OMNIMAX INTERNATIONAL
MIAMI-DADE TEST REPORT

SCOPE OF WORK
MIAMI-DADE PERFORMANCE TEST ON 6 FT HIGH BY 6 FT WIDE *KNOTWOOD* FENCE SYSTEM

REPORT NUMBER
K0316.01-119-18 R0

TEST DATES
10/16/19 - 10/22/19

ISSUE DATE
03/17/20

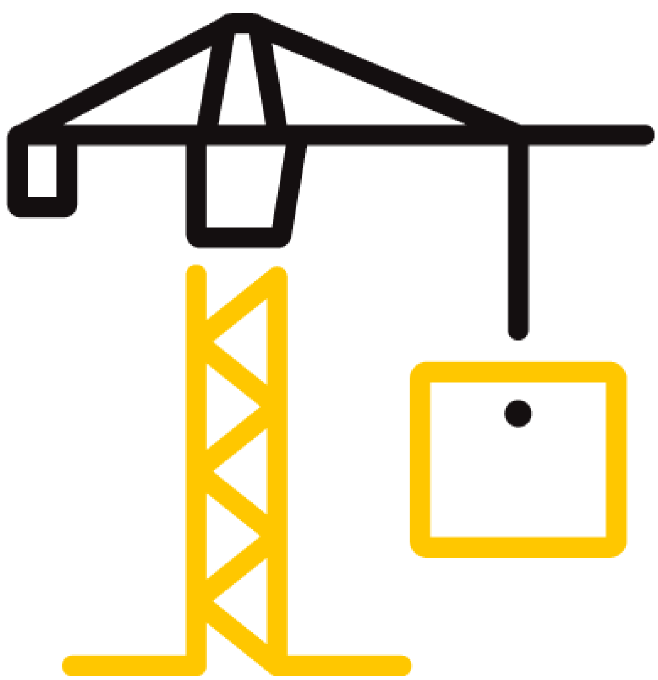
RECORD RETENTION END DATE
10/22/29

MIAMI-DADE COUNTY NOTIFICATION NO.
ATI19046

LABORATORY CERTIFICATION NO.
19-0321.16

PAGES
36

DOCUMENT CONTROL NUMBER
ATI 00637 (07/24/17)
RT-R-AMER-Test-2790



intertek
Total Quality. Assured.

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York, Pennsylvania 17406

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TEST REPORT FOR OMNIMAX INTERNATIONAL
Report No.: K0316.01-119-18 R0
Date: 03/17/20

REPORT ISSUED TO
OMNIMAX INTERNATIONAL
30 Technology Parkway South
Suite 400
PeachTree Corners, GA 30092

SECTION 1
SCOPE

Intertek Building & Construction (B&C) was contracted by OmniMax International to perform Miami-Dade performance testing on their 6 ft high by 6 ft wide *Knotwood* fence system. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek B&C test facility in York, PA. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

DANIEL C. CULBERT
LICENSE
No. 83035
STATE OF FLORIDA
PROFESSIONAL ENGINEER
2020.03.17 16:54:22 -04'00'

For INTERTEK B&C:

COMPLETED BY:	Scott T. Gladfelter	**REVIEWED BY:**	Daniel C. Culbert, P.E.
TITLE:	Project Engineer	**TITLE:**	Engineer Team Leader
SIGNATURE:	Digitally Signed by: Scott Gladfelter	**SIGNATURE:**	Digitally Signed by: Daniel Craig Culbert
DATE:	03/17/20	**DATE:**	03/17/20

REVIEWED BY:	Virgal T. Mickley, Jr., P.E.
TITLE:	Senior Staff Engineer
SIGNATURE:	Digitally Signed by: Virgal Thomas Mickley, Jr.
DATE:	03/17/20

STG:vtm/dcg/aas

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SECTION 2
TEST METHODS

The specimens were evaluated in accordance with the following:

ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures.* American Society of Civil Engineers.

2017 Florida Building Code, Building

SECTION 3
MATERIAL SOURCE

Test samples were provided by the client. Specimens were extruded and powder coated at the ALCAS manufacturing facility in Istanbul, Turkey. Specimens were sublimated at the Knotwood facility in Duluth, GA. Representative samples of the test specimens will be retained by Intertek B&C for a minimum of ten years from the test completion date.

SECTION 4
EQUIPMENT

The support posts were secured in square steel tube structural frames designed to accommodate anchorage of the specimen and application of the required test loads. The specimen was loaded using dead weights. Deflections were measured with linear displacement transducers accurate to 0.01 inch.

SECTION 5
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Robert G. Spayd	Intertek B&C
Scott T. Gladfelter	Intertek B&C

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SECTION 6
TEST SPECIMEN DESCRIPTION

SERIES/MODEL	Knotwood
DESCRIPTION	6 ft high by 6 ft wide (per panel section) aluminum privacy fence
PANELS	Twelve, 5/8 in thick by 5-29/32 in wide by 67 in long 6060-T5 aluminum panels (0.060 in wall) installed horizontally (per panel section); each panel was attached to a U-channel with four (two at each end, one side only) #10-16 by 5/8" (0.132 in minor diameter) stainless steel, Philips drive, pancake-head, self-drilling screws
PANEL ATTACHMENT	Two 1-3/16 in square by 68 in long 6060-T5 aluminum "U"-channels (one on each end of the panel); fastened to the post with #10-16 by 1" (0.134 in minor diameter) stainless steel, hex-washer head, self-drilling screws every 12 in
POSTS	3-9/16 in square by 96 in long 6061-T6 aluminum post (0.118 in wall)

SECTION 7
INSTALLATION AND TEST PROCEDURES

Three 6 ft high by 6 ft wide Knotwood fence sections were tested according to the following:

The 2-panel/3-post specimens were constructed in the horizontal orientation by securely anchoring each post in a section of square steel tubing to a depth equal to the embedment specified on the product drawings. Steel weights were uniformly placed on top of the plywood to achieve the desired 1.0 times the design load for a period of 30 seconds. Following this duration, additional weights were added to achieve the 1.5 times the design load. This load was held for a period of 24 hours after which time the weights were removed and the permanent set was recorded. Transducers were mounted to the top, middle, and bottom of each panel at the mid-span between posts. Deflection was continuously, electronically recorded during the entire duration of the test. Reference photographs in Section 10 for typical test setup.

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SECTION 8
TEST CALCULATIONS

OmniMax International has provided Intertek-ATI with calculations from PVE, LLC, a Professional Engineer licensed in the state of Florida specifying the design load (based on Exposure C) to be applied for the gravity load test. Reference Section 11 for design calculations.

SPECIMEN	1.0 x DESIGN LOAD (psf)	1.5 x DESIGN LOAD (psf)
6 ft. high by 6 ft. wide Fence System	17.5	26.3

SECTION 9
TEST RESULTS

Test No. 1 - Test Date: 10/16/19

DESIGN LOAD	DURATION	MAXIMUM DEFLECTION (inches)		
		TOP Left / Right	MID Left / Right	BOTTOM Left / Right
1.0x	Initial	0.90/0.86	0.68/0.66	0.32/0.31
1.0x	30 sec	0.91/0.86	0.68/0.66	0.32/0.31
1.5x	Initial	1.52/1.45	1.11/1.07	0.58/0.52
1.5x	24 hours	1.60/1.50	1.11/1.08	0.63/0.58
0x	Initial	0.07/0.06	0.05/0.05	0.08/0.05

***Observation**: Specimen sustained the 1.5x design load for the 24-hour period*

Test No. 2 - Test Date: 10/17/19

DESIGN LOAD	DURATION	MAXIMUM DEFLECTION (inches)		
		TOP Left / Right	MID Left / Right	BOTTOM Left / Right
1.0x	Initial	0.89/0.87	0.71/0.65	0.36/0.37
1.0x	30 sec	0.90/0.87	0.71/0.65	0.35/0.37
1.5x	Initial	1.48/1.43	1.04/0.98	0.55/0.58
1.5x	24 hours	1.53/1.46	1.05/1.01	0.60/0.61
0x	Initial	0.09/0.07	0.06/0.09	0.10/0.06

***Observation**: Specimen sustained the 1.5x design load for the 24-hour period*

Test No. 3 - Test Date: 10/21/19

DESIGN LOAD	DURATION	MAXIMUM DEFLECTION (inches)		
		TOP Left / Right	MID Left / Right	BOTTOM Left / Right
1.0x	Initial	0.97/0.91	0.69/0.63	0.35/0.34
1.0x	30 sec	0.97/0.91	0.68/0.63	0.35/0.33
1.5x	Initial	1.58/1.52	1.13/1.05	0.58/0.52
1.5x	24 hours	1.63/1.58	1.15/1.09	0.59/0.57
0x	Initial	0.12/0.10	0.08/0.05	0.05/0.11

Observation*: Specimen sustained the 1.5x design load for the 24-hour period*

SECTION 10
PHOTOGRAPHS

Photo No. 1
Typical Gravity Load Specimen in Fixture

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Photo No. 2
Gravity Load Specimen with 1.0 x Design Load Applied

Photo No. 3
Gravity Load Specimen with 1.5 x Design Load Applied

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SECTION 11
DESIGN CALCULATIONS

Knotwood 4x4 Fencing

For

Florida Testing

Date Prepared … November 26, 2019

Prepared for:

<u>Knotwood a Division of OmniMax International, Inc.</u>
30 Technology Pkwy S, Suite 400/Suite 600
Peachtree Corners, GA 30092
Phone…(855) 566-8966

Prepared by:
<u>PVE, LLC</u>
2000 Georgetowne Drive, Suite 101
Sewickley, PA 15143
Phone ... (724) 444-1100

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DESIGN CODES AND STANDARDS

The following codes and standards, including all specifications referenced within, apply to the design and construction of this project:

- IBC, INTERNATIONAL BUILDING CODE – 2015
- FBC, FLORIDA BUILDING CODE - 2017
- ASCE 7-10, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
- ADM, ALUMINUM DESIGN MANUAL - 2010

GENERAL NOTES

1. Contractor to verify all dimensions in the field prior to installation. Do not scale off drawings.
2. All members shall be saw cut in field as required.
3. No splices shall be permitted unless indicated otherwise on the drawings.
4. Touch up all scratches with dealer provided colors to match.
5. Welding is not permitted, unless otherwise indicated on the drawings.
6. The contents show the application of aluminum Knotwood framing components only. The installing contractor is to refer to the project documents for additional requirements.
7. Dimensions herein are for engineering purposes only and must be reviewed for the purpose of approval. All conditions are subject to approval and to field verification prior to fabrication or installation.
8. Before ordering, fabricating or erecting any material, make any necessary surveys and measurements to verify that in place work has been built according to the contract documents and are within acceptable tolerances. This includes the original buildings and all additions thereto. Notify the Architect/Engineer and owner's representatives of any discrepancies prior to construction.
9. Temporary bracing of the system and safety during construction is solely the responsibility of the contractor. Temporary bracing of the system shall remain in place until the system is totally in place. Contractor shall coordinate locations of temporary bracing with other contractors. Refer to drawings for additional criteria.
10. This submittal is subject to the review and approval of the project Architect/Engineer of record prior to installation.

STRUCTURAL CALCULATIONS

FOR

Florida Testing - 4X4 Fencing

Florida

Code Search

Code: Florida Building Code 2017

Occupancy:

Occupancy Group = R Residential

Risk Category & Importance Factors:

Risk Category = I

Wind factor =	1.00
Snow factor =	0.80
Seismic factor =	1.00

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	1.00 / 12	4.8 deg
Building length (L)	24.0 ft	
Least width (B)	24.0 ft	
Mean Roof Ht (h)	6.0 ft	
Parapet ht above grd	0.0 ft	
Minimum parapet ht	0.0 ft	

Live Loads:

Roof

0 to 200 sf:	20 psf
200 to 600 sf:	24 - 0.02Area, but not less than 12 psf
over 600 sf:	12 psf

Floor:

Typical Floor		N/A
Partitions		N/A
Partitions	N/A	
Partitions		N/A
Partitions	N/A	

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2000 Georgetowne Drive, Suite 101
Sewickley, PA 15143-8992
724-444-1100

JOB TITLE	Florida Testing - 4X4 Fencing		
JOB NO.		**SHEET NO.**	
CALCULATED BY	DSG	**DATE**	11/26/19
CHECKED BY	JU	**DATE**	11/26/19

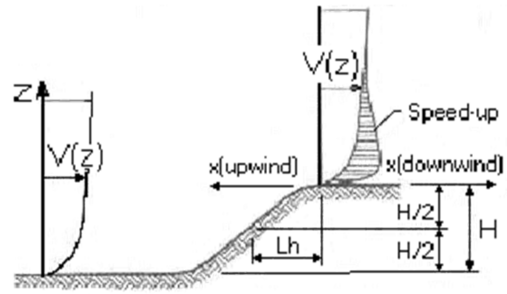
Wind Loads : ASCE 7 - 10

Ultimate Wind Speed	115 mph
Nominal Wind Speed	89.1 mph
Risk Category	I
Exposure Category	C
Enclosure Classif.	Open Building
Internal pressure	+/-0.00
Directionality (Kd)	0.85
Kh case 1	0.849
Kh case 2	0.849
Type of roof	Monoslope

Topographic Factor (Kzt)

Topography	Flat
Hill Height (H)	0.0 ft
Half Hill Length (Lh)	0.0 ft
Actual H/Lh =	0.00
Use H/Lh =	0.00
Modified Lh =	0.0 ft
From top of crest: x =	0.0 ft
Bldg up/down wind?	downwind

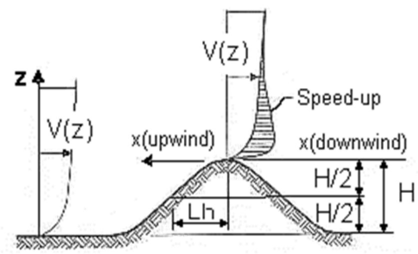
H< 15ft;exp C
∴ Kzt=1.0



ESCARPMENT

H/Lh= 0.00 K_1 = 0.000
x/Lh = 0.00 K_2 = 0.000
z/Lh = 0.00 K_3 = 1.000

At Mean Roof Ht:
$Kzt = (1+K_1K_2K_3)^2$ = 1.00



2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h =	6.0 ft
B =	24.0 ft
/z (0.6h) =	15.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
If building h/B>4 then may be flexible and should be investigated.
h/B = 0.25 Rigid structure (low rise bldg)

G = 0.85 Using rigid structure default

Rigid Structure

ē =	0.20
ℓ =	500 ft
z_{min} =	15 ft
c =	0.20
g_Q, g_v =	3.4
L_z =	427.1 ft
Q =	0.95
I_z =	0.23
G =	0.90 use G = 0.85

Flexible or Dynamically Sensitive Structure

34 ıcy (η_1) =	0.0 Hz				
Damping ratio (β) =	0				
/b =	0.65				
/α =	0.15				
Vz =	97.1				
N_1 =	0.00				
R_n =	0.000				
R_h =	28.282	η =	0.000	h =	6.0 ft
R_B =	28.282	η =	0.000		
R_L =	28.282	η =	0.000		
g_R =	0.000				
R =	0.000				
Gf =	0.000				

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JOB TITLE	Florida Testing - 4X4 Fencing		
JOB NO.		**SHEET NO.**	
CALCULATED BY	DSG	**DATE**	11/26/19
CHECKED BY	JU	**DATE**	11/26/19

Wind Loads - Other Structures: ASCE 7 - 10

Ultimate Wind Pressures

Wind Factor =	1.00		
Gust Effect Factor (G) =	0.85	Ultimate Wind Speed =	115 mph
Kzt =	1.00	Exposure =	C

A. Solid Freestanding Walls & Solid Signs (& open signs with less than 30% open)

		s/h =	1.00	**Case A & B**	
Dist to sign top (h)	6.0 ft	B/s =	2.00	C_f =	1.40
Height (s)	6.0 ft	Lr/s =	0.00	F = qz G Cf As =	**29.1 As**
Width (B)	12.0 ft	Kz =	0.849	As =	36.0 sf
Wall Return (Lr) =		qz =	24.4 psf	F =	1047 lbs
Directionality (Kd)	0.85				
Percent of open area to gross area	0.0%	Open reduction factor =	1.00		

Case C reduction factors

Factor if s/h>0.8 =	0.80
Wall return factor for Cf at 0 to s =	1.00

CaseC

Horiz dist from windward edge	Cf	F=qzGCfAs (psf)
0 to s	1.80	37.4 **As**
s to 2s	1.20	24.9 **As**

B. Open Signs & Lattice Frameworks (openings 30% or more of gross area)

Height to centroid of Af (z)	0.0 ft			Kz =	0.849
				Base pressure (qz) =	24.4 psf
Width (zero if round)	0.0 ft				
Diameter (zero if rect)	0.0 ft			$F = q_z G C_f A_f$ =	**33.2 Af**
Percent of open area		Ī =	0.65	Solid Area: A_f =	0.0 sf
to gross area	35.0%	C_f =	1.6	F =	0 lbs
Directionality (Kd)	0.85				

C. Chimneys, Tanks, Rooftop Equipment (h>60') & Similar Structures

Height to centroid of Af (z)	0.0 ft	Kz =	0.849
Cross-Section	Square	Base pressure (qz) =	25.9 psf
Directionality (Kd)	0.90	h/D =	1.00
Height (h)	0.0 ft		
Width (D)	0.0 ft		
Type of Surface	N/A		

Square (wind along diagonal)		Square (wind normal to face)	
Cf =	1.00	C_f =	1.30
F = qz G Cf Af =	**22.0 Af**	$F = q_z G C_f A_f$ =	**28.6 Af**
Af =	sf	A_f =	0.0 sf
F =	0 lbs	F =	0 lbs

D. Trussed Towers

Height to centroid of Af (z)	0.0 ft	Kz =	0.849
∈ =	0.27	Base pressure (qz) =	27.3 psf
Tower Cross Section	triangle		
Member Shape	flat	Diagonal wind factor =	1
Directionality (Kd)	0.95	Round member factor =	1.000

Triangular Cross Section

C_f =	2.38
$F = q_z G C_f A_f$ =	**55.2 Af**
Solid Area: A_f =	0.0 sf
F =	1 lbs

Knotwood™ Design Calculation:

Methodology:

When checking **Knotwood™ Fencing** (slats, posts, etc.), the applied loads, generated from ASCE 7-10, are compared to allowable tension and shear strengths per the Aluminum Design Manual.

Per ASCE 7-10, the fencing is considered a "Solid Freestanding Wall". The fencing posts are considered to be the "screen enclosure support frame". A uniform live load of 5 psf and a concentrated load of 200 lbs is applied directly to frame members. For wind loading the fence is considered to be an "Other Structure - Solid Freestanding Wall".

Miscellaneous:

The drawings and models shown within the calculation sheets are not meant to be used for fabrication nor performing work. During the design process, elements change, and we do not change the CAD drawings in this booklet. They are for illustrative purposes only to assist in the preparation of the calculations and may not accurately represent the actual work to be performed. The contractor shall refer to the actual drawings to perform all their work.

Fastener Requirements:

Self-Tapping Metal Screws - #10 Minimum.
Galvanized Unless Noted Otherwise
Aluminum Where Noted At High/Salt Exposure

Materials Requirements:

Knotwood Battens:

Aluminum Alloy 6063-T6:	Fy=25 ksi (MIN)	Fu=30 ksi (MIN)
Aluminum Alloy 6061-T6:	Fy=35 ksi (MIN)	Fu=38 ksi (MIN)
Aluminum Alloy 6060-T5:	Fy=16 ksi (MIN)	Fu=22 ksi (MIN)

All Aluminum Welds:
5556 Electrode: Fu=46 ksi

Material Allowable Stress:

Per the ADM Tables 2-19 to 2-21:

Bending Stress:

$F_{ab6061} := 19.5\ ksi$ $\quad F_{ab6063} := 15.2\ ksi$ $\quad F_{ab6060} := 5.2\ ksi$

Shear Stress:

$$S_1 := \frac{(5.91 - 2\ (0.059))}{0.059} = 98.17 \quad \text{Use:} \quad F_{avS150} := \frac{38665}{{S_1}^2}\ ksi = 4.01\ ksi \quad \text{(6" Slat)}$$

$$S_2 := \frac{(3.94 - 2\ (0.118))}{0.118} = 31.39 \quad \text{Use:} \quad F_{av4x4} := 16.5\ ksi - 0.107\ ksi \cdot S_2 = 13.14\ ksi \quad \text{(4x4 Post)}$$

Modulus of Elasticity:

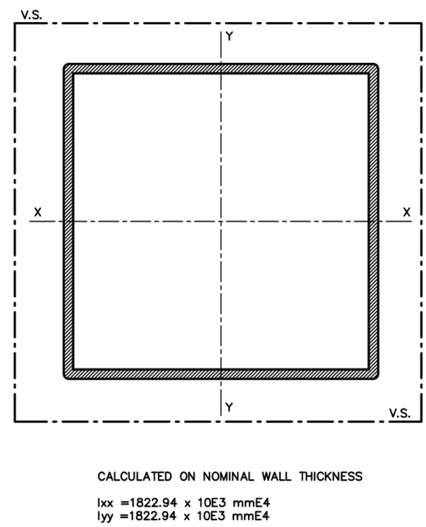
$E := 10100\ ksi$

Material Section Properties:

Section Properties:

4x4 Post:

$I_{x100100} := 1822940\ mm^4$ (Ixx per Knotwood Techfiles)



$y_{x100100} := 50\ mm$

$$S_{x100100} := \frac{I_{x100100}}{y_{x100100}} = \left(3.65 \cdot 10^4\right)\ mm^3$$

$S_{x100100} = 2.22\ in^3$

$I_{y100100} := 1822940\ mm^4$ (Iyy per Knotwood Techfiles)

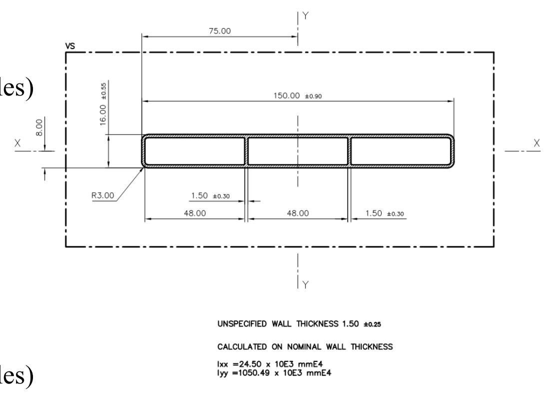
$y_{y100100} := 50\ mm$

$$S_{y100100} := \frac{I_{y100100}}{y_{y100100}} = \left(3.65 \cdot 10^4\right)\ mm^3$$

$S_{y100100} = 2.22\ in^3$

6" Wide Slat:

$I_{xS150} := 24500\ mm^4$ (Ixx per Knotwood Techfiles)



$y_{xS150} := 8\ mm$

$$S_{xS150} := \frac{I_{xS150}}{y_{xS150}} = \left(3.06 \cdot 10^3\right)\ mm^3$$

$S_{xS150} = 0.19\ in^3$

$I_{yS150} := 1050490\ mm^4$ (Iyy per Knotwood Techfiles)

$y_{yS150} := 125\ mm$

$$S_{yS150} := \frac{I_{yS150}}{y_{yS150}} = \left(8.40 \cdot 10^3\right)\ mm^3$$

$S_{yS150} = 0.51\ in^3$

Load Requirements:

Dead Load:

$DL_{self1W6525} := 0.960 \frac{kgf}{m} = 0.65 \ plf$ (Self weight of 1 way post per linear foot)

$DL_{self100100} := 3.138 \frac{kgf}{m} = 2.11 \ plf$ (Self weight of 4" post per linear foot)

$DL_{selfS15016} := 1.411 \frac{kgf}{m} = 0.95 \ plf$ (Self weight of 6" slat per linear foot)

$DL_{selfGFS} := 1.227 \frac{kgf}{m} = 0.82 \ plf$ (Self weight of small gate frame per linear foot)

$DL_{self2W6565} := 2.557 \frac{kgf}{m} = 1.72 \ plf$ (Self weight of 2 way post per linear foot)

$DL_{self2C6565} := 2.035 \frac{kgf}{m} = 1.37 \ plf$ (Self weight of corner post per linear foot)

Live Loads:

$w_{LL} := 5 \ psf$ (Dist. Load)

$P_{req} := 200 \ lbf$ (Point Load)

Wind Loads:

$w_{Wind} := 29.1 \ psf$ (Maximum Ultimate Design Wind Loading - 115 mph wind per Florida Building Code 1616.2.1)

$w_{WindNominal} := 0.6 \cdot w_{Wind} = 17.46 \ psf$ (Nominal Design Wind Loading)

$w_{WindS15016} := 6 \ in \cdot w_{Wind} = 14.55 \ plf$

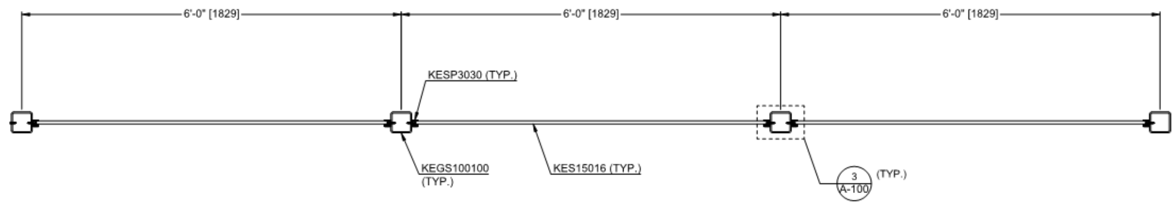


Figure 1 - Typical Fencing Plan View

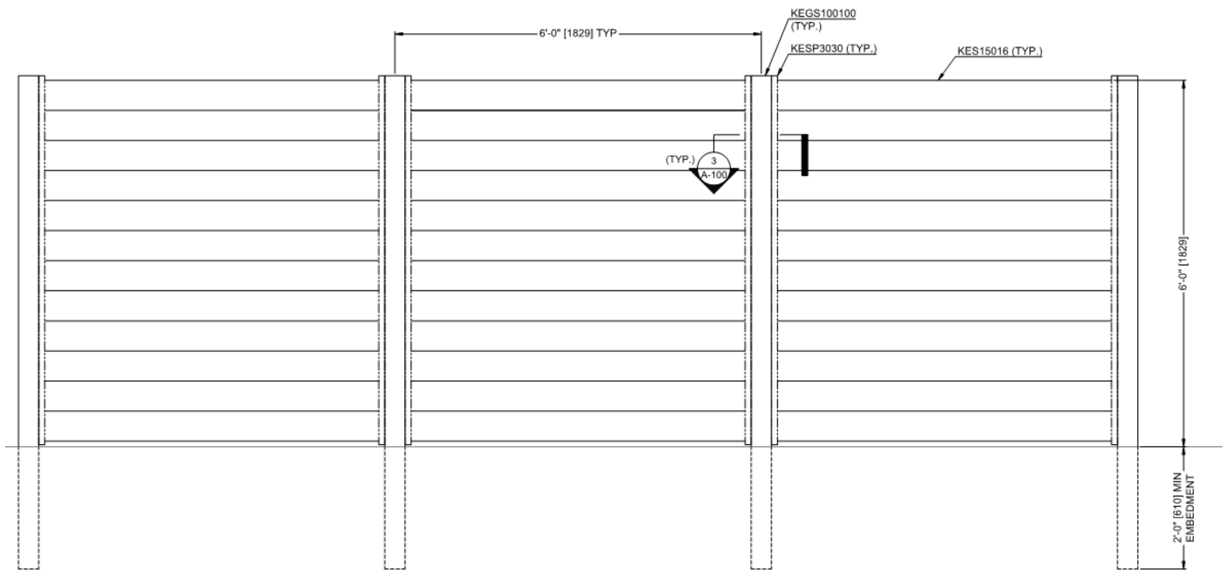


Figure 2 - Typical Fencing Elevation View

Check 6" Slats:

$d := 68\ in$ (Max span considered) $h := 6\ in$ (Tributary width on Slat)

Loading:

$DL_{Total} := DL_{selfS15016} = 0.95\ plf$

$w_{WLTotal} := w_{WindS15016} = 14.55\ plf$

$w_{LLTotal} := w_{LL} \cdot h = 2.50\ plf$

$P_{reqinfill} := 50\ lbf$ (Considering infill guardrail loading for fence slats)

Max forces considering slat "pinned"

DL+LL Load Case (Considering LL perpendicular to flat face, so dead load does not cause bending):

$$M_{Dist1} := \frac{w_{LLTotal} \cdot d^2}{8} = 0.01\ kip \cdot ft$$

$$V_{Dist1} := \frac{w_{LLTotal} \cdot d}{2} = 7.08\ lbf$$

$$M_{Point1} := \frac{P_{reqinfill} \cdot d}{4} = 0.07\ kip \cdot ft$$

$$V_{Point1} := P_{reqinfill} + \frac{DL_{Total} \cdot d}{2} = 52.69\ lbf$$

DL+0.6WL Load Case (Considering WL perpendicular to flat face, so dead load does not cause bending):

$$M_{Dist2} := \frac{0.6\ w_{WLTotal} \cdot d^2}{8} = 0.04\ kip \cdot ft$$

$$V_{Dist2} := \frac{0.6\ w_{WLTotal} \cdot d}{2} + \frac{DL_{Total} \cdot d}{2} = 27.42\ lbf$$

$M_{Point2} := 0\ kip \cdot ft$ N/A for this load case

$V_{Point2} := 0\ kip$ N/A for this load case

DL+0.75LL+0.45WL Load Case:

$$M_{Dist3} := \frac{\left(0.75\ w_{LLTotal} + 0.45\ w_{WLTotal}\right) \cdot d^2}{8} = 0.03\ kip \cdot ft$$

$$V_{Dist3} := \frac{\left(0.75 \cdot w_{LLTotal} + 0.45 \cdot w_{WLTotal}\right) \cdot d}{2} = 23.86\ lbf$$

$$M_{Point3} := \frac{0.45\ w_{WLTotal} \cdot d^2}{8} + \frac{0.75\ P_{reqinfill} \cdot d}{4} = 0.08\ kip \cdot ft$$ ← Governs

$$V_{Point3} := \frac{DL_{Total} \cdot d}{2} + 0.75\ P_{reqinfill} + \frac{0.45 \cdot w_{WLTotal} \cdot d}{2} = 58.74\ lbf$$

$M_{MAX} = 0.08\ \mathit{kip} \cdot \mathit{ft}$

$V_{MAX} = 58.74\ \mathit{lbf}$

Check Slat Bending:

$f_{bS150} := \frac{M_{MAX}}{S_{xS150}} = 5.10\ \mathit{ksi} \quad < \quad F_{ab6060} = 5.20\ \mathit{ksi} \quad \therefore$ OK

Check Slat Shear:

$A_{S150} := 2 \cdot 147\ \mathit{mm} \cdot 1.5\ \mathit{mm} = 0.68\ \mathit{in}^2$

$f_{vS150} := \frac{V_{MAX}}{A_{S150}} = 0.09\ \mathit{ksi} \quad < \quad F_{avS150} = 4.01\ \mathit{ksi} \quad \therefore$ OK

Therefore, use of KES15016 is Acceptable

Check Slat Fasteners:

Allowable Connection Shear:

The allowable connection shear is determined according to Section J.5.6, which specifies a safety factor Ω = 3.0 for fastener connection shear for building-type structures.

$\Omega := 3.0$ (ASD building-type structures)

$D := 0.19\ in$ (#10 Fastener Diameter)

$t_1 := 0.059\ in$ (Slat Thickness)

$t_2 := 0.079\ in$ (Slat Support Thickness)

Section J.5.6.1 addresses bearing. Since the edge distance is 0.5 in. > 0.38 in. = 2(0.19in.) = 2D, the allowable bearing force is 2FtuDt/W. Using Ftu from Table A.3.4, the allowable shear for bearing is:

$F_{tu} := 22\ ksi$ (Table A.3.4)

$$F_{bearing} := \frac{2 \cdot F_{tu} \cdot D \cdot t_1}{\Omega} = 164.41\ lbf \quad > \quad \frac{V_{MAX}}{2} = 29\ lbf \quad \therefore \text{ OK}$$

Fastener Pull Over:

For $t_2 > t_1$, Pull Over is not a limit state.

Fastener Shear:

$F_{vu} := 1.15\ kip$ (#10 Ultimate Shear)

$$F_{shear} := \frac{F_{vu}}{\Omega} = 383.33\ lbf \quad > \quad \frac{V_{MAX}}{2} = 29\ lbf \quad \therefore \text{ OK}$$

Fastener Tension:

Nominal Pullout (ADM J.5.5, 0.060in $\leq$ Le $\leq$ 0.125 in)

$K_s := 1.01$ ADM J.5.5.1.1

$D = 0.19\ in$ Nominal diameter of screw

$F_{ty2} := 30\ ksi$ Tensile yield strength of member not in contact with screw head

$L_e := t_2 = 0.08\ in$ Screw engaged length

$R_n := K_s \cdot D \cdot L_e \cdot F_{ty2} = 454.80\ lbf$ (#10 Ultimate Pullout - ADM J.5-1)

$$F_{pullout} := \frac{R_n}{\Omega} = 151.60\ lbf \quad > \quad \frac{V_{MAX}}{2} = 29\ lbf \quad \therefore \text{ OK}$$

Therefore, use of #10 Screw is acceptable

Check Posts :

$d := 6\ ft$ (Max height of post) $h := 6\ ft$ Tributary width on post

$DL_{Total} := \frac{12\ DL_{selfS15016} \cdot h}{d} + DL_{self100100} + 2 \cdot DL_{self1W6525} = 14.78\ plf$ Total dead load on post

$w_{WLTotal} := w_{Wind} \cdot h = 174.60\ plf$

$w_{LLTotal} := w_{LL} \cdot h = 30.00\ plf$

$P_{req} = 200.00\ lbf$

Max forces considering post cantilevered

DL+LL Load Case (Considering LL perpendicular to flat face, so dead load does not cause bending):

$M_{Dist1} := \frac{w_{LLTotal} \cdot d^2}{2} = 0.54\ kip \cdot ft$

$V_{Dist1} := w_{LLTotal} \cdot d = 180.00\ lbf$

$M_{Point1} := P_{req} \cdot d = 1.20\ kip \cdot ft$ ← Governs

$V_{Point1} := P_{req} + DL_{Total} \cdot d = 288.66\ lbf$

DL+0.6WL Load Case (Considering WL perpendicular to flat face, so dead load does not cause bending):

$M_{Dist2} := \frac{0.6\ w_{WLTotal} \cdot d^2}{2} = 1.89\ kip \cdot ft$

$V_{Dist2} := 0.6\ w_{WLTotal} \cdot d + DL_{Total} \cdot d = 717.22\ lbf$

$M_{Point2} := 0\ kip \cdot ft$ N/A for this load case

$V_{Point2} := 0\ kip$ N/A for this load case

DL+0.75LL+0.45WL Load Case:

$M_{Dist3} := \frac{\left(0.75\ w_{LLTotal} + 0.45\ w_{WLTotal}\right) \cdot d^2}{2} = 1.82\ kip \cdot ft$

$V_{Dist3} := \left(0.75 \cdot w_{LLTotal} + 0.45 \cdot w_{WLTotal}\right) \cdot d = 606.42\ lbf$

$M_{Point3} := \frac{0.45\ w_{WLTotal} \cdot d^2}{2} + 0.75\ P_{req} \cdot d = 2.31\ kip \cdot ft$

$V_{Point3} := DL_{Total} \cdot d + 0.75\ P_{req} + 0.45 \cdot w_{WLTotal} \cdot d = 710.08\ lbf$

$M_{MAX2} = 2.31\ kip \cdot ft$

$V_{MAX2} = 717.22\ lbf$

Check Post Bending:

$F_{cr6063post65} := \frac{M_{MAX2}}{S_{y100100}} = 12.48\ ksi \quad < \quad F_{ab6061} = 19.50\ ksi \quad \therefore$ OK 4x4 Post Maximum

Check Post Shear:

$A_{P4x4} := 2 \cdot 3.58\ in \cdot 0.118\ in = 0.84\ in^2$ (Web Area)

$F_{vpost} := \frac{V_{MAX2}}{A_{P4x4}} = 0.85\ ksi \quad < \quad F_{av4x4} = 13.14\ ksi \quad \therefore$ OK

APPENDIX 'A'

(References)

Section 1616.2 from the 2017 Florida Building Code:

1616.2 General design for specific occupancies and structures.

1616.2.1 Fences.

Fences not exceeding 6 feet (1829 mm) in height from grade may be designed for 75 mph (33 m/s) fastest mile wind speed or 115 mph (40 m/s) 3-second gust.

1616.2.1.1 Wood fences.

Wood fence design shall be as specified by Section 2328.

1616.2.2 Sway forces in stadiums.

1. The sway force applied to seats in stadiums, grandstands, bleachers and reviewing stands shall be not less than 24 pounds per lineal foot (350 N/m), applied perpendicularly and along the seats.
2. Sway forces shall be applied simultaneously with gravity loads.
3. Sway forces need not be applied simultaneously with other lateral forces.

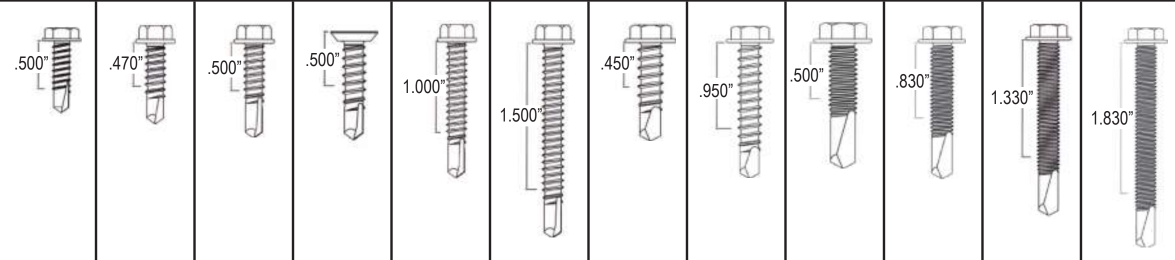
1616.3 Deflection.

1616.3.1 Allowable deflections.

The deflection of any structural member or component when subjected to live, wind and other superimposed loads set forth herein shall not exceed the following:

1. Roof and ceiling or components supporting plaster	L/360

SELECTOR GUIDE & PERFORMANCE DATA



			1076000	1112000	1080000	1132000	1114000	1117000	1119000	1121000	1124000	1125000	1078000	1126000
Part Number			1076000	1112000	1080000	1132000	1114000	1117000	1119000	1121000	1124000	1125000	1078000	1126000
Description			10-16x3/4"	12-14x7/8"	12-14x1"	12-14x1"	12-14x1-1/2"	12-14x2"	1/4-14x1"	1/4-14x1-1/2"	1/4-20x1-1/8"	1/4-20x1-1/2"	1/4-20x2"	1/4-20x2-1/2"
Head Style			HWH	HWH	HWH	UPFH***	HWH	HWH	HWH	HWH	HWH	HWH	HWH	HWH
Drill Point			3	3	3	3	3	3	3	3	4	4	4	4
Drilling Cap			.150"	.187"	.187"	.187"	.187"	.187"	.210"	.210"	.210" - .312"	.210" - .312"	.210" - .312"	.210" - .312"
Max Load Bearing Area*			.500"	.470"	.500"	.500"	1.000"	1.500"	.450"	.950"	.500"	.830"	1.330"	1.830"
Installation Tool			5/16" Driv-Tru™ Socket (P/N: 1513910)	5/16" Driv-Tru™ Socket (P/N: 1513910)	5/16" Driv-Tru™ Socket (P/N: 1513910)	#3 Phillips Bit	5/16" Driv-Tru™ Socket (P/N: 1513910)	5/16" Driv-Tru™ Socket (P/N: 1513910)	3/8" Driv-Tru™ Socket (P/N: 1574910)	3/8" Driv-Tru™ Socket (P/N: 1574910)	3/8" Driv-Tru™ Socket (P/N: 1574910)	3/8" Driv-Tru™ Socket (P/N: 1574910)	3/8" Driv-Tru™ Socket (P/N: 1574910)	3/8" Driv-Tru™ Socket (P/N: 1574910)
PULLOUT VALUES (AVERAGE LBS. ULTIMATE)														
		ksi												
STEEL GAUGE	18	45.5	401	400	400	400	400	400	475	475				
STEEL GAUGE	16	63	699	561	561	561	561	561	631	631	827	827	827	827
STEEL GAUGE	14	55.5	1010	964	964	964	964	964	1062	1062	1258	1258	1258	1258
STEEL GAUGE	12	63	1680	1516	1516	1516	1516	1516	1878	1878	1946	1946	1946	1946
STEEL GAUGE	1/8	56.9	2183	2149	2149	2149	2149	2149	2320	2320	2685	2685	2685	2685
STEEL GAUGE	3/16	65.3		2877	2877	2497	2877	2877	3668	3668	3572	3572	3572	3572
STEEL GAUGE	1/4	48.1									4719	4719	4719	4719
STEEL GAUGE	5/16	49.1									4699	4699	4699	4699
ALUMINUM 6063-T5	1/8	32.4	745	1008	1008	1008	1008	1008	1017	1017	970	970	970	970
ALUMINUM 6063-T5	1/4	32.1		2543	2543	2462	2543	2543	3080	3080	2760	2760	2760	2760
ALUMINUM 6063-T5	3/8	27.7									3851	3851	3851	3851
SHEAR VALUES (AVERAGE LBS. ULTIMATE)														
STEEL GAUGE**	18-18		996	965	965	965	965	965	1100	1100	1026	1026	1026	1026
STEEL GAUGE**	18-14		1872	1803	1803	1803	1803	1803	2132	2132	2089	2089	2089	2089
STEEL GAUGE**	16-16		1331	1360	1360	1360	1360	1360	1414	1414	1359	1359	1359	1359
STEEL GAUGE**	14-14			1815	1815	1815	1815	1815	2439	2439	2357	2357	2357	2357
STEEL GAUGE**	1/8-3/16								2636	2636	2748	2748	2748	2748
STEEL GAUGE**	3/16-1/4										2881	2881	2881	2881
STEEL GAUGE**	12-1/4										2843	2843	2843	2843
ALUMINUM 6063-T5**	1/8-1/8		1526	1846	1846	1846	1846	1846	2087	2087	2106	2106	2106	2106
ALUMINUM 6063-T5**	1/8-1/4			2488	2488	2180	2488	2488	3328	3328	3062	3062	3062	3062
MECHANICAL PROPERTIES														
Yield Stregth, F_y Ksi (MPa)			134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa	134 ksi 920 Mpa
Tensile Strength F_u Ksi (MPa)			152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa	152 ksi 1054 Mpa

** IMPORTANT: Maximum load bearing area is indicated by brackets.*

*** KSI values are the same as listed in the Pullout Values table.*

**** Undercut Phillips Flat Head*

ITW Buildex

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Table 2-19
ALLOWABLE STRESSES FOR BUILDING-TYPE STRUCTURES (UNWELDED)

6061 – T6, T6510, T6511 **Extrusions**
6061 – T6 **Pipe**
6351 - T5 **Extrusions**

F_{ty} = 35 k/in² E = 10,100 k/in²
F_{cy} = 35 k/in² k_t = 1
F_{tu} = 38 k/in²

Allowable Stresses F/Ω (k/in²)	**Section**	**F/Ω**	
Axial Tension			
axial tension stress on net effective area	D.2b	19.5	
axial tension stress on gross area	D.2a	21.2	
Flexure		**Tension**	**Compression**
elements in uniform stress	F.8.1.1	19.5	see B.5.4.1 thru B.5.4.5 and E.4.2
elements in flexure	F.8.1.2, F.4.1	27.6	27.6 see also F.4.2
round tubes	F.6.1	24.2	24.8 see also F.6.2
rods	F.7	27.6	27.6
Bearing			
bolts or rivets on holes	J.3.7a, J.4.7	39.0	
bolts on slots, pins on holes, flat surfaces	J.3.7b, J.7	25.9	

		Slenderness S	**F/Ω for $S \le S_1$**	**S_1**	**F/Ω for $S_1 < S < S_2$**	**S_2**	**F/Ω for $S \ge S_2$**
Axial Compression							
all shapes member buckling	E.3	kL/r			20.3 – 0.127 S	66	51,352 /S^2
Flexural Compression							
open shapes lateral-torsional buckling	F.2.1	$L_b/(r_{ye}C_b^{1/2})$			23.9 – 0.124 S	79	86,996 /S^2
closed shapes lateral-torsional buckling	F.3.1	$2L_bS_c/(C_b(I_yJ)^{1/2})$			23.9 – 0.238 $S^{1/2}$	1685	23,599 /S
rectangular bars lateral-torsional buckling	F.4.2	$(d/t)(L_b/(C_bd))^{1/2}$			40.5 – 0.928 S	29	11,420 /S^2
round tubes local buckling	F.6.2	R_b/t	39.3 – 2.702 $S^{1/2}$	55	26.2 – 0.944 $S^{1/2}$	141	3,776 /[$S(1+S^{1/2}/35)^2$]
Elements—Uniform Compression							
flat elements supported on one edge in columns whose buckling axis is not an axis of symmetry	B.5.4.1	b/t	21.2	6.7	27.3 – 0.910 S	12	2,417 /S^2
flat elements supported on one edge in all other columns and all beams	B.5.4.1	b/t	21.2	6.7	27.3 – 0.910 S	10.5	186 /S
flat elements supported on both edges	B.5.4.2	b/t	21.2	20.8	27.3 – 0.291 S	33	580 /S
flat elements supported on both edges and with an intermediate stiffener	B.5.4.4	λ_s	21.2	17.8	23.9 – 0.149 S	66	60,414 /S^2
curved elements supported on both edges	B.5.4.5	R_b/t	21.2	27.6	26.2 – 0.944 $S^{1/2}$	141	3,776 /[$S(1+S^{1/2}/35)^2$]
flat elements—alternate method	B.5.4.6	λ_{eq}	21.2	33.3	27.3 – 0.182 S	52	928 /S
Elements—Flexural Compression							
flat elements supported on both edges	B.5.5.1	b/t	27.6	49.3	40.5 – 0.262 S	77	1,563 /S
flat elements supported on tension edge, compression edge free	B.5.5.2	b/t	27.6	9.2	40.5 – 1.412 S	19	4,932 /S^2
flat elements supported on both edges and with a longitudinal stiffener	B.5.5.3	b/t	27.6	110.5	40.5 – 0.117 S	173	3,502 /S
flat elements—alternate method	B.5.5.4	λ_{eq}	27.6	32.0	40.5 – 0.403 S	50	1,016 /S
Elements—Shear							
flat elements supported on both edges	G.2	b/t	12.7	35.3	16.5 – 0.107 S	63	38,665 /S^2

Table 2-20
ALLOWABLE STRESSES FOR BUILDING-TYPE STRUCTURES (UNWELDED)

6063 – T5 Extrusions (Up thru 0.500 in. thick)
6063 – T52 Extrusions (Up thru 1.000 in. thick)

F_{ty} = 16 k/in^2, F_{cy} = 16 k/in^2, F_{tu} = 22 k/in^2
E = 10,100 k/in^2, k_t = 1

Allowable Stresses F/Ω (k/in^2)	Section	F/Ω
Axial Tension		
axial tension stress on net effective area	D.2b	11.3
axial tension stress on gross area	D.2a	9.7

Flexure	Section	Tension	Compression	
elements in uniform stress	F.8.1.1	9.7	see B.5.4.1 thru B.5.4.5 and E.4.2	
elements in flexure	F.8.1.2, F.4.1	12.6	12.6	see also F.4.2
round tubes	F.6.1	11.3	11.3	see also F.6.2
rods	F.7	12.6	12.6	

Bearing	Section	F/Ω
bolts or rivets on holes	J.3.7a, J.4.7	22.6
bolts on slots, pins on holes, flat surfaces	J.3.7b, J.7	15.0

	Section	Slenderness S	F/Ω for $S \le S_1$	S_1	F/Ω for $S_1 < S < S_2$	S_2	F/Ω for $S \ge S_2$
Axial Compression							
all shapes member buckling	E.3	kL/r			8.9 – 0.037 S	99	51,352 $/S^2$
Flexural Compression							
open shapes lateral-torsional buckling	F.2.1	$L_b/(r_{ye}C_b^{1/2})$			10.5 – 0.036 S	119	86,996 $/S^2$
closed shapes lateral-torsional buckling	F.3.1	$2L_bS_c/(C_b(I_yJ)^{1/2})$			10.5 – 0.070 $S^{1/2}$	3823	23,599 $/S$
rectangular bars lateral-torsional buckling	F.4.2	$(d/t)(L_b/(C_bd))^{1/2}$			17.2 – 0.256 S	45	11,420 $/S^2$
round tubes local buckling	F.6.2	R_b/t	17.5 – 0.917 $S^{1/2}$	95	11.6 – 0.320 $S^{1/2}$	275	3,776 $/[S(1+S^{1/2}/35)^2]$
Elements—Uniform Compression							
flat elements supported on one edge in columns whose buckling axis is not an axis of symmetry	B.5.4.1	b/t	9.7	8.2	11.8 – 0.260 S	19	2,417 $/S^2$
flat elements supported on one edge in all other columns and all beams	B.5.4.1	b/t	9.7	8.2	11.8 – 0.260 S	15.9	122 $/S$
flat elements supported on both edges	B.5.4.2	b/t	9.7	25.6	11.8 – 0.083 S	50	382 $/S$
flat elements supported on both edges and with an intermediate stiffener	B.5.4.4	λ_s	9.7	18.8	10.5 – 0.044 S	99	60,414 $/S^2$
curved elements supported on both edges	B.5.4.5	R_b/t	9.7	36.7	11.6 – 0.320 $S^{1/2}$	275	3,776 $/[S(1+S^{1/2}/35)^2]$
flat elements—alternate method	B.5.4.6	λ_{eq}	9.7	41.0	11.8 – 0.052 S	80	611 $/S$
Elements—Flexural Compression							
flat elements supported on both edges	B.5.5.1	b/t	12.6	62.9	17.2 – 0.072 S	119	1,017 $/S$
flat elements supported on tension edge, compression edge free	B.5.5.2	b/t	12.6	11.7	17.2 – 0.389 S	29	4,932 $/S^2$
flat elements supported on both edges and with a longitudinal stiffener	B.5.5.3	b/t	12.6	141.1	17.2 – 0.032 S	266	2,280 $/S$
flat elements—alternate method	B.5.5.4	λ_{eq}	12.6	40.9	17.2 – 0.111 S	77	661 $/S$
Elements—Shear							
flat elements supported on both edges	G.2	b/t	5.8	43.6	7.2 – 0.031 S	96	38,665 $/S^2$

Table 2-21
ALLOWABLE STRESSES FOR BUILDING-TYPE STRUCTURES (UNWELDED)

6063 – T6 — **Extrusions and Pipe**

F_{ty} = 25 k/in^2 — E = 10,100 k/in^2
F_{cy} = 25 k/in^2 — k_t = 1
F_{tu} = 30 k/in^2

Allowable Stresses F/Ω (k/in^2)	Section	F/Ω
Axial Tension		
axial tension stress on net effective area	D.2b	15.4
axial tension stress on gross area	D.2a	15.2

Flexure		Tension	Compression	
elements in uniform stress	F.8.1.1	15.2	see B.5.4.1 thru B.5.4.5 and E.4.2	
elements in flexure	F.8.1.2, F.4.1	19.7	19.7	see also F.4.2
round tubes	F.6.1	17.7	17.7	see also F.6.2
rods	F.7	19.7	19.7	

Bearing		
bolts or rivets on holes	J.3.7a, J.4.7	30.8
bolts on slots, pins on holes, flat surfaces	J.3.7b, J.7	20.5

		Slenderness S	F/Ω for $S \le S_1$	S_1	F/Ω for $S_1 < S < S_2$	S_2	F/Ω for $S \ge S_2$
Axial Compression							
all shapes member buckling	E.3	kL/r			14.2 – 0.074 S	78	51,352 /S^2
Flexural Compression							
open shapes lateral-torsional buckling	F.2.1	$L_b/(r_{ye}C_b^{1/2})$			16.7 – 0.073 S	94	86,996 /S^2
closed shapes lateral-torsional buckling	F.3.1	$2L_bS_c/(C_b(I_yJ)^{1/2})$			16.7 – 0.140 $S^{1/2}$	2400	23,599 /S
rectangular bars lateral-torsional buckling	F.4.2	$(d/t)(L_b/(C_bd))^{1/2}$			27.9 – 0.532 S	35	11,420 /S^2
round tubes local buckling	F.6.2	R_b/t	27.7 – 1.697 $S^{1/2}$	70	18.5 – 0.593 $S^{1/2}$	189	3,776 /[$S(1+S^{1/2}/35)^2$]
Elements—Uniform Compression							
flat elements supported on one edge in columns whose buckling axis is not an axis of symmetry	B.5.4.1	b/t	15.2	7.3	19.0 – 0.530 S	15	2,417 /S^2
flat elements supported on one edge in all other columns and all beams	B.5.4.1	b/t	15.2	7.3	19.0 – 0.530 S	12.6	155 /S
flat elements supported on both edges	B.5.4.2	b/t	15.2	22.8	19.0 – 0.170 S	39	484 /S
flat elements supported on both edges and with an intermediate stiffener	B.5.4.4	λ_s	15.2	18.2	16.7 – 0.088 S	78	60,414 /S^2
curved elements supported on both edges	B.5.4.5	R_b/t	15.2	31.2	18.5 – 0.593 $S^{1/2}$	189	3,776 /[$S(1+S^{1/2}/35)^2$]
flat elements—alternate method	B.5.4.6	λ_{eq}	15.2	36.5	19.0 – 0.106 S	63	775 /S
Elements—Flexural Compression							
flat elements supported on both edges	B.5.5.1	b/t	19.7	54.9	27.9 – 0.150 S	93	1,298 /S
flat elements supported on tension edge, compression edge free	B.5.5.2	b/t	19.7	10.2	27.9 – 0.810 S	23	4,932 /S^2
flat elements supported on both edges and with a longitudinal stiffener	B.5.5.3	b/t	19.7	123.0	27.9 – 0.067 S	208	2,910 /S
flat elements—alternate method	B.5.5.4	λ_{eq}	19.7	35.7	27.9 – 0.231 S	60	844 /S
Elements—Shear							
flat elements supported on both edges	G.2	b/t	9.1	38.7	11.5 – 0.062 S	76	38,665 /S^2

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SECTION 12
DRAWINGS

The "As-Built" drawings for the 6 ft high by 6 ft wide *Knotwood* Fence System, which follow, have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

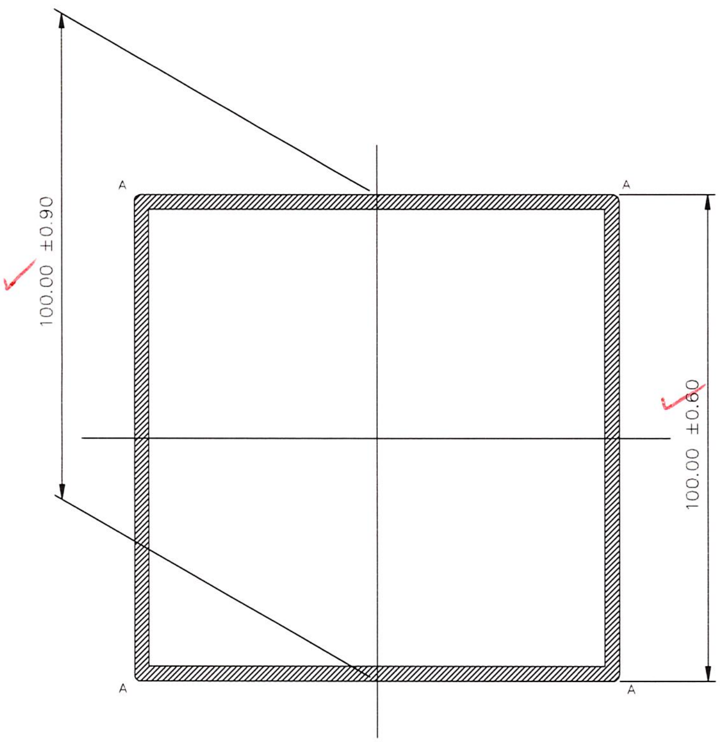
CUSTOMER APPROVAL DRAWING

EXCLUSIVE SHAPES – WHERE THE SHAPE IS DEVELOPED AS AN "EXCLUSIVE", THE CUSTOMER WHOSE NAME APPEARS ON THIS DRAWING SHALL ACCEPT FULL RESPONSIBILITY FOR ALL CLAIMS MADE AGAINST THE CUSTOMER, PERSONS CLAIMING UNDER THE CUSTOMER, OR CAPRAL LIMITED, IF THE EXTRUDED SHAPE SHOWN AND PRODUCTS MADE FROM IT INFRINGES ANY INTELLECTUAL PROPERTY RIGHT, INCLUDING PATENT, DESIGN OR COPYRIGHT, OR IS THE SUBJECT OF CONFIDENTIAL INFORMATION AND THE CUSTOMER SHALL INDEMNIFY CAPRAL LIMITED AGAINST ALL DAMAGES, LOSSES AND EXPENSES ARISING OUT OF ANY CLAIM.

SHAPE DIMENSIONS – THIS DRAWING HAS BEEN CHECKED FOR CORRECT DIMENSIONS, TOLERANCES AND ANY OTHER SPECIAL WRITTEN REQUIREMENTS BY THE CUSTOMER. ALTERATIONS MADE AFTER TOOLAGE MANUFACTURE IS COMMENCED WILL BE AT THE CUSTOMER'S ACCOUNT.

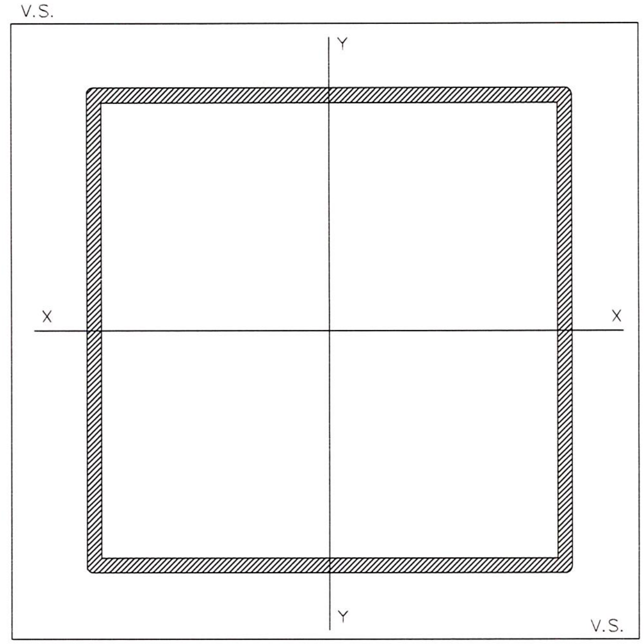
CUSTOMER ....

SIGNATURE .... DATE ....



UNSPECIFIED WALL THICKNESS 3.00 ±0.30

A = 1.40 R



CALCULATED ON NOMINAL WALL THICKNESS

Ixx =1822.94 x 10E3 mmE4
Iyy =1822.94 x 10E3 mmE4

intertek

Test sample complies with these details. Deviations are noted.

Report # K0316.01-119-18

Date 12/6/19 **Tech** STG

CAPRAL

DIE No	ISSUE
E22119	02

ENQUIRY No	SECTION No
24585	TS47488/A

HANDLING

NOT APPLICABLE

WRAPPING

NOT APPLICABLE

PACKING

NOT APPLICABLE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

ISSUE	MODIFICATION	DRN	DATE
02	RELEASED TO ISSUE 02	A.K.	13.10.2011
1A	REDRAWN & UPDATED, ADDED V.S., NO DIE CHANGE.	A.K.	13.10.2011

STRAIGHTNESS mm	2.00 X LENGTH (m)
FLATNESS mm	0.15mm/25mm
TWIST °	0.80 X TOTAL LENGTH; 3° MAX
ANGULARITY	± 2°

DIMENSIONAL TOLERANCES WHERE NOT SHOWN WILL BE IN ACCORDANCE WITH AS/NZ 1866:1997
ALL CORNERS 0.40mm RADIUS UNLESS OTHERWISE SPECIFIED

SPECIAL TOLERANCES	STD TO 3/4	0	3/4 TO 1/2	0	1/2 TO 1/4	0	LESS THAN 1/4	0

AREA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
PRESS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
SAW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
PACKING																										

ALLOY	TEMPER	FINISH	CUSTOMER		ACCOUNT No
6061	T6	STRU	CAPRAL LIMITED		00100
TOTAL PER mm: 774	ANOD PER mm: 398	PAINT PER mm: 398	SHAPE OWNER: CAPRAL LIMITED		DRAWN: A.K. 13.10.2011
AREA mm: 1162	MASS kg/m: 3.138	FACTOR: 247	CUSTOMER PART No: SKETCH	END USE: 999	CHECKED: P.D. 13.10.2011
CCD mm: 141	CLASS: A	COMPLEXITY: M	APPLICATION: SHS 100x3		APPROVED: E.R. 13.10.2011

DIE No	ISSUE
E22119	02

ENQUIRY No	SECTION No
24585	TS47488/A

CUSTOMER APPPOVAL DRAWING

EXCLUSIVE SHAPES – WHERE THE SHAPE IS DEVELOPED AS AN "EXCLUSIVE", THE CUSTOMER WHOSE NAME APPEARS ON THIS DRAWING SHALL ACCEPT FULL RESPONSIBILITY FOR ALL CLAIMS MADE AGAINST THE CUSTOMER, PERSONS CLAIMING UNDER THE CUSTOMER, OR CAPRAL LIMITED, IF THE EXTRUDED SHAPE SHOWN AND PRODUCTS MADE FROM IT INFRINGES ANY INTELLECTUAL PROPERTY RIGHT, INCLUDING PATENT, DESIGN OR COPYRIGHT, OR IS THE SUBJECT OF CONFIDENTIAL INFORMATION AND THE CUSTOMER SHALL INDEMNIFY CAPRAL LIMITED AGAINST ALL DAMAGES, LOSSES AND EXPENSES ARISING OUT OF ANY CLAIM.

SHAPE DIMENSIONS – THIS DRAWING HAS BEEN CHECKED FOR CORRECT DIMENSIONS, TOLERANCES AND ANY OTHER SPECIAL WRITTEN REQUIREMENTS BY THE CUSTOMER. ALTERATIONS MADE AFTER TOOLAGE MANUFACTURE IS COMMENCED WILL BE AT THE CUSTOMER'S ACCOUNT.

CUSTOMER ....

SIGNATURE .... DATE ....

intertek

Test sample complies with these details. Deviations are noted.

Report # K6316.01-119-18

Date 12/6/19 **Tech** STG

CAPRAL

DIE No	ISSUE
P13322R	01
ENQUIRY No 31033	SECTION No TS49640/B

HANDLING

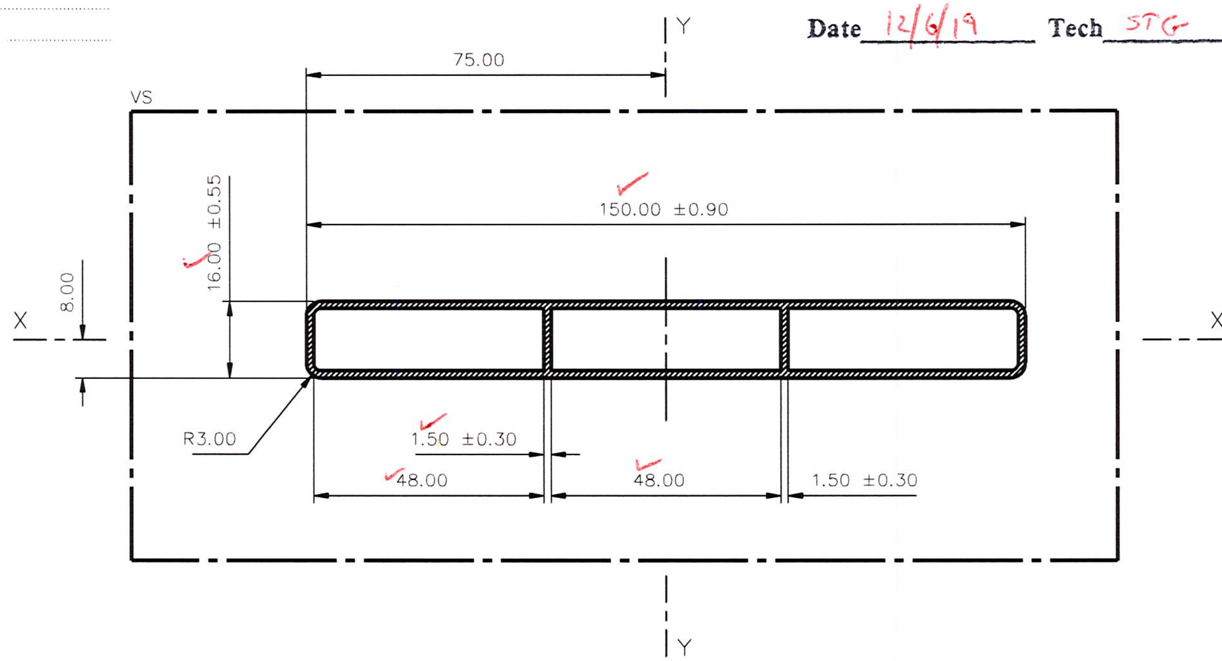
NOT APPLICABLE

WRAPPING

NOT APPLICABLE

PACKING

NOT APPLICABLE



UNSPECIFIED WALL THICKNESS 1.50 ±0.25

CALCULATED ON NOMINAL WALL THICKNESS

Ixx =24.50 x 10E3 mmE4
Iyy =1050.49 x 10E3 mmE4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

ISSUE	MODIFICATION	DRN	DATE
01	RELEASED TO 1ST REISSUE	ER	19.04.2013
00	FIRST ISSUE	FE	24.01.2013

STRAIGHTNESS mm	0.70 X TOTAL LENGTH m
FLATNESS mm	0.15mm/25mm
TWIST °	0.80 X TOTAL LENGTH; 3° MAX
ANGULARITY	± 2°

DIMENSIONAL TOLERANCES WHERE NOT SHOWN WILL BE IN ACCORDANCE WITH AS/NZS 1866:1997
ALL CORNERS 0.40mm RADIUS UNLESS OTHERWISE SPECIFIED

SPECIAL TOLERANCES: STD TO 3/4 0 | 3/4 TO 1/2 0 | 1/2 TO 1/4 0 | LESS THAN 1/4 0

AREA																										
PRESS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
SAW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
PACKING																										

ALLOY	TEMPER	FINISH	CUSTOMER		ACCOUNT No	
6060	T5	ARCH	KNOTWOOD PTY LTD		121262	
TOTAL PER mm 689	ANOD PER mm 327	PAINT PER mm 327	SHAPE OWNER KNOTWOOD PTY LTD		DRAWN E.R. 19.04.2013	DIE No P13322R / ISSUE 01
AREA mm 522	MASS kg/m 1.411	FACTOR 488	CUSTOMER PART No NOT SPECIFIED	END USE 129	CHECKED A.K. 19.04.2013	
CCD mm 151	CLASS C	COMPLEXITY C	APPLICATION DECKING		APPROVED F.E. 19.04.2013	ENQUIRY No 31033 / SECTION No TS49640/B

SPECIAL REQUIREMENTS	CAPRAL EXTRUSIONS								ENQ. 21105	SKETCH NUMBER	DIE NUMBER	DIE CUT TO ISSUE.
	EXTRUDED FINISH	ALLOY	TEMPER	TOTAL PERIM.	ANOD. PERIM.	PAINT PERIM.	AREA	MASS kg/m	FACTOR			
	Architectural	6060	T5	238	238	100	215	0.580	410	TS44505/D	P11040R	00

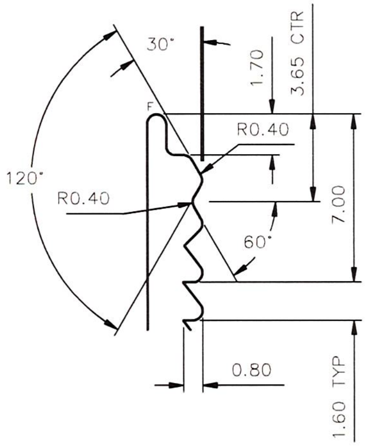
CUSTOMERS APPROVAL DRAWING

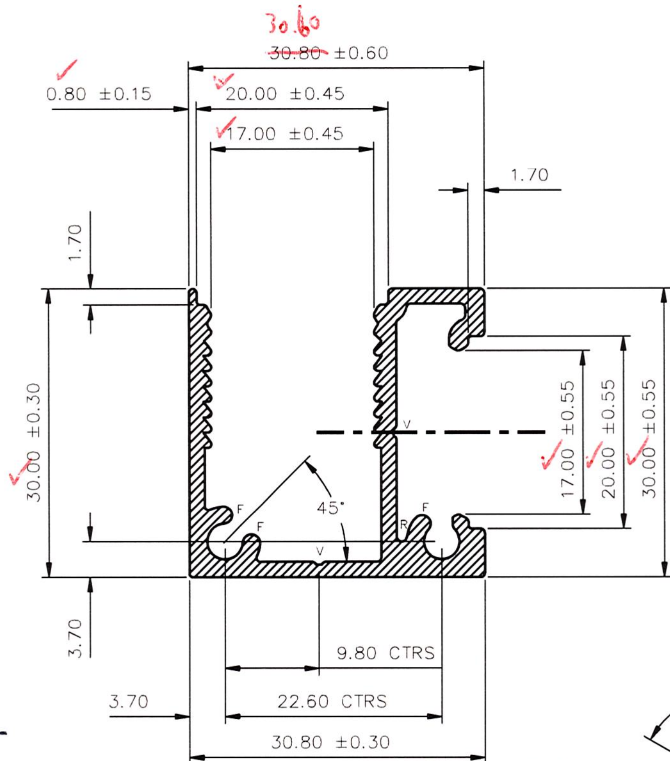
EXCLUSIVE SHAPES— IN THOSE INSTANCES WHERE THE SHAPE IS DEVELOPED AS AN "EXCLUSIVE," THE CUSTOMER WHOSE NAME APPEARS ON THIS DRAWING SHALL ACCEPT FULL RESPONSIBILITY FOR ALL CLAIMS MADE AGAINST THE CUSTOMER OR PERSONS CLAIMING UNDER THE CUSTOMER , OR CAPRAL ,THAT THE EXTRUDED SHAPES SHOWN AND PRODUCTS MADE FROM IT,INFRINGES ANY PATENT,REGISTERED DESIGN OR COPYRIGHT OR IS THE SUBJECT OF CONFIDENTIAL INFORMATION.THE CUSTOMER SHALL INDEMNIFY CAPRAL AGAINST ALL DAMAGES,LOSSES AND EXPENCES ARISING OUT OF ANY CLAIM.

SHAPE DIMENSIONS— THIS DRAWING HAS BEEN CHECKED FOR CORRECT DIMENSIONS,TOLERANCES AND ANY OTHER SPECIAL REQUIREMENTS BY THE CUSTOMER. ALTERATIONS MADE AFTER TOOLAGE MANUFACTURE IS COMMENCED WILL BE AT OUR ACCOUNT.

CUSTOMER . . . .

SIGNATURE . . . . DATE . . . . . .





CALCULATED ON NOMINAL WALL THICKNESS

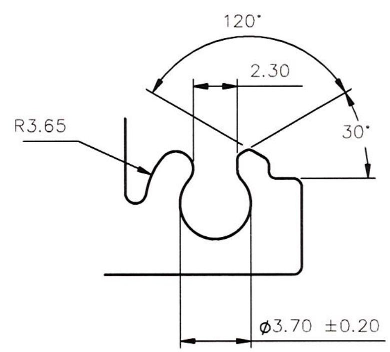
Ixx =23.64 x 10E3 mmE4
Iyy =24.78 x 10E3 mmE4

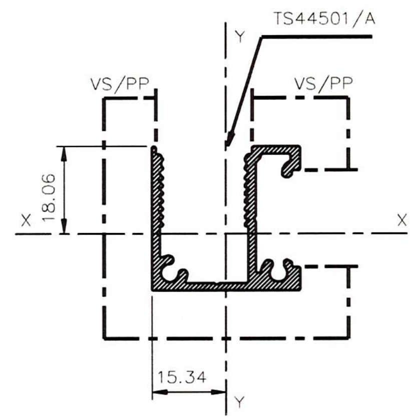
intertek

Test sample complies with these details.
Deviations are noted.

Report # K0316.01-119-18

Date 12/6/19 Tech STG





F = FULL R
P = 0.40 R X 0.20 HIGH PIP
R = R TO SUIT
V = STD VEE GROOVE

UNSPECIFIED WALL THICKNESS 1.60 ±0.15

DIMENSIONAL TOLERANCES WHERE NOT SHOWN WILL BE IN ACCORDANCE WITH AS/NZ1866:1997 AND ADC'S ALUMINIUM STANDARDS, DATA AND DESIGN – WROUGHT PRODUCTS   0.40MM RAD. ON ALL CORNERS UNLESS OTHERWISE SPECIFIED

CUSTOMER KNOTWOOD PTY LTD	E.D.P. No. 121262	PART No.	COMPLEXITY CODE C
APPLICATION 30 x 30 U CHANNEL – FENCING	END USE 129	CIRC. CIRCLE DIAM 43	H.C. S
LONGITUDINAL DEVIATION FLATNESS 0.10mm/25mm STRAIGHTNESS 0.20mm/300mm 0.70 x Total Length mm TWIST 0.50mm/300mm 0.80 X TOTAL LENGTH; 3° MAX		SCALE 2:1 1:1	DRAWN P.D. 30.03.2010
		CHECKED A.K. 27.04.2010	APPROVED A.K. 27.04.2010

MOD	RE-ISSUE	No.

RATIO | GAP

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SECTION 13
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/17/20	N/A	Original Report Issue