Company Logo / Name

Structural Calculation Report

Untitled Project

Date: June 12, 2026

Design Criteria

Governing Codes & Standards

Building Code	IBC2021
Load Standard	ASCE 7-16
Wood Design	NDS2018
Steel Design	AISC360-16
Concrete Design	ACI318-19
Masonry Design	TMS402-16

Deflection Limits

Floor Joists (Live Load)	L/360
Floor Joists (Total Load)	L/240
Floor Beams (Live Load)	L/360
Floor Beams (Total Load)	L/240
Headers (Live Load)	L/360

Load Cases (active in this project)

DL — Dead Load	Self-weight target case
LL — Live Load	
SL — Snow Load	
Lr — Roof Live Load	
R — Rain Load	
W — Wind Load	
E — Seismic Load	
Temp — Temperature	

ASCE 7 Hazard Inputs

Material Properties

Concrete (f'c)	3000 psi

Steel (Fy)	50 ksi (A992)
Rebar	Grade 60 (Fy = 60 ksi)

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Load Path Narrative

The structural system is designed to transfer all gravity loads from the roof and floor levels down to the foundation.

Roof/floor loads are supported by 10 joist region(s) which transfer tributary loads to supporting beams and walls.

Concentrated loads from joists and other framing bear on 18 beam(s), which span between columns or bearing walls.

24 wood column(s) transfer beam reactions to the foundation level.

All loads are ultimately transferred to the soil through 8 foundation wall(s), 4 spot footing(s), 7 continuous footing(s).

Calculation Audit

33 error(s), 26 warning(s), 5 note(s).

Errors (33)

Beam B-003	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.439), governing channel: momentPositive.
Beam B-004	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 3.390), governing channel: momentPositive.
Beam B-005	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.961), governing channel: momentPositive.
Beam B-006	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 6.808), governing channel: momentPositive.
Beam B-008	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 5.784), governing channel: momentPositive.
Beam B-009	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 15.079), governing channel: momentPositive.
Beam B-010	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 53.525), governing channel: deflectionDown.
Beam B-013	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 6.139), governing channel: deflectionDown.
Beam B-015	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 13.667), governing channel: momentPositive.
Beam B-016	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 13.369), governing channel: momentPositive.
Beam B-017	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 5.534), governing channel: momentPositive.
Beam B-018	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 5.517), governing channel: momentPositive.
Joist JR-001	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.370), governing channel: bending.
Joist JR-003	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.912), governing channel: bending.
Joist JR-004	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.557), governing channel: bending.
Joist JR-007	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.179), governing channel: bending.

Joist JR-008	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.056), governing channel: bending.
Joist JR-009	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.204), governing channel: bending.
Joist JR-010	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.130), governing channel: bending.
Column C-007	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.584), governing channel: compression.
Column C-008	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.624), governing channel: compression.
Column C-009	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 3.186), governing channel: compression.
Column C-013	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.623), governing channel: compression.
Column C-015	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.898), governing channel: compression.
Column C-016	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 3.463), governing channel: compression.
Column C-017	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.056), governing channel: compression.
Column C-019	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.051), governing channel: compression.
Column C-023	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.584), governing channel: compression.
Column C-024	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 5.751), governing channel: compression.
Wall W-007	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.120), governing channel: compression.
Spot Footing SF-003	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.362), governing channel: bearing.
Spot Footing SF-004	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 2.909), governing channel: bearing.
Continuous Footing CF-007	**Member fails capacity check** — Capacity utilization exceeds 1.0 (unity = 1.319), governing channel: bearing.

Warnings (26)

Column C-006	**Member capacity utilization near limit** — Capacity utilization in warning range (unity = 0.911), governing channel: compression.

Column C-014	**Member capacity utilization near limit** — Capacity utilization in warning range (unity = 0.922), governing channel: compression.
Column C-001	**Column base reaction not routed to a foundation** — Column delivers 32 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-002	**Column base reaction not routed to a foundation** — Column delivers 2587 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-003	**Column base reaction not routed to a foundation** — Column delivers 1246 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-004	**Column base reaction not routed to a foundation** — Column delivers 1395 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-005	**Column base reaction not routed to a foundation** — Column delivers 2550 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-006	**Column base reaction not routed to a foundation** — Column delivers 2709 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-007	**Column base reaction not routed to a foundation** — Column delivers 6250 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-008	**Column base reaction not routed to a foundation** — Column delivers 6421 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-009	**Column base reaction not routed to a foundation** — Column delivers 12641 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-010	**Column base reaction not routed to a foundation** — Column delivers 64 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-011	**Column base reaction not routed to a foundation** — Column delivers 1522 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-012	**Column base reaction not routed to a foundation** — Column delivers 2724 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-013	**Column base reaction not routed to a foundation** — Column delivers 7688 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.

Column C-014	**Column base reaction not routed to a foundation** — Column delivers 2741 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-015	**Column base reaction not routed to a foundation** — Column delivers 8614 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-016	**Column base reaction not routed to a foundation** — Column delivers 10293 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-017	**Column base reaction not routed to a foundation** — Column delivers 3096 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-018	**Column base reaction not routed to a foundation** — Column delivers 158 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-019	**Column base reaction not routed to a foundation** — Column delivers 3081 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-020	**Column base reaction not routed to a foundation** — Column delivers 122 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-021	**Column base reaction not routed to a foundation** — Column delivers 2006 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-022	**Column base reaction not routed to a foundation** — Column delivers 1984 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-023	**Column base reaction not routed to a foundation** — Column delivers 7573 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.
Column C-024	**Column base reaction not routed to a foundation** — Column delivers 20161 lb to its base but no foundation receiver is wired. Add a spot footing, continuous footing, or foundation wall under this column, or confirm the load path is terminated intentionally.

Notes (5)

Engineering Scope	**Beam: 4 check(s) not performed** — Omitted checks: CV volume factor; Cr repetitive member factor; CM wet service factor; Ct temperature factor
Engineering Scope	**Joist: 2 check(s) not performed** — Omitted checks: Cr repetitive member factor; Vibration check
Engineering Scope	

	Foundation Wall: 3 check(s) not performed — Omitted checks: Development length (ACI §25.4); Seismic reinforcement detailing; Second-order (P-delta) effects
Engineering Scope	**Spot Footing: 3 check(s) not performed** — Omitted checks: Biaxial bending; Overturning check; Development length (ACI §25.4)
Engineering Scope	**Continuous Footing: 2 check(s) not performed** — Omitted checks: Biaxial bending; Development length (ACI §25.4)

B-001 Beam — 2x12

PASS — 35.7%

Section Properties

Span	Size (actual)	Area	Sx
3.02 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	890	0	1687	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.992	1027

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 366 psi	Fb' = 1027 psi	35.7%	OK	NDS §3.3
Shear	fv = 61 psi	Fv' = 207 psi	29.3%	OK	NDS §3.4
Deflection (L/240)	” = 0.0089"	”_allow = 0.1509"	5.9%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	420	0	794	0	0	0	0	0	1214	lb
R2	470	0	893	0	0	0	0	0	1363	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-002 Beam — 2x12

PASS — 80.7%

Section Properties

Span	Size (actual)	Area	Sx
6.75 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	1735	0	3374	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.979	1013

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 817 psi	Fb' = 1013 psi	80.7%	OK	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 1013 psi	0.0%	OK	NDS §3.3
Shear	fv = 114 psi	Fv' = 207 psi	54.8%	OK	NDS §3.4
Deflection (L/240)	” = 0.1241"	” allow = 0.3374"	36.8%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	868	0	1687	0	0	0	0	0	2555	lb
R2	868	0	1687	0	0	0	0	0	2555	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-003 Beam — 2x12

FAIL — 143.9%

Section Properties

Span	Size (actual)	Area	Sx
5.97 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	1793	0	3401	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.982	1016

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 1462 psi	Fb' = 1016 psi	143.9%	FAIL	NDS §3.3
Shear	fv = 119 psi	Fv' = 207 psi	57.5%	OK	NDS §3.4
Deflection (L/240)	” = 0.1391"	”_allow = 0.2985"	46.6%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	869	0	1648	0	0	0	0	0	2517	lb
R2	923	0	1753	0	0	0	0	0	2677	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-004 Beam — 2x12

FAIL — 339.0%

Section Properties

Span	Size (actual)	Area	Sx
13.61 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	3498	0	6802	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.947	980

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 3322 psi	Fb' = 980 psi	339.0%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 980 psi	0.0%	OK	NDS §3.3
Shear	fv = 229 psi	Fv' = 207 psi	110.6%	FAIL	NDS §3.4
Deflection (L/240)	” = 2.0501"	” allow = 0.6803"	301.3%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	1749	0	3401	0	0	0	0	0	5150	lb
R2	1749	0	3401	0	0	0	0	0	5150	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-005 Beam — 2x12

FAIL — 296.1%

Section Properties

Span	Size (actual)	Area	Sx
6.24 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	3869	5469	3269	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.984	886

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 2622 psi	Fb' = 886 psi	296.1%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 1015 psi	0.0%	OK	NDS §3.3
Shear	fv = 210 psi	Fv' = 180 psi	116.7%	FAIL	NDS §3.4
Deflection (L/240)	” = 0.2781"	” allow = 0.3121"	89.1%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	1909	2703	1607	0	0	0	0	0	6218	lb
R2	1960	2766	1662	0	0	0	0	0	6389	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-006 Beam — 2x12

FAIL — 680.8%

Section Properties

Span	Size (actual)	Area	Sx
13.46 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	6654	10989	4887	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.959	863

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 5876 psi	Fb' = 863 psi	680.8%	FAIL	NDS §3.3
Bending (-M)	fb = 354 psi	Fb' = 863 psi	41.0%	OK	NDS §3.3
Shear	fv = 414 psi	Fv' = 180 psi	229.7%	FAIL	NDS §3.4
Deflection (L/240)	” = 3.5113"	” allow = 0.6728"	521.9%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	3784	5520	3305	0	0	0	0	0	12609	lb
R2	2869	5469	1582	0	0	0	0	0	9920	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-007 Beam — 2x12

PASS — 63.8%

Section Properties

Span	Size (actual)	Area	Sx
6.31 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	1370	1163	1648	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.981	1015

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 647 psi	Fb' = 1015 psi	63.8%	OK	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 1100 psi	0.0%	OK	NDS §3.3
Shear	fv = 94 psi	Fv' = 207 psi	45.3%	OK	NDS §3.4
Deflection (L/240)	” = 0.0683"	” allow = 0.3155"	21.7%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	472	581	436	0	0	0	0	0	1489	lb
R2	898	581	1213	0	0	0	0	0	2691	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-008 Beam — 2x12

FAIL — 578.4%

Section Properties

Span	Size (actual)	Area	Sx
13.67 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	4164	11187	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.958	862

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 4987 psi	Fb' = 862 psi	578.4%	FAIL	NDS §3.3
Bending (-M)	fb = 449 psi	Fb' = 862 psi	52.1%	OK	NDS §3.3
Shear	fv = 382 psi	Fv' = 180 psi	212.4%	FAIL	NDS §3.4
Deflection (L/360)	” = 2.2639"	” allow = 0.4557"	496.8%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	2087	5608	0	0	0	0	0	0	7695	lb
R2	2077	5579	0	0	0	0	0	0	7656	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-009 Beam — 2x12

FAIL — 1507.9%

Section Properties

Span	Size (actual)	Area	Sx
16.34 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	5995	0	12847	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.925	957

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 14430 psi	Fb' = 957 psi	1507.9%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 771 psi	0.0%	OK	NDS §3.3
Shear	fv = 456 psi	Fv' = 207 psi	220.3%	FAIL	NDS §3.4
Deflection (L/240)	” = 10.2520"	” allow = 0.8168"	1255.1%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	2734	0	5847	0	0	0	0	0	8581	lb
R2	3261	0	7000	0	0	0	0	0	10261	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-010 Beam — 2x12

FAIL — 5352.5%

Section Properties

Span	Size (actual)	Area	Sx
30.08 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	11751	0	25694	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.15	1.00	0.718	744

Fv' (psi)
207

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 26696 psi	Fb' = 744 psi	3590.1%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 744 psi	0.0%	OK	NDS §3.3
Shear	fv = 832 psi	Fv' = 207 psi	402.0%	FAIL	NDS §3.4
Deflection (L/240)	” = 80.4904"	”_allow = 1.5038"	5352.5%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	5876	0	12847	0	0	0	0	0	18723	lb
R2	5876	0	12847	0	0	0	0	0	18723	lb

Design per NDS 2024 — ASD · Governing bending combo: D+S · Reference report only; final project compliance requires licensed engineer review.

B-011 Beam — 2x12

PASS — 75.7%

Section Properties

Span	Size (actual)	Area	Sx
9.61 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	966	2223	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.974	877

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 163 psi	Fb' = 877 psi	18.6%	OK	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 877 psi	0.0%	OK	NDS §3.3
Shear	fv = 136 psi	Fv' = 180 psi	75.7%	OK	NDS §3.4
Deflection (L/240)	” = 0.0361"	” allow = 0.4805"	7.5%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	905	2159	0	0	0	0	0	0	3064	lb
R2	61	65	0	0	0	0	0	0	126	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-012 Beam — 2x12

PASS — 75.3%

Section Properties

Span	Size (actual)	Area	Sx
9.22 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	950	2188	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.975	878

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 98 psi	Fb' = 878 psi	11.1%	OK	NDS §3.3
Shear	fv = 136 psi	Fv' = 180 psi	75.3%	OK	NDS §3.4
Deflection (L/240)	” = 0.0211"	”_allow = 0.4609"	4.6%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	901	2148	0	0	0	0	0	0	3049	lb
R2	50	40	0	0	0	0	0	0	90	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-013 Beam — 2x12

FAIL — 613.9%

Section Properties

Span	Size (actual)	Area	Sx
24.13 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	1779	4411	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.870	783

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 3569 psi	Fb' = 783 psi	455.8%	FAIL	NDS §3.3
Bending (-M)	fb = 585 psi	Fb' = 783 psi	74.7%	OK	NDS §3.3
Shear	fv = 170 psi	Fv' = 180 psi	94.5%	WARN	NDS §3.4
Deflection (L/360)	” = 4.9388"	” allow = 0.8045"	613.9%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	896	2223	0	0	0	0	0	0	3119	lb
R2	883	2188	0	0	0	0	0	0	3071	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-014 Beam — 2x12

PASS — 67.4%

Section Properties

Span	Size (actual)	Area	Sx
24.13 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	731	0	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
0.90	1.00	0.897	727

Fv' (psi)
162

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 419 psi	Fb' = 727 psi	57.7%	OK	NDS §3.3
Bending (-M)	fb = 43 psi	Fb' = 727 psi	5.9%	OK	NDS §3.3
Shear	fv = 19 psi	Fv' = 162 psi	11.7%	OK	NDS §3.4
Deflection (L/240)	” = 0.8136"	” allow = 1.2067"	67.4%	OK	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	365	0	0	0	0	0	0	0	365	lb
R2	366	0	0	0	0	0	0	0	366	lb

Design per NDS 2024 — ASD · Governing bending combo: D · Reference report only; final project compliance requires licensed engineer review.

B-015 Beam — 2x12

FAIL — 1366.7%

Section Properties

Span	Size (actual)	Area	Sx
18.23 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	1070	2159	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.929	836

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 11427 psi	Fb' = 836 psi	1366.7%	FAIL	NDS §3.3
Shear	fv = 519 psi	Fv' = 180 psi	288.4%	FAIL	NDS §3.4
Deflection (L/240)	” = 12.0674"	”_allow = 0.9116"	1323.8%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	537	1084	0	0	0	0	0	0	1621	lb
R2	533	1075	0	0	0	0	0	0	1608	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-016 Beam — 2x12

FAIL — 1336.9%

Section Properties

Span	Size (actual)	Area	Sx
18.03 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	1065	2148	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.931	837

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 11196 psi	Fb' = 837 psi	1336.9%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 764 psi	0.0%	OK	NDS §3.3
Shear	fv = 515 psi	Fv' = 180 psi	285.9%	FAIL	NDS §3.4
Deflection (L/240)	” = 11.5644"	”_allow = 0.9016"	1282.6%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	539	1089	0	0	0	0	0	0	1628	lb
R2	526	1059	0	0	0	0	0	0	1585	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-017 Beam — 2x12

FAIL — 553.4%

Section Properties

Span	Size (actual)	Area	Sx
13.46 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	4062	10913	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.959	863

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 4776 psi	Fb' = 863 psi	553.4%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 863 psi	0.0%	OK	NDS §3.3
Shear	fv = 333 psi	Fv' = 180 psi	184.9%	FAIL	NDS §3.4
Deflection (L/360)	” = 2.1007"	”_allow = 0.4485"	468.4%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	2031	5456	0	0	0	0	0	0	7487	lb
R2	2031	5456	0	0	0	0	0	0	7487	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

B-018 Beam — 2x12

FAIL — 551.7%

Section Properties

Span	Size (actual)	Area	Sx
13.44 ft	undefined" x undefined"	undefined in²	undefined in³

Ix	E	Fb (tab)	Fv (tab)
undefined int	—	—	—

Load Summary

	DL	LL	SL	Lr	R	W	E	Temp	Unit
Total at supports	4056	10897	0	0	0	0	0	0	lb

Includes self-weight of 7.31 plf in DL

Adjustment Factors

CD	CF	CL	Fb' (psi)
1.00	1.00	0.959	863

Fv' (psi)
180

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Bending (+M)	fb = 4762 psi	Fb' = 863 psi	551.7%	FAIL	NDS §3.3
Bending (-M)	fb = 0 psi	Fb' = 863 psi	0.0%	OK	NDS §3.3
Shear	fv = 332 psi	Fv' = 180 psi	184.6%	FAIL	NDS §3.4
Deflection (L/360)	” = 2.0885"	” allow = 0.4479"	466.3%	FAIL	IBC §1604.3

Support Reactions (per case)

Support	DL	LL	SL	Lr	R	W	E	Temp	Total	Unit
R1	2028	5448	0	0	0	0	0	0	7477	lb
R2	2028	5448	0	0	0	0	0	0	7477	lb

Design per NDS 2024 — ASD · Governing bending combo: D+L · Reference report only; final project compliance requires licensed engineer review.

JR-001 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-002 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-003 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-004 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-005 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-006 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-007 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-008 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-009 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

JR-010 — Not calculated

This joist has not been analyzed yet. Open its design dialog to compute.

C-001 Column — 2x6

PASS — 1.1%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	32

Compression Intermediates

CD	CF	c	Cp
0.90	1.10	0.80	0.208

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	175	2

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 2 psi	Fc' = 175 psi	1.1%	OK	NDS §3.7
Axial Shortening	” = 0.0002"	”_allow = 0.2160"	0.1%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	32	0	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D · Reference report only; final project compliance requires licensed engineer review.

C-002 Column — 2x6

PASS — 87.0%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	900
Snow Load	1687

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	157

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 157 psi	Fc' = 180 psi	87.0%	OK	NDS §3.7
Axial Shortening	” = 0.0121"	”_allow = 0.2160"	5.6%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	900	0	1687	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-003 Column — 2x6

PASS — 41.9%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	452
Snow Load	794

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	76

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 76 psi	Fc' = 180 psi	41.9%	OK	NDS §3.7
Axial Shortening	” = 0.0058"	”_allow = 0.2160"	2.7%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	452	0	794	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-004 Column — 2x6

PASS — 46.9%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	502
Snow Load	893

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	85

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 85 psi	Fc' = 180 psi	46.9%	OK	NDS §3.7
Axial Shortening	” = 0.0065"	”_allow = 0.2160"	3.0%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	502	0	893	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-005 Column — 2x6

PASS — 85.8%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	902
Snow Load	1648

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	155

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 155 psi	Fc' = 180 psi	85.8%	OK	NDS §3.7
Axial Shortening	” = 0.0119"	” allow = 0.2160"	5.5%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	902	0	1648	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-006 Column — 2x6

WARN — 91.1%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	956
Snow Load	1753

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	164

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 164 psi	Fc' = 180 psi	91.1%	WARN	NDS §3.7
Axial Shortening	” = 0.0127"	”_allow = 0.2160"	5.9%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	956	0	1753	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-007 Column — 2x6

FAIL — 158.4%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	1941
Live Load	2703
Snow Load	1607

Compression Intermediates

CD	CF	c	Cp
1.25	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	281

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 281 psi	Fc' = 178 psi	158.4%	FAIL	NDS §3.7
Axial Shortening	” = 0.0217"	”_allow = 0.2160"	10.1%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	1941	2703	1607	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+0.75L+0.75S · Reference report only; final project compliance requires licensed engineer review.

C-008 Column — 2x6

FAIL — 162.4%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	1992
Live Load	2766
Snow Load	1662

Compression Intermediates

CD	CF	c	Cp
1.25	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	288

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 288 psi	Fc' = 178 psi	162.4%	FAIL	NDS §3.7
Axial Shortening	” = 0.0222"	”_allow = 0.2160"	10.3%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	1992	2766	1662	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+0.75L+0.75S · Reference report only; final project compliance requires licensed engineer review.

C-009 Column — 2x6

FAIL — 318.6%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	3817
Live Load	5520
Snow Load	3305

Compression Intermediates

CD	CF	c	Cp
1.25	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	566

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 566 psi	Fc' = 178 psi	318.6%	FAIL	NDS §3.7
Axial Shortening	” = 0.0437"	”_allow = 0.2160"	20.2%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	3817	5520	3305	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+0.75L+0.75S · Reference report only; final project compliance requires licensed engineer review.

C-010 Column — 2x6

PASS — 2.2%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	64

Compression Intermediates

CD	CF	c	Cp
0.90	1.10	0.80	0.208

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	175	4

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 4 psi	Fc' = 175 psi	2.2%	OK	NDS §3.7
Axial Shortening	” = 0.0003"	”_allow = 0.2160"	0.1%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	64	0	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D · Reference report only; final project compliance requires licensed engineer review.

C-011 Column — 2x6

PASS — 37.1%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	505
Live Load	581
Snow Load	436

Compression Intermediates

CD	CF	c	Cp
1.25	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	66

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 66 psi	Fc' = 178 psi	37.1%	OK	NDS §3.7
Axial Shortening	” = 0.0051"	”_allow = 0.2160"	2.4%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	505	581	436	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+0.75L+0.75S · Reference report only; final project compliance requires licensed engineer review.

C-012 Column — 2x6

PASS — 72.1%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	930
Live Load	581
Snow Load	1213

Compression Intermediates

CD	CF	c	Cp
1.25	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	130

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 130 psi	Fc' = 180 psi	72.1%	OK	NDS §3.7
Axial Shortening	” = 0.0100"	” allow = 0.2160"	4.6%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	930	581	1213	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+0.75L+0.75S · Reference report only; final project compliance requires licensed engineer review.

C-013 Column — 2x6

FAIL — 262.3%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	2109
Live Load	5579

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	466

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 466 psi	Fc' = 178 psi	262.3%	FAIL	NDS §3.7
Axial Shortening	” = 0.0359"	”_allow = 0.2160"	16.6%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	2109	5579	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-014 Column — 2x6

WARN — 92.2%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	988
Snow Load	1753

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	166

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 166 psi	Fc' = 180 psi	92.2%	WARN	NDS §3.7
Axial Shortening	” = 0.0128"	”_allow = 0.2160"	5.9%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	988	0	1753	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-015 Column — 2x6

FAIL — 289.8%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	2766
Snow Load	5847

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	522

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 522 psi	Fc' = 180 psi	289.8%	FAIL	NDS §3.7
Axial Shortening	” = 0.0403"	”_allow = 0.2160"	18.6%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	2766	0	5847	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-016 Column — 2x6

FAIL — 346.3%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	3293
Snow Load	7000

Compression Intermediates

CD	CF	c	Cp
1.15	1.10	0.80	0.168

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	180	624

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 624 psi	Fc' = 180 psi	346.3%	FAIL	NDS §3.7
Axial Shortening	” = 0.0481"	”_allow = 0.2160"	22.3%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	3293	0	7000	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+S · Reference report only; final project compliance requires licensed engineer review.

C-017 Column — 2x6

FAIL — 105.6%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	937
Live Load	2159

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	188

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 188 psi	Fc' = 178 psi	105.6%	FAIL	NDS §3.7
Axial Shortening	” = 0.0145"	”_allow = 0.2160"	6.7%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	937	2159	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-018 Column — 2x6

PASS — 5.4%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	93
Live Load	65

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	10

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 10 psi	Fc' = 178 psi	5.4%	OK	NDS §3.7
Axial Shortening	” = 0.0007"	”_allow = 0.2160"	0.3%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	93	65	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-019 Column — 2x6

FAIL — 105.1%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	933
Live Load	2148

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	187

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 187 psi	Fc' = 178 psi	105.1%	FAIL	NDS §3.7
Axial Shortening	” = 0.0144"	”_allow = 0.2160"	6.7%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	933	2148	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-020 Column — 2x6

PASS — 4.2%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	82
Live Load	40

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	7

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 7 psi	Fc' = 178 psi	4.2%	OK	NDS §3.7
Axial Shortening	” = 0.0006"	”_allow = 0.2160"	0.3%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	82	40	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-021 Column — 2x6

PASS — 68.4%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	931
Live Load	1075

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	122

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 122 psi	Fc' = 178 psi	68.4%	OK	NDS §3.7
Axial Shortening	” = 0.0094"	”_allow = 0.2160"	4.3%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	931	1075	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-022 Column — 2x6

PASS — 67.7%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	924
Live Load	1059

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	120

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 120 psi	Fc' = 178 psi	67.7%	OK	NDS §3.7
Axial Shortening	” = 0.0093"	”_allow = 0.2160"	4.3%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	924	1059	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-023 Column — 2x6

FAIL — 258.4%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	2125
Live Load	5448

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	459

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 459 psi	Fc' = 178 psi	258.4%	FAIL	NDS §3.7
Axial Shortening	” = 0.0354"	”_allow = 0.2160"	16.4%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	2125	5448	0	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

C-024 Column — 2x6

FAIL — 575.1%

Section Properties

Height	Size (actual)	Area	d_min
9.00 ft	3.00" x 5.50"	16.50 in²	3.00"

Fc (tab) (psi)	Emin (psi)	E (psi)	Le
850	0.51 x10v	—	108.0 in

Le/d
19.6

Applied Loads (Unfactored)

Case	P (lb)
Dead Load	5880
Live Load	10976
Snow Load	3305

Compression Intermediates

CD	CF	c	Cp
1.00	1.10	0.80	0.190

FcE (psi)	Fc* (psi)	Fc' (psi)	fc (psi)
1087	—	178	1022

Design Checks

Design Check	Demand	Capacity	Utility	Status	Reference
Compression	fc = 1022 psi	Fc' = 178 psi	575.1%	FAIL	NDS §3.7
Axial Shortening	” = 0.0788"	”_allow = 0.2160"	36.5%	OK	Project

Base Reactions (per case)

Location	DL	LL	SL	Lr	R	W	E	Temp	Unit
Base	5880	10976	3305	0	0	0	0	0	lb

Design per NDS 2024 — ASD · Governing axial combo: D+L · Reference report only; final project compliance requires licensed engineer review.

Status

Overall status	PASS
Worst utility	33.4%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	40.9%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	1.9%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	62.1%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	39.9%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	2.4%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

W-007 Stud Wall

FAIL — 112.0%

Status

Overall status	FAIL
Worst utility	112.0%
Governing check	compression

Full PDF template for stud wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-001 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-002 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-003 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-004 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-006 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-007 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

FW-008 Foundation Wall

PASS — 60.0%

Status

Overall status	PASS
Worst utility	60.0%
Governing check	slenderness

Full PDF template for foundation wall is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

SF-001 — Not calculated

This spot footing has not been analyzed yet. Open its design dialog to compute.

SF-002 — Not calculated

This spot footing has not been analyzed yet. Open its design dialog to compute.

SF-003 — Not calculated

This spot footing has not been analyzed yet. Open its design dialog to compute.

SF-004 — Not calculated

This spot footing has not been analyzed yet. Open its design dialog to compute.

Status

Overall status	PASS
Worst utility	56.0%
Governing check	bearing

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	55.7%
Governing check	minRein

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	55.7%
Governing check	minRein

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	84.6%
Governing check	bearing

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	55.7%
Governing check	minRein

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Status

Overall status	PASS
Worst utility	55.7%
Governing check	minRein

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

CF-007 Continuous Footing

FAIL — 131.9%

Status

Overall status	FAIL
Worst utility	131.9%
Governing check	bearing

Full PDF template for continuous footing is not yet ported (Phase 2e stub). For complete details including section properties, applied loads, design-check intermediates, and reactions, see the legacy HTML calc report (Analysis > Calc Report menu).

Professional Engineer Certification

PE Seal
(place here)

I hereby certify that these structural calculations were prepared by me or under my direct supervision in accordance with the applicable building codes and accepted engineering practice.

_____

_____

Date: _____

Disclaimer: These calculations are intended for the specific project described herein. They are not to be used for any other project or purpose without the express written permission of the engineer of record. Field conditions should be verified prior to construction. Any deviations from the design documents shall be reviewed and approved by the engineer of record.