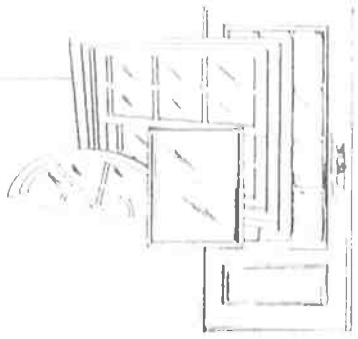
CERTIFIED TESTING LABORATORIES

Architectural Division • 7252 Narcoossee Rd. • Orlando, FL 32822
(407) 384-7744 • Fax (407) 384-7751
Web Site: www.ctlarch.com
E-mail: ctlarch.com



Report No.: CTLA 2037W-1
DC Not. No.: CTL 10011
CTL Certification #: 08-0528.05

Date: June 28, 2010
Test Dates: June 21st – 26th, 2010

Test Requested By: Ingersoll Rand
9017 Blue Ash Rd.
Cincinnati, Ohio 45242

Tests Conducted: **TAS 201** (Lg. Missile), **TAS 202** (with deviations, no water test) & **TAS 203**

Design Pressures:

Specimen 1	(TAS 202) - Outswing	+ 80.0 psf.	- 70.0 psf.
Specimen 2	(TAS 202) - Inswing	+ 70.0 psf.	- 80.0 psf.
Specimen 3 & 4	(TAS 201, TAS 203)	+ 70.0 psf.	- 70.0 psf.

(1) DESCRIPTION OF SERIES

Model Designation: **SZ Series 3070 Steel Commercial Flush Door, 18 gauge**

Overall Size: All Specimens - (Frame) 40.00" wide x 86.00" high x 5.75"" deep.

Configuration: All Specimens - X

No. & Size of Panels: All Specimens - (1) Slab 35.79" wide x 83.19" high.

(2) MATERIAL CHARACTERISTICS

Frame Material:
All Specimens — ASTM A-366 16 Ga. Steel, cold rolled as stated by manufacturer

Frame Construction:
All Specimens — Cold rolled steel measuring 2.0" wide face x 5.75" deep x 4.875" throat opening. Mitered corner tab and slot construction. Extruded aluminum threshold measuring 0.500" high x 5" wide x 36" long coped to fit into main frame and secured with three (3) #12 x 1.50" wood screws.

RAMESH PATEL LICENSE NO. 52224 STATE OF FLORIDA PROFESSIONAL ENGINEER

6/25/10

Slab Construction:

All Specimens

Single slab measure 35.79" x 83.19" x 1.75". 18 Ga. Galvanized steel skins. Polystyrene core laminated to both inside faces. Vertical edges square with a continuous mechanical seam. Top and bottom rails contained 16 GA. steel channels measuring .688" x 1.660" x 35.66" long, spot welded to face sheets nominally 2" from each end and 6" on center thereafter. Lock reinforcement is 14 Ga. and 8 Ga. hinge reinforcements.

Glazing: N/A

Weather-stripping:

All Specimens

QTY	DESCRIPTION	LOCATION
One (1) Strip	PS-074 Weather-strip	Frame Head
One (1) Strip	PS-074 Weather-strip	Frame Jambs
One (1) Strip	Bulb vinyl bumper basket .250" o.d.	Length of threshold
One (1) piece	Fas-seal door sweep two (2) fin	Slab bottom

Hardware:

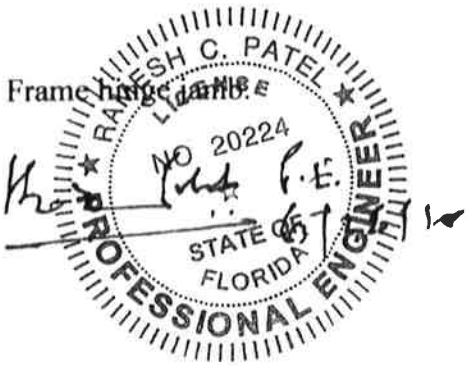
All Specimens

QTY	DESCRIPTION	LOCATION
Three (3)	Ives 5BB1 hinges 4.5" x 4.5" x .134" thick with four (4) .210" dia. X .525" self threading Phillips head countersunk screws to frame and four (4) Phillips head countersunk screws to the leaf.	Three in each frame jamb measuring from rabbet in head to center of hinge at 9.75", 41.69" and 73.625"
Six (6)	Wire hinge spacer.	One behind each hinge on door leaf.
One (1)	Falcon MA series mortise lock 3/4" latch throw (no deadbolt)	Door Slab
One (1)	National Guard 950A Threshold w/bumper.	Frame Sill.

Reinforcement:

All Specimens

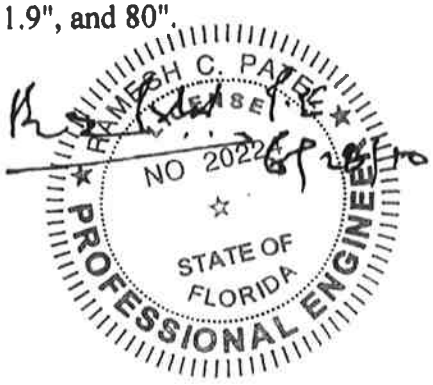
QTY	DESCRIPTION	LOCATION
One (1)	Mortise lock reinforcement, 14 GA galvanized steel	Door leaf lock stile
Three (3)	Hinge reinforcement, 8 GA galvanized steel measuring 1.25" x 8" long.	Door leaf hinge stile
Three (3)	Hinge reinforcement, 7 Ga. steel measuring 1.23" x 9.19" long.	Frame hinge jamb.



Weep holes: N/A

Sealant:
All Specimens Latex caulking as needed to seal unit into rough opening.

INSTALLATION:
Screws and Method of Attachment:
All Specimens Specimens were tested in wooden test buck, installed with eight (8) 3/8 x 4" lag bolts (4 per jamb) and three (3) #12 x 1.50" wood screws.
Head: None
Sill: Three (3) #12 x 1.5" wood screws located 6.5", 18", 29.5"
Jambs: Eight (8) 3/8" x 4" lag bolts. Four (4) in each Jamb, located measuring from bottom to top at 4", 19.97", 51.9", and 80".

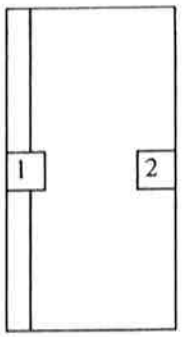


Performance Test Results

Test Sequence: TAS 202

1.	Air Infiltration	ASTM 283-91
2.	½ Test Pressure Positive	ASTM E330-02
3.	½ Test Pressure Negative	ASTM E330-02
4.	Design Pressure Positive	ASTM E330-02
5.	Design Pressure Negative	ASTM E330-02
6.	Full Test pressure Positive	ASTM E330-02
7.	Full Test Pressure Negative	ASTM E330-02

Deflection Gauges locations



X

Deflection was measured with two (2) 5" CDI Dial Indicators
Location #1 2" above lock. Location # 2 Mid-span of fasteners in jamb.

AIR INFILTRATION

Air Infiltration Tests were conducted in accordance with **TAS 202-94**

Air @ 1.57 psf.	Actual	Allowable
Specimen 1	.10 cfm/ft²	.34 cfm/ft²
Specimen 2	.11 cfm/ft²	.34 cfm/ft²

STATIC AIR PRESSURE TESTS

Static Tests were conducted in accordance with **TAS 202-94**

Specimen 1 - Outswing

Range of test	Time (Sec.)	Load (psf.)	Loc.	Deflection	Perm. Set	Allowable
Positive loads	(Design Pressure + 80.0 psf.)					
1/2 Test	30	60				
Design	30	80	Loc. 1	0.320"		
			Loc. 2	0.142"		
Test	30	120	Loc. 1		0.027"	0.333"
			Loc. 2		0.027"	0.128"
Negative loads	(Design Pressure – 70.0 psf.)					
1/2 Test	30	52.5				
Design	30	70	Loc. 1	0.780"		
			Loc. 2	0.091"		
Test	30	105	Loc. 1		0.280"	0.333"
			Loc. 2		0.034"	0.128"

All Permanent set numbers are gross numbers

Location (1) - Max. allowable Perm. Set after test load (0.4% of 83.25" span) = 0.333"
Location (2) - Max. allowable Perm. Set after test load (0.4% of 32.0" span) = 0.128"

RAMESH C. PATEL LICENSE NO. 62225 STATE OF FLORIDA PROFESSIONAL ENGINEER

Performance Test Results (Continued)

STATIC AIR PRESSURE TESTS (Continued)

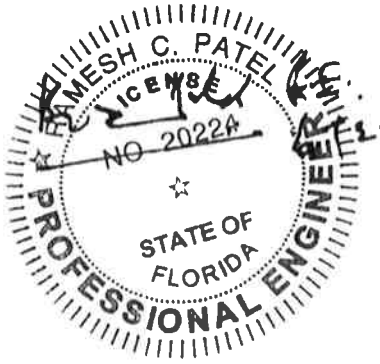
Specimen 2 - Inswing

Range of test	Time (Sec.)	Load (psf.)	Loc.	Deflection	Perm. Set	Allowable
Positive loads	(Design Pressure + 60.0 psf.)					
1/2 Test	30	60				
Design	30	80	Loc. 1	0.805"		
			Loc. 2	0.094"		
Test	30	120	Loc. 1		0.270"	0.333"
			Loc. 2		0.035"	0.128"
Negative loads	(Design Pressure – 80.0 psf.)					
1/2 Test	30	45				
Design	30	60	Loc. 1	0.332"		
			Loc. 2	0.145"		
Test	30	90	Loc. 1		0.028"	0.333"
			Loc. 2		0.026"	0.128"

All Permanent set numbers are gross numbers
Location (1) - Max. allowable Perm. Set after test load (0.4% of 83.25" span) = 0.333"
Location (2) - Max. allowable Perm. Set after test load (0.4% of 32.0" span) = 0.128"

	Title of Test	Method		
Specimen 1	Forced Entry Resistance Load peak was 30 seconds	**AAMA 1304 -02**	**Passed**	300 lbs
Specimen 2	Forced Entry Resistance Load peak was 30 seconds	**AAMA 1304 -02**	**Passed**	300 lbs

Note: At the conclusion of testing, there was no opening thru which access to the interior hardware, or locking devices could be gained. In addition there was no opening which allowed for entrance into the specimen tested. The leaf remained locked, closed and no locks or hinges disengaged.



8/5/10

Performance Test Results (Continued)

Impact Test: Large Missile

Impact tests were conducted in accordance with **TAS 201-94**

Each specimen was impacted with an 8 ft., 9 lb. Southern yellow pine 50mm x 100mm (2" x 4") at the following locations:

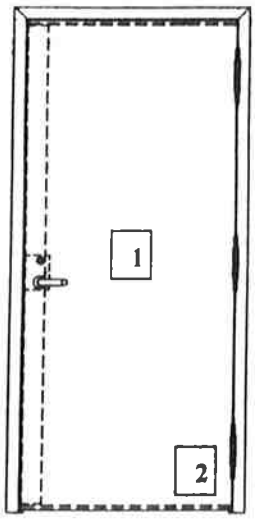
Note: Specimen 3 (Outswing) & 4 (Inswing)

X measurement from left edge of specimen.

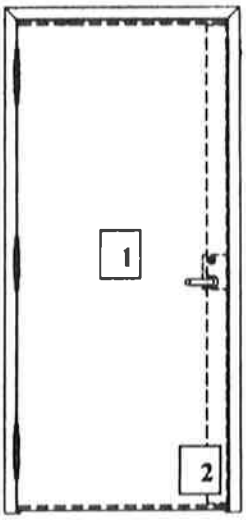
Y measurement from top edge of test specimen.

Type and weight of missile: # 2 Southern Yellow Pine 2x4, Length approx. 89-5/16" & 9 lb.

Specimen 3



Specimen 4



Specimen #	Impact No.	Speed Ft/Sec.	X Meas.	Y Meas.
3	1	49.3	20.00"	41.50"
3	2	49.9	33.50"	75.00"
4	1	49.1	20.00"	42.00"
4	2	50.3	33.00"	76.00"

Result: None of the impacts penetrated the specimen.

RAMESH C. PATEL LICENSE 2022 STATE OF FLORIDA PROFESSIONAL ENGINEER

Performance Test Results (Continued)

Fatigue Loading Test

Cycle tests were conducted in accordance with **TAS 203**

Specimen 3 & 4

Positive loads

Design Pressure + 70.0 psf.

Range of Test	Actual Load (psf.)	# of Cycles	Cycles/min.
+ .0 to 0.5	35.0	600	56
+ .0 to 0.6	42.0	70	56
+ .0 to 1.3	91.0	1	

	Deflection	Set
671 cycles completed	0.375"	0.00"

Negative Loads

Design Pressure - 70.0 psf.

Range of Test	Actual Load (psf.)	# of Cycles	Cycles/min.
+ .0 to 0.5	35.0	600	56
+ .0 to 0.6	42.0	70	56
+ .0 to 1.3	91.0	1	

	Deflection	Set
671 cycles completed	0.500"	0.00"

Result: Specimen showed no resultant failure or duress after cycle test. No failure of fasteners. There were no cracks longer than 5" x 1/16" through which air could pass observed.

The results obtained and reported apply only to the specimens tested.

Comment: Nominal 2 mil polyethylene film was used to seal against air leakage during structural loads. The film was used in a manner that did not influence the test results.

Drawings to be Submitted:

Submittal drawings numbered, 2037W sheets 1 thru 3 of 3, and marked with the CTL stamp are a part of this report.

RAMESH G. PATEL LICENSE NO 20224 STATE OF FLORIDA PROFESSIONAL ENGINEER

2/5/10

Remarks: Detailed drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by CTL for a period of ten (10) years. The results obtained apply only to the specimen tested.

This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Certified Testing Laboratories assumes that all information provided by the client is accurate and that the physical and chemical properties of the components are as stated by the manufacturer.

Observers
Yuriy Farber - Ingersoll-Rand
Kevin Schmidt - Ingersoll-Rand
Snehil Solanki - Ingersoll-Rand

Dade County Witness:
Not present

All Tests Witnessed by:
Ramesh Patel P.E.
Stephen Gibbs - CTL

Jonathan Pittenger
Lab Technician
Architectural Division
Certified Testing Laboratories

Ramesh Patel P.E.
Florida Reg. #20224

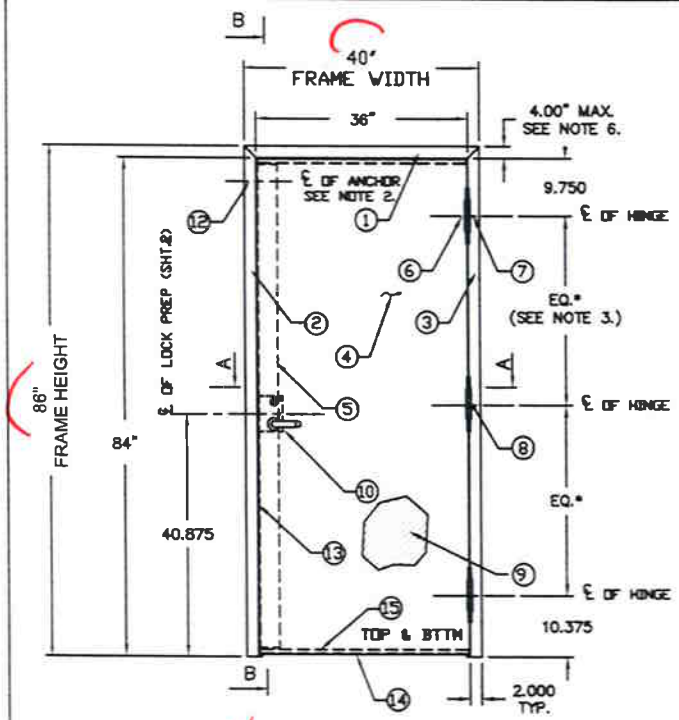
6/26/14

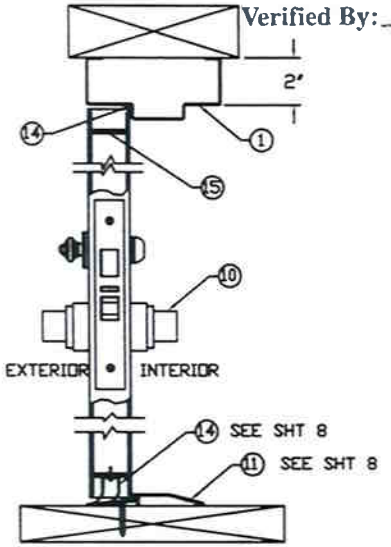
cc: Ingersoll-Rand (4)
Ramesh Patel (1)
File (1)

CTL CERTIFIED TESTING LABORATORIES
ARCHITECTURAL DIVISION
7252 NARCOOSSEE ROAD
ORLANDO, FLORIDA 32822

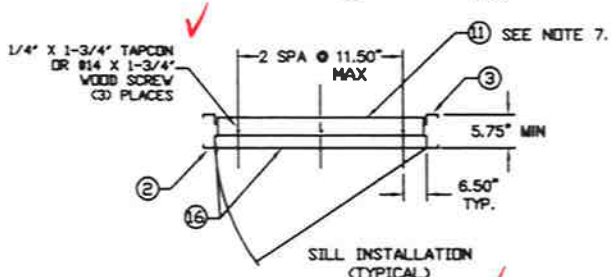
CTLA No. 2037W-1
Date Verified: 6/28/10
Verified By: JB

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	APPROVAL DWG	06/28/10	

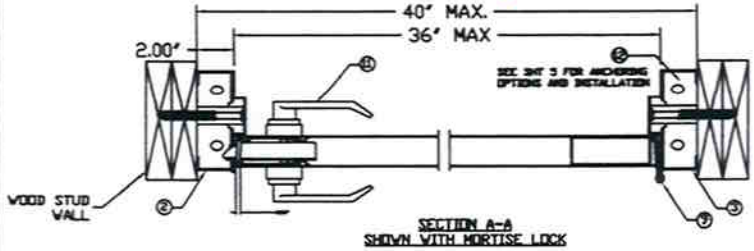




SECTION B-B
SHOWN WITH
MORTISE LOCK



SILL INSTALLATION
(TYPICAL)



SECTION A-A
SHOWN WITH MORTISE LOCK

NOTES:

1. ONE ROW OF PS074 WEATHERSTRIPPING PER JAMB AND HEAD.
2. ANCHOR REQUIREMENTS:
   SEE SHT 2 FOR TESTED ANCHOR AND INSTALLATION REQUIREMENTS.
3. HINGE REQUIREMENTS:
   MIN (3) HINGES
   LOCATIONS: 9.75" FROM RABBET IN HEAD TO CL OF TOP HINGE
   10.38" FROM FLOOR TO CL OF BOTTOM HINGE,
   EQUALLY SPACED IN BETWEEN.
4. SEE SHEET 6 FOR AVAILABLE STANDARD OPENING SIZES AND SPECIFICATIONS.
5. HARDWARE INSTALLATION AS PER MANUFACTURER'S INSTRUCTIONS.
6. 4" FACE HEAD IS AVAILABLE WHEN FRAME IS GROUTED WITH CONCRETE.
7. APPLY CAULK AS NEEDED.
8. PRODUCT IS NOT APPROVED WHERE WATER INFILTRATION REQUIREMENT IS NEEDED

ITEM	QUANTITY	DESCRIPTION	MATERIAL	SIZE
1	1	HEAD SEE SHT 2. ASTM A366	.053" MIN. STL	MAX. 40"
2	1	STRIKE JAMB. SEE SHT 2	.053" MIN. STL	MAX. 86"
3	1	HINGE JAMB SEE SHT 2. ASTM A366	.053" MIN. STL	MAX. 86"
4	1	DOOR SLAB	SEE SHT 8	3'0" X 7'0" MAX.
5	1	LOCK SIDE REINFORCEMENT	.070" (14 GA STL)	
6	NOTE 3.	HINGE REINFORCEMENT DOOR ASTM A621	8 Ga. MIN. STL	1.25" X 8"
7	NOTE 3.	HINGE REINFORCEMENT FRAME ASTM A621	.171" (7 Ga.) MIN. STL	1.23" X 9.19"
8	NOTE 3.	4.5" X 4.5" BUTT HINGES	.134 MIN.	(4) #12-24 MS PER HINGE
9	1	CORE MATERIAL: POLYSTYRENE		35.66" X 81.5" MAX.
10	1	LOCKING HARDWARE - LOCKS BY FALCON 1) MA SERIES MORTISE LOCK BY FALCON 2) T SERIES OR B SERIES CYLINDRICAL LOCK		
11	1	THRESHOLD SILL W/BUMPER GASKET. SHT.2 NAT'L GUARD 950A	.100" ALUM. 6063 T5	5.5" X 0.5" X 36" MAX
12	NOTE 2.	JAMB ANCHOR	SEE SHT. 5	
13	3	PS074 WEATHER STRIPPING. SHEET 2	TPE	MAX. 21'
14	1	FAS-SEAL DOOR SWEEP. SHEET 2	TPE	MAX. 35.66"
15	2	END CHANNEL ASTM A924	.070" MIN. STL	.69" X 1.66" X 35.66" MAX.
16	AS NEEDED	BUTYL RUBBER OR 100% SILICONE		

BEND RADIUS
THIRD ANGLE PROJECTION

Ingersoll Rand
Security Technologies

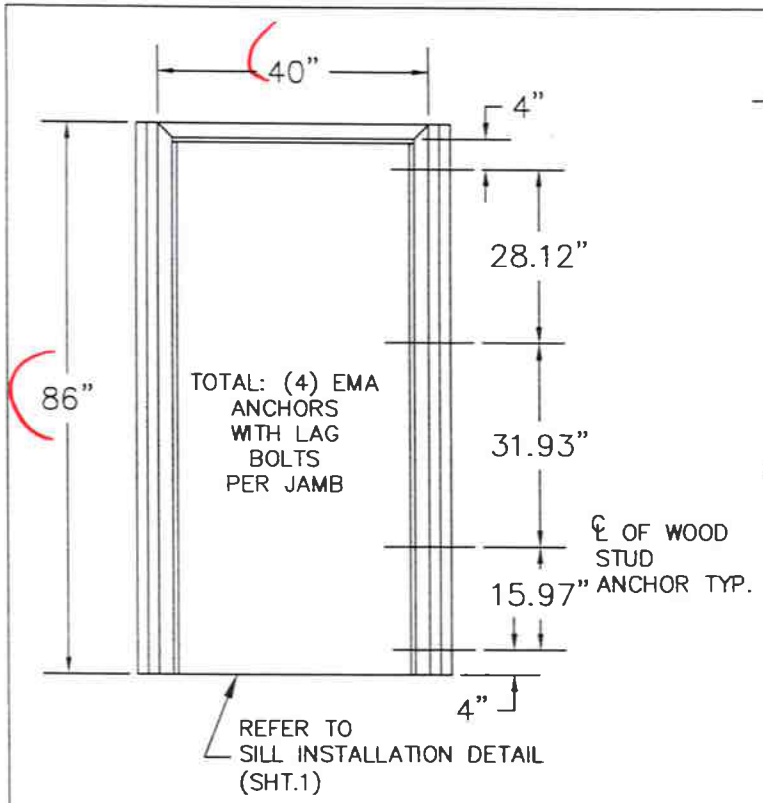
DRAWN	YMF	DATE	06/28/10
CHECKED			
APPROVED			
ENG. APPVL			

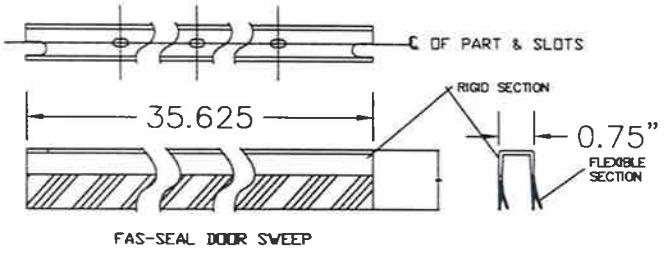
TITLE: TAS 201/202/203
HVHZ TEST
FOR SZ SERIES SINGLE FLUSH DOOR
BY STEELCRAFT
WITH LOCKS BY FALCON

SIZE	FLAT	DWG NO.	REV
		2037W	A

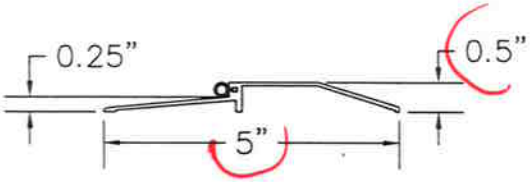
SCALE: NTS | AUTOCAD | SHEET 1 OF 3

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	TEST DWGS.	06/28/10	

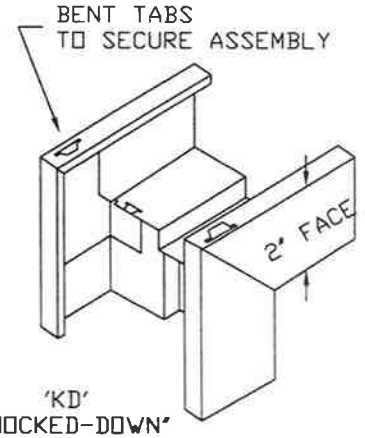




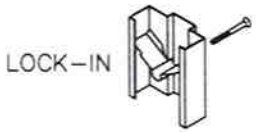
FAS-SEAL DOOR SWEEP



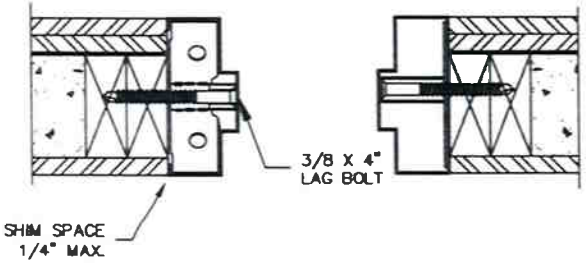
NATIONAL GUARD 950 SERIES THRESHOLD WITH SILICONE, VINYL OR NEOPRENE BUMPER

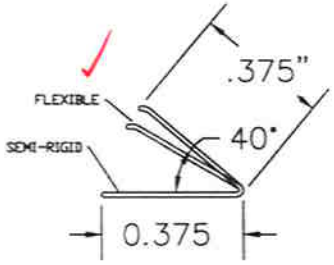


'KD' "KNOCKED-DOWN" ASSEMBLY

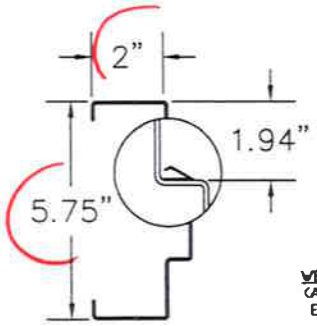


EXISTING MASONRY ANCHOR (EMA)
WITH LAG BOLT INTO WOOD STUD WALL

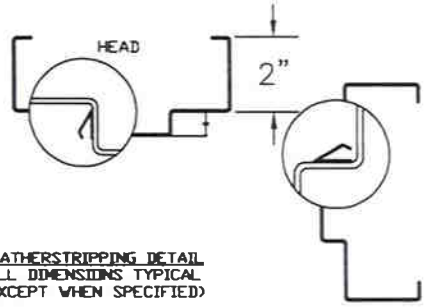




PS-074
SELF-ADHESIVE WEATHERSTRIPPING



HINGE JAMB



WEATHERSTRIPPING DETAIL
(ALL DIMENSIONS TYPICAL EXCEPT WHEN SPECIFIED)

STRIKE JAMB

CERTIFIED TESTING LABORATORIES
ARCHITECTURAL DIVISION
7252 NARCOOSSEE ROAD
ORLANDO, FLORIDA 32822

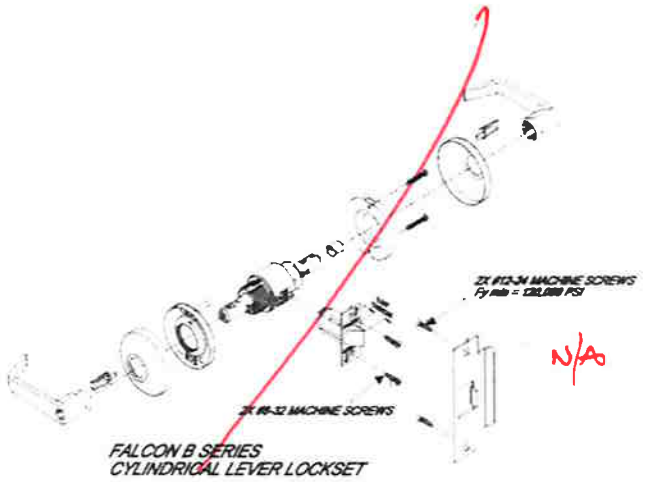
BEND RADIUS		Ingersoll Rand Security Technologies	
THIRD ANGLE PROJECTION		TITLE: DADE COUNTY ANCHOR DETAILS / MOUNTING CONDITIONS	
DRAWN: YMF	DATE: 06/28/10		
CHECKED			
APPROVED		SIZE: FLAT	DWG NO: 2037W
ENG. APPVL			REV: A
		SCALE: NTS	AUTOCAD / SHT 2 OF 3

CTLA No. 2037W-1
Date Verified: 6/28/10
Verified By: [signature]

CTL CERTIFIED TESTING LABORATORIES
ARCHITECTURAL DIVISION
7252 NARCOOSSEE ROAD
ORLANDO, FLORIDA 32822

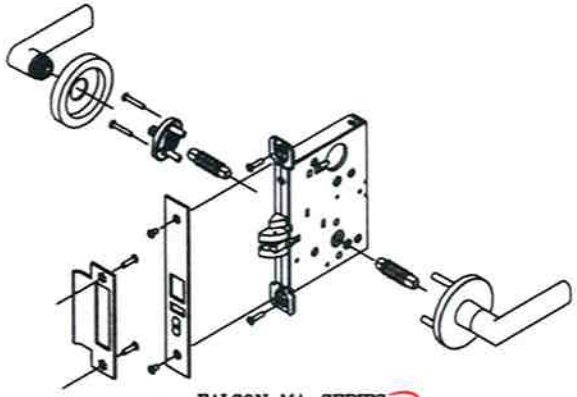
CTLA No. 2037W-1
Date Verified: 6/28/10
Verified By: JP

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	TEST DWG	06/28/10	

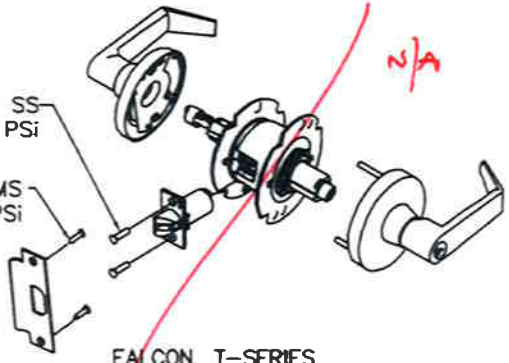


N/A

FALCON B SERIES
CYLINDRICAL LEVER LOCKSET



FALCON MA-SERIES
MORTISE LOCKSET



N/A

FALCON, T-SERIES
CYLINDRICAL LEVER LOCKSET

ZERO RADIUS		Ingersoll Rand Security Technologies	
THIRD ANGLE PROJECTION			
DRAWN YMF	DATE 06/28/10	TITLE: TAS 201/202/203 HVHZ TEST FOR SZ SERIES SINGLE FLUSH DOOR BY STEELCRAFT WITH LOCKS BY FALCON: T, B AND MA-SERIES	
CHECKED			
APPROVED		SIZE: FLAT	DWG NO. 2037W REV A
ENG APPVL		SCALE: NTS AUTOCAD	SHEET 3 OF 3