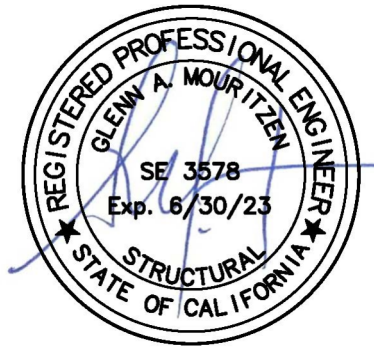




MOUR GROUP
ENGINEERING + DESIGN

6593 Riverdale St.
San Diego, CA 92120
619-727-4800

Structural Calculations
for
CBWC-119 Series
CBWCLXL



Prepared for:
PROVENT / RRS
3847 Wabash Drive
Mira Loma, CA 91725

Date: October 11, 2021
Project Number: PV2101

For wood, concrete and steel attachments see Roof Anchorage Detail, Form No. CB-60.

STRUCTURALLY CALCULATED WELDED ROOF CURBS FOR YORK UNITS

ProVent P/N	A	WEIGHT
CBWCLXL08	8"	74 Lbs
CBWCLXL11	11"	85 Lbs
CBWCLXL14	14"	97 Lbs
CBWCLXL24	24"	171 Lbs

P*B ALL MODELS**

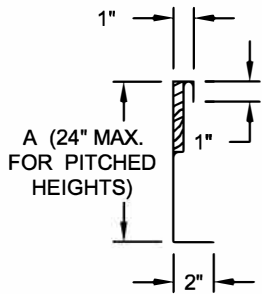
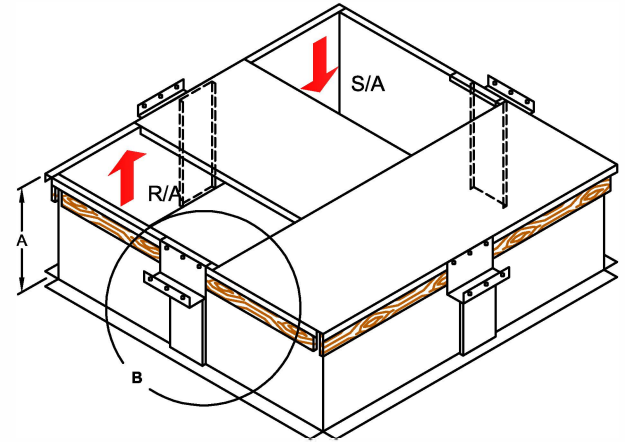
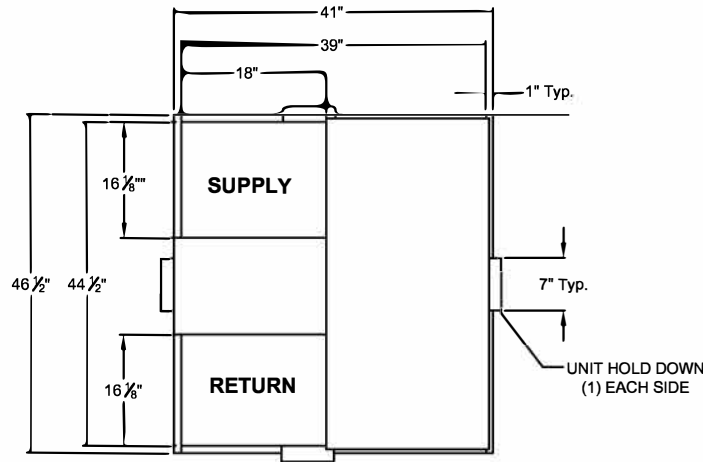
FEATURES

- Roof curb sides and ends are 16 ga. galvanized steel.
- Gasketing package provided.
- Heat treated wood nailer provided.
- Insulated deck pans provided.
- Pitched curbs and taller curbs are available.

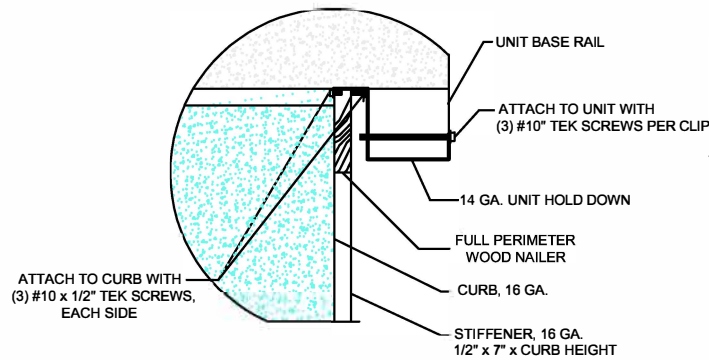
Meets seismic requirements for the following codes:
 CBC 2019
 IBC 2018

NOTES

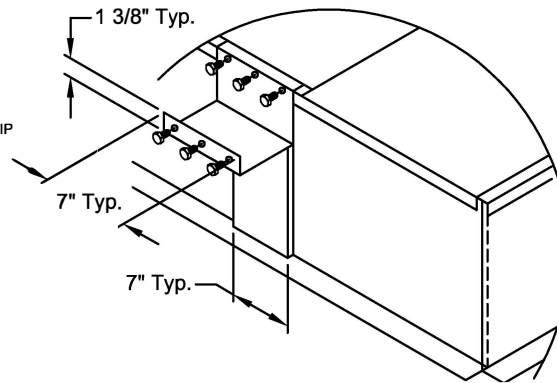
- Attach ductwork to roof curb. Flanges of duct rest on top of curb. Support ductwork below the curb.
- Thru the curbs utilities are available. Contact your York distributor or Provent directly.



CURB DETAIL



HOLD DOWN DETAIL



DETAIL B



3847 WABASH DRIVE
 MIRA LOMA, CA 91725

PHONE (951) 685-1101
 FAX (619) 872-9799

SUBMITTED TO: _____
 COMPANY: _____
 JOB NAME: _____
 EQUIPMENT: _____
 NOTES: _____

FORM NO:
 CBWC-119

DATE:
 3/26/2021

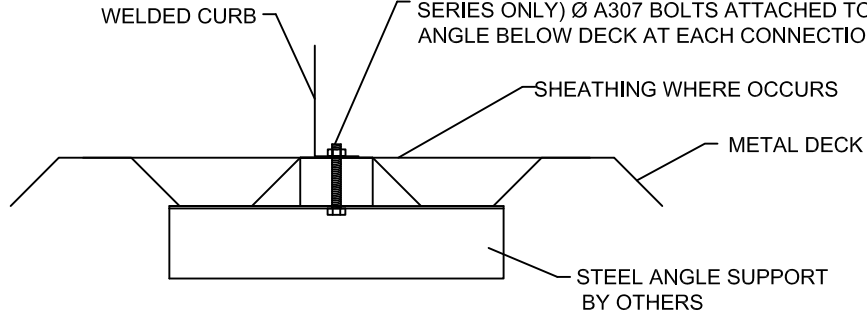
PART NUMBER:
 CBWCLXL SERIES

REV:
 6

DRAWN BY:
 ALL

STEEL ATTACHMENT

CENTER ON CURB FLANGE. SEE TABLE FOR QUANTITY OF EVENLY SPACED 1/2" (OR 5/8" FOR MIL SERIES ONLY) Ø A307 BOLTS ATTACHED TO STEEL ANGLE BELOW DECK AT EACH CONNECTION POINT.



NO. OF ANCHORAGE BOLTS REQUIRED

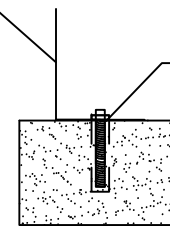
CURB	LONG SIDE	SHORT SIDE
LXS	2 @ 34.5" O.C.	2 @ 19" O.C.
LXL	2 @ 34.5" O.C.	2 @ 29" O.C.
SUN3672	2 @ 60.5" O.C.	2 @ 39" O.C.
PRD3715	2 @ 68.88" O.C.	2 @ 39" O.C.
PRS	2 @ 58.88" O.C.	2 @ 28.69" O.C.
PRL	2 @ 72" O.C.	2 @ 41.5" O.C.
SLU180	3 @ 51.38" O.C.	2 @ 71.5" O.C.
SLM1830	3 @ 56.88" O.C.	3 @ 35.75" O.C.

ASSUMES:

CONC SLAB
f_c= 4000PSI MINIMUM
6" MIN THICKNESS
NORMAL WEIGHT CONCRETE
OR SAND LIGHT WEIGHT

CONCRETE ATTACHMENT

WELDED CURB



CENTER ON CURB FLANGE. SEE TABLE FOR QUANTITY OF EVENLY SPACED 3/4" Ø THREADED ROD IN HILTI HIT-HY 200 EPOXY WITH 4" EMBED

NO. OF ANCHORAGE BOLTS REQUIRED

CURB	LONG SIDE	SHORT SIDE
LXS	4 @ 11.5" O.C.	3 @ 9.5" O.C.
LXL	4 @ 11.5" O.C.	3 @ 14.5" O.C.
SUN3672	4 @ 20.17" O.C.	3 @ 12.38" O.C.
PRD3715	9 @ 8.61" O.C.	7 @ 6.5" O.C.
PRS	5 @ 14.72" O.C.	4 @ 9.56" O.C.
PRL	6 @ 14.4" O.C.	5 @ 10.38" O.C.
SLU180	8 @ 14.68" O.C.	7 @ 11.92" O.C.
SLM1830	12 @ 10.34" O.C.	10 @ 7.94" O.C.

Meets seismic requirements for the following codes:
CBC 2019
IBC 2018

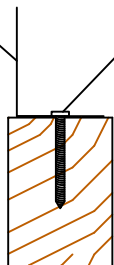
ROOF ANCHORAGE DETAIL

CBKD Series	CBWC Series
LXS	LXS
LXL	LXL
SUN3672	SUN3672
PRD3715	PRD3715
PRS	PRS
PRL	PRL
SLU180	SLU180
SLM1830	SLM1830

* SIX INCHES FROM EACH CORNER EVENLY SPACED.
** CENTERED.

WOOD ATTACHMENT

WELDED CURB



CENTER ON CURB FLANGE. SEE TABLE FOR QUANTITY OF EVENLY SPACED 1/4" Ø SIMPSON SDS OR EQUIVALENT SCREWS (3 1/2" MIN. EMBED. INTO WOOD FRAMING)

5/8" Ø LAG SCREW W/MIN. 3.5" EMBED (SGMIN=0.43) (FOR MIL SERIES ONLY)

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 @ 9.11" 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.

FOUR INCHES FROM EACH CORNER EVENLY SPACED



3847 WABASH DRIVE
MIRA LOMA, CA 91725

PHONE (951) 685-1101
FAX (619) 872-9799

SUBMITTED TO: _____
COMPANY: _____
JOB NAME: _____
EQUIPMENT: _____
NOTES: _____

FORM NO:
CB-60

DATE:
10/07/2021

REV:
7

DRAWN BY:
FMM



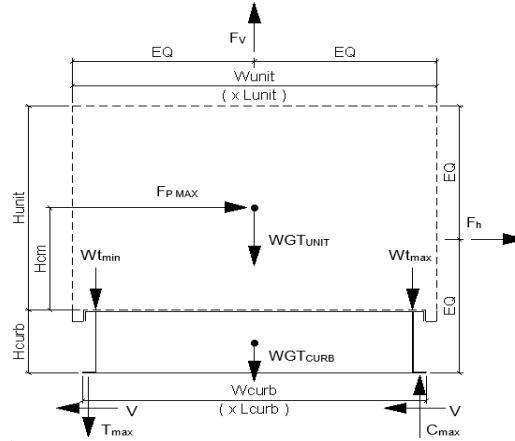
Client:	ProVent PV2101	Previous:	PV1806
Description:	CBWC-119	CBWCLXL	
Unit:	ALL YORK P***B MODELS		

Curb Information

Hcurb =	24	in	(Height of curb)
Lcurb =	46.5	in	(Length of curb)
wcurb =	41	in	(Width of curb)
WGTCurb =	171	lbs	(Weight of curb)
# Clips long side =	1		
# Clips short side =	1		

Unit Information

WGUnit =	420	lbs	(Weight of Unit)
Wtmax =	141	lbs	(Maximum corner weight)
Wtmin =	78	lbs	(Minimum corner weight)
Hunit =	55	in	(Height of unit above curb)
Hcm =	27.5	in	(Height to center of mass)
Lunit =	51.25	in	(Length of unit)
Wunit =	45.75	in	(Width of unit)



Seismic Loading - 2018 IBC/2019 CBC

Ss =	2.85	(Worst case for majority of California)
Fa =	1.2	Default Site Class D
Sms =	3.420	(Fa*Ss)
Sds =	2.280	(2/3*Sms)
Ip =	1.50	(Importance Factor Category III Building)
Fpmax =	1.710 Wp	(0.4*Sds*Ip)*Wp*3/Rp
FpmaxASD =	503 lbs	(0.7*Fpmax)
	(unit only)	
		FpmaxASD = 707 lbs
		(unit and curb)

Wind Loading - 2018 IBC/2019 CBC

*** Exposure Category C ***

Kz =	1.13	(For 60 ft roof height, Exposure C - Table 26.10-1 ASCE 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 =	115	(Max wind velocity, mph for Cat III & IV bldgs Exp. Cat C)
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 =	32.5 psf	= 0.00256*Kz*Kzt*Kd*V ² (Eq. 26.10-1 ASCE 7-16)
Fh ASD trans =	1042 lbs	= 0.6*qz*GCr*Lunit*(Hunit+Hcurb) (Eq. 29.4-2)
Fh ASD long =	930 lbs	= 0.6*qz*GCr*Wunit*(Hunit+Hcurb)
Fvert ASD =	477 lbs	= 0.6*qz*GCr*Lunit*Wunit (Eq. 29.4-3)

Curb Loading

Transverse:		
Compression _{SEISMIC} =	709 lbs	= [FpmaxASD*Hcm+2*(1+0.14S _{DS})*Wtmax*wcurb]/wcurb
Tension _{SEISMIC} =	591 lbs	= Comp _{SEISMIC} - (0.6-0.14S _{DS})*WGTunit
Compression _{WIND} =	630 lbs	= [Fh trans ASD *Hcm+2*0.6*Wtmax*wcurb-Fvert ASD *wcurb/2]/wcurb
Tension _{WIND} =	855 lbs	= Comp _{WIND} +Fvert-0.6*WGTunit

---> Negative values indicate Compression load rather than Tension.

Longitudinal:		
Compression _{SEISMIC} =	669 lbs	= [FpmaxASD*Hcm+2*(1+0.14*S _{DS})*Wtmax*Lcurb]/Lcurb
Tension _{SEISMIC} =	551 lbs	= Comp _{SEISMIC} - (0.6-0.14S _{DS})*WGTunit
Compression _{WIND} =	481 lbs	= [Fh trans ASD *Hcm+2*0.6*Wtmax*Lcurb-Fvert ASD *Lcurb/2]/Lcurb
Tension _{WIND} =	706 lbs	= Comp _{WIND} +Fvert-0.6*WGTunit

---> Negative values indicate Compression load rather than Tension.

Governing Reactions:

Transverse:	Comp _{MAX} =	709	lbs	---> Along long edge of curb.
(on long edge)	Tens _{MAX} =	855	lbs	---> Along long edge of curb.
Longitudinal:	Comp _{MAX} =	669	lbs	---> Along short edge of curb.
(on short edge)	Tens _{MAX} =	706	lbs	---> Along short edge of curb.

---> Negative values indicate Compression load rather than Tension.

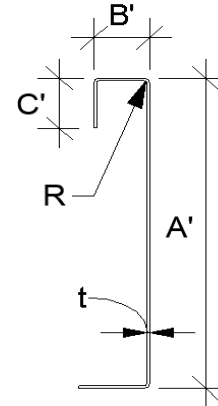


Curb Design

Fy = 50 ksi Fu = 65 ksi t = 0.0566 16 Gauge
E = 29500 ksi

Calculate Section Properties of Curb

A' = 24.000 in	a = 23.717 in = A' - (2r+t)
B' = 1.000 in	a' = 23.943 in = A' - t
C' = 0.000 in [0 if no lips]	b = 0.859 in = B' - [r+t/2+a(r+t/2)]
α = 0.000 [0 - no Lip; 1 w/ lip]	b' = 0.972 in = B' - [t/2+αt/2]
R = 0.0849 [Inside bend radius]	c = 0.000 in = α[C' - (r+t/2)]
t = 0.0566 in	c' = 0.000 in = α[C' - t/2]
r' = 0.113 in = R+t/2	u = 0.178 in = πr/2
x = 0.037 in [Distance between centroid and web centerline]	
Ix = 79.767 in ⁴ [Moment of Inertia about X-Axis]	
Iy = 0.033 in ⁴ [Moment of Inertia about Y-Axis]	
A = 1.46 in ²	
rx = 7.39 in	
ry = 0.150 in	
rmin = 0.150 in	



Axial Compression

Pu = 0.521 k	(Max Axial Comp)	Ωc = 1.80
Pn/Ωc = 3.656 k		
Fe = 5.14 ksi		
λc = 3.12		
Fn = 4.51 ksi		
Ly = 45 in	Lateral unbraced length	
kyLy/ry = 238	(assume k=0.8)	

$\lambda_c = \sqrt{\frac{F_y}{F_e}}$ $F_e = \frac{\pi^2 E}{(kl/r)^2}$

If $\lambda_c \leq 1.5$; $F_n = (0.658\lambda_c^2) F_y$
If $\lambda_c > 1.5$; $F_n = \frac{0.877}{\lambda_c^2} F_y$

Compression Check = O.K.

Check Web Crippling

h = 24 in	-- Check limits:	C = 4.00	} (See table C3.4.1-2, fastened to support, one flange, end loading)
t = 0.0566 in	h/t = 424.03 ≤ 200	CR = 0.14	
N = 7.00	N/t = 123.67 ≤ 210	CN = 0.35	
Ωw = 1.75	N/h = 0.291667 ≤ 2.0	Ch = 0.02	
Pn = 1.366 k	R/t = 1.50 ≤ 9.0		

$P_n = C t^2 F_y \sin(90) \left(1 - C_R \sqrt{\frac{R}{t}}\right) \left(1 + C_N \sqrt{\frac{N}{t}}\right) \left(1 - C_h \sqrt{\frac{h}{t}}\right)$

Long side: Pu_{Trans} = 0.709 k **O.K.** # clips = 1
Short side: Pu_{Long} = 0.669 k **O.K.** # clips = 1

*****h/t > 200; use web stiffeners**

Check Web Stiffener

16Ga x 3/4" x 7" [C-channel]

width of stiffener = 7.000 in	ts = 0.0566 16 Gauge
web of stiff. w = 6.717 in	Rs = 0.0849 in
***Check w/ts ≤ 1.28√E/Fys	Ωc = 1.70
w/ts = 118.675	
1.28√E/Fys = 31.091	--> w/ts over limit Use C3.7.2
Pn = 0.7(Pwc + AeFy) ≥ Pwc	
Pwc = 1.366 k	Ae = 0.380 in ²
Pn = 14.262 k	Pn/Ω = 8.390 k

O.K.

Corner Connections

1/4" φ SAE Grade 8 bolts w/ 1/4-20-UNC Threaded inserts

Tcrnmax = 261 lbs	Max[FpmaxASD/4 -OR- FhASDtrans/4 corner connections]
Vcrnmax = 427 lbs	(Max Ten/2 corner connections per side)
Bolt: Tall = 2480 lbs	Val = 1096 lbs
Threaded Insert: Tall = 2860 lbs	Val = 1714 lbs
# of Bolts required for Tension = 0.1	
# of Bolts required for Shear = 0.4	
# of Bolts Used = 1.0	***If combined fails: USE --> 2.0
Check Combined Stress in Bolts & Inserts: 0.495 O.K.	StressComb = 0.247 O.K.

Check 1/8" welded connection

<--- USE WELD Ω = 2.35

Assume L/t > 25: 25*t = 1.415 in Pn/Ω = $\frac{1}{\Omega} 0.75tL F_u \geq V_{req}$ Lreq'd = $\frac{V_{req}\Omega}{0.75tF_u}$
Lreq'd = 0.364 in



Connection Unit to Curb Clip

#10 SMS screw

$\Omega = 3.0$

$t_1 = 0.0566$ in

$F_{u1} = 65$ ksi

$t_2 = 0.1017$ in (unit base rail thickness)

$F_{u2} = 65$ ksi

$d = 0.190$ in (screw diameter)

$d_w = 0.375$ in (nom. washer diameter)

$t_2/t_1 = 1.8$

For $t_2/t_1 \leq 1.0$:

Shear: $P_{ns} = 4.2F_{u2}\sqrt{t_2^3d}$ $P_{ns} = 1887$ # 3.86 k

For $t_2/t_1 \geq 2.5$:

$P_{ns} = 1887$ # 3.86 k

$P_{ns} = 2.7t_1dF_{u1}$ 1.89 k

$P_{ns} = 2.7t_1dF_{u1}$ 1.89 k

$P_{ns} = 2.7t_2dF_{u2}$ 3.39 k

$P_{ns} = 2.7t_2dF_{u2}$ 3.39 k

$P_{ns}/\Omega = 629$ #

$P_{ss}/\Omega = 540$ # <- Controls

Tension: $P_{not} = 1.068$ k (screw pull-out strength)

$P_{not} = 0.85t_c d F_{u2}$

$t_c = \min(t_1, t_2)$

$P_{nov} = 2.069$ k (screw pull-over strength)

$P_{nov} = 1.5t_1 d_w F_{u1}$

$P_{ts}/\Omega = 356$ # <- Controls

$P_{ts}/\Omega = 820$ #

(full tensile screw capacity)

	Shear (k)	# clips	V_{clip} (k)	V_{allow} (lb)	# screws	spacing
Long side:	1.042	1	1.04	540 #	2	6.00 in
Short side:	0.930	1	0.93	540 #	2	6.00 in

clip width (in) = 7.00

clip height = 1.4 in

min spacing = 0.57 in

edge distance = 0.5 in (min. 1.5d)

Check Block shear rupture: O.K.

thinnest part = 0.0566 AISI BSR applies

$F_y = 50$ ksi

$\Omega = 2.22$ bolt/screw connection

$A_{gv} = 0.368$ in²

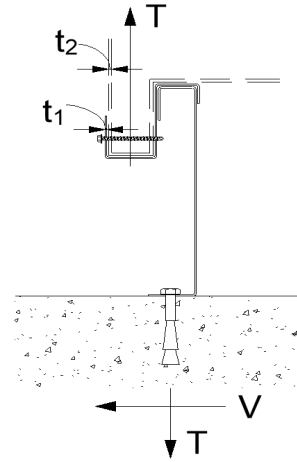
$A_{nv} = 0.352$ in²

$A_{nt} = 0.034$ in²

$R_n/\Omega = 5.954$ k

$R_n = 0.6F_y A_{gv} + F_u A_{nt} \leq 0.6F_u A_{nv} + F_u A_{nt}$
(AISI Sect. E5.3)

BSR O.K.



Connection of Curb to Supporting Structure

Roof Loading

SEISMIC: (0.6-0.14SDS)D + 0.7E

WIND: 0.6D + W

Transverse:	Uplift _{MAX} =	1370 lbs	Shear _{MAX} =	521 lbs
Compression _{SEISMIC}	=	$[F_{pmaxASD}*(H_{cm}+H_{curb})+(1+0.14S_{DS})*(WGT_{unit+curb}/2)*w_{curb}]/w_{curb}$		
Tension _{SEISMIC}	=	$Comp_{SEISMIC} - [0.6-0.14S_{DS}]*[WGT_{unit+curb}]$		
Compression _{WIND}	=	$[F_{htransASD}*(H_{cm}+H_{curb})+0.6*(WGT_{unit+curb}/2)*w_{curb}-F_{vertASD}*w_{curb}/2]/w_{curb}$		
Tension _{WIND}	=	$[F_{htransASD}*(H_{cm}+H_{curb})-0.6*(WGT_{unit+curb}/2)*w_{curb}+F_{vertASD}*w_{curb}/2]/w_{curb}$		
Longitudinal:	Uplift _{MAX} =	1091 lbs	Shear _{MAX} =	465 lbs
Compression _{SEISMIC}	=	$[F_{pmaxASD}*(H_{cm}+H_{curb})+(1+0.14S_{DS})*(WGT_{unit+curb}/2)*L_{curb}]/L_{curb}$		
Tension _{SEISMIC}	=	$Comp_{SEISMIC} - [0.6-0.14S_{DS}]*[WGT_{unit+curb}]$		
Compression _{WIND}	=	$[F_{htransASD}*(H_{cm}+H_{curb})+0.6*(WGT_{unit+curb}/2)*L_{curb}-F_{vertASD}*L_{curb}/2]/L_{curb}$		
Tension _{WIND}	=	$[F_{htransASD}*(H_{cm}+H_{curb})-0.6*(WGT_{unit+curb}/2)*L_{curb}+F_{vertASD}*L_{curb}/2]/L_{curb}$		

Wood Attachment:

1/4" φ x 3.5" Simpson SDS screws w/ 2.25" threaded emt (SGmin = 0.43)

Tall _{metal} =	997 lbs	Vall _{metal} =	1097 lbs
Transverse:	Tall _{wood} = 616 lbs	Vall _{wood} =	400 lbs
# of Screws Req'd for Uplift =	2.22	COMBINED LOADING:	0.882 O.K.
# of Screws Req'd for Shear =	1.30	Screw Spacing =	12.8 in o.c.
Total # of screws Required =	4		

1/4" φ x 3.5" Simpson SDS screws @ 12.8 in o.c. along long side of curb

Longitudinal:

# of Screws Req'd for Uplift =	1.8	COMBINED LOADING:	0.978 O.K.
# of Screws Req'd for Shear =	1.2	Screw Spacing =	16.5 in o.c.
Total # of screws Required =	3		

1/4" φ x 3.5" Simpson SDS screws @ 16.5 in o.c. along short side of curb

Steel Deck Attachment:

1/2" φ A307 Bolts to steel angle below deck

Tall _{bolt} =	3927 lbs	Vall _{bolt} =	2209 lbs
Transverse:	Tall _{metal} = 1656 lbs	Vall _{metal} =	1756 lbs
# of Bolts Req'd for Uplift =	0.83	COMBINED LOADING:	0.271 O.K.
# of Bolts Req'd for Shear =	0.30	Bolt Spacing =	34.5 in o.c.
Total # of Bolts Required =	2		

1/2" φ A307 Bolts to steel angle below deck @ 34.5 in o.c. along long side of curb

Longitudinal:

# of Bolts Req'd for Uplift =	0.66	COMBINED LOADING:	0.192 O.K.
# of Bolts Req'd for Shear =	0.26	Req'd Min Spacing =	29.0 in o.c.
Total # of Bolts Required =	2		

1/2" φ A307 Bolts to steel angle below deck @ 29 in o.c. along short side of curb



For Concrete anchorage: SEISMIC (0.6-0.14SDS)D + 0.7Q_oE (Q_o = 2.5)

Concrete Attachment: 3/4" φ Hilti Hit-HY 200 adhesive anchors w/ 4" embed

Tall_{LRFD} = 1722 lbs Vall_{LRFD} = 2032 lbs α = (1 + 0.2SDS)D + 2.5E = 1.87

Tall_{ASD} = Tall_{LRFD}/α = 920.9 lbs Vall_{ASD} = Vall_{LRFD}/α = 1086.6 lbs (D = 0.465, E = 0.535)

Transverse:	Uplift _{MAX} = 2445 lbs	Shear _{MAX} = 884 lbs
--------------------	----------------------------------	--------------------------------

Compression_{SEISMIC} = 2611 lbs = [2.5*FpmaxASD*(Hcm+Hcurb)+(1+0.14SDS)*(WGT_{unit+curb}/2)*wcurb]/wcurb

Tension_{SEISMIC} = 2445 lbs = Comp_{SEISMIC} - [0.6-0.14SDS]*(WGT_{unit+curb})

Shear_{SEISMIC} = 884 lbs = 2.5*FpmaxASD/2

Min Bolts Req'd Uplift = 2.66 spacing = 11.25 in o.c. T_{applied} = 611.3 lbs

Min Bolts Req'd Shear = 2.00 spacing = 22.5 in o.c. V_{applied} = 221.1 lbs

Try using 4 bolts spaced at 11.50 in o.c.	COMBINED LOADING = $\frac{T_{applied}}{T_{allow,ASD}} + \frac{V_{applied}}{V_{allow,ASD}} \leq 1.2 = 0.87$
---	--

Use 4 - 3/4" φ Hilti Hit-HY 200 adhesive anchors @ 11.5 in o.c. max. along long side of curb w/ 4" embed

Longitudinal:	Uplift _{MAX} = 2183 lbs	Shear _{MAX} = 884 lbs
----------------------	----------------------------------	--------------------------------

Compression_{SEISMIC} = 2349 lbs = [2.5*FpmaxASD*(Hcm+Hcurb)+(1+0.14SDS)*(WGT_{unit+curb}/2)*Lcurb]/Lcurb

Tension_{SEISMIC} = 2183 lbs = Comp_{SEISMIC} - [0.6-0.14SDS]*(WGT_{unit+curb})

Shear_{SEISMIC} = 884 lbs = 2.5*FpmaxASD/2

Min Bolts Req'd Uplift = 2.37 spacing = 8.5 in o.c. T_{applied} = 727.5 lbs

Min Bolts Req'd Shear = 2.00 spacing = 17 in o.c. V_{applied} = 294.8 lbs

Try using 3 bolts spaced at 14.50 in o.c.	COMBINED LOADING = $\frac{T_{applied}}{T_{allow,ASD}} + \frac{V_{applied}}{V_{allow,ASD}} \leq 1.2 = 1.06$
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Use 3 - 3/4" φ Hilti Hit-HY 200 adhesive anchors @ 14.5 in o.c. max. along short side of curb w/ 4" embed

CURB DESIGN SUMMARY: CBWC-119			
CURB RAIL THICKNESS: 0.0566 in 16 Gauge			
UNIT CLIP THICKNESS: 0.0566 in 16 Gauge			
# OF CLIPS (LONG SIDE) - 1 clips with 2 - #10 SMS screws each clip			
WEB STIFFENER: 16Ga x 3/4" x 7" (C-channel) stiffener at each clip			
# OF CLIPS (SHORT SIDE) - 1 clips with 2 - #10 SMS screws each clip			
WEB STIFFENER: 16Ga x 3/4" x 7" (C-channel) stiffener at each clip			
CORNER CONNECTION: Use 2 - 1/4" φ SAE Grade 8 bolts w/ 1/4-20-UNC Threaded inserts			
CURB ANCHORAGE	WOOD	STEEL	CONCRETE
	1/4" φ Simpson SDS screw w/ 2.25" threaded embed (SGmin=0.43)	1/2" φ A307 bolts	3/4" φ thrd'd rod in Hilti HIT-HY 200 epoxy, min. 4" embed
LONG DIRECTION	4 @ 12.83 in o.c.	2 @ 34.5 in o.c.	4 @ 11.5 in o.c.
SHORT DIRECTION	3 @ 16.5 in o.c.	2 @ 29 in o.c.	3 @ 14.5 in o.c.