

WALL OPENING SCHEDULE					
DOOR	WIDTH	HEIGHT	OPENING TYPE	HEADER GIRT	OPENING JAMBS
①	10'-0"	10'-0"	ROLL UP DOOR	SINGLE	C6X3.5 X16
②	10'-0"	10'-0"	ROLL UP DOOR	SINGLE	C6X3.5 X14
③	6'-0"	8'-0"	PERSONNEL DOOR	SINGLE	C8X3.5 X16
④	6'-0"	8'-0"	PERSONNEL DOOR	SINGLE	CHN6X 2.875X14
⑤	3'-0"	8'-0"	PERSONNEL DOOR	SINGLE	CHN8X 2.875X12
⑥-7	6'-0"	5'-0"	WINDOW	SINGLE	CHN8X 2.875X14
⑧	7'-0"	4'-0"	WINDOW	SEE NOTE #4	CHN8X 2.875X14
⑨-10	6'-0"	4'-0"	WINDOW	SEE NOTE #4	C6X3.5 X16
⑪	6'-0"	4'-0"	WINDOW	SINGLE	CHN8X 2.875X12
⑫-17	8'-0"	3'-0"	WINDOW	SEE NOTE #4	CHN6X 2.875X14
⑱	6'-0"	3'-0"	WINDOW	SEE NOTE #4	C6X3.5 X16
⑲	3'-0"	2'-0"	WINDOW	SEE NOTE #4	CHN6X 2.875X14

NOTES:
1) JAMB MEMBERS SHOWN AS "CHN" ARE CHANNEL MEMBERS (WITHOUT STIFFENER LIPS) AND THOSE SHOWN AS "C" ARE CEE MEMBERS. FIRST NUMBER IS WEB DEPTH IN INCHES, SECOND NUMBER IS FLANGE WIDTH IN INCHES, AND THIRD NUMBER IS MATERIAL THICKNESS (GAUGE).
2) SEE DETAILS J/9 AND K/9 FOR OPENING FRAMING INFORMATION.
3) SIZE OF HEADER GIRT MEMBER TO BE SAME AS SIDEWALL OR ENDWALL GIRT, AS APPROPRIATE, PER ELEVATIONS. AT WINDOWS, INSTALL HEADER GIRT SPECIFIED ABOVE AND BELOW WINDOWS, U.N.O.
4) AT OPENINGS NOTED, INSTEAD OF ATTACHING DOOR JAMBS TO HEADER GIRT PER DETAIL L1/9 ATTACH DOOR JAMBS TO UNDERSIDE OF ENDWALL RAFTER OR EAVE PURLIN PER DETAIL L2/9.
5) ALL OPENINGS AND ACCESSORIES (UNLESS NOTED IN SCHEDULE ABOVE) SHALL BE CAPABLE OF SUPPORTING ALL WIND PRESSURES PERPENDICULAR TO THE SURFACE (GENERATED BY WINDS AT THE SPEED AND EXPOSURE INDICATED ABOVE) BY SPANNING BETWEEN THE JAMBS.
6) DOORS MARKED AS 'NOT WIND RATED' IN SCHEDULE ABOVE ARE DESIGNED TO BE OPEN DURING A WIND EVENT.

COMPONENT DIAGRAM

DEFLECTION LIMITS

PORTAL FRAME (HORZ):

L/100 (BRN)

PURLINS:

L/240 (BRN)

GIRTS:

L/240 (BRN)

EW WIND COLUMNS:

L/240 (BRN)

WALL PANEL:

L/240 (BRN)

IMPORTANT: IN ADDITION TO THESE ENGINEERING PLANS (WHICH ALWAYS TAKE PRECEDENCE), YOU SHOULD HAVE THE FOLLOWING FROM ACT BUILDING SYSTEMS:

- CONSTRUCTION PACKAGE

- INSTALLATION MANUALS

- CONSTRUCTION VIDEOS

PLEASE CONTACT YOUR SALES REP IF YOU HAVE NOT RECEIVED THESE PRIOR TO STARTING CONSTRUCTION.

PROJECT DESIGN CRITERIA

ROOF DEAD LOAD: 3 psf

ROOF COLLATERAL LOAD: 0 psf

GROUND SNOW LOAD: 0 psf

ROOF SNOW LOAD: 0 psf

ROOF LIVE LOAD: 20 psf

WIND SPEED: 115 mph

WIND EXPOSURE: C

Ss: 0.241

Sds: 0.257

SI: 0.077

SdI: 0.124

SEISMIC DESIGN CATEGORY:

B ('short' period) B ('l-sec' period)

R transverse: 3.0

R longitudinal: 3.0

RISK CATEGORY: II

Ct = 1.0

WIND DESIGN OF LATERAL FORCE-RESISTING SYSTEMS IS BASED ON THE DIRECTIONAL DESIGN PROCEDURE OF ASCE 7-16, CHAPTER 27

SEISMIC DESIGN OF LATERAL FORCE-RESISTING SYSTEMS ARE AS FOLLOWS:

-- TRANSVERSE: ORDINARY STEEL MOMENT FRAME (SEISMIC DESIGN IS BASED ON ASCE 07-16, SECTIONS 12.1 - 12.13)

-- LONGITUDINAL: ORDINARY STEEL BRACED FRAME. (SEISMIC DESIGN IS PERFORMED USING THE SIMPLIFIED DESIGN PROCEDURE (ASCE 07-16, SECTION 12.14).

DESIGN BASE SHEAR: IS SHOWN ON CALCULATION SHEET M2.

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Fountain Inn, SC 29644
engsupport@actbuildingsystems.com

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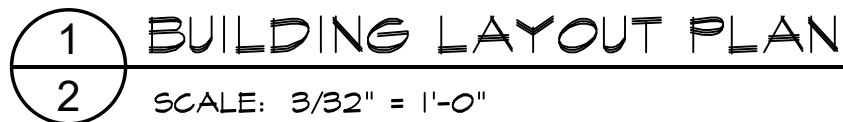
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NOTE: EXCEPT AT DOOR OPENINGS,
INSTALL L4x2x1/4" ANGLE TO
FOUNDATION (FOR ATTACHMENT OF
BOTTOM OF WALL SIDING) WITH 1/4" X 1 1/2"
DRIVE PIN ANCHORS AT 48" O.C. (6" MAX.
FROM ANY END).

	BAY #2	BAY #3	BAY #4
Sidewall 'A'	M/S	M/S	M/S

Diagram illustrating the structural framing plan of a building, showing various components and bracing details:

- ROOF PURLINS PER ROOF FRAMING PLAN 1/7**: Indicated by a line pointing to the roof structure.
- V 11**: Vertical section line.
- W 11**: Horizontal section line.
- GIRT FLANGE BRACING PER SCHEDULE AND DETAIL N/10**: Indicated by a line pointing to the girt flange bracing.
- 6in x 3.125/3.375in 12G ZEE MAIN BUILDING SIDEWALL GIRTS SPACED AT 7'-8" O.C.**: Indicated by a line pointing to the main building sidewall girts.
- MOMENT FRAME**: Indicated by a line pointing to the moment frame.
- COLUMN FLYBRACING PER DETAIL T/11 AT (8) LOCATIONS SPACE NO MORE THAN 7'-8"**: Indicated by a line pointing to the column flybracing.
- MAIN BUILDING X-BRACING PER DETAIL M/10**: Indicated by a line pointing to the main building x-bracing.

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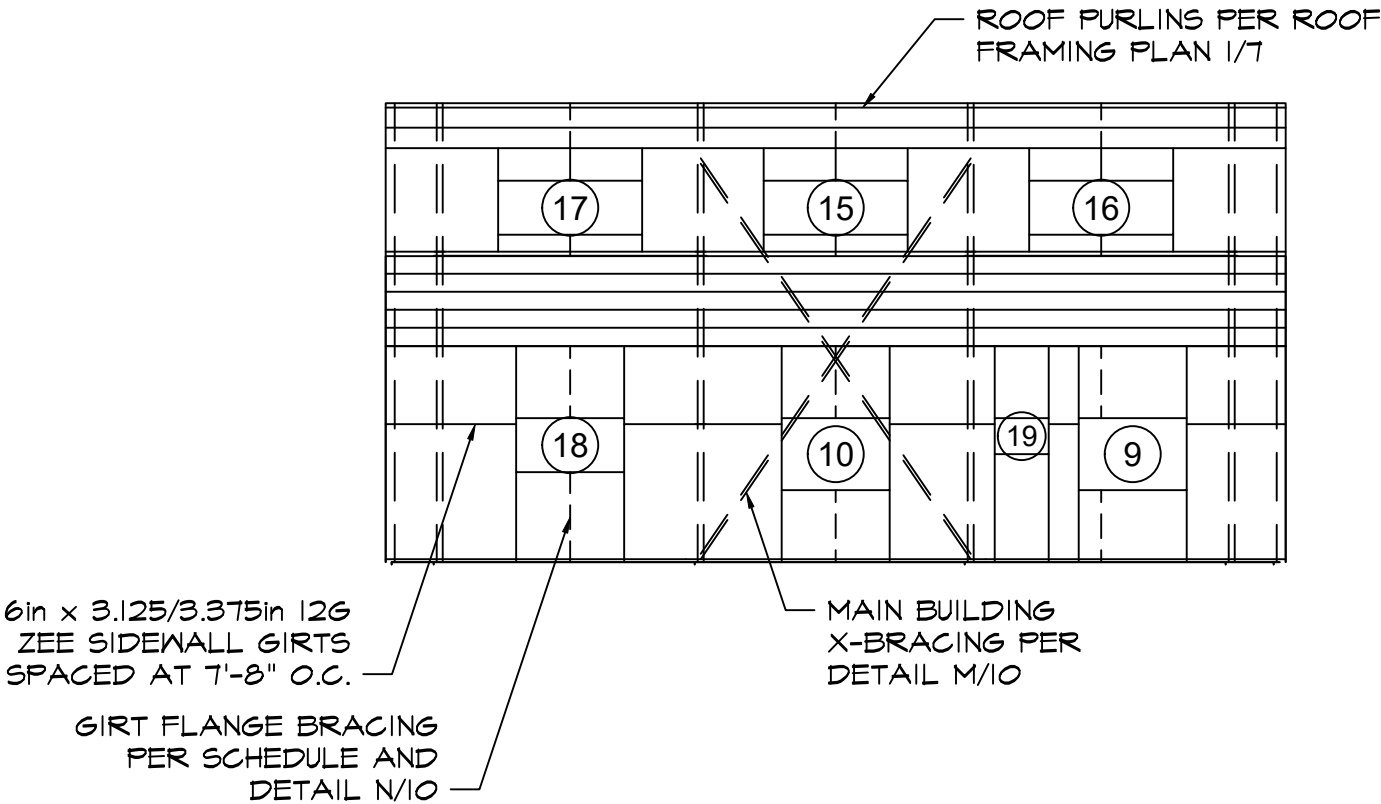
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GIRT FLANGE BRACING SCHEDULE


	BAY #2	BAY #3	BAY #4
Sidewall 'B'	M/S	M/S	M/S
Leanto 'B' Sidewall	M/S	M/S	M/S

M/S = MIDSPAN



1 **SIDEWALL 'B' EXTERIOR ELEVATION**
4 SCALE: 3/32" = 1'-0"

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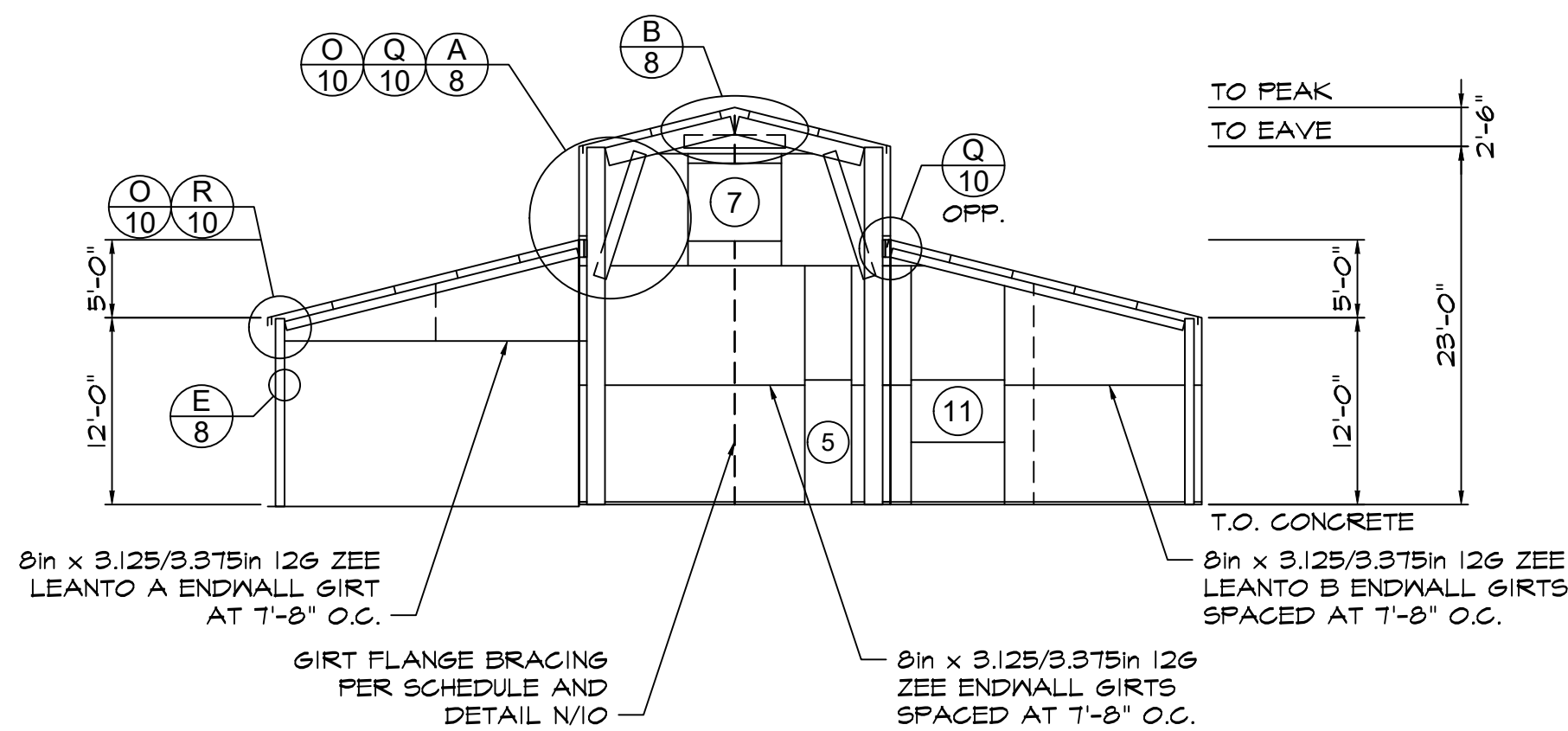
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GIRT FLANGE
BRACING SCHEDULE

	BAY #1
Endwall 'A'	M/S
Leanto 'A' Endwall 'A'	M/S
Leanto 'B' Endwall 'A'	M/S

M/S = MIDSPAN



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ENDWALL 'A' INTERIOR ELEVATION

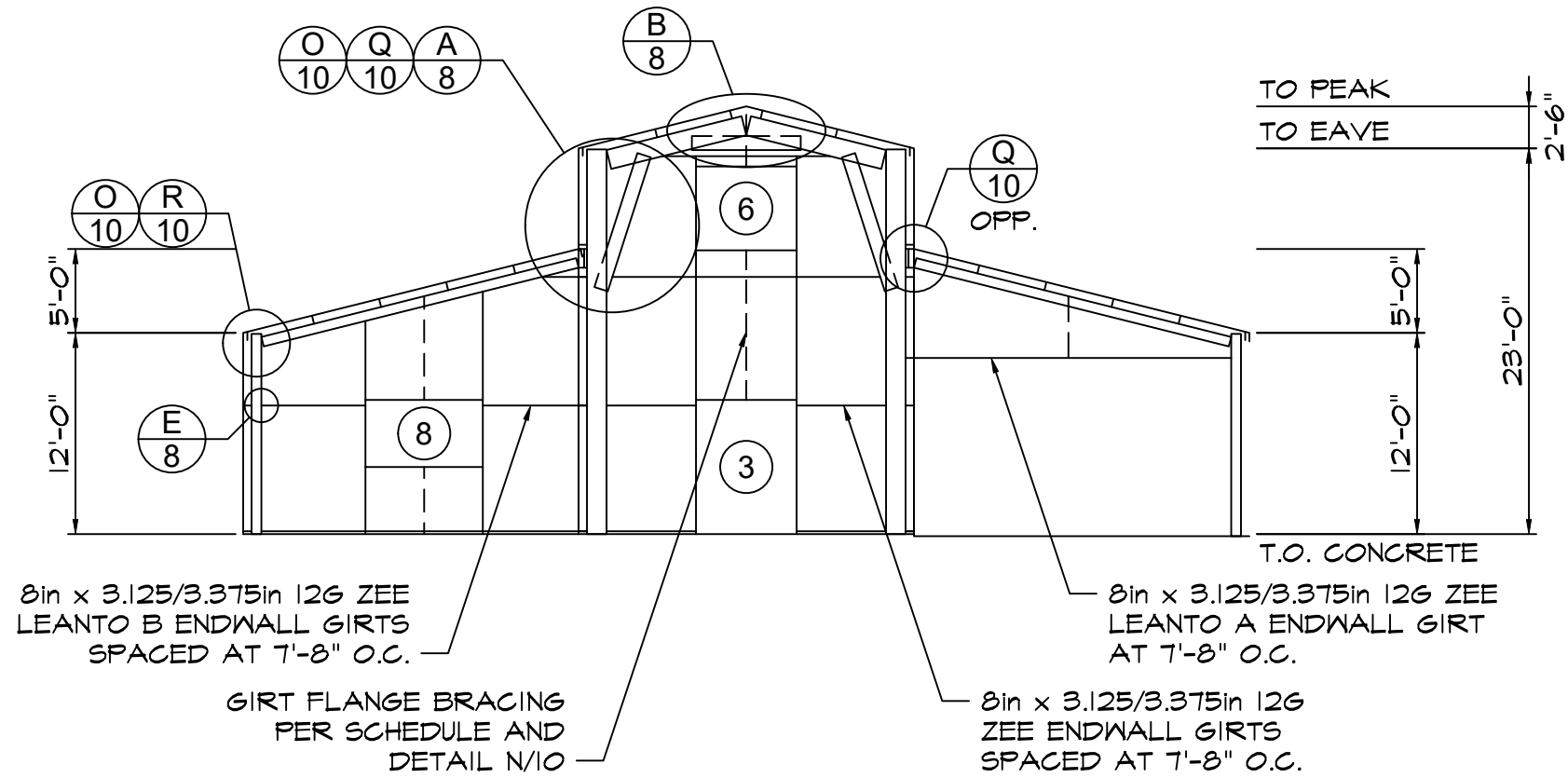
SCALE: 3/32" = 1'-0"

FRAME #1

GIRT FLANGE
BRACING SCHEDULE

	BAY #1
Endwall 'B'	M/S
Leanto 'A' Endwall 'B'	M/S
Leanto 'B' Endwall 'B'	M/S

M/S = MIDSPAN



1

6

ENDWALL 'B' INTERIOR ELEVATION

SCALE: 3/32" = 1'-0"

FRAME #6

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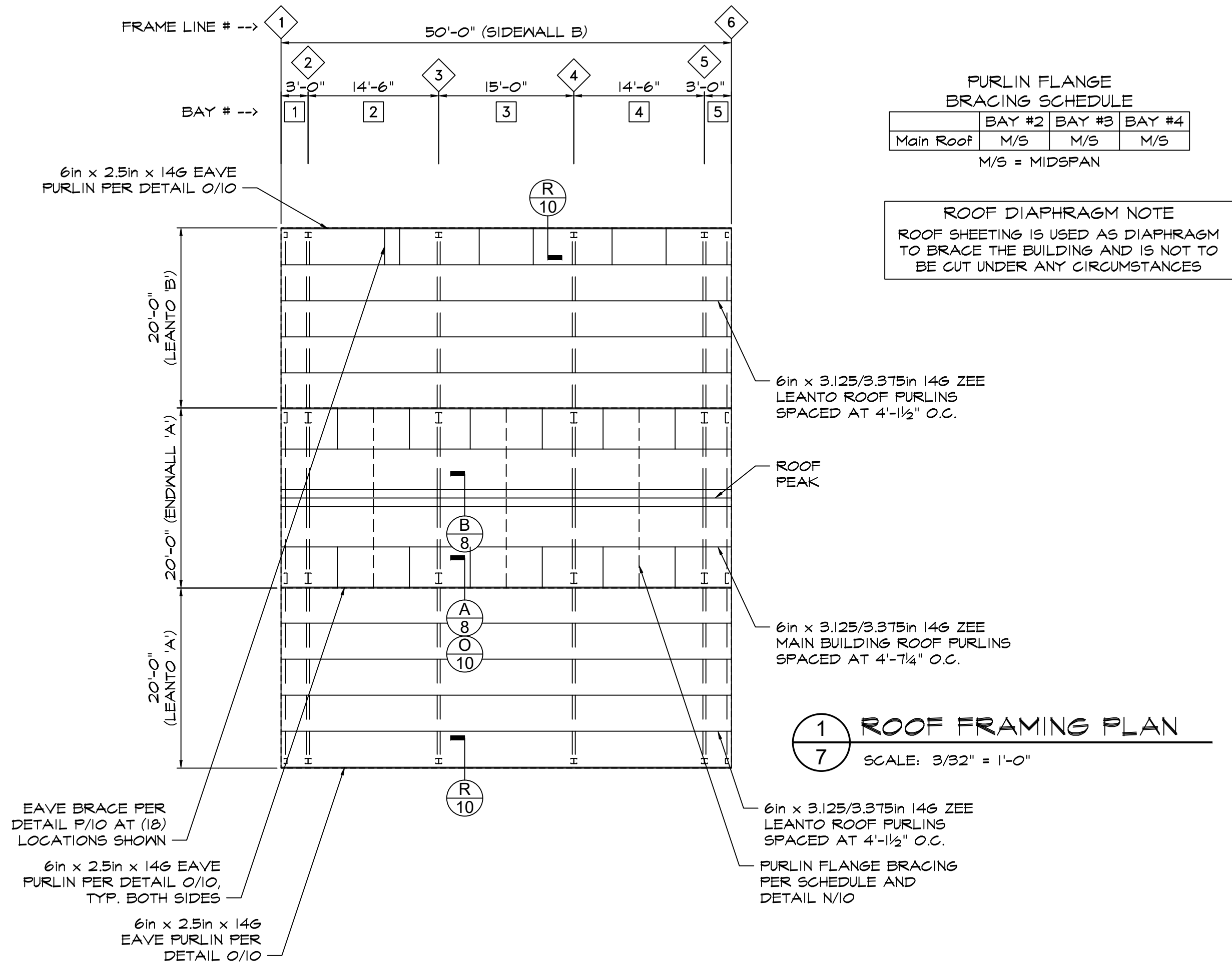
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PURLIN FLANGE BRACING SCHEDULE

	BAY #2	BAY #3	BAY #4
Main Roof	M/S	M/S	M/S

M/S = MIDSPAN

ROOF DIAPHRAGM NOTE
ROOF SHEETING IS USED AS DIAPHRAGM TO BRACE THE BUILDING AND IS NOT TO BE CUT UNDER ANY CIRCUMSTANCES

1 ROOF FRAMING PLAN
7 SCALE: 3/32" = 1'-0"

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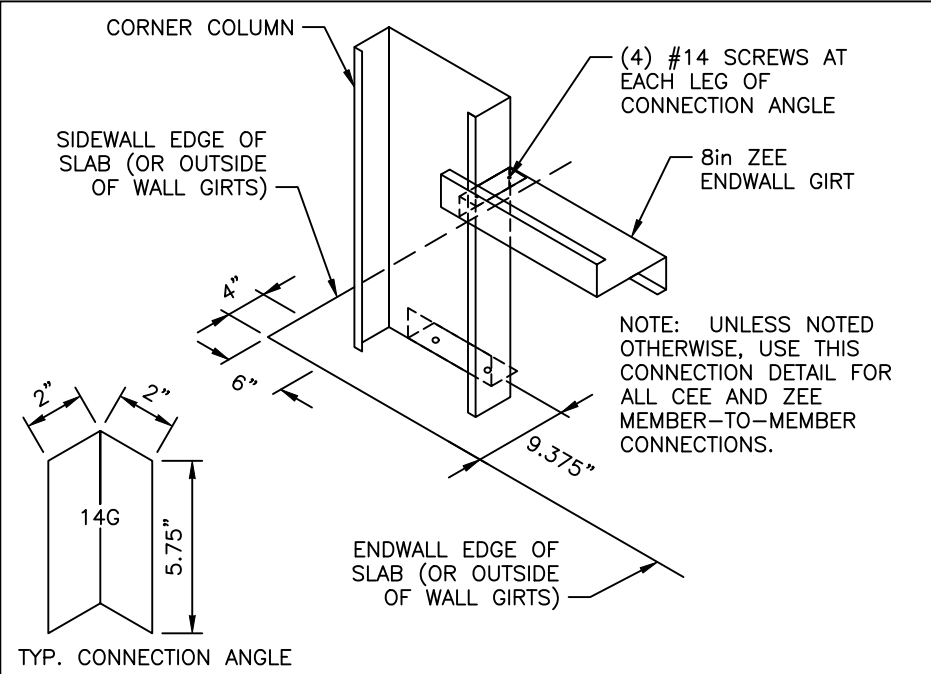
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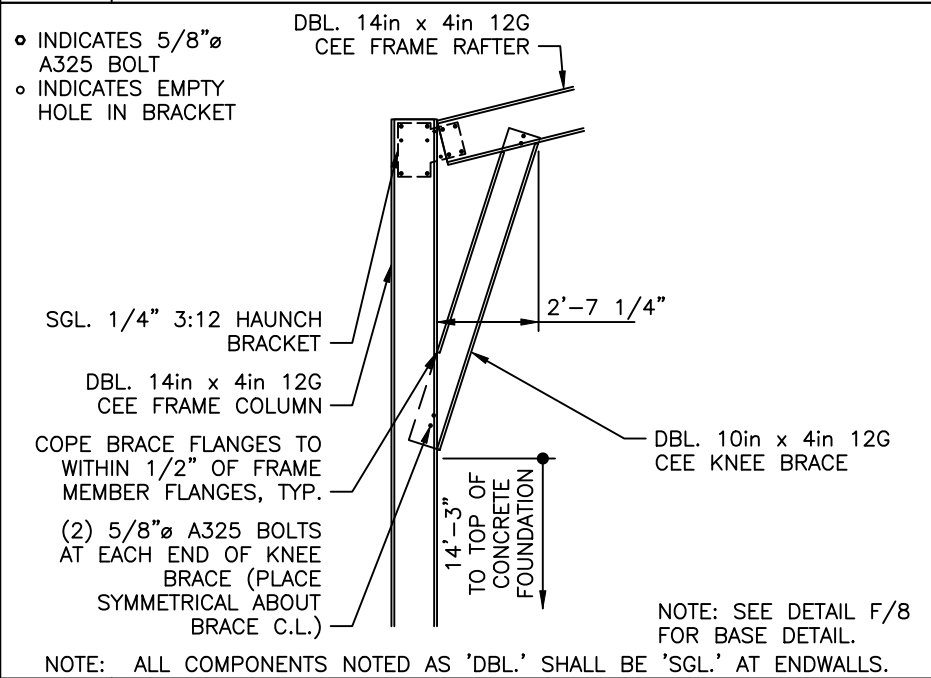
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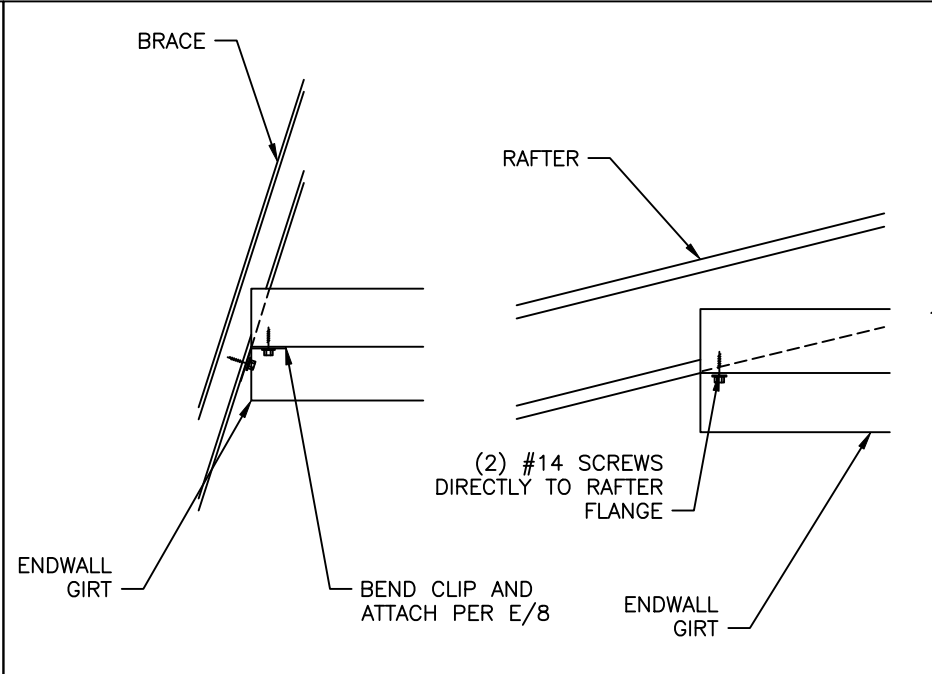
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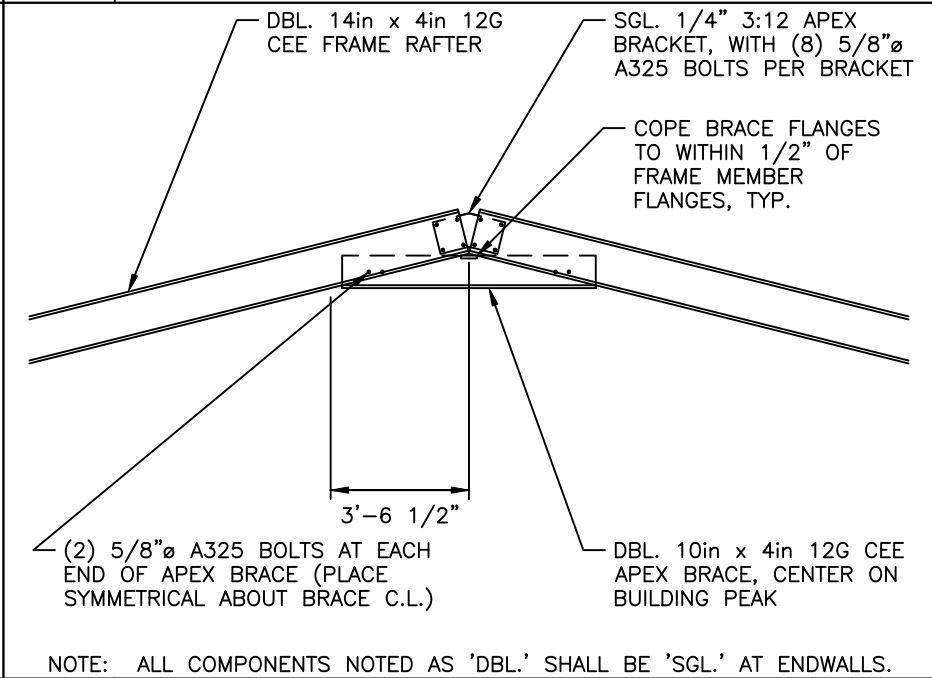
E ENDWALL GIRT AT CORNER COLUMN



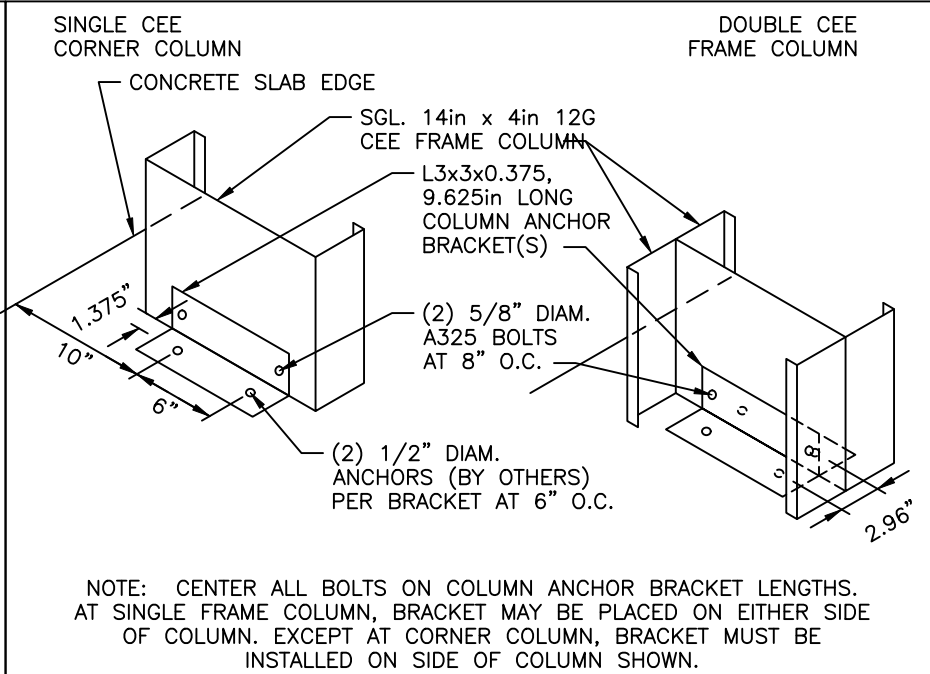
A HAUNCH CONNECTION



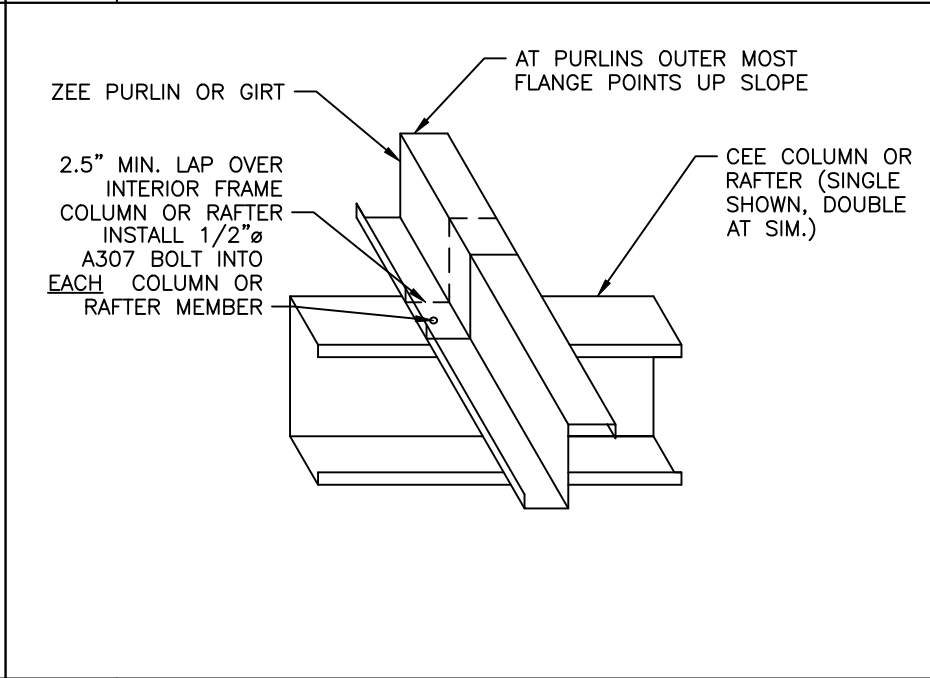
E2 END GIRT TO ANGLED CEE



B APEX CONNECTION



F FRAME COLUMN BASE DETAIL



D ZEE PURLIN/GIRT CONNECTION

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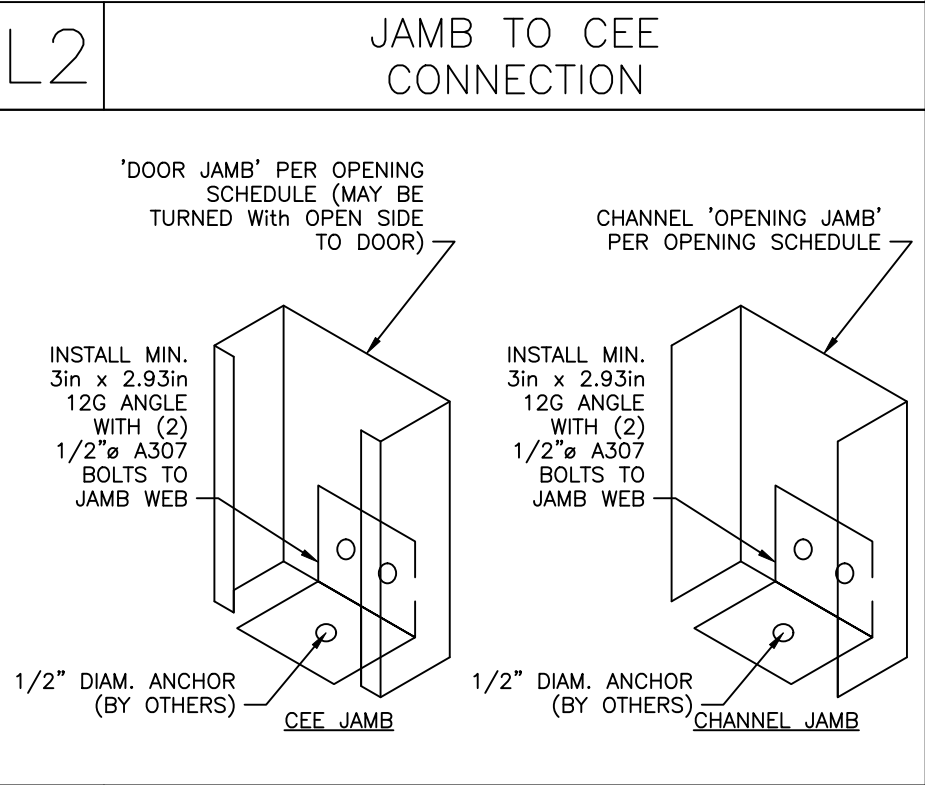
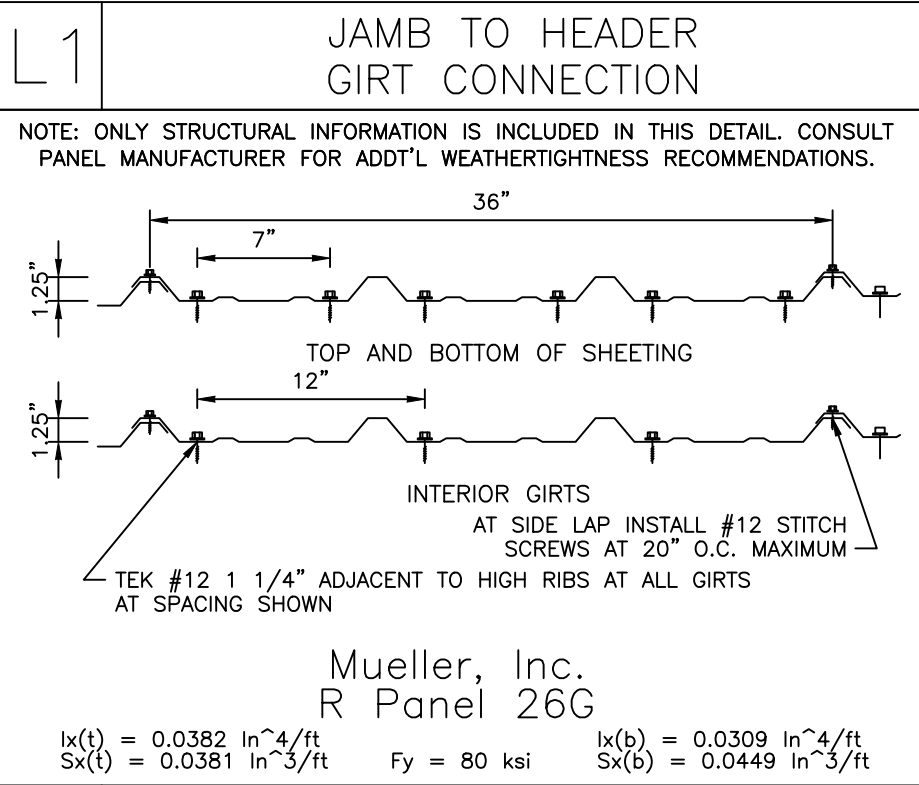
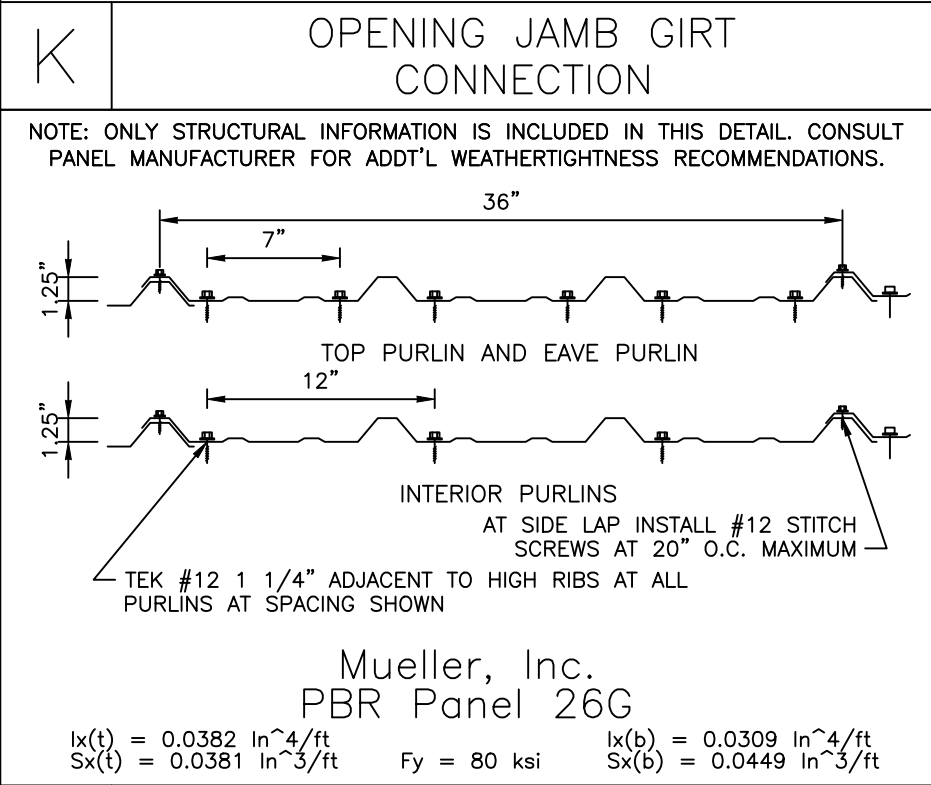
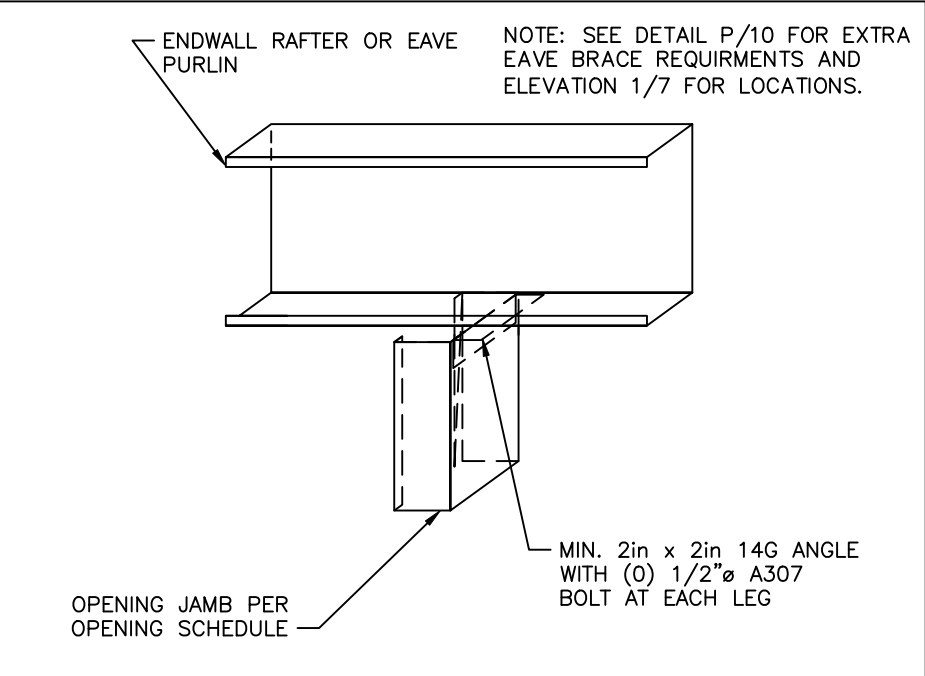
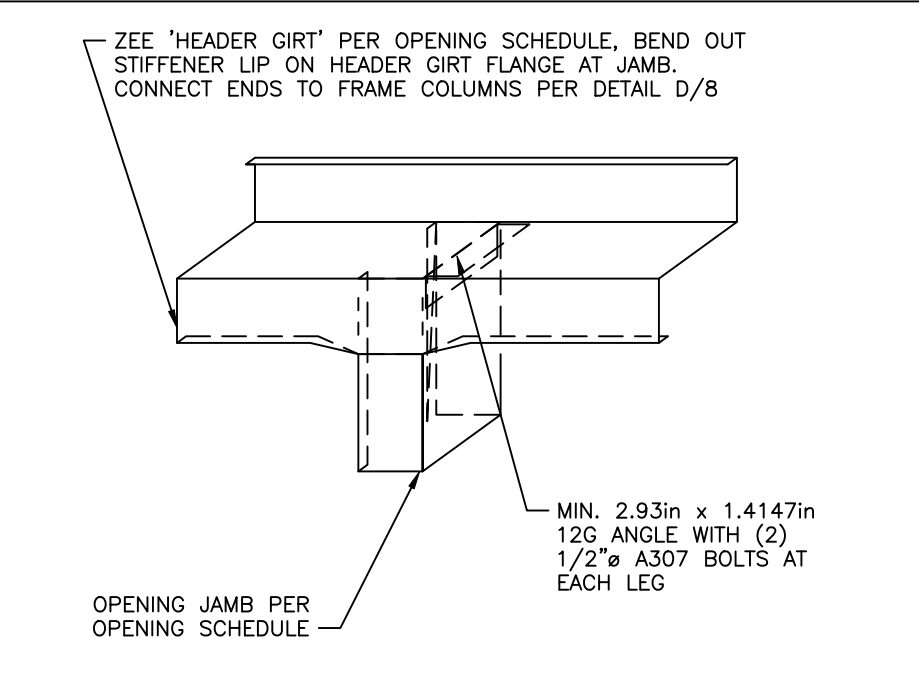
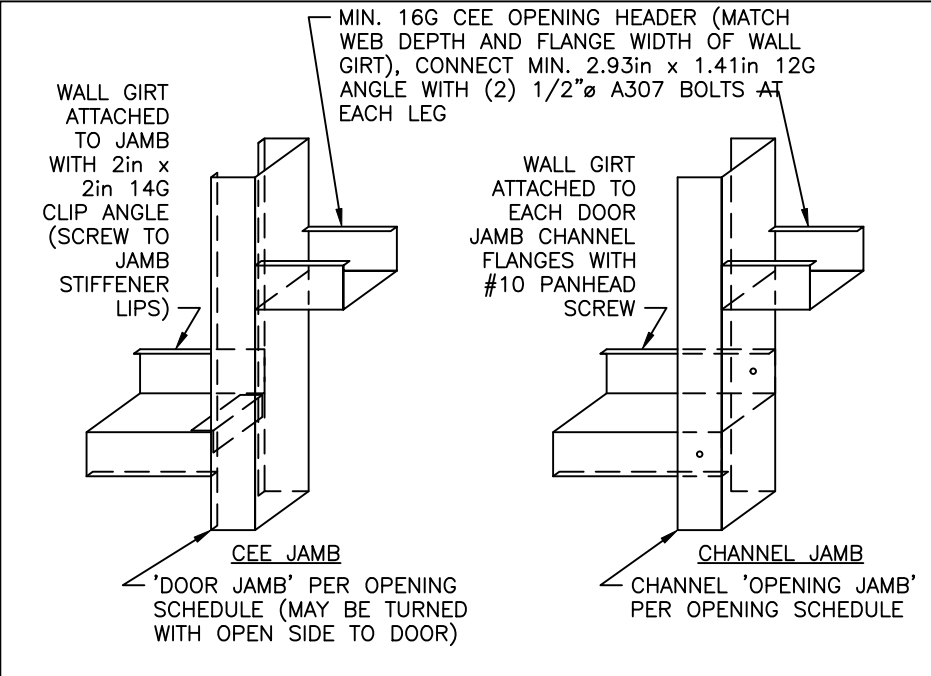
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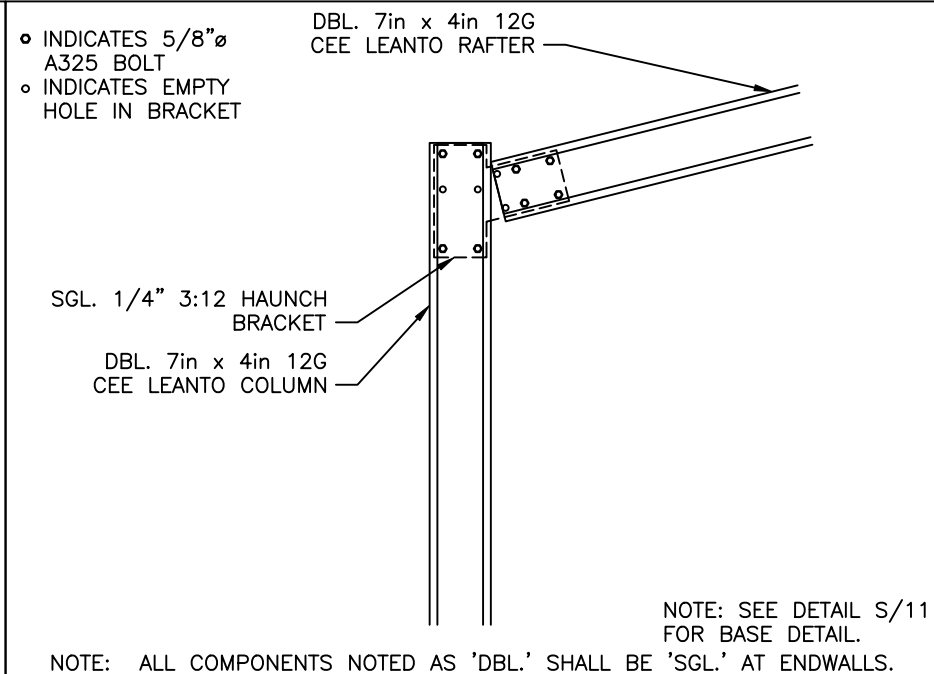
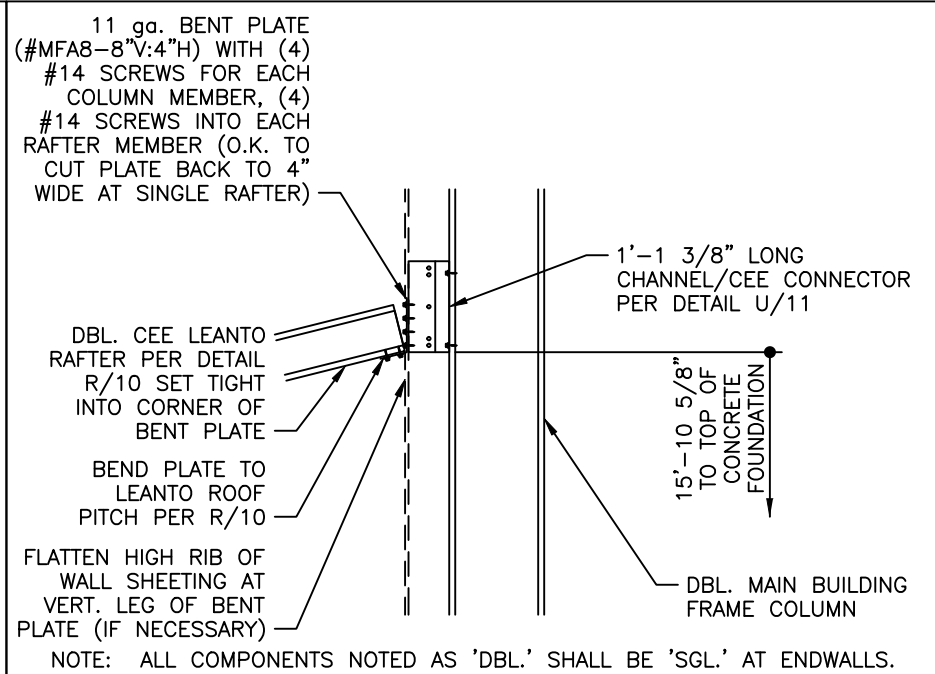
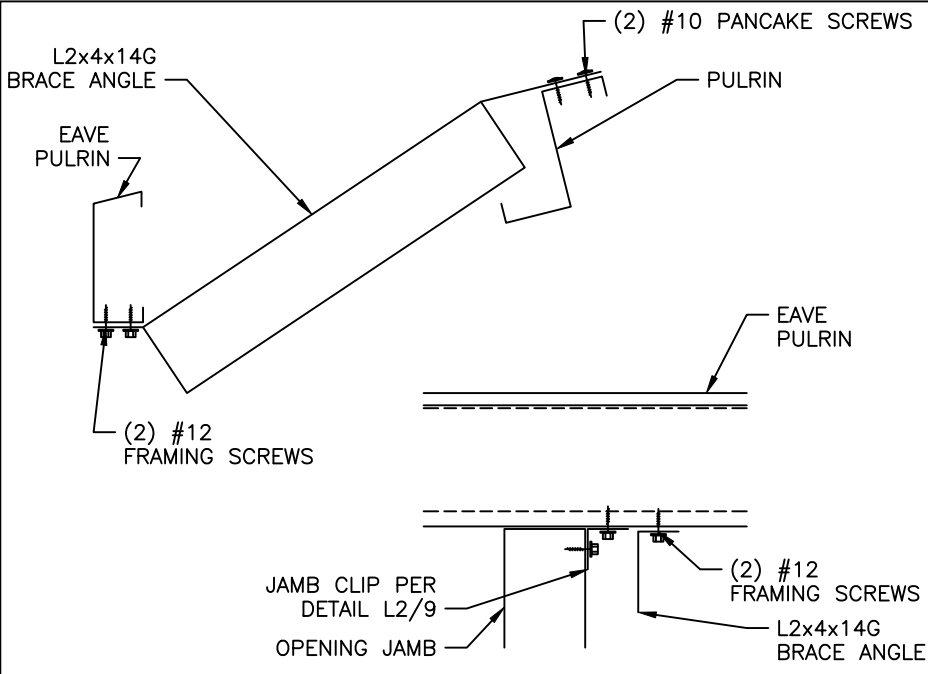
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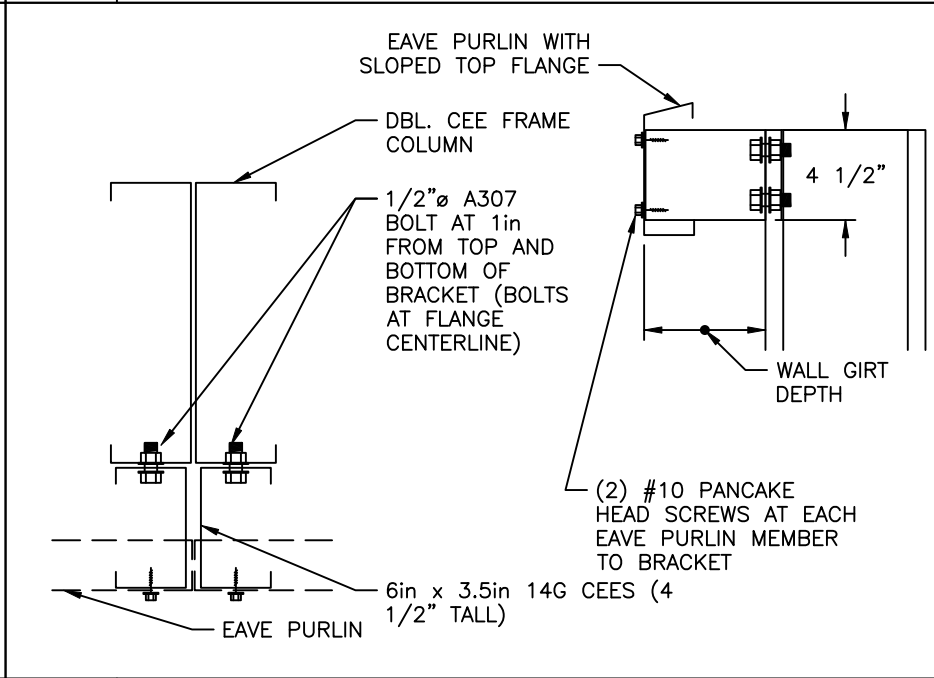
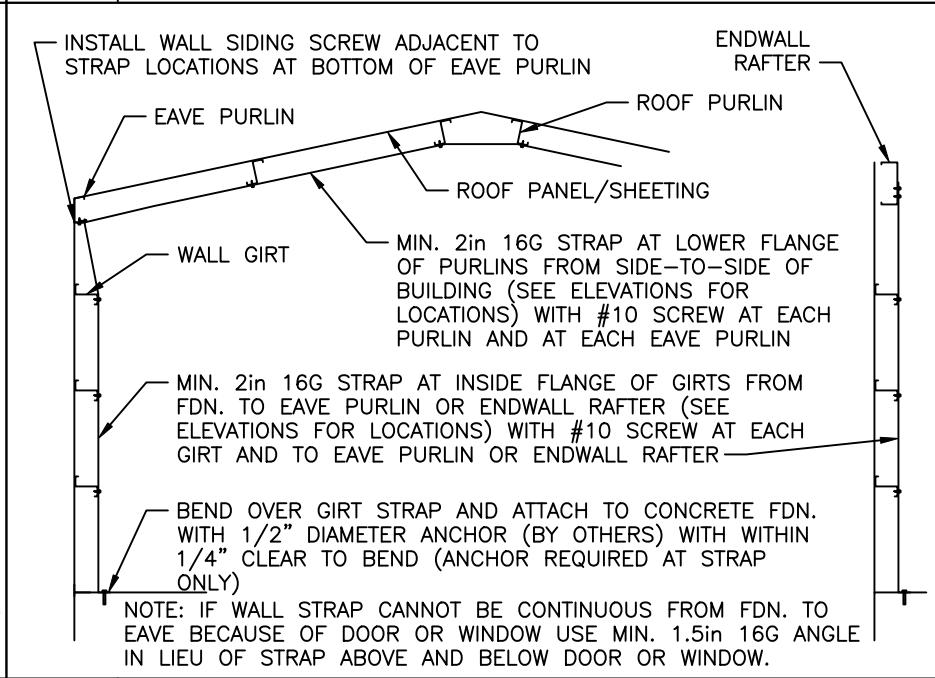
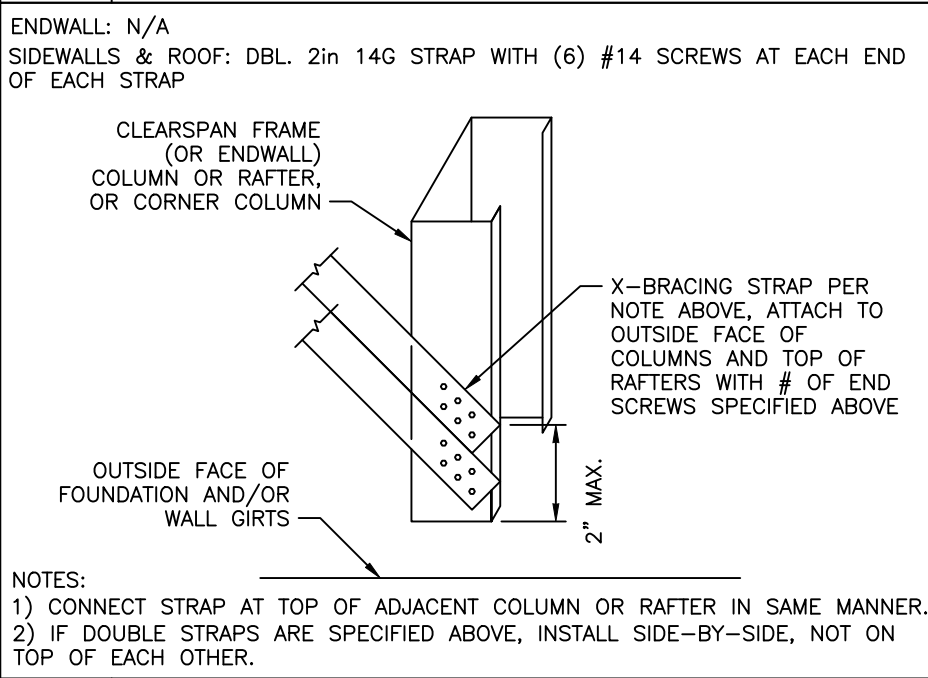
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P EAVE PURLIN BRACE

Q LEANTO RAFTER CONNECTION

R LEANTO HAUNCH CONNECTION



M ROOF AND WALL X-BRACING CONNECTION

N PURLIN AND GIRT FLANGE BRACING

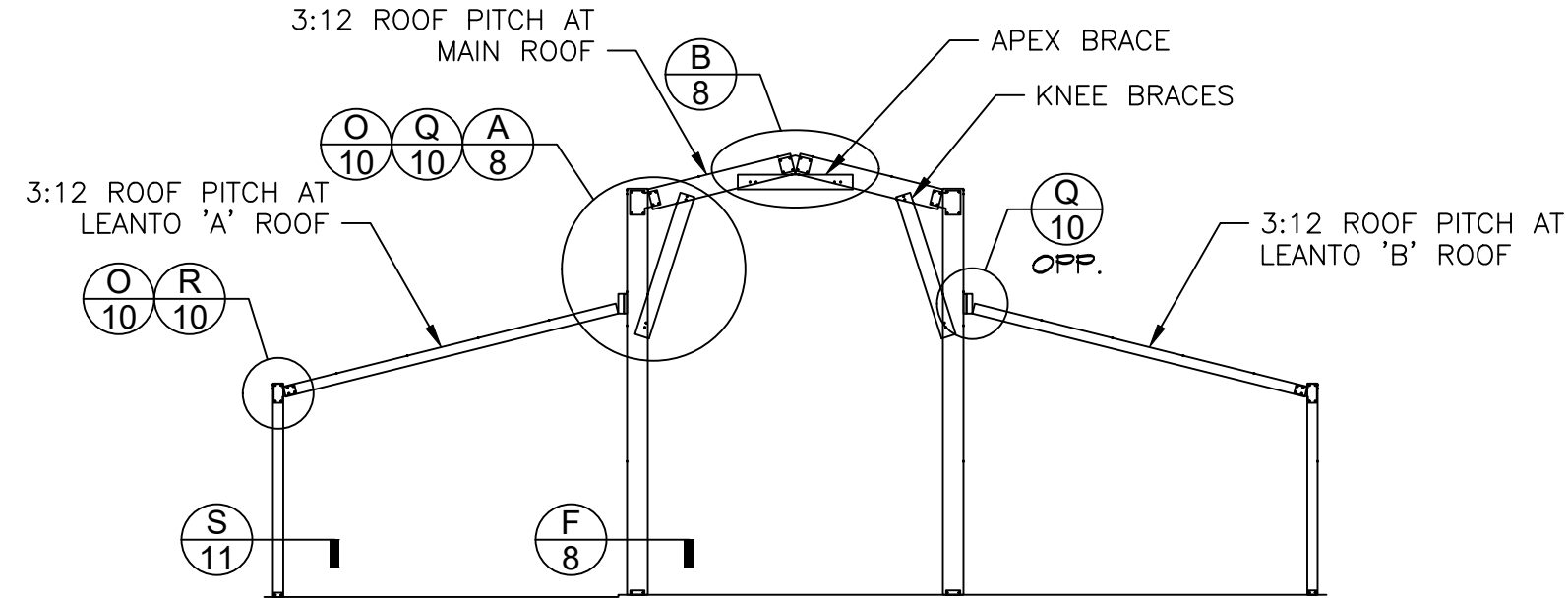
O EAVE PURLIN BRACKET

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12

TYP. FRAME CROSS-SECTION

SCALE: 3/32" = 1'-0"

FRAMES 2-5

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STRUCTURAL GENERAL NOTES

1. GOVERNING CODE: 2018 INTERNATIONAL BUILDING CODE

2. DRAWING OWNERSHIP:
THESE DRAWINGS ARE JOINTLY OWNED BY MUELLER, INC. (MLR) AND METAL BUILDING ENGINEERING, LLC. DRAWINGS ARE PROVIDED FOR THE SOLE PURPOSE OF OBTAINING BUILDING PERMITS. ENGINEERING SEAL IS VALID FOR THE CONSTRUCTION OF A SINGLE BUILDING AT THE JOB ADDRESS SHOWN IN DRAWING TITLEBLOCK. ANY OTHER USE OF THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM MLR AND METAL BUILDING ENGINEERING, LLC IS PROHIBITED.

3. DRAWING SEAL REQUIREMENTS:
THESE DRAWINGS ARE NOT VALID UNLESS 1) THE SEAL (STAMP) ON A PAPER COPY IS WET SIGNED IN INK BY THE ENGINEER, OR 2) THE PAPER COPIES ARE OF A DRAWING DIGITALLY SIGNED BY THE ENGINEER, OR 3) THE ELECTRONIC FILE OF THE DRAWING IS DIGITALLY SIGNED BY THE ENGINEER. IF A COPY OF THESE DRAWINGS IS DISTRIBUTED WITHOUT EITHER A PROPER WET SIGNATURE OR A DIGITAL SIGNATURE, THE DRAWING IS CONSIDERED INVALID. IF A COPY OF THESE DRAWINGS IS DISTRIBUTED WITHOUT EITHER A PROPER WET SIGNATURE OR A DIGITAL SIGNATURE, THE DRAWING IS CONSIDERED INVALID. THE ENGINEER ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR DRAWINGS CONSIDERED INVALID AS NOTED ABOVE.

4. CONTRACTOR RESPONSIBILITIES:
CONTRACTOR SHALL VERIFY AND CONFIRM ALL EXISTING CONDITIONS AND DIMENSIONS. METAL BUILDING ENGINEERING, LLC (ENGINEER) SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN DRAWINGS AND EXISTING CONDITIONS PRIOR TO START OF WORK.

CONTRACTOR MUST SUBMIT IN WRITING ANY REQUEST FOR MODIFICATION TO THE PLANS AND/OR SPECIFICATIONS AND NO STRUCTURAL CHANGES FROM THE APPROVED PLANS SHALL BE MADE IN THE FIELD UNLESS, PRIOR TO MAKING CHANGES, WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. SHOP DRAWINGS SUBMITTED TO THE ENGINEER FOR REVIEW DO NOT CONSTITUTE "IN WRITING" UNLESS IT IS NOTED THAT SPECIFIC CHANGES ARE BEING REQUESTED. IF CHANGES ARE MADE WITHOUT WRITTEN APPROVAL, SUCH CHANGES SHALL BE THE LEGAL AND FINANCIAL RESPONSIBILITY OF THE CONTRACTOR OR SUB-CONTRACTORS INVOLVED AND IT SHALL BE THEIR FULL RESPONSIBILITY TO REPLACE OR REPAIR THE CONDITION AS DIRECTED BY THE ENGINEER.

CONTRACTOR SHALL PROVIDE ALL TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING ERECTION. THESE TEMPORARY PROVISIONS SHALL REMAIN IN PLACE UNTIL SUFFICIENT PERMANENT MEMBERS ARE ERECTED TO INSURE THE SAFETY OF PARTIALLY ERECTED STRUCTURES. CONTRACTOR IS RESPONSIBLE FOR MEETING ALL LAWS REGULATING THE ERECTION OF STEEL BUILDINGS.

THESE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. BUILDING IS NOT CONSIDERED COMPLETE UNTIL THE INSTALLATION OF ALL COMPONENTS AND DETAILS SHOWN HEREIN ARE INSTALLED ACCORDING TO THE DRAWINGS.

5. ENGINEERING:
THE SUPPLYING OF STAMPED ENGINEERING CALCULATIONS AND DRAWINGS FOR THIS METAL BUILDING DOES NOT IMPLY OR CONSTITUTE AN AGREEMENT THAT METAL BUILDING ENGINEERING, LLC IS ACTING AS THE ENGINEER OR ARCHITECT OF RECORD OR THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR THE WHOLE OF THE PROJECT.

THIS BUILDING HAS BEEN REVIEWED BY METAL BUILDING ENGINEERING, LLC FOR CONFORMITY ONLY TO THE STRUCTURAL DESIGN PORTIONS OF THE GOVERNING CODE. THE BUILDING OWNER IS RESPONSIBLE TO SEEK PROFESSIONAL ADVICE IN ADDRESSING ANY OTHER CODE REQUIREMENTS (INCLUDING, BUT NOT LIMITED TO, FIRE AND LIFE SAFETY, ENVIRONMENTAL, ACCESSIBILITY, OR ELECTRICAL) THAT MAY APPLY TO THIS PROJECT.

DRAWINGS SCALES INDICATED ON DRAWINGS ARE APPROXIMATE AND INTENDED TO BE USED FOR REFERENCE ONLY. DO NOT SCALE DRAWINGS FOR CONSTRUCTION PURPOSES.

THESE DOCUMENTS ARE STAMPED ONLY AS TO THE COMPONENTS FURNISHED BY MLR. IT IS THE RESPONSIBILITY OF THE PURCHASER TO COORDINATE DRAWINGS PROVIDED BY METAL BUILDING ENGINEERING, LLC WITH OTHER PLANS AND/OR OTHER COMPONENTS THAT ARE PART OF THE OVERALL PROJECT. IN CASES OF DISCREPANCIES, DRAWINGS PROVIDED BY METAL BUILDING ENGINEERING, LLC SHALL GOVERN. THE UNDERSIGNED ENGINEER WILL NOT SUPERVISE THE FABRICATION OR ERECTION OF THIS STRUCTURE. ANY OBSERVATION VISITS TO THE PROJECT SITE BY THE UNDERSIGNED ENGINEER ARE NOT TO BE CONSTRUED AS BEING INSPECTIONS FOR THE CONSTRUCTION OF ANY COMPONENT OF THIS BUILDING.

6. INSPECTIONS:
NO SPECIAL INSPECTIONS ARE REQUIRED BY THE GOVERNING CODE ON THIS JOB. ALL SPECIAL INSPECTIONS AND ANY OTHER ADDITIONAL INSPECTIONS REQUESTED BY BUILDING DEPARTMENT SHALL BE AT OWNER'S EXPENSE.

7. SOIL REQUIREMENTS:
ALLOWABLE SOIL BEARING VALUE INDICATED ON DRAWING SHEET 1 OCCURS AT 12" BELOW FINISH GRADE, OR EXISTING NATURAL GRADE, OR AT FROST DEPTH SPECIFIED BY BUILDING DEPARTMENT, WHICHEVER IS THE LOWEST ELEVATION. FOUNDATION DESIGN SHOWN ASSUMES BOTTOM OF FOOTING BEARS ON NATIVE SOILS.

FOUNDATION DESIGN SHOWN DOES NOT ACCOUNT FOR EXPANSIVE SOIL CONDITIONS OR FOR CONCRETE THAT WILL BE EXPOSED TO SULFATE CONTAINING SOLUTIONS OR CHLORIDES. OWNER SHALL CONTACT ENGINEER PRIOR TO CONSTRUCTION IF ANY OF THESE CONDITIONS EXIST.

8. CONCRETE REQUIREMENTS:
MLR AND & METAL BUILDING ENGINEERING, LLC ARE NOT RESPONSIBLE FOR PROJECT FOUNDATION DESIGN. THE FOUNDATION DESIGN IS THE RESPONSIBILITY OF A REGISTERED PROFESSIONAL ENGINEER. THIS IS NOT DETERMINED OR COORDINATED BY MLR AND METAL BUILDING ENGINEERING, LLC, AS THE FOUNDATION DESIGN FOR THIS PROJECT IS 'BY OTHERS'. IT IS THE RESPONSIBILITY OF THE FOUNDATION ENGINEER TO VERIFY THAT SUFFICIENT EDGE DISTANCE IS PROVIDED FOR ALL ANCHORS.

9. STRUCTURAL STEEL REQUIREMENTS:
ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 (Fy MIN. OF 36000 psi), U.N.O. ALL BOLTS SHALL CONFORM TO ASTM A325, U.N.O. BOLT HOLE DIAMETERS SHALL BE 1/16" LARGER THAN NOMINAL BOLT DIAMETER. ALL INSTALLATION SHALL BE IN ACCORDANCE WITH AISC "CODE OF STANDARD PRACTICE".
NO WELDING IS REQUIRED ON THIS JOB.

10. LIGHT GAUGE STRUCTURAL STEEL REQUIREMENTS:
ALL LIGHT GAUGE STEEL FRAMING MATERIAL AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN IRON AND STEEL INSTITUTE (AISI) "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS".

ALL LIGHT GAUGE STEEL MATERIAL SHALL CONFORM TO ASTM A653 HAVING A MINIMUM YIELD STRENGTH OF 55000 psi. THE GRADE AND ASTM SPECIFICATION NUMBER SHALL BE INDICATED BY PAINTING, DECAL, TAGGING, OR OTHER SUITABLE MEANS, ON EACH LIFT OR BUNDLE OF FABRICATED ELEMENTS.

UNLESS NOTED OTHERWISE, CEE, ZEE, AND CHANNEL MEMBERS' WEB AND FLANGE DIMENSIONS (IN INCHES) SHALL BE AS NOTED IN DETAILS IN THE FOLLOWING FORMAT: [WEB DEPTH]in x [FLANGE WIDTH]in [GAUGE]G. FOR ZEES WITH UNEQUAL FLANGES, THE WIDTHS FOR BOTH FLANGES WILL BE LISTED, SEPARATED BY A " / ". MIN. FLANGE STIFFENER LIPS SHALL BE 0.885" FOR 12G CEES, 0.800" FOR 14G CEES, 0.773" FOR 16G CEES, 1.000" FOR 12G ZEES, 1.000" FOR 14G ZEES, AND 1.000" FOR 16G ZEES. ALL BEND RADIUSES SHALL BE .1875". FOR ANGLES, THE FIRST TWO NUMBERS ARE THE LEG DIMENSIONS.

DECIMAL THICKNESS OF THE DELIVERED LIGHT GAUGE STEEL MATERIAL, ACCORDING TO NOMINAL GAUGES, SHALL MEET OR EXCEED 95% THE FOLLOWING DESIGN VALUES

GAUGE NO.	DECIMAL THICKNESS, IN.	GAUGE NO.	DECIMAL THICKNESS, IN.	GAUGE NO.	DECIMAL THICKNESS, IN.
10	0.135	14	0.070	18	0.048
12	0.105	16	0.059	20	0.036

EXCEPT AS SHOWN ON DRAWINGS, CEE COLUMN AND RAFTER MEMBERS SHALL NOT BE DRILLED OR NOTCHED WITHOUT PRIOR APPROVAL OF THE ENGINEER. DOOR JAMB, ROOF PURLIN, AND WALL GIRT ENDS MAY HAVE FLANGES COPED 3" MAX. IF CONNECTION IS MADE TO PERPENDICULAR MEMBER PER DETAIL E/8. ROUND HOLES MAY BE DRILLED THROUGH ANY GIRT OR PURLIN MEMBER WITHIN THE MIDDLE THIRD OF THE DEPTH OF THAT MEMBER AND NOT WITHIN 24" OF MEMBER END (FIELD-DRILLED BOLT HOLES INDICATED AT ENDS OF KNEE OR APEX BRACE WEBS AND SHOP-PUNCHED HOLES IN BRACE FLANGES EXCEPTED).

ALL BOLTS USED TO CONNECT LIGHT GAUGE MATERIAL SHALL CONFORM TO ASTM A325. BOLTS TO BE SNUG TIGHT PER THE RCSC AND AISC SPECIFICATIONS, UNLESS SPECIFICALLY NOTED OTHERWISE. BOLTS SHALL BE SPACED NO LESS THAN 3 BOLT DIAMETERS BETWEEN CENTERS. DISTANCE FROM BOLT CENTER TO THE END OR EDGE OF ANY LIGHT GAUGE MEMBER SHALL BE A MIN. OF 1.5 BOLT DIAMETERS. ALL SCREWS USED TO CONNECT LIGHT GAUGE MATERIAL SHALL BE SELF-DRILLING SCREWS AND SHALL HAVE A MIN. TENSILE BREAKING STRENGTH OF 100,000 psi. SCREWS SHALL BE SPACED NO LESS THAN 1" O.C. AND EDGE OR END DISTANCE SHALL NOT BE LESS THAN 1". UNLESS NOTED OTHERWISE, ALL REFERENCES TO 'SCREWS' CONNECTING MATERIAL THICKER THAN 20 ga. SHALL BE MIN. #12 SCREWS AND SHALL HAVE MIN. 14 THREADS PER INCH.

SCREW ROOT DIAMETERS SHALL NOT BE LESS THAN: #14 SCREW: .200" #12 SCREW: .177" #10 SCREW: .153"

11. STEEL ROOF AND WALL PANELS (CLADDING):
LIGHT GAUGE STEEL ROOF AND WALL PANELS SHALL CONFORM TO ASTM A653 AND THE STEEL DECK INSTITUTE SPECIFICATIONS AND HAVE A MIN. YIELD STRENGTH OF 80000 psi.

DECIMAL THICKNESSES, ACCORDING TO NOMINAL GAUGES, SHALL MEET OR EXCEED THE FOLLOWING:					
GAUGE NO.	DECIMAL THICKNESS, IN.	GAUGE NO.	DECIMAL THICKNESS, IN.	GAUGE NO.	DECIMAL THICKNESS, IN.
22	0.0299	26	0.0179	29	0.0134
24	0.0179	28	0.0149	30	0.0120

SEE DETAILS H/9 AND I/9 FOR ROOF AND WALL PANEL FASTENER TYPES AND SPACINGS.



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Temporary Bracing

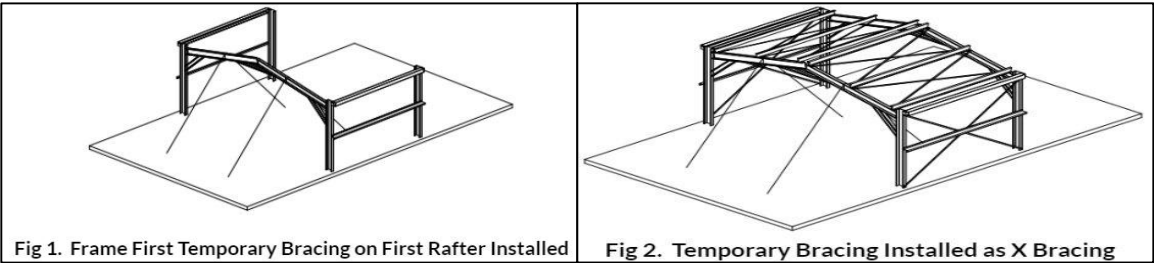
The installation of temporary bracing is critical to avoid building collapse or damaging structural movement during construction. This collapse can occur with no notice and as such the installation of appropriate temporary bracing is critical to avoid damage, injury, and possible death. Determination, procurement, and correct installation of temporary bracing is the responsibility of the builder / primary contractor / installer.

Bracing Materials

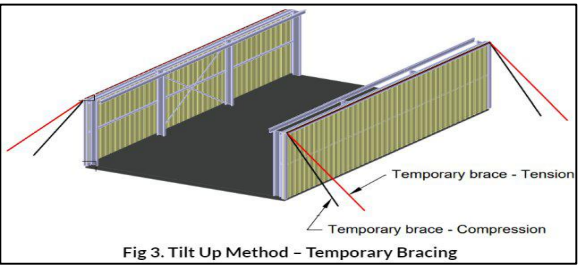
The constructor / installer is to supply suitably sized materials for temporary bracing. These materials are generally capable of tension, but in some circumstances will need to be capable of tension and compression. Load rated ratchet strapping of an appropriate size can be used to temporarily 'x-brace' bays in both directions, until the final bracing systems are fully installed. This is especially critical for buildings where X Bracing is not required in the final structure due to the use of moment frames or diaphragm bracing.

Temporary Bracing Location

The location of Temporary bracing will depend on the installation method used. Installation should be completed in accordance with the Construction Package, Engineering Plans, and Instruction Manuals. If the Frame First Method (most common) is used, then the use of tension only bracing and creating temporarily braced bays as per Fig 1 and Fig 2. can be used. As a basic guide, a minimum of every 4th bay should have temporary bracing installed as per Fig 2.



If the Tilt Up Method Is used (where walls are constructed on the ground And then tilted into place), then the tops of columns are braced with a tension and compression brace in the same direction Fig 3. Then rafters and purlins can be installed with temporary bracing holding rafters in place (similar to Fig 1) until final bracing of diaphragm sheeting is installed.



Typically, braces should be positioned diagonally across the structure from the top to the bottom, intersecting near the midpoint to provide stability, optimally at a 45-degree angle but no less than a 20-degree angle. The connection strength of temporary bracing is a critical consideration and these connections must be capable of resisting the potentially substantial temporary bracing loads – whether this connection point be to the building, the foundations or to the ground. Dependent upon building size this may include heavy angles and post installed concrete anchors. The temporary bracing methods used must be capable of fully stabilising the structure during the construction process.

Additional Temporary Bracing

The temporary bracing described is a minimum requirement for a standard-sized building in average conditions. Additional consideration should be given to larger building spans and/or challenging site conditions. There may also be an increased risk in relation to partially completed buildings and exposed sites. It is recommended that extra temporary bracing is utilized if moderate wind speeds are expected on site. Additional support elements, such as steel cables may need to be introduced that can be attached to the building's framework and anchored to the ground or other stable structures to provide extra stability. The frame should remain rigid throughout and such responsibility lies with the constructor. Buildings should not be left in a partially completed state longer than necessary.

Bracing Removal

The temporary bracing should not be removed until all purlins, girts and permanent cross bracing, diaphragm bracing or moment frames where used are installed. The temporary bracing is to remain in place where possible, until the roof and wall cladding is fully installed. If you need any further information regarding the installation of temporary bracing or are at all unsure of the necessary requirements for this specific building, there are guides available through various industry bodies:

<https://www.aisc.org/>
<https://www.metal-buildings-institute.org/>

Support is also available at support@actbuildingsystems.com.

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