Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	846182
Site Name:	BARCELONA STREET
Order Number:	
Location:	Guy A @ 126 ft (Elev 1 ft)

TIA-222 Revision: H

Design Reactions		
Shear, **S**:	44.98	kips
Uplift, **Ua**:	43.53	kips
Resultant Force, **Rf**:	62.59	kips
Tower Height, **H**:	300.00	ft
Guy Anchor Radius, **R**:	126.00	ft
Resultant Angle to Horizontal, **θ**:	44.1	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6	ft
Anchor Width, **Wa**:	4	ft
Anchor Thickness, **Ta**:	2	ft
Anchor Length, **La**:	16	ft
Concrete Volume, **Vc**:	4.7	yd^3
Toe Width, **toe**:	0	ft

Anchor Shaft Diameter, **ds**:	1.5	in
Anchor Shaft Quantity, **n**:	2	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf
Anchor Shaft Grade, **Fy'**:	36	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	58	ksi

Design Checks

	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	208.69	44.98	**20.5%**	**Pass**
Uplift Capacity (kips):	121.76	43.53	**34.0%**	**Pass**
Anchor Shaft (kips):	101.79	62.59	**58.6%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Anchor Shaft Rating:	**58.6%**
Structural Rating:	**N/A**
Soil Rating:	**34.0%**

Neglect Depth, **Neg**:	3	ft
Groundwater Level, **gw**:	N/A	ft

Soil Properties: No. of Soil Layers: 2

Layer	φ, deg	cu, ksf	δ, pcf	d, ft	Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	120	3.00	0.000	
2	0	2.750	120	6.00	1.100	

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	846182
Site Name:	BARCELONA STREET
Order Number:	
Location:	Guy B @ 126 ft (Elev 2 ft)

TIA-222 Revision: H

Design Reactions		
Shear, **S**:	45.24	kips
Uplift, **Ua**:	43.62	kips
Resultant Force, **Rf**:	62.84	kips
Tower Height, **H**:	300.00	ft
Guy Anchor Radius, **R**:	126.00	ft
Resultant Angle to Horizontal, **θ**:	44.0	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6	ft
Anchor Width, **Wa**:	4	ft
Anchor Thickness, **Ta**:	2	ft
Anchor Length, **La**:	16	ft
Concrete Volume, **Vc**:	4.7	yd^3
Toe Width, **toe**:	0	ft

Anchor Shaft Diameter, **ds**:	1.5	in
Anchor Shaft Quantity, **n**:	2	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf
Anchor Shaft Grade, **Fy'**:	36	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	58	ksi

Design Checks

	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	208.70	45.24	**20.6%**	**Pass**
Uplift Capacity (kips):	121.74	43.62	**34.1%**	**Pass**
Anchor Shaft (kips):	101.79	62.84	**58.8%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Anchor Shaft Rating:	**58.8%**
Structural Rating:	**N/A**
Soil Rating:	**34.1%**

Neglect Depth, **Neg**:	3	ft
Groundwater Level, **gw**:	N/A	ft

Soil Properties: No. of Soil Layers: 2

Layer	φ, deg	cu, ksf	δ, pcf	d, ft	Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	120	3.00	0.000	
2	0	2.750	120	6.00	1.100	

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	846182
Site Name:	BARCELONA STREET
Order Number:	
Location:	Guy C @ 126 ft (Elev -6 ft)

TIA-222 Revision:	H

Design Reactions		
Shear, **S**:	45.46	kips
Uplift, **Ua**:	46.34	kips
Resultant Force, **Rf**:	64.92	kips
Tower Height, **H**:	300.00	ft
Guy Anchor Radius, **R**:	126.00	ft
Resultant Angle to Horizontal, **θ**:	45.5	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6	ft
Anchor Width, **Wa**:	4	ft
Anchor Thickness, **Ta**:	2	ft
Anchor Length, **La**:	16	ft
Concrete Volume, **Vc**:	4.7	yd^3
Toe Width, **toe**:	0	ft

Anchor Shaft Diameter, **ds**:	1.5	in
Anchor Shaft Quantity, **n**:	2	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf
Anchor Shaft Grade, **Fy'**:	36	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	58	ksi

Design Checks

	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	208.44	45.46	**20.8%**	**Pass**
Uplift Capacity (kips):	122.00	46.34	**36.2%**	**Pass**
Anchor Shaft (kips):	101.79	64.92	**60.7%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Anchor Shaft Rating:	**60.7%**
Structural Rating:	**N/A**
Soil Rating:	**36.2%**

Neglect Depth, **Neg**:	3	ft
Groundwater Level, **gw**:	N/A	ft

Soil Properties: No. of Soil Layers: 2

Layer	φ, deg	cu, ksf	δ, pcf	d, ft	Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	120	3.00	0.000	
2	0	2.750	120	6.00	1.100	

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	846182
Site Name:	BARCELONA STREET
Order Number:	
Location:	Guy A @ 150 ft (Elev 2 ft)

TIA-222 Revision:	H

Design Reactions		
Shear, **S**:	15.52	kips
Uplift, **Ua**:	25.39	kips
Resultant Force, **Rf**:	29.75	kips
Tower Height, **H**:	300.00	ft
Guy Anchor Radius, **R**:	150.00	ft
Resultant Angle to Horizontal, **θ**:	58.6	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6	ft
Anchor Width, **Wa**:	4	ft
Anchor Thickness, **Ta**:	2	ft
Anchor Length, **La**:	6	ft
Concrete Volume, **Vc**:	1.8	yd^3
Toe Width, **toe**:	0	ft

Anchor Shaft Diameter, **ds**:	1.4375	in
Anchor Shaft Quantity, **n**:	1	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf
Anchor Shaft Grade, **Fy'**:	50	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	65	ksi

Design Checks	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	81.58	15.52	**18.1%**	**Pass**
Uplift Capacity (kips):	58.64	25.39	**41.2%**	**Pass**
Anchor Shaft (kips):	64.92	29.75	**43.7%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Anchor Shaft Rating:	**43.7%**
Structural Rating:	**N/A**
Soil Rating:	**41.2%**

Neglect Depth, **Neg**:	3	ft
Groundwater Level, **gw**:	N/A	ft

Soil Properties: — **No. of Soil Layers:** 2

Layer	φ, deg	cu, ksf	δ, pcf	d, ft	Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	120	3.00	0.000	
2	0	2.750	120	6.00	1.100	

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	846182
Site Name:	BARCELONA STREET
Order Number:	
Location:	Guy B @ 150 ft (Elev 2 ft)

TIA-222 Revision:	H

Design Reactions		
Shear, **S**:	15.19	kips
Uplift, **Ua**:	24.80	kips
Resultant Force, **Rf**:	29.09	kips
Tower Height, **H**:	300.00	ft
Guy Anchor Radius, **R**:	150.00	ft
Resultant Angle to Horizontal, **θ**:	58.5	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6	ft
Anchor Width, **Wa**:	4	ft
Anchor Thickness, **Ta**:	2	ft
Anchor Length, **La**:	6	ft
Concrete Volume, **Vc**:	1.8	yd^3
Toe Width, **toe**:	0	ft

Anchor Shaft Diameter, **ds**:	1.4375	in
Anchor Shaft Quantity, **n**:	1	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf
Anchor Shaft Grade, **Fy'**:	50	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	65	ksi

Design Checks	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	81.59	15.19	**17.7%**	**Pass**
Uplift Capacity (kips):	58.63	24.80	**40.3%**	**Pass**
Anchor Shaft (kips):	64.92	29.09	**42.7%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Anchor Shaft Rating:	**42.7%**
Structural Rating:	**N/A**
Soil Rating:	**40.3%**

Neglect Depth, **Neg**:	3	ft
Groundwater Level, **gw**:	N/A	ft

Soil Properties: — **No. of Soil Layers:** 2

Layer	φ, deg	cu, ksf	δ, pcf	d, ft	Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	120	3.00	0.000	
2	0	2.750	120	6.00	1.100	

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	846182
Site Name:	BARCELONA STREET
Order Number:	
Location:	Guy C @ 150 ft (Elev -6 ft)

TIA-222 Revision: H

Design Reactions		
Shear, **S**:	15.40	kips
Uplift, **Ua**:	25.95	kips
Resultant Force, **Rf**:	30.18	kips
Tower Height, **H**:	300.00	ft
Guy Anchor Radius, **R**:	150.00	ft
Resultant Angle to Horizontal, **θ**:	59.3	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6	ft
Anchor Width, **Wa**:	4	ft
Anchor Thickness, **Ta**:	2	ft
Anchor Length, **La**:	6	ft
Concrete Volume, **Vc**:	1.8	yd^3
Toe Width, **toe**:	0	ft

Anchor Shaft Diameter, **ds**:	1.4375	in
Anchor Shaft Quantity, **n**:	1	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Wt. Avg.Concrete Density, **δx**:	0.150	kcf
Anchor Shaft Grade, **Fy'**:	50	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	65	ksi

Design Checks

	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	81.44	15.40	**18.0%**	**Pass**
Uplift Capacity (kips):	58.72	25.95	**42.1%**	**Pass**
Anchor Shaft (kips):	64.92	30.18	**44.3%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Anchor Shaft Rating:	**44.3%**
Structural Rating:	**N/A**
Soil Rating:	**42.1%**

Neglect Depth, **Neg**:	3	ft
Groundwater Level, **gw**:	N/A	ft

Soil Properties: No. of Soil Layers: 2

Layer	φ, deg	cu, ksf	δ, pcf	d, ft	Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	120	3.00	0.000	
2	0	2.750	120	6.00	1.100	

*key: φ = *Internal Angle of Friction*
cu = Cohesion / Undrained Shear Strength
δ = *Buoyant Soil Unit Weight*
d = Depth to Bottom of Layer
Ultimate fs = Geotechnical Report-provided skin friction / adhesion
N = SPT Blow Count