CEDAR HILL
WHERE OPPORTUNITIES GROW NATURALLY

Code Enforcement

285 Uptown Blvd., Cedar Hill, TX 75104
O. 972.291.5100 X 1090
F. 972 .291.7250

NOTICE OF MEETING
BOARD OF ADJUSTMENTS
Tuesday, June 5, 2018
TURK CANNADY BRIEFING ROOM-
1ST FLOOR
285 UPTOWN BLVD., BUILDING 100
1:00 p.m.

MISSION STATEMENT: The mission of the City of Cedar Hill is to deliver the highest quality municipal services to our citizens and customers consistent with our community values.

VISION STATEMENT: We envision Cedar Hill as a premier city that retains its distinctive character, where families and businesses flourish in a safe and clean environment.

I. Call Meeting to Order

II. Approve the meeting minutes for Tuesday, February 13, 2018.

III. Conduct a public hearing and consider a request by Doug Henderson with Crafton Communications to authorize the expansion of a nonconforming structure (broadcast tower/antennas) on property zoned the "SF-E" (Single-Family Residential Estate – minimum 43,560 square foot lots) District, legally described as Lot 1, Block A of the Miller Transmission Tower Addition and generally located on the south side of West Belt Line Road, west of Carrell Street with the approximate address being 1360 West Belt Line Road.

IV. Adjourn.

I certify that the above notice of meeting was posted in accordance with the Texas Open Meetings Act on the 30th of May, 2018.

Jeanette Cosme

Jeanette Cosme

Permit Tech/Executive Assistant

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This facility is wheelchair accessible. Handicapped parking is also available. To arrange for sign interpretative services or special accommodations, please call 972-291-5100 Ext. 1081 or (TDD) 1-800-RELAY TX (1-800-735-2989), at least 48 hours in advance of the meeting.

"PURSUANT TO SECTION 30.07, PENAL CODE (TRESPASS BY LICENSE HOLDER WITH AN OPENLY CARRIED HANDGUN), A PERSON LICENSED UNDER SUBCHAPTER H, CHAPTER 411, GOVERNMENT CODE (HANDGUN LICENSING LAW), MAY NOT ENTER THIS PROPERTY WITH A HANDGUN THAT IS CARRIED OPENLY"

"CONFORME A LA SECCIÓN 30.07, DEL CÓDIGO PENAL (ENTRADA SIN AUTORIZACIÓN POR TITULAR DE LICENCIA CON UNA PISTOLA VISIBLE), UNA PERSONA CON LICENCIA BAJO EL SUBCAPÍTULO H, CAPÍTULO 411 DEL CÓDIGO DE GOBIERNO (LEY DE LICENCIAS DE PISTOLAS), NO PUEDE ENTRAR EN ESTA PROPIEDAD CON UNA PISTOLA VISIBLE"

PREMIER STATEMENTS

Cedar Hill is Safe
Cedar Hill is Clean
Cedar Hill has Vibrant Parks and Natural Beauty
Cedar Hill has Excellent, Safe and Efficient Mobility
Cedar Hill has a Strong and Diverse Economy
Cedar Hill has Texas Schools of Choice

Minutes
Board of Adjustments and Appeals
Meeting of Tuesday, February 13, 2018

The Board of Adjustments of the City of Cedar Hill, Texas met on Tuesday, February 13, 2018 at 1:00 p.m. in the T.W. "Turk" Cannady-Cedar Hill Room on the 1st floor of the Government Center, City of Cedar Hill, Texas.

Present: Ray Stroh, Douglass Hibbs, Roger Welch, Michael Craig and Jerry Berry
Staff Present: Jeanette Cosme, Permit Tech, Stacey Graves, Neighborhood & Code Services Director and Gail Lux, Building Official.

I. Call the meeting to order.

Chairman Craig calls meeting to order at 1:00pm. He explained to the audience that the board must have four votes in favor for the variance to be approved.

II. Approve meeting minutes of meeting for Tuesday, January 9, 2018.

Doug Hibbs made a motion to approve the minutes from January 9, 2018 and Ray Stroh seconded the motion.

The motion was approved unanimously.

III. Review and consider a request by Judy Sudduth for an exception to the Cedar Hill Zoning Ordinance #2001-64, Section 4.1.3.E.3 Accessory Buildings to allow an accessory building without a main structure at Lot 1, Block 3, ACS 10314, Brook View unrec more commonly known as 328 Simmons Way.

Judy Sudduth is present for the meeting. She currently resides at 3706 Magnolia, Grand Prairie, TX. 75050. Judy owns the property in question and she is planning on building a home on the property but would like to build a barn there before she builds the house.

Michael Craig reads several letters of support for this request that were sent in by other property owners near hers. Gary Osborne is one of the neighbors and is present for the meeting. He just wants to see the plans and where on the property it will go on the property. He is told that it will be professionally built and that it will not be visible from the street.

Doug Hibbs asks Gail Lux, the Building Official, if the building has to meet any other requirements and Gail explains that since its under 240 sq. ft. it does not have to meet the masonry requirements. Since this property contains more than one lot, Mr. Lux wants to be sure that the structure is on the same lot which the house will be constructed because there cannot be a structure without a house.

Michael Craig explains the size of the lot and that the area is very rural and does not see a problem with it. Mr. Craig motions to approve the request contingent on the house construction to start within one year of the barn. Mr. Hibbs seconds the motion. All members vote in favor of the variance request.

IV. **Review and consider a request by Tina Conner for an exception to the Cedar hill Zoning Ordinance #2001-64, Section 5.1.2.D Required Garages to allow an enclosed garage for residential living purposes without a required separate garage at Lot 5, Block 27AR, Stonewood Heights Ph. 2 Rep more commonly known as 744 Rockett Lane.**

Tina Conner is present for the meeting. Tina's ex-husband converted the garage to a living area 3 years ago. She was not aware that he did this without having a permit and she recently received a notice stating that it needed to be converted back to a garage.

Mr. Craig asks if there is currently a nonfinancial hardship that could be considered for this request. At the time Ms. Conner is the only one working in the home and paying all of the expenses. Financial hardships cannot be the reason requests are granted. Mr. Craig has gone by the house and does not like how it has changed the look of the house. It stands out from the other homes in the neighborhood. There is not anyone else present to speak either for or against this request.

Ray Stroh motions to deny the request and Roger Welch seconds the motion. Members all vote to deny the request. Ms. Conner must convert the existing room back into a garage.

V. **Reconsider a request by Joe Property and Construction for an exception to the Cedar Hill Zoning Ordinance #2001-64, Section 3.3.3.A Minimum Lot Area of 0.702 acres at Tract 2.6, Abstract 942, John N Gainer Survey more commonly known as 363 Lakeview Drive.**

Jose Lara, the property owner, is present for the meeting. Mr. Craig explains that the lot was sized before the city changed the rules and there is no way that it could conform. The lot would be an eye sore for the area if it remains

vacant and that since this was not the fault of the owner that they should allow him to build on it.

Mr. Welch motions to approve the request and Mr. Hibbs seconds the motion. All members voted in favor of allowing Mr. Lara to build his home on the property.

VI. Review and consider a request by Joe Property and Construction for an exception to the Cedar Hill Zoning Ordinance #2001-64, Section 3.3.3.B Minimum Side Yard (interior) to allow a side yard of 10 feet at Tract 2.6, Abstract 942, John N Gainer Survey more commonly known as 363 Lakeview Drive.

Jose Lara is present for the meeting. He is asking to reduce the side yard setback so that they can build their home on it. Robbie Wiser, the property owner of the adjoining lot, is present for the meeting. He is concerned about the removal of the trees along their property. Mr. Lara explains that all of those trees will untouched and that it will not affect Mr. Wiser's property. Mr. Wiser is in favor of the home being built as described to him.

Mr. Hibbs and Mr. Craig have both been by the property and are in favor of the house being built there. They both agree that a home on a nice maintained property will look much better than what it looks like currently. Mr. Craig explains that this house will have another house to one side and that the other lot is vacant and will remain that way.

Mr. Hibbs motions to approve the request and Mr. Stroh seconds the motion. All members vote in favor of the request.

VII. Adjourn

Mr. Hibbs motions to adjourn the meeting. Mr. Stroh seconds the motion. Meeting Adjourned.

Jeanette Cosme

Jeanette Cosme/Permit Tech-Executive Assistant

CEDAR HILL
WHERE OPPORTUNITIES GROW NATURALLY

PLANNING DEPARTMENT

285 Uptown Blvd.,
Cedar Hill, TX 75104
O. 972-291-5100 X1080
F. 972.291.7250

TO: Board of Adjustments and Appeals

FROM: LaShondra Stringfellow

BAA DATE: June 5, 2018

RE: Case No. 69-2018

REQUEST:
Case No. 69-2018 – An application to authorize the expansion of a nonconforming structure [broadcast tower/antennas] on property zoned the "SF-E" (Single-Family Residential Estate – minimum 43,560-square-foot lots) District, legally described as Lot 1, Block A of the Miller Transmission Tower Addition and generally located on the south side of West Belt Line Road, west of Carrell Street with the approximate address being 1360 West Belt Line Road. *Applicant: Doug Henderson, Crafton Communications; Tower Owner: American Tower Corporation*

SUMMARY:
The applicant requests to raise the height of the tower (including antenna installation) from 1,529.3 feet to 1,600 feet. This change is necessitated by the FCC (Federal Communications Commission) mandating that TV stations on the UHF band be moved to the VHF band in order to make room for the wireless industry. No additional wireless communications equipment is being installed on this tower. However, the TV stations that utilize this tower have to move to the VHF band, which utilizes a stacked design as opposed to the current candelabra design to avoid interference amongst the various signals.

Nonconforming Structure Based Upon Setbacks
The structure is nonconforming because it does not meet the setback requirements specified in Section 5.4.4.B of the Zoning Ordinance (Chapter 23), which states:

> "In any district where a structure is permitted to be constructed above two (2) stories, an additional setback shall be required from any existing single-family residential use or zoning district. The additional setback shall be two feet (2') for every one foot (1') in height above two (2) stories from the single-family district boundary line or property line, whichever is closer."

Even though other broadcast towers surround the property on the south side of Belt Line Road, those parcels are zoned "SF-E" like the subject site. Therefore, the setbacks still apply. With the proposed expansion, the tower would need to be

3,200 feet away from the nearest single-family zoning district in order to comply. The nearest single-family zoning district is 550 feet to the west. The Ninth Grade Center property is 755 feet to the northwest. The single-family residences are approximately 1,585 feet to the northeast. There is undeveloped, single-family residential property zoned Old Town-Residential located 1,968 feet to the east and "SF-22" (Single-Family Residential – minimum 22,000-square-foot lots) located 555 feet to the north.

HISTORY (HOW DID THE TOWER BECOME NONCONFORMING?):

Prior to 1979:	Property was zoned "special use district" for broadcast tower.
Between 1979-1989:	The tower was constructed.
2001:	The property was rezoned as part of a city-wide rezoning to remove special use zoning as a district. The special use zoning districts for towers were converted to Conditional Use Permits (CUPs). Also, the special height regulations in Section 5.4.4.B were adopted. Even though the use remained conforming with the conversion from a special use zoning district to a CUP in 2001, the structure became nonconforming in terms of height based upon the surrounding residential zoning.

ACTION REQUIRED:

Section 2.2.3.B of the Zoning Ordinance grants the authority to expand a nonconforming structure to the Board. This request is not for a variance. Therefore, the property owner does not have to prove a hardship. In rendering its decision, the Board will have to determine whether or not expansion of the structure height is compatible with or detrimental to property that falls within 3,200 feet of the tower base.

Per Section 2.2.6.D, the concurring vote of four members of the Board is required to decide in favor of the applicant.

ATTACHMENTS:

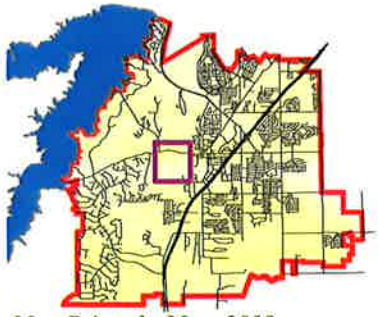
Maps
Explanation of FCC Broadcast Incentive Auction (provided by applicant)
Design Drawings
Structural Analysis
Tower Inspection Form/Mapping Report

City of Cedar Hill

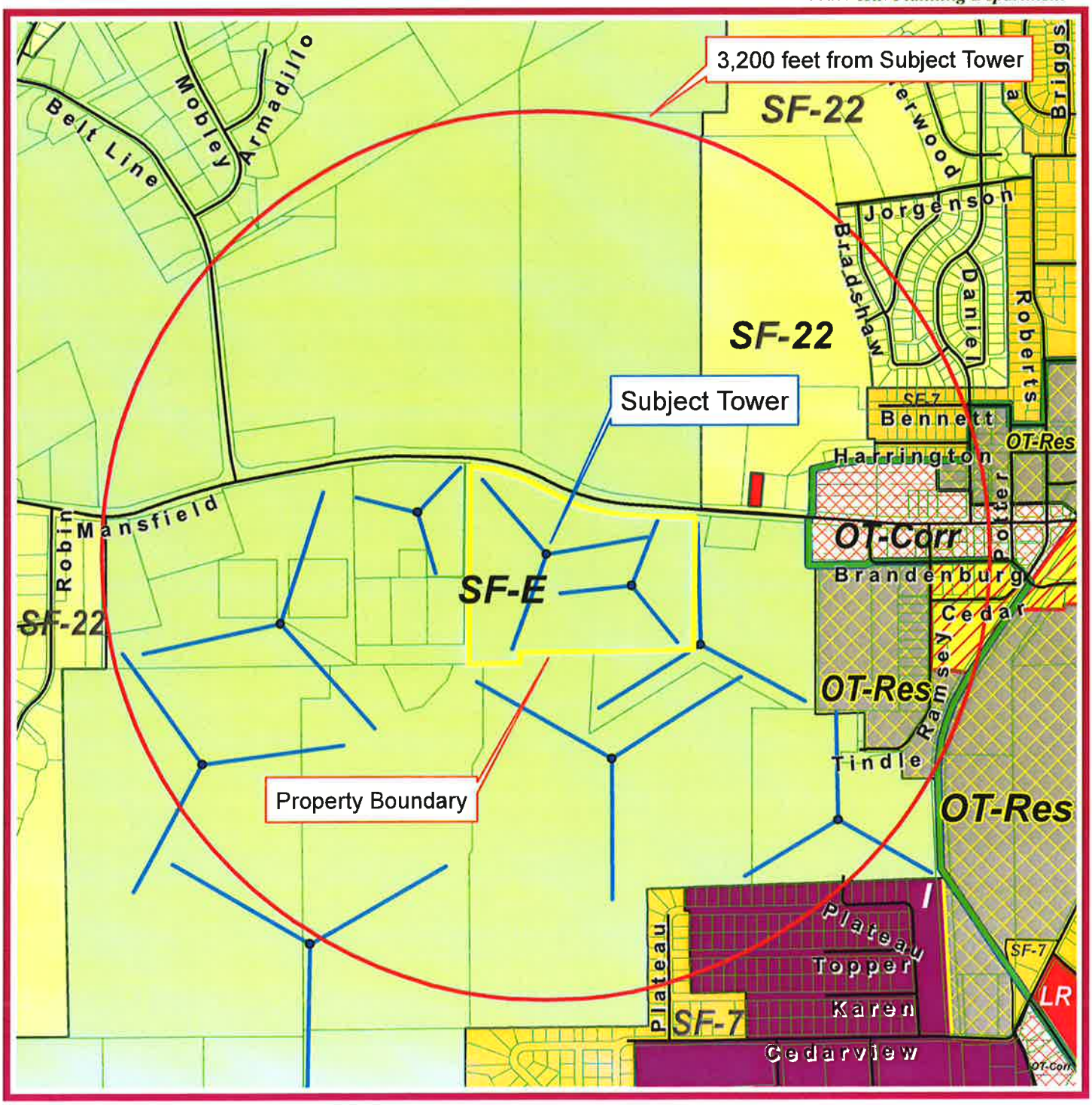
1 inch = 1,000 feet

0 1,000 Feet

Case PD-69-2018



Map Printed - May 2018
Cedar Hill Planning Department

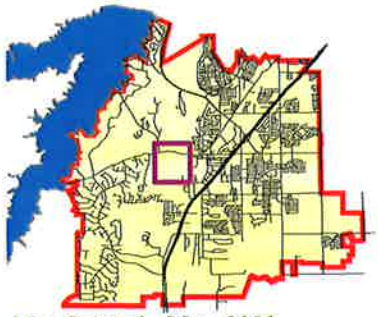


City of Cedar Hill

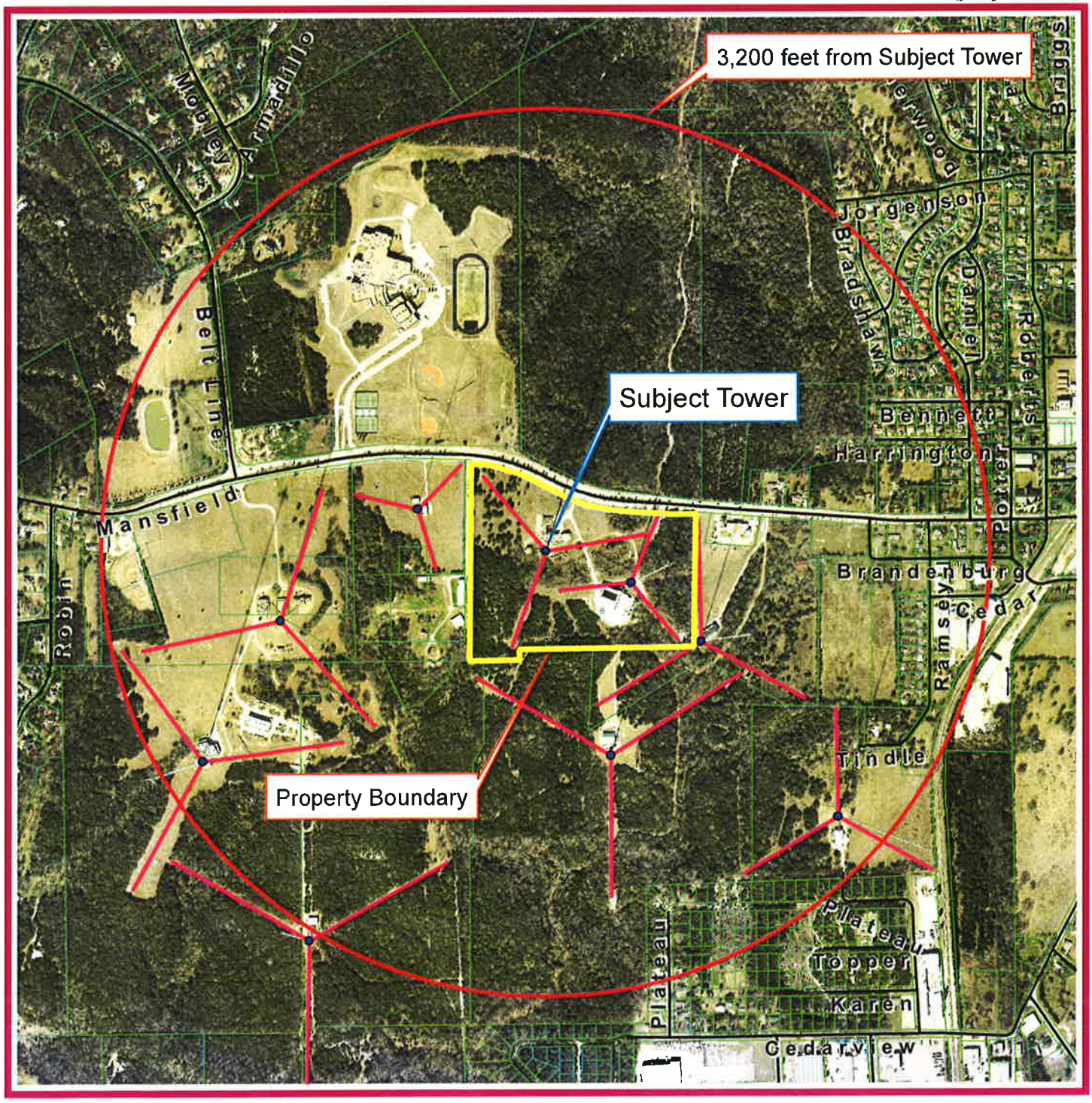
1 inch = 1,000 feet

0 1,000 Feet

Case PD-69-2018



Map Printed - May 2018
Cedar Hill Planning Department



FCC Broadcast Incentive Auction

ATC-Milton, Cedar Hill, TX
Telecommunications Facilities

April 25, 2018

AMERICAN TOWER®

What is the FCC Broadcast Incentive Auction

Results of the Auction

Impact on TV stations across the US

Proposed Changes for ATC Milton Tower located in Cedar Hill, TX

What is the FCC Broadcast Incentive Auction

- Approved by Congress and President Obama as part of the "The Middle Class Tax Relief and Job Creation Act of 2012"
- FCC mandated to generate revenue for First Net and the GAO through a spectrum auction
- Wireless industry wanted more low band spectrum to satisfy the ever increasing consumer mobile device demand
- FCC plan to auction all or part of the 600 MHz spectrum currently occupied by TV Ch.32-Ch.51 – Forward Auction
- FCC needed to clear TV stations from the upper UHF band - moving stations to new channels or buying TV licenses back
- FCC created an auction for TV stations to voluntarily sell back their licenses and either go dark permanently, channel share with other TV stations, or move from UHF to the VHF band – Reverse Auction

What is the FCC Broadcast Incentive Auction

- Forward and reverse auctions were run simultaneously 4Q 2016 through 1Q 2017
- Sale of 600Mhz to wireless industry had to generate enough revenue to cover:
  - Reverse auction buyback of Full Power and Class A TV licenses – Voluntary
  - FCC cost of running the auction
  - Reimbursement costs of Full Power and Class A TV stations having to change channels
  - GAO and First Net funding
- ~2,100 Full Power and Class A stations eligible to either voluntarily or involuntarily participate
- Most complex undertaking ever by the FCC

Results of the Reverse & Forward Auctions

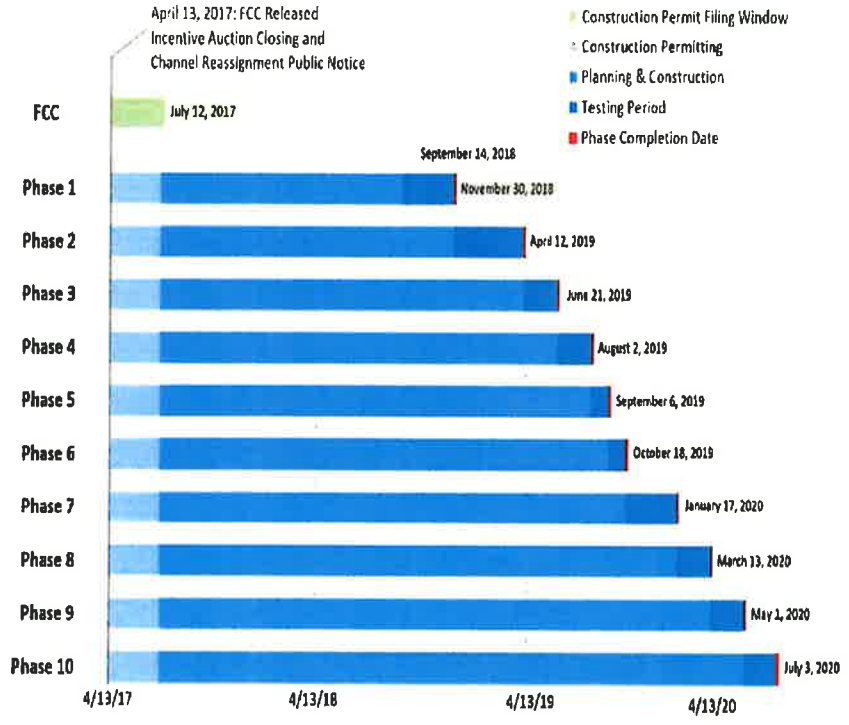
- Auctions closed April 13, 2017 after multiple auction rounds and downward adjustments to 600 MHz spectrum to be auctioned
- 70 MHz of the 600 MHz (TV channels 38-51) sold in forward auction for $19.8b
- 175 winning TV station licensees in the reverse auction for a total of $10b to be paid by the FCC to the winners.
  - 30 stations took lower payments to move to the VHF
  - 133 stations to remain on the air by channel sharing with stations that did not participate in the auction
  - 12 stations either going off the air permanently or filed post auction to channel share

Impact on Television Stations Across the US

- Reverse auction winners relinquishing their licenses must shut down by January 20, 2018 or file a waiver for up to two 90-day extensions
- Reverse Auction winners moving from a UHF to VHF channel must cutover by their assigned FCC transition date
- All TV stations that did not participate in the reverse auction were subjected to an involuntary program of possibly having their channel changed – TV Repack
- 957 TV stations are required to change their channel as part of the repack program
- Repack stations must turn off their current channels in accordance with their assigned FCC transition phase

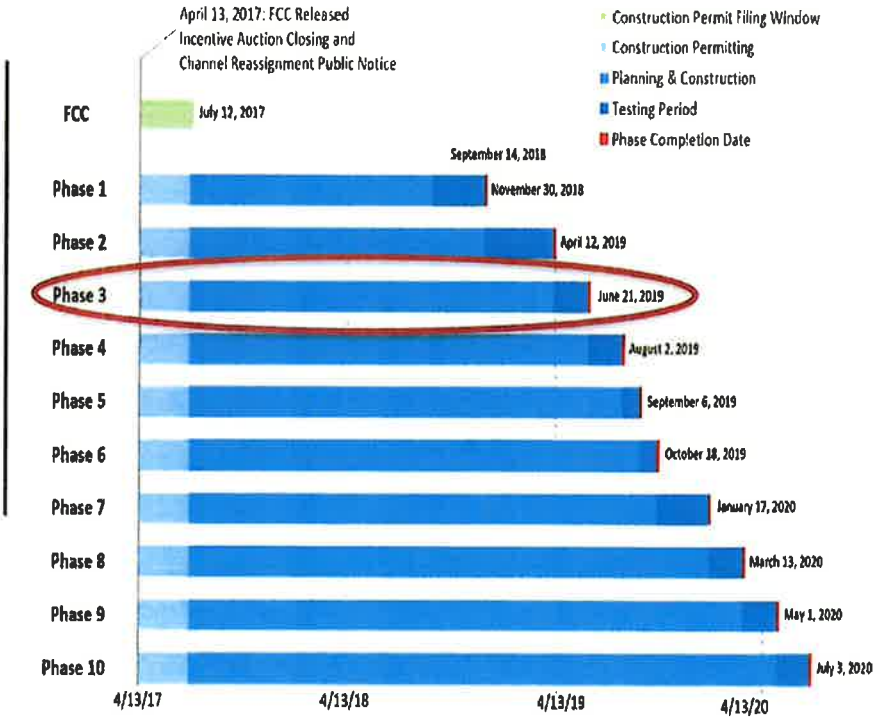
FCC Repack Transition Schedule

- FCC set a very aggressive 3 year build schedule
- Repack stations assigned a phase and date where they have to turn off their current channel transmission
- Lots of debate whether this schedule can be met



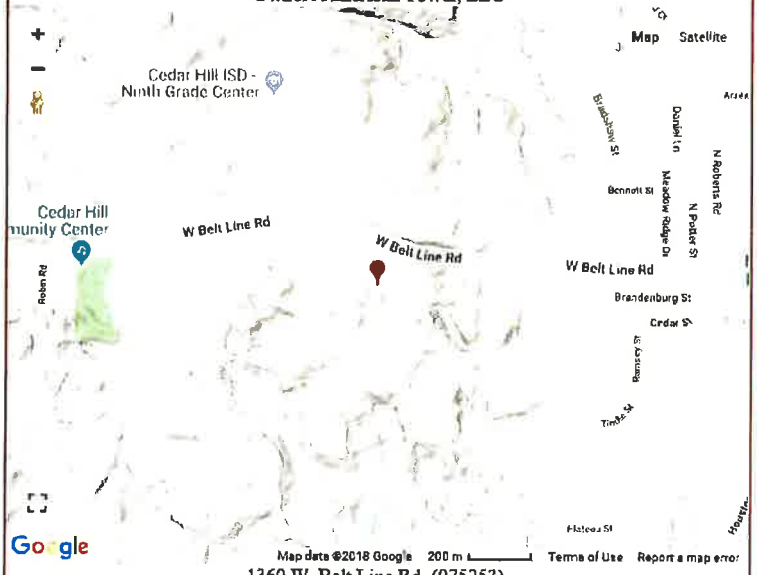
Dallas Repack Transition Schedule

- Dallas TV stations transition in Phase 2
- June 21, 2019 cutover date
- **Work to be completed in Summer and Fall 2018**



Milton Tower – Full & Low Power TV Stations

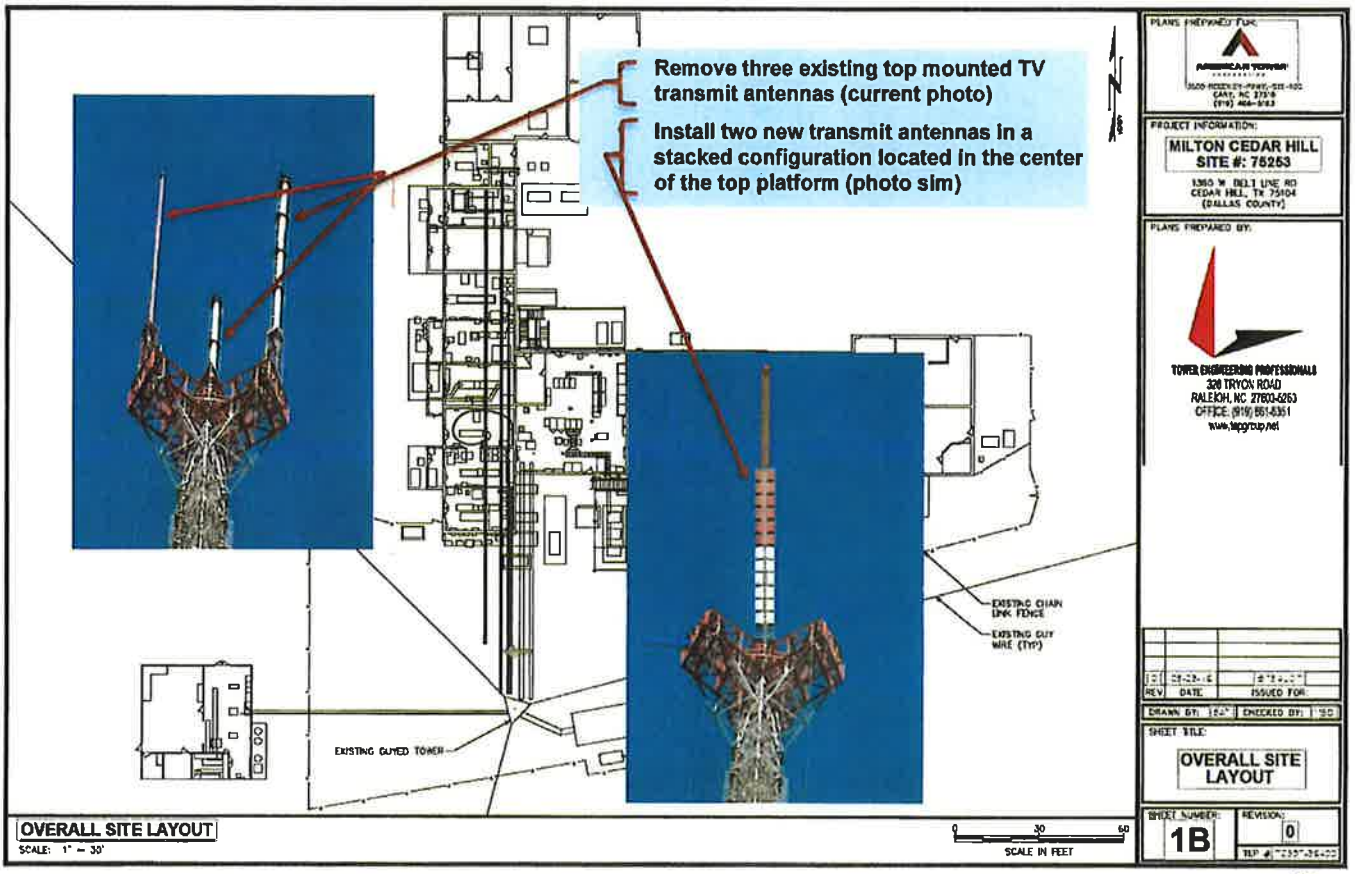
ASRN: 1055009
Tower Height: 1551' (Constructed)
Coordinates: 32.589444, -96.97025
Latitude: N 32° 35' 22"
Longitude: W 96° 58' 12.9"
Owner: American Tower, LLC



1360 W. Belt Line Rd. (075253)
CEDAR HILL, TX

Channel	Call Sign	City of License	AGL	Record Type	HAAT	Power
2-1 (29)	KDTN	DENTON, TX	1518'	DTV-CP	1621'	415 kW DA
11-1 (19)	KTVT	FORT WORTH, TX	1518'	DTX-APP	1719'	465 kW DA
21-1 (18)	KTXA	FORT WORTH, TX	1518'	DTX-CP	1719'	465 kW DA
22-1 (22)	KNAV-LP	DE SOTO, TX	853'	LPD-CP	1052'	15 kW DA
23-1 (23)	KUVN-DT	GARLAND, TX	1456'	DTV-LIC	1596'	1000 kW DA
23-1 (23)	KUVN-DT	GARLAND, TX	1493'	DTX-LIC	1699'	220 kW ND
23-1 (33)	KUVN-DT	GARLAND, TX	1523'	DTV-CP	1726'	1000 kW DA
26-1 (27)	KODF-LD	BRITTON, TX	591'	LPD-LIC	789'	15 kW DA
28-1 (10)	KHPK-LD	DE SOTO, TX	1050'	LPD-LIC	1248'	3 kW DA
31-1 (31)	K31GL-D	DE SOTO, TX	1083'	LPD-LIC	1281'	8 kW DA
34-1 (34)	KJJM-LD	DALLAS & MESQUITE, TX	853'	LPD-LIC	1052'	15 kW DA
38-1 (38)	KVFW-LD	FORT WORTH, TX	787'	LPT-LIC	986'	15 kW DA
47-1 (23)	KTXD-TV	GREENVILLE, TX	1518'	DTV-CP	1621'	1000 kW DA
58-1 (21)	KDTX-TV	DALLAS, TX	1518'	DTV-CP	1621'	735 kW DA

ATC – Milton Tower, Cedar Hill, TX



Thank You & Questions?

Peter Starke
Vice President, Broadcast
781-926-4772 (office)
508-878-4876 (mobile)
peter.starke@americantower.com

Cedar Hill, TX – Broadcast Towers (>1,000 Feet AGL)

2 towers 1,000' to 1,250' AGL

9 towers 1,500' to 1,730' AGL

Source: FCC Antenna Structure Registration Data

ATC – Antenna Separation and Placement

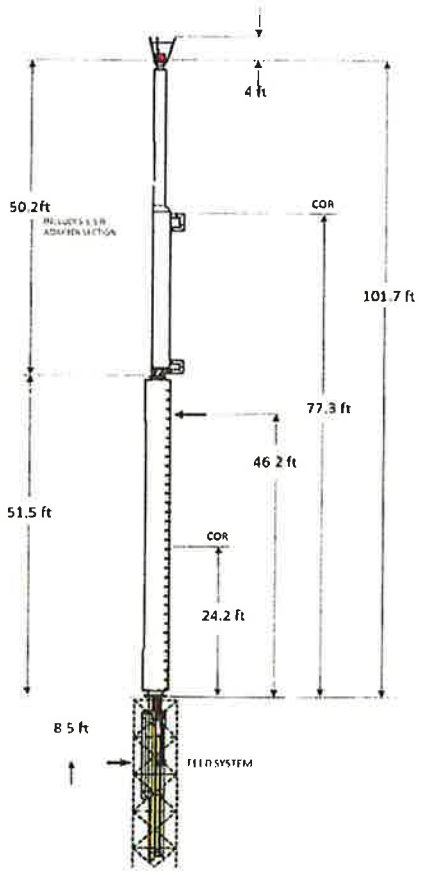
Candelabra with 75 ft. antenna separation

Candelabra with 30 ft. antenna separation

Proposed stacked antennas

Dielectric®

MECHANICAL SPECIFICATIONS



Proposal No.	**C-70652-7**
Date	**3-May-18**
Call Letters	**KDTN**
Channel	**29**
Frequency	**563 MHz**
Antenna Type	**TUM-C4-AP-14/48H-2-R-B**

Preliminary Specifications

Bottom of Stack

With ice TIA-222-G

Height AGL(z)	900 ft (274.3 m)
Basic Wind Speed	90 m/h (144.8 km/h)
Structure Class	II
Exposure Category	C
Topography Category	1
Design Ice	0.75 in t_{iz} = 2.10 in
Wind Speed w/Ice	30 m/h (48.3 km/h)

Mechanical Specifications		**without ice**	**with ice**	**full stack**	**full stack with ice**	
Height with Lightning Protector	H4	ft (m)		105.7 ft (32.2m)		
Height less Lightning Protector	H2	51.5 ft (15.7m)		101.7 ft (31m)		
Height of Center of Radiation	H3	25.7 ft (7.8m)		25.7 ft (7.8m)		
Effective Projected Area	$(EPA)_S$	112.47 ft² (10.4m²)	255 ft² (23.7m²)	186 ft² (17.3m²)	434.1 ft² (40.3m²)	
Moment Arm	D1	27 ft (8.2m)	28.3 ft (8.6m)	46.2 ft (14.1m)	49 ft (14.9m)	
Effective Projected Area	$(EPA)_S$	92 ft² (8.5m²)	195 ft² (18.1m²)	92 ft² (8.5m²)	195 ft² (18.1m²)	below tower top
Moment Arm	D3	8.5 ft (2.6m)	8.8 ft (2.7m)	8.5 ft (2.6m)	8.8 ft (2.7m)	below tower top
Pole Bury Length	D2	ft (m)	ft (m)	ft (m)	ft (m)	below tower top
Weight	W	23400 lb (10.6t)	28390 lb (12.9t)	32200 lb (14.6t)	39320 lb (17.8t)	

Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-G

Prepared by:	CAB	**Date:**	1-Sep-17	**ME:**	**EE:**
Rev. No.7 by:	JBC	**Date:**	3-May-18		

STAINLESS®

A Business of FDH Velocitel

200 North Warner Road, Suite 315

King of Prussia, PA 19406

DESIGN DRAWINGS
G-10 TOWER MODIFICATION
ATC Site: 75253 Milton/Cedar Hill

INDEX

DESCRIPTION	DWG	REV	DATE
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GENERAL NOTES	D01.03		1/22/2018
TOWER PROFILE	D04.00		1/24/2018
TOWER PROFILE	D04.01		1/24/2018
TOWER PROFILE	D04.02	A	2/23/2018
LINEAR APPURTENANCES	D05.00		1/22/2018
DIAGONAL REPLACEMENT	D05.01		1/24/2018
DIAGONAL REPLACEMENT	D05.02		1/24/2018
DIAGONAL REPLACEMENT	D05.03		1/24/2018
DIAGONAL REPLACEMENT	D05.04		1/24/2018
HORIZONTAL REPLACEMENT	D05.05		1/24/2018
SUB-BRACING DETAILS	D05.06		1/24/2018
TOP OF TOWER DETAILS	D05.07		2/8/2018
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FLANGE REINFORCEMENT DETAILS	D05.09		2/13/2018
COAX ARRANGEMENT FOR 8-3/16" RIGID LINE	D06.00		1/30/2018
COAX ARRANGEMENT FOR 7-3/16" RIGID LINE	D06.01		1/30/2018
COAX ARRANGEMENT FOR 7-3/16" RIGID LINE	D06.02		1/30/2018
GUY #4 ATTACHMENT DETAILS	D08.00		1/25/2018
INTERCEPTS & ERECTION TENSIONS	D08.01		2/8/2018
MATERIAL LIST	D11.00		2/13/2018

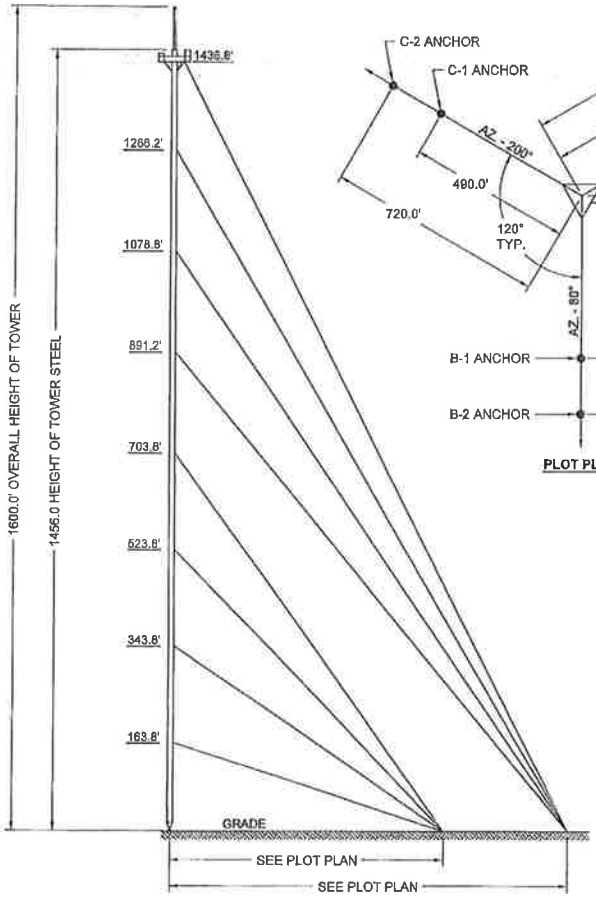
Rev	Description	Drawn by	Date	Checked by	Date	Reviewed by	Date	Approved by	Date
A	Rev-D01.02, D04.02								
-	Initial Release								

k:\278349\dwg\278349eddx.xls

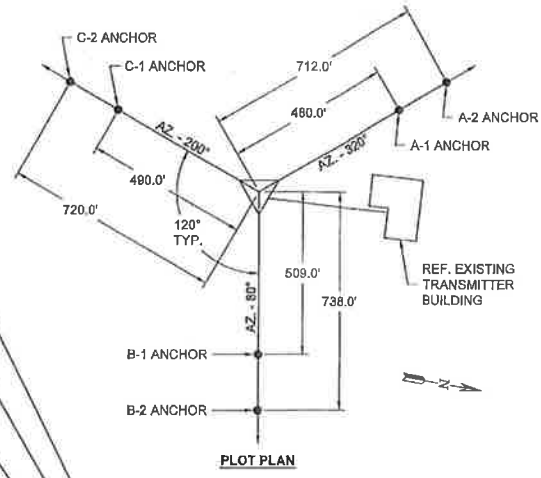
Project No.: 278349

STATE OF TEXAS
ALAN AH-KUM PANG
121108
LICENSED
PROFESSIONAL ENGINEER

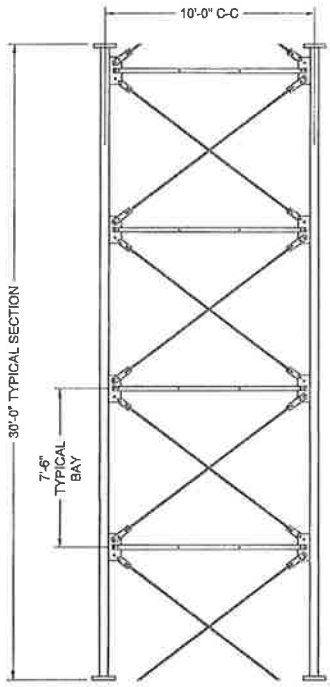
3/1/18



ELEVATION VIEW



PLOT PLAN



TOWER DETAIL

NOTE:
1. SEE PAGE D01.01, D01.02 AND D01.03 FOR GENERAL NOTES.

PREPARED BY	RE
CHECKED BY	
PROJECT MGR	
PROJECT NUMBER	278349
DRAWING NUMBER	D01.00

STAINLESS

GENERAL ARRANGEMENT
DALLAS, TX

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STATE OF TEXAS
ALAN AH-KUM PANG
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LICENSED
PROFESSIONAL ENGINEER

3/1/18

1. The tower is a guyed, triangular, non-insulated, open face structure.

2. The tower was analyzed per Stainless Rigorous Structural Analysis Report 278348 Rev. A, dated 2/12/2018 in accordance with the 2015 IBC and ANSI/TIA 222- G-2005, Structural Standard for Antenna Supporting Structures and antennas, including addenda 1 and 2, dated 2007 and 2009 respectively, for the following analysis parameters while supporting equipment as listed below:

   - Structure Classification II
   - 115 mph ultimate design wind speed with no ice
   - 30 mph nominal design wind speed with 3/4" design ice thickness
   - Exposure Category D
   - Topographic Category 1
   - 0.11 earthquake spectral response acceleration at short periods (S_s)
   - Earthquake Site Class D

a. One (1) Dielectric TFU-26GTC-VP-R 4C190 DC SP antenna (KUVN Channel 33 and KSTR Channel 34) and one (1) Dielectric TUM-AP-C4-14/48H-2-R-B (KDTN Channel 29) stack antenna system on top of a new 39-ft tower mast extension on top of main tower, fed by one (1) 8-3/16" rigid line and two (2) 7-3/16" rigid lines.(Proposed)
b. One (1) ERI 1183-8CP-2 8-bay panel antenna at the 1360' level, fed by one (1) 6-1/8" rigid line and one (1) 2-1/2" conduit.
c. One (1) ERI 1183-6CP-2 6-bay panel antenna at the 1303' level, fed by one (1) 5" Conduit (5.56" OD) and one (1) 2-1/2" conduit.
d. One (1) MCI 952000 (6-bay with 2 panels each bay) antenna at the 1271' level, fed by one (1) 6-1/8" rigid line.
e. One (1) SWR 4-bays slot antenna side mount to tower leg at the 1156' level, fed by one (1) 4-1/16' rigid line.
f. One (1) Scala CL-46/HRM/50N Yagi antenna at the 1145' level, fed by one (1) 1-5/8" line.
g. One (1) Scala CL-46/HRM/50N Yagi antenna at the 1133' level, Shares line with Yagi antenna at the 1145' level.
h. One (1) SBP UP8-C LPTV antenna at the 1085' level, fed by one (1) 4"line.
i. One (1) SBP UP8-C LPTV antenna at the 1072' level, fed by one (1) 3"line.
j. One (1) Dielectric THA-C2 antenna at the 1072' level, fed by one (1) 3"line.
k. One (1) ProScan III ENG antenna at the 995' level, fed by one (1) 1-1/4" line and one (1) 7/8" line.
l. One (1) Micro Communication Ch30 and Ch 60 side mounted antenna at the 950' level, fed by one (1) 4" line.
m. One (1) Telewave ANT150F6-7 antenna on platform handrail mount at the 905.5' level, no associated line.
n. Two (2) 18"x12" junction boxes, one (1) 5412 ESS242010 unit, one (1) 24"x24"x14" junction box and one (1) 48"x24" junction box at the 899' level, fed by two (2) 7/8" lines.
o. One (1) DB420 MS-E dipole antenna at the 892.5' level, fed by one (1) 7/8" line.
p. One (1) 8' wide, three-sided platform at the 892' level.
q. One (1) MCI 955138 (8-bay with 2 panels each bay) antenna at the 840' level, fed by one (1) 4" line and one (1) future 4" line.
r. One (1) MCI 952000-4 (4-bay with 2 panels each bay) antenna at the 793' level, fed by one (1) 3" line.
s. One (1) ERI SHPX-8AC6-HW FM antenna at the 745' level, fed by one (1) 3-1/8" rigid line.
t. Six (6) AN1430-01 antennas and twenty four (24) BMAX-BST-AU-ODU units at the 658' level, fed by twenty four (24) 5/8" lines.
u. One (1) MCI 955138 (8-bay with 2 panels each bay) antenna at the 591' level, fed by one (1) 3" line.
v. One (1) 4' Yagi antenna at the 677.5' level, fed by one (1) 7/8" line.
w. One (1) DB420MS-E dipole antenna at the 569.5' level, fed by one (1) 7/8" line.
x. One (1) 10' grid dish antenna at the 528' level, fed by one (1) 7/8" line.
y. One (1) DB224-E dipole antenna, one (1) 20' dipole antenna and one (1) 10' grid dish antenna at the 500' level, fed by one (1) 7/8" line and one (1) 1-1/4" line.
z. One (1) 12' ice shield at the 410' level.

aa. One (1) 3' Yagi antenna at the 405' level, fed by one (1) 7/8" line.
bb. One (1) 12' standard dish antenna at the 400' level, fed by one (1) 7/8' line.
cc. One (1) 6' ice shield at the 378' level.
dd. One (1) 10' grid dish antenna at the 382' level, fed by one (1) 7/8" line.
ee. One (1) 8' grid dish antenna at the 378' level, fed by one (1) 7/8" line.
ff. One (1) 6' standard dish antenna and one (1) 10' grid antenna at the 362' level, fed by one (2) 7/8" lines.
gg. One (1) RFS PD200 omni antenna at the 360' level, fed by one (1) 7/8" line.
hh. One (1) 8' HP dish antenna at the 352.5' level, fed by one (1) EW63 cable.
ii. One (1) 2' grid dish antenna at the 334' level, fed by one (1) 1-5/8" line.
jj. One (1) 10' grid dish antenna at the 333' level, fed by one (1) 1-5/8" line.
kk. Two (2) 8' standard dish antennas at the 330' level, fed by two (2) 1/2" lines.
ll. One (1) 10' grid dish antenna at the 326' level, fed by one (1) 7/8" line.
mm. One (1) RFS DA12-65AC dish antenna at the 325' level, fed by one (1) EW63 cable.
nn. One (1) 12' ice shield at the 306' level.
oo. One (1) 8' standard dish antenna at the 300' level, no associated line.
pp. One (1) UHX6-59-P3A/L HP dish antenna at the 300' level, fed by one (1) EW63 cable.
qq. One (1) RFS DA12-65AC dish antenna at the 275' level, fed by one (1) EW63 cable.
rr. Two (2) 6' ice shields at the 267' level.
ss. Two (2) RFS SBX2-107NEC HP dishes at the 262' level, fed by four (4) 3/8" lines.
tt. Three (3) CSS X7C-665 and three (3) Jaybeam PCSX065-18-0 antennas; three (3) LGP18601 TTA units on sector frames at the 252' level, fed by nine (9) 1-5/8" lines.
uu. One (1) 3' standard dish antenna at the 224' level, fed by one (1) 0.19" line.
vv. One (1) 12' ice shield at the 212.5' level.
ww. One (1) 12' grid dish antenna at the 203' level, fed by one (1) 7/8" line.
xx. One (1) Scala CA7-410 Yagi antenna at the 200' level, fed by one (1) 7/8" line.
yy. One (1) PL8-65 6' standard MW dish antenna at the 200' level, fed by one (1) EW63 cable.
zz. One (1) 6' standard dish antenna at the 190' level, fed by one (1) 1/2" line.
aaa. One (1) 8' grid dish antenna at the 168' level, fed by one (1) 7/8" line.
bbb. One (1) 10' grid dish antenna at the 170' level, fed by one (1) 7/8" line.
ccc. One (1) 2' Yagi antenna at the 153' level, fed by one (1) 1/2" line.
ddd. One (1) 4' standard dish antenna and (2) TTA units at the 131 level, fed by one 1-5/8" line.
eee. One (1) 2' Yagi antenna at the 107' level, fed by one (1) 3/8" line.
fff. One (1) 4' standard dish antenna at the 131 level, fed by one 1-5/8" line.
ggg. One (1) 10' Omni antenna at the 70' level, fed by one (1) 7/8' line.
hhh. One (1) 1-1/4" conduit to 1443' level.
iii. One (1) 1-1/2" line support conduit (assumed) to level 1072'.
jjj. One (1) 1-1/2" line support conduit (assumed) to level 950'.
kkk. One (1) 3/4" line support conduit (assumed) to level 500'.
lll. One (1) 1-1/2" line support conduit to level 252'.
mmm. One (1) 1-1/4" line support conduit to level 610'.
nnn. One (1) 1-1/2" line support conduit (assumed) to level 325'.
ooo. One (1) two man, double-deck elevator to level 1455'.
ppp. One (1) 3/4" conduit containing control circuits for item above.
qqq. One (1) lighting system with 3" conduit to tower top.
rrr. One (1) climbing ladder without safety cable to tower top.

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GENERAL NOTES
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

PREPARED BY	RC	1/22/18
CHECKED BY	GLA	2/9/18
ENGINEER REVIEW	PZC	2/14/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D01.01	

4. In order for the tower to achieve a 115 mph ultimate design wind speed with no ice, and a 30 mph nominal design wind speed with 3/4" design ice thickness in accordance with the 2015 IBC and ANSI/TIA 222-G, the following modifications are required:

a. Install two (2) tower sections totaling approximately38'

b. Replace guy level 4 with new 1-9/16" dia. GR2 guy wires.

c. Install additional horizontal sub-bracing at the midpoints of the following bays:

Location	No. of bays
1108.8' – 1153.8'	6
1086.3' – 1093.8'	1
1063.8' – 1071.3'	1

d. Replace existing diagonal braces with new, higher capacity members at the following bays:

Location	No. of bays
1011.3' – 1033.8'	3
838.8' – 853.8'	2
808.8' – 823.8'	2
718.8' – 778.8'	8
658.8' – 696.3'	6
613.8' – 621.3'	1
576.3' – 606.3'	4
531.3' – 553.8'	3
441.3' - 463.8'	3
388.8' – 396.3'	1
366.3' – 381.3'	2
246.3' – 343.8'	13
216.3'– 238.8'	3
178.8' – 208.8'	4
141.3' – 156.3'	2
738'– 133.8'	8

e. Replace existing horizontal braces with new, higher capacity members at the following bay:

Location	No. of levels
1033.8' – 1041.3'	2
201.3' – 208.8'	2
118.8' – 133.8'	3

f. Adjust the initial guy tensions to the following values at 60 degrees F:

Level	Tension (kips)
1B	27560
2B	29700
3B	41520
4B	41520
5B	38800
6B	41500
7B	50160
8B	38880

g. Reinforce existing leg flanges and replace existing flange bolts with new, higher capacity bolts at one (1) level – Elevation 1455'.

5. The design of the tower modifications above has been based upon Stainless Rigorous Structural Analysis Report 278348, dated 12/05/2017. The details contained within this design drawing package are included for information and are not intended to be used as shop or final fabrication drawings. The Contractor shall field verify all dimensions, elevations and existing site conditions and notify Stainless immediately of any site discrepancies or variances. Contractor shall not scale dimensions from the design drawings. It shall be the responsibility of the Contractor to ensure proper fit-up of the tower modification materials. All work shown on this design drawing package shall be performed by qualified contractor (s) with a minimum of 5 years experience in tower and foundation construction.

6. All material shall be in accordance with the notes, specifications and drawings. All deviations and substitutions must be approved by a registered Professional Engineer in the state where the work is being done and submitted to Stainless for approval prior to installation. The Contractor shall furnish satisfactory evidence as to the kind and quality of the materials and equipment being substituted. Contractor shall also be responsible for obtaining all necessary permits, licenses and any other requirements for the construction. Submit all necessary calculations for substitutions and design details.

7. Contractor shall observe safe construction practices and shall be responsible for all methods of construction, including proper and adequate bracing to the tower and excavation work during the installation process. Adequately designed temporary support shall be installed before any tower component is removed and replaced. All means and methods of construction, including construction and soil pressure loads, shall be properly calculated and documented by the Contractor.

8. If the construction activities require a rigging plan per the requirements of ANSI/ASSE A10.48 and ANSI/TIA-322-2016, a rigging plan shall be developed by a Qualified Person, submitted to the Owner for review and implemented by a competent rigger. The Qualified Person shall coordinate Class IV rigging plans with a Qualified Engineer for a structural analysis of the structure considering the construction loading. A properly detailed rigging plan shall include, as a minimum, a review of the following:

- Operational and non-operational construction loads.
- Equipment used, and Supporting structure
- Construction sequence and durations

9. Stainless assumes no responsibility for the structural adequacy of the tower if non-conforming modification materials are supplied and/or installed by others, and shall have no liability whatsoever to owner or to others for any work performed by any persons other than Stainless in connection with the implementation of any structural changes or modifications not specifically addressed within this design drawing package. Owner acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by owner shall be solely responsible to owner and to others for the quality of work performed by them and that Stainless shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by such rigger, erector or subcontractor.

10. The modification drawings contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

a. Proper alignment and plumbness.
b. Correct bolt tightness.
c. No significant deterioration or damage to any component.

11. The design of the tower modifications are based on all existing antennas, antenna mounting pedestals and lines on candelabra being removed.

12. All galvanizing remediation is to be in accordance with American Tower Corporation Standard Specifications for Tower Sites, dated 1/23/2017 and ASTM A780 Standard Practice for Repair of Damage and Uncoated Areas of Hot-Dip Galvanized Coatings.

STAINLESS

GENERAL NOTES
DALLAS, TX

PREPARED BY	RE	1/22/18
CHECKED BY	GH	2/5/18
ENGINEER REVIEW	PCC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D01.02	

STATE OF TEXAS
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3/1/18

APPLICABLE CODES AND STANDARDS

Use latest editions of the following Codes and Standards unless noted otherwise.

1. ANSI/TIA-222-G 2005 Structural Standards for Antenna Supporting Structures and Antennas including Addenda 1 & 2, dated 2007 and 2009.
2. ANSI/ASCE A10.48 Criteria for Safety Practices Related to the Installation, Alteration, and Maintenance of Communication Structures. ANSI/TIA-322 Loading, Analysis and Design Criteria Related to the Installation, Alteration and Maintenance Communication Structures.
3. AISC Manual of Steel Construction.
4. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
5. ACI 301 Specifications for Structural Concrete.
6. ACI 318 Building Code Requirements for Structural Concrete.
7. ACI 315 Details and Detailing of Concrete Reinforcement.
8. CRSI Manual of Standard Practice.
9. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete.
10. ASTM C494 Standard Specification for Chemical Admixtures for Concrete.
11. ASTM A36 Standard Specification for Carbon Structural Steel.
12. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
13. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
14. ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
15. ASTM F436 Standard Specification for Hardened Steel Washers.
16. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and products.
17. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
18. ASTM A780 Standard Practice for Repair of Damage and Uncoated Areas of Hot-Dip Galvanized Coatings.
19. ASTM A615 Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.

STRUCTURAL STEEL

1. The fabrication and erection of structural steel shall conform to the AISC Manual of Steel Construction.
2. Repair all damaged or uncoated areas of galvanized coatings in accordance with ASTM A780.
3. Locking ANCO style nuts shall be installed on all bolts unless noted otherwise.
4. All A325 high strength bolts shall be tightened by the "snug tightening" method as specified in the RCSC Specification for Structural Joints Using ASTM A325 Bolts unless noted otherwise on the design drawings.
5. Material grades shall be as follows:
   a. Bolts – A325X and A490X
   b. U-Bolts – A307 min.
   c. Round Bars – A572 Gr.50
   d. Plates and angles – A36
   e. Channels – A572 Grade 50
   f. Guy strands – ASTM A586 Grade 2

INSTALLING GUYS AND PLUMBING LINES

1. The tower is designed for initial tension as specified in the erection drawings. It is important that the guys be tensioned accurately to assure the stiffness of the tower.
2. Uneven terrain, temperature, plumbness of tower and wind are factors which affect guy tensions. If the tower site is level and anchor distances are equal, the tensions in all three guys at a level will be equal when the tower is plumb. If the terrain of the tower site is uneven, the guys are not perfectly symmetrical and tensions in guys vary in the three directions. For this reason initial guy tensions are specified in one direction only. The tower should be plumbed with the specified tensions in the given guy direction.
3. Wind load on tower and guys changes the tension in all guys; therefore, plumb the tower in calm weather only.
4. In changing out guys, work should proceed in one guy direction at a time. A temporary guy must be installed before removing existing guy. It is the contractor's responsibility to insure the temporary guy and its connections are adequately designed for the loads imposed on it.
5. The plumbing of a tower or checking alignment of a tower should be performed in accordance with Annex J of ANSI/TIA 222-G.

TOWER PAINTING

1. The tower modifications shall be painted with International Orange and White in accordance with FAA Specifications. This includes all tower structural members and coaxial cable, conduits and other cables attached to the face of the tower. It does not include the tower ladder nor conduits and cables located in the interior of the tower. Paint shall be supplied by the Contractor.
2. Painting can be performed in either of two ways:
   a. On the ground prior to erection
   b. After the tower modifications have been installed

   If Method a is followed, all paint damage shall be repaired and touched up after assembly and erection of the tower modifications.
3. Painting shall not be performed when the temperature is below 45° Fahrenheit or when the steel is wet from rain or condensation.
4. All paint shall be applied on clean surfaces. Paint shall be applied smoothly, to a uniform thickness and without voids, pin holes, brush marks, laps, runs or other defects.

PREPARED BY: RK 1/22/18
CHECKED BY: GA 2/5/18
ENGINEER APPROVAL: [signature] 2/5/18
PROJECT NUMBER: 278349
DRAWING NUMBER: D01.03

MARK	DRAWN BY	DATE	REVISION DESCRIPTION	CHK'D BY	DATE

STAINLESS
GENERAL NOTES
DALLAS, TX

STATE OF TEXAS
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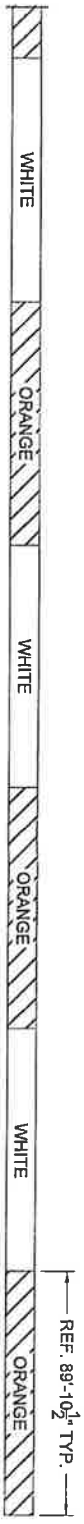
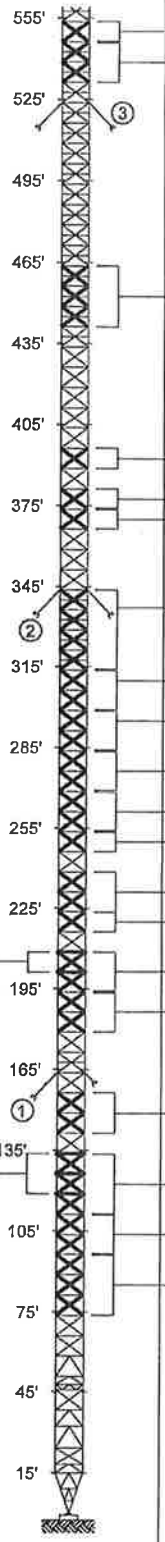
PROFESSIONAL ENGINEER

3/1/18

NOTE:
1. PAINT NEW TOWER MATERIAL TO MATCH EXISTING TOWER BANDS.





REPLACE HORIZONTALS BETWEEN 201.3' - 208.8' (2 LEVELS) SEE PAGE D05.05

REPLACE HORIZONTALS BETWEEN 118.8' - 133.8' (3 LEVELS) SEE PAGE D05.05

REPLACE DIAGONALS BETWEEN 546.3' - 553.8' (1 BAY) SEE PAGE D05.04

REPLACE DIAGONALS BETWEEN 531.3' - 546.3' (2 BAYS) SEE PAGE D05.04

REPLACE DIAGONALS BETWEEN 441.3' - 463.8' (3 BAYS) SEE PAGE D05.02

REPLACE DIAGONALS BETWEEN 388.8' - 396.3' (1 BAY) SEE PAGE D05.02

REPLACE DIAGONALS BETWEEN 373.8' - 381.3' (1 BAY) SEE PAGE D05.02

REPLACE DIAGONALS BETWEEN 366.3' - 373.8' (1 BAY) SEE PAGE D05.02

REPLACE DIAGONALS BETWEEN 313.8' - 343.8' (4 BAYS) SEE PAGE D05.04

REPLACE DIAGONALS BETWEEN 298.8' - 313.8' (2 BAYS) SEE PAGE D05.04

REPLACE DIAGONALS BETWEEN 283.8' - 298.8' (2 BAYS) SEE PAGE D05.02

REPLACE DIAGONALS BETWEEN 268.8' - 283.8' (2 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 253.8' - 268.8' (2 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 246.3' - 253.8' (1 BAY) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 223.8' - 238.8' (2 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 216.3' - 223.8' (1 BAY) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 193.8' - 208.8' (2 BAYS) SEE PAGE D05.04

REPLACE DIAGONALS BETWEEN 178.8' - 193.8' (2 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 141.3' - 156.3' (2 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 111.3' - 133.8' (3 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 96.3' - 111.3' (2 BAYS) SEE PAGE D05.01

REPLACE DIAGONALS BETWEEN 73.8' - 96.3' (3 BAYS) SEE PAGE D05.01

PAINT SCHED.	HORIZONTAL REPLACEMENT	TOWER ELEVATION	DIAGONAL REPLACEMENT

3/1/18

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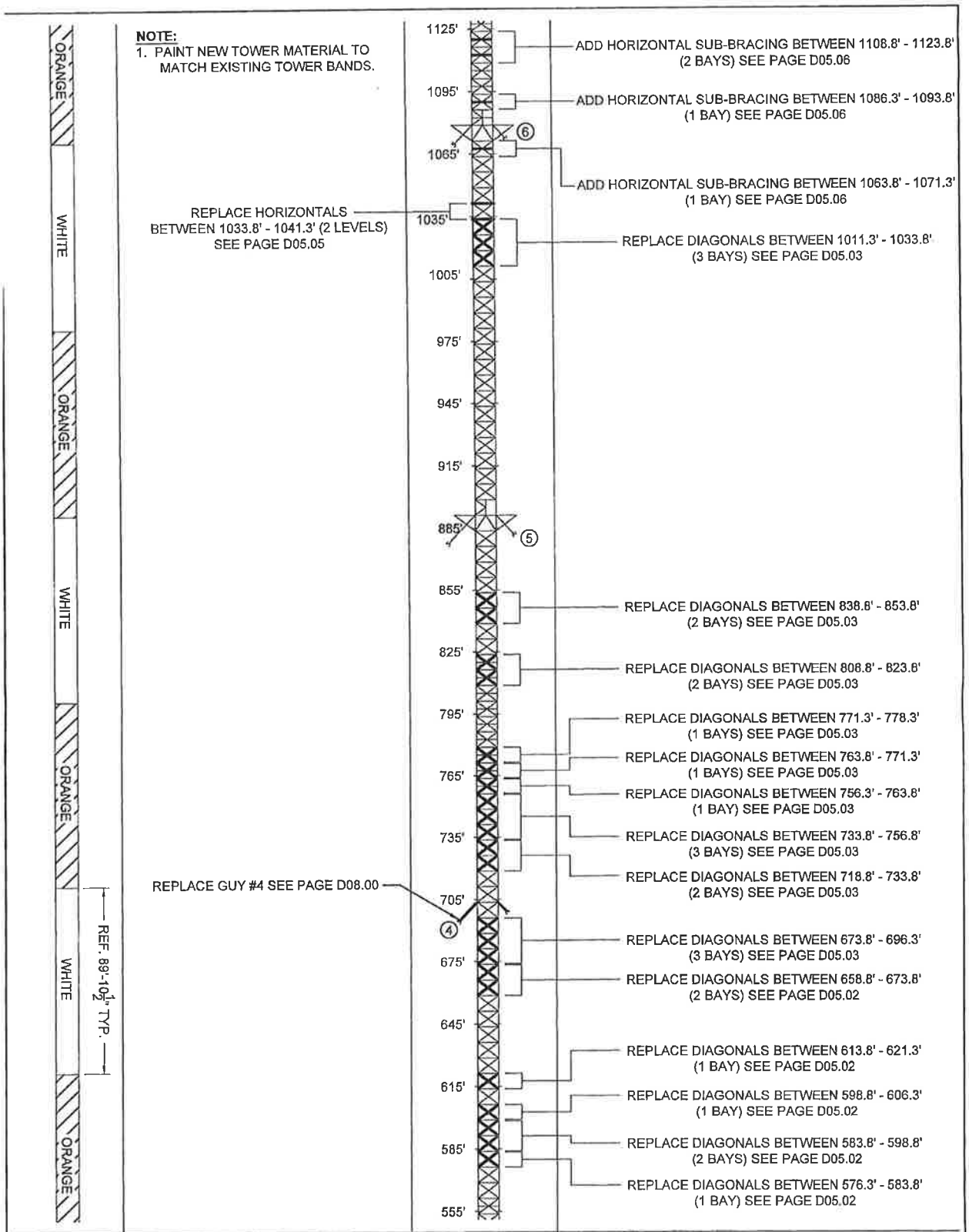
TOWER PROFILE

DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

K:\278349\dwg\278349_D04.00_TOWER_PROFILE.dwg

PREPARED BY	RE	1/24/18
CHECKED BY	GH	2/8/18
ENGINEER REVIEW	PJC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D04.00	



3/1/18

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TOWER PROFILE
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

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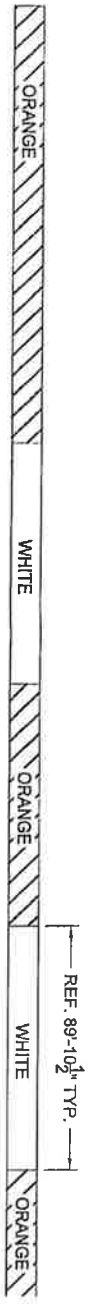
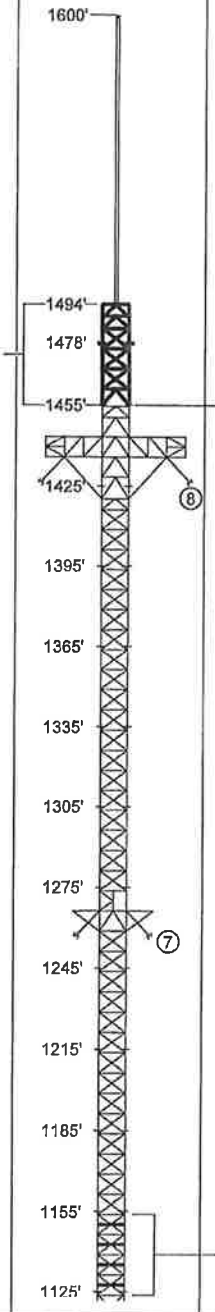
PREPARED BY	RE	1/24/18
CHECKED BY	GA	2/9/18
ENGINEER REVIEW	PEC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D04.01	

NOTE:
1. PAINT NEW TOWER MATERIAL TO MATCH EXISTING TOWER BANDS.





INSTALL TWO (2) NEW TOWER SECTIONS TOTALING APPROXIMATELY 39', SEE PAGE D05.07 & D05.08

Ⓐ REINFORCE FLANGE AT THE 1455' LEVEL SEE PAGE D05.09

ADD HORIZONTAL SUB-BRACING BETWEEN 1123.8' - 1153.8' (4 BAYS) SEE PAGE D05.06

PAINT SCHED.	TOWER EXTENSION	TOWER ELEVATION	Ⓐ HORIZONTAL SUB-BRACING AND FLANGE REINFORCEMENT

3/1/18

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TOWER PROFILE
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
A	RE	2/23/18	ADDED FLANGE REINFORCEMENT	GH	2/5/18	PCC	2/12/18

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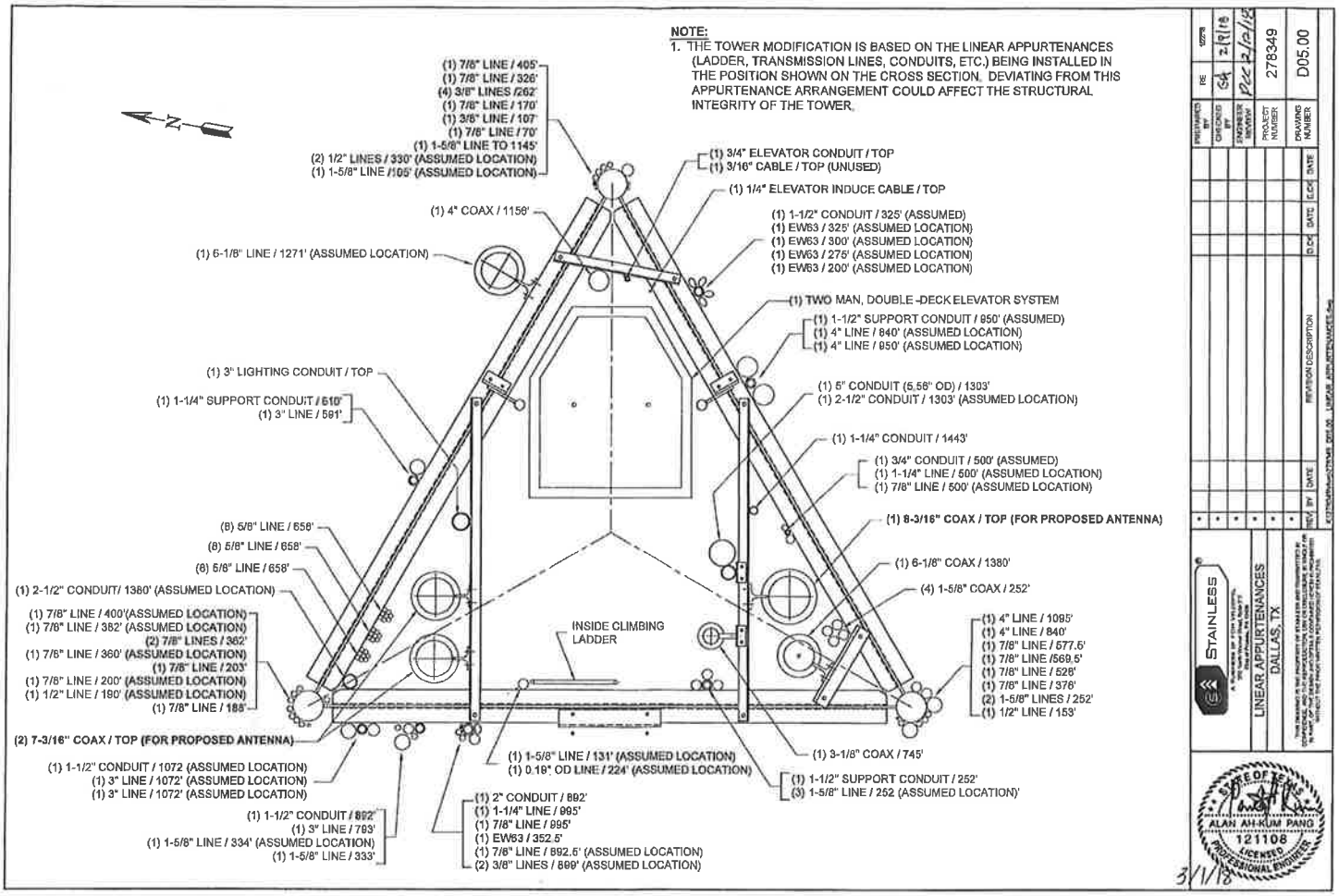
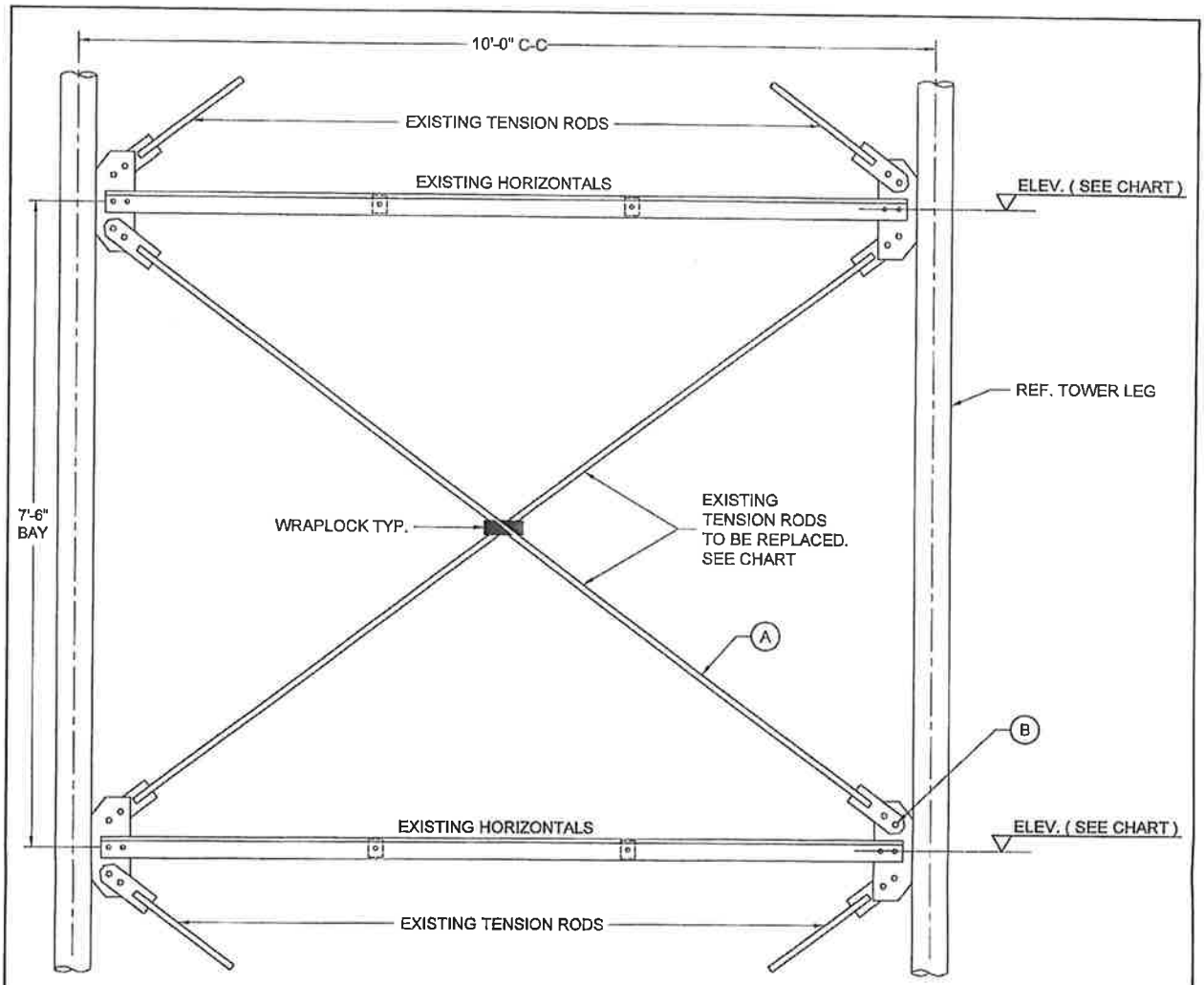
PREPARED BY	RE	1/24/18
CHECKED BY	GH	2/5/18
ENGINEER REVIEW	PCC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D04.02	


NOTE:
1. THE TOWER MODIFICATION IS BASED ON THE LINEAR APPURTENANCES (LADDER, TRANSMISSION LINES, CONDUITS, ETC.) BEING INSTALLED IN THE POSITION SHOWN ON THE CROSS SECTION. DEVIATING FROM THIS APPURTENANCE ARRANGEMENT COULD AFFECT THE STRUCTURAL INTEGRITY OF THE TOWER.
N
(1) 7/8" LINE / 405'
(1) 7/8" LINE / 326'
(4) 3/8" LINES /262'
(1) 7/8" LINE / 170'
(1) 3/8" LINE / 107'
(1) 7/8" LINE / 70'
(1) 1-5/8" LINE TO 1145'
(2) 1/2" LINES / 330' (ASSUMED LOCATION)
(1) 1-5/8" LINE /105' (ASSUMED LOCATION)
(1) 3/4" ELEVATOR CONDUIT / TOP
(1) 3/16" CABLE / TOP (UNUSED)
(1) 1/4" ELEVATOR INDUCE CABLE / TOP
(1) 4" COAX / 1156'
(1) 1-1/2" CONDUIT / 325' (ASSUMED)
(1) EW63 / 325' (ASSUMED LOCATION)
(1) EW63 / 300' (ASSUMED LOCATION)
(1) EW63 / 275' (ASSUMED LOCATION)
(1) EW63 / 200' (ASSUMED LOCATION)
(1) 6-1/8" LINE / 1271' (ASSUMED LOCATION)
(1) TWO MAN, DOUBLE -DECK ELEVATOR SYSTEM
(1) 1-1/2" SUPPORT CONDUIT / 950' (ASSUMED)
(1) 4" LINE / 840' (ASSUMED LOCATION)
(1) 4" LINE / 950' (ASSUMED LOCATION)
(1) 3" LIGHTING CONDUIT / TOP
(1) 1-1/4" SUPPORT CONDUIT / 610'
(1) 3" LINE / 591'
(1) 5" CONDUIT (5.56" OD) / 1303'
(1) 2-1/2" CONDUIT / 1303' (ASSUMED LOCATION)
(1) 1-1/4" CONDUIT / 1443'
(1) 3/4" CONDUIT / 500' (ASSUMED)
(1) 1-1/4" LINE / 500' (ASSUMED LOCATION)
(1) 7/8" LINE / 500' (ASSUMED LOCATION)
(1) 8-3/16" COAX / TOP (FOR PROPOSED ANTENNA)
(8) 5/8" LINE / 658'
(8) 5/8" LINE / 658'
(8) 5/8" LINE / 658'
(1) 6-1/8" COAX / 1380'
(1) 2-1/2" CONDUIT/ 1380' (ASSUMED LOCATION)
(4) 1-5/8" COAX / 252'
(1) 7/8" LINE / 400'(ASSUMED LOCATION)
(1) 7/8" LINE / 382' (ASSUMED LOCATION)
(2) 7/8" LINES / 362'
(1) 7/8" LINE / 360' (ASSUMED LOCATION)
(1) 7/8" LINE / 203'
(1) 7/8" LINE / 200' (ASSUMED LOCATION)
(1) 1/2" LINE / 180' (ASSUMED LOCATION)
(1) 7/8" LINE / 188'
INSIDE CLIMBING LADDER
(1) 4" LINE / 1095'
(1) 4" LINE / 840'
(1) 7/8" LINE / 577.5'
(1) 7/8" LINE /569.5'
(1) 7/8" LINE / 528'
(1) 7/8" LINE / 378'
(2) 1-5/8" LINES / 252'
(1) 1/2" LINE / 153'
(2) 7-3/16" COAX / TOP (FOR PROPOSED ANTENNA)
(1) 1-1/2" CONDUIT / 1072 (ASSUMED LOCATION)
(1) 3" LINE / 1072' (ASSUMED LOCATION)
(1) 3" LINE / 1072' (ASSUMED LOCATION)
(1) 1-5/8" LINE / 131' (ASSUMED LOCATION)
(1) 0.18" OD LINE / 224' (ASSUMED LOCATION)
(1) 3-1/8" COAX / 745'
(1) 1-1/2" SUPPORT CONDUIT / 252'
(3) 1-5/8" LINE / 252 (ASSUMED LOCATION)'
(1) 1-1/2" CONDUIT / 892'
(1) 3" LINE / 793'
(1) 1-5/8" LINE / 334' (ASSUMED LOCATION)
(1) 1-5/8" LINE / 333'
(1) 2" CONDUIT / 892'
(1) 1-1/4" LINE / 995'
(1) 7/8" LINE / 995'
(1) EW63 / 352.5'
(1) 7/8" LINE / 892.5' (ASSUMED LOCATION)
(2) 3/8" LINES / 869' (ASSUMED LOCATION)
PREPARED BY: RE
CHECKED BY: GH
ENGINEER REVIEW: 12/12/18
PROJECT NUMBER: 278349
DRAWING NUMBER: D05.00
REVISION DESCRIPTION
DATE
BY
STAINLESS
LINEAR APPURTENANCES
DALLAS, TX
STATE OF TEXAS
ALAN AH-KUM PANG
121108
LICENSED
PROFESSIONAL ENGINEER
3/1/18



ELEVATION VIEW

DIAGONAL REPLACEMENTS				
ELEVATION	**BAYS**	**(A)**	**(B)**	**MAXIMUM FACTORED TENSION LOADS**
73.8' - 96.3'	3	1" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A490X)	35.0 KIPS SEE NOTE 2
96.3' - 111.3'	2	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2
111.3' - 133.8'	3	1" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A490X)	35.0 KIPS SEE NOTE 2
141.3' - 156.3'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 7/8" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2
178.8' - 193.8'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 7/8" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2
216.3' - 223.8'	1	1" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A490X)	35.0 KIPS SEE NOTE 2
223.8' - 238.8'	2	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2
246.3' - 253.8'	1	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2
253.8' - 268.8'	2	1" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A325X)	35.0 KIPS SEE NOTE 2
268.8' - 283.8'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING MEMBER

NOTES:

1. REPLACE ONLY ONE TENSION ROD MEMBER ON ONE FACE AT A TIME.
2. DESIGN END PAD CONNECTIONS TO DEVELOP THE DESIGN TENSILE STRENGTH OF THE TENSION RODS PER ANSI/TIA 222-G.

2/1/18

STATE OF TEXAS — ALAN AH-KUN PANG — 121108 — LICENSED PROFESSIONAL ENGINEER

STAINLESS®

A BUSINESS OF TOH VELOCITEL
200 North Warner Road, Suite 310
King of Prussia, PA 19406

DIAGONAL REPLACEMENT
DALLAS, TX

REV.	BY	DATE	REVISION DESCRIPTION	D.CK.	DATE	E.CK.	DATE
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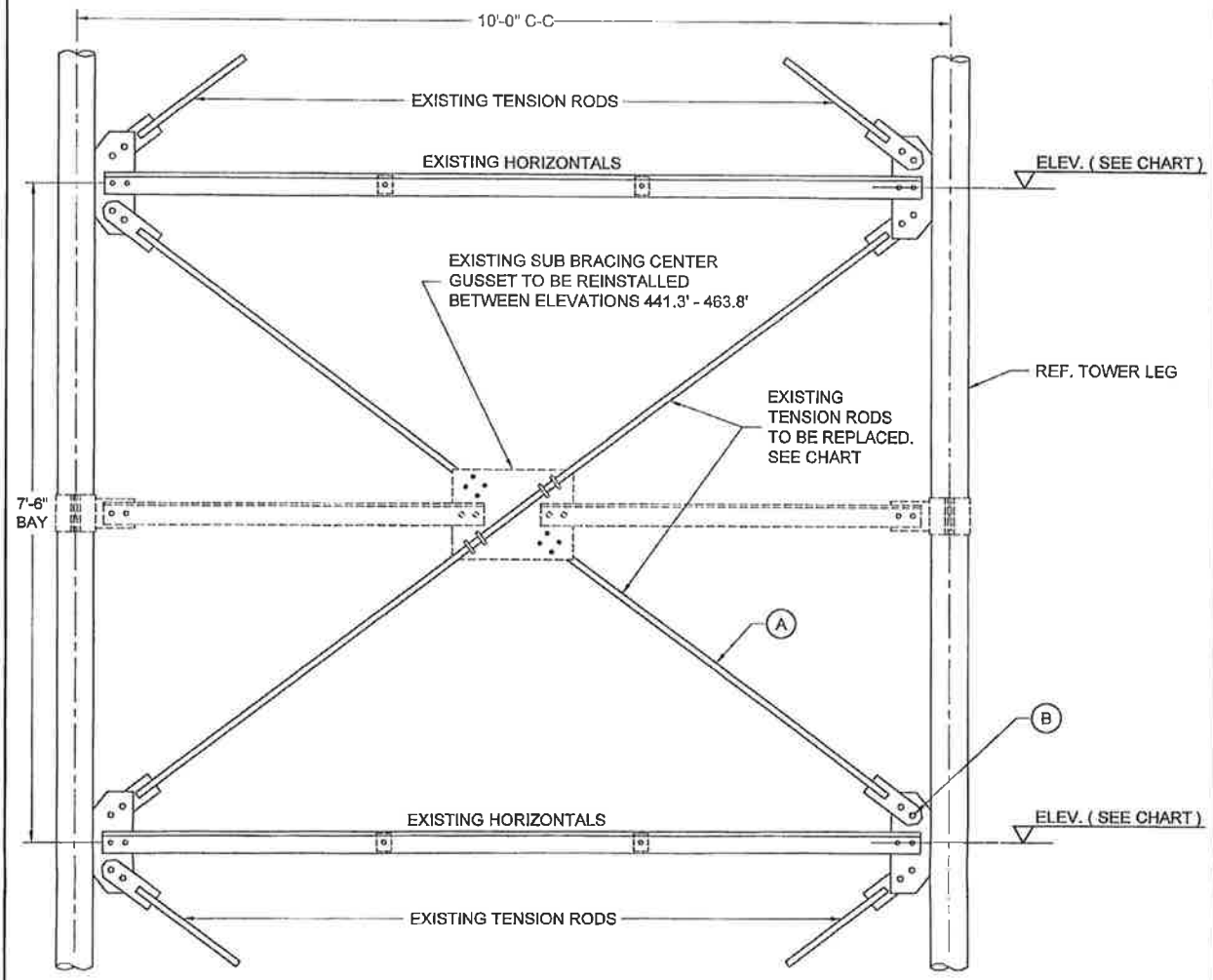
PREPARED BY	RE	1/24/18
CHECKED BY	GA	2/9/18
ENGINEER REVIEW	PEC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.01	



ELEVATION VIEW

DIAGONAL REPLACEMENTS

ELEVATION	BAYS	Ⓐ	Ⓑ	MAXIMUM FACTORED TENSION LOADS
283.8' - 298.8'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 7/8" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2
366.3' - 373.8'	1	1-1/4" DIAMETER (A572 GRADE 50)	(2) 7/8" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2
373.8' - 381.3'	1	1-1/4" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A490X)	55.0 KIPS SEE NOTE 2
388.8' - 396.3'	1	1" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A325X)	35.0 KIPS SEE NOTE 2
441.3' - 463.8'	3	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2
576.3' - 583.8'	1	1-1/4" DIAMETER (A572 GRADE 50)	(2) 7/8" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2
583.8' - 598.8'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A490X)	55.0 KIPS SEE NOTE 2
598.8' - 606.3'	1	1" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A325X)	35.0 KIPS SEE NOTE 2
613.8' - 621.3'	1	1" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A490X)	35.0 KIPS SEE NOTE 2
658.8' - 673.8'	2	1" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A490X)	35.0 KIPS SEE NOTE 2

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING MEMBER

NOTES:

1. REPLACE ONLY ONE TENSION ROD MEMBER ON ONE FACE AT A TIME.
2. DESIGN END PAD CONNECTIONS TO DEVELOP THE DESIGN TENSILE STRENGTH OF THE TENSION RODS PER ANSI/TIA 222-G.

3/1/18

STATE OF TEXAS — ALAN AH-KUM PANG — 121108 — LICENSED PROFESSIONAL ENGINEER

STAINLESS

A BUSINESS OF FDH VELOCITEL
209 North Walnut Road, Suite 215
King of Prussia, PA 19406

DIAGONAL REPLACEMENT
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

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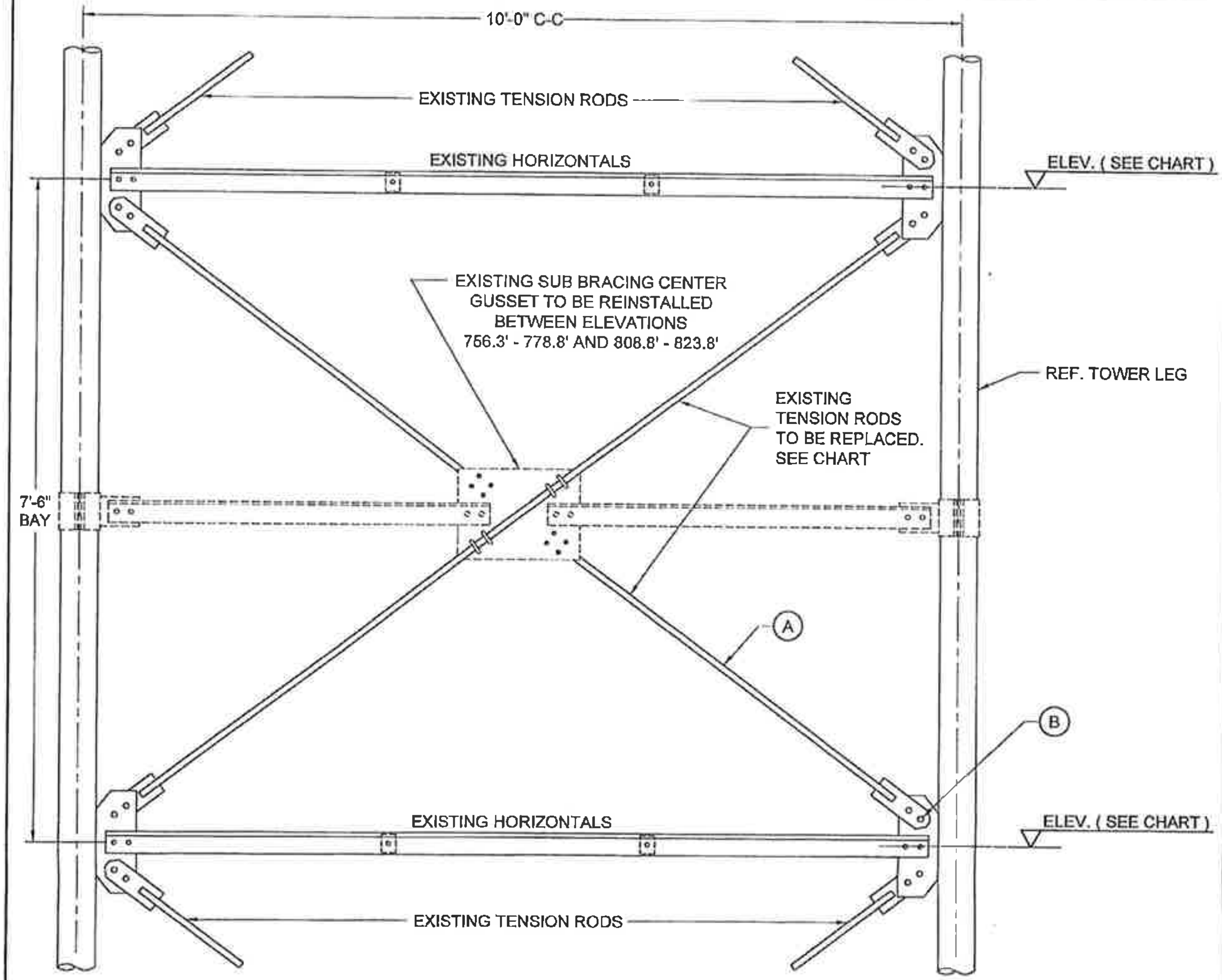
PREPARED BY	RE	1/24/18
CHECKED BY	GA	2/8/18
ENGINEER REVIEW	PZC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.02	



ELEVATION VIEW

DIAGONAL REPLACEMENTS				
ELEVATION	BAYS	(A)	(B)	MAXIMUM FACTORED TENSION LOADS
673.8' - 696.3'	3	1" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A325X)	35.0 KIPS SEE NOTE 2
718.8' - 733.8'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 7/8" DIA. BOLTS (A325X)	55.0 KIPS SEE NOTE 2
733.8' - 756.8'	3	1-1/4" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A490X)	55.0 KIPS SEE NOTE 2
756.3' - 763.8'	1	1" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A325X)	35.0 KIPS SEE NOTE 2
763.8' - 771.3'	1	1" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A490X)	35.0 KIPS SEE NOTE 2
771.3' - 778.3'	1	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2
808.8' - 823.8'	2	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2
838.8' - 853.8'	2	1-1/4" DIAMETER (A572 GRADE 50)	(2) 3/4" DIA. BOLTS (A490X)	55.0 KIPS SEE NOTE 2
1011.3' - 1033.8'	3	7/8" DIAMETER (A572 GRADE 50)	(2) 5/8" DIA. BOLTS (A325X)	27.0 KIPS SEE NOTE 2

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING MEMBER

NOTES:

1. REPLACE ONLY ONE TENSION ROD MEMBER ON ONE FACE AT A TIME.
2. DESIGN END PAD CONNECTIONS TO DEVELOP THE DESIGN TENSILE STRENGTH OF THE TENSION RODS PER ANSI/TIA 222-G.

3/1/18

STATE OF TEXAS — ALAN AH-KUM PANG — 121108 — LICENSED PROFESSIONAL ENGINEER

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200 North Warner Road, Suite 215
King of Prussia, PA 19406

DIAGONAL REPLACEMENT
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

PREPARED BY	RE	1/24/18
CHECKED BY	GA	2/9/18
ENGINEER REVIEW	paa	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.03	

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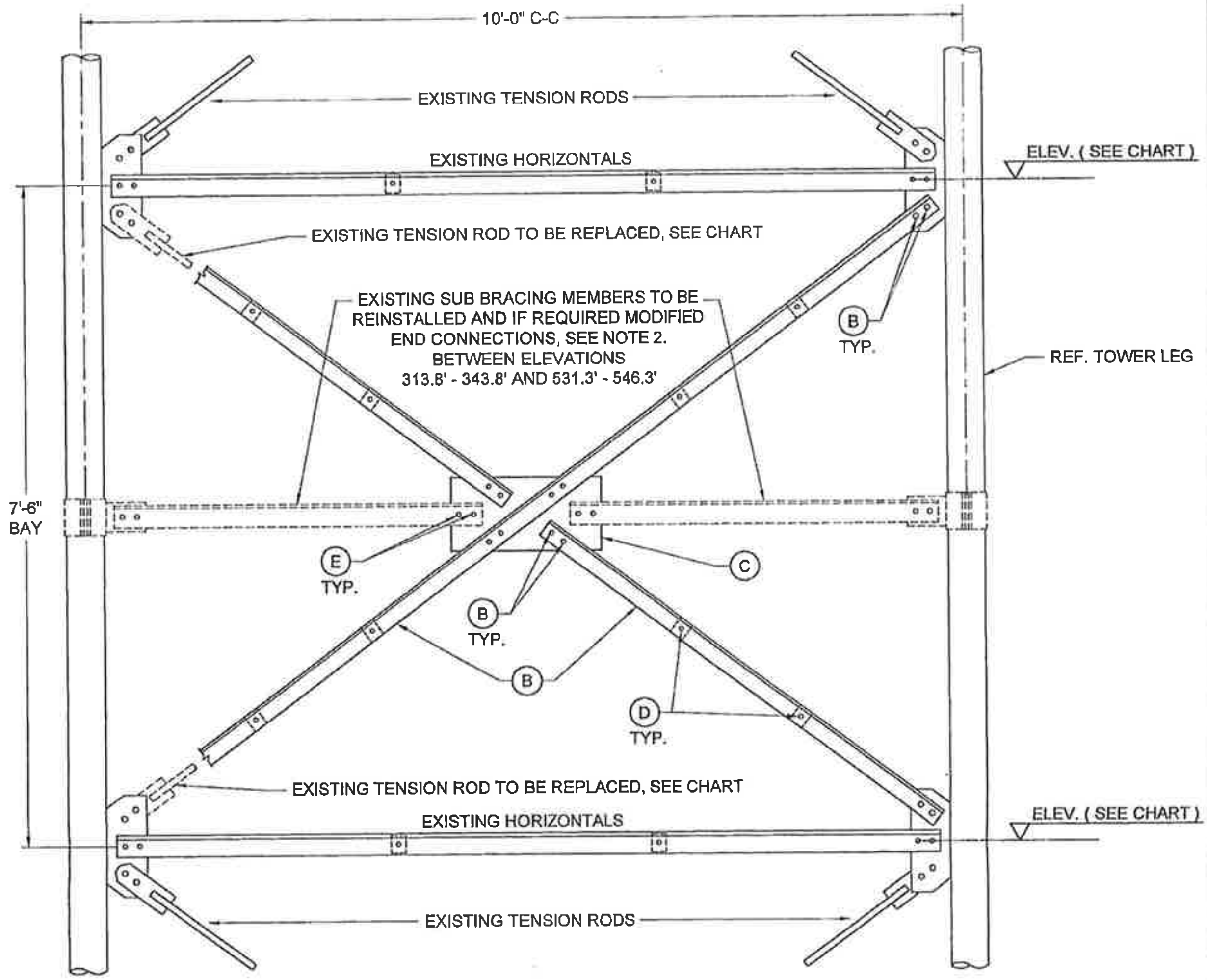

ELEVATION VIEW

NOTES:
1. REPLACE ONLY ONE TENSION ROD MEMBER ON ONE FACE AT A TIME.
2. ALL CONNECTIONS SHALL BE DESIGNED TO DEVELOP THE MAXIMUM FACTORED LOADS FOR TENSION AND COMPRESSION.

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING MEMBER

DIAGONAL REPLACEMENTS

ELEVATION	BAYS	(A) INNER	(A) OUTER	(B)	(C)	(D)	(E)	MAXIMUM FACTORED LOADS
193.8' - 208.8'	2	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 5/8" DIA. BOLTS (A325X)	1/2" PLATE (A36)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	N/A	60.0 KIPS SEE NOTE 2
298.8' - 313.8'	2	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 7/8" DIA. BOLTS (A325X)	1/2" PLATE (A36)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	N/A	60.0 KIPS SEE NOTE 2
313.8' - 343.8'	4	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 1" DIA. BOLTS (A325X)	1/2" PLATE (A36)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	(2) 5/8" DIA. BOLTS (A325X)	60.0 KIPS SEE NOTE 2
531.3' - 546.3'	2	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 1" DIA. BOLTS (A325X)	1/2" PLATE (A36)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	(2) 5/8" DIA. BOLTS (A325X)	60.0 KIPS SEE NOTE 2
546.3' - 553.8'	1	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 1" DIA. BOLTS (A325X)	1/2" PLATE (A36)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	N/A	60.0 KIPS SEE NOTE 2

STATE OF TEXAS
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DIAGONAL REPLACEMENT
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

PREPARED BY	RE	1/24/18
CHECKED BY	GO	2/9/18
ENGINEER REVIEW	JCC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.04	

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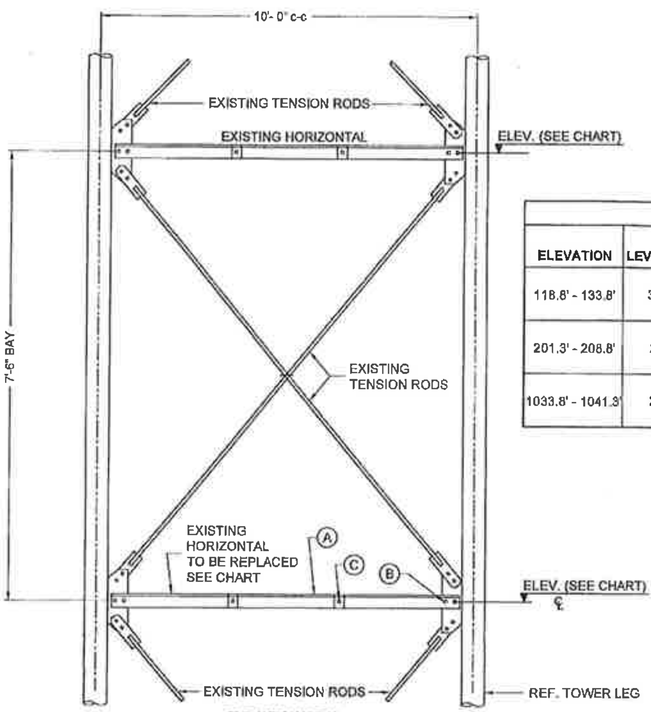

ELEVATION VIEW

TOWER MUST BE ADEQUATELY BRACED BEFORE REMOVING ANY EXISTING MEMBER

NOTES:

1. REPLACE HORIZONTAL MEMBERS ON ONE FACE AT A TIME.
2. ALL CONNECTIONS SHALL BE DESIGNED TO DEVELOP THE MAXIMUM SERVICE LEVEL LOAD.

HORIZONTAL REPLACEMENTS

ELEVATION	LEVELS	(A) INNER	(A) OUTER	(B)	(C)	MAXIMUM FACTORED LOADS
118.8' - 133.8'	3	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 5/8" DIA. BOLTS (A325X)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	42.0 KIPS SEE NOTE 2
201.3' - 208.8'	2	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 5/8" DIA. BOLTS (A325X)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	42.0 KIPS SEE NOTE 2
1033.8' - 1041.3'	2	L3 x 2-1/2 x 1/4 (A36)	L3 x 2-1/2 x 1/4 (A36)	(2) 5/8" DIA. BOLTS (A325X)	(2) 5/8" DIA. BOLTS (A325X) + 1/2" THK. SPACER (A36)	26.0 KIPS SEE NOTE 2

PREPARED BY: RE
CHECKED BY: GH 2/9/18
ENGINEER REVIEW: PEC 2/12/18
PROJECT NUMBER: 278349
DRAWING NUMBER: D05.05

STAINLESS

HORIZONTAL REPLACEMENT
DALLAS, TX

STATE OF TEXAS
ALAN AH-KUM PANG
121108
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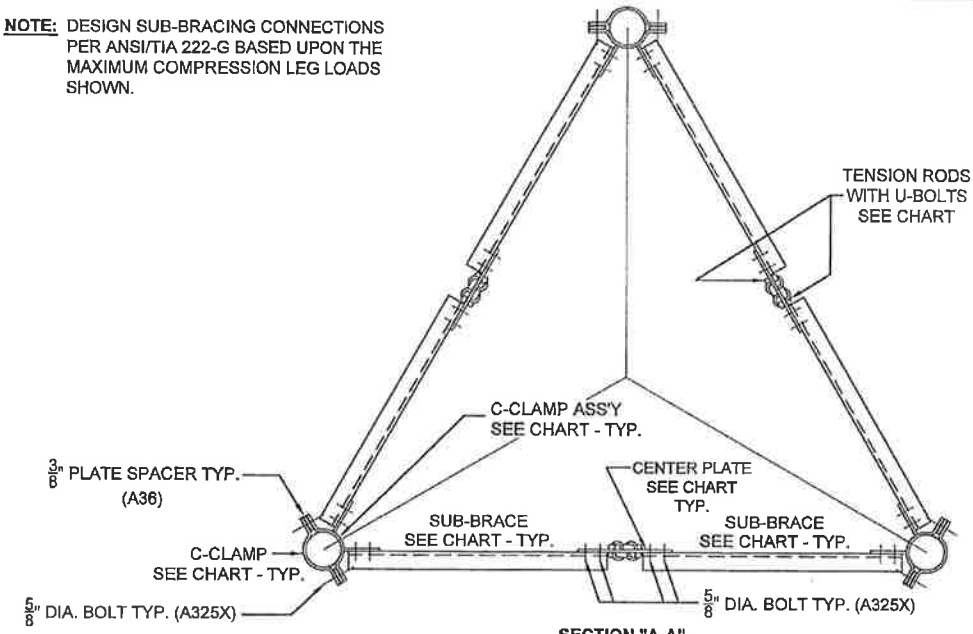
PROFESSIONAL ENGINEER

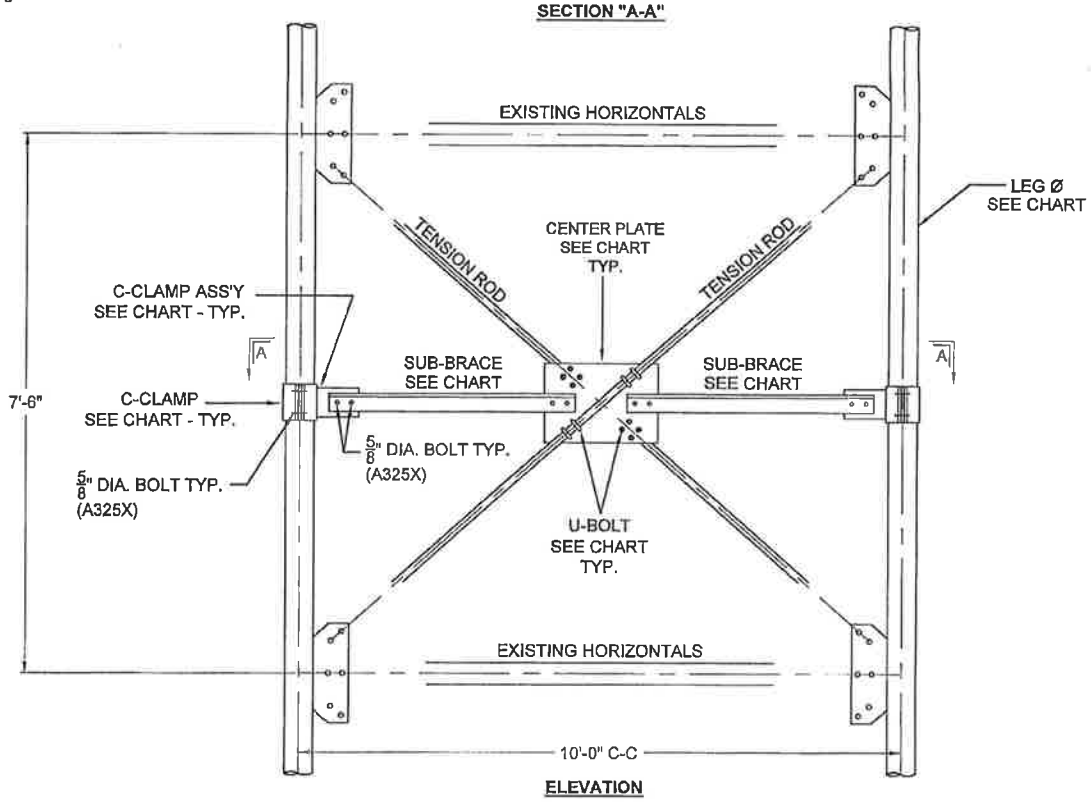
3/1/18

ELEVATIONS	# BAYS	LEG Ø	C-CLAMP ASS'Y	C-CLAMP	CENTER PLATE	U-BOLT	SUB-BRACE SIZE	MAX. FACTORED COMPRESSION LEG LOADS
1063.8' - 1071.3'	1	5 5/8"	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" DIA. (A307)	L 2 1/2 x 2 1/2 x 1/4 (A36)	808.0 KIPS
1086.3' - 1093.8'	1	5 5/8"	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" DIA. (A307)	L 2 1/2 x 2 1/2 x 1/4 (A36)	784.0 KIPS
1108.8' - 1123.8'	2	5 1/8"	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" DIA. (A307)	L 2 1/2 x 2 1/2 x 1/4 (A36)	702.0 KIPS
1123.8' - 1153.8'	4	5 1/8"	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" PLATE (A36)	3/8" DIA. (A307)	L 2 1/2 x 2 1/2 x 1/4 (A36)	702.0 KIPS

NOTE: DESIGN SUB-BRACING CONNECTIONS PER ANSI/TIA 222-G BASED UPON THE MAXIMUM COMPRESSION LEG LOADS SHOWN.



SECTION "A-A"



ELEVATION

3/1/18

STATE OF TEXAS
ALAN AH-KUM PANG
121108
LICENSED PROFESSIONAL ENGINEER

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200 North Warner Road, Suite 215
King of Prussia, PA 19406

SUB-BRACING DETAILS
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

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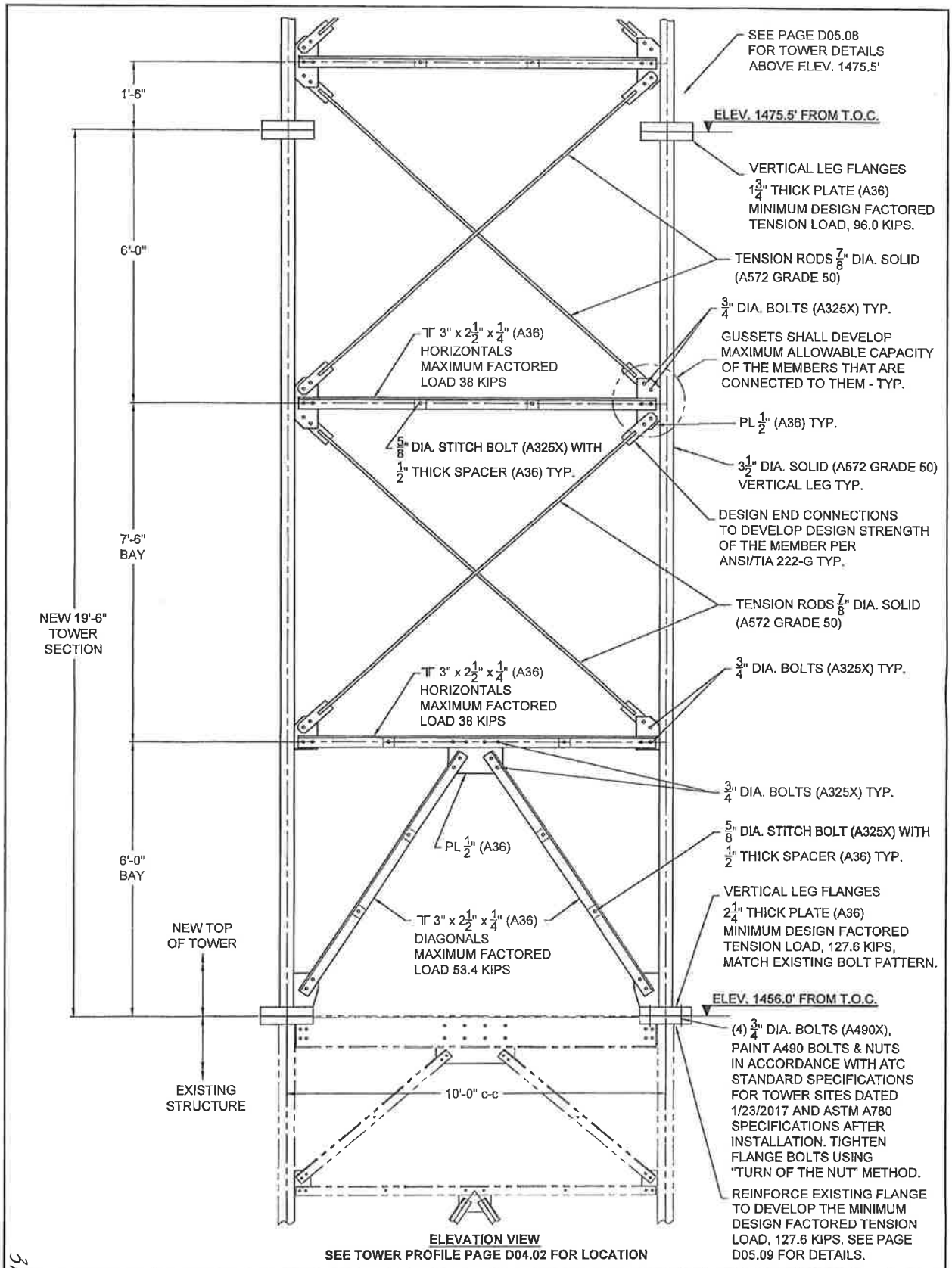
PREPARED BY	RE	1/24/18
CHECKED BY	GA	2/9/18
ENGINEER REVIEW	PZC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.06	



ELEVATION VIEW
SEE TOWER PROFILE PAGE D04.02 FOR LOCATION

3/1/18

STATE OF TEXAS — ALAN AH-KUM PANG — LICENSED PROFESSIONAL ENGINEER — 121108

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King of Prussia, PA 19406

TOP OF TOWER DETAILS
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

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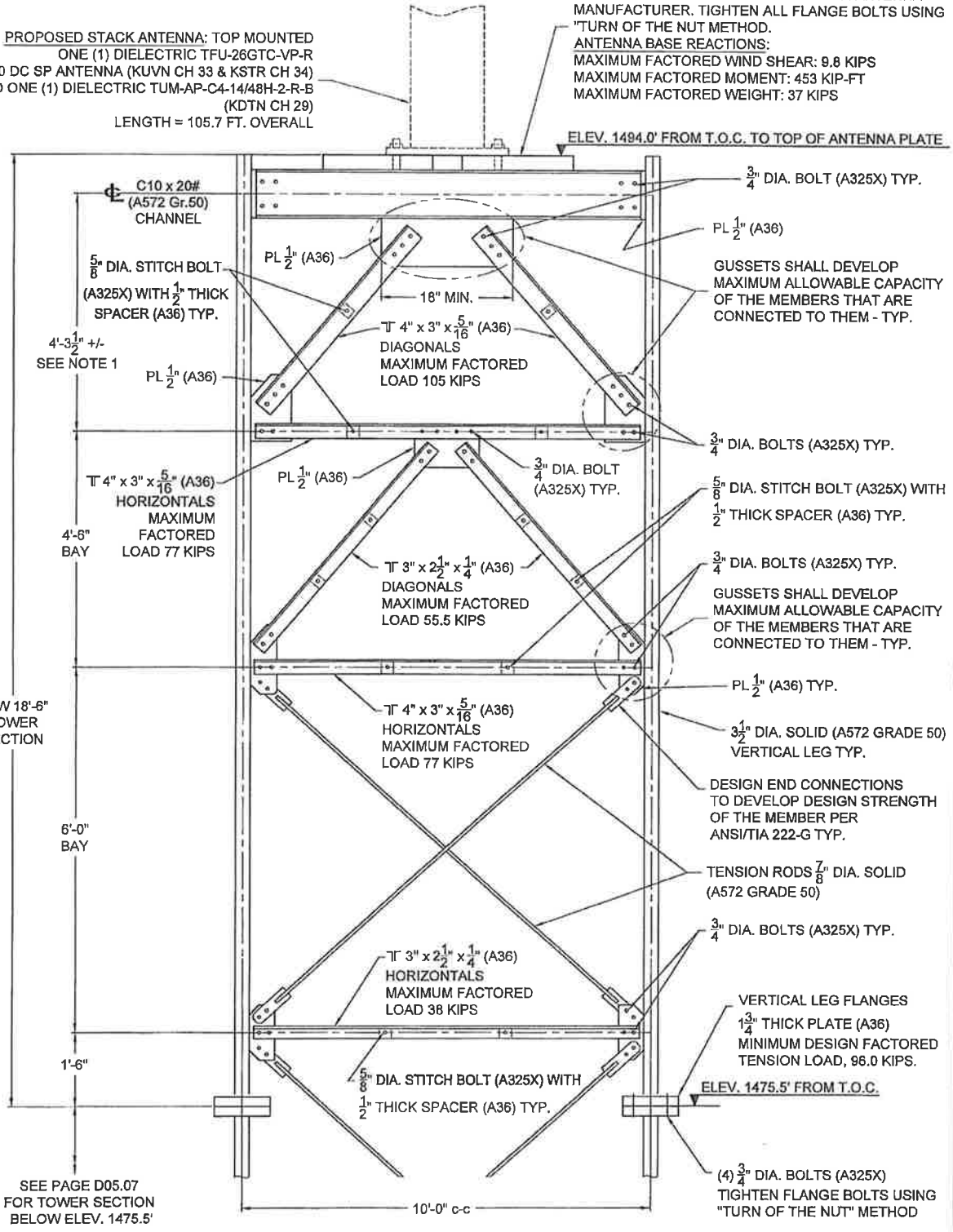
PREPARED BY	RE	2/9/18
CHECKED BY	GA	2/9/18
ENGINEER REVIEW	PLC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.07	

NOTE:
1. ALL BOLTS IN THIS BAY, EXCEPT FOR STITCH BOLTS, SHALL BE TIGHTENED USING "TURN OF THE NUT" METHOD.

PROPOSED STACK ANTENNA: TOP MOUNTED
ONE (1) DIELECTRIC TFU-26GTC-VP-R
4C190 DC SP ANTENNA (KUVN CH 33 & KSTR CH 34)
AND ONE (1) DIELECTRIC TUM-AP-C4-14/48H-2-R-B
(KDTN CH 29)
LENGTH = 105.7 FT. OVERALL

DESIGN TOP ANTENNA PLATFORM ASSEMBLY FOR MAXIMUM ALLOWABLE CAPACITY OF ANTENNA LOADS AND FINAL BOLT PATTERN FROM ANTENNA MANUFACTURER. TIGHTEN ALL FLANGE BOLTS USING "TURN OF THE NUT METHOD.
ANTENNA BASE REACTIONS:
MAXIMUM FACTORED WIND SHEAR: 9.8 KIPS
MAXIMUM FACTORED MOMENT: 453 KIP-FT
MAXIMUM FACTORED WEIGHT: 37 KIPS

ELEV. 1494.0' FROM T.O.C. TO TOP OF ANTENNA PLATE



ELEVATION VIEW
SEE TOWER PROFILE PAGE D04.02 FOR LOCATION

3/1/18

STATE OF TEXAS — LIAN AH-KUM PANG — 121108 — LICENSED PROFESSIONAL ENGINEER

STAINLESS
A BUSINESS OF TOH VELOCITEL
200 North Warner Road, Suite 215
King of Prussia, PA 19406

TOP OF TOWER DETAILS
DALLAS, TX

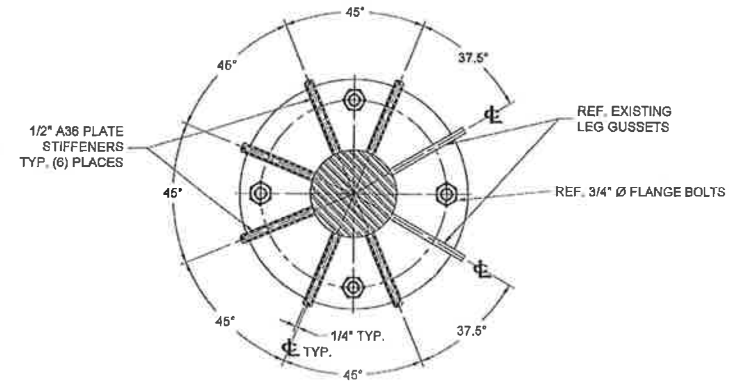
REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	C.CK	DATE

PREPARED BY	RE	2/8/18
CHECKED BY	BH	2/9/18
ENGINEER REVIEW	PZC	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D05.08	

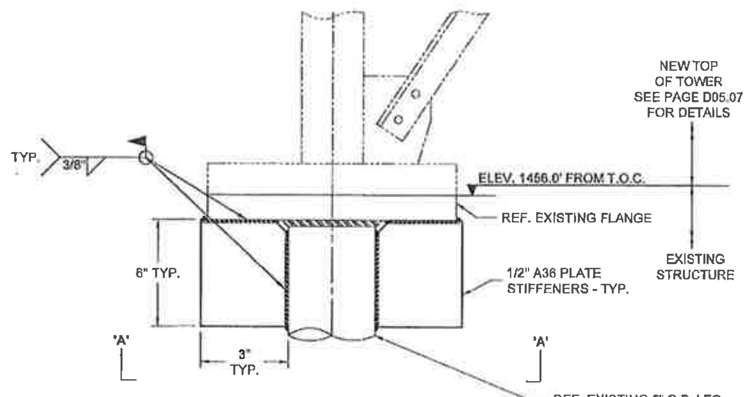
K:\278349\dwg\278349_D05.07_D05.08_Tower_Top.dwg

NOTES:

1. PREP WELD AREAS - AREAS TO BE WELDED ARE TO BE FREE OF SCALE, RUST, GALVANIZING, AND SLAG. ALL BASE METALS SHALL BE PREPARED IN ACCORDANCE TO AWS D1.1.
2. REMOVE ANY GALVANIZING FINISH COMPLETELY WITHIN A 2" PERIMETER OF ANY WELD ZONES.
3. PREHEAT FLANGE AND LEG MATERIAL TO 250° F MINIMUM. MATERIAL SHOULD BE HEAT SOAKED THROUGH OR A 2" MINIMUM IN EVERY DIRECTION. NEW STIFFENER PLATES DO NOT REQUIRE PREHEAT.
4. USE LOW HYDROGEN WELD MATERIAL E70XX.
5. MAINTAIN 250° F MIN. DURING WELDING.
6. REFER TO AWS D1.1 FOR GENERAL WORKMANSHIP AND TECHNIQUE.
7. NO STARTS OR STOPS ARE ALLOWED AT THE END OF THE STIFFENER CORNERS. WELD WRAPS MUST BEGIN AND END AT 1" MIN. AWAY FROM THE CORNERS.
8. REFER TO ASTM A780 STANDARD PRACTICE FOR REPAIR OF HOT-DIP GALVANIZED COATINGS.



SECTION VIEW 'A'-'A'
TYPICAL FOR ALL (3) FLANGES
(TOWER MEMBERS NOT SHOWN FOR CLARITY)



FLANGE ELEVATION VIEW
TYPICAL FOR ALL (3) FLANGES

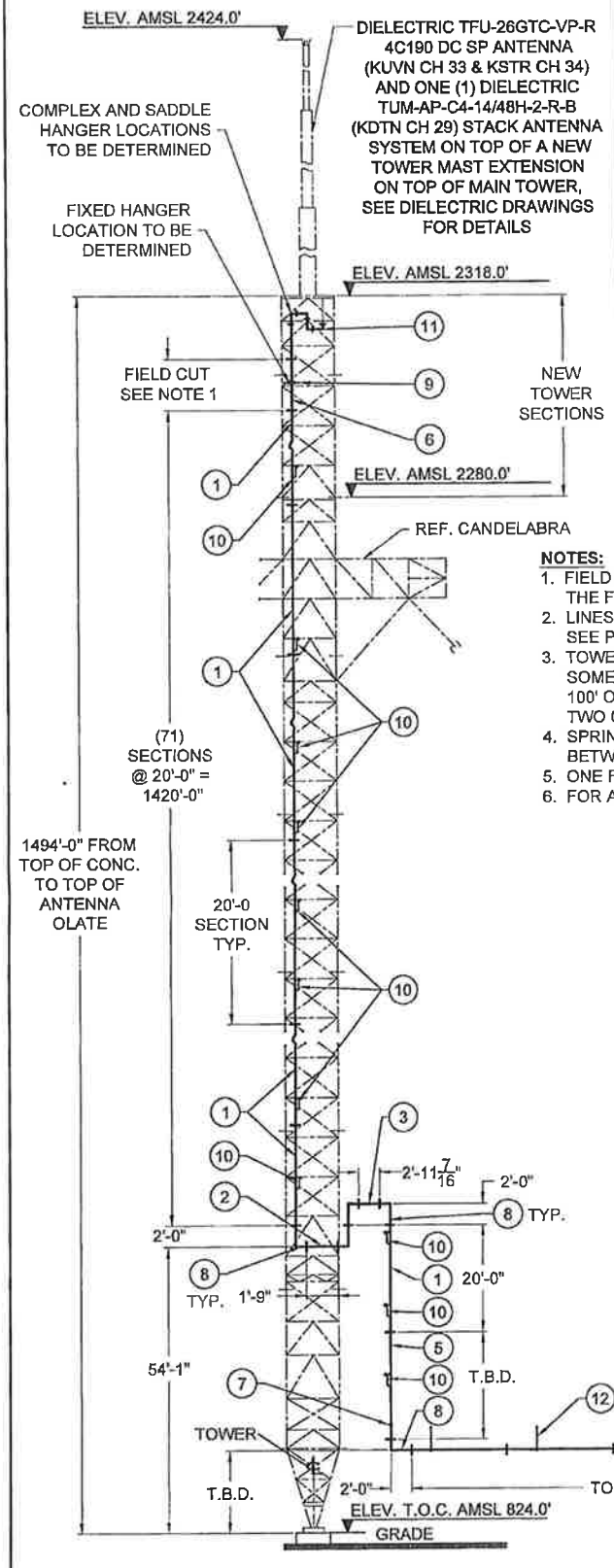
STAINLESS

FLANGE REINFORCEMENT DETAILS
DALLAS, TX

PREPARED BY	RE
CHECKED BY	2/15/18
ENGINEER REVIEW	2/20/18
PROJECT NUMBER	278349
DRAWING NUMBER	D05.09

ALAN AH-KUM PANG
121108
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

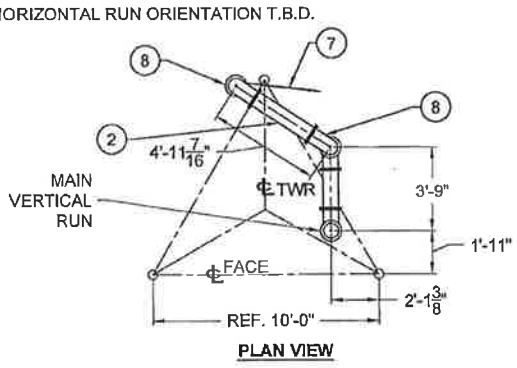
3/1/18



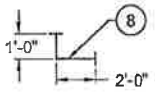
- BILL OF MATERIAL -		
ITEM #	QUAN.	DESCRIPTION
1	72	8 3/16" COAX x 20'-0" STRAIGHT SECTION
1A	T.B.D.	8 3/16" COAX x 20'-0" STRAIGHT SECTION
2	1	8 3/16" COAX x 1'-9" STRAIGHT SECTION
3	1	8 3/16" COAX x 2'-11 3/16" STRAIGHT SECTION
4	1	8 3/16" COAX x T.B.D. STRAIGHT SECTION
5	1	8 3/16" COAX x T.B.D. STRAIGHT SECTION
6	1	8 3/16" COAX x * (FIELD CUT) STRAIGHT SECTION
7	1	8 3/16" LATERAL BRACE
8	5	8 3/16" COAX 1'-0" x 2'-0" 90° ELBOW
9	1	8 3/16" COAX HEAVY DUTY FIXED HANGER
10	145	8 3/16" COAX VERTICAL EXPANSION HANGER
11	1	ANTENNA INPUT COMPLEX, SEE NOTE 6
12	T.B.D.	8 3/16" COAX 3 POINT SUSPENSION HANGER
13	1	8 3/16" COAX WALL ANCHOR

NOTES:

1. FIELD CUT SECTIONS ARE TO BE FIELD MEASURED PRIOR TO CUTTING. THE FIELD CUT DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
2. LINES SHOWN OUT OF POSITION IN ELEVATION VIEW FOR CLARITY. SEE PLAN VIEW FOR TRUE ORIENTATION.
3. TOWER SPRING HANGERS (SPACED AT 7'-6") MAY BE OMITTED FROM SOME CROSS MEMBERS TO MAINTAIN AN AVERAGE OF 10 HANGERS PER 100' OF TOWER, HOWEVER HANGERS SHOULD NOT BE OMITTED FROM TWO CONSECUTIVE TOWER MEMBERS.
4. SPRING HANGER LOCATIONS TO BE PLANNED TO AVOID INTERFERENCE BETWEEN TRANSMISSION LINE FLANGES AND HANGERS.
5. ONE FIXED HANGER IS TO BE INSTALLED AT THE TOP OF MAIN VERTICAL RUN.
6. FOR ANTENNA INPUT COMPLEX SEE DIELECTRIC DRAWINGS.



PLAN VIEW



TO BE CONFRIMED

3/1/18

ALAN AH-KUM PANG 121108 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

STAINLESS
A BUSINESS OF FDH VELOCITEL
209 North Water Road, Suite 210
King of Prussia, PA 19406

COAX ARRANGEMENT FOR 6-3/16" RIGID LINE
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE

PREPARED BY	RE	1/30/18
CHECKED BY	GH	2/8/18
ENGINEER REVIEW	PZL	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D06.00	

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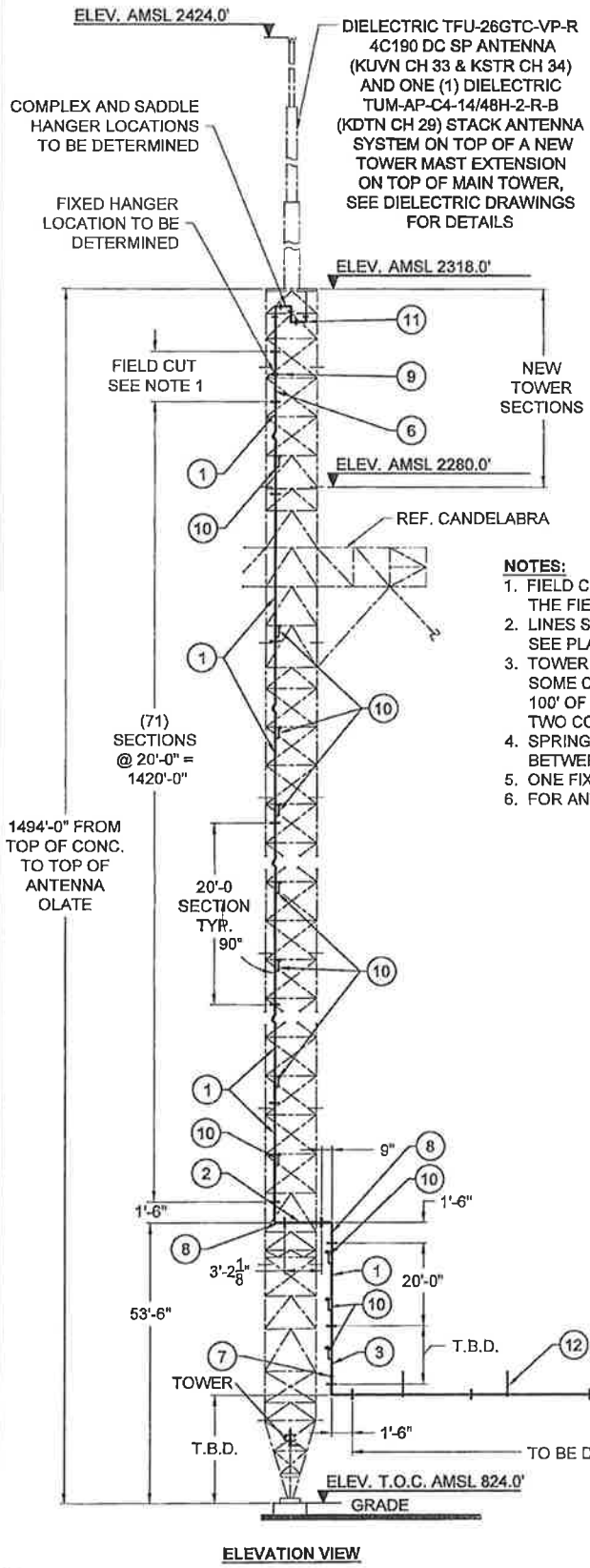

- BILL OF MATERIAL -

ITEM #	QUAN.	DESCRIPTION
1	72	7 3/16" COAX x 20'-0" STRAIGHT SECTION
1A	T.B.D.	7 3/16" COAX x 20'-0" STRAIGHT SECTION
2	1	7 3/16" COAX x 3'-2 1/8" STRAIGHT SECTION
3	1	7 3/16" COAX x T.B.D. STRAIGHT SECTION
4	1	7 3/16" COAX x T.B.D. STRAIGHT SECTION
5	1	7 3/16" COAX WALL ANCHOR
6	1	7 3/16" COAX x * (FIELD CUT) STRAIGHT SECTION
7	1	7 3/16" LATERAL BRACE
8	3	7 3/16" COAX 9" x 1'-6" 90° ELBOW
9	1	7 3/16" COAX HEAVY DUTY FIXED HANGER
10	145	7 3/16" COAX VERTICAL EXPANSION HANGER
11	1	ANTENNA INPUT COMPLEX, SEE NOTE 6
12	T.B.D.	7 3/16" COAX 3 POINT SUSPENSION HANGER

NOTES:

1. FIELD CUT SECTIONS ARE TO BE FIELD MEASURED PRIOR TO CUTTING. THE FIELD CUT DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
2. LINES SHOWN OUT OF POSITION IN ELEVATION VIEW FOR CLARITY. SEE PLAN VIEW FOR TRUE ORIENTATION.
3. TOWER SPRING HANGERS (SPACED AT 7'-6") MAY BE OMITTED FROM SOME CROSS MEMBERS TO MAINTAIN AN AVERAGE OF 10 HANGERS PER 100' OF TOWER, HOWEVER HANGERS SHOULD NOT BE OMITTED FROM TWO CONSECUTIVE TOWER MEMBERS.
4. SPRING HANGER LOCATIONS TO BE PLANNED TO AVOID INTERFERENCE BETWEEN TRANSMISSION LINE FLANGES AND HANGERS.
5. ONE FIXED HANGER IS TO BE INSTALLED AT THE TOP OF MAIN VERTICAL RUN.
6. FOR ANTENNA INPUT COMPLEX SEE DIELECTRIC DRAWINGS.

ALAN AH-KUM PANG 121108 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

STAINLESS
A BUSINESS OF FOX VELOCITEL
300 North Walker Road, Suite 210
King of Prussia, PA 19406

COAX ARRANGEMENT FOR 7-3/16" RIGID LINE
DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
*							
*							
*							
*							
*							
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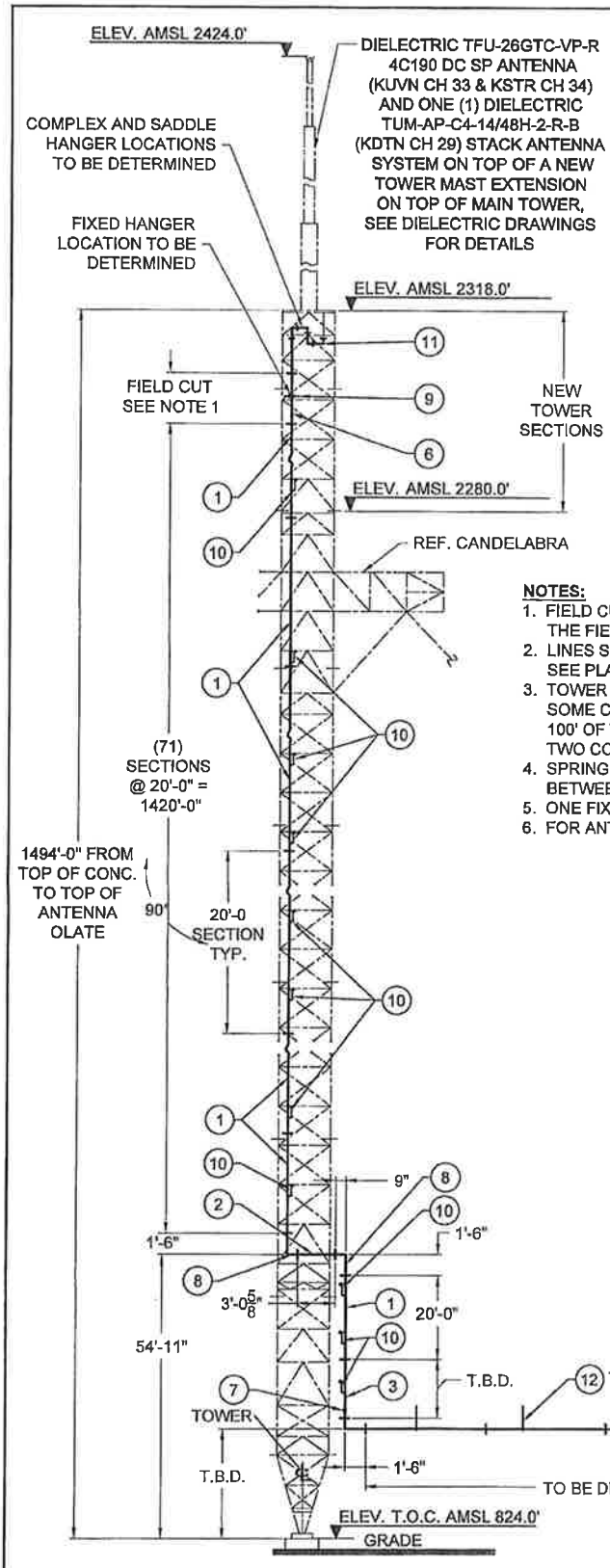
PREPARED BY	RE	1/30/18
CHECKED BY	GH	2/9/18
ENGINEER REVIEW	PZC	2/11/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D06.01	

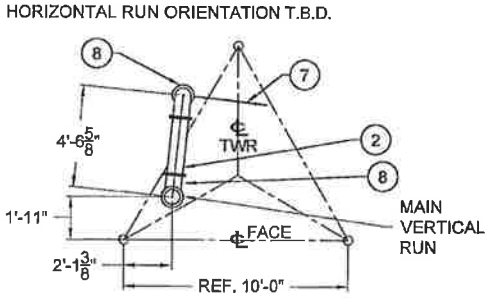


ELEVATION VIEW

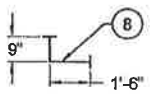
- BILL OF MATERIAL -		
ITEM #	QUAN.	DESCRIPTION
1	72	7 3/16" COAX x 20'-0" STRAIGHT SECTION
1A	T.B.D.	7 3/16" COAX x 20'-0" STRAIGHT SECTION
2	1	7 3/16" COAX x 3'-0 5/8" STRAIGHT SECTION
3	1	7 3/16" COAX x T.B.D. STRAIGHT SECTION
4	1	7 3/16" COAX x T.B.D. STRAIGHT SECTION
5	1	7 3/16" COAX WALL ANCHOR
6	1	7 3/16" COAX x * (FIELD CUT) STRAIGHT SECTION
7	1	7 3/16" LATERAL BRACE
8	3	7 3/16" COAX 9" x 1'-6" 90° ELBOW
9	1	7 3/16" COAX HEAVY DUTY FIXED HANGER
10	145	7 3/16" COAX VERTICAL EXPANSION HANGER
11	1	ANTENNA INPUT COMPLEX, SEE NOTE 6
12	T.B.D.	7 3/16" COAX 3 POINT SUSPENSION HANGER

NOTES:

1. FIELD CUT SECTIONS ARE TO BE FIELD MEASURED PRIOR TO CUTTING. THE FIELD CUT DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
2. LINES SHOWN OUT OF POSITION IN ELEVATION VIEW FOR CLARITY. SEE PLAN VIEW FOR TRUE ORIENTATION.
3. TOWER SPRING HANGERS (SPACED AT 7'-6") MAY BE OMITTED FROM SOME CROSS MEMBERS TO MAINTAIN AN AVERAGE OF 10 HANGERS PER 100' OF TOWER, HOWEVER HANGERS SHOULD NOT BE OMITTED FROM TWO CONSECUTIVE TOWER MEMBERS.
4. SPRING HANGER LOCATIONS TO BE PLANNED TO AVOID INTERFERENCE BETWEEN TRANSMISSION LINE FLANGES AND HANGERS.
5. ONE FIXED HANGER IS TO BE INSTALLED AT THE TOP OF MAIN VERTICAL RUN.
6. FOR ANTENNA INPUT COMPLEX SEE DIELECTRIC DRAWINGS.



PLAN VIEW



TO BE CONFRIMED

3/1/18

ALAN AH-KUM PANG 121108 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

STAINLESS
A BUSINESS OF FEH VOLKSTEL
200 North Warner Road, Suite 215
King of Prussia, PA 19406

COAX ARRANGEMENT FOR 7-3/16" RIGID LINE

DALLAS, TX

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
*							
*							
*							
*							
*							
*							

PREPARED BY	RE	1/30/18
CHECKED BY	GH	2/9/18
ENGINEER REVIEW	pac	2/12/18
PROJECT NUMBER	278349	
DRAWING NUMBER	D06.02	

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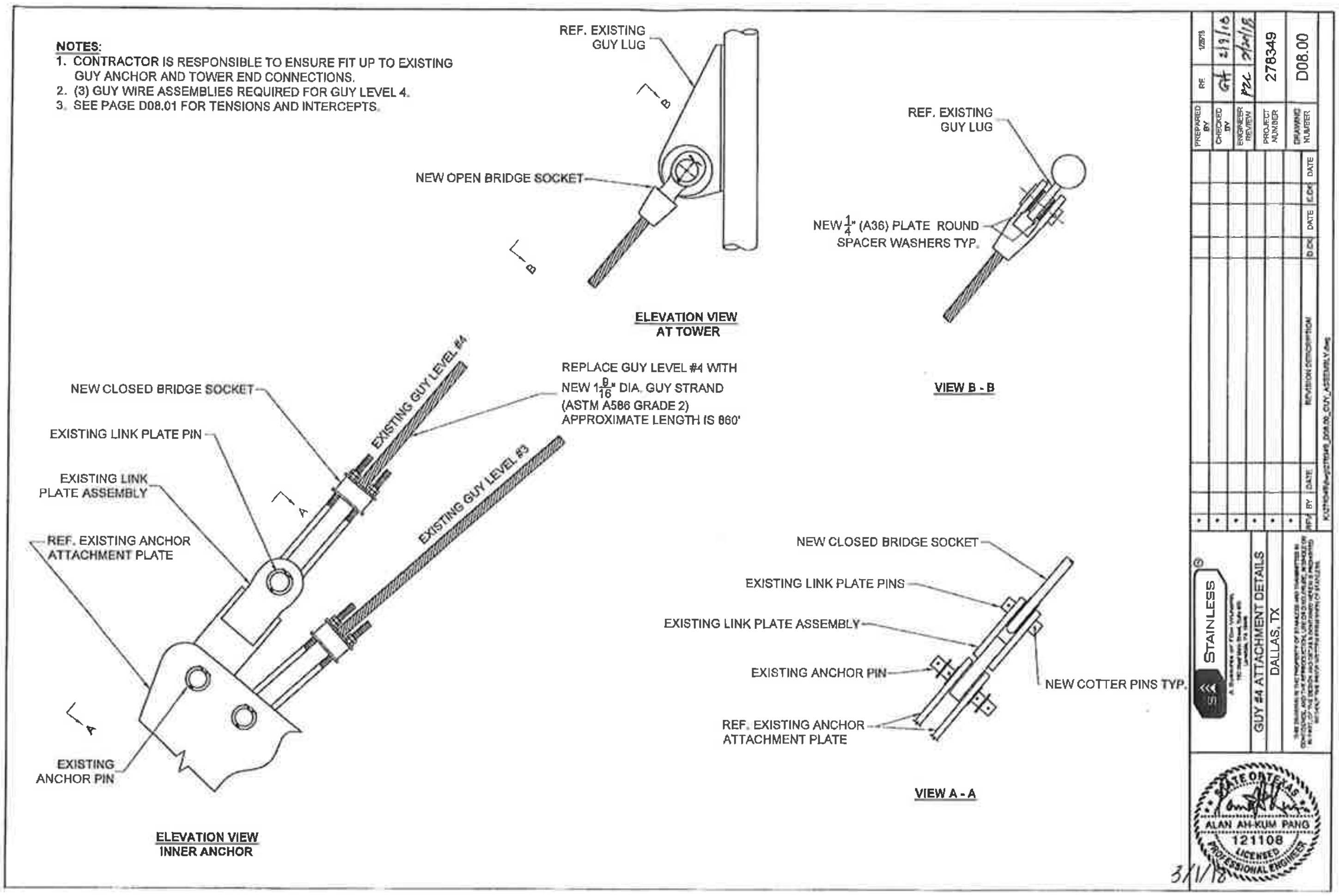
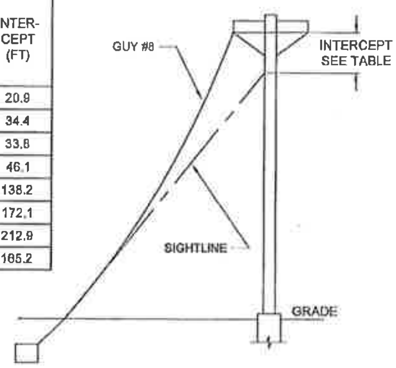


NOTES:
1. CONTRACTOR IS RESPONSIBLE TO ENSURE FIT UP TO EXISTING GUY ANCHOR AND TOWER END CONNECTIONS.
2. (3) GUY WIRE ASSEMBLIES REQUIRED FOR GUY LEVEL 4.
3. SEE PAGE D08.01 FOR TENSIONS AND INTERCEPTS.
REF. EXISTING GUY LUG
NEW OPEN BRIDGE SOCKET
ELEVATION VIEW AT TOWER
REF. EXISTING GUY LUG
NEW 1/4" (A36) PLATE ROUND SPACER WASHERS TYP.
VIEW B - B
NEW CLOSED BRIDGE SOCKET
EXISTING LINK PLATE PIN
EXISTING LINK PLATE ASSEMBLY
REF. EXISTING ANCHOR ATTACHMENT PLATE
EXISTING GUY LEVEL #4
REPLACE GUY LEVEL #4 WITH NEW 1 9/16" DIA. GUY STRAND (ASTM A586 GRADE 2) APPROXIMATE LENGTH IS 860'
EXISTING GUY LEVEL #3
EXISTING ANCHOR PIN
ELEVATION VIEW INNER ANCHOR
NEW CLOSED BRIDGE SOCKET
EXISTING LINK PLATE PINS
EXISTING LINK PLATE ASSEMBLY
EXISTING ANCHOR PIN
NEW COTTER PINS TYP.
REF. EXISTING ANCHOR ATTACHMENT PLATE
VIEW A - A
STAINLESS
GUY #4 ATTACHMENT DETAILS
DALLAS, TX
PROJECT NUMBER 278349
DRAWING NUMBER D08.00
ALAN AH-KUM PANG
121108
LICENSED PROFESSIONAL ENGINEER
3/1/18

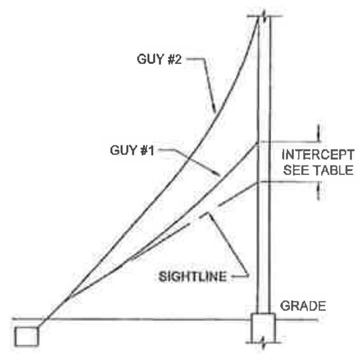
	0 DEG. F		20 DEG. F		40 DEG. F		60 DEG. F		80 DEG. F		100 DEG. F	
	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)	ERECT. TENSION (LBS)	INTER-CEPT (FT)
1B	34460	14.3	32080	15.3	29783	16.5	27560	17.8	25479	19.3	23514	20.9
2B	35930	25.3	33734	26.9	31657	28.7	29700	30.5	27919	32.4	26252	34.4
3B	47063	27.4	45173	28.6	43350	29.8	41520	31.0	39805	32.4	38084	33.8
4B	45442	39.8	44126	40.9	42810	42.2	41520	43.4	40313	44.7	39065	46.1
5B	39506	124.4	38591	127.1	37699	129.9	36800	132.9	36050	135.4	35271	138.2
6B	43964	158.2	43156	160.9	42348	163.7	41500	166.8	40834	169.3	40103	172.1
7B	63114	198.9	62134	201.8	61191	204.6	60160	207.7	59415	210.1	58545	212.9
8B	40786	153.3	40189	155.6	39560	158.0	38880	160.8	38398	162.8	37832	165.2



ELEVATION VIEW - GUY #8

NOTES:

1. DURING THE INITIAL GUY TENSIONING PROCEDURES AND AT THE TIME OF INSPECTION, THE GUY TENSIONS AND/OR INTERCEPTS SHOULD BE IN ACCORDANCE WITH THE VALUES SHOWN ABOVE. USE THE TEMPERATURE WHICH ACTUALLY EXISTS AT THE TIME THE TENSION IS BEING CHECKED. FOR TEMPERATURES OTHER THAN THOSE SHOWN ABOVE, INTERPOLATE OR EXTRAPOLATE OTHER VALUES.
2. TOWER PLUMBING AND INITIAL TENSIONING OF GUYS SHOULD BE DONE ONLY IN CALM WEATHER AND WITH NO ICE ON GUYS.
3. USE INTERCEPTS AND TENSIONS IN GUY DIRECTION "B" ONLY.
4. GUY #1 IS BOTTOM GUY; GUY #2 IS NEXT, ETC.
5. USE SIGHT BAR FOR DETERMINING GUY INTERCEPTS.
6. TENSION AND/OR INTERCEPT TOLERANCES +/- 5%.
7. AFTER INSTALLING FINAL SET OF GUYS GO BACK AND RECHECK ALL LEVELS, RETENSIONING WHERE REQUIRED.



ELEVATION VIEW - GUY #1 THRU #7

PREPARED BY: RE
CHECKED BY: GH 2/9/18
ENGINEER REVIEW: BZZ 2/12/18
PROJECT NUMBER: 278349
DRAWING NUMBER: D08.01

REV | BY | DATE | REVISION DESCRIPTION | D.CK | DATE | E.CK | DATE

STAINLESS

INTERCEPTS & ERECTION TENSIONS
DALLAS, TX

STATE OF TEXAS
ALAN AH-KUM PANG
121108
LICENSED
PROFESSIONAL ENGINEER
3/1/18

PREPARED BY:GH
DATE: 2/9/2018
SHIPMENT: 1

STAINLESS
SHIPPING LIST AND BILL OF MATERIAL
DALLAS, TX

Report No:278349

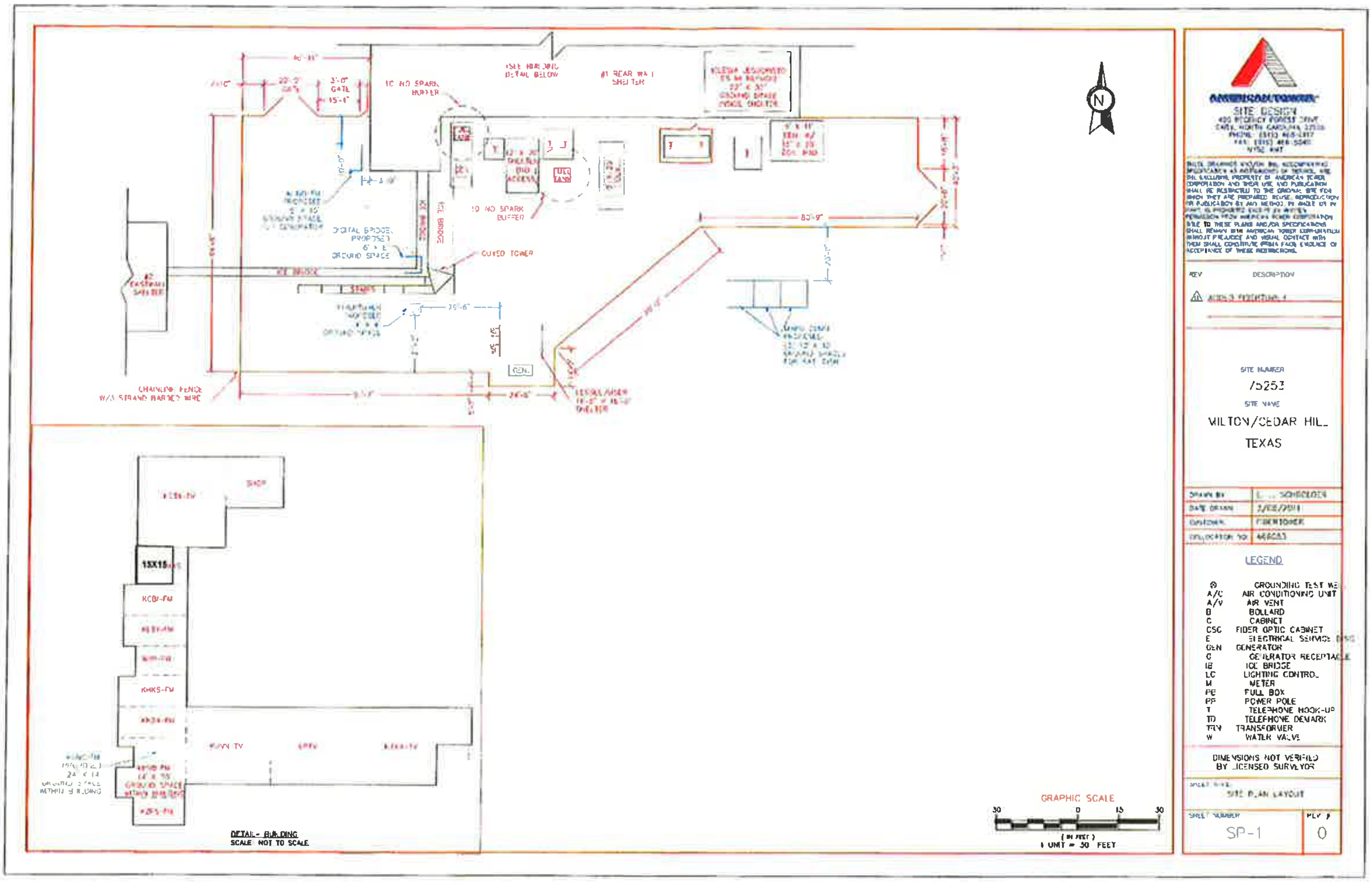
SHIP TO:			VIA:		SHIPPED BY:	
			JOB NO.	278349	DATE:	
			PACK	PPD	TRAILER NO:	
			SHIP	COL.	SHIPPING NO:	
SOURCE	QUAN	NAME	DESCRIPTION		WT.(lb)	MARK OR PART NO.
	n/a		MATERIAL LIST FOR DRAWING D05.01		n/a	
	30	TENSION RODS	7/8" DIA. X 11'-8" LG. (APPROX.)		840	
	54	TENSION RODS	1" DIA. X 11'-8" LG. (APPROX.)		2106	
	36	TENSION RODS	1-1/4" DIA. X 11'-8" LG. (APPROX.)		2160	
	n/a		MATERIAL LIST FOR DRAWING D05.02		n/a	
	18	TENSION RODS	7/8" DIA. X 11'-8" LG. (APPROX.)		504	
	30	TENSION RODS	1" DIA. X 11'-8" LG. (APPROX.)		1170	
	36	TENSION RODS	1-1/4" DIA. X 11'-8" LG. (APPROX.)		2160	
	n/a		MATERIAL LIST FOR DRAWING D05.03		n/a	
	18	TENSION RODS	7/8" DIA. X 11'-8" LG. (APPROX.)		504	
	30	TENSION RODS	1" DIA. X 11'-8" LG. (APPROX.)		1170	
	42	TENSION RODS	1-1/4" DIA. X 11'-8" LG. (APPROX.)		2520	
	n/a		MATERIAL LIST FOR DRAWING D05.04		n/a	
	66	DIAGONAL ANGLES	L 3 X 2-1/2 X 1/4 X 12'-6" LG. (APPROX.)		3762	
	112	DIAGONAL ANGLES	L 3 X 2-1/2 X 1/4 X 6'-0" LG. (APPROX.)		3024	
	33	CENTER GUSSETS	PL 1/2" X 10" X 1'-8" LG. (APPROX.)		924	
	n/a		MATERIAL LIST FOR DRAWING D05.05		n/a	
	42	HORIZONTAL ANGLES	L 3 X 2-1/2 X 1/4 X 9'-3" LG. (APPROX.)		1764	
	n/a		MATERIAL LIST FOR DRAWING D05.06		n/a	
	48	SUB BRACE ANGLES	L 2-1/2 X 2-1/2 X 1/4 X 4'-3" LG. (APPROX.)		864	
	24	CENTER GUSSETS	PL 3/8" X 11" X 1'-4" LG. (APPROX.)		456	
	24	C-CLAMPS	PL 3/8" X 5" X 1'-3" (APPROX.)		192	
	24	C-CLAMP ASSEMBLIES	PL 3/8" X 5" X 1'-3" WELDMENT (APPROX.)		336	
	n/a		MATERIAL LIST FOR DRAWING D05.07, D05.08		n/a	
	3	LEG ASSEMBLIES	RB 3-1/2" DIA. X 19'-6" LG. WELDMENT		21450	
	12	TENSION RODS	7/8" DIA. X 11'-8" LG. (APPROX.)		336	
	12	DIAGONAL ANGLES	L 3 X 2-1/2 X 1/4 X 6'-10" LG. (APPROX.)		384	
	3	CENTER GUSSETS	PL 1/2" X 10" X 1'-2" LG. (APPROX.)		60	
	6	HORIZONTAL ANGLES	L 3 X 2-1/2 X 1/4 X 9'-3" LG. (APPROX.)		252	
	3	LEG ASSEMBLIES	RB 3-1/2" DIA. X 18'-6" LG. WELDMENT		20370	
	6	TENSION RODS	7/8" DIA. X 11'-8" LG. (APPROX.)		168	
	12	DIAGONAL ANGLES	L 3 X 2-1/2 X 1/4 X 5'-10" LG. (APPROX.)		324	
	3	CENTER GUSSETS	PL 1/2" X 10" X 1'-2" LG. (APPROX.)		60	
	12	DIAGONAL ANGLES	L 4 X 3 X 5/16 X 5'-3" LG. (APPROX.)		456	
	3	HORIZONTAL ANGLES	L 3 X 2-1/2 X 1/4 X 9'-3" LG. (APPROX.)		126	
	6	HORIZONTAL ANGLES	L 4 X 3 X 5/16 X 9'-3" LG. (APPROX.)		402	
	1	ANTENNA PLATFORM	C10 X 20# X 9'-3" LG. WELDMENT (APPROX.)		1200	

TOTAL WEIGHT THIS PAGE:	70044 lb

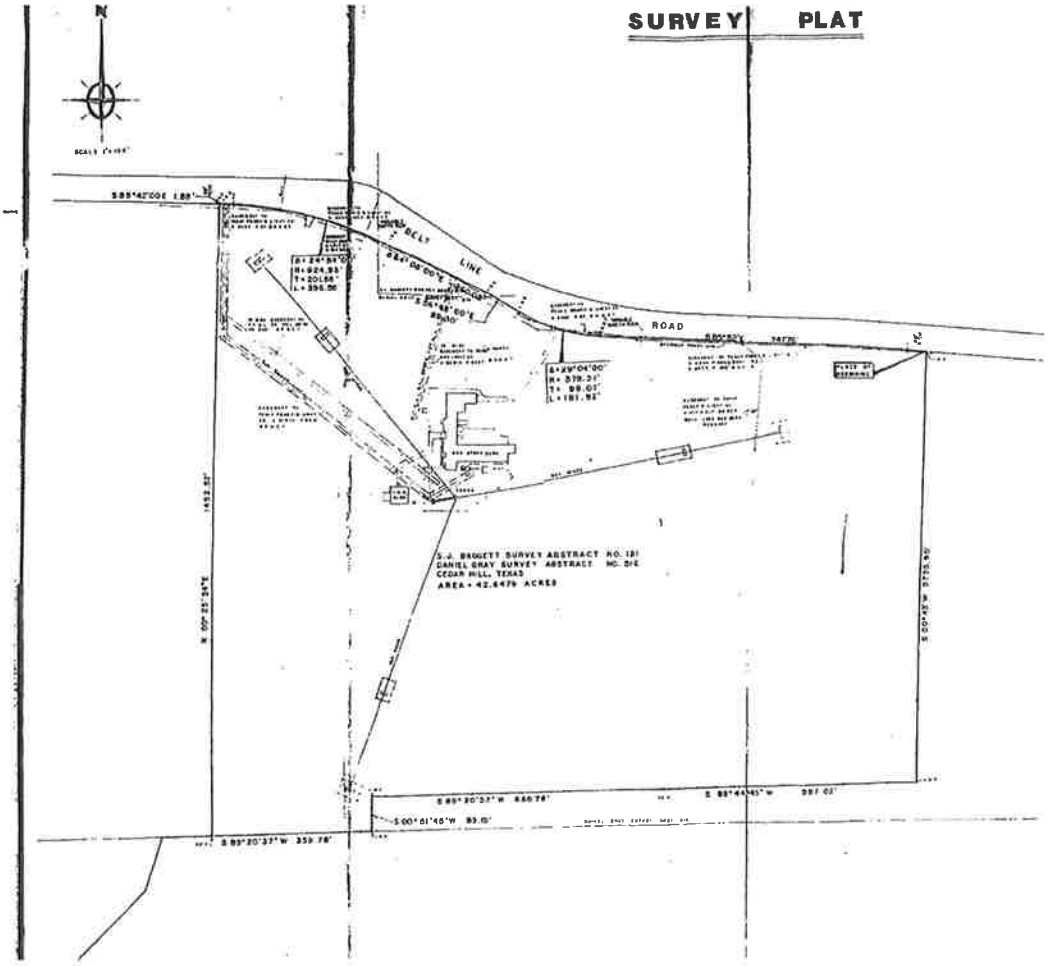
DESCRIPTION	REV	PREP BY:	CHKED BY:

DRAFTING RELEASE:	CHECKED BY:	PACKED BY:	TOTAL WEIGHT THIS SHIPMENT: 70044 lb

File:278349Ship.xls


SITE DESIGN
SITE NUMBER
75253
SITE NAME
MILTON/CEDAR HILL
TEXAS
LEGEND
A/C AIR CONDITIONING UNIT
A/V AIR VENT
B BOLLARD
C CABINET
FOC FIBER OPTIC CABINET
E ELECTRICAL SERVICE
GEN GENERATOR
IB ICE BRIDGE
LC LIGHTING CONTROL
M METER
PB PULL BOX
PP POWER POLE
T TELEPHONE HOOK-UP
TD TELEPHONE DEMARK
TRN TRANSFORMER
W WATER VALVE
DIMENSIONS NOT VERIFIED
BY LICENSED SURVEYOR
SITE PLAN LAYOUT
SP-1
0
GRAPHIC SCALE
1 UNIT = 30 FEET
GUYED TOWER
NO SPARK BUFFER
CHAINLINK FENCE
DETAIL - BUILDING
SCALE: NOT TO SCALE
15X15
KCBI-FM
GEN

SURVEY PLAT



COUNTY OF DALLAS

To: Grantee Corporation, Commonwealth Land Title Company and American Title Company and

Date: November 29, 2000

I, W.A. Lee, Registered Public Surveyor No. 2036, do hereby certify that the plat shown hereon accurately represents the results of a survey made on the ground under my direction and supervision. Significant and visible improvements to the property found on the ground are shown hereon. Except as shown hereon, there were no significant visible and apparent improvements across property lines by improvements on adjacent property. Except as shown hereon, there were no significant visible and apparent protrusions across property lines by improvements on the subject property. Evidence of one of the building restrictions (whether platted visible and apparent easements) found on the ground is shown hereon. Conflicts with adjacent boundaries (if any) visible and apparent on the ground are shown hereon. The property is contiguous to or has access lines with the streets and alleys where shown hereon. Appropriate governmental agencies may provide information, when needed, about access and access rights. The area shown within the boundaries described hereon is correct. The property described hereon is not located in a designated Special Flood Hazard Area, as a Zone of 100 year flood plain) as shown on Community Panel No. 480184 0010 B of the Flood Hazard Boundary Map or the Flood Insurance Rate Map of the Federal Emergency Management Agency, map effective date April 2, 1981.

This survey is based on deeds, easements and/or recorded plats and other records furnished to the Title Company, as well as significant and visible improvements found on the subject property and adjacent properties. Field measurements and evidence of boundaries found on the ground. However, this certification is not a representation or warranty of title or ownership of property.

DESCRIPTION OF PROPERTY:

Being a tract of land situated in the Daniel H. Gray Survey, Abstract No. 516, and the S.J. Bragett Survey, Abstract No. 131, City of Cedar Hill, Dallas County, Texas, and being a part of a 42 acre tract of land conveyed to E.M. Lewis by deed filed 10/25/57, in the Deed Records of Dallas County, Texas, and being more particularly described as follows:

BEGINNING at the intersection of the South line of Belt Line Road (a 60 Foot R.O.W.), and the dividing fence between the 2.5 acre tract conveyed to W.F. Delafield, by Volume 4840 at page 430, Deed Records of Dallas County, Texas, and the East line of a 30.0 acre tract conveyed to Byron Phillips by deed filed March 7, 1942, Deed Records of Dallas County, Texas, 1/2 inch iron rod found for corner;

THENCE South 00 deg. 42 min. West, with said Byron Phillips tract's East line a distance of 1452.82 feet to the Southeast corner of said 30 acre tract conveyed to W.F. Delafield by Volume 3254 at page 322 of the Deed Records of Dallas County, Texas, said point also being the Southwest corner of said Byron Phillips tract, a 3/4 inch iron rod found for corner by a fence post;

THENCE South 89 deg. 20 min. 37 sec. West, with an old hedge and along a Fence Line Between said Delafield and Phillips tract a distance of 656.78 feet to the apparent corner of a 2.5 acre tract conveyed to W.F. Delafield by Volume 4840 at page 430 of the Deed Records of Dallas County, Texas, a 1/2 inch iron rod found for corner;

THENCE South 89 deg. 20 min. 37 sec. West, along a Fence Line a distance of 359.78 feet to a 3/4 inch iron pipe found on the South line of said Brag Survey;

THENCE South 89 deg. 44 min. 45 sec. West, with an old Fence line a distance of 397.02 feet to the Southwest corner of a tract of land conveyed to Volume 3203 at page 376 of the Deed Records of Dallas County, Texas, to W.F. Delafield, a 3/4 inch iron pipe found for corner;

THENCE North 00 deg. 51 min. 34 sec. East, with a Fence line some being the East line of a 2.5 acre tract of land conveyed to Roy D. Mason by deed filed May 3, 1955, of the Deed Records of Dallas County, Texas, a distance of 1552.82 feet to a 1/2 inch iron rod found at the intersection of the South line of Belt Line Road (a variable width R.O.W.), with the East line of said E.M. Lewis tract some being in the West line of a 2 acre tract conveyed to W.F. Delafield by deed filed 2/23/56, of the Deed Records of Dallas County, Texas;

THENCE South 89 deg. 42 min. East, along the South line of Belt Line Road, a distance of 1.50 feet to a 3/4 inch iron rod set at the beginning of a curve to the right;

THENCE Southeasterly, continuing along said South line and with said curve to the right, having a central angle of 24 deg. 55 min. and a radius of 924.93 feet, an arc distance of 396.10 feet to a 3/4 inch iron rod set at the end of said curve;

THENCE South 64 deg. 88 min. East, continuing along the South line of Belt Line Road, a distance of 204.66 feet to a 3/4 inch iron rod set at an angle point in said South line;

THENCE South 66 deg. 42 min. East, continuing along the South line of Belt Line Road, a distance of 88.91 feet to a 3/4 inch iron rod set at the beginning of a curve to the left;

THENCE Southeasterly continuing along the South line of Belt Line Road and with said curve to the left, having a central angle of 29 deg. 04 min. and a radius of 379.21 feet, an arc distance of 181.91 feet to a Railroad Spike found for corner;

THENCE South 83 deg. 52 min. East, along the South line of Belt Line Road, a distance of 191.78 feet to the PLACE OF BEGINNING and containing 42.6476 acres of land more or less.

This survey was performed for the above mentioned parties. USE OF THIS SURVEY FOR ANY OTHER PURPOSE OR BY OTHER PARTIES SHALL BE AT THEIR RISK AND UNDERSIGNED IS NOT RESPONSIBLE FOR ANY LOSS RESULTING THEREFROM.

W. A. Lee
W.A. Lee
Registered Public Surveyor
Number 2036

SHIELDS & LEE
SURVEYORS 1421 Ferndale Avenue Dallas, Texas 75224
(214) 942-8496

Job No. 87336

STAINLESS®

A BUSINESS OF TOWER INFRASTRUCTURE SERVICES

REPORT 278348

ATC Site: 75253 Milton/Cedar Hill

DATE: 12/05/2017

RIGOROUS STRUCTURAL ANALYSIS

FOR A 1455' STAINLESS G-10 GUYED TOWER

DALLAS, TEXAS

PREPARED BY: PCC/215-631-1326 APPROVED: AP

CHECKED BY: AP/215-631-1329

5/4/18

STATE OF TEXAS
ALAN AH-KUM PANG
121108
LICENSED
PROFESSIONAL ENGINEER

Date	Pages	Remarks
2/12/2018	7-9	Rev A: New soil data & updated Para. G2c
5/4/2018	10	Rev B: Revised Para. G4

Rev.	Date	Description
A	2/12/18	New soil data & updated Para. G2c
B	5/418	Revised Para. G4

SECTION PAGE

APPENDIX

Rev.	Date	Description
A	2/12/18	New soil data & updated Para. G2c
B	5/418	Revised Para. G4

A. AUTHORIZATION/PURPOSE

As authorized by Geoffrey Middlebrooks of American Tower Corporation (ATC), a structural analysis was performed to investigate the adequacy of a 1455' Stainless G-10 guyed tower in Dallas, Texas to support specified equipment.

B. TOWER HISTORY

The tower was originally designed and furnished in 1980 by Stainless, Inc. It was designed in accordance with EIA Standard RS-222-C for a wind load of 51 psf, to support the following:

1. One (1) slotted tube array antenna (Channel 33), top-mounted and fed by one (1) 8-3/16" coax.
2. One (1) RCA TFU-36JDAS antenna (Channel 21), top-mounted and fed by one (1) 8-3/16" coax.
3. One (1) RCA TFU-36JDAS antenna (Channel 27), top-mounted and fed by one (1) 8-3/16" coax.
4. One (1) ERI panel type FM antenna directly below the top platform, fed by one (1) 6-1/8" coax.
5. One (1) V-Z antenna (Channel 16) below the ERI panel type FM antenna, fed by one (1) 8-3/16" coax.
6. Three (3) 8' wide, three-sided platforms to support 41 communication cabinets and 30 communications antennas, one (1) platform each at the 895', 1080' and 1270' levels.
7. Three (3) 2" conduits for three (3) power circuits, one (1) to each outside platform.
8. Three (3) 1-1/2" conduits for three (3) telephone cable circuits, one (1) to each outside platform.
9. One (1) two-person, double-deck elevator by Marshall Elevator Co., with control circuit.
10. One (1) 3" conduit for the lighting system and two (2) de-icers.
11. One (1) ladder to the top of the tower.
12. Two (2) 6' dishes at the first guy level, each fed by one (1) 1" line.
13. One (1) 8' x 12' reflector at the first guy level.
14. Two (2) 6' dishes at the second guy level, each fed by one (1) 1" line.
15. One (1) 8' x 12' reflector at the second guy level.
16. Two (2) 6' dishes at the third guy level, each fed by one (1) 1" line.
17. One (1) 8' x 12' reflector at the third guy level.

The tower has been modified since the original erection in 1980. The modifications are as follows:

1986 - Modification under Stainless, Inc. Contract 2783-7
Replaced guy wires at levels 2 and 4 and re-tensioned guys.
Installed ten (10) bays of leg sub-bracing.

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Replaced thirteen (13) bays of diagonal braces.

1988 - Modification under Stainless, Inc. Contract 278311
Replaced three (3) levels of horizontal braces.
Replaced eight (8) bays of diagonal braces.

1989 - Modifications under Stainless, Inc. Contract 278315
Replaced two (2) levels of horizontal braces.
Replaced ten (10) bays of diagonal braces.

1990 - Modifications by others.
Replaced four (4) bays of diagonal braces.

1997 - Modifications under Stainless, Inc. Contract 278319
Replaced guy wire at level 2 and re-tensioned guys.

2002 - Modifications by Kline Iron & Steel Co., Inc.
Replaced guy wires at level 3 and re-tensioned guys.
Installed twenty-two (22) bays of leg sub-bracing.
Replaced fourteen (14) bays of diagonal braces.
Installed reinforcement to candelabra structure.

2005 - Modifications by Kline Iron & Steel Co., Inc.
Installed two (2) bays of leg sub-bracing.

2006 - Modifications under Stainless LLC. Contract 278330
Re-tensioned guys and replaced one (1) bay of diagonals.

2007 - Modifications under Stainless LLC. Contract 278332
Re-tensioned guys and replaced two (2) bays of diagonals.

2008 - Modifications under Stainless LLC. Contract 278335
Re-tensioned guys and replaced one (1) bay of diagonals.

2010 - Modifications by others. Re-tensioned the guys per the recommended tensions of Stainless LLC Contract 278338.

2011 - Modifications under Stainless LLC. Contract 278342
Replaced two (2) bays of diagonals.

2014 - Modifications under Stainless LLC. Contract 278344
Replaced one (1) bay of diagonals.

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C. CONDITIONS INVESTIGATED

The analysis was performed for the tower supporting equipment based upon the following sources:

- Stainless LLC Report 278345 dated 03/22/2017.
- Load List Milton-Cedar Hill_75253_103117-FINAL, provided by American Tower Corporation.
- All emails from Christina Minor and Geoffrey Middlebrooks of ATC dated between 11/02/2017 and 11/20/2017.
- An email from Christina Minor ATC dated 11/20/2017 with approved tower loading and tower cross section.

ITEM	APPURTENANCE	ELEVATION, ft.	FEED LINES
1	(1) ERI 1183-8CP-2 8-bay panel antenna	1380	(1) 6-1/8" rigid line and (1) 2-1/2" conduit
2	(1) ERI 1183-6CP-2 6-bay panel antenna	1303	(1) 5" Conduit (5.56" OD) and (1) 2-1/2" conduit
3	(1) MCI 952000 (6-bay with 2 panels each bay) antenna	1271	(1) 6-1/8" rigid line
4	(1) SWR 4-bays slot antenna side mount to tower leg	1156	(1) 4-1/16" rigid line
5	(1) Scala CL-46/HRM/50N Yagi antenna	1145	(1) 1-5/8"
6	(1) Scala CL-46/HRM/50N Yagi antenna	1133	Shares line with Yagi antenna at the 1145' level
7	(1) SBP UP8-C LPTV antenna	1095	(1) 4" line
8	(1) BSP UP8 C LPTV antenna	1072	(1) 3" line
9	(1) Dielectric THA-C2 antenna	1072	(1) 3" line
10	(1) ProScan III ENG antenna	995	(1) 1-1/4" line and (1) 7/8" line
11	(1) Micro Communication Ch30 and Ch 50 side mounted antenna	950	(1) 4" line
12	(1) Telewave ANT150F6-7 antenna on platform handrail mount	905.5	--

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13	(2) 18"x12" junction box (1) 5412 ESS242010 unit (1) 24"x24"x14" junction box (1) 48"x24" junction box	899	(2) 3/8"cables
14	(1) DB420 MS-E dipole antenna	892.5	(1) 7/8" line
15	(1) 8' wide, three-sided platform	892	(1) 2" and (1) 1-1/2" conduit
16	(1) MCI 955138 antennas (8-bay each bay with 2 panels)	840	(1) 4" line and (1) future 4" line
17	(1) MCI 952000-4 antennas (4-bay each bay with 2 panels)	793	(1) 3" line
18	(1) ERI SHPX-8AC6-HW FM antenna	745	(1) 3-1/8" line
19	(6) AN1430-01 antennas and (24) BMAX-BST-AU-ODU units	658	(24) 5/8" lines
20	(1) MCI 955138 antenna (8-bay each bay with 2 panels)	591	(1) 3" line
21	(1) 4' Yagi antenna	577.5	(1) 7/8" line
22	(1) DB420MS-E dipole antenna	569.5	(1) 7/8" line
23	(1) 10' grid dish antenna	528	(1) 7/8" line
24	(1) DB224-E dipole antenna; (1) 20' dipole antenna; and (1) 10' grid dish antenna	500	(1) 7/8" line and (1) 1-1/4" line
25	(1) 12' ice shield	410	
26	(1) 3' Yagi antenna	405	(1) 7/8" line
27	(1) 12' standard dish antenna	400	(1) 7/8" line
28	(1) 6' ice shield	387	
29	(1) 10'grid dish antenna	382	(1) 7/8" line
30	(1) 8'grid dish antenna	378	(1) 7/8" line
31	(1) 6'standard dish antenna and (1) 10' grid antenna	362	(2) 7/8" line
32	(1) RFS PD200 omni antenna	360	(1) 7/8" line
33	(1) 8' HP dish antenna	352.5	(1) EW63 cable
34	(1) 2' grid dish antenna	334	(1) 1-5/8" line
35	(1) 10' grid dish antenna	333	(1) 1-5/8" line
36	(2) 8' standard dish antennas	330	(2) 1/2" lines
37	(1) 10' grid dish antenna	326	(1) 7/8" line
38	(1) RFS DA12-65AC dish antenna	325	(1) EW63 cable
39	(1) 12' ice shield	306	
40	(1) 8' standard dish antenna	300	n/a
41	(1) UHX6-59-P3A/L HP dish antenna	300	(1) EW63 cable
42	(1) RFS DA12-65AC dish antenna	275	(1) EW63 cable

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43	(2) 6' ice shields	267	
44	(2) RFS SBX2-107NEC HP dishes	262	(4) 3/8" lines
45	(3) CSS X7C-665 and (3) Jaybeam PCSX065-18-0 antennas; (3) LGP18601 TTA units on sector frames	252	(9) 1-5/8" lines
46	(1) 3' standard dish antenna	224	(1) 0.19" line
47	(1) 12' ice shield	212.5	
48	(1) 12' grid dish antenna	203	(1) 7/8" line
49	(1) Scala CA7-410 Yagi antenna	200	(1) 7/8" line
50	(1) PL8-65 8' standard MW dish antenna	200	(1) EW63 cable
51	(1) 6' standard dish antenna	190	(1) 1/2" line
52	(1) 8' grid dish antenna	188	(1) 7/8" line
53	(1) 10' grid dish antenna	170	(1) 7/8" line
54	(1) 2' Yagi antenna	153	(1) 1/2" line
55	(1) 4' standard dish antenna and (2) TTA units	131	(1) 1-5/8" line
56	(1) 2' Yagi antenna	107	(1) 3/8" line
57	(1) 4' standard dish antenna	105	(1) 1-5/8" line
58	(1) 10' omni antenna	70	(1) 7/8" line
59	(1) conduit	To 1443	(1) 1-1/4" conduit
60	(1) line support conduit (assumed)	To 1072	(1) 1-1/2" conduit
61	(1) line support conduit (assumed)	To 950	(1) 1-1/2" conduit
62	(1) line support conduit (assumed)	To 500	(1) 3/4" conduit
63	(1) line support conduit	To 252	(1) 1-1/2" conduit
64	(1) line support conduit	To 610	(1) 1-1/4" conduit
65	(1) line support conduit (assumed)	To 325	(1) 1-1/2" conduit
66	(1) two man, double-deck elevator	1455	(1) 3/4" conduit containing control circuits
67	(1) lighting system	Tower top	3" conduit
68	(1) climbing ladder without safety cable	Tower top	--
	***** Proposed Loading*****		
69	**(1) TFU-26GTC-VP-R 4C190 DC SP /(1) TUM-AP-C4-14/48H-2-R-B stack antenna system on top of a new 39-ft tower mast extension on top of main tower**	**Tower Top**	**(1) 8-3/16" rigid line; (2) 7-3/16" rigid lines**

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Locations of transmission lines are based upon Stainless Report 278345 dated 03/22/2017. The transmission line arrangement is summarized on page A-2 of this report. Deviating from this arrangement will affect the accuracy of this analysis.

All existing antennas, antenna mounting pedestals on top candelabra and antenna feed lines will be removed and will not be included in this analysis. The modifications of Report 278345 have not been installed.

D. LOADS AND STRESSES

The analysis was performed using the following design parameters in accordance with 2015 IBC and ANSI/TIA 222-G-2005, Structural Standard for Antenna Supporting Structures and Antennas, including addenda 1 & 2, dated 2007 and 2009 respectively.

- Risk Category II
- 115 mph ultimate design wind speed with no ice.
- 30 mph nominal design wind speed with 3/4" design ice thickness
- Exposure Category D
- Topographic Category 1
- 0.11 earthquake spectral response acceleration at short periods (S_s)
- Earthquake Site Class D

Seismic effects need not be considered as the value of Ss is less than 1.0 per Section 2.7.3 of ANSI/TIA 222-G. Load and resistance factors used to evaluate the adequacy of the structure were in accordance with ANSI/TIA 222-G.

E. METHOD OF ANALYSIS

The analysis was performed using tnxTower and RISA3D, computer-aided finite element programs for analysis of structures and towers subject to simultaneous transverse and axial loads.

F. RESULTS

The results of the analysis show the following ratings:

LOCATION	SPAN	RATING %
Candelabra	Chords	34
	Vertical bracing	52
	Horizontal bracing	58
	Diagonal bracing	95
	Pedestal members	42
	Knee bracing	46
Leg Compression	8	**137**
	7	**183**
	6	**156**
	5	97

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	4	**113**
	3	89
	2	91
	1	87
Leg Tension	8	42
	7	--
	6	--
	5	--
	4	--
	3	--
	2	--
	1	--
Diagonals	8	**109**
	7	94
	6	**134**
	5	**217**
	4	**176**
	3	**146**
	2	**211**
	1	**184**
Horizontals	8	**113**
	7	84
	6	**117**
	5	**167**
	4	**160**
	3	**134**
	2	**190**
	1	**150**
Guys	8	86
	7	70
	6	66
	5	82
	4	**106**
	3	100
	2	**111**
	1	91
Foundations	Base	**110**
	Inner anchors	84
	Outer anchors	83

The rating is defined as the percentage of the component design capacity that is used up in supporting itself and the loading from the antennas and transmission lines under the design wind

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and ice loading conditions. Ratings of up to 105% are considered acceptable due to tolerances in calculating the applied loads on the tower as well as component design capacities.

With new soil parameters for inner guy anchors provided by FDH Velocitel, Project number: 18PAMC1401, dated 02/01/2018, the inner guy anchors new ratings are 84% and inner anchors are adequate.

G. CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding results, the following conclusions may be drawn:

1. The tower, supporting the equipment as specified in section C of this report, is not adequate to achieve an ultimate wind speed of 115 mph with no ice and 30 mph nominal wind speed with 3/4" design ice thickness in accordance with the 2015 IBC and ANSI/TIA 222-G with the parameters.
2. In order to achieve an ultimate wind speed of 115 mph with no ice and 30 mph nominal wind speed with 3/4" design ice thickness in accordance with the 2015 IBC, and ANSI/TIA 222-G with the analysis parameters of Section D, the following modifications are required:
   a. Replace guy level 4 guy wires with new, higher strength guy wires.
   b. Adjust guy wire initial tensions for all guy levels.
   c. [Deleted; inner anchors adequate after review with new geotechnical report]
   d. Install additional horizontal sub-bracing members at the midpoints of the following bays:

Location	No. of bays
1153.8' – 1108.8'	6
1093.8' – 1086.3'	1
1071.3' – 1063.8'	1

   e. Replace existing diagonal members with new, higher capacity members at the following bays:

Location	No. of bays
1033.8' – 1011.3'	3
853.8' – 838.8'	2
823.8' – 808.8'	2
778.8' – 718.8'	8
696.3' – 658.8'	5
621.3' – 613.8'	1
606.3' – 576.3'	4
553.8' – 531.3'	3
463.8' – 441.3'	3
396.3' – 388.8'	1
381.3' – 366.3'	2

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343.8' – 246.3'	13
238.8' – 216.3'	3
208.8' – 178.8'	4
156.3' – 141.3'	2
133.8' – 73.8'	8

f. Replace existing horizontal members with new, higher capacity members at the following levels:

Location	No. of levels
1041.3' – 1033.8'	2
208.8' – 201.3'	2
133.8' – 118.8'	3

g. Reinforce tower top existing leg flanges in order to have adequate strength for additional new 39-ft tower mast on top of existing main tower.

3. After the above modifications are completed, the twist and sway at the elevation of the dish at the service wind speed of 60 mph are as follows:

Dish	Elevation, ft.	Twist, degrees	Sway, degrees
10' grid dish	528	1.26	0.15
10' grid dish	500	1.23	0.12
12' standard dish	400	1.16	0.10
10' grid dish	382	1.15	0.10
8' grid dish	378	1.15	0.10
6' standard dish	362	1.15	0.10
8' HP dish antenna	352	1.15	0.10
2' dish	334	1.16	0.10
10' grid dish	333	1.16	0.10
8' standard dish	330	1.16	0.10
10' grid dish	326	1.16	0.10
RFS DA12-65AC dish	325	1.16	0.10
8' standard dish	300	1.17	0.11
UHX6-59-P3A/L HP dish	300	1.17	0.11
RFS DA12-65AC dish	275	1.15	0.12
(2) RFS SBX2-107NEC HP dishes	262	1.12	0.13
3' standard dish	224	0.96	0.16
12' grid dish	203	0.87	0.16
PL8-65 dish	200	0.86	0.17
6' standard dish	190	0.83	0.17
8' grid dish	188	0.82	0.18

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10' grid	170	0.75	0.18
4' standard dish	131	0.55	0.19
4' standard dish	105	0.41	0.20

4. The following table shows a comparison between the current loads and the design resistance of the tower base.

Component	Design resistance x 105% (kips)	Current load (kips)	Factor of safety	Status
Download	3712	3899	1.91	Acceptable

H. PROVISIONS OF ANALYSIS

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct guy tensions.
2. Correct bolt tightness.
3. No significant deterioration or damage to any component.

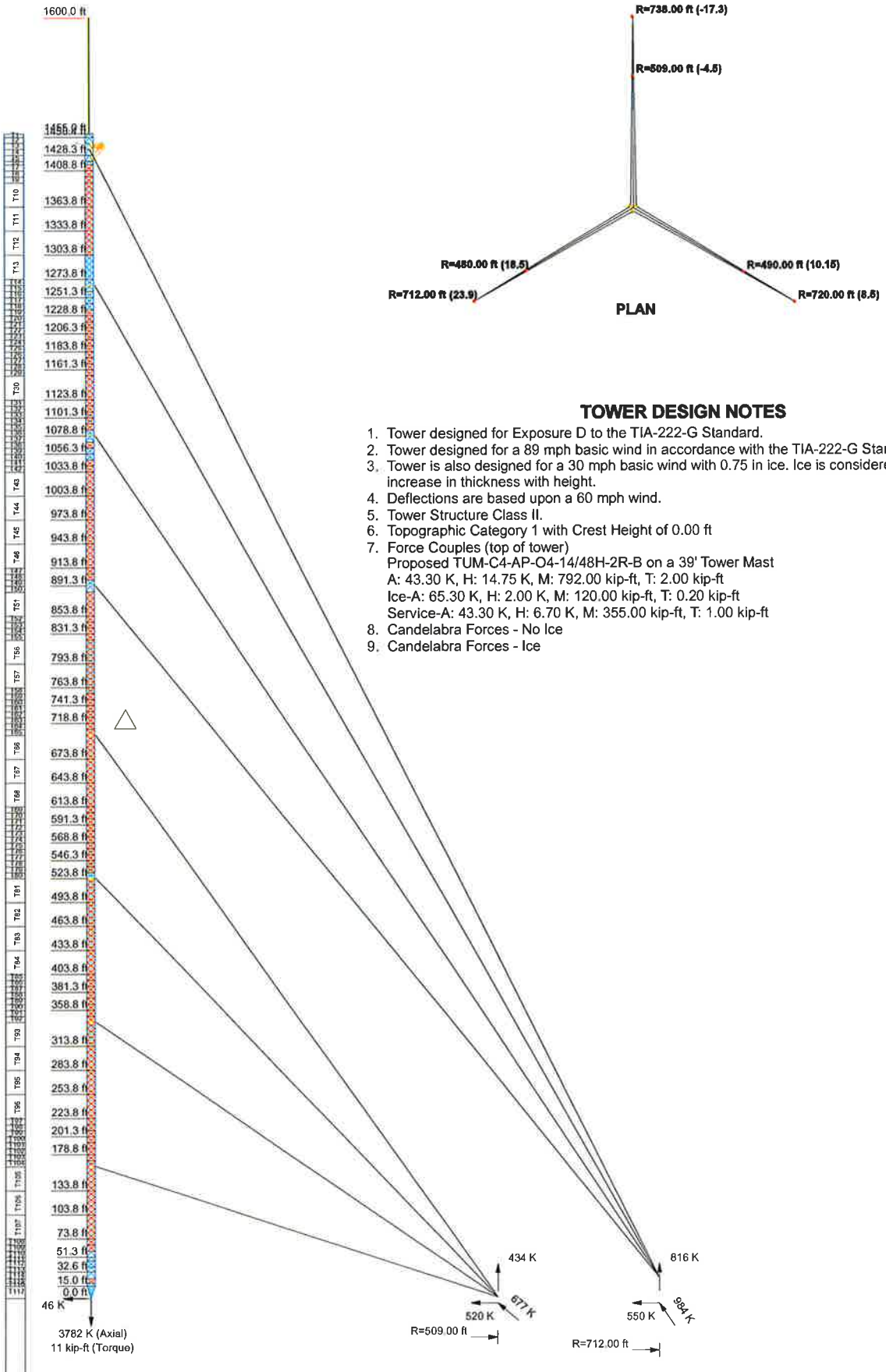
Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-arts" engineering and analysis procedures and formulae, and Stainless assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will Stainless have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of Stainless, if any, pursuant to this Report shall be limited to the total funds actually received by Stainless for preparation of this Report.

Customer has requested Stainless to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested Stainless to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of Stainless, Customer has informed Stainless that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by Stainless and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

Customer hereby agrees and acknowledges that Stainless shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than Stainless in connection with the implementation of any structural changes or modifications recommended by Stainless including but not limited to any services rendered for Customer or for others by riggers,

Rev.	Date	Description
A	2/12/18	New soil data & updated Para. G2c
B	5/418	Revised Para. G4

erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that Stainless shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor.



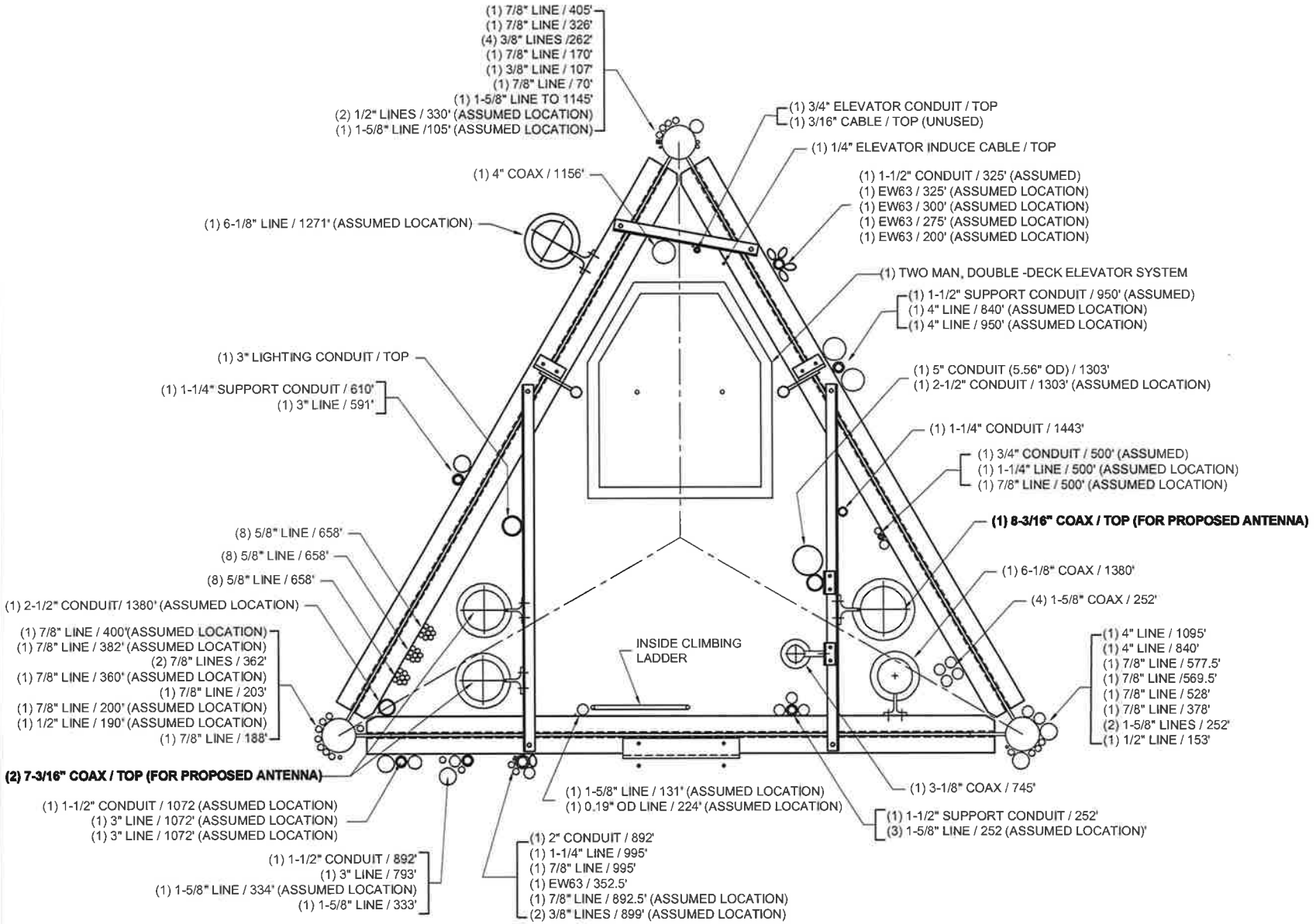
TOWER DESIGN NOTES

1. Tower designed for Exposure D to the TIA-222-G Standard.
2. Tower designed for a 89 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 30 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Force Couples (top of tower)
   Proposed TUM-C4-AP-O4-14/48H-2R-B on a 39' Tower Mast
   A: 43.30 K, H: 14.75 K, M: 792.00 kip-ft, T: 2.00 kip-ft
   Ice-A: 65.30 K, H: 2.00 K, M: 120.00 kip-ft, T: 0.20 kip-ft
   Service-A: 43.30 K, H: 6.70 K, M: 355.00 kip-ft, T: 1.00 kip-ft
8. Candelabra Forces - No Ice
9. Candelabra Forces - Ice

ALL REACTIONS ARE FACTORED

STAINLESS
Tower Analysis
Stainless
200 N Warner Road, Suite 215
King of Prussia, PA 19406
Phone: 6109924101
FAX: 6109924109

Job:	***Report 278348; Dallas, TX; Result Run***		
Project:	***1455-ft Stainless G-10 Candelabra Guyed Tower***		
Client:	American Tower Corporation	Drawn by: C.Chen	App'd:
Code:	TIA-222-G	Date: 12/05/17	Scale: NTS
Path:	K:\278348\eng\TNXTower\278348_Result_Run.eri		Dwg No. E-1



PREPARED BY	PCC	11/17/2017
CHECKED BY		
ENGINEER REVIEW		
PROJECT NUMBER	278348	
DRAWING NUMBER	A-2	

REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
*	*	*	*	*	*		

STAINLESS

A Business of: KDH Solutions, 100 West Main Street, Suite 400, Lansdale, PA 19446

LINEAR APPURTENANCES
DALLAS, TX

Rev 5.10 (07/08/16)

ATC TOWER INSPECTION FORM

AMERICAN TOWER® CORPORATION

ANSI-TIA/EIA-222 Compliant

SECTION A - SITE INFORMATION

ATC Site Number	: 75253	ATC Site Name, State	: CEDAR HILL - MILTON, TX
Site Address	: 1360 W. Belt Line Rd.	Number of Compounds	: 1
City/State	: Cedar Hill, TX	Date of Inspection	: 6/20/16
Contractor Name	: Structural Components		
Inspection Completed By	: Chance Adams, David Begley, Wes Culver		

SECTION B - TOWER INFORMATION

Structure Type	: Guyed	Number of Tower Legs	: 3
Tower Height	: 1455.0	Climbing/Safety Device	: No
Overall Structure Height	: 1529.5	FCC/ASR Number	: 1055009
Tower Manufacturer	: Unknown	AM Detuning ?	: No

SECTION C - SITE INFORMATION CATEGORIES

SECTION A - Site Information
SECTION B - Tower Information
SECTION C - Tower Information Summary Comments
SECTION D - Tower Foundation Comments
SECTION E - Tower Structure Comments
SECTION F - Safety Comments
SECTION G - Grounding Comments
SECTION H - Guy Anchors & Wires Comments
SECTION I - AM Detuning Comments
SECTION J - Dampers Comments
SECTION K - Lights Comments
SECTION L - Elevator Comments
SECTION M - Transmission Line Bridges Comments
SECTION N - RF Equipment Comments
SECTION O - Compliance

SECTION D - TOWER FOUNDATION

Instructions

Tower base should be visually inspected for spalling and cracking of the concrete. The soil surrounding the tower base foundation should be inspected for evidence of settlement. Any such settlement or movement should be noted.

Base drains (if present) should be clear of any obstructions. Penetrate drain with object to ensure drains functioning.

Base Insulators (if present) - The porcelain surface should be wiped clean with a soft cloth to remove any salt deposits or other foreign substance. A check should be made for any evidence of deterioration or cracks in the porcelain surface.

All discrepancies must be marked with masking tape and magic marker.

All discrepancies must be noted and photographed and numbered.

	Yes	No	Corrected	N/A
Is tower center pin in place?	x			
Is tower center pin free of corrosion?	x			
Are all base plate bolts, nuts, and washers present?	x			
Is the tower foundation in good condition? (No cracking, spalling, or settling)	x			
Is the concrete tower base free from standing water?	x			
Are base drains clear and free flowing? (Drains required only under tubular legs.)				x
Is porcelain surface of base insulators in good condition? (No deterioration or cracking)				x
Is the soil around the foundation in good condition? (No settling or movement)	x			

Place an x in the proper box

If any comments exceed one row please expand the row height so that all of the text is visible. To expand rows automatically, click the Select All button, then click AutoFit Row Height in the Cells/Format box

Comments:

1. Light rust on baseplate stack. (Photos 86, 87)
2.
3.
4.

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PLANNING

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APR 4
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PLANNING

SECTION E - TOWER STRUCTURE

Instructions

Corrosion - If corrosion is observed, the source should be determined and noted.

Damaged or faulty members - A visual inspection must be made of the entire tower structure to determine if any of the members have been deformed or damaged. Any bowed, bent or damaged member/bolt should be noted as to part number, size, location on tower, nature and magnitude of deformation or damage.

Do not remove any tower member for replacement unless authorized by ATC Engineering Dept - Signed/Sealed Construction Drawings are required if a

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Are all bolts and nuts tight? Tighten loose bracing bolts and document as corrected. Loose	x			
Is the tower free of rust? (If "No", be specific in the comments below.)		x		
Are all structural members straight and not damaged, bent, and/or missing?	x			
Is the tower finish in good condition? (No obvious signs of cracking)		x		
Is the weld free of rust and not damaged? (If "No", be specific in the below)	x			

Place an x in the proper box

Comments:

1. Light rust and chipped paint typical in many places throughout tower members and bolts. Esp in white areas.(Photos 484, 487, 571, 589, 620)
2. Rusty hardware in several places on tower including climbing ladder, coax hangers, trap door chains, antenna mounts(Photos 423, 446, 448, 553, 629)
3. Unused ice shields on tower, see line and antenna report (Photo 300)
4. Unused conduits on tower (Photo 678)
5. Unused equipment on tower, see line and antenna report (Photo 135)
6. Active small-bird nest. C-Leg 165' (Photo 566)
7. Moderate rust on antenna mount C-Leg Dish @ 131' (Photo 553)
8. Overgrown base compound (Photo 51-54)
9. Compound fence is rusted and barbed wire is loose (Photo 46, 75)

SECTION F - SAFETY

Instructions

Safety is paramount- Report anything that makes it unsafe to operate or maintain this tower to ATC immediately.

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Is there a safety climb system?		x		
Are all components of the safety climb system free of rust?				x
Is the cable free from kinks, fraying, broken wires or strands or other damage?				x
Is the climbing path free from obstructions allowing a clear path for the cable?				x
Is the cable secured by properly spaced cable guides?				x
Is the total system properly installed including the top connection? If No, correct and note.				x
Is the FCC and ATC signage apparent and placed properly.	x			
Is the ladder continous, if "No", be specific in the comments	x			
Are the platforms secured with proper handrails and/or anchorages	x			

Place an x in the proper box

Comments:

1. No safety cable system installed on tower. (Photo 395)
2.
3.
4.

SECTION G - GROUNDING

Instructions

Connections - The connections above grade should be visually checked for loose fittings, ensure wires are snug in mechanical connections or well bonded with exothermic connections at the base of the tower.

Ground Wires - The ground wires at the base should be cad welded to each leg.

Take a photo of the grounding at the base and at each anchor.

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Is the tower base properly grounded?	x			
Are the guy cables and/or guy anchor heads properly grounded?		x		
Are ground wires and connections in satisfactory condition?		x		
Is there a lightning rod or static dissipation array installed on this tower?	x			
Is lightning rod or static dissipation array properly installed, if present?	x			
Is the lightning rod mounted in a location making it the highest point on the tower?	x			

Place an x in the proper box

Comments:

1. No grounding on wires or fanplate: Bi, Bo, Co. (Photos 184, 190, 196, 227)
2. Frayed grounding on Ci (Photo 223)
3. No fanplate grounding: Ai, Ao, Ci. (Photos 155, 177, 213)
4. Guy wire ground clips rusted: Ai, Ao, Bi, Bo, Ci. (Photos 160, 171, 198, 214)
5. One ground at base is disconnected, there are still (3) connected grounds though (Photo 83)
6.
7.
8.
9.
10.

SECTION H - GUY ANCHORS & WIRES

Instructions

All discrepancies must be marked with masking tape and magic marker and must be noted and photographed.

	Yes	No	Corrected	N/A
Are the guy cables & paths clear of brush, vegetation, fencing or any other obstruction?		x		
Are the anchor heads and rods free from any bends and/or fractures?	x			
Are the anchor heads and turnbuckle hardware free from soil build-up?	x			
Are exposed guy anchor foundations free from cracking, weathering?		x		
Excavate the soil around anchor shafts by hand to a distance of 36" (along the shaft) and 12" wi				x
Do the turnbuckles have room for adjusting tensions? (Not fully extended or contracted?)	x			
Are the anchor heads free of corrosion?		x		
Is guy anchor rod laterally aligned?	x			
Are guy wires free of broken strands or insulators?	x			
Are the guy dampers secured and in good condition?	x			
Are all shackles, clevises, thimbles, cotter pins, and Crosby clamps properly installed?	x			
Are the dead-end grips in good condition?				x
Are the dead-end grip end-sleeves (ice-clips) installed?				x
Are guy wires and guy hardware free of corrosion?		x		
Is each turnbuckle safety wire properly installed and secure? If not, make corrections.				x
Are guy wire connections in satisfactory condition?	x			
Are guy attachment points to tower in good condition?	x			

Place an x in the proper box

IMPORTANT:	
Shaft Location	***Type***
Inner Anchor	FPL
Middle Anchor (If applicable)	FPL
Outer Anchor (If applicable)	
Shaft Type	***Select***
Channel	C
Double Channel	2C
Double Angle	2L
I-Beam or W-shape	I
Solid Rod	SR
Double Solid Rod	2SR
Flat Plate	FPL
Helical	HL
Caisson	CSN
Please describe below	Other

Note - If anchor shafts show signs of heavy corrosion at any point, stop digging immediately and complete the remainder of the inspection.

Comments:

1. Light rust on anchor hardware including varigrips, pins, and plates. (Photos 205, 220, 216, 236, 240)
2. Strand popping out of top guy line on B-Leg. (Photo 209)
3. Overgrown anchor compound: Ai, Ao. (Photos 152, 165)
4. Light rust on all guy wires except levels 2 & 3. Mostly visible at top of wires. (Photos 561, 563, 564, 582, 588, 611, 613, 614, 644, 645, 646)
5. Light rust on top cotter pins. Typical at many wires. (Photos 612, 615, 643)
6. Minor cracks in concrete: Bo, Co (Photos 203, 218, 242)
7. Anchor latch broken Bo. Loose and rusted barbed wire for guy anchor fences (Photo 207, 208, 211, 226)
8.
9.
10.

SECTION I- AM DETUNING

Instructions

All discrepancies must be marked with masking tape and magic marker and must be noted and photographed.

Note: If the tower has a base insulator (decommissioned AM hot tower) the box next to the tower with a single wire feed is NOT an AM detuning device.

	Yes	No	Corrected	N/A
Is there an AM Detuning system on the tower?		x		
Are the AM Detuning skirt wires securely attached to the tower?				x
Are the AM Detuning wires in good condition? (Broken, sharp bends, etc)				x
Is the AM Detuning box securely attached to the tower or other mounting system?				x
Is the AM Detuning box in good condition? (Sealed, loose or missing hardware, etc)				x
Is the exterior of the AM Detuning box free of rust and corrosion?				x
Is the AM Detuning system properly grounded?				x

Place x in the proper box

Comments:

1.
2.

SECTION J - Dampers

Instructions

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Are quantity, location, and arrangement correct?	x			
Are high frequency dampers in good condition?	x			
Are safeties properly installed when dampers are attached at the tower end of the guy wires?				x
Is tension in snubber wire in good status?				x
Are low frequency snubbers in good condition?				x
Are dampers wheels frozen?				x

Place an x in the proper box

Comments:

1.
2.
3.
4.
5.

SECTION K - Lights

SECTION K - Lights

Instructions

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Are all lights properly operational in both day and night mods?	x			
Is there any light outage?		x		
Are connection in good condition for resistance to entry of water?	x			
Are drain and openings unobstructed?	x			
Are junction boxes and wiring in good condition?	x			
Do light lense have cracks and crazing?		x		

Place an x in the proper box

Comments:

1. Small lights behind Face FM antennas may be considered obstructed (Photo 450)
2.
3.
4.
5.

SECTION L - Elevator

Instructions

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Does elevator travel full range?	x			
Do upper and lower limit switches work properly?				x
Are cables in good condition (corrosion, birdcaging, broken wires in strand)		x		
Do emergency breaks work properly?		x		
Are elevator sheaves in good condition?	x			
Are machine fluid at proper levels?				x

Place an x in the proper box

Comments:

1. Cab controls were not working at time of inspection. Elevator could be operated from ground but only by manually holding down contact switches.
2. Emergency breaks were not tested at time of inspection. Top limit switch was not tested.
3. Light corrosion of wires, rails, top wheels and other hardware (Photos 403, 423, 446)
4. Moderate rust on elevator stop brackets (Photo 443, 444)
5. Elevator sheaves have light rust (Photo 386)
6. Emergency breaks were not tested at time of inspection. Top limit switch was not tested.

SECTION M - Transmission Line Bridges

Instructions

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Are all bolts and nuts tight? Tighten loose bracing bolts and document as corrected. Loose	x			
Is the tower free of rust? (If "No", be specific in the comments below.)		x		
Are all structural members straight and not damaged, bent, and/or missing?	x			
Is the tower finish in good condition? (No obvious signs of cracking)	x			

Place an x in the proper box

Comments:

1. Moderate surface rust on transmission line bridge from "Building 2" (Photo 115, 116)
2.
3.
4.
5.

SECTION M - RF Equipment

Instructions

All discrepancies must be marked with masking tape and magic marker. All discrepancies must be noted and photographed before and after repair.

	Yes	No	Corrected	N/A
Is mounting support in good condition? (Including any ice shields)	x			
Are line support hangers in good condition? (Type, quantity, and spacing)	x			
Is antenna in good condition?		x		
Is feed line in good condition?	x			

Place an x in the proper box

Comments:

1. Cracked antenna shrouds: Top face FM bottom bay, TV @ 1125' top bay shroud, Superquad shroud @ 1023'. (Photos 606, 642, 649)
2. Unstable ice shield. C-Leg, 210'. Seems insufficiently braced- based on how easily it moves. Could really move in wind. (Photo 706, 707)
3. Unattached coax at 260', and a few other spots. (Photo 709)
4. Moderate rust on top hangers for copper lines and Face mount FM line support (Photo 440, 448, 449)
5. Light rust on copper lines from building to tower (Photo 126)

SECTION O - COMPLIANCE

I understand that this information and form are the sole property of American Tower Corporation and may not be copied or shared without written permission from ATC.
I certify this report to be accurate and complete to the best of my knowledge and belief.

Name : Chance Adams Date : 6/20/16

Company : Structural Components, LLC

AMERICAN TOWER®

ATC TOWER MAPPING

3500 Regency Pkwy, Ste 100
Cary, NC 27518
Phone: 919-468-0112
www.americantower.com

TOWER MAPPING REPORT

75253 - MILTON/CEDAR HILL
1360 W. Belt Line Rd., Cedar Hill, TX
1455ft Guyed Tower

Contractor report # 160443
Date: 07-05-2016

Prepared By:

Structural Components

Information Notes:

- Include names of all crew members present at site.
- Contact to be person to whom any questions regarding this mapping should be directed.
- Crew leader signature indicates that tower mapping is complete and accurate per company and ATC standards.

CONTRACTOR INFORMATION AND SIGNATURE	
Company Name	Structural Components, LLC
Company Address	11611 E. 51st Ave, Denver, CO 80239
Contact Person / Phone #	Wes Culver / 303-435-4647
Project Manager	Wes Culver
Tower Mapping Date	June 20th - 21st, 2016
Crew Members	Wes Culver, Chance Adams, David Begley
CAD Initials	WC
Report Number	160443
Report Completion Date	07/05/16
Crew Leader Signature	

Information Notes:

- Initial each Item when completed and identify the correct page number(s).
- Add or remove items / lines as necessary based on tower.
- Use notes column to identify any issues or further information.

CHECKLIST / INDEX			
Page Title	**Initial**	**Page(s)**	**Notes**
Contractor Information	WC	1	
Checklist / Index	WC	1	
Site Information	WC	1	
Abbreviation Definitions	WC	1	
Compound Plan Sketch	WC	1	
Tower Profile	WC	4	
Ladder and Waveguides	WC	1	
Coax Details	WC	6	
Antenna and Mount Sketch	WC	20	
Photo Log	WC	1	

Information Notes:

- Add notes to identify problem areas that were Identified and corrected.
- Use notes to list and explain exception to standard procedures.

SITE INFORMATION	
Site Name	MILTON/CEDAR HILL
Site Number	75253
Site Address	1360 W. Belt Line Rd., Cedar Hill, TX 75104
County	Dallas
Latitude	32.58945
Longitude	-96.97025
Driving Instructions	From Dallas/Fort Worth International Airport: Take State Hwy 161 S/TX-161 S and President George Bush Turnpike S to FM1382 S/Belt Line Rd in Grand Prairie. Take exit 457 from I-20 E. Continue on FM1382 S. Drive to W Belt Line Rd in Cedar Hill

COMPOUND INFORMATION	
Gate Combo	6789
Phone Company	Unkown
Power Company	Unkown
Meter # & Owner	Unkown

TOWER INFORMATION	
Tower Type	Guyed
Tower Manufacturer	Stainless, Inc.
Tower Tag Information	N/A
Structure Height	1455ft
Top of Highest Appurt. (AGL)	1529.3ft
Ground Elevation (AMSL)	830ft
FCC ID#	1055009
Notes / Additional Info	Was not able to access candelabra towers to get exact dimensions of upper TV antennas due to RF

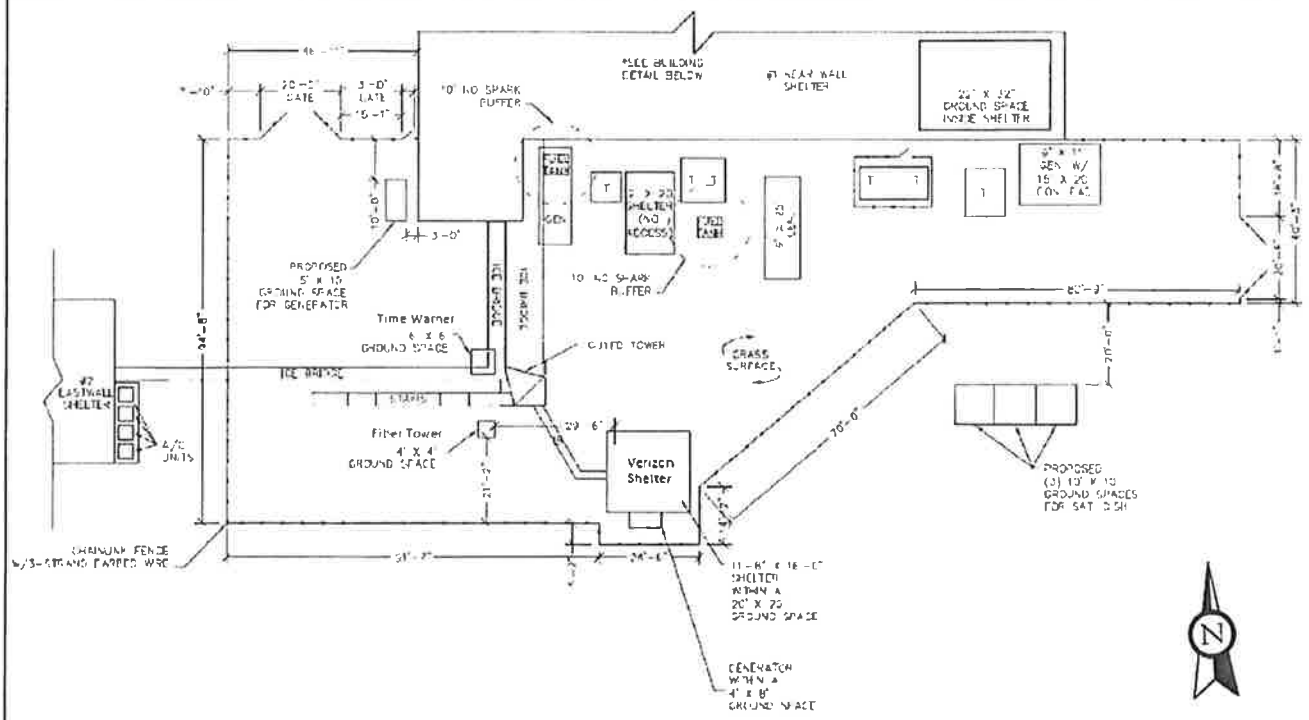
ABBREVIATION DEFINITIONS

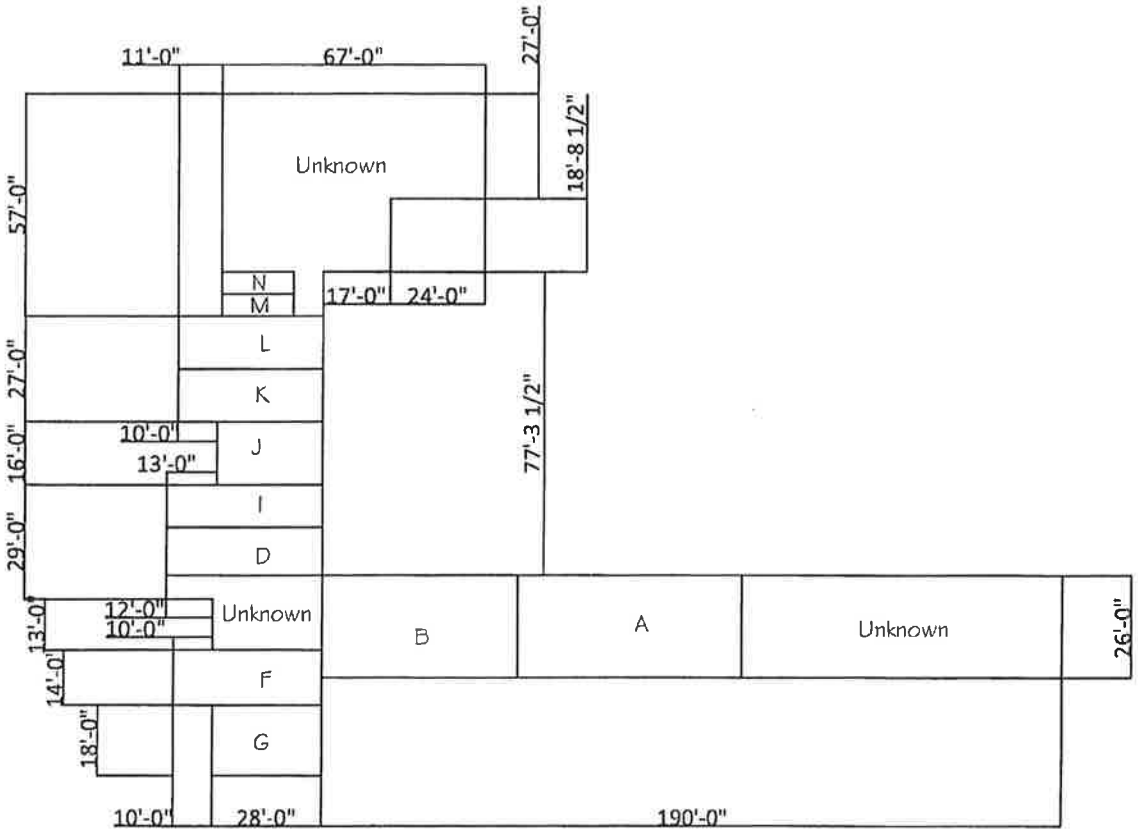
ATC	American Tower Corp.	E.D.	Edge Distance	LLV	Long Leg Vertical	DNR	Did Not Record
AGL	Above Grade Level	M.E.	Minimum Edge	SLV	Short Leg Vertical	EW	Elliptical Waveguide
TOS	Top of Structure	THK	Thickness	BP	Bent Plate	FH	Foam Heliax
BOS	Bottom of Structure	OD	Outer Diameter	PL	Plate	MC	Metal Conduit
B/B	Bolt Center to Bolt Center	C	Channel	SR	Solid Round	RC	Rigid Conduit
C/C	Center to Center	HSS	Hollow Structural Sections	SCHL	Schifflerized Angle	SM	Smooth Heliax
I/I	Inside to Inside	L	Angle	S.B.	Stitch Bolts		
O/O	Outside to Outside	2L	Double Angle	CNR	Could Not Record		

Information Notes:

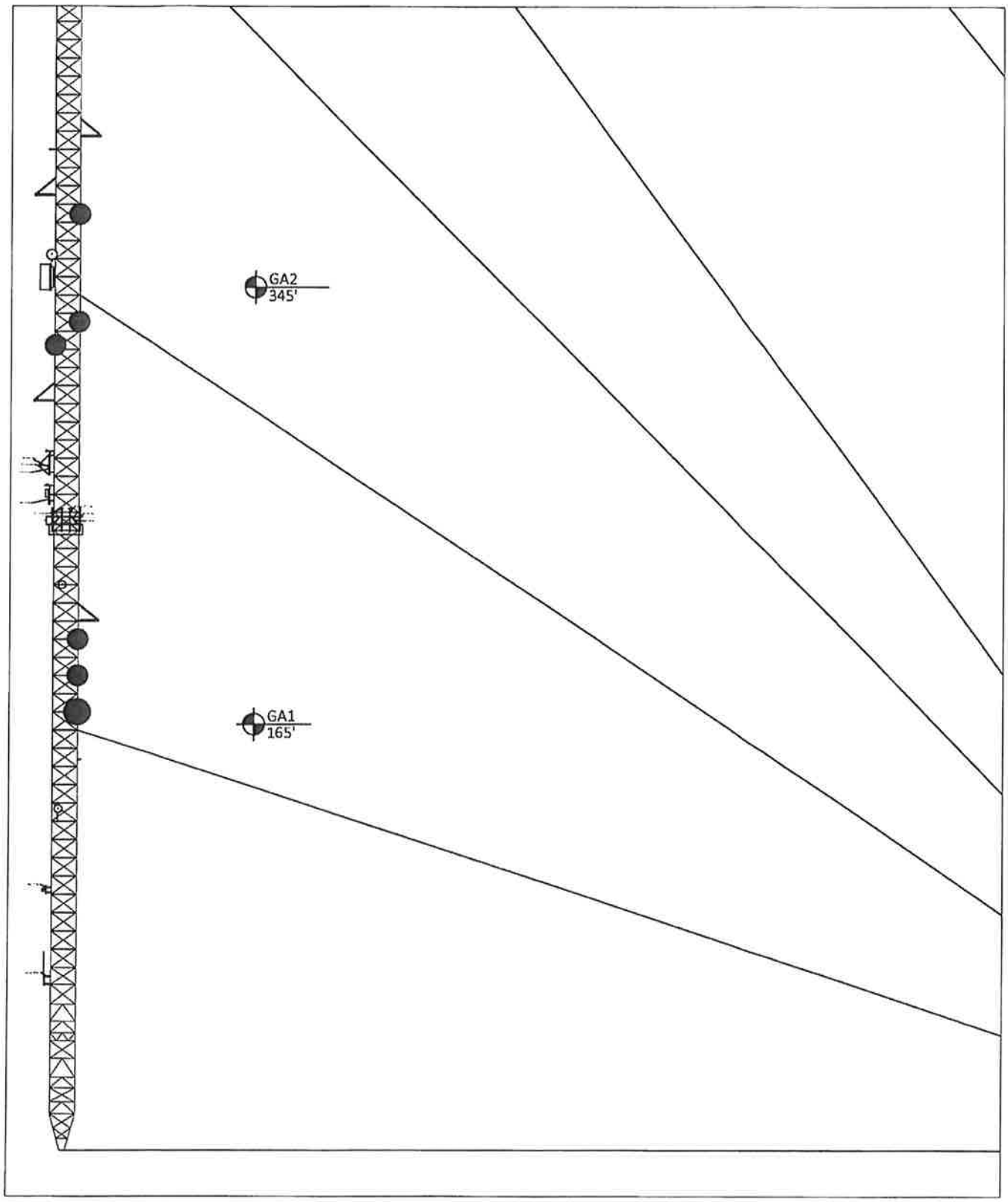
- Draw plan view of compound showing all physical features and/or dimensions.
- Show magnetic north and designate tower leg 'A' with magnetic azimuth.

COMPOUND PLAN SKETCH

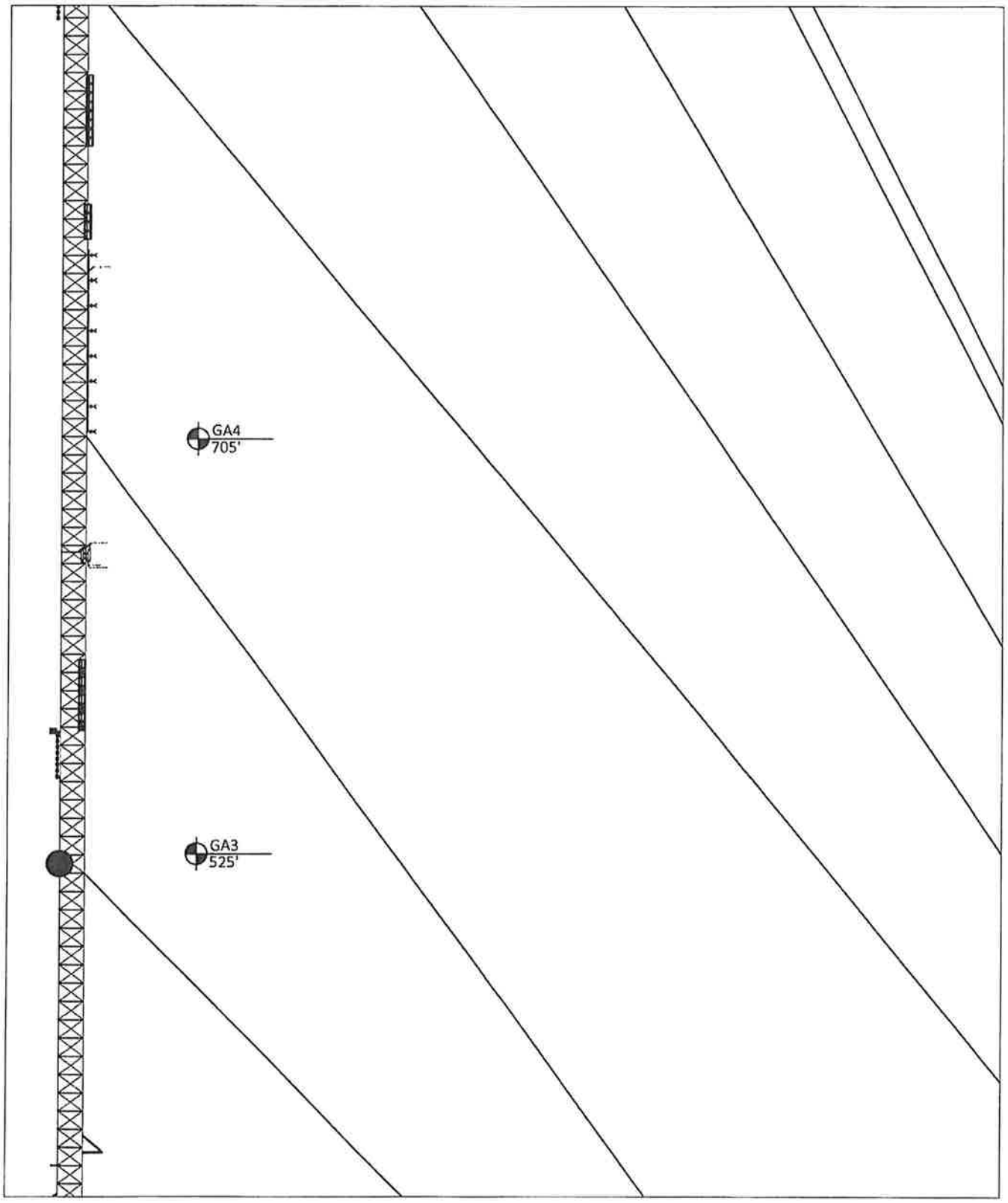




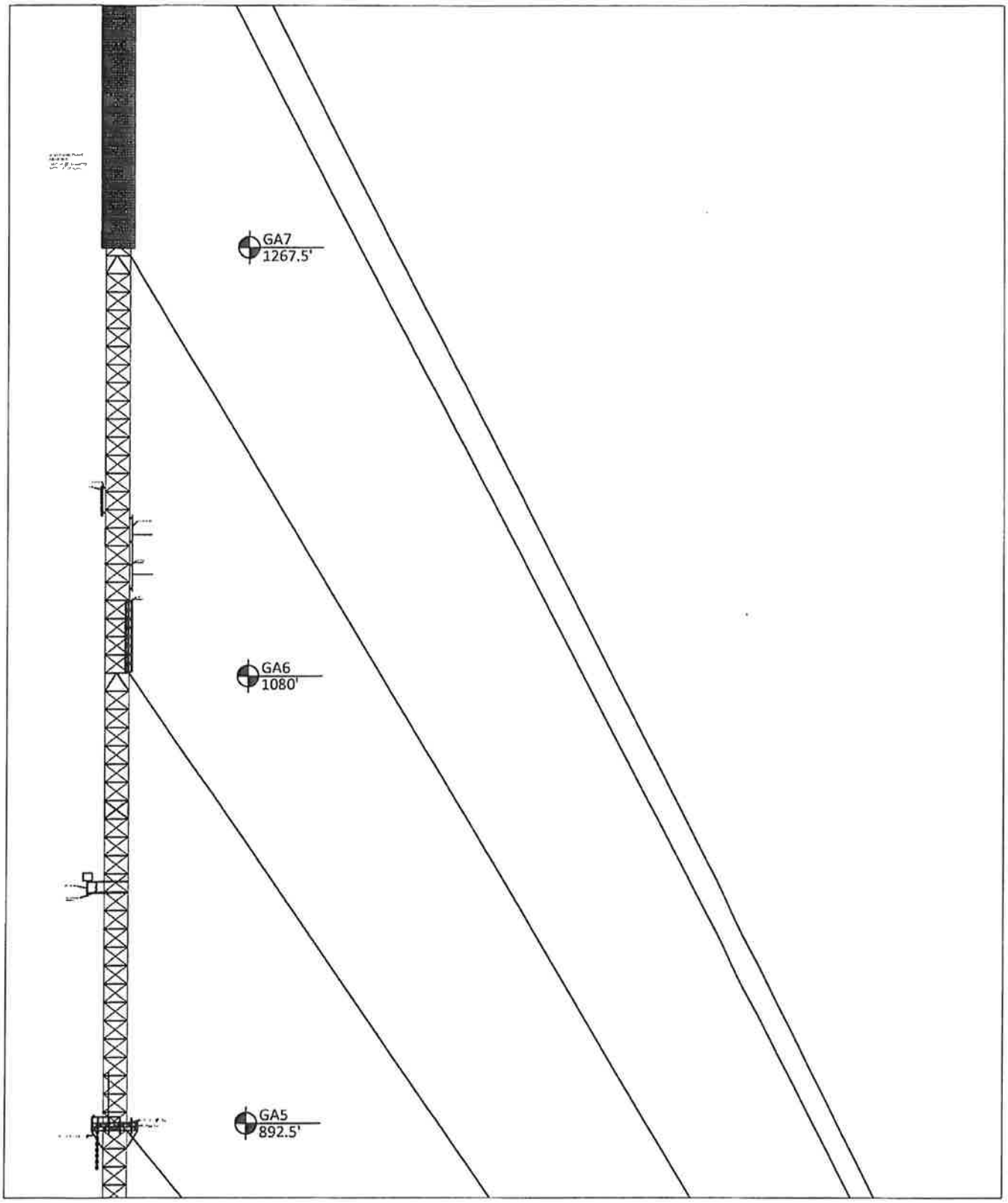
GUYED & SST TOWER PROFILE with Antenna Details



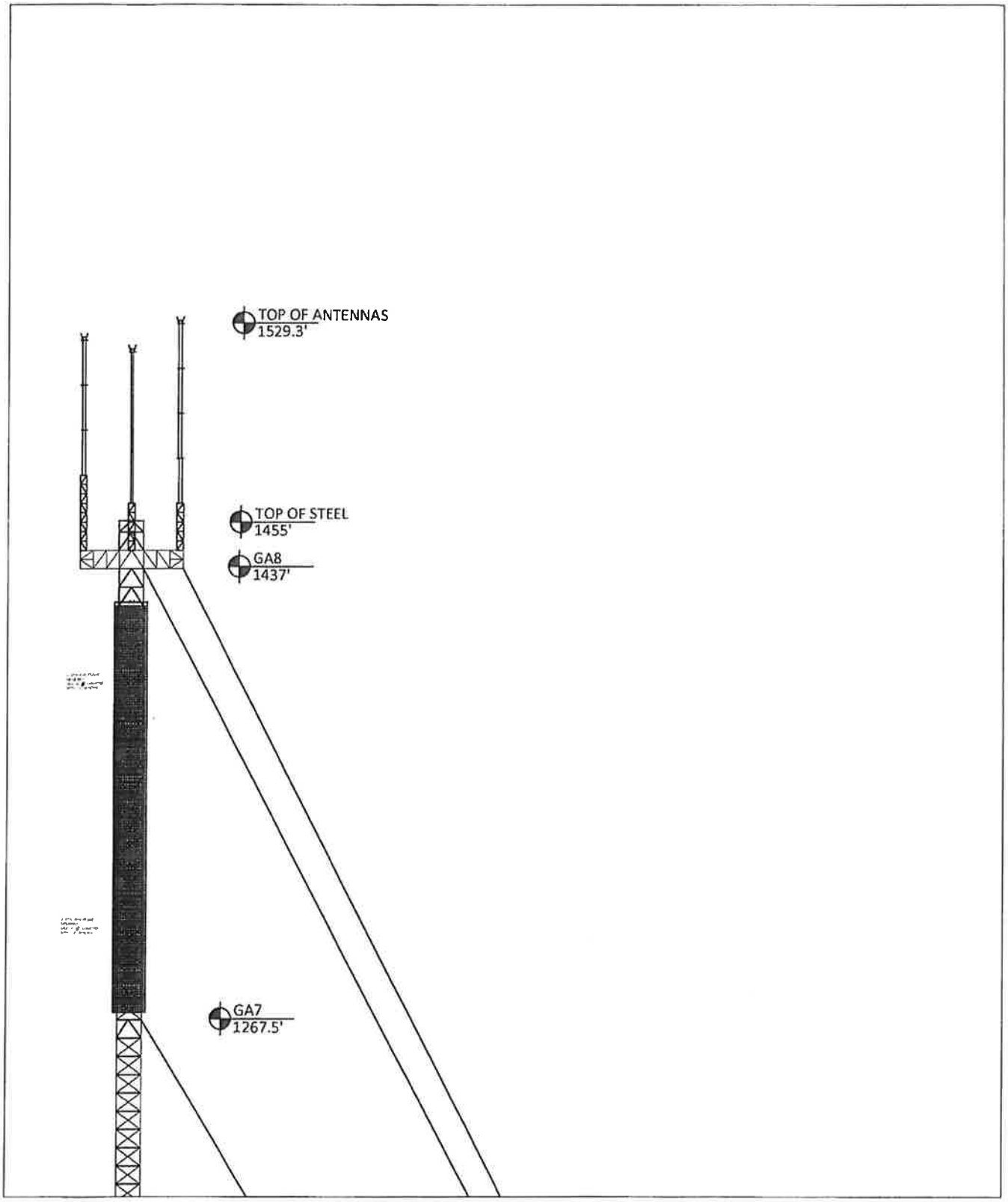
GUYED & SST TOWER PROFILE with Antenna Details



GUYED & SST TOWER PROFILE with Antenna Details



GUYED & SST TOWER PROFILE with Antenna Details



Information Notes:

- Draw a front elevation view of climbing ladder(s) and waveguide ladder(s).
- Drawings can be typical when appropriate, showing typical dimensions.
- Climbing ladder width to be measured from inside to inside of ladder rails and step to be measured from center to center of rungs.
- Identify climbing ladders and waveguide ladders on coax plan view sketch.

LADDER AND WAVEGUIDES

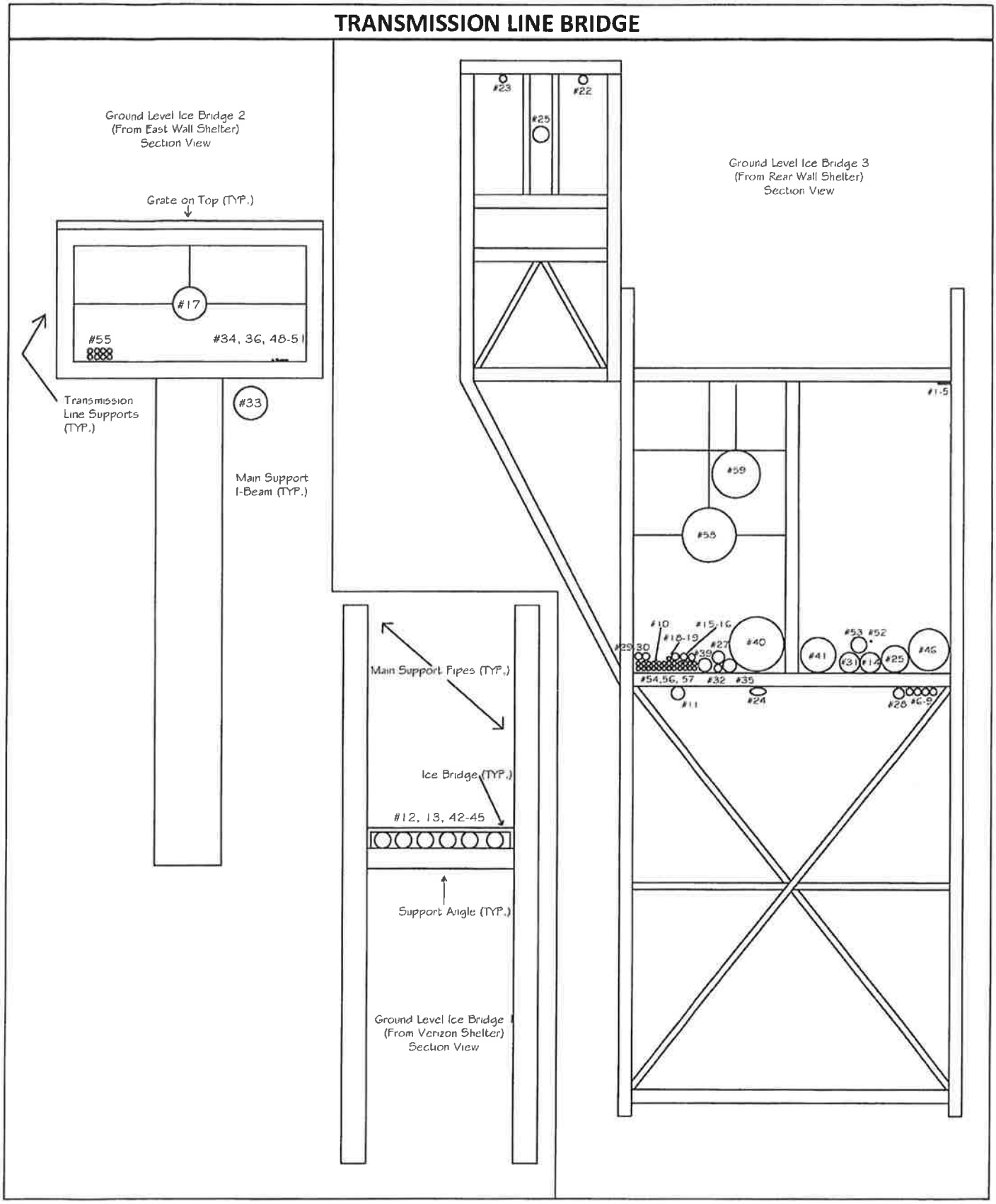
Climbing Ladder Sketch

Waveguide Ladder Sketch

Description	No.	Height Btm to Top	Width	Step	Rail Material Type & Size	Rung Material Type & Size	Safety Wire Material Type & Size
Climbing	1	45' to 1455'	16-1/2"	12"	¾" Solid Round	¾" Solid Round	None
Description	**No.**	**Height Btm to Top**	**Width**	**Step**	**Rail Material Type & Size**	**Rung Material Type & Size**	**Holes Qty, Size & Spacing**
Waveguide							
Waveguide							

Information Notes:

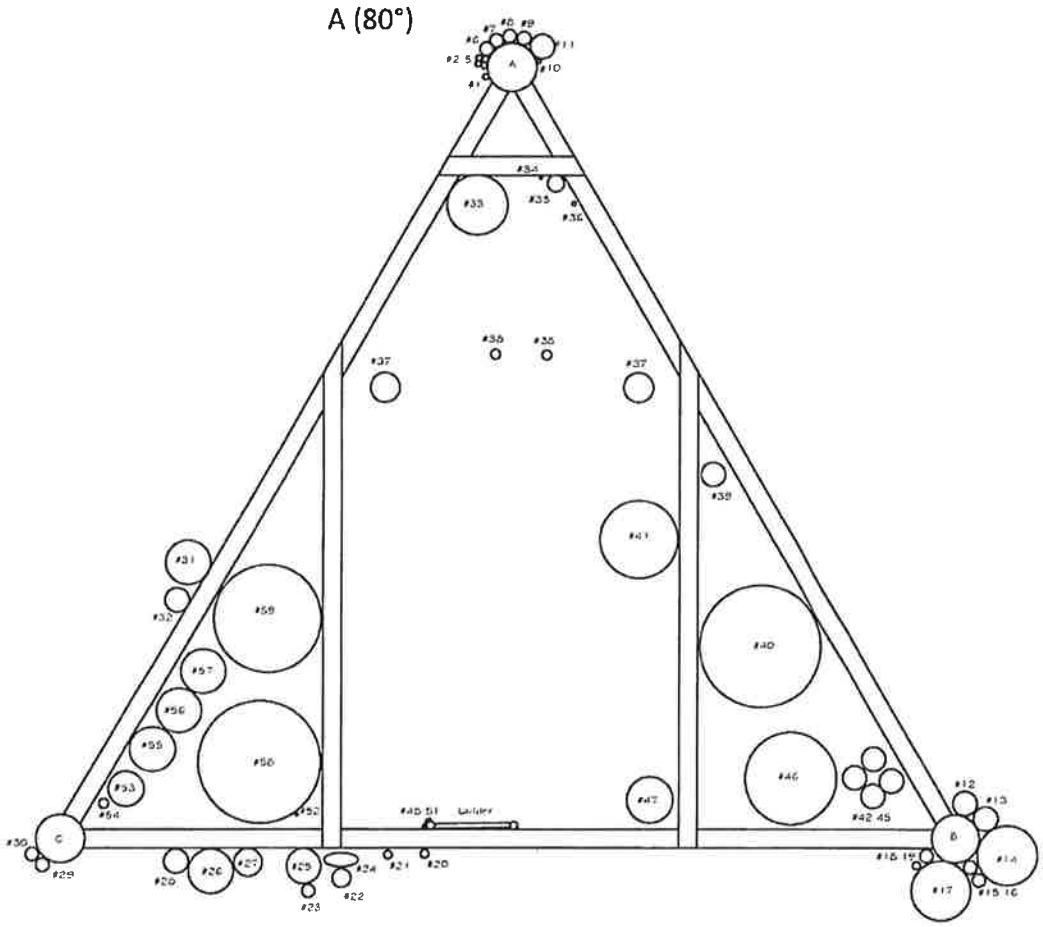
- Draw a cross-section (elevation) drawing of each transmission lin bridge(s).
- Drawings can be typical when appropriate, showing typical dimensions.



Information Notes:

- Draw a plan view of the tower showing all cables, conduits, coax, climbing ladders, waveguide ladders, etc.
- Identify ***each*** leg with a letter, starting at the northmost leg as 'A' and going clockwise. Correctly orient North arrow.
- Beginning with coax on "A' leg, number all coax clockwise.

TRANSMISSION CABLES INFORMATION

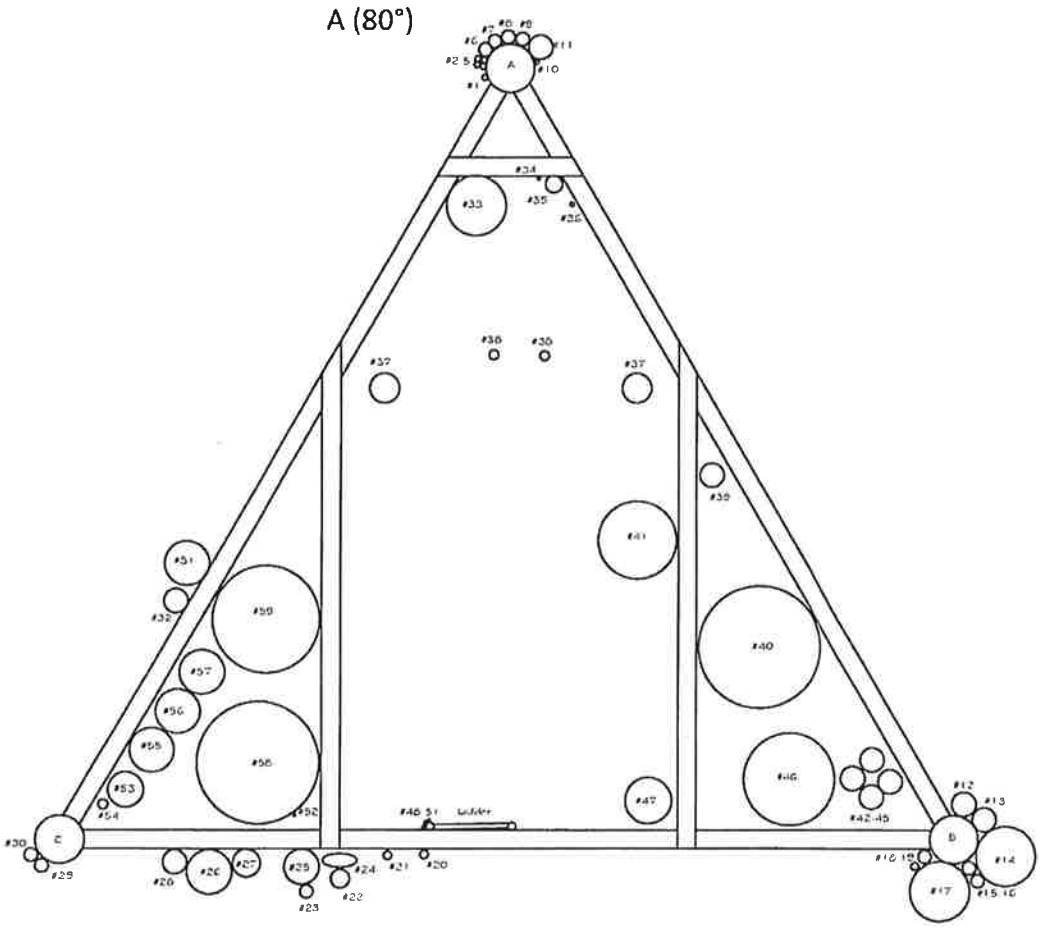


Coax No.	Type	Size	Height	Antenna No.	Carrier	Notes
1	Smooth	3/8"	107'	39	Rear Wall Shelter #1 Suite J	
2	Smooth	3/8"	262'	30	Rear Wall Shelter #1 Suite J	
3	Smooth	3/8"	262'	30	Rear Wall Shelter #1 Suite I	
4	Smooth	3/8"	262'	30	Rear Wall Shelter #1 Suite I	
5	Smooth	3/8"	262'	30	Rear Wall Shelter #1 Suite I	
6	TX	7/8"	405'	22	Rear Wall Shelter #1 Suite B	Enters in Suite B but may transfer to another Suite
7	TX	7/8"	170'	36	Rear Wall Shelter #1 Suite B	Enters in Suite B but may transfer to another Suite
8	TX	7/8"	326'	28	Rear Wall Shelter #1 Suite B	Enters in Suite B but may transfer to another Suite
9	TX	7/8"	65'	40	Rear Wall Shelter #1 Suite B	Enters in Suite B but may transfer to another Suite
10	Smooth	1/4"	DNR	N/A	N/A	Assumed to be dead along tower
					Rear Wall Shelter	

Information Notes:

- Draw a plan view of the tower showing all cables, conduits, coax, climbing ladders, waveguide ladders, etc.
- Identify ***each*** leg with a letter, starting at the northmost leg as 'A' and going clockwise. Correctly orient North arrow.
- Beginning with coax on "A' leg, number all coax clockwise.

TRANSMISSION CABLES INFORMATION

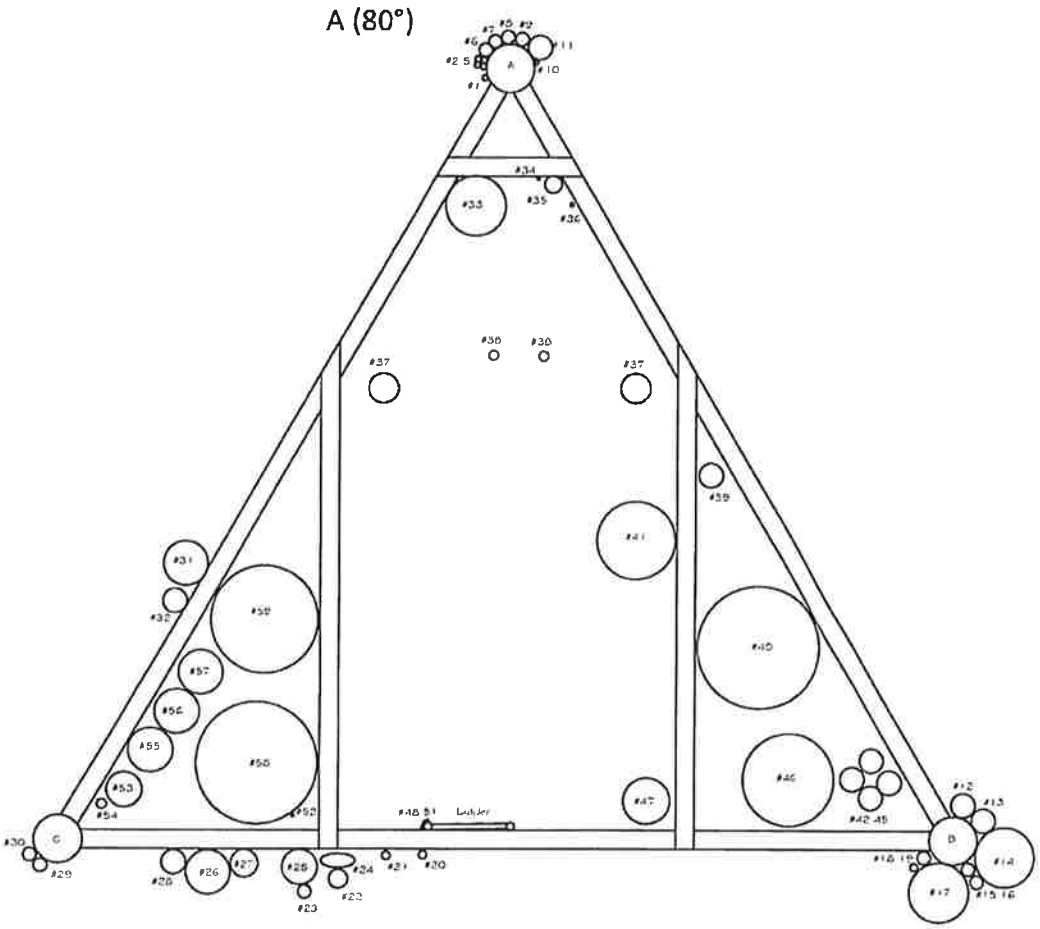


Coax No.	Type	Size	Height	Antenna No.	Carrier	Notes
12	TX	1-5/8"	252'	31	Verizon	
13	TX	1-5/8"	252'	31	Verizon	
14	TX	4"	1095'	8	Rear Wall Shelter #1 Suite A	
15	TX	7/8"	528'	20	Rear Wall Shelter #1 Suite I	
16	TX	7/8"	577.5'	18 / 19	Rear Wall Shelter #1 Suite D	
17	TX	4"	840'	13	East Wall Shelter	
18	TX	1/2"	153'	37	Rear Wall Shelter #1 Suite D	
19	TX	7/8"	378'	24	Rear Wall Shelter #1 Suite D	
20	Cable	9/16"	1455'	N/A	ATC	Elevator Cable
21	Cable	9/16"	1455'	N/A	ATC	Elevator Cable
22	TX	1-1/4"	995'	9	Rear Wall Shelter #1 Suite M	

Information Notes:

- Draw a plan view of the tower showing all cables, conduits, coax, climbing ladders, waveguide ladders, etc.
- Identify ***each*** leg with a letter, starting at the northmost leg as 'A' and going clockwise. Correctly orient North arrow.
- Beginning with coax on "A' leg, number all coax clockwise.

TRANSMISSION CABLES INFORMATION

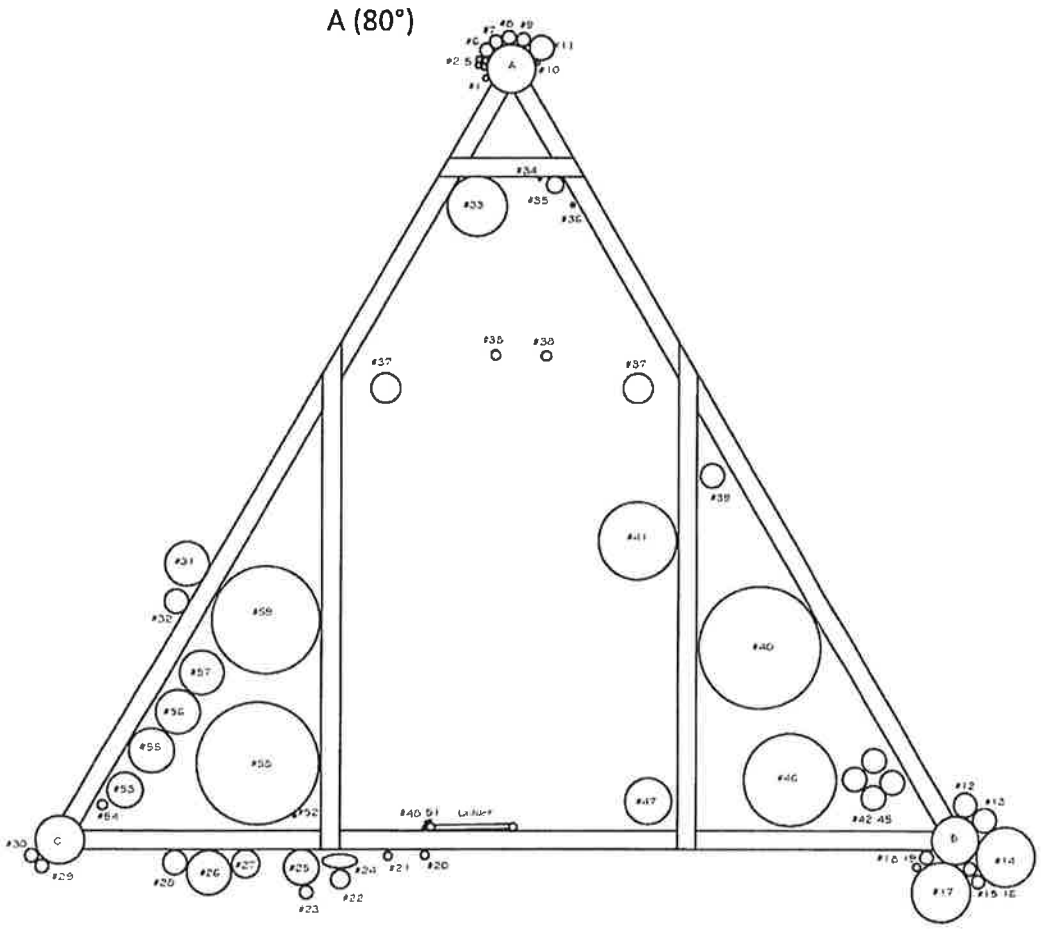


Coax No.	Type	Size	Height	Antenna No.	Carrier	Notes
23	Smooth	7/8"	995'	9	Rear Wall Shelter #1 Suite M	
24	EW	EW 63	352.5'	26	Rear Wall Shelter #1 Suite B	
25	MC	2-3/8"	892.5	10 / 11 / 12	Rear Wall Shelter #1 Suite M or N	
26	TX	3"	793'	14	Rear Wall Shelter #1 Suite A	
27	MC	1-7/8"	892.5'	10 / 11 / 12	ATC	Power
28	TX	1-5/8"	333'	27	Rear Wall Shelter #1 Suite B	
29	TX	7/8"	203'	34	Rear Wall Shelter #1 Suite K	
30	TX	7/8"	187.5'	35	Rear Wall Shelter #1 Suite K	
31	TX	3"	606'	17	Rear Wall Shelter #1 Suite B	
32	MC	1.66"	610'	N/A	ATC	Lighting
33	Copper	4"	1175'	6	East Wall Shelter	
34	Smooth	3/16"	DNR	Unknown	East Wall Shelter	Assumed to be dead along tower

Information Notes:

- Draw a plan view of the tower showing all cables, conduits, coax, climbing ladders, waveguide ladders, etc.
- Identify ***each*** leg with a letter, starting at the northmost leg as 'A' and going clockwise. Correctly orient North arrow.
- Beginning with coax on "A' leg, number all coax clockwise.

TRANSMISSION CABLES INFORMATION

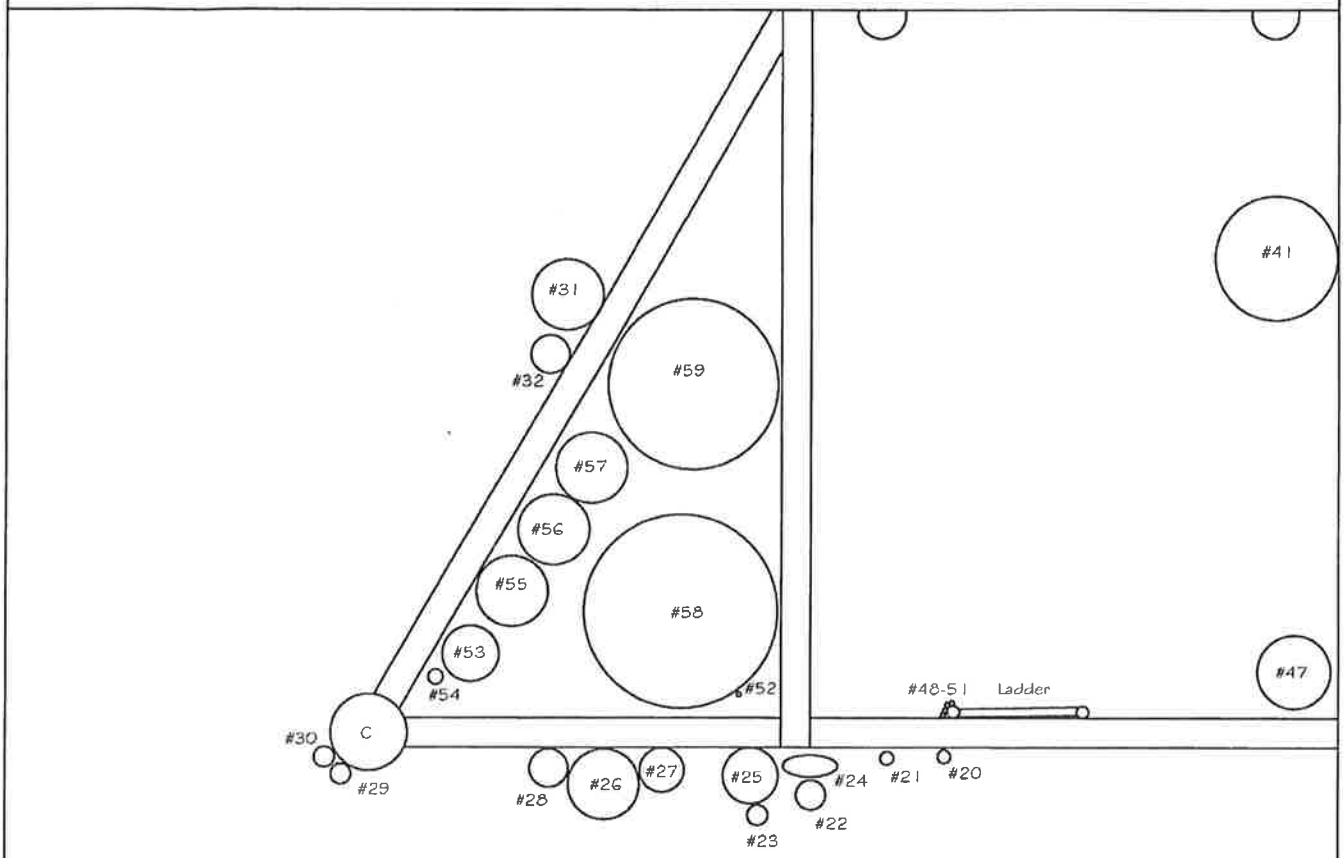


Coax No.	Type	Size	Height	Antenna No.	Carrier	Notes
35	MC	1-1/8"	1455'	N/A	ATC	Lighting
36	Smooth	1/4"	1455'	N/A	East Wall Shelter	Elevator Line
37	Rail	2"	1455'	N/A	ATC	Elevator Guides
38	Cable	5/8"	1455'	N/A	ATC	Elevator Cables
39	MC	1.66"	1443'	N/A	Rear Wall Shelter #1 Suite D	
40	Copper	8-3/16"	1465'	2	Rear Wall Shelter #1 Suite B	
41	Copper	5-1/4"	1303'	5	Rear Wall Shelter #1 Suite G	
42	TX	1-5/8"	252'	32	Verizon	
43	TX	1-5/8"	252'	32	Verizon	
44	TX	1-5/8"	252'	32	Verizon	
45	TX	1-5/8"	252'	32	Verizon	
46	Copper	6-1/4"	1380'	4	Rear Wall Shelter #1 Suite A	
47	Copper	3-1/8"	745'	15	N/A	Dead
48	Smooth	3/16"	131'	38	East Wall Shelter	
49	Smooth	3/16"	131'	38	East Wall Shelter	

Information Notes:

- Draw a plan view of the tower showing all cables, conduits, coax, climbing ladders, waveguide ladders, etc.
- Identify *each* leg with a letter, starting at the northmost leg as 'A' and going clockwise. Correctly orient North arrow.
- Beginning with coax on "A' leg, number all coax clockwise.

TRANSMISSION CABLES INFORMATION



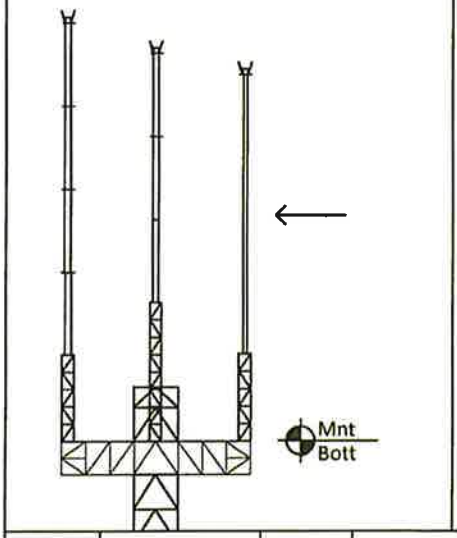
Coax No.	Type	Size	Height	Antenna No.	Carrier	Notes
50	Smooth	3/16"	224'	33	East Wall Shelter	
51	Smooth	3/16"	224'	33	East Wall Shelter	
52	Smooth	3/16"	1455'	N/A	Rear Wall Shelter #1 Suite I	Unused
53	TX	2-1/2"	1380'	4,5	Rear Wall Shelter #1 Suite I	
54	TX	5/8"	362'	25	Rear Wall Shelter #1 Suite J	
55	Smooth Bundle	(8) 5/8"	658'	16	Pad at Base of Tower	
56	Smooth Bundle	(8) 5/8"	658'	16	Pad at Base of Tower	
57	Smooth Bundle	(8) 5/8"	658'	16	Pad at Base of Tower	
58	Copper	8-1/4"	1485'	3	Rear Wall Shelter #1 Suite J	
59	Copper	7-1/4"	1465'	1	Rear Wall Shelter #1 Suite G	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

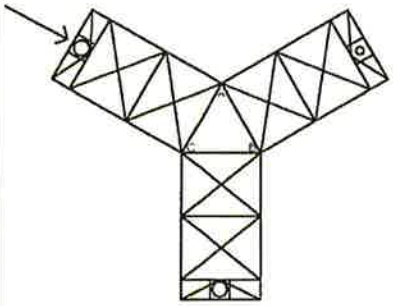
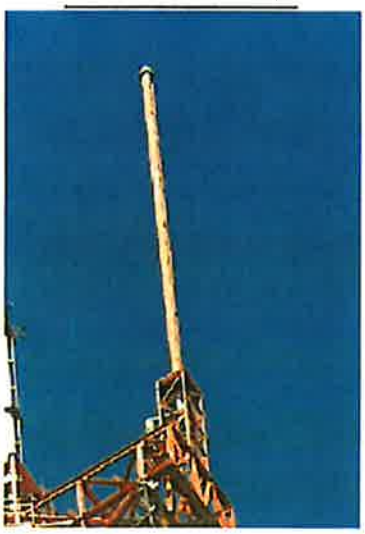


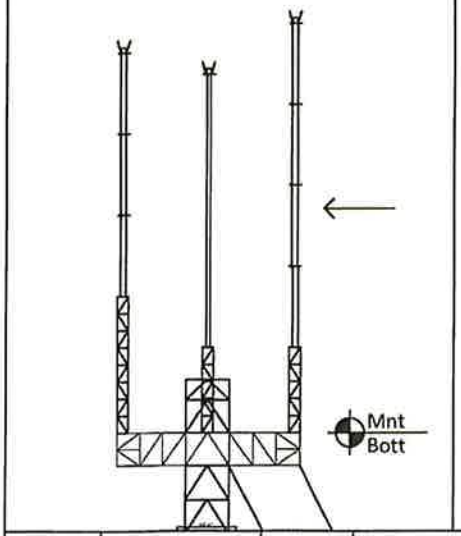
Photo of Antenna



No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax#	Carrier
1	1443' Mount Base	CA	Tower off Candelabra	20	7-1/4" Copper	59	Rear .Wall Shelter #1 Suite G

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	CNR, Approximate: 8" x 60'	

Front or Side Elevation



Plan View

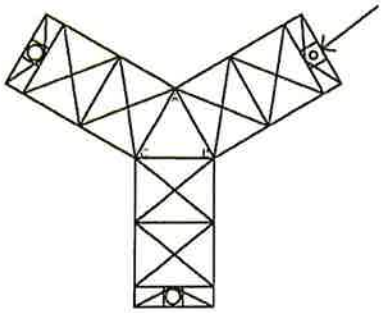


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax#	Carrier
2	1443' Mount Base	AB	Tower off Candelabra	140	8-3/16" Copper	40	Rear Wall Shelter #1 Suite B

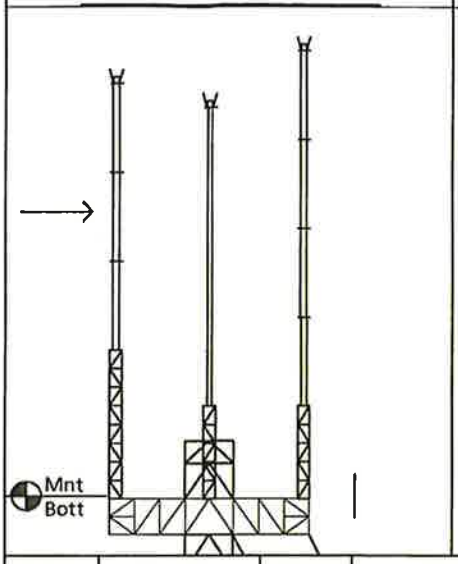
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	CNR, Approximate: 15" x 80'	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

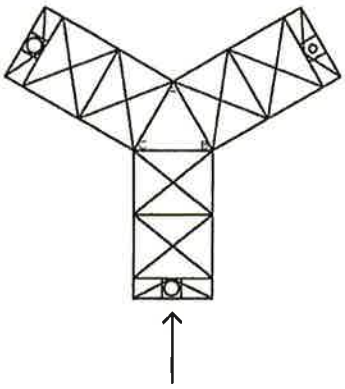
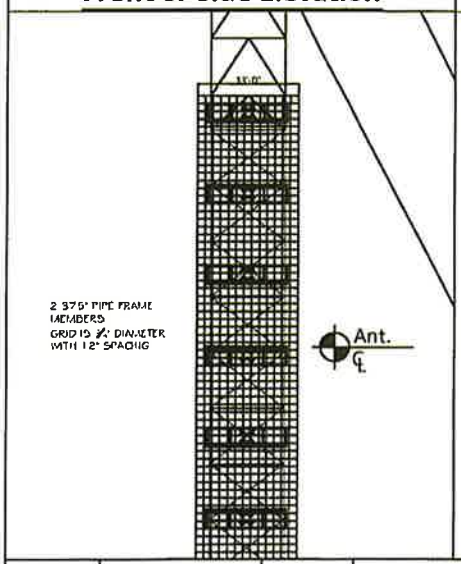


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
3	1443' Mount Base	BC	Tower off Candelabra	260	8-1/4" Copper	58	Rear Wall Shelter #1 Suite J

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	CNR, Approximate: 15" x 60'	

Front or Side Elevation



Plan View

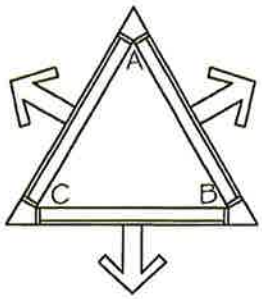
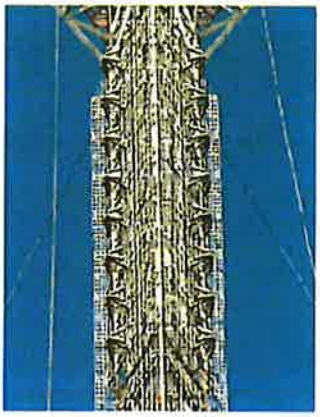


Photo of Antenna



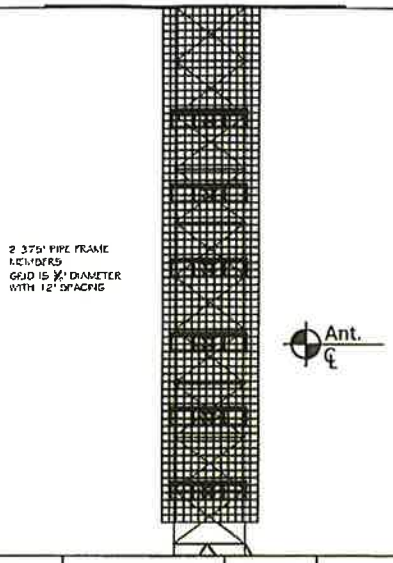
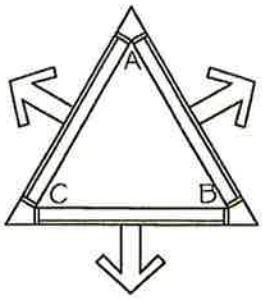
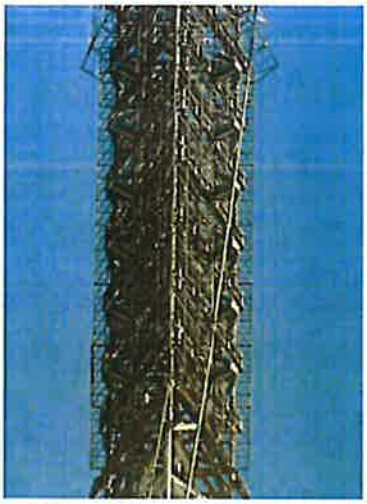
No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
4	1380' Center	All (3) Faces	Each bay has a 2' x 2' x 13' Wide frame	20 / 140 / 260	6-1/4" Copper, 2-1/2" TX	46, 53	Rear Wall Shelter #1 Suite A

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(8) Bay FM with 6" Dia.x 24" Elements @ Approx. 10' Spacing	

Information Notes:

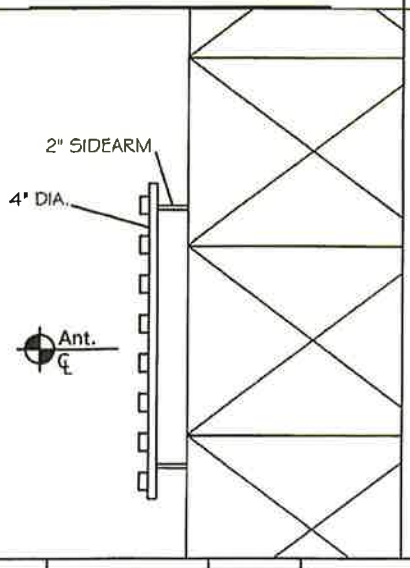
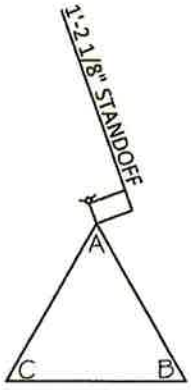
- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation	Plan View	Photo of Antenna
		

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
5	1303' Center	All (3) Faces	Each bay has a 2' x 2' x 13' Wide frame	20 / 140 / 260	(1) 5-1/4" Copper (1) 2-1/2" TX	41, 53	Rear Wall Shelter #1 Suite G

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(6) Bay FM with 6" Dia.x 24" Elements @ Approx. 10' Spacing	

Front or Side Elevation	Plan View	Photo of Antenna
		

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
6	1156' Center	A	(2) Sidearms	60	4" Copper	33	East Wall Shelter

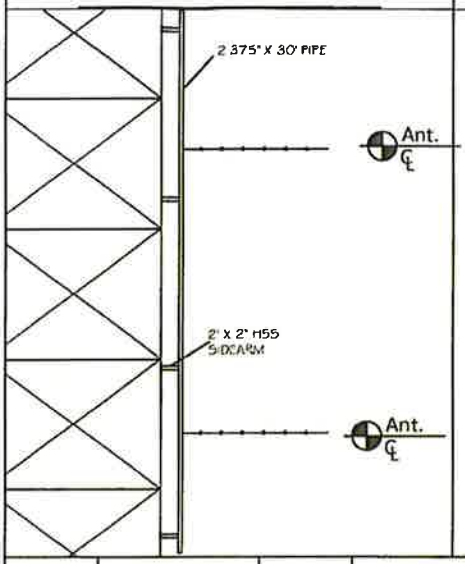
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	4" Dia. x 12' with (16) Fins	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

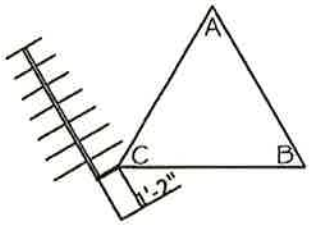
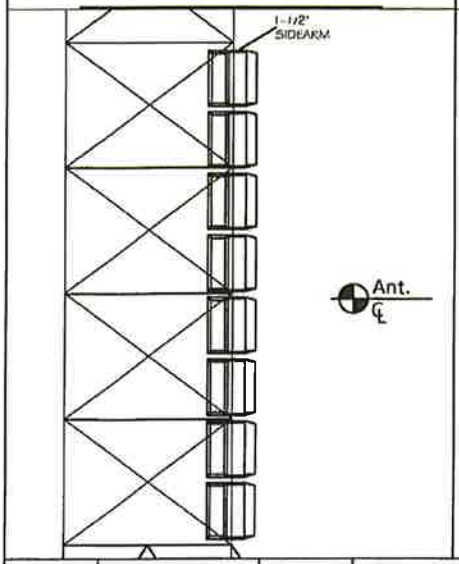


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
7	1132.5' & 1145' Center	C	2.375" X 30' Pipe	50	1-5/8"	11	Rear Wall Shelter #1 Suite I

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
KATHREIN	CL-46/HRM/50N	6' (6) Element	

Front or Side Elevation



Plan View

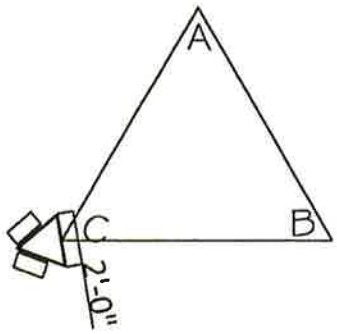


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
8	1095' Center	C	Triangular Sidearm	30 / 230	4"	14	Rear Wall Shelter #1 Suite A

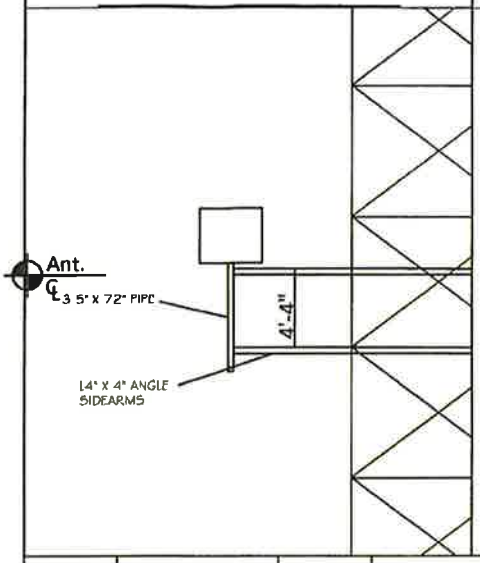
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Rymsa	AT-1S-250/5132	(8) Sets of (2) Panels, 38-1/2"	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

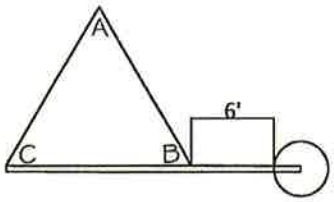
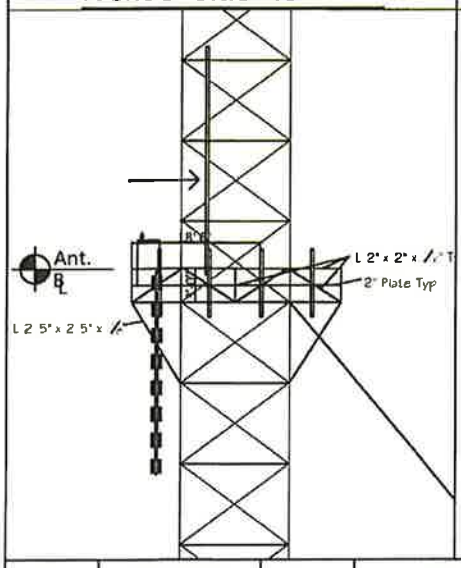


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax#	Carrier
9	995' Center	B	Sidearm	170	(1) 1-1/4" TX (1) 7/8" OD	22, 23	Rear Wall Shelter #1 Suite M

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Superquad	Unk	36" Dia. x 41"	

Front or Side Elevation



Plan View

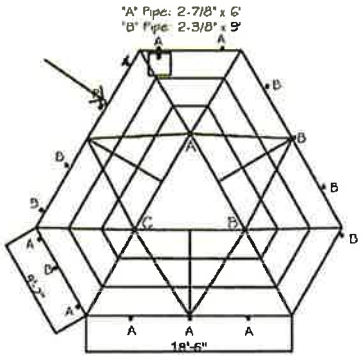


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax#	Carrier
10	895.5' Base	CA	Platform	20	1-7/8" / 2-3/8"	25, 27	Rear Wall Shelter #1 Suite M

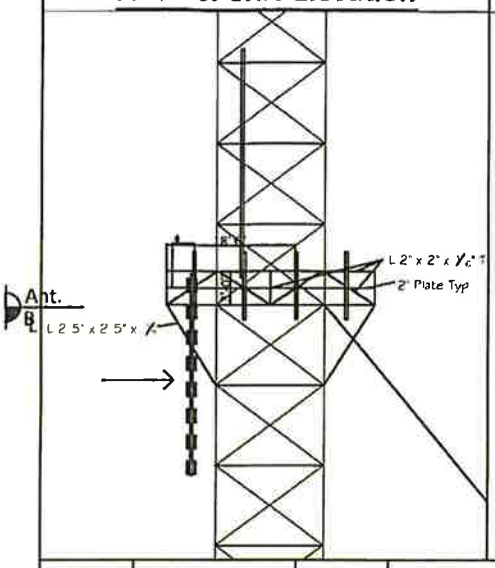
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Telewave, Inc.	ANT150F6-L	2" x 20'	See #12

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

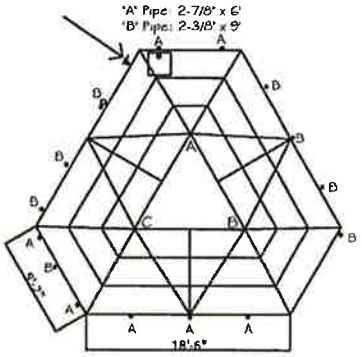
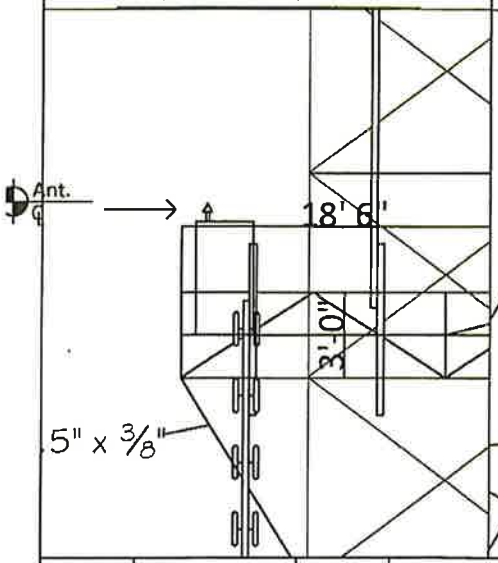


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
11	892.5' Base	CA	Platform	40	1-7/8" / 2-3/8"	25, 27	Rear Wall Shelter #1 Suite M

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(16) Element x 16' Inverted Dipole	See #12

Front or Side Elevation



Plan View

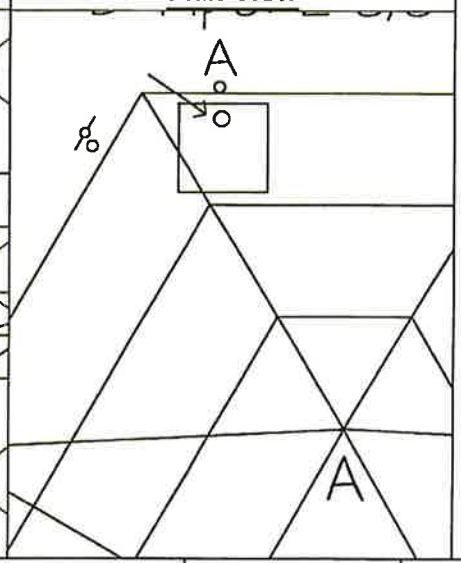


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
12	896.5' Base	A	On 4' x 2' x 2' Cabinet	80	1-7/8" / 2-3/8"	25, 27	Rear Wall Shelter #1 Suite M

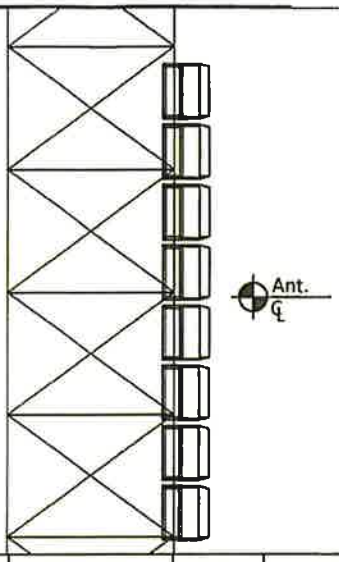
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	3" GPS	Additional Cabinets 24"x 15" x 22" Face AB on platform 34" x 12" x 4" Face AB on tower (2) 17" x 12" x 5" Face CA on tower 48" x 24" x 24" Face CA on plaform

Information Notes:

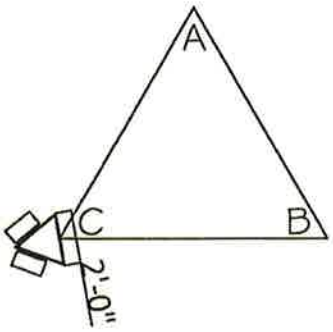
- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation

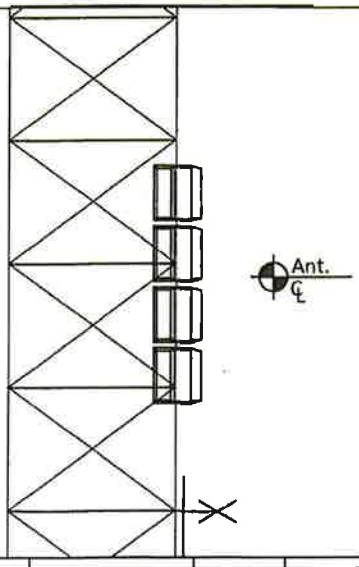


Plan View



No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
13	840' Center	C	Triangular Sidearm	30 / 230	4"	17	East Wall Shelter
Ant. Manufacturer		**Antenna Model #**		**Antenna Dimensions**		**TMA Qty/ Model or Dim.**	
Unk		Unk		(8) Sets of (2) Panels, 38-1/2" x 14" x 7" Each			

Front or Side Elevation



Plan View

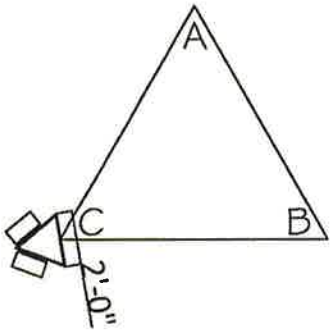


Photo of Antenna

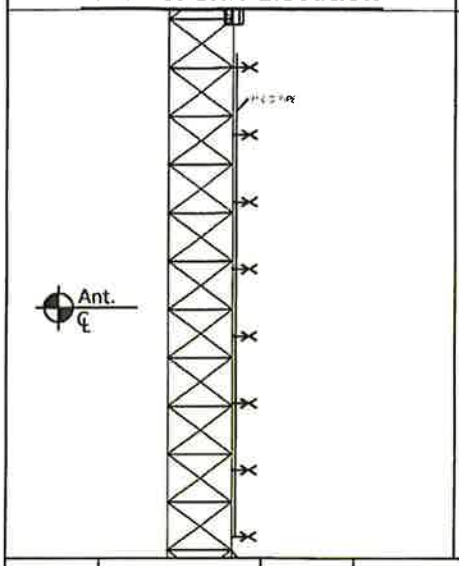
No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
14	793' Center	C	Triangular Sidearm	30 / 230	3"	26	Rear Wall Shelter #1 Suite A
Ant. Manufacturer		**Antenna Model #**		**Antenna Dimensions**		**TMA Qty/ Model or Dim.**	
Unk		Unk		(4) Sets of (2) Panels, 38-1/2"			

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

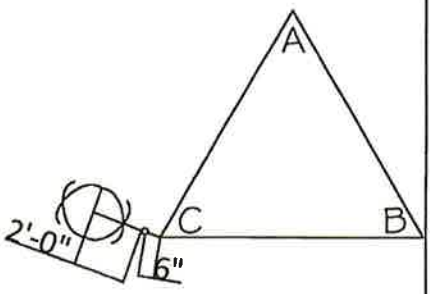
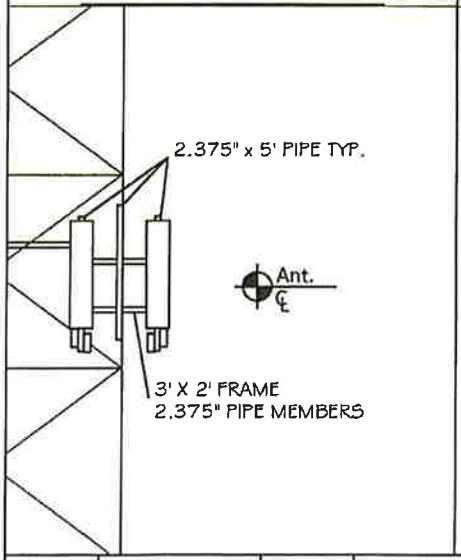


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
15	745' Center	C	3" x 32' Pipe	10	3-1/8"	47	Dead
Ant. Manufacturer		**Antenna Model #**		**Antenna Dimensions**		**TMA Qty/ Model or Dim.**	
Unk		Unk		(8) Bay FM, 10' Spacing, Approx. 24" x 30" Bays			

Front or Side Elevation



Plan View

Photo of Antenna

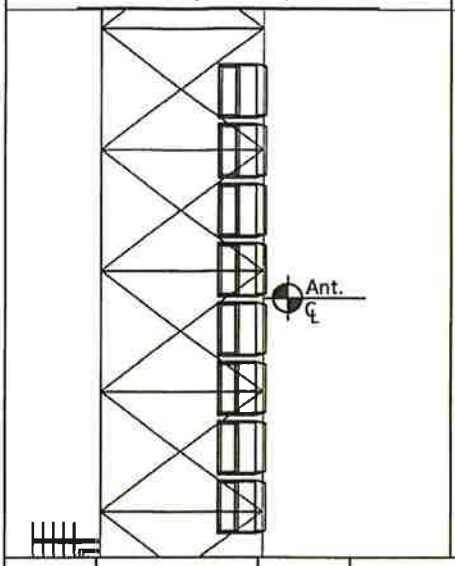
No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
16	658' Center	A/B/C	Small Face Frame	20 / 120 / 320	(24) 5/8"	55/56 /57	Pad at Base of Tower
Ant. Manufacturer		**Antenna Model #**		**Antenna Dimensions**		**TMA Qty/ Model or Dim.**	
Alvarion		AN1453-01 REV A		Approx. 4' x 10" x 3"		(4) Alvarion BMAX-B5T-AU-ODU Each (4) RET Each	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

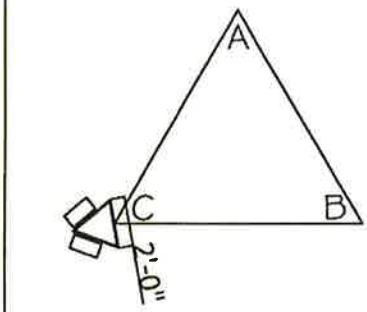
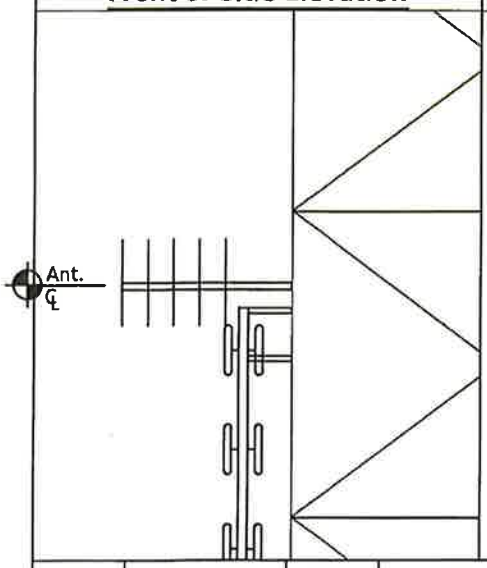


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
17	591' Center	CA	Triangular Sidearm	30 / 230	3"	31	Rear Wall Shelter #1 Suite B

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(8) Sets of (2) Panels, 38-1/2" x 14" x 7" Each	

Front or Side Elevation



Plan View

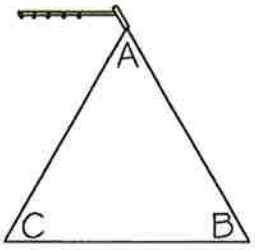


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
18	577.5' Center	A	Shared with No. 19	350	7/8" TX	16	Rear Wall Shelter #1 Suite D

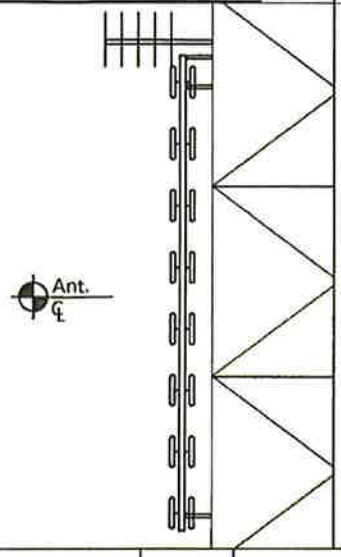
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	4' x (5) Element Yagi	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

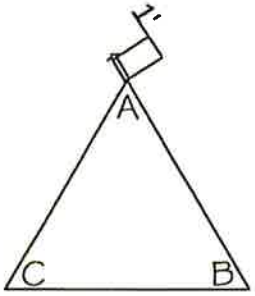
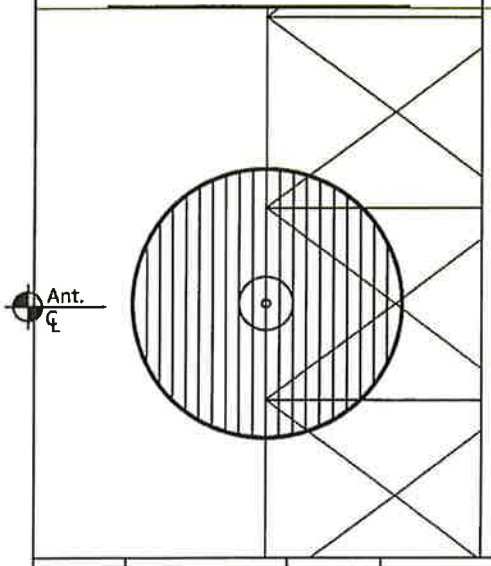


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
19	569.5' Center	CA	1-1/2" Sidearm at top and bottom	50	7/8" TX	16	Rear Wall Shelter #1 Suite D

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(8) Element x 16' Dipole	(1) 12" x 3" x 3"

Front or Side Elevation



Plan View

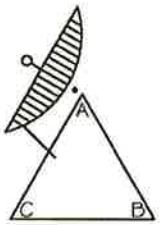


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
20	528' Center	A	2-7/8" x 4' Pipe with 2-3/8" Tieback	20	7/8" TX	15	Rear Wall Shelter #1 Suite I

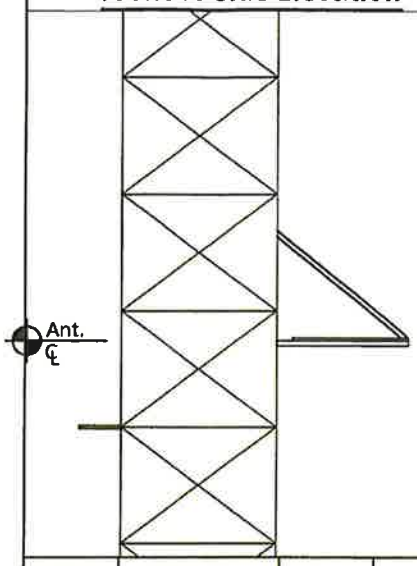
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	10' Grid Dish	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

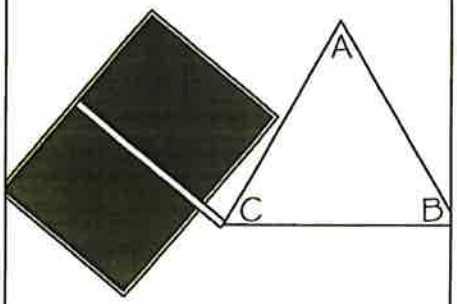
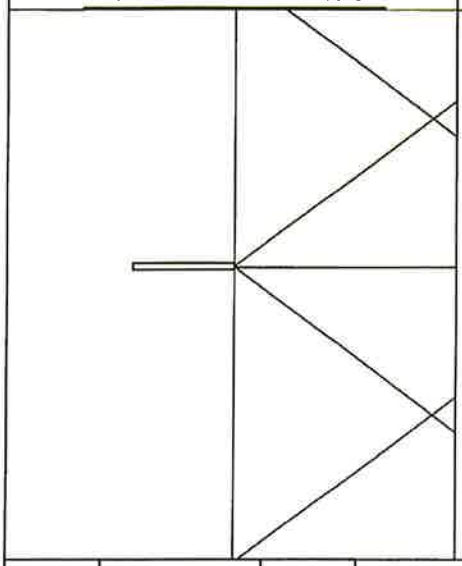


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
21	410' Center	C	Direct to Leg	0	N/A	N/A	N/A

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
N/A	N/A	Unused 10' x 7' Ice Shield for #24	

Front or Side Elevation



Plan View

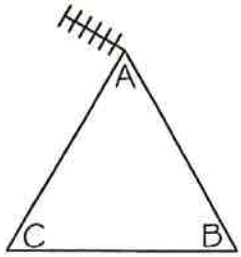


Photo of Antenna

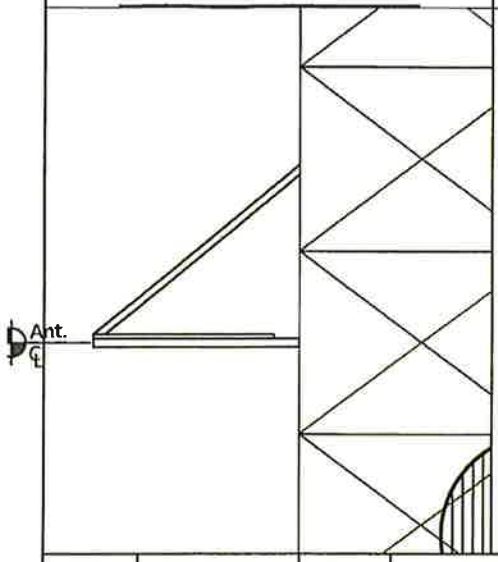
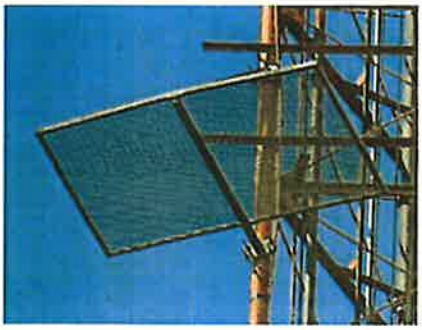
No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
22	405' Center	A	Direct to Leg	20	7/8" TX	6	Rear Wall Shelter #1 Suite B

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	30" x (6) Element Yagi	

Information Notes:

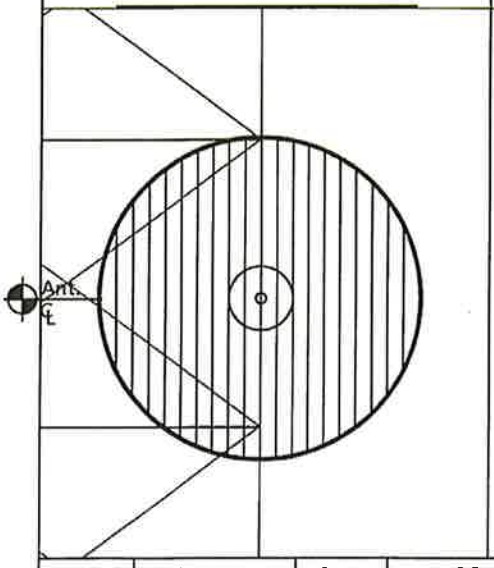
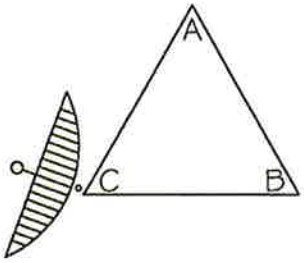
- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation	Plan View	Photo of Antenna
		

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
23	387' Center	A	Direct to Leg	40	N/A	N/A	N/A

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
N/A	N/A	Unused 6' x 5' Ice Shield for #26	

Front or Side Elevation	Plan View	Photo of Antenna
		

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
24	378' Center	C	2.875" x 4' Pipe	20	7/8" TX	19	Rear Wall Shelter #1 Suite D

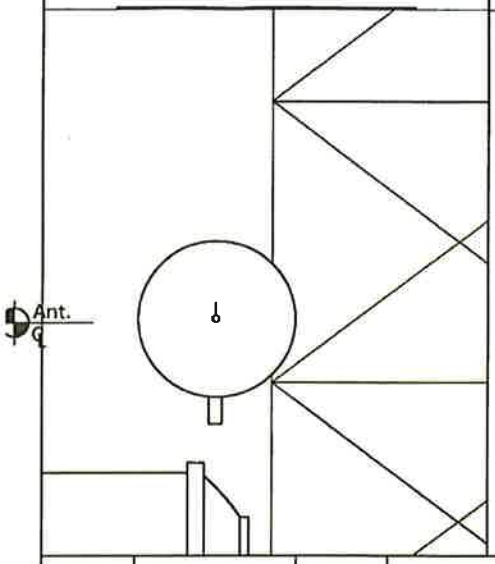
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	8' Grid Dish	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

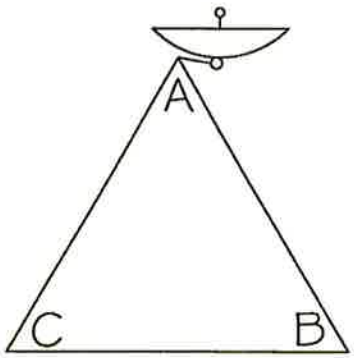
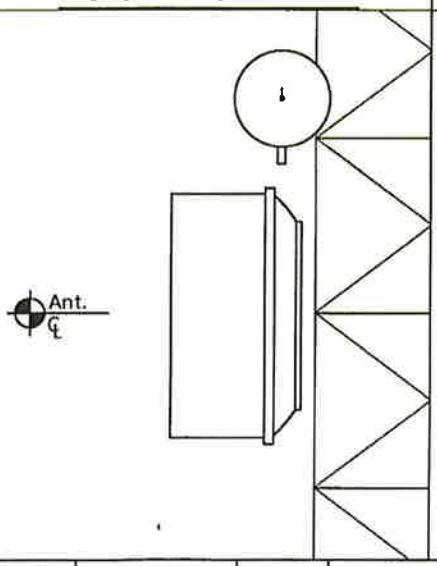


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
25	362' Center	A	4" x 4' Pipe	80	5/8" Smooth	54	Rear Wall Shelter #1 Suite J

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	4' Dish	

Front or Side Elevation



Plan View

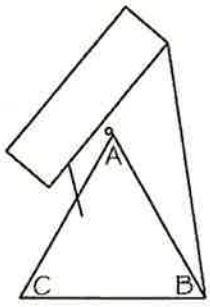


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
26	352.5' Center	A	4" x 4' Pipe w/(2) 2.375" Tiebacks	30	EW 63	24	Rear Wall Shelter #1 Suite B

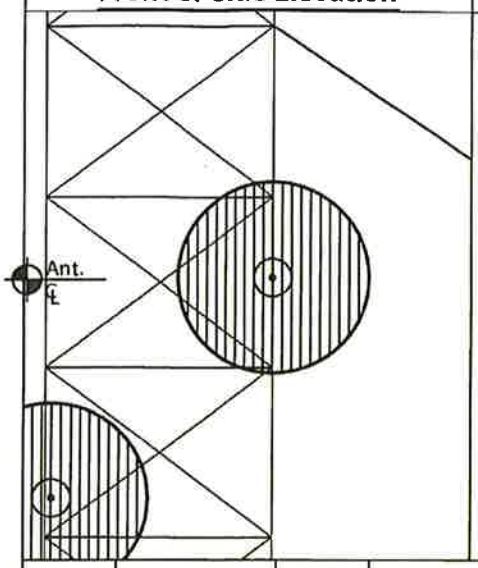
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Andrew	UHX8	8 Dish/Drum	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

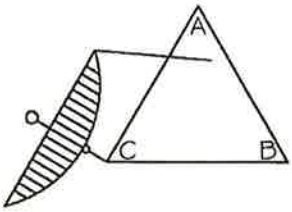
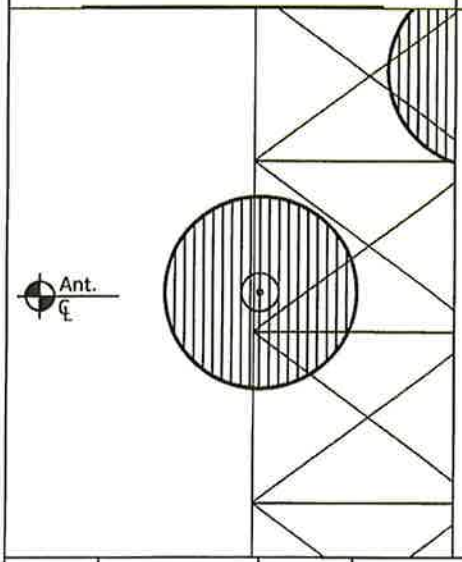


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
27	333' Center	C	4.5" x 4' Pipe with 12" Sidearm and 1.9" Tieback	20	1-5/8" TX	28	Rear Wall Shelter #1 Suite B

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	10' Grid Dish	

Front or Side Elevation



Plan View

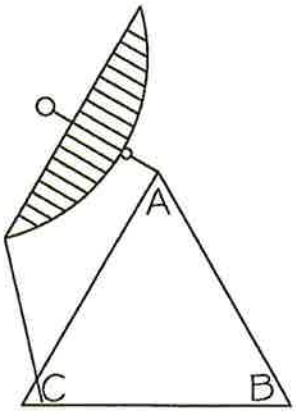


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
28	326' Center	A	4.5" x 4' Pipe with 12" Sidearm and 1.9" Tieback	20	7/8" TX	8	Rear Wall Shelter #1 Suite B

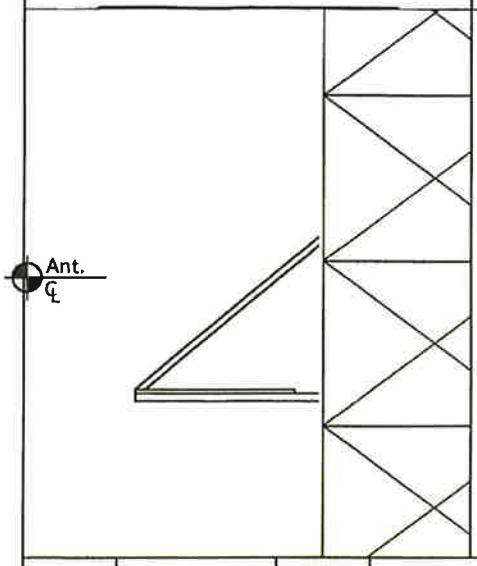
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	10' Grid Dish	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

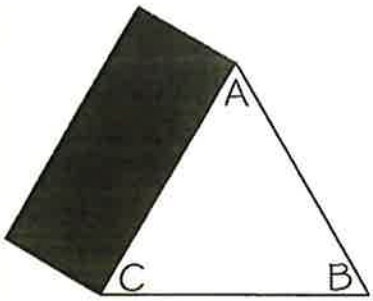
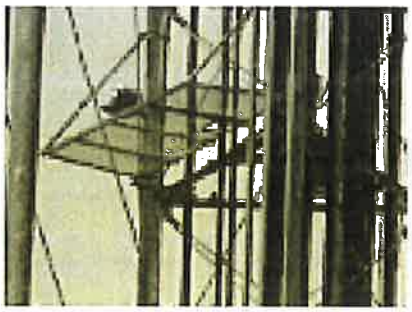


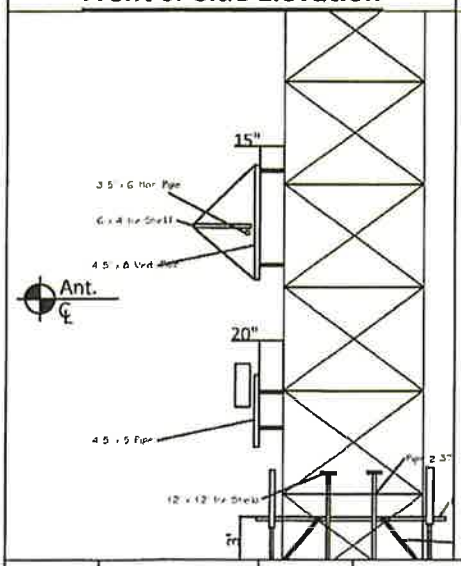
Photo of Antenna



No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
29	306 Center	CA	Direct to Tower	20	N/A	N/A	N/A

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
N/A	N/A	10' x 4' 2" Ice Shield	

Front or Side Elevation



Plan View

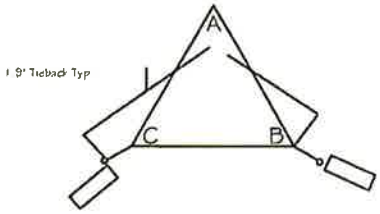


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
30	262' Center	B / C	4.5" x 5' Pipe with 20" Sidearm and 1.9" Tieback	110 / 210	3/8" Smooth	2-5	Rear Wall Shelter #1 Suite I

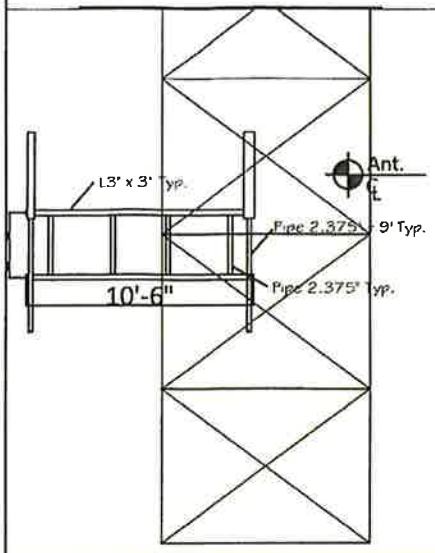
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	SBX2-107CNEC	(2) 3' Dishes with 6' x 4' Ice Shields at 267'	(1) Small ODU each

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

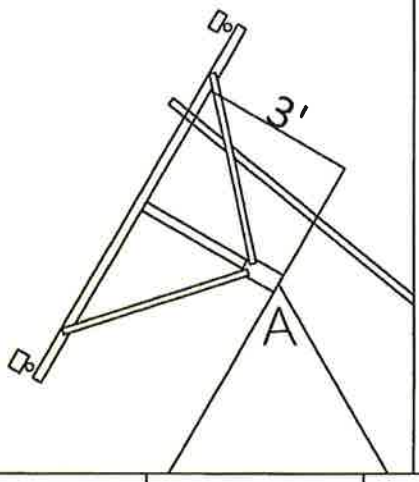
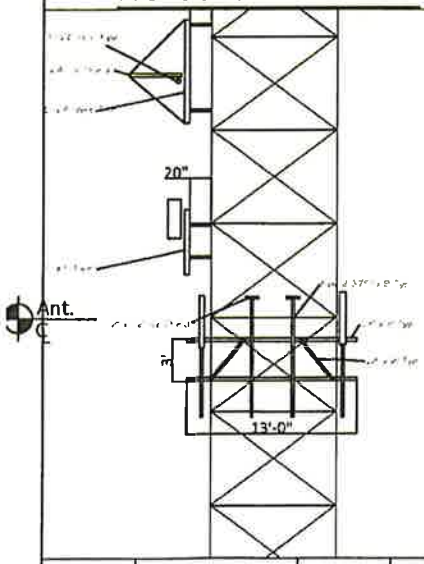


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
31	252' Center	A	10' 6" x 3' Sector Frame	20	(2) 1-5/8" TX	12/13	Verizon

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
(1) CSS (1) Jaybeam	(1) X7C-665-6-I-B (1) PCSX065-18-2	See Make/Model	(1) Total - Powerwave LGP 18601

Front or Side Elevation



Plan View

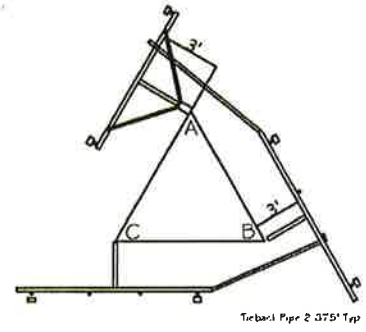


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
32	252' Center	B / C	13' x 3' Sector Frame	140 / 260	(4) 1-5/8" TX	42-45	Verizon

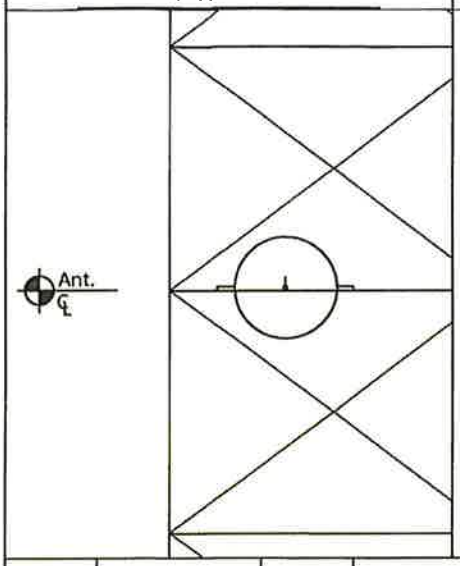
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
(2) CSS (2) Jaybeam	(2) X7C-665-6-I-B (2) PCSX065-18-2	See Make/Model	(2) Total - Powerwave LGP 18601

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

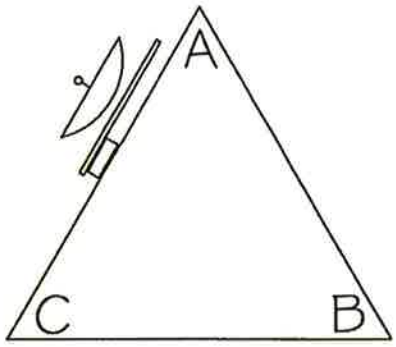
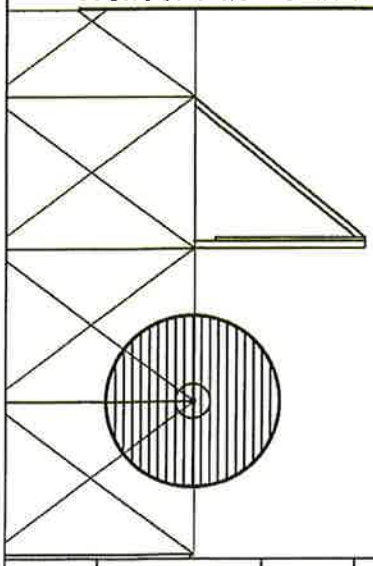


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
33	224' Center	CA	1.5" x 4' Horizontal Pipe	20	3/16" Smooth	50/51	East Wall Shelter

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	3' Dish	(1) 12" x 8" x 4"

Front or Side Elevation



Plan View

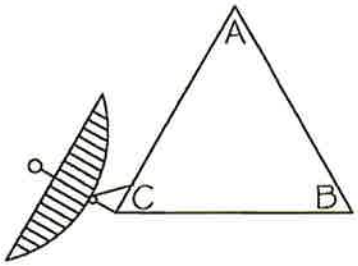
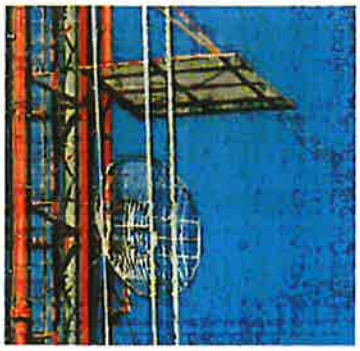


Photo of Antenna



No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
34	203' Center	C	4.5" x 6' Pipe with 1.9" Tieback	20	7/8" TX	29	Rear Wall Shelter #1 Suite K

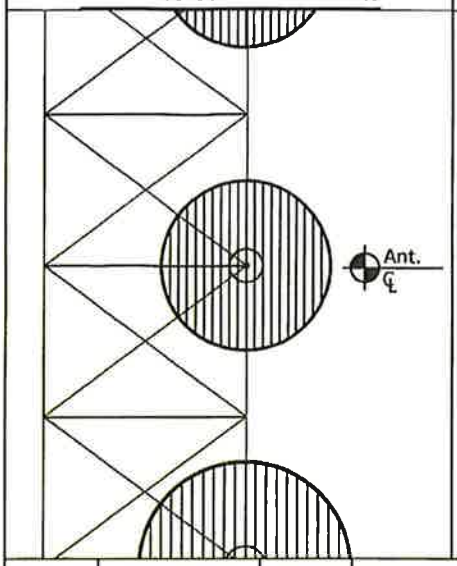
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	8' Grid Dish with 12' x 9' Ice Shield at 212.5'	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

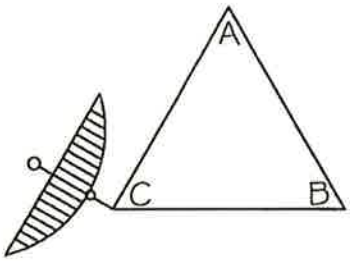
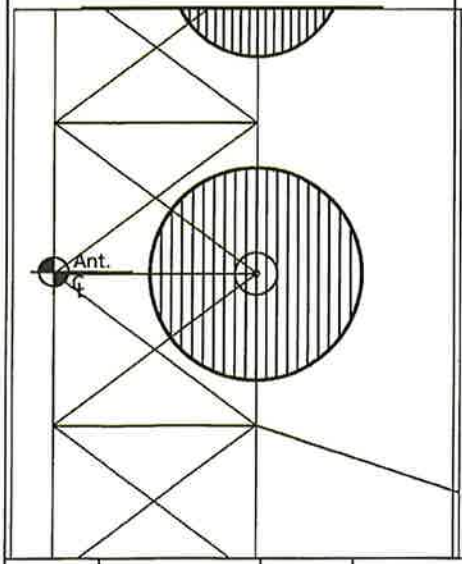


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
35	187.5' Center	C	4.5" x 4' Pipe	20	7/8" TX	30	Rear Wall Shelter #1 Suite K

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	8' Grid Dish	

Front or Side Elevation



Plan View

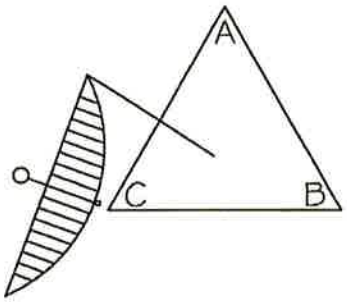


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
36	170' Center	C	2.375" x 4' Pipe	30	7/8" TX	7	Rear Wall Shelter #1 Suite B

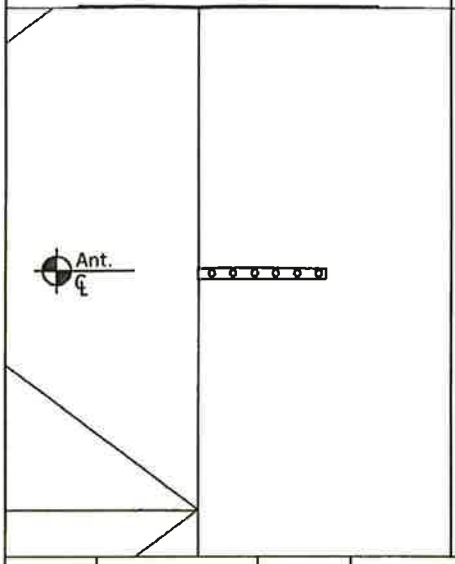
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	10' Grid Dish	

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

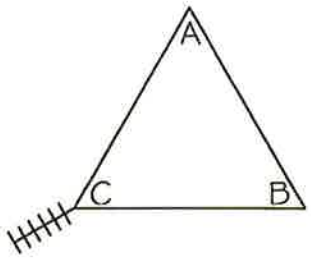
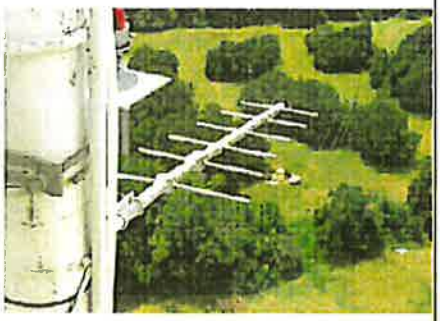


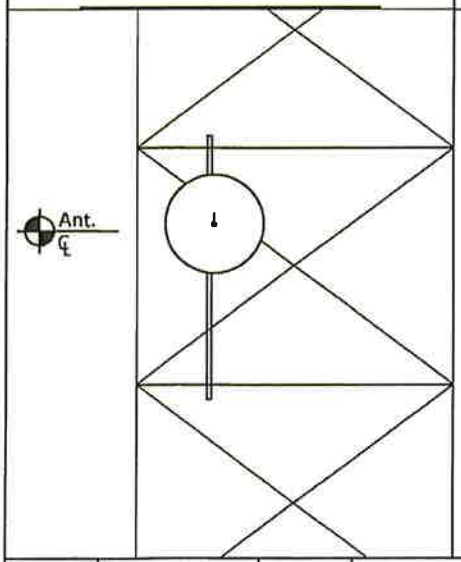
Photo of Antenna



No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
37	153' Center	C	Direct to Leg	320	1/2" TX	18	Rear Wall Shelter #1 Suite D

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(6) Element x 18" Yagi	

Front or Side Elevation



Plan View

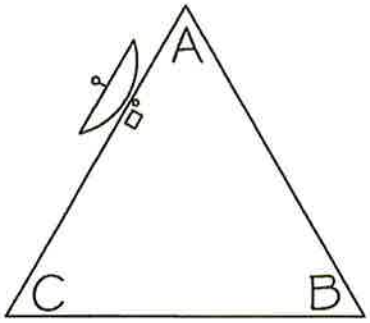


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax #	Carrier
38	131' Center	CA	1.9" x 8' Pipe	20	3/16" Smooth	48/49	East Wall Shelter

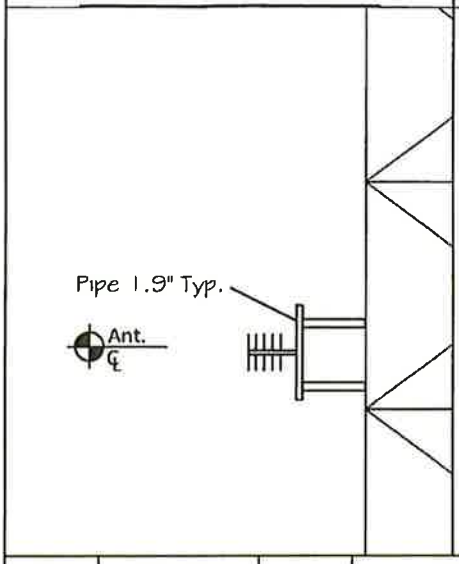
Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	3' Dish	(2) 4" x 4" TMAs

Information Notes:

- Draw an elevation and plan view of each antenna showing all dimensions of mount and antenna. Insert photo of antenna and mount.
- Indicate the location of the elevation given in the table with a marker on the elevation view.
- Drawings can be used to show single antennas, sectors or platforms.

ANTENNA AND MOUNT INFORMATION

Front or Side Elevation



Plan View

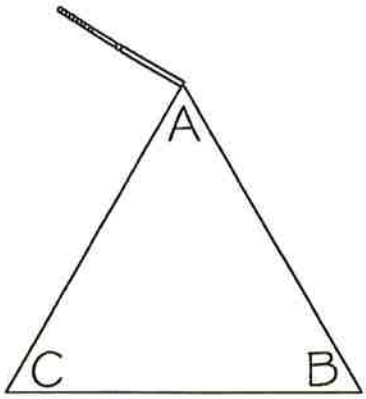
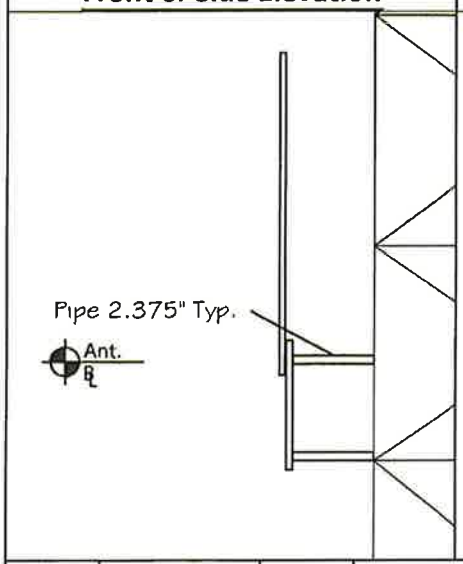


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax#	Carrier
39	107' Center	A	2' x 2' Sidearm	20	3/8" Smooth	1	Rear Wall Shelter #1 Suite J

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	(5) Element x 18" Yagi	

Front or Side Elevation



Plan View

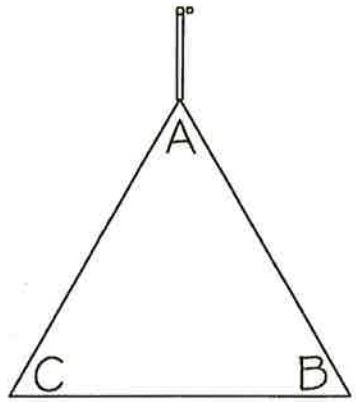


Photo of Antenna

No.	Elevation	Leg	Mount Type	Azimuth	Coax Size	Coax#	Carrier
40	65' Base	A	3' x 2'-6" Sidearm	80	7/8" TX	9	Rear Wall Shelter #1 Suite B

Ant. Manufacturer	Antenna Model #	Antenna Dimensions	TMA Qty/ Model or Dim.
Unk	Unk	2" x 10' Omni	

Information Notes:

- Photo Ranges are acceptable.
- Note elevations or specific anchors for a range or photo when relevant.
- Number file names of photos with 001, 002, 003, etc. so photos will display in order.

PHOTO LOG	
Photo #	**Description of Photograph**
1-136	Compound, Shelter, Tower Base
137-181	A Anchors
182-209	B Anchors
210-243	C Anchors
244-370	Overall Phots from Tower - From Leg A, B, C
371-404	Photos Showing Coax Layout
405-451	Photos of Candelabra Area
451-710	Photos from Tower