

Robinson
Meier
Juilly & Associates

Principals
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Schneider
 **Electric**
NetShelter SX

Structural Drawings For Seismic Anchorage

Prepared for:

Schneider Electric
November 17, 2016
RMJ Job No. 14109
Valid Thru December 31, 2017

241 Joaquin Avenue
San Leandro, CA 94577
(510) 991-0977



GENERAL NOTES

DESIGN

This Design and design forces are based on 2012 IBC.

This Document may only be used with the express written consent of the manufacturer listed below for the specific project site and installation location. This document is invalid without such consent.

Design Criteria:

Importance Factor1.5

Maximum Value of $S_{DS}=2.0$, $a_p=1.0$, $R_p=2.5$, $\Omega_0=2.5$ (As req'd for anchorage to concrete), $z/h=0.0$ (Concrete slab on grade), $z/h=0.5$ (For Upper Levels)

Forces per ASCE 7-10 section 13.3.1, Equations 13.3-1, 13.3-2 & 13.3-3.

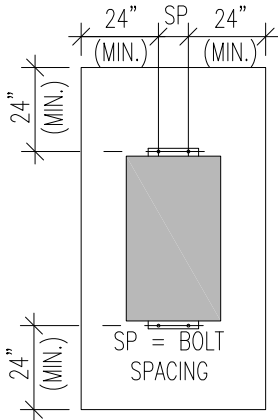
Note: For Site Specific S_{DS} , SEOR shall determine appropriate value to be utilized.

Dimensions: Refer to rough concrete surfaces, or top of slab, unless otherwise indicated.

Fasteners Expansion Anchors:

Anchor Diameter	Concrete Type	Min. f'c (psi)	Anchor Type	ICC Report No.	Min. Embed.	Min. Spacing	Min. Edge Dist.	Min. Conc. Thickness	Torque Test	Direction Tension
1/2"	Normal Weight	3,000	Hilti Kwik Bolt CS	ESR-1917	3 1/4"	6 1/2"	24"	6"	40 FT-LB	2,600 lb

Tension testing shall be done in the presence of the special inspector and a report of the test results shall be submitted to SEOR (After at least 24 hours have elapsed since installation, direct pull tension test or torque test at least 50% of the anchors.) Testing shall be done in the presence of Special Inspector, and a report shall be submitted to the enforcement agency.



TYPICAL CONCRETE
EDGE DETAIL

Acceptance Criteria:

Direction Tension Test:

Anchor shall have maintain test load of (15) seconds & shall exhibit no discernable movement during the tension test, e.g., as evidenced by loosening of the washer under the nut.

Torque Test:

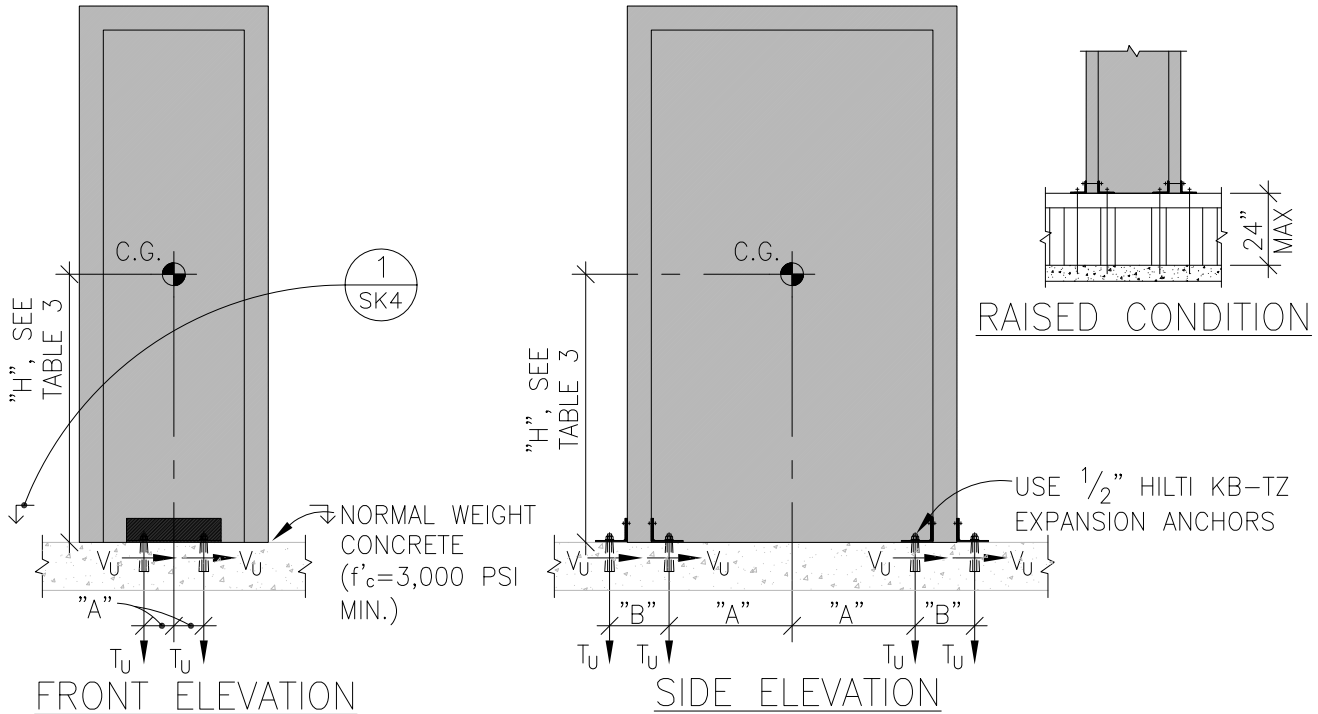
The applicable torque must be achieved within the following limits: wedge type: 1/2 turn of the nut.

*If any anchor fails testing, all anchors of the same type shall be tested, which are install by the same trade, not previously tested until twenty (20) consecutive anchors pass, then resume initial test frequency.



<p>Robinson Meier Juilly & Associates</p>	Structural Engineers	241 Joaquin Avenue San Leandro CA 94577 510.991.0977	SCHNEIDER ELECTRIC NETSHELTER SX ANCHORAGE	Job No. 14109.01
	LOW, MODERATE, AND HIGH SEISMIC REGIONS			Sheet No. <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> SK1 </div>
	Signed by MAS		Date	11.2016

SEISMIC SUPPORT & ANCHORAGE



NOTES:

1. DESIGN CENTER OF GRAVITY AT 2/3 THE HEIGHT OF THE UNIT. (NOTE: ACTUAL CENTER OF GRAVITY DOES NOT EXCEED DESIGN HEIGHT.)
2. FORCES ARE DETERMINED PER 2012 INTERNATIONAL BUILDING CODE AND ASCE 7-10 STRENGTH DESIGN. ($S_{DS}=2.0$ (HIGH SEISMIC) 1.0 (LOW SEISMIC), $\alpha_p=1.0$, $I_p=1.5$, $R_p=2.5$, $\Omega_0=2.5$, $z/h=0$ (GROUND LEVEL) & $z/h=.5$ (50% OF BLDG. HT.)).
3. SEE GENERAL NOTES FOR ALL OTHER CONDITIONS AND LIMITATIONS.
4. NETSHELTER SX EXTERIOR CABINET UNIT COVER COMPOSED OF 14 ga COLD ROLLED STEEL 29.4 ksi.
5. SIGN MUST BE POSTED INDICATING CABINET TOTAL WT. LIMITS LISTED IN THE TABLE 1.
6. WEIGHTS LISTED IN "TABLE 1" APPLY TO ALL UNITS IRRESPECTIVE OF SIZE.

ALLOWABLE CABINET ADDED WEIGHT *ALL WEIGHTS GIVEN IN (LB) TABLE 1

MAX CABINET WT. (500)	LOW & MODERATE SEISMIC				HIGH SEISMIC			
	GROUND		UPPER		GROUND		UPPER	
	ON FLOOR	RAISED	ON FLOOR	RAISED	ON FLOOR	RAISED	ON FLOOR	RAISED
SINGLE UNIT	1,500	850	1,200	1,200	1,000	SS ¹	1,200	1,200
GANGED UNIT	2,000	2,000	1,200	1,200	1,500	1,500	1,200	1,200

(INCLUDES Ω_0 FOR ANCHORAGE TO CONCRETE)

DIMENSIONS, AND DEMAND LOADING (TABLE 2)

COVERS ALL SCHNEIDER ELECTRIC NETSHELTER SX UNITS WITH-IN THE FOLLOWING DIMENSIONS	CABINET DIMENSIONS		
	WIDTH (in.)	LENGTH (in.)	HEIGHT (in.)
	23.6-31.5	42.1-47.2	47.17-99.6



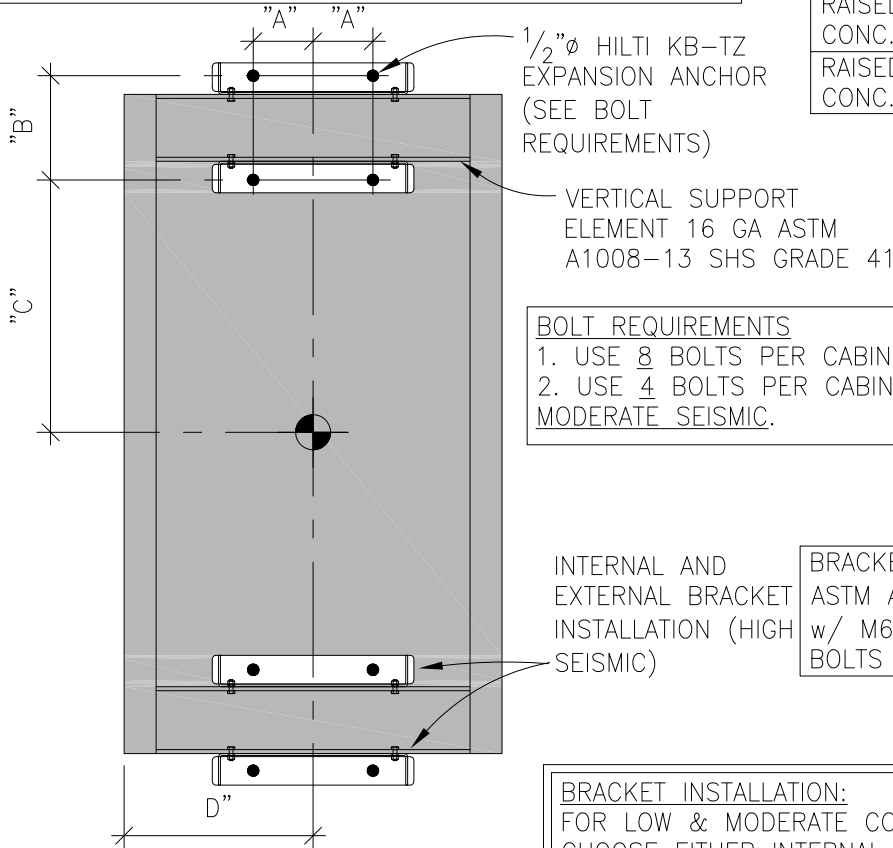
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	LOW, MODERATE, AND HIGH SEISMIC REGIONS	Sheet No. (SK3)
	Signed by MAS Date 11.2016	

NOTES:

- *POSITION BOLTS IN OUTER OR UPPER HALF OF SLOTTED BOLT HOLES WHERE APPLICABLE
- *SEE MANUFACTURE DRAWINGS FOR EXACT DIMENSIONS OF NETSHELTER SX CABINETS. AR3100 SHOWN FOR REFERENCE.
- *HIGH SEISMIC BRACKET INSTALLATION SHOWN HERE. CLIENT HAS OPTION TO USE INTERNAL OR EXTERNAL BRACKET INSTALLATION FOR LOW AND MODERATE SEISMIC REGIONS.

CONDITION SCHEDULE

CONDITION	SEE
CONCRETE SLAB	(SK6)
CONCRETE FILL OVER METAL DECK	(SK7)
RAISED COMP. FLOOR CONC. FILL METAL DECK	(SK8)
RAISED COMP. FLOOR CONC. SLAB	(SK9)



BOLT REQUIREMENTS

- USE 8 BOLTS PER CABINET FOR HIGH SEISMIC.
- USE 4 BOLTS PER CABINET FOR LOW AND MODERATE SEISMIC.

BRACKET MATERIAL (0.135" THK, ASTM A1008-13 SHS GRADE 41) w/ M6 (ISO 898-1 CLASS 10.9) BOLTS PROVIDED BY NETSHELTER.

BRACKET INSTALLATION:
 FOR LOW & MODERATE CONDITIONS CUSTOMER MAY CHOOSE EITHER INTERNAL OR EXTERNAL BRACKET INSTALLATION SEE SK10.
 FOR HIGH SEISMIC CONDITIONS BOTH BRACKETS ARE REQUIRED SEE SK13.

SINGLE UNIT BOTTOM PLAN VIEW
PLAN
 N.T.S. (1) SK4

ANCHOR BOLT DIMENSIONS TABLE 3

"H"	"A"	"B"	"C"	"D"
MAX (in.)	MAX (in.)	MAX (in.)	MAX (in.)	MAX (in.)
59.3"	3.74"	5.9"	15.03"	15.75"

WORST CASE VALUES



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NOTES:

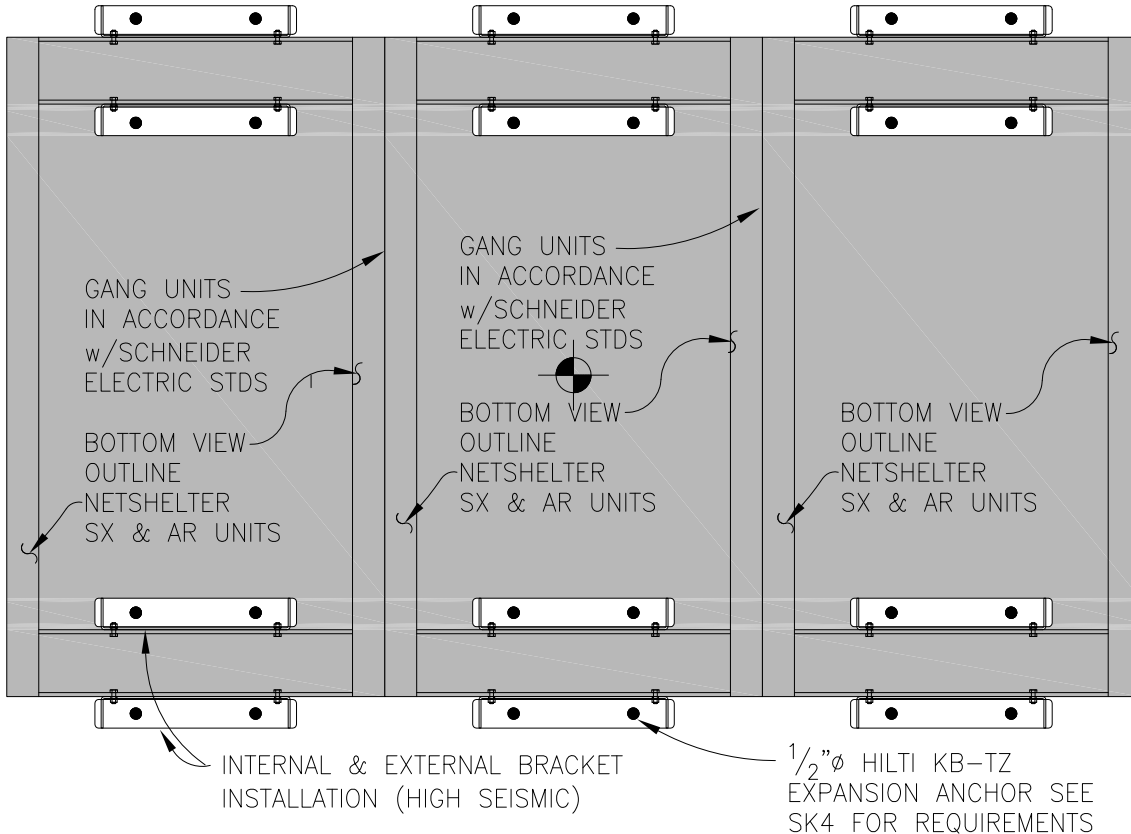
- *POSITION BOLTS IN OUTER OR UPPER HALF OF SLOTTED BOLT HOLES WHERE APPLICABLE
- *SEE MANUFACTURE DRAWINGS FOR EXACT DIMENSIONS OF NETSHELTER SX CABINETS. AR3100 SHOWN FOR REFERENCE.
- *HIGH SEISMIC BRACKET INSTALLATION SHOWN HERE. CLIENT HAS OPTION TO USE INTERNAL OR EXTERNAL BRACKET INSTALLATION FOR LOW AND MODERATE SEISMIC REGIONS.

CONDITION SCHEDULE

CONDITION	SEE
CONCRETE SLAB	(SK6)
CONCRETE FILL OVER METAL DECK	(SK7)
RAISED COMP. FLOOR CONC. FILL METAL DECK	(SK8)
RAISED COMP. FLOOR CONC. SLAB	(SK9)

INSTALLATION FOR THE FOLLOWING CONDITIONS:

1. SEE BOLT REQUIREMENTS ON SK4 FOR ANCHORAGE REQUIREMENTS.



GANG UNIT BOTTOM PLAN VIEW (3 UNITS OR MORE GANGED TOGETHER)



PLAN

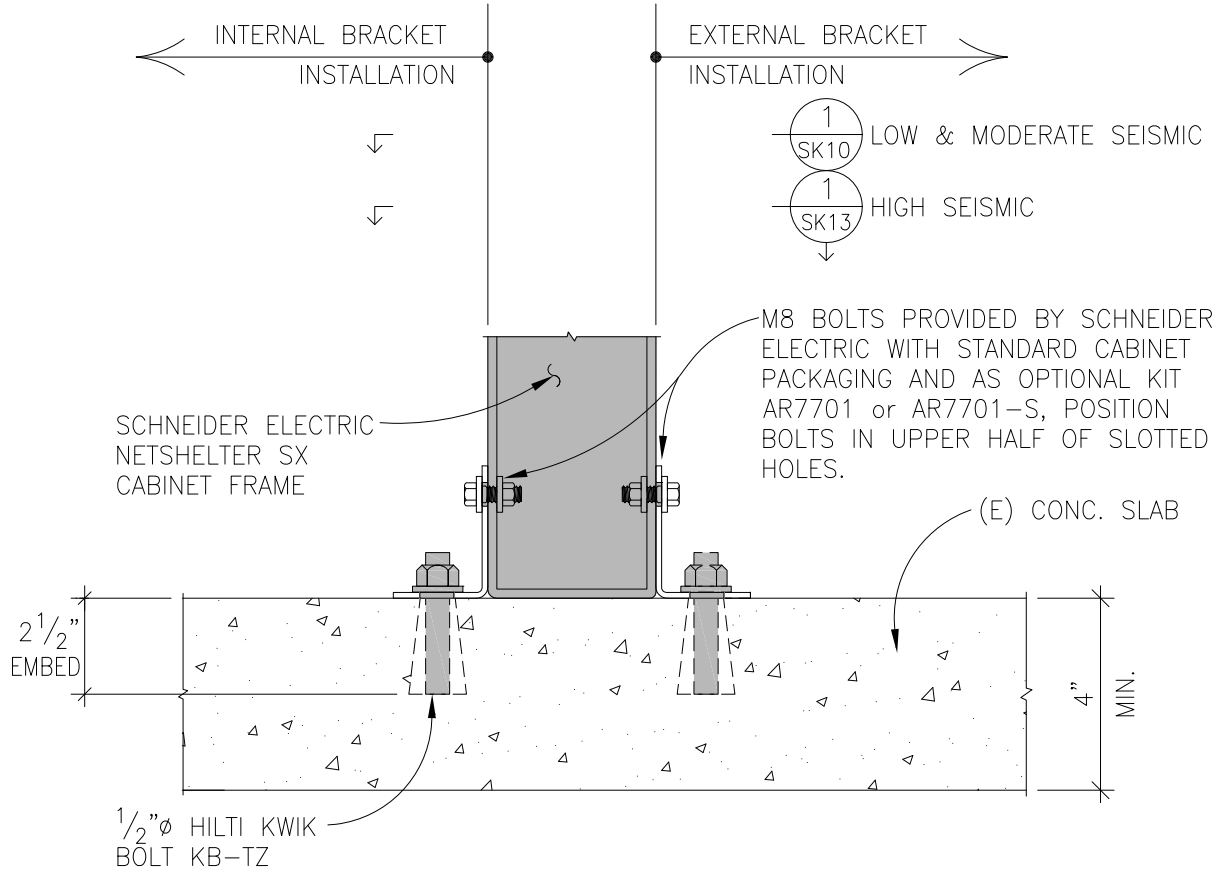
1
SK5

BRACKET INSTALLATION:

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FOR HIGH SEISMIC CONDITIONS BOTH BRACKETS ARE REQUIRED SEE SK13.

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	<p>LOW, MODERATE, AND HIGH SEISMIC REGIONS</p>	<p>Sheet No. (SK5)</p>
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NOTE:
 OPTIONAL EXTERNAL
 INSTALLATION SHOWN DASHED.



**CONCRETE SLAB
 INSTALLATION**



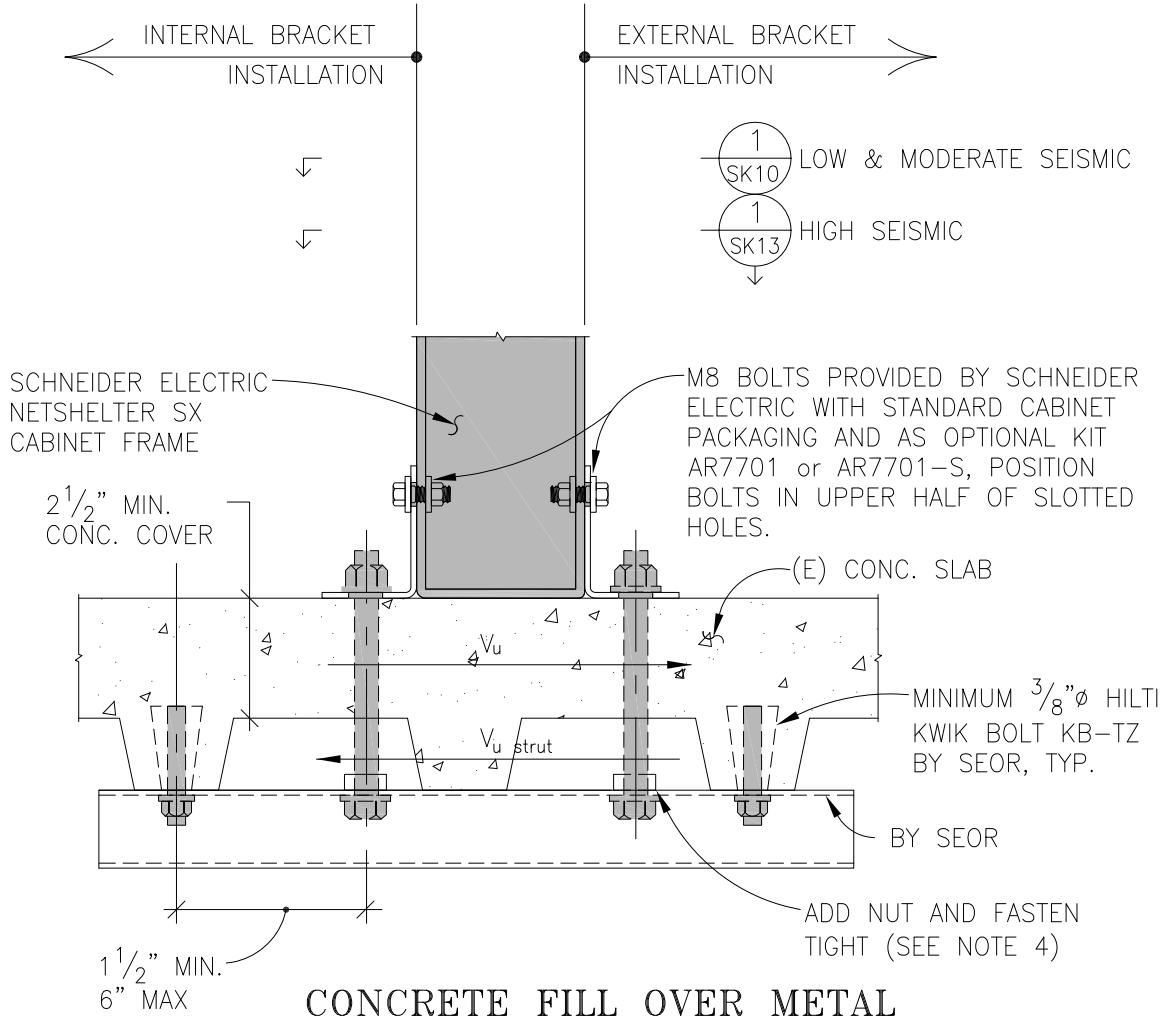
DETAIL

3" = 1'-0"

1
 SK6

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NOTE:
 OPTIONAL EXTERNAL
 INSTALLATION SHOWN DASHED.



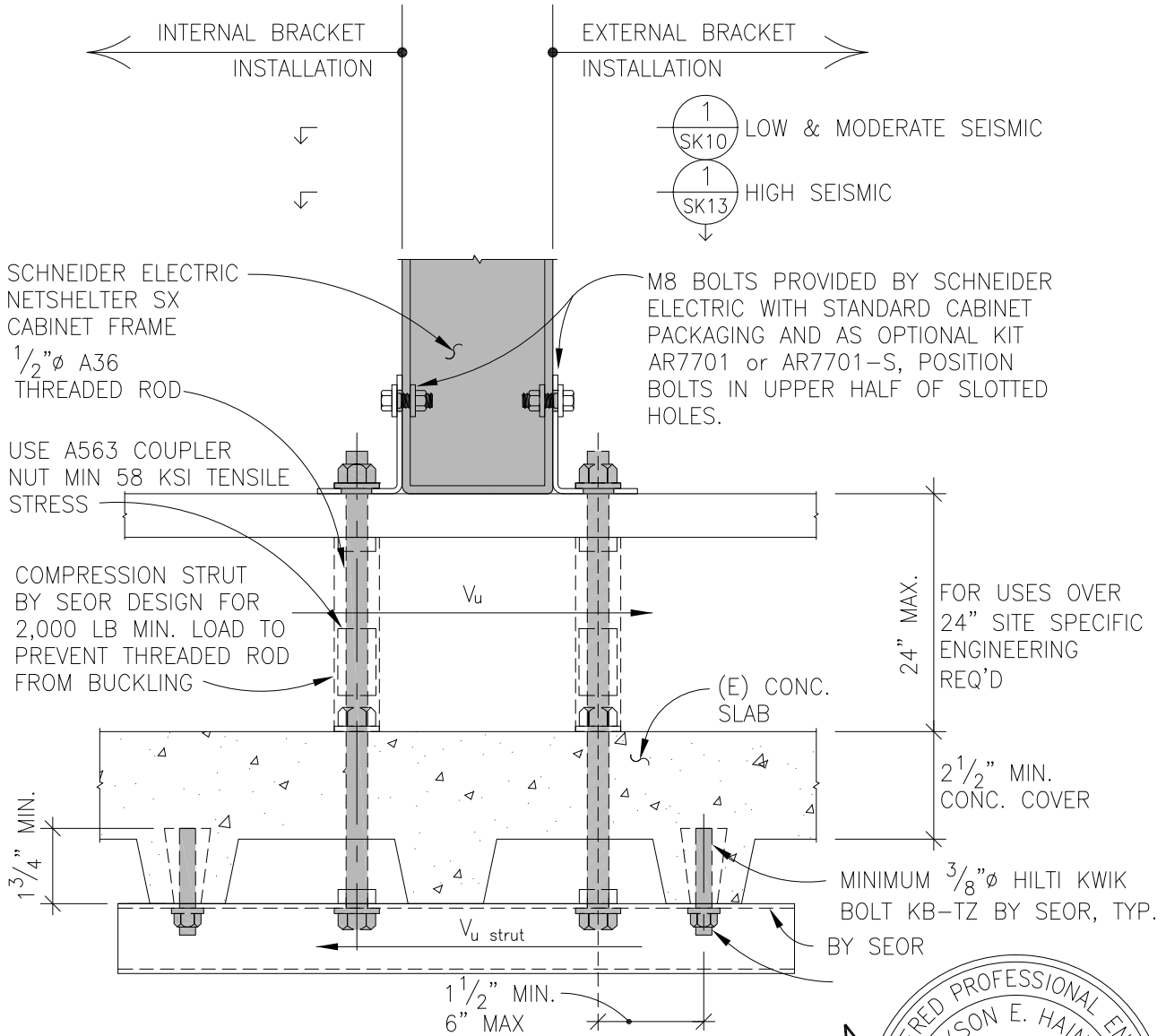
CONCRETE FILL OVER METAL DECK INSTALLATION

DETAIL 1
 3" = 1'-0" SK7



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NOTE:
OPTIONAL EXTERNAL
INSTALLATION SHOWN DASHED.



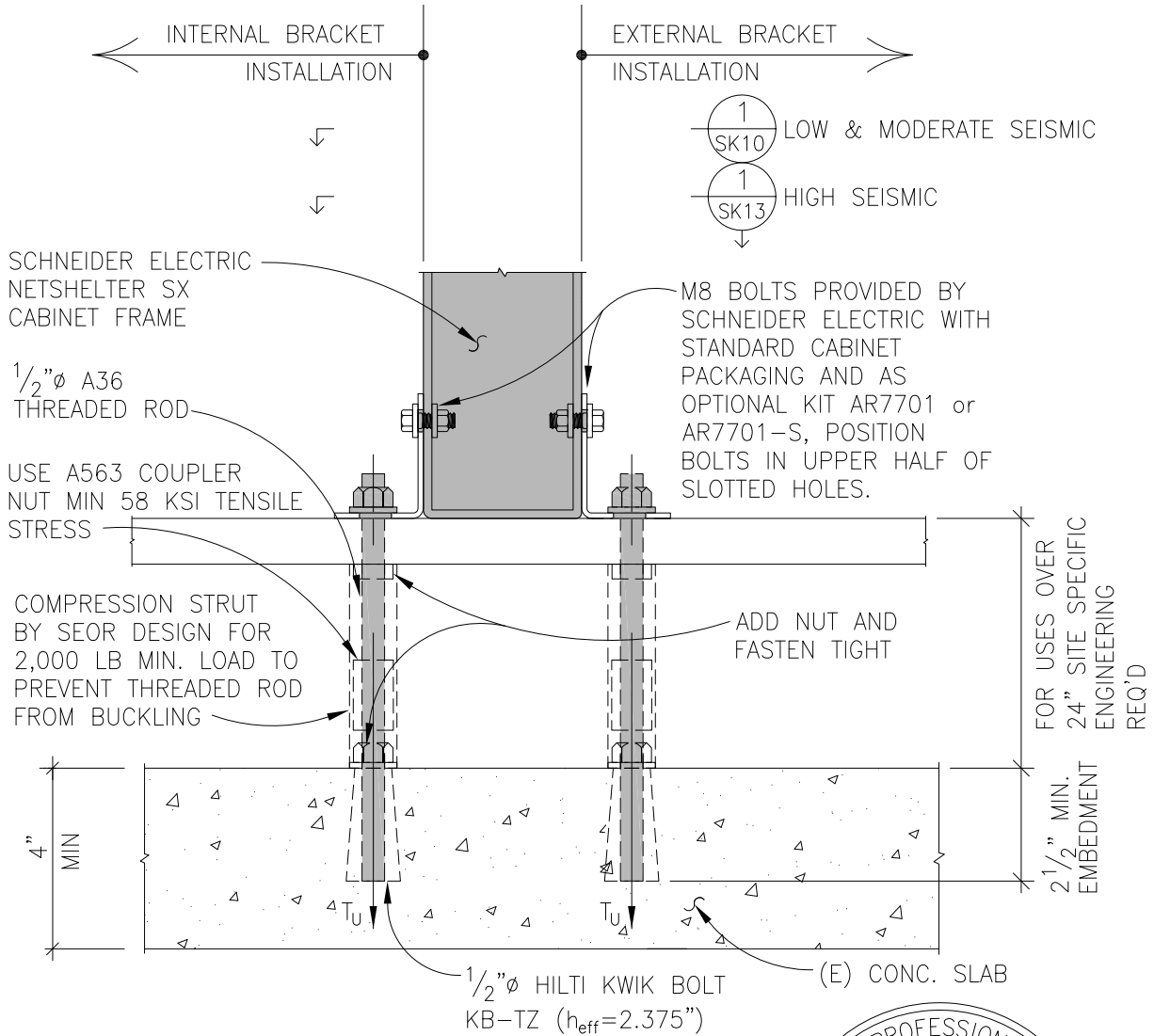
**RAISED COMPUTER OVER CONC.
FILLED METAL DECK INSTALLATION**

DETAIL 1
3" = 1'-0" SK8



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NOTE:
OPTIONAL EXTERNAL
INSTALLATION SHOWN DASHED.



**RAISED COMPUTER OVER
CONC. SLAB INSTALLATION**

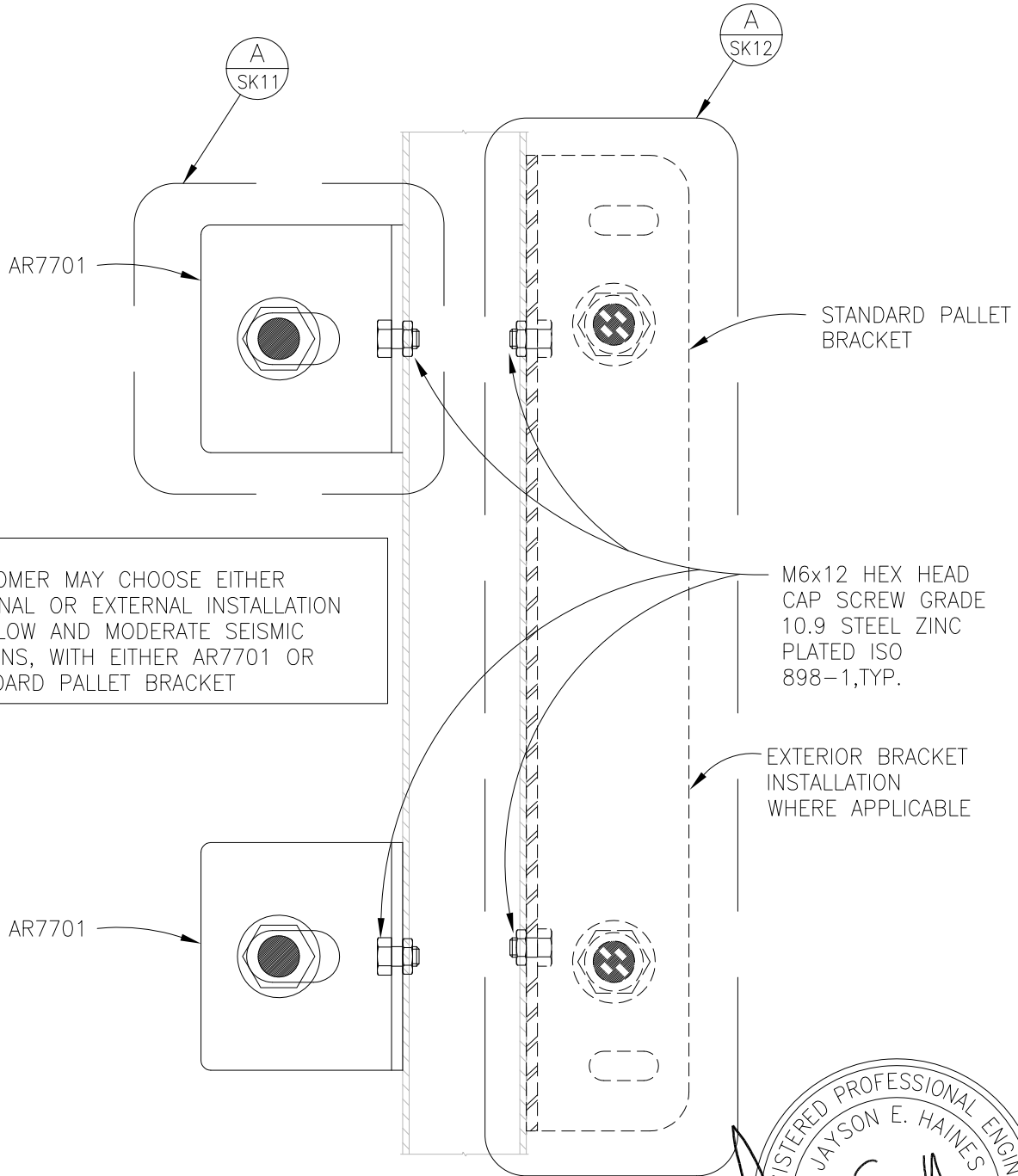
DETAIL

3" = 1'-0"

1
SK9



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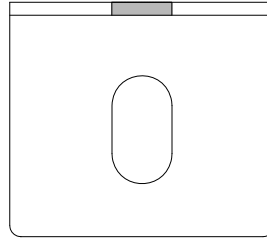
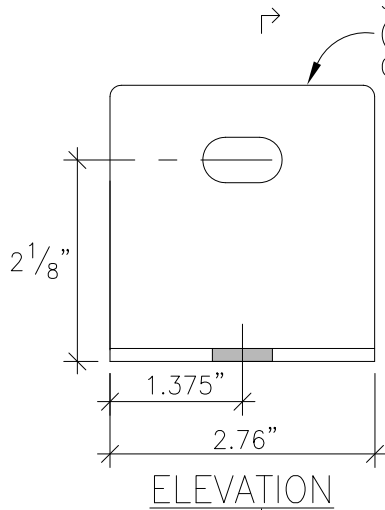
DETAIL B
N.T.S. SK10



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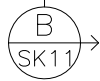
AR7701 BRACKET SUPPLIED BY
SCHNEIDER ELECTRIC (4 TOTAL)
(0.118" THK PL ASTM A1008 SHS
GRADE 41)

AR7701 BRACKET
FOR LOW AND MODERATE
SEISMIC REGIONS



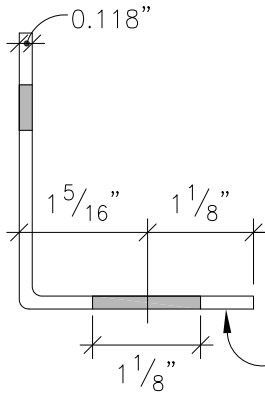
PLAN

ELEVATION



DETAIL

N.T.S.



ASTM A1008-13 SHS
GRADE 41, TYP.

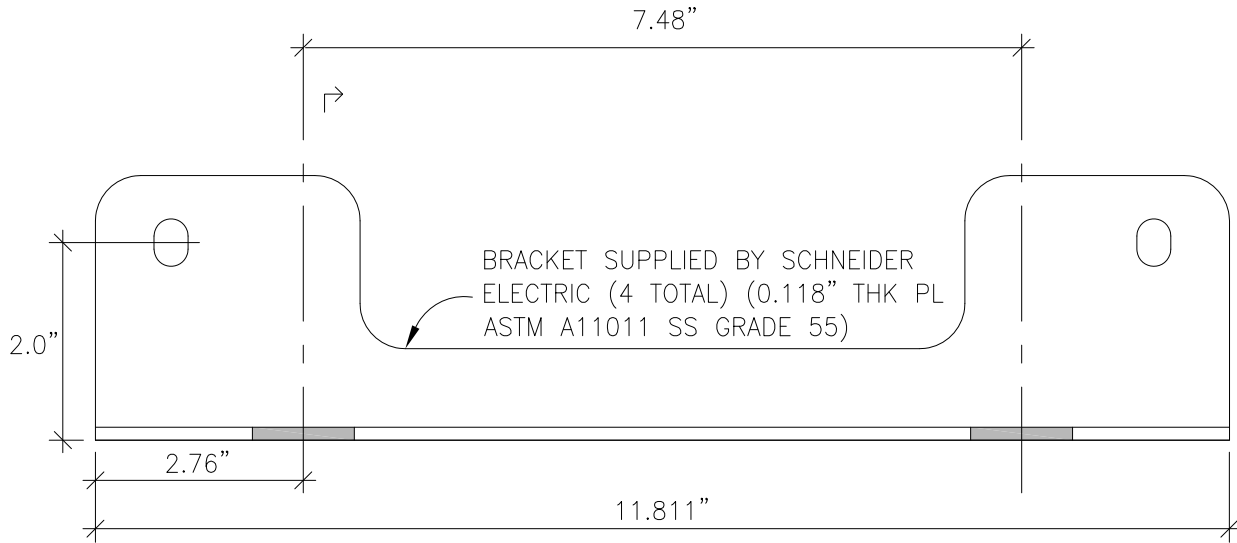
NOTE:
FOR EXACT BRACKET DIMENSION SEE
SCHNEIDER ELECTRIC NETSHELTER SX
MANUFACTURE DRAWINGS.

SECTION
DETAIL

N.T.S.



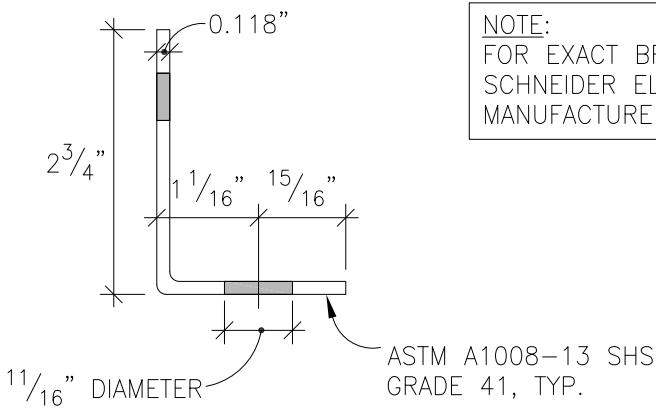
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	LOW, MODERATE, AND HIGH SEISMIC REGIONS	Sheet No. (SK11)
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ELEVATION
DETAIL
 N.T.S.

(B SK12) (A SK12)

STD. PALLET BRACKET
 FOR LOW AND MODERATE
 SEISMIC REGIONS



NOTE:
 FOR EXACT BRACKET DIMENSION SEE
 SCHNEIDER ELECTRIC NETSHELTER SX
 MANUFACTURE DRAWINGS.

SECTION
DETAIL
 N.T.S.

(B SK12)

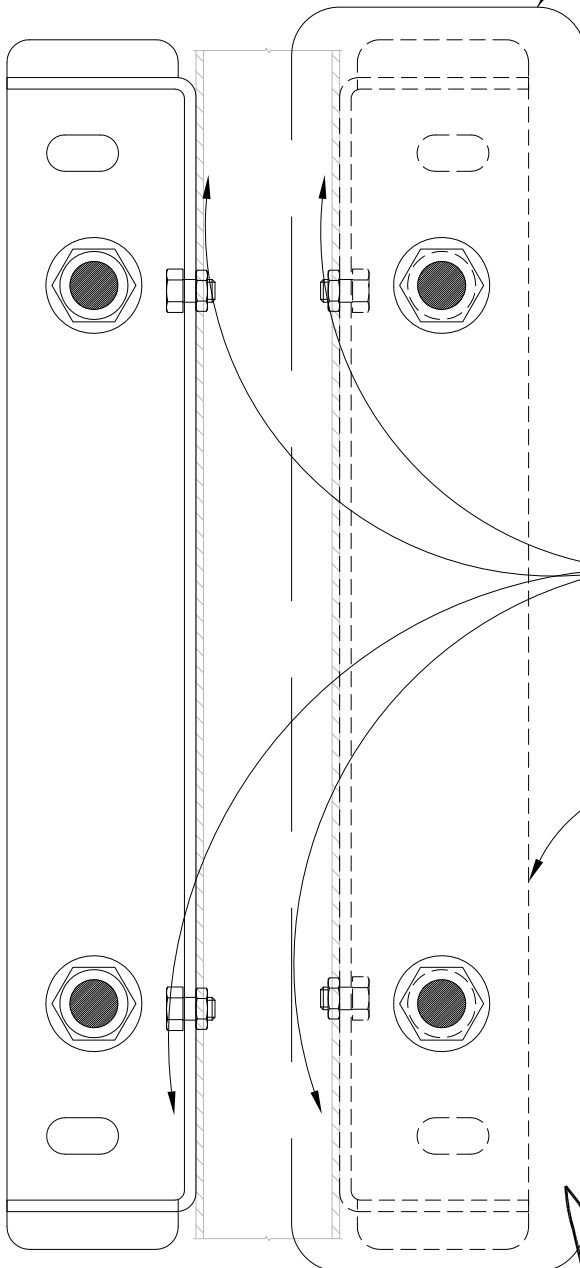


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	<p>LOW, MODERATE, AND HIGH SEISMIC REGIONS</p>	<p>Sheet No. (SK12)</p>
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NOTE:
BOTH INTERNAL AND EXTERNAL BRACKET ARE REQUIRED
FOR HIGH SEISMIC REGIONS.

A
SK14

AR7701-S BRACKET
FOR HIGH SEISMIC REGIONS



M6x12 HEX HEAD
CAP SCREW GRADE
10.9 STEEL ZINC
PLATED ISO
898-1,TYP.

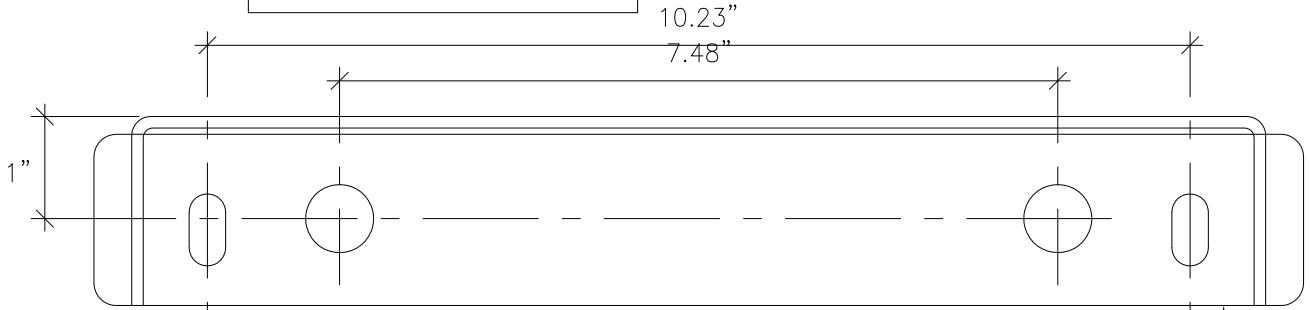
EXTERIOR BRACKET
INSTALLATION
WHERE APPLICABLE

DETAIL B
N.T.S. SK13



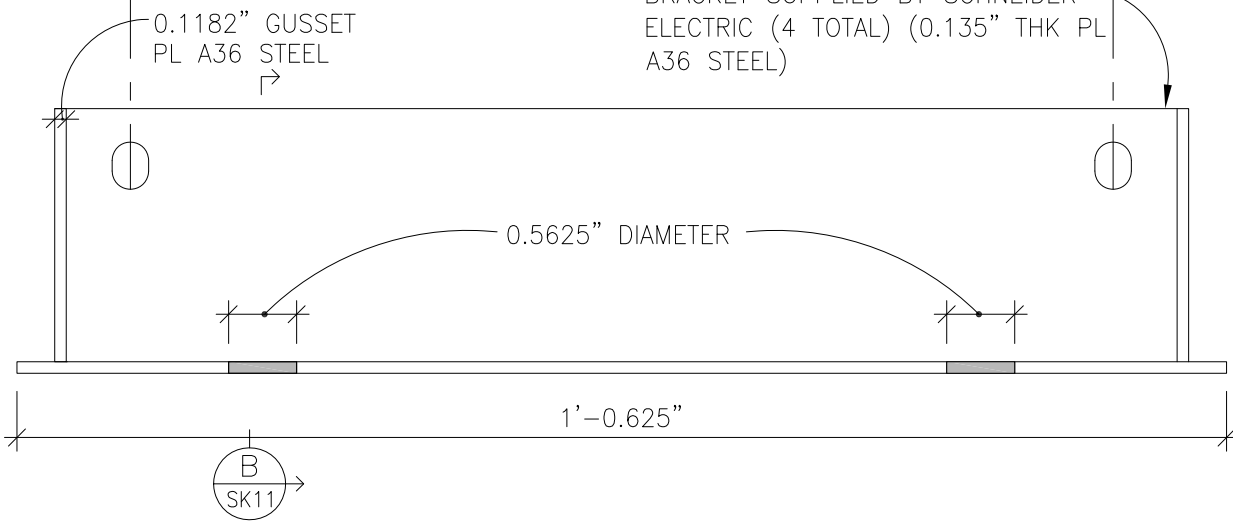
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AR7701-S BRACKET
FOR HIGH SEISMIC REGIONS



HIGH SEISMIC BRACKET PLAN

BRACKET SUPPLIED BY SCHNEIDER
ELECTRIC (4 TOTAL) (0.135" THK PL
A36 STEEL)

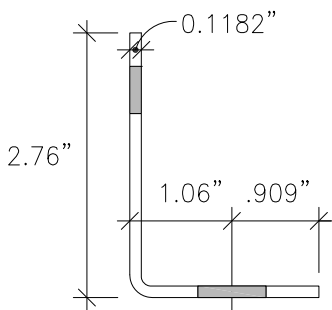


HIGH SEISMIC BRACKET ELEVATION

DETAIL

N.T.S.

A
SK14



SECTION

N.T.S.

B
SK14

NOTE:
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MANUFACTURE DRAWINGS.



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