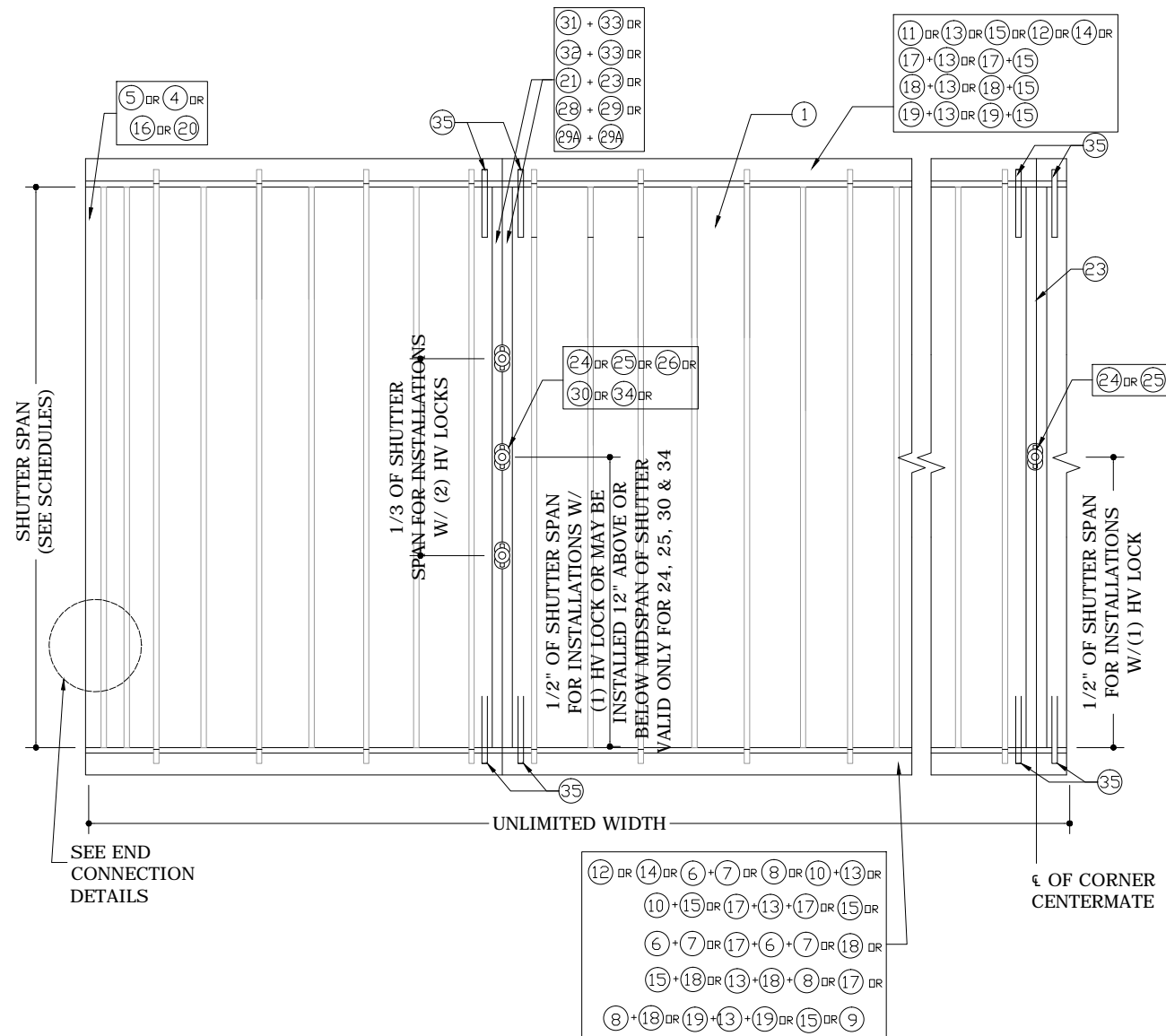
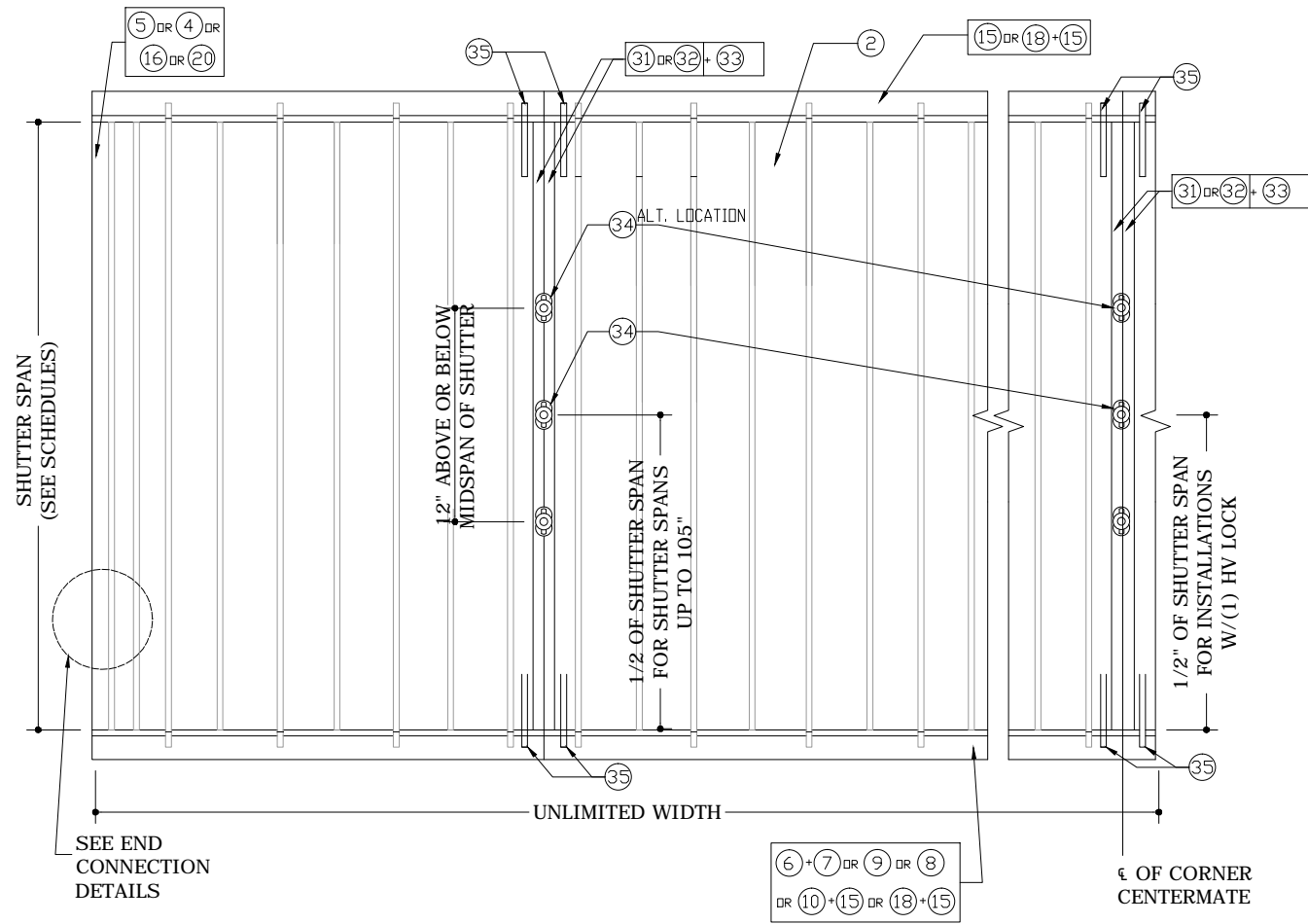


# BERTHA HV ACCORDION SHUTTER

## HV BLADE 1, HV WINDOW BLADE 1A & HV BLADE 2



1 TYPICAL HV 1 BLADE SHUTTER  
N.T.S. EXTERIOR ELEV



2 TYPICAL HV 2 BLADE SHUTTER  
N.T.S. EXTERIOR ELEV

### GENERAL NOTES

1. THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE SEVENTH EDITION (2020), THE INTERNATIONAL BUILDING CODE (IBC) AND THE INTERNATIONAL RESIDENTIAL CODE (IRC) FOR USE INSIDE AND OUTSIDE OUTSIDE THE HIGH VELOCITY HURRICANE ZONE, PER ASTM E330, E1886, AND E1996 AND TAS 201, 202 & 203 STANDARDS. SEE PRODUCT APPROVAL EVALUATION FOR ADDITIONAL INFORMATION.
2. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM. WIND LOAD DURATION FACTOR  $C_d = 1.6$  HAS BEEN USED FOR WOOD ANCHOR DESIGN.
3. POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED PER SEPARATE ENGINEERING IN ACCORDANCE WITH THE GOVERNING CODE. PRESSURE REQUIREMENTS AS DETERMINED IN ACCORDANCE WITH ASCE 7 AND CHAPTER 1609 OF THE FLORIDA BUILDING CODE SHALL BE LESS THAN OR EQUAL TO THE POSITIVE OR NEGATIVE ASD DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.
4. DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.

5. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.
6. EACH UNIT MUST BEAR A PERMANENT LABEL IN A VISIBLE PLACE WITH WARNING NOTE: DURING PERIODS OF HURRICANE WARNINGS HOME OWNER, TENANT OR OTHERS MUST PROPERLY CLOSE A HV AND HD CENTERMATES AND ENGAGE OR LOCK ALL HV/HD LOCKS.
7. THIS DOCUMENT CONTAINS INFORMATION RELEVANT TO THE NECESSARY STRUCTURAL REQUIREMENTS OF THE SYSTEM INSTALLATION. COMPONENTS AND FASTENERS NOT REFERENCED WHICH ARE PART OF THE INTERNAL FABRICATION OF THE SPECIFIED SYSTEMS OR ASSEMBLIES SHALL BE PER MANUFACTURER PUBLISHED SPECIFICATIONS.
8. THE STRUCTURAL ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS BY THIS SYSTEM SHALL BE VERIFIED BY OTHERS.

9. ALL EXTRUSIONS SHALL BE MINIMUM 6063-T6 ALUMINUM ALLOY, UNLESS NOTED OTHERWISE.
10. EACH SHUTTER ASSEMBLY SHALL BEAR A PERMANENT LABEL PER SECTION 1709. OF THE FBC 2020 WITH THE FOLLOWING MINIMUM INFORMATION:  
AMERICAN SHUTTER SYSTEMS ASSOC., INC.  
WEST PALM BEACH, FL  
MISSILE LEVEL D - ASTM E1886, E1996 & E330 - TAS 201, 202 & 203  
FLORIDA PRODUCT APPROVAL NUMBER
11. ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH A MINIMUM TENSILE YIELD STRENGTH OF \*S?G="5@5@A=B1 A" #8" α CF %#( " α DCD F=J9HG G< 5@69+S+) !F CF STRONGER.
12. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.

VISIT [ECALC.IO/31270](http://ECALC.IO/31270)

FOR SITE SPECIFIC DEVIATIONS  
& MORE INFORMATION ABOUT THIS DOCUMENT  
OR SCAN THIS QR CODE

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FRANK BENNARDO, PE  
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West Palm Beach, FL 33407  
(561) 841-5480

BERTHA HV ACCORDION SHUTTER  
HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

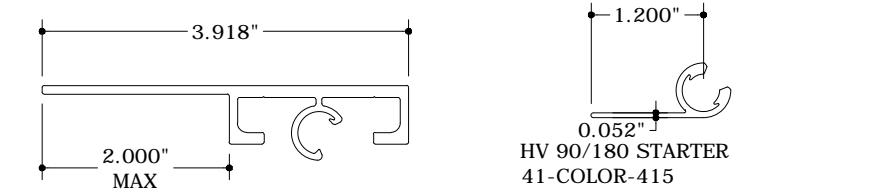
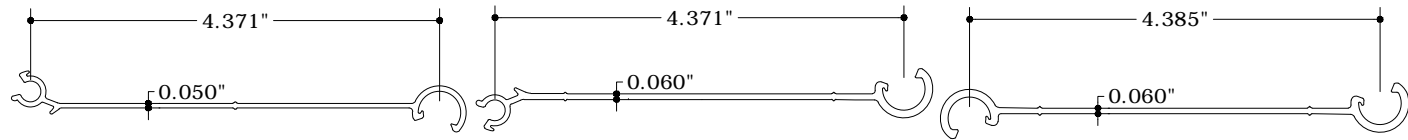
REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RWN	RWN	1/8/2020
2020 FBC	COB	RWN	9/02/2024

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# BLADE 1, 1A & 2 COMPONENTS



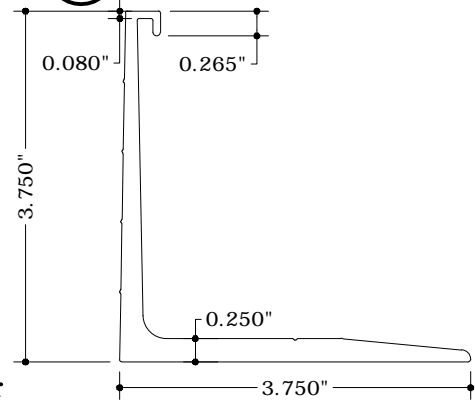
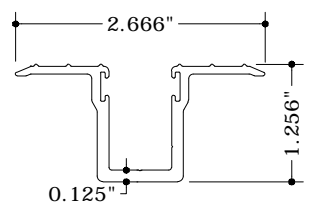
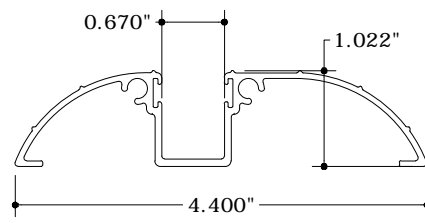
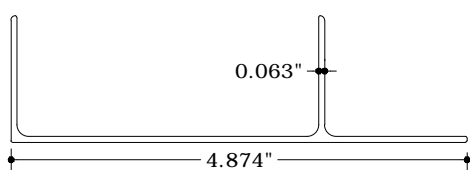
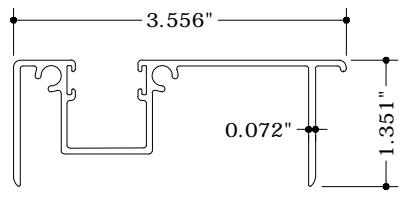
**1 1A HV BLADE 1**  
N.T.S. 6063-T6 ALUM  
\*W/ OR W/ OUT WINDOW

**2 HV BLADE 2**  
N.T.S. 6063-T6 ALUM

**3 HV UNIVERSAL FLOATER**  
N.T.S. 6063-T6 ALUM

**4 HV DIRECT MOUNT**  
N.T.S. 6063-T6 ALUM

**5 HV 90°/180° STARTER**  
N.T.S. 6063-T6 ALUM



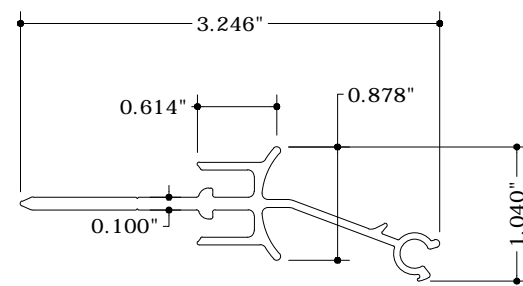
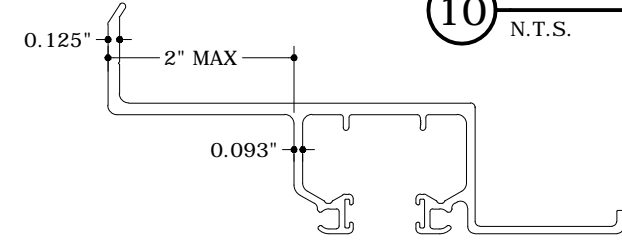
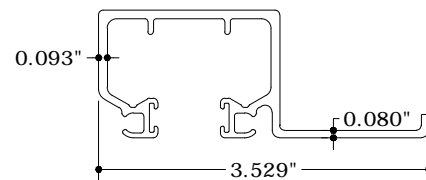
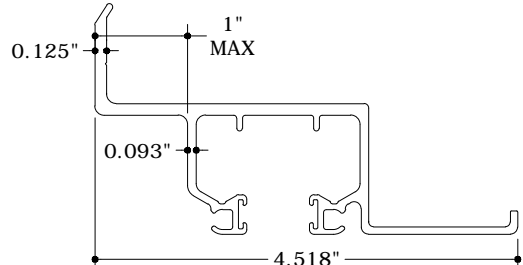
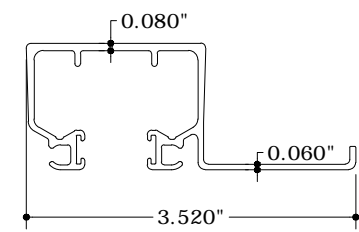
**6 HV ADJ. FLOOR TRACK**  
N.T.S. 6063-T6 ALUM

**7 HV ADJ. ADAPTOR W/ LIP**  
N.T.S. 6063-T6 ALUM

**8 HV WALK OVER TRACK**  
N.T.S. 6063-T6 ALUM

**9 HV TRENCH TRACK**  
N.T.S. 6063-T6 ALUM

**10 HV RAIN GUARD**  
N.T.S. 6063-T6 ALUM



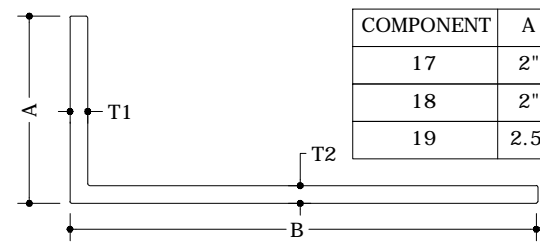
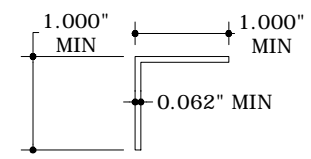
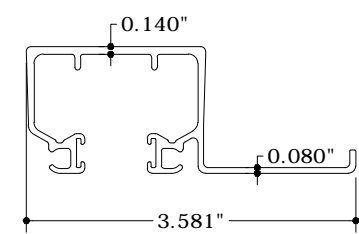
**11 HV CEILING HEADER**  
N.T.S. 6063-T6 ALUM

**12 HV HEADER/SILL**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

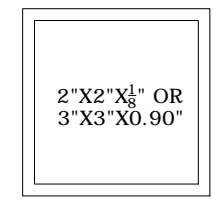
**13 HD CEILING HEADER/SILL**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

**14 HD WALL HEADER/SILL**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

**29A FLAT CENTERMATE**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY



COMPONENT	A	B	T1	T2	BLADE QUALIFIED
17	2"	5" MAX	0.125"	0.125"	1
18	2"	5" MAX	0.192"	0.192"	2
19	2.5"	7" MAX	0.190"	0.190"	1

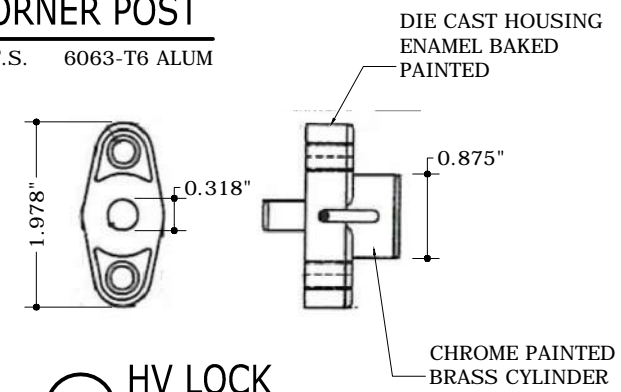
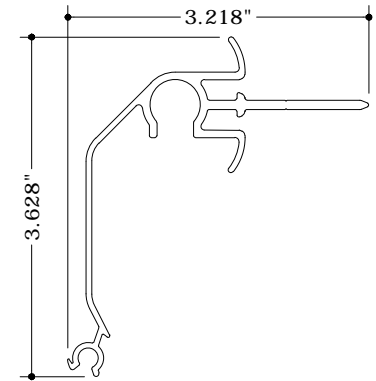
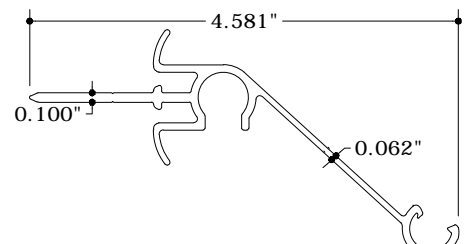
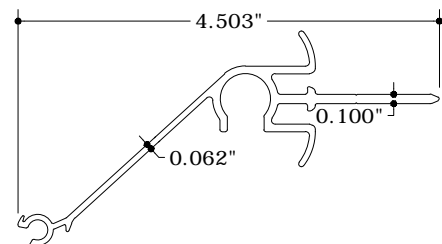


**15 SHD CEILING HEADER/SILL**  
N.T.S. 6063-T6 ALUM

**16 SIDE ANGLE**  
N.T.S. 6063-T6 ALUM

**17 18 19 ALUM ANGLES**  
N.T.S. 6063-T6 ALUM

**20 CORNER POST**  
N.T.S. 6063-T6 ALUM



**21 HV CENTERMATE**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

**22 HV FLOATING CENTERMATE**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

**23 HV CORNER CENTERMATE**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

**24 HV LOCK**  
N.T.S. 6063-T6 ALUM  
\*USE W/ BLADE 1 ONLY

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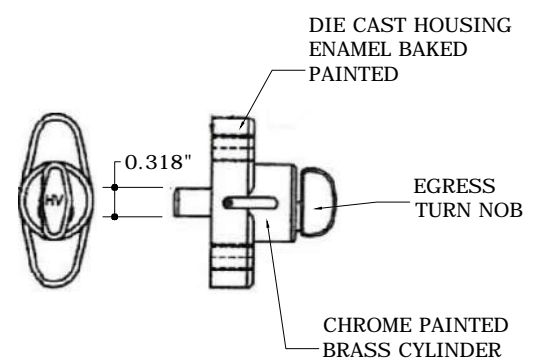
BERTHA HV ACCORDION SHUTTER  
HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL\_32030.1

REMARKS	DATE
2020 FBC	1/8/2020
	1/8/2020
	9/02/2020

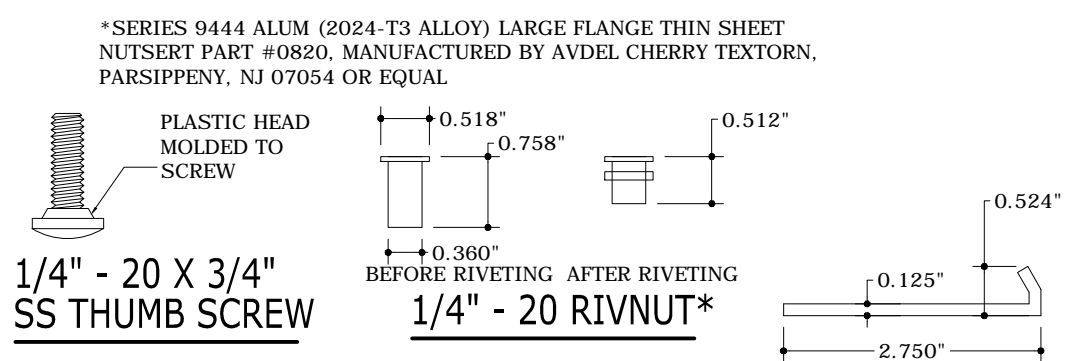
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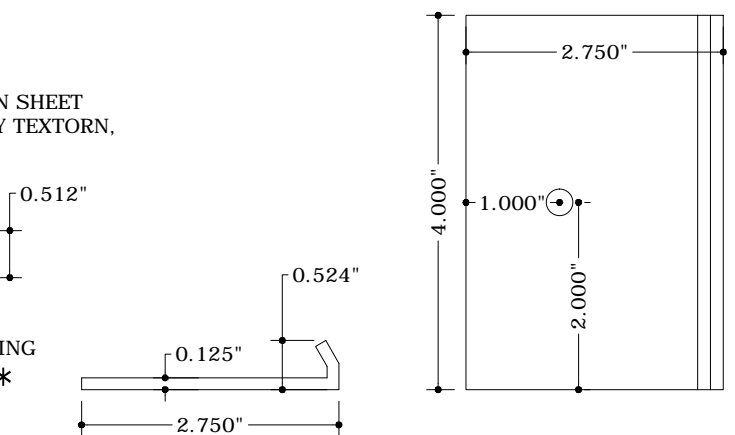
# BLADE 1, 1A & 2 COMPONENTS (CONT'D)



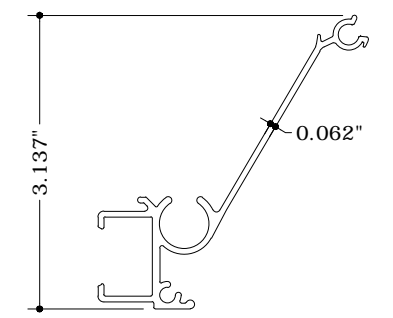
**25 HV EGRESS LOCK**  
N.T.S.  
\*USE W/ BLADE 1 ONLY



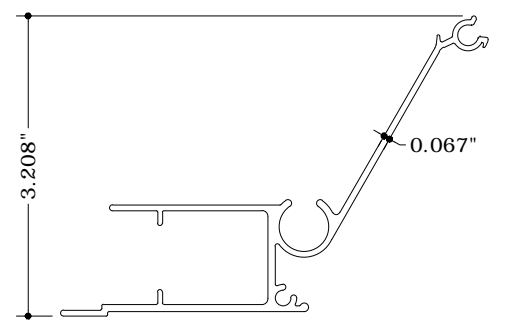
**26 HV ALTERNATIVE LOCK**  
N.T.S.  
\*USE W/ BLADE 1 ONLY



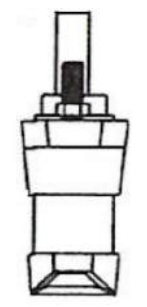
**27 LOCKER FOR "T" LOCK CENTERMATE**  
N.T.S.  
\*USE W/ BLADE 1 ONLY  
6063-T6 ALUM



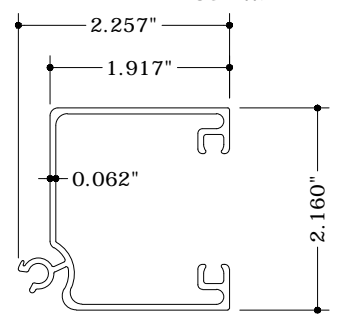
**28 HV MALE "T" LOCK CENTERMATE**  
N.T.S.  
\*USE W/ BLADE 1 ONLY  
6063-T6 ALUM



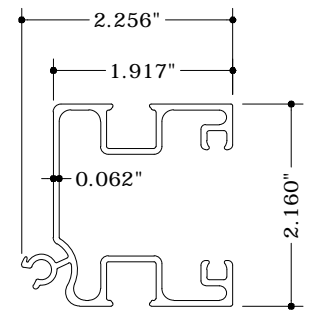
**29 HV FEMALE "T" LOCK CENTERMATE**  
N.T.S.  
\*USE W/ BLADE 1 ONLY  
6063-T6 ALUM



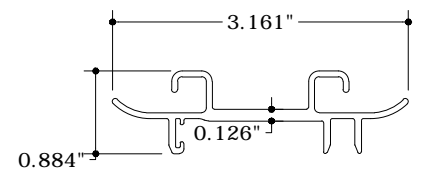
**30 HV "T" LOCK**  
N.T.S.  
\*USE W/ BLADE 1 ONLY



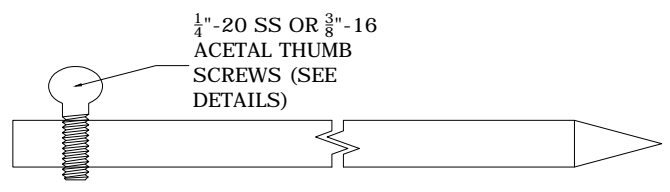
**31 HD CENTERMATE W/ NO LOCKING ROD**  
N.T.S.  
6063-T6 ALUM



**32 HD CENTERMATE W/ LOCKING ROD**  
N.T.S.  
6063-T6 ALUM

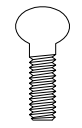


**33 HD CENTERMATE INSERT**  
N.T.S.  
6063-T6 ALUM

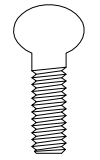


**35 LOCKING ROD**  
N.T.S.  
6063-T6 ALUM

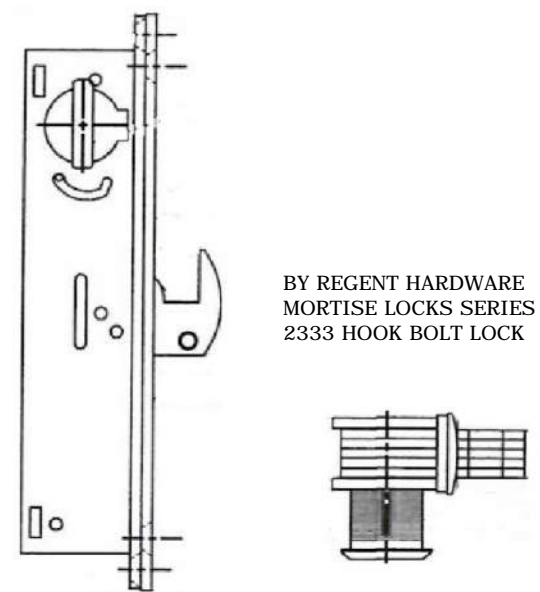
\*\*LOCKING ROD MAY BE USED TO HOLD SYSTEM IN OPEN POSITION WITHOUT EXTENDING THROUGH RAINGUARD (VIA FRICTION). WHEN LOCKING ROD IS USED TO LOCK IN SYSTEM IN CLOSED POSITION, ROD SHALL EXTEND THROUGH RAINGUARD LIP, TYP.



**36 HV 1/4"-20 THUMBSCREW**  
N.T.S.  
304 SS



**37 HV 3/8"-16 ACETAL THUMBSCREW**  
N.T.S.  
6063-T6 ALUM



**34 HD LOCK**  
N.T.S.

BY REGENT HARDWARE  
MORTISE LOCKS SERIES  
2333 HOOK BOLT LOCK



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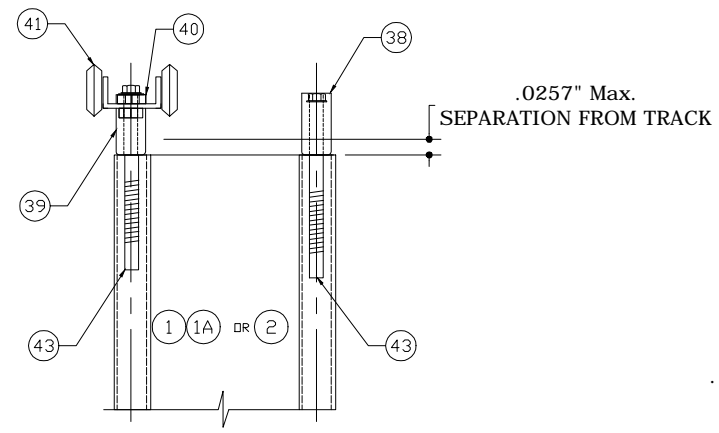
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(561) 841-5480  
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HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

REMARKS	DATE	DRWN	CHKD
INIT ISSUE	1/8/2020	RWN	RWN
2020 FBC	9/02/2026	CCB	RWN

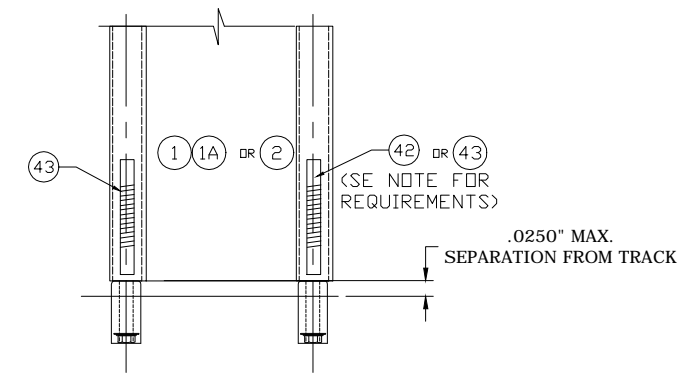
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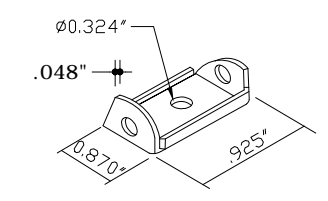
# TYPICAL SHUTTER ASSEMBLY (ALL BLADE TYPES)



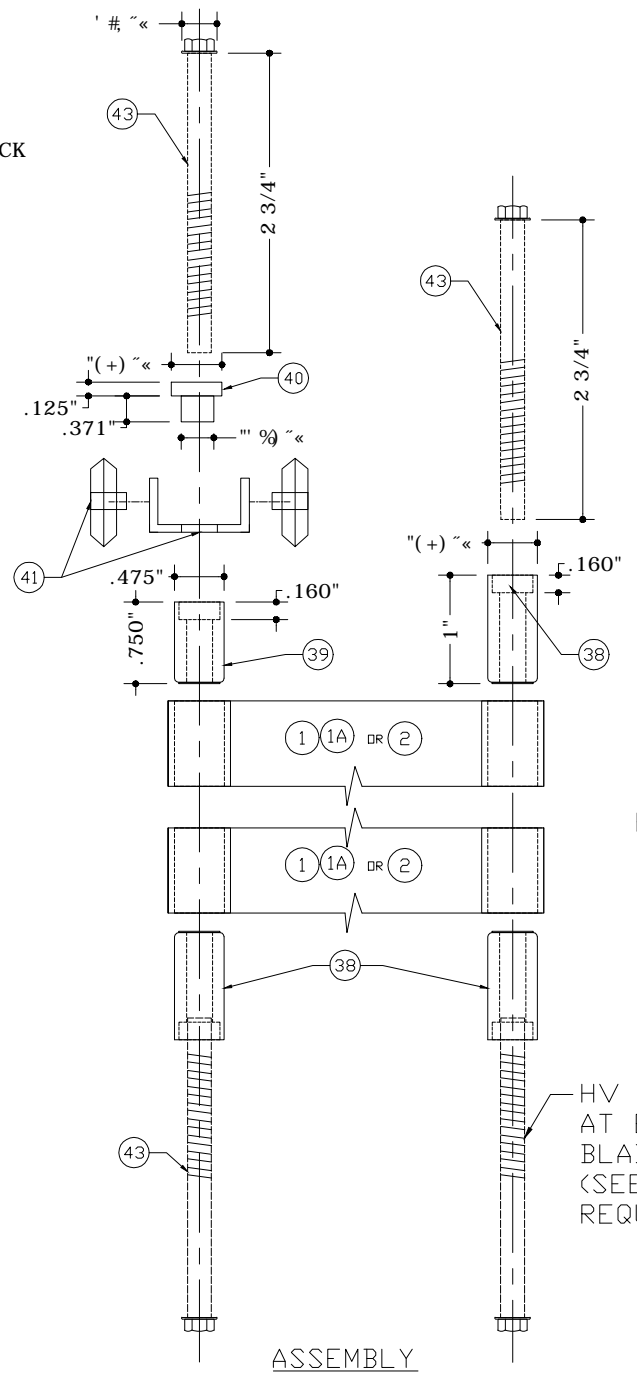
EXTERIOR



TYPICAL SHUTTER ASSEMBLY  
SCALE: 3/8" = 1"



HV WALL SILL INSTALLATION  
N.T.S.



EXTERIOR

ASSEMBLY  
LAYOUT  
N.T.S.

HV PIN (42) OR (43)  
AT EXTERIOR  
BLADE'S KNUCKLE.  
(SEE NOTE \* FOR  
REQUIREMENTS)

- (38) - HV LONG RECESSED NYLON BUSHING
- (39) - HV SHORT RECESSED NYLON BUSHING
- (40) - HV NYLON HAT WASHER
- (42) - HV 1-3/4" ACCORDION PIN W/ #8 HEAD
- (43) - HV 2-3/4" ACCORDION PIN W/ #8 HEAD
- (44) - POLYCARBONATE IMPACT RESISTANT HV WINDOW

FRANK BENNARDO, PE  
PE# 0046549 CA# 9885



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REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RWN	RWN	1/8/2020
2020 FBC	CCB	RWN	9/02/2020

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# SECTION DETAILS - ALL BLADE OPTIONS

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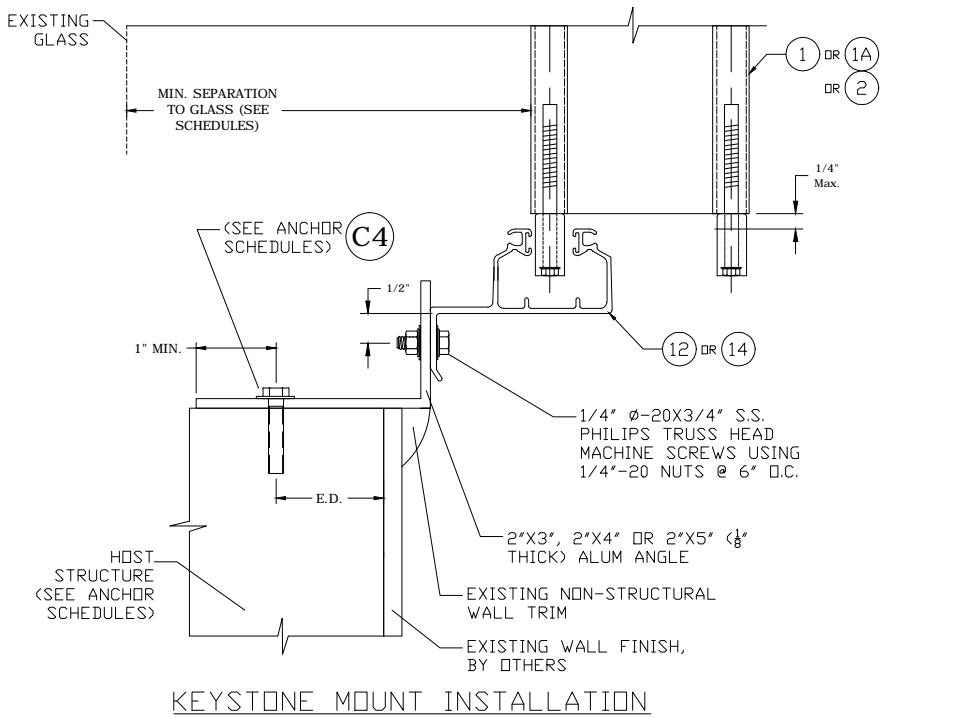
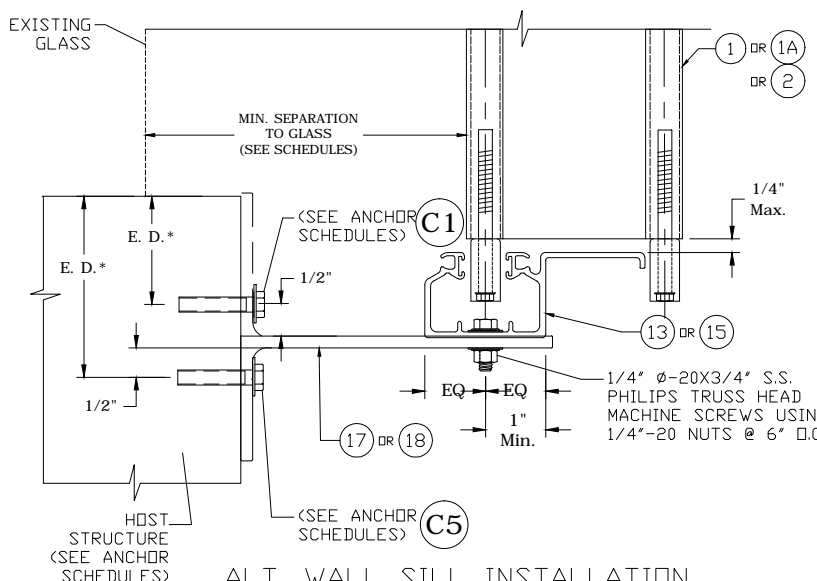
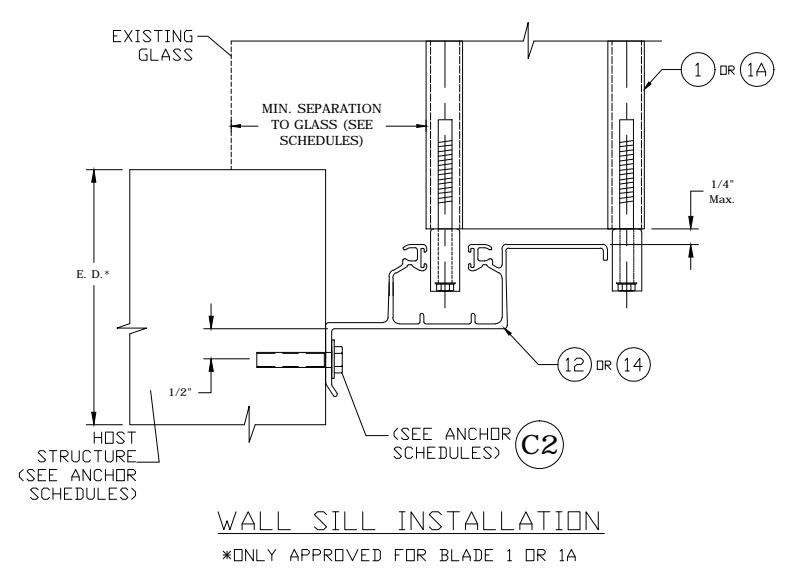
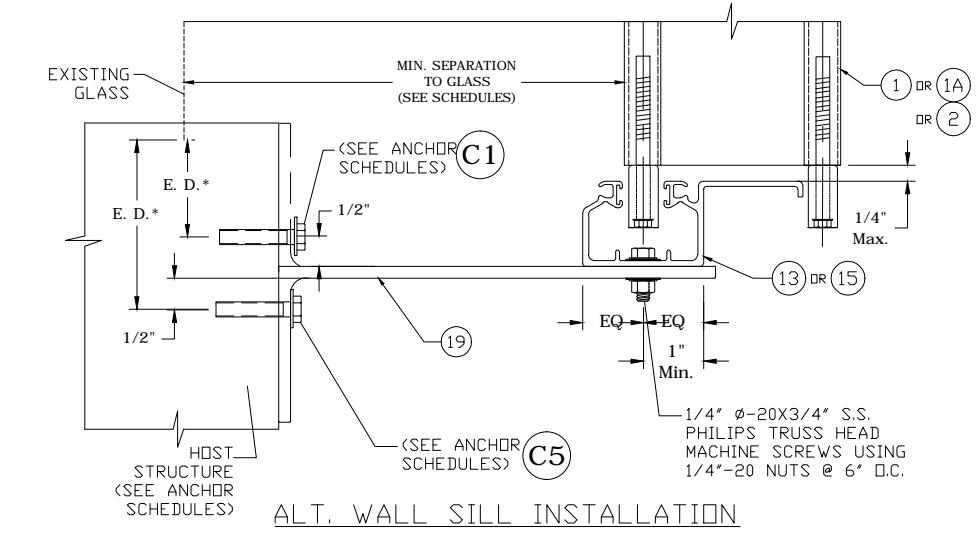
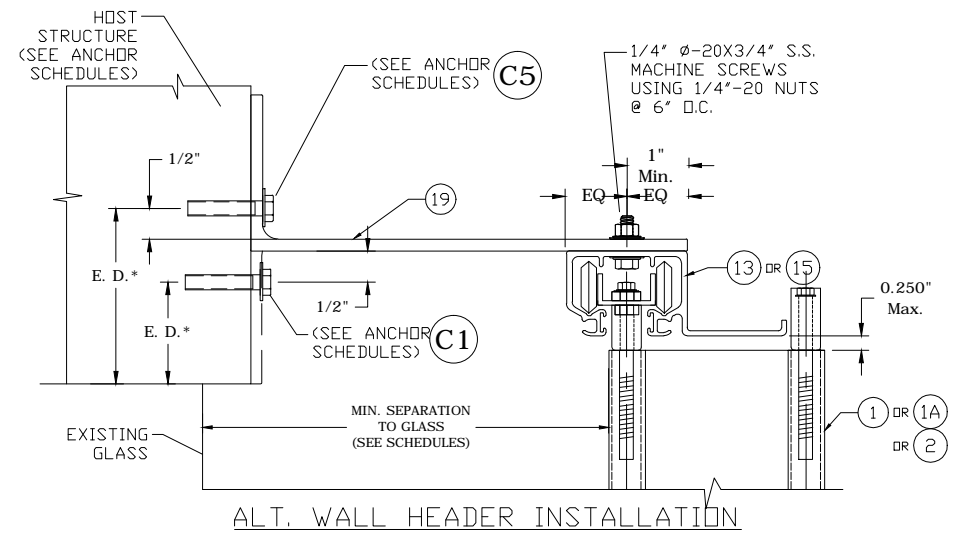
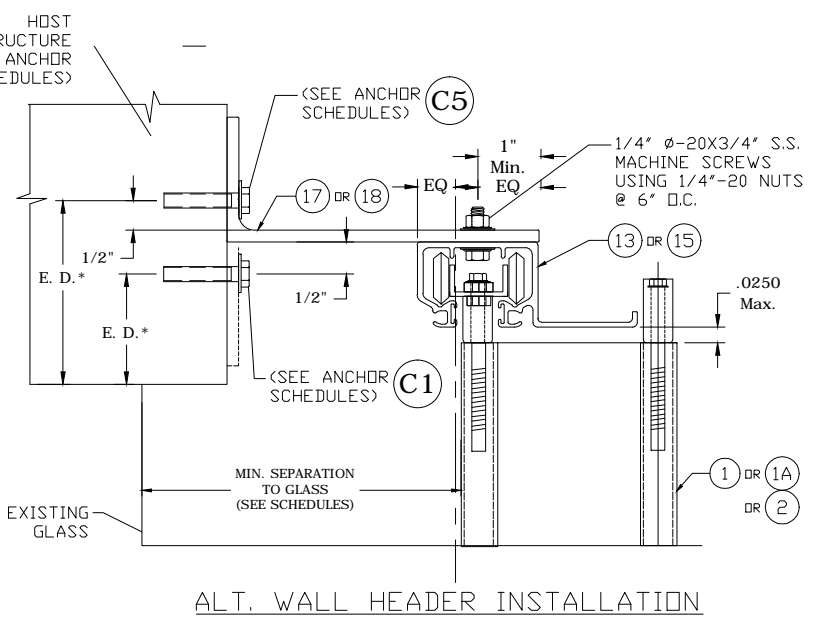
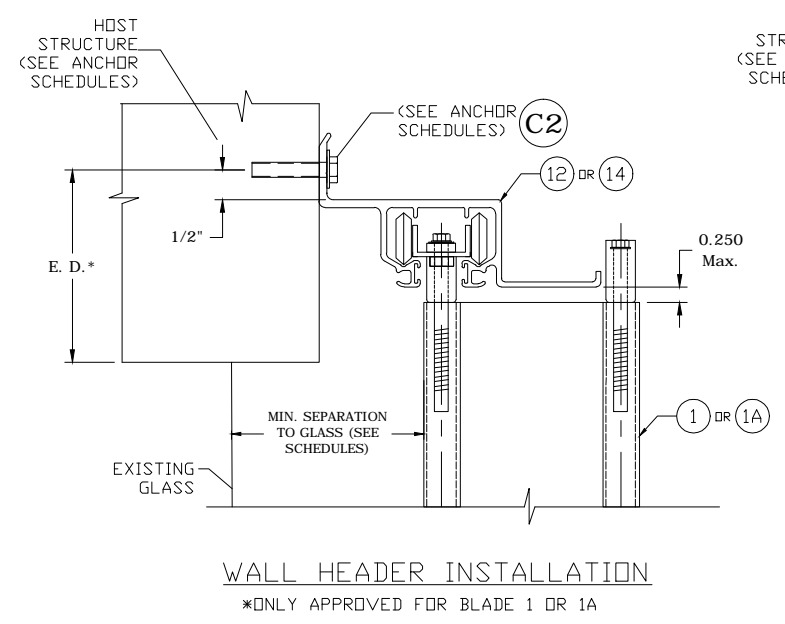
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4268 West Roads Dr.  
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BERTHA HV ACCORDION SHUTTER  
HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL-32030.1

REMARKS	DATE
INIT ISSUE	1/8/2020
2020 FBC	9/02/2020

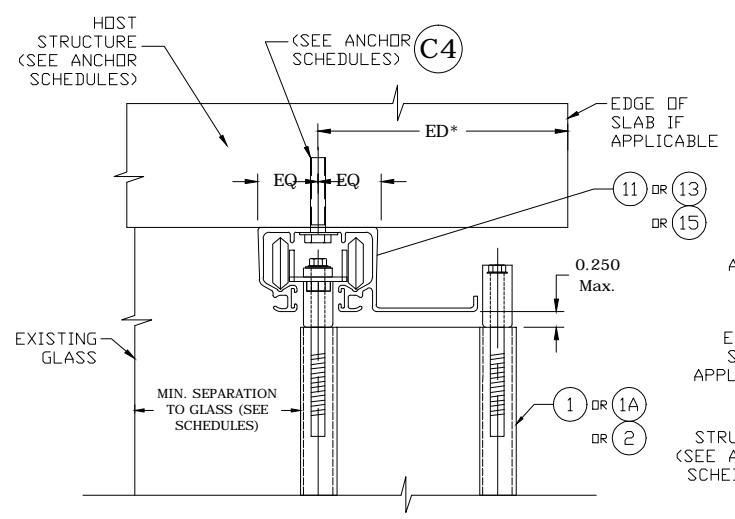
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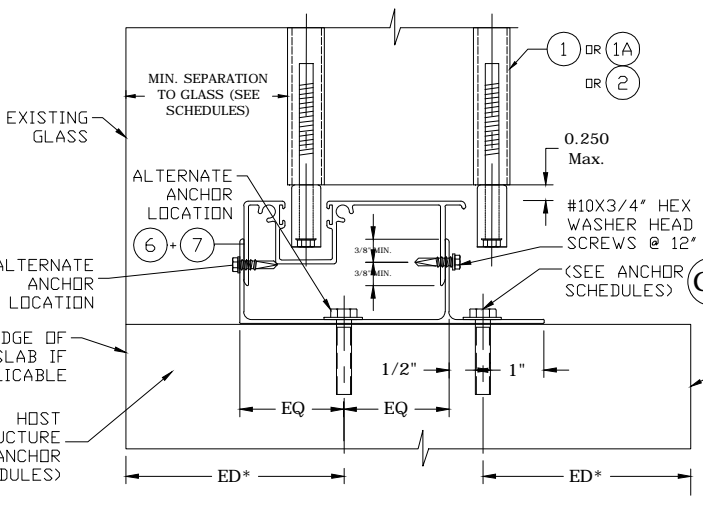


# SECTION DETAILS - ALL BLADE OPTIONS (CONT'D)

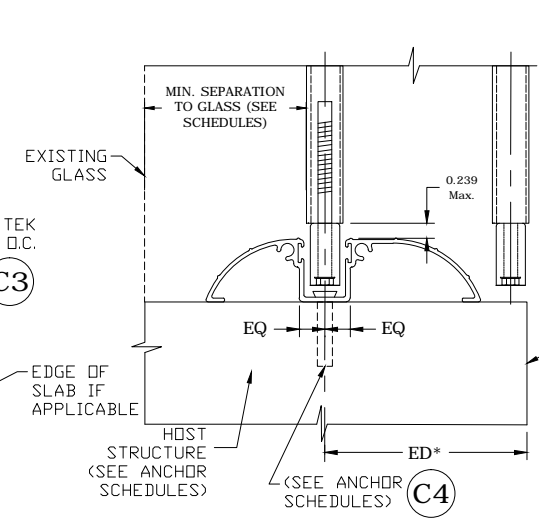
FRANK BENNARDO, PE  
 PE# 0046549 CA# 9885  

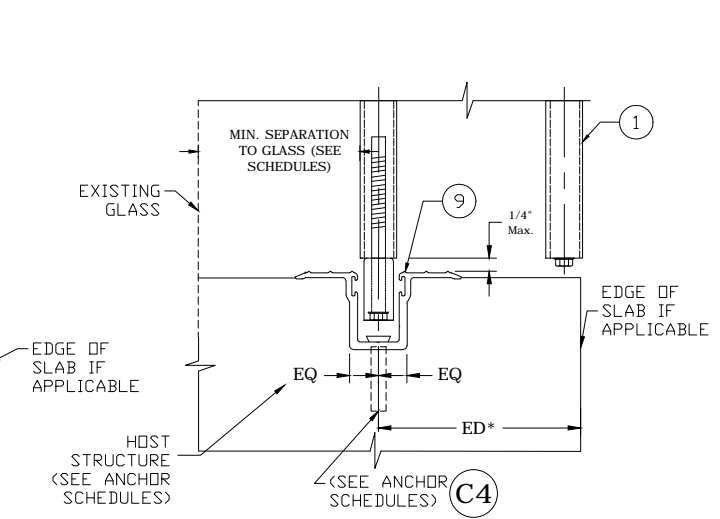
CEILING INSTALLATION



FLOOR INSTALLATION

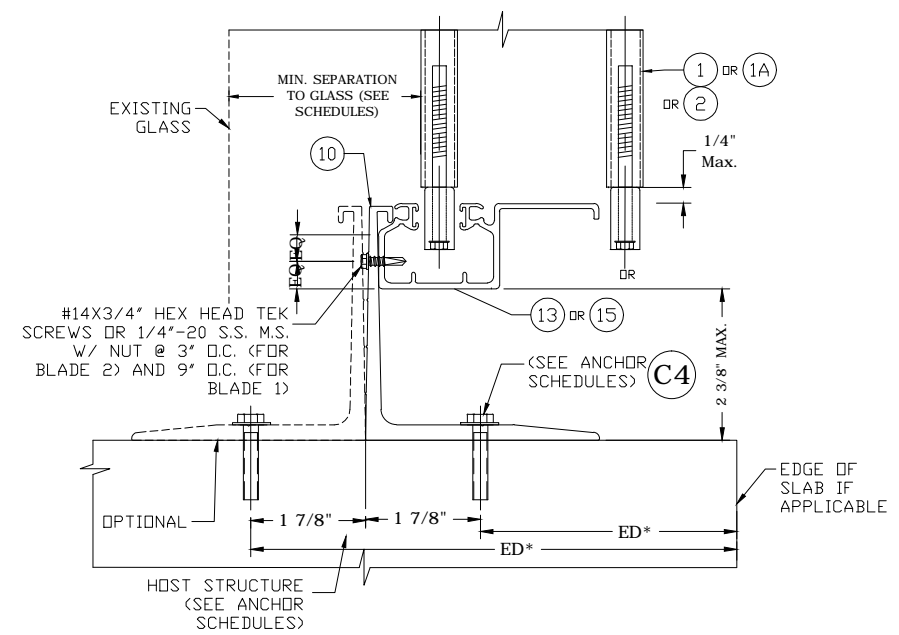


WALK-OVER INSTALLATION

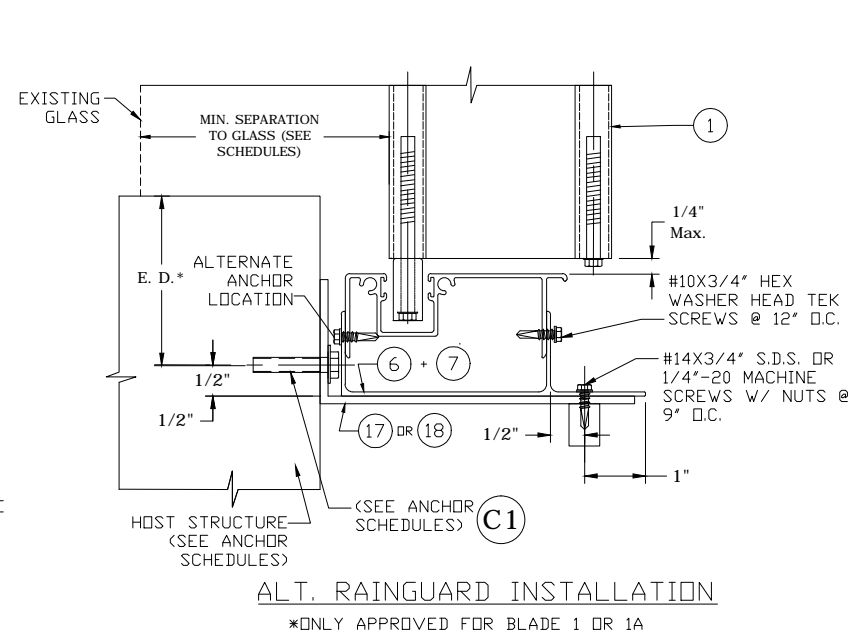


TRENCH INSTALLATION

VALID ONLY UP TO +70, -75 psf  
 PRESSURE RATING & FOR SPANS PER  
 SCHEDULE #4

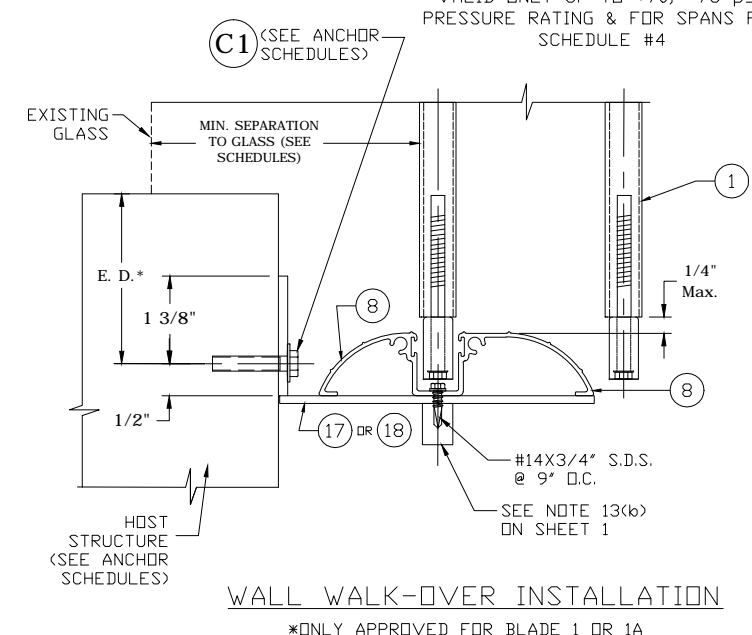


RAINGUARD INSTALLATION †



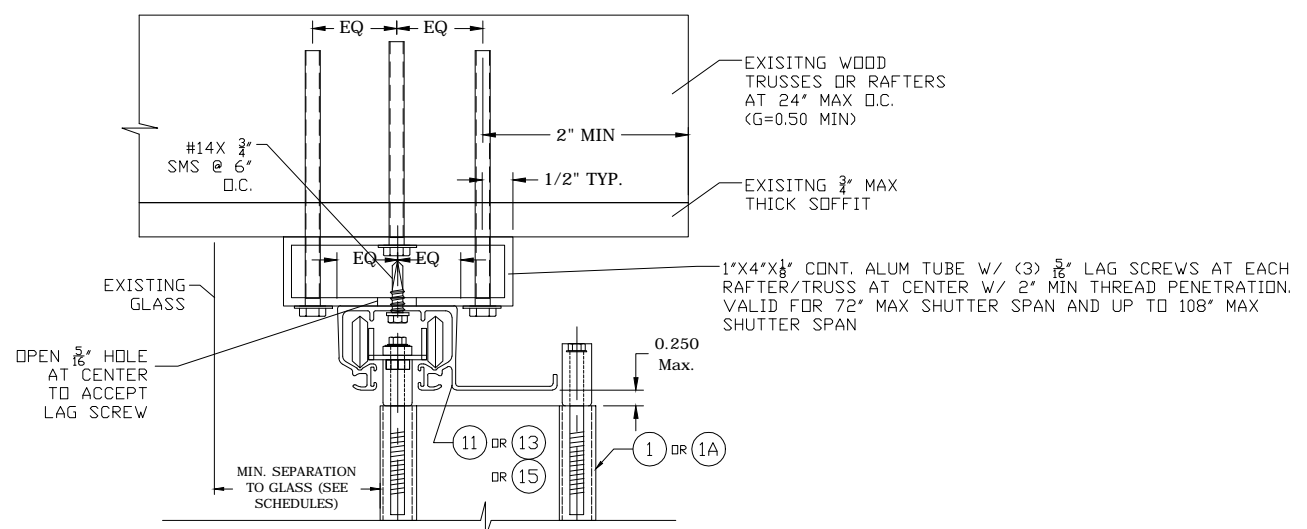
ALT. RAINGUARD INSTALLATION

\*ONLY APPROVED FOR BLADE 1 OR 1A



WALL WALK-OVER INSTALLATION

\*ONLY APPROVED FOR BLADE 1 OR 1A



CEILING INSTALLATION (TO WOOD TRUSSES/RAFTERS)

NOTE:  
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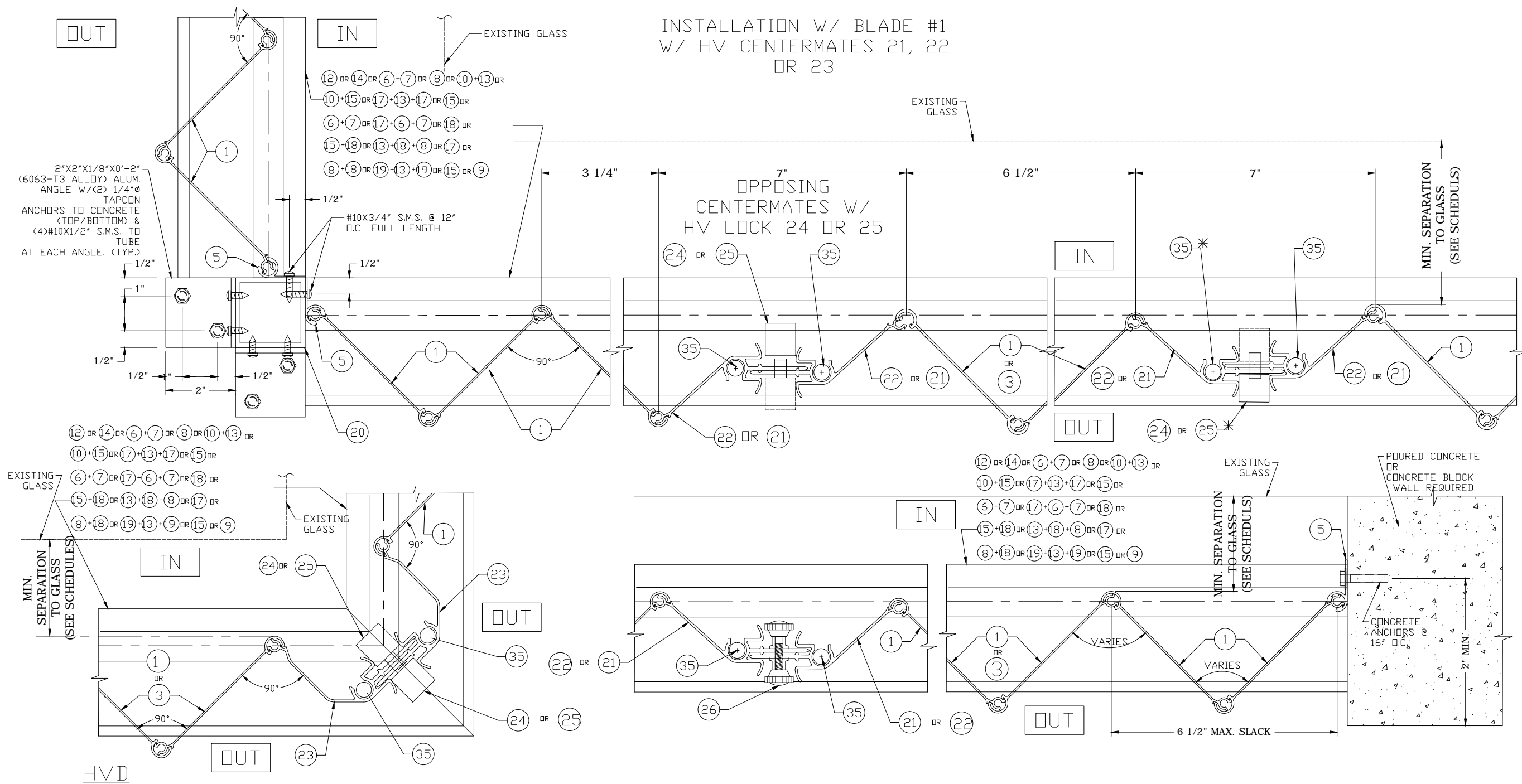
**AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.**  
 4268 West Roads Dr.  
 West Palm Beach, FL 33407  
 (561) 841-5480  
 BERTHA HV ACCORDION SHUTTER  
 HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
 PRODUCT APPROVAL #FL 32030.1

REMARKS	DATE
INIT ISSUE	1/8/2020
2020 FBC	9/02/2020

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# HV BLADE 1 - SECTION DETAILS



INSTALLATION W/ BLADE #1  
W/ HV CENTERMATES 21, 22  
OR 23

OPPOSING  
CENTERMATES W/  
HV LOCK 24 OR 25

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04/19/2021

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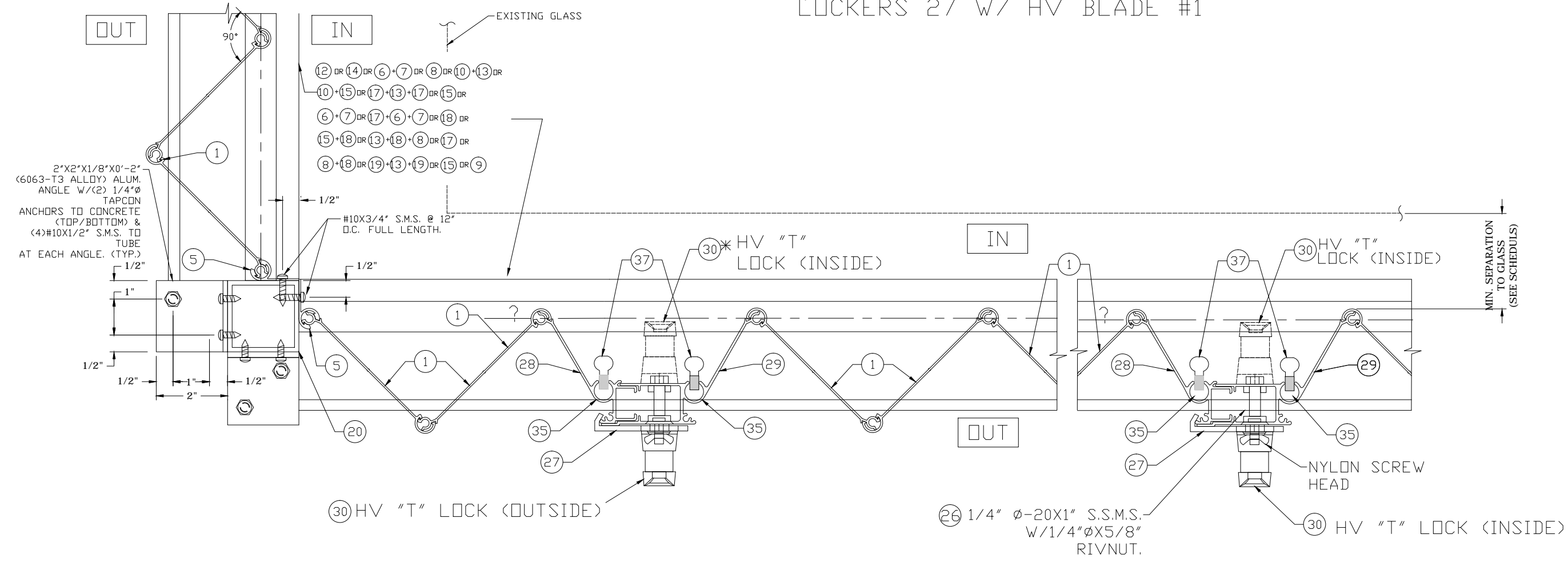
REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RVN	RVN	1/8/2020
2020 FBC	CCB	RVN	9/02/2020

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# HV BLADE 1 - SECTION DETAILS (CONT'D)

ALTERNATE INSTALLATION W/ HV "T" LOCK 30, HV MALE/FEMALE "T" LOCKS CENTERMATES 28, 29 & LOCKERS 27 W/ HV BLADE #1



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BERTHA HV ACCORDION SHUTTER  
HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RWN	RWN	1/8/2020
2020 FBC	CCB	RWN	9/02/2020

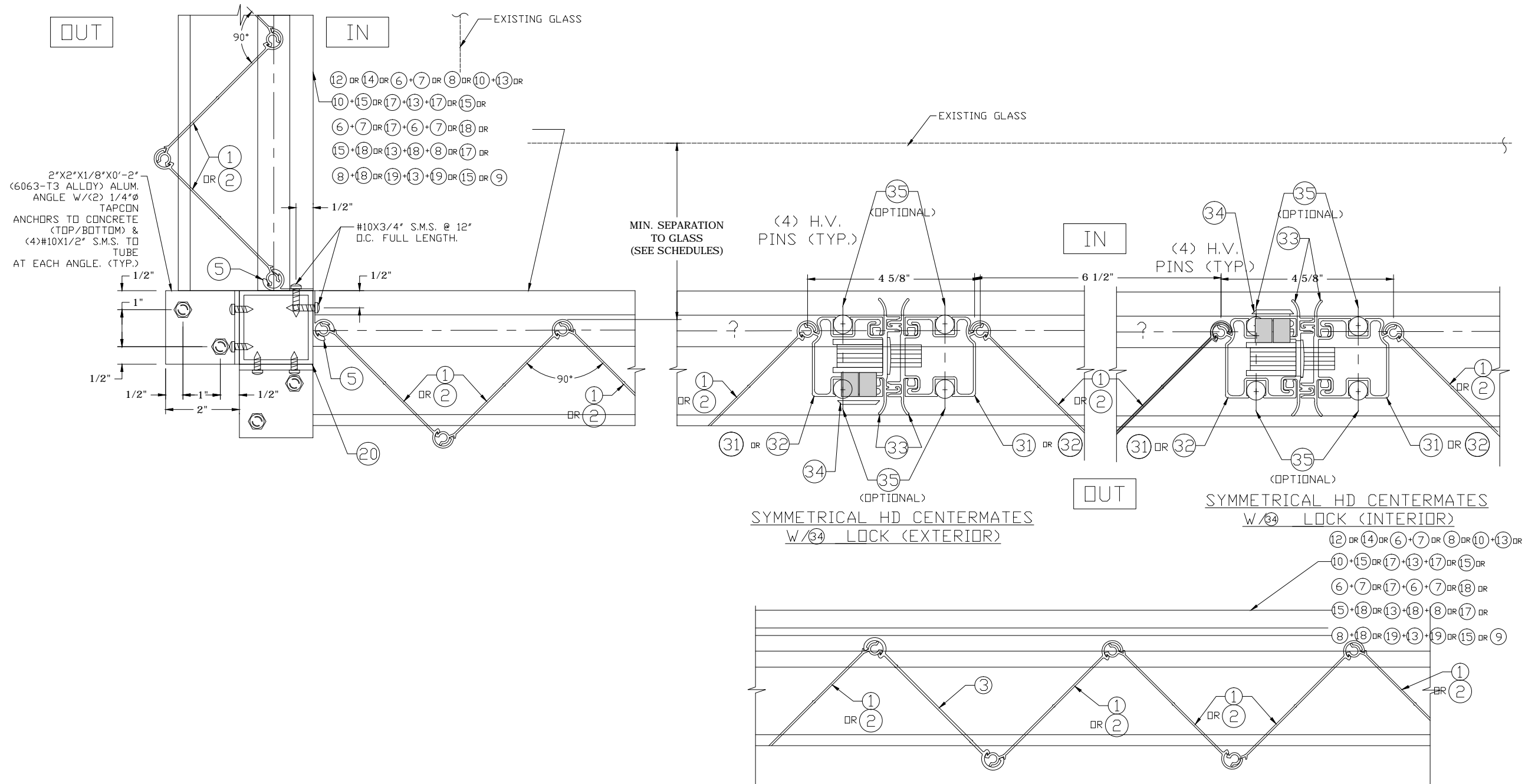
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# HV BLADE 1 OR 2 - SECTION DETAILS

INSTALLATION W/ HV BLADE #1, 1A OR  
2 W/ HD CENTERMATES 31, 32 OR 33



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HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

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INIT ISSUE	RWN	RWN	1/8/2020
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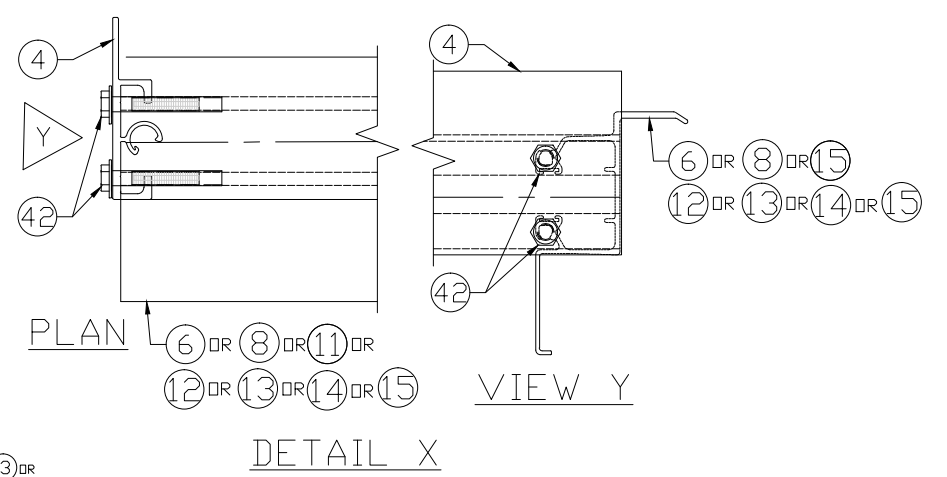
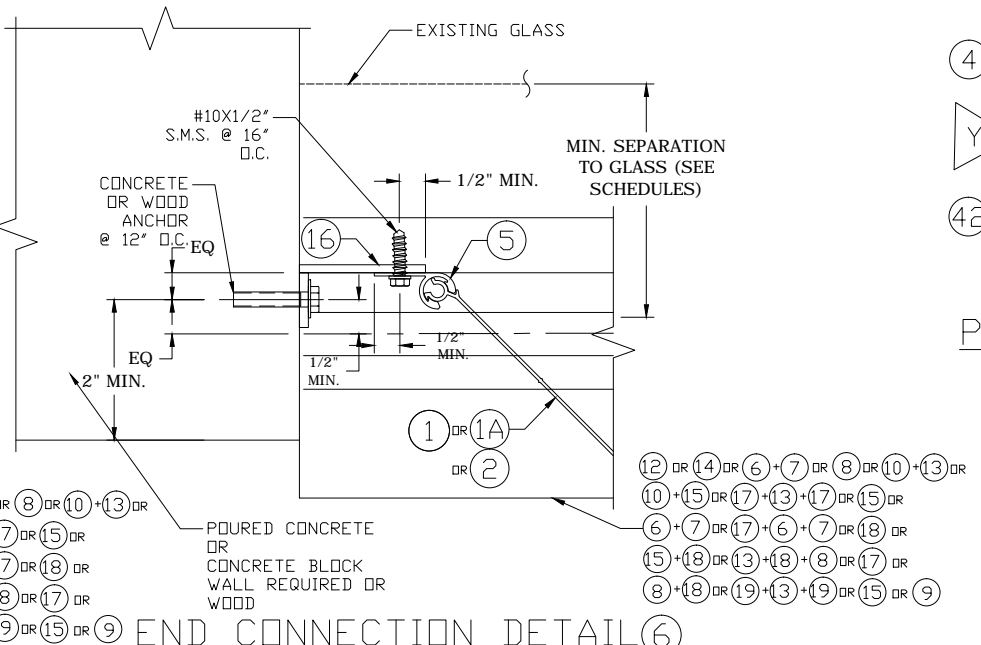
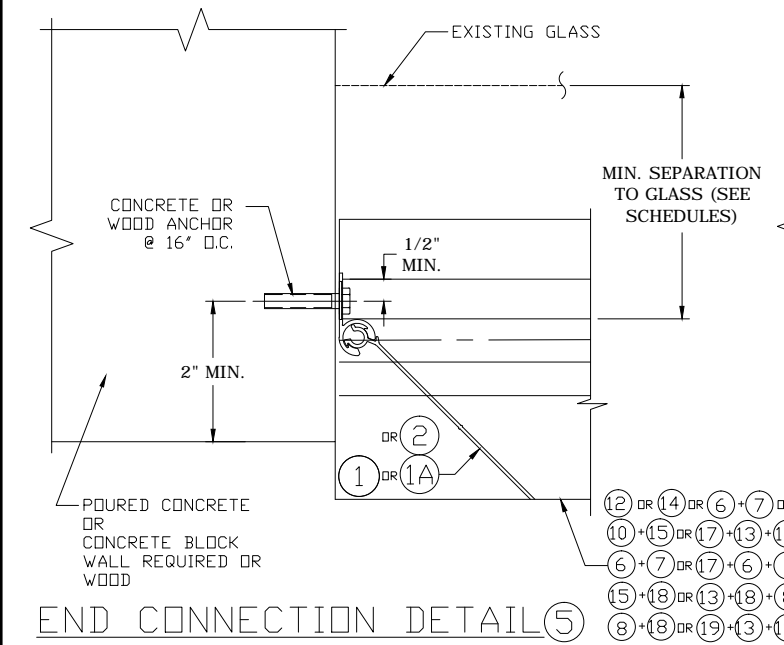
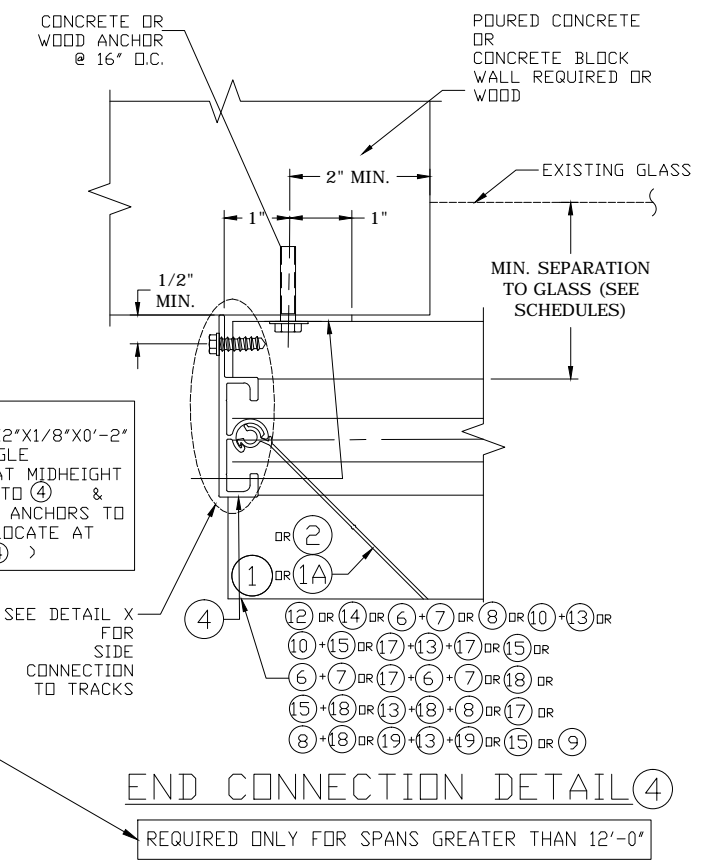
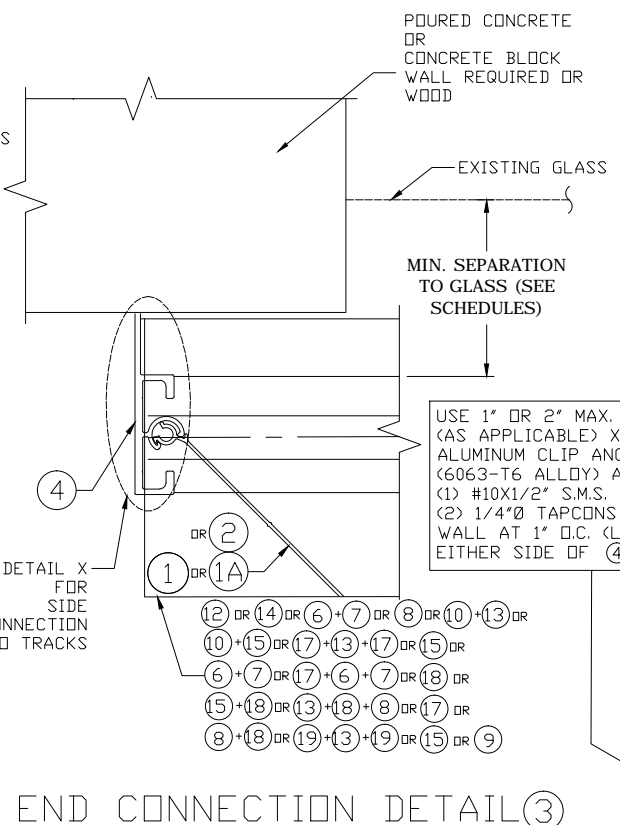
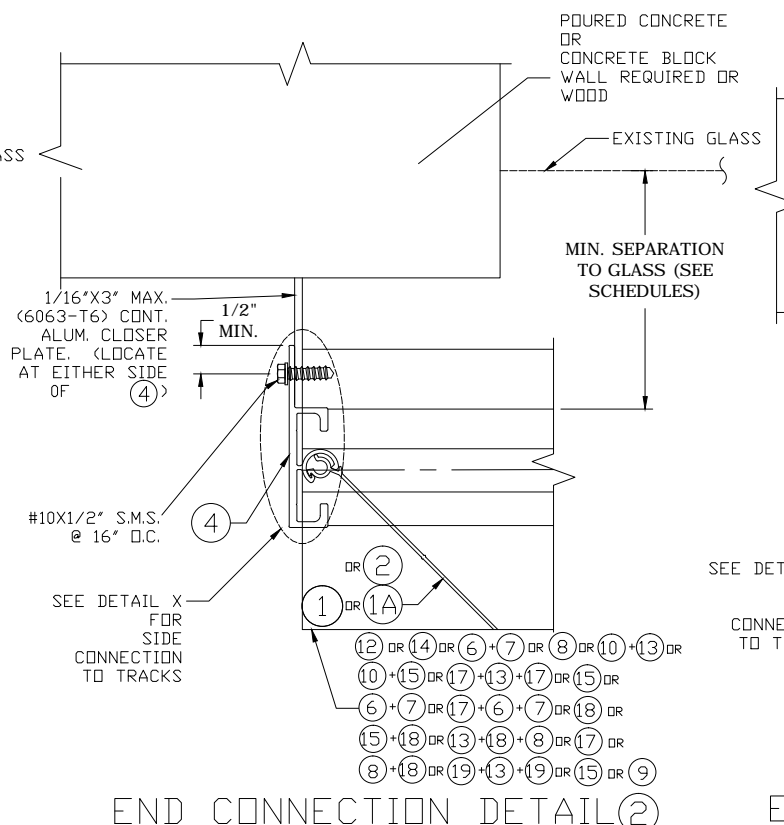
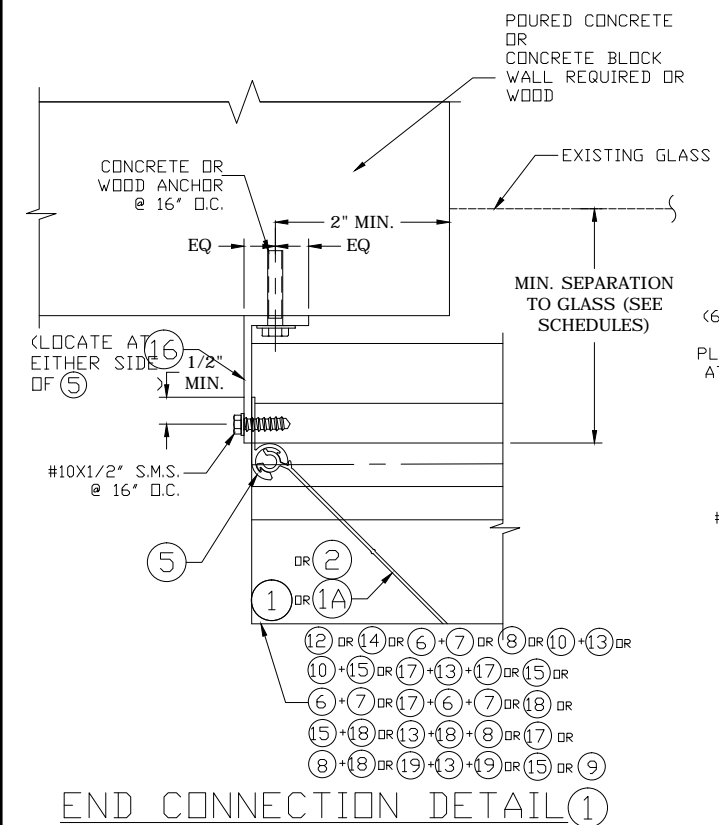
# END CONNECTION DETAILS (ALL BLADE OPTIONS)

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HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1



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# CONNECTION TO METAL WALL STUDS (BLADE 1 ONLY)

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HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

## INSTALLATIONS $\textcircled{W}$ HV BLADE & HV $\textcircled{C}$ ENTERMATES INTO METAL STUD WALLS \*

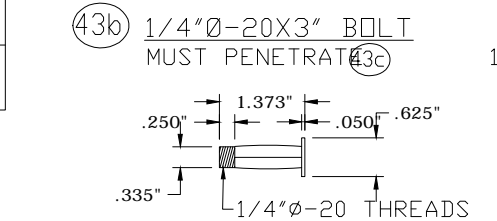
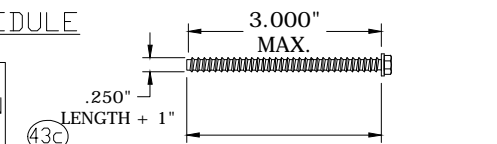
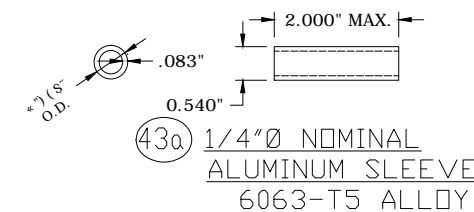
\*LIMITATIONS AND CONDITIONS OF USE FOR BERTHA 1 HV BLADE INSTALLATION TO METAL STUD WALLS

1. MAX. A.S.D. DESIGN PRESSURE RATING: +75 p.s.f
2. MAX. SHUTTER SPAN: 84"
3. ALLOWED MOUNTING:  $\textcircled{A}$  ON THIS SHEET.
4. ONLY CENTERMATE  $\textcircled{21}$  W/  $\textcircled{24}$  HV LOCK ARE ALLOWED WITH  $\textcircled{21}$  ARRANGED IN A SYMMETRICAL LAYOUT. USE OF  $\textcircled{35}$  (2) (6" LONG, MINIMUM) MUST ALWAYS BE INCLUDED AT EXTERIOR OR INTERIOR ACCESS SIDE OF CENTERMATES.

\*\* BLADE SLACK DETAIL E IS VALID FOR CENTERMATE  $\textcircled{21}$  APPLICATION WITH BLADE  $\textcircled{1}$

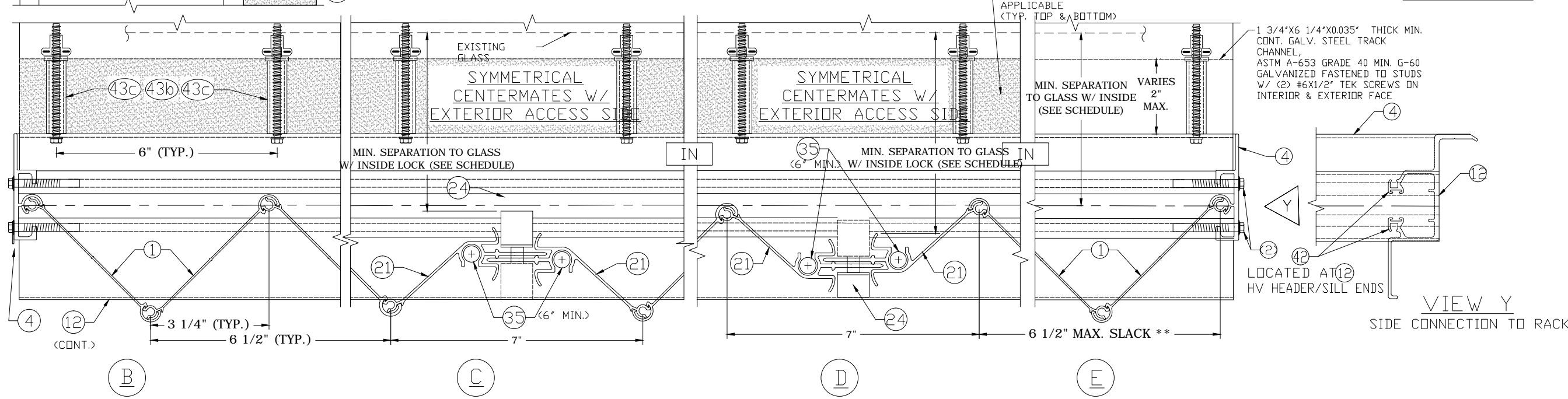
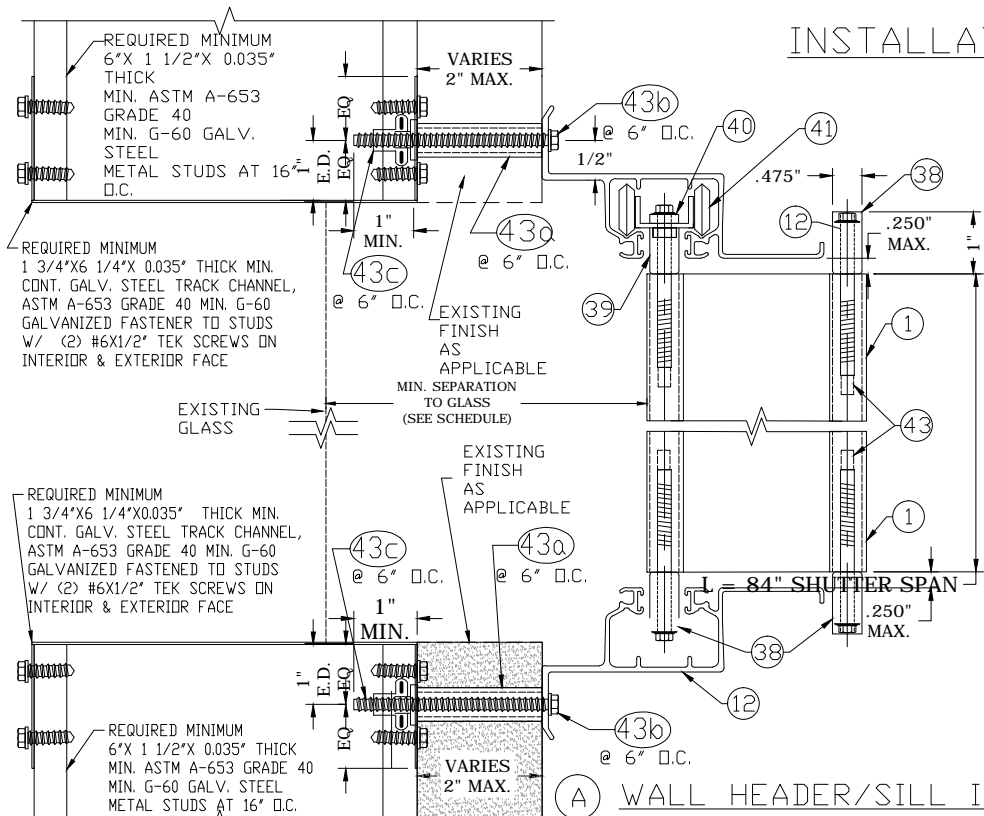
### SEPARATION GLASS SCHEDULE

WIND ZONE ASTM E-1996	MINIMUM SEPARATION TO GLASS
1 THRU 3	1"
4	4"



$\textcircled{43c}$  1/4"  $\textcircled{D}$  DEWALT CONSTRUCTION PRODUCTS FAB-LOK HD

COMPONENTS  
SCALE: 3/8" = 1"



VIEW Y  
SIDE CONNECTION TO RACK

REMARKS	DRWN	CHKD	DATE
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	CCB	RWN	9/02/2022

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# SPAN SCHEDULES (ALL BLADE OPTIONS)

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REMARKS	DRWN	CHKD	DATE
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	COB	IRVN	9/02/2020

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12 of 16

SCHEDULE #1 (BLADE 1)					SCHEDULE #2 (BLADE 1)			SCHEDULE #3 (BLADE 1)			SCHEDULE #4 (BLADE 1)			SCHEDULE #5 (BLADE 2)		
MAXIMUM SHUTTER SPAN FOR INSTALLATIONS W/ SYMMETRICAL CENTERMATES 21 & 22 OR 31 OR 32 W/ ONE HV LOCK 24 OR 25 OR 26 HD LOCK 34 W/ NO LOCKING RODS 35 OR CENTERMATES 28 & 29 OR 29A W/ ONE HV LOCK 30 W/ TWO LOCKING RODS 35 TOP & BOTTOM					MAXIMUM SHUTTER SPAN FOR INSTALLATIONS W/ OPPOSING CENTERMATES, 21 & 22 ONE HV LOCK 24 OR 25 OR 26 W/ NO LOCKING RODS 35			MAXIMUM SHUTTER SPAN FOR INSTALLATIONS W/ SYMMETRICAL CENTERMATES 21 & 22 W/ TWO HV 24 OR 25 OR 26 LOCKS OR TWO LOCKING RODS 35 TOP/BOTTOM W/ ONE HV LOCK 24 OR 25 OR 26			MAXIMUM SHUTTER SPAN FOR INSTALLATIONS W/ SYMMETRICAL CENTERMATES 21 & 22 W/ ONE HW LOCKS 24 OR 25 W/ NO LOCKING RODS 35			MAXIMUM SHUTTER SPAN FOR INSTALLATIONS W/ SYMMETRICAL HD CENTERMATES 31 OR 32 W/ ONE HD 34 LOCK & LOCKING RODS 35		
MAXIMUM DESIGN PRESSURE RATING (+/-)	CONCRETE & WOOD INSALLATIONS				MAXIMUM DESIGN PRESSURE RATING (+/-)	CONCRETE & WOOD INSALLATIONS		MAXIMUM DESIGN PRESSURE RATING (+/-)	CONCRETE & WOOD INSALLATIONS		MAXIMUM DESIGN PRESSURE RATING (+/-)	CONCRETE INSTALLATIONS		MAXIMUM DESIGN PRESSURE RATING (+/-)	POURED CONCRETE INSTALLATIONS	
	WALL MOUNTING		FLOOR/CEILING MOUNTING			WALL MOUNTING & FLOOR/CEILING MOUNTINGS			FLOOR/CEILING MOUNTING			FLOOR/CEILING MOUNTING OR FLOOR/WALL MOUNTING			ALL MOUNTING CONDITIONS	
	MAX SPAN (+)	MAX SPAN (-)	MAX SPAN (+)	MAX SPAN (-)		MAX SPAN (+)	MAX SPAN (-)		MAX SPAN (+)	MAX SPAN (-)		MAX SPAN (+)	MAX SPAN (-)		MAX SPAN (+)	MAX SPAN (-)
30 psf	158"	192"	158"	192"	30 psf	147"	177"	30 psf	157"	192"	30 psf	158"	192"	30 psf	185"	216"
35 psf	152"	178"	152"	178"	35 psf	141"	164"	35 psf	151"	187"	35 psf	152"	178"	35 psf	178"	216"
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195 psf	75"	51"	73"	54"	195 psf	69"	51"	195 psf	77"	65"				195 psf	-	105"
200 psf	74"	50"	72"	53"	200 psf	69"	50"	200 psf	76"	63"						
205 psf	72"	49"	72"	51"	205 psf	68"	49"	205 psf	75"	61"						

**SCHEDULE 1-5 NOTES:**

- INSTALLATIONS TO WOOD HOST SHALL BE LIMITED TO 105 psf.
- H.V. CORNER CENTERMATE #3 MAY BE USED AT ALL MOUNTING INSTALLATIONS AS DESCRIBED IN THE SECTION DETAILS

SCHEDULE #6 (BLADE 1 - GLASS SEPARATION)		
MINIMUM GLASS SEPARATION FOR SHUTTERS W/ ONE LOCK WITHOUT LOCKING RODS		
SHUTTER SPAN	W/ SYMMETRICAL CENTERMATES	W/ OPPOSING CENTERMATES
UP TO 105"	3.5"	4"
> 105"	4"	4"
MINIMUM GLASS SEPARATION FOR SHUTTERS W/ ONE LOCK AND TWO LOCKING RODS OR ONLY TWO LOCKS		
SHUTTER SPAN	W/ SYMMETRICAL CENTERMATES	W/ OPPOSING CENTERMATES
UP TO 105"	3"	3.25"
> 105"	3.25"	3.25"

**SCHEDULE 6 NOTES:**

- GLASS SEPARATION VALUES SHOWN APPLY TO INSTALLATIONS LESS THAN 30 FEET FROM GRADE.
- INSTALLATIONS ABOVE 30 FEET FROM GRADE SHALL HAVE A MINIMUM GLASS SEPARATION OF 3".
- BLADE 2 OPTION SHALL HAVE A MINIMUM GLASS SEPARATION OF 3" FOR ALL HEIGHTS FROM GRADE.

# ANCHOR SCHEDULES - ALL BLADE OPTIONS

HOST STRUCT.	ANCHOR	LOAD (psf)	2.5" MIN EDGE DISTANCE																					
			Spans Up To 6'-0"					Spans Up To 8'-0"					Spans Up To 10'-0"					Spans Up To 18'-0"						
			CONN TYPE					CONN TYPE					CONN TYPE					CONN TYPE						
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5		
CONCRETE	1/4" ITW TAPCON OR ELCO/DEWALT ULTRACON WITH 1-3/4" EMBED (3000psi MIN CONC)	48	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	12.0"	11.0"	16.0"	16.0"	16.0"	16.0"	9.0"	8.0"	16.0"	10.0"	9.0"	4.5"	4.0"	5.5"	
		62	16.0"	16.0"	12.5"	12.0"	16.0"	16.0"	16.0"	8.5"	8.0"	16.0"	16.0"	16.0"	16.0"	6.5"	6.0"	9.5"	7.5"	6.0"	3.5"	3.0"	3.5"	
		72	16.0"	16.0"	10.0"	9.5"	16.0"	16.0"	16.0"	7.0"	6.5"	11.5"	13.0"	12.0"	5.5"	5.0"	7.5"	6.0"	5.0"	2.5"	2.5"	3.0"	3.0"	
		110	14.5"	14.5"	6.0"	5.5"	8.5"	10.0"	8.5"	4.5"	4.0"	5.5"	7.5"	6.0"	3.5"	3.0"	4.0"	3.5"	4.0"	1.5"	1.5"	1.5"	1.5"	
		135	11.0"	10.0"	5.0"	4.0"	6.0"	7.5"	6.5"	3.5"	3.0"	4.0"	6.0"	4.5"	2.5"	2.0"	3.0"	3.0"	2.0"	1.5"	1.0"	1.5"	1.5"	
		150	9.5"	8.5"	4.0"	3.5"	5.0"	6.5"	5.5"	3.0"	2.5"	3.5"	5.0"	4.0"	2.5"	2.0"	2.5"	2.5"	2.0"	1.0"	1.0"	1.0"	1.0"	
		180	14.5"	14.5"	6.0"	5.5"	8.5"	10.0"	8.5"	4.5"	4.0"	5.5"	7.5"	6.0"	3.5"	3.0"	4.0"	3.5"	3.0"	1.5"	1.5"	1.5"	1.5"	
		205	6.5"	5.5"	3.0"	3.0"	4.5"	4.5"	3.5"	2.5"	2.0"	2.5"	3.5"	3.5"	2.5"	2.5"	1.5"	1.5"	2.0"	1.5"	1.0"	0.5"	0.5"	
		CONCRETE	1/4" ELCO CRETEFLEX SS4 W/ 2" EMBED (3350psi MIN CONC)	48	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	13.5"	12.5"	16.0"	13.5"	12.0"	6.5"	5.5"	7.5"
				62	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	13.0"	11.5"	16.0"	16.0"	16.0"	10.0"	8.5"	13.0"	10.0"	8.0"	5.0"	4.0"	5.0"
72	16.0"			16.0"	15.5"	14.5"	16.0"	16.0"	16.0"	11.0"	9.5"	15.0"	16.0"	16.0"	8.5"	7.0"	10.0"	8.0"	6.5"	4.0"	3.5"	4.0"		
110	16.0"			16.0"	9.0"	8.0"	11.5"	13.0"	11.5"	6.5"	5.5"	7.0"	10.0"	8.5"	5.0"	4.5"	5.0"	4.0"	2.5"	2.0"	2.5"	2.5"		
135	14.5"			13.0"	7.0"	6.0"	8.0"	10.0"	8.5"	5.0"	4.5"	5.0"	8.0"	6.0"	4.0"	3.5"	4.0"	4.0"	3.0"	2.0"	1.5"	2.0"		
150	12.5"			11.0"	6.5"	5.5"	7.0"	9.0"	7.5"	4.5"	4.0"	4.5"	7.0"	5.5"	3.5"	3.0"	3.5"	3.5"	2.5"	2.0"	1.5"	1.5"		
180	10.0"			8.5"	5.0"	4.5"	5.0"	7.0"	5.5"	3.5"	3.0"	3.5"	5.5"	4.5"	3.0"	2.5"	2.5"	3.0"	2.0"	1.5"	1.0"	1.0"		
205	8.5"			7.0"	4.5"	3.5"	4.5"	6.0"	5.0"	3.0"	2.5"	3.0"	5.0"	3.5"	2.5"	2.0"	2.0"	2.5"	2.0"	1.0"	1.0"	1.0"		

- ANCHOR NOTES:**
- SPANS AND LOADS SHOWN HERE ARE FOR DETERMINING ANCHOR SPACING ONLY. ALLOWABLE STORM SHUTTER SPANS FOR SPECIFIC LOADS MUST BE LIMITED TO THOSE SHOWN IN SPAN SCHEDULES.
  - ENTER ANCHOR SCHEDULE BASED ON THE EXISTING STRUCTURE MATERIAL, ANCHOR TYPE AND EDGE DISTANCE. SELECT DESIGN LOAD GREATER THAN OR EQUAL TO NEGATIVE DESIGN LOAD ON SHUTTER AND SELECT SPAN GREATER THAN OR EQUAL TO SHUTTER SPAN. INTERPOLATION BETWEEN PRESSURES OR SPANS IN PERMITTED
  - SEE MOUNTING SECTION DETAILS FOR IDENTIFICATION OF CONNECTION TYPE.
  - EXISTING STRUCTURE MAY BE CONCRETE, ASTM C-90 HOLLOW CONCRETE BLOCK OR WOOD FRAMING. REFERENCE ANCHOR SCHEDULE FOR PROPER ANCHOR TYPE BASED ON TYPE OF EXISTING STRUCTURE AND APPROPRIATE CONNECTION TYPE. SEE CONNECTION DETAILS FOR IDENTIFICATION OF CONNECTION TYPE.
  - ALL CONCRETE ANCHORS SHALL BE INSTALLED TO NON-CRACKED CONCRETE ONLY.
  - THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ANCHORS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS. EMBEDMENT LENGTHS SHALL BE AS NOTED AND DO NOT INCLUDE STUCCO OR OTHER FINISHES.
  - WHERE EXISTING STRUCTURE IS WOOD FRAMING, WOOD FRAMING CONDITIONS VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS. ATTACHMENT TO 1/2" MIN THICK CDX PLYWOOD SHALL BE 1/4" ITW TAPCONS OR #14 WOOD SCREWS W/ 1/2" THREAD PENETRATION SPACED AT 3" O.C.. EXISTING WOOD STUDS SHALL BE MIN 2X4 SPACED AT 16" O.C. MAX W/ PLYWOOD ATTACHED TO STUDS IN ACCORDANCE W/ SECTION 2322 OF THE FBC.
  - WHERE LAG SCREWS FASTEN TO NARROW FACE OF STUD FRAMING, FASTENER SHALL BE LOCATED IN CENTER OF NOMINAL 2" x 4" (MIN.) WOOD STUD. 3/4" EDGE DISTANCE IS ACCEPTABLE FOR WOOD FRAMING. LAG SCREWS SHALL HAVE PHILLIPS PAN HEAD OR HEX HEAD.
  - MACHINE SCREWS SHALL HAVE MINIMUM OF 1/2" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFER HEAD (SIDEWALK BOLT), U.O.N.
  - DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE USES.
  - DESIGNATES ANCHORS WHICH ARE REMOVABLE BY REMOVING MACHINE SCREW, NUT OR WASHER WINGNUT.
  - MINIMUM CONCRETE STRENGTHS ARE AS INDICATED IN ANCHOR SCHEDULE.
  - WHEN ANCHORING TO HOLLOW BLOCK, SDS DRILLS SHOULD NOT BE USED TO DRILL INTO HOLLOW BLOCK. NOR SHOULD IMPACT DRILLS BE USED TO INSTALL CONCRETE SCREWS TO HOLLOW BLOCK

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HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

REMARKS	DRWN	CHKD	DATE
2020 FBC	RWN	RWN	1/8/2020
	COB	RWN	9/02/2024

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20-31270  
SCALE: NTS UNLESS NOTED  
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ANCHOR SCHEDULES - ALL BLADE OPTIONS (CONT'D)

HOST STRUCT.	ANCHOR	LOAD (psf)	1" MIN EDGE DISTANCE																				
			Spans Up To 6'-0"					Spans Up To 8'-0"					Spans Up To 10'-0"					Spans Up To 18'-0"					
			CONN TYPE					CONN TYPE					CONN TYPE					CONN TYPE					
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5			
HOLLOW CONCRETE BLOCK	1/4" ITW TAPCON WITH 1-1/4" EMBED	48	7.5"	7.5"	3.0"	3.0"	7.5"	5.5"	5.5"	2.0"	2.0"	5.5"	4.5"	4.5"	1.5"	1.5"	3.0"	2.0"	2.0"	1.5"	1.5"	1.0"	
		62	6.0"	6.0"	2.0"	2.0"	6.0"	4.0"	4.5"	1.5"	1.5"	3.0"	3.0"	3.0"	1.0"	1.0"	1.5"	1.0"	1.0"	0.5"	0.5"	0.5"	
		72	5.0"	5.0"	2.0"	1.5"	4.5"	3.5"	3.5"	1.0"	1.0"	2.0"	2.5"	2.0"	1.0"	1.0"	1.5"	1.0"	1.0"	0.5"	0.5"	0.5"	
		110	2.5"	2.5"	1.0"	1.0"	1.5"	1.5"	1.5"	0.5"	0.5"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"
		135	2.0"	2.0"	0.5"	0.5"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	1.0"	0.5"	0.5"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"
		150	1.5"	1.5"	0.5"	0.5"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	1.0"	0.5"	0.5"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"
	180	2.5"	2.5"	1.0"	1.0"	1.5"	1.5"	1.5"	0.5"	0.5"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"	
	205	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	
	1/4" ELCO/DEWALT ULTRACON WITH 1-1/4" EMBED	48	11.5"	11.5"	6.5"	6.5"	11.5"	8.5"	8.5"	4.0"	4.0"	8.5"	6.5"	7.0"	3.0"	2.5"	5.0"	3.0"	2.5"	2.5"	1.0"	1.5"	
		62	9.0"	9.0"	4.5"	4.0"	9.0"	6.5"	6.5"	3.0"	2.5"	4.5"	4.5"	4.5"	2.0"	2.0"	2.0"	2.0"	1.5"	1.0"	0.5"	0.5"	
72		7.5"	7.5"	3.5"	3.0"	6.5"	5.0"	5.5"	2.5"	2.0"	3.0"	3.5"	3.5"	2.0"	1.5"	2.0"	1.5"	1.5"	1.0"	0.5"	0.5"		
110		4.0"	4.0"	2.0"	1.5"	2.5"	2.5"	2.5"	1.5"	1.0"	1.5"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"		
135		3.0"	3.0"	1.5"	1.5"	1.5"	2.0"	1.5"	1.0"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	
150		2.5"	2.5"	1.5"	1.0"	1.5"	2.0"	1.5"	1.0"	0.5"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	
180	2.0"	1.5"	1.0"	1.0"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"		
205	1.5"	1.5"	1.0"	0.5"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"		

HOST STRUCT.	ANCHOR	LOAD (psf)	2-1/2" MIN EDGE DISTANCE																				
			Spans Up To 6'-0"					Spans Up To 8'-0"					Spans Up To 10'-0"					Spans Up To 18'-0"					
			CONN TYPE					CONN TYPE					CONN TYPE					CONN TYPE					
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5			
HOLLOW CONCRETE BLOCK	1/4" ITW TAPCON WITH 1-1/4" EMBED	48	10.5"	10.5"	6.5"	6.5"	10.5"	8.0"	8.0"	4.0"	4.0"	8.0"	6.0"	6.0"	3.0"	2.5"	4.5"	2.5"	2.0"	1.5"	1.0"	1.5"	
		62	8.0"	8.0"	4.5"	4.0"	8.0"	5.5"	6.0"	3.0"	2.5"	4.0"	4.0"	4.0"	2.0"	2.0"	2.5"	2.0"	1.5"	1.0"	0.5"	0.5"	
		72	7.0"	7.0"	3.5"	3.0"	6.0"	4.5"	5.0"	2.5"	2.0"	3.0"	3.5"	3.0"	1.5"	1.5"	2.0"	1.5"	1.0"	0.5"	0.5"	0.5"	
		110	3.5"	3.5"	2.0"	1.5"	2.0"	2.5"	2.0"	1.5"	1.0"	1.0"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	
		135	3.0"	2.5"	1.5"	1.0"	1.5"	2.0"	1.5"	1.0"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"
		150	2.5"	2.0"	1.5"	1.0"	1.0"	1.5"	1.5"	1.0"	0.5"	0.5"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"
	180	3.5"	3.5"	2.0"	1.5"	2.0"	2.5"	2.0"	1.5"	1.0"	1.0"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	
	205	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	
	1/4" ELCO/DEWALT ULTRACON WITH 1-1/4" EMBED	48	14.5"	14.5"	9.0"	9.0"	14.5"	10.5"	10.5"	6.0"	5.5"	10.5"	8.5"	8.5"	4.0"	4.0"	6.0"	3.5"	3.0"	2.0"	1.5"	2.0"	
		62	11.0"	11.0"	6.0"	5.5"	11.0"	8.0"	8.0"	4.0"	3.5"	5.5"	5.5"	6.0"	3.0"	2.5"	3.5"	2.5"	2.0"	1.5"	1.0"	1.0"	
72		9.5"	9.5"	5.0"	4.5"	8.5"	6.5"	7.0"	3.5"	3.0"	4.0"	4.5"	4.5"	2.5"	2.0"	2.5"	2.0"	1.5"	1.0"	1.0"	1.0"		
110		5.0"	5.0"	3.0"	2.5"	3.0"	3.5"	3.0"	2.0"	1.5"	2.0"	2.5"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	
135		4.0"	3.5"	2.0"	2.0"	2.0"	2.5"	2.0"	1.5"	1.0"	1.5"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	
150		3.5"	3.0"	2.0"	1.5"	1.5"	2.0"	1.5"	1.0"	1.0"	1.5"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	
180	2.5"	2.0"	1.5"	1.0"	1.5"	2.0"	1.5"	1.0"	1.0"	1.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"		
205	2.0"	2.0"	1.0"	1.0"	1.0"	1.5"	1.0"	1.0"	0.5"	0.5"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"		

HOST STRUCT.	ANCHOR	LOAD (psf)	1-1/4" MIN EDGE DISTANCE																				
			Spans Up To 6'-0"					Spans Up To 8'-0"					Spans Up To 10'-0"					Spans Up To 18'-0"					
			CONN TYPE					CONN TYPE					CONN TYPE					CONN TYPE					
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5			
HOLLOW CONCRETE BLOCK	1/4" ALL-POINTS SOLID-SET ANCHOR W/ 7/8" EMBED & 1/4-20 SS MACHINE SCREW	48	13.5"	13.5"	5.5"	5.5"	13.5"	10.0"	10.0"	4.0"	3.5"	10.0"	8.0"	8.0"	3.0"	2.5"	6.0"	3.5"	3.0"	1.5"	1.0"	1.5"	
		62	10.5"	10.5"	4.0"	4.0"	10.5"	7.5"	8.0"	2.5"	2.5"	5.5"	5.5"	5.5"	2.0"	2.0"	3.0"	2.5"	2.0"	1.0"	1.0"	1.0"	
		72	9.0"	9.0"	3.0"	3.0"	8.0"	6.0"	6.5"	2.0"	2.0"	4.0"	4.5"	4.0"	1.5"	1.5"	2.5"	2.0"	1.5"	1.0"	0.5"	0.5"	
		110	5.0"	5.0"	2.0"	1.5"	3.0"	3.5"	3.0"	1.5"	1.0"	1.5"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"
		135	3.5"	3.5"	1.5"	1.0"	2.0"	2.5"	2.0"	1.0"	1.0"	2.0"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"
		150	3.0"	3.0"	1.0"	1.0"	1.5"	2.0"	2.0"	1.0"	0.5"	1.0"	1.5"	1.5"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"
		180	5.0"	5.0"	2.0"	1.5"	3.0"	3.5"	3.0"	1.5"	1.0"	1.5"	2.5"	2.0"	1.0"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"
		205	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"

HOST STRUCT.	ANCHOR	LOAD (psf)	2" MIN EDGE DISTANCE																				
			Spans Up To 6'-0"					Spans Up To 8'-0"					Spans Up To 10'-0"					Spans Up To 18'-0"					
			CONN TYPE					CONN TYPE					CONN TYPE					CONN TYPE					
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5			
HOLLOW CONCRETE BLOCK	1/4" ALL-POINTS SOLID-SET ANCHOR W/ 7/8" EMBED & 1/4-20 SS MACHINE SCREW	48	16.0"	16.0"	9.5"	9.5"	16.0"	13.0"	13.0"	6.5"	6.0"	16.0"	14.0"	14.0"	5.0"	4.5"	10.5"	6.0"	5.5"	2.5"	2.0"	3.0"	
		62	16.0"	16.0"	7.0"	6.5"	16.0"	13.0"	13.5"	4.5"	4.5"	9.5"	9.5"	9.5"	3.5"	3.0"	6.0"	4.5"	3.5"	1.5"	1.5"	2.0"	
		72	15.5"	15.5"	5.5"	5.0"	14.0"	10.5"	11.5"	4.0"	3.5"	6.5"	7.5"	7.5"	3.0"	2.5"	4.5"	3.5"	3.0"	1.5"	1.0"	1.5"	
		110	8.5"	8.5"	3.5"	3.0"	5.0"	6.0"	5.0"	2.5"	2.0"	3.0"	4.5"	3.5"	2.0"	1.5"	2.0"	2.0"	1.5"	1.0"	0.5"	0.5"	1.0"
		135	6.5"	6.0"	2.5"	2.0"	3.5"	4.0"	4.0"	2.0"	1.5"	2.0"	3.5"	2.5"	1.5"	1.0"	1.5"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"
		150	5.5"	5.0"	2.5"	2.0"	3.0"	4.0"	3.0"	1.5"	1.5"	2.0"	3.0"	2.5"	1.0"	1.0"	1.5"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"
		180	8.5"	8.5"	3.5"	3.0"	5.0"	6.0"	5.0"	2.5"	2.0"	3.0"	4.5"	3.5"	2.0"	1.5"	2.0"	2.0"	1.5"	1.0"	0.5"	0.5"	1.0"
		205	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"

HOST STRUCT.	ANCHOR	LOAD (psf)	3-1/8" MIN EDGE DISTANCE																				
			Spans Up To 6'-0"					Spans Up To 8'-0"					Spans Up To 10'-0"					Spans Up To 18'-0"					
			CONN TYPE					CONN TYPE					CONN TYPE					CONN TYPE					
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5			
HOLLOW CONCRETE BLOCK	5/16" ELCO/DEWALT ULTRACON WITH 1-1/4" EMBED	48	16.0"	16.0"	10.5"	10.5"	16.0"	14.0"	14.0"	7.0"	6.5"	14.0"	11.0"	11.0"	5.0"	4.5"	8.0"	4.5"	4.0"	2.5"	2.0"	2.5"	
		62	14.5"	14.5"	7.0"	6.5"	14.5"	10.5"	10.5"	5.0"	4.5"	7.5"	7.5"	7.5"	3.5"	3.0"	4.5"	3.5"	3.0"	1.5"	1.5"	1.5"	
		72	12.5"	12.5"	6.0"	5.5"	11.0"	8.0"	9.0"	4.0"	3.5"	5.0"	6.0"	5.5"	2.0"	2.5"	3.5"	2.0"	1.5"	1.0"	0.5"	0.5"	
		110	6.5"	6.5"	2.5"	2.0"	4.0"	4.5"	4.0"	2.5"	2.0"	2.5"	3.5"	3.0"	2.0"	1.5"	1.5"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"
		135	5.0"	4.5"	2.5"	2.0"	3.5"	3.0"	3.0"	2.0"	1.5"	2.5"	2.0"	1.5"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"
		150	4.5"	4.0"	2.5"	2.0"	3.0"	3.0"	2.5"	1.5"	1.5"	2.5"	2.0"	1.0"	1.0"	1.0"	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"
		180	6.5"	6.5"	2.5"	2.0"	4.0"	4.5"	4.0"	2.5"	2.0"	2.5"	3.5"	3.0"	2.0"	1.5"	1.5"	1.5"	1.0"	0.5"	0.5"	0.5"	0.5"
		205	1.0"	1.0"	0.5"	0.5"	0.5"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0"	0.5"	0.5"	0.0"	0.0"	0.0"	0.0				

## ANCHOR SCHEDULES - ALL BLADE OPTIONS (CONT'D)

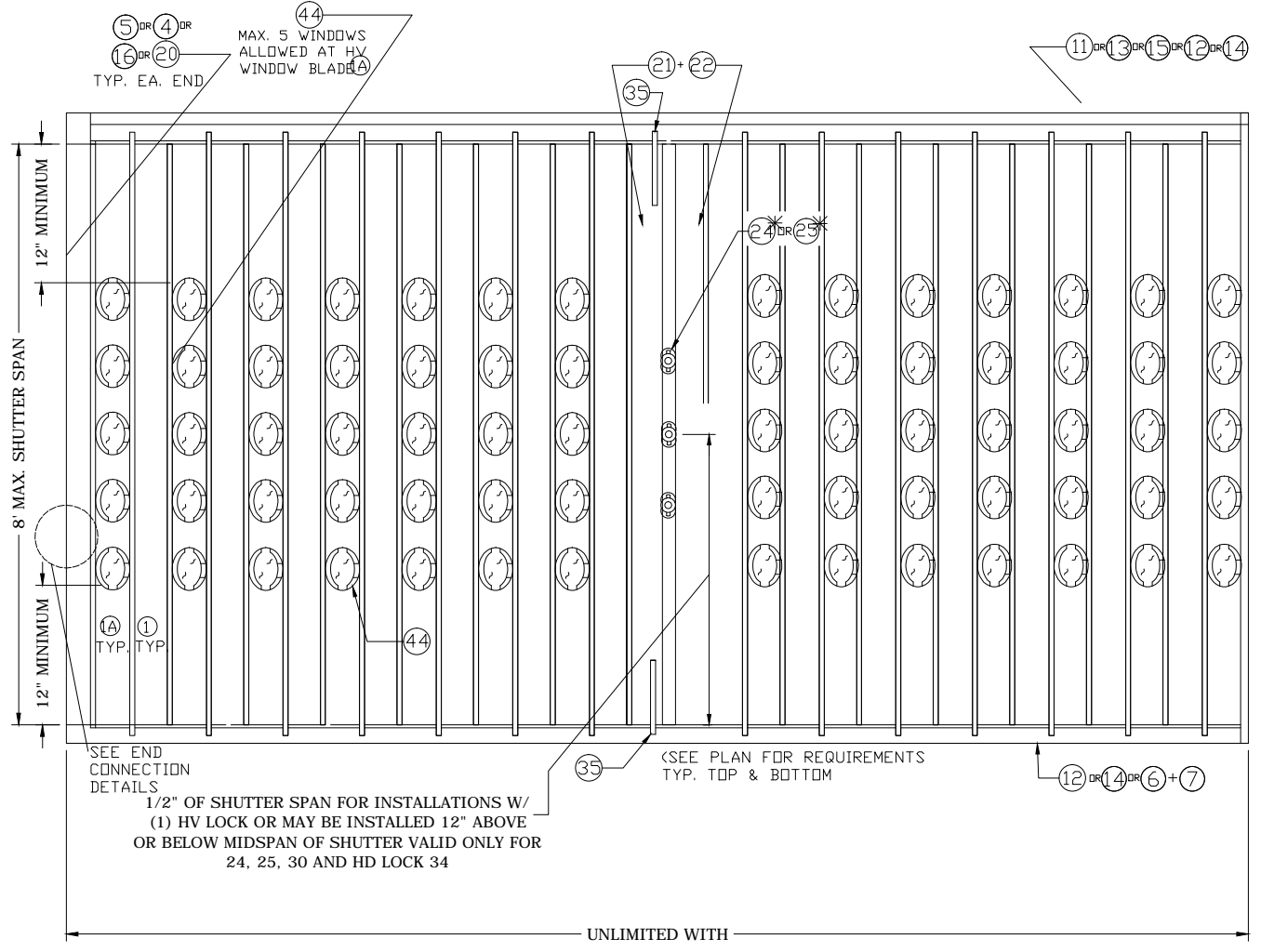
HOST STRUCT.	ANCHOR	LOAD (psf)	2-1/2" MIN EDGE DISTANCE																					
			Spans Up To 6'-0" CONN TYPE					Spans Up To 8'-0" CONN TYPE					Spans Up To 10'-0" CONN TYPE					Spans Up To 18'-0" CONN TYPE						
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5		
GROUT-FILLED CONCRETE BLOCK	5/16" ITW TAPCON XL OR DEWALT ULTRACON W/ 2-1/4" MIN. EMBED	48	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	14.5"	13.5"	16.0"	16.0"	14.5"	7.0"	6.5"	9.0"
		62	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	14.0"	12.5"	16.0"	16.0"	16.0"	10.5"	9.5"	15.5"	12.0"	10.0"	10.0"	5.5"	4.5"	6.0"	
		72	16.0"	16.0"	16.0"	15.5"	16.0"	16.0"	16.0"	11.5"	10.5"	16.0"	16.0"	16.0"	9.0"	8.0"	12.0"	10.0"	8.0"	8.0"	4.5"	4.0"	5.0"	
		110	16.0"	16.0"	10.0"	9.0"	14.0"	16.0"	14.0"	7.0"	6.0"	8.5"	12.0"	10.0"	5.5"	4.5"	6.0"	6.0"	4.5"	3.0"				
		135	16.0"	16.0"	8.0"	7.0"	9.5"	12.5"	10.5"	5.5"	5.0"	6.5"	9.5"	7.5"	4.5"	3.5"	4.5"	5.0"	3.5"					
		150	15.5"	13.5"	7.0"	6.0"	8.0"	11.0"	9.0"	5.0"	4.5"	5.5"	8.5"	6.5"	4.0"	3.5"	4.0"	4.0"	3.0"					
		180	16.0"	16.0"	10.0"	9.0"	14.0"	16.0"	14.0"	7.0"	6.0"	8.5"	12.0"	10.0"	5.5"	4.5"	6.0"	6.0"	4.5"	3.0"				
205																								
GROUT-FILLED CONCRETE BLOCK	1/4" ITW TAPCON XL OR DEWALT ULTRACON W/ 1-3/4" MIN. EMBED	48	16.0"	16.0"	13.5"	13.5"	16.0"	16.0"	16.0"	9.5"	9.0"	16.0"	16.0"	16.0"	7.0"	6.5"	14.5"	8.5"	7.5"	3.5"	3.0"	4.5"		
		62	16.0"	16.0"	9.5"	9.5"	16.0"	16.0"	16.0"	6.5"	6.0"	13.0"	13.0"	13.5"	5.0"	4.5"	8.0"	6.0"	5.0"					
		72	16.0"	16.0"	8.0"	7.5"	16.0"	14.5"	15.5"	5.5"	5.0"	9.5"	10.5"	10.0"	4.5"	4.0"	6.0"	5.0"	4.0"					
		110	12.0"	12.0"	5.0"	4.5"	7.0"	8.0"	7.0"	3.5"	3.0"	3.0"	4.5"	5.0"	3.0"	3.0"								
		135	9.0"	8.5"	3.5"	3.5"	5.0"	6.5"	5.5"			3.0"	5.0"	4.0"										
		150	8.0"	7.0"	3.5"	3.0"	4.0"	5.5"	4.5"			4.0"	3.5"											
		180	6.5"	5.5"			3.0"	4.5"	3.5"					3.5"										
205	5.5"	4.5"			4.0"	3.0"						3.0"												

HOST STRUCT.	ANCHOR	LOAD (psf)	3/4" MIN EDGE DISTANCE																				
			Spans Up To 6'-0" CONN TYPE					Spans Up To 8'-0" CONN TYPE					Spans Up To 10'-0" CONN TYPE					Spans Up To 18'-0" CONN TYPE					
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	
WOOD (G = 0.55)	1/4" LAG SCREW WITH 1-3/4" MIN THREAD PENETRATION	48	16.0"	16.0"	11.5"	11.5"	16.0"	16.0"	16.0"	8.0"	8.0"	16.0"	16.0"	16.0"	6.5"	6.0"	16.0"	15.5"	14.0"	3.5"	3.0"	8.5"	
		62	16.0"	16.0"	8.5"	8.5"	16.0"	16.0"	16.0"	6.0"	6.0"	16.0"	16.0"	16.0"	4.5"	4.5"	15.0"	11.5"	9.5"	2.5"	2.0"	6.0"	
		82	16.0"	16.0"	6.0"	6.0"	16.0"	16.0"	16.0"	4.5"	4.0"	13.5"	16.0"	15.0"	3.5"	3.0"	9.0"	8.0"	6.5"	2.0"			
		105	16.0"	16.0"	4.5"	4.5"	16.0"	16.0"	14.5"	3.5"	3.0"	12.0"	10.5"	2.5"	2.5"	6.5"	6.0"	4.5"					
WOOD (G = 0.55)	7/16" WOOD BUSHING WITH 1.13" MIN EMBED & 1/4-20 SS MACHINE SCREW	48	16.0"	16.0"	9.5"	9.5"	16.0"	14.0"	14.0"	6.5"	6.0"	14.0"	11.0"	11.5"	4.5"	4.0"	8.5"	5.0"	4.5"	2.0"	2.0"	2.5"	
		62	14.5"	14.5"	6.5"	6.0"	14.5"	10.5"	11.0"	4.5"	4.0"	7.5"	7.5"	8.0"	3.5"	3.0"	4.5"	3.5"	3.0"				
		82	10.5"	11.0"	4.5"	4.0"	7.5"	7.0"	7.0"	3.0"	3.0"	4.0"	5.0"	4.5"	2.5"	2.0"	3.0"	2.5"	2.0"				
		105	7.5"	7.5"	3.5"	3.0"	4.5"	5.0"	4.5"	2.5"	2.0"	2.5"	3.5"	3.0"			2.0"	2.0"					
WOOD (G = 0.55)	#14 WOOD SCREW OR 1/4" ITW TAPCON WITH 1-3/4" MIN THREAD PENETRATION	48	16.0"	16.0"	13.0"	13.0"	16.0"	16.0"	16.0"	9.5"	9.0"	16.0"	16.0"	16.0"	7.0"	6.5"	16.0"	16.0"	12.0"	9.0"	7.5"	2.5"	2.5"
		62	16.0"	16.0"	9.5"	9.5"	16.0"	16.0"	16.0"	7.0"	6.5"	16.0"	16.0"	16.0"	5.5"	5.0"	12.0"	9.0"	7.5"	2.5"	2.5"	4.5"	
		82	16.0"	16.0"	7.0"	6.5"	16.0"	16.0"	16.0"	5.0"	4.5"	11.0"	13.5"	12.0"	4.0"	3.5"	7.5"	6.5"	5.0"	2.0"			
		105	16.0"	16.0"	5.0"	5.0"	11.5"	13.0"	11.5"	3.5"	3.5"	7.0"	10.0"	8.5"	3.0"	2.5"	5.0"	5.0"	3.5"				

HOST STRUCT.	ANCHOR	LOAD (psf)	3/4" MIN EDGE DISTANCE																				
			Spans Up To 6'-0" CONN TYPE					Spans Up To 8'-0" CONN TYPE					Spans Up To 10'-0" CONN TYPE					Spans Up To 18'-0" CONN TYPE					
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	
WOOD (G = 0.42)	1/4" LAG SCREW WITH 1-3/4" MIN THREAD PENETRATION	48	16.0"	16.0"	9.0"	9.0"	16.0"	16.0"	16.0"	6.5"	6.5"	16.0"	16.0"	16.0"	5.0"	4.5"	16.0"	10.5"	9.0"	2.5"	2.5"	5.5"	
		62	16.0"	16.0"	6.5"	6.5"	16.0"	16.0"	16.0"	5.0"	4.5"	16.0"	16.0"	16.0"	3.5"	3.5"	10.0"	7.5"	6.0"	2.0"			
		82	16.0"	16.0"	5.0"	4.5"	16.0"	15.0"	15.0"	3.5"	3.0"	9.0"	11.0"	10.0"	2.5"	2.5"	6.0"	5.5"	4.0"				
		105	16.0"	16.0"	4.5"	4.5"	14.5"	16.0"	14.5"	3.5"	3.0"	9.0"	12.0"	10.5"	2.5"	2.5"	6.5"	6.0"	4.5"				
WOOD (G = 0.42)	7/16" WOOD BUSHING WITH 1.13" MIN EMBED & 1/4-20 SS MACHINE SCREW	48	12.5"	12.5"	6.0"	6.0"	12.5"	9.0"	9.0"	4.0"	3.5"	9.0"	7.0"	7.5"	3.0"	2.5"	5.5"	3.0"	2.5"				
		62	9.5"	9.5"	4.0"	4.0"	9.5"	7.0"	7.0"	2.5"	2.5"	5.0"	5.0"	2.0"	2.0"	3.0"	2.0"	2.0"					
		82	7.0"	7.0"	3.0"	2.5"	5.0"	4.5"	4.5"	2.0"	2.0"	2.5"	3.0"	3.0"									
		105	4.5"	5.0"	2.0"		3.0"	3.0"	3.0"			2.5"	2.0"										
WOOD (G = 0.42)	#14 WOOD SCREW OR 1/4" ITW TAPCON WITH 1-3/4" MIN THREAD PENETRATION	48	16.0"	16.0"	9.5"	9.5"	16.0"	16.0"	16.0"	6.5"	6.5"	16.0"	16.0"	16.0"	5.0"	4.5"	12.5"	7.0"	6.5"	2.5"	2.0"	4.0"	
		62	16.0"	16.0"	7.0"	6.5"	16.0"	15.5"	16.0"	5.0"	4.5"	11.5"	11.0"	11.5"	3.5"	3.5"	7.0"	5.0"	4.5"	2.0"			
		82	16.0"	16.0"	5.0"	4.5"	11.5"	10.5"	10.5"	3.5"	3.0"	6.0"	7.5"	7.0"	2.5"	2.5"	4.0"	3.5"	3.0"				
		105	16.0"	16.0"	5.0"	5.0"	11.5"	13.0"	11.5"	3.5"	3.5"	7.0"	10.0"	8.5"	3.0"	2.5"	5.0"	5.0"	3.5"				

ANCHOR NOTES: SEE SHEET 13 FOR ANCHOR NOTES.

## WINDOW BLADE 1A OPTION



TYPICAL 1A HV BLADE WORKING IN UNISON WITH 1 HV WINDOW BLADE SHUTTER

- WINDOW BLADE 1A NOTES:**
1. MAXIMUM DESIGN PRESSURE = +/-110psf
  2. MAXIMUM SHUTTER SPAN = 96"
  3. MINIMUM GLASS SEPARATION = 5"
  4. SEE SECTION DETAILS FOR MOUNTING OPTIONS
  5. ONLY CENTERMATES 21, 22 (WITH 24 OR 25) ARE ALLOWED WITH SYMMETRICAL OR OPPOSING LAYOUT. 35 MUST BE INCLUDED FOR OPPOSING LAYOUT.
  6. BLADE 1A SHALL ONLY ALLOW 5 OPENINGS MAXIMUM. SEE NEXT SHEET FOR SPACING.
  7. MINIMUM CLEARANCE FROM TOP OR BOTTOM EDGE OF WINDOW BLADE SHALL BE 12"
  8. FIRST OR LAST BLADE CONNECTED TO STARTERS MAY BE WINDOW BLADE 1A
  9. BLADE 1A SHALL ALTERNATE WITH HV BLADE 1 THROUGHOUT SHUTTER WIDTH
  10. CENTERMATES SHALL ALWAYS BE INSTALLED ADJACENT TO SOLID HV BLADE 1 ON BOTH SIDES.
  11. POLYCARBONATE HV WINDOW SHALL BE INSTALLED SUCH THAT TABS FACE THE INTERIOR OF OPENING BEING PROTECTED.
  12. HV WINDOW SHALL ONLY BE INSTALLED AND LOCKED USING AN HV SETTING TOOL PROVIDED BY ASSA, INC.
  13. REFERENCE ANCHOR SCHEDULES FOR ANCHOR SPACING OPTIONS.

FRANK BERNARDO, PE  
PE# 0046549 CA# 9885

STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
9/19/2024

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BERTHA HV ACCORDION SHUTTER  
HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
PRODUCT APPROVAL #FL 32030.1

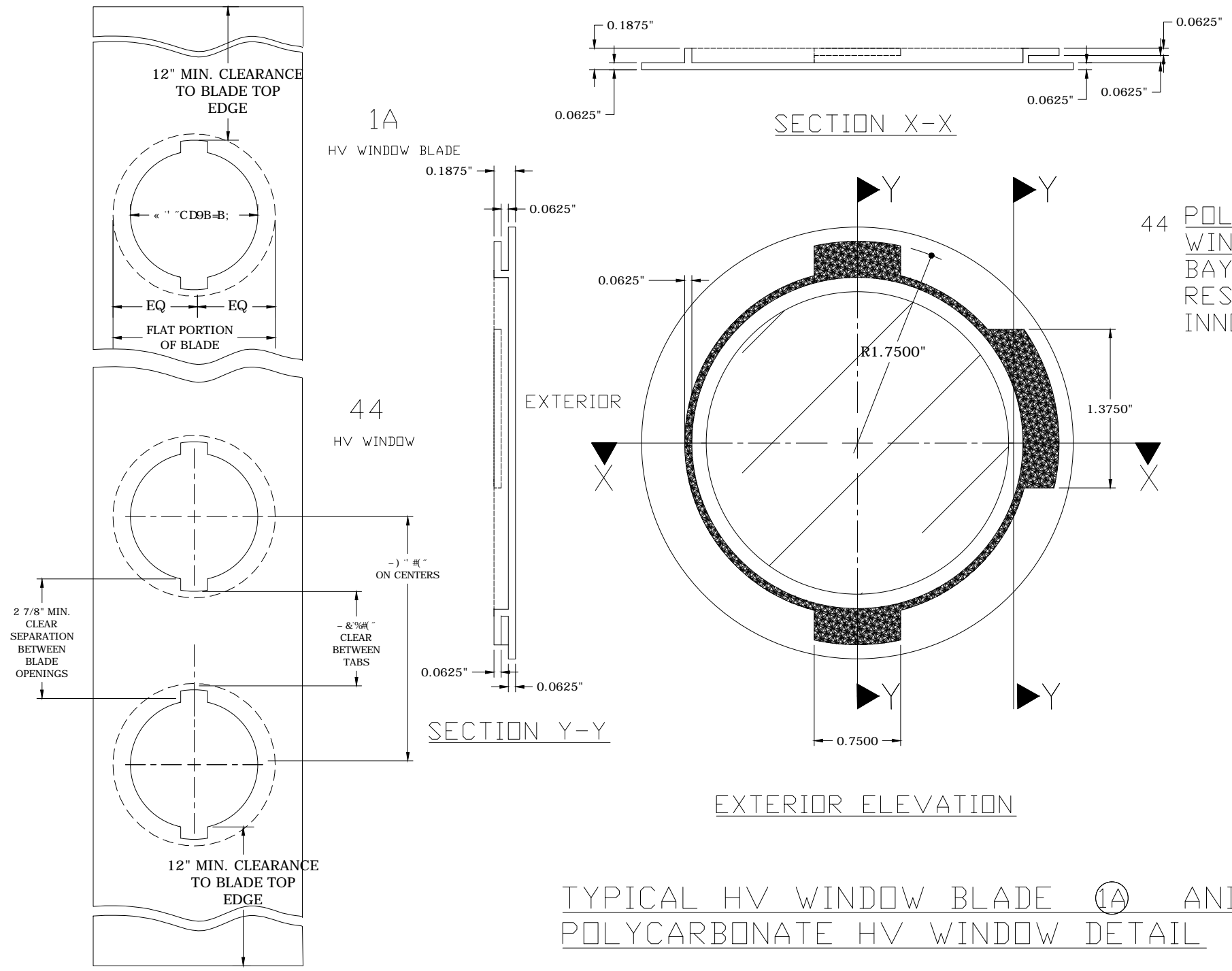
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**15** OF 16

# WINDOW BLADE 1A OPTION



44 POLYCARBONATE IMPACT RESISTANT HV WINDOW  
 BAYER MAKROLON 3103 POLYCARBONATE RESINS, UV-STABILIZED GRADE OR SABIC INNOVATIVE PLASTIC LEXAN 103 RESIN

TYPICAL HV WINDOW BLADE (1A) AND POLYCARBONATE HV WINDOW DETAIL

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BERTHA HV ACCORDION SHUTTER  
 HV BLADE 1, HV WINDOW BLADE 1A \* HV BLADE 2  
 PRODUCT APPROVAL #FL 32030.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RWN	RWN	1/8/2020
2020 FBC	CCB	RWN	9/02/2020

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