

F. TOWER PLANS AND KITS

fold over guyed pole type.

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DISCLAIMER: IT IS THE USER'S RESPONSIBILITY TO HAVE THESE PLANS REVIEWED, MODIFIED AND APPROVED FOR LOCAL WIND AND SOIL CONDITIONS BY A LICENSED ENGINEER. THE TOWER LIFTING ARRANGEMENT (DIRECTION OF PULL, ETC) AND COMPONENTS (CABLE, PULLEY, VEHICLE, WINCH, ETC.) SHALL BE SPECIFIED BY THE ENGINEER. IT IS THE USER'S RESPONSIBILITY TO SUBMIT THE MODIFIED PLANS TO THE PROPER AUTHORITIES TO OBTAIN THE REQUIRED BUILDING PERMIT AND TO OBTAIN A FINAL INSPECTION BEFORE PLACING INTO SERVICE. WORLD POWER TECHNOLOGIES MAKES NO CLAIMS FOR THE SUITABILITY OF THESE PLANS FOR SUPPORTING A WIND GENERATOR OR FOR ANY OTHER PURPOSE. THESE PLANS ARE PROVIDED SOLELY FOR THE CONVENIENCE OF THE USER'S ENGINEER.

LIST OF MODELS DESCRIBED

GP1 series are for Whisper H500, 600, H900, 1000, and H1500 and SP3 series are for Whisper 3000 and H4500.

Model	Height	# of guys	Anchor
GP1-9K4	9m/31ft	4	Screw-In or fan anchor
GP1-14K8	14m/47ft	8	Screw-In or fan anchor
GP1-19K8	19m/62ft	8	Fan anchor
GP1-28K12	28m/93ft	12	Fan anchor
GP3-13K4	13m/44ft	4	Fan anchor
GP3-20K8	22m/70ft	8	Fan anchor
GP3-26K12	26m/87ft	12	Fan anchor

Lift Line Tensions* (in pounds)

Machine/Tower	GP1-9K4	GP1-14K8	GP1-19K8	GP1-28K12	GP3-13K4	GP3-20K8	GP3-26K12
500	288.0	394.5	512.9	716.1	762.4	1284.7	1563.1
600	336.7	443.9	563.2	765.8	808.6	1332.2	1612.7
900	361.0	468.5	588.3	790.6	831.7	1355.9	1637.5
1000	391.5	499.4	619.7	821.7	860.6	1385.6	1668.4
1500	421.9	530.2	651.1	852.8	889.5	1415.3	1699.4
3000	634.9	746.0	871.0	1070.3	1091.7	1623.1	1916.3
4500	706.8	818.9	945.2	1143.8	1160.0	1693.2	1989.5

*Single Lift Line (1:1 mechanical advantage). For block and tackle arrangement, increase the number of lift lines between the lift anchor and the tower and divide the Lift Pull by the number of lines and multiply the Lift Distance by the number of lines.

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Tower Selection Guide

Blade Diameter Prop Tip to Tower Center Lateral Thrust	1.5m/5ft 21 cm/8.5in 450N/100 pounds	2.1m/7ft 28cm/11in 900N/200 pounds	2.7m/9ft 33cm/13in 1800N/450 pounds	4.5m/14.8ft 56cm/22in 4500N/1000 pounds
BOAT	(1)	(1)		
ROOF	(2)	(2)		
SIDE OF BUILDING	SB5-20 SB5-30	SB7-20 SB7-30		
GUYED, SELF-ERECTING POLE (3)	See World Power Owner's Manual for Plans Order Numbers for KITS available from World Power Technologies			
30 ft	GP1-9k4	GP1-9k4	GP1-9k4	
40 ft	GP1-14k8	GP1-14k8	GP1-14k8	GP3-13k4
60 ft	GP1-19k8	GP1-19k8	GP1-19k8	GP3-20k8
80 ft	GP1-28k12	GP1-28k12	GP1-28k12	GP3-26k12
GUYED LATTICE (2,4) Models listed are Rohn Industries and require top modification				
20 ft	25G	25G	45G	45G
30 ft	25G	25G	45G	45G
40 ft	25G	25G	45G	45G
60 ft	25G	25G	45G	45G
80 ft	25G	25G	45G	45G
100 ft	25G	25G	45G	45G
120 ft	25G	25G	45G	45G
SELF-SUPPORTING POLE (no guys), HINGED FOLD-OVER				
20 ft	FP5-20	FP7-20		
30 ft	FP5-30	FP7-30		
40 ft	FP5-40			
SELF-SUPPORTING LATTICE (2,4), Windmill Style (5), ssv* is Rohn Industries Model				
30 ft	Windmill	Windmill	Windmill,SSV	
40 ft	Windmill	Windmill	Windmill,SSV	
50 ft	Windmill	Windmill	Windmill,SSV	SSV
60 ft			SSV	
80 ft			SSV	SSV
100 ft			SSV	SSV

*SSV = self-supporting

NOTES and SOURCES

1. Renaissance Works, Tom Mincarelli, Phone (919) 729-3251, FAX: (919) 729-1382, Tomm@ren-works.com
2. Rohn Industries, Phil Metcalf, Phone (309) 697-4400 ext. 258, FAX: (309) 633-2695, mail@rohnet.com
3. Lake Michigan Wind and Sun, John or Kim, Phone (920) 743-0456, FAX: (920) 743-0466, LMWandS@itol.com
4. ERI, Phone (812) 925-6000
5. Mueller Industries, Marty Mueller, Phone (800) 316-2727 (Used and reconditions windmill towers and parts)
6. NRG Systems, Phone (802) 482-2255

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1. INTRODUCTION

Please carefully read and understand the disclaimer at the beginning. While simple in concept these towers require basic mechanical aptitude and attention to detail. Read the system planning section of the Owner's Manual first and determine the location and height of the tower you require. It is much easier to work with nearly level ground. Parts listed to construct these towers are readily available in most parts of the world. Steel pipe or tube of a slightly heavier wall or slightly larger diameter may be used without having to increase the size of the guy wire, anchors etc. but such a change will require also changing the tower adapter inserts that mount the wind generator. World Power Technologies offers low cost, easy-to-ship tower kits containing some of the parts and hardware required but not the tube or pipe itself nor the cable or pulleys for pulling the tower up or down.

The lifting arrangement varies greatly whether you will be using a vehicle or hand or electric winch. When pulling with a vehicle the lifting cable and pulley arrangement will depend on the direction of pull and pulling strength available. Make sure the lifting arrangements and components are part of the engineering review. Screw-in-type anchors are much easier to install if the soil condition warrant their use. The lift pole can be removed after the tower is installed but adds to the labor of raising and lowering the tower.

2. UNPACKING AND INSPECTION

1. Inspect the parts included in your tower kit and make sure that nothing is missing or damaged. Use the Parts List as a checklist and refer to the Figures for assistance identifying parts as you unpack your kit. Parts beginning with an "A" are user-supplied parts. You should be able to buy them from local sources.

2. Submit these tower plans, tower parts, and application data (wind speed, soil conditions, etc.) to a licensed civil or structural engineer. Obtain approval for your tower, site and application in writing.

NOTE: On shorter towers screw-in guy anchors are optional. It is possible to modify the base to be stable without concrete, thus making the tower portable. If you think you may someday wish to move the tower, discuss this with your engineer.

3. Submit the engineer-approved tower and foundation plans (as modified by the engineer) to your local building permit authorities and obtain a building permit. Post it on the site before beginning tower installation. All references in this section to the Parts List and Figures assume they have been modified as required.

4. Purchase tube and pipe for the tower and lift-pipe from a local steel supplier, for tubing use type HREW (a.k.a. ERW). DOM tubing is also satisfactory but usually more costly. Pipe must be seamless rather than a seam that has been welded. Refer to the Parts List to determine the total length of tube or pipe required for the tower itself and the lift pipe. You also need to decide if you will be lifting the tower by vehicle, winch, block and tackle, etc. and obtain the necessary equipment and components. All such components must have a minimum working strength of

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1000 pounds or a minimum breaking strength of 4000 pounds for GP1 series towers and 3000 pounds working and 12,000 pounds breaking strength for the GP3 series.

5. If necessary, clean, prime and paint all parts including the base angles (Item B1) furnished in kits. In particularly corrosive environments you may wish to consider having parts galvanized. Hardware (nut, bolts, turnbuckles, guy wire, etc.) furnished by World Power Technologies in the tower kits is stainless, galvanized or plated for good corrosion resistance.

3. TOWER LOCATION, TOWER BASE AND GUY ANCHOR LAYOUT

1. Carefully study Figures 1.1 and 1.2. This will give you a good idea of how much space you will need to raise your tower, which is pulled up from the lift anchor. The ground must be level or made level between the side anchors and the tower base. The ground may slope steadily downward from the tower top (when it is in the lowered position) to the tower base, and from the tower base to the lift anchor. When the lift anchor lies lower than the tower base there is more room for winches, lifting pulleys, etc.

A tower should never be close to occupied buildings. A good rule of thumb is to select a location that is a distance of at least one and a half times the tower height. Thus, if you are installing the GP1-28K112 tower (with a nominal height of 84'), the tower should be a distance of at least 126 feet/38 meters from any occupied buildings. If the pipe sizes make the tower slightly taller or shorter (since the pipe and tube lengths may vary up to 5%), please adjust the distances accordingly.

CAUTION! DANGER OF LETHAL SHOCK. CONTACT WITH OVERHEAD POWER LINES WILL CAUSE INSTANT ELECTROCUTION. NEVER INSTALL A TOWER WHERE IT COULD CONTACT POWER LINES IN ANY DIRECTION.

These towers may often be set in wooded areas. It is only necessary to clear enough trees for the guy wires. Clear the path for the guy wires as the tower is raised and lowered. Be sure the height of the tower is at least 20-30 ft/7 - 10 meters above trees and structures within 300 ft./100 meters of the wind generator. The center of an open field is ideal and can reduce the tower height requirement.

Select a location for the tower base, and determine the direction in which the tower will lower and raise. If you will be using a vehicle to raise the tower, clear a path for the lift line from the Lift Anchor to the vehicle road. With a swivel pulley at the Lift Anchor, this path can be in any direction and distance from the Lift Anchor that is convenient. Mark the ground locations for the base and anchors.

2. Install the concrete anchor bolts in their holes and temporarily install the two pivot bolts and spacers (Item B6) to align the angle pieces that form the tower base (Item B1) as shown in Figure 2.1 and Figure 2.4. Tie 1/2-inch rebar to the concrete anchors as shown in Figure 2.1.

3. Install screw-in anchors, if used, at an approximate 45-degree angle pointing toward the imagined top of the tower. Dig the base and guy anchor holes (non-screw in type). Position forms for the concrete in the holes. Round foundations are simplified by using sonotube (a

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circular piece of cardboard tube for cement footings usually available at your local hardware store). Position base angle pieces (Item B1) with the pivot bolt pointing at the side anchors and at finish grade. Carefully level, align and secure. Carefully note hole alignment of the guy anchors as shown in Figure 2.4 and install the anchors in their holes.

4. Use a string to verify that side anchor holes are in a straight line with the pivot bolt of the base as shown in Figure 2.4 Also verify that lift and back anchors are in the same plane as the center of the base.
5. Use concrete of 4000-psi minimum at 28 days (mix ratio - contact your local concrete supplier if there are any questions) and pour the base and anchor foundations. The anchor holes should be about 3 inches above the top of the concrete. Level the foundation tops with a slight slope to assure that water will not pool around the anchor rods and base.
6. Verify all alignments; verify that the base is plumb before the concrete sets.

4. LIFT PIPE ASSEMBLY AND RIGGING

1. Drill a hole through the tower and lift-pole bottom sections, as shown in Figure 2.1 Bolt lift pole to tower base assembly. Connect second lift pole section, if used, to the bottom lift pole section as shown in Figure 1.3.1. Install shackles in side guy anchor holes. Drill hole and attach side anchor guy wires to lift pole and to side guy anchors as shown in Figure 2.4 These guy wires should be as tight as possible pulling by hand. Up to six inches side-to-side slack at end of lift pole is acceptable. Make sure lift pole is aligned with the lift guy anchor where it will attach when tower is raised. Attach the 1, 2 or 3 tower guy wires to the end of the lift pole as shown in Figure 2.3.

2. Attach the lifting cable assembly that will be used to raise the tower to the end of the lift pole. Secure the other end to the lifting anchor or to the winch or vehicle. **MAKE SURE** the slack length of this cable will permit the lift pole to go vertical within 2 feet.

3. Prepare a sturdy A-frame shaped structure such as shown in Figures 3.1 and 3.2 with a "V" in the top to catch the guy wire of height equal to 1/3 - 1/2 the lift pole height and 6-10 foot width. This will straddle the base and hold the guy wire in the air while the lift pole is raised for the first time. Place the top guy connected to the lift pole over the top of the A-frame and connect to the lifting vehicle. Raise the lift pipe to the vertical position and secure it.

5. TOWER ASSEMBLY AND WIRING

1. For all towers, lay out all sections of tower pipe end to end in the normal lowered direction and install the lower end in the base assembly. Join sections which are not guy points according to Figure 1.3.1. Join sections which are guy points according to Figure 1.3.2. Pound only on a block of wood if necessary to drive sections together. Install remaining guy attachment points according to Figure 1.3.3.

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2. Prepare a rugged stand with a "V" top about 4 feet high to support tower and wind generator in the lowered position and lift tower onto the stand. Make sure stand is exactly centered and in a straight line between base and lift anchor. See Figure 3.3 for more details.
3. Install all guy wires as close to the correct length as possible with all turnbuckles half extended. Side guys should have a little slack of about one foot side to side in case they become tighter as the tower is raised. Make sure guy wires that attach to back guy are in place and approximately the right length, because these guys catch the tower in the vertical position when being raised and prevent it from coming over center!
4. Obtain the correct size wire to go from the top of the tower to the wind generator controller. Rubber coated wire such as multi-conductor type S04 will cause less noise from slapping the inside of the tower. Using a fish tape (obtained at an electrical supply house) pull the wind generator wires through the tower. These wires must be secured at the top of the tower so that the wire connections are not under any excess tension. A support cable can be looped around the lower tower insert (also called a "Chinese Finger"). See Figure 2.6(a).
5. Hook over the top or secure lead wire at top of tower so it cannot fall down inside when tower is raised for the first time.
6. Dig one small hole at the base and four small holes on tower side of each concrete anchor. Drive ground rods into the holes until top of rods are 3 inches below ground level. Using clamps A6 connect ground wire A7 to rods A5. **DO NOT RAISE OR LEAVE AN UNGROUNDED TOWER IN THE AIR.** Tower must be grounded because cement is an insulator.

6. RAISING THE TOWER

1. THE TOWER ALONE MUST BE RAISED THE FIRST FEW TIMES! DO NOT INSTALL A WIND GENERATOR OR ANY OTHER LOAD AT THIS TIME! Now bring the lifting cable taut and raise tower several inches off its stand for all towers models. Make any adjustments to side guy turnbuckles and note position of lifting vehicle. Lower tower and adjust lifting cable length to conveniently position lifting vehicle.
2. NEVER STAND NEAR OR UNDER TOWER, GUYS, OR LIFT POLE WHEN RAISING OR LOWERING! KEEP EYES ON TOWER AT ALL TIMES WHEN RAISING OR LOWERING AND DETERMINE A FREE DIRECTION TO RUN FROM YOUR POSITION SHOULD TOWER BEGIN TO FALL! Raise tower 10 feet and practice lowering gently onto stand. One person in the vehicle can raise or lower the tower.
3. Raise tower slowly - CAREFULLY OBSERVING THE TENSION OF THE SIDE GUYS. IF THE SIDE GUYS BECOME TAUT, STOP LIFTING AND LOWER THE TOWER AND LOOSEN THE SIDE GUYS. REPEAT IF NECESSARY. Excess tension on side guys due to anchors being lower than base pivot point will collapse the tube or pipe. Raise tower until nearly vertical but with tension still on lift cable. Mark this vehicle or winch position for lowering the tower. A second person or the driver can now catch the lift pole and lower it gently to the ground. Allowing the lift pole to crash to the ground puts a serious strain on the back guys and other tower components. At the end of this step, the tower should be vertical.

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4. Fasten the lift pole to the anchor. Using a long level against the side of the tower toward each anchor, adjust the lower turnbuckles until tower is plumb at the base. Sighting up the tower, now tighten the upper turnbuckles until tower is straight. Guy wires should be just tight enough to eliminate sag. Pulling on guy wires should easily result in several inches deflection.
5. Move lifting vehicle to the position that was marked in paragraph 3, above and connect lift cable. **CHECK AGAIN THAT EVERYTHING IS CONNECTED!** Disconnect link, hoist lift lifting pipe until tower is over center and being held by lifting vehicle or winch. Lower tower to support stand. Raise and lower tower several more times until completely familiar with the procedure.

7. TOWER TOP INSTALLATION

1. Follow manufacturer's directions for wiring and installing tower top load such as wind generator, antenna, etc. Do not exceed rated load of the tower or surface area of any object to generate such a load.
2. Now raise the tower with the wind generator or other load installed at the top. This time, depending on weight of the tower top load, the balance point of a lift-pole tower will move closer to vertical. Move the vehicle mark or winch cable marking tape away from the tower accordingly. You may wish to practice lowering and raising the tower once more before leaving it raised. Make notes because it could be some time before you lower it again. On the final lift make sure everything is tight, make all ground connections.
3. Safety the three or four guy wires by running a piece of guy wire through the thimble, through the center of the turnbuckle and through the anchor and clamping the ends together with two clips as shown in Figure 2.2. This prevents the turnbuckle from unwinding and will hold the tower in the event a turnbuckle should break.

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Table F-1: Fold-Over Tube Tower Plans

Towers for Whisper 500,600,1000, & 1500		GP1-	GP1-	GP1-	GP1-
Parts List		9K4S	14K8LS	19K8L	28K12L
ID#	DESCRIPTION	29 ft.	42 ft.	56 ft.	84 ft.
Items supplied by user					
A1	TUBE:4"odx.120wall (11ga) 24 Ft long HREW**	3	3	4	6
A3	Fan Plate Anchor (see Figure 2.6)	4	4	4	4
A5	Ground Rods: 1/2 x 8ft	5	5	5	5
A6	Ground Rod Clamp	5	5	5	5
A7	Ground Wire #8 Stranded (feet)	25	25	25	25
A8	Wire Rope: 1/4" or equiv (4000lb) (feet)	35	35	50	65
A9	Pulley, Snatch Block for A8	1	1	1	1
A10	Sonotube (size to be determined by engineer)	1	1	1	1
Parts Included in Tower Kit					
B1	Base Angle (3.5" X 5" x 12")	2	2	2	2
B2	Guy Tab 30° 5/16 upper	4	4	4	4
	Guy Tab 45° 1/4 middle/lift	2	6	6	6
	Guy Tab 60° 1/4 lower	0	0	0	4
B4	Link: Turnbuckle to Lift Pole	1	1	1	1
B5	Link: Lift Pole to Shackle	2	2	2	2
B6	Base Spacer	2	2	2	2
B7	Tower Mount Inserts Kit for 4"x.120 (incl. H1500)	1	1	1	1
B8	Tower section connectors (3-3/4" OD, 12", .188 wall)	1	1	3	4
Hardware Included in Tower Kit					
C1	Bolt: 3/8x4-1/2	2	0	6	8
C2	Bolt: 3/8x5	3	6	6	7
C3	Bolt:1/2x5-1/2	3	3	3	3
C5	Locknut 3/8	5	6	12	15
C6	Locknut 1/2	7	7	7	7
C7	Concrete Anchor 1/2 x 15"	4	4	4	4
Guy Wire and Fittings Included in Tower Kit					
D1	Guy Wire Upper: 1/4EHS Class A Ft.	146	190	284	422
D2	Guy Wire Lower: 1/4EHS Class A Ft	0	154	196	565
D3	Guy Wire Lift Pipe: 1/4EHS Class A Ft.	52	74	94	138
	Total D1+D2+D3	198	418	574	1125
D4	Thimble:1/4 Heavy Duty	12	20	20	28
D5	Clip: 1/4 Drop Forged	36	60	60	84
D6	Turnbuckle: 1/2x6 Eye & Jaw Forged	4	8	8	12
D7	Bolt: 1/2x2 (B5 to A3)	1	1	1	1
D8	Nut: 1/2" (D7 - Same as C6)	1	1	1	1
D9	Shackle Safety Anchor 1-1/2T 1/2 Bolt	3	6	6	9

**** Hot Rolled Electrically Welded.** Tubing is usually random lengths 18-24 feet. Anything in that range will be okay. DOM (**D**rawn **O**ver **M**andrel) is also acceptable, although probably more expensive.

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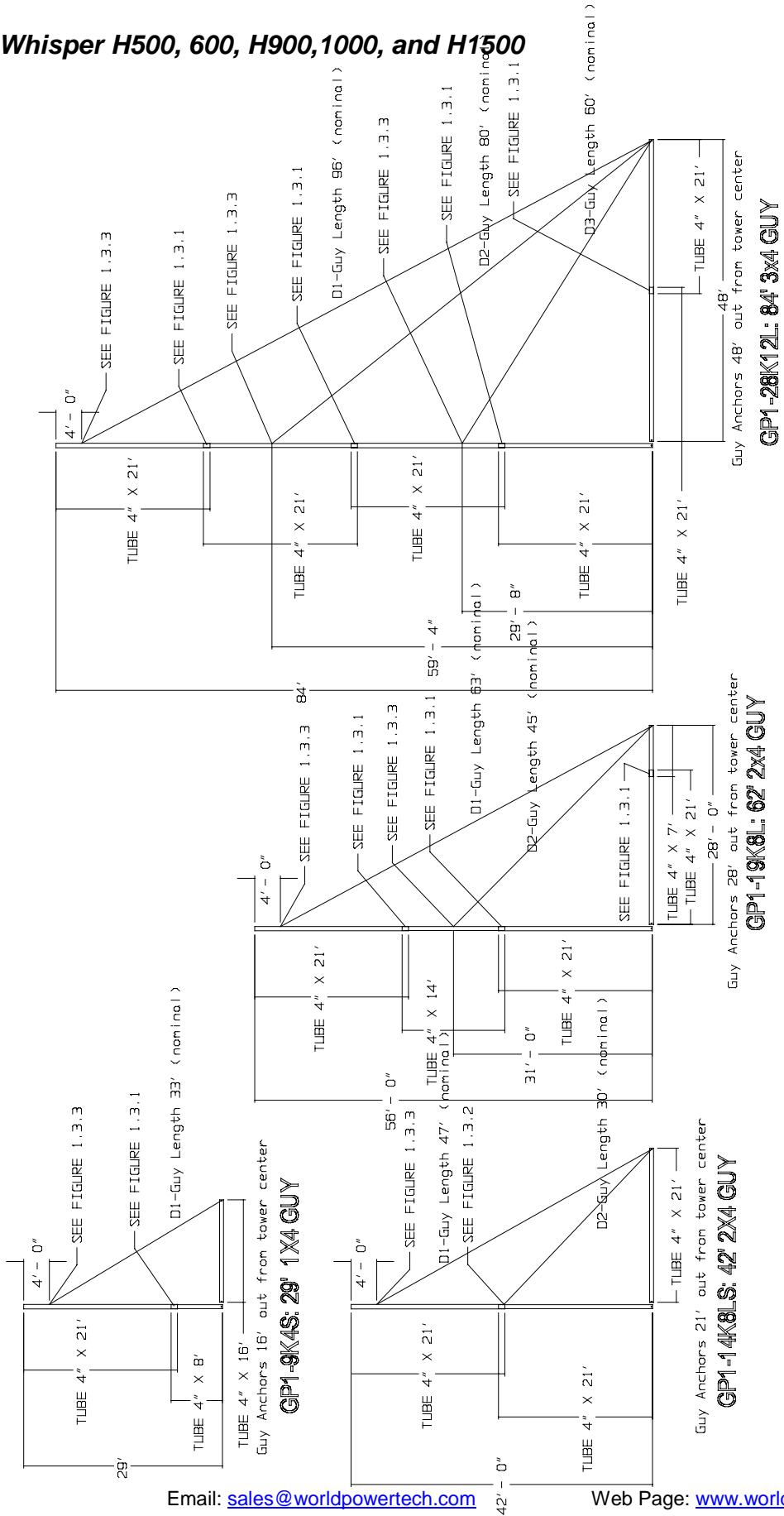
Table F-2: Fold-Over Guyed Pole Tower Plans

Towers for Whisper 3000 & 4500 Parts List		GP3- 13K4LS 42 ft. Lift Pole	GP3- 21K8L 70 ft. Lift Pole	GP3- 26K12L 84 ft. Lift Pole
ID#	DESCRIPTION			
Items supplied by user				
A1	Pipe:5" schd40 HREW 21' LONG (I.D. 5.047")	3	5	6
A3	Fan Plate Anchor (see Figure 2.6)	4	4	4
A5	Ground Rods: 1/2 x 8ft	5	5	5
A6	Ground Rod Clamp	5	5	5
A7	Ground Wire #8 Stranded (feet)	25	25	25
A8	Wire Rope: 7/16" or equiv (8000lb) (feet)	35	50	65
A9	Pulley, Snatch Block for A6	1	1	1
A10	Sonotube (size to be determined by engineer)	1	1	1
Parts Included in Tower Kit				
B1	Base Angle (3.5" X 5" X 16")	2	2	2
B2	Guy Tab 30° 5/16 upper	4	4	4
	Guy Tab 45° 1/4 middle/lift pole	2	6	6
	Guy Tab 60° 1/4 lower	0	0	4
B4	Link: Turnbuckle to Lift Pole	1	1	1
B5	Link: Lift Pole to Shackle	2	2	2
B6	Base Spacer	2	2	2
B8	Tower Section Connectors 12" (5" Tube 7ga. .180" Wall)	1	4	4
Hardware Included in Tower Kit				
C1	Bolt: 5/8 x 6 1/2	2	8	6
C2	Bolt: 5/8 x 7	3	5	7
C3	Bolt: 7/8 x 8	2	2	2
C4	Bolt: 7/8 x 7 1/2	1	1	1
C5	Nylock Nut 5/8	5	13	13
C6	Nylock Nut 3/4	4	4	4
C7	Concrete Anchor Bolt 3/4 X 18	4	4	4
C8	Nylock Nut 7/8	3	3	3
Guy Wire and Fittings Included in Tower Kit				
D1	Guy Wire Upper: 5/16EHS Class A Ft.	190	313	390
D2	Guy Wire Lower: 1/4EHS Class A Ft	0	224	514
D3	Guy Wire Lift Pipe: 1/4EHS Class A Ft.	74	112	132
	1/4EHS Total=D2+D3	74	336	646
D4	Thimble:1/4 Heavy Duty	4	12	20
	Thimble: 5/16 Heavy Duty	8	8	8
D5	Clip: 1/4 Drop Forged Steel	12	40	60
	Clip: 5/16 Drop Forged Steel	24	24	24
D6	Turnbuckle: 1/2x9 Eye & Jaw Forged	4	8	12
D7	Bolt: 1/2x2 (B5 to A3)	1	1	1
D8	Nut: 1/2" (D7)	1	1	1
D9	Shackle Safety Anchor 1-1/2T 1/2 Bolt	3	6	9

*** 5" Pipe schedule 40 either seamless or HREW. Inner Diameter (ID) measurement for tower connectors is standard for 5" schedule 40 pipe.**

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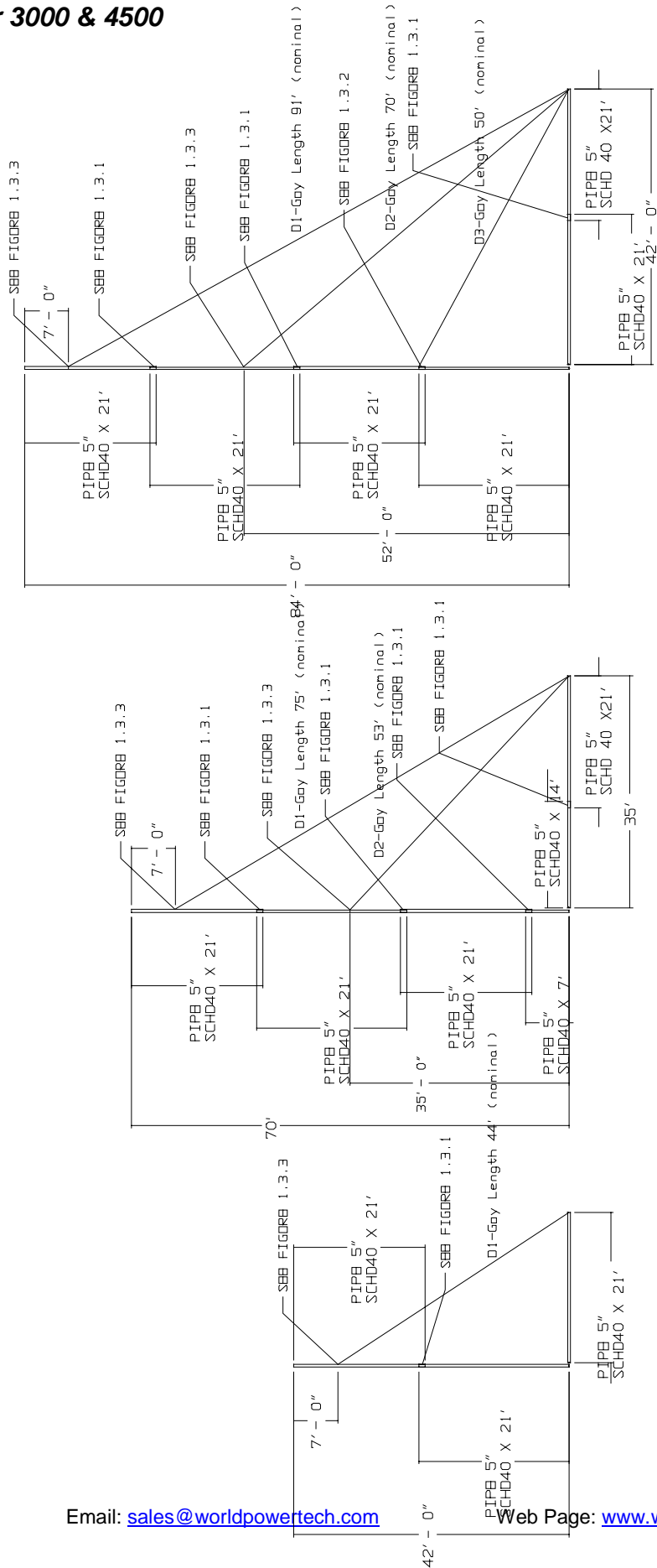
Figure 1.1: GP1 Whisper H500, 600, H900,1000, and H1500



* All guy wire measurements are nominal and depend on site topography. They are to be used for reference ONLY.
 * Tube sections are referenced as A1 in Table F-1

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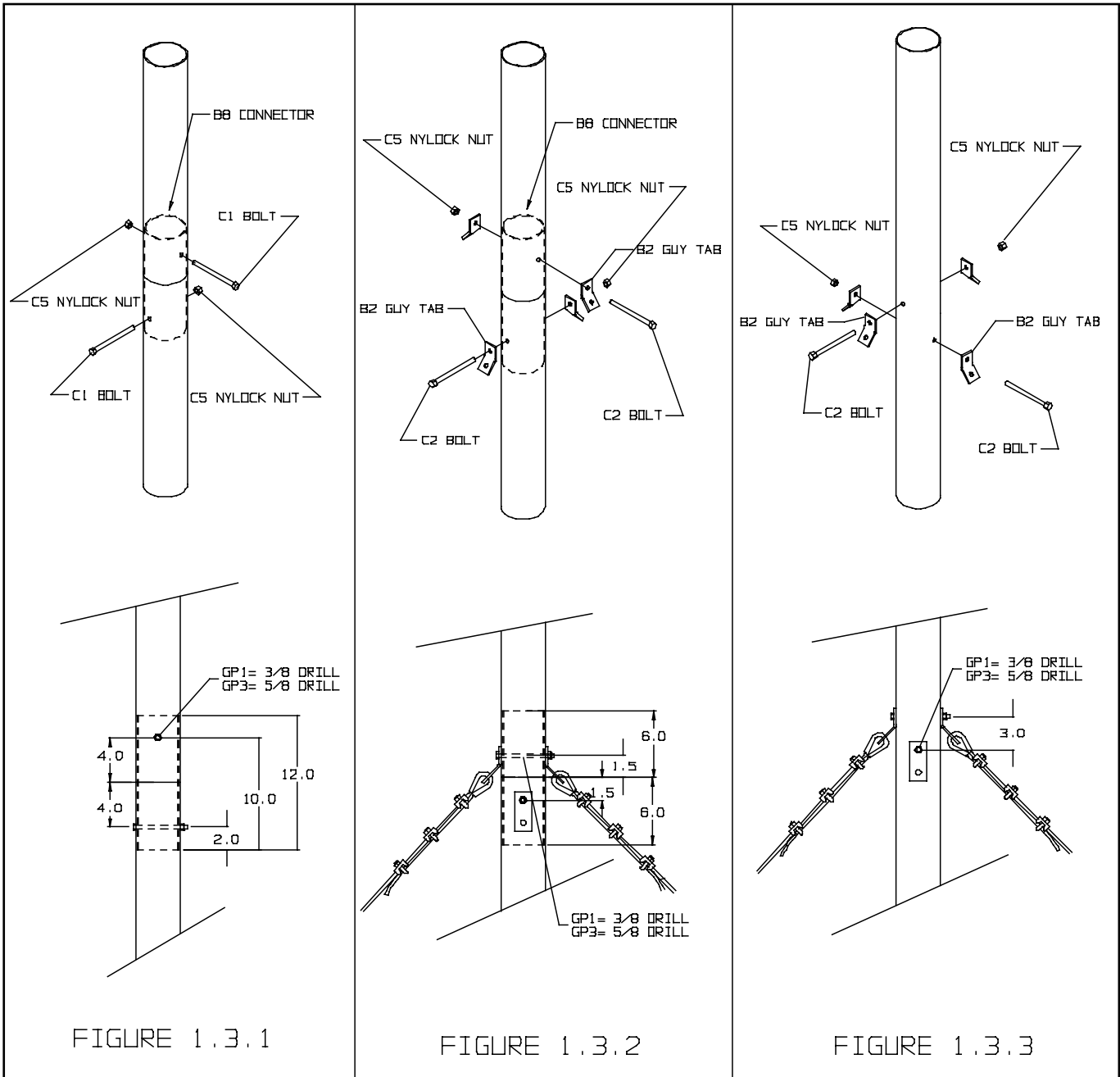
Figure 1.2: GP3 Whisper 3000 & 4500



* All gay wire measurements are nominal and depend on site topography.
 They are to be used for reference ONLY!
 * Pipe sections are referenced as A1 in Table F-2

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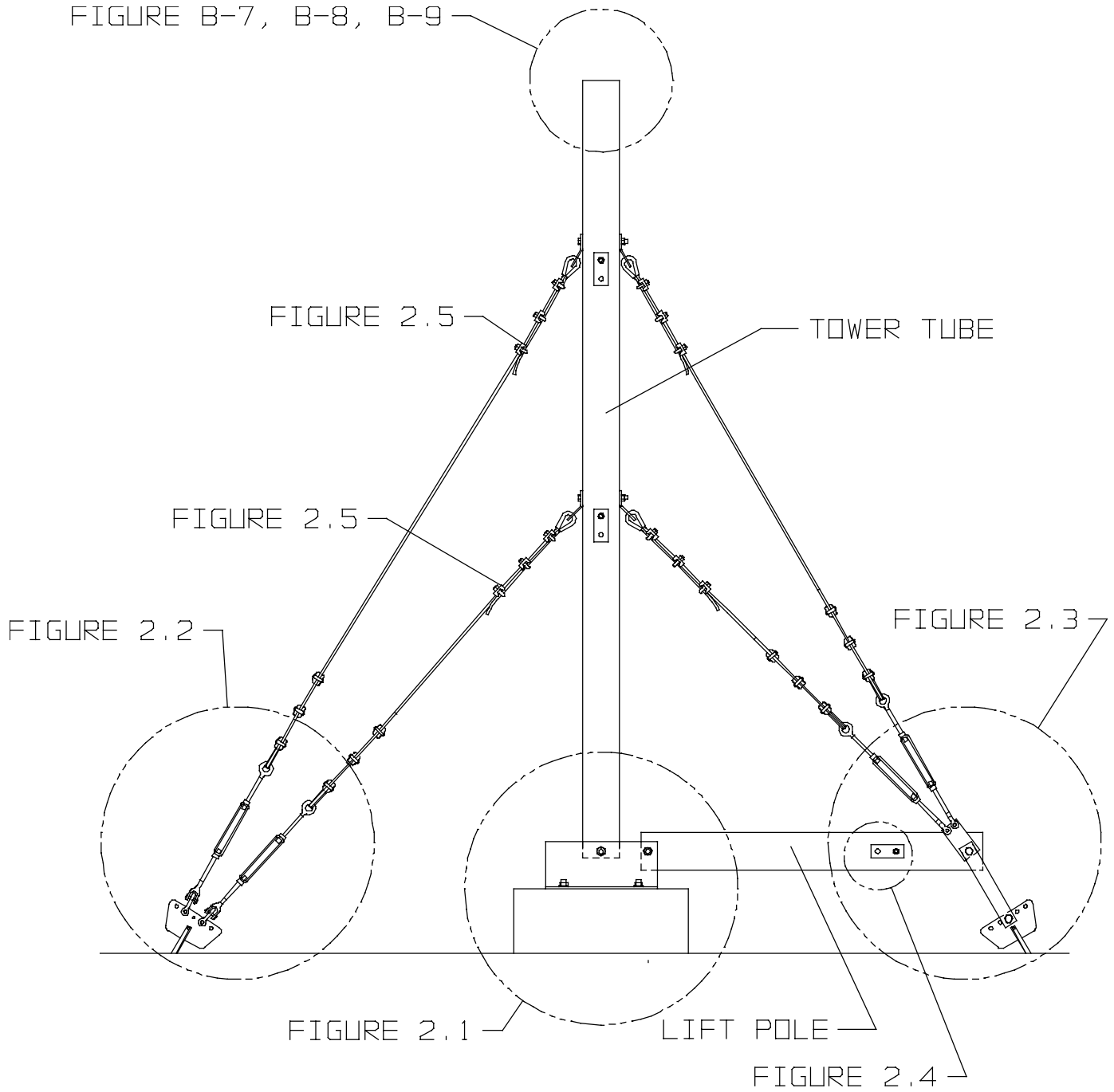
Figure 1.3: Joint and Guy Attachment Detail



NOTE:

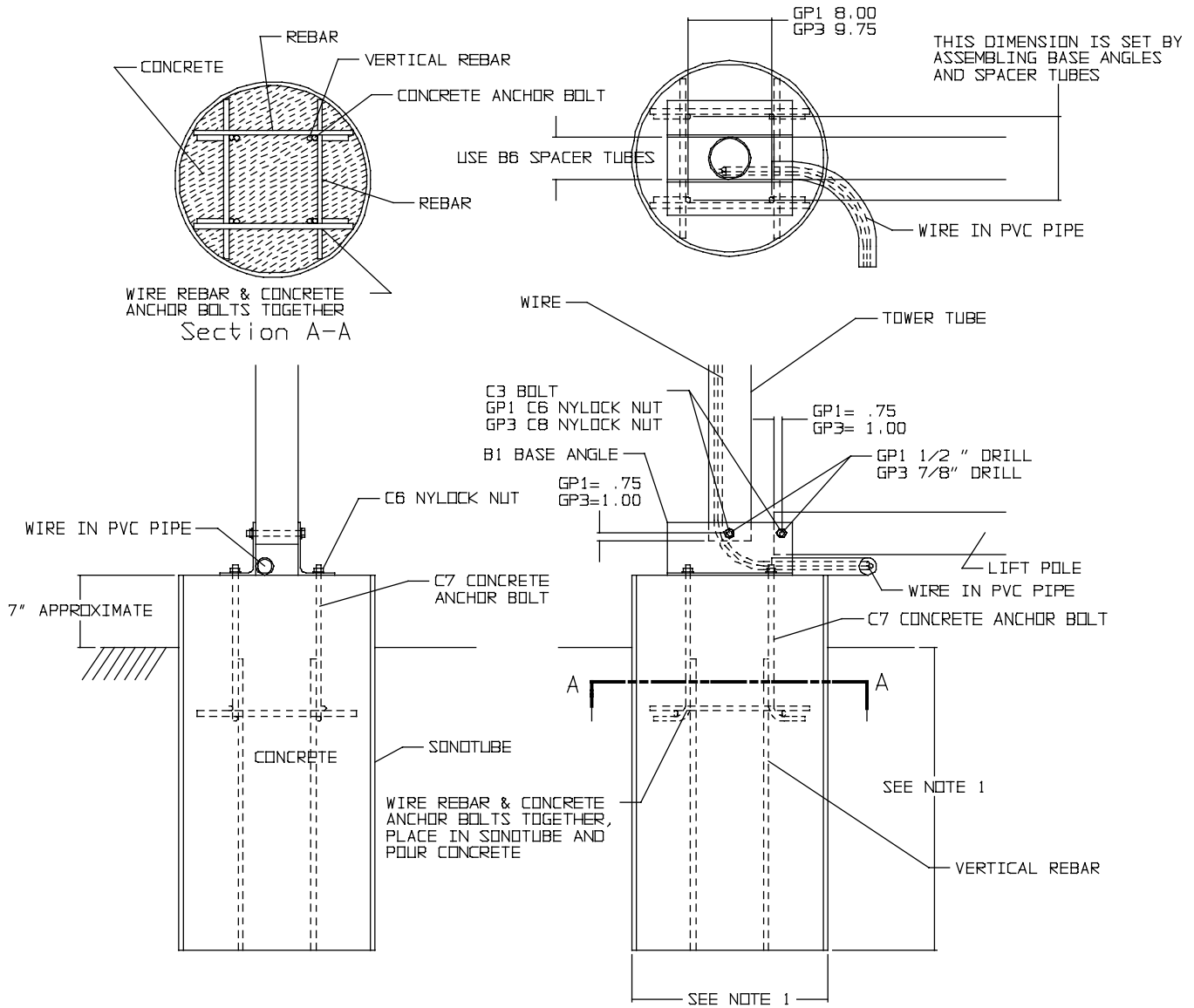
1. Clamp/hold insert 6 inches into tower section.
2. Drill hole 4 inches from the edge of the tower section and install bolt.
3. Slide next tower segment over insert until totally covered.
4. Drill hole 4 inches from the edge of the new tower segment and install bolt.

Figure 2.0: Tower In Raised Position



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Figure 2.1: Tower Base

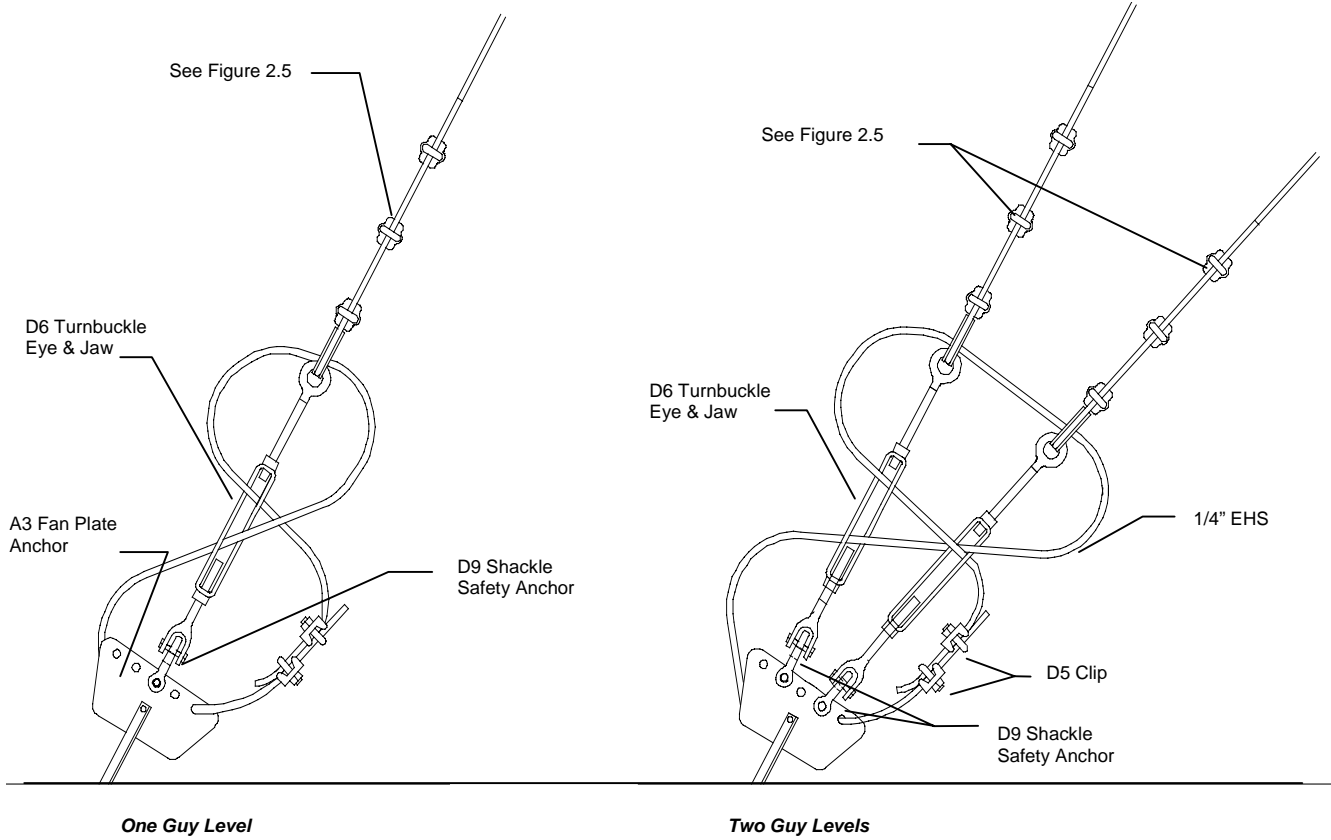


NOTE:

- For Base Dimensions, see disclaimer on Page 1.
- Tower Base and Anchors must be below frost line.

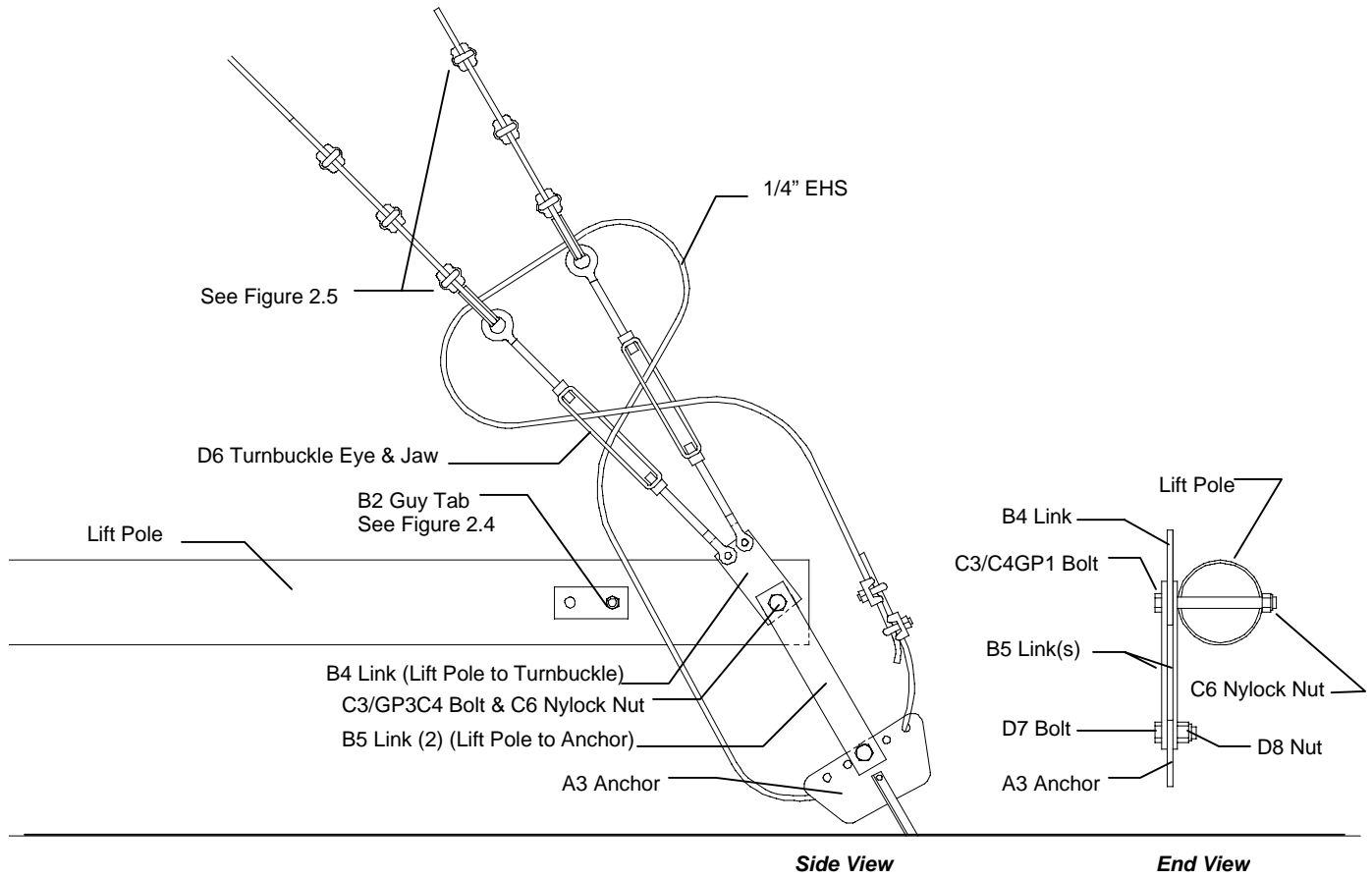
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Figure 2.2: Guys To Anchor



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Figure 2.3: Guys/Lift Pole to Anchor

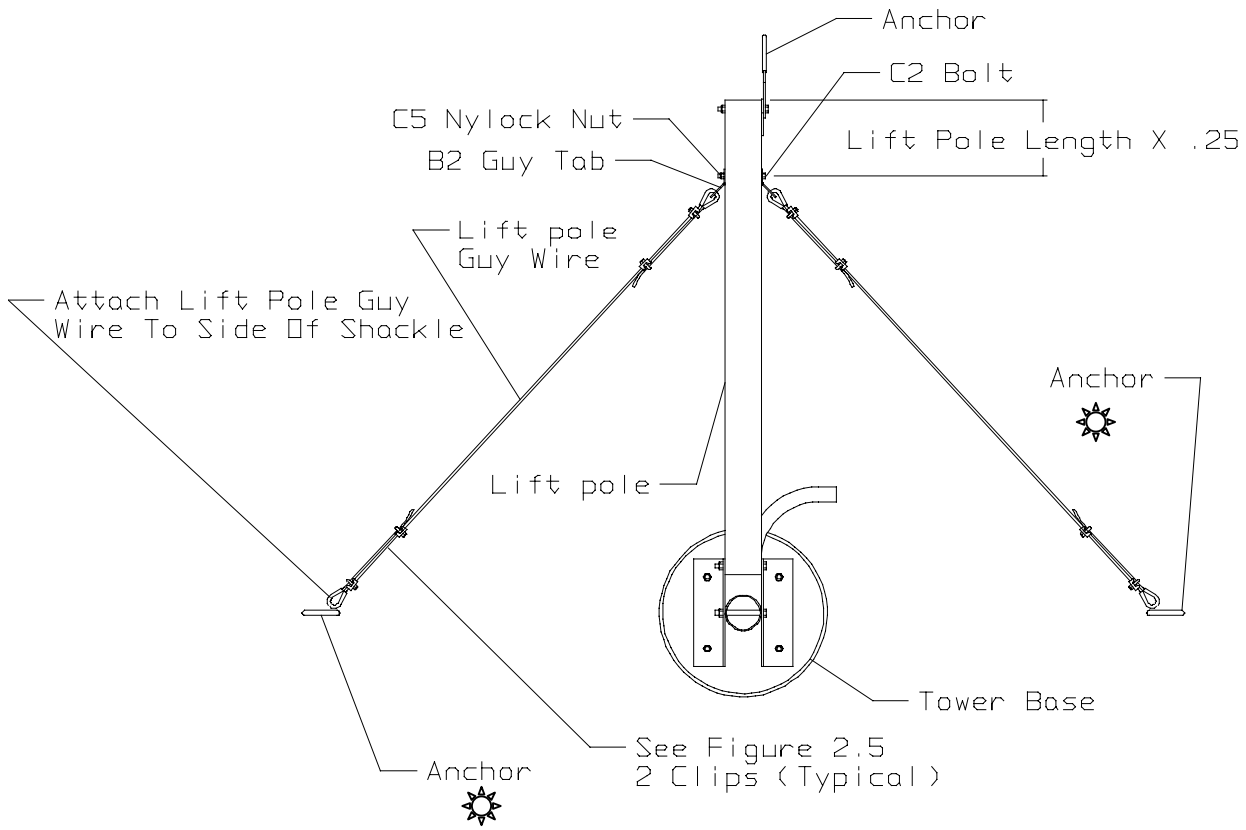


NOTE:
Sandwich the A3 Anchor between the two B5 links.
Use the D7 Bolt and D8 Nut to connect the links to the A3 Anchor

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Figure 2.4: Lift Pole

Birds Eye View



NOTE: These anchor locations require the use of one shackle per guy connected to that location

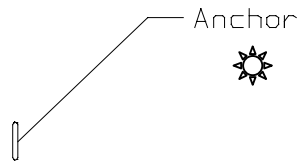


Figure 2.5: Clip Orientation

- NOTE:
1. Two Clips for Lift Pole Guys.
 2. Three Clips for Tower Guys.

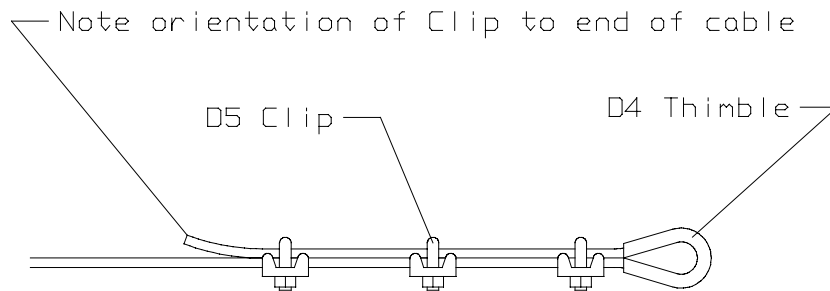
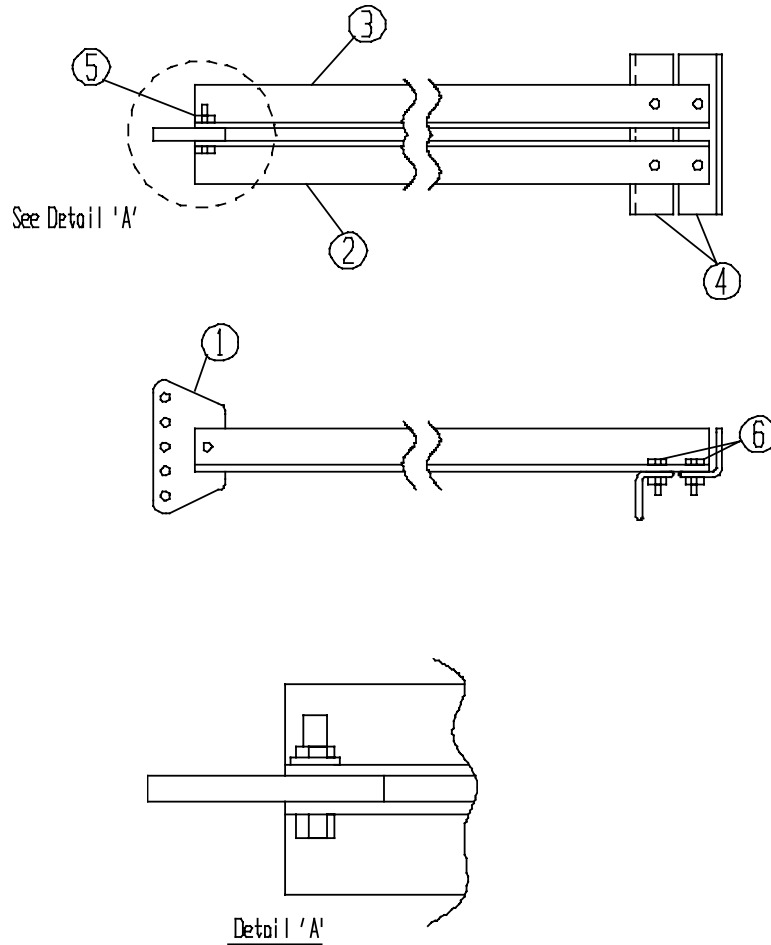


Figure 2.6: Anchor Specifications

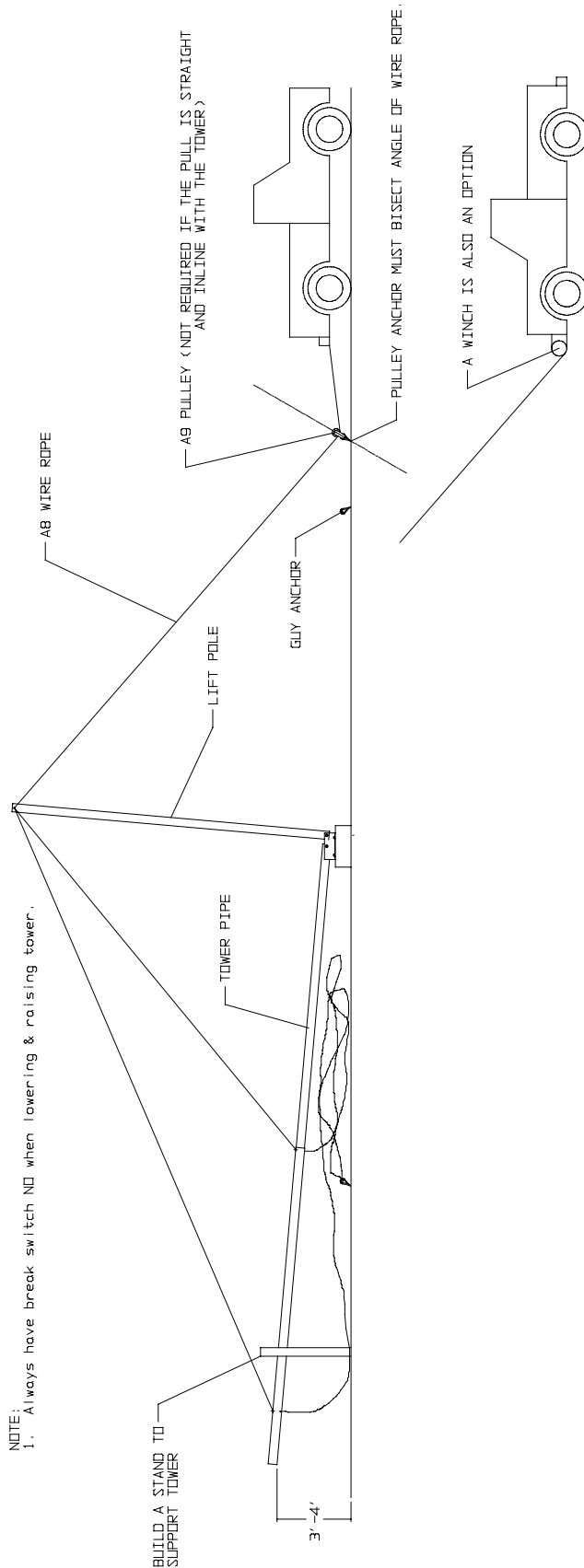
This type of fan anchor can be purchased from most tower companies including:

- World Power Technologies - 218-722-1492
- Rohn - 309-697-4400 (3455 Angle Anchor GAC3455KD)
- ERI - 812-925-6000 (20 KIP Anchor)



F. Tower Plans and Kits

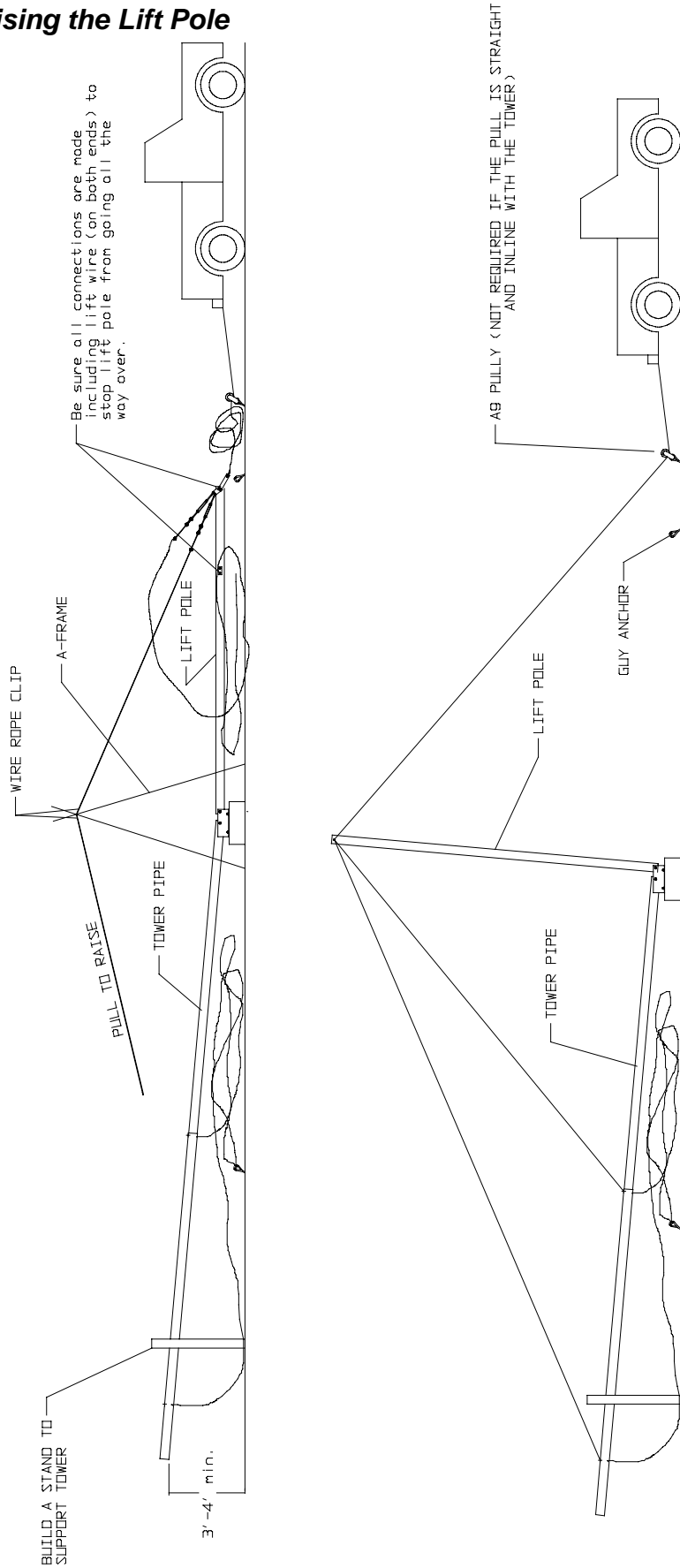
Figure 3.0: Tower In Lowered Position



NOTE:
1. Always have break switch NO when lowering & raising tower.

F. Tower Plans and Kits

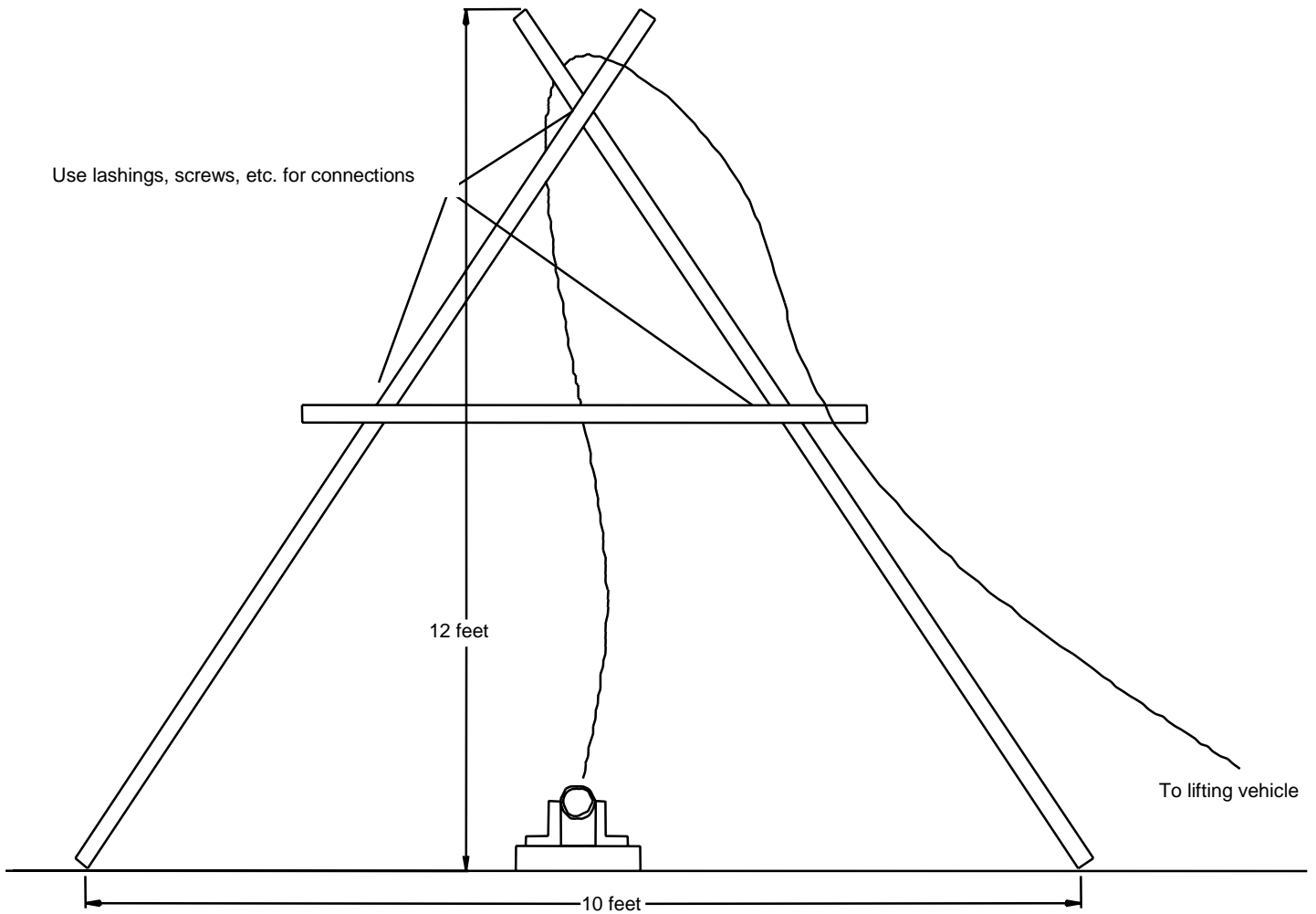
Figure 3.1: Raising the Lift Pole



F. Tower Plans and Kits

Figure 3.2 : Example A frame for Tower GP1-19K8L

This is only one possibility of the A frame for this tower. Please read section 4, paragraph 3 in this section for more details.



F. Tower Plans and Kits

Figure 3.3 : Stand to hold the generator and tower off the ground before lifting

