

6593 Riverdale St. San Diego, CA 92120

619-727-4800

Structural Calculations for CBKDSAV28 Curb



Prepared for:

PROVENT

3847 Wabash Drive

Mira Loma, CA 91725

Date: December 19, 2022

Project Number: PV2206

	STEEL ATTACHME	<u>NT</u>	ASSUMES:		Meets sei	smic	ROOF ANCHORAGE DETAIL		
				CONC SLAB		requirements for the		CBKD Series	CBWC Series
		CENTER ON CURB FLAM	NGE. SEE TABLE FOR	f'c= 4000PSI MIN	IMUM	following c	odes:	LXS	LXS
		QUANTITY OF EVENLY	6" MIN THICKNE			CBC 2019		LXL	
WELDED	LDED CURB \ SERIES ONLY) Ø A307 BOLTS ATTACHED TO STEEL				IT CONCRETE	IBC 201	18	SUN3672	SUN3672
		ANGLE BELOW DECK A	T EACH CONNECTION POINT.					PRD3715	PRD3715
							Í	PRS	PRS
	¥ /	SHEATHING	WHERE OCCURS				ľ	PRL	PRL
							Ī	SLU180	SLU180
			METAL DECK	CONCRETE ATTAC	HMENT			SLM1830	SLM1830
							Ī	SAV1518	SAV1518
		<u> </u>	`	. WELT	DED CURB		Ī	SAV2025	SAV2025
							Ī	SAV28	SAV28
			ANGLE SUPPORT		CENTER ON CUP	RB FLANGE. SEE	E TABLE F	FOR QUANTITY C	F EVENLY
		BY OTH			SPACED 3/4" Ø T	HREADED ROD	IN HILTI	HIT-HY 200 EPOX	Y WITH 4" EMBED
	[5/8" Ø HAS ROD MIN. 9-1/8" EDG		200 V3 EI	POXY WITH 4-1/2	EMBED
	NO. OF ANCHORAG	E BOLTS REQUIRED			(FOR SAV SERIE		NO. OF	ANCHORAGE BO	LTS REQUIRED
CURB	LONG SIDE	SHORT SIDE				CURB	LON	G SIDE	SHORT SIDE
LXS	2 @ 34.5" O.C.	2 @ 19" O.C.				LXS	4 @ 1	1.5" O.C.	3 @ 9.5" O.C.
LXL	2 @ 34.5" O.C.	2 @ 29" O.C.				LXL	4 @ 1		3 @ 14.5" O.C.
SUN3672	2 @ 60.5" O.C.	2 @ 39" O.C.				SUN3672			3 @ 12.38" O.C.
PRD3715	2 @ 68.88" O.C.	2 @ 39" O.C.				PRD3715			7 @ 6.5" O.C.
PRS	2 @ 58.88" O.C.	2 @ 28.69" O.C.				PRS			4 @ 9.56" O.C.
PRL	2 @ 72" O.C.	2 @ 41.5" O.C.				PRL			5 @ 10.38" O.C.
SLU180	3 @ 51.38" O.C.	2 @ 71.5" O.C.				SLU180	8 @ 14	1.68" O.C. 7	' @ 11.92" O.C.
SLM1830	3 @ 56.88" O.C	3 @ 35.75" O.C.				SLM1830	12 @ 1		0 @ 7.94" O.C.
SAV1518	3 @ 54.56" O.C	2 @ 68.13" O.C.				SAV1518			2 @ 68.13" O.C.
SAV2025	3 @ 61.56" O.C	2 @ 68.13" O.C.	* SIX INCHES FROM EACH C			SAV2025	3@6′		2 @ 68.13" O.C.
SAV28	3 @ 69.75" O.C	2 @ 68.13" O.C.	** CENTERED.	ONNER EVENLI JP		SAV28	3@69	9.75" O.C. 2	2 @ 68.13" O.C.
			· · ·		•				

WOOD ATTACHMENT

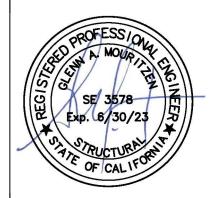
WELDED CURB-

CENTER ON CURB FLANGE. SEE TABLE FOR QUANTITY OF EVENLY SPACED ¼" Ø SIMPSON SDS OR EQUIVALENT SCREWS (3 ½ " MIN. EMBED. INTO WOOD FRAMING)

1/4" Ø x 3.5" SIMPSON SDS SCREWS W/2.25" THREADED EMBED (FOR SAV SERIES ONLY)

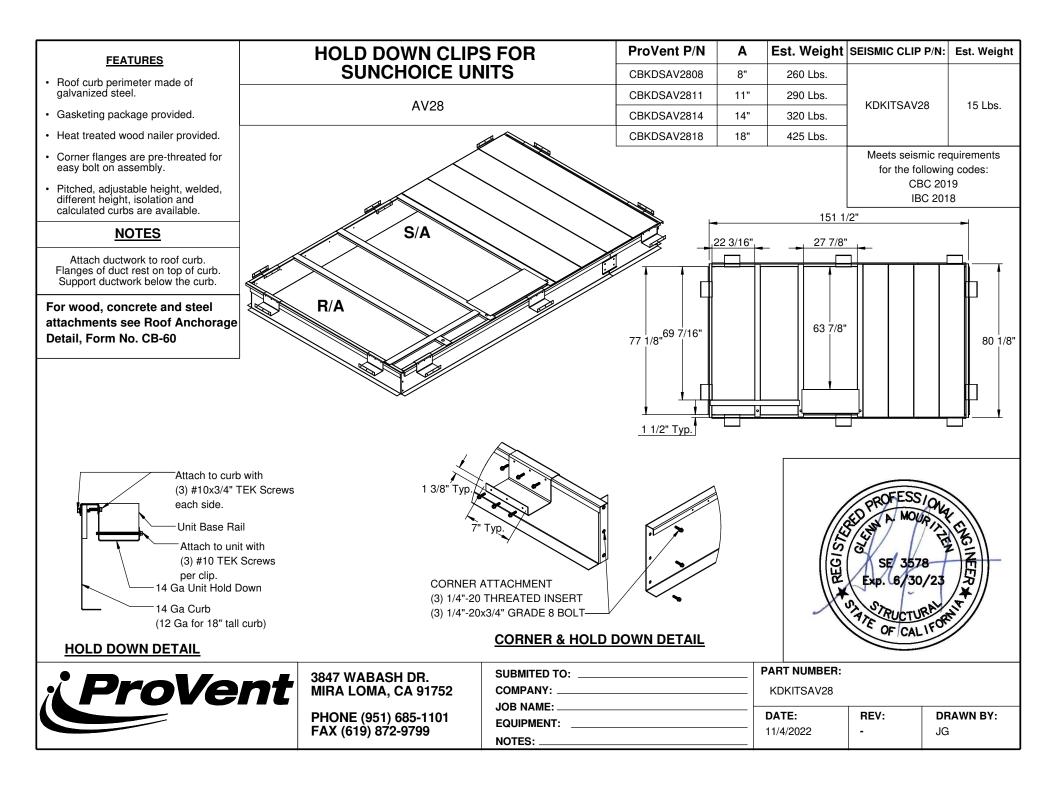
FOUR INCHES FROM EACH CORNER EVENLY SPACED

	NO. OF ANCHORAGE SCREWS REQUIRED					
CURB	LONG SIDE	SHORT SIDE				
LXS	4 @ 12.83" O.C.	3 @ 11.5" O.C.				
LXL	4 @ 12.83" O.C.	3 @ 16.5" O.C.				
SUN3672	4 @ 21.5" O.C.	3 @ 14.38" O.C.				
PRD3715	9@911"O.C.	8@6.14"O.C.				
PRS	4 @ 20.96" O.C.	3 @ 16.34" O.C.				
PRL	5 @ 19" O.C.	4 @ 15.17" O.C.				
SLU180	9 @ 13.34" O.C.	7 @ 12.58" O.C.				
SLM1830	13 @ 9.81" O.C.	12 @ 6.86" O.C.				
SAV1518	5 @ 28 28" O.C.	4 @ 24.04" O.C.				
SAV2025	6 @ 25.43" O.C.	5 @ 18.03" O.C.				
SAV28	7 @ 23.92" O.C.	5 @ 18.03" O.C.				



3847 WABASH DRIVE MIRA LOMA, CA 91725 PHONE (951) 685-1101 FAX (619) 872-9799

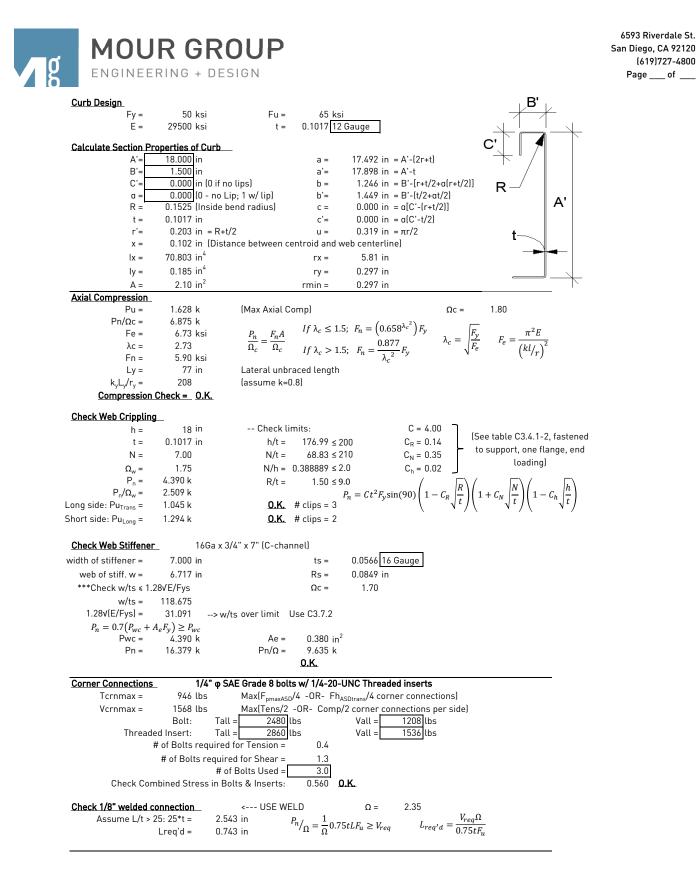
SUBMITTED TO: COMPANY: JOB NAME:	FORM NO: CB-60			
	DATE: 11/05/2022	REV 8	:	DRAWN BY: FMM





		PV2206							
Description:			18"						
Unit:	Sunchoice A	/28							
Curb Information				_ 4					
Hcurb =	18 i		(Height of c	Fv EQ EQ					
Lcurb =	151.5 i		(Length of (3A6 unit					
wcurb =	80.125 i		(Width of cu	(X LUTIL)					
WGTcurb =	440 l								
# Clips long side =	3		(Weight of o = short side						
Unit Information	5	# Cup	s short side -						
WGTunit =	2720 l	he	(Oper. Weig	ght of Unit)					
Wtmax =	748 l			corner weight) \Box WGT_{UNIT}					
Wtmin =	578 l			corner weight)					
Hunit =	57.22 i			unit above curb)					
Hcm =	28.61 i		0	center of mass)					
Lunit =	160.06 ii		(Length of						
Wunit =	88.75 i		(Width of u	uint) ⊥ WGT _{CURB}					
wunnt –	00.75			Wcurb					
Seismic Loading -	2018 IBC/201								
Ss =	2.85		Worst case	e for majority of Cautorina					
Fa =	1.20			e Class D - Table 11.4-1 ASCE 7-16)					
l a = p =	1.50			e Factor Category III Building)					
Sms =	3.420		(Fa*Ss)	ap = 2.5					
Sds =	2.280		(2/3*Sms)	$R_p = 6$					
Fpmax =	1.710 V	Vp		s*lp)*Wp*3/Rp <=1.6*Sds*lp*Wp					
FpmaxASD =	3256 l		(0.7*Fpmax						
	(unit only)		((unit and curb)					
Wind Loading - 20		СВС		(and data)					
Kz =	1.13		(For 60 ft ro	oof height, Exposure C - Table 26.10-1 ACSE 7-16)					
Kzt =	1.0			aphic effects assumed for rooftop mounted units)					
Kd =	0.85			lity factor Table 26.6-1 ASCE 7-16)					
V =	110			ity, mph for Occupancy Cat III-IV bldgs Exp. Cat C, Fig 25.5-1D, ASCE7-16					
GCr _(horiz) =	1.9			29.4.1 ASCE 7-16)					
GCr _(vert) =	1.5			29.4.1 ASCE 7-16]					
	29.8 p	of		<pre>Kz*Kzt*Kd*V² (Eq. 26.10-1 ASCE 7-16)</pre>					
qz F _{h ASD trans} =	27.0 µ 2836 l			Cr*Lunit*(Hunit+Hcurb) (Eq. 29.4-2)					
F _{h ASD long} =	1572 l		•	Cr*Wunit*(Hunit+Heurb)					
F _{vert ASD} =	2642 l			Cr*Lunit*Wunit (Eq. 29.4-3)					
vert ASD	2042 (- 0.0 42 00						
Curb Loading									
Transverse:									
Compression _{SEISMIC} =	3136 l	bs	=[FpmaxAS	D*Hcm+2*(1+0.14S _{DS})*Wtmax*wcurb]/wcurb					
Tension _{SEISMIC} =	838 l	bs	=[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*wcurb]/wcurb						
Compression _{WIND} =	589 l	bs		*Hcm+2*0.6*Wtmax*wcurb-F _{vert ASD} *wcurb/2]/wcurb					
Tension _{WIND} =	1640 l	bs	=[F _{h ASD trans} Hcm-2*0.6*Wtmin*wcurb+F _{vertASD} *wcurb/2]/wcurb						
	> Negative	e values	indicate oppo						
Longitudinal:	5								
Compression _{SEISMIC} =	2588 l	bs	=[FpmaxAS	D*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb					
Tension _{SEISMIC} =	290 l	bs	=[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb						
Compression _{WIND} =	-126 l	bs	=[Fh ASD long*	*Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb					
Tension _{WIND} =	924 l	bs		*Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb					
	> Negative	e values	indicate oppo						
Governing Reactio	0								
Transverse:	Comp _{MAX} =	3136	lbs	> Along long edge of curb.					
(on long edge)	Tens _{MAX} =	1640	lbs	> Along long edge of curb.					
Longitudinal:	Comp _{MAX} =	2588	lbs	> Along short edge of curb.					
(an short ad)	Tong -	2300	lbs						

(on short edge) Tens_{MAX} = 924 lbs ---> Along short edge of curb. ---> Negative values indicate opposite load.



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Connection Unit to Curb Clip 110 $5MS$ screw $0 = 30$ $11 = 0.0017$ in (unit base rait thickness) $Ful = \frac{4}{65}$ ksi d = 0.190 in (screw diameter) $dw = 0.375$ in (nom. washer diameter) 12(11 = 1.0) Shear: $P_{ns} = 4.2F_{ns}\sqrt{\frac{1}{2}d}$ 3.36 k $P_{ns} = 3391$ # $For (2/11 \ge 2.5)$ $P_{ns} = 2.7t_{1}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{1}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns}/2 = 1.5t_{1}dF_{ns}$ 3.39 k $P_{ns} = 2.7t_{2}dF_{ns}$ 3.39 k $P_{ns}/2 = 540$ # - Controls Tension: Phote 1 0.068 k iscrew pull-over strength $P_{ns} = 1.5t_{1}dF_{ns}$ 100 min spacing $= 0.57$ in $P_{10}/2 = 820$ # full tensite screw capacity Pts/Q = 820 # 1.619 this screw spacing clip width lint $\frac{7}{700}$ this screw 10.97 screws spacing $M_{10} = 10.677$ k $R_n = 0.657, 3n^2$ An (a = 0.000 in^2 $Rn'0 = 10.677$ k $R_n = 0.657, 3n^2$ An (a = 0.000 in^2 $Rn'0 = 10.677$ k $R_n = 0.657, 3n^2$ An (a = 0.000 in^2 $Rn'0 = 10.677$ k $R_n = 0.657, 3n^2$ + $K_{ns} \leq 50.67, 4n^2$ + $K_{ns} = 0.000$ in ² Concrection of 2urb to Supporting Structure. Stock (0.6-0.145c_{rs}) D - 7E WIND: 0.60 + W Transcrew curb/2/Neurb Compression _{Raised} = 1777 lbs = -[PrmaxA5D ²](Hern+Heurb)-10.4509] WOT (maxes) "vcurb/2/Neurb Compression _{Raised} = 1224 bits = -150 maxA5D ²](Hern+Heurb)-10.64 WOT (maxes) "vcurb/2/Neurb Compression _{Raised} = 1224 bits = -150 maxA5D ²](Hern+Heurb)-10.64 WOT (maxes) "vcurb/2/Neurb) 2/Neurb Compression _{Raised} = 1224 bits = -150 maxA5D ²](Hern+Heurb)-10.64 WOT (maxes) "vcurb/2/Neurb) 2/Neurb 2	
$ \begin{array}{c} 1 \\ t_{1} = \underbrace{0.1017}_{0.1017} \text{ in lumi base rait thickness} \\ d = 0.1017 \text{ in lumi base rait thickness} \\ d = 0.1017 \text{ in lumi base rait thickness} \\ d = 0.075 \text{ in lumi base rait thickness} \\ d = 0.075 \text{ in lumi base rait thickness} \\ d = 0.075 \text{ in lumi base rait thickness} \\ d = 0.075 \text{ in lumi base rait thickness} \\ r = 27t_2 dF_{12} = 3.86 k \\ F = 27t_2 dF_{12} = 3.39 k \\ F = 27t_2 dF_{12} = 3.30 k \\ F = 27t_2 d$	
$ \begin{array}{c} 12 = \boxed{0.1017} \text{ [m lunit base rail thickness]} & Fu2 = \underbrace{55} \text{ ksi} \\ d = 0.190 \text{ in]screw diameter]} & dw = 0.373 \text{ in [nom. washer diameter]} \\ 1211 = 1.0 \\ For 1211 = 1.0 \\ For 1211 = 1.0 \\ R_{m} = 2.7t_{1}dF_{m} = 3.391 \# For 1211 \geq 2.5 \\ Shear : R_{m} = 4.2F_{m2}\sqrt{\frac{1}{2}d} & 3.86 \text{ k} \\ Pns = 3.391 \# \\ R_{m} = 2.7t_{1}dF_{m} = 3.39 \text{ k} \\ Pns/0 = 1130 \# \\ Pss/0 = 540 \# < Controls \\ Pns/0 = 1130 \# \\ Pss/0 = 540 \# < Controls \\ Pnot = 1.068 \text{ k} screw pull-out strength } \\ R_{met} = 0.85t_{1}dF_{m2} \\ Pnot = 3.718 \text{ k} screw pull-out strength } \\ R_{met} = 0.35t_{1}dF_{m2} \\ Pnot = 3.276 \# < Control = 0.057 \text{ in } \\ Pnot = 3.276 \# < Control = 0.057 \text{ in } \\ Pts/0 = 356 \# < Control = 0.057 \text{ in } \\ Pts/0 = 356 \# < Control = 0.057 \text{ in } \\ Pts/0 = 356 \# < Control = 0.059 \text{ in } \\ Shear t \# < Clips = V_{abs} \# < Clips = 0.059 \text{ Jul} \# 3 \text{ 3.00 \text{ in } } \\ Shear t \# < R_{m} = 0.65/A_{mp} + F_{m}A_{m} \le 0.65R_{m}A_{m} + R_{m}A_{m} = 0.600 \text{ in}^{2} \\ Rn/0 = 10.607 \text{ k} \\ Rn/0 = 10.677 \text{ k} \\ Rn/0 = 10.777 \text{ k} \\ Rn/0 = 10.677 $	
d = 0.375 in [nom. washer diameter] tz/11 = 1.0 For tz/12 is 1.2, tz, tz, tz, tz, tz, tz, tz, tz, tz, tz	
$ \begin{array}{c} \hline For 12/11 \leq 1.0; \\ Shear: P_{ns} = 4.2P_{ns}\sqrt{t_{2}^{2}} & 3.86 k \\ P_{ns} = 2.7t_{2}dF_{us} & 3.39 k \\ P_{us} = 0.85t_{2}dF_{us} & 3.30 n \\ P_{us} = 0.85t_{2}dF_{us} & 3.00 n \\ P_{us} = 0.50t_{1}m^{2} & A_{1}m & 0.50t_{1}m^{2} & A_{1}m \\ P_{us} = 0.65t_{1}m^{2} & A_{1}m & 0.50t_{1}m^{2} & A_{1}m \\ P_{us} = 0.60t_{1}m^{2} & A_{1}m & 0.593 n^{2} & A_{1}t & 0.060 n^{2} \\ R_{u} = 0.60t_{1}m^{2} & A_{1}m & 0.593 n^{2} & A_{1}t & 0.060 n^{2} \\ R_{u} = 0.60t_{1}m^{2} & A_{1}m & 0.593 n^{2} & A_{1}t & 0.060 n^{2} \\ R_{u} = 0.60t_{1}m^{2} & A_{1}m & 0.593 n^{2} & A_{1}t & 0.060 n^{2} \\ R_{u} = 0.60t_{1}m^{2} & A_{1}m & 0.593 n^{2} & A_{1}t & 0.060 n^{2} \\ R_{u} = 0.60t_{1}m^{2} & A_{1}m & 0.593 n^{2} & A_{1}t & 0.060 n^{2} \\ R_{u} = 0.62t_{1}m^{2} & A_{1}m^{2} & 0.56t_{1}A_{us} + t_{0}A_{us} \\ BSR 0.K & (AlSI Sect E5.3) \\ \hline \\ $	
Shear: $P_{11} = 2.2T_{11}dF_{11}$ 3.39 k $P_{11} = 2.2T_{11}dF_{11}$ 3.39 k $P_{12} = 2.2T_{11}dF_{11}$ 3.39 k $P_{12} = 2.2T_{11}dF_{11}$ 3.39 k $P_{12} = 2.2T_{12}dF_{12}$ 3.39 k $P_{12} = 2.2T_{12}dF_{12}$ 3.39 k $P_{12} = 2.2T_{12}dF_{12}$ 3.39 k $P_{12} = 5.0 \text{ H} < \text{Controls}$ $P_{12} = 3.26 \text{ H} < \text{Controls}$ $P_{12} = 820 \text{ H}$ (full tensile screw capacity)Shear (k) # clips $V_{10} (k) V_{410} (k) V$	
$P_{ue} = 2.7t_1 dF_{u1} 3.39 k P_{ue} = 2.7t_1 dF_{u2} 3.39 k P_{ue} = 2.7t_2 dF_{u2} = 3.7t_2 dF_{u2} = 3.7t_2 dF_{u2} = 3.7t_2 dF_{u2} = 3.7t_2 dF_{u2} = 2.7t_2 dF_{u2} = 3.7t_2 dF_{u2} = 2.7t_2 dF_{u2} = 3.7t_2 dF_{u2} = 2.7t_2 dF_{u2} = 2.7t_2$	
$\begin{array}{c} P_{ns} = 2.7 t_2 dF_{n2} & 3.39 \text{ k} \\ P_{ns}/Q = 1130 \text{ ff} \\ P_{ns}/Q = 1100 \text{ ff} \\ P_{ns}/Q = 1000 \text{ ff} \\$	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	_
$\begin{array}{llllllllllllllllllllllllllllllllllll$	
$\begin{array}{c} \mbox{Tension:} \mbox{Pnot} = & 1.068 \ \mbox{k} \ \mbox{(screw pull-out strength)} & \mbox{Tension} \ \mbox{Tension} $	
Prov = 3.718 k (screev pull-over strength) $P_{tot} = 1.5r_1 d_w F_{uit}$ Pfs/ $\Omega = 320 \#$ (full tensile screw capacity) Shear (k) # clips V_{clip} (k) V_{slips} (lb) # screws spacing Long side: $3.256 = 2$ 1.3 $540 \# 4 = 2.00$ in clip width [in] = $\frac{7.00}{7.00}$ min spacing = 0.57 in clip height = $\frac{1.4}{1.4}$ in min spacing = 0.57 in clip height = $\frac{1.4}{1.4}$ in clip height = $\frac{1.4}{1.4}$ in Check Block shear rupture: 0.K. thinnest part = 0.017 AlSI BSR applies $Fy = \frac{50}{100}$ ksi $\Omega = 2.22$ bott/screw connection Agv = 0.661 in ² Anv = 0.593 in ² Ant = 0.060 in ² Rn/ $\Omega = 10.677$ k $R_n = 0.6F_y A_{gv} + F_u A_{nt} \leq 0.6F_u A_{nv} + F_u A_{nt}$ BSR 0.K. (AISI Sect. E5.3) Connection of Curb to Supporting Structure Read Loading. SEISMIC: $[0.4-0.145_{5p}]D + 0.7E$ WIND: $0.40 + W$ Transverse: Uplift _{MAX} = $\frac{2022}{105}$ Shear _{Max} = $\frac{1891}{105}$ Compression _{SEISMIC} = 1757 lbs = $[F_{Pmax}ASD^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*wcurb/2]/wcurb TensionSEISMIC = 3248 lbs = [F_{Pmax}ASD^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*wcurb/2]/wcurb CompressionWND = 111 lbs = [F_{h, ASD uage}^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*wcurb/2]/wcurb TensionSEISMIC = 3248 lbs = [F_{Pmax}ASD^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*wcurb/2]/wcurb CompressionWND = 111 lbs = [F_{h, ASD uage}^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*=Lcurb/2]/wcurb TensionWND = 111 lbs = [F_{h, ASD uage}^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*=Lcurb/2]/wcurb TensionSEISMIC = 3248 lbs = [F_{Pmax}ASD^*](Hcm+Hcurb)-10.6-0.145_{5p}]^*WGT_{unit-curb}^*=Lcurb/2]/wcurbTensionSEISMIC$	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	
$\begin{array}{c} \label{eq:product} \mbox{Pts}(\Omega) = & 820 \ \mbox{# clips} & V_{sigs}(M) & V_{si$	
$\frac{\text{Shear Ik}}{\text{Short side:}} \frac{3.256}{3.256} \frac{3}{3.00} \frac{1.09}{5.00 \#} \frac{5.00 \#}{3.00} \frac{3}{3.00} \frac{1}{1.09} \frac{5.00 \#}{5.00 \#} \frac{3}{3.00} \frac{1}{1.09} \frac{1.09}{5.00 \#} \frac{5.00 \#}{3.00} \frac{3}{3.00} \frac{1}{1.09} \frac{1.09}{5.00 \#} \frac{5.00 \#}{3.00} \frac{3}{3.00} \frac{1}{1.09} \frac{1.09}{5.00 \#} \frac{5.00 \#}{3.00} \frac{1}{1.09} \frac{1.09}{5.00 \#} \frac{5.00 \#}{3.00} \frac{1}{1.09} \frac{1.09}{5.00 \#} \frac{5.00 \#}{3.00} \frac{1.09}{5.00 \#} $	
$ \begin{array}{c} \mbox{Long side:} & 3.256 & 3 & 1.09 & 540 \ \ensuremath{\#}\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	
$\frac{Short : side:}{ctip width [in] = \frac{7.00}{1.00}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{ctip width [in] = \frac{7.00}{1.00}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{ctip width [in] = \frac{7.00}{1.00}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{ctip width [in] = \frac{7.00}{1.00}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ in} \text{ min spacing = 0.57 \text{ in}}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ in} \text{ min spacing = 0.57 \text{ in}}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min spacing = 0.57 \text{ in}}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.51 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.051 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.051 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.051 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.051 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{0.061 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{0.067 \text{ min space constraints}}$ $\frac{1.63 540 \# 4 2.00 \text{ in}}{0.067 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{1.64 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{1.64 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{1.64 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{1.64 \text{ min space constraints}}$ $\frac{1.64 510 \text{ min space constraints}}{1.64 min space c$	۰. ^۲
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$\begin{array}{c} \mbox{min spacing} = \begin{tabular}{lllllllllllllllllllllllllllllllllll$	8
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	/
$\begin{array}{c} \Gamma_{\rm p} = \underbrace{\text{SU}}_{\rm p}(\text{si} & \Omega = 2.22 \text{ boty Screw connection} \\ Agy = 0.661 \text{ in}^2 & Anv = 0.593 \text{ in}^2 & Ant = 0.060 \text{ in}^2 \\ Rn (\Omega = 10.697 \text{ k} & R_n = 0.6F_y A_{gv} + F_u A_{nt} = 0.6F_u A_{nv} + F_u A_{nt} \\ \hline \text{BSR O.K.} & (AISI Sect. E5.3) \end{array}$	
$\begin{split} \mathbf{Rn} \overset{\frown}{\mathbf{D}} &= 10.697 \text{ k} \\ \mathbf{BSR 0.K.} \\ R_n &= 0.6F_yA_{gv} + F_uA_{nt} \leq 0.6F_uA_{nv} + F_uA_{nt} \\ \text{(AISI Sect. E5.3)} \\ \end{split}$	
$\begin{array}{c} \textbf{BSR.0.k.} (AISI Sect. E5.3) \end{array} \\ \hline \textbf{SEISMIC} & \textbf{SUPPORTING Structure} \\ \hline \textbf{Roof Loading} & \textbf{SEISMIC} & (0.6-0.14S_{DS}]D + 0.7E & WIND: 0.6D + W \\ \hline \textbf{Transverse:} & UPlift_{MAX} & 2022 \ lbs & \textbf{Shear}_{MAX} & = 1891 \ lbs \\ \hline \textbf{Compression}_{SEISMIC} & 4285 \ lbs & =[FpmaxASD*[Hcm+Hcurb]+(1+0.14S_{DS}]^{3}WGT_{unit+curb} *wcurb/2]/wcurb \\ \hline \textbf{Tension}_{SEISMIC} & 1757 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-(0.6-0.14S_{DS}]^{3}WGT_{unit+curb} *wcurb/2]/wcurb \\ \hline \textbf{Compression}_{SEISMIC} & 1277 \ lbs & =[F_{hASD trans}^{*}(Hcm+Hcurb)-(0.6-0.14S_{DS}]^{3}WGT_{unit+curb} *wcurb/2]/wcurb \\ \hline \textbf{Tension}_{NIND} & 2022 \ lbs & & =[F_{hASD trans}^{*}(Hcm+Hcurb)-0.6^{4}WGT_{unit+curb} *wcurb/2]/wcurb \\ \hline \textbf{Tension}_{NIND} & 2022 \ lbs & & =[F_{pmax}ASD*[Hcm+Hcurb]-0.6^{4}WGT_{unit+curb} *wcurb/2]/wcurb \\ \hline \textbf{Tension}_{SEISMIC} & 3248 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-(0.6-0.14S_{DS}]^{3}WGT_{unit+curb} *ucurb/2]/Lcurb \\ \hline \textbf{Compression}_{SEISMIC} & 720 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-(0.6-0.14S_{DS})^{3}WGT_{unit+curb} *Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{SEISMIC} & 720 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-(0.6-0.14S_{DS})^{3}WGT_{unit+curb} *Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{SEISMIC} & 720 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-0.6^{4}WGT_{unit+curb} *Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} & 111 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} & 857 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} & 857 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} & 857 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} & 857 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WID} & 857 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WID} & 857 \ lbs & =[F_{hASD long}^{*}(Hcm+Hcurb]-0.6^{4}WGT_{unit+curb}^{*} Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WID} & 6^{5$	
$ \begin{array}{c} \hline \textbf{Connection of Curb to Supporting Structure} \\ \hline \textbf{Roof Loading} & \textbf{SEISMIC: } (0.6-0.14S_{DS}]D + 0.7E & \textbf{WIND: } 0.6D + W \\ \hline \textbf{Iransverse:} & Uplift_{MAX} = 2022 \ lbs & \textbf{Shear}_{MAX} = 1891 \ lbs \\ \hline \textbf{Compression}_{SEISMIC} = 4285 \ lbs & =[FpmaxASD*[Hcm+Hcurb]+1]+0.14S_{DS}]^*WGT_{unit+curb}^*wcurb/2]/wcurb \\ \hline \textbf{Tension}_{SEISMIC} = 1757 \ lbs & =[FpmaxASD*[Hcm+Hcurb]+0.6 + 0.014S_{DS}]^*WGT_{unit+curb}^*wcurb/2]/wcurb \\ \hline \textbf{Compression}_{WIND} = 1277 \ lbs & =[F_{h ASD trans}^*(Hcm+Hcurb]+0.6 + 0.014S_{DS}]^*WGT_{unit+curb}^*wcurb/2]/wcurb \\ \hline \textbf{Tension}_{WIND} = 2022 \ lbs & =[F_{h ASD trans}^*(Hcm+Hcurb]-0.6 + 0.014S_{DS}]^*WGT_{unit+curb}^*wcurb/2]/wcurb \\ \hline \textbf{Longitudinali:} & Uplift_{MAX} = 857 \ lbs & \textbf{Shear}_{MAX} = 1891 \ lbs \\ \hline \textbf{Compression}_{SEISMIC} = 720 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-10.6 + 0.14S_{DS}]^*WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{SEISMIC} = 720 \ lbs & =[FpmaxASD*[Hcm+Hcurb]-10.6 + 0.14S_{DS}]^*WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{SEISMIC} = 720 \ lbs & =[FpmaxASD*[Hcm+Hcurb]+110 + 1140 \ lbs_{DS}]^*WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{SEISMIC} = 720 \ lbs & =[F_{h ASD long}^*(Hcm+Hcurb]+0.6 + WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} = 857 \ lbs & =[F_{h ASD long}^*(Hcm+Hcurb]+0.6 + WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \hline \textbf{Tension}_{WIND} = 857 \ lbs & =[F_{h ASD long}^*(Hcm+Hcurb]+0.6 + WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \hline \textbf{Wood Attachment:} & 1/4^*q \times 3.5^* \ \textbf{Simpson SDS screws W 2.25^* threaded emt [SGmin = 0.43] \\ \hline \textbf{Tansverse:} & Tall_{wood} = 0.10 \ lbs & Vall_{wood} = 0.72 \ lbs \\ \hline Total # of screws Req'd for Uplift = 3.28 \ COMBINED LOADING: 0.871 \ O.K. \\ \# of Screws Req'd for Shear = 2.81 \ Screw Spacing = 23.9 \ ln o.c. \\ \hline \textbf{Total # of screws Req'd for Uplift = 1.4 \ COMBINED LOADING: 0.841 \ O.K. \\ \# of Screws Req'd for Shear = 2.8 \ Screw Spacing = 23.9 \ ln o.c. \\ \hline \textbf{Total # of screws Req'd for Shear = 2.8 \ Screw Spacing = 18.0 \ ln o.c. \\ \hline \textbf{Total # of screws Req'd for Shear = 2.8 \ Screw Spacing $	
Roof LoadingSEISMIC: $[0.6-0.14S_{DS}]D + 0.7E$ WIND: $0.6D + W$ Iransverse:Uplift _{MAX} = 2022 lbsShear _{MAX} = 1891 lbsCompressionSEISMIC =4285 lbs=[FpmaxASD*(Hcm+Hcurb)+(1+0.14S_{DS})*WGT_unit+curb*wcurb/2]/wcurbTension_SEISMIC =1757 lbs=[FpmaxASD*(Hcm+Hcurb)+(0.6-0.14S_{DS})*WGT_unit+curb*wcurb/2]/wcurbCompression_WIND =1277 lbs=[FpmaxASD*(Hcm+Hcurb)+0.6+WGT_unit+curb*wcurb/2-Fwert ASD*wcurb/2]/wcurbCompression_WIND =2022 lbs=[FpmaxASD*(Hcm+Hcurb)-0.6+WGT_unit+curb*wcurb/2-Fwert ASD*wcurb/2]/wcurbLongitudinal:Uplift _{MAX} = 857 lbsShear_MAX = 1891 lbsCompression_SEISMIC =3248 lbs=[FpmaxASD*(Hcm+Hcurb)-(0.6+0.14S_DS)*WGT_unit+curb*Lcurb/2]/LcurbTension_SEISMIC =720 lbs=[FpmaxASD*(Hcm+Hcurb)+(1-0.14S_DS)*WGT_unit+curb*Lcurb/2]/LcurbCompression_WIND =111 lbs=[Fp_ASD long*(Hcm+Hcurb)+(0.6+WGT_unit+curb*Lcurb/2-Fwert ASD*Lcurb/2]/LcurbTension_WIND =857 lbs=[Fp_ASD long*(Hcm+Hcurb)-0.6+WGT_unit+curb*Lcurb/2-Fwert ASD*Lcurb/2]/LcurbMood Attachment:1/4** q x 3.5* Simpson SDS screws w/ 2.25* threaded emt (SGmin = 0.43)Transverse:Tall_metal =997Mood Attachment:1/4** q x 3.5* Simpson SDS screws w/ 2.25* threaded emt# of Screws Reqid for Shear =2.81Screw Spacing =Total # of screws Reqid for Shear =2.81Screw Spacing =0.871 0.K.# of Screws Reqid for Uplift =1.4COMBINED LOADING:0.841 0.K.# of Screws Reqid for Shear =2.8Screw Spacing =18.0 in o.c.<	
Roof LoadingSEISMIC: $[0.6-0.14S_{DS}]D + 0.7E$ WIND: $0.6D + W$ Iransverse:Uplift _{MAX} = 2022 lbsShear _{MAX} = 1891 lbsCompressionsEISMIC =4285 lbs=[FpmaxASD*(Hcm+Hcurb)+(1+0.14S_{DS})*WGT_unit+curb*wcurb/2]/wcurbTension_{SEISMIC} =1757 lbs=[FpmaxASD*(Hcm+Hcurb)+(0.6+0.14S_{DS})*WGT_unit+curb*wcurb/2]/wcurbCompression_WIND =1277 lbs=[FpmaxASD*(Hcm+Hcurb)+0.6+WGT_unit+curb*wcurb/2-Fwert ASD*wcurb/2]/wcurbCompression_WIND =2022 lbs=[FpmaxASD*(Hcm+Hcurb)-0.6+WGT_unit+curb*wcurb/2-Fwert ASD*wcurb/2]/wcurbLongitudinal:Uplift _{MAX} = 857 lbsShear_MAX = 1891 lbsCompression_SEISMIC =3248 lbs=[FpmaxASD*(Hcm+Hcurb)-10.6+WGT_unit+curb*Lcurb/2]/LcurbTension_SEISMIC =720 lbs=[FpmaxASD*(Hcm+Hcurb)+(1-0.14S_DS]*WGT_unit+curb*Lcurb/2]/LcurbCompression_WIND =111 lbs=[FpmaxASD*(Hcm+Hcurb)+0.6+WGT_unit+curb*Lcurb/2]/LcurbTension_WIND =857 lbs=[FpmaxASD*(Hcm+Hcurb)-0.6+WGT_unit+curb*Lcurb/2]/LcurbMood Attachment:1/4* q x 3.5* Simpson SDS screws w/ 2.25* threaded emt (SGmin = 0.43)Transverse:Tall_metal =997Mood attachment:1/4* q x 3.5* Simpson SDS screws w/ 2.25* threaded emt# of Screws Reqid for Shear =2.81Screw Spacing =2.3.9in o.c.Total # of screws Required =71/4* q x 3.5* Simpson SDS screws w/ 2.25* threaded embedLongitudinal:# of Screws Reqid for Shear =2.81Screw Spacing =2.32in o.c.Total # of Screws Reqid for Shear =2.8Scre	
$\begin{array}{c} \hline \label{eq:compression_setSMC} \hline \begin{tabular}{lllllllllllllllllllllllllllllllllll$	
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
$\begin{array}{cccc} Tension_{SEISNC} = & 720 \ lbs & = [FpmaxASD^*(Hcm+Hcurb)-(0.6-0.14S_{DS})^*WGT_{unit+curb}^*Lcurb/2]/Lcurb \\ \\ compression_{WIND} = & 111 \ lbs & = [F_{h} \ ASD \ log^*(Hcm+Hcurb)-0.6^*WGT_{unit+curb}^*Lcurb/2-F_{vert} \ ASD^*(Lcurb/2)/Lcurb \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \mathbf{Tension}_{WIND} = & 857 \ lbs & = [F_{h} \ ASD \ log^*(Hcm+Hcurb)-0.6^*WGT_{unit+curb}^*Lcurb/2+F_{vert} \ ASD^*(Lcurb/2)/Lcurb \\ \\ \hline $	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
Wood Attachment: 1/4"\$\overline x 3.5" Simpson SDS screws w/ 2.25" threaded emt [SGmin = 0.43] Tall_metal = 997 Ibs Vall_metal = 1097 tbs Transverse: Tall_wood = 616 tbs Wood Attachment: Tall_wood = 1097 tbs Iransverse: Tall_wood = 616 tbs Wood Attachment: 1097 tots 616 Wood Attachment: 1097 tots 672 tots 7 4 of Screws Req'd for Uplift = 3.28 COMBINED LOADING: 0.871 0.5 0.871 1/4"\$\phi x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed Longitudinal: # of Screws Req'd for Uplift = # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 9 Screws Req'd for Shear = 2.8 5 Screw Spacing = 18.0 10 screws Required = 5	
Tall_metal 997 lbs Vall_metal 1097 lbs Transverse: Tall_wood 616 lbs Vall_wood 672 lbs # of Screws Req'd for Uplift = 3.28 COMBINED LOADING: 0.871 0.K. # of Screws Req'd for Shear = 2.81 Screw Spacing = 23.9 in o.c. Total # of screws Required = 7 7 7 1/4"\$\phi x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed Longitudinal: # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 0.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c. Total # of screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c.	
Transverse: Tallwood 616 Ubs ValLwood 672 Ubs # of Screws Req'd for Uplift = 3.28 COMBINED LOADING: 0.871 0.K. # of Screws Req'd for Shear = 2.81 Screw Spacing = 23.9 in o.c. Total # of screws Required = 7 7 7 1/4"\$\phi x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed 672 1 Longitudinal: # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 0.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c. Total # of screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c.	
<pre># of Screws Req'd for Uplift = 3.28 COMBINED LOADING: 0.871 0.K. # of Screws Req'd for Shear = 2.81 Screw Spacing = 23.9 in o.c. Total # of screws Required = 7 1/4"\phy x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed Longitudinal: # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 0.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c. Total # of screws Required = 5</pre>	
<pre># of Screws Req'd for Shear = 2.81 Screw Spacing = 23.9 in o.c. Total # of screws Required = 7 <u>1/4"\phy x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed</u> Longitudinal: # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 O.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c. Total # of screws Required = 5</pre>	
Total # of screws Required = 7 <u>1/4"\phy x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed</u> <u>Longitudinal:</u> # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 0.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = <u>18.0</u> in o.c. Total # of screws Required = <u>5</u>	
<u>1/4"φ x 3.5" Simpson SDS screws @ 23.9 in o.c. along long side of curb w/ 2.25" threaded embed</u> Longitudinal: # of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 O.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = <u>18.0</u> in o.c. Total # of screws Required = <u>5</u>	
# of Screws Req'd for Uplift = 1.4 COMBINED LOADING: 0.841 O.K. # of Screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c. Total # of screws Required = 5	
# of Screws Req'd for Shear = 2.8 Screw Spacing = 18.0 in o.c. Total # of screws Required = 5	
Total # of screws Required = 5	
1/4" \$\phi x 3.5" Simpson SDS screws @ 18 in o.c. along short side of curb w/ 2.25" threaded embed	
Steel Deck Attachment: 1/2" \u03c6 A307 Bolts to steel angle below deck	
$Tall_{bolt} = \frac{3927}{100} lbs \qquad Vall_{bolt} = \frac{2209}{100} lbs$	
<u>Transverse:</u> Tall _{metal} = 2086 lbs Vall _{metal} = 2192 lbs	
# of Bolts Req'd for Uplift = 0.97 COMBINED LOADING: 0.278 O.K. # of Bolts Req'd for Shear = 0.86 Bolt Spacing = 69.8 in o.c.	
# of Bolts Req'd for Shear = 0.86 Bolt Spacing = 69.8 in o.c. Total # of Bolts Required = 3	
1/2" φ A307 Bolts to steel angle below deck @ 69.8 in o.c. along long side of curb	
# of Bolts Reg'd for Uplift = 0.41 COMBINED LOADING: 0.318 O.K.	
# of Bolts Req'd for Shear = 0.86 Req'd Min Spacing = 68.1 jin o.c.	
Total # of Bolts Required =2	
<u>1/2" φ A307 Bolts to steel angle below deck @ 68.1 in o.c. along short side of curb</u>	

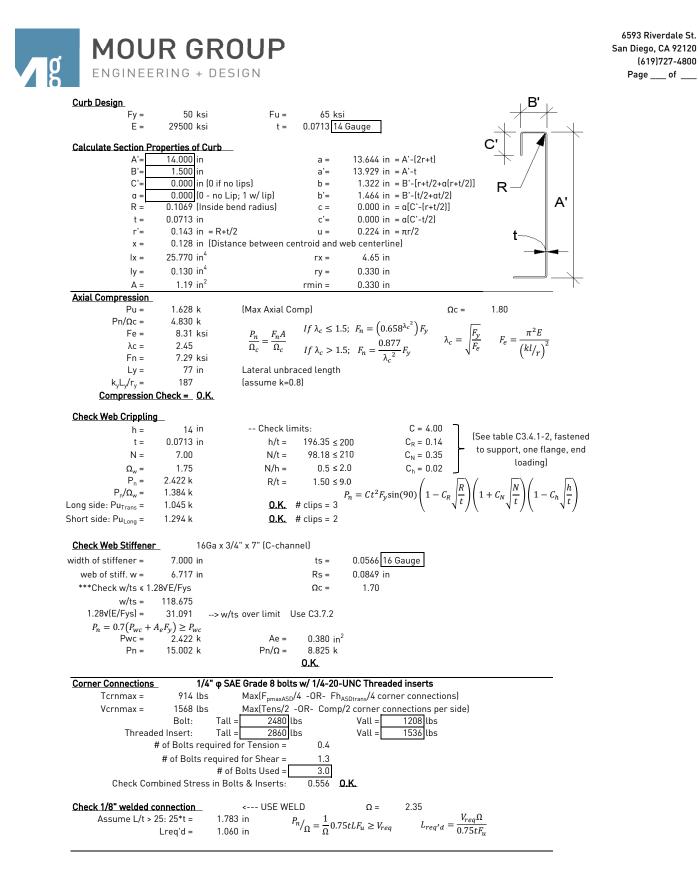
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For Concrete ar	nchorage:	SEISMIC	(0.6-0.14S _{DS})	$0 + 0.7 \Omega_{o}$	E		Ωo = 2.0			
	-		rods in Hilti H	-		w/ 4	5in embed		_	— A _{Na}
			C ESR 4868)						K	- INd
f'c =	4000		,						1	
h =			e thickness, t_	min = h	ef + 2dol	0.K.			<u>^</u>	CNa
h ef=			e embedment		,	0.11.			•	
da =	-	in (anchor		, do =	0.75	in (ho	ole diameter)		8	ş
n =							spacing effect		•	
S =			pacing estima		,	,				
τk,cr / uncr =	1170		psi (from ESF		ahle 14 Tem	n ran	ae Bl			s
τk,cr / uncr =									•	
	0.0425	, 2027 in (min. ad	μ_{3} II $j_c > 1$	2500, r full con	nulliply D	y U ci	$(2500)^{0.1} = 10 d_a \sqrt{\frac{\tau_{uncr}}{1100}}$			
c _N a=	7.0025	n (min. eu	ge distance to	г тип сар	acity);	C _{Na}	$= 10a_a \sqrt{1100}$)		J
Tension:	$N_{aa} = -$	$\frac{A_{Na}}{\Phi}\varphi_{ec,Na}$	$\varphi_{ed,Na}\varphi_{cp,Na}N$	ha	(10)210 14	4745	16)		• -	
Bond strength		A _{Nao}	- 1.0		(ACI318-14,	17.4.5	.10)			ş
-		$\varphi_{ed,Na}\varphi_{cp,l}$	$a_{Ma} = 1.0$						• -	
***Bond strength	A _{Na} =	985.55	in ²					_	-∕	CNa
will govern over concrete breakout	A _{Nao} =	328.52	in ²							
concrete breakout	N _{ba} =	10727	lbs $N_{hg} =$	$= \lambda_{\alpha} \tau_{\alpha} \pi d$	ahatan saism	vic I	$\alpha_{n,seismic} = 0.9$	9		
	N _{ag} =			<i>u</i> - <i>c</i> ₁ - <i>c</i> ₀	u ejn,selsm			CNa	+ CNa+	
			lbs (group)				$\lambda_a = 1.0$			
	øN _{ag} =	15688	lbs (group)		CONTROLS		$\lambda_a = 1.0 \text{ fc}$	or normal weig	tt conc; 0.6	for lightweig
Breakout	N	A _{Nc}								
strength	N _{cbg} –		$\varphi_{ed,N}\varphi_{cp,N}N_b$	N_b	$=\lambda_a k_c \sqrt{f'_c}$	$h_{ef}^{1.5}$				
	A _{Nc} =	722.25	in ²	N _b =	10264	lbs	Ø _{conc} =	= 0.75		
	A _{Nco} =	182.25	in ²	kc =	17		Ø _{bond} =			
				Ke -	17					
	N _{cbg} =	40674	lbs (group)				$\phi_{ m seis}$ =			
	ØN _{cbg} =	22879	lbs (group)				Ø _{steel} =	= 0.65		
Shear:	Vsa,eq =	7865	(from ESR48	68, Table	11)		α _{v,seismic} =	= 0.6		
Steel strength	øVsa.eq =	3067					.,			
0	Tall _{LRFD} =		lbs (anchor)		Vall _{LRFD} =		3067 lbs ∝=	(1 ± 0.250)	C)D + 25F	-1 708
Tall -	$Tall_{IRFD}/\alpha =$	3062		Vall –	$Vall_{LRFD}/\alpha =$			(D = 0.75)	-	
Transverse:		Uplift _{MAX} =	3957 lb			Shear		(b = 0.75) 3 lbs	5, 2 = 0.24	2)
L							MAX – 576 S _{DS})*WGT _{unit+cu}			
Compression _{SEISMIC} =	6485									
Tension _{SEISMIC} =	3957				n+HcurbJ-(0	.6-0.1	4S _{DS})*WGT _{unit+}	_{curb} *wcurb/2	2]/wcurb	
Shear _{SEISMIC} =	3783		=Ωo*FpmaxA							
Min Bolts Re			spacing =		in o.c.		Tapplied =			
Min Bolts Red			spacing =		in o.c.		Vapplied =	= 756.5		
Try using		bolts	COMBINED LC	ADING =	Tapplied	$+ \frac{V_a}{V_a}$	$\frac{pllied}{1.2}$	= 0.85	0.K.	
spaced at		in o.c.								
<u>Use 3 - 5/8"ф НА</u>	S rods in Hilti	i HIT-HY 200	V3 epoxy @ 6	9.8 in o.c	. max. along l	long si	de of curb w/ 4	.5in embed	-	
Longitudinal:		Uplift _{MAX} =						3 lbs	l	
Compression _{SEISMIC} =	4412	lbs	=[Ωo*Fpmax4	\SD*(Hcn	n+Hcurb)+(1	+0.14	S _{DS})*WGT _{unit+cu}	_{rb} *Lcurb/2],	/Lcurb	
Tension _{SEISMIC} =	1884						4S _{DS}]*WGT _{unit+}			
Shear _{SEISMIC} =	3783		=Ωo*FpmaxA							
Min Bolts Re			spacing =		in o.c.		Tapplied =	= 941.9	lbs	
Min Bolts Red							Vapplied =			
Try using		bolts			Tannlied	V_{α}			0.K.	
spaced at		in o.c.	COMBINED LC	DADING =	Tallow ACD	$+\frac{u}{V_{av}}$	$\frac{1}{1000} \leq 1.2$	= 0.73		
<u>Use 2 - 5/8"ф НА</u>								4.5in embed		
<u>0302 3/0 UTA</u>		200			ax. arong :	5110113	ac of carb W/			
CURB DESIGN SUM						Sunch	noice AV28		1	
		CBKDSAV28			Unit:	Sunch	IUICE AVZO			
	THICKNESS:		12 Gauge							
	THICKNESS:			cours and	clin	I				
			3 - #10 SMS sci	ews each	cilh					
	STIFFENER:				alta.					

WEB STIFFENER: NOT REQUIRED										
# OF CLIPS (SHORT SIDE) - 2 clips with 4 - #10 SMS screws each clip										
WEB STIFFENER: NOT REQUIRED										
CORNER CONNECTION: Use 3 - 1/4" ϕ SAE Grade 8 bolts w/ 1/4-20-UNC Threaded inserts										
CURB	WOOD	STEEL	CONCRETE							
ANCHORAGE	1/4"φ x 3.5" Simpson SDS screws	1/2" φ A307 Bolts to	5/8"φ HAS rods in Hilti HIT-HY							
ANCHORAGE	w/ 2.25" threaded embed	steel angle below deck	200 V3 epoxy w/ 4.5in embed							
LONG DIRECTION	7 @ 23.92 in o.c.	3 @ 69.75 in o.c.	3 @ 69.75 in o.c.							
SHORT DIRECTION	5 @ 18.03 in o.c.	2 @ 68.13 in o.c.	2 @ 68.13 in o.c.							



		V2206					
	CBKDSAV28		14"				
Unit:	Sunchoice AV	/28					
			▲				
Curb Information			Fv Fv Fo				
Hcurb =	14 ir	n	(Height of curb)				
Lcurb =	151.5 ir	n	(Length of curb) Wunit (x Lunit)				
wcurb =	80.125 ir	n	(Width of curb)	ĩ			
WGTcurb =	335 ll	bs	(Weight of curb)				
# Clips long side =	3						
Unit Information			III				
WGTunit =	2720 เ	hs	(Oper. Weight of Unit)				
Wtmax =	748 U		(Maximum corner weight)	Fh			
Wtmax = Wtmin =	578 [(Minimum corner weight)	Ì			
Hunit =	57.22 ir						
			(Height of unit above curb)				
Hcm =	28.61 ir						
Lunit =	160.06 ir		(Length of unit)				
Wunit =	88.75 ir	n	(Width of unit)	Ļ			
			V (x Lcurb)	,			
Seismic Loading -	2018 IBC/201	9 CBC	- (V (V COURD)) Cmax	, ,			
Ss =	2.85		(Worst case for majority of Cauronia)	^			
Fa =	1.20		(Default Site Class D - Table 11.4-1 ASCE 7-16)				
lp =	1.50		(Importance Factor Category III Building)				
Sms =	3.420		(Fa*Ss) ap = 2.5				
Sds =	2.280		(2/3*Sms) Rp = 6				
Fpmax =		Vn	(0.4*ap*Sds*Ip)*Wp*3/Rp <=1.6*Sds*Ip*Wp				
FpmaxASD =			(0.7*Fpmax) FpmaxASD = 3657 lbs				
i pilidxASD =	(unit only)	05	(unit and curb)				
Wind Loading - 20		200					
Kz =	1.13		(For 60 ft roof height, Exposure C - Table 26.10-1 ACSE 7-16)				
Kzt =	1.0		(No topographic effects assumed for rooftop mounted units)				
Kd =	0.85		(Directionality factor Table 26.6-1 ASCE 7-16)				
V =	110		(Wind velocity, mph for Occupancy Cat III-IV bldgs Exp. Cat C, Fig 25.5-1D, ASCE7-				
GCr _(horiz) =	1.9		(Refer Sect 29.4.1 ASCE 7-16)				
GCr _(vert) =	1.5		(Refer Sect 29.4.1 ASCE 7-16)				
qz	29.8 p	sf	= 0.00256*Kz*Kzt*Kd*V ² (Eq. 26.10-1 ASCE 7-16)				
F _{h ASD trans} =			= 0.6*qz*GCr*Lunit*(Hunit+Hcurb) (Eq. 29.4-2)				
F _{h ASD long} =		bs	= 0.6*qz*GCr*Wunit*(Hunit+Hcurb)				
F _{vert ASD} =			= 0.6*qz*GCr*Lunit*Wunit (Eq. 29.4-3)				
· vert ASD	2012 1						
Curb Loading							
Transverse:							
Compression _{SEISMIC} =	3136 U	bs	=[FpmaxASD*Hcm+2*(1+0.14S _{ns})*Wtmax*wcurb]/wcurb				
Tension _{SEISMIC} =			=[FpmaxASD*Hcm-2*(0.6-0.14S _{ns})*Wtmin*wcurb]/wcurb				
			=[F _{h ASD trans} *Hcm+2*0.6*Wtmax*wcurb-F _{vert ASD} *wcurb/2]/wcurb				
Compression			=[F _{h ASD trans *Hcm-2*0.6*Wtmin*wcurb+F_{vertASD}*wcurb/2]/wcurb}				
Compression _{WIND} =	1504 1		Th ASD trans from 2 0.0 Within would TreetASD would/2]/would				
Compression _{WIND} = Tension _{WIND} =			s indicate ennesite lead				
Tension _{WIND} =			s indicate opposite load.				
Tension _{WIND} = <u>Longitudinal:</u>	> Negative	values i					
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} =	> Negative 2588 II	e values i bs	 =[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} =	> Negative 2588 U 290 U	e values i bs bs	 =[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} =	> Negative 2588 U 290 U -142 U	e values i bs bs bs	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} =	> Negative 2588 U 290 U -142 U 908 U	e values i bs bs bs bs	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb =[F _{h ASD long} *Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} =	> Negative 2588 II 290 II -142 II 908 II > Negative	e values i bs bs bs bs	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} = Tension _{WIND} = <u>Governing Reactio</u>	> Negative 2588 II 290 II -142 II 908 II > Negative ons:	e values i bs bs bs bs e values i	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb =[F _{h ASD long} *Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb s indicate opposite load.				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} = Tension _{WIND} = <u>Governing Reaction</u> <u>Transverse:</u>	> Negative 2588 II 290 II -142 II 908 II > Negative ons: Comp _{MAX} =	e values i bs bs bs e values i 3136	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb =[F _{h ASD long} *Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb s indicate opposite load.				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} = Tension _{WIND} = <u>Governing Reactio</u>	> Negative 2588 II 290 II -142 II 908 II > Negative ons:	e values i bs bs bs bs e values i	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*[0.6-0.14S _{DS}]*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb =[F _{h ASD long} *Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb s indicate opposite load. Lbs> Along long edge of curb. Lbs> Along long edge of curb.				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} = Tension _{WIND} = <u>Governing Reaction</u> <u>Transverse:</u>	> Negative 2588 II 290 II -142 II 908 II > Negative ons: Comp _{MAX} =	e values i bs bs bs e values i 3136	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*(0.6-0.14S _{DS})*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb =[F _{h ASD long} *Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb s indicate opposite load.				
Tension _{WIND} = <u>Longitudinal:</u> Compression _{SEISMIC} = Tension _{SEISMIC} = Compression _{WIND} = Tension _{WIND} = <u>Governing Reaction</u> <u>Transverse:</u> (on long edge)	> Negative 2588 II 290 II -142 II 908 II > Negative ons: Comp _{MAX} = Tens _{MAX} =	e values i bs bs bs e values i 3136 1586	=[FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb =[FpmaxASD*Hcm-2*[0.6-0.14S _{DS}]*Wtmin*Lcurb]/Lcurb =[F _{h ASD long} *Hcm+2*0.6*Wtmax*Lcurb-F _{vertASD} *Lcurb/2]/Lcurb =[F _{h ASD long} *Hcm-2*0.6*Wtmin*Lcurb+F _{vertASD} *Lcurb/2]/Lcurb s indicate opposite load. Lbs> Along long edge of curb. Lbs> Along long edge of curb.				



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Connection Unit to C	urb Clip	#10 SMS scr	ew	Ω =	3.0	
t1 =	0.0713 in	ļJ		Fu1 =	65 ksi	
t2 =	0.1017 in (unit bas	se rail thickness)		Fu2 =	65 ksi	
d =	0.190 in (screw o		dw =	0.375 in (nom. washer diameter	·)
t2/t1 =	1.4				-	_
<u>For t2/t1 ≤ 1.0:</u>	Pns =	2377 # <u>F</u>	or t2/t1 ≥ 2.5:		▲ I	
Shear: $P_{ns} = 4$.	$2F_{u2}\sqrt{t_2^3d}$ 3.86	k	Pns =	2377 #	τ2	
	$2.7t_1 dF_{u1}$ 2.38	k P _{ns}	$= 2.7t_1 dF_{u1}$	2.38 k		
$P_{ns} =$	$2.7t_2 dF_{u2}$ 3.39	k <i>P_{ns}</i> :	$= 2.7t_2 dF_{u2}$	3.39 k	t ₁	U
Pns/Ω =	792 #					,
Pss/Ω =	540 # <- Control	P	$not = 0.85t_c d$	$F_{\mu 2}$)		
Tension: Pnot =	1.068 k (screw p	5	$t_c = \min(t_1,$			
Pnov =		ull-over strength) P _i	$nov = 1.5t_1d_w$	F_{u1}		
Pts/Ω =	356 # <- Control					
Pts/Ω =	820 #	(full tensile screw		chooing		TT)
Long side:	Shear(k) # clips 3.256 3	V _{clip} (k) V _{allow} (lb 1.09 540 #	b) #screws 3	spacing 3.00 in		1
<u>Short side:</u>	3.256 3 3.256 2	1.63 540 #	4	2.00 in		
	idth (in) = 7.00	clip height	-	-	4 4	
	spacing = 0.57 in	edge distance		in (min. 1.5d)		
<u>Check Block shear r</u>	1 0	thinnest part		AISI BSR appl	ies	- V
Fy =	50 ksi		2 bolt/screw			▼ I
Aqv =	0.463 in ²	Anv = 0.41	6 in ²	Ant =	0.042 in ²	
$Rn/\Omega =$	7.500 k	$R_n = 0.6F_y A_{gv} + F_{u}$	$A_{nt} \le 0.6F_uA_n$	$v + F_u A_{nt}$		
	<u>BSR 0.K.</u>	, ,	(AISI Sec	ct. E5.3)		
Connection of Curb	to Supporting Structu	ire				
Roof Loading	SEISMIC: (0.6-0.14S	_{DS})D + 0.7E	-	0.6D + W		
Transverse:	Uplift _{MAX} =			Shear _{MAX} =	1828 lbs	
Compression _{SEISMIC} =	3960 lbs	=[FpmaxASD*(Hcm+				
Tension _{SEISMIC} =	1516 lbs				it+curb [*] wcurb/2]/wcurb	
Compression _{WIND} =	1024 lbs				b/2-F _{vert ASD} *wcurb/2]/v	
Tension _{WIND} =	1832 lbs				o/2+F _{vertASD} *wcurb/2]/v	vcurb
Longitudinal:	Uplift _{MAX} =	823 lbs		Shear _{MAX} =	1828 lbs	
Compression _{SEISMIC} =	3044 lbs	=[FpmaxASD*(Hcm+				
Tension _{SEISMIC} =	600 lbs				_{it+curb} *Lcurb/2]/Lcurb	aurh
Compression _{WIND} =	14 lbs	\$			/2-F _{vert ASD} *Lcurb/2]/Lo	
Tension _{WIND} =	823 lbs	<i>,</i>			/2+F _{vertASD} *Lcurb/2]/Lc	curb
Wood Attachment:	•	5" Simpson SDS screv 997 lbs			min = 0.43)	
Transverse:	Tall _{metal} =		Vall _{metal} =			
	= Tall _{wood} = ws Req'd for Uplift		Vall _{wood} = COMBINED I		0.814 O.K.	
	ws Reg'd for Shear =			Spacing =	23.9 in o.c.	
	of screws Required =		Screw	opuenig -	20.7	
	•	in o.c. along long side o	of curb w/ 2.25	" threaded emb	ed	
Longitudinal:	<u> </u>		•			
-	ws Req'd for Uplift =	1.3	COMBINED I	OADING:	0.811 O.K.	
	ws Reg'd for Shear =			Spacing =	18.0 in o.c.	
	of screws Required =			-pj		
		o.c. along short side of	f curb w/ 2.25"	threaded embe	d	
Steel Deck Attachm		7 Bolts to steel angle			<u> </u>	
	Tall _{bolt} =	3927 lbs	Vall _{bolt} =	2209 lbs		
Transverse:	Tall _{metal} =		Vall _{metal} =	2192 lbs		
# of Bo	olts Req'd for Uplift =	0.88	COMBINED I	OADING:	0.248 O.K.	
# of Bo	lts Req'd for Shear =	0.83	Bolt	Spacing =	69.8 in o.c.	
Total #	# of Bolts Required =	3				
<u>1/2" φ A307 Bolts</u>	to steel angle below de	eck @ 69.8 in o.c. along	long side of cu	<u>ırb</u>		* * *
Longitudinal:						
	olts Req'd for Uplift =		COMBINED I		0.300 O.K.	
	lts Req'd for Shear =		Req'd Min	Spacing =	68.1 in o.c.	
	# of Bolts Required =					
<u>1/2" φ A307 Bolts</u>	to steel angle below de	eck @ 68.1 in o.c. along	short side of c	urb		

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For Concrete ar	nchorage:	SEISMIC	(0.6-0.14S _{DS})D + 0.7Ω _o E		Ωo = 2	2.0			
Concrete Att	-					w/ 4.5in en	nbed		. ~	— A _{Na}
			C ESR 4868)			-			K-	
f'c =	4000									l` CNa
h =	6	in (concret	e thickness,	t_min = h_e	f + 2do)	0.K.			<u></u>	
h_ef =	4.5	in (effective	e embedmer	nt)					1	ſ
da =	0.625	in (anchor	diameter)	do =	0.75	in (hole dia	meter)		1	s
n =	3	(number of	f dummy and	chors to che	ck capacity	with spacir	ng effect)		• -	\rightarrow
S =	20	in (initial s	pacing estim	nate)						s
τk,cr / uncr =	1170		psi (from ES							.]
τk,cr / uncr =	1226	2327	psi If $f'_c >$	> 2500, 1	multiply by	$v(f'_c/2500)$) ^{0.1}			
c _N a=	9.0625	in (min. ed	psi If <i>f'_c ></i> ge distance f	for full capa	city);	$c_{Na} = 100$	$d_a \left(\frac{u_{ncr}}{1100} \right)$			s
	N —	A _{Na}	(0 . (0	N			V1100		• –	
Tension:	$N_{ag} =$	$\overline{A_{Nao}}^{\Psi ec,Na}$	$\varphi_{ed,Na}\varphi_{cp,Na}$	^w ba (1	ACI318-14, 1	17.4.5.1b)				
Bond strength	$\varphi_{ec,N}$	$a\varphi_{ed,Na}\varphi_{cp,I}$	$_{Va} = 1.0$							J
***Bond strength	A _{Na} =	985.55	in ²					_	→	
will govern over	A _{Nao} =		in ²							CNa
concrete breakout	N _{ba} =			$=\lambda_a \tau_{cr} \pi d_a$	h a a		- 0.00			
				- naternua	nef an,seismi		nic = 0.99	CNa-		
	N _{ag} =		lbs (group)				$\lambda_a = 1.0$			
	øN _{ag} =	15688	lbs (group)	C	ONTROLS	2	$\lambda_a = 1.0$ for no	ormal weig	ht conc; 0.6 f	or lightweig
Breakout	N. –	A _{Nc}	$\varphi_{ed,N}\varphi_{cp,N}N_b$.15				
strength	recbg –			$N_b =$	$= \lambda_a k_c \sqrt{f'} c$	$h_{ef}^{1.5}$				
1	A _{Nc} =	722.25	in²	N _b = 1	0264	lbs	$\phi_{conc} =$	0.75		
1	A _{Nco} =	182.25	in ²	kc = 1	.7		Ø _{bond} =	0.65		
	N _{cba} =	40674	lbs (group)				Ø _{seis} =	0.75		
	øN _{cbg} =	· · · · · · · · · · · · · · · · · · ·	lbs (group)				$\phi_{\text{steel}} =$	0.65		
Shear:	Vsa,eq =		(from ESR4	868, Table '	11]	α,	seismic =	0.6		
Steel strength	øVsa,eq =									
	Tall _{LRFD} =	5229	lbs (anchor)		$Vall_{LRFD} =$		bs ∝= (1		-	
Tall _{ASD} = 1	Fall _{LRFD} /α =		lbs	Vall _{ASD} = V		1796 l			B, E = 0.242	2)
Transverse:		Uplift _{MAX} =	3460		9	Shear _{MAX} =	3657 lb			
$Compression_{SEISMIC} =$	5904	lbs	=[Ωo*Fpmax	xASD*(Hcm·	+Hcurb)+(1	+0.14S _{DS})*V	VGT _{unit+curb} *۱	wcurb/2],	/wcurb	
Tension _{SEISMIC} =	3460	lbs	=[Ωo*Fpmax	xASD*(Hcm·	+Hcurb)-(0.	.6-0.14S _{DS})*	WGT _{unit+curb}	*wcurb/2]/wcurb	
Shear _{SEISMIC} =	3657	lbs	=Ωo*Fpmax	ASD/2						
Min Bolts Re	q'd Uplift =	1.13	spacing =	69.75 ii	n o.c.	Т	applied =	1153.5	lbs	
Min Bolts Red	q'd Shear =	2.04	spacing =	69.75 ii			applied =	731.4	lbs	
Try using	3	bolts	COMBINED I	OADING =	Tapplied	$+ \frac{V_{apllied}}{V_{apllied}}$	≤ 1.2 =	0 78	0.K.	
spaced at	69.75	in o.c.			$T_{allow,ASD}$	V _{allow,ASD}				
<u>Use 3 - 5/8"ф НА</u>	S rods in Hilt				max. along lo	ong side of c	urb w/4.5in	embed		
Longitudinal:		Uplift _{MAX} =				Shear _{MAX} =				
Compression _{SEISMIC} =	4072	lbs	=[Ωo*Fpmax							
Tension _{SEISMIC} =	1628	lbs	=[Ωo*Fpmax	xASD*(Hcm	+Hcurb)-(0.	.6-0.14S _{DS})*	WGT _{unit+curb}	*Lcurb/2]/Lcurb	
Shear _{SEISMIC} =	3657	lbs	=Ωo*Fpmax	ASD/2						
Min Bolts Re			spacing =	34.06 ii		Т	applied =	814.0	lbs	
Min Bolts Red		2.04	spacing =	34.06 ii			applied =	731.4	lbs	
Try using	2	bolts	COMBINED I	OADING =	$T_{applied}$	$+ \frac{V_{apllied}}{V_{apllied}}$	<12 -	0.67	0.K.	
spaced at		in o.c.								
<u>Use 2 - 5/8"ф НА</u>	S rods in Hill	ti HIT-HY 200	V3 epoxy @	68.1 in o.c. i	max. along s	hort side of	curb_w/4.5i	n embed		
CURB DESIGN SUM	MMARY:	CBKDSAV28			Unit:	Sunchoice A	V28			
CURB RAIL	THICKNESS:	0.0713 in	14 Gauge							
		0.0713 in	-							
# OF CLIPS (L	ONG SIDE) -	3 clips with	3 - #10 SMS s	crews each c	lip					
WEB	STIFFENER:	NOT REQUI	RED							

UNIT CLIP	THICKNESS: 0.0713 III 14 Gauge								
# OF CLIPS (LONG SIDE) - 3 clips with 3 - #10 SMS screws each clip									
WEB STIFFENER: NOT REQUIRED									
# OF CLIPS (SHORT SIDE) - 2 clips with 4 - #10 SMS screws each clip									
WEB STIFFENER: NOT REQUIRED									
CORNER CONNECTION: Use 3 - 1/4" φ SAE Grade 8 bolts w/ 1/4-20-UNC Threaded inserts									
CURB	WOOD	STEEL	CONCRETE						
ANCHORAGE	1/4"φ x 3.5" Simpson SDS screws	1/2" φ A307 Bolts to	5/8"φ HAS rods in Hilti HIT-H						
ANCHORAGE	w/ 2.25" threaded embed	steel angle below deck	200 V3 epoxy w/ 4.5in embed						
LONG DIRECTION	7 @ 23.92 in o.c.	3 @ 69.75 in o.c.	3 @ 69.75 in o.c.						
SHORT DIRECTION	5 @ 18.03 in o.c.	2 @ 68.13 in o.c.	2 @ 68.13 in o.c.						