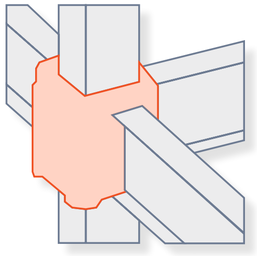
CONXTECH®
Simply Faster

SMF

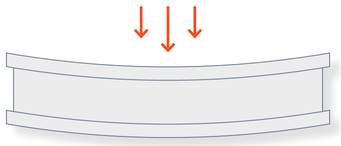
Design & Constructibility
Tips & Tricks

Design Decision Tips



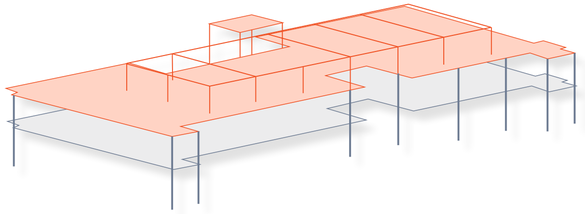
BEAM DEPTH

Maintain **beam depth** throughout entire column tree



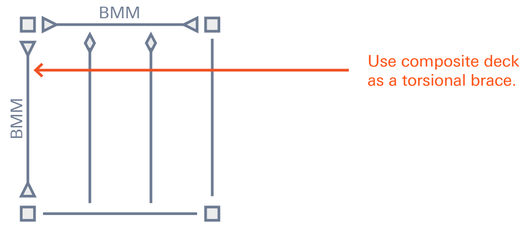
CAMBERING

Camber as required -no limitations on cambering



ROOF SCREEN DETAILING

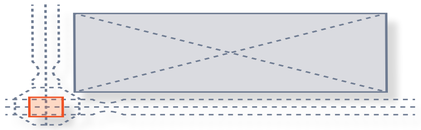
Coordinate early on decision to use ConX roof screen vs. other roof screen



BEAM BRACING

Evaluate tradeoffs for **Moment Frame bracing** scheme (bare metal deck vs concrete over metal deck)

Design Decision Tips

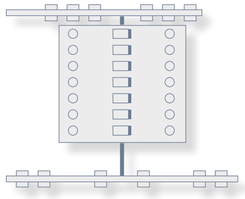


WHEN TO AVOID

Avoid ConXtech Moment Frames at **large openings** where closure plate and/or bracing interferes with Moment Frame beams and connections

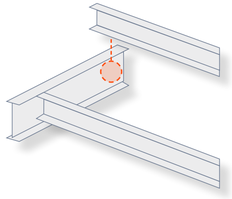
STAIR DETAILING/LIMITS

ConXtech stairs are intended to be functional for back of house egress during construction and after.



CANTILEVER

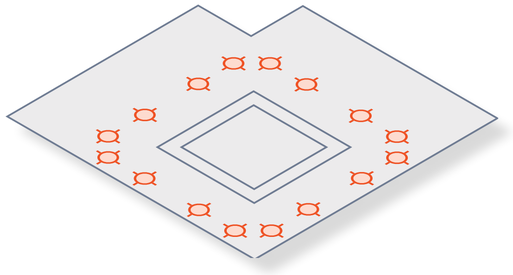
ConX standard **cantilever** beam detail condition justification bolted vs. welded.



DOUBLE ANGLE GRAVITY CONNECTION

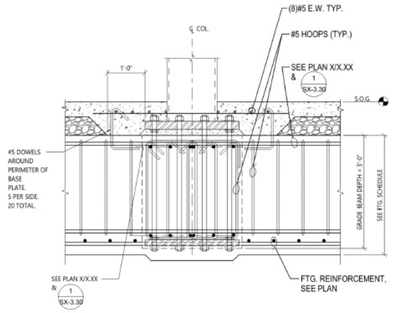
Confirm justification of the standard **double angle gravity connection** at all locations in the building. – evaluating tradeoff from ConXtech clips vs. conventional connections.

Constructability Tips



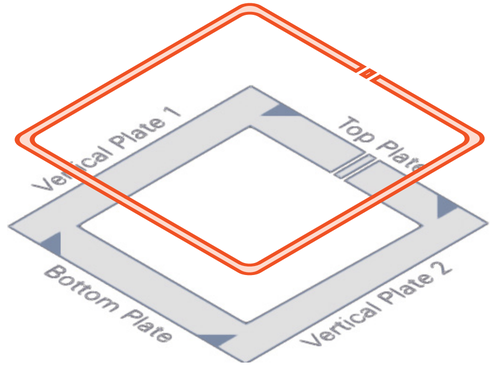
BASE PLATES

Use of **oversized holes** in ConXtech column base plates and shear load path- Evaluate base plates details based on governing authority



GRADE BEAMS

Grade beam detailing and interaction with anchor bolt placement- Ensure coordination with grade beam detail and anchor rods

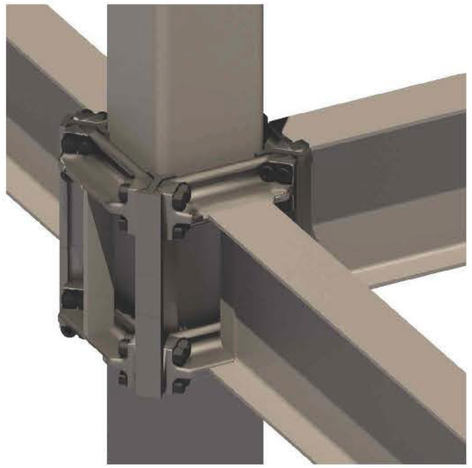


COLUMN SIZE SELECTION

Coordinate with ConXtech on procurement constraints and cost dependent on the lifecycle of the projects. Thesee factors may impact **selection of XL400 column** sizes

System Reference Tables | ConXL400

CX-ENG-RFR-000001
REV2



Available Column Sections[1,4]

HSS	BOX
HSS16x16x3/8[2]	BOX16x16x5/8[2]
HSS16x16x1/2	BOX16x16x3/4[2]
HSS16x16x5/8	BOX16x16x7/8[2]
HSS16x16x3/4	BOX16x16x1[2]
HSS16x16x7/8	BOX16x16x1-1/4
	BOX16x16x1-1/2
	BOX16x16x1-3/4
	BOX16x16x2
	BOX16x16x2-1/4
	BOX16x16x2-1/2

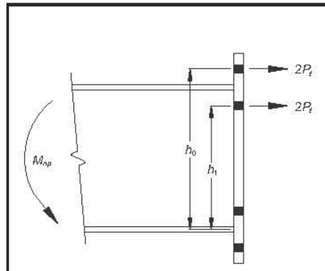
Available Wide Flange Beam Sections[3,4]

W30	W27	W24	W21	W18
W30X90[5]	W27X84[5]	W24X55[7]	W21X44[7]	W18X35[7]
W30X99[5]	W27X94	W24X62[7]	W21X50[7]	W18X40[7]
W30X108	W27X102	W24X68[5]	W21X57[7]	W18X46[7]
W30X116	W27X114	W24X76	W21X48[5,7]	W18X50[7]
W30X124		W24X84	W21X55[5]	W18X55[7]
W30X132		W24X94	W21X62	W18X60[7]
		W24X103	W21X68	W18X65[7]
			W21X73	W18X71[7]
			W21X83	W18X76[5]
			W21X93	W18X86
				W18X97
				W18X106

Installation Clearance for Collar Connection[9]

Moment Beam Depth	Required Clearance
W18	2'-6"
W21	2'-9"
W24	3'-0"
W27	3'-3"
W30	3'-6"

Available Collar Bending Strength[8]



$$\phi M_n = \phi 0.637 F_u A_b \left(\frac{n_b}{2}\right)\left(d - t_f\right) - 800\left(d - t_f\right) k - in$$

where

$\phi = 0.75$

$F_u\,(A574) = 170ksi$

$A_b = 1.23in^2$

$n_b = 16$

Notes:

1. Moment Frame (MF) columns can be Hollow Structural Sections (HSS A500 Gr. B/C or A1085) or built-up Box Sections (A572 Gr. 50 or Gr. 55). Concrete Filled Column Sections (CFCS) can be used for additional strength and stiffness when required. Special Moment Frame (SMF) Columns shall be CFCS.
2. MF column size not permitted for use on OSHPD and DSA projects.
3. All moment beams, including cantilevers, connecting to a collar node must be of the same nominal depth.
4. SMF beams and columns shall satisfy the requirements of AISC 358 Chapter 10.
5. Beam size used in SMF requires RBS cutout to meet seismic compactness requirements (AISC 341 Section D1.1b).
6. MF beam size not permitted for use on OSHPD and DSA projects.
7. Beam size used in SMF requires lateral bracing spaced according to AISC 341 (except where there is a concrete filled composite deck whose ribs are perpendicular to the beam, the beam is fixed-fixed, and there are no openings/slab edges near the beam).
8. Collar bolts shall be 1-1/4" socket head type A574. The governing collar bending strength equation is based on the load path of a bolted end-plate moment connection. The equation ensures that the moment in the beam due to LRFD load combinations does not exceed the available tensile strength of the collar bolts.
9. Provide installation clearance above the T.O.S. for moment beam installation.

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