



# County of Fairfax, Virginia

## MEMORANDUM

DATE: April 12, 2010

**TO:** David Marshall, Chief  
Facilities Planning Branch, Planning Division, DPZ

**FROM:** Kevin Guinaw, Chief *K. Guinaw*  
Special Projects/Applications Management Branch, Zoning Evaluation Division, DPZ

**SUBJECT:** Proposed T-Mobile Northeast LLC Telecommunications Facility at 11450 N. Shore Drive;  
Tax Map 17-2 ((1)) 3; 2232 Application FS-H10-5

This is in response to a request for a determination as to whether the telecommunications facility proposed by T-Mobile Northeast LLC at 11450 N. Shore Drive (Lake Anne Fellowship House Building) is in substantial conformance with the Rezoning RZ A-502 as approved by the Board of Supervisors. As described in the 2232 application dated February 24, 2010, from Nathan Campbell, two (2) panel antennas (59" high x 11.9" wide x 6.3" deep) are proposed to be flush-mounted to the rooftop penthouse of the 96-foot tall building. The antennas will be painted to match the penthouse. In addition, two (2) equipment cabinets (63.5" high x 51" wide x 37" deep) are proposed to be installed on an existing equipment platform on the rooftop. A copy of the 2232 application with illustrations of the proposed locations of the telecommunications equipment is attached.

The Zoning Administration Division has determined that a telecommunications facility as described above is a permitted use pursuant to the provisions of Sect. 2-514 of the Zoning Ordinance provided that it is determined to be in substantial conformance with any applicable rezoning. It is my determination that the proposed telecommunications facility is in substantial conformance with RZ A-502. Please note that this proposal is subject to 2232 review requirements and that T-Mobile's ability to proceed with its proposal is dependent upon approval of the pending 2232 application by the Fairfax County Planning Commission. This determination has been made in my capacity as the duly authorized agent of the Zoning Administrator. If you have any questions regarding this memorandum, please call Carrie Lee (703) 324-1290.

KG/CDL/O:\clee01\ActionAssignments\Antennas\11450 N Shore Dr\_rooftop\11450 N Shore Dr\_T-Mobile.doc

Attachments: A/S

cc: Catherine M. Hudgins, Supervisor, Hunter Mill District  
Frank de la Fe, Planning Commissioner, Hunter Mill District  
Regina C. Coyle, Director, Zoning Evaluation Division, DPZ  
Diane Johnson-Quinn, Deputy Zoning Administrator, Zoning Permit Review, ZAD, DPZ  
Nathan Campbell, T-Mobile Northeast LLC, 12050 Baltimore Avenue, Beltsville, MD 20705  
File: RZ A-502, ANT 1003 023, **Imaging**, Reading File



# MEMORANDUM

TO: Lorrie Kirst, Deputy Zoning Administrator, ZAD  
Other: \_\_\_\_\_

DATE: 2-25-10

FROM: David B. Marshall, Chief  
Facilities Planning Branch, DPZ

FAIRFAX COUNTY  
RECEIVED  
FEB 25 2010  
2010-0147  
DIVISION OF  
ZONING ADMINISTRATION

RECEIVED  
Department of Planning & Zoning

MAR 01 2010

Zoning Evaluation Division

SUBJECT: Request for Review: 2232 Application

RE: Application Number: FS-H10-3 Tax Map: 17-2((1))3

Attached for your review and comment is a 2232 Review application:

RECEIVED FROM: T-Mobile Northeast LLC  
PROPOSED USE: Telecom - Switching Collocation  
LOCATION OF USE: 11450 North State Drive  
ADDITIONAL COMMENTS: \_\_\_\_\_

Please send your comments to David Marshall by: 3/12/10  
Staff Coordinator: Connie Marie Phone: 44263 Email: CONNIE.MARIE@FAIRFAXCOUNTYVA.GOV

**\*\*ZAD COMMENTS:**

Property is zoned PRC  
\_\_\_\_ Proposed use is permitted by Zoning Ordinance and meets all zoning requirements.  
\_\_\_\_ Proposed use does not meet all Zoning requirements as follows:  
See attached

Referred to ZED for the following: Must be in substantial conformance with the development plan associated  
ZAD comments prepared by: Bryan Parsons Date: \_\_\_\_\_  
plan associated with R2A-502. with R2A-50@

**\*\*ZED COMMENTS:**  
\_\_\_\_ Proposed use is in substantial conformance with all development conditions and/or proffers.  
\_\_\_\_ Proposed use is not in substantial accord with all development conditions and proffers.

**\*\*ZED comments prepared by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Excellence \* Innovation \* Stewardship  
Integrity \* Teamwork \* Public Service

Department of Planning and Zoning  
Planning Division  
12055 Government Center Parkway, Suite 730  
Fairfax, Virginia 22035-5509  
Phone 703-324-1380  
Fax 703-324-3056  
www.fairfaxcounty.gov/dpz/



**Kirst, Lorrie**

---

**To:** Maier, Constance A.  
**Cc:** Parsons, Brian S.  
**Subject:** FW: FS-H10-5, 11450 North Shore Drive, T-Mobile Northeast LLC

**RE: FS-H10-5**

11450 North Shore Drive

Tax Map Ref.: 17-2 ((1)) 3

T-Mobile: Rooftop Collocation

Zoning District: PRC

The proposed use meets the requirements of Par. 1 of Sect. 2-514 of the Zoning Ordinance.

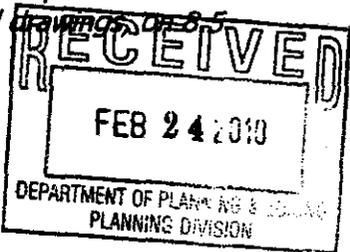
Refer to ZED: Must be in substantial conformance with the development plan associated with RZ A-502.

Prepared by: Brian Parsons 2/26/10

**COUNTY OF FAIRFAX, VIRGINIA**  
**APPLICATION FOR DETERMINATION**  
**PURSUANT TO**  
**SECTION 15.2-2232 OF THE CODE OF VIRGINIA**  
Application Number: FS-410-05  
(assigned by staff)

The application contains three parts: I. Application Summary; II. Statement of Justification; and I Telecommunication Proposal Details. Please do not staple, bind or hole-punch this application. Please provide at least one copy of all pages, including maps and drawings on 8 1/2 x 11 inch paper.

(Please Type or Print All Requested Information)



**PART I: APPLICATION SUMMARY**

**ADDRESS OF PROPOSED USE**

Street Address 11450 North Shore Drive  
City/Town Reston Zip Code 20190

**APPLICANT(S)**

Name of Applicant T-Mobile Northeast LLC  
Street Address 12050 Baltimore Avenue  
City/Town Beltsville State MD Zip Code 20705  
Telephone Number: Work ( 703 ) 201-7709 Fax ( 240 ) 264-8610  
E-mail Address Nathan.Campbell14@t-mobile.com  
Name of Applicant's Agent/Contact (if applicable) Nathan Campbell  
Agent's Street Address same as above  
City/Town \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Telephone: Work ( \_\_\_\_\_ ) \_\_\_\_\_ Fax ( \_\_\_\_\_ ) \_\_\_\_\_

**PROPOSED USE**

Street Address 11450 North Shore Drive

Fairfax Co. Tax Map and Parcel Number(s) 17-2 ((1)) 3

Brief Description of Proposed Use \_\_\_\_\_

Modification of existing wireless broadband telecommunications facility - Applicant proposes the installation of two (2) additional panel antennas mounted on a rooftop penthouse and the installation of two equipment cabinets on an existing steel platform. Proposed antennas will be flush-mounted and painted to match the penthouse.

Total Area of Subject Parcel(s) 3.37 acres (acres or square feet)

Portion of Site Occupied by Proposed Use 200 sq ft (acres or square feet)

Fairfax County Supervisor District Hunter Mill

Planned Use of Subject Property (according to Fairfax County Comprehensive Plan)  
Residential

Zoning of Subject Property PRC

List all applicable Proffer Conditions, Development Plans, Special Exceptions, Special Permits or Variances previously approved and related to this site

**PROPERTY OWNER(S) OF RECORD**

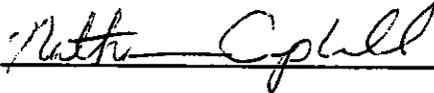
Owner Fellowship Square Foundation Inc.

Street Address 560 Herndon Pkwy, Suite 340

City/Town Herndon State VA Zip Code 20170

**PART II**, entitled "Statement of Justification," pages 4 through 6, shall be completed by all applicants and included as part of the application. **PART III**, entitled "Telecommunication Proposal Details," pages 7 through 9, also shall be completed and included for all proposed telecommunication uses.

Name of Applicant or Agent Nathan Campbell

Signature of Applicant or Agent 

Date February 9, 2010

\*\*\*\*\*

*Please do not staple, bind or hole-punch this application. Please provide at least one copy of all pages, including maps and drawings, on 8.5 x 11 inch paper.*

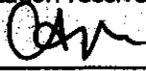
**Submit completed application to:**

**Fairfax County  
Department of Planning and Zoning, Planning Division  
Herrity Building  
12055 Government Center Parkway, Suite 730  
Fairfax, Virginia 22035**

\*\*\*\*\*

**FOR STAFF USE ONLY**

Date application received: 2/24/10

By: 

Additional information requested to complete application:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date application accepted:   /  /  

By: \_\_\_\_\_



February 9, 2009<sup>10</sup>

Fairfax County  
Department of Planning and Zoning, Zoning Division  
Herrity Building  
12055 Government Center Parkway, Suite 730  
Fairfax, VA 22035

**RE: STATEMENT OF JUSTIFICATION**

**T-Mobile Northeast LLC**

**Request for Determination under Virginia Code Section 15.2-2232**

**Site Address: 11450 North Shore Drive Reston, VA 20190**

**Parcel ID#: 0172-01-0003**

**Zoning: PRC**

**Use: Residential**

**Supervisor District: Hunter Mill**

**To Whom It May Concern:**

Pursuant to Section 15.2-2232 of the Code of Virginia and in substantial accordance with the provisions of the adopted Comprehensive Plan, T-Mobile Northeast LLC, hereby requests a determination that the proposed modifications to the existing wireless broadband telecommunications facility on a rooftop at 11450 North Shore Drive in Reston (T-Mobile site 7WAC074A) is in substantial accordance with the provisions of the adopted Comprehensive Plan.

**1. Description of Proposed Modifications to Existing Use:**

The existing six (6) panel antenna installation is flush-mounted to the penthouse wall at a height of 95'. T-Mobile Northeast LLC (T-Mobile) acquired its rights to the installation from APC, Sprint's predecessor. The building also supports antennas from Sprint and Nextel. T-Mobile proposes the installation of two (2) additional panel antennas measuring 59" high, 11.9" wide and 6.3" deep. The additional antennas will be flush mounted and painted to match and mounted no higher than the existing T-Mobile antennas. The new antennas would increase the size of T-Mobile's installation by no more than 25%

The proposed additional antennas would utilize a proposed RBS 2106 equipment cabinet, measuring 63.5" high by 51" wide by 37" deep to be mounted on an existing steel rooftop equipment platform. A RBS-3518 would also be mounted on the platform.

*[Faint, illegible text]*



There would be no increase in the roof coverage area. The platform is set back from the roof edge and the proposed equipment is not visible from the ground.

The facility is unmanned and operates around the clock, 365 days per year. Routine maintenance occurs once or twice per month, performed by a service technician driving a standard sized vehicle. This facility operates as a base station for T-Mobile's telecommunications network. T-Mobile's network operates with transmitting frequencies between 1965 and 1975 megahertz and receiving frequencies between 1885 and 1895 megahertz. These modifications will not generate any noise, lights, dust, glare, vibrations, fumes or odors. The only traffic generated will be the roughly once a month routine maintenance visits. The proposed modifications pose no threat to the public health safety or welfare and will not impact radio, television or telephone reception. They will have no impact upon the air and water quality nor will they impact any existing environmental features of the subject property.

## 2. Requirement of Proposed Use:

The proposed modifications are a vital component of T-Mobile's area-wide wireless telecommunications network. Because wireless communications facilities operate at low power levels, wireless service providers such as T-Mobile must locate antenna sites according to a network design based on interconnecting cells (coverage areas) so that a wireless call can be seamlessly handed off from one wireless communications facility to the next as a user travels throughout the area. Without a sufficient number of wireless communications facilities, calls will drop and disconnect as the user approaches the outer limits of a cell. In order to achieve maximum efficiency from each wireless communications facility in the network, T-Mobile is adding antennas at existing sites, so that it can attain the broadest pattern of signal distribution and the widest possible spacing between its wireless communications facilities.

Dropped calls are not only an inconvenience and an annoyance for mobile phone users, but a network with significant gaps in coverage also diminishes the important emergency services component of wireless telephone service. Signal quality and network access are what matter most too wireless users. T-Mobile has significant coverage gaps in the area surrounding this wireless broadband communications facility and by modifying its installation, will be able to provide more complete coverage without the need for an entirely new installation.

T-Mobile is licensed by the Federal Communications Commission to provide telecommunications service in Fairfax County. The proposed modification is necessary in order to service the intended coverage area and to provide for proper hand-off to the adjacent antenna facilities in the network. This modification will serve to both close coverage gaps and relieve the number of dropped calls for adjacent sites.



#### **ANTICIPATED IMPACTS ON ADJOINING PROPERTIES**

The facility has no impact on traffic or parking as the facility is unmanned and does not generate traffic. This is an existing telecommunications site so the visual impact of the modifications will be minimal. There is no perceptible noise generated by the facility. There will be no interference with electronic equipment for telephone, television, radio or other electronic uses generated by these modifications.

#### **RELATIONSHIP OF THE PROPOSAL TO THE COMPREHENSIVE PLAN**

The existing facility has been found to be consistent with the goals the Fairfax County Comprehensive Plan and the objectives found under the Policy Plan of the Comprehensive Plan concerning "Mobile and Land-Based Telecommunication Services". The proposed modifications to T-Mobile's installation will not alter the facility's compliance with the goals and objectives of the Comprehensive Plan. These modifications will enhance the service provided by this installation without generating any significant additional impact to the property or surrounding parcels and will reduce the need for new T-Mobile wireless installations in this area of Fairfax County.

Respectfully submitted,

A handwritten signature in cursive script that reads "Nathan B. Campbell".

Nathan B. Campbell  
Smartlink, LLC for T-Mobile Northeast LLC

### PART III: TELECOMMUNICATION PROPOSAL DETAILS

*Please complete and provide all requested information. If question is not applicable to the proposed use, please indicate with N/A.*

#### PROPOSED TELECOMMUNICATION USE

Use is (check one):

- New structure (monopole, tower or camouflaged facility)
- Replacement of existing pole or tower at same location with another pole or tower
- Antenna placement on building or penthouse facade
- Antenna placement on building or penthouse rooftop
- Collocation on other existing telecommunications structure (monopole or tower)
- Collocation on other non-telecommunications structure (such as an electric transmission tower/pole, utility pole, water tower, etc.)
- Modification to telecommunications facility previously approved for same applicant:  
Prior 2232 Review application number: FS-49 (APC)  
Date of Planning Commission approval: June 22, 1995

#### PROJECT DETAILS

##### **1. ANTENNA**

Number and Type: Two (2) TMBXX-6516-R2M panel  
Dimensions: height 59" width 11.9" depth 6.3" diameter           
Location / Placement: flush mounted on existing rooftop penthouse  
Wattage: 250 W  
Material and Color: metal - will be painted to match penthouse  
Material and Color of the Antenna Mounting: metal - will be painted to match  
Height Above Ground: 95'

##### **2. EQUIPMENT**

Number and Type of Cabinets or Structures: (2) RBS cabinets (2106 & 3518)  
Cabinet / Structure Dimensions: height 63.5" width 51" depth 37"  
Height of equipment platforms, if any: +/- 12"  
Material and Color: metallic off-white  
Location: on existing steel equipment platform  
Method of Screening: set back from roof edge - not visible from ground

##### **3. STRUCTURE ON WHICH ANTENNAS WILL BE MOUNTED**

Maximum Height: 85' building height, 97' penthouse height  
Material: brick  
Color: tan brick  
If structure is within a utility right-of-way, state right-of-way width:  
N/A

If the proposed structure will replace an existing pole or tower, provide dimensions of the existing structure:

Height of Structure to be Replaced: N/A

Diameter or Overall Footprint of Structure to be Replaced: N/A

#### 4. ADDITIONAL INFORMATION

The following information, as relevant to the proposal, shall be included:

- A. ELEVATIONS: Structural elevation drawings showing the placement of the antenna and the related equipment on the existing or proposed structure;
- B. ANTENNA: Details showing the antenna and antenna mountings and the location of the antenna on the building or structure;
- C. BUILDING ROOF PLAN AND CALCULATION: If located on a building rooftop, provide a roof plan at a scale of 1"= not more than 20' showing all existing penthouses, structures and mechanical equipment on the roof and the location of the proposed antenna and related telecommunications equipment. Include a calculation stating 1) the percentage of the roof which is covered by all existing structures, and 2) the percentage that will be covered by all existing structures plus the proposed antennas, equipment cabinets and shelters;
- D. SCREENING: Details of screening for the equipment structure and/or antenna structure showing type of screening material, dimensions and placement; if landscaping is provided, list the height of the landscaping at time of planting and the ultimate height;
- E. PROPERTY PLAT: A plat of the property prepared by a certified engineer showing the location of the proposed ground equipment structure and antenna, the relationship to other structures on site, with measured distances from all property boundaries or easement lines if the structure or antenna is placed in an easement;
- F. PHOTOGRAPHS: For collocations on existing buildings or other structures such as power poles or towers, provide photographs of the building or structure showing the proposed placement of the antenna and related equipment;
- G. PHOTOGRAPHIC SURVEY: For proposed structures, provide a photographic survey of the project site. Photographs should be taken from the subject property boundaries at four or more locations to show on- and off-site views of the subject property and to identify the proposed location of the facility on the site. The number of photos submitted will vary according to site size but should be adequate to view the entire site;

H. PHOTO SIMULATIONS: Provide photo simulations illustrating the proposed facility, antennas and equipment. Include enough photo simulations to accurately depict the proposed facility. For new structures, the photo simulations should depict the appearance of all proposed structures and equipment as viewed from the subject site and adjoining properties and show the relationship to existing site features such as building, trees and other physical features. For rooftop or structure installations, the photo simulations should depict the appearance of the antennas and equipment when installed. Photo simulations may be submitted to Fairfax County as part of the application. For new structures the simulations may be submitted following completion of an on-site height test.

I. On-site Height Test: For proposed poles or towers, the applicant should conduct an on-site height demonstration, such as a balloon or crane test, to simulate the extent of the proposed structure's visibility from surrounding properties. Such test should be coordinated with the staff coordinator.

END OF APPLICATION

**MAP #: 0172 01 0003**  
**FELLOWSHIP SQUARE FOUNDATION**  
**INC**

**11450 NORTH SHORE DR**

### Owner

Name FELLOWSHIP SQUARE FOUNDATION INC,  
Mailing Address 560 HERNDON PKWY SUITE 340 HERNDON VA  
20170  
Book 03271  
Page 0143

### Parcel

Property Location 11450 NORTH SHORE DR  
Map # 0172 01 0003  
Tax District 10500  
District Name HUNTER MILL DIST. #5  
Land Use Code Medium rise apartments rental(5to8 stry)  
Land Area (acreage) 3.3714  
Land Area (SQFT)  
Zoning Description PRC(Commercial/Industrial Dev)  
Utilities WATER CONNECTED  
SEWER CONNECTED

County Historic Overlay District NO  
For further information about Historic Overlay  
Districts, Click here

Street/Road PAVED  
Site Description

### Legal Description

Legal Description RESTON  
PT PCL 13 SEC 1

### Sales History

Date	Amount	Seller	Buyer
02/10/1970	\$138,000		FELLOWSHIP SQUARE FOUNDATION INC

### Sales

Date	02/10/1970
Amount	\$138,000
Seller	
Buyer	FELLOWSHIP SQUARE FOUNDATION INC
Notes	Valid and verified sale
Deed Book and Page	03271-0143

### Values

Current Land	\$3,150,000
Current Building	\$6,132,750
Current Assessed Total	\$9,282,750
Tax Exempt	YES
Note	

### Values History

Tax Year	Land	Building	Assessed Total	Tax Exempt
2009	\$3,150,000	\$6,132,750	\$9,282,750	YES
2008	\$3,500,000	\$5,650,320	\$9,150,320	YES
2007	\$3,500,000	\$5,537,240	\$9,037,240	YES
2006	\$3,500,000	\$4,543,160	\$8,043,160	YES

2005	\$3,500,000	\$4,348,310	\$7,848,310	YES
2004	\$3,500,000	\$3,986,705	\$7,486,705	YES
2003	\$2,100,000	\$5,361,225	\$7,461,225	YES
2002	\$2,100,000	\$4,604,365	\$6,704,365	YES
2001	\$2,100,000	\$4,604,365	\$6,704,365	YES
2000	\$2,100,000	\$4,177,030	\$6,277,030	YES

**Structure**

Property Name LAKE ANNE FELLOWSHIP HOUSE 1  
Land Use Code Medium rise apartments rental(5to8 stry)  
Year Built 1971  
Gross Floor Area 115,356  
Units (if applicable) 140  
Stories 9  
Construction Type Cinder Block/Concrete Block/Brickcrete  
Exterior Walls Brick/Insullite  
Floor Concrete  
Roof Tar/Gravel  
Elevator 0  
Element # E01632001  
Note THIS COMMERCIAL PROPERTY MAY BE COMPRISED OF MORE THAN ONE TAX MAP PARCEL. IF SO, THE ADDITIONAL TAX MAP PARCEL(S) WILL BE LISTED BELOW.

Associated Parcels

**Structure Summary**

Property Name	Land Use Code	Year Built	GFA	Units
LAKE ANNE FELLOWSHIP HOUSE 1	Medium rise apartments rental (5to8 stry)	1971	115,356	140

**Structure Size**

Above Grade Living Area Total  
Sq. Ft  
Basement Garage # Cars

**General Information**

**Need Help?**

For questions and requests for information about the Real Estate site, call 703-222-8234 or [CLICK HERE](#)

**Disclaimer**

Under Virginia State law these records are public information. Display of this information on the Internet is specifically authorized by Va. Code 58.1-3122.2 (1998). See the Virginia State Code to read the pertinent enabling statute.

If you believe any data provided is inaccurate or if you have any comments about this site, we would like to hear from you. Owner names will be withheld from the Internet record upon request. Comments or requests may be made via e-mail to the Real Estate Division at Real Estate Division or by phone at (703) 222-8234.

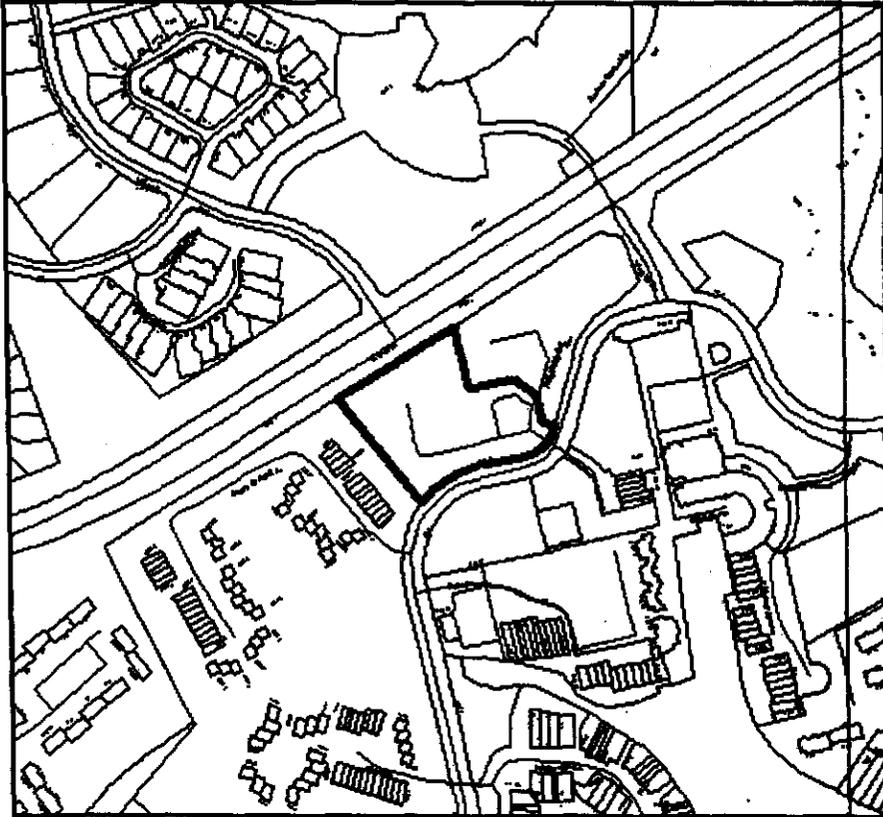
While Fairfax County has attempted to ensure that the data contained in this file is accurate and reflects the property's characteristics, Fairfax County makes no warranties, expressed or implied, concerning the accuracy, completeness, reliability, or suitability of this data. Fairfax County does not assume any liability associated with the use or misuse of this data.

**Last Refresh Date**

Data last refreshed: 17-DEC-09

MAP #: 0172 01 0003  
FELLOWSHIP SQUARE FOUNDATION  
INC

11450 NORTH SHORE DR



Aerial Imagery © 2007 Commonwealth of Virginia

Source: Fairfax County Department  
of Tax Administration, Real Estate Division.



# TMBXX-6516-R2M

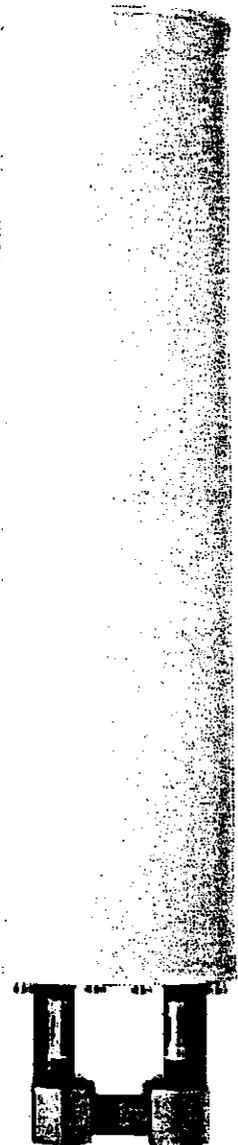
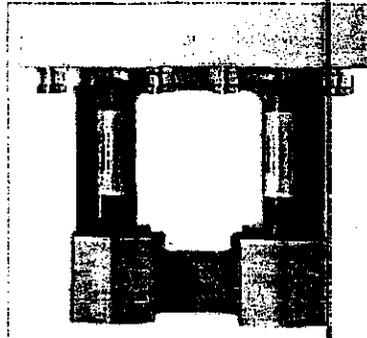
±45° Dual Band Quad Antenna

**Decibel®**  
Base Station Antennas

- Patented cross dipole and feed system
- Rugged, reliable design with excellent PIM suppression
- Includes factory installed AISG RET actuator
- Fully compatible with Andrew Teletilt® remote control antenna system

## ELECTRICAL

Frequency Range (MHz):	1710-2155				
Characteristic Impedance (Ohms):	50				
Azimuth BW (Deg):	64.5 ± 8				
Elevation BW (Deg):	7.2 ± 1.2				
Gain (dBi):	17.5 ± 8				
Polarization:	±45°				
Front-to-Back Ratio (dB)	2°	4°	6°	8°	10°
Copol, 180° ± 30°:	>24	>24	>24	>24	>24
Total Power, 180° ± 30°:	>24	>23	>22	>23	>23
Upper Sidelobe (dB)	2°	4°	6°	8°	10°
Main Beam to +20°:	>18	>17	>15	>14	>11
VSWR / Return Loss (dB):	1.35:1 / 16.5				
Port-to-Port Isolation (dB):	>30				
Electrical Tilt Range (Deg):	2-10				
Electrical Downtilt Accuracy (Deg):	± 0.9				
Cross-pol (dBc)	2°	4°	6°	8°	10°
3 dB Beamwidth:	>13	>13	>12	>12	>12
Intermodulation Products (dBc)					
3rd Order, 2 x 20 Watts:	155				
Max. Input Power (Watts):	250				
Lightning Protection:	DC Ground				



## PERFORMANCE TRACKING

Gain Variation (dB) (between UL and DL frequency pair):	1.3
Electrical Tilt Accuracy (Deg) (between UL and DL frequency pair within 0.5°):	<0.55
Azimuth HPBW (Deg) (between UL and DL frequency pair):	11.5

## MECHANICAL

Net Weight (kg / lbs):	15.7 / 34.6
Dimensions-LxWxD: (with actuator)	1499 x 302 x 160 mm 59 x 11.9 x 6.3 inch
Max. Wind Area (m² / ft²):	0.27 / 2.9
Max. Wind Load (N / lbf):	729.4 / 164
Max. Wind Speed (km/h / mph):	241 / 150
Hardware Material:	Hot Dip Galvanized
Connector Type:	7-16 DIN, Female (4)
Color:	Off White
Standard Mounting Hardware:	TM600899A-2

Andrew Corporation  
2601 Telecom Parkway  
Richardson, Texas U.S.A. 755082-3521  
Tel: 214.631.0310

Fax: 214.688.0089  
Toll Free Tel: 1.800.676.5342  
Fax: 1.800.229.4706  
www.andrew.com

11/27/2006  
Page 1 of 3  
dbtech@andrew.com

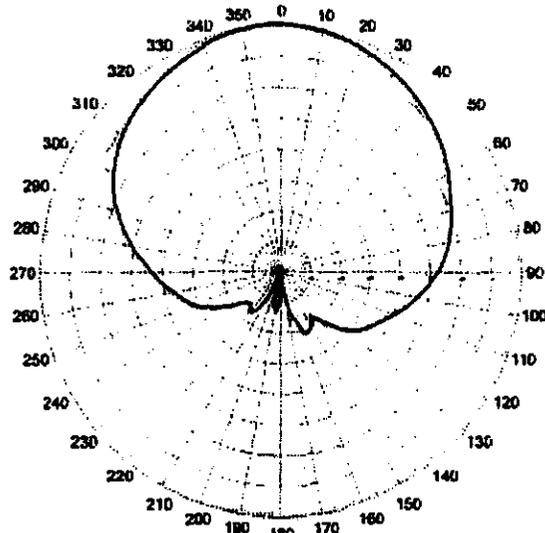


**TMBXX-6516-R2M**  
±45° Dual Band Quad Antenna

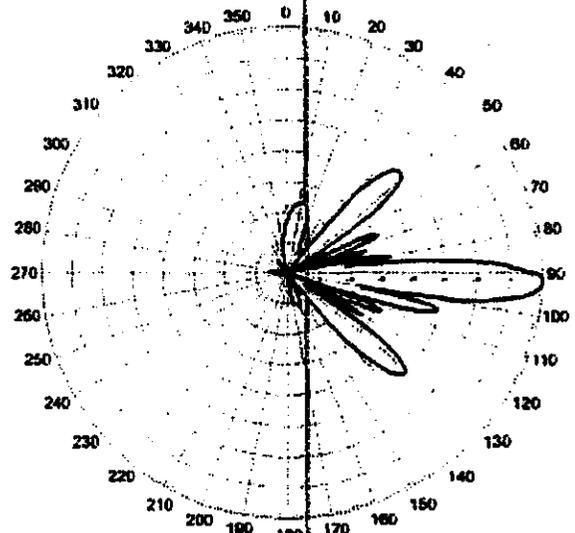
**Decibel®**  
Base Station Antennas

**AZIMUTH PATTERN**

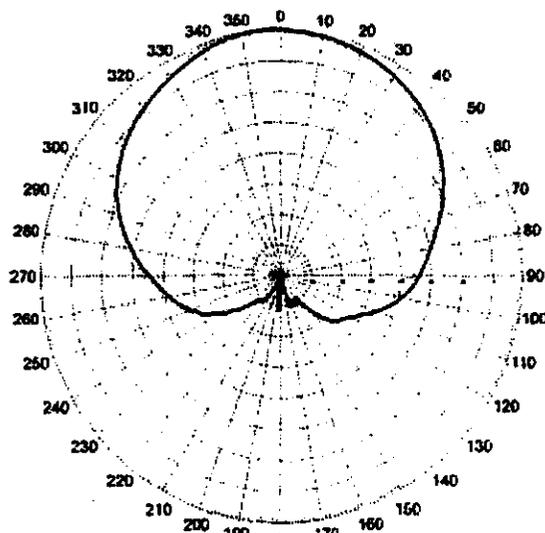
**ELEVATION PATTERN**



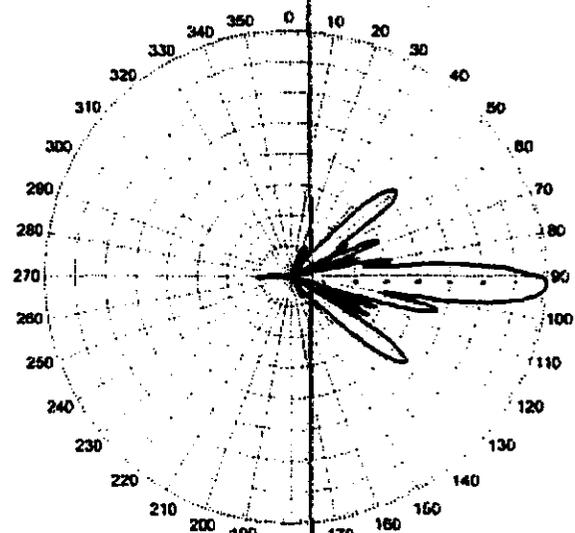
1732 MHz, Tilt: 2°



1732 MHz, Tilt: 2°



1880 MHz, Tilt: 2°



1880 MHz, Tilt: 2°

Note: Scale 5 dB per division.

Andrew Corporation  
2601 Telecom Parkway  
Richardson, Texas U.S.A. 755082-3521  
Tel: 214.631.0310

Fax: 214.688.0089  
Toll Free Tel: 1.800.676.5342  
Fax: 1.800.229.4706  
www.andrew.com

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dbtech@andrew.com

Information correct at date of issue but may be subject to change without notice.



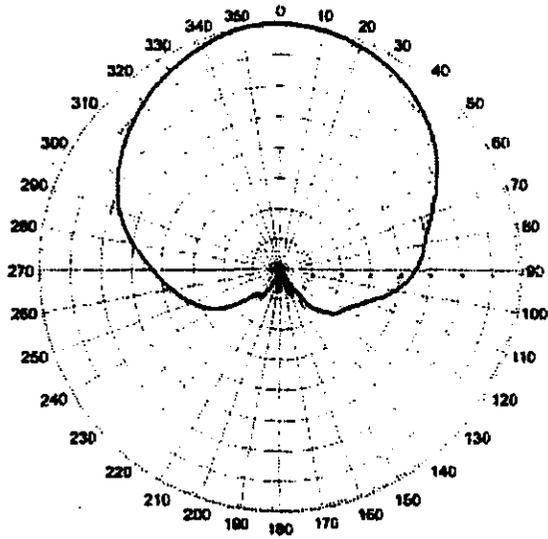
# TMBXX-6516-R2M

±45° Dual Band Quad Antenna

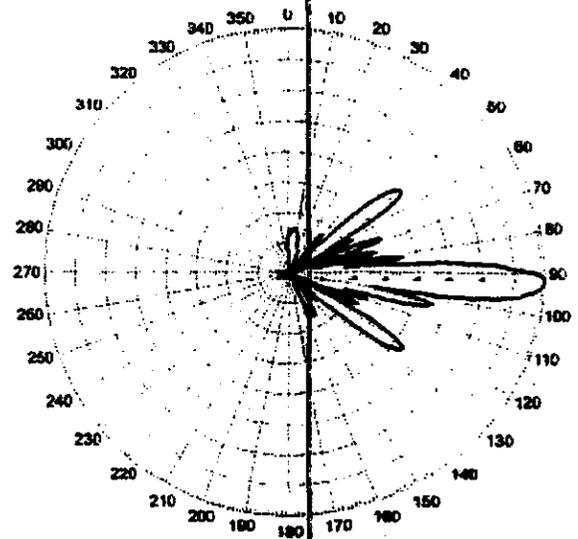
**Decibel®**  
Base Station Antennas

## AZIMUTH PATTERN

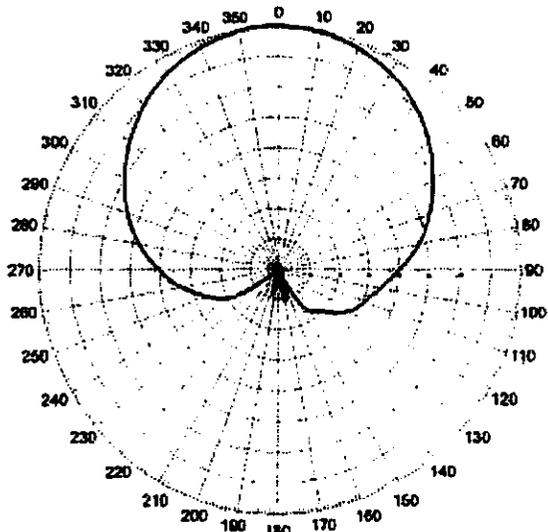
## ELEVATION PATTERN



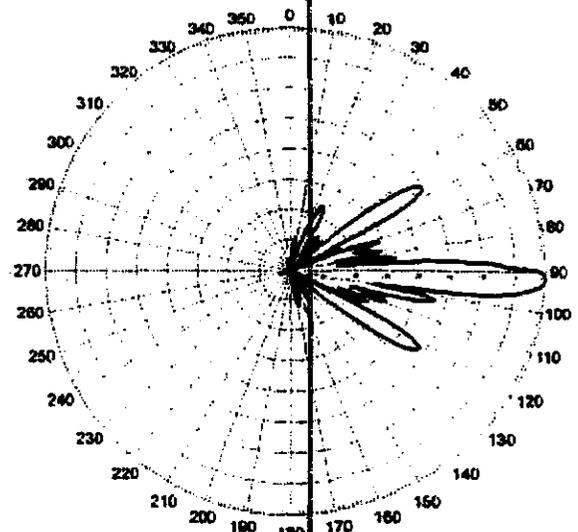
1960 MHz, Tilt: 2°



1960 MHz, Tilt: 2°



2132 MHz, Tilt: 2°



2132 MHz, Tilt: 2°

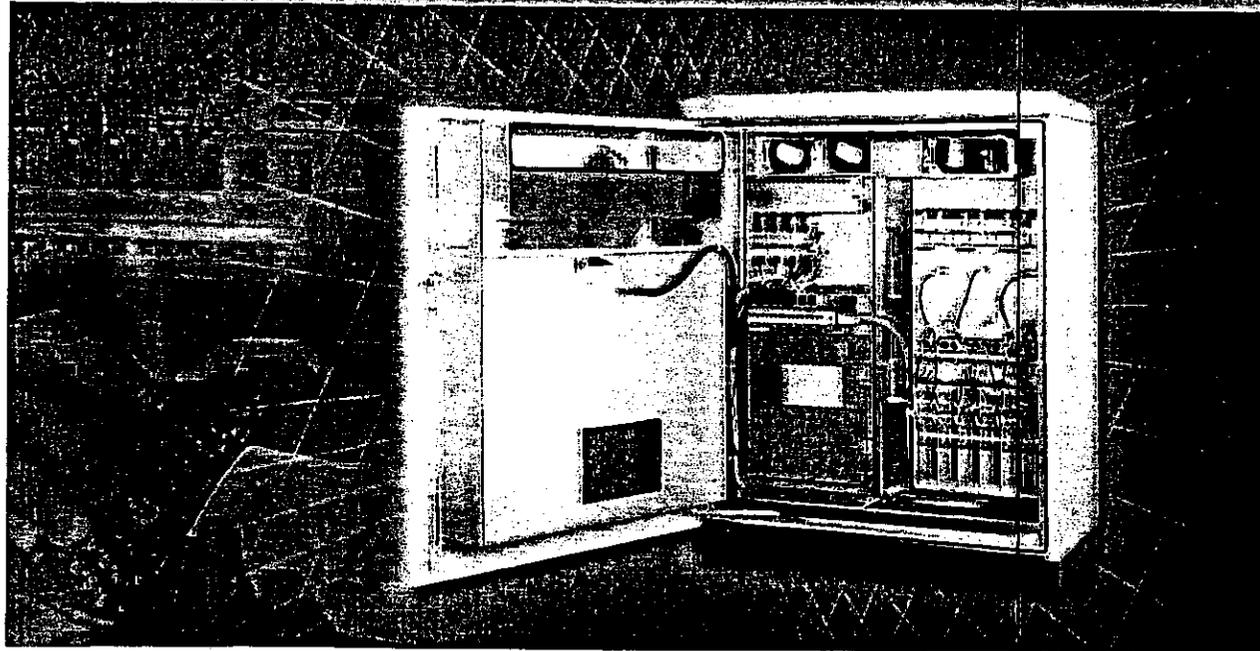
Note: Scale 5 dB per division.

Andrew Corporation  
2601 Telecom Parkway  
Richardson, Texas U.S.A. 755082-3521  
Tel: 214.631.0310

Fax: 214.688.0089  
Toll Free Tel: 1.800.676.5342  
Fax: 1.800.229.4706  
www.andrew.com

11/27/2006  
Page 3 of 3  
dbtech@andrew.com

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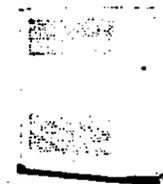


## RBS 2106

*RBS 2106 is a high capacity, outdoor macro radio base station supporting up to twelve transceivers per cabinet. It is possible to build one, two and three sector configurations including dual band configurations in one cabinet.*

Being the latest member in the RBS 2000 family, RBS 2106 is to date the most powerful outdoor RBS in the world. Keeping the successful characteristics of the existing RBS 2000 portfolio and improving functionality as well as operation and maintenance makes the RBS 2106 a very cost-effective solution for growing GSM operators.

The RBS 2000 family supports a wide range of applications ranging from extreme coverage to extreme capacity. Being a RBS 2000 member guarantees coexistence with the installed base of RBS 2000 and RBS 2000 products. Ericsson's synchronization based BSS features ensure that transceivers from different generations of radio base stations can easily form common cells. Operators can therefore bridge the past with the future. By making existing sites futureproof, investments are protected while migrating to 3G.



## Part of the grow-on-site concept

Since it is becoming increasingly difficult to find new base station sites, it is of great interest to remain on the existing sites as long as possible. Site space is often a limiting factor for capacity growth. The powerful RBS 2106, included in Ericsson's grow-on-site toolbox, addresses this problem. On many sites, two or more existing cabinets can be replaced by one RBS 2106. This is of major importance, since it makes it possible to reuse the space to rollout WCDMA equipment. The RBS 2106 will pave the way for WCDMA.

Also interesting for new locations, the RBS 2106 offers a complete solution in stand-alone cabinet which rapidly can be implemented outdoors. All the units to run the RBS are included in this single cabinet, there is no need for an extra product.

## Doubled capacity – superior performance – same footprint

The 12-transceiver RBS 2106 cabinet has the same footprint as RBS 2102, but has doubled the capacity, thanks to the new double-capacity transceivers and combiners. The RBS 2106 has better output power than the current RBS 2000 products, which are the best on the market today. The improved radio performance means increased site-to-site distance, and therefore, fewer sites. Another example of a cost saving feature is 121 km Extended Range. The RBS 2106 comes with a configuration switch unit, the CXU, and two extremely flexible combiners. Examples of configurations supported by the Filter Combiner (CDU-F) are 3x4, 2x6, 1x12 and dual band 8+4 in one cabinet. CDU-F supports up to 12 transceivers on one dual-polarized antenna. The other combiner (CDU-G) can be configured in two modes: capacity mode and coverage mode, making it very flexible. In coverage mode, the output power from the CDU-G is increased, making it perfect for rural sites or when fast rollout is required at a minimum cost.

## Prepared for the future

The RBS 2000 family is prepared for GSM data services, including General Packet Radio Service (GPRS) and High Speed Circuit Switched Data (HSCSD) including 14.4 kbit/s timeslots. To meet the operators' need for faster datacom solutions, RBS 2106 supports EDGE.

A powerful Distribution Switch Unit (DXU) and fast internal buses guarantee full EDGE support. With the optional BSS feature RBS 2000 synchronization, it is possible to have up to 32 transceivers in one cell. With the optional BSS feature RBS 200 and RBS 2000 in the same cell, it is possible to expand an existing RBS 200 cell with RBS 2106, and thereby introduce EDGE through plug-in units.

## Key features

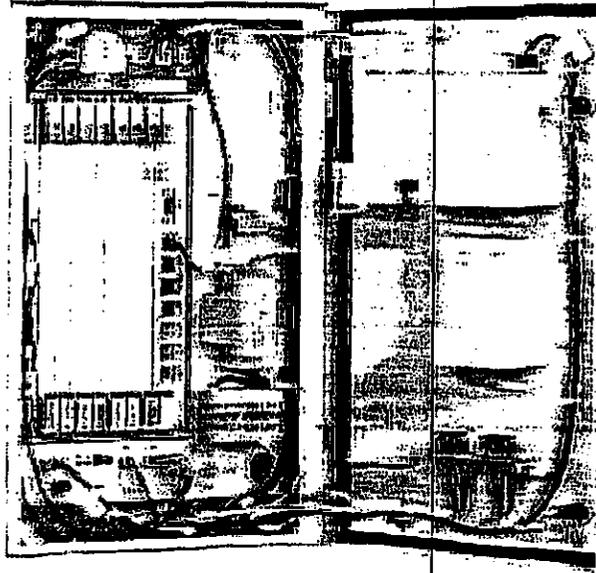
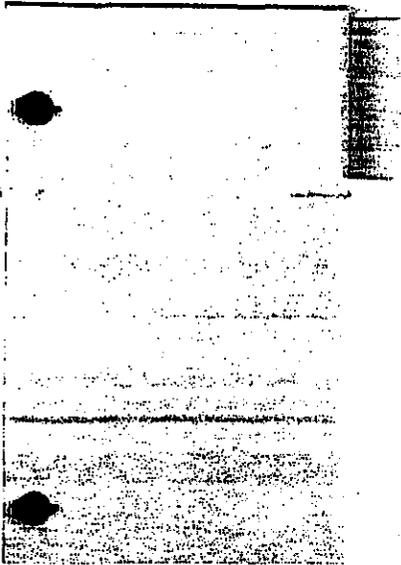
- Six double transceiver units (dTRU); that is, 12 transceivers
- Filter and hybrid combining one, two, or three sectors in one cabinet
- Improved radio performance
- Synthesized and baseband frequency hopping
- Supports 12 transceiver EDGE on all timeslots
- Supports GSM 800, 900, 1800 and 1900 MHz
- Extended Range 121 km
- Duplexer and TMA support for all configurations
- Four transmission ports supporting up to 8 Mbit/s
- Optional built-in transmission equipment transmission
- Prepared for GPS assisted positioning services
- Internal or external battery backup
- Simple co-siting with WCDMA equipment
- Supports most common power systems
- Hardware independent of transmission interface
- Prepared for outdoor environment (wide range of temperatures / humidity)

## Technical specifications for RBS 2106

Frequency band:	GSM 800, E-GSM 800, GSM 1800, GSM 1900
Number of transceivers:	2-12
Number of sectors:	1-3
Transmission interface:	1.5 Mbit/s (T1), 2 Mbit/s (E1), 75, 100, 120 Ω
Dimension (H x W x D):	1614 x 1300 x 940 mm (63 1/2 x 51 1/8 x 37 in.) including installation frame
Weight without batteries:	550 kg (1211 lbs)
Power into antenna feeder:	33 W / 45.2 dBm (GSM 800 / GSM 900) 25 W / 44.0 dBm (GSM 1800 / GSM 1900)
Receiver sensitivity:	-110 dBm (without TMA)
Power supply:	200-250V AC, 50/60 Hz
Integrated battery backup:	30 minutes, 90 minutes (TM space used)
External battery backup:	Up to 4 hours (optional)
Operating temperature:	-33°C – +45°C (-27°F – +113°F)
Weatherproofing:	Min level IP55 according to IEC/EN 60529 Min level 3R according to UL 50 and CSA C22.2 No. 84

# RBS 3518

## A Main Remote WCDMA Radio Base Station



The RBS 3518 is an outdoor RBS in the powerful and flexible Main Remote family from Ericsson. The RBS has a similar architecture as the other RBS 3000 products. The RBS can provide macro coverage and/or in-building coverage for up to 6 sectors with 1 carrier or up to 3 sectors with 2 carriers.

The main-remote concept separates the traditional RBS cabinet into two distinct HW entities. The radio specific HW for each sector is contained in a Remote Radio Unit (RRU), which is designed to be located near the antenna. The rest of the RBS (control, base band, switching and lub interface parts) is contained in a Main Unit. A thin optical fiber pair cable connects each RRU to the Main Unit.

### Lower CAPEX and OPEX

The RBS 3518 allows reduced CAPEX costs compared to a traditional Macro site due to:

- Smaller or no additional footprint required
- No traditional telecom room required
- Smaller power supply and smaller battery back up is required
- No ASC/TMA required.
- Less installation costs with carry to site modules

This makes easier site acquisition feasible leading to faster network roll out and faster revenues.

Compared with a Micro or Pico base station the pooled capacity, for base band, control and transmission, are shared between the sectors.

The OPEX will be reduced compared to a traditional Macro site due to:

- Reduced power consumption. Up to 40 percent less energy is required
- Lower site rent
- No need for site cooling

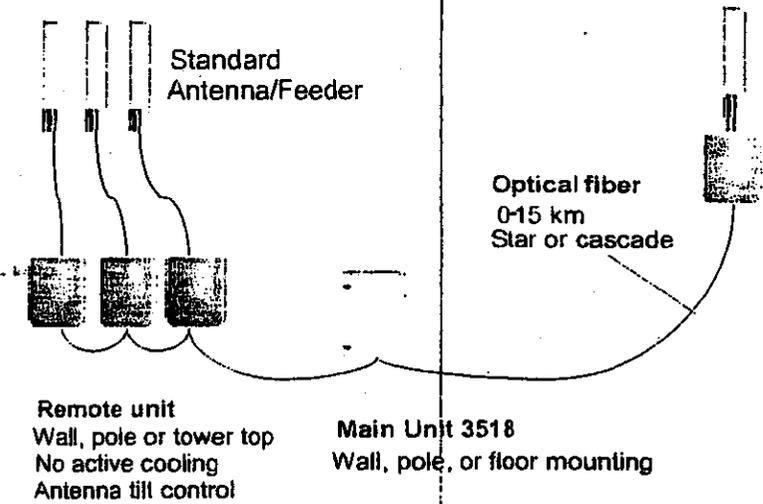
#### Key features

The RBS 3518 provides an appealing solution for sites with limitations in one or more of the following: space, floor load, access, power supply, noise and cooling equipment.

The RBS 3518 Main Unit can be wall, pole or floor mounted requiring low or no floor space. It is possible to connect different RRU types with different output power to the same Main Unit. The Main Unit also supports dual band, i.e. connection of different RRUs for different frequency bands.

The Main Unit supports star connection of the RRUs. The Main Unit and the RRU 22s are also HW prepared to supporting cascading.

The Main Unit provides environmental protection and cooling via fans. It has connections for the lub interface, 6 optical links and external alarms. The power options are 100-250 V AC or -48 V DC.



**Remote unit**  
Wall, pole or tower top  
No active cooling  
Antenna tilt control

**Main Unit 3518**  
Wall, pole, or floor mounting

### Technical specifications for RBS 3518

#### Supported configurations

Number of sector-carriers per Main Unit: 1- 6 sectors: 1-2 carrier per sector.  
Uplink capacity: Max 640 channel elements  
Downlink capacity: Max 768 channel elements

#### Cabinet dimensions

Height x Width x Depth: 477 x 342 x 312 mm (18.7 x 13.4 x 12.3 in)

Volume: 42 liters

Weight: 33 kg (73 lb)

#### Normal Operating Conditions

Temperature: -33°C to +45°C (plus 1120 W/m<sup>2</sup> solar radiation)

#### External interface

Power supply: -48 V DC or 100-250 V AC

#### Mounting type

Wall, Pole, Floor

#### Maximum distances

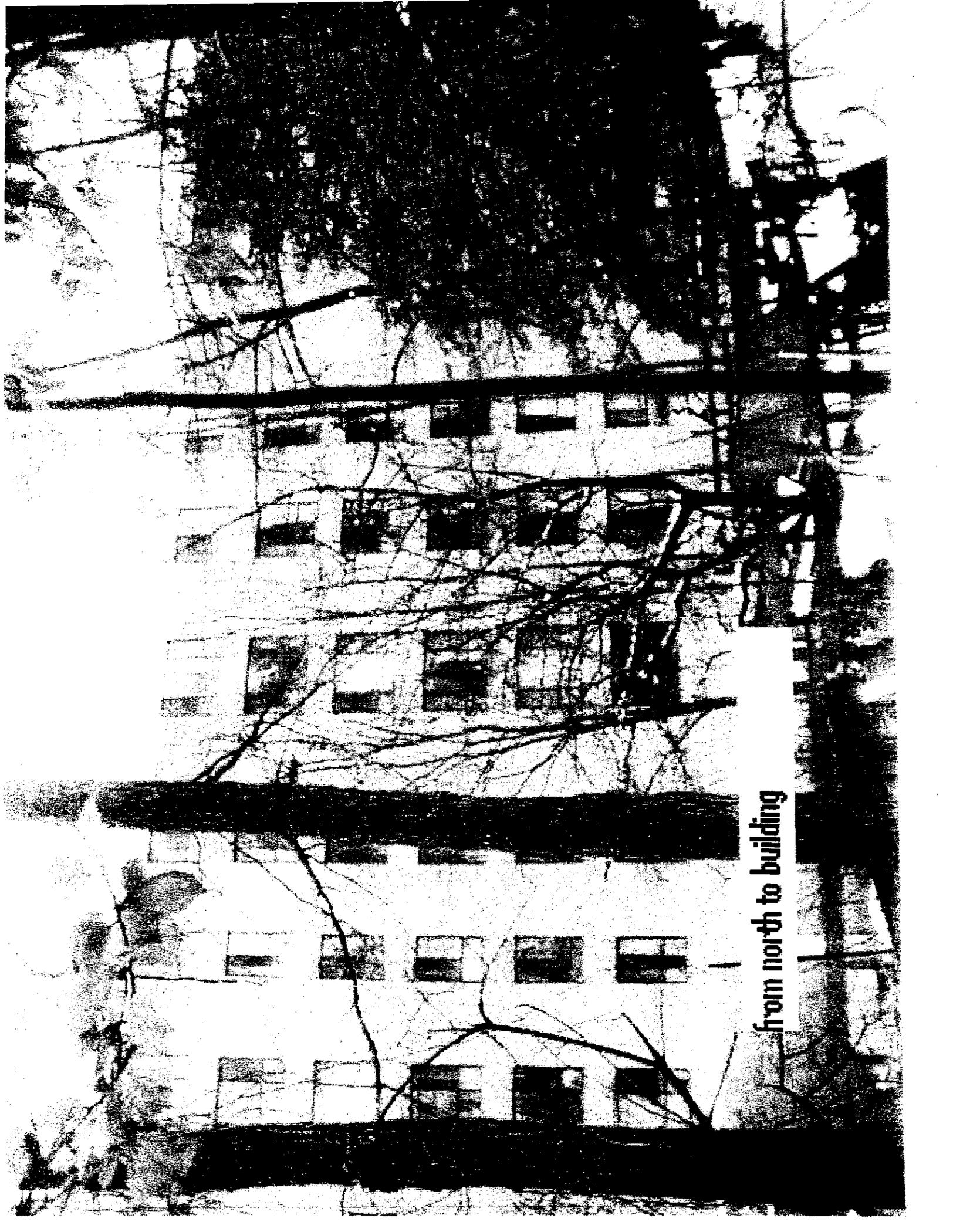
Main Unit - RRU: 15 km

#### Acoustic Noise

< 45 dB LwA (at +25° C)  
< 50 dB LwA (at +40° C)

#### Transmission interfaces

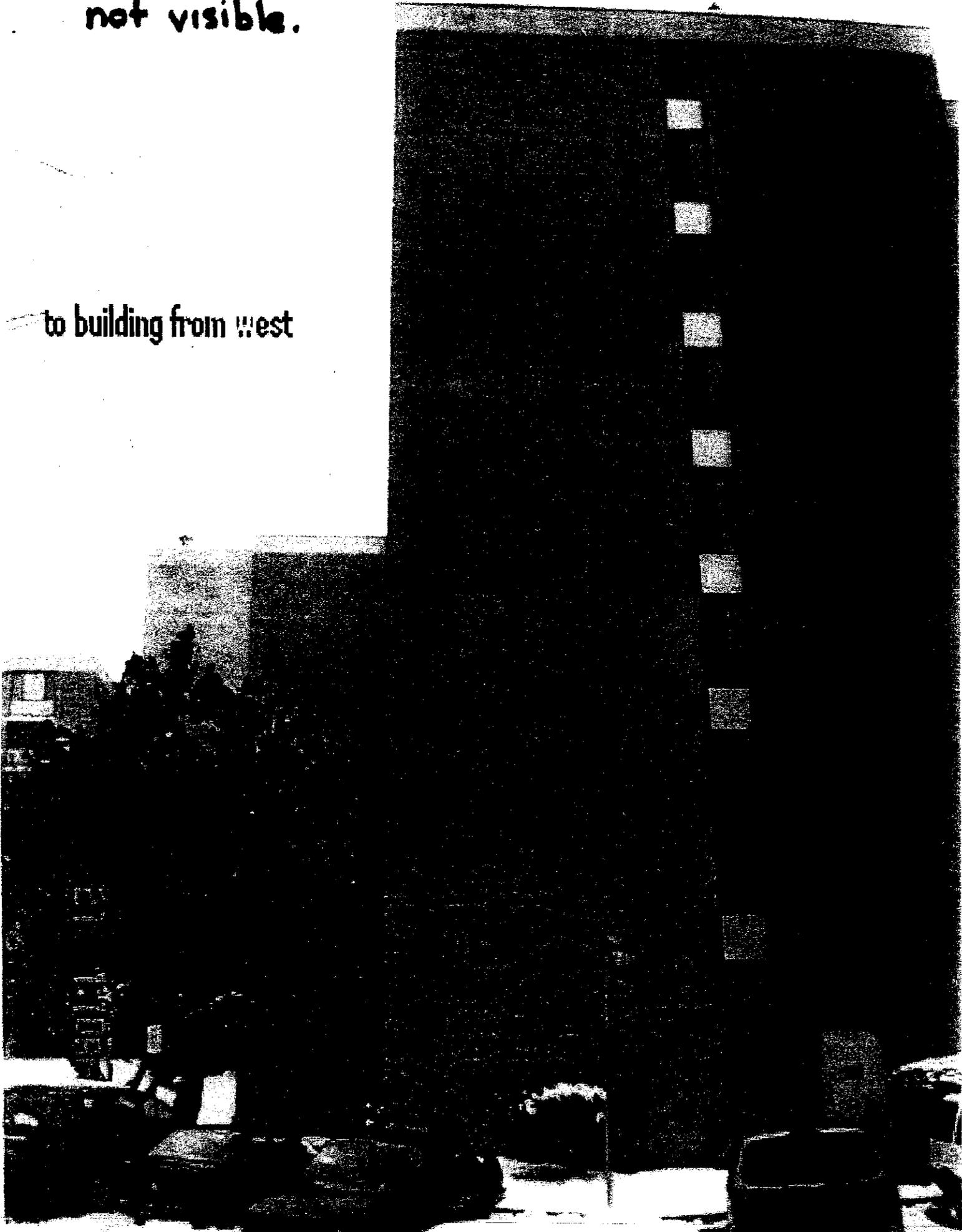
E1/J1/T1 and E3/J2/T3  
STM-1/OC-3c  
Channelized STM-1/OC-3  
Mega link



from north to building

Proposed T-Mobile antennas (2)  
not visible.

to building from west

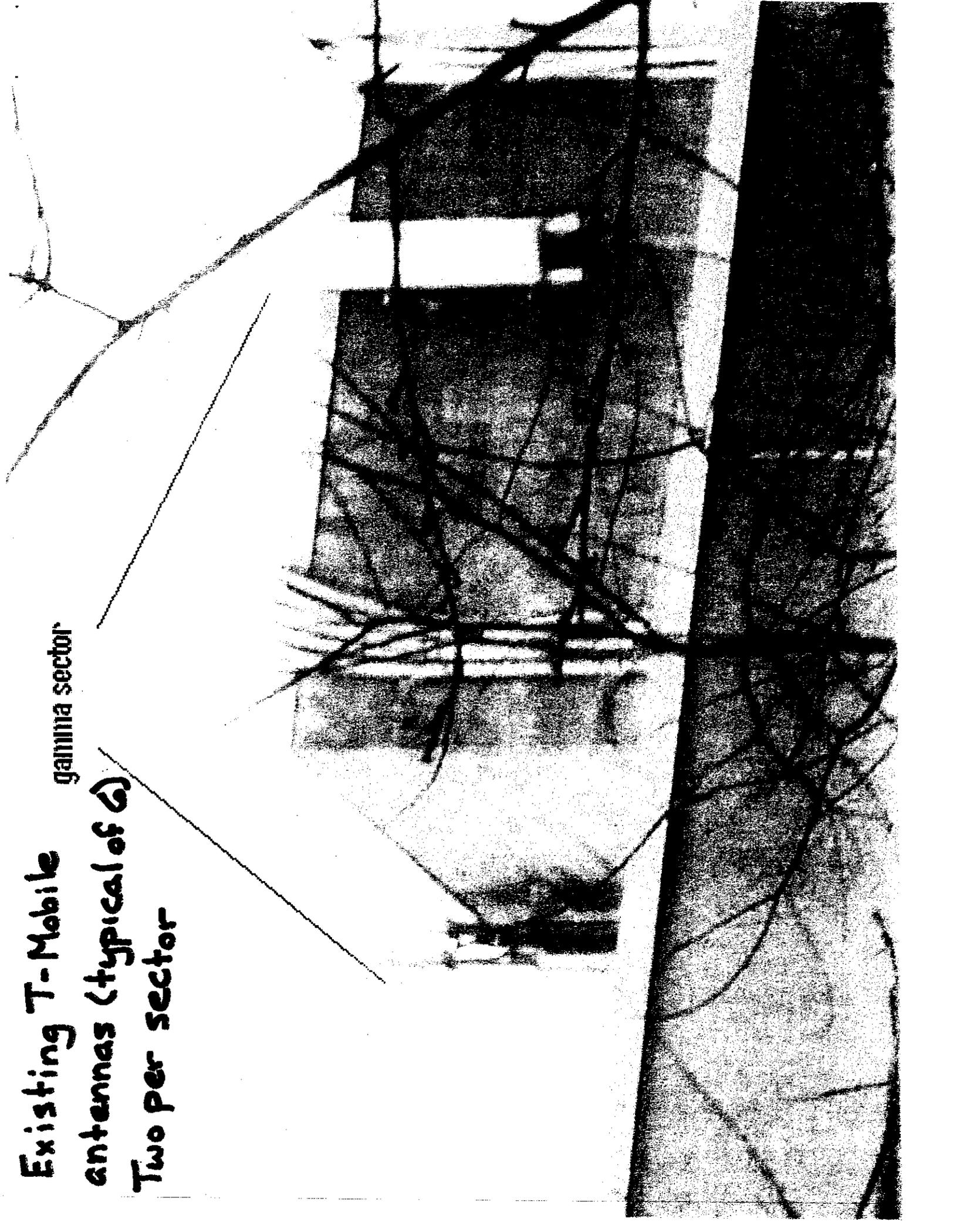


**Existing T-Mobile**

**antennas (typical of 6)**

**Two per sector**

**gamma sector**





# T-Mobile NORTHEAST LLC

SITE NAME:

**LAKE ANN FELLOWSHIP HOUSE**

SITE NUMBER:

**7WAC074A**

**NEW OUTDOOR EQUIPMENT WITHIN THE  
EXISTING T-MOBILE LEASE AREA,  
AND NEW ANTENNAS ON THE EXISTING ROOFTOP**

**SITE INFORMATION**

Site Name: LAKE ANN FELLOWSHIP HOUSE  
 Address: 10000 N. LAKE ANN RD., WACARUS, WA 98148  
 City: WACARUS, WA  
 County: KING COUNTY, WA  
 State: WA  
 Zip: 98148  
 Date: 02/24/2010  
 Project No: 7WAC074A  
 Client: T-MOBILE  
 Designer: T-MOBILE  
 Title: SITE PLAN

**CODE ANALYSIS**

Code: 10000 N. LAKE ANN RD., WACARUS, WA 98148  
 Code No: 10000 N. LAKE ANN RD., WACARUS, WA 98148  
 Code Description: 10000 N. LAKE ANN RD., WACARUS, WA 98148

**PROJECT DESCRIPTION**

1. SEE ATTACHED DRAWINGS FOR ALL ANTENNA PLACEMENTS.  
 2. SEE ATTACHED DRAWINGS FOR ALL ANTENNA PLACEMENTS.  
 3. SEE ATTACHED DRAWINGS FOR ALL ANTENNA PLACEMENTS.



**AREA MAP**

Scale: 1" = 100'

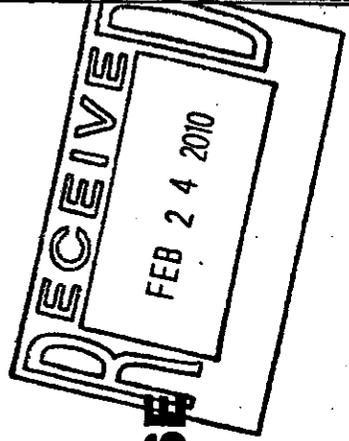
**DIRECTIONS:**  
 From the intersection of 10000 N. LAKE ANN RD. and WACARUS RD., travel east on WACARUS RD. for 0.2 miles to the intersection of WACARUS RD. and 10000 N. LAKE ANN RD. The site is located on the north side of WACARUS RD., 0.2 miles east of the intersection of WACARUS RD. and 10000 N. LAKE ANN RD.

**SHEET INDEX**

SHEET NO.	SHEET DESCRIPTION
1	GENERAL NOTES
2	EXISTING T-MOBILE LEASE AREA
3	NEW OUTDOOR EQUIPMENT WITHIN THE EXISTING T-MOBILE LEASE AREA
4	NEW ANTENNAS ON THE EXISTING ROOFTOP
5	AREA MAP
6	T-MOBILE REVIEW

**T-MOBILE REVIEW**

Reviewed By: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Comments: \_\_\_\_\_



**T-Mobile NORTHEAST LLC**  
 10000 N. LAKE ANN RD., WACARUS, WA 98148  
 (206) 835-1234

**smartlink**  
 1-800-4-A-T-MOBILE

**CMX**  
 COMMUNITY MEDIA EXCHANGE

**TITLE SHEET**

**T-1**

**DATE PLOTTED: 02/24/2010 10:00 AM**  
**BY: J. SMITH**  
**PROJECT: 7WAC074A**  
**SHEET: 1 OF 6**

**LAKE ANN FELLOWSHIP HOUSE**  
**10000 N. LAKE ANN RD., WACARUS, WA 98148**

11610





1	DATE	11/16/10
2	PROJECT	116410
3	CLIENT	116410
4	DESIGNER	116410
5	SCALE	1/8" = 1'-0"
6	DATE	11/16/10
7	PROJECT	116410
8	CLIENT	116410
9	DESIGNER	116410
10	SCALE	1/8" = 1'-0"
11	DATE	11/16/10
12	PROJECT	116410
13	CLIENT	116410
14	DESIGNER	116410
15	SCALE	1/8" = 1'-0"
16	DATE	11/16/10
17	PROJECT	116410
18	CLIENT	116410
19	DESIGNER	116410
20	SCALE	1/8" = 1'-0"

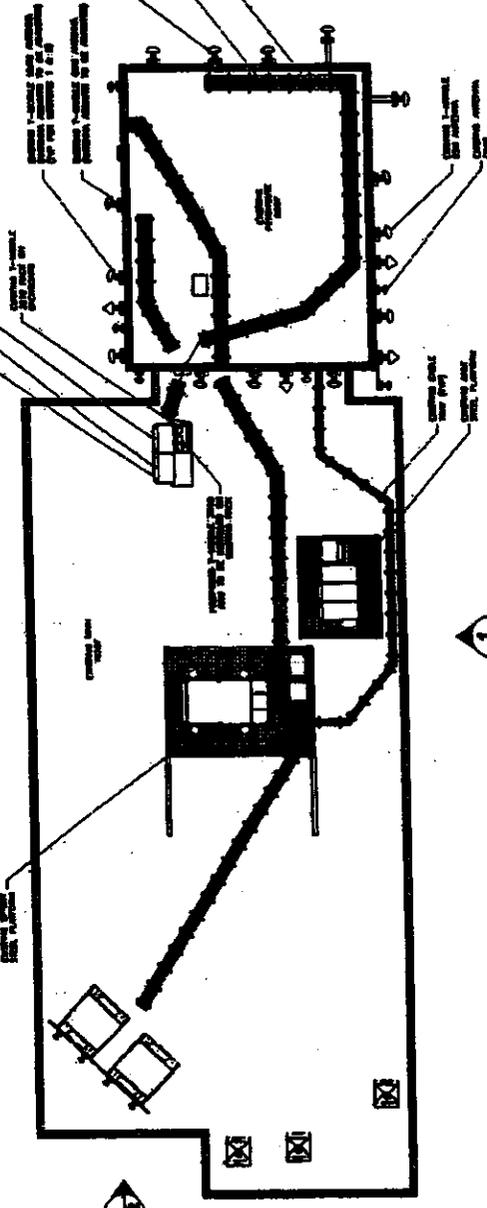
PARTIAL ROOFTOP PLAN

S-1

BYE MAJOR  
 LANE 8000 FELLOWSHIP AVENUE  
 WYOMING  
 77403744  
 WYOMING  
 11600 NORTH SHORE DRIVE  
 WESTON, VIRGINIA 20180

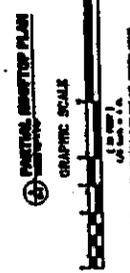


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ROOFTOP CALCULATIONS

116410 - 116410  
 116410 - 116410  
 116410 - 116410  
 116410 - 116410







**NORTHEAST LLC**  
 10000 WOODBRIDGE BLVD  
 SUITE 100  
 WOODBRIDGE, VA 22191  
 (703) 766-1100

**smartlink** LLC  
 PROJECTS & CONSULTING  
 10000 WOODBRIDGE BLVD  
 SUITE 100  
 WOODBRIDGE, VA 22191  
 (703) 766-1100

**CMX**  
 PROJECT COLLABORATION  
 10000 WOODBRIDGE BLVD  
 SUITE 100  
 WOODBRIDGE, VA 22191  
 (703) 766-1100

REVISIONS	
NO.	DESCRIPTION
1	ISSUED FOR PERMITTING
2	
3	
4	
5	
6	
7	
8	
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**DETAILS**

PROJECT NO. **S-4**

DATE: 08/11/10

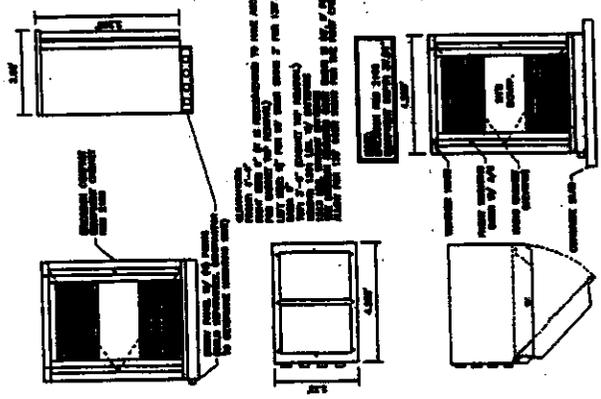
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PROJECT: 116610

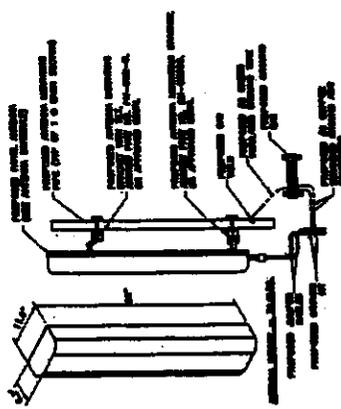
**S-4**

116610  
 11/18/10  
 HEALTH

116610



**PROPOSED 2400 CASSETTE DETAIL**



**INSTALL 2400 ANTENNA MOUNTING DETAIL**