



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

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Web Site: [www.state.ct.us/csc/index.htm](http://www.state.ct.us/csc/index.htm)

January 3, 2002

Richard Greene  
Senior Wireless Designer  
Edward and Kelcey  
One Church Street, 3<sup>rd</sup> Floor  
New Haven, CT 06510

RE: **EM-AT&T-005-018-031-055-068-092-111-125-153-162-168-011121** - Edwards and Kelcey on behalf of AT&T Wireless notice of intent to modify existing telecommunications facilities located at twelve sites throughout the State of Connecticut.

Dear Mr. Greene:

At a public meeting held on January 3, 2002, the Connecticut Siting Council (Council) acknowledged your notice to modify the Litchfield-Kent (L04); Mohawk Mountain (L12); Pine Meadows (L14); and North Kent (L17) sites of the proposed twelve existing telecommunications facilities, eight of which were previously approved on December 17, 2001, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notices dated November 20, 2001, December 10, 2001, and December 21, 2001. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston  
Chairman

MAG/laf

c: See attached list

List Attachment:

Honorable Dolores R. Schiesel, First Selectman, Town of Kent  
Judith Wick, Zoning Enforcement Officer, Town of Kent  
Honorable James P. O'Leary, First Selectman, Town of Goshen  
Martin Connor, Town Planner, Town of Goshen  
Honorable Michael D. Fox, First Selectman, Town of Barkhamsted  
Karl Nilsen, Zoning Enforcement Officer, Town of Barkhamsted  
Honorable P. Robert Moeller, First Selectman, Town of Sharon  
Elizabeth H. Casey, Zoning Enforcement Officer, Town of Sharon  
Honorable Gordon M. Ridgway, First Selectman, Town of Cornwall  
Ruth Mucahy, Zoning Enforcement Officer, Town of Cornwall



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

Ten Franklin Square  
New Britain, Connecticut 06051  
Phone: (860) 827-2935  
Fax: (860) 827-2950

December 13, 2001

Richard Greene  
Senior Wireless Designer  
Edward and Kelcey  
One Church Street, 3<sup>rd</sup> Floor  
New Haven, CT 06510

RE: **EM-AT&T-005-018-031-055-068-092-111-125-153-162-168-011121** - Edwards and Kelcey on behalf of AT&T Wireless notice of intent to modify existing telecommunications facilities located at twelve sites throughout the State of Connecticut.

Dear Mr. Greene:

At a public meeting held on December 11, 2001, the Connecticut Siting Council (Council) acknowledged your notice to modify eight of the proposed twelve existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies. The Litchfield-Kent (L04); Mohawk Mountain (L12); Pine Meadows (L14); and North Kent (L17) sites will be presented at a future Council meeting after requested information is received.

The proposed modifications are to be implemented as specified here and in your notice dated November 20, 2001. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston  
Chairman

MAG/laf

c: See attached list

Honorable John F. Arcelaschi, Mayor, Town of Winchester  
Anthony Cannavo, Planning and Zoning Chairman, Town of Winchester  
Margaret A. Johnson, Town Manager, Town of Winchester  
Honorable Rosalie G. Loughran, Chairman of the Town Council, Town of Watertown  
Mary Barton, Zoning Enforcement Officer, Town of Watertown  
Charles T. O'Conner, Jr., Town Manager, Town of Watertown  
Honorable David C. Mischke, Mayor, Town of Plymouth  
William Kuehn, Town Planner, Town of Plymouth  
Honorable Richard W. Crane, First Selectman, Town of Woodbury  
Christopher S. Wood, Town Planner, Town of Woodbury  
Honorable Arthur J. Peitler, Mayor, Town of New Milford  
David, N. Hubbard, Planning and Econ. Director, Town of New Milford  
Honorable Dolores R. Schiesel, First Selectman, Town of Kent  
Judith Wick, Zoning Enforcement Officer, Town of Kent  
Honorable James P. O'Leary, First Selectman, Town of Goshen  
Martin Connor, Town Planner, Town of Goshen  
Honorable Katherine L. Rieger, First Selectman, Town of New Hartford  
Karl Nilsen, Zoning Enforcement Officer, Town of New Hartford  
Honorable Michael D. Fox, First Selectman, Town of Barkhamsted  
Karl Nilsen, Zoning Enforcement Officer, Town of Barkhamsted  
Honorable P. Robert Moeller, First Selectman, Town of Sharon  
Elizabeth H. Casey, Zoning Enforcement Officer, Town of Sharon  
Honorable Martin J. Foncello, Jr., First Selectmen, Town of Brookfield  
Clare Ann Walsh, Land Use Enforcement Officer, Town of Brookfield  
Heather Paton, Land Use Office, Town of Brookfield



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CHAUNCEY L. WALKER (also CA)  
ROBERT L. WOLFE  
DAVID E. WORBY**

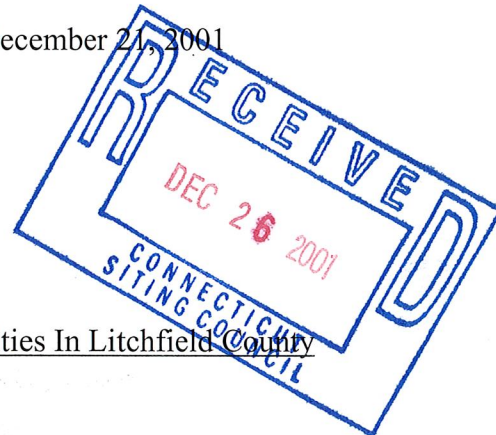
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MARYANN M. PALERMO  
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LOUIS R. TAFFERA**

**NEIL J. ALEXANDER (also CT)  
CHARLES T. BAZYDLO (also NJ)  
THOMAS R. BEIRNE (also DC)  
THOMAS M. BLOOMER  
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ROBERT FEDER  
CHRISTOPHER B. FISHER (also CT)  
ANTHONY B. GIOFFRE III (also CT)  
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WAYNE E. HELLER (also CT)  
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MICHAEL L. KATZ (also NJ)  
JOSHUA E. KIMERLING (also CT)  
DANIEL F. LEARY (also CT)  
BARRY E. LONG**

December 21, 2001

VIA FEDERAL EXPRESS

Robert Mercier  
Siting Analyst  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051



Re: AT&T Exempt Modification Filings For Facilities In Litchfield County

Dear Mr. Mercier:

On behalf of Litchfield Acquisition Corporation d/b/a AT&T Wireless ("AT&T") enclosed please find additional information that you had requested with respect to the Notice of Exempt Modifications that were filed with the Council by Edwards & Kelcey on November 27, 2001:

1. As noted in our December 10, 2001 correspondence with respect to AT&T Site L04, Bulls Bridge Road, Kent, Edwards & Kelcey and AT&T have confirmed that based on their information, AT&T's antennas are at 152' centerline on this existing tower facility with SCLP (Cingular) located at the 170' level (this is consistent with the Council's inventory).
2. AT&T Site L12 Mohawk State Forest, West Goshen - AT&T Wireless believes that this tower is owned by AT&T Long Lines which no longer has a corporate relationship with AT&T Wireless.
3. AT&T Site L14, 127 New Hartford Road, Barkhamsted - Annexed hereto is a revised report by RF Emissions Experts, dated December 19, 2001 with AT&T, Nextel and Cingular included as approved by the Council in 1998. As you may know, Sprint is

CUDDY & FEDER & WORBY LLP

December 21, 2001

Page 2

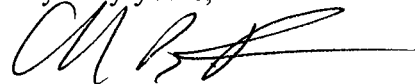
currently processing an application for an amended certificate and has included calculations in their filing for all carriers should a modified facility be approved by the Council.

4. AT&T Site L17, Herb Road, Sharon – Annexed hereto is a revised report by RF Emissions Experts, dated December 20, 2001 including AT&T, Nextel and Cingular as approved by the Council in 1998. At this time the State Police are not proposing to use the tower and as such have been excluded from the calculations provided by AT&T.

We would appreciate it if these notices were placed on the next available agenda of the Council for acknowledgement.

Thank you for your continued assistance. Please do not hesitate to contact me, should you require any additional information or have any questions.

Very truly yours,



Christopher B. Fisher

cc: Carmen Chapman, AT&T  
Richard Greene, E&K  
Darryl Hendrickson, Bechtel



Engineering  
Consulting  
Construction  
Value Engineering  
Real Estate Services



November 27<sup>th</sup>, 2001

Mr. Mortimer A. Gelston, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT. 06051

**RE: Notice of Intent to modify an existing telecommunication facility at Mohawk State Forest West Goshen, CT. (Site ID: L12).**

Dear Mr. Gelston:

On behalf of AT&T Wireless, Edwards and Kelcey is enclosing 20 copies of an RF study that was recently done on the above site as well as 20 - 1/2 size drawing of our modifications to the site.

The changes we are proposing will have no visual changes to the site. One antenna will be changed out and replaced with a new one, same shape, size and weight. New radio equipment will be installed in an enclosed shelter.

The drawings were stamped by a structural engineer on the cover stating that no changes were required for this site.

In conclusion Edwards and Kelcey on behalf of AT&T Wireless Service Petition for a declaratory ruling that no amendment to the Certificate of Environmental Compatibility and public need is required for modifications to a facility located at Mohawk State Forest in West Goshen, CT.

Thank you for your consideration of this matter

Very truly yours,

EDWARDS AND KELCEY

Richard Greene  
Senior Wireless Designer

EM-AT&T-005-018-031-055-068-092-096-111-125-153-  
162-168-011121

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EM-AT&T-005-018-031-055-068-092-096-111-125-153-  
162-168-011121

November 20<sup>th</sup>, 2001

Mr. Mortimer A. Gelston, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT. 06051

RE: Request by Edwards And Kelcey for an order to approve the AT&T Wireless 1900 MHZ System for  
cellsites named below

Dear Mr. Gelston:

Enclosed you will find 20 copies of 12 cellsite RF reports and 20 copies of ½ size construction drawings showing the changes we will be making at these sites. As well as a statement on the cover of each drawing set stating that these changes will have no additional structural effect on the tower structure. We will be removing one panel on each sector and replacing it with one the same size, shape and weight.

Cellsites numbers involved in this study are as follows:

L02 Plymouth	L09 Cornwall
L03 Watertown	L12 Mohawk Mountain
L04 Litchfield-Kent	L13 Brookfield
L05 Winstead	L14 Pine Meadows
L06 New Milford	L16 Nepaug
L07 Woodbury	L17 North Kent

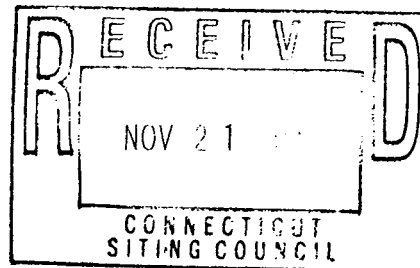
In conclusion we are requesting the approval by the siting council for the addition of the AT&T Wireless 1900 MHZ System.

Thank you for your consideration of this matter

Very truly yours,

EDWARDS AND KELCEY

Richard Greene  
Senior Wireless Designer



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***RF Emissions Experts***  
***AN EDWARDS AND KELCEY SERVICE***

***Analysis and Report  
of RF Exposure Levels  
and Compliance with  
FCC Regulations***

***Mohawk Mountain Site  
Mohawk State Forest  
West Goshen, CT  
Site ID: L12***

***Prepared for  
AT&T Wireless***

***November 15, 2001***



**EDWARDS AND KELCEY**  
299 Madison Avenue - PO Box 1936  
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Tel: 973-267-8830 Fax: 973-267-3555  
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**PROPRIETARY – AT&T WIRELESS AND EDWARDS AND KELCEY**

This document has been prepared for AT&T Wireless for its use in demonstrating RF compliance, as necessary, to federal, state and/or local authorities, and/or site landlords. Distribution beyond that described is prohibited without the express written consent of Edwards and Kelcey.



## FCC RF COMPLIANCE ANALYSIS FOR

AT&T Wireless

Mohawk Mountain, CT Tower

This site compliance report is organized as follows:

- Site Technical Data
- Analysis Method and Assumptions
- The FCC RF Radiation Exposure Regulations
- Applicable Formulas
- Analysis Results
- Conclusion

### ***SITE TECHNICAL DATA (adding one 1900 MHz antenna per sector to an existing 800 MHz facility – data reflects additional 1900 MHz system)***

Facility type	Existing 79 ft. tower
Transmit frequency band (proposed additional band)	1965 - 1975 MHz
Replacement Antenna type	Allgon 7262
Antenna major dimension (length)	4.3 ft.
Maximum antenna gain	14.0 dBd
Antenna centerline height	48 ft. above ground level
Total number of 1900 MHz antennas added	2 (1 per sector)
Number of 1900 MHz channels per antenna	2 channels
Maximum ERP per channel	150 watts
Antenna downtilt	2 degrees (mechanical)
Existing carriers on tower	AT&T microwave antennas, (see report)

### **ANALYSIS METHOD AND ASSUMPTIONS**

Type of analysis	Maximum / ground-level
Area analyzed	0' to 500' from tower
Classification of area	Uncontrolled (gen. pop.)
FCC Maximum Permissible Exposure (MPE) limit	1.000 mW/ cm <sup>2</sup> (1900 MHz)
Mathematical model	Point source, far field
Assumed ground reflection factor	100%
Assumed human height	6'0"
Vertical antenna discrimination included	from Ant. Mfr. data

## **THE FCC RF RADIATION EXPOSURE REGULATIONS**

This RF exposure analysis is based on the current FCC guidelines for human exposure to RF fields, which represent the consensus of federal agencies responsible for RF safety matters. Those agencies include the National Council on Radiation Protection and Measurements (NCRP), the Occupational Health and Safety Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). In formulating its guidelines, the FCC also considered input from the public and technical community – notably the Institute of Electrical and Electronics Engineers (IEEE).

The FCC's RF exposure guidelines are incorporated in Section 1.1301 *et seq* of its Rules and Regulations. Those guidelines specify maximum permissible exposure (MPE) levels for both occupational and general population exposure on a continuous basis, as well as averaging times for each of those categories when and if exposure exceeds the specified continuous exposure limits. (The concept of averaging time will be ignored in this analysis, as the results show the potential exposure levels are far below those permitted even for continuous exposure.)

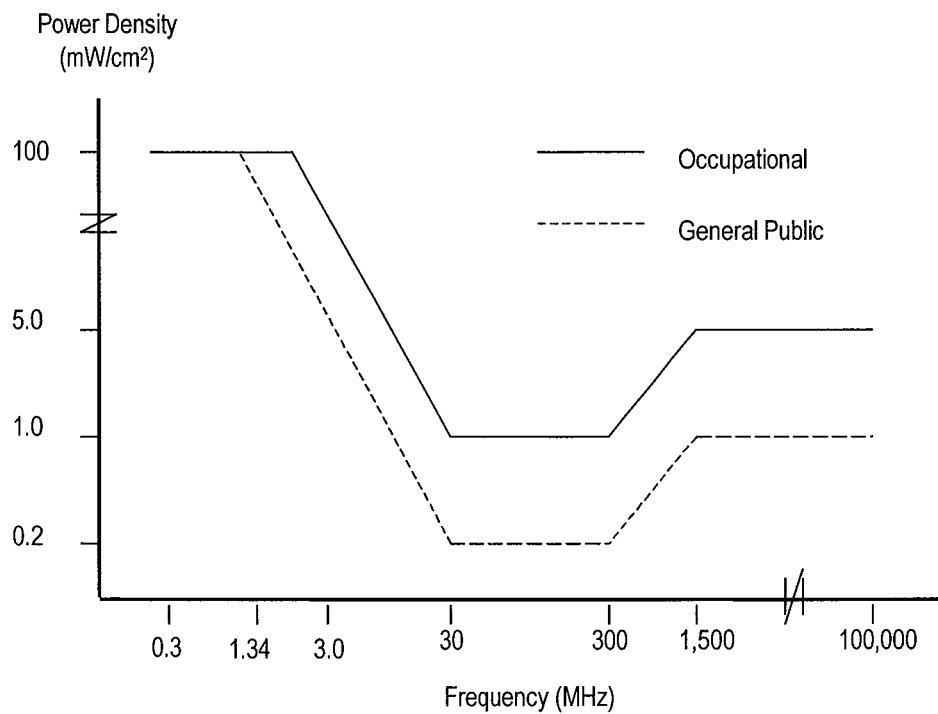
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in the form of heat). The occupational MPE guidelines incorporate a safety factor of 10 or greater with respect to RF levels known to represent a health hazard, and an additional safety factor of five is applied to the MPE limits for general population exposure. Thus the general population MPE limit has a built-in safety factor of more than 50. Continuous exposure at levels equal to or below the applicable MPE limits is considered to result in no adverse health effects on humans.

The reason for *two* tiers of MPE limits is based on an understanding and assumption that members of the general public are unlikely to have had appropriate RF safety training and may not be aware of the exposures they receive; occupational exposure in controlled environments, on the other hand, is assumed to involve individuals who have had such training, are aware of the exposures, and know how to maintain a safe personal work environment.

The FCC's RF exposure limits are expressed in two equivalent forms, using alternative units of field strength (expressed in volts per meter, or V/m), and power density (expressed in milliwatts per square centimeter, or mW/cm<sup>2</sup>). The more popularly used reference unit is power density, as it is more easily understood. One milliwatt per square centimeter is approximately the energy impinging on an area roughly one-fourth the size of a dime from a light bulb emitting ten thousand times less than the energy of a common 100-watt bulb. The table below lists the FCC limits for both occupational and general population exposure to different radio frequencies.

Frequency Range (F) (MHz )	Occupational Exposure ( mW/cm <sup>2</sup> )	General Public Exposure ( mW/cm <sup>2</sup> )
0.3 - 1.34	100	100
1.34 - 3.0	100	$180 / F^2$
3.0 - 30	$900 / F^2$	$180 / F^2$
30 - 300	1.0	0.2
300 - 1,500	$F / 300$	$F / 1500$
1,500 - 100,000	5.0	1.0

The figure below provides a graphical illustration of both the FCC's occupational and general population MPE limits.



FCC MPE limits – graphical representation

The FCC makes it clear that the MPE limits apply only in accessible areas. Fundamentally, in areas that are considered normally inaccessible, the exposure issue is moot.



## APPLICABLE FORMULAS

According to FCC OET Bulletin 65, different mathematical models apply to different distances around an antenna. At the height of the antenna, the breakpoint is the “far-field distance”, calculated as the ratio of the square of the major dimension of the antenna divided by the signal wavelength. Beyond the far-field distance at the height of the antenna, as well as at ground-level underneath the antenna, a “far-field point source” model applies; within that distance, a “near-field cylindrical model applies. The subsections below provide background on the two applicable models in the 1900 MHz band.

### Far-Field Point Source Model

$$(1) \quad S \text{ [mW/cm}^2\text{]} = ( 4 * \text{EIRP}_{\text{max}} * \text{VertAntDisc}(\phi) ) / ( 4 * \pi * R_{\text{cm}}^2 )$$

$$(2) \quad \text{FCC MPE limit} = 1.000 \text{ mW/cm}^2$$

$$(3) \quad \text{MPE\%} = 100 * (S / 1.000)$$

where:

S	=	Calculated power density
4 (in numerator)	=	100% field ground reflection effect (has $[1 + 1]^2 = 4$ effect on power density)
$\text{EIRP}_{\text{max}}$	=	Maximum effective isotropically radiated power (Note: EIRP is 64% higher than ERP, which is referenced to a half-wave dipole)
$\text{VertAntDisc}(\phi)$	=	Numeric factor for antenna discrimination (EIRP reduction) in the vertical plane, applicable at downward angle $\phi$ to a 6' human standing on ground, calculated at distances from 0' to 500' away from the antenna
R	=	Straight-line distance from antenna to 6' human
MPE%	=	Calculated exposure level, as a percentage of the FCC MPE limit for continuous exposure of the general population

### Near-Field Cylindrical Model

$$(1) \quad S \text{ [mW/cm}^2\text{]} = (P_i * ACF / (2 \pi R h))$$

$$(2) \quad \text{FCC MPE limit} = 1.000 \text{ mW/cm}^2$$

$$(3) \quad \text{MPE\%} = 100 * (S / 1.000)$$

where:

S = Calculated power density

P<sub>i</sub> = Total power input to the antenna, in mW

ACF = Antenna correction factor (adjustment to near-field power density calculation to compensate for the antenna mounting height above ground level and resulting partial-body exposure; see Richard Tell article listed in the References)

R = Straight-line distance from antenna to 6' human

h = Subtended height of the antenna, in cm

MPE% = Calculated exposure level, as a percentage of the FCC MPE limit for continuous exposure of the general population

### **ANALYSIS RESULTS – GROUND-LEVEL**

AT&T Wireless will add two (2) 1900 MHz antennas (one in each of two sectors) to a facility presently transmitting in the 800 MHz band. This analysis will reflect the additional RF emissions from the 1900 MHz antennas.

The table on the following page summarizes the results of the calculations using the site data, method and far-field point source formula described above. Note that the information on the vertical antenna discrimination has been taken from the antenna manufacturer's specification sheets. In addition, note that while the tabular distances are listed in feet, the calculations translate these units into centimeters, to match the FCC specification of MPE units. Also note that the value for 'G dist' is the distance along the ground in feet, from the base of the tower.

1900 MHz Antenna Array (AT&T Wireless)					
G dist	R dist	V angle	V disc	mW/cm <sup>2</sup>	GPMPE%
0	39.0	88.0	0.025	0.0028	0.279
20	43.8	60.9	0.025	0.0022	0.221
40	55.9	42.3	0.020	0.0011	0.108
60	71.6	31.0	0.020	0.0007	0.066
80	89.0	24.0	0.020	0.0004	0.042
100	107.3	19.3	0.040	0.0006	0.058
120	126.2	16.0	0.040	0.0004	0.042
140	145.3	13.6	0.040	0.0003	0.032
160	164.7	11.7	0.040	0.0002	0.025
180	184.2	10.2	0.040	0.0002	0.020
200	203.8	9.0	1.000	0.0041	0.406
220	223.4	8.1	1.000	0.0034	0.338
240	243.1	7.2	1.000	0.0029	0.285
260	262.9	6.5	1.000	0.0024	0.244
280	282.7	5.9	1.000	0.0021	0.211
300	302.5	5.4	1.000	0.0018	0.184
320	322.4	4.9	1.000	0.0016	0.162
340	342.2	4.5	1.000	0.0014	0.144
360	362.1	4.2	1.000	0.0013	0.129
380	382.0	3.9	1.000	0.0012	0.116
400	401.9	3.6	1.000	0.0010	0.104
420	421.8	3.3	1.000	0.0009	0.095
440	441.7	3.1	1.000	0.0009	0.086
460	461.7	2.8	1.000	0.0008	0.079
480	481.6	2.6	1.000	0.0007	0.073
500	501.5	2.5	1.000	0.0007	0.067

**Table 1.** AT&T Wireless 1900 MHz ground level RF power density & percent-of-MPE calculations

## **CONCLUSION**

The calculations presented above demonstrate that the maximum potential exposure level around the existing tower induced by the additional 1900 MHz AT&T Wireless system is  $0.0041 \text{ mW/cm}^2$ , which represents 0.406% of the FCC limit for continuous exposure of the general population.

On February 9, 1995 an RF Report was submitted to the Connecticut Siting Council by AT&T Bell Laboratories on behalf of Cellular One (now AT&T Wireless), the last collocator on the tower. At that time, a collective worst case exposure level of  $0.0059 \text{ mW/cm}^2$  or 1.018% of the FCC standard was reported. (see attached) When added to the additional level expected from the proposed AT&T Wireless 1900 MHz system of 0.406%, the resultant cumulative level of 1.424% is still safe for continuous exposure of the general population based on FCC standards.

**Therefore, the addition of the AT&T Wireless 1900 MHz system to the existing facility will not create a significant risk of cumulative exposure to RF emissions to the general population. And, according to the calculations, the AT&T Wireless facility is in compliance with the FCC regulations (FCC OET Bulletin 65) concerning the control of potential RF exposure.**

# **CERTIFICATION**

This report was prepared by George Burylo, Director – Engineering Services. The undersigned certifies that the analysis provided herein is consistent with the applicable FCC Rules and Regulations and accepted industry practice.

  
George Burylo  
Director – Engineering Services

November 15, 2001

## REFERENCES

47 CFR, FCC Rules and Regulations, Section 1.1301 *et seq.*

FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), *In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (ET Docket 93-62), and Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning Amendment of the Commission's Rules to Preempt State and Local Regulation of Commercial Mobile Radio Service Transmitting Facilities*, released August 25, 1997.

FCC First Memorandum Opinion and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released December 24, 1996.

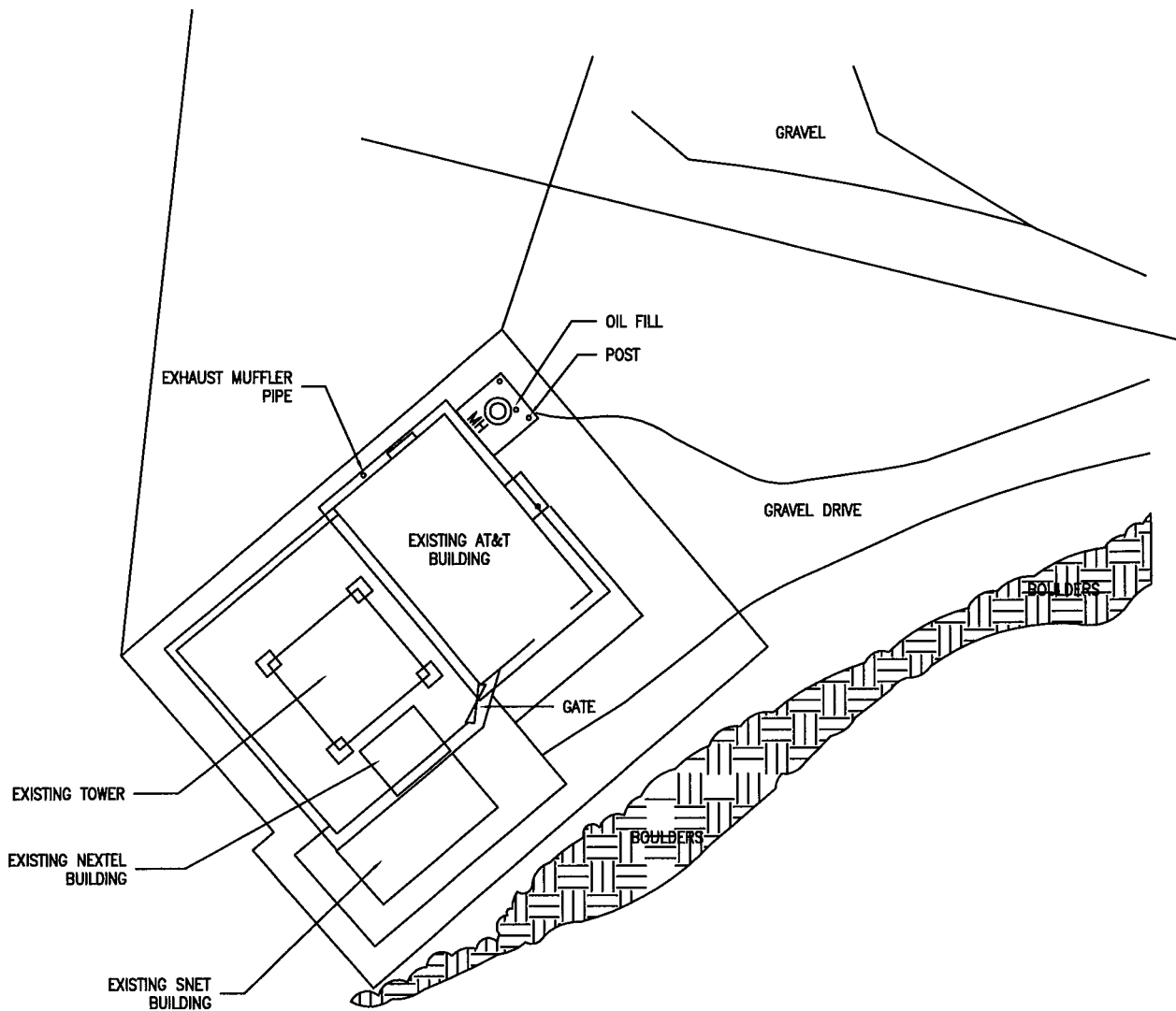
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

FCC Office of Engineering and Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 97-01, August 1997.

FCC Office of Engineering and Technology (OET) Bulletin 56, "Questions and Answers About Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields", Fourth Edition, August 1999.

Richard Tell, "CTIA's EME Design and Operation Considerations for Wireless Antenna Sites", November 15, 1996.

***Site Data***



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 Designed by:  
 Drawn by:  
 Checked by:  
 Approved by:

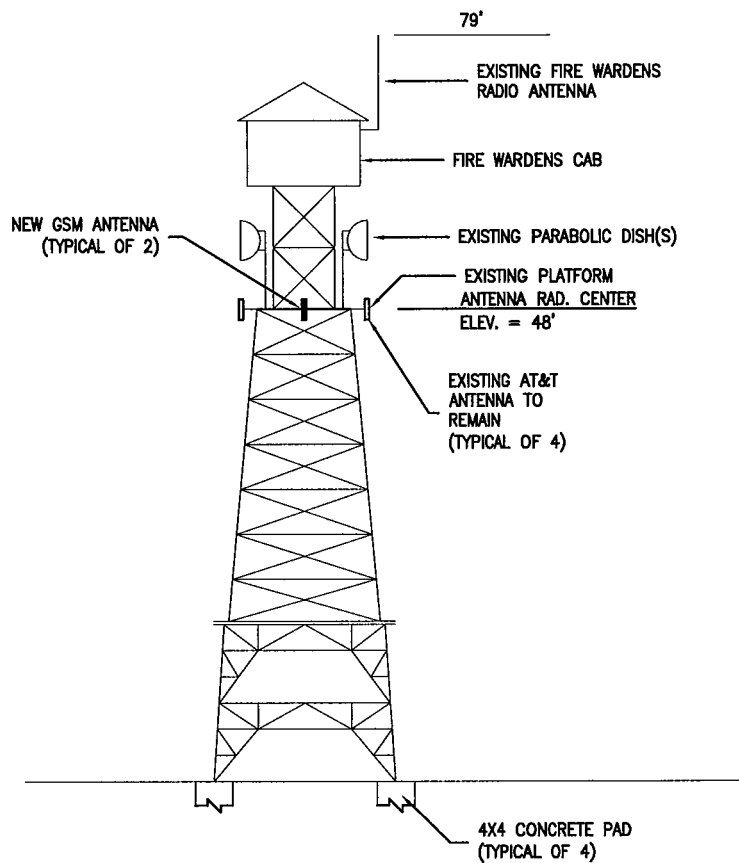


AT&T  
 WIRELESS COMMUNICATIONS FACILITY  
 SITE ADDRESS: **MOWHALK MOUNTAIN  
 MOHAWK STATE FOREST  
 WEST GOSHEN, CT**

REV.	DATE	DESCRIPTION
Scale:	Date: 11/05/01	
Job No.	File No.	Dwg. of 1

Dwg. No.  
**SK-1**





SITE ID NO:  
 Designed by:  
 Drawn by:  
 Checked by:  
 Approved by:

**Edwards**  
 AND **Kelcey**  
 WE'LL TAKE YOU THERE

AT&T  
 WIRELESS COMMUNICATIONS FACILITY

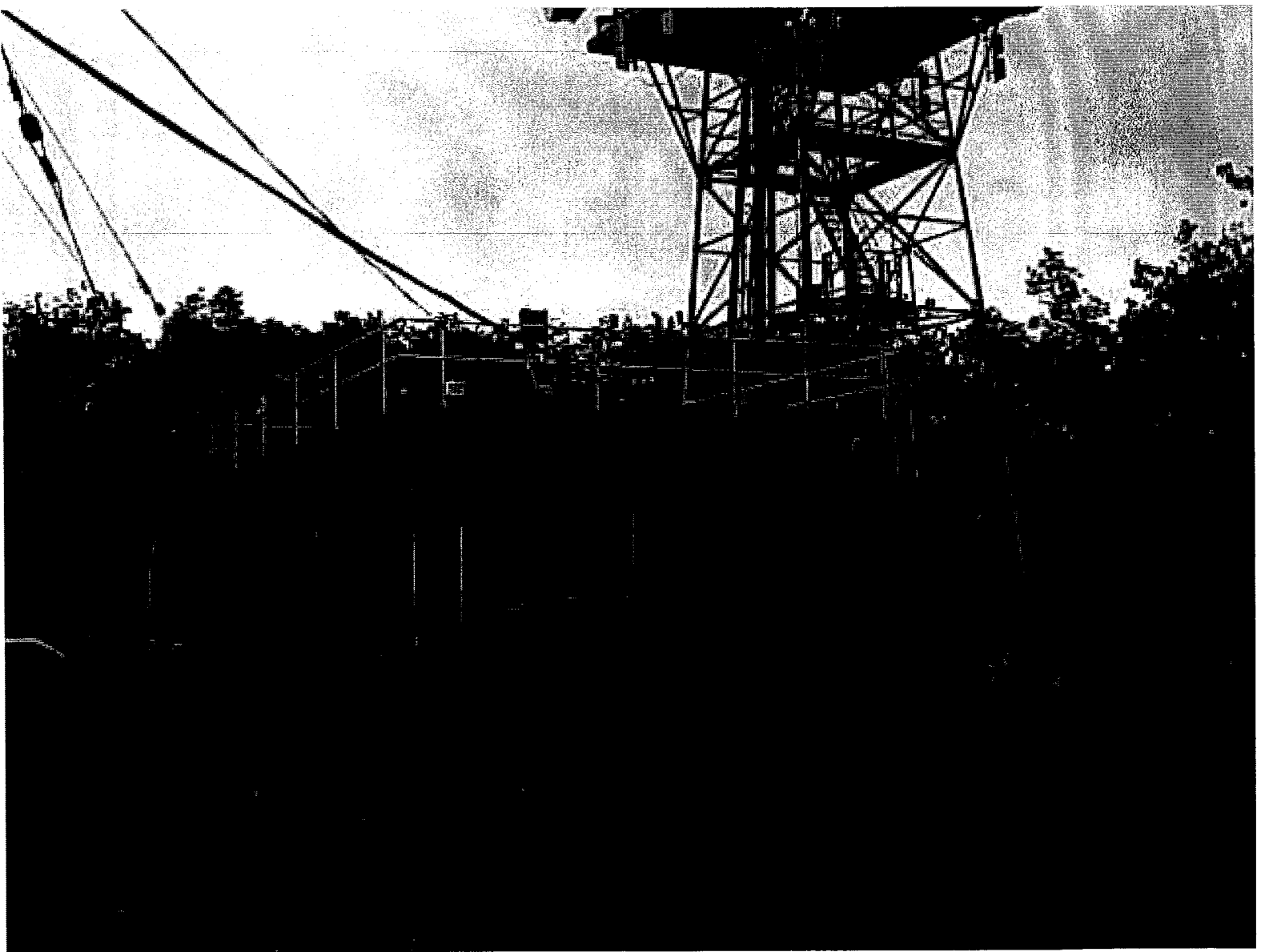
SITE ADDRESS  
**MOHAWK MOUNTAIN**  
**MOHAWK STATE FOREST**  
**WEST GOSHEN, CT**

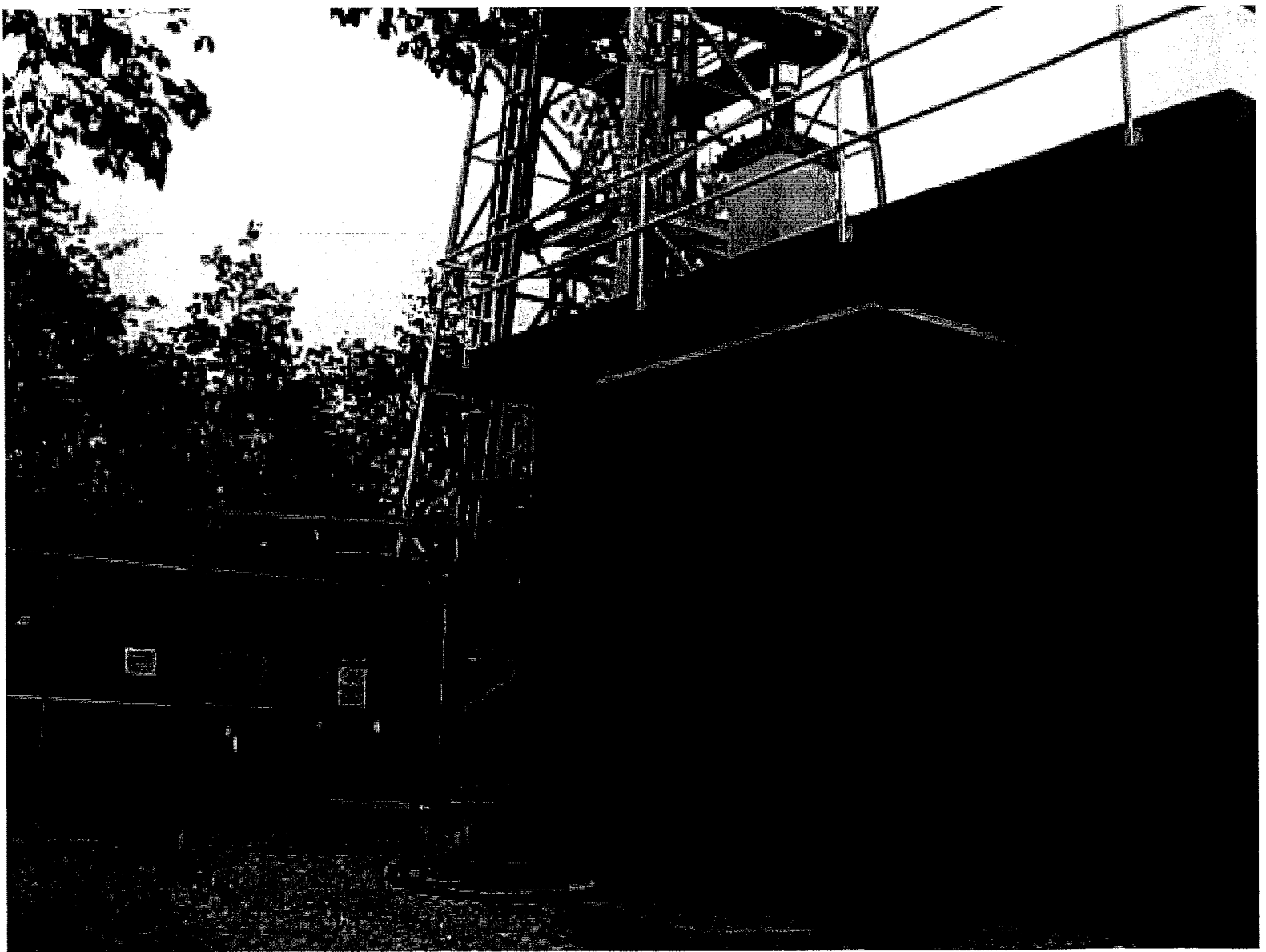
REV.	DATE:	DESCRIPTION
Scale:	Date: 11/05/01	
Job No.	File No.	

Dwg. No.  
**SK-2**  
 Dwg. of 1

299 Madison Avenue, PO Box 1936  
Morristown, New Jersey 07962-1936

Tel 973.267.8830 x1250  
Fax 973.267.3555  
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Web [www.ekcorp.com](http://www.ekcorp.com)







**Safety Analysis of the Electromagnetic Environment in the  
Vicinity of an Existing and Proposed Cellular Radio Installation,  
Cell Site L12: AT&T Mohawk Mountain Tower, Cornwall, Connecticut**

*Radiation Protection and Product Safety Department*  
AT&T Bell Laboratories  
Murray Hill, New Jersey 07974-0636

**Summary**

This report is a safety analysis of the electromagnetic environment surrounding the existing cellular radio site and the one proposed for installation in Cornwall, CT. CellularOne antennas and Southern New England Telephone (SNET) antennas will be colocated on this tower. The analysis utilizes engineering data provided by CellularOne, together with well-established analytical techniques for estimating the radiofrequency (RF) electromagnetic fields associated with the cellular antennas. Worst-case assumptions were used to ensure safe-side estimates, i.e., the actual values will be significantly lower than the corresponding analytical values. The analysis indicates that the maximum level of RF energy to which the public may be exposed is below all applicable health and safety limits.

Specifically, in all normally accessible areas in the neighborhood surrounding the tower, the maximum levels of RF energy associated with the CellularOne antennas will be at least 366 times below the exposure limits of OSHA, ANSI, IEEE, NCRP, and the limits of all states that regulate RF exposure. The combined maximum levels of RF energy associated with both the CellularOne and SNET antennas will be at least 95 times below these exposure limits.

*Prepared for*  
John Farrell  
CellularOne  
15 East Midland Avenue  
Paramus, New Jersey 07652-2931

February 9, 1995

---

## 1. Introduction

This report was prepared in response to a request from CellularOne for a safety analysis of the radiofrequency (RF) electromagnetic environment in the vicinity of an existing and proposed cellular-radio installation, and an opinion regarding the concern for public health associated with long-term exposure in this environment.

## 2. Technical Data

### *Cellular Radio*

The proposed CellularOne cellular system, to be located on AT&T's Mohawk Mountain tower, Cornwall, CT, will ultimately consist of two directional transmitting antennas (Swedcom Allgon Model ALP9212-N) mounted on the tower at an antenna centerline height of approximately 47.8 ft above grade. Each transmitting antenna will operate at frequencies between 869-894 million hertz (MHz). These frequencies were formerly allocated for UHF television. Two receiving antennas will also be mounted at approximately the same height. (This is a two sector cell-site configuration.)

A maximum of two transmitters (channels) could be connected to each CellularOne transmitting antenna. The effective radiated power (ERP) is limited to 250 watts per channel which corresponds to a maximum antenna input power of less than 16 watts per channel. Hence, the actual total radiated power will be less than 32 watts.

The existing Southern New England Telephone (SNET) cellular system, which is also located on the tower, consists of three directional transmitting antennas (Swedcom Allgon Model ALP9212-N) mounted at an antenna centerline height of approximately 53 ft above grade. Each transmitting antenna operates at frequencies between 869-894 million hertz (MHz). Six receiving antennas are also mounted at approximately the same height.

A maximum of nineteen channels could be connected to each SNET transmitting antenna. The effective radiated power (ERP) is limited to 100 watts per channel which corresponds to a maximum antenna input power of less than 7 watts per channel. Hence, the actual total radiated power will be less than 133 watts (assuming the maximum number of transmitters are installed and operate simultaneously and continuously, which is rarely, if ever, the case).

### *Microwave Radio*

The existing AT&T microwave system operates at an extremely low power (less than 5 watts) and, unlike the pattern of other antennas, the energy from the microwave antenna is propagated in a very narrow, well collimated beam (the beam divergence is less than two degrees) similar to that of a searchlight. Moreover, in order for a microwave system to function, a clear, unobstructed line-of-sight path must exist between the transmitting and receiving antennas. Thus, buildings and, hence, people cannot be located near the tower on the axis of the transmitting antennas. *Consequently, public exposure to electromagnetic energy from the microwave antennas is insignificant.* This has been verified during studies in which measurements were made in the vicinity of a number of representative microwave towers, most of which contained a large number of transmitting antennas<sup>1</sup>.

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1. Petersen, R.C., Electromagnetic Radiation from Selected Telecommunications Systems, *Proc. of the IEEE*, Vol. 68, No. 1. 1980

These are extremely low power systems when compared with other familiar radio systems, such as AM, FM, and television broadcast, which operate upwards of 50,000 watts. Figure 1 is a diagram of the electromagnetic spectrum which also lists common uses of RF energy.

### 3. Environmental Levels of RF Energy

The antenna pattern from a cellular-radio antenna is such that the energy is propagated in a relatively narrow beam (in the vertical plane) which is directed toward the horizon. The reason for this is to provide uniform coverage. Hence, levels of RF energy directly under the antennas are not remarkably different from the levels at points more distant.

For the case at hand, the maximum potential exposure levels associated with the proposed CellularOne installation can be readily calculated at any point in a plane at any height above grade. Based on the information provided, and an antenna gain of approximately 14.15 dBi, the maximum power density at any point in a horizontal plane 6 ft above grade will be less than 1.5 millionths of a watt per centimeter squared ( $1.5 \mu\text{W}/\text{cm}^2$ ).

Based on the information provided for the SNET system, and an antenna gain of approximately 14.15 dBi, the maximum power density at any point in a horizontal plane 6 ft above grade will be less than  $4.4 \mu\text{W}/\text{cm}^2$ .

The above values are the theoretical *maxima* that could occur and are not typical values. The calculations include the effect of field reinforcement from in-phase reflections, and the assumption was made that all transmitters operate simultaneously and continuously (which is not the usual case). Because of the intermittent nature of the transmission from these antennas, the actual time-weighted-average values will be lower than those above. Although the above values are obtained analytically, experience has shown that the technique used is extremely conservative. That is, the measured power density levels have always been found to be smaller than the corresponding calculated levels<sup>2</sup>. Furthermore, levels inside nearby homes and buildings will be lower than those immediately outside because of the high attenuation of common building material at these frequencies and, hence, will not be significantly different from normal ambient levels.

### 4. Comparison with Standards

Table 1 shows the cellular radio RF power density levels calculated near the cell-site, and the pertinent federal, state and consensus exposure limits for human exposure to RF energy. The various exposure limits range from  $550 \mu\text{W}/\text{cm}^2$  (for public exposure) to  $10,000 \mu\text{W}/\text{cm}^2$  (occupational exposure), while the corresponding calculated maximum power density levels in the environment around the existing and proposed antennas are  $1.5 \mu\text{W}/\text{cm}^2$  (at 6 ft above grade) for the CellularOne system and  $4.4 \mu\text{W}/\text{cm}^2$  (at 6 ft above grade) for the SNET system. The corresponding maximum power densities for both systems combined will be  $5.9 \mu\text{W}/\text{cm}^2$  at 6 ft above grade. The power density in the main beam will be less than  $10 \mu\text{W}/\text{cm}^2$  at any distance greater than 190 ft from the antennas.

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2. Petersen, R.C., and Testagrossa, P.A., Radiofrequency Fields Associated with Cellular-Radio Cell-Site Antennas, *Bioelectromagnetics*, Vol. 13 No. 6 (1992).



**Table 1**  
**Comparison of Radiofrequency Exposure Limits with Calculated**  
**Exposure Levels for the Existing and Proposed Cellular Radio Antennas**

<b>Organization/Government Agency</b>	<b>Exposure Population</b>	<b>Exposure Limits (<math>\mu\text{W}/\text{cm}^2</math>)</b>
Occupational Safety & Health Administration ..... (OSHA - 29 CFR 1910.97)	Occupational	10,000
American National Standards Institute ..... (ANSI C95.1 - 1982)	Occupational	2,700
	Public	2,700
Institute of Electrical and Electronic Engineers <sup>†</sup> ..... (ANSI/IEEE C95.1-1992)	Occupational	2,700
	Public	550
National Council on Radiation Protection & Measurements.. (NCRP Report 86 - 1986)	Occupational	2,700
	Public	550
U.S. Federal Communications Commission <sup>††</sup> ..... (requires FCC licensees to comply with ANSI C95.1-1982)	Occupational	2,700
	Public	2,700
New Jersey Administrative Code..... (NJAC 7:28-42)	Public	2,700
Massachusetts Department of Health..... (106 CMR 122)	Public	550
New York State, Department of Health ..... (follows NCRP Report 86)	Public	550
<b>Calculated Levels Near the Existing and Proposed Installation</b>		<b>Power Density (<math>\mu\text{W}/\text{cm}^2</math>)</b>
CellularOne system, 6 ft above grade.....		< 1.5
SNET system, 6 ft above grade.....		< 4.4
Combined systems, 6 ft above grade.....		< 5.9
In the main beam, at any distance greater than 190 ft from the antennas .....		< 10.0

<sup>†</sup> Latest revision of ANSI C95.1 - 1982.

<sup>††</sup> Because of the low transmitter power, the FCC has categorically excluded cellular-radio from hazard analyses by the licensee.

## 5. Discussion of Health Standards

Recently, press coverage has suggested an association between health effects and exposure to magnetic fields from electric-power distribution lines, and from the use of hand-held cellular telephones. This press coverage has heightened concern among some members of the public about the possibility that health effects may be associated with *any* exposure to electromagnetic energy. Many people feel uneasy about new or unfamiliar technology and often want absolute proof that something is safe. Such absolute guarantees are not possible since it is virtually impossible to prove that something does *not* exist. However, sound judgements can be made as to the safety of a physical agent based on knowledge of the pertinent scientific literature. This is exactly how health standards are developed.

All unequivocal scientific evidence indicates that biological effects associated with exposure to RF energy are threshold effects, i.e., unless the exposure level is sufficiently high the effect will not occur regardless of exposure duration. (Unlike ionizing radiation, e.g., X-rays and nuclear radiation, repeated exposures to low level RF radiation, or nonionizing radiation, are not cumulative.) Thus, it is relatively straightforward to derive safety limits. By adding safety factors to the level at which the most sensitive effect occurs, conservative exposure guides have been developed to ensure safety.

At present, there are close to 10,000 reports in the scientific literature which address the subject of RF bioeffects. These reports, most of which describe the results of epidemiological studies and animal studies, have been critically reviewed by leading researchers in the field and all new studies are continuously being reviewed by various groups and organizations whose interest is developing health standards. These include the U.S. Environmental Protection Agency, the National Institute for Occupational Safety and Health, the National Council on Radiation Protection and Measurements, the American National Standards Institute, the International Radiation Protection Association under the sponsorship of the World Health Organization, and the National Radiological Protection Board in the UK. All of these groups have recently either reaffirmed existing health standards, developed and adopted new health standards, or proposed health standards for exposure to RF energy.

For example, in 1986 the National Council on Radiation Protection and Measurements (NCRP) published recommended limits for occupational and public exposure<sup>3</sup>. These recommendations were based on the results of an extensive critical review of the scientific literature by a committee of the leading researchers in the field of bioelectromagnetics. The literature selected included many controversial studies reporting effects at low levels. The results of all studies selected were weighed and analyzed and an exposure guide of approximately 2,700  $\mu\text{W}/\text{cm}^2$  (at cellular-radio frequencies) was recommended for continuous occupational exposure and approximately 550  $\mu\text{W}/\text{cm}^2$  for continuous exposure of the public. (Although the State of New York does not have a regulatory program for the RF portion of the electromagnetic spectrum, the New York Department of Health (DOH) compares potential exposure levels with the recommendations of the NCRP to assess public safety.)

In July of 1986 the Environmental Protection Agency published a notice in the *Federal Register*, calling for public comment on recommended guidance for exposure of the public.<sup>4</sup> Three different limits, ranging from approximately 270 to 2,700  $\mu\text{W}/\text{cm}^2$ , were proposed. Further, the maximum permissible exposure limits proposed by the Institute of Electrical and Electronics Engineers Standards Coordinating Committee SCC-28 (formerly ANSI Committee C95), were approved by the IEEE Standards Board on September 26, 1991<sup>5</sup>, and approved by ANSI on November 18, 1992. These limits, which resulted from an extensive critical review of the scientific literature, are identical to the 1982 ANSI RFPGs<sup>6</sup> for occupational exposure and approximately 550  $\mu\text{W}/\text{cm}^2$  for exposure of the general public at cellular-radio frequencies. Also in implementing the National Environmental Policy Act<sup>7</sup> regarding potentially hazardous RF radiation from radio services regulated by the Federal Communications Commission (FCC), the FCC categorically excluded land mobile services, including cellular radio, from hazard analyses because "individually or cumulatively they do not have a significant effect on the quality of the human environment"<sup>8</sup>. The FCC pointed out there was no evidence of excessive exposure to RF radiation during routine normal operation of these radio services. More recently, the World Health

3. NCRP - *Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields*, NCRP Report No. 86, National Council on Radiation Protection and Measurements, Bethesda, MD.

4. *Federal Register*, Vol. 51, No. 146, Wednesday, July 30, 1986.

5. *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, ANSI/IEEE C95.1-1992, Institute of Electrical and Electronics Engineers, Piscataway, NJ.

6. *American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz*, ANSI C95.1-1982, American National Standards Institute, New York, NY.

7. Although there are no federal limits *per se*, in order to fulfill its obligation under the National Environmental Policy Act, the FCC requires licensees to comply with the 1982 ANSI C95.1 limits.

8. Action by the Commission February 12, 1987, by Second Report and Order (FCC 87-63), and Third Notice of Proposed Rulemaking (FCC 87-64). General Docket No. 79-144.

Organization's International Commission on Non-Ionizing Radiation Protection<sup>9</sup>, and the National Radiological Protection Board in the United Kingdom<sup>10</sup>, independently developed and published guidelines similar to those of ANSI/IEEE. Finally, what was formerly the USSR, which traditionally had the lowest exposure guides, twice revised upward its limits for public exposure. Thus, there is a converging consensus of the world's scientific community as to what constitutes safe levels of exposure.

With respect to the existing and proposed cellular-radio systems, be assured that the *actual* exposure levels in the vicinity of the Cornwall, CT installation will be below any health standard used anywhere in the world and literally thousands of times below any level reported to be associated with any verifiable functional change in humans or laboratory animals. This holds true even when all transmitters operate simultaneously and continuously (which is not the normal operating mode). Power density levels of this magnitude are not even a subject of speculation with regard to an association with adverse health effects.

#### 6. For Further Information

Anyone interested can obtain additional information about the environmental impact of cellular-radio from:

Dr. Robert Cleveland, Jr.  
Federal Communications Office of  
Engineering and Technology  
Room 7002  
1919 M Street NW  
Washington, DC 20554  
(202)653-8169

#### 7. Conclusion

A safety analysis has been performed with respect to potential public exposure to RF energy in the environment surrounding the existing cellular radio site and the one proposed for installation in Cornwall, CT. CellularOne antennas and Southern New England Telephone (SNET) antennas will be colocated on this monopole. The analysis utilizes engineering data provided by CellularOne, together with well-established analytical techniques for estimating the radiofrequency (RF) electromagnetic fields associated with the cellular antennas. Worst-case assumptions were used to ensure safe-side estimates, i.e., the actual values will be significantly lower than the corresponding analytical values. The analysis indicates that the maximum level of RF energy to which the public may be exposed is below all applicable health and safety limits.

Specifically, in all normally accessible areas in the neighborhood surrounding the tower, the maximum levels of RF energy associated with the CellularOne antennas will be at least 366 times below the exposure limits of OSHA, ANSI, IEEE, NCRP, and the limits of all states that regulate RF exposure. The combined maximum levels of RF energy associated with both the CellularOne and SNET antennas will be at least 95 times below these exposure limits.

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9. *Electromagnetic Fields (300 Hz to 300 GHz)*, Environmental Health Criteria 137, World Health Organization, Geneva, Switzerland, 1993.

10. *Board Statement on Restrictions on Human Exposure to Static and Time Varying Electromagnetic Fields and Radiation*, Documents of the NRPB, National Radiological Protection Board, Chilton, Didcot, Oxon, United Kingdom, 1993.



Peter J. Tyrrell  
Senior Attorney

May 23, 1994

Mr. Mortimer A. Gelston, Chairman  
Connecticut Siting Council  
136 Main Street, Suite 401  
New Britain, CT 06051

RECEIVED  
MAY 23 1994

CONNECTICUT  
SITING COUNCIL

Dear Chairman Gelston:

Enclosed please find a Notice of Intent to Modify an Exempt Tower and Associated Equipment for facilities owned and operated by the American Telephone and Telegraph Company (AT&T) in Cornwall, Connecticut. The site is located atop Mohawk Mountain in Mohawk Mountain State Park. The Springwich Cellular Limited Partnership (SCLP) proposes to add antennas to the existing tower and locate a modular equipment shelter at the tower base. The site will be used to provide cellular communications coverage in and around the Cornwall area.

The attached pages detail the required information. As is shown in the attachment, the proposed addition meets all the necessary criteria established in the Regulations of Connecticut State Agencies Section 16-50j-72 (b) (2), and is thus an exempt facility pursuant to Section 16-50j-73.

Please record me as counsel for SCLP in this matter and in all correspondence from the Council.

Thank you for your cooperation.

Very truly yours,

A handwritten signature in cursive script that reads "Peter J. Tyrrell".

Copies to: Honorable Gordon M. Ridgeway, First Selectman  
Town of Cornwall

Mr. Dick Harris, State of Connecticut,  
Department of Environmental Protection

Mr. Jeff Burkland, American Telephone & Telegraph

## Cornwall

Pursuant to Section 16-50i (a) (5) of the Connecticut General Statutes and Section 16-50j-72 (b) (2), as amended, of the Regulations of Connecticut State Agencies, the Springwich Cellular Limited Partnership (SCLP) hereby notifies the Connecticut Siting Council that it intends to modify an existing telecommunications facility by adding cellular service antennas to an existing communications tower and locating a pre-fabricated equipment building adjacent to the tower structure. The site is located atop Mohawk Mountain in Cornwall, inside Mohawk Mountain State Park.

### Background

The proposed location is the site of a 79 foot lattice communications tower owned and operated by AT&T. In 1952, AT&T was granted an easement to utilize the site, which is owned by the State of Connecticut Department of Environmental Protection (DEP). In January 1994, the easement was modified by AT&T and the DEP to allow SCLP to utilize the site.

The existing facility is a main backbone site in AT&T's Northeast microwave transmission network.

### Discussion

SCLP proposes to install nine directional antennas at the sixty foot level of the existing tower to expand and improve cellular system coverage in the Cornwall area. A new twelve foot by twenty-six foot pre-fabricated equipment building will be located at the base of the tower, adjacent to AT&T's equipment building. The new structure will house SCLP's cellular radio equipment.

The power density in the microwave and cellular frequency bands is set forth below. The levels shown indicate the total power density in milliwatts per square centimeter, and have been calculated at the tower base.

<u>Service</u>	<u>Power Density</u>	<u>Antenna Height</u>	<u>ANSI/ Connecticut Standard</u>	<u>Percent of Standard</u>
Cellular	0.1064	60'	0.5867	18.14
Microwave	$3.437 \times 10^{-10}$	40'	2.6667	$1.28 \times 10^{-8}$

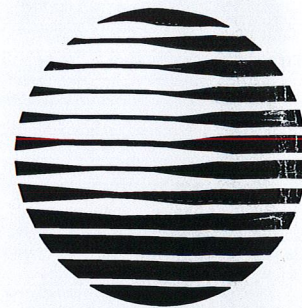
The current Connecticut (and ANSI) power density level standards for non-ionizing radiation are shown above. The levels demonstrated in this case are well below the standards.

### Conclusion

The proposed addition does not constitute a "modification" of an existing facility as defined in Connecticut General Statutes Section 16-50i (d). This is because there is no change in the buildings height. There is no extension of the boundaries of the site. There will be no increase in noise levels at the site's boundary by six decibels or more, and the total radio frequency electromagnetic radiation is not at or above the standard set forth in Section 22 (a) - 162 of the Connecticut General Statutes. This addition will not have a substantially adverse environment effect.

For the reasons discussed above, SCLP requests that the Council acknowledge that this Notice of Modification meets the Council's exemption criteria.



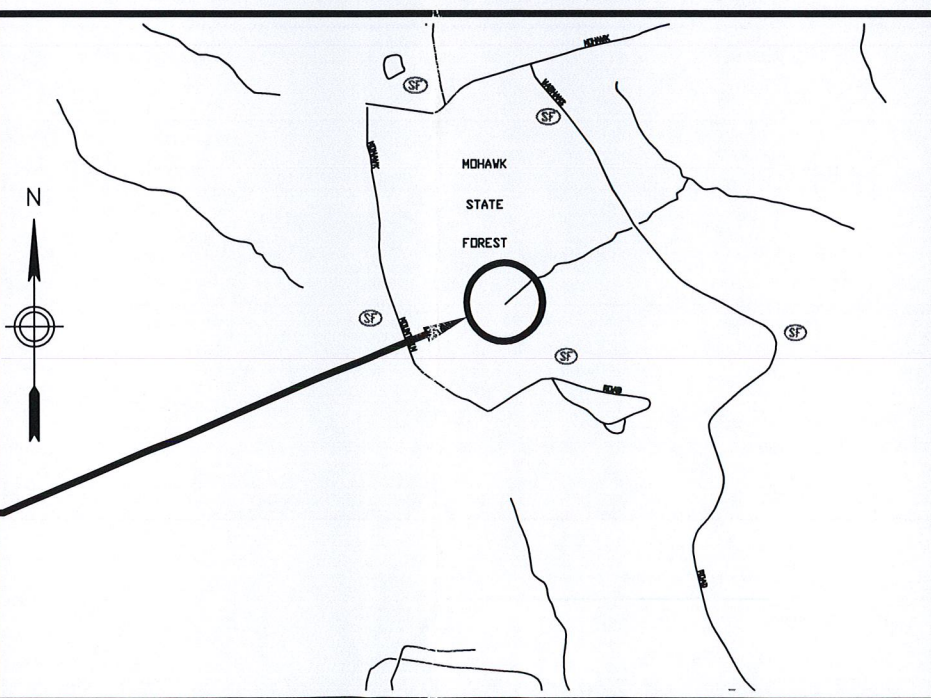




# AT&T

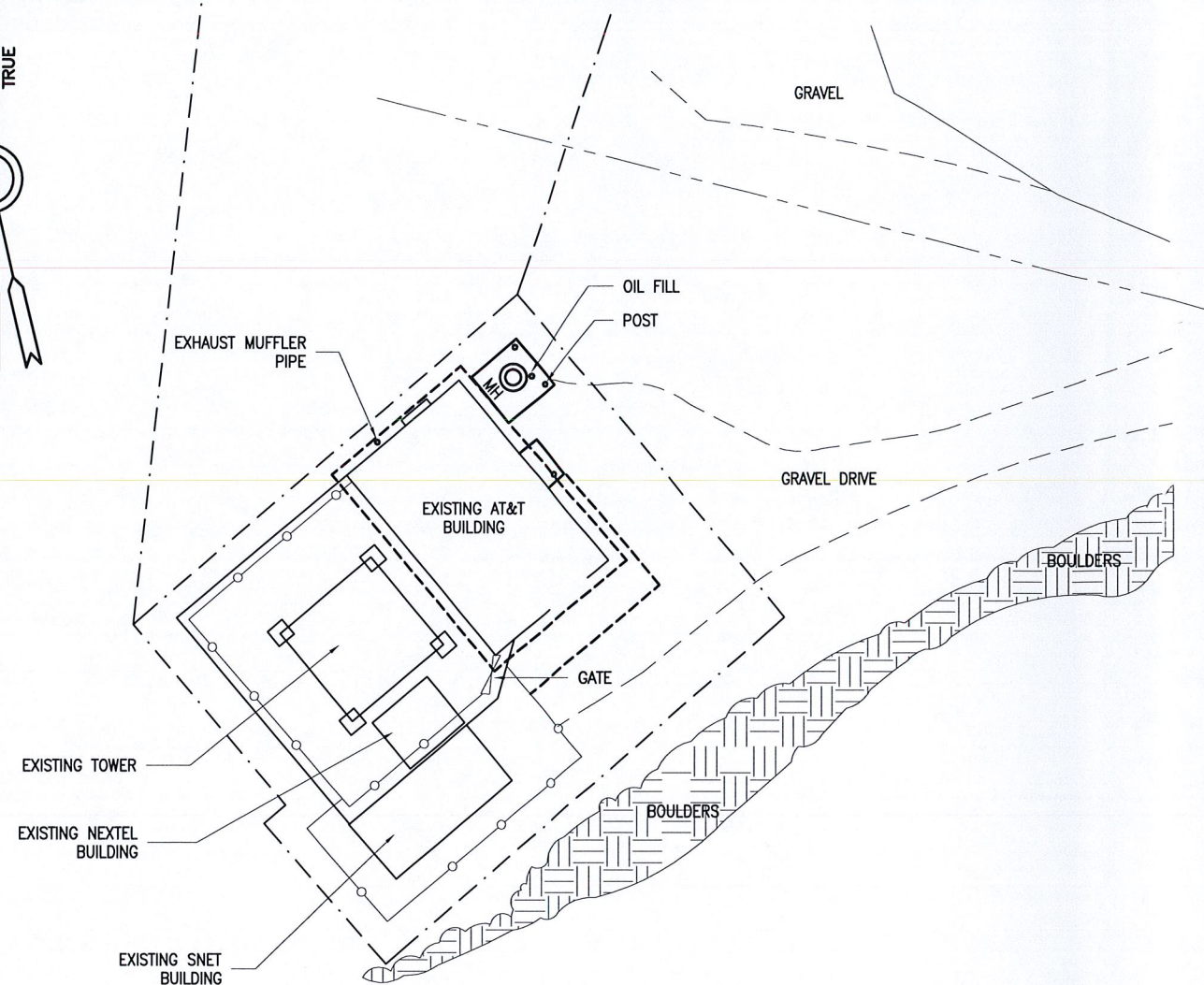
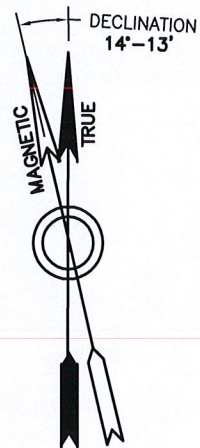
## AT&T WIRELESS SERVICES, LLC

SITE NUMBER:L12

SITE NAME:MOHAWK MOUNTAIN

DRAWING INDEX		REV.	DIRECTIONS	PROJECT INFORMATION																	
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24623-313-CT-L12-02	SITE LAYOUT	0		SITE ADDRESS: MOHAWK STATE FOREST END OF ALLYN RD WEST GOSHEN, CT 06756																	
24623-313-CT-L12-03	EQUIPMENT ROOM LAYOUT & NOTES	0		PROPERTY OWNER: STATE OF CONNECTICUT DEPT. OF ENVIRONMENTAL PROTECTION 79 ELM STREET HARTFORD, CT 06102-5066																	
24623-313-CT-L12-04	ELEVATION AND ANTENNA AZIMUTH	0		CONTACT PERSON: TIMOTHY KEENEY																	
24623-313-CT-L12-05	ANTENNA SCHEMATIC AND BILL OF MATERIALS	0		APPLICANT: AT&T 15 EAST MIDLAND AVE. PARAMUS, NJ 07652																	
24623-313-CT-L12-06	STANDARD DETAILS	0		LATITUDE: 41.8214 LONGITUDE: -73.2972 ELEVATION: 1651' JURISDICTION: GOSHEN, CT																	
24623-313-CT-L12-07	STANDARD DETAILS	0		TAX I.D. NUMBER: CURRENT USE: WIRELESS TELECOMMUNICATIONS FACILITY PROPOSED USE: NO CHANGE ZONING DISTRICT: STRUCTURE HEIGHT: 74' ANTENNA RAD CENTER: 48' RF DATASHEET: 08/26/01 (REV. 3) RF ENGINEER: TONY HOUWELING LUCENT TECHNOLOGIES (973) 386-8621																	
STRUCTURAL REVIEW				ANTENNA LOCATION: LATTICE TOWER EQUIPMENT LOCATION: AT&T EQUIPMENT BUILDING GENERAL CONTRACTOR: EK TECHNOLOGY THOMAS E. SMITH 299 MADISON AVENUE MORRISTOWN, NJ 07962 973-267-8830																	
EXISTING TOWER/FOUNDATION AND BUILDING (AS APPLICABLE) HAVE BEEN EVALUATED FOR THE REPLACEMENT/ADDITION OF EQUIPMENT, ANTENNA AND COAX CABLES. NO STRUCTURAL MODIFICATIONS ARE REQUIRED			THOMAS R. CABANA P.E. No. 21784 11/19/01 DATE																		
 EDWARDS AND KELCEY, INC. 1247 WARD AVENUE WEST CHESTER, PA 19380-4259 E & K PROJ.#: 020015.011 CONTACT: ROB DAVIS PHONE: (401) 272-1969		SITE NAME: MOHAWK MOUNTAIN SITE#: L12 MOHAWK ST. FOREST( AT END OF ALLYN ROAD) WEST GOSHEN, CONNECTICUT		 AT&T 15 EAST MIDLAND AVE. PARAMUS, NJ 07652		<table><thead><tr><th>NO.</th><th>DATE</th><th>REVISIONS</th><th>BY</th><th>CHK</th><th>APP'D</th></tr></thead><tbody><tr><td>0</td><td>08/24/01</td><td>ISSUED FOR CONSTRUCTION</td><td></td><td>DPD</td><td>PDC RLD</td></tr></tbody></table> SCALE AS SHOWN DESIGNED DRAWN		NO.	DATE	REVISIONS	BY	CHK	APP'D	0	08/24/01	ISSUED FOR CONSTRUCTION		DPD	PDC RLD	L12 - MOHAWK MOUNTAIN TITLE SHEET JOB NO. 24623-313 DRAWING NUMBER CT-L12-01 REV 0	
NO.	DATE	REVISIONS	BY	CHK	APP'D																
0	08/24/01	ISSUED FOR CONSTRUCTION		DPD	PDC RLD																





NOTE:  
COMPLETENESS AND ACCURACY OF LOCATION AND DEPTH OF  
UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE  
GUARANTEED. LOCATION AND DEPTH OF ALL UNDERGROUND  
UTILITIES AND FACILITIES MUST BE VERIFIED PRIOR TO ANY  
EARTH MOVING ACTIVITIES.

SITE PLAN  
SCALE: N.T.S.

1  
02

**Edwards  
AND Kelcey**

EDWARDS AND KELCEY, INC.  
1247 WARD AVENUE  
WEST CHESTER, PA 19380-4259

E & K PROJ.#: 020015.011  
CONTACT: ROB DAVIS  
PHONE: (401) 272-1969

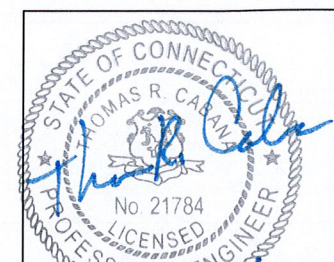
SITE NAME: MOHAWK MOUNTAIN  
SITE#: L12

MOHAWK ST. FOREST (AT END OF ALLYN ROAD)  
WEST GOSHEN, CONNECTICUT



AT&T  
15 EAST MIDLAND AVE.  
PARAMUS, NJ 07652

0	08/24/01	ISSUED FOR CONSTRUCTION	DPD	PDC	RLD
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE	AS SHOWN	DESIGNED	DRAWN		



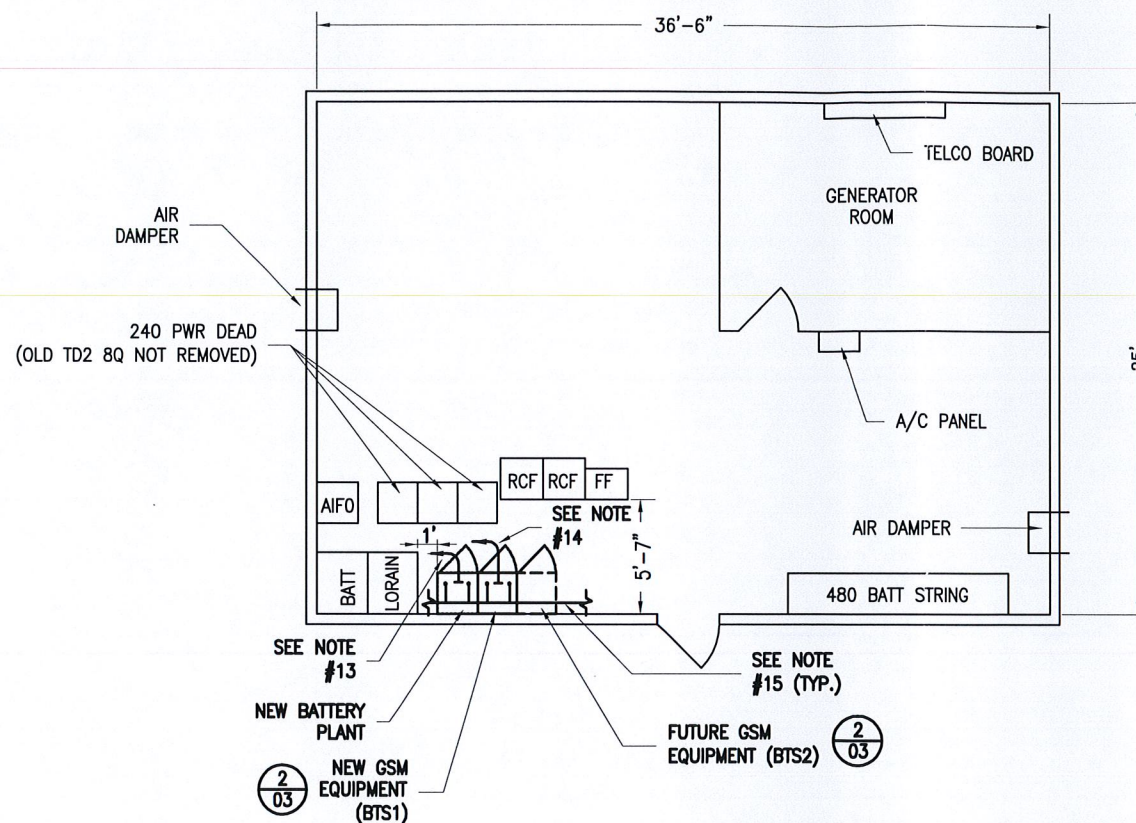
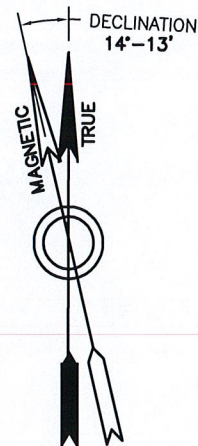
THOMAS R. CABANA  
P.E. No. 21784  
11/19/01 DATE

L12 - MOHAWK MOUNTAIN

SITE  
LAYOUT

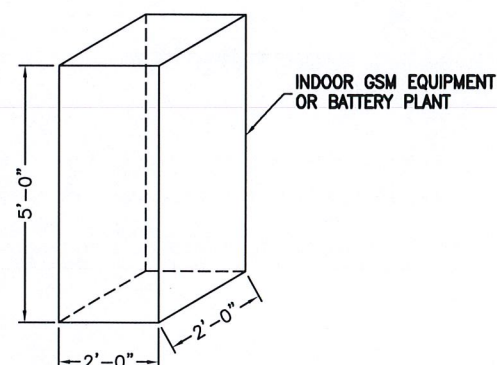
JOB NO.	DRAWING NUMBER	REV
24623-313	CT-L12-02	0





\*NOTE:  
DIMENSION FOR REFERENCE ONLY.  
3'-0" MINIMUM CLEARANCE REQUIRED.

EQUIPMENT PLAN  
SCALE: N.T.S.



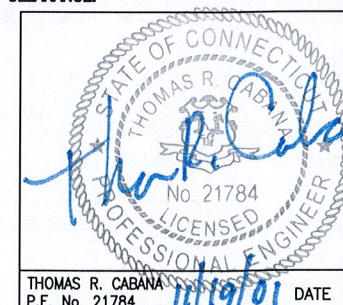
TYPICAL LUCENT GSM  
EQUIPMENT/BATTERY PLANT  
NOT TO SCALE

#### GENERAL NOTES:

1. ALL WORK SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NATIONAL STATE, CITY, AND LOCAL CODES, STANDARDS, AND AMENDMENTS.
2. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM INFORMATION AND DRAWINGS PROVIDED BY CONTRACTOR. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
3. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS ARE INTENDED AS GUIDELINES ONLY AND MUST BE VERIFIED.
4. ALL ITEMS OTHER THAN WHAT IS NOTED IN THE BILL OF MATERIALS FOR ANTENNAS, WILL BE PROVIDED BY THE SUBCONTRACTOR.
5. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
6. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF SPECIFICATIONS LISTED BELOW.
7. FIELD ROUTE ALL CONDUITS, CABLES, ETC. AS REQUIRED. CONFIRM THE EXACT ROUTING WITH THE ON-SITE CONTRACTOR CONSTRUCTION MANAGER PRIOR TO THE START OF WORK.
8. ALL DAMAGE TO THE EXISTING STRUCTURE DURING THE CELL SITE UPGRADE MUST BE MADE GOOD TO THE PRE-CONSTRUCTION CONDITION OR BETTER.
9. REMOVE AND CLEAN UP ANY DEBRIS OR MATERIAL FROM THE SITE THROUGHOUT THE DURATION OF THE CONTRACT UPON COMPLETION OF THE WORK AS DIRECTED BY THE CONTRACTOR.
10. THIS CELL SITE IS IN FULL COMMERCIAL OPERATION, THE SUBCONTRACTOR IS NOT TO DISRUPT THE EXISTING SITE'S NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR AND SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
11. SINCE THIS SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
12. WHEN OTHER CARRIERS ARE PRESENT ON THE SAME STRUCTURE MAINTAIN 10' HORIZONTAL SEPARATION AND 5' VERTICAL SEPARATION BETWEEN CARRIERS.
13. POWER:  
SUBCONTRACTOR TO PROVIDE & INSTALL 3 DP 25 AMP BREAKERS. SUBCONTRACTOR TO FIELD ROUTE 6-#10 STRANDED WIRES AND 1-#10 STRANDED GREEN INSULATED GROUND WIRE 1-INCH EMT FROM AC PANEL TO A 8X8X4-INCH JUNCTION BOX NEAR EQUIPMENT LOCATION. SUBCONTRACTOR TO RUN FLEX CONDUIT FROM JUNCTION BOX TO 3-FOOT ABOVE GROUND.
14. TELCO:  
SUBCONTRACTOR TO PROVIDE, INSTALL, & FIELD ROUTE (1.5 MBIT/s) CAT 5E T-1 LINE FROM THE NETWORK INTERFACE UNIT (NIU) TO LUCENT BTS CABINET PER DETAIL 1016A. CONNECTION TO CABINET WILL BE MADE BY LUCENT.
15. GROUND:  
SUBCONTRACTOR SHALL PROVIDE PIG TAIL WITH 2-HOLE LUG (DETAIL 508) FOR GROUNDING THE LUCENT GSM (BTS AND POWER) CABINET FRAMES TO EXISTING HALO GROUND RING USING #6 AWG STRANDED AND INSULATED GREEN COPPER WIRE WITH COMPRESSION TYPE CONNECTOR. IF CONNECTION TO HALO IS NOT FEASIBLE, PROVIDE #6 AWG STRANDED & INSULATED GREEN COPPER WIRE FROM LUCENT GSM (BTS AND POWER) CABINET FRAMES TO MASTER GROUND BAR (DETAIL 509) AND TERMINATE WITH 2-HOLE LUG PER DETAIL 508. PROVIDE 2 GROUNDS PER CABINET. CONNECTION TO CABINET WILL BE MADE BY LUCENT.
16. CLEARANCE:  
GSM CABINET SHOULD HAVE A MINIMUM OF 36-INCH FRONT CLEARANCE.

#### REFERENCE SPECIFICATIONS:

1. 24623-033-3PS-A00Z-00002, SCOPE OF WORK (EXHIBIT "D") FOR GENERAL CONSTRUCTION SERVICES.
2. 24623-033-3PS-A00Z-00005, (EXHIBIT "E") FOR GENERAL CONSTRUCTION SERVICES.



THOMAS R. CABANA  
P.E. No. 21784  
DATE 11/19/01

L12 - MOHAWK MOUNTAIN		
EQUIPMENT ROOM LAYOUT AND NOTES		
JOB NO.	DRAWING NUMBER	REV
24623-313	CT-L12-03	0

**Edwards  
AND Kelcey**

EDWARDS AND KELCEY, INC.  
1247 WARD AVENUE  
WEST CHESTER, PA 19380-4259

E & K PROJ.#: 020015.011  
CONTACT: ROB DAVIS  
PHONE: (401) 272-1969

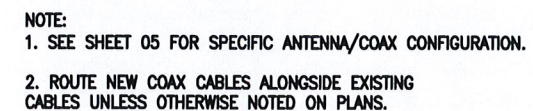
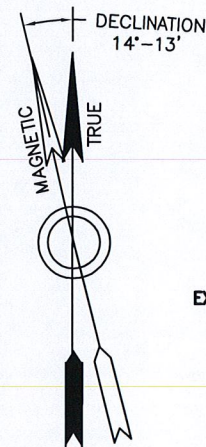
SITE NAME: MOHAWK MOUNTAIN  
SITE#: L12  
MOHAWK ST. FOREST (AT END OF ALLYN ROAD)  
WEST GOSHEN, CONNECTICUT



AT&T  
15 EAST MIDLAND AVE.  
PARAMUS, NJ 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	08/24/01	ISSUED FOR CONSTRUCTION		DPD	PDC RLD
SCALE	AS SHOWN	DESIGNED	DRAWN		



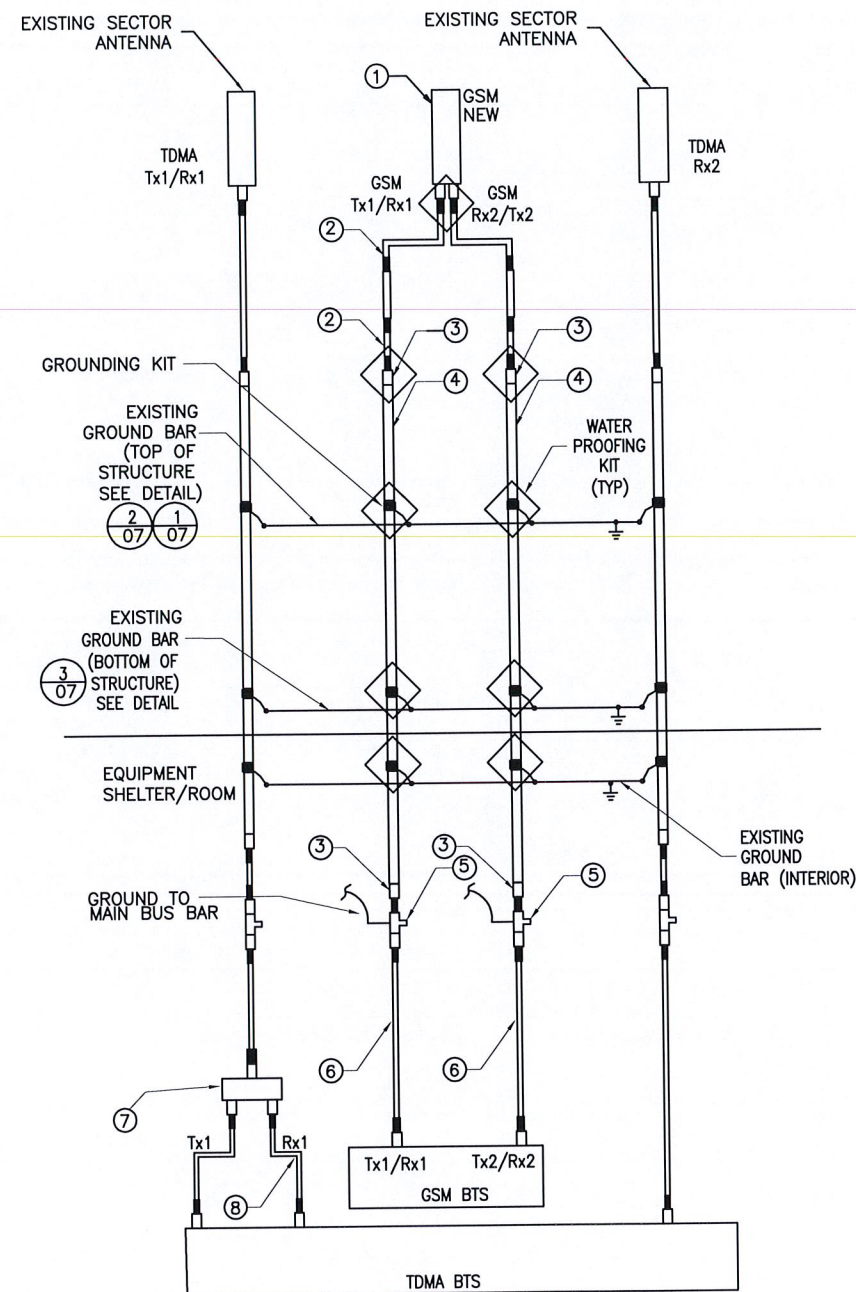


2  
04

1  
04

JOB NO.	DRAWING NUMBER	REV
24623-313	CT-L12-04	0



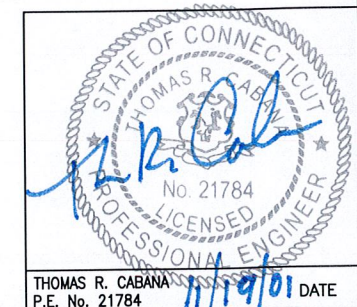


3/4 VDP  
ANTENNA CONFIGURATION  
NOT TO SCALE

# BILL OF MATERIALS

ITEM NO.	ITEM DESCRIPTION	SYS.	SECTOR ALPHA AZIMUTH 0°			SECTOR BETA AZIMUTH 180°			TOTAL QUANTITY	SUPPLIED BY
			TDMA TX1/RX1	GSM TX1/RX1 TX2/RX2	TDMA RX2	TDMA TX1/RX1	GSM TX1/RX1 TX2/RX2	TDMA RX2		
1	ANTENNA		ALP9212 EXISTING	ALGON 7262.01 NEW (51.2"x5"x3.2")	ALP9212 EXISTING	ALP9212 EXISTING	ALGON 7262.01 NEW (51.2"x5"x3.2")	ALP9212 EXISTING	2	BECHTEL
	MECHANICAL DOWNTILT			2 DEG.			2 DEG.			
2	STANDARD HELIAX JUMPER LDF 1/2" JUMPER, DIN MALE/DIN MALE			L4A-PDMDM-6			L4A-PDMDM-6		4	BECHTEL
3	STANDARD HELIAX UNATTACHED CONNECTOR, DIN FEMALE			L5PDF-RPC			L5PDF-RPC		4	BECHTEL
4	MAIN COAXIAL CABLE (LENGTH)			LDF5-50A (110'-8") 2-NEW			LDF5-50A (106'-8") 2-NEW		432'(7/8")	BECHTEL
5	SURGE ARRESTOR			APTDC-BDFDM- SAT NEW			APTDC-BDFDM- SAT NEW		2	BECHTEL
6	1/2" JUMPER, DIN MALE/DIN MALE			L4A-PDMDM-25 NEW			L4A-PDMDM-25 NEW		TBD	TBD
7	DUPLEXER								TBD	TBD
8	1/2" JUMPER, DIN MALE/ DIN MALE								TBD	TBD
9	LOW NOISE AMPLIFIER									BECHTEL
ID TAG				ALPHA A2/A3 ATTWS GSM			BETA B2/B3 ATTWS GSM			SUB CONTRACTOR
COLOR CODE				2/3 RED			2/3 BLUE			SUB CONTRACTOR

- SUBCONTRACTOR SHALL VERIFY THE ACTUAL LENGTH IN THE FIELD BEFORE INSTALLATION
- TAG (SEE DETAIL 5 ON SHEET 06) & COLOR CODE ALL MAIN CABLES AT LOCATIONS PER AWS TOWER/ANTENNA CABLE MARKING STANDARD:  
TOP OF TOWER END OF MAIN COAX  
BOTTOM OF TOWER SHELTER EXTERIOR AT CABLE ENTRY PORT  
WAVE GUIDE PORT SHELTER INTERIOR AT CABLE ENTRY PORT  
DIRECTLY BEFORE AND AFTER RF EQUIPMENT (DUPLEXERS, DIPLEXERS, ETC.)  
END OF INTERIOR JUMPERS AT BTS EQUIPMENT
- ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWN TILT MOUNTING BRACKETS SUPPLIED BY ANTENNA MANUFACTURER
- PRIOR APPROVAL IS REQUIRED BEFORE PERFORMING ANY WORK ON EXISTING CELL SITE EQUIPMENT
- CONTRACTOR SHALL PROVIDE ALL GROUNDING KITS AND WEATHER PROOFING KITS.
- INFORMATION TAKEN FROM RF DATASHEET, REV. 3



**Edwards  
AND Kelcey**

EDWARDS AND KELCEY, INC.  
1247 WARD AVENUE  
WEST CHESTER, PA 19380-4259

E & K PROJ.#: 020015.011  
CONTACT: ROB DAVIS  
PHONE: (401) 272-1969

SITE NAME: MOHAWK MOUNTAIN  
SITE#: L12

MOHAWK ST. FOREST( AT END OF ALLYN ROAD)  
WEST GOSHEN, CONNECTICUT



AT&T  
15 EAST MIDLAND AVE.  
PARAMUS, NJ 07652

0	08/24/01	ISSUED FOR CONSTRUCTION	DPD	PDC	RLD
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE	AS SHOWN	DESIGNED	DRAWN		

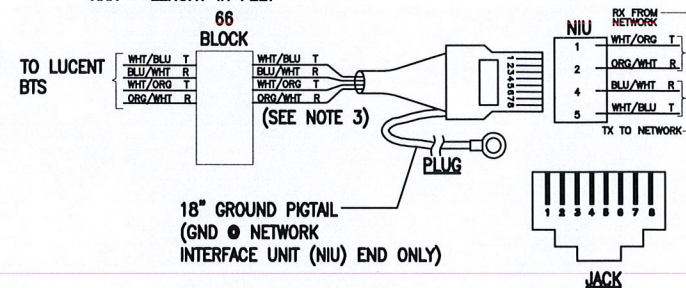
L12 - MOHAWK MOUNTAIN

ANTENNA SCHEMATIC AND  
BILL OF MATERIALS

JOB NO.	DRAWING NUMBER	REV
24623-313	CT-L12-05	0



\* VENDOR:  
CDS DATACOM INC.  
214-340-9199  
INDOOR SINGLE ENDED P/N C00411482-XXX  
OUTDOOR SINGLE ENDED P/N C00411492-XXX  
XXX = LENGTH IN FEET



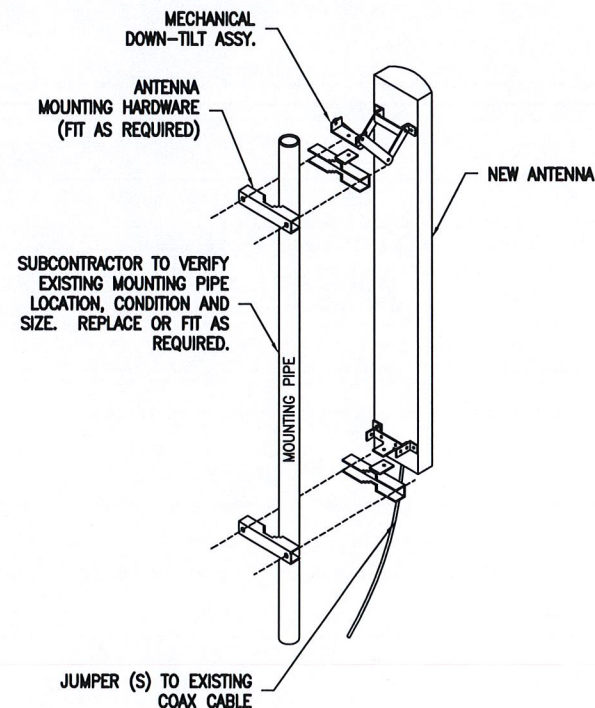
RJ48C 8 PIN CONNECTOR

\* T1 CABLE MUST BE CDS DATACOM (NO SUBSTITUTION)

NOTES:

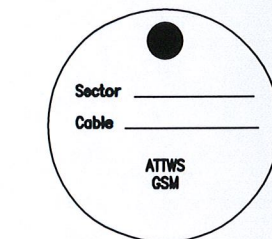
1. THE CABLE IS SUITABLE FOR LUCENT FLEXENT SITE GSM BTS.
2. THE CABLE IS A STRAIGHT-THROUGH CABLE WITH IDENTICAL CONNECTOR IF MODULAR PLUG USED AT BOTH ENDS.
3. PAIRS 3&4 NOT SHOWN/ USED FOR RJ48C BUT ARE TERMINATED IN MODULAR PLUG PER ANSI/TIA/EIA (T568B).

T-1/PCM  
CONNECTOR PINOUT (1016)  
NOT TO SCALE



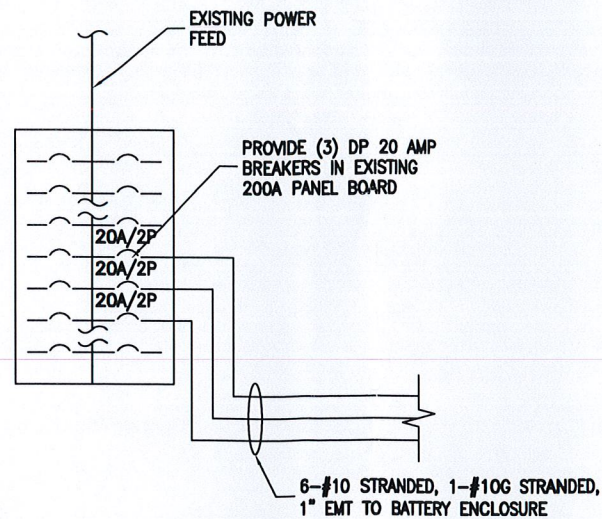
ANTENNA  
MOUNT DETAIL  
NOT TO SCALE

ONE  
LINE DIAGRAM  
NOT TO SCALE



NOTE:  
TAG SHALL BE MADE OF STEEL OR  
EQUIVALENT AND ATTACHED TO CABLE  
WITH CORROSION PROOF WIRE.

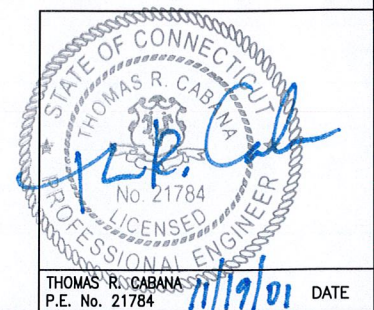
TAG LABELING  
NOT TO SCALE



EXISTING 200A PANEL					
DESCRIPTION	BREAKER	CIRCUIT	CIRCUIT	BREAKER	DESCRIPTION
UNK	60	1	2	30	RECTIFIER #4
UNK	60	3	4		
EXHAUST FAN	60	5	6	30	RECTIFIER #5
SPARE	60	7	8		
SPARE	60	9	10	30	RECTIFIER #6
SPARE	60	11	12		
RECTIFIER #1	60	13	14	20	UNK
		15	16	20	NEW GSM
RECTIFIER #2	60	17	18	20	NEW GSM
		19	20		
RECTIFIER #3	60	21	22	20	NEW GSM
		23	24		
SPARE		25	26		
SPARE		27	28		SPARE
SPARE		29	30		SPARE
SPARE		31	32		SPARE
SPARE		33	34		SPARE
SPARE		35	36		SPARE
SPARE		37	38	100	SURGE SUPPRESSOR
SPARE		39	40		
SURGE ARRESTER					

NOTE: SUBCONTRACTOR SHALL VERIFY IN FIELD AND MAKE ADJUSTMENTS IF NECESSARY

PANEL SCHEDULE  
NOT TO SCALE



THOMAS R. CABANA  
P.E. No. 21784  
DATE 11/19/01

L12 - MOHAWK MOUNTAIN

STANDARD  
DETAILS

JOB NO. 24623-313  
DRAWING NUMBER CT-L12-06  
REV 0

**Edwards  
AND Kelcey**

EDWARDS AND KELCEY, INC.  
1247 WARD AVENUE  
WEST CHESTER, PA 19380-4259

E & K PROJ.#: 020015.011  
CONTACT: ROB DAVIS  
PHONE: (401) 272-1969

SITE NAME: MOHAWK MOUNTAIN  
SITE#: L12

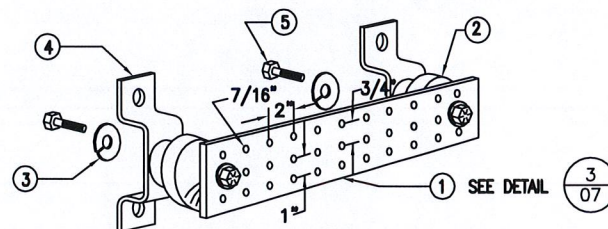
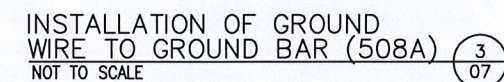
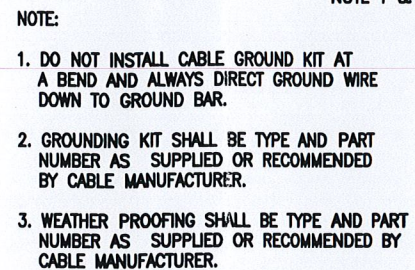
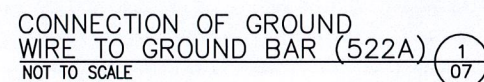
MOHAWK ST. FOREST( AT END OF ALLYN ROAD)  
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- 1- COPPER GROUND BAR,  $\frac{1}{2}$ "X 4"X 20", NEWTON INSTRUMENT CO.  
CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA  
DOUBLE LUG CONFIGURATION.
- 2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
- 3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO.  
CAT. NO. 3015-8
- 4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO.  
CAT. NO. A-6056
- 5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO.  
CAT. NO. 3012-1

