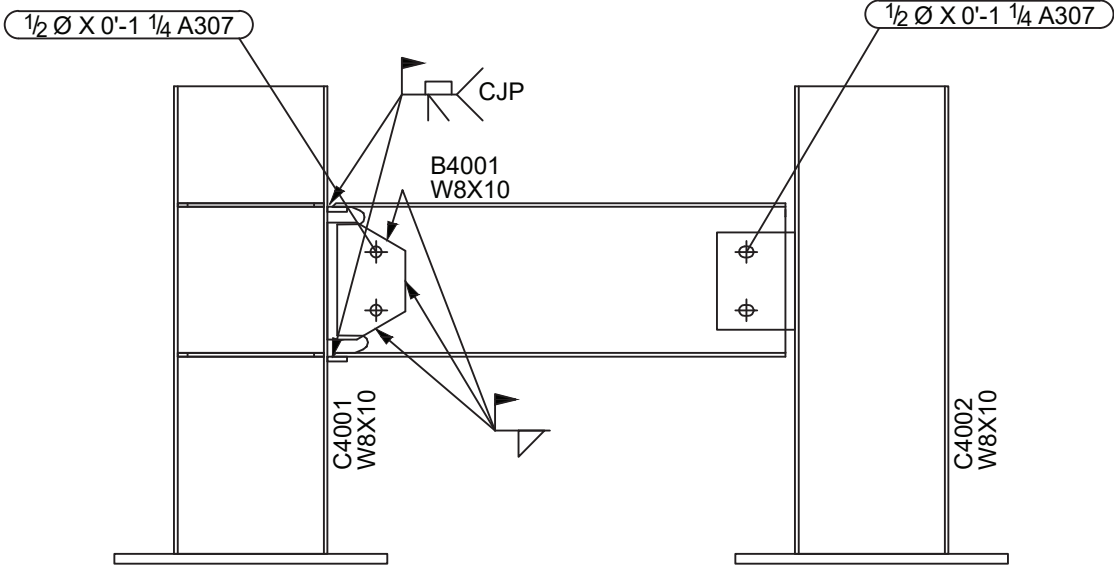


# WUF-W + SHEAR TAB BEAM TO COLUMN CONNECTIONS ACTIVITY



Proportions of this model WUF-W connection vary slightly from the dimensional requirements of ANSI/AISC 358.

WORKFORCE DEVELOPMENT  
[aisc.org/IBuiltThat](http://aisc.org/IBuiltThat)



Smarter.  
Stronger.  
Steel.

# WUF-W + SHEAR TAB BEAM TO COLUMN CONNECTIONS ACTIVITY

## ACTUAL BILL OF MATERIALS

- (1) B4001 beam
- (1) C4001 column
- (4) P4003 column web stiffeners
- (1) C4002 column
- (2) P4001 base plates
- (2) P4002 shear tab
- (4)  $\frac{1}{2}$   $\times$   $1\frac{1}{2}$ " long bolts, nuts, and washers
- (2) 4" long ceramic backer bar
- (2)  $\frac{3}{4}$   $\times$  3" long wood quarter-round – paint grey to simulate weld metal
- (4)  $\frac{3}{4}$   $\times$  4" long wood quarter-round – paint grey to simulate weld metal
- (1)  $\frac{3}{4}$   $\times$  5" long wood quarter-round – paint grey to simulate weld metal
- (2)  $\frac{3}{4}$   $\times$   $6\frac{1}{2}$ " long wood quarter-round – paint grey to simulate weld metal
- (2)  $\frac{1}{16}$   $\times$   $\frac{1}{2}$   $\times$  3" long flexible magnetic tape
- (4)  $\frac{1}{16}$   $\times$   $\frac{1}{2}$   $\times$  4" long flexible magnetic tape
- (1)  $\frac{1}{16}$   $\times$   $\frac{1}{2}$   $\times$  5" long flexible magnetic tape
- (2)  $\frac{1}{16}$   $\times$   $\frac{1}{2}$   $\times$   $6\frac{1}{2}$ " long flexible magnetic tape

## FABRICATION

- Fabricate all individual pieces
- Weld columns and shear tabs to base plates as shown in the shop document
- Weld (2) lower column web stiffeners as shown in the shop document only
- Weld underside of (2) top column web stiffeners only, leaving top side clear for demonstration
- Paint wood components grey, if you prefer
- Attach magnetic tape to corresponding ceramic backer bars or quarter-round pieces

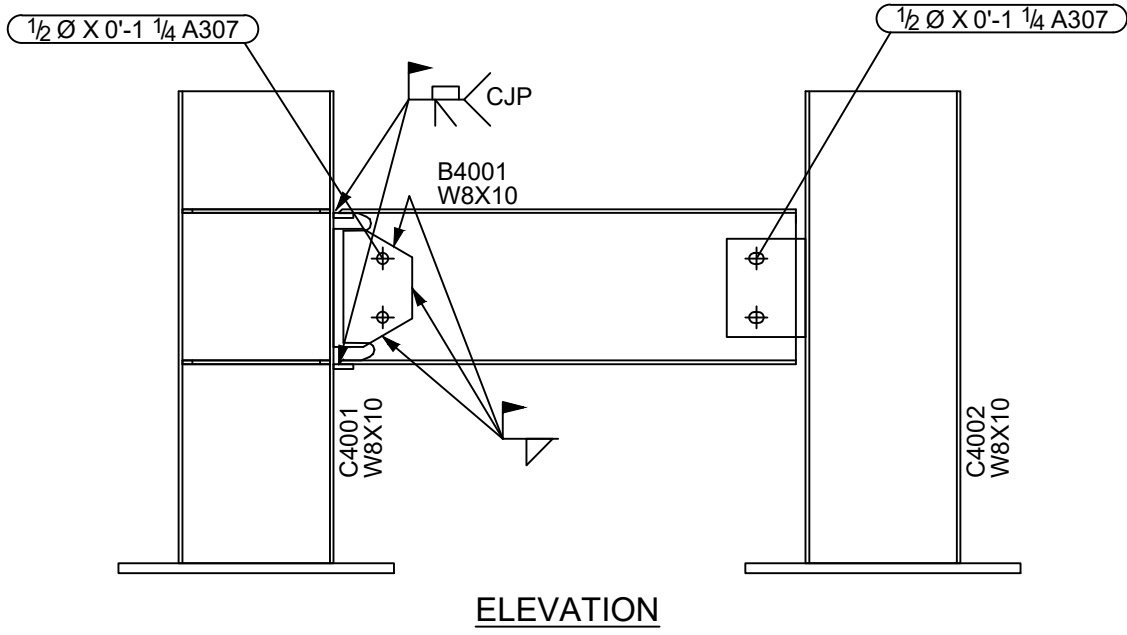
## ACTIVITY

- Start – The two columns should be placed around 2 ft apart. Orient the beam with the beveled flanges near the column with the web stiffeners and the plain end near the column with just the shear tab.
- This activity will require two, and possibly three, pairs of hands
- Place the web stiffeners at the marked locations within the column flanges
- Add the welds to hold the stiffeners in place
- Hold up the WF beam to align the bolt holes in the beam with the bolt holes of the shear tabs
- Install and finger-tighten the bolts
- Add the ceramic backer bars below the bevels
- Add the welds in the bevels
- When the activity and the conversation are complete, undo the actions for the next participant

## HIGHLIGHTS

- Note which actions occur in the shop and which occur on a job site
- Stiffeners and miscellaneous connection pieces are installed when the column is lying on its side, so this isn't exactly how a column would be fabricated in a shop
- Note that the full penetration welds are set to be performed from the top and not the bottom to make welding safer and easier
- Explain the functional difference between the fixed (can not rotate) and pinned (can rotate) connections
- Note how much more work (labor) is involved in the fixed connection compared to the pinned connection






**ELEVATION**

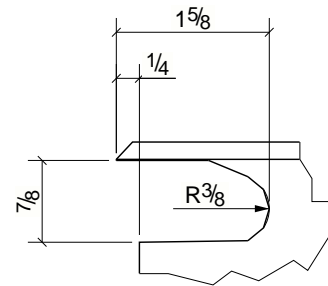
| DATE       | NO. | DESCRIPTION                     | BY |
|------------|-----|---------------------------------|----|
| 02/08/2024 | 0   | ISSUED FOR CONSTRUCTION (IFC04) | CH |
| 02/06/2024 | A   | ISSUED FOR APPROVAL (IFA04)     | CH |

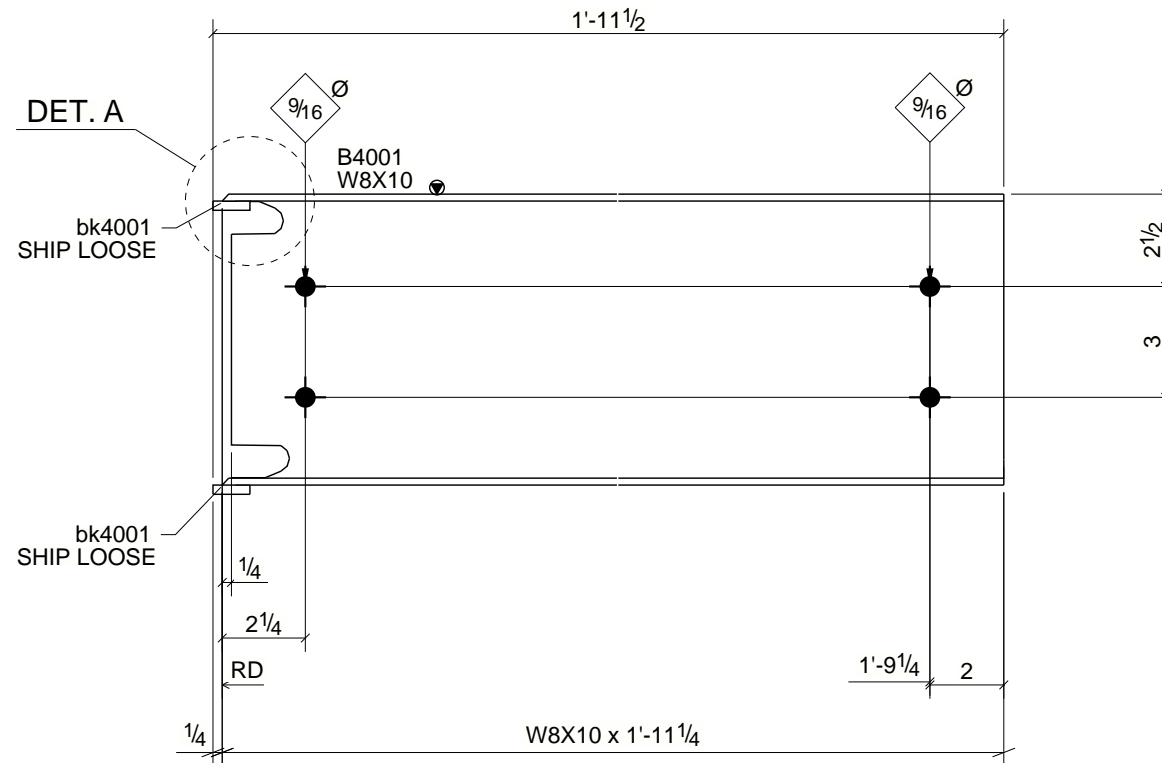
|   |  |   |                              |
|---|--|---|------------------------------|
| CONTACT US IF YOU HAVE ANY OF THESE PROBLEMS:<br>• DAMAGED STEEL CONNECTIONS<br>• IMPROPER FIT<br>• FIELD MODIFICATIONS<br>• QUESTIONS ABOUT THESE DWGS |  |  LENEX STEEL CO.<br>450 E. 96TH STREET, SUITE 100<br>INDIANAPOLIS, INDIANA<br>317.818.1622   317.818.1625 (Fax) |                              |
| CALL OUR PROJECT MANAGER:<br><b>LENEX</b><br>OFFICE PHONE: (317) 818-1622<br>CELL PHONE: 317.818.1622   |  | PROJECT NAME<br><b>WORKFORCE ZONE ACTIVITIES</b>  |                              |
| ELECTRODES<br>E70XX UNO   |  | LOCATION<br><b>SAN ANTONIO, TX</b>  |                              |
| WELDS<br>1/4" FILLET UNO  |  | CONTRACTOR<br><b>AISC W/ LENEX STEEL COMPANY</b>  |                              |
| OPEN HOLES<br>13/16" Ø UNO  |  | ARCHITECT   |                              |
| BOLTS<br>A325N_TC UNO   |  | DESCRIPTION<br><b>ACTIVITY #4</b>   |                              |
|   |  | DRAWN BY<br>CH 02/01/2024   | JOB No.<br><b>NASCC 2024</b> |
|   |  | CHECK BY<br>KE 02/01/2024   | DRG No.<br><b>E4</b>         |
|   |  |   | REV<br><b>0</b>              |

| QTY. | SITE BOLTS      | LENGTH |
|------|-----------------|--------|
| 4    | 1/2"Ø A307 BOLT | 1 1/2" |

| SEQ | QTY |
|-----|-----|
| 4   | 1   |



DETAIL A  
(TYPICAL)



SHOP NOTE:  
AISC WORKFORCE PROJECT WOULD PREFER CERAMIC BACKERS AND WANTS THEM ATTACHED TO BEAM FOR DEMONSTRATION PURPOSES. SHIP HOW LENEXFAB FEELS BEST TO ENSURE THIS WORKS

### ONE - BEAM - B4001

W | 7 7/8" x 3/16"  
F | 4" x 3/16"

|            |                             |    |
|------------|-----------------------------|----|
| 02/06/2024 | ISSUED FOR APPROVAL (IFA04) | CH |
| DATE       | DESCRIPTION                 | BY |

#### BILL OF MATERIAL

| Qty Ea. | Qty Tot | Piece Mark | Description  | Length     | Weight Total | Remarks | Adv Mill # | Steel Grade |
|---------|---------|------------|--------------|------------|--------------|---------|------------|-------------|
|         | 1       | B4001      | BEAM         |            | 19           |         |            |             |
| 1       | 1       |            | W8X10        | 1'-11 1/4" | 19           |         |            | A992        |
| 2       | 2       | bk4001     | PL 1/4" X 1" | 0'-5"      | 0            | CERAMIC |            | Misc_Un***  |

ALL WELDING TO BE DONE IN ACCORDANCE WITH ANSI/AWS D1.1 STRUCTURAL WELDING CODE - STEEL, OF LATEST ISSUE

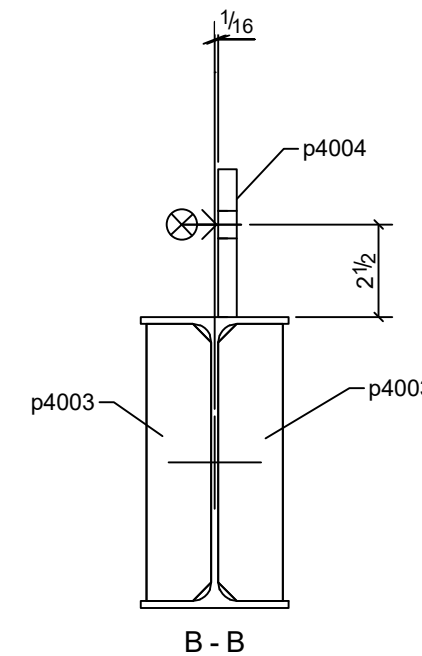
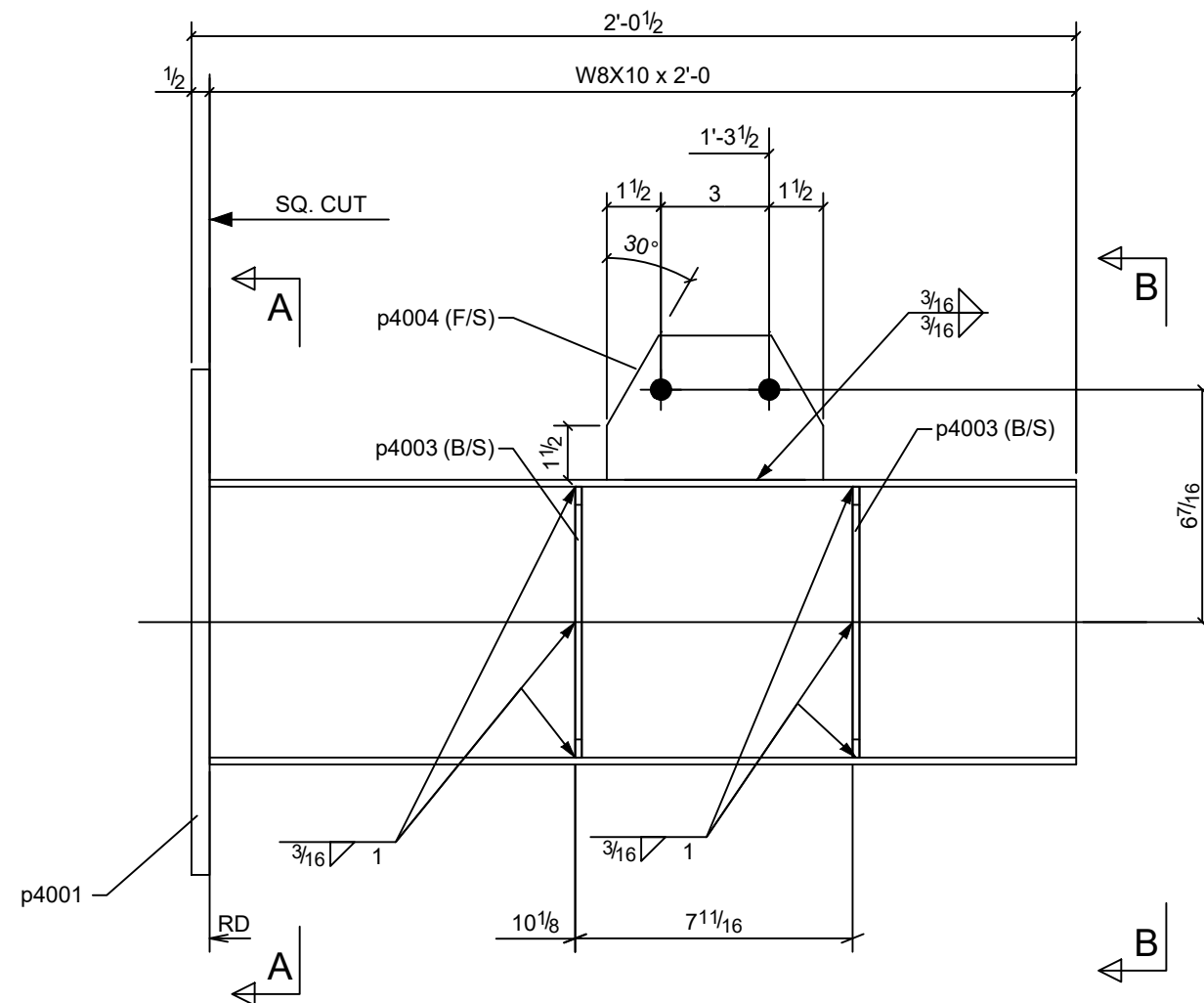
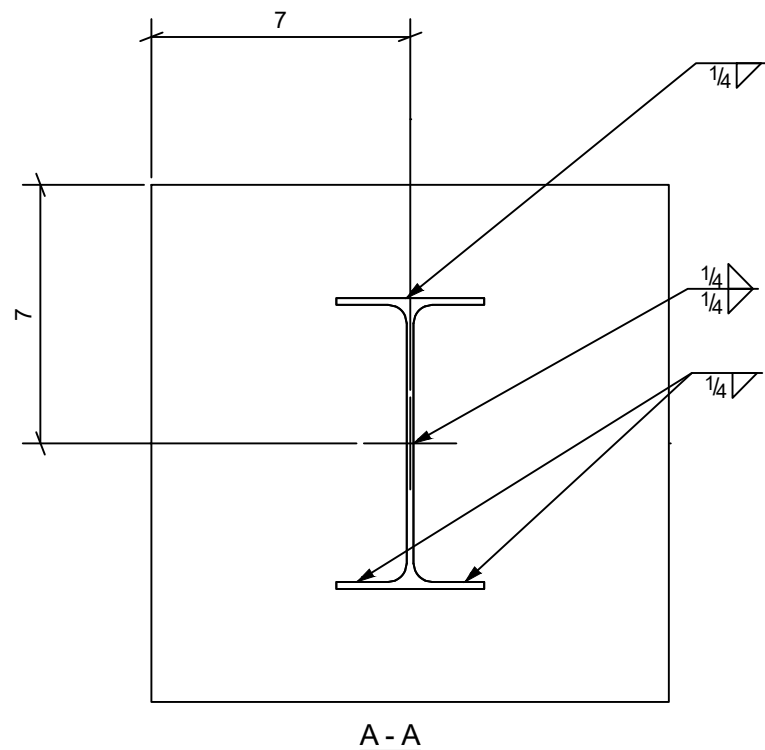
|   |
|---|
| PROJECT NAME<br>WORKFORCE ZONE ACTIVITIES |
| LOCATION<br>SAN ANTONIO, TX               |
| CONTRACTOR<br>AISC W/ LENEX STEEL COMPANY |
| ARCHITECT                                 |

|                          |   |                              |
|--------------------------|---|------------------------------|
|                          | <b>LENEX STEEL CO.</b><br>450 E. 96TH STREET, SUITE 100<br>INDIANAPOLIS, INDIANA<br>317.818.1622   317.818.1255 (Fax) |                              |
|                          | DESCRIPTION<br><b>BEAM</b>  | JOB No.<br><b>NASCC 2024</b> |
| DRN BY<br>CH 02/01/2024  | DRG No.<br><b>B4001</b>   |                              |
| CHKD BY<br>CH 02/01/2024 |   |                              |

Tekla Structures

| QTY. | SITE BOLTS | LENGTH |
|------|------------|--------|
|------|------------|--------|

| SEQ | QTY |
|-----|-----|
| 4   | 1   |



### ONE - COLUMN - C4001

|   |                |
|---|----------------|
| W | 7 7/8" x 3/16" |
| F | 4" x 3/16"     |

#### BILL OF MATERIAL

| Qty Ea. | Qty Tot | Piece Mark | Description    | Length    | Weight Total | Remarks | Adv Mill # | Steel Grade |
|---------|---------|------------|----------------|-----------|--------------|---------|------------|-------------|
|         | 1       | C4001      | COLUMN         |           | 52           |         |            |             |
| 1       | 1       |            | W8X10          | 2'-0"     | 20           |         |            | A992        |
| 1       | 1       | p4001      | PL1/2"X14"     | 1'-2"     | 28           |         |            | A572-50     |
| 4       | 4       | p4003      | PL3/16"X1 3/4" | 0'-7 1/2" | 3            |         |            | A572-50     |
| 1       | 1       | p4004      | PL1/2"X4"      | 0'-6"     | 1            |         |            | A572-50     |

ALL WELDING TO BE DONE IN ACCORDANCE WITH ANSI/AWS D1.1 STRUCTURAL WELDING CODE - STEEL, OF LATEST ISSUE

PROJECT NAME  
WORKFORCE ZONE ACTIVITIES

LOCATION  
SAN ANTONIO, TX

CONTRACTOR  
AISC W/ LENEX STEEL COMPANY

ARCHITECT

HOLES 13/16"Ø BOLTS A325N\_TC UNO

COPIES 1/2" RADIUS UNO

AESS CAT. UNO

PAINT UNP UNO

|            |                                 |             |
|------------|---------------------------------|-------------|
| 02/08/2024 | ISSUED FOR CONSTRUCTION (IFC04) | CH          |
| 02/06/2024 | ISSUED FOR APPROVAL (IFA04)     | CH          |
| DATE       | NO.                             | DESCRIPTION |
|            |                                 | BY          |



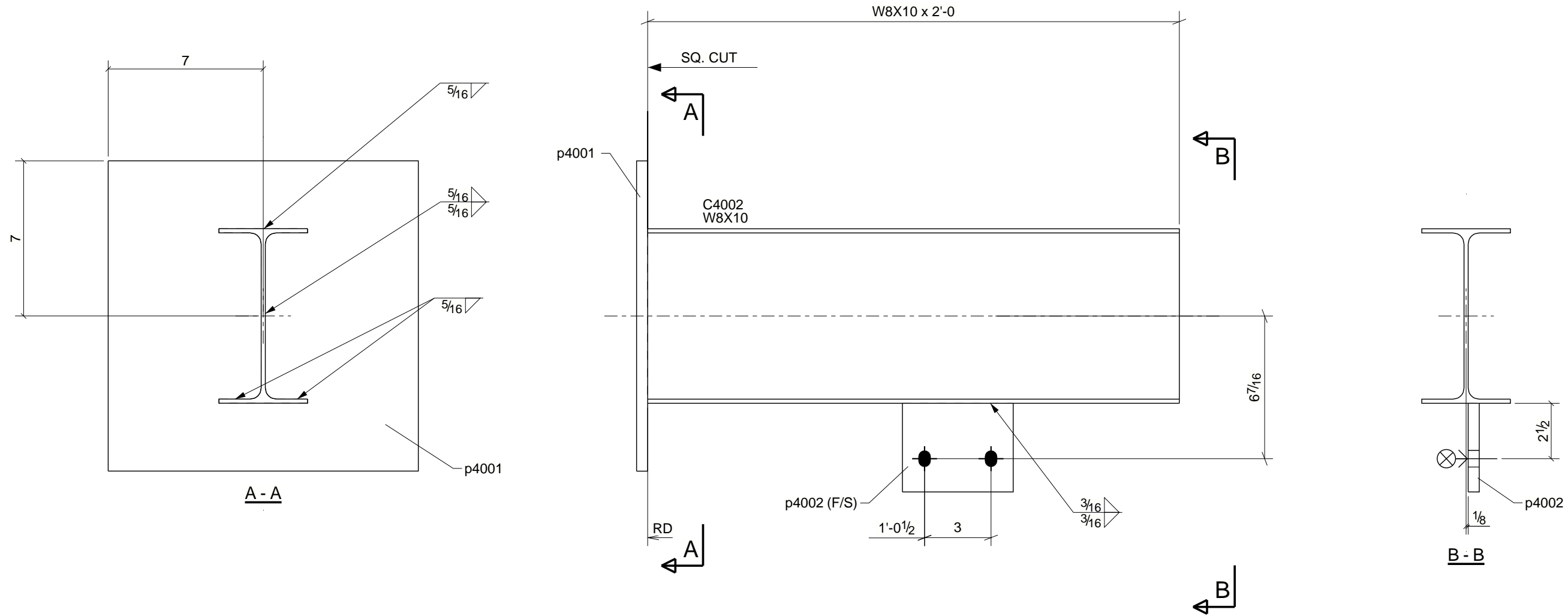
LENEX STEEL CO.  
450 E. 96TH STREET, SUITE 100  
INDIANAPOLIS, INDIANA  
317.818.1622 | 317.818.1255 (Fax)

|             |                          |                       |
|-------------|--------------------------|-----------------------|
| DESCRIPTION | DRN BY<br>CH 02/01/2024  | JOB No.<br>NASCC 2024 |
| COLUMN      | CHKD BY<br>CH 02/01/2024 | DRG No.<br>C4001      |

Tekla Structures

|      |            |        |
|------|------------|--------|
| QTY. | SITE BOLTS | LENGTH |
|------|------------|--------|

|     |     |
|-----|-----|
| SEQ | QTY |
| 4   | 1   |



### ONE - COLUMN - C4002

|   |                |
|---|----------------|
| W | 7 7/8" x 3/16" |
| F | 4" x 3/16"     |

#### BILL OF MATERIAL

| Qty Ea. | Qty Tot | Piece Mark | Description | Length | Weight Total | Remarks | Adv Mill # | Steel Grade |
|---------|---------|------------|-------------|--------|--------------|---------|------------|-------------|
| 1       | 1       | C4002      | COLUMN      |        | 50           |         |            |             |
| 1       | 1       |            | W8X10       | 2'-0"  | 20           |         |            | A992        |
| 1       | 1       | p4001      | PL1/2"X14"  | 1'-2"  | 28           |         |            | A572-50     |
| 1       | 1       | p4002      | PL1/2"X4"   | 0'-5"  | 3            |         |            | A572-50     |

ALL WELDING TO BE DONE IN ACCORDANCE WITH ANSI/AWS D1.1 STRUCTURAL WELDING CODE - STEEL, OF LATEST ISSUE

PROJECT NAME  
WORKFORCE ZONE ACTIVITIES

LOCATION  
SAN ANTONIO, TX

CONTRACTOR  
AISC W/ LENEX STEEL COMPANY

ARCHITECT

HOLES 13/16"Ø BOLTS A325N\_TC UNO

COPIES 1/2" RADIUS UNO

AESS CAT. UNO

PAINT UNP UNO

|            |                             |    |
|------------|-----------------------------|----|
| 02/06/2024 | ISSUED FOR APPROVAL (IFA04) | CH |
| DATE       | DESCRIPTION                 | BY |

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450 E. 96TH STREET, SUITE 100  
INDIANAPOLIS, INDIANA  
317.818.1622 | 317.818.1255 (Fax)

|             |               |            |
|-------------|---------------|------------|
| DESCRIPTION | DRN BY        | JOB No.    |
| COLUMN      | CH 02/01/2024 | NASCC 2024 |
|             | CHKD BY       | DRG No.    |
|             | CH 02/01/2024 | C4002      |