Protection Engineering CONSULTANTS

October 20, 2014

MegaMet Industries, Inc.
P.O Box 635
Birmingham, AL 35201

ATTN: Edward Wall
ewalljr777@gmail.com

Re: Comparison letter for MegaMet's MegaStorm Door against door construction details in FEMA 361 section 7.4.1

Reference: P.O # 110513

Dear Edward:

Per your request, Protection Engineering Consultants compared the door construction recommendations in section 7.4.1 of FEMA 361 "*Design and Construction Guidance for Community Safe Rooms",* August 2008 to the MegaStorm construction drawings provided by MegaMet. A summary of our findings is provided next.

BACKGROUND

Doors in Safe Rooms must be capable of resisting high wind-induced loads as well as preventing perforation (as defined in FEMA 361) from large missile impact (refer to chapter 3 in FEMA 361 for specific requirements). Section 7.4 in FEMA 361 provides a summary of construction configurations for door and door hardware that have successfully passed missile impacts for the largest missile at the highest speed (15 lb 2x4 traveling horizontally at 100 mph). Per FEMA 361, these door configurations in widths up to 36 inches are also capable of withstanding wind loads associated with wind speeds up to 250 mph.

The goal of this of task was to compare the requirements for successful door configurations provided in section 7.4 of FEMA 361 to the construction configuration of the MegaStorm door by MegaMet to verify that MegaMet's MegaStorm Door meets or exceeds all construction recommendations detailed by FEMA 361 Safe Room guidelines.

COMPARISON RESULTS

A detailed comparison of the construction recommendations in FEMA 361 section 7 and MegaMet's MegaStorm Door is provided in Table 1. The MegaStorm single and double doors in configurations per the attached drawing details provided by MegaMet (with mark-ups) exceeds the construction recommendations described section 7.4 in FEMA 361 with the following limitations and stipulations:

Single Doors

- The door width is equal or less than 36 inches
- The door hardware which consists of latching locking mechanisms and hinges must be specified only with certified and approved for FEMA's 361 Safe Rooms.

Double doors

- Each leaf to be 36 inches wide or less in a swing-out configuration
- Hardware per requirements mentioned above for Single Doors
- Must have a fixed or removable middle mullion consisting of structural steel tube section or with structural reinforcement within the mullion.
- The middle mullion must be properly attached at the head and sill and shown through testing of analysis to be capable of resisting the wind pressures and missile impact demands.

Table 1. – FEMA 361 Safe Room Door Construction Recommendations

Construction Recommendations based on FEMA 320 and 361 systems that met performance	**MegaMet MegaStorm**
Door	
14-Ga skin	√
3ft width	√
Latched with 3 hinge and 3 points locking	√
Continuous 14-Ga steel channels as hinge and lock rails	√
16-Ga steel channels at the top and bottom	√
Hardware reinforcement 12-Ga	√
Skin welded full height of the door	√
weld spacing on lock and hinge rails max 5" O.C	√
skin welded to the 14-Ga top and bottom channel with max spacing 2.5" O.C	√
Internal 20-Ga steel ribs with polystyrene or honeycomb fill between stiffeners	√
Door Frame	
(Single Door) 14-Ga steel frames, welded or knockdown style	√
(Double Door) 12-Ga steel frames, welded or knockdown style	√
stud construction - attach with five 3/8 lag screws per jambs and three in the head	N/A
masonry construction - attach with T-anchors, five T per jamb and three T at head	√
Door Hardware	
three point locking must be provided (if one fails, at least two remain)	To be specified
hinges should be heavy duty 5-knuckle types attached with American made "full head" screws	√
no door closers/coordinators or showed to remain attached after missile and impact test	To be specified
no windows and no peep	√
latching - Grade 1 mortised with 1/2 throw bolts with 1 inch throw into door jamb - 3 total	To be specified
Operational requirements, panic bar - some codes don't allow single operated multiple latches	To be specified

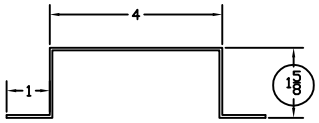
Very truly yours,

PROTECTION ENGINEERING CONSULTANTS, LLC

Aldo E. McKay
Sr. Engineer

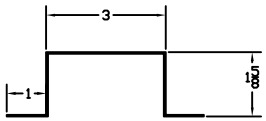
Ed. Conrath, PE
Senior Principal

DOOR STIFFENERS
3 ea. REQUIRED



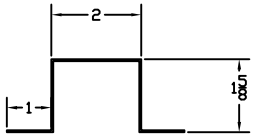
SW = 9" 18GA

DOOR STIFFENER
1 ea. REQUIRED

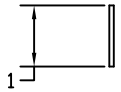


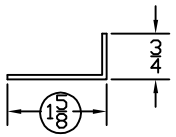
SW = 8" 18GA

DOOR STIFFENER
1 ea. REQUIRED



SW = 7" 18GA

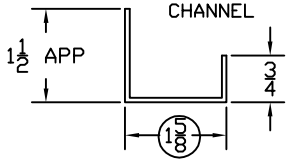




SW = 2 1/4" 14 GA

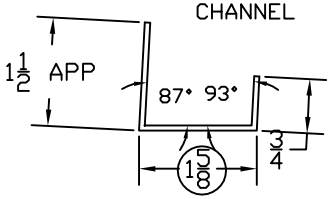
DOOR TOP & BOTTOM
CHANNEL

DOOR HINGE
CHANNEL



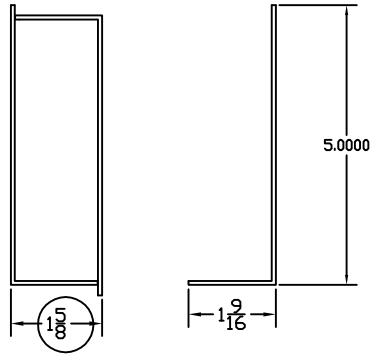
SW = 3 11/16" 14 GA

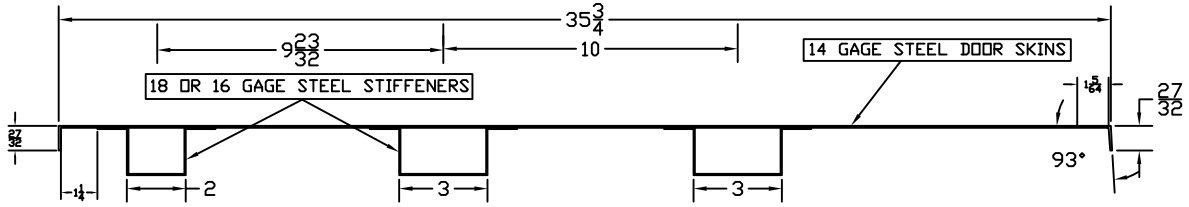
DOOR STRIKE
CHANNEL



SW = 3 11/16" 14 GA

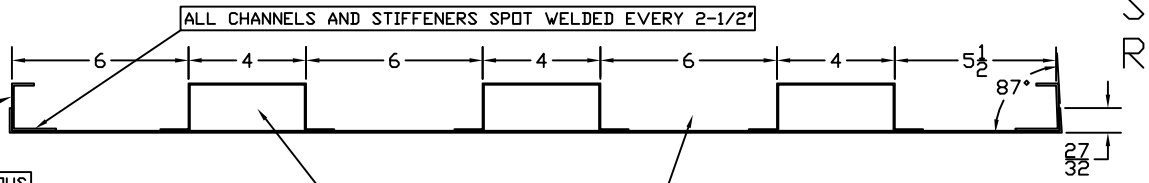
CLOSER REINF.
14 GAUGE MATERIAL
1-3/4" DOOR
6-3/8" X 32 7/16"





HINGE RAIL

STRIKE RAIL



14 GAGE STEEL CONTINUOUS PERIMETER CHANNEL

VOIDS IN HAT SECTIONS FILLED WITH ROCKWOOL
ALL OTHER VOIDS FILLED WITH POLYSTYRENE

TOLERANCE ON ALL DIMENSIONS FRACTIONAL ± 3/32"
UNLESS OTHERWISE SPECIFIED DECIMAL ± 0.0937

CUSTOMER:	MEGAMET
ARCHITECT:	
CONTRACTOR:	

Manufactured by
MEGAMET INDUSTRIES, INC.
Birmingham, Alabama

NAME 320 DOOR CONSTRUCTION

DRAWN R BRADY	DATE 5-4-2011
CHECKED	SCALE NONE
APPROVED	PROJECT

MEGAMET INDUSTRIES

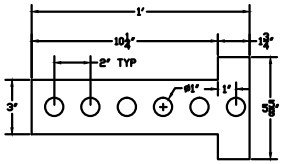
MEGAMET REV.

3'0 x 8'0 FEMA 361

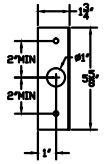
CONTINUOUSLY WELDED
FRAME 14ga RK 3/4" STOPS

5-KNUCKLE HEAVY WEIGHT
4-1/2" HINGES WITH STAINLESS
STEEL SCREWS.

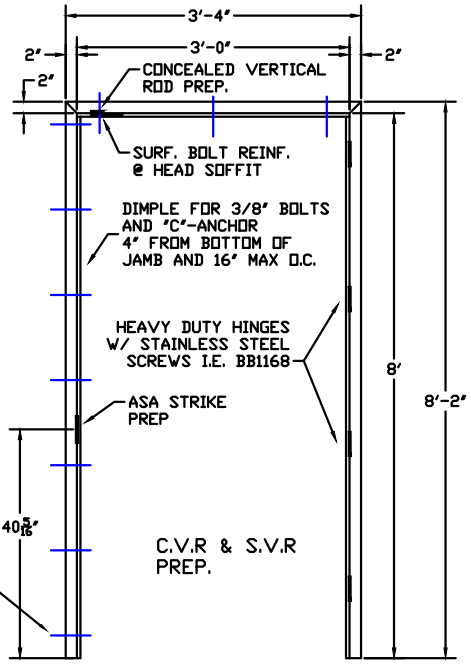
Tee ANCHORS HINGE SIDE ALIGN
HOLE WITH FLOOR CLIP.
FLOOR CLIP MADE OF 14GA.



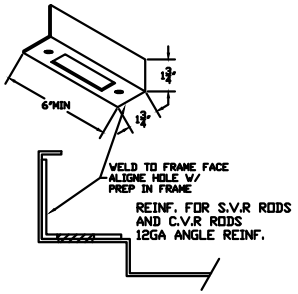
14GA Tee ANCHORS
LOCATE 4" FROM BTM
AND 15" O.C. AT JAMBS
3ea. PROVIDED AT HEAD

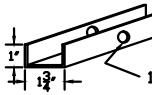


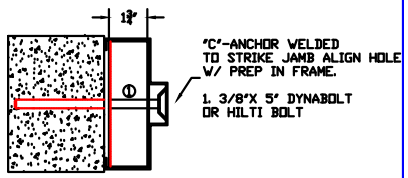
14GA MIN. BASE ANGLE
W/ 1"HOLE TO ALIGN
W/ HOLE IN T-ANCHORS

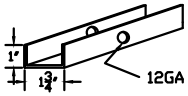


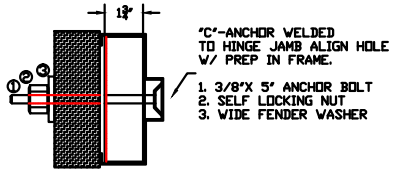
STRIKE REINF. W/ 12GA ANGLE
@ 40-5/16" CL AFF











TOLERANCE ON ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED
FRACTIONAL ± 3/32"
DECIMAL ± 0.0937

CUSTOMER:	MEGAMET
ARCHITECT:	
CONTRACTOR:	

Manufactured by
MEGAMET INDUSTRIES, INC.
Birmingham, Alabama

NAME: FEMA FRAME TEST

DRAWN	DATE
MONDRAGON D.	07-17-2014
CHECKED	SCALE
	NONE
APPROVED	PROJECT

MEGAMET INDUSTRIES

TEST FEMA 361 REV.

6'0 x 8'0 FEMA 361

CONTINUOUSLY WELDED
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5-KNUCKLE HEAVY WEIGHT
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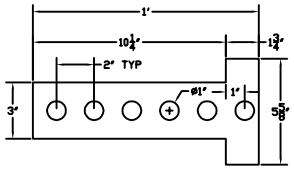

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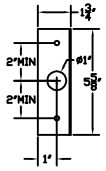

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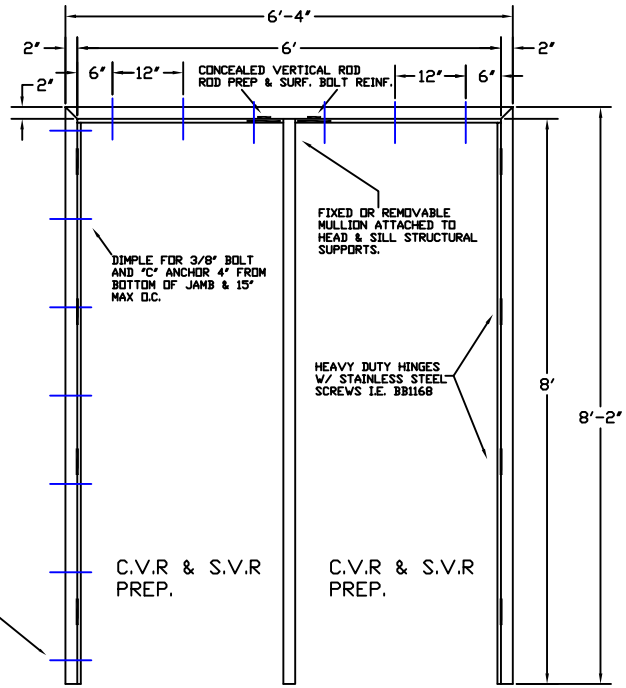

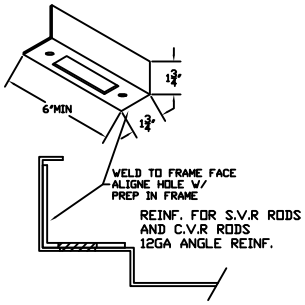

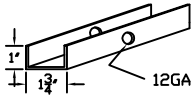

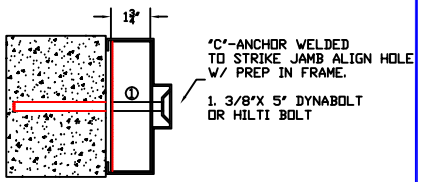

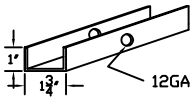

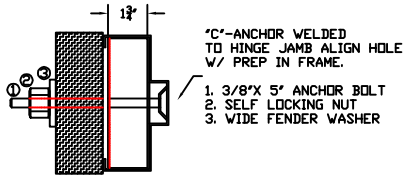

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APPROVED	PROJECT

MEGAMET INDUSTRIES

TEST FEMA 361

REV.