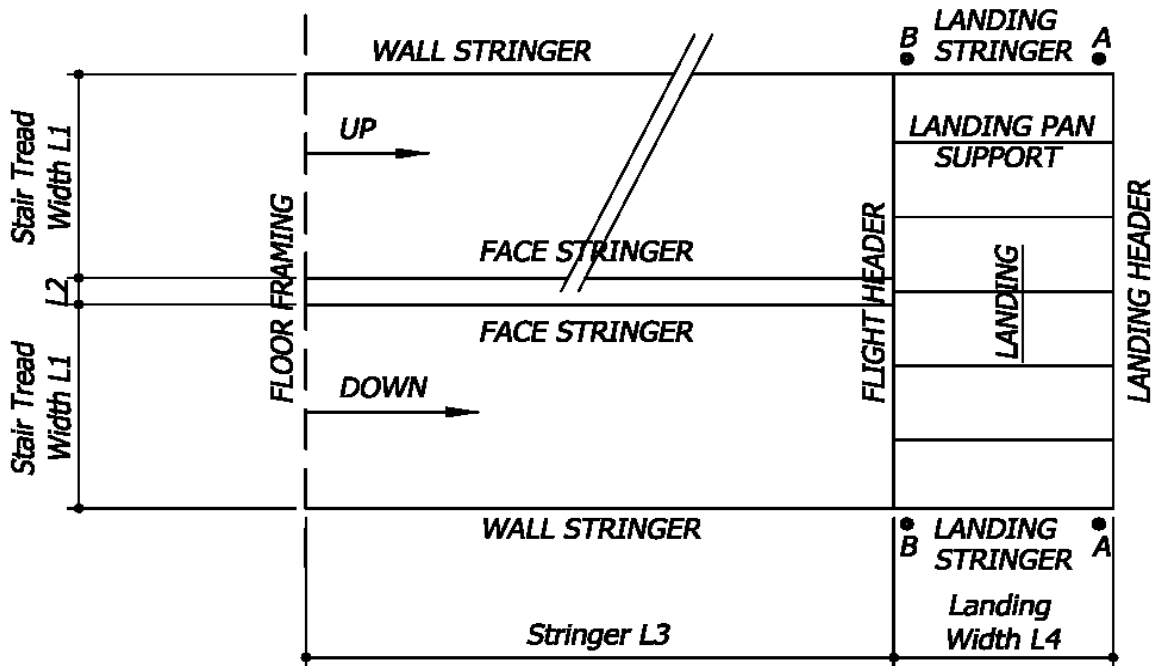


Analysis Method: **ASD**

Stair Number: Sample

Standard Stair Design
Based on 2005 Specification for Structural Steel Buildings

FRAMING AT STANDARD STAIR



Geometry

Tread Width L1 :	3.667 ft
Stringer Spacing L2 :	8.000 in
Stringer Length L3 :	12.146 ft
Landing Width L4 :	4.500 ft
Landing Pan Support Spacing:	2.000 ft
Concrete Fill at Treads :	2.00 in
Concrete Fill at Landing :	3.00 in

Loads

Treads:	Concrete = 25.00 psf
	Treads & Pans = 10.00 psf
	Misc = 5.00 psf
	Dead Load = 40.00 psf
	Live Load = 100.00 psf
Stringers:	Unif. Load = 73.34 plf
	Handrails = 50.00 plf
	Dead Load = 123.34 plf
	Live Load = 183.35 plf
	Total Load = 306.69 plf
Landing:	Concrete = 37.50 psf
	Pans = 3.00 psf
	Misc = 4.50 psf
	45.00 psf
	Live Load = 100.00 psf
	Total Load = 145.00 psf

Does Wall Stringer have Handrails?
No

Tread Design

Tread Gage =	14 GA
I =	16.60
S =	2.57
Max Imposed Load =	0.51 k
Max Tread Capacity =	8.41 k OK
Deflection =	0.019 in = L/2270

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Face Stringer

max. deflection = 0.4049 in

Face Stringer Size = **C12x20.7**

Span = 12.146 ft

w = 327.39 plf

R = 1.99 k

Z_x = 25.60 in³

M = 6.04 k-ft

Mark

Wt = 20.70 plf

M_r/Ω = **45.99 k-ft** **OK****107S1**I_x = 129.00 in⁴Channel F_y: **36.00 ksi**

deflection = 0.0429 in = L/3401

F_u: 58.00 ksi

Max Span for Strength = 33.52 ft

Max Span for Deflection = 21.29 ft

Wall Stringer

max. deflection = 0.4049 in

Face Stringer Size = **C12x20.7**

Span = 12.146 ft

w = 277.39 plf

R = 1.68 k

Z_x = 25.60 in³

M = 5.12 k-ft

Mark

Wt = 20.70 plf

M_r/Ω = **63.87 k-ft** **OK****107S1**I_x = 129.00 in⁴Channel F_y: **50.00 ksi**

deflection = 0.0363 in = L/4014

F_u: 65.00 ksi

Max Span for Strength = 42.92 ft

Max Span for Deflection = 22.20 ft

Landing Pan SupportHeader Size = **C4X5.4**

Span = 4.500 ft

w = 295.40 plf

R = 0.66 k

Z_x = 2.29

Mark

W = 5.4

M = 0.75 k-ft

S116M1I_x = 3.85M_r/Ω = **4.11 k-ft** **OK**F_y: **36.00 ksi**

deflection = 0.0244 in = L/2212

F_u: 58.00 ksi**Flight Header**Header Size = **C8X11.5**

Span = 8.001 ft

w = 337.75 plf

R = 3.34 k

Z_x = 9.63

P = 3.98 k

Mark

W = 11.5

M = 10.66 k-ft

S116M1I_x = 32.5M_r/Ω = **20.66 k-ft** **OK**F_y: **36.00 ksi**

deflection = 0.1108 in = L/866

F_u: 58.00 ksi**Hanger Rod**

Maximum load at B

Hanger Rod Size = **3/4**

P = 6.68 k

A = 0.442 in²

Mark

Rod F_y: **36.00 ksi****S118M1**F_u: 58.00 ksiR_n/Ω = 9.61 k **OK**F_{nt} = 43.50 ksi

Low Bracket

Bracket Size : **HSS6X4X3/8**
 Zx 11.90 in3
 Mark A 6.18 in3
S116M1
 Sx 9.43 in3
 kS113 Angle F_y: **36.00 ksi**
 F_u: 58.00 ksi

e = **5.750 in** P = 6.68 plf
 M = 38.42 k-in
 R_n/Ω = 88.99 k
 M_n/Ω = 203.28 k-in
 Interaction = 0.264 < 1.0 OK

Weld A = 20.00 in
 Weld S = 22.00 in2

f_v = 0.33
 f_b = 1.75
 f_r = 1.78

Weld size req'd = 0.12 in
 Weld Required = **3/16 Fillet** Both sides of angle

High Bracket If Required

Bracket Size : **HSS6X4X3/8**
 Zy 8.94 in3
 Mark A 6.18 in3
 Sx 9.43 in3
 Angle F_y: **36.00 ksi**
 F_u: 58.00 ksi

e = **5.750 in** P = 6.68 k
 M = 38.42 k-in
 Hanger Weld to Bracket: FBGW Effect. throat = 0.12 in
 Equivalent Fillet Weld D = 2.65

Bracket Length: **9.00 in**

For Welded hanger only:
 Weld Length required = 2.72 in
 Weld Length furnished = **0.00 in** NG

Tensile Yield Strength: 67.71 k **OK**

Weld Eccentricity: 5.750 in

Weld A = 8.00 in
 Weld S = 5.33 in2

f_a = 0.84
 f_b = 7.20
 f_r = 8.04

FBGW Weld
 Weld size req'd = 0.54 in
 Minimum Weld Required = **0/16 Fillet** Bracket to Support
Special Weld Sizing