



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY
APPLICATION #: OPM-0393-13

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: [X] New [] Renewal [] Update to Pre-CBC 2013 OPA Number:

Manufacturer Information

Manufacturer: CARESTREAM HEALTH, Inc.

Manufacturer's Technical Representative: Ted Young

Mailing Address: 1049 West Ridge Road, Rochester, NY 14615

Telephone: On File Email: On File

Product Information

Product Name: DRX Evolution Plus Power Distribution Unit (PDU)

Product Type: Motor Control Center

Product Model Number: N/A

General Description: Distribute Electrical Energy to Components

Applicant Information

Applicant Company Name: EASE Co.

Contact Person: Jonathan Roberson, S.E.

Mailing Address: 5877 Pine Ave. Suite 210, Chino Hills, CA. 91709

Telephone: (909) 606-7622 Email: J.Roberson@EASECo.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: [Signature] Date: 11/7/16

Title: Principal Engineer Company Name: EASE Co.

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: EASE Co.

Name: Jonathan Roberson, S.E.

California License Number: S4197

Mailing Address: 5877 Pine Ave. Suite 210, Chino Hills, CA. 91709

Telephone: 909-606-7622

Email: J.Roberson@EASECo.com

OSHPD Special Seismic Certification Preapproval (OSP)

Special Seismic Certification is preapproved under OSP-0497-10
(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 test 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: 14 April 2017

Print Name: Jeffrey Y Kikumoto

Title: Senior Structural Engineer

Condition of Approval (if applicable): _____

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





**EQUIPMENT ANCHORAGE
& SEISMIC ENGINEERING**

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Chino Hills, CA. 91709
Phn: (909) 606-7622

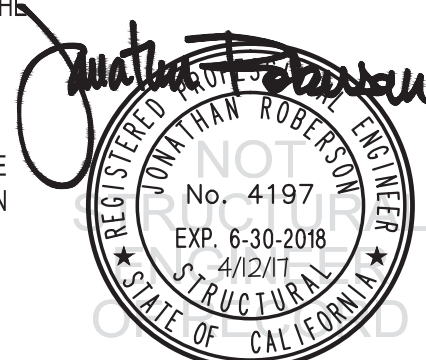
Office of Statewide Health Planning and Development
PREAPPROVAL OF MANUFACTURER'S CERTIFICATION
OPM-0393-13

THIS PREAPPROVAL CONFORMS TO THE 2016 CALIFORNIA BUILDING CODE

MANUFACTURER: **CARESTREAM HEALTH, INC** Sheet: 1 of 9
EQUIPMENT NAME: **DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)** Date: 4/12/17

GENERAL NOTES

1. THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE 2016 CBC. THE DEMANDS (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE 2016 CBC
2. THIS DOCUMENT MAY ONLY BE USED WITH THE EXPRESS WRITTEN CONSENT OF THE MANUFACTURER LISTED ABOVE FOR THE SPECIFIC PROJECT SITE AND INSTALLATION LOCATION. THIS DOCUMENT IS INVALID WITHOUT SUCH CONSENT.
3. THIS PREAPPROVAL CONFORMS TO THE 2016 CALIFORNIA BUILDING CODE WHERE S_{ds} IS NOT GREATER THAN 2.00 & 2.20. SEE DETAIL FOR APPLICABILITY
4. FORCES PER ASCE 7-10 SECTION 13.3.1, EQUATIONS 13.3-1, 13.3-2 & 13.3-3,
WHERE $S_{ds} = 2.00$, $a_p = 1.0$, $I_p = 1.5$, $R_p = 2.5$, $z/h = 0$ AT CONCRETE SLAB. SEE FOLLOWING SHEETS FOR Ω_o
WHERE $S_{ds} = 2.20$, $a_p = 1.0$, $I_p = 1.5$, $R_p = 2.5$, $z/h \leq 1$ AT CONCRETE SLAB ON METAL DECK. SEE FOLLOWING SHEETS FOR Ω_o .
5. THIS PREAPPROVAL COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF THE EQUIPMENT TO THE STRUCTURE.
6. ALL DESIGN FORCES SHOWN ON THE DRAWINGS ARE FACTORED LOADS THAT SHALL BE USED FOR STRENGTH DESIGN.
7. CONCRETE SLAB ON METAL DECK DETAIL VALID FOR DEMANDS SHOWN AT ANY ELEVATION IN THE BUILDING. (i.e. $z/h \leq 1$)
8. CONCRETE SLAB ON GRADE DETAIL VALID FOR DEMANDS SHOWN AT ANY ELEVATION AT OR BELOW GRADE. (i.e. $z/h = 0$)
9. **RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD OF THE BUILDING**
 - A. PROVIDE SUPPORTING STRUCTURE TO SUPPORT WEIGHTS AND FORCES SHOWN IN ADDITION TO ALL OTHER LOADS.
 - B. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2016 CBC AND WITH THE DETAILS, MATERIAL AND GAGE OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN ON THE PREAPPROVAL DOCUMENTS.
 - C. VERIFY THAT PROJECT SPECIFIC VALUES OF S_{ds} & z/h RESULT IN SEISMIC FORCES (E_h , E_v) THAT DO NOT EXCEED THE VALUES ON THE DETAILS.
 - D. VERIFY THAT THE CONCRETE SLAB TO WHICH THE EQUIPMENT IS ANCHORED MEETS THE REQUIREMENTS OF THE APPLICABLE ICC ESR.
 - E. VERIFY THAT THE ANCHORS ARE AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS (SEE TYPICAL DETAIL ON SHEET 2).
 - F. VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE AN ADEQUATE DISTANCE FROM THE UNIT ATTACHMENTS AND CHECK FOR INTERACTION WHERE OTHER ANCHORS ARE WITHIN 18" OR $6h_{ef}$ FROM THIS UNIT'S ANCHORS.



CARESTREAM HEALTH, INC

DES. J. ROBERSON

SHEET

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DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

JOB NO. 11-1617

DATE 4/12/17

OF 9 SHEETS

10. EXPANSION ANCHORS:

A. ATTACHMENT IS TO BE MADE WITH THE ANCHORS LISTED BELOW AND INSTALLED AS DESCRIBED IN THE CORRESPONDING ICC REPORT.

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	Direct Tension Test
3/8"	Sand Light Weight	3000	Hilti Kwik Bolt TZ	ESR-1917	2"	4"	3"	See Detail "A"	25 FT-LB	1186 lb
1/2"	Normal Weight	3000	Hilti Kwik Bolt TZ	ESR-1917	2"	4"	9"	4"	40 FT-LB	1338 lb

B. THIS PREAPPROVAL ALLOWS FOR UP TO A MAXIMUM OF 2 ADJACENT CONCRETE SLAB EDGES, 18" (SEE SCHEDULE) AWAY MINIMUM (i.e. - CORNER). SEE ADJACENT DETAIL FOR ADDITIONAL MINIMUM ALLOWABLE CONCRETE EDGE DISTANCES.

C. TESTING OF EXPANSION ANCHORS PER 2016 CBC, 1910A.5: TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO OSHPD

- (i) AFTER AT LEAST 24 HOURS HAVE ELAPSED SINCE INSTALLATION, DIRECT PULL TENSION TEST OR TORQUE TEST AT LEAST 50% OF THE ANCHORS.
- (ii) ACCEPTANCE CRITERIA:
 - DIRECT TENSION TEST: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE TEST LOAD. A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER BECOMES LOOSE.
 - TORQUE TEST: THE APPLICABLE TORQUE MUST BE ACHIEVED WITHIN THE FOLLOWING LIMITS: WEDGE TYPE : 1/2 TURN OF THE NUT

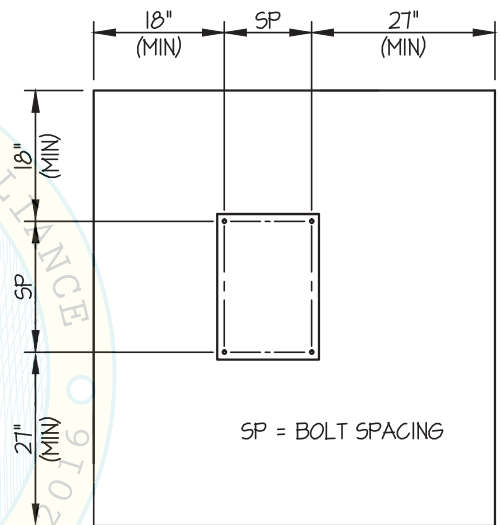
(iii) IF ANY ANCHOR FAILS, TEST ALL ANCHORS.

D. AVOID DAMAGING EXISTING STEEL REINFORCING IN CONCRETE SLAB WHEN INSTALLING CONCRETE EXPANSION ANCHORS.

E. PROVIDE FOR FULL THREAD ENGAGEMENT OF NUT & WASHER.

11. 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, UNLESS OTHERWISE NOTED.
- B. THROUGH BOLT HOLES SHALL BE 1/16" LARGER THAN BOLT SIZE (HOLE SIZE = BOLT SIZE + 1/16) FOR CONCRETE.
- C. THROUGH-BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING (THROUGH BOLTS WITH STEEL TO STEEL CONNECTION IN TENSION DO NOT REQUIRE TENSION TESTING) IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS.



TYPICAL CONCRETE EDGE DETAIL



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SHEET

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DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

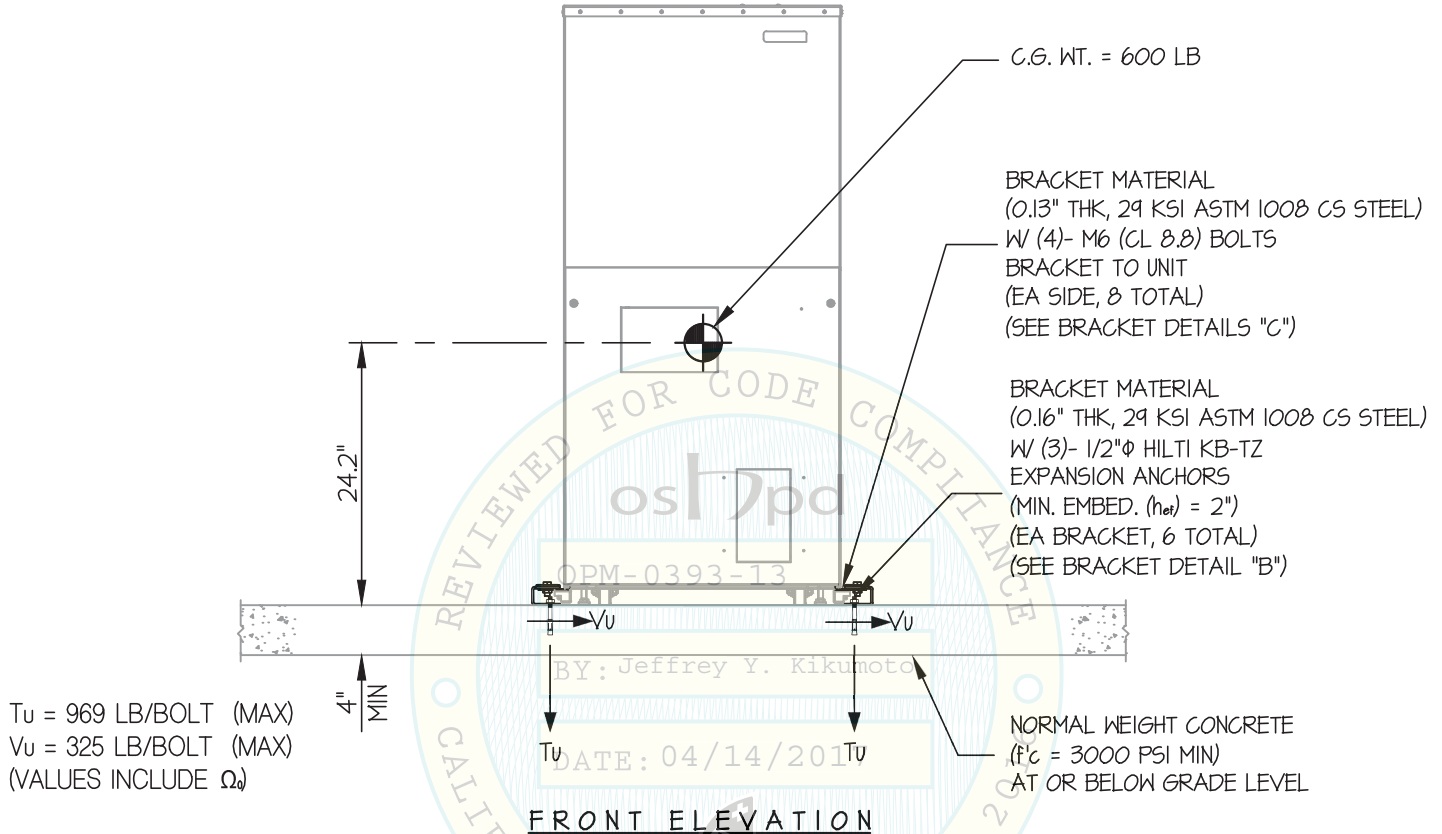
JOB NO. 11-1617

DATE 4/12/17

OF 9 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB



NOTES:

- FORCES ARE DETERMINED PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10 STRENGTH DESIGN IS USED. (S_{ds} = 2.00, α_p = 1.0, I_p = 1.5, R_p = 2.5, Ω₀ = 2.0, z/h = 0)
 HORIZONTAL FORCE (E_h) = 0.90 W_p
 HORIZONTAL FORCE (E_{mh}) = 1.80 W_p (FOR CONCRETE ANCHORAGE)
 VERTICAL FORCE (E_v) = 0.40 W_p
- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THIS PREAPPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



CARESTREAM HEALTH, INC

DES. **J. ROBERSON**

SHEET

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DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

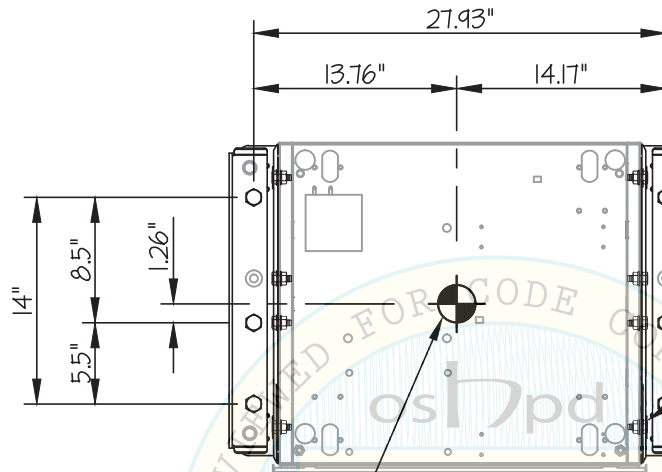
JOB NO. **11-1617**

DATE **4/12/17**

OF **9** SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB



BRACKET MATERIAL
(0.16" THK, 29 KSI ASTM 1008 CS STEEL)
W/ (3)- 1/2"φ HILTI KB-TZ
EXPANSION ANCHORS
(MIN. EMBED. (h_{ef}) = 2")
(EA BRACKET, 6 TOTAL)
(SEE BRACKET DETAIL "B")

HOLE NOT USED
(SIM ON OTHER BRACKET)

BRACKET MATERIAL
(0.13" THK, 29 KSI ASTM 1008 CS STEEL)
W/ (4)- M6 (CL 8.8) BOLTS
BRACKET TO UNIT
(EA SIDE, 8 TOTAL)
(SEE BRACKET DETAILS "C")

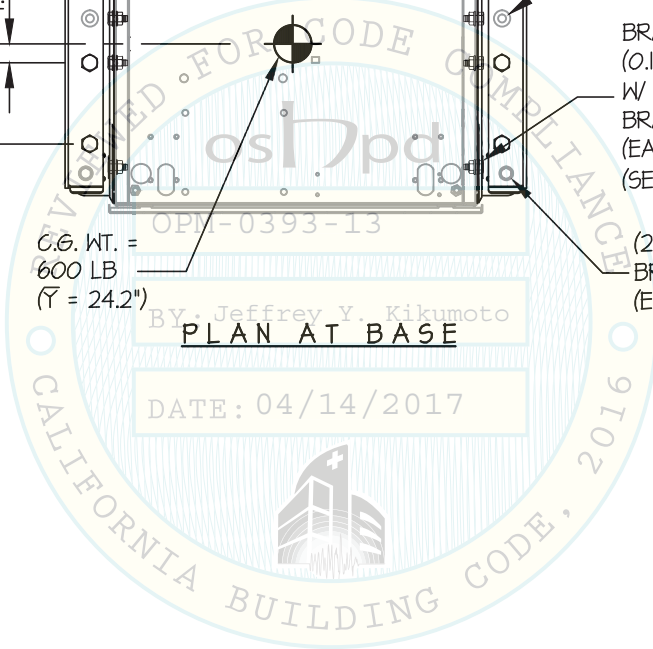
(2)- M12 (CL 8.8) BOLTS
BRACKET TO BRACKET CONNECTION
(EA SIDE, 4 TOTAL)

C.G. WT. =
600 LB
(\bar{Y} = 24.2")

OPM-0393-13

By: Jeffrey Y. Kikumoto
PLAN AT BASE

DATE: 04/14/2017



CARESTREAM HEALTH, INC

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SHEET

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JOB NO. 11-1617

9

SHEETS

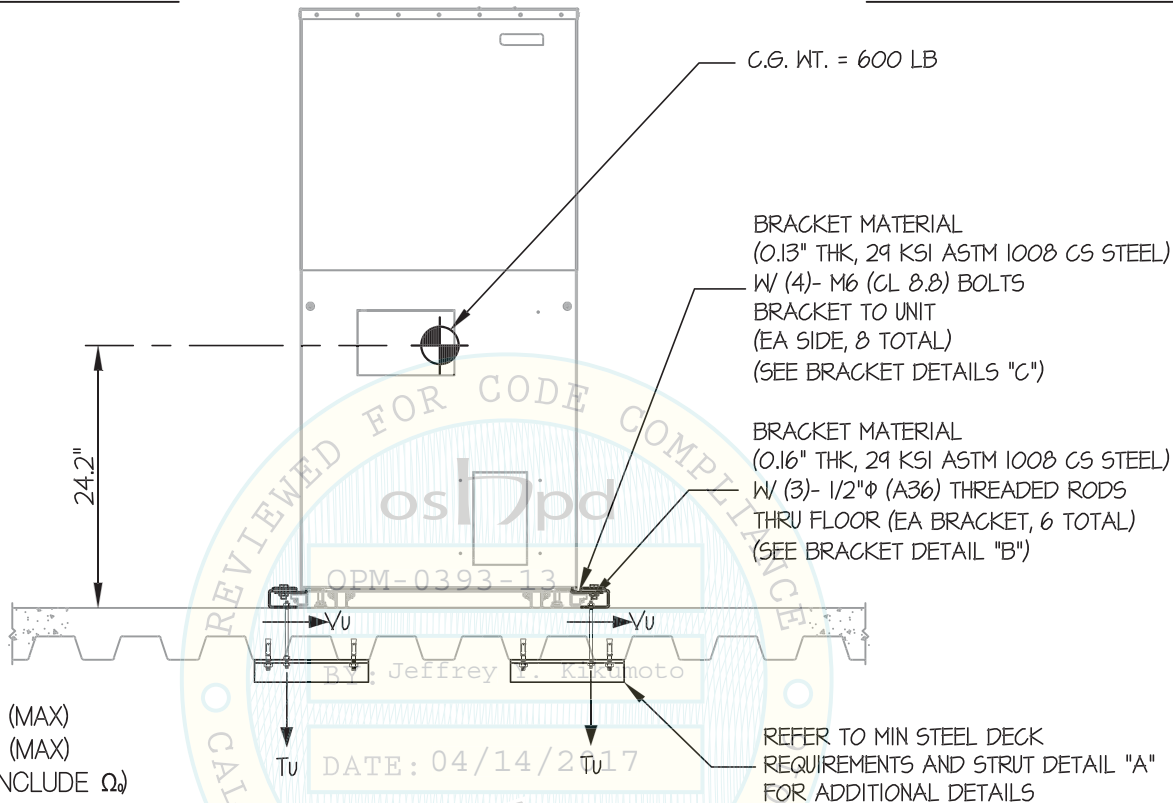
DATE 4/12/17

OF

DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



FRONT ELEVATION

NOTES:

- FORCES ARE DETERMINED PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.**

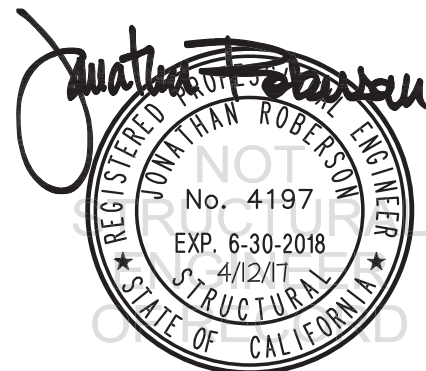
STRENGTH DESIGN IS USED. ($S_{Ds} = 2.20$, $a_p = 1.0$, $I_p = 1.5$, $R_p \leq 2.5$, $\Omega_0 = 2.0$, $z/h \leq 1$)

HORIZONTAL FORCE (E_h) = 1.58 W_p

HORIZONTAL FORCE (E_{mh}) = 3.96 W_p (FOR CONCRETE ANCHORAGE)

VERTICAL FORCE (E_v) = 0.44 W_p

- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THIS PREAPPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
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SHEET

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DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

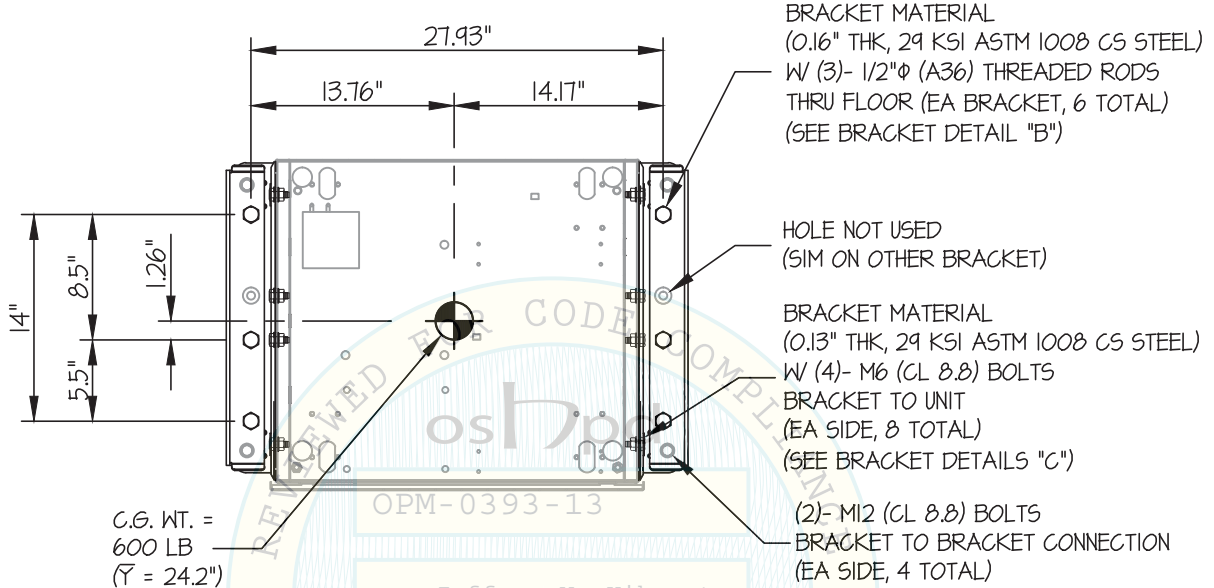
JOB NO. **11-1617**

DATE **4/12/17**

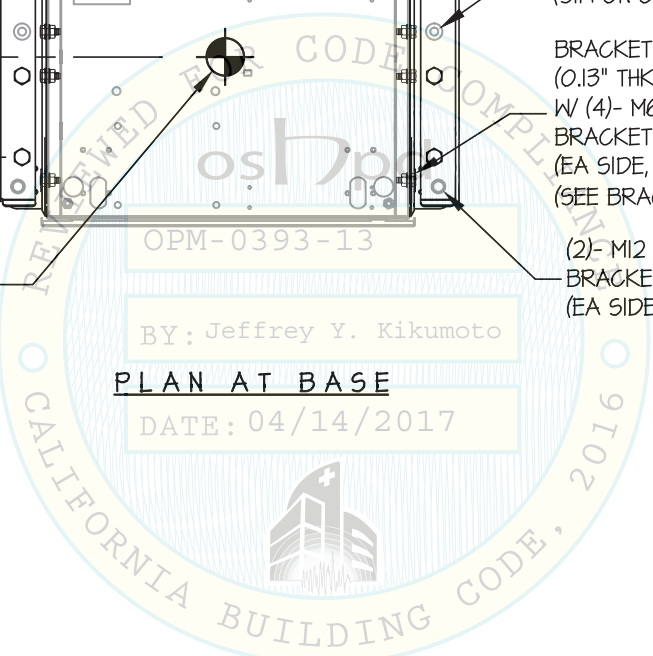
OF **9** SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



OPM-0393-13
BY: Jeffrey Y. Kikumoto
PLAN AT BASE
DATE: 04/14/2017



CARESTREAM HEALTH, INC

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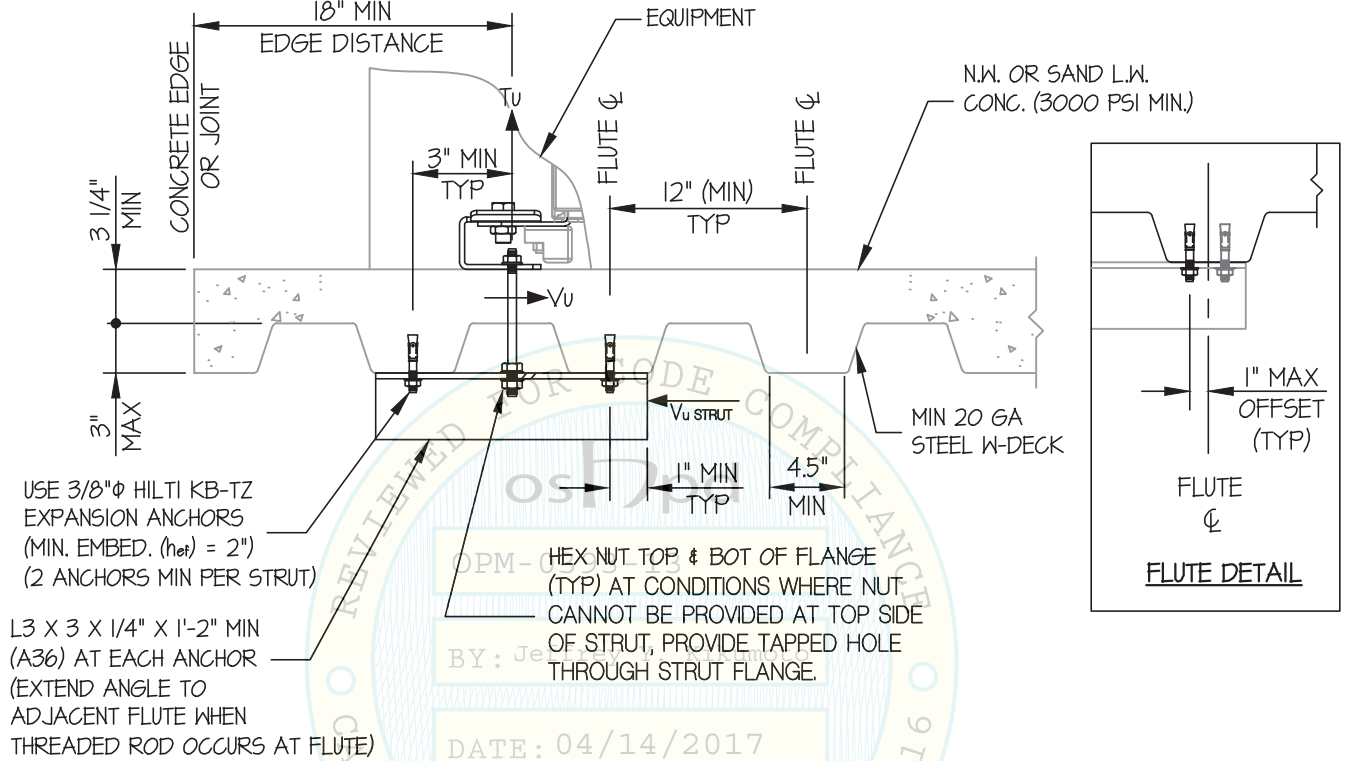
DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

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OF 9 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE DETAIL



MIN STEEL DECK REQUIREMENTS AND STRUT DETAIL (A)



CARESTREAM HEALTH, INC

DES. **J. ROBERSON**

SHEET

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**DRX EVOLUTION PLUS
POWER DISTRIBUTION UNIT (PDU)**

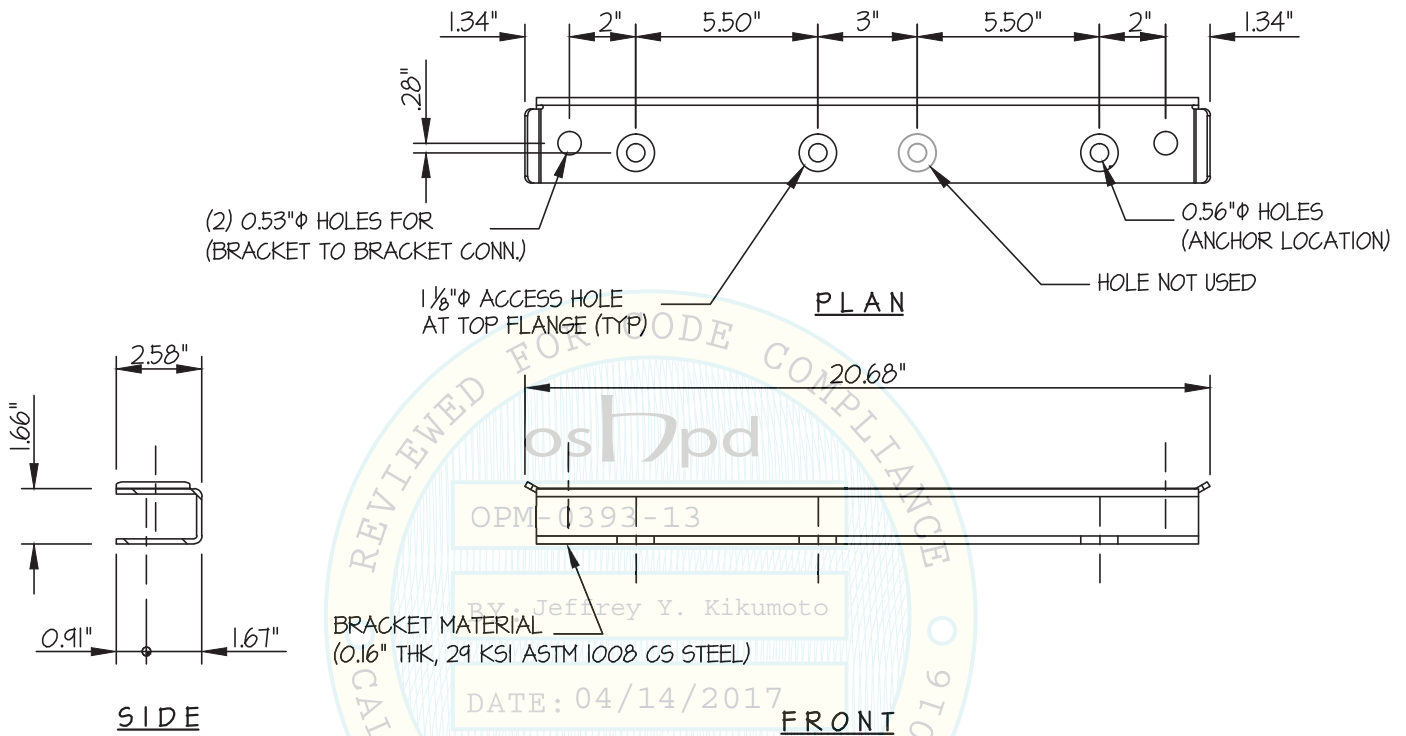
JOB NO. **11-1617**

DATE **4/12/17**

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SEISMIC SUPPORTS & ATTACHMENTS

BRACKET DETAILS



BRACKET DETAIL (B)

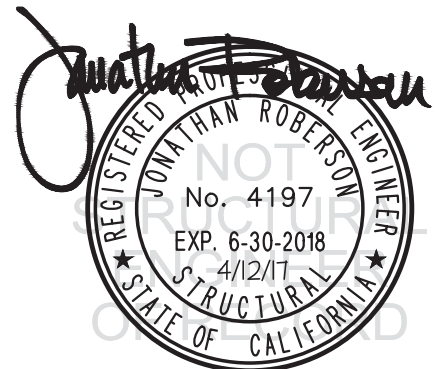
LOADS TO BRACKET: (BASED ON UPPER FLOOR DEMANDS)

$T_u = 850$ LB/BOLT (NON-PRYING)

$V_u = 285$ LB/BOLT

NOTE: SHAKE TABLE TESTED

PER OSP-0497-10
CONNECTION OK



CARESTREAM HEALTH, INC

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SHEET

9

DRX EVOLUTION PLUS POWER DISTRIBUTION UNIT (PDU)

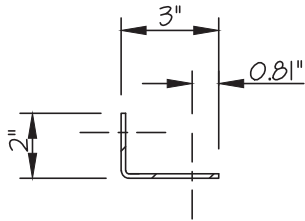
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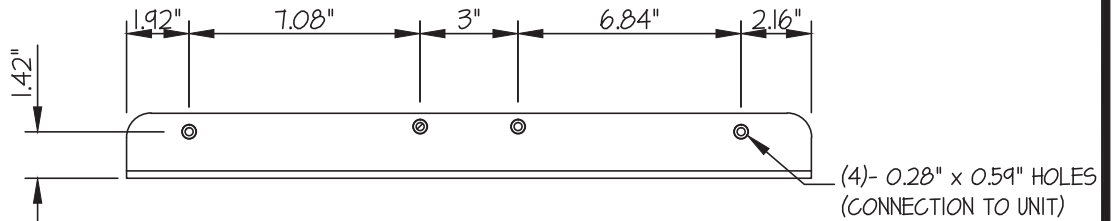
OF 9 SHEETS

SEISMIC ANCHORAGE

BRACKET DETAILS



SIDE

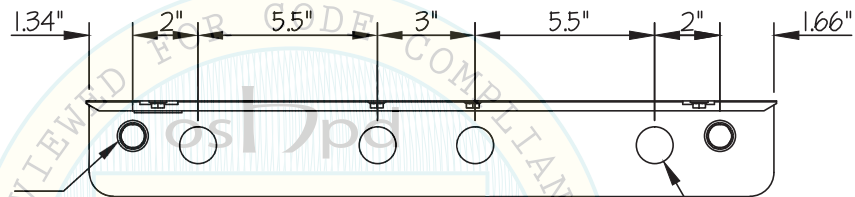


FRONT

(4)- 0.28" x 0.59" HOLES
(CONNECTION TO UNIT)

(2)- 0.53" ϕ HOLES
(BRACKET TO BRACKET CONN.)

BRACKET MATERIAL
(0.13" THK, 29 KSI ASTM 1008 CS STEEL)



1/8" ϕ ACCESS HOLE
(4 PER BRACKET)

PLAN

BRACKET DETAIL (C)

LOADS TO BRACKET: (BASED ON UPPER FLOOR DEMANDS)

$T_u = 850$ LB/BOLT (NON-PRYING)

$V_u = 285$ LB/BOLT

NOTE: SHAKE TABLE TESTED

PER OSP-0497-10
CONNECTION OK

