

DOCUMENT DATA FORM

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Drawing book 20 - Structural steel details

Include work order no. and floor no. if applicable

Roll # DB02

Doc. ID (report #, dwg. #):

Document Date: 1968-71

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KEYWORDS - HIGHLIGHT ALL THAT APPLY

Level 1

|                       |                          |                           |     |
|-----------------------|--------------------------|---------------------------|-----|
| Bankers Trust         | Project 4                | WTC 1 - North Tower       | Add |
| Below Grade           | Project 5                | WTC 2 - South Tower       |     |
| Concourse             | Project 6                | WTC 3 - Marriott Hotel    |     |
| Electrical Substation | Project 7                | WTC 4 - South Plaza Bldg. |     |
| Liberty Plaza         | Project 8                | WTC 5 - North Plaza Bldg  |     |
| PATH Station          | WFC 1 - Oppenheimer Dow  | WTC 6 - Customs House     |     |
| PATH Terminal         | WFC 2 - Tower B          | WTC 7                     |     |
| Project 1             | WFC 3 - American Express | WTC Complex               |     |
| Project 2             | WFC 4 - Tower D          | WTC Plaza                 |     |
| Project 3             |                          |                           |     |

Level 2

|                         |                 |                            |                    |
|-------------------------|-----------------|----------------------------|--------------------|
| Accident analysis & nsk | Fire protection | Misc. Performance Problems | Structural         |
| Architectural           | Fire service    | News coverage              | Tenant alterations |
| Data request            | Landscaping     | Police                     | Tenant Space       |
| Emergency management    | Management      | Security                   | Add                |
| Evacuation              | Mech./elec.     |                            |                    |

Level 3

|                       |                          |                             |                   |                |
|-----------------------|--------------------------|-----------------------------|-------------------|----------------|
| 1993 explosion        | Cranes                   | Frame                       | Roof              | Weight         |
| A/E flout             | Criteria                 | Frame analysis              | Safety            | Weld detail    |
| A-242                 | Dampers                  | Frequency                   | Schedule          | Weld size      |
| A-38                  | Debris                   | Fuel                        | Sculpture         | Welding        |
| A-497                 | Deck                     | Furniture layout            | Security system   | Wind           |
| Aircraft impact       | Deflection               | Generators                  | Shear knuckle     | Windows        |
| Air cooled condensers | Demolition               | Guidelines                  | Shear test        | Yield strength |
| Analysis              | Design                   | Gypsum board                | Shear Stud        | Add            |
| Angles                | Detailing                | Hat truss                   | Shop drawings     |                |
| Antenna               | Doors                    | Human comfort               | Shortening        |                |
| Artifacts             | Drawings                 | HVAC                        | Slab              | drawing books  |
| Asbestos              | Eastern States Steel     | Index                       | Slurry wall       |                |
| Base plate            | Egress                   | Inspection                  | Smoke control     |                |
| Beams                 | Elevator                 | Insulation                  | Smoke test        |                |
| Bid documents         | Elevator Shaft           | Job number                  | Spandrel beam     |                |
| Bid invitation        | Emergency communications | Joist                       | Specifications    |                |
| Bow tie               | Equipment                | L-50                        | Splices           |                |
| Bracing               | Erection marks           | Lighting                    | Sprinkler         |                |
| Bridging truss        | Errors & Omissions       | Loads                       | Stability         |                |
| Building code         | Escalator                | Maintenance                 | Stairways         |                |
| Calculations          | Expansion joint          | Marking                     | Standards         |                |
| Carpet                | Exterior columns         | Mesh reinforcement          | Steel             |                |
| Ceilings              | Fabrication              | Mill inspection             | Steel composition |                |
| Certification         | Family member            | Model                       | Stiffness         |                |
| Chillers              | Field survey             | Mullion                     | Structural review |                |
| Cladding              | Fire alarms              | Operations                  | Surveillance      |                |
| Collapse              | Fireproofing             | Paint                       | Survey            |                |
| Columns               | Fire spread              | Partition layout            | Survivor          |                |
| Communication systems | Fire testing             | Partitions                  | Tenant list       |                |
| Composite truss       | Fireflow                 | Photos                      | Tenant occupancy  |                |
| Computer output       | Flag Pole                | Pipes                       | Testing           |                |
| Computer program      | Flammability             | Plumbing                    | Tie               |                |
| Concrete              | Floor                    | Prestressing                | Tolerances        |                |
| Connections           | Floor load               | Probability, uncertainty    | Transfer Girders  |                |
| Construction          | Floor slab               | Quality control             | Trid              |                |
| Contract              | Floor system             | Ramp                        | Truss             |                |
| Core beams            | Floor trusses            | Reinforcing (strengthening) | Vestibule         |                |
| Core columns          | Formwork                 | Renovation                  | Vibration         |                |
| Corrosion             | Foundations              | Repair                      | Walls             |                |
| Cracking              | Fracture                 | Research & Development      | Water supply      |                |
|                       |                          |                             | Weather           |                |

PROJECT

THE WORLD TRADE CENTER

TITLE

DRAWING BOOK 20 - STRUCTURAL STEEL DETAILS - GENERAL NOTES

DATE

9-5-68

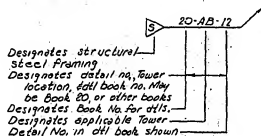
## REVISIONS

10/9/68

GENERAL NOTES

1. The details given in Book 20 define support framing.

2. The locations of such support framing, and detail numbers, are given in Structural Steel Plans, using the following symbol:



3. Dimensions which locate new members in plan, except those dimensions which govern the length of new members, are subject to verification based on final drawings. Connection details include field welds which permit relocations without re-detailing new or existing members.

4. Revisions after fabrication shall conform to current AISC and AWS specifications for building construction, and to project drawings and specifications for the fabricated members being revised.
5. Standard AISC connections shall be used where shown in the drawings, or where member connections are given in kips, or where connection details are not otherwise shown. Bolted connections shall have a minimum of two 3/4"  $\phi$  A325 bolts, unless otherwise shown.
6. All bolts shall be ASTM A325, friction-type, unless otherwise shown in the drawings.
7. All manual welding electrodes shall be E70XX low hydrogen, unless otherwise shown in the drawings.
8. All steel parts shall be ASTM A36, unless otherwise shown in the drawings.
9. The requirements and general notes given in the following drawings apply to the details of Book 20 when pertinent:

1-A2-44  
5-AB1-0  
6-AB1-1

WTC1-1046-LERA



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Structural &amp; Civil Engineers

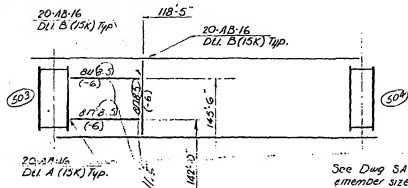
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL 1

DATE 9568

REVISIONS

10-9-68



DESIGNED

DRAWN

REVIEWED

20-A-1

**Structural & Civil Engineers**

TITLE STRUCTURAL STEEL - DETAIL 2

DATE 7-17-68

## REVISIONS

8-29-68  
9-5-68  
10-9-68  
11-20-68

20 AB-16  
Dcl. B (30K)

NOTE: Void 8813 previously scheduled

120.1"

Oct. A

10W21 (F5)

10W21 (F5)

1003

64.70"

35.25"

1004

35.25"

35.25"

Section c-c

See DWG 3A-5 for Member S & member sizes not shown

20 AB-16  
Dcl. B (30K) Typ

S-2 (EL. 274)

Section c-c

S-2 (EL. 274)

## PLAN

C.P.

6" dia. strong pipe

10" x 3/4" x 10" R

CL. 242.00

27 x 1/2 x 0.7

Adopt pipe post anchor bolts as shown on SA-151 except as shown in Sec. C-C

C-C

- Adopt pipe post anchor bolts as shown on SA-151 except as shown in Sec. C-C

Sect. a-a  
DET. A



**DESIGNED**

## PRAYM

REVIEW

20-A-2

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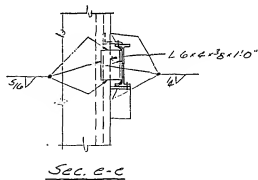
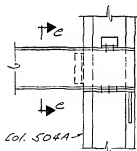
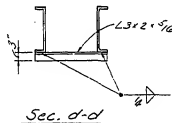
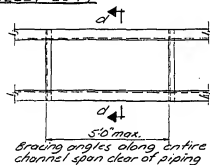
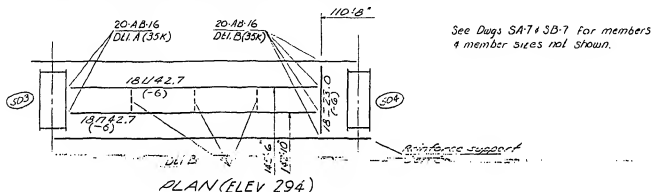
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL 3

DATE 9-5-69

## REVISIONS

10-9-68



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20-AB-3

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PROJECT THE WORLD TRADE CENTER

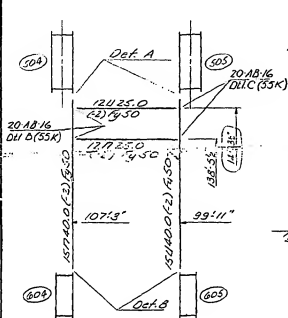
TITLE STRUCTURAL STEEL - DETAIL 4

DATE 9-5-68

## REVISIONS

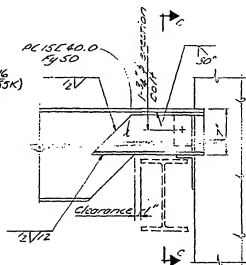
10-9-68

11-10-68



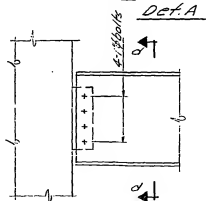
PLAN (Floor 1)

See Drawgs SA-B & SB-B for members  
& member sizes not shown.



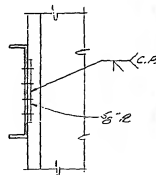
Elevation

Sec. C-C



Elevation

Det. B



Sec. D-D



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DRAWN

REVIEWED

20-AB-4

### Structural & Civil Engineers

PROJECT *THE WORLD TRADE CENTER*

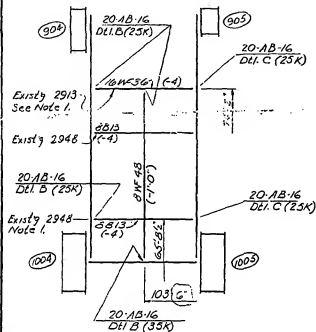
TITLE STRUCTURAL STEEL - DETAIL 5

DATE 9-15-68

## REVISIONS

10-9-68

11-20-68



PLAN (Floor 4)

Notes:

1. Members No 2913 & 2948 are reversed in position from that previously shown in Structural Steel Plans.
2. See Drawgs SA-12 & SB-12 for members & member sizes not shown.



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20-AB-5

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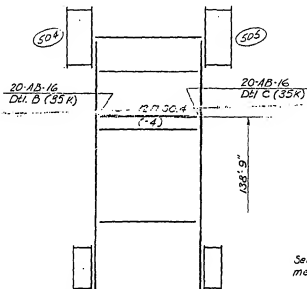
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL G

DATE 9-5-16

REVISIONS

10-9-68



See Dwg's SA-14 & SB-14 for  
members & member sizes not shown.

PLAN (Floor 6)



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DRAWN

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20-AB-6

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TITLE STRUCTURAL STEEL - DETAIL 7

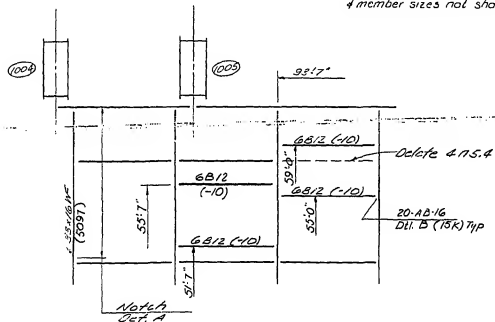
DATE 9-15-68

## REVISIONS

10-9-68

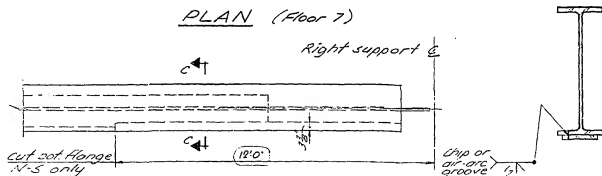
11-20-68

See Dwg's SA-15 & SB-15 for members  
& member sizes not shown.



PLAN (Floor 7)

Right support  $\underline{c}$



Det. A.

Sec. C-C

20-AB-7

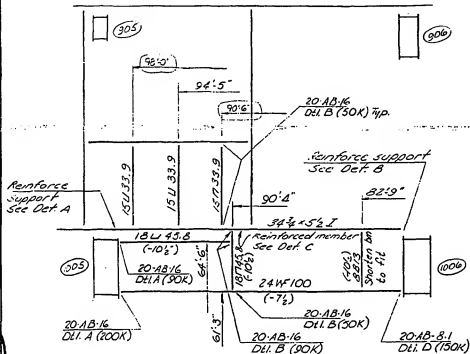


## REVISIONS

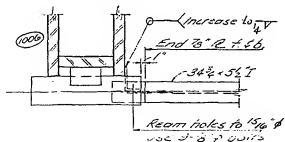
10 - 9 - 68

11-20-68

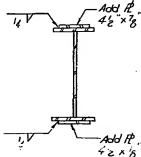
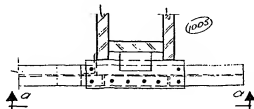
See Dwg's SA-17 & SB-17 for members  
& member sizes not shown.



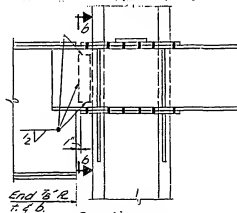
PLAN (Floor 9)



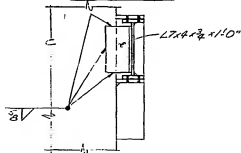
Det. B

 $\det C$ 

PLAN Oct. 4



Section a-a



Det.  $\overline{A}$

20-AB-B



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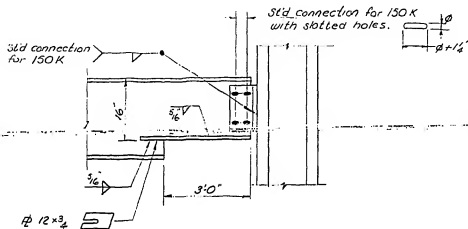
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL B

DATE 9-5-68

REVISIONS

10-9-68

DETAIL D

DESIGNED

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REVIEWED

20-AB-8.1

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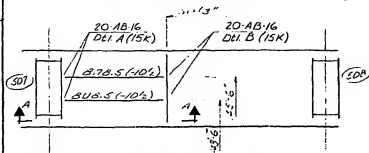
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL 9

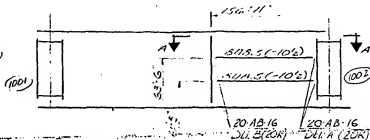
DATE 9-5-68

REVISIONS

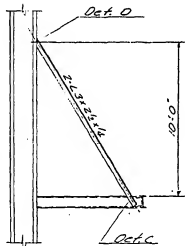
1C-9-GS



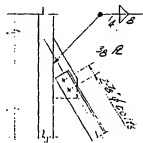
PLAN (Floor 9)



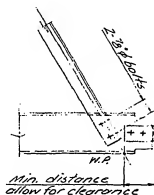
PLAN (Floor 9)



Section A-A



Det. D



Det. C

Note  
See DWG SA-17 for members  
& member sizes not shown.



DESIGNED

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20-A-9

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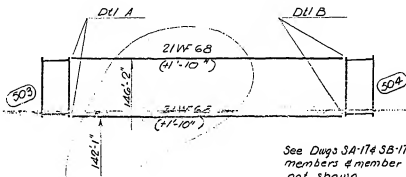
TITLE STRUCTURAL STEEL - DETAIL 10

DATE 9-5-68

## REVISIONS

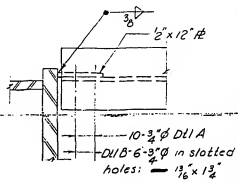
10-9-68

6-24-69



See Dwg's SA-174 SB-17 for  
members & member sizes  
not shown.

PLAN (Floor 9)



Details A & B



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20-AB-10

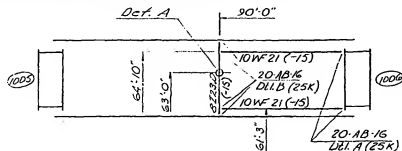
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL II

DATE 9-5-68

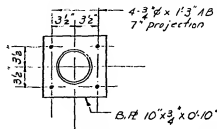
## REVISIONS

10-9-68

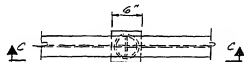


EL. 234

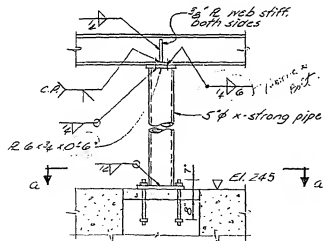
See Dwg SB-4 for  
members & member sizes  
not shown.



Section AA



Detail A



Section C-C



DESIGNED

DRAWN

PERMITTED

20-5-11

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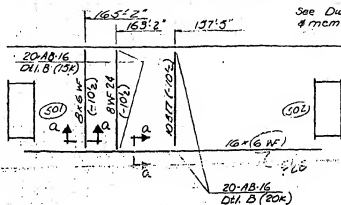
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL 12

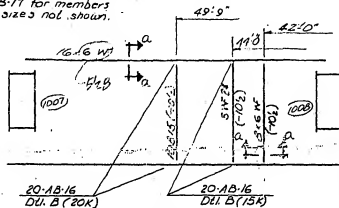
DATE 9-5-68

REVISIONS

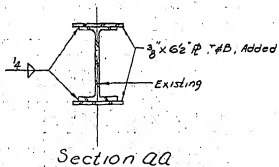
10-9-68



PLAN (Floor 9)



PLAN (Floor 9)



Section AA



DESIGNED

DRAWN

REVIEWED

20-8-12

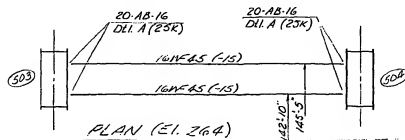
SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTERTITLE STRUCTURAL STEEL - DETAIL 13DATE 9-5-68

REVISIONS

10-9-68



See Dwg's SA-4 & SB-4 for  
members & member sizes  
not given



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20-AB-13

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PROJECT

THE WORLD TRADE CENTER

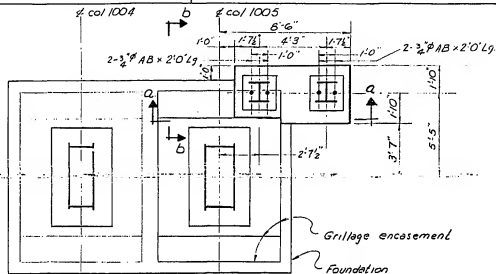
TITLE

STRUCTURAL STEEL &amp; FOUNDATION DETAIL 14

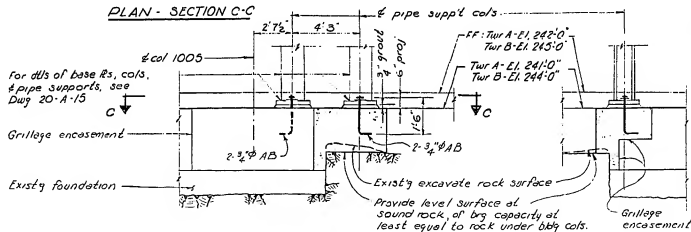
DATE

8-19-68

REVISIONS

9-5-68  
10-9-68

PLAN - SECTION C-C



SECTION C-C

SECTION B-B

20-AB-14



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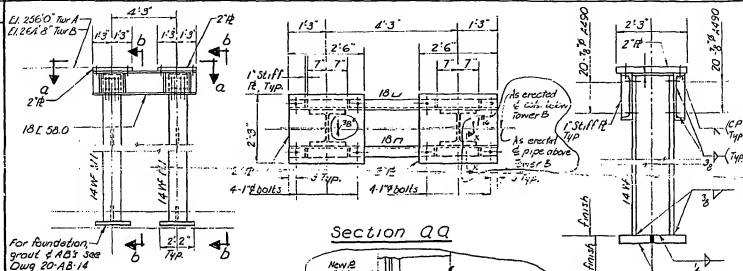
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL 15

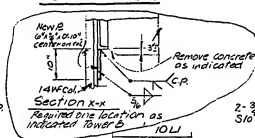
DATE 9-5-68

## REVISIONS

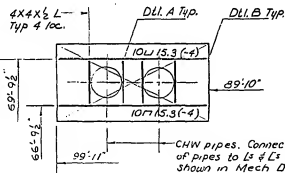
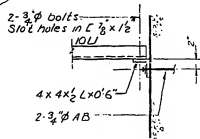
10-9-68  
11-20-68  
1-31-69  
3-12-71



## Section QQ



## Section bb



## Detail A

## Detail B

PLAN AT ELEV. 264' TOWER A

20-AB-15



DESIGNED

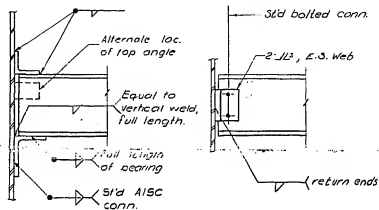
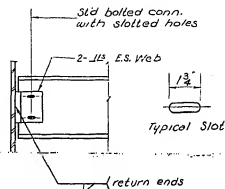
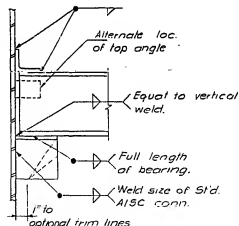
DRAWN

REVIEWED

## REVISIONS

9-27-68

10-9-68

DETAIL AUnstiffened seatDETAIL BDETAIL CDETAIL A  
Stiffened seatNotes.

1. All connections are standard AISC connections for the reactions shown in Plans, Details of Book 20, or in Structural Steel Plans, except as noted.
2. Cope beam flanges where required.



DESIGNED

DRAWN

REVIEWED

X-AB-16

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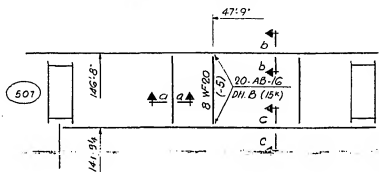
Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

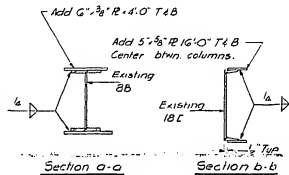
TITLE STRUCTURAL STEEL - DETAIL 20

DATE 10-9-68

## REVISIONS

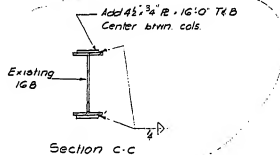
11-22-68  
3-21-69

Plan - Floor 25, 59

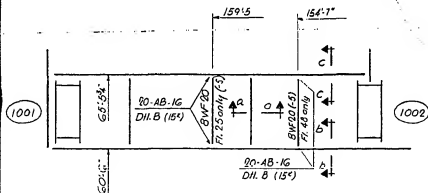


Section a-a

Section b-b



Section c-c

See Structural Steel Drawings for members  
and member sizes not shown.

Plan - Floor 25, 48



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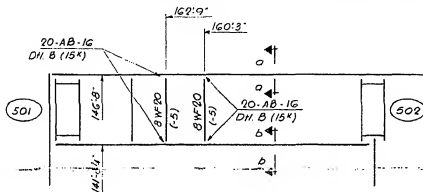
20-A-20

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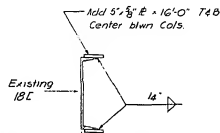
TITLE STRUCTURAL STEEL - DETAIL 21

DATE 10-9-68

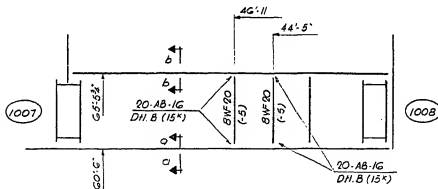
## REVISIONS

11-22-68  
3-21-69

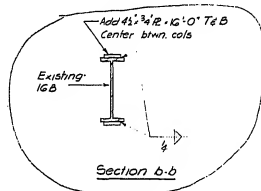
Plan - Floors 25, 59



Section a-a



Plan - Floor 25



Section b-b

See Structural Steel Drawings for members  
and member sizes not shown.

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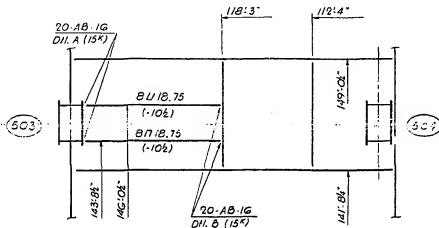
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL 50

DATE 9-25-68

## REVISIONS

10-9-68



See Dwg. 5A-B3 and 5B-B3 for members  
and member sizes not shown.

Plan - Floor 75



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TITLE

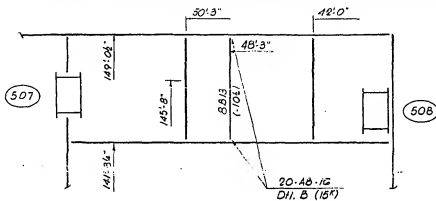
STRUCTURAL STEEL - DETAIL 51

DATE

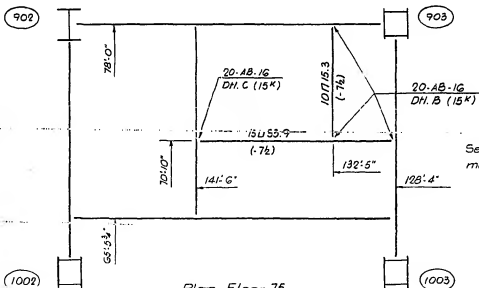
9-25-68

REVISIONS

10-9-68



Plan - Floor 75



Plan - Floor 75

See Dwg. SA-83 for members and member sizes not shown.

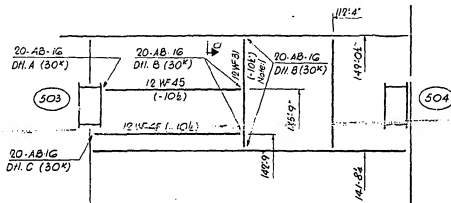


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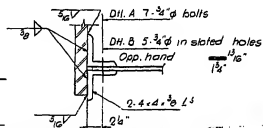
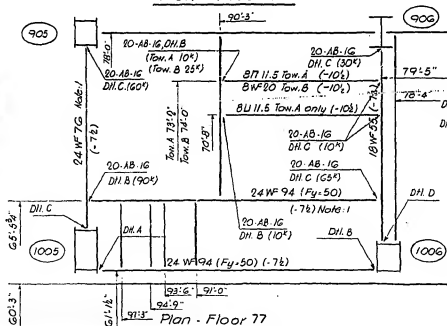
20-A-51

## REVISIONS

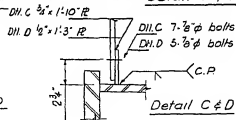
10-9-68



Plan - Floor 77



Detail A & B



Detail C & D

- Note:
1. Delete member previously shown at this location on Dwg. SA-85 and SB-85
  2. See Dwg. SA-85 and SB-85 for members and member sizes not shown.

20-48-53



**SEPTEMBER**

**References**

**REGISTRATION**

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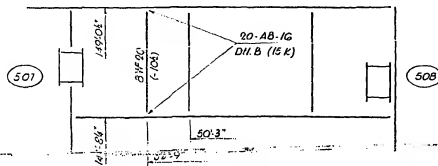
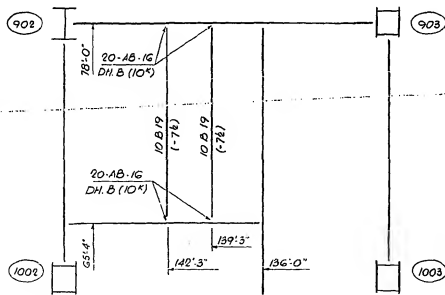
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TITLE STRUCTURAL STEEL - DETAIL 54

DATE 9.25.68

## REVISIONS

10-9-68

Plan - Floor 77Plan - Floor 77

See Dwg. SA-85 for members and  
member sizes not shown.



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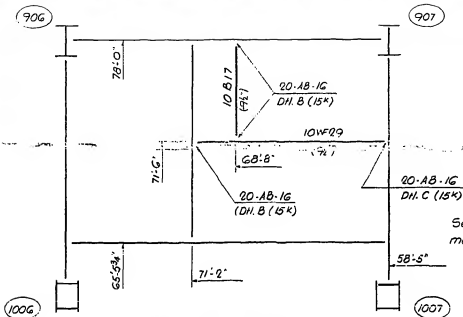
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TITLE STRUCTURAL STEEL - DETAIL 55

DATE 11-27-68

REVISIONS

20-AB-1G  
DH. C (15K)

See Dwg. 5B-83 for members and  
member size not shown.

58'-5"

Plan - Floor 15

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TITLE

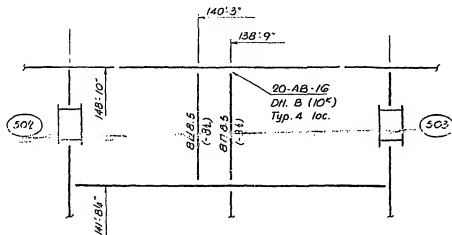
STRUCTURAL STEEL - DETAIL 60

DATE

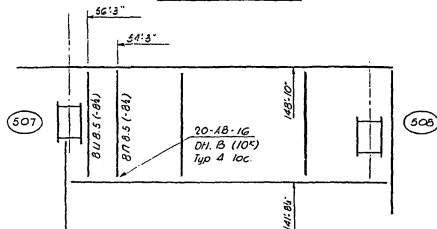
9.27.68

REVISIONS

10.9.68



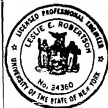
Plan - Floors 78, 82



Plan - Floor 78

See Structural Steel Plans for members  
and member sizes not shown.

20-A-60



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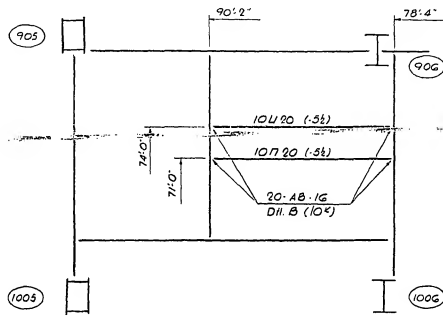
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PROJECT  
THE WORLD TRADE CENTERTITLE  
STRUCTURAL STEEL - DETAIL G1DATE  
9-27-68

REVISIONS

10-9-68



Columns are shown  
at Floor 78

See Structural Steel Plans for  
members and member sizes not shown.

Plan - Floors 78, 84, 91, 93, 100



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20-A-G1

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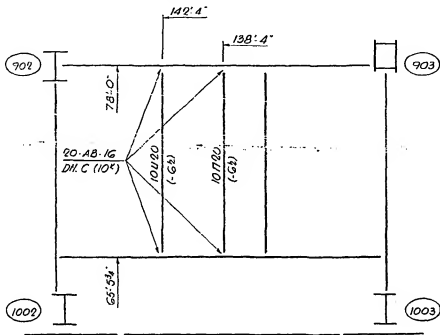
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TITLE STRUCTURAL STEEL - DETAIL G2

DATE 9-27-68

REVISIONS

10-9-68

Plan - Floor 78

See Dwg. SA-86 for members and  
member sizes not shown.



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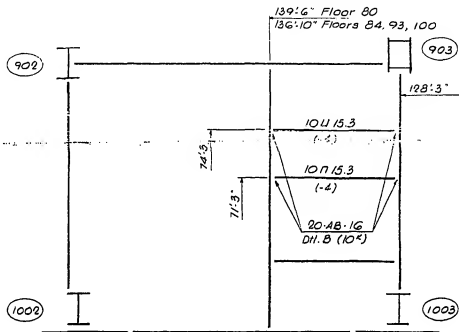
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL G3

DATE 9-27-68

## REVISIONS

10-9-68



Columns are shown  
at Floor 80

Plan - Floors 80, 84, 93, 100

See Structural Steel Plan for members  
and member sizes not shown.



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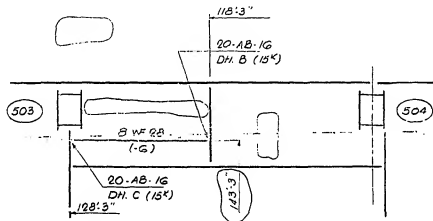
20-A-G3

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PROJECT *THE WORLD TRADE CENTER*TITLE *STRUCTURAL STEEL - DETAIL G4*DATE *9-27-68*

## REVISIONS

*10-9-68**11-27-68**6-24-69*Plan - Floor 81

See Structural Plan for members and  
member sizes not shown



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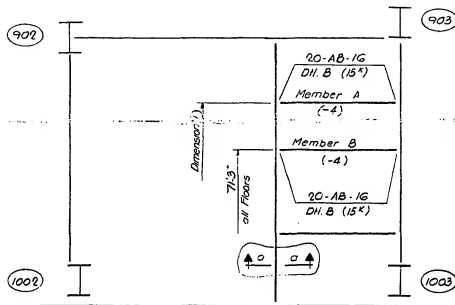
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL G5

DATE 9-27-68

## REVISIONS

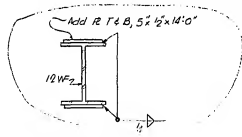
10-9-68  
11-22-68  
3-21-69



| Floor | Member A | Member B | Dim. (1) |
|-------|----------|----------|----------|
| 50    | 10WF25   | 10WF25   | 74'3"    |
| 58    | 10WF25   | 10WF21   | 74'3"    |
| 59    | 10WF25   | 10WF25   | 74'3"    |
| 81    | 10WF25   | 10WF25   | 74'3"    |
| 91    | 10WF25   | 10WF25   | 74'3"    |
| 92    | 10WF25   | 12WF31   | 75'3"    |

Columns shown  
at floor 81

Plan - Floors 50, 58, 59, 81, 91 & 92



Section a-a  
Floors 50, 59 only

See Structural Steel Plan for  
members and member sizes not shown.

20-A-G5



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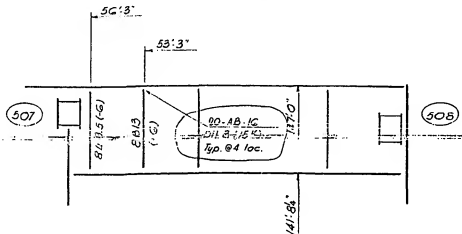
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL - DETAIL C.C.

DATE 9-27-68

REVISIONS

10-9-68

Plan - Floor 82

See Dwg. SA-90 for member  
and member sizes not shown.

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20-A-66

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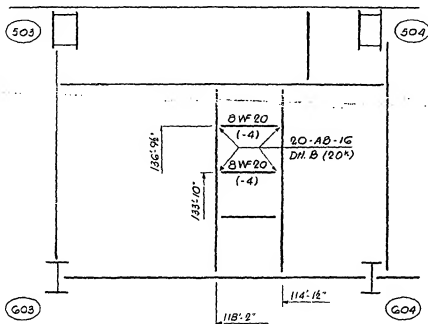
TITLE STRUCTURAL STEEL - DETAIL G7

DATE 9-27-68

## REVISIONS

10-9-68

11-27-68

Plan - Floor 83

See Structural Plans for members and member sizes not shown.



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20 (AB) G7

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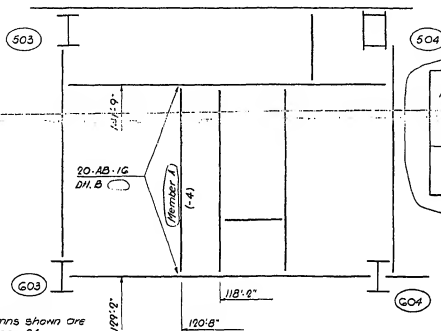
TITLE STRUCTURAL STEEL - DETAIL G8

DATE 9-27-68

## REVISIONS

10-9-68

11-27-68



| Tower | Floors         | Member A | Connection Reaction |
|-------|----------------|----------|---------------------|
| A     | 84, 91, 93, 99 | BB13     | 10*                 |
| B     | 84             | 8WF40    | 20*                 |
|       | 91             | 8WF28    | 15*                 |
|       | 92             | 8WF40    | 20*                 |

## PLAN

Tower A - Floors 84, 91, 93, 99

Tower B - Floors 84, 91, 92

See Structural Steel Plans for members and member sizes not shown.



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20 (AB) 68

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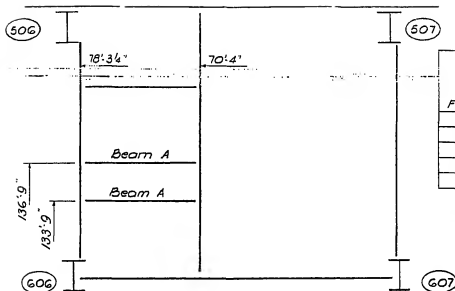
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TITLE STRUCTURAL STEEL - DETAIL G9

DATE 9-27-68

REVISIONS

10-9-68



| Floor | Beam A   |                                 |
|-------|----------|---------------------------------|
|       | Size     | connections<br>20-AB-16, D.H. B |
| 84    | 12 B 19  | 15 <sup>K</sup>                 |
| 91    | 8 B 13   | 15 <sup>K</sup>                 |
| 92    | 12 WF 27 | 25 <sup>K</sup>                 |
| 93    | 8 C 11.5 | 10 <sup>K</sup>                 |
| 99    | 8 C 11.5 | 10 <sup>K</sup>                 |

Plan - Floors 84, 91, 92, 93, 99

See Structural Steel Plan for  
members and member sizes  
not shown.



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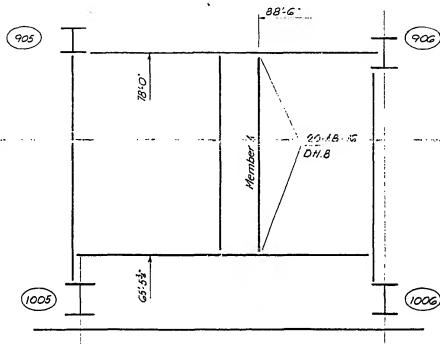
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TITLE STRUCTURAL STEEL - DETAIL 70

DATE 11-27-68

REVISIONS



| Floor | Member<br>A | Connection<br>Reaction |
|-------|-------------|------------------------|
| 91    | 10WF25      | 10 <sup>k</sup>        |
| 92    | 10WF45      | 80 <sup>k</sup>        |

Plan - Floors 91, 92

See Structural Steel Plans for members  
and member sizes not shown.



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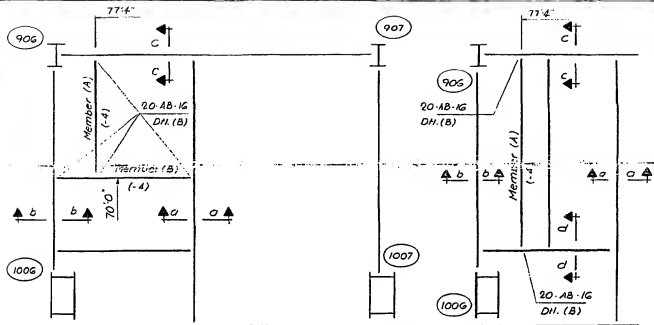
PROJECT THE WORLD TRADE CENTER

TITLE STRUCTURAL STEEL DETAIL 71

DATE 11-22-68

REVISIONS

3-21-69



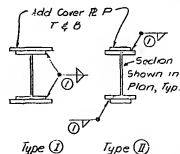
Plan - Floors 50, 58, 74

Plan - Floor 59



See Structural Steel  
Plans for members  
and member sizes  
not shown.

| Floor | Member A |                  | Member B |                  | Section | Cover R P |             |          |
|-------|----------|------------------|----------|------------------|---------|-----------|-------------|----------|
|       | Section  | End<br>Reactions | Section  | End<br>Reactions |         | Type      | Size        | Weld (1) |
| 50    | 8 WF 20  | 20.0 K           | 8 WF 17  | 15.0 K           | a-a     | II        | 5 x 1/4     | 1/4      |
|       |          |                  |          |                  | b-b     | II        | 3 x 1/2     | 1/4      |
|       |          |                  |          |                  | c-c     | II        | 5 x 1/2     | 5/16     |
| 58    | 8 WF 17  | 15.0 K           | 8 WF 17  | 10.0 K           | a-a     | none      |             |          |
|       |          |                  |          |                  | b-b     | II        | 3 x 1/2     | 1/4      |
|       |          |                  |          |                  | c-c     | none      |             |          |
| 59    | 12 WF 36 | 25.0 K           | —        | —                | a-a     | II        | 5 x 1/4     | 1/4      |
|       |          |                  |          |                  | b-b     | I         | 5 1/2 x 1/4 | 1/4      |
|       |          |                  |          |                  | c-c     | II        | 5 x 1/2     | 5/16     |
| 74    | 8 WF 17  | 15.0 K           | 8 WF 17  | 10.0 K           | d-d     | II        | 3 x 3/4     | 5/8      |
|       |          |                  |          |                  | none    | —         | —           | —        |



Sections a-a thru d-d

20-B-71

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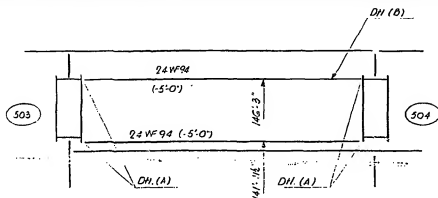
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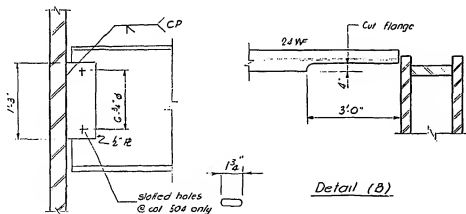
TITLE STRUCTURAL STEEL DETAIL 72

DATE 11-22-68

REVISIONS



Plan - Floor 46



Detail (A)

Detail (B)

See Structural Steel Plans for members  
and member sizes not shown.



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TITLE

STRUCTURAL STEEL DETAIL 73

DATE

4-9-69

REVISIONS

Concrete pad for  
pipe support See  
F&S Mfg. Corp.  
drawing 30-CHN-1

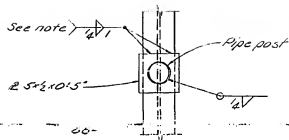
Remove concrete  
to expose lower  
surface of sot flange.  
After welding provide  
offset also both sides of  
post before patching

4- $\frac{3}{4}$ " anchor bolts  
(A307), hex nut  
each end

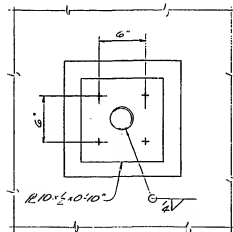
Note:  
Before welding or  
grouting, drive  
shims to provide  
tight bearing of  
SB on post

Provide 2'-0" x 2'-0"  
pier to existing rock.  
Engineer to inspect  
rock surface before  
concrete is cast.

Elevation



Section b-b



Section a-a



H. Roet

H. Roet

H. Roet

20-A-73

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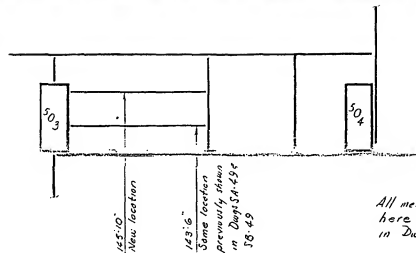
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TITLE STRUCTURAL STEEL - DETAIL 75

DATE 8-19-69

REVISIONS



All member sizes & locations not shown  
here are same as originally shown  
in Dwg's SA-49 & SB-49

PLAN FLOOR 41

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20-AB-75

4431-0001-1051

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