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# FUTUREGLASS GLASS WAREHOUSE

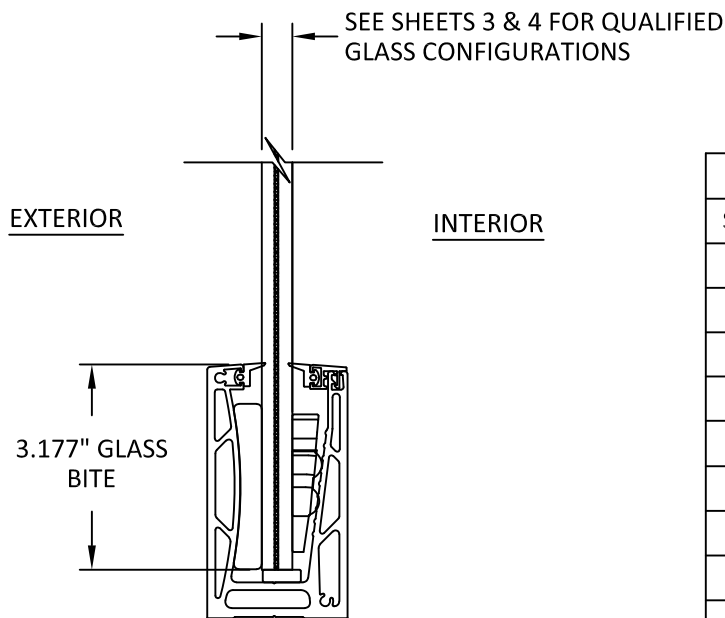
## RANA - MODEL RAN-CHRES GLASS BASE SHOE RAILING

**GENERAL NOTES:**

1. THE PRODUCT SHOWN HEREIN IS DESIGNED AND MANUFACTURED TO COMPLY WITH THE CURRENT EDITION OF THE INTERNATIONAL BUILDING CODE (IBC).
2. FOR FALL PROTECTION REQUIREMENTS, THIS PRODUCT HAS BEEN ANALYZED IN ACCORDANCE WITH SECTION 1607.9.1 AND MEETS THE REQUIREMENTS OF THE 50 PLF LINEAR LOAD AND 200 LB CONCENTRATED LOAD SPECIFIED IN ASCE 7 SECTION 4.5.1.
3. ADEQUACY OF THE EXISTING STRUCTURAL CONCRETE/MASONRY AND 2X FRAMING AS A MAIN WIND FORCE RESISTING SYSTEM CAPABLE OF WITHSTANDING AND TRANSFERRING APPLIED PRODUCT LOADS TO THE FOUNDATION IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD FOR THE PROJECT OF INSTALLATION.
4. THE INSTALLATION DETAILS DESCRIBED HEREIN ARE GENERIC AND MAY NOT REFLECT ACTUAL CONDITIONS FOR A SPECIFIC SITE. IF SITE CONDITIONS CAUSE INSTALLATION TO DEVIATE FROM THE REQUIREMENTS DETAILED HEREIN, A LICENSED ENGINEER OR ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE WITH THIS DOCUMENT.
5. APPROVED IMPACT PROTECTIVE SYSTEM **IS REQUIRED** ON THIS PRODUCT IN AREAS REQUIRING IMPACT RESISTANCE.
6. BASE SHOE MATERIAL: 6063-T5 ALUMINUM
7. GLASS MEETS THE REQUIREMENTS OF ASTM E1300 GLASS CHARTS. SEE SHEET 1 FOR GLAZING DETAIL AND SHEETS 3 & 4 FOR QUALIFIED GLASS OPTIONS.

**INSTRUCTIONS FOR USE:**

1. DETERMINE DESIGN WIND LOAD REQUIREMENTS BASED ON WIND VELOCITY, BUILDING HEIGHT, AND WIND ZONE USING THE APPLICABLE ASCE 7 STANDARD. (SEE SHEET 8 FOR TYPICAL WIND LOADS).
2. SEE DESIGN PRESSURE TABLES ON SHEETS 3 & 4 FOR DESIGN LOAD CAPACITY OF DESIRED GLASS TYPE, SIZE, AND THE MAXIMUM RAILING HEIGHT BASED ON THE CONCENTRATED AND DISTRIBUTED LIVE LOADS.
3. SEE ANCHOR SCHEDULE AND CAPACITY TABLES ON SHEET 6.
4. FOR HANDRAIL OPTIONS AND ALLOWABLE SPANS REFER TO SHEET 7.



**GLAZING DETAIL**

**GLAZING NOTES:**

1. GLASS TYPE COMPLIES WITH ASTM E1300 REQUIREMENTS. PER THE FBC TEMPER AND SAFETY GLAZING REQUIREMENTS SHALL BE REVIEWED ON A SITE SPECIFIC BASIS.
2. SETTING BLOCK DUROMETER HARDNESS OF 70-90 (SHORE A) AS REFERENCED IN FBC CHAPTER 24.
3. SETTING BLOCKS TO BE LOCATED AT 1/4 SPAN LENGTH FOR GLASS WIDER THAN 36" AS PER FBC CHAPTER 24.
4. D.L.O. AND DESIGN PRESSURES MAY NOT EXCEED MAX VALUES SHOWN HEREIN.

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5	INSTALLATION DETAILS
6	ANCHOR SCHEDULE & ANCHOR CAPACITY TABLES
7	HANDRAIL TYPES AND ALLOWABLE SPANS
8	ALLOWABLE WIND LOADS PER ASCE 7
9	WIND SPEED MAP

**FUTUREGLASS**  
  
GLASS WAREHOUSE  
  
FUTUREGLASS  
GLASS WAREHOUSE  
1319 ROCKY POINT DRIVE, SUITE 200  
OCEANSIDE, CA 92056  
PH: (760) 536-3640

**TITLE: RANA - MODEL RAN-CHRES GLASS BASE SHOE RAILING**

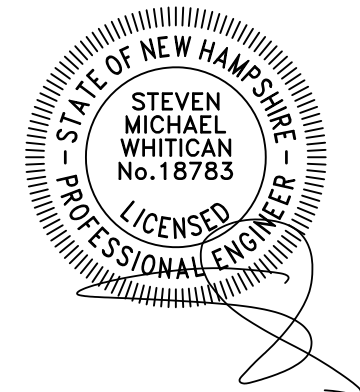
**GENERAL NOTES AND GLAZING DETAIL**

**PREPARED BY: BUILDING DROPS, INC.**  
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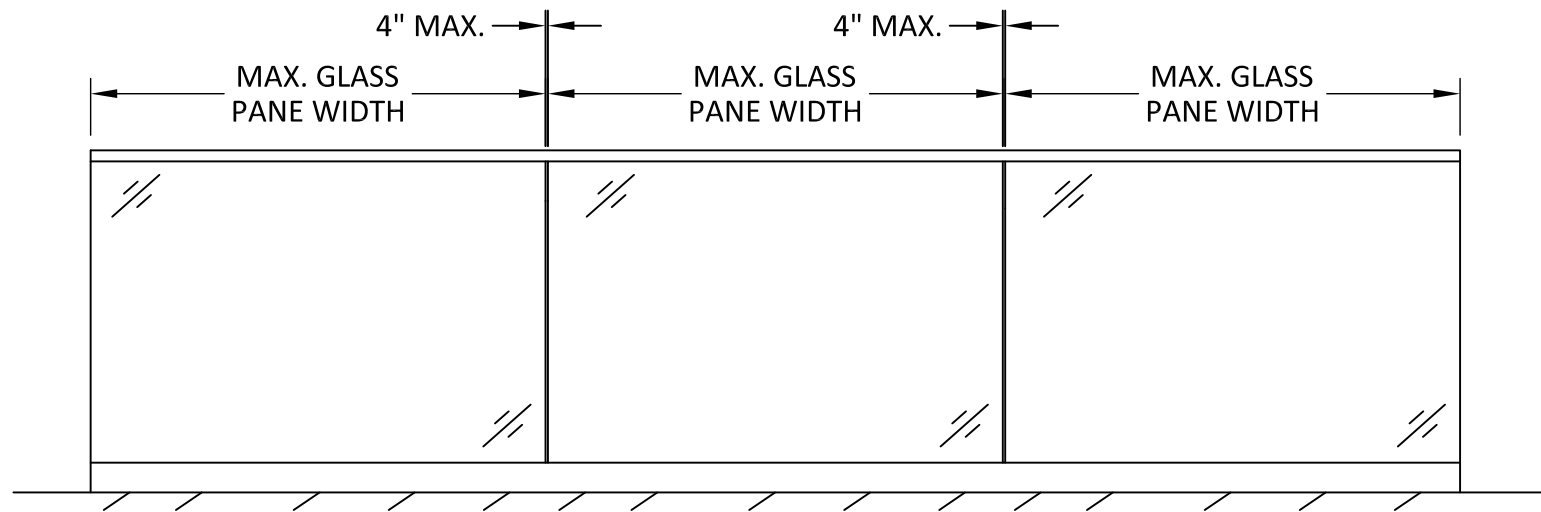
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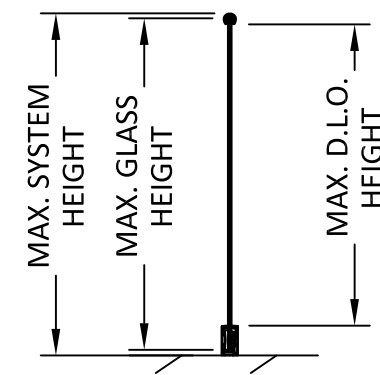
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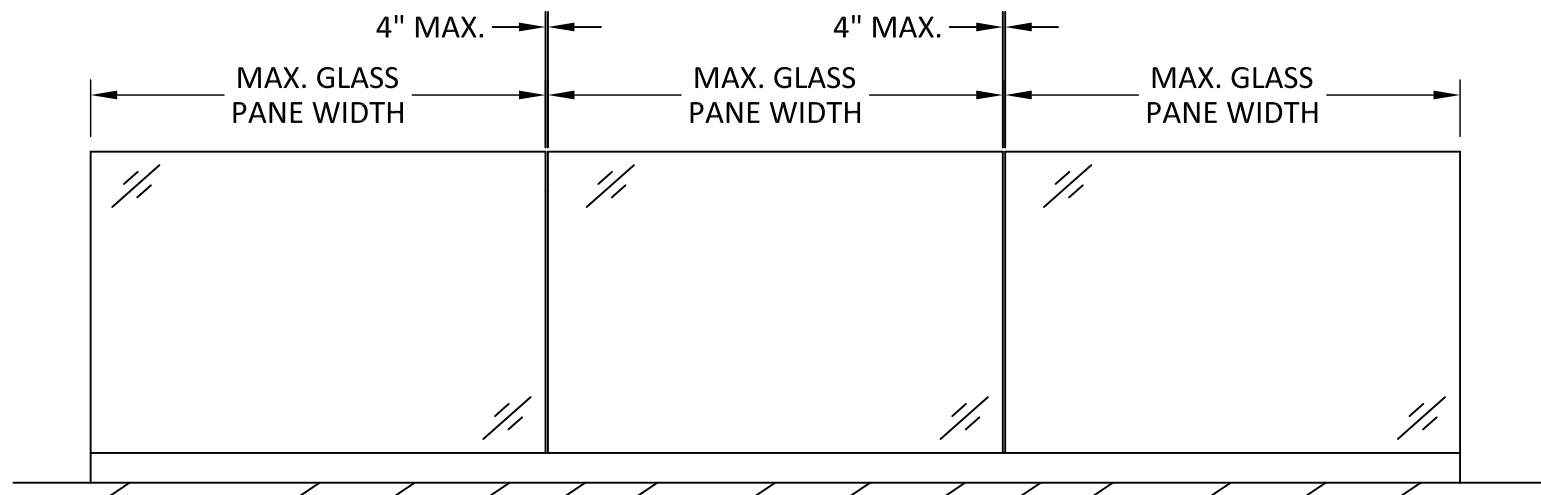
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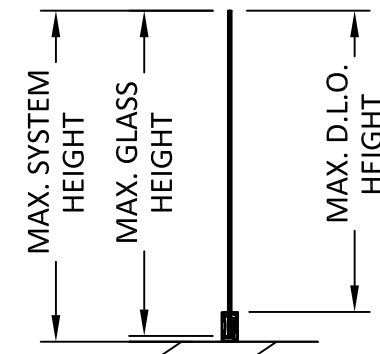
TYPICAL BASE SHOE ELEVATION W/ HANDRAIL



TYPICAL VERTICAL SECTION



TYPICAL BASE SHOE ELEVATION W/O HANDRAIL



TYPICAL VERTICAL SECTION

NOTE: SEE SHEETS 3 & 4 FOR DESIGN PRESSURE TABLES AND SHEETS 5 & 6 FOR ANCHOR DETAILS.



TYPICAL TOP VIEW

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GLASSWAREHOUSE

FUTUREGLASS  
GLASS WAREHOUSE  
1319 ROCKY POINT DRIVE, SUITE 200  
OCEANSIDE, CA 92056  
PH: (760) 536-3640

TITLE: RANA - MODEL RAN-CHRES  
GLASS BASESHOE RAILING

ELEVATIONS

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# ALLOWABLE WIND LOAD TABLES BASED ON GLASS TYPE

TABLE 1: 1/2" MONOLITHIC TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	59.67	48.52	42.92	31.76	19.77	11.15
24	48.25	39.14	34.71	25.78	16.09	9.05
36	39.64	32.38	28.70	21.36	13.36	7.61
42	39.64	32.38	25.24	18.85	11.80	6.72
48	39.64	32.38	25.24	16.56	10.41	5.88
60	39.64	32.38	25.24	16.56	8.51	4.86
72	39.64	32.38	25.24	16.56	8.51	4.09

TABLE 2: 7/16" O.A. LAMINATED GLASS: 3/16" TEMPERED GLASS - 0.060" PVB - 3/16" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	24.78	20.33	18.21	13.94	8.92	6.20
24	29.02	23.80	21.32	16.32	10.45	7.25
36	34.31	28.14	25.20	19.30	12.35	8.58
42	34.31	28.14	27.14	20.78	13.30	9.23
48	34.31	28.14	27.14	22.18	14.19	9.86
60	34.31	28.14	27.14	22.18	15.77	10.95
72	34.31	28.14	27.14	22.18	15.77	11.84

TABLE 3: 7/16" O.A. LAMINATED GLASS: 3/16" TEMPERED GLASS - 0.060" PVB ES - 3/16" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	28.41	23.30	20.87	15.98	10.23	7.10
24	38.22	31.35	28.08	21.50	13.76	9.55
36	46.14	37.84	33.90	25.95	16.61	11.53
42	46.14	37.84	36.01	27.57	17.65	12.25
48	46.14	37.84	36.01	28.86	18.47	12.83
60	46.14	37.84	36.01	28.86	19.65	13.65
72	46.14	37.84	36.01	28.86	19.65	14.18

TABLE 4: 7/16" O.A. LAMINATED GLASS: 3/16" TEMPERED GLASS - 0.060" SENTRYGLAS - 3/16" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	43.16	35.40	31.71	24.28	15.54	10.79
24	54.98	45.09	40.39	30.93	19.79	13.74
36	58.88	48.30	43.26	33.12	21.20	14.72
42	58.88	48.30	43.96	33.66	21.54	14.96
48	58.88	48.30	43.96	34.02	21.78	15.12
60	58.88	48.30	43.96	34.02	22.06	15.32
72	58.88	48.30	43.96	34.02	22.06	15.43

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TITLE: RANA - MODEL RAN-CHRES  
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GLASS ALLOWABLE DESIGN  
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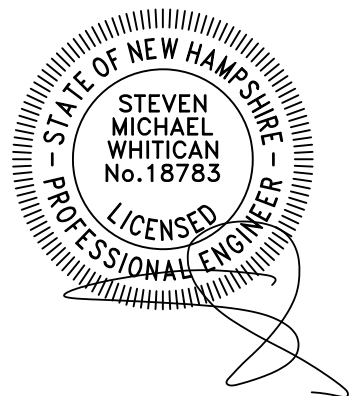
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# ALLOWABLE WIND LOAD TABLES BASED ON GLASS TYPE

TABLE 5: 9/16" O.A. LAMINATED GLASS: 1/4" TEMPERED GLASS - 0.090" PVB - 1/4" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	36.06	29.58	26.49	20.29	12.98	9.02
24	40.87	33.52	30.03	22.99	14.71	10.22
36	47.18	38.70	34.67	26.54	16.99	11.80
42	47.18	38.70	37.07	28.38	18.17	12.61
48	47.18	38.70	37.07	30.17	19.31	13.41
60	47.18	38.70	37.07	30.17	21.41	14.87
72	47.18	38.70	37.07	30.17	21.41	16.10

TABLE 6: 9/16" O.A. LAMINATED GLASS: 1/4" TEMPERED GLASS - 0.090" PVB ES - 1/4" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	40.17	32.95	29.51	22.59	14.46	10.04
24	52.09	42.73	38.27	29.30	18.75	13.02
36	62.68	51.41	46.05	35.26	22.56	15.67
42	62.68	51.41	49.06	37.56	24.04	16.69
48	62.68	51.41	49.06	39.45	25.25	17.53
60	62.68	51.41	49.06	39.45	27.03	18.77
72	62.68	51.41	49.06	39.45	27.03	19.60

TABLE 7: 9/16" O.A. LAMINATED GLASS: 1/4" TEMPERED GLASS - 0.090" SENTRYGLAS - 1/4" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	58.59	48.06	43.05	32.96	21.09	14.65
24	75.69	62.08	55.61	42.58	27.25	18.92
36	81.89	67.17	60.16	46.06	29.48	20.47
42	81.89	67.17	61.31	46.94	30.04	20.86
48	81.89	67.17	61.31	47.54	30.43	21.13
60	81.89	67.17	61.31	47.54	30.90	21.46
72	81.89	67.17	61.31	47.54	30.90	21.65

TABLE 8: 11/16" O.A. LAMINATED GLASS: 5/16" TEMPERED GLASS - 0.090" PVB - 5/16" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	63.02	51.69	46.30	35.45	22.69	15.75
24	68.89	56.51	50.62	38.75	24.80	17.22
36	77.07	63.21	56.62	43.35	27.74	19.27
42	77.07	63.21	59.90	45.86	29.35	20.38
48	77.07	63.21	59.90	48.39	30.97	21.51
60	77.07	63.21	59.90	48.39	34.09	23.67
72	77.07	63.21	59.90	48.39	34.09	25.61

TABLE 9: 11/16" O.A. LAMINATED GLASS: 5/16" TEMPERED GLASS - 0.090" PVB ES - 5/16" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	68.01	55.79	49.97	38.26	24.49	17.00
24	83.81	68.75	61.58	47.14	30.17	20.95
36	99.70	81.78	73.25	56.08	35.89	24.93
42	99.70	81.78	78.16	59.84	38.30	26.60
48	99.70	81.78	78.16	63.07	40.36	28.03
60	99.70	81.78	78.16	63.07	43.57	30.26
72	99.70	81.78	78.16	63.07	43.57	31.82

TABLE 10: 11/16" O.A. LAMINATED GLASS: 5/16" TEMPERED GLASS - 0.090" SENTRYGLAS - 5/16" TEMPERED GLASS

GLASS WIDTH (in.)	ALLOWABLE WIND LOAD (PSF)					
	GLASS HEIGHT (in.)					
	36	39.75	42	48	60	72
12	93.34	76.56	68.57	52.50	33.60	23.33
24	122.15	100.19	89.75	68.71	43.98	30.54
36	134.21	110.08	98.60	75.49	48.31	33.55
42	134.21	110.08	100.95	77.29	49.46	34.35
48	134.21	110.08	100.95	78.54	50.27	34.91
60	134.21	110.08	100.95	78.54	51.27	35.60
72	134.21	110.08	100.95	78.54	51.27	36.00

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GLASSWAREHOUSE

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TITLE: RANA - MODEL RAN-CHRES  
GLASS BASESHOE RAILING

GLASS ALLOWABLE DESIGN  
PRESSURE TABLES

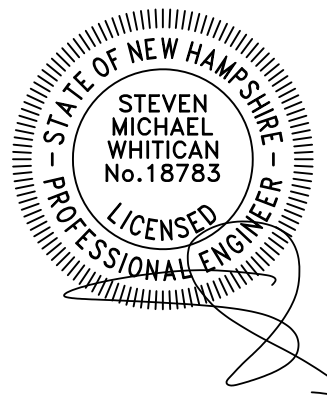
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# ANCHOR TABLES

ANCHOR SCHEDULE			
SUBSTRATE	ANCHOR TYPE	MIN. EMBEDMENT (in.)	MIN. EDGE DISTANCE (in.)
WOOD SG = 0.55 MIN.	1/2" ASTM F593 BOLT	3.00	0.75
	3/8" LAG SCREW	3.00	0.75
	1/2" LAG SCREW	3.00	0.75
CONCRETE f'c = 3000 PSI MIN.	3/8" DEWALT SCREW-BOLT+	4.50	2.50
	1/2" DEWALT SCREW-BOLT+	4.50	2.50
	3/8" ITW REDHEAD DYNABOLT	1.50	2.50
	1/2" ITW REDHEAD DYNABOLT	1.875	2.50
	3/8" HILTI HIT-Z ROD W/ HIT-HY 200	4.50	2.375
	1/2" HILTI HIT-Z ROD W/ HIT-HY 200	4.50	2.625
STEEL 1/4" THK. MIN.	3/8" HWH SELF-TAPPING SCREW	THREE THREADS MIN. PENETRATION PAST STRUCTURE	0.50
	1/2" HWH SELF-TAPPING SCREW	THREE THREADS MIN. PENETRATION PAST STRUCTURE	0.50

ANCHOR ALLOWABLE WIND LOAD CAPCITY (PSF)								
SUBSTRATE	ANCHOR TYPE	ON CENTER SPACING (in.)	RAILING HEIGHT (In.)					
			36	39.75	42	48	60	72
WOOD SG = 0.55 MIN.	1/2" ASTM F593 BOLT	9.84	97.81	80.23	71.86	55.02	35.21	24.45
	3/8" LAG SCREW	9.84	21.81	17.89	16.02	12.27	7.85	5.45
	1/2" LAG SCREW	9.84	27.09	22.22	19.90	15.24	9.75	6.77
CONCRETE f'c = 3000 PSI MIN.	3/8" DEWALT SCREW-BOLT+	9.84	44.75	36.71	32.88	25.17	16.11	11.19
	1/2" DEWALT SCREW-BOLT+	9.84	55.69	45.67	40.91	31.32	20.05	13.92
	3/8" ITW REDHEAD DYNABOLT	9.84	14.17	11.62	10.41	7.97	5.10	3.54
	1/2" ITW REDHEAD DYNABOLT	9.84	20.11	16.50	14.78	11.31	7.24	5.03
	3/8" HILTI HIT-Z ROD W/ HIT-HY 200	9.84	23.63	19.38	17.36	13.29	8.51	5.91
	1/2" HILTI HIT-Z ROD W/ HIT-HY 200	9.84	30.48	25.00	22.39	17.14	10.97	7.62
STEEL 1/4" THK. MIN.	3/8" HWH SELF-TAPPING SCREW	9.84	28.16	23.10	20.69	15.84	10.14	7.04
	1/2" HWH SELF-TAPPING SCREW	9.84	37.53	30.79	27.58	21.11	13.51	9.38

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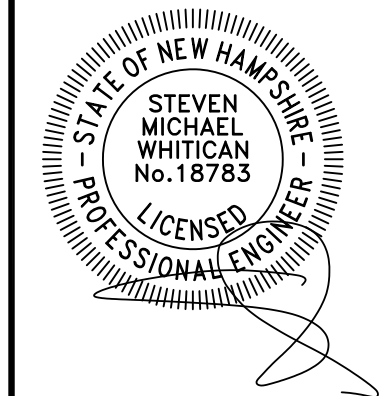
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GLASS BASESHOE RAILING

ANCHOR SCHEDULE &  
ANCHOR CAPACITY TABLES

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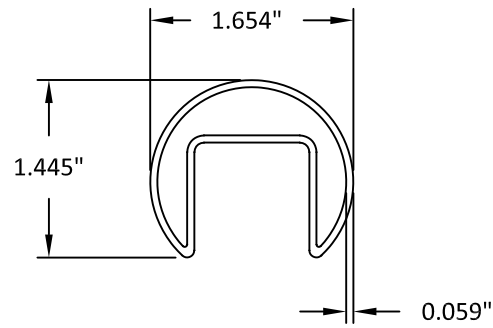
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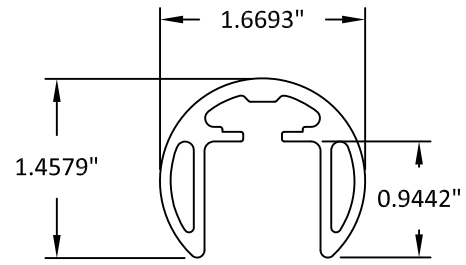
OF 9

c:\users\y\anivara\building\_drops, inc\building\_drops\_projects\glass\_warehouse, llc\ev-24-0946.1 - engineering evaluation - base shoe system and posted glass railing\dwgs\base shoe\other states\glw002 - fbc.dwg 1/30/2025 11:20 AM

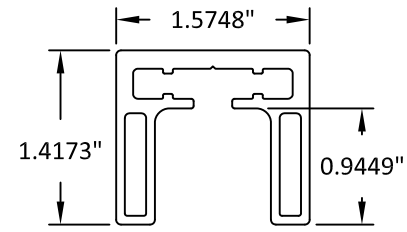
# HANDRAIL TYPES AND MAX. ALLOWABLE SPANS



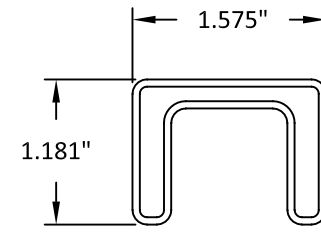
- AGE-SHR42 HANDRAIL:**
- SIMPLY SUPPORTED: 10.92 FT
  - CANTILEVER: 3.0 FT



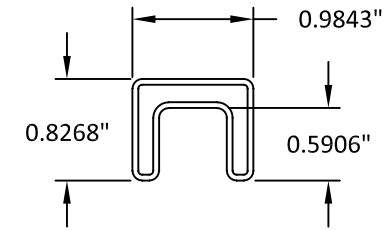
- DRA-AHR42 HANDRAIL:**
- SIMPLY SUPPORTED: 10.75 FT
  - CANTILEVER: 2.75 FT



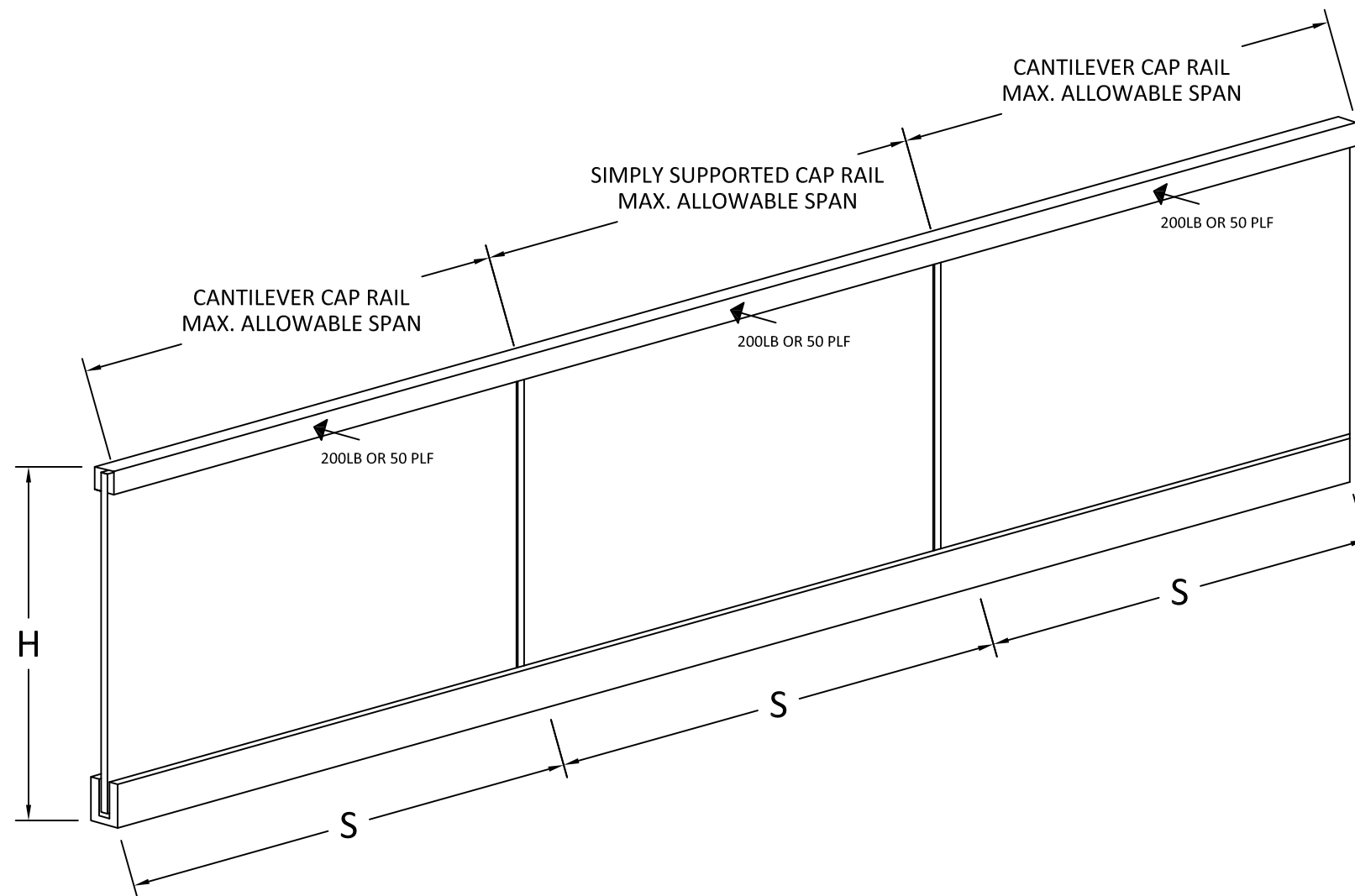
- COR-AHS HANDRAIL:**
- SIMPLY SUPPORTED: 11.42 FT
  - CANTILEVER: 3.08 FT



- MAT-SHS HANDRAIL:**
- SIMPLY SUPPORTED: 10.58 FT
  - CANTILEVER: 2.75 FT



- HG25S XS HANDRAIL:**
- SIMPLY SUPPORTED: 3.08 FT
  - CANTILEVER: 0.58 FT



**NOTE:**  
CANTILEVER SPAN ONLY APPLIES WHEN TOP RAIL IS NOT FIXED TO A STRUCTURE.  
IF CAP RAIL IS FIXED TO A STRUCTURE, USE SIMPLY SUPPORTED MAX ALLOWABLE SPAN.

FUTUREGLASS

GLASSWAREHOUSE

FUTUREGLASS  
GLASS WAREHOUSE  
1319 ROCKY POINT DRIVE, SUITE 200  
OCEANSIDE, CA 92056  
PH: (760) 536-3640

TITLE: RANA - MODEL RAN-CHRES  
GLASS BASESHOE RAILING

HANDRAIL TYPES &  
ALLOWABLE SPANS

PREPARED BY: BUILDING DROPS, INC.

1900 NE MIAMI COURT, STE. 2-15  
MIAMI, FL 33132  
PH: (954)399-8478  
FAX: (954)744-4738  
WEB: www.buildingdrops.com



REMARKS	BY	DATE

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BUILDING DROPS, INC.  
1900 NE MIAMI COURT, STE. 2-15  
MIAMI, FL 33132  
FBPE CERT. OF AUTHORIZATION No. 29578

DATE: 10.30.24

DWG. BY: DI      CHK. BY: HFN

SCALE: NTS

DWG. #: GLW002

SHEET: 7

OF 9

# TYP. ALLOWABLE WIND LOADS

ALLOWABLE WIND LOADS (PSF)						
WIND SPEED (MPH)	W <sub>ASD</sub> FOR Cf = 1.3			W <sub>ASD</sub> FOR Cf = 2.6		
	EXP. B K <sub>Z</sub> = 0.7	EXP. C K <sub>Z</sub> = 0.85	EXP. D K <sub>Z</sub> = 1.03	EXP. B K <sub>Z</sub> = 0.7	EXP. C K <sub>Z</sub> = 0.85	EXP. D K <sub>Z</sub> = 1.03
100	9.50	11.53	13.98	19.00	23.07	27.95
110	11.49	13.95	16.91	22.98	27.91	33.82
120	13.68	16.61	20.12	27.35	33.21	40.25
130	16.05	19.49	23.62	32.10	39.98	47.24
140	18.62	22.60	27.39	37.23	45.21	54.78
150	21.37	25.95	31.44	42.74	51.90	62.89
160	24.31	29.52	35.78	48.63	59.05	71.55
170	27.45	33.33	40.39	54.90	66.66	80.78
180	30.77	37.37	45.28	61.54	74.73	90.56

**PREMISES FOR WIND LOADS:**

1. WIND LOADS ARE BASED ON ASCE 7.
2. THE FOLLOWING ASSUMPTIONS HAVE BEEN MADE:
  - a. K<sub>d</sub> = 0.85
  - b. K<sub>z</sub>t = 1.0
  - c. MAX. HEIGHT, Z = 15 FT
3. C<sub>f</sub> VALUES SHOWN ON TABLE ARE TWO OF THE TYPICAL EXTREME VALUES. FOR OTHER C<sub>f</sub> VALUES MULTIPLY THE WIND LOAD BY C<sub>f</sub>/1.3 OR REFER TO ASCE 7 FOR MORE DETAILS.
4. FOR HEIGHTS ABOVE 15 FT REFER TO ASCE 7 FOR ADDITIONAL FACTORS.
5. WIND LOADS DISPLAYED ARE GENERIC AND MAY NOT REFLECT THE JOBSITE CONDITIONS. IF SITE SPECIFIC WIND LOADS ARE REQUIRED A LICENSED ENGINEER SHALL PREPARE SITE SPECIFIC WIND LOADS FOR USE WITH THIS PRODUCT.
6. REFER TO SHEET 9 FOR A RISK CATEGORY II WIND SPEED MAP PER ASCE 7.

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TITLE: RANA - MODEL RAN-CHRES  
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ALLOWABLE WIND LOADS  
PER ASCE 7

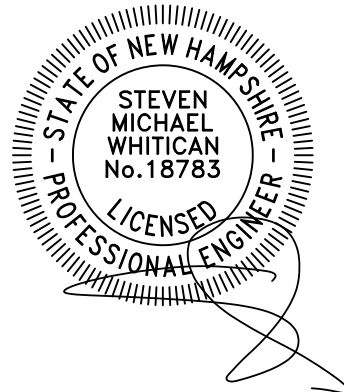
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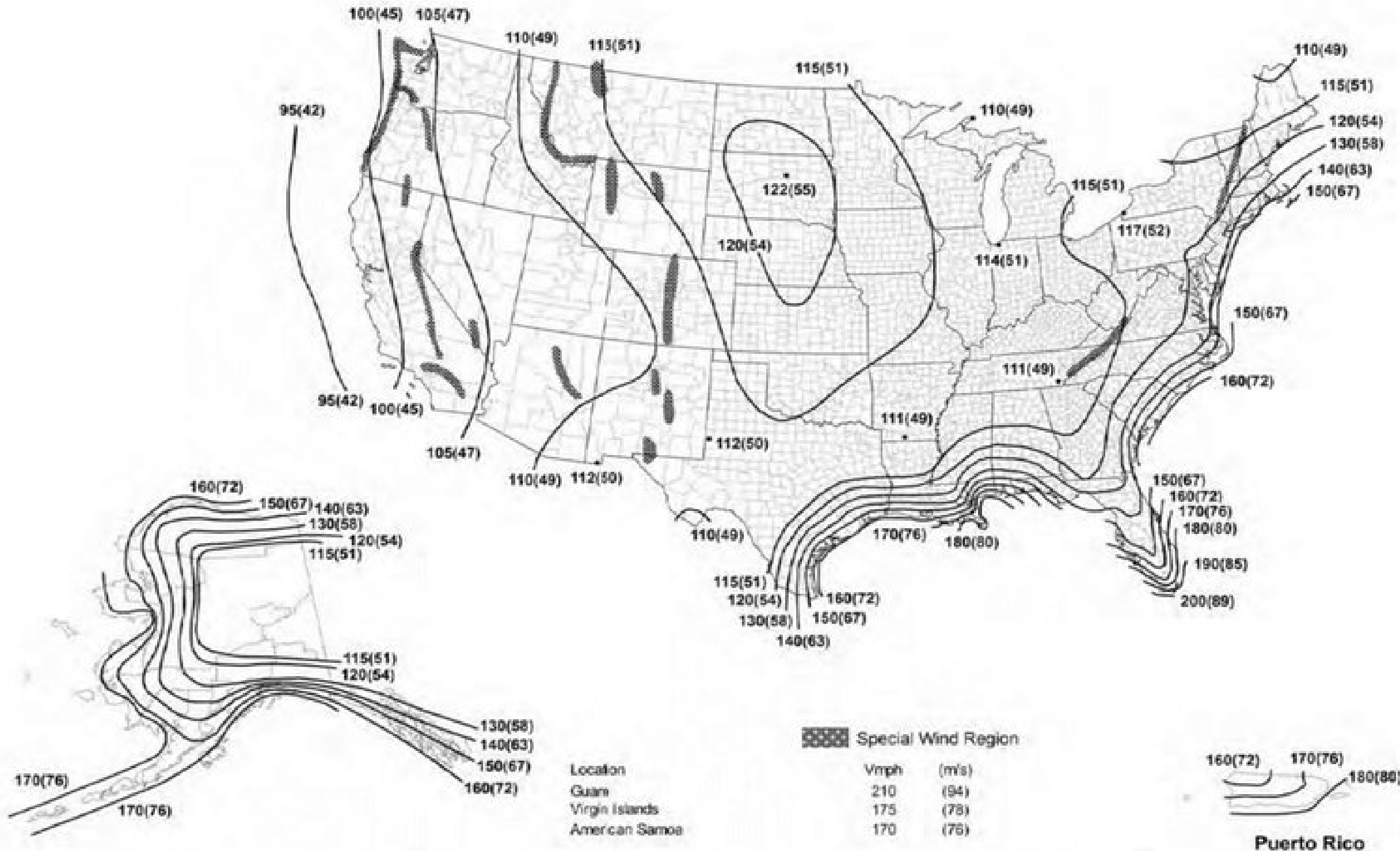
SHEET: 8

OF 9

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# WIND SPEED MAP

mph (m/sec.)



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WIND SPEED MAP

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