STRUCTURAL DESIGN

ENCLOSED BUILDING
EXPOSURE B

MAXIMUM 40'-0" WIDE X 20'-0" EAVE HEIGHT- BOX EAVE FRAME

15 January 2021
Revision 5
M&A Project No. 16022S/16072S/16073S/17301S/20352S

Prepared for:

Tubular Building Systems, LLC
631 SE Industrial Circle
Lake City, Florida 32025

Prepared by:

Moore and Associates Engineering and Consulting,
1009 East Avenue
North Augusta, SC 29841

401 S. Main Street, Suite 200
Mount Airy, NC 27030

Digitally signed by Wayne S Moore
Date: 2021.01.15 12:14:37 -05'00'

MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING

Columbia County Building Department
Plans Reviewed for Code Compliance
State of Florida

WAYNE S. MOORE
LICENSE
No 57170
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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CHECKED BY: PDH				
PROJECT MGR: WSM	DATE: 1-15-21	SCALE: NTS	JOB NO: 16022S/17301S/20352S	
CLIENT: TBS	SHT. 1	DWG. NO: SK-3	REV: 5	

DRAWING INDEX

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INSTALLATION NOTES AND SPECIFICATIONS

1. DESIGN IS FOR A MAXIMUM 40'-0" WIDE x 20'-0" EAVE HEIGHT ENCLOSED STRUCTURES.
2. DESIGN WAS DONE IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODE (FBC) 7TH EDITION, 2018 INTERNATIONAL BUILDING CODE (IBC), 2015 IBC AND 2012 IBC.
3. DESIGN LOADS ARE AS FOLLOWS:
   A) DEAD LOAD = 15 PSF
   B) LIVE LOAD = 12 PSF
   C) GROUND SNOW LOAD = 10 PSF
   NOTE: UNBALANCED SNOW LOAD DUE TO DRIFTING HAS NOT BEEN EVALUATED.
4. LOW ULTIMATE WIND SPEED 105 TO 140 MPH (NOMINAL WIND SPEED 81 TO 108 MPH): MAXIMUM RAFTER/POST AND END POST SPACING = 5.0 FEET.
5. HIGH ULTIMATE WIND SPEED 141 TO 170 MPH (NOMINAL WIND SPEED 109 TO 132 MPH): MAXIMUM RAFTER/POST AND END POST SPACING = 4.0 FEET.
6. END WALL COLUMNS (POSTS) AND SIDE WALL COLUMNS ARE EQUIVALENT IN SIZE AND SPACING (UNLESS NOTED OTHERWISE).
7. RISK CATEGORY I.
8. WIND EXPOSURE CATEGORY B.
9. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS. FOR VERTICAL PANELS, 29 GAUGE METAL PANELS SHALL BE FASTENED TO 18 GAUGE HAT CHANNELS (U.N.O.).
10. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR PURLINS, AND POSTS, INTERIOR = 9" AND END = 6" (MAX.).
11. FASTENERS CONSIST OF #12-14x3/4" SELF-DRILLING FASTENER (SDF). USE CONTROL SEAL WASHER WITH EXTERIOR FASTENERS. SPECIFICATIONS APPLICABLE ONLY FOR MEAN ROOF HEIGHT OF 20 FEET OR LESS, AND ROOF SLOPES OF 14° (3:12 PITCH) OR LESS. SPACING REQUIREMENTS FOR OTHER ROOF HEIGHTS AND/OR SLOPES MAY VARY.
12. ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6" OF EACH RAFTER COLUMN ALONG SIDES AND ENDS.
13. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 30" LONG AND MAY BE USED IN SUITABLE SOILS. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED. SOIL NAILS MAY BE USED FOR WIND SPEEDS $\leq$ 145 MPH. COORDINATE WITH LOCAL CODES/ORDINANCES REGARDING MINIMUM LENGTH FOR FROST DEPTH PROTECTION.
14. 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} = 2.039 g $V = C_S W$
    S_{D1} = 1.258 g

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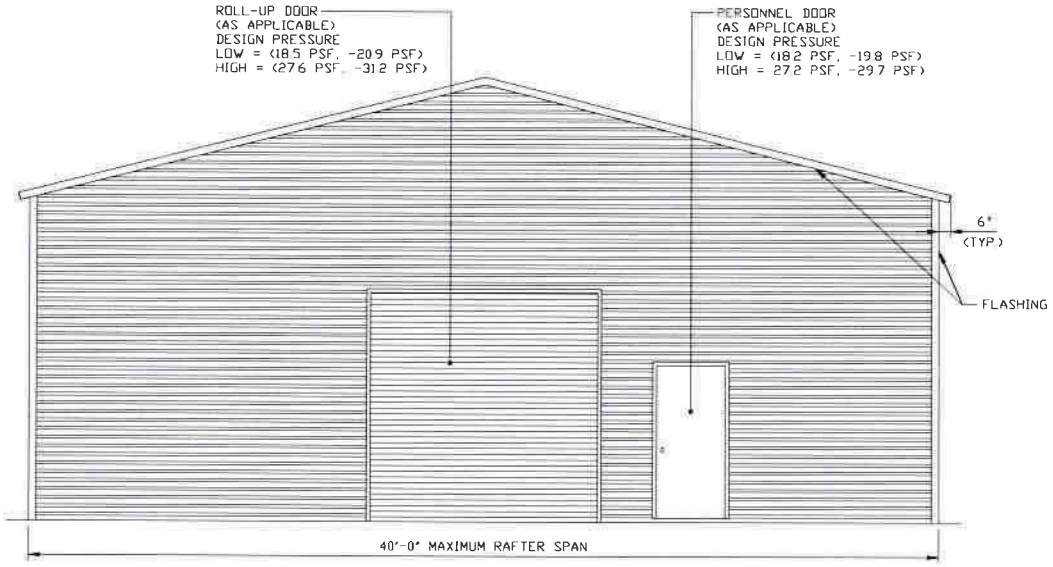
☐ BOX EAVE FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION-HORIZONTAL ROOF

SCALE: 1/8" = 1'-0"

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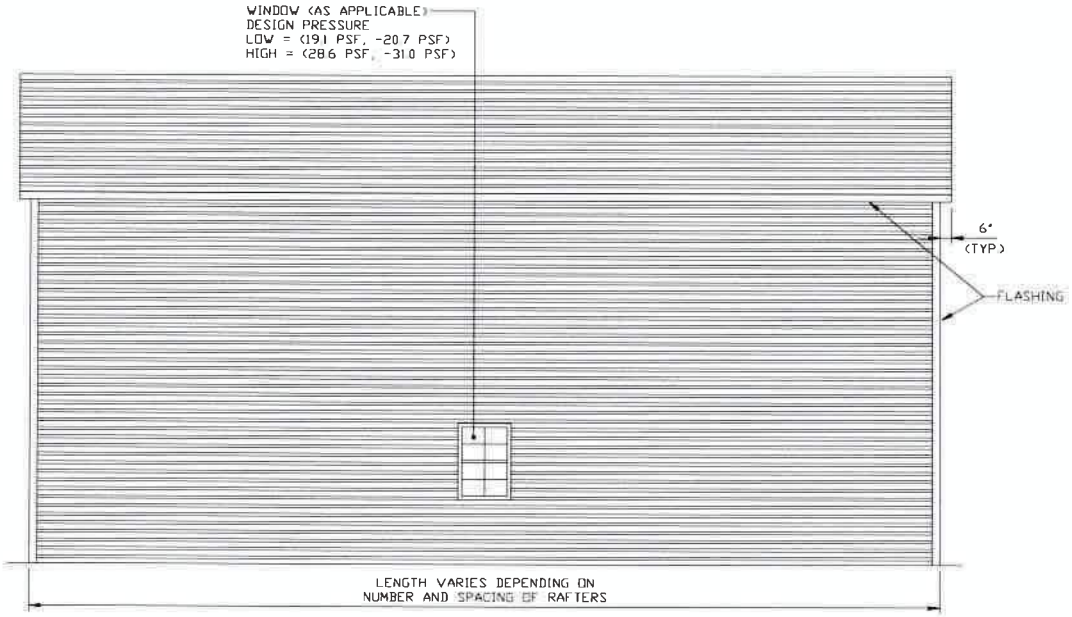

TYPICAL SIDE ELEVATION-HORIZONTAL ROOF

SCALE: 1/8" = 1'-0"

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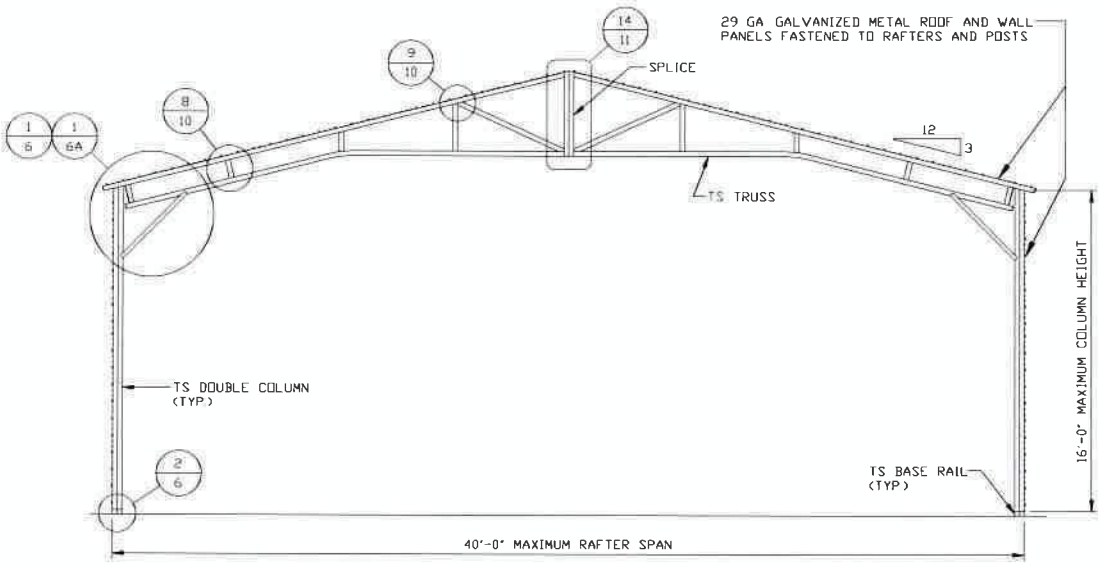
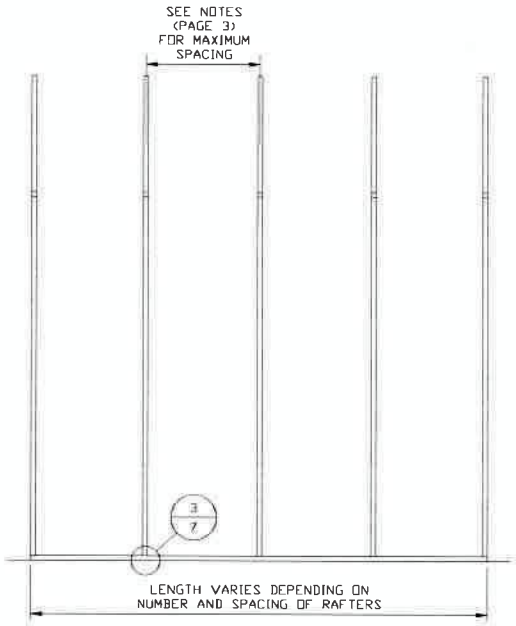


TYPICAL RAFTER/POST FRAME SECTION

SCALE: 1/8" = 1'-0"



TYPICAL RAFTER/POST SIDE FRAMING SECTION

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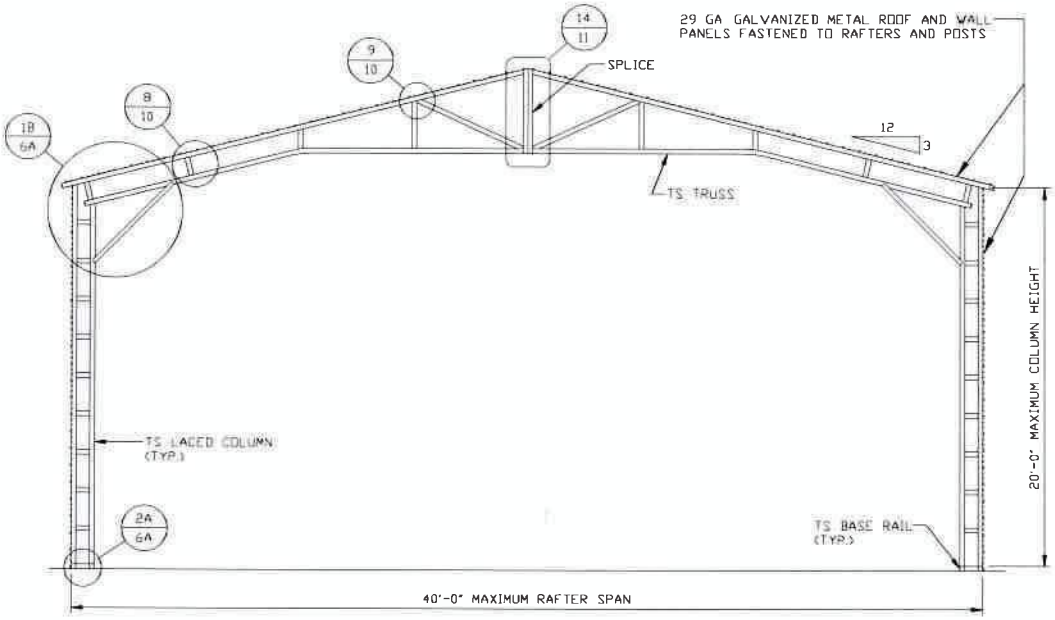
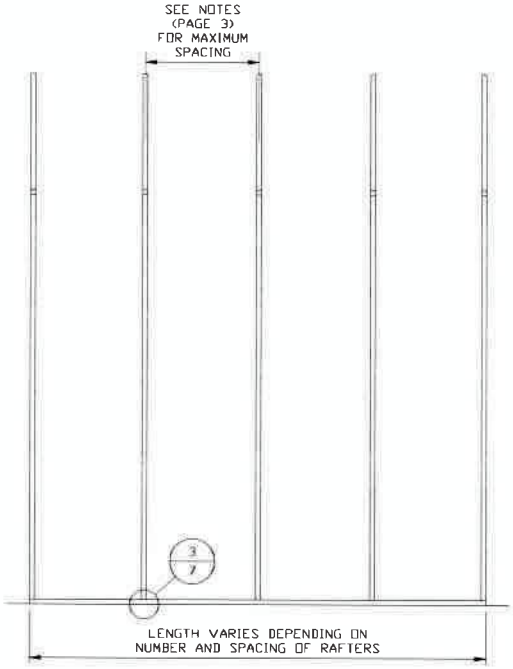


TYPICAL RAFTER/POST FRAME SECTION

SCALE: 1/8" = 1'-0"



TYPICAL RAFTER/POST SIDE FRAMING SECTION

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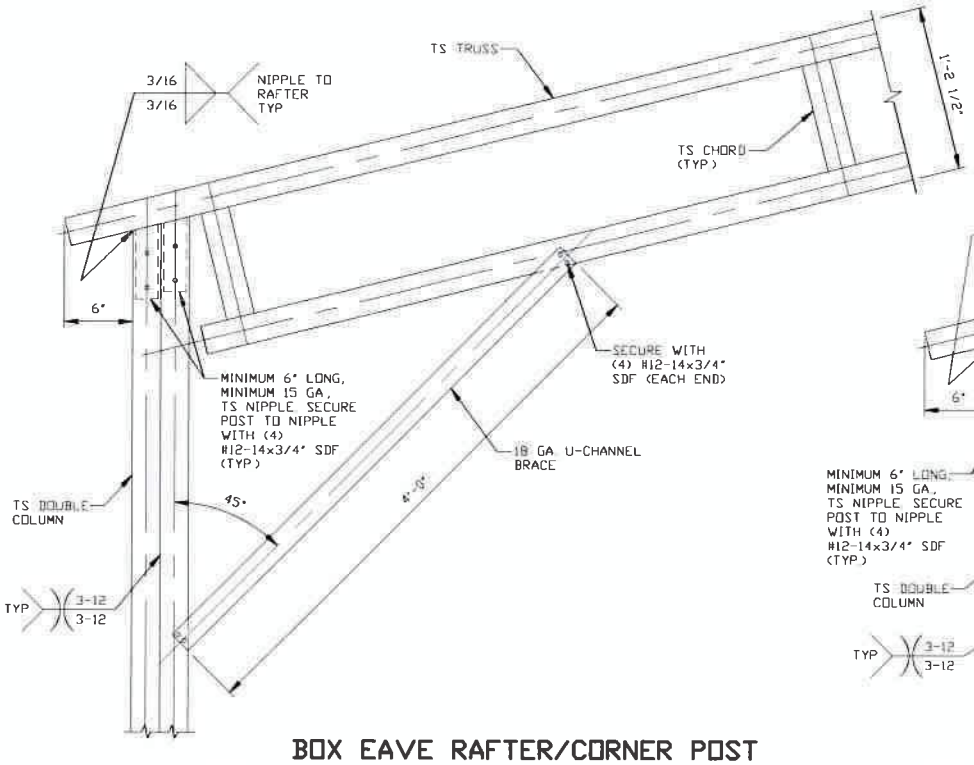
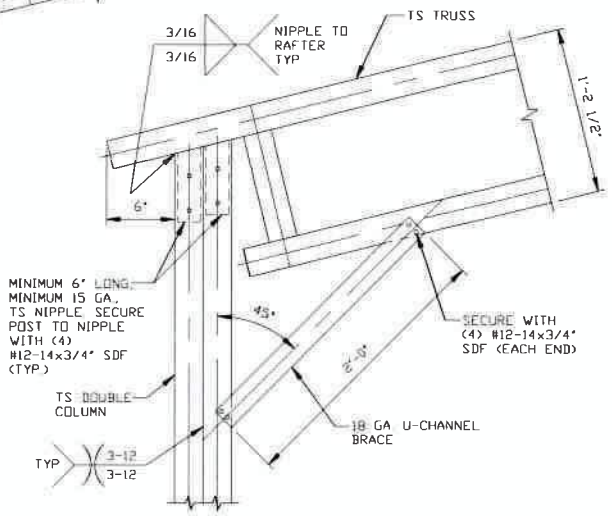


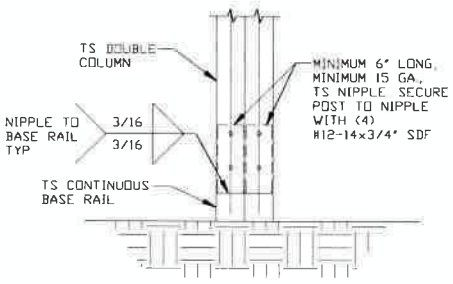
1 BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO ≤ 16'-0"

SCALE: NTS



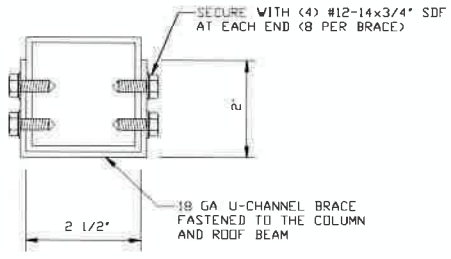
1A BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS ≤ 10'-0"

SCALE: NTS



2 POST/BASE RAIL CONNECTION DETAIL

SCALE: NTS



BRACE SECTION

SCALE: NTS

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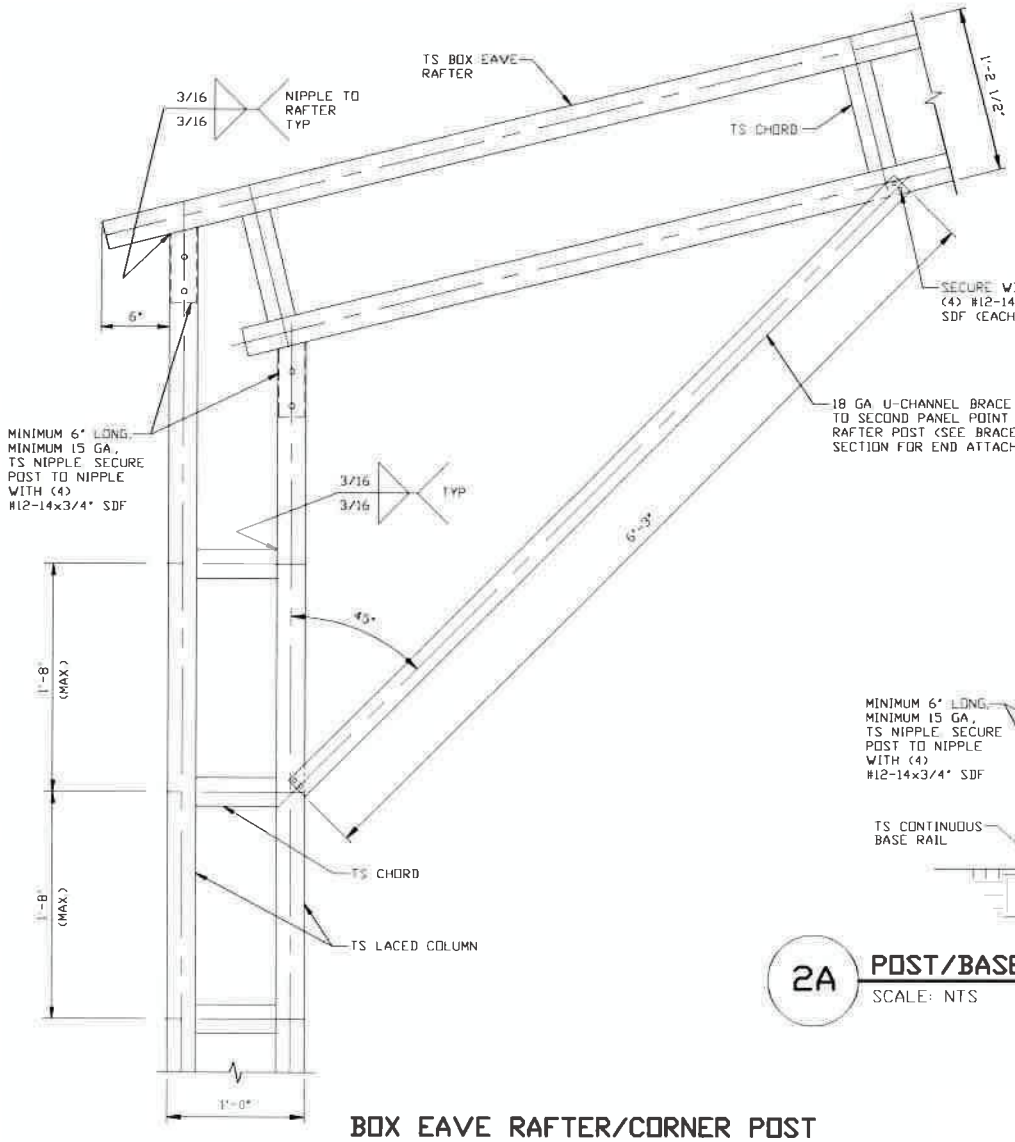
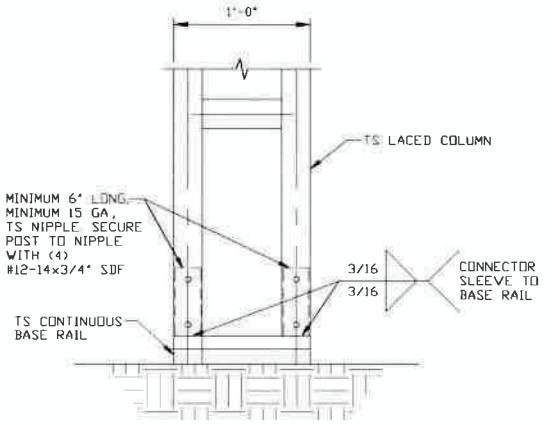


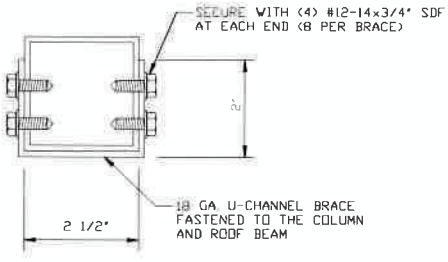
1B BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0"

SCALE: NTS



2A POST/BASE RAIL CONNECTION DETAIL

SCALE: NTS



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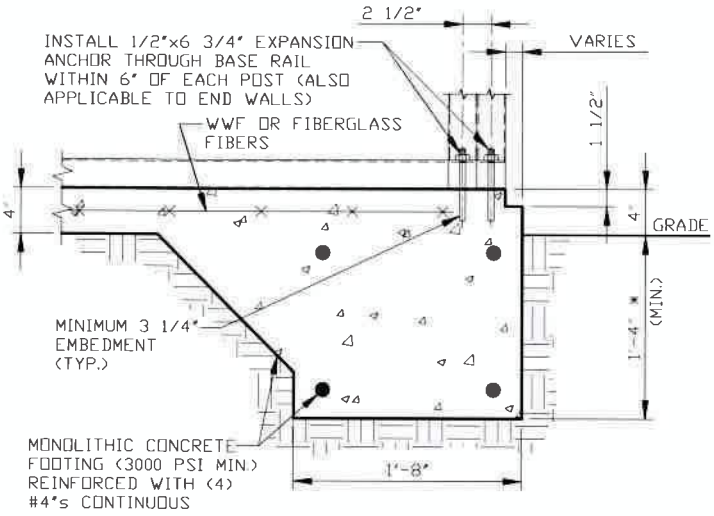
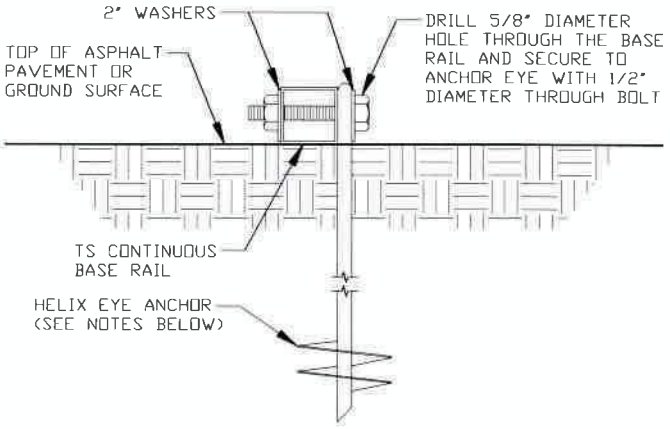
BASE RAIL ANCHORAGE OPTIONS FOR LOW AND HIGH WIND SPEED



3 **CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE**

SCALE: NTS
(MINIMUM ANCHOR EDGE DISTANCE IS 4")
* COORDINATE WITH LOCAL CODES/ORD.



3A **GROUND BASE HELIX ANCHORAGE**

SCALE: NTS
(CAN BE USED FOR ASPHALT)
* COORDINATE WITH LOCAL CODES/ORD. REGARDING MINIMUM FROST DEPTH REQ.

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 INCHES 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 INCHES 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.

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 INCH EMBEDMENT.
2. FOR CORAL USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT.
3. FOR MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS AND CLAYS USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT.
4. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL USE MINIMUM (2) 6" HELICES WITH MINIMUM 50 INCH EMBEDMENT.
5. FOR VERY LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL USE MINIMUM (2) 8" HELICES WITH MINIMUM 60 INCH EMBEDMENT.

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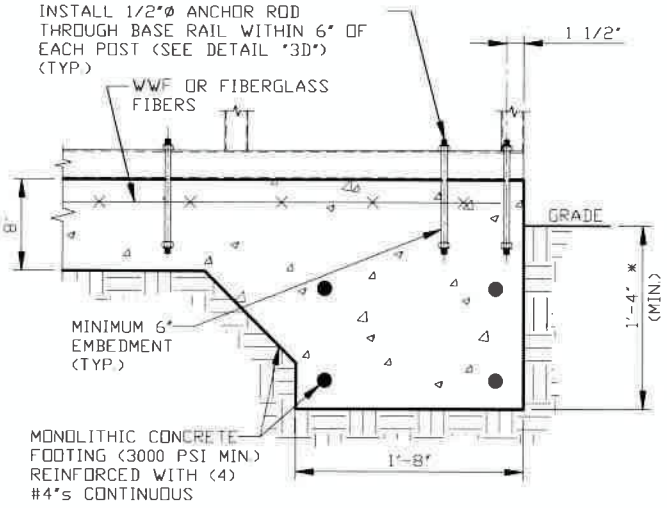
OPTIONAL FOUNDATION ANCHORAGE FOR LOW AND HIGH WIND SPEED



3B **CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE**
SCALE: NTS
(MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2")
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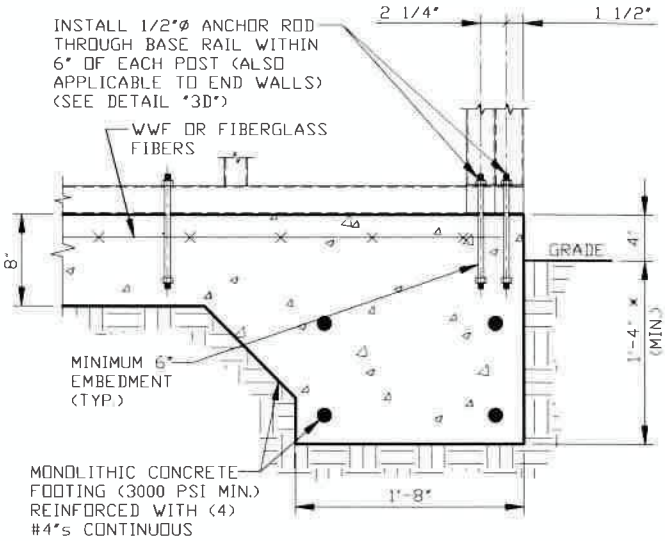

3C **CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE**
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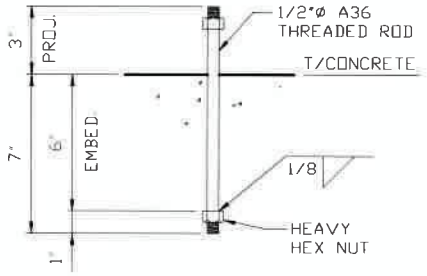

3D **ANCHOR ROD THROUGH BASE RAIL DETAIL**
SCALE: NTS

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:

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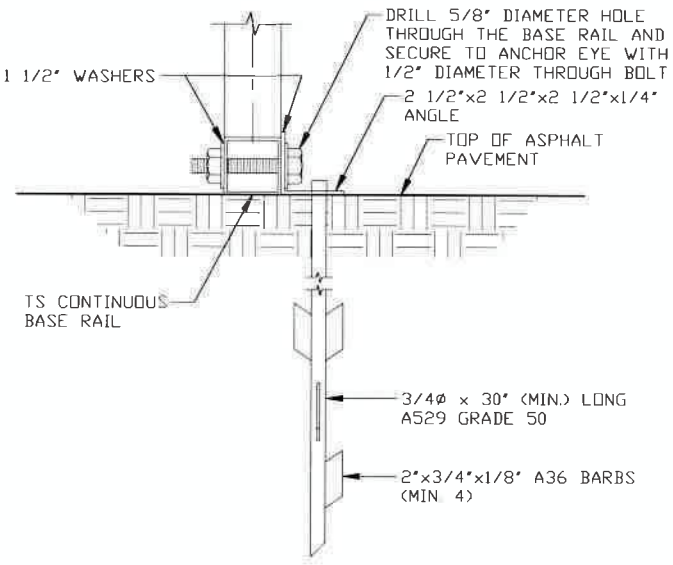
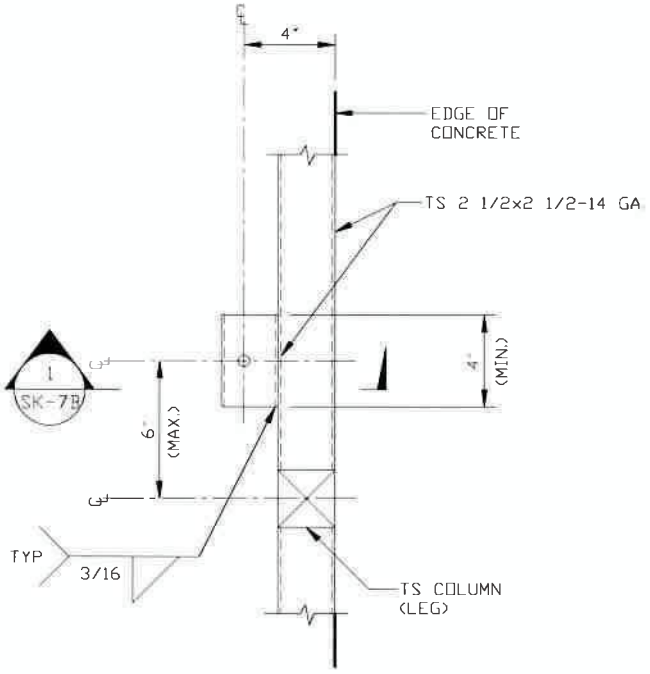
BASE RAIL ANCHORAGE OPTION



3E

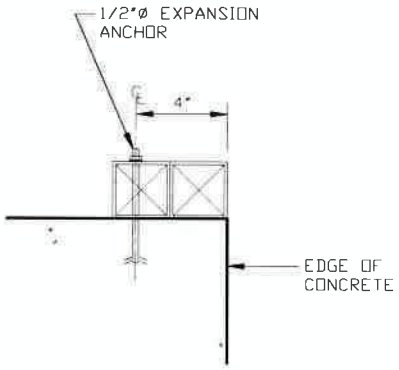
ASPHALT BASE ANCHORAGE (HP 9 BARBED DRIVE ANCHOR)

SCALE: NTS
(CAN BE USED FOR ASPHALT)
* COORDINATE WITH LOCAL CODES/ORD REGARDING MINIMUM FROST DEPTH REQ



TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



SECTION 1 SK-7B

SCALE: NTS

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No 57170
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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	PROJECT MGR: WSM	DATE: 1-15-21	SCALE: NTS	JOB NO: 16022S/17301S/20352S
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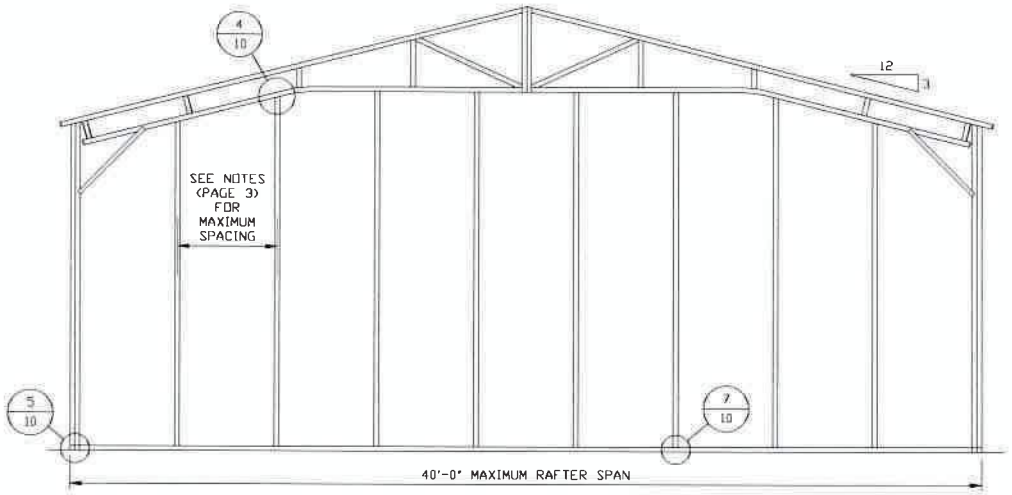
BOX EAVE RAFTER END WALL AND WALL OPENINGS



TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: 1/8" = 1'-0"

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	CHECKED BY: PDH			
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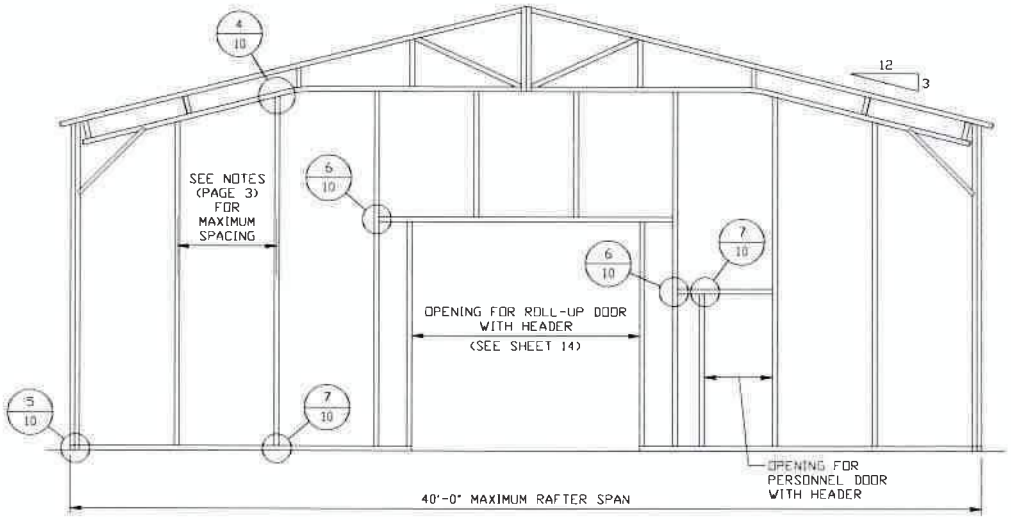
BOX EAVE RAFTER END WALL AND WALL OPENINGS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: 1/8" = 1'-0"

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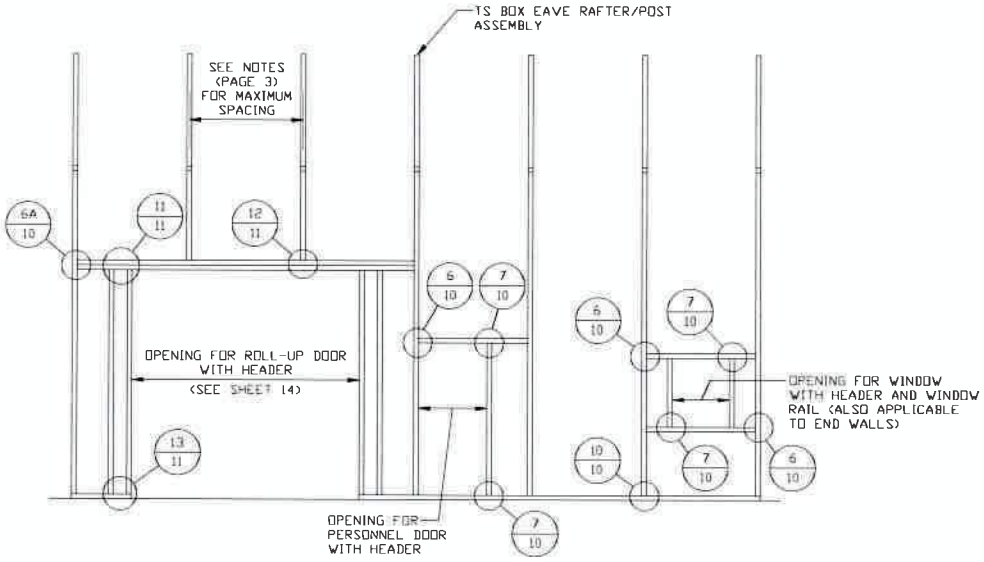
BOX EAVE RAFTER SIDE WALL AND WALL OPENINGS



TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: 1/8" = 1'-0"

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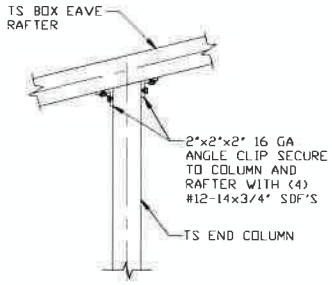
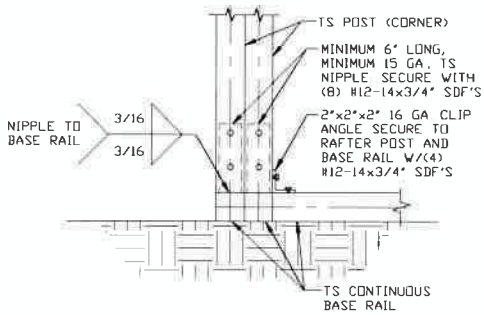
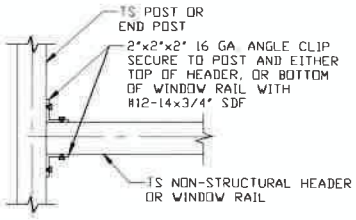
CONNECTION DETAILS



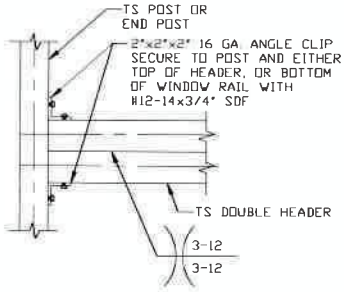
4 END POST/RAFTER CONNECTION DETAIL
SCALE: NTS



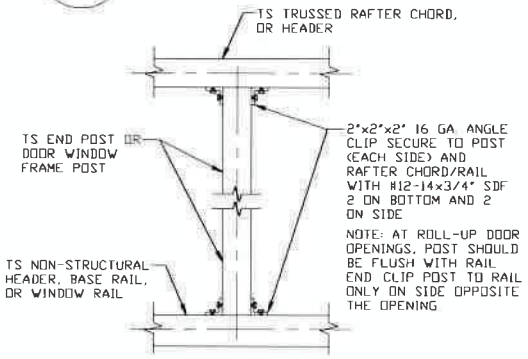
5 END POST/BASE RAIL CONNECTION DETAIL
SCALE: NTS



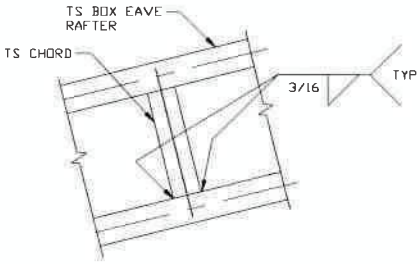
6 HEADER OR WINDOW RAIL TO POST CONNECTION DETAIL
SCALE: NTS



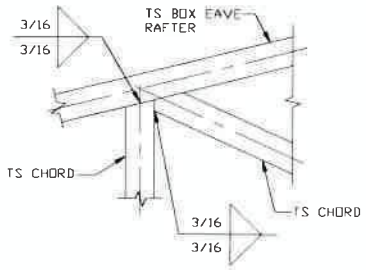
6A DOUBLE HEADER TO COLUMN CONNECTION DETAIL
SCALE: NTS



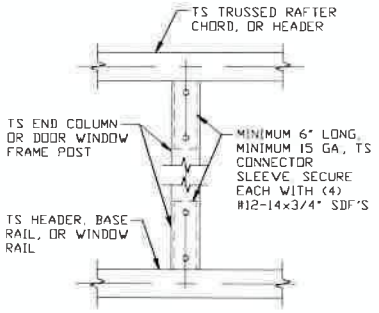
7 POST TO HEADER, BASE RAIL OR WINDOW RAIL CONNECTION DETAIL
SCALE: NTS



8 CHORD/RAFTER CONNECTION DETAIL
SCALE: NTS



9 TRUSS POST AND CORD TO RAFTER CONNECTION DETAIL
SCALE: NTS



10 COLUMN TO HEADER/ BASE RAIL CONNECTION DETAIL
SCALE: NTS

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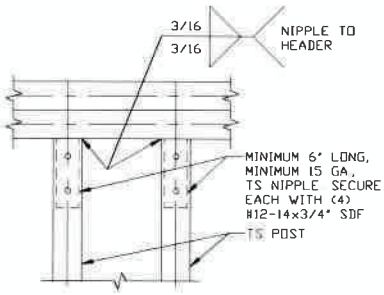
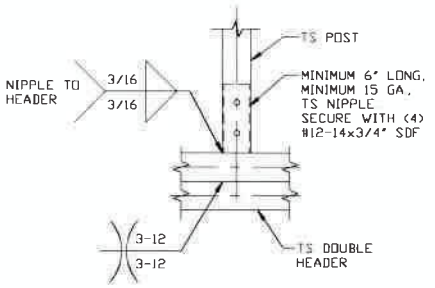
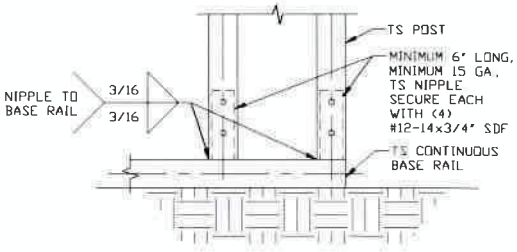
CONNECTION DETAILS



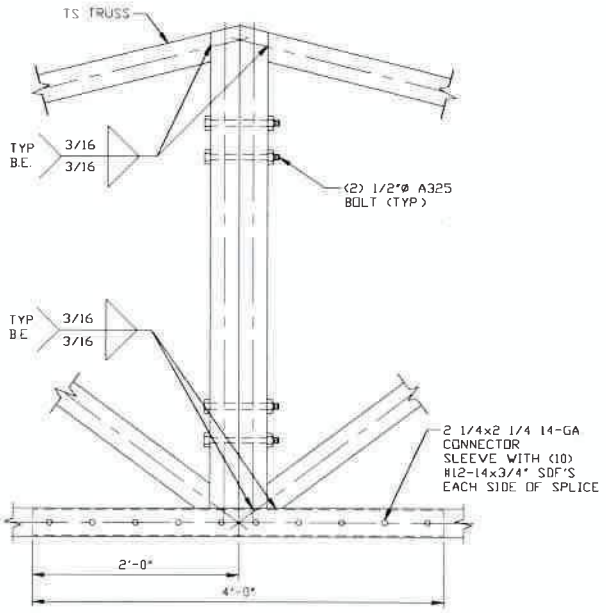
11 DOUBLE HEADER/POST CONNECTION DETAIL
SCALE: NTS



12 POST/DOUBLE HEADER CONNECTION DETAIL
SCALE: NTS



13 POST/BASE RAIL CONNECTION DETAIL
SCALE: NTS



14 SPLICE CONNECTION DETAIL
SCALE: NTS

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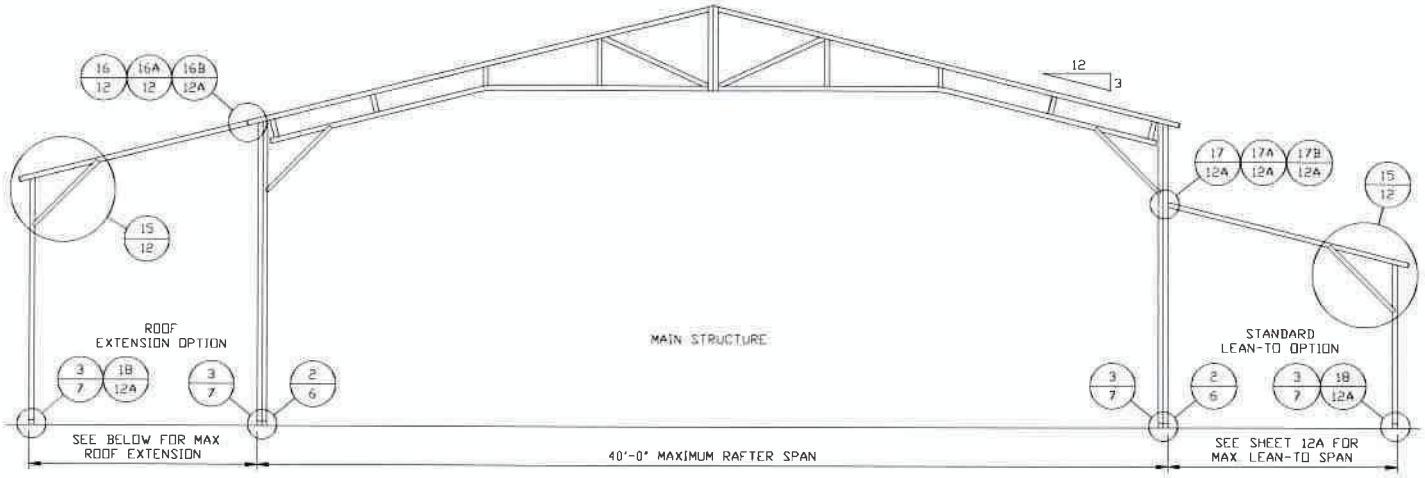
BOX EAVE RAFTER LEAN-TO OPTIONS



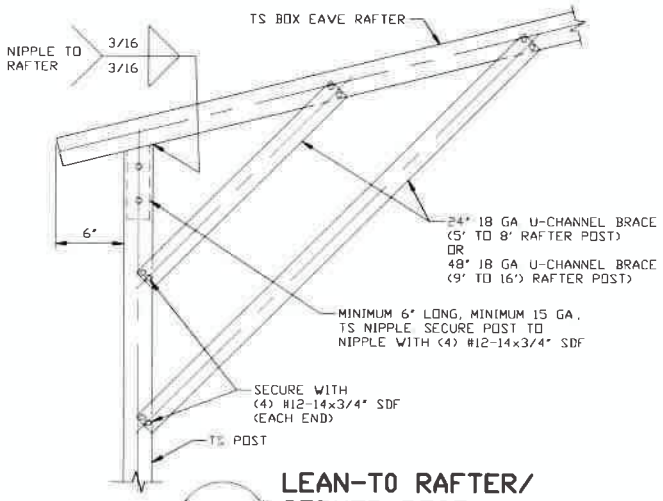
TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

SCALE: NTS

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE LACED COLUMNS FOR EAVE HEIGHTS 16'-0" < TO ≤ 20'-0"

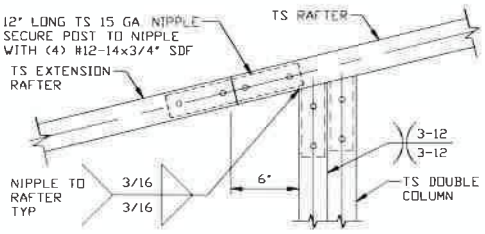
MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS FOR EAVE HEIGHTS 11'-0" < TO ≤ 16'-0"

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS ≤ 10'-0"



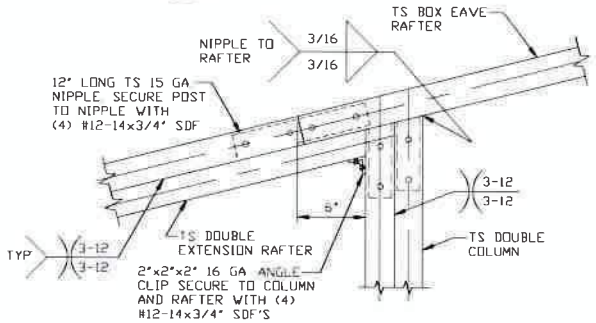
15 **LEAN-TO RAFTER/ CORNER POST DETAIL**

SCALE: NTS



16 **SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS ≤ 12'-0"**

SCALE: NTS



16A **SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS 12'-0" < L ≤ 16'-0"**

SCALE: NTS

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PROFESSIONAL ENGINEER

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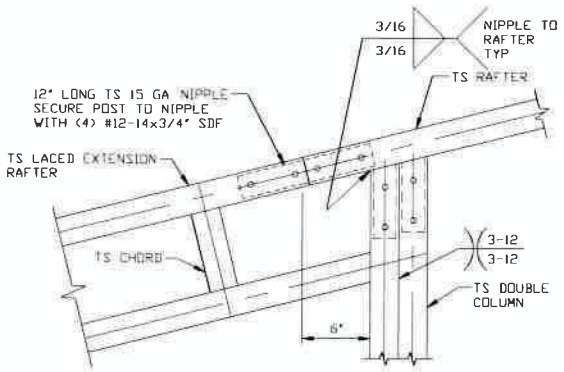
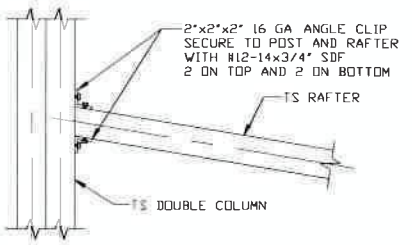
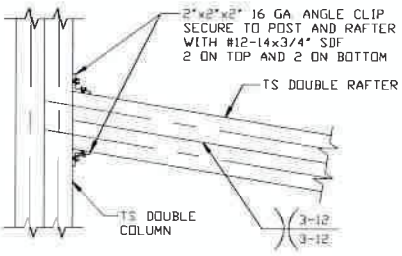
BOX EAVE RAFTER LEAN-TO OPTIONS



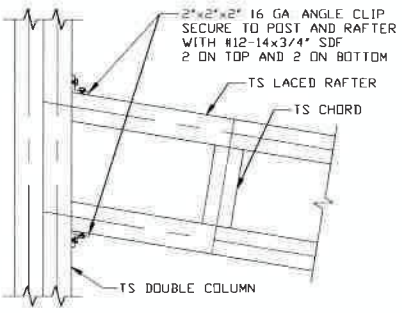
16B **SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS 16'-0" < L ≤ 24'-0"**
SCALE: NTS



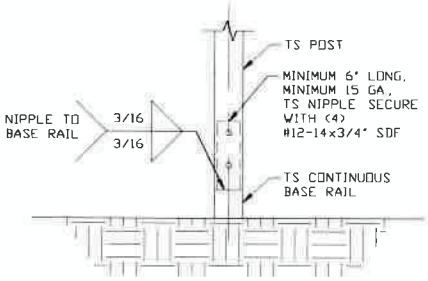
17 **LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0"**
SCALE: NTS



17A **LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0" < L ≤ 16'-0"**
SCALE: NTS



17B **LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 16'-0" < L ≤ 24'-0"**
SCALE: NTS



18 **LEAN-TO POST CONNECTION DETAIL**
SCALE: NTS

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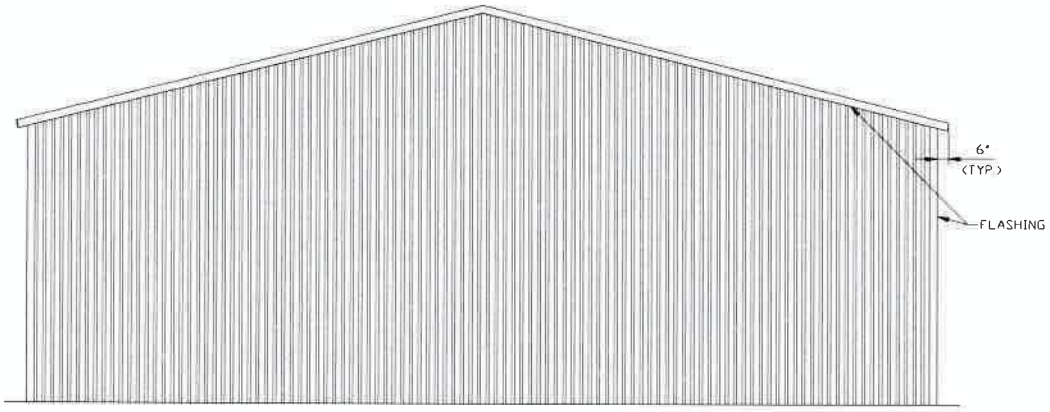
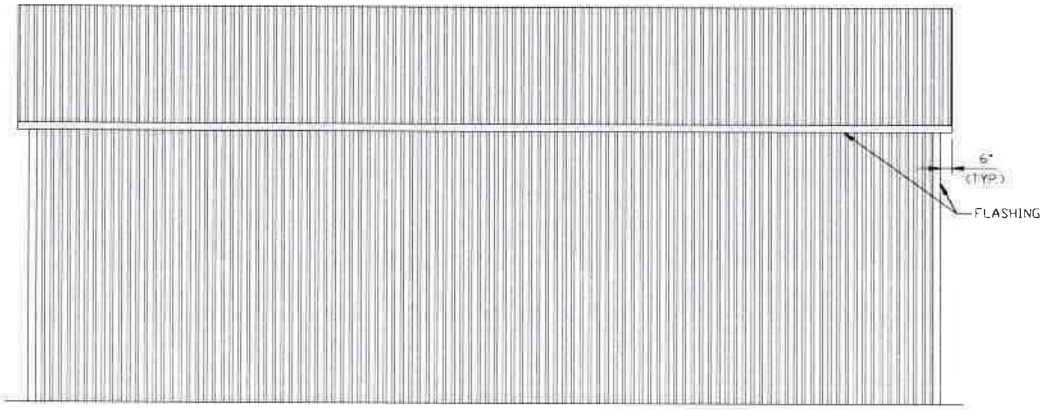
BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



TYPICAL END ELEVATION VERTICAL ROOF/SIDING
SCALE: 1/8" = 1'-0"



TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING
SCALE: 1/8" = 1'-0"

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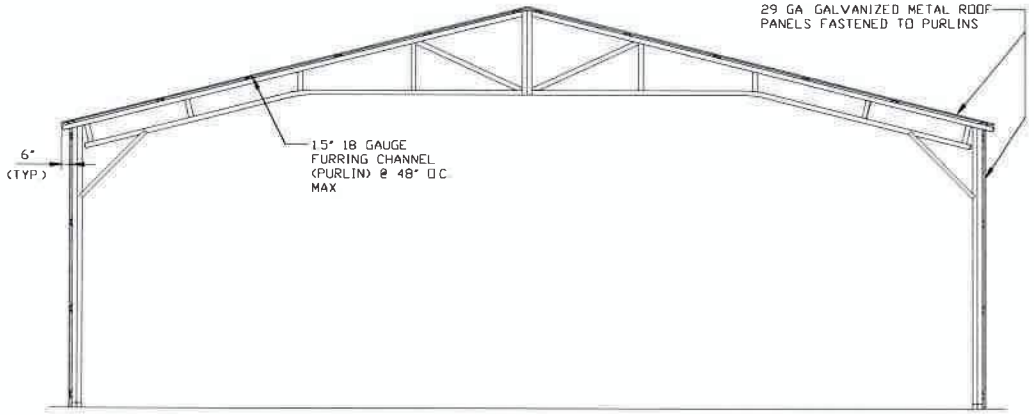
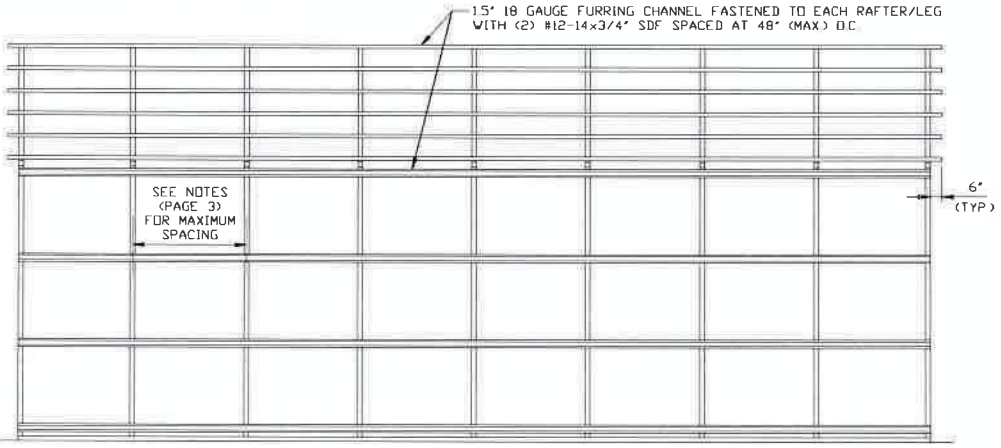
CLIENT: TBS	SHT. 13	DWG. NO: SK-3	REV: 5	

BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

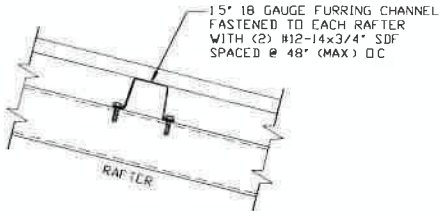
SCALE: 1/8" = 1'-0"



TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

SCALE: 1/8" = 1'-0"

NOTE: TS 2 1/2"x2 1/2"-14 GA. WALL GIRTS CAN BE USED AS AN OPTION IN PLACE OF HAT CHANNELS. TS GIRTS MUST BE SPACED AT 4'-0" (MAX.) OC



PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS)

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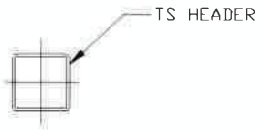
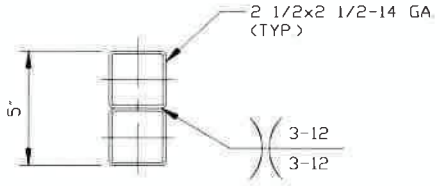
	CLIENT: TBS	SHT. 13A	DWG. NO: SK-3	REV: 5

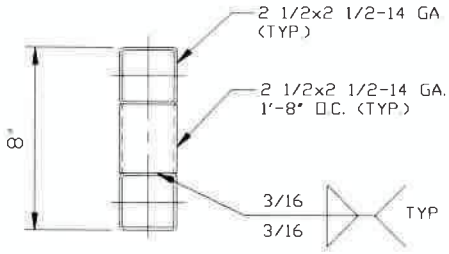
SIDE WALL OPTIONAL HEADER



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

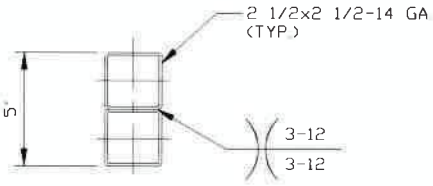


HEADER DETAIL FOR OPENINGS
8'-0" < LENGTH ≤ 10'-0"
SCALE: NTS

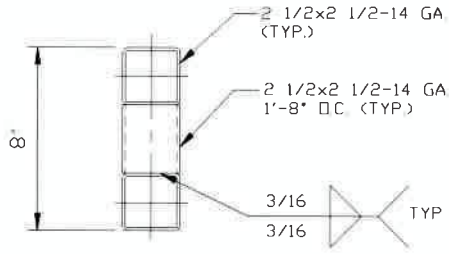


HEADER DETAIL FOR OPENINGS
10'-0" < LENGTH ≤ 15'-0"
SCALE: NTS

END WALL OPTIONAL HEADER



HEADER DETAIL FOR
OPENINGS LENGTH ≤ 10'-0"
SCALE: NTS



HEADER DETAIL FOR OPENINGS
10'-0" < LENGTH ≤ 15'-0"
SCALE: NTS

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	CHECKED BY: PDH			
	PROJECT MGR: WSH	DATE: 1-15-21	SCALE: NTS	JOB NO: 16022S/17301S/20352S
	CLIENT: TBS	SHT: 14	DWG. NO: SK-3	REV: 5

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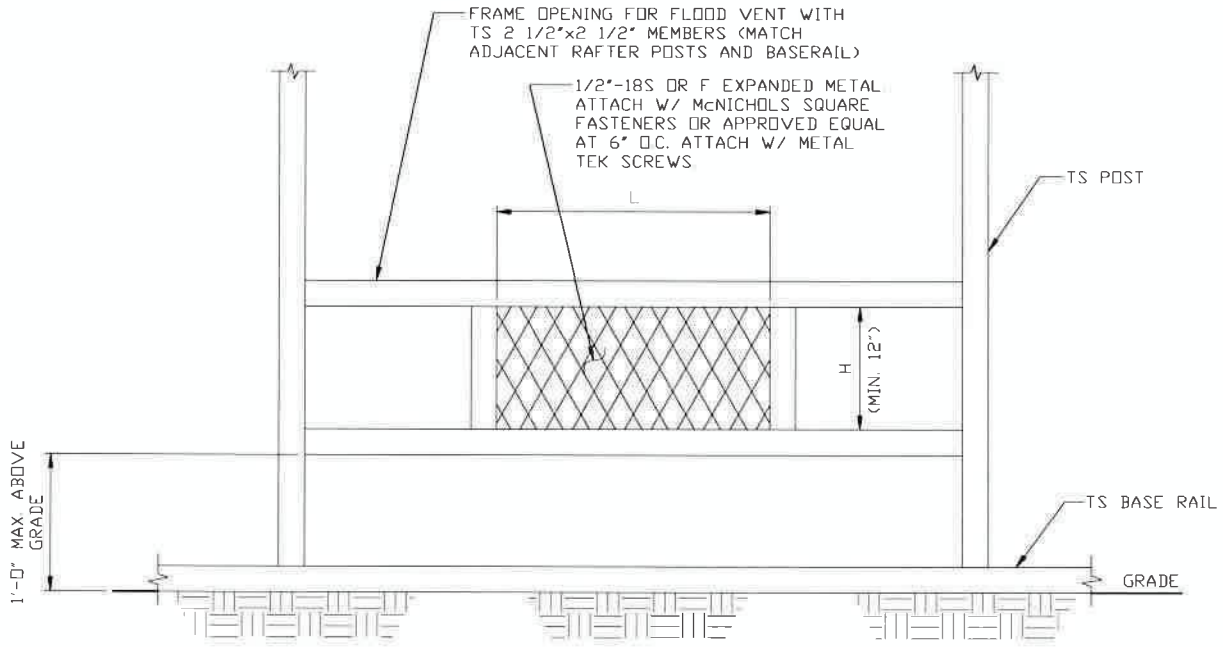
FLOOD VENT DETAIL



TYPICAL FLOOD VENT DETAIL

SCALE: NTS

1. MINIMUM VENT SPACE REQUIRED = 1 SQ. INCH OF OPEN VENT AREA PER SQ. FOOT OF BUILDING AREA.
2. THERE SHALL BE A MINIMUM OF TWO OPENINGS ON DIFFERENT SIDES FOR EACH ENCLOSED BUILDING.
3. APPLY 1.3 FACTOR WHEN CALCULATING TOTAL OPEN AREA WHEN USING 1/2"-18GA S OR F EXPANDED METAL.
4. TOTAL OPEN AREA OF VENT = LxH(MIN. 12").
5. FLOOD VENT DETAIL COMPLIES WITH FEMA/NFIP.
6. PREFABRICATED FLOOD VENTS MEETING THE REQUIREMENTS OF FEMA/NFIP MAY BE USED.

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	PROJECT MGR: WSM	DATE: 1-15-21	SCALE: NTS	JOB NO: 16022S/17301S/20352S
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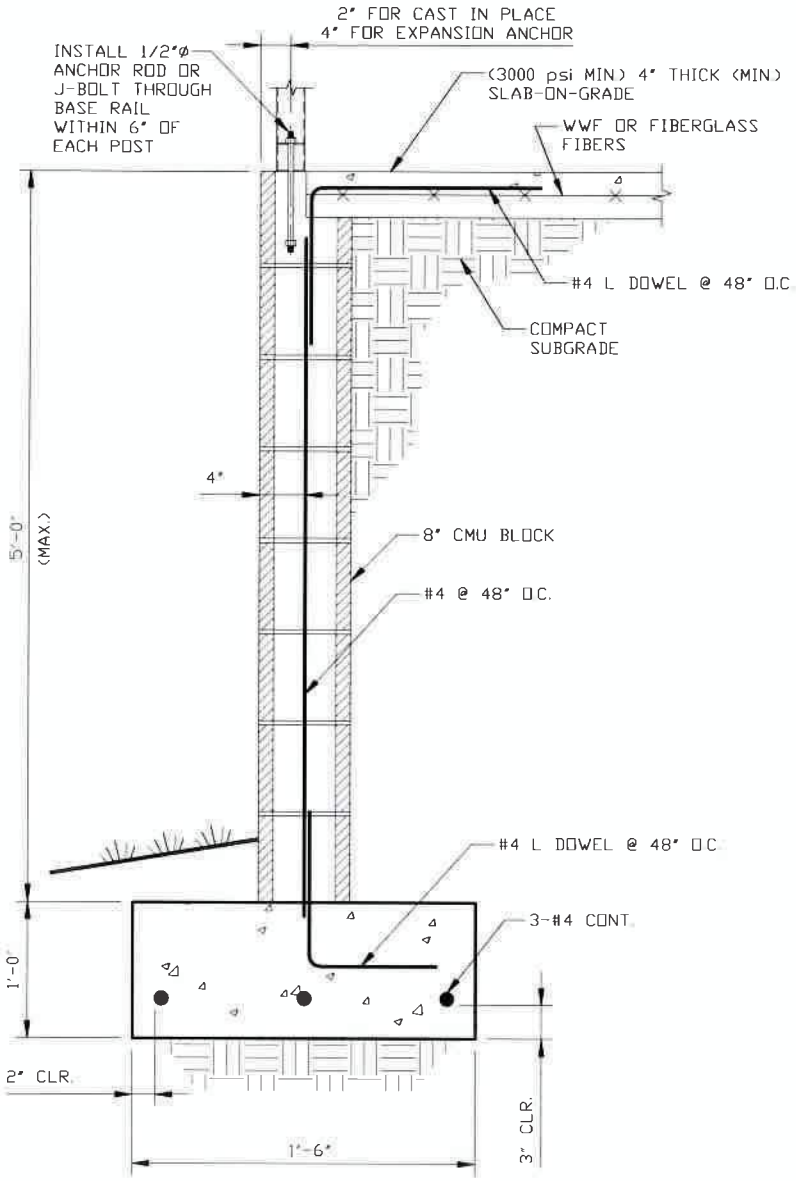
STAND -ALONE STEM WALL DETAIL



STAND-ALONE CONCRETE MASONRY UNIT (CMU) FOUNDATION STEM WALL DETAIL

SCALE: NTS

WAYNE S. MOORE
LICENSE
No 57170
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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	PROJECT MGR: WSM	DATE: 1-15-21	SCALE: NTS	JOB NO: 160225/17301S/20352S
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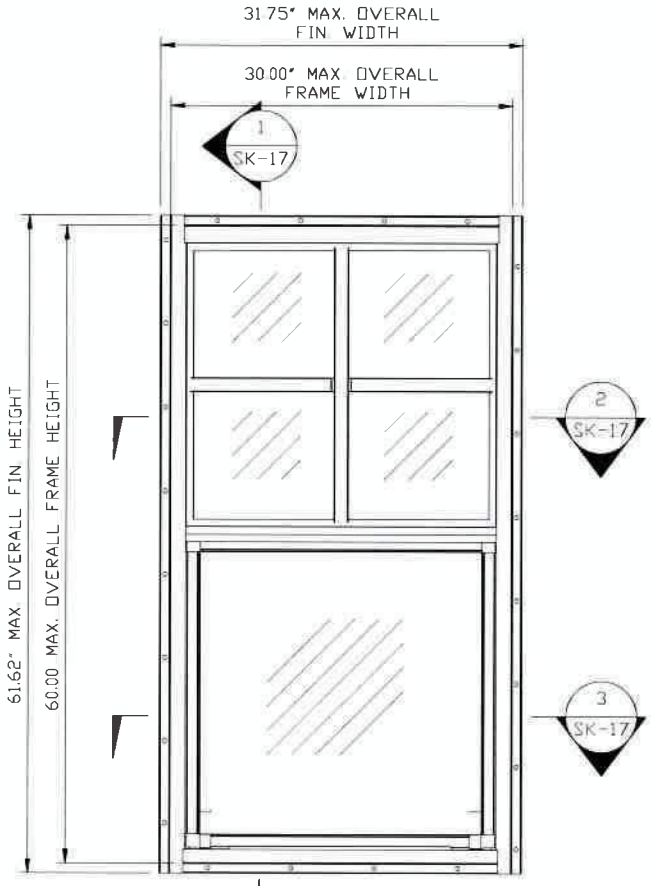
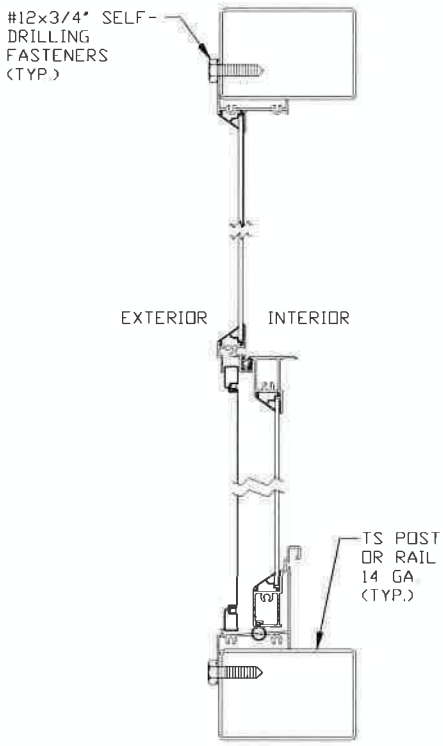
VERTICAL SLIDING WINDOW DETAIL

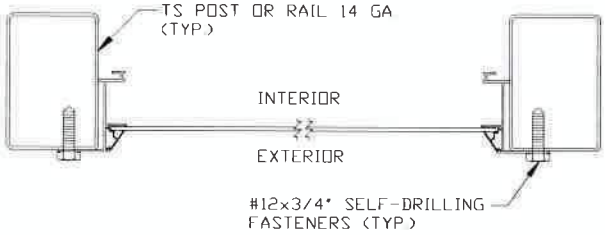


ELEVATION VIEW
SCALE: NTS

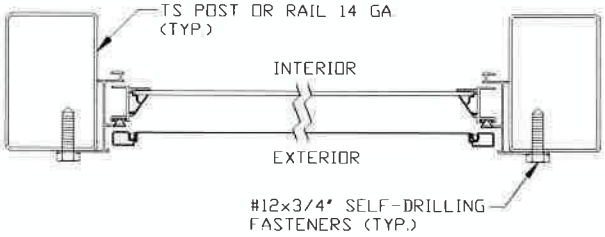


SECTION
SCALE: 3"=1'-0"
NOTE: KINRO SERIES 18000-R VS OR EQUIVALENT WINDOW IS REQUIRED

POSITIVE WALL PRESSURE: +40.0 PSF
NEGATIVE WALL PRESSURE: -40.0 PSF



SECTION 2
SCALE: 3"=1'-0"



SECTION 3
SCALE: 3"=1'-0"

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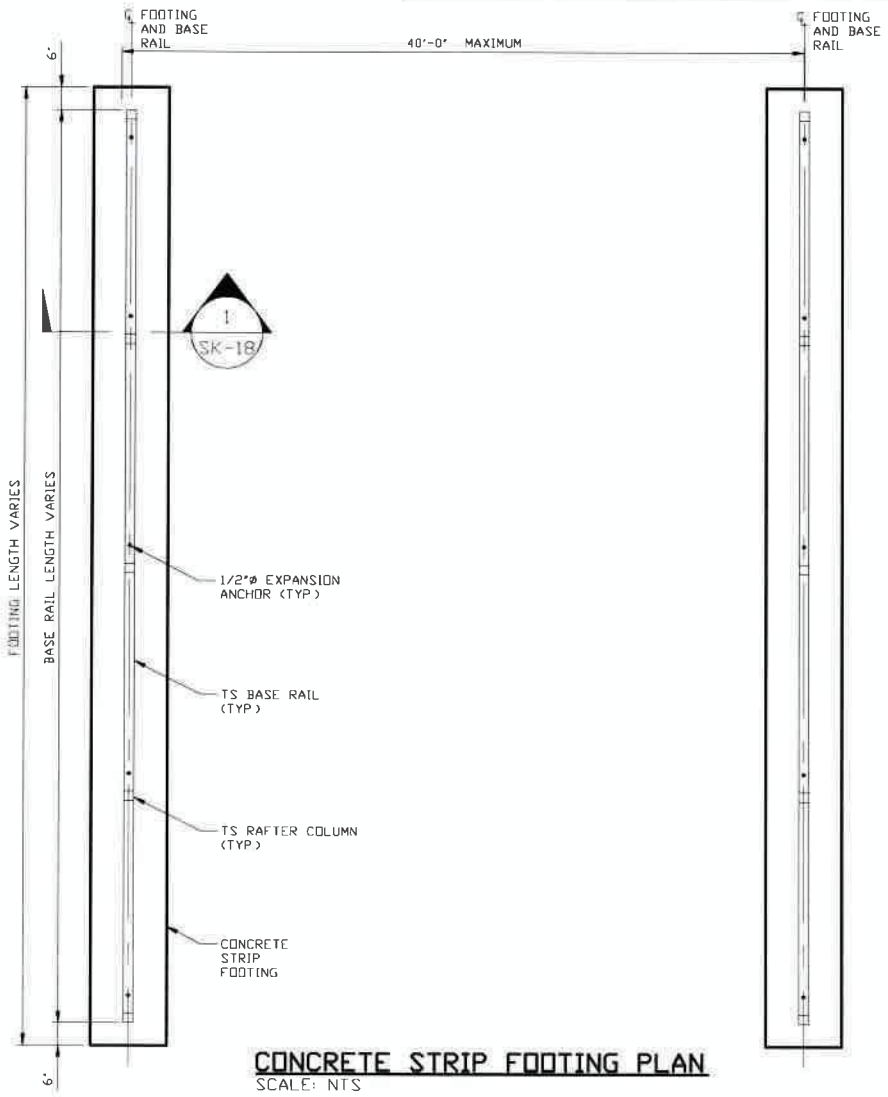
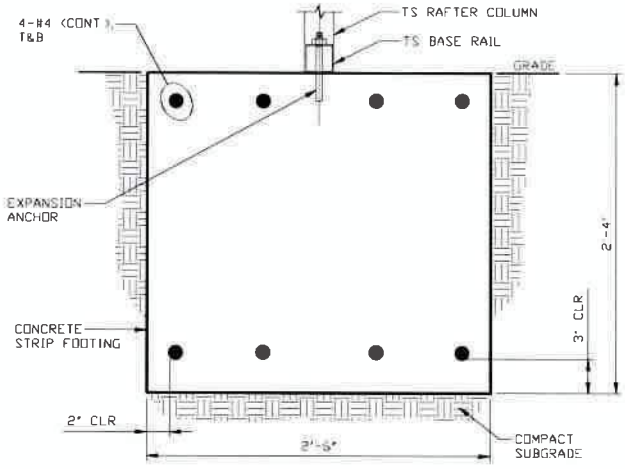
OPTIONAL CONCRETE STRIP FOOTING



CONCRETE STRIP FOOTING PLAN
SCALE: NTS



SECTION 1/SK-18
SCALE: NTS

* COORDINATE WITH LOCAL CODES/ORD

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 INCHES 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 INCHES 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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