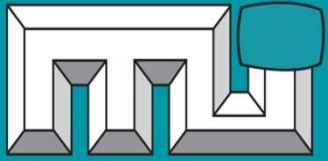


**Maguire Iron, Inc.**

# WATER TOWER EXPERTS

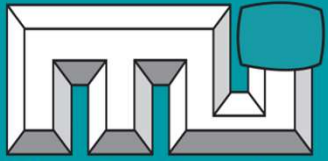


**MAGUIREIRON.COM**



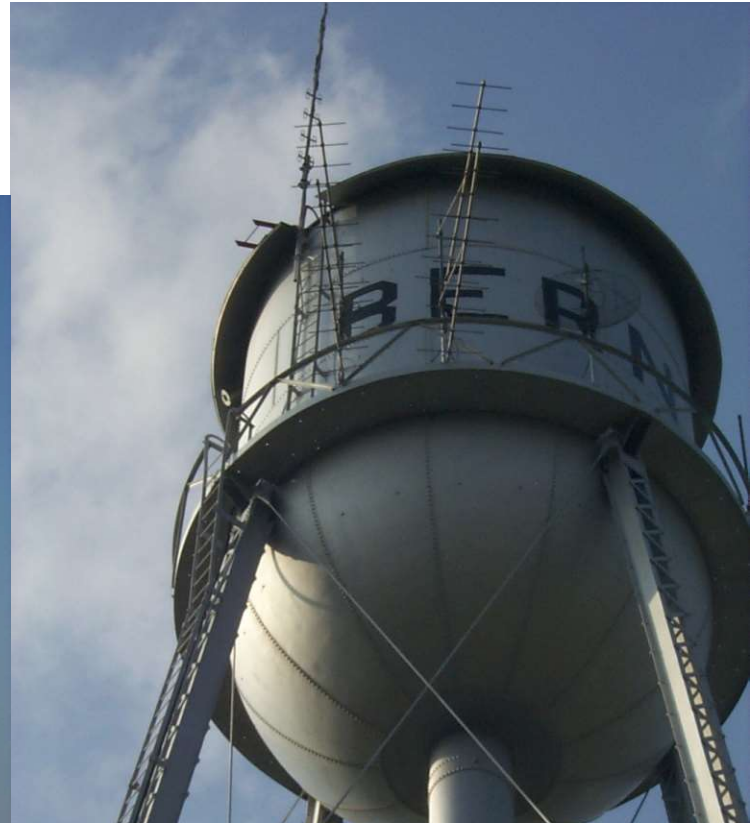
**Maguire Iron, Inc.**

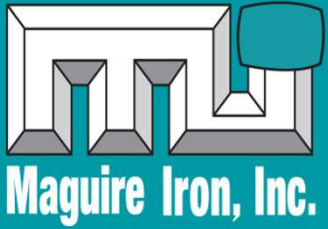
# MANAGING ANTENNAS ON WATER TOWERS



Maguire Iron, Inc.

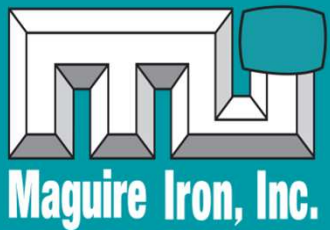
# Antennas on Water Tanks





# Types of Antennas

- Telemetry
- 911
- Police/Sheriff
- School Bus Barn
- Wireless Internet
- Local Ham Radio Club
- TV Antenna
- Cellular Phone
- Long Distance Carriers

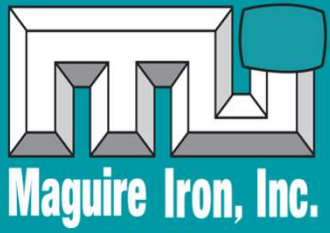


# What Can Happen When An Antenna Goes On a Water Tank??



**The Tank Owner Gets Money!!**

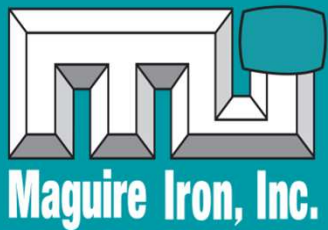




# What Makes a Site Desirable?

## Location

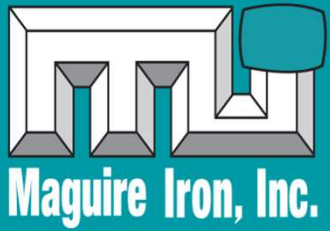
- Exposure to population or traffic pattern
- Relative height (which relates to signal distance)
- Costs (of land, construction, zoning)
- The Carrier's Build-Out Plan & Schedule
- Other options (other towers, other antennas)



# What Else Can Happen When An Antenna Goes On a Water Tank??

## The Tank May Get Damaged

- Structurally
- Interior/Exterior Coatings
- Inappropriate Attachments and Welding
- Additional Corrosion Sites



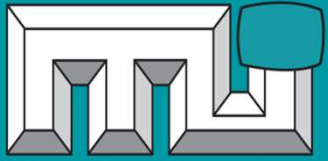
# ENGINEERING ANALYSIS

□ **MUST** have an engineering analysis for modification of tank to include:

- Weight of new equipment
  - Wind loading
  - Snow loading
- Capacity of anchorage of existing tank
  - Any penetrations  
(i.e. through base cone, balcony, tank, etc.)

*MAGUIRE IRON can provide this service if necessary*





**Maguire Iron, Inc.**

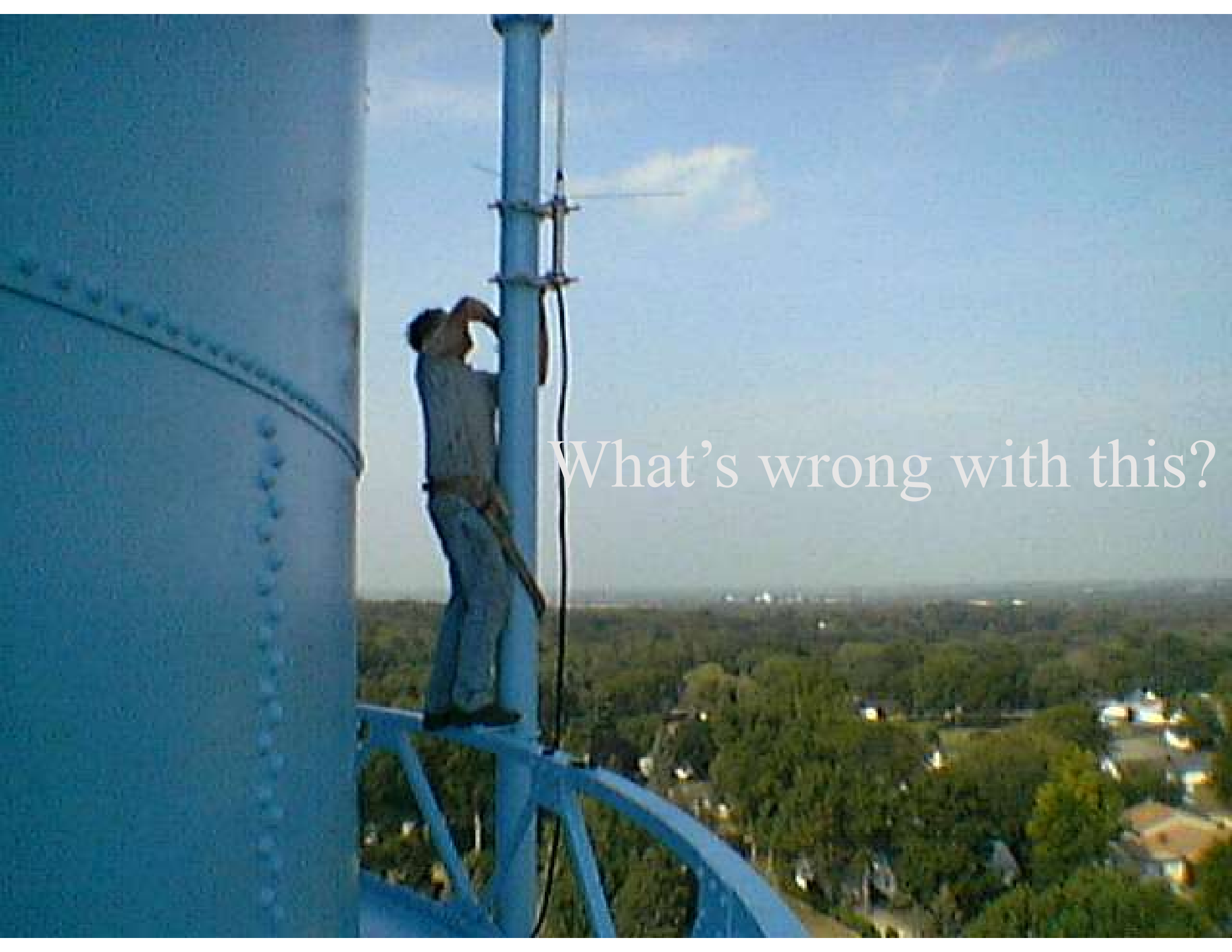


**Most Antennas Are  
Installed by Antenna  
Installers;**

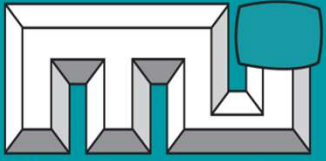
**Not Water Tank  
Professionals**



What's wrong  
with this???

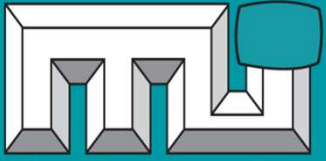


What's wrong with this?



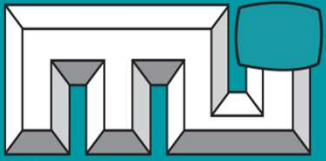
Maguire Iron, Inc.





Maguire Iron, Inc.



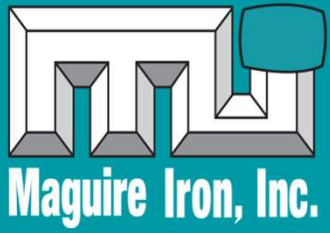


**Maguire Iron, Inc.**





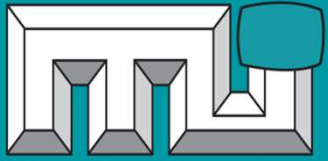
Antenna Installer  
Rigging Failed!



# Antenna installed over roof ladder



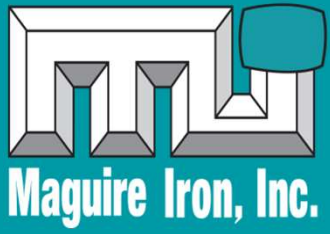




**Maguire Iron, Inc.**

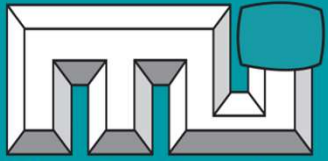
MAGUIREIRON.COM





# Poor Installations

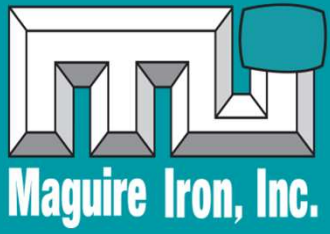




Maguire Iron, Inc.

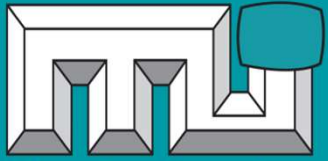
# “STUD” WELDING





# Repairs of Existing Corral



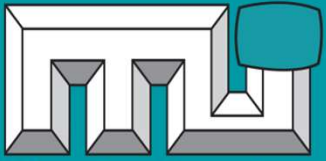


Maguire Iron, Inc.





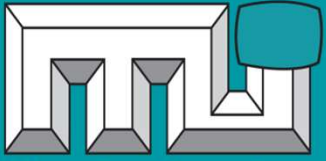




Maguire Iron, Inc.



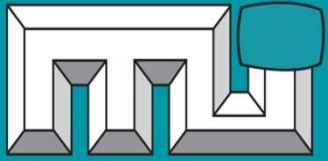




Maguire Iron, Inc.



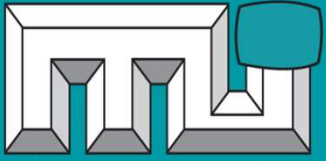
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Maguire Iron, Inc.

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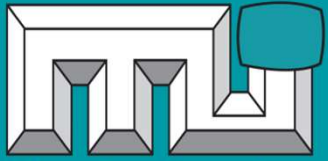


**Maguire Iron, Inc.**



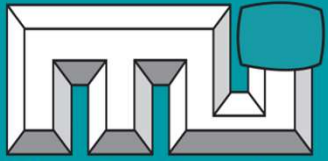
MAGUIREIRON.COM





**Maguire Iron, Inc.**

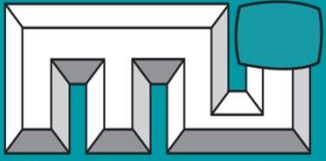




Maguire Iron, Inc.

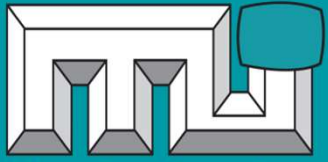
# Blocked Shell Ladder





**Maguire Iron, Inc.**

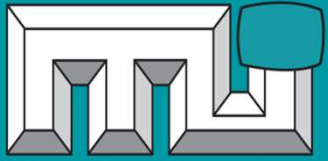




**Maguire Iron, Inc.**







**Maguire Iron, Inc.**









**NOTICE TO WORKERS**

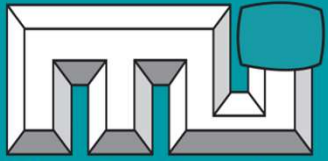
**RADIO FREQUENCY ANTENNA**

**PLEASE MAINTAIN A DISTANCE OF  
2 FEET FROM THIS ANTENNA.**

**IF WORK IS REQUIRED WITHIN \_\_ FEET,  
CALL 1-888-859-1400 BEFORE APPROACHING**

**SITE NUMBER: KC03XC084**

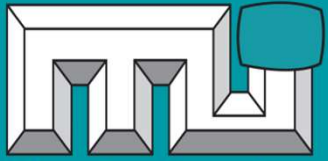
**IN ACCORDANCE WITH FCC RULES 47 CFR 1.1307(b)**



**Maguire Iron, Inc.**



[MAGUIREIRON.COM](http://MAGUIREIRON.COM)



Maguire Iron, Inc.

# Blocked Ladder





164112 CONNECTE INC. 1 5/8 CELL REITH CR 1973 12

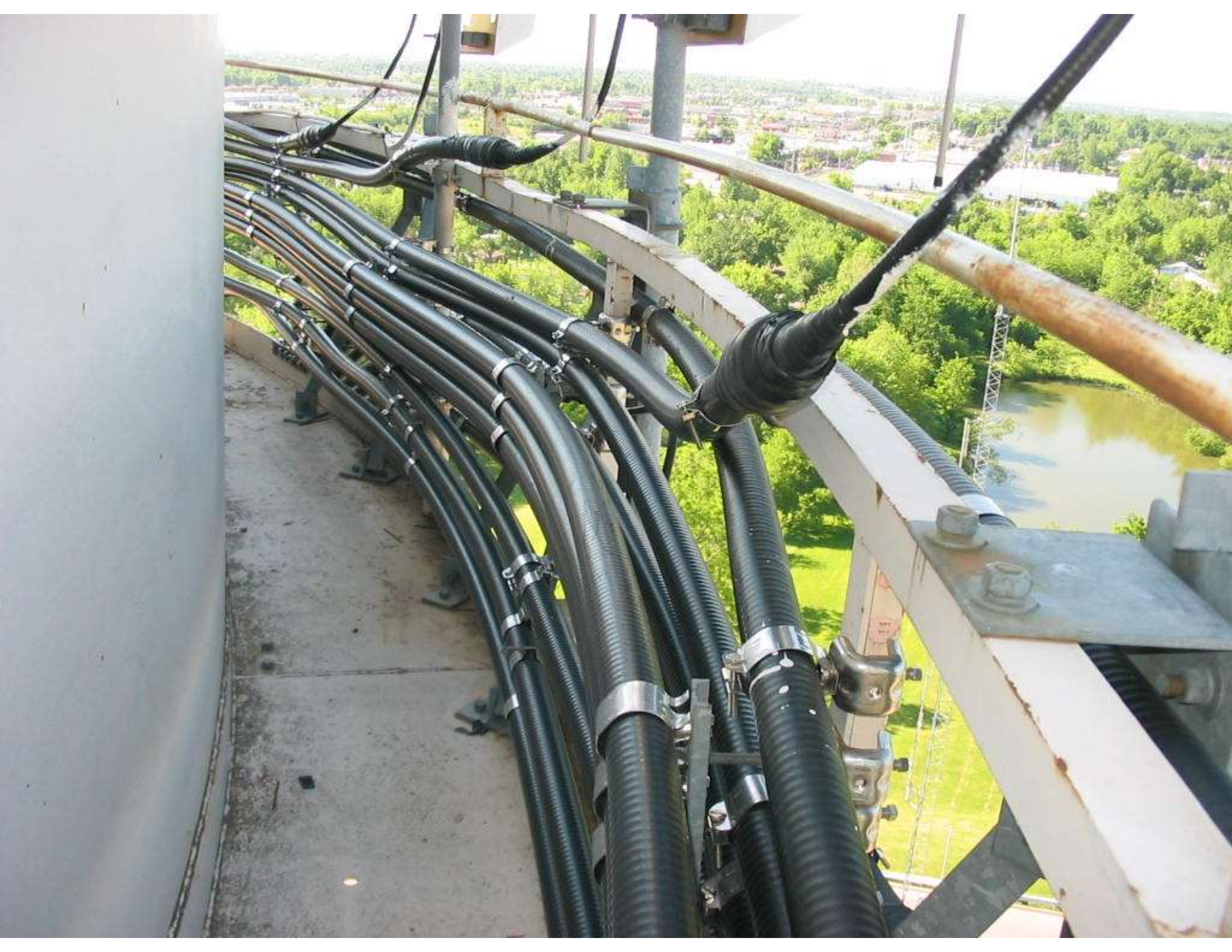
164112 CONNECTE INC. 1 5/8 CELL REITH CR 1973 12





# **Trip Hazards**

**Balcony blocked by cables**

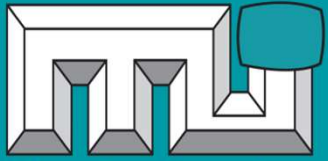




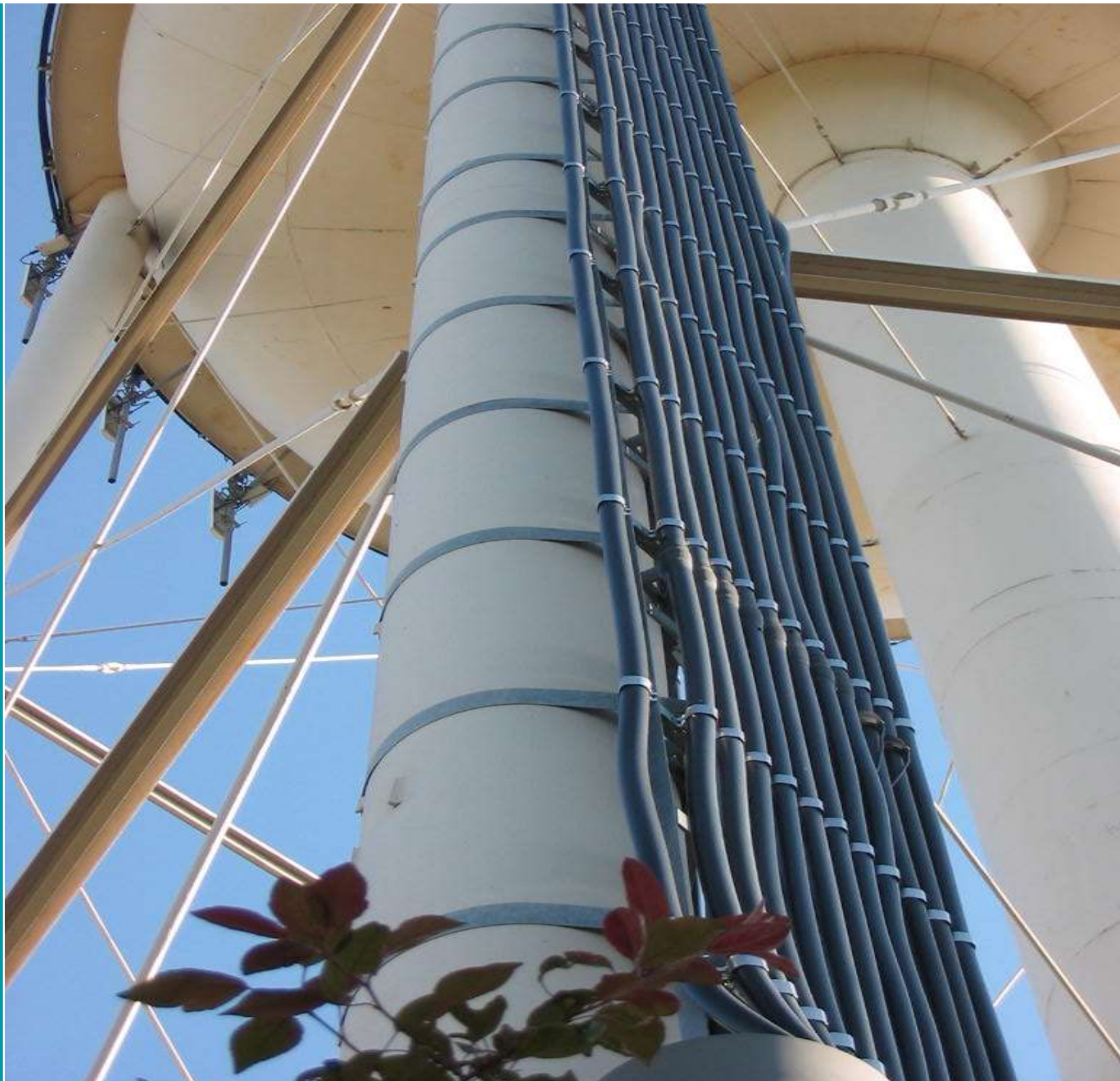


Maintenance Issues

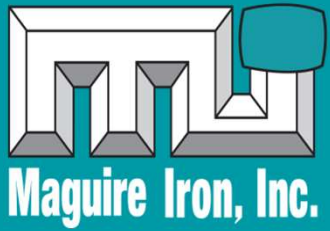
**Coax Cables  
Attached to  
Tower leg**



**Maguire Iron, Inc.**



[MAGUIREIRON.COM](http://MAGUIREIRON.COM)



# The Tank Owner Must Understand the Issues

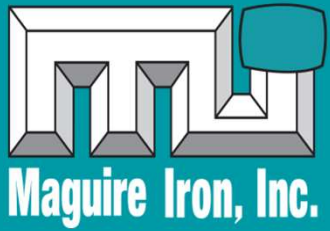
Safety

Tank Issues (OSHA)

Radio Frequency Issues

Site Safety Plan

Multiple Carriers



# WITHOUT SITE MANAGEMENT, THE ISSUES BECOME **PROBLEMS**

- Damaged Tanks
- Contaminated Water
- Regulatory Violations
- Tanks which are not AWWA Compliant
- Ugly Tanks
- Unsafe Tanks
- Higher Maintenance Costs
- Site Coordination Conflicts

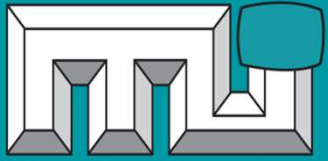


# WELDING SLAG FROM INSTALLATION

## CLIMBING HAZARD



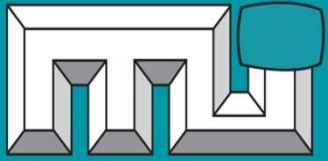




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# How Can this Leg be Painted?

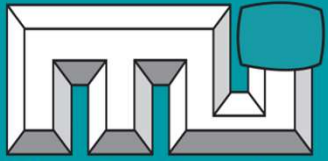




Maguire Iron, Inc.



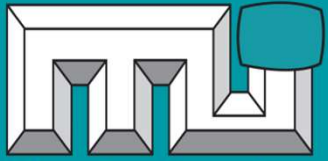
# INTERIOR & EXTERIOR COATING DAMAGE



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# Antenna Cow





**Maguire Iron, Inc.**

# **NEAT and PROPER ANTENNA INSTALLATIONS**



Clean & Attractive  
Installations

Structurally Sound  
Designs

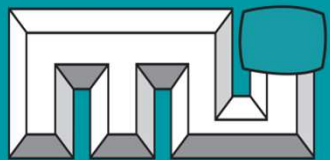








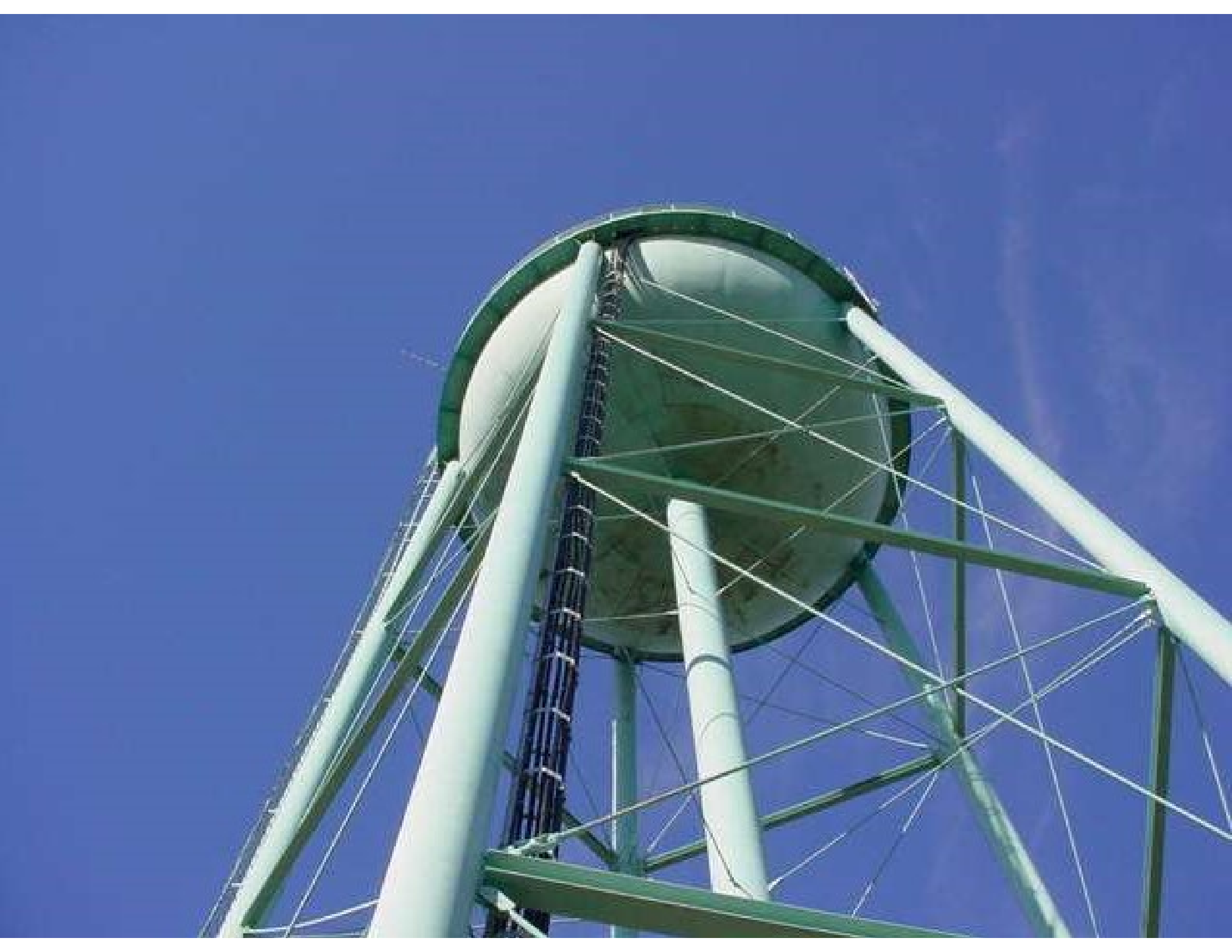


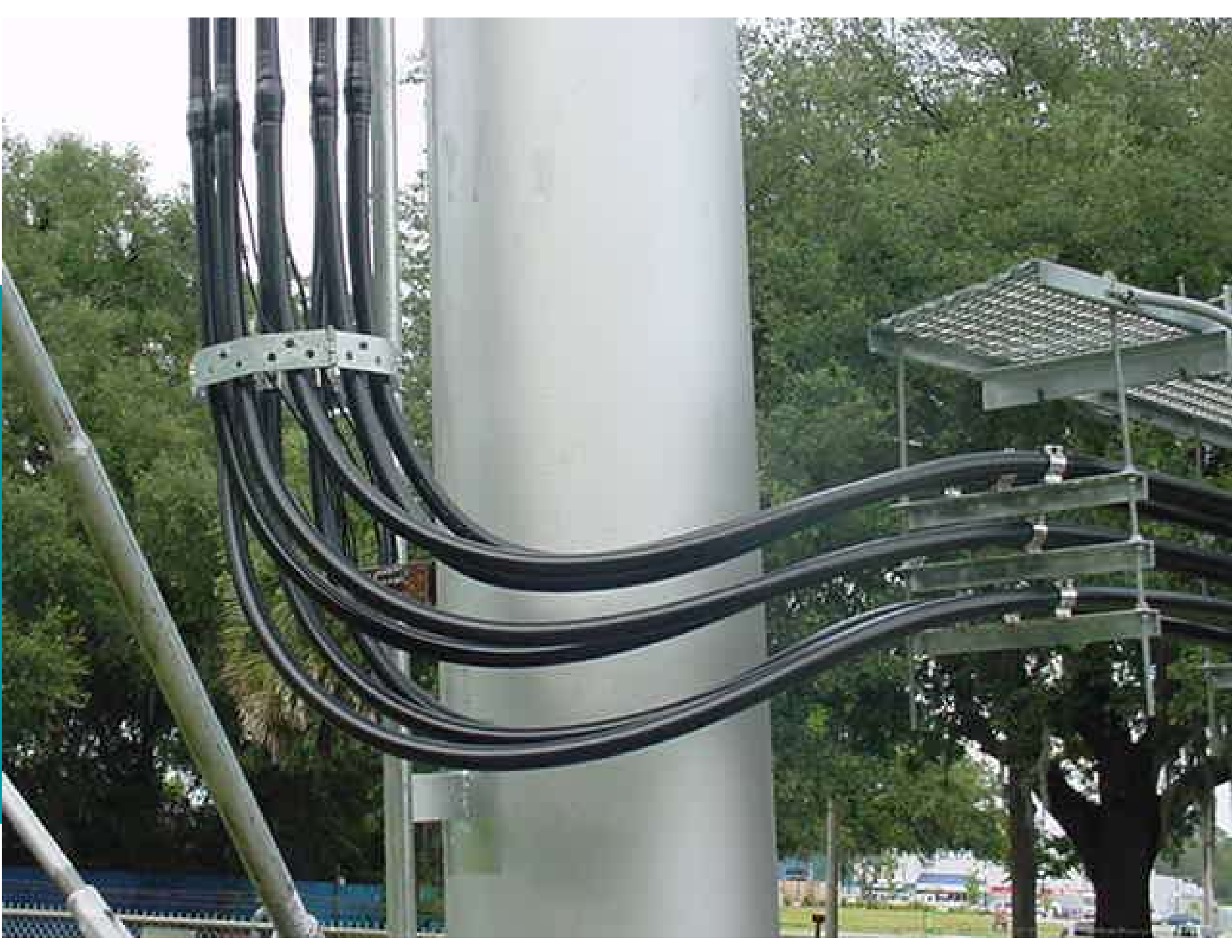


Maguire Iron, Inc.

# MESSENGER PIPE







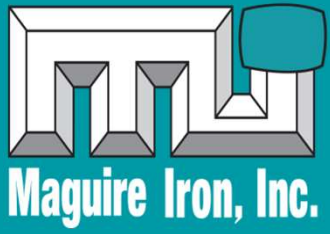


# Easier to Maintain Structure And Attachments

White Coax Cables  
match the white tower

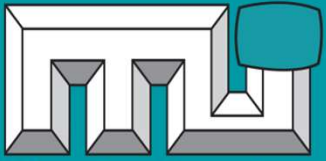




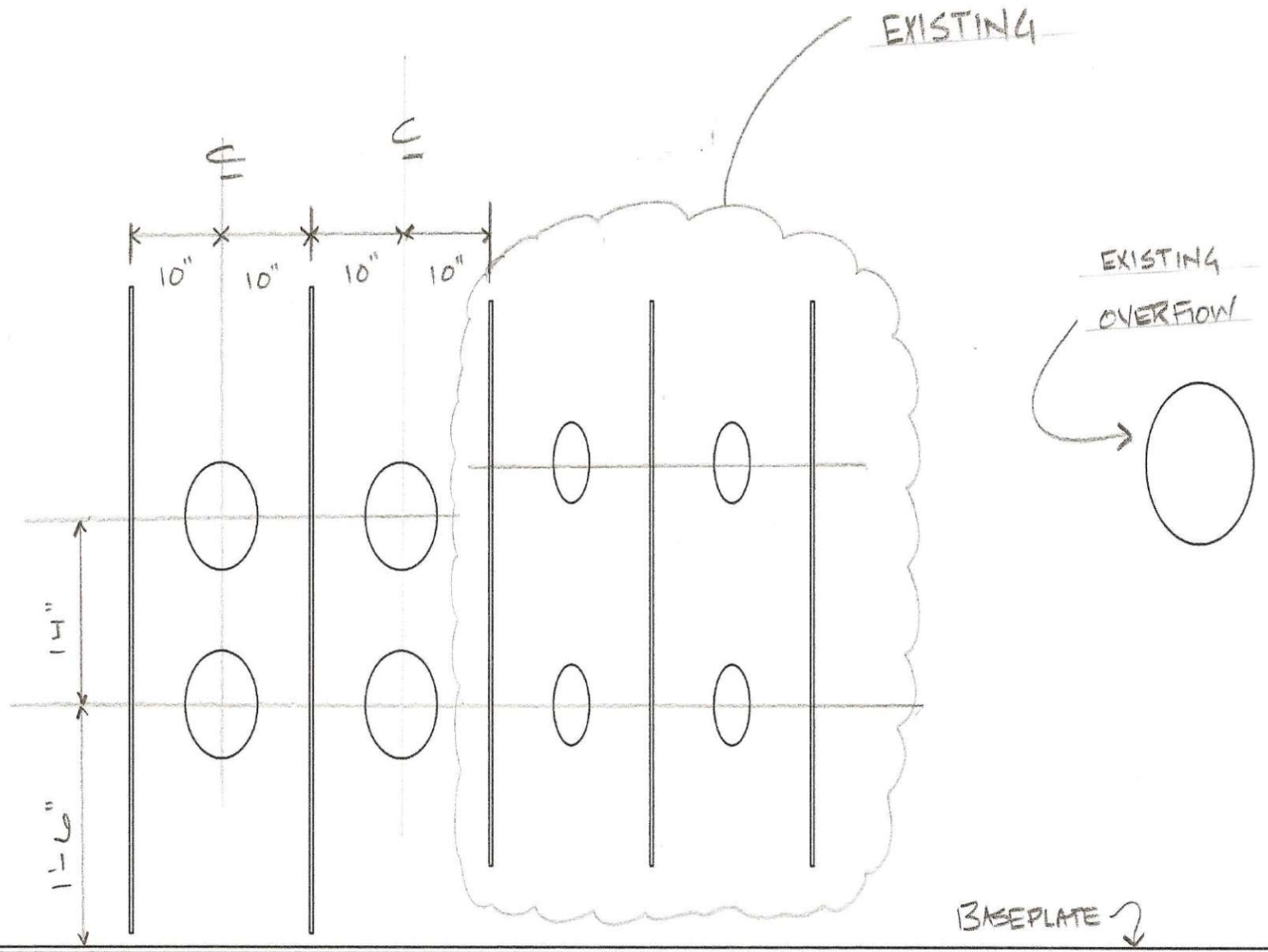


# PENETRATIONS





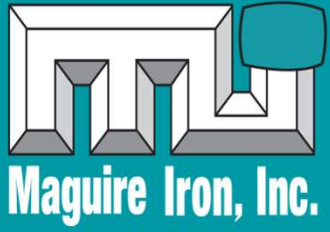
Maguire Iron, Inc.



ELEVATION

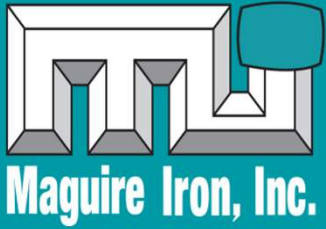
OAKPORT, MN  
PENETRATION INSTALL  
11/29/11





# ADDED ANCHORAGE





Date: **September 4, 2020**

**ARCHITECTURE & ENGINEERING DIVISION**

604 FOX GLEN . BARRINGTON, IL 60010

847/277-0070 . FAX: 847/277-0080

AE@westchesterservices.com / www.westchesterservices.com

Eric Laugesen  
Project Manager  
LCC Telecom Services  
10700 W. Higgins Rd., Ste. 240  
Rosemont, IL 60018

**Subject: Structural Analysis Report**

**T-Mobile**

**Site Number:** ML70558B

**Site Name:** Center St WT

**Engineering Firm Designation:** Westchester Services, LLC

**Site Data:** 750 Wild Ridge Dr., Lake Geneva, WI 53147  
Walworth County – 132ft Pedisphere

Eric Laugesen,

Westchester Services, LLC is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned structure.

The purpose of the analysis is to determine acceptability of the structure stress level. Based on our analysis we have determined the stress levels for the structure under the following load case to be:

**Existing and Proposed Equipment**

**Insufficient Capacity**

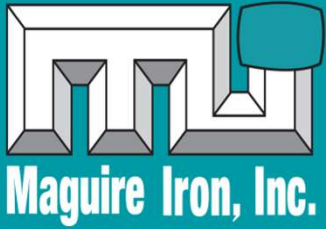
Note: See Table 2-1 for the existing and proposed loading.

Member Type	Result	Pass/Fail
Overall	128.2%	Fail

The analysis has been performed in accordance with the AWWA D100-11 standard and local code requirements.

We at Westchester Services, LLC appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

I certify that this report was prepared by me or under my direct supervision and that I am a licensed Professional Engineer under the laws of the State of Wisconsin.



Date: **September 22, 2020**

ARCHITECTURE & ENGINEERING DIVISION

604 FOX GLEN . BARRINGTON, IL 60010

847/277-0070 . FAX: 847/277-0080

AE@westchesterservices.com / www.westchesterservices.com

Eric Laugesen  
Project Manager  
LCC Telecom Services  
10700 W. Higgins Rd., Ste. 240  
Rosemont, IL 60018

**Subject: Structural Modification Report**

**T-Mobile**

**Site Number:** ML70558B

**Site Name:** Center St WT

**Engineering Firm Designation:** Westchester Services, LLC

**Site Data:** 750 Wild Ridge Dr., Lake Geneva, WI 53147  
Walworth County – 132ft Pedisphere

Eric Laugesen,

Westchester Services, LLC is pleased to submit this “**Structural Modification Report**” to determine the structural integrity of the above mentioned structure.

The purpose of the analysis is to determine acceptability of the structure stress level. Based on our analysis we have determined the stress levels for the structure under the following load case to be:

**Existing and Proposed Equipment - Sufficient Capacity w/ Proposed Modifications**

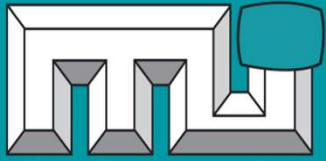
Note: See Table 2-1 for the existing and proposed loading.

Member Type	Result	Pass/Fail
Modified Anchor Bolts	85.5%	Pass

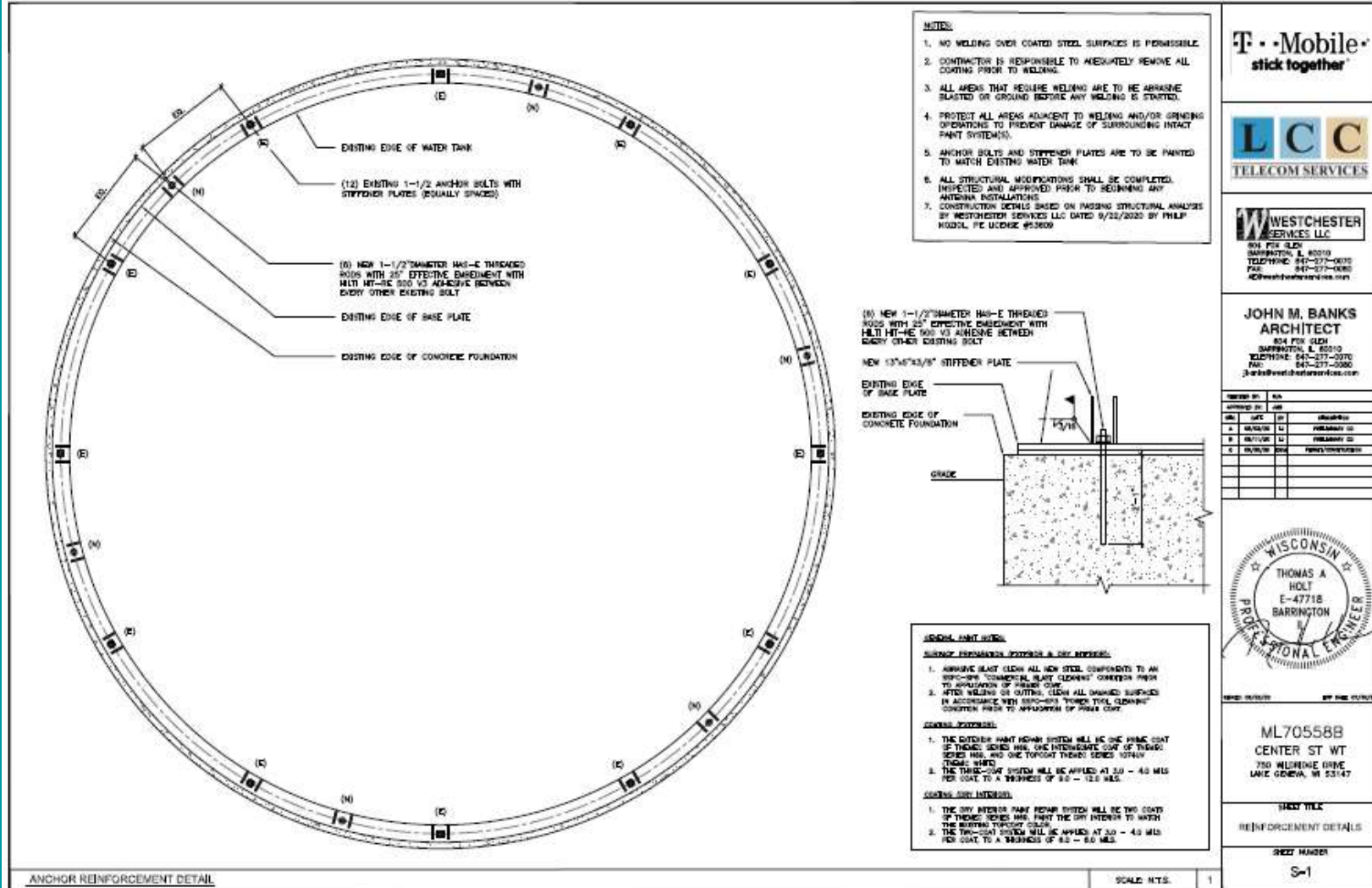
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I certify that this report was prepared by me or under my direct supervision and that I am a licensed Professional Engineer under the laws of the State of Wisconsin.



Maguire Iron, Inc.



T-Mobile  
stick together

LCC  
TELECOM SERVICES

WESTCHESTER  
SERVICES LLC  
804 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX: 847-277-0080  
AID@westchesterservices.com

JOHN M. BANKS  
ARCHITECT  
804 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX: 847-277-0080  
jbanks@westchesterservices.com

REVISION NO.	DATE	DESCRIPTION
A	10/1/20	ISSUED FOR PERMIT
B	10/1/20	ISSUED FOR PERMIT
C	10/1/20	ISSUED FOR PERMIT



DESIGNED BY THE CLIENT

ML705588  
CENTER ST WT  
750 WILSON DRIVE  
LAKE GENEA, WI 53147

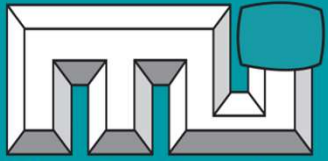
REINFORCEMENT DETAILS

SHEET NUMBER  
S-1



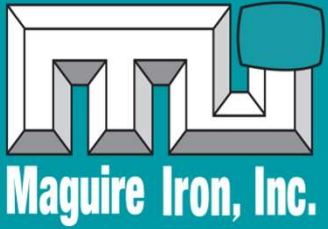
# Safe Access and Working Conditions

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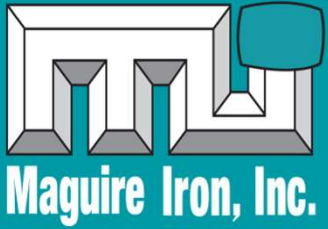
**Maguire Iron, Inc.**

# **Communications Site Management Services**



## Total Site Management Services

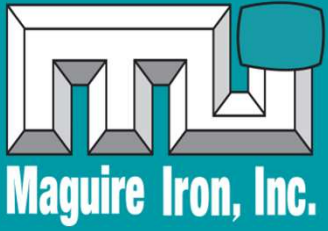
- Maintain the structural integrity of the tank.
- Minimize the aesthetic impact on the tank.
- Minimize the impact on future tank maintenance costs.
- Maximize possible revenue for the tank owner.



## **OWNER BENEFITS**

- Revenue Maximization
- Maintenance Expense Control
- Minimized Administration Expense
- Reliability
- Indemnification
- Expertise and Professional Service





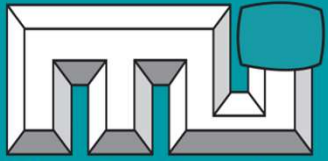
## **SERVICES PROVIDED**

- Design & Installation Engineers Review
- National Marketing Program
- Initial Contract Negotiation
- Ongoing Contract Management
- Regulatory Compliance
- Administrative Services
- Support Services



Allow No antennas  
on water tower!

(Without a good investigation & assessment)



**Maguire Iron, Inc.**

# Burning Questions?