



Town Council Agenda Report

SUBJECT: Resolution

TITLE OF AGENDA ITEM:

A RESOLUTION OF THE TOWN OF DAVIE, FLORIDA, AUTHORIZING THE APPROPRIATE OFFICIAL TO EXECUTE AMENDMENTS TO THE LEASE AGREEMENT CONCERNING THE MONOPOLE TELECOMMUNICATIONS TOWER AT THE SITE LOCATED AT 3600 FLAMINGO ROAD; AND PROVIDING FOR AN EFFECTIVE DATE.

REPORT IN BRIEF:

The proposed amendments to the existing lease agreement for the tower located at 3600 S. Flamingo Road allows an additional provider of telecommunications services to have antennas on the monopole. The attached memo to Town Attorney Kiar explains the history about this tower and additional detail. Currently, three providers are allowed on the tower. The amendment allows a fourth provider, Nextel to have equipment on the tower. The approved site plan includes an area for the ground equipment to support the antennas.

The proposed amendment specifically allows four providers and lists the heights at which the equipment is located. This replaces language which previously allowed three providers. A sentence is deleted which requires the separation of equipment of 25' on the pole. Lastly, the notice requirements are changed at the request of Ominipoint.

CONCURRENCES: Not Applicable

FISCAL IMPACT: The Town will receive a monthly lease payment.

RECOMMENDATION(S): Motion to approve the resolution.

Attachment(s): Resolution, the Agreement, Memorandum and Recommendation to Monroe Kiar dated November 20, 2000 with attachments including engineering documents illustrating there is capacity on the tower for the equipment, November 21, 2000 memo from Town Attorney Kiar indicating agreement with evaluation and recommendation from a legal standpoint.

RESOLUTION NO.

A RESOLUTION OF THE TOWN OF DAVIE, FLORIDA, AUTHORIZING THE APPROPRIATE OFFICIAL TO EXECUTE AMENDMENTS TO THE LEASE AGREEMENT CONCERNING THE MONOPOLE TELECOMMUNICATIONS TOWER AT THE SITE LOCATED AT 3600 FLAMINGO ROAD ; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Davie adopted Resolution R-97-405 on November 19, 1997, consenting to the "Assignment and Assumption of Lease" for the telecommunications tower at 3600 Flamingo Road to Omnipoint Communications DEF Operations, Inc.; and

WHEREAS, Resolution R-97-405 allowed the tower to be constructed to a height of 150 feet and to accommodate three providers on the tower rather than three total providers; and

WHEREAS, the successor in interest to Omnipoint Communications DEF Operations, Inc. is Unisite/Omnipoint Fl Tower Venture L.L.C.; and

WHEREAS, Unisite/Omnipoint Fl. Tower Venture, L.L.C. has requested amendments to the lease to allow four providers on the tower rather than three providers with the tower remaining at the same height and not increasing the area of the ground lease; and

WHEREAS, an engineer licensed in the State of Florida has certified that the existing tower has sufficient loading capacity for the additional antennas; and

WHEREAS, there is sufficient loading capacity on the tower, and the addition of a fourth antenna is consistent with the goal of colocation on towers to reduce the number of towers.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF DAVIE, FLORIDA.

SECTION 1. The Mayor or appropriate official is hereby authorized to execute the proposed First Amendment To Lease Agreement between the Town of Davie and Unisite/Omnipoint FL Tower Venture,L.L.C. , a copy of which is attached hereto as Exhibit "A", on behalf of the Town.

SECTION 2. This Resolution shall take effect immediately upon its passage and adoption.

PASSED AND ADOPTED THIS _____ DAY OF _____, 2000.

MAYOR/COUNCILMEMBER

ATTEST:

ACTING TOWN CLERK

APPROVED THIS _____ DAY OF _____, 2000

TOWN OF DAVIE
OFFICE OF THE TOWN ADMINISTRATOR

MEMORANDUM

TO: Monroe Kiar, Town Attorney
FROM: Will Allen, Programs Administrator *Will Allen*
DATE: November 20, 2000 **001122**
SUBJECT: Amendment To Lease Agreement For Telecommunications
Tower At 3600 S. Flamingo Road (Flamingo Fire Station)
Control No.

A request has been made to amend the lease agreement for the telecommunications tower located on Town property, the Flamingo Fire Station at 3600 S. Flamingo Road. The request is to amend the lease to accommodate the addition of a fourth antenna on the existing tower as well as the unmanned equipment shelter for a fourth wireless telecommunications provider on the ground. The area on the ground is within the area previously approved in the lease. This antenna and ground equipment would be for Nextel Communications. In my opinion the request meets the spirit of the Town's ordinances concerning telecommunications towers and should be granted. The request utilizes an existing telecommunications tower and adjoining ground area rather than constructing another such tower, supports the policy of colocation of such facilities, and benefits the Town in terms of receipt of additional revenue. In order to better explain the request, information of the history of how this situation came in to being will follow. Your review and approval as to the course of action necessary is needed. It is hoped this item can be placed on the December 5, 2000 Town Council meeting.

Ordinance No. 97-16 was adopted by the Town Council on March 19, 1997. This ordinance adopted regulations concerning the location and development of telecommunications towers within the community. The intent of the ordinance was to promote the health, safety, and general welfare of citizens by regulating towers. The regulations were to minimize adverse visual effects, avoid potential damage to adjacent properties from tower failure through engineering and careful siting of tower structures, and to protect residential areas from potential adverse impacts of towers and antennas by maximizing the use of any new or existing towers by shared use or colocation to reduce the number of towers. These regulations were placed in Sections 12-504 through 12-508 of the Land Development Code which is Chapter 12 of the Code of Ordinances. Section 12-506(B) indicates the Town can locate towers on lands owned by the Town without necessity of a public hearing by authorizing a lease agreement for a telecommunications tower. Section 12-506 (C) indicates antennas can be added to existing towers after approval by the Development Services Director if the existing tower has sufficient loading capacity as certified by an engineer licensed in the State of Florida. Section 12-506 (D) gives the minimum standards for such towers. These

Yard, front. A yard extending the full width of the front of a lot between the front lot line and the front building line.

Yard, interior side. A side yard that is located immediately adjacent to another plot.

Yard, rear. A yard extending the full width of the lot in the area between the rear lot line and the rear building line.

Yard, required. The minimum yard required by this chapter. Any yard space supplied in excess of the minimum amount specified shall not be deemed to be a required yard.

Yard, side. A yard extending the full length of the lot in the area between a side lot line and a side building line.

Yard, street. A yard extending the full width of the lot in the area between a lot line abutting a street right-of-way and a building line.

Zoning certificate. A document issued by the enforcing official authorizing buildings, structures or uses consistent with the terms of this chapter and for the purpose of carrying out and enforcing its provisions.

Zoning map. The map and/or detailed maps showing the location and boundaries of the zoning districts established by this chapter. These maps are entitled, "Official Zoning Maps, Town of Davie, Florida."

Zoning permit. See the definition for "Zoning Certificate."

(Ord. No. 90-4, § 7, 2-21-90; Ord. No. 90-59, §§ 1, 2, 10-17-90; Ord. No. 90-65, §§ 2, 3, 12-5-90; Ord. No. 91-3, § 1, 1-2-91; Ord. No. 91-33, 9-4-91; Ord. No. 94-45, § 2, 12-21-94; Ord. No. 96-36, § 2, 8-21-96; Ord. No. 92-42, § 2—4, 12-1-99; Ord. No. 2000-7, § 1, 2-2-2000)

ARTICLE XV. TELECOMMUNICATIONS TOWERS AND ANTENNAS

Sec. 12-504. Intent.

The regulations and requirements of this article are intended to:

- (A) Promote the health, safety and general welfare of the citizens by regulating the siting of telecommunications towers;

- (B) Provide for the appropriate location and development of telecommunications towers and antennas within the Town;
- (C) Minimize adverse visual effects of telecommunication towers and antennas through careful design, siting, landscape screening and innovative camouflaging techniques;
- (D) Avoid potential damage to adjacent properties from tower failure through engineering and careful siting of tower structures; and
- (E) Protect residential areas and land uses from potential adverse impacts of telecommunication towers and antennas by maximizing use of any new or existing telecommunications towers through share use, i.e., co-location, to reduce the number of towers needed.

(Ord. No. 97-16, § 1, 3-19-97)

Sec. 12-505. Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

- (A) *Accessory use* means a use incidental to, subordinate to, and subservient to the main use of the premises.
- (B) *Antenna* means a transmitting and/or receiving device used in telecommunications that radiates or captures electromagnetic waves, including directional antennas, such as panel and microwave dish antennas, and omnidirectional antennas, such as whips, excluding radar antennas, amateur radio antennas and satellite earth stations and private home use of television antennas.
- (C) *Guyed tower* means a telecommunication tower that is supported, in whole or in part, by guy wires and ground anchors.
- (D) *Microwave dish antenna* means a dish-like antenna used to link communication sites together by wireless transmission of voice or data.

- (E) *Monopole tower* means a telecommunication tower consisting of a single pole or spire self-supported by a permanent foundation, constructed without guy wires and ground anchors.
- (F) *Panel antenna* means an array of antennas designed to concentrate a radio signal in a particular area.
- (G) *Self-support/lattice tower* means a telecommunication tower that is constructed without guy wires and ground anchors.
- (H) *Stealth facility* means any telecommunications facility which is designed to blend into the surrounding environment. Examples of stealth facilities include architecturally screened roof-mounted antennas, antennas integrated into architectural elements, and telecommunication towers designed to look like light poles, power poles or trees.
- (I) *Telecommunications tower* means a guyed, monopole or self-support/lattice tower, con-

structed as a freestanding structure, containing one or more antennas intended for transmitting or receiving television, AM/FM radio, digital, microwave, cellular, telephone, or similar forms of electronic communication, excluding radar towers, amateur radio support structures licensed by the FCC, private home use of satellite dishes and television antennas and satellite earth stations.

- (J) *Whip antenna* means a cylindrical antenna that transmits signals in 360 degrees.

(Ord. No. 97-16, § 1, 3-19-97)

Sec. 12-506. Telecommunications towers.

(A) A telecommunications tower shall be a conditionally permitted use of land allowable by special permit in all zoning districts, except for "E," "A-1," "AG," "R-1" and "RR" districts and lands with industrial land use designations and zoned for industrial uses. No person or entity shall build, erect or construct a telecommunications tower upon any parcel of land within a zoning district designated "E," "A-1," "AG," "R-1" and "RR." Telecommunications towers shall be permitted without special permit upon lands with industrial land use designations and zoned for industrial use subject to the limitations of this section. No telecommunications towers shall be built, erected or constructed unless a building permit shall have been issued by the development services department of the town. Application shall be made to the development services department in the manner provided in this chapter.

(B) A telecommunications tower shall be a conditional use of land subject to detailed use regulations as set forth in this article. On property owned by the Town, the Town shall authorize the application and use of Town property after the applicant executes a lease agreement acceptable to the Town. The Town shall have no obligation whatsoever to execute such lease even if the applicant can meet the criteria set forth herein. Applications for location of telecommunications towers upon lands owned by the Town of Davie shall be acted upon administratively without the necessity for a public hearing.

(C) Antennas added to existing towers. After approval by the development services director, telecommunications antennas may be placed on existing towers with sufficient loading capacity. The capacity shall be certified by an engineer licensed to practice in the State of Florida.

(D) Minimum standards. Telecommunications towers shall be subject to the following minimum standards:

- (1) Prior to the issuance of a building permit by the building division of the development services department, a site development plan shall be presented for approval to the site plan committee and the Town Council. Each application for a proposed telecommunications tower shall include all requirements for site development plan approval as required by Section 12-372 of the Land Development Code. The director of development services may waive all or some of these provisions for stealth towers which are designed to emulate existing structures already on the site, including but not limited to light standards or power poles.
- (2) A statement shall be submitted, prepared by a professional registered engineer licensed to practice in the State of Florida, which through rational engineering analysis certifies the tower's compliance with applicable standards as set forth in the South Florida Building Code, latest Broward County Edition, and any associated regulations; and describes the tower's capacity, including number and type of antennas it can accommodate. No tower shall be permitted to exceed its loading capacity. For all antennas attached to existing structures, the statement shall include certification that the structure can support the load superimposed from the tower.
- (3) Height/setbacks and related location requirements.
 - (a) The height of a telecommunications tower shall not exceed one hundred fifty (150) feet. Tower height shall be measured from the natural grade of

- the site prior to any fill, excavation or earthwork activities associated with the proposed telecommunications tower.
- (b) In non-residential zoning districts, and in residential zoning districts abutting non-residential zoning districts, telecommunications towers shall conform with the setbacks established for the underlying zoning district.
 - (c) In residential zoning districts, monopole, lattice or guyed telecommunications towers shall not be permitted within one hundred fifty (150) feet of any other district zoned or land uses planned for residential uses.
 - (d) Monopole, lattice or guyed telecommunications towers shall not be located within seven hundred fifty (750) feet of any existing monopole, lattice or guyed telecommunications tower.
 - (e) All buildings and other structures to be located on the same property as a telecommunications tower shall conform with the setbacks established for principal structures.
- (4) Aircraft hazard. Prior to the issuance of a building permit by the building division of the development services department, the applicant shall provide evidence that the telecommunications towers or antennas are in compliance with Federal Aviation Administration (FAA) regulations. Where an antenna will not exceed the highest point of the existing structure upon which it is to be mounted, such evidence shall not be required.
 - (5) Approval required from other governmental agencies. Each application for a telecommunications tower may be required to include written approval or a statement of no objection from other federal or state agencies that may regulate telecommunications tower siting, design, and construction.
 - (6) FCC emissions standards. All proposed telecommunications towers shall comply with current radio frequency emissions standards of the Federal Communications Commission. All applicants shall provide proof of compliance with this requirement in a form acceptable to the town.
 - (7) Buffering and landscape. All buffering and landscape requirements applicable to industrial districts as they may be amended from time to time shall apply to all telecommunications tower sites.
 - (8) High voltage and "No Trespassing" warning signs.
 - (a) If high voltage is necessary for the operation of the telecommunications tower or any accessory structures, "HIGH VOLTAGE—DANGER" warning signs shall be permanently attached to the fence or wall and shall be spaced no more than forty (40) feet apart.
 - (b) "NO TRESPASSING" warning signs shall be permanently attached to the fence or wall and shall be spaced no more than forty (40) feet apart.
 - (c) The letters for the "HIGH VOLTAGE—DANGER" and "NO TRESPASSING" warning signs shall be at least six (6) inches in height. The two warning signs may be combined into one sign. The warning signs shall be installed at least five (5) feet above the finished grade of the fence.
 - (d) The warning signs may be attached to freestanding poles if the content of the signs may be obstructed by landscaping.
 - (9) Equipment storage. All outdoor storage shall be prohibited at any telecommunication site.
 - (10) Removal of abandoned or unused facilities. All abandoned or unused telecommunication tower facilities shall be removed by the tower owner/operator within ninety (90) days of the cessation of use. A tower shall be considered abandoned if use has been discontinued for one hundred eighty

(180) consecutive days. Telecommunication towers being utilized for other purposes, including but not limited to light standards and power poles, may be exempt from this provision.

- (11) Signs and advertising. The use of any portion of a tower for signs or advertising purposes, including company name, banners, streamers, etc., shall be strictly prohibited.
- (12) Accessory buildings or structures. All accessory buildings or structures shall meet all building design standards as listed in this Code, and in accordance with the provisions of the South Florida Building Code, latest Broward County Edition. All accessory buildings or structures shall require a building permit issued by the building division of the development services department.
- (13) Colors. Telecommunications towers shall be painted or constructed in neutral colors, designed to blend into the surrounding environment, such as non-contrasting gray. This requirement may be superseded by the requirements of [any] other county, state, or federal regulatory agency possessing jurisdiction over telecommunications towers.
- (14) Non-interference. Each application to allow construction of a telecommunications tower shall include a certified statement that the construction of the tower, including reception and transmission functions, will not interfere with public safety communications and the usual and customary transmission or reception of radio, television, etc. service enjoyed by adjacent residential and non-residential properties. The statement shall be prepared by a registered engineer licensed to practice in the State of Florida.

(E) Occupational Licenses. All owners of telecommunications towers shall obtain an occupational license from the town to authorize use of the tower.

(F) Telecommunications towers are prohibited when a proposed or existing principal use includes the storage, distribution, or sale of volatile, flammable, explosive, or hazardous wastes such as LP gas, propane, gasoline, natural gas, and corrosive or dangerous chemicals.

(Ord. No. 97-16, § 1, 3-19-97)

Sec. 12-507. Antennas.

(A) Antennas shall be permitted as follows:

- (1) Stealth rooftop or building mounted antennas may be permitted as an accessory use in the "E," "A-1," "A-G," "R-1" and "RR" districts.
- (2) Non-stealth rooftop or building mounted antennas shall be a conditionally permitted accessory use of land allowable by special permit in all zoning districts, except "E," "A-1," "A-6," "R-1" and "RR," and lands with industrial land use designations and zoned for industrial uses. Non-stealth rooftop or building mounted antenna shall be permitted without special permit upon lands with industrial land use designations and zoned for industrial use subject to the limitations of this section.

(B) Minimum Standards. Building or rooftop antennas shall be subject to the following minimum standards:

- (1) Antennas may not extend more than 20 feet above the highest point of a roof;
- (2) Antennas, and related equipment buildings, shall be located or screened to minimize the visual impact of the antenna upon adjacent properties and shall be of a material or color which matches the exterior of the building or structure upon which it is situated;
- (3) No commercial advertising shall be allowed on an antenna;
- (4) No signals, lights, or illumination shall be permitted on an antenna, unless required by the Federal Communications Commission or the Federal Aviation Administration;

- (5) Any related unmanned equipment building shall not contain more than 750 square feet of gross floor area or be more than twelve (12) feet in height; and
- (6) If the equipment building is located on the roof of the building, the area of the equipment building shall not occupy more than twenty-five percent (25%) of the roof area.

(C) Antenna types. To minimize adverse visual impacts, antenna types shall be selected based upon the following hierarchy. The application shall be required to demonstrate, in a technical manner acceptable to the Town staff, why each choice in the hierarchy cannot be used for the particular application in order to justify the selection of an antenna type lower in the hierarchy:

- (1) Stealth;
- (2) Panel;
- (3) Whip;
- (4) Dish.

(D) Antenna Dimensions. Antenna dimensions shall be approved by the development services director as required by existing technology. A statement shall be submitted, prepared by a professional registered engineer licensed to practice in the State of Florida, to certify the need for the required dimensions.

(Ord. No. 97-16, § 1, 3-19-97)

Sec. 12-508. Shared use of communication antennas.

(A) To minimize adverse visual impacts associated with the proliferation and clustering of telecommunications towers, co-location of communication antennas by more than one carrier on existing or new telecommunications towers shall take precedence over the construction of new single-use telecommunication towers. Accordingly, each application for a telecommunications tower shall include the following:

- (1) A written evaluation of the feasibility of sharing a telecommunications tower, if an appropriate telecommunications tower or

towers is/are available. The evaluation shall analyze one or more of the following factors:

- (a) Structural capacity of the tower or towers;
- (b) Radio frequency interference;
- (c) Geographical service area requirements;
- (d) Mechanical or electrical incompatibility;
- (e) Inability or ability to locate equipment on the tower or towers;
- (f) Availability of towers for co-location;
- (g) Any restrictions or limitations of the Federal Communications Commission that would preclude the shared use of the tower;
- (h) Additional information requested by the Town.

(B) The Town may deny an application if an available co-location is feasible and the application is not for such co-location.

(C) The Town may require additional sharing feasibility evaluations if warranted by changes in technology.

(D) For any telecommunications tower approved for shared use, the owner of the tower shall provide notice of the location of the telecommunication tower and the tower's load capacity to all other providers.

(Ord. No. 97-16, § 1, 3-19-97)

IN WITNESS WHEREOF, the parties have executed this Amendment on the day and year first above written and the Amendment shall be attached to and made a part of the Agreement.

LESSOR:

TOWN OF DAVIE,
a municipal corporation

Signed, sealed and delivered
before the following witnesses:

By: _____ (SEAL)
Print Name: _____
Title: _____

Witness

Print Name

[CORPORATE SEAL]

Witness

Print Name

TENANT:

**UNISITE/OMNIPPOINT FL TOWER
VENTURE, L.L.C.**

Signed, sealed and delivered
before the following witnesses:

By: Unisite, Inc., its manager

By: _____ (SEAL)
Name: Richard C. Beesley
Title: Vice President/Area General Manager

Shelma Wilson

Witness
Helma L. Wilson

Print Name

[CORPORATE SEAL]

Marye A. Higbee

Witness
Gayle A. Higbee

Print Name

Notarial Acknowledgment for Lessor

STATE OF FLORIDA

COUNTY OF BROWARD

I, the undersigned, a Notary Public in and for said County in said State, hereby certify that _____, whose name as _____ of Town of Davie, a municipal corporation, is signed to the foregoing instrument and who is known to me, acknowledged before me on this day that, being informed of the contents of the instrument, he/she, as such officer and with full authority, executed the same voluntarily for an as the act of said corporation, acting in his/her capacity as _____, as aforesaid.

Given under my hand this the _____ day of _____, 2000.

My Commission Expires: _____

Notary Public

[NOTARY SEAL]

Notarial Acknowledgment For Tenant

STATE OF GEORGIA

COUNTY OF COBB

I, the undersigned, a Notary Public in and for said County in said State, hereby certify that Richard C. Beesley, whose name as Vice President of Unisite, Inc., a Delaware corporation, is signed to the foregoing instrument and who is known to me, acknowledged before me on this day that, being informed of the contents of the instrument, he, as such officer and with full authority, executed the same voluntarily for and as the act of said corporation, acting in his capacity as Vice President as aforesaid.

Given under my hand this the 11th day of October, 2000.

My Commission Expires: _____

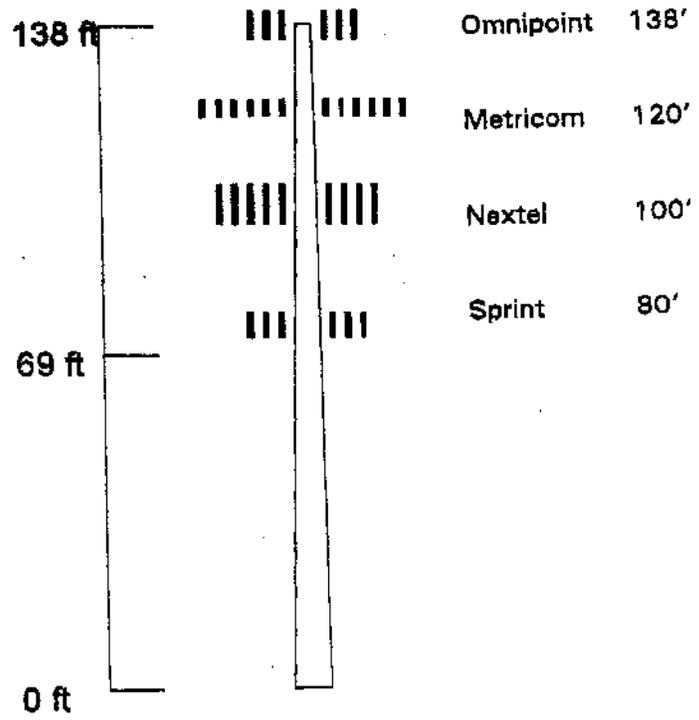
7/7/2003

Cheryl M. Stoner
Notary Public

[NOTARY SEAL]



EXHIBIT 'A'



RESOLUTION NO. R-97-405

A RESOLUTION OF THE TOWN OF DAVIE, FLORIDA, CONSENTING TO THE "ASSIGNMENT AND ASSUMPTION OF LEASE" CONCERNING THE TELECOMMUNICATIONS TOWER PROPERTY LEASE ENTERED INTO BETWEEN THE TOWN OF DAVIE AND BELL SOUTH MOBILITY INC, WHEREIN BELL SOUTH MOBILITY INC IS ASSIGNING ITS INTEREST IN THE LEASE TO OMNIPPOINT COMMUNICATIONS, INC.; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Town of Davie adopted Resolution R-87-205 on June 4, 1997, approving and authorizing the Mayor to execute a Lease Agreement between the Town of Davie and BellSouth Mobility Inc for purposes of constructing a monopole telecommunications tower at the site known as "WVCV" located at 3600 Flamingo Road in the Town of Davie; and

WHEREAS, the Town of Davie and BellSouth Mobility Inc subsequently agreed that the authorized tower would be constructed to a height of 150 feet rather than 125 feet and that the tower would accommodate two co-locators in addition to BellSouth Mobility Inc for a total of three providers on the subject tower; and

WHEREAS, BellSouth Mobility Inc and Omnipoint Communications, Inc. have requested that the Town consent to the tenant's assignment of the subject Lease Agreement from BellSouth Mobility Inc to Omnipoint Communications, Inc.; and

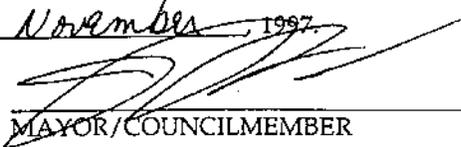
WHEREAS, Omnipoint Communications, Inc. has agreed to accept all obligations of BellSouth Mobility Inc under the terms of the Lease and has further agreed to be bound by BellSouth Mobility Inc's agreement to construct the tower to a height of 150 feet and to accommodate three providers on the tower rather than two total providers.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF DAVIE, FLORIDA:

SECTION 1. That pursuant to paragraph 17 of the Lease Agreement by and between the Town of Davie, Florida, and BellSouth Mobility Inc dated the 4th day of June, 1997, the Town does hereby consent to the "Assignment and Assumption of Lease", a copy of which is attached hereto as Exhibit "A".

SECTION 2. This Resolution shall take effect immediately upon its passage and adoption.

PASSED AND ADOPTED THIS 19th DAY OF November, 1997.



MAYOR/COUNCILMEMBER

ATTEST:

Barbara Bergamine
Asst TOWN CLERK

APPROVED THIS 19th DAY OF November, 1997.

EXHIBIT "A"

LEASE AGREEMENT

BETWEEN

TOWN OF DAVIE, FLORIDA

AND

BELLSOUTH MOBILITY INC
(for Site "WVCV")

This Agreement is made this 20th day of June, 1997, between TOWN OF DAVIE, a municipal corporation of the State of Florida, whose address is 6591 S.W. 45th Street, Davie, Florida 33314, hereinafter designated LESSOR, and BELLSOUTH MOBILITY INC, a Georgia corporation, whose address is 5201 Congress Avenue, Boca Raton, Florida 33487, hereinafter designated TENANT.

RECITALS:

LESSOR is the owner of certain real property located at 3600 Flamingo Road, Davie, Florida 33330, Broward County, State of Florida, and TENANT desires to lease a portion of said real property, containing approximately one thousand eight hundred (1,800) square feet, together with a twenty foot (20') wide right of way for access thereto (said leased parcel and right of way hereinafter referred to as the "Property"). The Property is more specifically described in and substantially shown outlined in red on Exhibit "A" attached hereto and made a part hereof.

LESSOR covenants that LESSOR is seized of good and sufficient title and interest to the Property and has full authority to enter into and execute this Agreement. LESSOR further covenants that there are no other liens, judgments or impediments of title on the Property.

LEASE AGREEMENT

1. LESSOR hereby leases to TENANT that certain parcel of real property, containing approximately one thousand eight hundred (1,800) square feet, situated at Town of Davie, Broward County, State of Florida, together with the nonexclusive right for ingress and egress, seven (7) days a week, twenty-four (24) hours a day, on foot or motor vehicle, including trucks, and for the installation and maintenance of utility wires, cables, conduits and pipes over, under or along a twenty foot (20') wide right of way extending from the nearest public right of way, namely Flamingo Road, to the leased parcel, said leased parcel and right of way for access being substantially as described herein in Exhibit "A" and as shown enclosed within red lines on Exhibit "A" attached hereto and made a part hereof. Said leased parcel and right of way for access shall be hereinafter referred to as the "Property". TENANT shall use the Property for the purpose of constructing, maintaining and

operating a Communications Facility as further described in paragraph 6 below as shown on the site plan to be developed and mutually agreed upon by the parties. Such site plan shall then be attached to this Agreement as Exhibit A-1 and by this reference made a part hereof. All of TENANT's improvements in and to the Property shall comply with LESSOR's ordinances regarding height, setback, buffering, landscaping and signage as well as other criteria set forth in LESSOR's Ordinance 97-16, as it may be amended from time to time; provided any such amendments shall not operate to affect and/or revise specific terms of this Agreement. LESSOR shall cooperate with TENANT in TENANT's effort to obtain utility services along said right of way by signing such documents or easements as may reasonably be required by said utility companies. In the event any public utility is unable to use the aforementioned right of way, the LESSOR hereby agrees to grant an alternative right of way or utility easement either to the TENANT or to the public utility at no cost to the TENANT. Said utility services shall consist of electrical service and fiber optic or telephone cables.

2. LESSOR also hereby grants to TENANT the right to survey said Property, and the legal description on said survey shall then become Exhibit "B", which shall be attached hereto and made a part hereof, and shall control in the event of discrepancies between it and Exhibit "A". LESSOR grants TENANT the right to take measurements, make calculations, and to note other structures, setbacks, uses, or other information as deemed by TENANT to be relevant and pertinent, as such information relates to LESSOR's real property, leased or otherwise abutting or surrounding the Property. Cost for such survey work shall be borne by the TENANT.

3. This Agreement shall be for an initial term of ten (10) years commencing on the date TENANT secures a Certificate of Occupancy for the Property (the "Commencement Date") at an annual rental of FIFTEEN THOUSAND and No/100 Dollars (\$15,000.00) plus applicable taxes. Within thirty (30) days of the issuance of said Certificate of Occupancy, TENANT shall remit to LESSOR a non-refundable, lump sum payment in the amount of ONE HUNDRED FIFTY THOUSAND and No/100 Dollars (\$150,000.00), plus applicable taxes, representing the total rental payment for the initial ten (10) year term. TENANT shall have twelve (12) months from the date of this Agreement to obtain the Certificate of Occupancy; provided, however, if TENANT is unable to obtain the Certificate of Occupancy within said period, LESSOR may grant TENANT additional time upon a showing of good cause.

4. TENANT shall have the option to extend this Agreement for three (3) additional five (5) year terms, and such extensions shall automatically occur unless TENANT gives LESSOR written notice of its intention not to extend this Agreement at least six (6) months prior to the end of the then current term. Annual rental for each extension term shall be FIFTEEN THOUSAND and No/100 Dollars

(\$15,000.00) plus applicable taxes increased by five percent (5%) per year for each lease year prior to the commencement of the applicable extension term. Accordingly, the annual rental for (a) the eleventh (11th) through the fifteenth (15th) rental years shall be increased to TWENTY-FIVE THOUSAND and No/100 Dollars (\$25,000.00) per year; (b) the sixteenth (16th) through twentieth (20th) years shall be increased to THIRTY-TWO THOUSAND and No/100 Dollars (\$32,000.00) per year; and (c) the twenty-first (21st) through twenty-fifth (25th) years shall be increased to FIFTY-FIVE THOUSAND and No/100 Dollars per year, all plus applicable taxes. The annual rental shall be payable by TENANT to LESSOR within thirty (30) days of the commencement of each extension term and on each anniversary thereof, in a lump sum payment in the applicable amount, plus applicable taxes, representing the total rental payment for the respective lease year.

5. If at the end of the third (3rd) five (5) year extension term this Agreement has not been terminated by either party by giving to the other written notice of an intention to terminate it at least six (6) months prior to the end of such term, this Agreement shall continue in force upon the same covenants, terms and conditions for a further term of one (1) year, and for annual terms thereafter until terminated by either party by giving to the other written notice of its intention to so terminate at least six (6) months prior to the end of such term. Annual rental for this period shall be equal to the annual rent for the prior year increased by five percent (5%).

6. TENANT shall use the Property for the purpose of constructing, maintaining and operating a Communications Facility and uses incidental thereto, consisting of the following: (a) a new unmanned equipment building constructed by TENANT to shelter its telecommunications equipment and related office space and finished to substantially match the LESSOR's adjacent building, (b) a free standing monopole of one hundred and twenty-five (125) feet in height to meet TENANT's telecommunication needs and (c) all necessary connecting appurtenances, all as shown on the site plan to be attached hereto as Exhibit A-1 and by this reference made a part hereof. All improvements to the Property shall comply with LESSOR's ordinances including, but not limited to, the location, size and height of the monopole. Upon the prior written consent of LESSOR, such consent not to be unreasonably withheld or delayed, TENANT may at its discretion modify its antenna structure or building(s); provided, however, LESSOR's consent shall not be required where the modification is non-structural in nature or involves the replacement of substantially similar equipment. A security fence consisting of chain link construction or similar but comparable construction may at the option of TENANT be placed around the perimeter of the Property (not including the access easement) in accordance with LESSOR's applicable ordinances. All improvements shall be at TENANT's expense. LESSOR grants TENANT the right to use adjoining and adjacent land as is reasonably

required during construction and installation of the Communications Facility provided TENANT does not unreasonably interfere with the use of said land owned by LESSOR. TENANT will maintain the Property in a reasonable condition and, at a minimum, in accordance with LESSOR's applicable ordinances. It is understood and agreed that TENANT's ability to use the Property is contingent upon its obtaining after the execution date of this Agreement, all of the certificates, permits and other approvals that may be required by any federal, state or local authorities. LESSOR shall cooperate with TENANT in its effort to obtain such approvals, including dedicating right of way or other customary extractions as reasonably requested by the applicable authority, and shall take no action which would adversely affect the land use designation and/or zoning of the Property with respect to the proposed use thereof by TENANT. LESSOR agrees to sign such papers as are customarily and reasonably required to file applications with the appropriate zoning authority and/or commission for the proper zoning of the Property as required for the use intended by the TENANT. TENANT will perform all other acts and bear expenses associated with the rezoning procedure. Notwithstanding any other termination rights available to TENANT under this Agreement, TENANT, at its sole and absolute discretion, shall have the right to terminate this Agreement with ninety (90) days prior written notice to LESSOR. Notice of the TENANT's exercise of its right to terminate shall be given to LESSOR in writing by certified mail, return receipt requested, and shall be effective upon receipt of such notice by the LESSOR as evidenced by the return receipt. In the event this Agreement is terminated by TENANT during the initial term, TENANT acknowledges and agrees that the lump sum payment of ONE HUNDRED FIFTY THOUSAND and No/100 Dollars (\$150,000.00) is non-refundable and shall be retained by LESSOR as consideration for such termination. In the event this Agreement is terminated by TENANT during any of the three (3) extension periods, TENANT acknowledges and agrees that the annual rental payment paid by TENANT for the lease year of termination is non-refundable and shall be retained by LESSOR plus, as additional consideration for such termination, TENANT agrees to pay to LESSOR at the time of said termination an amount equal to the annual rental in effect at the time. In the event this Agreement is terminated by LESSOR, the rental payment shall be prorated as of the termination date and the balance of such rental payment shall be returned to TENANT within thirty (30) days of the date of such termination. Upon any such termination, this Agreement shall become null and void and all the parties shall have no further obligations, including the payment of money, to each other.

7. Both the LESSOR and TENANT hereby acknowledge and agree that one (1) additional wireless communications provider may be allowed to co-locate equipment on the monopole installed by TENANT under certain circumstances. Whenever the LESSOR desires to allow an additional party to lease space on its property adjacent to the Property in order to co-locate equipment on the monopole, the

LESSOR will identify the third party to TENANT in order that the TENANT can communicate directly with the third party regarding the negotiation of a co-location agreement for equipment space on TENANT's monopole. Such co-location agreement shall provide for, among other things, (a) reimbursement by the third party to TENANT for up to fifty percent (50%) of TENANT's capital costs for its Communications Facility, which shall include but not be limited to the foundation and monopole and for TENANT's site acquisition costs which shall include, but not be limited to costs associated with the design, zoning, and permitting of the Communications Facility; (b) that the third party's equipment on the monopole shall not be located less than twenty-five (25) feet away from TENANT's equipment on the monopole unless otherwise agreed to by the parties; and (c) the third party shall be responsible for curing any interference caused to TENANT's operations by either (i) replacing the third party's equipment or (ii) ceasing operations. TENANT shall pay to LESSOR fifty percent (50%) of all rent received from the third party under said co-location agreement (excluding the reimbursement of capital costs). Provided that co-location is technologically feasible and does not interfere with TENANT's use of the Property, TENANT will use best reasonable efforts to accommodate the additional provider.

8. TENANT shall indemnify and hold LESSOR harmless against any claims of liability or loss from personal injury or property damage resulting from or arising out of the use and occupancy of the Property by the TENANT, its servants or agents, excepting, however, such claims or damages as may be due to or caused by the acts of the LESSOR, or its servants or agents.

9. TENANT will provide and at all times during the term of this Agreement maintain in effect (a) workman's compensation insurance in statutorily required amounts and (b) commercial general liability insurance in an aggregate amount of Two Million and No/100 Dollars (\$2,000,000.00) with an insurance company reasonably acceptable to LESSOR and name LESSOR as an additional insured as its interest may appear on the policy or policies. TENANT may satisfy this requirement by obtaining an appropriate endorsement to any master policy of liability insurance maintained by TENANT provided such does not lessen the insurance required to be carried hereunder. A certificate of insurance shall be provided to LESSOR prior to accessing the Property and prior to the expiration of each policy. Such insurance policy or policies shall provide that same is cancelable only upon thirty (30) days prior notice to LESSOR. TENANT shall cause its subcontractors to provide and maintain the foregoing insurance coverages on the terms required hereunder. These insurance requirements shall not relieve or limit the liability of TENANT. LESSOR does not in any way represent that the types and amounts of insurance required hereunder are sufficient or adequate to protect TENANT's interest or liabilities, but are merely minimum requirements established by the LESSOR. LESSOR reserves the right to require any other

reasonable insurance coverages that LESSOR deems reasonably necessary depending upon the risk of loss and exposure to liability in the context of TENANT's use of the Property pursuant to this Agreement.

10. TENANT shall be responsible for making any necessary returns for and paying any and all property taxes separately levied or assessed against its improvements on the Property. TENANT shall reimburse LESSOR as additional rent for any increase in real estate taxes levied against the Property which are directly attributable to the improvements constructed by TENANT and are not separately levied or assessed against TENANT's improvements by the taxing authorities.

11. TENANT upon termination of this Agreement, shall, within a reasonable period, remove its personal property and fixtures and restore the Property to its original above grade condition, reasonable wear and tear excepted. However, at LESSOR's option, when this Agreement is terminated and upon LESSOR's advance written notice to TENANT, TENANT will leave the foundation, the communications structure, and the security fence to become property of LESSOR. If such time for removal causes TENANT to remain on the Property after termination of this Agreement, TENANT shall pay rent based on the then existing monthly pro-rata basis, until such time as the removal of personal property and fixtures are completed.

12. Should the LESSOR, at any time during the term of this Agreement, decide to sell all or any part of the Property and/or the right of way thereto to a purchaser other than TENANT, such sale shall be under and subject to this Agreement and TENANT's rights hereunder. LESSOR agrees not to sell, lease or use any other areas of the larger parcel upon which the Property is situated for the placement of other communications facilities if such installation would interfere with the facilities in use by TENANT.

13. LESSOR covenants that TENANT, on paying the rent and performing the covenants shall peaceably and quietly have, hold and enjoy the Property.

14. LESSOR covenants that LESSOR is seized of good and sufficient title and interest to the real property and has full authority to enter into and execute this Agreement. LESSOR further covenants that there are no other liens, judgments or impediments of title on the Property.

15. It is agreed and understood that this Agreement contains all agreements, promises and understandings between the LESSOR and TENANT and that no verbal or oral agreements, promises or understandings shall be binding upon either the LESSOR or TENANT in any dispute, controversy or proceeding at law, and any addition,

variation or modification to this Agreement shall be void and ineffective unless made in writing and signed by the parties:

16. This Lease Agreement and the performance thereof shall be governed, interpreted, construed and regulated by the laws of the State of Florida.

17. This Agreement may not be sold, assigned, subleased or transferred at any time except to TENANT's principal, affiliates or subsidiaries of its principal or to any company upon which TENANT is merged or consolidated. As to other parties, this Agreement may not be sold, assigned, subleased or transferred without the written consent of the LESSOR, such consent not to be unreasonably withheld or delayed.

18. All notices hereunder must be in writing and shall be deemed validly given if sent by certified mail, return receipt requested, addressed as follows (or any other address that the party to be notified may have designated to the sender by like notice):

LESSOR: Town of Davie
6591 S.W. 45th Street
Davie, Florida 33314
Attn: Town Manager

TENANT: BellSouth Mobility Inc
5201 Congress Avenue
Boca Raton, Florida 33487
Attn: Network-Real Estate Manager

19. This Agreement shall extend to and bind the heirs, personal representatives, successors and assigns of the parties hereto.

20. If LESSOR sells all or any part of the Property to a purchaser who is not a governmental entity, then, at LESSOR's option, this Agreement shall be subordinate to any mortgage by LESSOR which from time to time may encumber all or part of the Property or right of way, provided, however, every such mortgage shall recognize the validity of this Agreement in the event of a foreclosure of LESSOR's interest and also TENANT's right to remain in occupancy of and have access to the Property as long as TENANT is not in default of this Agreement. TENANT shall execute in a timely manner whatever instruments as may reasonably be required to evidence this subordination clause. In the event the leased Property is encumbered by a mortgage, the LESSOR, no later than thirty (30) days after this lease is exercised, shall have obtained and furnished to TENANT a non-disturbance instrument in recordable form for each such mortgage. In the event LESSOR fails to provide TENANT with such instrument within such time period, LESSOR agrees that TENANT may, at TENANT's option, withhold and accrue the rental

payments due until such time as the requested instrument is received by TENANT.

21. If the whole of the Property or such portion thereof as will make the Property unusable for the purposes herein leased, are condemned by any legally constituted authority for any public use or purpose, then in either of said events the term hereby granted shall cease from the time when possession thereof is taken by public authorities, and any rental previously paid to LESSOR shall be retained or paid to LESSOR by TENANT. Any lesser condemnation shall in no way affect the respective rights and obligations of LESSOR and TENANT hereunder. Nothing in this provision shall be construed to limit or affect TENANT's right to an award of compensation of any eminent domain proceeding for the taking of TENANT's leasehold interest hereunder.

22. LESSOR and TENANT agree that a memorandum of this Agreement will be prepared by TENANT and forwarded for recording or filing in the appropriate office of the County of Broward, and LESSOR and TENANT agree to take such actions as may be necessary to permit such recording or filing. TENANT, at TENANT's option and expense, may obtain title insurance on the property leased herein. LESSOR, shall cooperate with TENANT's efforts to obtain such title insurance policy by executing documents or obtaining requested documentation as required by the title insurance company. Upon TENANT's request, LESSOR shall provide TENANT a copy of its prior title insurance policy in its possession or control. If title is found to be defective, LESSOR shall use diligent effort to cure the defects in title; provided, however, LESSOR shall not be obligated to bring suit or incur any expense in doing so. If title is found to be defective and LESSOR has failed to cure the defects within a reasonable period, TENANT may cancel this Agreement or cure the title defect at TENANT's expense.

23. If TENANT defaults in fulfilling any of the covenants of this Agreement and such default shall continue for sixty (60) days after service by LESSOR of written notice upon TENANT specifying the nature of said default, or, if the said default so specified shall be of such a nature that the same cannot be reasonably cured or remedied within such sixty (60) day period, if TENANT shall not in good faith commence the curing or remedying of such default within such sixty (60) day period and shall not thereafter diligently proceed therewith to completion, then in any one or more of such events this Agreement shall terminate and come to an end as fully and completely as if such date were the day herein definitely fixed for the end and expiration of this Agreement and TENANT shall then quit and surrender the Leased Premises to LESSOR as provided herein. TENANT acknowledges and agrees that upon such termination, none of the prepaid rent will be returned to TENANT and LESSOR shall retain all prepaid rent as full and liquidated damages for such termination.

24. In connection with any litigation arising out of this Agreement, the prevailing party, whether LESSOR or TENANT, shall be entitled to recover all costs incurred including attorney's fees for services rendered in connection with any enforcement of breach of contract, including appellate proceedings and post judgment proceedings.

25. In accordance with Florida Law, the following statement is hereby made:

RADON GAS: Radon is a natural occurring radioactive gas that, when it has accumulated in a building in sufficient quantities, may present health risks to persons who are exposed to it over time. Levels of radon that exceed federal and state guidelines have been found in buildings in Florida. Additional information regarding radon and radon testing may be obtained from your county public health unit.

26. LESSOR shall be responsible for any damage, loss, expenses or liability resulting from the discovery by any person of hazardous substance generated, stored, disposed of, or transported to or over Property by the LESSOR, as long as such substance was not stored, disposed of, or transported to or over the Property solely by TENANT, its agents, contractors, employees, or invitees. TENANT will be responsible for any and all damages, losses, and expenses resulting from any discovery by any persons of such hazardous wastes generated, stored, or disposed of solely as a result of TENANT's equipment and uses of the aforementioned Property.

27. TENANT shall submit all required applications for permits to the applicable departments of LESSOR and/or Broward County for review and approval as well as submitting all required fees for the same at TENANT's sole cost and expense.

28. Nothing contained in this Agreement is intended nor shall be construed to waive the LESSOR's rights and immunities under common law and/or § 768.28, Florida Statutes, as amended from time to time.

29. In the event that TENANT abandons the Property for more than one hundred and eighty (180) consecutive days and does not, during such period of abandonment, provide LESSOR with written notice of its intention to re-enter the Property and assume its obligations under the Agreement, LESSOR may terminate this Agreement and retain all pre-paid rental payments as full and liquidated damages for such termination. Additionally, LESSOR shall be entitled to re-enter the Property for any purposes whatsoever, including re-letting the Property to another telecommunications provider.

30. This Agreement shall be executed in three, (3) counterparts, each of which shall be deemed an original, and such counterparts shall constitute but one and the same Agreement.

[THE REST OF THIS PAGE INTENTIONALLY LEFT BLANK]

TENANT

Signed, sealed and delivered
in the presence of:

KS BELLSOUTH MOBILITY INC

Marc Zielinski
Witness
Print Name: MARC ZIELINSKI

By: [Signature]
Print Name: Steve Gray
Title: REGIONAL VICE PRESIDENT

Theresa Ferrusi
Witness
Print Name: Theresa Ferrusi

Executed on 20th day of June,
1997.

Florida
STATE OF GEORGIA Broward
) SS
COUNTY OF FULTON)

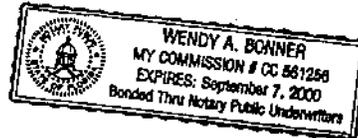
The foregoing instrument was acknowledged before me this 20th day
of June, 1997, by Steve Gray
as Regional V.P. of BELLSOUTH MOBILITY INC, a
Georgia corporation, who (check one) [] is personally known to me
or [] has produced _____ as
identification.

My Commission Expires:

Wendy Bonner
NOTARY PUBLIC
Print Name: Wendy A Bonner

(Seal)

016\325\lease.002



BELL SOUTH MOBILITY WVCV CELL SITE

LEGAL DESCRIPTION of INGRESS - EGRESS and UTILITY EASEMENT:

A portion of the North 100 feet of the West 360 feet of Tract 123, Flamingo Groves Unit "D", an Amended Plat of Subdivision of the S.W. 1/4 of Section 24, Township 50 South, Range 40 East as recorded in Plat Book 10, Page 77 of the Public Records of Broward County, Florida, being more particularly described as follows:

Commence at the Southwest corner of said Section 24, thence N00°08'27"W, along the West line of said Section 24 for 889.76 feet; thence N89°41'50"E, along the South line of the North 100 feet of said Tract 123, for 225.72 feet to the POINT OF BEGINNING of the following described easement; thence continue N89°41'50"E for 124.28 feet; thence N00°18'10"W for 85.00 feet; thence S89°41'50"W for 20.00 feet; thence S00°18'10"E for 65.00 feet; thence S89°41'50"W, along a line 80.00 feet South of the North line of said Tract 123 for 119.66 feet to a point on a circular curve concave to the Northeast with the center point bearing N55°25'27"E from this point; thence Southeasterly along the arc of said circular curve to the left having a radius of 220.00 feet and a central angle of 06°34'28" for an arc distance of 25.24 feet to the POINT OF BEGINNING. The last described course being coincident with the Easterly Right-of-Way line of an access road as shown on the Florida Department of Transportation Right of Way Map, Section 86190-2516, Sheet 5 of 22, dated 2/87 with latest revision 3/5/96. Said easement containing 0.091 acres more or less.

NOTE:

- 1.) See Boundary Survey under File No. B-1492, Dated 6-18-1997, by this FIRM, for a detailed Sketch of the Legal Description described hereon.

THIS LEGAL DESCRIPTION WAS PREPARED UNDER MY SUPERVISION.
LEITER, PEREZ & ASSOCIATES, INC.

BY:  DATE: 6/24/97
STANLEY T. OLESIEWICZ, VICE PRESIDENT
REGISTERED PROFESSIONAL SURVEYOR & MAPPER NO. 1633
STATE OF FLORIDA

Composite Exhibit "B"

R-97-205

BELL SOUTH MOBILITY WVCV CELL SITE

LEGAL DESCRIPTION of LEASE PARCEL:

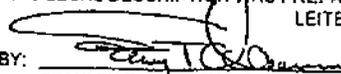
A portion of the North 100 feet of the West 360 feet of Tract 123, Flamingo Groves Unit "D", an Amended Plat of Subdivision of the S.W. 1/4 of Section 24, Township 50 South, Range 40 East as recorded in Plat Book 10, Page 77 of the Public Records of Broward County, Florida, being more particularly described as follows:

Commence at the Southwest corner of said Section 24, thence N00°08'27"W, along the West line of said Section 24 for 889.76 feet; thence N89°41'50"E, along the South line of the North 100 feet of said Tract 123, for 350.00 feet; thence N00°18'10"W for 16.00 feet to the POINT OF BEGINNING of the following described parcel; thence continue N00°18'10"W for 69.00 feet; thence N89°41'50"E for 12.00 feet; thence S00°18'10"E for 69.00 feet; thence S89°41'50"W for 12.00 feet to the POINT OF BEGINNING. Said parcel containing 0.019 acres, more or less.

NOTE:

- 1). See Boundary Survey under File No. B-1492, Dated 6-18-1997, by this FIRM for a detailed Sketch of the Legal Description described hereon.

THIS LEGAL DESCRIPTION WAS PREPARED UNDER MY SUPERVISION.
LEITER, PEREZ & ASSOCIATES, INC.

BY:  DATE: 6/24/97
 STANLEY T. OLESIEWICZ, VICE PRESIDENT
 REGISTERED PROFESSIONAL SURVEYOR & MAPPER NO. 1633
 STATE OF FLORIDA

Composite Exhibit "B"

1.0 Analysis Summary

The site interference analysis at ATC's Davie Fire Station site was completed for Nextel. The results predict no interference with the configurations and antenna separations used for the analysis.

This site analysis included 4 tenants with 4 configurations. The configurations include 33 antennas. 371 frequencies were used in the analysis. Further information on the configurations used for the analysis is given in section 2.0. A full description of the results of the analysis is given in section 3.0. Section 5.0 describes the software used to calculate the shared site interference.

Here is a summary of the analysis results:

Analysis	Status	Detailed Information	Worst Case Margin (dB)
Transmitter Noise	Passed	All Receiver(s) passed	105.4
Receiver Desensitization	Passed	All Receiver(s) passed	69.7
TX 2 Intermodulation	Passed	No Interference	N/A
TX 3 Intermodulation	Passed	No Interference	N/A
TX 4 Intermodulation	Passed	No Interference	N/A
TX 5 Intermodulation	Passed	No Interference	N/A
Total TX Intermodulation	Passed	No Interference	N/A
RX 2 Intermodulation	Passed	No Interference	N/A
RX 3 Intermodulation	Passed	No Interference	N/A
RX 4 Intermodulation	Passed	No Interference	N/A
RX 5 Intermodulation	Passed	No Interference	N/A
Total RX Intermodulation	Passed	No Interference	N/A
Harmonic Interference	Passed	No Interference	45.7
Spurious Interference	Passed	No Interference	N/A

Here is a summary of the analysis options:

Intermodulation Parameters	Values
Highest Order	11
Transmitters Mixed	5
Intermodulation Offset	100 dB
Susceptibility Level	6 dB Below Noise

2.0 Site Configuration

ATC ID: 91535 \ Davie Fire Station
Nextel ID: FL1658A \ Carlton

Description: ATC ID: 91535
Owner: ATC

Address: 3600 S Flamingo Rd
Davie, FL

Latitude: 26-04-33.001 N
Longitude: 080-18-49.001 W

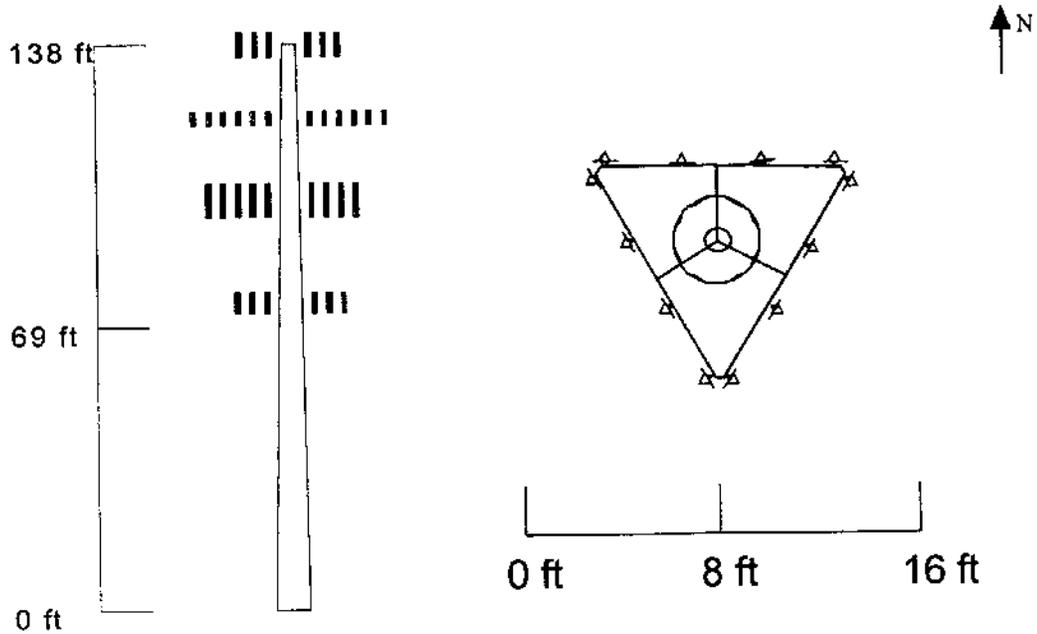
The following table lists the 4 configurations at this site.

Tenant	Configuration Name	Technology	Frequency Band
Metricom	Metricom12	FHSS	900 MHz ISM, 2400 MHz ISM
Nextel	Nextel 9	ESMR	ESMR 800
Omnipoint	Omnipoint E&F GSM 6	GSM	PCS E, PCS F
Sprint PCS	Sprint Nortel CDMA 6 A	PCS 1900 CDMA	PCS A

The following sections describe each configuration in detail.

2.1 Metricom Matricom12 Configuration

The 12 PANEL antennas are mounted with the center of the antennas at 120.0 feet. The system operates in the 900 MHz ISM, 2400 MHz ISM band. The transmit frequencies are between 902 MHz and 928 MHz. The receive frequencies are from 902 MHz to 928 MHz. Figure 2.1-1 shows the top and side views of the antennas with the associated antenna mounts.



Antenna	Type	Height (ft)	Azimuth (°N)
Larsen2400	PANEL	120.0	0.0
Larsen900	PANEL	120.0	0.0
Larsen2400	PANEL	120.0	0.0
Larsen900	PANEL	120.0	0.0
Larsen2400	PANEL	120.0	120.0
Larsen900	PANEL	120.0	120.0
Larsen2400	PANEL	120.0	120.0
Larsen900	PANEL	120.0	120.0
Larsen2400	PANEL	120.0	240.0
Larsen900	PANEL	120.0	240.0
Larsen2400	PANEL	120.0	240.0
Larsen900	PANEL	120.0	240.0

Figure 2.1-1 Metricom System

Figure 2.1-2 shows the model of one sector of the system used by the UNistar interference prediction software.

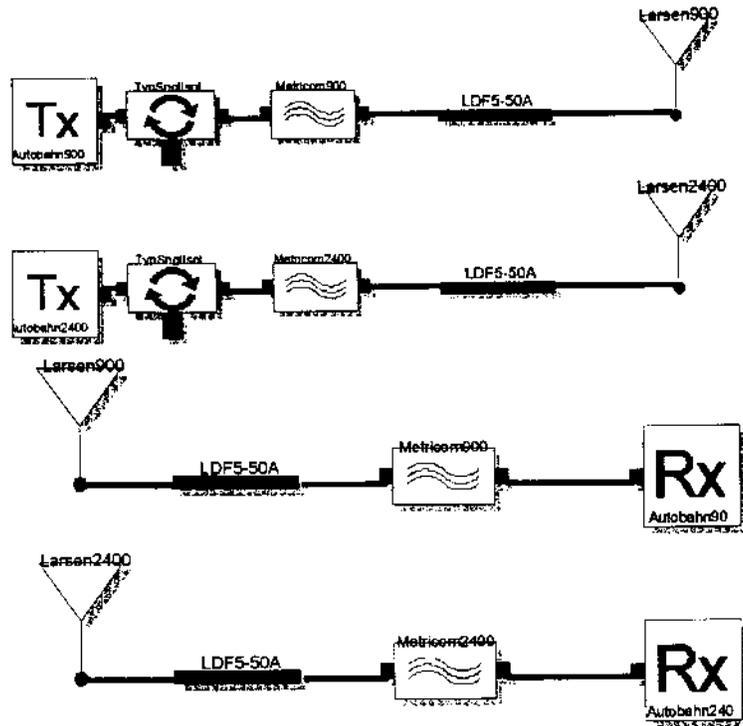


Figure 2.1-2 Metricom Configuration

The frequencies used for transmit and receive are listed in the following tables.

2441	915	2441	915	2441	915		
------	-----	------	-----	------	-----	--	--

Figure 2.1-3 Metricom Transmit Frequency Plan (MHz)

2441	915	2441	915	2441	915		
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Figure 2.1-4 Metricom Receiver Frequency Plan (MHz)

2.2 Nextel Nextel 9 Configuration

The 9 PANEL antennas are mounted with the center of the antennas at 100.0 feet. The system operates in the ESMR 800 band. The transmit frequencies are between 851 MHz and 866 MHz. The receive frequencies are from 806 MHz to 821 MHz. Figure 2.2-1 shows the top and side views of the antennas with the associated antenna mounts.

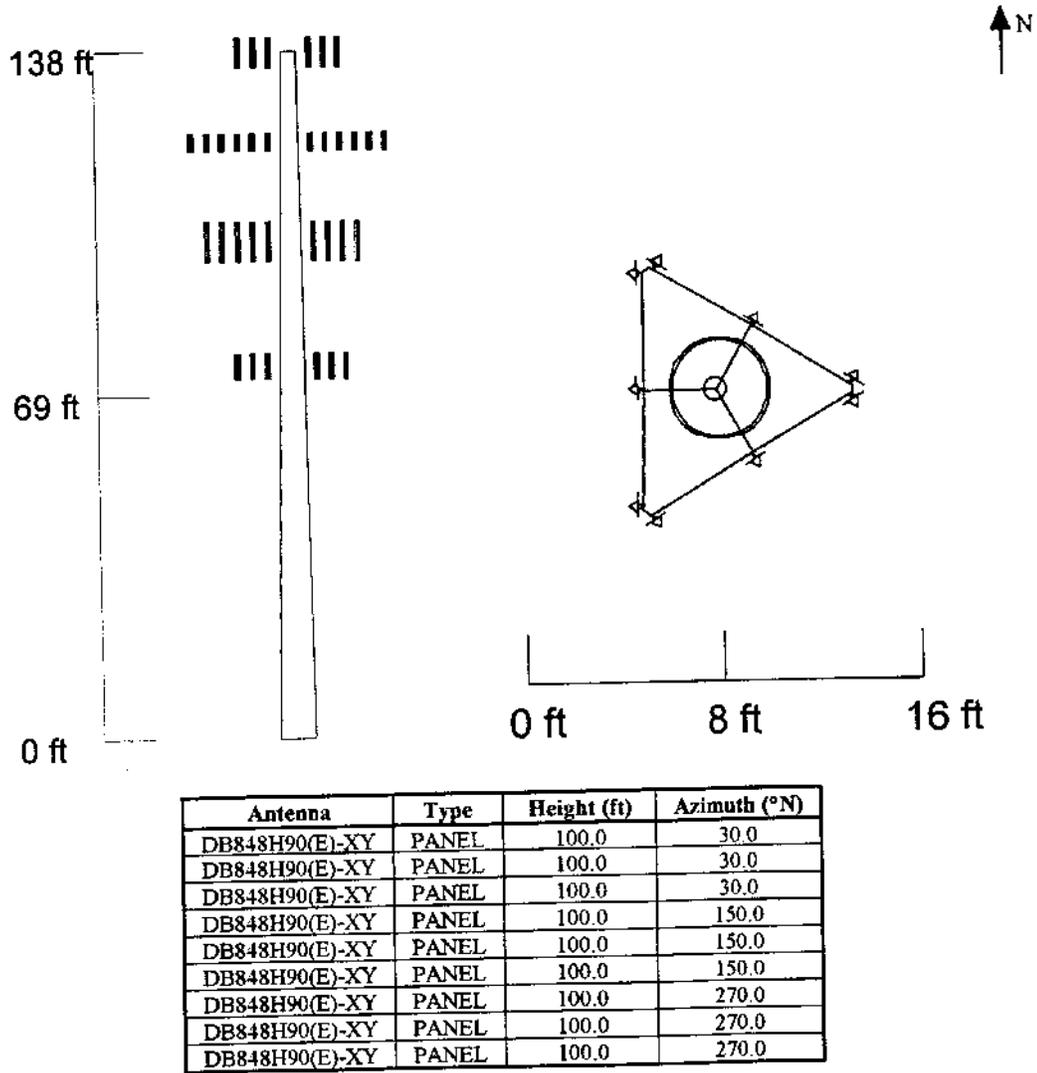


Figure 2.2-1 Nextel System

Figure 2.2-2 shows the model of one sector of the system used by the UNistar interference prediction software.

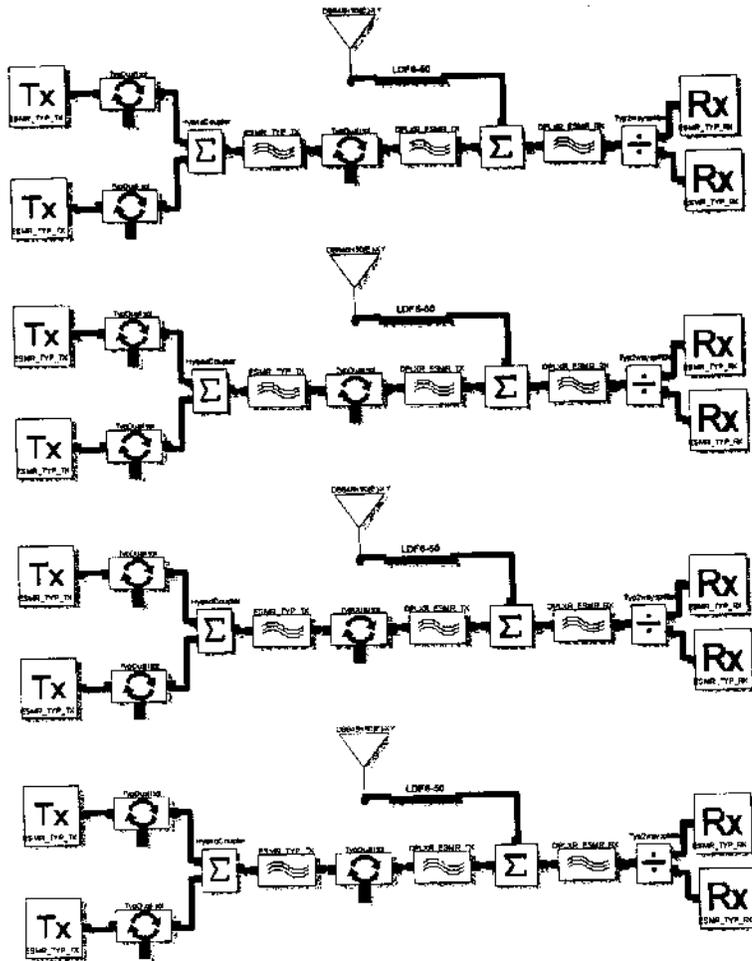


Figure 2.2-2 Nextel Configuration

The frequencies used for transmit and receive are listed in the following tables.

851.0125	852.5125	854.5125	856.5125	858.5125	860.5125	862.5125	865.0125
852.0125	854.0125	856.0125	858.0125	860.0125	862.0125	864.5125	852.0375
854.0375	856.0375	858.0375	860.0375	862.0375	864.0375	851.5375	853.5375
855.5375	857.5375	859.5375	861.5375	863.5375	865.5375	851.0625	854.0625
857.0625	860.0625	865.5625	852.5625	855.5625	858.5625	861.5625	864.5625
855.6125	858.6125	862.1125	865.6125	852.6125	857.1125	860.1125	864.1125
854.1125	851.1125	865.6375	862.6375	858.6375	855.6375	851.1375	864.1375
860.6375	857.1375	854.1375	852.6375	865.7125	862.7125	858.7125	855.7125
852.7125	864.2125	860.7125	857.2125	854.2125	851.2125	851.0125	852.5125
856.5125	860.5125	865.0125	854.0125	858.0125	862.0125	863.0125	854.5125
858.5125	862.5125	852.0125	856.0125	860.0125	864.5125	852.0375	854.0375
858.0375	862.0375	851.5375	855.5375	859.5375	863.5375	863.0125	856.0375
860.0375	864.0375	853.5375	857.5375	861.5375	865.5375	865.8625	862.8625
858.8625	855.8625	852.8625	864.3625	860.8625	857.3625	854.3625	851.3625

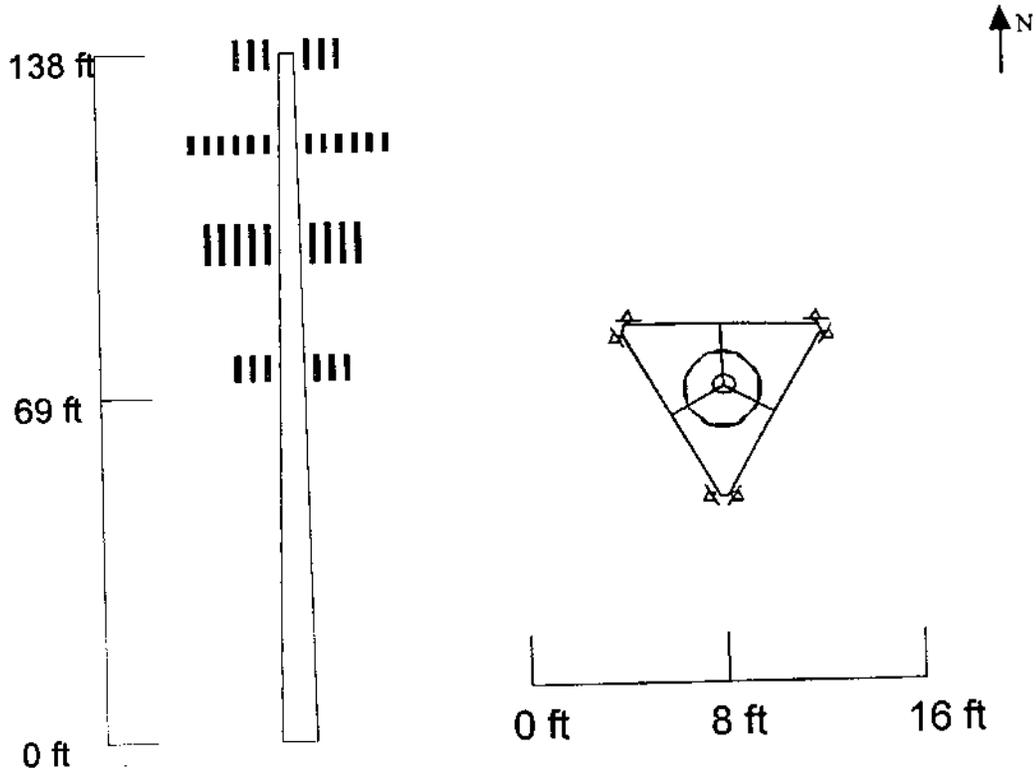
Figure 2.2-3 Nextel Transmit Frequency Plan (MHz)

806.0125	808.0125	810.0125	812.0125	814.0125	816.0125	818.0125	820.0125
807.5125	809.5125	811.5125	813.5125	815.5125	817.5125	819.5125	807.0375
809.0375	811.0375	813.0375	815.0375	817.0375	819.0375	806.5375	808.5375
810.5375	812.5375	814.5375	816.5375	818.5375	820.5375	820.5625	817.5625
813.0625	810.0625	806.5625	819.0625	814.5625	811.5625	808.5625	819.9125
807.5875	811.0875	814.5875	817.5875	820.5875	806.0875	809.0875	816.0875
819.0875	820.6375	817.6375	813.6375	810.6375	807.6375	819.1375	815.6375
812.1375	809.1375	806.1375	806.2125	809.2125	813.2125	816.2125	819.2125
807.7125	811.2125	814.7125	817.7125	820.7125	819.9125	811.0875	817.5875
806.0875	816.0875	807.5875	814.5875	820.5875	809.0875	819.0875	819.9125
817.6375	810.6375	819.1375	812.1375	806.1375	820.6375	813.6375	807.6375
815.6375	809.1375	806.3625	809.3625	813.3625	816.3625	819.3625	807.8625
811.3625	814.8625	817.8625	820.8625				

Figure 2.2-4 Nextel Receiver Frequency Plan (MHz)

2.3 Omnipoint Omnipoint E&F GSM 6 Configuration

The 6 PANEL antennas are mounted with the center of the antennas at 138.0 feet. The system operates in the PCS E, PCS F band. The transmit frequencies are between 1970 MHz and 1975 MHz. The receive frequencies are from 1890 MHz to 1895 MHz. Figure 2.3-1 shows the top and side views of the antennas with the associated antenna mounts.



Antenna	Type	Height (ft)	Azimuth (°N)
DAPA59000	PANEL	138.0	0.0
DAPA59000	PANEL	138.0	0.0
DAPA59000	PANEL	138.0	120.0
DAPA59000	PANEL	138.0	120.0
DAPA59000	PANEL	138.0	240.0
DAPA59000	PANEL	138.0	240.0

Figure 2.3-1 Omnipoint System

Figure 2.3-2 shows the model of one sector of the system used by the UNistar interference prediction software.

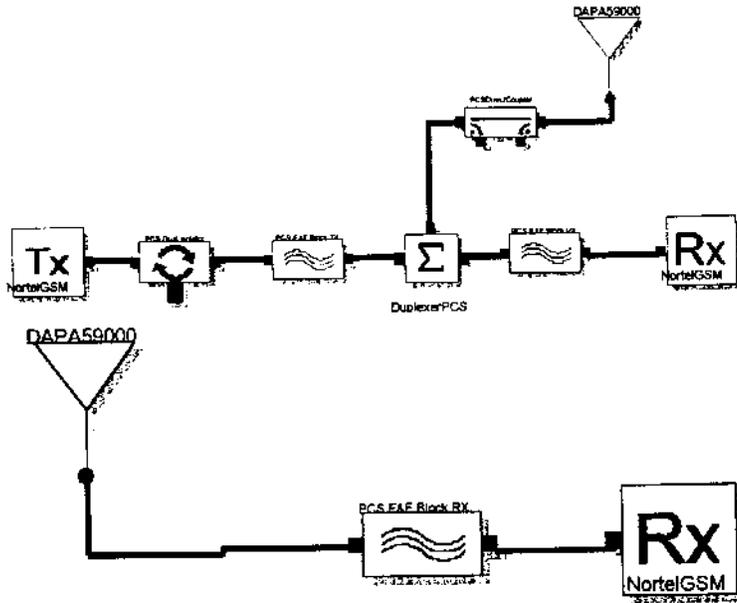


Figure 2.3-2 Omnipoint Configuration

The frequencies used for transmit and receive are listed in the following tables.

1965.2	1966.2	1967.2	1970.2	1971.2	1972.2	1965.4	1966.4
1967.4	1970.4	1971.4	1972.4	1965.6	1966.6	1967.6	1970.6
1971.6	1972.6						

Figure 2.3-3 Omnipoint Transmit Frequency Plan (MHz)

1888.2	1889.2	1893.2	1894.2	1885.2	1886.2	1887.2	1890.2
1891.2	1892.2	1888.4	1889.4	1893.4	1894.4	1885.4	1886.4
1887.4	1890.4	1891.4	1892.4	1888.6	1889.6	1893.6	1984.6
1885.6	1886.6	1887.6	1890.6	1891.6	1892.6		

Figure 2.3-4 Omnipoint Receiver Frequency Plan (MHz)

2.4 Sprint PCS Sprint Nortel CDMA 6 A Configuration

The 6 PANEL antennas are mounted with the center of the antennas at 75.0 feet. The system operates in the PCS A band. The transmit frequencies are between 1930 MHz and 1945 MHz. The receive frequencies are from 1850 MHz to 1865 MHz. Figure 2.4-1 shows the top and side views of the antennas with the associated antenna mounts.

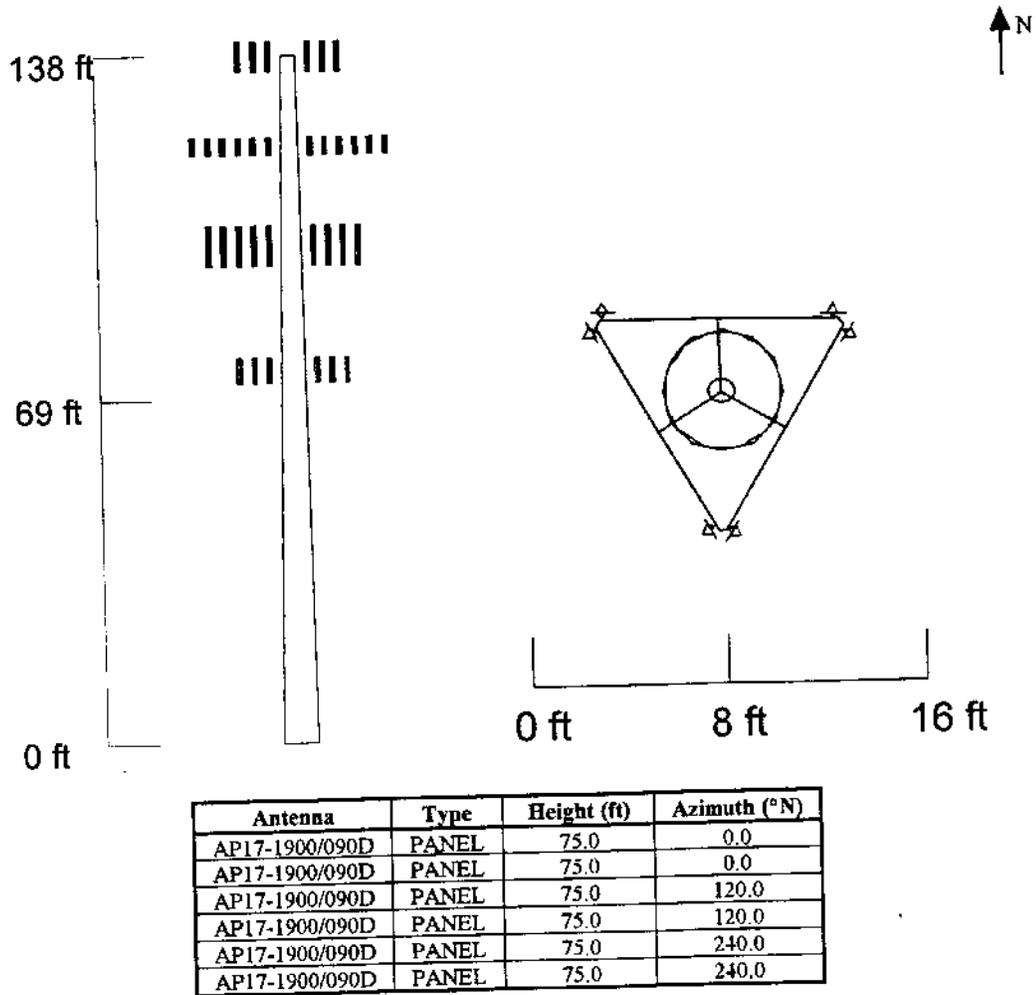


Figure 2.4-1 Sprint PCS System

Figure 2.4-2 shows the model of one sector of the system used by the UNistar interference prediction software.

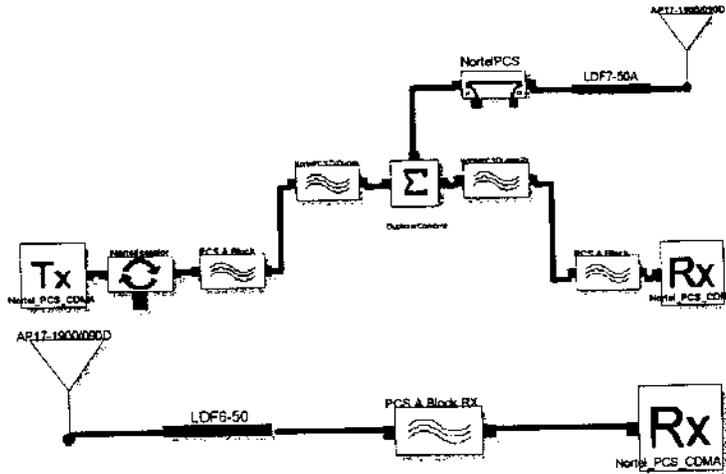


Figure 2.4-2 Sprint PCS Configuration

The frequencies used for transmit and receive are listed in the following tables.

1931.25	1932.5	1933.75	1935	1936.25	1937.5	1938.75	1940
1941.25	1942.5	1943.75	1931.25	1932.5	1933.75	1935	1936.25
1937.5	1938.75	1940	1941.25	1942.5	1943.75	1931.25	1932.5
1933.75	1935	1936.25	1937.5	1938.75	1940	1941.25	1942.5
1943.75							

Figure 2.4-3 Sprint PCS Transmit Frequency Plan (MHz)

1851.25	1852.5	1853.75	1855	1856.25	1857.5	1858.75	1860
1861.25	1862.5	1863.75	1851.25	1852.5	1853.75	1855	1856.25
1857.5	1858.75	1860	1861.25	1862.5	1863.75	1851.25	1852.5
1853.75	1855	1856.25	1857.5	1858.75	1860	1861.25	1862.5
1863.75	1851.25	1852.5	1853.75	1855	1856.25	1857.5	1858.75
1860	1861.25	1862.5	1863.75	1851.25	1852.5	1853.75	1855
1856.25	1857.5	1858.75	1860	1861.25	1862.5	1863.75	1851.25
1852.5	1853.75	1855	1856.25	1857.5	1858.75	1860	1861.25
1862.5	1863.75						

Figure 2.4-4 Sprint PCS Receiver Frequency Plan (MHz)

3.0 Analysis Details

The site analysis was completed using UNistar and no interference was predicted.

The following sections give a detailed report on the analysis performed. Section 3.1 describes the results of the transmitter noise analysis. Section 3.2 describes the results of the receiver desensitization analysis. Sections 3.3 and 3.4 describe the results of the transmitter and receiver intermodulation analysis. Sections 3.5 and 3.6 respectively describe the harmonic and spurious interference analysis.

3.1 Transmitter Noise Analysis

Transmitter noise is interference caused by noise generated by a transmitter that falls within a receiver's bandwidth. This noise level is compared with the receiver's susceptibility. Receiver susceptibility is determined by calculating the equivalent noise floor of the receiver system. This is based on the sensitivity of the receiver and the modulation scheme. For this analysis, susceptibility is considered to be 6 dB below the noise floor. The analysis predicts the transmitter power level in the receiver bandwidth at the receive frequency. The difference between the receiver susceptibility and the predicted interfering power level is called the noise margin. If the noise margin is positive, the number represents the margin before interference occurs. If the margin is negative, the amount represents the level of improvement in isolation required between the transmitter and receiver. The system also accumulates the effects of all transmitters on a receiver at a site.

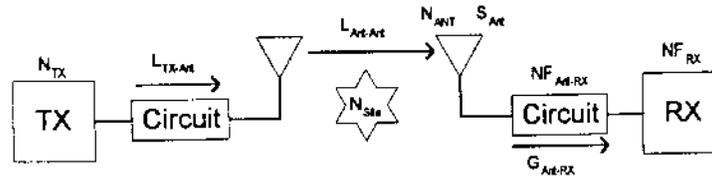
The levels in figure 3.1-1 show the predicted worst-case transmitter noise margin between receivers and transmitters at the site.

TX System	TX (MHz)	RX System	RX (MHz)	N _{TX} (dBm)	L _{TX, Ant} (dB)	L _{Ant, Ant} (dB)	N _{Ant} (dBm)	S _{Ant} (dBm)	N Margin (dB)
Nextel 9	851.3625	Nextel 9	820.8625	-57.6	179.7	-0.0	-228.2	-111.8	116.5
Nextel 9	865.0125	Metricom12	915	-27.4	353.9	58.9	-440.2	-93.6	346.6
Nextel 9	851.0125	Sprint Nortel CDMA 6	1851.25	-40.6	354.8	78.0	-473.4	-110.0	363.4
Nextel 9	851.0125	Omnipoint E&F GSM	1888.2	-48.5	354.8	86.8	-490.2	-118.5	371.7
Metricom12	2441	Nextel 9	806.2125	-95.0	175.8	58.0	-328.8	-111.9	216.9
Metricom12	915	Sprint Nortel CDMA 6	1851.25	-78.0	176.8	91.1	-345.9	-109.7	236.2
Metricom12	2441	Omnipoint E&F GSM	1888.2	-86.0	176.7	73.4	-336.1	-118.4	217.7
Metricom12	2441	Metricom12	915	-64.8	175.9	18.5	-259.3	-93.4	165.9
Sprint Nortel CDMA 6 A	1931.25	Nextel 9	806.0875	-109.1	353.9	65.6	-328.5	-112.3	416.2
Sprint Nortel CDMA 6 A	1931.25	Metricom12	915	-78.9	353.9	79.3	-512.1	-93.9	418.1
Sprint Nortel CDMA 6 A	1931.25	Sprint Nortel CDMA 6	1863.75	-92.1	303.6	-0.0	-395.6	-109.2	286.4
Sprint Nortel CDMA 6 A	1931.25	Omnipoint E&F GSM	1894.4	-100.0	240.5	99.6	-440.1	-118.5	321.6
Omnipoint E&F GSM 6	1965.4	Nextel 9	806.0875	-68.0	179.4	73.4	-320.8	-111.8	209.1
Omnipoint E&F GSM 6	1965.2	Metricom12	915	-38.3	179.4	62.0	-279.7	-93.2	186.5
Omnipoint E&F GSM 6	1965.4	Sprint Nortel CDMA 6	1863.75	-45.9	174.6	99.2	-319.6	-109.5	210.2
Omnipoint E&F GSM 6	1965.6	Omnipoint E&F GSM	1892.6	-49.2	174.6	-0.0	-223.8	-118.4	105.4

Figure 3.1-1 Transmitter Noise Summary

3.1.1 Worst Case Example Transmitter Noise

The worst case example of transmitter noise is from the transmitter (1965.6 MHz) on circuit 'Gamma TX/RX' in system 'Omniport E&F GSM 6' to the receiver (1892.6 MHz) in circuit 'Gamma TX/RX' in system 'Omniport E&F GSM 6'. UNistar calculated an acceptable noise margin of 105.4 dB using the following method:



Step 1: Calculate transmitter noise at receiver's antenna.

$F_{TX} = 1965.6 \text{ MHz}$	Transmit frequency
$F_{RX} = 1892.6 \text{ MHz}$	Receive frequency
$BW_{RX} = 200 \text{ kHz}$	Receiver bandwidth
$P_{TX} = 43.0 \text{ dBm}$	Transmitter power
$PSD_{TX} = -145.2 \text{ dBc}$	Relative power emitted by trans. in receiver band (from transmitter's power spectral density curve)
$L_{TX-Ant} = 174.6 \text{ dB}$	Loss from transmitter to transmitter's antenna at F_{RX}
$L_{Ant-Ant} = -0.0 \text{ dB}$	Antenna (or coupler) isolation at F_{RX}
N_{TXC} = $PSD_{TX} + 10 \times \log(BW_{RX})$ = $-145.2 + 10 \times \log(200000.0)$ = -92.2 dBc	Noise emitted by transmitter in receiver's band relative to carrier
N_{TX} = $P_{TX} + (N_{TXC})$ = $43.0 + (-92.2)$ = -49.2 dBm	Noise at transmitter in receiver's band
N_{Ant} = $N_{TX} - (L_{TX-Ant} + L_{Ant-Ant})$ = $-49.2 - (174.6 + -0.0)$ = -223.8 dBm	Transmitter noise at receiver's antenna

Step 2: Calculate the susceptibility of the receiver at its antenna.

$$\begin{aligned} \text{Sense}_{RX} &= -107.0 \text{ dBm} \\ [C/N] &= 7.0 \text{ dB} \end{aligned}$$

Receiver sensitivity
Equivalent carrier-to-noise level for specified receiver sensitivity

$$NF_{Ant-RX} = 1.6 \text{ dB}$$

Equivalent noise figure of sector from antenna (or coupler) to receive input

$$N_{Site} = -20.9 \text{ dBkTB}$$

Site noise from Site Noise curve relative to kTB

$$G_{Ant-RX} = -1.6 \text{ dB}$$

Gain from antenna (or coupler) to receiver

$$\begin{aligned} kTB &= \\ &= -174.0 + 10 \times \log(BW_{RX}) \\ &= -174.0 + 10 \times \log(200000.0) \\ &= -121.0 \text{ dBm} \end{aligned}$$

Thermal noise in the receiver bandwidth at room temperature.

$$\begin{aligned} NF_{RX} &= \text{Sense}_{RX} - [C/N] - (kTB) \\ &= -107.0 - 7.0 - (-121.0) \\ &= 7.0 \text{ dB} \end{aligned}$$

Noise figure of receiver

$$\begin{aligned} NF'_{Ant} &= 10^{(NF_{Ant-RX}/10)} + \\ &= 10^{(1.6/10)} + \\ &= 10^{(7.0/10)} + \\ &= 10^{(1.6/10)} + \\ &= 7.2 \end{aligned}$$

Noise factor at antenna

$$\begin{aligned} NF_{Ant} &= 10 \times \log(NF'_{Ant}) \\ &= 10 \times \log(7.2) \\ &= 8.6 \text{ dB} \end{aligned}$$

Noise factor at antenna in decibels

$$\begin{aligned} NF_{SysAnt} &= 10 \times \log(10^{(NF_{Ant}/10)} + 10^{(N_{Site}/10)}) \\ &= 10 \times \log(10^{(8.6/10)} + 10^{(-20.9/10)}) \\ &= 8.6 \text{ dB} \end{aligned}$$

System noise figure at antenna adds external noise at the site to the internal noise at the antenna.

$$\begin{aligned} S_{RX Ant} &= kTB + NF_{SysAnt} - 6 \\ &= -121.0 + 8.6 - 6 \\ &= -118.4 \text{ dBm} \end{aligned}$$

Susceptibility of receiver to interference at receive antenna

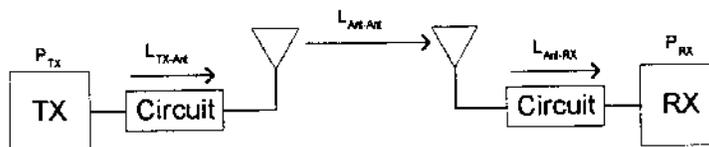
Step 3: Calculate the noise margin.

$$\begin{aligned} N_{Margin} &= S_{RX Ant} - N_{Ant} \\ &= -118.4 - (-223.8) \\ &= 105.4 \text{ dB} \end{aligned}$$

Margin between noise reaching receive antenna and level of susceptibility at antenna

3.2.1 Worst Case Example Receiver Desensitization

The worst case example of receiver desensitization is from the transmitter (851.0125 MHz) on circuit 'SectorCAntenna1' in system 'Nextel 9' to the receiver (820.5875 MHz) in circuit 'SectorCAntenna1' in system 'Nextel 9'. UNistar calculated an acceptable margin of 69.7 dB by using the following method, which compares the LNA and receiver desensitization and selects the lowest margin of the two:

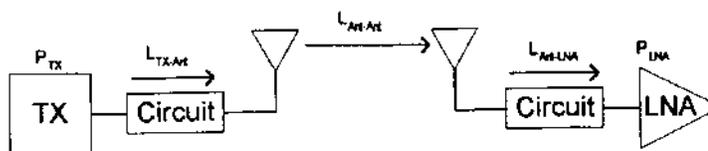


Step 1: Calculate transmitter power at receiver.

$F_{TX} = 851.0125$ MHz	Transmit frequency
$F_{RX} = 820.5875$ MHz	Receive frequency
$BW_{RX} = 25$ kHz	Receiver bandwidth
$P_{TX} = 48.5$ dBm	Transmitter power
$L_{TX-Ant} = 8.6$ dB	Loss from transmitter to transmitter's antenna at F_{TX}
$L_{Ant-Ant} = -0.0$ dB	Antenna (or coupler) isolation at F_{TX}
$L_{Ant-RX} = 86.0$ dB	Losses from receiver's antenna to receiver at F_{TX}
P_{RX}	Power emitted by transmitter in transmitter's band reaching receiver
$= P_{TX} - (L_{TX-Ant} + L_{Ant-Ant} + L_{Ant-RX})$	
$= 48.5 - (8.6 + -0.0 + 86.0)$	
$= -46.1$ dBm	

Step 2: Calculate desensitization margin at receiver.

$Desense_{RX} = 23.6$ dBm	Desensitization level of receiver at F_{TX} . This value is derived from the LNA's power rejection mask curve.
D_{RX}^{Margin}	Margin between desensitization level of the receiver and the transmitter power reaching the receiver
$= Desense_{RX} - (P_{RX})$	
$= 23.6 - (-46.1)$	
$= 69.7$ dB	



Step 3: Calculate transmitter power at LNA (if applicable).

$L_{Ant-LNA} = N/A$	Losses from receiver's antenna to LNA at F_{TX}
P_{LNA}	Power emitted by transmitter in transmitter's band reaching receiver's LNA
$= P_{TX} - (L_{TX-Ant} + L_{Ant-Ant} + L_{Ant-LNA})$	
$= 48.5 - (8.6 + -0.0 + N/A)$	
$= N/A \text{ dBm}$	

Step 4: Calculate desensitization margin at LNA.

$Desense_{LNA} = N/A \text{ dBm}$	Desensitization level of LNA at F_{TX} . This value is derived from the LNA's power rejection mask curve.
$D_{LNA \text{ Margin}}$	Margin between desensitization level and power at LNA
$= Desense_{LNA} - (P_{LNA})$	
$= N/A - (N/A)$	
$= N/A \text{ dB}$	

Step 5: Compare the LNA and receiver desensitization margin and select the lowest margin.

D_{Margin}	Minimum desensitization margin between the LNA and receiver
$= \min (D_{LNA \text{ Margin}}, D_{RX \text{ Margin}})$	
$= \min (N/A, 69.7)$	
$= 69.7 \text{ dB}$	

3.5 Harmonic Analysis

The non-linear characteristics of the transmitter result in each transmitter generating a series of harmonic outputs. These characteristics are modeled in UNistar. The harmonics are caused in the transmitter or in the filtering between the transmitter and antenna. If the resultant harmonic signal falls within the band of a receiver, the signal may interfere with the receiver. Once the level of the harmonic level at the receiver's antenna is calculated, the power level of the interference reaching the antenna is compared to the receiver's susceptibility at antenna. The interference margin is the result of this comparison. If the margin is positive, interference will not occur. If the margin is negative interference may occur.

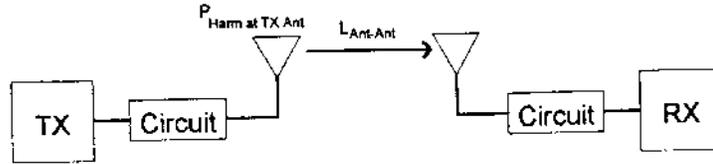
No interference was predicted between receivers and transmitters at the site. Figure 3.5-1 shows that the harmonics predicted to fall within the receiver bands at the site are insufficient to cause interference.

TX System	TX (MHz)	RX System	RX (MHz)	P _{Harmon} at A (dBm)	L _{Ant-Ant} (dB)	P _{Harmon} (dBm)	S _{of RX} (dBm)	F _{margin} (dB)
Metricom12	915	Sprint Nextel CDMA 6 A	1851.25	-75.7	79.7	-155.4	-109.7	45.7

Figure 3.5-1 Harmonic Interference Summary

3.5.1 Worst Case Example Harmonics

The worst case example of harmonic interference is from the transmitter (915 MHz) on circuit 'Sec2TX900' in system 'Metriocom12' to the receiver (1851.25 MHz) in circuit 'SectCSD' in system 'Sprint Noriel CDMA 6 A'. UNistar calculated an acceptable harmonic margin of 45.7 dB using the following method:



Step 1: Calculate harmonic level at receive antenna.

F_{TX}	= 915 MHz	Transmit frequency
F_{RX}	= 1851.25 MHz	Receive frequency
BW_{RX}	= 1250 kHz	Receiver bandwidth
$P_{Harm\ at\ TX\ Ant}$	= -75.7 dBm	Power of harmonic at transmitter antenna
$L_{Ant-Ant}$	= 79.7 dB	Antenna (or coupler) isolation at F_{RX}
$Harmonic_{Order}$	= 2	Order of harmonic
F_{Harm}	=	Frequency of harmonic
	= $F_{TX} \times Harmonic_{Order}$	
	= 915×2	
	= 1830 MHz	
BW_{Harm}	= 52000 kHz	Harmonic frequency bandwidth
$P_{Harm\ at\ RX\ Ant}$	= $P_{Harm\ at\ TX\ Ant} - L_{Ant-Ant}$	Power of harmonic reaching the receive antenna
	= $-75.7 - 79.7$	
	= -155.4 dBm	

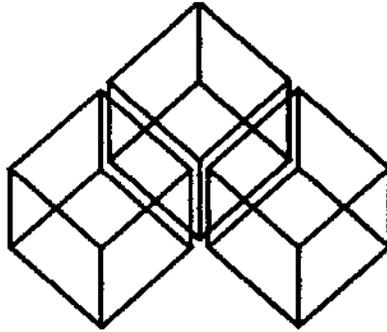
Step 2: Calculate margin between power of harmonic interference and susceptibility of receiver to interference.

$S_{RX\ Ant}$	= -109.7 dBm	Susceptibility of receiver to interference at receive antenna. Refer to the Transmitter Noise calculation for the details of computing $S_{RX\ Ant}$.
N_{Margin}	=	Margin between power of harmonic interference reaching receive antenna and level of susceptibility at antenna
	= $S_{RX\ Ant} - P_{Harm\ at\ RX\ Ant}$	
	= $-109.7 - (-155.4)$	
	= 45.7 dB	

3.6 Spurious Analysis

The UNistar database models the spurious characteristics of each transmitter. If the resultant spurious signal falls within the band of a receiver, the signal may interfere with the receiver. To determine if interference occurs, the power level of the interference reaching the receiver is calculated as shown in the following figure. This level is compared to the receiver's susceptibility. The interference margin is the result of this comparison. If the margin is positive, interference will not occur. If the margin is negative interference may occur.

No interference was predicted between receivers and transmitters at the site. There were no spurious results at this site.



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STRUCTURAL ANALYSIS

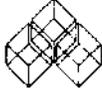
AMERICAN TOWER

DAVIE FIRE STATION

**Putnam Engineering/Construction
Project No.: 00-5088**

September 7, 2000

8413 Laurel Fair Circle, Bldg. 5, Ste.100, Tampa, FL 33610 – (813) 626-7300 – Fax: (813) 626-7233



Putnam

ENGINEERING | CONSTRUCTION CORP

September 7, 2000

Mr. Eric Cuthbert
American Tower
9027 Town Center Parkway
Bradenton, FL 34202

**RE: Structural Review of an Existing 138' Summit Manufacturing Steel Monopole
Davie Fire Station Putnam Engineering/Construction Project No.: 00-5088**

Dear Eric:

We have completed our structural review of the existing 138' Summit Manufacturing Steel Monopole per your request. The scope of services were as follows:

- Perform a climbing inspection of the existing monopole to determine its current condition.
- Perform a structural review of the monopole to determine its adequacy to support the additional loads imposed by Nextel antennas and associated coaxial cable.
- Provide a structural report of the monopole with conclusions and recommendations.

We have found the monopole and its foundation to be **structurally adequate** to support the proposed addition of nine (9) DB 848H90 panel antennas with 14' low profile platform at elevation 100'.

This analysis was performed with the benefit of a climbing inspection that was performed by us on 08-28-00.

Sincerely,

Mike Leahy, P.E.
Vice President

MKL/pso

TABLE OF CONTENTS

Summary of Results and Conclusions

Calculations

Climbing Inspection

Reference Information

Summary of Results and Conclusions

1. The existing tower is loaded as follows:

<u>No.</u>	<u>Elevation</u>	<u>Equipment</u>
1-6	138'	Six DB 848H90 panel antennas on sector mounts
7-12	80'	Six AP17-1900-090D

The addition of nine (9) DB 848 H90 panel antennas with 14' (low profile) platform and associated coaxial cable at elevation 100' is within the capacity of the existing monopole.

2. The monopole was in good repair at the time of the climbing inspection. The monopole is several years old and is structurally sound. The deterioration factor associated with this tower is 1.0.
3. The foundation was consistent with the original design and in good shape. The foundation was sized for the loading as depicted in 1. above and **will** safely support the additional loads.

Calculations

The monopole was originally designed for multiple carriers distributed shown below according to EIA/TIA-222-F (115 MPH wind) standards. The monopole is currently loaded to 82.6 % of its original design.

Design loads:

<u>Elevation</u>	<u>Equipment</u>	<u>Design area (ft²)</u>
Top	Lightning Rod	2.0
138'	12 DAPA 5900 panel antennas on sector mounts	82.0
120'	12 DAPA 5900 panel antennas on sector mounts	80.0
100'	12 DAPA 5900 panel antennas on sector mounts	80.0

Current loading:

<u>Elevation</u>	<u>Equipment</u>	<u>Actual Wind Area (ft²)</u>
Top	Lightning Rod	2.0
138'	6 DAPA 5900 panel antennas on sector mounts	58.0
120' (future)	16 Larson 108246-200. panel antennas on sector mounts	35.0
80'	6 AP17-1900-090D panel antennas on sector mounts	42.0

Proposed loading:

<u>Elevation</u>	<u>Equipment</u>	<u>Design area (ft²)</u>
Top	Lightning Rod	2.0
138'	6 DB848 panel antennas on sector mounts	58.0
120' (future)	16 Larson 108246-200 panel antennas on sector mounts	35.0
100' (Proposed)	9 DB 848 panel antennas w/ 14' low profile platform	117.0
80'	6 AP17-1900-090D panel antennas on sector mounts	42.0

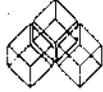
Percent currently loaded = 82.6 %

Addition of nine (9) DB 848 H90 panel antennas with 14' (low profile) platform and associated coaxial cable at elevation 100'

Percent proposed loaded = 97.2 %

Therefore, the loads due to the addition nine (9) DB 848 panel antennas with low profile platforms and associated coaxial cable on sector mounts at elevation 100' is within the capacity of the existing tower.

CLIMBING INSPECTION



Putnam

ENGINEERING / CONSTRUCTION CORP

CUSTOMER: AMERICAN TOWER
NAME OF PROJECT: DAVIE FIRE STATION
ADDRESS: 3600 S. FLAMINGO ROAD
DAVIE, FLORIDA
JURISDICTION: BROWARD COUNTY
TYPE OF TOWER: 138' SUMMIT MANUFACTURING STEEL
MONOPOLE

I CERTIFY THAT THE ABOVE REFERENCED STRUCTURE WAS INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND THE APPROVED STRUCTURAL DRAWINGS AS PRODUCED BY THE MANUFACTURER AND THE APPLICABLE AISI CODE OR SJI SPECIFICATIONS.

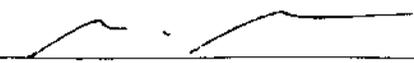
THERE WAS NO FIELD WELDING. ALL SHOP WELDS CONFORM TO THE APPROVED PLANS AND THE APPLICABLE AWS CODE AND AISI SPECIFICATION.

THE ASSEMBLY AND INSPECTION OF CONNECTIONS USING HIGH STRENGTH BOLTS CONFORMS WITH THE APPROVED PLANS AND THE RCSC SPECIFICATION PERTAINING TO ASTM A 325 OR A 490 BOLTS.

A CLIMBING INSPECTION PERFORMED BY US ON 08/28/00 SHOWED THE MONOPOLE TO BE IN EXCELLENT REPAIR. (SEE ATTACHED PICTURES)

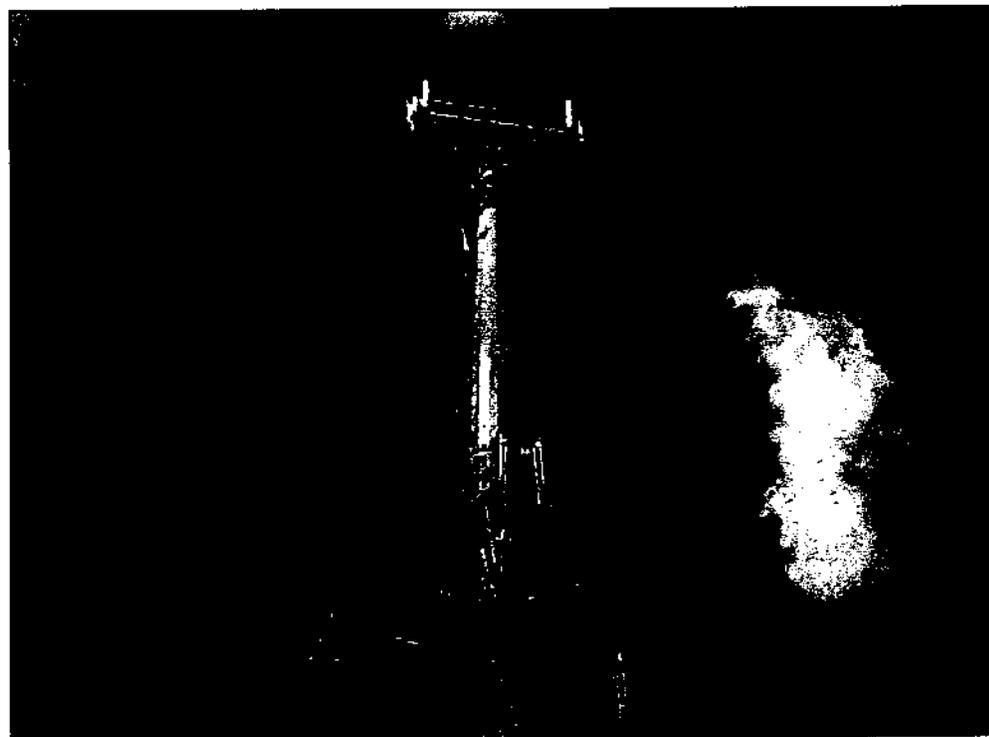
I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.

CERTIFIED BY:


MICHAEL K. LEAHY, P.E. #45287

DATE:

09-07-00



Putnam Job # 00-5088, Davie Fire Station

Davie Fire Station (existing)

EIA/TIA-222.F, 1996 Wind speed 115 mph

h	K _s	C _d	Q _z	F1	F2	F3	M1	M2	M3
0	1.00	1.14	33.86						
10	1.00	1.14	33.86						
20	1.00	1.14	33.86						
30	1.00	1.14	33.86						
40	1.06	1.14	35.77						
50	1.13	1.14	38.12						
60	1.19	1.14	40.16						
70	1.24	1.14	41.97						
80	1.29	1.14	43.60						
90	1.33	1.14	45.10						
100	1.37	1.14	46.47						
110	1.41	1.14	47.76						
120	1.45	1.14	48.96		2,730.2	2,917.9			233.4
130	1.48	1.14	50.09				684.6	327.6	
140	1.51	1.14	51.16	4,851.1			684.6	327.6	233.4
									Total
									1,308.1

P-delta 62.3

tip dia = 2.08 feet
 o.l. dia = 5.17 feet
 total ht = 140 feet
 C_r = 1.03
 Arm_{wind} = 83.33 feet
 Wind pressure = 46.47 pounds
 F_{wind} = 41,054.7 pounds
 M_{wind} = 3,831.8 kip-ft
 Total Cap. M_{ult} = 6,223 kip-ft
 M_{fact} = 5,138.9
 % of Cap. = 82.6%

Applicable h = Arm_{wind}
 (e.g., in this case it = 100.00 or "use 132")

Wind pressure @ (70) * Total ht.

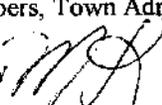
Ant. Group	Elevation	Ant. nom. & type	# of antennas	Mount type	Design area
Area - F1	138	DB 846, panel	8	Sector	80
Area - F2	120	Lanxon 100246-200, panel	16	Sector	35
Area - F3	80	AP17-1800-0800, panel	6	Sector	42

* 1 lumped the lightning rod in with the 58.0 sq. ft. of DB 846s

MONROE D. KIAR
TOWN ATTORNEY
TOWN OF DAVIE
6191 SW 45th Street, Suite 6151A
Davie, Florida 33314
(954) 584-9770

TOWN OF DAVIE
2000 NOV 21 P 4:13
ADM. SVC. DEPT.

MEMORANDUM

DATE: November 21, 2000
TO: Will Allen, Programs Administrator
CC: Mayor and Town Council Members, Town Administrator
FROM: Monroe D. Kiar, Town Attorney 
RE: Amendment to Lease Agreement for Telecommunications Tower at 3600 South Flamingo Road (Flamingo Fire Station) Control No. 001122

Pursuant to your memorandum of November 20, 2000 I have reviewed the proposed resolution authorizing the Mayor to execute proposed amendments to the Lease Agreement concerning the monopole telecommunications tower at the site located at 3600 South Flamingo Road. I have also reviewed the First Amendment to Lease Agreement dated October 11, 2000 by and between the Town of Davie and Unisite/Omnipoint FL Tower Venture, L.L.C. Additionally, I have reviewed all back up material provided to me as well as the applicable provisions from the Davie Town Code with regard to telecommunications towers and antennas, the assignment and assumption of lease dated November 25, 1997 from Bell South Mobility Inc. and Omnipoint Communications Inc., the lease agreement between Town of Davie Florida and Bell South Mobility Inc., dated June 20, 1997, and the shared site interference analysis prepared on September 18, 2000 for Nextel.

Section 12-506 (B) provides that the Town can locate towers on lands owned by the Town without the necessity of a public hearing by authorizing a lease agreement for a telecommunications tower. Section 12-506 (C) indicates that antennas may be added to existing towers after approval by the Development Services Director where there is sufficient loading capacity as certified by an engineer licensed to practice in the State of Florida. Section 12-506 (D) gives the minimum standards for such towers including a requirement that the height of a telecommunications tower shall not exceed one hundred and fifty feet. Lastly, as indicated by you in your memorandum, Section 12-508 seeks to minimize adverse visual impacts associated with the proliferation and clustering of telecommunications towers by encouraging co-location of communication antennas by more than one

carrier on an existing or new telecommunications tower which shall take precedence over the construction of new single-use telecommunication towers.

You have indicated that there is a request is to now allow four providers to use the monopole rather than three users at the Flamingo Fire Station location. A review of the existing lease, the applicable provisions of the Davie Town Code and the other documentation provided to me reveal no restriction that would prohibit the use of the monopole by a fourth provider as long as there is sufficient capacity to allow for its use by a fourth provider. The information which you have provided to me including the analysis performed for Nextel dated September 18, 2000 appears to indicate that the monopole is structurally adequate to support the proposed addition. As you indicate, the report shows the that tower is loaded to a capacity of 82.6% currently and with the addition of the fourth provider the capacity would be raised to 97.2% of capacity.

You have concluded in you memorandum that " as there is sufficient loading capacity on the tower as certified per the requirements of Section 12-506 (C), as there is sufficient ground space within the approved lease area, as the addition of a fourth antenna is consistent with the goal of colocation resulting in less towers, and as the Town will benefit by obtaining greater revenue from the lease, it is recommended to approve the amendments to the lease agreement." After review of the documentation provided to me by your office as well as the applicable code provisions I concur from a legal stand point with your evaluation and recommendation. It would further appear from language contained in Section 12-506 (C) of the Land Development Code that the Development Services Director, Mr. Mark Kutney, would be authorized to place on the existing tower the equipment of the fourth provider, Nextel, if the Town Council approves the First Amendment to lease agreement dated October 11, 2000.

The only change I would suggest to your proposed resolution which you intend to present to the Town Council pertains to Section 1. It is assumed that Section 1 is meant to read " The Mayor or appropriate Town official is hereby authorized to execute the proposed First Amendment to LeaseA between the Town of Davie and Unisite/Omnipoint FL Tower Venture,L.L.C., a copy of which is attached hereto as exhibit "A", on behalf of the Town."

Finally, as indicated above, I found nothing in the materials which you sent to me or in the provisions of the Land Development Code which prohibits a fourth provider from using the existing monopole. It is assumed that there are no further agreements between either the Town and the various providers or between the providers themselves which would limit the use of the monopole to three rather than four providers. This, you may wish to verify.