

REV.	LERA LESLIE E. ROBERTSON ASSOCIATES, RLLP CONSULTING STRUCTURAL ENGINEERS	P	DRAWING NO.
		DRAFT	
		DESIGN	
		CHECK	

Wick
DRAWING
BOOK
11

x

Box 5

Book 11

PROJECT	THE WORLD TRADE CENTER	TITLE	DRAWING BOOK 11	DATE	10/ 6/72
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REVISIONS

NOTED
5/18/73

WTCT-33-LERA

11-JK0-	0	5/18/73	11-JK2-	37	5/ 1/68
11-JK1-	0	5/18/73	11-JK2-	38	5/ 1/68
11-J1-	2	4/18/69	11-JK2-	39	5/ 1/68
11-J1-	3	4/18/69	11-JK2-	40	5/ 1/68
11-J1-	4	4/26/68	11-JK2-	41	5/ 1/68
11-J1-	5	4/18/69	11-JK2-	42	5/ 1/68
11-J1-	6	5/ 1/68	11-JK2-	43	5/ 1/68
11-J1-	7	5/ 1/68	11-JK2-	44	5/ 1/68
11-J1-	8	5/ 1/68	11-JK2-	45	5/ 1/68
11-J1-	9	5/ 1/68	11-JK2-	46	6/ 7/68
11-J1-	10	6/ 7/68	11-JK2-	47	6/ 7/68
11-J1-	11	6/ 7/68	11-JK2-	48	12/ 3/68
11-K1-	26	3/21/69	11-JK2-	49	6/ 7/68
11-JK2-	2	4/18/69	11-JK2-	50	12/ 3/68
11-JK2-	3	4/26/68	11-JK2-	51	6/ 7/68
11-JK2-	4	4/26/68	11-JK2-	52	6/ 7/68
11-JK2-	5	4/26/68	11-JK2-	53	6/ 7/68
11-JK2-	6	4/18/69	11-JK2-	54	6/ 7/68
11-JK2-	7	4/26/68	11-JK2-	55	6/ 7/68
11-JK2-	8	4/18/69	11-JK2-	56	9/ 4/68
11-JK2-	9	4/26/68	11-JK2-	57	10/15/68
11-JK2-	10	4/18/69	11-JK2-	58	3/21/69
11-JK2-	11	4/26/68	11-JK2-	59	9/ 4/68
11-JK2-	12	4/18/69	11-JK2-	60	3/21/69
11-JK2-	13	4/18/69	11-JK2-	61	9/ 4/68
11-JK2-	14	4/18/69			
11-JK2-	14A	4/18/69			
11-JK2-	14B	4/18/69			
11-JK2-	15	4/26/68			
11-JK2-	16	4/18/69			
11-JK2-	17	4/26/68			
11-JK2-	18	4/26/68			
11-JK2-	19	4/ 5/68			
11-JK2-	20	4/26/68			
11-JK2-	21	4/18/69			
11-JK2-	22	5/ 1/68			
11-JK2-	23	4/18/69			
11-JK2-	24	5/ 1/68			
11-JK2-	25	5/ 1/68			
11-JK2-	26	5/ 1/68			
11-JK2-	27	5/ 1/68			
11-JK2-	28	5/ 1/68			
11-JK2-	29	5/ 1/68			
11-JK2-	30	5/ 1/68			
11-JK2-	31	5/ 1/68			
11-JK2-	32	5/ 1/68			
11-JK2-	33	5/ 1/68			
11-JK2-	34	5/ 1/68			
11-JK2-	35	5/ 1/68			
11-JK2-	36	5/ 1/68			



11-JK0- 0

SICILIANO, HILLE

LESLIE E. ROBERTSON

PROJECT

THE WORLD TRADE CENTER

TITLE

DRAWING INDEX

DATE

5/15/67

REVISIONS

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4-1-69

Printed 5-1-69

DRAWING NO.

11-JK1-0

11-J1-2 Thru 11

11-K1-26

11-JK2-2 Thru 61

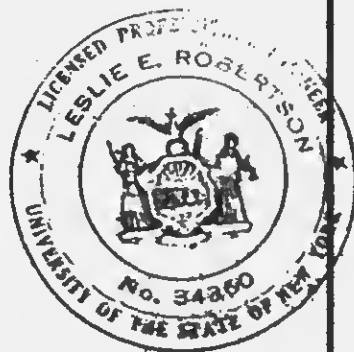
TITLE

Drawing Index

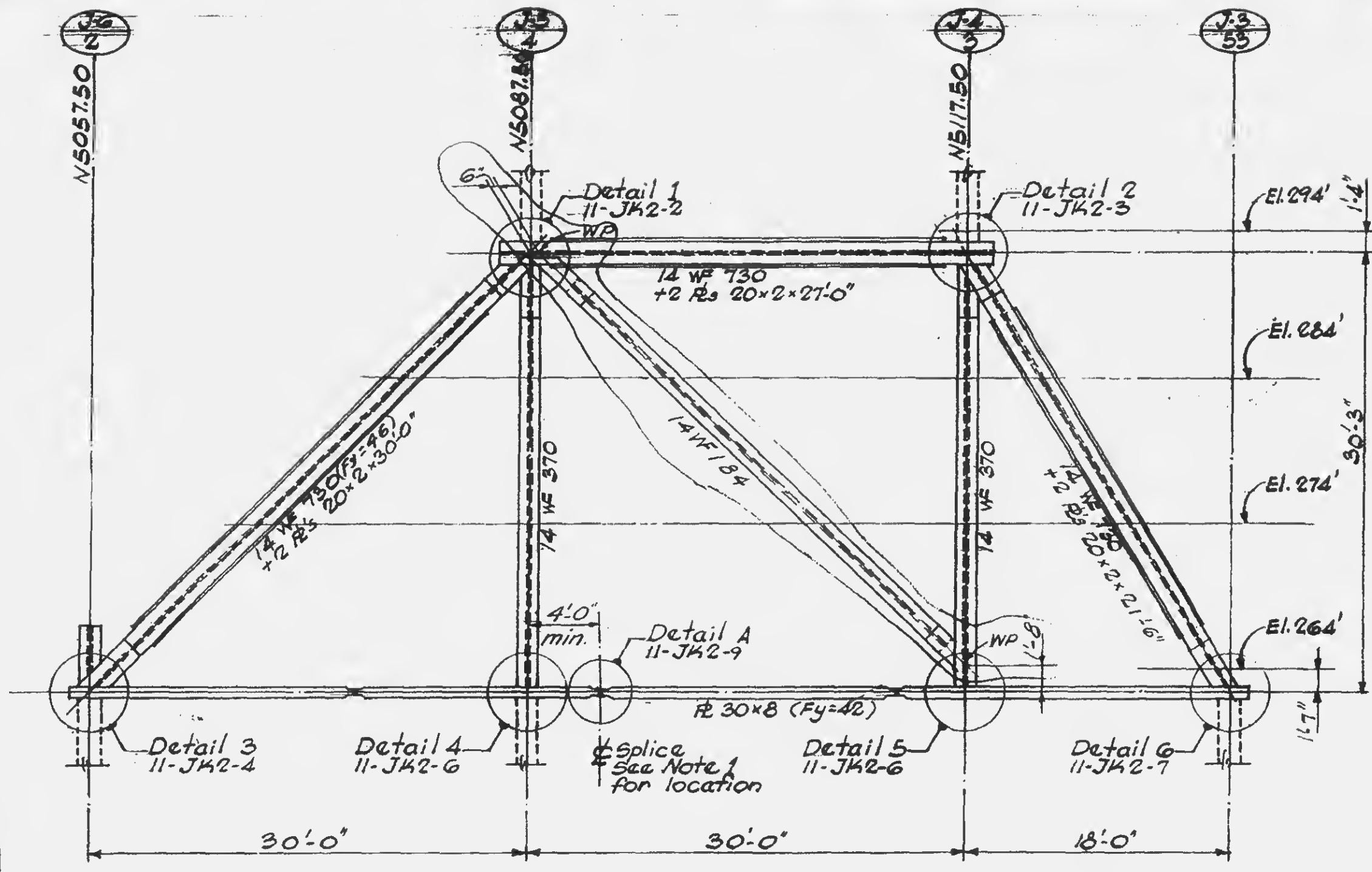
Truss Elevation (Zone J)

Truss Elevation (Zone K)

Truss Details



11-JK1-0



TRUSS JT-1
 1/8" = 1'-0"
 (at W10290.00)

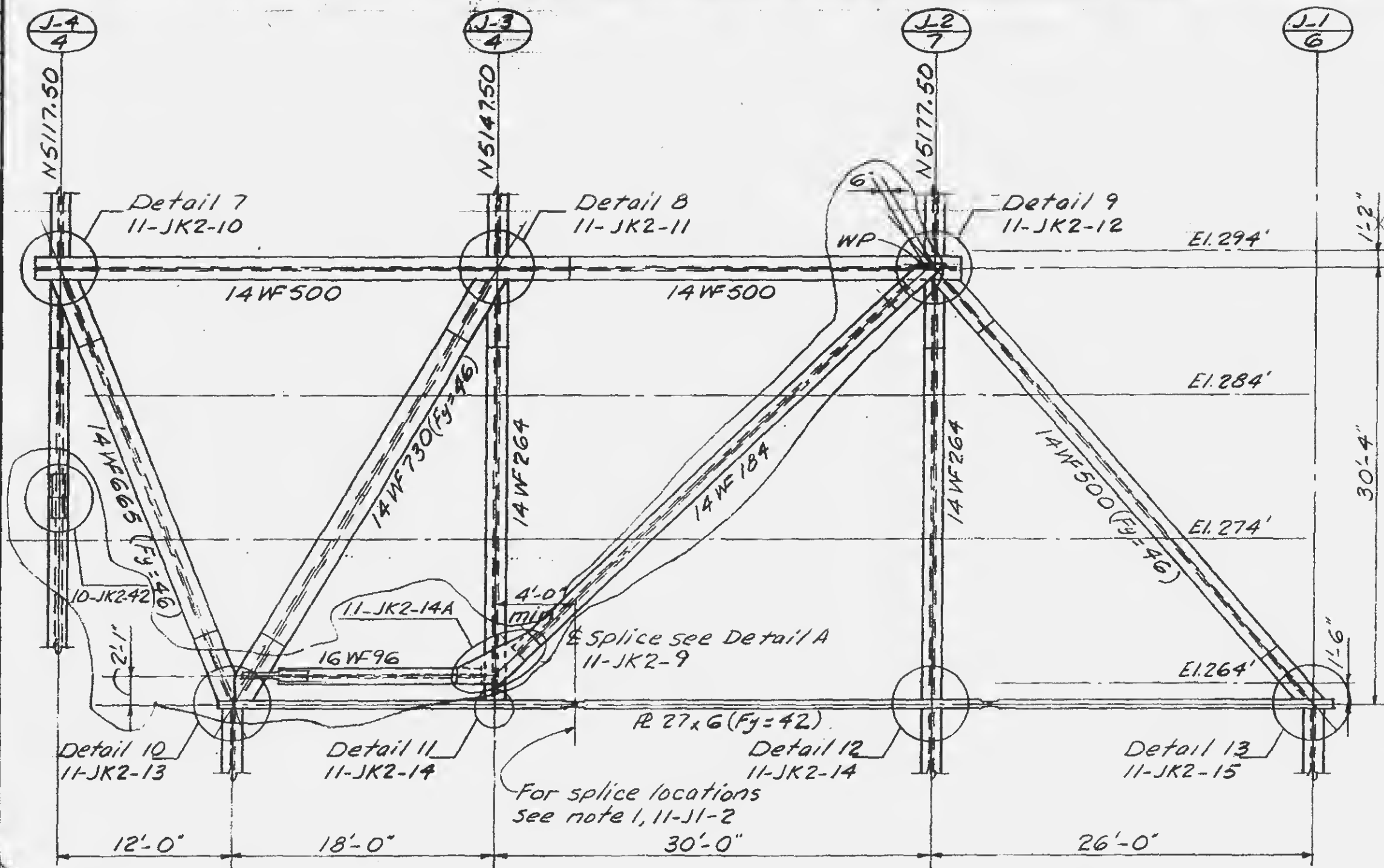
- Notes:
- Number and location of splices at Contractors option.
 - For intermediate support of bottom chord see Det. B, 11-JK2-9.
 - All steel shall have a minimum yield stress of 36 ksi, except as noted.



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 E.L.

REVISIONS

4-5-68
 4-26-68
 4-18-69



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 A.F.
 REVIEWED
 EL.

TRUSS JT-2
 '8"=1'-0"

(at W10260.00)

Notes:

1. For intermediate support of bottom chord see Detail B, 11-JK2-9.
2. All steel shall have a minimum yield stress of 36 ksi, except as noted.

11-J1-3

PROJECT THE WORLD BRIDGE CENTER

TITLE

TRUSS

ELEVATION

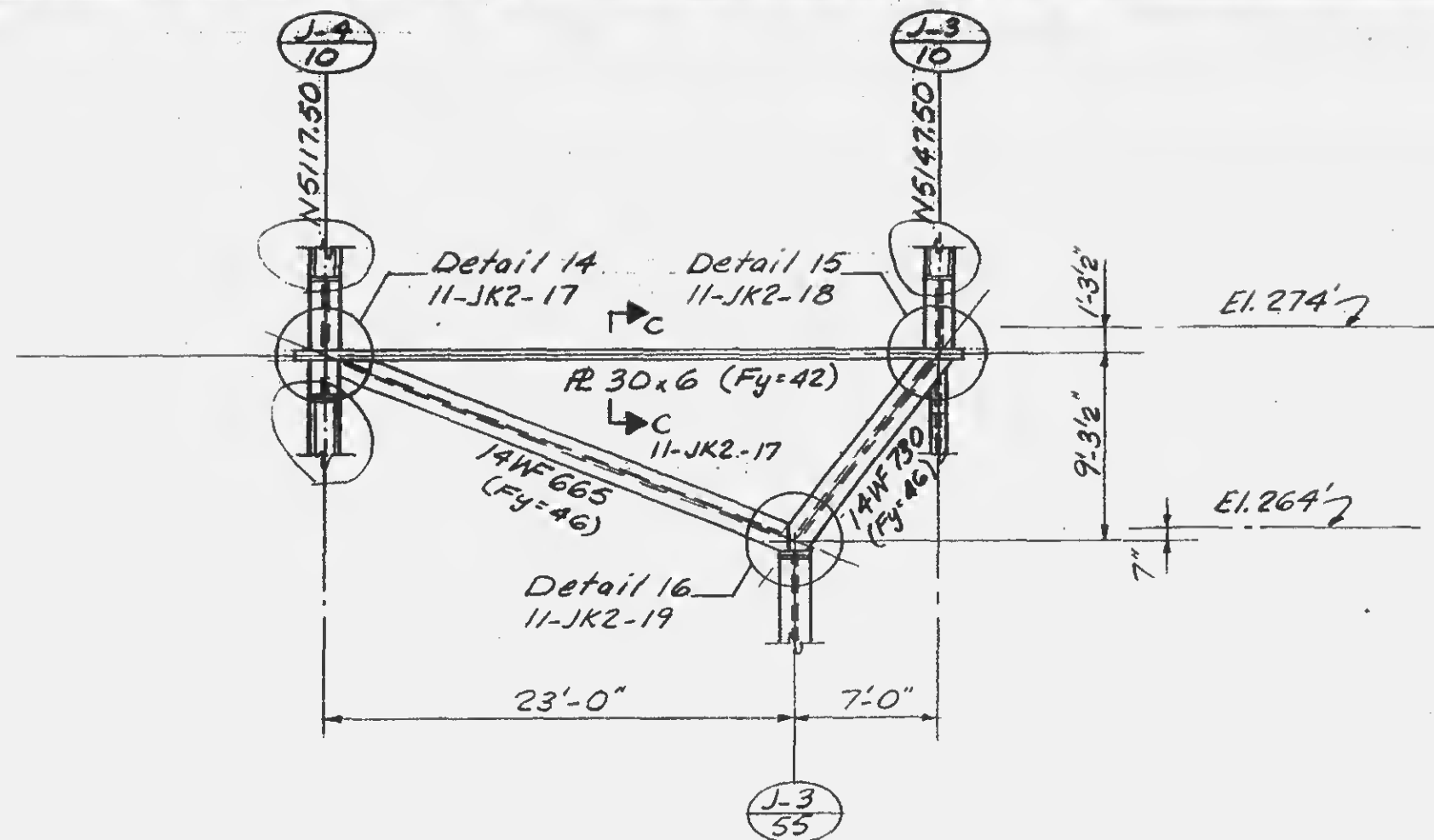
DATE

5-15-67

REVISIONS

4-5-68

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TRUSS JT-3
 '8" = 1'-0"
 (at W10080.00)

Note:

All steel shall have a minimum yield stress of 36 ksi, except as noted.



PROJECT THE WORLD TRADE CENTER

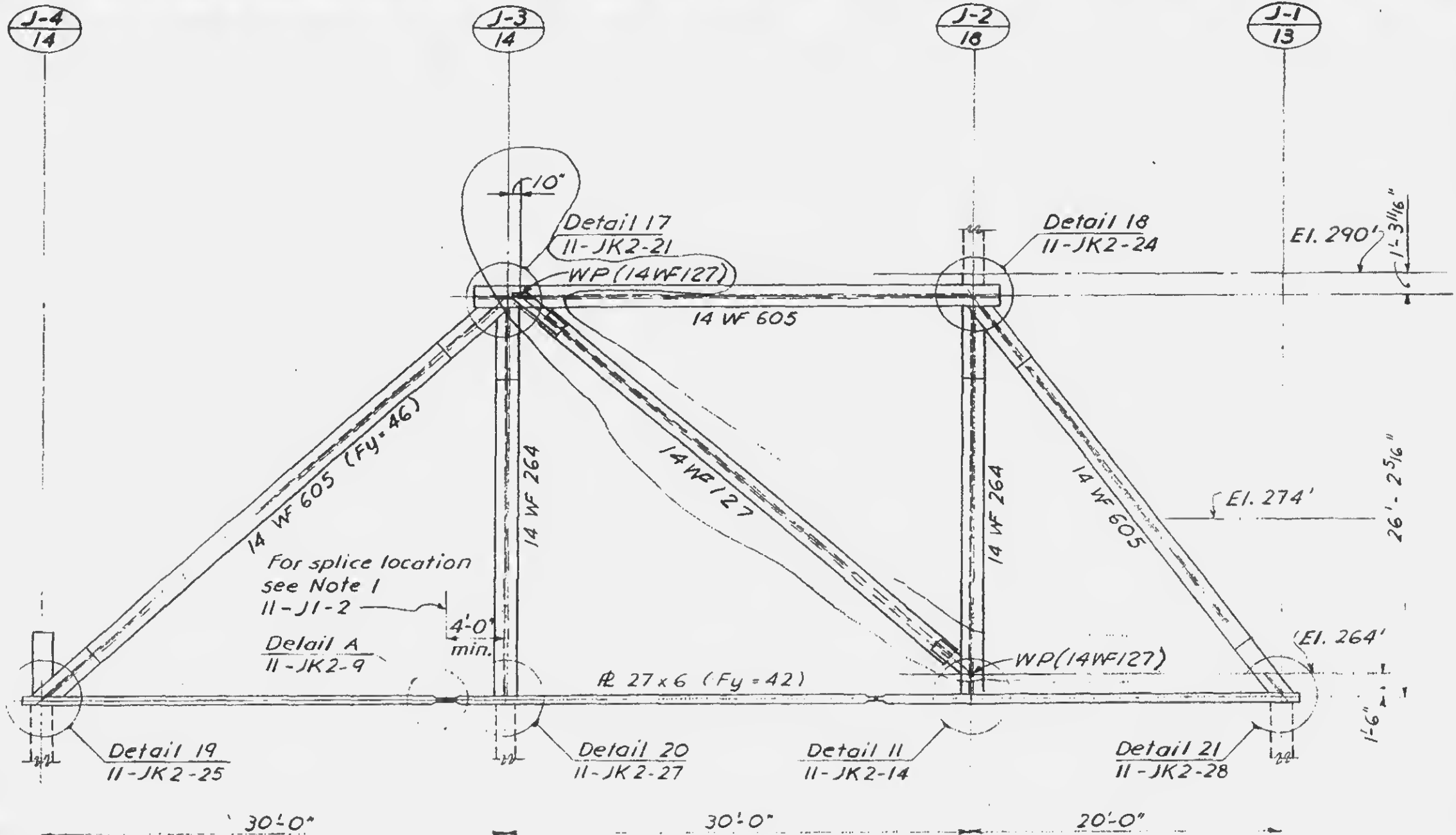
TITLE TRUSS ELEVATION

DATE 5-15-67

REVISIONS

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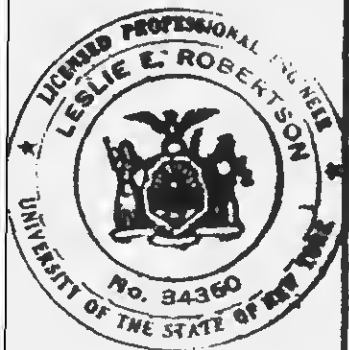
TRUSS JT-4

8" = 1'-0"

(at W 9974.50)

Notes:

1. For intermediate support of bottom chord see Detail B, 11-JK2-9.
2. All steel shall have a minimum yield stress of 36 ksi, except as noted.

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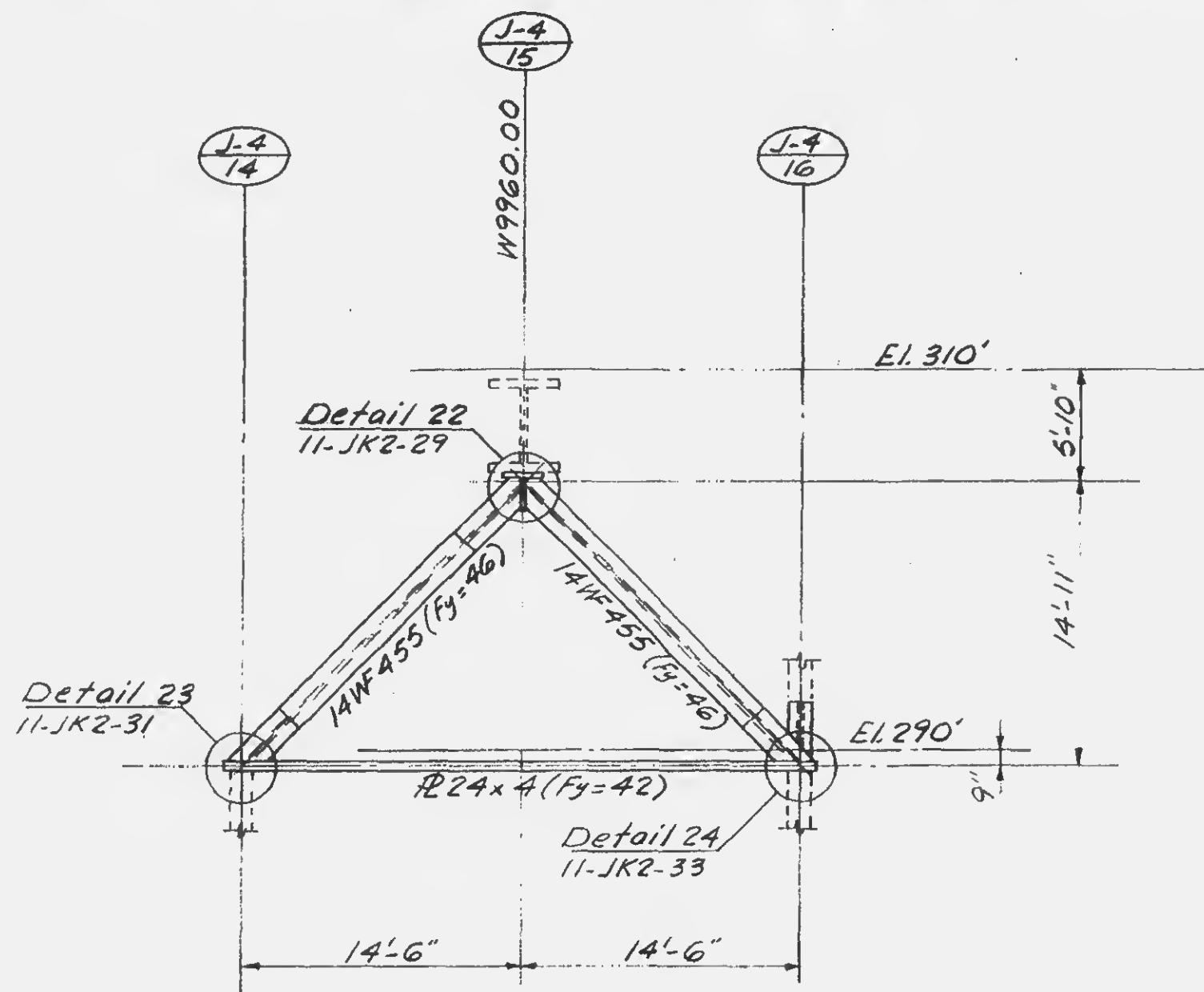
11-J1-5

PROJECT THE WORLD TRADE CENTER

TITLE

TRUSS ELEVATIONDATE 5-15-67

REVISIONS

5-1-68TRUSS JT-518" = 1'-0"

(at N5117.50)

Note:

1. All steel shall have a minimum yield stress of 36Ksi, except as noted.
2. For tie-bar (bottom chord) material see note on Detail A, 11-JK2-9



11-11-6

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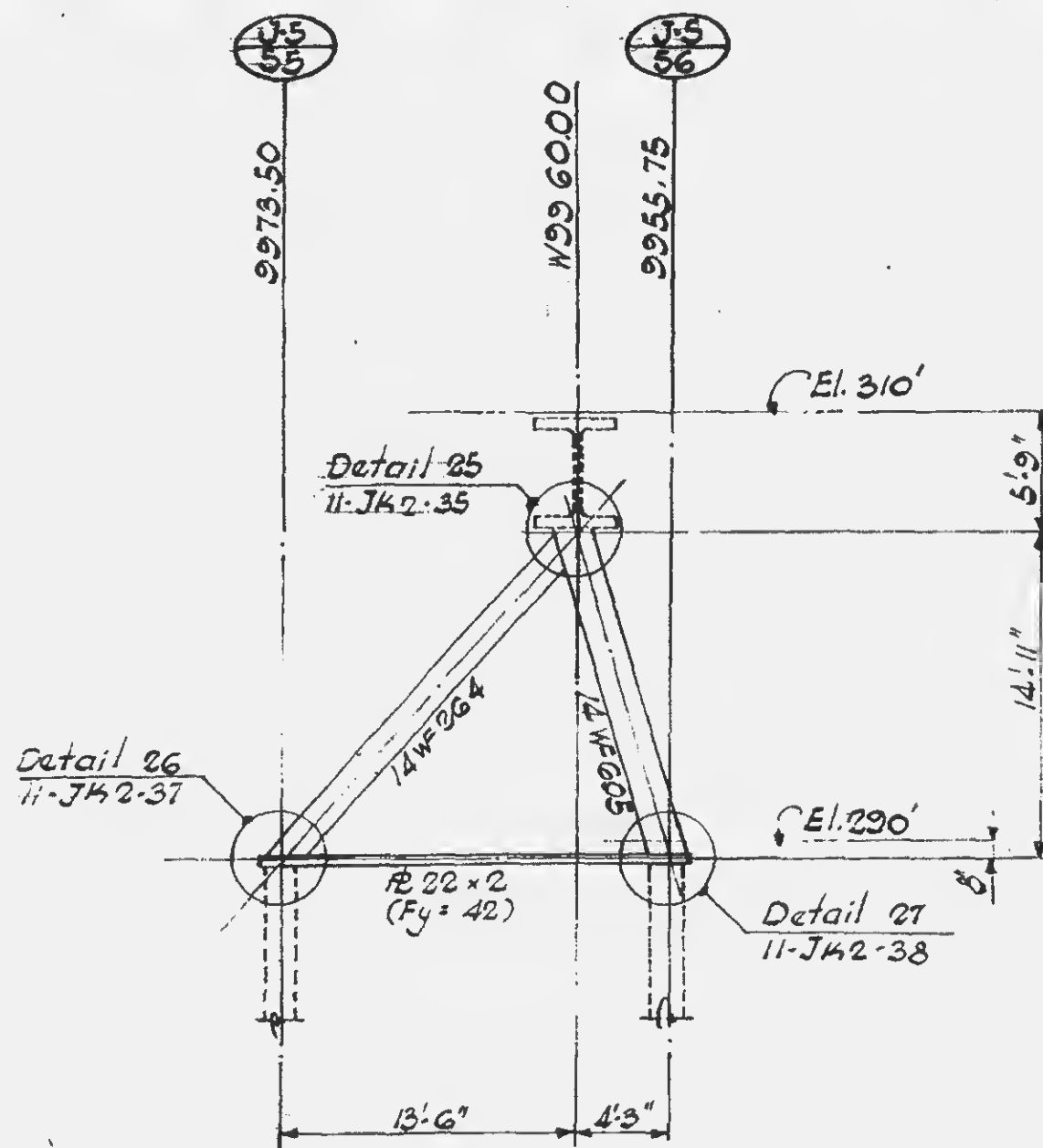
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE

TRUSSELEVATIONDATE 5-15-67

REVISIONS

5-1-68TRUSS JT-G $\frac{1}{8}'' = 1'-0''$

(at N5072.50)

Note:

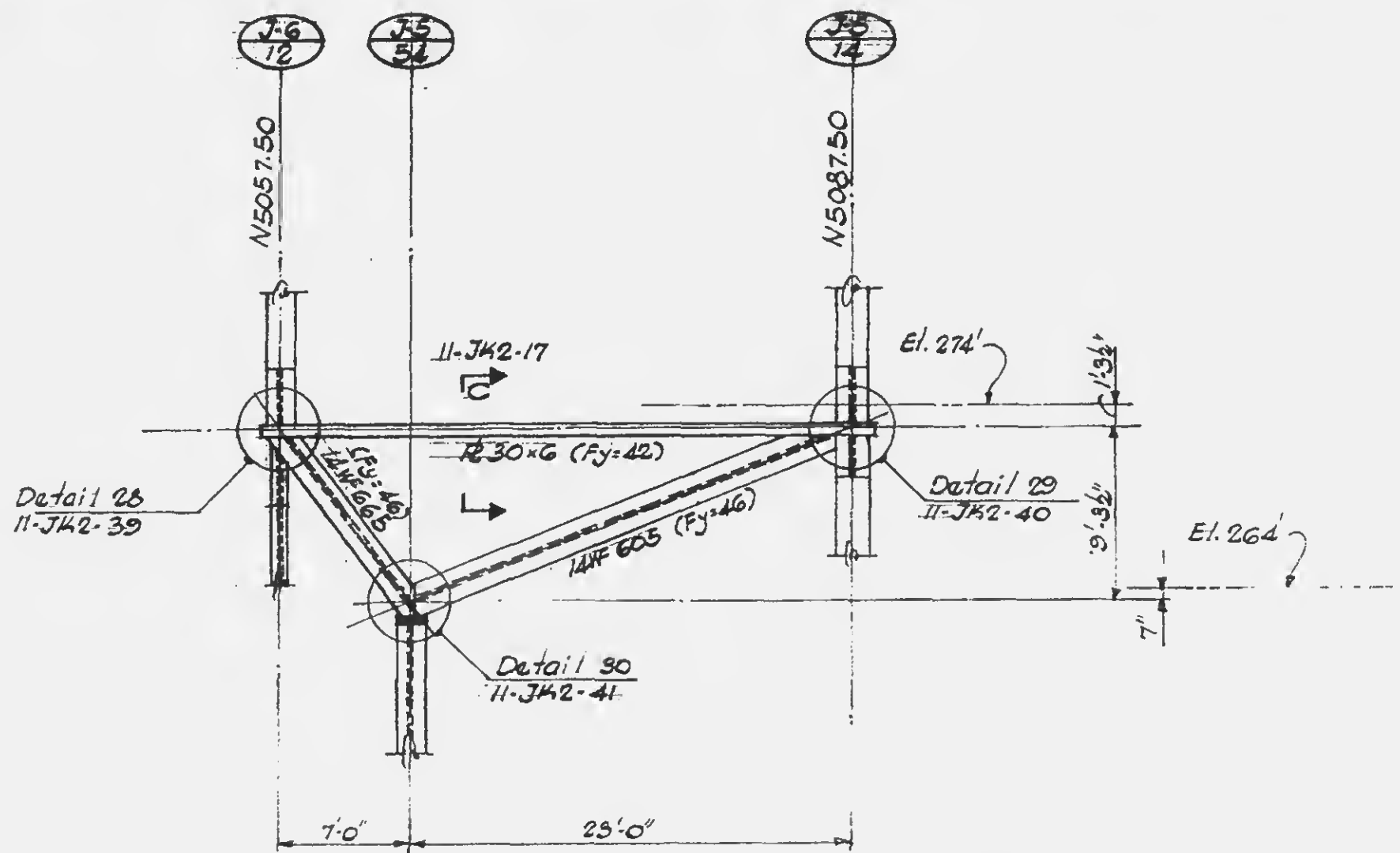
1. All steel shall have a minimum yield stress of 36 K.S.I., except as noted.
2. For tie-bar (bottom chord) material, see note on Detail A, 11-JK2-9.



11-J1-7

REVISIONS

5-1-68

TRUSS JT-7

$\frac{1}{8}" = 1'-0"$
(at W9990.00)

Notes:

1. All steel shall have a minimum yield stress of 36 ksi, except as noted.
2. For tie-bar (top chord) material see note on Detail A, 11-JK2-9



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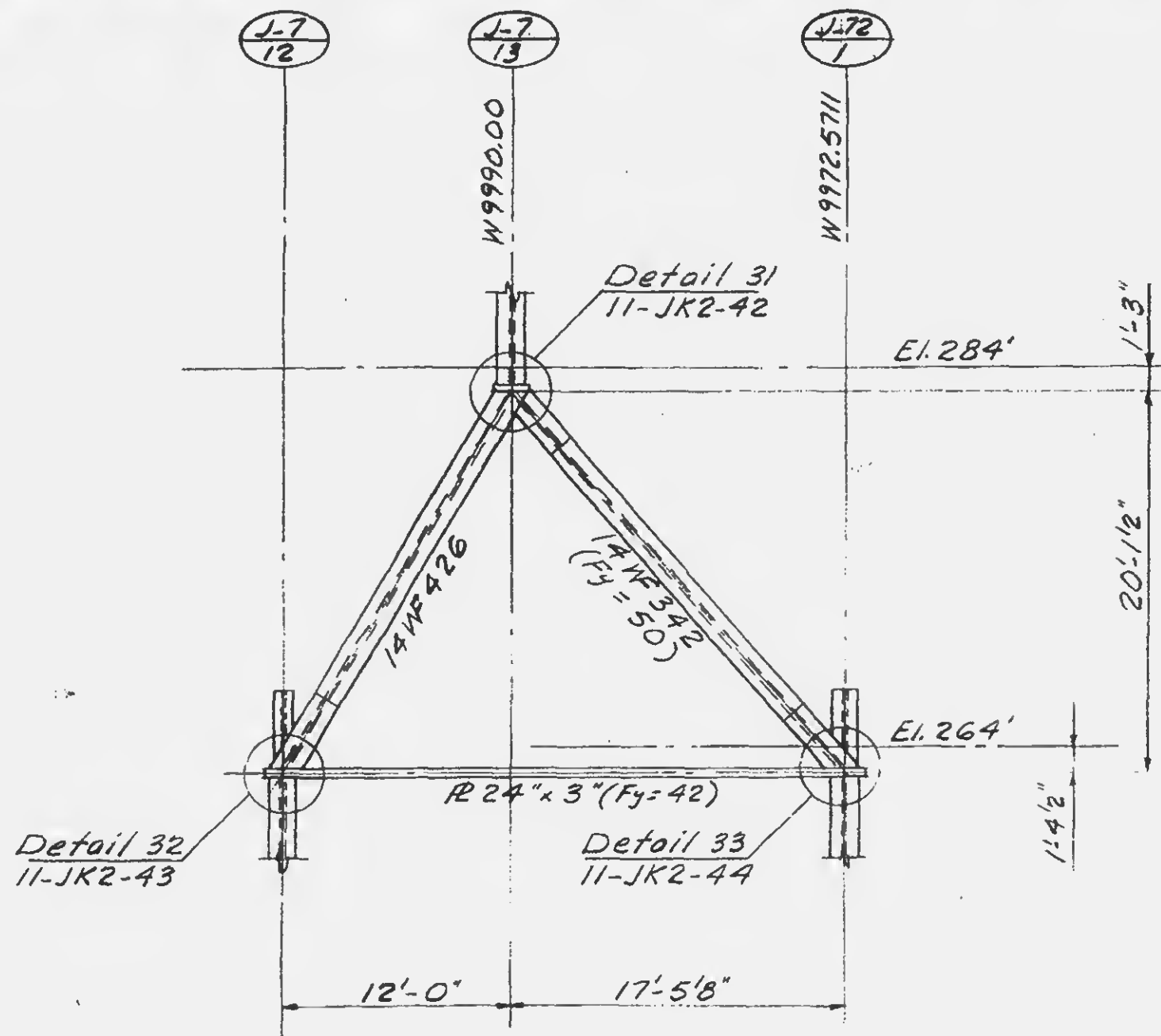
TRUSS ELEVATION

DATE

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REVISIONS

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TRUSS JT-8

1/8" = 1'-0"

(at N5027.50)

Notes:

1. For intermediate support of bottom chord see Detail B, 11-JK2-9.
2. All steel shall have a minimum yield stress of 36 ksi, except as noted.
3. For tie-bar (bottom chord) material see note on Detail A, 11-JK2-9.

11-11-9



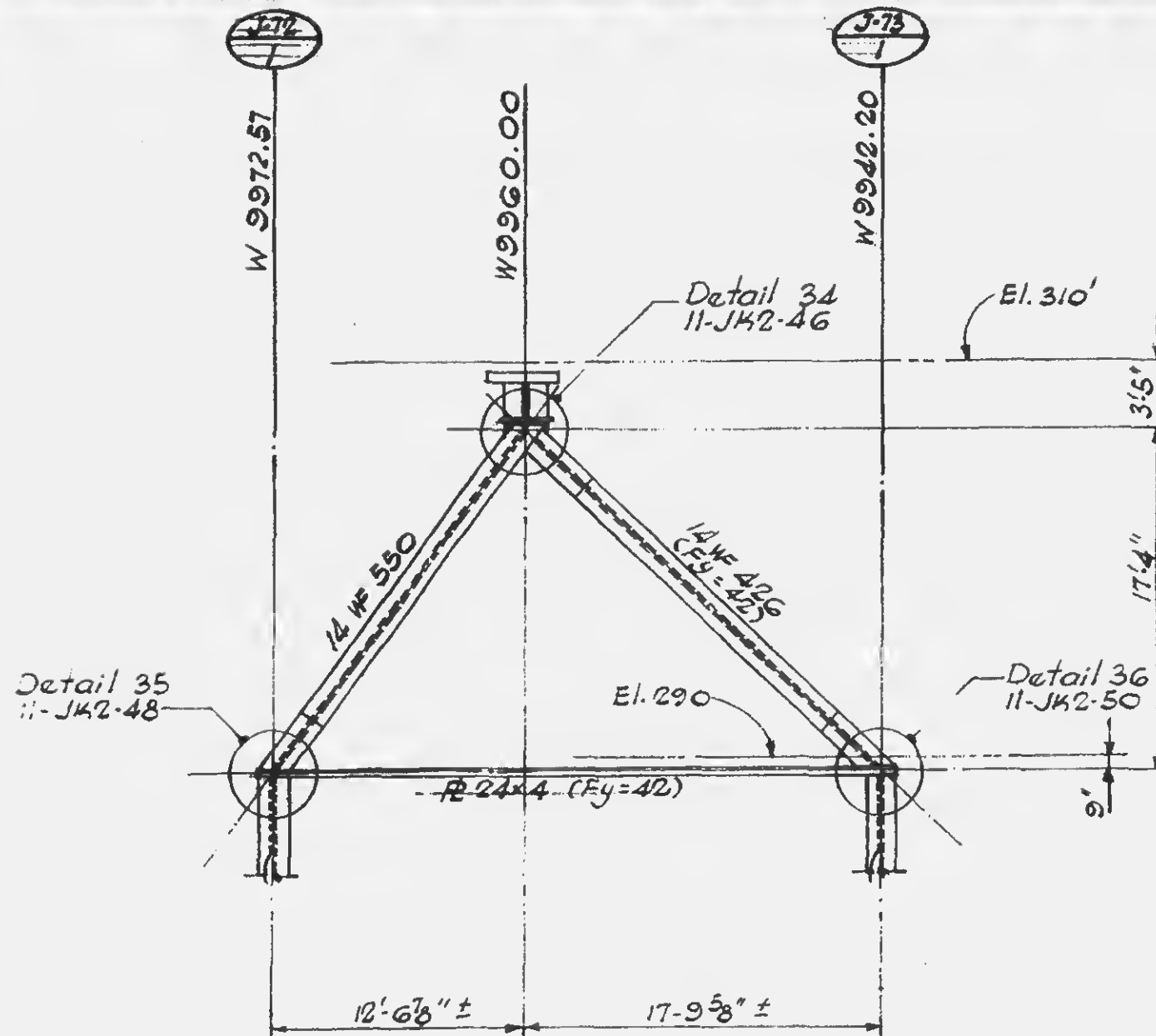
PROJECT THE WORLD TRADE CENTER

TITLE TRUSS ELEVATION

DATE 5-15-67

REVISIONS

6-7-68



TRUSS JT-9

 $\frac{1}{8"} = 1'-0"$
 (at N5027.50)

Notes:

1. All steel shall have a minimum yield stress of 36 KSI, except as noted.
2. For tie-bar (bottom chord) material see note on Detail A, 11-JK2-9.

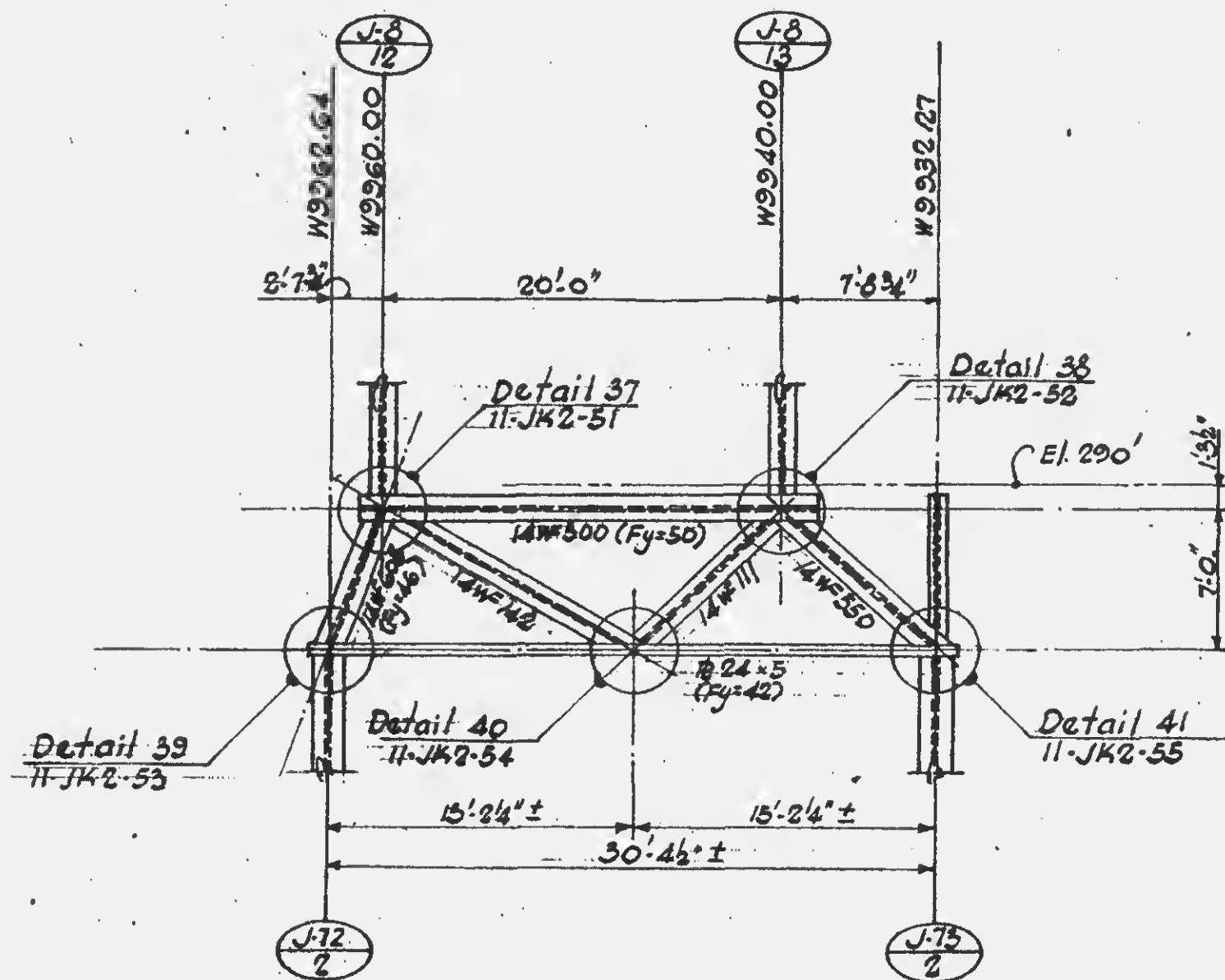
11-J1-10



PROJECT THE WORLD TRADE CENTERTITLE TRUSS ELEVATIONDATE 5-15-67

REVISIONS

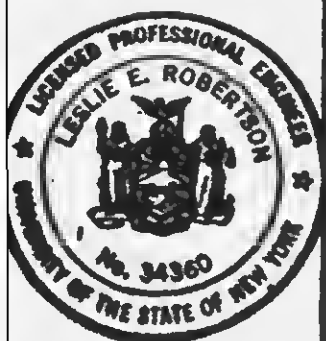
2-7-68

TRUSS JT-10

1/8" = 1'-0"
(at N4997.50)

Notes:-

1. All steel shall have a minimum yield stress of 36 ksi, except as noted.
2. For tie-bar (bottom chord) material see note on Detail A, 11-JK2-9.



PROJECT THE WORLD TRADE CENTER

TITLE TRUSS ELEVATION (KT-3)

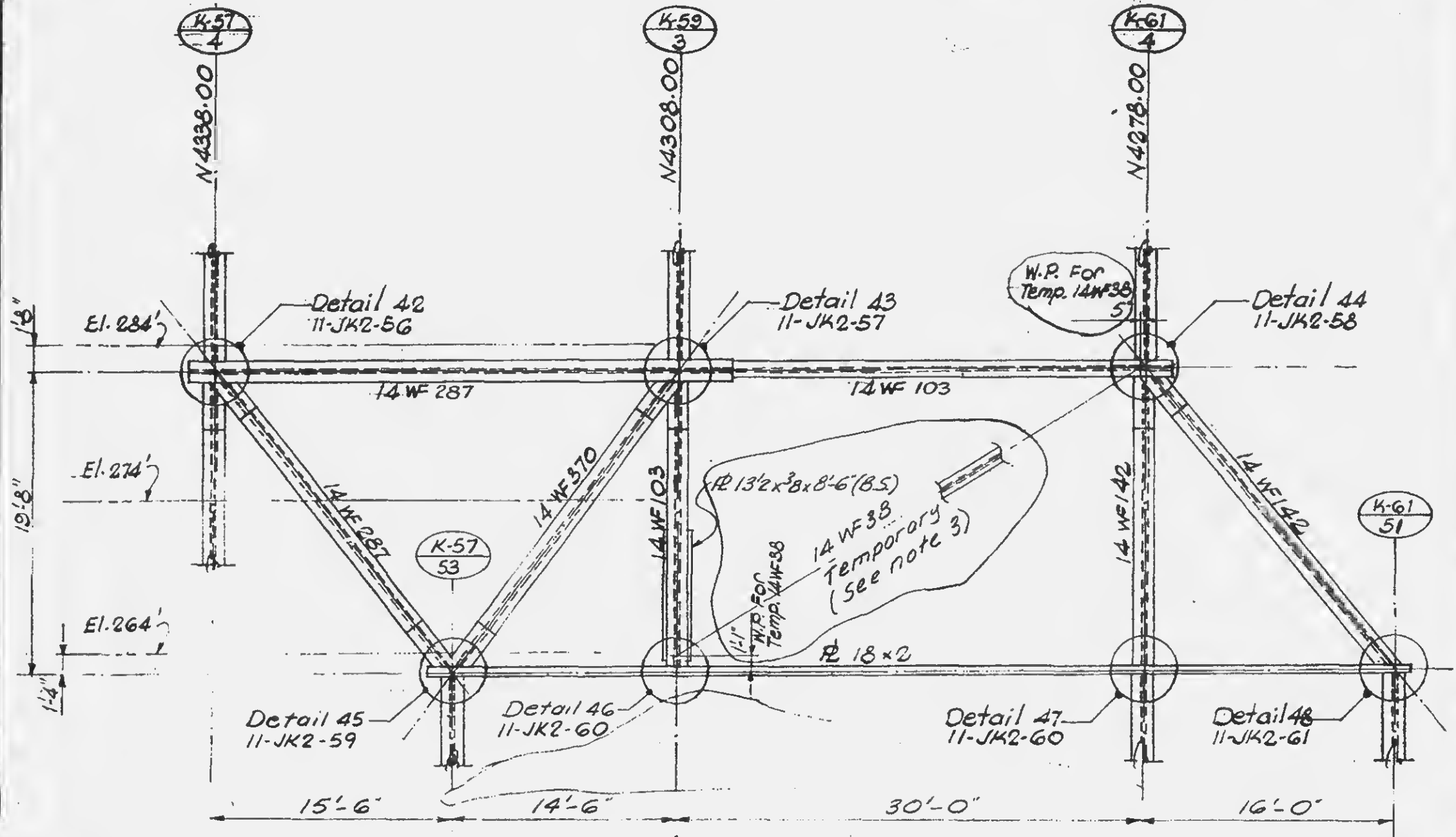
DATE 5-15-67

REVISIONS

9-4-68

10-15-68

3-21-69



Notes:

1. For intermediate support of bottom chord, see Detail B, 11-JK2-9.
2. All steel shall have a minimum yield stress of 36 ksi, except as noted.
3. Temporary 14 WF 38 to remain in place until column K-57-4 is erected with framing and floor slab at this column complete to El. 332, when it shall be removed.

TRUSS KT-3

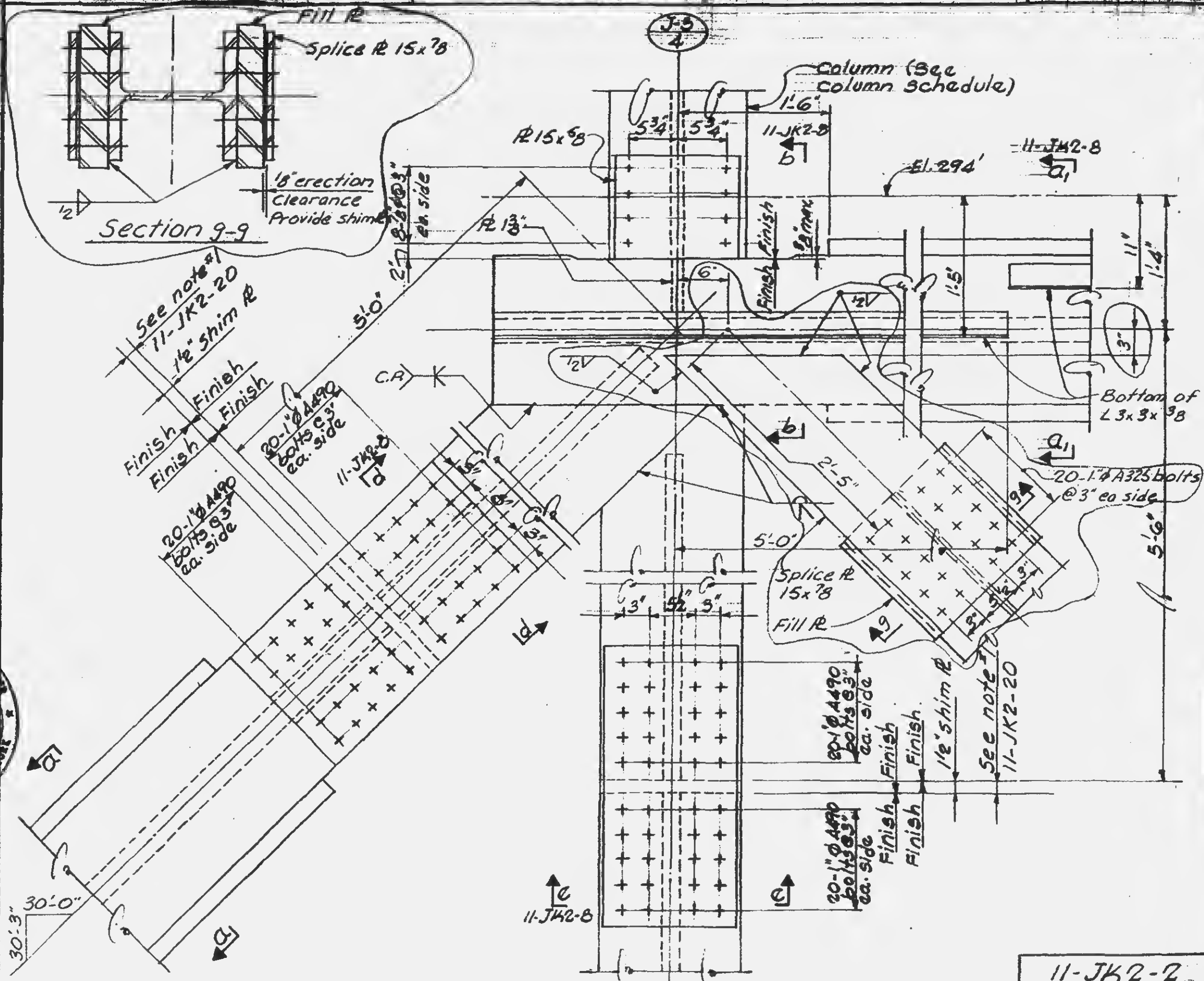
 $\frac{1}{8}'' = 1'-0''$
 (at W10034.14)

DESIGNED

DRAWN
S.C.REVIEWED
E.L.

11-K1-26

4-18-69



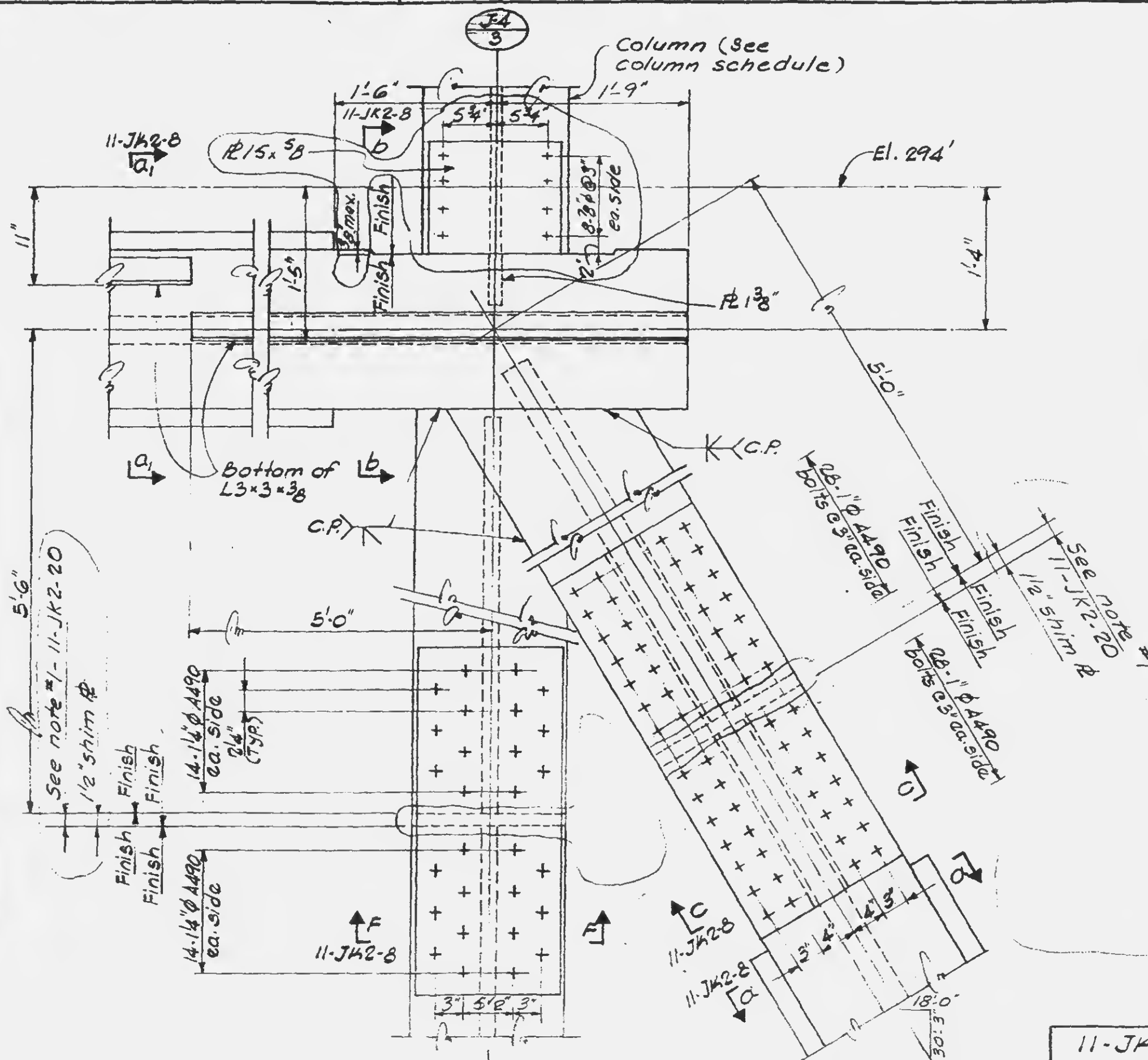
DRAWN
A.F.
REVIEWED
E.L.

11-JK2-2

REVISIONS

4-5-68

4-26-68



11-JK2-3

PROJECT

THE WORLD TRADE CENTER

TITLE

TRUSS DETAIL 3

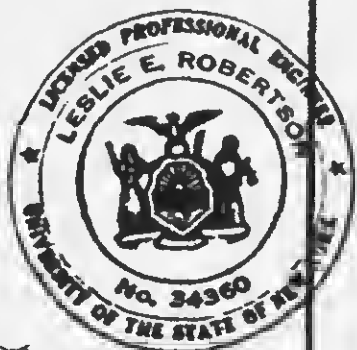
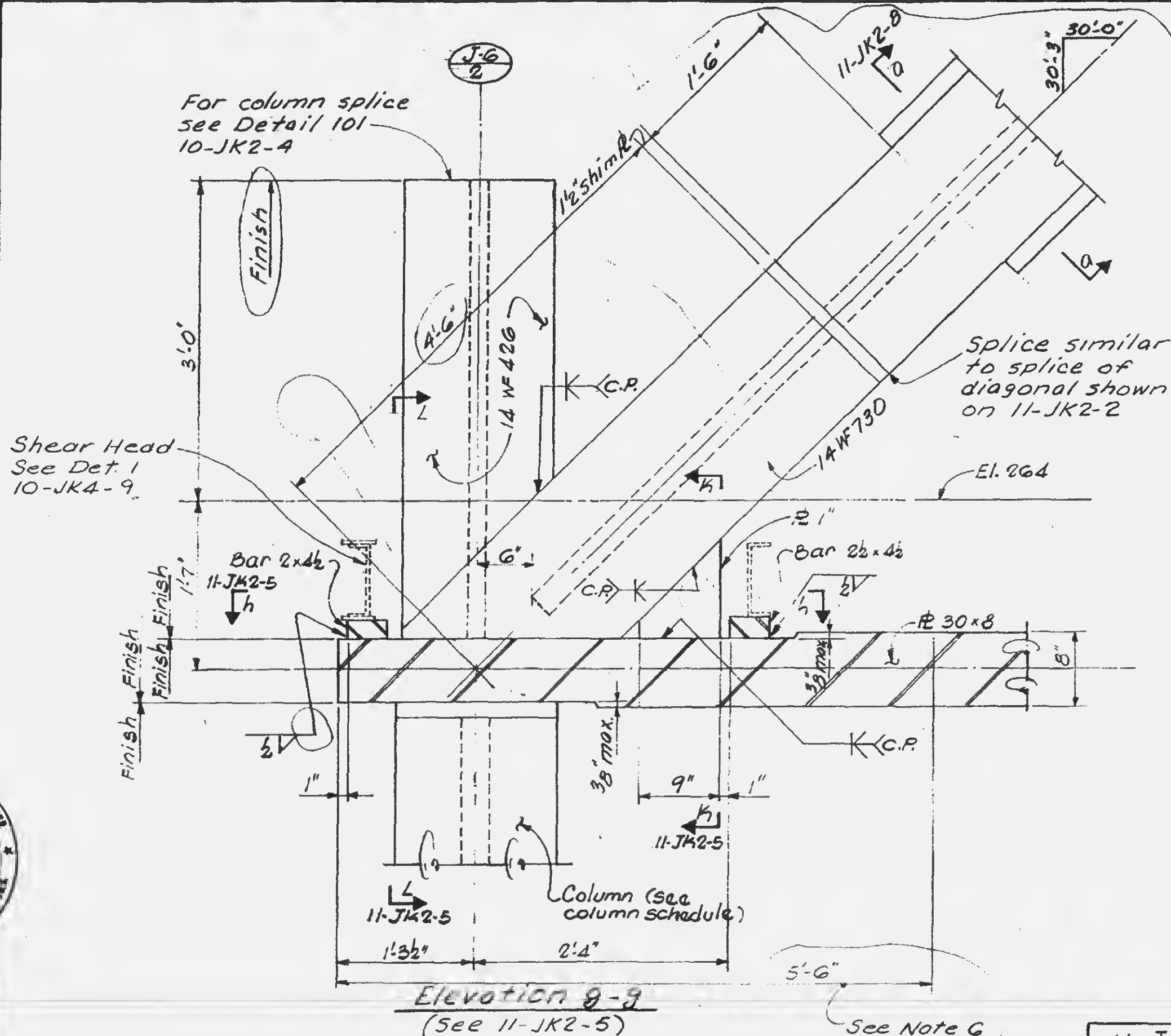
DATE

5-15-67

REVISIONS

4-5-68

4-26-68



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PROJECT THE WORLD TRADE CENTER

TITLE

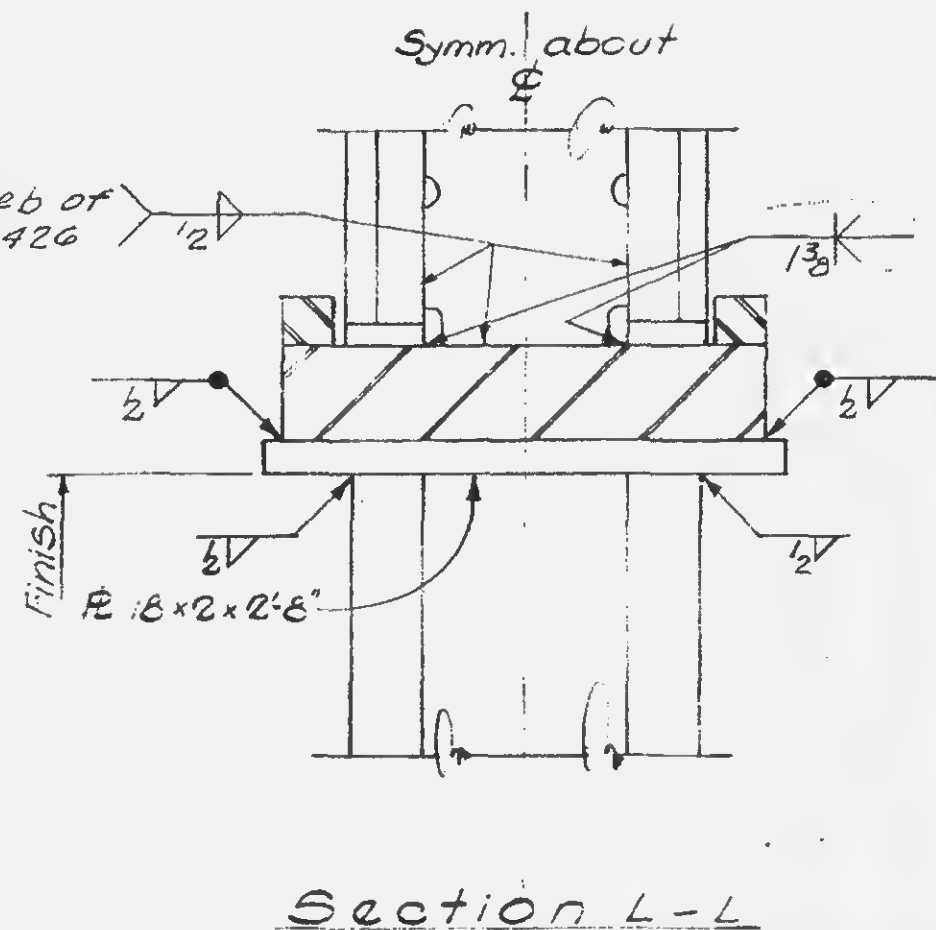
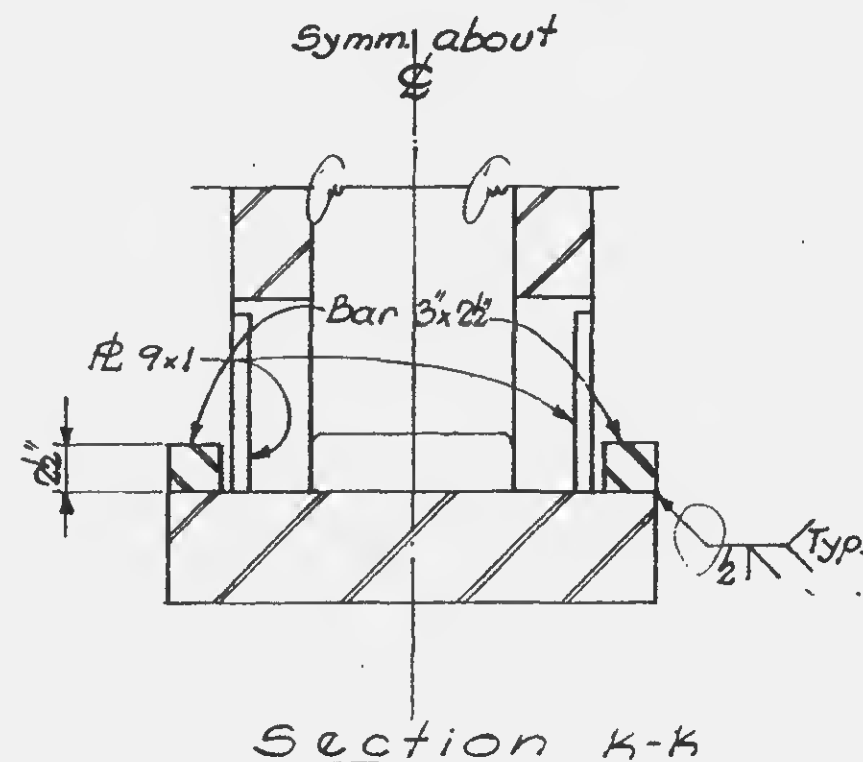
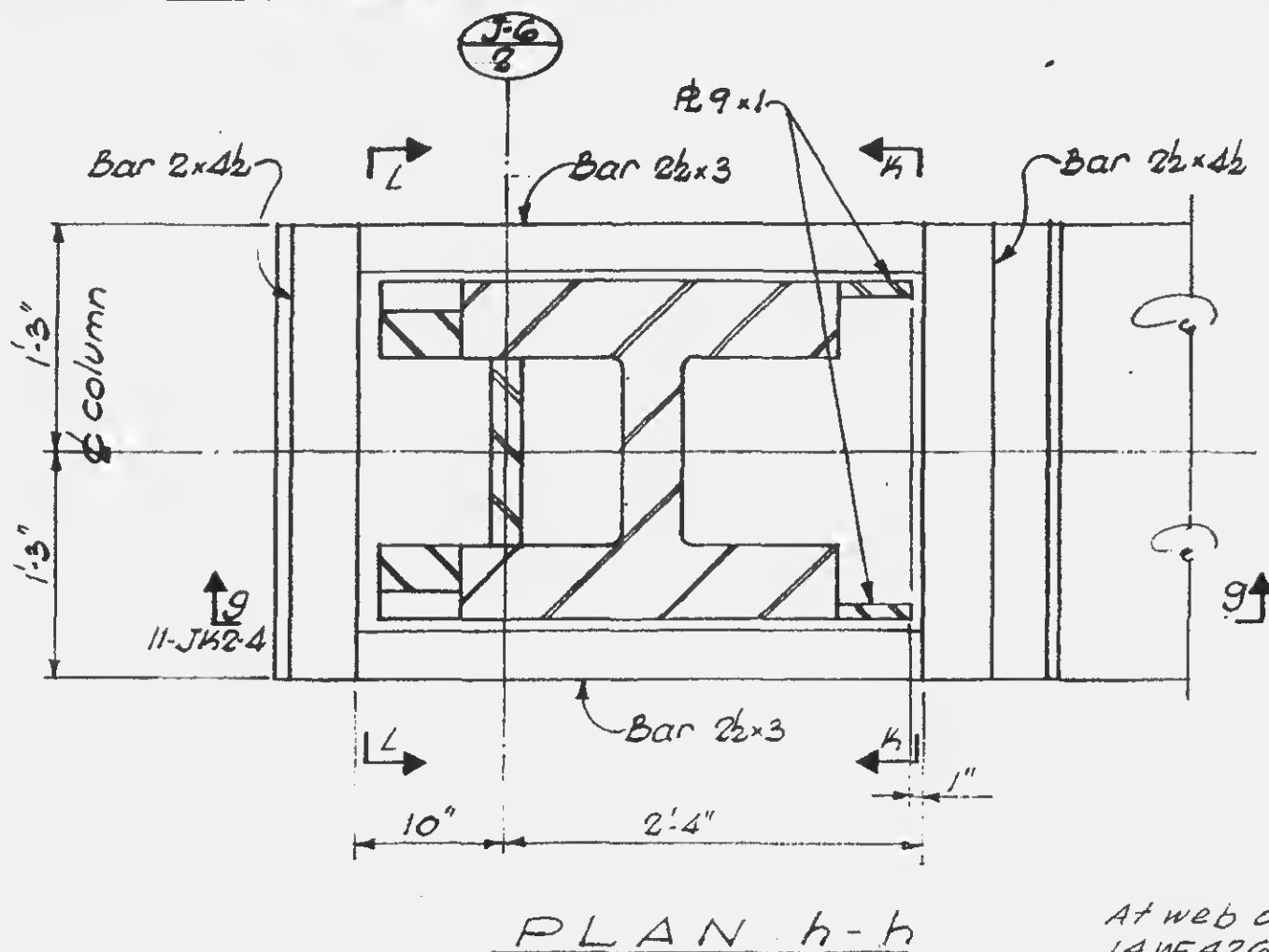
TRUSS DETAIL 3

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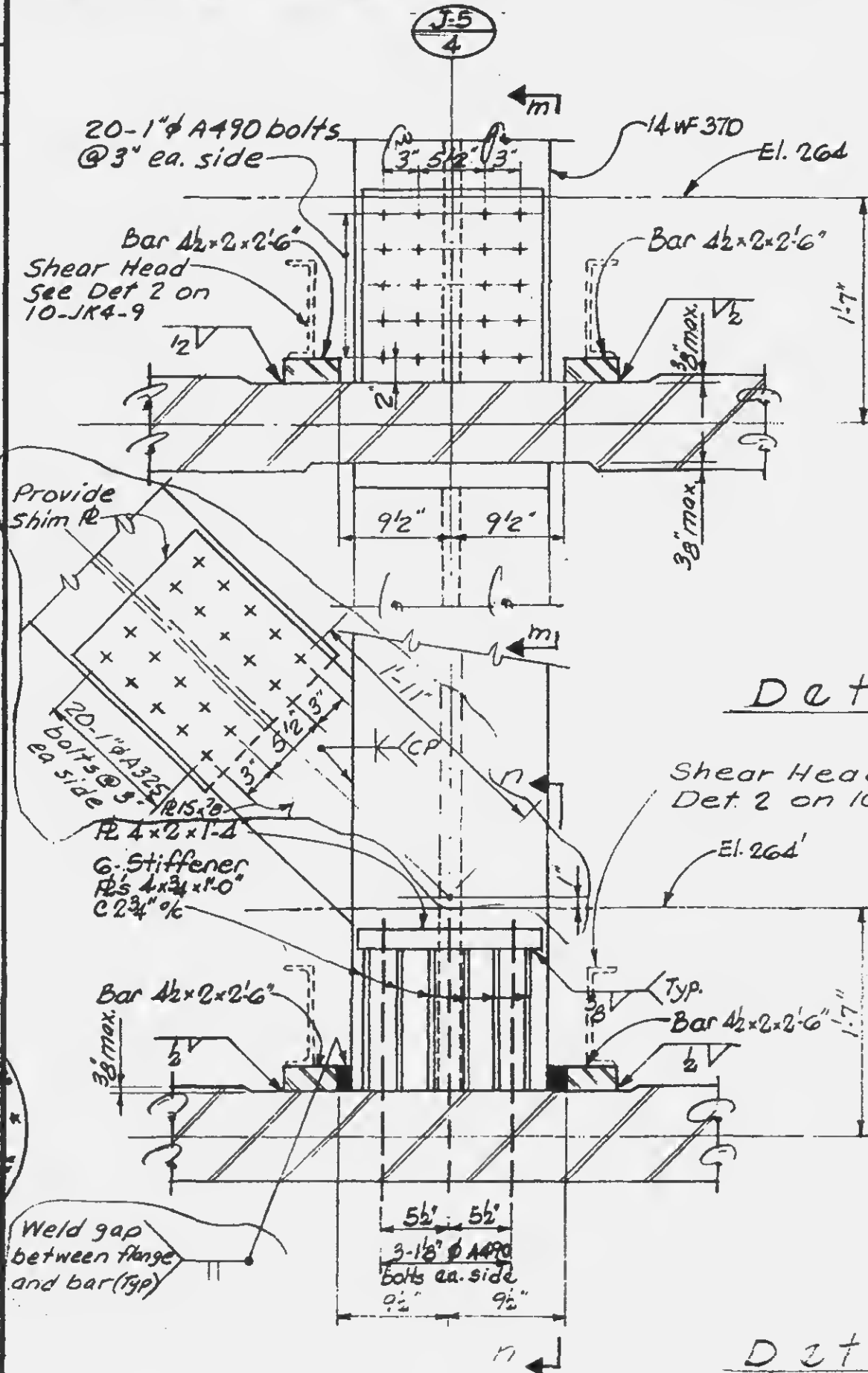
11-JK2-5

REVISIONS

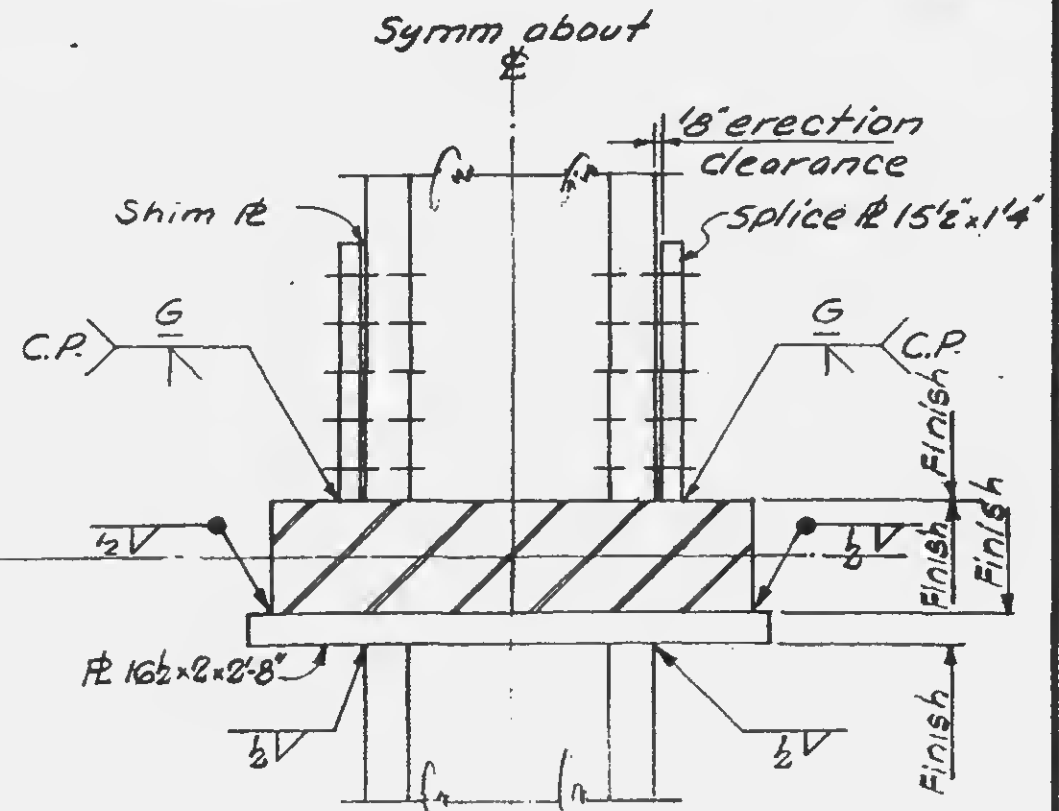
4-5-68

4-26-68

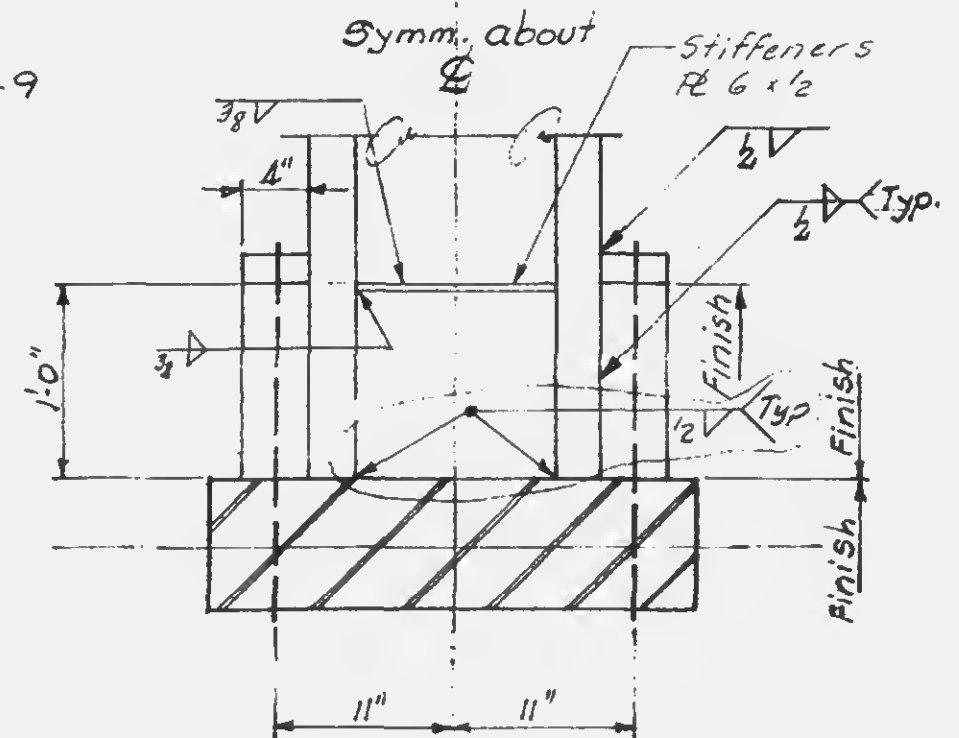
4-18-69



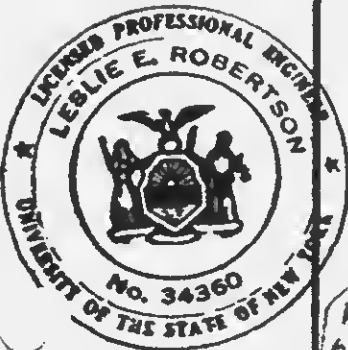
Detail 4



Section m-m



Section n-n



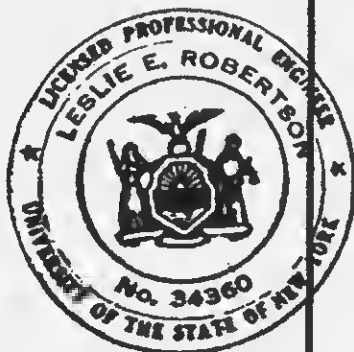
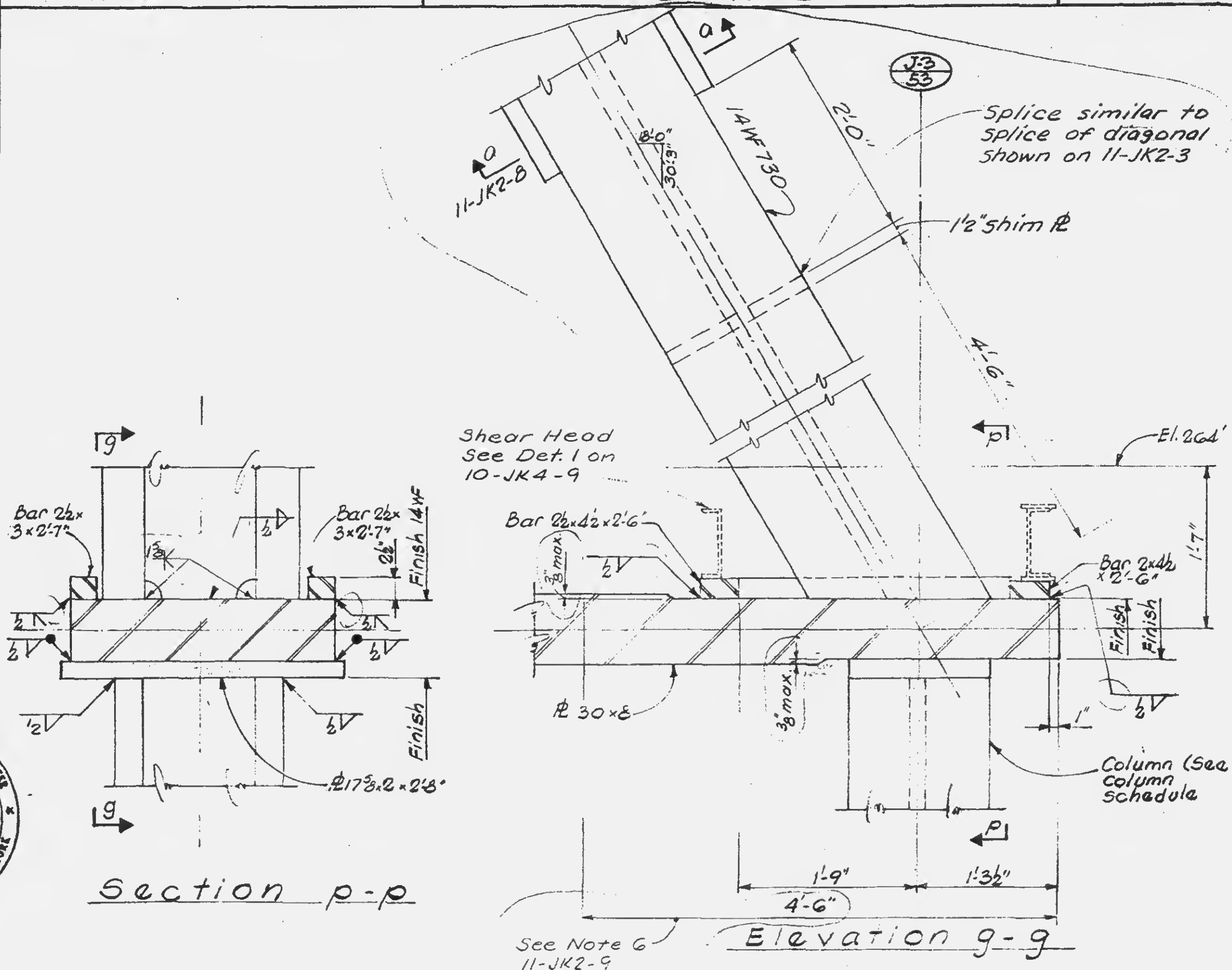
DRAWN
A.F.
REVIEWED
E.L.

11-JK2-6

REVISIONS

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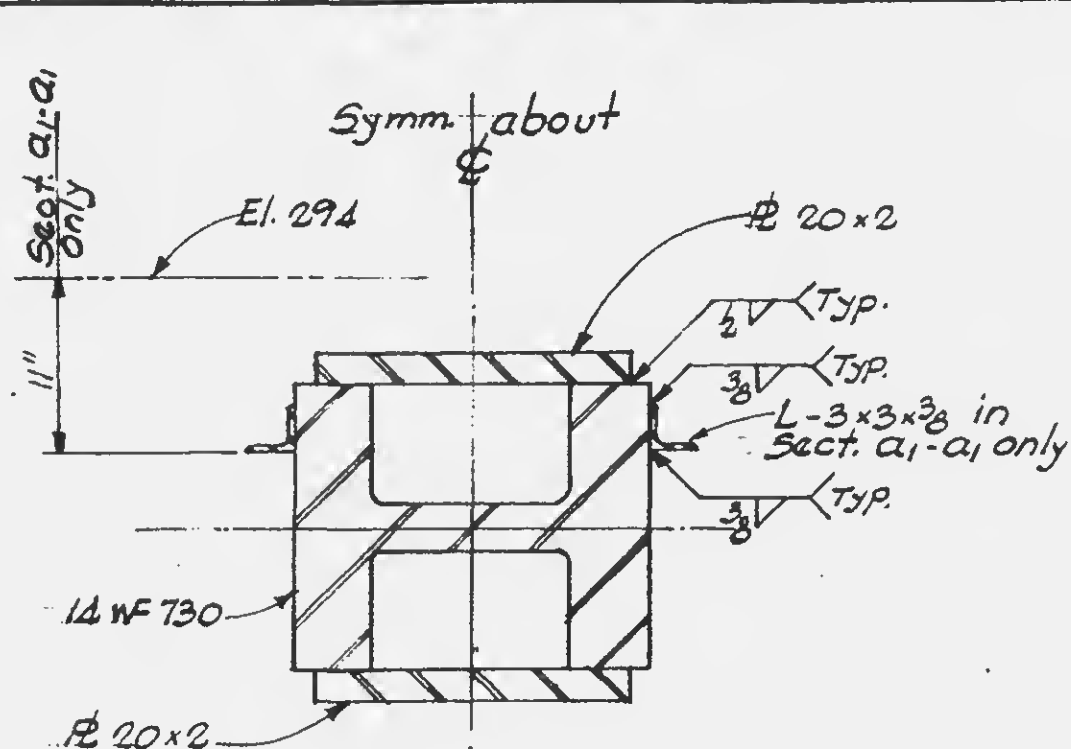


REVISIONS

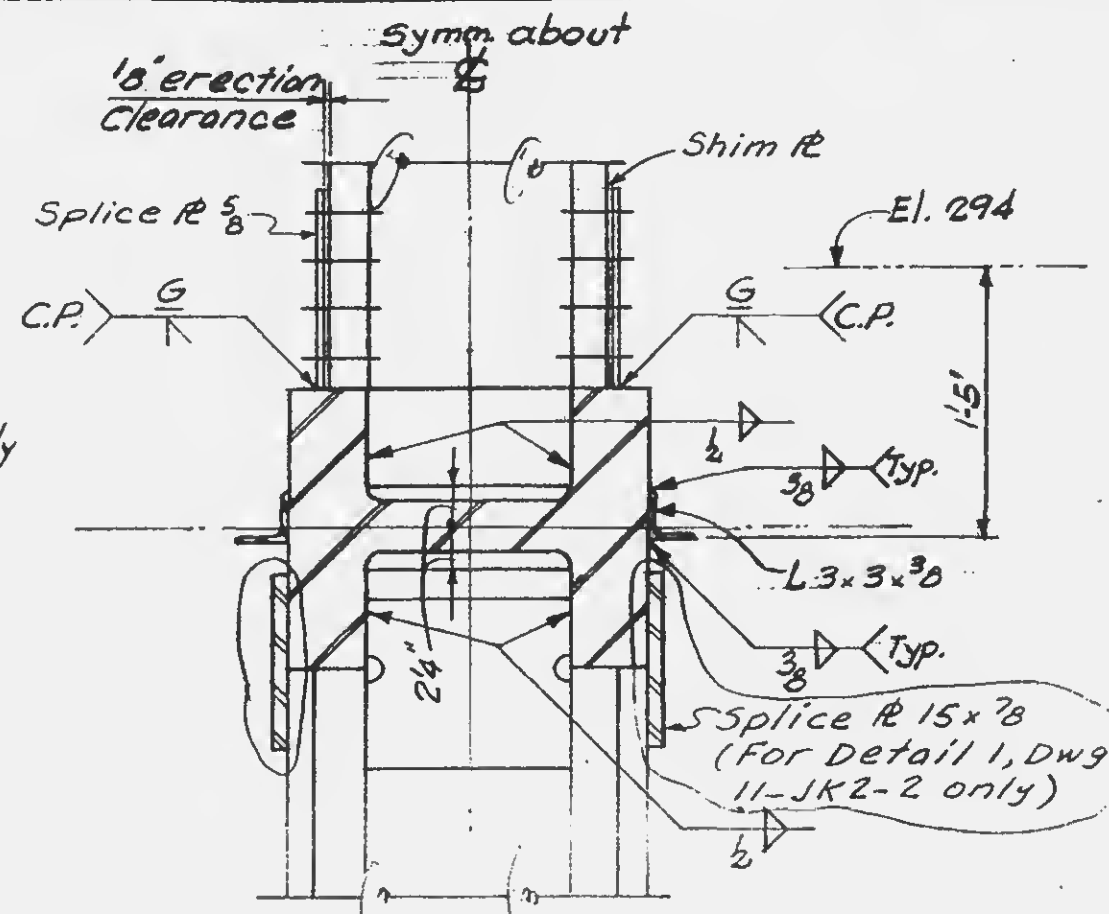
4-5-68

4-26-68

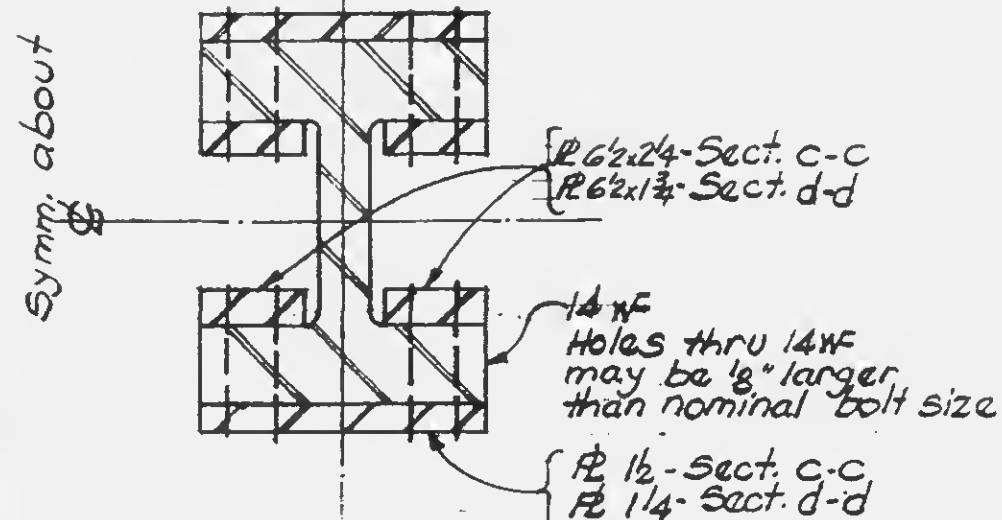
4-18-69



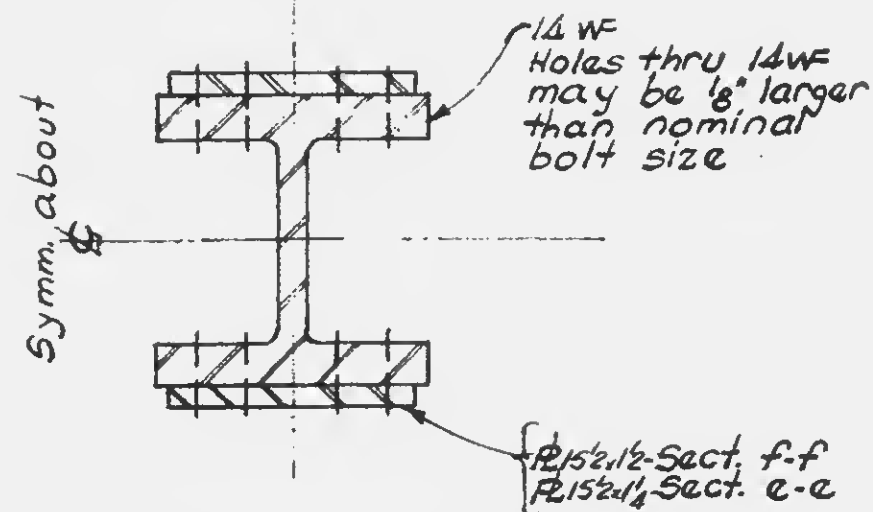
Section a-a
Section a₁-a₁



Section b-b



Section c-c
Section d-d



Section e-e
Section f-f



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A.F.
REVIEWED
E.L.

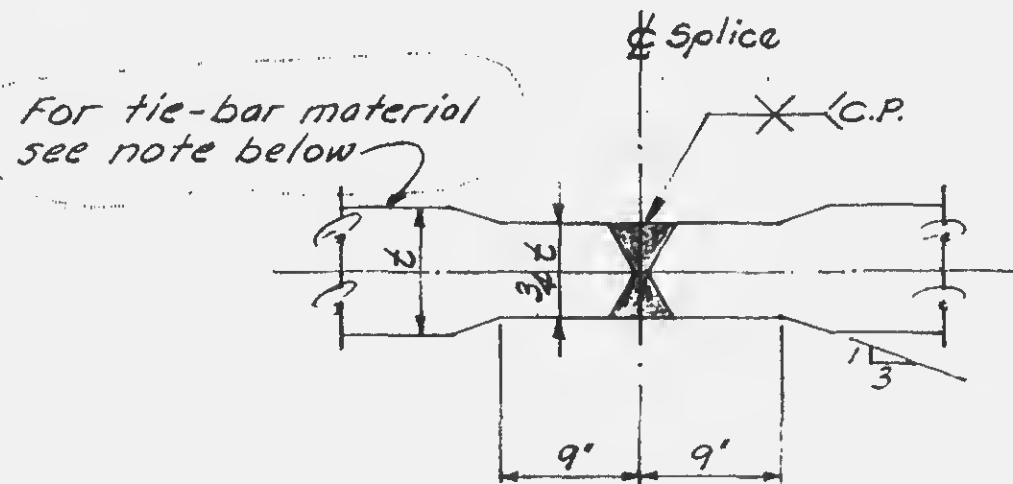
11-JK 2-8

PROJECT THE WORLD TRADE CENTERTITLE TRUSS DETAILSDATE 5-15-67

REVISIONS

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4-26-68



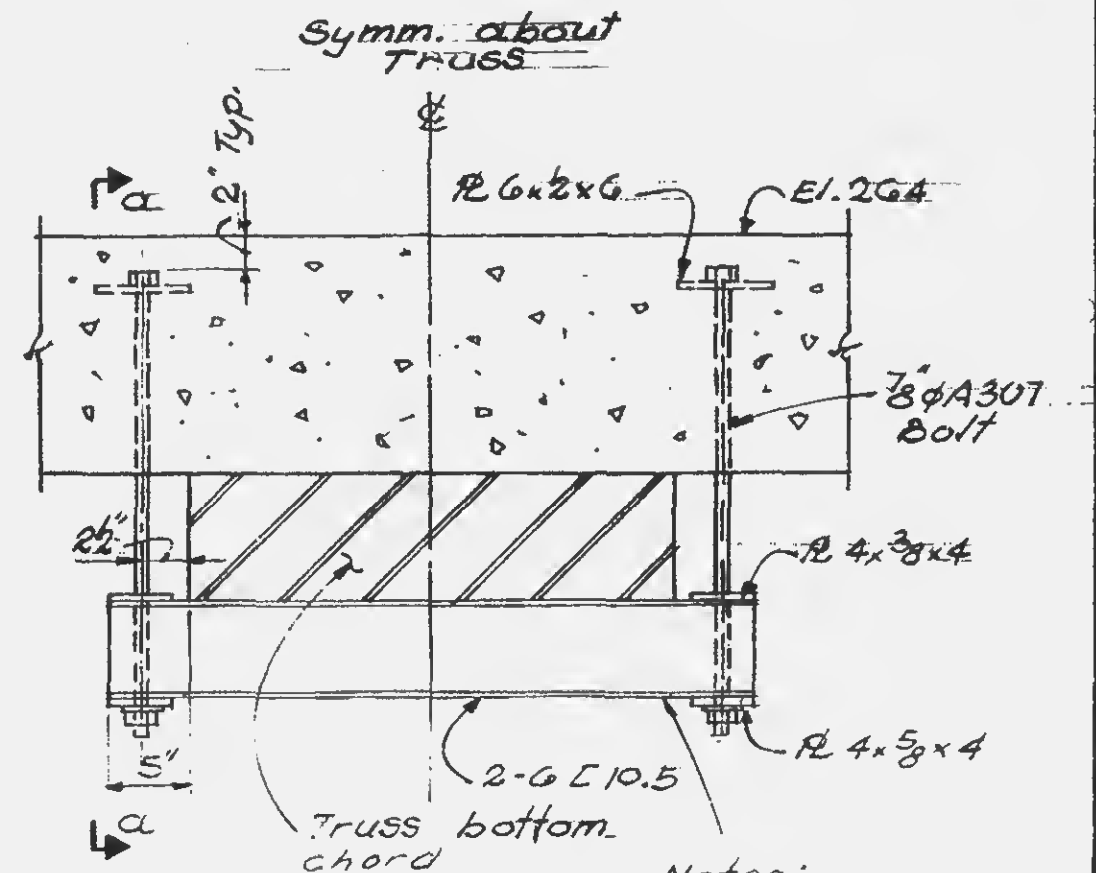
Typical detail for
shop splice of single
plate chord members

NOTE:

Tie bar material shall conform to the following:

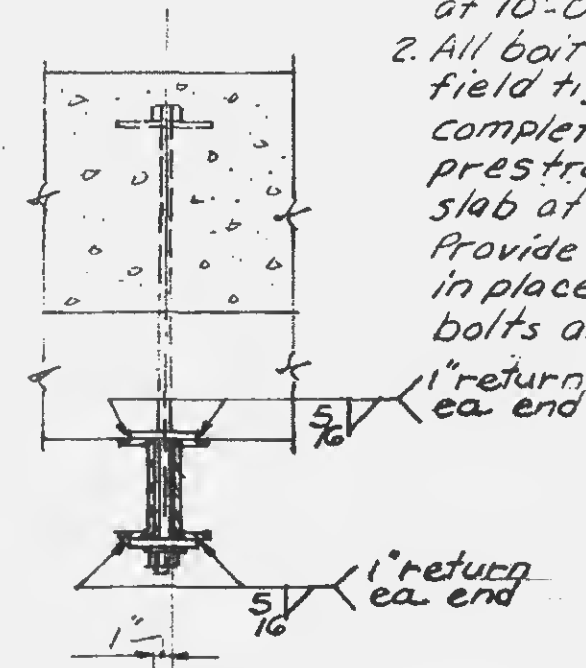
1. To be made to coarse grain practice.
2. To be silicon killed.
3. To be forging quality.
4. To be ordered to vacuum degassed practice with extra top discard.
5. To be 100% ultrasonically inspected in specified areas in accordance with ASTM A435-65.
6. In the locations shown in the drawings, steel plate shall be free of gross internal discontinuities exceeding
 - (a) 3 square inches measured as the projected area on the surface of the plate, or 3 inches in maximum dimension measured parallel to the plane of the plate, or both.
 - (b) 1/32 inch when measured in the direction of the thickness of the plate.
 - (c) The sum of the maximum dimensions of each discontinuity intersected by any plane perpendicular to the longitudinal axis of the plate shall not exceed 4 inches.
 - (d) At surfaces on the plate where the plate is joined to the flanges of diagonal members, the plate shall be free of gross internal discontinuities exceeding 1 sq. inch in area within widths of 10 inches centered on the flanges of the diagonals and within a depth of 3 inches from the surface of the plate.

Detail A



Detail B

- Notes:
1. Intermediate supports spaced at 10'-0" max.
 2. All bolts to be field tightened after completion of prestress work for slab at El. 264. Provide temp. sup'ts. in place of L before bolts are tightened.



Section a-a



11-JK2-9

PROJECT

THE WORLD TRADE CENTER

TITLE

TRUSS DETAIL 7

DATE

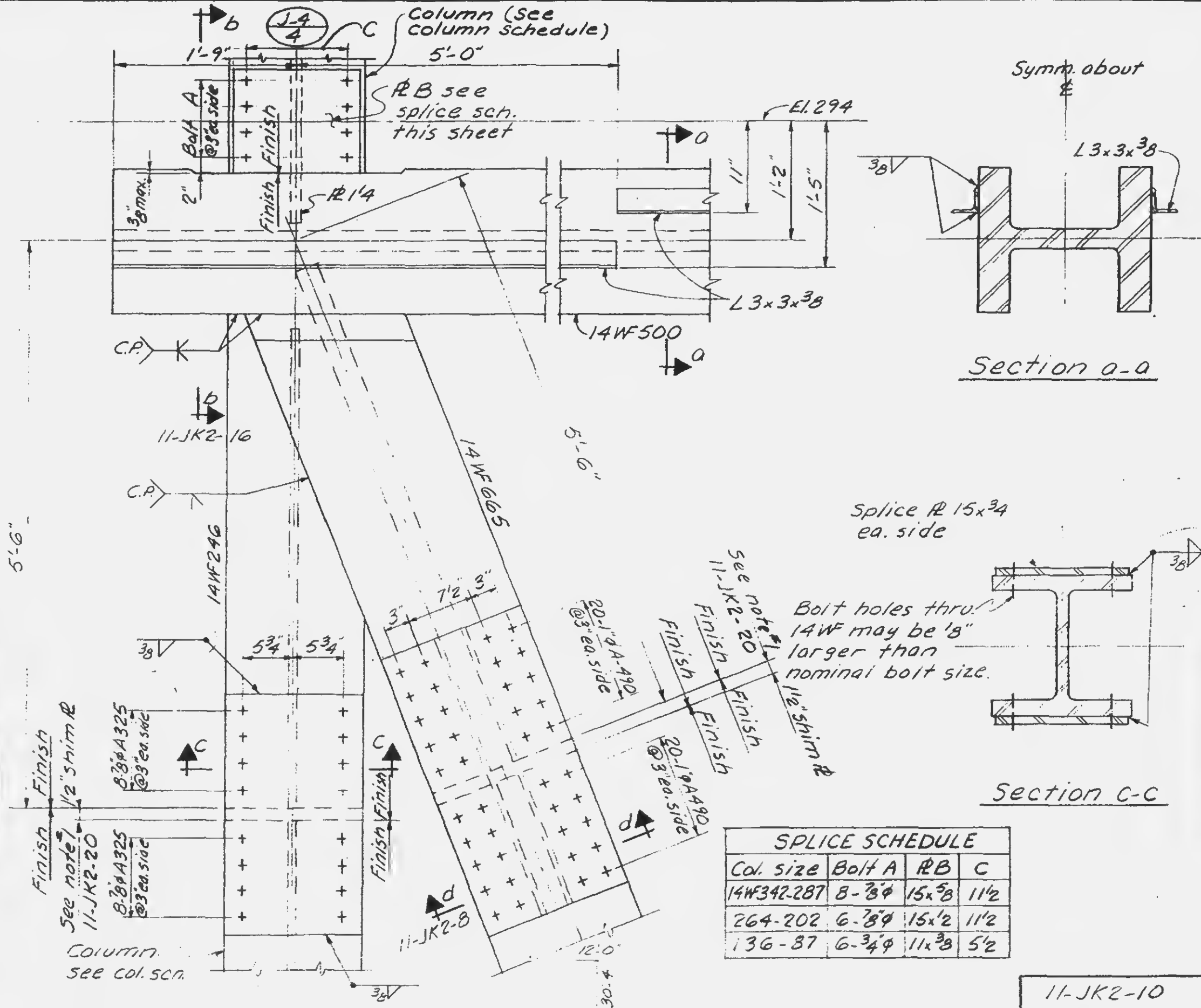
5-15-67

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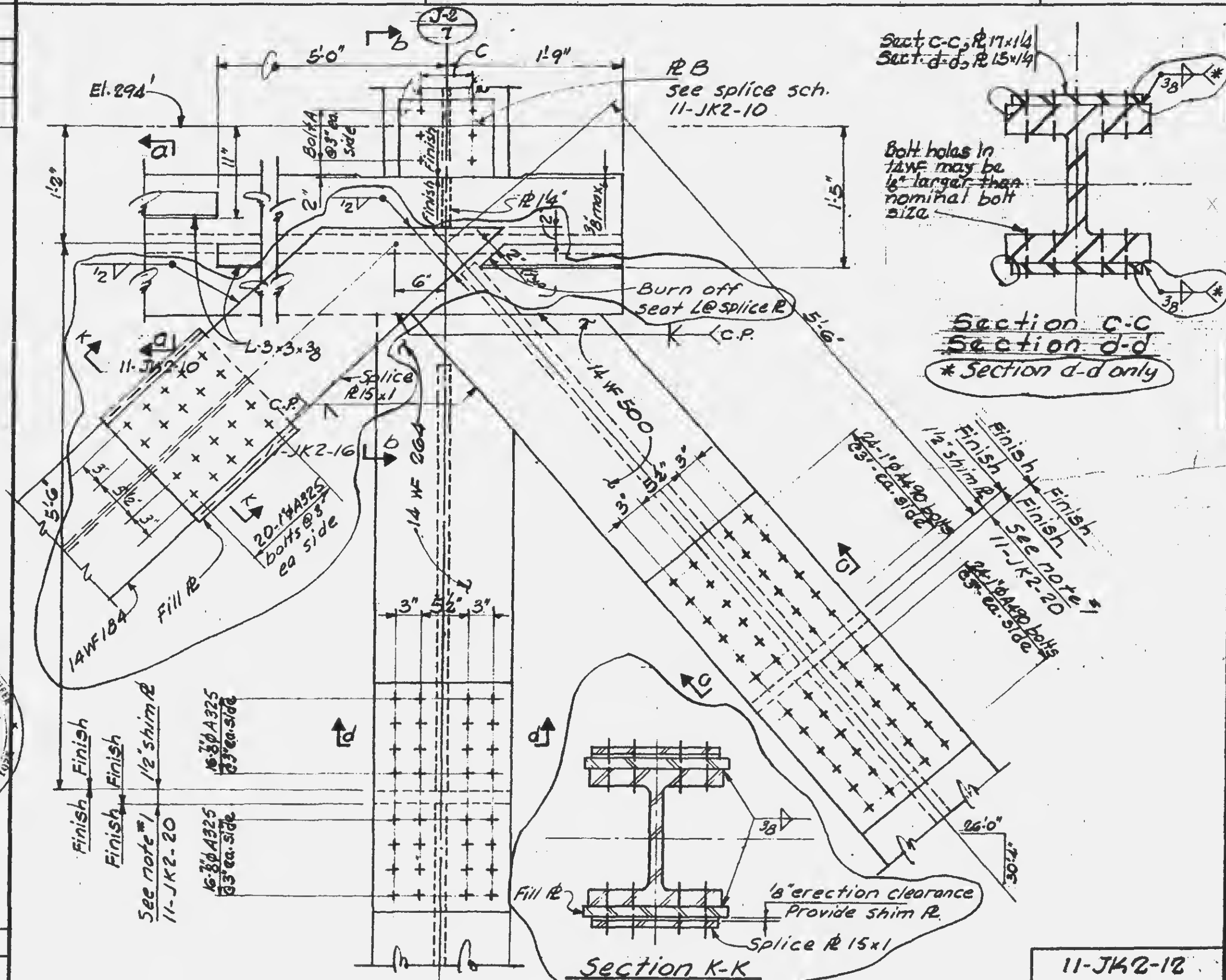
DRAWN
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REVIEWED
E.L.

4-26-68



REVISIONS

4-5-68
4-26-68
4-18-69



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E.L.

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4-5-68

4-26-68

4-18-69

See note

R 4 x 2 x 1'-4"

6 Stiffeners
R 5-4 x 2 x 1'-0"
@ 2'-4" o.c.
ea. side

Bar 4 x 2 x 2'-3"

1/2"

R 27 x 6

J-3
4

14 WF 264

El. 264'

Shear Head - See
Det. 2 on 10-JK4-9

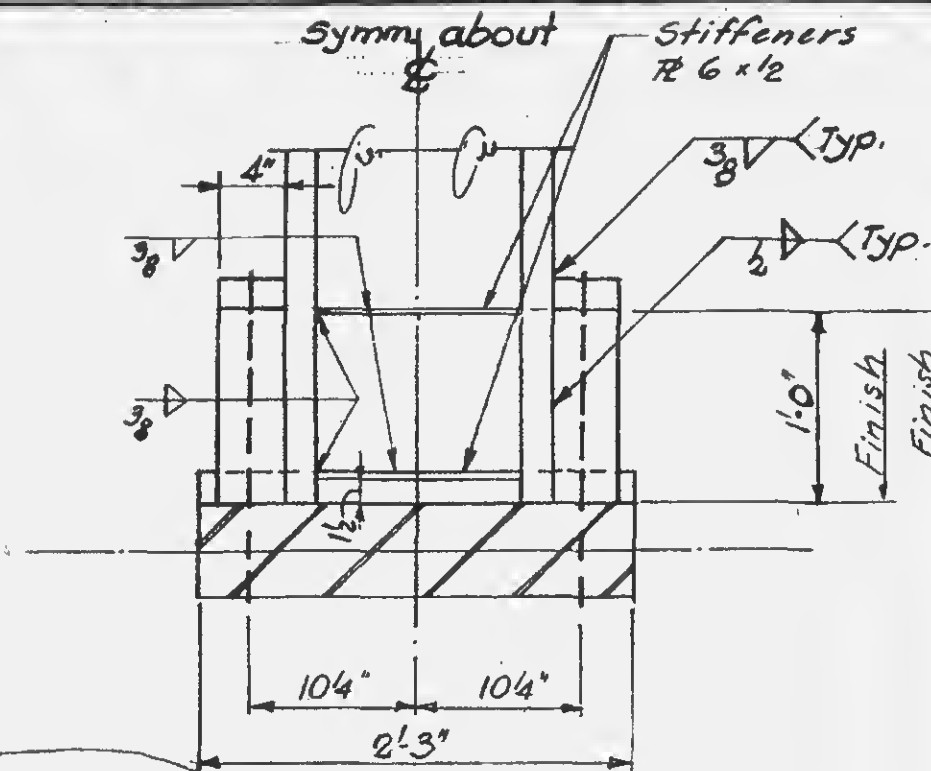
3/8" < Typ.

3-1/8" ϕ A490 bolts
ea. side

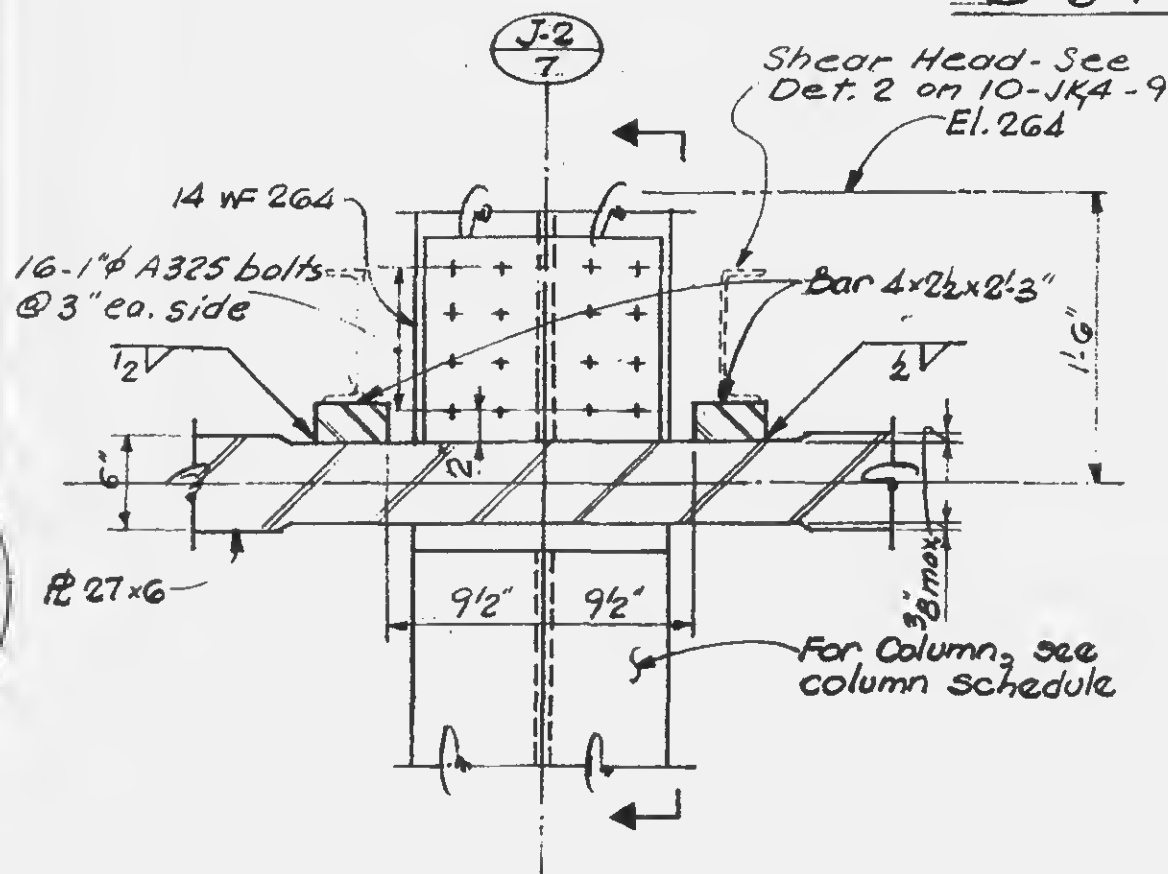
Note:

See Dwg 11-JK2-14B for additional
information for Truss JT-4 only

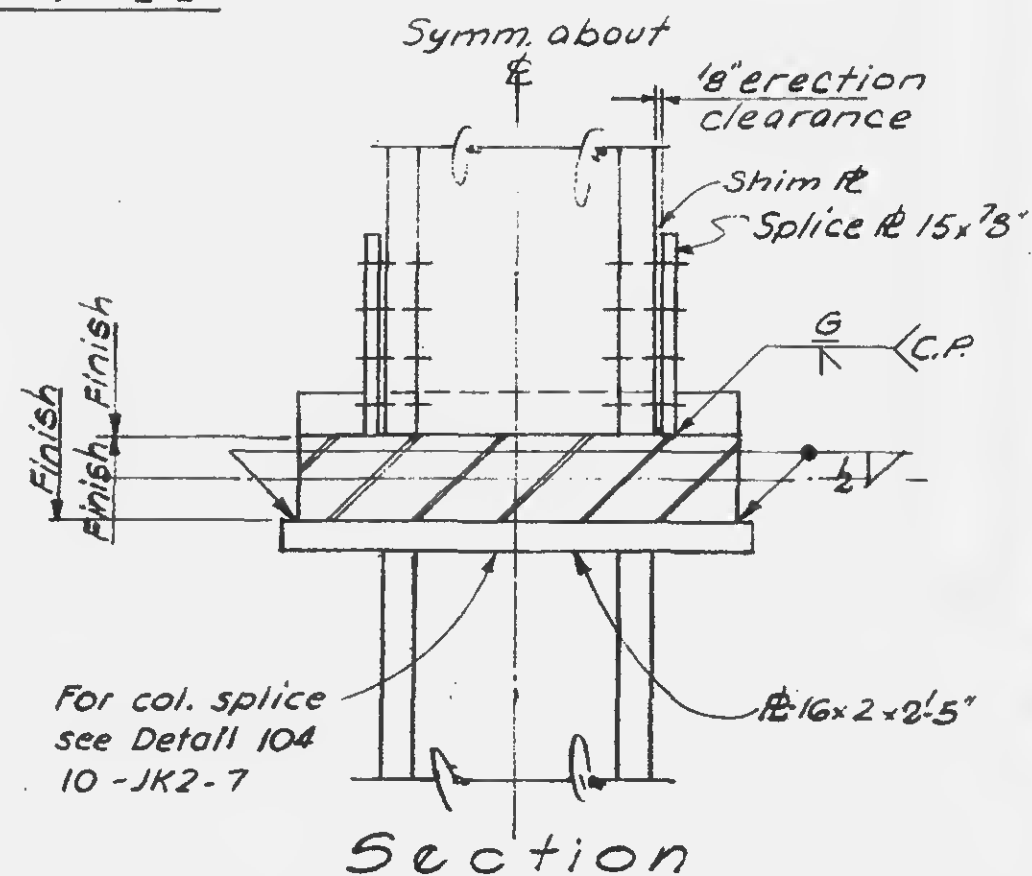
Detail 11



Section



Detail 12



Section

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A.F.
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E.L.

11-JK2-14

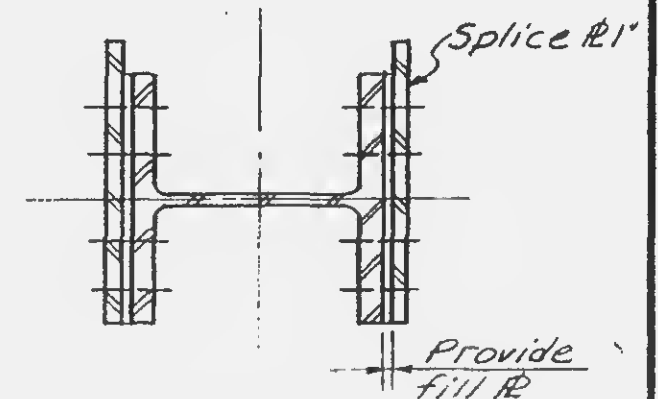
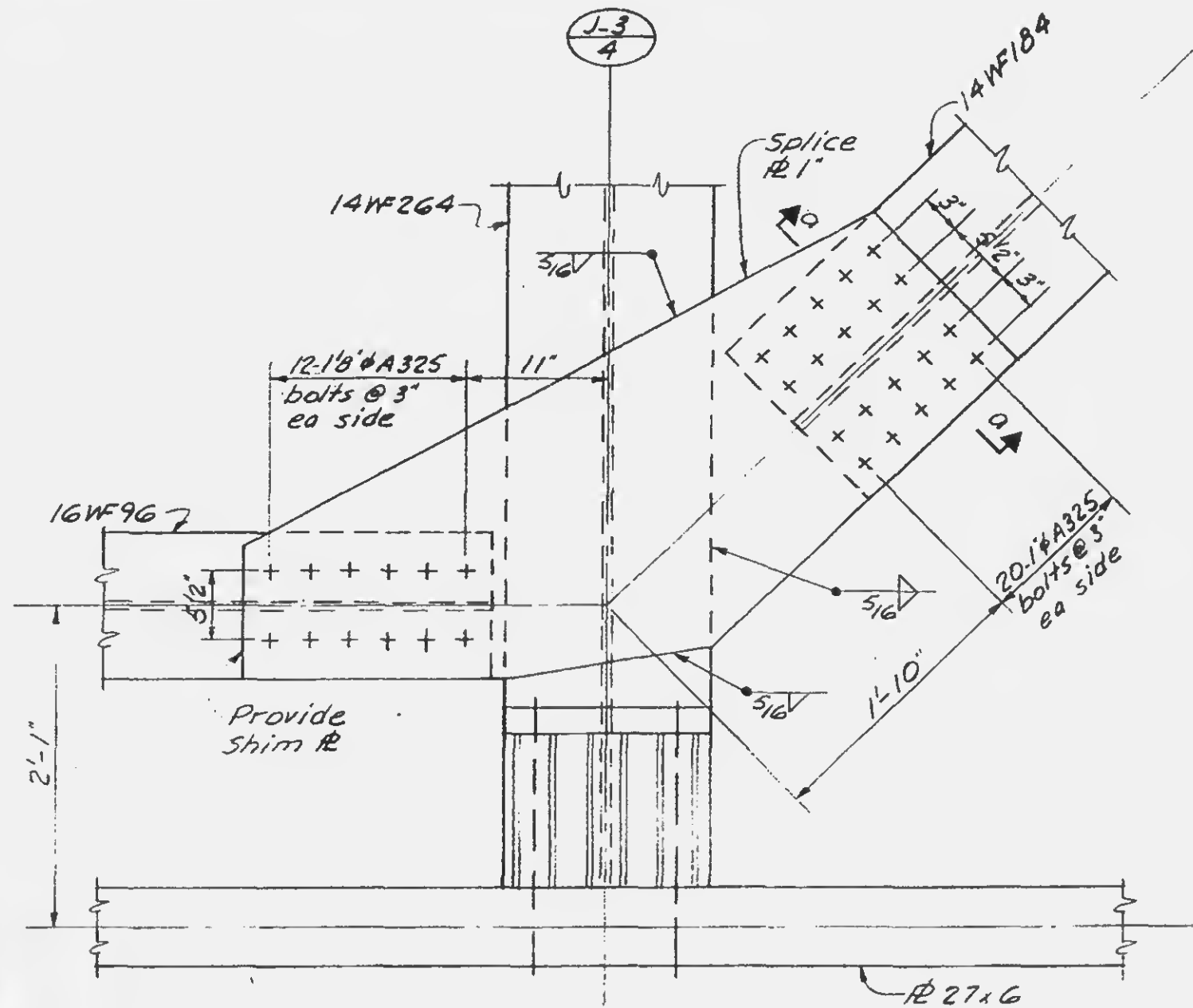
SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

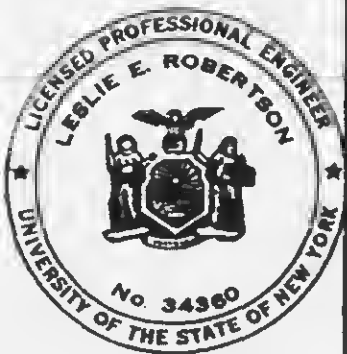
PROJECT THE WORLD TRADE CENTER TITLE TRUSS DETAILS (JT-2)

DATE 4-18-69

REVISIONS



Section a-a



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11-JK2-14A

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

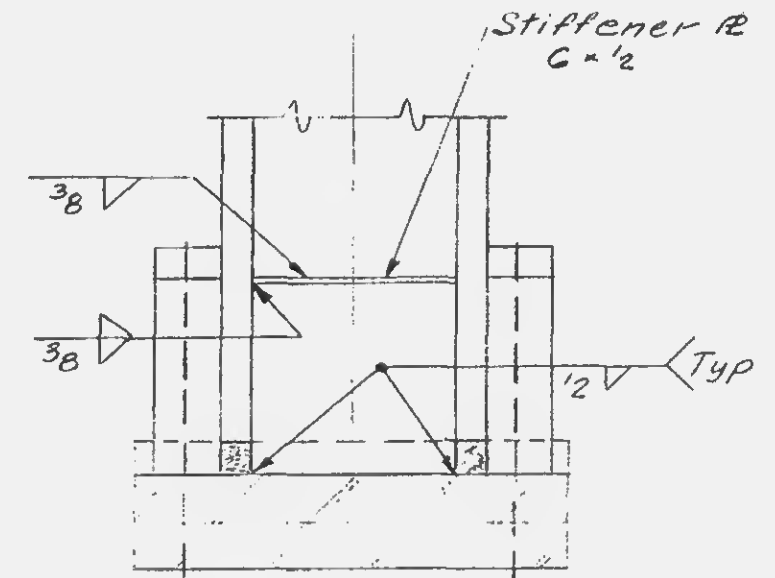
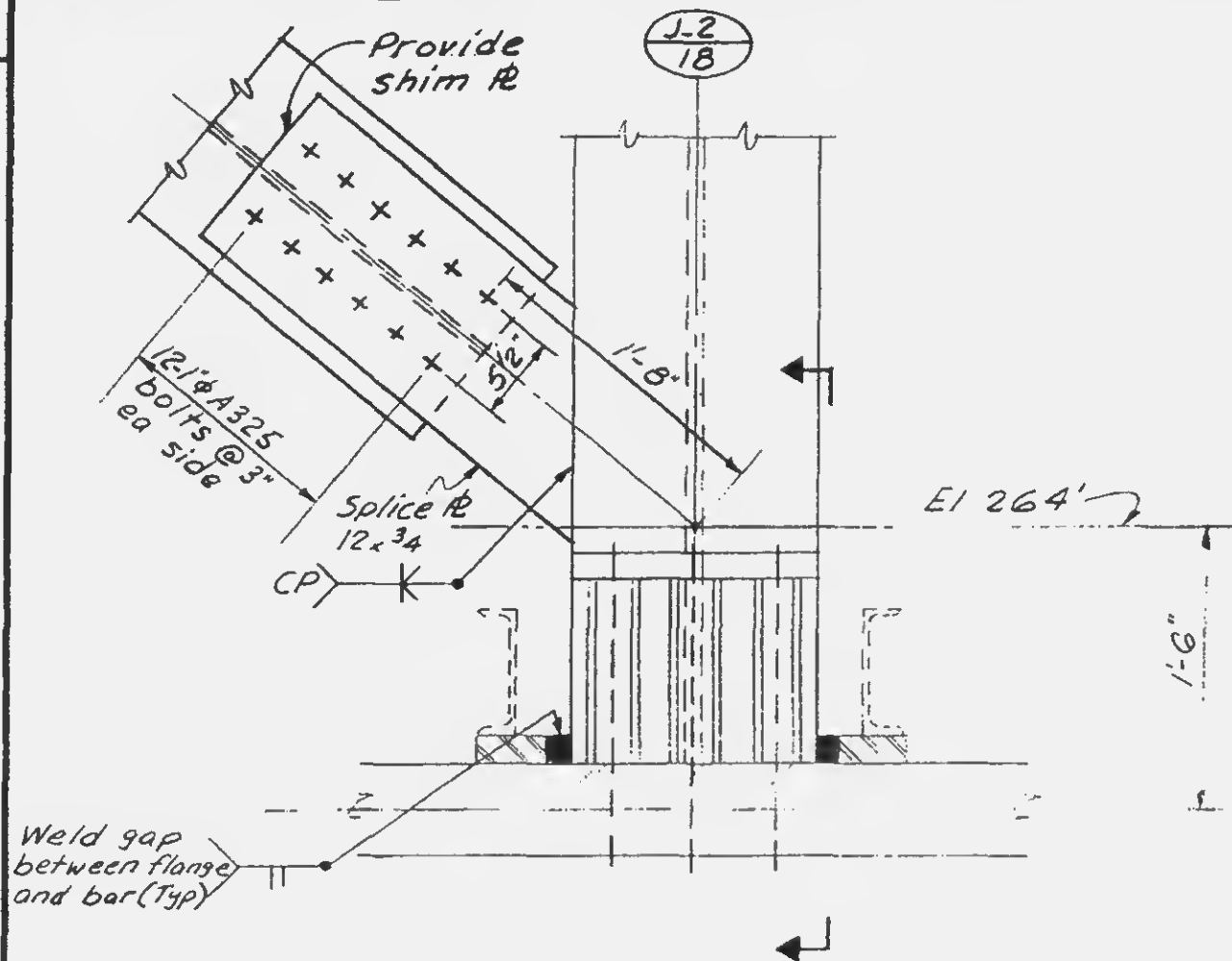
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAIL (JT-4)

DATE 4-18-69

REVISIONS



Section



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DRAWN
A.F.

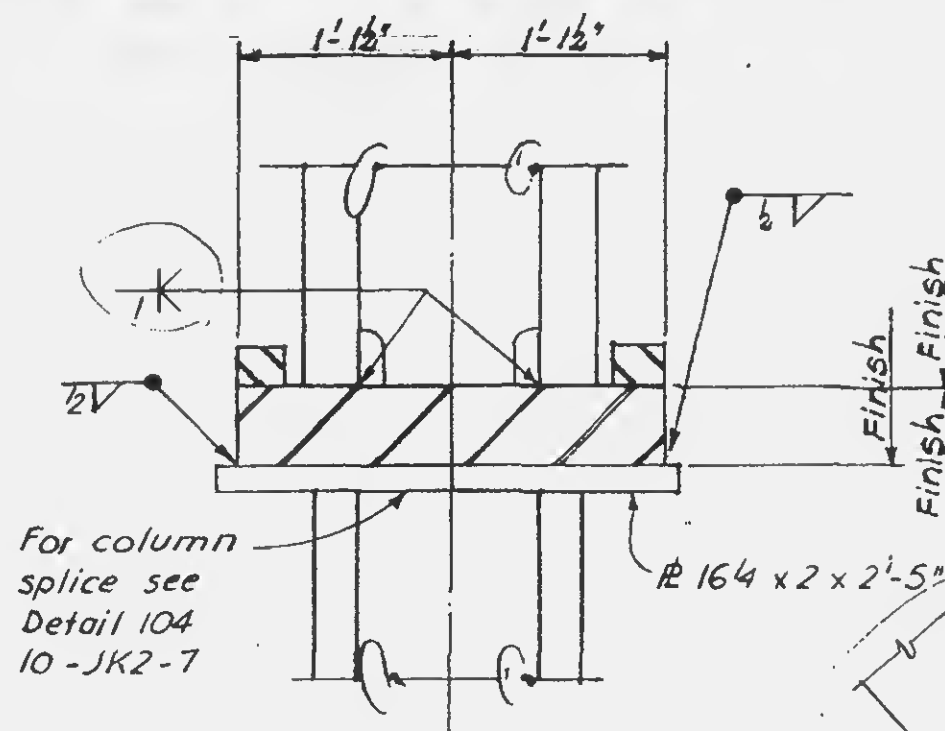
REVIEWED
E.L.

11-JK2-14B

REVISIONS

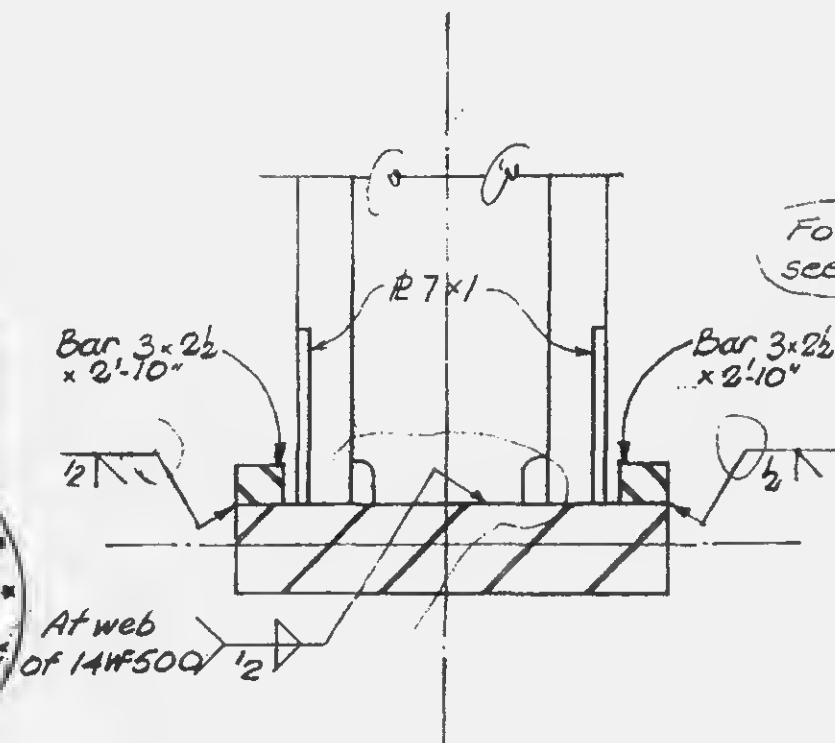
4-5-68

4-26-68

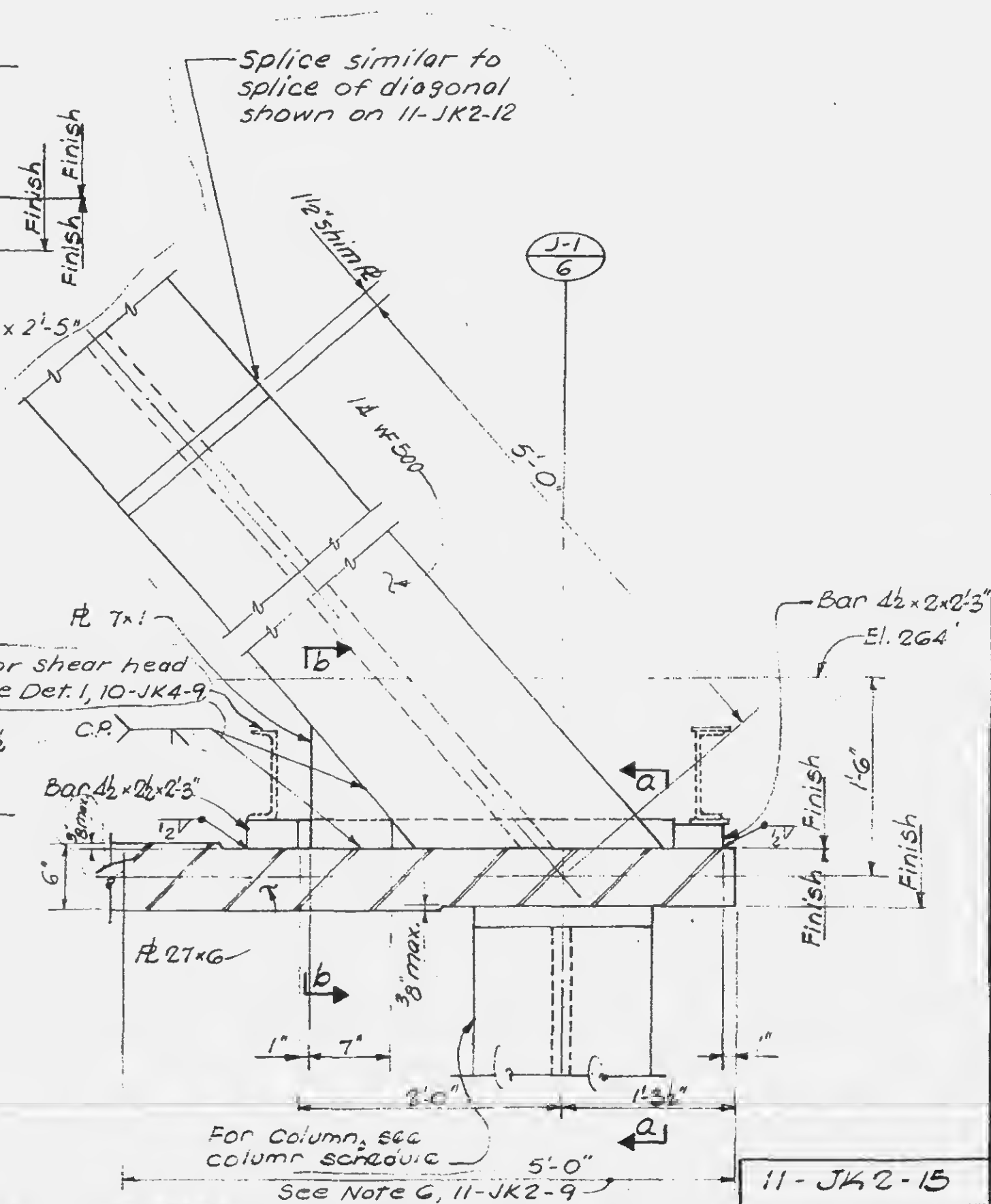


For column
splice see
Detail 104
10-JK2-7

Section a-a



Section b-b



For Column, see
column schedule

See Note G, 11-JK2-9

11-JK2-15



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PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS

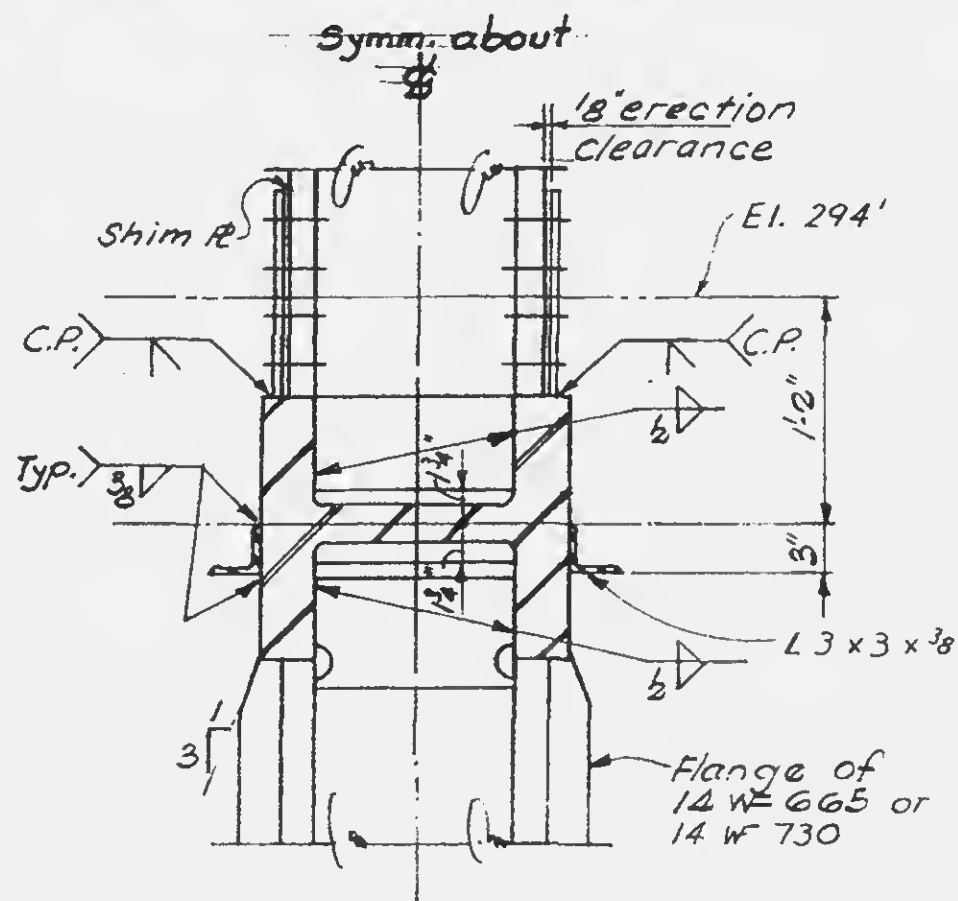
DATE 5-15-67

REVISIONS

4-5-68

4-26-68

4-18-69



Section b-b

Note:

Splice $\phi 15 \times 1$ not shown
(For Detail 9, Dwg 11-JK2-12 only)



DRAWN
A.F.
REVIEWED
E.L.

11-JK2-16

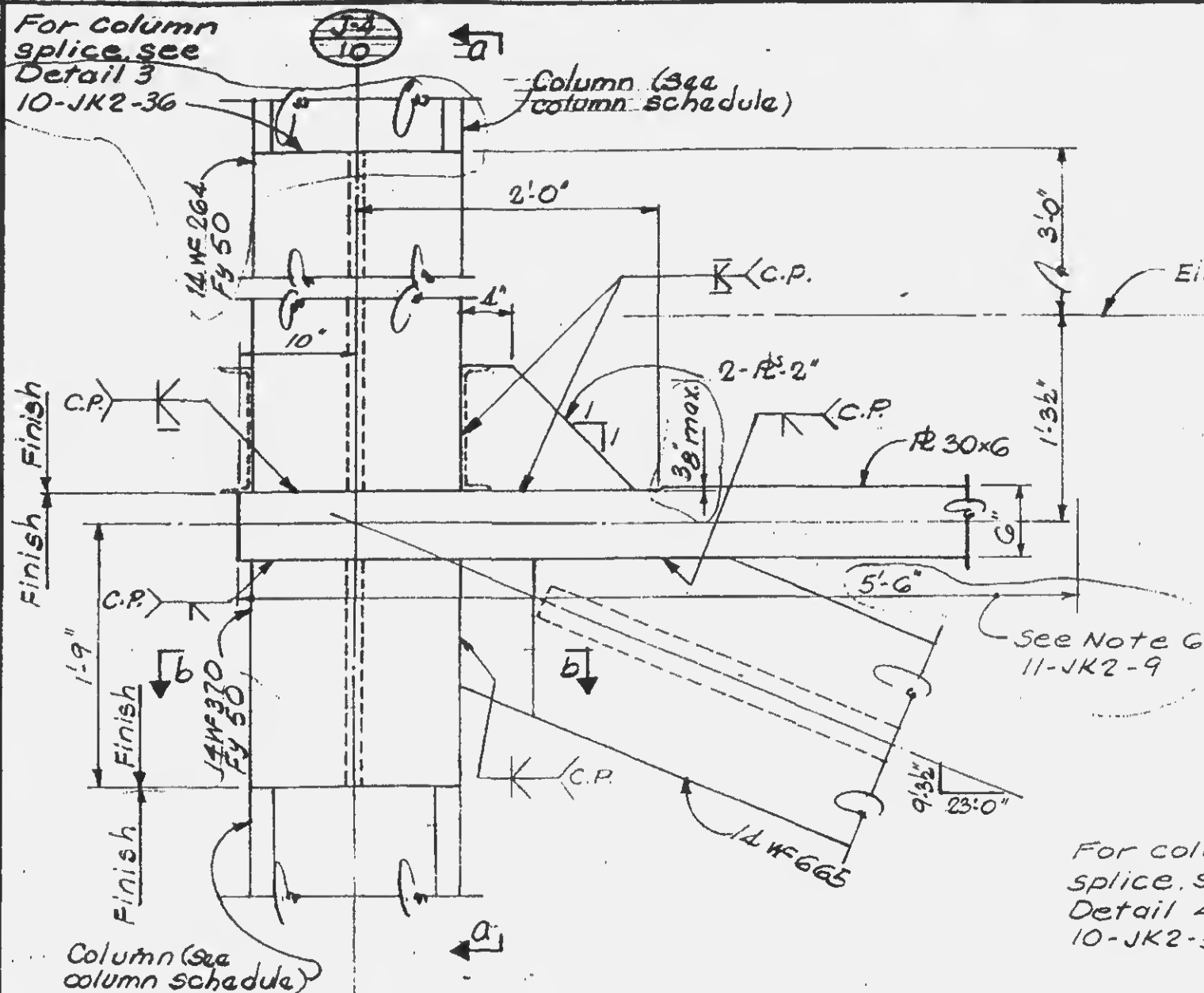
REVISIONS

4-5-68

4-26-68

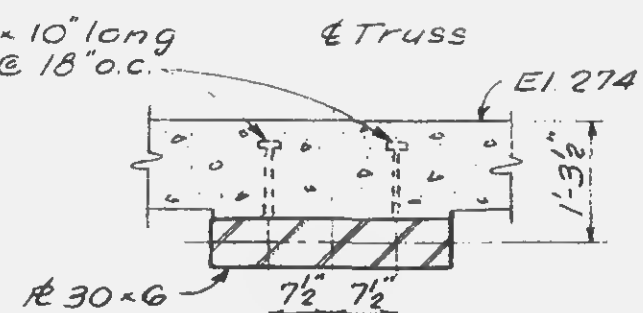
For Column
splice, see
Detail 3
10-JK2-36 —

~~Column (See~~
~~column schedule)~~



For column
splice, see
Detail 4
10-JK2-36

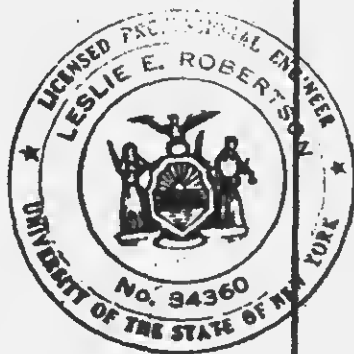
Section a-a



Section C-C
(See 11-J1-4)

Section b-b

11-JK2-17



PROJECT THE WORLD TRADE CENTER

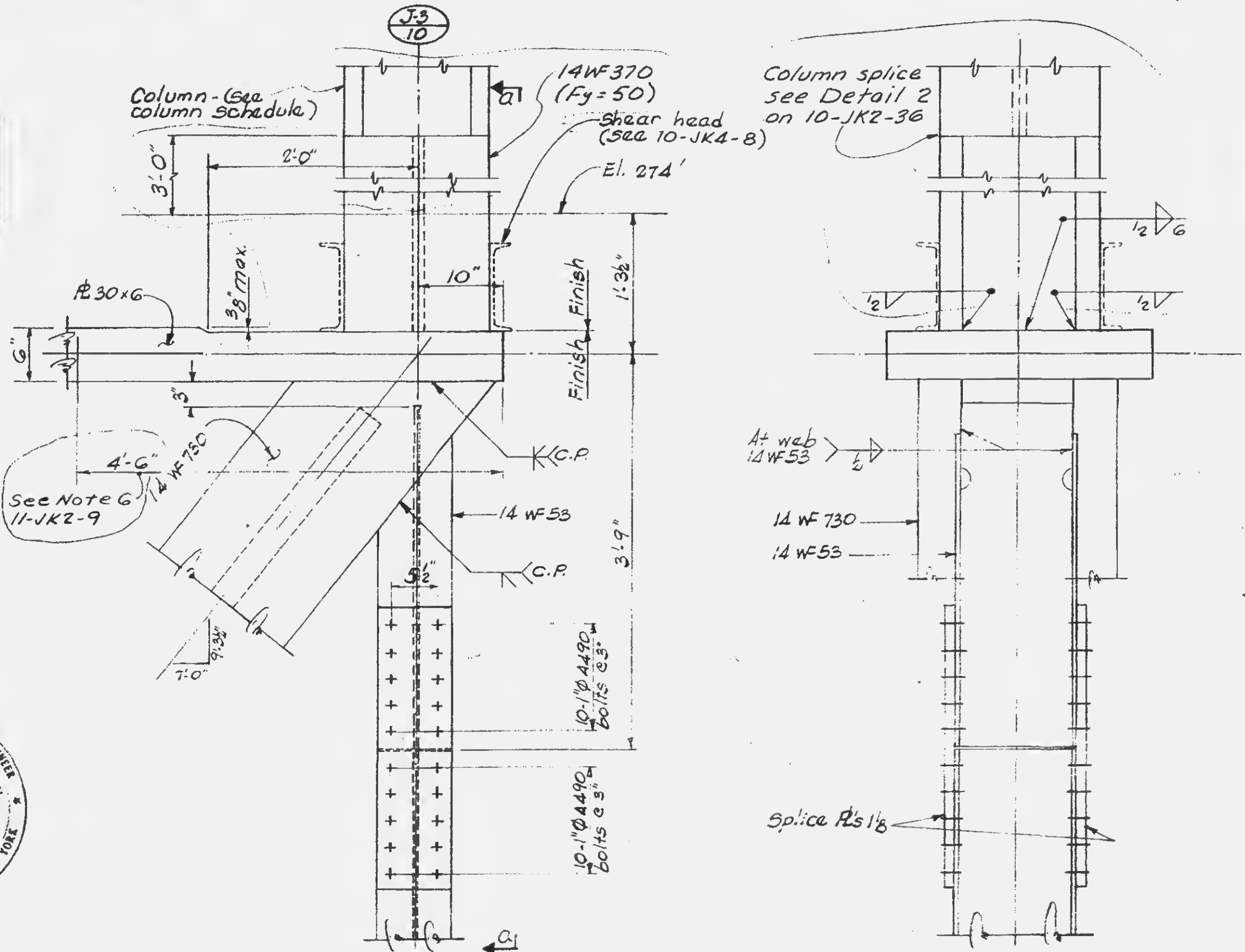
TITLE TRUSS DETAIL 15

DATE 5-15-67

REVISIONS

4-5-68

4-26-68



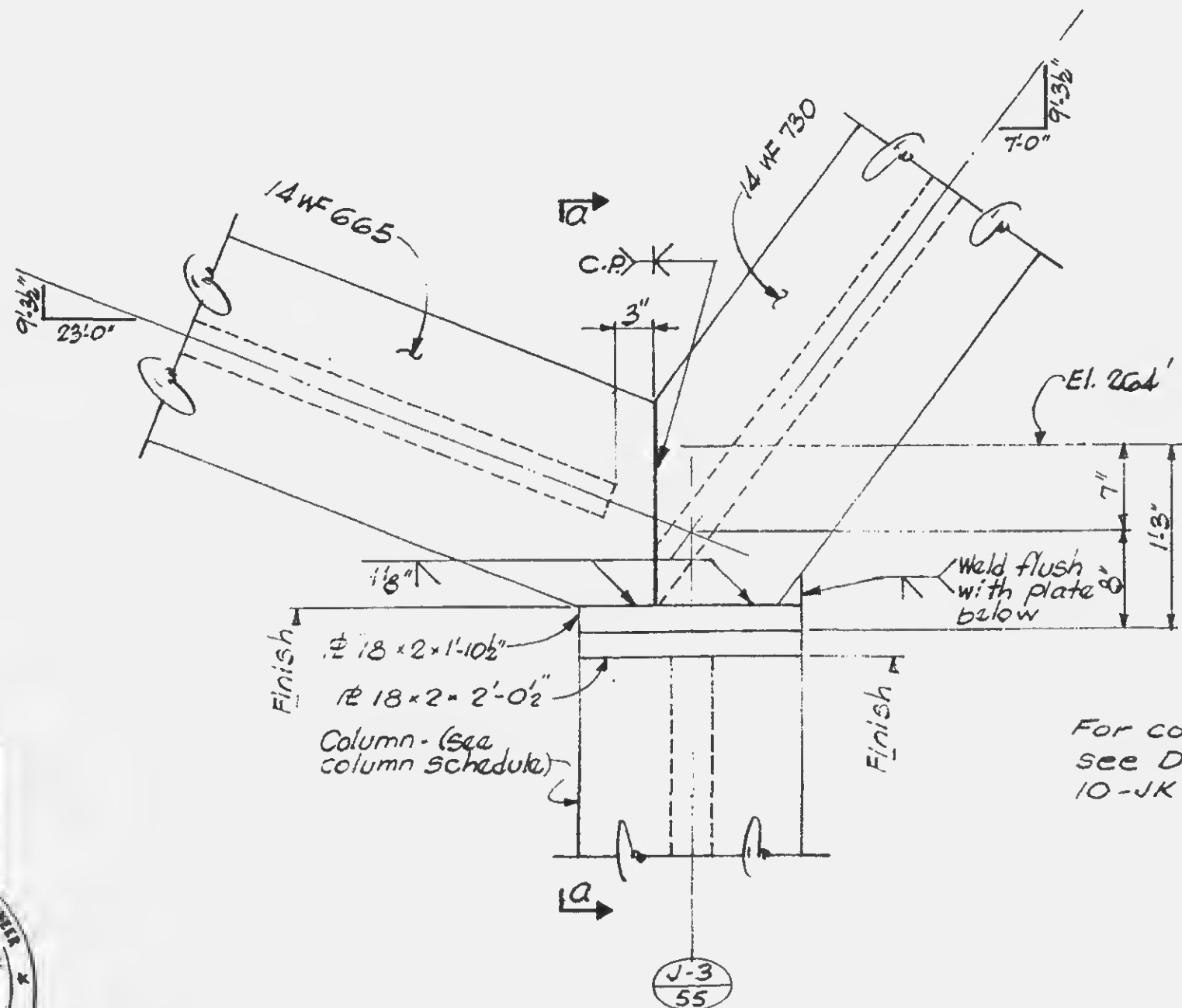
Section a-a

11-JK2-18

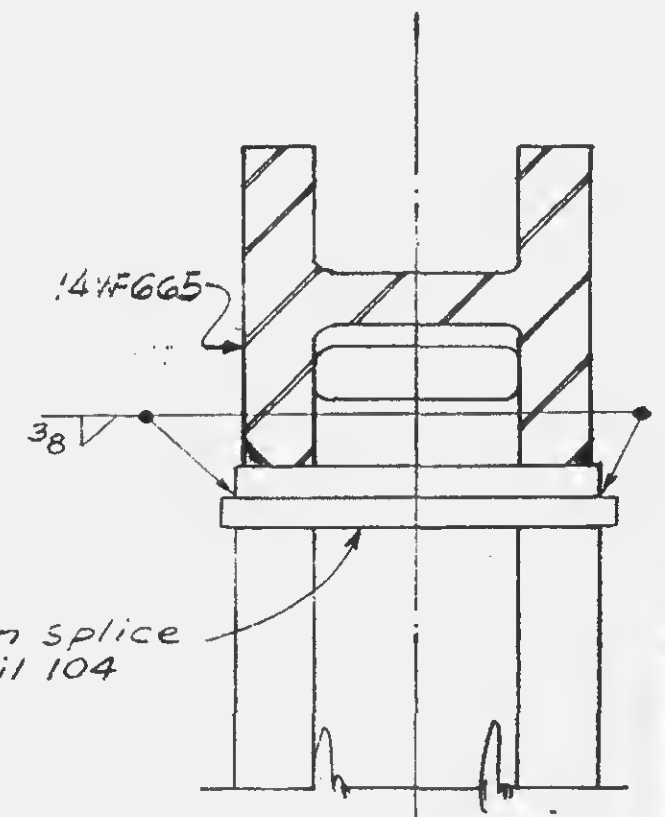


REVISIONS

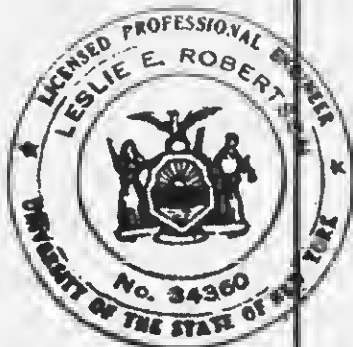
4-5-68



For column splice
see Detail 104
10-JK2-7



Section A-A



PROJECT

THE WORLD TRADE CENTER

TITLE

TRUSS DETAILS

DATE

4-26-68

REVISIONS

NOTE 1

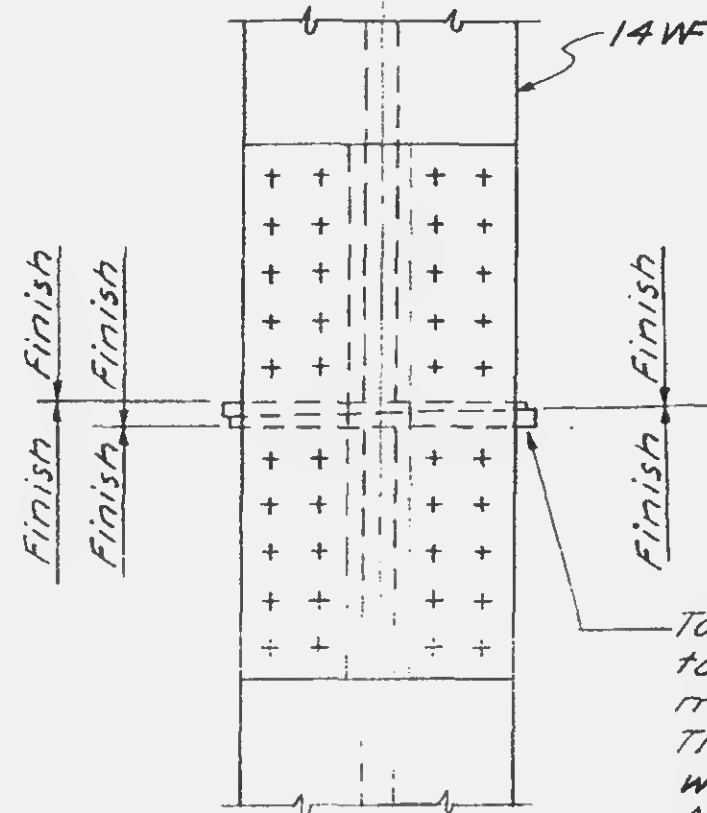
Trusses shall be shop assembled.

All joints provided with shim plates depend upon contact bearing, and shall bear evenly with respect to the centroid on the contact area. The contact area consists of the two flange areas of the members.

When assembled in the shop, at least 75 per cent of the entire contact area shall be in full bearing and the separation of any remaining portion shall not exceed 0.01 inch.

When re-assembled in the field, at least 65 per cent of the entire contact area shall be in full bearing and the separation of any remaining portion shall not exceed 0.02 inch.

Where the joining of the members in the field does not meet these tolerances, the erection contractor shall provide and install tapered shim plates to achieve full bearing as indicated on Detail A (this sheet).



Tapered shim plates to be cut from field measurements. Trim flush and tack weld in place. At contractors option a single shim plate cut to fit the field measured profile may be provided.

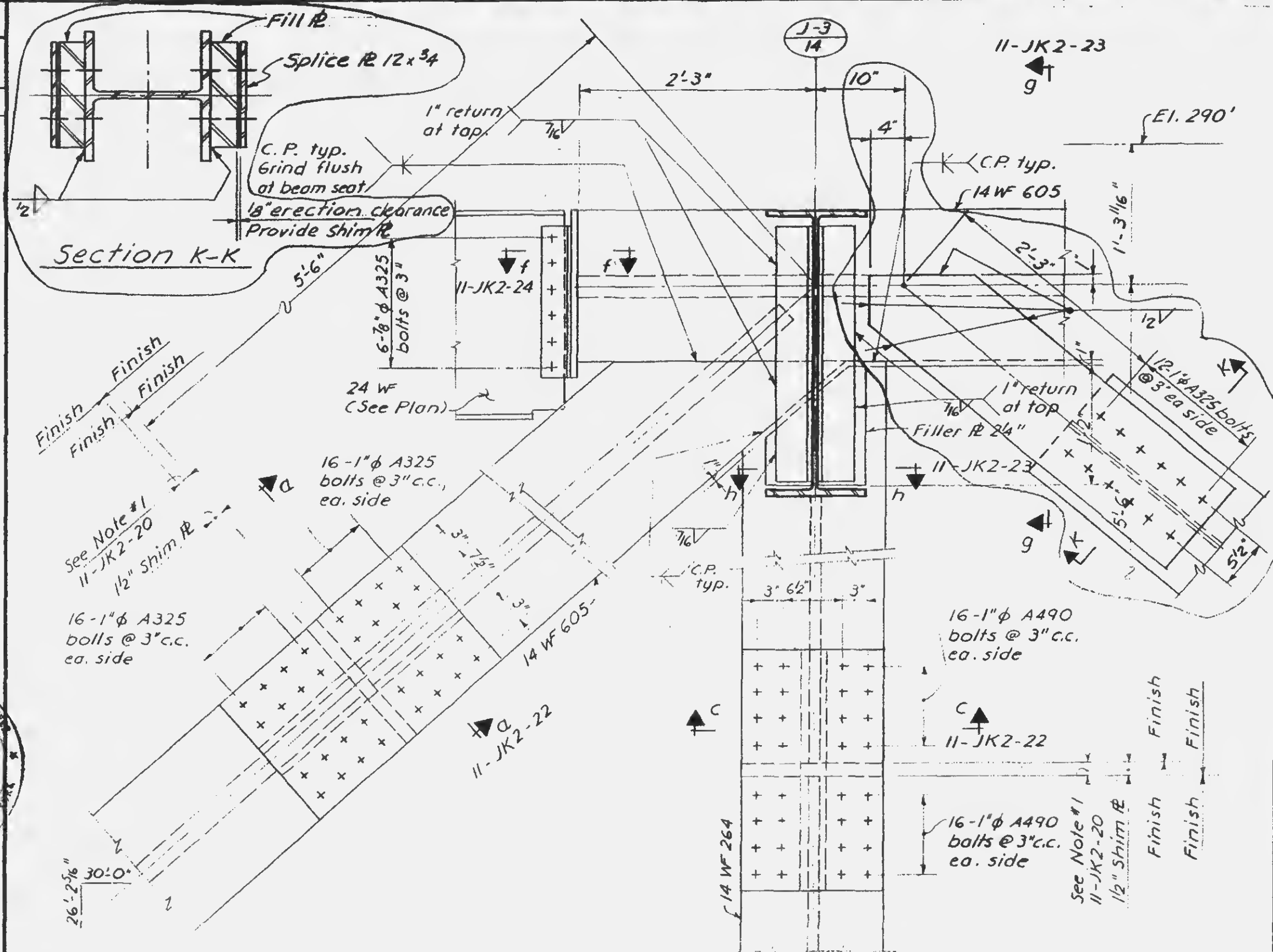
Detail A



REVISIONS

5-1-68

4-18-69



DRAWN
A.L.
REVIEWED
E.L.

11-JK2-21

PROJECT

THE WORLD TRADE CENTER

TITLE

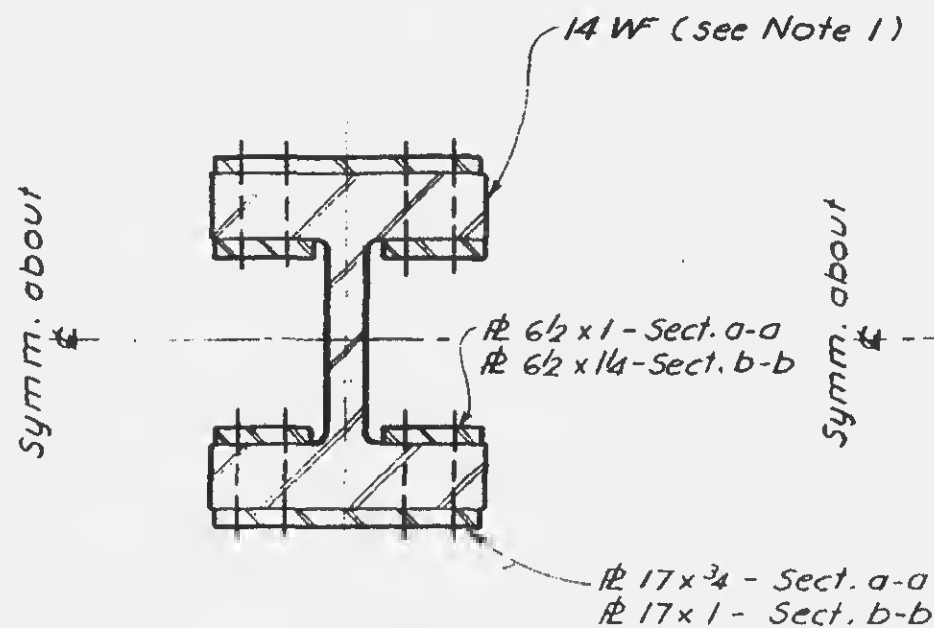
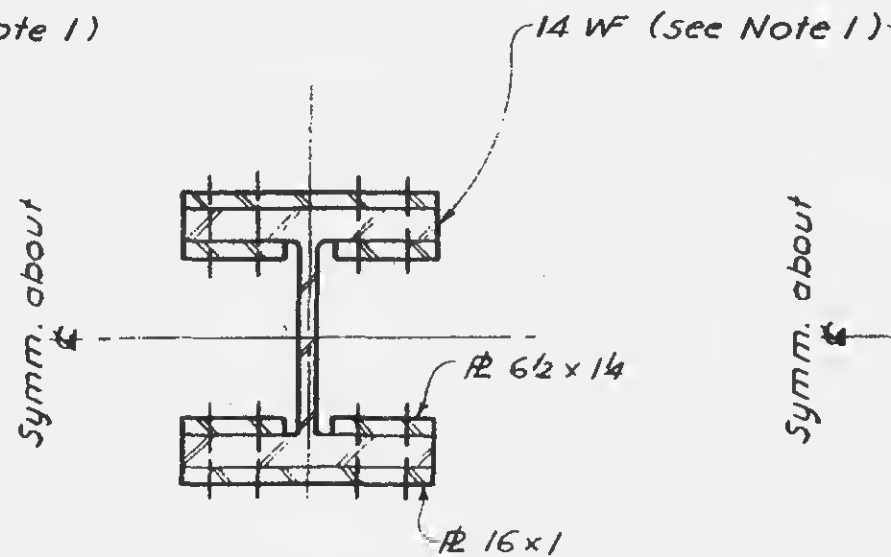
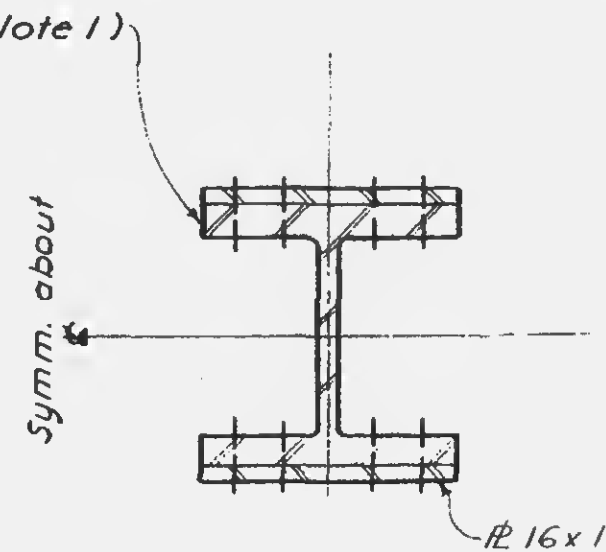
TRUSS DETAILS

DATE

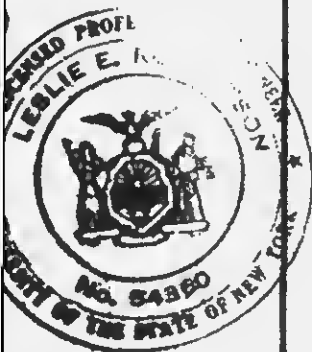
5-15-67

REVISIONS

5-1-68

Section a-aSection b-bSection c-cSection d-dNote:

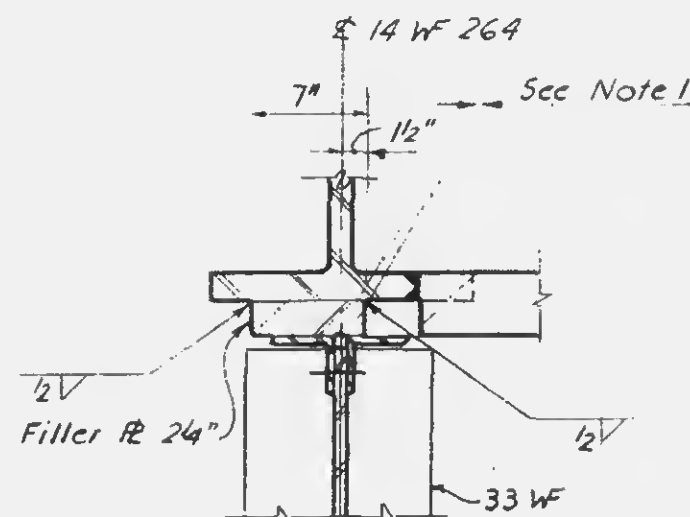
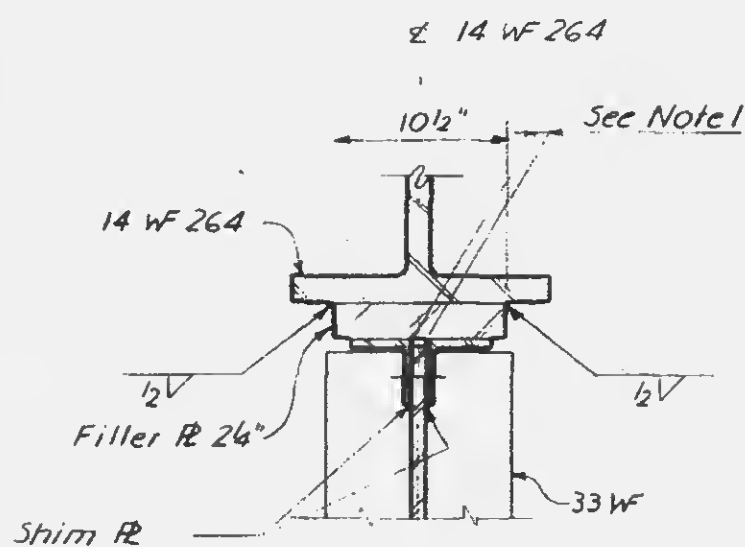
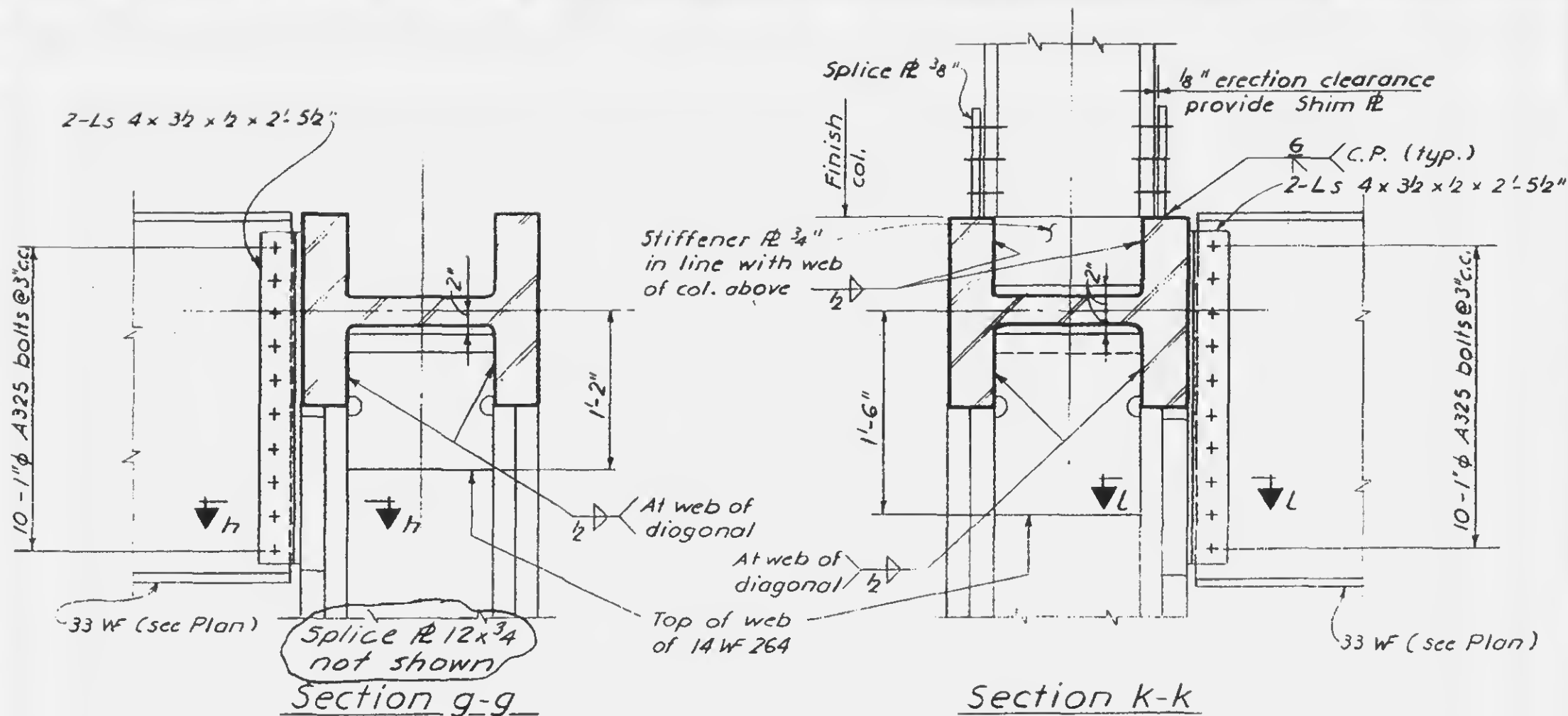
1. Bolt holes thru 14 WF may be 1/8" larger than nominal bolt size.



REVISIONS

5-1-68

4-18-69



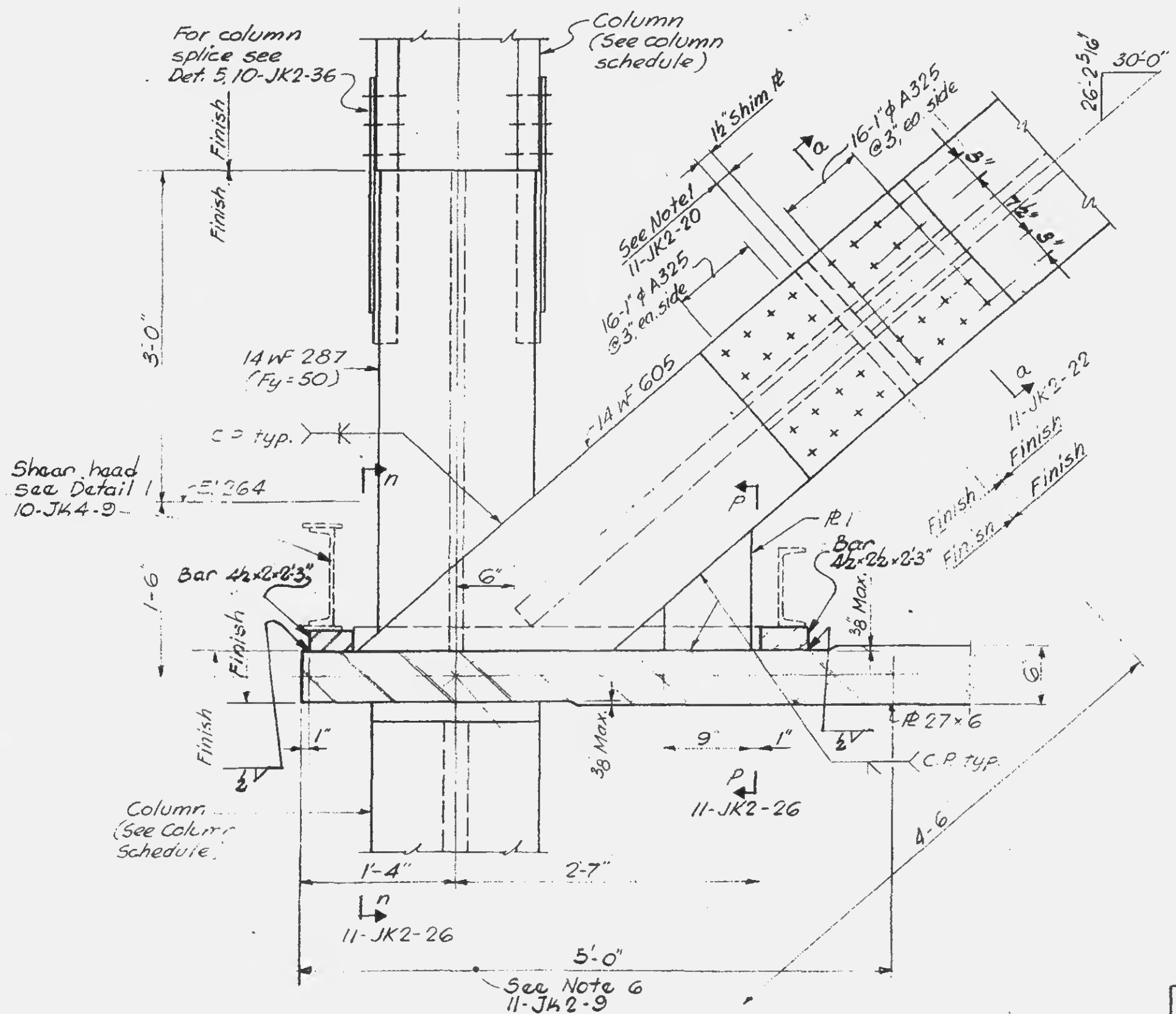
Note 1:

Erection clearance each side of beam web should not be more than 1/16". Provide shim between beam web and L's if required to insure surface contact for H.S. bolts.



REVISIONS

5-1-68

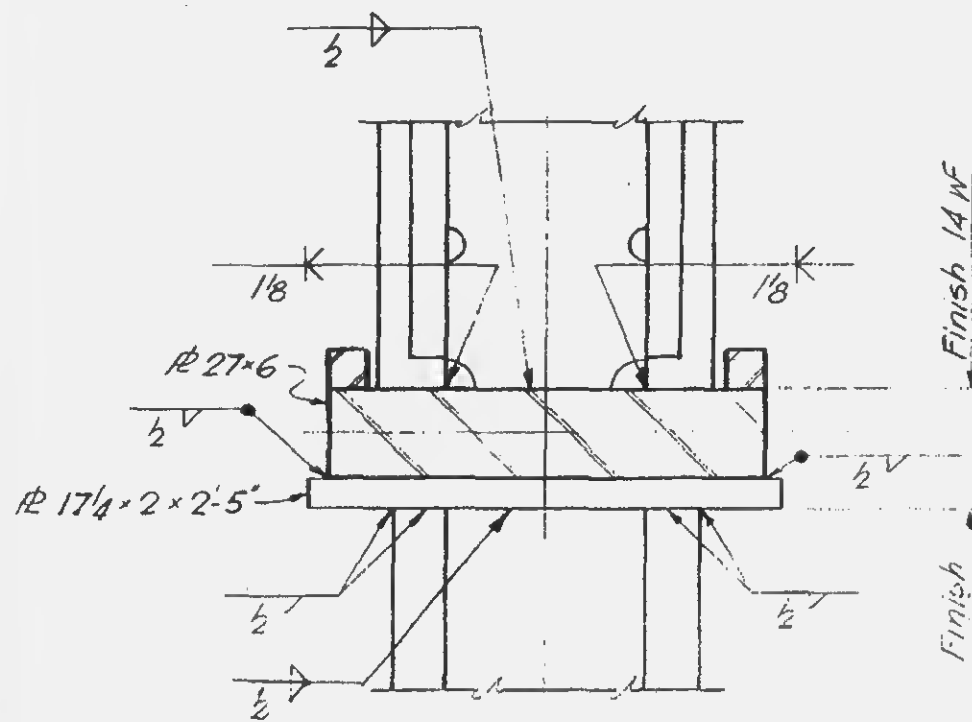


11- JK 2- 25

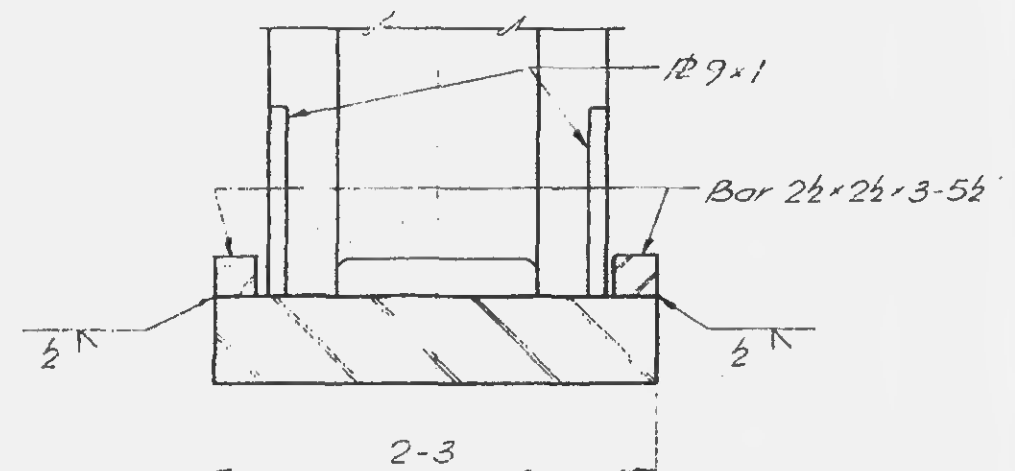


REVISIONS

5-1-68



Section n-n

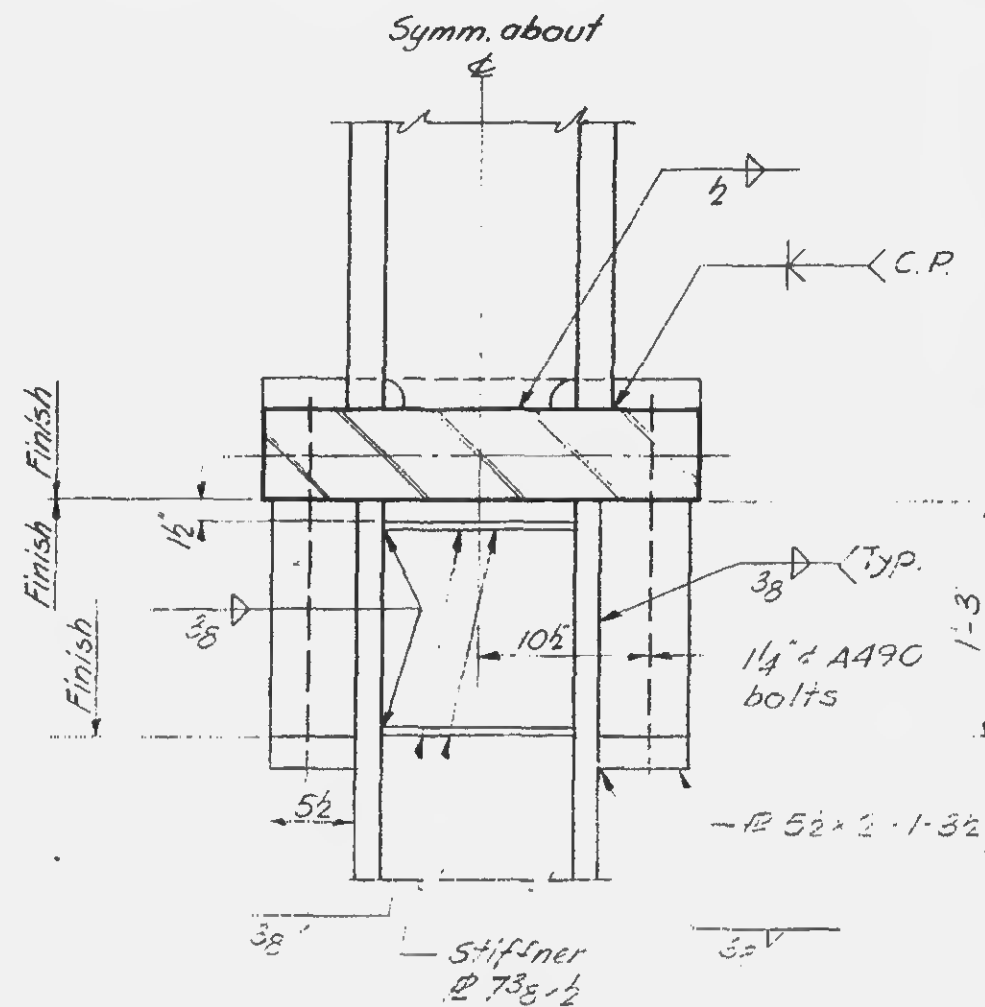
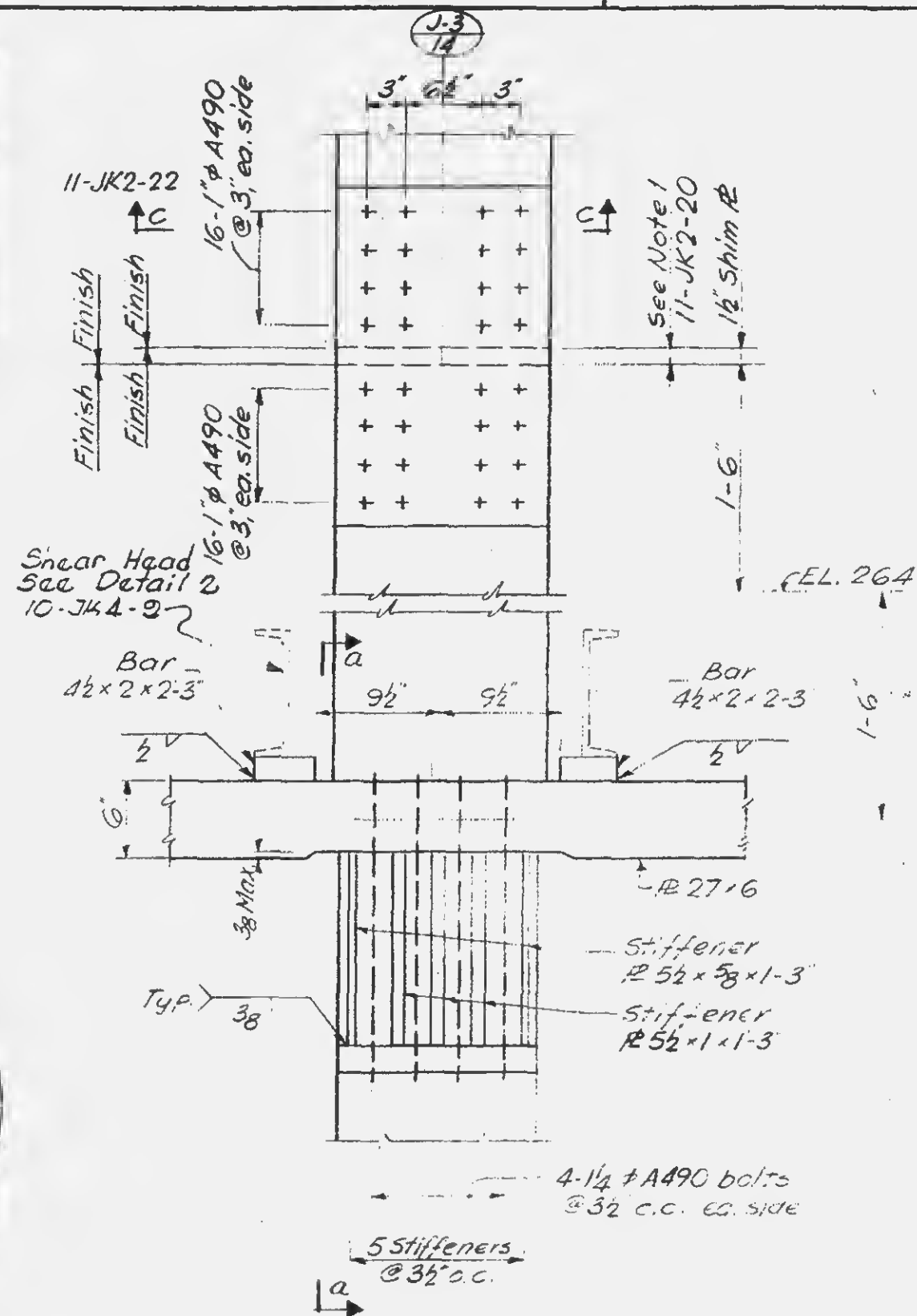


Section p-p



REVISIONS

Y-1-68



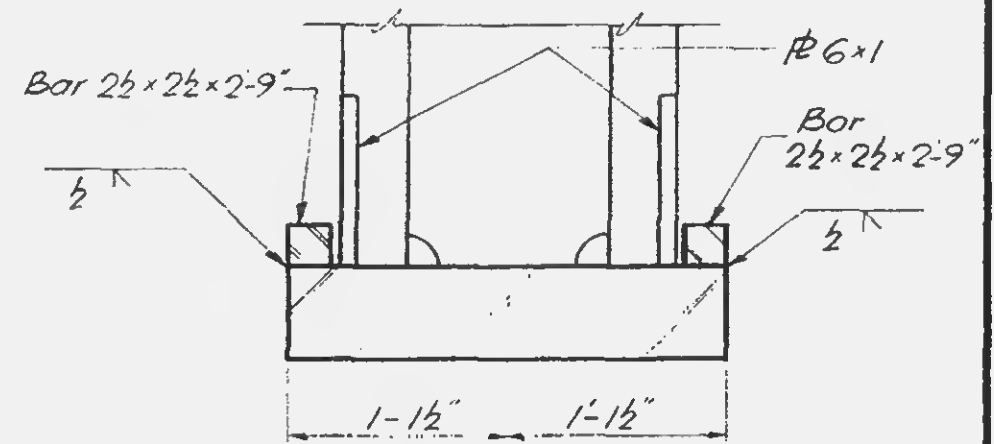
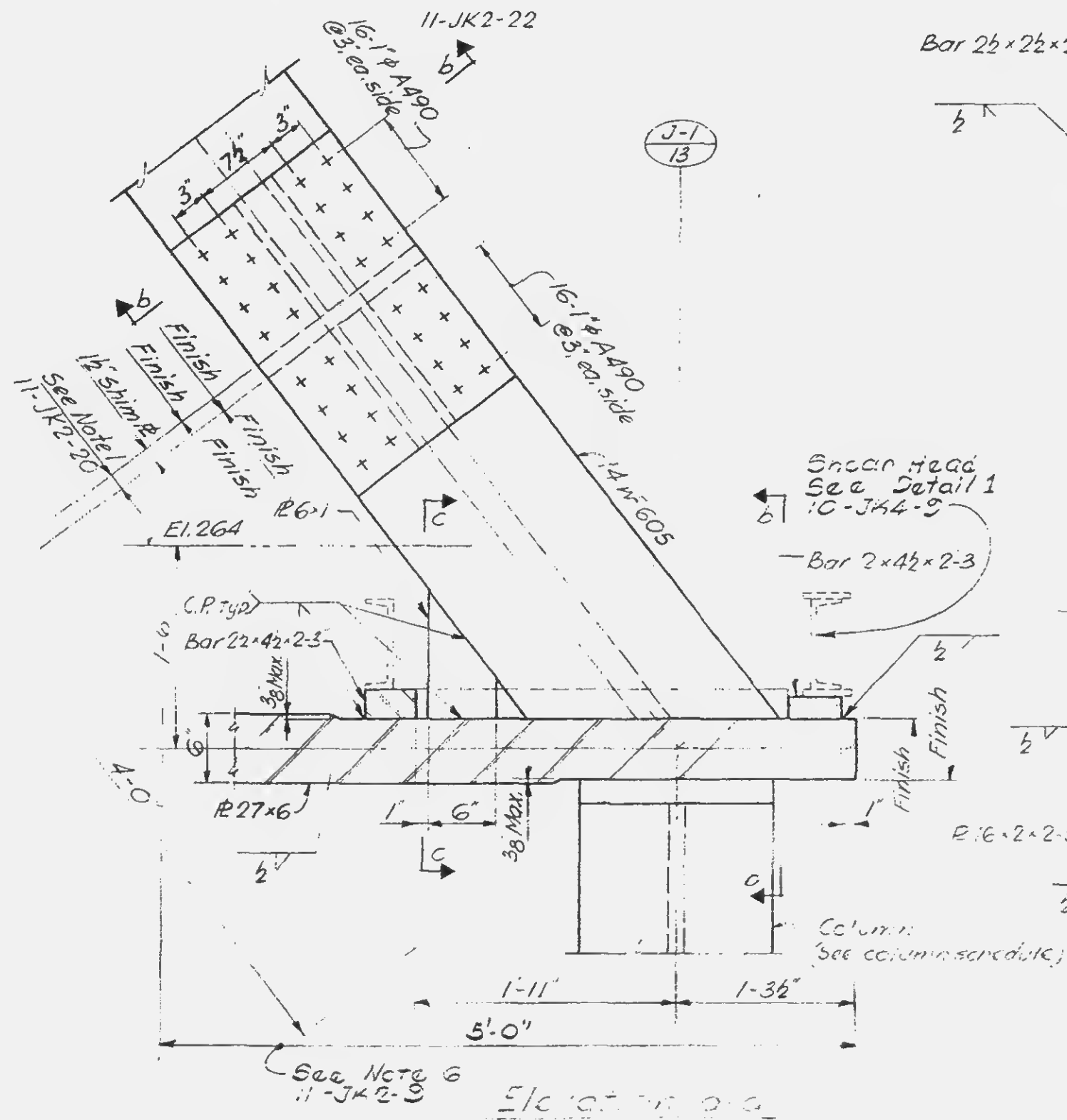
Section 2-2



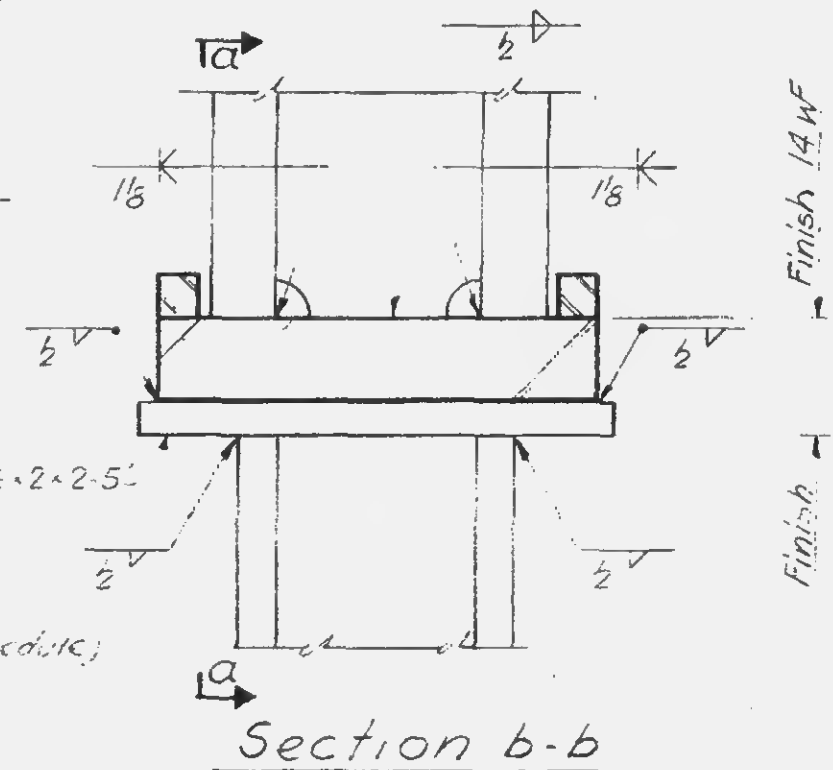
11-JK2-27

REVISIONS

5-1-68



Section c-c



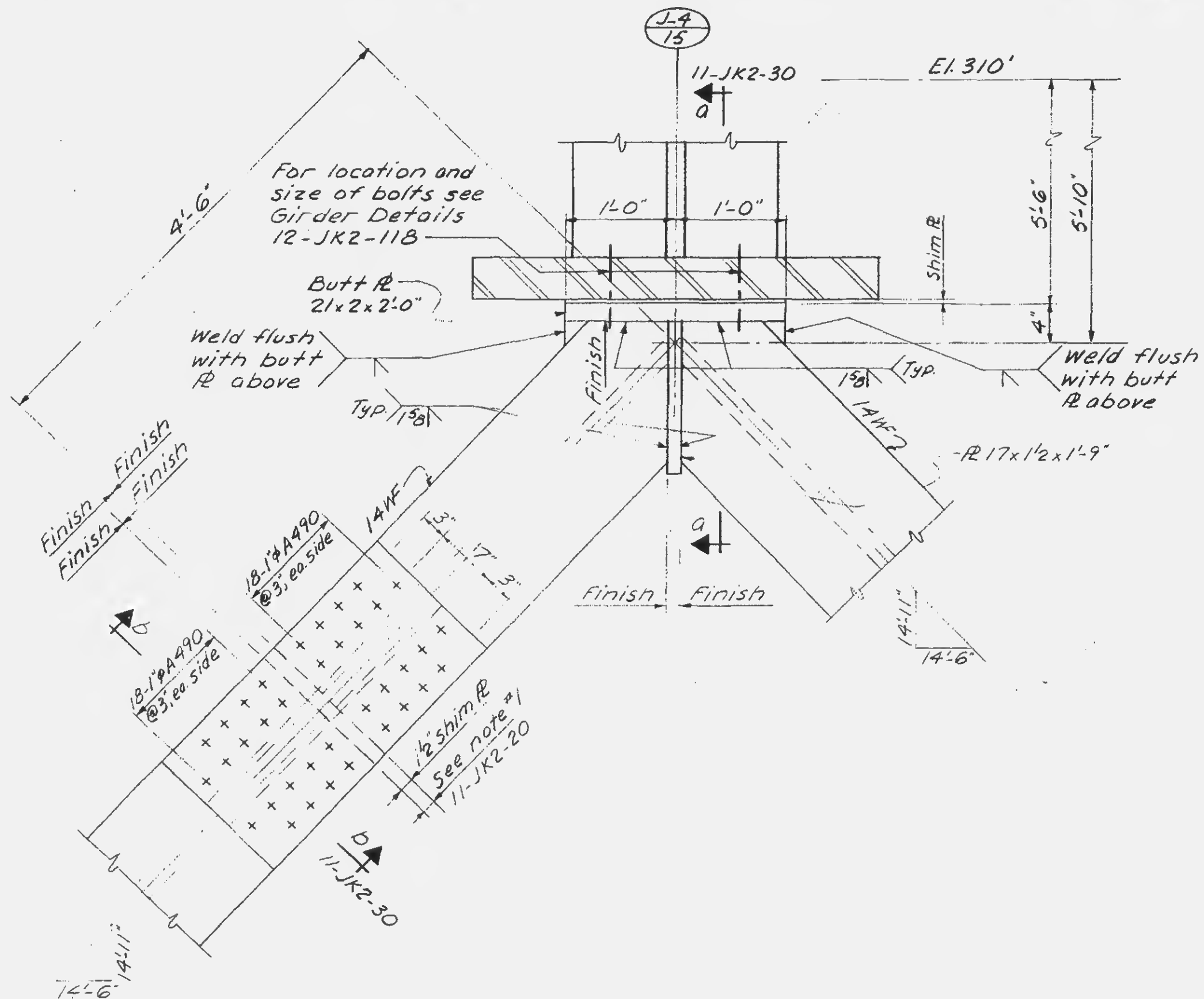
Section b-b



11-JK2-28

REVISIONS

3-1-68



11-JK2-29

PROJECT

THE WORLD TRADE CENTER

TITLE

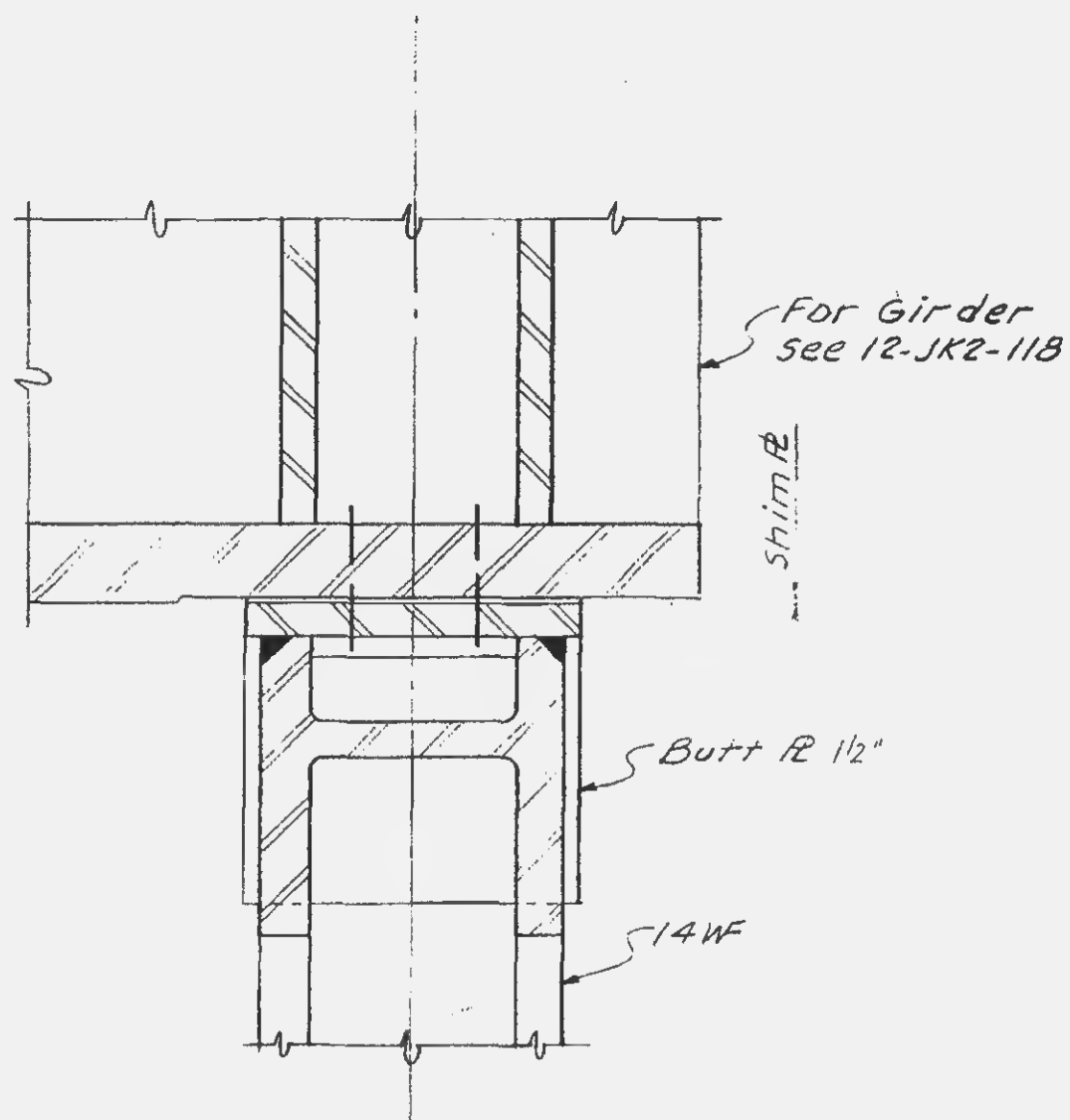
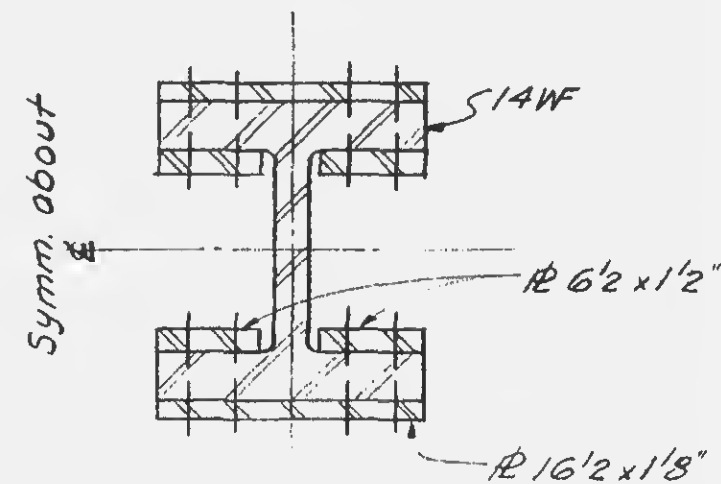
TRUSS DETAILS

DATE

5-15-67

REVISIONS

5-1-68

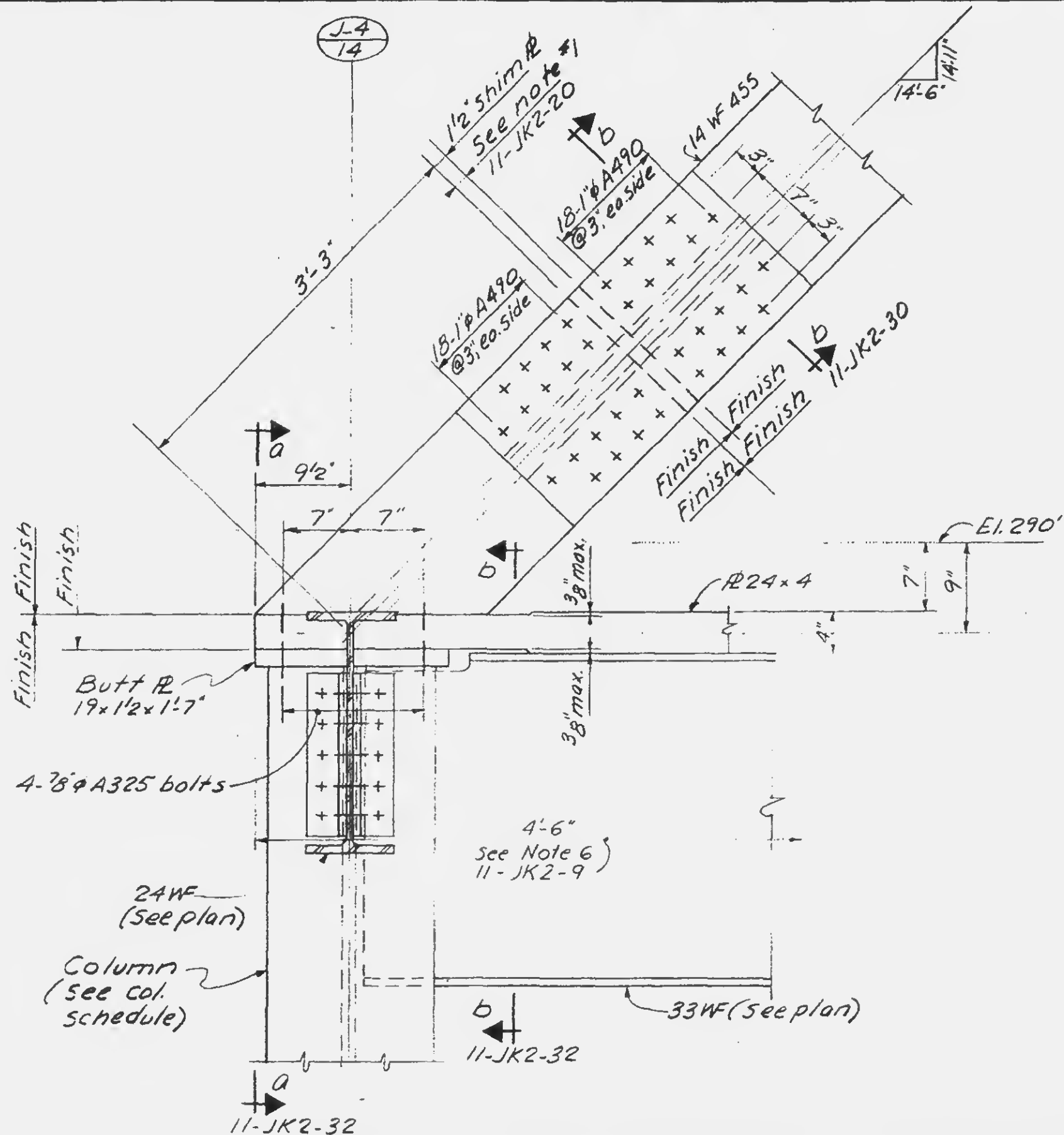
Section a-aSection b-bNote:

Bolt holes thru 14WF
may be '8" larger than
nominal bolt size.



REVISIONS

5-1-68



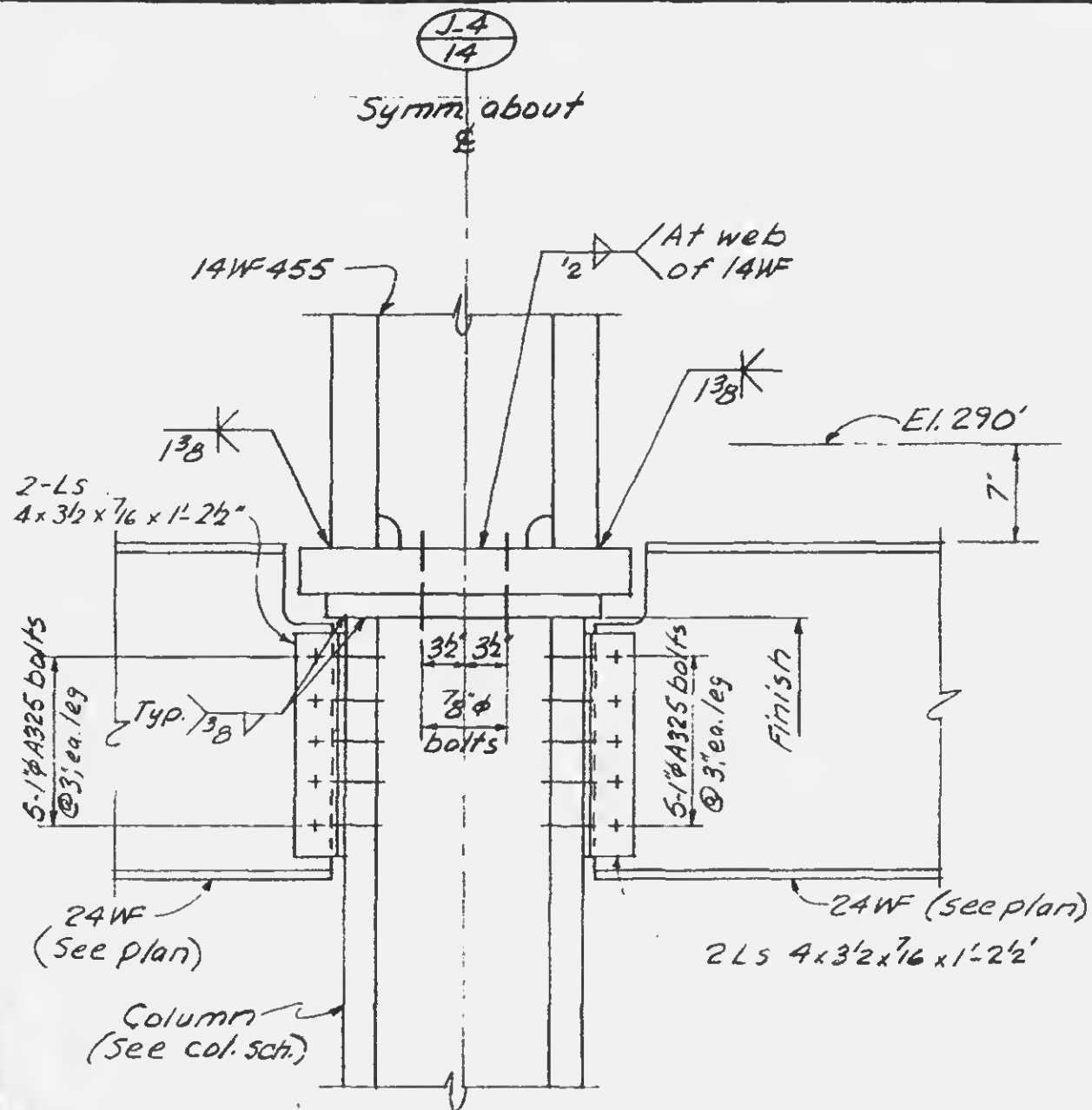
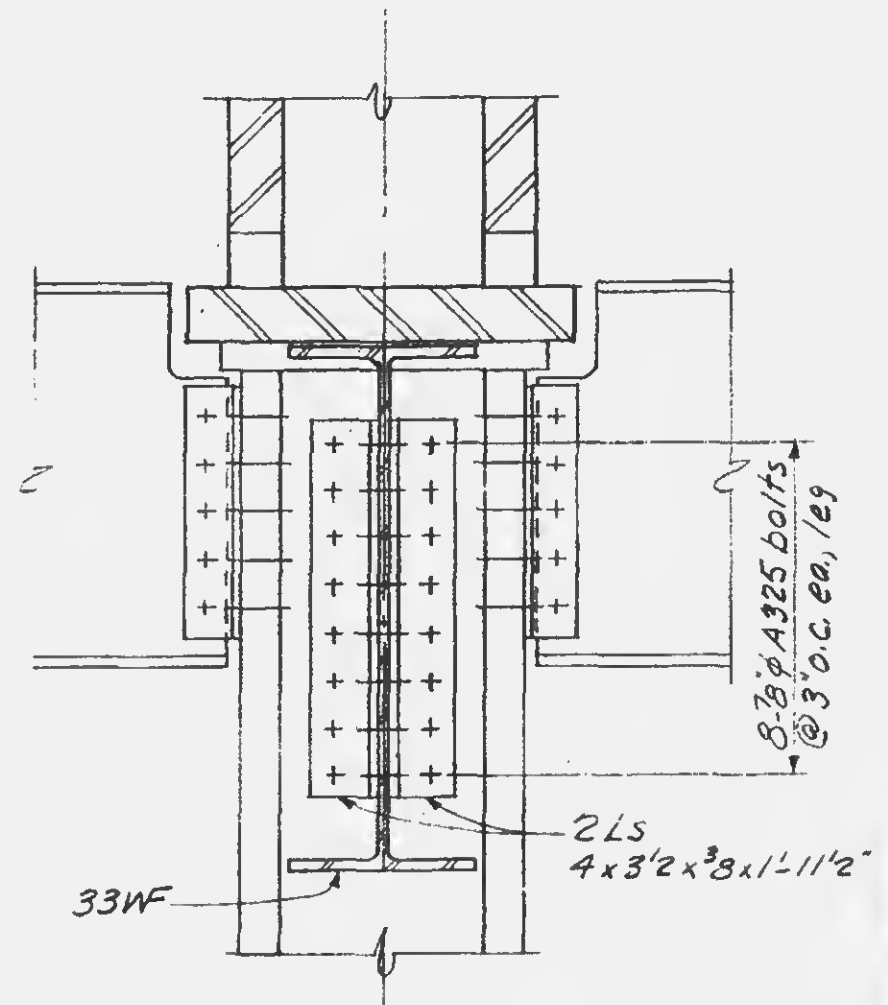
11-JK2-31



PROJECT THE WORLD TRADE CENTERTITLE TRUSS DETAILSDATE 5-15-67

REVISIONS

5-1-68

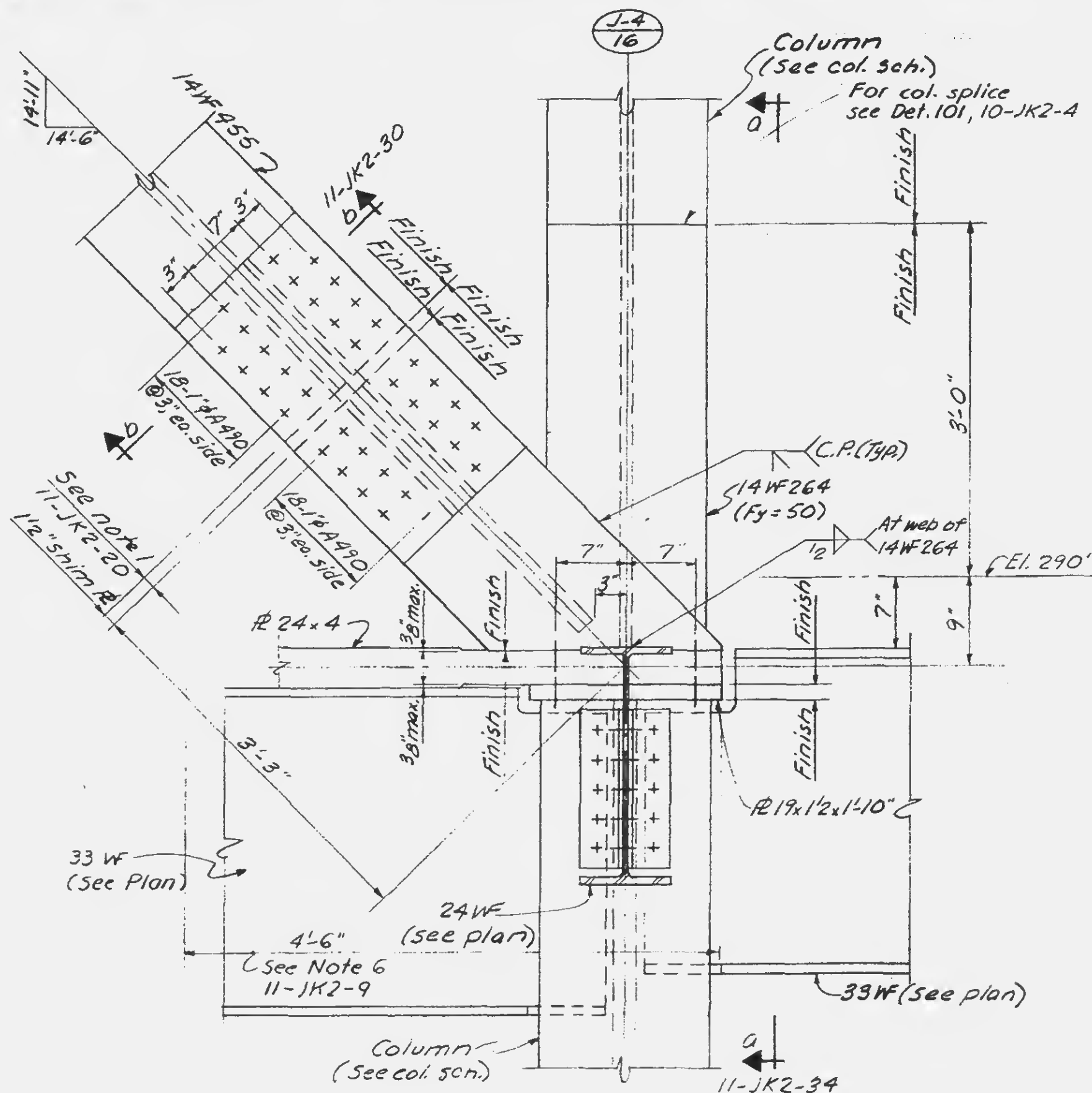
Section a-aSection b-b

Structural & Civil Engineers

TITLE TRUSS DETAIL 24

DATE 5-15-67

5-1-68



11-JK2-33



PROJECT

THE WORLD TRADE CENTER

TITLE

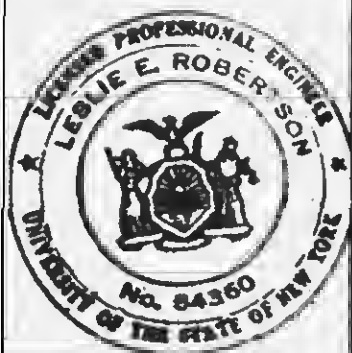
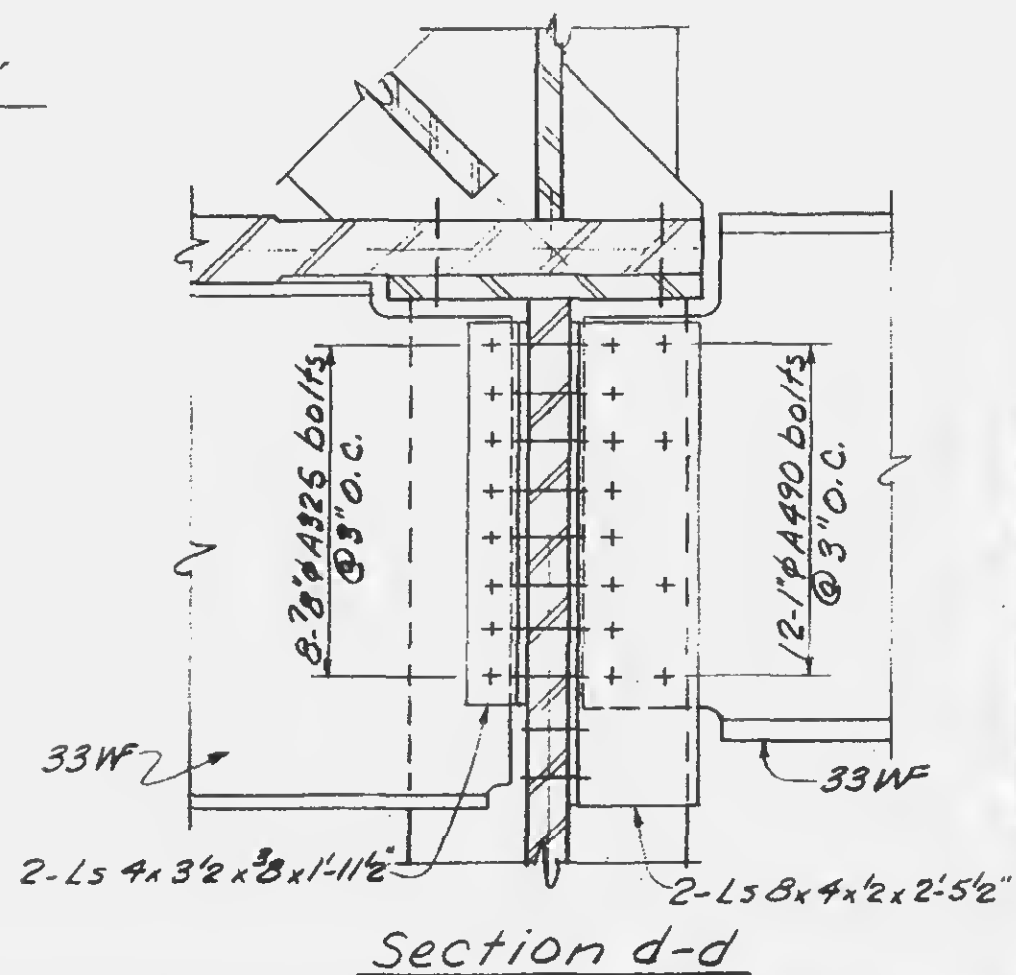
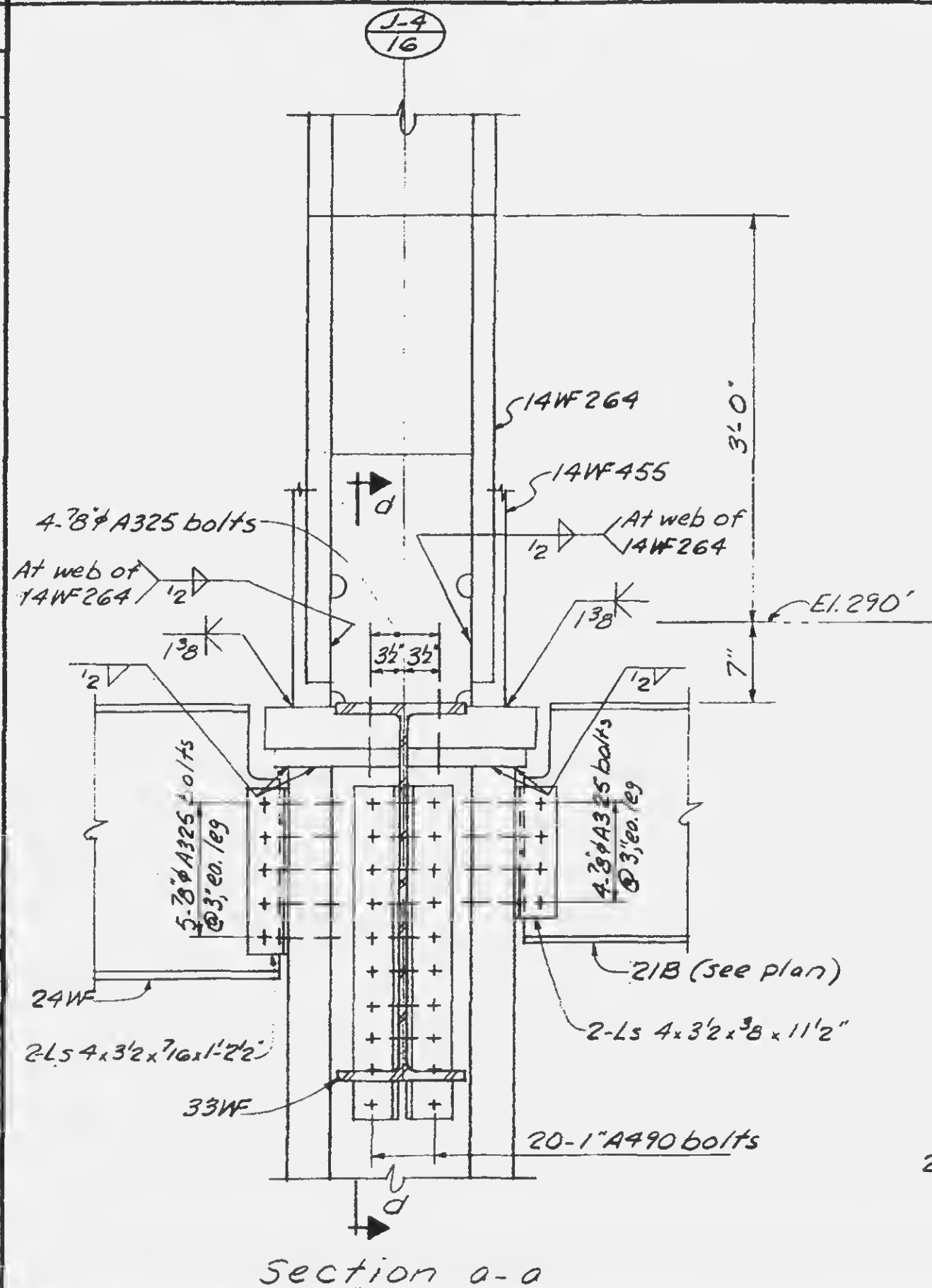
TRUSS DETAILS

DATE

5-15-67

REVISIONS

5-1-68



SKILLING - HELLE - CHRISTIANSEN - ROBERTSON

Structural & Civil Engineers

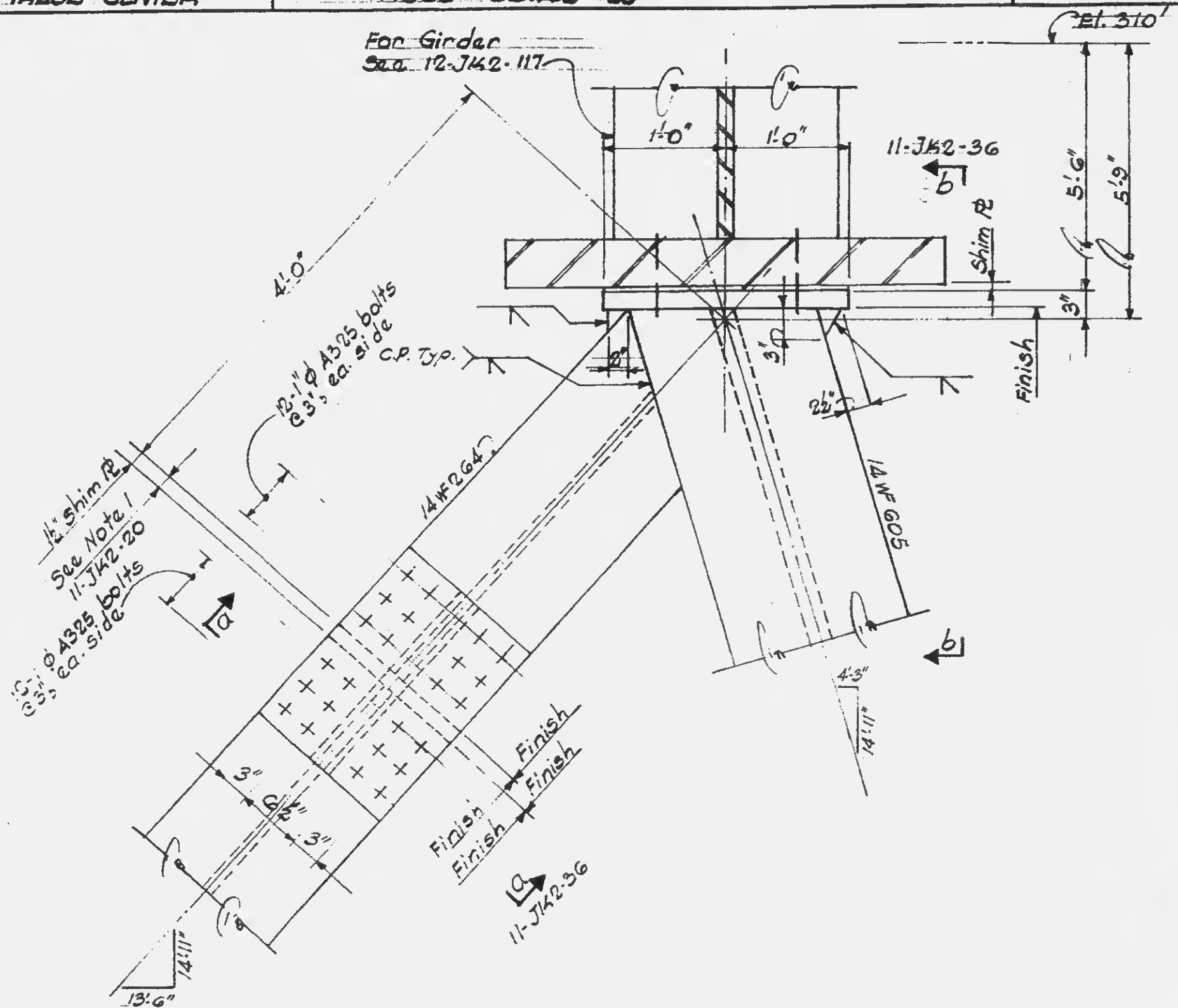
PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAIL 25

DATE 5-18-67

REVISIONS

5-1-68



11-JK2-35

SKILLING - HELLE - CHRISTIANSEN - ROBERTSON

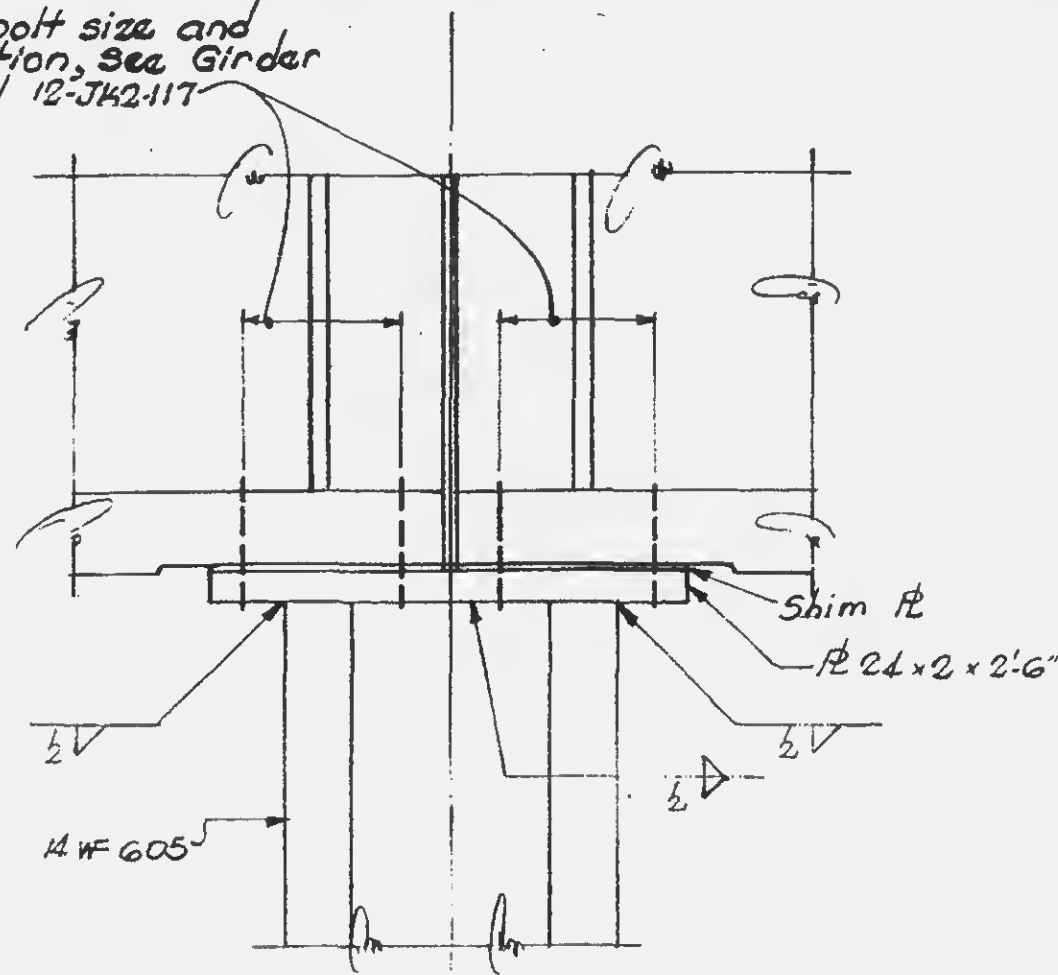
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER TITLE TRUSS DETAIL

DATE 5-1-68

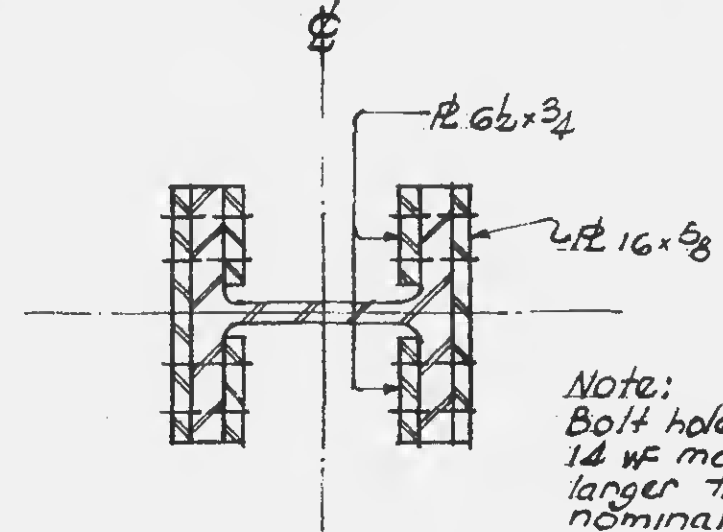
REVISIONS

For bolt size and location, see Girder Detail 12-JK2-117



Section b-b

Symm. about



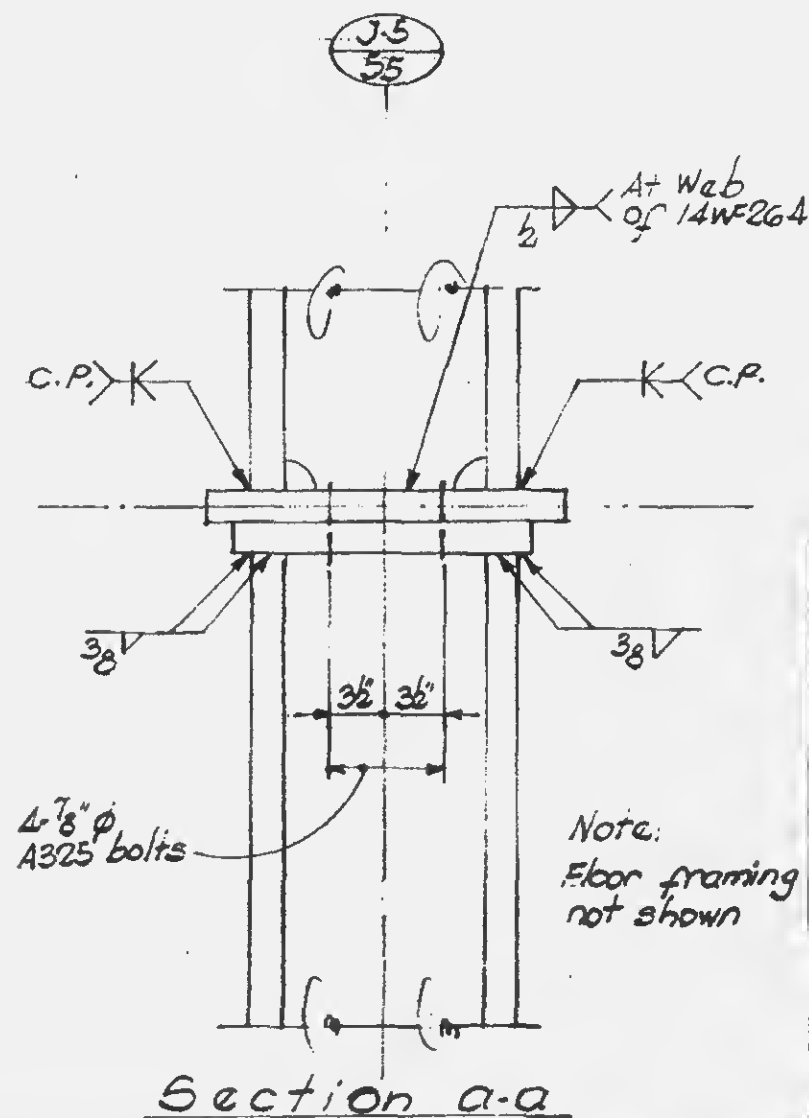
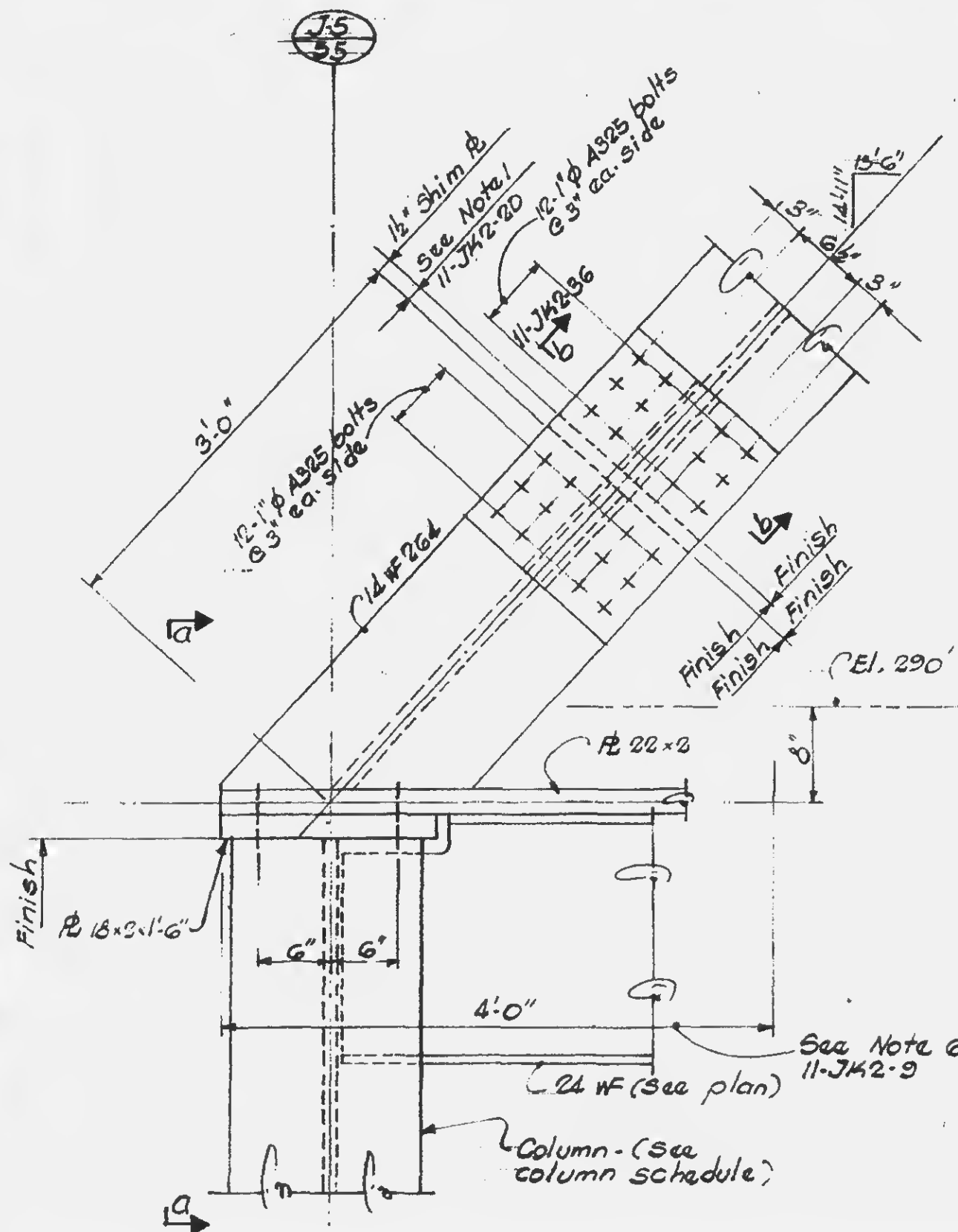
Section a-a

Note:
Bolt holes thru
1/4 WF may be 1/8"
larger than
nominal bolt size

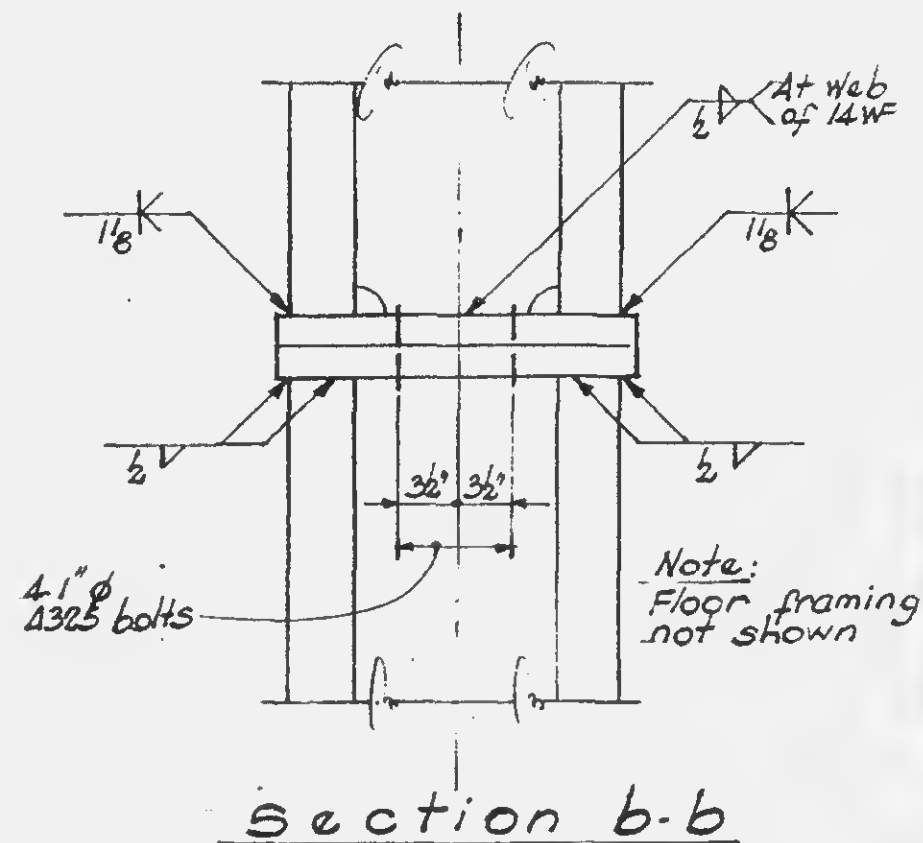
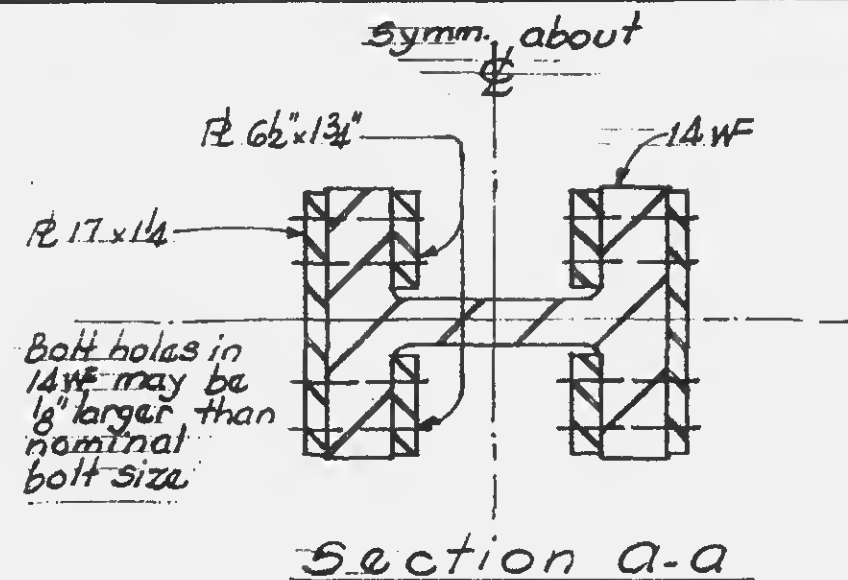
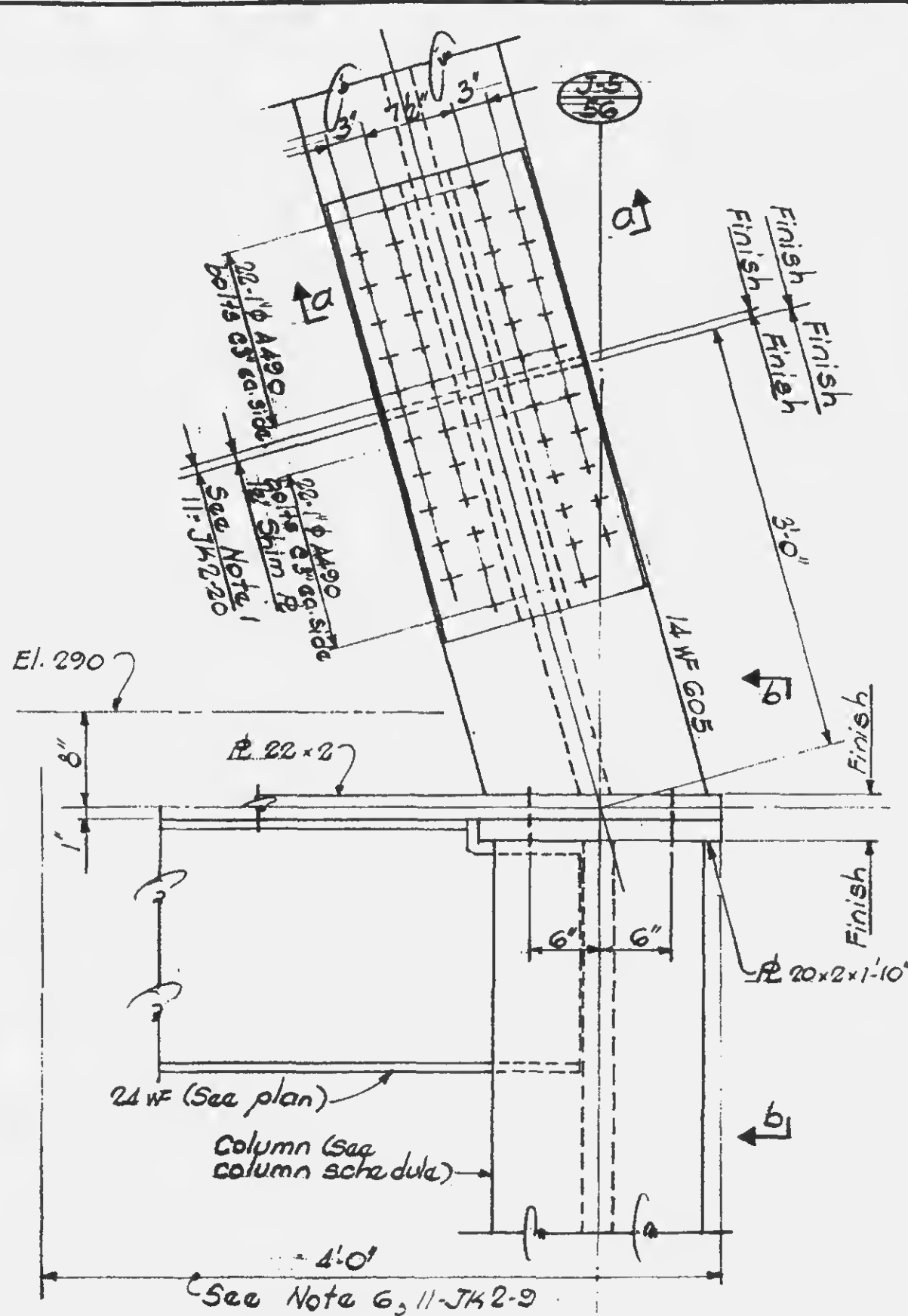


11-JK2-36

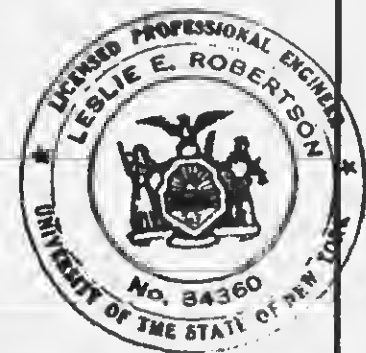
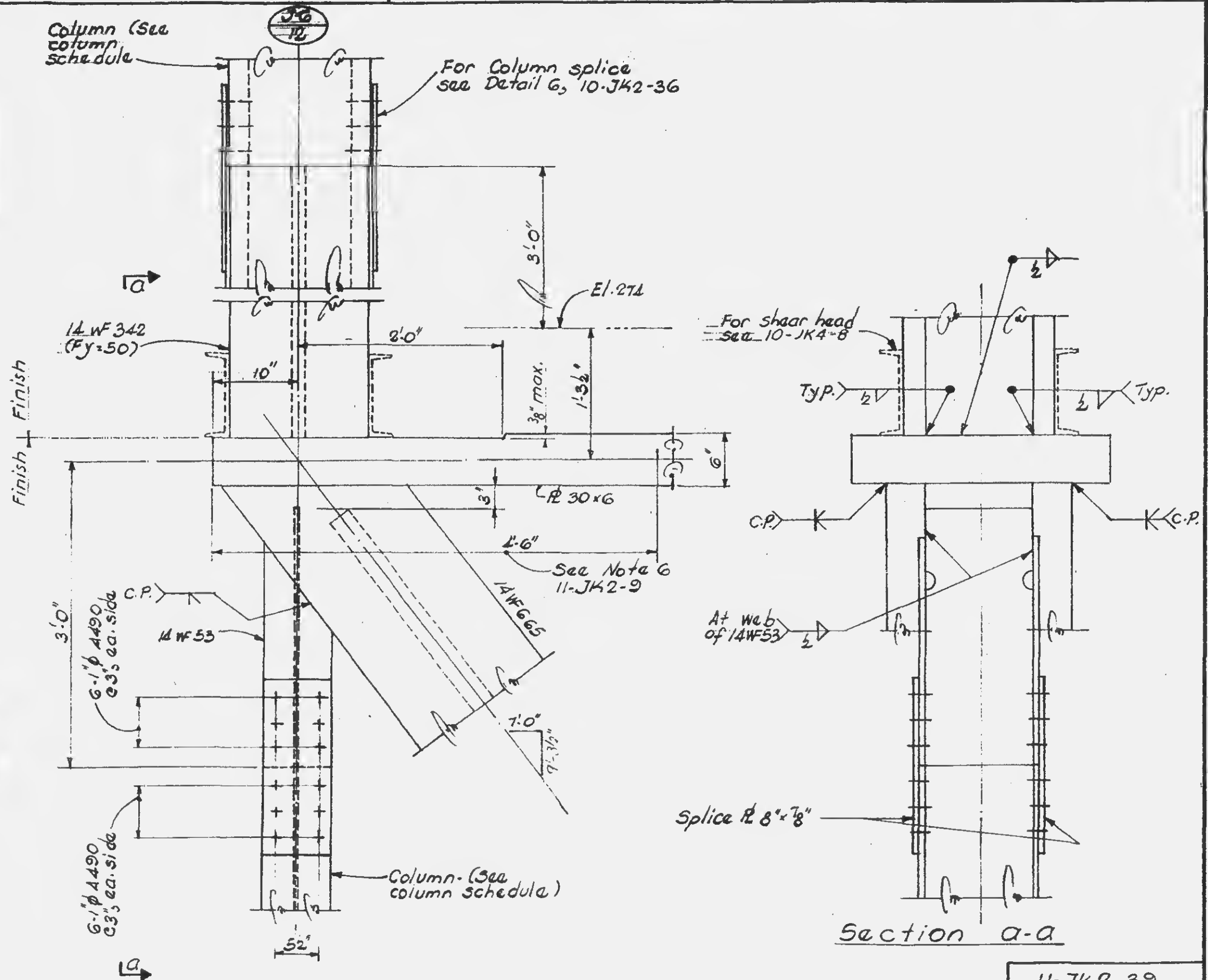
REVISIONS



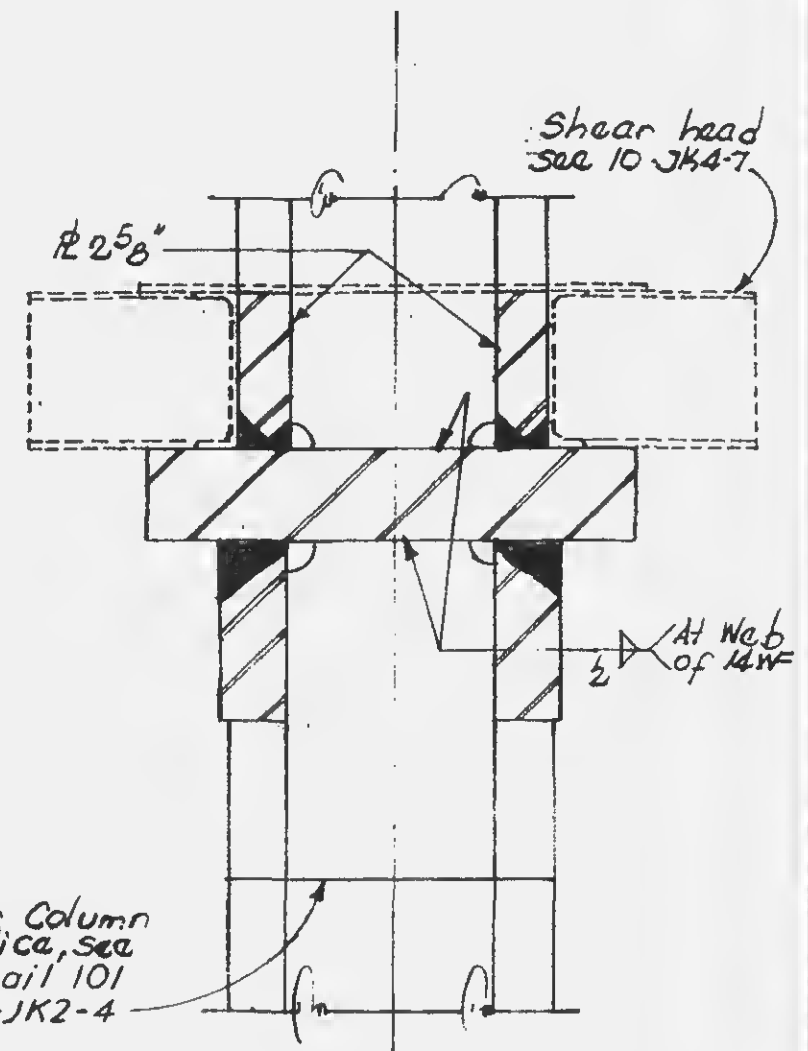
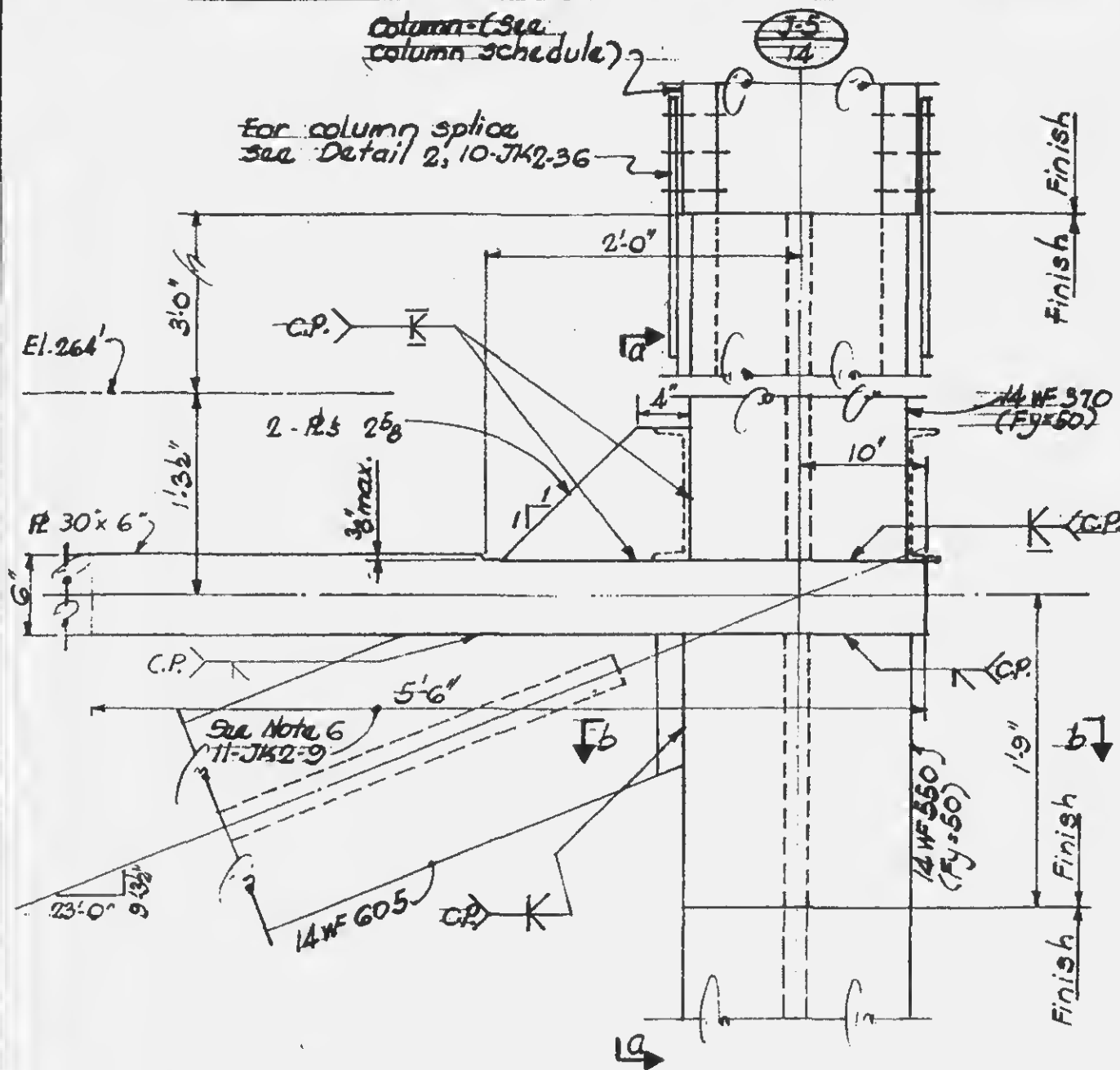
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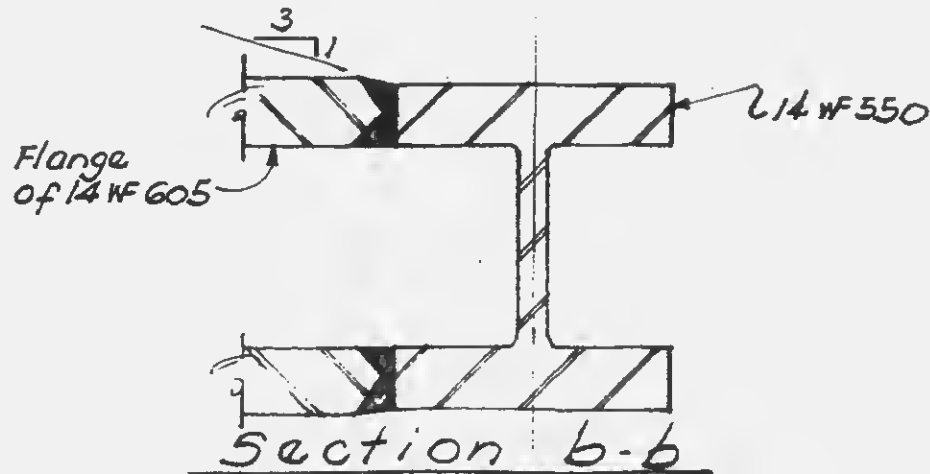
REVISIONS



REVISIONS



Section a-a



Section b-b

For Column splice, see Detail 101 10-JK2-4



PROJECT

THE WORLD TRADE CENTER

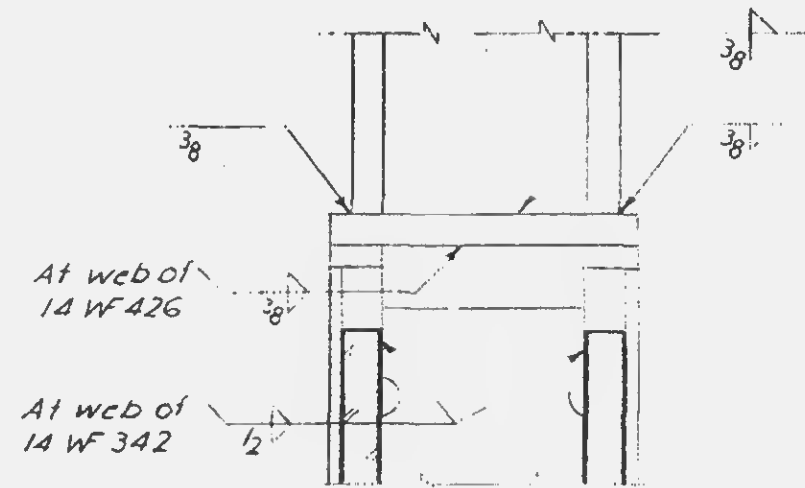
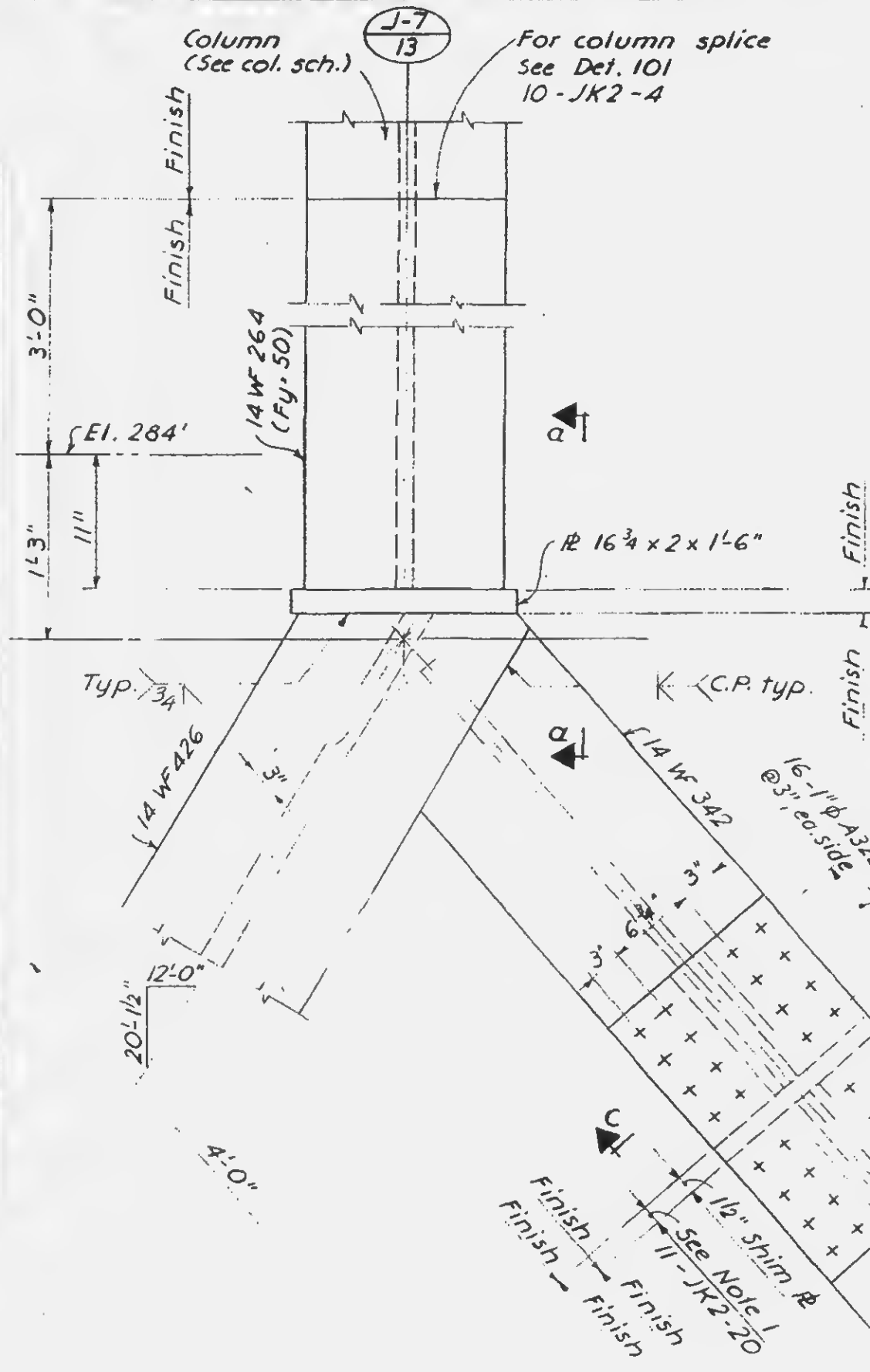
TITLE

TRUSS DETAIL 31

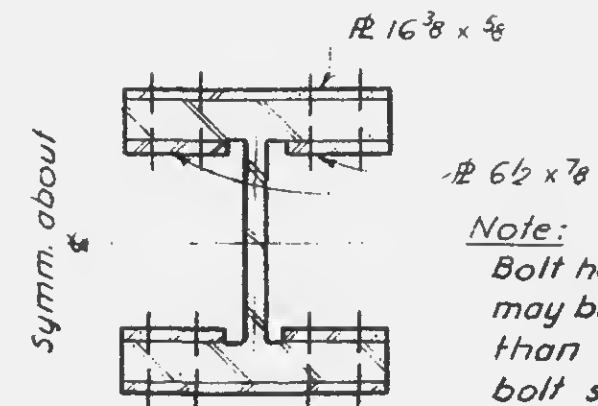
DATE

5-1-68

REVISIONS



Section a-a



Section c-c

Note:

Bolt holes in 14 W
may be 1/8\"/>

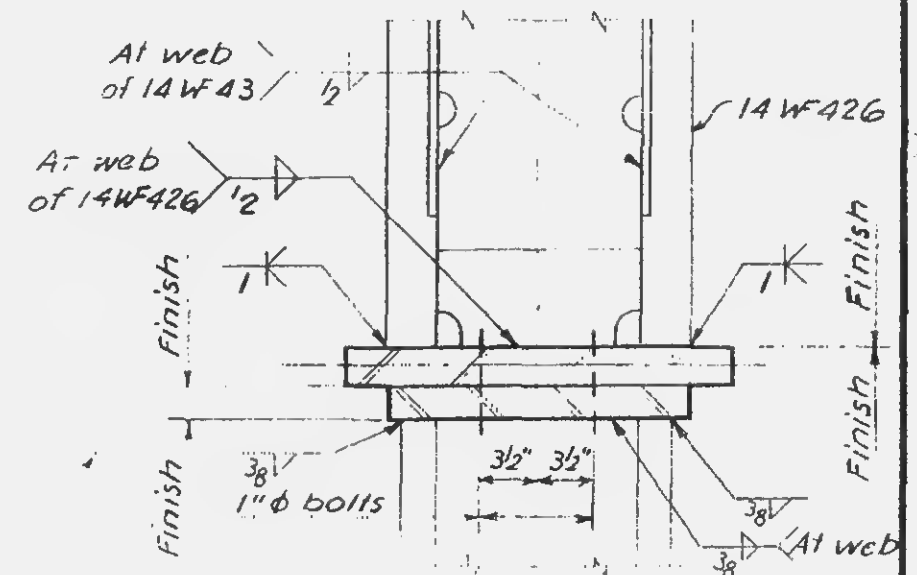
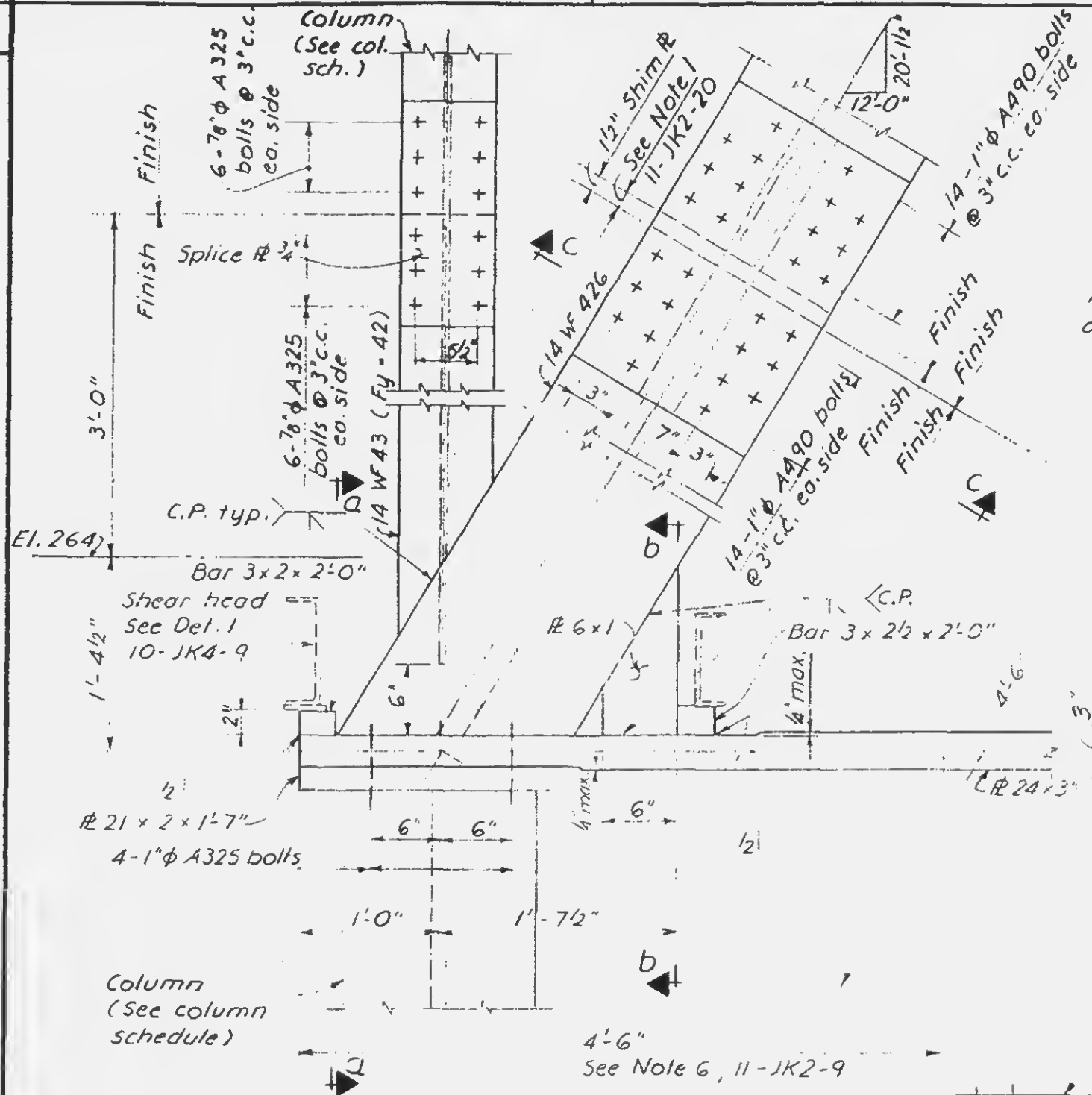


PROJECT THE WORLD TRADE CENTER

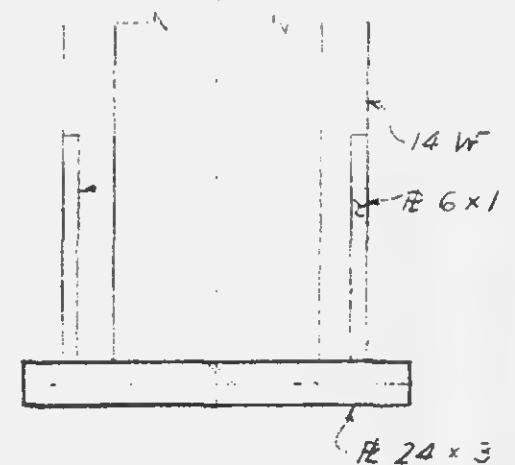
TITLE TRUSS DETAIL 32

DATE 5-1-68

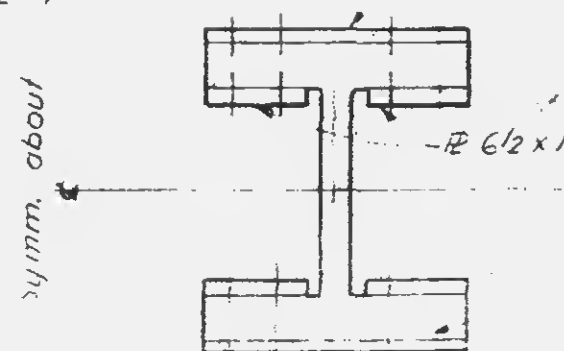
REVISIONS



Section a-a



Section b-b

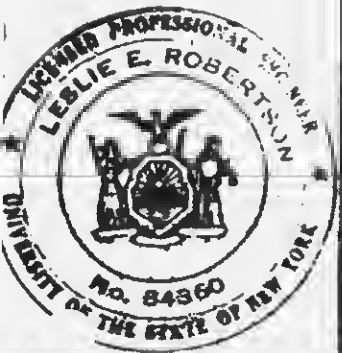


Section c-c

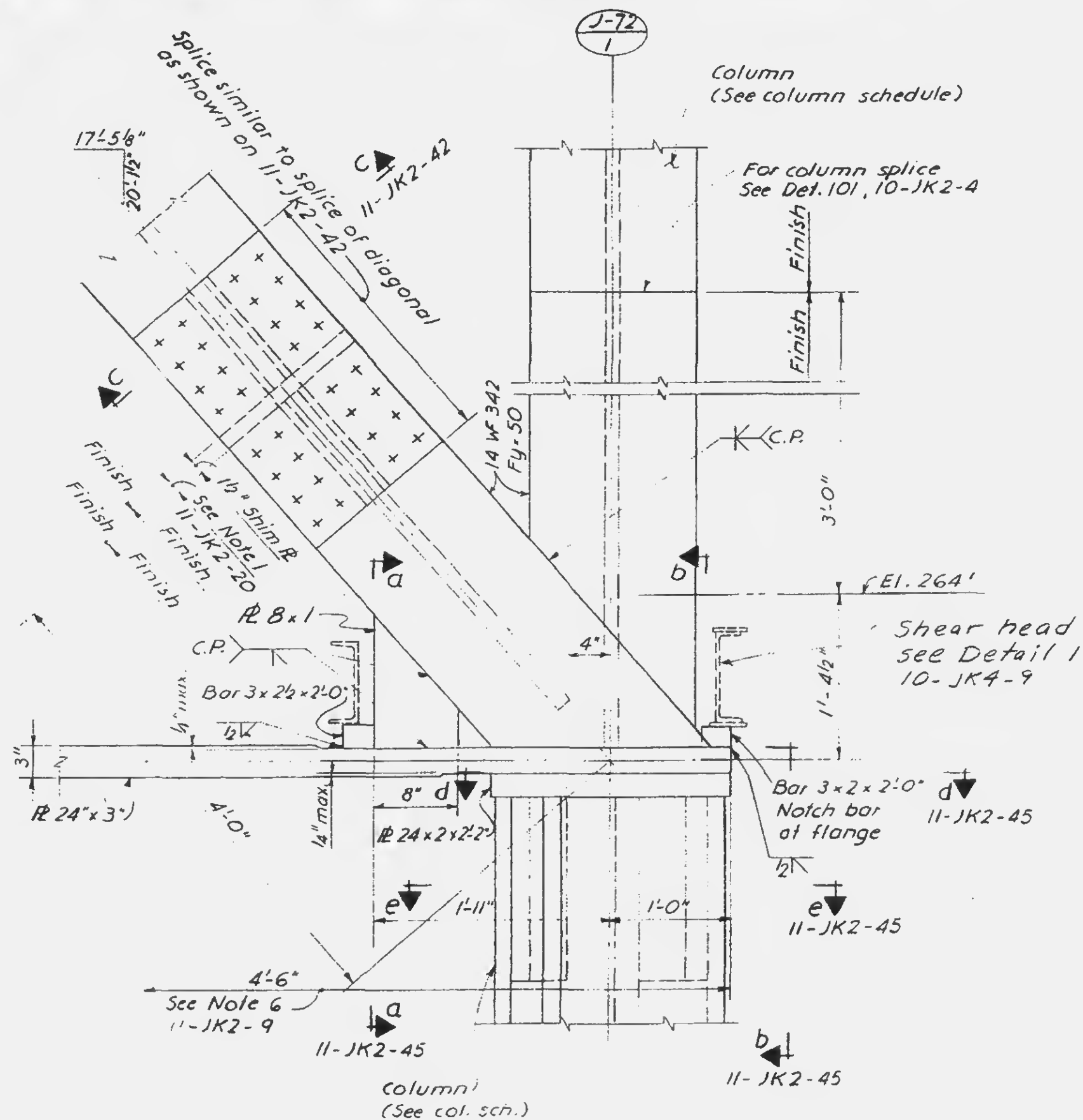
Note:

Bolt holes in 14W
may be 1/8\"/>

11-JK2-43



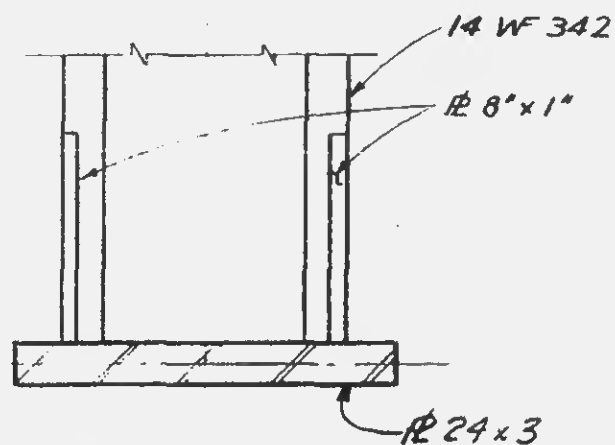
REVISIONS



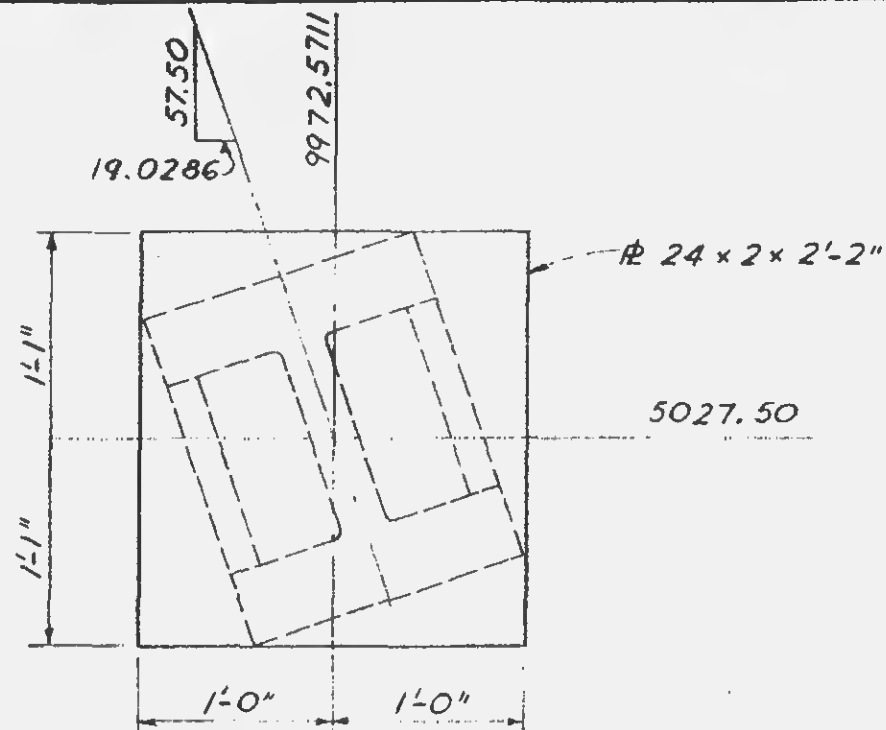
11-JK2-44



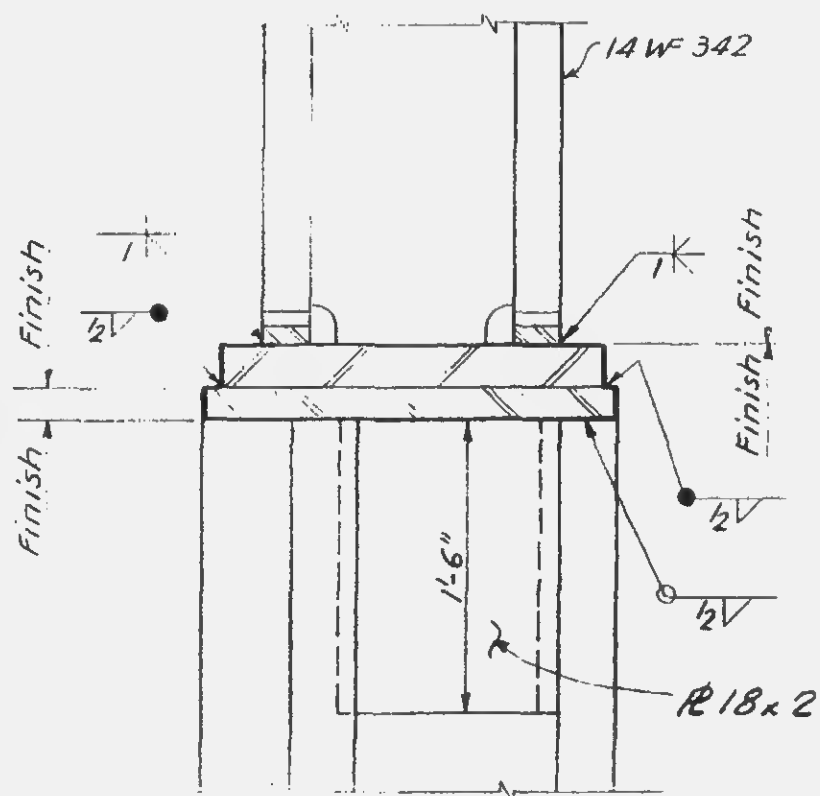
REVISIONS



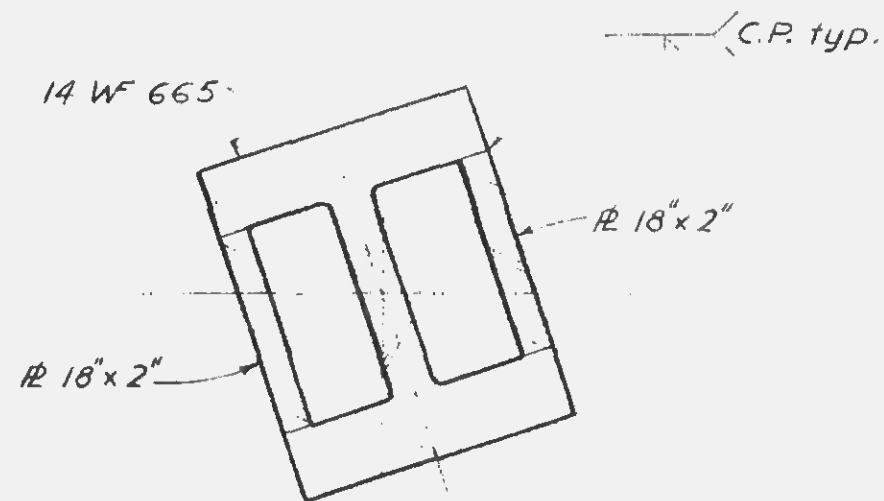
Section a-a



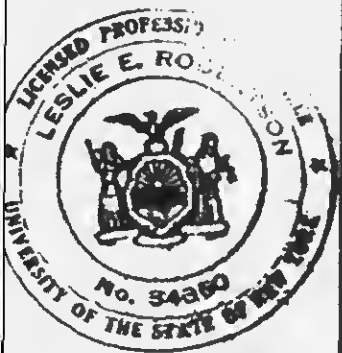
Section d-d



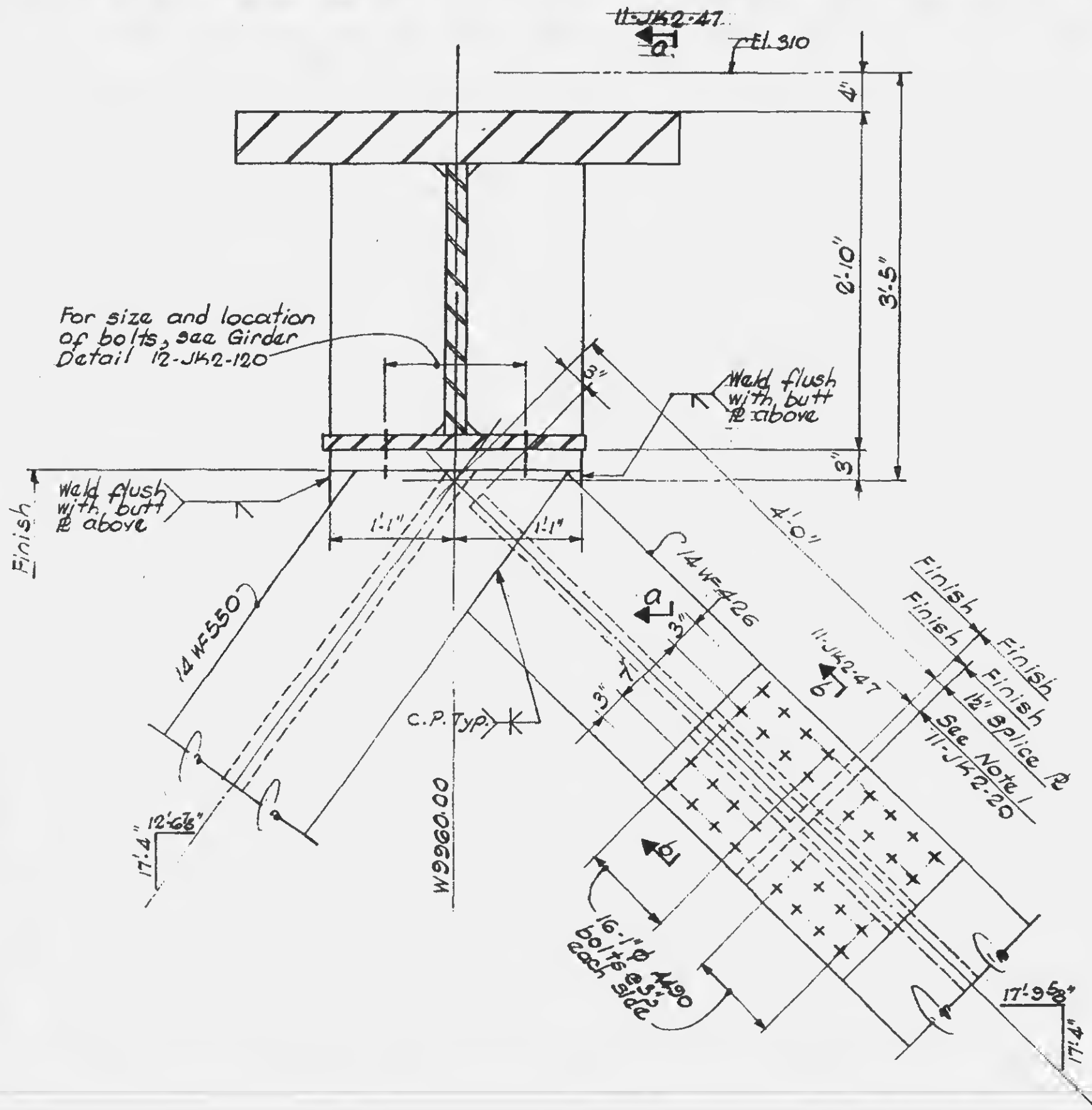
Section b-b



Section e-e



REVISIONS

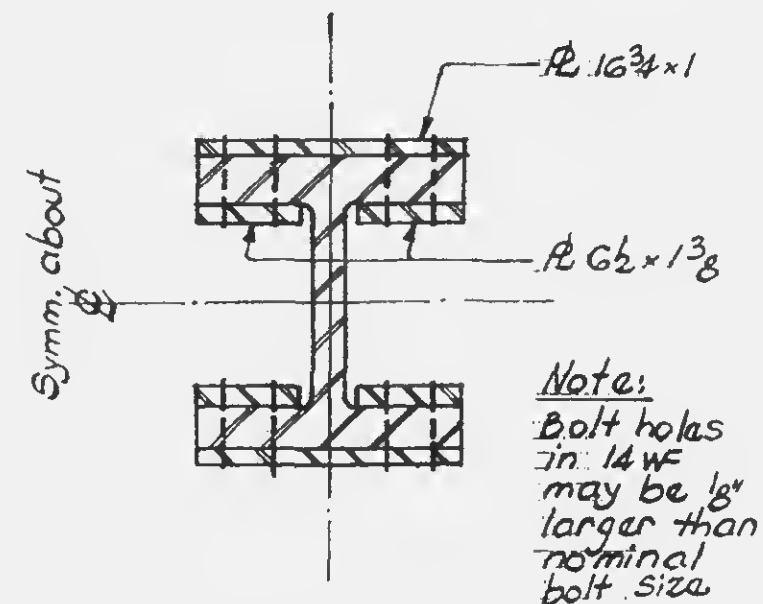
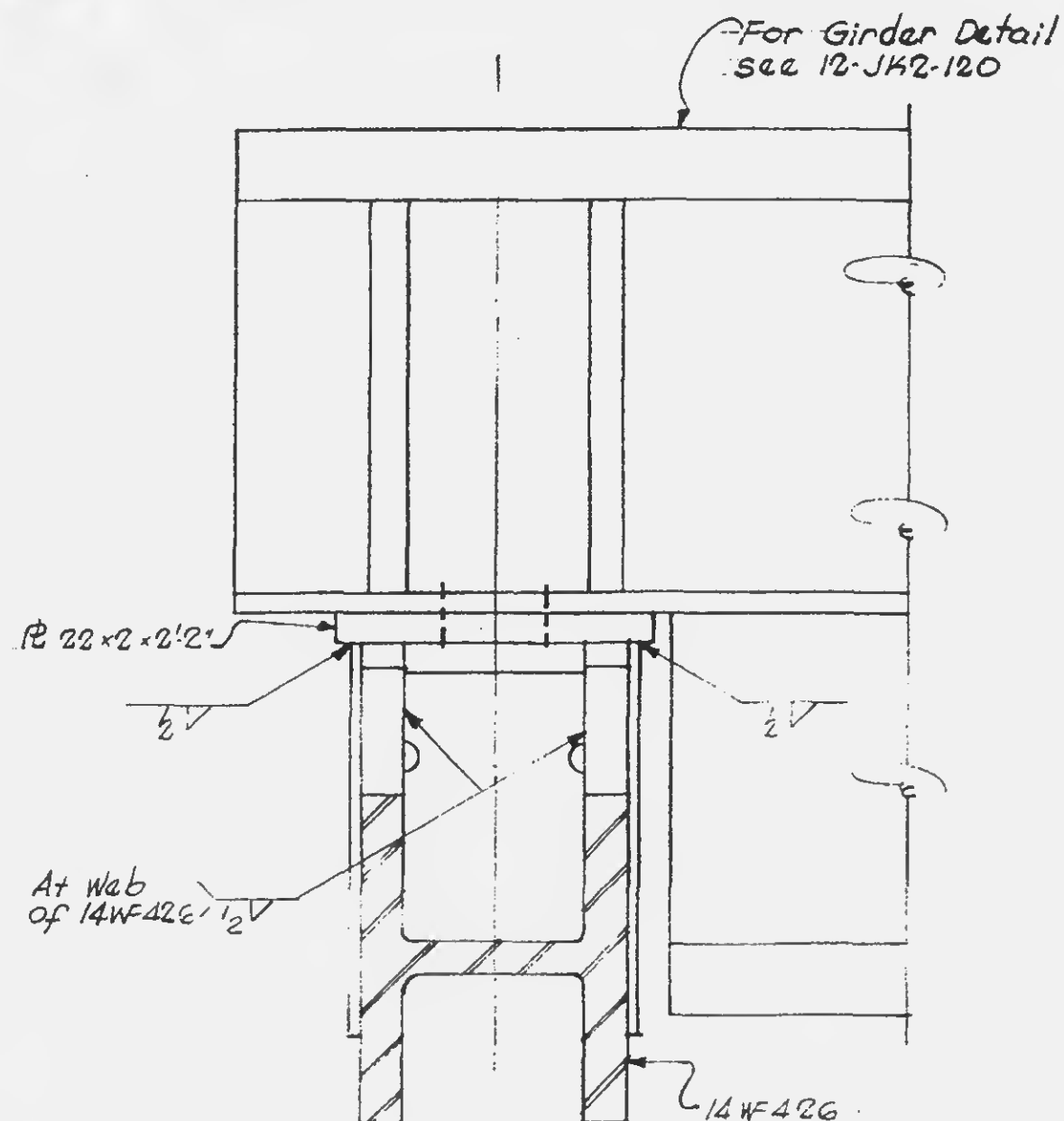


PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAILS

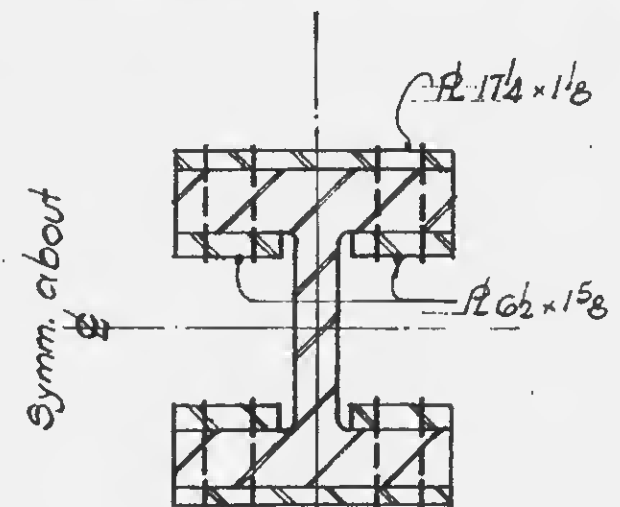
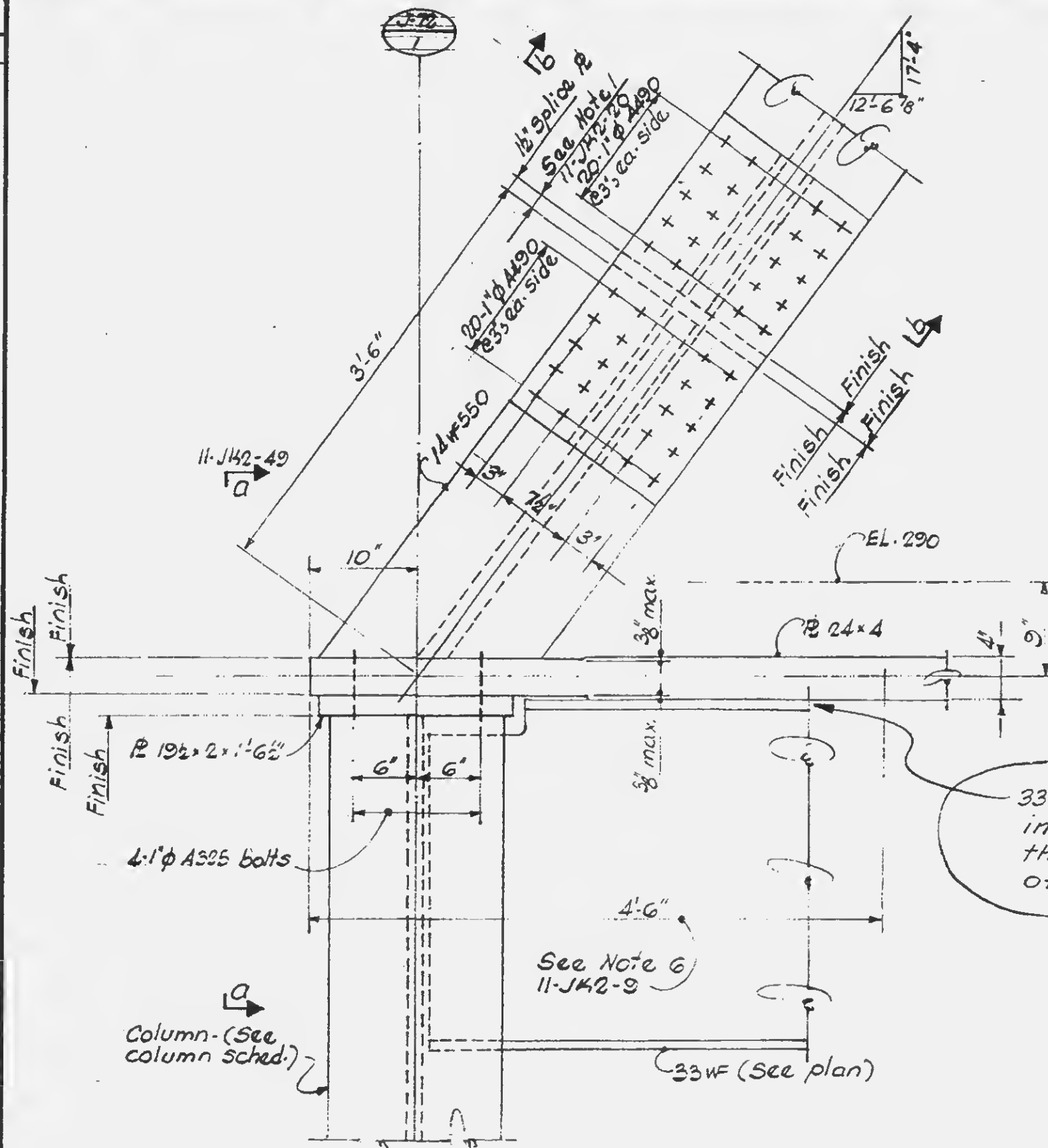
DATE 6-7-68

REVISIONS



REVISIONS

✓ 12-3-68



Note:
Bolt holes in 14WF
may be 1/8" larger
than nominal bolt size.

Section b-b

- 33W may be lowered by $\frac{1}{2}$ " in order to accommodate the straightness tolerance of 4" R.



11-JK2-48

PROJECT

THE WORLD TRADE CENTER

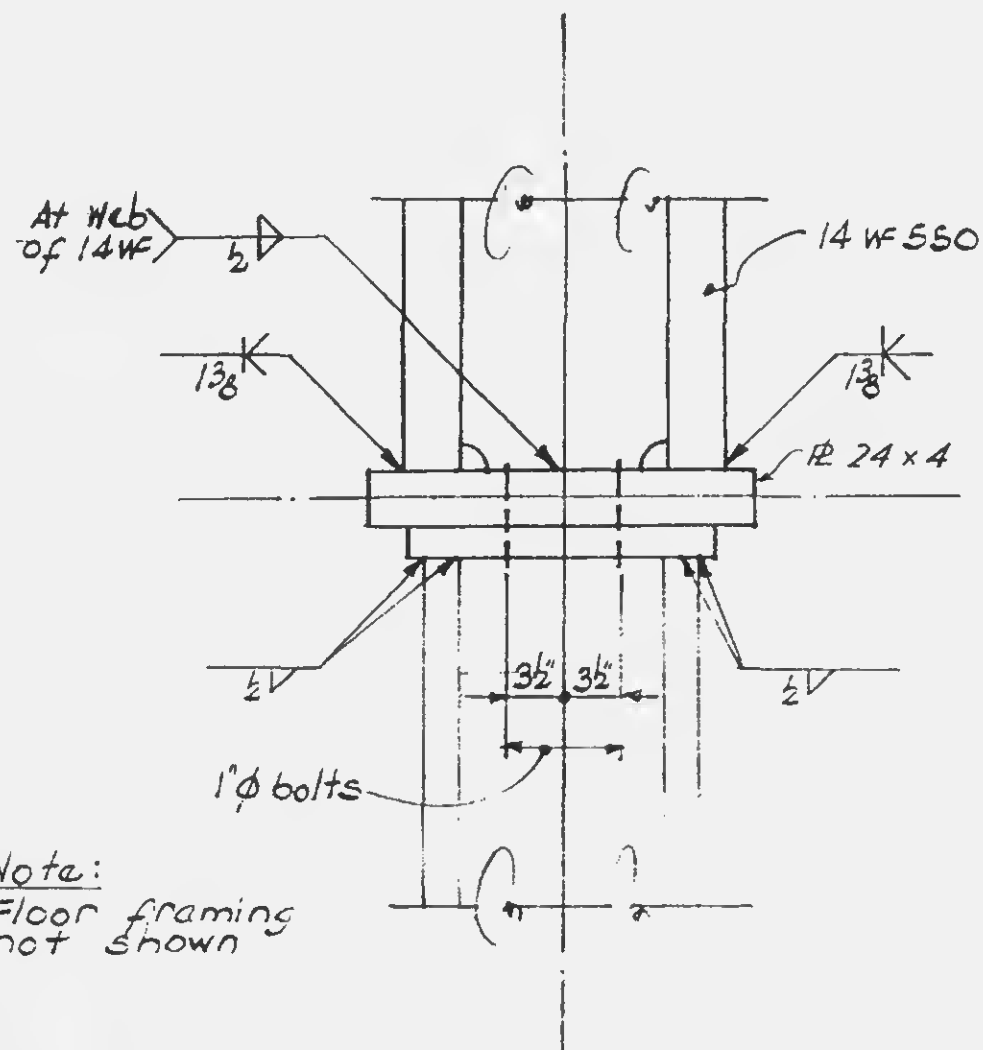
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TRUSS DETAILS

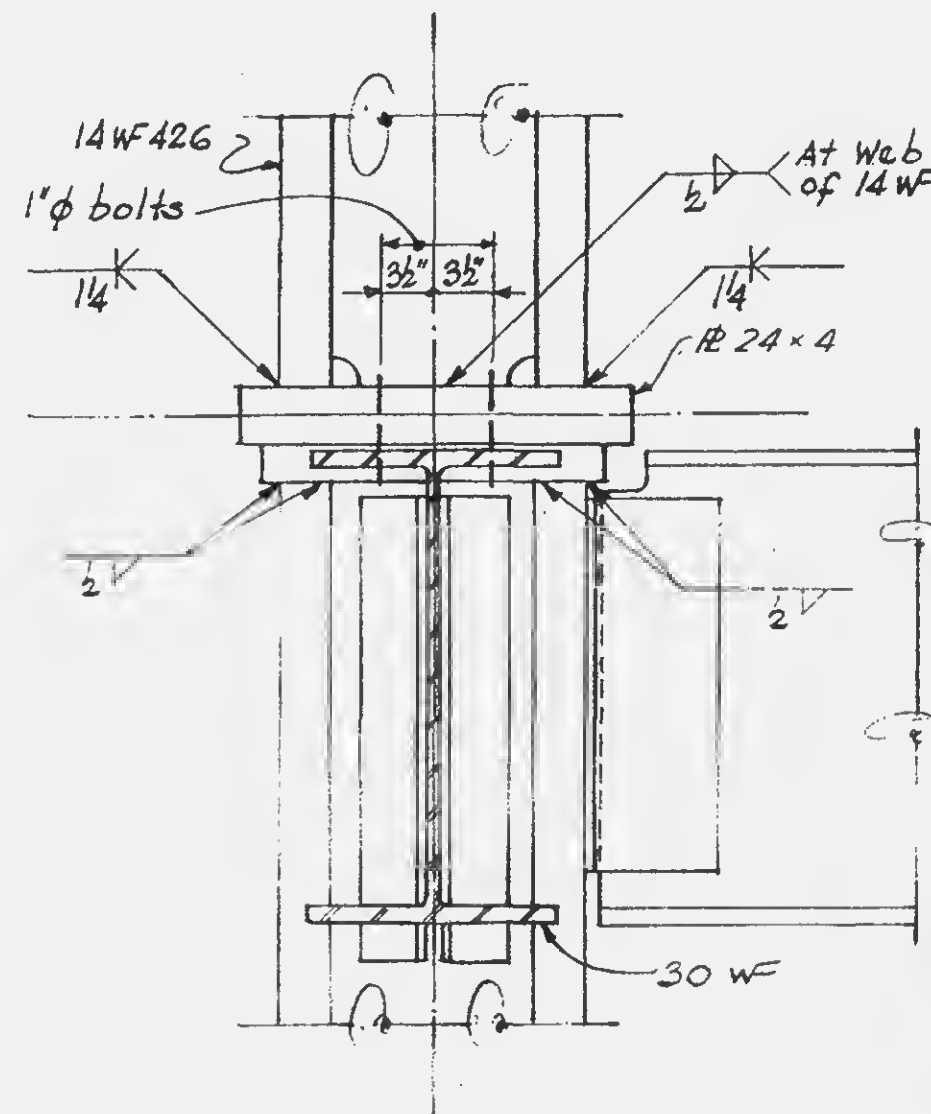
DATE

6-7-68

REVISIONS



Note:
Floor framing
not shown

Section a-aSection b-b

SKILLING - HELLE - CHRISTIANSEN - ROBERTSON

Structural & Civil Engineers

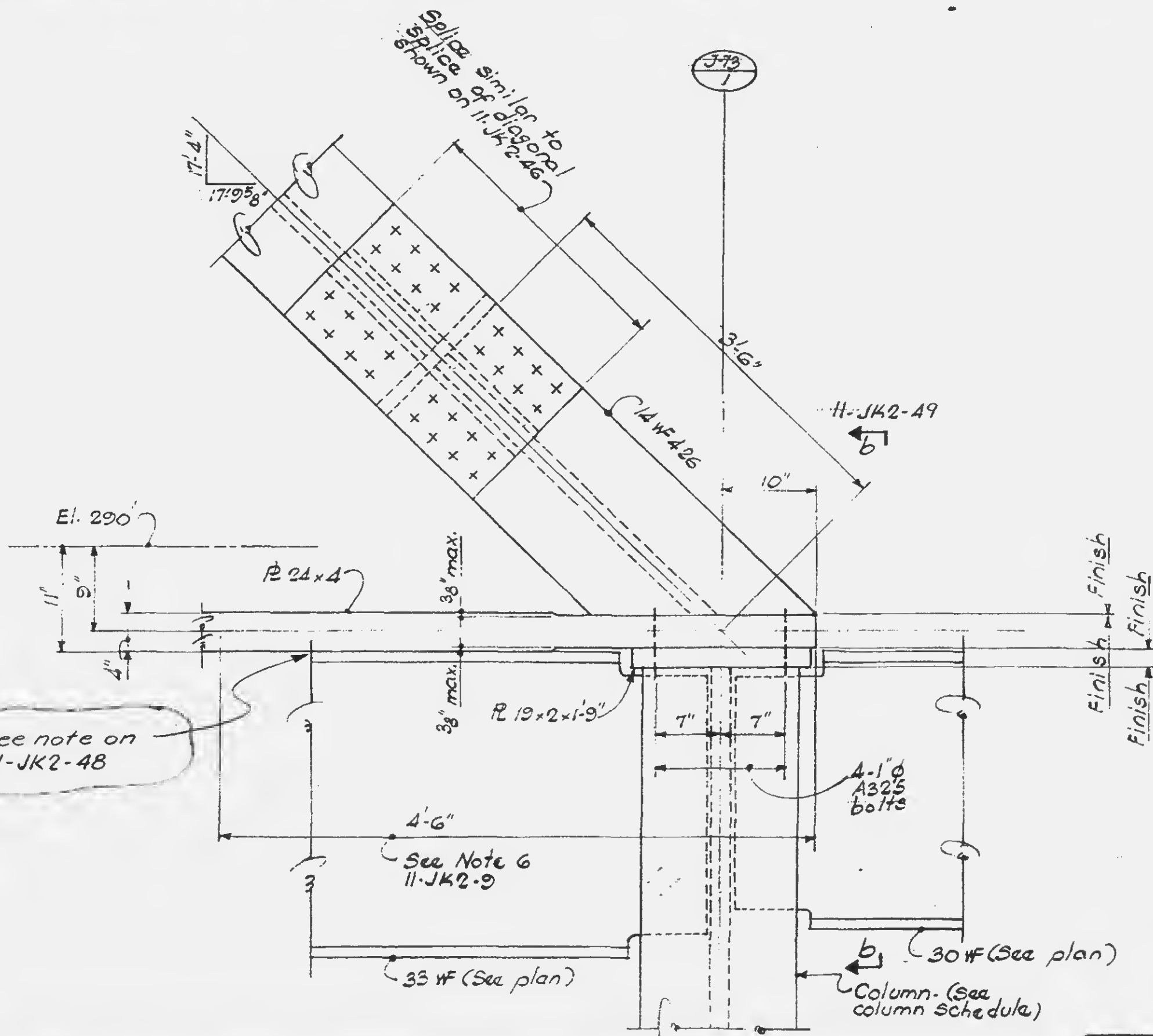
PROJECT THE WORLD TRADE CENTER

TITLE TRUSS DETAIL 36

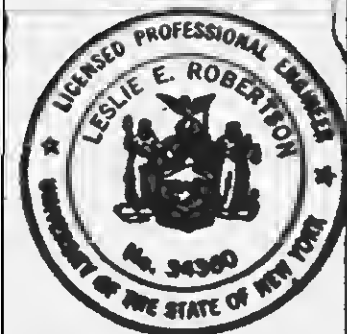
DATE 6-7-68

REVISIONS

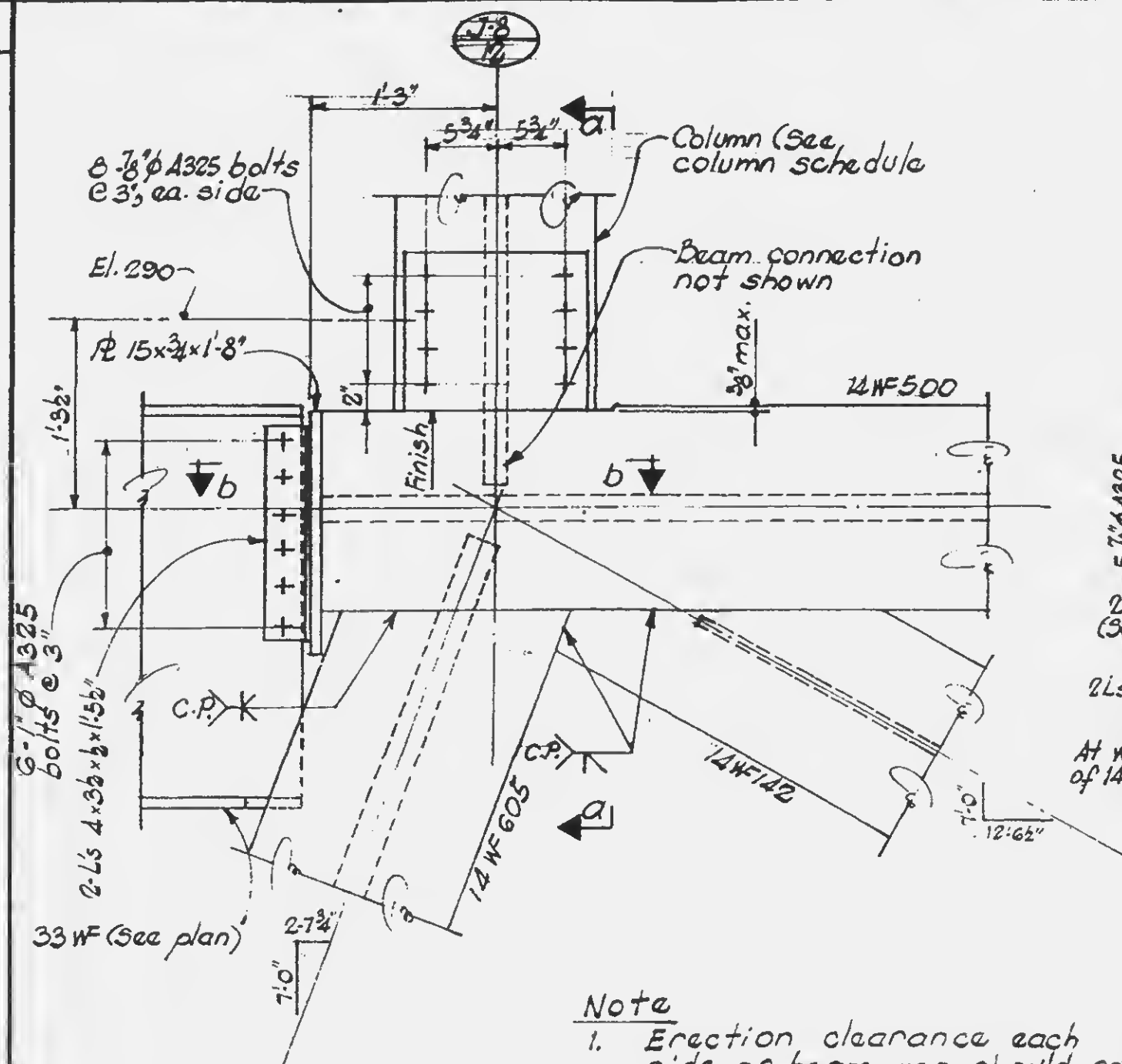
12-3-68



11-JK2-50

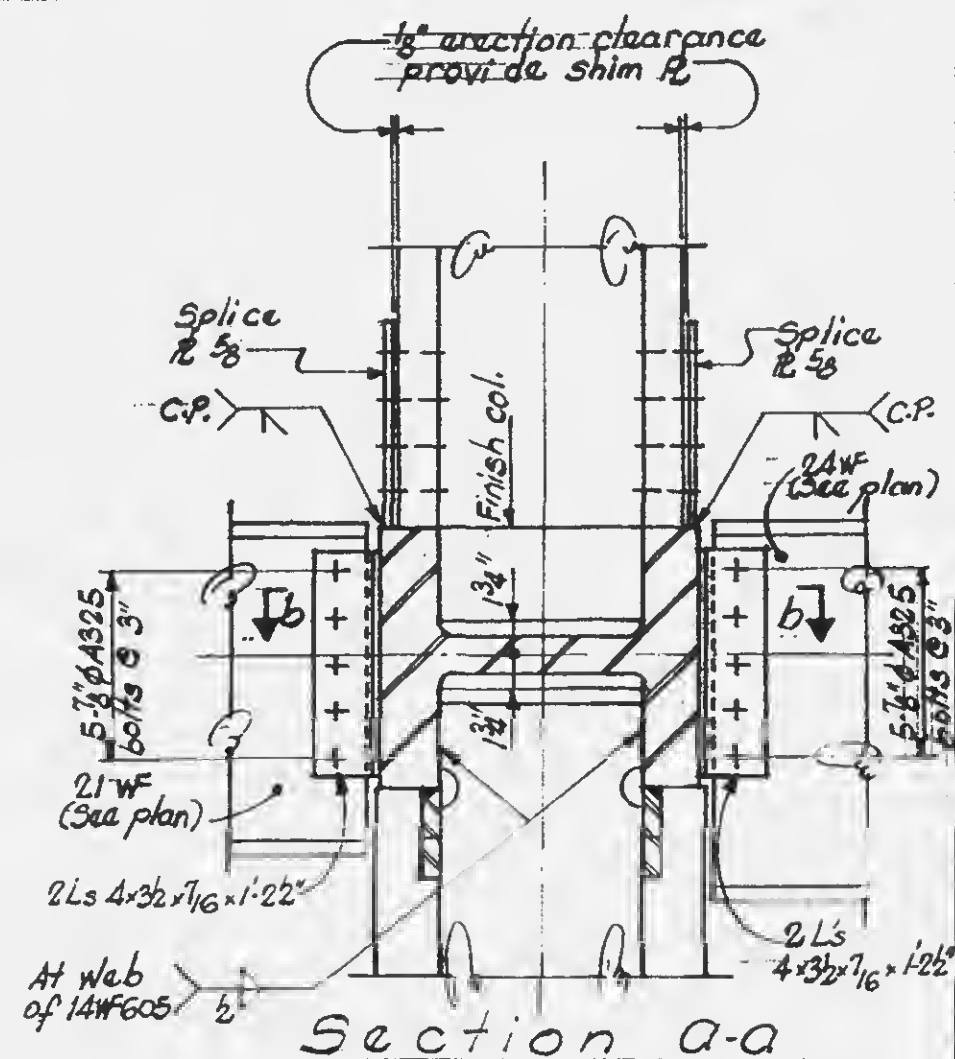


REVISIONS

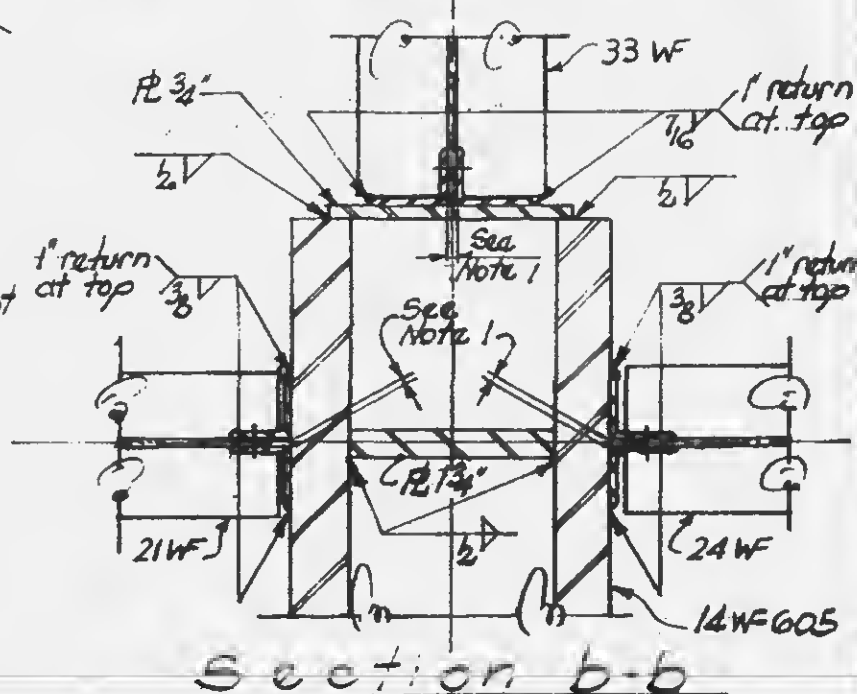


Note

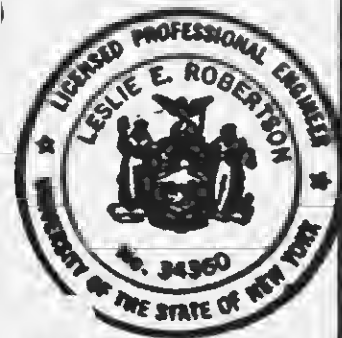
1. Erection clearance each side of beam web should not be more than $1/16"$. Provide shim between beam web and angles if required to insure surface contact for H.S. bolts.



Section A-A



Section b-b



11-JK2-51

PROJECT

THE WORLD TRADE CENTER

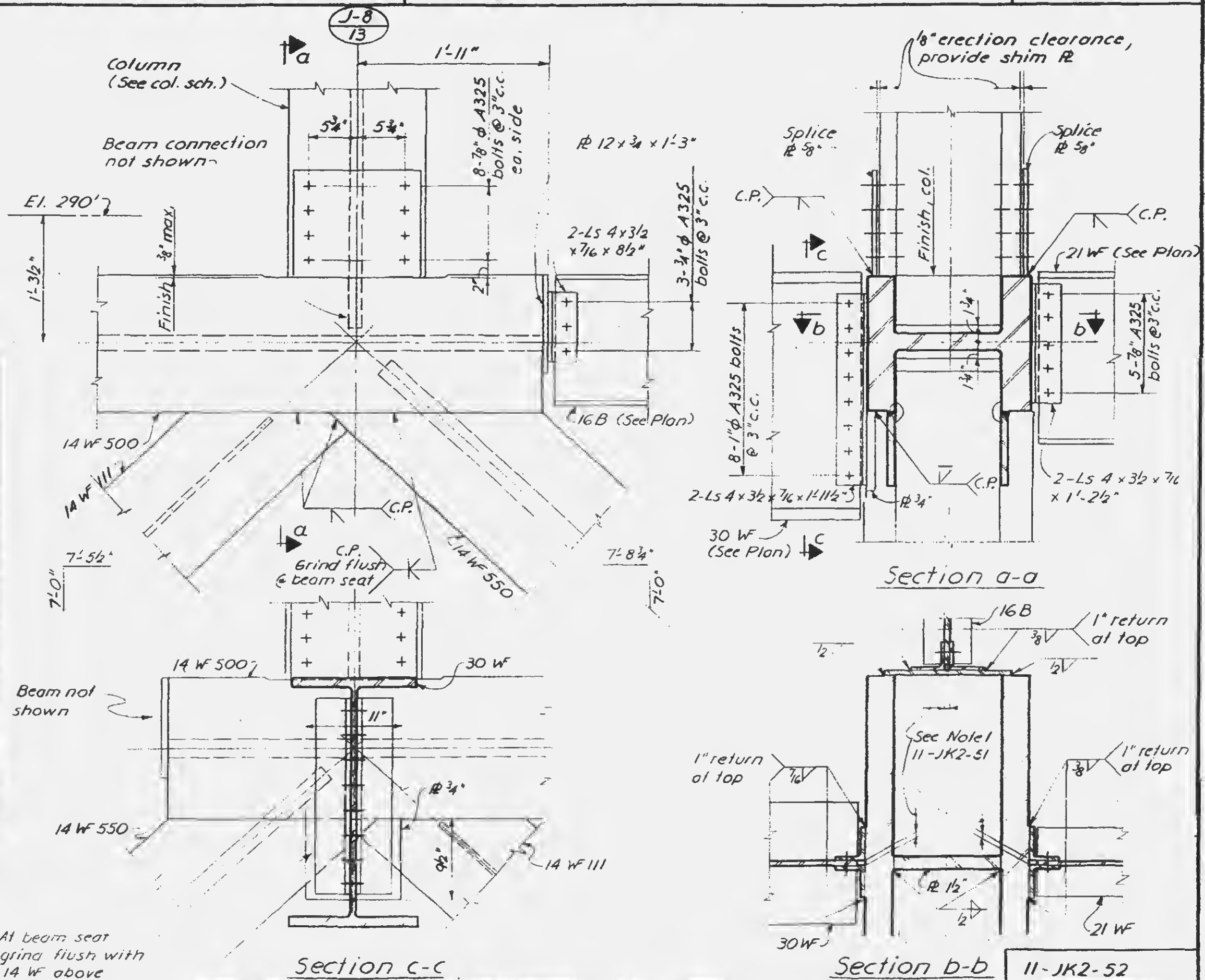
TITLE

TRUSS DETAIL 38

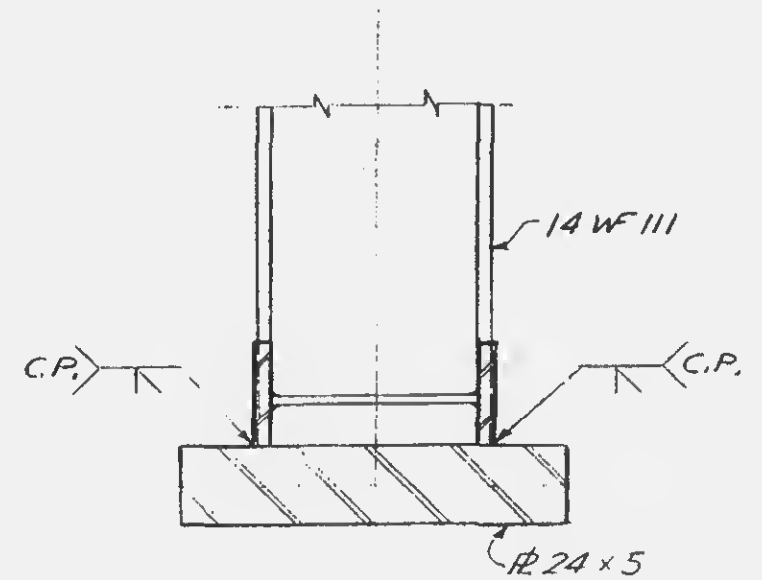
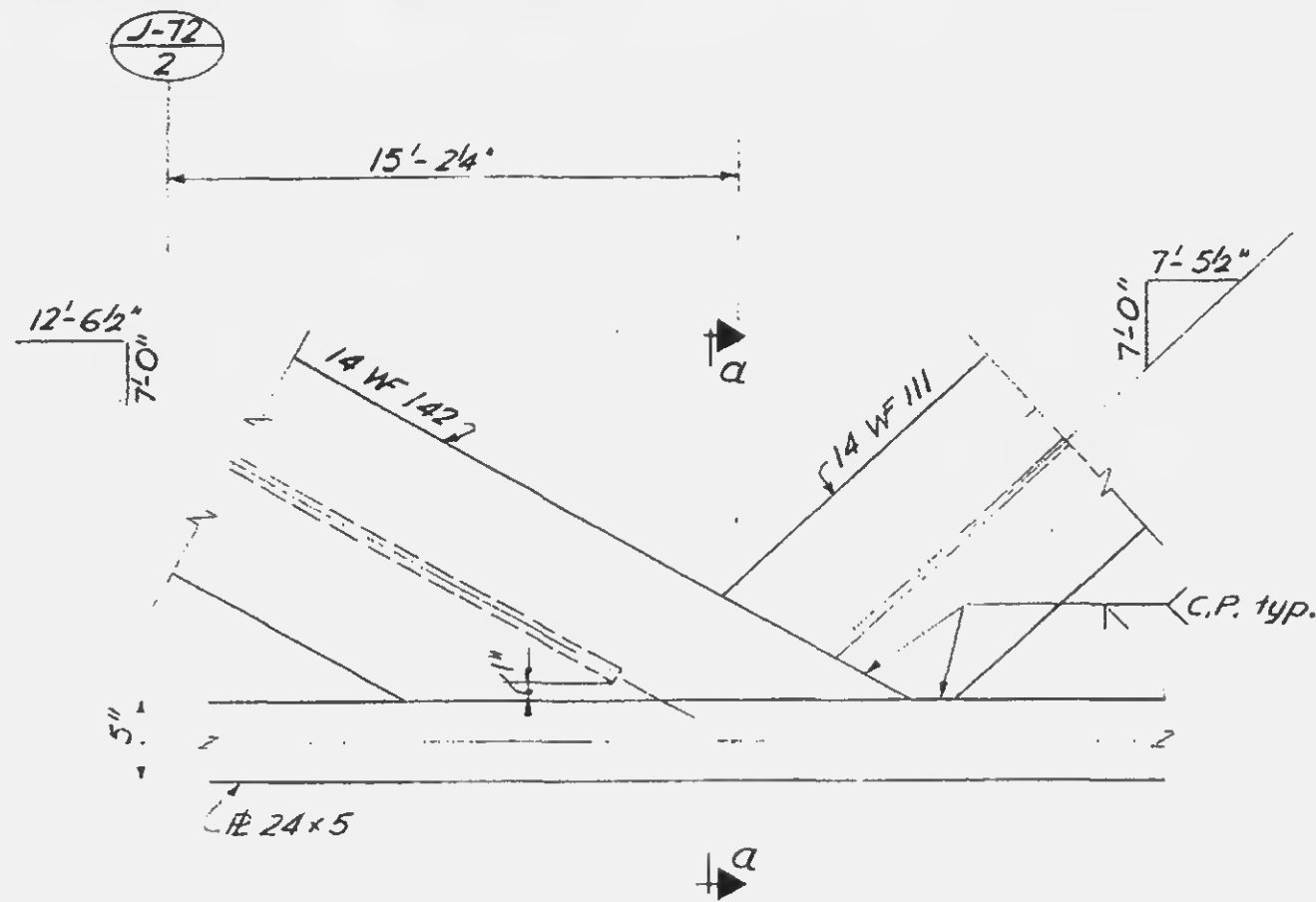
DATE

6-7-68

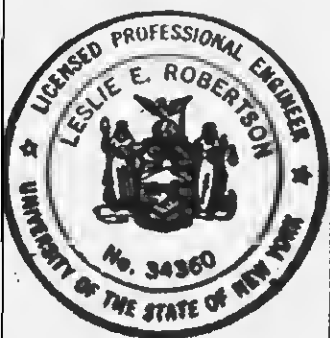
REVISIONS



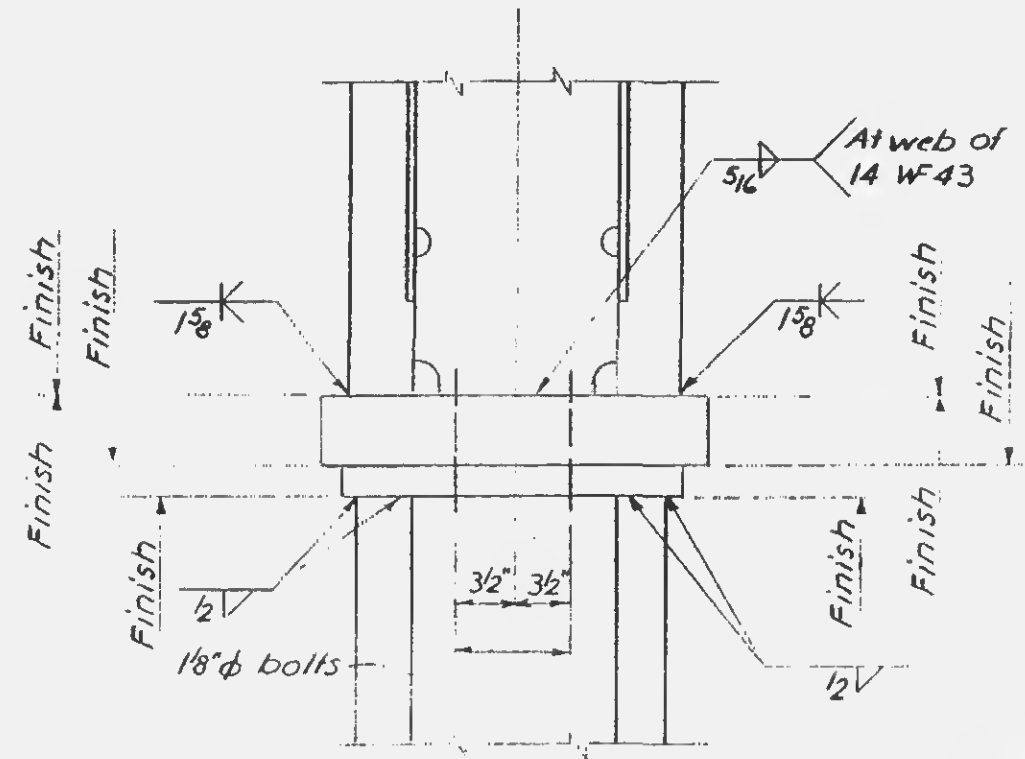
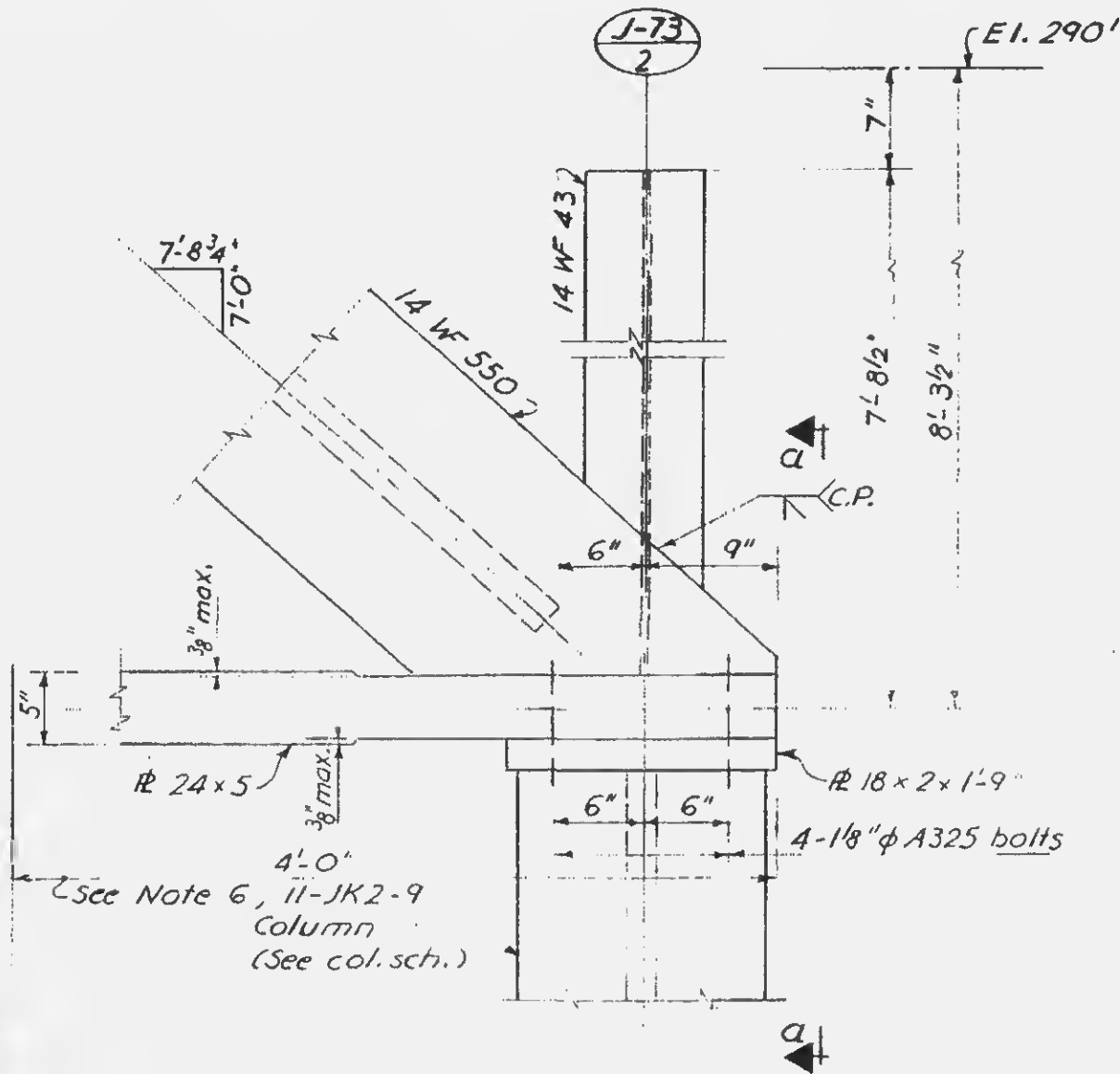
REVISIONS



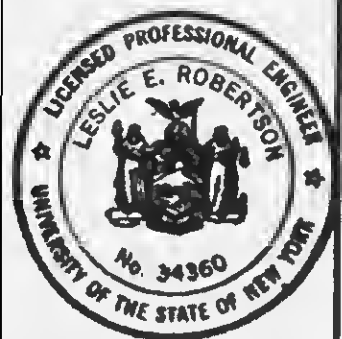
Section a-a



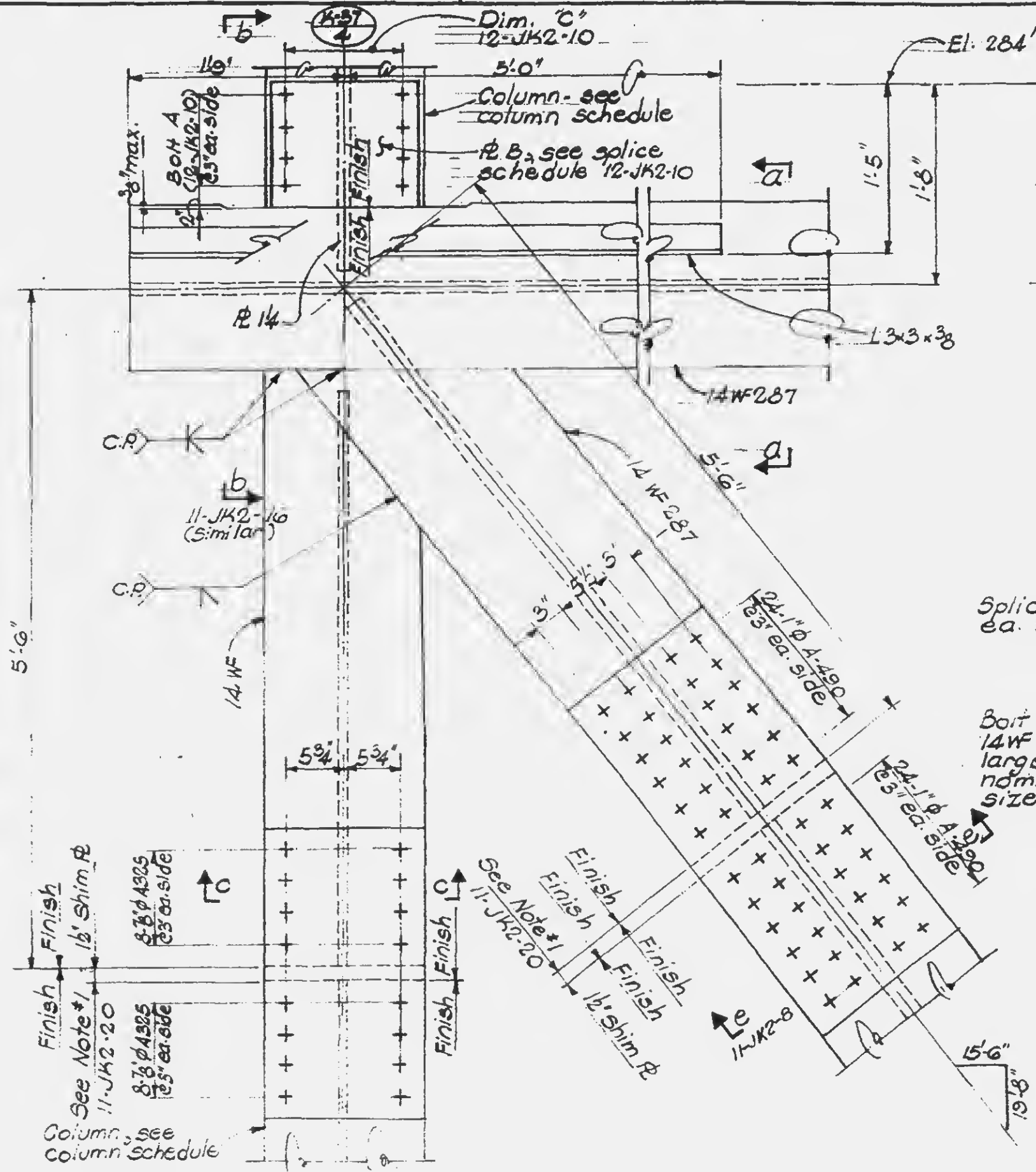
REVISIONS



Section a-a



REVISIONS



Symm. about

$$L-3 \times 3 \times 3$$

Section a-a

Splice ϕ 15x $\frac{3}{4}$
ea. side

Bolt holes thru
14WF may be $\frac{1}{8}$ "
larger than
nominal bolt
size

Section C-C



DESIGNED

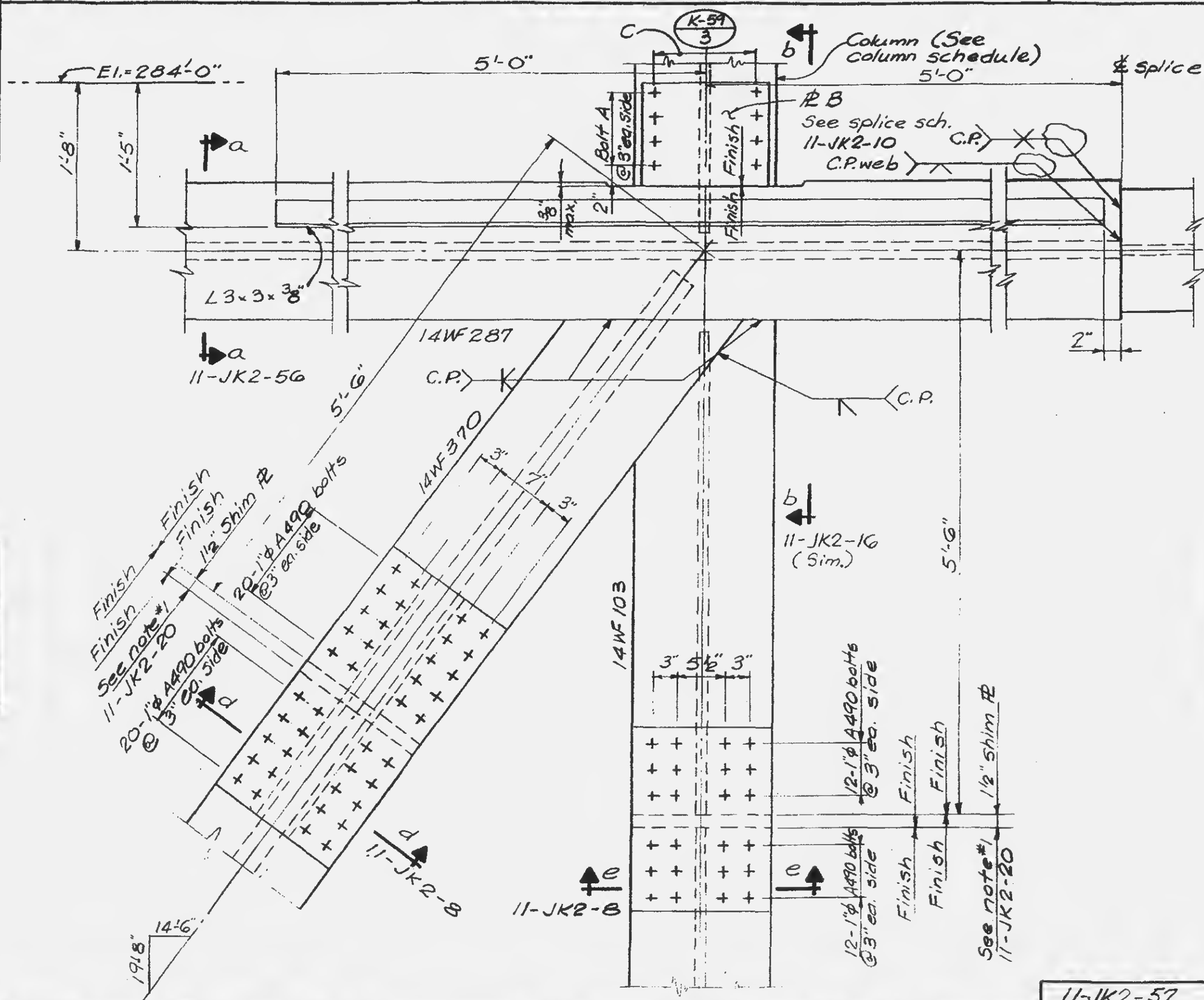
DRAWN

REVIEWED

11-JK2-56

REVISIONS

10-15-68



DESIGNED

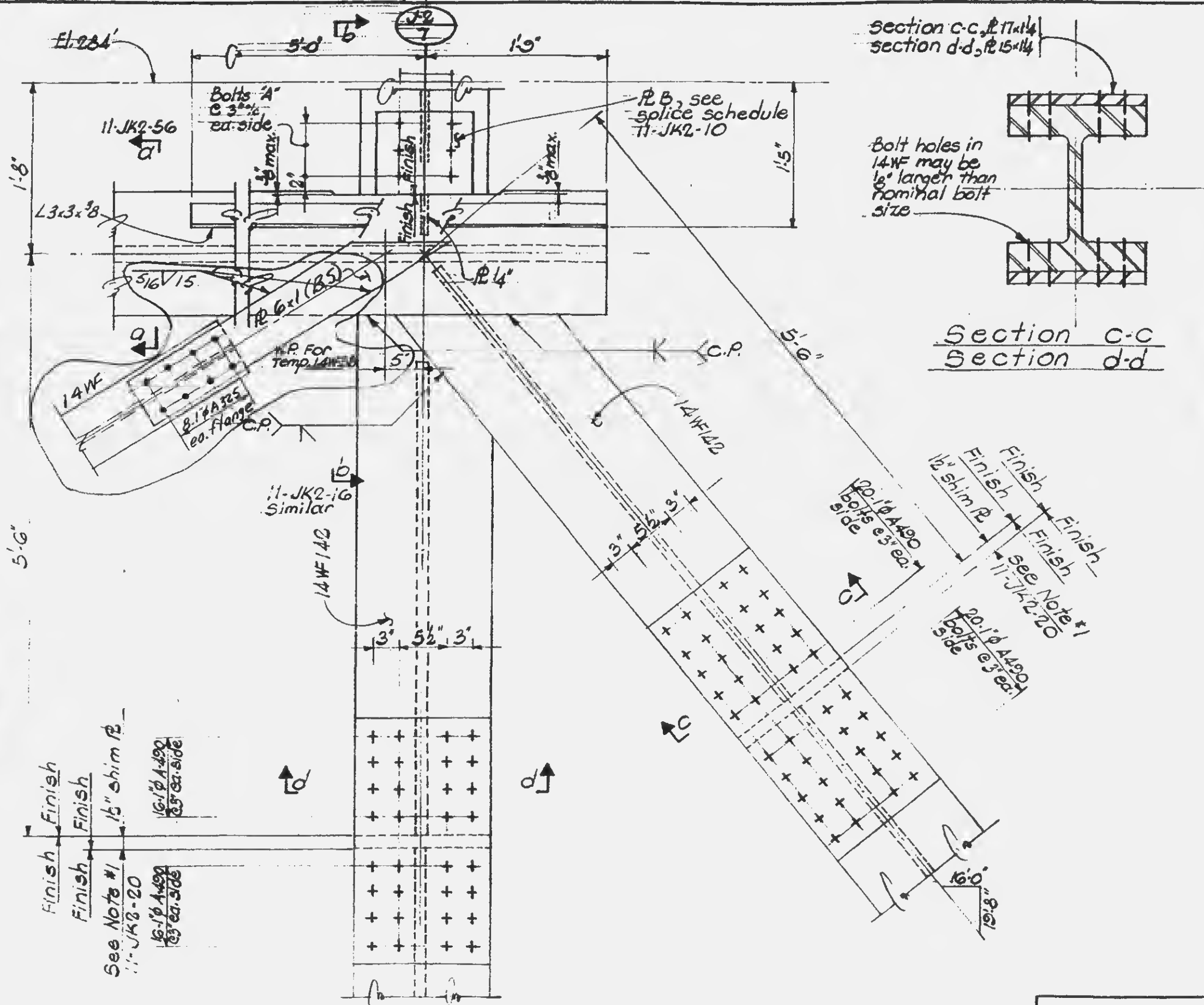
DRAWN

REVIEWED

11-JK2-57

REVISIONS

3-21-69



DESIGNED

DRAWN
S.C.

REVIEWED
E.L.

11-JK2-58

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT

THE WORLD TRADE CENTER

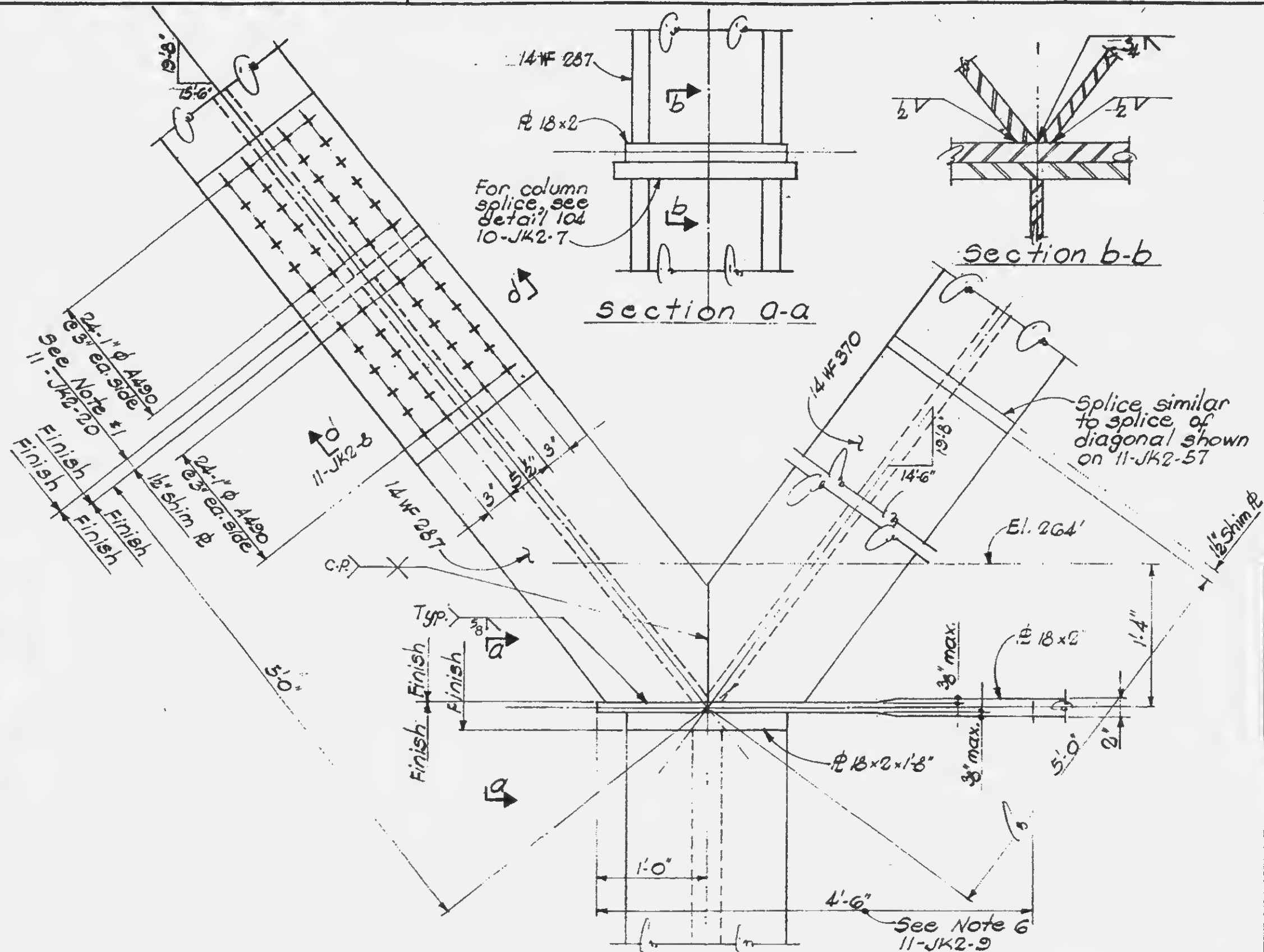
TITLE

TRUSS DETAIL 45

DATE

9-4-68

REVISIONS



DESIGNED

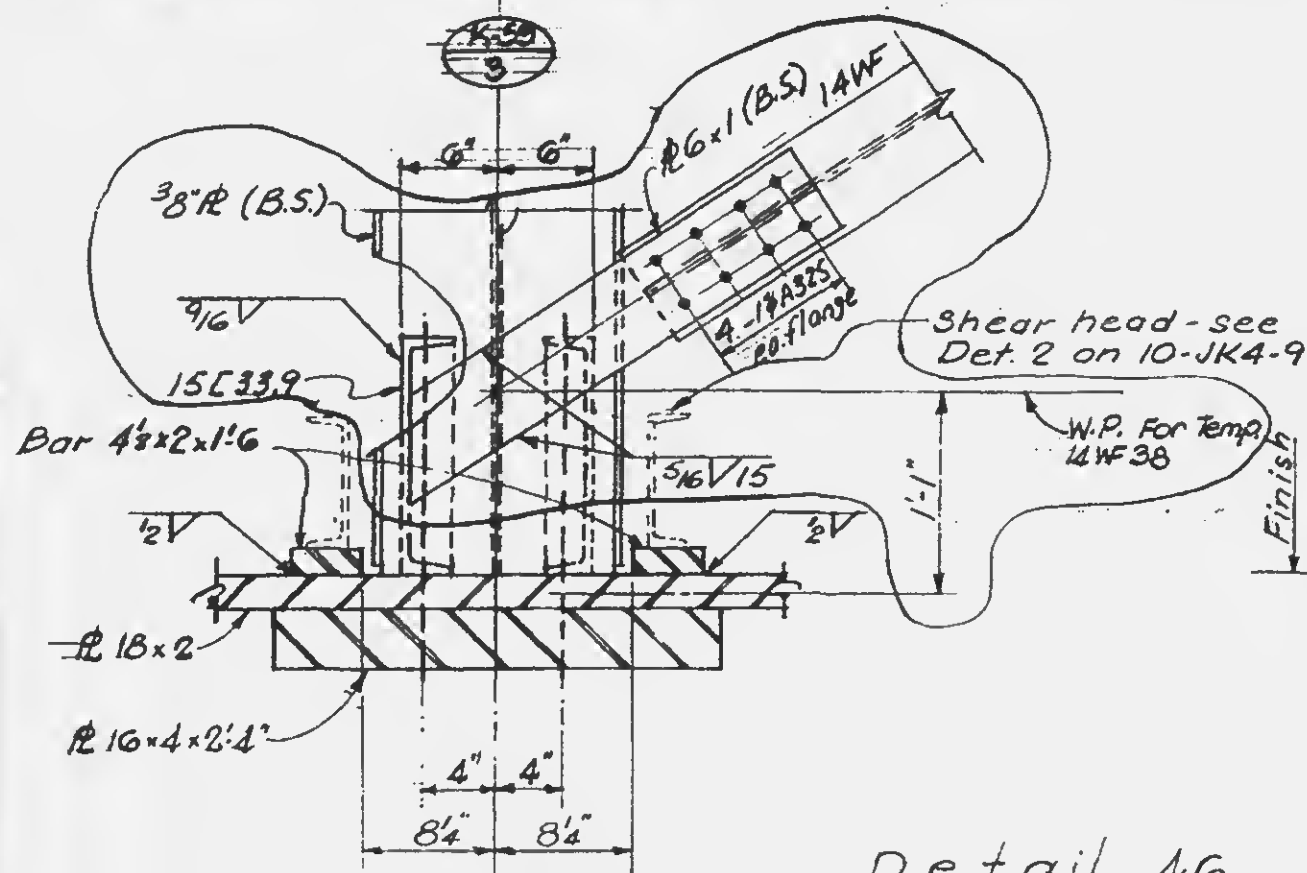
DRAWN

REVIEWED

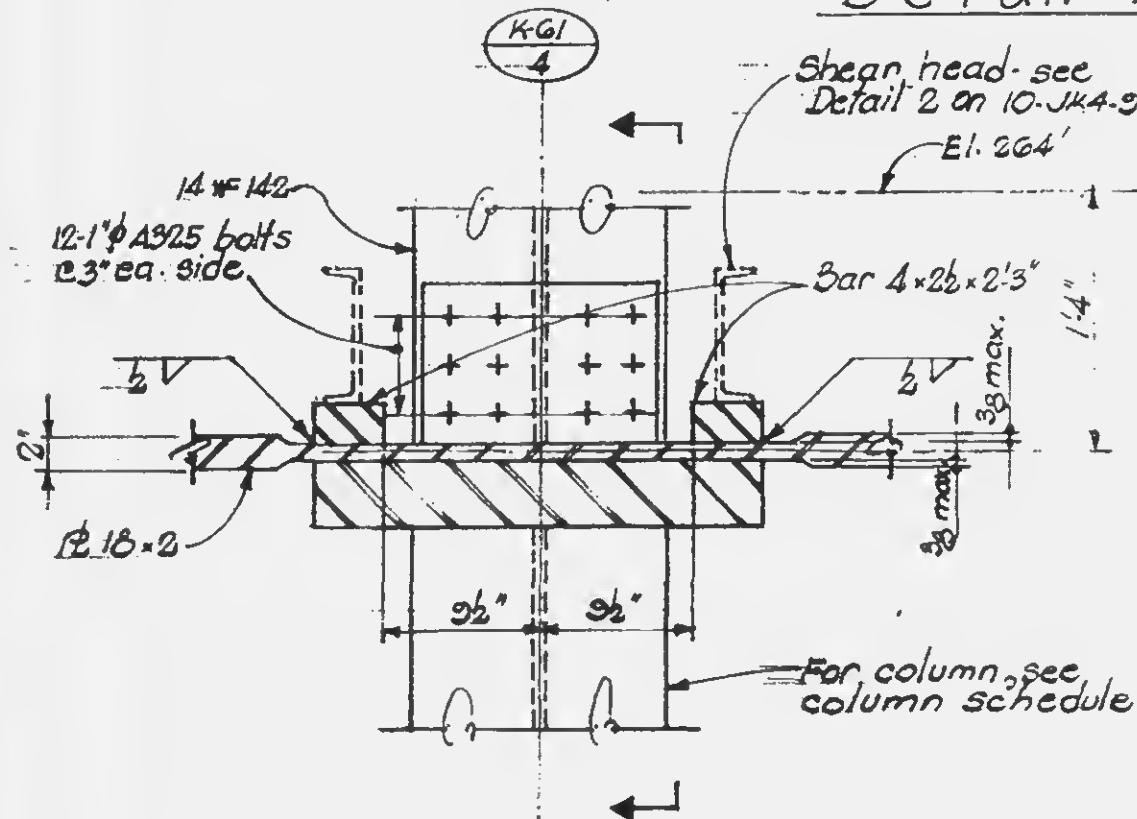
REVISIONS

1-8-69

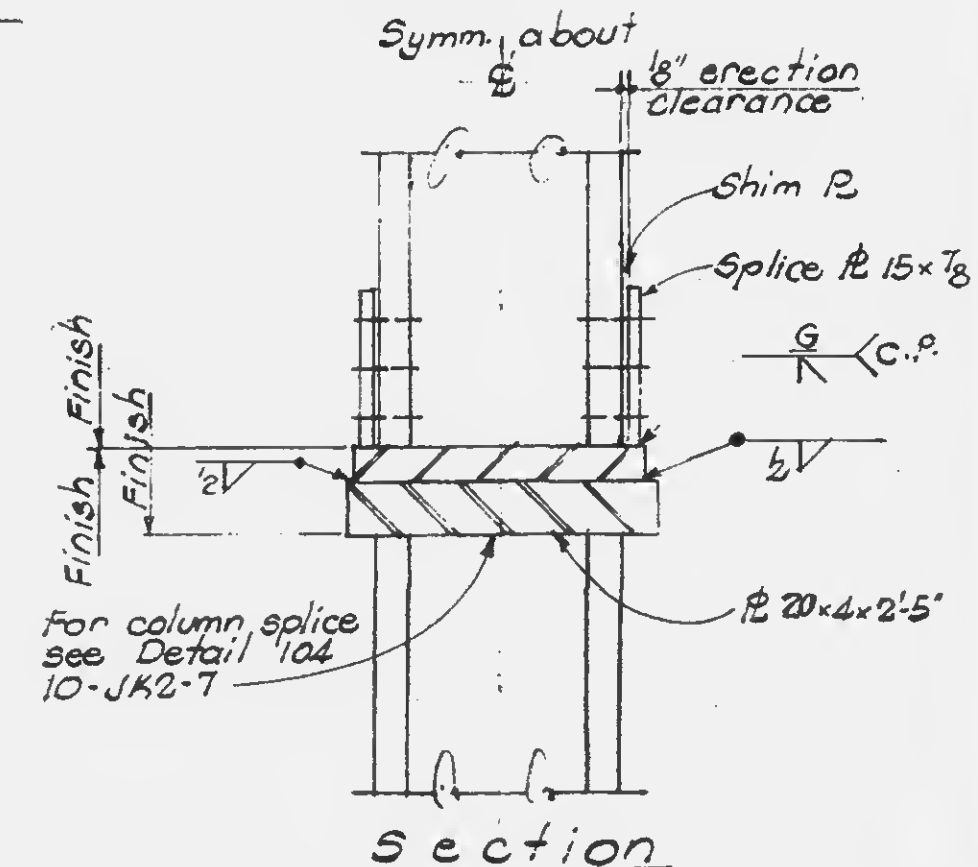
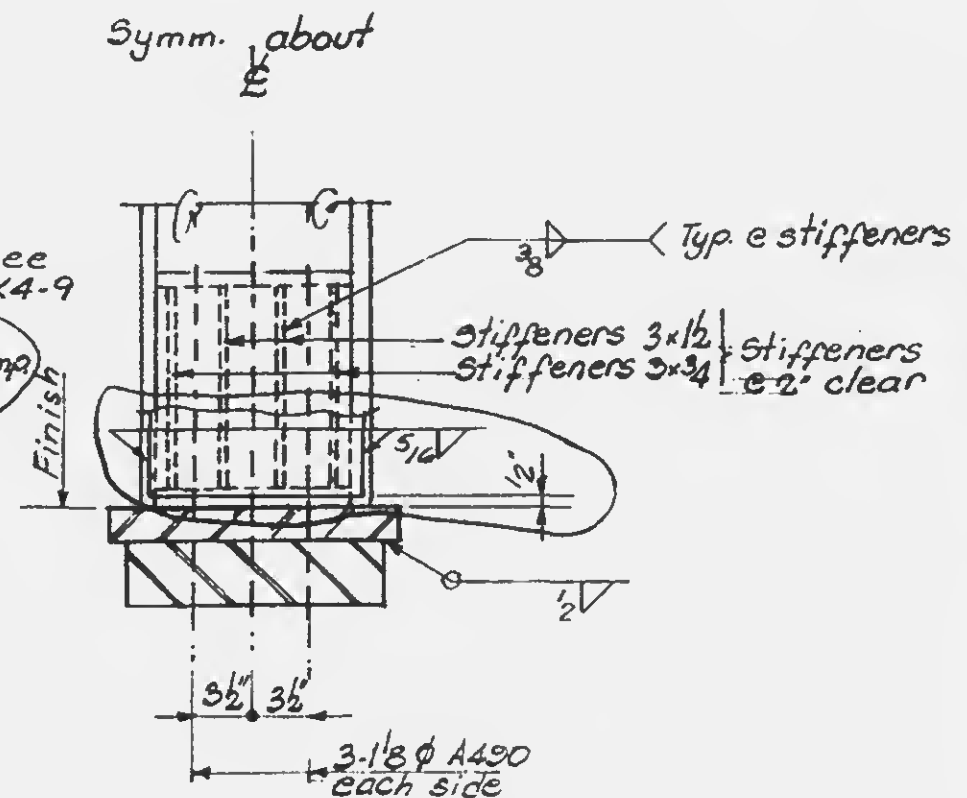
3-21-69



Detail 46



Detail 47



2-24-68

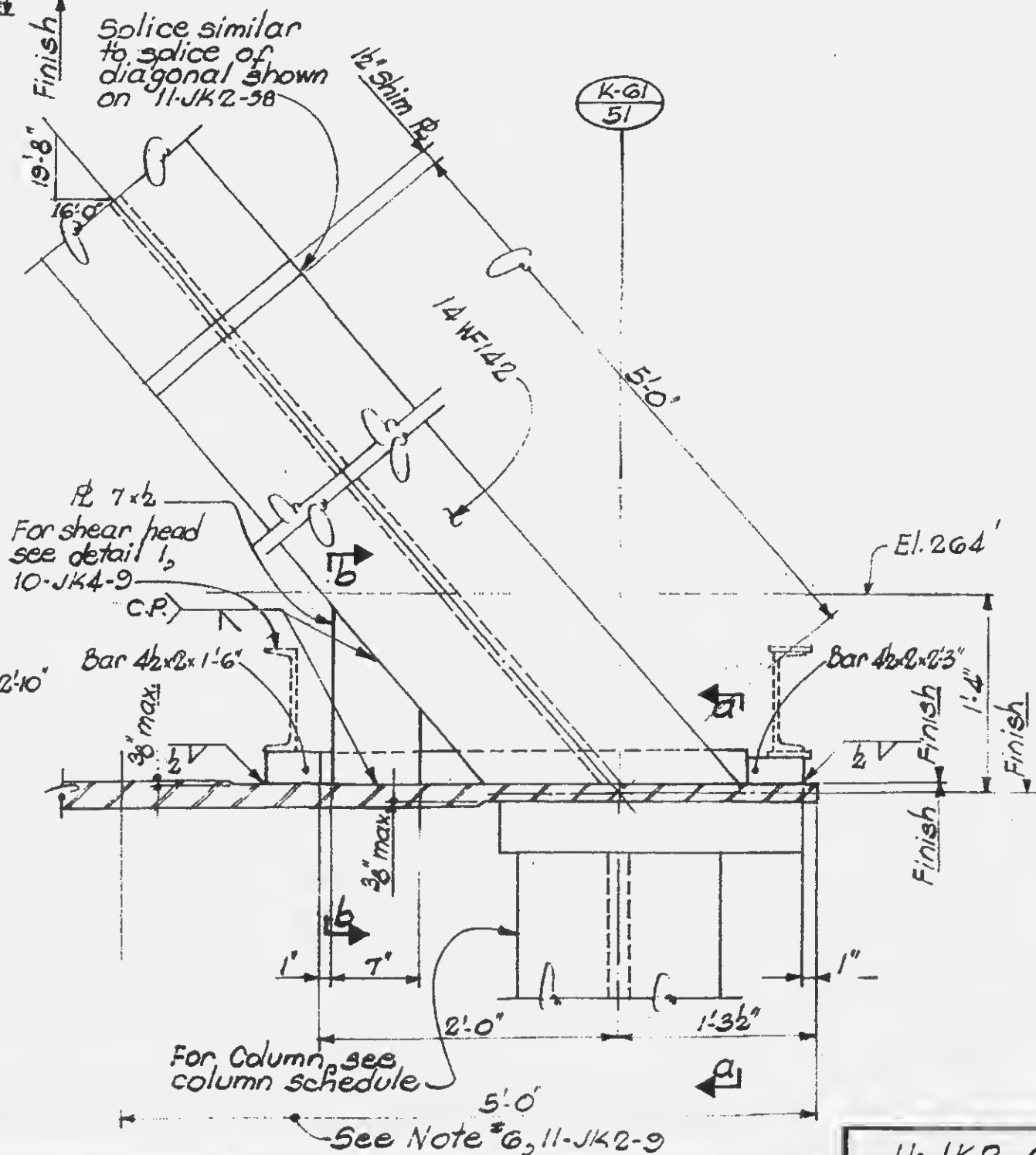
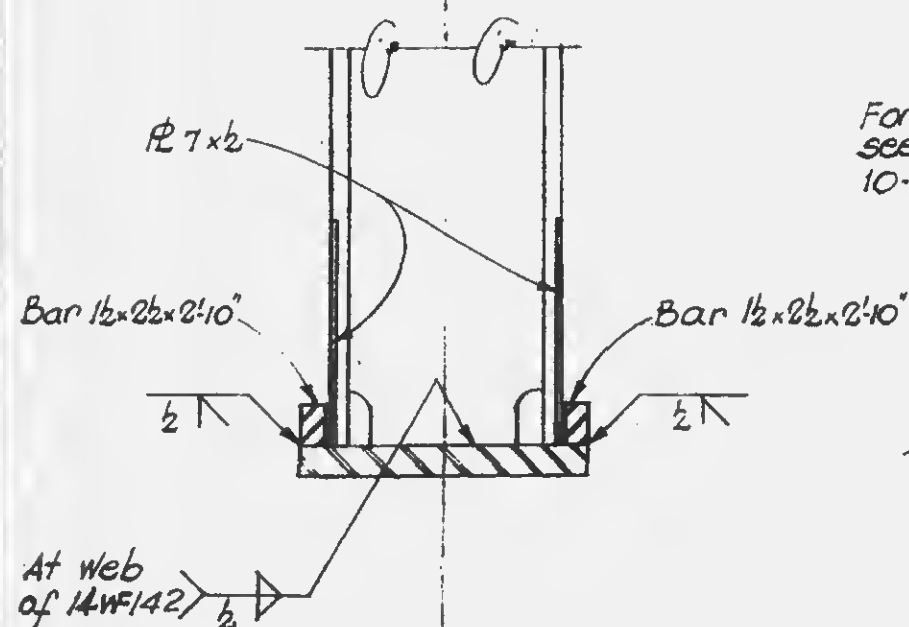
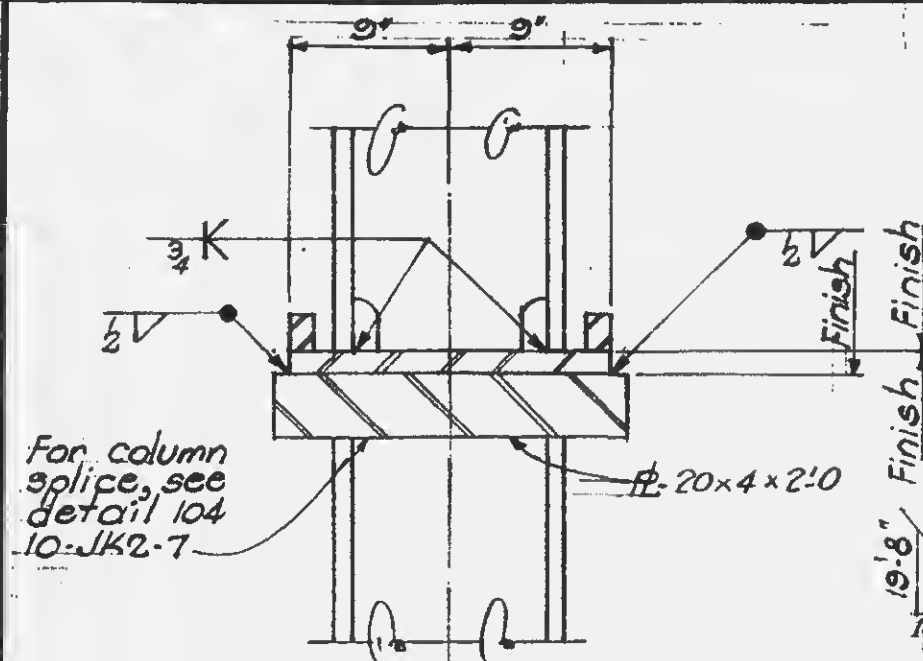
DESIGNED

DRAWN S.C.

REVIEWED E.L.

11-JK2-60

REVISIONS



DESIGNED

DRAWN

REVIEWED

11-JK2-61