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

OFFICE USE ONLY

APPLICATION #: OPM-0426

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: ☐ New ☒ Renewal/Update

Manufacturer Information

Manufacturer: Intermetro Industries

Manufacturer's Technical Representative: Willard Sickles

Mailing Address: 651 N. Washington St., Wilkes-Barre, PA 18705

Telephone: (570) 706-3121 Email: Bill.Sickles@metro.com

Product Information

Product Name: FREE STANDING, FLOOR ANCHORED, ADJUSTABLE SHELVING SYSTEM

Product Type: "Super Erecta" Family wire and solid shelving and "MetroMax Q" and "MetroMax i" shelving

Product Model Number: A

General Description: FREE STANDING, FLOOR ANCHORED, ADJUSTABLE SHELVING SYSTEM

Applicant Information

Applicant Company Name: Intermetro Industries

Contact Person: Willard Sickles

Mailing Address: 651 N. Washington St., Wilkes-Barre, PA 18705

Telephone: (570) 706-3121 Email: Bill.Sickles@metro.com

Title: Manager Product Safety

Registered Design Professonal Preparing Engineering Recommendations

Company Name: BROOKS RANSOM ASSOCIATES

Name: Klare Yavasile California License Number: S2488

Mailing Address: 7415 North Palm, Suite 100, Fresno, CA 93711

Telephone: (559) 449-8444 Email: klare@brooksransom.com

OSHPD 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 OSHPD prior to testing.

☒ Analysis

☐ Experience Data

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

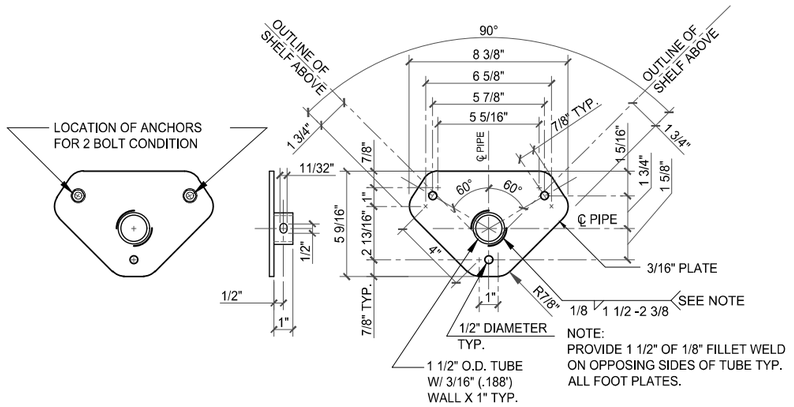
OSHPD Approval

Date: 7/20/2021

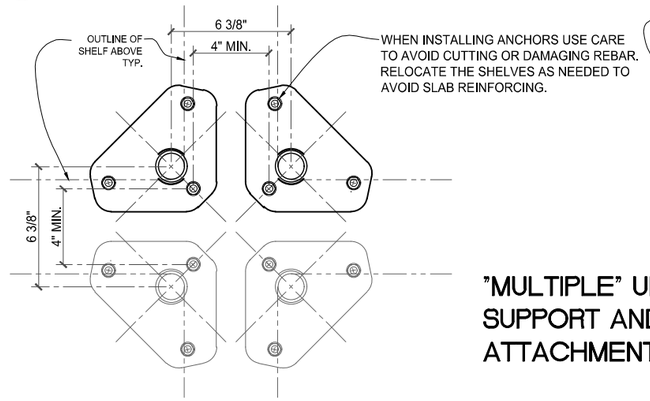
Name: Jeffrey Kikumoto Title: Senior Structural Engineer

Condition of Approval (if applicable):

REVISIONS							
REV	DESCRIPTION	DATE	DWN	CHK	PD	MFG	CRN#

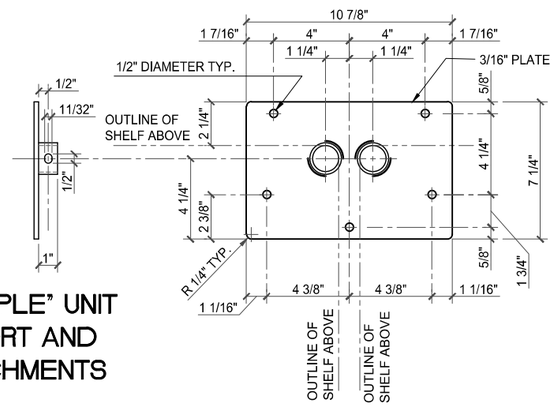


1 FOOT PLATE, 1-POST TRI 2-BOLT
FOOT PLATE, 1-POST TRI 3-BOLT
SCALE: 3"=1'-0"

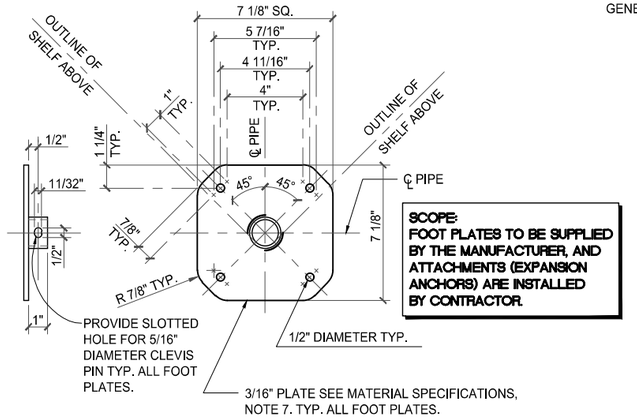


"MULTIPLE" UNIT SUPPORT AND ATTACHMENTS

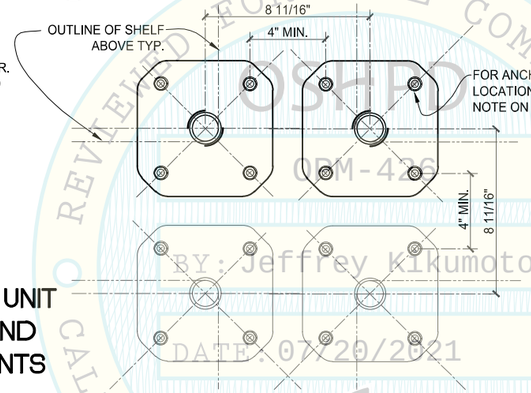
3 with TRI 2-BOLT OR 3-BOLT FOOT PLATES
SCALE: 3"=1'-0"



"MULTIPLE" UNIT SUPPORT AND ATTACHMENTS

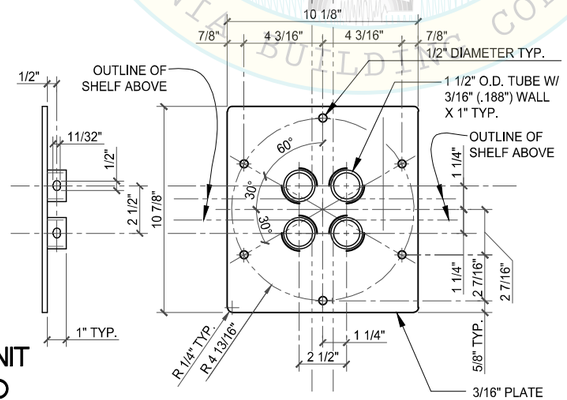


2 FOOT PLATE, 1-POST SQR 4-BOLT
SCALE: 3"=1'-0"



"MULTIPLE" UNIT SUPPORT AND ATTACHMENTS

4 with SQR 4-BOLT FOOT PLATES
SCALE: 3"=1'-0"



THIS FOOT PLATE MAY BE ROTATED 90 DEGREES IF NEEDED TO AVOID REBAR.

"MULTIPLE" UNIT SUPPORT AND ATTACHMENTS

5 FOOT PLATE, 2-POST RECT 5-BOLT
SCALE: 3"=1'-0"

6 FOOT PLATE, 4-POST RECT 6-BOLT
SCALE: 3"=1'-0"

GENERAL NOTES:

THIS OSPHD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM MUST BE BASED ON THE CBC 2019.

A1. THE PRE-APPROVAL IS ONLY FOR SUPPORTS AND ATTACHMENTS OF INTERMETRO SHELVING TO THE STRUCTURE. THE ENGINEER OF RECORD FOR A SITE SPECIFIC PROJECT MUST SUBSTANTIATE ADEQUACY OF THE SUPPORTING STRUCTURE.

A2. THE PRE-APPROVAL IS ONLY FOR SHELVING LOADED WITH 20 PSF MAXIMUM AND LOCATED IN AREAS WITH AN S_{DS} AS NOTED IN ITEM A7. BELOW.

A3. INSTALLATIONS REQUIRE A MAXIMUM 20 PSF CAPACITY, A POSTING SHALL BE REQUIRED WHICH STATES "MAX. LOADING 20 PSF".

A4. SPECIAL INSPECTION REQUIREMENTS OF SECTION 1705A.3, 2019 CBC, AS APPLIES TO CONCRETE ANCHOR BOLT INSTALLATION AND SECTION 1910A.5, 2019 CBC.

A5. CONCRETE ANCHORS SHALL BE AS CALLED FOR ON THE DETAILS.

A. EXPANSION ANCHORS
EXPANSION ANCHORS SHALL BE HILTI KB-TZ2 TZ, ICC-ES ESR-4266 UNLESS OTHERWISE NOTED.
AVOID CUTTING OR DAMAGING EXISTING SLAB REINFORCING.
MINIMUM CONCRETE SLAB-ON-GRADE THICKNESS SHALL BE 4".
MINIMUM 3 1/4" NORMAL WEIGHT OR SAND LIGHT WEIGHT CONCRETE OVER A 20 GA MINIMUM STEEL DECK WITH 1 1/2" MINIMUM HIGH FLUTES.
MINIMUM CONCRETE EDGE DISTANCE FROM CENTER OF ANCHOR SHALL BE 5"
MINIMUM SPACING BETWEEN ANCHORS TO BE 4"
PROOF LOAD TEST BOLT TO A MINIMUM LOAD OF 1600 LBS. TENSION-PROOF
LOAD TESTS SHALL BE DONE BY AN APPROVED INDEPENDENT TESTING AGENCY EMPLOYED BY THE FACILITY OWNBER PER CBC 1704A & 1910A.5 AND CAC 7-149.

A6. ADDITIONAL TEST SPECIFICATIONS PER 1910A.5, 2019 CBC AND AS FOLLOWS:
1. ANCHOR DIAMETER REFERS TO THE THREAD SIZE FOR THE WEDGE ANCHORS
2. APPLY PROOF TEST LOADS TO ANCHORS WITH NUT IN PLACE
3. TEST LOADS SHALL BE AS FOLLOWS:

ANCHOR	TEST LOAD (N.W. CONC)	TEST LOAD (SAND L.W.CONC.)	INSTALLATION TORQUE
3/8" HILTI KB-TZ2	1600 LBS	1030 LBS	25 FT-LBS

4. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED PROVIDED THE ANCHOR IS NOT RESTRAINED BY THE FIXTURE.
5. TEST 50% OF THE INSTALLED ANCHORS, OR ALTERNATE BOLTS IN A GROUP, INCLUDING AT LEAST ONE-HALF OF THE ANCHORS IN EACH GROUP PER CBC 1910A.5.3, 2019 CBC.
6. TESTING SHALL OCCUR 24 HOURS MINIMUM AFTER INSTALLATION
7. IF ANY ANCHOR FAILS TESTING, ALL ANCHORS IN THE SAME CATEGORY SHALL BE TESTED UNTIL 20 CONSECUTIVE ANCHORS, NOT PREVIOUSLY TESTED, PASS, THEN RESUME THE INITIAL TEST FREQUENCY.
8. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
   a. HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD AFTER 15 SECONDS THAT IS, THE WASHER UNDER THE NUT SHOULD NOT BECOME LOOSE.
   b. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN ONE-QUARTER (1/4) TURN OF THE NUT.
9. ALL TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE SPECIAL INSPECTOR. ALL REPORTS SHALL BE SENT TO THE INSPECTOR OF RECORD, OWNER, AND THE ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE.

A7. DESIGN CRITERIA

SEISMIC DESIGN:
LATERAL FORCE ON ELEMENT OF STRUCTURE

$$F_p = \frac{0.4\, a_p\, S_{DS}\, W_p}{\left(\frac{R_p}{I_p}\right)} \left(1 + 2\frac{z}{h}\right) (\Omega o)$$

$F_p = 0.3\, S_{DS}\, I_p\, W_p$ (MINIMUM)

$F_p = 1.6\, S_{DS}\, I_p\, W_p$ (MAXIMUM)

$I_p = 1.5$
$a_p = 1.0$
$R_p = 2.5$
$\Omega o = 2.0$

USE $S_{DS} \leq 0.73$
USE $S_{DS} \leq 1.33$
USE $S_{DS} \leq 1.83$

z/h = (IS-1)/TSG; see footnote no. 1 on Tables on Sheets 3 through 6.

S_{DS} is noted in the Anchorage Charts. If site s_{DS} is not shown, use the next highest figure.

MATERIAL SPECIFICATIONS:

1. MATERIAL AND WORKMANSHIP SHALL CONFORM TO AISC 360-16 AND TO THE APPLICABLE STANDARDS REFERENCED IN CHAPTER 35 , 2019 CBC.
2. ALL WELDING SHALL BE DONE BY CURRENTLY CERTIFIED WELDERS AND DONE IN CONFORMANCE WITH THE A.I.S.C. AND THE A.W.S. SPECIFICATIONS D1.1-15.
3. WELDING ELECTRODES TO BE E70XX OR E308-16 FOR SS.
4. ANCHORS SHALL BE HILTI KB-TZ2 CS OR SS AS MANUFACTURED BY HILTI INC (ICC-ES ESR-4266, ISSUED DECEMBER 2020). THE ANCHORS USED SHALL MATCH THE TYPE OF MATERIAL USED FOR THE FOOT PLATES.
5. MACHINE BOLTS SHALL BE AS PER ASTM A307 OR ASTM F593, AISI TYPE 304, CONDITION CW. NUTS SHALL BE AS PER ASTM A563 GRADE A OR ASTM A 194 GRADE 8.
6. LOCK WASHERS TO BE EXTRA DUTY HELICAL SPRING STEEL AS PER ASME/ANSI B 18.21.1. (CS SAE 1055 OR SS SAE 304).
7. STEEL PLATES AND STRAPS TO BE PER ASTM A36 OR ASTM A240 TYPE 304 WITH Fy =30 KSI MIN. U.N.O.
8. TUBING TO BE PER ASTM A513 CARBON STEEL OR ASTM A249 304 STAINLESS STEEL W/ Fy=30 KSI MIN.
9. CONCRETE STRENGTH (f'c) TO BE 3000 PSI MINIMUM.
10. NORMAL WEIGHT CONCRETE (SEE SHEETS 3 AND 4) OR SAND-LIGHTWEIGHT CONCRETE (SEE SHEETS 5 AND 6) IS ACCEPTABLE FOR ANCHORAGE.
11. CLEVIS PIN TO BE COLD DRAWN CARBON STEEL AS PER SAE 1010 WITH Fy = 44.2 KSI MIN.
12. LEVELING BOLT TO BE HOT ROLLED CARBON STEEL AS PER SAE 1010 WITH Fy = 26.1 KSI MIN.

REGISTERED PROFESSIONAL ENGINEER KLARE W. YAVASILE No. S2488 Exp. 12-31-21 STRUCTURAL STATE OF CALIFORNIA

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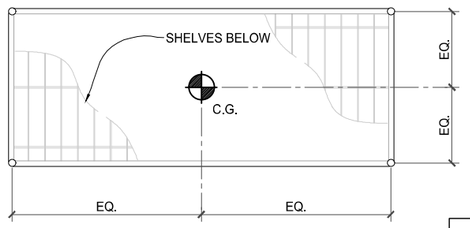
InterMetro Industries Corp.
North Washington Street
Wilkes-Barre, PA 18705
www.metro.com

MATERIAL/COLOR	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES	APPROVALS // DATE	TITLE: SEISMIC SUPPORT AND ATTACHMENTS FREE STANDING, FLOOR ANCHORED INTERMETRO SHELVING
FINISH/TEXTURE	TOLERANCES ARE: DECIMALS FRACTIONS ANGLES °	DWN SOC // 08-31-20	
		CHK SOC // 08-31-20	SIZE D | SW DWG. NO. 29897 | SHT. 1 OF 6 | REV . VER --
PART NO.	SOLIDWORKS CAD FILE: Met_D_DWG_rev_P	PD -	SCALE : AS NOTED
ALL SPECIFICATIONS PER PRODUCT DEVELOPMENT STANDARDS		MFG	CAD GENERATED DRAWING DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.

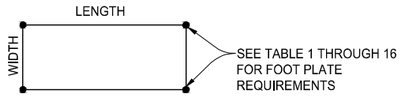
DWG. NO. D	SHT. 1 OF 1	REV . VER --

REVISIONS

REV	DESCRIPTION	DATE	DWN	CHK	PD	MFG	CRN#

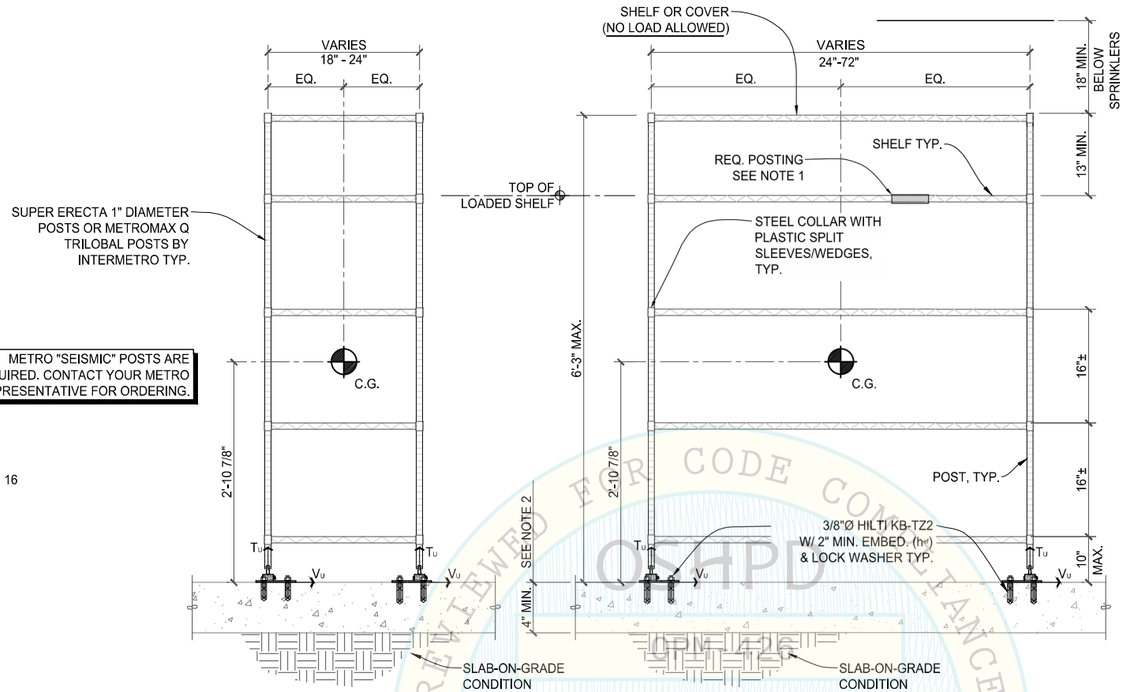


11 TOP PLAN VIEW
SCALE: 1"=1'-0"



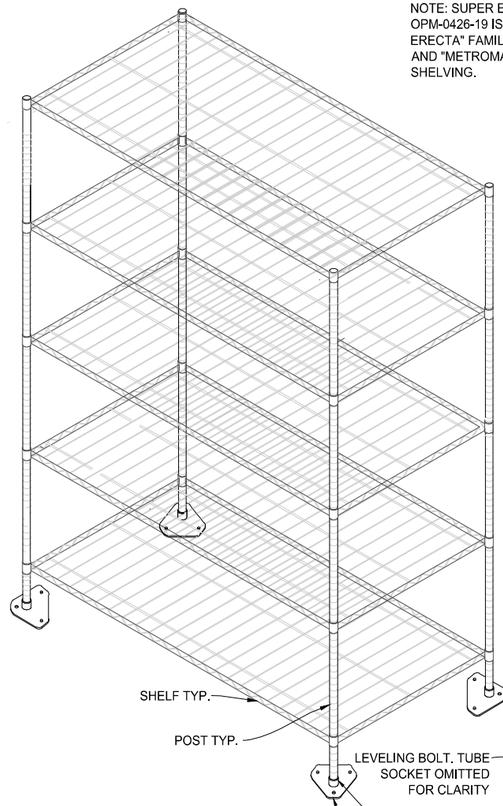
TYPICAL "STAND ALONE" UNIT
SCALE: N.T.S.

METRO "SEISMIC" POSTS ARE REQUIRED. CONTACT YOUR METRO REPRESENTATIVE FOR ORDERING.

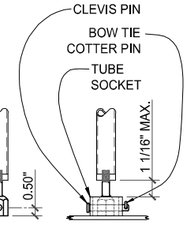


10 SIDE ELEVATION
SCALE: 1"=1'-0"

8 FRONT ELEVATION
SCALE: 1"=1'-0"

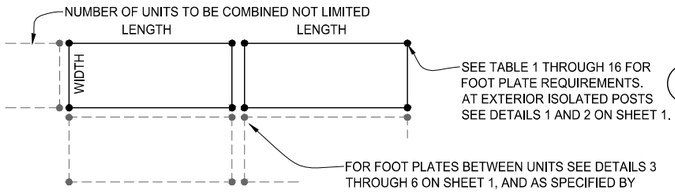


NOTE: SUPER ERECTA WIRE SHELVING SHOWN. OPM-0426-19 IS APPLICABLE FOR "SUPER ERECTA" FAMILY WIRE AND SOLID SHELVING AND "METROMAX Q" AND METROMAX i" SHELVING.



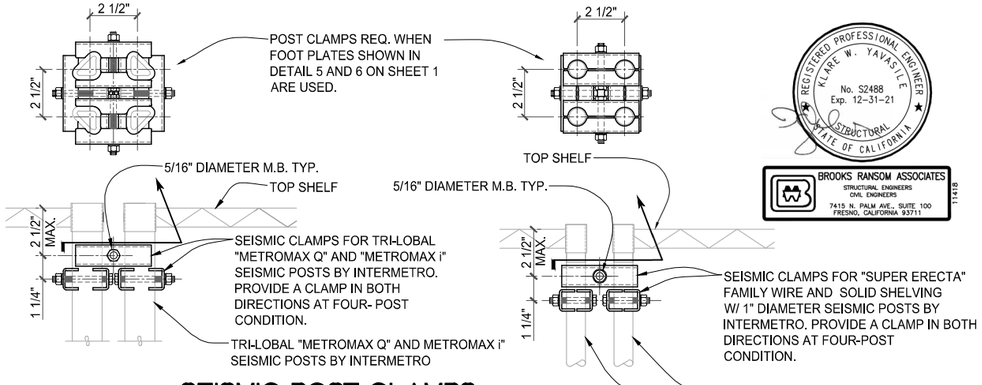
7 ISOMETRIC VIEW
SCALE: NTS

NOTES:
1. SHELF LOADING IS LIMITED TO 20 PSF BASED ON 4 LOADED SHELVES, AND NO LOADING ALLOWED ON TOP SHELF/COVER. POSTING OF MAXIMUM SHELF LOADING REQUIRED. SEE FRONT ELEVATION FOR LOCATION. FOR GREATEER OR LESSER AMOUNTHS THAN 4 LOADED SHELVES, THE 20 PSF MUST BE PROPORTIONALLY ADJUSTED. EVENLY SPACED SHELVING WILL ENSURE THE CENTER OF GRAVITY DOES NOT INCREASE.
   EXAMPLES:
   1.1. FOR FIVE LOADED SHELVES, LOAD IS 4/5 x 20 PSF = 16 PSF
   1.2. FOR THREE LOADED SHELVES, LOAD IS 4/3 x 20 PSF = 27 PSF
2. CONCRETE THICKNESS MUST BE 4" TO ACCOMMODATE 3/8" HILTI KB-TZ2 FOR CONC. SLAB-ON-GRADE. SEE DTLS. 8 & 10 THIS SHEET.
3. CONCRETE THICKNESS MUST BE 3 1/4" ABOVE FLUTES TO ACCOMMODATE 3/8" HILTI KB-TZ2 FOR SLAB ABOVE GRADE. SEE DTL. 9 THIS SHEET.



FOR MULTIPLE UNITS USING THE FOOT PLATES SHOWN IN DETAIL 5 AND 6 ON SHEET 1 PROVIDE POST CLAMPS AT THE TOP OF THE SHELVES AS SHOWN IN DETAIL 12 OF THIS SHEET.

TYP. "MULTIPLE" UNIT SUPPORT AND ATTACHMENTS
SCALE: N.T.S.



12 SEISMIC POST CLAMPS
SCALE: 3"=1'-0"

CLAMPS TO BE FABRICATED FROM 0.105" COLD ROLLED STEEL SHEET METAL PER ASTM A1008-20 CS TYPE B (Fy =20 KSI MIN) OR ASTM A249 304 STAINLESS STEEL.

RESPONSIBILITIES OF SEOR:

1. VERIFY THE EXISTING STRUCTURE IS ADEQUATE TO SUPPORT THE SHELVES AND THE ANCHORAGE FORCES AS NOTED ON SHEETS 3 THROUGH 6.
2. VERIFY THE SLAB-ON-GRADE MEETS THE MINIMUM STANDARDS NOTED ON THE ATTACHED DETAILS AND SPECIFICATIONS.
3. VERIFY THE RAISED SLABS MEET THE MINIMUM STANDARDS NOTED ON THE ATTACHED DETAILS AND SPECIFICATIONS.
4. ESTABLISH THE S_{DS} VALUE TO BE USED, AND VERIFY THE S_{DS} VALUE DOES NOT EXCEED THE S_{DS} VALUES LISTED ON SHEET 1.

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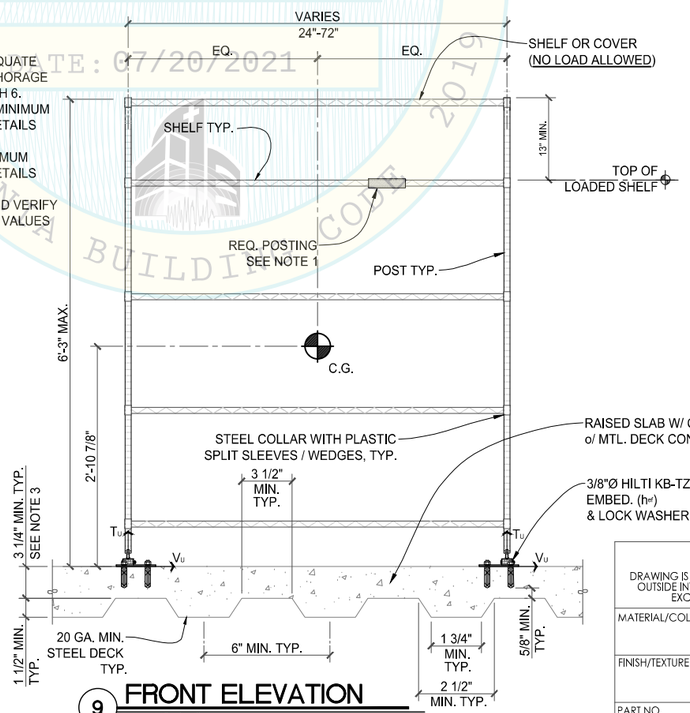
11448

9 FRONT ELEVATION
SCALE: 1"=1'-0"



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DWG. NO. D	SHT. 1 OF 1	REV . VER --

REVISIONS

REV	DESCRIPTION	DATE	DWN	CHK	PD	MFG	CRN#

Base Anchorage Requirement for Acceptable Anchorage Configurations at Various Story Locations for Shelving Lengths Shown

Normal Weight Concrete Only

Table 1
24 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
	$S_{DS} \leq 1.33$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
	$S_{DS} \leq 1.83$					
18	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT

Table 2
30 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
	$S_{DS} \leq 1.33$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.83$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT

NOTES:
1. STORY RATIO FORMULA IS (IS-1)/TSG, OR (INSTALLATION STORY -1)/(TOTAL STORIES ABOVE GRADE)
   WHERE:
   -IS: INSTALLATION STORY - I.E. THE STORY UPON WHICH THE SHELVING IS TO BE LOCATED
   -TSG: TOTAL STORIES ABOVE GRADE
   - IF STORY RATIO IS NOT SHOWN, USE NEXT HIGHEST FIGURE.
   - GROUND FLOOR PLUS ALL LEVELS BELOW GRADE ARE DEEMED TO BE ON FLOOR "1", I.E. STORY RATIO = 0.0
2. IN NO CASE SHALL THE INTERMETRO SHELF RATING BE EXCEEDED.
3. FOR END-TO-END CONDITION, A SIDE-BY-SIDE CONDITION OR A COMBINED END-TO-END WITH A SIDE-BY-SIDE CONDITION PROVIDE INDIVIDUAL FOOT PLATES AS DELINEATED IN DETAILS 3 AND 4 ON SHEET 1 UNLESS OTHERWISE NOTED. PROVIDE A MINIMUM SPACING BETWEEN ANCHORS OF 4" WHEN INDIVIDUAL FOOT PLATES ARE USED.
4. FOOT PLATES WITH MULTIPLE POSTS, SEE DETAILS 5 AND 6 ON SHEET 1, MAY BE USED IF SPECIFIED IN TABLES 1 THROUGH 16.
5. WHEN FOOT PLATES WITH MULTIPLE POSTS, AS REFERENCED IN DETAILS 5 & 6 ARE USED, THE POSTS AT THE TOP OF THE SHELVES MUST BE INTERCONNECTED WITH POST CLAMPS AS PER DETAIL 12 ON SHEET 2.

Normal Weight Concrete Only

MAXIMUM LOAD TO BE RESISTED BY THE NOTED FOOT PLATES AND INDIVIDUAL ANCHORS

	2-BOLT	3-BOLT	4-BOLT	5-BOLT	6-BOLT
Tu MAX. / FOOT PLATE (Kips)	0.527	0.995	1.320	1.358	1.088
Vu MAX. / FOOT PLATE (Kips)	0.272	0.438	0.584	0.702	1.404
Tu MAX. / ANCHOR (Kips)	1.049	1.143	0.947	0.946	1.085
Vu MAX. / ANCHOR (Kips)	0.174	0.392	0.311	0.251	0.317

1. THE ABOVE NOTED LOADS INCLUDE THE OVERSTRENGTH FACTOR (Ω_0) OF 2.0.
2. THE LOADS FOR THE 5-BOLT AND 6-BOLT FOOT PLATES ARE THE RESULTANT OF THE SUMMATION OF THE REACTIONS FROM THE MULTIPLE POSTS SUPPORTED BY THE RESPECTIVE FOOT PLATES.

Normal Weight Concrete Only

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STATE OF CALIFORNIA

BROOKS RANSOM ASSOCIATES
STRUCTURAL ENGINEERS
CIVIL ENGINEERS
7415 N. PALM AVE., SUITE 100
FRESNO, CALIFORNIA 93711
91418

LEGEND:

N.G.: NO GOOD. THERE IS NOT AN APPROVED FOOT PLATE FOR THIS CONDITION.

2 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

3 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

4 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 2 ON SHEET 1.

: SHELVES MAY BE COMBINED FOR END-TO-END, SIDE-BY-SIDE, OR A COMBINATION OF BOTH CONDITIONS USING THE 5 BOLT FOOT PLATE AS PER DETAIL 5 ON SHEET 1 FOR A TWO-POST CONDITION, AND THE 6 BOLT FOOT PLATE AS PER DETAIL 6 ON SHEET 1 FOR A FOUR-POST CONDITION.

Table 3
36 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
	$S_{DS} \leq 1.33$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.83$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT

Table 4
42 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
	$S_{DS} \leq 1.33$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.83$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	N.G.

InterMETRO
InterMetro Industries Corp.
North Washington Street
Wilkes-Barre, PA 18705
www.metro.com

MATERIAL/COLOR	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES	APPROVALS // DATE	TITLE: SEISMIC SUPPORT AND ATTACHMENTS FREE STANDING, FLOOR ANCHORED INTERMETRO SHELVING
FINISH/TEXTURE	TOLERANCES ARE: DECIMALS FRACTIONS ANGLES °	DWN SOC // 08-31-20	
		CHK SOC // 08-31-20	SIZE D | SW DWG. NO. 29897 | SHT. 3 OF 6 | REV . VER --
PART NO.	SOLIDWORKS CAD FILE: Met_D_DWG_rev_P	PD -	
ALL SPECIFICATIONS PER PRODUCT DEVELOPMENT STANDARDS		MFG	SCALE : AS NOTED

CAD GENERATED DRAWING DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.

DWG. NO. D	SHT. 1 OF 1	REV . VER --

REVISIONS

REV	DESCRIPTION	DATE	DWN	CHK	PD	MFG	CRN#

Base Anchorage Requirement for Acceptable Anchorage Configurations at Various Story Locations for Shelving Lengths Shown

Normal Weight Concrete Only

Table 5
48 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
$S_{DS} \leq 0.73$						
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
$S_{DS} \leq 1.33$						
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
$S_{DS} \leq 1.83$						
18	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
21	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
24	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.

Table 6
54 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
$S_{DS} \leq 0.73$						
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
$S_{DS} \leq 1.33$						
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
$S_{DS} \leq 1.83$						
18	3 BOLT	3 BOLT	3 BOLT	4 BOLT	N.G.	N.G.
21	3 BOLT	3 BOLT	3 BOLT	4 BOLT	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.

Normal Weight Concrete Only

MAXIMUM LOAD TO BE RESISTED BY THE NOTED FOOT PLATES AND INDIVIDUAL ANCHORS

	2-BOLT	3-BOLT	4-BOLT	5-BOLT	6-BOLT
T_U MAX. / FOOT PLATE (Kips)	0.527	0.995	1.320	1.358	1.088
V_U MAX. / FOOT PLATE (Kips)	0.272	0.438	0.584	0.702	1.404
T_U MAX. / ANCHOR (Kips)	1.049	1.143	0.947	0.946	1.085
V_U MAX. / ANCHOR (Kips)	0.174	0.392	0.311	0.251	0.317

1. THE ABOVE NOTED LOADS INCLUDE THE OVERSTRENGTH FACTOR (Ω_0) OF 2.0.
2. THE LOADS FOR THE 5-BOLT AND 6-BOLT FOOT PLATES ARE THE RESULTANT OF THE SUMMATION OF THE REACTIONS FROM THE MULTIPLE POSTS SUPPORTED BY THE RESPECTIVE FOOT PLATES.

Normal Weight Concrete Only

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CIVIL ENGINEERS
7415 N. PALM AVE., SUITE 100
FRESNO, CALIFORNIA 93711
11418

Table 7
60 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
$S_{DS} \leq 0.73$						
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
$S_{DS} \leq 1.33$						
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
$S_{DS} \leq 1.83$						
18	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.

Table 8
72 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
$S_{DS} \leq 0.73$						
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
$S_{DS} \leq 1.33$						
18	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
21	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
24	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
$S_{DS} \leq 1.83$						
18	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.

NOTES:
1. STORY RATIO FORMULA IS (IS-1)/TSG, OR (INSTALLATION STORY -1)/(TOTAL STORIES ABOVE GRADE)
   WHERE:
   -IS: INSTALLATION STORY - I.E. THE STORY UPON WHICH THE SHELVING IS TO BE LOCATED
   -TSG: TOTAL STORIES ABOVE GRADE
   - IF STORY RATIO IS NOT SHOWN, USE NEXT HIGHEST FIGURE.
   - GROUND FLOOR PLUS ALL LEVELS BELOW GRADE ARE DEEMED TO BE ON FLOOR "1", I.E. STORY RATIO = 0.0
2. IN NO CASE SHALL THE INTERMETRO SHELF RATING BE EXCEEDED.
3. FOR END-TO-END CONDITION, A SIDE-BY-SIDE CONDITION OR A COMBINED END-TO-END WITH A SIDE-BY-SIDE CONDITION PROVIDE INDIVIDUAL FOOT PLATES AS DELINEATED IN DETAILS 3 AND 4 ON SHEET 1 UNLESS OTHERWISE NOTED. PROVIDE A MINIMUM SPACING BETWEEN ANCHORS OF 4" WHEN INDIVIDUAL FOOT PLATES ARE USED.
4. FOOT PLATES WITH MULTIPLE POSTS, SEE DETAILS 5 AND 6 ON SHEET 1, MAY BE USED IF SPECIFIED IN TABLES 1 THROUGH 16.
5. WHEN FOOT PLATES WITH MULTIPLE POSTS, AS REFERENCED IN DETAILS 5 & 6 ARE USED, THE POSTS AT THE TOP OF THE SHELVES MUST BE INTERCONNECTED WITH POST CLAMPS AS PER DETAIL 12 ON SHEET 2.

LEGEND:

N.G.: NO GOOD. THERE IS NOT AN APPROVED FOOT PLATE FOR THIS CONDITION.

2 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

3 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

4 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 2 ON SHEET 1.

: SHELVES MAY BE COMBINED FOR END-TO-END, SIDE-BY-SIDE, OR A COMBINATION OF BOTH CONDITIONS USING THE 5 BOLT FOOT PLATE AS PER DETAIL 5 ON SHEET 1 FOR A TWO-POST CONDITION, AND THE 6 BOLT FOOT PLATE AS PER DETAIL 6 ON SHEET 1 FOR A FOUR-POST CONDITION.

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MATERIAL/COLOR	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES	APPROVALS // DATE	TITLE: SEISMIC SUPPORT AND ATTACHMENTS FREE STANDING, FLOOR ANCHORED INTERMETRO SHELVING
FINISH/TEXTURE	TOLERANCES ARE: DECIMALS FRACTIONS ANGLES °	DWN SOC // 08-31-20	
		CHK SOC // 08-31-20	SIZE D / SW DWG. NO. 29897 / SHT. 4 OF 6 / REV . VER --
PART NO.	SOLIDWORKS CAD FILE: Met_D_DWG_rev_P	PD -	
ALL SPECIFICATIONS PER PRODUCT DEVELOPMENT STANDARDS		MFG	SCALE : AS NOTED / CAD GENERATED DRAWING DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.

DWG. NO. D	SHT. 1 OF 1	REV . VER --

REVISIONS

REV	DESCRIPTION	DATE	DWN	CHK	PD	MFG	CRN#

Base Anchorage Requirement for Acceptable Anchorage Configurations at Various Story Locations for Shelving Lengths Shown

Sand-Light Weight Concrete

Table 9
24 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
	$S_{DS} \leq 1.33$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.83$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	4 BOLT

Table 10
30 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT
	$S_{DS} \leq 1.33$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
	$S_{DS} \leq 1.83$					
18	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
21	4 BOLT	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.

Table 11
36 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT
	$S_{DS} \leq 1.33$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
	$S_{DS} \leq 1.83$					
18	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.

Table 12
42 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.33$					
18	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT	N.G.
	$S_{DS} \leq 1.83$					
18	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.

Sand-Light Weight Concrete

MAXIMUM LOAD TO BE RESISTED BY THE NOTED FOOT PLATES AND INDIVIDUAL ANCHORS

	2-BOLT	3-BOLT	4-BOLT	5-BOLT	6-BOLT
T_U MAX. / FOOT PLATE (Kips)	0.351	0.598	0.930	0.783	0.626
V_U MAX. / FOOT PLATE (Kips)	0.193	0.278	0.422	0.413	0.848
T_U MAX. / ANCHOR (Kips)	0.705	0.696	0.665	0.546	0.639
V_U MAX. / ANCHOR (Kips)	0.097	0.242	0.221	0.147	0.125

1. THE ABOVE NOTED LOADS INCLUDE THE OVERSTRENGTH FACTOR (Ω_0) OF 2.0.
2. THE LOADS FOR THE 5-BOLT AND 6-BOLT FOOT PLATES ARE THE RESULTANT OF THE SUMMATION OF THE REACTIONS FROM THE MULTIPLE POSTS SUPPORTED BY THE RESPECTIVE FOOT PLATES.

Sand-Light Weight Concrete

REGISTERED PROFESSIONAL ENGINEER
KLARE W. YAVASTE
No. S2488
Exp. 12-31-21
STRUCTURAL
STATE OF CALIFORNIA

BROOKS RANSOM ASSOCIATES
STRUCTURAL ENGINEERS
CIVIL ENGINEERS
7415 N. PALM AVE., SUITE 100
FRESNO, CALIFORNIA 93711
11436

NOTES:
1. STORY RATIO FORMULA IS (IS-1)/TSG, OR (INSTALLATION STORY -1)/(TOTAL STORIES ABOVE GRADE)
   WHERE:
   -IS: INSTALLATION STORY - I.E. THE STORY UPON WHICH THE SHELVING IS TO BE LOCATED
   -TSG: TOTAL STORIES ABOVE GRADE
   - IF STORY RATIO IS NOT SHOWN, USE NEXT HIGHEST FIGURE.
   - GROUND FLOOR PLUS ALL LEVELS BELOW GRADE ARE DEEMED TO BE ON FLOOR "1", I.E. STORY RATIO = 0.0
2. IN NO CASE SHALL THE INTERMETRO SHELF RATING BE EXCEEDED.
3. FOR END-TO-END CONDITION, A SIDE-BY-SIDE CONDITION OR A COMBINED END-TO-END WITH A SIDE-BY-SIDE CONDITION PROVIDE INDIVIDUAL FOOT PLATES AS DELINEATED IN DETAILS 3 AND 4 ON SHEET 1 UNLESS OTHERWISE NOTED. PROVIDE A MINIMUM SPACING BETWEEN ANCHORS OF 4" WHEN INDIVIDUAL FOOT PLATES ARE USED.
4. FOOT PLATES WITH MULTIPLE POSTS, SEE DETAILS 5 AND 6 ON SHEET 1, MAY BE USED IF SPECIFIED IN TABLES 1 THROUGH 16.
5. WHEN FOOT PLATES WITH MULTIPLE POSTS, AS REFERENCED IN DETAILS 5 & 6 ARE USED, THE POSTS AT THE TOP OF THE SHELVES MUST BE INTERCONNECTED WITH POST CLAMPS AS PER DETAIL 12 ON SHEET 2.

LEGEND:

N.G.: NO GOOD. THERE IS NOT AN APPROVED FOOT PLATE FOR THIS CONDITION.

2 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

3 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

4 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 2 ON SHEET 1.

: SHELVES MAY BE COMBINED FOR END-TO-END, SIDE-BY-SIDE, OR A COMBINATION OF BOTH CONDITIONS USING THE 5 BOLT FOOT PLATE AS PER DETAIL 5 ON SHEET 1 FOR A TWO-POST CONDITION, AND THE 6 BOLT FOOT PLATE AS PER DETAIL 6 ON SHEET 1 FOR A FOUR-POST CONDITION.

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FINISH/TEXTURE	TOLERANCES ARE: DECIMALS FRACTIONS ANGLES °	DWN SOC // 08-31-20	
		CHK SOC // 08-31-20	SIZE D | SW DWG. NO. 29897 | SHT. 5 OF 6 | REV . VER --
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ALL SPECIFICATIONS PER PRODUCT DEVELOPMENT STANDARDS		MFG	SCALE : AS NOTED | CAD GENERATED DRAWING DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.

DWG. NO. D	SHT. 1 OF 1	REV . VER --

REVISIONS

REV	DESCRIPTION	DATE	DWN	CHK	PD	MFG	CRN#

Base Anchorage Requirement for Acceptable Anchorage Configurations at Various Story Locations for Shelving Lengths Shown

Sand-Light Weight Concrete

Table 13
48 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.33$					
18	4 BOLT	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.
21	4 BOLT	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.
	$S_{DS} \leq 1.83$					
18	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.

Table 14
54 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
21	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
24	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	3 BOLT
	$S_{DS} \leq 1.33$					
18	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
	$S_{DS} = 1.83$					
18	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.
21	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.
24	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.

Table 15
60 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	4 BOLT
21	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	4 BOLT
24	2 BOLT	2 BOLT	2 BOLT	3 BOLT	3 BOLT	4 BOLT
	$S_{DS} \leq 1.33$					
18	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.
	$S_{DS} \leq 1.83$					
18	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.
21	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.
24	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.

Table 16
72 inch Long Shelving
20 psf shelf Loading[2,3,4,5]

SHELF WIDTH	STORY RATIO[1] : (IS-1)/TSG					
	= 0.0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 1.0
	$S_{DS} \leq 0.73$					
18	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
21	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
24	3 BOLT	3 BOLT	3 BOLT	3 BOLT	4 BOLT	4 BOLT
	$S_{DS} \leq 1.33$					
18	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
21	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
24	4 BOLT	4 BOLT	4 BOLT	N.G.	N.G.	N.G.
	$S_{DS} \leq 1.83$					
18	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.
21	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.
24	N.G.	N.G.	N.G.	N.G.	N.G.	N.G.

Sand-Light Weight Concrete

MAXIMUM LOAD TO BE RESISTED BY THE NOTED FOOT PLATES AND INDIVIDUAL ANCHORS

	2-BOLT	3-BOLT	4-BOLT	5-BOLT	6-BOLT
Tu MAX. / FOOT PLATE (Kips)	0.351	0.598	0.930	0.783	0.626
Vu MAX. / FOOT PLATE (Kips)	0.193	0.278	0.422	0.413	0.848
Tu MAX. / ANCHOR (Kips)	0.705	0.696	0.665	0.546	0.639
Vu MAX. / ANCHOR (Kips)	0.097	0.242	0.221	0.147	0.125

1. THE ABOVE NOTED LOADS INCLUDE THE OVERSTRENGTH FACTOR (Ω_0) OF 2.0.
2. THE LOADS FOR THE 5-BOLT AND 6-BOLT FOOT PLATES ARE THE RESULTANT OF THE SUMMATION OF THE REACTIONS FROM THE MULTIPLE POSTS SUPPORTED BY THE RESPECTIVE FOOT PLATES.

Sand-Light Weight Concrete

REGISTERED PROFESSIONAL ENGINEER
KLARE W. YAVASILE
No. S2488
Exp. 12-31-21
STRUCTURAL
STATE OF CALIFORNIA

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STRUCTURAL ENGINEERS
CIVIL ENGINEERS
7415 N. PALM AVE., SUITE 100
FRESNO, CALIFORNIA 93711
11648

NOTES:
1. STORY RATIO FORMULA IS (IS-1)/TSG, OR (INSTALLATION STORY -1)/(TOTAL STORIES ABOVE GRADE)
   WHERE:
   -IS: INSTALLATION STORY - I.E. THE STORY UPON WHICH THE SHELVING IS TO BE LOCATED
   -TSG: TOTAL STORIES ABOVE GRADE
   - IF STORY RATIO IS NOT SHOWN, USE NEXT HIGHEST FIGURE.
   - GROUND FLOOR PLUS ALL LEVELS BELOW GRADE ARE DEEMED TO BE ON FLOOR "1", I.E. STORY RATIO = 0.0
2. IN NO CASE SHALL THE INTERMETRO SHELF RATING BE EXCEEDED.
3. FOR END-TO-END CONDITION, A SIDE-BY-SIDE CONDITION OR A COMBINED END-TO-END WITH A SIDE-BY-SIDE CONDITION PROVIDE INDIVIDUAL FOOT PLATES AS DELINEATED IN DETAILS 3 AND 4 ON SHEET 1 UNLESS OTHERWISE NOTED. PROVIDE A MINIMUM SPACING BETWEEN ANCHORS OF 4" WHEN INDIVIDUAL FOOT PLATES ARE USED.
4. FOOT PLATES WITH MULTIPLE POSTS, SEE DETAILS 5 AND 6 ON SHEET 1, MAY BE USED IF SPECIFIED IN TABLES 1 THROUGH 16.
5. WHEN FOOT PLATES WITH MULTIPLE POSTS, AS REFERENCED IN DETAILS 5 & 6 ARE USED, THE POSTS AT THE TOP OF THE SHELVES MUST BE INTERCONNECTED WITH POST CLAMPS AS PER DETAIL 12 ON SHEET 2.

LEGEND:

N.G.: NO GOOD. THERE IS NOT AN APPROVED FOOT PLATE FOR THIS CONDITION.

2 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

3 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 1 ON SHEET 1.

4 BOLT: PROVIDE A FOOT PLATE AS PER DETAIL 2 ON SHEET 1.

: SHELVES MAY BE COMBINED FOR END-TO-END, SIDE-BY-SIDE, OR A COMBINATION OF BOTH CONDITIONS USING THE 5 BOLT FOOT PLATE AS PER DETAIL 5 ON SHEET 1 FOR A TWO-POST CONDITION, AND THE 6 BOLT FOOT PLATE AS PER DETAIL 6 ON SHEET 1 FOR A FOUR-POST CONDITION.

InterMETRO
InterMetro Industries Corp.
North Washington Street
Wilkes-Barre, PA 18705
www.metro.com

MATERIAL/COLOR	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE GIVEN IN INCHES	APPROVALS // DATE	TITLE: SEISMIC SUPPORT AND ATTACHMENTS FREE STANDING, FLOOR ANCHORED INTERMETRO SHELVING
FINISH/TEXTURE	TOLERANCES ARE: DECIMALS FRACTIONS ANGLES °	DWN SOC // 08-31-20	
PART NO.	SOLIDWORKS CAD FILE: Met_D_DWG_rev_P	CHK SOC // 08-31-20	SIZE D / SW DWG. NO. 29897 / SHT. 6 OF 6 / REV . VER --
ALL SPECIFICATIONS PER PRODUCT DEVELOPMENT STANDARDS		PD -	SCALE : AS NOTED
		MFG	CAD GENERATED DRAWING DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.