A Beginner's Guide to Structural Engineering

Communications Tower

General Notes:

1. All member and connection design is to be in accordance with latest version of the American Institute of Steel Construction (AISC) Specification for Structural Steel Buildings and the AISC Specification for Structural Joints using ASTM A325 or A490 bolts as found in the AISC Steel Construction Manual (SCM).
2. All steel is the preferred type for each shape as indicated in the Steel Construction Manual unless otherwise noted or specified in problem statements.
3. All bolts are $\frac{3}{4}$" dia. A325-SC unless otherwise noted or specificed in problem statements.
4. The drawings presented here are schematic in nature. Actual member and bolt types and sizes and connection configurations are subject to change during problem completition.
5. These drawings are intended for use in teaching structural steel design and are not intended for actual construction.

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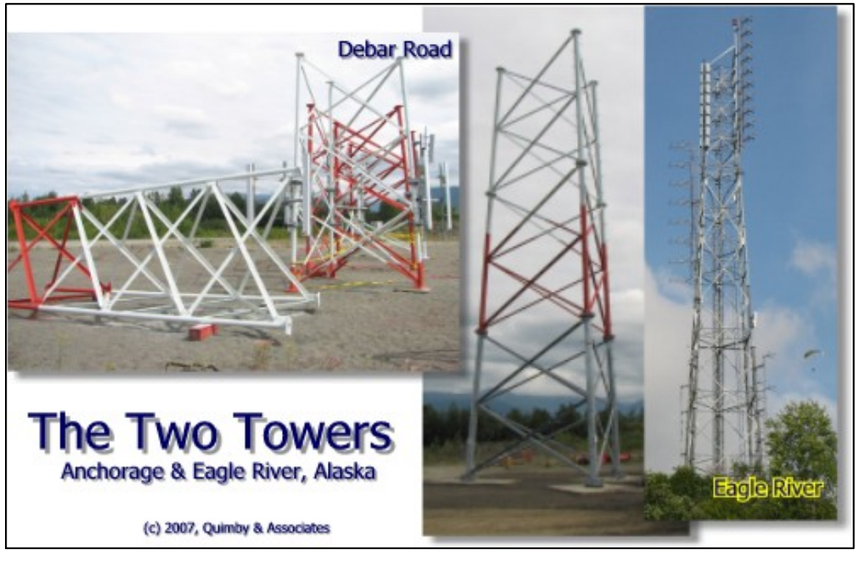

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A Beginner's Guide to Structural Engineering
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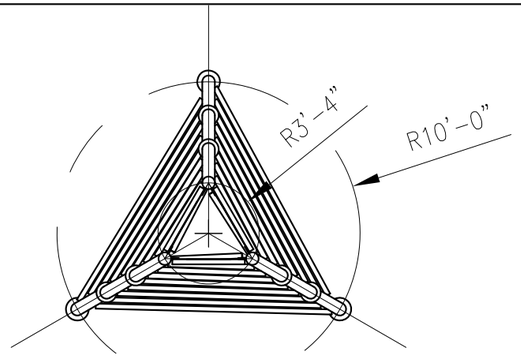
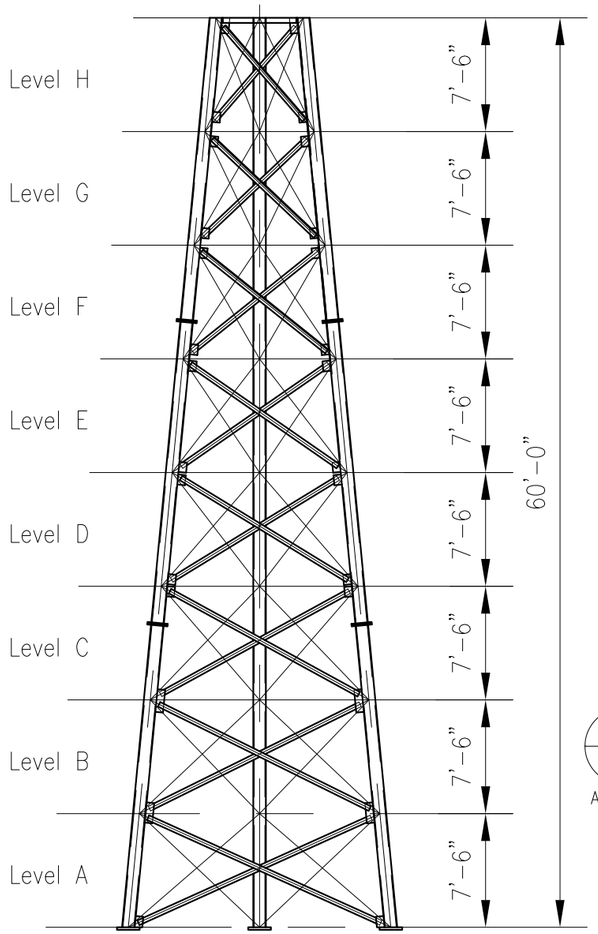


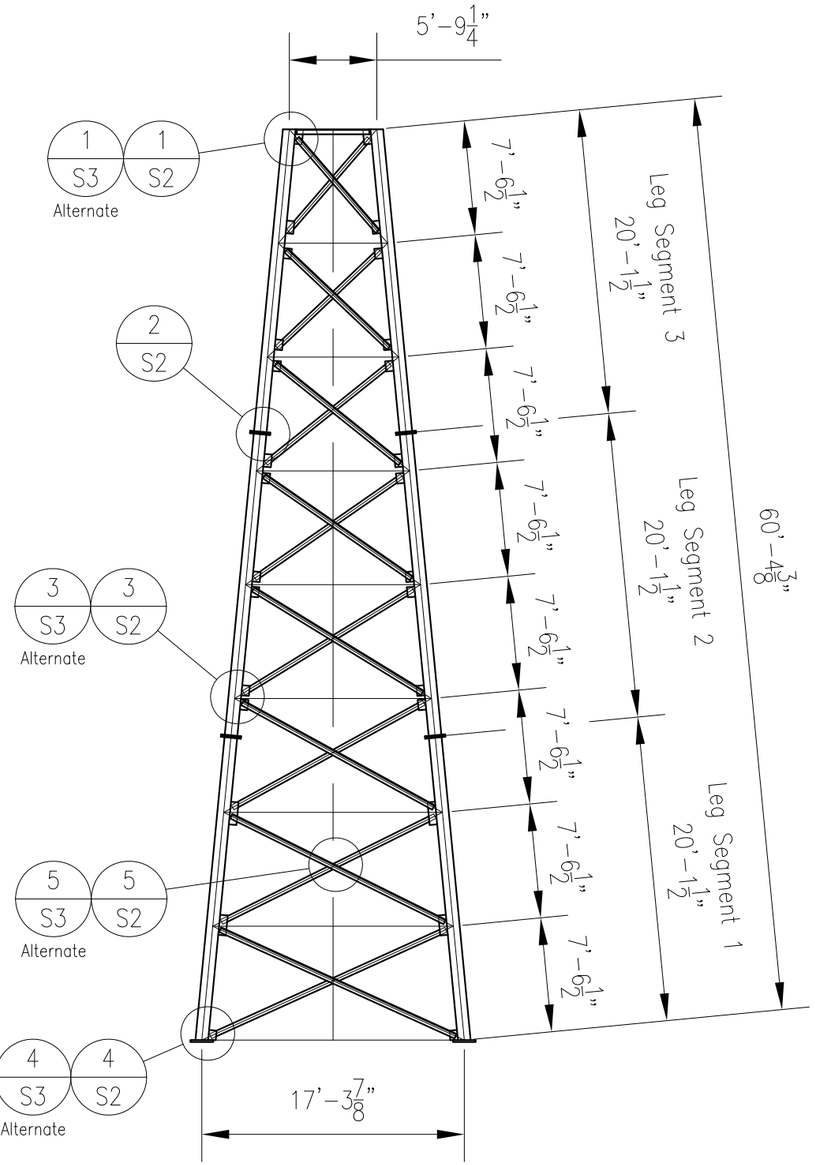
1 Tower Top View

BGSCM: Tower SCALE: 1" =10'-0"



2 Tower Elevation

BGSCM: Tower SCALE: 1" = 10'-0"



3 Typical Face – True Size

BGSCM: Tower SCALE: 1" = 10'-0"

Analysis considering braces as having both tensile & compressive capacity.

Brace Forces (kips)

Level	Self Wt	Imposed DL	Ice	Wind	
H	0.0120	0.0000	0.0012	7.9070	Max Tension
	-0.1340	-0.2090	-0.0134	-8.1720	Max Compression
G	0.0180	0.0000	0.0018	6.0340	
	-0.1040	-0.2180	-0.0104	-5.9230	
F	0.0490	0.0000	0.0049	4.6845	
	-0.1410	-0.0749	-0.0141	-4.7190	
E	0.0760	0.0450	0.0076	3.7850	
	-0.1430	0.0000	-0.0143	-3.7180	
D	0.0850	0.0000	0.0085	3.3060	
	-0.1650	-0.0240	-0.0165	-3.4040	
C	0.0910	0.0060	0.0091	2.8370	
	-0.1960	0.0000	-0.0196	-2.7600	
B	0.1440	0.0136	0.0144	2.4770	
	-0.1840	0.0000	-0.0184	-0.1590	
A	0.0990	0.0000	0.0099	2.7830	
	-0.2730	-0.0282	-0.0273	-2.5000	

Leg Forces (kips)

Level	Self Wt	Imposed DL	Ice	Wind
H	-0.6610	-3.0300	-0.0661	5.7730
	0.0000	0.0000	0.0000	-5.7730
G	-1.2100	-3.5300	-0.1210	16.0700
	0.0000	0.0000	0.0000	-16.0700
F	-1.7210	-3.2600	-0.1721	22.9400
	0.0000	0.0000	0.0000	-22.9400
E	-2.3700	-3.4100	-0.2370	27.9950
	0.0000	0.0000	0.0000	-27.9950
D	-3.0280	-3.3300	-0.3028	31.7000
	0.0000	0.0000	0.0000	-31.7000
C	-0.3758	-3.3600	-0.0376	34.9100
	0.0000	0.0000	0.0000	-34.9100
B	-4.5830	-3.3600	-0.4583	37.2400
	0.0000	0.0000	0.0000	-37.2400
A	-5.3610	-3.3320	-0.5361	39.1100
	0.0000	0.0000	0.0000	-39.1100

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PLAN & ELEVATIONS
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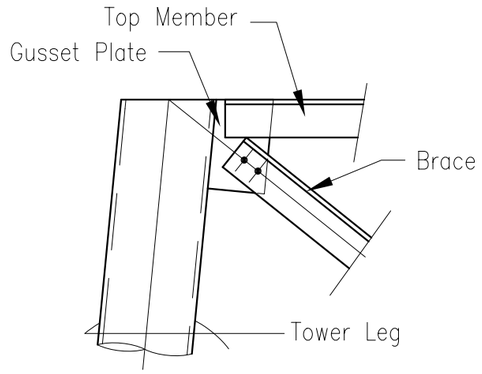
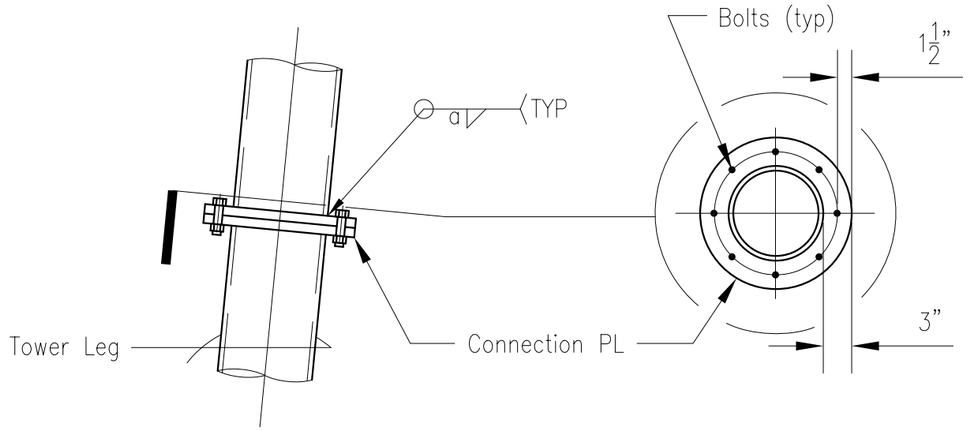
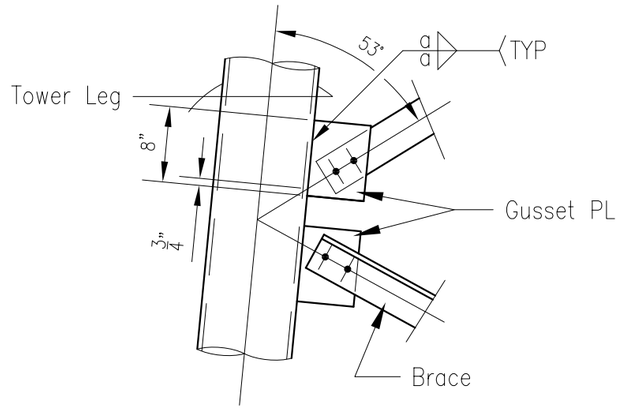


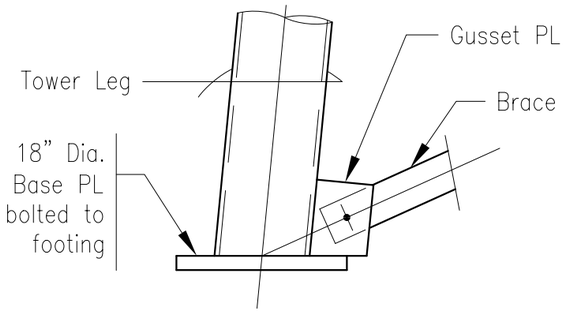
1 DETAIL
BGSCM: Tower SCALE: 3/4" = 1'-0"



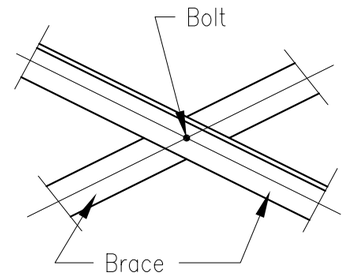
2 DETAIL
BGSCM: Tower SCALE: 3/4" = 1'-0"



3 DETAIL
BGSCM: Tower SCALE: 3/4" = 1'-0"



4 DETAIL
BGSCM: Tower SCALE: 3/4" = 1'-0"



5 DETAIL
BGSCM: Tower SCALE: 3/4" = 1'-0"

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CONNECTION DETAILS
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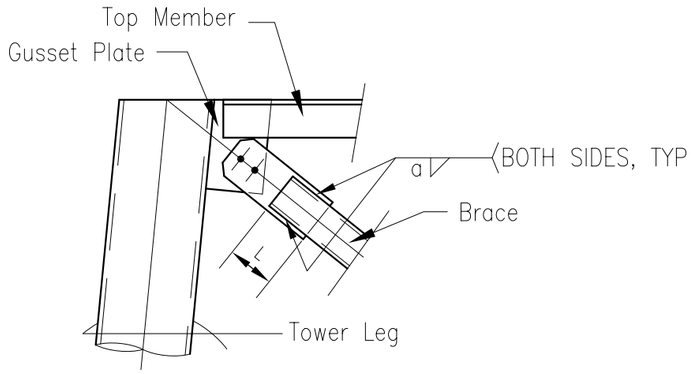
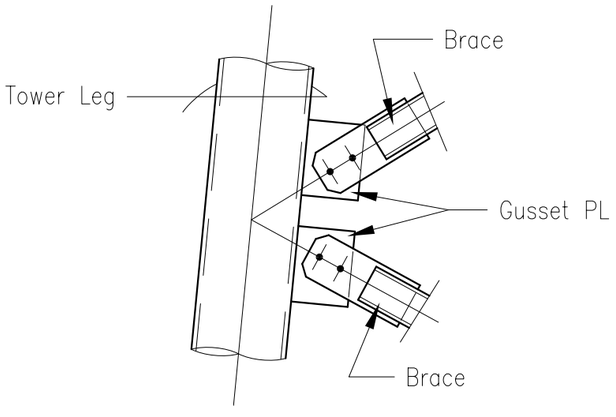


1 DETAIL

BGSCM: Tower SCALE: 3/4" = 1'-0"

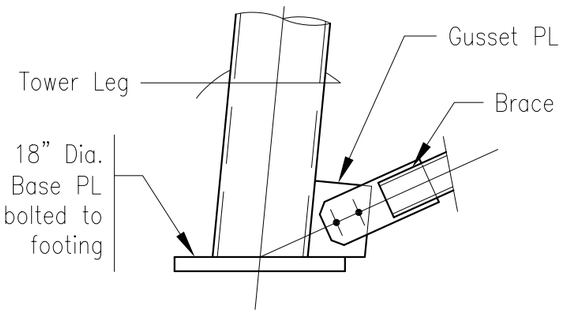
Alternate Connection Notes:

1. The alternate connections shown on this sheet use members that have a connection plated welded into slots in the ends of the member and are then bolted to gusset plates.
2. The size and configuration of gusset and splice plates are approximate.
3. The number and location of bolts is approximate.



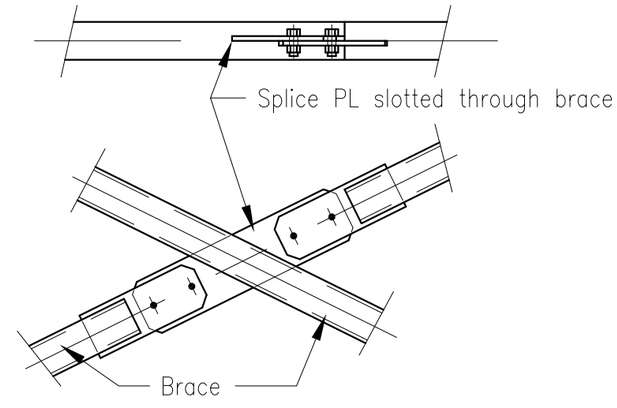
3 DETAIL

BGSCM: Tower SCALE: 3/4" = 1'-0"



4 DETAIL

BGSCM: Tower SCALE: 3/4" = 1'-0"



5 DETAIL

BGSCM: Tower SCALE: 3/4" = 1'-0"

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ALT. CONNECTION DETAILS
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