



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD PREAPPROVAL  
OF MANUFACTURER'S CERTIFICATION (OPM)**

OFFICE USE ONLY

APPLICATION #: OPM-0117-13

**OSHPD Preapproval of Manufacturer's Certification (OPM)**

Type:  New  Renewal  Update to Pre-CBC 2013 OPA Number: \_\_\_\_\_

**Manufacturer Information**

Manufacturer: Panduit Corporation

Manufacturer's Technical Representative: Nathan Gleghorn

Mailing Address: 412 Rockwell Court, Burr Ridge, Illinois 60527

Telephone: 708-532-1800 x84249

Email: NAGL@panduit.com

**Product Information**

Product Name: 4 Post Cable Management Rack

Product Type: 4 post rack

OPM-0117-13

Product Model Number: R4P, R4P23, R4P36, R4P42, R4PCN, R4P23CN, R4P36CN, R4P42CN, R4P96, R4P2396, R4P3696, R4P4296, R4PCN96, R4P23CN96, R4P36CN96, R4P42CN96, ER4P23, ER4P29, ER4P2396, ER4P2996

General Description: 4 post racks for support of standard 19-inch components.

**Applicant Information**

Applicant Company Name: Panduit Corporation

Contact Person: Robert Fritz

Mailing Address: 412 Rockwell Court, Burr Ridge, Illinois 60527

Telephone: 708-532-1800 x84346

Email: RLFR@panduit.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant: *Robert Fritz*

Date: 06/04/2014

Title: Senior Manager Engineering

Company Name: Panduit Corporation

\*Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs\*





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**Registered Design Professional Preparing Engineering Recommendations**

Company Name: Degenkolb Engineers

Name: Adrian M. Nacamuli California License Number: S 4857

Mailing Address: 1300 Clay Street, 9<sup>th</sup> Floor, Oakland, California 94612

Telephone: 510-250-1216 Email: nacamuli@degenkolb.com

**OSHPD Special Seismic Certification Preapproval (OSP)**

- Special Seismic Certification is preapproved under OSP- (Separate application for OSP is required)
- Special Seismic Certification is not preapproved

**Certification Method(s)**

- Testing in accordance with:  ICC-ES AC156  FM 1950-10
- Other\* (Please Specify): \_\_\_\_\_

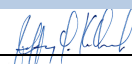
\*Use of criteria other than those adopted by the California Building Standards Code, 2013 (CBSC 2013) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC 2013 may be used when approved by OSHPD prior to testing.

- Analysis
- Experience Data
- Combination of Testing, Analysis, and/or Experience Data (Please Specify): \_\_\_\_\_

**List of Attachments Supporting the Manufacturer's Certification**

- Test Report  Drawings  Calculations  Manufacturer's Catalog
- Other(s) (Please Specify): \_\_\_\_\_

**OFFICE USE ONLY – OSHPD APPROVAL VALID FOR CBC 2013 ONLY**

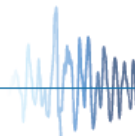
Signature:  Date: 12/30/2014

Print Name: Jeffrey Kikumoto

Title: SSE

Condition of Approval (if applicable): \_\_\_\_\_

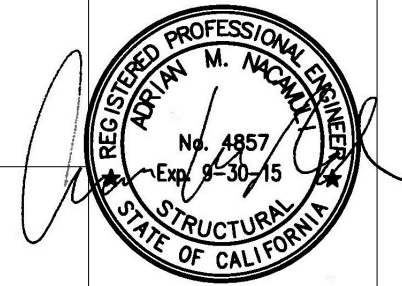
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**OSHPD PRE-APPROVAL OF  
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OPM 0117 - 13**

**DEGENKOLB ENGINEERS**  
235 Montgomery Street, Suite 500  
San Francisco, CA 94104  
415.392.6952 Phone  
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www.degenkolb.com



**PANDUIT 4 POST CABLE MANAGEMENT RACK**

MODELS R4P, R4P23, R4P36, R4P42, R4PCN, R4P23CN, R4P36CN, R4P42CN, R4P96, R4P2396, R4P3696, R4P4296, R4PCN96, R4P23CN96, R4P36CN96, R4P42CN96, ER4P23, ER4P29, ER4P2396, ER4P2996

GENERAL NOTES

1. THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2013. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2013.
2. PRE-APPROVED DESIGN AND MATERIALS CONFORM WITH THE 2013 EDITION OF THE CALIFORNIA BUILDING CODE. DETAILS WITHIN THIS APPROVAL MAY BE USED ANYWHERE IN THE STATE OF CALIFORNIA WHERE  $S_{DS} \leq 2.0$
3. SEISMIC FORCES ON EQUIPMENT DETERMINED PER THE 2013 CBC & ASCE 7-10. 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 $\geq 5"$ $f_c \geq 3000$ PSI NORMAL WEIGHT CONCRETE PROVIDE 8" MIN DISTANCE TO ANY OPENINGS, THE EDGE OF SLAB, OTHER ANCHORS OR ATTACHMENTS TO SLAB 8" MIN SPACING	CONCRETE ON METAL DECK $f_c \geq 3000$ 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:

a.  $S_{DS} \leq 2.0$ ,  $a_p = 2.5$ ,  $R_p = 6.0$ ,  $I_p = 1.5$ ,  $\Omega_o = 2.5$ ,

WHERE  $z/h \leq 1$

WHERE  $z/h = 0$

- i.  $F_p = 1.50 W_p$
- ii.  $E_v = 0.40 W_p$
- iii.  $\Omega_o F_p = 3.75 W_p$

- i.  $F_p = 0.90 W_p$
- ii.  $E_v = 0.40 W_p$
- iii.  $\Omega_o F_p = 2.25 W_p$  (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 COMPLIANT WITH THE MINIMUM DISTANCE FROM ANY OPENINGS OR EDGES AS DESCRIBED IN NOTE 4.
- b. VERIFY THAT THE ATTACHMENTS ARE COMPLIANT WITH THE MINIMUM DISTANCE FROM ANY NEW OR EXISTING ANCHORS DESCRIBED IN NOTES 4, 9 AND 10.

- 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 2013 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.

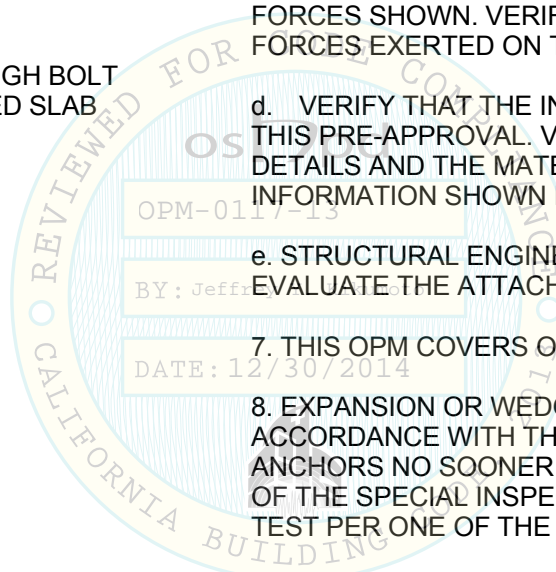
- e. STRUCTURAL ENGINEER-OF-RECORD (S.E.O.R.) OR PRINCIPAL-IN-CHARGE OF A SITE SPECIFIC PROJECT SHALL EVALUATE THE ATTACHMENT FOR CONDITIONS THAT VARY FROM THIS PRE-APPROVAL.

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

8. EXPANSION OR WEDGE ANCHORS INTO CONCRETE: HILTI KB-TZ (ICC ESR-1917). INSTALL ANCHORS IN ACCORDANCE WITH THE ICC REPORT AND MANUFACTURER'S RECOMMENDATIONS. TEST AT LEAST 50% OF ANCHORS NO SOONER THAN 24 HOURS AFTER INSTALLATIONS. TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO OSHPD. 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 (IN NORMAL WEIGHT CONCRETE)				
ANCHOR DIAMETER (IN)	TENSION LOAD (LBS)	TORQUE LOAD (FT-LB)	MINIMUM EDGE DISTANCE	MINIMUM SPACING
5/8"	3,125	60	8"	8"

9. IF ANY EXPANSION OR WEDGE ANCHOR FAILS DURING TESTING, UNIT MUST BE MOVED SO THAT NO ANCHOR IS WITHIN 8" OF AN ABANDONED ANCHOR.

10. CONTRACTOR OR SEOR MUST VERIFY EXPANSION OR WEDGE ANCHOR SPACING TO ADJACENT EQUIPMENT ANCHORS IS TO BE GREATER THAN 8".

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

BOLTS	A307 GR. A.
ANGLE	ASTM 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  $\Omega_0$  AS REQUIRED BY ASCE 7-10, SUPPLEMENT NO. 1, TABLE 13.6-1.

15.  $T_{ult} + q$  IS THE FORCE DEMAND IN THE ANCHOR INCLUDING EFFECTS OF PRYING

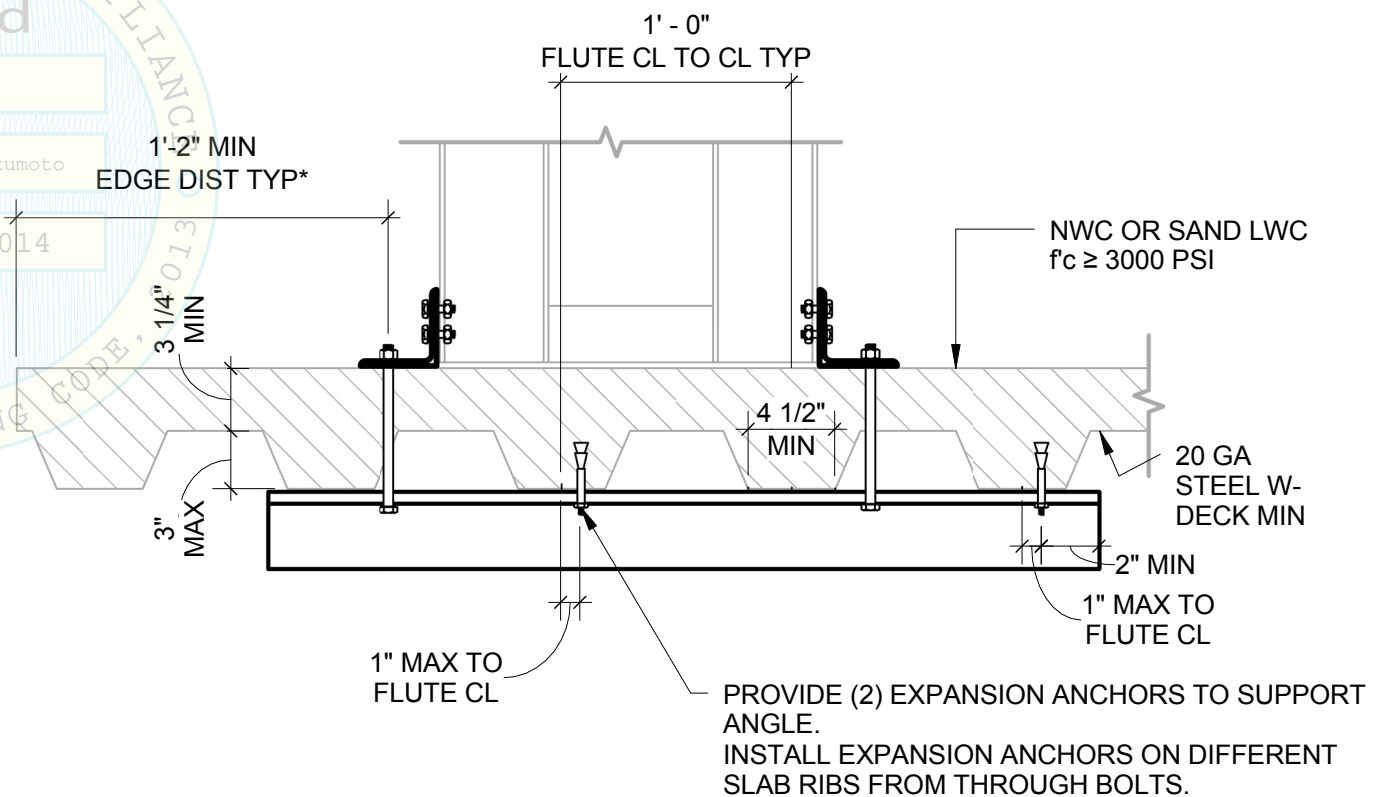
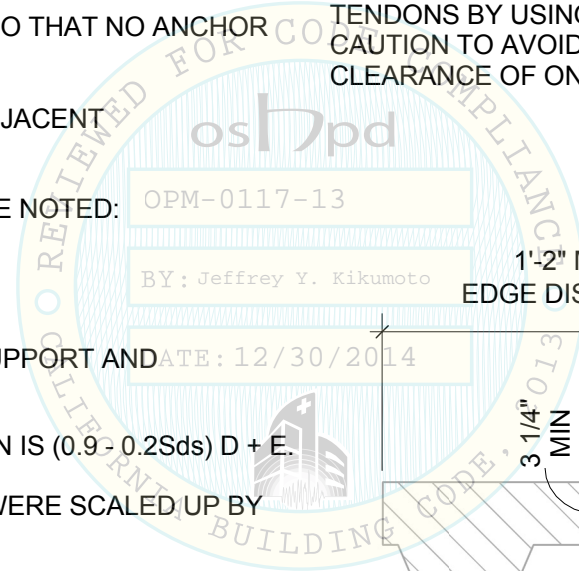
16. THE TABLE ON PAGE 4 SHOWS THE PROPERTIES OF THE DIFFERENT MODELS CONSIDERED IN THIS SUBMITTAL.

17. WHERE  $q = 0$  AS INDICATED ON THE TABLE OF PAGE 3, 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 FOURTEENTH 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 PGE 4 OF 6

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.



\*PROVIDE 8" MINIMUM DISTANCE TO EDGE OF SLAB, OPENINGS OR OTHER ATTACHMENTS

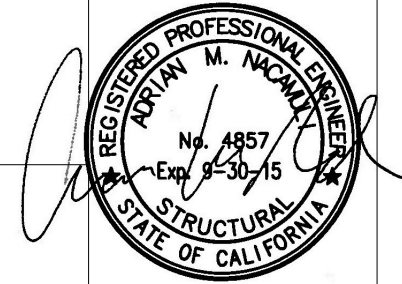
**MINIMUM STEEL DECK REQUIREMENTS**



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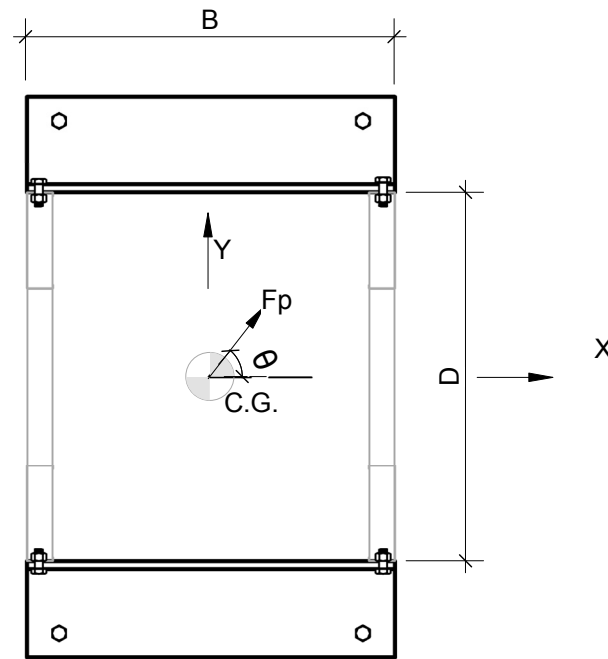
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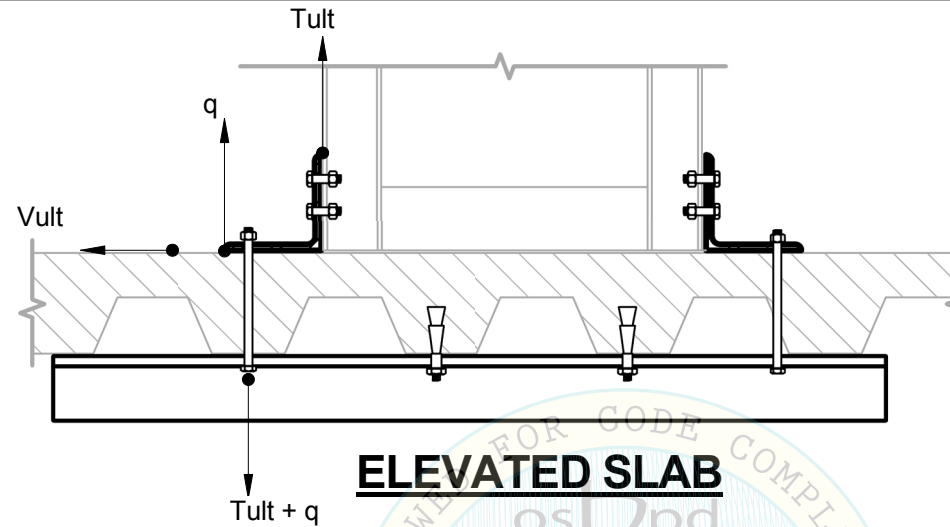


PANDUIT 4 POST CABLE MANAGEMENT RACK

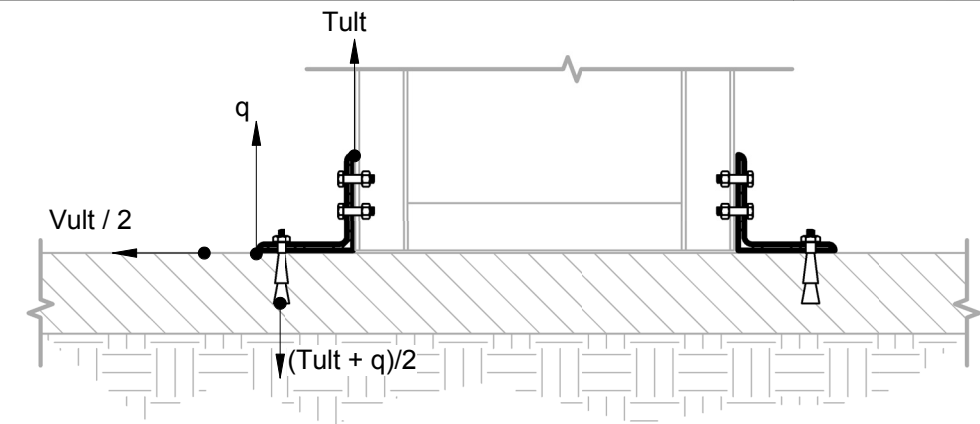
MODELS R4P, R4P23, R4P36, R4P42, R4PCN, R4P23CN, R4P36CN, R4P42CN, R4P96, R4P2396, R4P3696, R4P4296, R4PCN96, R4P23CN96, R4P36CN96, R4P42CN96, ER4P23, ER4P29, ER4P2396, ER4P2996



PLAN VIEW



ELEVATED SLAB



SLAB ON GROUND

NOTES:

1. THE LOAD RATING IS IN ADDITION TO THE SELF-WEIGHT AT THE CONDITION UNDER CONSIDERATION; ( $W_p$  = SELF-WEIGHT + LOAD RATING)
2.  $z$  IS THE HEIGHT IN THE STRUCTURE OF THE POINT OF ATTACHMENT OF THE COMPONENT WITH RESPECT TO THE BASE OF THE STRUCTURE.
3.  $h$  IS THE AVERAGE ROOF HEIGHT.
4. THE DESIGN FORCES  $T_{ult}$ ,  $q$  AND  $V_{ult}$  ON THE TABLE ABOVE ARE AT STRENGTH LEVEL AND ARE NOT AMPLIFIED BY OVER STRENGTH FACTOR ( $\Omega_0$ ). FINAL FORCES FOR ANCHORAGE TO CONCRETE TO INCLUDE OVERSTRENGTH FACTOR.
5.  $\theta$  IS THE ANGLE AT WHICH  $F_p$  GENERATES THE LARGEST TENSILE FORCE DEMAND IN THE ANCHORS
6. THE BASE BRACKET HAS ENOUGH STIFFNESS AND STRENGTH TO DEVELOP THE FULL BOLT AVAILABLE TENSILE STRENGTH
7. PROVIDE A SIGN ATTACHED TO THE RACK AT A LOCATION THAT IS VISIBLE THAT CLEARLY SHOWS THE DESIGN LOAD RATING AND CENTER OF GRAVITY HEIGHT ( $H_{cg}$ ) THAT THE SUPPORT AND ATTACHMENT IS DESIGNED TO.
8. SEE NOTES 18 AND 19 ON PAGE 2 OF 6.

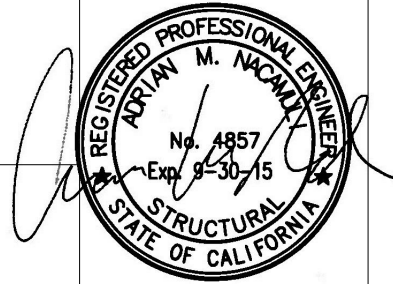
PART NUMBER	ANGLE $\theta$ (DEG)	SELF-WEIGHT (LBS)	$H_{cg}^{(8)}$ (IN)	LOAD RATING <sup>(1)</sup> (LBS)	$z/h = 0$			$z/h \leq 1$			
					$T_{ult}^{(4)}$ (LBS)	$q^{(6)}$ (LBS)	$V_{ult}^{(4)}$ (LBS)	LOAD RATING (LBS)	$T_{ult}^{(4)}$ (LBS)	$q$ (LBS)	$V_{ult}^{(4)}$ (LBS)
R4P	25	105	42	720	940	0	185	2500	5150	3220	975
R4P23	30	101	42	685	945	0	177	2500	5410	3380	975
R4P36	20	109	42	735	940	0	190	2500	5015	3140	975
R4P42	20	112	42	745	935	0	195	2500	4930	3085	975
R4PCN	25	96	42	725	940	0	185	2500	5150	3220	975
R4P23CN	30	92	42	695	945	0	177	2500	5410	3380	975
R4P36CN	20	100	42	745	940	0	190	2500	5015	3140	975
R4P42CN	20	103	42	755	935	0	194	2500	4930	3085	975
R4P96	25	116	48	600	950	0	161	2500	5930	3710	975
R4P2396	30	111	48	470	955	0	131	2500	6230	3896	975
R4P3696	20	120	48	615	945	0	166	2500	5780	3615	975
R4P4296	20	123	48	625	945	0	168	2500	5680	3550	975
R4PCN96	25	106	48	610	945	0	161	2500	5930	3710	975
R4P23CN96	30	102	48	480	955	0	131	2500	6230	3896	975
R4P36CN96	20	110	48	625	945	0	166	2500	5780	3615	975
R4P42CN96	20	113	48	635	945	0	168	2500	5680	3550	975
ER4P23	25	81	42	585	950	0	150	2000	5160	3225	788
ER4P29	20	83	42	605	950	0	155	2000	5000	3125	788
ER4P2396	25	89	48	490	955	0	131	2000	5935	3710	788
ER4P2996	20	92	48	508	955	0	135	2000	5750	3595	788



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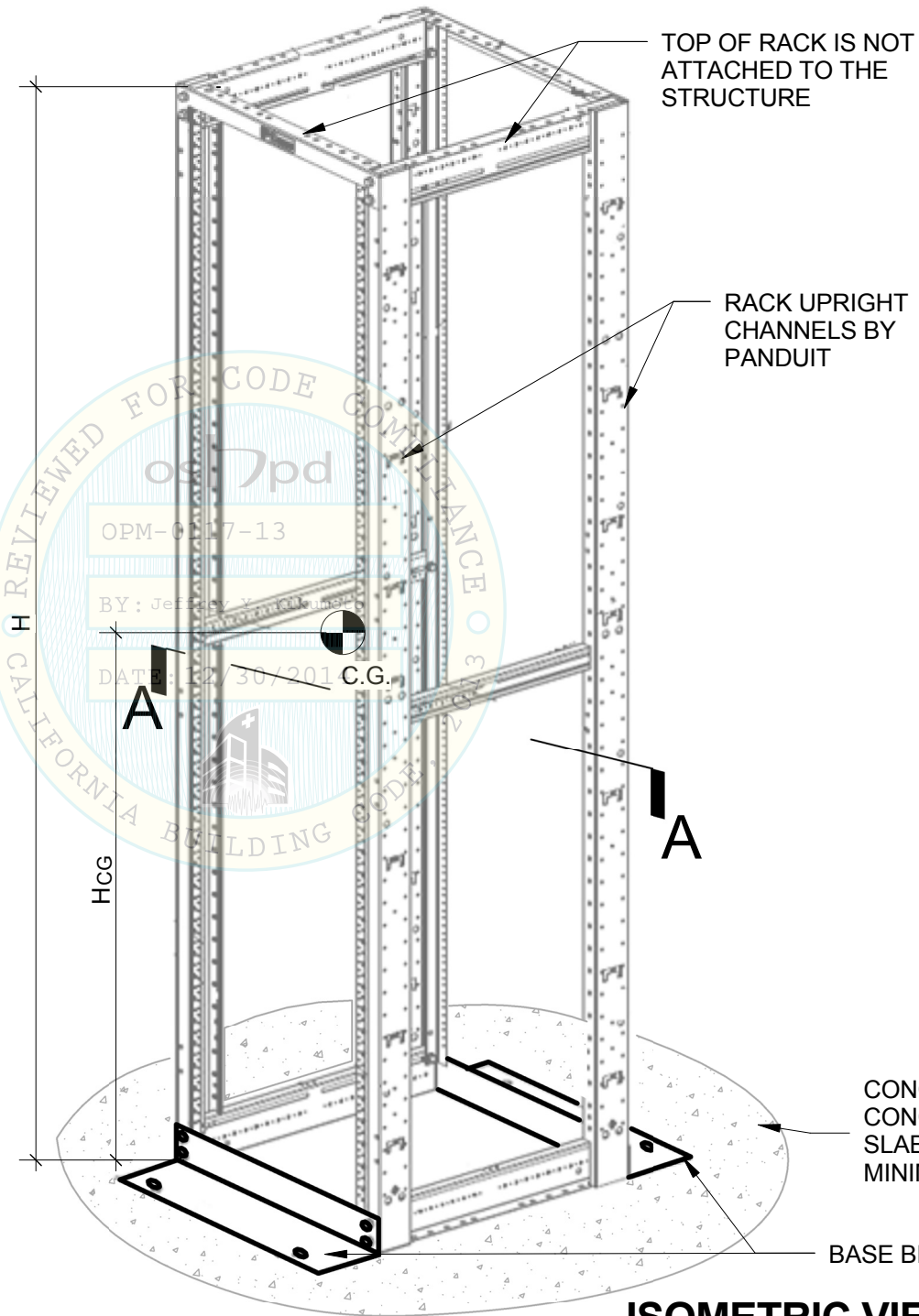


PANDUIT 4 POST CABLE MANAGEMENT RACK

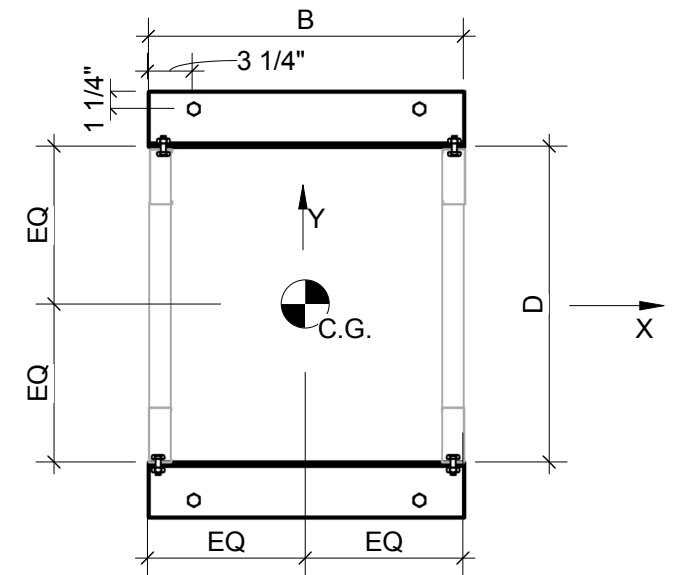
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RACK UPRIGHT CHANNELS  
PROPERTIES  
(ASTM A653 CS TYPE B)

PART NUMBER	H (IN)	B (IN)	D (IN)	Hcg (IN)	FLANGE		
					fy MIN (KSI)	t <sub>f</sub> MIN (IN)	w <sub>f</sub> MIN (IN)
R4P	84	23.25	30	42	30.0	0.125	1.50
R4P23	84	23.25	23	42	30.0	0.125	1.50
R4P36	84	23.25	36	42	30.0	0.125	1.50
R4P42	84	23.25	42	42	30.0	0.125	1.50
R4PCN	84	23.25	30	42	30.0	0.125	1.50
R4P23CN	84	23.25	23	42	30.0	0.125	1.50
R4P36CN	84	23.25	36	42	30.0	0.125	1.50
R4P42CN	84	23.25	42	42	30.0	0.125	1.50
R4P96	96	23.25	30	48	30.0	0.125	1.50
R4P2396	96	23.25	23	48	30.0	0.125	1.50
R4P3696	96	23.25	36	48	30.0	0.125	1.50
R4P4296	96	23.25	42	48	30.0	0.125	1.50
R4PCN96	96	23.25	30	48	30.0	0.125	1.50
R4P23CN96	96	23.25	23	48	30.0	0.125	1.50
R4P36CN96	96	23.25	36	48	30.0	0.125	1.50
R4P42CN96	96	23.25	42	48	30.0	0.125	1.50
ER4P23	84	20.25	23	42	30.0	0.125	1.50
ER4P29	84	20.25	29	42	30.0	0.125	1.50
ER4P2396	96	20.25	23	48	30.0	0.125	1.50
ER4P2996	96	20.25	29	48	30.0	0.125	1.50



**ISOMETRIC VIEW**



**SECTION A-A**

CONCRETE SLAB ON GRADE OR  
CONCRETE FILL OVER ELEVATED  
SLAB. SEE NOTE 4 ON PAGE 1 FOR  
MINIMUM REQUIREMENTS

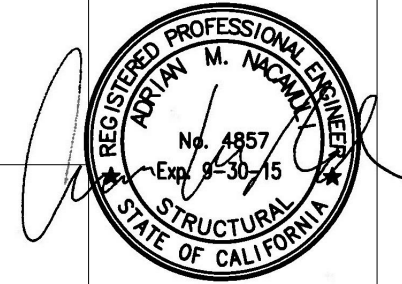
BASE BRACKET



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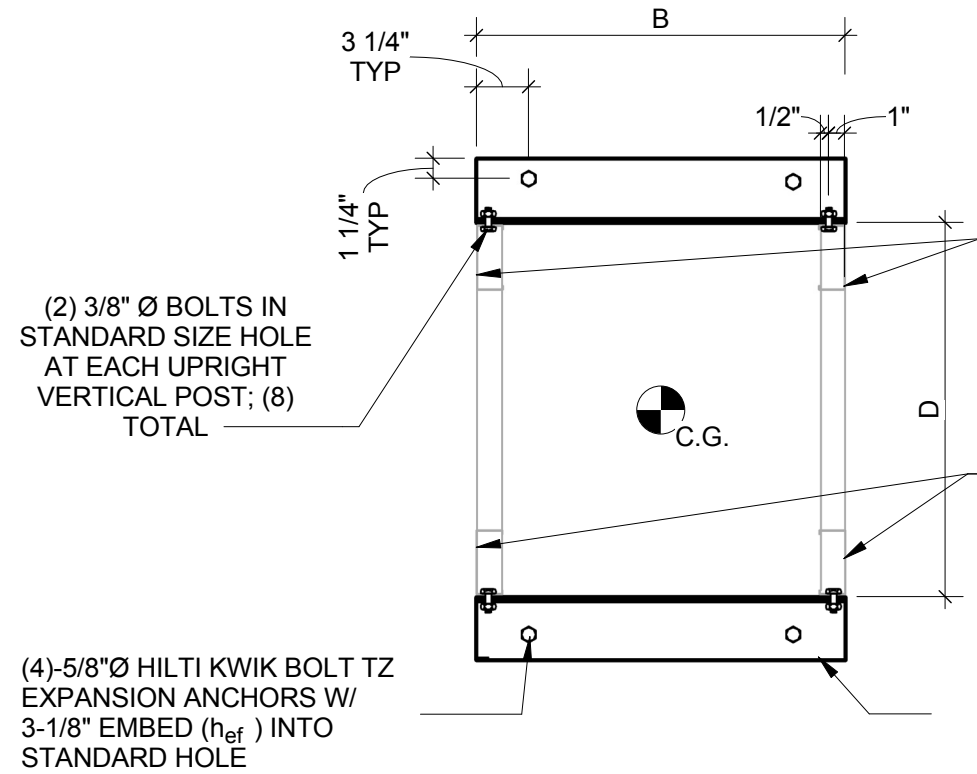
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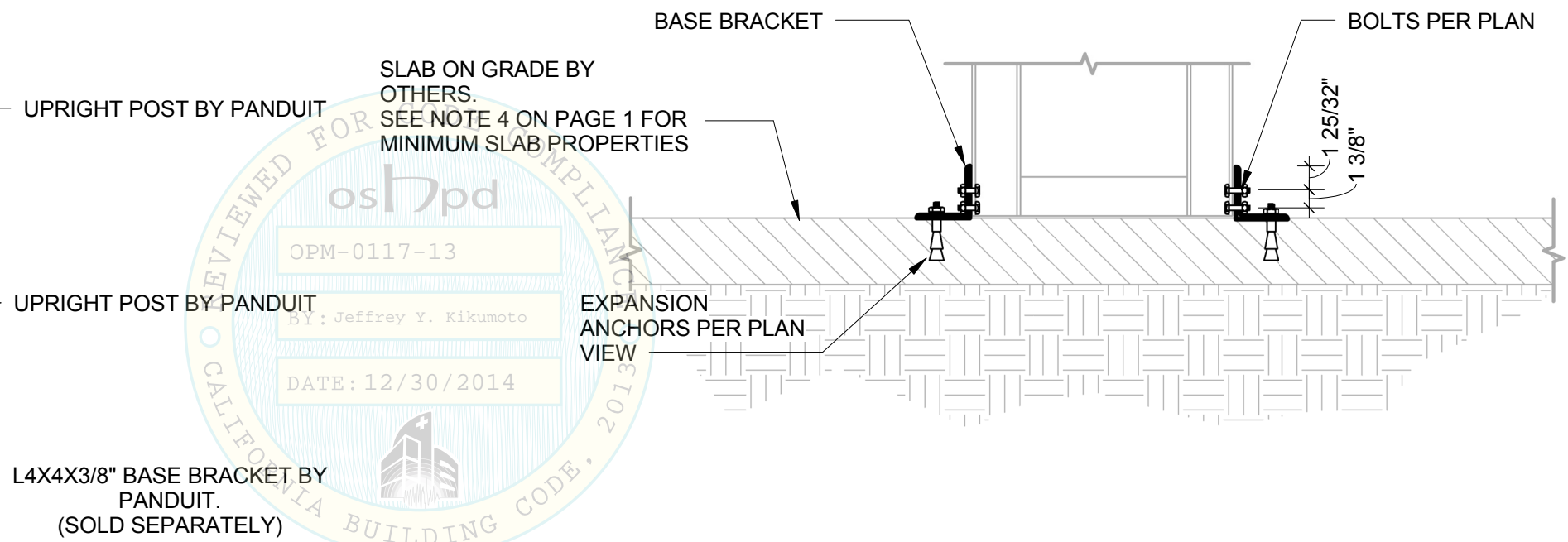


PANDUIT 4 POST CABLE MANAGEMENT RACK

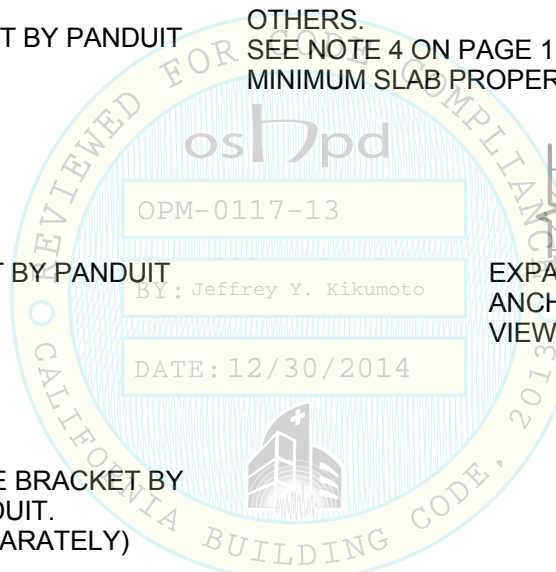
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**PLAN VIEW**



**SIDE VIEW**



NOTES:

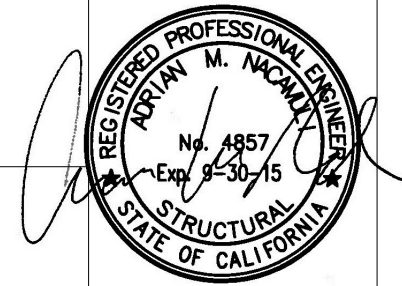
1. FOR FORCE DEMANDS AND GEOMETRIC PROPERTIES SEE PAGES 3 AND 4 RESPECTIVELY.
2. ALL HOLES THROUGH STEEL FOR BOLTS SHALL BE STANDARD SIZE HOLES PER AISC 14TH EDITION, TABLE J3.3 (BOLT DIAMETER PLUS 1/16")



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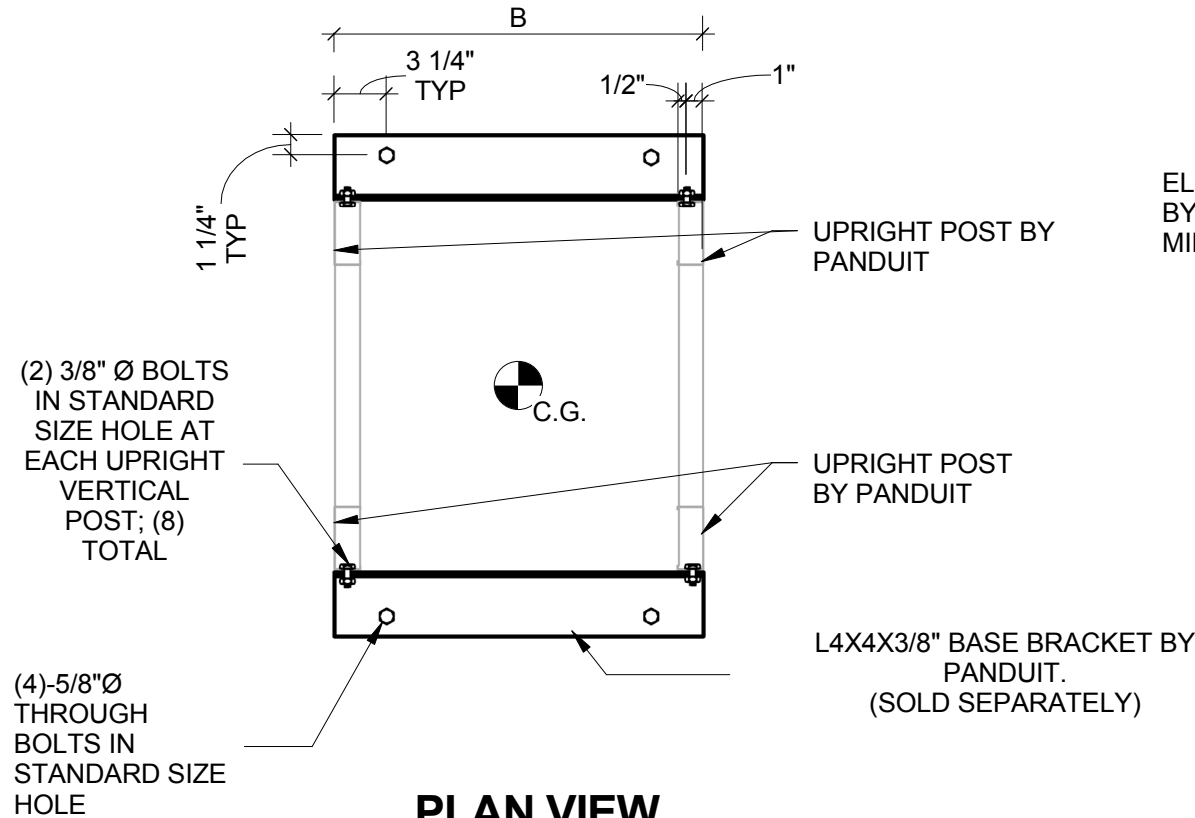
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PANDUIT 4 POST CABLE MANAGEMENT RACK

MODELS R4P, R4P23, R4P36, R4P42, R4PCN, R4P23CN, R4P36CN, R4P42CN, R4P96, R4P2396, R4P3696, R4P4296, R4PCN96, R4P23CN96, R4P36CN96, R4P42CN96, ER4P23, ER4P29, ER4P2396, ER4P2996

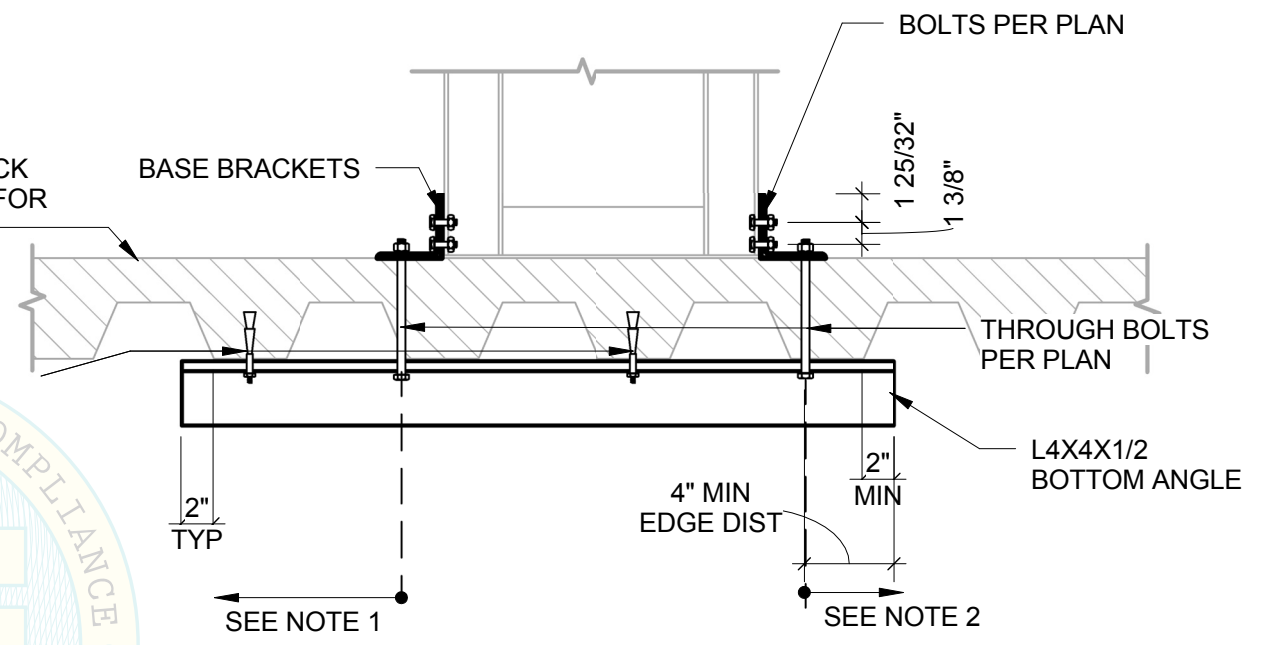
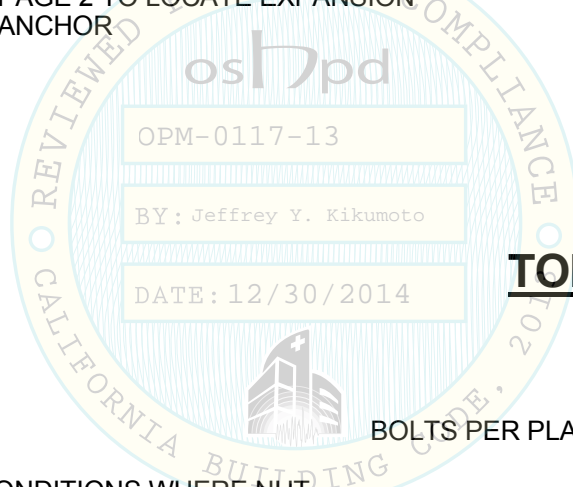


**PLAN VIEW**

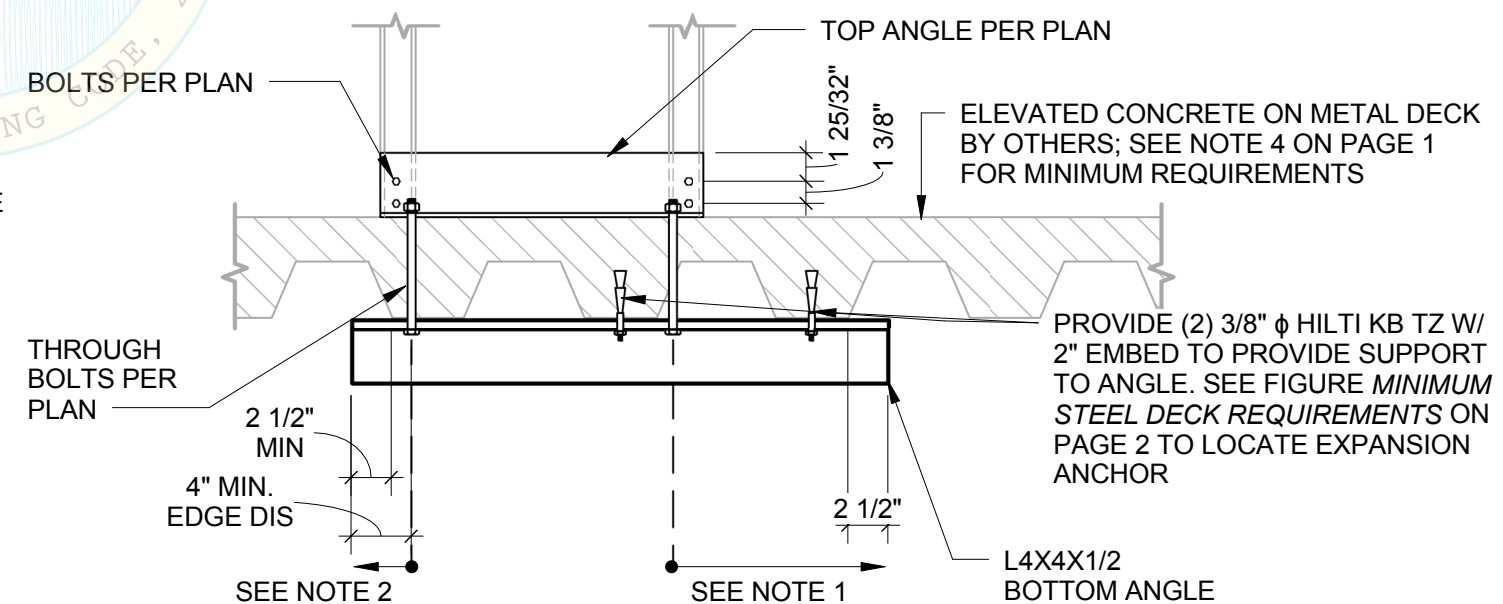
- NOTES:
1. PROVIDE HEX NUT AT TOP AND BOTTOM OF BOTTOM ANGLE FLANGE, TYP. U.O.N. AT CONDITIONS WHERE NUT CANNOT BE PROVIDED AT TOP SIDE OF ANGLE FLANGE, PROVIDE TAPPED HOLE IN ANGLE
  2. WHEN THE THROUGH BOLT DOESN'T COINCIDE WITH THE RIB OF THE SLAB, EXTEND BOTTOM ANGLE 2" PAST THE ADJACENT SLAB RIB.
  3. WHEN THE THROUGH BOLT COINCIDES WITH THE RIB OF THE SLAB, EXTEND THE BOTTOM ANGLE 2" PAST THE EDGE OF THE SLAB RIB.
  4. ALL BOLT HOLES THROUGH STEEL SHALL BE STANDARD SIZE HOLES PER AISC 360-10, TABLE J3.3 (BOLT DIAMETER PLUS 1/16")
  5. FOR CONCRETE ELEVATED SLAB, PROVIDE BOTTOM ANGLE SIMILAR TO TOP ANGLE PARALLEL TO METAL DECK FLUTES
  6. BOLTS THROUGH CONCRETE ON METAL DECK
    - A. BOLTS SHALL BE TORQUED BY 3/4 TURN OF THE NUTS AFTER THE SNUG TIGHT (THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT) CONDITION IS ACHIEVED.
    - B. THROUGH BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS.

ELEVATED CONCRETE ON METAL DECK BY OTHERS; SEE NOTE 4 ON PAGE 1 FOR MINIMUM REQUIREMENTS

PROVIDE (2) 3/8"  $\phi$  HILTI KB TZ W/ 2" EMBED TO PROVIDE SUPPORT TO ANGLE. SEE FIGURE *MINIMUM STEEL DECK REQUIREMENTS* ON PAGE 2 TO LOCATE EXPANSION ANCHOR



**TOP ANGLES PARALLEL TO METAL DECK FLUTES**



**TOP ANGLES PERPENDICULAR TO METAL DECK FLUTES**