

Sample Project: Commercial Building

Material breakdown taken from the contract drawings: members, mill list, plates, bolts, anchor rods, welds and misc items, ready for unit prices.

TAKEOFF	ISSUED 2026-10-08
PACKAGE	sample-commercial-building
MEMBERS	131
PIECES	922
WEIGHT	63,802 lb

Not a bid. Quantities are taken from the contract drawings; verify against the drawings.

63,802	31.90	131	922	494	244
LB TOTAL MATERIAL	TONS	MEMBERS SUPPLIED	PIECES	BOLTS	WELDS

01 Summary by category

net weights, lb

CATEGORY	MEMBERS	PIECES	WEIGHT LB	TONS	SHARE
Columns	7	7	1,525	0.76	2.4%
Beams	54	54	50,771	25.39	79.6%
Bracing		0	0	0.00	0.0%
Stairs	2	118	2,299	1.15	3.6%
Rails (handrail / guardrail)	5	163	630	0.31	1.0%
Misc / pour stop	48	132	6,654	3.33	10.4%
Embeds	3	3	541	0.27	0.8%
Anchor rods (rods, nuts, washer plates)	12	48	40	0.02	0.1%
Connection material (plates / angles)		214	1,249	0.62	2.0%
Headed / shear studs		183	92	0.05	0.1%
Bolts, structural		440			440 ea
Post-installed anchors / screws		54			54 ea
Total steel	131	922	63,802	31.90	100%

By material type

MATERIAL TYPE	PIECES	WEIGHT LB	TONS
W shapes	54	50,771	25.39
HSS (tube)	7	1,525	0.76
Pipe	56	457	0.23
Channels	15	2,278	1.14
Angles	189	1,407	0.70
Round / square bar	111	199	0.10
Plates / flat bar	187	1,483	0.74
Bent plate	89	5,579	2.79
Headed studs	183	92	0.05
Nuts / loose bolts	24	4	0.00
Standard parts	7	7	0.00
Total	922	63,802	31.90

Unit prices go in the workbook (Summary sheet, yellow cells): by category, by material type, and other items; the extended amounts and the grand total are formulas.

02 Mill list

shapes by size and grade • 27 lines

SHAPE	SIZE	GRADE	PCS	TOTAL LENGTH	FEET	LONGEST	LB/FT	WEIGHT LB
W shapes	W10x17	A992	2	6'-11 3/8"	6.9	3'-5 11/16"	16.3	113
W shapes	W12x19	A992	19	274'-5 5/8"	274.5	18'-7 9/16"	18.7	5,134
W shapes	W14x22	A992	19	538'-0 13/16"	538.1	29'-10 1/2"	21.8	11,731
W shapes	W16x26	A992	2	44'-9 13/16"	44.8	26'-3 1/4"	25.7	1,152
W shapes	W18x46	A992	3	118'-1"	118.1	42'-7 15/16"	45.8	5,403
W shapes	W24x55	A992	1	18'-10 1/4"	18.9	18'-10 1/4"	54.6	1,030
W shapes	W30x90	A992	6	200'-3 7/8"	200.3	42'-2 5/8"	90.0	18,023
W shapes	W30x99	A992	2	82'-8 7/16"	82.7	42'-1 1/4"	99.0	8,185
HSS (tube)	HSS3x3x1/4	A500B	4	17'-8 3/8"	17.7	6'-6 11/16"	8.8	156
HSS (tube)	HSS8x8x3/8	A500B	3	36'-3 15/16"	36.3	12'-5 1/8"	37.7	1,369
Pipe	PIPE 1 1/2 STD	A53	30	112'-4 7/16"	112.4	21'-8"	2.7	299
Pipe	PIPE 1 1/4 STD	A53	26	70'-9 9/16"	70.8	21'-7 15/16"	2.2	158
Channels	C4x4.5	A36	3	11'-6"	11.5	3'-10"	4.5	52
Channels	C8x11.5	A36	1	4'-0 15/16"	4.1	4'-0 15/16"	11.5	47
Channels	C12x20.7	A36	9	62'-6 7/16"	62.5	21'-0 3/4"	19.3	1,209
Channels	C12x30	A36	2	32'-4 1/2"	32.4	19'-11 3/4"	30.0	971
Angles	L1 1/4x1 1/4x3/16	A36	52	44'-9 1/2"	44.8	1'-2 7/8"	1.5	65
Angles	L2x2x1/4	A36	4	6'-9 7/8"	6.8	3'-9"	3.1	21
Angles	L2x2x3/16	A36	4	9'-10 3/4"	9.9	2'-10 7/16"	2.4	24
Angles	L3 1/2x3x3/8	A36	1	3'-10"	3.8	3'-10"	7.9	30
Angles	L3x3x1/4	A36	106	139'-5 5/8"	139.5	3'-0"	4.2	580
Angles	L3x3x3/8	A36	10	4'-11 1/16"	4.9	0'-8 1/4"	6.9	34
Angles	L6x4x3/8	A36	9	8'-11 15/16"	9.0	1'-0"	12.3	111
Angles	L6x6x5/8	A36	3	22'-4 7/16"	22.4	7'-8 7/16"	24.2	541
Round / square bar	RB1/2	A36	90	249'-8 13/16"	249.7	2'-11 9/16"	0.7	165
Round / square bar	RB3/4	ASTM F1554 Gr36	12	22'-0"	22.0	1'-10"	1.5	33
Round / square bar	RB3/8	A36	9	3'-8 3/8"	3.7	0'-6 3/16"	0.4	1
Total shapes			432		2,148.5			56,637

Net cut lengths; drop and stock lengths are the buyer's call.

03 Bolts, anchor rods and welds

494 bolts • 12 anchor rods • 244 welds

Bolts						Welds				
KIND	DIA	LENGTH	GRADE	SHOP / FIELD	COUNT	TYPE	SIZE	SHOP / FIELD	COUNT	LENGTH FT
Structural bolt	3/4"	1 3/4"	A325N	Field	111	Fillet / Fillet 3/16	3/16"	Field	17	28.3
Structural bolt	3/4"	2"	A325N	Field	184	Bevel groove	3/16"	Shop	4	3.3
Structural bolt	3/4"	2 1/4"	A325X	Field	112	Fillet	3/16"	Shop	89	98.8
Structural bolt	3/4"	2 1/2"	A325N	Field	8	Fillet / Fillet 3/16	3/16"	Shop	101	77.1
Structural bolt	3/4"	2 3/4"	A325N	Field	7	Fillet	1/4"	Shop	6	6.1
Structural bolt	1/4"	3"	A325N	Field	18	Fillet	5/16"	Shop	5	12.8
Anchor / other	3/4"	6"	THEA ROD	Field	2	Square groove	1/16"	Shop	22	47.2
Anchor / other	1/2"	3 1/2"	EXP. BOLT	Field	36	Total			244	273.6

KIND	DIA	LENGTH	GRADE	SHOP / FIELD	COUNT
Anchor / other	1/2"	6"	THEA ROD	Field	16
Total					494

Anchor rods

ROD	GRADE	LENGTH	QTY	NUTS EA	NUTS	WASHER PLATES EACH	WEIGHT LB
RB3/4	ASTM F1554 Gr36	1'-10"	12	2	24	1 x FL1/4x2	40.2
Total			12		24		40.2

04 Plates, flat bar and bent plate

heaviest 22 of 43 lines

TYPE	DESCRIPTION	GRADE	USE	PCS	LENGTH FT	AREA SQ FT	WEIGHT LB
Bent plate	BPL1/4x22	A36	pour stop	18	139.8	256.3	2,608
Bent plate	BPL1/4x15 1/2	A36	pour stop	10	78.4	101.3	1,032
Bent plate	BPL12GAx22 15/16	A36	stair tread	23	88.2	168.6	720
Bent plate	BPL1/4x7	A36	pour stop	18	114.1	66.6	676
Plates / flat bar	FL3/8x4	A36	shear plate	82	27.3	21.3	312
Plates / flat bar	FL1/2x10	A36	other (misc / pour stop)	18	18.0	15.0	305
Bent plate	BPL1/4x12	A36	pour stop	3	22.3	22.3	226
Plates / flat bar	PL1x16	A36	base / cap plate	3	4.0	5.3	214
Plates / flat bar	FL3/8x5	A36	shear plate	17	7.1	11.8	172
Plates / flat bar	FL1/2x12	A36	other (misc / pour stop)	9	9.0	6.8	138
Bent plate	BPL1/4x21	A36	pour stop	1	6.4	11.1	114
Bent plate	BPL1/4x10	A36	pour stop	3	9.1	7.6	77
Plates / flat bar	PL12GAx45 1/4	A36	other (stairs)	1	3.9	14.8	63
Bent plate	BPL1/4x16	A36	pour stop	1	3.4	4.5	46
Plates / flat bar	FL1/2x8	A36	base / cap plate	4	2.7	1.8	36
Plates / flat bar	FL3/4x10	A36	base / cap plate	1	1.3	1.1	34
Plates / flat bar	FL3/8x4 1/2	A36	shear plate	5	1.9	2.2	32
Plates / flat bar	PL3/4x9	A36	base / cap plate	1	1.3	1.0	30
Plates / flat bar	PL3/8x2 11/16	A36	other (misc / pour stop)	9	8.6	1.9	28
Plates / flat bar	FL3/8x4 1/2	A36	stiffener	2	4.7	1.8	27
Plates / flat bar	FL3/8x4 1/2	A36	shear tab	2	0.8	1.8	27
Plates / flat bar	PL5/8x9	A36	base / cap plate	1	1.2	0.9	22
21 more lines	see workbook			44	33.9	14.8	124
Total				276	587.4	740.6	7,062

05 Stairs, rails, pour stop and misc

2 stair flights • 5 rail members • 51 misc members

Stairs

ITEM	QTY	STRINGERS EACH	TREADS EACH	RISE EACH	WEIGHT LB
Stair	1	4 x C12x20.7	20 x BPL12GAx14 / BPL12GAx22 15/16	11'-5 1/2"	1,584
Stair	1	5 x C12x20.7 / C8x11.5	5 x BPL12GAx2 3/8 / BPL12GAx22 15/16	2'-10 3/8"	715
Total	2				2,299

Rails

Rail material by size

ITEM	QTY	RUN	POSTS	MAIN PIPE	WEIGHT LB	MATERIAL	SIZE	PCS	FEET	WEIGHT LB
Guardrail	3	29'-0 1/4"	11	PIPE 1 1/2 STD	557	Pipe	PIPE 1 1/2 STD	30	112.4	299

ITEM	QTY	RUN	POSTS	MAIN PIPE	WEIGHT LB	MATERIAL	SIZE	PCS	FEET	WEIGHT LB
Handrail	2	25'-10 7/16"	0	PIPE 1 1/4 STD	73	Pipe	PIPE 1 1/4 STD	26	70.8	158
Total	5	54.9 ft	11		630	Round / square bar	RB1/2	90	249.7	165
						Round / square bar	RB3/8	9	3.7	1

Pour stop and studs

DESCRIPTION	WHERE	PCS	FEET	WEIGHT LB
BPL1/4x22	on beams	18	139.8	2,608
BPL1/4x15 1/2	on beams	10	78.4	1,032
BPL1/4x7	on beams	18	114.1	676
BPL1/4x12	on beams	3	22.3	226
BPL1/4x21	loose (misc members)	1	6.4	114
BPL1/4x10	on beams	3	9.1	77
BPL1/4x16	on beams	1	3.4	46
BPL1/4x7 13/16	on beams	2	3.1	15
BPL1/4x8	on beams	1	1.9	9
WS1/2 studs	pour stop	183		92

Misc and embed members (heaviest first)

ITEM	QTY	LENGTH EACH	DESCRIPTION	WEIGHT LB
Misc channel C12x30	1	19'-11 3/4"	MISC CHANNEL	615
Misc angle L6x4x3/8	9	1'-0"	MISC ANGLE	553
Misc channel C12x30	1	12'-4 3/4"	MISC CHANNEL	384
Embed angle L6x6x5/8	2	7'-4"	ANGLE	355
Embed angle L6x6x5/8	1	7'-8 7/16"	ANGLE	186
Misc plate FL3/8x5	17	0'-5"	MISC PLATE	172
Misc angle L3x3x1/4	10	3'-0"	MISC ANGLE	147
Misc bent plate BPL1/4x21	1	6'-4 7/16"	MISC BENT PLATE	114
Misc angle L3x3x1/4	4	1'-6"	MISC ANGLE	29
Misc angle L2x2x3/16	2	2'-10 7/16"	MISC ANGLE	14
Misc angle L2x2x3/16	2	2'-0 15/16"	MISC ANGLE	10
Misc plate FL3/8x4	1	0'-4"	MISC PLATE	6
Total	51			2,586

06 Notes, assumptions and open questions

Standard notes

- Quantities are taken from the contract drawings; verify against the drawings. Not a bid.
- Quantities are net: no drop, cutting waste, overrun or spare allowance is included.
- Connection material is included per the details shown, and per standard connections where the drawings show none. It can change with approval comments or with connection information issued later.
- Items not shown on the drawings are not included.
- Existing steel shown on the drawings is not counted. Concrete and masonry are not included.
- Weights are calculated from standard section and plate weights. Bolt sets are counted, not weighed. Welding consumables, shop primer, paint and galvanizing are not included.
- Welds are listed per weld symbol as detailed.
- Lengths are net cut lengths. Plate area is cut length x width.
- This package is a material breakdown for estimating. It is not a bid, a quote or a price.

Items to verify before bidding

1. 18 bolts 1/4 in. x 3 in. on the embed angles L6x6x5/8 are carried as A325N, a structural grade that is unusual at this diameter: confirm what the drawings call for (studs, screws or anchors).
2. Fasteners shown as post-installed anchors or screws: EXP. BOLT 36, THEA ROD 18. Confirm product, embedment and who supplies them.
3. Connection at one W30x90 beam end could not be completed from the information given; carry an allowance.