

GENERAL NOTES: VALID FOR SHUTTERS WITHOUT STORM BARS AND HEADERS: SHEETS 1 THRU 19

1. ROLL-UP SHUTTER SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE (I.B.C.) AND INTERNATIONAL RESIDENTIAL CODE (I.R.C.).

DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE INTERNATIONAL BUILDING CODE, FOR A BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE SHUTTER WILL BE INSTALLED, AND FOR A DIRECTIONALITY FACTOR $K_d=0.85$, IN ACCORDANCE W/ ASCE 7-16 STANDARD, AND SHALL NOT EXCEED THE DESIGN PRESSURE RATING INDICATED ON SHEETS 10 THRU 13, 16 THRU 19 AND SH. 27.

IN ORDER TO VERIFY THE ABOVE CONDITION, ULTIMATE DESIGN WIND LOADS DETERMINED PER ASCE 7-16 SHALL BE FIRST REDUCED TO A.S.D. DESIGN WIND LOADS BY MULTIPLYING THEM BY 0.6 IN ORDER TO COMPARE THESE W/ MAX. (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ABOVE.

IN ORDER TO VERIFY THAT COMPONENTS AND ANCHORS ON THIS P.E.D. AS TESTED WERE NOT OVER STRESSED, A 33% INCREASE IN ALLOWABLE STRESS FOR WIND LOADS WAS NOT USED IN THEIR ANALYSIS. FASTENERS SPACING TO WOOD HAS BEEN DETERMINED IN ACCORDANCE WITH N.D.S. 2018.

ROLL-UP SHUTTER'S ADEQUACY FOR IMPACT AND CYCLIC RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE INTERNATIONAL BUILDING CODE AS PER FENESTRATION TESTING LAB. REPORT # 8846 AS PER FLORIDA HIGH VELOCITY HURRICANE ZONE TAS-201, TAS-202 & TAS-203 PROTOCOLS, EQUIVALENT TO ASTM E-1886-13a, ASTM E-1996-14a & ASTM E-330-14., QUALIFYING INSTALLATIONS FOR WIND ZONES 1, 2, 3 & 4, MISSILE TYPE D, APPLICABLE TO BASIC PROTECTION ONLY, INSTALLATIONS AT NON ESSENTIAL FACILITIES AS DEFINED BY ASTM E 1996 SEE *, Δ NOTES ON SHEETS 10 & 18 FOR ADDITIONAL LIMITATIONS, AND AS PER STRUCTURAL CALCULATIONS PERFORMED IN ACCORDANCE W/ SECTION 1604 OF THE INTERNATIONAL BUILDING CODE.

2. ALL ALUMINUM EXTRUSIONS SHALL BE AS INDICATED ON SHEET 2. ALL ALUMINUM EXTRUSIONS IN CONTACT WITH DISSIMILAR MATERIALS SHALL COMPLY WITH SECTION III-6 OF THE 2015 ALUMINUM DESIGN MANUAL.

3. EVERY OTHER SLAT SHALL INCLUDE WIND LOCKS AT EACH END (SEE COMPONENTS SHEET). EVERY SLAT (A) ADJACENT AND ABOVE BOTTOM SLAT (A) MUST INCLUDE WIND LOCKS.

4. ALL SCREWS & BOLTS (EXCEPT COMPONENT (C)) TO BE S.A.E. GRADE 5 CADMIUM PLATED OR GALVANIZED STEEL. ALL SCREWS AND BOLTS INSTALLED TO BE STAINLESS STEEL 304 OR 316 AISI SERIES AND MEET ASTM A167, OR HOT DIPPED GALVANIZED (AFTER FABRICATION) CARBON STEEL AS PER ASTM A123 OR ASTM A153, OR HOT DIPPED GALVANIZED OR GALVANNEALED (PRIOR TO FABRICATION) AND MEET ASTM A653 WITH 50 KSI YIELD STRENGTH AND 90 KSI TENSILE STRENGTH.

5. ANCHORS TO WALL FOR (B) SIDE RAIL SHALL BE AS FOLLOWS: (UNLESS OTHERWISE NOTED)

(A) TO EXISTING POURED CONCRETE: MIN. $f'_c = 2899$ p.s.i. COMPRESSIVE STRENGTH.

-5/16" CARBON STEEL TAPCON XL ANCHORS AS MANUFACTURED BY ITW BUILDEX, INC.

A.1) MINIMUM EMBEDMENT OF 5/16" TAPCON XL ANCHORS INTO POURED CONCRETE SHALL BE 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.

A.2) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON XL ANCHORS INTO POURED CONCRETE SHALL BE 4". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

A.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM EMBEDMENT SHALL BE AS INDICATED ON NOTE A.1 ABOVE.

(B) TO EXISTING GROUT FILLED CELL, CONCRETE BLOCK WALL: ASTM C-90

-5/16" CARBON STEEL TAPCON XL ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.

B.1) MINIMUM EMBEDMENT OF 5/16" TAPCON XL ANCHORS, INTO GROUT FILLED CELL CONCRETE BLOCK UNIT SHALL BE 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.

B.2) MINIMUM EDGE DISTANCE (E.D.) OF 5/16" TAPCON XL ANCHORS INTO GROUT FILLED CELL CONCRETE BLOCK SHALL BE 4". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

B.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM EMBEDMENT SHALL BE AS INDICATED ON NOTE B.1 ABOVE.

(C) TO EXISTING WOOD FRAME BUILDING: SOUTHERN PINE #2 W/ $G = 0.55$ MIN., DOUGLAS FIR-SOUTH ($G=0.46$) OR SPRUCE PINE-FIR SOUTH, ($G=0.36$).

-5/16" CARBON STEEL ULTRACON ANCHORS, AS MANUFACTURED BY ELCO CONSTRUCTION PRODUCTS, INC.

C.1) MINIMUM PENETRATION OF ULTRACON ANCHORS, INTO THE WOOD FRAME UNIT SHALL BE 2 1/2". (MUST INCLUDE 2" THREADED LENGTH) NO PENETRATION INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED PENETRATION.

C.2) MINIMUM EDGE DISTANCE (E.D.) OF ULTRACON ANCHORS, INTO WOOD SHALL BE 2". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

C.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM THREADED PENETRATION SHALL BE AS INDICATED ON NOTE C.1 ABOVE.

6. ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

7. ANCHORS REQUIRED FOR MULLION CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 16 & 17 RESPECTIVELY.

-1/2" & 5/8" KWIK BOLT TZ EXPANSION ANCHOR TO BE AS MANUFACTURED BY HILTI, INC.

MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT ABOVE MENTIONED SHEET. EDGE DISTANCE AND EMBEDMENTS ARE BEYOND ANY FINISH MATERIAL.

ANCHOR	SPACING @ 100%	EDGE DISTANCE @ 100%	CONCRETE	EMBEDMENT GROUT FILLED OR CONCRETE BLOCK
1/2"	22 1/2"	7 1/2"	4" (3000 psi)	-
5/8"	20 1/4"	6 3/4"	6 3/4" (3000 psi)	-

8. ROLL-UP SHUTTER SLATS FOAM PLASTIC CORE SHALL CONSIST OF HIGH DENSITY ELASTOLID D 8220/109 POLYOLKOMPONENT 0.021676 Lb/in³ FOAM PLASTIC CORE.

SLATS FOAM PLASTIC CORE SURFACE BURNING CHARACTERISTICS HAVE BEEN VERIFIED IN ACCORDANCE WITH SECTION 2603.3 OF THE INTERNATIONAL BUILDING CODE AS PER INTERTEK TEST REPORTS # 102498030SAT_001A & 102484409MID_001 RESPECTIVELY.

9. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL SHUTTER TRACKS ALL AROUND FULL LENGTH.

10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. THIS SHUTTER SHALL ONLY BE ATTACHED TO CONCRETE, GROUT FILLED CELL CONCRETE BLOCK OR WOOD FRAME BUILDINGS.

11. ROLL-UP SHUTTERS INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.

12. ROLL-UP MECHANISM NOT PART OF THIS APPROVAL.

13. (a) THIS P.E.D. PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; I.E. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.E.D.

(b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS P.E.D. PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.

(c) THIS P.E.D. WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

(d) SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A PROFESSIONAL REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D.

(e) THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

14. PRODUCT MANUFACTURE'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT PRODUCT IN ACCORDANCE WITH TEXAS DEPARTMENT OF INSURANCE REQUIREMENTS. ONE LABEL SHALL BE PLACED FOR EVERY OPENING.

THIS DRAWING SHALL ONLY BE USED TO OBTAIN PERMITS UNDER THE TEXAS DEPARTMENT OF INSURANCE JURISDICTION



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TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroal RS 53 RC 2 SLAT
ENGAGED ROLL-UP SHUTTER

heroal-Johann HenkenJohann GmbH & Co. KG
Osterwieher Str. 80
33415 Verl.

M.P
DRAWN BY:

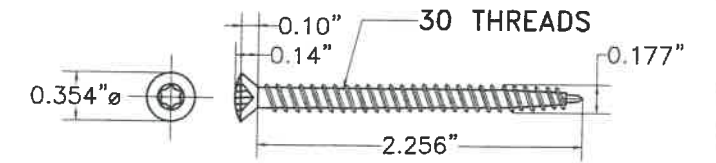
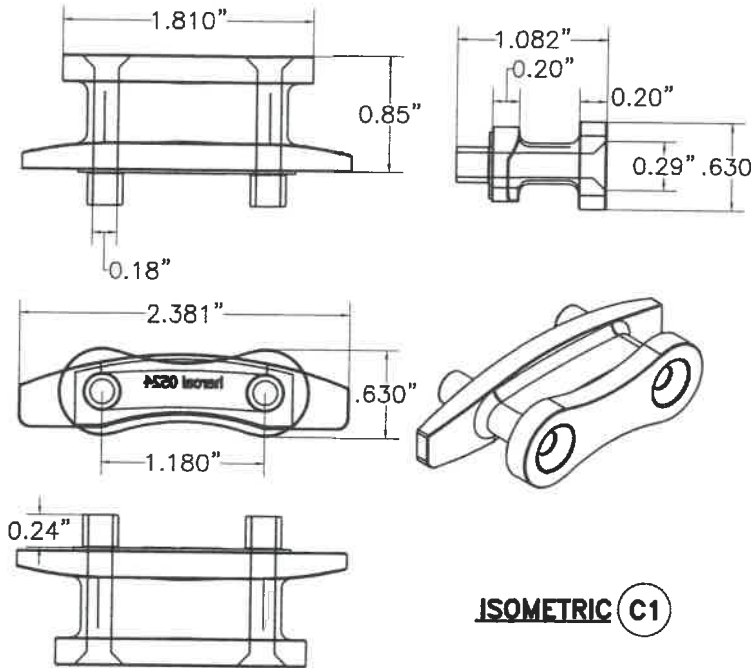
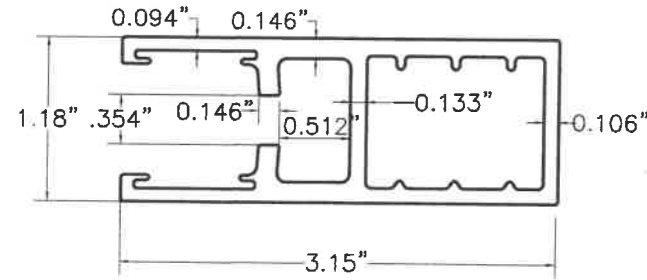
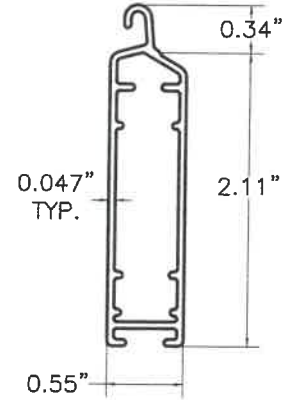
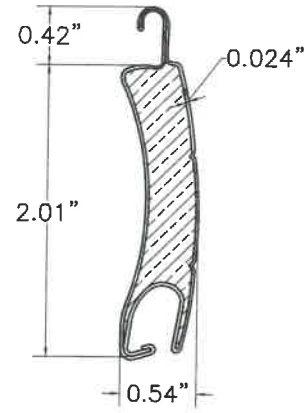
10/22/2020
DATE:

20-293

DRAWING No.

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

SHEET 1 OF 27



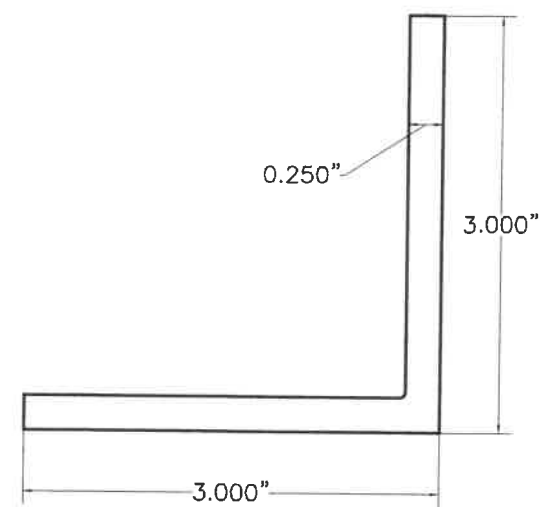
(C3) WIND LOCK SCREW:
 (2) 2 3/8" 305 SERIES F.H. S.D.S.
 (Min. Fy = 72.8 ksi, Min. FtU = 83.1 ksi)
 SCALE: 3/4" = 1"

(A) SLAT:
 heroyal RS 53 RC 2 SLAT
 53mm (t = .024")
 HIGH DENSITY ELASTOLID D 8220/109
 POLYOLKOMPONENTE
 0.021676 Lb/in³
 FOAM PLASTIC CORE
 SHEET METAL ALUMINUM SLAT
 5754 H46 ALUMINUM ALLOY
 SCALE: 3/4" = 1"

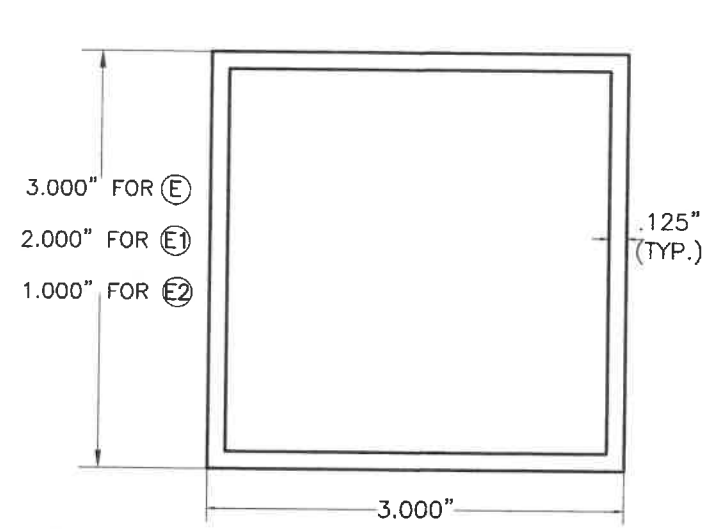
(A1) BOTTOM SLAT:
 6060-T66 ALUMINUM ALLOY
 SCALE: 3/4" = 1"

(B1) SIDE RAIL:
 6060-T66 ALUMINUM ALLOY
 SCALE: 3/4" = 1"

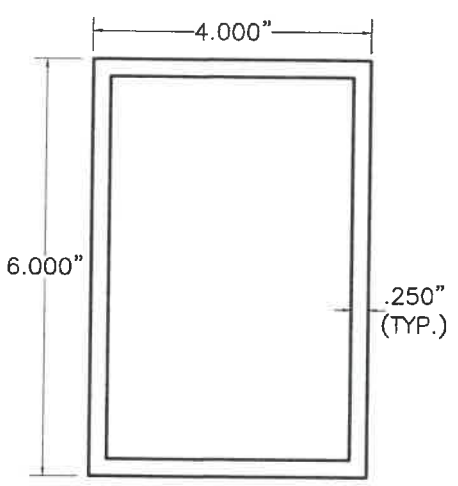
(C1) WIND LOCK:
 DURETHAN BC 40 SR2
 SCALE: 3/4" = 1"



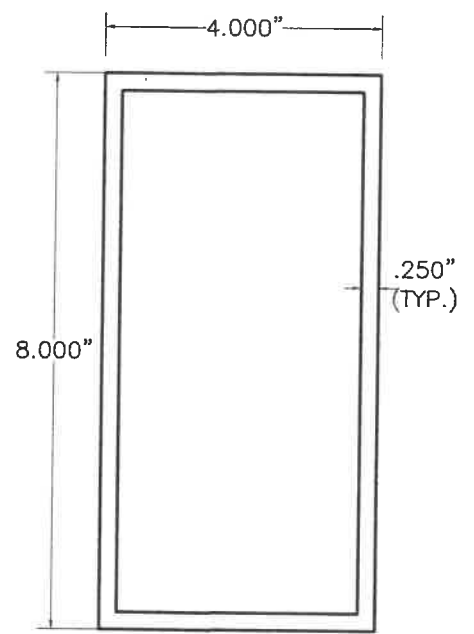
(D) ALUMINUM ANGLE
 6063-T6 ALUMINUM ALLOY



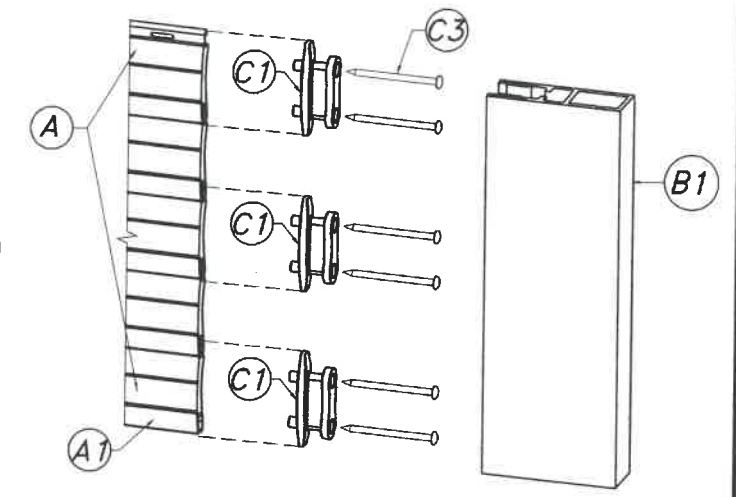
(E, E1, E2) ALUMINUM BUILD-OUT TUBES
 6063-T6 ALUMINUM ALLOY
 SCALE: 3/8" = 1"



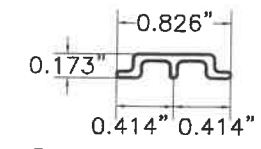
(G) TYPE 1 MULLION
 6061-T6 ALUMINUM ALLOY
 SCALE: 3/8" = 1"



(I) TYPE 2 MULLION
 6061-T6 ALUMINUM ALLOY
 SCALE: 3/8" = 1"



**heroyal RS 53 RC 2
 SLAT ASSEMBLY DETAIL**
 N.T.S.



(F) SIDE RAIL INLAY
 PC/ABS T85 POLYCARBONATE

COMPONENTS

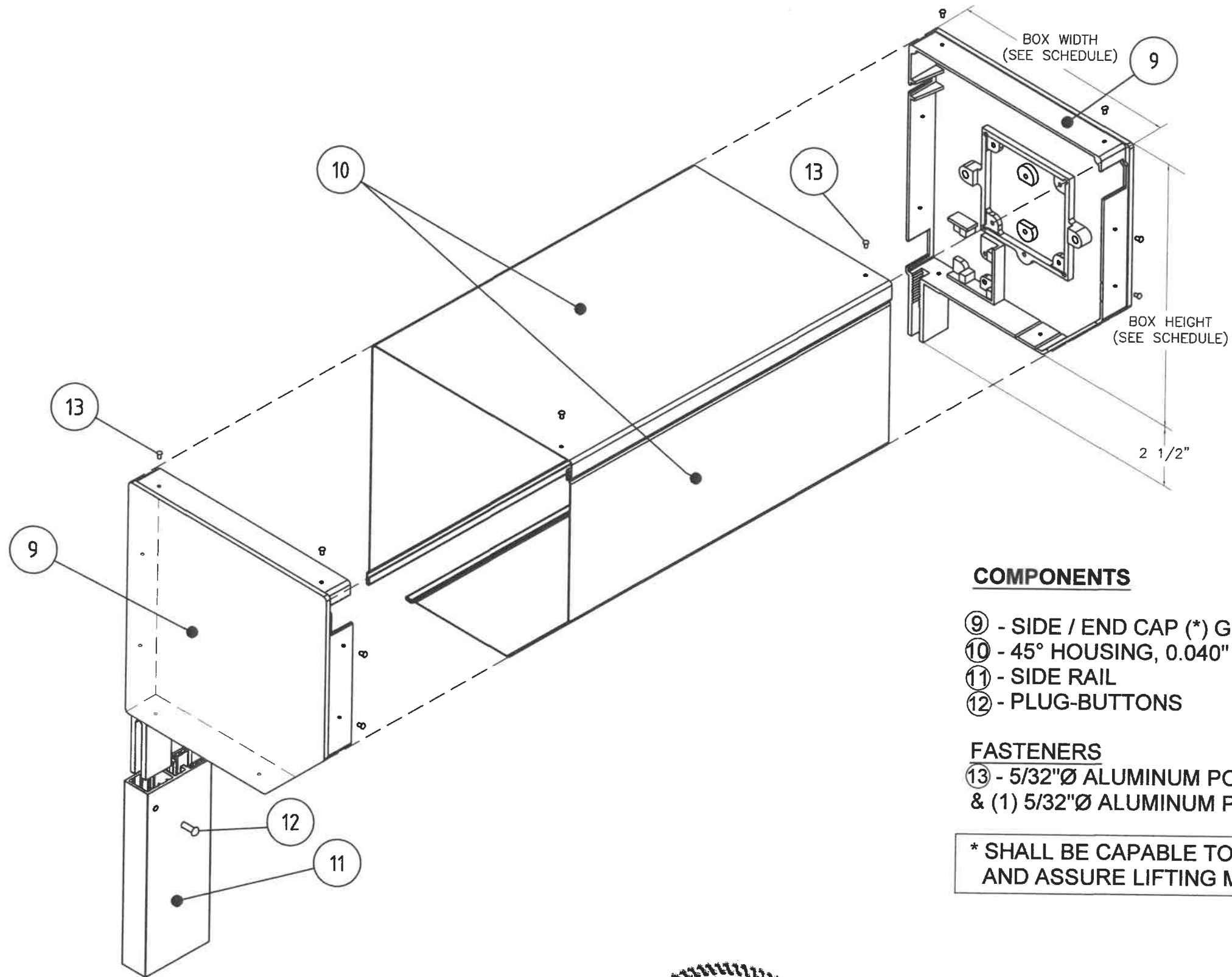
(VALID ONLY FOR SHUTTERS
 WITHOUT STORM BARS & HEADERS)

STATE OF TEXAS
 WALTER A. TILLIT, JR.
 90691
 LICENSED PROFESSIONAL ENGINEER
 SEAL/SIGNATURE/DATE

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 TEXAS LIC. # 90691
 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER						M.P. DRAWN BY:
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.						10/22/2020 DATE:
						20-293 DRAWING No.
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE	SHEET 2 OF 27
1	OLD 17-286	10/22/20	3			
2			4			



BOX SCHEDULE

GKSE BOX	BOX WIDTH (in)	BOX HEIGHT (in)
205	8.1	8.1
230	9.1	9.1
254	9.9	9.9
300	12	12

COMPONENTS

- ⑨ - SIDE / END CAP (*) GKSE 300
- ⑩ - 45° HOUSING, 0.040" THICK, 5754-H42 OR EQUAL
- ⑪ - SIDE RAIL
- ⑫ - PLUG-BUTTONS

FASTENERS

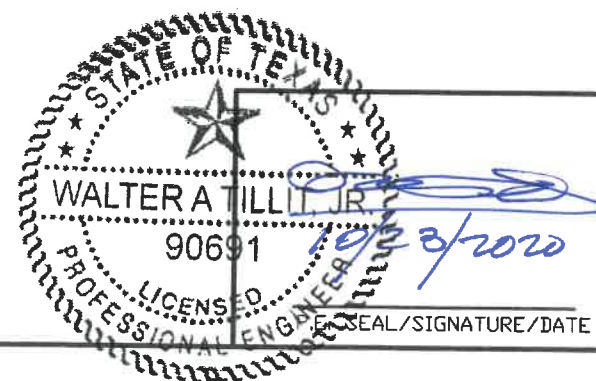
- ⑬ - 5/32"Ø ALUMINUM POP RIVETS (MIN. 8 REQ'D. EA. SIDE CAP) & (1) 5/32"Ø ALUMINUM POP RIVETS @ 10" O.C. THEREAFTER

* SHALL BE CAPABLE TO SUSTAIN SLAT'S WEIGHT AND ASSURE LIFTING MECHANISM

Ⓜ BOX ASSEMBLY DETAIL W/ END CAP SYSTEM ⑨

COMPONENTS (CONT'D)

(VALID FOR SHUTTERS WITH OR WITHOUT STORM BARS & HEADERS)



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TEXAS LIC. # 90691
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TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT
ENGAGED ROLL-UP SHUTTER

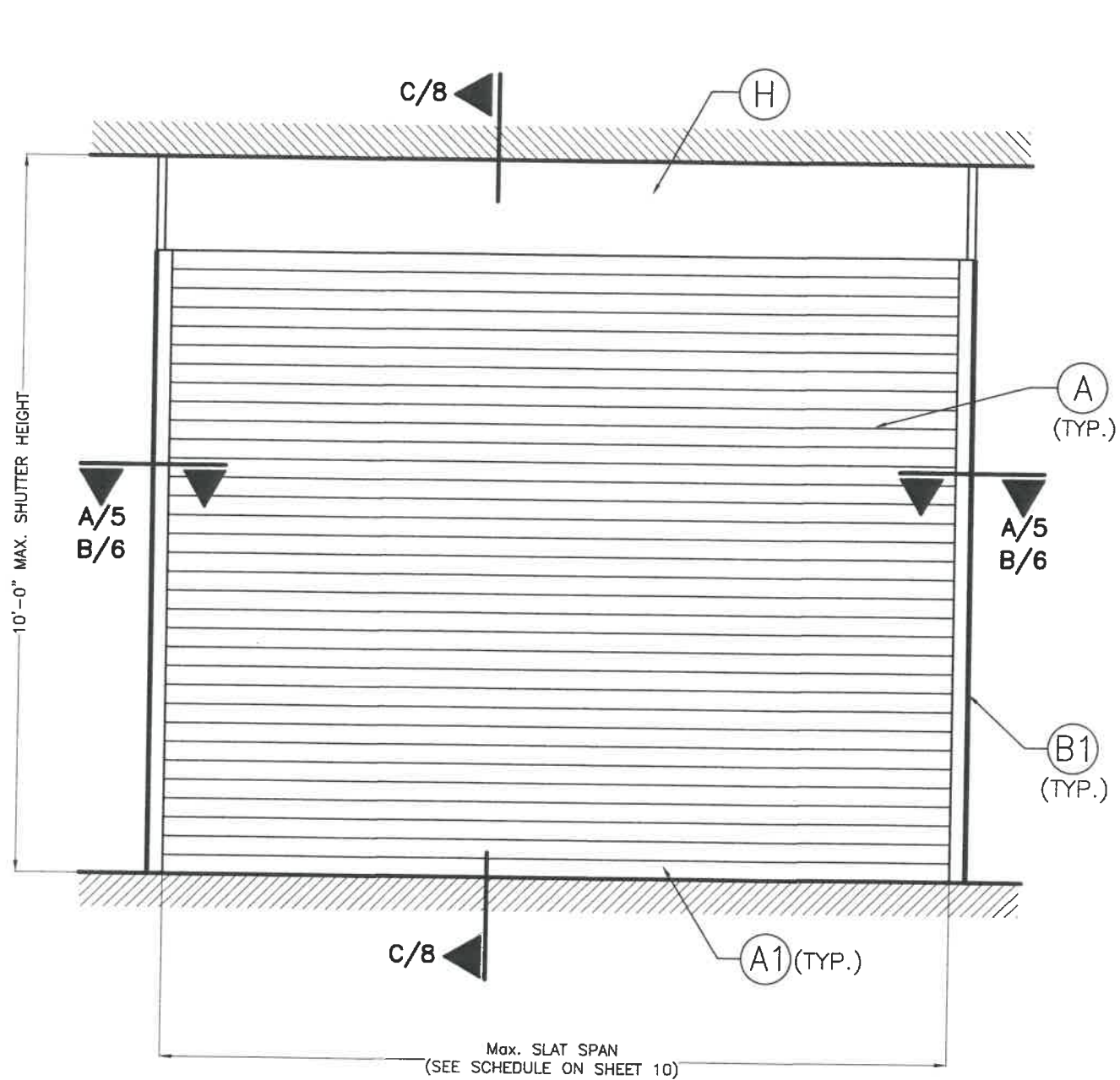
heroyal-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
33415 Verl.

M.P
DRAWN BY:

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DATE:

20-293
DRAWING No.

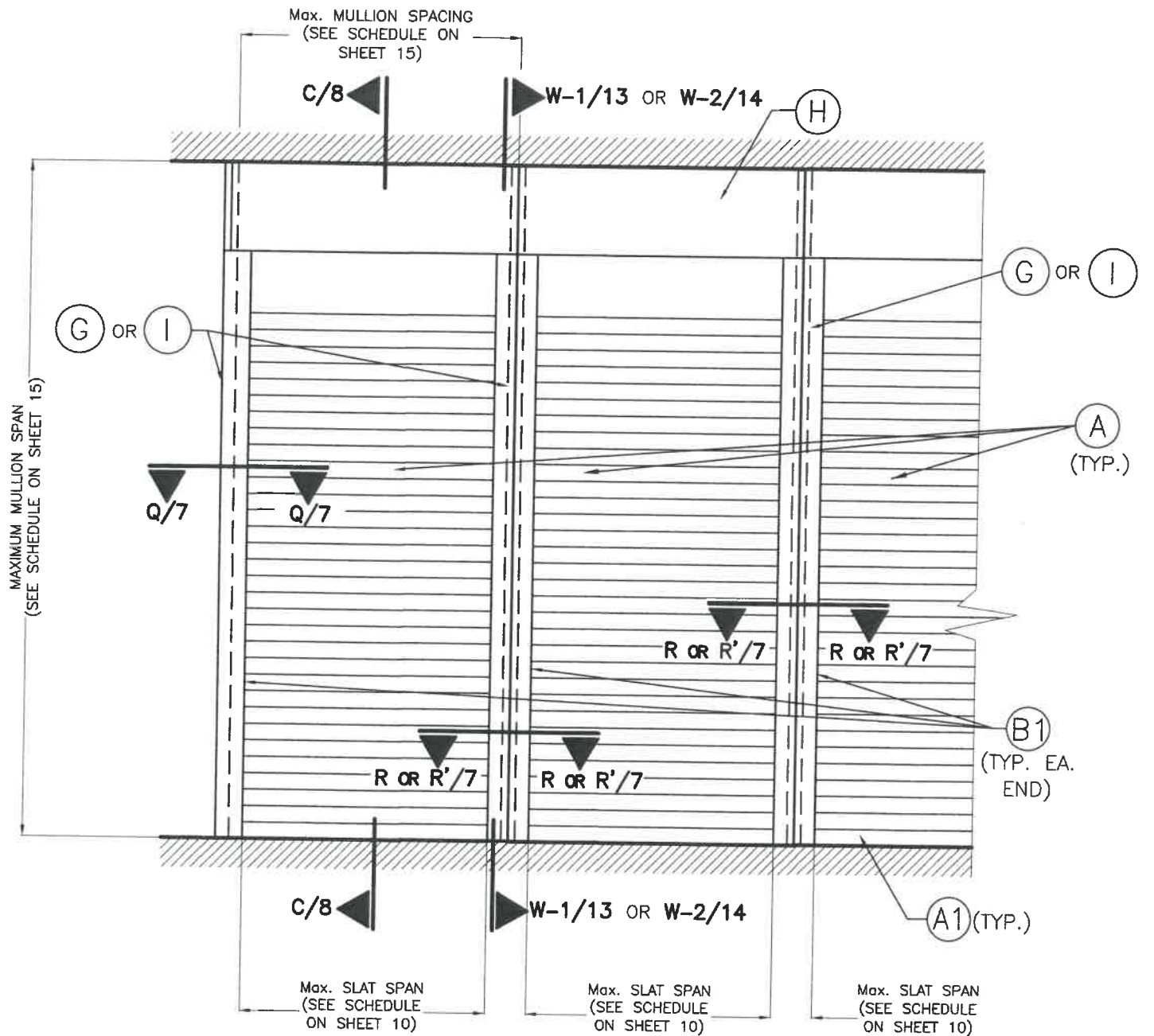
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1	OLD 17-286	10/22/20	3		
2			4		



**TYPICAL ELEVATION:
INSTALLATION INTO POURED CONCRETE,
GROUT FILLED CELL, CONCRETE BLOCK & WOOD**

NOTES: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.
N.T.S

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)



**TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION W/ MULLIONS:
INSTALLATION INTO POURED CONCRETE**

NOTES: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.
N.T.S

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

STATE OF TEXAS
WALTER A. TILLIT, JR.
90691
LICENSED PROFESSIONAL ENGINEER
SEAL/SIGNATURE/DATE

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TEXAS LIC. # 90691
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TEXAS DEPARTMENT OF INSURANCE - 2018

herool RS 53 RC 2 SLAT
ENGAGED ROLL-UP SHUTTER

herool-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
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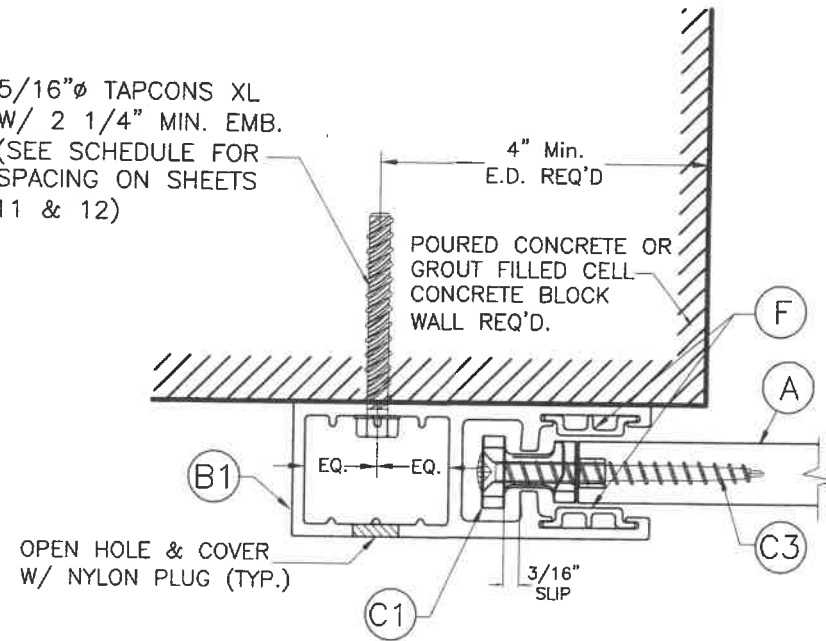
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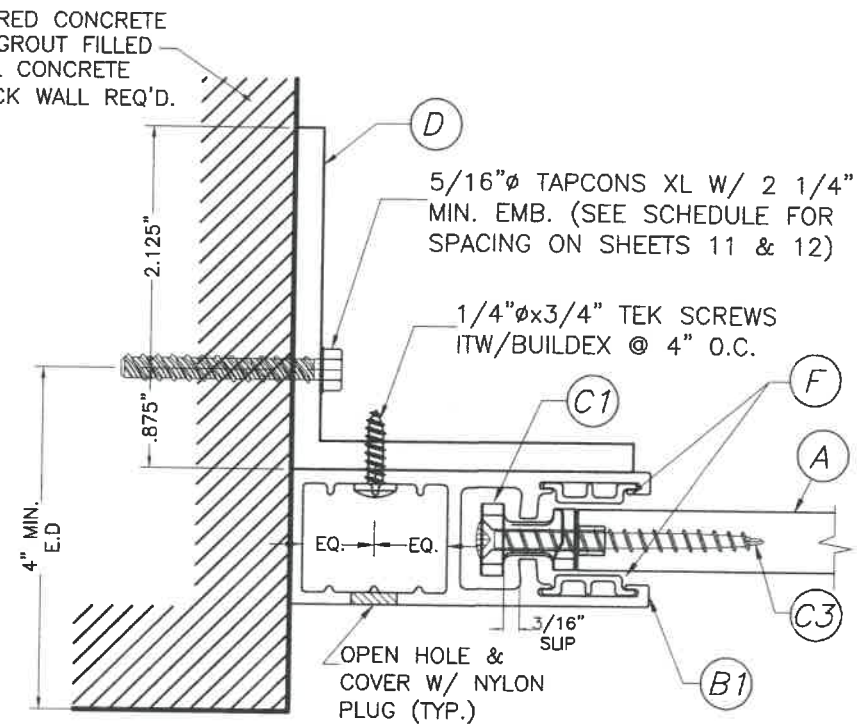
SHEET 4 OF 27

5/16"Ø TAPCONS XL
W/ 2 1/4" MIN. EMB.
(SEE SCHEDULE FOR
SPACING ON SHEETS
11 & 12)



**SECTION A-A (1):
WALL MOUNT**

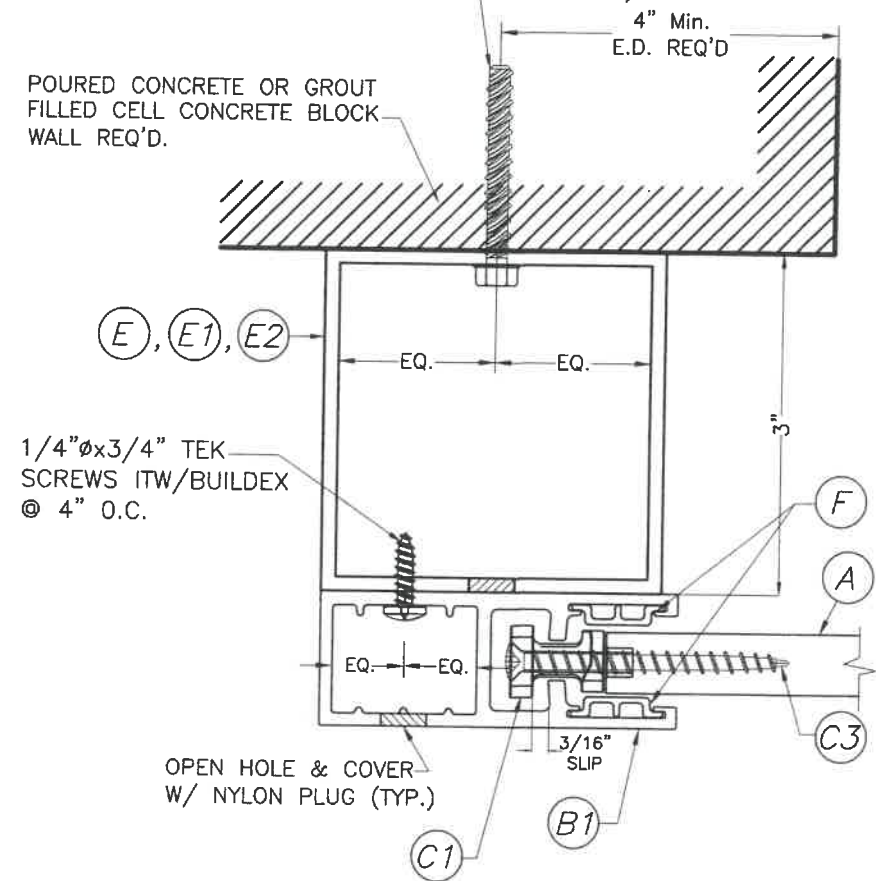
POURED CONCRETE
OR GROUT FILLED
CELL CONCRETE
BLOCK WALL REQ'D.



**SECTION A-A (2):
INSIDE WALL MOUNT**

5/16"Ø TAPCONS XL
W/ 2 1/4" MIN. EMB.
(SEE SCHEDULE FOR
SPACING ON SHEETS
11 & 12)

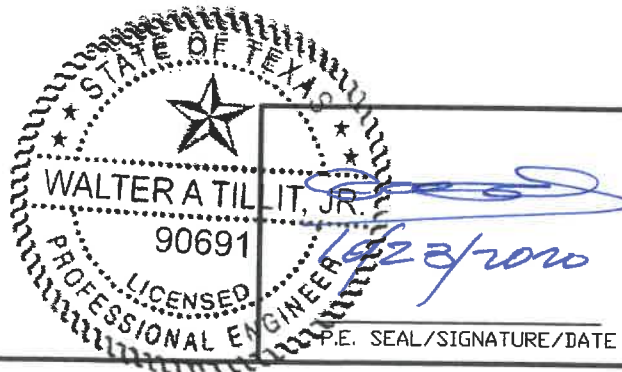
POURED CONCRETE OR GROUT
FILLED CELL CONCRETE BLOCK
WALL REQ'D.



**SECTION A-A (3):
BUILD-OUT MOUNT**

**SIDE RAIL CONNECTIONS TO POURED CONCRETE
OR GROUT FILLED CELL CONCRETE BLOCK WALL**

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)



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TEXAS LIC. # 90691
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TEXAS DEPARTMENT OF INSURANCE - 2018

**heroal RS 53 RC 2 SLAT
ENGAGED ROLL-UP SHUTTER**

heroal-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
33415 Verl.

M.P.
DRAWN BY:

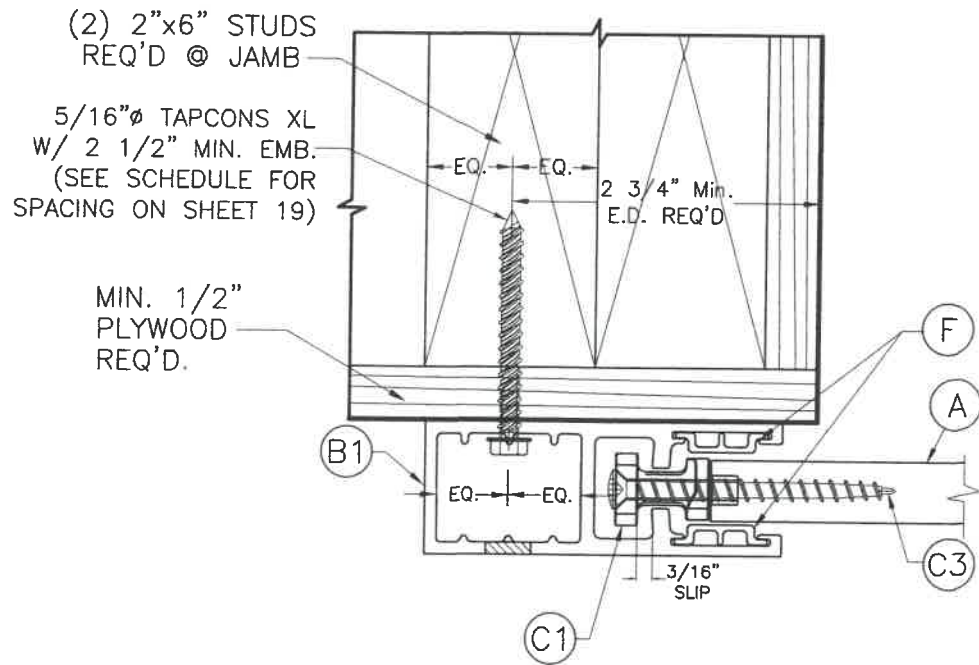
10/22/2020
DATE:

20-293

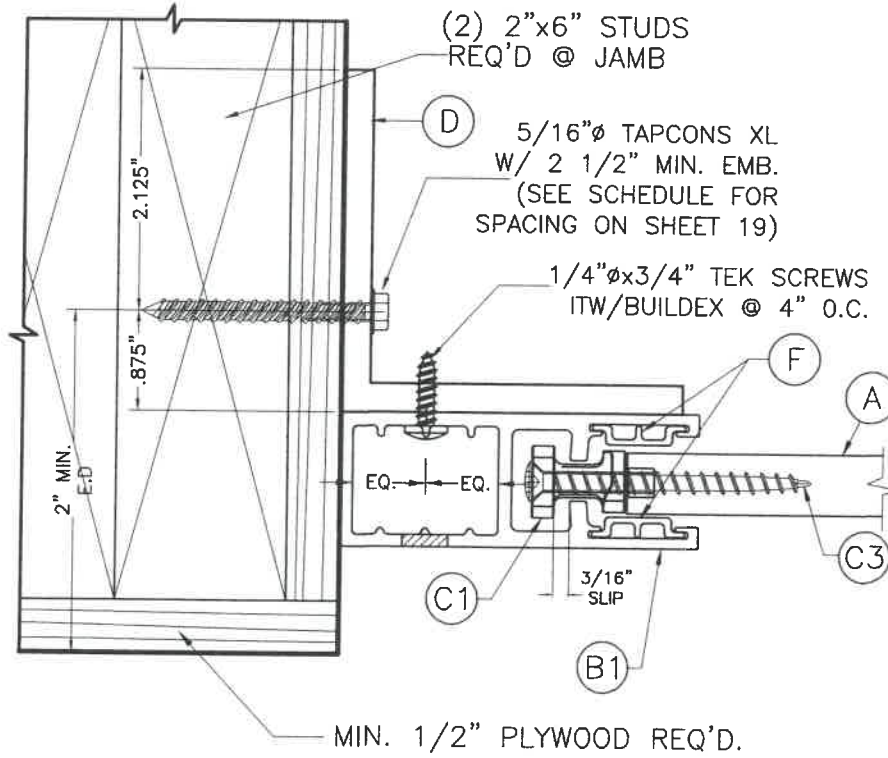
DRAWING No.

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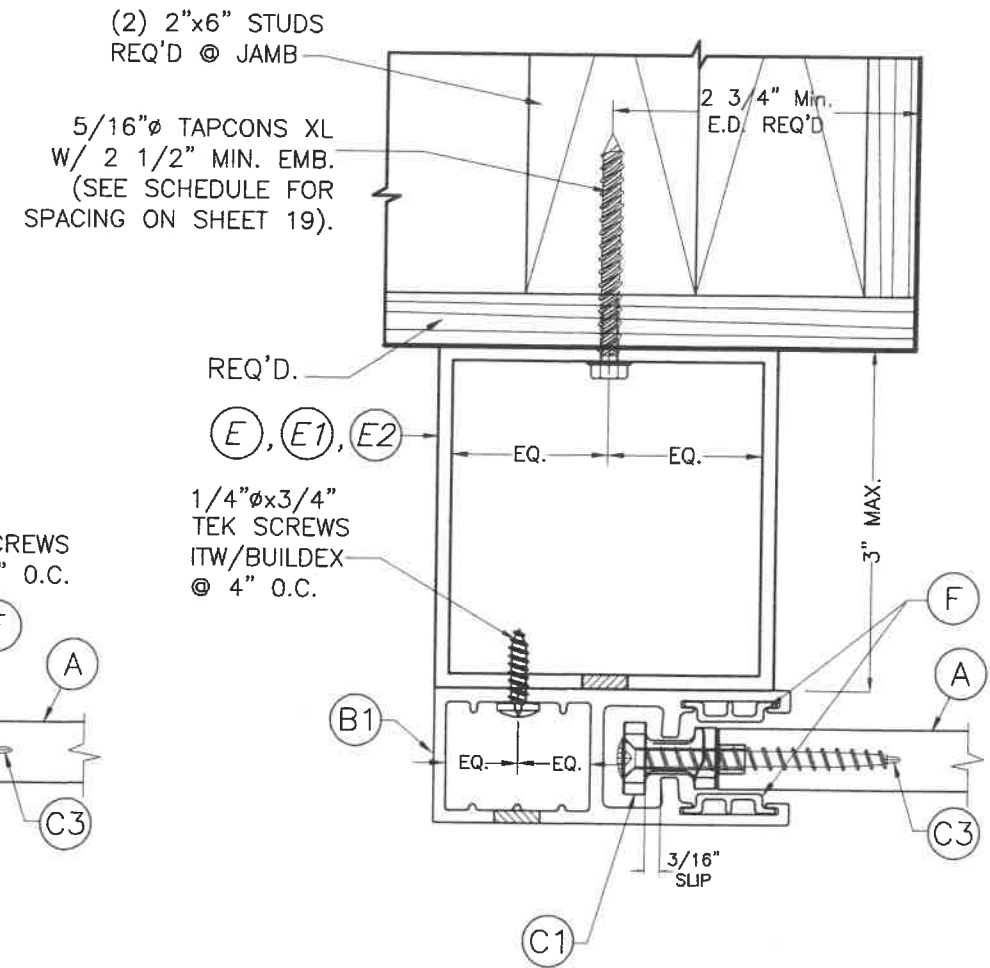
SHEET 5 OF 27



**SECTION B-B (1):
WALL MOUNT**



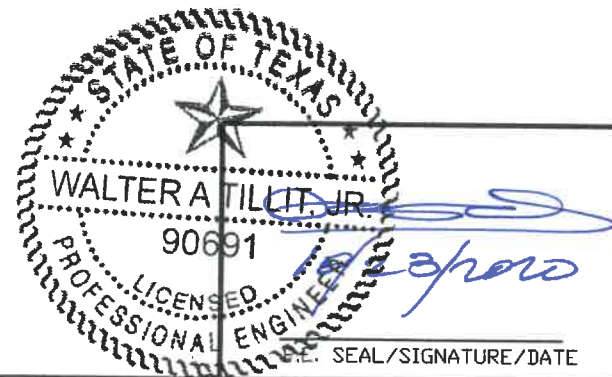
**SECTION B-B (2):
INSIDE WALL MOUNT**



**SECTION B-B (3):
BUILD-OUT MOUNT**

SIDE RAIL CONNECTIONS TO WOOD WALL

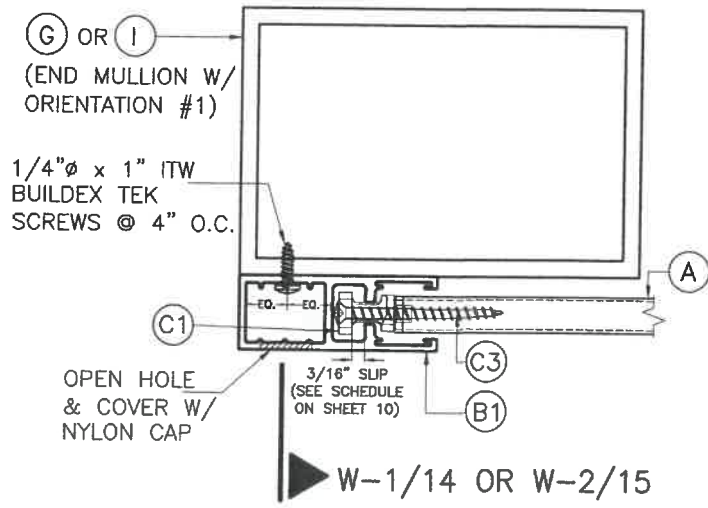
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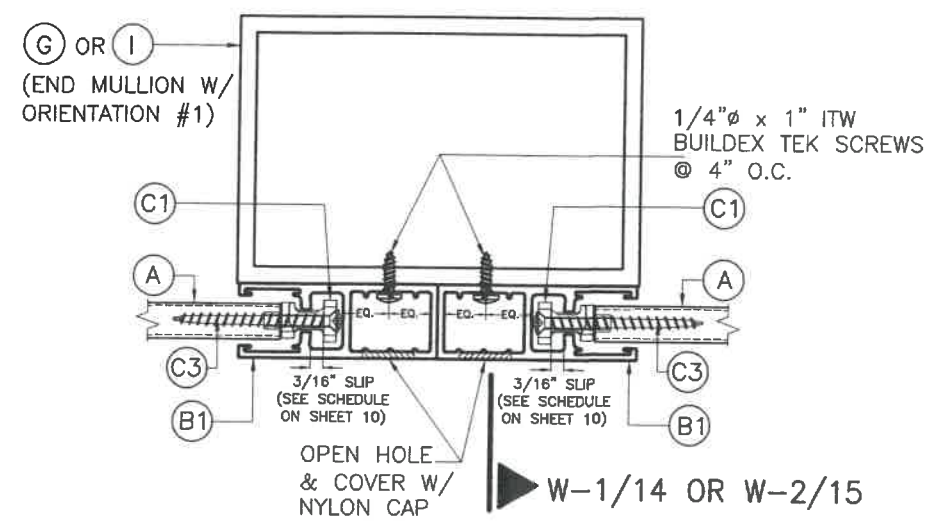
WALTER A. TILLIT Jr. P.E.
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TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

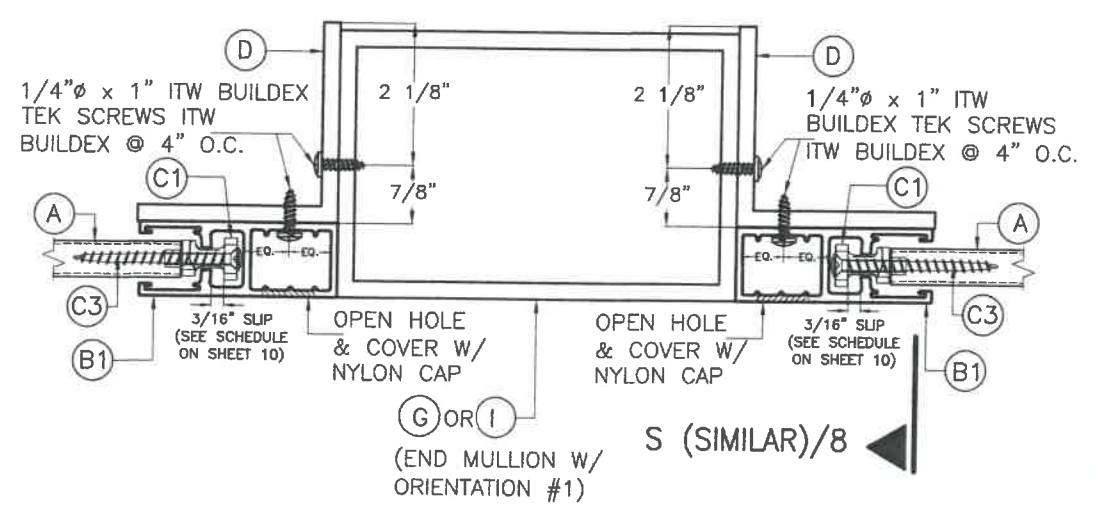
heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER			M.P. DRAWN BY:		
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.			10/22/2020 DATE:		
			20-293 DRAWING No.		
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		



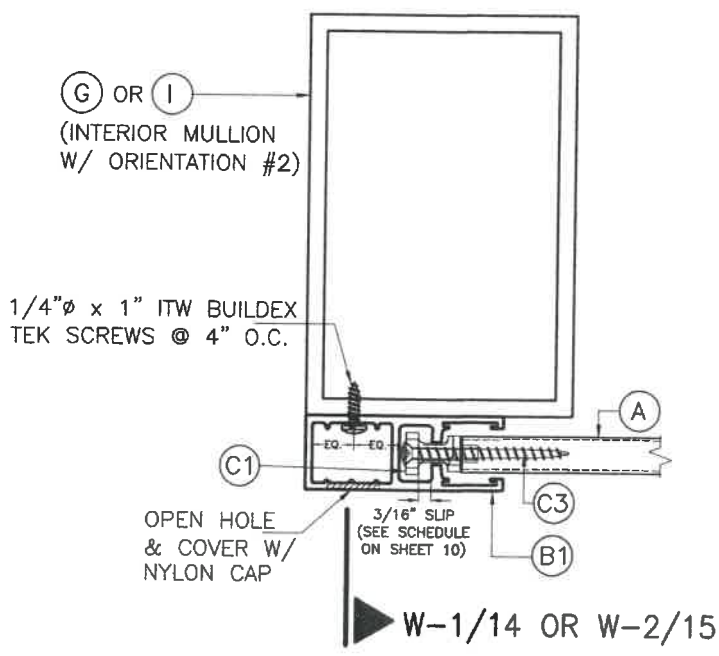
SECTION Q-Q:
MULLION MOUNT (FACE MOUNT)



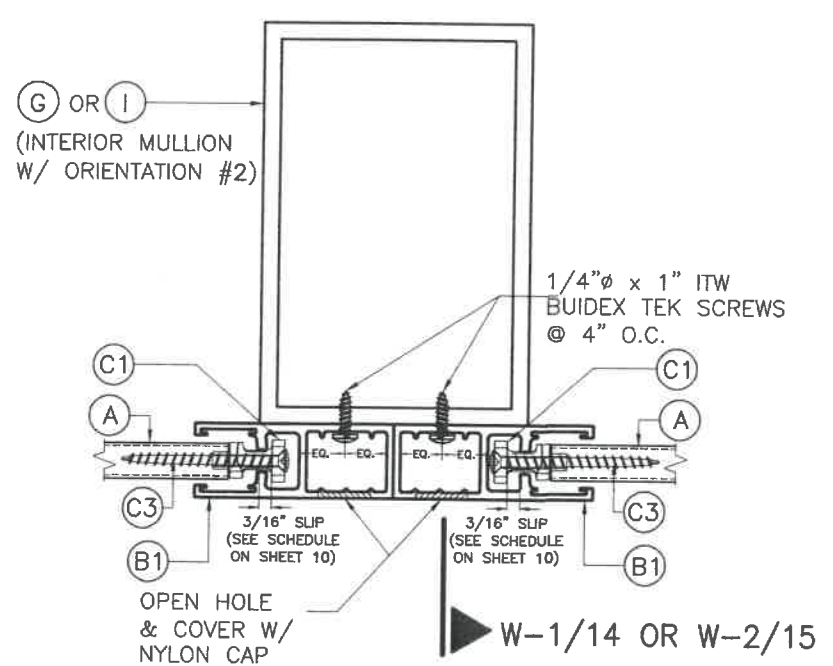
SECTION R-R:
MULLION MOUNT (FACE MOUNT)



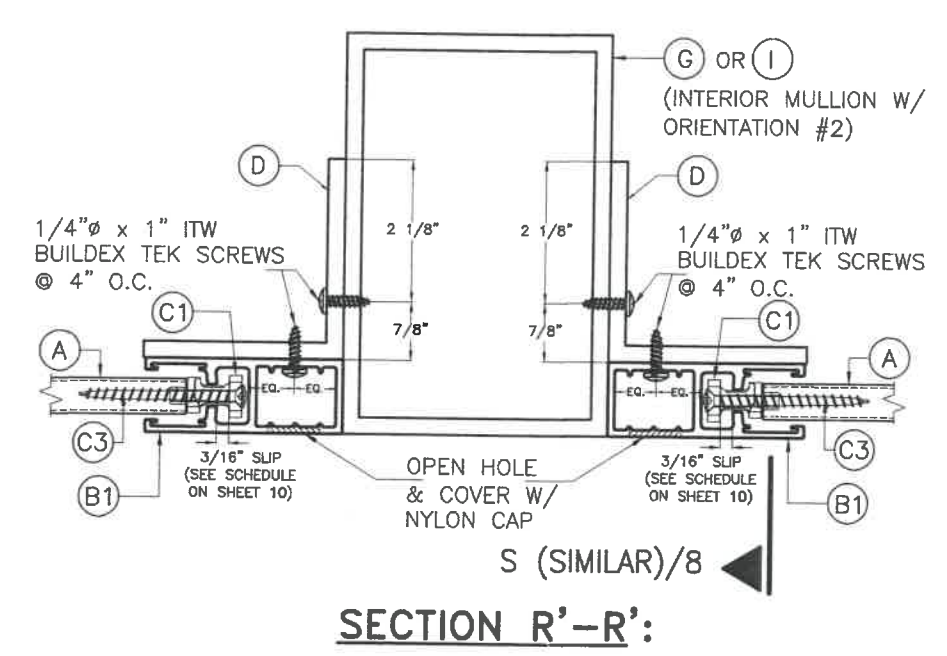
SECTION R'-R':
MULLION MOUNT (INSIDE MOUNT)



SECTION Q-Q:
MULLION MOUNT (FACE MOUNT)



SECTION R-R:
MULLION MOUNT (FACE MOUNT)

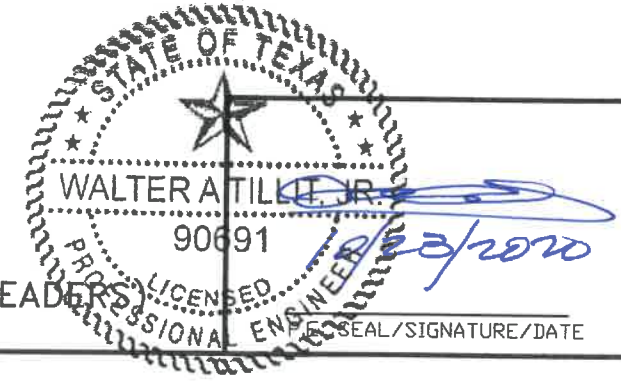


SECTION R'-R':
MULLION MOUNT (INSIDE MOUNT)

**SIDE RAIL CONNECTION
TO MULLIONS**

SCALE: 3/8" = 1"

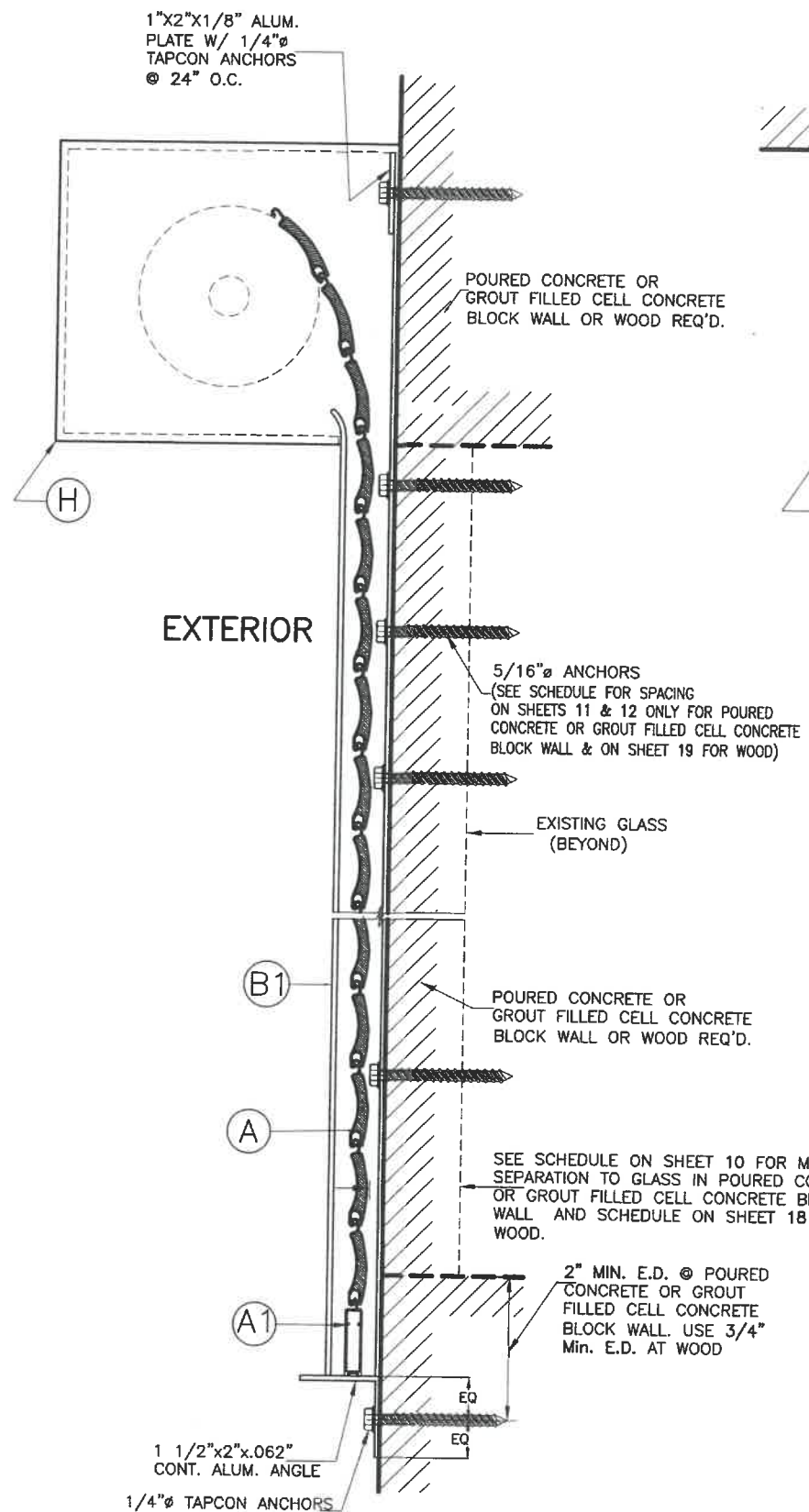
(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)



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FIRM REGISTRATION # F-13790

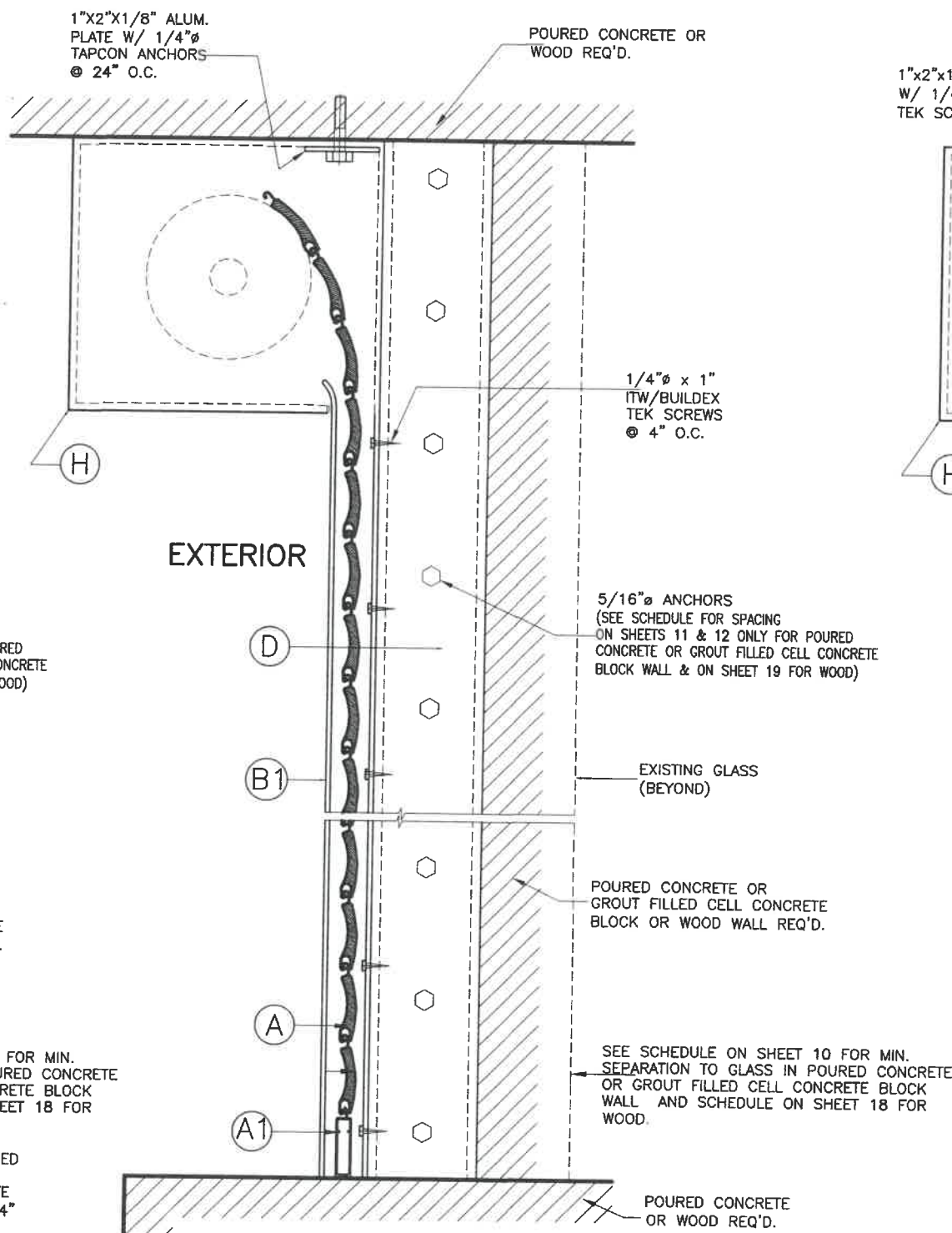
TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER			M.P. DRAWN BY:		
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.			10/22/2020 DATE:		
			20-293 DRAWING No.		
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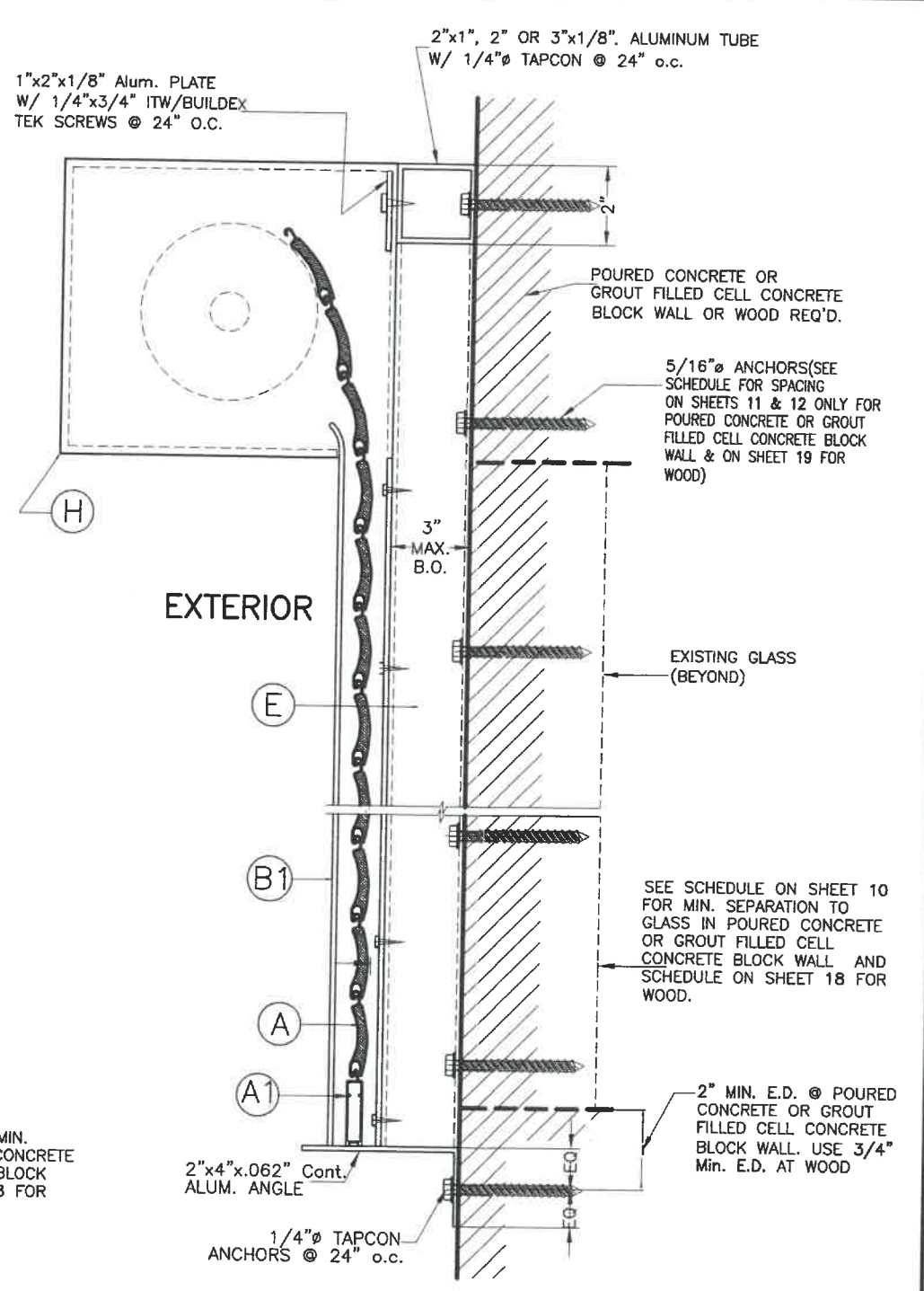


**SECTION C-C (1)
WALL MOUNTING**

(VALID ONLY FOR SHUTTERS WITHOUT
STORM BARS & HEADERS)



**SECTION C-C (2)
FLOOR / CEILING TRAPPED MOUNTING**



**SECTION C-C (3)
BUILD-OUT MOUNTING**

STATE OF TEXAS
WALTER A. TILLIT JR.
90691
LICENSED PROFESSIONAL ENGINEER
SEAL/SIGNATURE/DATE

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**TYPICAL MANDATORY PROCEDURE FOR VERIFYING SHUTTER CODE
COMPLIANCE RELATED TO ITS INSTALLATION INTO EXISTING POURED
CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK STRUCTURES (*)**
(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

STEP 1: OBTAIN JOB SITE'S DESIGN LOAD (p.s.f.) FOR THE OPENING AND DESIRED SHUTTER SPAN "L" (ft) TO PROTECT IT (SEE GENERAL NOTE #1, ON SHEET 1).

STEP 2: ENTER TO CHARTS I AND II ON SHEET 10 TO DETERMINE, BASED ON A 3/16" SLAT SLIP (in); DESIGN LOAD (p.s.f.); AND SHUTTER SPAN "L" (ft) ; THE REQUIRED MAXIMUM SLAT SLIP THAT SLATS MUST BE INSTALLED WITH TO MEET THE REQUIRED LOAD AND DESIRED SHUTTER SPAN.

•MINIMUM REQUIRED SEPARATION TO GLASS IS PROVIDED ON CHARTS I AND II: PROVIDES SEPARATION TO GLASS FOR SHUTTERS WITH OR WITHOUT MULLIONS BASED ON SHUTTER INSTALLATIONS WITHIN WIND ZONES 1 THRU 4, AS DEFINED BY ASTM E 1996-05, SECTION 6.2.2.

STEP 3: OBTAIN INFORMATION ON SHUTTER'S SIDE RAIL ANCHOR SPACING REQUIREMENTS FOR CONNECTION TO EXISTING STRUCTURE FROM ANCHOR SCHEDULES ON SHEETS 11 & 12. ENTER SCHEDULE WITH FINALLY DETERMINED SUBSTRATE, MOUNTING TYPE, DESIGN LOAD & SHUTTER SPAN AND OBTAIN MAXIMUM ANCHOR SPACING (INCHES ON CENTERS). SEE GENERAL NOTE 6 ON SHEET 1 FOR ANCHOR SPECS.

STEP 4: IF SHUTTER INSTALLATION INCLUDES MULLIONS, THE FOLLOWING MANDATORY ADDITIONAL PROCEDURE IS APPLICABLE.

PROCEDURE 4a: IF MULLIONS ARE USED

1. MINIMUM SEPARATION TO GLASS FOR SLATS IF MULLIONS ARE USED SHALL BE BASED ON INSTALLATIONS PERFORMED WITHIN ASTM WIND ZONES 1 THRU 4 INDICATED ON CHARTS I AND II ON SHEET 10. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS. FOR INSTALLATIONS WITHIN ASTM WIND ZONES 1 THRU 3 WHERE MINIMIZING OF THE PROBABILITY OF BREACHING OF GLASS IS DESIRED EVEN THOUGH IT IS NOT REQUIRED BY THE INTERNATIONAL BUILDING CODE, MINIMUM SEPARATION TO GLASS FOR SLATS SHALL BE IDENTICAL TO WIND ZONE 4 VALUES.
2. ENTER SCHEDULES 1a THRU 2c ON SHEETS 16 & 17 W/ DESIGN LOAD ; MAXIMUM MULLION SPACING (MAX., 10', 8' OR 6'), AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN ⓐ & ⓑ, MULLION TYPE & MULLION ORIENTATION.
3. SEE SHEETS 14 & 15 FOR REQUIRED MULLION CONNECTION DETAILS AT TOP & BOTTOM FOR FLOOR TO CEILING (TRAPPED) OR WALL MOUNTINGS OF MULLIONS INTO CONCRETE FOR A GIVEN MULLION TYPE ⓐ & ⓑ.

* PROCEDURE PER STEPS 1 THRU 3 IS SIMILAR FOR INSTALLATIONS INTO WOOD FRAME STRUCTURES. SEE SHEETS 18 & 19 FOR LIMITATIONS APPLICABLE TO INSTALLATIONS INTO WOOD FRAME STRUCTURES.



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heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.				10/22/2020 DATE:	
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SLAT PERFORMANCE CHART I, II:
VALID FOR INSTALLATIONS INTO POURED CONCRETE, GROUT FILLED CELL CONCRETE BLOCK OR MULLIONS
AND FOR A GIVEN DESIGN LOAD (p.s.f.) AND SHUTTER MOUNT CONDITION
(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

CHART I (ONLY VALID FOR 3/16" SLIP) (INTO POURED CONCRETE)				
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD			USE MAXIMUM POSITIVE LOAD VALUE	
MAXIMUM DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT SPAN			MIN. SEPARATION TO GLASS (in) (SEE NOTES *)
	WALL MOUNT (SEE NOTES *)	TRAPPED MOUNT (SEE NOTES *)	BUILD-OUT MOUNT (SEE NOTES *) (E, E1, E2)	
30.0	10'-0"	10'-0"	10'-0"	6 7/8"
35.0	10'-0"	10'-0"	10'-0"	6 7/8"
40.0	10'-0"	10'-0"	10'-0"	6 7/8"
45.0	10'-0"	10'-0"	10'-0"	6 7/8"
50.0	10'-0"	10'-0"	10'-0"	6 7/8"
55.0	10'-0"	10'-0"	10'-0"	6 7/8"
60.0	9'-0"	9'-0"	9'-0"	6 7/8"
65.0	8'-5"	8'-5"	8'-5"	6 7/8"
70.0	7'-10"	7'-10"	7'-10"	6 7/8"
75.0	7'-4"	7'-4"	7'-4"	6 7/8"
80.0	6'-6"	6'-6"	6'-6"	4 5/8"

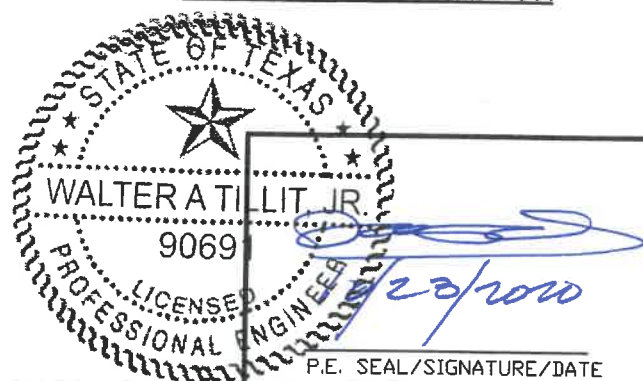
CHART II (ONLY VALID FOR 3/16" SLIP) (INTO GROUT FILL CONCRETE BLOCK)						
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD					USE MAXIMUM POSITIVE LOAD VALUE	
MAXIMUM DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT SPAN					MIN. SEPARATION TO GLASS (in) (SEE NOTES *)
	WALL MOUNT (SEE NOTES *)	TRAPPED MOUNT (SEE NOTES *)	BUILD-OUT MOUNT (SEE NOTES *)			
			W/E	W/E1	W/E2	
30.0	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	6 7/8"
35.0	10'-0"	10'-0"	9'-9"	10'-0"	10'-0"	6 7/8"
40.0	10'-0"	10'-0"	9'-0"	10'-0"	10'-0"	6 7/8"
45.0	10'-0"	10'-0"	8'-6"	9'-6"	10'-0"	6 7/8"
50.0	10'-0"	10'-0"	8'-0"	8'-10"	10'-0"	6 7/8"
55.0	10'-0"	10'-0"	7'-6"	8'-4"	9'-6"	6 7/8"
60.0	9'-0"	9'-0"	7'-0"	7'-10"	9'-0"	6 7/8"
65.0	8'-5"	8'-5"	6'-10"	7'-6"	8'-5"	6 7/8"
70.0	7'-10"	7'-10"	6'-8"	7'-3"	7'-10"	6 7/8"
75.0	7'-4"	7'-4"	6'-4"	7'-0"	7'-4"	6 7/8"
80.0	6'-6"	6'-6"	6'-0"	6'-6"	6'-6"	4 5/8"

*** NOTES:**

1. ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEETS 11 & 12 INDICATE THAT A SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND DESIGN LOAD.
2. REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH 5/16"Ø ITW BUILDEX TAPCON XL INTO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK OR 1/4"Ø TEK SCREWS AT MULLIONS CONNECTION VALID FOR WALL MOUNTED, INSIDE MOUNTED, AND BUILD-OUT MOUNTED.
3. MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.
4. MINIMUM SEPARATION TO GLASS FOR WIND ZONES 1, 2 & 3 IS 1" AND AS SHOWN ON CHARTS I & II FOR WIND ZONE 4.



SLAT SPAN DEFINITION



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TEXAS LIC. # 90691
 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

**herool RS 53 RC 2 SLAT
 ENGAGED ROLL-UP SHUTTER**

herool-Johann Henkenjohann GmbH & Co. KG
 Osterwieher Str. 80
 33415 Verl.

M.P.
 DRAWN BY:

10/22/2020
 DATE:

20-293

DRAWING No.

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
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MAX. ANCHOR'S SPACING SCHEDULE IV FOR A GIVEN PRODUCT MOUNTING TYPE W/ ϕ 5/16"
ITW BUILDEX TAPCON XL ANCHORS TO POURED CONCRETE WALL ♣

DESIGN PRESSURE RATING & SLAT SPAN RANGE
(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

WALL MOUNT

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	8"	8"	8"	8"	8"	8"
>31-40	8"	8"	8"	8"	8"	8"
>41-60	8"	8"	8"	8"	6 1/2"	-
>61-80	8"	8"	8"	7 1/4"	-	-

TRAPPED MOUNT

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	6"	6"	6"	6"	6"	6"
>31-40	6"	6"	6"	6"	6"	6"
>41-60	6"	6"	6"	6"	5 1/4"	-
>61-80	6"	6"	6"	6"	-	-

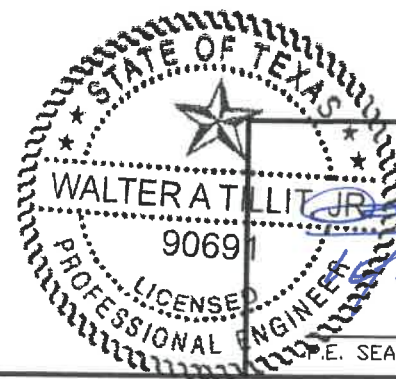
BUILD-OUT MOUNT W/ (E) OR (E1) OR (E2)

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	4"	4"	4"	4"	4"	4"
>31-40	4"	4"	4"	4"	4"	-
>41-60	4"	4"	4"	4"	3 3/4"	-
>61-80	4"	4"	4"	3 3/4"	-	-



SLAT SPAN DEFINITION

♣ **NOTE:**
 MAX. SPAN FOR SLAT FOR A GIVEN DESIGN PRESSURE RATING SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 10.



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 E. SEAL/SIGNATURE/DATE

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TEXAS LIC. # 90691
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TEXAS DEPARTMENT OF INSURANCE - 2018

**heroyal RS 53 RC 2 SLAT
 ENGAGED ROLL-UP SHUTTER**

heroyal-Johann Henkenjohann GmbH & Co. KG
 Osterwieher Str. 80
 33415 Verl.

M.P.
 DRAWN BY:

10/22/2020
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20-293

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SHEET 11 OF 27

MAX. ANCHOR'S SPACING SCHEDULE IV FOR A GIVEN PRODUCT MOUNTING TYPE W/ ϕ 5/16"
ITW BUILDEX TAPCON XL ANCHORS TO GROUTED CONCRETE BLOCK WALL ♣

DESIGN PRESSURE RATING & SLAT SPAN RANGE

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

WALL MOUNT

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	8"	8"	8"	8"	8"	8"
>31-40	8"	8"	8"	8"	8"	6 3/4"
>41-60	8"	8"	8"	8"	5 1/4"	-
>61-80	8"	8"	8"	6"	-	-

TRAPPED MOUNT

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	6"	6"	6"	6"	6"	6"
>31-40	6"	6"	6"	6"	6"	6"
>41-60	6"	6"	6"	6"	5"	-
>61-80	6"	6"	6"	5 1/2"	-	-

BUILD-OUT MOUNT W/ (E)

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	4"	4"	4"	4"	4"	4"
>31-40	4"	4"	4"	4"	3 3/4"	-
>41-60	4"	4"	4"	4"	-	-
>61-80	4"	4"	4"	-	-	-

BUILD-OUT MOUNT W/ (E1) & (E2)

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
	0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 10'
≤ 30.0	4"	4"	4"	4"	4"	4"
>31-40	4"	4"	4"	4"	4"	3 3/4"
>41-60	4"	4"	4"	4"	-	-
>61-80	4"	4"	4"	4"	-	-



SLAT SPAN DEFINITION

♣ NOTE:

MAX. SPAN FOR SLAT FOR A GIVEN DESIGN PRESSURE RATING SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 10.



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ENGAGED ROLL-UP SHUTTER**

heroyal-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
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M.P.
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SHEET 12 OF 27

SCHEDULE V:

V_x FORCES (Lb/ft) & V_y FORCES (Lb/ft) ACTING AT JAMBS FOR A DESIGN PRESSURE RATING RANGE SLAT SPAN RANGE FOR POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK WALL BUILDINGS*

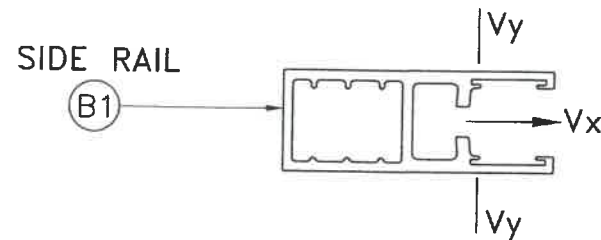
(USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD)

(VALID FOR SHUTTERS WITH OR WITHOUT STORM BARS & HEADERS)

MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE											
	0' to 4' †		>4' to 5' †		> 5' to 6' ††		> 6' to 7' ††		> 7' to 9' ††		> 9' to 10' ††	
	V _y	V _x	V _y	V _x	V _y	V _x	V _y	V _x	V _y	V _x	V _y	V _x
≤ 30.0	60	0.0	75	0.0	90	46	105	254	135	254	150	702
>31-40	80	0.0	100	10	120	188	140	419	180	419	200	950
>41-60	120	0.0	150	101	180	454	210	733	270	733	300	1425
>61-80	160	0.0	200	313	240	707	280	1034	280	1034	-	-

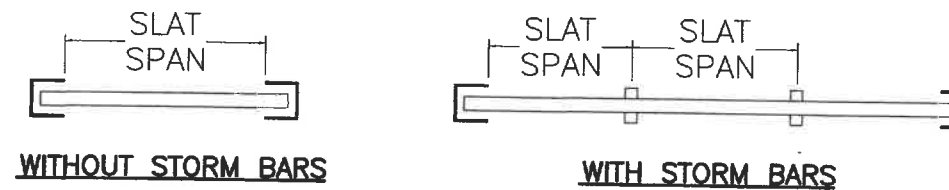
***NOTE:**

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR PERMIT HOLDER TO VERIFY THAT EXISTING STRUCTURE IS DESIGNED TO SUPPORT V_x AND V_y FORCES IN POUNDS PER UNIT FOOT OF PRODUCT HEIGHT AT BOTH JAMBS. SEE THIS SHEET FOR V_x & V_y VALUES.

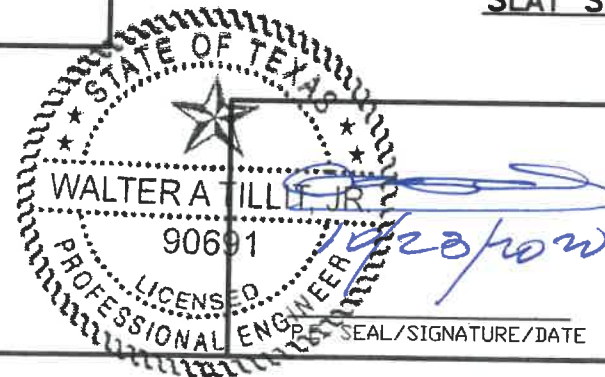


† NOTE: SLAT SPAN RANGE VALID FOR SHUTTERS WITH OR WITHOUT STORM BARS & HEADERS

†† NOTE: SLAT SPAN RANGE VALID FOR SHUTTERS WITHOUT STORM BARS & HEADERS



SLAT SPAN DEFINITION



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TEXAS LIC. # 90691
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heroal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER

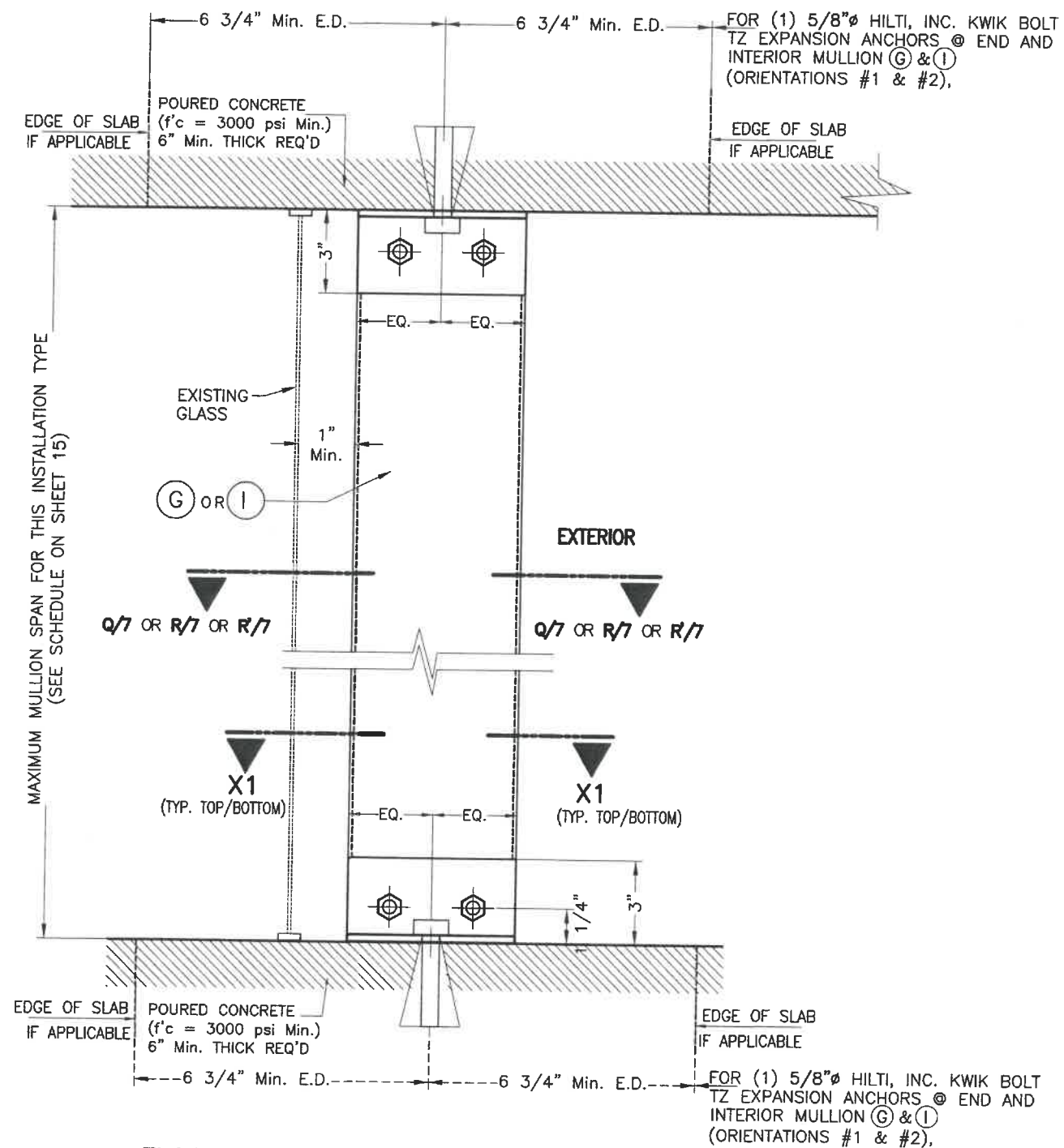
heroal-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
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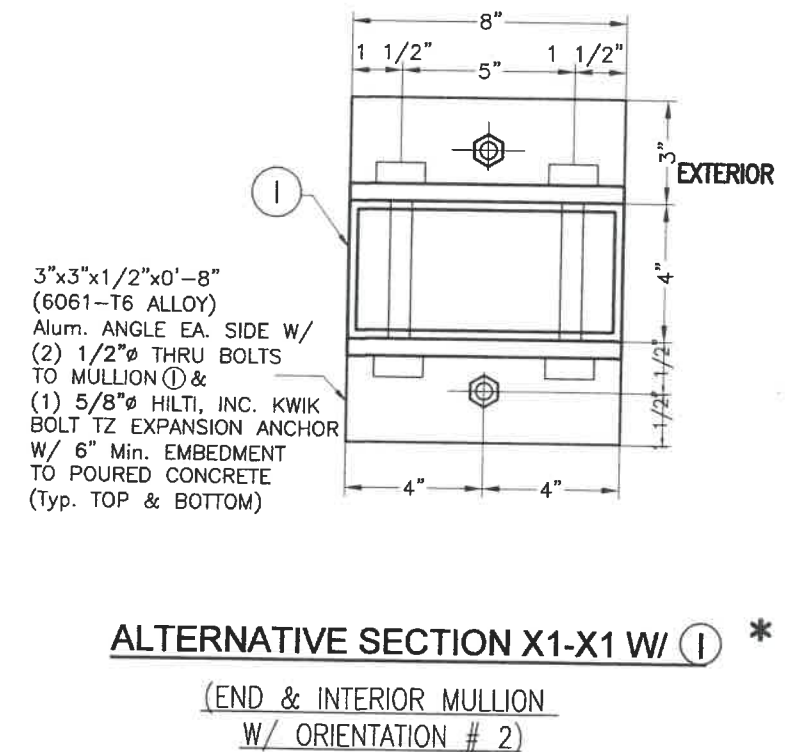
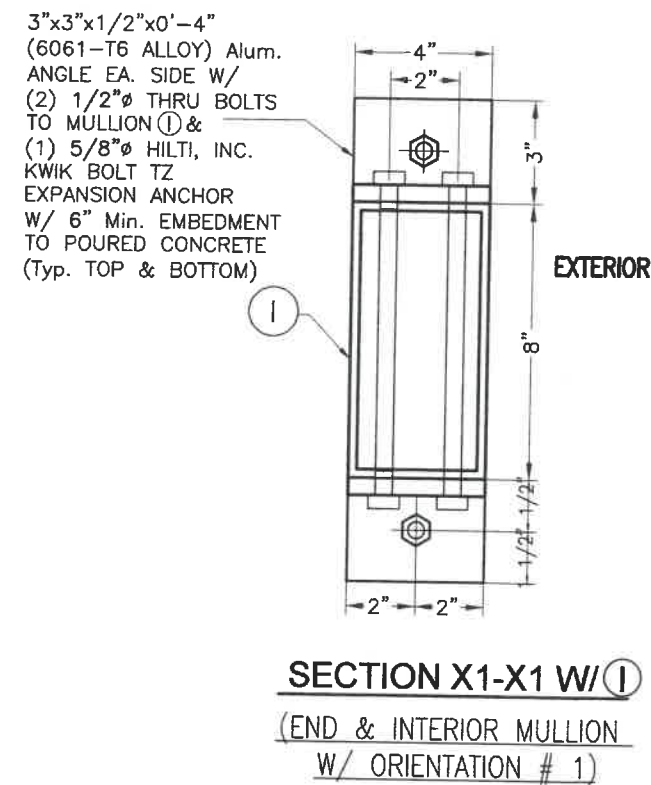
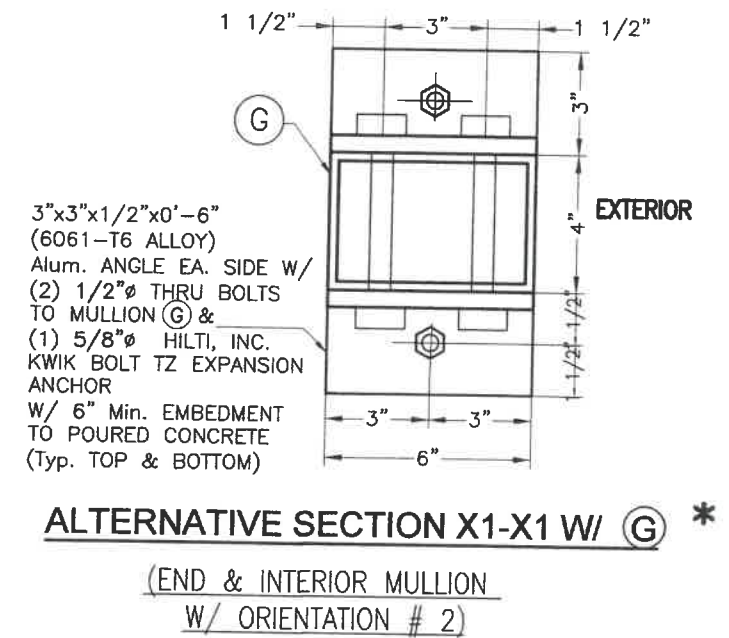
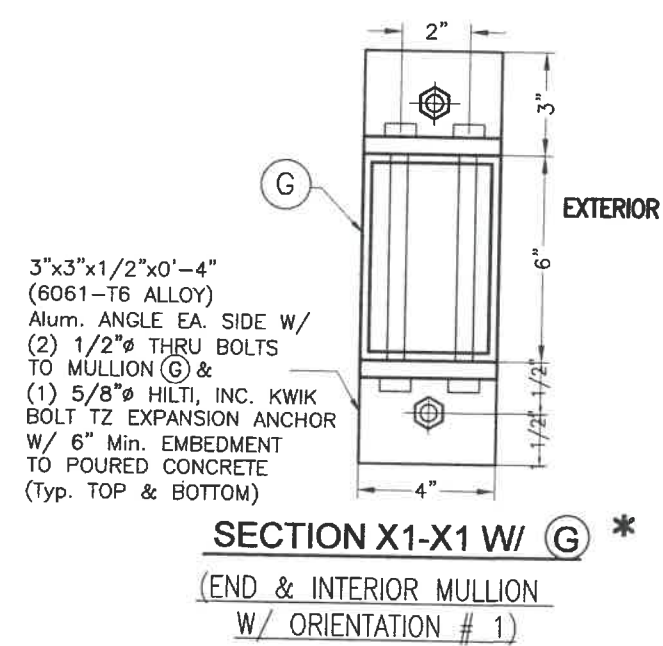


FLOOR TO CEILING / TRAPPED MOUNTING:
MULLION (G) OR (I)
SECTION W-1*

END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION

SCALE: 3/16" = 1"

(VALID ONLY FOR SHUTTERS WITHOUT STORM
 & HEADERS)



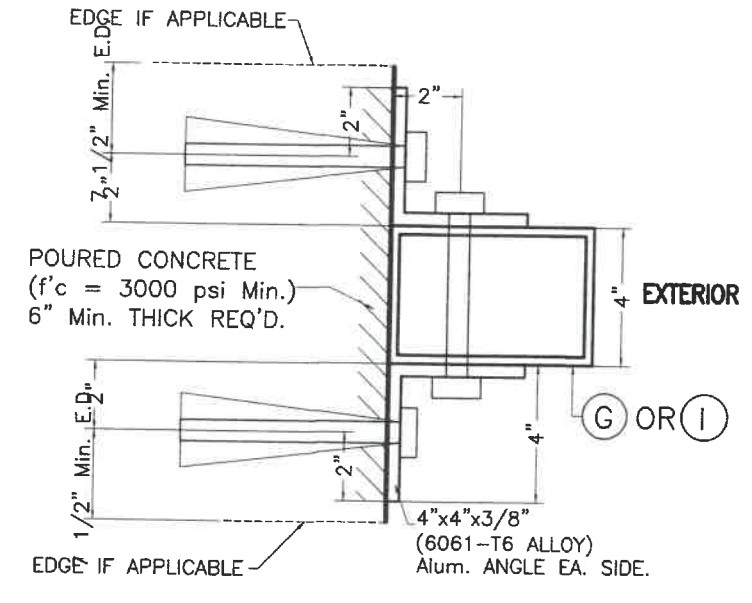
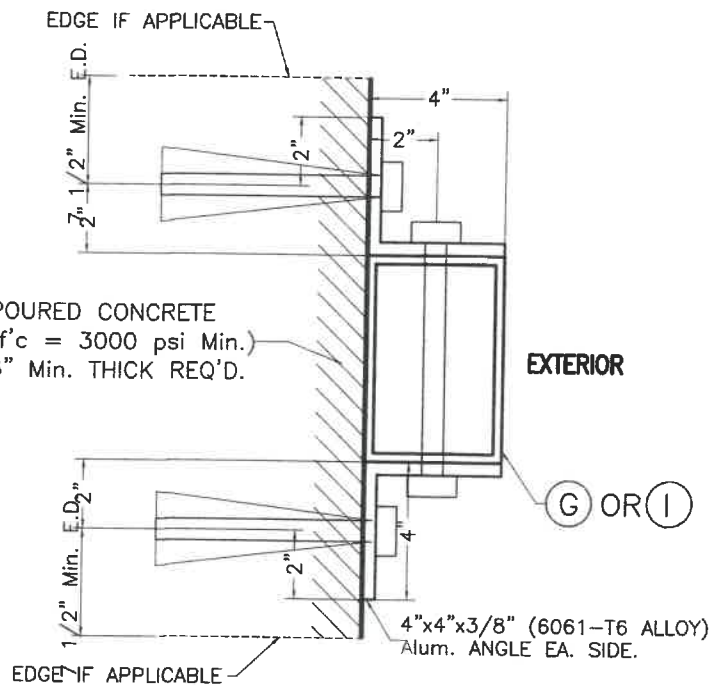
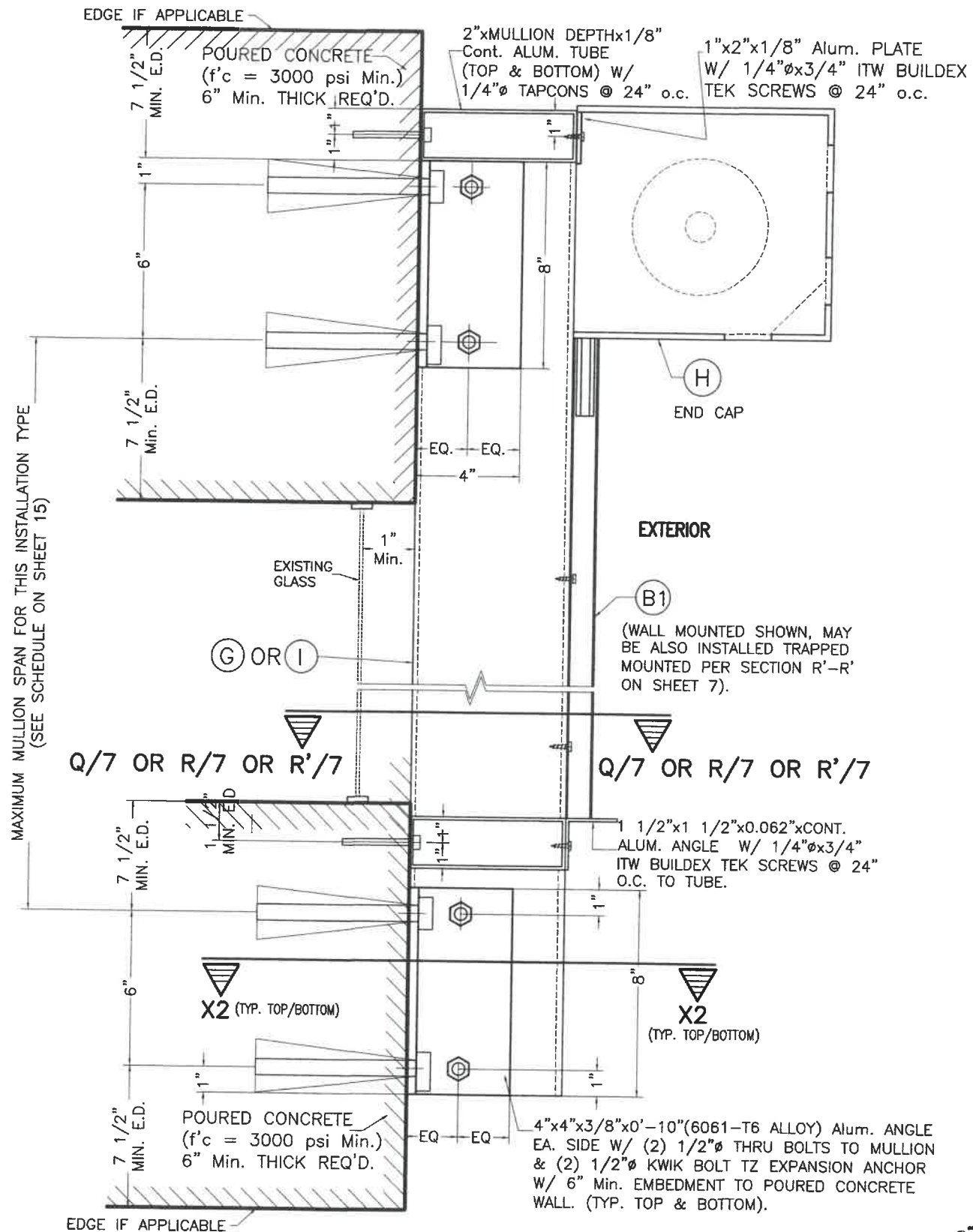
* SIDE RAIL B1 AND BOX NOT SHOWN FOR CLARITY.

STATE OF TEXAS
 WALTER A. TILLIT, JR.
 90691
 LICENSED PROFESSIONAL ENGINEER
 SEAL/SIGNATURE/DATE

WALTER A. TILLIT Jr. P.E.
 PROFESSIONAL ENGINEER
 6365 N.W. 36TH ST., STE. 305
 VIRGINIA GARDENS, FL 33166
 PHONE : (305) 871-1530 . FAX : (305) 871-1531
 TEXAS LIC. # 90691
 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER				M.P. DRAWN BY:	
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.				10/22/2020 DATE:	
				20-293 DRAWING No.	
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

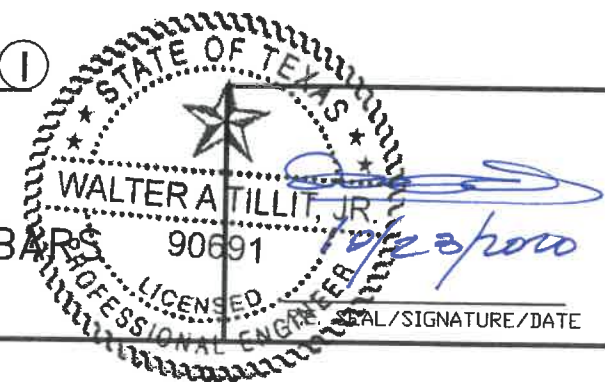


* SIDE RAILS (B1) NOT SHOWN FOR CLARITY.

END & INTERIOR WALL MOUNTED MULLION INSTALLATION
SCALE: 1/8" = 1"

**WALL MOUNTING : MULLION (G) OR (I)
POURED CONCRETE WALL
SECTION W-2 ***

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)



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TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

hercol RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER			M.P. DRAWN BY:		
hercol-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.			10/22/2020 DATE:		
			20-293 DRAWING No.		
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

SCHEDULE 1a

FLOOR TO CEILING (TRAPPED) MOUNTING

MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 10'-0" MAX. MULLION SPACING (ft.) *
VALID ONLY FOR INSTALLATIONS INTO CONCRETE

MAX. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft.) *	MAXIMUM MULLION SPAN (ft.)							
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION			
		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	10'-0"	11'-1"	11'-10"	9'-3"	12'-0"	12'-0"	12'-0"	10'-0"	12'-0"
35.0	10'-0"	10'-3"	10'-11"	8'-9"	12'-0"	12'-0"	12'-0"	9'-6"	12'-0"
40.0	10'-0"	9'-7"	10'-5"	8'-4"	12'-0"	11'-4"	12'-0"	9'-1"	12'-0"
45.0	10'-0"	9'-0"	10'-1"	8'-0"	12'-0"	10'-4"	11'-7"	8'-8"	12'-0"
50.0	10'-0"	8'-6"	9'-8"	7'-9"	11'-4"	9'-3"	11'-3"	8'-5"	12'-0"
55.0	10'-0"	8'-2"	9'-5"	7'-6"	10'-3"	8'-5"	10'-10"	8'-2"	12'-0"
60.0	9'-0"	8'-5"	9'-2"	7'-8"	10'-6"	8'-11"	10'-11"	8'-4"	12'-0"
65.0	8'-5"	8'-6"	8'-11"	7'-9"	10'-4"	9'-1"	10'-11"	8'-5"	12'-0"
70.0	7'-10"	8'-8"	8'-8"	7'-11"	10'-4"	9'-4"	10'-11"	8'-7"	12'-0"
75.0	7'-4"	8'-10"	8'-6"	8'-1"	10'-3"	9'-8"	10'-10"	8'-9"	12'-0"
80.0	6'-6"	9'-6"	8'-4"	8'-7"	10'-10"	11'-0"	11'-1"	9'-4"	12'-0"

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

SCHEDULE 1b

FLOOR TO CEILING (TRAPPED) MOUNTING

MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 8'-0" MAX. MULLION SPACING (ft.) *
VALID ONLY FOR INSTALLATIONS INTO CONCRETE

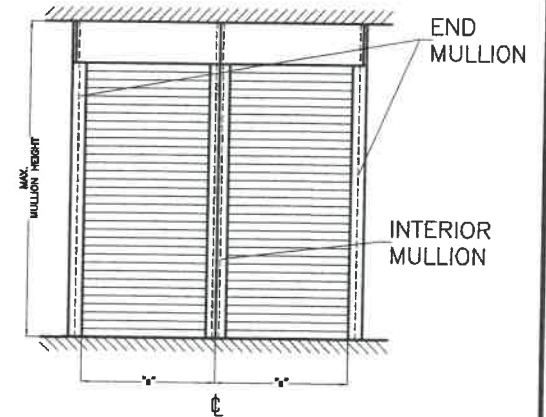
MAX. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft.) *	MAXIMUM MULLION SPAN (ft.)							
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION			
		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	8'-0"	12'-0"	12'-0"	10'-11"	12'-0"	12'-0"	12'-0"	11'-11"	12'-0"
35.0	8'-0"	12'-0"	12'-0"	10'-2"	12'-0"	12'-0"	12'-0"	11'-1"	12'-0"
40.0	8'-0"	11'-7"	12'-0"	9'-8"	12'-0"	11'-4"	12'-0"	10'-6"	12'-0"
45.0	8'-0"	10'-10"	11'-6"	9'-2"	12'-0"	10'-4"	12'-0"	10'-0"	12'-0"
50.0	8'-0"	10'-3"	11'-1"	8'-10"	12'-0"	9'-3"	12'-0"	9'-7"	12'-0"
55.0	8'-0"	9'-8"	10'-9"	8'-6"	12'-0"	8'-5"	11'-8"	9'-3"	12'-0"
60.0	8'-0"	9'-3"	10'-5"	8'-3"	10'-9"	8'-11"	11'-4"	9'-0"	12'-0"
65.0	8'-0"	8'-10"	10'-2"	8'-0"	10'-10"	9'-1"	11'-1"	8'-9"	12'-0"
70.0	8'-0"	8'-8"	10'-0"	7'-11"	10'-4"	9'-4"	10'-11"	8'-7"	12'-0"
75.0	7'-4"	8'-10"	10'-0"	8'-1"	10'-3"	9'-8"	10'-10"	8'-9"	12'-0"
80.0	6'-6"	9'-6"	10'-2"	8'-7"	10'-10"	11'-0"	11'-1"	9'-4"	12'-0"

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

SCHEDULE 2a
WALL MOUNTING

MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 10'-0" MAX. MULLION SPACING (ft.) *
VALID ONLY FOR INSTALLATIONS INTO CONCRETE

MAX. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft.) *	MAXIMUM MULLION SPAN (ft.)							
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION			
		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	10'-0"	11'-1"	12'-0"	9'-3"	12'-0"	12'-0"	12'-0"	10'-0"	12'-0"
35.0	10'-0"	10'-3"	11'-7"	8'-9"	12'-0"	12'-0"	12'-0"	9'-6"	12'-0"
40.0	10'-0"	9'-7"	11'-1"	8'-4"	12'-0"	11'-4"	12'-0"	9'-1"	12'-0"
45.0	10'-0"	9'-0"	10'-8"	8'-0"	12'-0"	10'-8"	11'-7"	8'-8"	12'-0"
50.0	10'-0"	8'-6"	10'-4"	7'-9"	12'-0"	10'-1"	11'-3"	8'-5"	12'-0"
55.0	10'-0"	8'-2"	10'-0"	7'-6"	12'-0"	9'-8"	10'-10"	8'-2"	12'-0"
60.0	9'-0"	8'-5"	10'-1"	7'-8"	12'-0"	10'-0"	10'-11"	8'-4"	12'-0"
65.0	8'-5"	8'-6"	10'-0"	7'-9"	12'-0"	10'-1"	10'-11"	8'-5"	12'-0"
70.0	7'-10"	8'-8"	10'-0"	7'-11"	12'-0"	10'-3"	10'-11"	8'-7"	12'-0"
75.0	7'-4"	8'-10"	10'-0"	8'-1"	12'-0"	10'-5"	10'-10"	8'-9"	12'-0"
80.0	6'-6"	9'-6"	10'-2"	8'-7"	12'-0"	11'-3"	11'-1"	9'-4"	12'-0"



MULLION SPACING: "s"

* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX SLAT SPAN FOR THAT DESIGN LOAD SHALL NOT BE EXCEEDED.

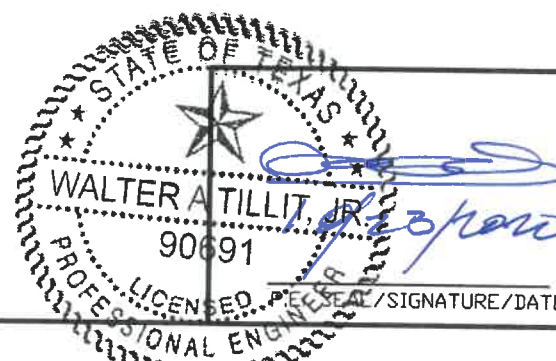
‡ MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF SHUTTER.

SCHEDULE 2b
WALL MOUNTING

MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 8'-0" MAX. MULLION SPACING (ft.) *
VALID ONLY FOR INSTALLATIONS INTO CONCRETE

MAX. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft.) *	MAXIMUM MULLION SPAN (ft.)							
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION			
		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⇨) ‡	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	8'-0"	12'-0"	12'-0"	10'-11"	12'-0"	12'-0"	12'-0"	11'-11"	12'-0"
35.0	8'-0"	12'-0"	12'-0"	10'-2"	12'-0"	12'-0"	12'-0"	11'-1"	12'-0"
40.0	8'-0"	11'-7"	12'-0"	9'-8"	12'-0"	11'-4"	12'-0"	10'-6"	12'-0"
45.0	8'-0"	10'-10"	11'-6"	9'-2"	12'-0"	10'-4"	12'-0"	10'-0"	12'-0"
50.0	8'-0"	10'-3"	11'-1"	8'-10"	12'-0"	9'-3"	12'-0"	9'-7"	12'-0"
55.0	8'-0"	9'-8"	10'-9"	8'-6"	12'-0"	8'-5"	11'-8"	9'-3"	12'-0"
60.0	8'-0"	9'-3"	10'-5"	8'-3"	10'-9"	8'-11"	11'-4"	9'-0"	12'-0"
65.0	8'-0"	8'-10"	10'-2"	8'-0"	10'-10"	9'-1"	11'-1"	8'-9"	12'-0"
70.0	8'-0"	8'-8"	10'-0"	7'-11"	10'-4"	9'-4"	10'-11"	8'-7"	12'-0"
75.0	7'-4"	8'-10"	10'-0"	8'-1"	10'-3"	9'-8"	10'-10"	8'-9"	12'-0"
80.0	6'-6"	9'-6"	10'-2"	8'-7"	12'-0"	11'-3"	11'-1"	9'-4"	12'-0"

TEXAS DEPARTMENT OF INSURANCE - 2018



WALTER A. TILLIT Jr. P.E.
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TEXAS LIC. # 90691
 FIRM REGISTRATION # F-13790

heroyal RS 53 RC 2 SLAT
 ENGAGED ROLL-UP SHUTTER

heroyal-Johann Henkenjohann GmbH & Co. KG
 Osterwieher Str. 80
 33415 Verl.

M.P.
 DRAWN BY:

10/22/2020
 DATE:

20-293
 DRAWING No.

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

SHEET 16 OF 27

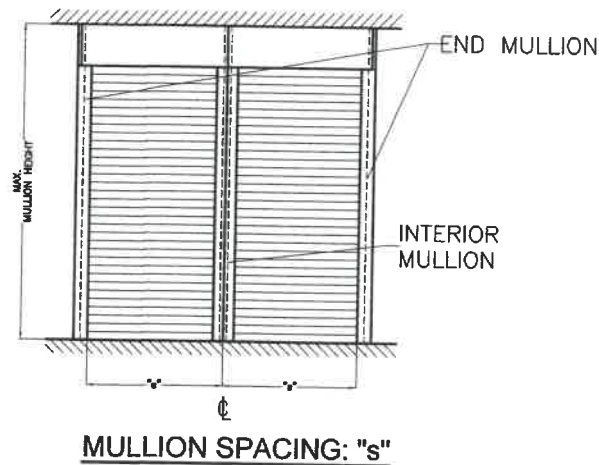
SCHEDULE 1c
FLOOR TO CEILING (TRAPPED) MOUNTING
MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN
DESIGN LOAD (p.s.f.) AND A 6'-0" MAX. MULLION SPACING (ft.) *
VALID ONLY FOR INSTALLATIONS INTO CONCRETE

MAX. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (ft.)							
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION			
		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⏏) ‡		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⏏) ‡	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
35.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
40.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
45.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
50.0	6'-0"	12'-0"	12'-0"	11'-11"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
55.0	6'-0"	12'-0"	11'-10"	11'-3"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
60.0	6'-0"	12'-0"	11'-6"	10'-8"	12'-0"	12'-0"	12'-0"	11'-7"	12'-0"
65.0	6'-0"	12'-0"	11'-2"	10'-2"	12'-0"	12'-0"	12'-0"	11'-1"	12'-0"
70.0	6'-0"	11'-4"	10'-11"	9'-10"	12'-0"	12'-0"	11'-11"	10'-8"	12'-0"
75.0	6'-0"	10'-10"	10'-8"	9'-6"	12'-0"	12'-0"	11'-7"	10'-4"	12'-0"
80.0	6'-0"	9'-6"	10'-2"	8'-7"	10'-10"	11'-0"	11'-1"	9'-4"	12'-0"

SCHEDULE 2c
WALL MOUNTING
MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN
DESIGN LOAD (p.s.f.) AND A 6'-0" MAX. MULLION SPACING (ft.) *
VALID ONLY FOR INSTALLATIONS INTO CONCRETE

MAX. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (ft.)							
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION			
		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⏏) ‡		ORIENTATION #1 (⇐) ‡		ORIENTATION #2 (⏏) ‡	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
35.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
40.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
45.0	6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
50.0	6'-0"	12'-0"	12'-0"	11'-11"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
55.0	6'-0"	12'-0"	11'-10"	11'-3"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
60.0	6'-0"	12'-0"	11'-6"	10'-8"	12'-0"	12'-0"	12'-0"	11'-7"	12'-0"
65.0	6'-0"	12'-0"	11'-2"	10'-2"	12'-0"	12'-0"	12'-0"	11'-1"	12'-0"
70.0	6'-0"	11'-4"	10'-11"	9'-10"	12'-0"	12'-0"	11'-11"	10'-8"	12'-0"
75.0	6'-0"	10'-10"	10'-8"	9'-6"	12'-0"	12'-0"	11'-7"	10'-4"	12'-0"
80.0	6'-0"	9'-6"	10'-2"	8'-7"	12'-0"	11'-3"	11'-1"	9'-4"	12'-0"

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)



* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX SLAT SPAN FOR THAT DESIGN LOAD SHALL NOT BE EXCEEDED.

‡ MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF SHUTTER.



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 TEXAS LIC. # 90691
 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER			M.P. DRAWN BY:		
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.			10/22/2020 DATE:		
			20-293 DRAWING No.		
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

SLAT PERFORMANCE CHART Ib:

FOR A GIVEN DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION PER DETAIL 1 BELOW

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

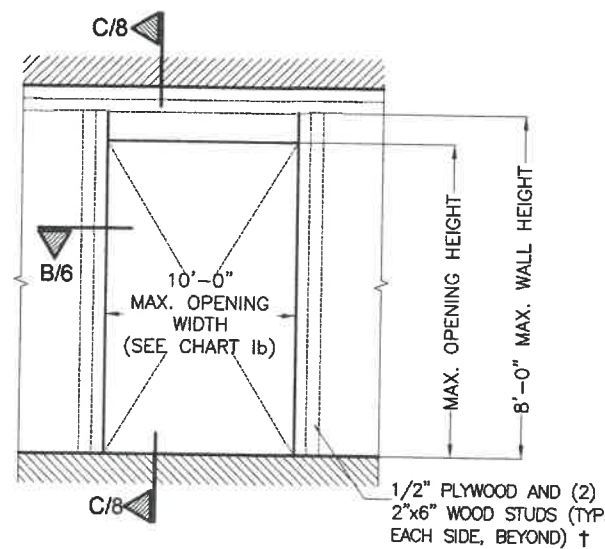
CHART Ib: (ONLY VALID FOR 3/16" SLIP)															
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD															
MAXIMUM DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT SPAN "L _{MAX.} " (ft)														
	WALL MOUNT (SEE NOTES Δ)			TRAPPED MOUNT (SEE NOTES Δ)			BUILD-OUT MOUNT (E1) (SEE NOTES Δ)			BUILD-OUT MOUNT (E2) (SEE NOTES Δ)			BUILD-OUT MOUNT (E) (SEE NOTES Δ)		
	G=0.55*	G=0.46*	G=0.36*	G=0.55*	G=0.46*	G=0.36*	G=0.55*	G=0.46*	G=0.36*	G=0.55*	G=0.46*	G=0.36*	G=0.55*	G=0.46*	G=0.36*
30.0	10'-0"	10'-0"	9'-6"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	8'-0"	10'-0"	9'-0"	8'-0"	10'-0"	9'-0"	8'-0"
35.0	10'-0"	9'-6"	8'-9"	10'-0"	10'-0"	10'-0"	9'-0"	8'-6"	7'-7"	8'-10"	8'-2"	7'-3"	8'-6"	7'-9"	7'-0"
40.0	9'-2"	8'-10"	8'-0"	10'-0"	10'-0"	10'-0"	8'-6"	7'-9"	7'-0"	8'-3"	7'-6"	6'-10"	8'-0"	7'-3"	6'-6"
45.0	8'-5"	8'-3"	7'-6"	10'-0"	10'-0"	9'-0"	8'-0"	7'-4"	6'-8"	7'-9"	7'-0"	6'-5"	7'-6"	6'-10"	6'-3"
50.0	8'-0"	7'-9"	7'-0"	10'-0"	10'-0"	8'-6"	7'-6"	6'-10"	6'-4"	7'-3"	6'-9"	6'-2"	7'-0"	6'-6"	6'-0"
55.0	7'-8"	7'-3"	6'-10"	10'-0"	10'-0"	8'-0"	7'-3"	6'-8"	6'-0"	6'-10"	6'-5"	5'-11"	6'-9"	6'-3"	5'-9"

REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)			
WIND ZONES 1-3		WIND ZONE 4	
SLAT SPAN	MIN. SEP. TO GLASS	SLAT SPAN	MIN. SEP. TO GLASS
>6'-6" TO 10'-0"	1"	>6'-6" TO 10'-0"	6 7/8"
6'-6" OR LESS	1"	6'-6" OR LESS	4 5/8"

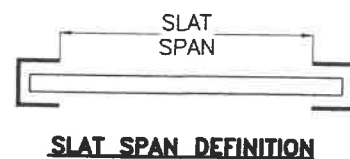
*: G=0.55, APPLICABLE TO SOUTHERN YELLOW PINE #2 WOOD GRADE
 G=0.46, APPLICABLE TO DOUGLAS FIR-SOUTH WOOD GRADE
 G=0.36, APPLICABLE TO SPRUCE PINE-FIR SOUTH WOOD GRADE

Δ NOTES:

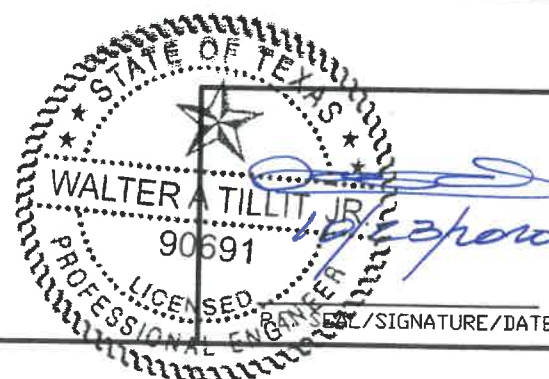
- ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 19 INDICATE THAT A SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND DESIGN PRESSURE RATING.
- †: WOOD FRAME WALL TO BE BUILT STRICTLY IN ACCORDANCE WITH SPECS GIVEN ON DETAIL 1 AND PROVISIONS FROM CHAPTER 23 OF THE INTERNATIONAL BUILDING CODE. MIN. WALL LENGTH AT EITHER SIDE OF OPENING MUST BE 33 INCHES.
- INSTALLATIONS VALID ONLY FOR PRODUCT WITHOUT MULLIONS



DETAIL 1 (ELEVATION)



INSTALLATIONS INTO WOOD FRAME STRUCTURES



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 TEXAS LIC. # 90691
 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER		M.P. DRAWN BY:	
heroyal-Johann Henkenjohann GmbH & Co. KG		10/22/2020	
Osterwieher Str. 80 33415 Verl.		DATE:	
20-293		DRAWING No.	
REV. NO	DESCRIPTION	DATE	REV. No
1	OLD 17-286	10/22/20	3
2			4

**MAX. ANCHOR'S SPACING SCHEDULE VI FOR A GIVEN PRODUCT MOUNTING TYPE W/ ø 5/16" ITW BUILDEX
TAPCON XL ANCHORS TO WOOD GRADE, DESIGN PRESSURE RATING (psf) AND SLAT SPAN RANGE ***

(VALID ONLY FOR SHUTTERS WITHOUT STORM BARS & HEADERS)

**WALL MOUNT
TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD**

(SEE DETAIL 1 ON SHEET 18)

WOOD GRADE	MAX. DESIGN PRESSURE RATING RANGE	SLAT SPAN RANGE					
		0' to 4' *	>4' to 5' *	>5' to 6' *	>6' to 7' *	>7' to 9' *	>9' to 10' *
SOUTHERN PINE #2 (G=0.55)	30.0	6"	6"	6"	6"	4 1/4"	3 1/2"
	40.0	6"	6"	6"	5 1/2"	3"	-
	50.0	6"	6"	6"	4"	-	-
	55.0	6"	6"	6"	3 1/2"	-	-
DOUGLAS-FIR-SOUTH (G=0.46)	30.0	6"	6"	6"	6"	4"	3 1/4"
	40.0	6"	6"	6"	5 1/4"	-	-
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤30.0	6"	6"	6"	6"	3 1/4"	-

**TRAPPED MOUNT
TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD**

(SEE DETAIL 1 ON SHEET 16)

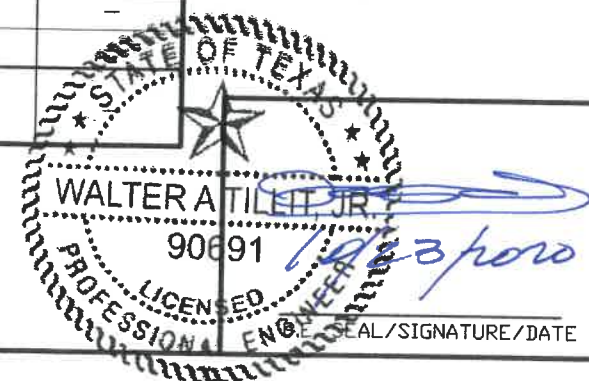
WOOD GRADE	DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE					
		0' to 4' *	>4' to 5' *	>5' to 6' *	>6' to 7' *	>7' to 9' *	>9' to 10' *
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"	6"
	40	6"	6"	6"	6"	6"	5 1/2"
	50	6"	6"	6"	6"	5"	4"
	53.3	6"	6"	6"	6"	4 3/4"	4"
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	6"	6"	6"	6"	6"	5 3/4"
	40	6"	6"	6"	6"	5"	4 1/4"
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	4 3/4"	4"

**BUILD-OUT MOUNT
TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD**

(SEE DETAIL 1 ON SHEET 16)

WOOD GRADE	DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE					
		0' to 4' *	>4' to 5' *	>5' to 6' *	>6' to 7' *	>7' to 9' *	>9' to 10' *
		BUILD-OUT MOUNT W/ (E, E1)	BUILD-OUT MOUNT W/ (E, E1)	BUILD-OUT MOUNT W/ (E, E1)	BUILD-OUT MOUNT W/ (E, E1)	BUILD-OUT MOUNT W/ (E, E1)	BUILD-OUT MOUNT W/ (E, E1)
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	4"	4"	4"	4"	3 1/4"	-
	40	4"	4"	4"	4"	-	-
	50	4"	4"	4"	3"	-	-
	53.3	4"	4"	4"	-	-	-
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	4"	4"	4"	4"	-	-
	40	4"	4"	4"	3 1/4"	-	-
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	4"	4"	4"	4"	-	-

*** NOTE:**
MAX. SPAN FOR SLAT FOR A GIVEN DESIGN PRESSURE RATING SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHARTS ON SHEET 18.



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FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER		M.P DRAWN BY:
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.		10/22/2020 DATE:
		20-293 DRAWING No.
REV. NO	DESCRIPTION	DATE
1	OLD 17-286	10/22/20
2		

GENERAL NOTES: VALID FOR SHUTTERS WITH STORM BARS AND HEADERS: SHEETS 3, 13, 20 THRU 27

1. ROLL-UP SHUTTER SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE (I.B.C.) AND INTERNATIONAL RESIDENTIAL CODE (I.R.C.).

DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE INTERNATIONAL BUILDING CODE, FOR A BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE SHUTTER WILL BE INSTALLED, AND FOR A DIRECTIONALITY FACTOR $K_d=0.85$, IN ACCORDANCE W/ ASCE 7-16 STANDARD, AND SHALL NOT EXCEED THE DESIGN PRESSURE RATING INDICATED ON SHEETS 10 THRU 13, 16 THRU 19 AND SHT. 27.

IN ORDER TO VERIFY THE ABOVE CONDITION, ULTIMATE DESIGN WIND LOADS DETERMINED PER ASCE 7-16 SHALL BE FIRST REDUCED TO A.S.D. DESIGN WIND LOADS BY MULTIPLYING THEM BY 0.6 IN ORDER TO COMPARE THESE W/ MAX. (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ABOVE.

IN ORDER TO VERIFY THAT COMPONENTS AND ANCHORS ON THIS P.E.D. AS TESTED WERE NOT OVER STRESSED, A 33% INCREASE IN ALLOWABLE STRESS FOR WIND LOADS WAS NOT USED IN THEIR ANALYSIS. FASTENERS SPACING TO WOOD HAS BEEN DETERMINED IN ACCORDANCE WITH N.D.S. 2018.

ROLL-UP SHUTTER'S ADEQUACY FOR IMPACT AND CYCLIC RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE INTERNATIONAL BUILDING CODE AS PER FENESTRATION TESTING LAB. REPORT # 9653 AS PER FLORIDA HIGH VELOCITY HURRICANE ZONE TAS-201, TAS-202 & TAS-203 PROTOCOLS., EQUIVALENT TO ASTM E-1886-13a, ASTM E-1996-14a & ASTM E-330-14., QUALIFYING INSTALLATIONS FOR WIND ZONES 1, 2, 3 & 4, MISSILE TYPE D, APPLICABLE TO BASIC PROTECTION ONLY, INSTALLATIONS AT NON ESSENTIAL FACILITIES AS DEFINED BY ASTM E 1996. SEE SCHEDULES ON SHEET 27 FOR ADDITIONAL LIMITATIONS, AND AS PER STRUCTURAL CALCULATIONS PERFORMED IN ACCORDANCE W/ SECTION 1604 OF THE INTERNATIONAL BUILDING CODE.

2. ALL ALUMINUM EXTRUSIONS SHALL BE AS INDICATED ON SHEET 21. ALL ALUMINUM EXTRUSIONS IN CONTACT WITH DISSIMILAR MATERIALS SHALL COMPLY WITH SECTION III-6 OF THE 2015 ALUMINUM DESIGN MANUAL.

3. EVERY OTHER SLAT SHALL INCLUDE WIND LOCKS AT EACH END (SEE COMPONENTS SHEET). EVERY SLAT (A) ADJACENT AND ABOVE BOTTOM SLAT (A) MUST INCLUDE WIND LOCKS.

4. ALL SCREWS & BOLTS (EXCEPT COMPONENT (C3)) TO BE S.A.E. GRADE 5 CADMIUM PLATED OR GALVANIZED STEEL. ALL SCREWS AND BOLTS INSTALLED TO BE STAINLESS STEEL 304 OR 316 AISI SERIES AND MEET ASTM A167, OR HOT DIPPED GALVANIZED (AFTER FABRICATION) CARBON STEEL AS PER ASTM A123 OR ASTM A153, OR HOT DIPPED GALVANIZED OR GALVANNEALED (PRIOR TO FABRICATION) AND MEET ASTM A653 WITH 50 KSI YIELD STRENGTH AND 90 KSI TENSILE STRENGTH.

5. ANCHORS TO WALL FOR (B1) SIDE RAIL SHALL BE AS FOLLOWS: (UNLESS OTHERWISE NOTED)

(A) TO EXISTING POURED CONCRETE: MIN. $f'_c = 2899$ p.s.i. COMPRESSIVE STRENGTH.

-5/16" CARBON STEEL TAPCON XL ANCHORS AS MANUFACTURED BY ITW BUILDEX, INC.

A.1) MINIMUM EMBEDMENT OF 5/16" TAPCON XL ANCHORS INTO POURED CONCRETE SHALL BE 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.

A.2) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON XL ANCHORS INTO POURED CONCRETE SHALL BE 4". BEYOND ANY FINISH MATERIAL.

A.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM EMBEDMENT SHALL BE AS INDICATED ON NOTE A.1 ABOVE.

EDGE DISTANCE IS

(B) TO EXISTING GROUT FILLED CELL, CONCRETE BLOCK WALL: ASTM C-90

-5/16" CARBON STEEL TAPCON XL ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.

B.1) MINIMUM EMBEDMENT OF 5/16" TAPCON XL ANCHORS, INTO GROUT FILLED CELL CONCRETE BLOCK UNIT SHALL BE 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.

B.2) MINIMUM EDGE DISTANCE (E.D.) OF 5/16" TAPCON XL ANCHORS INTO GROUT FILLED CELL CONCRETE BLOCK SHALL BE 4". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

B.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM EMBEDMENT SHALL BE AS INDICATED ON NOTE B.1 ABOVE.

(C) TO EXISTING WOOD FRAME BUILDING: SOUTHERN PINE #2 W/ $G = 0.55$ MIN., DOUGLAS FIR-SOUTH ($G=0.46$) OR SPRUCE PINE-FIR SOUTH, ($G=0.36$).

-5/16" CARBON STEEL ULTRACON ANCHORS, AS MANUFACTURED BY ELCO CONSTRUCTION PRODUCTS, INC.

C.1) MINIMUM PENETRATION OF ULTRACON ANCHORS, INTO THE WOOD FRAME UNIT SHALL BE 2 1/2". (MUST INCLUDE 2" THREADED LENGTH) NO PENETRATION INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED PENETRATION.

C.2) MINIMUM EDGE DISTANCE (E.D.) OF ULTRACON ANCHORS, INTO WOOD SHALL BE 2". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

C.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM THREADED PENETRATION SHALL BE AS INDICATED ON NOTE C.1 ABOVE.

6. ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

7. ANCHORS REQUIRED FOR STORM BARS & HEADERS CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS OR DETAILS SHOWN ON SHEETS 24, 25 & 26 RESPECTIVELY.

-1/4" SOLID SET ANCHOR TO BE AS DISTRIBUTED BY ALL POINTS SPECIALTY INC. 3/8" KWIK BOLT 3 S.S ANCHOR TO BE AS MANUFACTURED BY HILTI INC.

MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT ABOVE MENTIONED SHEET. EDGE DISTANCE AND EMBEDMENTS ARE BEYOND ANY FINISH MATERIAL.

ANCHOR	SPACING @ 100%	EDGE DISTANCE @ 100%	EMBEDMENT	
			CONCRETE	GROUT FILLED OR CONCRETE BLOCK
1/4" SOLID SET	3"	3"	3/4" (3000 psi)	-
3/8" KWIK BOLT 3	4 1/2"	5"	3 1/2" (3000 psi)	3 1/2"

8. ROLL-UP SHUTTER SLATS FOAM PLASTIC CORE SHALL CONSIST OF HIGH DENSITY ELASTOLID D 8220/109 POLYOLKOMPONENT 0.021676 Lb/in³ FOAM PLASTIC CORE.

SLATS FOAM PLASTIC CORE SURFACE BURNING CHARACTERISTICS HAVE BEEN VERIFIED IN ACCORDANCE WITH SECTION 2603.3 OF THE INTERNATIONAL BUILDING CODE AS PER INTERTEK TEST REPORTS # 102498030SAT_001A & 102484409MID_001 RESPECTIVELY.

9. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL SHUTTER TRACKS ALL AROUND FULL LENGTH.

10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. THIS SHUTTER SHALL ONLY BE ATTACHED TO CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK. AS SHOWN ON SHEETS 24, 25 & 26

11. ROLL-UP SHUTTERS INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.

12. ROLL-UP MECHANISM NOT PART OF THIS APPROVAL.

13. (a) THIS P.E.D. PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; I.E. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.E.D.

(b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS P.E.D. PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.

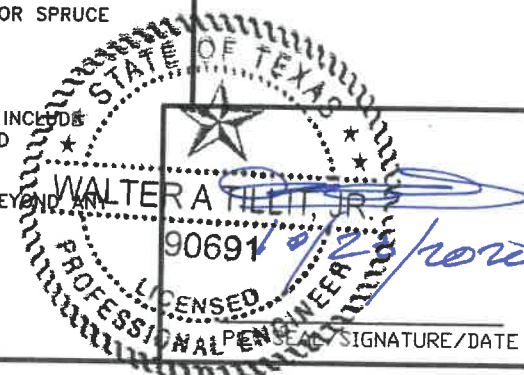
(c) THIS P.E.D. WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

(d) SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A PROFESSIONAL REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D.

(e) THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

14. PRODUCT MANUFACTURE'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT PRODUCT IN ACCORDANCE WITH TEXAS DEPARTMENT OF INSURANCE REQUIREMENTS. ONE LABEL SHALL BE PLACED FOR EVERY OPENING.

THIS DRAWING SHALL ONLY BE USED TO OBTAIN PERMITS UNDER THE TEXAS DEPARTMENT OF INSURANCE JURISDICTION



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TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT
ENGAGED ROLL-UP SHUTTER

M.P.
DRAWN BY:

heroyal-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
33415 Verl.

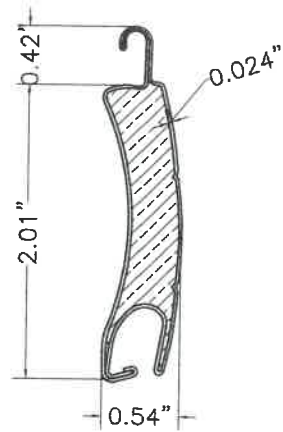
10/22/2020
DATE:

20-293

DRAWING No.

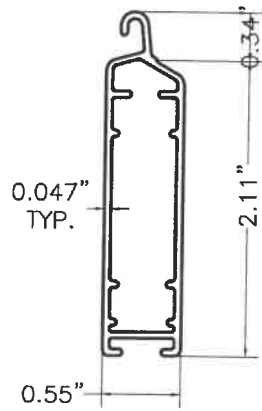
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1	OLD 17-286	10/22/20	3		
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SHEET 20 OF 27



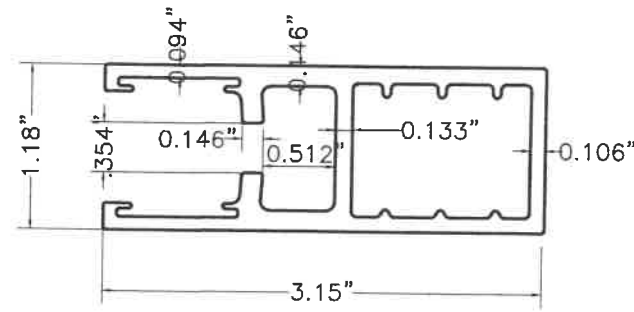
(A) SLAT:

heroal RS 53 RC 2 SLAT
 63mm (t = .024")
 HIGH DENSITY ELASTOLID D 8220/109
 POLYOLKOMPONENTE
 0.021676 Lb/in³
 FOAM PLASTIC CORE
 SHEET METAL ALUMINUM SLAT
 5754 H46 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



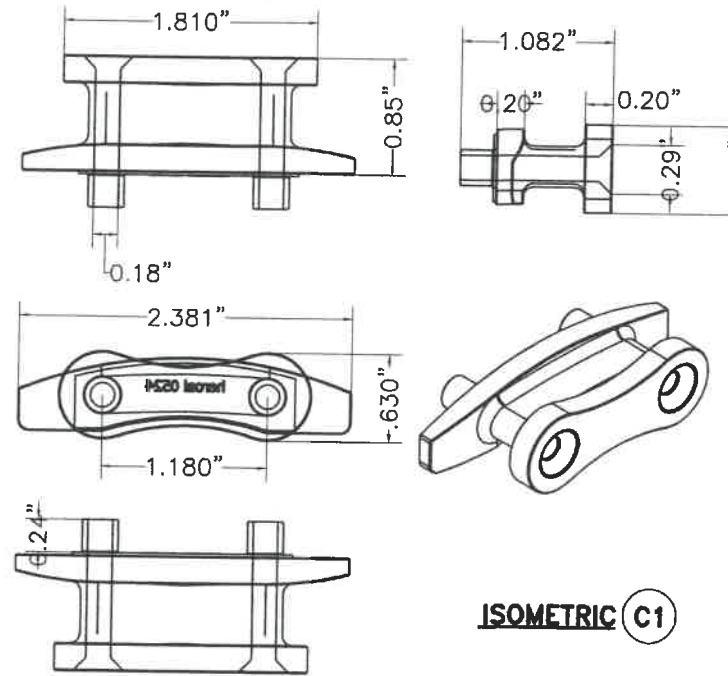
(A1) BOTTOM SLAT:

6060-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



(B1) SIDE RAIL:

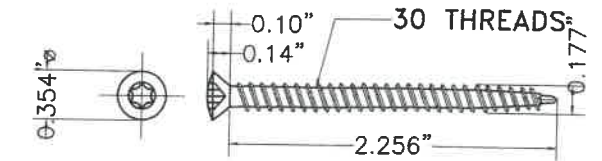
6060-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



(C1) WIND LOCK:

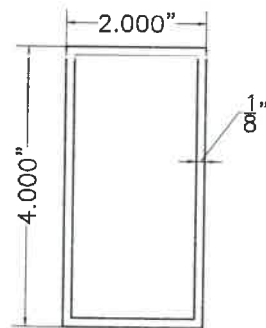
DURETHAN BC 40 SR2
 SCALE: 3/4" = 1"

ISOMETRIC (C1)



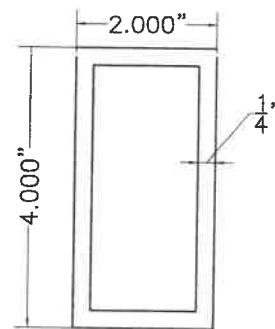
(C3) WIND LOCK SCREW:

(2) 2 3/8" 305 SERIES F.H. S.D.S.
 (Min. Fy = 72.8 ksi, Min. FtU = 83.1 ksi)
 SCALE: 3/4" = 1"



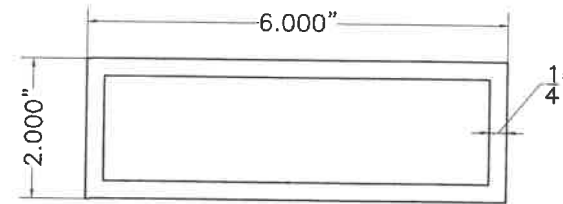
(K) STORM BAR

6063-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



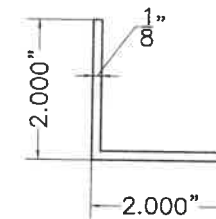
(L) STORM BAR

6061-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



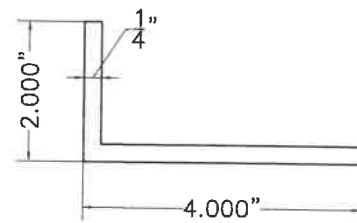
(O) HEADER

6061-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



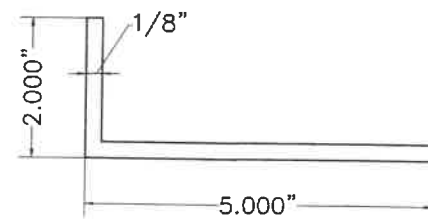
**(P) ANGLE FOR STORM BAR
 0'-4" LONG**

6063-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



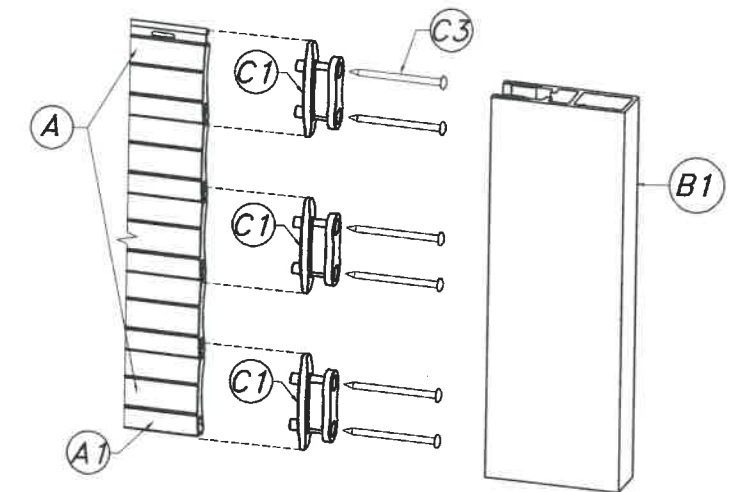
**(Q) ANGLE FOR HEADER BAR
 0'-6" LONG**

6063-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



**(Q1) CONTINUOUS AT BOTTOM
 OF SLAT**

6063-T6 ALUMINUM ALLOY
 SCALE: 3/4" = 1"



**heroal RS 53 RC 2
 SLAT ASSEMBLY DETAIL**
 N.T.S.

COMPONENTS

(VALID ONLY FOR SHUTTERS
 WITH STORM BARS & HEADERS)



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TEXAS DEPARTMENT OF INSURANCE - 2018

heroal RS 53 RC 2 SLAT
 ENGAGED ROLL-UP SHUTTER

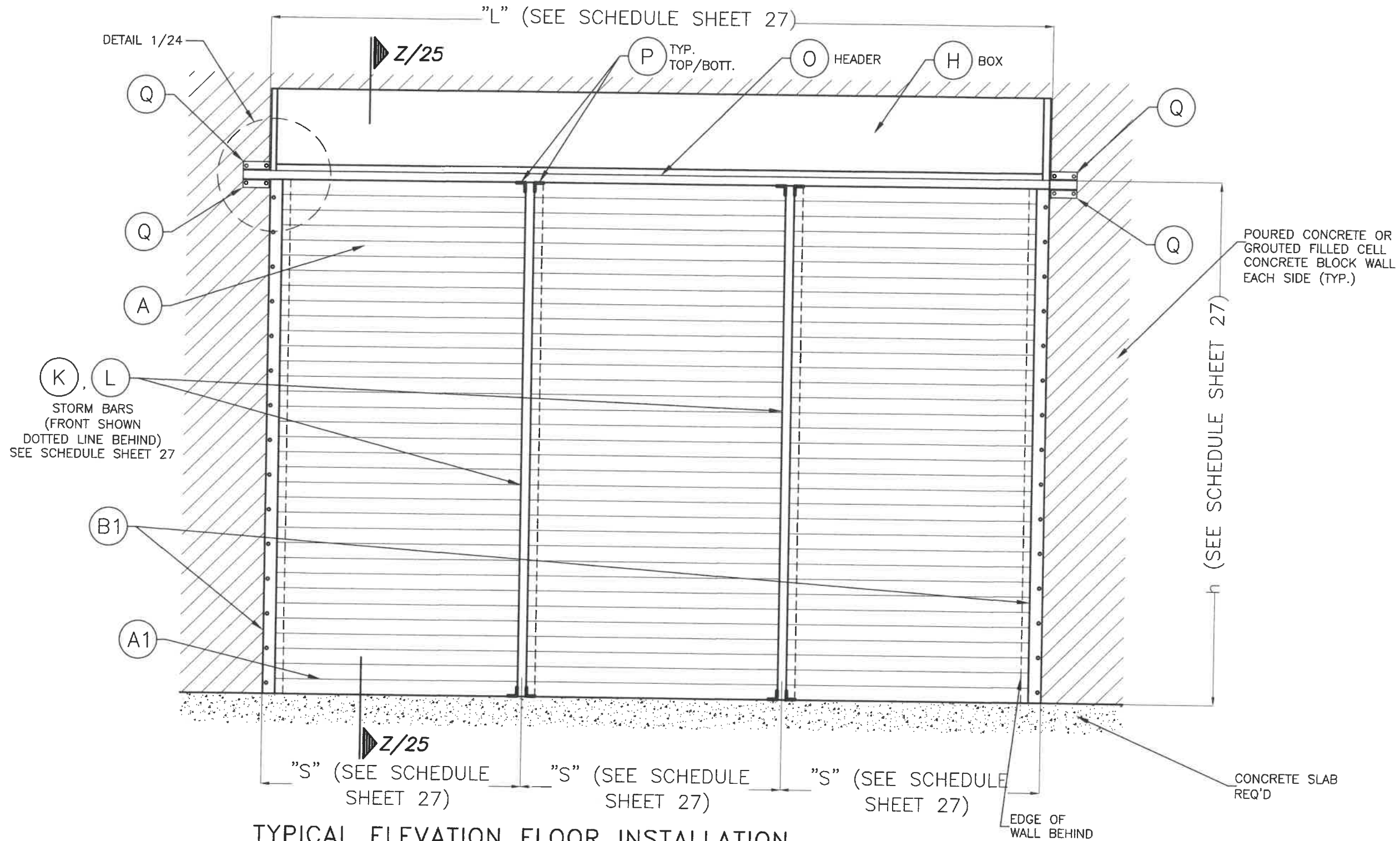
heroal-Johann Henkenjohann GmbH & Co. KG
 Osterwieher Str. 80
 33415 Verl.

M.P.
 DRAWN BY:
 10/22/2020
 DATE:

20-293
 DRAWING No.

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
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SHEET 21 OF 27



TYPICAL ELEVATION FLOOR INSTALLATION

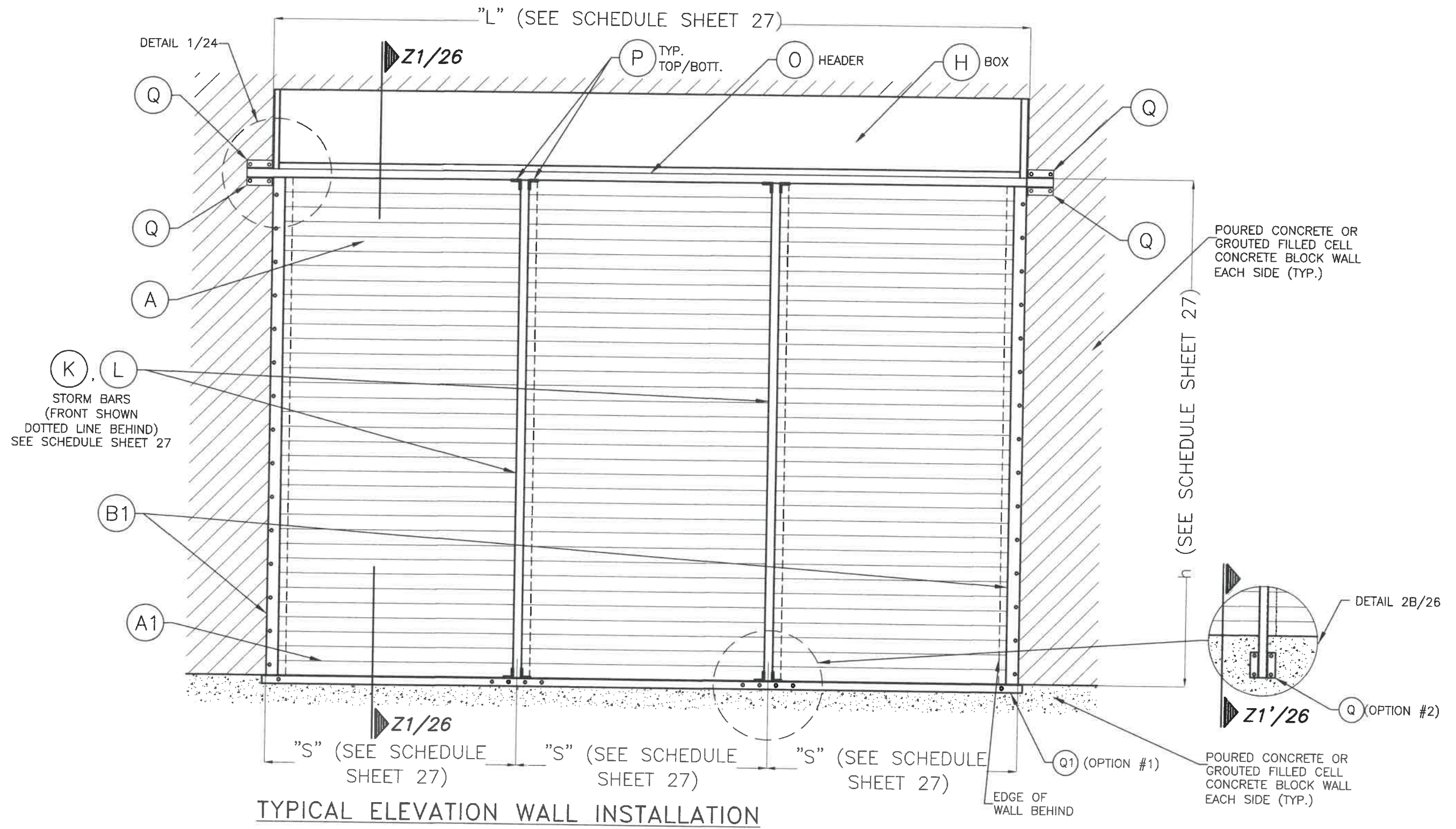
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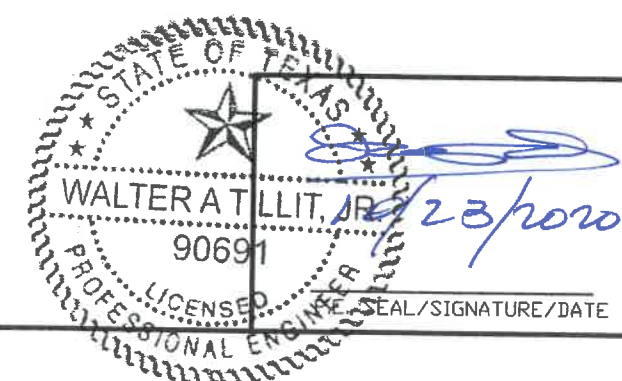
TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER			M.P. DRAWN BY:		
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.			10/22/2020 DATE:		
20-293			DRAWING No.		
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
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TYPICAL ELEVATION WALL INSTALLATION

(VALID ONLY FOR SHUTTERS WITH STORM BARS & HEADERS)



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 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

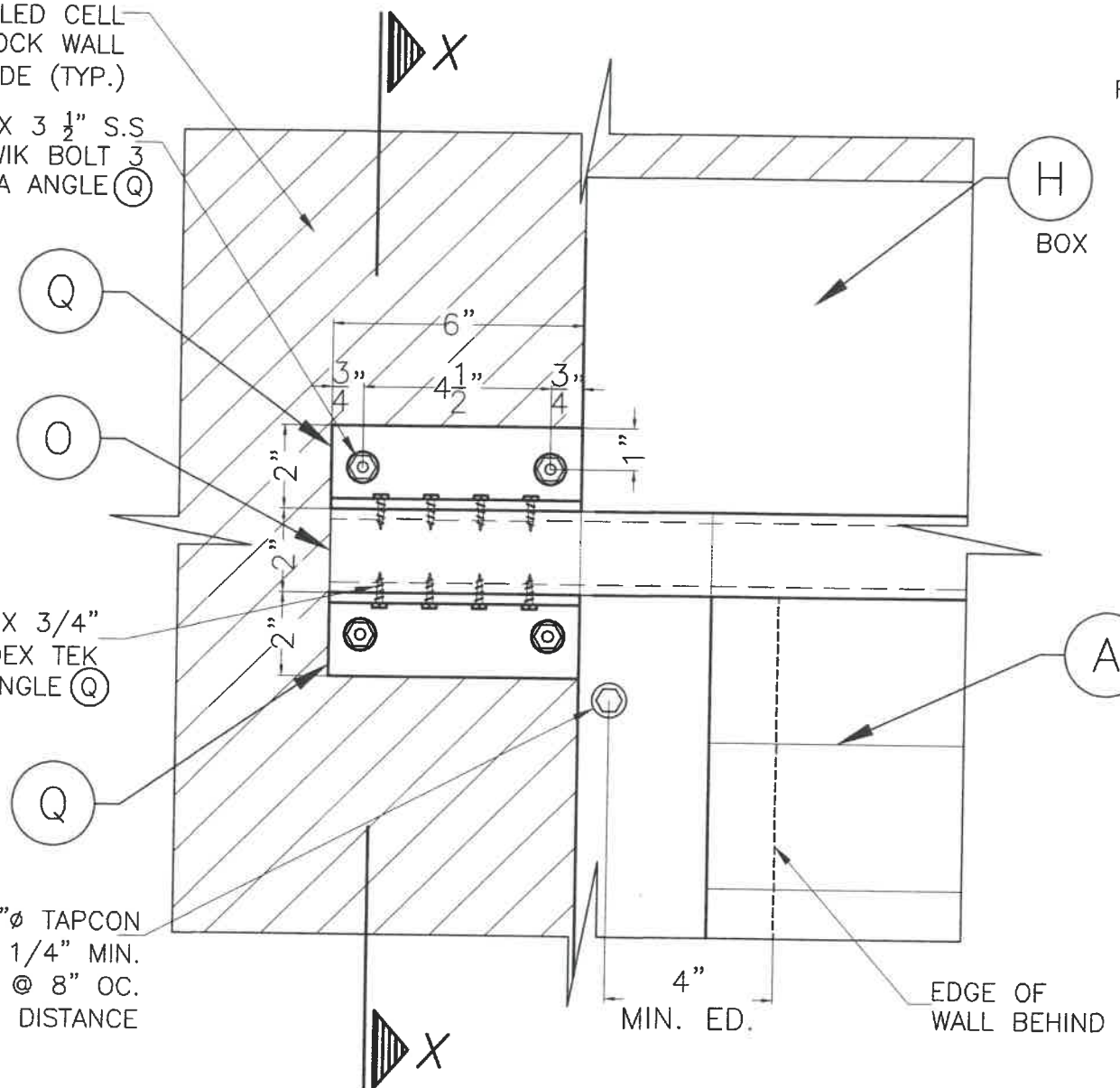
heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER						M.P. DRAWN BY:
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.						10/22/2020 DATE:
						20-293 DRAWING No.
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE	SHEET 23 OF 27
1	OLD 17-286	10/22/20	3			
2			4			

POURED CONCRETE OR
GROUTED FILLED CELL
CONCRETE BLOCK WALL
REQ'D EACH SIDE (TYP.)

(2) 3/8"Ø X 3 1/2" S.S.
HILTI Inc. KWIK BOLT 3
ANCHOR EA ANGLE (Q)

(4) 1/4-14 X 3/4"
S.S ITW/BUILDEX TEK
SCREW EA. ANGLE (Q)

(B1) W/ 5/16"Ø TAPCON
XL W/ 2 1/4" MIN.
EMBEDMENT @ 8" OC.
W/ 4" EDGE DISTANCE

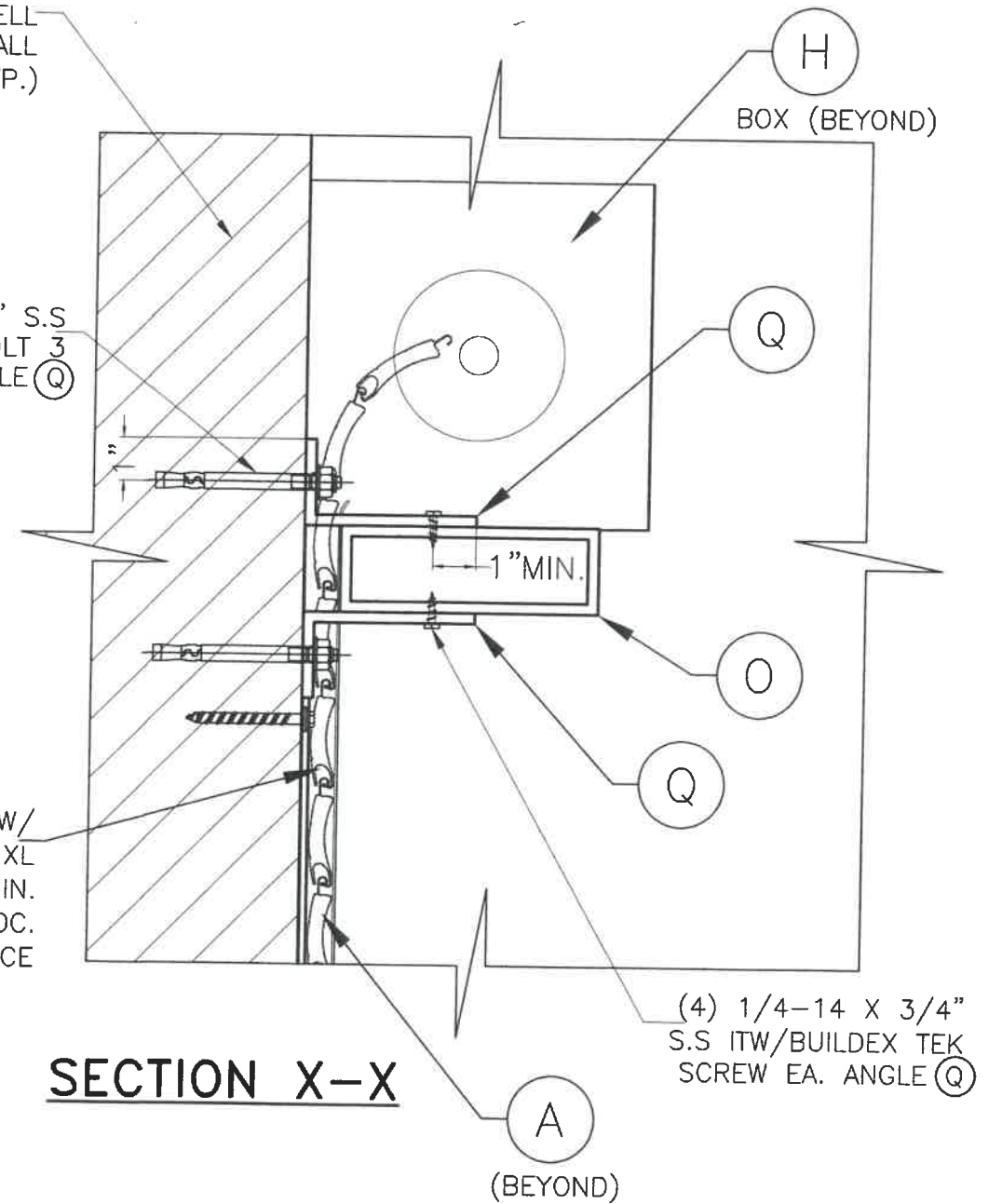


DETAIL 1

POURED CONCRETE OR
GROUTED FILLED CELL
CONCRETE BLOCK WALL
REQ'D EACH SIDE (TYP.)

(2) 3/8"Ø X 3 1/2" S.S.
HILTI Inc. KWIK BOLT 3
ANCHOR EA ANGLE (Q)

(B1) (BEYOND)W/
5/16"Ø TAPCON XL
W/ 2 1/4" MIN.
EMBEDMENT @ 8" OC.
W/ 4" EDGE DISTANCE



SECTION X-X

(VALID ONLY FOR SHUTTERS
STORM BARS & HEADERS)

STATE OF TEXAS
WALTER A. TILLIT, JR.
9069
LICENSED PROFESSIONAL ENGINEER
SEAL/SIGNATURE/DATE

WALTER A. TILLIT Jr. P.E.
PROFESSIONAL ENGINEER

6355 N.W. 36TH. ST., STE. 305
VIRGINIA GARDENS, FL. 33166
PHONE : (305) 871-1530 , FAX : (305) 871-1531

TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

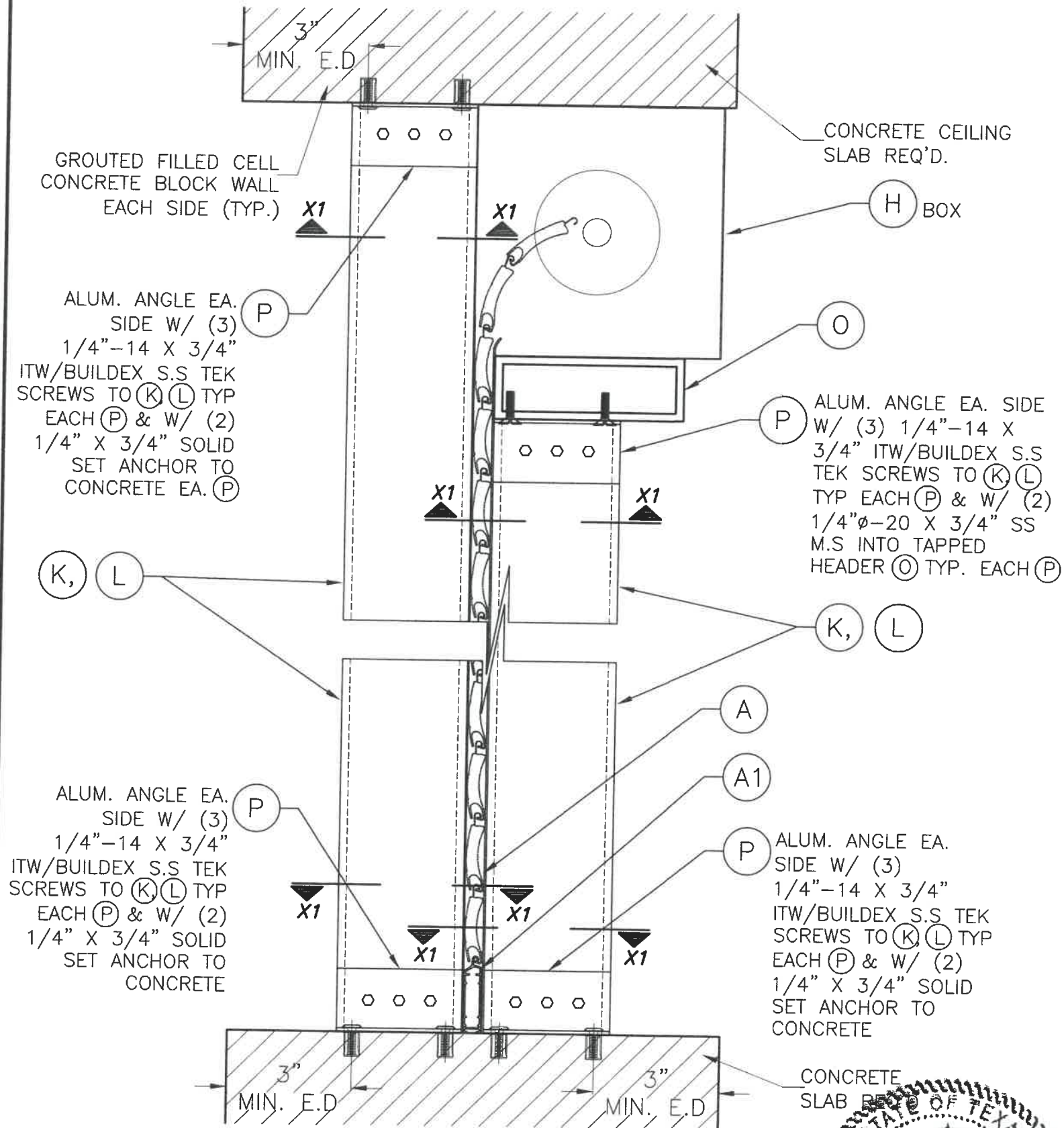
TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT
ENGAGED ROLL-UP SHUTTER

heroyal-Johann Henkenjohann GmbH & Co. KG
Osterwieher Str. 80
33415 Verl.

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

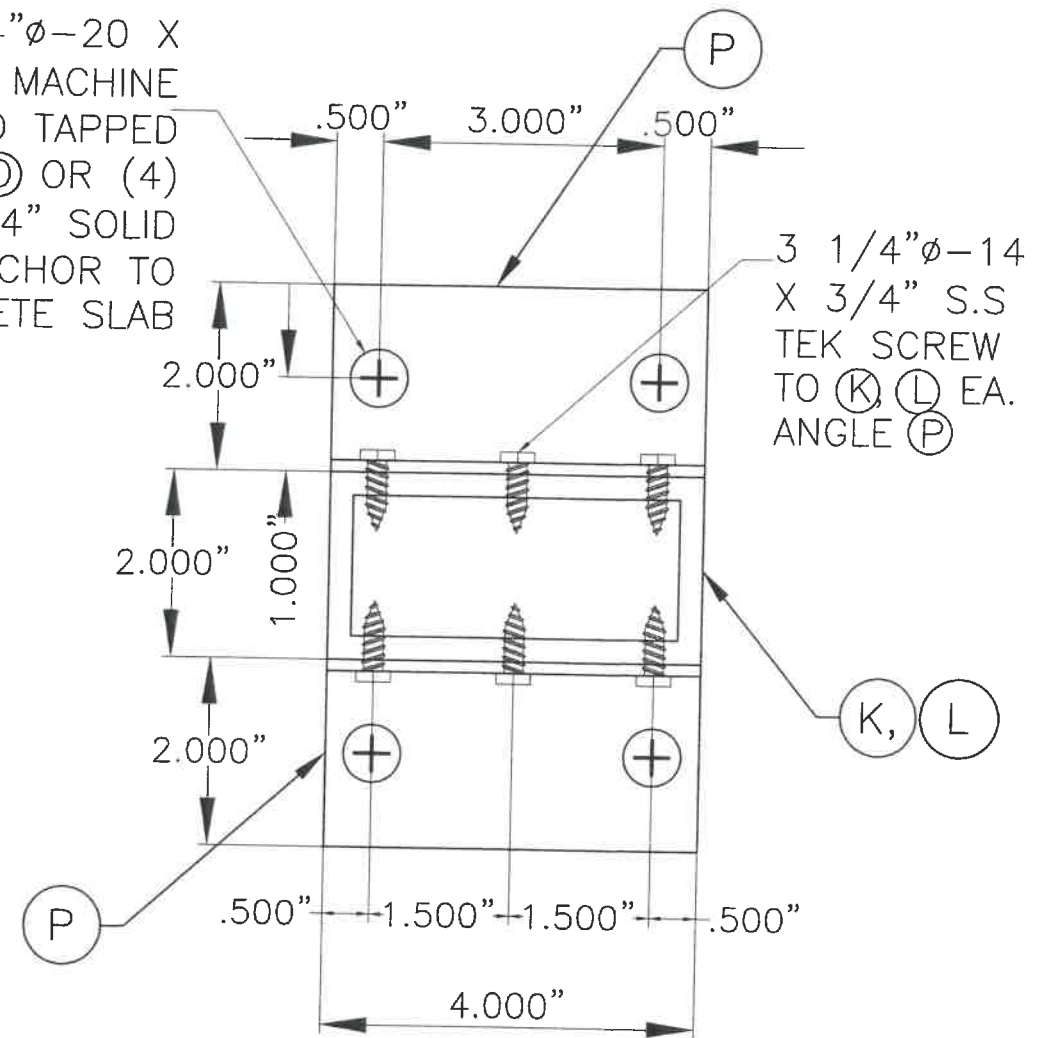
M.P
DRAWN BY:
10/22/2020
DATE:
20-293
DRAWING No.
SHEET 24 OF 27



SECTION Z-Z

(VALID ONLY FOR SHUTTERS WITH STORM BARS & HEADERS)

(4) 1/4"φ-20 X 3/4" S.S MACHINE SCREW INTO TAPPED HEADER (O) OR (4) 1/4" X 3/4" SOLID SET ANCHOR TO CONCRETE SLAB



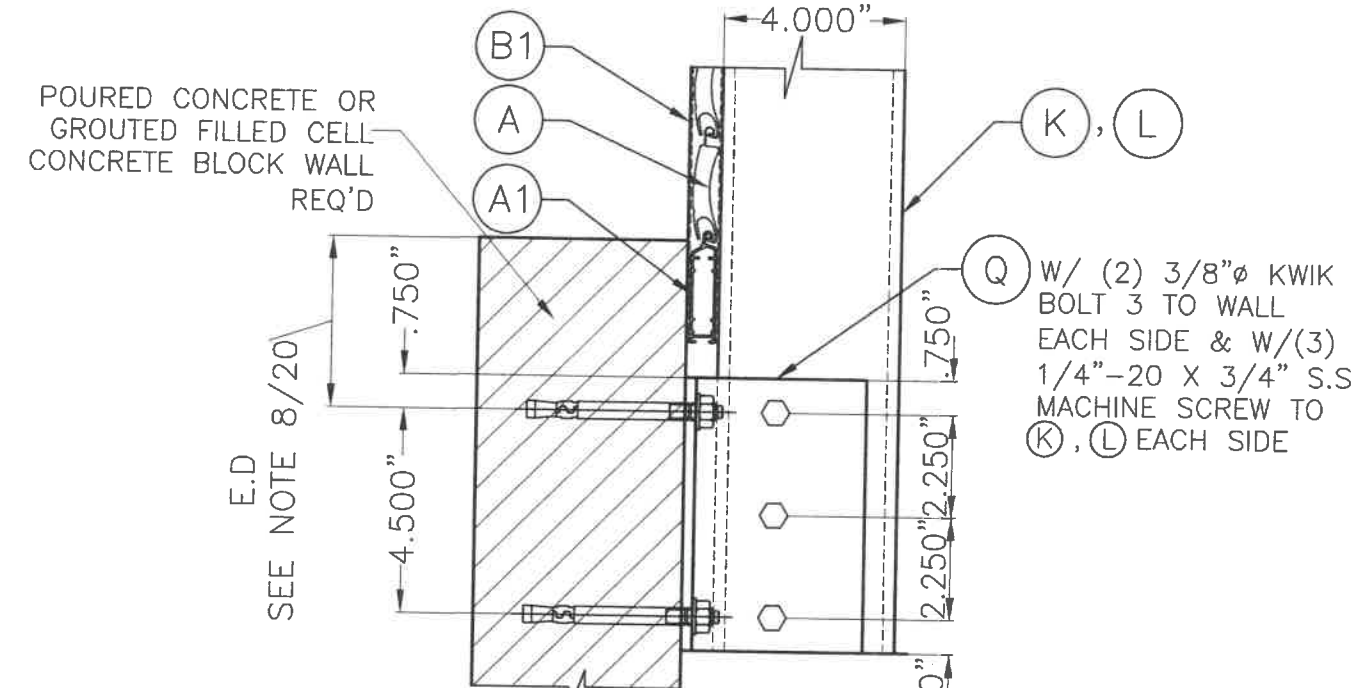
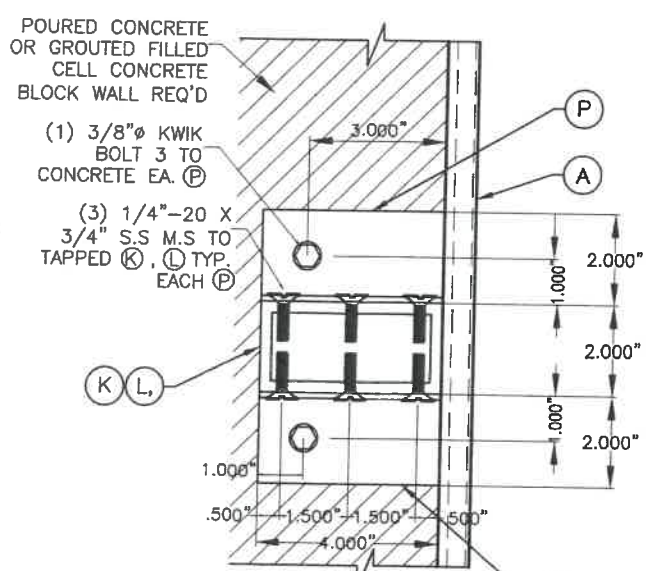
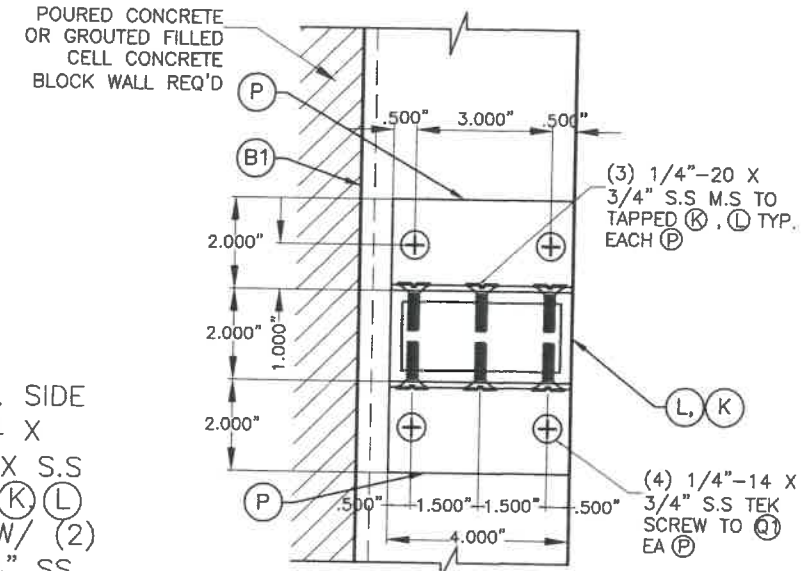
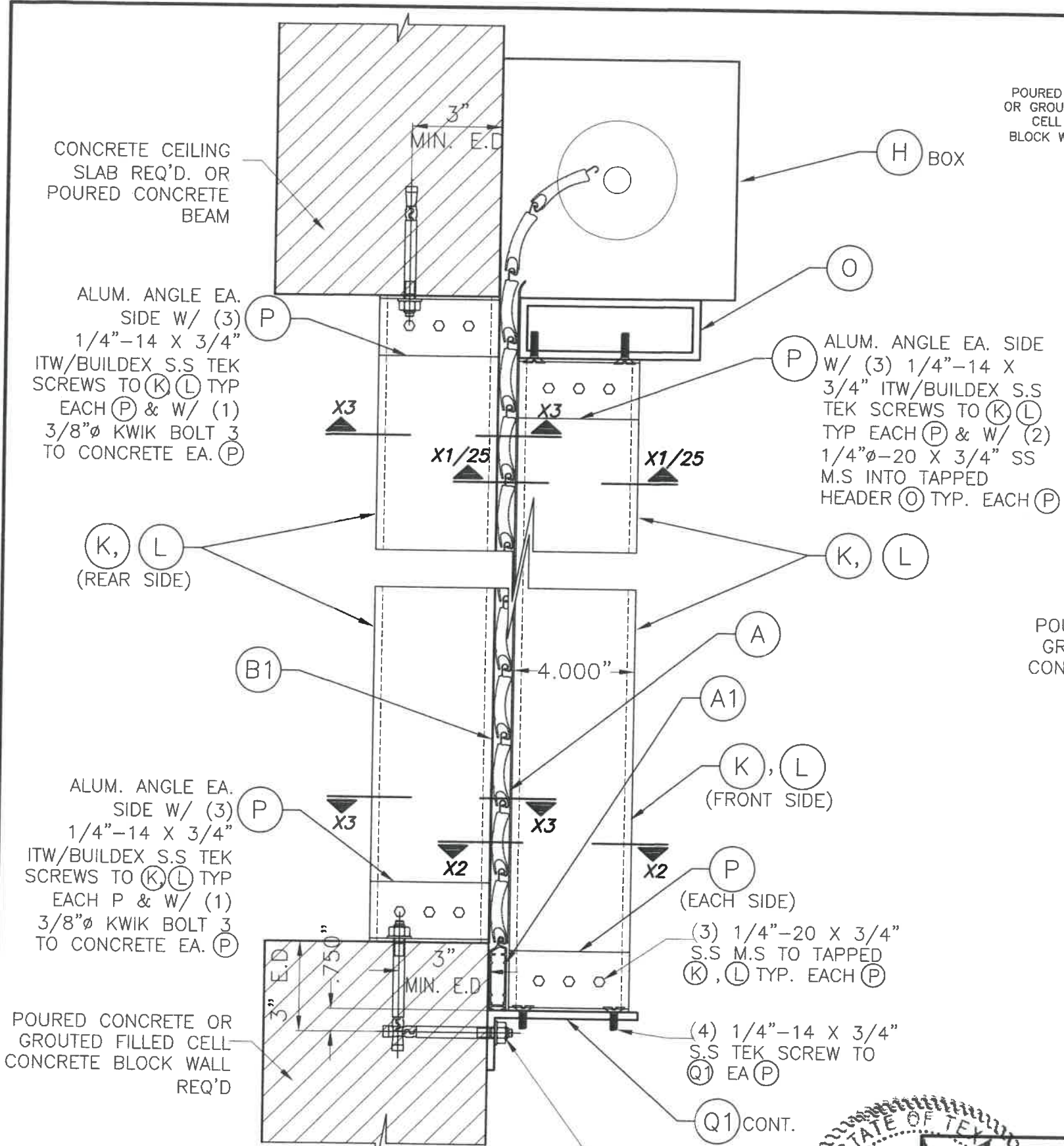
SECTION X1-X1

STATE OF TEXAS
 WALTER A. TILLIT, JR.
 90691
 LICENSED PROFESSIONAL ENGINEER
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 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018

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1	OLD 17-288	10/22/20
2		



SECTION Z1-Z1

(VALID ONLY FOR SHUTTERS WITH STORM BARS & HEADERS)



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TEXAS DEPARTMENT OF INSURANCE - 2018

heroyal RS 53 RC 2 SLAT ENGAGED ROLL-UP SHUTTER			M.P. DRAWN BY:		
heroyal-Johann Henkenjohann GmbH & Co. KG Osterwieher Str. 80 33415 Verl.			10/22/2020 DATE:		
			20-293 DRAWING No.		
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 17-286	10/22/20	3		
2			4		

**STORM BAR LOADING CHART MAXIMUM DESIGN
PRESSURE RATING (p. s. f.) AND CORRESPONDING
MAXIMUM SPAN "h" FOR A GIVEN TYPE OF STORM BAR
AND STORM BAR SPACING "S".**

(VALID ONLY FOR SHUTTERS WITH STORM BARS & HEADERS)

(USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)

MAXIMUM DESIGN PRESSURE RATING (p.s.f.)	TYPE 1 STORM BAR (K) 2" x 4" x 1/8"			TYPE 2 STORM BAR (L) 2" x 4" x 1/4"		
	* STORM BAR SPACING "S"			* STORM BAR SPACING "S"		
	≤ 3'-0"	3' TO 4'	4' TO 5'	< 3'-0"	3' TO 4'	4' TO 5'
40 OR LESS	7'-6"	7'-6"	7'-6"	10'-0"	10'-0"	10'-0"
45	7'-6"	7'-6"	7'-6"	10'-0"	10'-0"	10'-0"
50	7'-6"	7'-6"	7'-6"	10'-0"	10'-0"	10'-0"
55	7'-6"	7'-6"	7'-6"	10'-0"	10'-0"	10'-0"
60	7'-6"	7'-6"	7'-5"	10'-0"	10'-0"	10'-0"
65	7'-6"	7'-6"	6'-10"	10'-0"	10'-0"	10'-0"
70	7'-6"	7'-4"	6'-7"	10'-0"	10'-0"	10'-0"
75	7'-6"	7'-2"	6'-5"	10'-0"	10'-0"	10'-0"
80	7'-6"	7'-2"	6'-4"	10'-0"	10'-0"	10'-0"

**HEADER LOADING CHART MAXIMUM DESIGN
PRESSURE RATING (psf) AND CORRESPONDING
MAXIMUM SPAN "L" FOR A GIVEN TYPE OF HEADER.**

(VALID ONLY FOR SHUTTERS WITH STORM BARS & HEADERS)

(USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)

MAXIMUM DESIGN PRESSURE RATING (p.s.f.)	TYPE 1 HEADER (O) 2" x 6" x 1/4"		
	STORM BAR HEIGHT		
	≤ 6'-0"	6' TO 7'-6"	≤ 7'-6" TO 10'
40.0 OR LESS	15'-0"	15'-0"	15'-0"
45.0	15'-0"	15'-0"	15'-0"
50.0	15'-0"	15'-0"	15'-0"
55.0	15'-0"	15'-0"	15'-0"
60.0	15'-0"	15'-0"	15'-0"
65.0	15'-0"	15'-0"	14'-9"
70.0	15'-0"	15'-0"	14'-3"
75.0	15'-0"	15'-0"	13'-9"
80.0	15'-0"	15'-0"	13'-4"



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