



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0503

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: New Renewal/Update

Manufacturer Information

Manufacturer: Legrand AV (Middle Atlantic)

Manufacturer's Technical Representative: Sudharsan Yogasuntharam

Mailing Address: 300 Fairefaild Road, Fairefield, NJ 07004

Telephone: (973) 839-1011

Email: sudharsan.yogasuntharam@legrand.com

Product Information

Product Name: AXS-IR Series

Product Type: Racks and Enclosures

Product Model Number: AXS-IR-1927-20, AXS-IR-1932-26, AXS-IR-1938-26, AXS-IR-2527-20, AXS-IR-2532-26, AXS-IR-2538-26, AXS-IR-3827-20, AXS-IR-3832-26, AXS-IR-3838-26, AXS-IR-4127-20, AXS-IR-4132-26, AXS-IR-4138-26, AXS-IR-4527-20, AXS-IR-4532-26, AXS-IR-4538-26

General Description: Gang-able Floor Standing Enclosures intended to enclose audio, video and IT equipment.

Applicant Information

Applicant Company Name: Legrand AV (Middle Atlantic)

Contact Person: Sudharsan Yogasuntharam

Mailing Address: 300 Fairefaild Road, Fairefield, NJ 07004

Telephone: (973) 839-1011

Email: sudharsan.yogasuntharam@legrand.com

Title: Compliance Engineer

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

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY





DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

Registered Design Professional Preparing Engineering Recommendations

Company Name: SIMPSON GUMPERTZ & HEGER
Name: William Bruin California License Number: CE57867
Mailing Address: 500 12th Street, Suite 270, Oakland, CA 94607
Telephone: (510) 457-4456 Email: wmbuin@sgh.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, 2019 (CBSC 2019) 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 2019 may be used when approved by HCAI prior to testing.

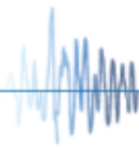
- Analysis
Experience Data
Combination of Testing, Analysis, and/or Experience Data (Please Specify): Tilt table testing in addition to FEM analysis

HCAI Approval


Date: 7/27/2022
Name: Mohammad Aliaari Title: Senior Structural Engineer
Condition of Approval (if applicable):

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

STATE OF CALIFORNIA - HEALTH AND HUMAN SERVICES AGENCY



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 Middle Atlantic Products, Inc. an ISO 9001:2000 Registered Company	OPM-0503 AXS-IR-SERIES HCAI	REVISION: D
		REV BY: TB
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GENERAL

- THIS HCAI PREAPPROVAL OF MANUFACTURE'S CERTIFICATION (OPM) IS BASED ON THE CBC2019. THE DEMAND (DESIGN FORCE) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2019
- THE WORK SHOWN ON THESE DRAWINGS IS FOR THE SEISMIC SUPPORTS & ATTACHMENTS OF THE SUBJECT RACK ENCLOSURES. MAXIMUM PERMISSIBLE CONTENT CAPACITIES FOR VARIOUS HEIGHTS WITHIN THE BUILDING ARE PROVIDED IN TABLES 1 THRU 7.
- SEISMIC SUPPORTS & ATTACHMENTS DESIGN HAS BEEN DONE IN ACCORDANCE WITH THE 2019 EDITION OF THE CALIFORNIA BUILDING CODE, PART 2, VOLUME 2 OF 2, AND ASCE 7-16, USING THE FOLLOWING PARAMETERS:

$I_p = 1.5$ (CBC §1617.1.17)
 $S_{DS} \leq 2.04G$
 $\Omega_0 = 2.0$
 $a_p = 2.5, R_p = 6$
 $Z, H = \text{VARIES}$

LATERAL FORCE, $F_{P,H} = [(0.4 a_p S_{DS} I_p W_p) / R_p] * (1 + 2 Z/H)$
 VERTICAL FORCE, $F_{P,V} = 0.2 S_{DS} W_p$

- DESIGN LOADS SHOWN IN TABLE 1 ARE FACTORED LOADS THAT SHALL BE USED FOR STRENGTH DESIGN.
- THIS PREAPPROVAL COVERS ONLY THE SUPPORTS & ATTACHMENTS OF THE EQUIPMENT TO THE STRUCTURE. IT DOES NOT COVER THE COMPONENT OR ITS CONTENTS. IF THE RACKS CONTAIN INTERNAL COMMUNICATION SERVERS & ROUTERS, SPECIAL SEISMIC CERTIFICATION IS REQUIRED.
- MFR RESPONSIBLE FOR EQUIPMENT INCLUDING SEISMIC BRACKETS. CONTRACTOR RESPONSIBLE FOR ANCHOR HARDWARE & INSTALLATION.

INSTALLATION NOTES

- RACK ENCLOSURES MAY BE ANCHORED TO EITHER A SAND LIGHT-OR NORMAL-WEIGHT, REINFORCED CONCRETE FLOOR OR SLAB (TABLES 2-4) OR SAND LIGHT- OR NORMAL-WEIGHT CONCRETE FILL OVER METAL DECK (TABLES 5-7). IN ALL CASES, THE MINIMUM CONCRETE COMPRESSIVE STRENGTH (F'C) SHALL BE 3,000 PSI.
- REINFORCED CONCRETE FLOOR SLAB (OR CONCRETE FILL OVER METAL DECK) SHALL HAVE MINIMUM THICKNESS BASED ON THE ANCHOR TYPES AS NOTED IN TABLE 8 AND 9
- INSTALLATION OF THE RACK ENCLOSURES IS LIMITED TO INTERIOR LOCATIONS ONLY, WHERE DESIGN IS CONTROLLED BY SEISMIC FORCES.

- CENTER OF GRAVITY (C.G.) WEIGHT IS A MAXIMUM. THIS PRE-APPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- SEOR MUST ENSURE THE ENCLOSURE RACK IS LOADED SO THAT THE CG IS NO HIGHER THAN THE CG SHOWN HEREIN. THE EQUIPMENT MANUFACTURER HAS DESIGNED THE UNIT TO MAKE THE C.G. LESS THAN OR EQUAL TO THE HEIGHT DIMENSION SHOWN ON SHEET 6.

FOOTNOTES TABLE 1


- INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES.
- DEMAND LOADS ARE MAXIMUM ULTIMATE LOADS PER ANCHOR, INCLUDING AN OVERSTRENGTH FACTOR ($\Omega_0 = 2.0$).
- DEMAND LOADS ARE THE WORST CASE FOR A GIVEN ANCHOR AND ELEVATION COMBINATION, LOADED TO THE CONTENT CAPACITIES PROVIDED IN THE REFERENCED TABLES.
- THESE LOADS ARE PROVIDED FOR THE END USER TO CHECK THE SLAB AND BUILDING STRUCTURE.
- THE MAXIMUM TENSION AND SHEAR SHOWN ARE INDEPENDENT MAXIMUMS. THEY DO NOT OCCUR SIMULTANEOUSLY FOR THE SAME UNIT OR INSTALLATION SCENARIO. THUS THEY MAY BE CONSERVATIVE FOR SOME INSTALLATIONS.
- ANCHORAGE CAPACITIES WERE VALIDATED WITHIN THIS OPM APPLICATION USING CONCURRENT LOADS FOR SPECIFIC INSTALLATION SCENARIOS.

Anchor Type (Reference Table)	Demand Parameter	Maximum Shear (V _u) and Tension (T _u) Per Anchor (pounds)			
		Elevation in Building (z/h)			
		0 (Ground)	1/3	2/3	≤ 1
Epoxy Anchor Solid Slab of NW Concrete (Table 2)	V _u	836	836	1080	1354
	T _u	2656	2656	2655	2795
Expansion Anchor Solid Slab of NW Concrete (Table 3)	V _u	818	818	1053	1080
	T _u	1880	1880	1895	1882
Expansion Anchor Solid Slab of Sand LW Concrete (Table 4)	V _u	753	753	743	757
	T _u	1295	1295	1299	1276
Expansion Anchor NW Concrete Fill over Deck (Table 5)	V _u	753	753	743	732
	T _u	1247	1247	1282	1245
Expansion Anchor Sand L/W Concrete Fill over Deck (Table 6)	V _u	514	514	511	508
	T _u	824	824	838	842
Thru-Bolt Connection NW or Sand L/W Concrete over Deck (Table 7)	V _u	1394	1394	1394	1394
	T _u	2185	2185	2185	2185


TABLE 1: MAXIMUM DEMAND LOADS FOR AXS-IR SERIES ENCLOSURES (SEE FOOTNOTES 1-3)



Date Signed: 1/7/2022

USED ON: --	APPROVALS: MODELED	DATE:	
NEXT ASBY: --	DRAWN:		
MATERIAL: SEE COMPONENTS	CIRCLED DIMENSIONS ARE CRITICAL UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMAL: 0.003 3 PLC 0.003 FRACTIONS: 1/32 ANGLES: 30°		TITLE: AXS-IR-SERIES HCAI
FINISH: --	SCALE: 1/8" = 1'-0"		PART NO.:
			SIZE: 3
			DXF NO. NONE
			DWG NO.:

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RACK ENCLOSURE CAPACITY TABLES

TABLE 2: AXS-IR SERIES ENCLOSURES & MAXIMUM HCAI SEISMIC CONTENT CAPACITY (LBS) WITH APPROVED EPOXY ANCHORING SYSTEM IN SOLID SLAB NORMAL WEIGHT CONCRETE (SEE FOOTNOTES 1-4)

RACK ENCLOSURE	ELEVATION IN BUILDING (Z/H)			
	GROUND	1/3	2/3	≤1
AXS-IR-1927-20	1200	1200	1200	1200
AXS-IR-1932-26	1200	1200	1200	1200
AXS-IR-1938-26	1200	1200	1200	1200
AXS-IR-2527-20	1200	1200	1200	1150
AXS-IR-2532-26	1200	1200	1200	1150
AXS-IR-2538-26	1200	1200	1200	1150
AXS-IR-3827-20	1200	1200	1100	825
AXS-IR-3832-26	1200	1200	1100	825
AXS-IR-3838-26	1200	1200	1100	825
AXS-IR-4127-20	1200	1200	1025	750
AXS-IR-4132-26	1200	1200	1025	750
AXS-IR-4138-26	1200	1200	1025	750
AXS-IR-4527-20	1200	1200	950	675
AXS-IR-4532-26	1200	1200	950	675
AXS-IR-4538-26	1200	1200	950	675

TABLE 3: AXS-IR SERIES ENCLOSURES & MAXIMUM HCAI SEISMIC CONTENT CAPACITY (LBS) WITH APPROVED EXPANSION ANCHORS IN SOLID SLAB NORMALWEIGHT CONCRETE (SEE FOOTNOTES 1-4)

RACK ENCLOSURE	ELEVATION IN BUILDING (Z/H)			
	GROUND	1/3	2/3	≤1
AXS-IR-1927-20	1200	1200	1200	925
AXS-IR-1932-26	1200	1200	1200	925
AXS-IR-1938-26	1200	1200	1200	925
AXS-IR-2527-20	1200	1200	1000	750
AXS-IR-2532-26	1200	1200	1000	750
AXS-IR-2538-26	1200	1200	1000	750
AXS-IR-3827-20	950	950	700	500
AXS-IR-3832-26	950	950	700	500
AXS-IR-3838-26	950	950	700	500
AXS-IR-4127-20	900	900	625	450
AXS-IR-4132-26	900	900	625	450
AXS-IR-4138-26	900	900	625	450
AXS-IR-4527-20	800	800	575	400
AXS-IR-4532-26	800	800	575	400
AXS-IR-4538-26	800	800	575	400

TABLE 4: AXS-IR SERIES ENCLOSURES & MAXIMUM HCAI SEISMIC CONTENT CAPACITY (LBS) WITH APPROVED EXPANSION ANCHORS IN SOLID SLAB SAND-LIGHTWEIGHT CONCRETE (SEE FOOTNOTES 1-4)

RACK ENCLOSURE	ELEVATION IN BUILDING (Z/H)			
	GROUND	1/3	2/3	≤1
AXS-IR-1927-20	1100	1100	800	600
AXS-IR-1932-26	1100	1100	800	600
AXS-IR-1938-26	1100	1100	800	600
AXS-IR-2527-20	900	900	650	450
AXS-IR-2532-26	900	900	650	450
AXS-IR-2538-26	900	900	650	450
AXS-IR-3827-20	600	600	425	275
AXS-IR-3832-26	600	600	425	275
AXS-IR-3838-26	600	600	425	275
AXS-IR-4127-20	550	550	375	250
AXS-IR-4132-26	550	550	375	250
AXS-IR-4138-26	550	550	375	250
AXS-IR-4527-20	500	500	340	210
AXS-IR-4532-26	500	500	340	210
AXS-IR-4538-26	500	500	340	210

FOOTNOTES TABLE 2

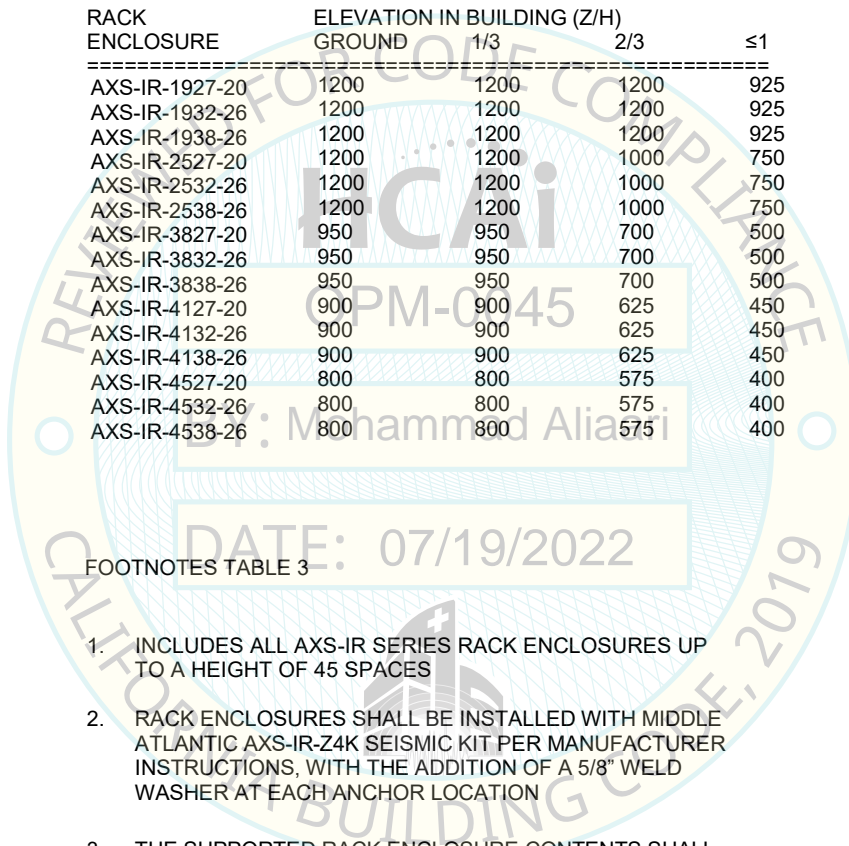
1. INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES
2. RACK ENCLOSURES SHALL BE INSTALLED WITH MIDDLE ATLANTIC AXS-IR-Z4K SEISMIC KIT PER MANUFACTURER INSTRUCTIONS, WITH THE ADDITION OF A 5/8" WELD WASHER AT EACH ANCHOR LOCATION
3. THE SUPPORTED RACK ENCLOSURE CONTENTS SHALL BE DISTRIBUTED WITHIN THE ENCLOSURE SUCH THAT 50% OF THE TOTAL WEIGHT IS LOCATED WITHIN THE BOTTOM THIRD OF THE RACK ENCLOSURE HEIGHT, 25% IN THE MIDDLE THIRD, AND 25% IN THE TOP THIRD. CONTENTS ARE IN ADDITION TO UNIT SELF-WEIGHT
4. ANCHORAGE WITH HILTI HIT-RE 500 V3 (ICC-ES ESR 3184) OR SIMPSON STRONG-TIE SET-XP (ICC-ES ESR 2508). REFER TO TABLE 8.
5. RATED RACK CAPACITY = 1200 LBS

FOOTNOTES TABLE 3


1. INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES
2. RACK ENCLOSURES SHALL BE INSTALLED WITH MIDDLE ATLANTIC AXS-IR-Z4K SEISMIC KIT PER MANUFACTURER INSTRUCTIONS, WITH THE ADDITION OF A 5/8" WELD WASHER AT EACH ANCHOR LOCATION
3. THE SUPPORTED RACK ENCLOSURE CONTENTS SHALL BE DISTRIBUTED WITHIN THE ENCLOSURE SUCH THAT 50% OF THE TOTAL WEIGHT IS LOCATED WITHIN THE BOTTOM THIRD OF THE RACK ENCLOSURE HEIGHT, 25% IN THE MIDDLE THIRD, AND 25% IN THE TOP THIRD. CONTENTS ARE IN ADDITION TO UNIT SELF-WEIGHT
4. ANCHORAGE WITH HILTI KWIK-BOLT TZ2 OR SIMPSON STRONG-TIE STRONG BOLT 2. REFER TO TABLE 8.
5. RATED RACK CAPACITY = 1200 LBS

FOOTNOTES TABLE 4

1. INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES
2. RACK ENCLOSURES SHALL BE INSTALLED WITH MIDDLE ATLANTIC AXS-IR-Z4K SEISMIC KIT PER MANUFACTURER INSTRUCTIONS, WITH THE ADDITION OF A 5/8" WELD WASHER AT EACH ANCHOR LOCATION
3. THE SUPPORTED RACK ENCLOSURE CONTENTS SHALL BE DISTRIBUTED WITHIN THE ENCLOSURE SUCH THAT 50% OF THE TOTAL WEIGHT IS LOCATED WITHIN THE BOTTOM THIRD OF THE RACK ENCLOSURE HEIGHT, 25% IN THE MIDDLE THIRD, AND 25% IN THE TOP THIRD. CONTENTS ARE IN ADDITION TO UNIT SELF-WEIGHT
4. ANCHORAGE WITH HILTI KWIK-BOLT TZ2 OR SIMPSON STRONG-TIE STRONG BOLT 2. REFER TO TABLE 8.
5. RATED RACK CAPACITY = 1200 LBS



REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. BRUIN
No. C 57867
CIVIL
STATE OF CALIFORNIA
Date Signed: 1/7/2022

USED ON: --	APPROVALS: MIDDLEB	DATE:	
NEXT ASSY: --	DRAWN:		
MATERIAL: SEE COMPONENTS	CIRCLED DIMENSIONS ARE CRITICAL INSPECTION DIMENSIONS UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMAL: ± PLC ±.03 FRACTIONS: ±1/32 ANGLES: AC SCALE: 1/8"		TITLE: AXS-IR-SERIES HCAI
FINISH: --	SIZE: 8	DXF NO: NONE	PART NO. / PART REV
	DWG NO.		DWG REV

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TABLE 5: AXS-IR SERIES ENCLOSURES & MAXIMUM HCAI SEISMIC CONTENT CAPACITY (LBS) WITH APPROVED EXPANSION ANCHORS IN NORMAL WEIGHT CONCRETE FILL OVER METAL DECK (SEE FOOTNOTES 1-4)

RACK ENCLOSURE	ELEVATION IN BUILDING (Z/H)			
	GROUND	1/3	2/3	≤1
AXS-IR-1927-20	1100	1100	800	575
AXS-IR-1932-26	1100	1100	800	575
AXS-IR-1938-26	1100	1100	800	575
AXS-IR-2527-20	875	875	625	450
AXS-IR-2532-26	875	875	625	450
AXS-IR-2538-26	875	875	625	450
AXS-IR-3827-20	575	575	400	275
AXS-IR-3832-26	575	575	400	275
AXS-IR-3838-26	575	575	400	275
AXS-IR-4127-20	525	525	350	225
AXS-IR-4132-26	525	525	350	225
AXS-IR-4138-26	525	525	350	225
AXS-IR-4527-20	475	475	325	200
AXS-IR-4532-26	475	475	325	200
AXS-IR-4538-26	475	475	325	200

TABLE 6: AXS-IR SERIES ENCLOSURES & MAXIMUM HCAI SEISMIC CONTENT CAPACITY (LBS) WITH APPROVED EXPANSION ANCHORS IN SAND-LIGHTWEIGHT CONCRETE FILL OVER METAL DECK (SEE FOOTNOTES 1-4)

RACK ENCLOSURE	ELEVATION IN BUILDING (Z/H)			
	GROUND	1/3	2/3	≤1
AXS-IR-1927-20	700	700	500	350
AXS-IR-1932-26	700	700	500	350
AXS-IR-1938-26	700	700	500	350
AXS-IR-2527-20	550	550	375	250
AXS-IR-2532-26	550	550	375	250
AXS-IR-2538-26	550	550	375	250
AXS-IR-3827-20	350	350	225	125
AXS-IR-3832-26	350	350	225	125
AXS-IR-3838-26	350	350	225	125
AXS-IR-4127-20	300	300	175	90
AXS-IR-4132-26	300	300	175	90
AXS-IR-4138-26	300	300	175	90
AXS-IR-4527-20	250	250	150	70
AXS-IR-4532-26	250	250	150	70
AXS-IR-4538-26	250	250	150	70

TABLE 7: AXS-IR SERIES ENCLOSURES & MAXIMUM HCAI SEISMIC CONTENT CAPACITY (LBS) WITH 1/2" THRU-BOLTS IN NORMALWEIGHT OR SAND-LIGHTWEIGHT CONCRETE FILL OVER METAL DECK. (SEE FOOTNOTES 1-4)

RACK ENCLOSURE	ELEVATION IN BUILDING (Z/H)			
	GROUND	1/3	2/3	≤1
AXS-IR-1927-20	1200	1200	1200	1200
AXS-IR-1932-26	1200	1200	1200	1200
AXS-IR-1938-26	1200	1200	1200	1200
AXS-IR-2527-20	1200	1200	1200	1200
AXS-IR-2532-26	1200	1200	1200	1200
AXS-IR-2538-26	1200	1200	1200	1200
AXS-IR-3827-20	1200	1200	1200	1200
AXS-IR-3832-26	1200	1200	1200	1200
AXS-IR-3838-26	1200	1200	1200	1200
AXS-IR-4127-20	1200	1200	1200	1200
AXS-IR-4132-26	1200	1200	1200	1200
AXS-IR-4138-26	1200	1200	1200	1200
AXS-IR-4527-20	1200	1200	1200	1200
AXS-IR-4532-26	1200	1200	1200	1200
AXS-IR-4538-26	1200	1200	1200	1200

FOOTNOTES TABLE 5

1. INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES
2. RACK ENCLOSURES SHALL BE INSTALLED WITH MIDDLE ATLANTIC AXS-IR-Z4K SEISMIC KIT PER MANUFACTURER INSTRUCTIONS, WITH THE ADDITION OF A 5/8" WELD WASHER AT EACH ANCHOR LOCATION.
3. THE SUPPORTED RACK ENCLOSURE CONTENTS SHALL BE DISTRIBUTED WITHIN THE ENCLOSURE SUCH THAT 50% OF THE TOTAL WEIGHT IS LOCATED WITHIN THE BOTTOM THIRD OF THE RACK ENCLOSURE HEIGHT, 25% IN THE MIDDLE THIRD, AND 25% IN THE TOP THIRD. CONTENTS ARE IN ADDITION TO UNIT SELF-WEIGHT
4. ANCHORAGE WITH HILTI KWIK-BOLT TZ2 OR SIMPSON STRONG-TIE STRONG BOLT 2. REFER TO TABLE 9.
5. RATED RACK CAPACITY = 1200 LBS

FOOTNOTES TABLE 6

1. INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES
2. RACK ENCLOSURES SHALL BE INSTALLED WITH MIDDLE ATLANTIC AXS-IR-Z4K SEISMIC KIT PER MANUFACTURER INSTRUCTIONS, WITH THE ADDITION OF A 5/8" WELD WASHER AT EACH ANCHOR LOCATION.
3. THE SUPPORTED RACK ENCLOSURE CONTENTS SHALL BE DISTRIBUTED WITHIN THE ENCLOSURE SUCH THAT 50% OF THE TOTAL WEIGHT IS LOCATED WITHIN THE BOTTOM THIRD OF THE RACK ENCLOSURE HEIGHT, 25% IN THE MIDDLE THIRD, AND 25% IN THE TOP THIRD. CONTENTS ARE IN ADDITION TO UNIT SELF-WEIGHT
4. ANCHORAGE WITH HILTI KWIK-BOLT TZ2 OR SIMPSON STRONG-TIE STRONG BOLT 2. REFER TO TABLE 9.
5. RATED RACK CAPACITY = 1200 LBS

FOOTNOTES TABLE 7

1. INCLUDES ALL AXS-IR SERIES RACK ENCLOSURES UP TO A HEIGHT OF 45 SPACES
2. RACK ENCLOSURES SHALL BE INSTALLED WITH MIDDLE ATLANTIC AXS-IR-Z4K SEISMIC KIT PER MANUFACTURER INSTRUCTIONS, WITH THE ADDITION OF A 5/8" WELD WASHER AT EACH ANCHOR LOCATION.
3. THE SUPPORTED RACK ENCLOSURE CONTENTS SHALL BE DISTRIBUTED WITHIN THE ENCLOSURE SUCH THAT 50% OF THE TOTAL WEIGHT IS LOCATED WITHIN THE BOTTOM THIRD OF THE RACK ENCLOSURE HEIGHT, 25% IN THE MIDDLE THIRD, AND 25% IN THE TOP THIRD. CONTENTS ARE IN ADDITION TO UNIT SELF-WEIGHT
4. ANCHORAGE WITH 1/2" DIAMETER THRU-BOLTS OF ASTM F1554 GRADE 36 OR 105, WITH CONNECTION TO THE DECK SOFFIT AS DETAILED ON THE DRAWINGS. REFER TO TABLE 9.
5. RATED RACK CAPACITY = 1200 LBS



Date Signed: 1/7/2022

USED IN: --	APPROVALS: MODELED	DATE:	
NEXT ASSY: --	DRAWN		
MATERIAL: SEE COMPONENTS	CIRCLED DIMENSIONS ARE CRITICAL UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMAL: 0.000 3 PLC 0.010		TITLE: AXS-IR-SERIES HCAI
FINISH: --	FRACTIONS: 16/32	ANGLE: 30	PART NO.:
	SCALE: 1/8"		SIZE: 3
			DXF NO. NONE
			DWG NO.:
			PART REV.:
			DWG REV.:

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AXS-IR-SERIES HCAI

CONCRETE ANCHOR NOTES

- CONCRETE ANCHORS FOR THE SUBJECT RACK ENCLOSURES INSTALLED IN SOLID REINFORCED CONCRETE SHALL BE ONE OF THE TYPES LISTED IN TABLE 8, WITH THE DIAMETER, EMBEDMENT, AND EDGE DISTANCES SPECIFIED. ANCHORS SHALL BE OF CARBON STEEL AND FOLLOW ALL INSTALLATION REQUIREMENTS SPECIFIED IN THE CORRESPONDING ESR REPORTS.
- CONCRETE ANCHORS FOR THE SUBJECT RACK ENCLOSURES INSTALLED IN TOP SIDE OF CONCRETE FILL OVER METAL DECK SHALL BE ONE OF THE TYPES LISTED IN TABLE 9, WITH THE DIAMETER, EMBEDMENT, AND EDGE DISTANCES SPECIFIED. ANCHORS SHALL BE OF CARBON STEEL AND FOLLOW ALL INSTALLATION REQUIREMENTS SPECIFIED IN THE CORRESPONDING ESR REPORTS
- ALTERNATIVELY, SUBJECT RACK ENCLOSURES MAY BE INSTALLED IN TOP SIDE OF CONCRETE FILL OVER METAL DECK USING THE THRU-BOLT CONNECTION AS LISTED IN TABLE 9 AND SHOWN ON THE DRAWINGS.
- LOCATE ALL EXISTING REINFORCING BARS WITHIN 12 INCHES OF PROPOSED ANCHOR LOCATIONS PRIOR TO DRILLING FOR CONCRETE ANCHORS. DO NOT CUT, CORE, OR DRILL THROUGH EXISTING REINFORCING BARS.
- ALL CONCRETE ANCHORS SHALL BE INSTALLED WITH PROPER TOOLS AND PROCEDURES IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND ICC EVALUATION SERVICE REPORTS REFERENCED ABOVE.
- CONCRETE ANCHORS REQUIRE SPECIAL INSPECTION FOR INSTALLATION IN ACCORDANCE WITH CBC TABLE 1705A.3.
- CONCRETE ANCHORS SHALL BE TESTED A MINIMUM OF 24 HOURS AFTER INSTALLATION TO VERIFY PROPER INSTALLATION IN ACCORDANCE WITH CBC SECTION 1910A.5
- A MINIMUM OF TWO ANCHORS (50%) PER ENCLOSURE MUST BE TESTED (CBC 1910A.5.3).
- TESTING OF THE POST INSTALLED ANCHORS SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR & A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO THE ENFORCEMENT AGENCY (CBC 1910A.5.3)
- ANCHORS SHALL BE TESTED TO LOADS SHOWN BELOW (CBC 1910A.5.4):
 - A) EPOXY ANCHORS IN NORMAL WEIGHT CONCRETE – 3904 LB

B) 1/2" DIA EXPANSION ANCHORS IN NORMAL OR SAND-LIGHT WEIGHT CONCRETE: 50 FT-LB FOR KWIK-BOLT TZ2 OR 60 FT-LB FOR STRONG BOLT 2

C) 3/8" DIA EXPANSION ANCHORS FOR UNDERSIDE OF METAL DECK (SEE SHEET 7): 30 FT-LB FOR STRONG BOLT 2

11. TEST ACCEPTANCE CRITERIA (CBC 1910A.5.5):

A) HYDRAULIC RAM METHOD (EPOXY ANCHORS): ANCHOR SHALL MAINTAIN TEST LOAD FOR A MINIMUM OF 15 SECONDS AND SHALL EXHIBIT NO DISCERNIBLE MOVEMENT (AS EVIDENCED BY THE LOOSENING OF THE WASHER UNDER THE NUT)

B) TORQUE WRENCH METHOD (EXPANSION ANCHORS): ANCHOR SHALL ATTAIN THE SPECIFIED TORQUE WITHIN 1/2 TURN OF THE NUT.

BOLTS THROUGH CONCRETE ON METAL DECK

A. BOLTS SHALL BE TORQUED BY 1/4 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.

TABLE 8: ACCEPTABLE FASTENERS FOR ANCHORING OF THE AXS-IR SERIES OF RACK ENCLOSURES TO SOLID REINFORCED CONCRETE (SEE NOTE 1)

Anchor Type	ICC ESR	Anchor Diameter (inches)	MIN Embedment (inches) (hef)	MIN Slab Thickness (inches)	MIN Edge Distance (Inches)	MIN Spacing (inches) (Note 5)
HILTI HIT RE 500V3 Threaded Rod Epoxy (Notes 2,4)	3814	0.5	6	8.5	6	18
Simpson Strong-Tie Set-XP Threaded Rod Epoxy Anchors (Notes 2,4)	2508	0.5	6	8.5	6	18
HILTI KWIK Bolt TZ2 Expansion Anchors (Note 3)	4266	0.5	3.25	6	6	18
Simpson Strong-Tie Strong-Bolt 2 Expansion Anchors (Note 3)	3037	0.5	3.375	6	6	18

NOTES TABLE 8

- FOR NORMALWEIGHT OR SAND-LIGHTWEIGHT CONCRETE WITH A MINIMUM FC = 3000 PSI. EPOXY ANCHORS MAY ONLY BE USED IN NORMAL WEIGHT CONCRETE.
- APPLIES TO THE AXS-IR SERIES ENCLOSURES LISTED IN TABLES 1-4
- APPLIES TO THE AXS-IR SERIES ENCLOSURES LISTED IN TABLES 5-7 ALSO, PROVIDE FOR FULL THREAD ENGAGEMENT OF NUT & WASHER.
- STANDARD THREADED ROD SHALL BE ASTM F1554 GRADE 36, OR 105.
- MINIMUM SPACING APPLIES TO MULTIPLE UNITS INSTALLED ADJACENT TO ONE ANOTHER, AND IS TAKEN AS THE DISTANCE FROM CENTERLINE TO CENTERLINE OF ANCHORS.



Date Signed: 1/7/2022

USED ON: --	APPROVALS: MODELED	DATE:	Middle Atlantic Products, Inc.
NEXT ASSY: --	DRAWN: CIRCLED DIMENSIONS ARE CRITICAL. INSPECTION DIMENSIONS UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES		
MATERIAL: SEE COMPONENTS	TOLERANCES ARE: DECIMAL: ± 0.03 3 PLG ± 0.03 FRACTIONS: 1/32 ANGLES: 1/2		TITLE: AXS-IR-SERIES HCAI
FINISH: --	SCALE: 1/8" = 1"		PART NO.:
			SIZE: 8
			DXF NO. NONE
			DWG NO.:
			PART REV:
			DWG REV:

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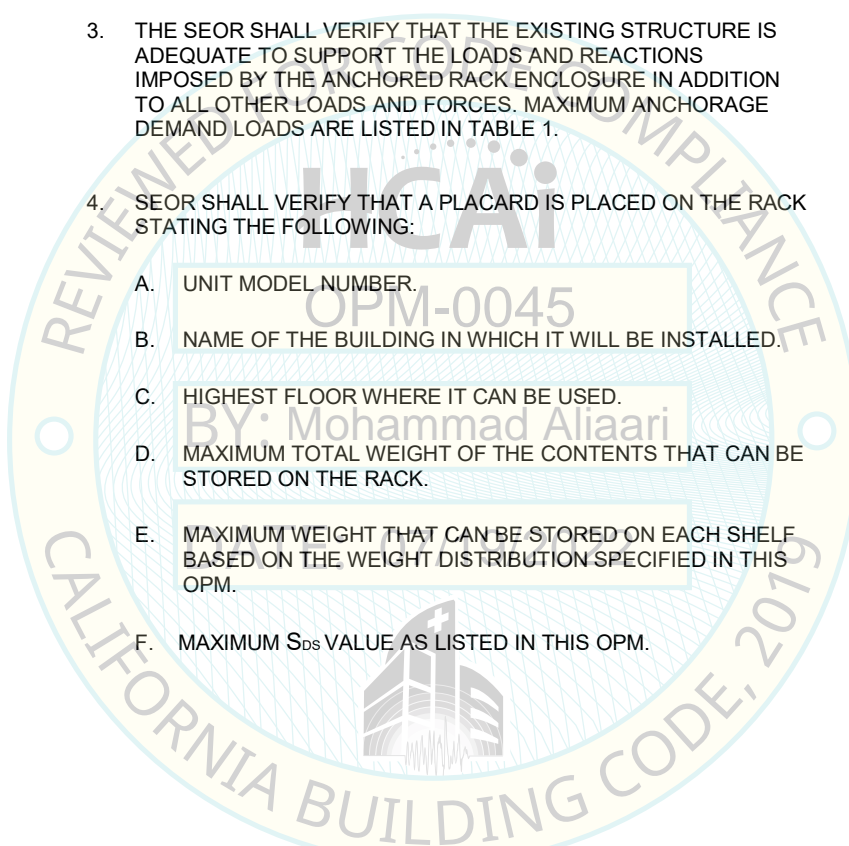
OPM-0503 AXS-IR-SERIES HCAI	REVISION:	D
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	PAGE:	5 of 7

TABLE 9: ACCEPTABLE FASTENERS FOR ANCHORING OF THE AXS-IR SERIES OF RACK ENCLOSURES TO TOPSIDE OF CONCRETE FILL OVER METAL DECK (NOTES 1,2)

Anchor Type	ICC ESR	Outside Diameter (inches)	Effective Embedment (inches) (hef)	MIN Thick Above/Within Flute (inches)	MIN Edge Distance (inches)	MIN Spacing (inches)
HILTI KWIK Bolt TZ2 Expansion Anchors	4266	0.5	2	3.25/1.5	7.5	9
Simpson Strong-Tie Strong-Bolt 2 Expansion Anchors	3037	0.5	2.25	3.25/1.5	6	8
ASTM F1554 Thru-Bolt (Note 3)	NA	0.5	NA	3.25/1.5	6	NA

RESPONSIBILITIES OF THE SEOR

- THE STRUCTURAL ENGINEER-OF-RECORD (SEOR) SHALL VERIFY THAT THE WEIGHT OF RACK ENCLOSURE CONTENTS DOES NOT EXCEED THE APPROVED CAPACITY FOR THE LOCATION OF INSTALLATION.
- THE SEOR SHALL VERIFY THAT PROJECT SPECIFIC SEISMIC PARAMETERS (S_{DS} & z/h) DO NOT EXCEED THE DESIGN VALUES STATED ON THESE DRAWINGS
- THE SEOR SHALL VERIFY THAT THE EXISTING STRUCTURE IS ADEQUATE TO SUPPORT THE LOADS AND REACTIONS IMPOSED BY THE ANCHORED RACK ENCLOSURE IN ADDITION TO ALL OTHER LOADS AND FORCES. MAXIMUM ANCHORAGE DEMAND LOADS ARE LISTED IN TABLE 1.
- SEOR SHALL VERIFY THAT A PLACARD IS PLACED ON THE RACK STATING THE FOLLOWING:
 - UNIT MODEL NUMBER.
 - NAME OF THE BUILDING IN WHICH IT WILL BE INSTALLED.
 - HIGHEST FLOOR WHERE IT CAN BE USED.
 - MAXIMUM TOTAL WEIGHT OF THE CONTENTS THAT CAN BE STORED ON THE RACK.
 - MAXIMUM WEIGHT THAT CAN BE STORED ON EACH SHELF BASED ON THE WEIGHT DISTRIBUTION SPECIFIED IN THIS OPM.
 - MAXIMUM S_{DS} VALUE AS LISTED IN THIS OPM.
- SEOR SHALL VERIFY THAT THE CONCRETE FLOOR MEETS THE REQUIREMENTS OF THIS PRE-APPROVAL.
- VERIFY THAT THE CONCRETE SLAB TO WHICH THE EQUIPMENT IS ANCHORED MEETS ALL REQUIREMENTS OF THE APPLICABLE ICC ESR.
- VERIFY THAT THE ANCHORS ARE AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS.
- VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE AN ADEQUATE DISTANCE FROM THE ANCHORS SHOWN IN THIS PRE-APPROVAL. VERIFY THAT THERE IS NO ADVERSE INTERACTION WHERE OTHER ANCHORS ARE WITHIN 18" OR 6 hef FROM THIS UNIT'S ANCHORS.
- VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2016 CBC AND THE DETAILS SHOWN IN THIS PRE-APPROVAL.



NOTES TABLE 9

- FOR NORMALWEIGHT OR SAND-LIGHTWEIGHT CONCRETE WITH A MINIMUM FC = 3000 PSI
- APPLIES TO THE AXS-IR SERIES ENCLOSURES LISTED IN TABLES 4-6
- ASTM F1554 GRADE 36 OR 105 THRU-BOLTS WITH CONNECTION TO THE DECK SOFFIT AS DETAILED ON THE DRAWINGS.



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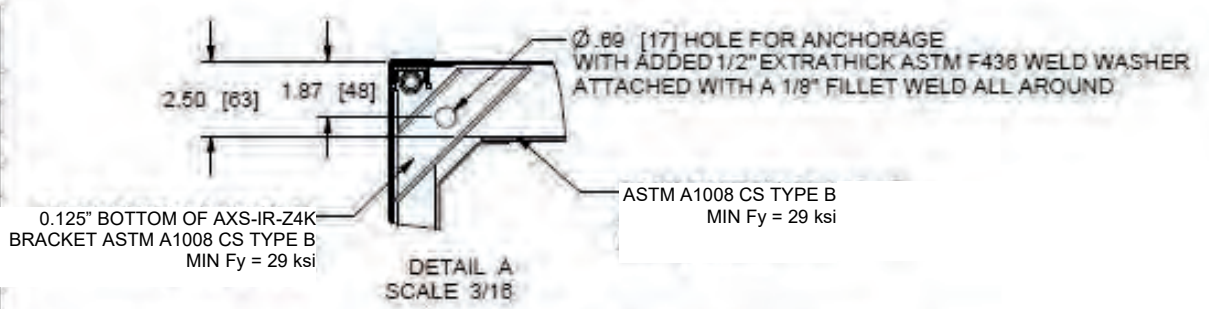
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NEXT ASSY: --	CIRCLED DIMENSIONS ARE CRITICAL. INSPECTION DIMENSIONS UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMAL: ± PLC 0.03; FRACTIONS: ±1/32; ANGLES: ±1°. SCALE = 1/8"		
MATERIAL: SEE COMPONENTS	TITLE: AXS-IR-SERIES HCAI PART NO. -- PART REV. -- SIZE: 3 DXF NO. NONE DWG NO. -- DWG REV. --		
FINISH: --			

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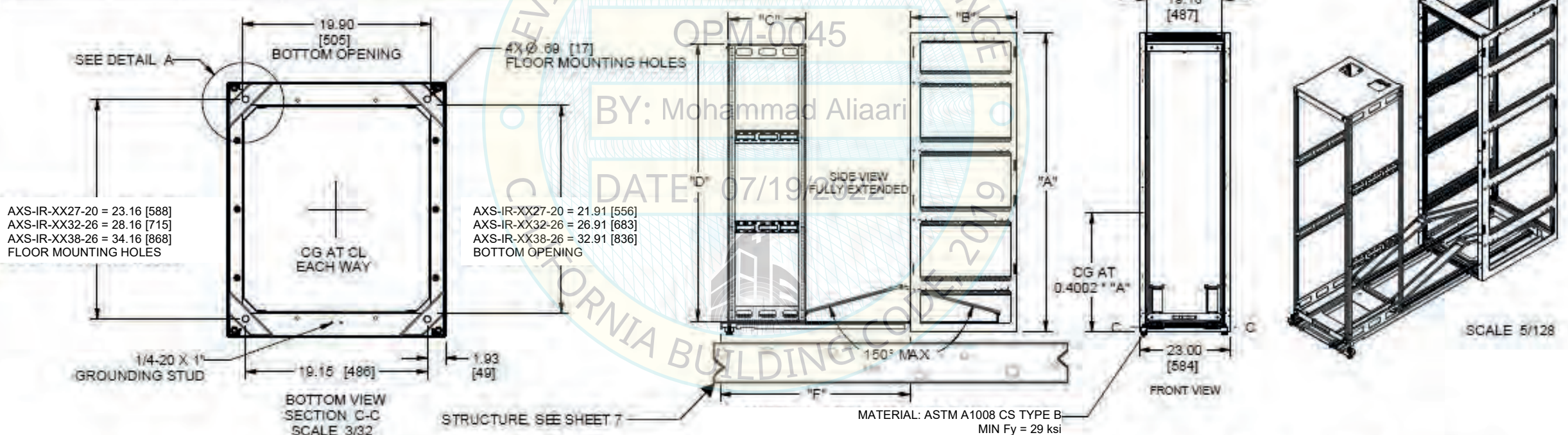
OPM-0503 AXS-IR-SERIES HCAI	REVISION:	D
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MODEL #	USEABLE RACKING HEIGHT	HOST CABINET OVERALL HEIGHT "A"	HOST CABINET OVERALL DEPTH "B"	FRAME DEPTH "C"	FRAME HEIGHT "D"	FRAME ROLL OUT "F"	RACK WEIGHT [LBS] (EMPTY)
AXS-IR-1927-20	16	37.45 [951]	27 [686]	20 [508]	32.5 [826]	47.5 [1207] TO 48.5 [1232]	130
AXS-IR-2527-20	22	47.95 [1218]	27 [686]	20 [508]	43.0 [1092]	47.5 [1207] TO 48.5 [1232]	139
AXS-IR-3827-20	35	70.70 [1796]	27 [686]	20 [508]	65.0 [1651]	47.5 [1207] TO 48.5 [1232]	151
AXS-IR-4127-20	38	75.95 [1929]	27 [686]	20 [508]	70.3 [1786]	47.5 [1207] TO 48.5 [1232]	163
AXS-IR-4527-20	42	82.95 [2107]	27 [686]	20 [508]	77.3 [1963]	47.5 [1207] TO 48.5 [1232]	167
AXS-IR-1932-26	16	37.45 [951]	32 [813]	26 [660]	32.5 [826]	47.5 [1207] TO 48.5 [1232]	147
AXS-IR-2532-26	22	47.95 [1218]	32 [813]	26 [660]	43.0 [1092]	47.5 [1207] TO 48.5 [1232]	156
AXS-IR-3832-26	35	70.70 [1796]	32 [813]	26 [660]	65.0 [1651]	47.5 [1207] TO 48.5 [1232]	170
AXS-IR-4132-26	38	75.95 [1929]	32 [813]	26 [660]	70.3 [1786]	47.5 [1207] TO 48.5 [1232]	184
AXS-IR-4532-26	42	82.95 [2107]	32 [813]	26 [660]	77.3 [1963]	47.5 [1207] TO 48.5 [1232]	188
AXS-IR-1938-26	16	37.45 [951]	38 [965]	26 [660]	32.5 [826]	47.5 [1207] TO 48.5 [1232]	161
AXS-IR-2538-26	22	47.95 [1218]	38 [965]	26 [660]	43.0 [1092]	47.5 [1207] TO 48.5 [1232]	170
AXS-IR-3838-26	35	70.70 [1796]	38 [965]	26 [660]	65.0 [1651]	47.5 [1207] TO 48.5 [1232]	184
AXS-IR-4138-26	38	75.95 [1929]	38 [965]	26 [660]	70.3 [1786]	47.5 [1207] TO 48.5 [1232]	198
AXS-IR-4538-26	42	82.95 [2107]	38 [965]	26 [660]	77.3 [1963]	47.5 [1207] TO 48.5 [1232]	202



* FOR SEISMIC APPLICATION USE P/N AXS-IR-Z4K
 ** BSPN-~~xxx-xx~~ ADDS 0.858 [17] PER SIDE TO WIDTH (REMOVABLE SIDE PANELS)
 *** MINIMUM RAIL SETBACK SHOWN. MAXIMUM RAIL SET BACK IS 2.5 [64]
 **** REQUIRES TRACKS (TRACK50) AND STANDS (TRACKL) FOR SERVICING

NOTE(S):
 1. ALL DIMENSIONS IN FORMAT: INCHES [MILLIMETERS]
 2. THE SEISMIC CONTENT CAPACITIES OF THIS OPM ARE APPLICABLE WHEN THE AXS-IR IS IN THE CLOSED AND LOCKED POSITION



AXS-IR-XX27-20 = 23.16 [588]
 AXS-IR-XX32-26 = 28.16 [715]
 AXS-IR-XX38-26 = 34.16 [868]
 FLOOR MOUNTING HOLES

AXS-IR-XX27-20 = 21.91 [556]
 AXS-IR-XX32-26 = 26.91 [683]
 AXS-IR-XX38-26 = 32.91 [836]
 BOTTOM OPENING

(4 ANCHORS TO BE USED)
 ANCHORED USING AXS-IR-Z4K BRACKET WITH 1/2" WELD WASHER AT EACH ANCHOR LOCATION. INSTALL ON SITE PER KIT DIRECTIONS. REFER TO DETAILS ON SHEET 7

SUPPORTS & ATTACHMENTS MATERIAL THICKNESS = .060 [1.5] BASE + .125 [3.2] BRACKET
 FIRST RACK SPACE IS 4 INCHES FROM BASE. ALL OTHER RACK SPACES ARE 1.755 INCHES IN HEIGHT
 MAS CONTACT CAPACITY FOR EACH UNIT CAN BE FOUND ON TABLE 2 THRU 7 BASED ON CAPACITY OF SUPPORTS & ATTACHMENTS

Middle Atlantic Products
 certifies this document as an outline drawing.

Signature: *y. Sudharsan*
 Print Name: Sudharsan Yogasuntharam
 Title: Compliance & Regulatory Engineer
 Date: 12/29/2021



Date Signed: 1/7/2022

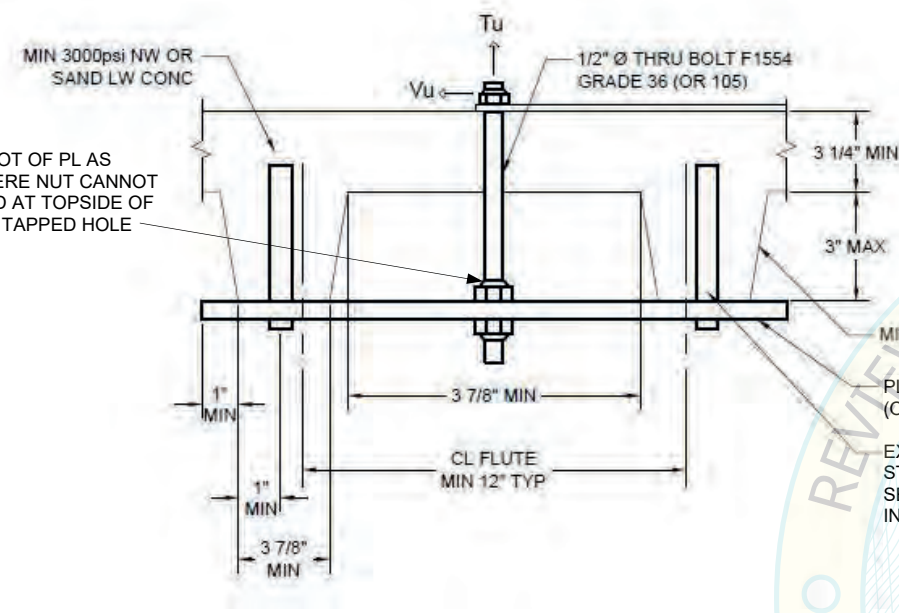
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FINISH: --	SCALE: 3/8		PART NO. PART REV
			SIZE: 3' DWF NO. NONE DWG NO. DWG REV

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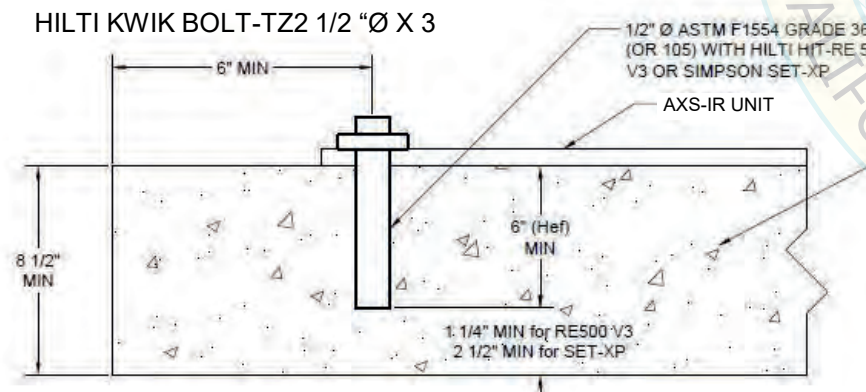


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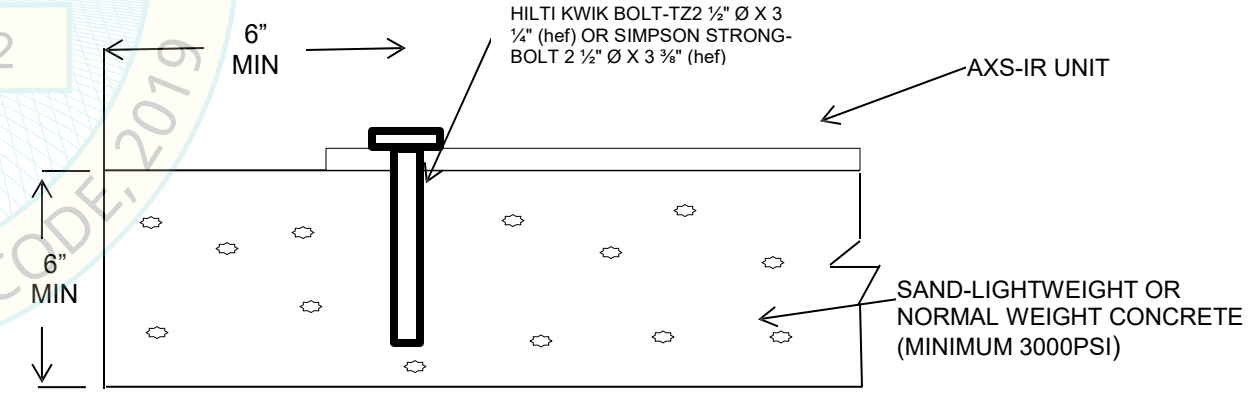
A
B
C
D
E



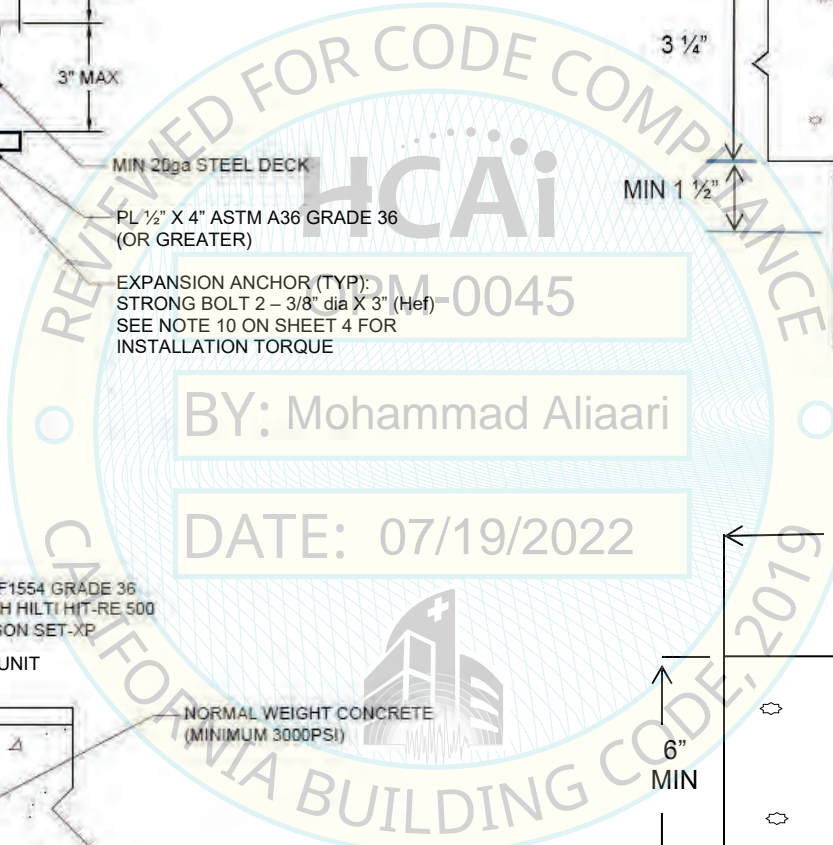
THRU-BOLT CONNECTION DETAIL



EXPANSION ANCHOR IN DECK CONNECTION DETAIL



EXPANSION ANCHOR CONNECTION DETAIL



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USED ON: --	APPROVALS MODELED	DATE	
NEXT ASSY: --	DRAWN		
MATERIAL: SEE COMPONENTS	CIRCLED DIMENSIONS ARE CRITICAL. INSPECTION DIMENSIONS UNLESS OTHERWISE SPECIFIED. ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMAL: 2 PLC 0.03 3 PLC 0.010 FRACTIONS: 16/32 ANGLES: 30° SCALE = 3/8"		TITLE AXS-IR-SERIES HCAI
FINISH: --			PART NO. PART REV.
			SIZE 3 DWF NO. NONE
			DWG NO. DWG REV.