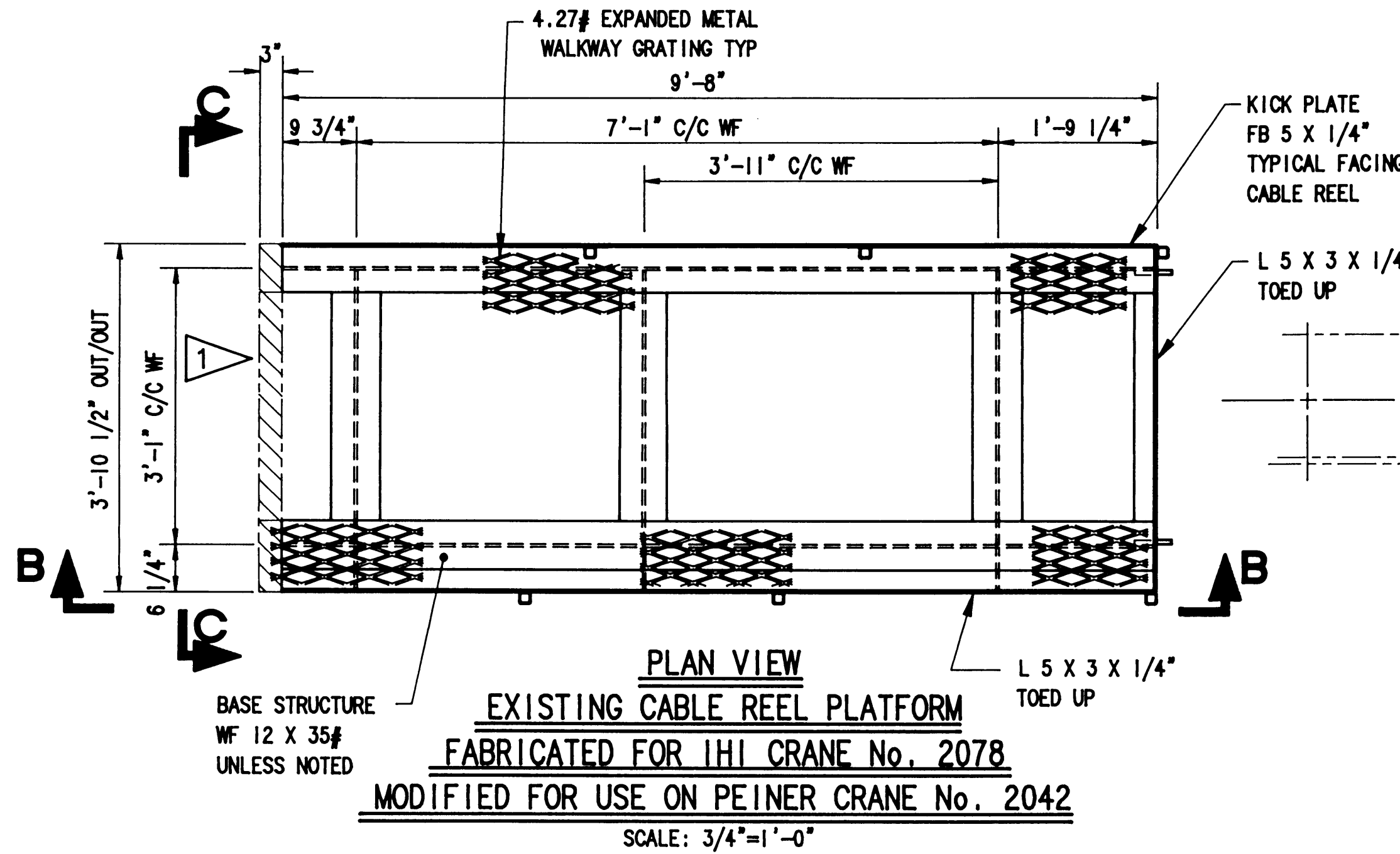
RELOCATION OF PEINER CRANE #2042 TO PIER 4

NEW CABLE REEL PLATFORM
EXTENSION AND SUPPORTS

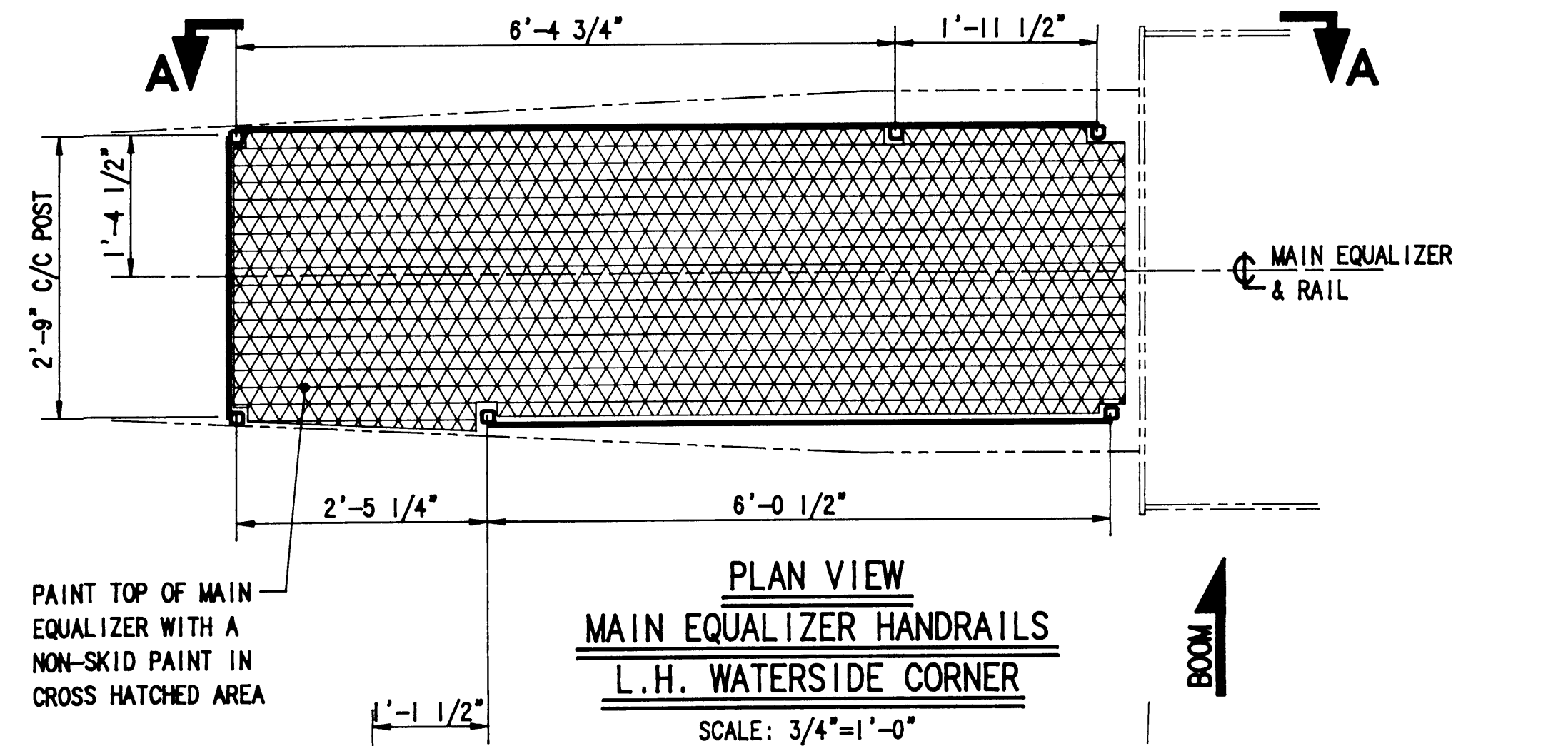
DRAWING No. EP4365-32

CONTRACT No. 681

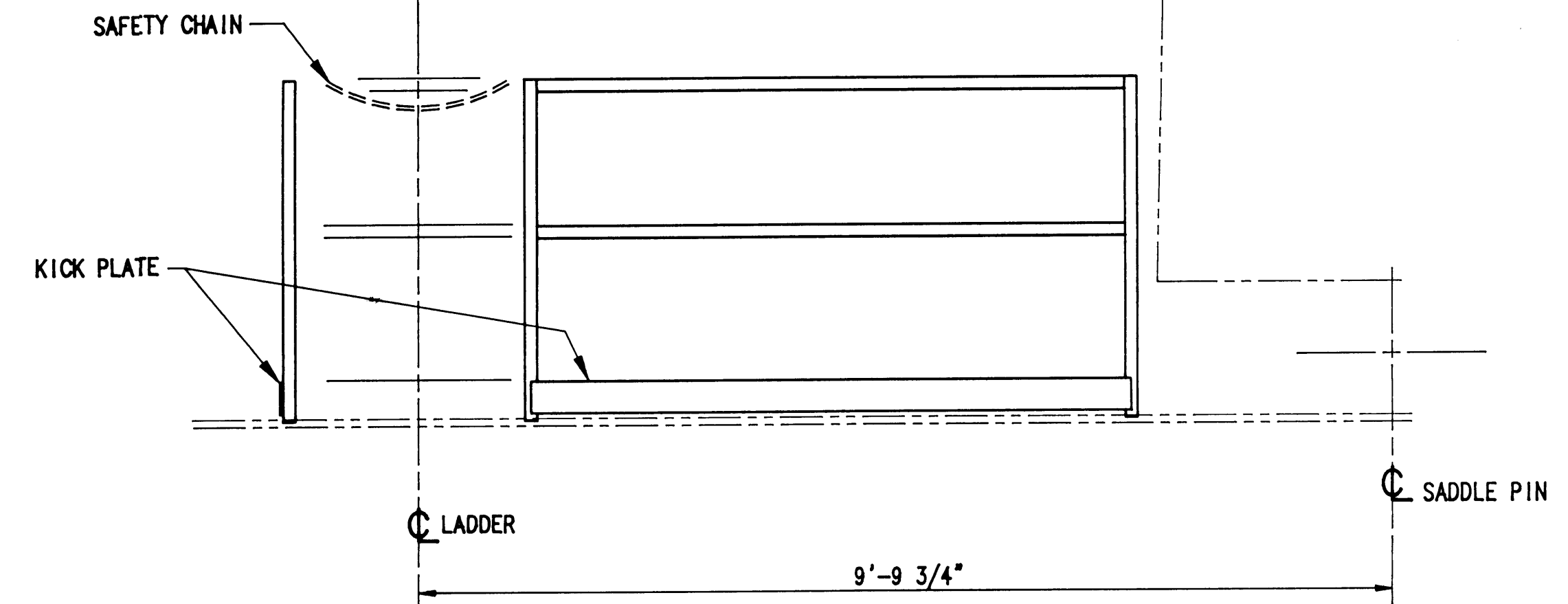
SHEET No. 46A OF



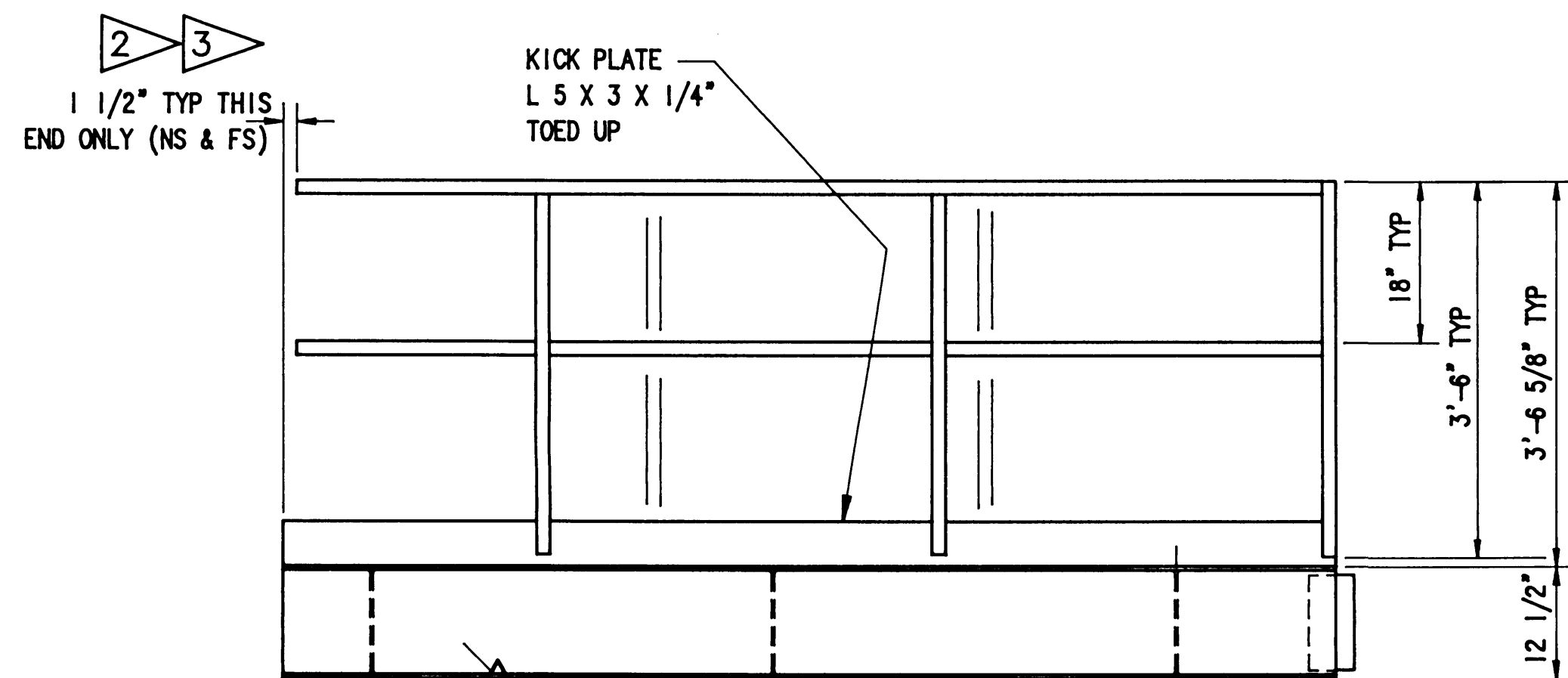
SECTION A-A
LOOKING TOWARDS LAND
SCALE: 3/4"=1'-0"



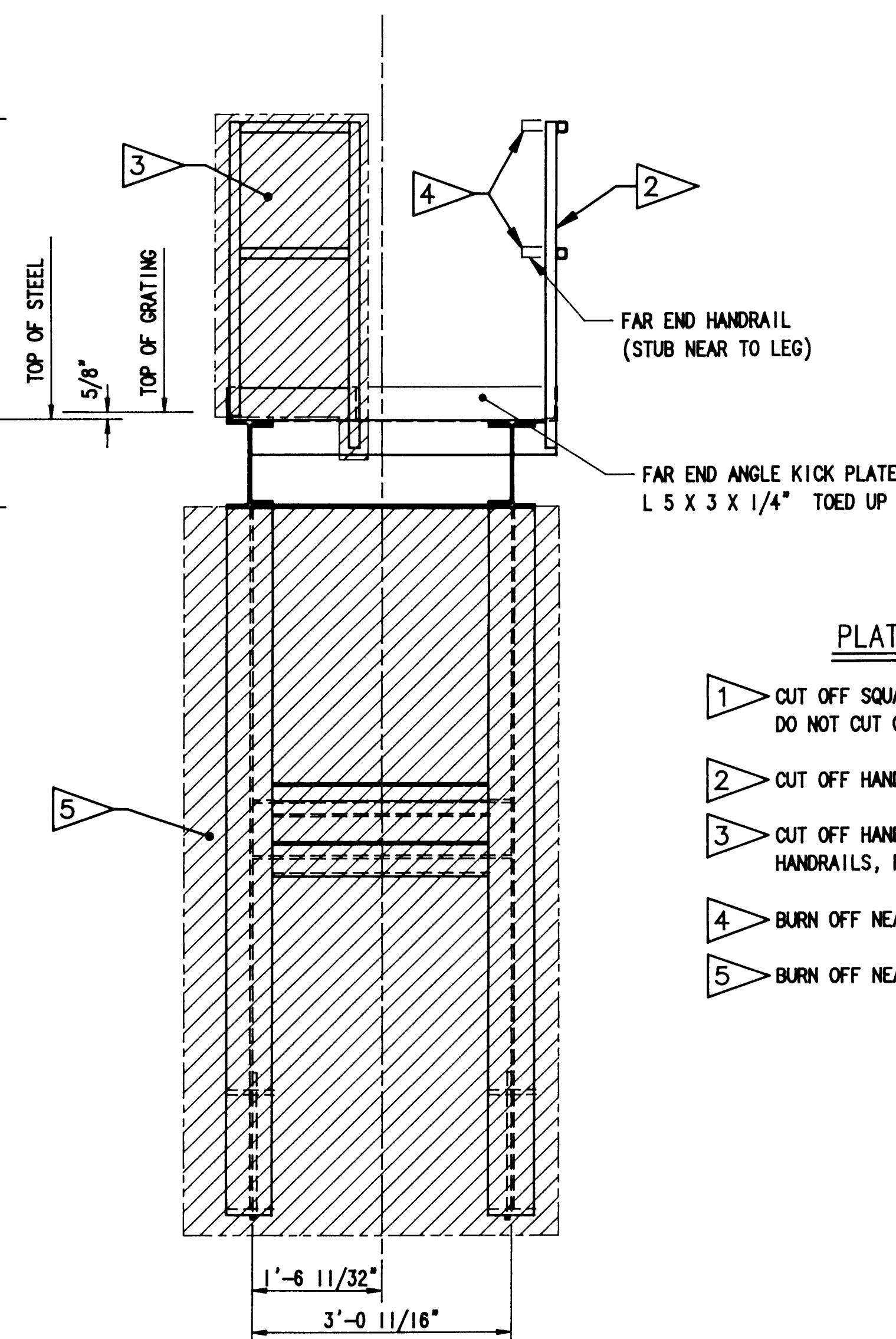
PLAN VIEW
MAIN EQUALIZER HANDRAILS
L.H. WATERSIDE CORNER
SCALE: 3/4"=1'-0"



ELEVATION VIEW
LOOKING TOWARDS WATER
SCALE: 3/4"=1'-0"



B-BELEV VIEW
SCALE: 3/4"=1'-0"



ELEV VIEW C-C
SCALE: 3/4"=1'-0"

PLATFORM MODIFICATION NOTES

- 1 CUT OFF SQUARE, END OF PLATFORM WF'S, KICKPLATES AND END ANGLE PIECE. DO NOT CUT OFF EXPANDED METAL GRATING.
- 2 CUT OFF HANDRAILS AND POST 1 1/2" BACK FROM NEW END OF PLATFORM.
- 3 CUT OFF HANDRAILS AND POST 1 1/2" BACK FROM NEW END OF PLATFORM. REMOVE HANDRAILS, POST AND KICKPLATES FROM END OF PLATFORM.
- 4 BURN OFF NEAT, HANDRAIL STUBS FROM POST.
- 5 BURN OFF NEAT, DIAGONAL BRACES FROM BOTTOM OF PLATFORM BASE.

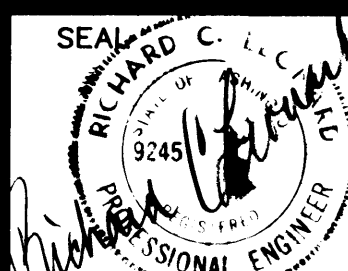
NOTES:

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5. WELD SIZES NOT SHOWN ON DRAWINGS SHALL BE THE MINIMUM REQUIRED BY AWS.
6. PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
7. VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
8. ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
9. BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
10. PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
11. ALL MATERIAL SHALL BE STEEL A36 EXCEPT HANDRAILS AND POSTS WHICH SHALL BE STEEL A500 GRADE B.



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2658 DWG: 1583 3/5



APPROVED
Richard C. Baker
CHIEF ENGINEER DATE

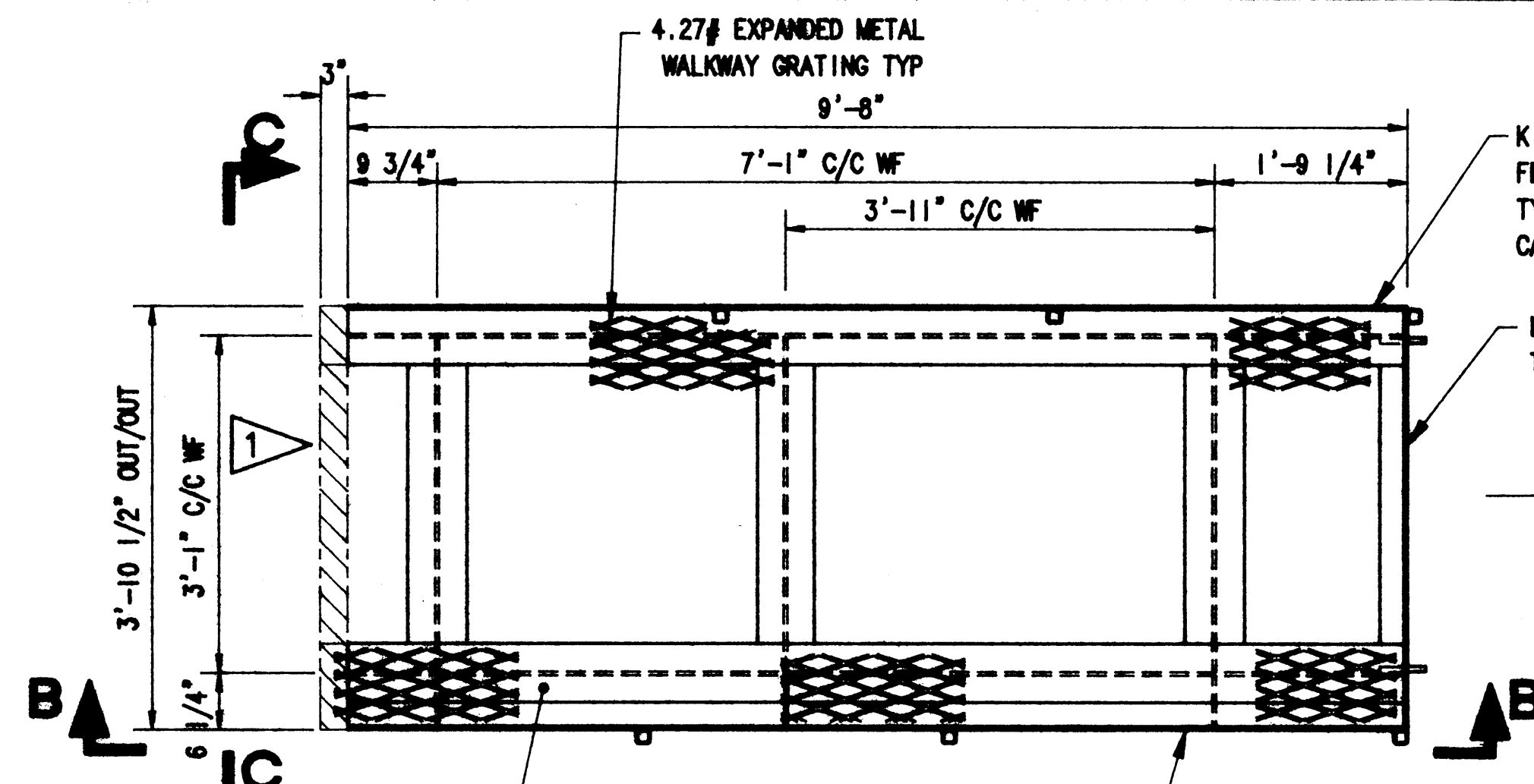
R BAKER 5/30/91
DRAWN BY DATE
C.R. 10/21/91
AS-BUILT BY DATE

K. H. 6/4/91
CHECKED BY DATE
J.L.A.
PROJ. ENGR. DATE

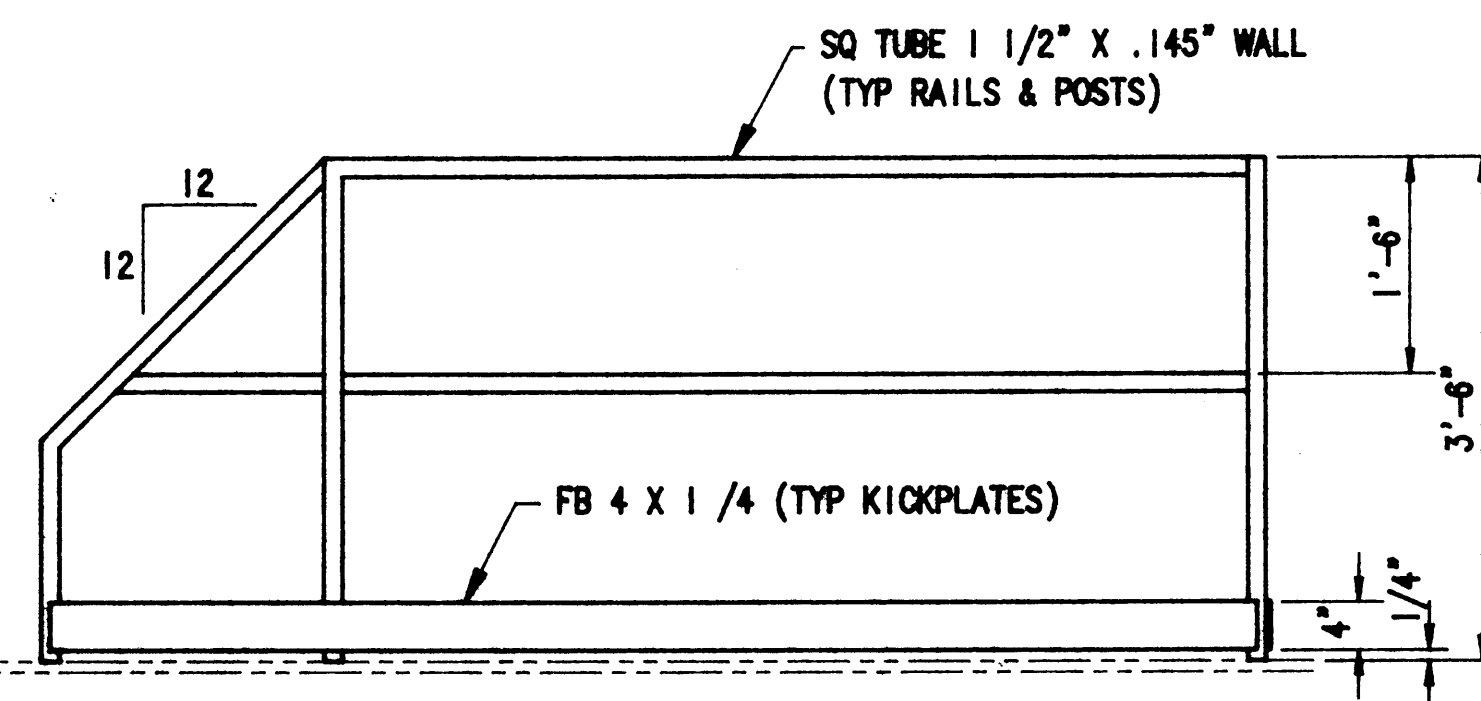
MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		7/17/91

RELOCATION OF PEINER CRANE #2042 TO PIER 4
PLATFORM MODIFICATION & MISC HANDRAILS

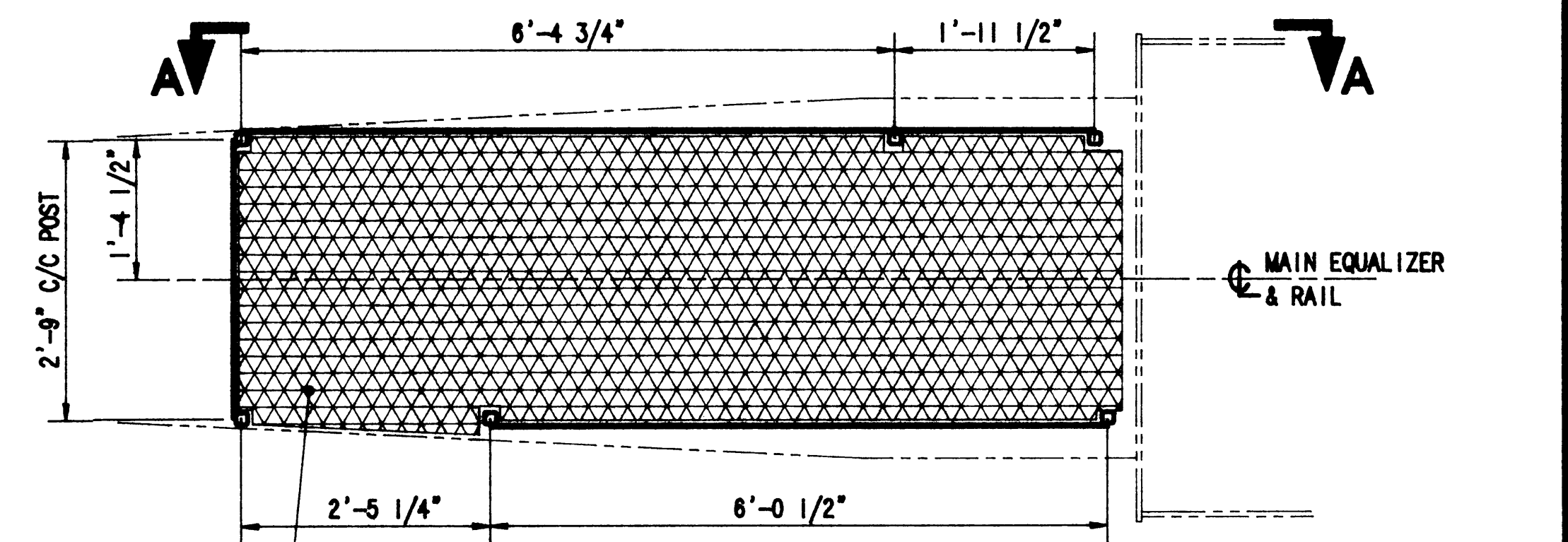
DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 47 OF 54



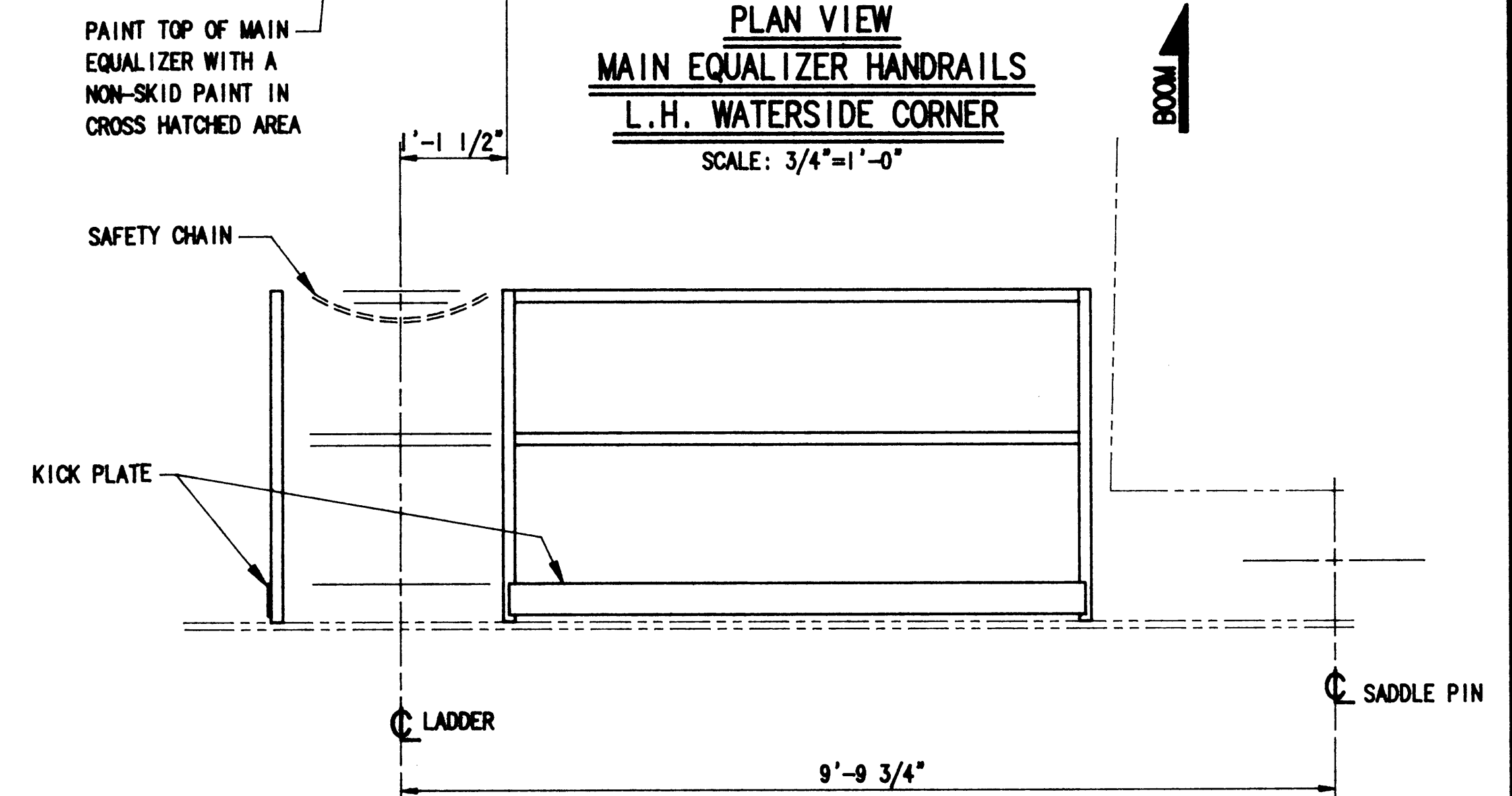
PLAN VIEW
EXISTING CABLE REEL PLATFORM
FABRICATED FOR IHI CRANE No. 2078
MODIFIED FOR USE ON PEINER CRANE No. 2042
 SCALE: 3/4"=1'-0"



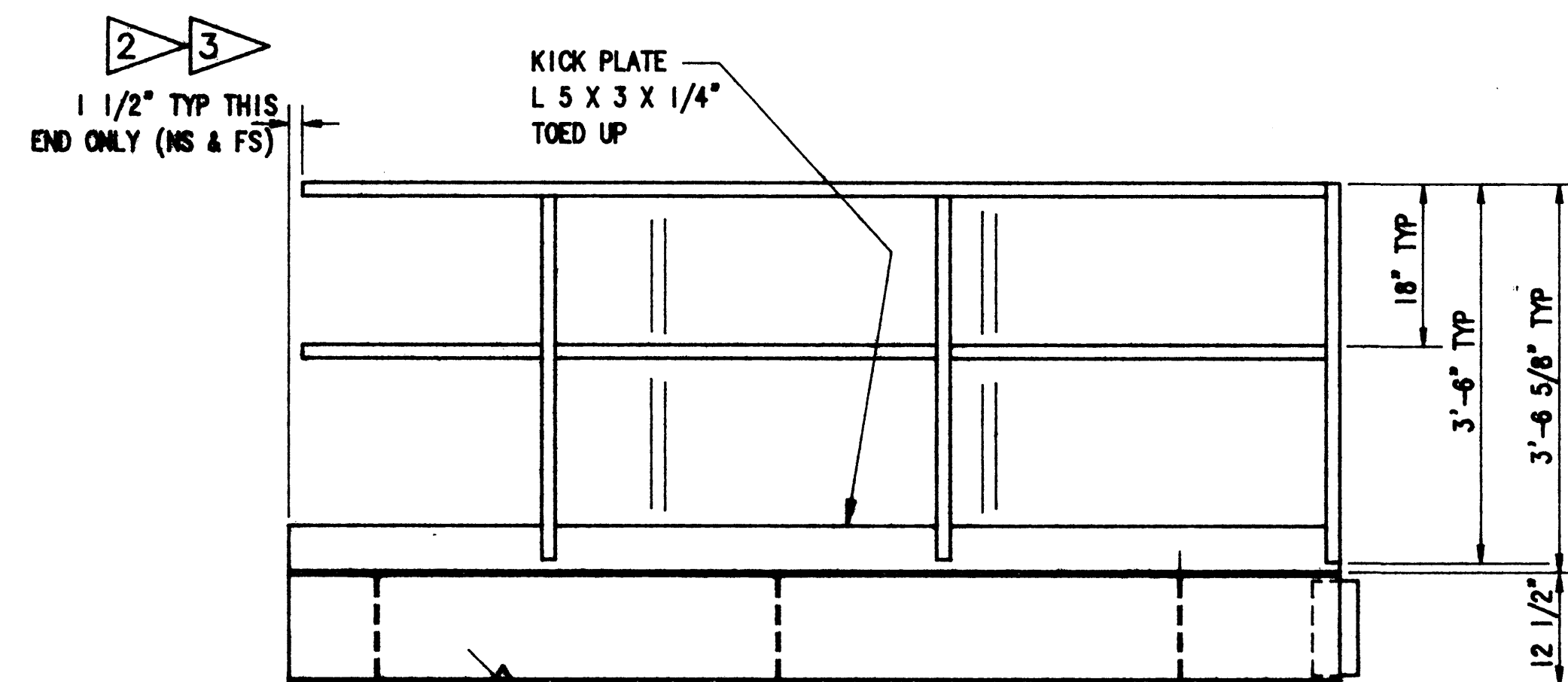
SECTION A-A
LOOKING TOWARDS LAND
 SCALE: 3/4"=1'-0"



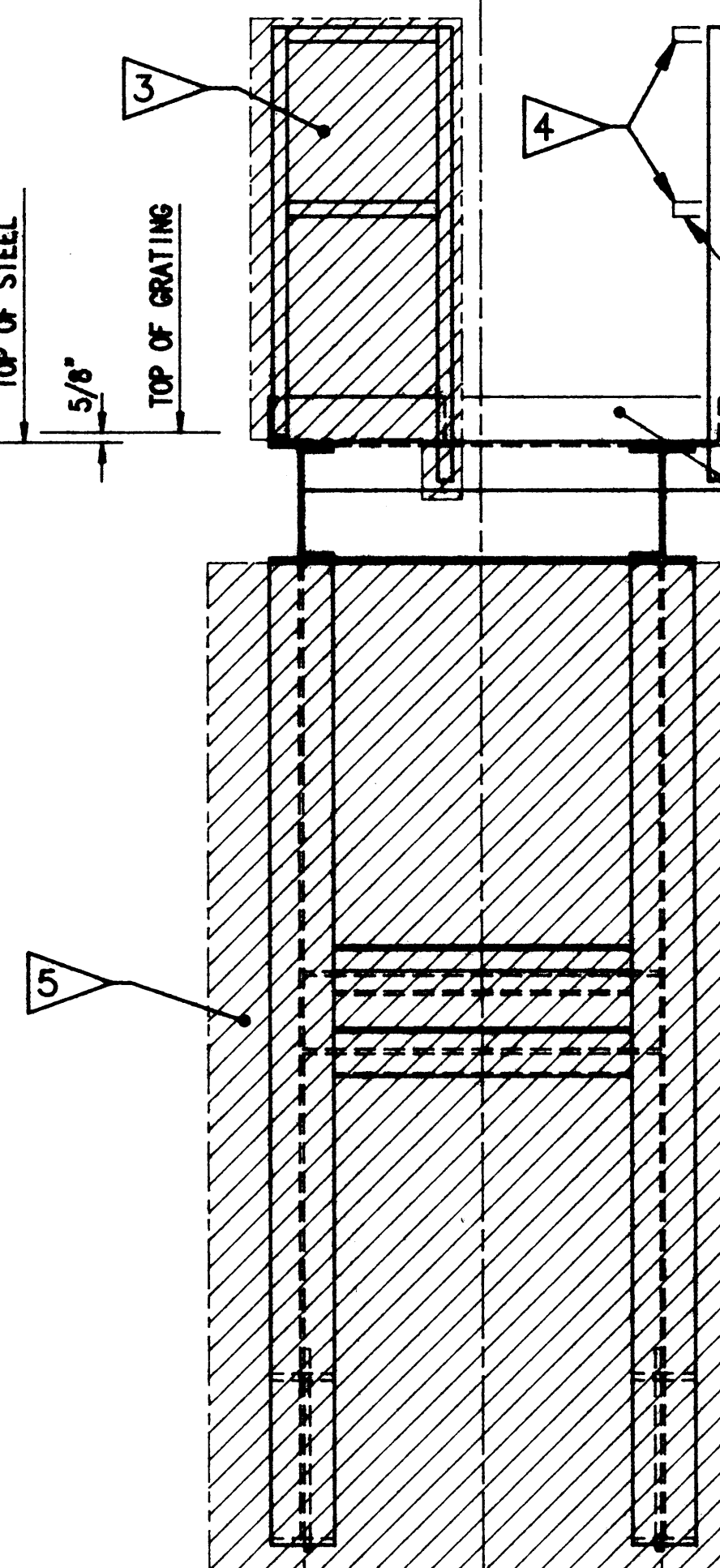
PLAN VIEW
MAIN EQUALIZER HANDRAILS
L.H. WATERSIDE CORNER
 SCALE: 3/4"=1'-0"



ELEVATION VIEW
LOOKING TOWARDS WATER
 SCALE: 3/4"=1'-0"



B-BELEV VIEW
 SCALE: 3/4"=1'-0"



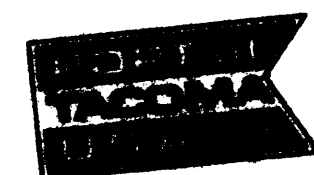
ELEV VIEW C-C
 SCALE: 3/4"=1'-0"

PLATFORM MODIFICATION NOTES

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4. BURN OFF NEAT, HANDRAIL STUBS FROM POST.
5. BURN OFF NEAT, DIAGONAL BRACES FROM BOTTOM OF PLATFORM BASE.

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PORT OF TACOMA
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 (206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
 932A INDUSTRY DRIVE
 SEATTLE WA 98188
 JOB: 2658 DWG: 1583 3/5



APPROVED
 CHIEF ENGINEER DATE

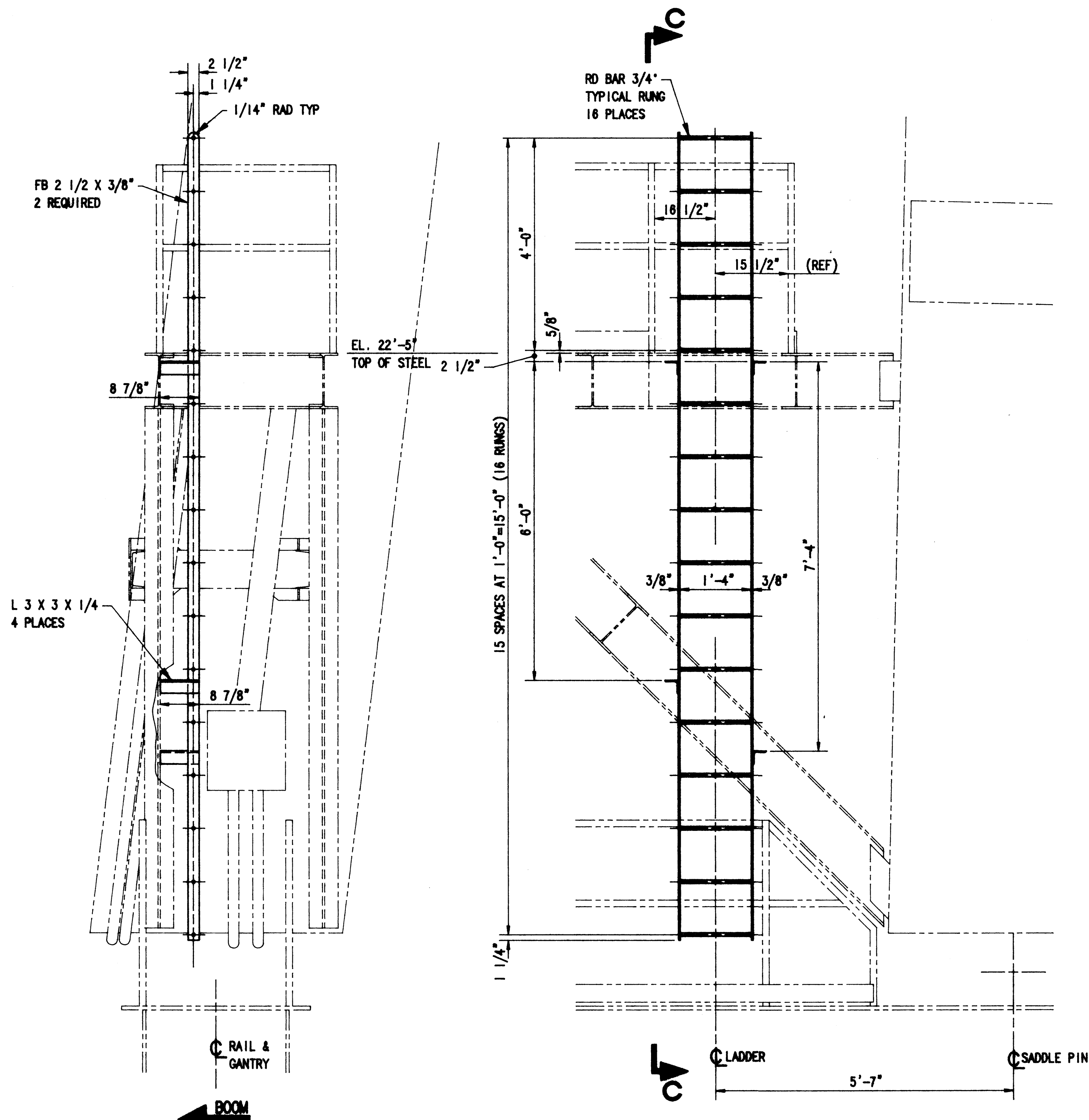
R BAKER 5/30/91
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K. H. 6/4/91
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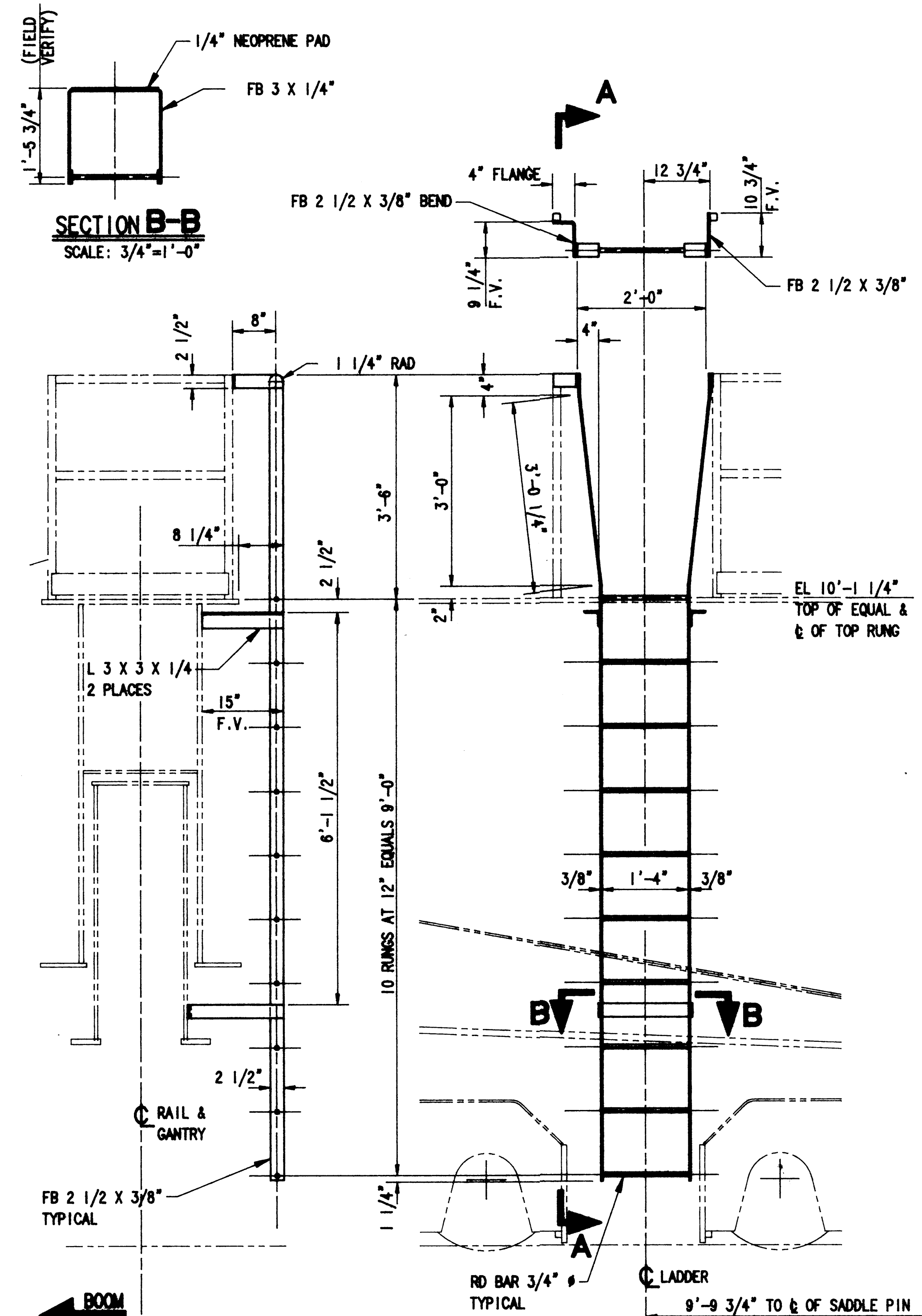
AS-BUILT BY DATE
 PROJ. ENGR. DATE
 MARK REVISION
 BY APP. DATE

RELOCATION OF PEINER CRANE #2042 TO PIER 4
 PLATFORM MODIFICATION
 & MISC HANDRAILS

DRAWING No. EP4365-32
 CONTRACT No. 681
 SHEET No. 47A OF 48



ELEVATION VIEW UPPER LADDER
L.H. WATERSIDE CORNER
LOOKING TOWARDS THE WATER
SCALE: 3/4"=1'-0"



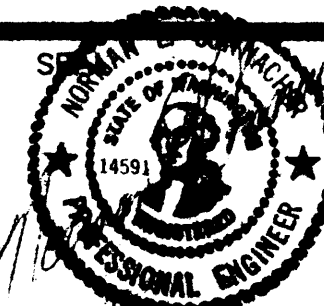
ELEVATION VIEW LOWER LADDER
L.H. WATERSIDE CORNER
LOOKING TOWARDS THE WATER
SCALE: 3/4"=1'-0"

- NOTES:**
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 - PAINT SHALL BE GROUND OFF OF EXISTING STRUCTURE PRIOR TO WELDING.
 - VISUALLY INSPECT ALL WELDS. ULTRASONICALLY INSPECT 100% OF THE LENGTH OF EACH FULL PENETRATION WELD.
 - ALL PLATE AND FLAT BAR SPLICES SHALL BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION WELD.
 - BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
 - PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
 - ALL MATERIAL SHALL BE STEEL A36.



PORT OF TACOMA
P.O. BOX 1837 TACOMA, WASHINGTON 98401
(206) 383-5841

CONSULTANTS
NORPAC Engineering Inc.
932A INDUSTRY DRIVE
SEATTLE WA 98188
JOB: 2658 DWG: 1853 4/5



APPROVED
CHIEF ENGINEER DATE

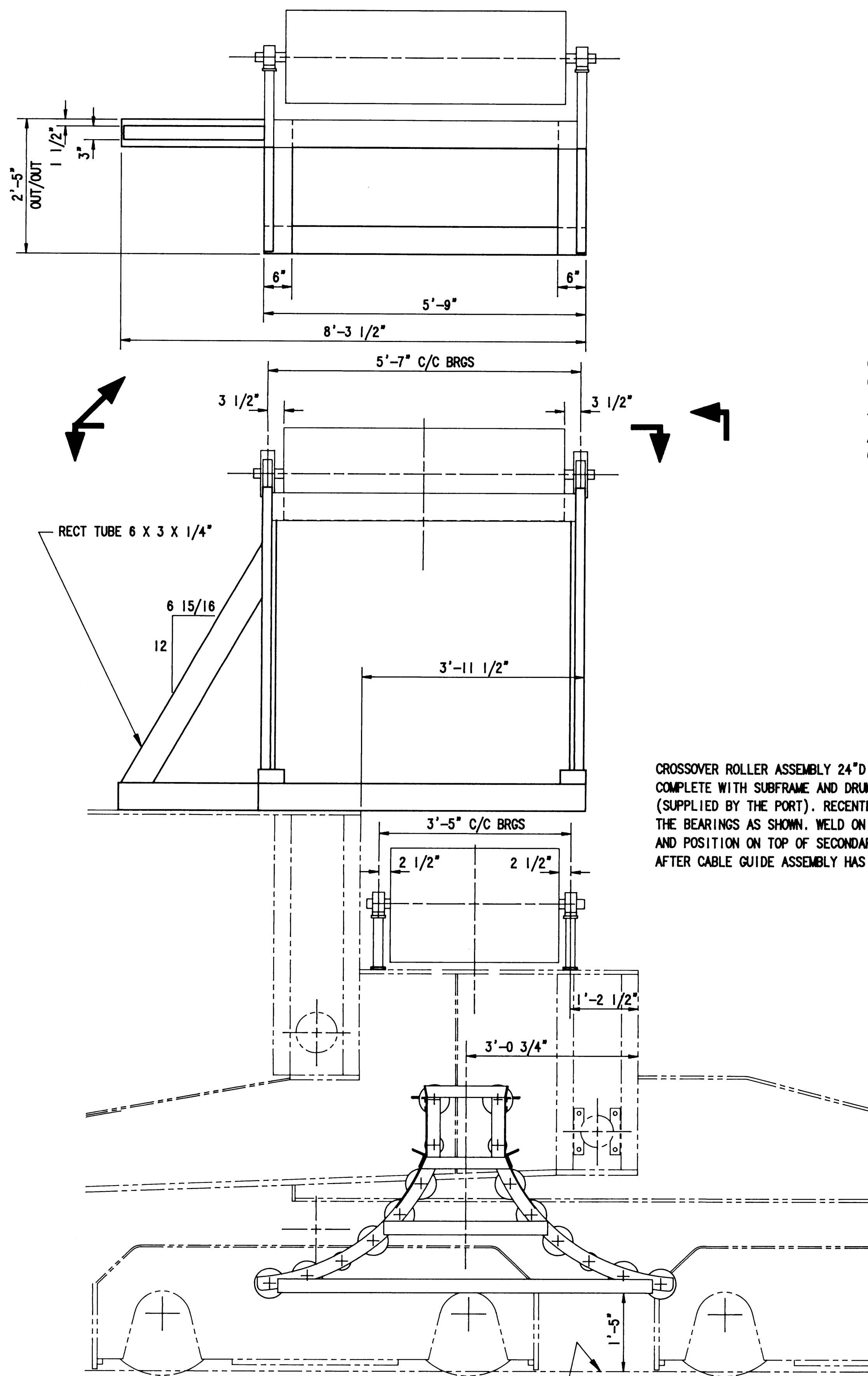
R BAKER 5/29/91
DRAWN BY DATE
AS-BUILT BY DATE

K.H. 6/4/91
CHECKED BY DATE
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE

RELOCATION OF PEINER CRANE #2042 TO PIER 4
NEW LADDERS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 48A OF 48

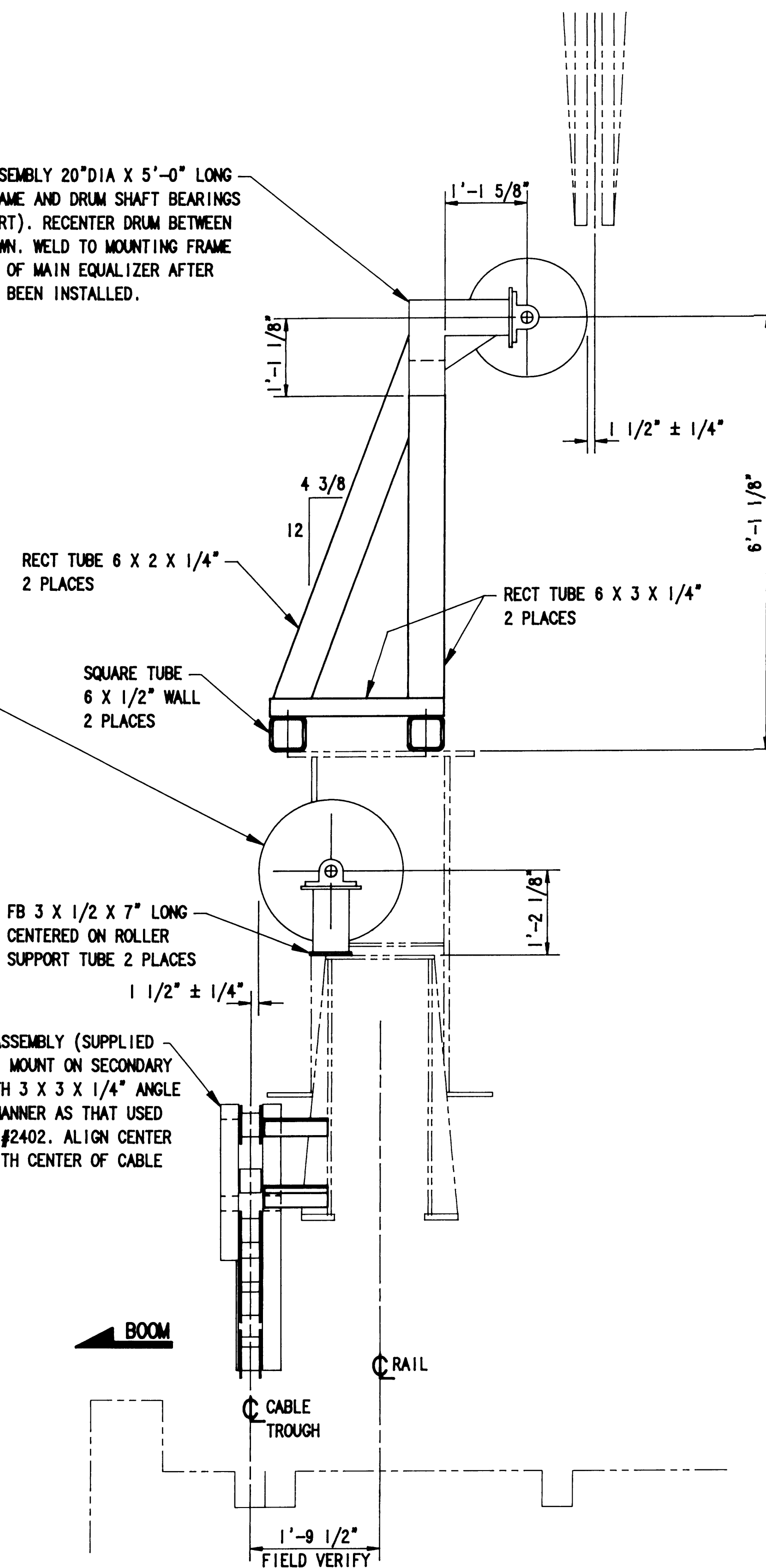


ELEVATION VIEW
L.H. WATERSIDE CORNER
LOOKING TOWARDS LAND
 SCALE: 3/4"=1'-0"

CROSSOVER ROLLER ASSEMBLY 20"DIA X 5'-0" LONG
 COMPLETE WITH SUBFRAME AND DRUM SHAFT BEARINGS
 (SUPPLIED BY THE PORT). RECENTER DRUM BETWEEN
 THE BEARINGS AS SHOWN. WELD TO MOUNTING FRAME
 AND POSITION ON TOP OF MAIN EQUALIZER AFTER
 CABLE REEL UNIT HAS BEEN INSTALLED.

CROSSOVER ROLLER ASSEMBLY 24"DIA X 3'-0" LONG
 COMPLETE WITH SUBFRAME AND DRUM SHAFT BEARINGS
 (SUPPLIED BY THE PORT). RECENTER DRUM BETWEEN
 THE BEARINGS AS SHOWN. WELD ON MOUNTING PADS
 AND POSITION ON TOP OF SECONDARY EQUALIZER
 AFTER CABLE GUIDE ASSEMBLY HAS BEEN INSTALLED.

CABLE GUIDE ASSEMBLY (SUPPLIED
 BY THE PORT). MOUNT ON SECONDARY
 EQUALIZER WITH 3 X 3 X 1/4" ANGLE
 IN THE SAME MANNER AS THAT USED
 ON 1H1 CRANE #2402. ALIGN CENTER
 OF ROLLERS WITH CENTER OF CABLE
 TROUGH.



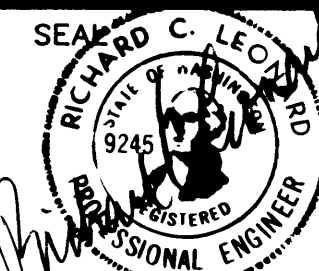
NOTES:

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- BREAK ALL EXTERIOR SHARP EDGES AND CORNERS.
- PAINT ALL FABRICATION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- ALL MATERIAL SHALL BE STEEL A36 EXCEPT TUBINGS WHICH SHALL BE STEEL A500 GRADE B.
- ALL OPEN ENDS OF TUBING SHALL BE CLOSED OFF WITH 3/16" PLATE.



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APPROVED

 R. BAKER
 CHIEF ENGINEER DATE

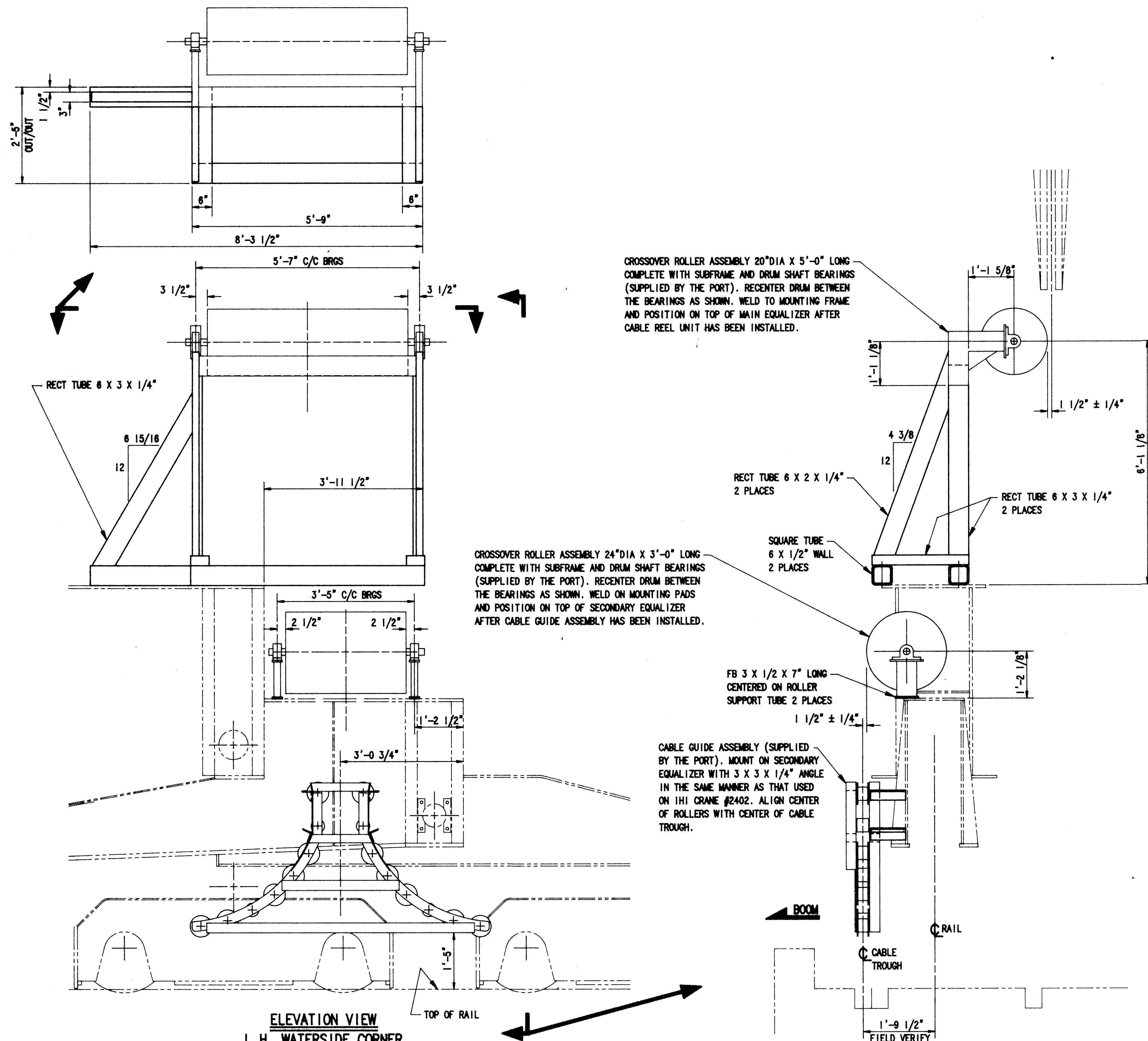
R. BAKER 5/31/91
 DRAWN BY DATE
 C.R. 10/21/91
 AS-BUILT BY DATE

K. H. 6/4/91
 CHECKED BY DATE
 J.L.A.
 PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE
A	AS BUILT	RJB		7/17/91

RELOCATION OF PEINER CRANE #2042 TO PIER 4
CROSSOVER ROLLERS & CABLE GUIDE

DRAWING No. EP4365-32
 CONTRACT No. 681
 SHEET No. 49 OF 54



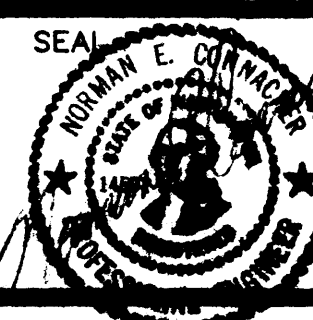
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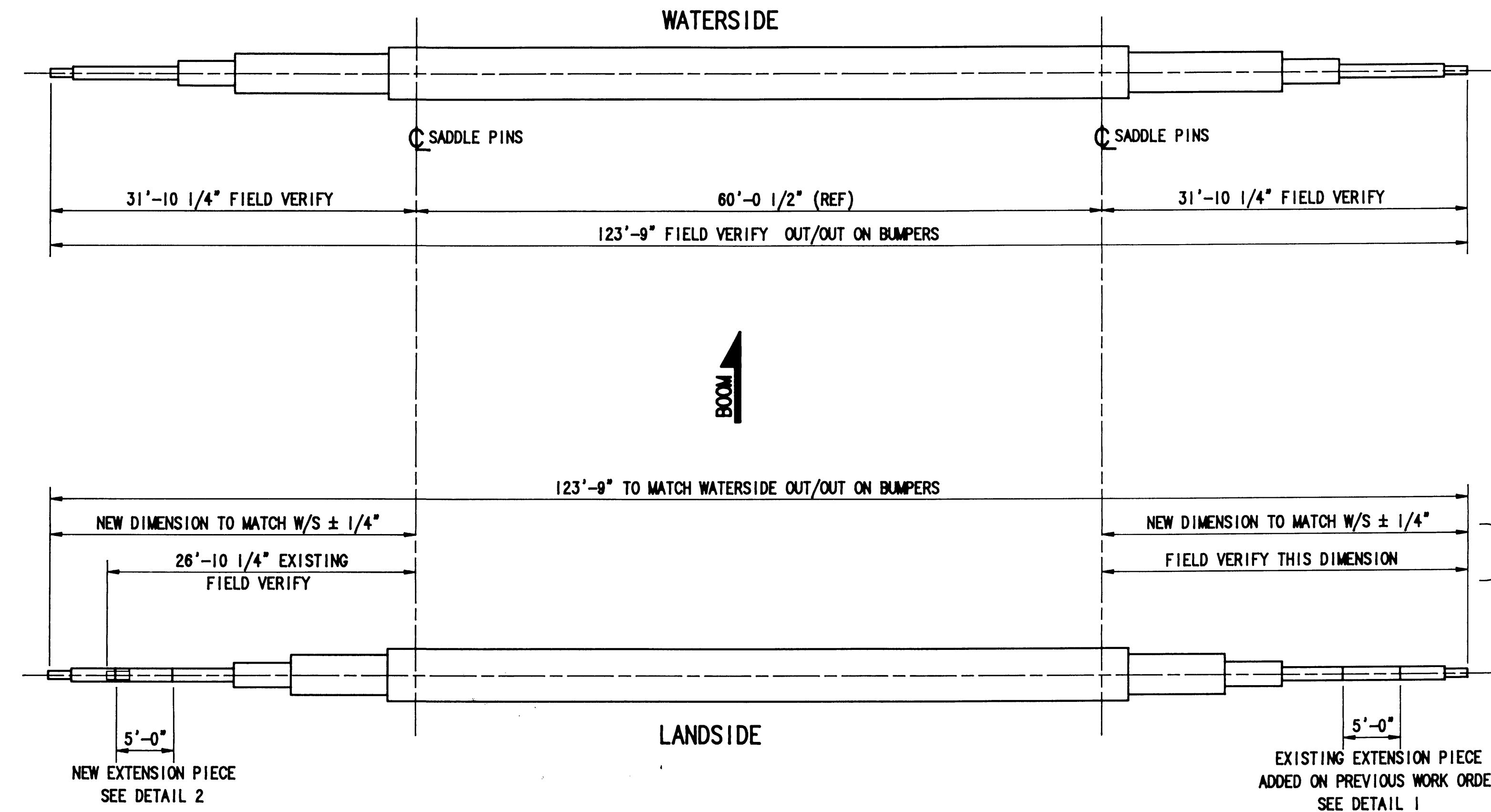
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DRAWN BY DATE
AS-BUILT BY DATE

K. H. 6/4/91
CHECKED BY DATE
PROJ. ENGR. DATE

MARK	REVISION	BY	APP.	DATE

RELOCATION OF PEINER CRANE #2042 TO PIER 4
CROSSOVER ROLLERS & CABLE GUIDE

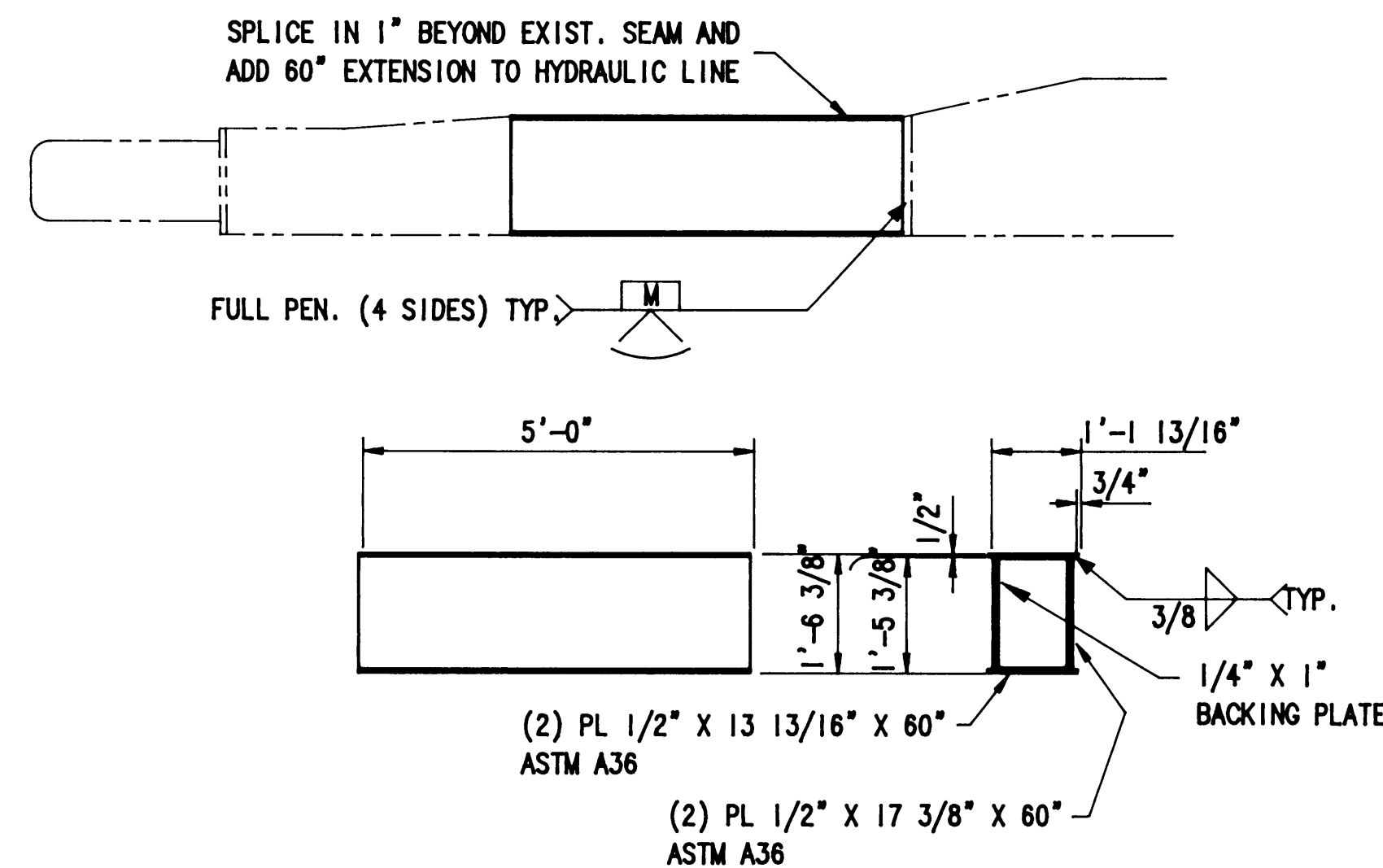
DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 49A OF



IF FIELD VERIFIED DIMENSION DIFFERS FROM
WATERSIDE DIMENSION NOTIFY THE ENGINEER
FOR CORRECTIVE ACTION.

NOTES:

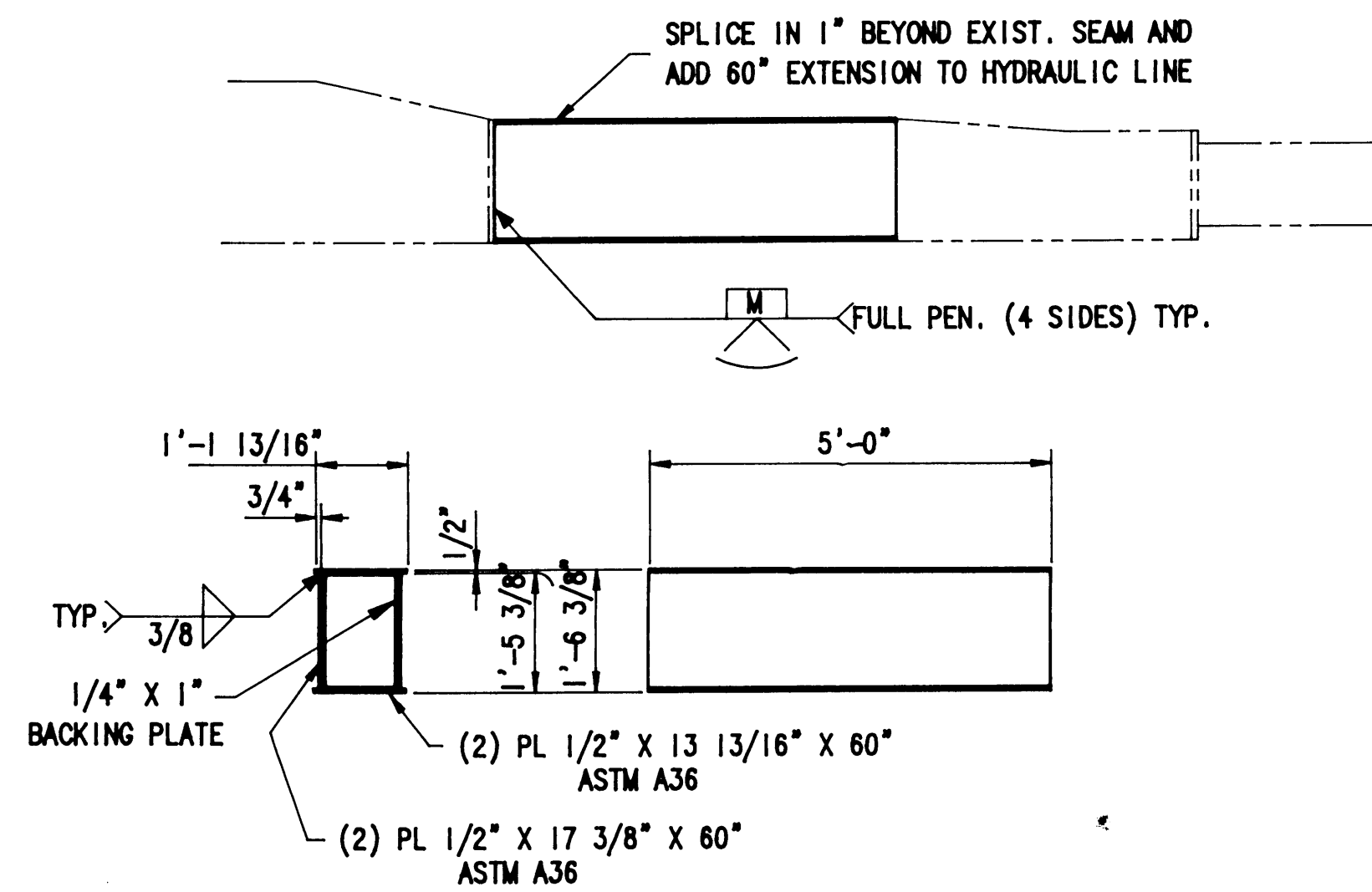
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- PAINT PER PORT OF TACOMA STANDARDS COLOR TO MATCH EXISTING CRANE.



DETAIL 2

BUMPER EXTENSION TO PIENER #2042 CONTAINER CRANE
LEFT HAND LANDSIDE CORNER

SCALE 1/2" = 1'-0"



DETAIL 1

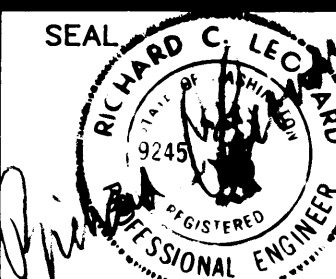
BUMPER EXTENSION TO PIENER #2042 CONTAINER CRANE
RIGHT HAND LANDSIDE CORNER

SCALE 1/2" = 1'-0"



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SEATTLE WA 98188
JOB: 2658 DWG: 1854 1/1



APPROVED
Richard C. Leonard
CHIEF ENGINEER DATE

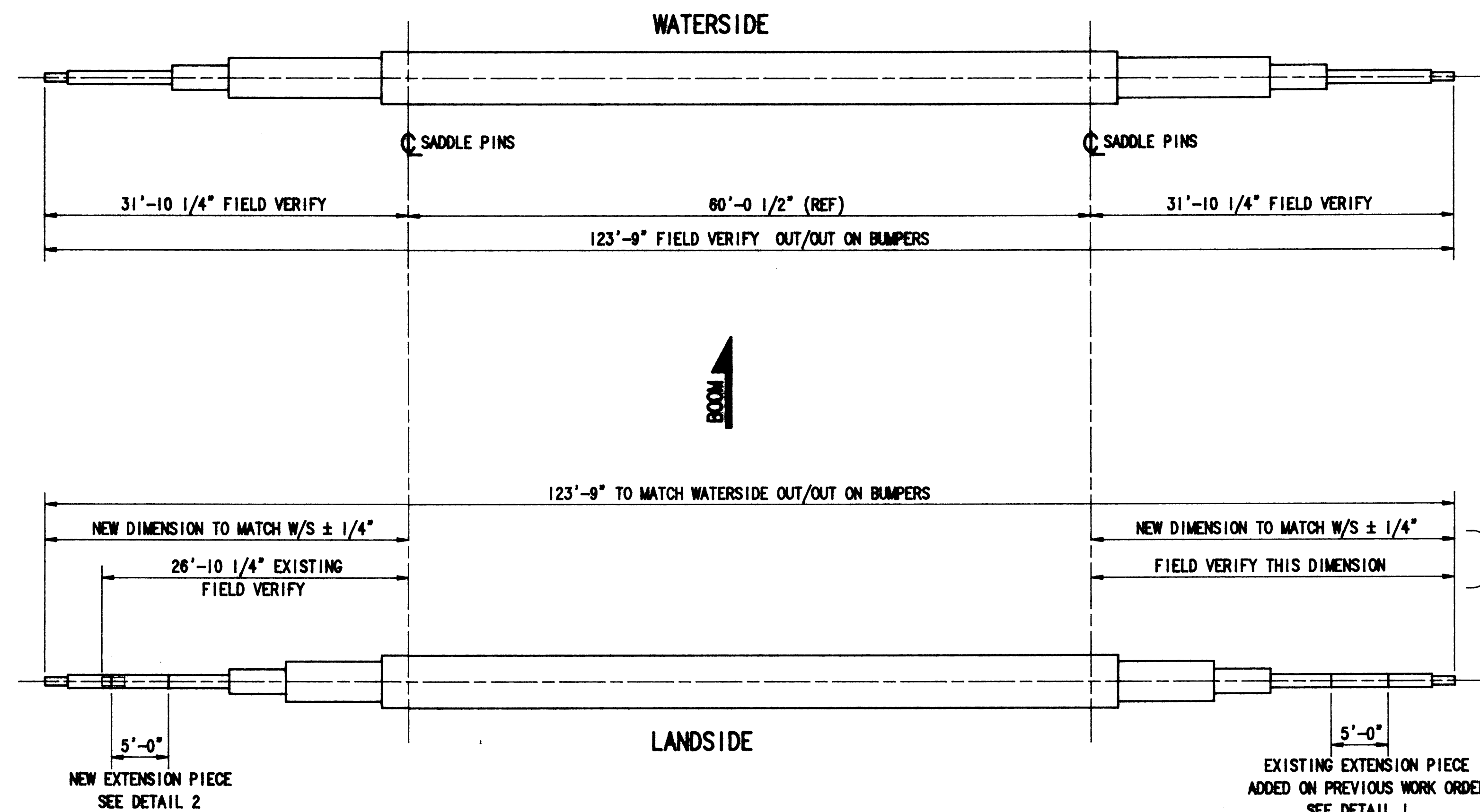
R BAKER	6/3/91	JLA	6/5/91
DRAWN BY	DATE	CHECKED BY	DATE
C.P.	10/21/91	J.L.A.	
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

A	AS BUILT	RJB	7/17/91
MARK	REVISION	BY	APP. DATE

RELOCATION OF PEINER CRANE #2042 TO PIER 4

NEW BUMPER EXTENSIONS

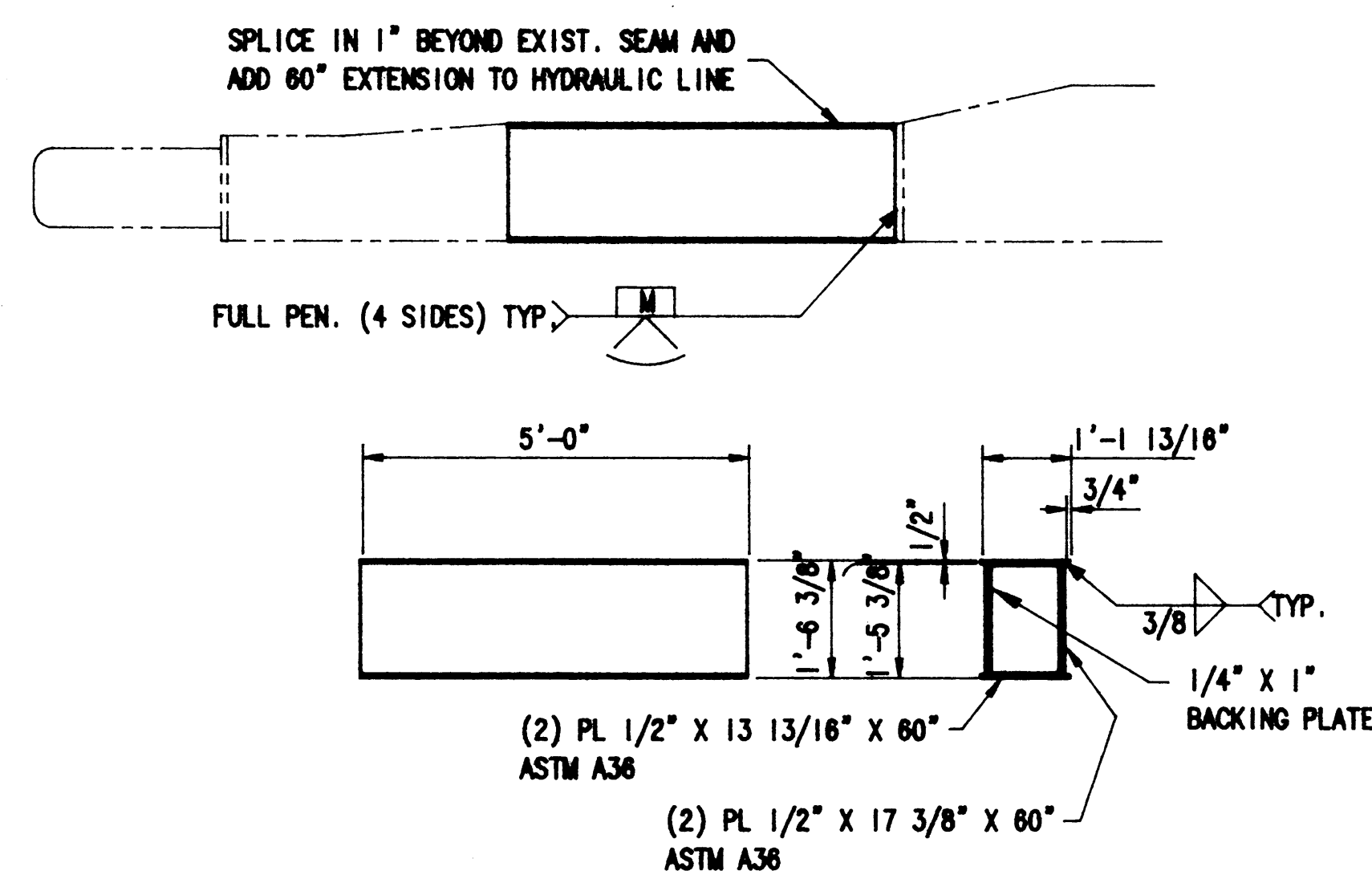
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CONTRACT No. 681
SHEET No. 50 OF 54



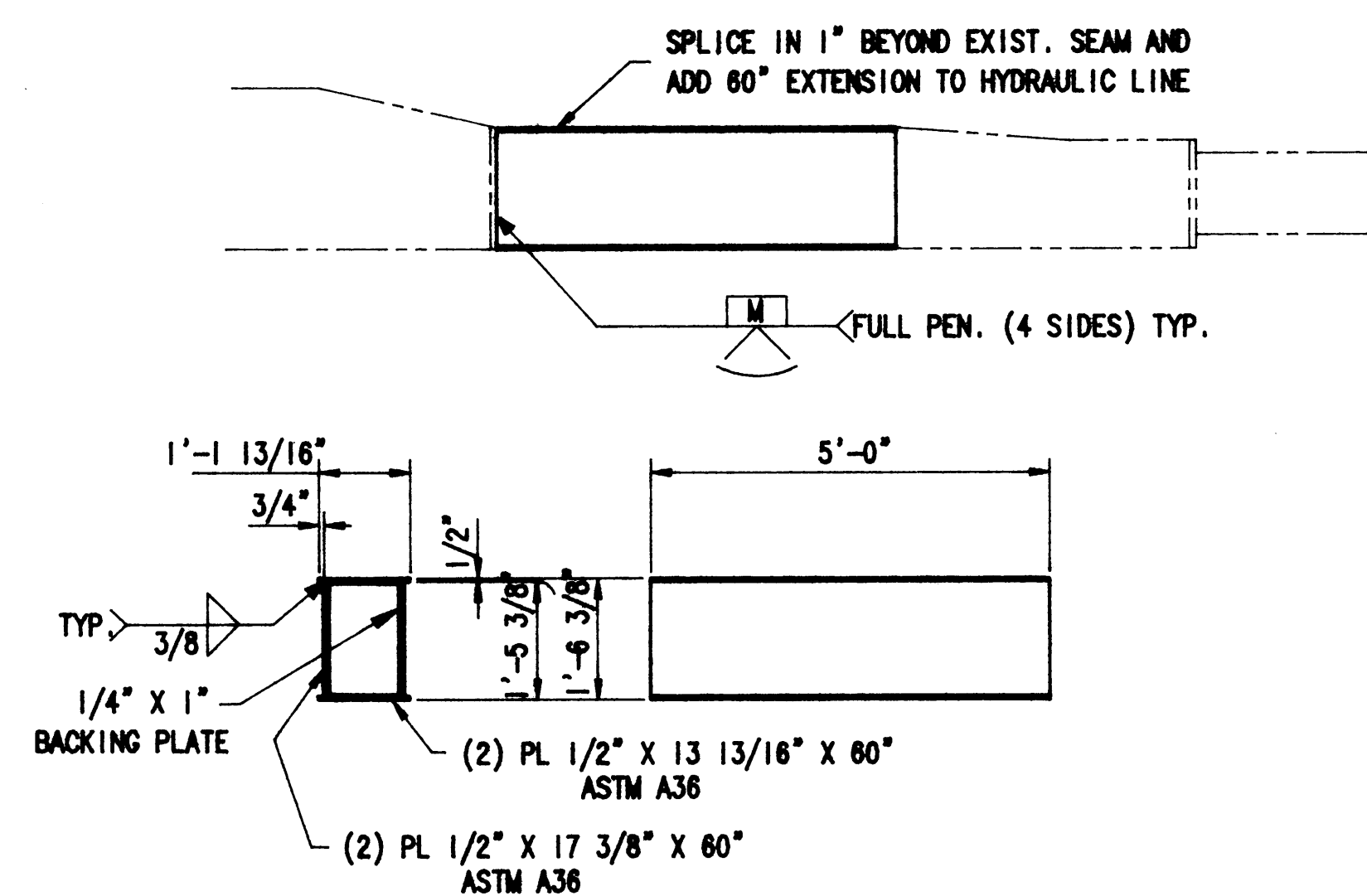
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DETAIL 2
BUMPER EXTENSION TO PIENER #2042 CONTAINER CRANE
LEFT HAND LANDSIDE CORNER
SCALE 1/2" = 1'-0"

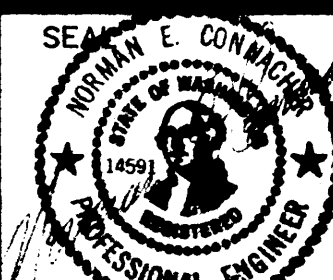


DETAIL 1
BUMPER EXTENSION TO PIENER #2042 CONTAINER CRANE
RIGHT HAND LANDSIDE CORNER
SCALE 1/2" = 1'-0"



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APPROVED

CHIEF ENGINEER DATE

R BAKER	6/3/91	JLA	6/5/91
DRAWN BY	DATE	CHECKED BY	DATE
AS-BUILT BY	DATE	PROJ. ENGR.	DATE

MARK	REVISION	BY	APP.	DATE

RELOCATION OF PEINER CRANE #2042 TO PIER 4
NEW BUMPER EXTENSIONS

DRAWING No. EP4365-32
CONTRACT No. 681
SHEET No. 50A OF 50