APPLICATION FOR HCAI PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)

OFFICE USE ONLY

APPLICATION #: OPM-0699

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: [X] New [ ] Renewal/Update

Manufacturer Information

Manufacturer: Panduit Corporation

Manufacturer's Technical Representative: Jerry Wiltjer

Mailing Address: 18900 Panduit Drive, Tinley Park, IL 60487

Telephone: (779) 254-6944 Email: jerry.wiltjer@panduit.com

Product Information

Product Name: FlexFusion Cabinet

Product Type: Network or server equipment cabinet.

Product Model Number: XG64211, XG/XGL64212, XG64213, XG64219, XG64511, XG64512, XG64513, XG64519, XG64811, XG/XGL64812, XG64813, XG64819, XG65211, XG65212, XG65213, XG65219, XG64221, XG/XGL64222, XG64223, XG64229, XG64521, XG64522, XG64523, XG64529, XG64821, XG/XGL64822, XG64823, XG64829, XG65221, XG65222, XG65223, XG65229, XG74211, XG74212, XG74213, XG74219, XG74511, XG74512, XG74513, XG74519, XG74811, XG74812, XG74813, XG74819, XG75211, XG75212, XG75213, XG75219, XG74221, XG74222, XG74223, XG74229, XG74521, XG74522, XG74523, XG74529, XG74821, XG74822, XG74823, XG74829, XG75221, XG75222, XG75223, XG75229, XG84211, XG/XGL84212, XG84213, XG84219, XG84511, XG84512, XG84513, XG84519,XG84811, XG/XGL84812, XG84813, XG84819, XG85211, XG85212, XG85213, XG85219, XG84221, XG/XGL84222, XG84223, XG84229, XG84521, XG84522, XG84523, XG84529,XG84821, XG/XGL84822, XG84823, XG84829, XG85221, XG85222, XG85223, XG85229

General Description: Network equipment cabinet for data centers, enterprise, or co-location deployment.

Applicant Information

Applicant Company Name: Panduit Corporation

Contact Person: Jerry Wiltjer

Mailing Address: 18900 Panduit Drive, Tinley Park, IL 60487

Telephone: (779) 254-6944 Email: jerry.wiltjer@panduit.com

Title: Engineering Manager

Registered Design Professonal Preparing Engineering Recommendations

Company Name: DEGENKOLB ENGINEERS

Name: Chad Closs California License Number: S5946

Mailing Address: 225 Broadway, Suite 1325, San Diego, CA 92101

Telephone: (858) 699-5412 Email: ccloss@degenkolb.com

HCAI Special Seismic Certification Preapproval (OSP)

☐ Special Seismic Certification is preapproved under OSP OSP Number:

Certification Method

Testing in accordance with: ☐ ICC-ES AC156 ☐ FM 1950-16

☐ Other(s) (Please Specify):

*Use of criteria other than those adopted by the California Building Standards Code, 2022 (CBSC 2022) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC 2022 may be used when approved by HCAI prior to testing.

☒ Analysis

☐ Experience Data

☐ Combination of Testing, Analysis, and/or Experience Data (Please Specify):

HCAI Approval

Date: 11/7/2023

Name: William Staehlin Title: Senior Structural Engineer

Condition of Approval (if applicable):

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PANDUIT FLEXFUSION CABINET

REGISTERED PROFESSIONAL ENGINEER
CHAD RAYMOND CLOSS
No. S 5946
Exp. Date
STRUCTURAL
STATE OF CALIFORNIA

MODELS XG/XGL6421X, XG6451X, XG/XGL6481X, XG6521X, XG/XGL6422X, XG6452X, XG/XGL6482X, XG6522X, XG7421X, XG7451X, XG7481X, XG7521X, XG7422X, XG7452X, XG7482X, XG7522X, XG/XGL8421X, XG8451X, XG/XGL8481X, XG8521X, XG/XGL8422X, XG8452X, XG/XGL8482X, XG8522X

GENERAL NOTES

1. THIS HCAI PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2022. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2022.

2. PRE-APPROVED DESIGN AND MATERIALS CONFORM WITH THE 2022 EDITION OF THE CALIFORNIA BUILDING CODE. DETAILS WITHIN THIS APPROVAL MAY BE USED ANYWHERE IN THE STATE OF CALIFORNIA WHERE $S_{DS} \leq$ 1.8

3. SEISMIC FORCES ON EQUIPMENT DETERMINED PER THE 2022 CBC & ASCE 7-16. ALL LOADS BELOW ARE FACTORED LOADS THAT SHALL BE USED FOR STRENGTH DESIGN.

4. EQUIPMENT MAY BE MOUNTED TO AN ELEVATED SLAB AT ANY FLOOR USING THE THROUGH BOLT CONDITION OR TO A NORMAL WEIGHT CONCRETE SLAB ON GRADE. THE MINIMUM REQUIRED SLAB PROPERTIES ARE AS FOLLOWS:

SLAB ON GRADE	ELEVATED SLAB
THICKNESS ≥ 5" f'c ≥ 3000 PSI NORMAL WEIGHT CONCRETE PROVIDE 12" MIN DISTANCE TO OPENINGS OR THE EDGE OF SLAB MINIMUM ANCHOR SPACING = 11"	CONCRETE ON METAL DECK f'c ≥ 3000 PSI NORMAL OR SAND LIGHT-WEIGHT CONCRETE SEE FIGURE ON PAGE 2 FOR MINIMUM STEEL DECK REQUIREMENTS

5. THE FACTORS USED TO CALCULATE THE SEISMIC DEMANDS ARE THE FOLLOWING:

DATA INSTRUMENTATION CABINET PER ASCE 7-16, Table 13.6-1
a. S_{DS}= 1.8, ap = 2.5, Rp = 6.0, Ip = 1.5

WHERE z/h ≤ 1

i. Fp = 1.35 Wp
ii. Ev = 0.36 Wp
iii. Fp, = 1.35 Wp (FOR THROUGH BOLT CONNECTION)

DATA INSTRUMENTATION CABINET PER ASCE 7-16, Table 13.6-1
b. S_{DS}= 1.8, ap = 2.5, Rp = 6.0, Ip = 1.5, Ωo = 2.0

WHERE z/h = 0

i. Fp = 0.81 Wp
ii. Ev = 0.36 Wp
iii. Ωo Fp, = 1.62 Wp (FOR ANCHORAGE TO CONCRETE)

6. THE STRUCTURAL ENGINEER-OF-RECORD (S.E.O.R.) OR PRINCIPAL-IN-CHARGE OF A PROJECT SPECIFIC SITE IS RESPONSIBLE FOR THE FOLLOWING:

a. VERIFY THAT THE ATTACHMENTS ARE A MINIMUM 12" FROM ANY OPENINGS OR EDGES.

b. VERIFY THAT THE ATTACHMENTS ARE 12" MINIMUM DISTANCE FROM ANY NEW OR EXISTING ANCHORS.

c. DESIGN ANY SUPPLEMENTARY MEMBERS TO WHICH THE UNIT IS ATTACHED, TO SUPPORT WEIGHTS AND FORCES SHOWN. VERIFY THE ADEQUACY OF ANY EXISTING MEMBERS AND THEIR ATTACHMENTS FOR THE FORCES EXERTED ON THEM BY THE UNIT IN ADDITION TO ALL OTHER LOADS AND FORCES.

d. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2022 CBC AND WITH THE DETAILS SHOWN IN THIS PRE-APPROVAL. VERIFY THAT THE EQUIPMENT'S ACTUAL WEIGHT, CG LOCATION, ANCHOR LOCATIONS, DETAILS AND THE MATERIAL AND GAGE OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN IN THIS PRE-APPROVAL.

e. THE ATTACHMENTS TO THE ELEVATED AND ON GRADE SLABS HAVE BEEN EVALUATED FOR THE WORST CASE LOADING PER THE 2022 CBC. STRUCTURAL ENGINEER-OF-RECORD (S.E.O.R.) OR PRINCIPAL-IN-CHARGE OF A SITE SPECIFIC PROJECT SHALL EVALUATE THE ATTACHMENT FOR CONDITIONS THAT VARY FROM THIS PRE-APPROVAL.

7. THIS OPM COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF THE UNIT TO THE STRUCTURE.

8. EXPANSION OR WEDGE ANCHORS INTO CONCRETE: HILTI KB-TZ2 (ICC ESR-4266). INSTALL ANCHORS IN ACCORDANCE WITH THE ICC REPORT AND MANUFACTURER'S RECOMMENDATIONS. TEST AT LEAST 50% OF ANCHORS. TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO HCAI.
TEST PER ONE OF THE FOLLOWING METHODS:

a. DIRECT PULL TENSION TEST. ANCHOR IS ACCEPTABLE IF NO MOVEMENT IS OBSERVED FOR A MINIMUM OF 15 SECONDS AT THE TEST LOAD GIVEN IN TABLE ON THE FOLLOWING PAGE. MOVEMENT MAY BE DETERMINED WHEN THE WASHER UNDER THE NUT BECOMES LOOSE.

b. TORQUE WRENCH TEST: TEST ANCHORS TO THE REQUIRED TORQUE LOAD GIVEN IN TABLE ON THE FOLLOWING PAGE WITHIN THE LIMIT OF ONE-HALF TURN OF THE NUT.

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GENERAL NOTES

ANCHOR TEST LOAD VALUES						
ANCHOR DIAMETER (IN)	EMBED hef (IN)	TENSION LOAD (LBS)	TORQUE LOAD (FT-LB)	CONCRETE TYPE	MINIMUM EDGE DISTANCE	MINIMUM SPACING
5/8"	2-3/4"	4,085	40	NORMAL WEIGHT	12"	11"
5/8"	3-1/4"	6,015	40	NORMAL WEIGHT	12"	11"
3/8"	2"	SEE NOTE a	30	SAND LIGHT-WEIGHT	12"	11"

a. TEST 3/8" EXPANSION ANCHORS USING THE TORQUE WRENCH TEST METHOD PER MANUFACTURER´S RECOMMENDATION AND AS DESCRIBED IN PAGE 1 OF 8

9. IF ANY ANCHOR FAILS DURING TESTING, UNIT MUST BE MOVED SO THAT NO ANCHOR IS WITHIN 11" OF AN ABANDONED ANCHOR.

10. CONTRACTOR OR SEOR MUST VERIFY ANCHOR SPACING TO ADJACENT EQUIPMENT ANCHORS IS TO BE GREATER THAN 12".

11. ALL MISCELLANEOUS STEEL SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:

THROUGH BOLTS	A307 GR. A.
STEEL ANGLES	A36

12. THE TABLE ON PAGE 3 SHOWS THE MOST CRITICAL FORCES CALCULATED FOR THE SUPPORT AND ATTACHMENT DESIGN.

13. FOR THE SUPPORT AND ATTACHMENT DESIGN, THE MOST CRITICAL LOAD COMBINATION IS (0.9 - 0.2Sds) D + E.

14. WHEN z / h = 0, THE DESIGN FORCES FOR THE EXPANSION ANCHORS INTO CONCRETE WERE SCALED UP BY Ωo AS REQUIRED BY ASCE 7-16, SUPPLEMENT NO. 1, TABLE 13.6-1.

15. Tult + q IS THE FORCE DEMAND IN THE ANCHOR INCLUDING EFFECTS OF PRYING

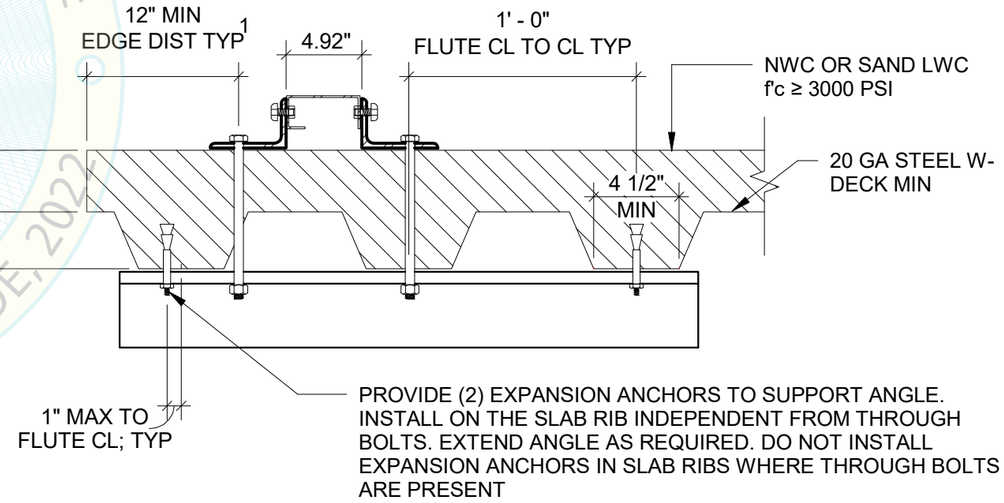
16. THE TABLE ON PAGE 4 SHOWS THE PROPERTIES OF THE DIFFERENT MODELS CONSIDERED IN THIS SUBMITTAL.

17. WHERE q = 0 AS INDICATED ON THE TABLE OF PAGE 3 AND 4, EITHER THE SUPPORT AND ATTACHMENT MECHANISM IS GOVERNED BY THE CAPACITY OF THE BASE BRACKET OR THE FITTING HAS SUFFICIENT STIFFNESS AND STRENGTH TO DEVELOP THE FULL BOLT AVAILABLE TENSILE STRENGTH AND ELIMINATE PRYING ACTION AS DESCRIBED IN THE FIFTEENTH EDITION OF THE AISC STEEL CONSTRUCTION MANUAL

18. CENTER OF GRAVITY (C.G.) WEIGHT IS A MAXIMUM. THIS PREAPPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM SHOWN.

19. EQUIPMENT MANUFACTURER MUST DESIGN UNIT TO MAKE C.G. EQUAL OR LESS THAN THE C.G. HEIGHT DIMENSION SHOWN ON THE TABLE ON PAGE 5

20. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. WHEN INSTALLING THEM INTO EXISTING PRESTRESSED CONCRETE (PRE- OR POST-TENSIONED) LOCATE THE PRESTRESSED TENDONS BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTALLATION. EXERCISE EXTREME CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE TENDONS DURING INSTALLATION. MAINTAIN A MINIMUM CLEARANCE OF ONE INCH BETWEEN THE REINFORCEMENT AND THE DRILLED-IN ANCHOR.



NOTES:
1. PROVIDE 12" MINIMUM DISTANCE TO EDGE OF SLAB, OPENINGS OR OTHER ATTACHMENTS
2. REFER TO SHEET 8 OF 8 FOR ADDITIONAL NOTES

MINIMUM STEEL DECK REQUIREMENTS

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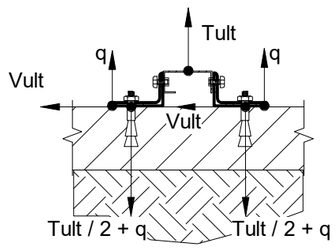
			z / h = 0, 2 3/4" EMBED					z / h = 0, 3 1/4" EMBED				
	PART NUMBER	qmax (DEG)	LOAD RATING (LBS)	Tult (LBS)	q (LBS)	Tult + q (LBS)	Vult (LBS)	LOAD RATING (LBS)	Tult (LBS)	q (LBS)	Tult + q (LBS)	Vult (LBS)
600 x 1070 Family	XG64211, XG/XGL64212 XG64213, XG64219	25.0	2,957	1,260	40	1,300	327	3,454	1,320	180	1,500	378
	XG64511, XG64512 XG64513, XG64519	25.0	2,708	1,260	40	1,300	304	3,169	1,320	180	1,500	350
	XG64811, XG/XGL64812 XG64813, XG64819	25.0	2,497	1,260	40	1,300	284	2,928	1,320	180	1,500	327
	XG65211, XG65212 XG65213, XG65219	25.0	2,277	1,260	40	1,300	263	2,677	1,320	180	1,500	304
600 x 1200 Family	XG64221, XG/XGL64222 XG64223, XG64229	20.0	3,015	1,260	40	1,300	337	3,526	1,320	180	1,500	388
	XG64521, XG64522 XG64523, XG64529	20.0	2,771	1,260	40	1,300	312	3,245	1,320	180	1,500	360
	XG64821, XG/XGL64822 XG64823, XG64829	20.0	2,553	1,260	40	1,300	292	2,996	1,320	180	1,500	336
	XG65221, XG65222 XG65223, XG65229	20.0	2,325	1,260	40	1,300	270	2,736	1,320	180	1,500	312
700 x 1070 Family	XG74211, XG74212 XG74213, XG74219	30.0	3,546	1,260	40	1,300	391	4,140	1,320	180	1,500	451
	XG74511, XG74512 XG74513, XG74519	30.0	3,243	1,260	40	1,300	362	3,793	1,320	180	1,500	418
	XG74811, XG74812 XG74813, XG74819	30.0	2,987	1,260	40	1,300	337	3,500	1,320	180	1,500	389
	XG75211, XG75212 XG75213, XG75219	30.0	2,720	1,260	40	1,300	313	3,195	1,320	180	1,500	361
700 x 1200 Family	XG74221, XG74222 XG74223, XG74229	25.0	3,673	1,260	40	1,300	406	4,290	1,320	180	1,500	469
	XG74521, XG74522 XG74523, XG74529	25.0	3,358	1,260	40	1,300	376	3,929	1,320	180	1,500	434
	XG74821, XG74822 XG74823, XG74829	25.0	3,090	1,260	40	1,300	350	3,623	1,320	180	1,500	404
	XG75221, XG75222 XG75223, XG75229	25.0	2,812	1,260	40	1,300	324	3,304	1,320	180	1,500	374
800 x 1070 Family	XG84211, XG/XGL84212 XG84213, XG84219	35.0	4,105	1,260	40	1,300	450	4,789	1,320	180	1,500	519
	XG84511, XG84512 XG84513, XG84519	35.0	3,754	1,260	40	1,300	416	4,385	1,320	180	1,500	480
	XG84811, XG/XGL84812 XG84813, XG84819	35.0	3,454	1,260	40	1,300	387	4,042	1,320	180	1,500	447
	XG85211, XG85212 XG85213, XG85219	35.0	3,143	1,260	40	1,300	358	3,687	1,320	180	1,500	413
800 x 1200 Family	XG84221, XG/XGL84222 XG84223, XG84229	30.0	4,307	1,260	40	1,300	472	5,025	1,320	180	1,500	545
	XG84521, XG84522 XG84523, XG84529	30.0	3,935	1,260	40	1,300	436	4,598	1,320	180	1,500	503
	XG84821, XG/XGL84822 XG84823, XG84829	30.0	3,617	1,260	40	1,300	406	4,234	1,320	180	1,500	468
	XG85221, XG85222 XG85223, XG85229	30.0	3,290	1,260	40	1,300	375	3,860	1,320	180	1,500	433

NOTES:

1. WHERE z/h = 0, THE DESIGN IS GOVERNED BY THE CAPACITY OF THE EXPANSION ANCHORS INTO CONCRETE.
2. WHERE z/h ≤ 1, THE DESIGN IS GOVERNED BY THE CAPACITY OF THE BOLTS CONNECTING THE ANGLES TO THE BUILT-UP HORIZONTAL MEMBER
3. THE LOAD RATING IS IN ADDITION OF THE SELF-WEIGHT SHOWN ON PAGE 4; Wp = LOAD RATING + SELF-WEIGHT
4. Tult, q AND Vult SHOWN ON THE TABLE ARE THE MAXIMUM FORCES AT THE STRENGTH LEVEL AND HAVE NOT BEEN AMPLIFIED BY Ωo. FOR ANCHORAGE TO CONCRETE, LOADS ARE REQUIRED TO BE AMPLIFIED BY Ωo.
5. PER DIAGRAM BELOW, NOTE THAT Tult IS THE TENSION FORCE APPLIED TO TWO ANCHORS AND Vult IS THE SHEAR FORCE APPLIED TO EACH ANCHOR
6. PROVIDE A STEEL PLATE ATTACHED TO THE CABINET THAT CLEARLY SHOWS THE DESIGN LOAD RATING THAT THE SUPPORT AND ATTACHMENT IS DESIGNED TO.
7. BOLTS THROUGH CONCRETE ON METAL DECK

   A. BOLTS SHALL BE TORQUED BY 3/4 TURN OF THE NUTS AFTER THE SNUG TIGHT CONDITION (THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT) IS ACHIEVED.
   B. THROUGH BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS.
8. THE ANGLE WHICH THE MAXIMUM AXIAL FORCE DUE TO SEISMIC FORCE IS APPLIED is qmax.



CABINET ON SLAB ON GRADE

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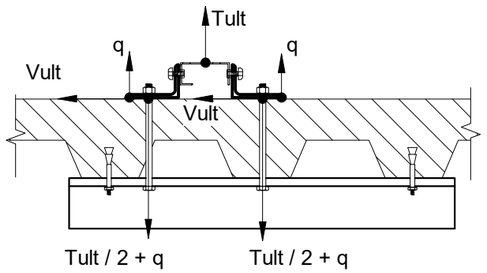
			z / h = 1				
	PART NUMBER	qmax (DEG)	LOAD RATING (LBS)	Tult (LBS)	q (LBS)	Tult + q (LBS)	Vult (LBS)
600 x 1070 Family	XG64211, XG/XGL64212 XG64213, XG64219	25.0	2,283	1,440	390	1,830	432
	XG64511, XG64512 XG64513, XG64519	25.0	2,093	1,440	390	1,830	402
	XG64811, XG/XGL64812 XG64813, XG64819	25.0	1,932	1,440	390	1,830	377
	XG65211, XG65212 XG65213, XG65219	25.0	1,760	1,440	390	1,830	352
600 x 1200 Family	XG64221, XG/XGL64222 XG64223, XG64229	20.0	2,335	1,440	390	1,830	443
	XG64521, XG64522 XG64523, XG64529	20.0	2,135	1,440	390	1,830	413
	XG64821, XG/XGL64822 XG64823, XG64829	20.0	1,969	1,440	390	1,830	387
	XG65221, XG65222 XG65223, XG65229	20.0	1,792	1,440	390	1,830	361
700 x 1070 Family	XG74211, XG74212 XG74213, XG74219	30.0	2,704	1,440	390	1,830	509
	XG74511, XG74512 XG74513, XG74519	30.0	2,479	1,440	390	1,830	474
	XG74811, XG74812 XG74813, XG74819	30.0	2,287	1,440	390	1,830	444
	XG75211, XG75212 XG75213, XG75219	30.0	2,083	1,440	390	1,830	414
700 x 1200 Family	XG74221, XG74222 XG74223, XG74229	25.0	2,789	1,440	390	1,830	528
	XG74521, XG74522 XG74523, XG74529	25.0	2,557	1,440	390	1,830	491
	XG74821, XG74822 XG74823, XG74829	25.0	2,357	1,440	390	1,830	460
	XG75221, XG75222 XG75223, XG75229	25.0	2,145	1,440	390	1,830	428
800 x 1070 Family	XG84211, XG/XGL84212 XG84213, XG84219	35.0	3,098	1,440	390	1,830	580
	XG84511, XG84512 XG84513, XG84519	35.0	2,843	1,440	390	1,830	539
	XG84811, XG/XGL84812 XG84813, XG84819	35.0	2,622	1,440	390	1,830	505
	XG85211, XG85212 XG85213, XG85219	35.0	2,389	1,440	390	1,830	469
800 x 1200 Family	XG84221, XG/XGL84222 XG84223, XG84229	30.0	3,234	1,440	390	1,830	606
	XG84521, XG84522 XG84523, XG84529	30.0	2,966	1,440	390	1,830	564
	XG84821, XG/XGL84822 XG84823, XG84829	30.0	2,734	1,440	390	1,830	527
	XG85221, XG85222 XG85223, XG85229	30.0	2,490	1,440	390	1,830	490

NOTES:

1. WHERE z/h = 0, THE DESIGN IS GOVERNED BY THE CAPACITY OF THE EXPANSION ANCHORS INTO CONCRETE.
2. WHERE z/h ≤ 1, THE DESIGN IS GOVERNED BY THE CAPACITY OF THE BOLTS CONNECTING THE ANGLES TO THE BUILT-UP HORIZONTAL MEMBER
3. THE LOAD RATING IS IN ADDITION OF THE SELF-WEIGHT SHOWN ON PAGE 4; Wp = LOAD RATING + SELF-WEIGHT
4. Tult, q AND Vult SHOWN ON THE TABLE ARE THE MAXIMUM FORCES AT THE STRENGTH LEVEL AND HAVE NOT BEEN AMPLIFIED BY Ωo. FOR ANCHORAGE TO CONCRETE, LOADS ARE REQUIRED TO BE AMPLIFIED BY Ωo.
5. PER DIAGRAM BELOW, NOTE THAT Tult IS THE TENSION FORCE APPLIED TO TWO ANCHORS AND Vult IS THE SHEAR FORCE APPLIED TO EACH ANCHOR
6. PROVIDE A STEEL PLATE ATTACHED TO THE CABINET THAT CLEARLY SHOWS THE DESIGN LOAD RATING THAT THE SUPPORT AND ATTACHMENT IS DESIGNED TO.
7. BOLTS THROUGH CONCRETE ON METAL DECK
   A. BOLTS SHALL BE TORQUED BY 3/4 TURN OF THE NUTS AFTER THE SNUG TIGHT CONDITION (THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT) IS ACHIEVED.
   B. THROUGH BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS.
8. THE ANGLE WHICH THE MAXIMUM AXIAL FORCE DUE TO SEISMIC FORCE IS APPLIED is qmax.



CONCRETE ON ELEVATED SLAB

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CHAD RAYMOND CLOSS
No. S 5946
Exp. Date
STRUCTURAL
STATE OF CALIFORNIA

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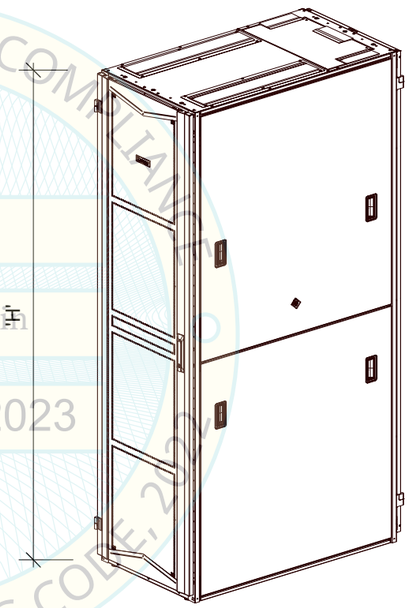
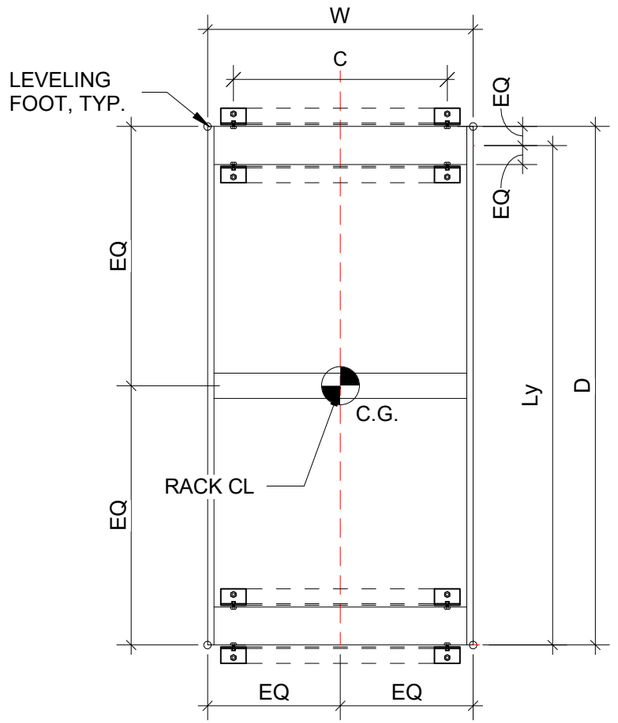
	PART NUMBER	DEPTH "D" (IN)	WIDTH "W" (IN)	Ly (IN)	HEIGHT "H" (IN)	"C" (IN)	MAX. SELF-WEIGHT (LBS)
600 x 1070 Family	XG64211, XG/XGL64212 XG64213, XG64219	43.5	23.5	37.7	79.6	15.4	276
	XG64511, XG64512 XG64513, XG64519	43.5	23.5	37.7	84.9	15.4	292
	XG64811, XG/XGL64812 XG64813, XG64819	43.5	23.5	37.7	90.1	15.4	304
	XG65211, XG65212 XG65213, XG65219	43.5	23.5	37.7	96.2	15.4	323
600 x 1200 Family	XG64221, XG/XGL64222 XG64223, XG64229	49.4	23.5	43.6	79.6	15.4	292
	XG64521, XG64522 XG64523, XG64529	49.4	23.5	43.6	84.9	15.4	313
	XG64821, XG/XGL64822 XG64823, XG64829	49.4	23.5	43.6	90.1	15.4	326
	XG65221, XG65222 XG65223, XG65229	49.4	23.5	43.6	96.2	15.4	346
700 x 1070 Family	XG74211, XG74212 XG74213, XG74219	43.5	27.4	37.7	79.6	19.3	315
	XG74511, XG74512 XG74513, XG74519	43.5	27.4	37.7	84.9	19.3	332
	XG74811, XG74812 XG74813, XG74819	43.5	27.4	37.7	90.1	19.3	346
	XG75211, XG75212 XG75213, XG75219	43.5	27.4	37.7	96.2	19.3	368
700 x 1200 Family	XG74221, XG74222 XG74223, XG74229	49.4	27.4	43.6	79.6	19.3	338
	XG74521, XG74522 XG74523, XG74529	49.4	27.4	43.6	84.9	19.3	354
	XG74821, XG74822 XG74823, XG74829	49.4	27.4	43.6	90.1	19.3	369
	XG75221, XG75222 XG75223, XG75229	49.4	27.4	43.6	96.2	19.3	392
800 x 1070 Family	XG84211, XG/XGL84212 XG84213, XG84219	43.5	31.4	37.7	79.6	23.2	338
	XG84511, XG84512 XG84513, XG84519	43.5	31.4	37.7	84.9	23.2	353
	XG84811, XG/XGL84812 XG84813, XG84819	43.5	31.4	37.7	90.1	23.2	369
	XG85211, XG85212 XG85213, XG85219	43.5	31.4	37.7	96.2	23.2	393
800 x 1200 Family	XG84221, XG/XGL84222 XG84223, XG84229	49.4	31.4	43.6	79.6	23.2	359
	XG84521, XG84522 XG84523, XG84529	49.4	31.4	43.6	84.9	23.2	375
	XG84821, XG/XGL84822 XG84823, XG84829	49.4	31.4	43.6	90.1	23.2	392
	XG85221, XG85222 XG85223, XG85229	49.4	31.4	43.6	96.2	23.2	416



CABINET ISOMETRIC VIEW



CABINET BASE FRAME PLAN

NOTES
1. Ly DENOTES THE DISTANCE FROM THE LEVELING LEG TO THE ANCHOR BOLT CENTER OF GRAVITY
2. W AND D REPRESENT THE WIDTH AND DEPTH DISTANCE BETWEEN LEVELING LEGS
3. H IS THE HEIGHT FROM THE TOP OF THE STRUCTURAL SLAB TO THE TOP OF THE CABINET. IT CAN VARY BY ± 1" DUE TO ADJUSTMENTS TO LEVELING LEGS.

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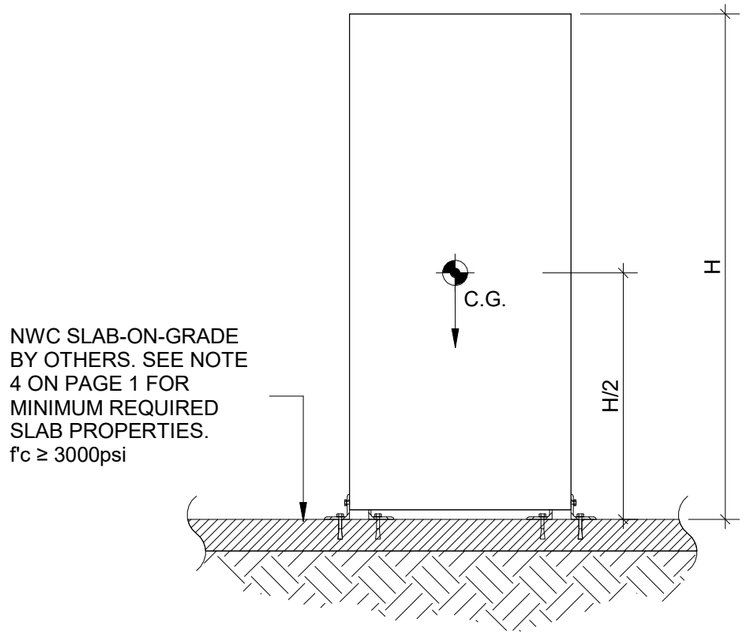
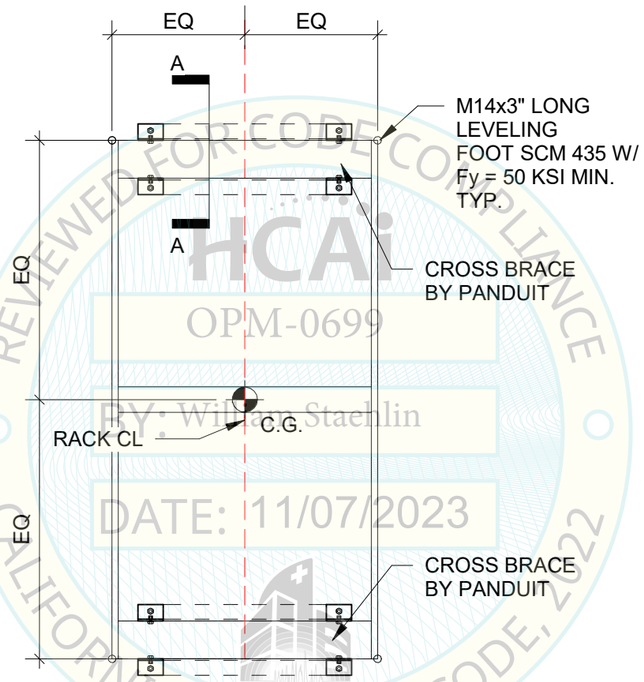
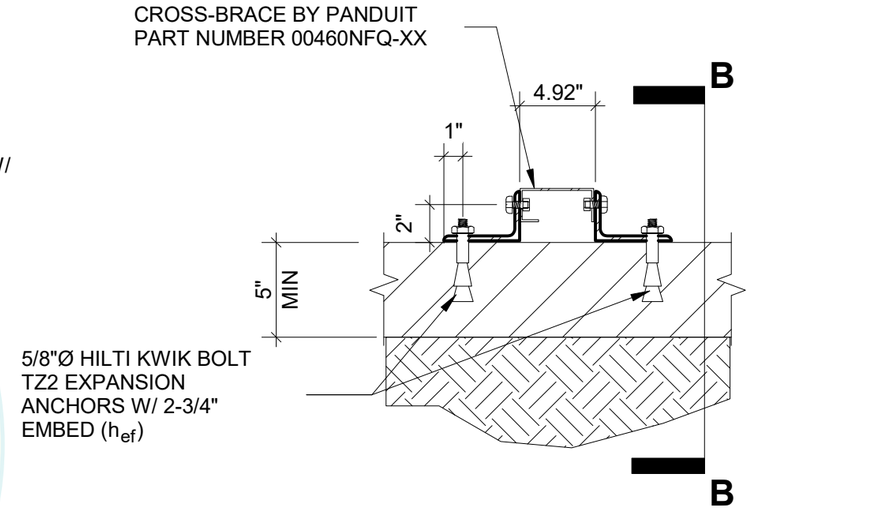
CASE 1: z/h = 0, EXPANSION ANCHORS W/ 2-3/4" EMBEDMENT LENGTH



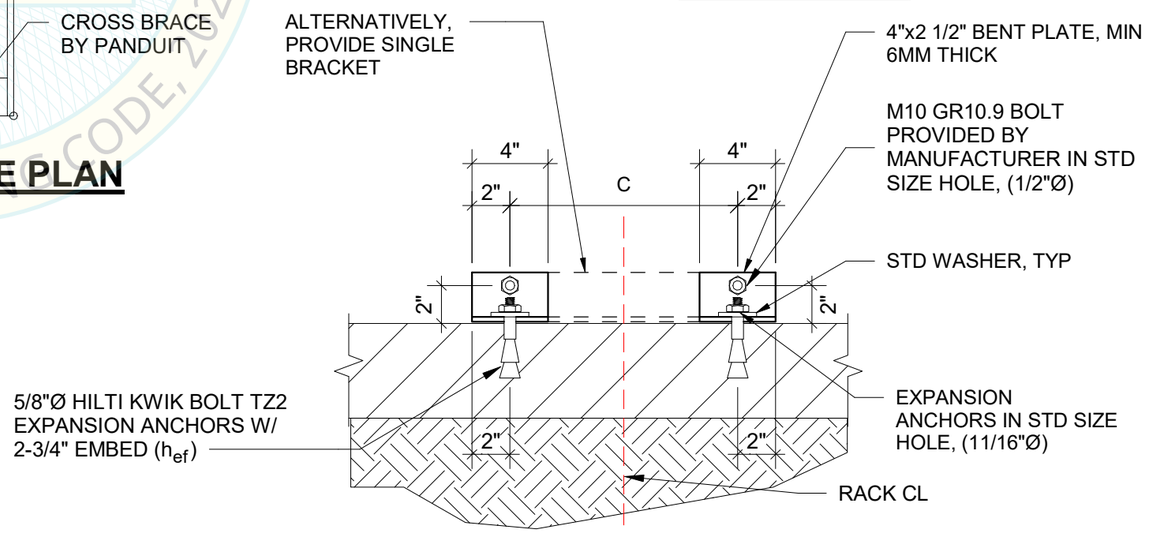
FRONT ELEVATION



RACK BASE FRAME PLAN



SECTION A-A



SECTION B-B

NOTES:
1. DESIGN CONFORMS TO CBC 2022. FORCES GIVEN ARE AT STRENGTH LEVEL
2. SEE GENERAL NOTES SECTION ON PAGES 1 AND 2
3. SEE RESULTANT FORCES AND GEOMETRIC PROPERTIES OF THE CABINETS ON PAGES 3 AND 4
4. S.E.O.R. MAY RECALCULATE MAX. ANCHOR FORCES Vu AND Tu AT THEIR DISCRETION BASED ON PROJECT SPECIFIC DEMANDS
5. ALL HOLES THROUGH STEEL FOR BOLTS SHALL BE STANDARD SIZE HOLES PER AISC 15TH EDITION, TABLE J3.3

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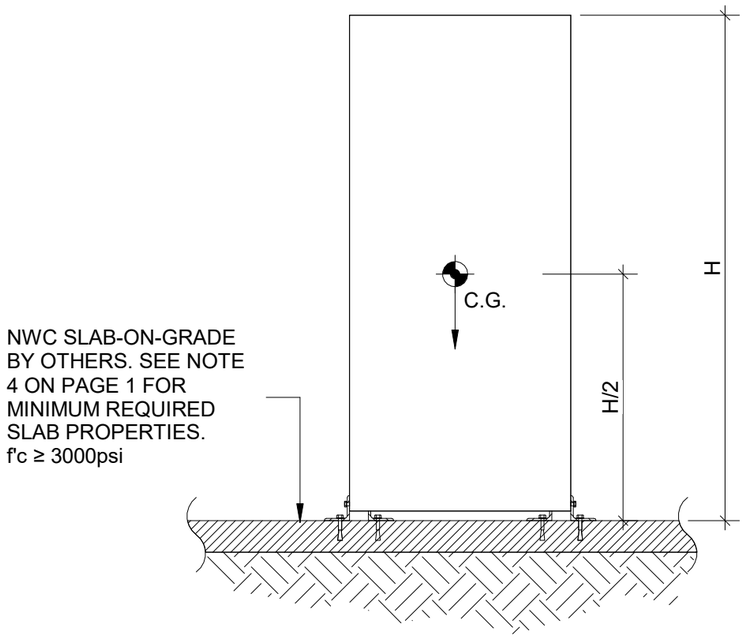
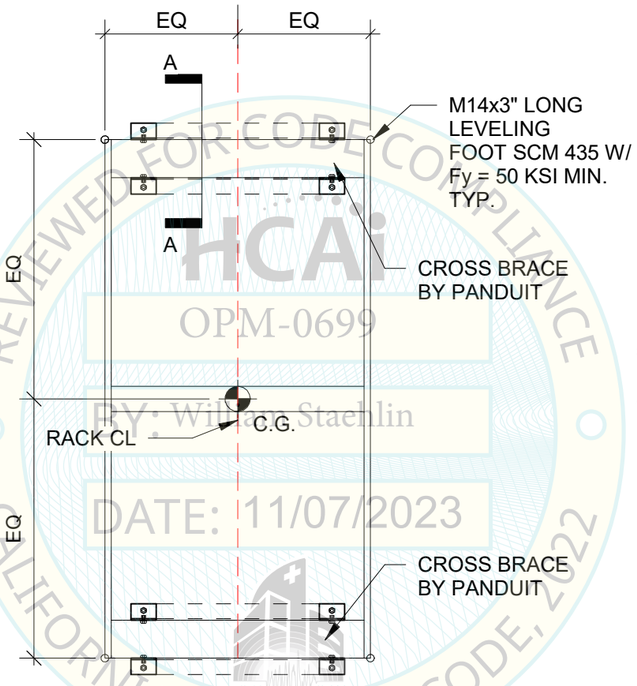
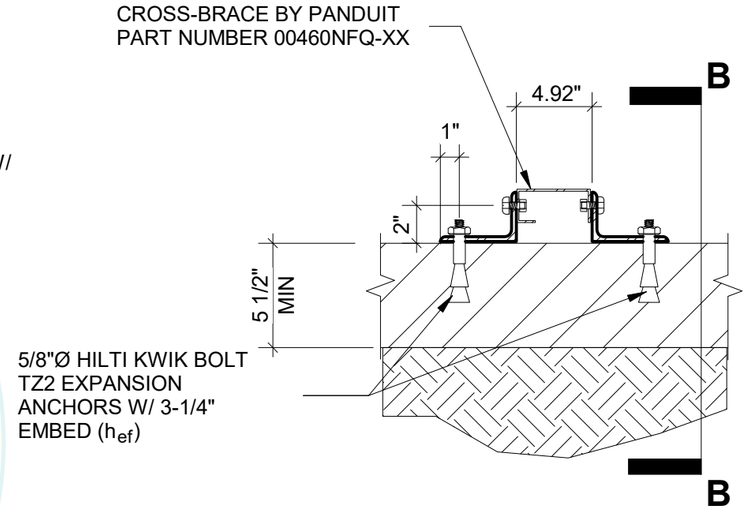
CASE 2: z/h = 0, EXPANSION ANCHORS W/ 3-1/4" EMBEDMENT LENGTH



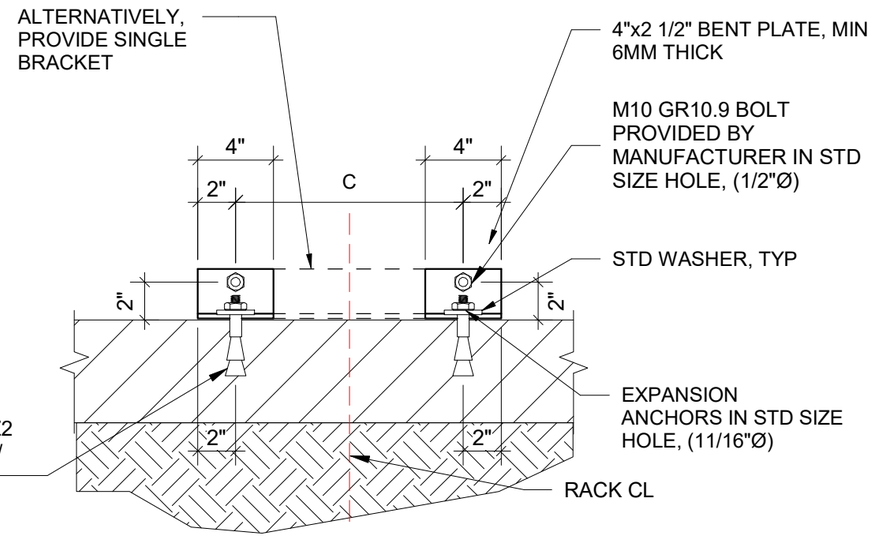
FRONT ELEVATION



RACK BASE FRAME PLAN



SECTION A-A



SECTION B-B

NOTES:
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2. SEE GENERAL NOTES SECTION ON PAGES 1 AND 2
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5. ALL HOLES THROUGH STEEL FOR BOLTS SHALL BE STANDARD SIZE HOLES PER AISC 15TH EDITION, TABLE J3.3

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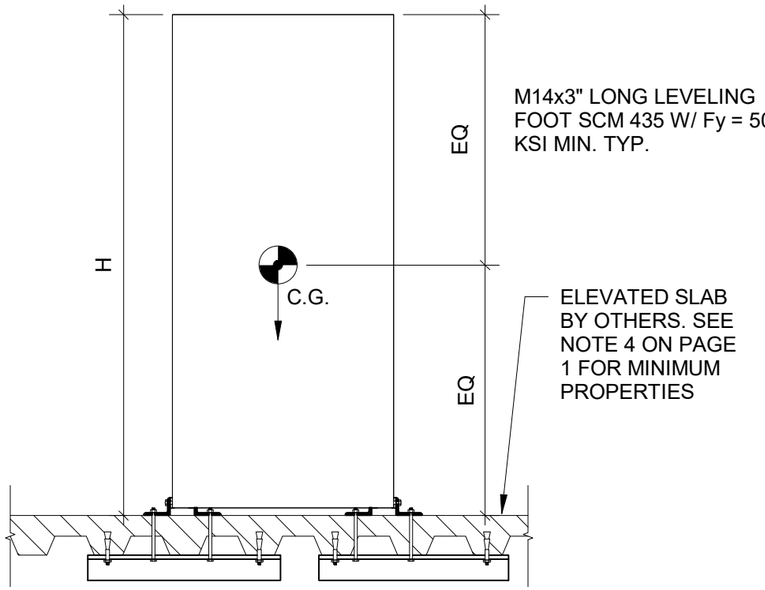
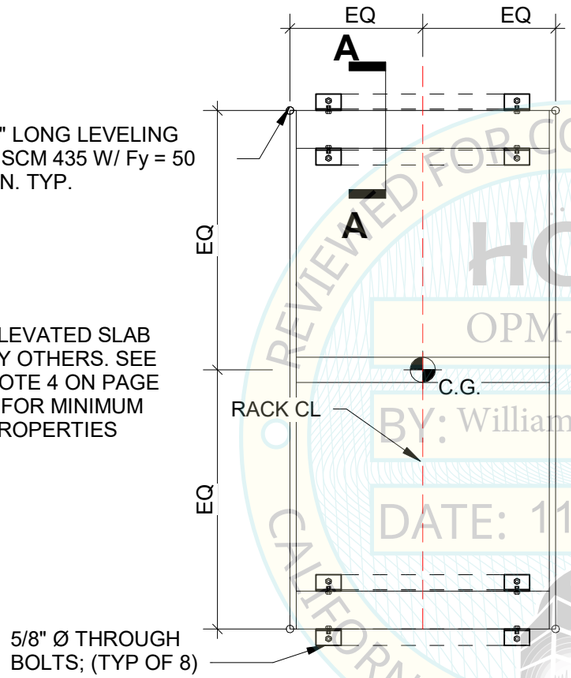
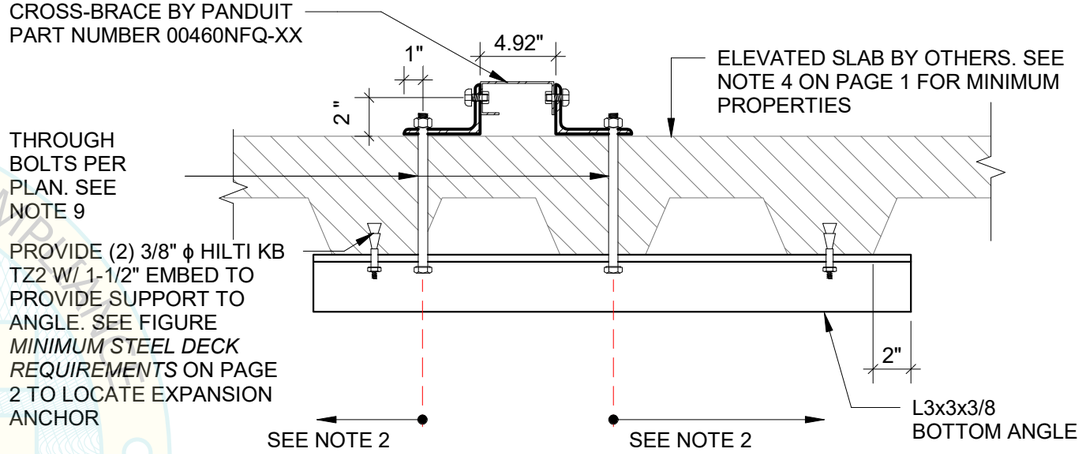
CASE 3: z/h = 1, THRU-BOLTS



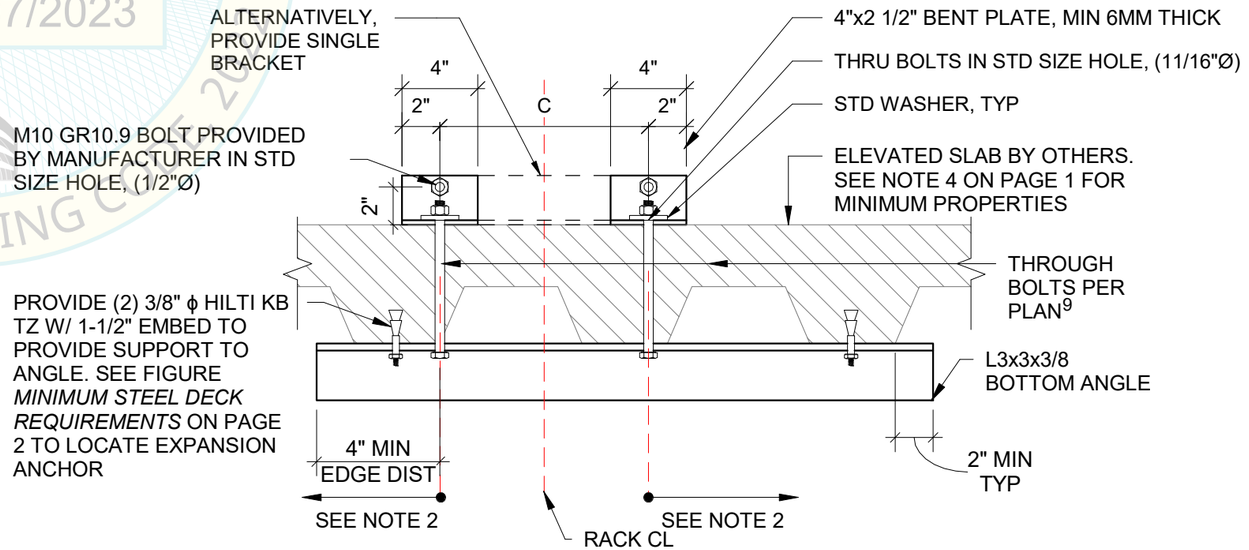
SIDE ELEVATION



RACK BASE FRAME PLAN



TOP ANGLES PARALLEL TO METAL DECK FLUTES



TOP ANGLES PERPENDICULAR TO METAL DECK FLUTES

NOTES:

1. PROVIDE HEX NUT AT TOP AND BOTTOM OF BOTTOM ANGLE FLANGE, TYP WHERE POSSIBLE
2. EXTEND THE BOTTOM ANGLE 2" PAST THE EDGE OF THE SLAB RIB TO INSTALL EXPANSION ANCHOR. DO NOT INSTALL EXPANSION ANCHOR IN THE SAME RIB AS THE THROUGH BOLT
3. ANCHORAGE DESIGN CONFORMS TO CBC 2022. FORCES GIVEN ARE AT STRENGTH LEVEL.
4. SEE GENERAL NOTES SECTION ON PAGES 1 AND 2.
5. SEE RESULTANT FORCES AND GEOMETRIC PROPERTIES OF THE CABINETS ON PAGES 4 AND 5
6. S.E.O.R. MAY RECALCULATE MAX. ANCHOR FORCES Vu AND Tu AT THEIR DISCRETION BASED ON PROJECT SPECIFIC DEMANDS.
7. ALL HOLES THROUGH STEEL FOR BOLTS SHALL BE STANDARD SIZE HOLES PER AISC 15TH EDITION, TABLE J3.3
8. FOR CONCRETE ELEVATED SLAB, PROVIDE BOTTOM ANGLE SIMILAR TO TOP ANGLE PARALLEL TO METAL DECK FLUTES
9. PROVIDE HEX NUT TOP AND BOTTOM OF ANGLE. WHERE TOP NUT CANNOT BE INSTALLED, PROVIDE TAPPED HOLE THROUGH ANGLE. TYP AT ALL THROUGH BOLTS.