

Date: 1/10/2023

To: D. Clugston, Inc.
2506 Reliance Ave.
Apex, NC 27539
www.dclugston.com
919.629.7290

Subject: Windmill
Location: 469 Piney Grove Rawls Rd.
Fuquay-Varina, NC 27526
JDS Consulting Project No.: 22902526
Review Date: 1/10/2023

JDS Consulting, PLLC (JDS) is pleased to provide the structural evaluation report for the subject and location referenced above for D. Clugston, Inc. The following comments and/or recommendations are outlined below to meet or exceed the 2018 North Carolina State Building Code:

Observations:

Contractor is installing a pre-designed 40ft tall windmill from Aermotor Windmill Corporation. Harnett County Central Permitting has required that the structural plan submitted by D. Clugston, Inc. be sealed with a North Carolina professional engineer stamp. One change has been noted by the contractor; the plans state that all angles used in the structure will be 2 ½"x2 ½"x1/8" steel angles, but 2 ½"x2 ½"x3/16" steel angles will be used instead.

Recommendations:

Upon review of the 10ft windmill on 40ft tall tower structural plans submitted by D. Clugston, Inc., JDS has determined that it meets the necessary structural building code requirements for the state of North Carolina for 130mph wind loads. Only the 10-40 version of the windmill (see attached plans) are approved for this location. Foundation design has been provided and sealed by others. This letter will serve as the sealed structural (non-foundation) document of record.

If you have any questions or if I can be of further assistance to you on this project, please contact me at 919.606.3958.

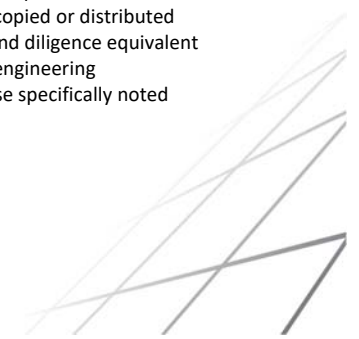
Respectfully Submitted,
Keegan Muncy-Champitto
JDS Consulting

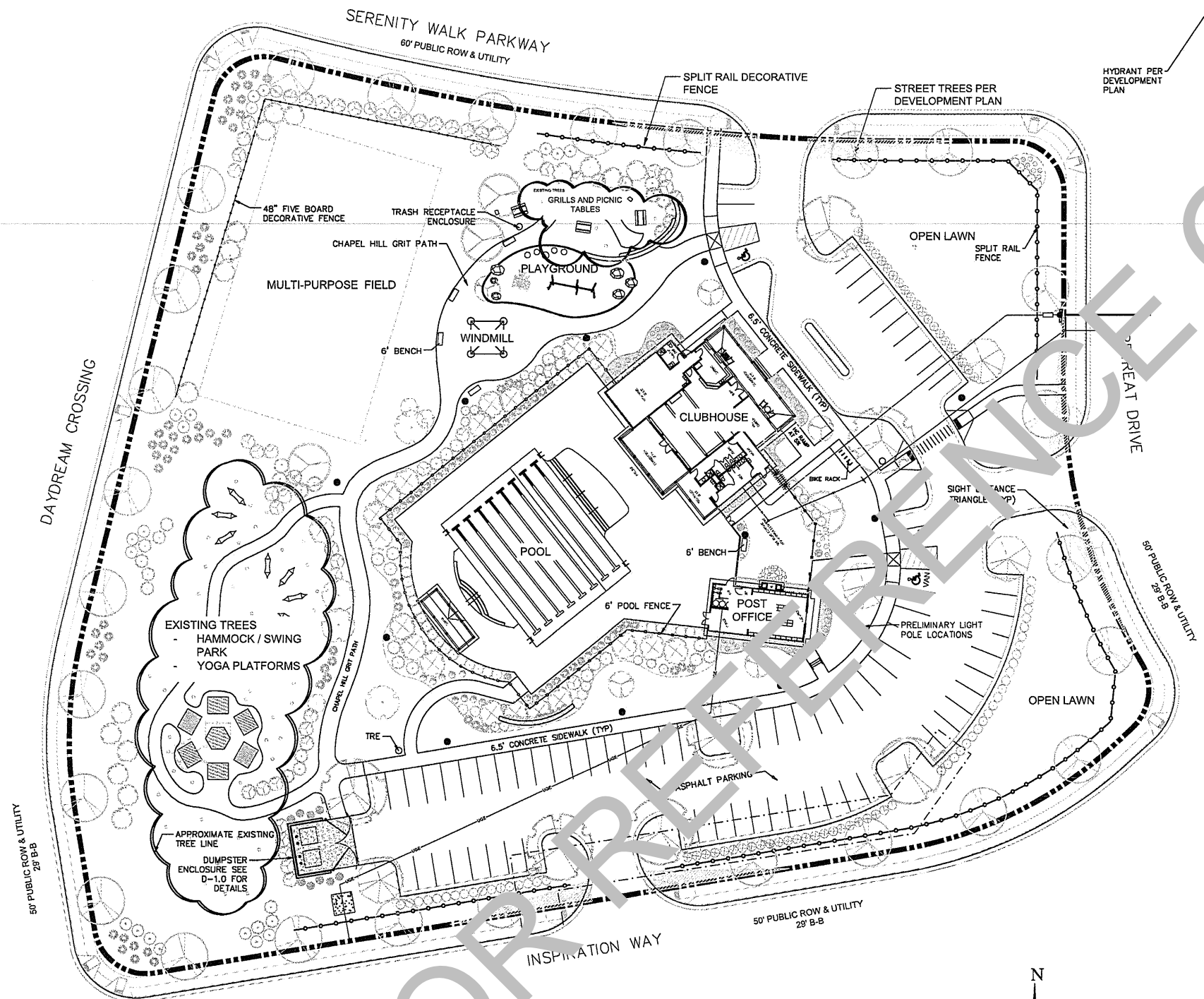


REVIEWING ENGINEER

Alteration of this seal is a violation of the provisions set forth by the local board of engineering and shall result in legal action by local authorities. These services are confidential in nature, and this report will not be released to any other party without your express consent. The use of this engineering work is limited to the express purpose for which it was commissioned, and it may not be reused, copied or distributed for any other purpose without the express written permission of JDS. All services are provided exercising a level of care and diligence equivalent to other professional engineers providing similar services under similar conditions. This report is the work product of an engineering investigation. This report is not a home inspection or a code-compliance report unless specifically stated. Unless otherwise specifically noted within the report, no destructive or invasive testing or procedures were performed during this investigation.

Attached: Serenity Windmill Plan Set, Project No.: 2018.037, Dated 10/14/2022





SITE DATA

TOTAL SITE AREA:	4.03 AC
PIN:	TO BE DETERMINED
PROPOSED USE:	RESIDENTIAL AMENITY (COMMERCIAL)
LAND USE CLASSIFICATION:	MEDIUM DENSITY RESIDENTIAL
CLUBHOUSE:	4775 SF
POST OFFICE:	107 SF
BUILDING SETBACK:	50'
PARKING SETBACK:	10'
PARKING:	1 PER 200 SF 5882/200= 29.4 SPACES REQUIRED 75 SPACES PROVIDED
STREET TREE:	PROVIDED PER DEVELOPMENT PLAN
PERIMETER BUFFER:	PARKING LOT SCREENING PROVIDED
DISTURBANCE AREA:	140,000 SF (3.21 AC)
PROPOSED IMPERVIOUS:	CLUBHOUSE AND POST OFFICE 6018 SF POOL DECK 8759 SF SIDEWALKS AND MISC 5736 SF VEHICULAR SURFACE AREA 31915 SF TOTAL 52,488 SF (1.2 AC)

- SITE PLAN NOTES:**
- CALL BEFORE YOU DIG. CALL THE NC ONE-CALL CENTER AT 1-800-632-4949. IT'S THE LAW.
 - EXISTING UTILITIES ARE SHOWN FROM THE BEST AVAILABLE INFORMATION AND ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THESE AND OTHER UTILITIES BEFORE STARTING CONSTRUCTION. NOTIFY UTILITY LOCATING COMPANY (ONE CALL) 1-800-632-4949 OR INDIVIDUAL UTILITY OWNERS FOR UNDERGROUND LOCATIONS AT LEAST 48 HOURS IN ADVANCE.
 - CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, RIGHT-OF-WAYS AND UTILITIES, PUBLIC OR PRIVATE, BEFORE WORKING IN THESE AREAS.
 - CONTRACTOR SHALL PUT INTO PLACE SUCH TEMPORARY EROSION CONTROL MEASURES AS INDICATED ON THE PLANS AND AS PER THE SERENITY DEVELOPMENT PLAN. THESE MEASURES SHALL BE INSPECTED AND EVALUATED DURING CONSTRUCTION OPERATION FOR THEIR EFFECTIVENESS IN PREVENTING EROSION MATERIAL AND SEDIMENT FROM DISCHARGING FROM THE WORK AREA. AS DIRECTED BY THE TOWN/COUNTY INSPECTOR, ADDITIONAL TEMPORARY EROSION CONTROL MEASURES MAY BE REQUIRED.
 - UNLESS EXPLICITLY SPECIFIED IN THESE PLANS, ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST EDITION OF HARNETT COUNTY UNIFIED DEVELOPMENT ORDINANCE, STANDARD DETAILS AND SPECIFICATION, AND ALL OTHER APPLICABLE REGULATIONS AND GUIDELINES. IN THE EVENT OF A DISCREPANCY BETWEEN THIS APPROVED PLAN AND THE APPLICABLE REGULATIONS OR GUIDELINES, THE MORE STRINGENT SHALL APPLY.
 - CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SUCH THAT WORKMEN AND THE PUBLIC WILL BE PROTECTED FROM INJURY, AND THE ADJOINING PROPERTY PROTECTED FROM DAMAGE.
 - CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT AT LEAST ONCE A WEEK DURING CONSTRUCTION. DEBRIS SHALL BE DISPOSED OF IN A PROPER AND LEGAL MANNER. CONTRACTOR IS RESPONSIBLE FOR ANY FEES.
 - CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO ANY EXISTING ITEM AND/OR MATERIAL DUE TO CONSTRUCTION OPERATIONS. ALL STREET SURFACES, UTILITY POLES, CULVERTS, DITCHES, CURB AND GUTTER OR OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATIONS.
 - IF DEPARTURES FROM THE DRAWINGS OR SPECIFICATIONS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEPARTURES AND REASONS THEREOF SHALL BE SUBMITTED IN WRITING TO THE OWNER/DESIGN ENGINEER FOR REVIEW. NO DEPARTURES FROM THE CONTRACT DOCUMENTS WILL BE ALLOWED WITHOUT APPROVAL BY THE OWNER.
 - CONTRACTOR SHALL MAINTAIN AN "AS-BUILT REDLINE" SET OF DRAWINGS TO RECORD THE EXACT LOCATION OF ALL PIPING AND PIPE INVERT ELEVATIONS PRIOR TO CONCEALMENT. DRAWINGS SHALL BE GIVEN TO THE OWNER/DESIGN ENGINEER PRIOR TO COMPLETION OF THE PROJECT.
 - ANY AND ALL QUANTITIES SHOWN OR IMPLIED ON THE PLANS ARE FOR ESTIMATION PURPOSES ONLY.
 - NO SIGHT OBSTRUCTING, OR PARTIALLY OBSTRUCTING WALL, FENCE, FOLIAGE, BERM, SIGN, PARKED VEHICLE, OR OTHER OBJECT BETWEEN THE HEIGHTS OF TWO (2) FEET AND EIGHT (8) FEET ABOVE THE CURB LINE ELEVATION (OR THE EDGE OF PAVEMENT IF NO CURB EXISTS) SHALL BE PLACED WITHIN A SIGHT TRIANGLE.
 - THIS SITE IS NOT IN A SPECIAL FLOOD HAZARD AREA.
 - REFER TO THE PHASE ONE SERENITY DEVELOPMENT PLAN FOR STREET PROFILES, CURB AND GUTTER, CURB RAMP, ASPHALT PAVING, AND CONCRETE SIDEWALK DETAILS.
 - REFER TO THE PHASE ONE SERENITY DEVELOPMENT PLANS FOR STANDARD DETAILS AND SPECIFICATIONS.
 - THE SITE SHALL BE MAINTAINED BY THE SERENITY HOA.
 - HOA SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE STORMWATER SYSTEM THAT IS OUTSIDE THE STREET RIGHT OF WAY.
 - LAND USE CLASSIFICATION = COMPACT MIXED USE
 - PINEY GROVE RAWLS RD. IS ON THE HARNETT COUNTY COMPREHENSIVE TRANSPORTATION PLAN.
 - THIS DEVELOPMENT IS WITHIN ONE MILE OF A VOLUNTARY AGRICULTURAL DISTRICT.
 - HOA SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE PARKING AREAS, DRIVE AISLES, AND ALL LANDSCAPE BUFFERING.
 - PERMANENT SIGN SHOULD BE SETBACK AT LEAST 10' FROM NCDOT RIGHT-OF-WAY, AND WILL REQUIRE AN ADDITIONAL PERMIT & REVIEW.

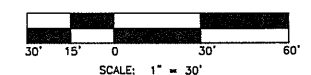
SITE PLAN NARRATIVE:

THE AMENITY SITE WILL CONSIST OF A CLUBHOUSE AND POOL, POST OFFICE FUNCTIONING AS THE CENTRAL MAIL KIOSK, AND MULTI-USE GREEN SPACE TO INCLUDE A PLAYGROUND, WINDMILL FEATURE, PICNIC AREA, MULTI-PURPOSE FIELD, YOGA AND HAMMOCK PARK. THE ARCHITECTURAL FACADE AND SITE ELEMENTS SHOW CASE THE HOMESTEAD FEEL WITH USE OF NATURAL WOOD FINISHES, DECORATIVE LIGHTING, SPLIT RAIL FENCING, AND STONE MATERIALS.

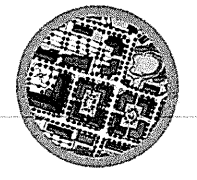
SEE SERENITY DEVELOPMENT PLAN STORMWATER REPORT FOR COMPLIANCE OF SITE STORMWATER MITIGATION MEASURES.

LEGEND

--- (dashed line)	contour interval per development plan
--- (dotted line)	proposed contour interval
--- (long dashed line)	sanitary sewer
--- (short dashed line)	water line
--- (dash-dot line)	decorative board fence
--- (dotted line with circles)	decorative split rail fence
--- (thick solid line)	Right of way
--- (thin solid line)	utility easement



1 SITE PLAN
SCALE: 1" = 30'



D. CLUGSTON
BUILDING AND DEVELOPMENT CO.

Timmons Group

REVISIONS:

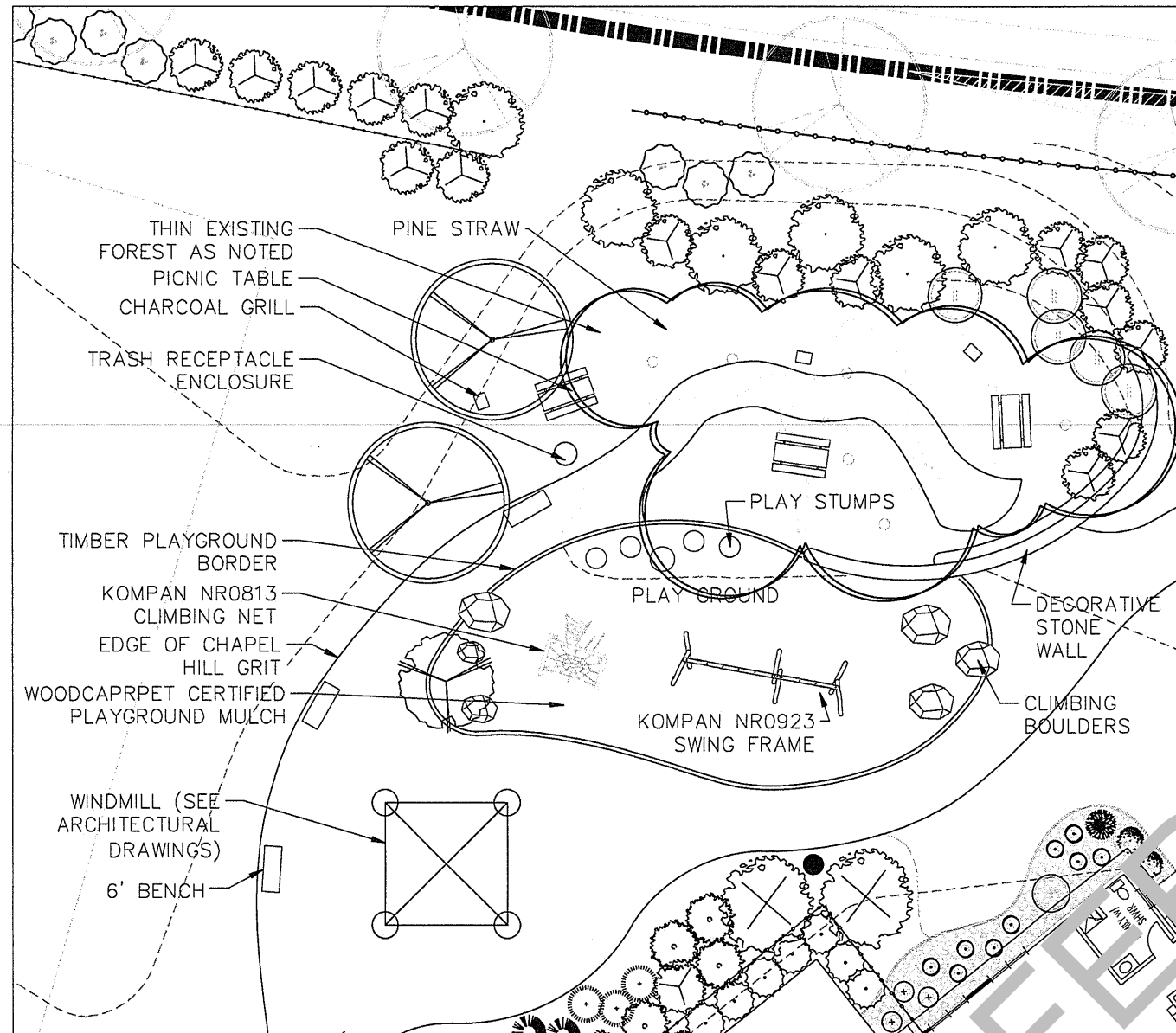
10-14-20	comments revision

SITE PLAN
SERENITY AMENITY
Piney Grove Rawls Rd, Harnett County, NC
GREENFIELD COMMUNITIES

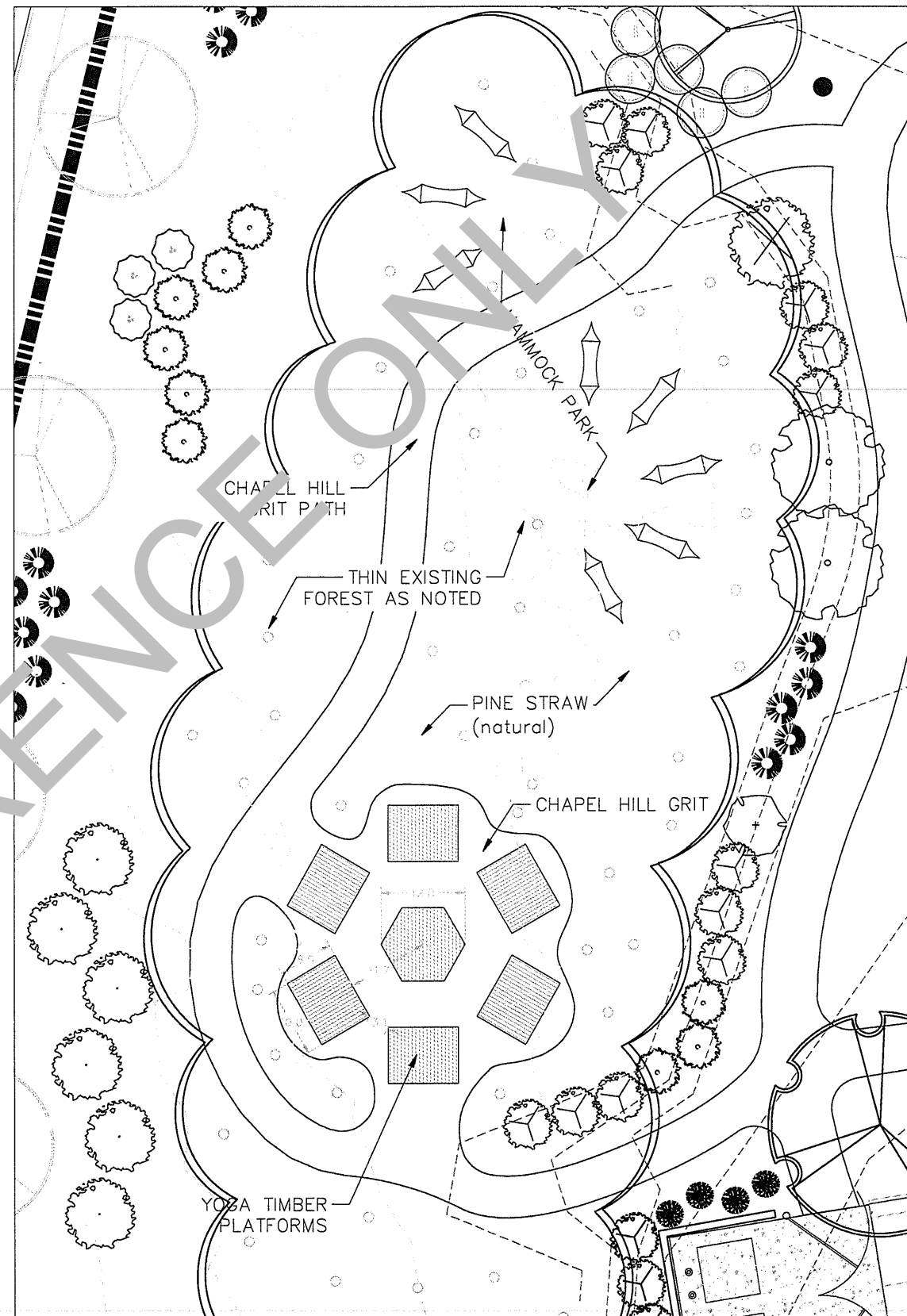
SCALE: _____
DRAWN BY: JGB
PROJECT # 18081
DATE: 03/03/20
SHEET

OF **C-2.0**

TMTLA ASSOCIATES
5011 SOUTH PARK DRIVE, STE. 200 - DURHAM, NC 27713
P: (919) 484-8880 E: info@tmtla.com



1 ENLARGEMENT
SCALE: 1" = 10'

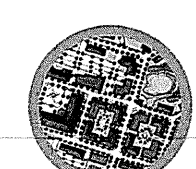
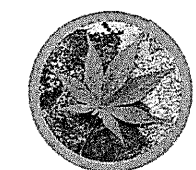
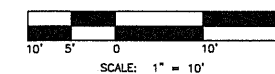
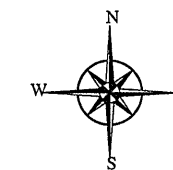


2 ENLARGEMENT
SCALE: 1" = 10'

- GENERAL NOTES:
1. PLAY EQUIPMENT TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
 2. PLAYGROUND AREA TO BE COVERED WITH WOODCAPRET CERTIFIED PLAY GROUND MULCH.
 3. SEE DETAILS SEE FOR FURNISHINGS AND SPECIFICATIONS.
 4. SEE LANDSCAPE SHEET FOR FOREST THINNING REQUIREMENTS.
 5. PLAYGROUND EQUIPMENT SUBJECT TO CHANGE.



Know what's below.
Call before you dig.



TMTLA ASSOCIATES
5011 SOUTH PARK DRIVE, STE. 200 - DURHAM, NC 27713
P: (919) 484-8880 e: info@tmtla.com

D. CLUGSTON
BUILDING AND DEVELOPMENT CO.

Timmons Group

REVISIONS:

10-14-20	comments revision

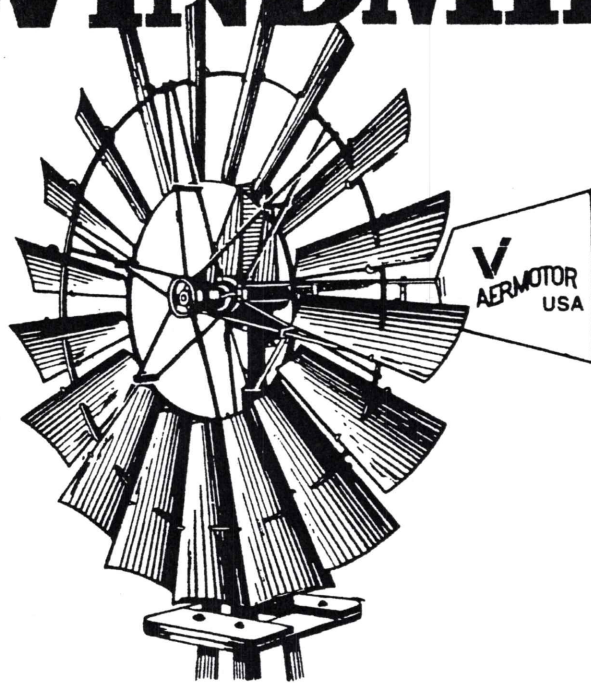
PARKS ENLARGEMENT
SERENITY CLUBHOUSE
Piney Grove Rawls Rd. Harnett County, NC
GREENFIELD COMMUNITIES

SCALE: _____
DRAWN BY: JGB
PROJECT # 18081
DATE: 03/03/20
SHEET

OF **C-2.1**

THE AERMOTOR WINDMILL

MADE IN THE U.S.A.

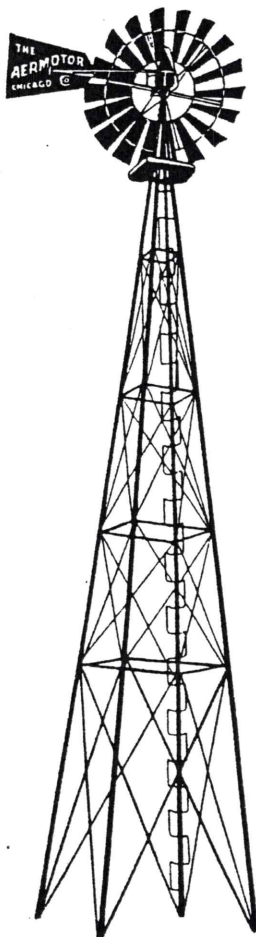


Very few refinements have been necessary in the time-proven Aermotor Windmill of 1888, a pumping machine proven to be the most energy efficient pump ever invented. The Aermotor Windmill, built in the USA with American technology, materials and labor, will provide years of trouble-free service, and pumping capacities for almost any rural application.

The Aermotor Windmill features:

- *Precisely balanced and aligned wheel design.*
- *Oil reservoir to supply oil liberally to all gears and bearings.*
- *Double gears and Pitmans for balanced loading.*
- *Automatic regulation to turn the wheel out of strong winds.*
- *Outside furling device.*
- *Adjustable brake.*
- *Adjustable stroke to vary volume or elevation.*

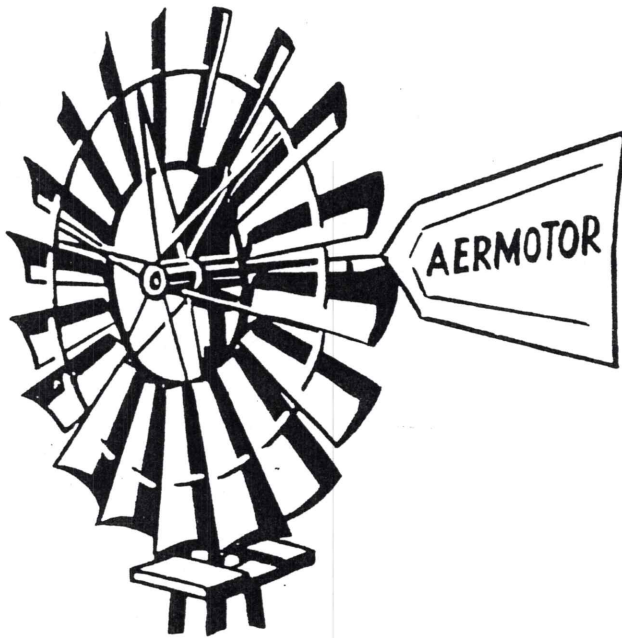
C A P A C I T I E S



DIAMETER OF CYLINDER IN INCHES	CAPACITY PER HOUR IN GALLONS		Total Elevation in Feet					
			SIZE					
	6 Ft	8-16 Ft	6 Ft	8 Ft	10 Ft	12 Ft	14 Ft	16 Ft
1 3/4	105	150	130	185	280	420	600	1,000
1 7/8	125	180	120	175	260	390	560	920
2	130	190	95	140	215	320	460	750
2 1/4	180	260	77	112	170	250	360	590
2 1/2	225	325	65	94	140	210	300	490
2 3/4	265	385	56	80	120	180	260	425
3	320	470	47	68	100	155	220	360
3 1/4	—	550	—	—	88	130	185	305
3 1/2	440	640	35	50	76	115	160	265
3 3/4	—	730	—	—	65	98	143	230
4	570	830	27	39	58	86	125	200
4 1/4	—	940	—	—	51	76	110	180
4 1/2	725	1,050	21	30	46	68	98	160
4 3/4	—	1,170	—	—	—	61	88	140
5	900	1,300	17	25	37	55	80	130
5 3/4	—	1,700	—	—	—	40	60	100
6	—	1,875	—	17	25	38	55	85
7	—	2,550	—	—	19	28	41	65
8	—	3,300	—	—	14	22	31	50

Capacities shown in the above table are approximate, based on the mill set on the long stroke, operating in a 15 to 20 mile-an-hour wind. The short stroke increases elevation by one-third and reduces pumping capacity one-fourth.

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INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

AERMOTOR WINDMILLS



California Contractor's License #620131

PAUL PETROCCHI
ELLEN SATTLER
530-644-3008 / 800-494-6364

POST OFFICE BOX 1187
DIAMOND SPRINGS
CALIFORNIA 95619

www.windmills.net

OWNER'S RECORD

WINDMILL SIZE 6, 8, 10, 12, 14, 16,
(Circle the size)

DATE CODE _____

DATE OF INSTALLATION _____

DEPTH TO CYLINDER _____

SIZE OF CYLINDER _____

DROP PIPE SIZE _____

PUMP ROD SIZE _____

OWNER _____

INSTALLER _____

It is important to use a tower high enough for good wind exposure from every direction. The mill will pump more often, and will be safer in storms. The wheel should be at least 15 feet above all surrounding wind obstructions, such as buildings and trees, within a radius of 400 feet.

Please read thoroughly these instructions BEFORE attempting to install your AERMOTOR WINDMILL. It can not only save you time but also enable you to get the maximum performance from your windmill.

HOW TO INSTALL THE AERMOTOR WINDMILL

General Information and Precautions

It is recommended that there be at least two men, working together on the installation, to save time and make the job easier and safer.

As in any installation of this type, safety is extremely important. If proper safety measures are not taken, it can result in severe physical impairment, or even loss of life, not only to the workers but to innocent bystanders as well.

WE STRONGLY RECOMMEND THAT THE FOLLOWING SAFETY PRECAUTIONS BE TAKEN FOR THE PERSONAL SAFETY OF EACH WORKER AND THE SAFETY OF ANYONE NEAR THE TOWER WHILE WORK IS IN PROGRESS:

1. Wear approved (construction type) hard hats.
2. Wear and use approved safety belts.
3. Wear safety shoes having steel toes and rubber or cork soles and heels.

4. Avoid wearing loose-fitting or torn clothing which might snag on a steel member of the tower.
5. Be certain that shovels, iron bars and tools are located a distance away from the tower when they are not in use.
6. Be certain that all bolts and nuts are secure at each level of tower construction before standing or climbing on that section.
7. Make certain that there are no overhead electrical lines nearby that could come into contact with tower or windmill.

When these safety precautions have been taken, you are now ready to begin the assembly and installation of your windmill.

AERMOTOR WINDMILL SPECIFICATIONS

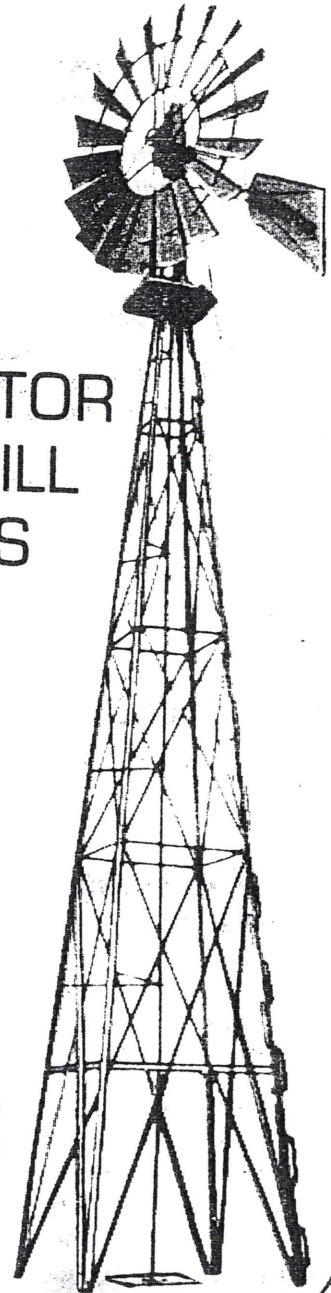
Model 802*	Mill Size Wheel Dia. (Ft.)	Stroke Inches		No. Of Sails	Mill Ship'g Weight (Pounds)	Back Geared	Max. Strokes Per Minute	At Wind Velocity	Max. Wheel RPM	Weight Of Crated Motor
		Long	Short							
X	6	5"	3¾"	18	210	3.91-1	32	15-18 mph	125	100
A	8	7½"	5½"	18	355	3.29-1	32	15-18 mph	105	175
B	10	9¼"	7¼"	18	655	3.29-1	26	15-18 mph	85	330
D	12	11¼"	8¼"	18	1130	3.50-1	21	18-20 mph	73	540
E	14	13½"	9¾"	18	1870	3.43-1	18	18-20 mph	62	805
F	16	14¾"	11¾"	18	2585	3.29-1	16	18-20 mph	53	1180

*Model 802 Windmills were introduced in 1981 and parts are interchangeable with Model 702 Windmills introduced in 1933.

INSTALLATION INSTRUCTIONS

AERMOTOR WINDMILL TOWERS

STANDARD
4-POST TOWER

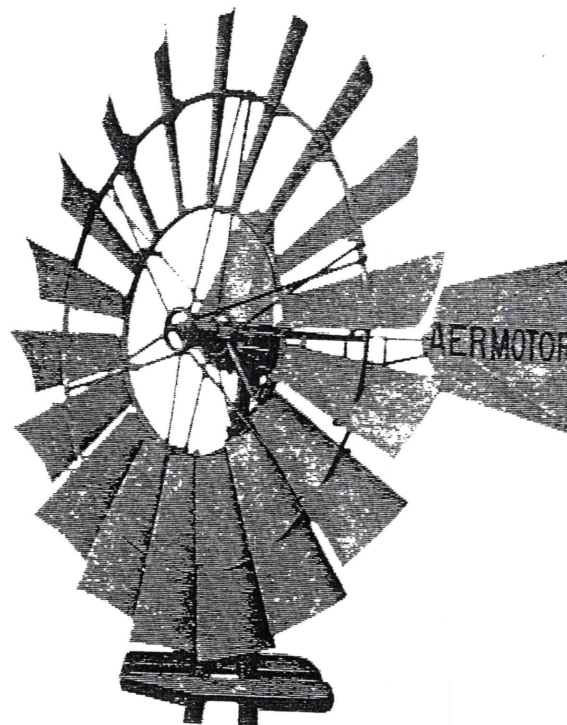


AERMOTOR

A Division of Valley Industries, Inc.

CONWAY, ARKANSAS 72032

It is important to use a tower high enough for good wind exposure from every direction. The mill will pump more often, and will be safer in storms. The wheel should be at least 15 feet above all surrounding wind obstructions, such as buildings and trees, within a radius of 400 feet.



Please read thoroughly these instructions BEFORE attempting to install your AERMOTOR WINDMILL TOWER. It can not only save you time but also enable you to get the maximum performance from your water system.

HOW TO INSTALL THE AERMOTOR STANDARD 4-POST AND WIDESPREAD WINDMILL TOWERS

General Information and Precautions.

It is recommended that there be at least two men, working together on the installation, to save time and make the job easier and safer.

As in any installation of this type, safety is extremely important. If proper safety measures are not taken, it can result in severe physical impairment, or even loss of life, not only to the workers but to innocent bystanders as well.

WE STRONGLY RECOMMEND THAT THE FOLLOWING SAFETY PRECAUTIONS BE TAKEN FOR THE PERSONAL SAFETY OF EACH WORKER AND THE SAFETY OF ANYONE NEAR THE TOWER WHILE WORK IS IN PROGRESS:

1. Wear approved (construction type) hard hats.
2. Wear and use approved safety belts.
3. Wear safety shoes having steel toes and rubber or cork soles and heels.
4. Avoid wearing loose-fitting or torn clothing which might snag on a steel member of the tower.
5. Be certain that shovels, iron bars and tools are located a distance away from the tower when they are not in use.

6. Be certain that all bolts and nuts are secure at each level of tower construction before standing or climbing on that section.
7. Make certain that there are no overhead electrical lines nearby that could come into contact with tower or windmill.

When these safety precautions have been taken, you are now ready to begin the assembly and installation of your tower.

Methods of Assembling A Standard 4-Post Tower.

Your Aermotor windmill tower can be built complete on the ground and hoisted into place by means of a crane, boom truck or similar equipment.

It can also be built, section by section, from the ground up.

The method selected will depend largely upon the experience of the installer. If you elect to build the tower on the ground, care should be taken to pre-

vent the bending of the corner posts when the tower is hoisted into position. Temporary bracing, installed near the bottom of the lower corner posts, will help to prevent bending until the tower can be securely anchored in place.

Aermotor towers are so designed that they can be built from the ground up. All girts are located just below the splice of the corner posts so that the installer, who is standing on planks at any set of girts, can build the section above.

It is recommended that the planks used as scaffolding be at least 2" x 12" of solid, sound material and placed on the girts as close to the corner posts as possible so that the girts will not sag in the middle.

Lay two (2) planks on **each side** in one direction and two (2) planks each on the opposite sides, over the first planks, in the other direction (total of 8 planks, See Figure 6). Leave them in place as each section is completed so that you can return to the lower section for tightening bolts. It will also enable

you to store your material for the next section of the tower to be built.

Check Your Material.

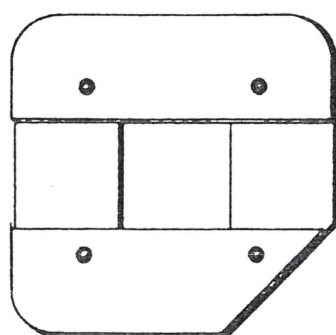
Open the bundles of tower materials and group similar pieces together. Open the bolt box and separate the different sizes. Check everything against the Components Listing to see that you have the parts you need to do your job.

On towers for 8-foot and 10-foot mills, the regular corner posts are 13 feet, 8½ inches long and extend over two panels of the tower. For 27-foot and 40-foot widespread towers, the bottom corner posts are 7 feet long.

The top corner posts for 21-foot, 33-foot and 47-foot towers are 7 feet long. For widespread towers for 12-foot, 14-foot and 16-foot mills, they are also 7 feet long but they are bent slightly just below the platform location.

After the material has been checked, you are ready to begin with the installation.

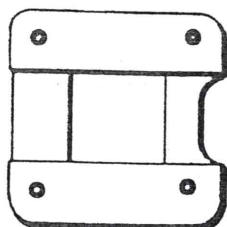
Components For Aermotor Towers.



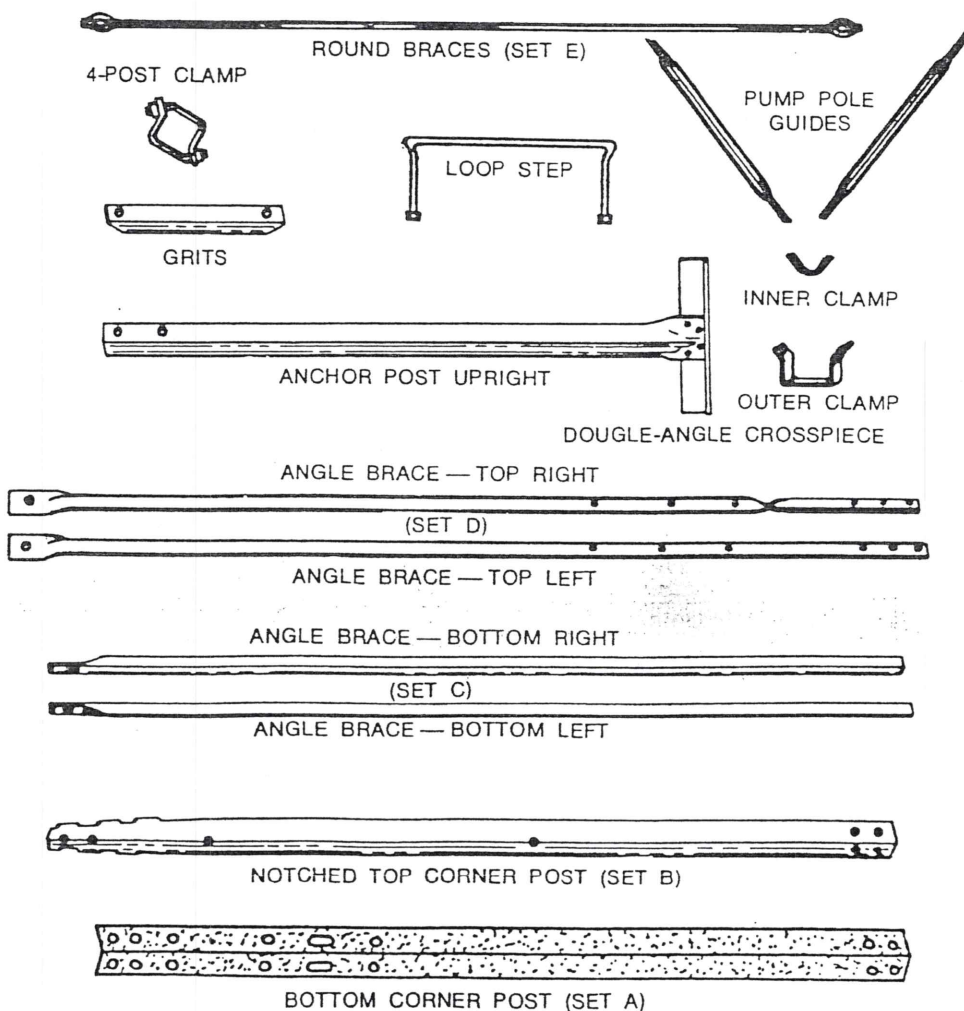
PLATFORM



PLATFORM BOLT



OILING PLATFORM
(For Widespread Towers
only with 12-ft., 14-ft.,
16-ft. Mills)



BOLT LISTS FOR 4-POST STANDARD TOWERS FOR 6 OR 8 FOOT AND 10 FOOT MILLS

Where Used	SIZE OF TOWER		HEIGHT OF TOWERS — FEET							
	10 Foot	6 or 8 Foot	7	14	20	21	27	33	40	47
Angle Brace, Cross	3/8 x 3/4"	3/8 x 3/4"	—	—	—	4	4	4	4	4
Corner Posts	3/8 x 3/4"	3/8 x 3/4"	17	33	50	17	34	50	50	67
Angle Braces	3/8 x 1"	3/8 x 1"	—	—	—	9	17	17	17	17
Corner Posts	3/8 x 1"	3/8 x 1"	—	—	—	33	—	—	—	—
Anchor Post-Crosspieces	3/8 x 1"	3/8 x 1"	—	—	—	17	17	17	17	17
Girt and 1 Brace	3/8 x 1"	3/8 x 1"	—	17	17	—	9	9	9	9
Girt and 2 Braces	3/8 x 1 1/4"	3/8 x 1 1/4"	—	—	9	—	9	17	25	33
Pipe Base, Short	1/2 x 2"	3/8 x 1 1/2"	2	2	2	2	2	2	2	2
Pipe Base, Long	1/2 x 2 1/2"	3/8 x 1 3/4"	2	2	2	2	2	2	2	2
Pump Pole Splices	3/8 x 2 1/4"	3/8 x 2"	—	—	—	2	4	4	8	8
Tower Top Bolts	3/8 x 4 1/2"	3/8 x 4"	4	4	4	4	4	4	4	4
Pole Splice Straps (Pair)	B-82	A-82	—	—	—	—	1	1	2	2
Pole Connection	B-62	A-62	—	—	1	1	1	1	1	1
Bolts for Pole Connection	3/8 x 2 1/4"	3/8 x 2"	—	—	2	2	2	2	2	2
Washers for Pole Connection	7/16 x 1 x 1/8"	7/16 x 1 x 1/8"	—	—	2	2	2	2	2	2
Pole Guide Clamp, Outer	T-3293	T-3291	—	1	1	1	2	3	4	5
Pole Guide Clamp, Inner	T-3294	T-3292	—	1	1	1	2	3	4	5
Bolts for Pole Guide	1/4 x 1"	1/4 x 1"	—	2	2	2	5	7	9	11
Clamp Complete	T-179 1/2	T-177	1	1	1	1	1	1	1	1
V-Bolt for Furl Handle	A-333	A-334	1	1	1	1	1	1	1	1
Loop Steps	—	U-397	2	7	12	11	17	22	27	32
Loop Steps	U-397	—	1	6	11	10	16	21	26	31

Specifications subject to change without notice.

BOLT LISTS FOR 4-POST WIDE SPREAD TOWERS

Where Used	Size of Mill			Height of Tower, Feet			
	16-ft.	14-ft.	12-ft.	27	33	40	47
Angle Braces	1/2 x 1	3/8 x 3/4	3/8 x 3/4	10	10	10	10
Angle or Truss Brace, Lower End	5/8 x 1 1/2	1/2 x 1 1/4	1/2 x 1 1/4	9	9	9	9
Corner Posts	5/8 x 1 1/4	1/2 x 1	1/2 x 1	57	57	74	74
Girt and 1 Brace	5/8 x 1 1/2	1/2 x 1 1/4	1/2 x 1 1/4	11	11	11	11
Girt and 2 Braces	5/8 x 1 3/4	1/2 x 1 1/2	1/2 x 1 1/2	9	17	25	33
Pipe Base, short	5/8 x 3	1/2 x 2 1/4	1/2 x 2	2	2	2	2
Pipe Base, long	5/8 x 3 1/2	1/2 x 2 1/2	1/2 x 2 1/4	2	2	2	2
Pump Pole Splices	3/8 x 3 1/2	3/8 x 3	3/8 x 2 1/2	4	4	8	8
Tower Top Bolts	5/8 x 7 1/2	1/2 x 6	1/2 x 5 1/2	4	4	4	4
Pole Splice Straps (pair)	F-82	E-82	D-82	1	1	2	2
Pump Connection	—	E-62	D-62	1	1	1	1
Bolts for Pump Connection	—	1/2 x 3	1/2 x 2 3/4	2	2	2	2
Washers for Pump Connection	—	9/16 x 1 1/4	9/16 x 1 1/4	2	2	2	2
Pole Guide Clamp, outer	T-3491	T-3393	T-3391	2	3	4	5
Pole Guide Clamp, inner	T-3492	T-3394	T-3392	2	3	4	5
Bolts for Pole Guide	3/8 x 1 1/4	1/4 x 1	1/4 x 1	5	7	9	11
Clamp Complete	T-777	T-274	T-277	1	1	1	1
V Bolt for Furl Handle	—	D-333	D-333	1	1	1	1
V Bolt for Furl Handle	D-333	—	—	2	2	2	2
Steps	—	U-397	U-397	17	22	27	32
Steps	U-397	—	—	16	21	26	31
Truss Braces	—	3/8 x 3/4	3/8 x 3/4	4	4	3	4
Truss Braces	—	3/8 x 1	3/8 x 1	8	8	8	8
Truss Braces	1/2 x 1	—	—	11	11	7	11
Truss Braces	1/2 x 1 1/4	—	—	—	—	4	—
Corner Washer f/Pipe Base Bolts	T-779	—	—	4	4	4	4
Anchor Post-Crosspiece	5/8 x 1 1/2	1/2 x 1 1/4	1/2 x 1 1/4	17	17	17	17

Specifications subject to change without notice.

Anchor Holes.

The anchors are the foundation of your tower so you must exercise care in locating and digging the holes. Determine how you will fill the holes around the anchors. It is recommended that the bottom two feet of the holes be filled with cement and topped with dirt. The holes should be at least two feet in diameter to give a secure foundation for the tower. Refer to Figure 1 for information on locating the holes and to Figure 2 for the proper base dimensions of the tower you plan to build.

For mills of 14-foot diameter, or less, the holes should be 4 feet, 9 inches deep. For 16-foot mills, the holes should be 6 feet, 6 inches deep. Be certain that the bottom of all four holes are on the same level.

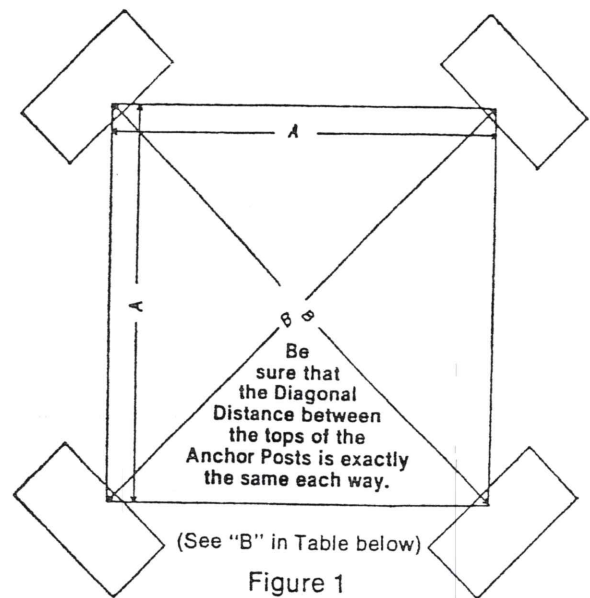


Figure 2																
BASE DIMENSIONS... 4-POST TOWERS																
STANDARD TOWER				WIDE-SPREAD TOWER												
FOR 6, 8 and 10-FT. MILLS				12-FT. MILLS				14-FT. MILLS				16-FT. MILLS				
HEIGHT	A		B		A		B		A		B		A		B	
(Feet)	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
21	6	0	8	5 ³ / ₁₆	—	—	—	—	—	—	—	—	—	—	—	—
27	5	6 ¹³ / ₁₆	7	10 ¹ / ₂	6	8 ¹ / ₈	9	5 ⁵ / ₁₆	6	8 ¹ / ₄	9	5 ¹ / ₂	—	—	—	—
33	6	10 ³ / ₄	9	9	8	4 ¹ / ₄	11	9 ³ / ₄	8	4 ³ / ₈	11	9 ¹⁵ / ₁₆	8	5 ¹ / ₂	11	11 ⁹ / ₁₆
40	8	2 ¹¹ / ₁₆	11	7 ¹ / ₂	9	11 ⁷ / ₈	14	1 ¹ / ₂	10	0	14	1 ¹¹ / ₁₆	10	1	14	3 ¹ / ₈
47	9	6 ⁵ / ₈	13	6	11	8 ¹ / ₁₆	16	6 ¹ / ₁₆	11	8 ⁹ / ₁₆	16	6 ¹ / ₄	11	9 ¹ / ₈	16	7 ⁹ / ₁₆

Anchor Posts.

Bolt two (2) anchor post crosspieces back to back to the anchor post upright (See Figure 3). Tighten the nuts securely. Put the anchors in the anchor holes BUT DO NOT FILL THE HOLES AT THIS TIME.

Ladder.

Attach the steps to the ladder corner post before you begin assembling the tower in order that you might use them to climb the tower as it is built up.



Loop Steps
Smooth loop steps on the corner post of the tower form a very solid ladder. Greater slope at the corner post makes climbing easy.

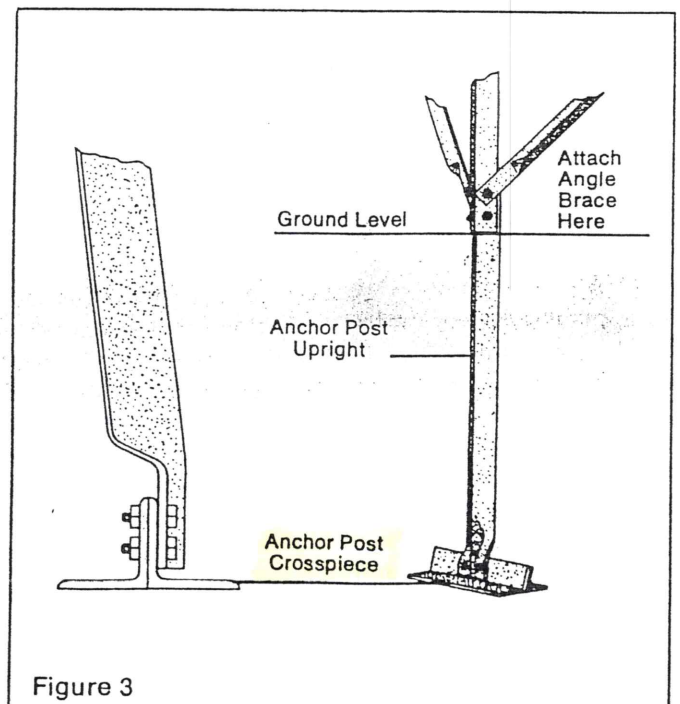


Figure 3

Assembling The First Section.

There are two types of corner posts. (Refer to Components For Aermotor Towers.) Set B, which has notches at the top end, is used at the top of the tower only. Set A is used from the bottom of the tower to the point where the posts join to Set B.

Bolt a corner post (from Set A) to each anchor post upright (the end of the post having two holes).

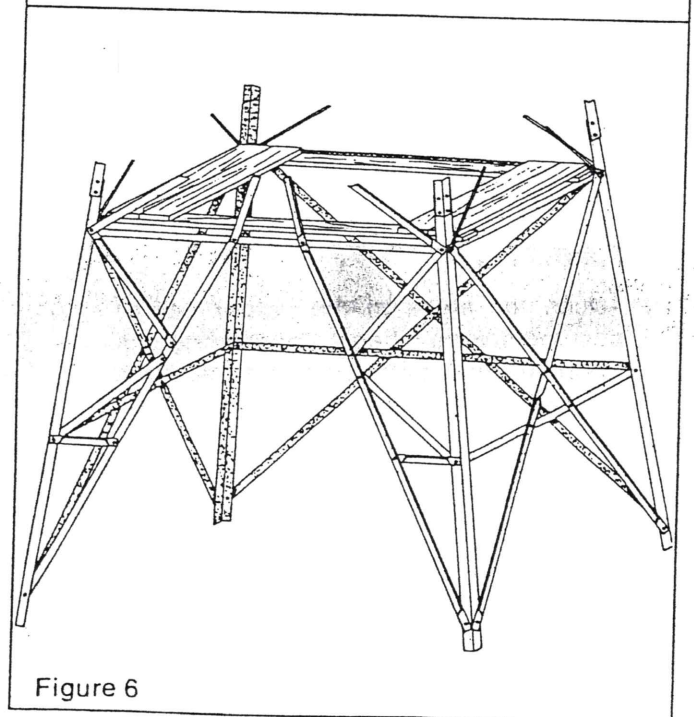
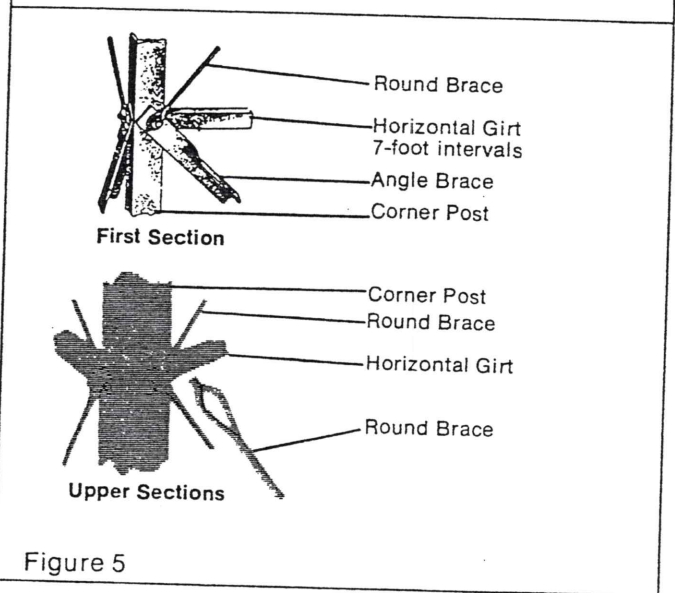
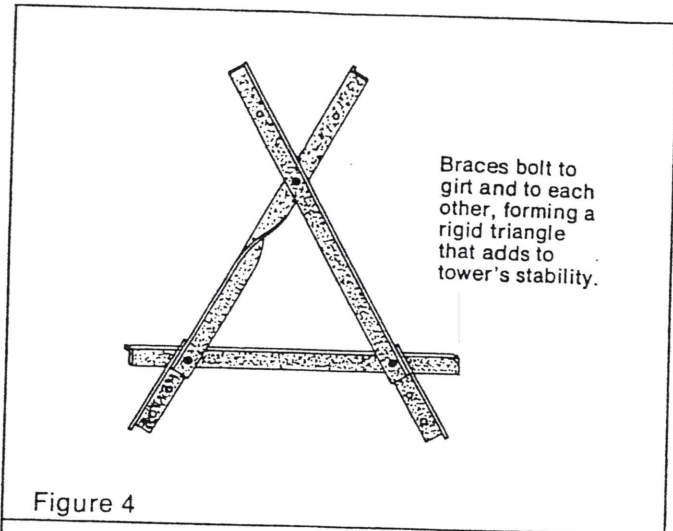
Install the longest set of girts, **inside** the corner posts, about 7 feet from the ground at the bolt holes provided in the corner posts. Install bolts with the nuts to the outside. Snug but do not tighten.

Install the lower sections of the angle braces, Set C, on the **outside** of the corner posts, bolting the bottom end of the brace to the upper hole of the anchor post splice. These braces are made right hand and left hand so that the flat side of both of them will be up when they are properly attached. Splice the top section of the angle braces, Set D, to Set C at the bottom girt and bolt in place on the corner post at the second girt from the ground. Snug but do not tighten nuts. (See Figure 4 for proper method of crossing and connecting angle braces.) The angle braces have extra holes so that they will fit different tower heights. Attach the top ends of the angle braces at the corner posts with the same bolts that are used to fasten the girts. At the second girt, install a round brace (Set E) at each corner post using the same bolts that are used to fasten the angle braces and girts (See Figure 5). Let the round braces hang free until the next section has been built. Snug the nuts but do not tighten the nuts in any section until the section above has been built.

The Second Section.

When the bottom section has been assembled, lay planks across the girts as close to the corner posts as possible (See Figure 6). Bring up material for the next section and use the planks for storage until the material can be installed in its proper place. Install the girts and fasten the round braces in place. Beginning at the second girt from the ground, the round braces extend diagonally across each tower section to the next highest girt and are used in much the same manner that the angle braces were used in the lower section.

When the second section is completed, return to the section below and tighten all nuts securely.



Setting The Anchors.

When two sections of the tower have been assembled, **level the anchor posts carefully**. Be certain that the pump or well casing is in the **exact center of the tower** and that the base of the tower is square. To level the tower, use a straight edge and spirit level on the bottom girts.

To square the tower, measure diagonally across the **tower between the top of the anchor posts**, making certain that the distance is the same in both directions.

When everything is level, plumb and square, fill the anchor holes. It is recommended that cement be used in the bottom two feet of each hole and allowed to set up. Fill the balance of the hole with dirt and tamp it well. **Be certain that the tower does not move when tamping the dirt.**

The Top Of The Tower.

When the top corner posts (Set B) are in position, install the platform (Figure 8) and secure it to the corner posts with four (4) "L" shape bolts. The notched corner of the platform installs at the ladder side of the tower.

Slip the mill mast pipe into position and install the two shorter bolts on that side of the tower to which the furl handle is to be attached. The two longer bolts, which support the furl lever, install on the opposite side.

The furl lever of the mill must be on the opposite side of the tower from the furl handle at the foot of the tower so that the furl wire will pull across the tower and clear the platform.

Be certain to lock the notches at the top of the corner posts, install the clamp and tie bolts, and tighten securely (See Figure 7).

Connect the furl wire to the furl lever at the top of the tower and to the furl handle at the bottom. When the furl handle is all the way down, the furl lever will bear against the nuts at the bottom of the supporting angles.

When both furl rings are in place, installation of the motor can proceed.

Assembling The Mill.

Assemble the tailbone and vane on the ground.

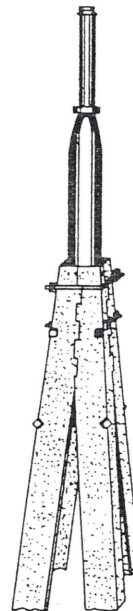
Using a gin pole and tackle, lift the motor to the top of the tower and slip it onto the pipe. Lift the tailbone and vane and attach it to the motor. When

the vane is in place, install the vane spring and pull the mill out of the wind.

Be certain that the furl handle is secure so that there will be no danger of the mill turning into the wind while the wheel is being assembled.

The Wheel.

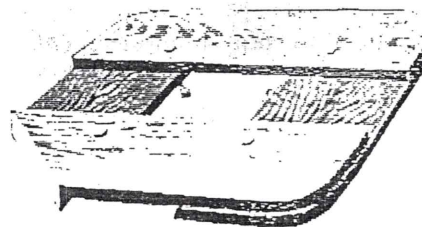
Preassemble the six sections of the wheel on the ground and install according to the instructions packaged with your mill.



Corner Posts

Notched together for added strength and rigidity.

Figure 7



Platform

Heavy lumber, bolted through corner posts.
Corner of the platform is cut for easy climbing.

Figure 8

Pump Pole.

Put the pump rod in place and attach the pump pole and pole guides. Each set of guides should be hooked into the oblong holes in the corner posts on the same side of the tower and should be horizontal when the mill is half way up on the stroke. (See Figure 9.) Tighten the nuts so that the clamps will be held firmly to the pump pole, but not so tight as to prevent the pole guides from working freely. A nail or screw, secured into the pole through the hole in the back of the clamp will prevent the clamp from slipping out of position.

Turn the wheel until the pump pole is at the lowest point of the stroke and attach the pump pole connection so that there will be about equal clearance at the top and bottom of the cylinder.

MAKE DOUBLY CERTAIN THAT ALL NUTS ON BOTH THE MILL AND THE TOWER ARE DRAWN UP TIGHT.

WIDESPREAD TOWERS

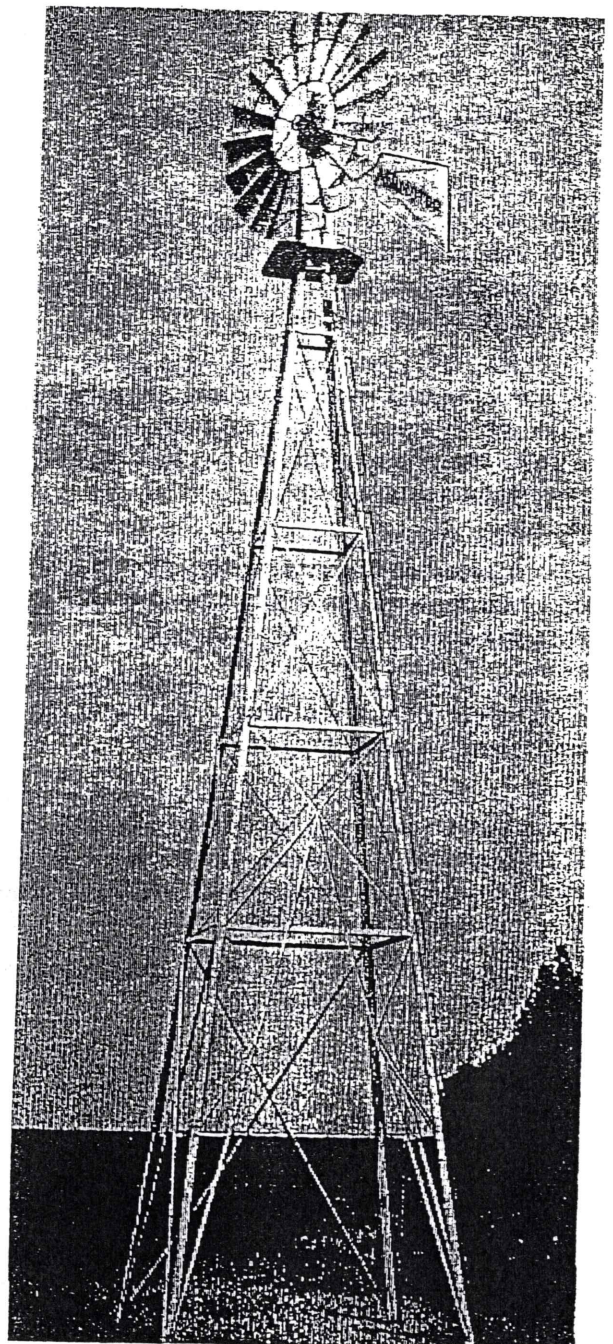
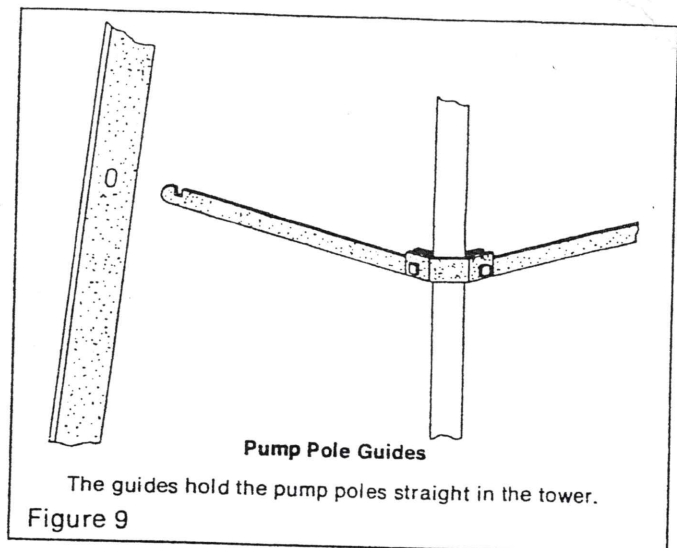
Installation of widespread towers for 12-foot, 14-foot and 16-foot mills is similar to other standard towers but there are a few exceptions.

These towers have a wider base dimension for a given tower height and one side of the tower is left open for pulling the well by having angle braces that extend up to the second girt. There is no bottom girt on the open side of the tower and truss braces are used to strengthen it.

All of the widespread towers have 7-foot top corner posts which are slightly bent just below the platform. For 27-foot and 40-foot towers, the bottom corner posts are also just 7-feet long.

Widespread towers have heavy channel girts in the tower above the platform to provide solid support for the tackle when pulling the well. The tower components and the windmill are much heavier than the smaller sizes and require special equipment and tackle for lifting them into position.

Widespread towers for 12-foot, 14-foot and 16-foot also have oiling platforms. Install with the cutaway side on the same side of the tower as the long bolts for the pipe base.



Wide-Spread Towers

One side of the tower is braced so that no horizontal girt interferes with free access to the center of the tower.

