



STRUCTURAL DESIGN
STANDARD PACKAGE
ENCLOSED BUILDING

**MAXIMUM 30' - 0" WIDE X 14' - 0" HEIGHT -
BOX EAVE FRAME AND BOW FRAME**

22 July 2024

Revision 5

M&A Project No. 17259S/19076S/19176S/20124S/23125S/24189S

Prepared for:

**Universal Metal Buildings
9283 US 601
Dobson, NC 27017**

Prepared by:

Moore and Associates Engineering and Consulting, Inc.

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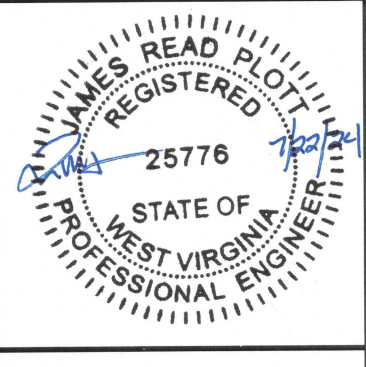
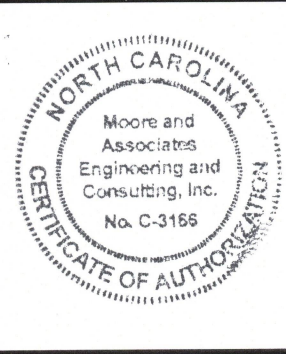


Validity Notice

Plans Expiration Date: 22 July 2025

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DRAWN BY: BF

CHECKED BY: JS

PROJECT MGR: JRP

CLIENT: UNIVERSAL

UNIVERSAL METAL BUILDINGS

9283 US 601

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 1

SCALE: NTS

DWG. NO: SK-3

**JOB NO: 17259S/19076S
/19176S/20124S/23125S
/24189S**

REV. 5

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MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: BF		UNIVERSAL METAL BUILDINGS 9283 US 601 DOBSON, NC 27017 30'-0"x14'-0" SP ENCLOSED STRUCTURE		
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	CLIENT: UNIVERSAL	SHT. 2	DWG. NO: SK-3	REV: 5	

INSTALLATION NOTES AND SPECIFICATIONS

1. DESIGN IS FOR MAXIMUM 30'-0" WIDE x 14'-0" EAVE HEIGHT ENCLOSED STRUCTURES.
2. DESIGN WAS DONE IN ACCORDANCE WITH ALL THE APPLICABLE BUILDING CODES LISTED ON SHEET 3A.
3. DESIGN LOADS ARE AS FOLLOWS:
 - A) ROOF DEAD LOADS:
 - SELF-WEIGHT = 1.5 PSF
 - MEP = 0 PSF
 - COLLATERAL = 0 PSF
 - B) ROOF LIVE LOAD = 12 PSF
 - C) FLOOR LIVE LOAD = 100 PSF (4" CONCRETE SLAB/FOOTING)
 - D) GROUND SNOW LOAD = 35 PSF
= 20 PSF WITH U-CHANNEL RAFTER TIE ($W \leq 16'-0"$)
- NOTE: DROP-DOWN LEAN-TO'S (THOSE CAUSING A HEIGHT DIFFERENTIAL FROM THE MAIN STRUCTURE) SHALL BE LIMITED TO GROUND SNOW LOADS ≤ 20 PSF DUE TO ADDITIONAL SNOW DRIFT LOADING.
4. ULTIMATE 3-SECOND GUST WIND SPEED = ≤ 145 MPH (NOMINAL WIND SPEED = 112 MPH).
5. MAXIMUM RAFTER/POST AND END POST SPACING = 5.0 FEET (UNLESS NOTED OTHERWISE)
6. END WALL COLUMNS ARE EQUIVALENT TO SIDE WALL COLUMNS IN SIZE AND SPACING (UNLESS NOTED OTHERWISE).
7. RISK CATEGORY I (NOT FOR HUMAN OCCUPANCY).
8. WIND EXPOSURE CATEGORY B.
9. STRUCTURAL ANALYSIS/DESIGN IS BASED ON TS MEETING THE REQUIREMENTS OF ASTM A653 GRADE 50 TYPE SS WITH MINIMUM YIELD STRENGTH (F_y) OF 50 KSI AND GALVANIZING MEETING THE MINIMUM REQUIREMENTS OF G60.
10. HORIZONTAL ROOF PANELING ONLY ADEQUATE FOR GROUND SNOW LOADS ≤ 30 PSF.
11. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2"x2 1/2"-14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED OTHERWISE).
12. CONNECTOR SLEEVES ARE MINIMUM 6" LONG, TS 2 1/4"x2 1/4"-14 GAUGE FOR 2 1/2"x2 1/2"-14 GAUGE (UNLESS NOTED OTHERWISE).
13. AVERAGE FASTENER SPACING ON-CENTERS = 10" (MAX.).
14. FASTENERS CONSIST OF #12-14x3/4" SELF-DRILLING FASTENER (SDF), USE CONTROL SEAL WASHER WITH EXTERIOR FASTENERS.
15. ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6" OF EACH COLUMN.
16. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 36" LONG AND MAY ONLY BE USED IN CONJUNCTION WITH OTHER (OPTIONAL) ANCHOR DEVICES AND ONLY IN SUITABLE SOILS. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED. COORDINATE WITH LOCAL CODES/ORDINANCES REGARDING MINIMUM LENGTH FOR FROST DEPTH PROTECTION.
17. CONTRACTOR TO PROVIDE ADEQUATE BRACING FOR STRUCTURE SO THAT IT WILL BE STABLE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE AND FOUNDATIONS ARE DESIGNED FOR A COMPLETED CONDITION ONLY AND, THEREFORE, REQUIRE ADDITIONAL SUPPORT TO MAINTAIN STABILITY BEFORE COMPLETION.
18. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
 - SOIL SITE CLASS = D
 - RISK CATEGORY I
 - $R = 3.25$ $I_E = 1.0$
 - $S_{DS} = 2.625 g$ $V = C_S W$
 - $S_{D1} = 2.13 g$
19. IF MORE THAN 50% OF COLUMN (LEG) ARE REMOVED IN ANY LONGITUDINAL (SIDE) WALL OF A BUILDING, THE ENGINEER IS TO BE NOTIFIED TO DETERMINE WHETHER PORTAL FRAMES OR OTHER LONGITUDINAL STABILITY ELEMENTS WILL BE REQUIRED.
20. ANALYSIS/DESIGN OF THIS STRUCTURE WAS BASED ON THE LOADS, BUILDING CODE, AND STRUCTURAL GEOMETRY NOTED HEREIN. NO CHANGES SHALL BE MADE TO THE STRUCTURE WITHOUT EXPRESS WRITTEN PERMISSION FROM THE DESIGN ENGINEER. ANY CHANGES IN THE USE OR GEOMETRY OF THE STRUCTURE IN ANY MANNER IS A VIOLATION OF THE BUILDING CODE AND NEGATES ANY LIABILITY ON THE PART OF MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.
21. WHEN USING GENERIC MASTER DESIGNS TO OBTAIN BUILDING PERMIT, IT MUST BE ACCOMPANIED BY SUFFICIENT ADDITIONAL INFORMATION TO INDICATE THE LOCATION, NATURE, AND EXTEND OF THE CONSTRUCTION AND SHOW IN DETAIL THAT IT WILL CONFORM TO ALL APPLICABLE CODES, LAWS, ORDINANCES, RULES, AND REGULATIONS.
22. WHEN APPLYING FOR BUILDING PERMIT, THE BUILDING OFFICIAL MUST BE CONSULTED TO VERIFY WHETHER THE USE OF THE MASTER DESIGN IS ADEQUATE OR IF A SITE-SPECIFIC DESIGN IS REQUIRED FOR OBTAINING A BUILDING PERMIT. GENERIC MASTER DESIGNS CAN NOT BE USED WHERE A SITE-SPECIFIC DESIGN IS REQUIRED.
23. ANY VARIATION FROM THE ANALYSIS/DESIGN PARAMETERS OF THE MASTER DESIGN REQUIRES THE DEVELOPMENT OF A SITE-SPECIFIC DESIGN.

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DOBSON, NC 27017

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SHT. 3

SCALE: NTS

DWG. NO: SK-3

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LIST OF APPLICABLE BUILDING CODES

2021 INTERNATIONAL BUILDING CODE (IBC 2021)

2018 INTERNATIONAL BUILDING CODE (IBC 2018)

2015 INTERNATIONAL BUILDING CODE (IBC 2015)

2012 INTERNATIONAL BUILDING CODE (IBC 2012)

GEORGIA STATE MINIMUM STANDARD BUILDING CODE
(ADOPTS THE IBC 2018 WITH AMENDMENTS)

2018 KENTUCKY BUILDING CODE
(ADOPTS THE IBC 2015 WITH AMENDMENTS)

2020 BUILDING CODE OF NEW YORK STATE
(ADOPTS THE IBC 2018 WITH AMENDMENTS)

2018 NORTH CAROLINA BUILDING CODE
(ADOPTS THE IBC 2015 WITH AMENDMENTS)

2024 OHIO BUILDING CODE
(ADOPTS THE IBC 2021 WITH AMENDMENTS)

PENNSYLVANIA BUILDING CODE 2018
(ADOPTS THE IBC 2018 WITH AMENDMENTS)
PHILADELPHIA BUILDING CODE
(ADOPTS THE IBC 2018 WITH AMENDMENTS)

2021 SOUTH CAROLINA BUILDING CODE
(ADOPTS THE IBC 2021 WITH AMENDMENTS)

TENNESSEE BUILDING CODE 2012
(ADOPTS THE IBC 2012 WITH AMENDMENTS)
BUILDING CODE OF THE CITY OF KNOXVILLE
(ADOPTS THE IBC 2018 WITH AMENDMENTS)
BUILDING CODE OF METROPOLITAN NASHVILLE AND
DAVIDSON COUNTY (ADOPTS THE IBC 2018 WITH
AMENDMENTS)
(IBC 2012, IBC 2018, IBC 2021 (DEPENDENT UPON
LOCAL JURISDICTION))

VIRGINIA UNIFORM STATEWIDE BUILDING CODE, PART 1,
CONSTRUCTION/VIRGINIA CONSTRUCTION CODE (VCC)
(ADOPTS THE IBC 2021 WITH AMENDMENTS)

WEST VIRGINIA BUILDING CODE 2018
(ADOPTS THE IBC 2018 WITH AMENDMENTS)

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SHT. 3A

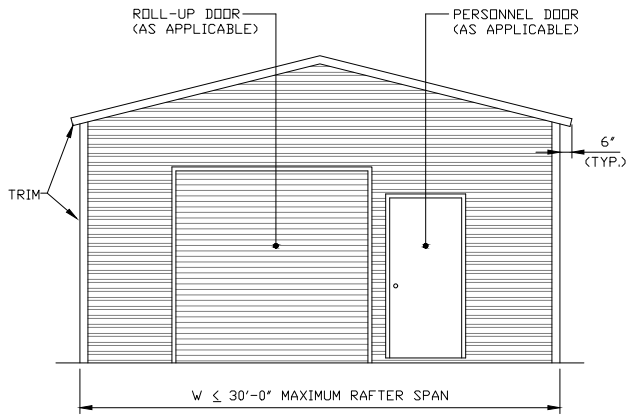
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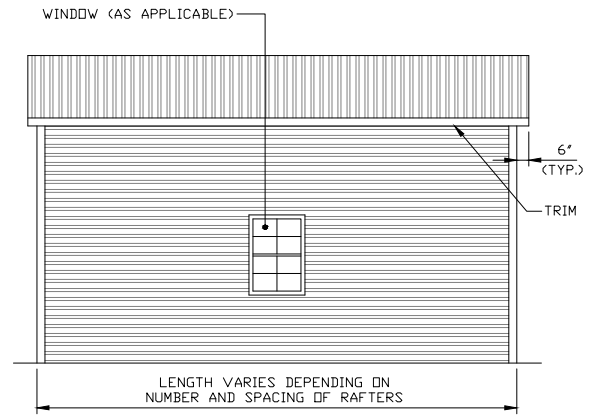
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BOX EAVE FRAME RAFTER STRUCTURE



TYPICAL END ELEVATION

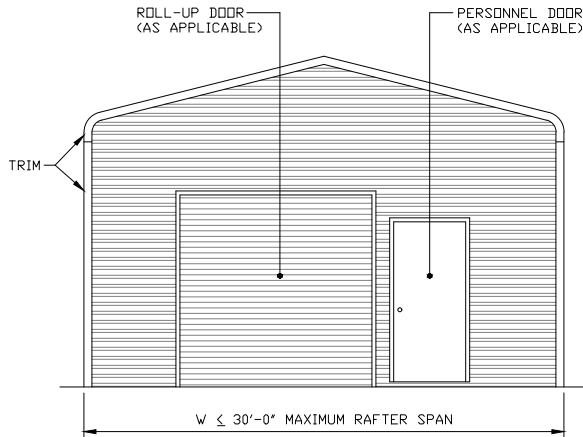
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TYPICAL SIDE ELEVATION

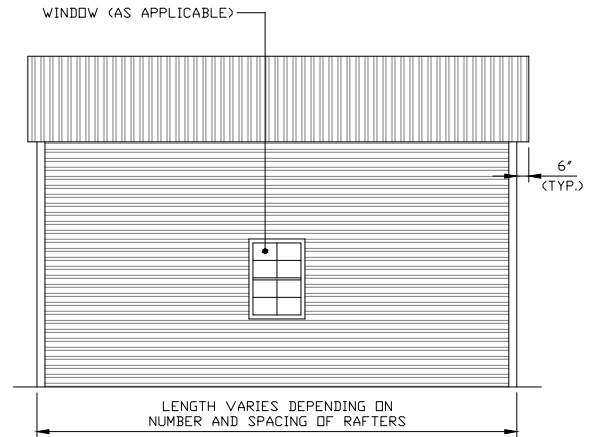
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BOW FRAME RAFTER STRUCTURE



TYPICAL END ELEVATION

SCALE: NTS



TYPICAL SIDE ELEVATION

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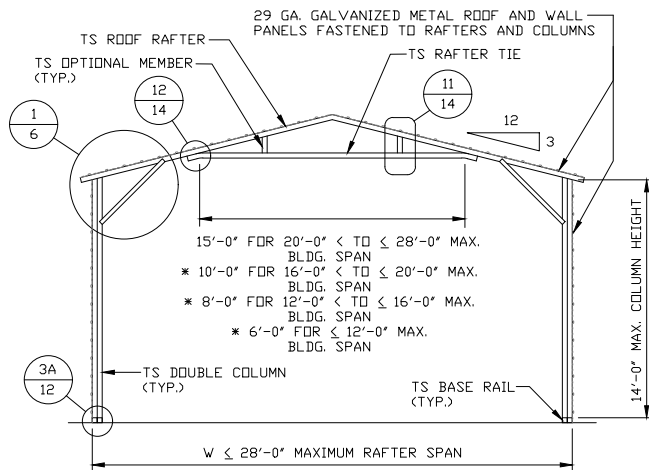
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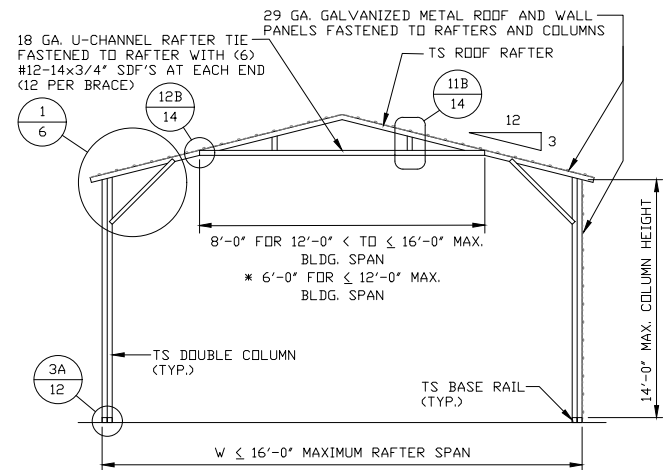
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TYPICAL RAFTER/COLUMN END FRAME SECTION

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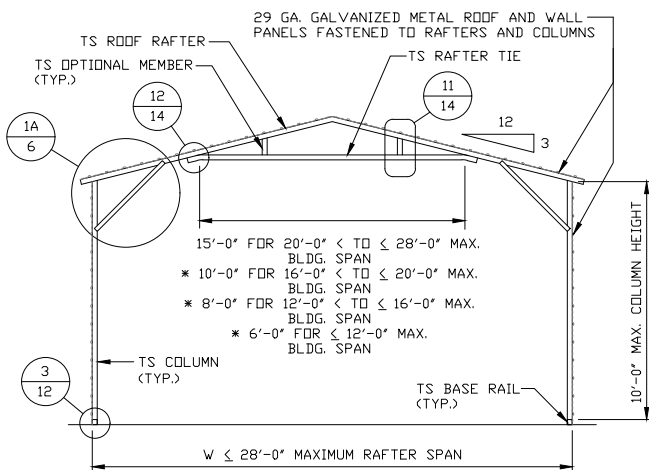
* NOTE: VERTICAL STRUTS NOT REQUIRED FOR THESE TIE LENGTHS



TYPICAL RAFTER/COLUMN END FRAME SECTION

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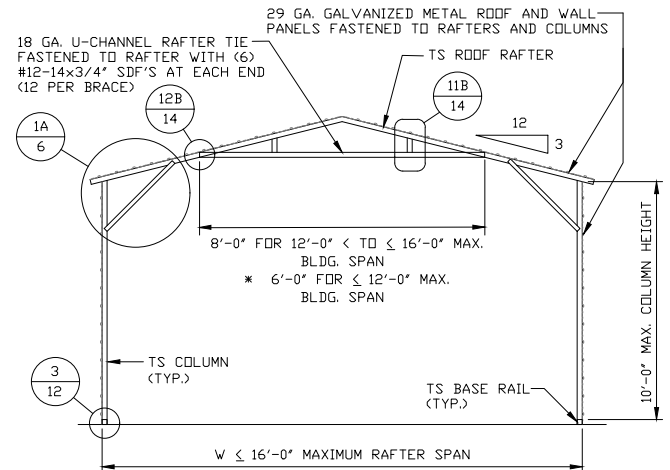
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TYPICAL RAFTER/COLUMN END FRAME SECTION

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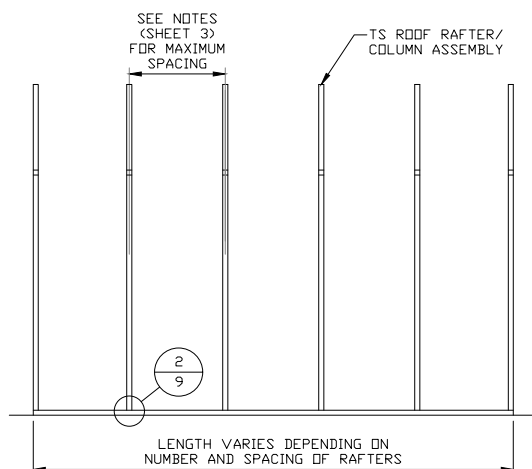
* NOTE: VERTICAL STRUTS NOT REQUIRED FOR THESE TIE LENGTHS



TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

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TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

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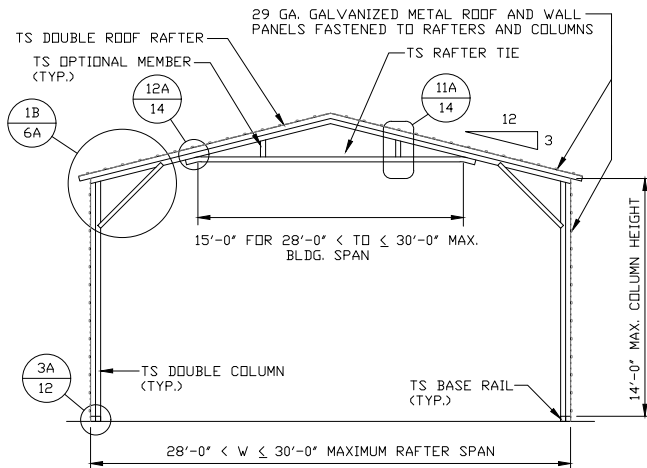
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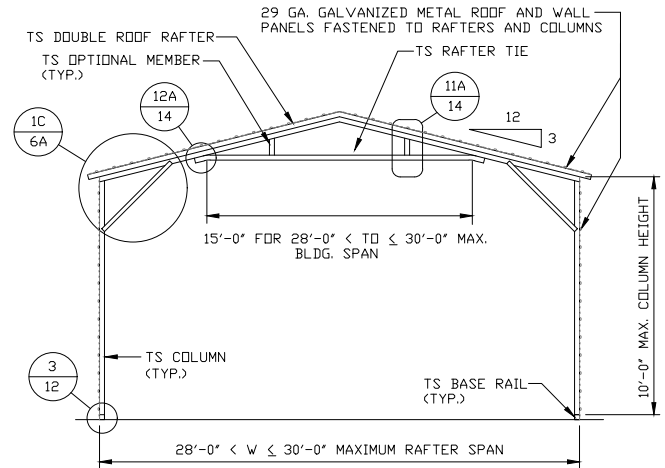
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TYPICAL RAFTER/COLUMN END FRAME SECTION

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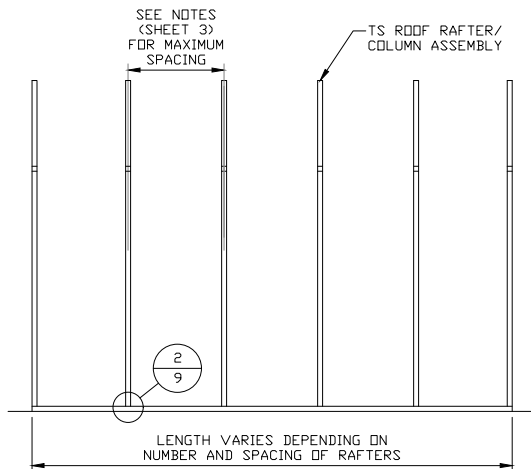
NOTE: SINGLE TUBE RAFTER CAN BE USED FOR GROUND SNOW LOADS ≤ 30 PSF



TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

NOTE: SINGLE TUBE RAFTER CAN BE USED FOR GROUND SNOW LOADS ≤ 30 PSF



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

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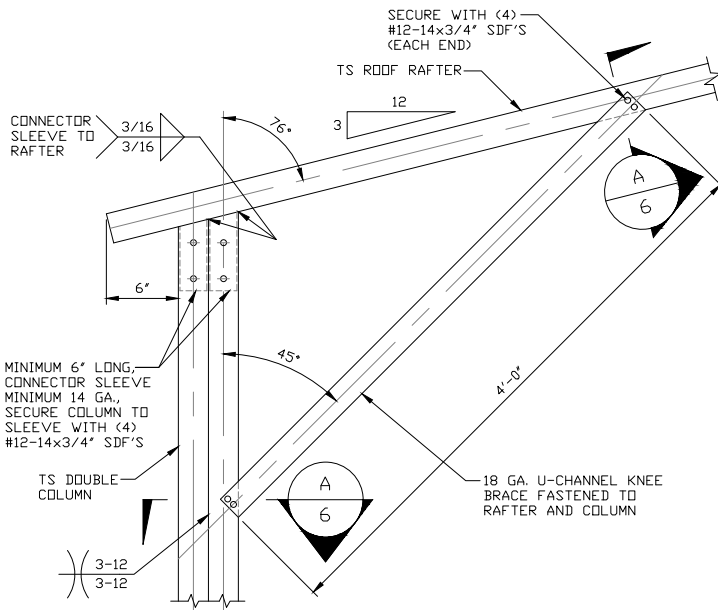
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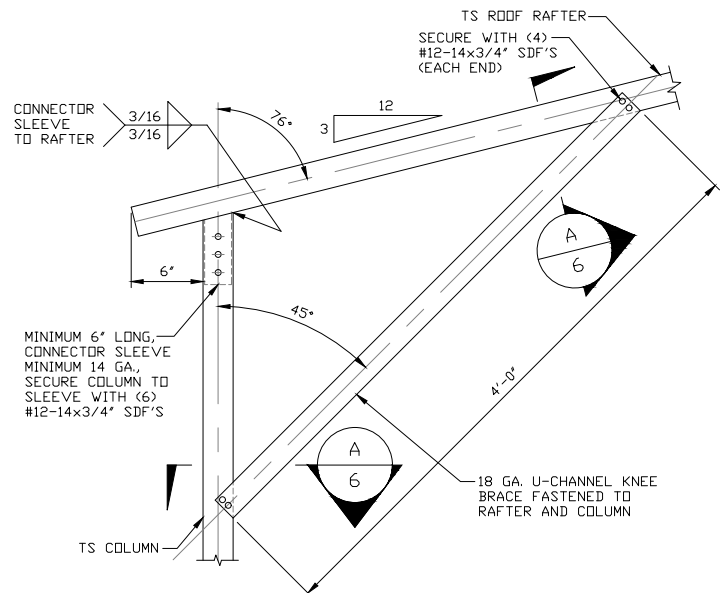
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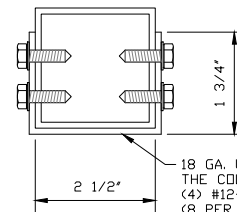
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**BOX EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS 10'-0" < TO ≤ 14'-0"**
SCALE: NTS



**BOX EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS ≤ 10'-0"**
SCALE: NTS
NOTE: MAXIMUM COLUMN HEIGHT IS
12'-0" FOR WIND SPEEDS ≤ 115 MPH.



A BRACE SECTION
SCALE: NTS

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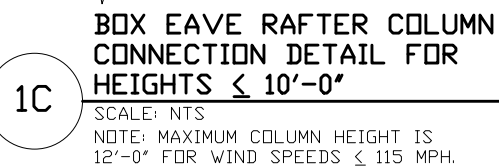
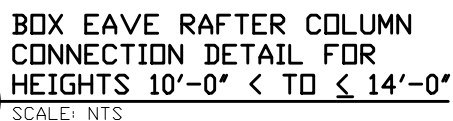
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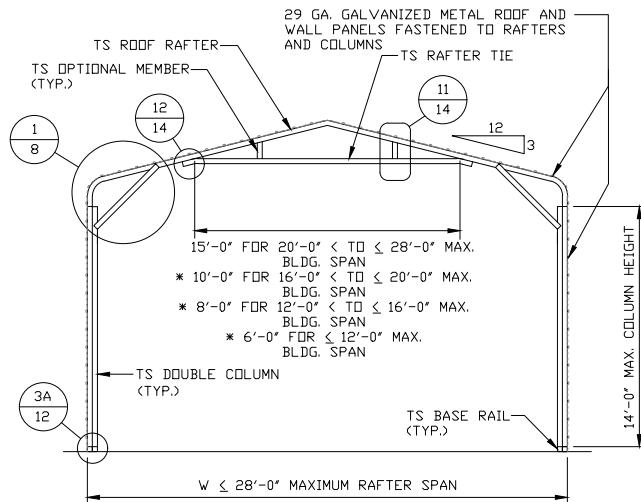
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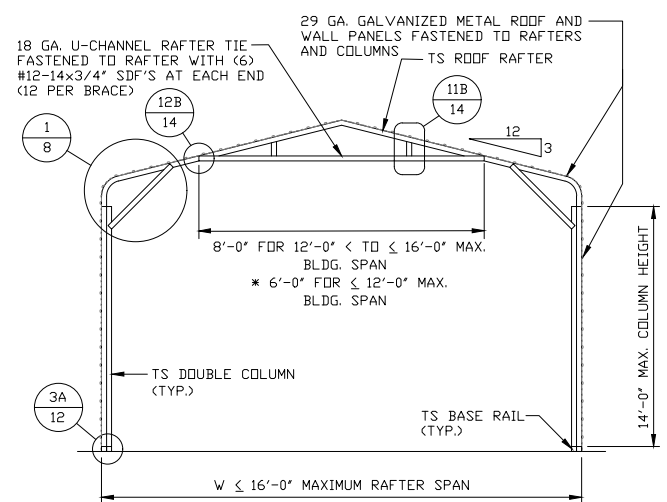
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TYPICAL RAFTER/COLUMN END FRAME SECTION

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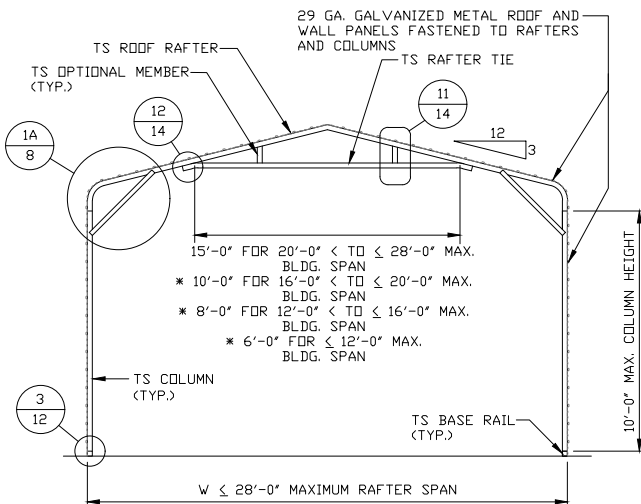
* NOTE: VERTICAL STRUTS NOT REQUIRED FOR THESE TIE LENGTHS



TYPICAL RAFTER/COLUMN END FRAME SECTION

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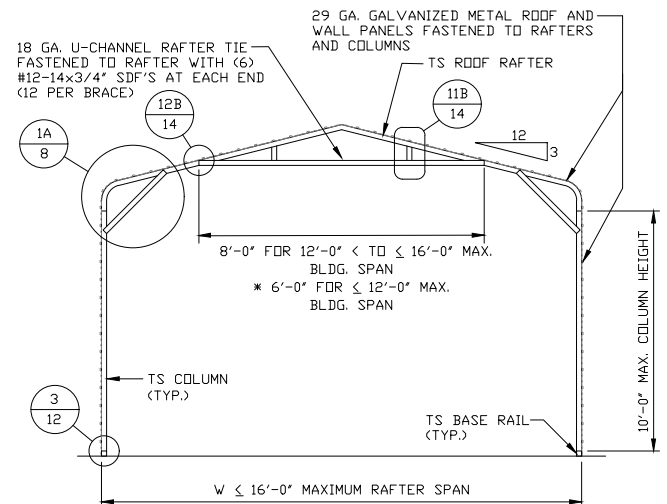
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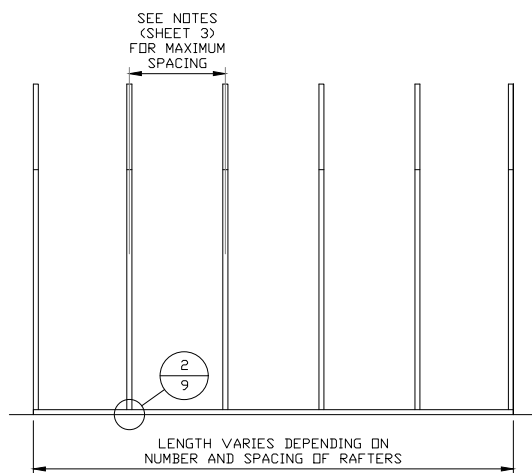
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TYPICAL RAFTER/COLUMN END FRAME SECTION

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TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION

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9283 US 601

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30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 7

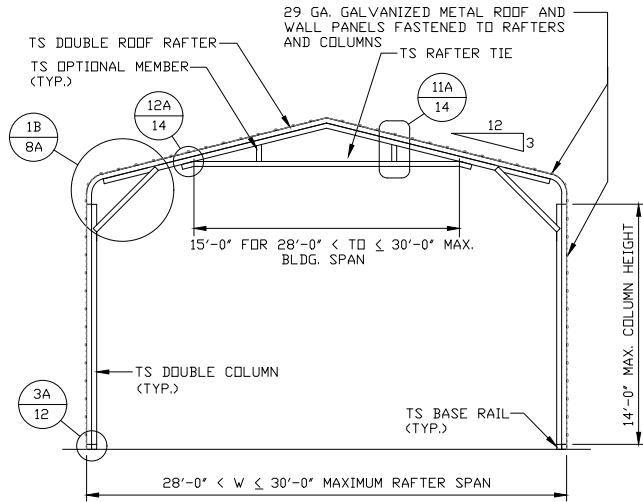
SCALE: NTS

DWG. NO: SK-3

**JOB NO: 17259S/19076S
/19176S/20124S/23125S
/24189S**

REV: 5

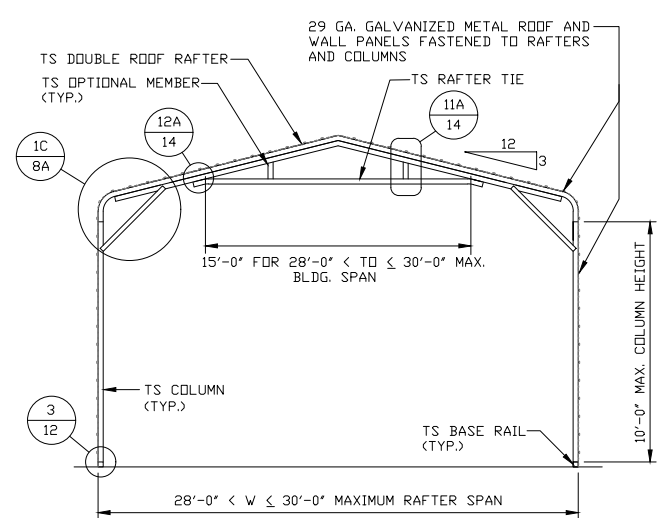
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TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

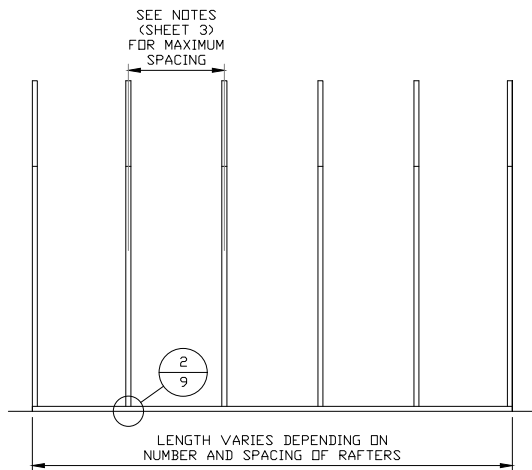
NOTE: SINGLE TUBE RAFTER CAN BE USED FOR GROUND SNOW LOADS ≤ 30 PSF



TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

NOTE: SINGLE TUBE RAFTER CAN BE USED FOR GROUND SNOW LOADS ≤ 30 PSF



TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION

SCALE: NTS

Validity Notice

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UNIVERSAL METAL BUILDINGS
9283 US 601

DOBSON, NC 27017
30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 7A

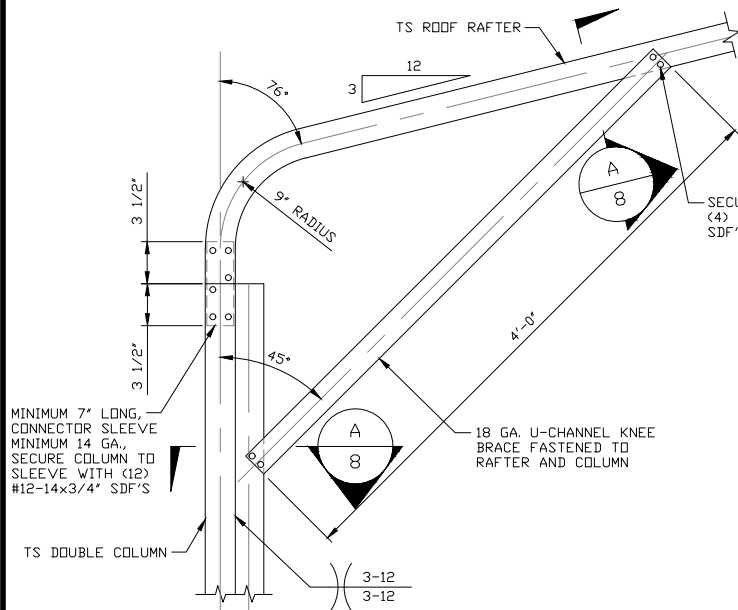
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DWG. NO: SK-3

**JOB NO: 17259S/19076S
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/24189S**

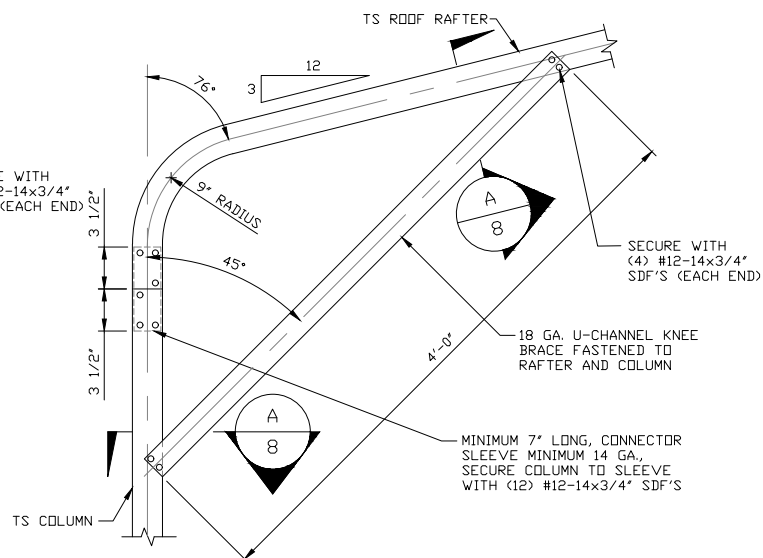
REV: 5

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**1 BOW EAVE RAFTER COLUMN CONNECTION
DETAIL FOR HEIGHTS 10'-0" < TO ≤ 14'-0"**

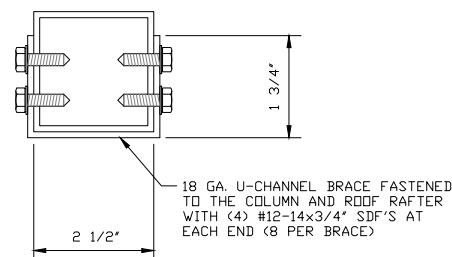
SCALE: NTS



**1A BOW EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS ≤ 10'-0"**

SCALE: NTS

NOTE: MAXIMUM COLUMN HEIGHT IS
12'-0" FOR WIND SPEEDS ≤ 115 MPH.



A BRACE SECTION

SCALE: NTS

Validity Notice

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DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 8

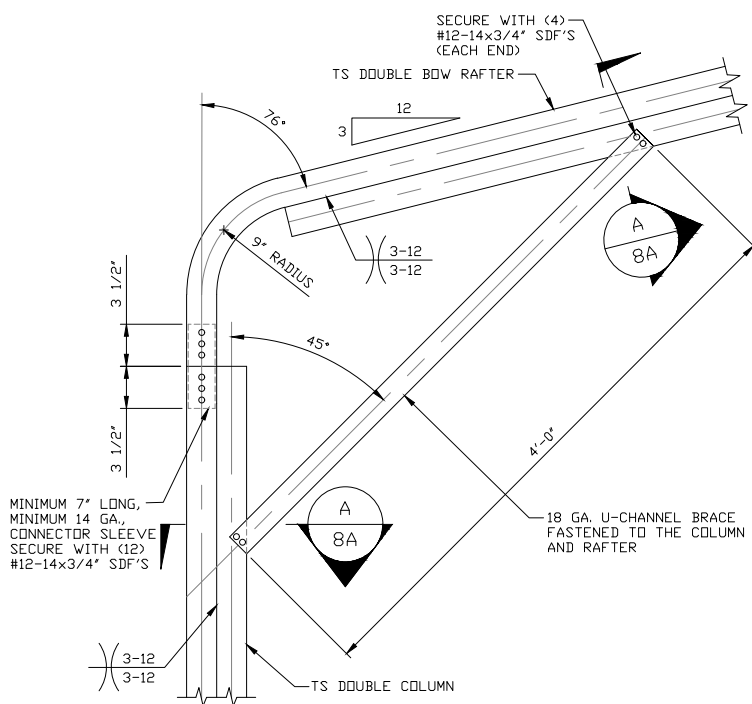
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DWG. NO: SK-3

**JOB NO: 17259S/19076S
/19176S/20124S/23125S
/24189S**

REV: 5

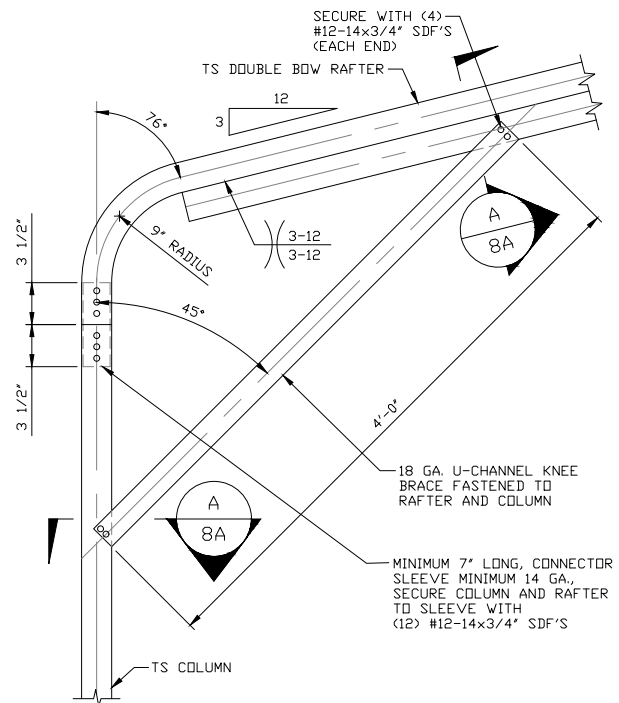
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1B

**BOW EAVE RAFTER COLUMN CONNECTION
DETAIL FOR HEIGHTS 10'-0" < TO ≤ 14'-0"**

SCALE: NTS

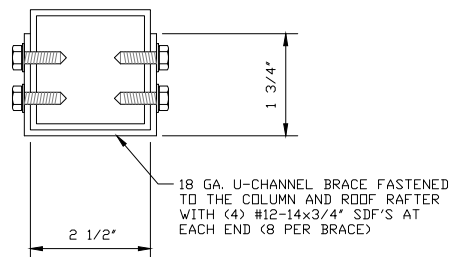


1C

**BOW EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS ≤ 10'-0"**

SCALE: NTS

NOTE: MAXIMUM COLUMN HEIGHT IS
12'-0" FOR WIND SPEEDS ≤ 115 MPH.



A

BRACE SECTION

SCALE: NTS

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9283 US 601

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 8A

SCALE: NTS

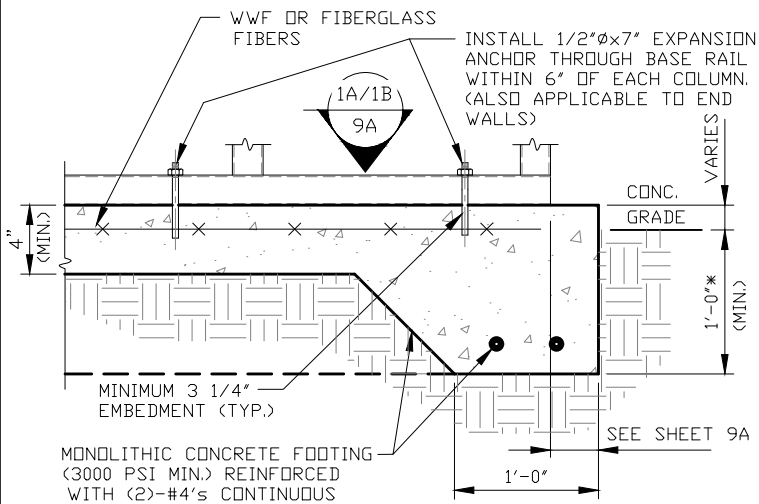
DWG. NO: SK-3

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BASE RAIL ANCHORAGE OPTIONS



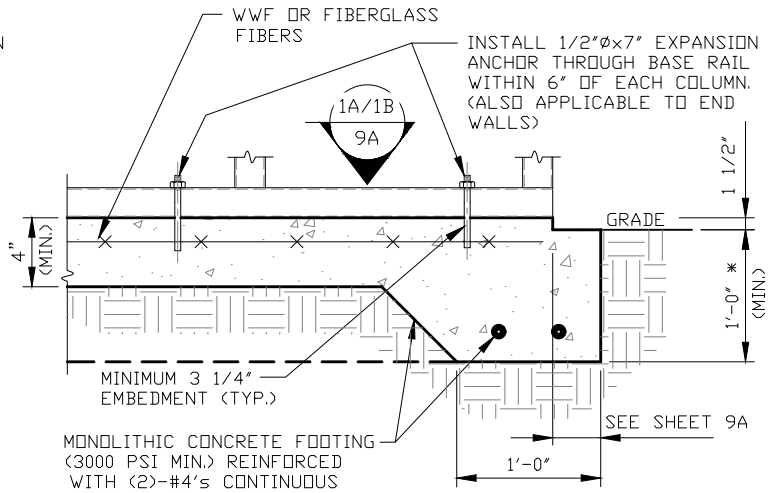
2A

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS

SEE SHEET 9A FOR MINIMUM ANCHOR
EDGE DISTANCE.

* COORDINATE WITH LOCAL BUILDING
CODE/ORD. REGARDING MINIMUM FROST
DEPTH (LENGTH).



2B

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS

SEE SHEET 9A FOR MINIMUM ANCHOR
EDGE DISTANCE.

* COORDINATE WITH LOCAL BUILDING
CODE/ORD. REGARDING MINIMUM FROST
DEPTH (LENGTH).

GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN BASED ON MINIMUM
SOIL BEARING CAPACITY OF 1,500 PSF.

CONCRETE:

CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE
STRENGTH OF 3,000 PSI AT 28 DAYS.

COVER OVER REINFORCING STEEL:

FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING
BARS SHALL BE PER ACI-318:

3" IN FOUNDATIONS WHERE THE CONCRETE IS CAST AGAINST AND
PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE
EARTH OR WEATHER, AND 1 1/2" ELSEWHERE.

REINFORCING STEEL:

THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE
60. THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC
MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT.

REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED:

1. REINFORCEMENT IS BENT COLD.
2. THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE
BAR, IS NOT LESS THAN SIX-BAR DIAMETERS.
3. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT
BE FIELD BENT.

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9283 US 601

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 9

SCALE: NTS

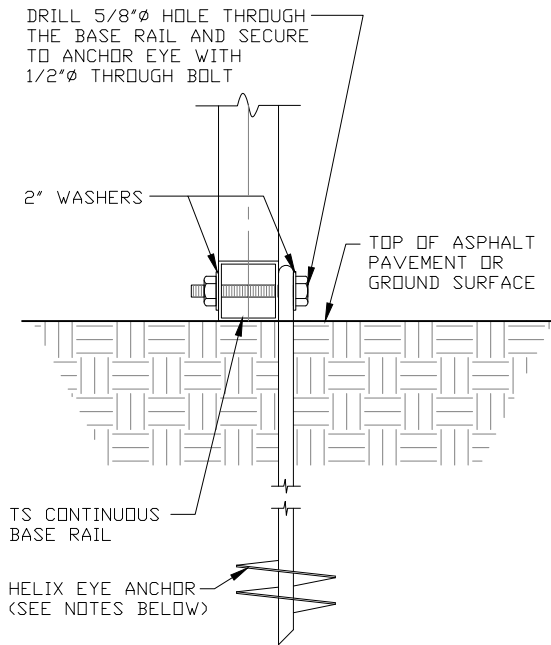
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**JOB NO: 17259S/19076S
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BASE RAIL ANCHORAGE OPTIONS

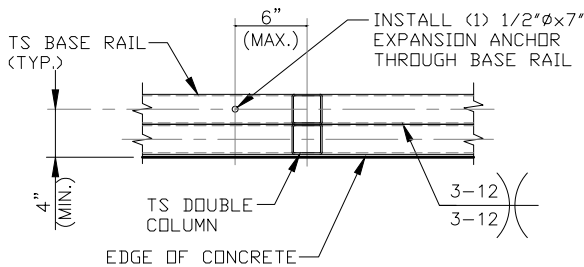


2C

GROUND BASE HELIX ANCHORAGE

SCALE: NTS (CAN BE USED FOR GRADE OR ASPHALT)

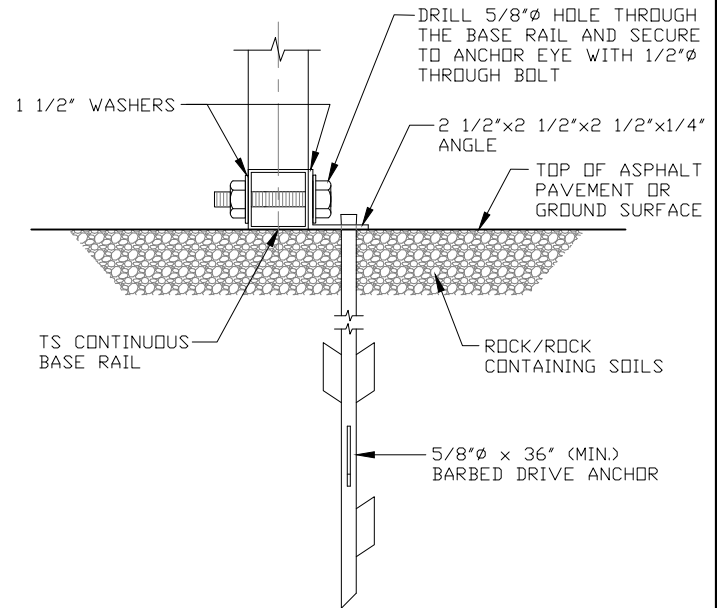
* COORDINATE WITH LOCAL BUILDING CODE/ORD. REGARDING MINIMUM FROST DEPTH (LENGTH).



1A

SECTION

SCALE: NTS

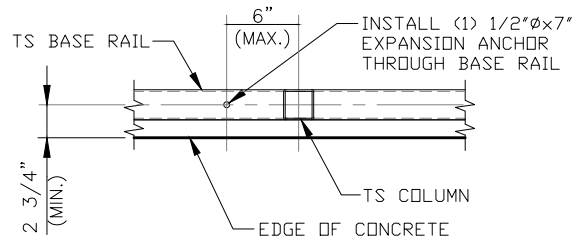


2D

ASPHALT BASE ANCHORAGE

SCALE: NTS

* COORDINATE WITH LOCAL BUILDING CODE/ORD. REGARDING MINIMUM FROST DEPTH (LENGTH).



1B

SECTION

SCALE: NTS

HELIX ANCHOR NOTES:

1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50" EMBEDMENT
2. FOR CORAL USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50" EMBEDMENT.
3. FOR MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS, AND CLAYS USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50" EMBEDMENT.
4. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL, USE MINIMUM (2) 6" HELICES WITH MINIMUM 50" EMBEDMENT.
5. FOR VERY LOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 8" HELICES WITH MINIMUM 60" EMBEDMENT.

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9283 US 601

DOBSON, NC 27017

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SHT. 9A

SCALE: NTS

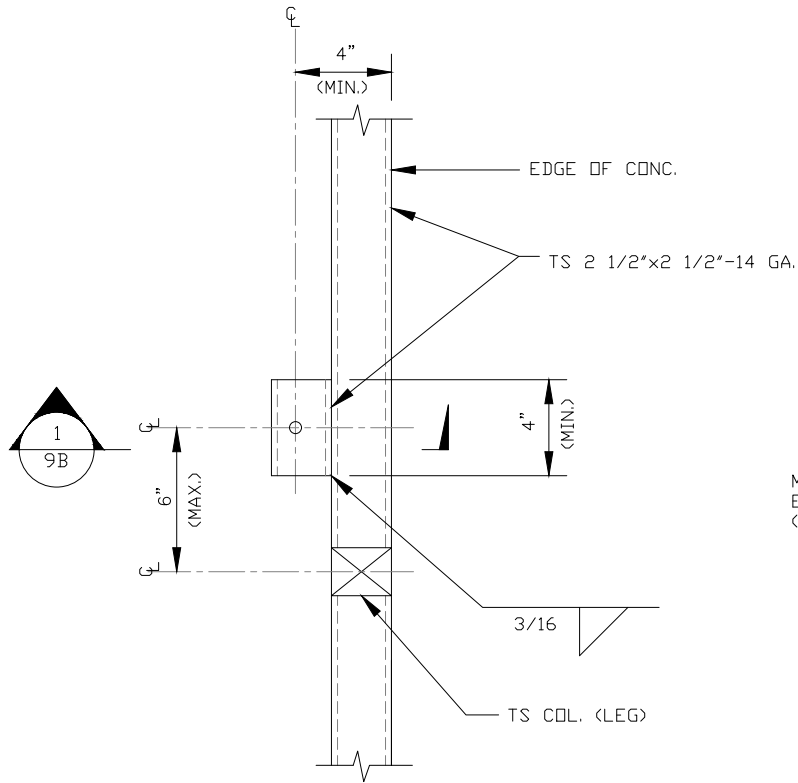
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/19176S/20124S/23125S
/24189S**

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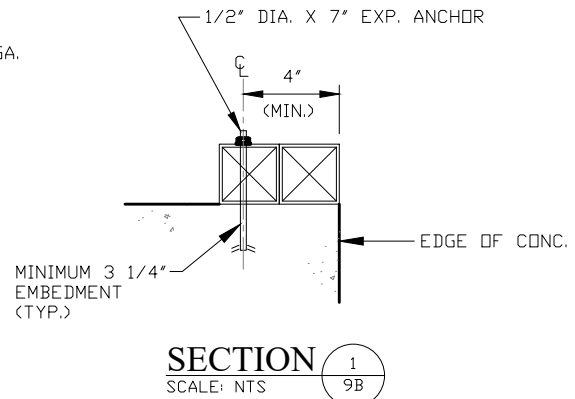
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BASE RAIL ANCHORAGE OPTIONS



TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



SECTION 1/9B
SCALE: NTS

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SHT. 9B

SCALE: NTS

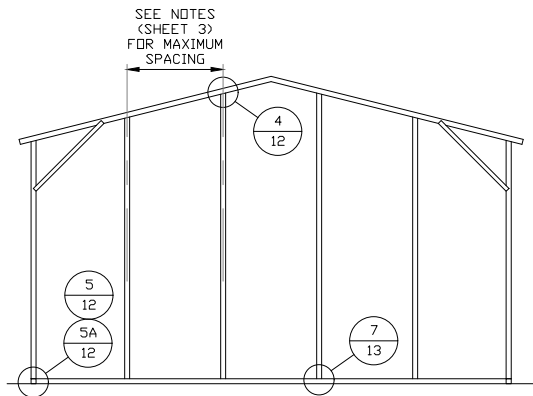
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JOB NO: 17259S/19076S
/19176S/20124S/23125S
/24189S

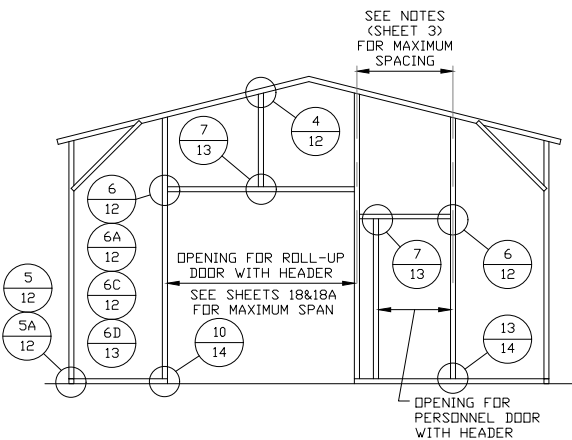
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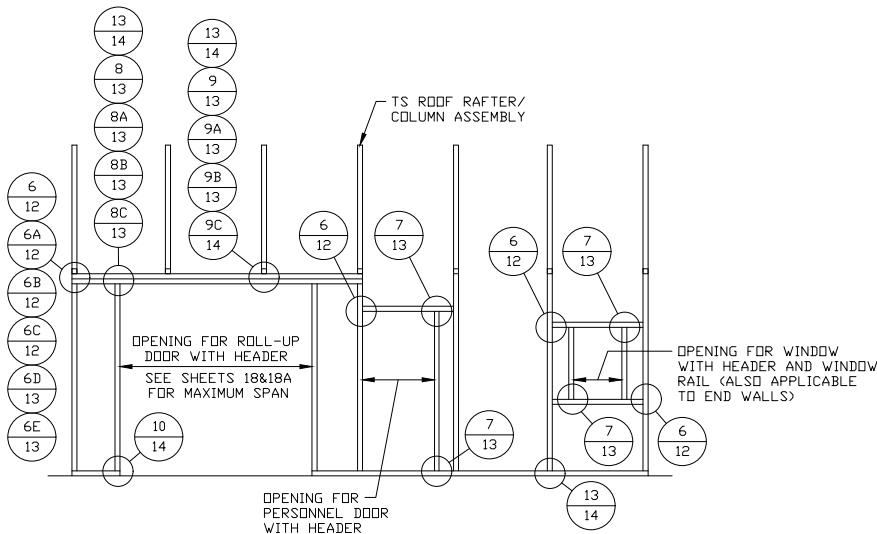
TYPICAL END WALL AND SIDE WALL FRAMING SECTIONS



TYPICAL BOX EAVE RAFTER
END WALL FRAMING SECTION
SCALE: NTS



TYPICAL BOX EAVE RAFTER END
WALL OPENINGS FRAMING SECTION
SCALE: NTS



TYPICAL BOX EAVE RAFTER
SIDE WALL OPENINGS FRAMING SECTION
SCALE: NTS

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9283 US 601
DOBSON, NC 27017
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DATE: 7-22-24

SHT. 10

SCALE: NTS

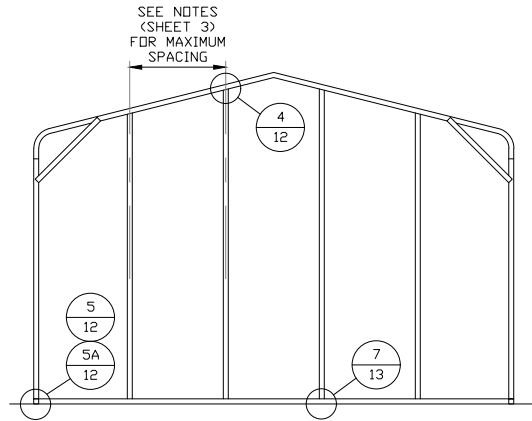
DWG. NO: SK-3

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/19176S/20124S/23125S
/24189S

REV: 5

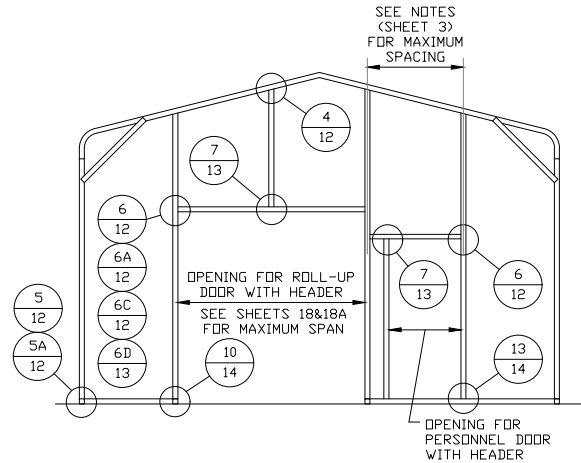
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TYPICAL END WALL AND SIDE WALL FRAMING SECTIONS



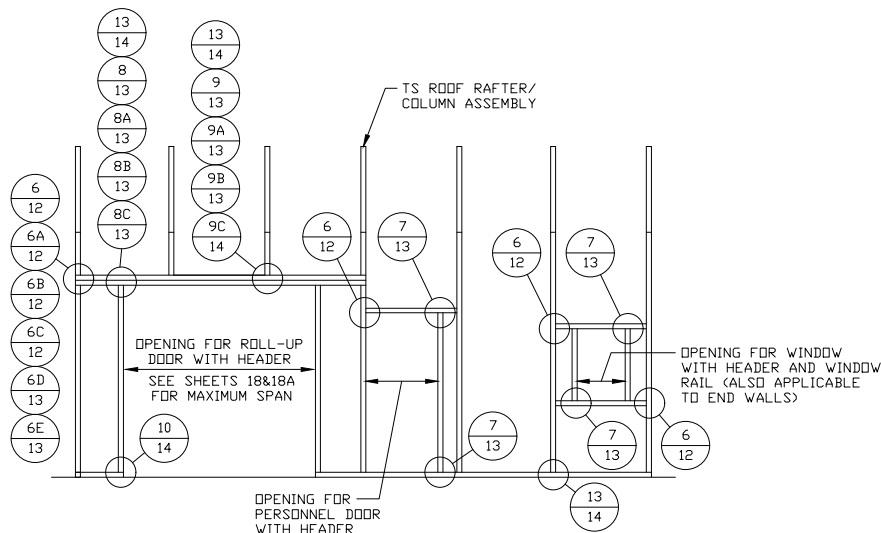
**TYPICAL BOW RAFTER
END WALL FRAMING SECTION**

SCALE: NTS



**TYPICAL BOW RAFTER END
WALL OPENINGS FRAMING SECTION**

SCALE: NTS



**TYPICAL BOW RAFTER SIDE
WALL OPENINGS FRAMING SECTION**

SCALE: NTS

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9283 US 601
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SHT. 11

SCALE: NTS

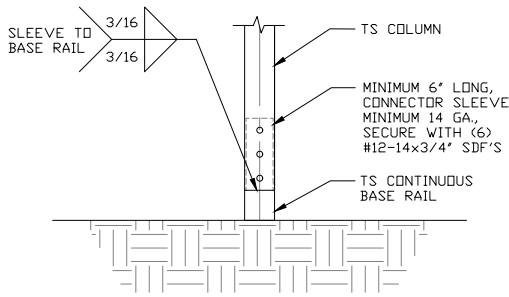
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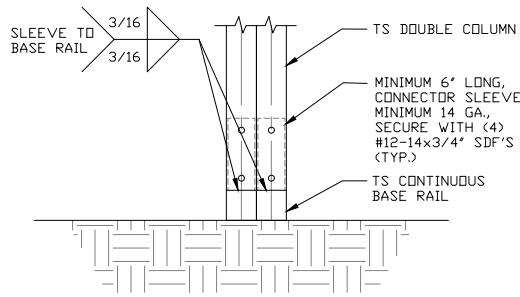
CONNECTION DETAILS



3

RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

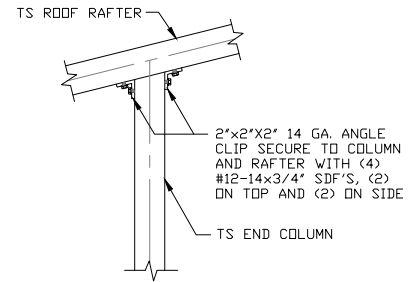
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3A

RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

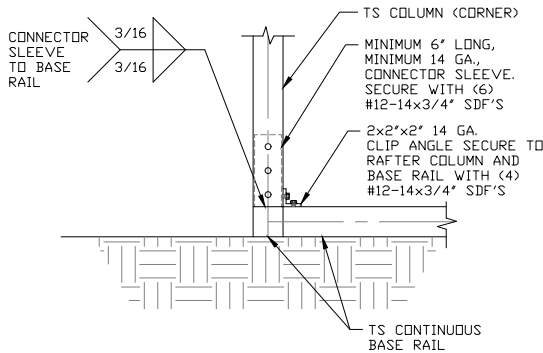
SCALE: NTS



4

END COLUMN/RAFTER CONNECTION DETAIL

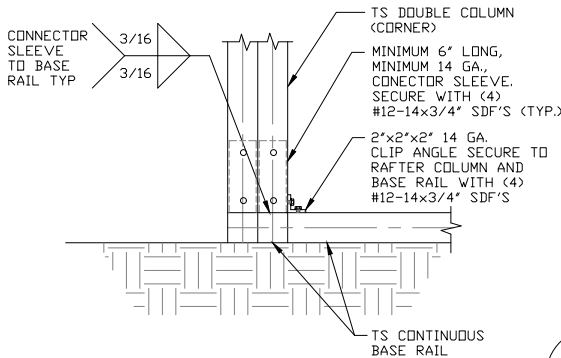
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5

END COLUMN/BASE RAIL CONNECTION DETAIL

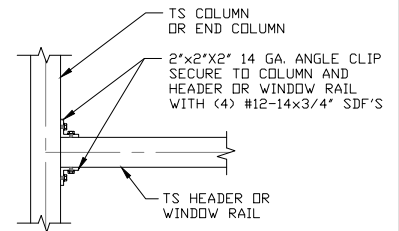
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5A

END COLUMN/BASE RAIL CONNECTION DETAIL

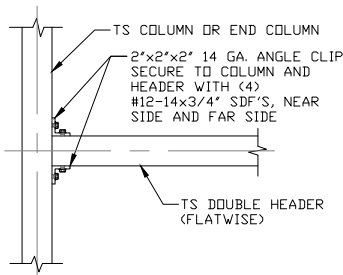
SCALE: NTS



6

COLUMN TO WINDOW RAIL/HEADER CONNECTION DETAIL

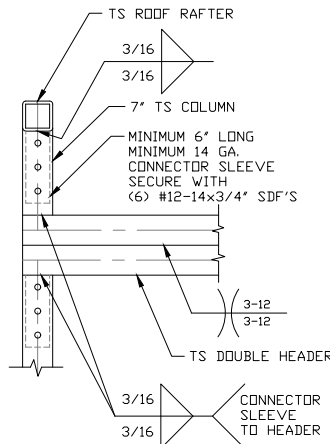
SCALE: NTS



6A

DOUBLE HEADER TO COLUMN CONNECTION DETAIL

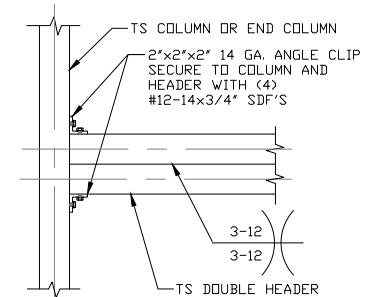
SCALE: NTS



6B

DOUBLE HEADER TO COLUMN CONNECTION DETAIL

SCALE: NTS



6C

DOUBLE HEADER TO COLUMN CONNECTION DETAIL

SCALE: NTS

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SHT. 12

SCALE: NTS

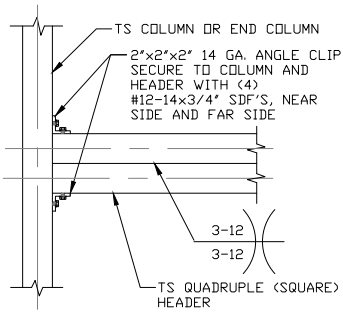
DWG. NO: SK-3

JOB NO: 17259S/19076S
/19176S/20124S/23125S
/24189S

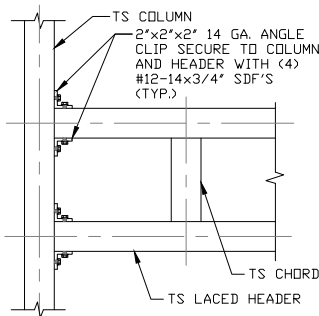
REV: 5

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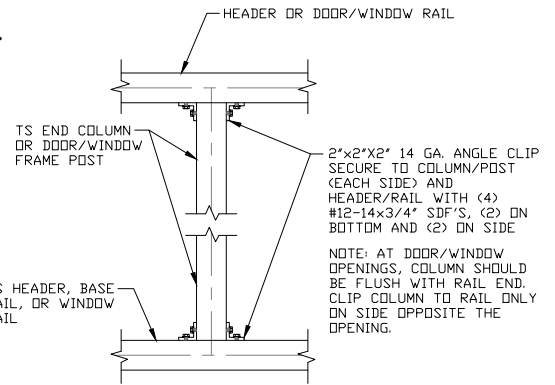
CONNECTION DETAILS



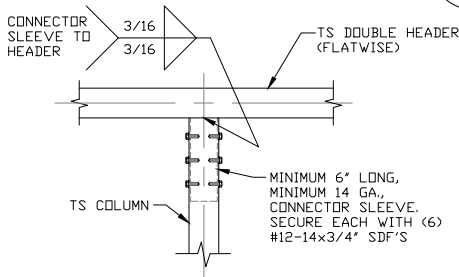
6D QUADRUPLE (SQUARE) HEADER TO COLUMN CONNECTION DETAIL
SCALE: NTS



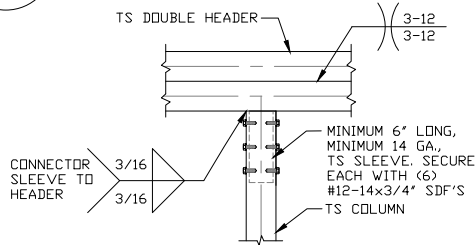
6E LACED HEADER TO COLUMN CONNECTION DETAIL
SCALE: NTS



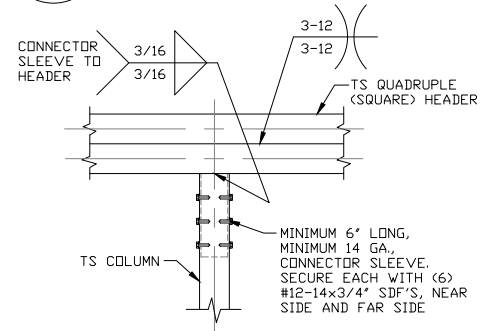
7 COLUMN/POST TO HEADER/RAIL CONNECTION DETAIL
SCALE: NTS



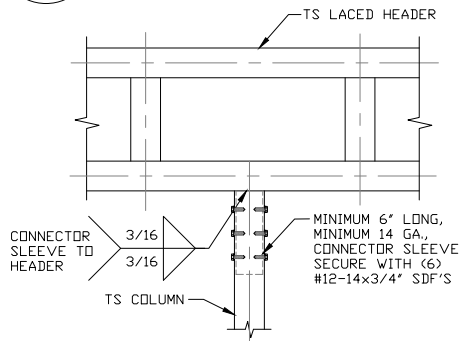
8 DOUBLE HEADER/ (FLATWISE) COLUMN CONNECTION DETAIL
SCALE: NTS



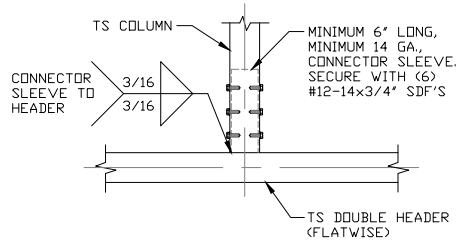
8A DOUBLE HEADER/COLUMN CONNECTION DETAIL
SCALE: NTS



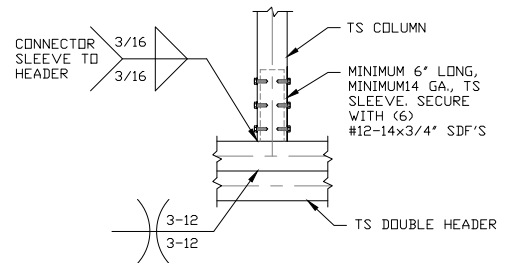
8B QUADRUPLE (SQUARE) HEADER/COLUMN CONNECTION DETAIL
SCALE: NTS



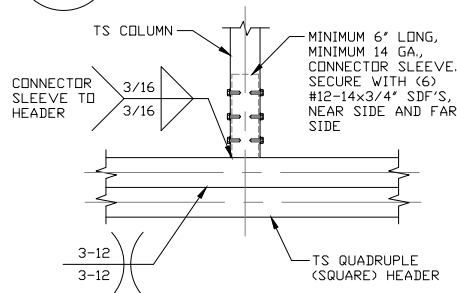
8C LACED HEADER/COLUMN CONNECTION DETAIL
SCALE: NTS



9 COLUMN/DOUBLE HEADER (FLATWISE) CONNECTION DETAIL
SCALE: NTS



9A COLUMN/DOUBLE HEADER CONNECTION DETAIL
SCALE: NTS



9B COLUMN/QUADRUPLE (SQUARE) HEADER CONNECTION DETAIL
SCALE: NTS

Validity Notice

Plans Expiration Date:

22 July 2025

**MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING, INC.**

DRAWN BY: BF

CHECKED BY: JS

PROJECT MGR: JRP

CLIENT: UNIVERSAL

UNIVERSAL METAL BUILDINGS

9283 US 601

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 13

SCALE: NTS

DWG. NO: SK-3

JOB NO: 17259S/19076S

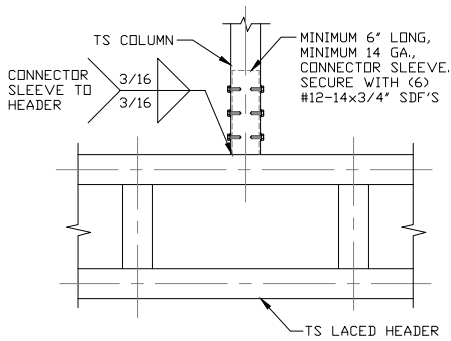
/19176S/20124S/23125S

/24189S

REV: 5

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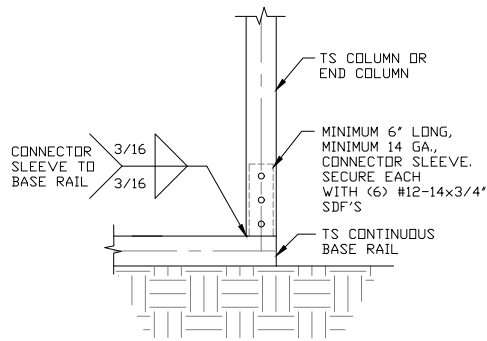
CONNECTION DETAILS



9C

COLUMN/LACED HEADER CONNECTION DETAIL

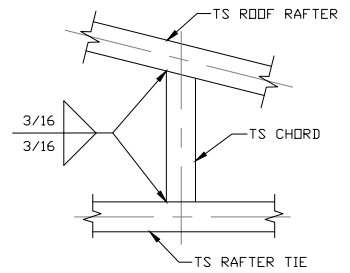
SCALE: NTS



10

COLUMN/BASE RAIL CONNECTION DETAIL

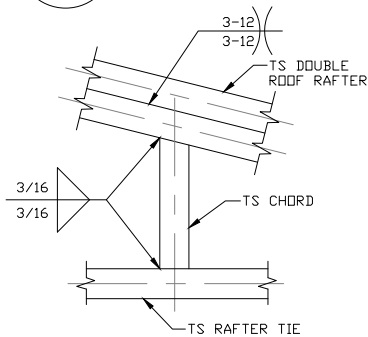
SCALE: NTS



11

RAFTER TO VERTICAL STRUT CONNECTION DETAIL

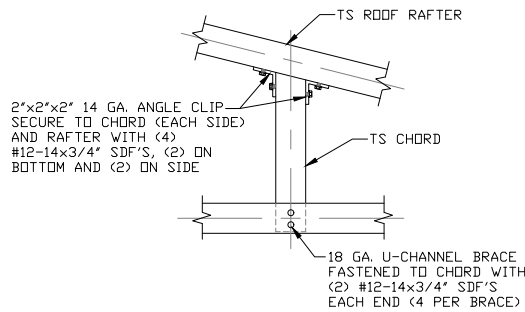
SCALE: NTS



11A

RAFTER TO VERTICAL STRUT CONNECTION DETAIL

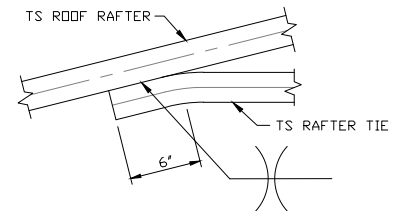
SCALE: NTS



11B

RAFTER TO VERTICAL STRUT CONNECTION DETAIL

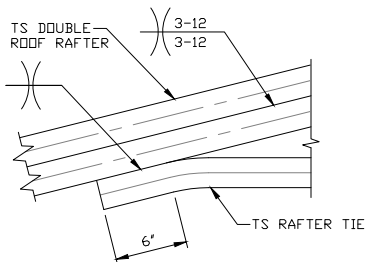
SCALE: NTS



12

RAFTER TIE CONNECTION DETAIL

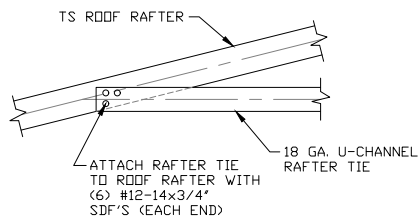
SCALE: NTS



12A

RAFTER TIE CONNECTION DETAIL

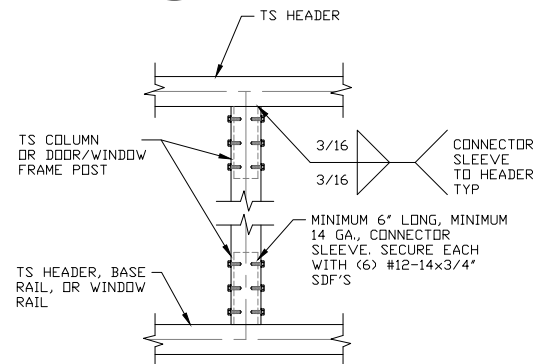
SCALE: NTS



12B

RAFTER TIE CONNECTION DETAIL

SCALE: NTS



13

COLUMN/POST TO HEADER OR RAIL CONNECTION DETAIL

SCALE: NTS

Validity Notice

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22 July 2025

MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING, INC.

DRAWN BY: BF

CHECKED BY: JS

PROJECT MGR: JRP

CLIENT: UNIVERSAL

UNIVERSAL METAL BUILDINGS

9283 US 601

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 14

SCALE: NTS

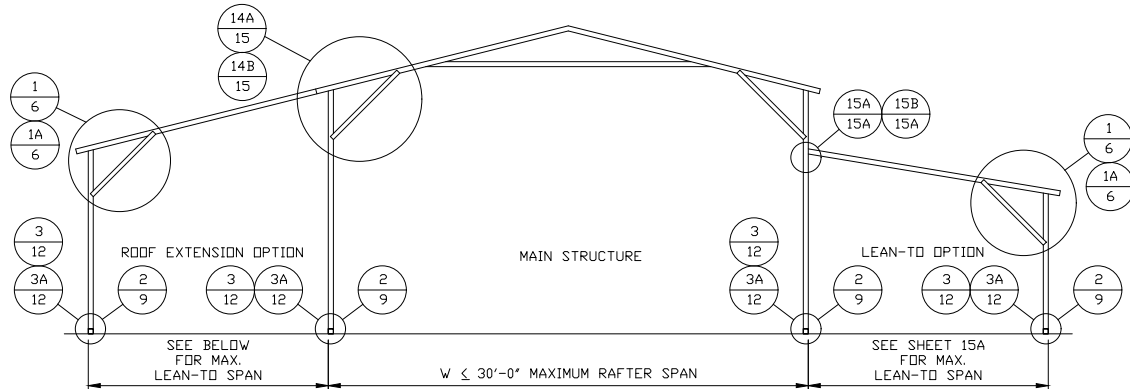
DWG. NO: SK-3

JOB NO: 17259S/19076S
/19176S/20124S/23125S
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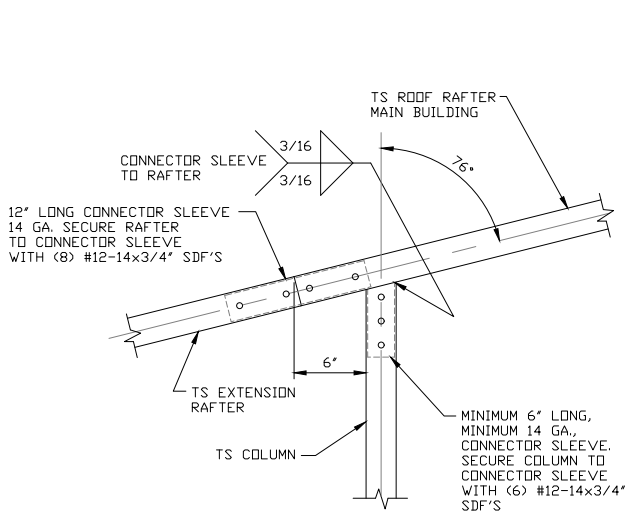
BOX EAVE RAFTER LEAN-TO OPTIONS



TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

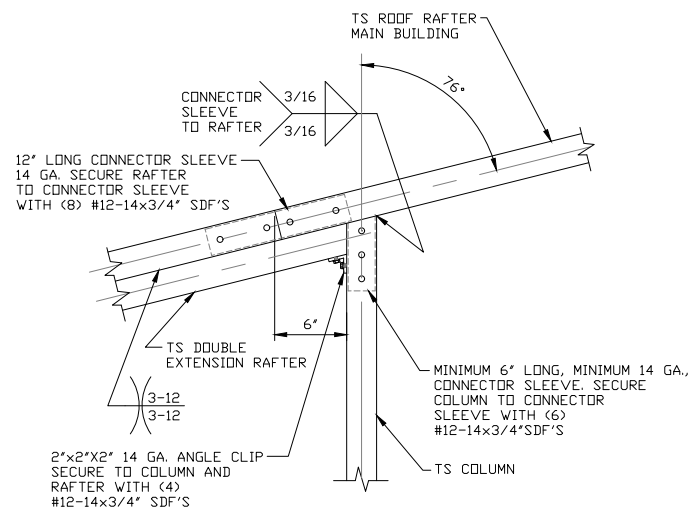
SCALE: NTS

NOTE: 1. REFER TO SHEET 6 FOR COLUMN HEIGHTS AND TYPES
2. LEAN-TO COLUMN SPACING SHALL MATCH MAIN BUILDING



14A SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR WIDTHS ≤ 12'-0"

SCALE: NTS



14B SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR WIDTHS 12'-0" < L ≤ 18'-0"

SCALE: NTS

Validity Notice

Plans Expiration Date:

22 July 2025

**MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING, INC.**

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CHECKED BY: JS

PROJECT MGR: JRP

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**UNIVERSAL METAL BUILDINGS
9283 US 601**

**DOBSON, NC 27017
30'-0"x14'-0" SP ENCLOSED STRUCTURE**

DATE: 7-22-24

SHT. 15

SCALE: NTS

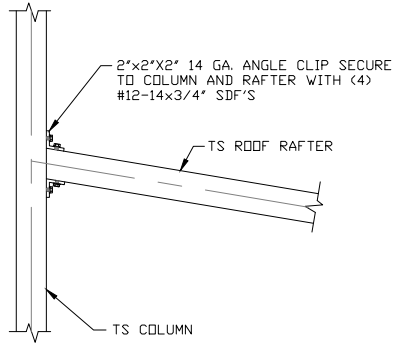
DWG. NO: SK-3

**JOB NO: 17259S/19076S
/19176S/20124S/23125S
/24189S**

REV: 5

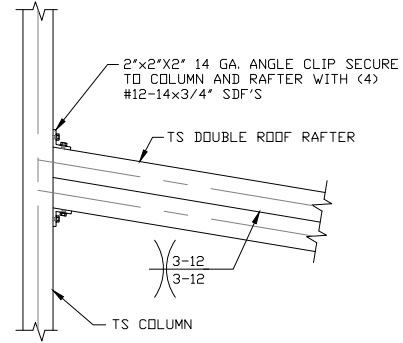
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BOX EAVE RAFTER LEAN-TO OPTION FOR
GROUND SNOW LOADS ≤ 20 PSF



15A

**LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL
FOR RAFTER SPANS $\leq 12'-0''$**
SCALE: NTS



15B

**LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL
FOR RAFTER SPANS $12'-0'' < L \leq 18'-0''$**
SCALE: NTS

Validity Notice

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**UNIVERSAL METAL BUILDINGS
9283 US 601**

**DOBSON, NC 27017
30'-0"x14'-0" SP ENCLOSED STRUCTURE**

DATE: 7-22-24

SHT. 15A

SCALE: NTS

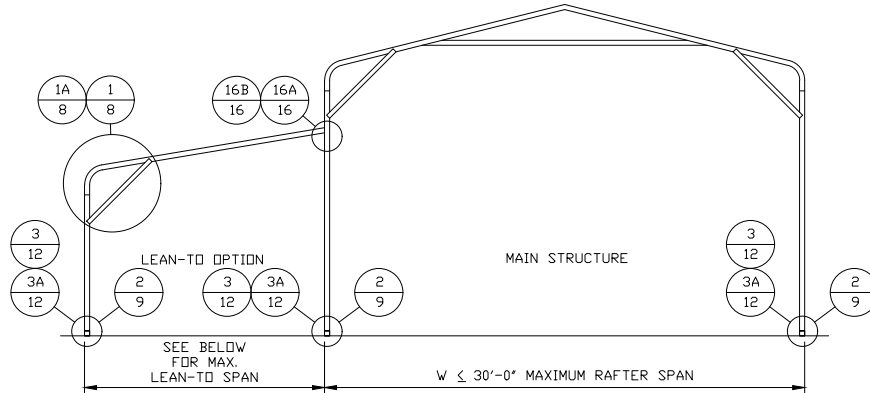
DWG. NO: SK-3

**JOB NO: 17259S/19076S
/19176S/20124S/23125S
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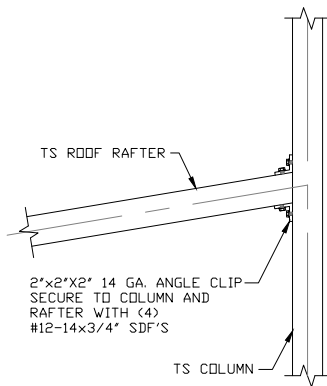
BOW EAVE RAFTER LEAN-TO OPTION FOR GROUND SNOW LOADS ≤ 20 PSF



TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION

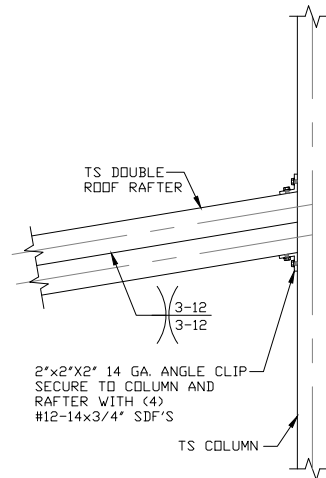
SCALE: NTS

- NOTE: 1. REFER TO SHEET 8 FOR COLUMN HEIGHTS AND TYPES
2. LEAN-TO COLUMN SPACING SHALL MATCH MAIN BUILDING



**LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL
FOR WIDTHS $< 12'-0"$**

SCALE: NTS



**LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL
FOR WIDTHS $12'-0" < L \leq 18'-0"$**

SCALE: NTS

Validity Notice

Plans Expiration Date:

22 July 2025

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**UNIVERSAL METAL BUILDINGS
9283 US 601**

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 16

SCALE: NTS

DWG. NO: SK-3

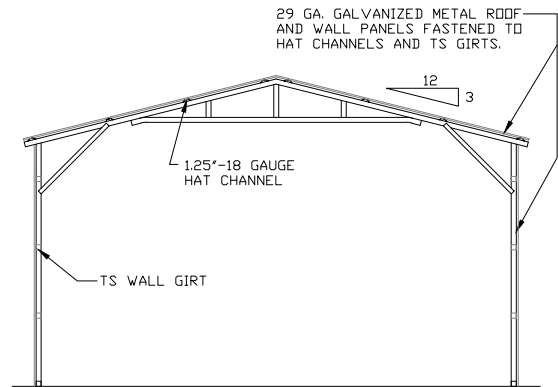
**JOB NO: 17259S/19076S
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/24189S**

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A diagram of a gable roof structure. The roof is shown with a pitch of 12/3, indicated by a triangle with a horizontal side of 12 and a vertical side of 3. The roof is covered with vertical siding. A vertical line on the right side of the roof is labeled "TRIM".

SCALE: NTS

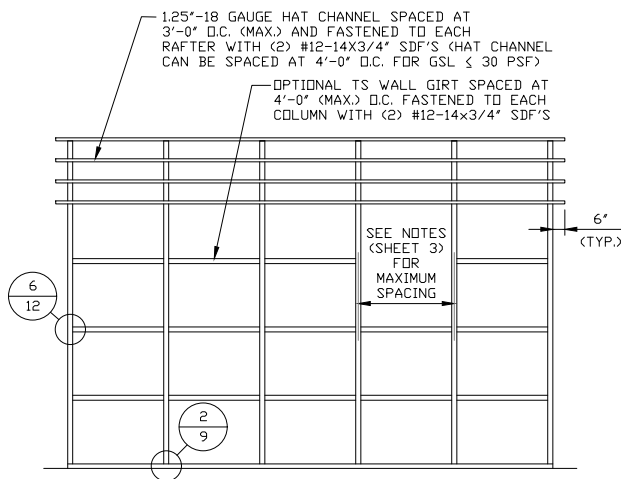


SCALE: NTS



SCALE: NTS

(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE: NTS



SCALE: NTS

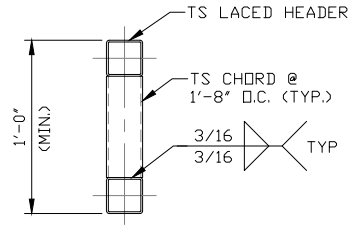
22 July 2025

REV. 5

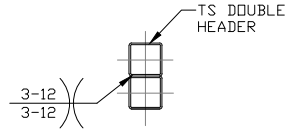
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SIDE WALL HEADER OPTIONS FOR TS SINGLE COLUMNS

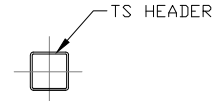
NOTE: HEADER DESIGN DOES NOT TAKE IN TO ACCOUNT ADDITIONAL ROOF LOADING FROM ATTACHED LEAN-TO STRUCTURES.



**HEADER DETAIL FOR
10'-0" < LENGTH ≤ 12'-0"**
SCALE: NTS

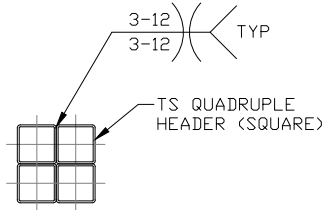


**HEADER DETAIL FOR
6'-0" < LENGTH ≤ 10'-0"**
SCALE: NTS

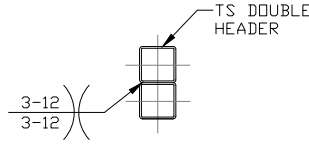


**HEADER DETAIL FOR
LENGTH ≤ 6'-0"**
SCALE: NTS

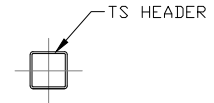
END WALL HEADER OPTIONS FOR TS SINGLE COLUMNS



**HEADER DETAIL FOR
13'-0" < LENGTH ≤ 16'-0"**
SCALE: NTS



**HEADER DETAIL FOR
8'-0" < LENGTH ≤ 13'-0"**
SCALE: NTS



**HEADER DETAIL FOR
LENGTH ≤ 8'-0"**
SCALE: NTS

Validity Notice

Plans Expiration Date:

22 July 2025

**MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING, INC.**

DRAWN BY: BF

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UNIVERSAL METAL BUILDINGS

9283 US 601

DOBSON, NC 27017

30'-0"x14'-0" SP ENCLOSED STRUCTURE

DATE: 7-22-24

SHT. 18

SCALE: NTS

DWG. NO: SK-3

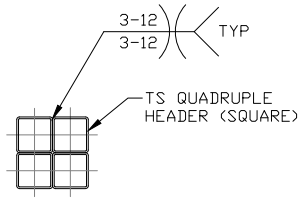
**JOB NO: 17259S/19076S
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/24189S**

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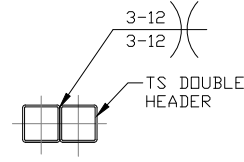
SIDE WALL HEADER OPTIONS FOR TS DOUBLE COLUMNS

NOTE: HEADER DESIGN DOES NOT TAKE IN TO ACCOUNT ADDITIONAL ROOF LOADING FROM ATTACHED LEAN-TO STRUCTURES.



**HEADER DETAIL FOR
8'-0" < LENGTH ≤ 12'-0"**

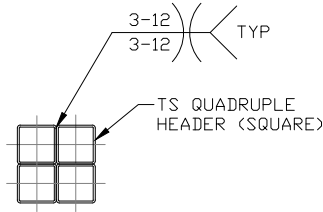
SCALE: NTS



**HEADER DETAIL FOR
LENGTH ≤ 8'-0"**

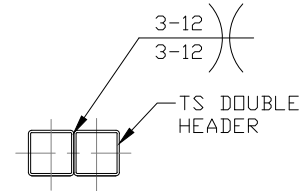
SCALE: NTS

END WALL HEADER OPTIONS FOR TS DOUBLE COLUMNS



**HEADER DETAIL FOR
11'-0" < LENGTH ≤ 16'-0"**

SCALE: NTS



**HEADER DETAIL FOR
LENGTH ≤ 11'-0"**

SCALE: NTS

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UNIVERSAL METAL BUILDINGS

9283 US 601

DOBSON, NC 27017

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DATE: 7-22-24

SHT. 18A

SCALE: NTS

DWG. NO: SK-3

**JOB NO: 17259S/19076S
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