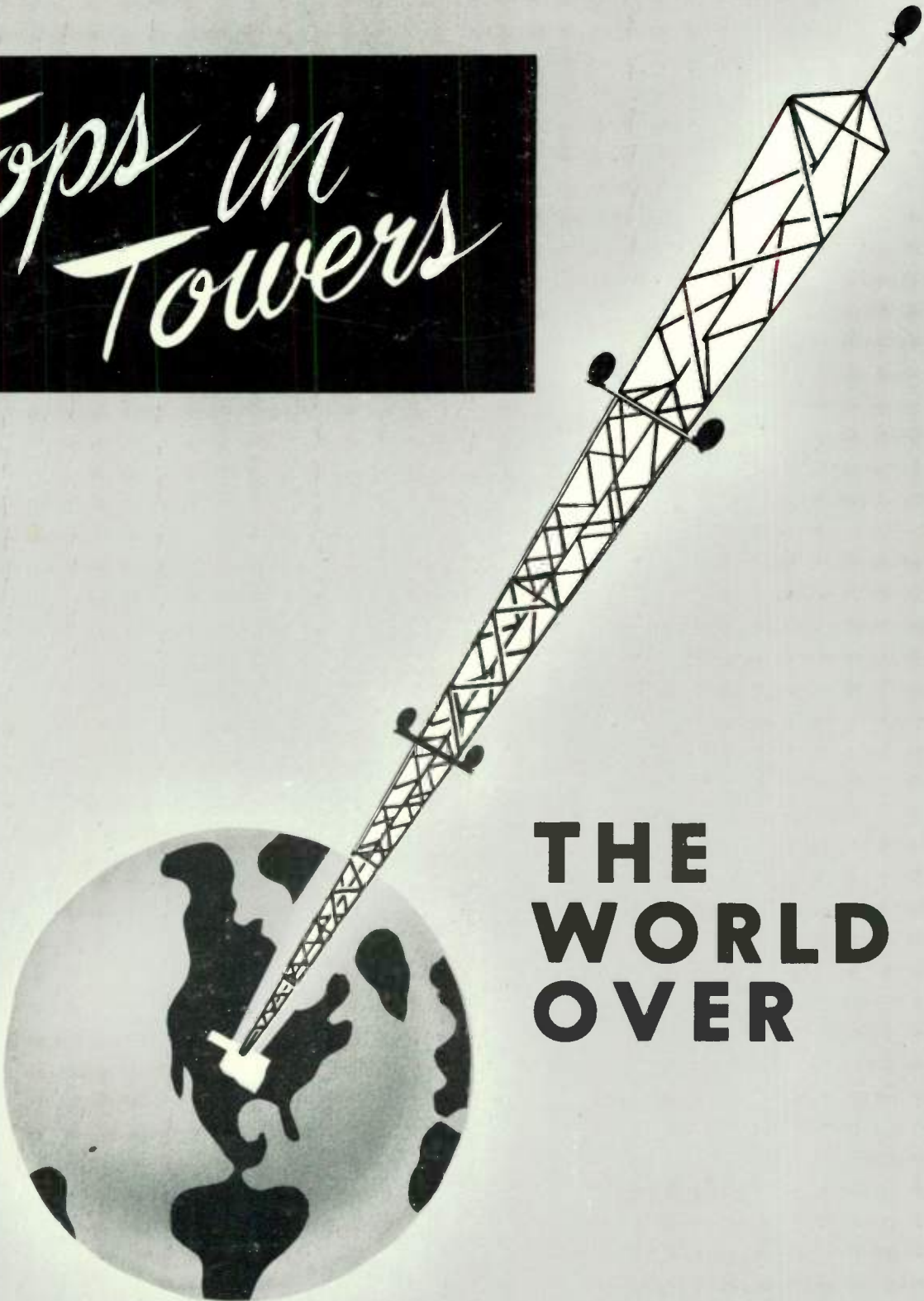


*Tops in
Towers*



**THE
WORLD
OVER**

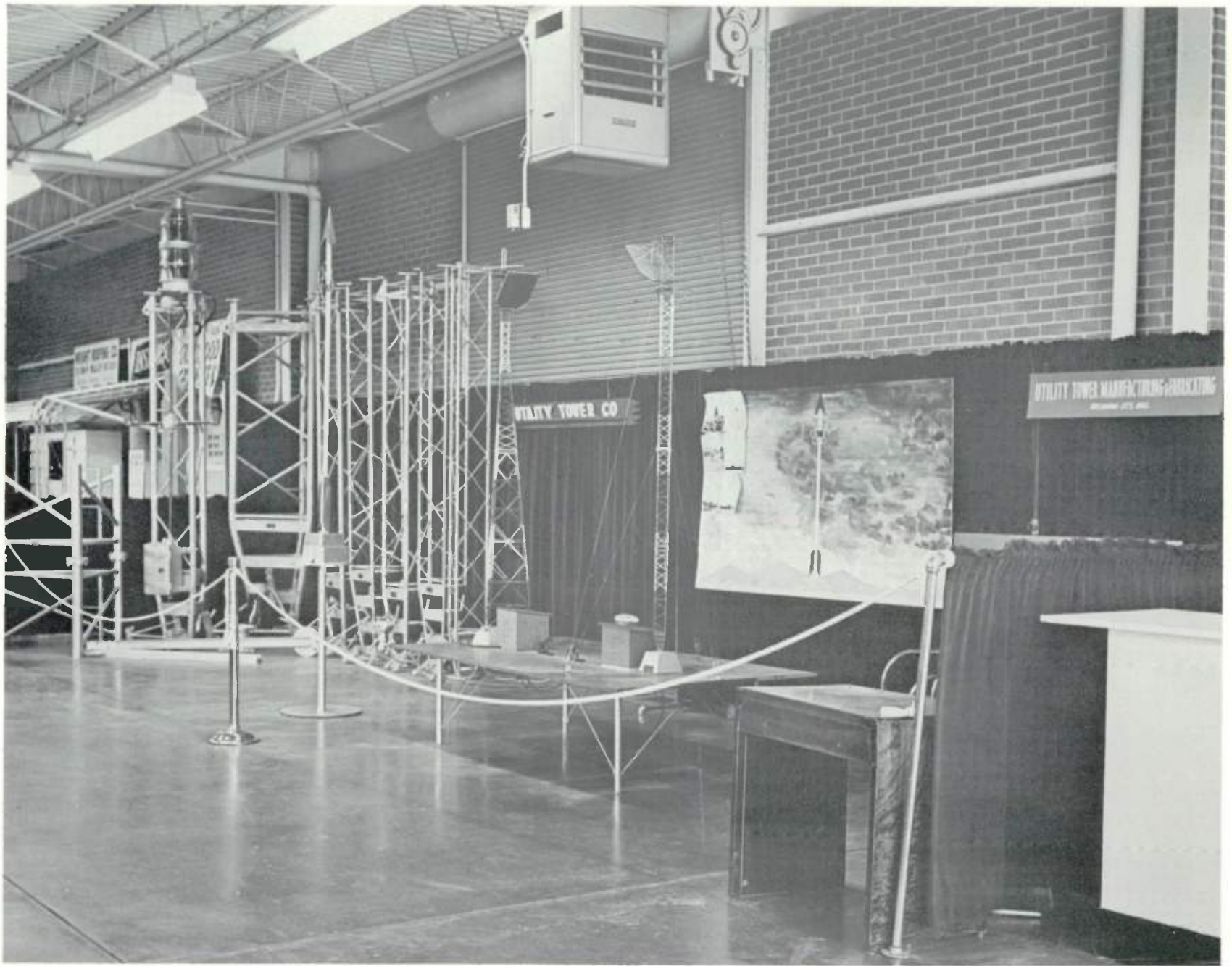
UTILITY TOWER COMPANY

POST OFFICE BOX 7022

OKLAHOMA CITY, OKLA.

INTRODUCTION

AS YOU THUMB THRU THE FOLLOWING PAGES, IT WILL BECOME MORE APPARENT, WHY WE AT UTILITY TOWER COMPANY, HAVE ADOPTED AS OUR TRADEMARK "TOPS IN TOWERS". PAGE BY PAGE WE WILL LEAD YOU THROUGH OUR ENTIRE SCOPE OF OPERATION, FROM DESIGN AND ENGINEERING TO THE FINISHED PRODUCT, FOLLOW US AS WE PASS OUR STOCK OF RAW MATERIALS THROUGH THE FABRICATING PLANT, WHERE METICULOUS CARE HAS BEEN TAKEN IN THE DESIGN AND CONSTRUCTION OF THE WELDING JIGS. SEE THE RAW MATERIALS AS THEY MEET WITH GRINDERS, CUTTERS, DRILLS, AND WELDERS AND RAPIDLY TAKE SHAPE. AS THEY COME OUT OF THE FINAL WELDING JIG, A FINISHED SECTION, EACH WELD IS THOROUGHLY CLEANED AND INDIVIDUALLY INSPECTED. FINALLY A RUST INHIBITIVE PRIME COAT IS APPLIED OR HOT DIP GALVANIZE, WHICHEVER IS PREFERRED. THE SECTIONS ARE THEN PLACED IN OUR STOCK TO AWAIT SHIPMENT TO ITS DESTINATION SOMEWHERE IN THIS COUNTRY OR AS LIKELY AS NOT, A FRIENDLY FOREIGN COUNTRY.



SPECIFICATIONS AND GENERAL INFORMATION

THE UTILITY TOWER MANUFACTURING AND FABRICATING COMPANY has taken advantage of the ability to understand the theories and complex problems involved in the design and manufacture of a towers with a specific function. In so doing, this has enabled us to produce better towers to meet every need, constructed of better materials by experience workmen to exacting specifications.

LOADING

1. When calculating the exposed surface, no effect for shielding because of the leeward portions of the tower by the windward frames is taken into account.
2. All towers are designed for 120 mile winds with no ice and 95 mile winds with 1/2" radial ice load. For 120 mile winds we use the wind pressure of 50 lbs. per sq. ft. on all rectangular surfaces. For towers that are greater than 300' in height we increase their value by 3 lbs. per sq. ft. for each additional 100' in height. On cylindrical surfaces we use 2/3 (50 lbs. per sq. ft.) because of the streamlined flow of air which is 33.3 lbs. per sq. ft., except the flow on cables is not considered to be streamlined.
3. Open face towers of triangular structure the total area is taken into account in order to arrive at the exact amount of projected area.
4. The initial tension weight and wind pressure on guys are taken into account. 1/2 of the forces will be applied to the guy anchors and 1/2 to the tower. Sag and deflection and initial tension are calculated in order that the guy force may be uniformly distributed along the tower in such manner that the tower will bend uniformly so deflection will be proportional to height of the tower.
5. The wind loading on the guys and on the tower is applied in such a manner that it's maximum stress can be calculated in order to obtain the maximum strength in the guy and in the tower.
6. The weight of the tower and all dead loads are applied at the same time the wind loads are at a maximum to obtain the material used in design.
7. Strict adherence to all RETMA Specifications is maintained in the manufacture and erection of all types of UTILITY TOWERS.

ALLOWABLE UNIT STRESS AND MATERIAL

All legs, bracing and other structural parts are so proportioned that the unit stress in pounds per square inch shall not exceed the following values:

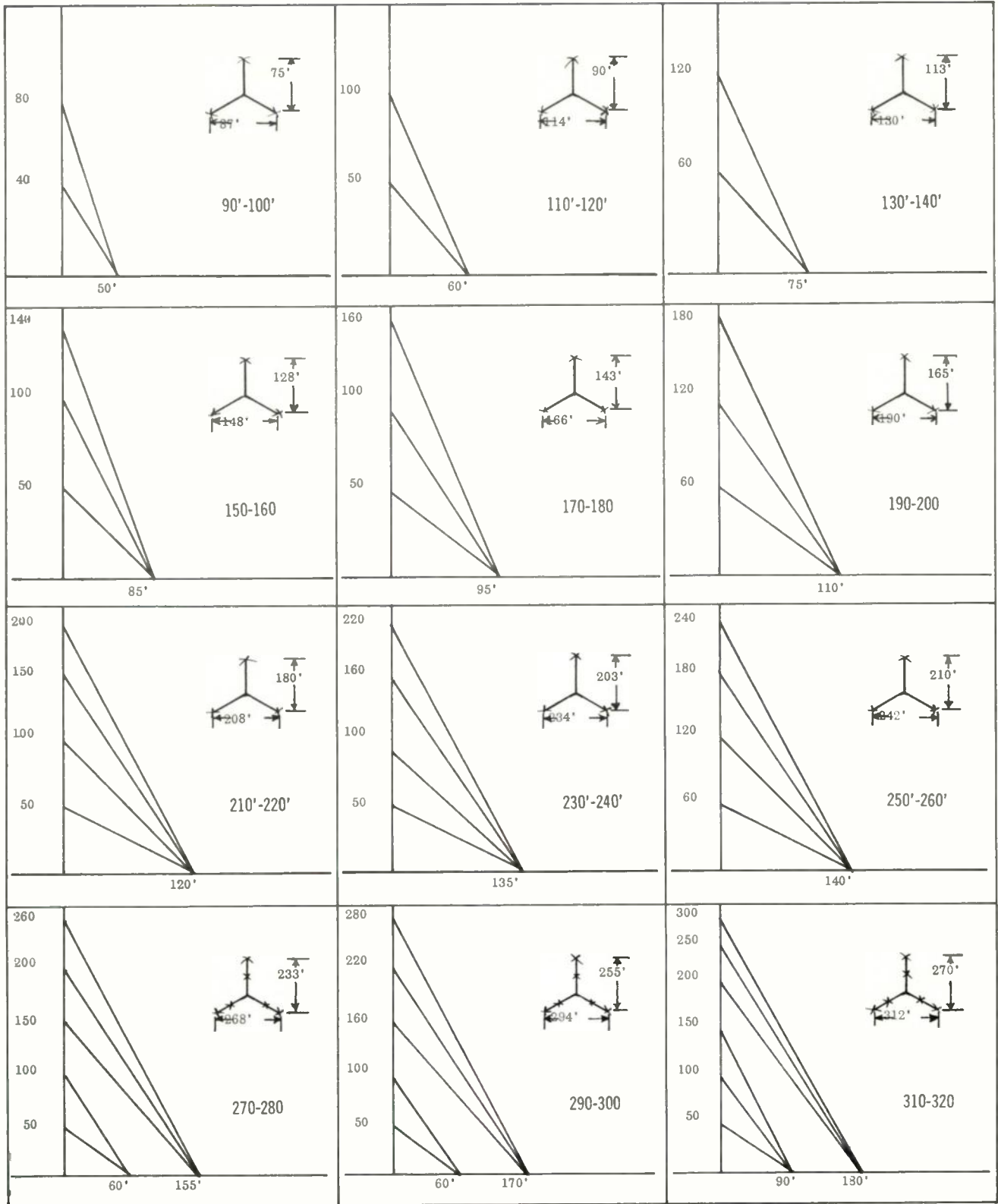
UTILITY TOWERS are made entirely of structural steel except for bolts, welds, and insulators.

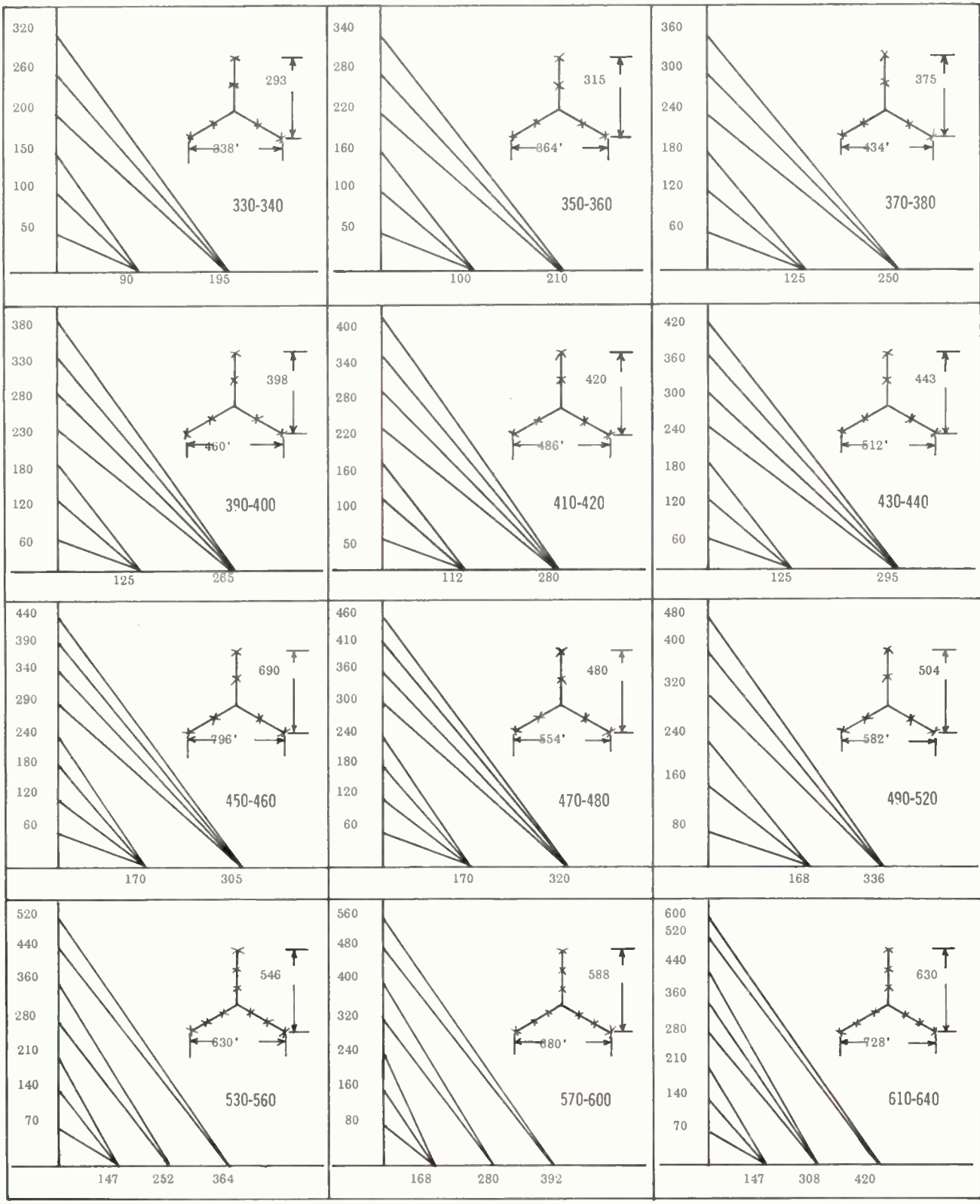
1. **TENSION**
 Structural Steel not section 20,000
 Butt welds, section through throat 20,000
 Bolts and other threaded parts, on nominal area at root of thread 20,000
2. **COMPRESSION**
 For axially loaded columns with values of L/R not greater than 120 $17,000 - 0.485 \frac{L^2}{R^2}$
 (1/r in UTILITY TOWERS is never greater than 120 in leg members)
 For axially loaded columns (bracing and other secondary members) with values of 1/r greater than 120 $\frac{18,000}{1 + \frac{L^2}{12R^2}}$
 (1/r is never greater than 150 in secondary members) in which L is the unbraced length of the secondary member and R is the corresponding radius of gyration of the section, both in inches.
 Butt Welds . . . section through throat (crushing) 20,000
3. **BENDING**
 Stress on extreme fibers of pins 30,000
4. **SHEARING**
 Single Shear unfinished bolts 10,000
 Double Shear unfinished bolts 20,000
 Single Shear turned bolts 15,000
 Double Shear turned bolts 30,000
5. **BEARING**

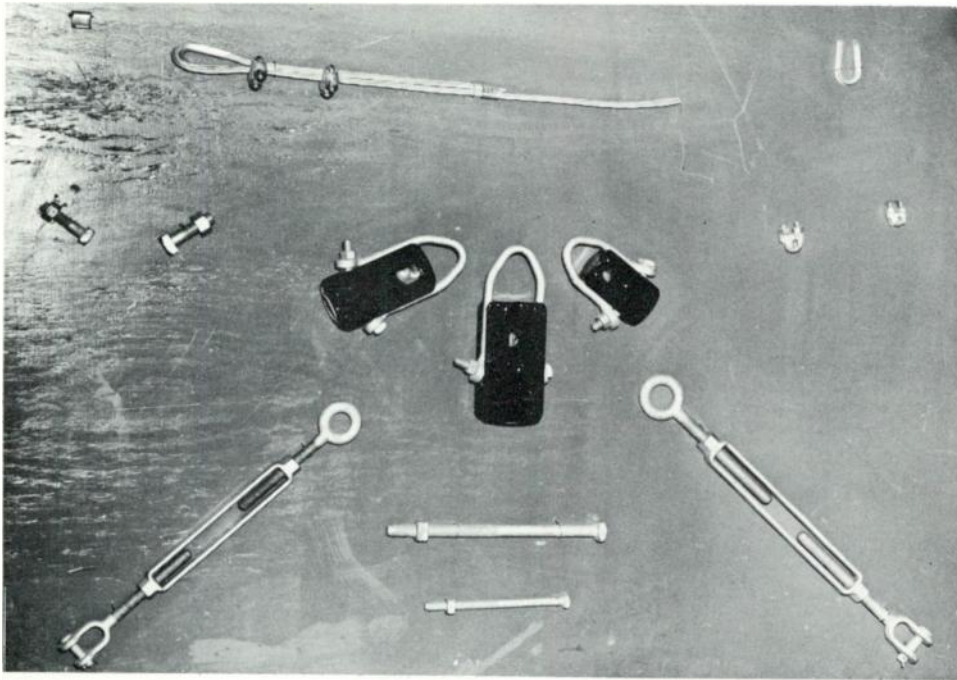
	Single	Double Shear
Turned bolts in reamed holes.	.40,000	32,000
Unfinished bolts25,000	20,000
6. **Eccentric Loading** - - For members subject both to direct loads and to bending loads the following formula is used:

$$\frac{fa}{Fa} + \frac{fb}{Fb} \text{ less than one}$$

Fa axial stress that would be permitted by this specification if axial stress existed only.
 Fb bending unit stress that would be permitted by specification if bending stress existed only.
 fa axial unit stress (actual) axial stress divided by area of the member.
 fb bending unit stress (actual) bending moment divided by section modulus of member.





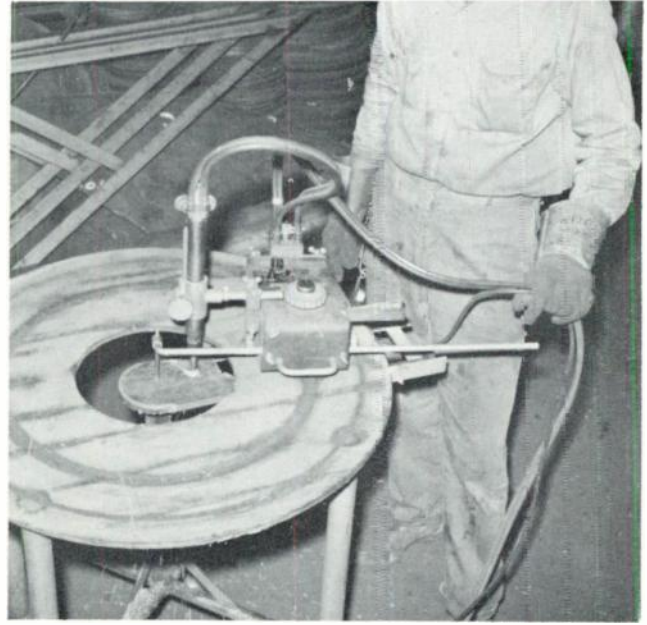


MATERIALS. . . .

By using the best materials we refer not only to the structural members in the tower proper, but also to all related accessories. We use only those brands of galvanized hardware, i.e. guy wire, clevises, cable clamps, turn buckles, bolts etc. and porcelain insulators that have been tested and guaranteed to withstand many times more strain than is ever applied to them when used on a UTILITY TOWER.



SAW & DRILL PRESS

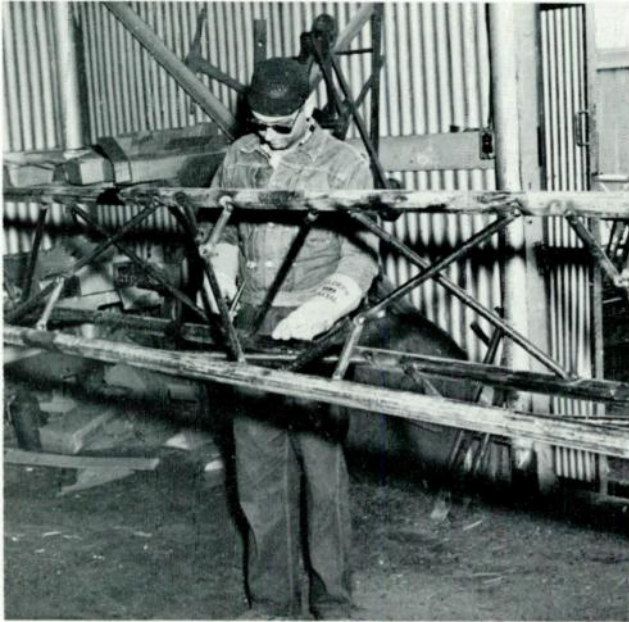


CUTO-MATIC

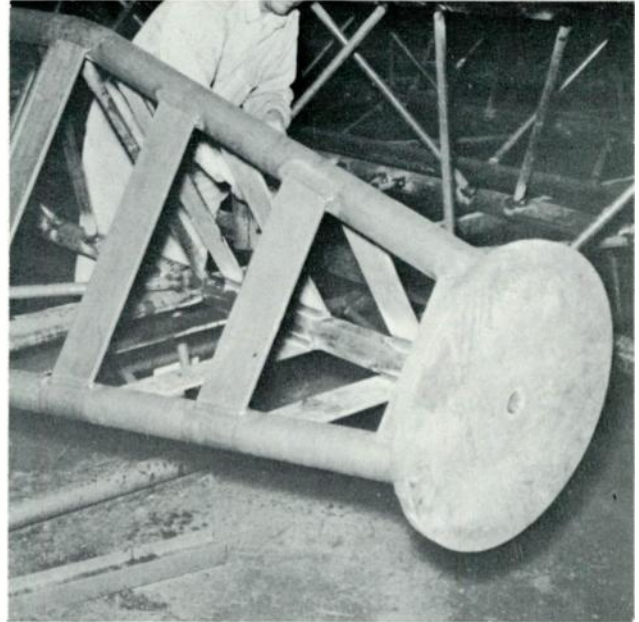


WELDING SECTIONS

RAW MATERIALS ARE CUT, DRILLED, AND WELDED IN ACCURATE JIGS TO ASSURE UNIFORMITY. OUR ENTIRE SHOP IS SET UP WITH VERSATILITY IN MIND. WITH A FEW MINOR SET UP CHANGES, PRODUCTION OF STOCK MODELS CAN BE CONVERTED INTO CUSTOM PRODUCTION TO SUIT MOST ANY NEED.

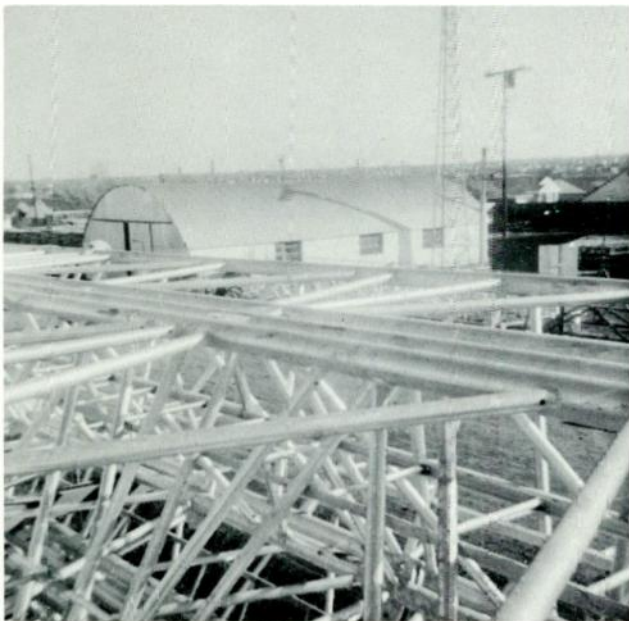


CHIPPING WELD

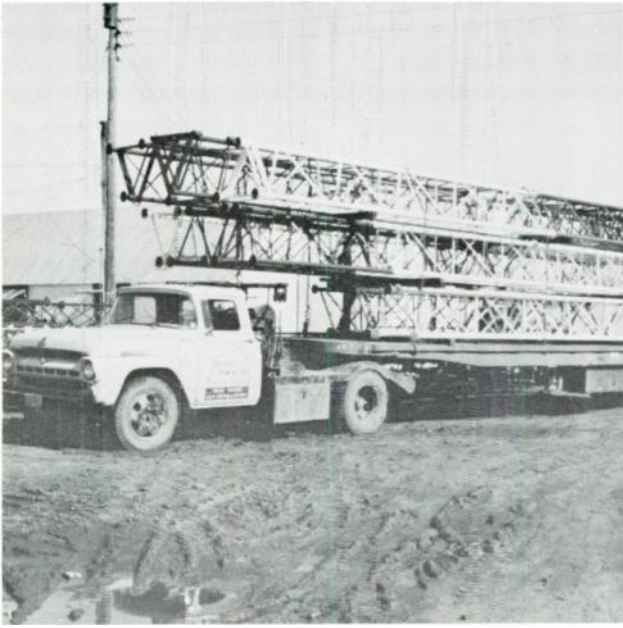


PRIMING OF SECTIONS

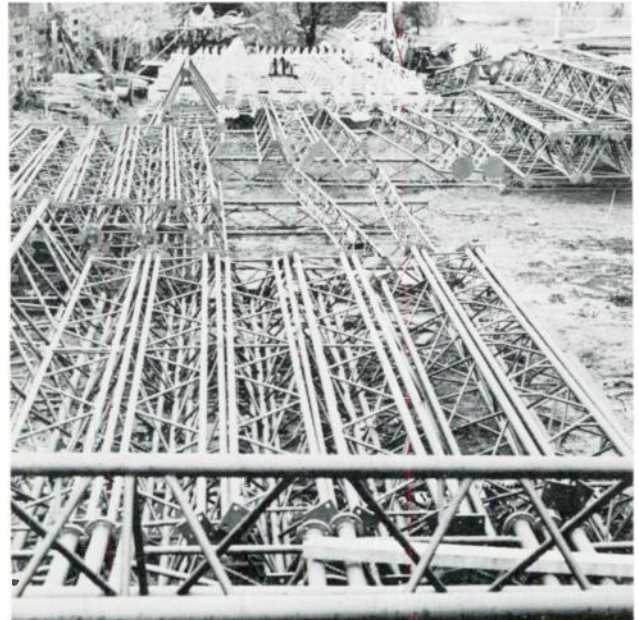
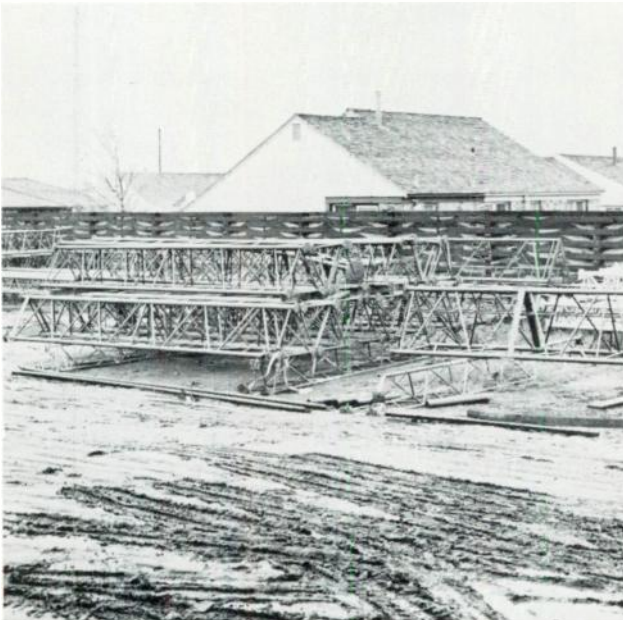
EACH WELD IS INDIVIDUALLY CLEANED AND INSPECTED BEFORE SECTION IS PRIME COATED WITH A RUST INHIBITIVE PRIMER, OR HOT DIP GALVANIZED, THE FINISH DEPENDENT UPON THE REQUIREMENTS OF THE CUSTOMER.



FABRICATED TOWER SECTIONS, AFTER COMPLETION OF HOT DIP GALVANIZE PROCESSING.

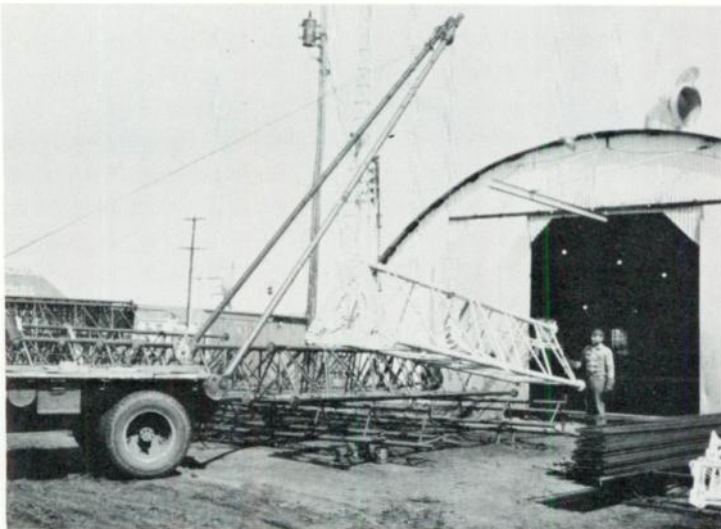
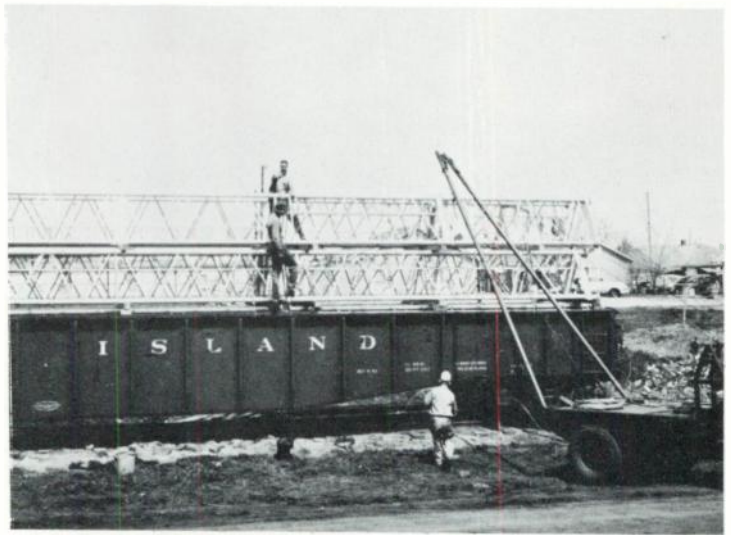
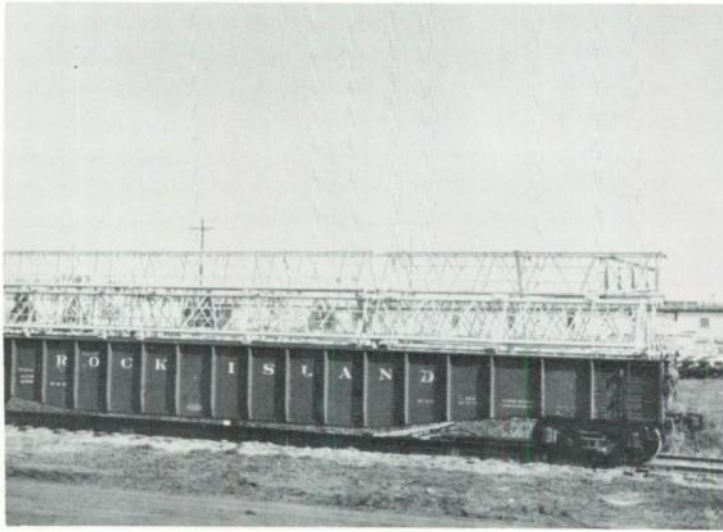


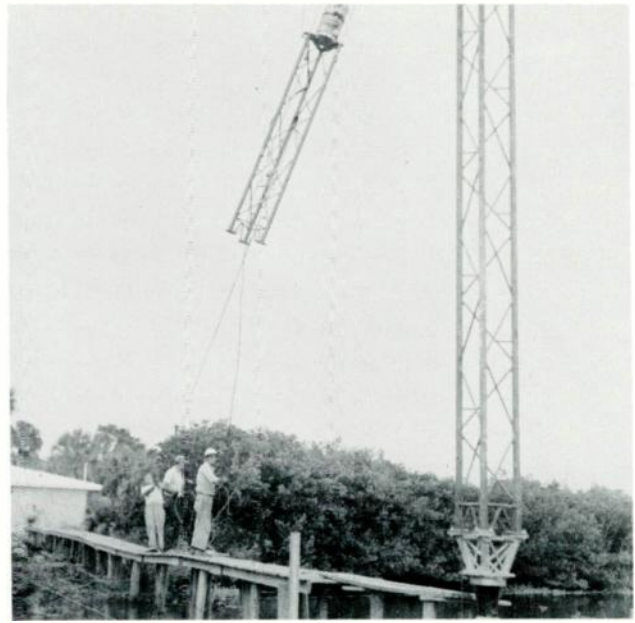
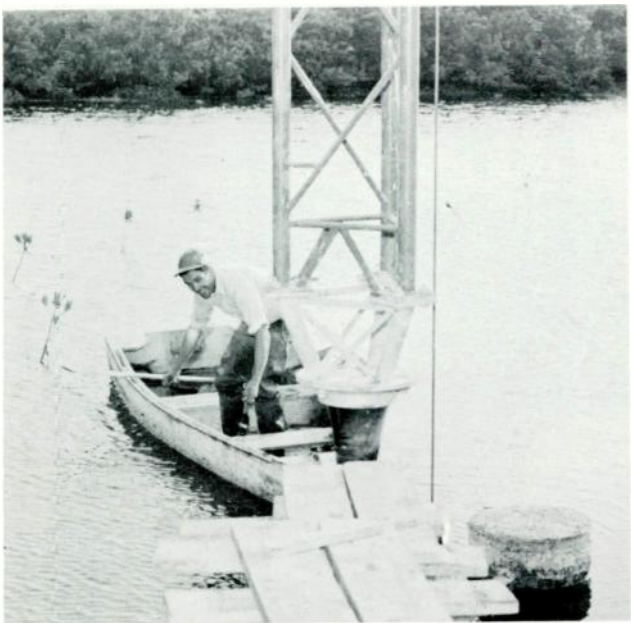
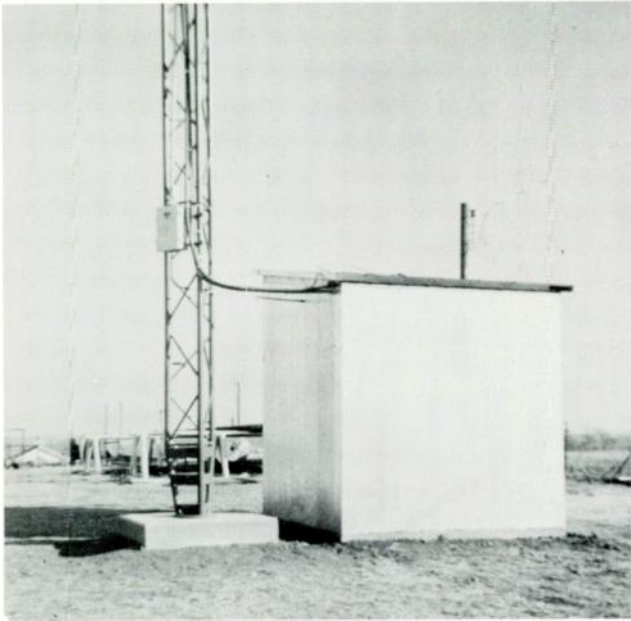
OUR TRUCKS, LOADED FOR SHIPMENT THROUGHOUT THE UNITED STATES OVERSEAS.
LARGER SHIPMENTS ARE MADE BY RAIL.



KEEPING SUPPLY AHEAD OF DEMAND



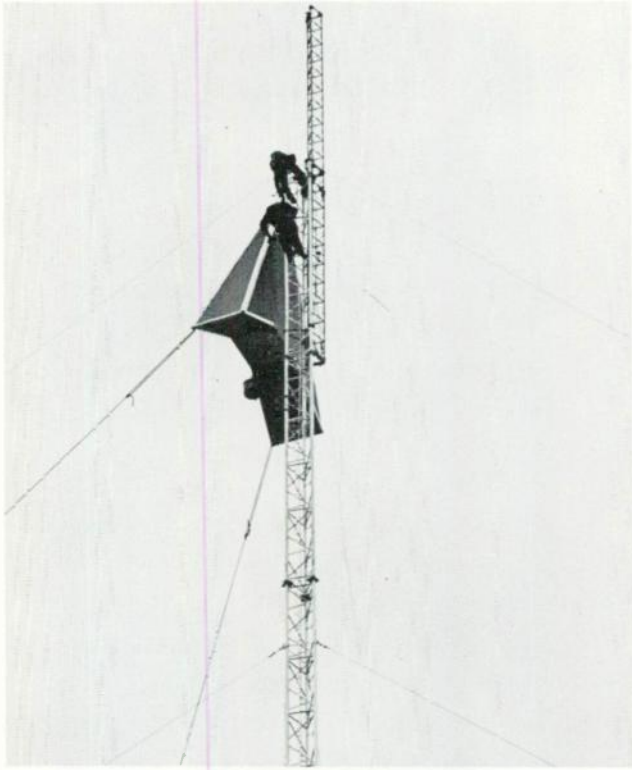




GROUND SYSTEM

ERECTION

NORMAL ? LOCATION



PUTTING THE TOP ON THE WORLD'S TALLEST
EXPOSITION SYMBOL OKLAHOMA CITY



THE "UP AND ATOM" TOWER COMPLETED

MICRO WAVE TOWERS

Since Micro Wave beams are highly directional, the ability to maintain directivity is of prime importance in a Micro Wave Tower.

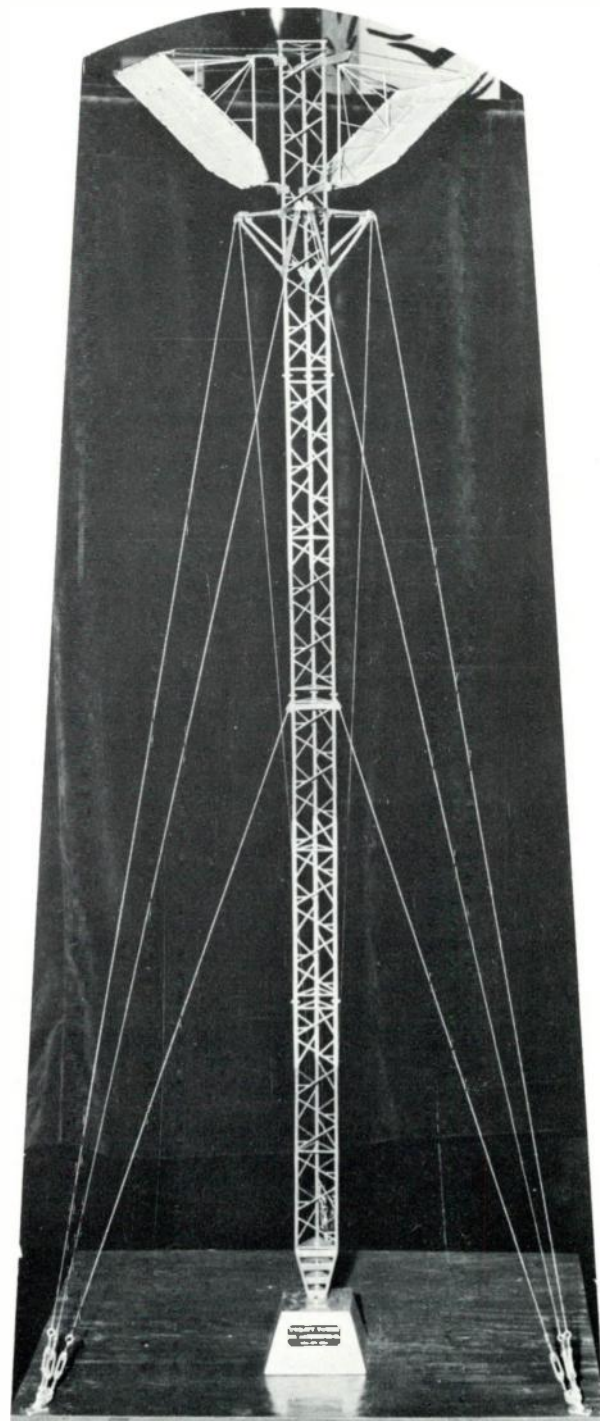
To attain this ability a guying pattern must first be determined, capable of holding the tower, and of course the reflectors or Paraboloids within narrow limits of twist and sway. After this has been accomplished, a tower must be designed that will withstand the vertical load and the additional lateral pressure of the wind. By experimenting with several types of guy patterns such as double guys, cross guys, bridal guying, etc., we have found that the star mount pattern excels, beyond a doubt, over the other types in use today.

THE UTILITY TOWER TYPE 480MW is a singular Micro Wave tower of triangular design. 33" across one face. The sections are of all welded construction 20' in length. Leg members are 3" OD structural pipe and the diagonal and horizontal braces are 1 3/8" OD. Field connections plates are 150# four hole flanges using four 5/8" x 2 1/2" galvanized bolts per leg.

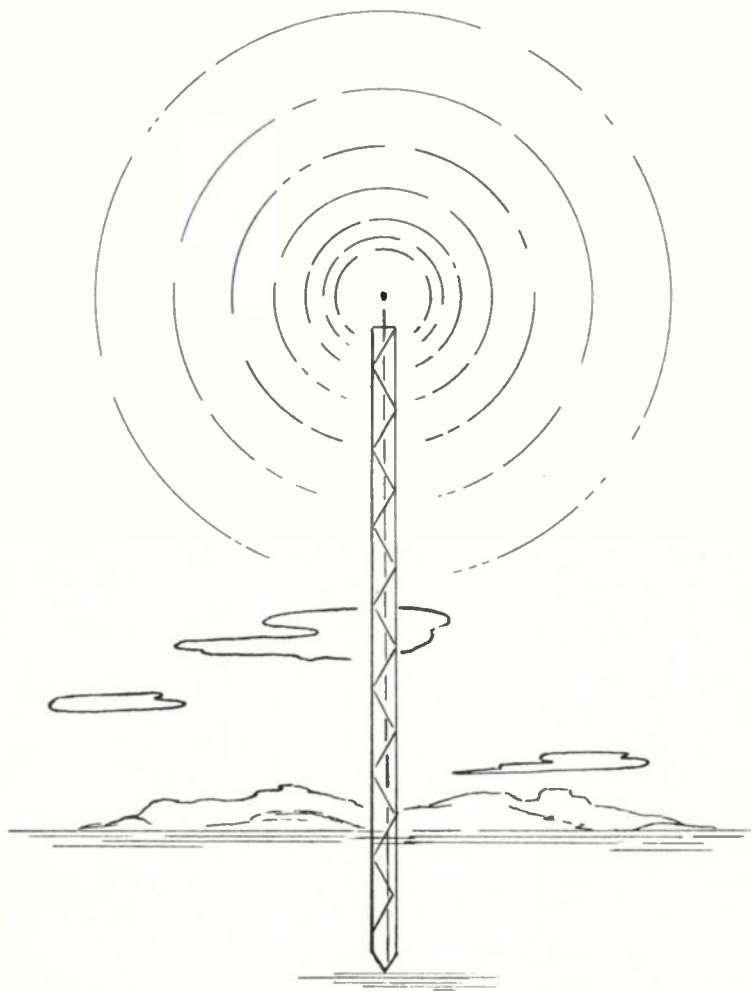
All factory connections are electric welds with connection flanges welded on the inside and outside. The guying consists of a star mount arrangement providing 6 guy wires at the top guy level approximately 2' below the reflector or Paraboloid, and 3 guys at each of the lower levels.

Towers are of such design and construction as to support three 8 x 12 reflectors weighing 250 lbs. each with a wind pressure of 30 miles per square foot on 1 1/2 tower faces. When all parts of the tower, antenna, reflectors, and accessories are covered with a 1/2 inch radial thickness of ice the following rigidity requirements will be met: The tower will not twist more than an amount which will produce a horizontal angular displacement of 1° for the lower edge of any microwave reflector from its unstressed position. The tilt of the tower in a vertical plane perpendicular to the lower edge of any reflector shall not exceed an amount which will cause 1/2° vertical angular displacement of an imaginary line drawn through the center of the base and center of the top of the tower from its unstressed position.

If your needs include a tower extremely capable of holding reflectors or Paraboloids well within the limits of specified maximum allowable twist and sway angles, you need THE UTILITY TOWER TYPE 480 MW, with STAR MOUNT GUYS.







UTILITY TOWER COMPANY
OKLAHOMA CITY, OKLAHOMA