

## **TOWER INSPECTION REPORT**

29 August 2008

Grand Valley State University –Chanel 35 Tower Site.

**Tower Structure:**  
Stainless Guyed Tower

**Size of Tower:**  
865 ft. x 84 inch Face Width. ( Center to Center Leg.)

**Tower Construction:**  
Hollow Round Legs (5") with 7/8" & 5/8" Solid Round Diagonals, 3/16"x 2"x 2" Angle Steel Horizontal Members at Guy Points and 2" Round Hollow members thru remaining members.  
Each Bay is 8ft. 4" length. Tower is Fabricated into 25ft. Sections with 10ft. Base Section and 20ft. Top Section. 60ft. Of Tower top is TV Antenna. Tower is a bolted Constructed Tower.

**Tower Base foundation:**  
38" x 40" Rectangle with 6" above ground concrete foundation, Second Layer is 23" Square and raised 2" above first and centered.

**Tower Leg Members:**  
Hollow Round Steel, In good Condition and are Galvanized Steel.

**Tower Cross Members:**  
Solid Round ,Galvanized Steel 7/8" & 5/8"Diagonal members and 2" Round Hollow and 3/16" x2" Angle Steel Horizontal members.

**Tower Sectional Joints:**  
7-1/4" Square Pad at 1-1/4" Thickness, (4) 3/4" x 3-1/2" Bolts in each Pad.

**Tower Guy System:**  
75% Guyed, Distance from Center of Tower 303ft. & 603ft. Dual Anchor Points at 120 degree intervals.

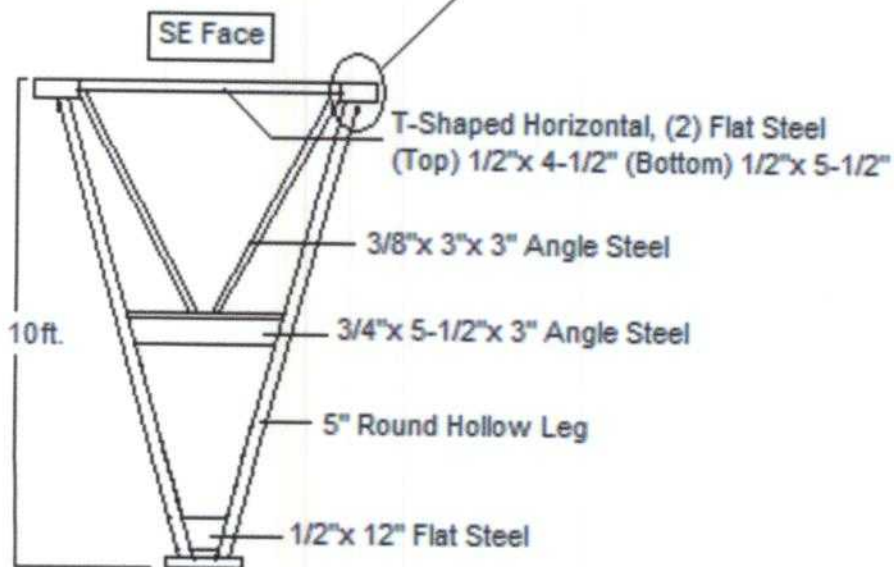
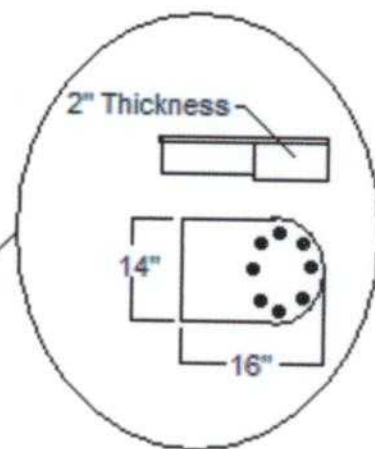
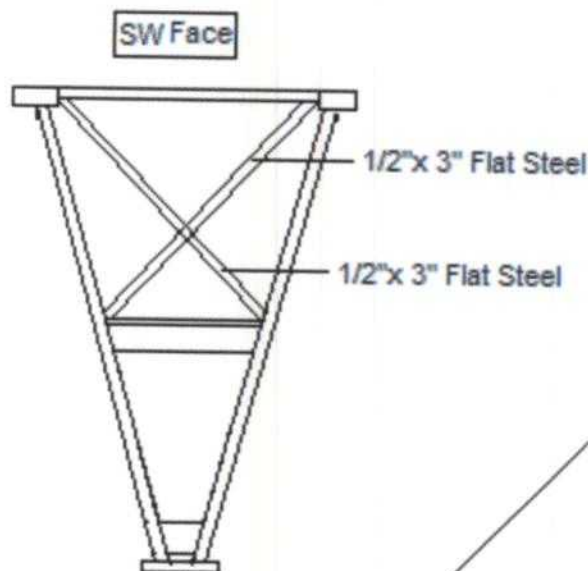
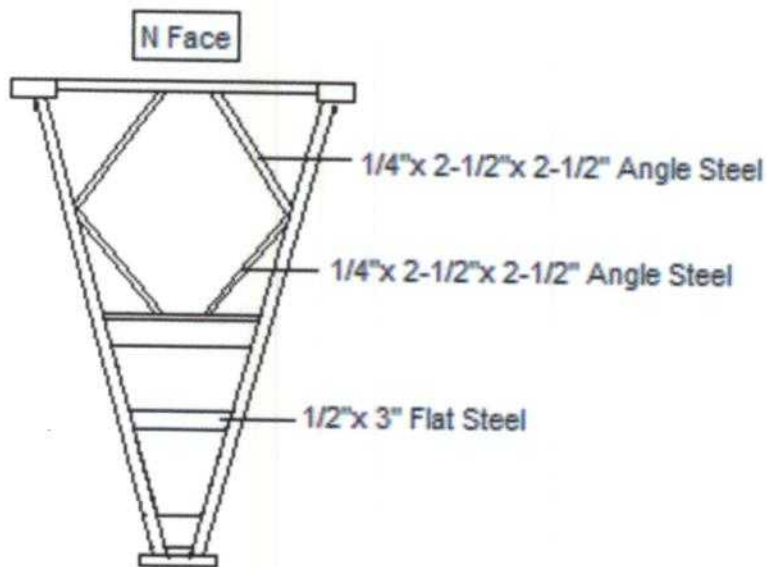
Anchors in good condition, (Inner) Heads are Dual Solid 3/4" Steel Plate head type with 2" x 8" Solid Flat Steel To Foundation. (Outer) Heads are Dual Solid 1/2" Steel plate head type with 1-1/2" x 8" Solid Flat Steel to Foundation. Turnbuckles are Hair pin Type at 1-3/8" & 2-3/8" Diameter with 7' 4" & 8' 8" Lengths.  
Guy cables are terminated with Socket type Dead end Blocks. Guy Cables are 1-1/8" & 1-3/16"

**Tower Lighting:**  
Obstruction Light Levels at 140ft., 420ft., & 700ft. with Three Obstruction lights at each Level.  
One Beacon Light at 280ft., 590ft., & 860ft. Levels.

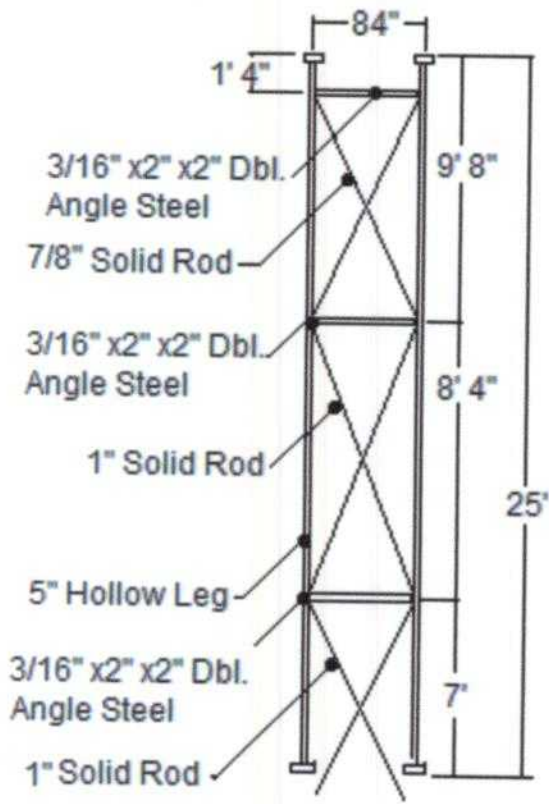
**Tower Grounding:**  
Tower base, #2 Braided Cadwelded at each face Bottom Plate. Guy Anchors are not grounded, (2) Guy cables are grounded.

# Tower Section Drawings

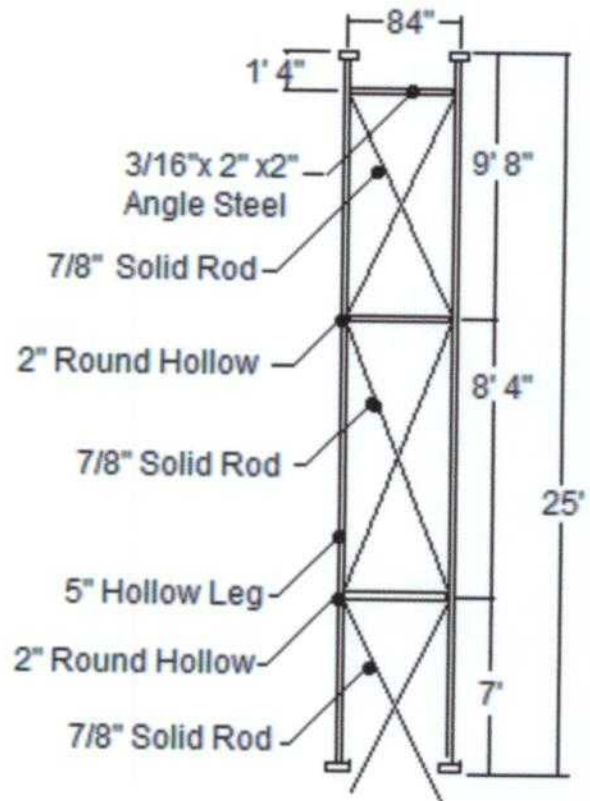
## Base Section



# Tower Section Drawings

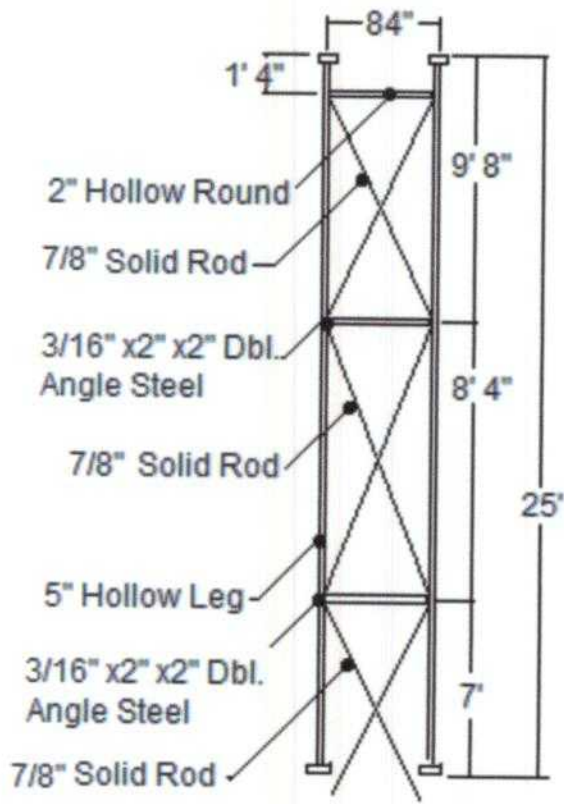


Tower Sections #'s  
13 & 20

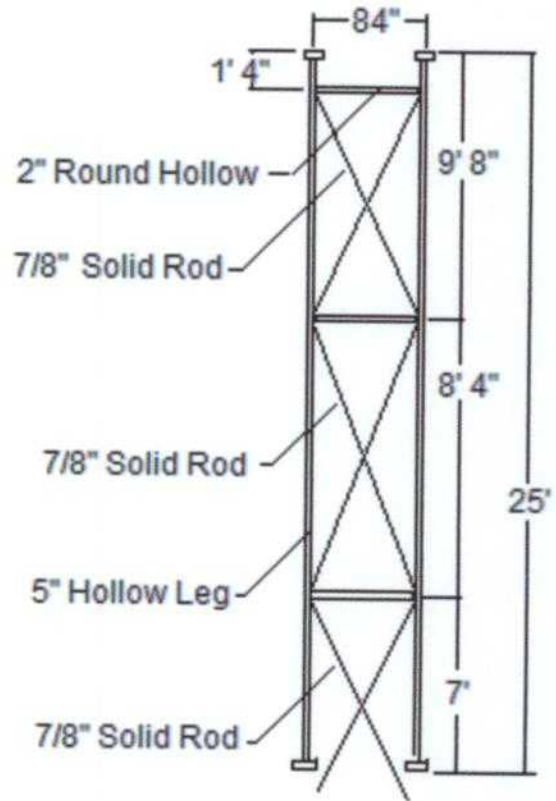


Tower Section # 28

# Tower Section Drawings

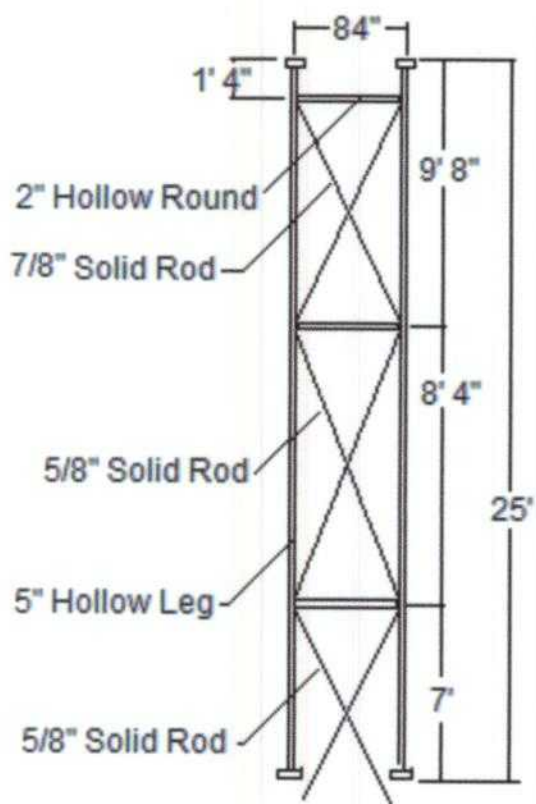


Tower Sections #'s  
7, 14, & 21

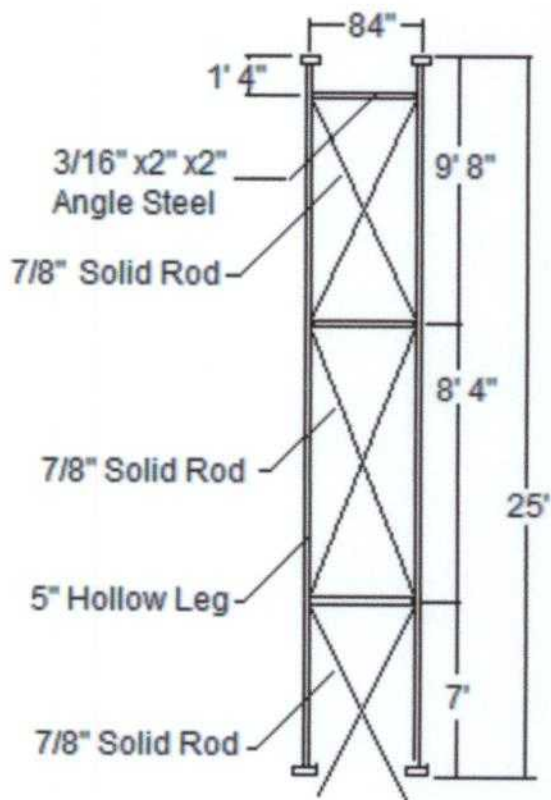


Tower Section #'s  
11 & 12

## Tower Section Drawings

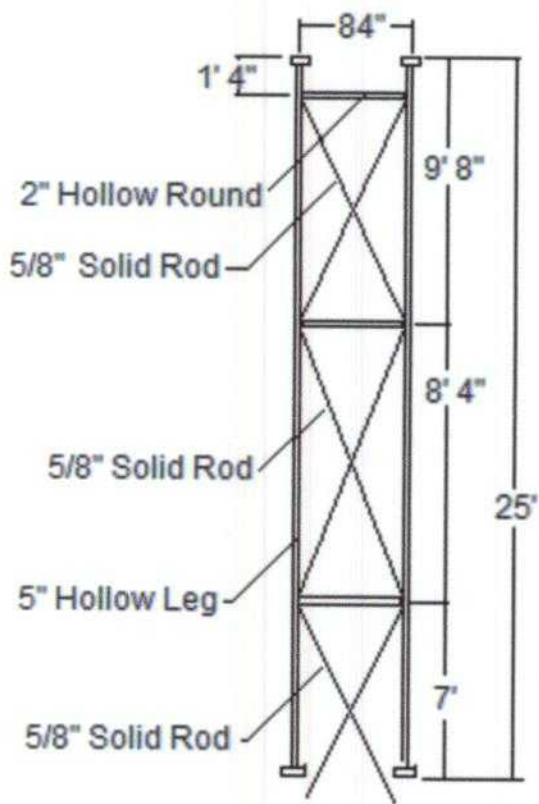


Tower Sections #s  
5, 19, & 29

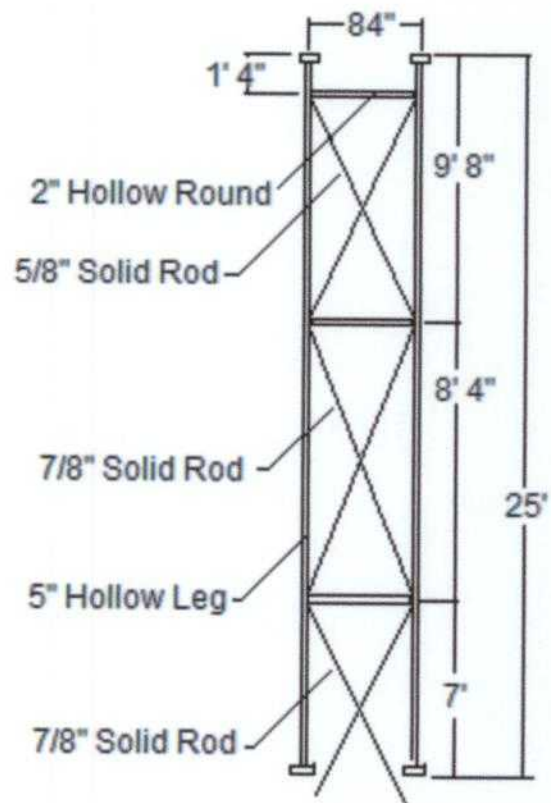


Tower Section #'s  
6, 26, & 27

## Tower Section Drawings



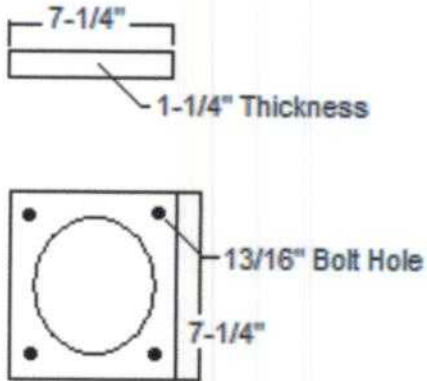
Tower Sections #'s  
3,4,8,9,10,15,16,17  
18,22,23,24,25,30,  
31, & 32



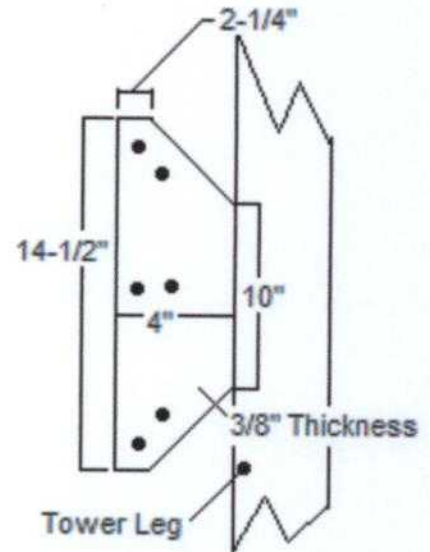
Tower Section #2

# Tower Cross Members, Attachments and Section Joints

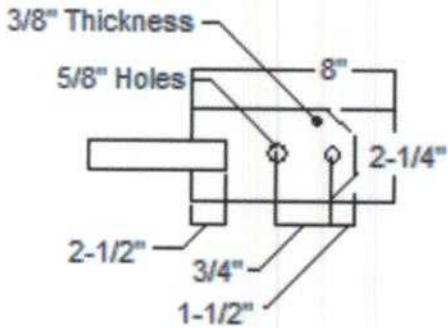
## Section Flange Joint



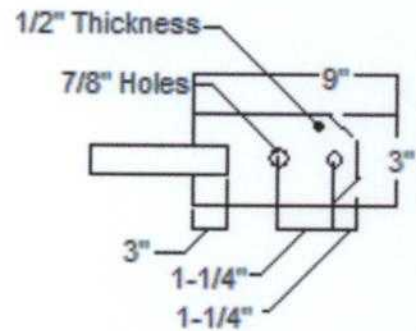
## Cross Brace Attachment Plate



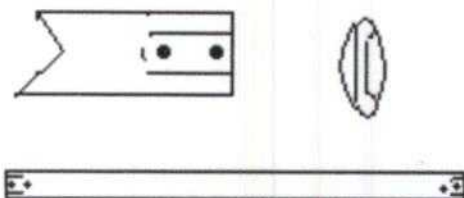
## 5/8" Diagonal Rod Attachment, 10ft.



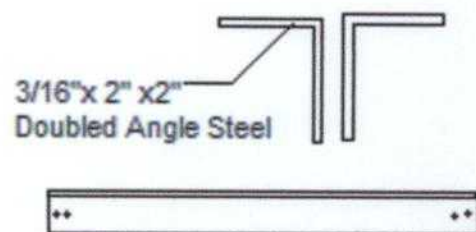
## 7/8" Diagonal Rod Attachment, 10ft.



## Round Horizontal Members



## Angle Horizontal Members



TOWER INSPECTION REPORT, Continued.

29 August 2008

Grand Valley State University-Chanel 53 Tower Site.

Antenna Loading:

90ft. NW Leg  
109ft. NW/NE Face  
120ft. NW & NE Legs.  
120ft. SE Leg  
140ft. NE Leg  
157ft. All Legs  
  
180ft. All Legs  
200ft. All Legs  
211ft. NE Leg  
219ft. NE Leg  
236ft. SE Leg  
250ft. SE Leg  
257ft. SE Leg  
296ft. SE Leg  
314ft. SE Leg  
356ft. SE Leg  
357ft. SE Leg  
367/374ft. SE Leg  
375ft. NE/NW Face  
415ft. NE/NW Face  
420ft. SE Leg  
426ft. SE Leg  
560 to 585ft. NW Leg  
602ft. SE Leg  
640ft. NW Leg  
685ft. SE Leg  
755ft. NW Leg  
805ft. Top Mounted

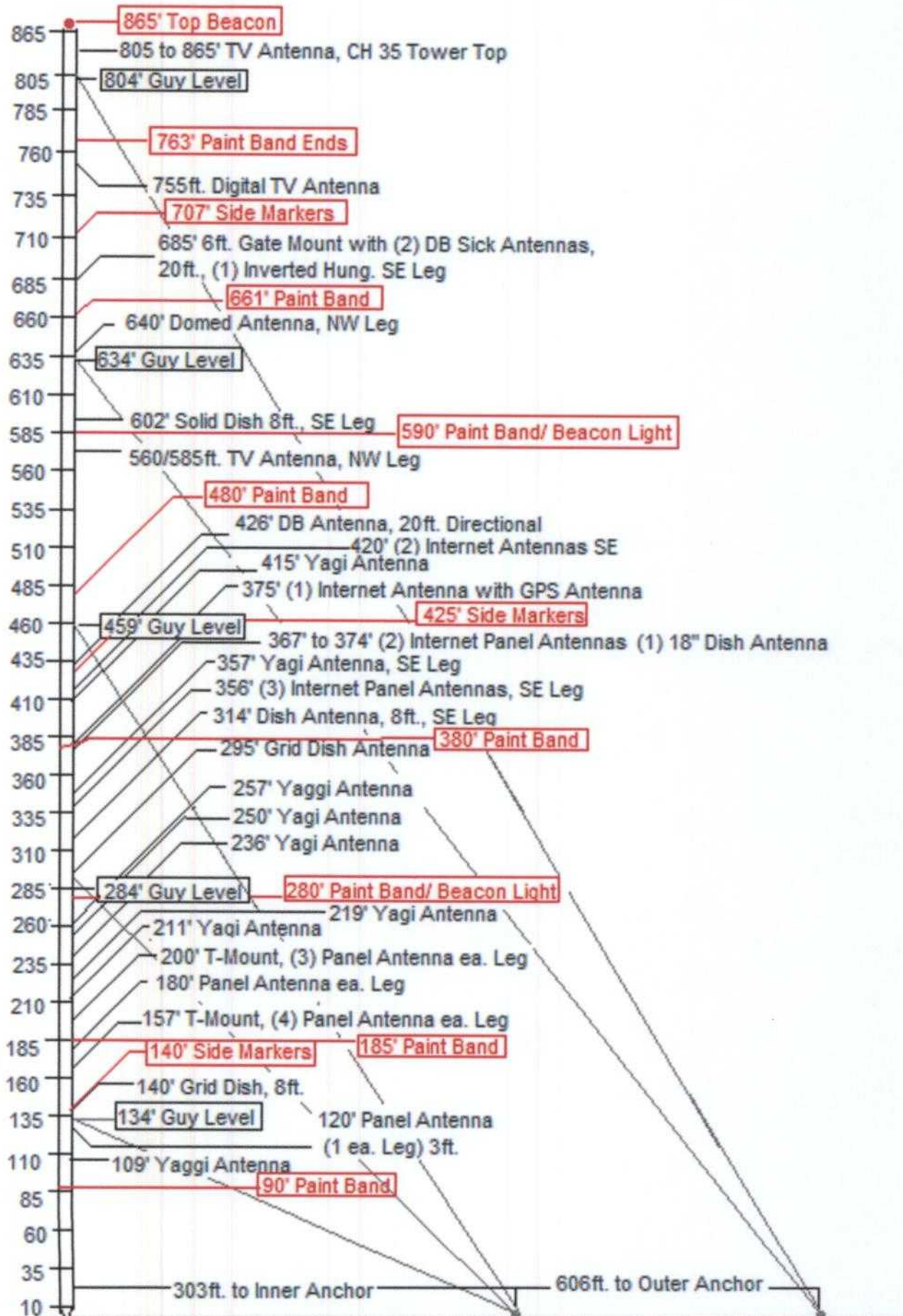
4ft. Grid Dish, Direct Mounted in North Direction.  
1ft. x 3ft. Yagi Antenna.  
8"x 3ft. Panel Antennas, direct leg mounted.  
12"x 48" Panel Antenna direct leg mounted  
8ft. Grid Dish, direct leg mounted.  
Heavy Duty T-Mounts with (3) Panel Antenna Each, NE & NW Sectors are  
12"x 6ft. Panel Antennas and SE Sector are 6"x 6ft. Panel Antennas.  
8"x 4ft. Panel Antennas, Direct leg Mounted.  
Heavy Duty T-Mounts with (3) 6"x 4ft. Panel Antennas each.  
18"x 48" Yagi Antenna, Direct Leg Mounted.  
2' x 4ft. Yagi Antenna, Direct Leg Mounted.  
8' x 15' Parabolic Yagi Antenna, Direct Leg Mounted in East Direction.  
3' x 8' Parabolic Yagi Antenna, Direct Leg Mounted.  
2' x 5' Parabolic Yagi Antenna, Direct Leg Mounted.  
3' x 6ft. Parabolic Dish Antenna, Direct Leg Mounted.  
8' Solid Dish, Direct Leg Mounted  
(1) 2.4mhz & (2) 3"x 9" Panel Antennas on Small Tri-mount. (Internet)  
6' x 9ft. Yagi Antenna, Direct Leg Mount.  
(3) 12"x 12" Panel Antennas, (1) 1"x 2" Panel Antenna (Internet)  
(1) 3"x 9" Canopy Antenna & GPS Antenna  
2' to 4' Elements at 6ft. Length Yagi Antenna  
3"x 9" Canopy Antenna and 6"x 36" Panel Antenna Direct Leg Mounted  
20ft. DB 224 Antenna on 24" Stand off brackets (2)  
25ft. Slotted TV Antenna Side mounted to Tower Leg  
8ft. Domed Solid Andrew Dish Leg Mounted  
Domed Marti Antenna, Direct Leg Mounted  
(2) 22ft. Blue Stick Antennas, (1) Inverted on 6ft. Gate Mount.  
Digital TV Antenna, 50ft. On Mounting Plate.  
Ch 35 TV Antenna.

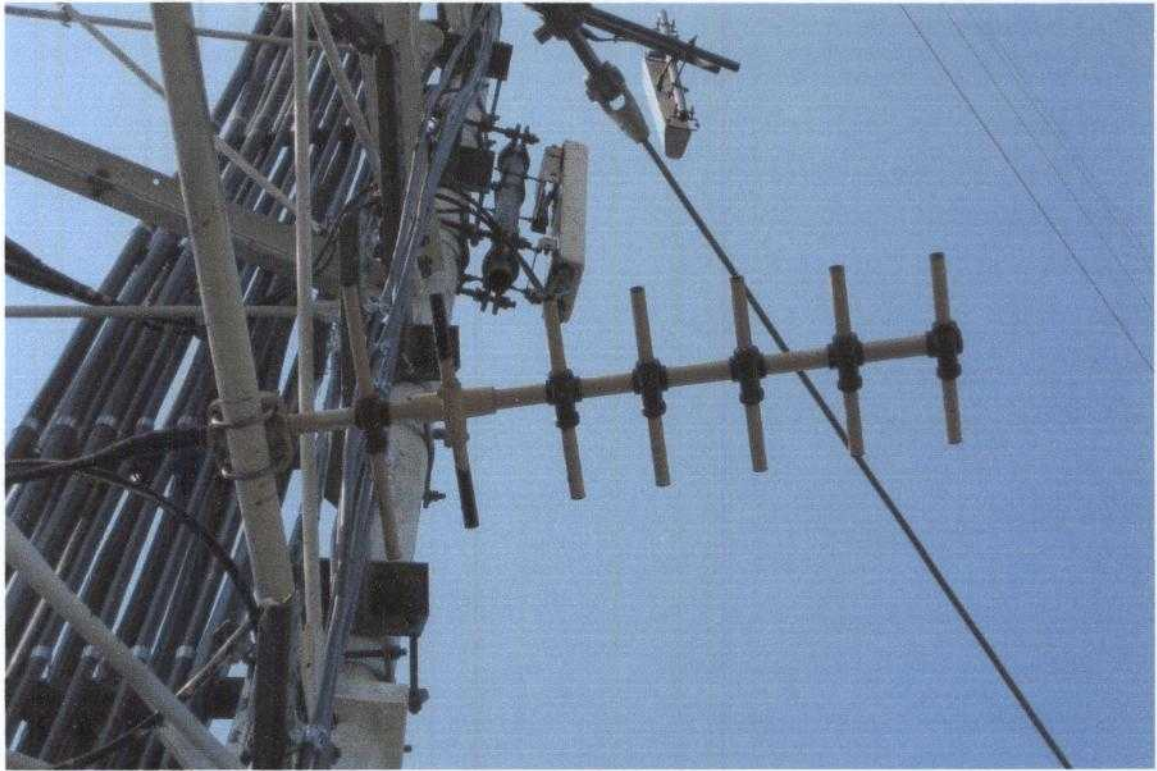


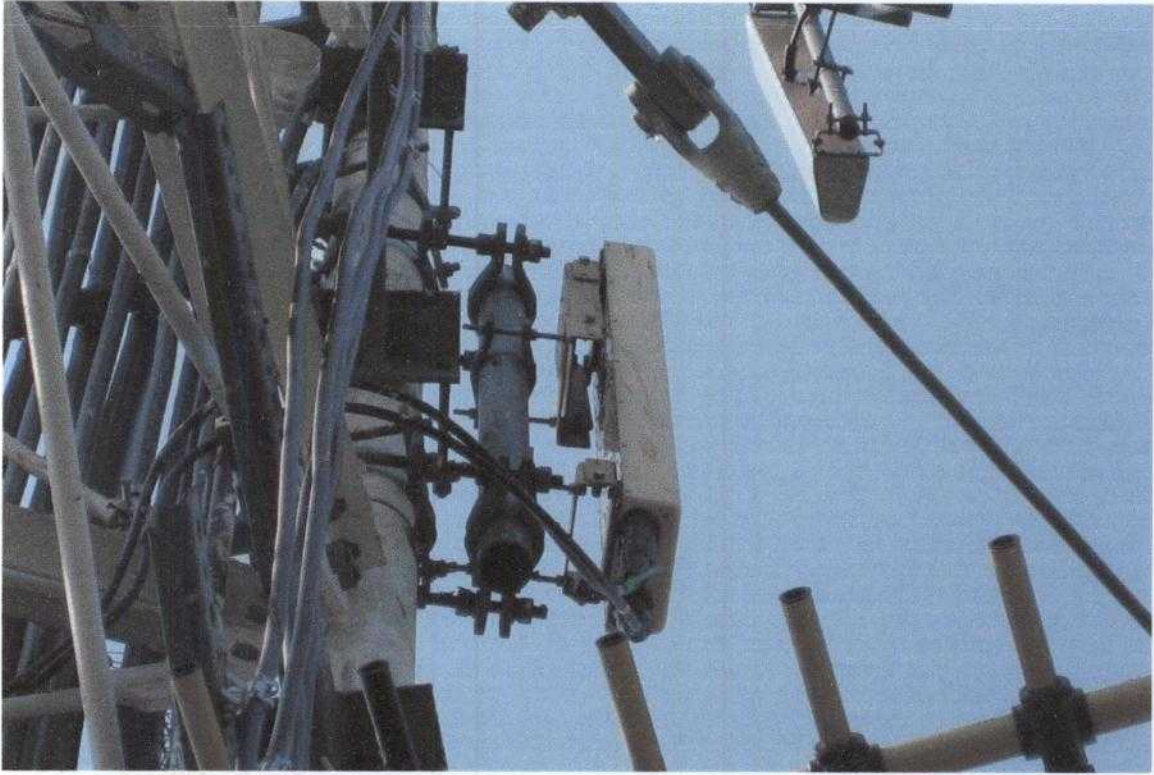
# Grand Valley State University Tower Site

29 August 2008

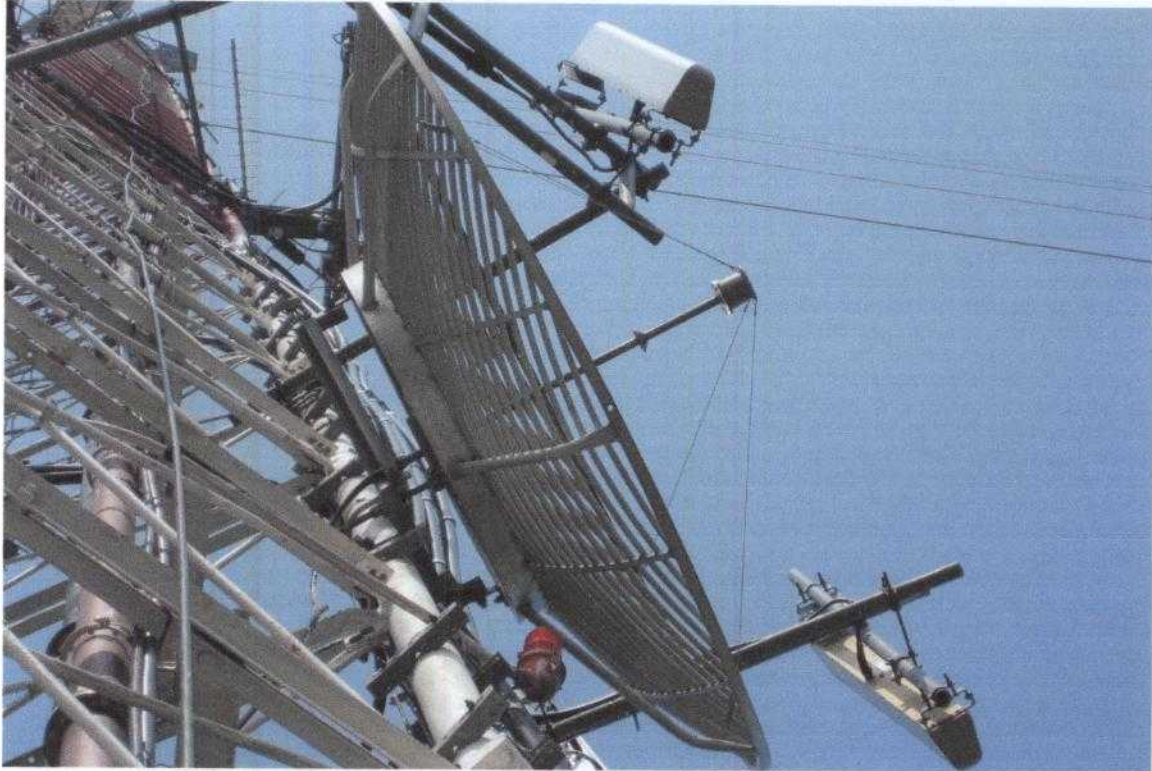
Chanel 35 Tower



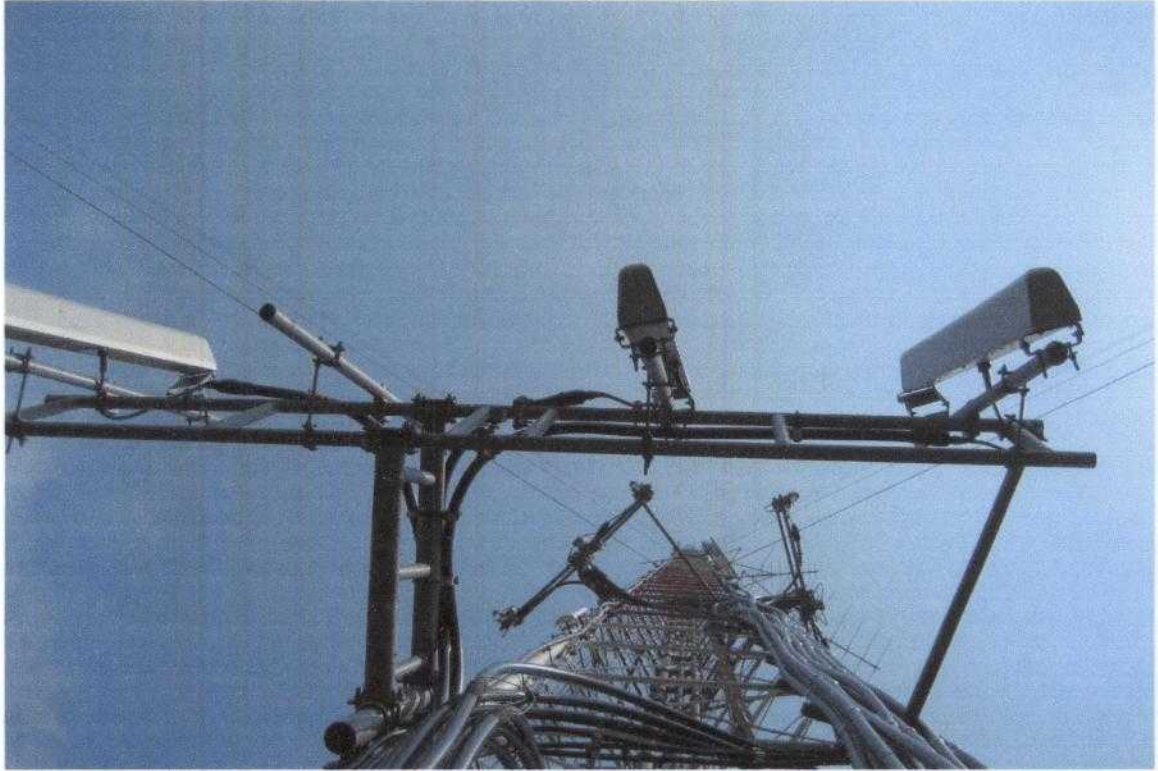






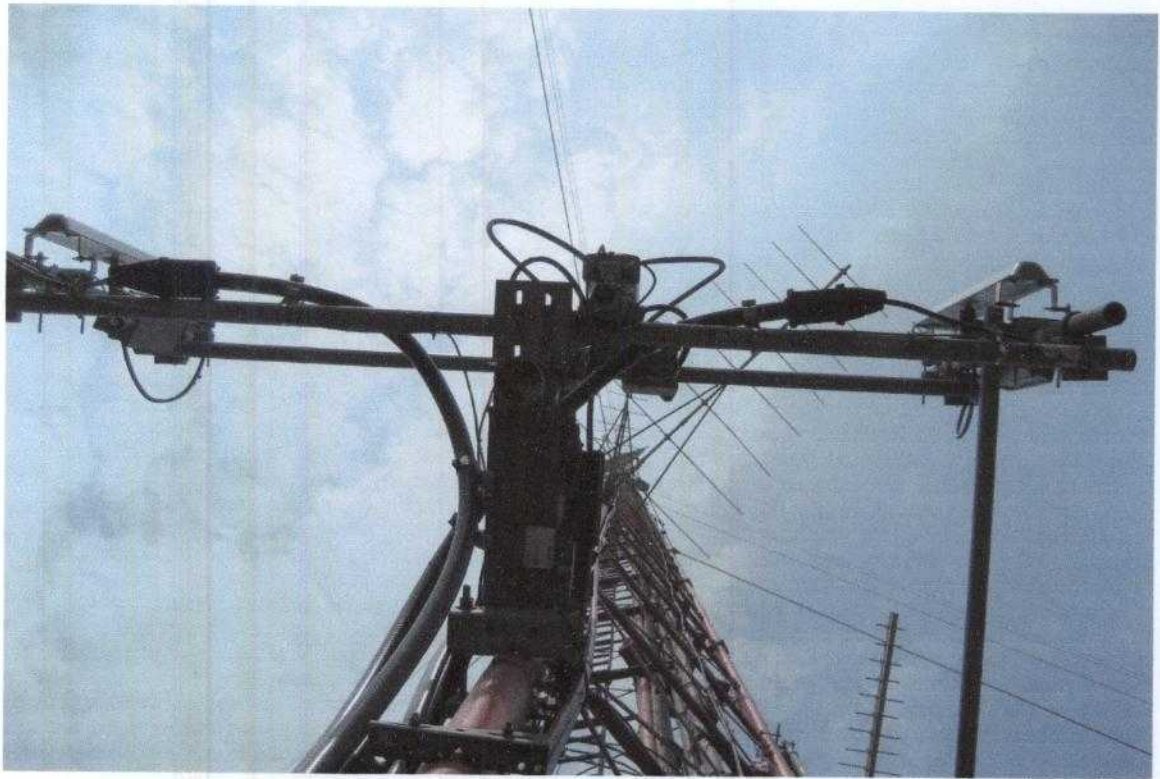
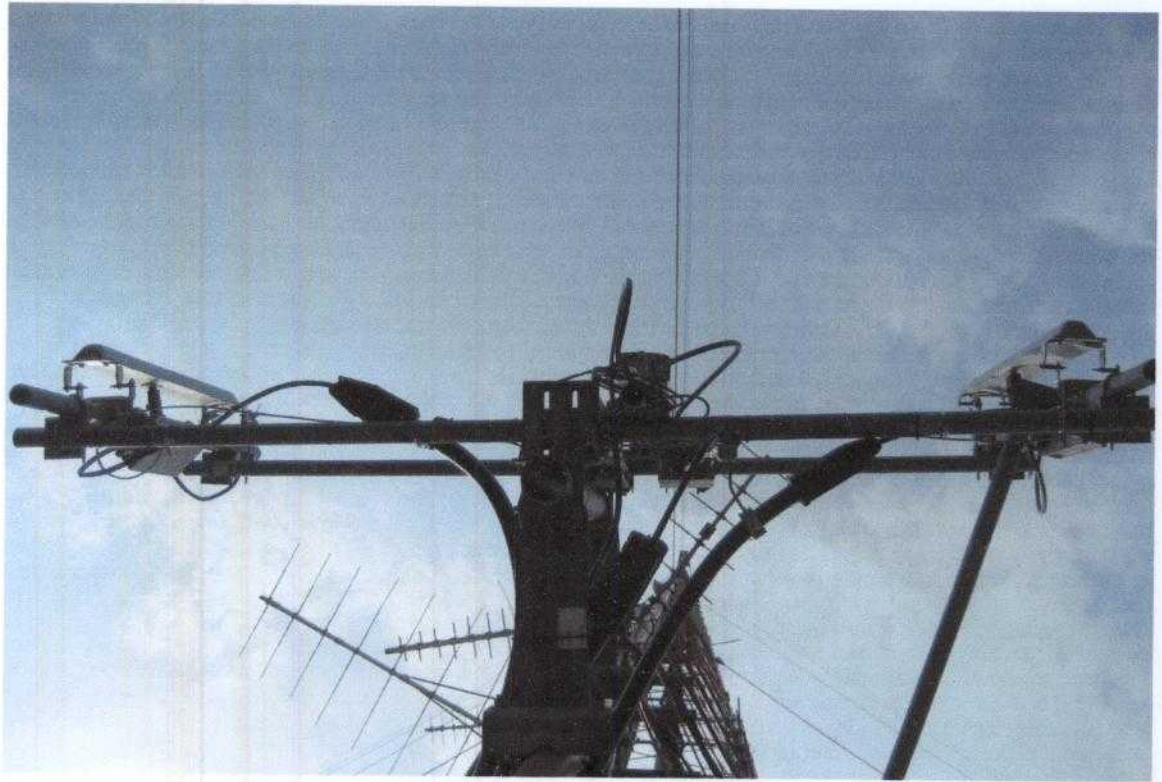


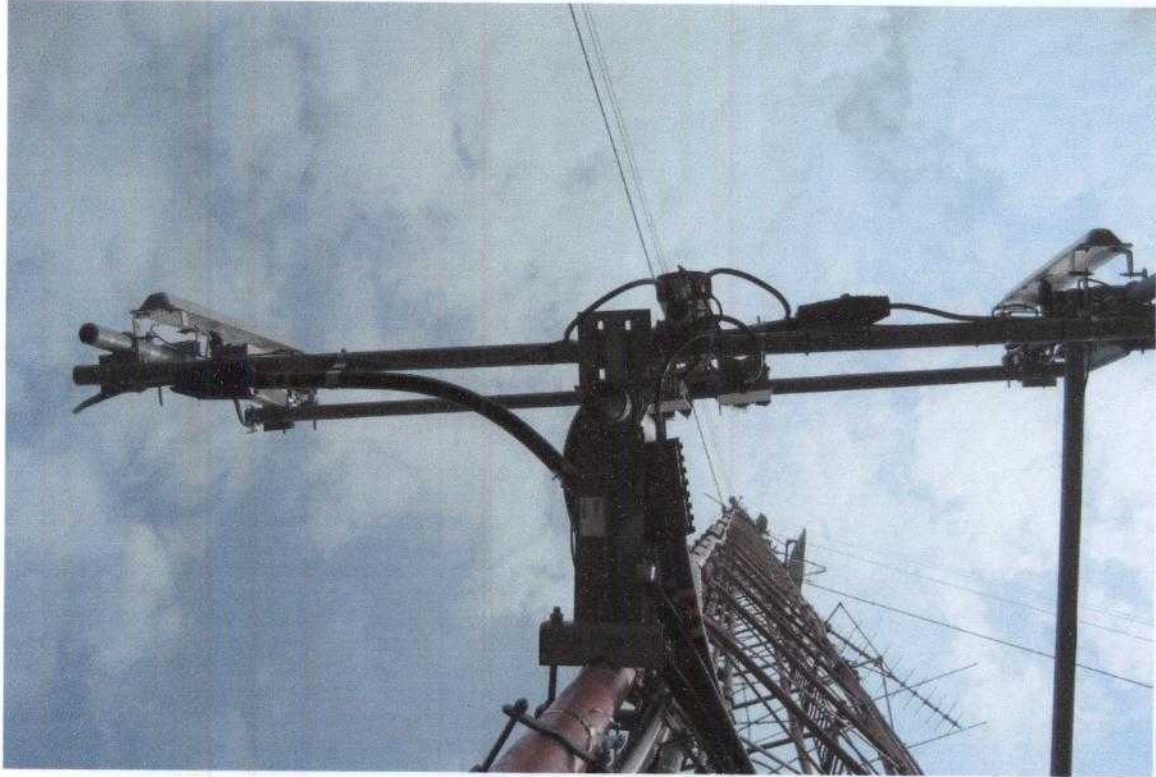


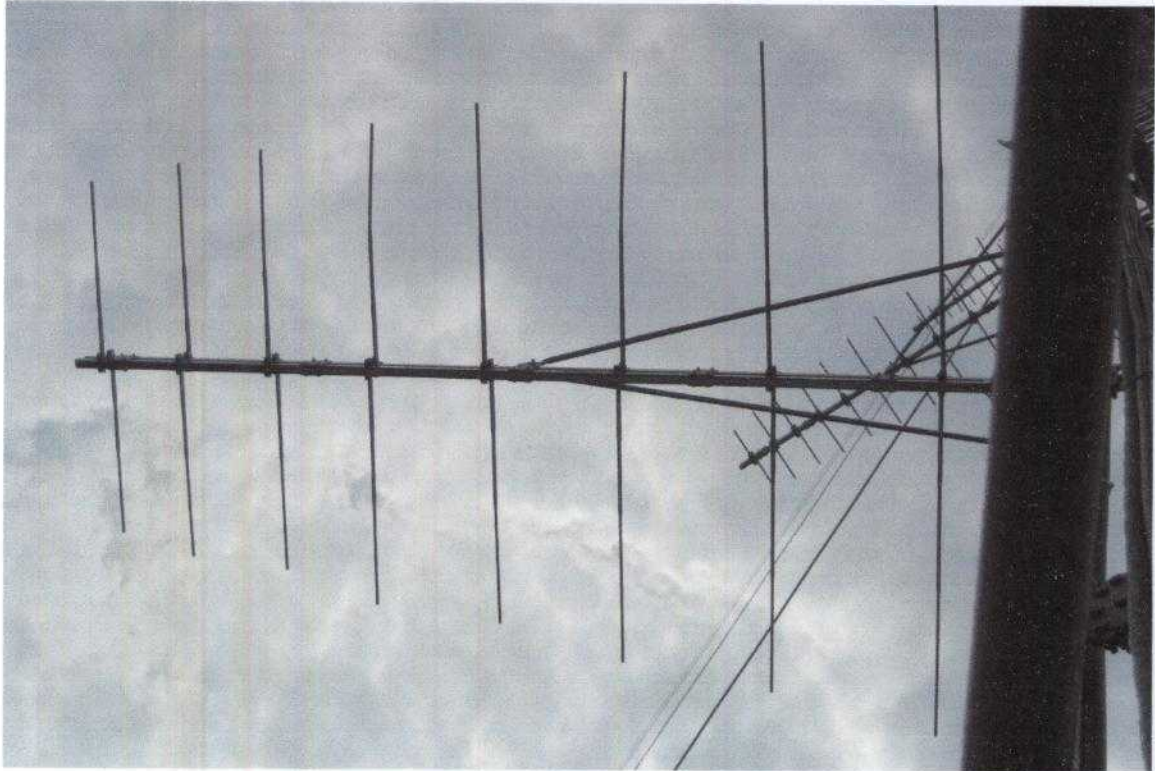
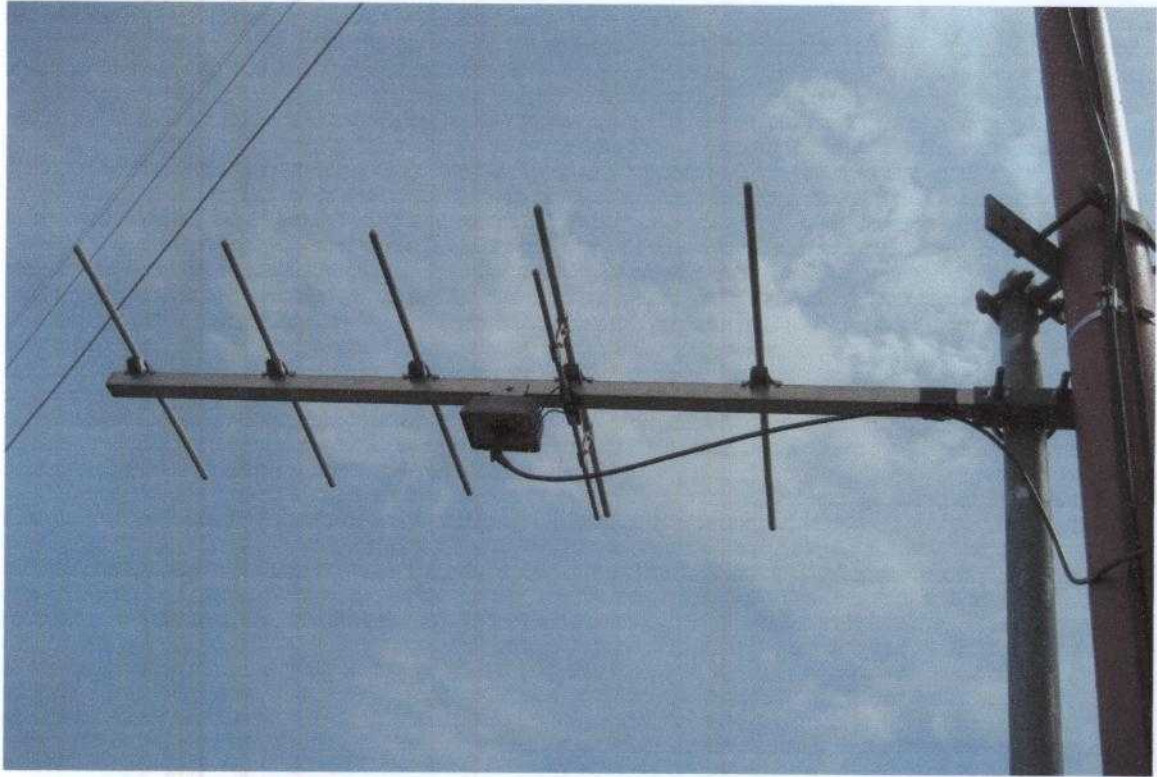


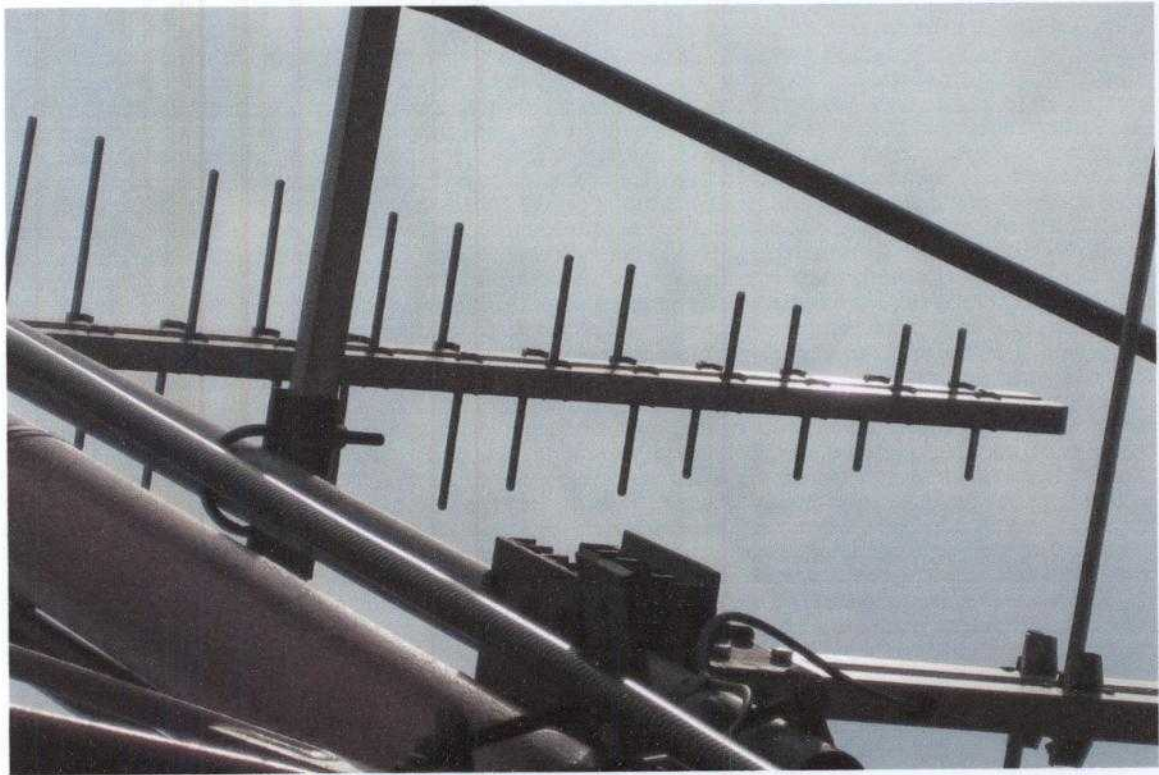
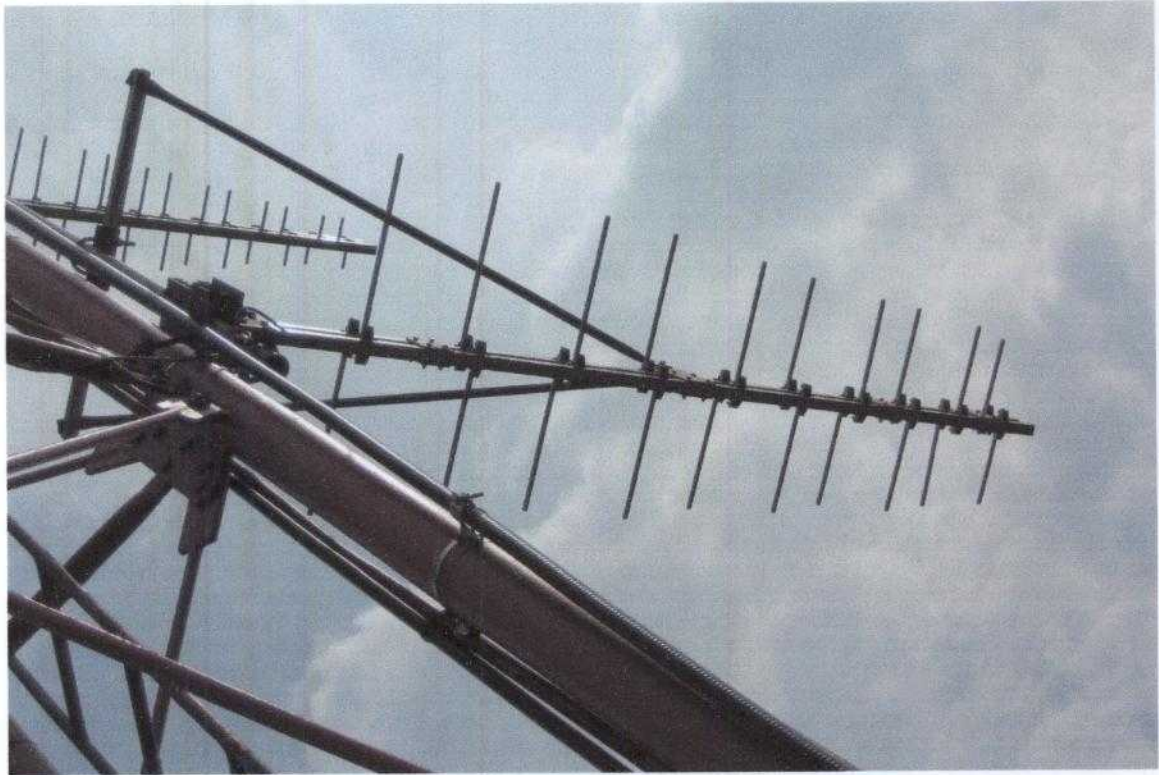


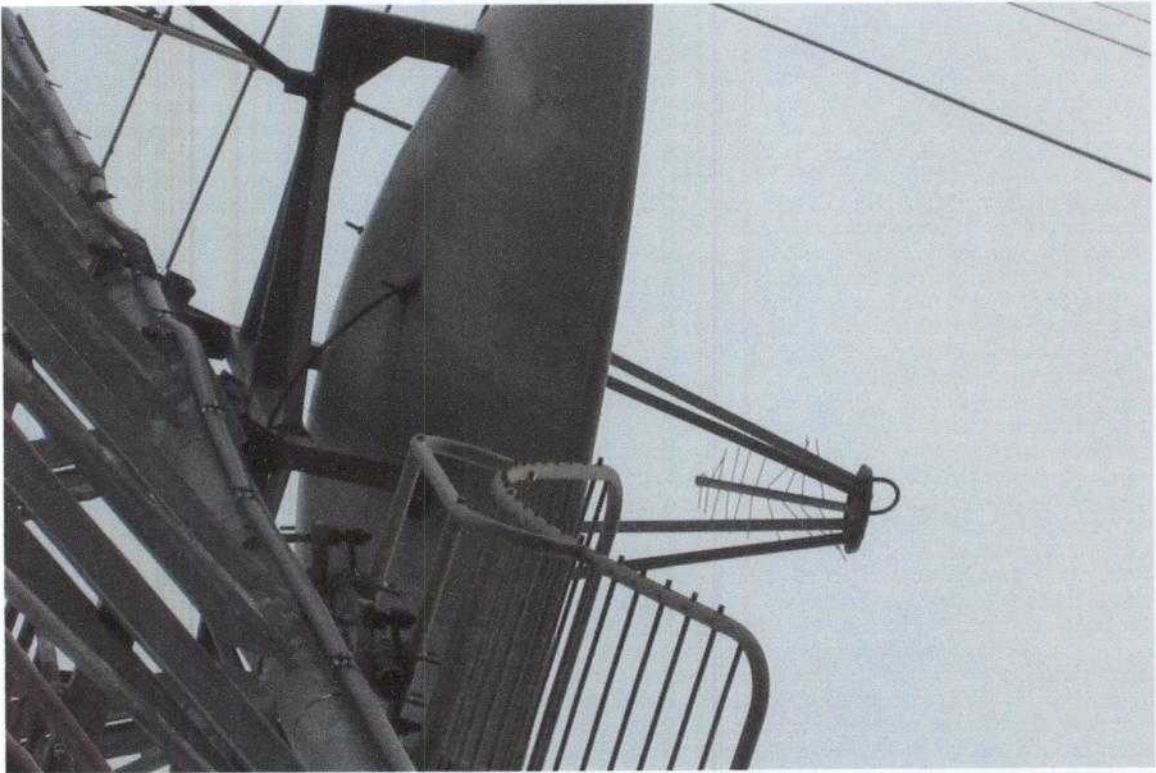
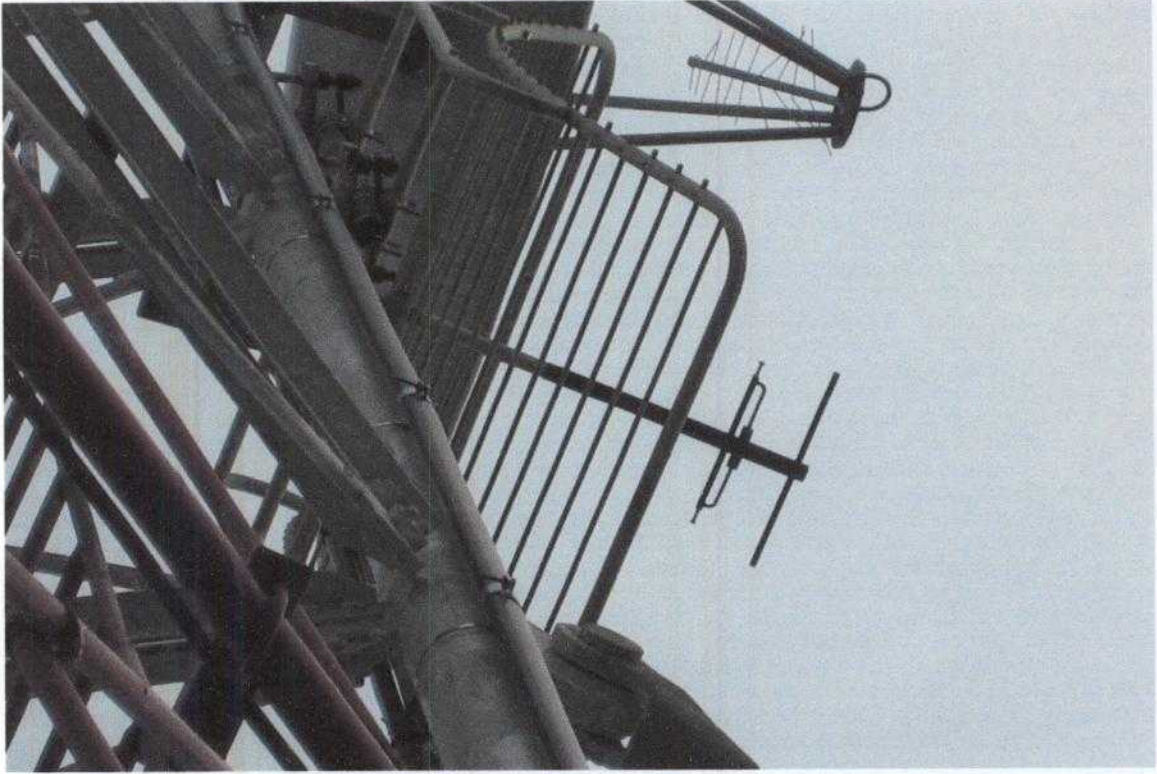


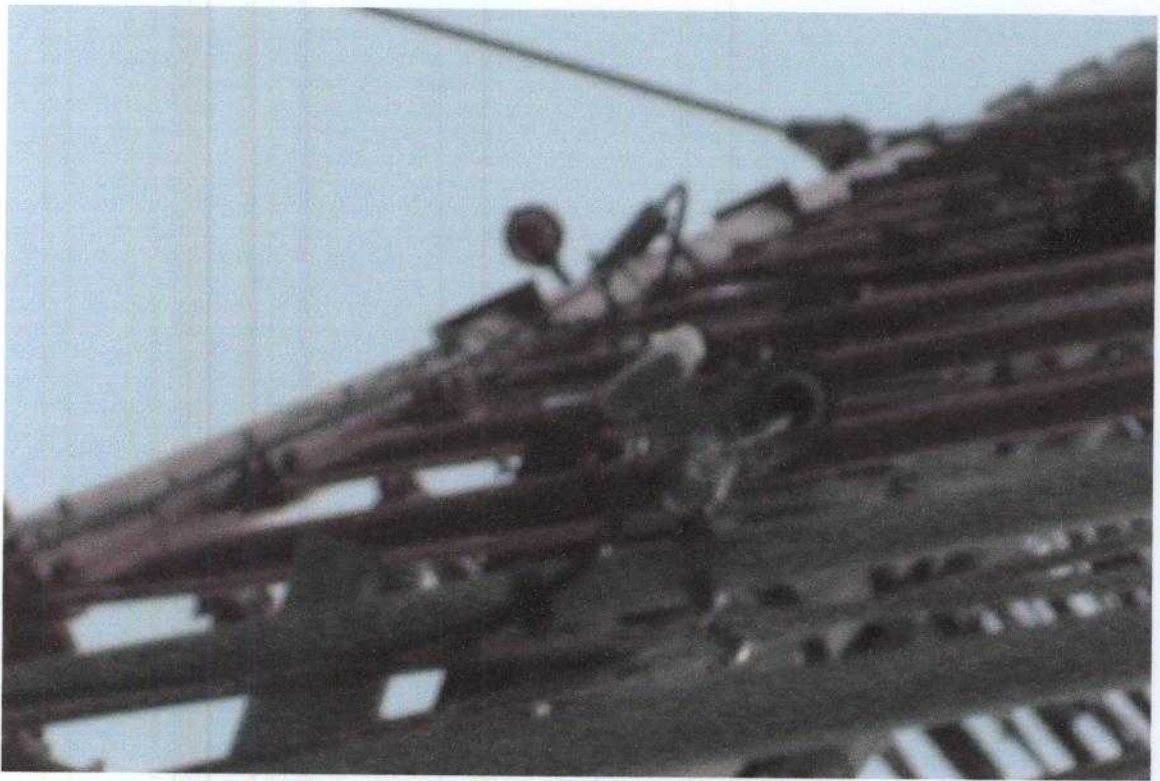
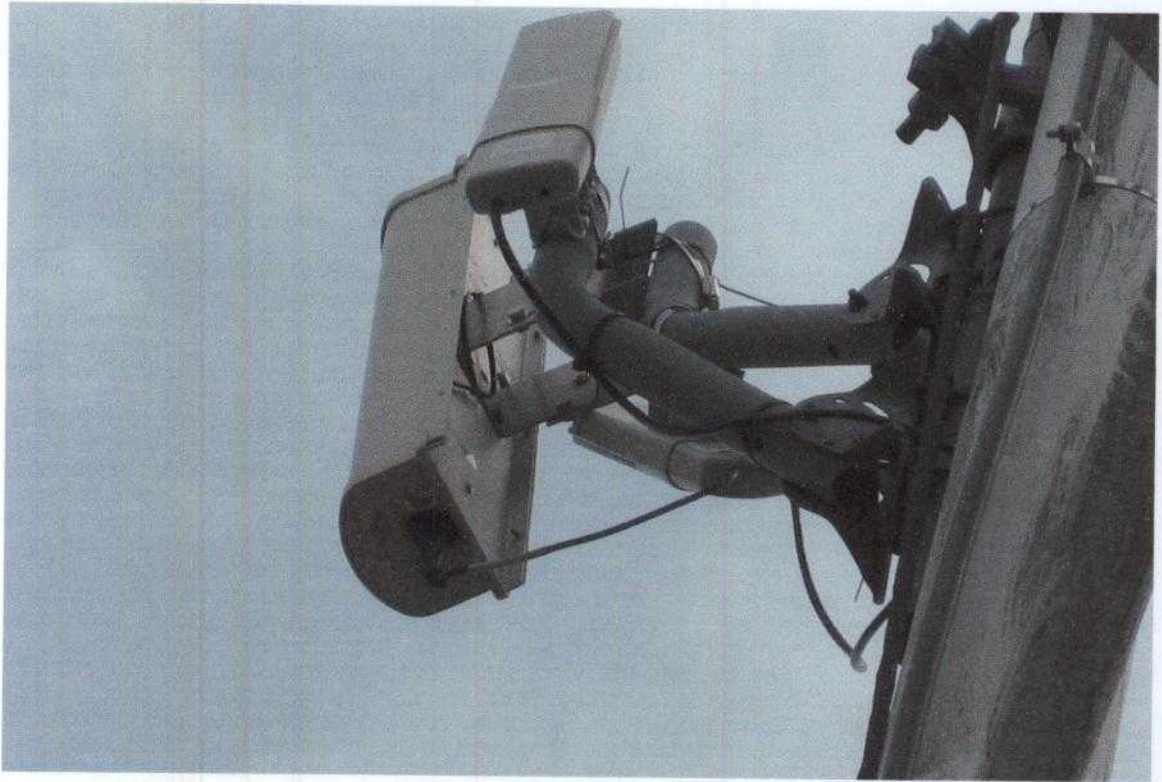


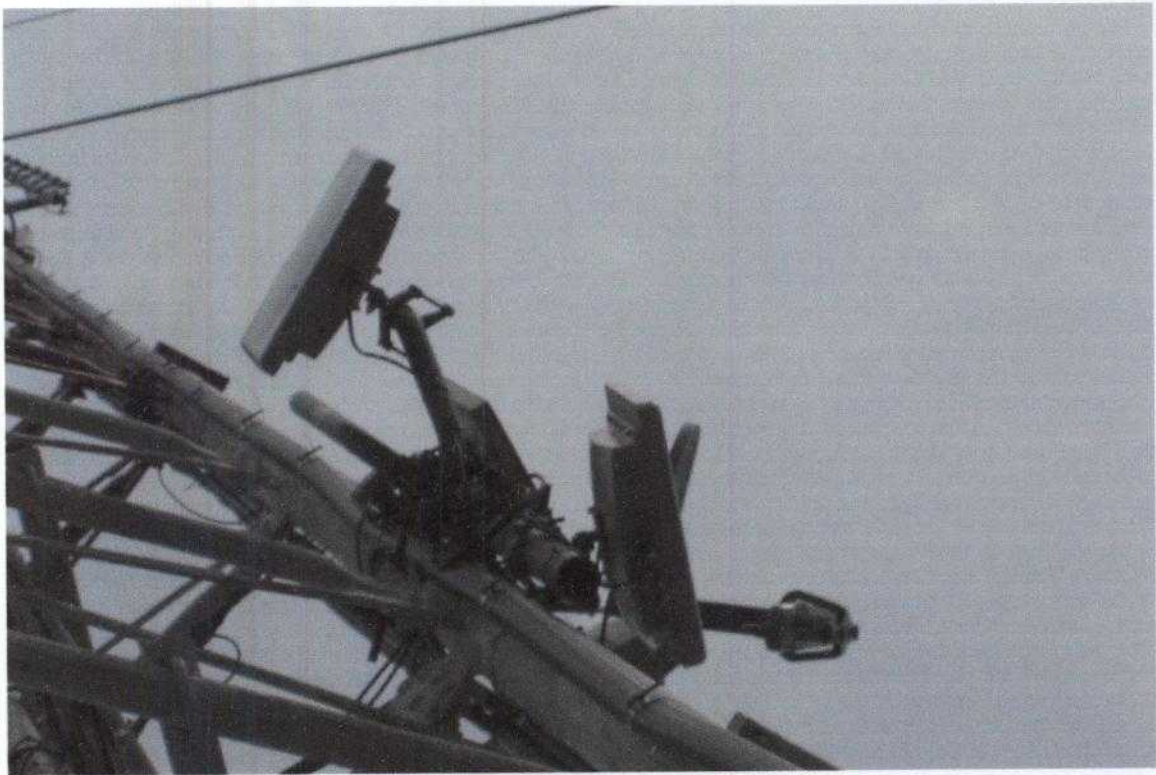
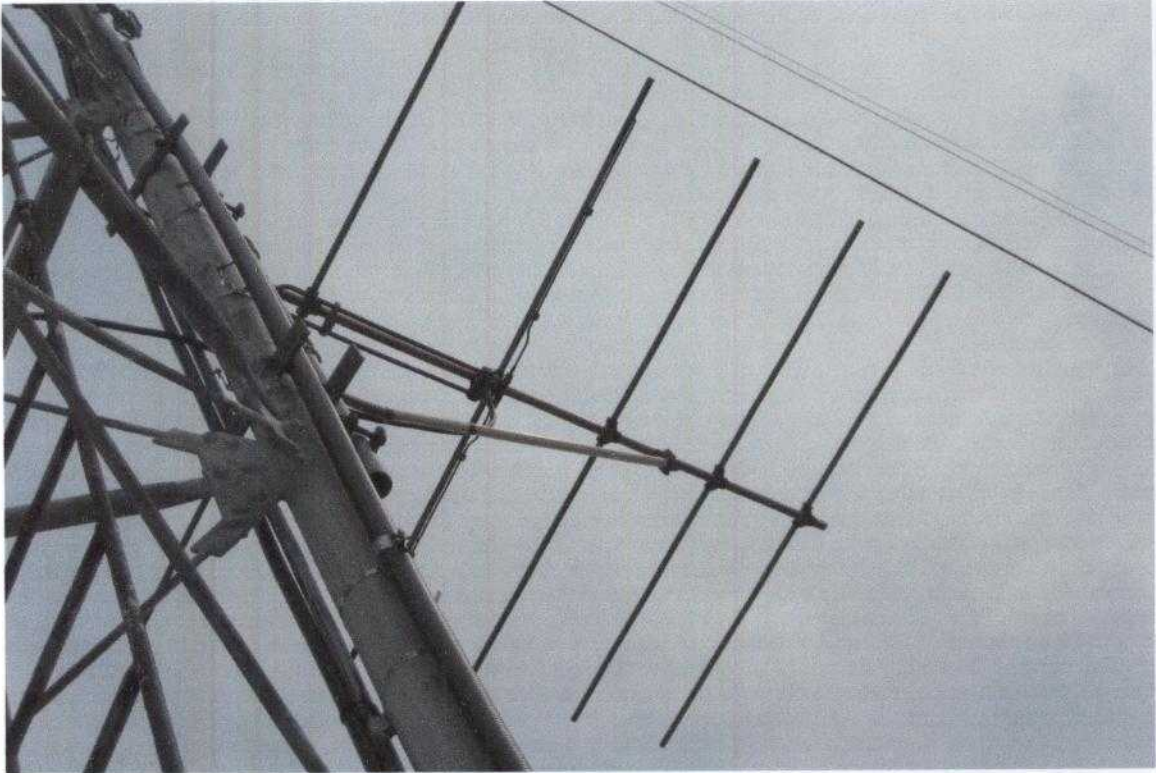


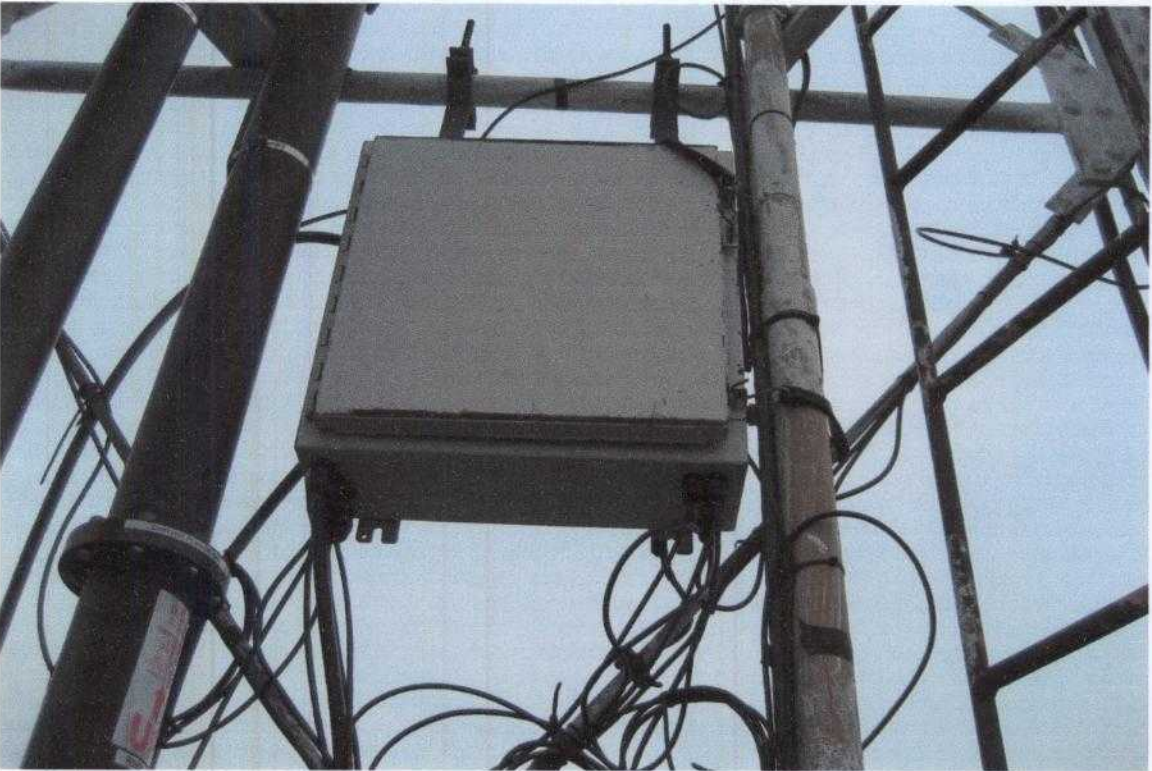




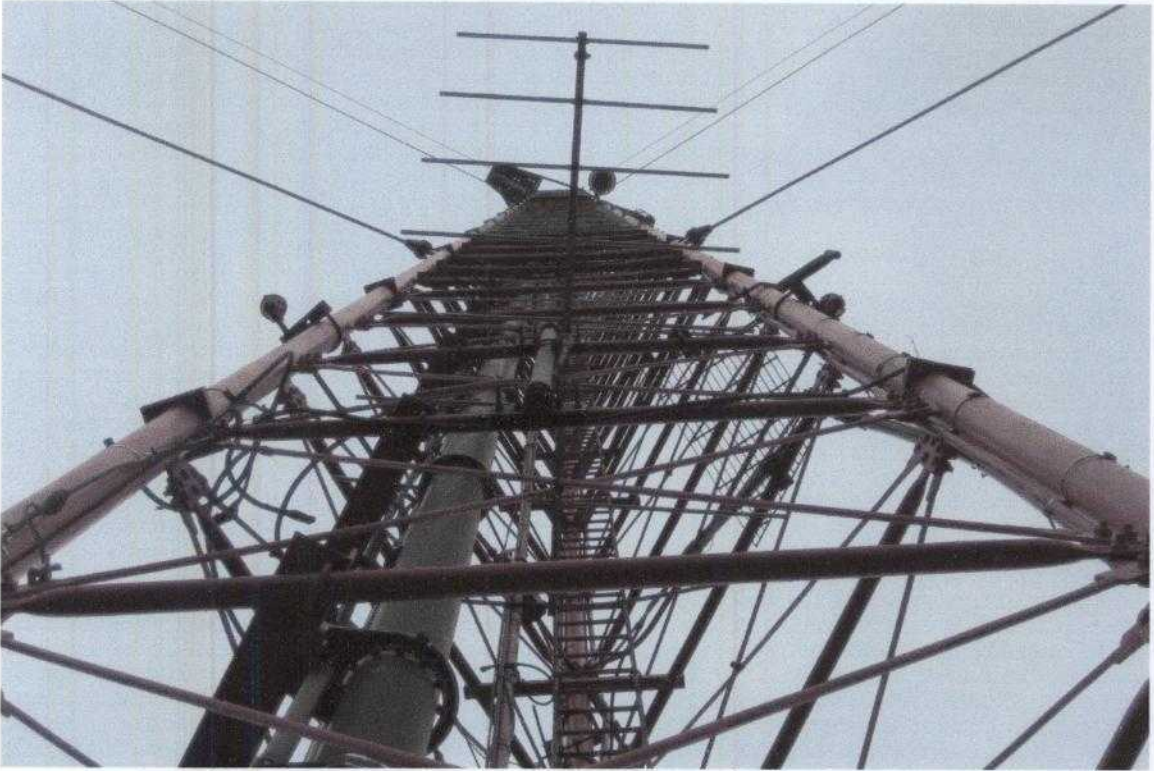
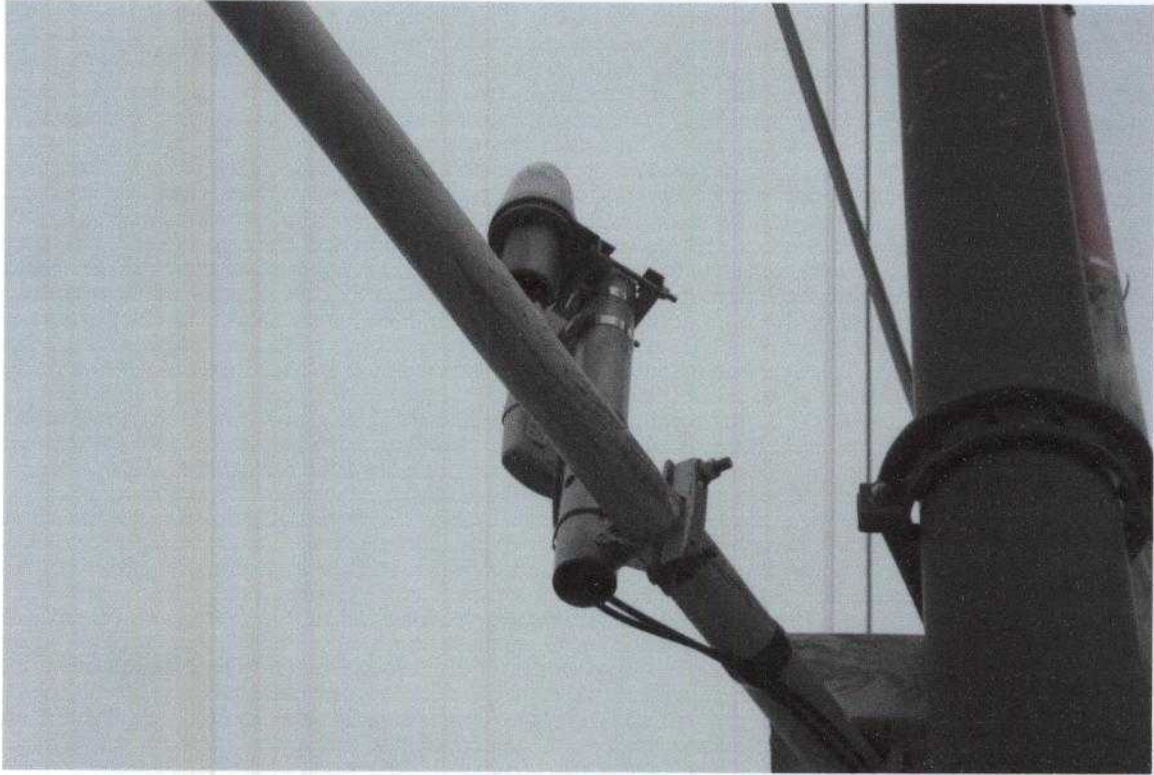


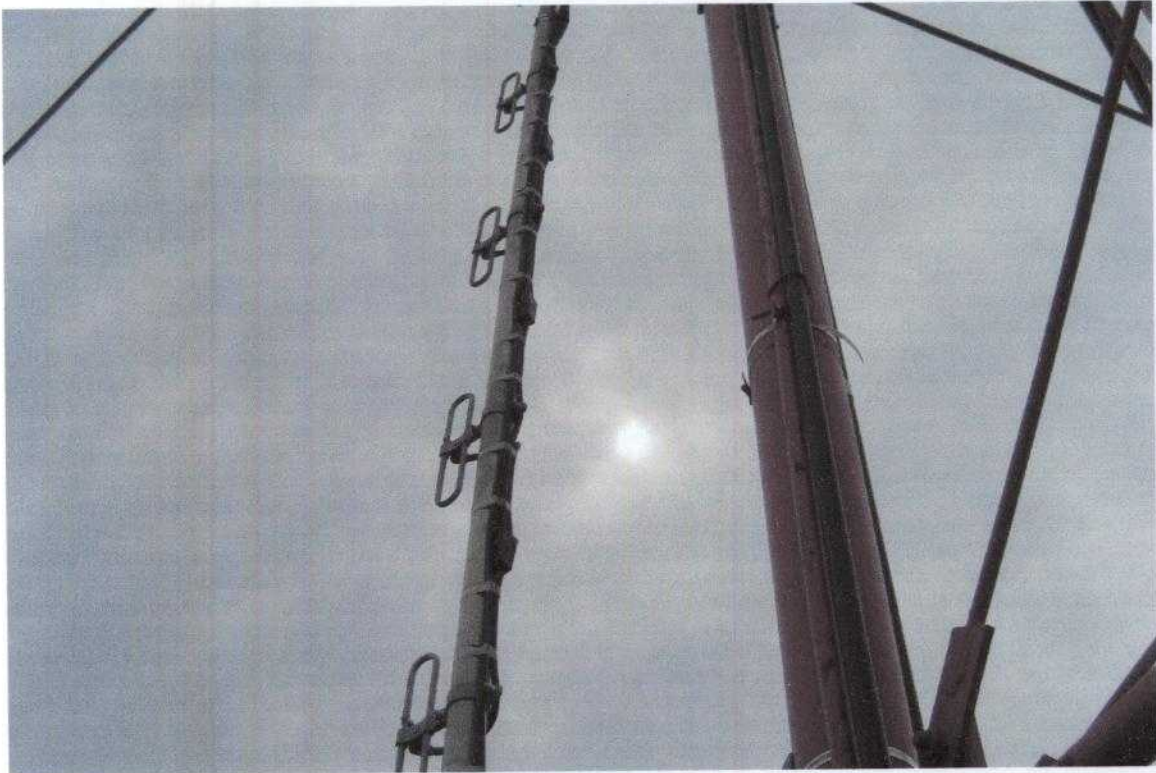
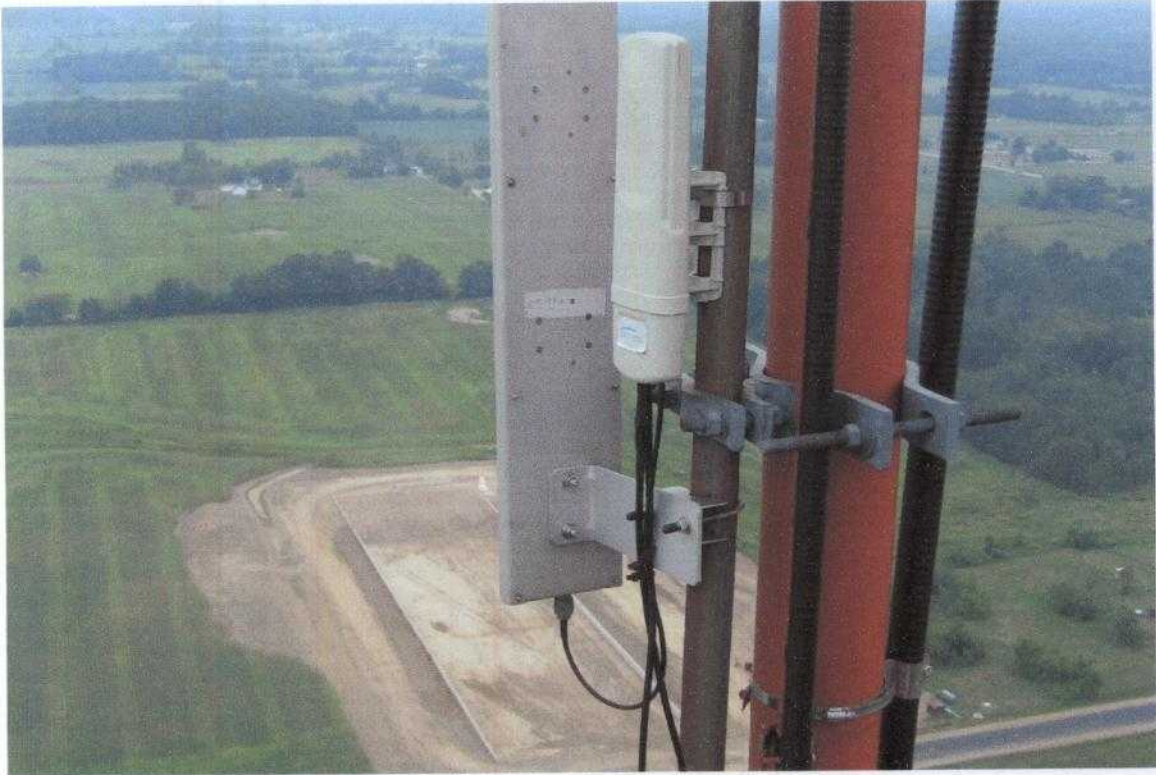




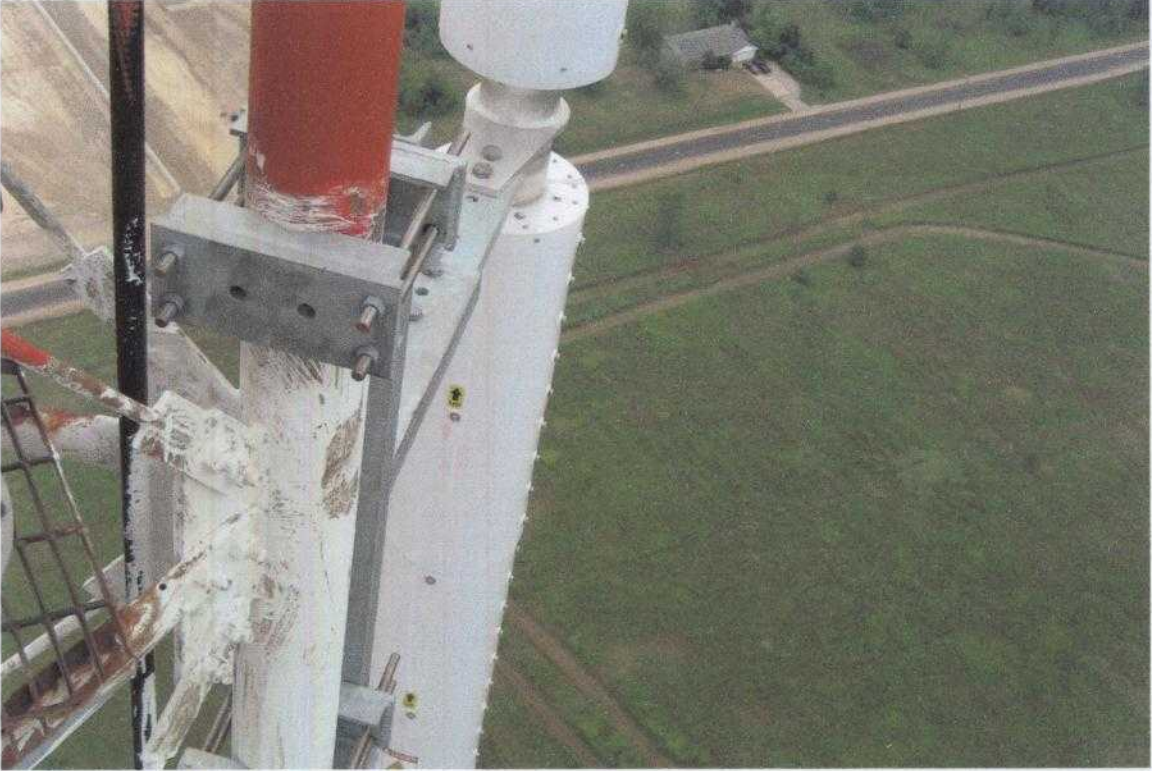


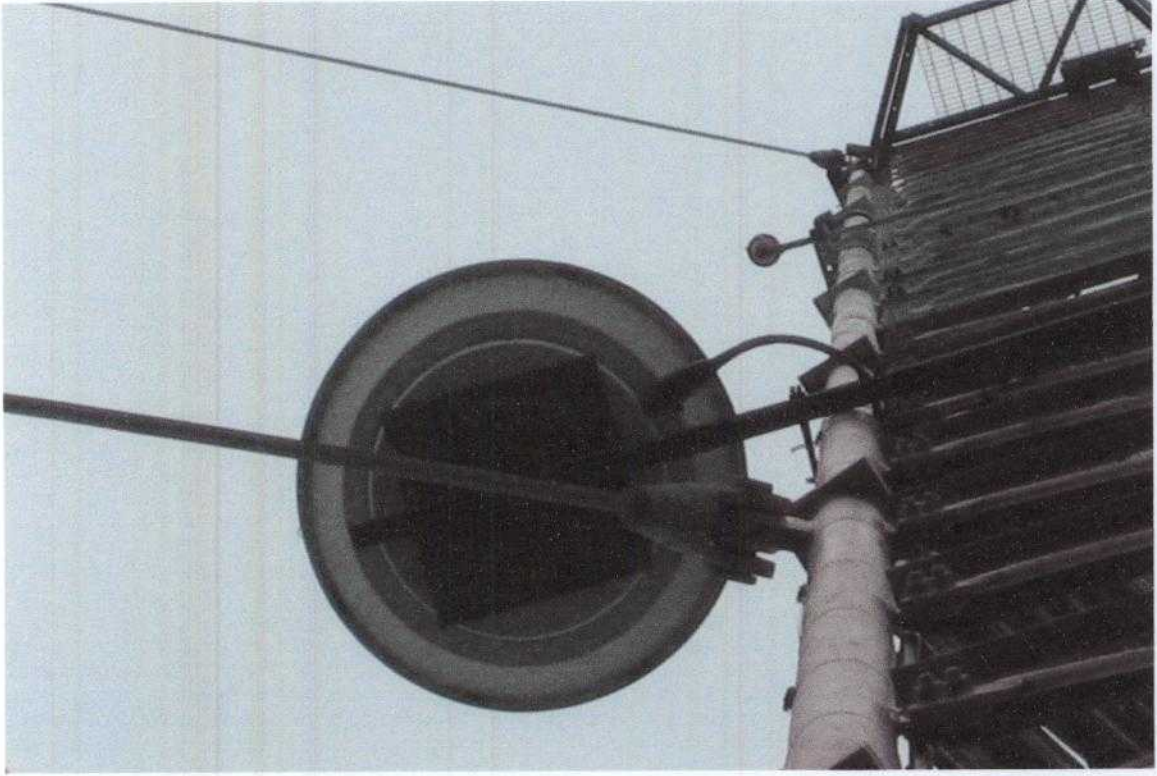














**TOWER INSPECTION REPORT**  
**Guy Cables**

**28 AUGUST 2008**

**Grand Valley State University-Ch 35 Tower Site.**

**GUY LEVELS:**

| Guy Level Height: | Size Guy Cable: | Size Preform Grips: | Size Shackles: |
|-------------------|-----------------|---------------------|----------------|
| 1. 134ft.         | 1-1/8"          | N/A                 | N/A            |
| 2. 287ft.         | 1-1/8"          | N/A                 | N/A            |
| 3. 459ft.         | 1-3/16"         | N/A                 | N/A            |
| 4. 634ft.         | 1-3/16"         | N/A                 | N/A            |
| 5. 805ft.         | 1-1/8"          | N/A                 | N/A            |

**GUY TENSIONS:**

| Anchor:    | Guy Level: | Initial Tension: | Corrected Tension: | 10% Breaking Strength: |
|------------|------------|------------------|--------------------|------------------------|
| North East | #1         | 8,600 lbs.       | N/A                | 15,600 lbs.            |
| North East | #2         | 15,200 lbs.      | N/A                | 15,600 lbs.            |
| North East | #3         | 19,400 lbs.      | N/A                | 19,500 lbs.            |
| North East | #4         | 19,400 lbs.      | N/A                | 19,500 lbs.            |
| North East | #5         | 10,900 lbs.      | N/A                | 15,600 lbs.            |
| North West | #1         | 10,500 lbs.      | N/A                | 15,600 lbs.            |
| North West | #2         | 15,300 lbs.      | N/A                | 15,600 lbs.            |
| North West | #3         | 19,600 lbs.      | N/A                | 19,500 lbs.            |
| North West | #4         | 19,600 lbs.      | N/A                | 19,500 lbs.            |
| North West | #5         | 8,600 lbs.       | N/A                | 15,600 lbs.            |
| South East | #1         | 9,200 lbs.       | N/A                | 15,600 lbs.            |
| South East | #2         | 15,800 lbs.      | N/A                | 15,600 lbs.            |
| South East | #3         | 19,800 lbs.      | N/A                | 19,500 lbs.            |
| South East | #4         | 19,800 lbs.      | N/A                | 19,500 lbs.            |
| South East | #5         | 10,000 lbs.      | N/A                | 15,600 lbs.            |

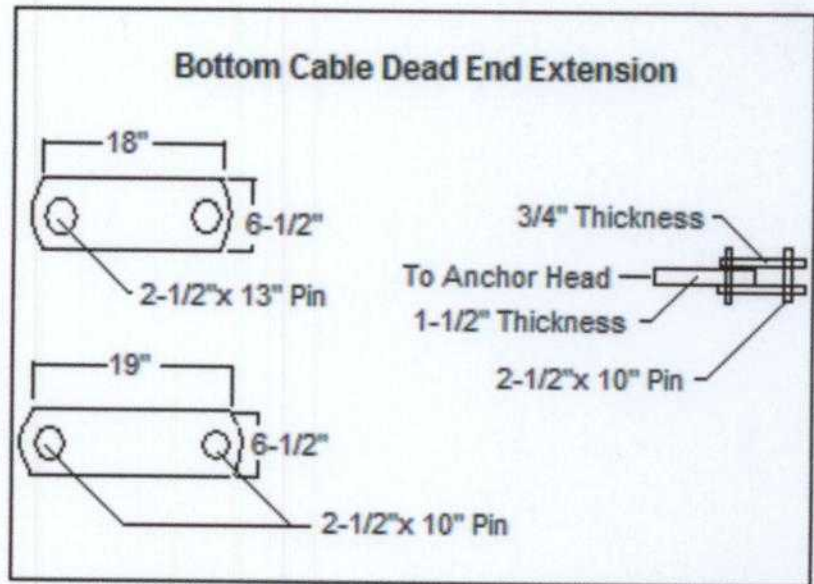
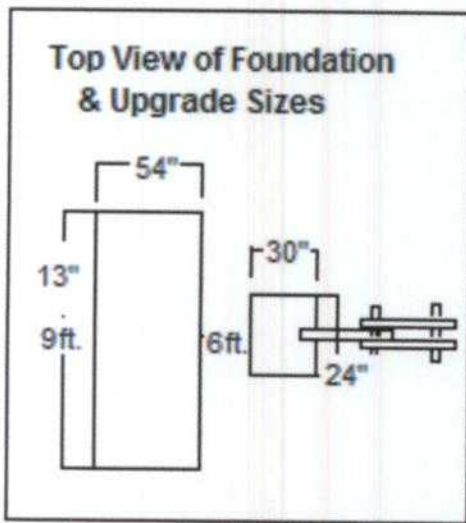
**Tower Plumb:**

Reading on South East Leg at North East Direction: ( Minus to West Lean, Plus to East Lean.)  
 1st. Level -0" 2nd. Level -0" 3rd. Level -1/4" 4th. Level -1/4" 5th. Level -1/4"  
 Reading at South Direction on North West Leg: ( Minus to South Lean, Plus to North Lean.)  
 1st. Level -1" 2nd. Level -0" 3rd. Level -1/2" 4th. Level -1/2" 5th. Level +1/2"

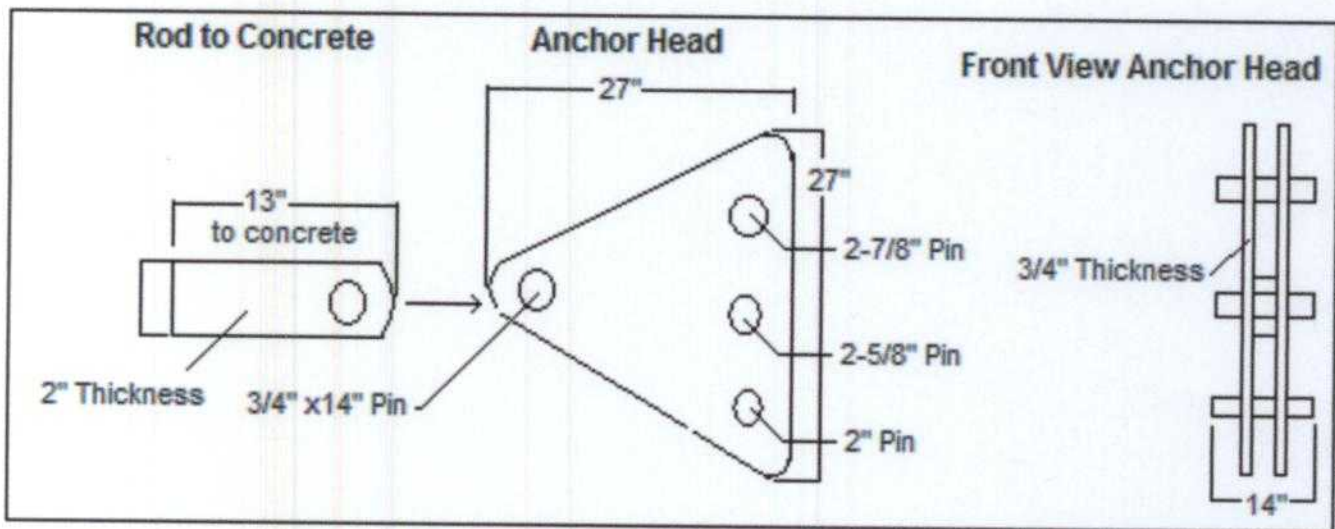
**Guy Condition:**

Guy Cables in good condition.

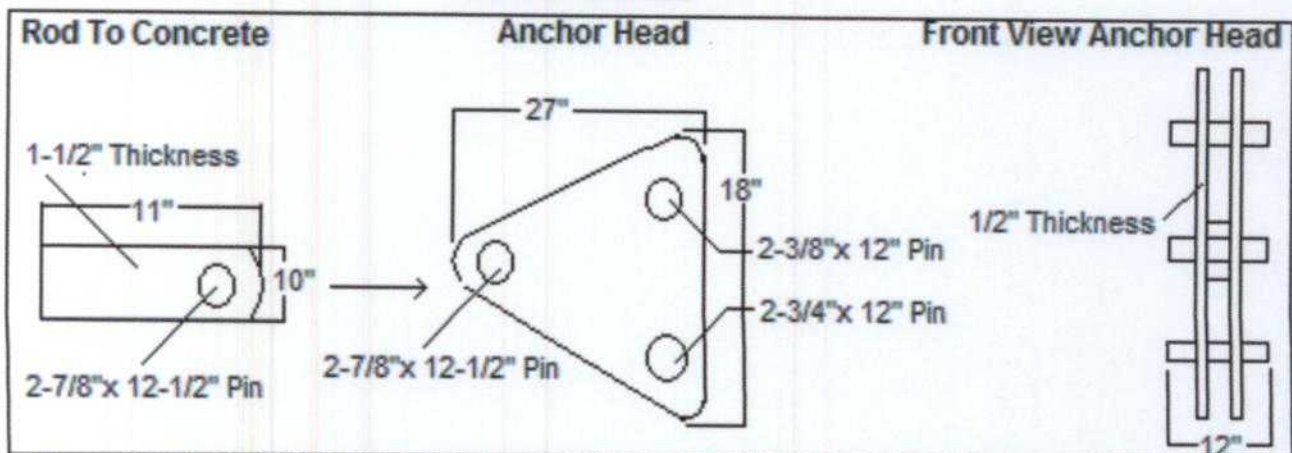
# Anchor Foundations and Anchor Drawings



**Front Anchor**

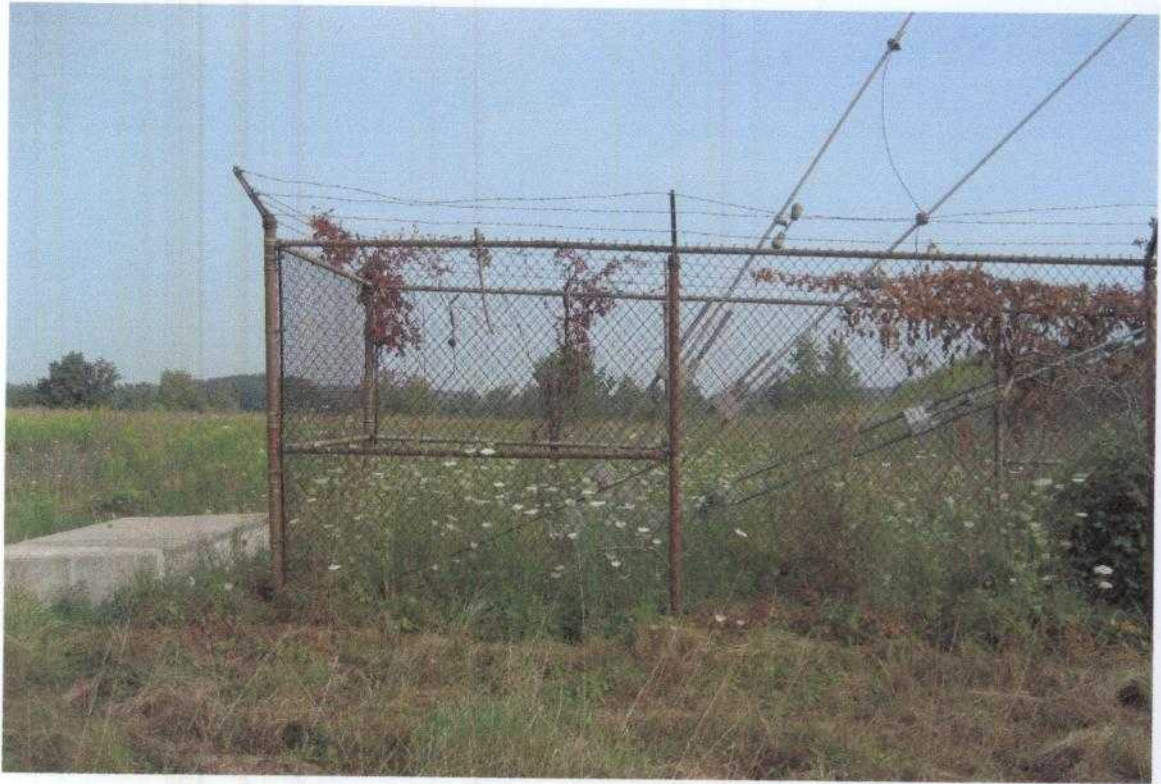


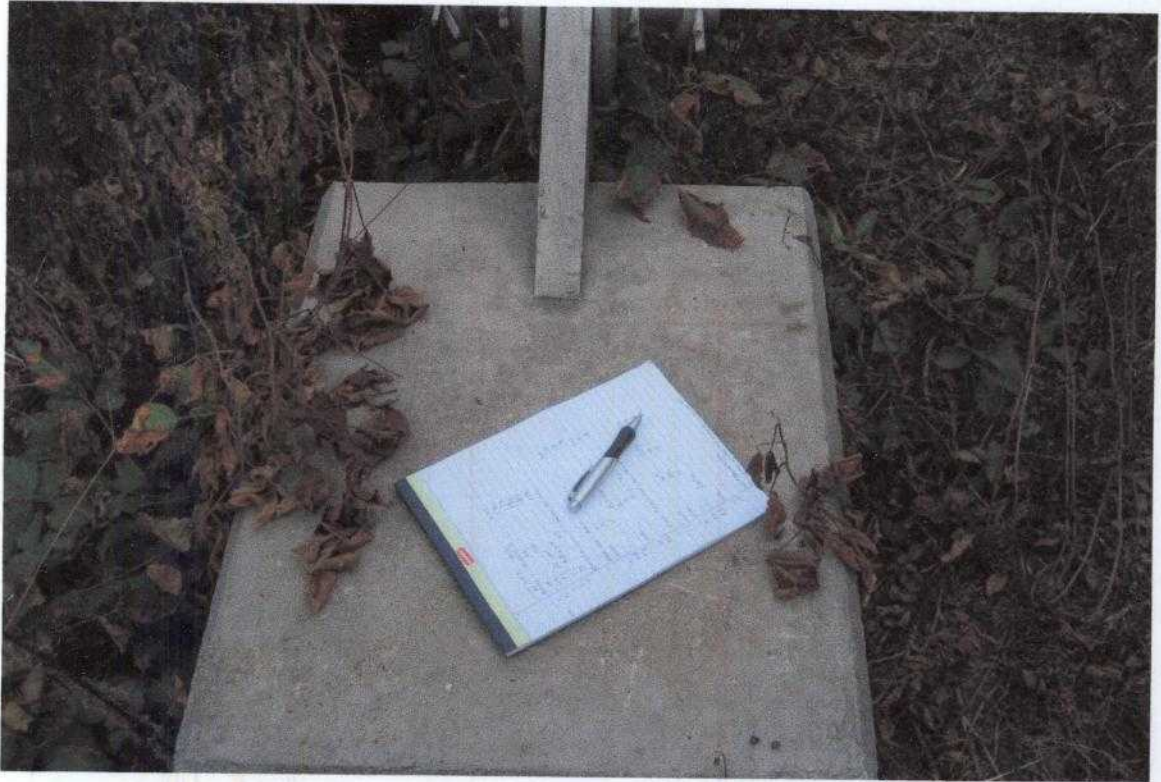
**Back Anchor**



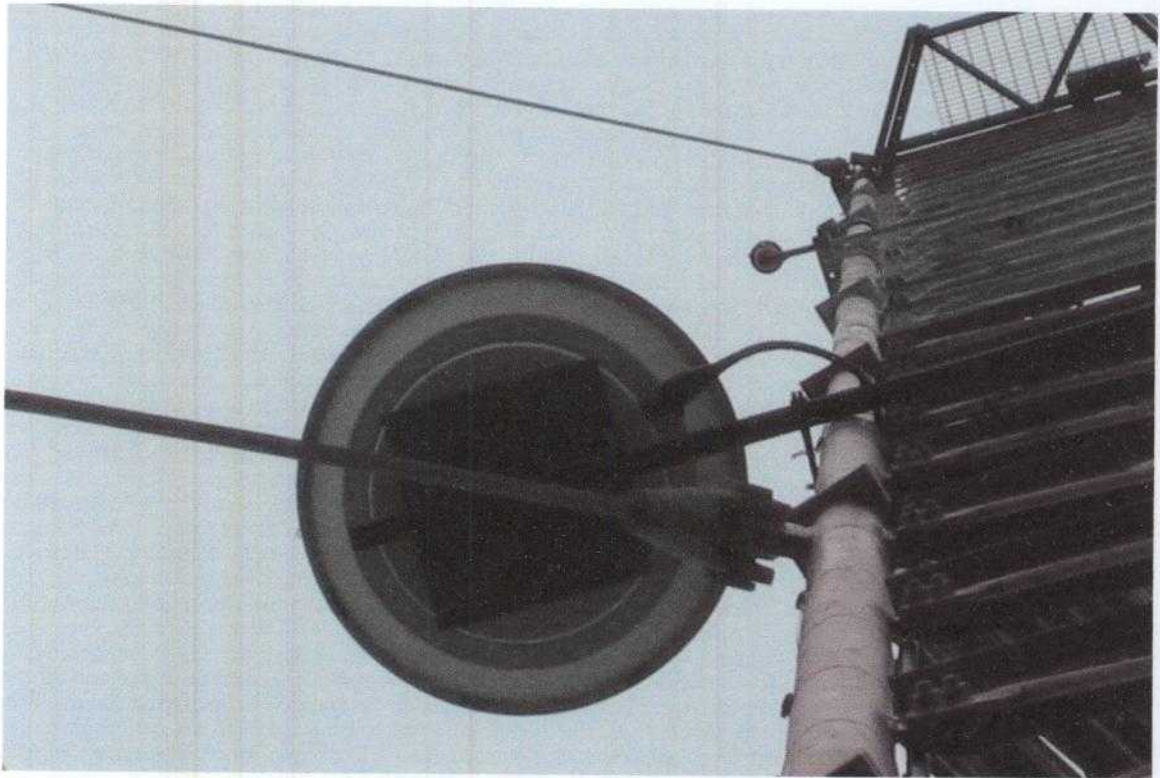












## Tower Inspection Report

30 JULY 2008

State Systems Radio- 1723 1/2 Romence Rd., Kalamazoo, MI.

### Cable Loading:

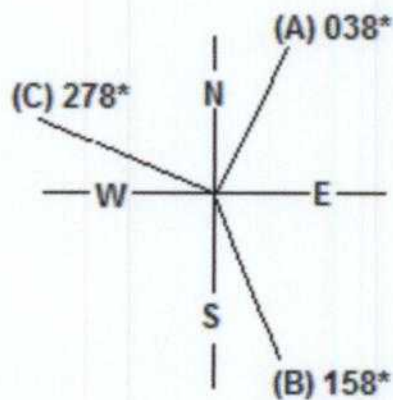
| Cable Position:           | Cable Size:        | Cable end Height: | Attachment:                       |
|---------------------------|--------------------|-------------------|-----------------------------------|
| North West Leg            | 7/8"               | 92ft.             | R-Member Clamps & cable Clamps    |
| North West Leg            | 1/2"               | 109ft.            | Stand-off with Snap-in Clamps     |
| South East Leg (Interior) | 7/8" (6 ea.)       | 120ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg (Interior) | 1/2"               | 140ft.            | R-Member Clamps & Cable Clamps    |
| North West Leg            | 1-5/8" (9 ea.)     | 157ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg            | 7/8" (6 ea.)       | 157ft.            | Cable Ladder with Snap-in Clamps  |
| North East Leg            | 1-5/8" (6 ea.)     | 180ft.            | Cable Ladder with Snap-in Clamps  |
| South East Leg            | 1-5/8" (6 ea.)     | 200ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg            | 1/2"               | 211ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg            | 1/2"               | 219ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg            | 1/2"               | 236ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg            | 1/2"               | 250ft.            | Cable Ladder with Snap-in Clamps  |
| North West Leg            | 1/2"               | 257ft.            | Cable Ladder with Snap-in Clamps  |
| Conduit at NE/SE Face     | 1/2"               | 295ft.            | Wire/ Cable Ties/ Tape/ Wrap Lock |
| Conduit at NE/SE Face     | 1/2"               | 314ft.            | Wire/ Cable Ties/ Wrap-Lock/ Tape |
| Conduit at NE/SE Face     | 1/2"               | 357ft.            | Wire/ Cable Ties/ Wrap-Lock/ Tape |
| Conduit at NE/SE Face     | 1/2"               | 410ft. (Abandon)  | Wire/ Cable Ties/ Wrap-Lock/ Tape |
| Conduit at NE/SE Face     | 1/2"               | 415ft.            | Wire/ Cable Ties/ Wrap-lock/ Tape |
| North West Leg            | 1-5/8"             | 426ft.            | R-Member with Cable Clamps        |
| Conduit at NE/SE Face     | RG59               | 426ft. (Abandon)  | Wire/ Cable Ties/ Wrap-Lock/ Tape |
| North East Interior       | 3-1/2" (Hard Line) | 560ft.            | Spring Hanger System              |
| Conduit at NE/SE Face     | RG59 (2)           | 600ft. (Abandon)  | Wire/ Cable Ties/ Wrap-Lock/ Tape |
| South East Leg (Interior) | Elliptical         | 602ft.            | R-Member with Cable Clamps        |
| North West Leg (Interior) | 7/8"               | 640ft.            | R-Member with Cable Clamps        |
| Conduit NE/SE Face        | Control Wire       | 640ft.            | Wrap-Lock/ Wire/ Cable Ties/ Tape |
| South East Leg            | 7/8" (2)           | 685ft.            | Wire Tied                         |
| North East Leg (Interior) | 3" (Hard Line)     | 755ft.            | Spring Hanger System              |
| North East Leg (Interior) | 5" (Hard Line)     | 805ft.            | Spring Hanger System              |

### Tower Lighting System:

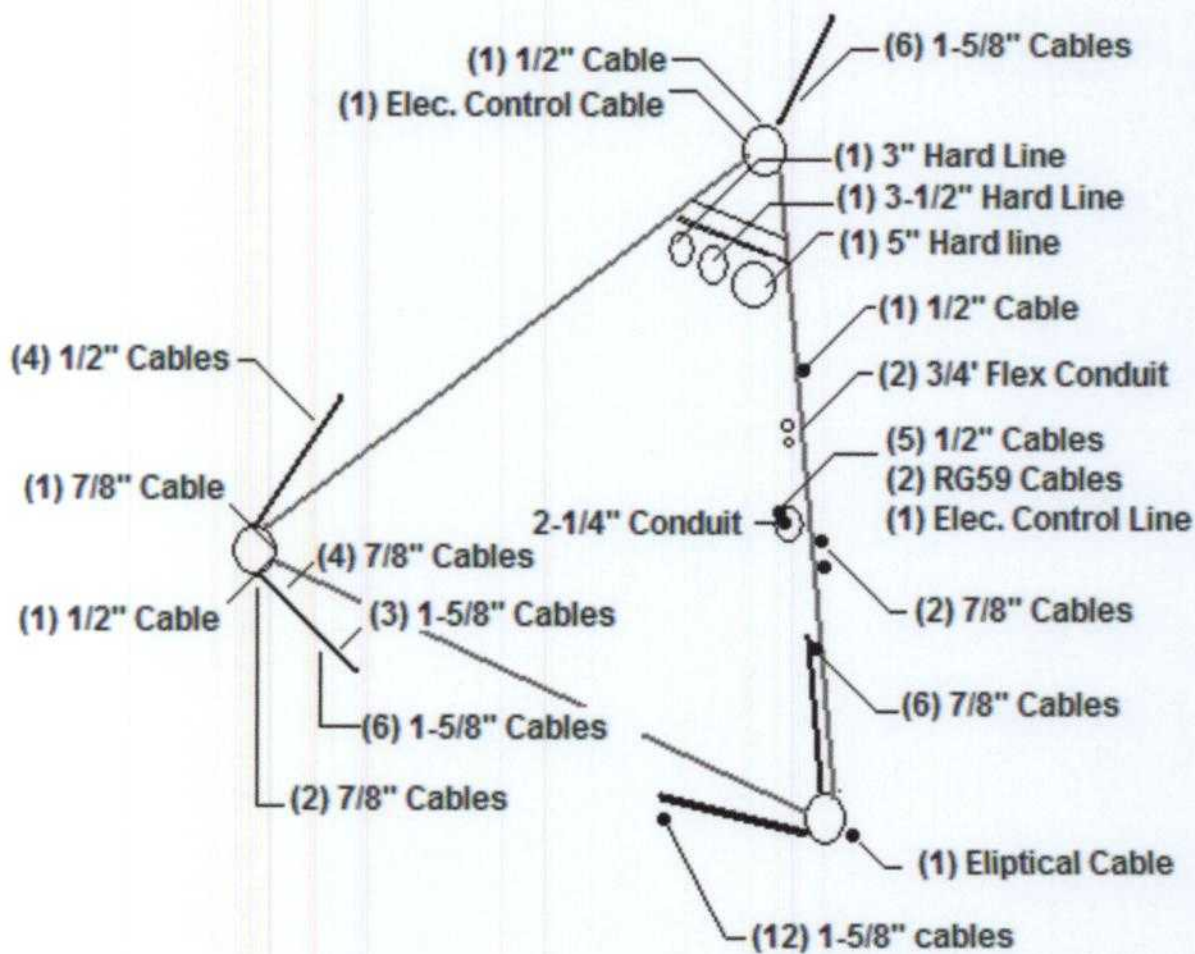
- (1) Beacon Lights at 280ft., 590ft., and 860ft. Levels , Filtered Type Beacon Light in Good Condition.
- (1) Set of Three Obstruction lamps at the 140ft., 425ft., and 707ft. Levels with Junction Box.  
Lamps and Globes and in good condition.
- (1) Solid State Control Box in building, photo cell is operational.

# Guy Anchor Lay out Drawing & Cable Placement

## Guy Anchor Azmuiths

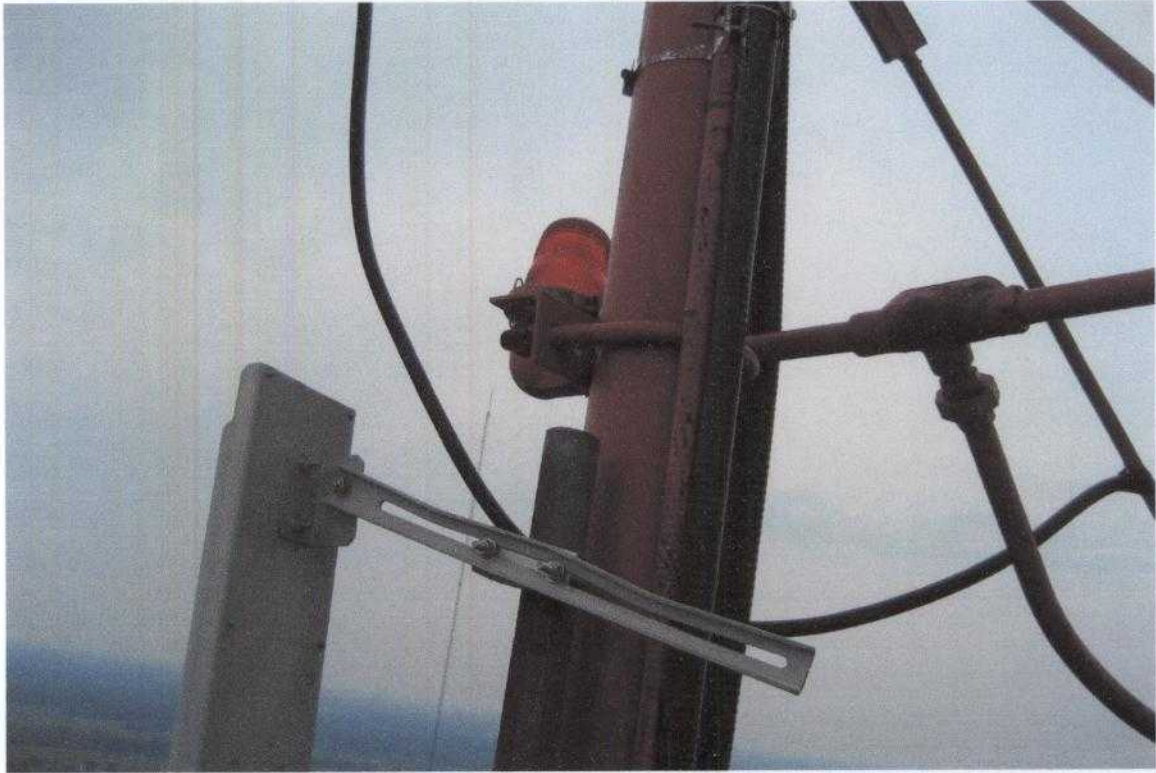


## Cable Placement Drawing









## Tower Inspection Report

28 AUGUST 2008

Grand Valley State University-Ch 35 Tower Site

### Discrepancy Report

Item #1

Guy Anchor cages are slightly grow over with vines.

Item #2

Guy cables are out of 10% breaking strength Tension, see engineered documentation for proper guy tensions.

Item #3

Abandon Lines on Tower Conduit System, Removal of abandon line will require re-tying of all lines on conduit.

Item #4

Tower De-Icier sensor broken.

## Ultra Sound Recording Report

Recordings are done at each Tower leg Above and Below 1ft. of each Section Joint., Reading are in tenths of an Inch.

| Tower Section Level: | NE Leg     | NW Leg     | SE Leg     |                               |
|----------------------|------------|------------|------------|-------------------------------|
| 0-10'                | .67        | .67        | .67        | Leg Center                    |
| 10 to 35ft.          | .68<br>.67 | .68<br>.60 | .68<br>.63 | Section Bottom<br>Section Top |
| 35 to 60ft.          | .70<br>.63 | .62<br>.64 | .66<br>.67 | Section Bottom<br>Section Top |
| 60 to 85ft.          | .68<br>.73 | .67<br>.64 | .67<br>.63 | Section Bottom<br>Section Top |
| 85 to 110ft.         | .65<br>.66 | .63<br>.64 | .64<br>.67 | Section Bottom<br>Section Top |
| 110 to 135ft.        | .65<br>.65 | .65<br>.75 | .68<br>.71 | Section Bottom<br>Section Top |
| 135 to 160ft.        | .63<br>.65 | .68<br>.65 | .63<br>.63 | Section Bottom<br>Section Top |
| 160 to 185ft.        | .64<br>.65 | .66<br>.63 | .65<br>.64 | Section Bottom<br>Section Top |
| 185 to 210ft.        | .60<br>.61 | .63<br>.61 | .55<br>.53 | Section Bottom<br>Section Top |
| 210 to 235ft.        | .57<br>.59 | .58<br>.59 | .53<br>.56 | Section Bottom<br>Section Top |
| 235 to 260ft.        | .57<br>.56 | .53<br>.56 | .57<br>.57 | Section Bottom<br>Section Top |
| 260 to 285ft.        | .62<br>.64 | .58<br>.59 | .62<br>.64 | Section Bottom<br>Section Top |
| 285 to 310ft.        | .67<br>.65 | .66<br>.68 | .66<br>.62 | Section Bottom<br>Section Top |
| 310 to 335ft.        | .66<br>.60 | .64<br>.62 | .66<br>.69 | Section Bottom<br>Section Top |
| 335 to 360ft.        | .56<br>.42 | .52<br>.41 | .57<br>.49 | Section Bottom<br>Section Top |
| 360 to 385ft.        | .44<br>.45 | .43<br>.40 | .43<br>.42 | Section Bottom<br>Section Top |
| 385 to 410ft.        | .40<br>.43 | .42<br>.41 | .41<br>.42 | Section Bottom<br>Section Top |
| 410 to 435ft.        | .39<br>.41 | .37<br>.41 | .42<br>.41 | Section Bottom<br>Section Top |

## ULTRA SOUND RECORDING REPORT (continued)

| Tower Section Level     | NE LEG     | NW LEG     | SE LEG     |                               |
|-------------------------|------------|------------|------------|-------------------------------|
| 435 to 460ft.           | .44<br>.45 | .44<br>.39 | .44<br>.39 | Section Bottom<br>Section Top |
| 460 to 485ft.           | .38<br>.39 | .40<br>.40 | .40<br>.42 | Section Bottom<br>Section Top |
| 485 to 510ft.           | .38<br>.39 | .39<br>.40 | .43<br>.42 | Section Bottom<br>Section Top |
| 510 to 535ft.           | .40<br>.46 | .44<br>.42 | .40<br>.38 | Section Bottom<br>Section top |
| 535 to 560ft.           | .39<br>.38 | .40<br>.42 | .39<br>.37 | Section Bottom<br>Section Top |
| 560 to 585ft.           | .39<br>.37 | .44<br>.45 | .37<br>.39 | Section Bottom<br>Section Top |
| 585 to 610ft.           | .39<br>.38 | .42<br>.41 | .40<br>.41 | Section Bottom<br>Section Top |
| 610 to 635ft.           | .43<br>.41 | .42<br>.41 | .41<br>.39 | Section Bottom<br>Section Top |
| 635 to 660ft.           | .40<br>.41 | .38<br>.39 | .37<br>.38 | Section Bottom<br>Section Top |
| 660 to 685ft.           | .39<br>.40 | .38<br>.37 | .38<br>.40 | Section Bottom<br>Section Top |
| 685 to 710ft.           | .35<br>.36 | .34<br>.34 | .31<br>.34 | Section Bottom<br>Section Top |
| 710 to 735ft.           | .33<br>.31 | .33<br>.35 | .33<br>.31 | Section Bottom<br>Section Top |
| 735 to 760ft.           | .31<br>.31 | .33<br>.35 | .33<br>.34 | Section Bottom<br>Section Top |
| 760 to 785ft.           | .34<br>.33 | .30<br>.31 | .31<br>.32 | Section Bottom<br>Section Top |
| 785 to 805ft.           | .35<br>.34 | .34<br>.36 | .32<br>.31 | Section Bottom<br>Section Top |
| 805ft. (Top of Section) | .30        | .30        | .30        | Section Top                   |