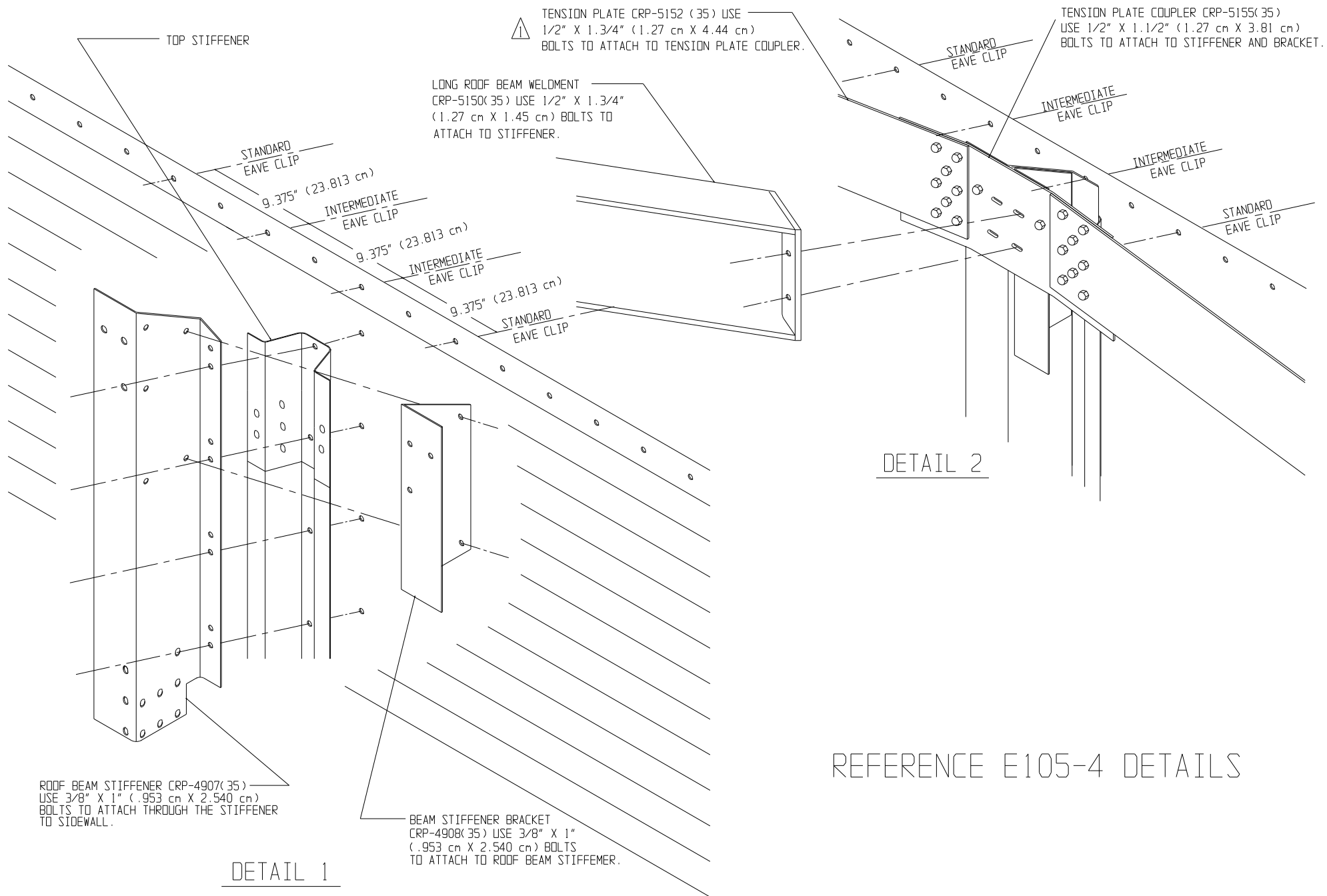




REFERENCE E105-4 DETAILS

3		UPDATED TOP STIFF. PART NO.	4/26/02	TG	
2	G1504	ADDED PNEG NO. & DR REV. TEXT	4/30/01	KG	
1		REV. 1/2" x 1.1/2" TO 1/2" x 1.3/4"	8/22/00	KG	
No.	ECN	Revision Description	Date	By	Assumption, IL. 62510 217/226-4421



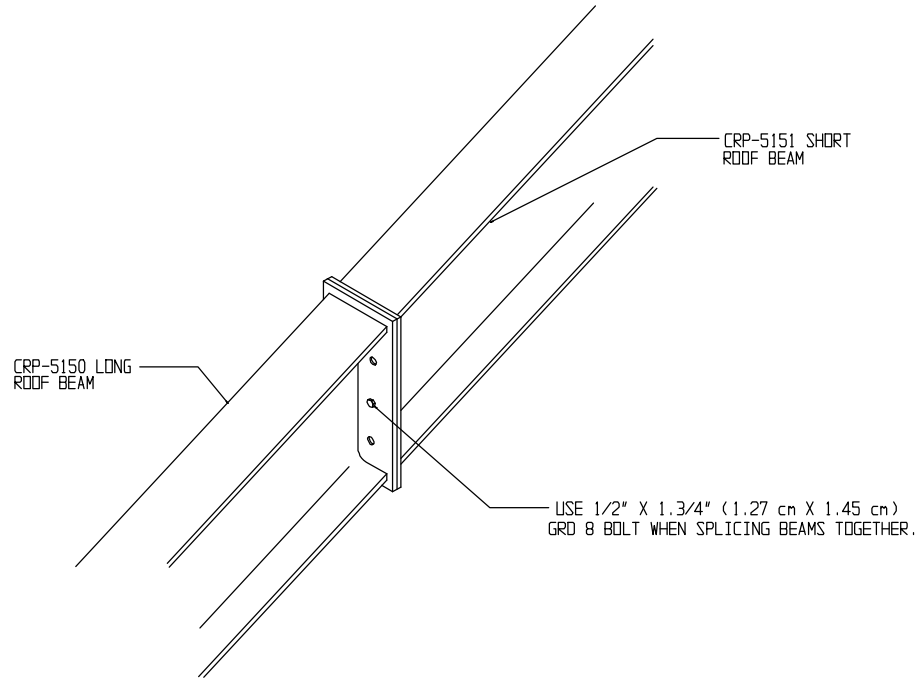
GRAIN SYSTEMS

105' ROOF ERECTION

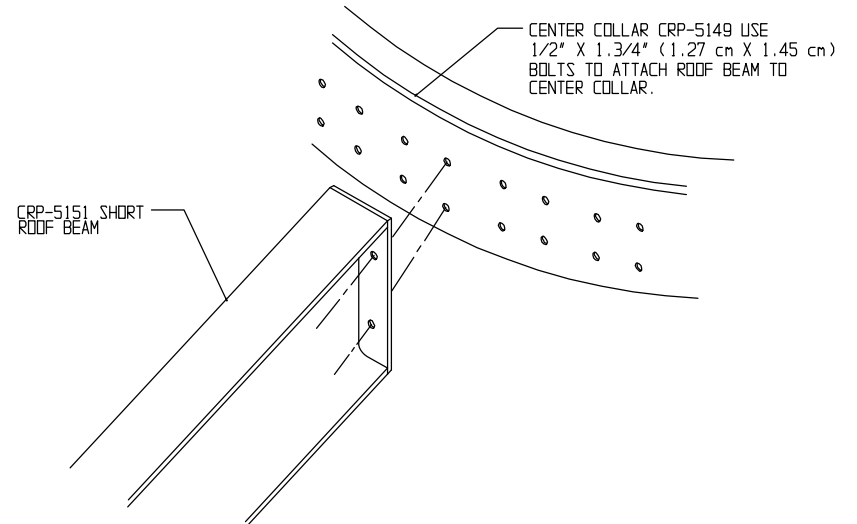
TOLERANCES
(Unless Noted)
Fractions +/- 1/32"
Decimals +/- .031"
Angles +/-

Quantity		Bldg. Wt.		Ship Wt.	
Sq. Ft.					
Drn. By	J. DECKER	Date	12-27-91	Scale	NTS
Chk'd By		Date		Work to Dimensions Do Not Scale	

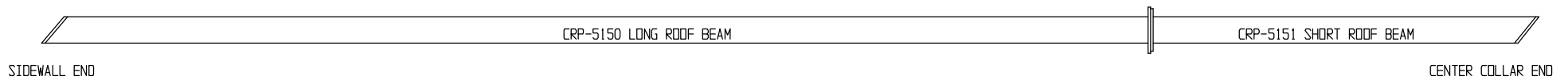
PNEG NO.	PNEG-044
Drawing No.	E105-1



DETAIL 3



DETAIL 4



DETAIL 5

					 GRAIN SYSTEMS	105' ROOF ERECTION	TOLERANCES (Unless Noted) Fractions +/- 1/32" Decimals +/- .031" Angles +/- - - - -	Quantity			PNEG NO.			
								Sq. Ft.	Blk. Wt.	Ship Wt.	PNEG-044			
1	G1504	ADDED PNEG NO. & OR REV TEXT	5/1/01	KG	Assumption, IL 62510 217/226-4421			Dim. By	J. DECKER	Date	12-27-91	Scale	NTS	Drawing No.
No.	ECN	Revision Description	Date	By				Chk'd By		Date	Work to Dimensions Do Not Scale		E105-2	

ROOF PURLIN CLIP CRP-4909
USED WITH UPPER AND LOWER
PURLINS ONLY

USE 1/2" X 1.1/2"
(1.27 cn X 3.81 cn)
BOLTS AND NUTS

"X" BRACING WELDMENT

SIDEWALL END OF BEAM

USE 3/8" X 1.1/2" (.953 cn X 3.81 cn)
BOLTS, NUTS, AND WASHER WHEN CONNECTING
PURLIN TO PURLIN CLIP.

UPPER ROOF PURLIN CRP-5142
LOWER ROOF PURLIN CRP-5153

DETAIL 6

USE 1/2" X 1.1/2"
(1.27 cn X 3.81 cn)
BOLTS AND NUTS

USE 3/8" X 1.1/2" (.953 cn X 3.810 cn) BOLTS,
NUTS, AND WASHERS WHEN CONNECTING PURLIN TO
PURLIN CLIP, EXCEPT WITH "X" BRACING USE
7/16" X 1.1/4" (1.111 cn X 3.175 cn) BOLTS.

ROOF PURLIN CLIP CRP-5158
USED WITH UPPER MIDDLE AND
LOWER MIDDLE PURLINS ONLY

SIDEWALL END OF BEAM

UPPER MIDDLE ROOF PURLIN CRP-5143
LOWER MIDDLE ROOF PURLIN CRP-5154

DETAIL 6A

USE 1/2" X 1.3/4"
(1.27 cn X 4.445 cn)
BOLTS AND NUTS

MIDDLE ROOF PURLIN CLIP CRP-5879
USED WITH MIDDLE PURLIN ONLY

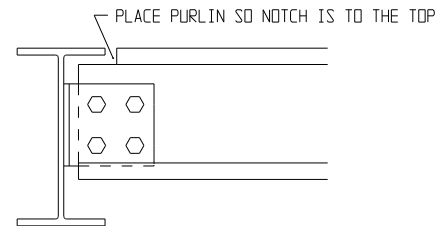
SIDEWALL END OF BEAM

MIDDLE ROOF PURLIN
CRP-5156

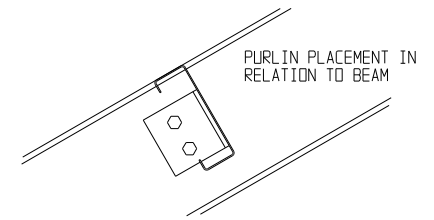
USE 3/4" X 2" BOLTS AND NUTS WHEN
CONNECTING PURLIN TO PURLIN CLIP
"X" BRACING WILL ALSO USE THE 3/4" BOLT

USE 1/2" WASHERS THIS
SIDE OF "X" BRACE CLIP

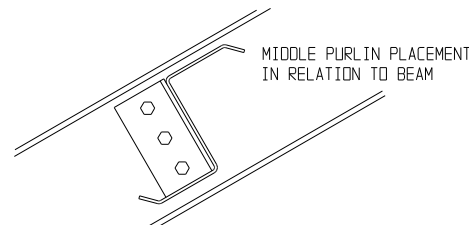
DETAIL 6B



BEAM-PURLIN DETAIL



BEAM-PURLIN DETAIL



BEAM-PURLIN DETAIL

3	104173	ADD WASHER NOTE IN DETAIL 6B	6/22/06	TB
2	100888	REV DETAIL 6B TO 1/2" - 1.3/4" BOLTS	8/23/05	TJH
1	61504	ADDED PNEG NO. & OR REV TEXT	5/1/01	KG
No.	ECN	Revision Description	Date	By



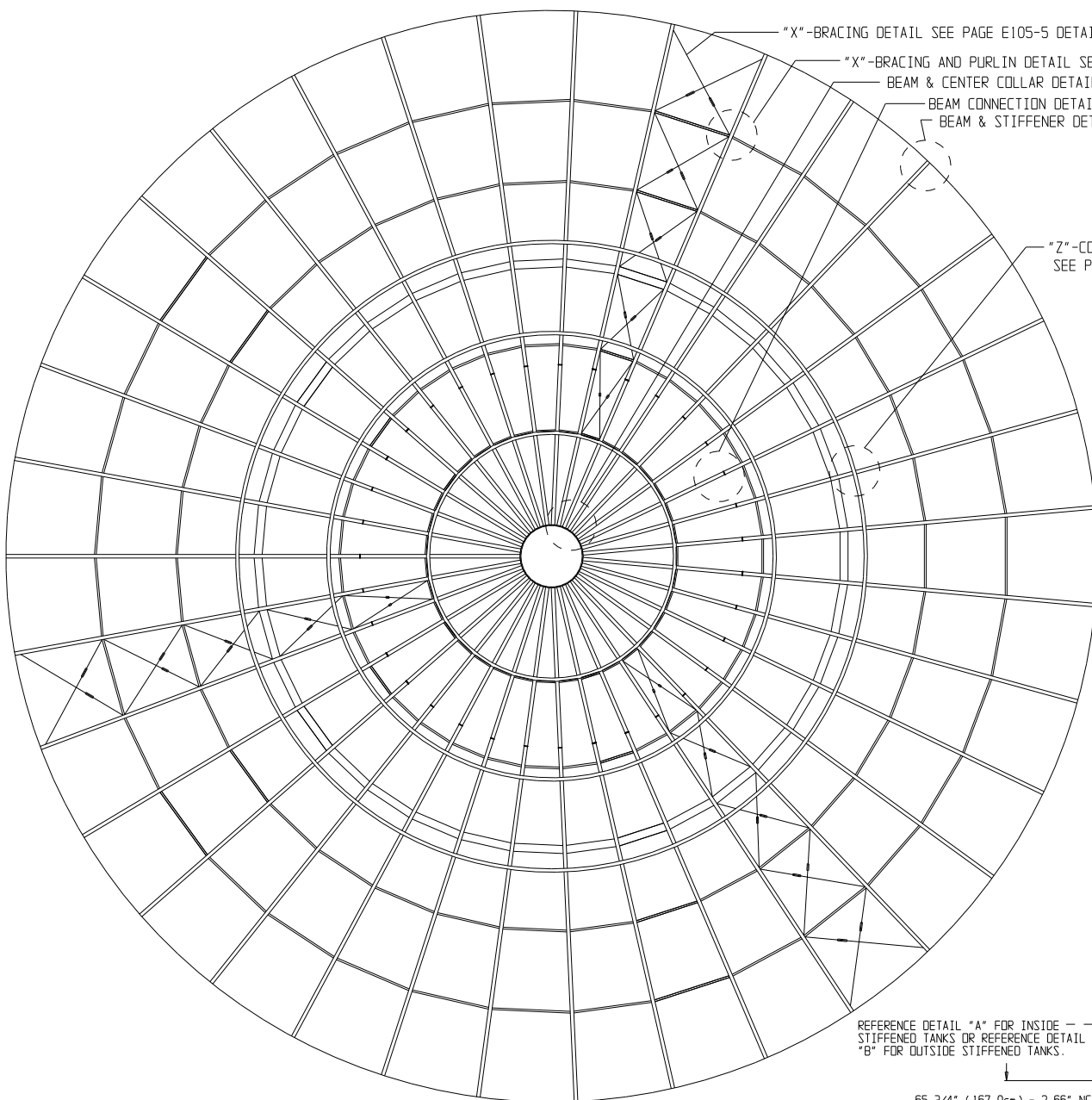
GRAIN SYSTEMS

105' ROOF ERECTION

TOLERANCES
(Unless Noted)
Fractions +/- 1/32"
Decimals +/- .031"
Angles +/-

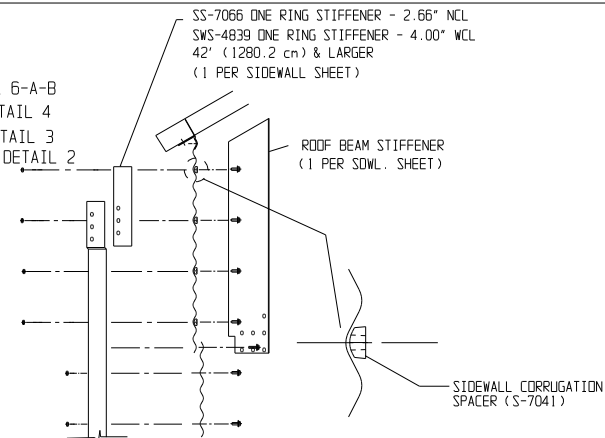
Quantity		PNEG NO.	
Sq. Ft.	Blk. Wt.	PNEG-044	
Drn. By	Date	Scale	Drawing No.
GAB	3-23-93	NTS	E105-3
Chk'd By	Date	Work to Dimensions Do Not Scale	

Assumption, IL. 62510 217/226-4421

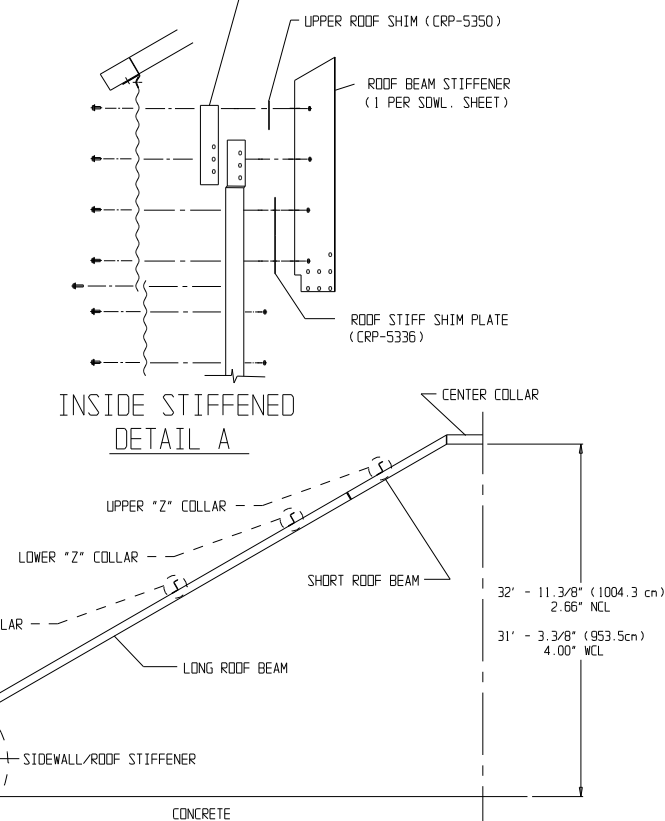


ROOF SUPPORT LAYOUT

OUTSIDE STIFFENED
DETAIL B



INSIDE STIFFENED
DETAIL A



CROSS SECTION OF ROOF

REFERENCE DETAIL "A" FOR INSIDE
STIFFENED TANKS OR REFERENCE DETAIL
"B" FOR OUTSIDE STIFFENED TANKS.

65 3/4" (167.0cn) - 2.66" NCL
45 3/4" (116.2cn) - 4.00" WCL

2 RINGS OF SIDEWALL - 2.66" NCL
1 RING OF SIDEWALL - 4.00" WCL

105' ROOF ERECTION

TOLERANCES
(Unless Noted)
Fractions +/- 1/32"
Decimals +/- .031"
Angles +/-

Quantity		Blk. Wt.		Ship Wt.	
Sq. Ft.					
Drn. By	JDD	Date	12-30-91	Scale	NTS
Chk'd By		Date		Work to Dimensions Do Not Scale	

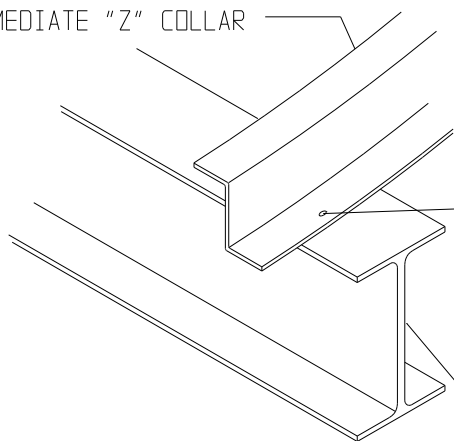
PNEG NO.
PNEG-044
Drawing No.
E105-4

3	102707	REVISED DESIGN FOR 3 X-BRACE BAYS IPD 5	2/8/06	KDK
2		UPDATED TOP STIFF. PART NO.	4/26/02	TG
1	G1504	ADDED PNEG NO. & OR REV. TEXT	5/1/01	KG
No.	ECN	Revision Description	Date	By
		Assumption, IL. 62510 217/226-4421		



GRAIN SYSTEMS

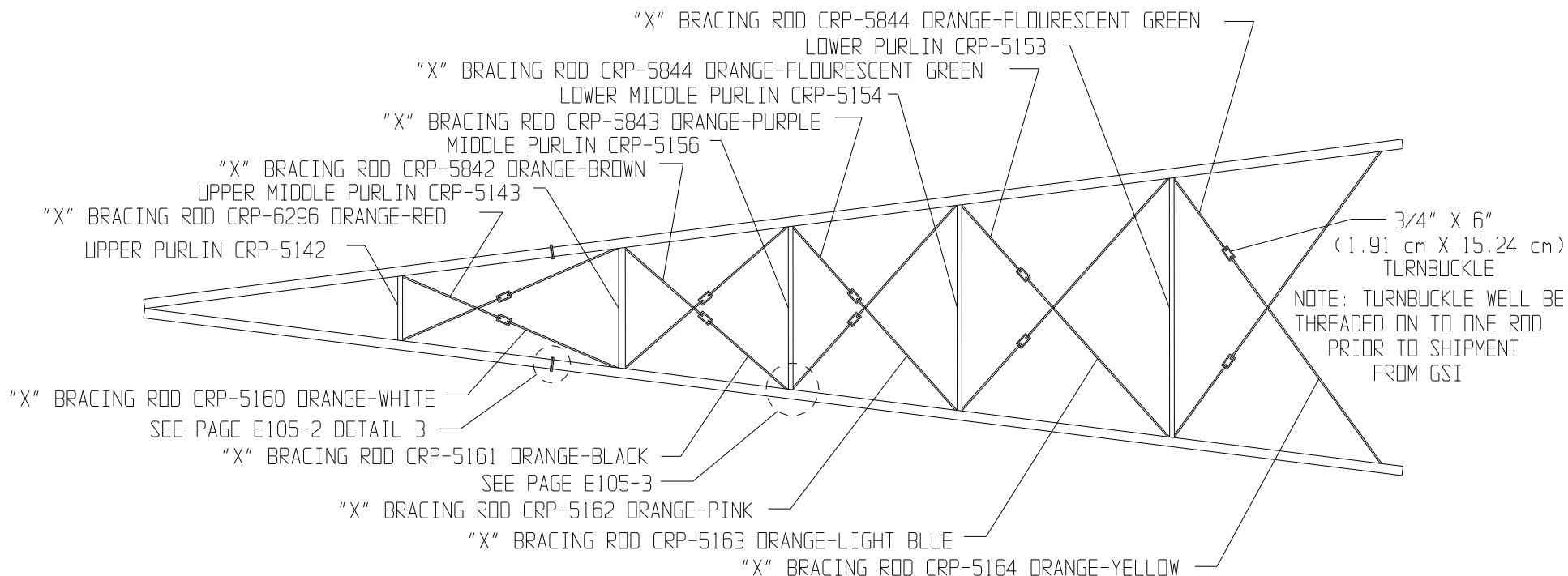
INTERMEDIATE "Z" COLLAR



1/2" X 1 1/2" (1.27 cm X 3.81 cm) BOLT AND NUT
LEAVE LOOSE UNTIL ROOF PANEL HAS BEEN PLACED.

ROOF BEAM

DETAIL 7



"X" BRACING BAY DETAIL 8

3	104173	CRP-6296 ORANGE-RED WAS CRP-5842 ORANGE-BROWN	6/22/06	TB
2	G1504	ADDED PNEG NO. & DR REV TEXT	5/1/01	KG
1	G1040	CHANGED X BRACING PRT NO.'S	4-7-99	KG
No.	ECN	Revision Description	Date	By



GRAIN SYSTEMS

Assumption, IL. 62510 217/226-4421

105' ROOF ERECTION

TOLERANCES
(Unless Noted)
Fractions +/- 1/32"
Decimals +/- .031"
Angles +/- - - - -

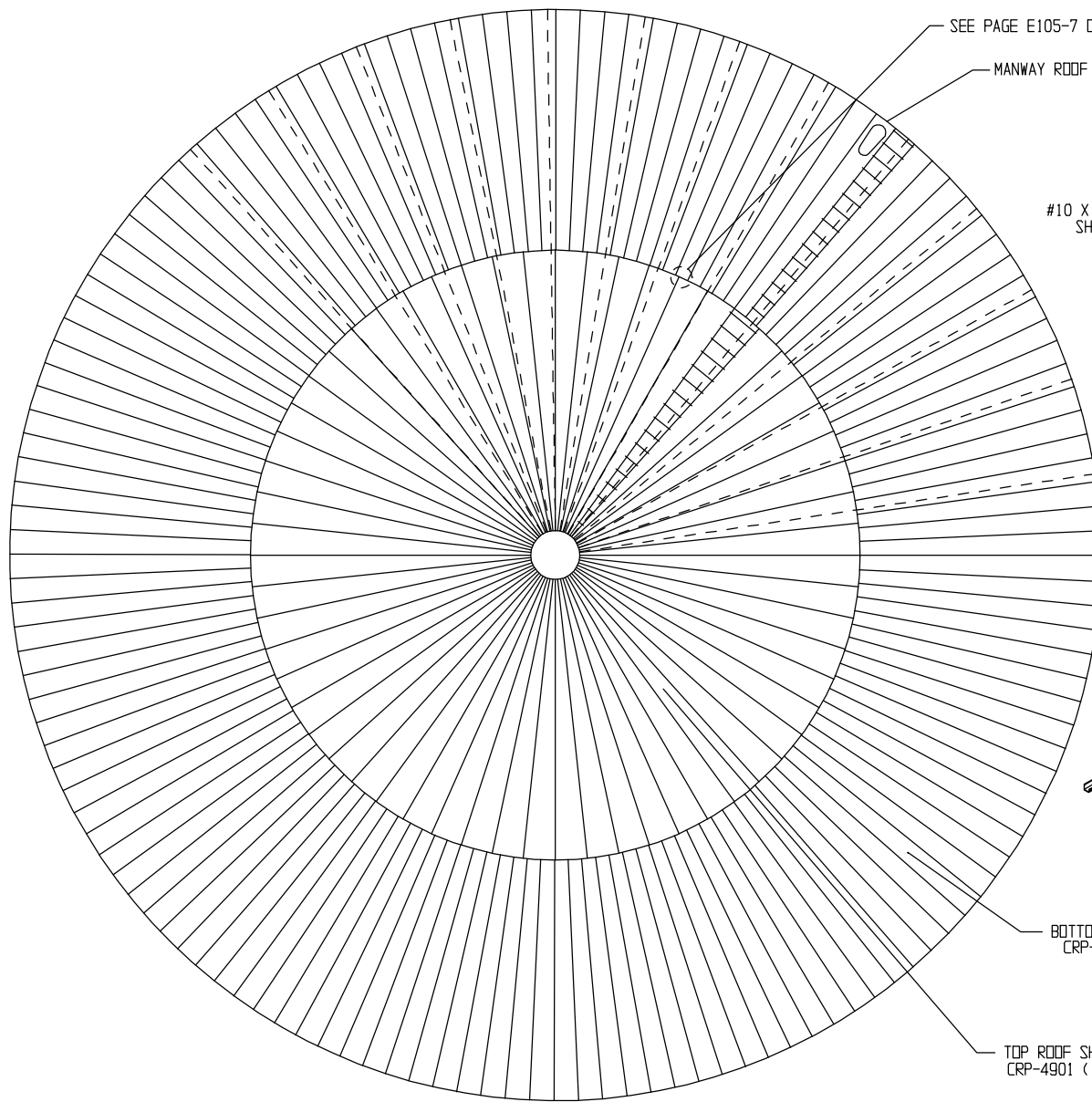
Quantity				PNEG NO.	
Sq. Ft.	Blk. Wt.	Ship Wt.		PNEG-044	
Drn. By	Date	Scale		Drawing No.	
Chk'd By	Date			E105-5	

GAB

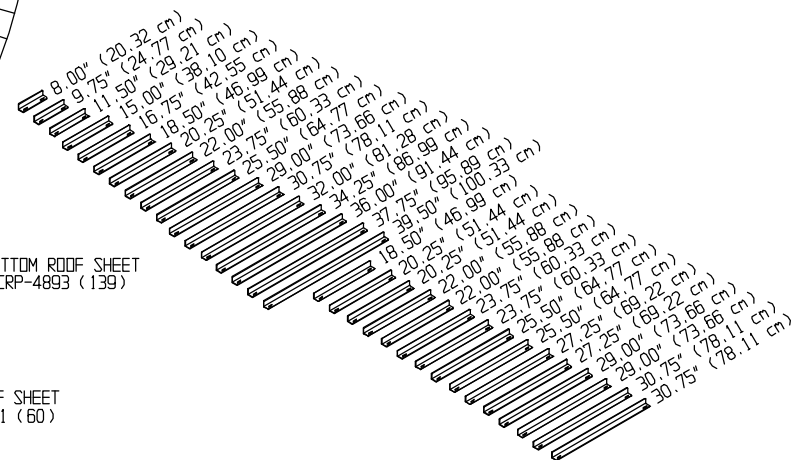
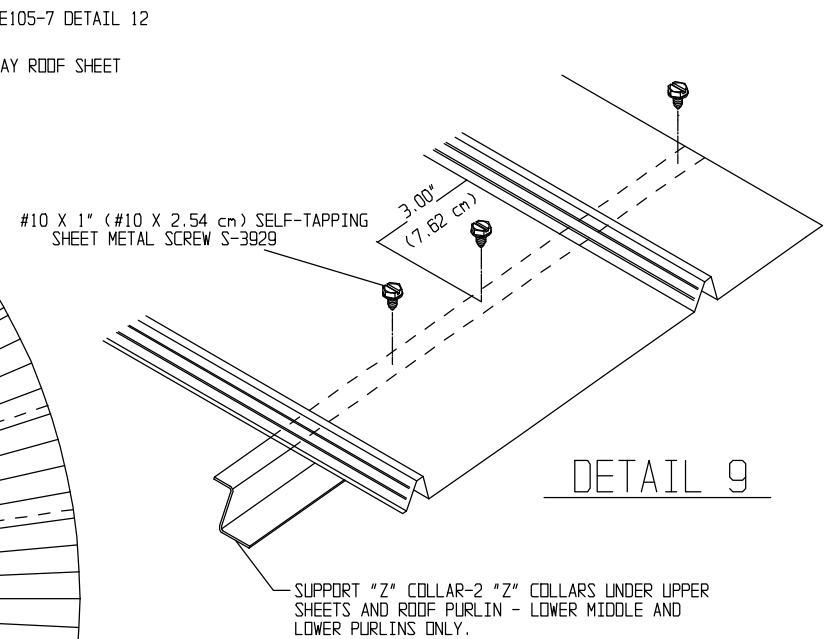
3-16-93

NTS

Work to Dimensions
Do Not Scale



ROOF SHEET LAYOUT





1.9

1.9

"Z" COLLAR SUPPORT
CRP-4900 (6)

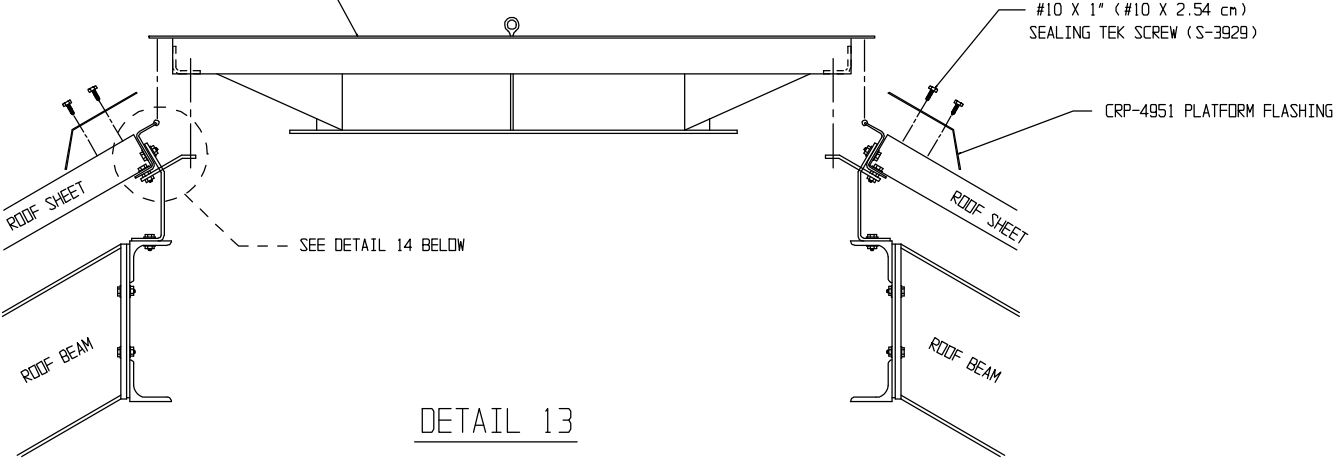
CENTER COLLAR
CRP-5149

DETAIL 11

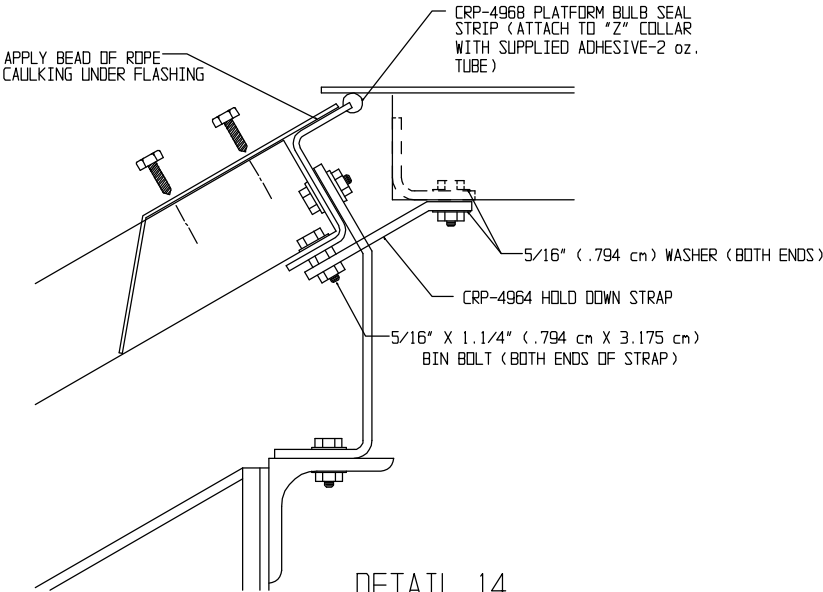


										PNEG NO.			
2	G1504	ADDED PNEG NO. & DR REV TEXT	5/1/01	KG	 GRAIN SYSTEMS Assumption, IL 62510 217/226-4421	105 FT. ROOF ERECTION		TOLERANCES (Unless Noted)		Quantity		PNEG-044	
1	G0465	ADDED NOTE LEFT OFF IN REVISION TO CAD	7-11-95	KWN				Fractions +/- 1/32" Decimals +/- .031" Angles +/- - - - -		Sq. Ft.	Blk. Wt.		Ship Wt.
No.	ECN	Revision Description	Date	By				Drn. By	Date	Scale	Drawing No.		
								CHK'd By	Date	NTS Work to Dimensions On Steel	E105-7		

CRP-4967 LARGE ROOF PEAK PLATFORM WELDMENT (COLOR CODE GREEN)



DETAIL 13



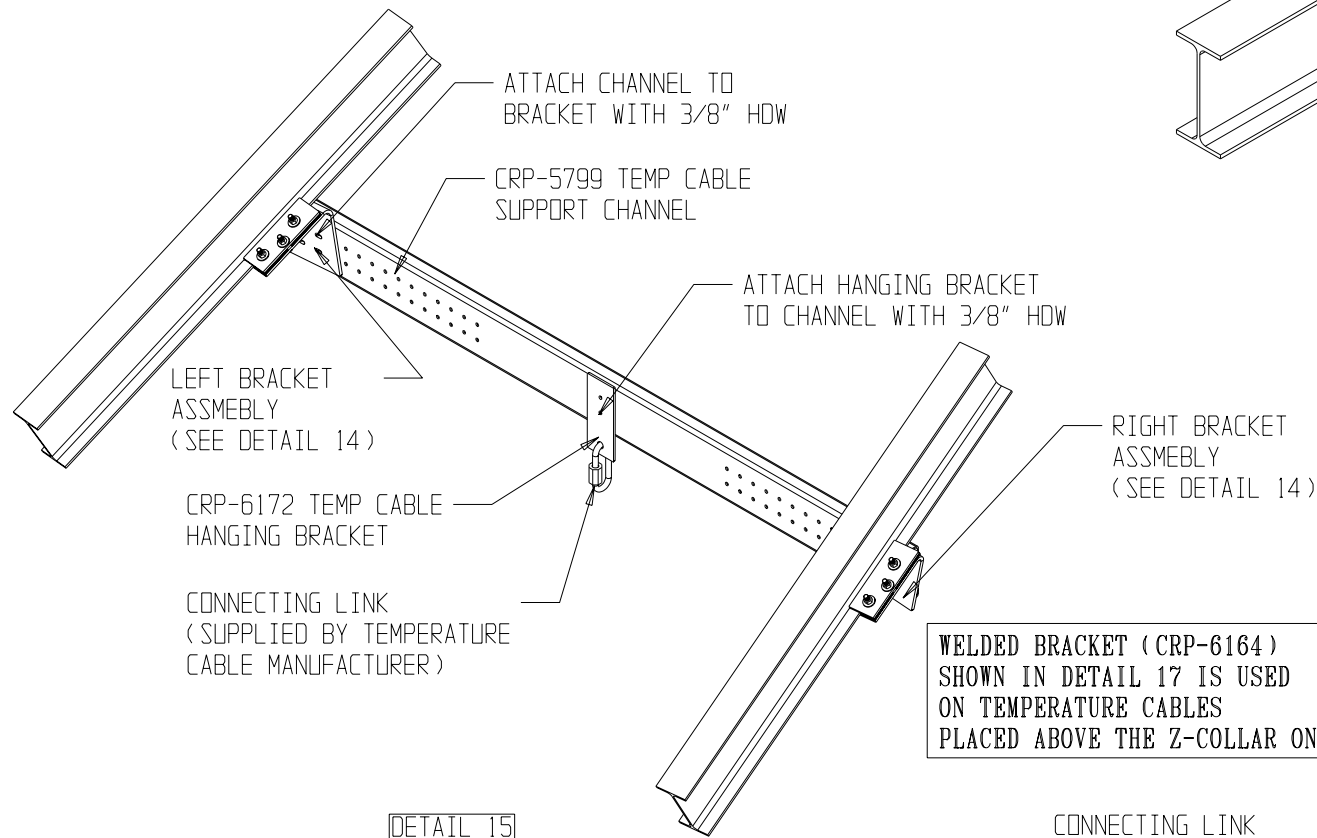
DETAIL 14

NOTE: HOLD DOWN STRAPS(6) MUST SHARE THE SAME BOLT AS A ROOF SHEET NOSE HOLE. EQUALLY SPACE THE SIX BRACKETS(60 DEG) USING THE DOUBLE NUT TECHNIQUE AS SHOWN IN DETAIL 14.

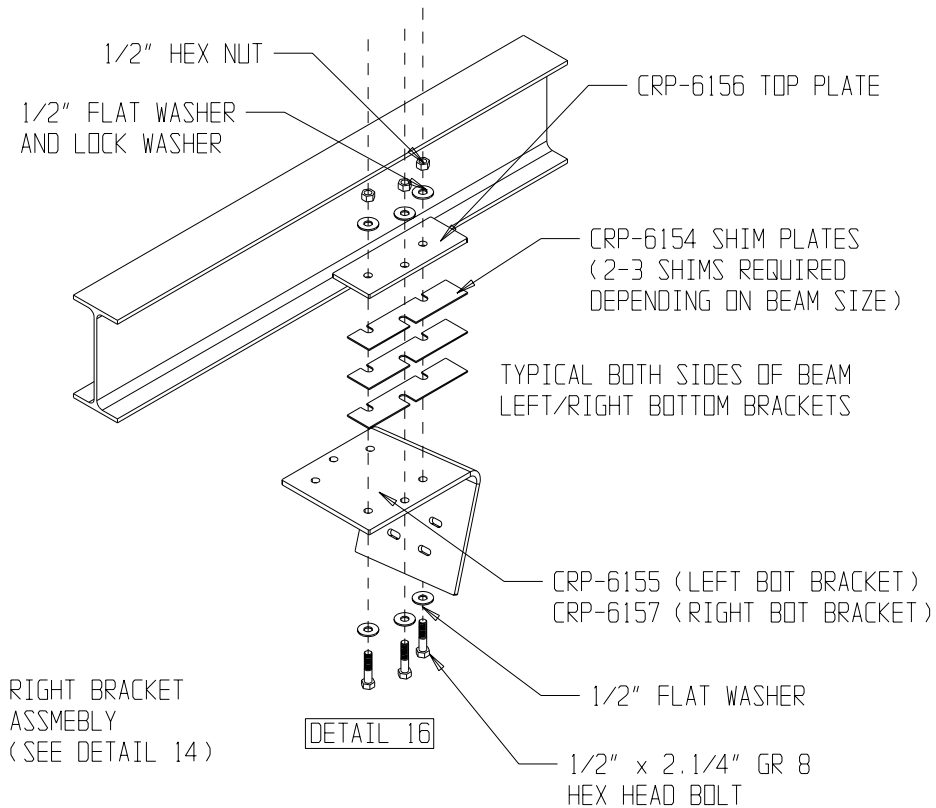
					 GRAIN SYSTEMS	105' ROOF ERECTION	TOLERANCES (Unless Noted) Fractions +/- 1/32" Decimals +/- .031" Angles +/-	Quantity			PNEG NO. PNEG-044
1	G1504	ADDED PNEG NO. & DR REV TEXT	5/1/01	KG				Sq. Ft.	Blk. Wt.	Ship Wt.	
No.	ECN	Revision Description	Date	By	Assumption, IL. 62510 217/226-4421			Drn. By J. DECKER	Date 12-31-91	Scale NTS	Drawing No. E105-8
								Chk'd By	Date	Work to Dimensions Do Not Scale	

GSI MANUFACTURED TEMPERATURE CABLE SUPPORT KITS

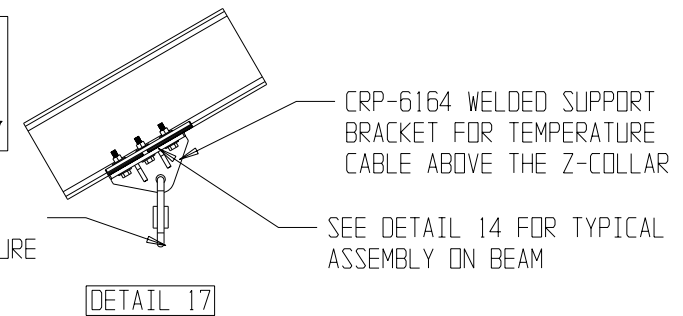
INSTALLATION INSTRUCTIONS: ATTACH LEFT AND RIGHT BRACKET ASSEMBLIES TO ROOF BEAMS AS SHOWN IN DETAIL 14. ADJUST BRACKET POSITION ALONG THE ROOF BEAM TO THE DESIRED RADIUS. ATTACH SUPPORT CHANNEL TO THE LEFT AND RIGHT BRACKET ASSEMBLIES WITH 3/8" x 1.1/2" FLANGE HEAD BOLTS, WASHERS AND NUTS. ATTACH HANGING BRACKET TO THE SUPPORT CHANNEL WITH 3/8" x 1.1/2" FLANGE HEAD BOLTS, WASHERS AND NUTS. TIGHTEN ALL 1/2" BOLTS TO A MINIMUM TORQUE OF 120 FT-LBS



DETAIL 15



DETAIL 16



DETAIL 17

IMPORTANT:
DO NOT ATTACH WEIGHTS TO TEMPERATURE CABLES
SECURE BOTTOM OF CABLES WITH A LIGHT TWINE TO THE FLOOR.

IMPORTANT:
DO NOT ATTACH MORE THAN 1 TEMPERATURE CABLE PER ROOF BEAM
(1 CABLE ABOVE LOWER Z COLLAR 1,000 LB. LOAD ASSUMED PER BEAM)
(1/2 CABLE BELOW LOWER Z COLLAR 500 LB. LOAD ASSUMED PER BEAM)

No.	ECN	Revision Description	Date	By	Assumption, IL. 62510 217/226-4421
1	13134	REV. TEMP CABLE SECTION OF INSTRUCTIONS	11/11/04	TJH	
1	G1504	ADDED PNEG NO & OR REV TEXT	5/1/01	KG	



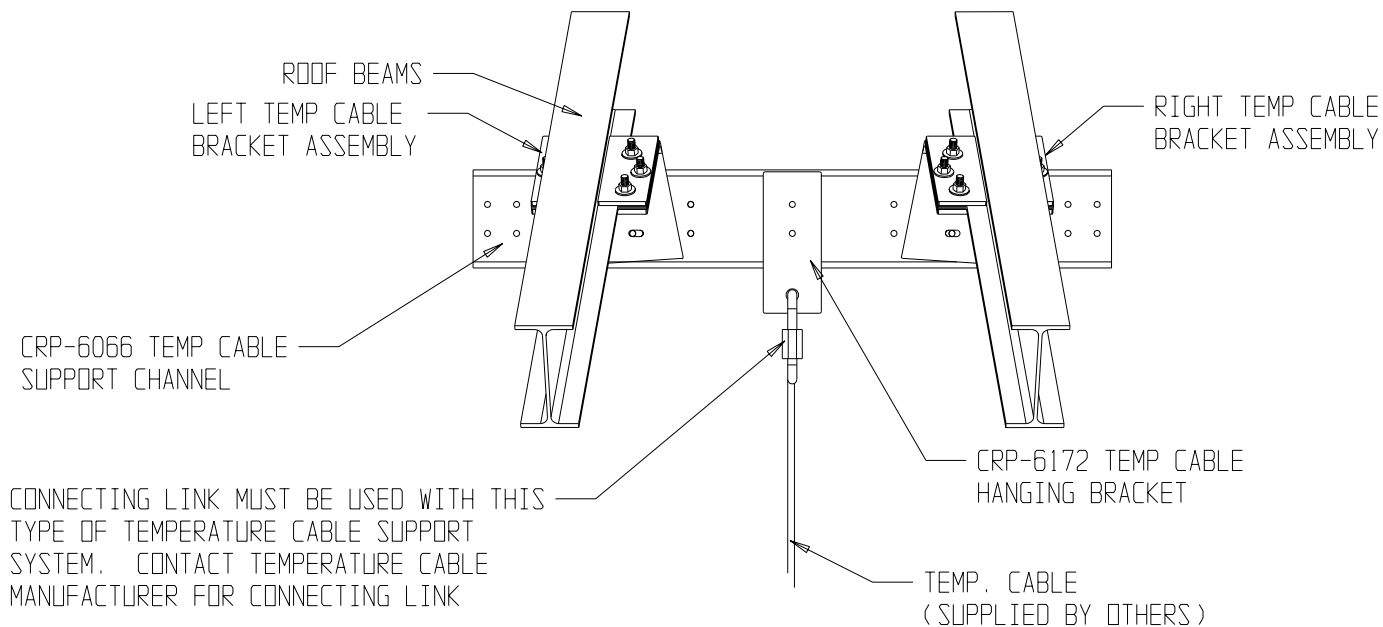
GRAIN SYSTEMS

105' INSTRUCTIONS

TEMP. CABLES

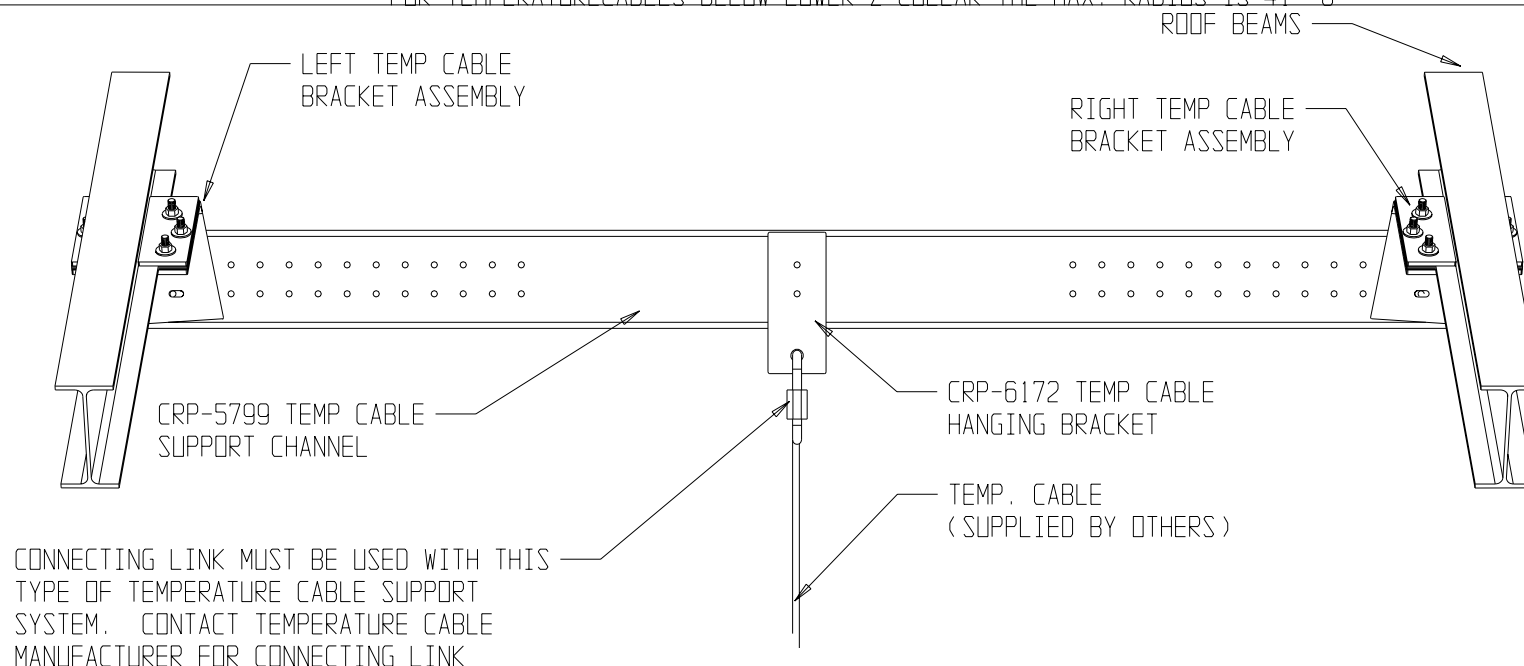
TOLERANCES (Unless Noted)			Quantity			PNEG NO.	
Fractions +/- 1/32"	Decimals +/- .031"	Angles +/-	Sq. Ft.	Blk. Wt.	Ship Wt.	PNEG-044	
Drawn By K. GAMMON			Date 12/27/00	Scale NTS	Work to Dimensions Do Not Scale	Drawing No. RE105-9	

GSI MANUFACTURED TEMPERATURE CABLE SUPPORT KITS



DETAIL 16

FOR TEMPERATURE CABLES BELOW LOWER Z COLLAR THE MAX. RADIUS IS 41'-6"



DETAIL 16

FOR TEMPERATURE CABLES BELOW LOWER Z COLLAR THE MAX. RADIUS IS 41'-6"

2	13134	REV. TEMP CABLE SECTION OF INSTRUCTIONS	11/11/04	TJH	 GRAIN SYSTEMS Assumption, IL 62510 217/226-4421	105' INSTRUCTIONS		TOLERANCES (Unless Noted) Fractions +/- 1/32" Decimals +/- .031" Angles +/- -----		Quantity			PNEG NO.
1	G1504	ADDED PNEG NO & DR REV. TEXT	4/30/01	KG						Sq. Ft.	Blk. Wt.	Ship Wt.	PNEG-044
No.	ECN	Revision Description	Date	By			TEMP. CABLES		Dwn. By	K. GAMMON	Date	Scale	Drawing No.
									Chk'd By		Date	NTS Work to Dimensions Do Not Scale	E105-10

GSI MANUFACTURED TEMPERATURE CABLE SUPPORT KITS

BIN DIAMETER	TEMP. CABLE MANUFACTURER	TOTAL NUMBER OF CABLES	CENTER CABLE (Y / N)	CABLE 1 RAD. (FT)	CABLE 2 RAD. (FT.)	CABLE 3 RAD. (FT)	TEMP. CABLE SUPPORT PACKAGE
105 FT. DIAMETER	BOONE	24	N	4 @ 10'	8 @ 27'	12 @ 41'	CRP-6171
	ROLFES	24	N	4 @ 10'	8 @ 27'	12 @ 41'	CRP-6171
	SAFE GRAIN	24	N	4 @ 8'	8 @ 28'	12 @ 43' *	N/A
	TSGC	24	N	4 @ 8'	8 @ 28'	12 @ 43' *	N/A

* FOR TEMPERATURE CABLES BELOW Z COLLAR THE MAX. RADIUS THE CHANNEL WILL SPAN IS 41'-6"

					 GRAIN SYSTEMS Assumption, IL 62510 217/226-4421	105' INSTRUCTIONS TEMP. CABLES	TOLERANCES (Unless Noted) Fractions +/- 1/32" Decimals +/- .031" Angles +/- - - - -	Quantity			PNEG NO.
2	13134	REV. TEMP CABLE SECTION OF INSTRUCTIONS	11/11/04	TJH				Sq. Ft.	Bk. Wt.	Ship Wt.	PNEG-044
1	G1504	ADDED PNEG NO & DR REV. TEXT	4/30/01	KG				Dwn. By K. GAMMON	Date 12/27/00	Scale NTS Work to Dimensions Do Not Scale	Drawing No. RE105-11
No.	ECN	Revision Description	Date	By							

Diagram illustrating a roof beam connection. The diagram shows a cross-section of a roof beam (labeled "ROOF BEAM") and a vertical support structure. A "FULL WELD" is indicated at the connection point. An "EYE BOLT (NOT PROVIDED)" is shown attached to the bottom of the vertical support structure, pointing downwards.

Diagram illustrating the connection of an L5" x 3" x 1/4" angle to a plate. The angle is 4" long and is welded to the plate at both ends. A nut and washer are shown attached to the angle.

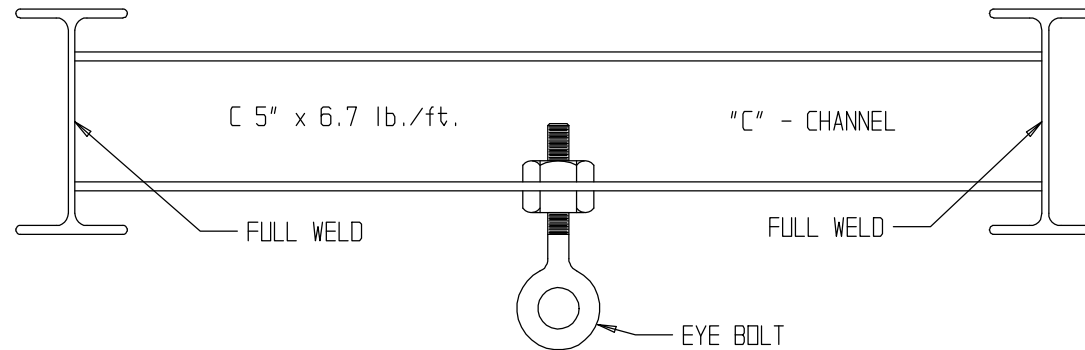
FOR CABLES ABOVE THE Z COLLAR ONLY

IMPORTANT;
DO NOT ATTACH WEIGHTS TO TEMPERATURE CABLES
SECURE BOTTOM OF CABLES WITH A LIGHT TWINE TO THE FLOOR.

IMPORTANT:
DO NOT ATTACH OR SUPPORT MORE THAN 1 TEMPERATURE CABLE PER ROOF BEAM
(1 CABLE ABOVE LOWER Z COLLAR 1,000 LB. LOAD ASSUMED PER BEAM)
(1/2 CABLE BELOW LOWER Z COLLAR 500 LB. LOAD ASSUMED PER BEAM)

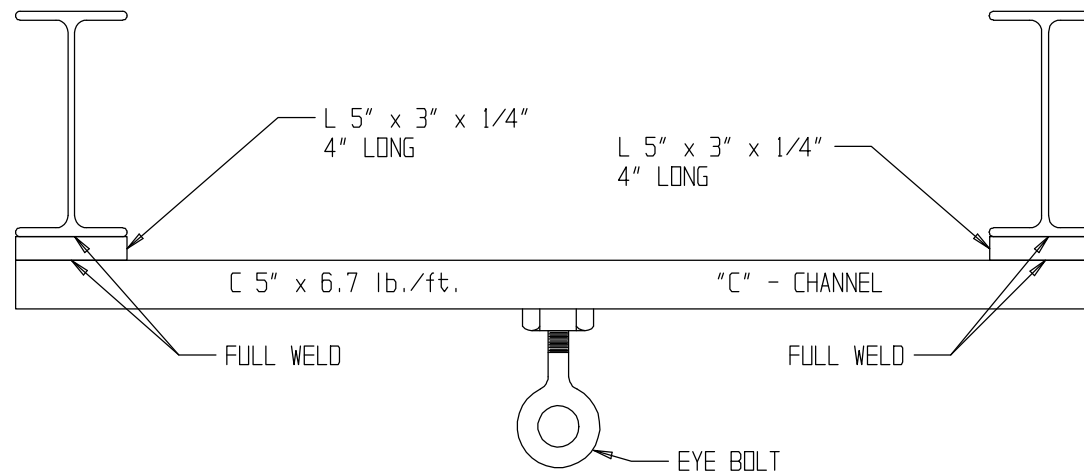
					 GRAIN SYSTEMS Assumption, Il. 62510 217/226-4421	105' INSTRUCTIONS TEMP. CABLES	TOLERANCES (Unless Noted) Fractions +/- 1/32" Decimals +/- .031" Angles +/-	Quantity			PNEG NO. PNEG-044
1	G1504	ADDED PNEG NO. & DR REV. TEXT	4/30/01	KG				Sq. Ft.	Sik. Wt.	Ship Wt.	Drn. By K.GAMMON
No.	ECN	Revision Description	Date	By				Chk'd By	Date	Work to Dimensions to this Scale	

RECOMMENDED FIELD FABRICATED TEMPERATURE CABLE SUPPORT ATTACHMENTS



DETAIL 22

CABLES BELOW THE Z-COLLAR



DETAIL 23

CABLES BELOW THE Z-COLLAR IN AN X - BRACED BAY

IMPORTANT:
DO NOT ATTACH WEIGHTS TO TEMPERATURE CABLES
SECURE BOTTOM OF CABLES WITH A LIGHT TWINE TO THE FLOOR.

IMPORTANT:
DO NOT ATTACH OR SUPPORT MORE THAN 1 TEMPERATURE CABLE PER ROOF BEAM
(1 CABLE ABOVE LOWER Z COLLAR 1,000 LB. LOAD ASSUMED PER BEAM)
(1/2 CABLE BELOW LOWER Z COLLAR 500 LB. LOAD ASSUMED PER BEAM)

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