



# CITY of NOVI CITY COUNCIL

[www.cityofnovi.org](http://www.cityofnovi.org)

**Agenda Item 9  
June 18, 2007**

**SUBJECT:** Consideration of resolution to allow T-Mobile an option to lease property for a 110 foot tall cell tower and equipment shelter at Lakeshore Park, subject to terms and contingent on subsequent site plan review and approval by the City Council.

**SUBMITTING DEPARTMENT:** Community Development - Planning *Bach*

**CITY MANAGER APPROVAL:** *PWA For UP*

**BACKGROUND INFORMATION:**

Over the last several months, city staff and the city attorney's office have been discussing a possible lease of property at Lakeshore Park for use by T-Mobile for a new cell tower location. Although cell towers are permitted in the I-1 and I-2 zoning districts and are expressly prohibited from the residential district per Zoning Ordinance Section 2508, the ordinance does allow the City Council to permit a communication antenna or pole in any district when there is a finding that such restrictions would prohibit or have the effect of prohibiting the provision of personal wireless services, as would be contrary to law.

The applicant has provided a letter and paperwork indicating that there is a deficiency in wireless coverage for an area surrounding the proposed location at Lakeshore Park, and provides justification related to the standards of the ordinance. Please note, the submitted plans show that the proposed cell tower will 110 feet in height, and able to accommodate 3 antennas within the flagpole style tower. The cell tower equipment is proposed to be housed within a new concrete block building to match other buildings in the park. The plans show that the building is proposed to accommodate a picnic shelter, as well as to house the cell tower equipment.

If the City Council is inclined to approve the attached resolution which was prepared by the city attorney's office, including the terms of the proposed lease of the land at Lakeshore Park, the applicant will need to seek approval of the use of the land through the typical Zoning Ordinance provisions. This requires a public hearing, review and recommendation by the Planning Commission for the proposed cell tower, equipment shelter and other improvements. The recommendation would be forwarded to the City Council for approval of the site plan. Please see the attached resolution to authorize application for cellular tower approval on city-owned property and preparation of option to lease for consideration by the City Council at this time.

**RECOMMENDED ACTION:** Approval of resolution to allow T-Mobile an option to lease property for a 110 foot tall cell tower and equipment shelter at Lakeshore Park, subject to terms and contingent on subsequent site plan review and approval by the City Council.

	1	2	Y	N
Mayor Landry				
Mayor Pro Tem Capello				
Council Member Gatt				
Council Member Margolis				

	1	2	Y	N
Council Member Mutch				
Council Member Nagy				
Council Member Paul				

**SUGGESTED RESOLUTION**

**RESOLUTION AUTHORIZING APPLICATION FOR CELLULAR  
TOWER APPROVAL ON CITY-OWNED PROPERTY AND  
PREPARATION OF OPTION TO LEASE**

City of Novi  
County of Oakland, Michigan

Minutes of a \_\_\_\_\_ Meeting of the City Council of the City of Novi,  
County of Oakland, Michigan, held in the City Hall in said City on \_\_\_\_\_, 2007,  
at \_\_\_\_\_ o'clock P.M. Prevailing Eastern Time.

PRESENT: Councilmembers \_\_\_\_\_  
\_\_\_\_\_

ABSENT: Councilmembers \_\_\_\_\_  
\_\_\_\_\_

The following preamble and Resolution were offered by Councilmember \_\_\_\_\_  
\_\_\_\_\_ and supported by Councilmember \_\_\_\_\_.

WHEREAS, the City of Novi owns Lakeshore Park, located in the north end of the City  
along South Lake Drive; and

WHEREAS, the City of Novi has been approached by a wireless communications service  
provider, T-Mobile, with a request to lease a portion of real property within Lakeshore Park for  
the purpose of installing a wireless communications tower, and more specifically a 110-foot  
unipole, on which T-Mobile contemplates offering co-locations to additional wireless service  
providers, to be located in the area shown on the attached drawing; and

WHEREAS, the terms of the lease proposed by T-Mobile are as follows:

Initial Term: \$50,000.00 for the first year's rent (payable upon issuance of a building  
permit).

Years 2-5: \$15,000.00 base rent per year plus 50% of rent co-locator received or  
\$4,000.00, whichever is greater for each user.



Years 6-10: \$17,000.00 base rent per year plus 50% of rent co-locator received or \$4,600.00, whichever is greater for each user.

Years 11-15: \$20,000.00 base rent per year plus 50% of rent co-locator received or \$8,800.00, whichever is greater for each user.

Years 16-20: \$22,500.00 base rent per year plus 50% of rent co-locator received or \$10,000.00, whichever is greater for each user.

Years 21-25: \$25,000.00 base rent per year plus 50% of rent co-locator received or \$11,500.00, whichever is greater for each user.

Reimbursement of reasonable expenses, not to exceed \$3,500.00.

In addition, the City understands that T-Mobile will, at the City's choice and in its sole discretion, either construct a picnic shelter to the City of Novi's specifications in a location to be determined by the City, which may or may not be incorporated into T-Mobile's equipment shelter for the unipole tower, which such shelter shall have a minimum value of \$50,000, or it shall make a payment to the City of the value of the picnic shelter, which such amount shall be no less than \$50,000; and

WHEREAS, under Section 2508 of the City of Novi's Zoning Ordinance, wireless communications towers other than those located in the I-1 or I-2 District require City Council approval, following Planning Commission recommendation, based upon standards set forth in the ordinance; and

WHEREAS, the City of Novi City Council has *not* reviewed the proposed location of the tower under the zoning ordinance requirement or evaluated whether the proposed location would meet the requirements of the zoning ordinance, but rather has only considered T-Mobile's request in the context of a lease arrangement for occupation of City property consistent with other existing lease agreements with other wireless service providers, such as Sprint; and

NOW, THEREFORE, BE IT RESOLVED that the City of Novi City Council determines as follows in connection with the T-Mobile lease offer:



1. The City authorizes T-Mobile to submit an application to the City for the construction of an approximately 110-foot unipole tower in the location within the City's Lakeshore Park shown on the attached drawing and pursuant to the requirements of Section 2508 of the Zoning Ordinance;

2. The City Council authorizes the City Manager, City Attorney, and other appropriate City staff to prepare an option to lease the described property within Lakeshore Park between T-Mobile and the City of Novi consistent with the financial terms set forth above, including the rental payments schedule and the payment of an appropriate initial fee or the construction of a City-approved park shelter, and containing other non-monetary terms and conditions that the City has required in prior lease agreements with wireless service providers;

3. The actions taken in Paragraphs 1 and 2, above, shall not constitute, and shall not be construed to constitute an approval of any kind by the City Council of the location of the tower or the authorization of such a tower under the City's Zoning Ordinance or other City ordinances. The City Council as of this date has not determined whether the proposed location complies with various ordinance requirements. The City Council has not determined that the ordinance approval standards have been or can be satisfied. The City Council has only reviewed and discussed the lease terms as the owner of the property on which T-Mobile proposes to construct the tower. Any non-monetary lease terms may be adjusted or required in connection with the City's zoning review. Failure of the City and T-Mobile to agree on the terms of an option to lease shall terminate, upon the City's notice to T-Mobile, the zoning approval process.

BE IT FURTHER RESOLVED, that all resolutions and part of resolutions insofar as they conflict with the provisions of this Resolution be and the same hereby are rescinded.

AYES: Councilmembers \_\_\_\_\_  
\_\_\_\_\_

NAYES: Councilmembers \_\_\_\_\_

\_\_\_\_\_

RESOLUTION DECLARED ADOPTED.

\_\_\_\_\_  
MARYANNE CORNELIUS, CITY CLERK

**CERTIFICATION**

I hereby certify that the foregoing is a true and complete copy of a Resolution adopted by the City Council of the City of Novi at \_\_\_\_\_ meeting held this \_\_\_\_\_ day of \_\_\_\_\_, 2007.

\_\_\_\_\_  
MARYANNE CORNELIUS, CITY CLERK

**LETTER AND SUPPORT MATERIALS  
FROM T-MOBILE**





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T-MOBILE CENTRAL, LLC  
12170 Merriman, Livonia, MI 48150  
(734) 367-7255 Fax (734) 367-7242  
[john.stoliker@t-mobile.com](mailto:john.stoliker@t-mobile.com)

May 25, 2007

City of Novi  
c/o Barb McBeth  
Director of Planning  
45175 W. Ten Mile Road  
Novi, Michigan 48375

Re: T-Mobile Site No. DE01322D, Lakeshore Park Unipole Lease Proposal

Dear Mrs. McBeth:

Thank you for meeting with me again recently to discuss T-Mobile's ongoing Lakeshore Park lease proposal. I appreciate your time and efforts over the past several months.

First off, I'll respond to the question of why this particular location was chosen by T-Mobile when there are other public properties farther from residential areas. As I've stated in the past, placing a new facility in either of the other city-suggested locations (the water treatment plant or Liberty Park), would provide us with *redundant* coverage. We already provide adequate coverage in the 12 ½ Mile and Dixon Road area (south of Lakeshore Park), and the West Park Dr and West Road area (west of Lakeshore Park), and neither of these locations would help us with our coverage gap along 13 Mile Road and especially along South Lake Drive as it meanders around Walled lake (please see attached coverage maps). Besides, the Liberty Park location would be just as near (if not nearer) to all those new homes going up in that area.

Secondly, as I stated during our meeting in April that was attended by myself, you, Tom, and Randy, T-Mobile would be willing to increase the height of the proposed pole to accommodate additional carriers, but if the big public concern is going to be aesthetics (per Randy), then wouldn't a taller pole make the zoning approval process that much harder? For your convenience, I have attached a set of site plans and a photo simulation of our proposed 110' unipole in its proposed location within the park.

Thirdly, regarding the lease parameters, you may recall that I already made an offer (via an e-mail dated 10/24/06) for this proposed site that matches the Sprint ice rink site (which was a city request) in all aspects but one, the up-front non-refundable \$50K payment. As you recall, since T-Mobile agreed to incorporate a picnic shelter area into our equipment shelter design (thereby saving the city *at least* \$50K), paying the up-front \$50K fee would be unreasonable and not in line with the Sprint deal. I remember Randy saying he's been unable to get funding for the picnic shelter, and proposing to build one is just the sort of thing that T-Mobile likes to do to bring a deal together.

Finally (and these are the *real* deal killers), regarding the 10-year time limit for the lease and the \$25K non-refundable fee that's due upon signing an amendment to add two additional co-locators, that's the first that I've heard of these requirements, and since they're not part of the Sprint deal (and since 10 years would not allow us enough time to recoup our substantial up-front investment at this site), I couldn't find the justification to make them a part of this proposal.

So in an effort to clarify T-Mobile's final offer for this lease proposal, I'm going to restate our offer (which matches the Sprint deal) in this correspondence. This offer will stand until 5:00 pm, June 29, 2007, at which time, if the city has not given its official approval, the offer will automatically expire, and T-Mobile will walk away.

T-Mobile's final lease offer for its proposed unipole at Lakeshore Park is as follows:

Initial Term: \$50,000.00 for the first year's rent (payable upon issuance of a building permit).

Years 2-5: \$15,000.00 base rent per year plus 30% of rent rec'd or \$4,000.00, whichever is greater for each user.

Years 6-10: \$17,000.00 base rent per year plus 50% of rent rec'd or \$4,600.00, whichever is greater for each user.

Years 11-15: \$20,000.00 base rent per year plus 50% of rent rec'd or \$8,800.00, whichever is greater for each user.

Years 16-20: \$22,500.00 base rent per year plus 50% of rent rec'd or \$10,000.00, whichever is greater for each user.

Years 21-25: \$25,000.00 base rent per year plus 50% of rent rec'd or \$11,500.00, whichever is greater for each user.

Reimbursement of reasonable expenses, not to exceed \$3,500.00.

Please keep in mind that T-Mobile has been trying to partner with the city of Novi regarding this site proposal for the benefit of its citizens for some time now. As you know, T-Mobile made every effort to find a co-location opportunity in this part of the city before deciding to submit a proposal to build a Communication Antenna Tower (CAT) of its own. Most notably, we were denied permission from the Oakland County Emergency Management Dept to place our antennas on their wooden siren pole located at the fire station on 13 Mile Road.

In addition, though T-Mobile tries to limit its CAT proposals to permitted-use areas within a city (in Novi's case, I-1 & I-2 districts), it has become increasingly difficult to do that and still satisfy the public's ever increasing demand for in-home coverage. Fortunately, technology is such these days that we are able to propose sites near residentially zoned areas with "camouflaged" or "hidden" antennas (like this proposed unipole), which have very little impact on the character of the general area, and absolutely no adverse effect on any present or future property use. Once again, please see the attached photo simulation.

And another fortunate turn in this particular instance is that section 2508 (1) (a) of the city's zoning regulations provide that the city council may permit a CAT in zoning districts other than I-1 or I-2, and may otherwise vary the standards & restrictions therein, when the following standards are met:

- 1) It finds that such restrictions would prohibit the provisions of personal wireless services,
- 2) It agrees that the requested use is essential or desirable to public convenience or welfare,
- 3) It feels that the CAT will be compatible with the orderly development of its zoning district.

Regarding item 1, T-Mobile has been trying to find a way to provide service for its customers in this area for many years now. It has taken a lot of effort and expense, but I believe that we've found a site location and site design to finally be able to do that, and I am hopeful that the city council will embrace this portion of the regulations by agreeing that a denial would prohibit the provision of personal wireless services in this area.

Regarding item 2, the only reason we're proposing this site is that this area has been a source of multiple customer complaints (i.e. no coverage) for many years now. So not only can this site be considered *desirable* to the convenience of the general public, with the planned inclusion of a E-911 antenna, this site can also be considered *essential* to the welfare of the general public as well.

Regarding item 3, it is T-Mobile's intention to make this proposed CAT as harmonious as possible with its intended surroundings while still making it tall enough to attract co-locators. I hope you agree that the design and location of the site addresses the council's understandable concerns about compatibility and orderly development. And since (per the city's zoning regulations) special consideration is given to applications which present creative solutions to the city's concern about the proliferation of towers, I am hopeful that the city council will recognize T-Mobile's efforts to incorporate a very creative camouflaging technique into this proposal.

Please submit this correspondence to the city council for an official decision about moving forward with the lease (with the above noted parameters), and let me know what agenda the decision will be on so I can attend the meeting. In the meantime, please feel free to contact me with any questions or comments. Thank you for your continued cooperation.

Respectfully,

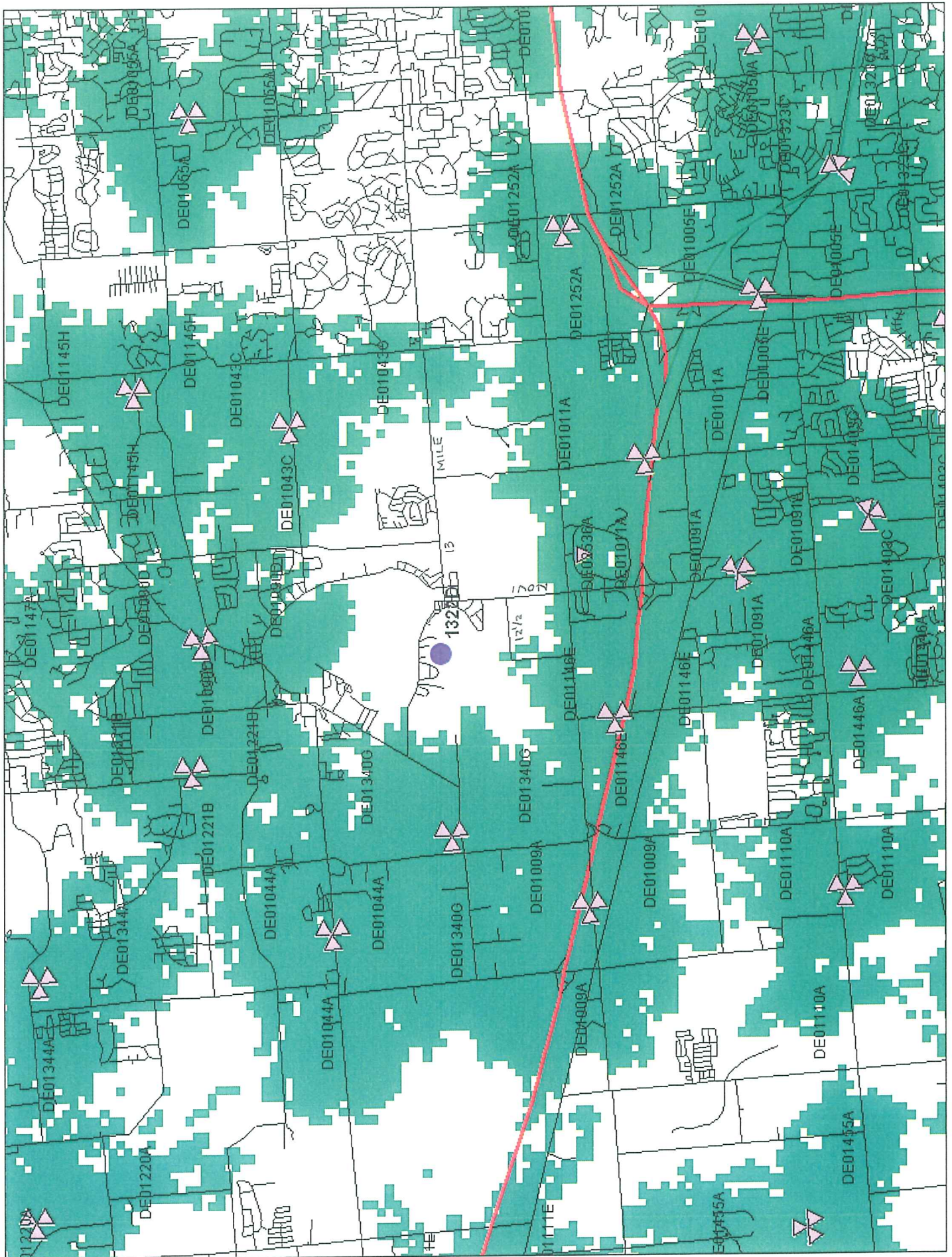


John Stoliker  
R/E Specialist III  
T-Mobile Central LLC

Encl.

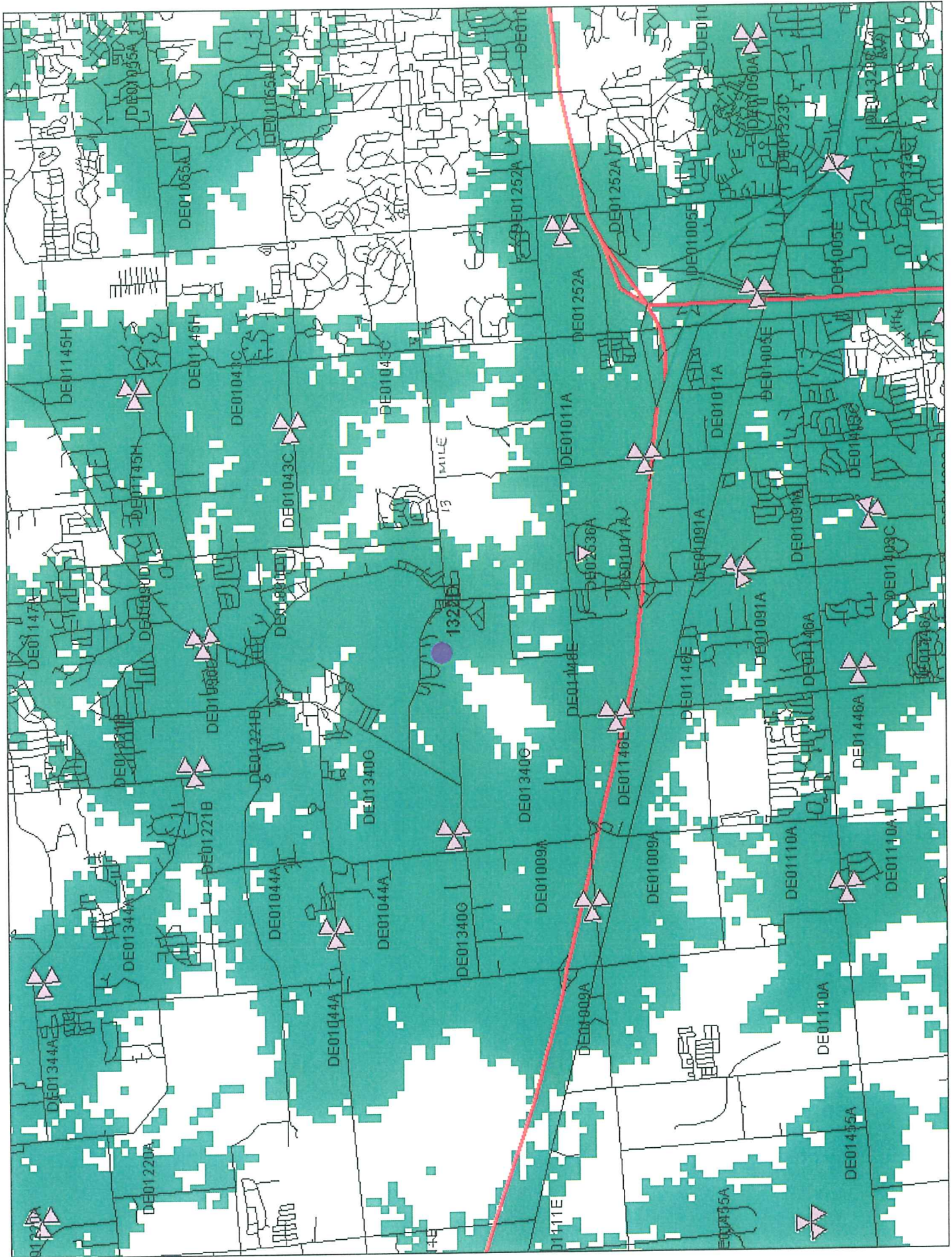


EXISTING T-MOBILE COVERAGE





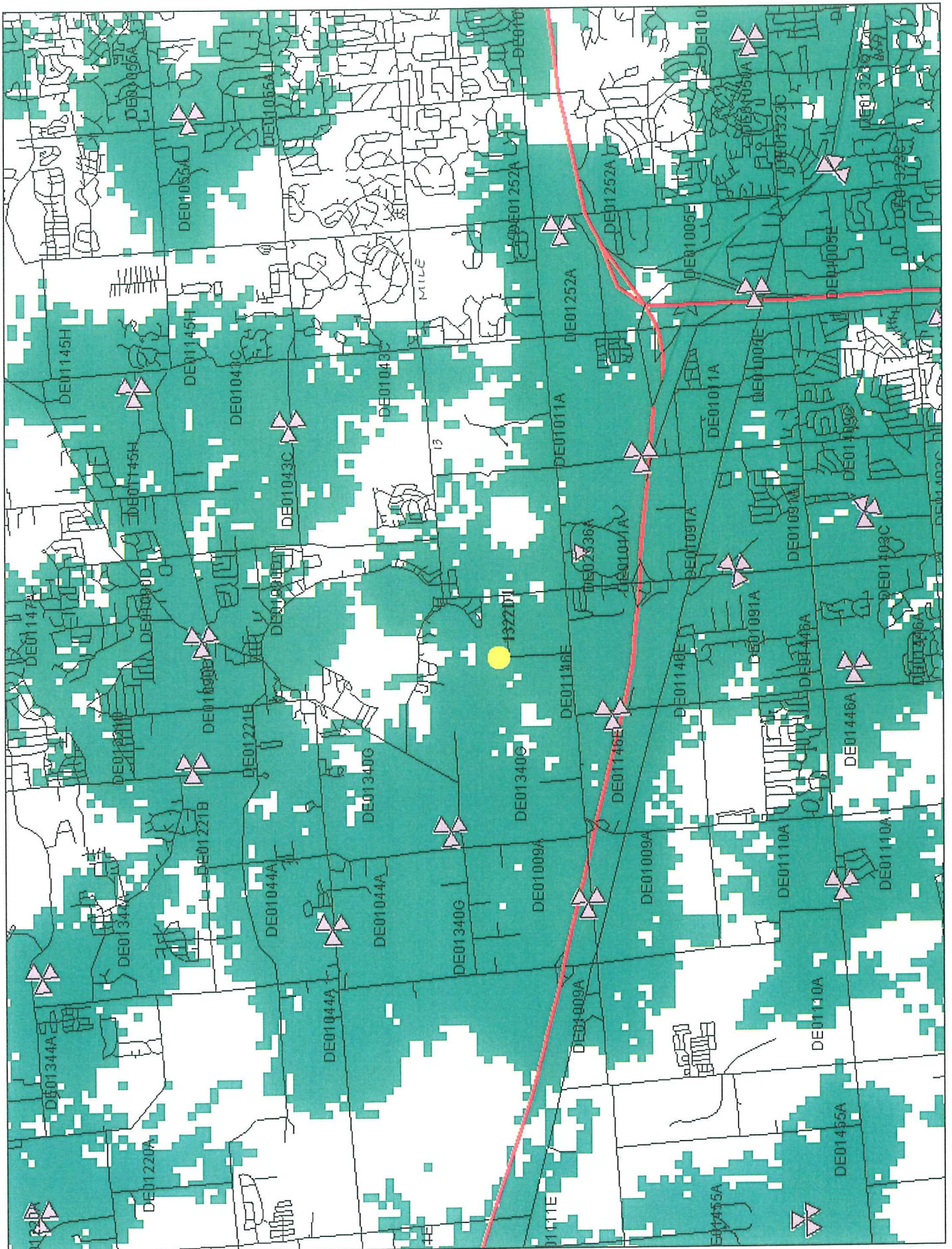
T-MOBILE COVERAGE W/110' POLE AT NORTH EDGE OF PARK



(NEAR WAUKEG LAKE (2147 637474 7437))



T-MOBILE COVERAGE W/ 110' POLE AT SOUTH EDGE OF PARK



(NEAR LIBERTY PARK SUBD.)





LOOKING SOUTHWEST

CURRENT

**T** = Mobile USA, INC.  
 12170 MERRIMAN ROAD  
 LIVONIA, MI 48150  
 Office: 734-367-7200  
 Fax: 735-367-7242

**LAKESHORE PARK  
 FLAG POLE**  
 DE01322D  
 601 S. LAKE DRIVE  
 110M, MI 48375

W.O. #	1004.002.DE01322
DATE	05/29/06
DRAWN BY:	A.J.L.
CHECKED BY:	L.F.
PHOTO SIMULATION	
SHEET TITLE	
PS-1	
SHEET NUMBER	

**NANDINA**  
 9435 WATERSTONE BLVD., SUITE 140  
 CINCINNATI, OHIO 45249  
 PHONE 513 444 2102  
 FACSIMILE 513 444 2099  
 WWW.NANDINAGROUP.COM



LOOKING SOUTHWEST

PROPOSED

**T** = Mobile USA, INC.  
 12170 MERRIMAN ROAD  
 LIVONIA, MI 48150  
 Office: 734-367-7200  
 Fax: 735-367-7242

**LAKESHORE PARK  
 FLAG POLE**  
 DE01322D  
 601 S. LAKE DRIVE  
 110M, MI 48375

W.O. #	1004.002.DE01322
DATE	05/29/06
DRAWN BY:	A.J.L.
CHECKED BY:	L.F.
PHOTO SIMULATION	
SHEET TITLE	
PS-1	
SHEET NUMBER	

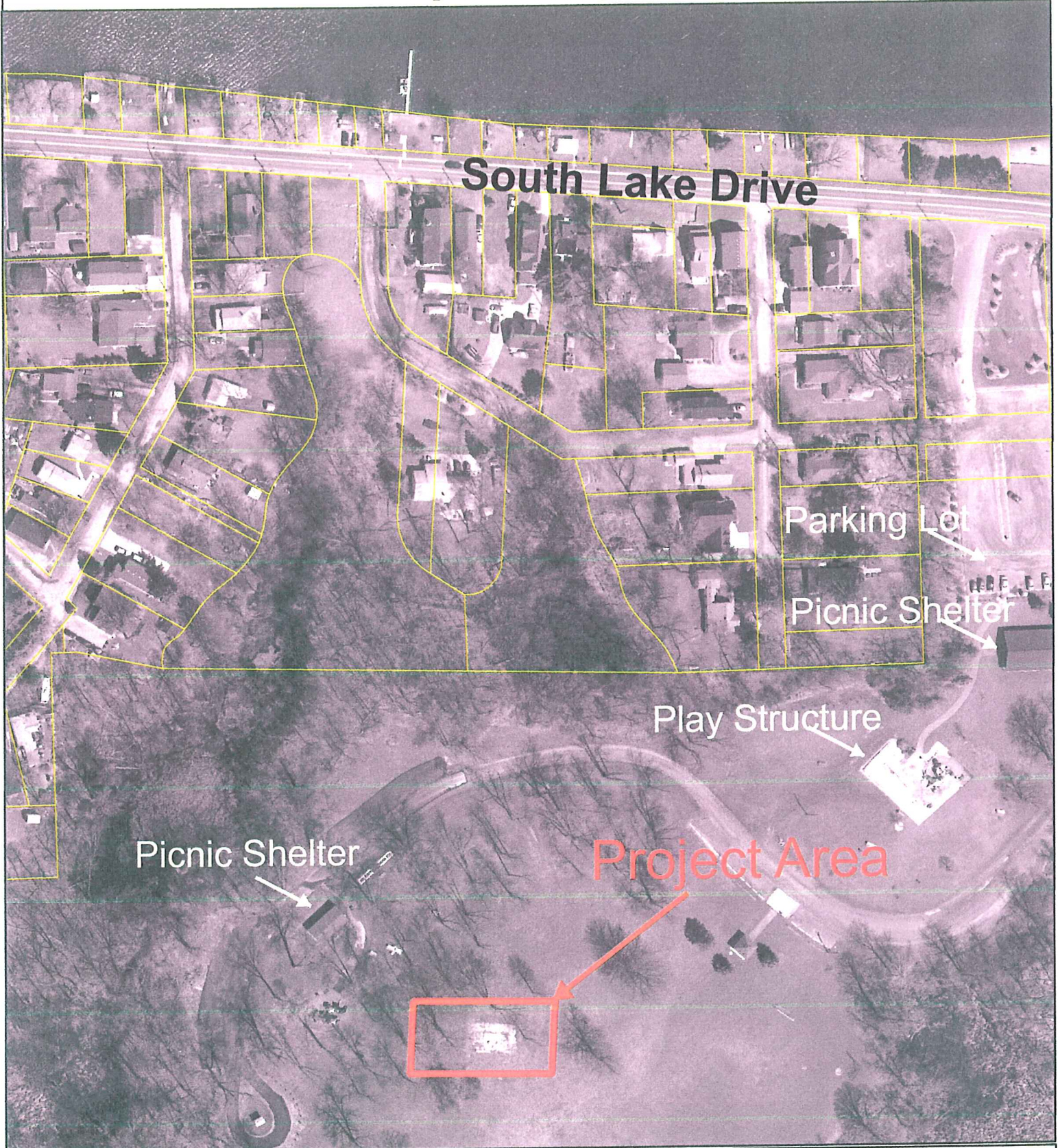
**NANDINA**  
 9435 WATERSTONE BLVD., SUITE 140  
 CINCINNATI, OHIO 45249  
 PHONE 513 444 2102  
 FACSIMILE 513 444 2099  
 WWW.NANDINAGROUP.COM

LOCATION MAP

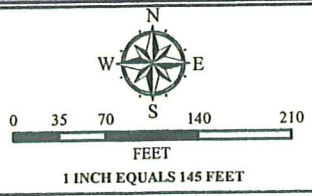


# Lakeshore Park Cell Tower and Shelters

Map Created: May 29, 2007

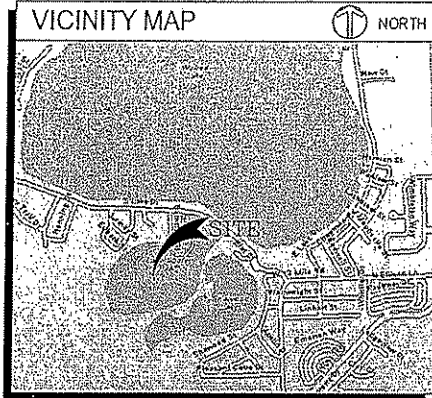


**CITY OF NOVI**  
COMMUNITY DEVELOPMENT DEPARTMENT  
PLAN REVIEW CENTER  
NOVI CITY HALL/CIVIC CENTER  
45175 W. TEN MILE ROAD  
NOVI, MI 48375-3024  
(248) 347-3279  
WWW.CI.NOVI.MI.US  
MAP AUTHOR: KRISTEN KAPELANSKI



**MAP INTERPRETATION NOTICE**  
Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.





**DIRECTIONS TO SITE**

FROM: T-MOBILE OFFICE, LIVONIA, MI

1. MERGE ONTO I-96 WEST.
2. TAKE EXIT #162 TOWARD NOV.
3. TURN RIGHT ONTO NOV ROAD. TRAVEL 1.0 MILE.
4. TURN LEFT ONTO OLD NOV ROAD. TRAVEL 0.4 MILE.
5. TURN LEFT ONTO S. LAKE DRIVE. TRAVEL 0.4 MILE. PARK IS ON THE LEFT.

**SITE COORDINATES**

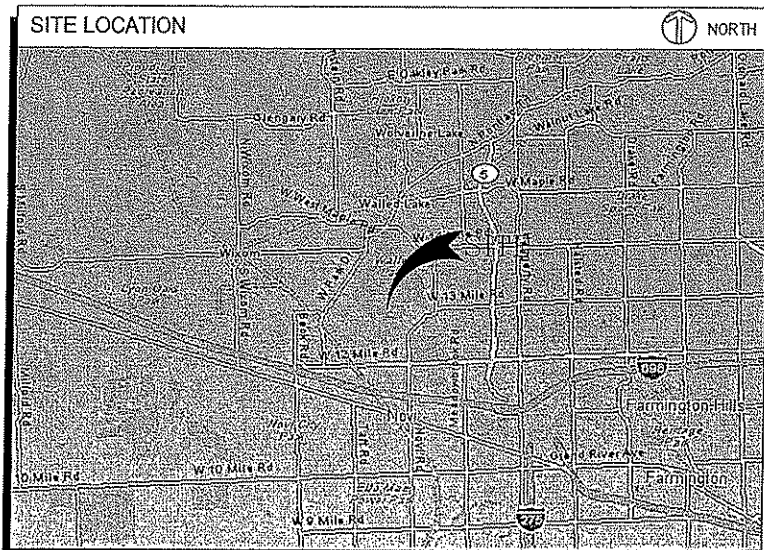
LATITUDE: 42° 30' 38.04" NAD 83  
 LONGITUDE: 83° 29' 04.93" NAD 83  
 GROUND EL: 958' ± (AMSL)

**HANDICAPPED REQUIREMENTS**

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAP ACCESS NOT REQUIRED.

**PLUMBING REQUIREMENTS**

FACILITY HAS NO PLUMBING REQUIREMENTS.



# T-Mobile USA, INC.

**SITE NAME: LAKESHORE PARK FLAG POLE**  
**SITE NUMBER: DE01322D**

601 S. LAKE DRIVE  
 NOVI, MI 48375

**PROPOSED (3) ANTENNAS @ 105' & @ 95' ON PROPOSED 110' FLAG POLE WITH COMMUNICATIONS EQUIPMENT IN A PROPOSED CMU BUILDING**

**PROJECT SUMMARY**

SITE No. DE01322D  
 SITE NAME: LAKESHORE PARK FLAG POLE  
 SITE ADDRESS: 601 S. LAKE DRIVE  
 NOVI, MI 48375

JURISDICTION: NOVI

CONSTRUCTION TYPE: RAW LAND

ZONING: R-4  
 PARCEL #: 022-03-457-001

OCCUPANCY: UNMANNED

BUILDING CODE: IBC 2003  
 NEC 2005

OWNER: CITY OF NOVI  
 45175 W. TEN MILE ROAD  
 NOVI, MI 48375

APPLICANT: T-MOBILE USA, INC.  
 12170 MERRIMAN ROAD  
 LIVONIA, MI 48150

T-MOBILE CONSTRUCTION SUPERVISOR: MARK SCHROEDER  
 TEL: 737-367-7260  
 FAX: 735-367-7242

**CONSULTANTS**

PRIME CONSULTANT: NANDINA, INC.  
 9435 WATERSTONE BLVD.  
 SUITE 140  
 CINCINNATI, OH 45249  
 OFFICE: 513-444-2102  
 FAX: 513-444-2099

SURVEYOR: AR SURVEYING  
 705-F LAKEVIEW PLAZA BLVD.  
 WORTHINGTON, OH 43086  
 CONTACT: ANTHONY ROBINSON  
 OFFICE: 614-841-0053  
 FAX: 614-841-0171

APPROVALS	
PROPERTY OWNER OR REP.	DATE
ZONING	DATE
CONSTRUCTION	DATE
SITE ACQUISITION	DATE
OPERATIONS	DATE
RF	DATE
NETWORK-TELCO	DATE
NETWORK-POWER	DATE
CONTRACTOR	DATE

SHEET INDEX	
SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
N-1	T-MOBILE SPECIFICATIONS
SS-1	SURVEY (BY OTHERS)
SS-2	SURVEY (BY OTHERS)
C-1	SITE PLAN
C-2	NOT USED
C-3	ELEVATION & ANTENNA DETAILS
C-4	EQUIPMENT DETAILS
E-1	UTILITY PLAN & ELECTRICAL NOTES
E-2	POWER & TELCO DETAILS
E-3	GROUNDING LAYOUT & NOTES
E-4	GROUNDING DETAILS
ST-1	BUILDING ELEVATIONS
ST-2	STRUCTURAL DETAILS
ST-3	STRUCTURAL DETAILS

THIS PLAN SET HAS BEEN SCALED FOR PRINT ON 24"x36" SHEETS.



**UTILITIES**

ELECTRICAL PROVIDER: DETROIT EDISON  
 1-800-477-4747

TELCO PROVIDER: SBC  
 1-800-660-3000

LOCATION SERVICE: EXISTING UTILITY: 1-800-482-7171  
 CALL 3 WKG. DAYS PRIOR TO DIGGING.

**T-Mobile USA, INC.**

12170 MERRIMAN ROAD  
 LIVONIA, MI 48150

Office: 734-367-7200  
 Fax: 735-367-7242

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**NANDINA**

9435 WATERSTONE BLVD., SUITE 140  
 CINCINNATI, OHIO 45249

PHONE 513 444 2102  
 FACSIMILE 513 444 2099  
 WWW.NANDINAGROUP.COM

W.O. # 1004.002.DE01322  
 DATE: 08/08/06  
 DRAWN BY: A.B.  
 CHECKED BY: L.F.

#	DATE	REVISIONS
A	08/08/06	FOR REVIEW
O	08/21/06	FOR ZNG & CONSTRUCTION

**LAKESHORE PARK FLAG POLE**  
**DE01322D**

601 S. LAKE DRIVE  
 NOVI, MI 48375

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**

SITUATED IN THE CITY OF NOVI, COUNTY OF OAKLAND AND STATE OF MICHIGAN

LEGEND

- EXISTING TRANSFORMER
- EXISTING TREE
- BENCHMARK
- IRON PIN SET
- IRON PIN FOUND
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING WATER MANHOLE
- EXISTING WATER METER
- EXISTING PARKING METER
- EXISTING STREET SIGN
- EXISTING BILLBOARD & LARGE SIGNS
- EXISTING GUARDRAIL
- EXISTING LIGHT POLE
- EXISTING UTILITY POLE
- EXISTING UTILITY POLE WITH STREET LIGHT
- EXISTING GROUND GUY WIRE
- EXISTING GAS VALVE
- EXISTING TRAFFIC SIGNAL POLE
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING ELEC OR TELE MH
- EXISTING INLET
- EXISTING TRENCH DRAIN
- EXISTING STORM DRAIN
- EXISTING SANITARY
- EXISTING WATER MAIN
- EXISTING ELECTRIC WIRE
- EXISTING FENCE
- EXISTING CONCRETE
- EXISTING BUILDING
- PROPOSED
- (P)
- (E)
- XXX
- EXISTING ELEVATION MARK
- MONUMENT BOX W/IRON PIN
- IRON PIPE FOUND

**T-Mobile**

T-MOBILE  
12170 MERRIMAN RD.  
LIVONIA, MI  
48153  
Phone: 734.367.7200  
Fax: 734.367.7242

THIS DOCUMENT AND INFORMATION HEREIN IS THE PROPERTY OF T-MOBILE USA, INC. THE DOCUMENT AND INFORMATION SHALL NOT BE REPRODUCED, USED OR DISCLOSED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF T-MOBILE USA, INC.

SURVEY PREPARED BY

**AR SURVEYING**

705-F LAKEVIEW PLAZA BLVD.  
WORTHINGTON, OHIO 43085  
614-841-0053 FAX: 614-841-0170

A&E SEAL



PROJECT No.: 50422-011  
DATE: 07/31/06  
DRAWN BY: PRE  
CHECKED BY: DAP

#	DATE	REVISIONS
A.	08/01/06	PRELIM SURVEY ISSUED
B.	08/16/06	FINAL SURVEY ISSUED

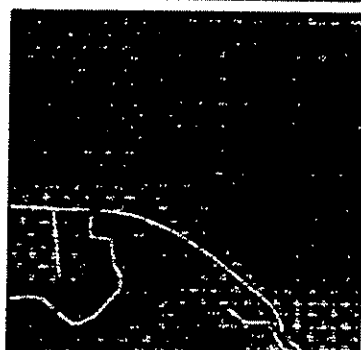
LAKESHORE PARK  
FLAG POLE RL

DE-01322D

601 SOUTH LAKE DRIVE  
NOVI, MICHIGAN, 48375

SHEET TITLE  
**SITE SURVEY**

SHEET NUMBER  
**SS-1**



VICINITY MAP

Legal Description for a T-Mobile Lease Area  
Project No. 50422\_011  
August 15, 2006

Situated in the Township of Novi, County of Oakland and State of Ohio, being part of the Southeast Quarter of Section 3 of Novi Township, Town 1 North, Range 8 East, also known as being part of lands conveyed to the City of Novi by deed dated February 11, 1971 as recorded in Liber 5619, Page 382 of Oakland County Register of Deeds Records further bounded and described as follows:

Commencing at a monument found being the South 1/4 post of said Section 3 said monument also being the Southwest corner of the Southeast 1/4 of said section 3;

Thence along the Southern line of said Section 3, bearing North 87°06'44" East, a distance of 564.69 feet to a point thereon;

Thence at a right angle and perpendicular to the Southern line of said Section 3, bearing North 02°53'16" West, a distance of 312.59 feet to an iron pin set and the TRUE PLACE OF BEGINNING of the T-Mobile Lease Area herein described;

Thence, bearing North 00°32'06" East, a distance of 20.00 feet to an iron pin set;

Thence at a right angle, bearing South 89°27'54" East, a distance of 40.00 feet to an iron pin set;

Thence at a right angle, bearing South 00°32'06" West, a distance of 20.00 feet to an iron pin set;

Thence at a right angle, bearing North 89°27'54" West, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing South 00°32'06" West, a distance of 10.00 feet to an iron pin set;

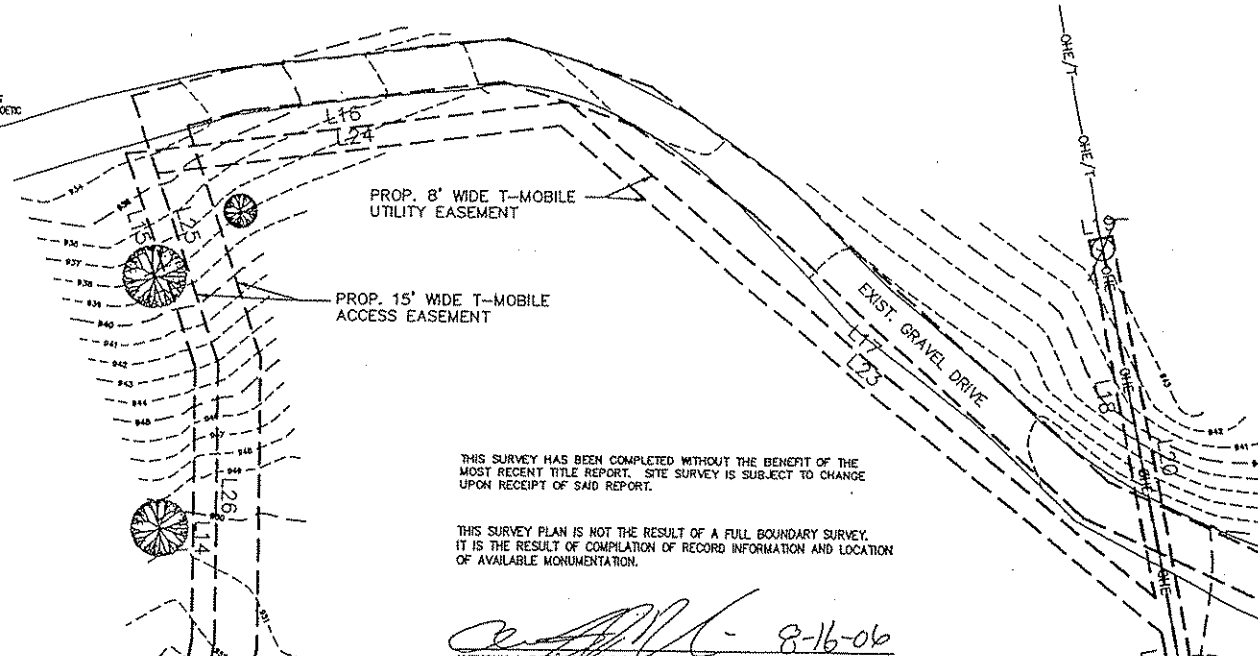
Thence at a right angle, bearing North 89°27'54" West, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing North 00°32'06" East, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing North 89°27'54" West, a distance of 20.00 feet to an iron pin set and the TRUE PLACE OF BEGINNING, containing 280 square feet or 0.0064 acres of land, more or less but subject to all legal highways and all covenants and agreements of record.

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Anthony J. Robinson, L.P.S. No. 50448 by AR Surveying in August 2006.



THIS SURVEY HAS BEEN COMPLETED WITHOUT THE BENEFIT OF THE MOST RECENT TITLE REPORT. SITE SURVEY IS SUBJECT TO CHANGE UPON RECEIPT OF SAID REPORT.

THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY. IT IS THE RESULT OF COMPILED RECORD INFORMATION AND LOCATION OF AVAILABLE MONUMENTATION.

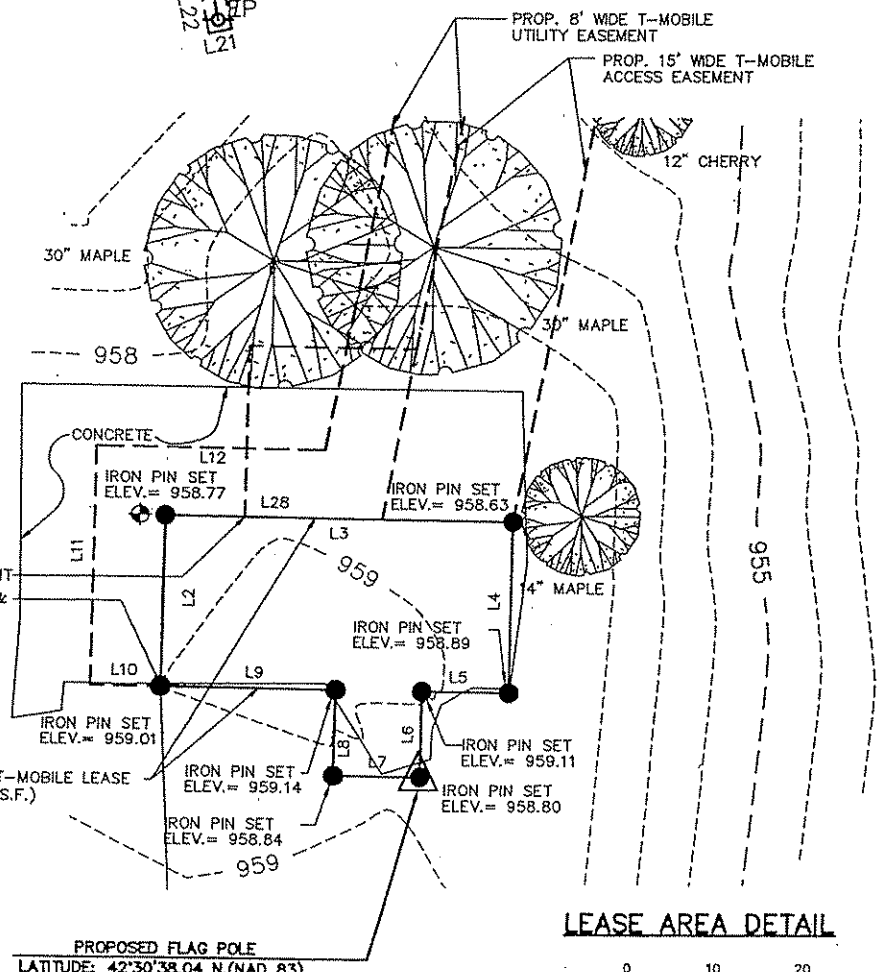
*Anthony J. Robinson* 8-16-06  
ANTHONY J. ROBINSON, L.P.S. No. 50448 DATE

SITE LIES WITHIN FLOOD ZONE "X" WHICH IS AN DETERMINED TO BE OUTSIDE 500 - YEAR FLOOD PLAIN, COMMUNITY PANEL NUMBER 260175 0005 C, EFFECTIVE DATE MAY 3, 1993.

UTILITY EASEMENT DETAIL

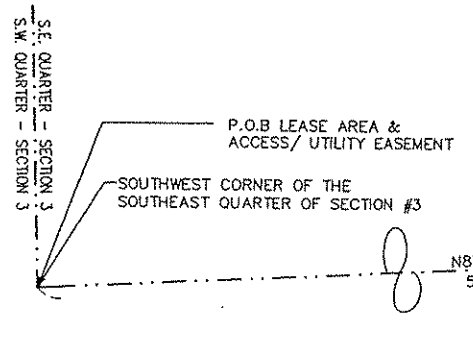
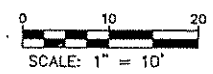


PARENT PARCEL LEGAL DESCRIPTION:  
PREMISES SITUATED IN THE TOWNSHIP OF NOVI, COUNTY OF OAKLAND, STATE OF MICHIGAN, TO WIT: PARCEL #1 - LOTS 127 TO 141 INCLUSIVE, "IDLEMERE PARK" A PART OF THE S.W. QUARTER AND S.E. QUARTER OF SECTION 3, TOWN 1 NORTH, RANGE 8 EAST, NOVI TOWNSHIP, OAKLAND COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 17 OF PLATS, PAGE 29, OAKLAND COUNTY RECORDS.  
PARCEL #2 - LOT 29 OF "SUPERVISOR'S REPLAT OF LOTS 142, 143 AND 144 OF IDLEMERE PARK" A SUBDIVISION OF PART OF S. HALF OF SECTION 3, TOWN 1 NORTH, RANGE 8 EAST, NOVI TOWNSHIP, OAKLAND COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 53 OF PLATS, PAGE 49, OAKLAND COUNTY RECORDS.  
PARCEL #3 - OUTLOT G OF "SUPERVISOR'S REPLAT OF LOTS 142, 143 AND 144 OF IDLEMERE PARK" A SUBDIVISION OF PART OF S. HALF OF SECTION 3, TOWN 1 NORTH, RANGE 8 EAST, NOVI TOWNSHIP, OAKLAND COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 53 OF PLATS, PAGE 49, OAKLAND COUNTY RECORDS.  
PARCEL #4 - PART OF S.W. QUARTER AND S.E. QUARTER OF SECTION 3, TOWN 1 NORTH, RANGE 8 EAST, NOVI TOWNSHIP, OAKLAND COUNTY, MICHIGAN DESCRIBED AS: THAT PART OF THE S. FRACTIONAL HALF OF SECTION 3 LYING DIRECTLY SOUTH OF "IDLEMERE PARK", ACCORDING TO THE PLAT AS RECORDED IN LIBER 17 OF PLATS, PAGE 29, OAKLAND COUNTY RECORDS.



PROPOSED FLAG POLE  
LATITUDE: 42°30'38.04" N.(NAD 83)  
LONGITUDE: 83°29'04.93" W.(NAD 83)  
SITE GROUND ELEVATION: 958.8'

BENCHMARK:  
IRON PIN SET ON  
NORTHWEST LEASE AREA  
CORNER.  
ELEVATION= 958.77



PARENT PARCEL'S SOUTHERLY P/L

**T-Mobile**

T-MOBILE  
12170 MERRIMAN RD.  
LIVONIA, MI  
48153  
Phone 734.367.7200  
Fax 734.367.7242

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SURVEY PREPARED BY

**AR SURVEYING**

705-F LAKEVIEW PLAZA BLVD.  
WORTHINGTON, OHIO 43085  
614-841-0053 FAX: 614-841-0170



PROJECT No.: 50422-011  
DATE: 07/31/06  
DRAWN BY: PRE  
CHECKED BY: DAP

#	DATE	REVISIONS
A.	08/01/06	PRELIM SURVEY ISSUED
B.	08/16/06	FINAL SURVEY ISSUED

**LAKESHORE PARK  
FLAG POLE RL**

**DE-01322D**

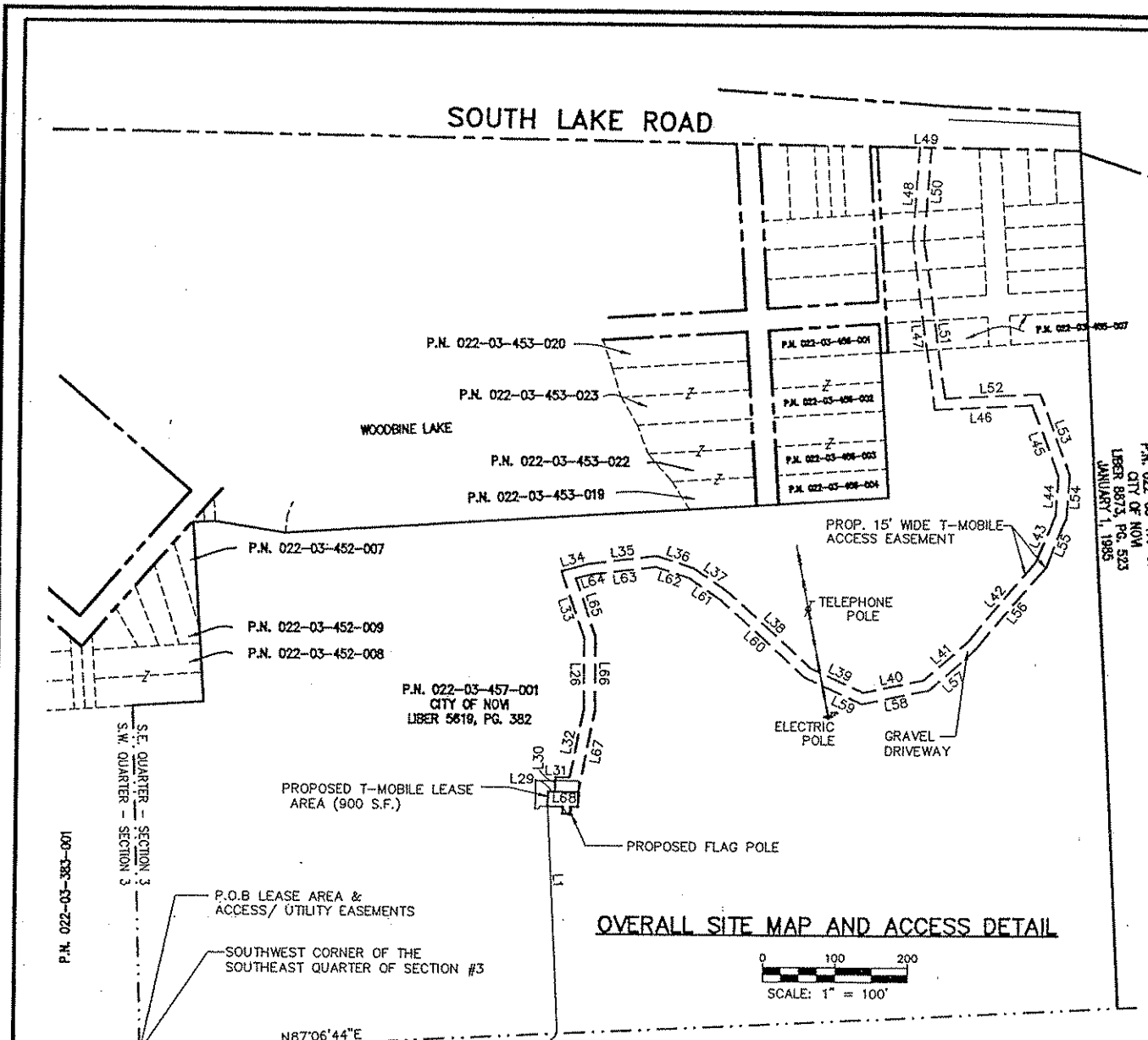
601 SOUTH LAKE DRIVE  
NOW, MICHIGAN, 48375

SHEET TITLE

**SITE SURVEY**

SHEET NUMBER

**SS-2**



LINE	LENGTH	BEARING	L31	19.23	S 89°27'54" E	L63	88.95	S 82°50'15" W
L1	312.59	N 02°53'16" W	L32	94.95	N 10°34'55" E	L64	20.63	S 74°16'08" W
L2	20.00	N 00°32'06" E	L33	97.96	N 18°29'23" W	L65	84.64	S 18°29'23" E
L3	40.00	S 89°27'54" E	L34	37.49	N 74°16'08" E	L66	101.79	S 00°10'32" E
L4	20.00	S 00°32'06" W	L35	93.46	N 82°50'15" E	L67	114.01	S 10°34'55" E
L5	10.00	N 89°27'54" W	L36	52.39	S 71°40'14" E	L68	30.92	N 89°27'54" W
L6	10.00	S 00°32'06" W	L37	55.02	S 55°18'02" E			
L7	10.00	N 89°27'54" W	L38	155.51	S 47°29'22" E			
L8	10.00	N 00°32'06" E	L39	80.39	S 64°59'40" E			
L9	20.00	N 89°27'54" W	L40	85.05	N 78°19'56" E			
L10	8.00	N 89°27'54" W	L41	81.05	N 47°28'25" E			
L11	28.00	N 00°32'06" E	L42	141.37	N 39°29'36" E			
L12	26.06	S 89°27'54" E	L43	69.52	N 21°55'08" E			
L13	107.80	N 10°34'55" E	L44	53.84	N 03°40'11" E			
L14	95.92	N 00°10'32" W	L45	104.40	N 20°33'57" W			
L15	78.05	N 18°29'23" W	L46	132.12	S 87°08'21" W			
L16	151.99	N 82°33'28" E	L47	234.08	N 07°43'46" W			
L17	267.51	S 50°17'04" E	L48	128.94	N 03°32'03" E			
L18	126.99	N 11°04'24" W	L49	15.02	S 89°12'39" E			
L19	8.00	N 78°55'36" E	L50	128.18	S 03°32'03" W			
L20	159.27	S 11°04'24" E	L51	218.82	S 07°43'46" E			
L21	8.00	S 78°55'36" W	L52	129.30	N 87°08'21" E			
L22	19.63	N 11°04'24" W	L53	118.58	N 20°33'57" W			
L23	273.82	N 50°17'04" W	L54	59.47	S 03°40'11" W			
L24	138.79	S 82°33'28" W	L55	74.25	S 21°55'08" W			
L25	97.96	S 18°29'23" E	L56	144.73	S 39°29'36" W			
L26	97.96	S 00°10'32" E	L57	86.24	S 47°28'25" W			
L27	115.26	S 10°34'55" W	L58	94.16	S 78°19'56" W			
L28	24.77	N 89°27'54" W	L59	87.67	N 64°59'40" W			
L29	9.08	N 89°27'54" W	L60	156.80	N 47°29'22" W			
L30	20.00	N 00°32'06" E	L61	51.83	N 55°18'02" W			
			L62	46.84	N 71°40'14" W			

Thence at a right angle and perpendicular to the Southern line of said Section 3, bearing North 02°53'16" West, a distance of 312.59 feet to an iron pin set being the Southwest corner of the T-Mobile lease area and the TRUE PLACE OF BEGINNING of the T-Mobile Utility Easement herein described;

Thence, bearing North 89°27'54" West, a distance of 8.00 feet to a point;

Thence, bearing North 00°32'06" East, a distance of 28.00 feet to a point;

Thence, bearing South 89°27'54" East, a distance of 26.06 feet to a point;

Thence, bearing North 10°34'55" East, a distance of 107.80 feet to a point;

Thence, bearing North 00°10'32" West, a distance of 95.92 feet to a point;

Thence, bearing North 18°29'23" West, a distance of 78.05 feet to a point;

Thence, bearing North 82°33'28" East, a distance of 151.99 feet to a point;

Thence, bearing South 50°17'04" East, a distance of 267.51 feet to a point;

Thence, bearing North 11°04'24" West, a distance of 126.99 feet to a point;

Thence, bearing North 18°29'23" West, a distance of 78.05 feet to a point;

Thence, bearing South 00°10'32" East, a distance of 97.96 feet to a point;

Thence, bearing North 82°33'28" East, a distance of 151.99 feet to a point;

Thence, bearing South 50°17'04" East, a distance of 267.51 feet to a point;

Thence, bearing North 11°04'24" West, a distance of 126.99 feet to a point;

Thence, bearing North 78°55'36" East, a distance of 8.00 feet to a point;

Legal Description for a T-Mobile Lease Area Project No. 50422\_011 August 15, 2006

Situated in the Township of Novi, County of Oakland and State of Ohio, being part of the Southeast Quarter of Section 3 of Novi Township, Town 1 North, Range 8 East, also known as being part of lands conveyed to the City of Novi by deed dated February 11, 1971 as recorded in Liber 5619, Page 382 of Oakland County Register of Deeds Records further bounded and described as follows:

Commencing at a monument found being the South ¼ post of said Section 3 said monument also being the Southwest corner of the Southeast ¼ of said section 3;

Thence along the Southern line of said Section 3, bearing North 87°06'44" East, a distance of 564.69 feet to a point thereon;

Thence at a right angle and perpendicular to the Southern line of said Section 3, bearing North 02°53'16" West, a distance of 312.59 feet to an iron pin set and the TRUE PLACE OF BEGINNING of the T-Mobile Lease Area herein described;

Thence, bearing North 00°32'06" East, a distance of 20.00 feet to an iron pin set;

Thence at a right angle, bearing South 89°27'54" East, a distance of 40.00 feet to an iron pin set;

Thence at a right angle, bearing South 00°32'06" West, a distance of 20.00 feet to an iron pin set;

Thence at a right angle, bearing North 89°27'54" West, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing South 00°32'06" West, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing North 89°27'54" West, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing North 00°32'06" East, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing North 00°32'06" East, a distance of 10.00 feet to an iron pin set;

Thence at a right angle, bearing North 89°27'54" West, a distance of 20.00 feet to an iron pin set and the TRUE PLACE OF BEGINNING, containing 280 square feet or 0.0064 acres of land, more or less but subject to all legal highways and all covenants and agreements of record.

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Anthony J. Robinson, L.P.S. No. 50448 by AR Surveying in August 2006.

Legal Description for a T-Mobile Access Easement Project No. 50422-011 August 15, 2006

Situated in the Township of Novi, County of Oakland and State of Ohio, being part of the Southeast Quarter of Section 3 of Novi Township, Town 1 North, Range 8 East, also known as being part of lands conveyed to the City of Novi by deed dated February 11, 1971 as recorded in Liber 5619, Page 382 of Oakland County Register of Deeds Records further bounded and described as follows:

Commencing at a monument found being the South ¼ post of said Section 3 said monument also being the Southwest corner of the Southeast ¼ of said section 3;

Thence along the Southern line of said Section 3, bearing North 87°06'44" East, a distance of 564.69 feet to a point thereon;

Thence at a right angle and perpendicular to the Southern line of said Section 3, bearing North 02°53'16" West, a distance of 312.59 feet to an iron pin set and the TRUE PLACE OF BEGINNING of the T-Mobile Access Easement herein described;

Thence, bearing North 00°32'06" East, a distance of 20.00 feet to a point;

Thence, bearing South 89°27'54" East, a distance of 19.23 feet to a point;

Thence, bearing North 10°34'55" East, a distance of 94.95 feet to a point;

Thence, bearing North 00°10'32" West, a distance of 97.96 feet to a point;

Thence, bearing North 18°29'23" West, a distance of 97.96 feet to a point;

Thence, bearing North 74°16'08" East, a distance of 37.49 feet to a point;

Thence, bearing North 82°50'15" East, a distance of 93.46 feet to a point;

Thence, bearing South 71°40'14" East, a distance of 52.39 feet to a point;

Thence, bearing South 55°18'02" East, a distance of 55.02 feet to a point;

Thence, bearing South 47°29'22" East, a distance of 155.51 feet to a point;

Thence, bearing South 64°59'40" East, a distance of 80.39 feet to a point;

Thence, bearing North 78°19'56" East, a distance of 85.05 feet to a point;

Thence, bearing North 47°28'25" East, a distance of 81.05 feet to a point;

Thence, bearing North 39°29'36" East, a distance of 141.37 feet to a point;

Thence, bearing North 21°55'08" East, a distance of 69.52 feet to a point;

Thence, bearing North 03°40'11" East, a distance of 53.84 feet to a point;

Thence, bearing South 11°04'24" East, a distance of 159.27 feet to a point;

Thence, bearing South 78°55'36" West, a distance of 8.00 feet to a point;

Thence, bearing North 11°04'24" West, a distance of 19.63 feet to a point;

Thence, bearing North 50°17'04" West, a distance of 273.82 feet to a point;

Thence, bearing South 82°33'28" West, a distance of 138.79 feet to a point;

Thence, bearing South 18°29'23" East, a distance of 69.63 feet to a point;

Thence, bearing South 00°10'32" East, a distance of 97.96 feet to a point;

Thence, bearing South 10°34'55" West, a distance of 115.26 feet to a point on the Northern line of the aforesaid lease area;

Thence along the Northern line of said lease area, bearing North 89°27'54" West, a distance of 24.77 feet to an iron pin set being the Northwest corner of said lease area;

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Anthony J. Robinson, L.P.S. No. 50448 by AR Surveying in August 2006.

Thence, bearing North 20°33'57" West, a distance of 104.40 feet to a point;

Thence, bearing South 87°08'21" West, a distance of 132.12 feet to a point;

Thence, bearing North 07°43'46" West, a distance of 234.08 feet to a point;

Thence, bearing North 03°32'03" East, a distance of 128.94 feet to a point on the Southern Right-of-Way line of South Lake Road, having a varied width;

Thence along the Southern Right-of-Way line of said South Lake Road, bearing South 89°12'39" East, a distance of 15.02 feet to a point thereon;

Thence, bearing South 03°32'03" West, a distance of 128.18 feet to a point;

Thence, bearing South 07°43'46" East, a distance of 218.82 feet to a point;

Thence, bearing North 87°08'21" East, a distance of 129.30 feet to a point;

Thence, bearing South 20°33'57" East, a distance of 118.58 feet to a point;

Thence, bearing South 03°40'11" West, a distance of 59.47 feet to a point;

Thence, bearing South 21°55'08" West, a distance of 74.25 feet to a point;

Thence, bearing South 39°29'36" West, a distance of 144.73 feet to a point;

Thence, bearing South 47°28'25" West, a distance of 86.24 feet to a point;

Thence, bearing South 78°19'56" West, a distance of 94.16 feet to a point;

Thence, bearing North 64°59'40" West, a distance of 87.67 feet to a point;

Thence, bearing North 47°29'22" West, a distance of 156.80 feet to a point;

Thence, bearing North 55°18'02" West, a distance of 51.83 feet to a point;

Thence, bearing North 71°40'14" West, a distance of 46.84 feet to a point;

Thence, bearing South 82°50'15" West, a distance of 88.95 feet to a point;

Thence, bearing South 74°16'08" West, a distance of 20.63 feet to a point;

Thence, bearing South 18°29'23" East, a distance of 101.79 feet to a point;

Thence, bearing South 00°10'32" East, a distance of 101.79 feet to a point;

Thence, bearing South 10°34'55" West, a distance of 114.01 feet to an iron pin set being the Northeast corner of the aforesaid lease area;

Thence along the Northern line of said lease area, bearing North 89°27'54" West, a distance of 30.92 feet to a point thereon and the TRUE PLACE OF BEGINNING, intending to be a 20-foot wide strip of land for ingress/egress purposes and subject to all legal highways and all covenants and agreements of record.

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Anthony J. Robinson, L.P.S. No. 50448 by AR Surveying in August 2006.

Thence, bearing North 89°27'54" West, a distance of 8.00 feet to a point;

Thence, bearing North 00°32'06" East, a distance of 28.00 feet to a point;

Thence, bearing South 89°27'54" East, a distance of 26.06 feet to a point;

Thence, bearing North 10°34'55" East, a distance of 107.80 feet to a point;

Thence, bearing North 00°10'32" West, a distance of 95.92 feet to a point;

Thence, bearing North 18°29'23" West, a distance of 78.05 feet to a point;

Thence, bearing North 82°33'28" East, a distance of 151.99 feet to a point;

Thence, bearing South 50°17'04" East, a distance of 267.51 feet to a point;

Thence, bearing North 11°04'24" West, a distance of 126.99 feet to a point;

Thence, bearing North 78°55'36" East, a distance of 8.00 feet to a point;

T-Mobile USA, INC.

12170 MERRIMAN ROAD  
LIVONIA, MI 48150

Office: 734-367-7200  
Fax: 735-367-7242

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**NANDINA**  
9435 WATERSTONE BLVD., SUITE 140  
CINCINNATI, OHIO 45249  
PHONE 513 444 2102  
FACSIMILE 513 444 2099  
WWW.NANDINAGROUP.COM

W.O. # 1004.002.DE01322  
DATE: 08/08/06  
DRAWN BY: A.B.  
CHECKED BY: L.F.

#	DATE	REVISIONS
A	08/08/06	FOR REVIEW
0	08/21/06	FOR ZNG & CONSTRUCTION

LAKESHORE PARK  
FLAG POLE  
DE01322D

601 S. LAKE DRIVE  
NOVI, MI 48375

SHEET TITLE

SITE PLAN

SHEET NUMBER

C-1

LEGEND / ABBREVIATIONS

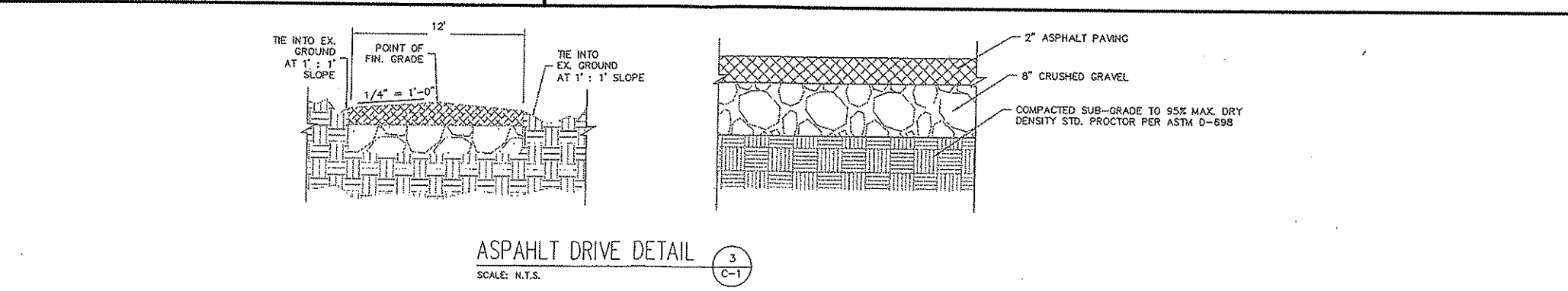
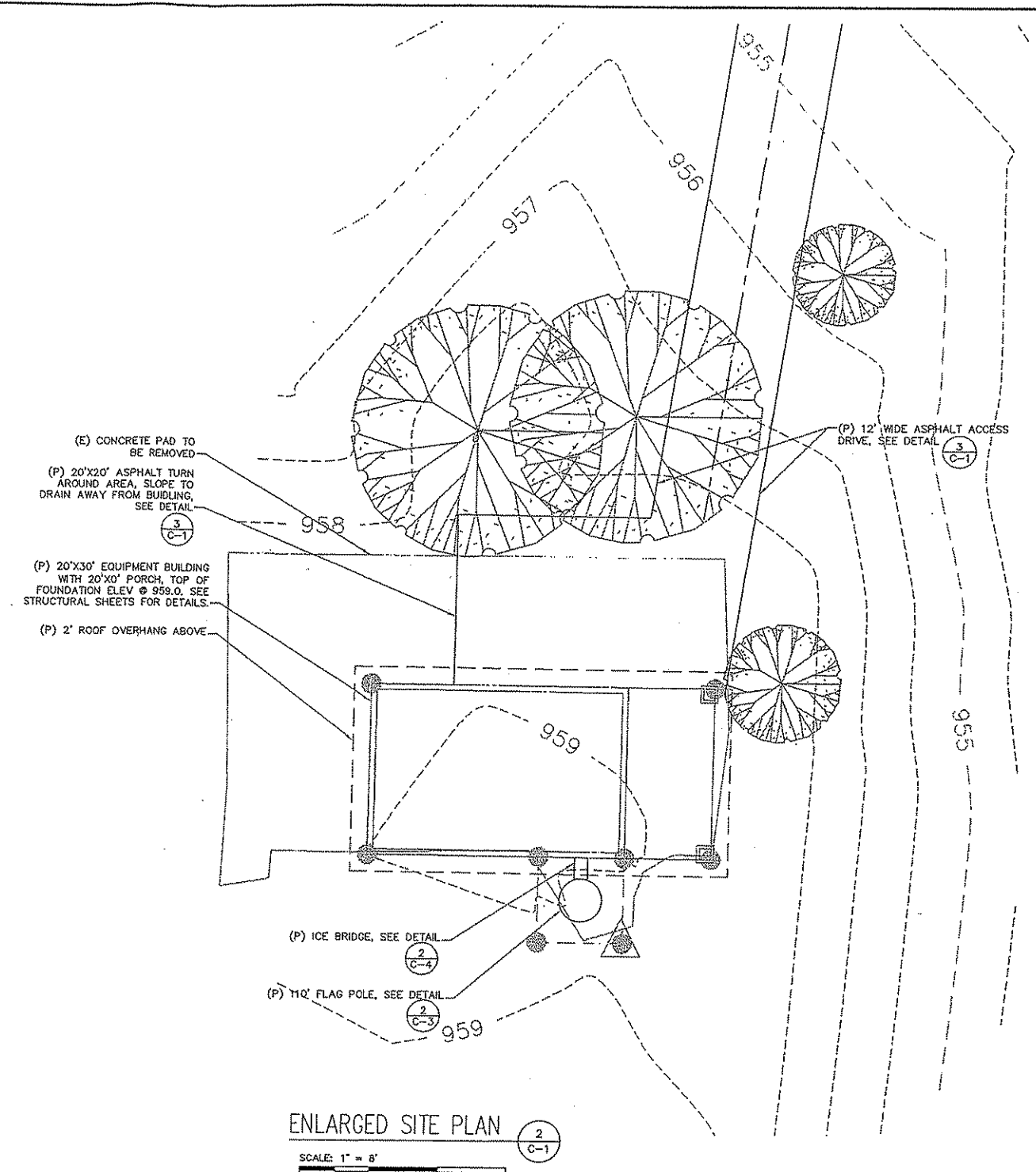
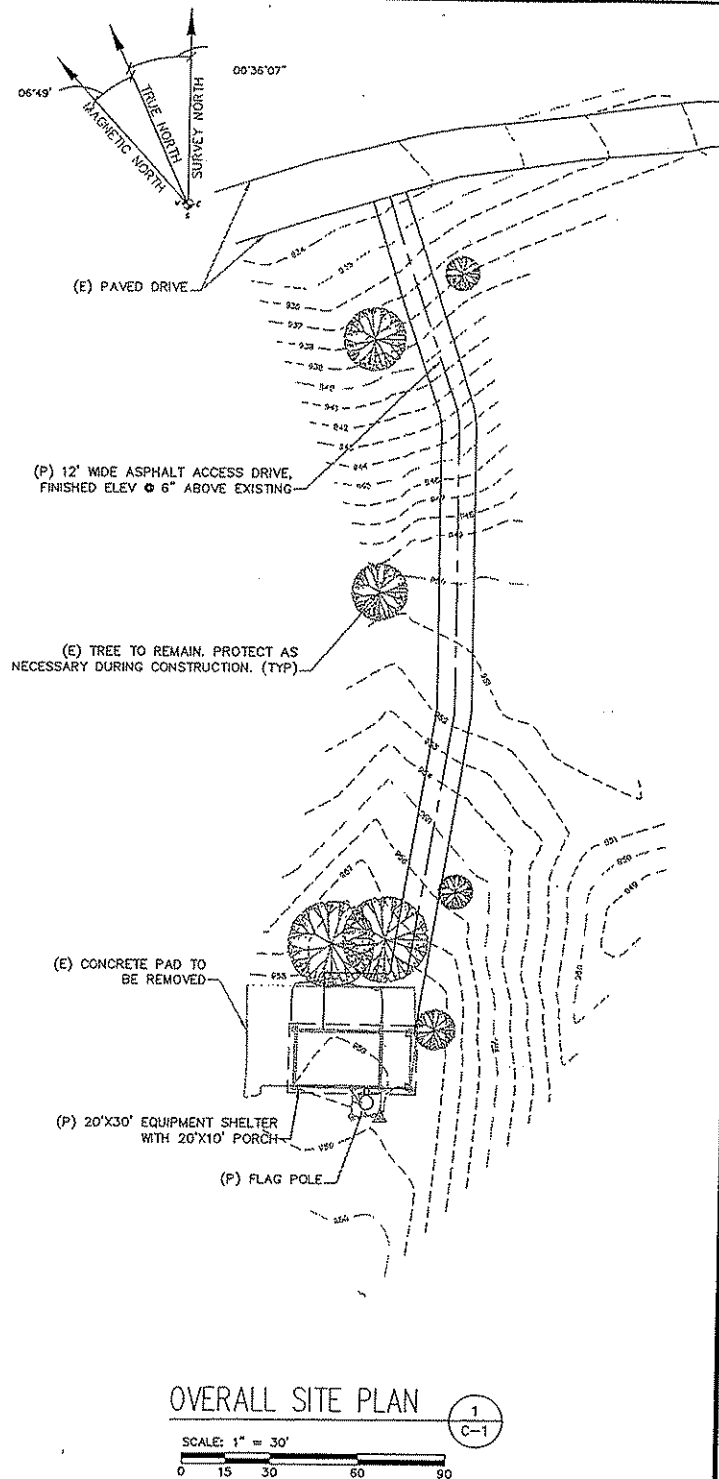
- (P) PROPOSED
- (E) EXISTING
- ⊙ IRON PIPE FOUND
- 1' CONTOUR INTERVAL
- - - 5' CONTOUR INTERVAL
- PROPERTY LINE
- - - PROPOSED LEASE LINE
- - - PROPOSED FENCE
- ⊙ PROPOSED SPOT ELEVATION
- ⊙ EXISTING TRANSFORMER
- ⊙ EXISTING TREE
- ⊙ BENCHMARK
- ⊙ IRON PIN SET
- ⊙ IRON PIN FOUND
- ⊙ EXISTING WATER VALVE
- ⊙ EXISTING FIRE HYDRANT
- ⊙ EXISTING WATER MANHOLE
- ⊙ EXISTING WATER METER
- ⊙ EXISTING PARKING METER
- ⊙ EXISTING STREET SIGN
- ⊙ EXISTING BILLBOARD & LARGE SIGNS
- ⊙ EXISTING GUARDRAIL
- ⊙ EXISTING LIGHT POLE
- ⊙ EXISTING UTILITY POLE
- ⊙ EXISTING UTILITY POLE W/ STREET LIGHT
- ⊙ EXISTING GROUND GUY WIRE
- ⊙ EXISTING GAS VALVE
- ⊙ EXISTING TRAFFIC SIGNAL POLE
- ⊙ EXISTING SANITARY MANHOLE
- ⊙ EXISTING STORM MANHOLE
- ⊙ EXISTING ELEC OR TELE MH
- ⊙ EXISTING INLET
- ⊙ EXISTING TRENCH DRAIN
- ⊙ EXISTING STORM DRAIN
- ⊙ EXISTING SANITARY
- ⊙ EXISTING WATER MAIN
- ⊙ EXISTING ELECTRIC WIRE
- ⊙ EXISTING FENCE
- ⊙ EXISTING CONCRETE
- ⊙ EXISTING BUILDING

NOTES

- ALL UNDERGROUND UTILITY INFORMATION PRESENTED HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. NO SUBSURFACE INVESTIGATION WAS PERFORMED BY NANDINA, INC.
- ALL SURVEY INFORMATION FROM SITE SURVEY PERFORMED BY AR SURVEYING, DATED 08/01/06, AND TITLED "LAKESHORE PARK FLAG POLE - DE01322D".

SITE WORK NOTES

- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND STIPULATED IN THE T-MOBILE SPECIFICATIONS.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AS ALL TIMES OR RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHICH INTERFERE WITH THE EXCAVATION OF THE WORK SHALL BE REMOVED AND CAPPED, PLUGGED, OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF WORK, SUBJECT TO APPROVAL OF THE ENGINEER.
- THE AREAS OF THE CUSTOMER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE BUILDING, DRIVEWAY, OR CRUSHED STONE SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH AS SPECIFIED IN THE LANDSCAPE WORK.
- CONTRACTOR SHALL USE CLEAN FILL AFTER TRENCHING.






**ANTENNA NOTES**

- DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO TIA/EIA-222-F "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- DESIGN OF THE ANTENNA MOUNTING BRACKETS, SUPPORTS, AND ALL COMPONENTS THEREOF AND ATTACHMENT THERETO SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER. MANUFACTURER SHALL PROVIDE THE OWNER DRAWINGS DETAILING ALL COMPONENTS OF THE ASSEMBLY, INCLUDING CONNECTIONS, DESIGN LOADS, AND ALL OTHER PERTINENT DATA. MANUFACTURER SHALL ALSO PROVIDE THE OWNER WITH A STATEMENT OF COMPLIANCE, INDICATING THAT THE ANTENNA SUPPORTS HAVE BEEN DESIGNED IN ACCORDANCE WITH TIA/EIA-222-F STANDARDS. ALL SUBMISSIONS SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE SITE IS LOCATED.
- ALLOWABLE TOLERANCES:  
ANTENNA DOWNTILT TOLERANCE = ± 0.2°  
ANTENNA SIDETILT TOLERANCE = ± 0.2°
- ALL DOWNTILTS AND AZIMUTHS MUST BE VERIFIED BY THE RF SITE DATA SHEET. SEE PROJECT MANAGER FOR INFORMATION.
- ALL AZIMUTHS TO BE SET FROM TRUE NORTH.

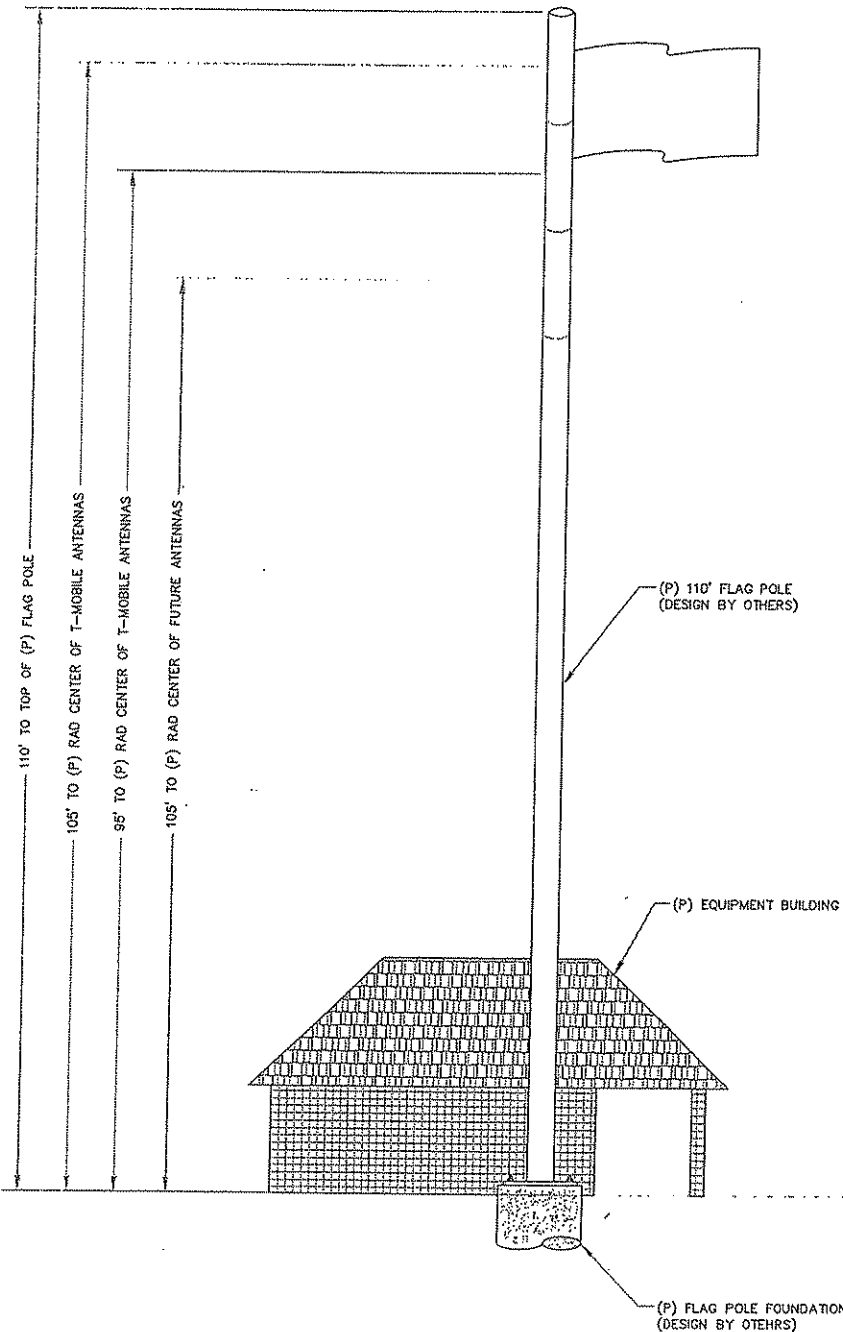
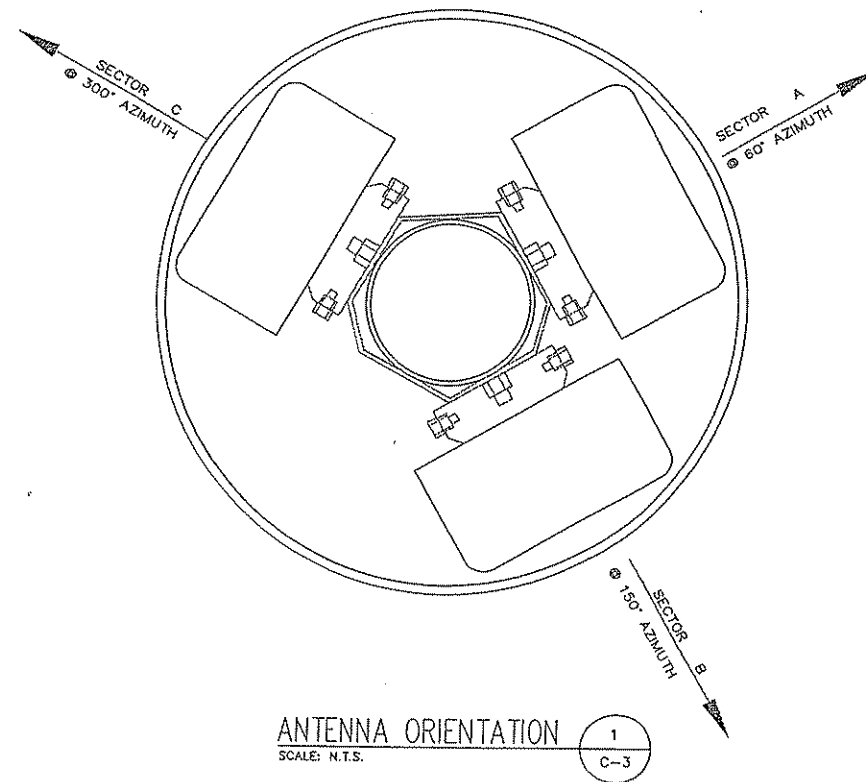
**COAX CABLE IDENTIFICATION**

- CONTRACTOR MUST PROVIDE EASY IDENTIFICATION AND UNIFORM MARKING OF ANTENNA CABLING, PER THE FOLLOWING INSTRUCTIONS:
- LOCATION: MARKINGS SHALL BE MADE USING COLOR TAPE WITH 3" OF COVERAGE AFFIXED AT THREE PLACES ON THE COAX CABLE RUN AS FOLLOWS:  
FIRST - ON THE COAX AT THE CONNECTOR NEAREST TO THE ANTENNA (WHERE THE COAX AND JUMPER ARE CONNECTED).  
SECOND - AT THE BASE OF THE TOWER STRUCTURE.  
THIRD - AT A POINT OUTSIDE THE BTS (JUST PRIOR TO THE MGB).
  - SECTOR IDENTIFICATION: NORMALLY A SITE WILL HAVE UP TO THREE SECTORS. SECTORS SHALL BE CONSIDERED IN A CLOCKWISE MANNER; THE ALPHA SECTOR IS CLOSEST TO ZERO DEGREES (NORTH) AND THE BETA AND GAMMA FOLLOW CLOCKWISE IN SEQUENCE.  
ALPHA SECTOR - RED  
BETA SECTOR - WHITE  
GAMMA SECTOR - BLUE  
SEE 
  - COLOR COAD IS REQUIRED AT HALF THE LENGTH OF THE COAX IF RAD CENTER IS GREATER THAN 201'.

**TOWER NOTES**

- NANDINA, INC. DID NOT EVALUATE THIS TOWER, TOWER FOUNDATIONS, OR ANY PORTION THEREOF, FOR STRUCTURAL CAPACITY TO PERMIT THIS INSTALLATION. NO TOWER DRAWINGS WERE AVAILABLE, NO CLIMBING INSPECTION WAS PERFORMED AND NO ANALYSIS WAS COMPLETED.
- THE VERIFICATION OF STRUCTURAL ADEQUACY AND DESIGN OF THE ATTACHMENTS MUST BE PERFORMED, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE SITE IS LOCATED.
- ALL WORK SHOULD CONFORM TO THE CURRENT STANDARD (ANSI/TIA/EIA-222-F "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES") AND APPLICABLE STATE AND LOCAL CODES.

ANTENNA & COAX SCHEDULE			
SECTOR	"A"	"B"	"C"
ANTENNA TYPE	DR65-19-02DPQ	DR65-19-02DPQ	DR65-19-02DPQ
NUMBER OF ANTENNAS	1+1 (2 TOTAL)	1+1 (2 TOTAL)	1+1 (23 TOTAL)
DEGREES OFF TRUE NORTH	60°	150°	300°
RESERVED CENTERLINE ELEVATION	105' & 95'	105' & 95'	105' & 95'
CABLE SIZE	1-1/4"	1-1/4"	1-1/4"
# OF COAX LINES PER ANTENNA	4+2	4+2	4+2
COAX LENGTH	130' / 120'	130' / 120'	130' / 120'
MECH. DOWNTILT	0	0	0
LNA	0	0	0
GBA	2	2	2
JUMPER SIZE	1/2"	1/2"	1/2"
ANTENNA JUMP. LENGTH	4'-0"	4'-0"	4'-0"
BTS JUMPER LENGTH	8'-0"	8'-0"	8'-0"



**T-Mobile USA, INC.**

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W.O. # 1004.002.DE01322  
DATE: 08/08/06  
DRAWN BY: A.B.  
CHECKED BY: L.F.

#	DATE	REVISIONS
A	08/08/06	FOR REVIEW
O	08/21/06	FOR ZNG & CONSTRUCTION

**LAKESHORE PARK  
FLAG POLE  
DE01322D**  
601 S. LAKE DRIVE  
NOVI, MI 48375

SHEET TITLE  
**ELEVATION &  
ANTENNA DETAILS**

SHEET NUMBER  
**C-3**

T-Mobile USA, INC.

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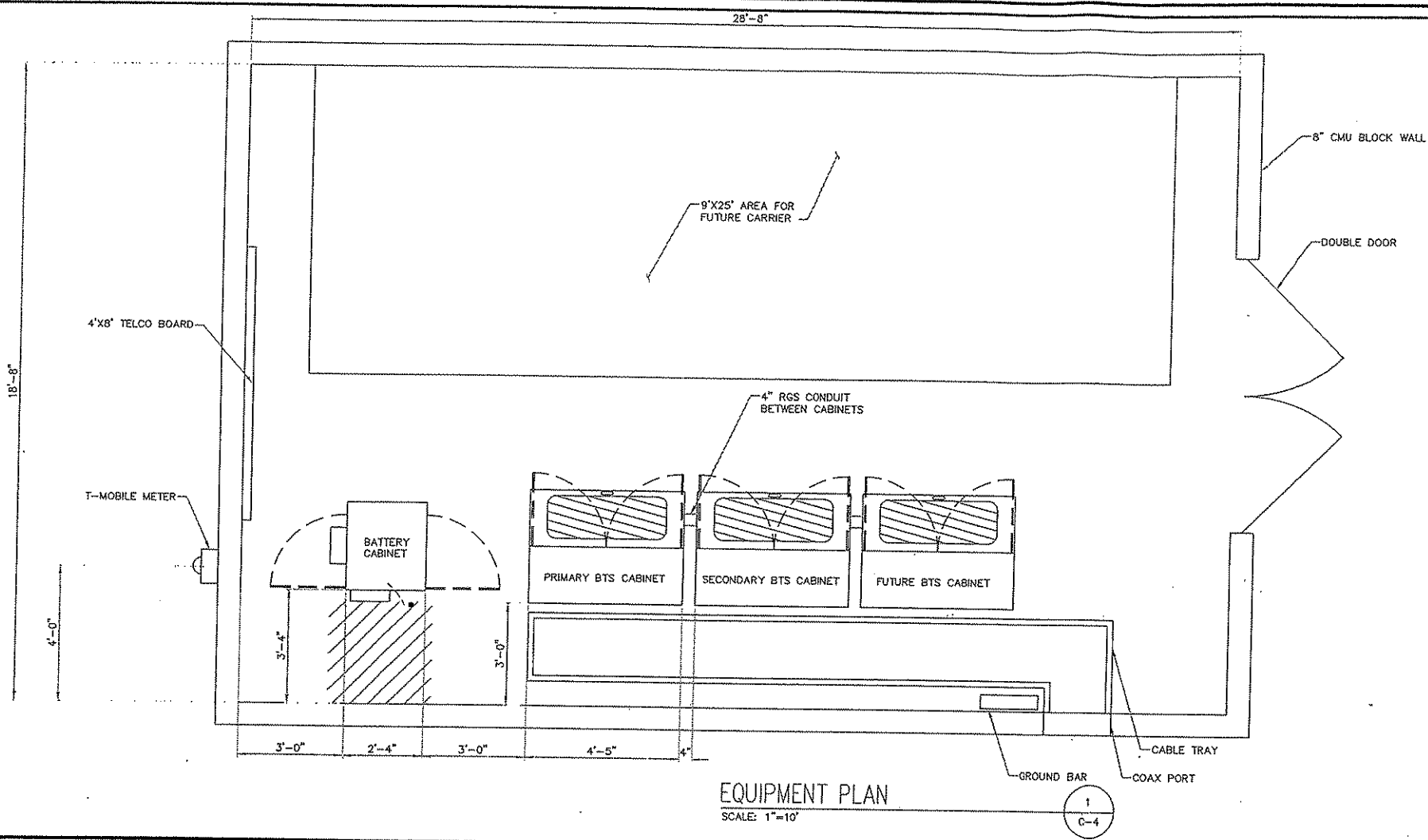
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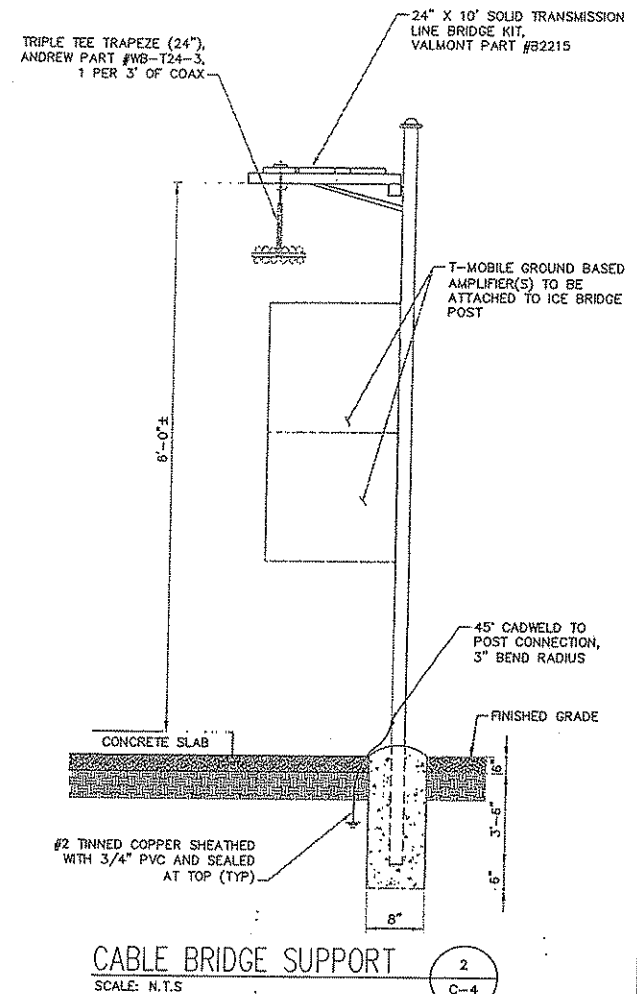
601 S. LAKE DRIVE  
NOVI, MI 48375

SHEET TITLE  
EQUIPMENT  
DETAILS

SHEET NUMBER  
C-4



EQUIPMENT PLAN  
SCALE: 1"=10'

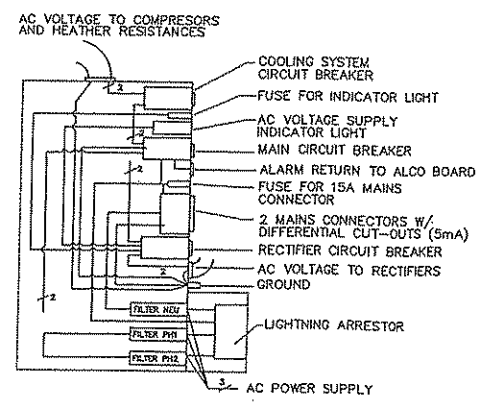


CABLE BRIDGE SUPPORT  
SCALE: N.T.S.

HEIGHT	75.2 in (1.91 m)
WIDTH	53.15 in (1.35 m)
DEPTH	25.59 in (.650 m)
MAXIMUM WEIGHT	1257 LB. (1358 LB INCL. BASE UNIT)
FOOT PRINT	1350 SQ. IN.
EMPTY WEIGHT	441 LB. (200 kg)
VOLTAGE	240 V + / - 10%
MAX POWER (240V)	6500 W
NORMAL POWER	3238 W
MAIN CIRCUIT PROTECTION	200 A
OPERATING TEMPERATURE	-40° TO 112° F (-40° TO 50°C)
MAC LEVEL OF ACOUSTIC NOISE	65 DB

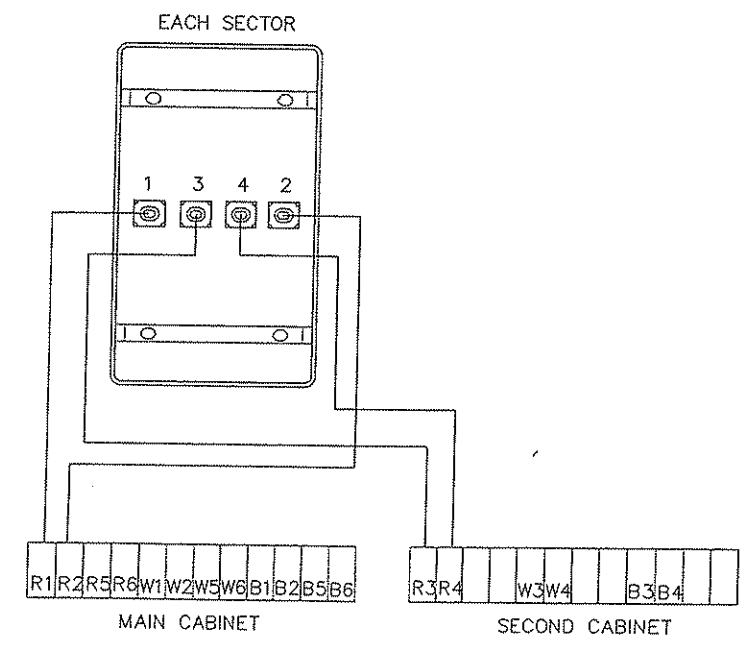
- CONTRACTOR RESPONSIBLE FOR OFFLOADING THE CABINET UPON DELIVERY.
- CONTRACTOR RESPONSIBLE FOR RF CABLING TO THE COMBINES, RF CABLE SHALL BE COLOR CODED AT THE COMBINER, OUTSIDE OF CABINET, AT TOWER (OR AT CABLE TRAY CONVERGENCE) AND AT ANTENNAS.
- CONTRACTOR IS RESPONSIBLE FOR MOUNTING THE TELCO AND ALARM DEMARCATION BLOCKS AFTER COAX IS PULLED AND FOR CONNECTING PHONE LINE FROM SMART JACK.
- CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ALL BOOT-CUSHION ASSEMBLIES FOR THE COAXIAL CABLE ENTRY INTO THE BASE UNIT.
- CONTRACTOR SHALL MOUNT THE CABINET TO THE BASE UNIT WITH HARDWARE SUPPLIES WITH NORTEL COMPLETION KIT #NTO4706A AND SUPPLY THE HARDWARE NEEDED TO ATTACH THE BASE TEMPLATE AND BASE TO THE MOUNTING PLATFORM.
- SPECIAL CARE MUST BE TAKEN TO ENSURE AN 8" CLEARANCE ABOVE MOUNTING PLATFORM TO ALLOW FOR MAINTENANCE OF THE BATTERIES AND HVAC UNIT.
- CONTRACTOR SHALL DETERMINE THE BEST-FIT LOCATION FOR POWER AND TELCO ENTRANCES INTO THE BASE UNIT.

S12000 SPECIFICATION TABLE AND NOTES  
SCALE: N.T.S.



- CONTRACTOR TO SUPPLY ALL HARDWARE AND CONDUCTORS NECESSARY TO BRING A 240V, 50 AMP SERVICE INTO THE CABINET AND CONNECT THE MAIN.
- CONTRACTOR IS RESPONSIBLE FOR BONDING THE GROUNDING CONDUCTORS FROM THE CABINET TERMINAL TO THE MASTER GROUND BAR.
- THE CONTRACTOR SHALL VERIFY THE ARRANGEMENT OF THE AC MAIN PRIOR TO INSTALLATION OF SERVICE IN THE EVENT THE MODULE IS RECONFIGURED.
- THE ENTRY PORT SHALL BE USED FOR THE INSTALLATION OF POWER AND TELEPHONE ENTRANCE SHALL BE SEALED WITH SILICONE SEALANT AFTER INSTALLATION.

AC MAIN MODULE AND ONE-LINE DIAGRAM  
SCALE: N.T.S.



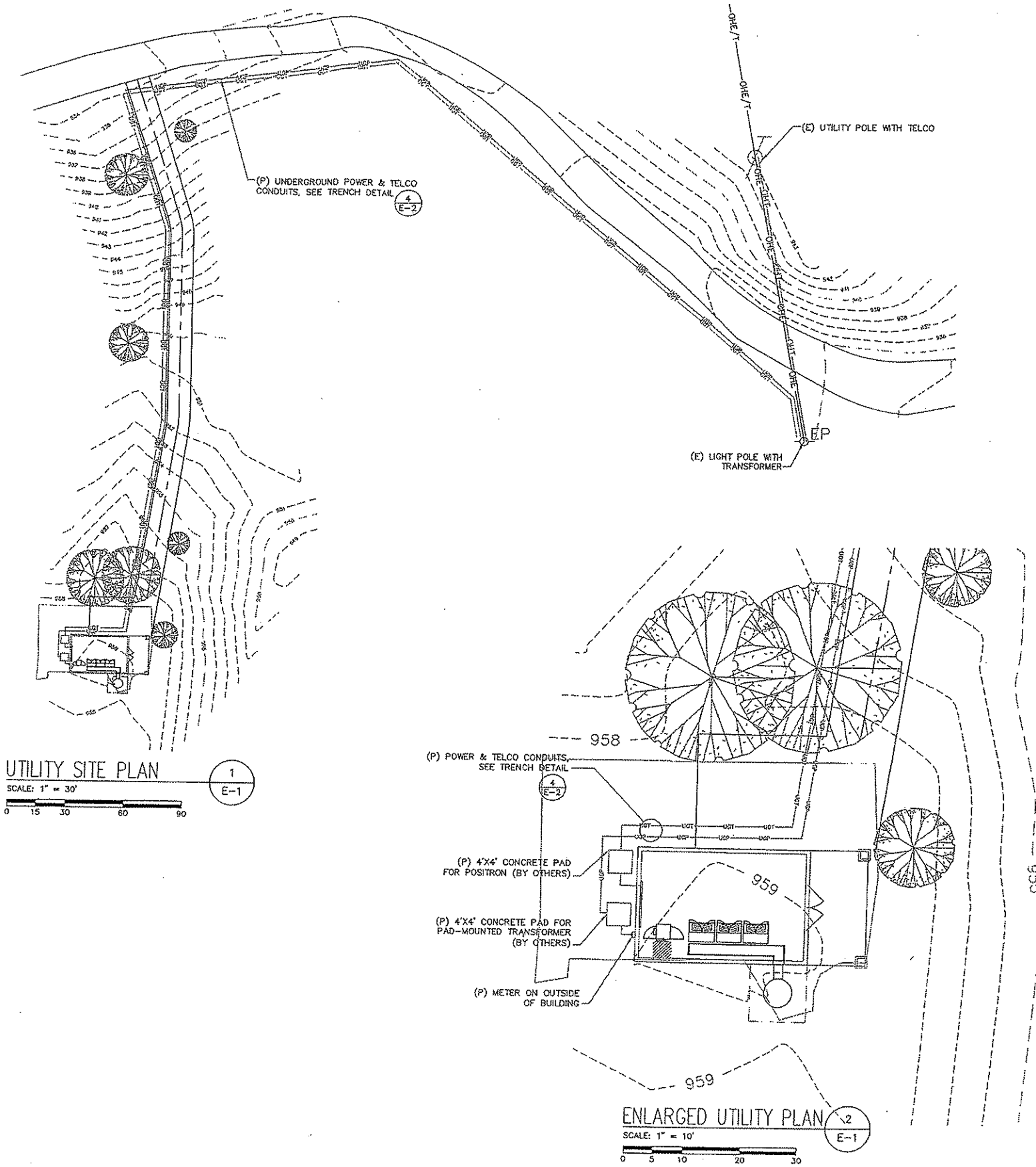
ANTENNA TO CABINET WIRING DIAGRAM  
SCALE: N.T.S.

**GENERAL CONTRACTOR NOTE**

THESE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY AND SHOW THE GENERAL INTENT OF THE FINAL ARRANGEMENT OF ELECTRICAL SYSTEMS, EQUIPMENT AND CONNECTIONS. IT IS THE INTENT OF THESE ELECTRICAL DRAWINGS TO REQUIRE ELECTRICAL WORK TO COMPLETELY FACILITATE THE ELECTRICAL REQUIREMENTS FOR THE NEW TENANT (T-MOBILE). SOME OF THE ELECTRICAL WORK SHOWN IS EXISTING AND SHALL REMAIN IN PLACE AND NEW WORK ADDED TO ACCOMMODATE T-MOBILE ELECTRICAL REQUIREMENTS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT AND WIRING AND ADD NEW WORK AS REQUIRED TO COMPLETE T-MOBILE ELECTRICAL REQUIREMENTS. IT IS NOT INTENDED TO SHOW EXISTING ELECTRICAL WORK EXACTLY AS IS, BUT TO SHOW THE INTENT ONLY. CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ADDED LOAD (T-MOBILE). VERIFY ELECTRICAL AND TELEPHONE SERVICE SIZE AND CAP.

**ELECTRICAL NOTES**

- ALL WORK IS TO COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY LOCAL ORDINANCES, CODES, AND ANY OTHER ADMINISTRATIVE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL FURNISH AND PAY FOR ANY PERMITS AND RELATED FEES.
- ALL EQUIPMENT AND MATERIAL FURNISHED AND INSTALLED UNDER THIS CONTRACT INCLUDING COMPONENTS LABELED MUST BE UNDERWRITERS LABORATORIES (U.L.) LISTED, NEW, FREE FROM DEFECTS, AND SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER OR HIS REPRESENTATIVE. SHOULD ANY TROUBLE DEVELOP DURING THIS PERIOD DUE TO FAULTY WORKMANSHIP, MATERIAL OR EQUIPMENT, THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS AND LABOR TO CORRECT THE TROUBLE WITHOUT COST TO THE OWNER.
- ALL WORK SHALL BE EXECUTED IN A WORKMAN-LIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED. CONTRACTOR SHOULD AVOID DAMAGE TO EXISTING UTILITIES WHEREVER POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO ELECTRICAL WORK, AND SHALL RESTORE ALL EXISTING LANDSCAPING, SPRINKLER SYSTEMS, CONDUITS, WIRING, PIPING, ETC., DAMAGED BY THE ELECTRICAL WORK TO MATCH EXISTING CONDITIONS.
- ELECTRICAL WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE ELECTRICAL POWER AND LIGHTING SYSTEMS, TELEPHONE AND COMMUNICATION SYSTEMS, PANEL BOARDS, CONDUIT, CONTROL WIRING, GROUNDING, ETC. AS INDICATED ON ELECTRICAL DRAWINGS AND/OR REQUIRED BY GOVERNING CODES.
- PRIOR TO INSTALLING ANY ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY EXISTING SITE LOCATIONS AND CONDITIONS. CONTRACTOR SHALL ALSO VERIFY UTILITY SERVICE REQUIREMENTS OF THE JOB, AND BY REFERENCE TO ENGINEERING AND EQUIPMENT SUPPLIERS' DRAWINGS, SHOULD THERE BE ANY QUESTION OR PROBLEM CONCERNING THE NECESSARY PROVISIONS TO BE MADE, PROPER DIRECTIONS SHALL BE OBTAINED BEFORE PROCEEDING WITH ANY WORK.
- PROVIDE POWER AND TELEPHONE SERVICE TO POINTS PER UTILITY COMPANY REQUIREMENTS. CONTRACTOR SHALL CONTACT UTILITY SERVICE PLANNERS AND OBTAIN ALL SERVICE REQUIREMENTS AND INCLUDE COSTS FOR SUCH IN THEIR BID.
- SERVICE EQUIPMENT SHALL HAVE A SHORT CIRCUIT WITHSTAND RATING EQUAL TO OR EXCEEDING THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SUPPLY TERMINAL. THE INSTALLATION SHALL BE FREE OF ANY SHORT CIRCUITS OR GROUNDS.
- ALL WIRES SHALL BE COPPER WITH THHN/THWN AND DUAL RATED 600 VOLTS INSULATION. ALL GROUND CONDUCTORS TO BE PROPERLY SIZED COPPER (STRANDED OR SOLID).
- IN THE EVENT OF ANY CONFLICT OR INCONSISTENCY BETWEEN ITEMS SHOWN ON THE PLANS AND/OR SPECIFICATIONS, THE NOTE, SPECIFICATIONS OR CODE WHICH PRESCRIBES AND ESTABLISHES THE HIGHEST STANDARD OF PERFORMANCE SHALL PREVAIL.
- SERVICE CONDUITS SHALL HAVE NO MORE THAN (2) 90° BENDS IN ANY SINGLE RUN. THE CONTRACTOR SHALL PROVIDE PULL BOXES AS NEEDED WHERE CONDUIT REQUIREMENTS EXCEED THESE CONDITIONS. PULL WIRES AND CAPS SHALL BE PROVIDED AT ALL SPARE CONDUITS FOR FUTURE USE.
- ALL ELECTRICAL EQUIPMENT SHALL BE ANCHORED TO WITHSTAND 100 M.P.H. WIND SPEED AND DESIGNED FOR OUTDOOR EXPOSURE.
- ALL COAX, POWER, AND TELEPHONE SYSTEM CONDUITS SHALL HAVE A MINIMUM 24" RADIUS SWEEP TO EQUIPMENT, PULLBOXES, MONOPOLE, ETC., UNLESS OTHERWISE NOTED, OR AS REQUIRED BY UTILITY COMPANIES.
- FUSE TYPE SHALL BE BUSSMAN RFI LOW PEAK FUSE (LPU-RK-100).
- UPON COMPLETION OF THE JOB, THE CONTRACTOR SHALL FURNISH AS-BUILT DRAWINGS TO THE OWNER.
- CONTRACTOR TO PROVIDE GUTTER TAP(S) AS REQUIRED.
- GENERAL GROUNDING CRITERIA FOR ROOFTOP INSTALLATIONS:  
1ST STEP: GROUND TO EXISTING BUILDING STRUCTURAL STEEL AND TO THE EXISTING COLD WATER LINE (WHERE APPLICABLE). THEN TEST GROUNDING RESISTANCE TO WITHIN 1 TO 5 OHMS OVERALL GROUND RESISTANCE FALLS BELOW THIS LEVEL. SUPPLEMENTAL GROUND MAY CONSIST OF ONE OR MORE OF THE FOLLOWING:  
1. COUNTERPOISE  
2. UFER GROUND  
3. GROUND ROD AND/OR GROUND WELL IN EXTREMELY ADVERSE SOIL CONDITIONS.  
WHERE THE EXISTING BUILDING DOES NOT PROVIDE AN EFFECTIVE GROUND RESISTANCE, THEN THE CONTRACTOR SHALL PROVIDE A SEPARATE GROUND CONDUCTOR FROM THE ROOF MOUNTED BTS EQUIPMENT LOCATIONS EITHER DOWN THROUGH THE INSIDE OF THE BUILDING OR DOWN THE OUTSIDE FACE OF THE BUILDING, DEPENDING UPON OWNER PREFERENCE. WHERE THE GROUND CONDUCTOR FROM THE ROOF MOUNTED EQUIPMENT IS ROUTED IN CONDUIT, THE CONDUIT SHALL BE EFFECTIVELY GROUNDED TO THE GROUND CONDUCTOR AT BOTH ENDS OF THE CONDUIT.  
GENERAL GROUNDING CRITERIA FOR MONOPOLE INSTALLATIONS:  
FOR INSTALLATIONS WHERE WOODEN STRUCTURES, TOWERS, CONCRETE SILOS, ETC., ARE ENCOUNTERED, A SEPARATE DOWNLEAD SHALL BE PROVIDED FROM THE 3 ANTENNAS SEPERATED BY A MINIMUM OF 12 INCHES FROM THE COXIAL CABLES. THE GROUND CONDUCTOR SHALL BE SECURELY FASTENED TO THE EXTERIOR OF OUTSIDE STRUCTURES WITH NONMETALLIC GROUND STRAPS EVERY 10 FEET. AGAIN, AS FOR TENANT IMPROVEMENT PROJECTS, TEST THE GROUND RESISTANCE FOR MONOPOLE INSTALLATIONS AND PROCEED PER THE ABOVE STEPS.
- CONTRACTOR TO COLOR PHASE CONDUCTORS BLACK (B PHASE), RED (A PHASE), WHITE (NEUTRAL), AND GREEN (GROUND).
- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES.



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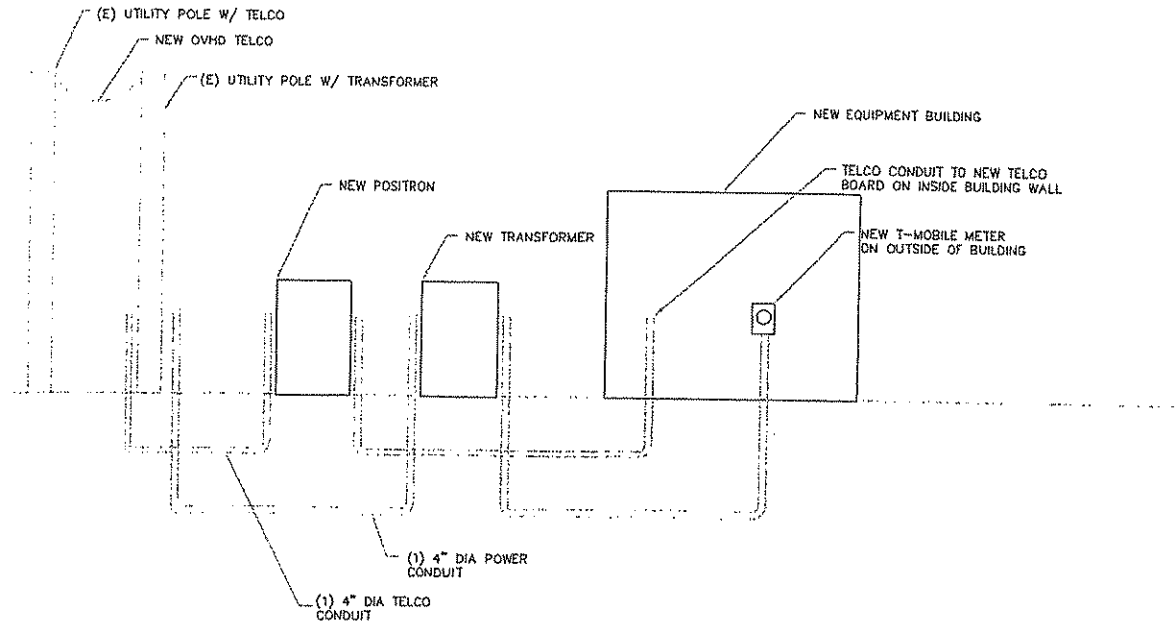
SHEET TITLE  
UTILITY PLAN &  
ELECTRICAL NOTES

SHEET NUMBER

E-1

NOTES:

- 1.) ALL CONDUIT LENGTH SHALL BE FIELD VERIFIED.
- 2.) INSTALL IN ACCORDANCE W/ LOCAL & NATIONAL ELECTRICAL CODE.
- 3.) OVERHEAD ELECTRIC AND TELEPHONE LINES TO BE INSTALLED BY LOCAL UTILITY. FOR CONTINUATION AND CONNECTION OF OVERHEAD ELECTRIC AND TELEPHONE SERVICE, REFER TO SURVEY. TIE-IN CONNECTION TO BE PERFORMED BY POWER COMPANY.

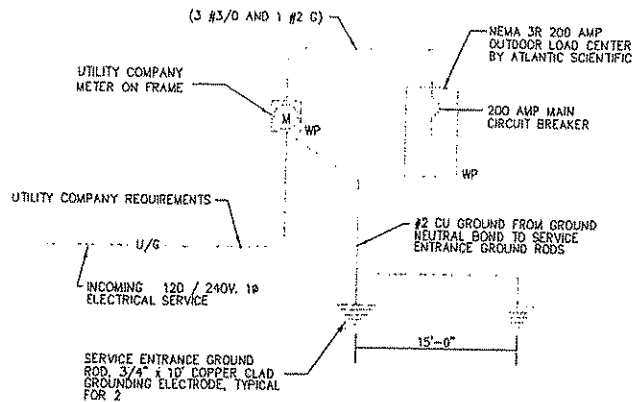


TYPICAL ELECTRIC AND TELEPHONE RISER DIAGRAM

SCALE: N.T.S.

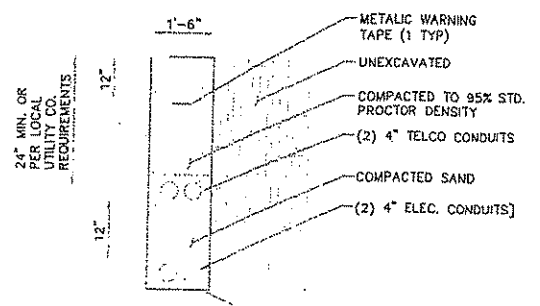
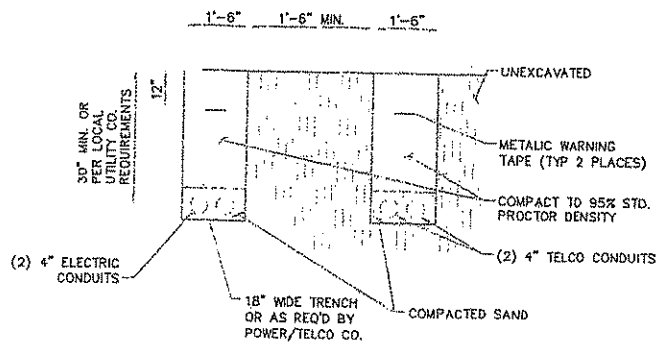
1  
E-2

NOTE: INTERIOR FINISH ELECTRICAL BY OTHERS



ELECTRICAL ONE-LINE DIAGRAM  
EQUIPMENT ONLY

2  
E-2



ELECTRICAL/TELCO TRENCH

SCALE: N.T.S.

4  
E-2

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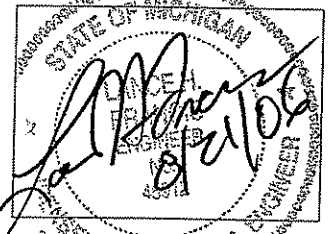
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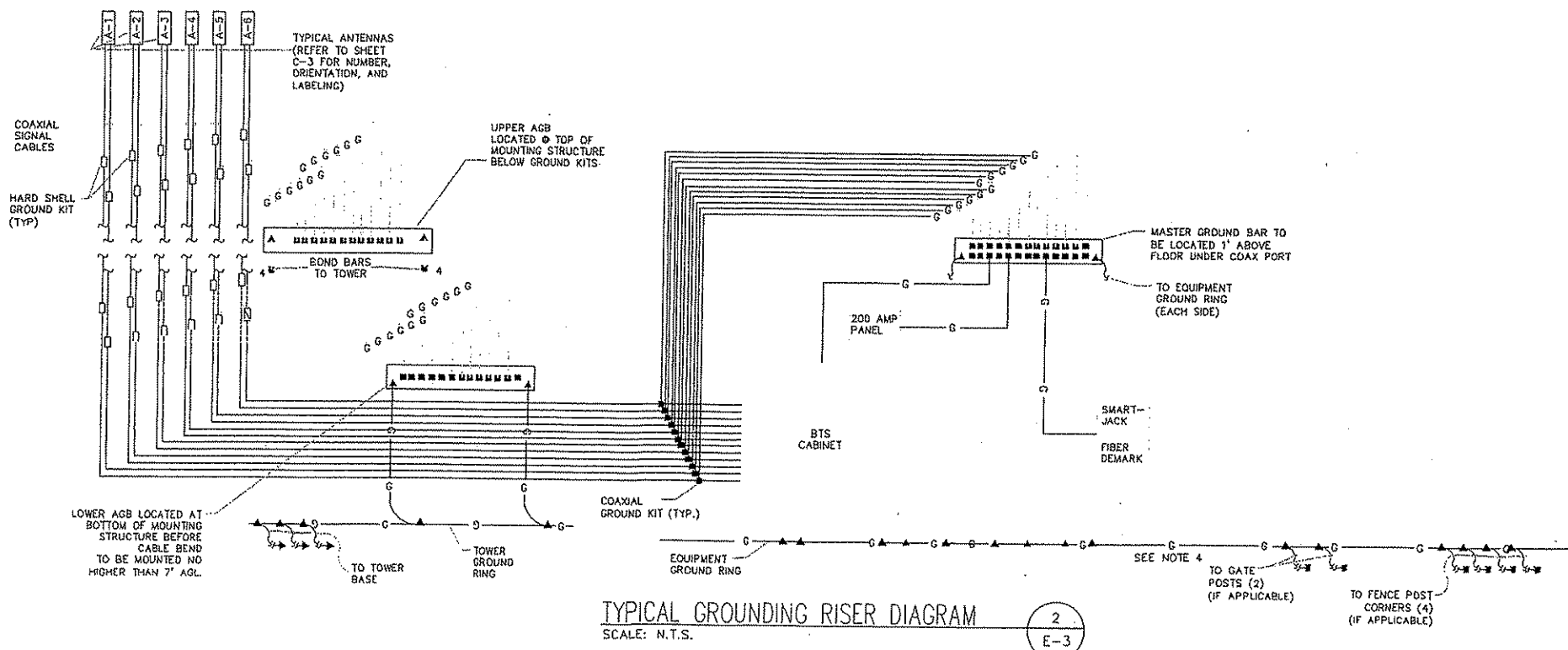
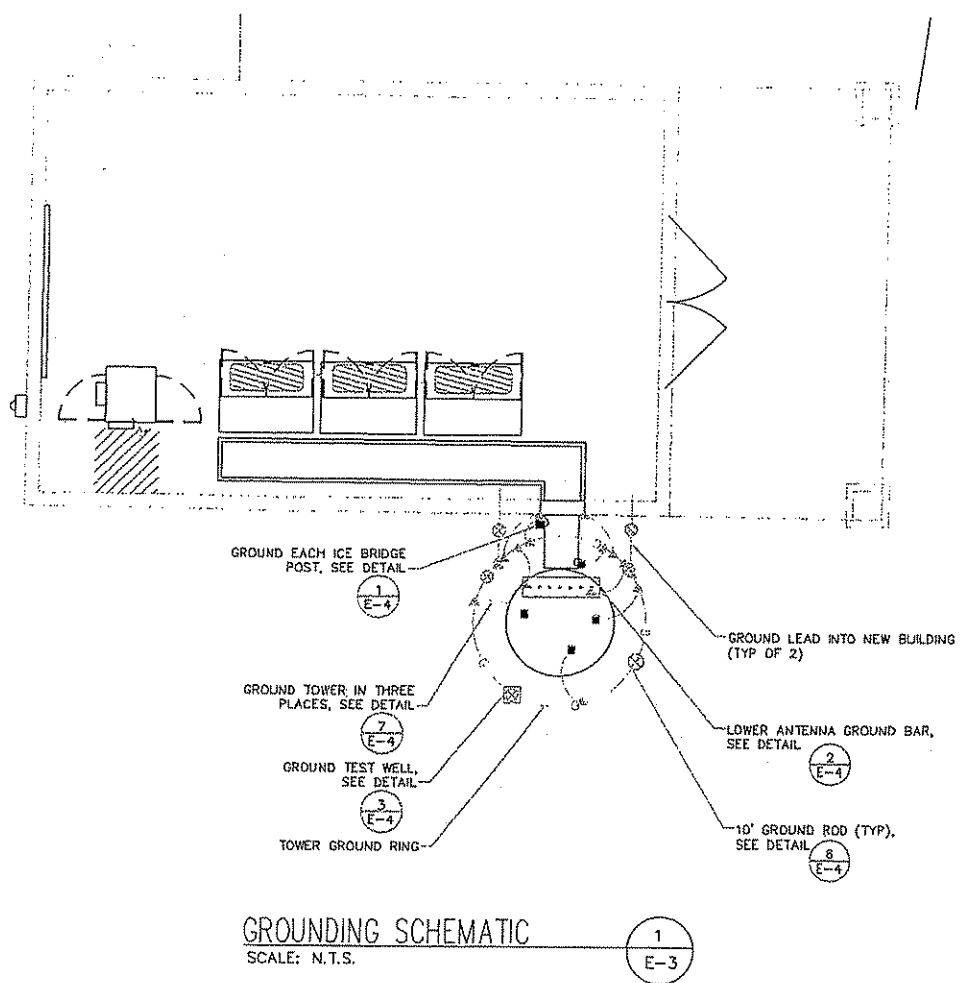
E-2



**GROUNDING NOTES**

1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION REQUIREMENTS AND CONSTRUCTION SHALL BE BASED ON SITE CONDITIONS.
2. ALL GROUNDING INSTALLATIONS AND CONNECTIONS SHALL BE MADE BY ELECTRICAL CONTRACTOR.
3. OBSERVE N.E.C. AND LOCAL UTILITY REQUIREMENTS FOR ELECTRICAL SERVICE GROUNDING.
4. GROUND RING SHALL BE LOCATED A MINIMUM OF 42" BELOW GRADE OR 6" MINIMUM BELOW THE FROST LINE.
5. GROUND BAR LOCATED AT BASE OF TOWER AND WILL BE FURNISHED INSTALLED BY THE ELECTRICAL CONTRACTOR.
6. MIDDLE TOWER GROUND BAR REQUIRED IF GROUND WIRE LENGTH FROM TOP OF TOWER TO BOTTOM OF TOWER EXCEEDS 200 FEET.
7. SUPPLEMENTARY GROUND: #2/0 AWG INSULATED STRANDED BARE COPPER WIRE ROUTED ALONG BACK OF EQUIPMENT LINE-UP, TIED DOWN WITH NON-METALLIC CLAMPS EVERY 4 FT. THE EQUIPMENT CABINETS, MOUNTING SKID, ETC., SHALL BE CONNECTED TO THIS GROUND CABLE, BOTH ENDS OF THIS GROUND CABLE SHALL BE CONNECTED TO THE BURIED GROUND RING USING EXOTHERMIC WELD (CAD WELD). SEE DETAILS FOR GROUNDING EQUIPMENT AND MOUNTING SKID.
8. COAX GROUND BAR (SUPPORT AT BOTTOM OF CABLE TRAY NEAR BASE OF TOWER); EXTEND (2 EACH) #2 ISBC WIRE FROM BURIED GROUND RING UP TO EACH GROUND BAR AND MAKE MECHANICAL CONNECTIONS TO GROUND BAR "NO SLACK".
9. GROUND KIT CONNECTION ON COAX CABLE SHALL BE LOCATED NOT MORE THAN (6) INCHES ABOVE BEGINNING OF CABLE BEND ON VERTICAL COAX "NO SLACK".
10. COAX CABLE TRAY AT TOWER END EXTEND #2/0 AWG TSBC WIRE FROM BURIED GROUND RING AND AT EQUIP. CAB. END EXTEND #2/0 AWG ISBC WIRE FROM SUPPLEMENTARY GROUND CABLE TO CABLE TRAY. MAKE MECHANICAL CONNECTION TO CABLE TRAY AND SUPPLEMENTARY GROUND CABLE.
11. FENCE GROUNDING: EXTEND #2/0 AWG ISBC WIRE FROM BURIED GROUND RING TO ALL FOUR CORNER POSTS AND EXOTHERMICALLY WELD. SEE FENCE GROUNDING DETAIL.
12. GATE GROUNDING: PROVIDE A #2/0 AWG ISBC WIRE FROM FENCE POSTS TO EACH GATE AND EXOTHERMICALLY WELD. ALSO GROUND GATE POSTS SIMILAR TO NOTE 11.
13. GROUNDING ATTACHMENT TO TOWER SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS OR AT GROUNDING POINTS PROVIDED (3 MINIMUM).
14. AT COLLOCATE SITES, CONTRACTOR SHALL TIE INTO EXISTING GROUND RING(S) AND REPAIR ANY CUTS OR DAMAGE TO GROUND RING. (2 PLACES)
15. ALL CADWELD CONNECTIONS ON GALVANIZED SURFACES SHALL BE CLEANED THOROUGHLY AND COVERED W/ (2) TWO COATS SHERWIN WILLIAMS GALVITE PAINT B350W3 (OR EQUIVALENT).
16. ALL ELECTRICAL AND MECHANICAL GROUND CONNECTIONS SHALL HAVE NON-OXIDATION COMPOUND APPLIED TO CONNECTION.
17. GROUND SYSTEM SHALL BE TESTED PER SPECIFICATIONS AND SHALL HAVE A RESISTANCE TO EARTH OF 10 OHMS OR LESS, IF NOT NOTIFY ENGINEER.
18. GROUND RODS SHALL BE SPACED AT 10'-0" MAXIMUM ALONG GROUND RINGS.
19. WHERE CONDUCTORS ARE OVERSIZED DUE TO VOLTAGE DROP, EQUIPMENT GROUNDING CONTRACTOR SHALL ALSO BE INCREASED IN SIZE ACCORDINGLY, PER NEC-122(B).
20. UTILITY FRAME AND SERVICE METER / CIRCUITBREAKER / PANEL "L" SHALL BE CONNECTED TO THE GROUND RING VIA GROUNDING ELECTRODE CONDUCTORS, SIZE PER NEC.
21. CHECK WITH PROJECT MANAGER FOR GROUNDING CONNECTOR TYPE IF TABS FOR COMPRESSION LUGS ARE NOT PROVIDED ON MONOPOLE/TOWER.

GROUNDING LEGEND	
SYMBOL	DESCRIPTION
	5/8" X 10'-0" LONG COPPER CLAD GROUND ROD
	GROUND TEST WELL
	INSPECTION WELL
	EXISTING GROUND RING
	#2/0 AWG. BARE COPPER WIRE (TSBC, SBC, OR ISC, AS REQUIRED)
	EXOTHERMIC TYPE CONNECTION (CADWELD)
	COMPRESSION TYPE CONNECTION (2 HOLE LUG) LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMPS.
	GROUND BUS BAR
	COIL GROUND LINE FOR FUTURE EQUIPMENT



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STATE OF MICHIGAN  
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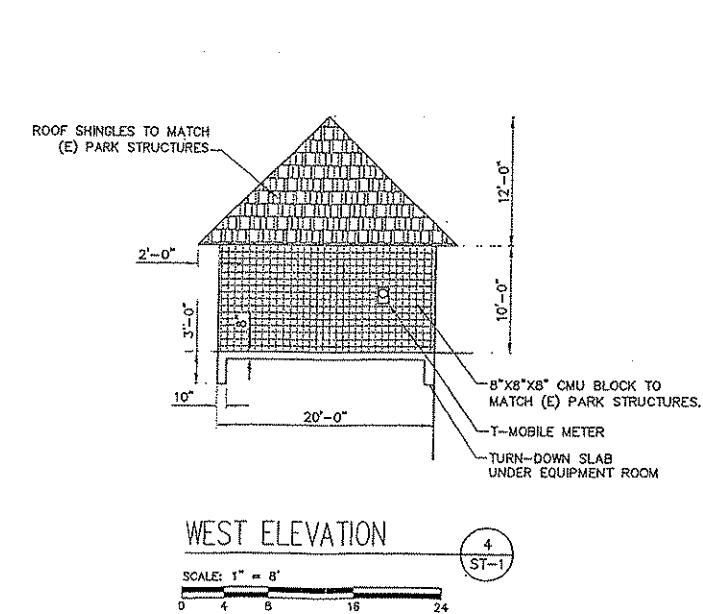
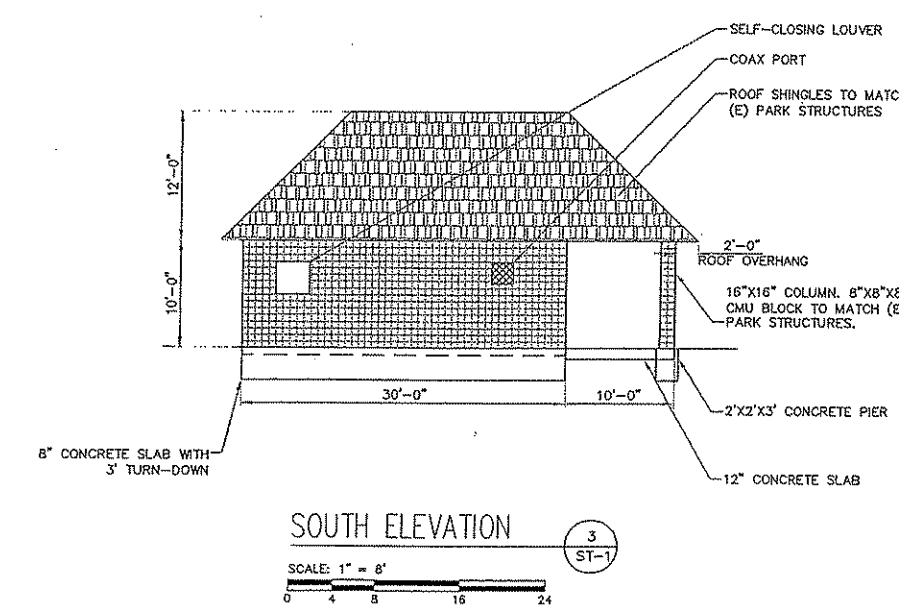
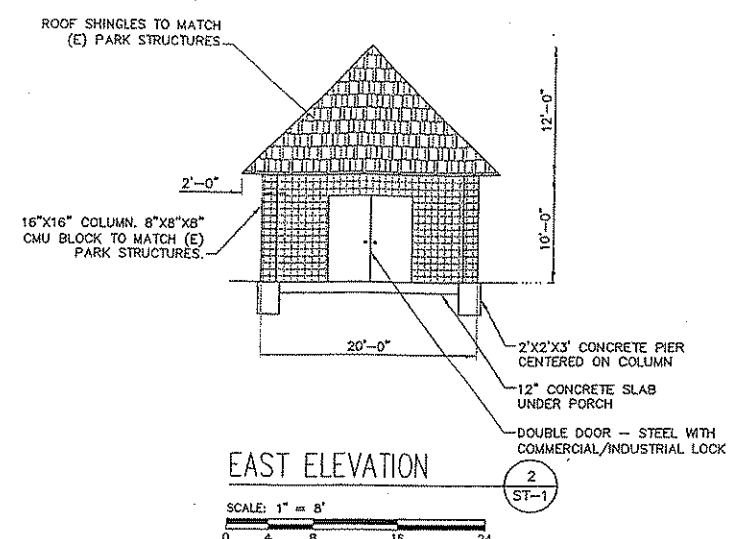
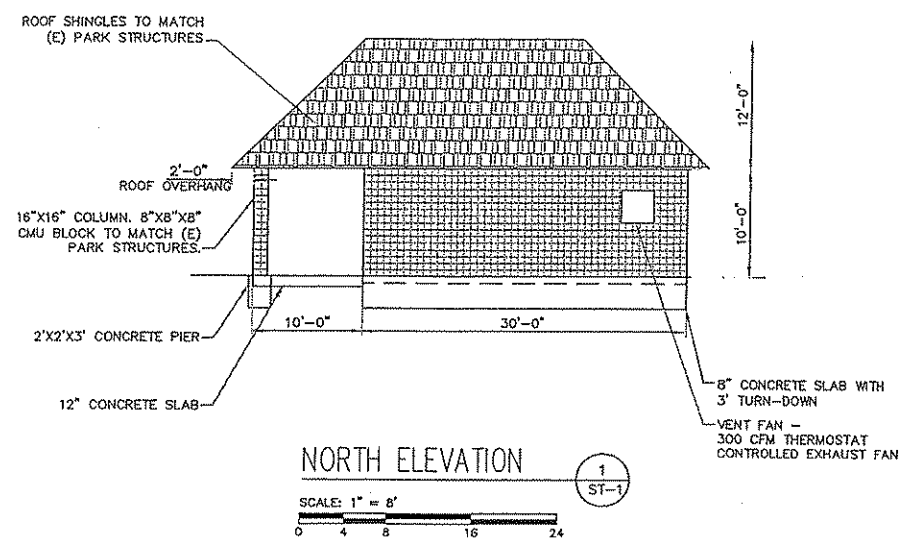
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 DATE: 08/08/06  
 DRAWN BY: A.B.  
 CHECKED BY: L.F.

#	DATE	REVISIONS
A	08/08/06	FOR REVIEW
D	08/21/06	FOR ZNG & CONSTRUCTION

**LAKESHORE PARK  
 FLAG POLE  
 DE01322D**  
 601 S. LAKE DRIVE  
 NOVI, MI 48375

SHEET TITLE  
**GROUNDING  
 LAYOUT & NOTES**

SHEET NUMBER  
**E-3**



**STRUCTURAL NOTES**

- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION.
- STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM 441 "50 KSI STEEL", UNLESS OTHERWISE INDICATED.
- STEEL TUBING SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 "PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED WELDED AND SEAMLESS", TYPE E OR S, GRADE B, PIPE SIZES INDICATED ARE NOMINAL, ACTUAL OUTSIDE DIAMETER IS LARGER.
- FIELD CONNECTIONS SHALL BE BOLTED UNLESS OTHERWISE INDICATED.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS AND CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS", LATEST EDITION. BOLTS SHALL BE 3/4 INCH DIA. UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A769.
- SUBMIT SHOP DETAIL DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL, AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
- GRATING SHALL BE GALVANIZED WELDED STEEL BAR GRATING, FASTEN TO SUPPORTING MEMBERS WITH SADDLE-TYPE CLIPS AND BAND ALL EXPOSED EDGES.
- EXPANSION BOLTS SHALL BE HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REPAIR OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.
- UNLESS OTHERWISE NOTED, ALL BEAM TO BEAM OR TO COLUMN, CONNECTIONS SHALL CONSIST OF A SINGLE SHEAR PLATE HAVING THE SAME THICKNESS AS THAT OF THE BEAM WEB, WITH A MINIMUM OF 3/8" THICKNESS AND SHALL BE WELDED TO THE WEB OF THE CARRYING MEMBER WITH A CONTINUOUS WELD. THE CONNECTOR SHALL BE CAPABLE OF SUPPORTING A MINIMUM OF 50% OF THE TOTAL UNIFORM LOAD CAPACITY OF THE BEAM UNLESS NOTED OTHERWISE.
- LOADS: SEE SHEET ST-3
- GROUT SHALL BE NON METALLIC, NON SHRINK, PREPACKAGED GROUT WITH A MINIMUM STRENGTH OF 5,000 PSI AT 28 DAYS. GROUT SHALL BE FIVE STAR GROUT AS MANUFACTURED BY U.S. GROUT CORP., FAIRFIELD, CT. OR APPROVED EQUAL.
- GRATING SHALL BE 1 1/2 X 3 1/8" BAR, TYPE 18-W-4 WELDED STEEL GRATING FROM OHIO GRATINGS OR APPROVED EQUAL, GALVANIZED FINISHED, PROVIDE 1/4" THICK ANCHOR BLOCKS FOR PERMANENT ATTACHMENT. ALL ENDS TO BE Banded.
- STAR TREADS SHALL BE OF THE SAME TYPE & SPACING AS GRATING WITH CHECKER PLATE HOUSING BY OHIO GRATINGS INC. OR APPROVED EQUAL. ATTACH CORNER PLATES BY WELDING.
- CMU SHALL BE 1' x 1500 PSI AND MATCH NEARBY PARK STRUCTURES.
- TYPE N MORTAR.

**CONCRETE NOTES**

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 301, ACI 318 AND THE SPECIFICATION CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  
CONCRETE CAST AGAINST EARTH: 3 IN.  
CONCRETE EXPOSED TO EARTH OR WEATHER:  
#6 AND LARGER: 2 IN.  
#5 AND SMALLER & WWF: 1 1/2 IN.  
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:  
SLAB AND WALL: 3/4 IN.  
BEAMS AND COLUMNS: 1 1/2 IN.
- A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE.
- WELDING OF REINFORCING STEEL IS PROHIBITED.
- PROVIDE BROOM FINISH TO ALL SURFACE PADS.

**INTERIOR FINISH/ELECTRICAL NOTES**

- PROVIDE 1/2" GYPSUM BOARD CEILING WITH ROOF ACCESS HATCH.
- PROVIDE TWELVE (12) 48" 144 WATT RATED 4 BULB FLUORESCENT LIGHTS MOUNTED TO THE CEILING. PROVIDE ELECTRICAL OUTLETS (ALL GFCI) PER NEC.
- LIGHTING/HVAC/OUTLETS SHALL BE SERVED BY SEPARATE 200 AMP PANEL MOUNTED INSIDE BUILDING.
- PROVIDE 300 CFM AUTOMATIC THERMOSTAT CONTROLLED FAN WITH SELF-SEALING INTAKE LOUVER. PROVIDE BIRD/INSECT GUARDS ON ALL.
- ELECTRICAL DESIGN OF INSTALLATION SHALL BE PER NEC2005. ELECTRICAL DESIGN SHALL BE BY OTHERS.

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W.O. # 1004.002.DE01322

DATE: 08/08/06

DRAWN BY: A.B.

CHECKED BY: L.F.

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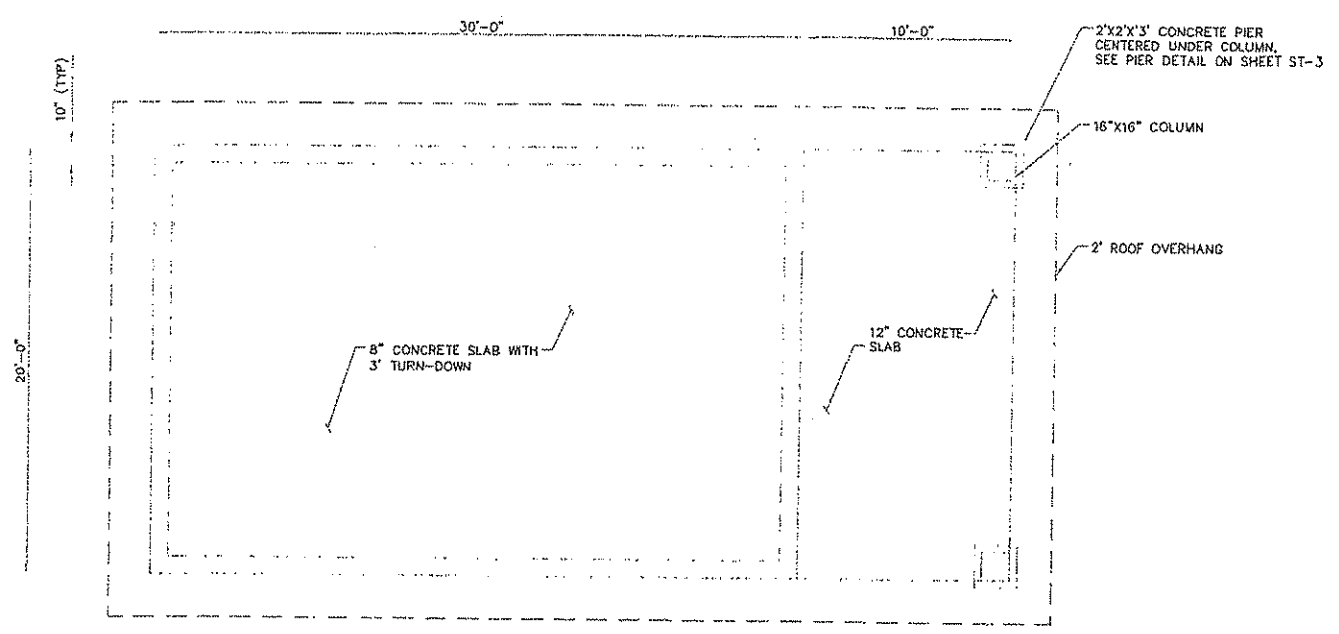
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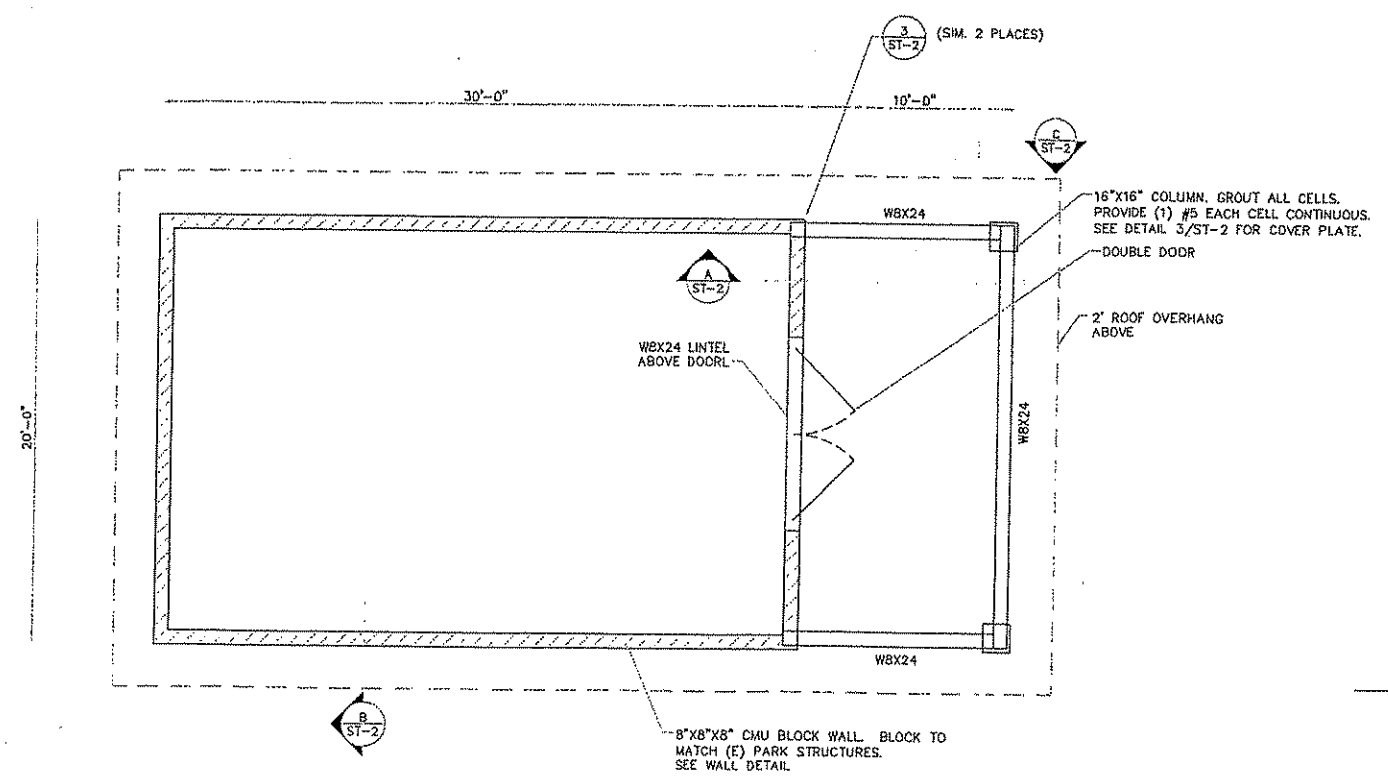
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**BUILDING ELEVATIONS**

SHEET NUMBER  
**ST-1**

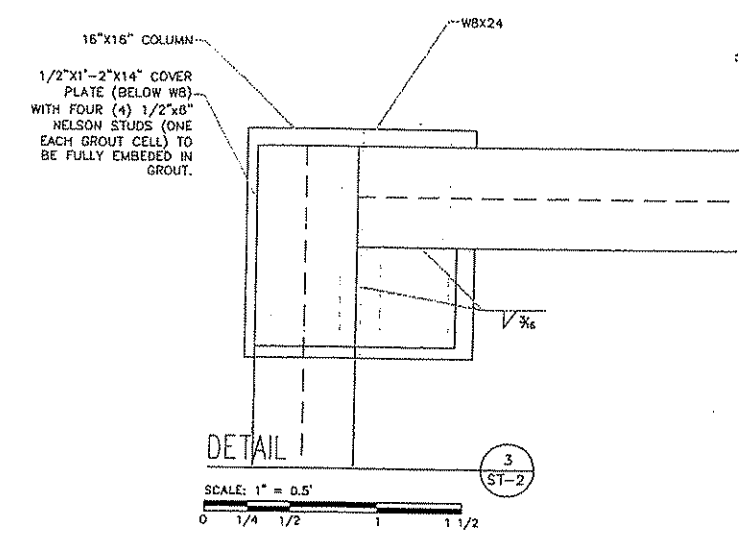




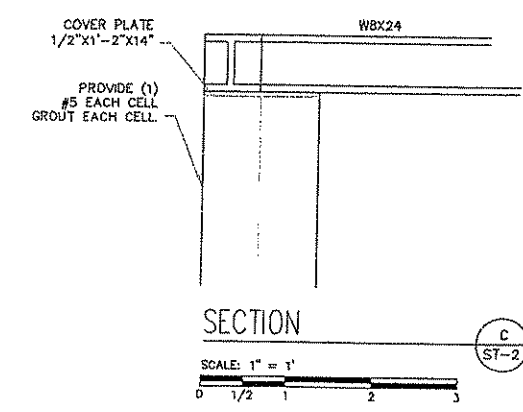
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SCALE: 1" = 4'  
1 ST-2



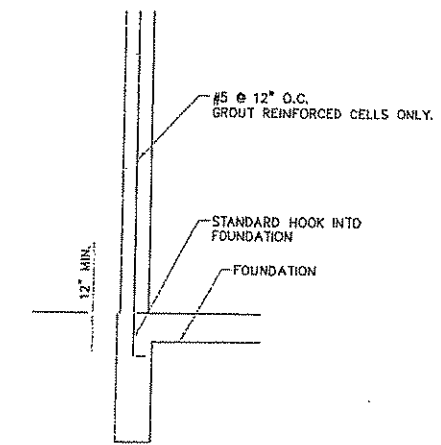
**FLOOR PLAN**  
SCALE: 1" = 4'  
2 ST-2



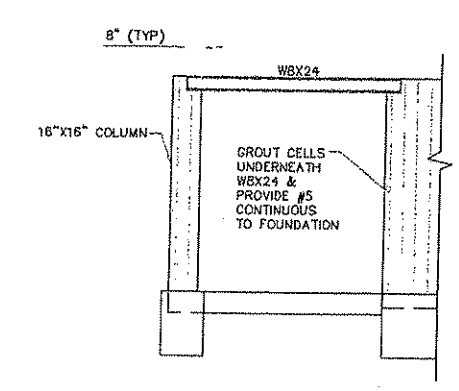
**DETAIL 1**  
SCALE: 1" = 0.5'  
3 ST-2



**SECTION C**  
SCALE: 1" = 1'  
C ST-2



**SECTION B**  
SCALE: 1" = 2'  
B ST-2



**SECTION A**  
SCALE: 1" = 4'  
A ST-2

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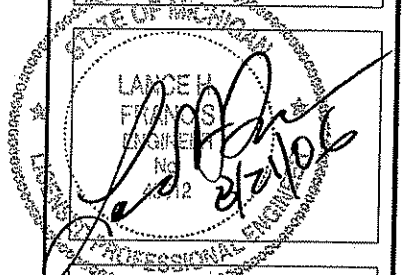
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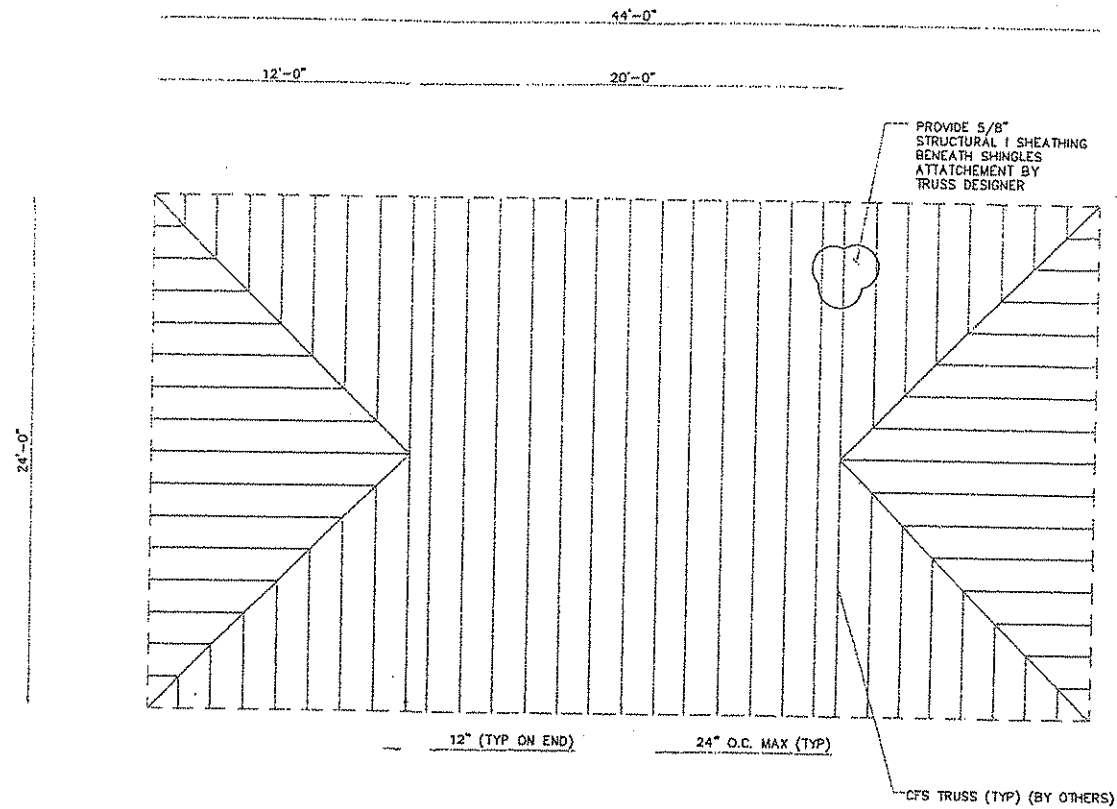
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**LAKESHORE PARK  
FLAG POLE  
DE01322D**

601 S. LAKE DRIVE  
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SHEET TITLE  
**STRUCTURAL DETAILS**

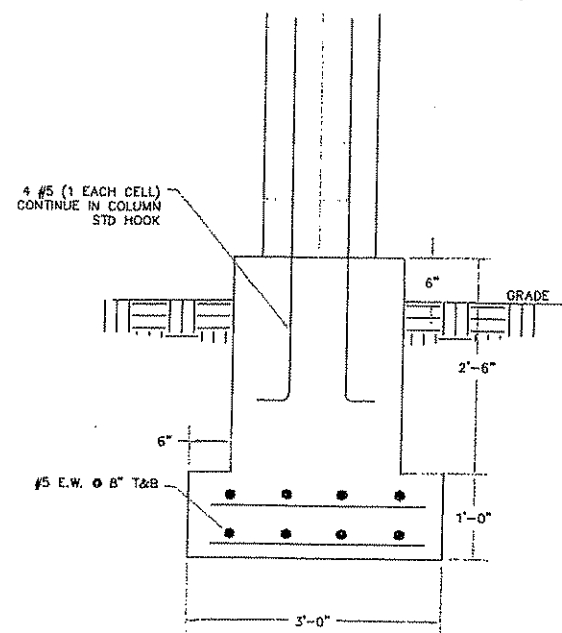
SHEET NUMBER  
**ST-2**



ROOF PLAN

SCALE: 1" = 4'  
0 2 4 8 16

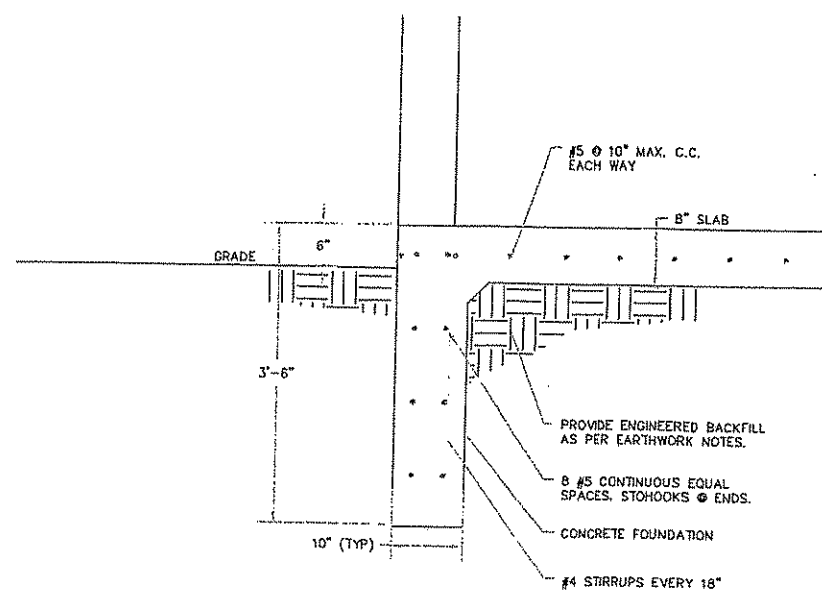
1  
ST-3



COLUMN PIER DETAIL

SCALE: 1" = 1'  
0 1/2 1 2 3

2  
ST-3

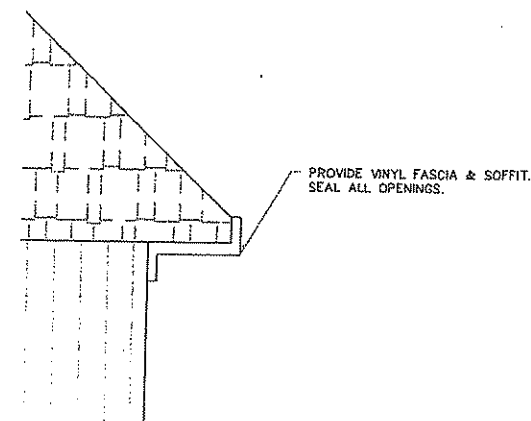


\*NOTES:  
BASED ON SOIL CHARACTERISTICS AS PROVIDED BY \*\*\*\*T.B.D.\*\*\*\*\*

TURN-DOWN FOUNDATION DETAIL

SCALE: 1" = 1'  
0 1/2 1 2 3

3  
ST-3



DETAIL

SCALE: N.T.S.

4  
ST-3

NOTES

1. ROOF TRUSS COMPONENT SHALL BE DESIGNED BY A REGISTERED ENGINEER IN THE STATE OF MICHIGAN FOR THE FOLLOWING LOADS:  
LL=25psf DL=20psf + SELF WEIGHT  
WIND & SNOW LOAD PER 18C2003
2. ROOF TRUSS SHALL BE COLD-FORMED STEEL STRUCTURAL FRAMING AND DESIGN AND INSTALLATION SHALL FOLLOW AISI CODE OF STANDARD PRACTICE.
3. CONTRACTOR & ROOF TRUSS DESIGNER SHALL SUBMIT ALL COMPONENT DESIGN & LAYOUT DOCUMENTS, INCLUDING DESIGN/DOCUMENTS FOR ATTACHMENT TO MAIN STRUCTURE.

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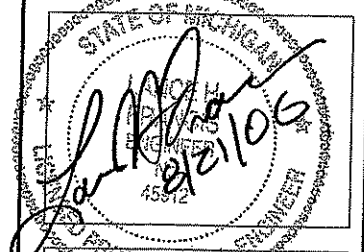
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