



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY
APPLICATION #: OPM-0216-13

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: [X] New [] Renewal [X] Update to Pre-CBC 2013 OPA Number: 2417-07

Manufacturer Information

Manufacturer: IMRIS, Inc.
Manufacturer's Technical Representative: Meir Dahan
Mailing Address: 5101 Shady Oak Road, Minnetonka, MN 55343
Telephone: (763) 203-6306 Email: mdahan@imris.com

Product Information

Product Name: IMRIS Skyra and Aera Magnet and Magnet Mover Systems
Product Type: MRI Scanner OPM-0216-13
Product Model Number: MR30 (3T MR) and MR15 (1.5T MR)
General Description: Overhead mounted rail and transport system that adapts a convention floor-mounted MRI scanner and allows travel in and out of an operating room. The system provides on-demand high resolution MR images during surgery.

Applicant Information

Applicant Company Name: IMRIS, Inc.
Contact Person: Meir Dahan
Mailing Address: 5101 Shady Oak Road, Minnetonka, MN 55343
Telephone: (763) 203-6306 Email: mdahan@imris.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: April 1, 2015
Title: EVP R&D/CTO Company Name: IMRIS, Inc.

"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: Button Engineering

Name: Martin Button, Ph.D., P.E. California License Number: C 34396

Mailing Address: 4701 Shoal Creek Blvd., Austin, TX 78756

Telephone: (512) 452-0628 Email: martin.button@sbcglobal.net

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): Shake table testing (2011) of earlier model of MR30 / MR15 together with analysis and qualification of differences, in accordance with the Design / Analysis Criteria document accompanying this application.

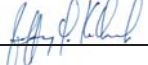
*Use of criteria other than those adopted by the California Building Standards Code, 2013 (CBSC 2013) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC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

- Analysis
- Experience Data
- Combination of Testing, Analysis, and/or Experience Data (Please Specify): Design of typical rail beams and their attachment to the structure will be in accordance with ASCE 7-10 and AISC 341-10.

List of Attachments Supporting the Manufacturer's Certification

- Test Report Drawings Calculations Manufacturer's Catalog
- Other(s) (Please Specify): Design / Analysis Criteria document for OSHPD review and approval. Once the Design / Analysis Criteria is approved, calcs and drawings will be submitted to support the Manufacturer's Certification.

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Signature:  Date: 12-01-2016

Print Name: Jeffrey Kikumoto

Title: SSE

Condition of Approval (if applicable): _____

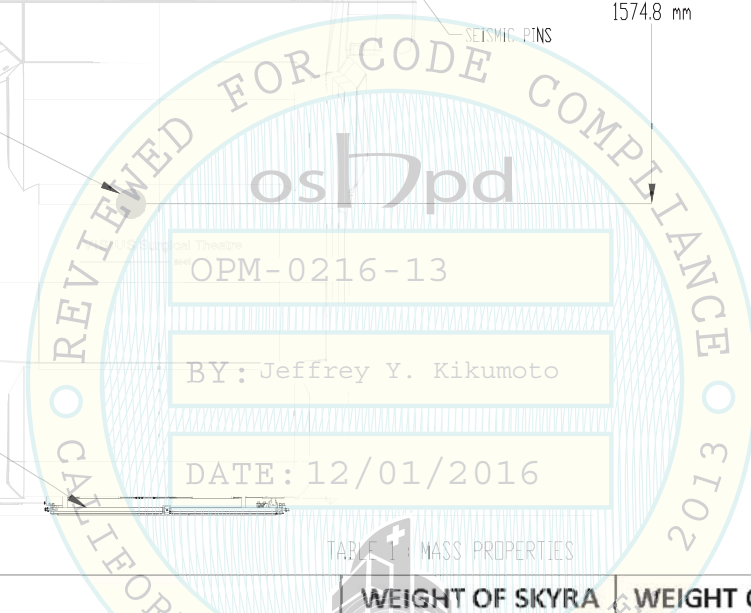
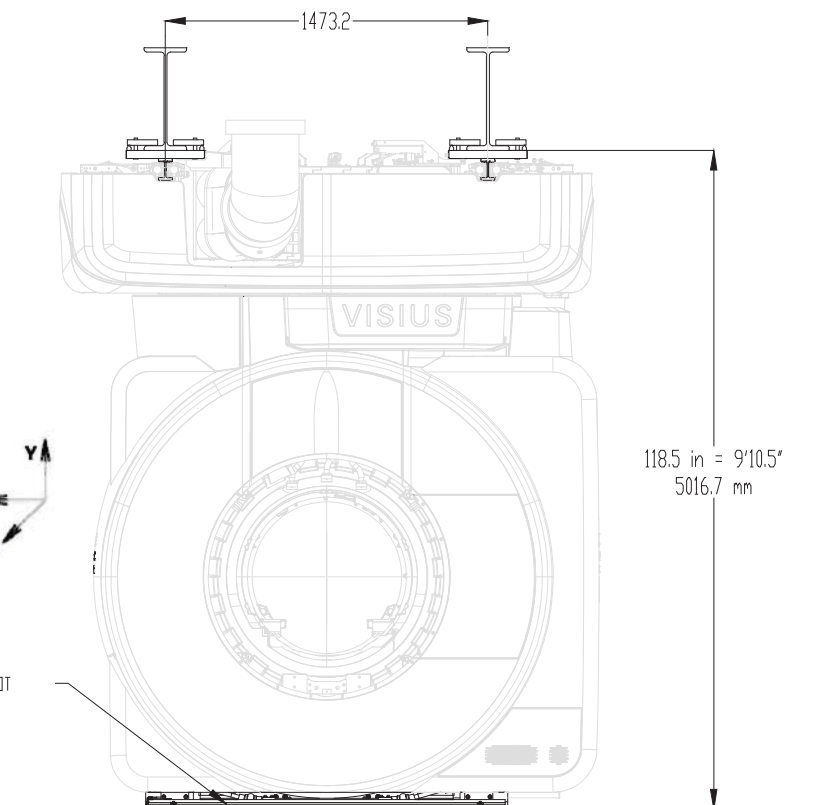
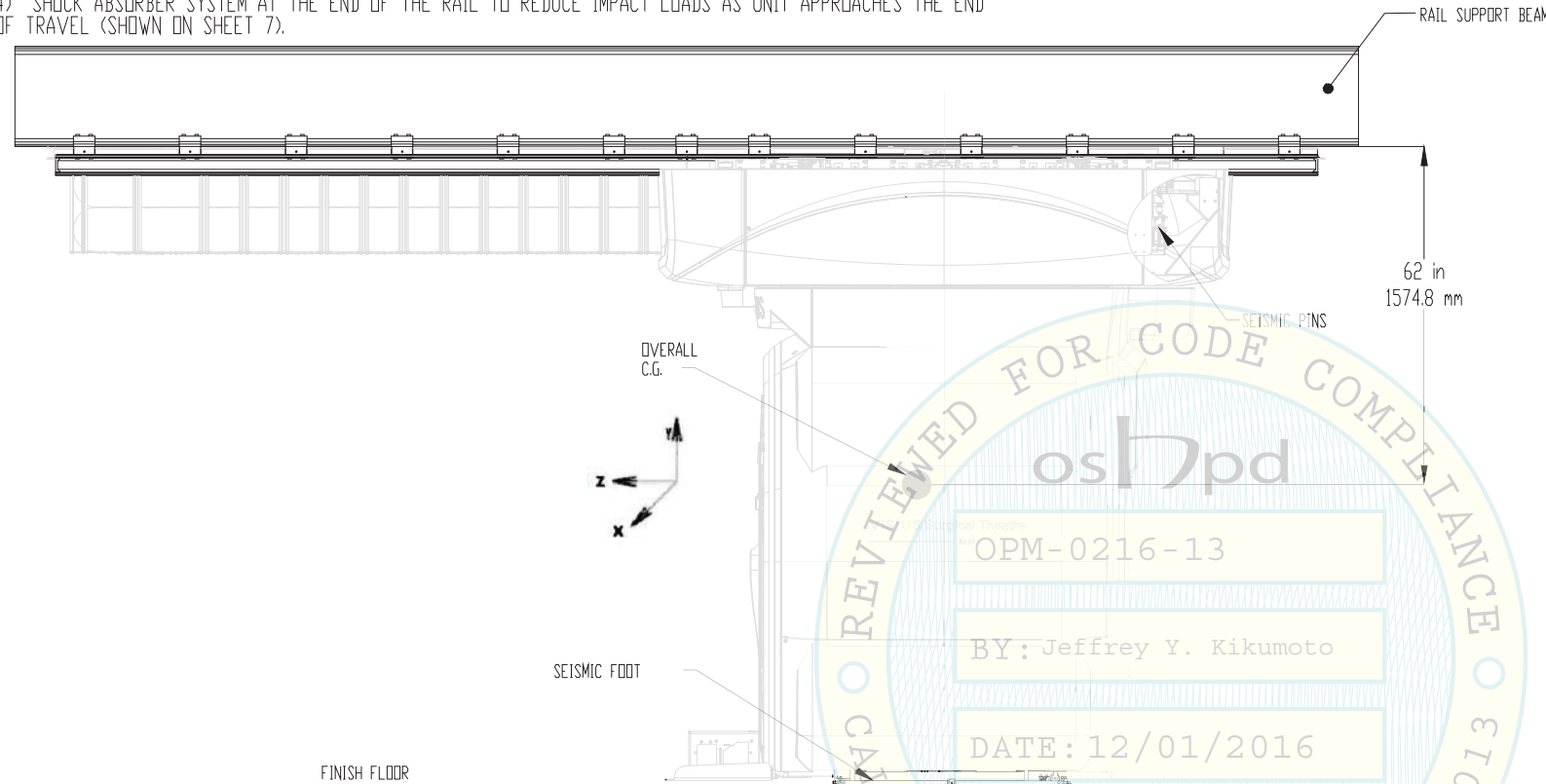
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REV.		ECO	DESCRIPTION	RELEASED BY	DATE	APPROVED	DATE
-	2392		INITIAL PRODUCTION RELEASE	CHE	2016-12-01	BREIMER	2016-12-01

A BRIEF OF SEISMIC MAGNET MOVER (MM) SYSTEM:

- 1) THE OVERHEAD MOUNTED RAILS SUPPORT THE GRAVITY LOAD OF MM SYSTEM TO THE BUILDING STRUCTURE.
- 2) SEISMIC PINS LOCK THE SYSTEM TO THE EACH SIDE OF RAILS DURING SEISMIC EVENT.
- 3) RETRACTABLE SEISMIC FOOT ENGAGES WITH THE FLOOR TO CONTROL THE LATERAL SEISMIC MOTION.
- 4) SHOCK ABSORBER SYSTEM AT THE END OF THE RAIL TO REDUCE IMPACT LOADS AS UNIT APPROACHES THE END OF TRAVEL (SHOWN ON SHEET 7).



GENERAL NOTES:

1) THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2013. THE DEMAND (DESIGN FORCES) FOR USE WITH THE OPM SHALL BE BASED ON CBC 2013.

2) DEERFIELD IMAGING OFFERS TWO MM SYSTEMS, "AERA" (1.5T) WITH 14.9 KIP MOVING LOAD AND "SKYRA" (3.0T) WITH 21.3 KIP MOVING LOAD. ALL LOADING HEREIN ARE BASED ON "SKYRA" MOVING LOAD. THE TRIBUTARY RAIL WEIGHT IS 1.2 KIPS.

3) DEERFIELD IMAGING CERTIFIES THAT BOTH MM SYSTEMS, "SKYRA" AND "AERA" HAVE IDENTICAL KEY STRUCTURAL COMPONENTS SUCH AS:

- a) ALL ATTACHMENT CLAMPS TO THE STRUCTURAL BEAM.
- b) THE RAILS THAT THE SYSTEM TRAVELS ON.
- c) THE PRIMARY HANGER PINS THAT SUSPEND THE SYSTEM.
- d) THE SEISMIC PINS AND SEISMIC FOOT.

4) THIS OPM IS APPLICABLE TO A LOCATION IN THE STATE OF CALIFORNIA WHERE $S_{DS} \leq 1.4g$ AT ANY STORY ($z/h \leq 1.0$), AND ALSO AT LIMITED z/h VALUES ABOVE 1.4g AS SHOWN IN FIGURE 1.

5) FORCES FOR DESIGN OF SUPPORT AND ATTACHMENTS SHOWN ON THE DRAWINGS ARE STRENGTH DESIGN VALUES.

6) UNLESS NOTED OTHERWISE, UNITS ARE IN mm.

TABLE 1 MASS PROPERTIES

	WEIGHT OF SKYRA	WEIGHT OF AERA
MAGNET MOVER [LBS]	5994	5994
MAGNET SYSTEM [LBS]	15264	8938
TOTAL MOVING LOAD [LBS]	21258	14932

- 7) FOR FIGURE 1: VALID REGION IS BELOW AND TO THE LEFT OF THE BLUE LINE.
- 8) RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD (SEOR) ARE SHOWN ON SHEET 2.
- 9) REPRESENTATIVE STRUCTURAL DESIGN FOR SUPPORT AND ATTACHMENTS IS SHOWN STARTING ON SHEET 9.
- 10) REQUIREMENTS FOR FLOOR LOADING IS SHOWN ON SHEET 6.
- 11) SEE SHEET 9 FOR A LIST OF PARAMETERS USED FOR THIS OPM.



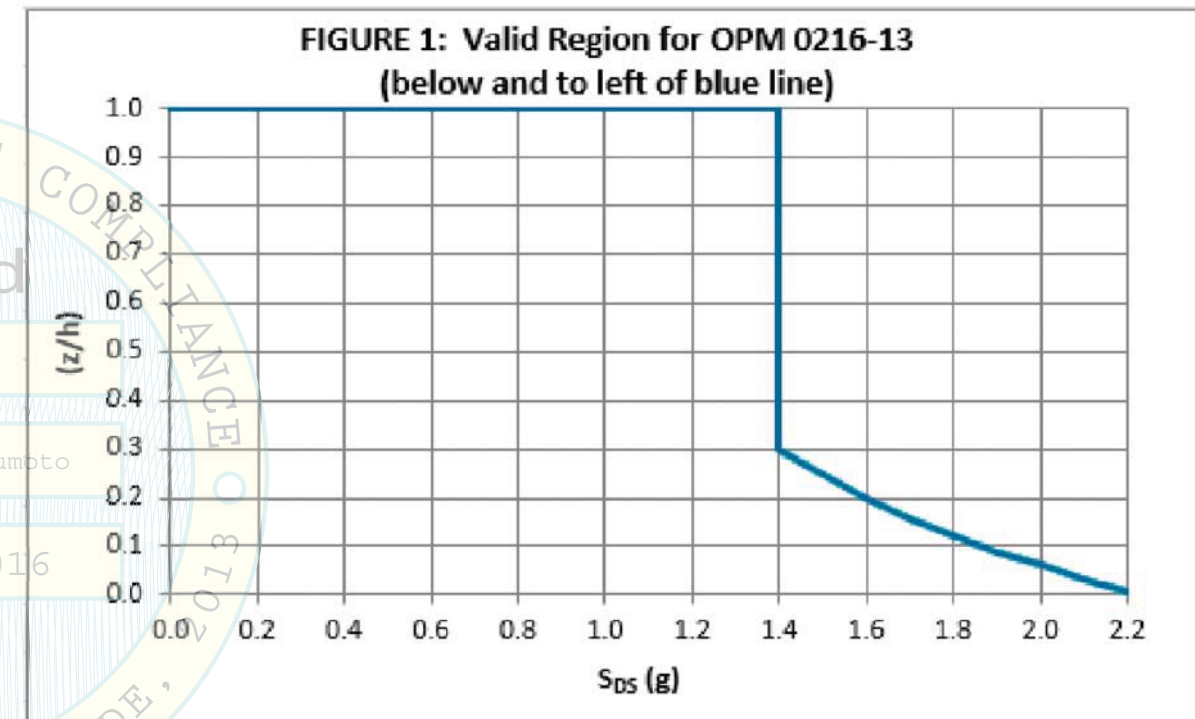
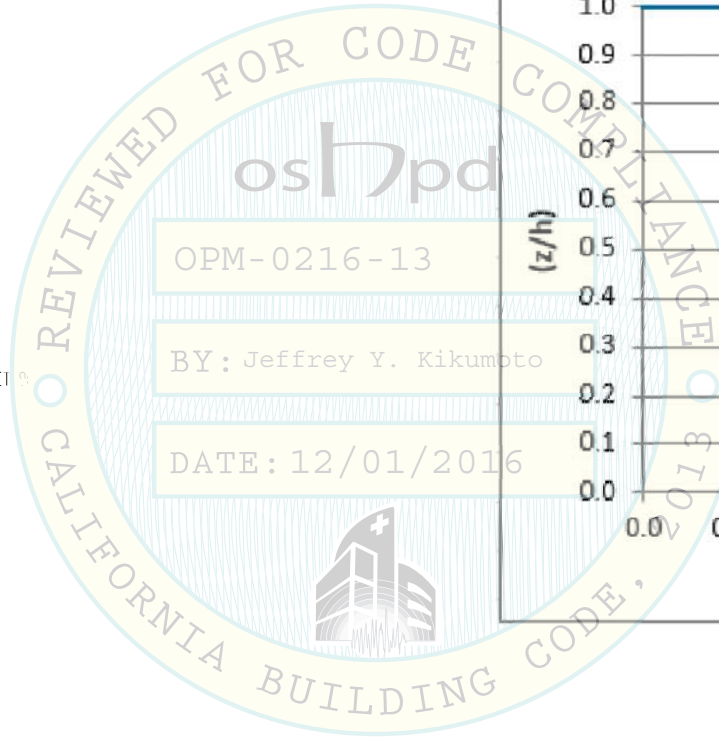
RELEASE	NAME:	YYYY-MM-DD	 5101 Shady Oak Road Minnetonka, MN USA 55343
DRAWN	CHE	2016-01-26	
CHECKED	BREIMER	2016-01-27	
INTERPRET PER Y14.5M-2009 DRAWING STANDARDS AT TIME OF RELEASE STANDARDS AVAILABLE UPON REQUEST			TITLE:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF IMRIS INC. AND ANY REPRODUCTION OF THE CONTENTS IN THIS DRAWING IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF IMRIS INC. IS PROHIBITED.			SKYRA & AERA MM SYSTEM SEISMIC INTERFACE SPEC
SIZE	DRAWING:	119200-000	REV
B	CAD:	SOLIDWORKS	-
DO NOT SCALE		SHEET:	1 OF 13

RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD (SEOR):

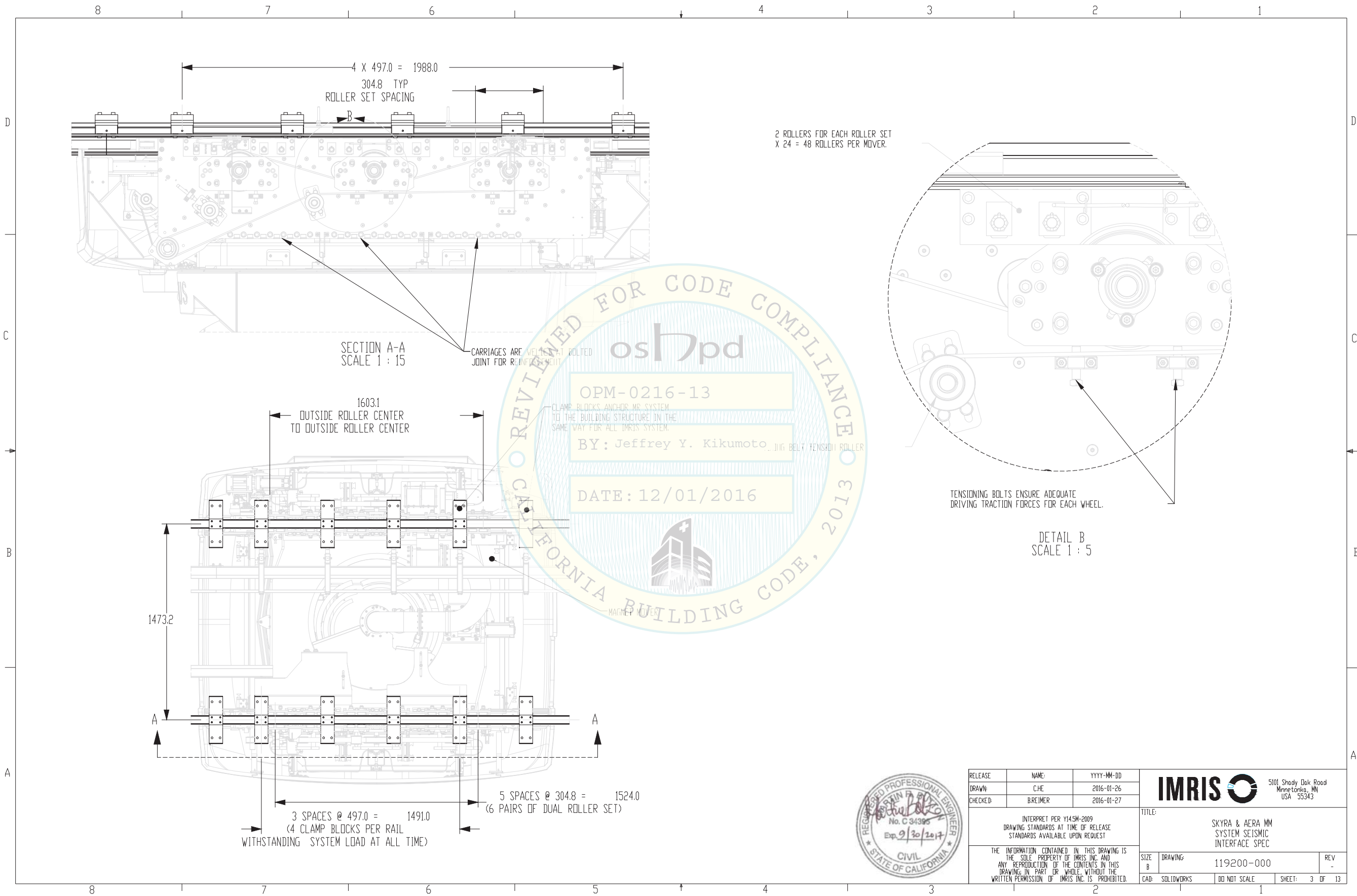
- 1) VERIFY THE INSTALLATION IS SUCH THAT S_{DS} LIES IN THE VALID REGION OF FIGURE 1.
- 2) CHECK THAT THE BUILDING CONFIGURATION IS SUCH THAT THE LIMITS OF APPLICABILITY FOR THE REPRESENTATIVE SUPPORTS AND ATTACHMENTS DESIGN PROVIDED WITH THIS OPM ARE MET.
- 3) IF THE LIMITS OF THE APPLICABILITY FOR THE SUPPORTS AND ATTACHMENTS ARE MET, VERIFY THAT THE STRUCTURE IS ADEQUATE FOR THE FORCES EXERTED ON IT AT THE ATTACHMENTS POINTS, AS DEFINED IN THIS OPM.
- 4) IF THE LIMITS OF APPLICABILITY FOR SUPPORTS AND ATTACHMENTS ARE NOT MET, DESIGN THE SUPPORTS AND ATTACHMENTS (1) ACCORDING TO THE SEISMIC PARAMETERS LISTED ON SHEET 8 AND (2) FOR DEFLECTION CRITERIA PROVIDED BY IMRIS AND VERIFY THAT THE STRUCTURE IS ADEQUATE FOR THE FORCES EXERTED ON IT AT THE ATTACHMENT POINTS.
- 5) CHECK THE DEFLECTION OF THE BASE STRUCTURE CAUSED BY THE MOVING LOADS.
- 6) DESIGN FOR THE VERTICAL SEISMIC FORCE ON THE FLOOR BELOW THE MM, AS LISTED IN THE NOTE AT THE TOP OF SHEET 6 OF THIS OPM.
- 7) VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2013 CBC AND THE DETAILS SHOWN ON THIS OPM. VERIFY THAT THE EQUIPMENT'S ACTUAL WEIGHT, MASS PROPERTIES, ANCHOR LOCATIONS, AND DETAILS OF MATERIAL AND THICKNESS OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH INFORMATION SHOWN IN THIS OPM.

LIMITS OF APPLICABILITY FOR REPRESENTATIVE SUPPORTS AND ATTACHMENTS DESIGN SHOWN STARTING ON SHEET 8:

- 1) $(z/h) \leq 1$
- 2) S_{DS} LIES IN THE VALID REGION OF FIGURE 1.
- 3) COLUMN SPACING $\leq 30'-0"$ IN BOTH HORIZONTAL DIRECTIONS.
- 4) DISTANCE FROM TOP OF FLOOR SLAB TO SLAB SOFFIT ABOVE $\leq 16'-7.5"$.
- 5) THE BRACE ANGLE WITH THE HORIZONTAL, θ , SHALL BE IN THE RANGE OF $45^\circ \leq \theta \leq 60^\circ$.
- 6) SPACING OF FLOOR FRAMING BEAMS $\leq 10'-0"$.
- 7) RAIL BEAMS SHALL BE CENTERED BETWEEN FLOOR FRAMING BEAMS ABOVE.
- 8) THE PARKED POSITION SHALL BE $12'-4\frac{3}{4}" \pm 4\frac{3}{4}"$ FROM THE NEAREST COLUMN LINE.
- 9) THE CENTERLINE OF THE RAIL BEAM NOTCH FOR THE PARTITION SHALL BE $2'-0"$ FROM THE NEAREST COLUMN LINE. THE NOTCH SHALL BE NO LONGER THAN 10 INCHES AND NO DEEPER THAN 10 INCHES.
- 10) THE MM INSTALLATION SHALL BE A TWO-ROOM CONFIGURATION. THREE-ROOM CONFIGURATIONS REQUIRE CUSTOM SUPPORTS AND ATTACHMENTS DESIGN.



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SIZE	DRAWING:	119200-000	REV
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2 ROLLERS FOR EACH ROLLER SET
X 24 = 48 ROLLERS PER MOVER.

SECTION A-A
SCALE 1 : 15

CARRIAGES ARE WELDED AT BOLTED
JOINT FOR REINFORCEMENT

CLAMP BLOCKS ANCHOR MR SYSTEM
TO THE BUILDING STRUCTURE IN THE
SAME WAY FOR ALL IMRIS SYSTEM.

DATE: 12/01/2016


TENSIONING BOLTS ENSURE ADEQUATE
DRIVING TRACTION FORCES FOR EACH WHEEL.

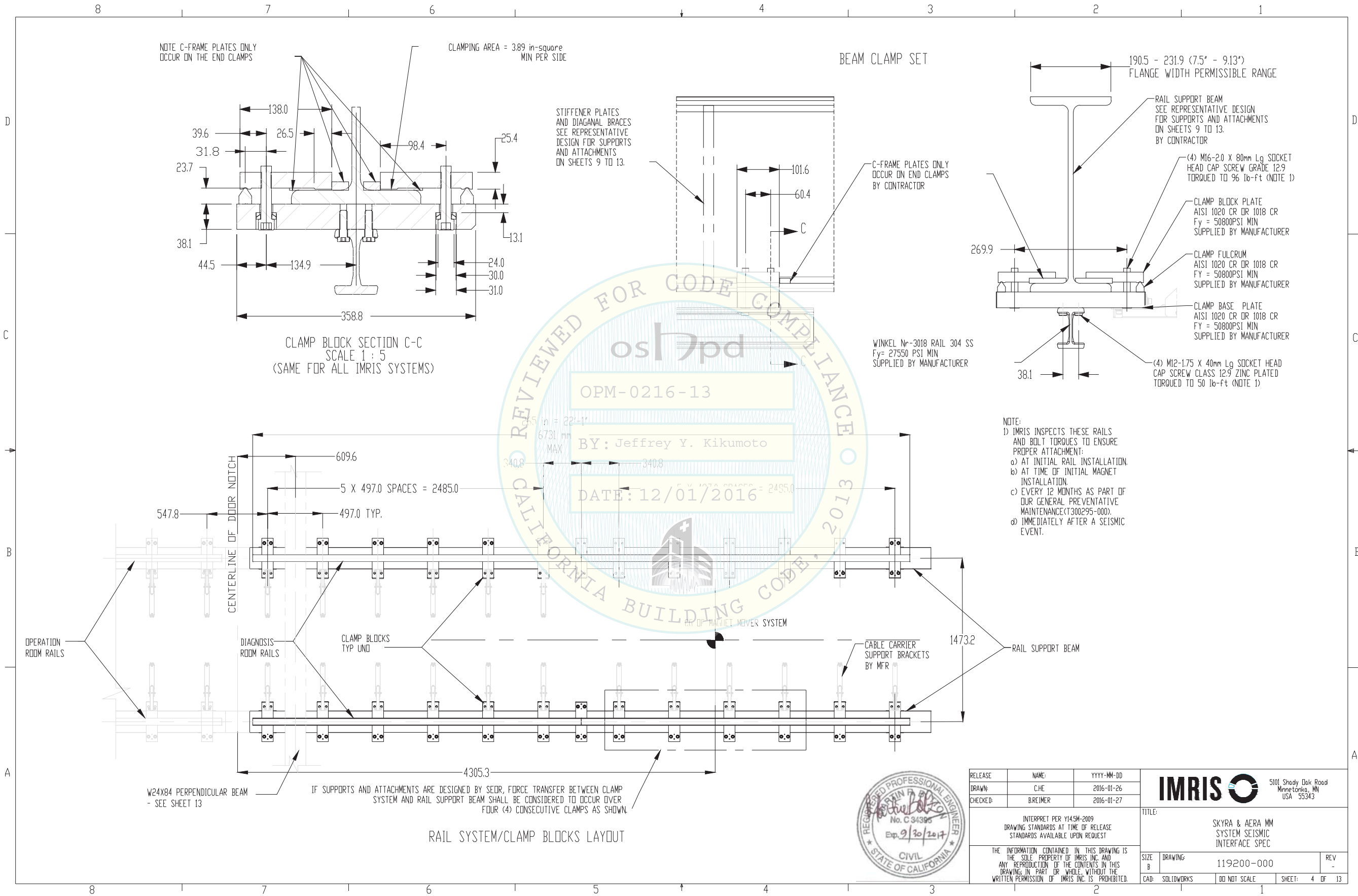
DETAIL B
SCALE 1 : 5

1473.2

3 SPACES @ 497.0 = 1491.0
(4 CLAMP BLOCKS PER RAIL
WITHSTANDING SYSTEM LOAD AT ALL TIME)

5 SPACES @ 304.8 = 1524.0
(6 PAIRS OF DUAL ROLLER SET)

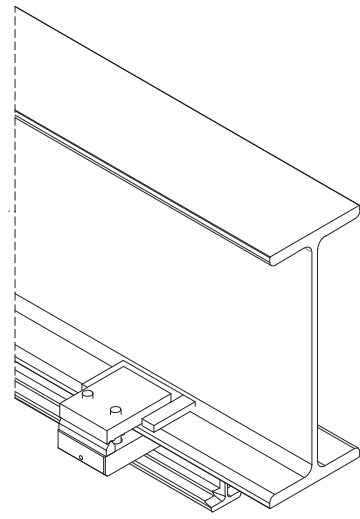
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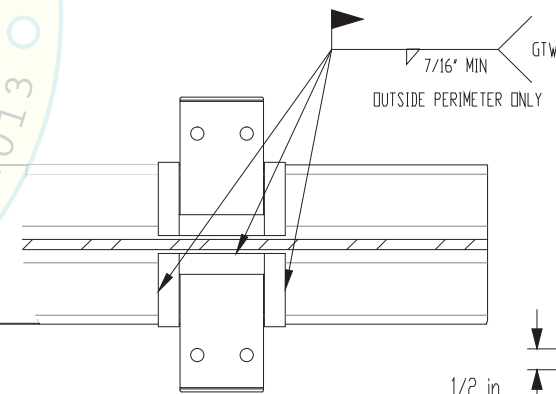
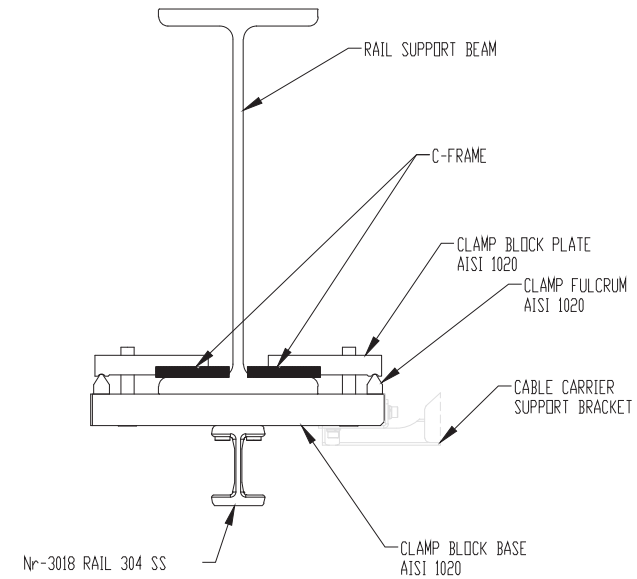
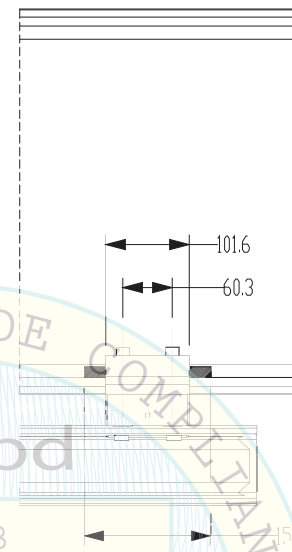
C-FRAME WELDED TO RAIL SUPPORT BEAM AT RAIL ENDS TO PREVENT MOVEMENT

NOTES:

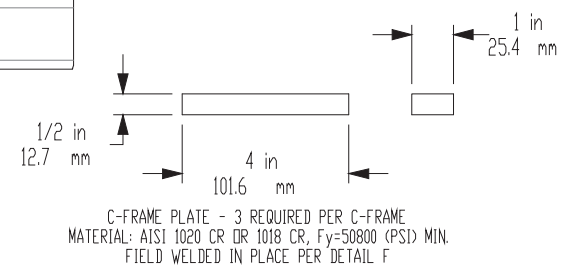
- 1) C-FRAMES ARE ADDED TO THE ENDS OF EACH RAIL LENGTH TO PREVENT ANY SLIPPAGE OF THE RAILS DURING A SEISMIC EVENT.
- 2) QTY 3 PER APPLIED CLAMP BLOCK, 1/2"x1"x4" FLAT BARS MAKE UP ONE C-FRAME AND ARE SUPPLIED BY CONTRACTOR. MATERIAL: AISI 1020 CR OR 1018 CR. Fy=50800 (PSI) MIN.
- 3) QTY OF 48 FLAT BARS (PER NOTE 2) ARE REQUIRED FOR AN IMRIS 2 ROOM INSTALLATION (MAKES 16 C-FRAMES) AND QTY OF 72 FLAT BARS FOR A IMRIS 3 ROOM IN (MAKES 24 C-FRAMES).
- 4) THE C-FRAMES ARE INSTALLED (BY CONTRACTOR) AFTER THE IMRIS RAIL SYSTEM IS INSTALLED AND LEVELED.
- 5) THE 3 FLAT BARS ARE PLACED AROUND THE PERIMETER OF THE RAILS CLAMP PLATE AS SHOWN. THE INSIDE PERIMETER OF THE FLAT BAR MUST TOUCH THE RAIL CLAMP PLATE.
- 6) FIELD WELDING (DONE BY CONTRACTOR): WELDING IS DONE ONLY ON THE OUTSIDE PERIMETER BETWEEN THE FLAT BARS AND THE BUILDING STRUCTURAL STEEL. NO WELDING IS TO BE DONE BETWEEN THE FLAT BARS AND THE RAIL CLAMP PLATE WHICH ALLOWS THESE CLAMPS TO BE REPLACED.



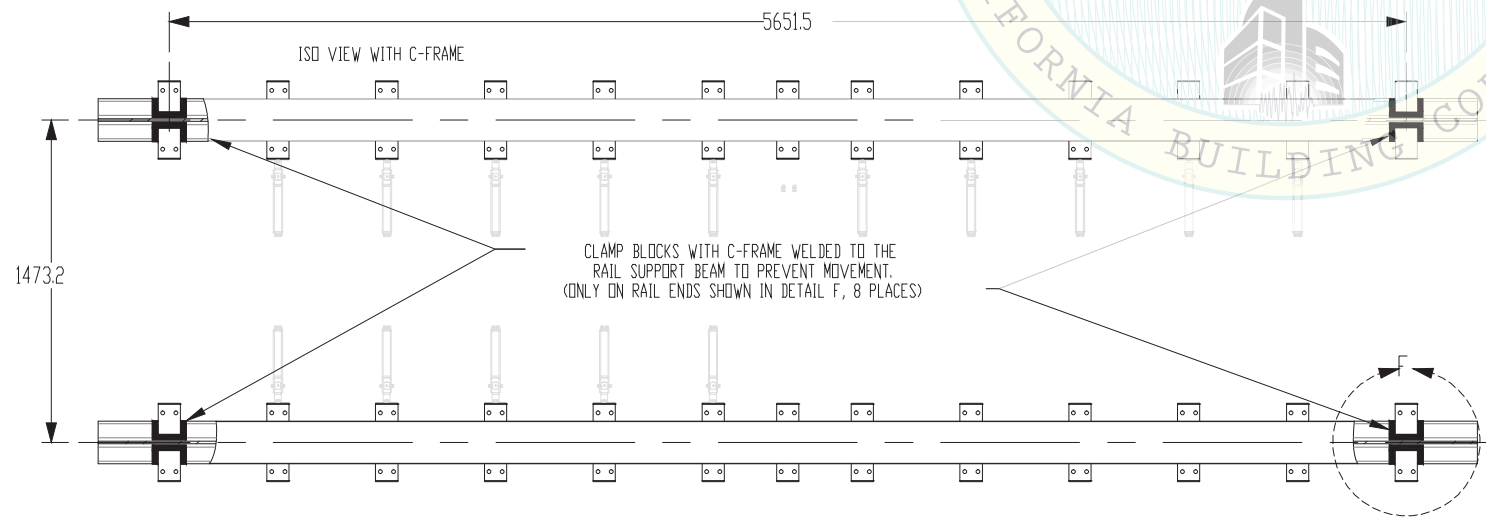
ISO VIEW WITH C-FRAME



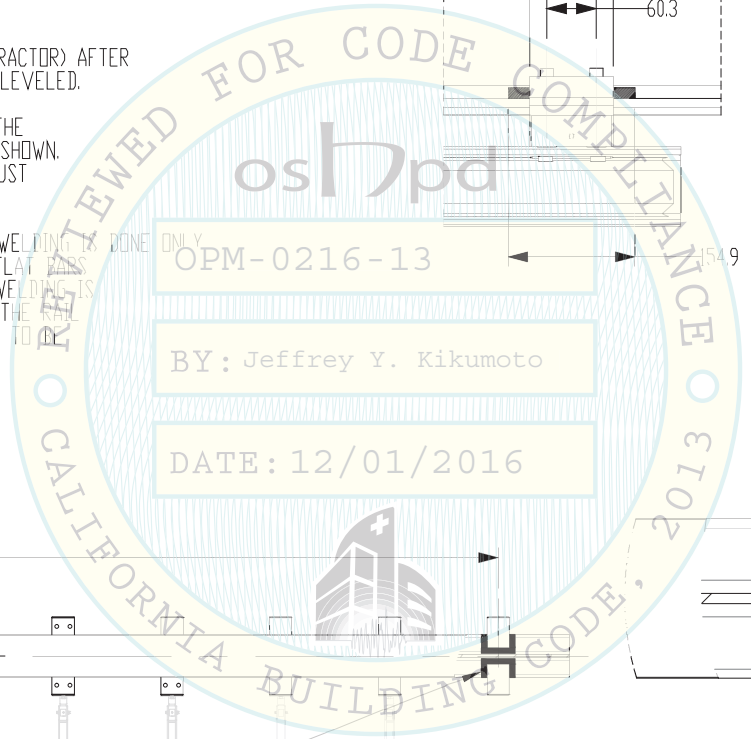
DETAIL F
SCALE 1 : 8



C-FRAME PLATE - 3 REQUIRED PER C-FRAME
MATERIAL: AISI 1020 CR OR 1018 CR, Fy=50800 (PSI) MIN.
FIELD WELDED IN PLACE PER DETAIL F



C-FRAMES LAYOUT FOR ALL FIRST CLAMP BLOCKS AT THE END OF RAILS



OPM-0216-13

BY: Jeffrey Y. Kikumoto

DATE: 12/01/2016



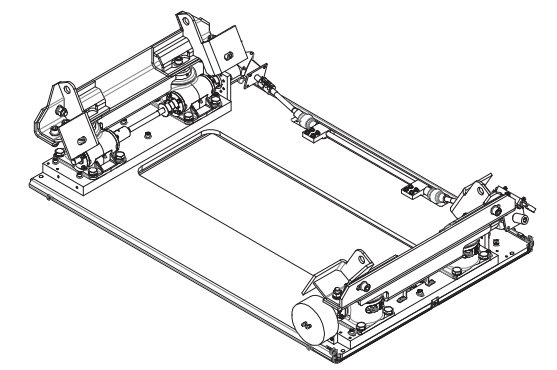
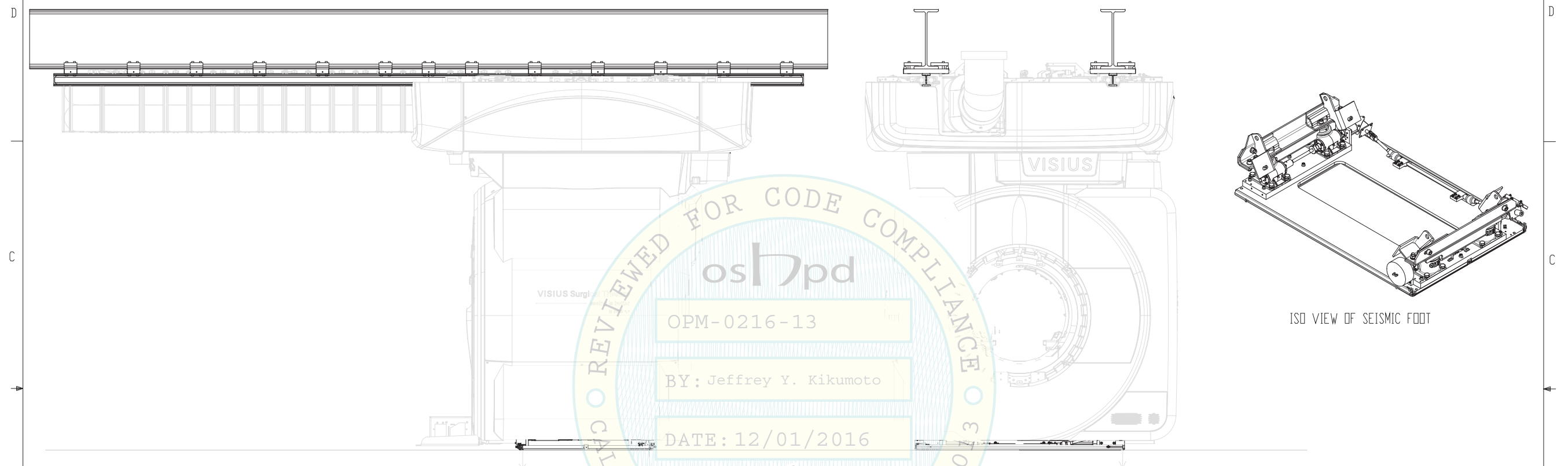
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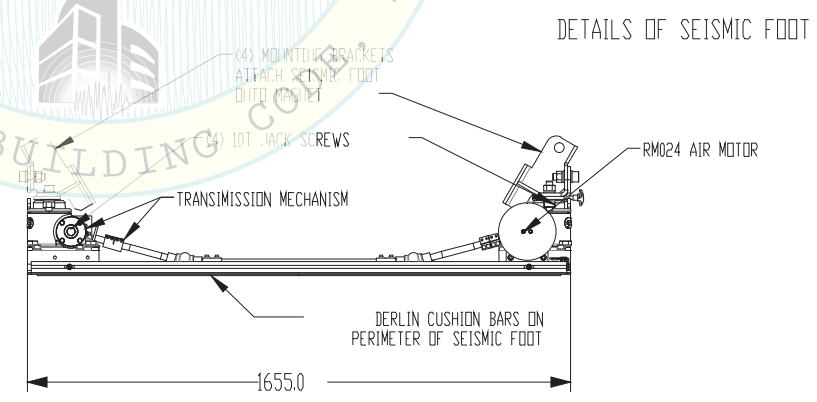
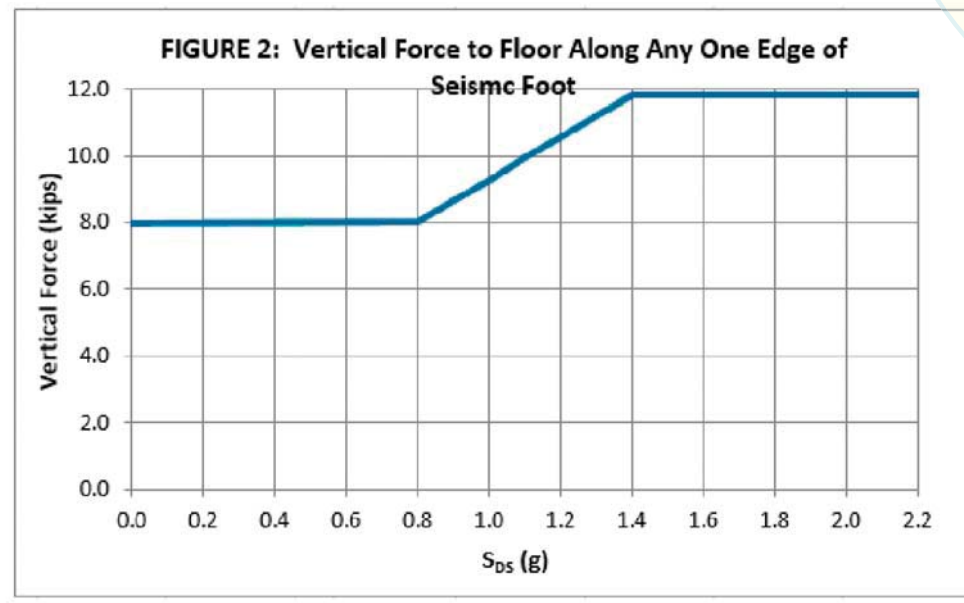
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		TITLE: SKYRA & AERA MM SYSTEM SEISMIC INTERFACE SPEC	
SIZE	DRAWING:	119200-000	REV
CAD: SOLIDWORKS	DO NOT SCALE	SHEET: 5	OF 13

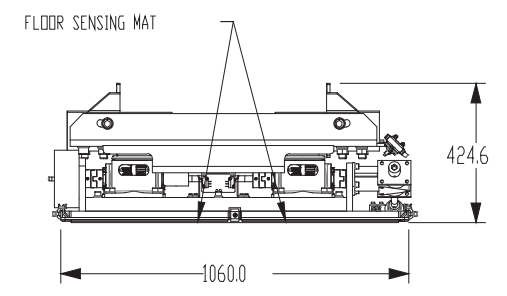
SEISMIC LOAD TRANSFER TO FLOOR: THE IMRIS SYSTEM INCLUDES A MECHANISM THAT LOWERS A SEISMIC FOOT AUTOMATICALLY ONTO THE FLOOR DIRECTLY BENEATH THE MR AT ALL ITS IMAGING POSITIONS. THIS SYSTEM INCLUDES A FEEDBACK LOOP/CONTACT SENSOR THAT ENSURES IT WILL STOP AS SOON AS IT COMES IN CONTACT WITH THE FLOOR WITH ZERO GAP AND VERTICAL LOAD TRANSFER OF <100 lbs. IT WILL NOT SUPPORT THE GRAVITY LOAD OF THE SYSTEM. THE PURPOSE OF SEISMIC FOOT IS TO REDUCE THE PENDULUM/ROCKING EFFECT OF THE SYSTEM DURING A SEISMIC EVENT. THE FLOOR-FOOT INTERFACE IS AN DERLIN PAD WITH A COEFFICIENT OF FRICTION, $\mu=0.5$. DURING A SEISMIC EVENT, THE SEISMIC FOOT INDUCES MAX. VERTICAL FORCE ALONG ANY ONE OF THE 4 FOOT EDGES AT ANY TIME AS A RESULT OF THE ROCKING ACTION. THE VERTICAL FORCE IS A FUNCTION OF S_{ds} : $F(\text{kIPS}) = 2.9 + 6.4 S_{ds} \leq 8.0$ KIPS. IT IS THE RESPONSIBILITY OF THE SEOR TO DESIGN THE FLOOR TO THIS LOADING. SEE FIGURE 2. THE PAD WILL BE RAISED NORMALLY 2" TO ALLOW MOVEMENT OF THE SYSTEM BETWEEN IMAGING LOCATIONS.



ISO VIEW OF SEISMIC FOOT



DETAILS OF SEISMIC FOOT



FLOOR SENSING MAT

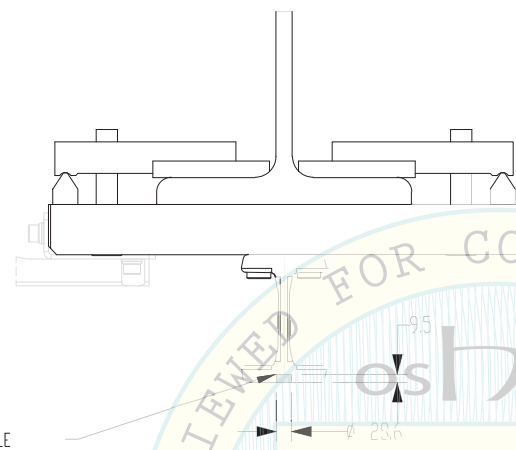
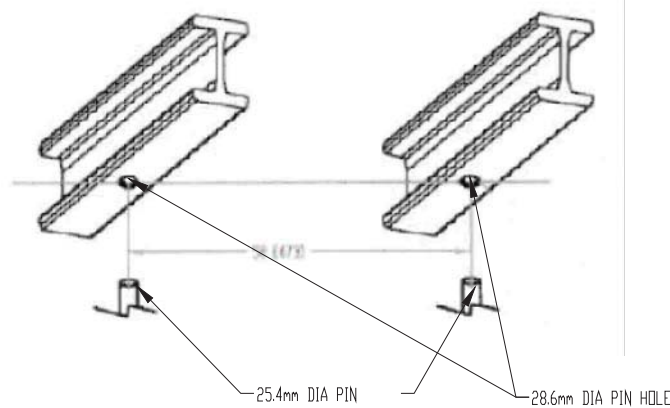


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8 7 6 4 3 2 1

SEISMIC PIN/RAIL LOCKING SYSTEM
(INTERNAL TO THE SUPPLIED IMRIS MOVER SYSTEM)

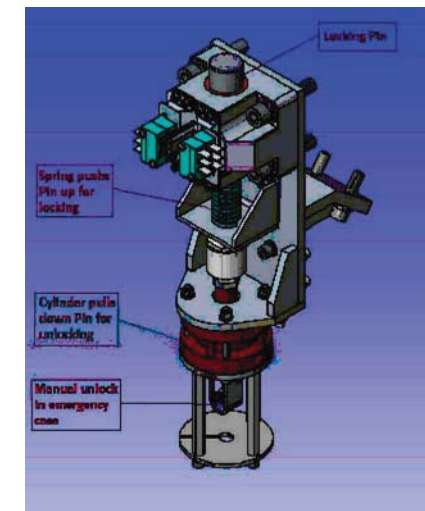
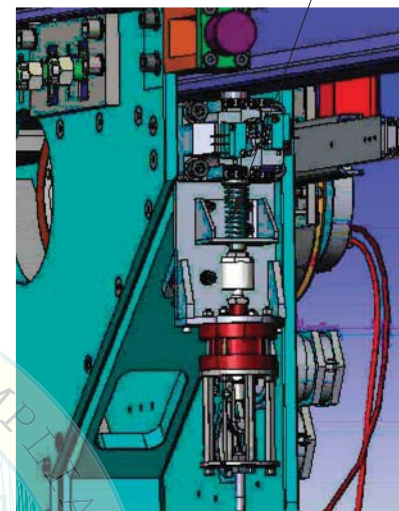
ISO VIEW (from floor looking up)



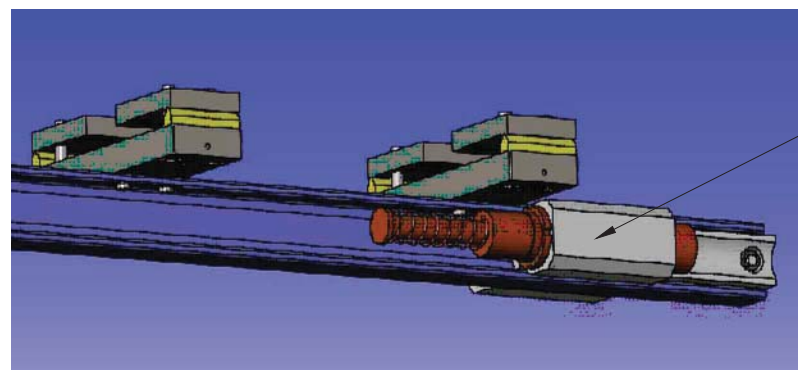
TWO 25.4mm DIA PINS, PART OF THE IMRIS MAGNET MOVER SYSTEM, ARE BEING RAISED INTO
Ø28.6mm X 9.5mm DEEP COUNTERBORES ON IMRIS MM RAILS TO LOCK THE SYSTEM TO THE RAILS.

NOTE: 28.6mm DIAMETER PIN HOLE ARE MACHINED AT EACH IMAGING POSITION IN THE FIELD BY
MANUFACTURER'S PERSONNEL TO ACCOUNT SITE CONSTRUCTION TOLERANCES.

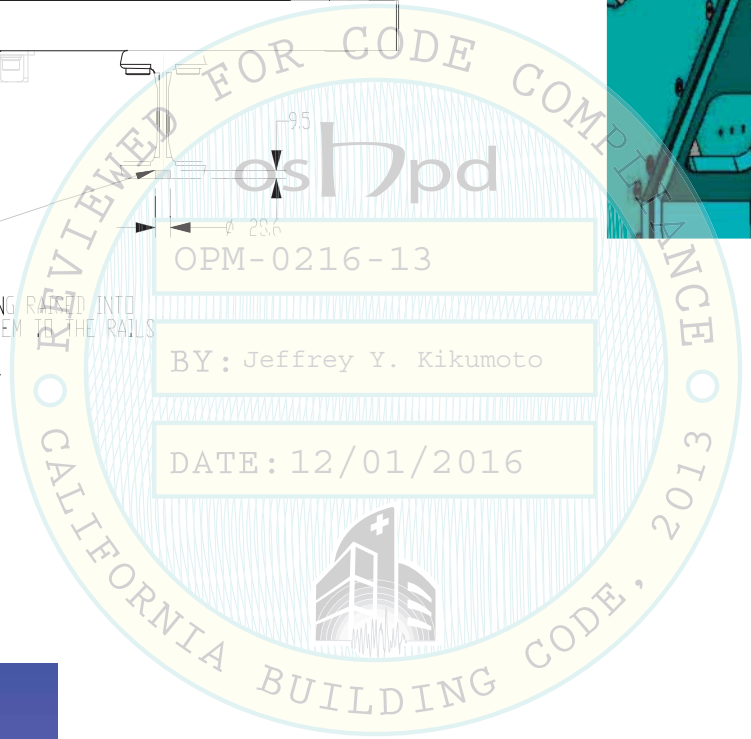
SEISMIC PIN UNIT
ATTACHED ON MOVER



SHOCK ABSORBER SYSTEM



SHOCK ABSORBERS
ON THE BOTH SIDES OF THE RAIL
EACH RAIL, EACH END OF THE SYSTEM



OPM-0216-13

BY: Jeffrey Y. Kikumoto

DATE: 12/01/2016



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SKYRA & AERA MM
SYSTEM SEISMIC
INTERFACE SPEC

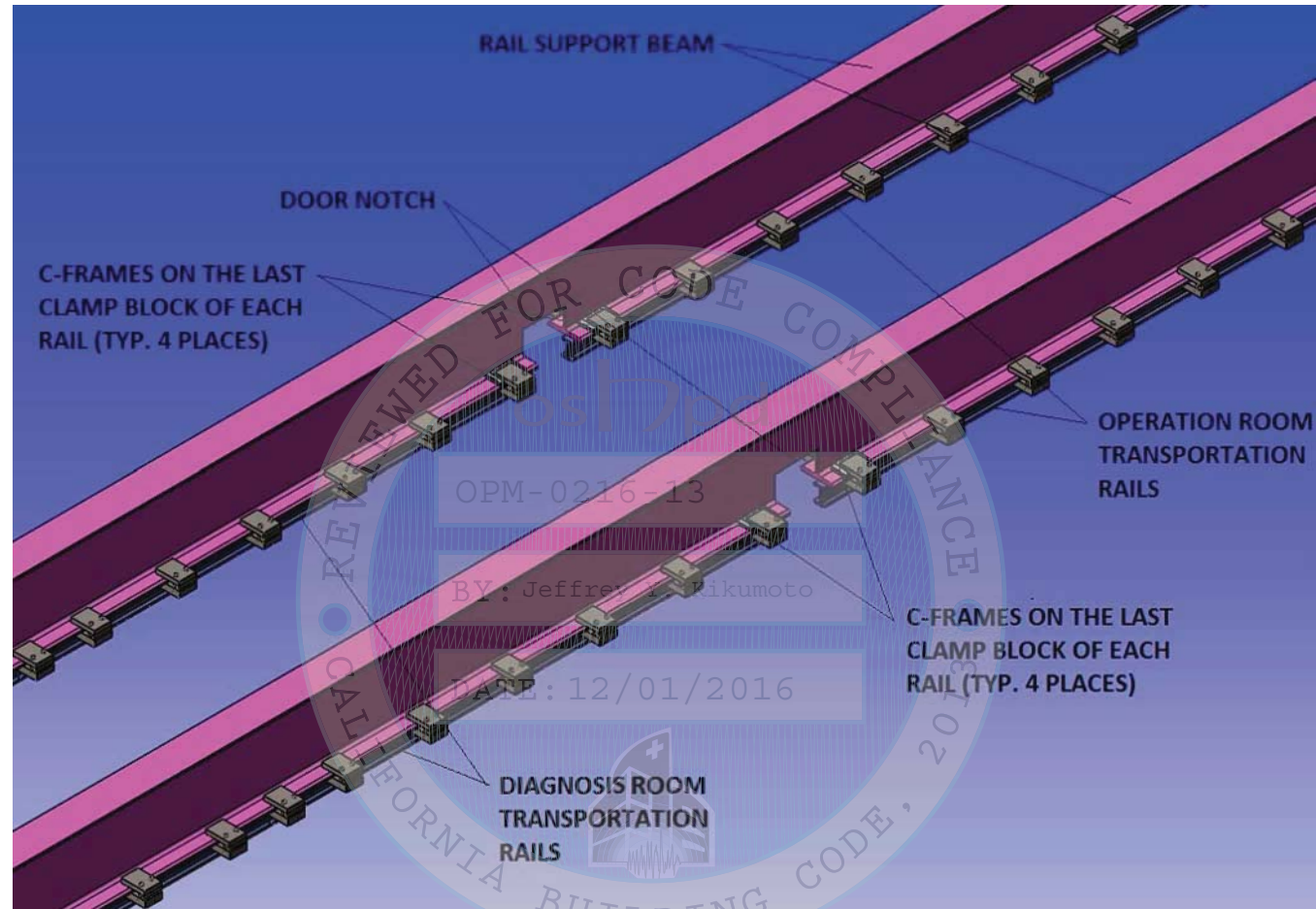
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8 7 6 5 4 3 2 1

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RAIL SYSTEM FOR TWO ROOM CONFIGURATION



NOTE:
 FOR A TWO ROOM CONFIGURATION THERE ARE TWO SEPERATE SETS OF RAILS, ONE SET IN THE OPERATION ROOM AND ONE SET IN THE DIAGNOSIS ROOM, SEPERATED BY THE DOOR NOTCH. THIS SCHEMATIC VIEW IS PROVIDED FOR OVERALL CONFIGURATION PURPOSES ONLY AND NOT ALL OF THE REPRESENTATIVE SUPPORTS AND ATTACHMENT MEMBERS OR DETAILS ARE SHOWN. COMPLETE DETAILS OF REPRESENTATIVE SUPPORTS AND ATTACHMENTS ARE PROVIDED ON SHEET 9 THROUGH 13. THE TWO SEPERATE SETS OF RAILS ARE INDICATED WITH DASHED LINES IN 3/S402 (SHEET 13).



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 SYSTEM SEISMIC
 INTERFACE SPEC

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SIZE	DRAWING	119200-000	REV
B			-
CAD	SOLIDWORKS	DO NOT SCALE	SHEET: 8 OF 13

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REVISIONS						
REV.	ECO	DESCRIPTION	DESIGN BY	DATE	APPROVED	DATE
-	-	-	-	-	-	-

GENERAL NOTES

DESIGN BASIS

A. EQUIPMENT SUPPORT ASCE 7-10 EQ. 13.3-1
 $F_{ph} = \frac{0.4 \cdot a_p \cdot S_{ps} \cdot W_p \cdot (1+2z/h)}{(R_p/l_p)}$ $a_p = 3.125$
 $S_{ps} \leq 1.4$ SEE FIG.1 (SHT 2 OF 12) SHEET 2
 $F_{ph} = 144.4 \text{ kips}$ $z/h \leq 1$
 $F_{pv} = \pm 0.2 \cdot 1.25 \cdot S_{ps} \cdot W_p = 7.86 \text{ kips}$ $R_p = 2.5$
 $W_p = 22.45 \text{ kips}$ FOR SKYRA, Loads to Structure are based on SKYRA WT. $l_p = 1.5$
 $W_p = 23.41 \text{ kips}$ Support Structure over 2 bays

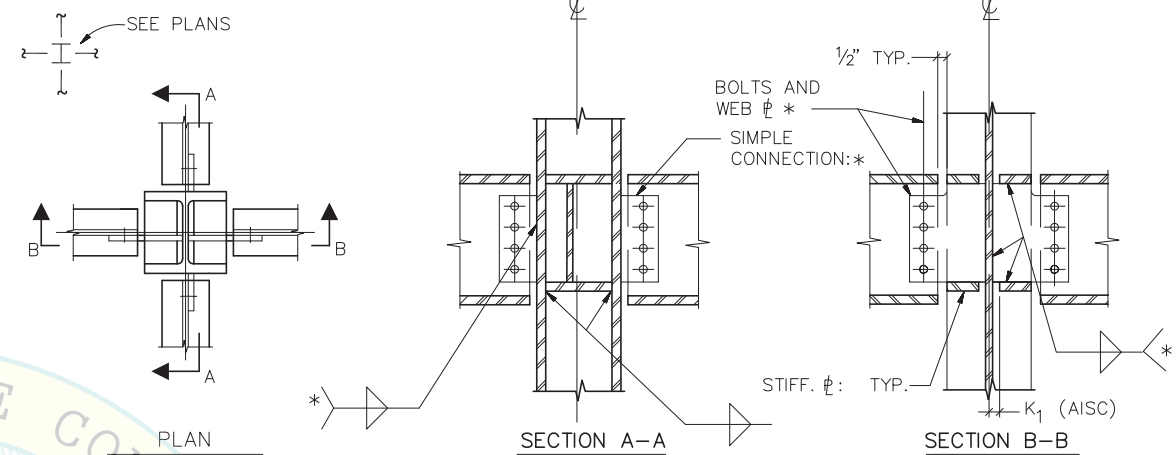
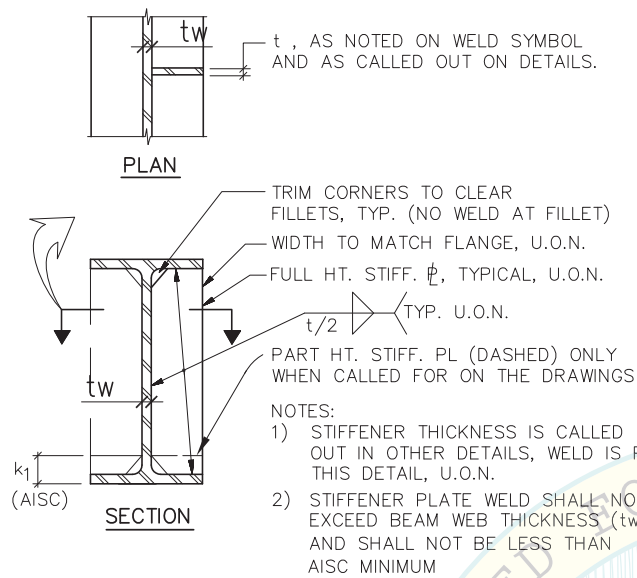
ASCE 7-10 PARAMETERS RAIL BEAM DESIGN (Eq. 13.3-1)

APPLY 100% OF HORIZONTAL FORCES IN ONE DIRECTION +30% OF THE HORIZONTAL FORCES IN THE ORTHOGONAL DIRECTION TOGETHER WITH THE VERTICAL SEISMIC FORCE. STRESSES MUST BE LESS THAN YIELD.

TO USE SUPPORTS AND ATTACHMENTS INDICATED HEREIN THE BASE STRUCTURE MUST MEET THE DESIGN BASIS AND OTHER PARAMETERS INCLUDING DIMENSIONS OF THE BASE STRUCTURE INDICATED ON THE FOLLOWING DRAWINGS. ALSO SEE LIMITS OF APPLICABILITY ON SHEET 2.

STRUCTURAL STEEL

A. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING:
 PLATES ASTM A572, GR:50
 WF SHAPES ASTM A572, GR:50
 CHANNELS & ANGLES ASTM A36



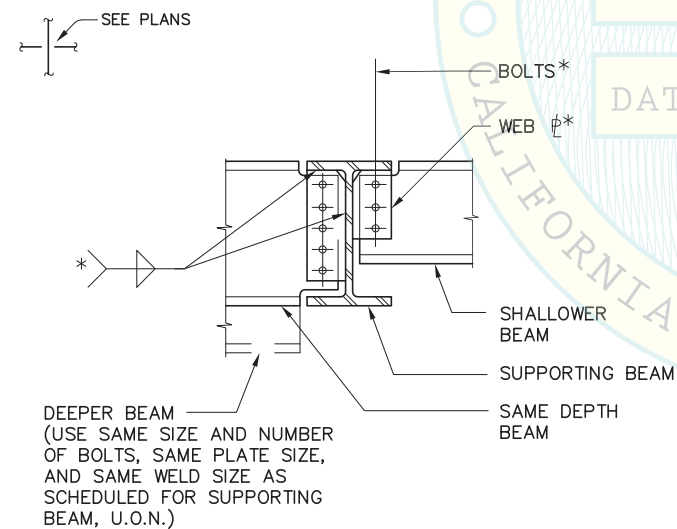
*NOTE: SEE CONNECTION SCHEDULE 1

TYP BEAM WEB STIFFENER PLATE DETAILS

NTS

TYP BEAM TO COLUMN CONNECTION

NTS



*NOTE: SEE CONNECTION SCHEDULE 1

TYP BEAM TO BEAM CONNECTION

NTS

BEAM WEB CONNECTION SCHEDULE

NTS

BEAM SIZE	NO. OF BOLTS	BOLT DIAM.	MIN. TOP OF BM. TO 1st. BOLT	WEB φ THICKNESS	WEB φ WELD	ALLOWABLE VERTICAL LOAD	REMARKS
W8	2	7/8"φ	2 1/2"	3/8"	1/4"		
W10	2	7/8"φ	3"	3/8"	1/4"		
W12, W14	3	7/8"φ	3"	3/8"	5/16"		
W16, W18	4	7/8"φ	3"	3/8"	5/16"		
W21	5	7/8"φ	4 1/2"	1/2"	5/16"		
W24	6	7/8"φ	4 1/2"	1/2"	5/16"		

1. WELDING FOR WEB φ SHALL BE AS SHOWN IN THE SCHEDULE, BUT NOT SMALLER THAN THE AISC MINIMUM WELD THICKNESS.
2. USE A325-N BOLTS TYPICAL, U.O.N. ALL BOLTS SHALL BE TENSIONED SNUG TIGHT UNLESS SHOWN OTHERWISE IN DETAILS.
3. WELDED ATTACHMENT TO STEEL BEAMS AND COLUMNS SHALL NOT BE PLACED WITHIN THE PROTECTED ZONE AS DEFINED IN AISC 341.



SKYRA & AERA MM SYSTEM REPRESENTATIVE DESIGN for SUPPORT & ATTACHMENT

ORIGINAL RELEASE	NAME	YY/MM/DD
DRAWN BY: DA	DA	1/26/16
CHECKED BY: DM	DM	1/27/16
MATERIAL:	NA	
APPROX. WEIGHT:	NA	
FINISH:	NA	
DIMENSIONS AND TOLERANCES AS PER CURRENT IMRIS DRAWING STANDARDS AT TIME OF RELEASE. STANDARDS AVAILABLE UPON REQUEST.		



GENERAL NOTES
TYPICAL DETAILS

SIZE DWG NO.	S01	REV	1
CAD: AUTOCAD	SCALE: NTS	SHT.	9 OF 13

ITEM	QTY	PART NO.	DESCRIPTION
1	-	-	-
2	-	-	-
3	-	-	-

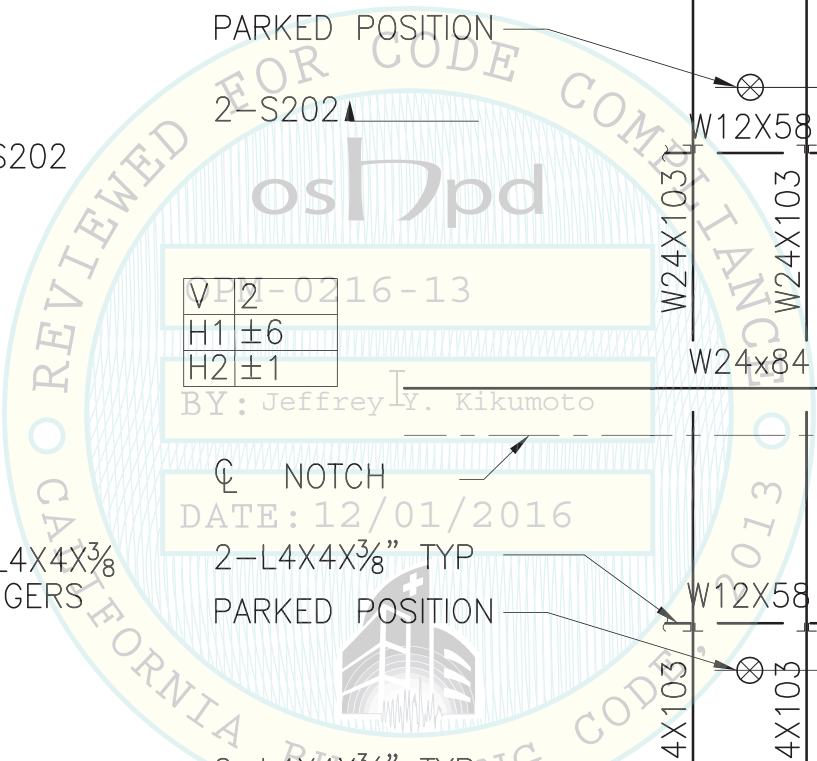
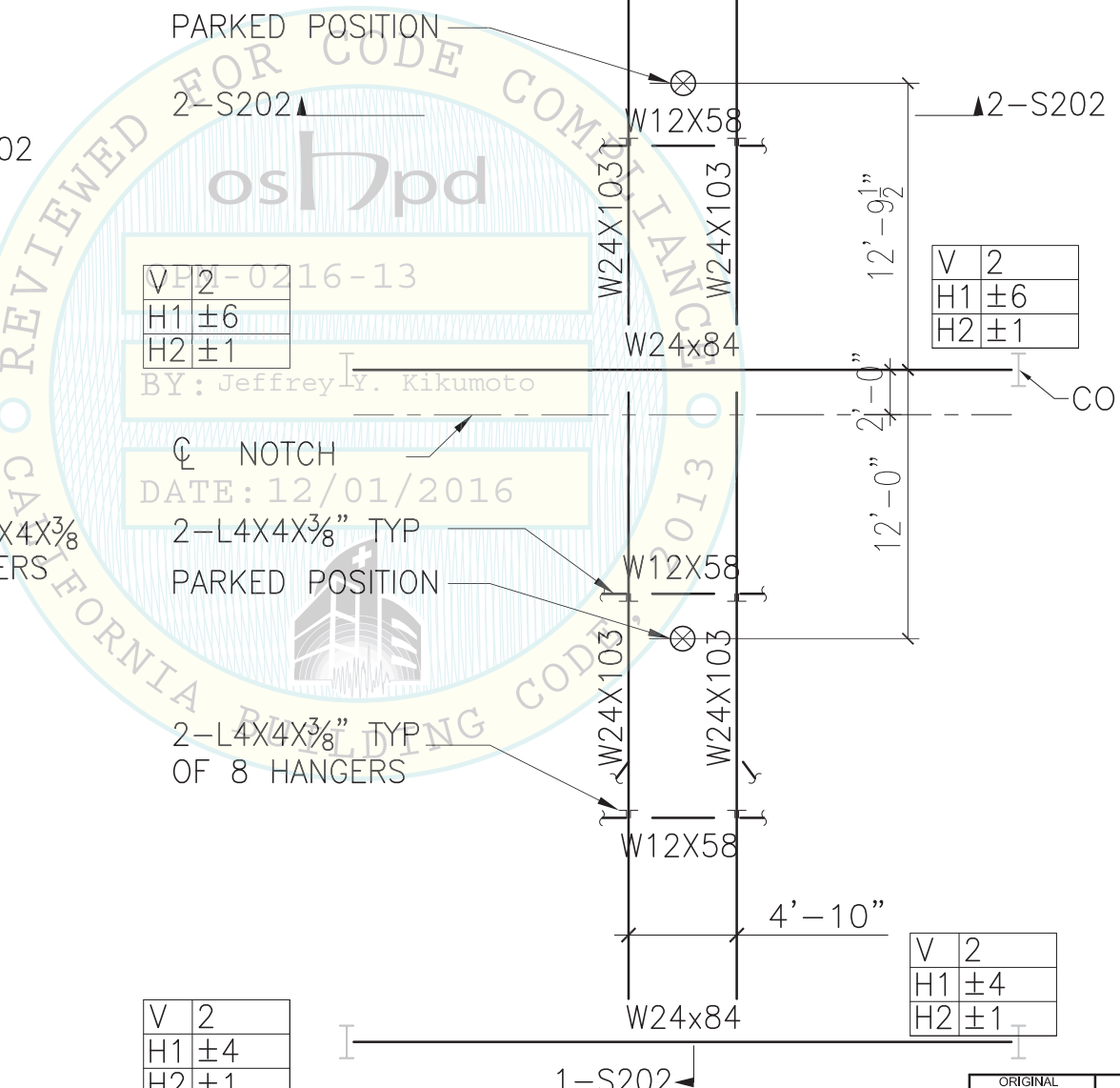
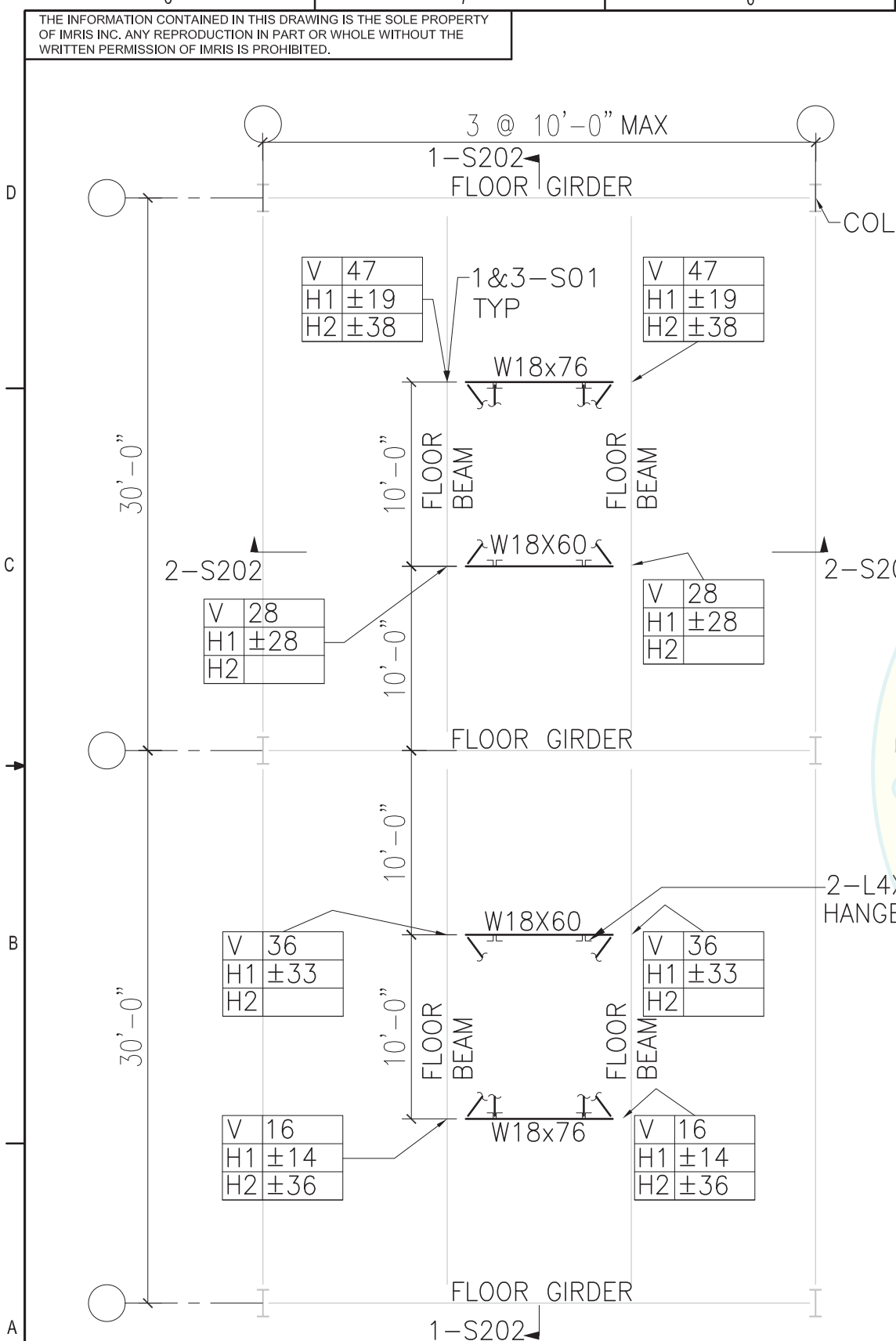
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REV.		ECO	DESCRIPTION	DESIGN BY	DATE	APPROVED	DATE
-	-	-					

DESIGN DATA for SKYRA MR30

WEIGHT & CENTER OF GRAVITY INFORMATION for SKYRA MR30		
QUANTITY	UNITS	DATA
MAGNET WEIGHT	KIPS	15.26
MAGNET c.g. BELOW BOTTOM FLANGE*	INCHES	77.5
CARRIAGE WEIGHT	KIPS	5.99
CARRIAGE c.g. BELOW BOTTOM FLANGE*	INCHES	22.4
TRIBUTARY RAIL WEIGHT	KIPS	1.2
RAIL c.g. BELOW BOTTOM FLANGE*	INCHES	1.93
SUPPORT STRUCTURE	KIPS	23.41

* BOTTOM FLANGE OF W24X103 SUPPORT BEAM



SEISMIC REACTION TO BASE STRUCTURE (KIPS) ; (LRFD)

SHOWN THUS:

V	50
H1	±50
H2	±50

VERT. + DOWN =V

HORIZ. ← H1

HORIZ. ↑ H2

SEOR IS RESPONSIBLE FOR THE DESIGN OF FLOOR BEAMS, FLOOR GIRDERS AND COLUMNS INCLUDING THE SEISMIC REACTIONS LISTED HEREIN.



SKYRA & AERA MM SYSTEM REPRESENTATIVE DESIGN for SUPPORT & ATTACHMENT

ITEM	QTY	PART NO.	DESCRIPTION
1	-	-	-
2	-	-	-
3	-	-	-

ORIGINAL RELEASE	NAME	YY/MM/DD
DRAWN BY: DA		02/03/16
CHECKED BY: DM		02/04/16
MATERIAL:	NA	
APPROX. WEIGHT:	NA	
FINISH:	NA	
DIMENSIONS AND TOLERANCES AS PER CURRENT IMRIS DRAWING STANDARDS AT TIME OF RELEASE. STANDARDS AVAILABLE UPON REQUEST		

IMRIS INC.
5101 Shady Oak Road
Minnetonka, MN
55343

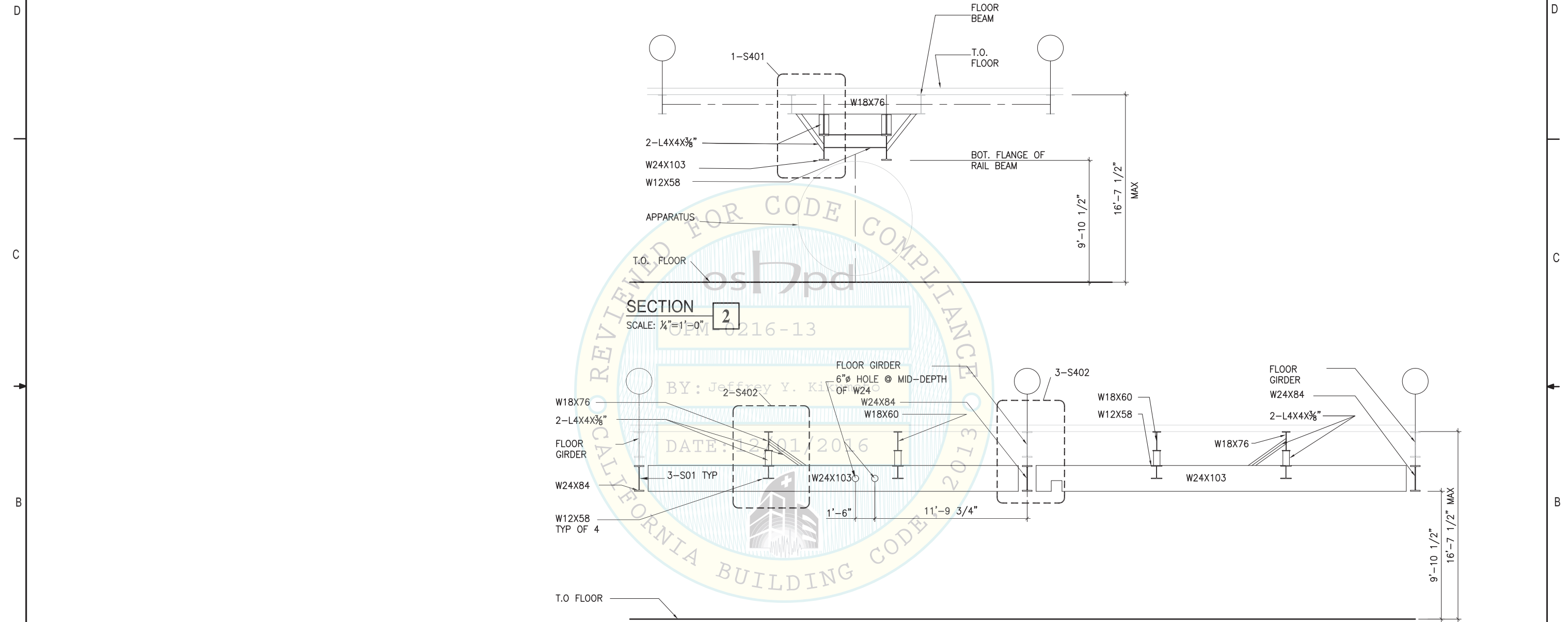
FLOOR_&_RAIL_SUPPORT FRAMING_PLANS

SIZE	DWG NO.	REV
B	S201	1

CAD: AUTOCAD SCALE: 1/8"=1'-0" SHT. 10 OF 13

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REVISIONS					
REV.	ECO	DESCRIPTION	DESIGN BY	DATE	APPROVED
-	-	-	-	-	-



SECTION 2
SCALE: 1/4"=1'-0"

SECTION 1
SCALE: 1/4"=1'-0"

NOTE: AS DESIGNED MAXIMUM DEFLECTION OF SUPPORT FOR RAIL OVER PATH = .111"; ALLOWABLE DEFLECTION = .335".
 AS DESIGNED MAXIMUM DIFFERENTIAL DISPLACEMENT OF SUPPORT FOR RAIL OVER 7'-0" = .070"; ALLOWABLE DISPLACEMENT OVER 7'-0" = .157".
 THE DISPLACEMENT OF THE FLOOR FRAMING CAUSED BY EQUIPMENT WEIGHT CANNOT EXCEED THE DIFFERENCE BETWEEN ALLOWABLE AND SUPPORT DISPLACEMENT.



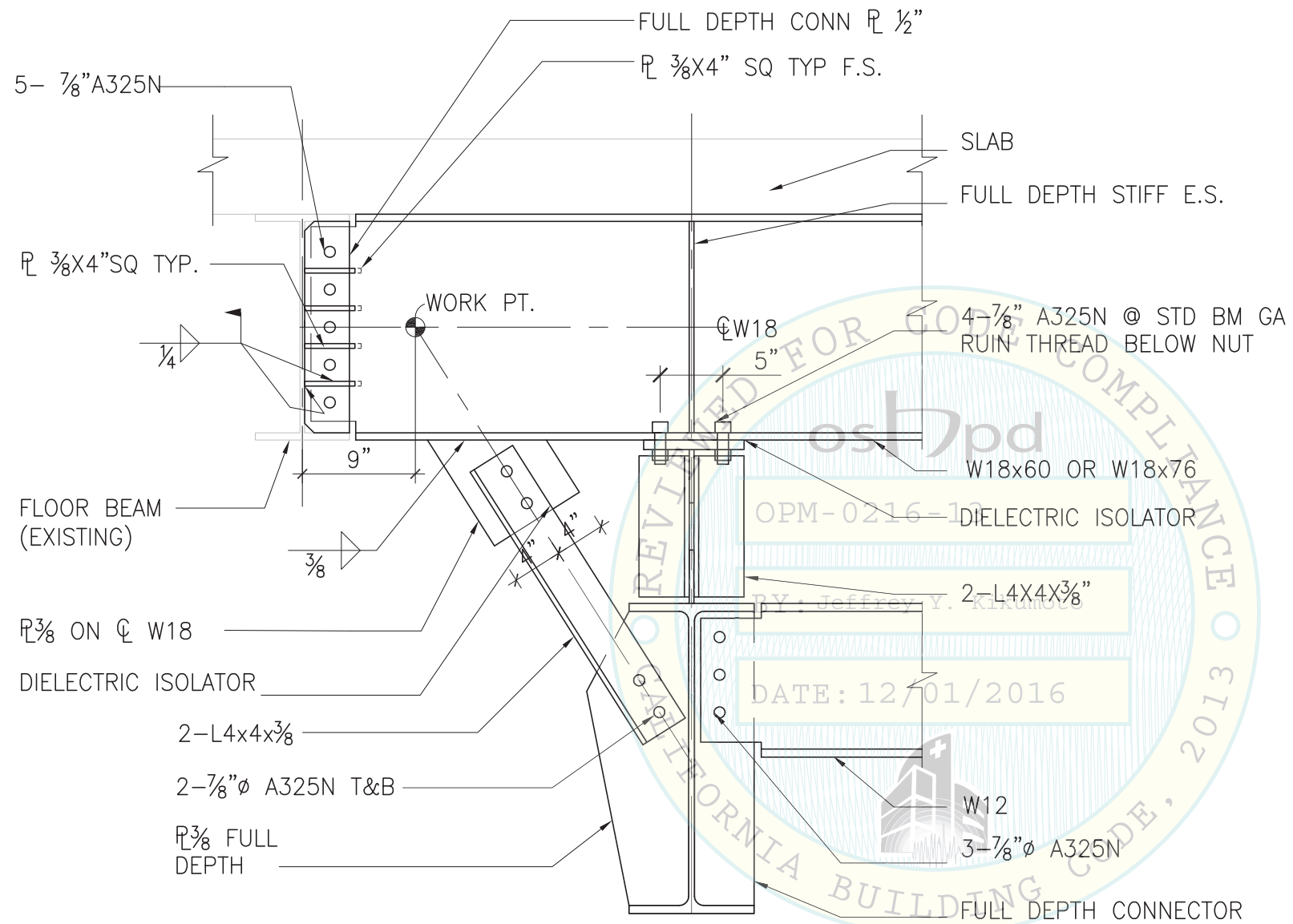
SKYRA & AERA MM SYSTEM
 REPRESENTATIVE DESIGN for SUPPORT & ATTACHMENT

ORIGINAL RELEASE	NAME	YY/MM/DD		IMRIS INC. 5101 Shady Oak Road Minnetonka, MN 55343
DRAWN BY:	DA	02/03/16		
CHECKED BY:	DM	02/04/16		
MATERIAL:	NA			SECTION & ELEVATION
APPROX. WEIGHT:	NA			
FINISH:	NA			
DIMENSIONS AND TOLERANCES AS PER CURRENT IMRIS DRAWING STANDARDS AT TIME OF RELEASE. STANDARDS AVAILABLE UPON REQUEST			SIZE B	DWG NO. S202
			CAD: AUTOCAD	SCALE: 1/8"=1'-0" SHT. 11 OF 13

ITEM	QTY	PART NO.	DESCRIPTION
1	-	-	-
2	-	-	-
3	-	-	-

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REV.		ECO	DESCRIPTION	DESIGN BY	DATE	APPROVED	DATE
-	-	-					



NOTES:

- FOR REMAINDER OF INFORMATION SEE 2-S402.
- WELDED ATTACHMENT TO STEEL SHALL NOT BE PLACED WITHIN THE PROTECTED ZONE AS DEFINED BY AISC 341.

SECTION

1"=1'-0"

1

ITEM	QTY	PART NO.	DESCRIPTION
1	-	-	-
2	-	-	-
3	-	-	-

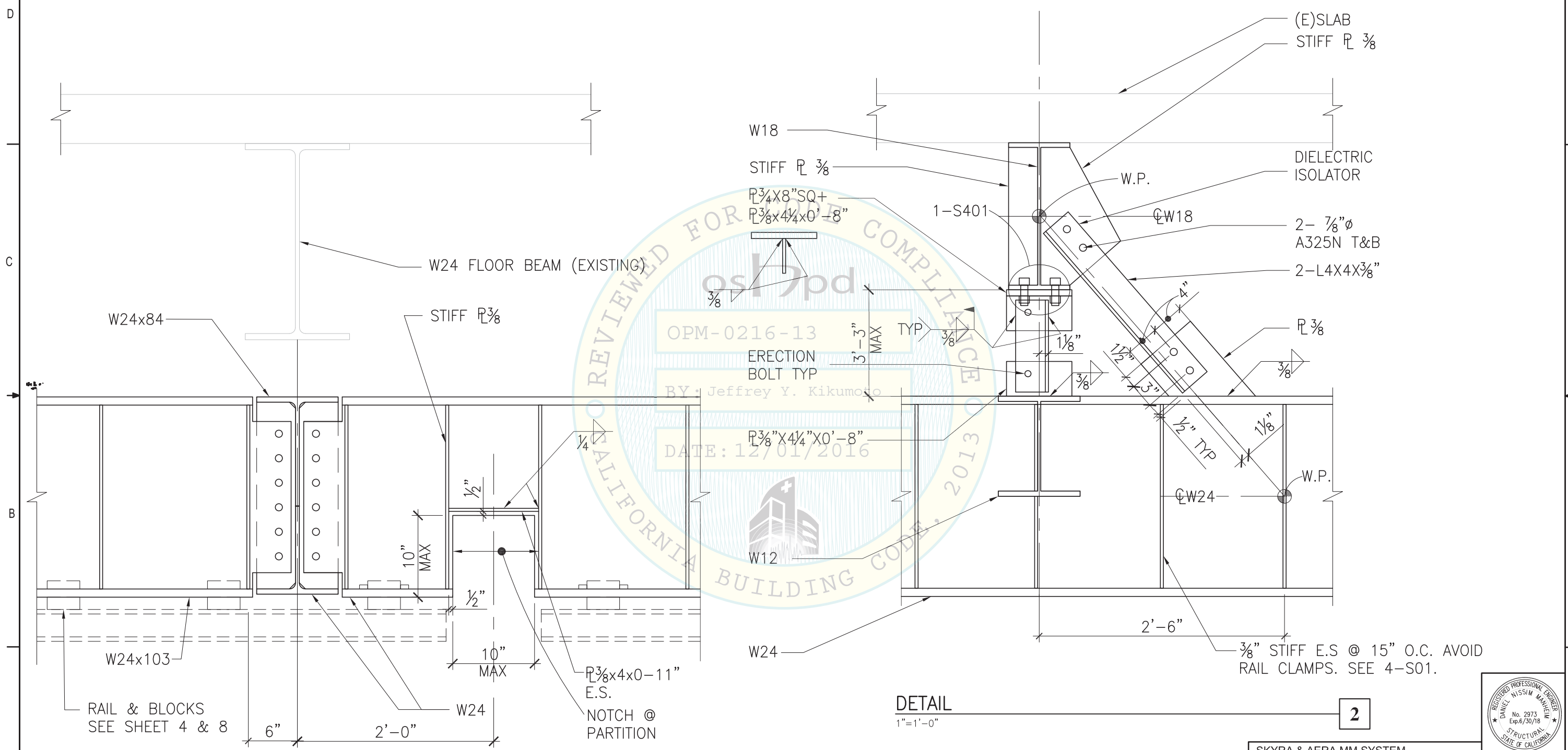


SKYRA & AERA MM SYSTEM
REPRESENTATIVE DESIGN for SUPPORT & ATTACHMENT

ORIGINAL RELEASE	NAME	YY/MM/DD	IMRIS	IMRIS INC. 5101 Shady Oak Road Minnetonka, MN 55343
DRAWN BY:	DA	02/03/16		
CHECKED BY:	DM	02/04/16	DETAILS	
MATERIAL:	NA			
APPROX. WEIGHT:	NA			
FINISH:	NA		SIZE DWG NO. S401 REV 1	
DIMENSIONS AND TOLERANCES AS PER CURRENT IMRIS DRAWING STANDARDS AT TIME OF RELEASE. STANDARDS AVAILABLE UPON REQUEST.				
CAD: AUTOCAD			SCALE: 1"=1'-0"	SHT. 12 OF 13

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REV.		ECO	DESCRIPTION	DESIGN BY	DATE	APPROVED	DATE
-	-	-					



DETAIL
1"=1'-0"

2



SKYRA & AERA MM SYSTEM
REPRESENTATIVE DESIGN for SUPPORT & ATTACHMENT

ITEM	QTY	PART NO.	DESCRIPTION
1	-	-	-
2	-	-	-
3	-	-	-

DETAIL
1"=1'-0"

3

ORIGINAL RELEASE	NAME	YY/MM/DD
DRAWN BY:	DA	02/03/16
CHECKED BY:	DM	02/04/16
MATERIAL:	NA	
APPROX. WEIGHT:	NA	
FINISH:	NA	
DIMENSIONS AND TOLERANCES AS PER CURRENT IMRIS DRAWING STANDARDS AT TIME OF RELEASE. STANDARDS AVAILABLE UPON REQUEST.		



DETAILS	
SIZE DWG NO.	S402
REV	1
CAD: AUTOCAD	SCALE: 1"=1'-0"
SHT. 13 OF 13	