CAL-ROYAL PRODUCTS, INC
6605 Flotilla Street
City of Commerce
CA 90040

DKS SERIES 1800
STEEL COMMERCIAL DOUBLE DOOR
INSWING / OUTSWING
"IMPACT"

EVALUATED FOR USE IN THE STATE OF TEXAS

The Cal-Royal Door described herein complies with the 2006 International Residential Code (IRC), Sections R301 and the 2006 International Building Code (IBC), Sections 1405.12, 1609 & 1714.5 (including Texas revisions) subject to the following conditions:

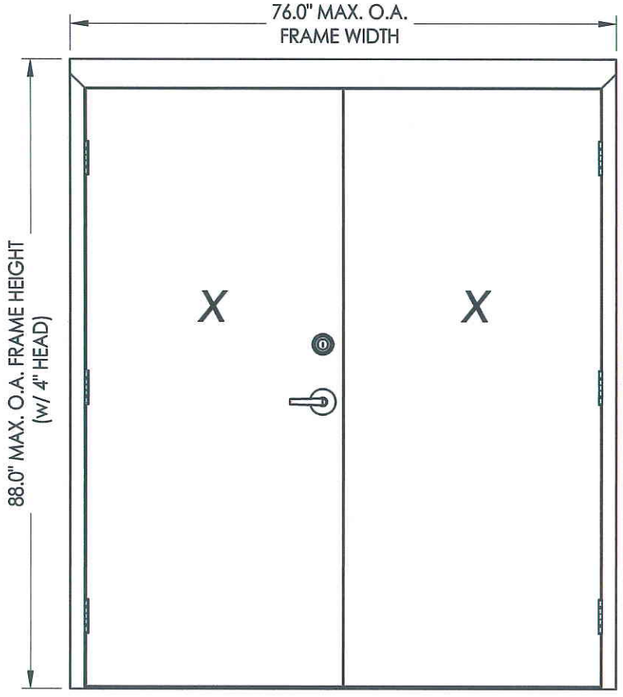
1. Anchors shall be as listed and spaced as shown in the details. Anchor embedment to base material shall be beyond wall dressing or stucco.
2. This system has been tested and evaluated as a large missile impact protective system for installation in the Seaward, Inland I and Inland II areas. This product meets missile level "D" and includes Wind Zone 4 as defined in ASTM E1996.
3. Allowable design pressure requirements must be equal to or less than the design pressure rating shown in the design pressure chart, sheet 1 of this drawing.
4. Conditions not covered by this drawing are subject to further engineering analysis.

SUPPORTING DOCUMENTS & EVIDENCE

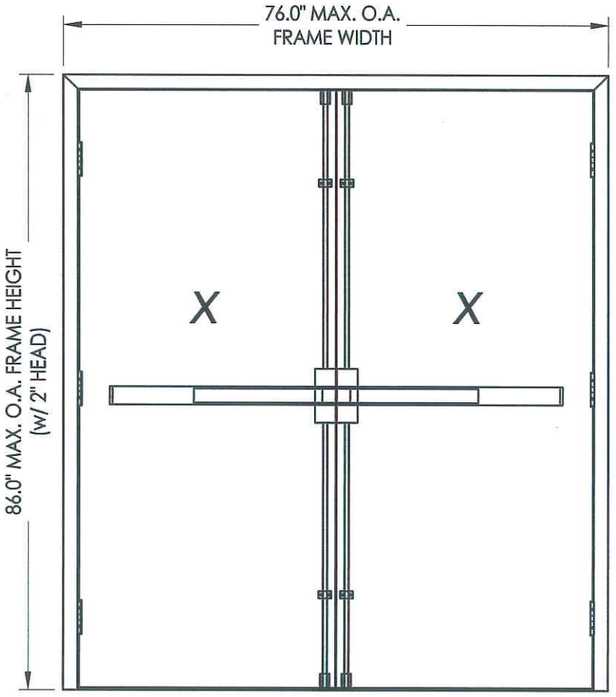
1. Testing per ASTM E 330-02 & ASTM E 1886/1996-02:
   Testing Evaluation Lab., Inc. test report(s) #: TEL 01820265.
2. Fire Testing per UL 10B & UL 10C: Intertek Testing Services test report #: 3053378.
3. Calculations (Anchoring) prepared by Lyndon F. Schmidt, P.E.
4. Certificate of Participation issued by the National Accreditation and Management Institute, Inc., certifying that Cal-Royal Products, Inc. is manufacturing products within a Quality Assurance program.

TABLE OF CONTENTS

SHEET#	DESCRIPTION
1	Typical elevation, design pressures & general notes
2	Door panel details
3	Door panel details
4	Horizontal cross sections
5	Vertical cross sections
6	Frame anchoring
7	Frame anchoring
8	Components
9	Bill of materials and components



161 Latch & Deadbolt
"SL / T300 Series"



Panic Bar Exit Device w/ Vertical Rods
"F7700-V Series"

MAX FRAME DIMENSION	LOCK TYPE	DESIGN PRESSURE (PSF) INSWING		DESIGN PRESSURE (PSF) OUTSWING	
		POSITIVE	NEGATIVE	POSITIVE	NEGATIVE
76.00" x 88.00"	161 LATCH & DEADBOLT "SL / T300 Series"	+55.0	-55.0	+55.0	-55.0
76.00" x 88.00"	PANIC BAR EXIT DEVICE w/ VERTICAL RODS "F7700-V Series"	N/A	N/A	+70.0	-70.0

STATE OF TEXAS
LYNDON F. SCHMIDT
104123
LICENSED PROFESSIONAL ENGINEER

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123
RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197
TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: CAL-ROYAL STEEL COMMERCIAL DOOR

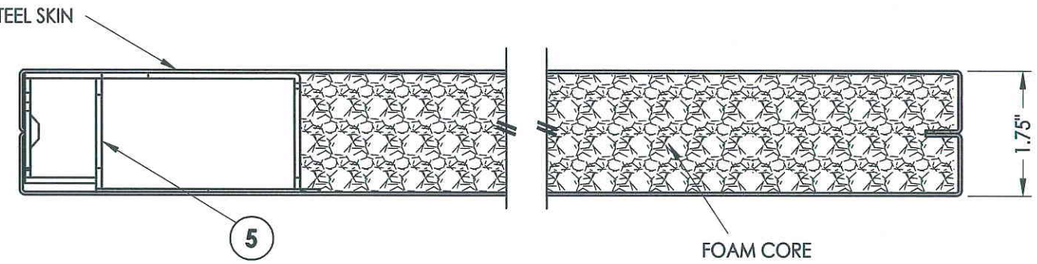
PART OR ASSEMBLY: TYPICAL ELEVATION, DESIGN PRESSURES & GENERAL NOTES

NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

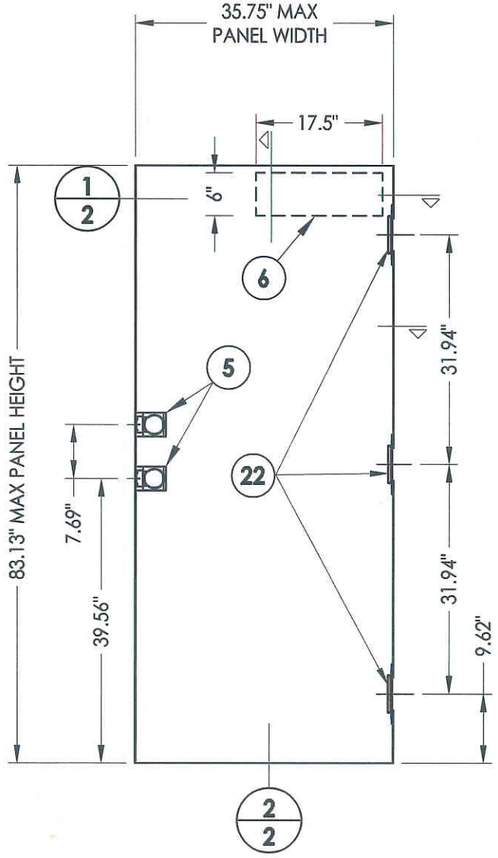
DATE: 8/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 1 OF 9

© 2010 R.W. BUILDING CONSULTANTS INC.

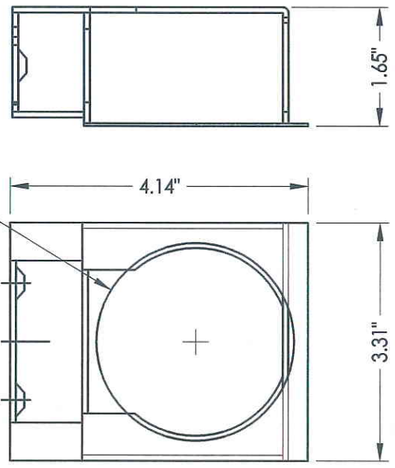
R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 4106.1



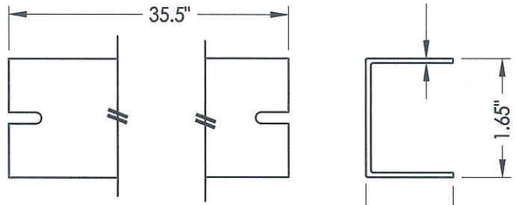
1/2 **HORIZONTAL CROSS SECTION**



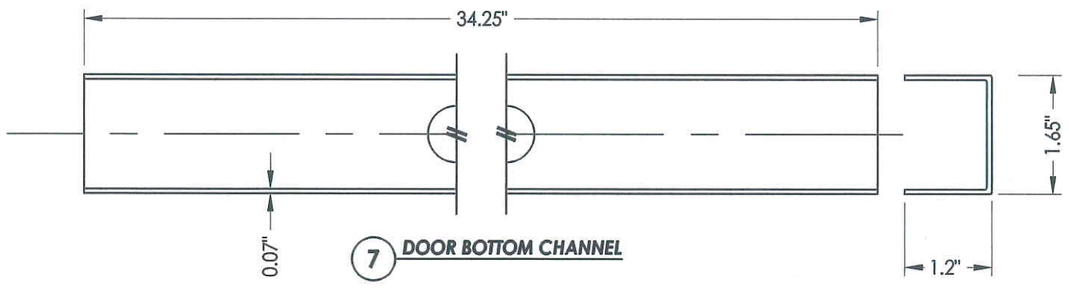
1/2 **CAL-ROYAL DOOR PANEL**
Active Door



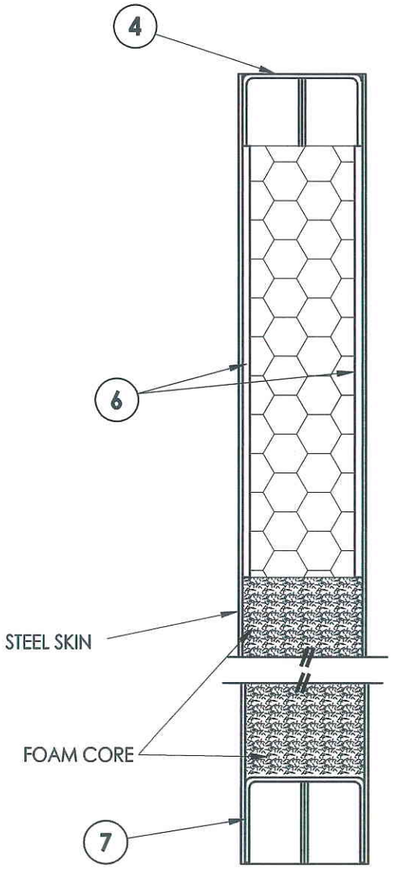
5 **LOCK BOX REINFORCEMENT**
161 Lock prep only



4 **DOOR TOP CHANNEL**



7 **DOOR BOTTOM CHANNEL**



1/2 **VERTICAL CROSS SECTION**

STEEL DOOR SKIN: MIN. 0.048" THK. (18 GA.)
CORE MATERIAL: EPS FOAM (POLYSTYRENE - 1.0 PCF MIN. DENSITY)

STATE OF TEXAS
LYNDON F. SCHMIDT
104123
LICENSED PROFESSIONAL ENGINEER
1/10-4

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: CAL-ROYAL
STEEL COMMERCIAL DOOR

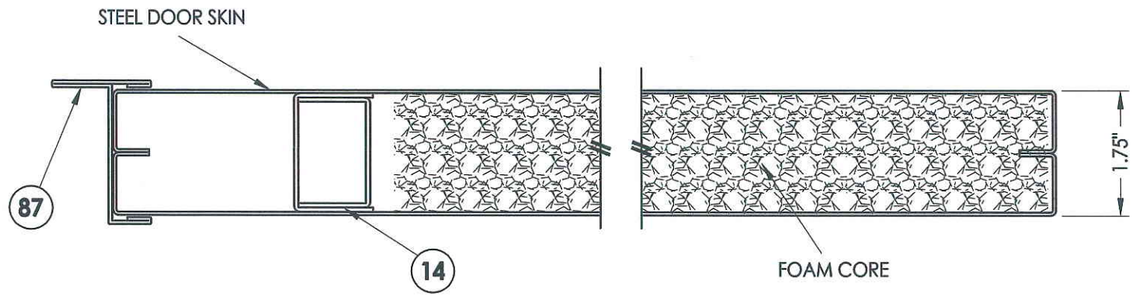
PART OR ASSEMBLY:
DOOR PANEL DETAILS

NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

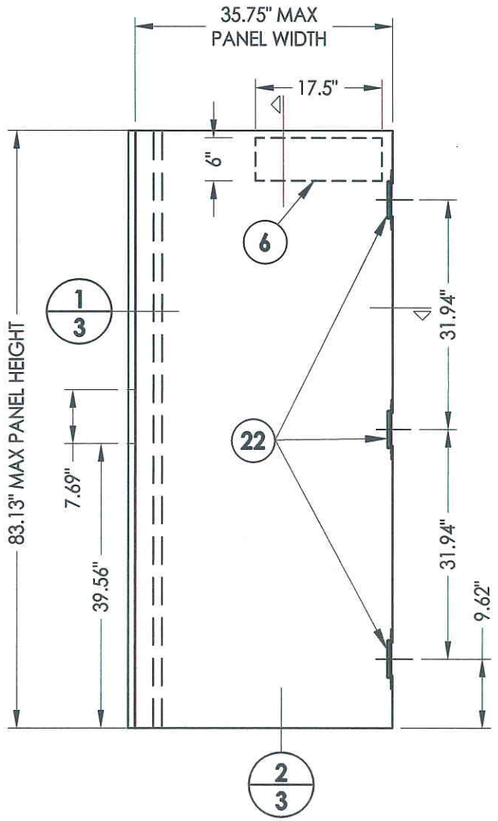
DATE: 8/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 2 OF 9

© 2010 R.W. BUILDING CONSULTANTS INC.

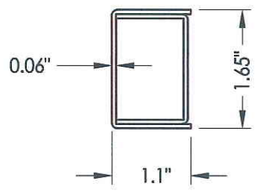
R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.2



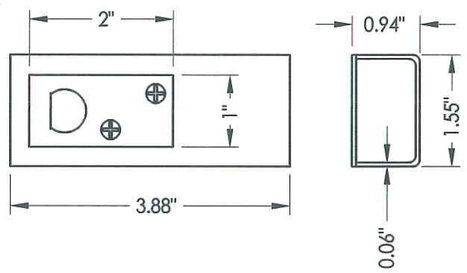
1/3 **HORIZONTAL CROSS SECTION**



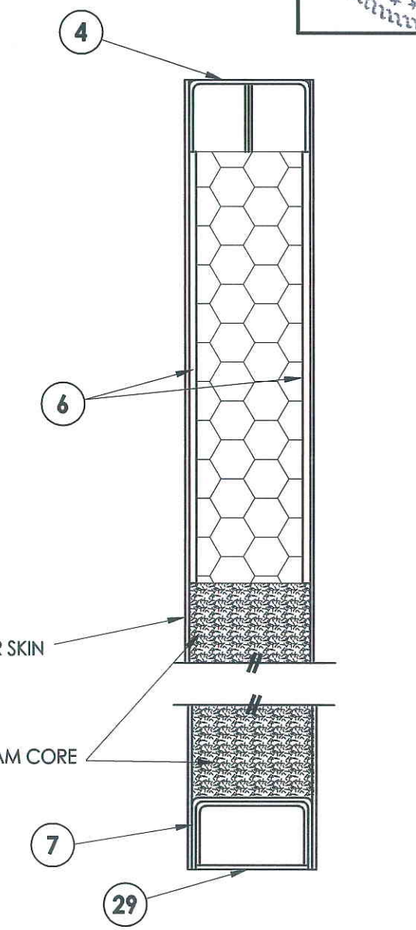
2 **CAL-ROYAL DOOR PANEL**
Inactive Door



14 **STILE REINFORCEMENT**



29 **DOOR BOTTOM REINFORCEMENT**
w/ Strike Plate



2/3 **VERTICAL CROSS SECTION**

STEEL DOOR SKIN: MIN. 0.048" THK. (18 GA.)
CORE MATERIAL: EPS FOAM (POLYSTYRENE - 1.0 PCF MIN. DENSITY)

STATE OF TEXAS
LYNDON F. SCHMIDT
104123
LICENSED PROFESSIONAL ENGINEER

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: CAL-ROYAL
STEEL COMMERCIAL DOOR
PART OR ASSEMBLY:
DOOR PANEL DETAILS

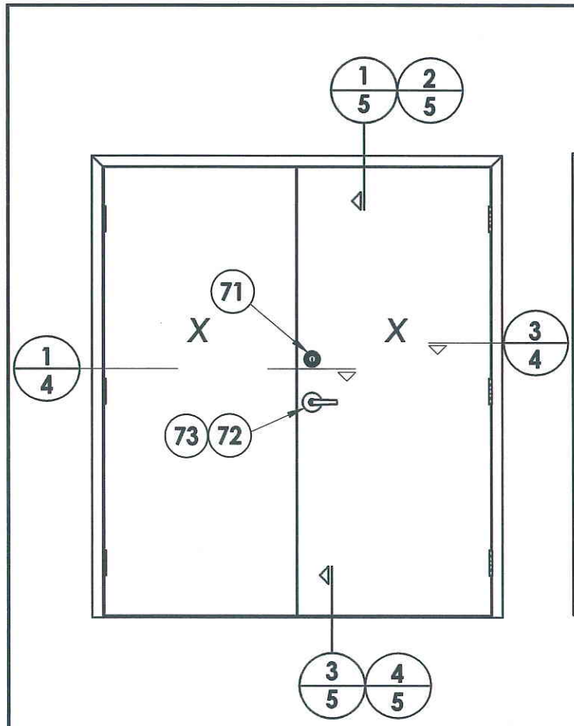
NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

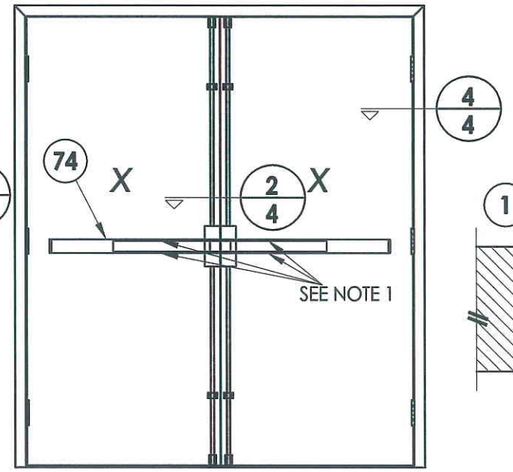
DATE: 8/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 3 OF 9

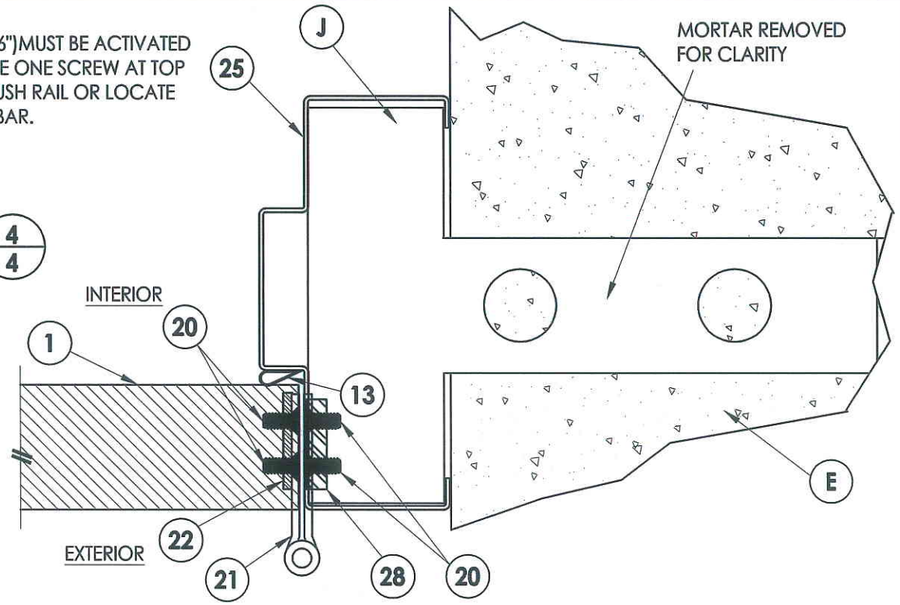
© 2010 R.W. BUILDING CONSULTANTS INC.

R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.3

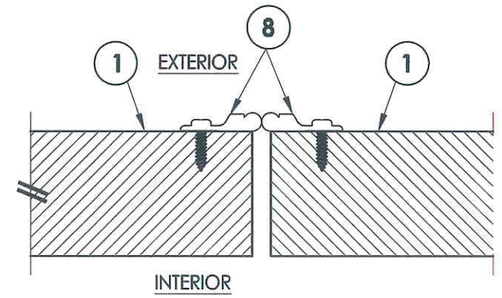
NOTE:
1. PANIC BAR SET SCREWS (#12-24 x 5/16")MUST BE ACTIVATED TO ACHIEVE IMPACT RATING. LOCATE ONE SCREW AT TOP AND BOTTOM AT CENTER OF EACH PUSH RAIL OR LOCATE ONE SCREW AT EACH END OF EACH BAR.



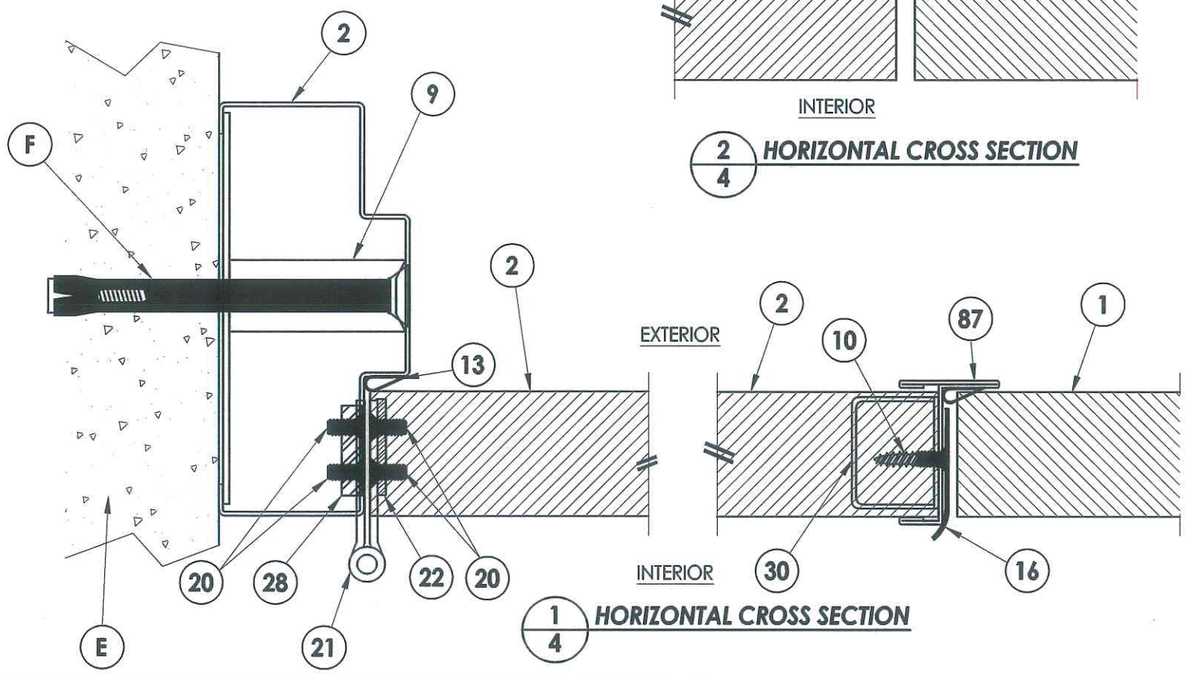




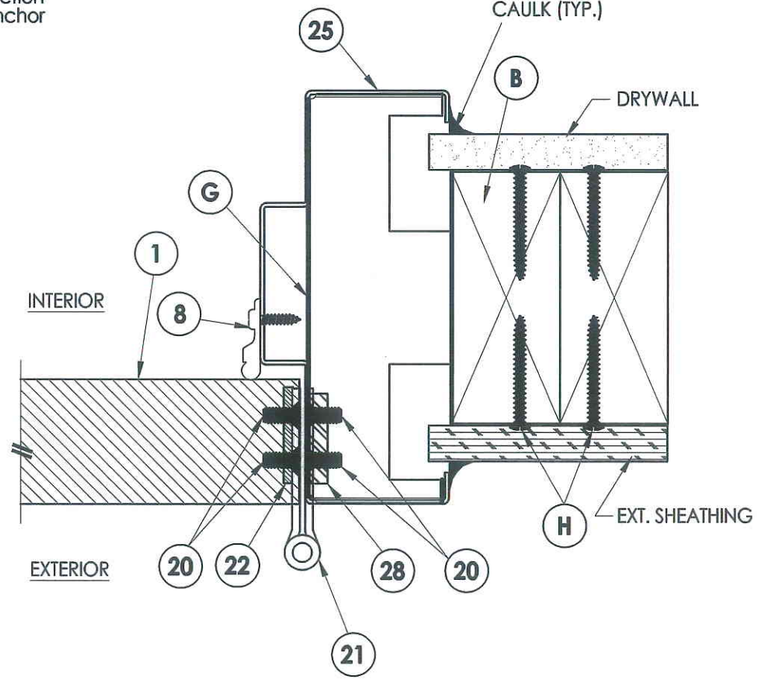
3/4 **HORIZONTAL CROSS SECTION**
Masonry Construction
Masonry "Tee" Anchor



2/4 **HORIZONTAL CROSS SECTION**



1/4 **HORIZONTAL CROSS SECTION**



4/4 **HORIZONTAL CROSS SECTION**
2X Stud Construction
Wood Stud Anchor

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

R|W BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: *CAL-ROYAL STEEL COMMERCIAL DOOR*

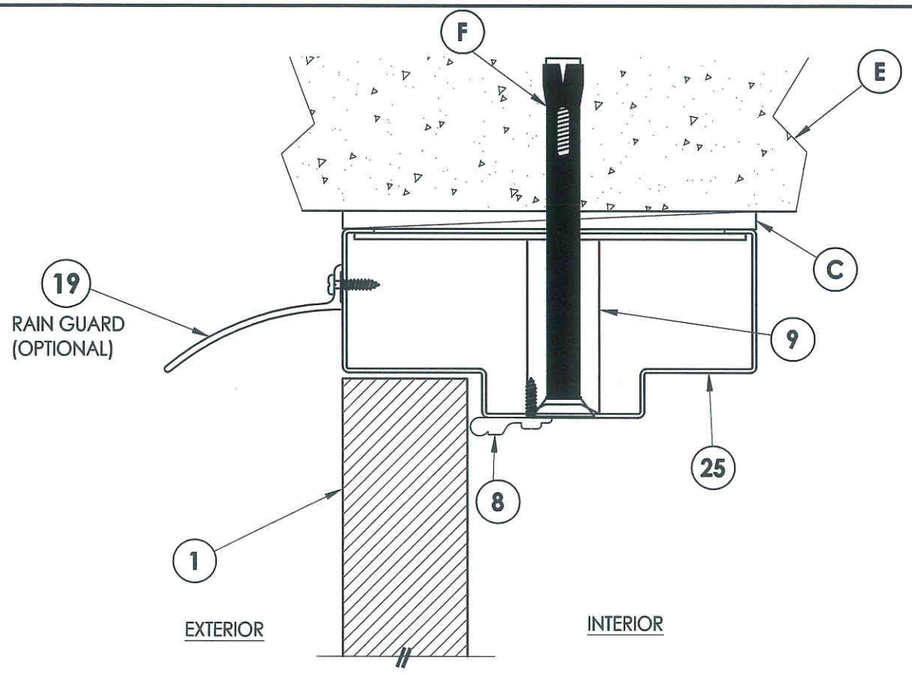
PART OR ASSEMBLY: *HORIZONTAL CROSS SECTIONS*

NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

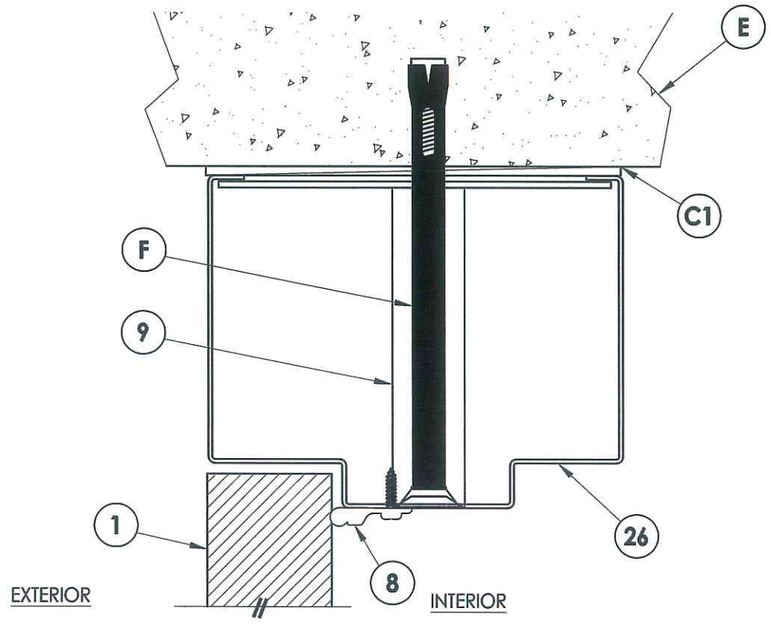
DATE: 8/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 4 OF 9

© 2010 R.W. BUILDING CONSULTANTS INC.

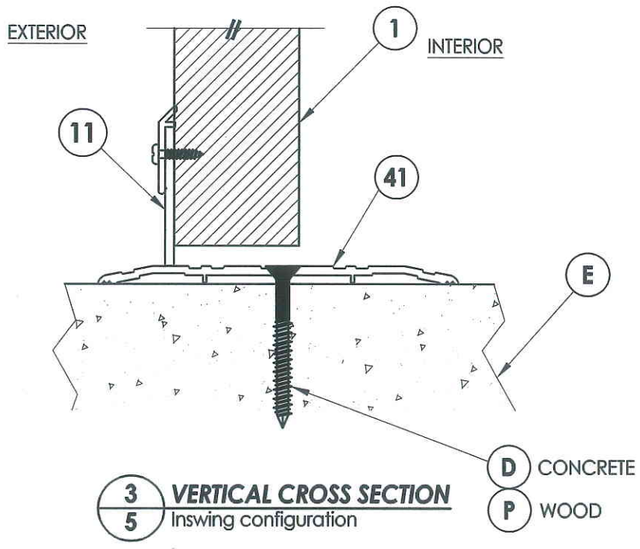
R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.4



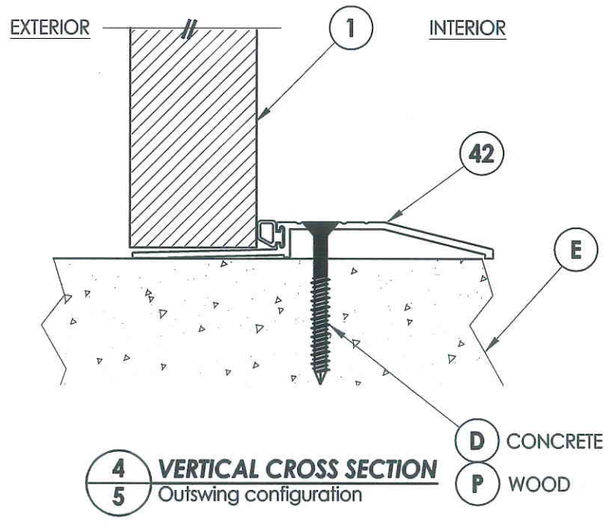
1/5 VERTICAL CROSS SECTION
Outswing configuration - Inswing also approved



2/5 VERTICAL CROSS SECTION
Outswing configuration - Inswing also approved



3/5 VERTICAL CROSS SECTION
Inswing configuration



4/5 VERTICAL CROSS SECTION
Outswing configuration

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

STATE OF TEXAS · LYNDON F. SCHMIDT · 104123 · LICENSED PROFESSIONAL ENGINEER

PRODUCT: CAL-ROYAL STEEL COMMERCIAL DOOR

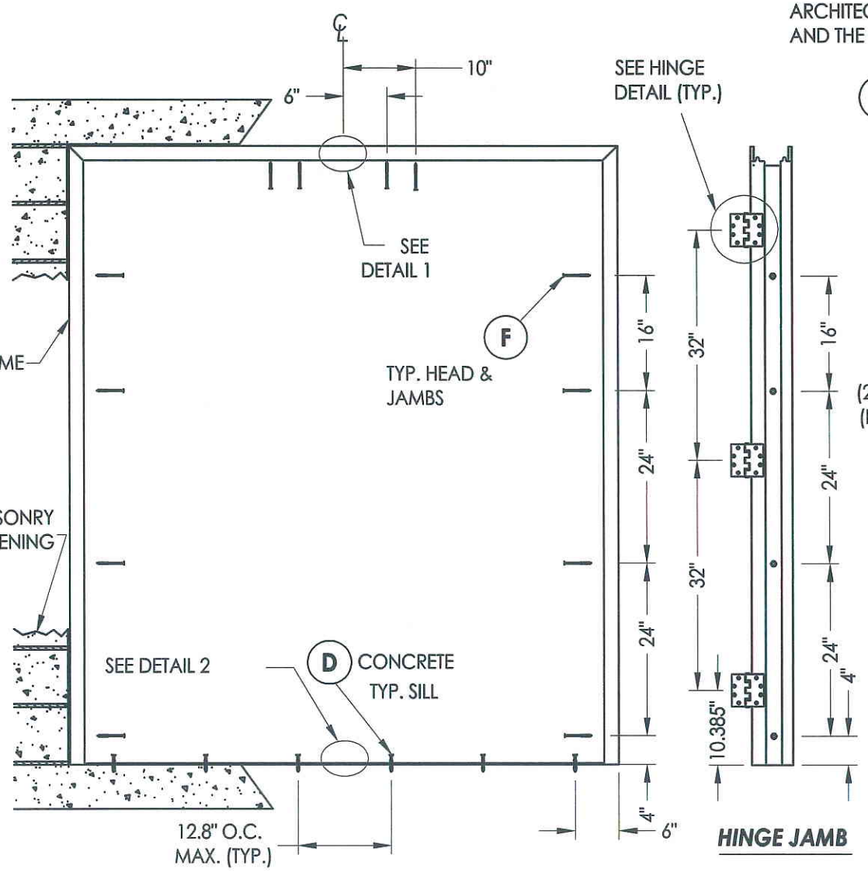
PART OR ASSEMBLY: VERTICAL CROSS SECTIONS

NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

DATE: 8/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 5 OF 9

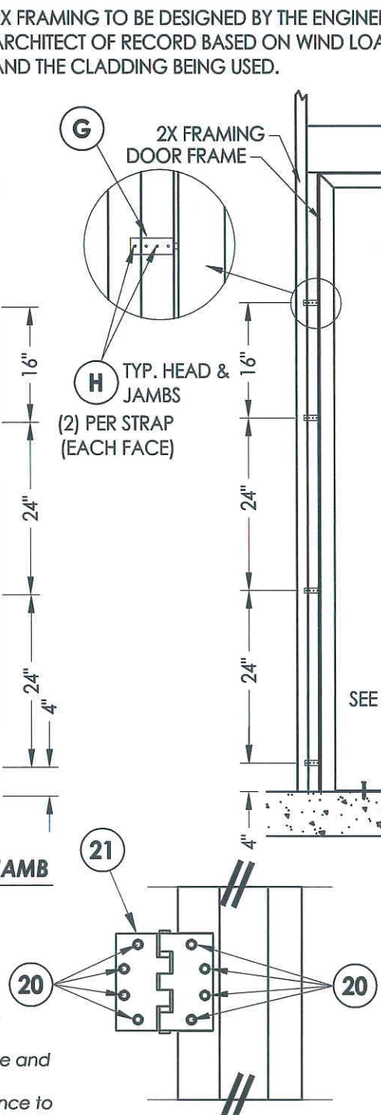
© 2010 R.W. BUILDING CONSULTANTS INC.

R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.5

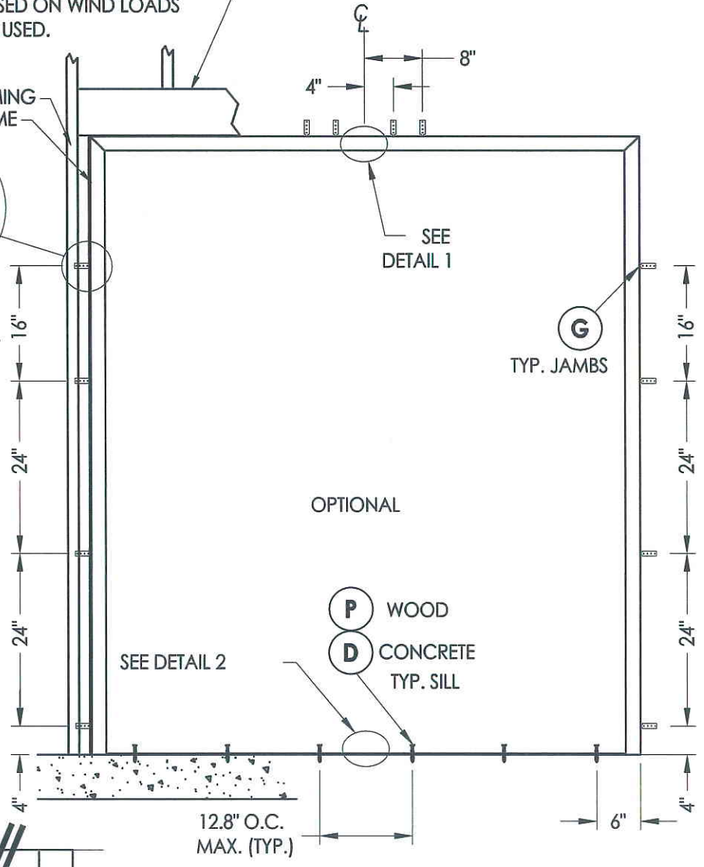


FRAME ANCHORING
Masonry Construction
Concrete Anchors

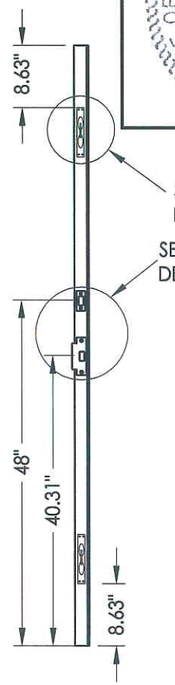
HINGE JAMB



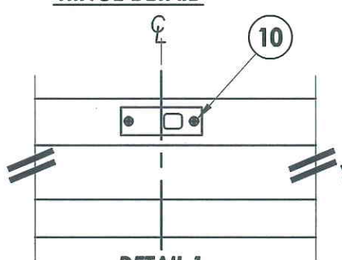
HINGE DETAIL



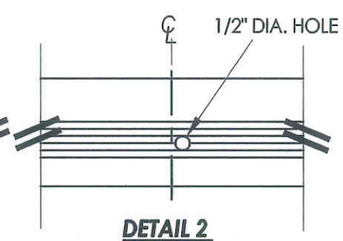
FRAME ANCHORING
2X Stud Construction
Strap Anchors



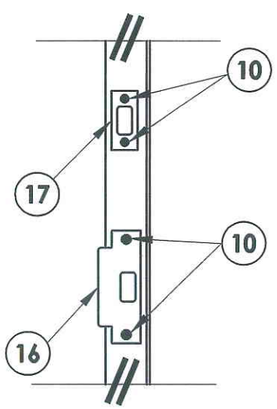
ASTRAGAL



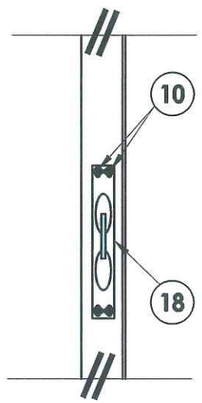
DETAIL 1
Flip bolt strike plate @ head



DETAIL 2
Flip bolt hole @ sill



LATCH & DEADBOLT DETAIL
161 Latch & Deadbolt



FLIP BOLT DETAIL
1/2" dia. bolt

CONCRETE ANCHOR NOTES:

1. *Substitution of equal concrete screws from a different supplier may have different edge distance and center distance requirements.*
2. *Concrete screw locations at the corners may be adjusted to maintain the minimum edge distance to mortar joints. If concrete screw locations noted as "MAX. ON CENTER" must be adjusted to maintain the minimum edge distance to mortar joints, additional concrete screws may be required to ensure the maximum on center dimension is not exceeded.*
3. *Concrete anchor table:*

ANCHOR TYPE	ANCHOR SIZE	MIN. EMBEDMENT	MIN. CLEARANCE TO MASONRY EDGE	MIN. CLEARANCE TO ADJACENT ANCHOR
ITW	1/4"	1-3/4"	2-1/2"	3"
ELCO	1/4"	1-3/4"	1"	4"
DYNABOLT SLEEVE ANCHOR	3/8"	1-1/2"	2-1/4"	4"

4. *Embedment may be through 1-1/4" face shell of hollow block.*

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123
RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL 33595
Phone No.: 813.659.9197
TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: *CAL-ROYAL STEEL COMMERCIAL DOOR*

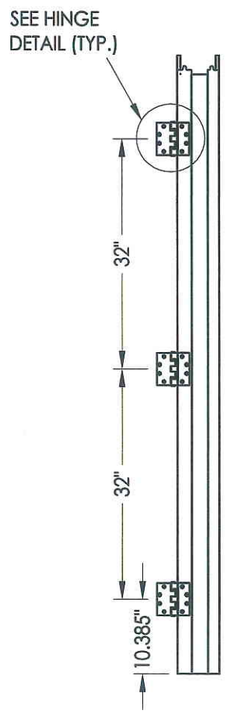
PART OR ASSEMBLY: *FRAME ANCHORING*

NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

DATE: 08/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 6 OF 9

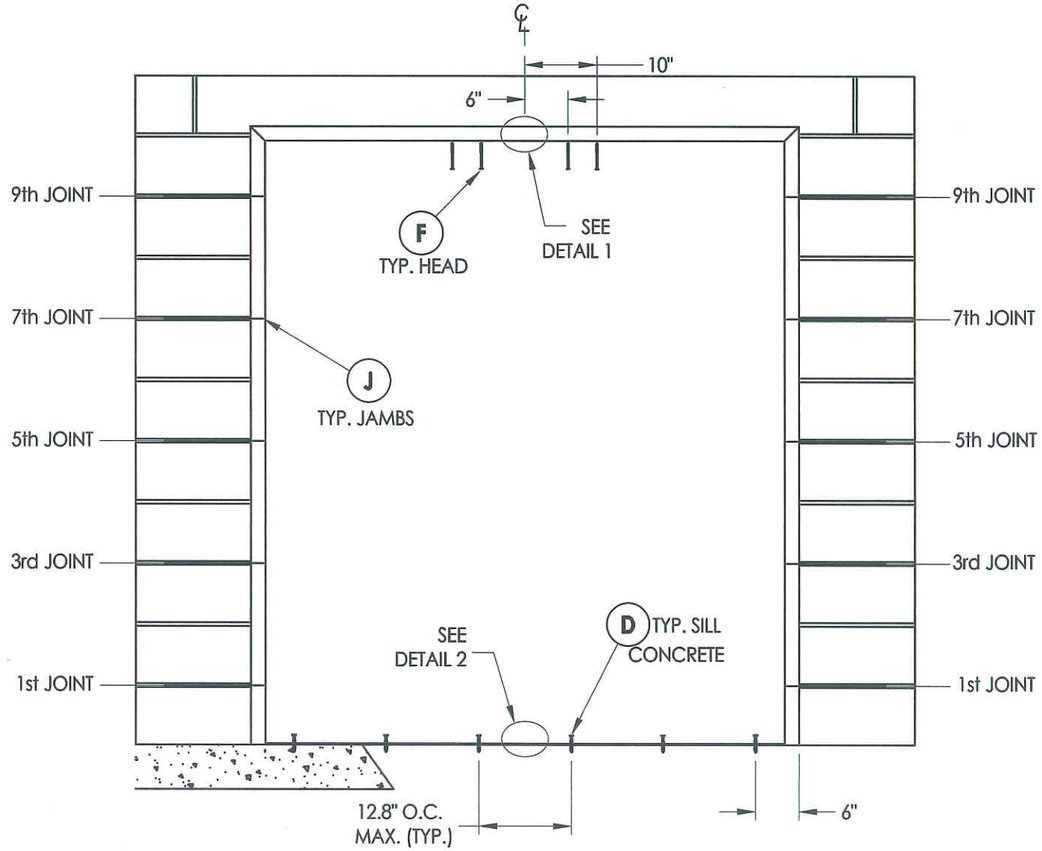
© 2010 R.W. BUILDING CONSULTANTS INC.

R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.6



HINGE JAMB

MASONRY "TEE" ANCHOR LOCATIONS (5) TOTAL PER JAMB
(JOINTS MEASURED FROM BOTTOM)



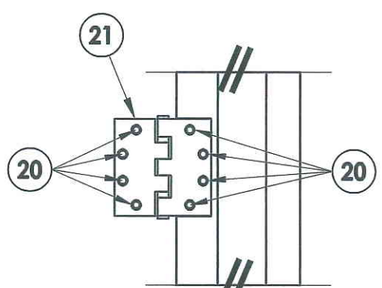
FRAME ANCHORING
Masonry Construction
Masonry "Tee" Anchors

CONCRETE ANCHOR NOTES:

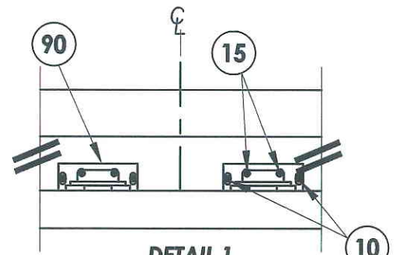
1. *Substitution of equal concrete screws from a different supplier may have different edge distance and center distance requirements.*
2. *Concrete screw locations at the corners may be adjusted to maintain the minimum edge distance to mortar joints. If concrete screw locations noted as "MAX. ON CENTER" must be adjusted to maintain the minimum edge distance to mortar joints, additional concrete screws may be required to ensure the maximum on center dimension is not exceeded.*
3. *Concrete anchor table:*

ANCHOR TYPE	ANCHOR SIZE	MIN. EMBEDMENT	MIN. CLEARANCE TO MASONRY EDGE	MIN. CLEARANCE TO ADJACENT ANCHOR
ITW	1/4"	1-3/4"	2-1/2"	3"
ELCO	1/4"	1-3/4"	1"	4"
DYNABOLT SLEEVE ANCHOR	3/8"	1-1/2"	2-1/4"	4"

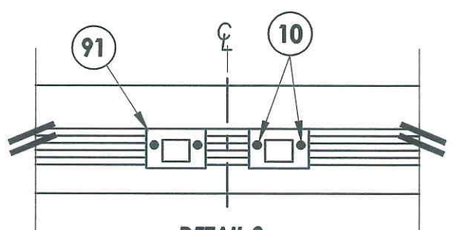
4. *Embedment may be through 1-1/4" face shell of hollow block.*



HINGE DETAIL



DETAIL 1
Vertical rod latch strike plate
@ head



DETAIL 2
Vertical rod latch strike plate
@ sill

STATE OF TEXAS
LYNDON F. SCHMIDT
104123
REGISTERED PROFESSIONAL ENGINEER

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: CAL-ROYAL STEEL COMMERCIAL DOOR

PART OR ASSEMBLY: FRAME ANCHORING

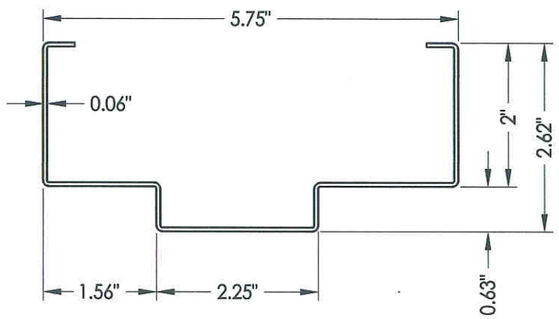
REVISIONS

NO.	DATE	REVISED PANIC BAR MODEL NO.	BY
1	1/4/11		LFS

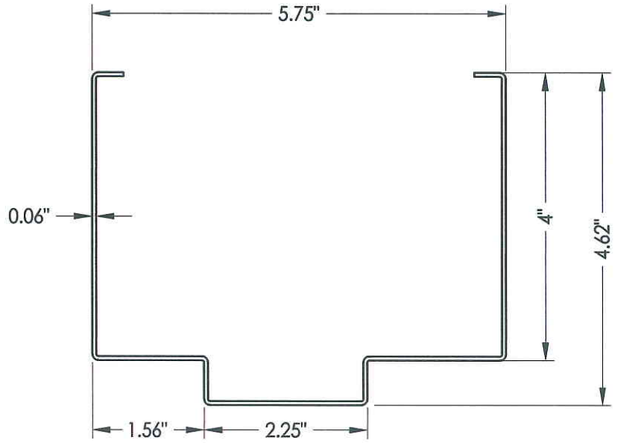
DATE: 08/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 7 OF 9

© 2010 R.W. BUILDING CONSULTANTS INC.

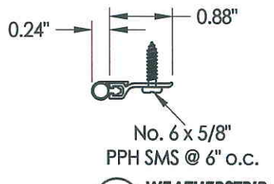
R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.7



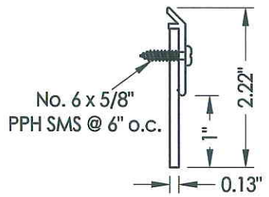
25 HOLLOW METAL FRAME
2" HEAD



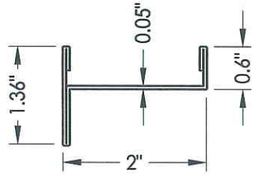
26 HOLLOW METAL FRAME
4" HEAD



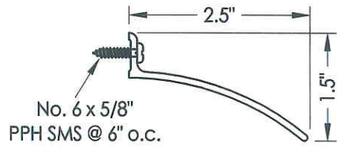
8 WEATHERSTRIP
Pemko 303A



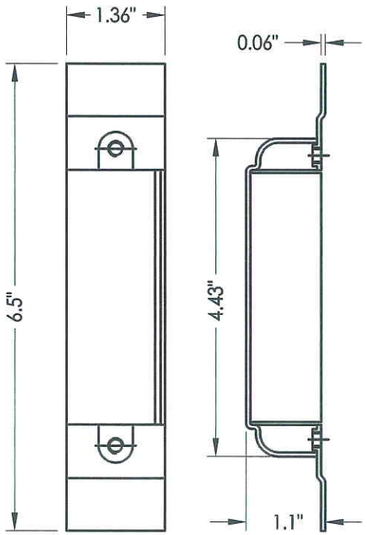
11 DOOR SWEEP
Pemko 3151



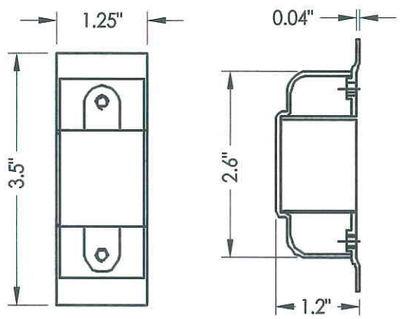
87 ASTRAGAL



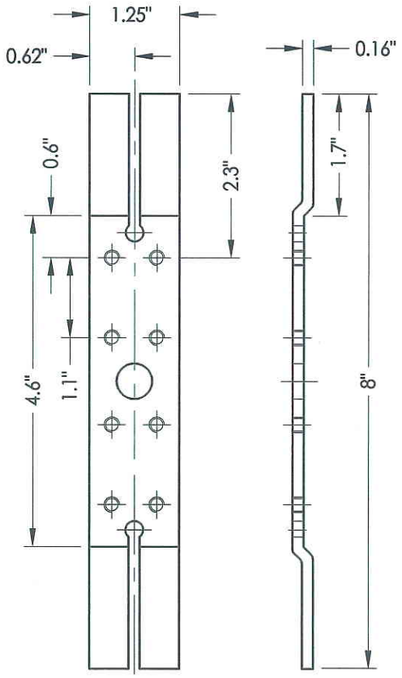
19 RAIN GUARD
Pemko 346



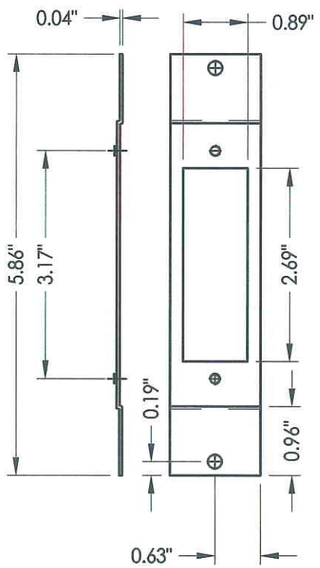
30 DOOR LATCH REINFORCEMENT



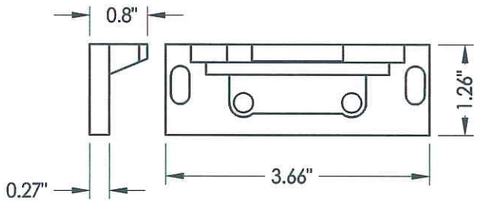
31 DOOR DEADBOLT REINFORCEMENT



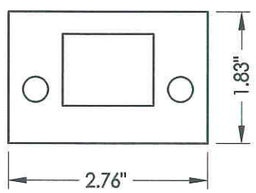
22 DOOR HINGE REINFORCEMENT



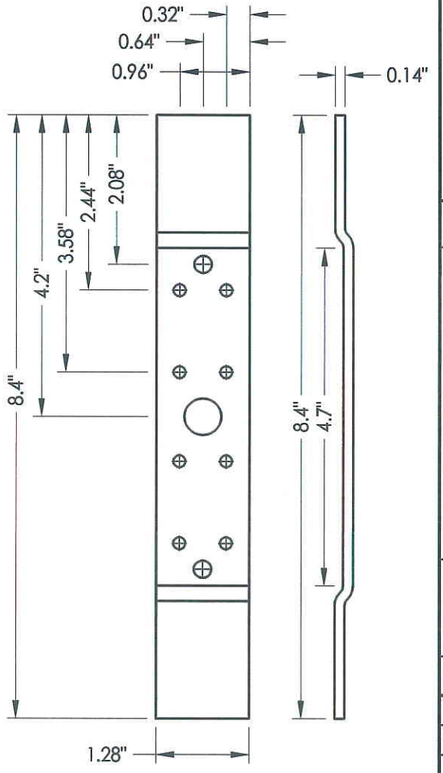
27 FRAME LATCH STRIKE REINFORCEMENT



90 VERTICAL ROD LATCH STRIKE PLATE
@ Head



91 VERTICAL ROD LATCH STRIKE PLATE
@ Sill



28 FRAME HINGE REINFORCEMENT

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: CAL-ROYAL STEEL COMMERCIAL DOOR

PART OR ASSEMBLY: COMPONENTS

NO.	DATE	REVISED PANIC BAR MODEL NO.	BY
1	1/4/11		LFS

REVISIONS

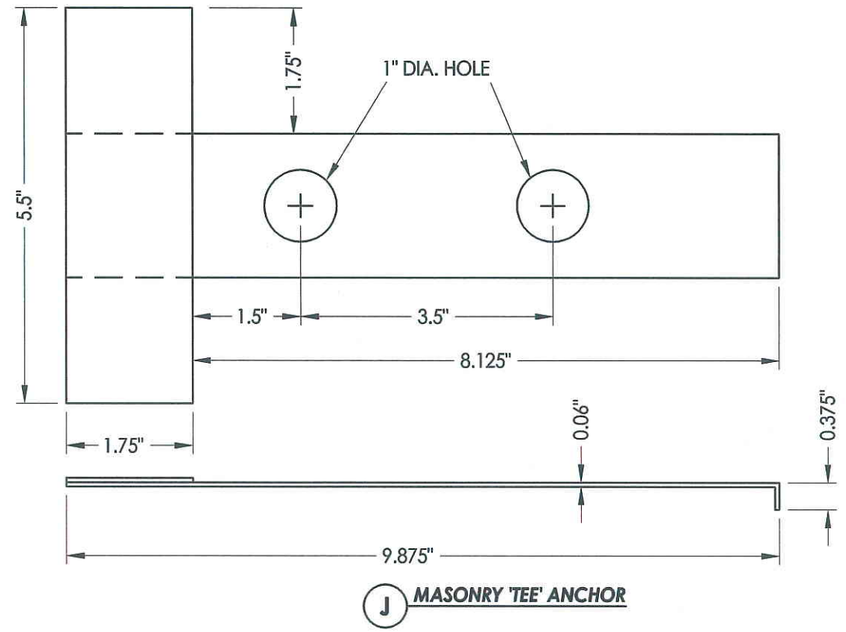
DATE: 08/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 8 OF 9

© 2010 R.W. BUILDING CONSULTANTS INC.

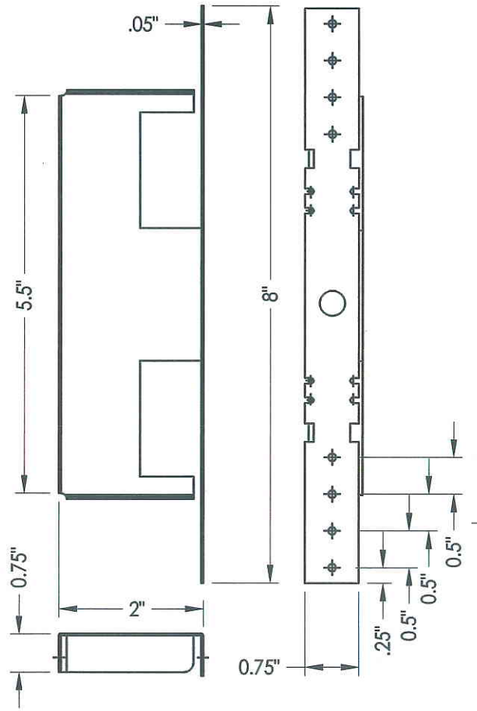
R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.8

BILL OF MATERIALS

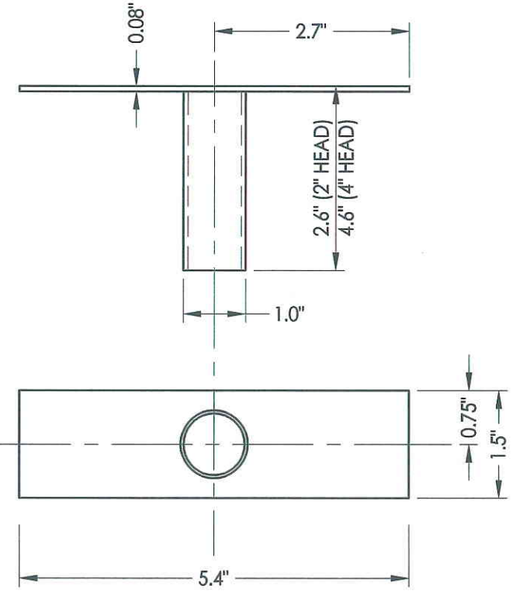
ITEM #	DESCRIPTION	MATERIAL
B	2 X 4 FRAMING (SG >= 0.55)	-
C	1/4" MAX. SHIM SPACE	-
C1	1/8" MAX. SHIM SPACE	-
D	1/4" X 2-3/4" ELCO OR ITW CONCRETE SCREW	STEEL
E	MASONRY - 3,192 PSI MIN. CONCRETE CONFORMING TO ACI 301 OR HOLLOW BLOCK CONFORMING TO ASTM C90	CONCRETE
F	3/8" PFH ITW DYNABOLT SLEEVE ANCHOR	STEEL
G	WOOD STRAP ANCHOR	STEEL
H	#8 X 1-1/2" PPH WOOD SCREW	STEEL
J	MASONRY "TEE" ANCHOR	STEEL
1	CAL-ROYAL DOOR PANEL (ACTIVE DOOR)	-
2	CAL-ROYAL DOOR PANEL (INACTIVE DOOR)	-
4	DOOR TOP CHANNEL	STEEL
5	LOCK BOX REINFORCEMENT	STEEL
6	CLOSER REINFORCEMENT (11 gauge)	STEEL
7	DOOR BOTTOM CHANNEL	STEEL
8	WEATHERSTRIP - PEMKO 303A	NEOPRENE
9	TUBE ANCHOR	STEEL
10	#12-24 X 1" COMBINATION MACHINE / WOOD SCREW	STEEL
11	DOOR SWEEP- PEMKO 3151	PVC
12	1/4 - 20 X 2-3/4" PFH BOLT	STEEL
13	WEATHERSTRIP - COMPRESSION BULB 1/4" X 1/2" (PEMKO S88)	NEOPRENE
14	STILE REINFORCEMENT	STEEL
15	#8-24 X 3/4" COMBINATION MACHINE / WOOD SCREW	STEEL
16	ANSI LATCH STRIKE	STEEL
17	DEAD BOLT STRIKE	STEEL
18	FLIP BOLT - CAL- ROYAL	-
19	RAIN GUARD (PEMKO 346)	ALUM.
20	#12-24 X 1/2" PFH MACHINE SCREW	STEEL
21	4-1/2" X 4-1/2" X 0.125" TEMPLATE HINGE	STEEL
22	DOOR HINGE REINFORCEMENT	STEEL
24	TUBE ANCHOR	STEEL
25	HOLLOW FRAME 2"	STEEL
26	HOLLOW FRAME 4" HEAD	STEEL
27	FRAME LATCH STRIKE REINFORCEMENT	STEEL
28	FRAME HINGE REINFORCEMENT	STEEL
29	DOOR BOTTOM REINFORCEMENT w/ STRIKE PLATE	STEEL
30	DOOR LATCH REINFORCEMENT	STEEL
31	DOOR DEADBOLT REINFORCEMENT	STEEL
40	INSWING THRESHOLD - PEMKO 156	ALUM
41	INSWING THRESHOLD - PEMKO 271	ALUM
42	OUTSWING THRESHOLD - PEMKO 2001P	ALUM
71	CAL-ROYAL SL SERIES CYLINDRICAL LOCK	-
72	CAL-ROYAL T300 SERIES DEADBOLT	-
74	CAL-ROYAL F7700-V SERIES VERTICAL ROD EXIT DEVICE	-
85	#10 X 2-1/2" PFH WOOD SCREW	STEEL
87	ASTRAGAL	STEEL
90	VERTICAL ROD LATCH STRIKE PLATE @ HEAD	STEEL
91	VERTICAL ROD LATCH STRIKE PLATE @ SILL	STEEL



J MASONRY 'TEE' ANCHOR



G WOOD STRAP ANCHOR



9 TUBE ANCHOR

Documents Prepared By: Lyndon F. Schmidt, P.E.
TEXAS P.E. #104123

RW BUILDING CONSULTANTS, INC.
P.O. Box 230 Valrico FL. 33595
Phone No.: 813.659.9197

TEXAS BOARD OF PROFESSIONAL ENGINEERS
CERTIFICATE OF REGISTRATION # F-11852

PRODUCT: CAL-ROYAL STEEL COMMERCIAL DOOR

PART OR ASSEMBLY: BILL OF MATERIALS AND COMPONENTS

NO.	DATE	REVISIONS	BY
1	1/4/11	REVISED PANIC BAR MODEL NO.	LFS

DATE: 08/12/10
SCALE: N.T.S.
DWG. BY: JK
CHK. BY: LFS
DRAWING NO.: TX-4106
SHEET 9 OF 9

© 2010 R.W. BUILDING CONSULTANTS INC.

R:\A - Projects\Project Folders\proj 1501 - 1600\PF 1536\D. RWBC Drawings\TEXAS.dwg, 6.9