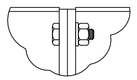
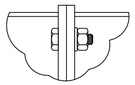
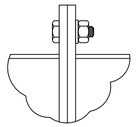
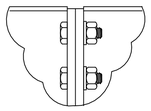
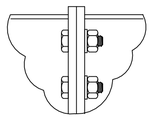
CONNECTION CODES
(FOR TOP AND BOTTOM BOLT PATTERN)

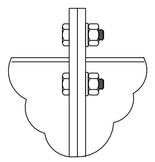

CONNECTION 1B, 1I OR 1P

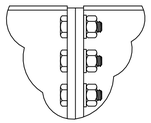

CONNECTION 1F

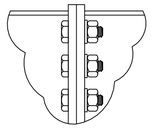

CONNECTION 1E

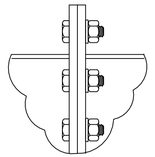

CONNECTION 2B, 2I OR 2P

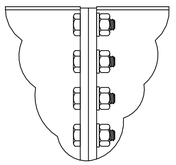

CONNECTION 2F

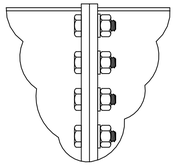

CONNECTION 2E

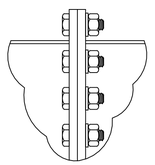

CONNECTION 3B, 3I OR 3P

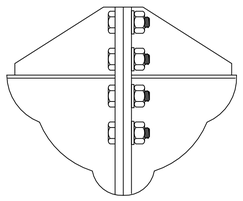

CONNECTION 3F


CONNECTION 3E


CONNECTION 4B, 4I OR 4P


CONNECTION 4F


CONNECTION 4E


CONNECTION 4X

CONNECTION CODE FORMAT

4 E / 2 E H

- 4 — CONNECTION DESIGNATION
- E — BLANK = STANDARD CONNECTION; H = HEAVY CONNECTION
- / — BOTTOM CONNECTION CODE
- 2 — BOTTOM QUANTITY OF BOLT ROWS
- E — CONNECTION DESIGNATION
- H — BLANK = STANDARD CONNECTION; H = HEAVY CONNECTION

TOP CONNECTION CODE

TOP QUANTITY OF BOLT ROWS

CONNECTION CODE DESCRIPTION

B = THIS DESCRIPTION CODE IS USED TO DEFINE SHEAR CONNECTIONS. BOLTS ARE LOCATED INSIDE THE TOP FLANGE AND CONNECTION PLATE IS RECESSED 1/8" BELOW THE TOP FLANGE. CONNECTION PLATE LENGTH MUST BE A MINIMUM OF HALF THE RAFTER WEB DEPTH AND SHALL NOT EXCEED THE RAFTER TOTAL DEPTH.

E = THIS DESCRIPTION CODE IS USED TO DEFINE MOMENT CONNECTIONS. BOLTS ARE LOCATED WITH ONE SET OUTSIDE THE TOP OR BOTTOM FLANGE AND THE REMAINING SETS ARE LOCATED INSIDE THE TOP OR BOTTOM FLANGE.

F = THIS DESCRIPTION CODE IS USED TO DEFINE MOMENT CONNECTIONS. BOLTS ARE LOCATED INSIDE THE TOP OR BOTTOM FLANGE AND CONNECTION PLATE PROJECTS 1/2" BEYOND THE TOP OR BOTTOM FLANGE.

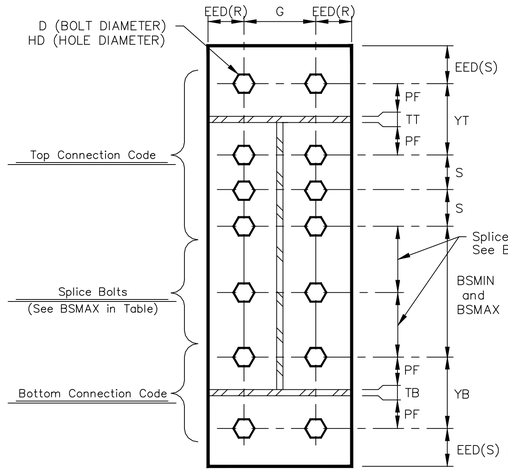
I = THIS DESCRIPTION CODE IS USED TO DEFINE MOMENT CONNECTIONS. BOLTS ARE LOCATED INSIDE THE TOP OR BOTTOM FLANGE AND CONNECTION PLATE IS RECESSED 1/8" BELOW THE TOP OR BOTTOM FLANGE.

P = THIS DESCRIPTION CODE IS USED TO DEFINE SHEAR CONNECTIONS. BOLTS ARE LOCATED INSIDE THE TOP FLANGE AND CONNECTION PLATE IS RECESSED 1/8" BELOW THE TOP FLANGE. CONNECTION PLATE LENGTH MUST BE A MINIMUM OF HALF THE RAFTER WEB DEPTH AND SHALL NOT EXCEED THE RAFTER TOTAL DEPTH.

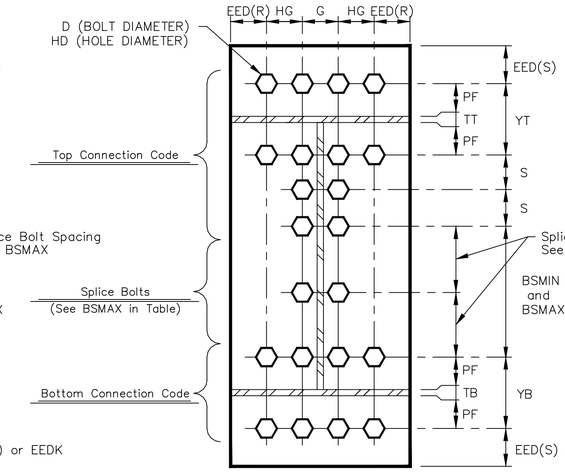
4X = THIS DESCRIPTION CODE IS USED TO DEFINE MOMENT CONNECTIONS. BOLTS ARE LOCATED WITH TWO SETS EACH SIDE OF THE TOP OR BOTTOM FLANGE WITH A GUSSET PLATE OUTSIDE THE TOP AND BOTTOM FLANGE OR COLUMN CAP PLATE.

CONNECTION BOLT DATA

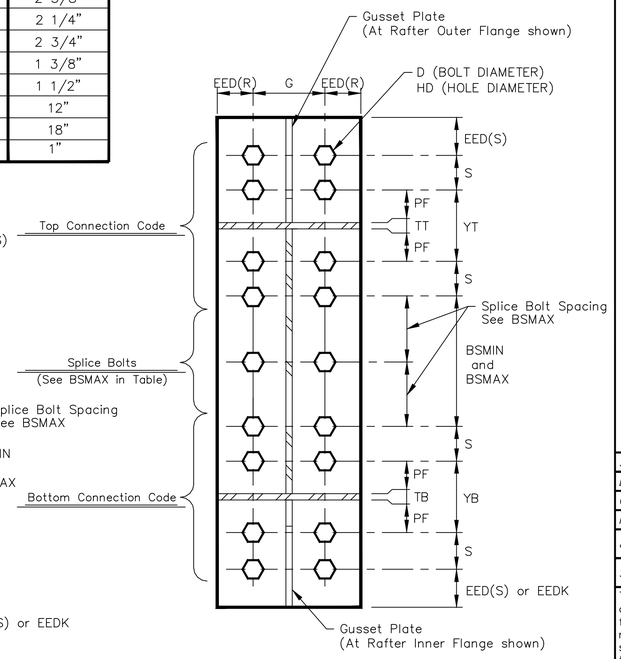
NAME	DESCRIPTION FOR A325 BOLT DIMENSIONS		A325 CONNECTION BOLT DIMENSIONS					
D	DIAMETER OF THE BOLT		1/2"	3/4"	7/8"	1"	1 1/4"	1 1/2"
HD	BOLT HOLE DIAMETER		9/16"	13/16"	15/16"	1 1/16"	1 5/16"	1 9/16"
G	BOLT GAUGE		2 1/2"	3"	4"	3 1/2"	4"	5 1/2"
	MAX. WEB THICKNESS (Max. 5/16" Fillet Weld) WITHOUT WASHER		1"	1 1/8"	1 7/8"	1 1/4"	1 3/8"	2 1/8"
	MAX. WEB THICKNESS (Max. 5/16" Fillet Weld) WITH WASHER		3/4"	7/8"	1 5/8"	7/8"	7/8"	1 7/8"
HG	HEAVY CONN. BOLT GAUGE		N/A	2 1/4"	2 5/8"	3"	3 3/4"	4"
S	NORMAL BOLT SPACING		2 1/2"	3"	3 1/4"	3 1/2"	4"	4 1/2"
BSMIN	MINIMUM SPACING BETWEEN TOP & BOTTOM SETS OF BOLTS		1 1/2"	2 1/4"	2 5/8"	3"	3 3/4"	4"
BSMAX	MAXIMUM BOLT SPACING BETWEEN TOP AND BOTTOM SETS OF BOLTS ON CONNECTION PLATES LESS THAN OR EQUAL TO 3/4" THICK		2'–0"	2'–0"	2'–0"	2'–0"	2'–0"	2'–0"
	SPLICE BOLT SPACING (NOT TO EXCEED 2'–0")		1/2 BSMAX (±1/16") WHEN BSMAX = 2'–0 1/16" TO 4'–0 1/3 BSMAX (±1/16") WHEN BSMAX = 4'–0 1/16" TO 6'–0 1/4 BSMAX (±1/16") WHEN BSMAX = 6'–0 1/16" TO 8'–0					
BFCD	MINIMUM BOLT–TO–FLANGE CLEARANCE AT OUT OF NUT SEE BOLT AT FLANGE DETAIL		1 1/2"	1 3/4"	1 7/8"	2 1/4"	2 1/2"	2 3/4"
PF	MINIMUM BOLT–TO–FLANGE CLEARANCE AT CONNECTION PLATE SEE BOLT AT FLANGE DETAIL		(BFCD + RNWT) PF INSIDE OF FLANGE IS INCREASED BASED ON THE YT & YB VALUE. PF FOR CONNECTION B, F, I AND P ARE THE SAME AS USED ON CONNECTION E					
NWT	NUT AND WASHER THICKNESS		SEE BOLT AT FLANGE DETAIL. NUT THICKNESS IS EQUAL TO THE BOLT DIAMETER AND .15625" WASHER THICKNESS IS USED EVEN IF A WASHER IS NOT REQUIRED.					
RNWT	RISE ON NUT AND WASHER THICKNESS							
TT	THICKNESS TOP FLANGE		REFER TO FRAME CROSS SECTION DRAWING FOR LARGEST FLANGE THICKNESS EITHER SIDE OF THE CONNECTION.					
TB	THICKNESS BOTTOM FLANGE							
YT	BOLT SPACING TOP (ROUND UP TO NEXT 1/2", MIN = S)		3" + TT	3 1/2" + TT	3 3/4" + TT	4 1/2" + TT	5" + TT	5 1/2" + TT
YB	BOLT SPACING BOTTOM (ROUND UP TO NEXT 1/2", MIN = S)		or TB Sloped	or TB Sloped	or TB Sloped	or TB Sloped	or TB Sloped	or TB Sloped
EED(S)	MINIMUM SHEARED END EDGE DIMENSION		1 1/4"	1 1/4"	1 1/2"	1 3/4"	2 1/4"	2 5/8"
EED(R)	MINIMUM ROLLED END EDGE DIMENSION		3/4"	1"	1 1/8"	1 1/4"	1 5/8"	2 1/4"
EEDK	END EDGE DIMENSION AT KNEE CONNECTION		1 3/8"	1 3/8"	1 5/8"	1 7/8"	2 3/8"	2 3/4"
BCWM	MINIMUM BOLT CLEARANCE FROM A FLANGE OR WEB WELD	WITHOUT WASHER	7/16"	5/8"	3/4"	13/16"	1"	1 3/8"
		WITH HARDENED WASHER	9/16"	3/4"	7/8"	1"	1 1/4"	1 1/2"
WCSM	MINIMUM WIDTH OF CONNECTION PLATE (Standard Connection)		5"	6"	8"	8"	10"	12"
WCHM	MINIMUM WIDTH OF CONNECTION PLATE (Heavy Connection)		N/A	10"	12"	12"	16"	18"
TCMIN	MINIMUM THICKNESS OF CONNECTION PLATE		1/4"	3/8"	7/16"	1/2"	5/8"	1"



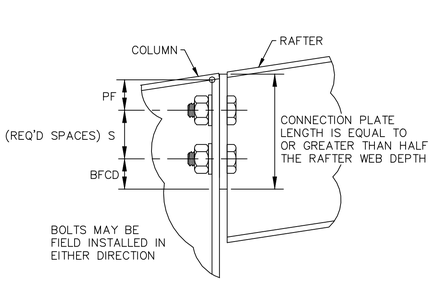
STANDARD CONNECTION DESIGNATION
(CODE 4E/2E SHOWN)



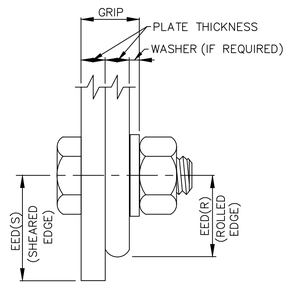
HEAVY CONNECTION DESIGNATION
(CODE 4EH/2EH SHOWN)



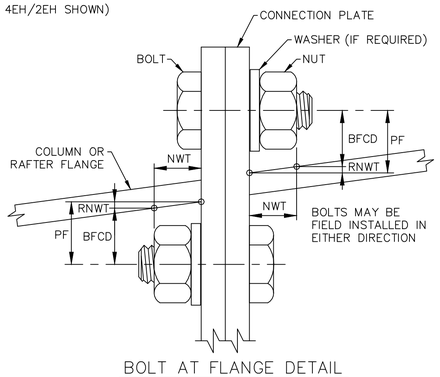
4X CONNECTION DESIGNATION
(CODE 4X/4X SHOWN)



CONNECTION B & P
(Low Side Shown, High Side Similar)



BOLT EDGE DISTANCE



BOLT AT FLANGE DETAIL
(Top Flange Shown, Bottom Flange Similar)

Frame Documentation
A325 Connection Bolt Details

Page 05-12-10
Date Sep '14 Rev. 03

B 4E/2EH
- Connection Code (See "Connection Code Format" on this drawing)
- Connection Location

CROSS SECTION CONNECTION CODE KEY
(AS SHOWN AT CONNECTIONS ON FRAME CROSS SECTION DRAWINGS)

Flange Brace Material Schedule	
Part Mark	Material
FB4_	L 2" x 2" x 14 Ga.
FB5_	L 2" x 2" x 14 Ga.
FB6_	L 2" x 2" x 1/8"
FB7_	L 2 1/2" x 2 1/2" x 3/16"

Revision	Date	Description	By	Ck'd

Reviewed for Code Compliance
Acceptable as noted
Date: 06/08/16

A&S BUILDING SYSTEMS
1880 HWY. 116, CARYVILLE, TENNESSEE 37714
PHONE: 865-426-2141 FAX: 865-426-2011

Project Name & Location:
BAYSIDE BOWL ADDITION
58 ALDER STREET
PORTLAND, ME. 04101

Customer:
AMERICAN AERIAL SERVICES, INC.
33 ALLEN AVENUE EXT.
FALMOUTH, ME. 04105

Drawing Status:
☐ Preliminary (Not For Construction)
☐ For Approval (Not For Construction)
☒ For Construction Permit
☐ For Erector Installation

Scale:	NOT TO SCALE
Drawn by:	DRF 4/26/16
Checked by:	NC 4/26/16
Project Engineer:	BDC
Job Number:	15–B–26518–1
Sheet Number:	E30 of 30

The engineer whose seal appears hereon is an employee for the manufacturer for the materials described herein. Said seal or certification is limited to the products designed and manufactured by manufacturer only. The undersigned engineer is not the overall engineer of record for this project.

Lee W. Lowe, P.E.
Maine P.E. 8861

Apr 26, 2016

STATE OF MAINE
LEE W. LOWE
8861
LICENSED
PROFESSIONAL ENGINEER