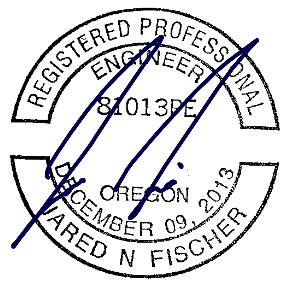
360.635.6611
601 Main Street #400
Vancouver, WA 98660

WAYPOINT ENGINEERING

STRUCTURAL CALCULATIONS

Stainless Cable Solutions Merged

Washington	Oregon
	
EXPIRES: 10/31/2022	EXPIRES: 12/31/2021

Prepared for:
Stainless Cable Solutions, LLC.
15806 SE 114th Ave
Clackamas, OR 97015

October 21, 2020
20184

Scope of Work

Development and design for an aluminum cable railing system including:
Termination post, intermediate post, top rail, rail connecting blocks, cables, end cap, flat infill, base plate, stair facia, stair intermeadiate cap, and attachments.

General

The enclosed calculations were intended to be to designed and submitted in conformance with the following:

Professional Engineer Seals
- State of Washington
- State of Oregon
- State of California

Building Codes (Meets or Exceeds Requirements)
- 2018 International Building and Residential Codes
- Compliant with 2019 Oregon Structural Specialty Code and 2019 California Building Code

Additional Design References
- 2015 Aluminum Design Manual
- 2014 Building Code Requirements for Structural Concrete (ACI318-14)
- AISC Steel Construction Manual, 14th Edition
- 2018 National Design Specification for Wood Construction
- ICC Report AC273: Acceptance Criteria for Handrails and Guards

Materials

6061-T6, T6510, T6511 Extrusions	Tensile Ultimate Strength,	F_{tu} =	38 ksi
	Tensile Yield Strength,	F_{ty} =	35 ksi
	Compressive Yield Strength,	F_{cy} =	35 ksi
	Tensile Ultimate Strength at Weld Zone,	F_{tuw} =	24 ksi
A554 Stainless Steel Grade 304/304L	Yield Stress,	F_y =	30 ksi
	Tensile Stress,	F_u =	75 ksi
Stainless Steel 18-8 Self Tapping Screws	Yield Stress,	F_y =	20 ksi
	Tensile Stress,	F_u =	65 ksi
Type 316 Stainless Steel Wire Rope	1x19 Strand Core		
	1/8" dia. with breaking strength =		1869 lbs
	7x7 Strand Core		
	1/8" dia. with breaking strength =		1566 lbs
Weld Filler Material 4043	Tensile Ultimate Strength,	F_{tuw} =	24 ksi

Guardrail Loading Conditions

Uniform Load

Per 2018 IBC §1607.8.1, the uniform load shall be applied to the handrail in any direction. This loading is only applicable to commercial projects with public access and is not applicable to residential guardrails. The railing system covered in this package covers all commercial and residential, thus this loading condition shall apply. — p = 50 plf

Concentrated Load

Per IBC §1607.8.1.1, the concentrated load shall be applied to the handrail in any direction — P = 200 lbs

Per IBC §1607.8.1.2, components including intermediate rails, balusters, and cables shall be designed for a concentrated load applied normal and horizontally over an area of 1ft^2. — P = 50 lbs

Per IBC §1015.4 and IRC §312.1.3 opening limitations shall not allow the passage of a sphere 4" in diameter through.

Part Numbers and Descriptions

IP100 - SCS Extruded Aluminum Intermediate Posts	Page 4, 5, 6
TR100 - SCS Extruded Aluminum Top Rail	Page 7,8,9,10
FI200 - SCS Extruded Aluminum Flat Infill	
EC100 - SCS Top Rail End Cap	
BP100 - SCS Base Plate	Page 11, 12
SR200 - SCS Extruded Aluminum Stair Rail	Page 13
RCB100 - SCS Stair Grab Rail Connecting Block	
Stainless Steel Wire Rope	Page 14
TP100 - SCS Extruded Aluminum Termination Posts	Page 15, 16
ISPA200 - SCS Stair Post Cap Assembly Intermediate Stair Post Adapter	Page 17, 18

Aluminum Cable Guardrail System Summary

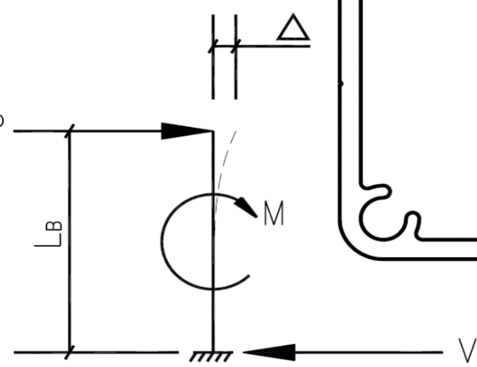
1 or 2 Family Residential?	Yes
Total Post/Handrail Height Including Base Plate	42 in
Maximum Post Spacing	5'-0" oc
Maximum Stair Rail Post Spacing	5'-0" oc
Cable Prestressing	255 lbs
Cable Spacing (On-Center)	3.125 in

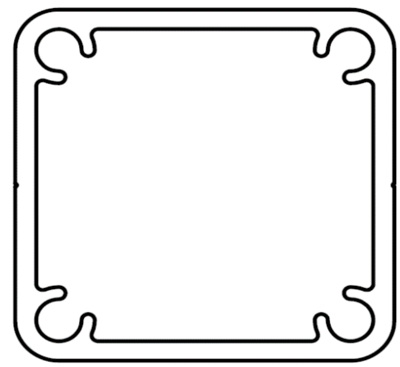
PROJECT: Stainless Cable Solutions Merged
SUBJECT: Aluminum Calcs
DATE: 10/20/2020
DESIGN: AM
PAGE:

WAYPOINT ENGINEERING

Extruded Aluminum Post Input

Post Spacing, s =	5 ft
(See Page 3) Applied Load At Top, P =	200 lbs
Unbraced Length = 40 5/8", L_B =	40.63 in
Post Area, A_p =	1.146 in²
Modulus of Elasticity, E =	10100 ksi
Section Modulus, S =	0.744 in³
Plastic Section Modulus, Z =	0.848 in³
Moment of Inertia, I_{min} =	0.837 in⁴
Torsion Constant, J =	0.073 in
Clear Height of Shear Area, h =	2.250 in
Thickness of Shear Area, t =	0.125 in
C_b =	1.3
k_t =	1.0





Flexural Yielding and Rupture 6061-T6 (ADM 2015 Section F.2)

yielding moment strength, Mnp =	29.67 kip-in	
rupture moment strength, Mnu =	32.21 kip-in	
all other limit states, Ω_b =	1.65	
rupture limit state, Ω_b =	1.95	
Allowable Moment, M_{nmb}/Ω_b =	**16.52 kip-in**	
Applied Moment, P*LB = Mapplied =	**8.13 kip-in**	**OK**

Flexural Local Buckling 6061-T6 (ADM 2015 Section F.3, B.5.5.5, Table 2-19 Part VI)

Slenderness, λ =	16.0	
Slenderness, λeq =	25.6	
Fe =	152.0 ksi	element supported on both edges, Table B.5.1
Allowable Stress, λeq≤λ1 =	24.2 ksi	◄ Controls
Slenderness Limit, λ1 =	33.5	
Allowable Stress, λ1<λeq<λ2 =	-169.4 ksi	
Slenderness Limit, λ2 =	61.0	
Allowable Stress, λeq≥λ2 =	32.6 ksi	
Allowable Bending Stress, Fb/Ω =	24.2 ksi	
Allowable Moment, S*Fb/Ω = Mallow =	**17.98 kip-in**	
Applied Moment, P*LB = Mapplied =	**8.13 kip-in**	**OK**

Flexural Lateral Torsional Buckling 6061-T6 (ADM 2015 Section F.4)

Slenderness, λ =	22.3	for closed shape member, F.4.2.3
inelastic buckling, M_{nmb} =	19.86 ksi	◄ Controls
elastic buckling, M_{nmb} =	148.92 ksi	
Ω_b =	1.65	
Allowable Moment, M_{nmb}/Ω_b =	**12.03 kip-in**	
Applied Moment, P*LB = Mapplied =	**8.13 kip-in**	**OK**

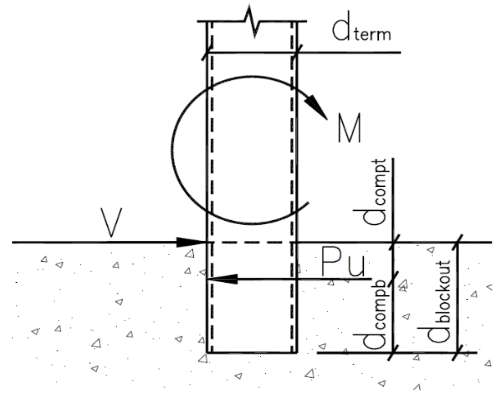
Deflection Check, ΔMAX = LB/12 (ICC Report AC273)

Allowable Deflection, Δallow =	3.385 in	
Applied Deflection, $PL_B^3/3EI$ = Δapplied =	0.529 in	**OK**

Shear in Elements, Gross Section 6061-T6 (ADM 2015 Table Section G.2, Table 2-19 Part VI)

Allowable Stress, λ≤λ1 =	12.7 ksi	
Slenderness Limit, λ1 =	35.3	
Allowable Stress, λ1<λ<λ2 =	14.8 ksi	
Slenderness Limit, λ2 =	63.0	
Allowable Stress, λ≥λ2 =	151.0 ksi	
Allowable Shear Stress, Fs/Ω =	13 ksi	
Allowable Shear, Ap*Fs/Ω = Vallow =	**14.557 kips**	
Applied Shear, P = Vapplied =	**0.200 kips**	**OK**

Core Mounted Posts Bearing Check



Existing Concrete Strength, f'_c =	2500 psi	
$V_{applied}$ =	0.200 kips	*(See Page 4)*
$M_{applied\ from\ post}$ =	8.125 kip-in	*(See Page 4)*
$M_{applied\ from\ shear}$ =	0.600 kip-in	
M_{total} =	8.725 kip-in	
Depth of Concrete Blockout, $d_{blockout}$ =	3.000 in	
Dist Bottom of Blockout to Applied P_u, d_{compb} =	2.000 in	
Dist from Applied P_u to Top of Concrete, d_{compt} =	1.000 in	
Width of Post, d_{term} =	2.250 in	
Loaded Area, A_1 =	2.250 in²	
Area of the Lower Base of Largest Fulcrum, A_2 =	6.500 in²	
Compression Load at Blockout, P_u =	4.363 kips	
Strength Reduction Factor, Ø =	0.65	*(Per ACI 318-14 §21.2)*
Concrete Bearing Strength, f_b =	5282 psi	*(Per ACI 318-14 §22.8)*
Maximum Applied Compression Load, f_{bmax} =	**1939 psi**	**OK < 5282 psi**

Core Mounted Posts Edge Distance Check

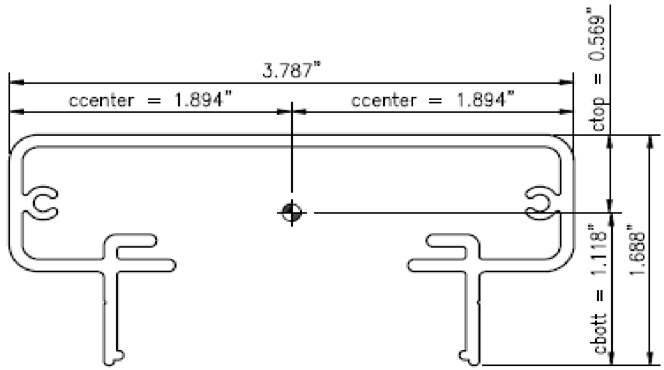
tance from Center of Post to Edge of Concrete, c_{a1} =	6.750 in	
Distance from Post Face to Edge of Concrete, c_{post} =	4.500 in	
Thickness of Concrete, h_{a1} =	4.000 in	
Projected Concrete Failure Area, A_{Vco} =	205.031 in²	*(Per ACI 318-14 §17.5.2.1)*
Projected Concrete Failure Area, A_{Vc} =	90.000 in²	*(Per ACI 318-14 §17.5.2.1)*
Shear Strength Modification Factor, $\psi_{ed,V}$ =	1.00	*(Per ACI 318-14 §17.5.2.6)*
Cracked Concrete Modification Factor, $\psi_{c,V}$ =	1.00	*(Per ACI 318-14 §17.5.2.7)*
Cracked Concrete Modification Factor, $\psi_{h,V}$ =	1.59	*(Per ACI 318-14 §17.5.2.8)*
Lightweight Concrete Factor, λ =	1.00	*(Per ACI 318-14 §19.2.4.2)*
Basic Concrete Breakout Strength, V_b =	9.752 kips	*(Per ACI 318-14 §17.5.2.2)*
Nominal Concrete Breakout Strength, V_{cb} =	6.811 kips	*(Per ACI 318-14 §17.5.2.1)*
Max Nominal Concrete Breakout Strength, V_{max} =	**6.811 kips**	**OK < 4.3625 kips**

Use 4,000psi Non-Shrink Grout in Min 3"SQx4"Deep Blockout or 3" Diax4"Deep Hole with 4 ½" Min Edge Distance (No Rebar) or 1 ¼" Min Edge Distance when #3 or Larger Slab Edge Rebar Present

Check Top Connection

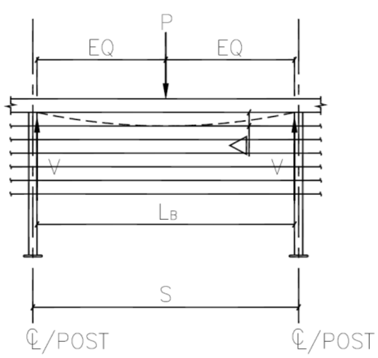
Note: Lateral loads on top rail bears directly on post side. Only uplift loads affecting attachment are considered.

Diameter of Screw, d_{screw} =	0.194 in	
Thickness of Post, t_{post} =	0.125 in	
Area of Engaged Post in Shear, A_{Vpost} =	0.024 in²	
Number of Screws in Shear =	2	
Factor of Safety on Screw Connections, n_s =	3.00	
Tensile Ultimate Strength of Member Not in Contact with Screw Head, F_{tu2} =	38 ksi	
Shear Strength of Screw, V_{screw} =	**0.614 kips**	**OK > 0.250 kips**

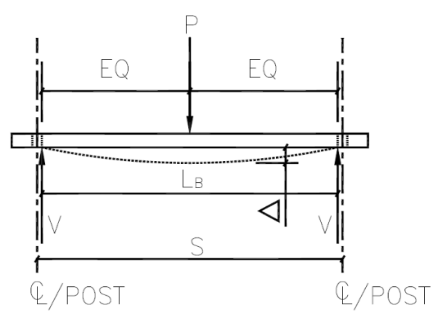


Extruded Aluminum Rail Input

Post Spacing, s =	5 ft	Left/Right to Centroid, Ccenter =	1.895 in
(See Page 4) Applied Load At Top, P =	200 lbs	Section Modulus Top, Sxx =	0.373 in³
Unbraced Length, LB = 5'-0" x 12" - 2.25" =	57.750 in	Section Modulus Bottom, Sxx =	0.190 in³
Compressive Modulus of Elasticity, E =	10100 ksi	Section Modulus Top, Zxx =	0.560 in³
Rail Area, Ar =	0.928 in²	Section Modulus Bottom, Zxx =	0.285 in³
Moment of Inertia x, Ixx =	0.212 in⁴	Section Modulus , Syy =	0.879 in³
Moment of Inertia y, Iyy =	1.664 in⁴	Torsion Constant, J =	0.005 in
Top of Member to Centroid, ctop =	0.569 in	Clear Height of Shear Area, h =	1.643 in
Bottom of Member to Centroid, cbott =	1.118 in	Thickness of Shear Area, t =	0.090 in
C_b =	1.31		
k_t =	1.0		



Vertical Loading Diagram



Horizontal Loading Diagram

Flexural Yielding and Rupture 6061-T6 (ADM 2015 Section F.2)

yielding moment strength, Mnp =	9.97 kip-in	
rupture moment strength, Mnu =	10.83 kip-in	
all other limit states, Ω_b =	1.65	
rupture limit state, Ω_b =	1.95	
Allowable Moment, M_{nmb}/Ω_b =	**5.55 kip-in**	
Applied Moment, P*s/4 = Mapplied =	**0.25 kip-in**	**OK**

Flexural Local Buckling 6061-T6 (ADM 2015 Section F.3, B.5.5.5, Table 2-19 Part VI)

λ =	10.69	
Slenderness, λeq =	17.1	
Fe =	341 ksi	element supported on both edges, Table B.5.1
Allowable Stress, $\lambda \leq \lambda_1$ =	31.8 ksi	◄ Controls
Slenderness Limit, λ_1 =	33.5	
Allowable Stress, $\lambda_1 < \lambda < \lambda_2$ =	-215.9 ksi	
Slenderness Limit, λ_2 =	61.0	
Allowable Stress, $\lambda \geq \lambda_2$ =	48.8 ksi	
Allowable Bending Stress, F_b/Ω =	31.8 ksi	
Allowable Moment, S*Fb/Ω = Mallow =	**6.04 kip-in**	
Applied Moment, P*s/4 = Mapplied =	**0.25 kip-in**	**OK**

Flexural Lateral Torsional Buckling 6061-T6 (ADM 2015 Section F.4)

d_{top}=	3.787 in	
t_{top} =	0.090 in	
Area of top element =	0.340 in³	
d_{side}=	1.138 in	
t_{side} =	0.090 in	
Area of side element =	0.102 in³	
Slenderness, λ =	32.3	any shape F4.2.5
Me =	18.12 kip-in	
U =	0.49	
go =	0.000 in	
C1 =	0.50	
C2 =	0.50	
Bx =	-1.94	
Shear Center, yo =	1.12	
inelastic buckling, M_{nmb} =	5.19 ksi	◄ Controls
elastic buckling, M_{nmb} =	32.46 ksi	
Ω_b =	1.65	
Allowable Moment, M_{nmb}/Ω_b =	**3.14 kip-in**	
Applied Moment, P*s/4 = Mapplied =	**0.25 kip-in**	**OK**

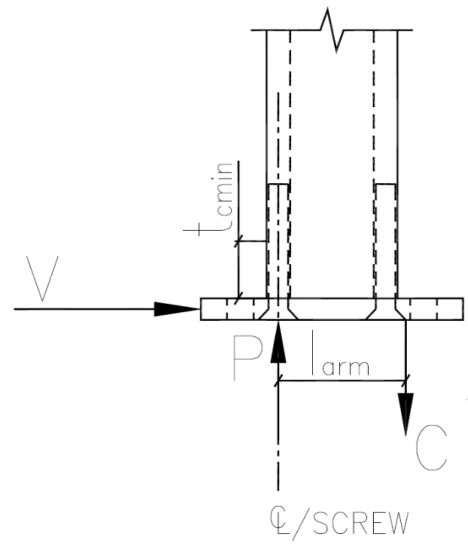
Deflection Check, ΔMAX = LB/12 (ICC Report AC273)

Allowable Deflection, ΔALLOW =	4.813 in	
Applied Deflection, $PL_B^3/48EI$ = ΔAPPLIED =	0.374 in	**OK**

Shear in Elements, Gross Section 6061-T6 (ADM 2015 Table Section G.2, Table 2-19 Part VI)

Slenderness, λ =	10.69	
Allowable Stress, $\lambda \leq \lambda_1$ =	12.7 ksi	◄ Controls
Slenderness Limit, λ_1 =	35.3 in³	
Allowable Stress, $\lambda_1 < \lambda < \lambda_2$ =	15.357 ksi	
Slenderness Limit, λ_2 =	63 in³	
Allowable Stress, $\lambda \geq \lambda_2$ =	338.650 ksi	
Allowable Shear Stress, F_s/Ω =	12.7 ksi	
Allowable Shear, Ap*Fs/Ω = Vallow =	**11.780 kips**	
Applied Shear, P = Vapplied =	**0.200 kips**	**OK**

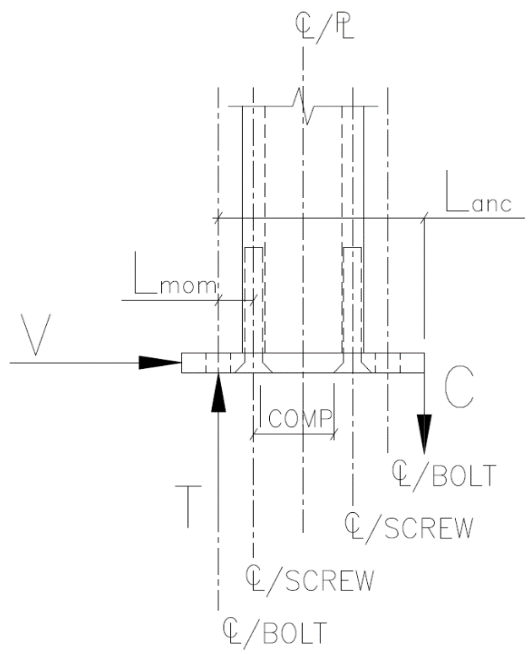
Tension Capacity of Screw (ADM 2015 Section J5.4, AISC DG 27)



$M_{APPLIED}$ =	8.125 kip-in	
	(Page 4)	
Number of Screws in Tension =	2	
Resisting Moment Arm, Center of Screw to Compression Face, larm =	2.000 in	
Tension Applied, Papplied =	**2.0313 kips**	
Thread Stripping Area of Internal Thread Per Inch, Asn =	0.663 in²	
Depth of Full Thread Engagement into tube, Le =	1.000 in	
Tensile Ult Strength of Member Not in Contact with Screw Head, Ftu2 =	38 ksi	
Nominal Pull-Out Strength, Rn =	**14.613 kips**	
	(Eq. J.5-3)	
Thickness of Member in Contact with Screw Head, t_1 =	0.375 in	
Tensile Yield Strength of Member in Contact with Screw Head, Fty1 =	35 ksi	
Nominal Screw Head Diameter Abs Min, D =	0.568 in	
t_1/D =	0.66	<1.1
Nominal Pull-Over Strength, Rn =	**9.150 kips**	
	(Eq. J5-10)	
Tensile Strength of Screw, Fnt =	56 ksi	Stainless Steel
Tensile Stress Area of Screw, As =	0.077 in²	
Nominal Tensile Strength of a Screw, Rn =	**4.312 kips**	*(Eq. AISC DG 27 Eq. J3-1)*
Ω, Aluminum =	3.00	
Ω, Steel =	2.00	
Pull-Out Strength, Rn/Ω =	**4.871 kips**	**OK > 2.03125 kips**
Pull-Over Strength, Rn/Ω =	**3.050 kips**	**OK > 2.03125 kips**
Tensile Strength, Rn/Ω =	**2.156 kips**	**OK > 2.03125 kips**

Shear Capacity of Screw (ADM 2015 J5.5, AISC DG 27)

$V_{APPLIED}$ =	3.515 kips	
Number of Screws in Shear =	4	
Shear Applied, Vapplied =	**0.879 kips**	**Per Screw**
diameter of screw, d =	0.313 in	
Tensile Ultimate Strength of Member in Contact with Screw Head, Ftu =	38 ksi	Note: 1/2 of depth subtracted from t_1
dist from screw center to edge of connected part, de =	0.500 in	as screw is countersunk
thickness of connected part, t =	0.375 in	
Screw Bearing Strength, Rn =	**3.563 kips**	*(Eq. J.5-12)*
Shear Strength of Screw, Fnv =	34 ksi	Stainless Steel
Shear Stress Area of Screw, As =	0.077 in²	
Nominal Shear Strength of a Screw, Rn =	**2.587 kips**	*(Eq. AISC DG 27 Eq. J3-1)*
Ω, Aluminum =	3.00	
Ω, Steel =	2.00	
Bearing Strength, Rn /Ω =	**1.188 kips**	**OK > 0.87875 kips**
Shear Strength, Rn /Ω =	**1.294 kips**	**OK > 0.87875 kips**



Base Plate Anchorage (Lag Screws) Per 2018 National Design Specification for Wood Construction

Applied Moment at TP100, $M_{applied}$ =	8.125 kip-in	*(Page 4)*
Edge of Baseplate to Centerline of Tension Anchorage, l_{anc} =	4.360 in	
Number of Screws in Tension =	2	
Applied Tension at Anchor Bolt/Screw, $T_{applied}$ =	**0.932 kips**	
$V_{applied}$ =	0.200 kips	*(Page 4)*
Number of Screws in Shear =	4	
Shear Applied, $V_{applied}$ =	**0.050 kips**	**Per Screw**
Lag Screw Ref Withdrawl Design Value (G=0.46, D=3/8"), W =	214 lbs	*(Per Simpson Strong-Tie)*
Penetration Depth, d =	4.500 in	
Allowable Lag Screw Tension, $T_{allowable}$ =	**1.541 kips**	**OK > 0.932 kips**
Lag Screw Reference Lateral Design Value (G=0.46, D=3/8"), Z =	405 lbs	*(Per Simpson Strong-Tie)*
Allowable Lag Screw Shear, $V_{allowable}$ =	**0.405 kips**	**OK > 0.05 kips**

Use (4) Simpson 0.220" Dia x 6" SDWS Timber Screw with 6" Min Penetration into Min (1) 6x6 or (2) 3x6 Hem-Fir #2 (1.5" Min Edge Distance)

Base Plate Anchorage (Thru-Bolts) Per 2018 National Design Specification for Wood Construction

Bolt diameter =	0.375 in	
Diameter of washer =	2.500 in	
Area of Bearing under washer =	4.758 in²	
Washer bearing, $F_{c\ perp}$ =	521 psi	*(Per Table 4A)*
Allowable Thru-Bolt Tension, $T_{allowable}$ =	**2.209 kips**	**OK > 0.932 kips**
Lag Screw Reference Lateral Design Value (G=0.46, D=3/8"), Z =	405 lbs	(No Thru-Bolt Values < 1/2" In NDS - Use Table 11K)
Allowable Thru-Bolt Shear, $V_{allowable}$ =	**0.405 kips**	**OK > 0.05 kips**

Use (4) ⅜" Dia SS304 Thru-Bolts with Min 2" Dia Heavy Washer into Min (1) 6x or (2) 3x Hem-Fir #2

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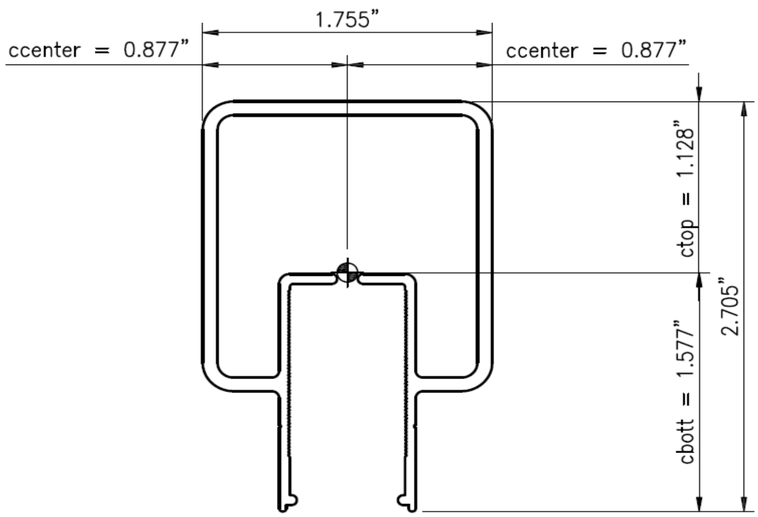
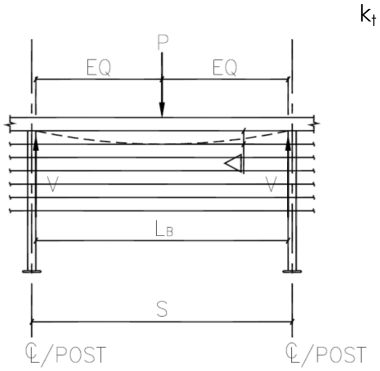
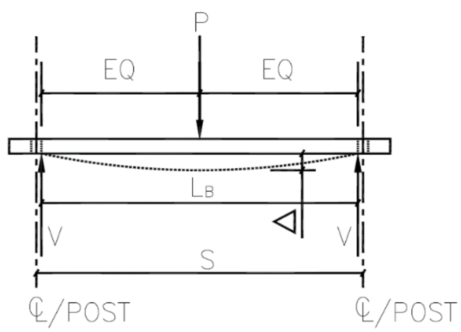


Extruded Aluminum Stair Rail Input

Post Spacing, s =	5 ft	Left/Right to Centroid, Ccenter =	0.878 in
Applied Load At Top, P =	200 lbs	Section Modulus Top, Sxx =	0.414 in³
Unbraced Length, LB = 6'x12"-2.25" =	57.750 in	Section Modulus Bottom, Sxx =	0.296 in³
Compressive Modulus of Elasticity, E =	10100 ksi	Section Modulus Top, Zxx =	0.621 in³
Rail Area, Ar =	0.761 in²	Section Modulus Bottom, Zxx =	0.444 in³
Moment of Inertia x, Ixx =	0.467 in⁴	Section Modulus , Syy =	0.350 in³
Moment of Inertia y, Iyy =	0.307 in⁴	Torsion Constant, J =	0.005 in
Top of Member to Centroid, Ctop =	1.128 in	Clear Height of Shear Area, h =	2.660 in
Bottom of Member to Centroid, Cbott =	1.577 in	Thickness of Shear Area, t =	0.090 in
C_b =	1.0		
k_t =	1.0		



Vertical Loading Diagram



Horizontal Loading Diagram

Flexural Yielding and Rupture 6061-T6 (ADM 2015 Section F.2)

yielding moment strength, Mnp =	15.55 kip-in	
rupture moment strength, Mnu =	16.88 kip-in	
all other limit states, Ω_b =	1.65	
rupture limit state, Ω_b =	1.95	
Allowable Moment, M_{nmb}/Ω_b =	**8.66 kip-in**	
Applied Moment, P*s/4 = Mapplied =	**0.25 kip-in**	**OK**

Flexural Local Buckling 6061-T6 (ADM 2015 Section F.3, B.5.5.5, Table 2-19 Part VI)

Slenderness, λ =	19.53	
Slenderness, λeq =	31.3	
Fe =	102 ksi	element supported on both edges, Table B.5.1
Allowable Stress, λ≤λ1 =	31.8 ksi	◄ Controls
Slenderness Limit, λ1 =	33.5	
Allowable Stress, λ1<λ<λ2 =	-436.7 ksi	
Slenderness Limit, λ2 =	61.0	
Allowable Stress, λ≥λ2 =	26.7 ksi	
Allowable Bending Stress, Fb/Ω =	31.8 ksi	
Allowable Moment, S*Fb/Ω = Mallow =	**9.42 kip-in**	
Applied Moment, P*s/4 = Mapplied =	**0.25 kip-in**	**OK**

Flexural Lateral Torsional Buckling 6061-T6 (ADM 2015 Section F.4)

d_{top}=	3.787 in	
t_{top} =	0.090 in	
Area of top element =	0.340 in³	
d_{side}=	1.138 in	
t_{side} =	0.090 in	
Area of side element =	0.102 in³	
Slenderness, λ =	35.3	any shape F4.2.5
Me =	23.66 kip-in	
U =	0.53	
go =	0.000 in	
C1 =	0.50	
C2 =	0.50	
Bx =	-2.11	
Shear Center, yo =	1.58	
inelastic buckling, M_{nmb} =	7.31 ksi	◄ Controls
elastic buckling, M_{nmb} =	27.18 ksi	
Ω_b =	1.65	
Allowable Moment, M_{nmb}/Ω_b =	**4.43 kip-in**	
Applied Moment, P*s/4 = Mapplied =	**0.25 kip-in**	**OK**

Deflection Check, ΔMAX = LB/12 (ICC Report AC273)

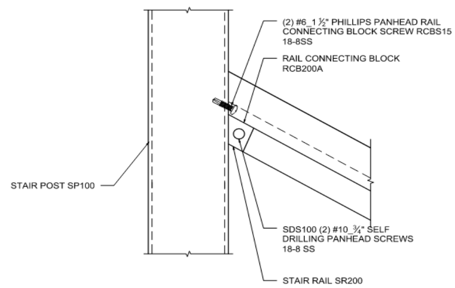
Allowable Deflection, ΔALLOW =	4.813 in	
Applied Deflection, $PL_B^3/48EI$ = ΔAPPLIED =	0.170 in	**OK**

Shear in Elements, Gross Section 6061-T6 (ADM 2015 Table Section G.2, Table 2-19 Part VI)

Slenderness, λ =	19.53	
Allowable Stress, λ≤λ1 =	12.7 ksi	◄ Controls
Slenderness Limit, λ1 =	35.3 in³	
Allowable Stress, λ1<λ<λ2 =	14.410 ksi	
Slenderness Limit, λ2 =	63 in³	
Allowable Stress, λ≥λ2 =	101.330 ksi	
Allowable Shear Stress, Fs/Ω =	12.7 ksi	
Allowable Shear, Ap*Fs/Ω = Vallow =	**9.665 kips**	
Applied Shear, P = Vapplied =	**0.200 kips**	**OK**

WAYPOINT ENGINEERING

PROJECT:	Stainless Cable Solutions Merged	DATE:	10/20/2020
SUBJECT:	Aluminum Calcs	DESIGN:	AM
		PAGE:	



Tension Capacity of Screw (ADM 2015 Section J5.4, AISC DG 27) SDS100

Note: Uses (2) #10_3/4" Phillips Pan Head Sheet Metal Screws - Type A, 18-8 Stainless Steel

Tension Load =	0.200 kips	*(Page 4)*
Screw Diamter, d =	0.138 in	
Number of Screws =	2	
Screw Tension Load =	**0.100 kips**	*(Page 4)*
Thread Stripping Area of Internal Thread Per Inch, A_{sn} =	0.401 in²	*(Table5-6)*
Depth of Full Thread Engagement into tube, L_e =	0.500 in	
Tensile Ult Strength of Member Not in Contact with Screw Head, F_{tu2} =	38 ksi	
Nominal Pull-Out Strength, R_n =	**4.419 kips**	*(Eq. J.5-3)*
Thickness of Member in Contact with Screw Head, t_1 =	0.050 in	
Tensile Yield Strength of Member in Contact with Screw Head, F_{ty1} =	35 ksi	
Nominal Screw Head Diameter Abs Min, D =	0.376 in	
t_1/D =	0.13	<1.1
Nominal Pull-Over Strength, Rn =	**0.305 kips** *(Eq. J5-10)*	
Tensile Strength of Screw, F_{nt} =	49 ksi	18-8 Stainless Steel
Tensile Stress Area of Screw, A_s =	0.015 in²	
ısile Strength of a Screw, Rn =	**0.729 kips**	*(Eq. AISC DG 27 Eq. J3-1)*
Ω, Aluminum =	3.00	
Ω, Steel =	2.00	
Pull-Out Strength, Rn/Ω =	**1.473 kips**	**OK > 0.1 kips**
Pull-Over Strength, Rn/Ω =	**0.102 kips**	**OK > 0.1 kips**
Tensile Strength, Rn/Ω =	**0.364 kips**	**OK > 0.1 kips**

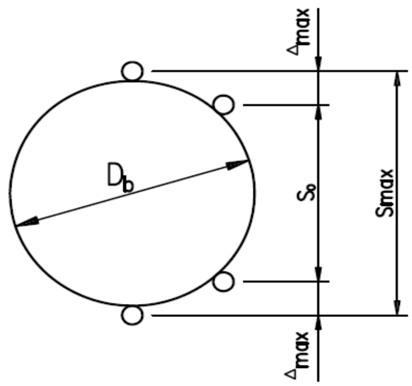
Screw Capacity of Screw (ADM 2015 Section J5.5, AISC DG 27) RCB515

Note: Uses (1) #6 x 1 1/2 Phillips Pan Head Screws - Type A, 18-8 Stainless Steel

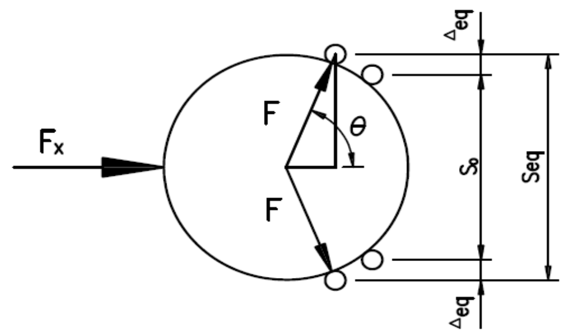
Shear Load =	0.200 kips	*(Page 4)*
Number of Screws in Shear =	1	
Screw Shear Load =	**0.200 kips**	
Tensile Ultimate Strength of Member in Contact with Screw Head, F_{tu} =	38 ksi	
dist from screw center to edge of connected part, de =	0.500 in	
thickness of connected part, t =	0.125 in	
Screw Bearing Strength, Rn =	**1.311 kips**	*(Eq. J.5-12)*
Shear Strength of Screw, F_{nv} =	29 ksi	18-8 Stainless Steel
Screw Diamter, d =	0.138 in	
Shear Stress Area of Screw, A_s =	0.015 in²	
Nominal Shear Strength of a Screw, Rn =	**0.437 kips**	*(Eq. AISC DG 27 Eq. J3-1)*
Ω, Aluminum =	3.00	
Ω, Steel =	2.00	
Bearing Strength, Rn /Ω =	**0.437 kips**	**OK > 0.2 kips**
Shear Strength, Rn /Ω =	**0.219 kips**	**OK > 0.2 kips**

WAYPOINT ENGINEERING

PROJECT: Stainless Cable Solutions Merged
SUBJECT: Aluminum Calcs
DATE: 10/20/2020
DESIGN: AM
PAGE:



Initial and Pass–Through Conditions



Conditions at Equilibrium

Check Cable Deflection

Note: A min load of 50psf shall be applied to a 4" sphere. Spacing and deflection of the cables shall not allow the sphere to pass through.

Diameter of Cable, D =	0.125 in
Intermediate Post Spacing, L =	5 ft
Prestress Force, F_{ps} =	255 ft
Sphere Diameter, D_b =	4.000 in
Initial Cable Spacing, S_o =	3.125 in
Termination Post Spacing, L_T =	30 ft
Load Applied to Sphere, w_{sphere} =	50.0 psf
Projected Area of Sphere, A_{sphere} =	12.566 in²
Impact Factor, I_f =	2.00
Force Applied to Sphere, $F_{xsphere}$ =	8.727 lbs
Spread at Pass-Thru = D_b+D_{cable}, S_{max} =	4.125 in
Final Cable Spacing, S_{final} = Seq =	4.124 in
Deflection at Pass-Thru = (S_{max}-S_o)/2, Δ'max =	0.500 in
Deflection, Δ = Δeq =	0.500
Applied Angle = asin((S_o+2Δ)/(D_b+D)), θ =	88.7 °
Force Applied to Cable, T = F =	198.171 lbs
Maximum Cable Deflection = (D_b+D-S_o)/2, Δmax =	0.500 in
Modulous of Elasticity, E =	29000 ksi
Moment of Inertia, I =	0.00001198 in⁴
Cross Sectional Area, A =	0.012 in²
Extensible, Flexible Cable, P_{ef} =	0.274 lbs
Flexural Bending, P_b =	0.039 lbs
Prestressing, P_{ps} =	8.492 lbs
Force in Cable Resisting Sphere, F_{xcable} = P =	8.804 lbs **OK**
1/8" Diameter 1x19 Strand Core Breaking Strength =	1869 lbs
1/8" Diameter 7x7 Strand Core Breaking Strength =	1566 lbs **◄ Controls (OK < 310lbs)**

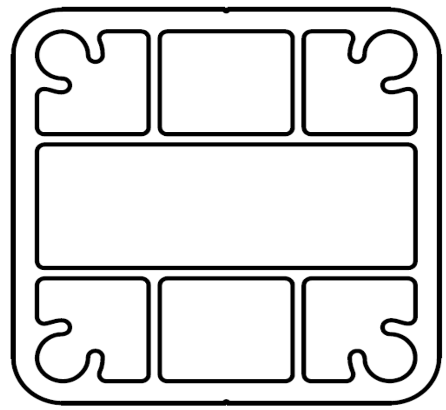
$$P_{ef} = \frac{4\Delta EA}{L} \times \frac{\sqrt{4\Delta^2 + L^2} - L}{\sqrt{4\Delta^2 + L^2} + L_T - L}$$

$$P_b = \frac{48EI\Delta}{L^3}$$

$$P_{ps} = \frac{4F_{ps}\Delta}{L}$$

Extruded Aluminum Termination Post Input

Post Spacing, s =	5'-0" oc	
Prestress Force, Fps =	255 lbs	*(Page 11)*
Initial Cable Spacing, So =	3.125 in	
Unbraced Length = 40 5/8", LB =	40.63 in	
Distributed Load, w =	81.6 lb/in	
Post Area, Ap =	1.529 in²	
Modulus of Elasticity, E =	10100 ksi	
Section Modulus, S =	0.847 in³	
Approx. Plastic Section Modulus, Z =	1.032 in³	
Moment of Inertia, I =	0.953 in⁴	
Approx. Torsion Constant, J =	0.143 in	
Clear Height of Shear Area, h =	2.250 in	
Thickness of Shear Area, t =	0.125 in	
C_b =	2.1	
k_t =	1.0	
Shear Load from Point Load, $V_{applied}$ =	200 lbs	*(Page 4)*
Shear Load from Cable Prestress, $V_{applied}$ =	3315 lbs	
Shear from Point Load and Cable, V_{tot} =	3515 lbs	
Moment From Point Load, Mpnt *=	8.125 kip-in	
Moment From Cable Prestress, Mpstr *=	16.834 kip-in	◄ Controls



*At end post, applied moments do not occur at same location along length of cross section (i.e. base vs mid point), therefore max moment will govern design. At corner post, field test for bi-directional bending due to 90° cable turn.

Flexural Yielding and Rupture 6061-T6 (ADM 2015 Section F.2)

Tensile Rupture Capacity, Ftu =	38.0 ksi			
Tensile Yield Capacity, Fty =	35.0 ksi			
Compression Yield Capacity, Fcy =	35.0 ksi			
yielding moment strength, Mnp =	36.13 kip-in			
rupture moment strength, Mnu =	39.23 kip-in			
all other limit states, Ω_b =	1.65			
rupture limit state, Ω_b =	1.95			
Allowable Moment, M_{nmb}/Ω_b =	**20.12 kip-in**			
Applied Moment, M =	**16.834 kip-in**	**OK**	DCR =	0.84

Flexural Local Buckling 6061-T6 (ADM 2015 Section F.3, B.5.5.5, Table 2-19 Part VI)

Slenderness, λ =	6.10			
Slenderness, λeq =	9.8			
Fe =	1046.8 ksi	element supported on both edges, Table B.5.1		
Allowable Stress, λeq≤λ1 =	23.0 ksi	◄ Controls		
Slenderness Limit, λ1 =	33.3			
Allowable Stress, λ1<λeq<λ2 =	-56.5 ksi			
Slenderness Limit, λ2 =	61.0			
Allowable Stress, λeq≥λ2 =	85.5 ksi			
Allowable Bending Stress, Fb/Ω =	23.0 ksi			
Allowable Moment, S*Fb/Ω = Mallow =	**19.46 kip-in**			
Applied Moment, M =	**16.834 kip-in**	**OK**	DCR =	0.86

Flexural Lateral Torsional Buckling 6061-T6 (ADM 2015 Section F.4)

Slenderness, λ =	15.4	for closed shape member, F.4.2.3		
inelastic buckling, M_{nmb} =	27.98 ksi	◄ Controls		
elastic buckling, M_{nmb} =	357.39 ksi			
Ω_b =	1.65			
Allowable Moment, M_{nmb}/Ω_b =	**16.96 kip-in**			
Applied Moment, M =	**16.834 kip-in**	**OK**	DCR =	0.99

Deflection Check, Δ_{MAX} = L_B/12 (ICC Report AC273)

Allowable Deflection, Δ_{allow} =	3.385 in	
Applied Deflection, $PL_B^3/3EI = \Delta_{applied}$ =	0.592 in	**OK**

Shear in Elements, Gross Section 6061-T6 (ADM 2015 Table Section G.2, Table 2-19 Part VI)

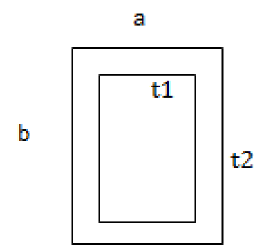
Allowable Stress, $\lambda \le \lambda_1$ =	12.7 ksi	◄ Controls
Slenderness Limit, λ_1 =	35.3	
Allowable Stress, $\lambda_1 < \lambda < \lambda_2$ =	15.8 ksi	
Slenderness Limit, λ_2 =	63.0	
Allowable Stress, $\lambda \ge \lambda_2$ =	1040.5 ksi	
Allowable Shear Stress, F_s/Ω =	13 ksi	
Allowable Shear, A_p*F_s/Ω = V_{allow} =	**19.418 kips**	
Applied Shear, V_{tot} =	**3.515 kips**	**OK**

WAYPOINT ENGINEERING

PROJECT: Stainless Cable Solutions Merged
SUBJECT: Aluminum Calcs
DATE: 10/20/2020
DESIGN: AM
PAGE:

Extruded Aluminum Stair Handrail Connection Input

Post Spacing, s =	5 ft		t1 =	0.125 in
Force, F =	200 lbs	*(Page 4)*	t2 =	0.125 in
Moment Arm =	2.750 in		a =	0.625 in
Initial Cable Spacing, So =	0.000 in		b =	1.750 in
Unbraced Length, LB =	1.600 in		J =	0.096 in⁴
Post Area, Ap =	0.531 in²		Sx =	0.178 in³
Compressive Modulus of Elasticity, E =	10100 ksi		Sy =	0.079 in³
Compression Section Modulus, Sy =	0.079 in³		Ix =	0.100 in⁴
Compression Section Modulus, Zy =	0.118 in³		Iy =	0.019 in⁴
Moment of Inertia, Iy =	0.019 in⁴		Area =	0.531 in²
Torsion Constant, J =	0.096 in⁴		wall/thick =	13.000
Moment From Railing, M =	0.550 kip-in			
C_b =	1.3			
k_t =	1.0			



Flexural Yielding and Rupture 6061-T6 (ADM 2015 Section F.2)

yielding moment strength, Mnp =	4.14 kip-in	
rupture moment strength, Mnu =	4.49 kip-in	
all other limit states, Ω_b =	1.65	
rupture limit state, Ω_b =	1.95	
Allowable Moment, M_{nmb}/Ω_b =	**2.30 kip-in**	
Applied Moment, Mapplied =	**0.55 kip-in**	OK

Flexural Local Buckling 6061-T6 (ADM 2015 Section F.3, B.5.5.5, Table 2-19W Part VI)

Slenderness, λ =	12.00	
Slenderness, λeq =	19.2	
Fe =	270.1 ksi	element supported on both edges, Table B.5.1
Allowable Stress, λ≤λ1 =	31.8 ksi	◄ Controls
Slenderness Limit, λ1 =	45.1	
Allowable Stress, λ1<λ<λ2 =	-486.4 ksi	
Slenderness Limit, λ2 =	123.0	
Allowable Stress, λ≥λ2 =	28.9 ksi	
Allowable Bending Stress, Fb/Ω =	31.8 ksi	
Allowable Moment, S*Fb/Ω = Mallow =	**2.51 kip-in**	
Applied Moment, Mapplied =	**0.55 kip-in**	OK

Flexural Lateral Torsional Buckling 6061-T6 (ADM 2015 Section F.4)

Slenderness, λ =	3.5	for closed shape member, F.4.2.3
inelastic buckling, M_{nmb} =	3.94 ksi	◄ Controls
elastic buckling, M_{nmb} =	646.25 ksi	
Ω_b =	1.65	
Allowable Moment, M_{nmb}/Ω_b =	**2.39 kip-in**	
Applied Moment, Mapplied =	**0.55 kip-in**	OK

Deflection Check, ΔMAX = LB/12 (ICC Report AC273)

Allowable Deflection, Δallow =	0.133 in	
Applied Deflection, $PL_B^3/3EI$ = Δapplied =	0.001 in	OK

Shear in Elements, Gross Section 6061-T6 (ADM 2015 Table Section G.2, Table 2-19W Part VI)

Allowable Stress, λ≤λ1 =	5.1	◄ Controls
Slenderness Limit, λ1 =	47.5	
Allowable Stress, λ1<λ<λ2 =	7.1 ksi	
Slenderness Limit, λ2 =	126.0	
Allowable Stress, λ≥λ2 =	1486.5 ksi	
Allowable Shear Stress, Fs/Ω =	5 ksi	
Allowable Shear, Ap*Fs/Ω = Vallow =	**2.709 kips**	
Applied Shear, P = Vapplied =	**0.200 kips**	**OK**

Weld Strength at Base (ADM 2015 J.2.5)

Nominal Strength of weld, F_{nw} =	20 ksi	Table A3.3
Base Metal Strength, F_{nBM} =	14 ksi	Table A3.6
Fillet Weld Size, Sw =	0.188 in	
Effective Fillet Weld Size, Swe =	0.133 in	
Weld Section Modulus, S =	0.086 in³	
Base Metal Area, Aw =	0.328 in²	
Ω =	1.95	
Allowable Base Metal Strength, F_{nBM}/Ω =	**7.385 ksi**	
Applied Metal Stress, (M/a)/Aw =	**2.682 ksi**	**OK**
Allowable Weld Strength, F_{nw}/Ω =	**10.043 ksi**	
Applied Weld Stress, M/S =	**6.390 ksi**	**OK**

Shear Capacity of Screw at Top fo Handrail (ADM 2015 J5.6) #6 x 1 1/2"_RCBS200

$V_{APPLIED}$ =	0.200 kips	
Number of Screws in Shear =	1	
Shear Applied, Vapplied =	**0.200 kips**	**Per Screw**
diameter of screw, d =	0.138 in	
ile Ultimate Strength of Member in Contact with Screw Head, Ftu =	38 ksi	
dist from screw center to edge of connected part, de =	0.250 in	
thickness of connected part, t =	0.140 in	
Screw Bearing Strength, Rn =	**1.330 kips**	*(Eq. J.5-12)*
Shear Strength of Screw, Fnv =	34 ksi	Stainless Steel
Shear Stress Area of Screw, As =	0.015 in²	
Nominal Shear Strength of a Screw, Rn =	**0.505 kips**	*(Eq. AISC DG 27 Eq. J3-1)*
Ω, Aluminum =	3.00	
Ω, Steel =	2.00	
Bearing Strength, Rn /Ω =	**0.443 kips**	**OK > 0.2 kips**
Shear Strength, Rn /Ω =	**0.252 kips**	**OK > 0.2 kips**

SIMPSON Strong-Tie®

Anchor Designer™
Software
Version 2.6.6794.0

Company:	Waypoint Engineering	Date:	9/5/2018
Engineer:	JF	Page:	1/5
Project:	Stainless Cable Solutions Concrete Anchorage		
Address:	601 Main Street #400		
Phone:	360.635.6611		
E-mail:	jared@waypointwa.com		

1.Project information

Customer company: Stainless Cable Solutions
Customer contact name:
Customer e-mail:
Comment:

Project description:
Location: Portland, Oregon
Fastening description:

2. Input Data & Anchor Parameters

General
Design method:ACI 318-14
Units: Imperial units

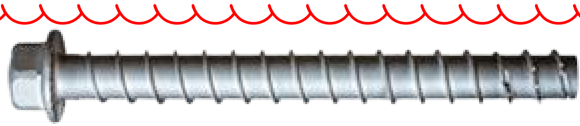
Anchor Information:
Anchor type: Concrete screw
Material: Stainless Steel
Diameter (inch): 0.375
Nominal Embedment depth (inch): 3.250
Effective Embedment depth, h_{ef} (inch): 2.040
Code report: IAPMO UES ER-493
Anchor category: 1
Anchor ductility: Yes
h_{min} (inch): 5.00
c_{ac} (inch): 5.50
C_{min} (inch): 1.75
S_{min} (inch): 3.00

Base Material
Concrete: Normal-weight
Concrete thickness, h (inch): 5.00
State: Uncracked
Compressive strength, f'_c (psi): 3000
$\Psi_{c,V}$: 1.4
Reinforcement condition: B tension, B shear
Supplemental reinforcement: No
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore 6do requirement: Not applicable
Build-up grout pad: No

Base Plate
Length x Width x Thickness (inch): 5.00 x 5.00 x 0.35
Yield stress: 34084 psi

Profile type/size: HSS2-1/4X2-1/4X1/8

Recommended Anchor
Anchor Name: Titen HD® Stainless Steel - 3/8"Ø SS Titen HD, hnom:3.25" (83mm)
Code Report: IAPMO UES ER-493



SCS PART# CCA 100-4
TITEN CONCRETE ANCHR 4" x 3/8"_304 SS

Note: Periodic special inspection is required per section 4.4 of the noted code report.

ANCHORAGE INTO CONCRETE IN LIEU OF SDWS TIMBER SCREWS

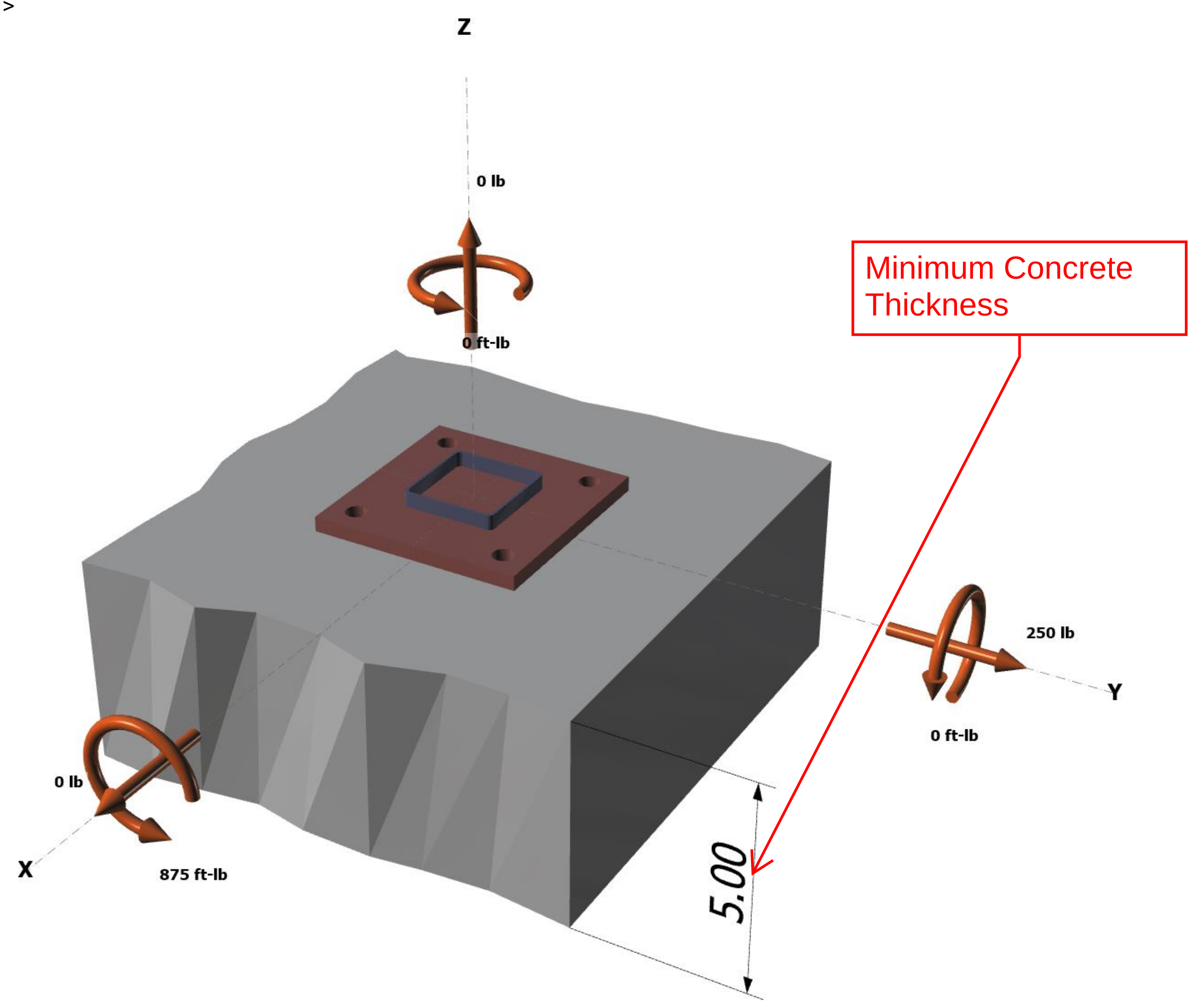
Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: No
Anchors subjected to sustained tension: Not applicable
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: No

Strength level loads:

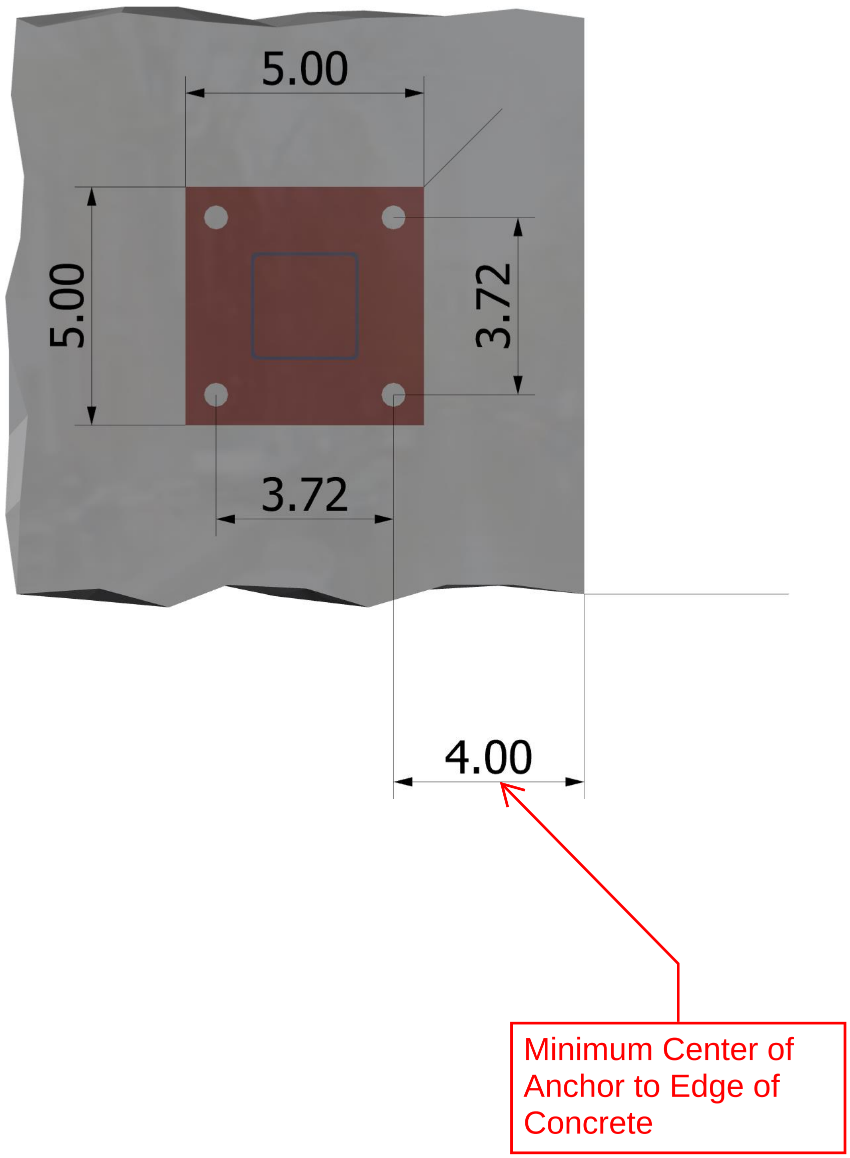
N_{ua} [lb]: 0
V_{uax} [lb]: 0
V_{uay} [lb]: 250
M_{ux} [ft-lb]: 875
M_{uy} [ft-lb]: 0
M_{uz} [ft-lb]: 0

10,500 in-lb/12 in/ft

<Figure 1>



<Figure 2>

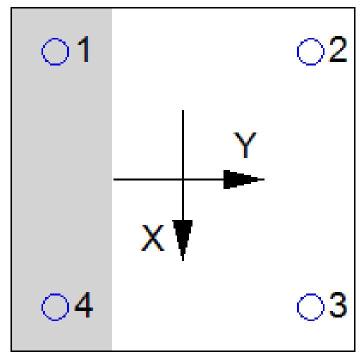

5.00
5.00
3.72
3.72
4.00
Minimum Center of Anchor to Edge of Concrete

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2+(V_{uay})^2}$ (lb)
1	0.0	0.0	62.5	62.5
2	1355.2	0.0	62.5	62.5
3	1355.2	0.0	62.5	62.5
4	0.0	0.0	62.5	62.5
Sum	2710.3	0.0	250.0	250.0

Maximum concrete compression strain (‰): 0.17
Maximum concrete compression stress (psi): 742
Resultant tension force (lb): 2710
Resultant compression force (lb): 2711
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.4.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
12177	0.75	9133

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.4.2)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ (Eq. 17.4.2.2a)

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	3000	2.040	3830

$\phi N_{cbg} = \phi\ (A_{Nc} / A_{Nco})\, \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$ (Sec. 17.3.1 & Eq. 17.4.2.1b)

A_{Nc} (in^2)	A_{Nco} (in^2)	$c_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
60.22	37.45	4.00	1.000	1.000	1.00	0.727	3830	0.65	2911

8. Steel Strength of Anchor in Shear (Sec. 17.5.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout} \phi V_{sa}$ (lb)
4780	1.0	0.65	3107

9. Concrete Breakout Strength of Anchor in Shear (Sec. 17.5.2)

Shear perpendicular to edge in y-direction:

$V_{by} = \min|7(l_e / d_a)^{0.2} \sqrt{d_a} \lambda_a \sqrt{f'_c} c_{a1}^{1.5};\ 9 \lambda_a \sqrt{f'_c} c_{a1}^{1.5}|$ (Eq. 17.5.2.2a & Eq. 17.5.2.2b)

l_e (in)	d_a (in)	λ_a	f'_c (psi)	c_{a1} (in)	V_{by} (lb)
2.04	0.375	1.00	3000	7.72	7067

$\phi V_{cbgy} = \phi\ (A_{Vc} / A_{Vco})\, \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{by}$ (Sec. 17.3.1 & Eq. 17.5.2.1b)

A_{Vc} (in^2)	A_{Vco} (in^2)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgy} (lb)
134.40	268.19	1.000	1.000	1.400	1.522	7067	0.70	5282

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.5.3)

$\phi V_{cpg} = \phi k_{cp} N_{cbg} = \phi k_{cp} (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$ (Sec. 17.3.1 & Eq. 17.5.3.1b)

k_{cp}	A_{Nc} (in^2)	A_{Nco} (in^2)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕV_{cpg} (lb)
1.0	96.83	37.45	1.000	1.000	1.000	0.727	3830	0.70	5041

11. Results

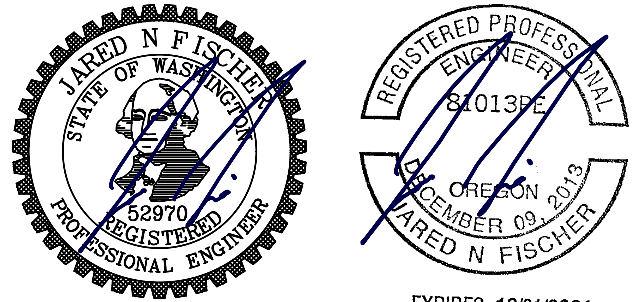
Interaction of Tensile and Shear Forces (Sec. 17.6.)

Tension	Factored Load, N_{ua} (lb)	Design Strength, øN_n (lb)	Ratio	Status
Steel	1355	9133	0.15	Pass
Concrete breakout	**2710**	**2911**	**0.93**	**Pass (Governs)**

Shear	Factored Load, V_{ua} (lb)	Design Strength, øV_n (lb)	Ratio	Status
Steel	63	3107	0.02	Pass
T Concrete breakout y+	250	5282	0.05	Pass
Pryout	**250**	**5041**	**0.05**	**Pass (Governs)**

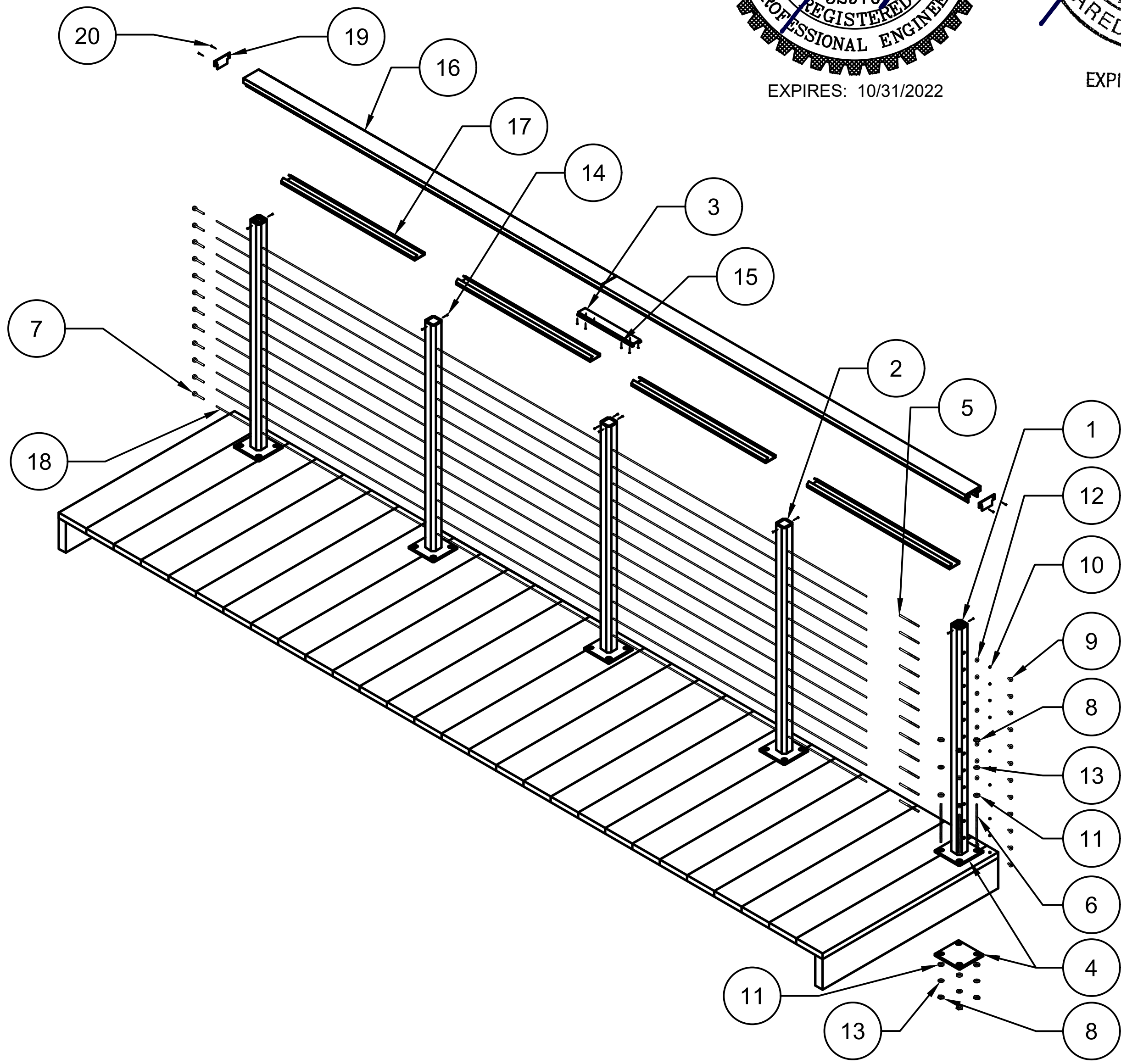
Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. 17.6..1	0.93	0.00	93.1%	1.0	Pass

3/8"Ø SS Titen HD, hnom:3.25" (83mm) meets the selected design criteria.



EXPIRES: 10/31/2022

EXPIRES: 12/31/2021



NOTE:
1. REFERENCE S2.01 FOR ITEM, P/N, AND PART NAMES SHOWN HERE.

1 ISOMETRIC VIEW

SCALE: 3/8"=1'-0"

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL:

FINISH:

DRAWN:

PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE:

ISOMETRIC RAILING ASSEMBLY VIEW

REVISIONS:

SHEET NO.: S1.00

ITEM	P/N	PART NAME
1	TP100	41" TERMINATION POST
2	IP100	41" INTERMEDIATE POST
3	SP100	SPLICE PLATE
4	BP100	BASE PLATE
5	TTMS249	THREADED TENSIONING TERMINAL OR TURNBUCKLE
6	TR375	THREADED ROD, SS, 3/8
7	BT249	BUTTON TERMINAL
8	SSN375	HEX NUT, SS, 3/8
9	ACN25	ACORN NUT, SS, 1/4
10	SSN25	HEX NUT, SS, 1/4
11	SCW100	STAINLESS CAP WASHER
12	SSW25	STAINLESS WASHER
13	LBLW38	LOCK WASHER, SS, 3/8
14	SDS100	#10 x 5/8" SS18-8 SELF DRILLING PAN HEAD SCREW
15	SDS100	#10 x 5/8" SS18-8 SELF DRILLING PAN HEAD SCREW
16	TR100	TOP RAIL
17	FI100	FLAT INFILL
18	WIRE ROPE	1/8", 3/16", OR 1/4" DIA.
19	EC100	END CAP
20	ECS100 X2	#6 x 3/4 316 SS END CAP SCREW

REGISTERED PROFESSIONAL ENGINEER
81013PE
OREGON
DECEMBER 09, 2013
JARED N FISCHER

EXPIRES: 12/31/2021

JARED N FISCHER
STATE OF WASHINGTON
52970
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 10/31/2022

NOTES:

1. REFERENCE S2.00 FOR ISOMETRIC PART ASSEMBLY DRAWING.

2. THIS DRAWING IS PROPERTY OF STAINLESS CABLE SOLUTIONS, LLC. AND IS SUBMITTED IN CONFIDENCE FOR USE IN CONNECTION WITH AN EXISTING, PENDING, OR FUTURE TRANSACTION BETWEEN US. THIS MATERIAL SHALL NOT BE REPRODUCED OR PUBLISHED IN ANY FORM OR DISCLOSED TO ANYONE OUTSIDE YOUR EMPLOY WITHOUT PRIOR WRITTEN CONSENT OF STAINLESS CABLE SOLUTIONS, LLC. THE SUBMISSION OF THIS DRAWING IS NOT INTENDED TO CONSTITUTE PUBLICATION OF SAME.

3. PACKAGING REQUIRED WHICH WILL AFFORD ADEQUATE PROTECTION AGAINST PHYSICAL DAMAGE DURING HANDLING, SHIPMENT, AND STORAGE.

4. DEBURR AND BREAK ALL SHARP EDGES.

5. ALL HARDWARE, INCLUDING NUTS, LAG SCREWS, HANGERS, ETC., SHALL BE GALVANIZED OR STAINLESS STEEL.

SCS
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UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL:
FINISH:
DRAWN:
PM: JF

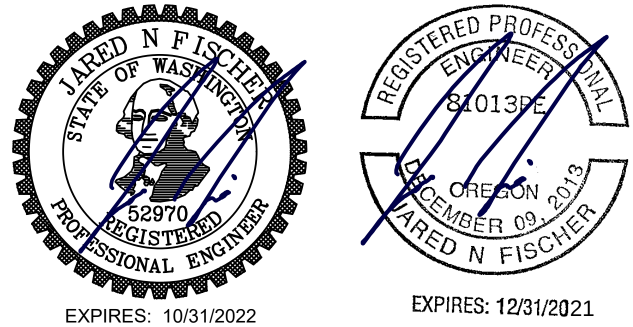
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

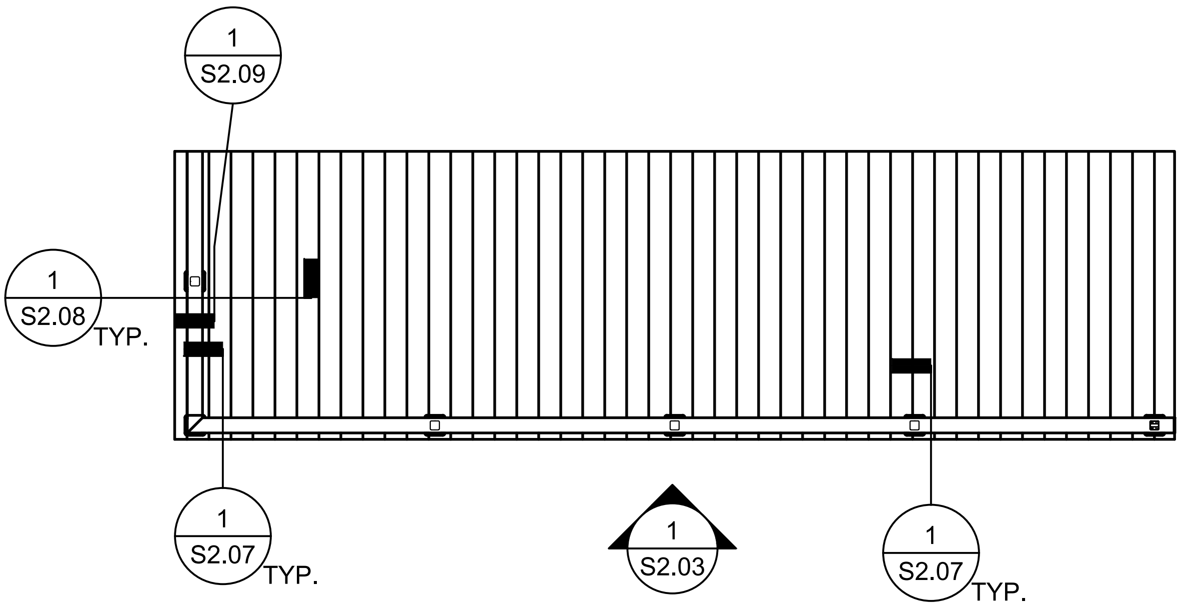
TITLE:

ITEM, PIN, AND PART NAMES

REVISIONS:

SHEET NO.: S1.01





NOTE:
1. REFERENCE S2.03 FOR ELEVATION.

1 PLAN

SCALE: 1/4"=1'-0"

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	DATE: 10/21/2020	
	MATERIAL:	TITLE: RAILING AND DECK PLAN
	FINISH:	REVISIONS:
	DRAWN:	SHEET NO.: S1.02
	PM: JF	

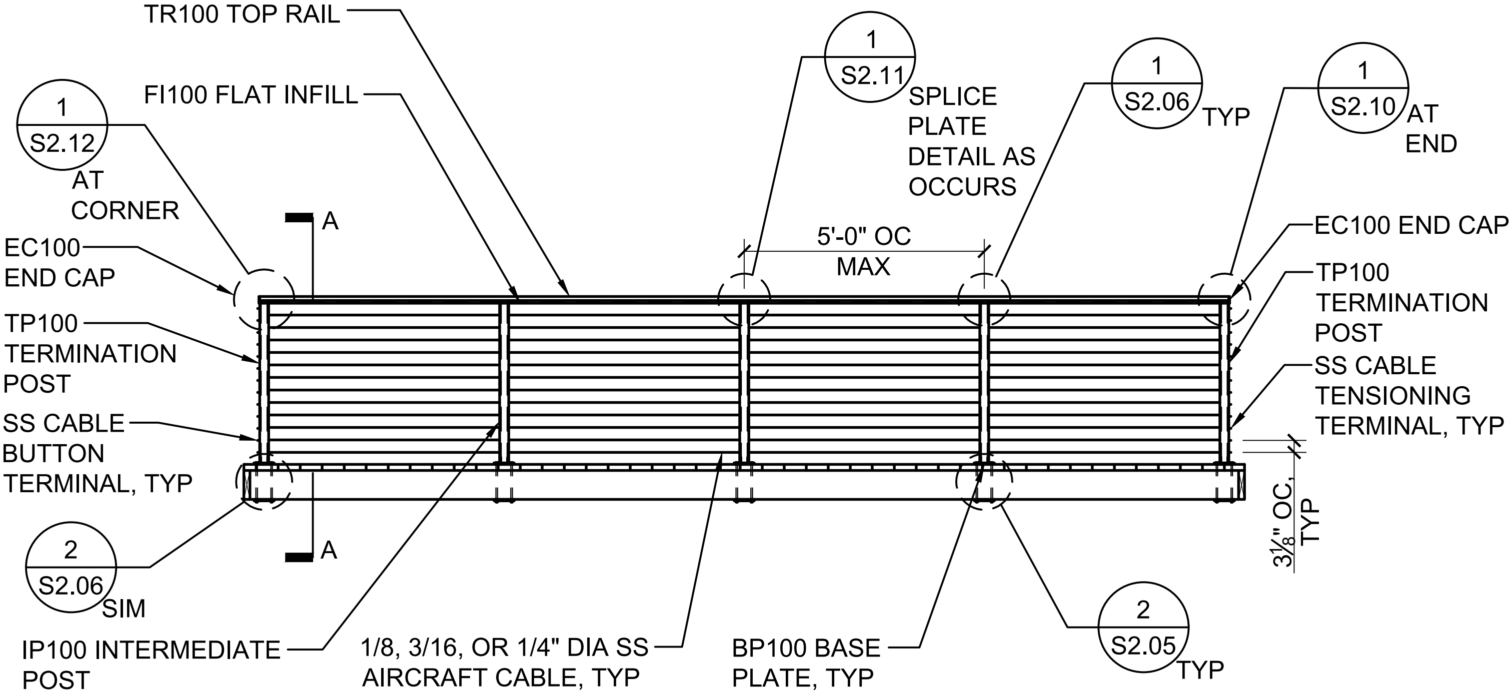
SCS
Stainless Cable Solutions

JARED N FISCHER
STATE OF WASHINGTON
52970
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 10/31/2022

REGISTERED PROFESSIONAL ENGINEER
81013PE
OREGON
DECEMBER 09, 2013
JARED N FISCHER

EXPIRES: 12/31/2021



NOTE:

1. REFERENCE S2.02 FOR PLAN.

1 ELEVATION

SCALE: 1/4"=1'-0"

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL:
FINISH:
DRAWN:
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

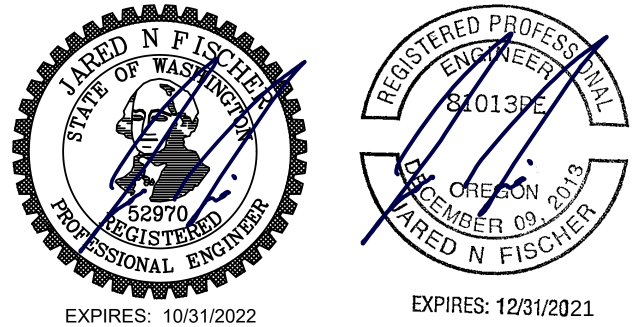
SCS
Stainless Cable Solutions

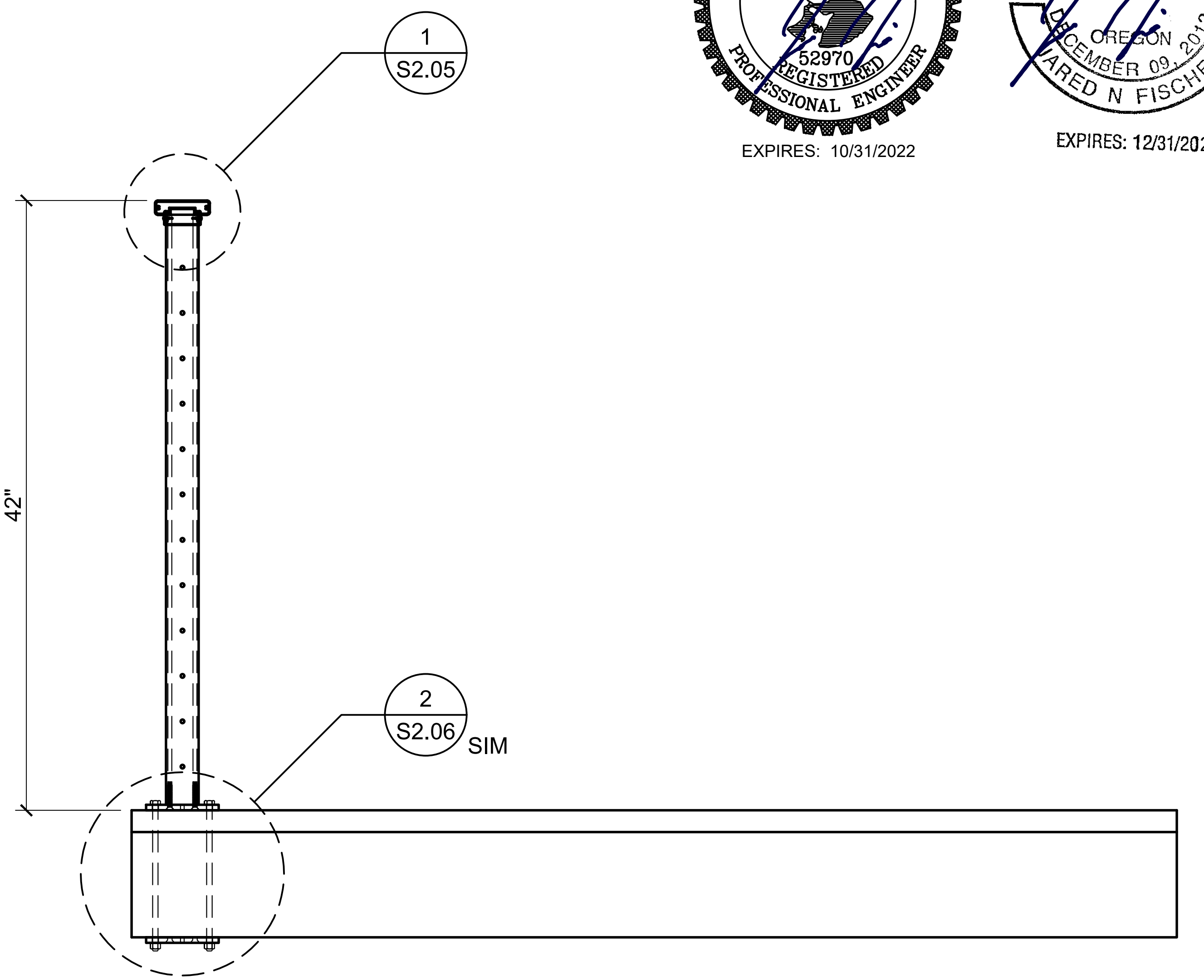
TITLE:

RAILING AND DECK ELEVATION

REVISIONS:

SHEET NO.: S1.03



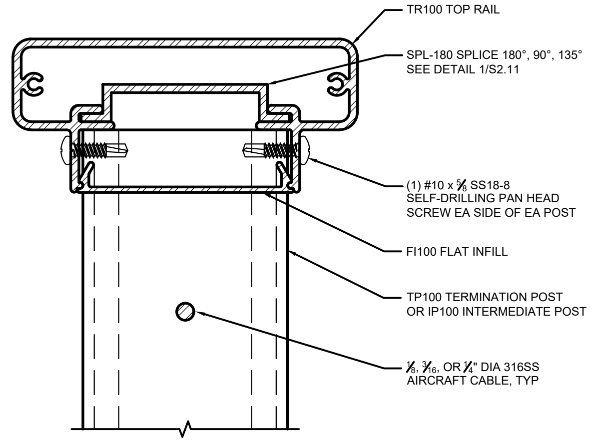


1 SECTION A-A

SCALE: 1"=1'-0"

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	DATE: 10/21/2020	TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY
	MATERIAL:	
	FINISH:	REVISIONS:
	DRAWN:	SHEET NO.: S1.04
	PM: JF	

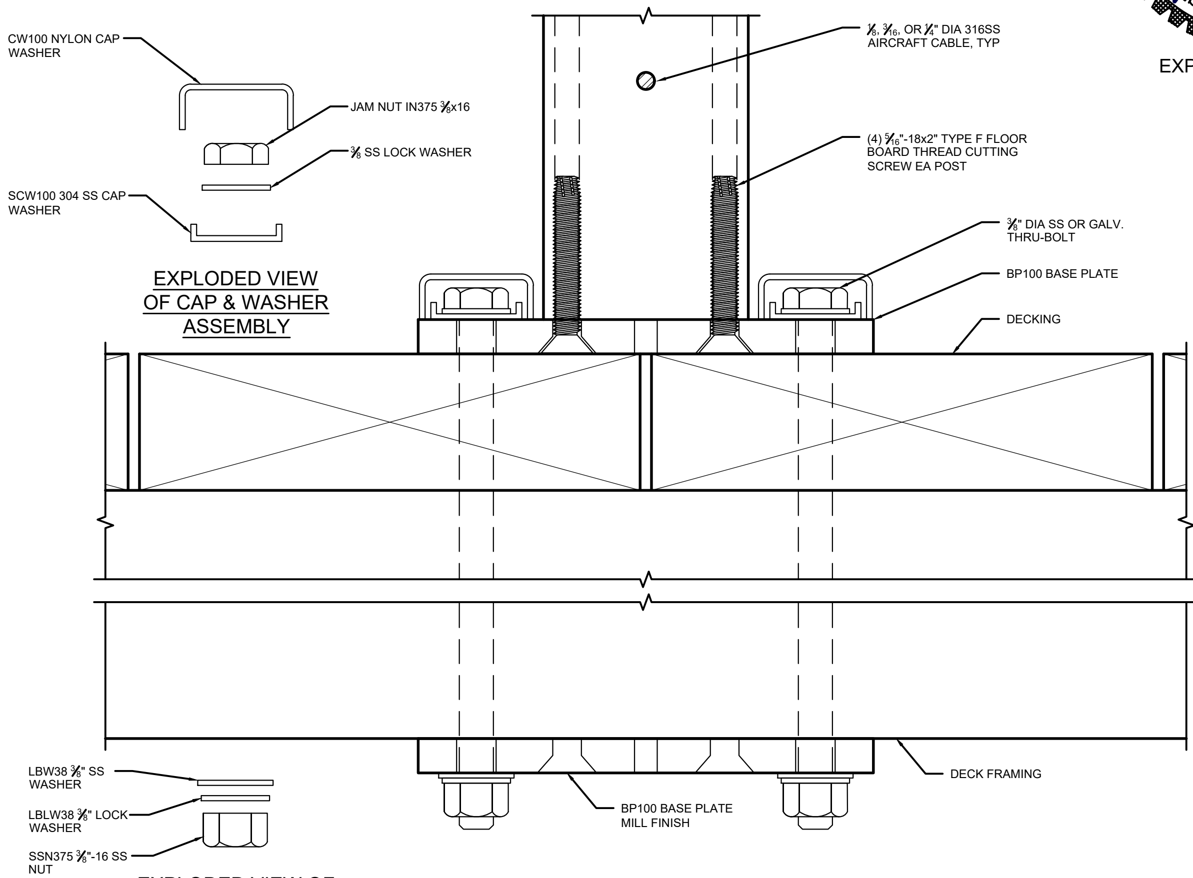
SCS
Stainless Cable Solutions



1 TOP RAIL CONNECTION DETAIL AT TERMINATION & INTERMEDIATE POST

REGISTERED PROFESSIONAL ENGINEER
81013PE
OREGON
DECEMBER 09, 2013
JARED N FISCHER
EXPIRES: 12/31/2021

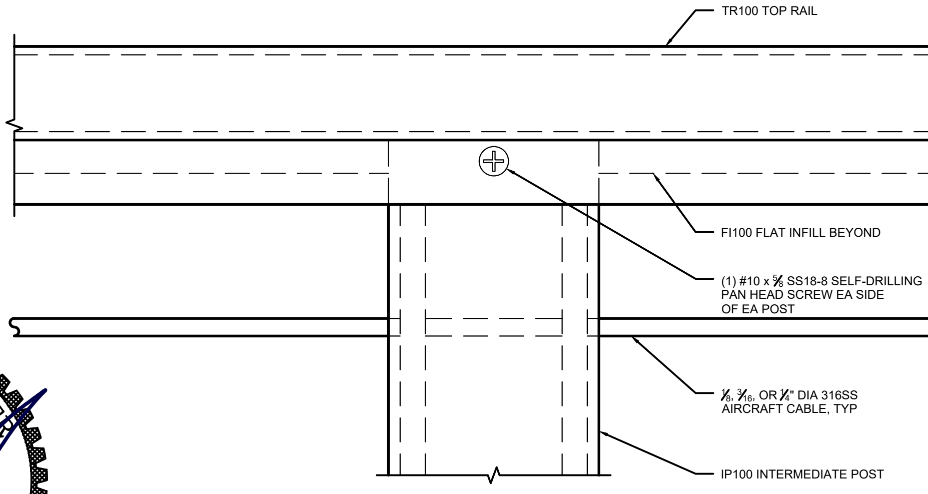
JARED N FISCHER
STATE OF WASHINGTON
52970
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 10/31/2022

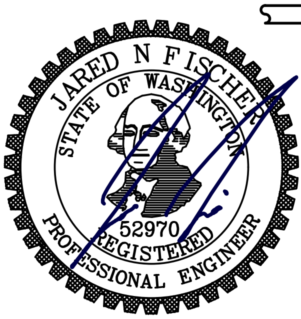


2 THROUGH BOLT CONNECTION DETAIL

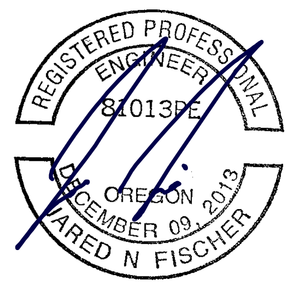
UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM)	DATE: 10/21/2020	
2. TOLERANCES: x = 0.1, x.x = 0.1, x.xx = 0.01, x.xxx = 0.001	MATERIAL:	TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY
	FINISH:	REVISIONS:
	DRAWN:	SHEET NO.: S1.05
	PM: JF	

Stainless Cable Solutions



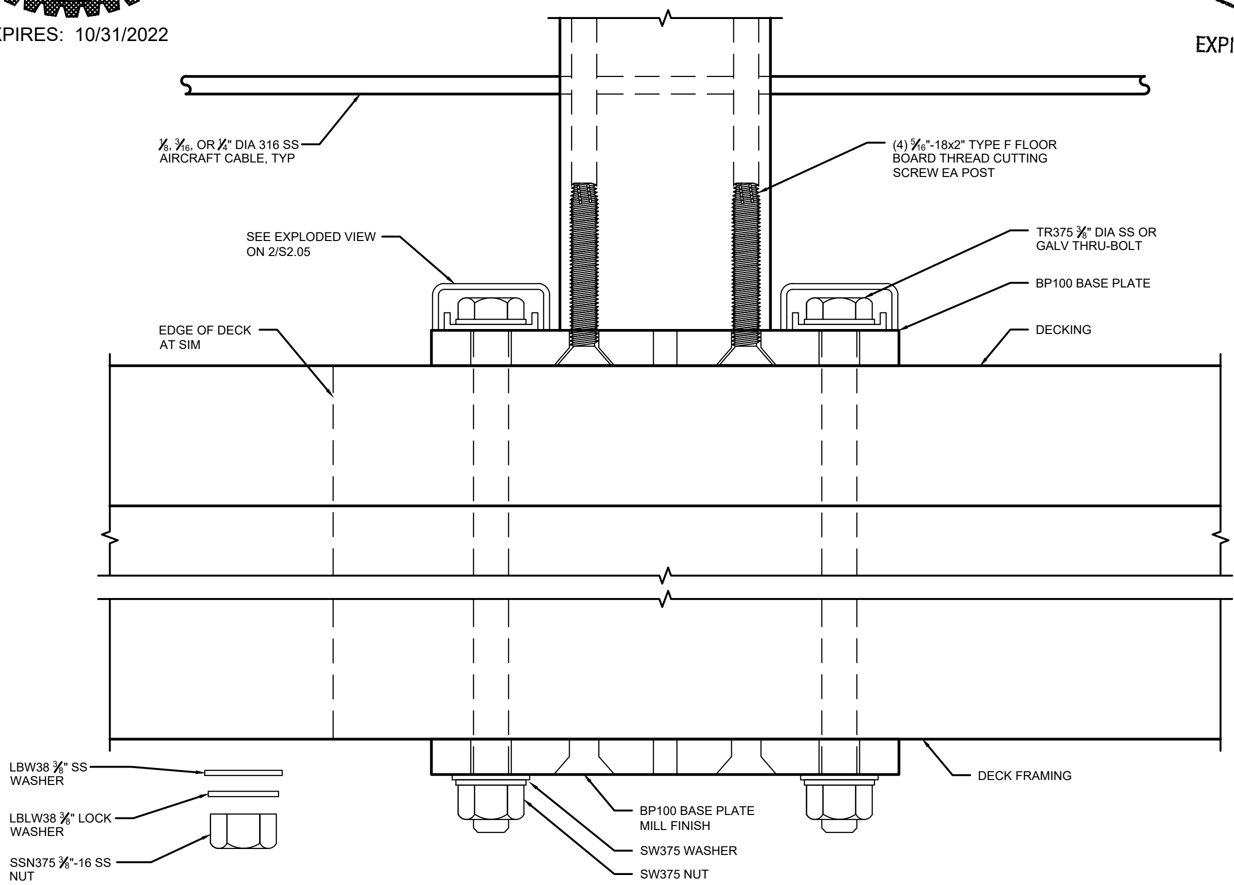


EXPIRES: 10/31/2022



EXPIRES: 12/31/2021

1 TOP RAIL CONNECTION DETAIL AT INTERMEDIATE POST

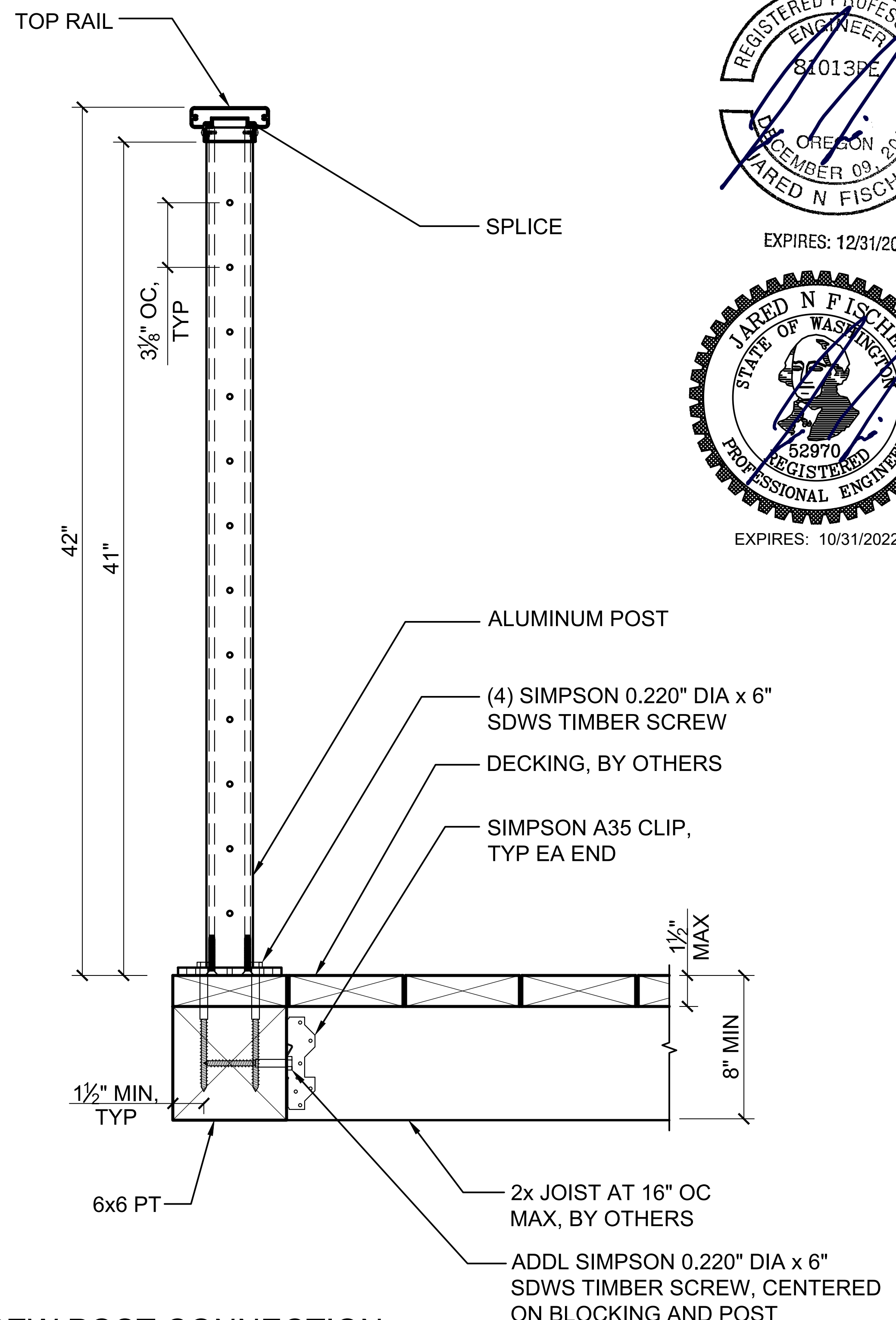


EXPLODED VIEW OF BOTTOM ASSEMBLY

2 THROUGH BOLT CONNECTION DETAIL

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	DATE: 10/21/2020 MATERIAL: FINISH: DRAWN: PM: JF	TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY REVISIONS: SHEET NO.: S1.06

Stainless Cable Solutions



REGISTERED PROFESSIONAL ENGINEER
81013PE
OREGON
DECEMBER 09, 2013
JARED N FISCHER
EXPIRES: 12/31/2021

JARED N FISCHER
STATE OF WASHINGTON
52970
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES: 10/31/2022

1 LAG SCREW POST CONNECTION

SCALE: 1 1/2"=1'-0"

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL:
FINISH:
DRAWN:
PM: JF

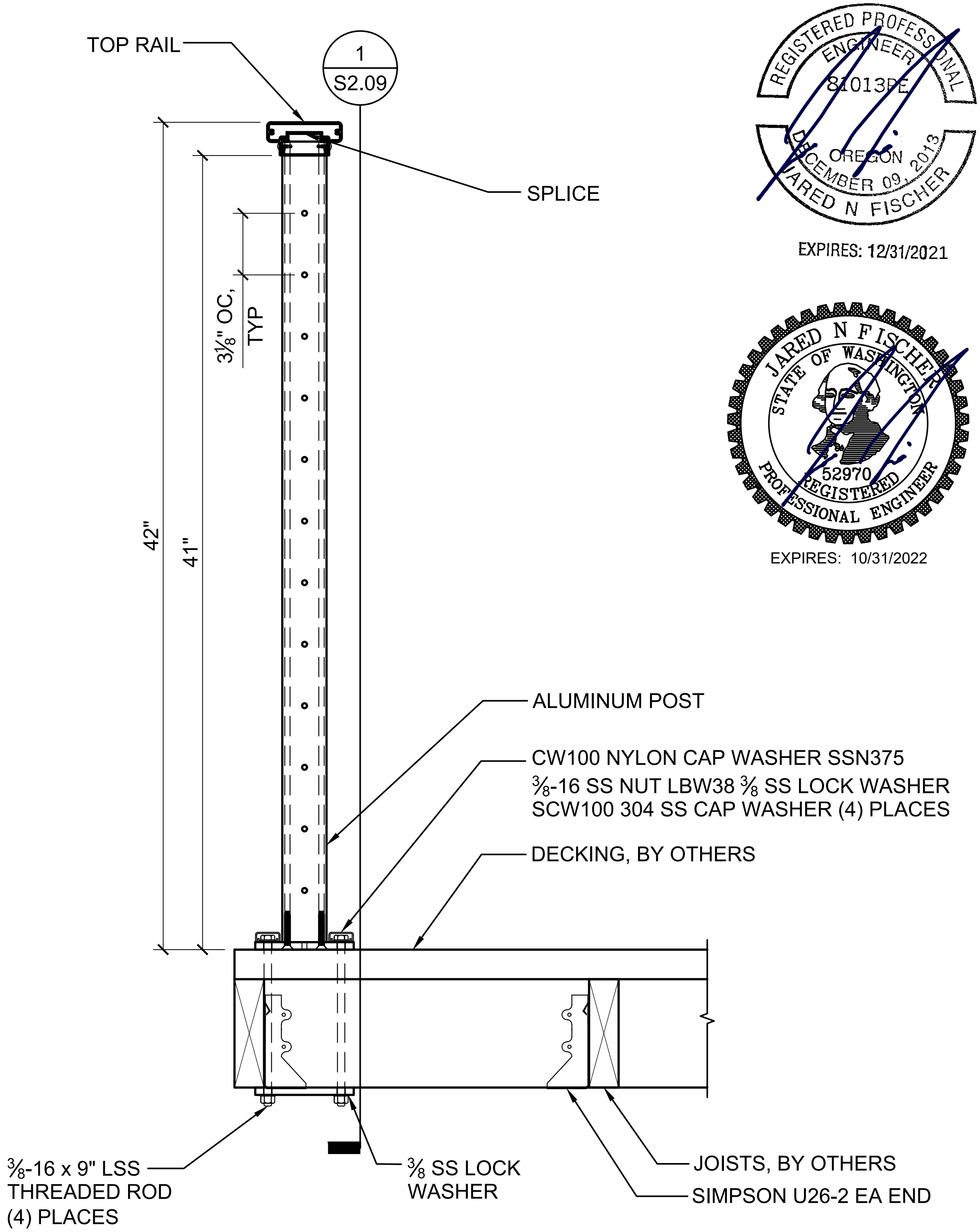
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY

REVISIONS:

SHEET NO.: S1.07

SCS
Stainless Cable Solutions

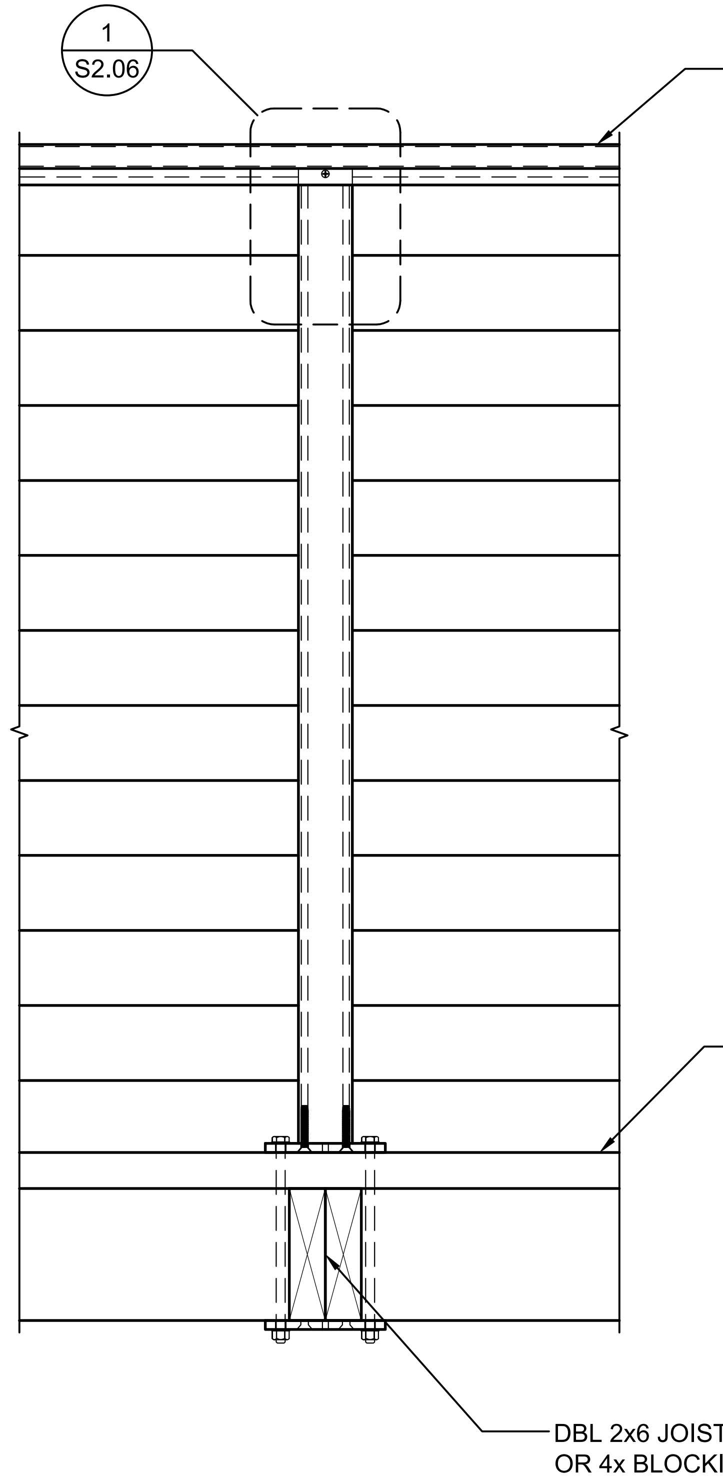


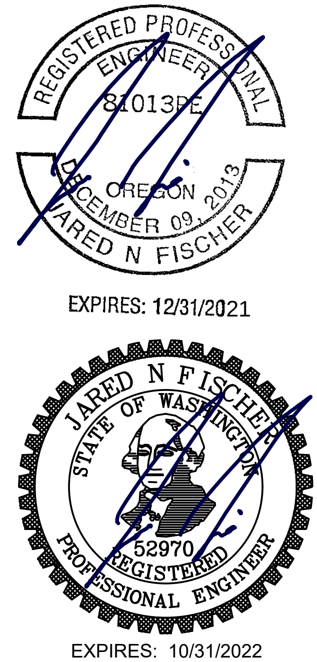
1 THROUGH BOLT POST CONNECTION

SCALE: 1 1/2"=1'-0"

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	DATE: 10/21/2020	
	MATERIAL:	TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY
	FINISH:	REVISIONS:
	DRAWN:	SHEET NO.: S1.08
	PM: JF	

SCS
Stainless Cable Solutions





1 INTERMEDIATE POST THROUGH BOLT CONNECTION

SCALE: 1 1/2"=1'-0"

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL:

FINISH:

DRAWN:

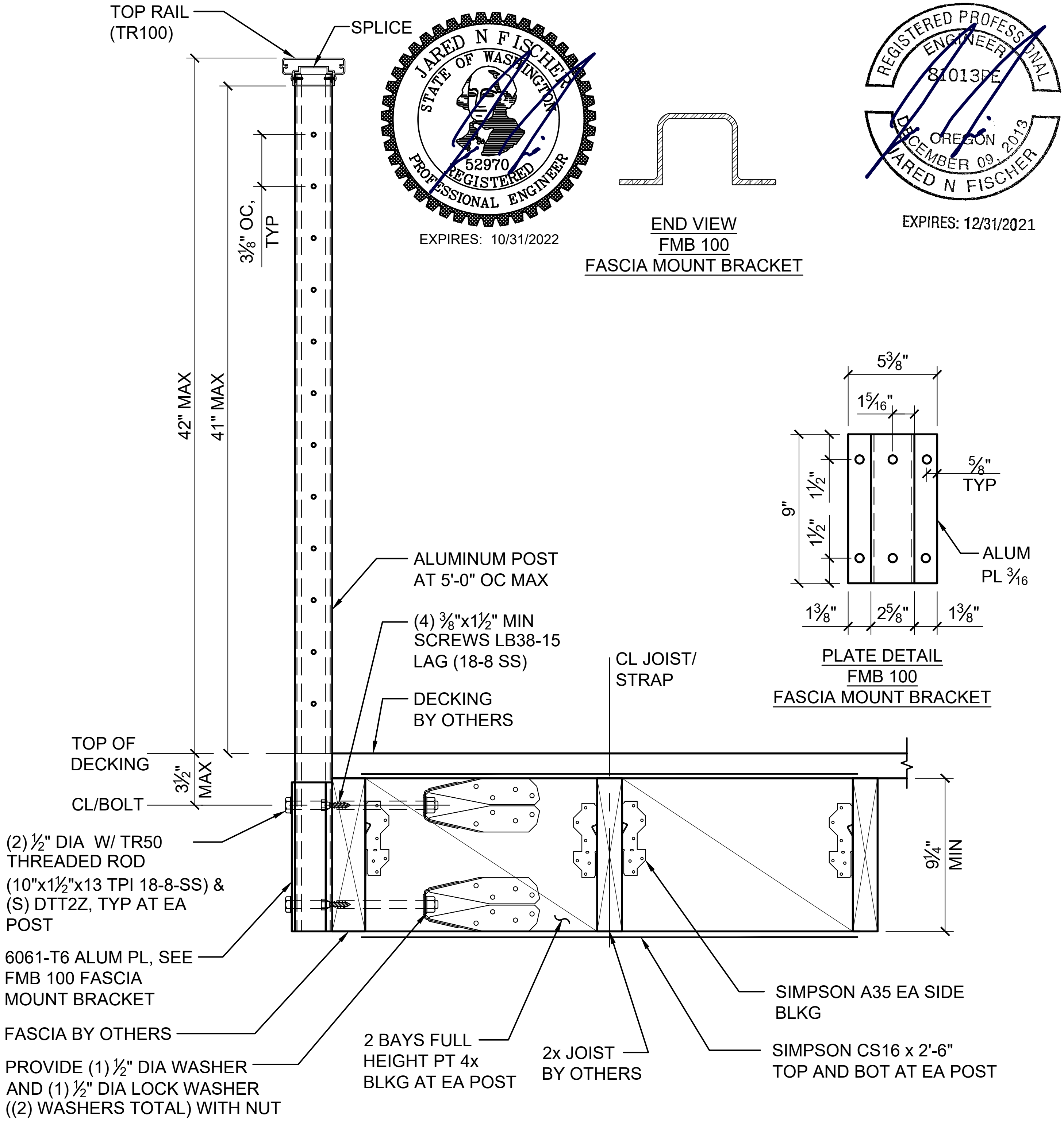
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY

REVISIONS:

SHEET NO.: S1.09



1 FASCIA MOUNT POST CONNECTION AT PARALLEL JOIST

SCALE: 11/2"=1'-0"

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL:

FINISH:

DRAWN:

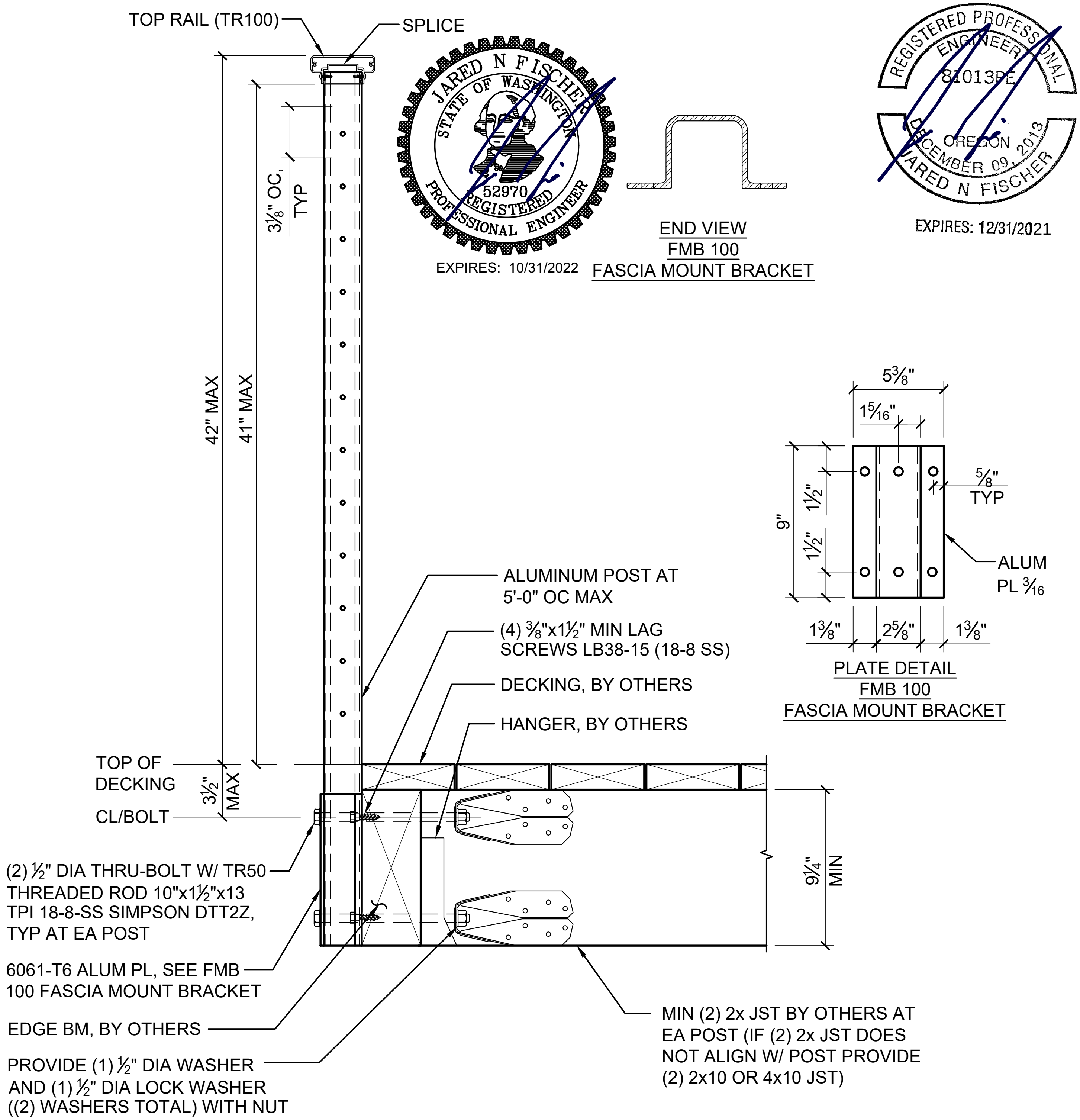
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY

REVISIONS:

SHEET NO.: S1.10



1 FASCIA MOUNT POST CONNECTION AT PERPENDICULAR JOIST

SCALE: 11/2"=1'-0"

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

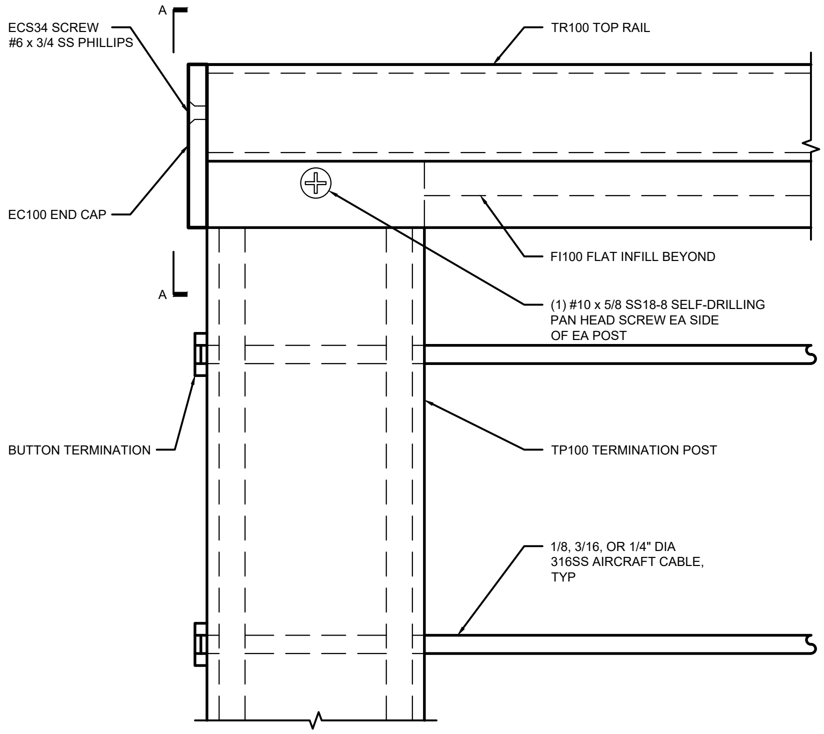
PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL:
FINISH:
DRAWN:
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

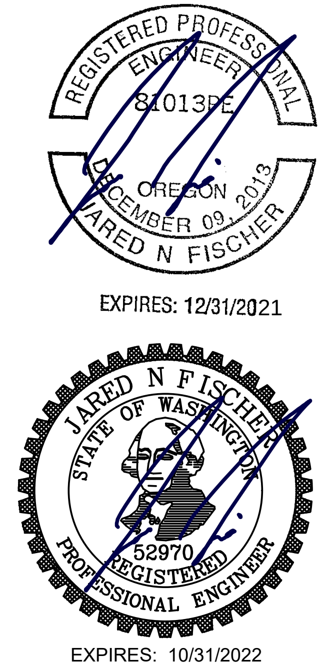
TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY

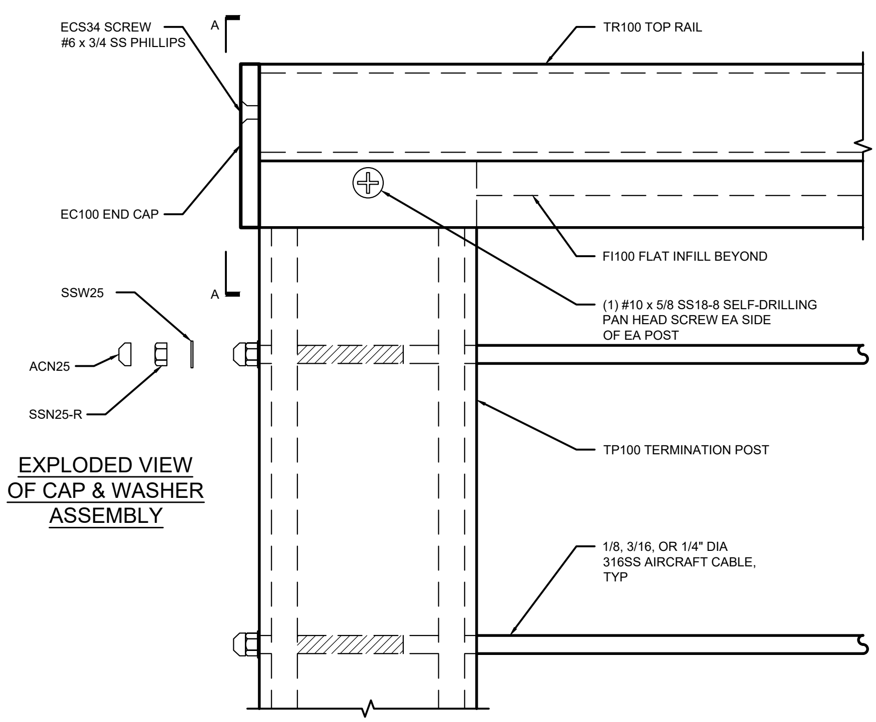
REVISIONS:

SHEET NO.: S1.11



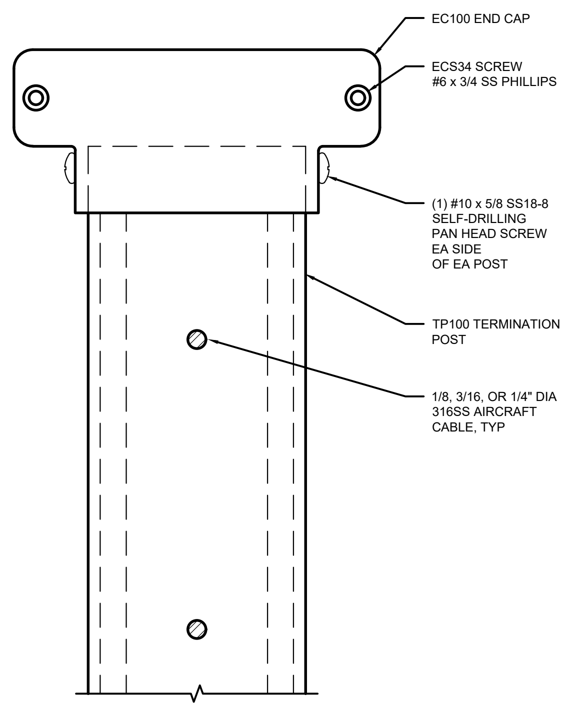
ELEVATION OF BUTTON SIDE





EXPLODED VIEW OF CAP & WASHER ASSEMBLY

ELEVATION OF THREADED TENSIONING SIDE



SECTION A-A

1 TOP RAIL CONNECTION DETAIL AT TERMINATION POST
SCALE: 1

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

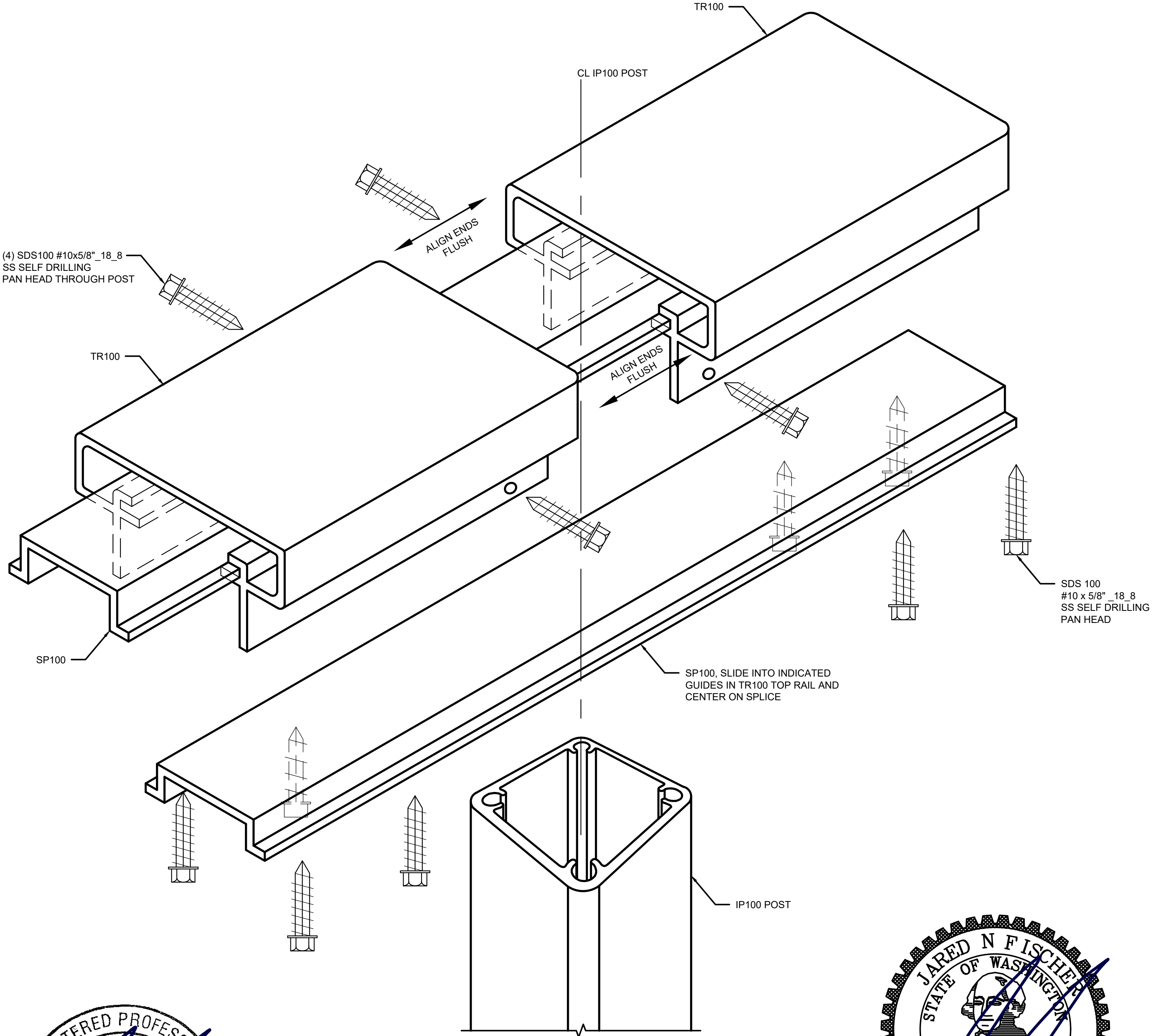
PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL:
FINISH:
DRAWN:
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY

REVISIONS:

SHEET NO.: S1.12



REGISTERED PROFESSIONAL ENGINEER 81013PE OREGON DECEMBER 09, 2013 JARED N FISCHER

EXPIRES: 12/31/2021

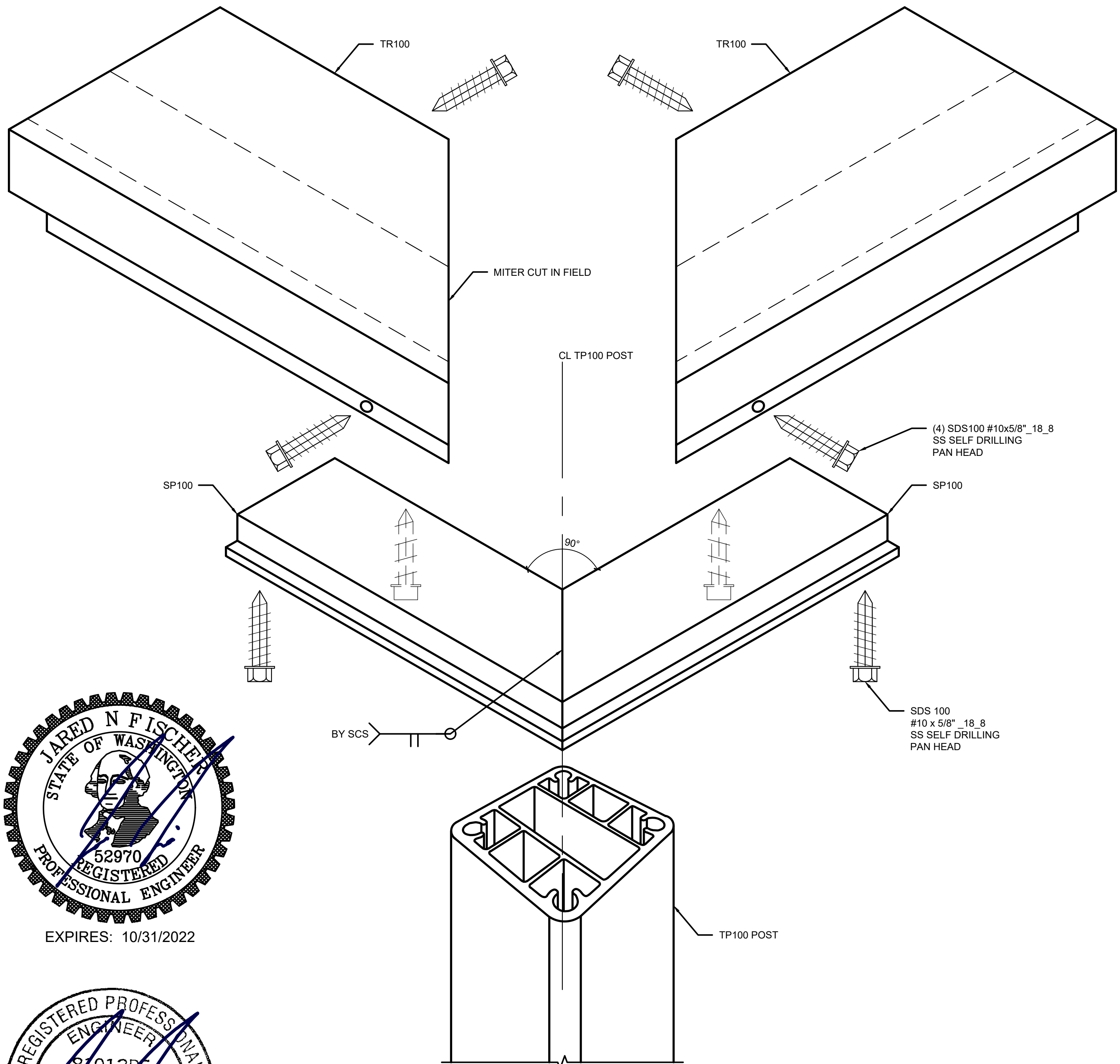
JARED N FISCHER STATE OF WASHINGTON 52970 REGISTERED PROFESSIONAL ENGINEER

EXPIRES: 10/31/2022

1 RAIL SPLICE CONNECTION DETAIL
SCALE:

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015	
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	DATE: 10/21/2020	TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY	
	MATERIAL:		
	FINISH:	REVISIONS:	SHEET NO.: S1.13
	DRAWN:		
	PM: JF		



1 RAIL SPLICE CONNECTION DETAIL AT CORNER
SCALE:

JARED N FISCHER
STATE OF WASHINGTON
52970
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 10/31/2022

REGISTERED PROFESSIONAL
ENGINEER
81013PE
OREGON
DECEMBER 09, 2013
JARED N FISCHER

EXPIRES: 12/31/2021

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

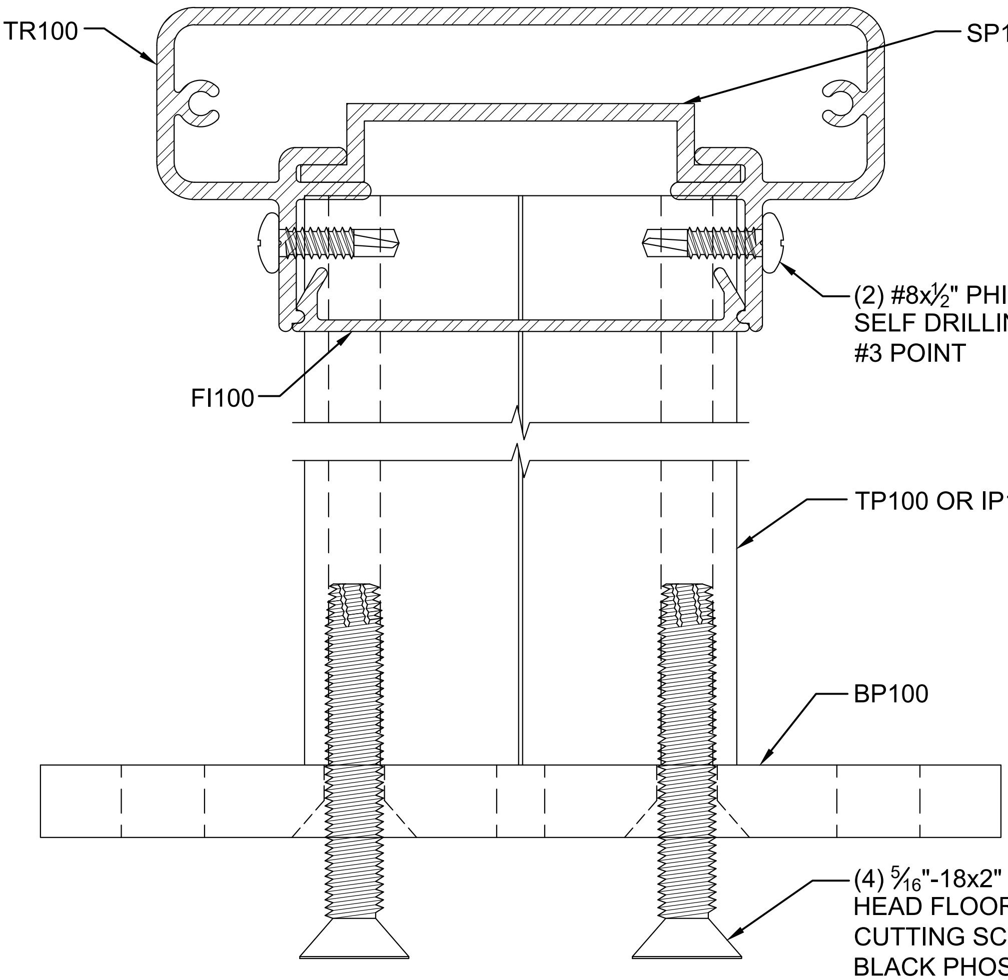
PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL:
FINISH:
DRAWN:
PM: JF

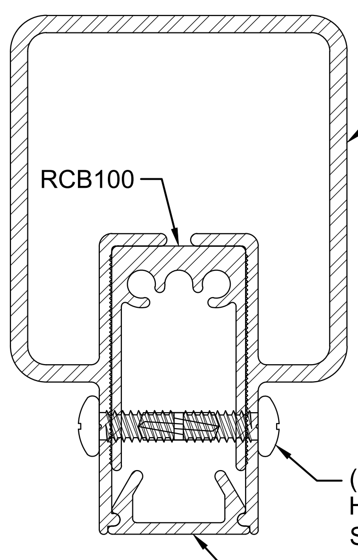
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

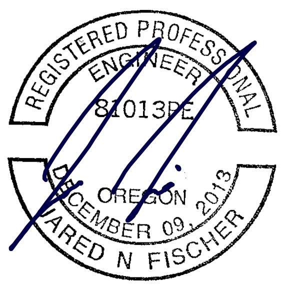
TITLE: 42" ALUMINUM DECK MOUNT ASSEMBLY

REVISIONS:

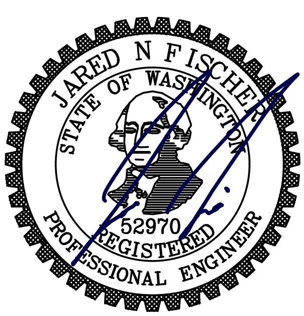
SHEET NO.: S1.14







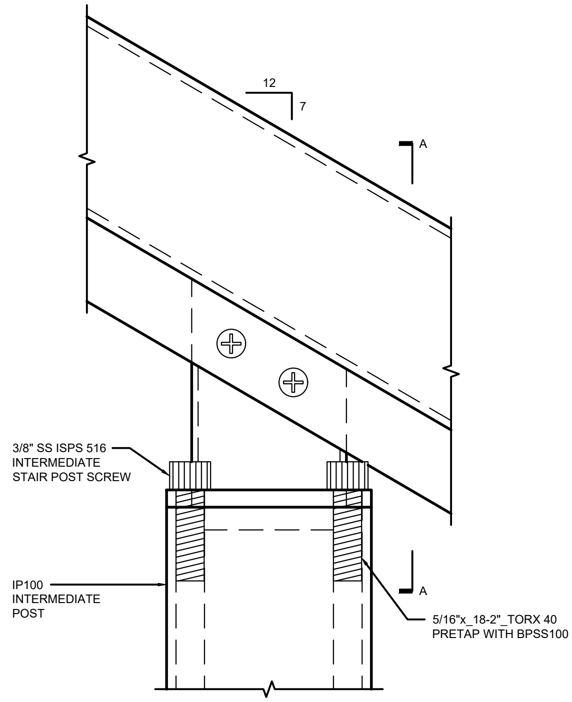
EXPIRES: 12/31/2021



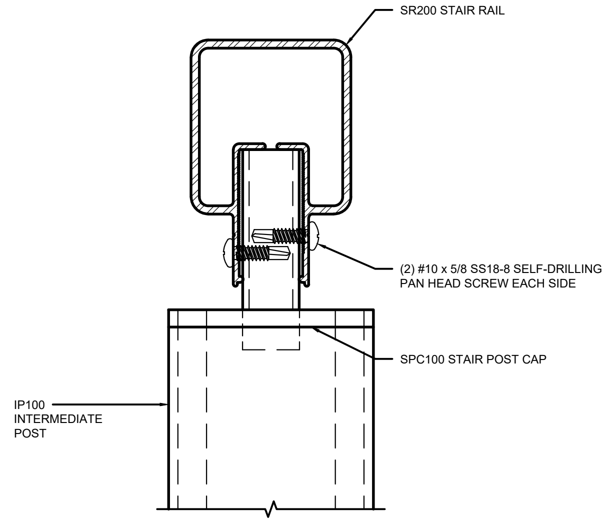
EXPIRES: 10/31/2022

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	DATE: 10/21/2020	
	MATERIAL:	TITLE: RAIL ASSEMBLY DIAGRAMS
	FINISH:	REVISIONS:
	DRAWN:	SHEET NO.: S1.15
	PM: JF	

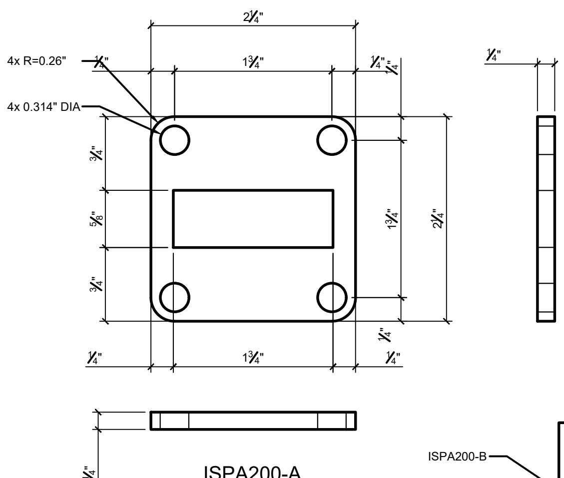


STAIR RAIL ASSEMBLY
ELEVATION

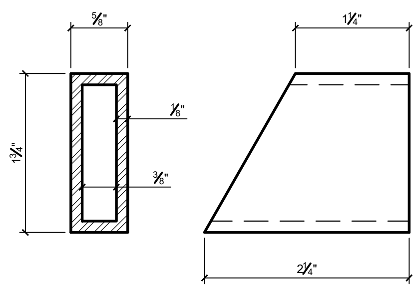


STAIR RAIL ASSEMBLY
SECTION A-A

1 TOP STAIR RAIL CONNECTION DETAIL



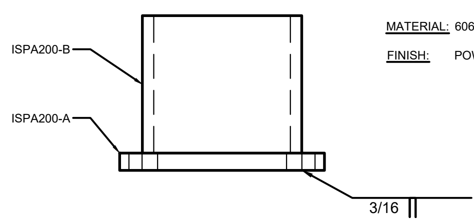
ISPA200-A



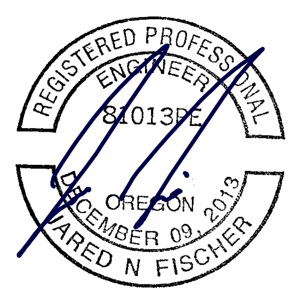
ISPA200-B

MATERIAL: 6061-T6 ALUMINUM

FINISH: POWDERCOAT 6 MIL MIN



STAIR POST CAP (ISPA200)
ASSEMBLY



EXPIRES: 12/31/2021

EXPIRES: 10/31/2022

2 INTERMEDIATE STAIR POST ADAPTER

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL:

FINISH:

DRAWN:

PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

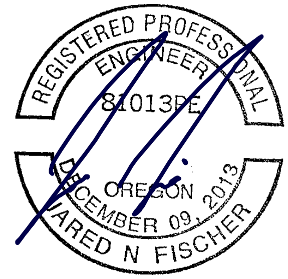
TITLE:

STAIR RAIL ASSEMBLY

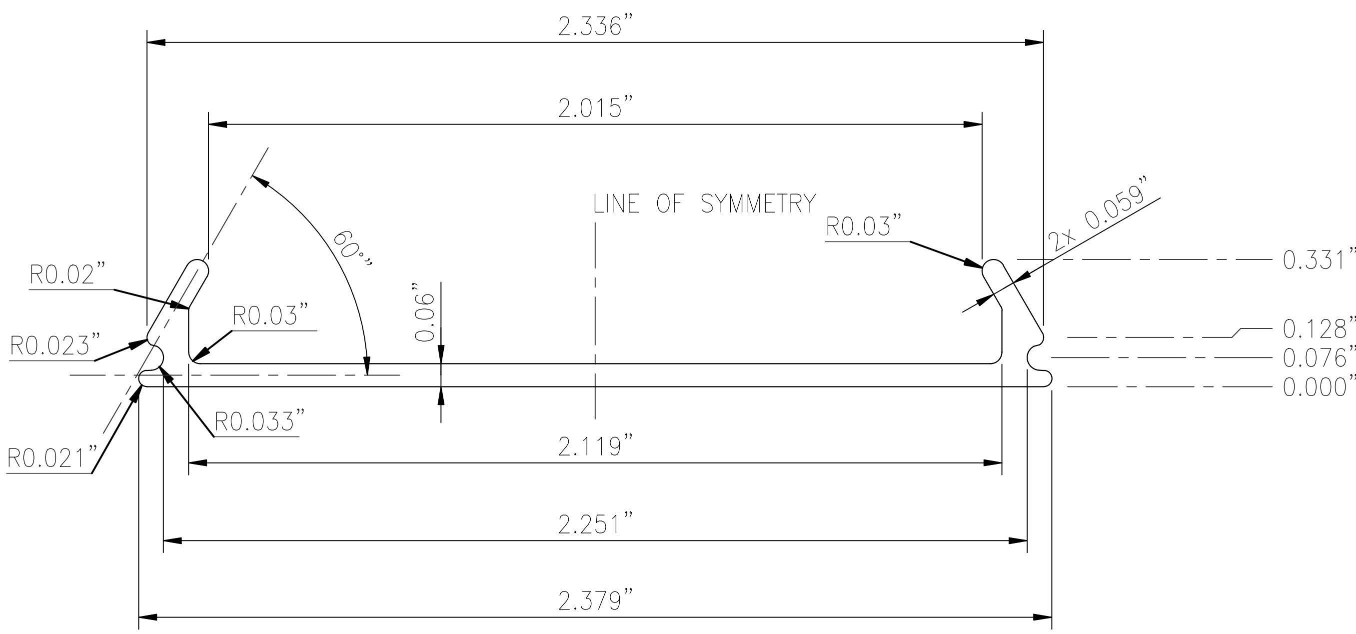
REVISIONS:

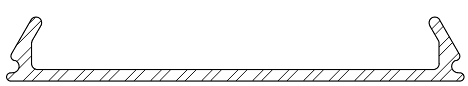
SHEET NO.: S1.16

EXPIRES: 10/31/2022



EXPIRES: 12/31/2021





ACTUAL SIZE

SCS
Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

3. SCALE: 2:1

PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL: 6063T5 ALUMINIUM LENGTH = 15'-0"
FINISH: POWDERCOAT 6 MIL MIN
DRAWN:
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

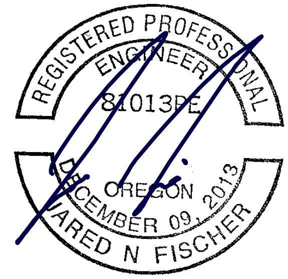
TITLE:

FLAT INFILL
FI100

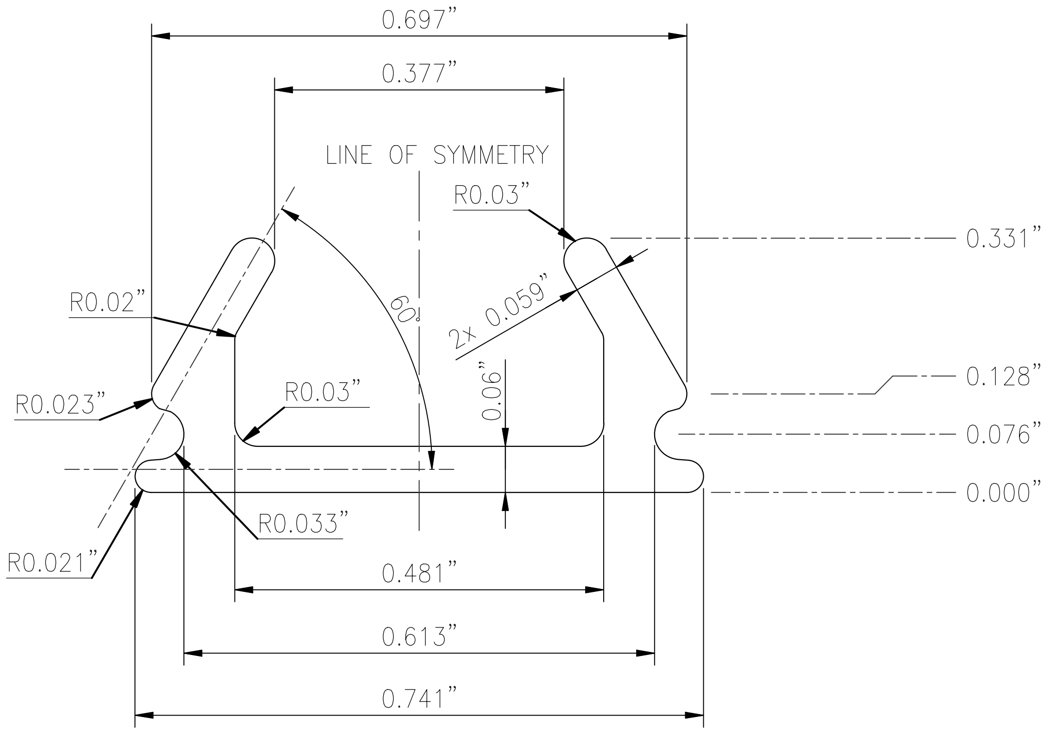
REVISIONS:

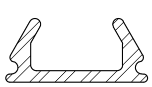
SHEET NO.: S2.01

EXPIRES: 10/31/2022



EXPIRES: 12/31/2021

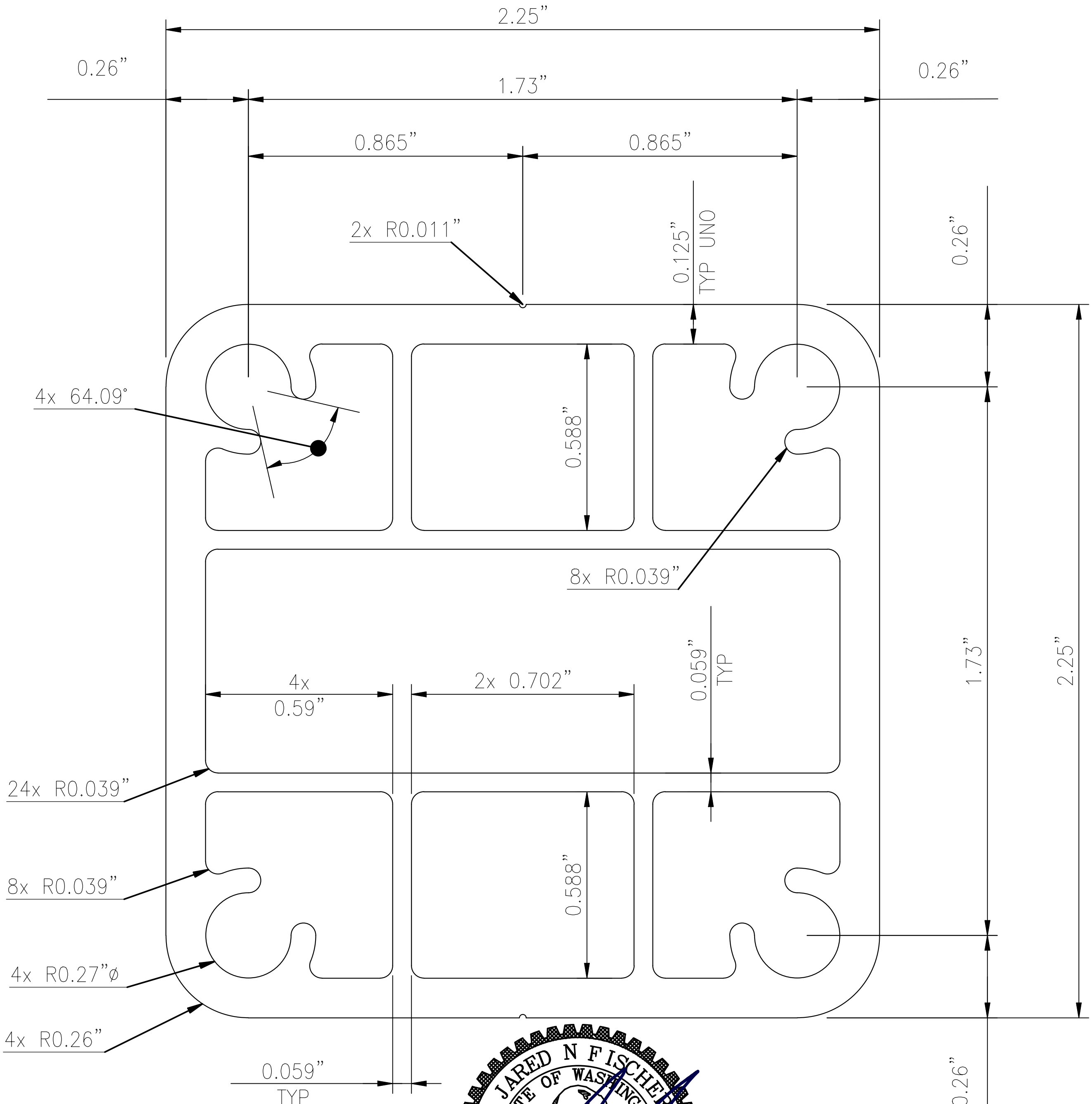




ACTUAL SIZE

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 4:1	DATE: 10/21/2020 MATERIAL: 6063T5 ALUMINIUM LENGTH = 15'-0" FINISH: POWDERCOAT 6 MIL MIN	TITLE: STAIR FLAT INFILL FI200
	DRAWN: PM: JF	REVISIONS: / SHEET NO.: S2.02

Stainless Cable Solutions



REGISTERED PROFESSIONAL ENGINEER
81013PE
OREGON
DECEMBER 09, 2013
JARED N FISCHER

EXPIRES: 12/31/2021

JARED N FISCHER
STATE OF WASHINGTON
52970
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 10/31/2022

Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

3. SCALE: 1:1

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL: 6061T5 ALUMINIUM LENGTH = 18'-2"

FINISH: POWDERCOAT 6 MIL MIN

DRAWN:

PM: JF

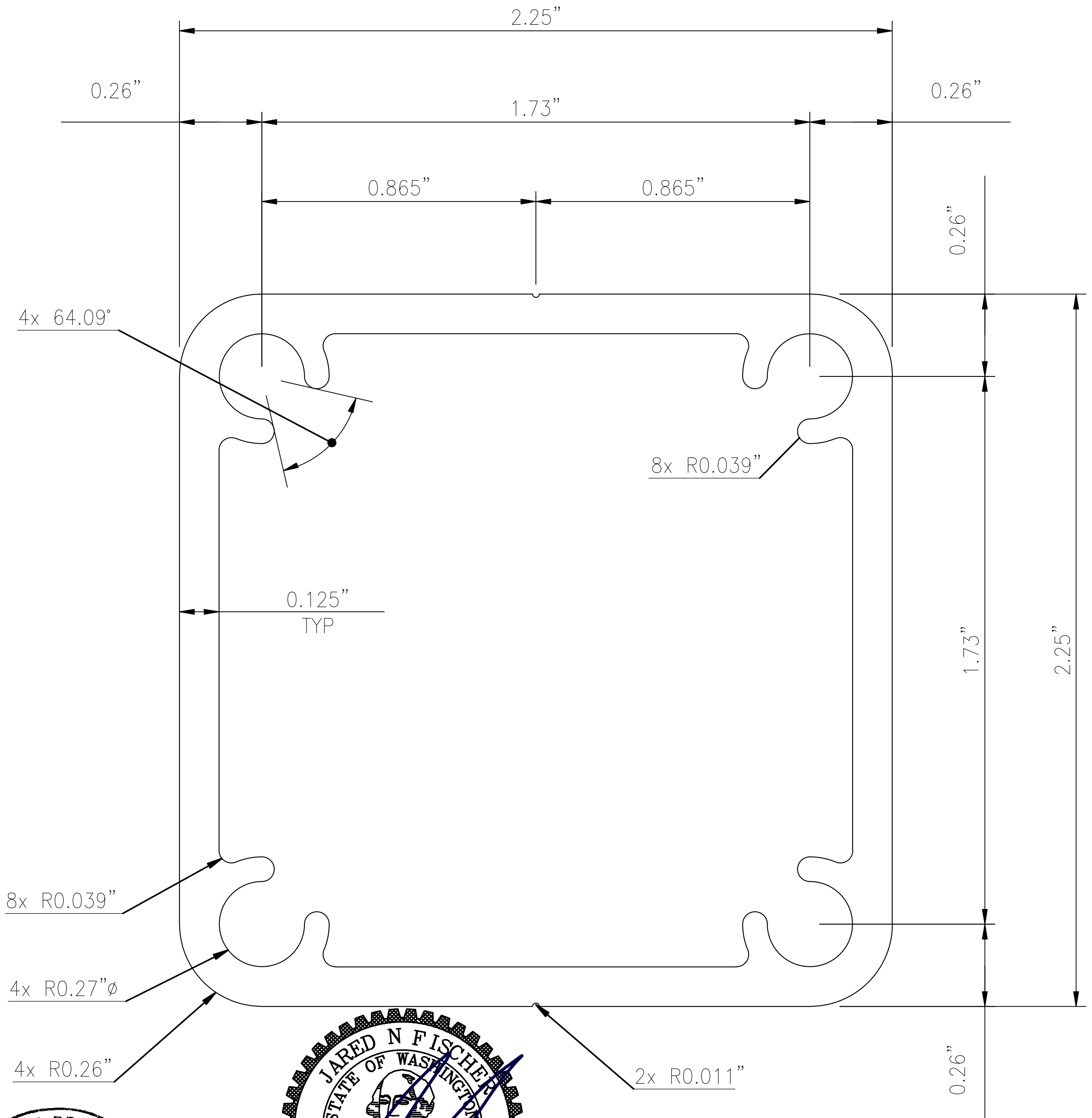
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE:

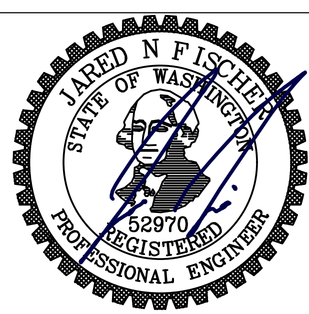
TERMINATION POST
TP100

REVISIONS:

SHEET NO.: S2.03



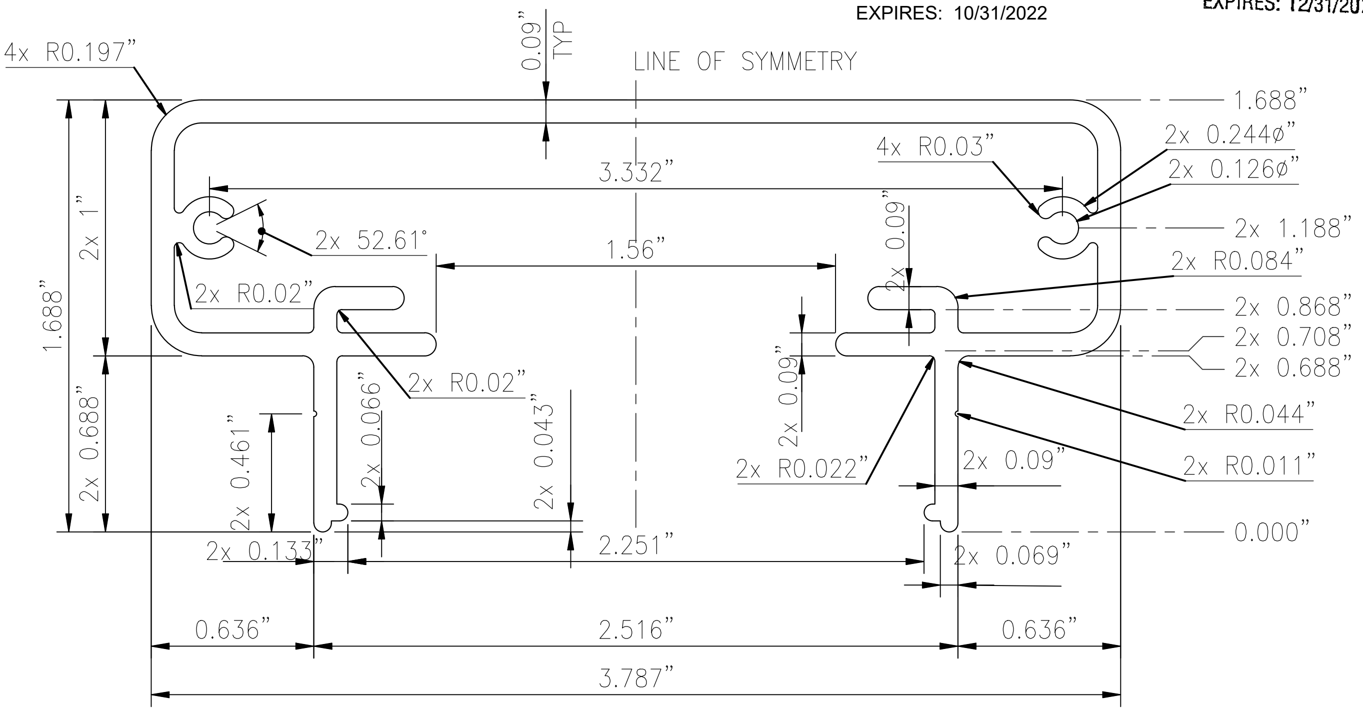
EXPIRES: 12/31/2021

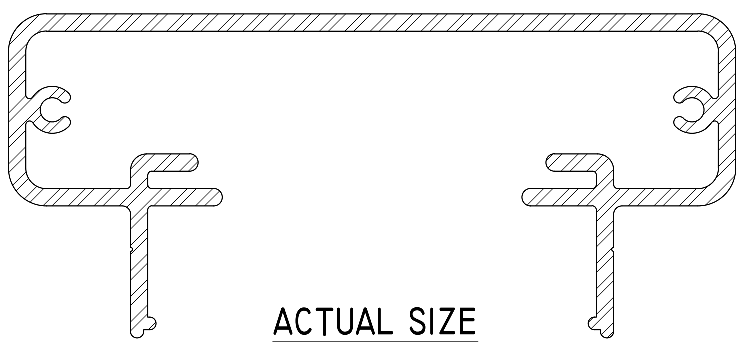


EXPIRES: 10/31/2022

Stainless Cable Solutions

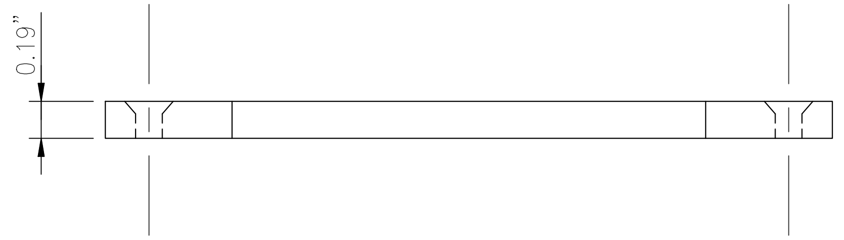
UNLESS NOTED OTHERWISE: 1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 1:1	PROJECT NO: 20184 DATE: 10/21/2020 MATERIAL: 6061T5 ALUMINIUM LENGTH = 18'-2" FINISH: POWDERCOAT 6 MIL MIN DRAWN: PM: JF	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015 TITLE: INTERMEDIATE POST IP100 REVISIONS: SHEET NO.: S2.04

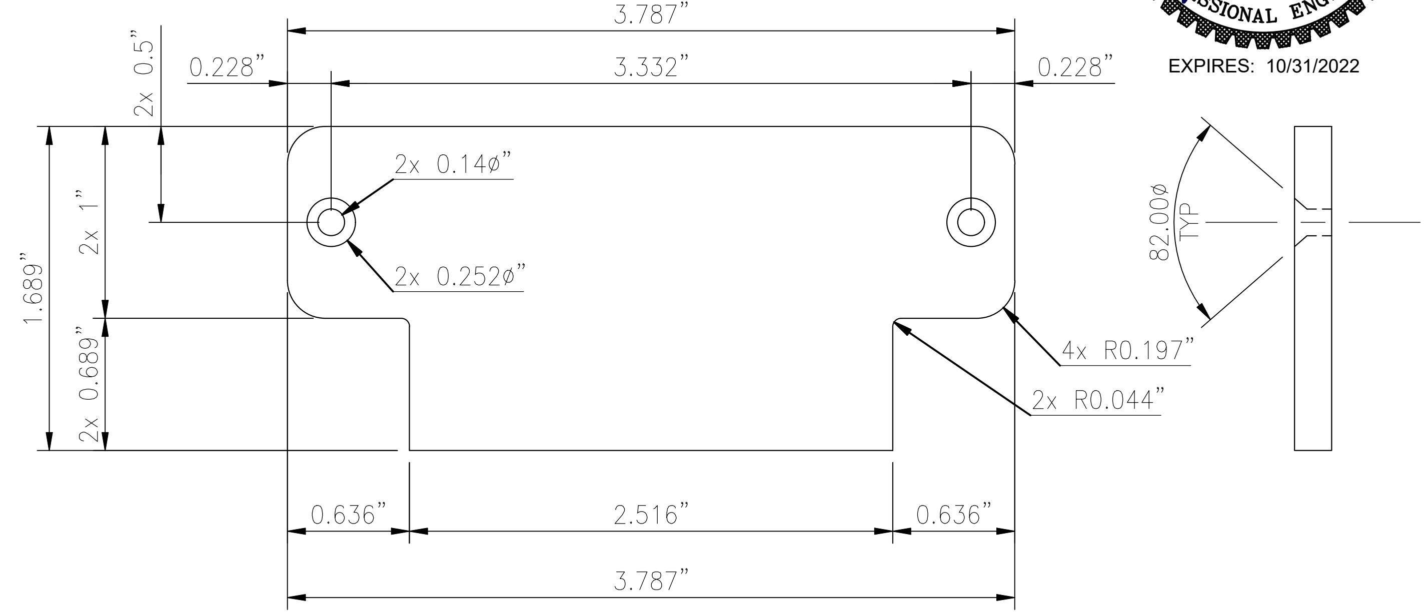




UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM)	DATE: 10/21/2020	TITLE: TOP RAIL TR100
2. TOLERANCES: x = 0.1, x.x = 0.1, x.xx = 0.01, x.xxx = 0.001	MATERIAL: 6061T5 ALUMINIUM LENGTH = 18'-2"	
	FINISH: POWDERCOAT 6 MIL MIN	REVISIONS: / SHEET NO.: S2.05
3. SCALE: 2:1	DRAWN: PM: JF	

SCS
Stainless Cable Solutions





Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:
   - x = 0.1
   - x.x = 0.1
   - x.xx = 0.01
   - x.xxx = 0.001
3. SCALE: 1:1

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL: 60631T5 ALUMINIUM

FINISH: POWDERCOAT 6 MIL MIN

DRAWN:

PM: JF

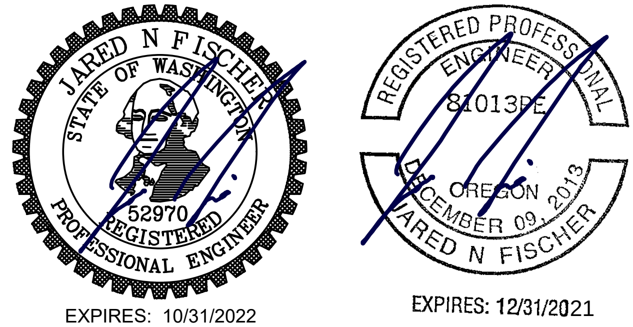
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

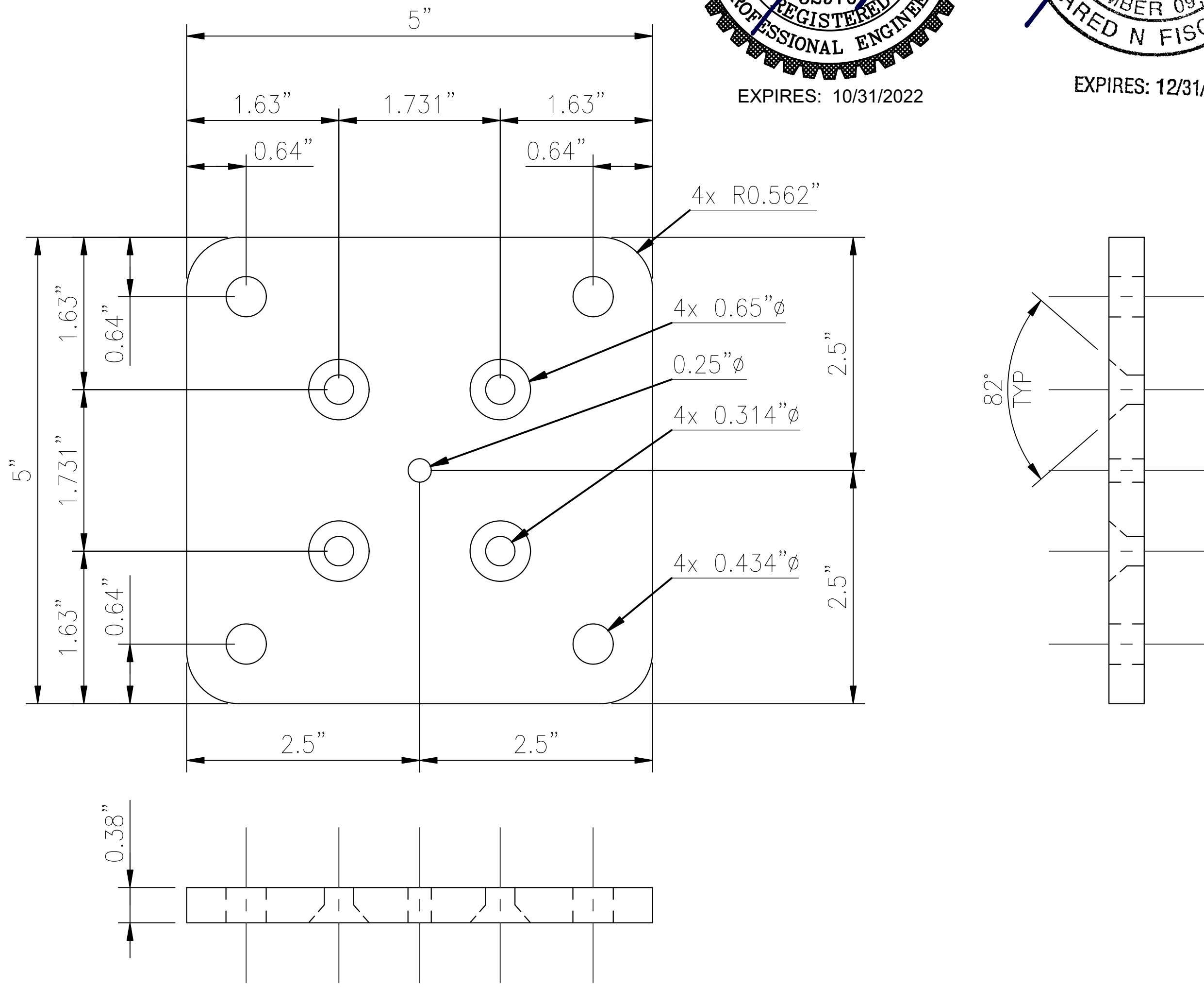
TITLE:

END CAP
EC100

REVISIONS:

SHEET NO.: S2.06





Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:

x = 0.1
x.x = 0.1
x.xx = 0.01
x.xxx = 0.001

3. SCALE: 1:2

PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL: 6061T5 ALUMINIUM
FINISH: POWDERCOAT 6 MIL MIN
DRAWN:
PM: JF

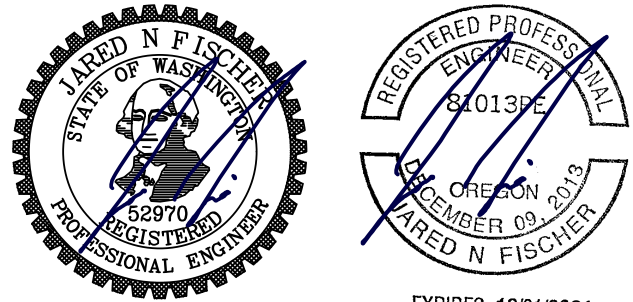
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE:

BASE PLATE
BP100

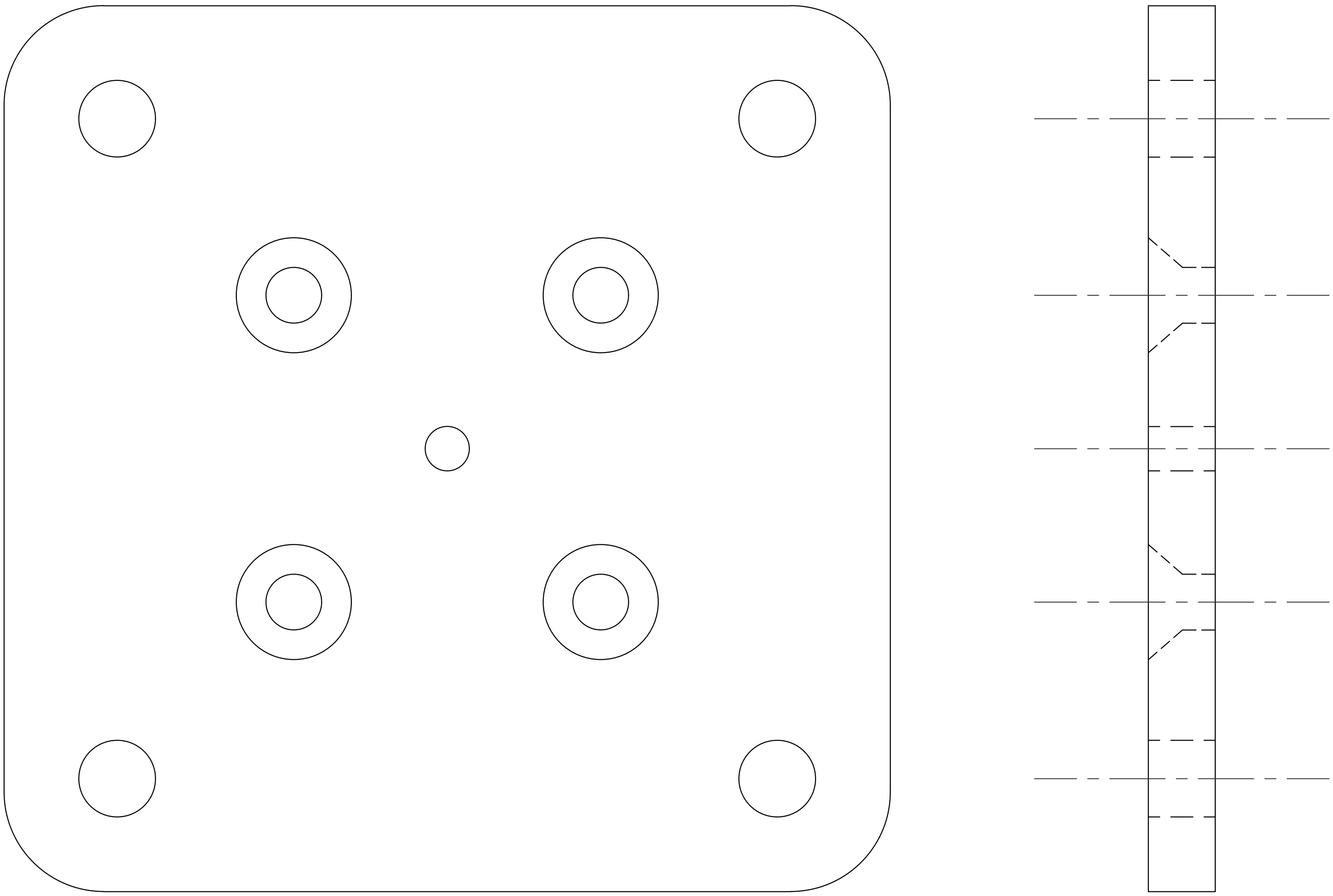
REVISIONS:

SHEET NO.: S2.07



EXPIRES: 10/31/2022

EXPIRES: 12/31/2021

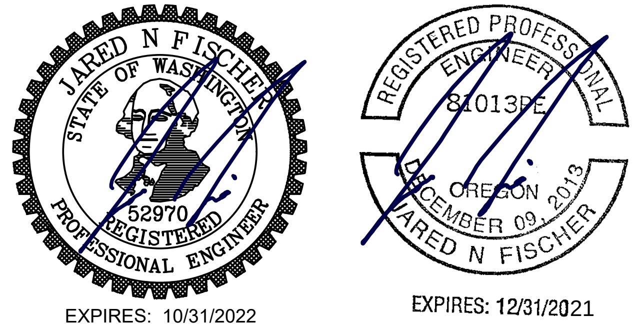


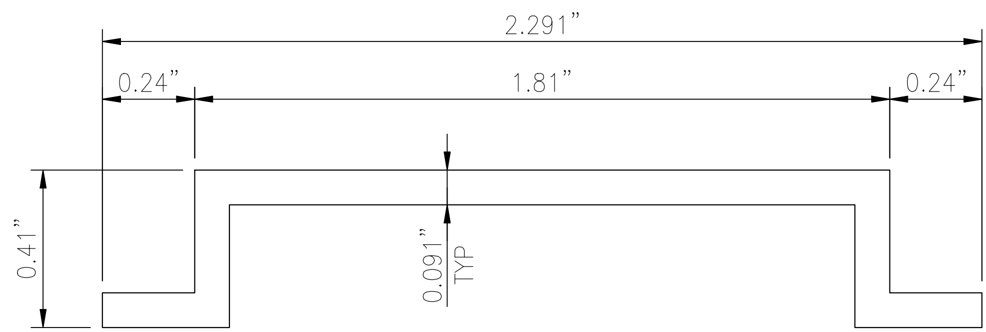
ACTUAL SIZE

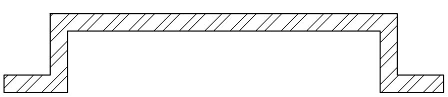
NOTE:
REF SHEET S7 FOR DIMENSIONS

SCS
Stainless Cable Solutions

UNLESS NOTED OTHERWISE:		
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 1:1	PROJECT NO: 20184 DATE: 10/21/2020 MATERIAL: 6061T5 ALUMINIUM FINISH: POWDERCOAT 6 MIL MIN DRAWN: PM: JF	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015 TITLE: BASE PLATE BP100 REVISIONS: SHEET NO.: S2.08





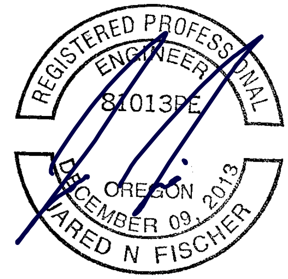


ACTUAL SIZE

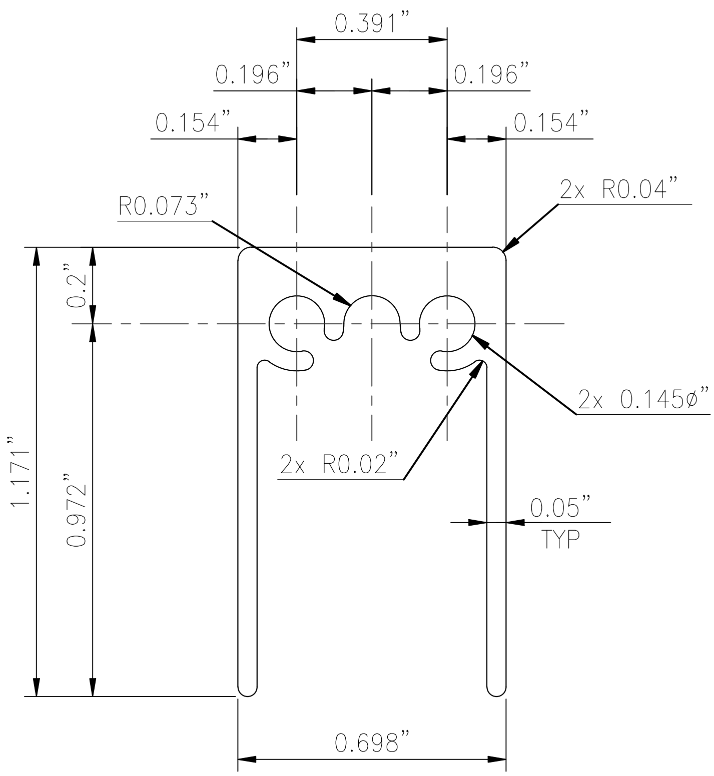
SCS
Stainless Cable Solutions

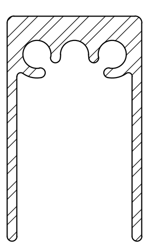
UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 2:1	DATE: 10/21/2020	TITLE: SPLICE SP100
	MATERIAL: 6063T5 ALUMINIUM LENGTH = 12'-0"	
	FINISH: NONE	REVISIONS:
	DRAWN:	SHEET NO.: S2.09
	PM: JF	

EXPIRES: 10/31/2022



EXPIRES: 12/31/2021

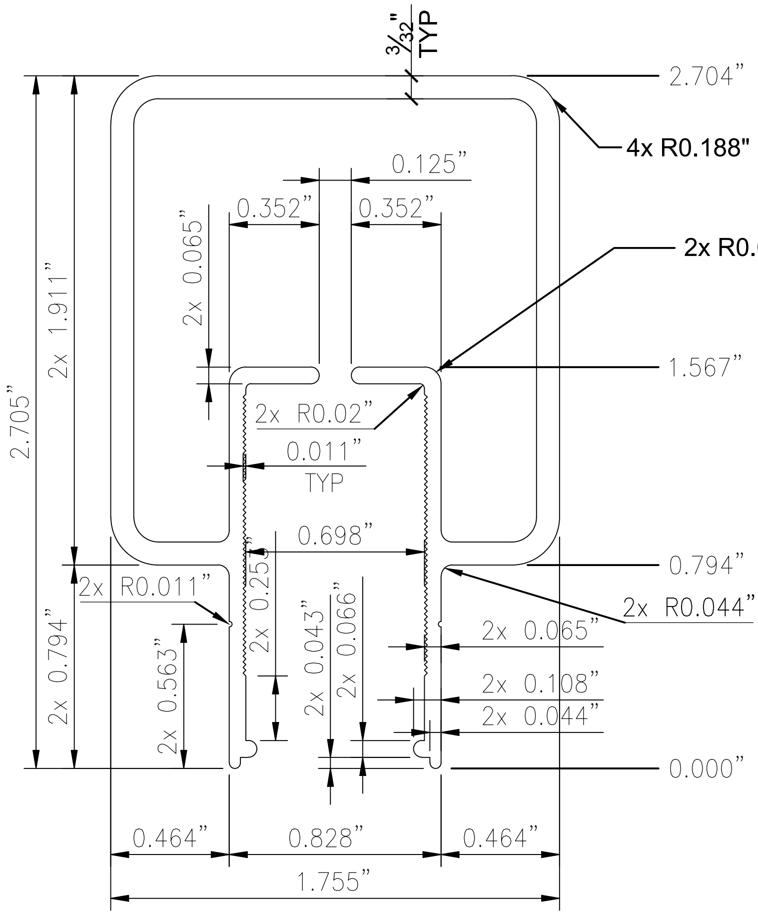


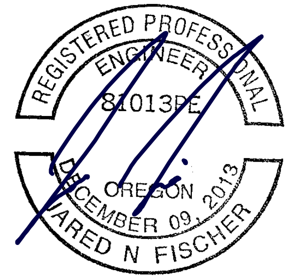


ACTUAL SIZE

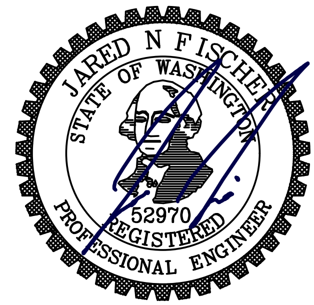
UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 2:1	DATE: 10/21/2020 MATERIAL: 6063T5 ALUMINIUM LENGTH = 12'-0" FINISH: NONE DRAWN: PM: JF	TITLE: RAIL CONNECTING BLOCK RCB100 REVISIONS: SHEET NO.: S2.10

Stainless Cable Solutions

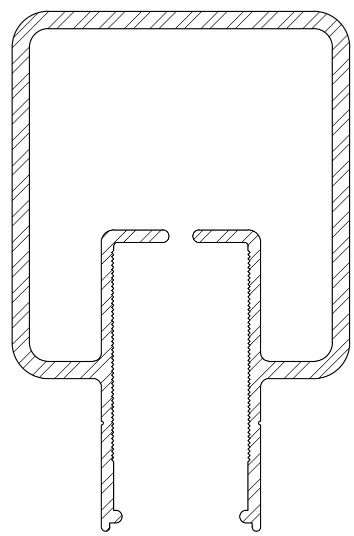




EXPIRES: 12/31/2021



EXPIRES: 10/31/2022



ACTUAL SIZE

SCS
Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:
   - x = 0.1
   - x.x = 0.1
   - x.xx = 0.01
   - x.xxx = 0.001
3. SCALE: 2:1

PROJECT NO: 20184

DATE: 10/21/2020

MATERIAL: 6061T5 ALUMINIUM LENGTH = 18'-2"

FINISH: POWDERCOAT 6 MIL MIN

DRAWN:

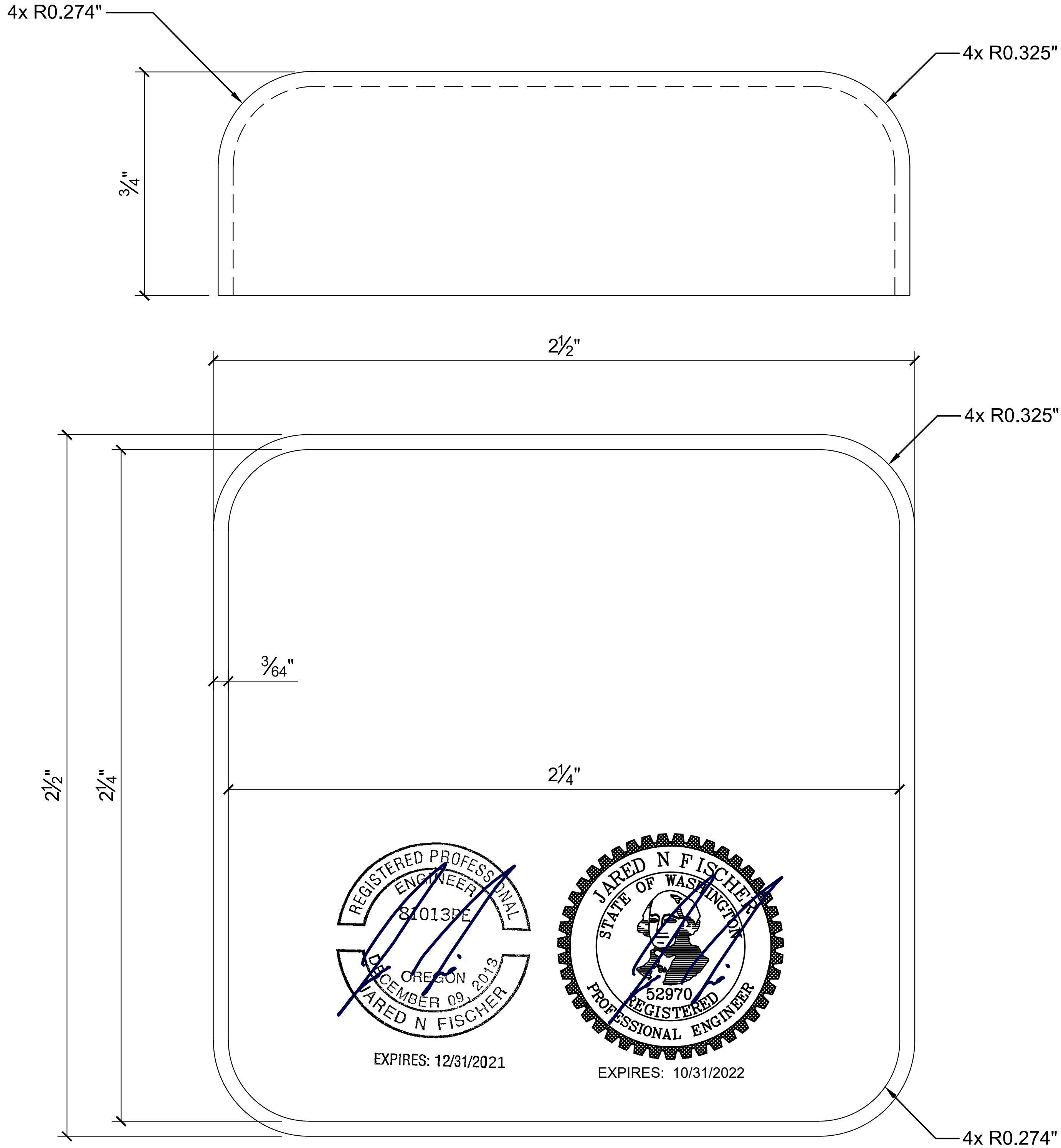
PM: JF

STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

TITLE: STAIR RAIL SR200

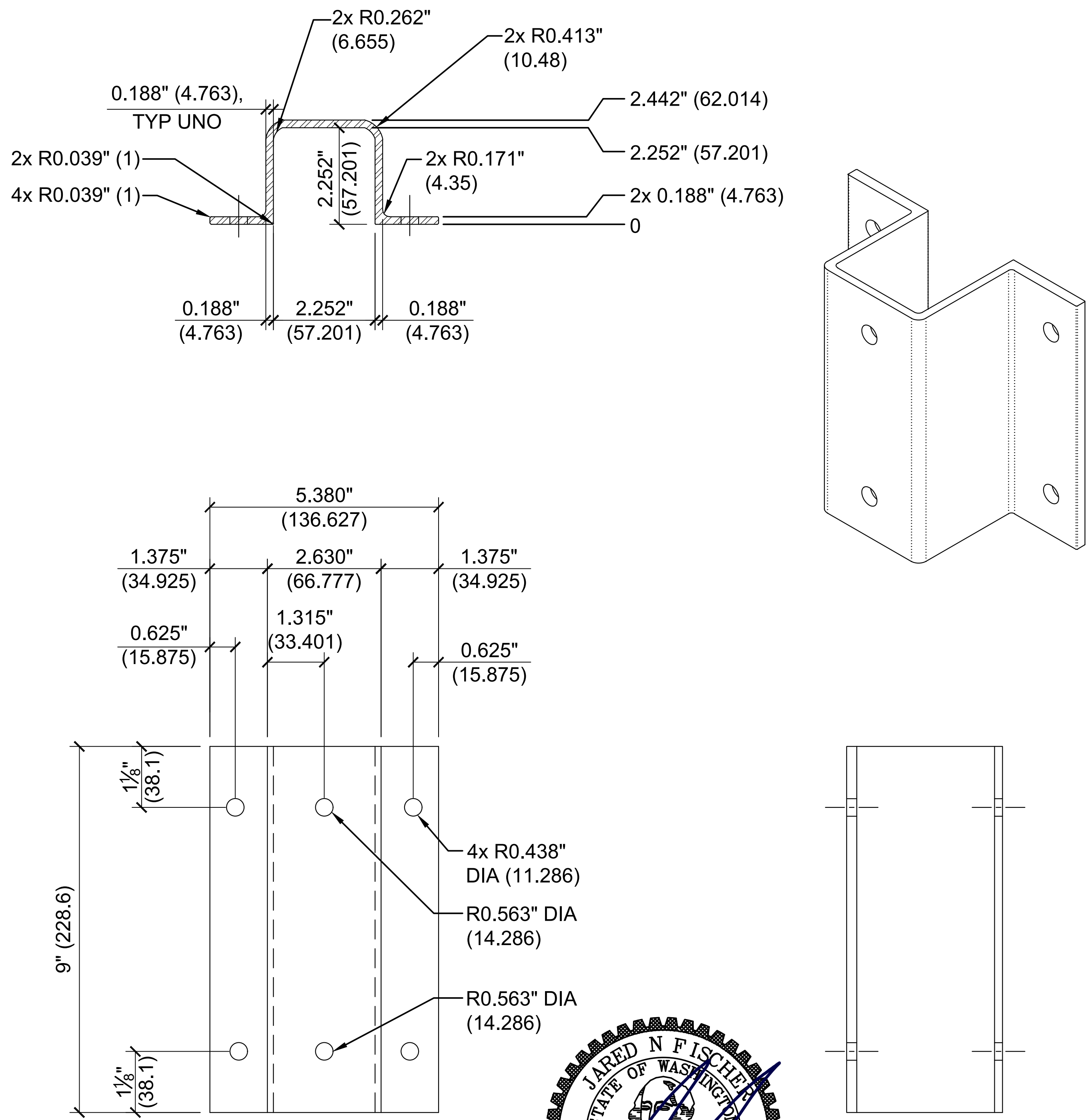
REVISIONS:

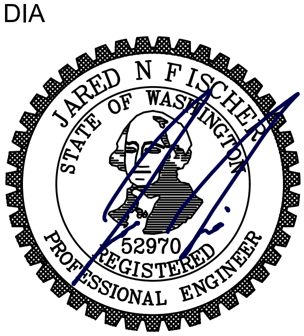
SHEET NO.: S2.11



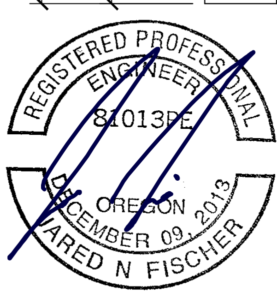
UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 1:1	DATE: 10/21/2020 MATERIAL: A1050 ALUMINIUM FINISH: POWDERCOAT 6 MIL MIN DRAWN: PM: JF	TITLE: POST CAP PC100 REVISIONS: SHEET NO.: S2.12

Stainless Cable Solutions





EXPIRES: 10/31/2022



EXPIRES: 12/31/2021

SCS
Stainless Cable Solutions

UNLESS NOTED OTHERWISE:

1. DIMENSIONS ARE IN INCHES (MM)
2. TOLERANCES:
   x = 0.1
   x.x = 0.1
   x.xx = 0.01
   x.xxx = 0.001
3. SCALE: 1:1

PROJECT NO: 20184
DATE: 10/21/2020
MATERIAL: 6061-T6 ALUMINIUM
FINISH: N/A
DRAWN:
PM: JF

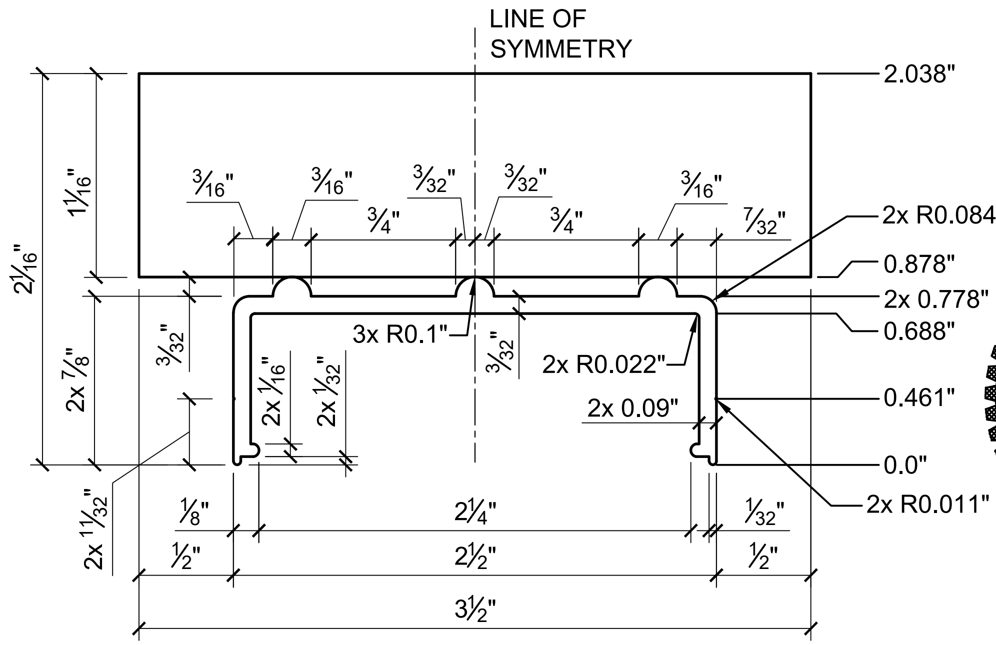
STAINLESS CABLE SOLUTIONS, LLC.
15806 SE 114th AVE
CLACKAMAS, OR 97015

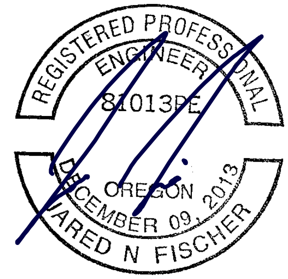
TITLE:

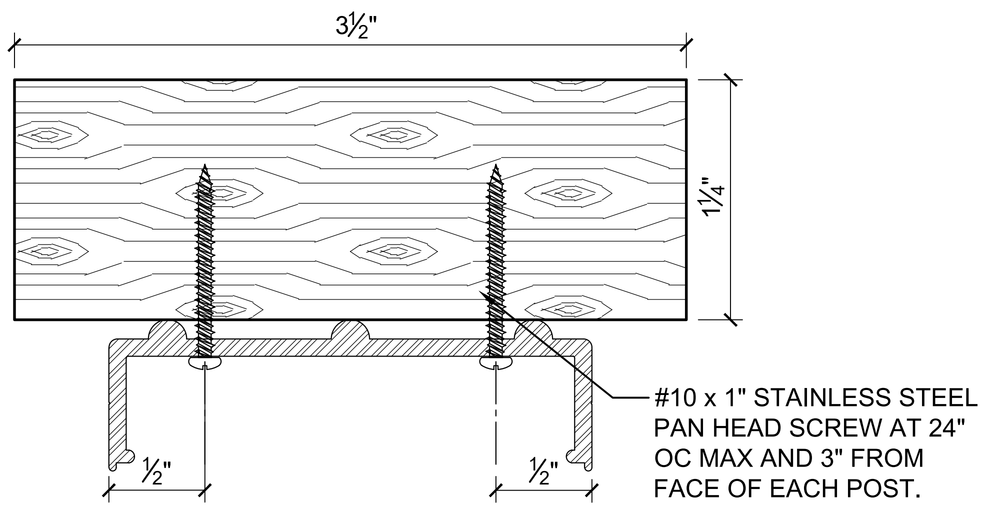
FMB 100 FASCIA MOUNT BRACKET

REVISIONS:

SHEET NO.: S2.13



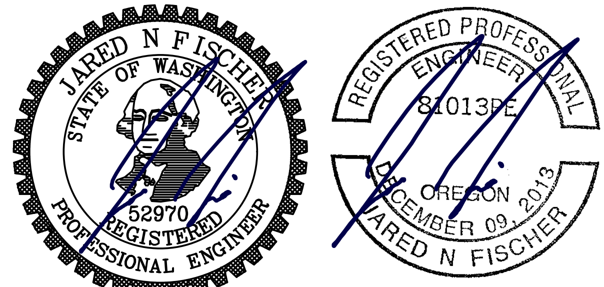




ACTUAL SIZE

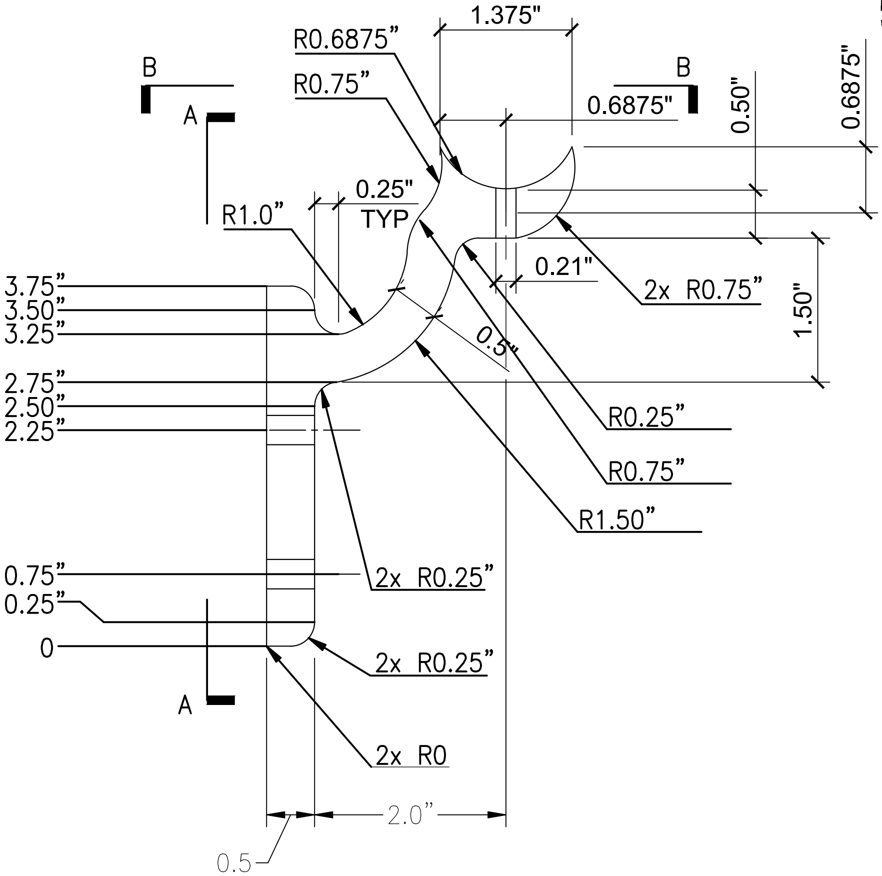
UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 1:1	DATE: 10/21/2020 MATERIAL: FINISH: DRAWN: PM: JF	TITLE: REVISIONS: SHEET NO.: S2.14

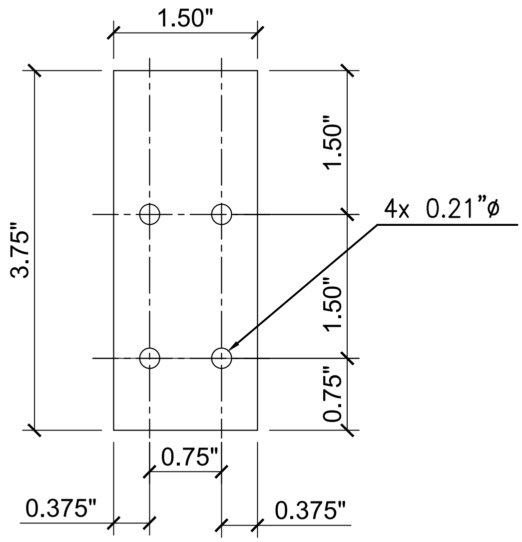
Stainless Cable Solutions



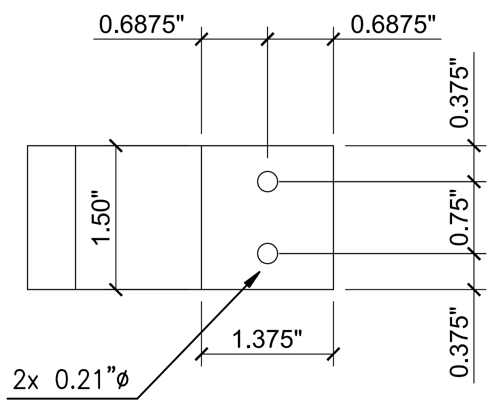
EXPIRES: 10/31/2022

EXPIRES: 12/31/2021





SECTION A-A



SECTION B-B

SCS
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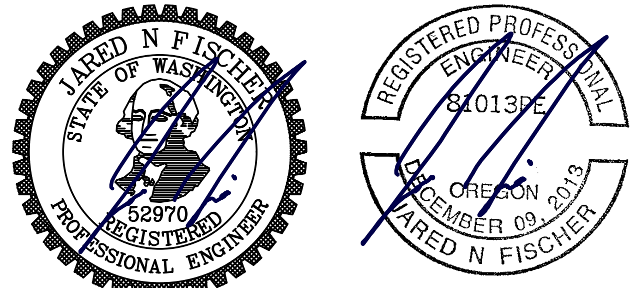
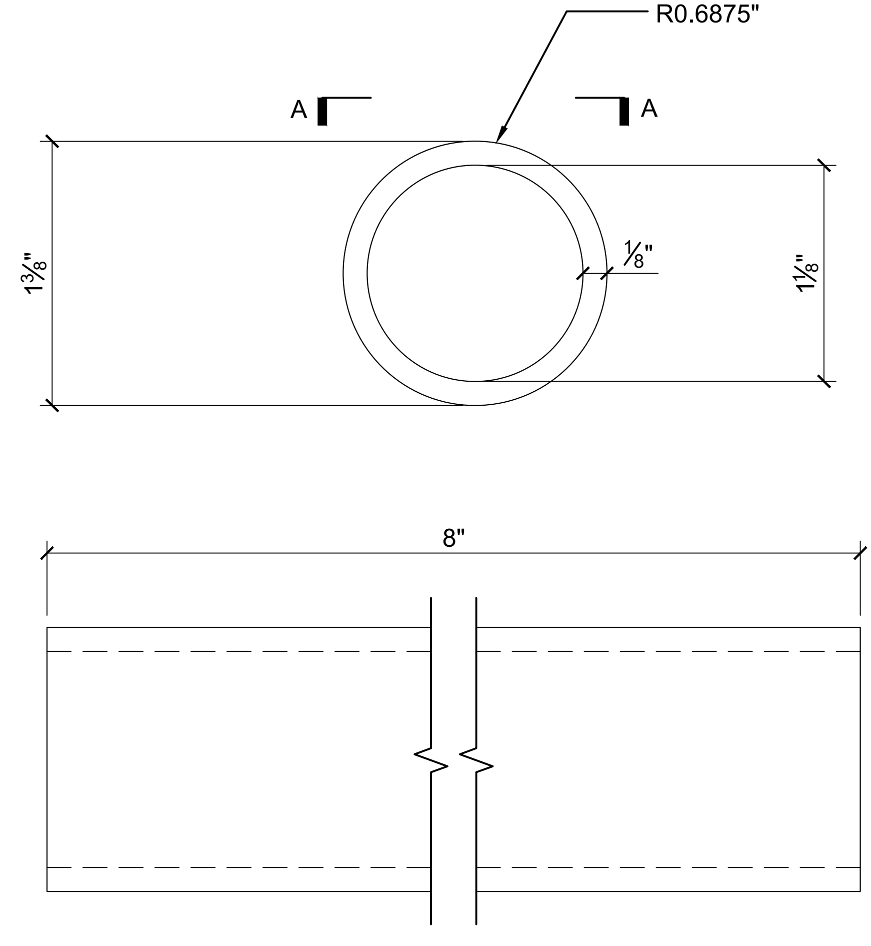
UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM)	DATE: 10/21/2020	
2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001	MATERIAL: 6061-T6 ALUMINIUM	TITLE: ADA HAND RAIL BRACKET HRB 20
	FINISH: N/A	REVISIONS: / SHEET NO.: S2.15
3. SCALE: 1:1	DRAWN: PM: JF	



EXPIRES: 10/31/2022

EXPIRES: 12/31/2021



SECTION A-A

UNLESS NOTED OTHERWISE:	PROJECT NO: 20184	STAINLESS CABLE SOLUTIONS, LLC. 15806 SE 114th AVE CLACKAMAS, OR 97015
1. DIMENSIONS ARE IN INCHES (MM) 2. TOLERANCES: x = 0.1 x.x = 0.1 x.xx = 0.01 x.xxx = 0.001 3. SCALE: 1:1	DATE: 10/21/2020 MATERIAL: N/A FINISH: N/A	TITLE: ITEM NUMBER: ADA_GR_MF PART NUMBER: ADA GRAB RAIL_MILL FINISH
	DRAWN: PM: JF	REVISIONS: / SHEET NO.: S2.16

Stainless Cable Solutions