# FIRST AMENDMENT TO LICENSE AGREEMENT BETWEEN THE CITY OF ANN ARBOR AND SPRINT SPECTRUM L.P., A DELAWARE LIMITED PARTNERSHIP (Sprint Site ID #DE49XC513)

THIS FIRST	AMENDMENT TO	LICENSE AGE	REEMENT ("I	First Amendm	ent") is m	ade as of
the day	of,	2014, by and b	between the C	City of Ann A	Arbor, a	Michigan
municipal co	rporation, whose a	address is 301	East Huron	Street, Ann	Arbor,	Michigan
("Licensor")	and Sprint Spectrur	n L.P., a Delav	vare limited p	artnership, ("	Licensee'	'), whose
address is 639	1 Sprint Parkway, C	verland Park, K	S 66251.	_		

WHEREAS, Licensor and Licensee entered into a License Agreement dated September 11, 2000, to permit Licensee to erect and use telecommunications equipment ("Equipment") on the property located at 2011 Manchester Road, Ann Arbor, MI, more commonly known to Licensor as the Manchester Water Tower Site ("Site"), which License Agreement was modified by an Interim Addendum dated December 16, 2013 ("Interim Addendum"), to allow replacement of certain equipment to be covered by this amendment; and

WHEREAS, Licensor and Licensee desire to amend the Agreement to allow for the installation of additional antennas, associated cables and other communications instruments ("Additional Equipment"); and

WHEREAS, Licensor and Licensee agree that, as consideration for Licensee's Additional Equipment, the current License Fee payable under the Agreement shall be increased as set forth herein; and

WHEREAS, Licensor and Licensee desire to amend the Agreement to add or modify provisions, including provisions related to notice; and

WHEREAS, Licensor and Licensee, in their mutual interest, wish to amend the Agreement as set forth below accordingly.

NOW THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Licensor and Licensee agree to amend the License Agreement as follows:

1. **Section 5. Use of Site** is amended by adding "and Licensee's Access" to the title, by numbering the existing provisions of Section 5 as Subsection (a), by adding paragraphs at the end of Subsection (a) to provide for Licensee's addition of equipment and a new Subsection (b) to govern Licensee's access to the Site, both as follows, and by adding new Exhibits #2A, #3A and #4, attached:

**Additional Equipment**. After execution of this First Amendment by both Licensee and Licensor and subject to its provisions, Licensee shall have the right to add antennas and other facilities and equipment, all as identified in attached Exhibit #2A and as shown and described on attached Exhibit #3A design drawings ("Additional Equipment"). Licensee

shall remove antennas and other existing Equipment identified and shown as equipment to be removed on the Exhibit #3A design drawings. Licensee's Additional Equipment shall be subject to all the terms and conditions of the Agreement, unless and except as specifically modified by this First Amendment.

Future Equipment. Licensee reserves the right to replace/upgrade once within 18 months from the date of this amendment any other "Legacy Equipment," including antennas, radios and supporting equipment, without further adjustment of fees other than the 4% escalation on July 1st. Legacy Equipment is defined as the equipment currently installed as of December 11, 2013. The right to replace/upgrade shall survive the decommissioning of the Legacy Equipment. Licensee shall be required to pay all normal review and inspection fees and seek all required approvals required by the City of Ann Arbor prior to any such replacement/upgrade. The replacement/upgraded equipment will be similar to the Additional Equipment, described herein. No additional footprint is anticipated nor will there be any additional penetrations or welding without Licensor's prior approval. Licensee's Future Equipment shall be subject to all the terms and conditions of the Agreement, unless and except as specifically modified by this First Amendment.

All reference in the License Agreement to Exhibit #2 shall be deemed to include reference to Exhibit #2A, all references in the License Agreement to Exhibit #3 shall be deemed to include reference to Exhibit #3A, and all rights and obligations contained in the License Agreement relative to the Equipment shall also apply to the Additional Equipment unless clear from the context that they apply only to the original Equipment.

b) Licensee's Access. Licensor agrees that, during the Term of this Agreement, and provided that Licensee is not in default under any of the terms and conditions of this Agreement beyond applicable notice and cure periods, that Licensee shall be permitted access to Licensee's Equipment and Additional Equipment at the Site in accordance with the procedures set forth in Exhibit #4 (Security and Access Procedures). Licensee agrees to comply with the Security and Access Procedures, understanding that they may be changed from time to time as provided in Exhibit #4. In no event shall any additional costs or charges be added to this Agreement by virtue of such modification.

#### 2. **Section 4. Fees and Escalator** is amended as follows:

Licensee agrees to pay Licensor \$18,000 per year for the first 5 year term ("License Fee"). This rate shall increase 20% per 5-year term thereafter.

Starting December 12, 2013, the Licensee Fee shall be increased from \$25,920.00 to \$45,000.00 and the due date for the License Fee shall be changed from September 11 to July 1 of every year. The December 12, 2013, to June 30, 2014, portion of the License Fee that was due and paid by September 11, 2013 (\$14,273.75), is credited against the Licensee Fee due for the December 12, 2013, to June 30, 2014, period (\$24,780.82). Within thirty (30) days after execution of this First Amendment by Licensee and Licensor, Licensee shall pay Licensor an additional license fee amount of \$10,507.07 for the Additional Equipment for the period December 12, 2013, through June 30, 2014.

Effective July 1, 2014, the License Fee shall be subject to a 4% escalation every year, starting July 1, 2014, provided that the July 1, 2014, to September 10, 2014, portion of the License Fee that was due and paid by September 11, 2013 (\$5,112.99), shall be credited toward the adjusted Licensee Fee due for the July 1, 2014 to June 30, 2015, period (\$46,800.00) with the result that the License Fee amount due on or before July 1, 2014, shall be (\$41,687.01).

The License Fee shall not be prorated for any partial term during which this Agreement, as amended, is in effect except as may be explicitly provided in this Agreement. Timely payment is of the essence of this Agreement. There shall be a \$500 processing fee due for each payment received fourteen (14) days or more after the due date.

3. **Section 6. Submission of Plans and General Structural Requirements** is amended by adding the following at the end:

Additional Equipment. Licensee has provided to Licensor for review and approval complete plans and specifications for the Additional Equipment Licensee intends to install, construct, or otherwise place at the Site. With modifications, Licensor has approved the plans and specifications for installation, construction and placement of Licensee's Equipment at the Site, as shown more specifically on Exhibit #3A. Licensor and Licensee agree that Licensee has fully reimbursed Licensor for all its reasonable costs for such review and approval.

If any changes are made by Licensee or its agents to the plans and specifications reviewed and approved by Licensor prior to completion of the installation, Licensee agrees to submit revised plans and specifications showing those changes to Licensor for review and approval and agrees to reimburse Licensor for all its reasonable costs for said review and approval. Licensee shall pay all amounts due prior to installation of the Additional Equipment according to these changes.

Following review and approval of changes by Licensor, Licensee will submit a revised Exhibit #3A showing the changes and clearly showing the date of the approved changes within one (1) week.

Within fourteen (14) days of completion of installation of the Additional Equipment, Licensor or its contracted agent will perform a final inspection of such installation and submit a final inspection report to Licensee. Licensee shall be responsible for correcting all punch list items reasonably determined by Licensor or its agent during their final inspection within fourteen (14) days of receipt of notice of correction. Licensee shall provide digital photos documenting correction of all punch list items within this (14) fourteen day period. If digital photos do not adequately document that all punch list items have been completed as determined by Licensor or its agent, Licensee shall be required to reimburse Licensor for it or its agent's cost to re-inspect and confirm that all punch list items have been addressed. Licensor and Licensee agree that the reasonable costs of these inspection services, including re-inspections, will be solely the responsibility of Licensee.

All construction, installation, placement or relocation of the Additional Equipment shall be coordinated with Licensor in advance of the activity to minimize any disruption of Licensor's day-to-day activities. All removal or relocation of the existing Equipment shall be coordinated with Licensor in advance of the activity to minimize any disruption of Licensor's day-to-day activities. In no case may Licensee's activity jeopardize the safety or security of Licensor's activities.

complete plans and specifications for the Additional Equipment Licensee intends to install, construct, or otherwise place at the Site. With modifications, Licensor has approved the plans and specifications for installation, construction and placement of Licensee's Equipment at the Site, as shown more specifically on Exhibit #3A. Licensor and Licensee agree that Licensee has fully reimbursed Licensor for all its reasonable costs for such review and approval.

If any changes are made by Licensee or its agents to the plans and specifications reviewed and approved by Licensor prior to completion of the installation, Licensee agrees to submit revised plans and specifications showing those changes to Licensor for review and approval and agrees to reimburse Licensor for all its reasonable costs for said review and approval. Licensee shall pay all amounts due prior to installation of the Additional Equipment according to these changes.

Following review and approval of changes by Licensor, Licensee will submit a revised Exhibit #3A showing the changes and clearly showing the date of the approved changes within one (1) week.

Within fourteen (14) days of completion of installation of the Additional Equipment, Licensor or its contracted agent will perform a final inspection of such installation and submit a final inspection report to Licensee. Licensee shall be responsible for correcting all punch list items reasonably determined by Licensor or its agent during their final inspection within fourteen (14) days of receipt of notice of correction. Licensee shall provide digital photos documenting correction of all punch list items within this (14) fourteen day period. If digital photos do not adequately document that all punch list items have been completed as determined by Licensor or its agent, Licensee shall be required to reimburse Licensor for it or its agent's cost to re-inspect and confirm that all punch list items have been addressed. Licensor and Licensee agree that the reasonable costs of these inspection services, including re-inspections, will be solely the responsibility of Licensee.

All construction, installation, placement or relocation of the Additional Equipment shall be coordinated with Licensor in advance of the activity to minimize any disruption of Licensor's day-to-day activities. All removal or relocation of the existing Equipment shall be coordinated with Licensor in advance of the activity to minimize any disruption of Licensor's day-to-day activities. In no case may Licensee's activity jeopardize the safety or security of Licensor's activities.

Licensee agrees to contract with Dixon Engineering, Inc. to design and provide approved plans to Licensor to depict the installation of the Additional Equipment stated in Section

5 above, as amended. Upon completion of installation of the Additional Equipment, Dixon Engineering will perform a final inspection of such installation, and submit a final inspection report to the Licensor and Licensee. All costs of these engineering design and inspection services, will be solely the Licensee's responsibility.

#### 4. **Section 29. Environmental** is amended by adding a new Subsection (d) as follows:

d) Licensee will comply with all applicable environmental statutes, regulations and rules regarding its use of the Site, including but not limited to statutes, regulations and rules regarding radiofrequency radiation. Without limiting or modifying the foregoing, Licensee shall measure baseline radiofrequency radiation before any installation work is started, and shall measure radiofrequency radiation after installation of the Equipment.

#### 5. **Section 9. Emergency Contact** is amended as follows:

#### 9. Emergency Contact.

Each party shall identify one or more contacts as 24 hour, 7 days per week, 365 days per year, as an emergency contact. The contact information of either party must be updated immediately if it changes. Licensee also must send Licensor, to the attention of Water Treatment Plant Manager, written notice of its emergency contact information annually between July 1 and July 10. The current emergency contact information is:

#### For Licensor:

Water Treatment Plant Manager or On Site Person in Charge 919 Sunset Road Ann Arbor, MI 48103 24 hour emergency number (734) 994-2840

#### For Licensee:

Sprint PCS Network Operations Control Center 15620 West 113<sup>th</sup> Street Lenexa, KS 66219 888-850-1400

#### 6. **Section 21. Notices and Payments** is amended as follows:

#### 21. Notices and Payments.

All notices, demands, and payments required by this Agreement shall be delivered personally by overnight delivery service with receipt, or by United States mail, first class, postage pre-paid, and addressed to the appropriate party, with the respective address for each as indicated below. Any party to this agreement may change their addresses for

notice by giving written notice of the change to the others in the manner prescribed by this Paragraph.

#### For Licensor:

City of Ann Arbor Manager Water Treatment Plant PO Box 8647 Ann Arbor, Michigan 48107

#### With copies to:

City of Ann Arbor Public Services Area Administrator PO Box 8647 Ann Arbor, Michigan 48107-8647

and

City Attorney City of Ann Arbor PO Box 8647 Ann Arbor, Michigan 48107-8647

#### For Licensee:

Sprint National Lease Management 6391 Sprint Parkway Mailstop KSOPHT0101-Z2650 Overland Park, KS 66251-2650

#### With a copy to:

Sprint Law Department 6391 Sprint Parkway Mailstop KSOPHT0101-Z2020 Overland Park, KS 66251-2020 Attn: Real Estate Attorney

Notice to Licensee shall reference Sprint Site ID #DE49XC513.

- 7. **Section 17. Licensor's Representations** is deleted and Section 17 is reserved.
- 8. The terms and conditions of the License Agreement and the Interim Addendum are incorporated herein by this reference, and capitalized terms used in this First Amendment shall have the same meanings such terms are given in the License Agreement. Except as specifically

set forth herein, this First Amendment shall in no way modify, alter or amend the remaining terms of the License Agreement, all of which are ratified by both Licensor and Licensee and shall remain in full force and effect. To the extent there is any conflict or inconsistency between the terms and conditions of the License Agreement or the Interim Addendum and this First Amendment, the terms and conditions of this First Amendment will govern and control.

- 9. This First Amendment to the License Agreement between the parties shall be binding on the heirs, successors and assigns of the parties.
- 10. **Signatures.**

LICENSOR	THE CITY OF ANN ARBOR			
John Hieftje, its Mayor	By:			
	By: Jacqueline Beaudry, its City Clerk			
Approved as to form:	Approved as to substance:			
Stephen K. Postema, City Attorney	Steven D. Powers, City Administrator			
	Craig Hupy, Public Services Area Administrator			
LICENSEE	SPRINT SPECTRUM L.P., a Delaware Limited Partnership			
	Ву:			

#### EXHIBIT #2A

#### LIST OF EQUIPMENT

The Additional Equipment covered by this First Amendment to License Agreement are identified on various pages of the Construction Drawings prepared by Powder River Development Services, LLC, dated December 10, 2013, and attached as Exhibit #3A to this First Amendment to License Agreement.

#### EXHIBIT #3A

#### **SITE PLAN AND SPECIFICATIONS**

See the Construction Drawings attached hereto, prepared by Powder River Development Services, LLC, dated December 10, 2013.

#### **EXHIBIT #4**

#### SECURITY AND ACCESS PROCEDURES

These procedures are applicable for the following City facilities: Plymouth and Manchester Water Towers, and the Water Treatment Plant.

You shall contact the Water Treatment Plant Manager at the City's Water Treatment Plant at (734) 994-2840 a minimum of twenty-four (24) hours prior to access to the foregoing City facilities for non-emergency maintenance and repairs. During non-business hours or if the Plant Manager is unavailable, you shall contact the Supervisor-in-Charge at the Water Treatment Plant. You must provide us the names and photographs of your personnel who will be visiting these sites for this work. That information must be provided to the Manager at the Water Treatment Plant as soon as possible. Your personnel not on this list will not be allowed access. It is your responsibility to ensure that this information stays current with us. Personnel who are not on the list will not be allowed access unless the City has been provided their names and photographs at least forty-eight (48) hours before they seek access.

The City of Ann Arbor will not escort or provide maps or direction to Licensee equipment locations at the Water Treatment Plant. It is the responsibility of the Licensee to provide sufficient direction to its personnel. Personnel who arrive on site without this information will not be permitted entry.

In case access is for one of the water towers, your personnel will sign out a key from the Water Treatment Plant located at 919 Sunset Road. The person who signs out the key must provide the names of all persons who will be accessing the water tower. All such persons must already be on the list with the Water Treatment Plant Manager. The person who signs out the key must return the key to the Water Treatment Plant upon completion of work at the water tower site each day. The key must be returned at the end of each day work is performed. You are not permitted to keep the key overnight. You are not permitted to make copies of the key to the water towers. In all circumstances, including emergencies, you shall contact the Water Plant prior to arriving on the site to request a key.

In case of an emergency, your personnel will be allowed access without a 24-hour advance notice. However, prior notice is still required before arrival at the Water Treatment Plant to pick up a key. Access will be limited to persons on the list with the Manager of the Water Treatment Plant.

Access to the Site shall be in accordance with the Security and Access Procedures stated in this Exhibit 4. Provided Licensee complies with these Security and Access Procedures, Licensee shall be permitted continuous twenty-four (24) hour access to Licensee's Antenna Facility and Additional Equipment at the Site for the purpose of maintenance and repairs or for any other purposes permitted under this Agreement, except in situations where access to the Site by Licensee shall impair Licensor's response to any situation potentially compromising the security of the Site or the protection of the water supply of the City. During "potentially compromising

situations," access, if any at all is granted, shall be at the sole discretion and under the terms dictated by the City On Site Person in Charge.

Licensor may from time to time and in Licensor's sole discretion, revise these Security and Access Procedures. A copy of each such revision will be sent to Licensee at the addresses identified in this Agreement.

If access by Licensee requires Licensor to visit the water tower, the Licensee will be responsible for the time and travel expense associated with the staff person visiting the Site. The Licensee shall promptly reimburse these expenses to Licensor upon presentation of an itemized invoice.

THIS IS AN EXISTING SPRINT WIRELESS TELECOMMUNICATION FACILITY NETWORK VISION EQUIPMENT UPGRADE

**NEWTORK VISION MMBS LAUNCH** 

# **CITY WATER TOWER**

# **DE49XC513**

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

LATITUDE: 42.257778 / 42° 15' 28.13" (NAD 83) LONGITUDE: -83.71000 / -83° 42' 37.74" (NAD 83)

> 146' WATER TOWER MICHIGAN MARKET

#### MICHIGAN STATE CODE COMPLIANCE:

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORPITES. NOTHING IN THESE PLANS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

Sprint

- 2009 IBC, STANDARDS AND AMENDMENTS-WAC 51-50; 2009 IMC, STANDARDS AND AMENDMENTS-WAC 51-52; 2009 IFC, STANDARDS AND AMENDMENTS-WAC 51-54; 2009 IPC, STANDARDS AND AMENDMENTS-WAC 51-55; 51-57

- MIOSHA MICHIGAN OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

#### ACCESSIBILITY REQUIREMENTS:

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED IN ACCORDANCE WITH THE 2009 IBC BUILDING

#### CODE BLOCK

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS

- REMOVE (6) EXISTING PANEL ANTENNAS (2 PER SECTOR) INSTALL (3) NEW PANEL ANTENNAS (1 PER SECTOR) REMOVE (2) POWER AND BATTERY CABINET
- REMOVE (2) MODCELL CABINETS

- REMOVE (2) MODULELL CABINETS
  INSTALL (1) NEW MMBS CABINET
  INSTALL (1) NEW BBU CABINET
  INSTALL (1) NEW FIBER JUNCTION BOX
  REMOVE ALL EXISTING SPRINT ANTENNA COAXIAL CABLES
  INSTALL (3) NEW HYBRIFLEX FIBER OPTIC CABLES USING EXISTING COAX ROUTE
  (1 PER SECTOR)

#### PROJECT DESCRIPTION

<u>APPROVAL</u>	<u>SIGNATURE</u>	<u>DATE</u>
SITE ACQUISITION MANAGER		
CONSTRUCTION MANAGER		
A&E MANAGER		
PLANNING CONSULTANT		
RF MANAGER		
RF ENGINEER		
PROPERTY OWNER		
SPRINT REPRESENTATIVE		
AAV MANAGER		
SIGNAT	TURE BLOCK	





#### VICINITY MAP

AREA MAP

FROM DETROIT METROPOLITAN WAYNE COUNTY AIRPORT-WILLIAM ROGELL DR, DETROIT,

DEPART JOHN D DINGELL DR 1.4 MI, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR EUREKA RD WEST 1.2 MI, TAKE RAMP RIGHT FOR 1-275 NORTH TOWARD FLINT 2.0 MI, AT EXIT 17, TAKE RAMP RIGHT FOR 1-94 WEST TOWARD CHICAGO / ANN ARBOR 1.5 MI, AT EXIT 18.0B, TAKE RAMP RIGHT FOR US-23 NORTH, 1-94-BR TOWARD ANN ARBOR 15.0 MI, AT EXIT 18.0B, TAKE RAMP RIGHT FOR US-23 NORTH, 1-94-BR TOWARD ANN ARBOR 2.1 MI, KEEP STRAIGHT ONTO US-23 N 0.3 MI, AT EXIT 37B, TAKE RAMP RIGHT FOR US-23-BR / I-94-BR TOWARD ANN ARBOR 0.7 MI, KEEP STRAIGHT ONTO I-94 BLVD / US-23 BRANCH / WASHTENAW AVE 0.9 MI, TURN LEFT ONTO MANCHESTER RD 0.1 MI, ARRIVE AT 42.257778, -83.71 ON THE LEFT

DRIVING DIRECTIONS

#### SHEET **DESCRIPTION** TITLE SHEET N-1GENERAL NOTES N-2 GENERAL NOTES A-1 OVERALL SITE PLAN A-2 ENLARGED SITE PLAN A-3 ENLARGED EQUIPMENT PLANS A-4 ANTENNA PLANS AND SCHEDULES A-5 A-6 EQUIPMENT DETAILS A-7 EQUIPMENT DETAILS (OUTDOOR SPECIFICATIONS) A-8 EQUIPMENT DETAILS A-9 EQUIPMENT DETAILS ANTENNA AND CABLE COLOR CODING DETAILS E-1 ONE-LINE DIAGRAM & POWER PANEL SCHEDULE E-3ELECTRICAL DETAILS (OUTDOOR SPECIFICATIONS F-4 CONDUIT ROUTING E-5 GROUNDING PLAN E-6 GROUNDING DETAILS GROUNDING DETAILS

#### SHEET INDEX

# GENERAL DYNAMICS ON BEHALF OF SPRINT 27007 HILLS TECH CT. FARMINGTON HILLS, MI 48331 CONTACT: GREG BRUETT PH: 781.726.0174

#### PROPERTY INFORMATION

PROPERTY OWNER: THE CITY OF ANN ARBOR P.O.BOX 8647

ANN ARBOR, MI 48107 MOLLY ROBINSON 919 SUNSET ROAD ADDRESS: ANN ARROR MI 48103 (734) 794-6426

CITY OF ANN ARBOR TOWER OWNER: DE49XC513 SITE ID: ZONING CLASSIFICATION: PL

CONSTRUCTION TYPE: 2B OCCUPANCY JURISDICTION: CITY OF ANN ARBOR

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY NEW USE:

### PARCEL NUMBER(S):

LEASE AREA:

20' X 20' (400 SQ.FT.)

PROIECT SUMMARY

#### ARCHITECT & ELECTRICAL ENGINEER:

POWDER RIVER DEVELOPMENT SERVICES, LLC TOU EASI SHENANGU STREET
SHARPSVILLE, PA 16150
CONTACT: JASON DOCTER
PHONE: 724-977-2317
EMAIL: jason.docter@powderriverdev.com

#### STRUCTURAL ENGINEER:

#### SITE ACQ. PROJECT MANAGER

GENERAL DYNAMICS Z7007 HILLS TECH CT.
FARMINGTON HILLS, MI 48331
CONTACT: ANDREW JEWELL
PH: 305.747.0532 andrew.jewell@gdit.com

#### CONSTRUCTION MANAGER:

Z7007 HILLS TECH CT.
FARMINGTON HILLS, MI 48331
CONTACT: JAMES SHIREY
PH: 810.618.0803 iames.shirev@adwireless.com

#### BUILDING DEPARTMENT:

301 HURON STREET ANN ARBOR, MI 48107 LISHA TURNER-TOLBERT 734-794-6267

#### **ELECTRICAL COMPANY:**

DTE ENERGY ONE ENERGY PLAZA
DETROIT, MI 48226
CONTACT: AVAILABLE REP.
PH: 734.302.4800

#### TELCO COMPANY:

3365 WASHINGTON AVE, SUITE E ANN ARBOR MI
CONTACT: AVAILABLE REP
PH: 734-973-8336

#### AAV MANAGER:

GENERAL DYNAMICS WIRELESS SERVICES 27007 HILLS TECH CT.
FARMINGTON HILLS, MI 48331
CONTACT: DENNIS SIKES
PH: 248.991.1502 dennis.sikes@adit.com

#### RF ENGINEER:

27007 HILLS TECH CT.
FARMINGTON HILLS, MI 48331
CONTACT: RINA PATEL
PH: 248.996.4971
EMAIL: r.patel@sta.samsung.com

PROJECT TEAM





#### GENERAL DYNAMICS

WIRELESS SERVICES



#### POWDER RIVER 100 E. SHENANGO STREET

SHARPSVILLE, PA 16150 724.962.5999

NETWORK VISION MMBS LAUNCH

## CITY WATER **TOWER**

DF49XC513 2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

ISSUE DATE: 12-10-2013

### ISSUED FOR: CONSTRUCTION DWGS

	REVISIONS								
REV.	DATE	DESCRIPTION	INITIALS						
Α	5/21/12	ISSUED FOR CDs 90%	ССМ						
В	03/01/13	ISSUED FOR CDs 100%	ССМ						
С	06/18/13	ISSUED FOR CDs FINALS	ССМ						
D	12/10/13	ISSUED FOR REVISED FINALS	JED						

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET



TITLE SHEET

SHEET NUMBER:

D

#### GENERAL CONSTRUCTION NOTES

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST
- CONTRACTOR SHALL CONSTRUCT SITE IN ACCORDANCE WITH THESE DRAWINGS AND SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES (LATEST REVISION). THE SPECIFICATION IS THE RULING DOCUMENT AND ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THESE DRAWINGS SHOULD BE BROUGHT OF THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH
- CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE NEW WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OF FIELD CONDITIONS.
- PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE
- DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE WORK.
- DETAILS ARE INTENDED TO SHOW DESIGN INTENT, MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF
- CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK LINDER THIS CONTRACT WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
- 10. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE SUPERINTENDENT OF BUILDINGS & GROUNDS AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.
- . CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK,
- 12 INSTALL ALL FOLLIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
- 3. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING ETC. AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
- 14. CONTRACTOR SHALL SUBMIT TO THE PROPERTY OWNER COPIES OF ALL PERMITS PRIOR TO SITE AND DOCUMENTATION THAT PERMITS WERE PROPERLY CLOSED UPON INITIATING WORK OF THE WORK.
- 15. REPAIR ALL EXISTING WALL SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACES.
- 16. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED
- 7. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR MODGES OF AN NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF
- 18. MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS....
- 19. NO PENETRATION/TAPPING/CUTTING OR SIMILAR DESTRUCTIVE WORK SHALL BE PERMITTED ON ANY STEEL OR CONCRETE ON SITE WHETHER STRUCTURAL OR NON-STRUCTURAL THAT IS NOT CLEARLY IDENTIFIED IN THE PLAN SET WITHOUT WRITTEN PERMISSION FROM THE PROPERTY OWNER.
- 20 CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION FROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION SHALL BE IN CONFORMANCE WITH JURISDICTIONAL OR STATE AND LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL AND COORDINATED WITH LOCAL REGULATORY AUTHORITIES.
- 21. LIGHT SHADED LINES AND NOTES REPRESENT WORK PREVIOUSLY DONE. DARK SHADED LINES AND NOTES REPRESENT THE SCOPE OF WORK FOR THIS PROJECT. CONTRACTOR SHALL VERIFY IF EXISTING CONSTRUCTION IS COMPLETE. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
- 22. CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND/OR WIRING CERTIFICATES REQUIRED FOR THE ELECTRICAL SERVICE UPGRADE. IN ADDITION, CONTRACTOR SHALL PROVIDE ALL NECESSARY COORDINATION AND SCHEDULING WITH THE SERVING ELECTRICAL UTILITY AND LOCAL INSPECTION .....
- 3. CONTRACTOR SHALL SUBMIT TO THE PROPERTY OWNER COPIES OF ALL PERMITS PRIOR TO INITIATING WORK ON SITE AND DOCUMENTATION THAT PERMITS WERE PROPERLY CLOSED UPON COMPLETION OF THE WORK.
- 24. NO PENETRATION/TAPPING/CUTTING OR SIMILAR DESTRUCTIVE WORK SHALL BE PERMITTED ON ANY STEEL OR CONCRETE ON SITE WHETHER STRUCTURAL OR NON-STRUCTURAL HAT IS NOT CLEARLY IDENTIFIED IN THE PLAN SET WITHOUT WRITTEN PERMISSION FROM THE PROPERTY OWNER.

#### ELECTRICAL NOTES

- ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ANY/ALL ELECTRICAL WORK INDICATED. ANY/AL CONSTRUCTION SHALL BE IN ACCORDANCE W/DRAWINGS AND ANY/ALL APPLICABLE SPECIFICATIONS. IF ANY PROBLEMS ARE ENCOUNTERED BY COMPLYING WITH THESE REQUIREMENTS, CONTRACTOR SHALL NOTIFY 'CONSTRUCTION MANAGER' AS SOON AS POSSIBLE, AFTER THE DISCOVERY OF THE PROBLEMS, AND SHALL NOT PROCEED WITH THAT PORTION OF WORK, UNTIL THE 'CONSTRUCTION MANAGER' HAS DIRECTED THE CORRECTIVE ACTIONS TO BE TAKEN.
- ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ANY/ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATION INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. ALL EXISTING CONDITIONS OF ELECTRICAL EQUIP, LIGHT FIXTURES, ETC., THAT ARE PART OF THE FINAL SYSTEM, SHALL BE VERIFIED BY THE CONTRACTOR, PRIOR TO THE SUBMITTAL OF HIS BIO. FALURE TO COMPLY WITH THIS PARAGRAPH WILL IN NO WAY RELIEVE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND ALL CODES AND LOCAL ORDINANCES OF THE LOCAL POWER & TELEPHONE COMPANIES HAVING JURISDICTION AND SHALL INCLUDED BUT NOT BE LIMITED TO:
  - A. UL -- UNDERWRITERS LABORATORIES

  - A. UL -- UNDERWRITERS LABURATORIES
    B. NEC -- NATIONAL ELECTRICAL CODE
    C. NEMA -- NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
    D. OSHA -- OCCUPATIONAL SAFETY AND HEALTH ACT
    E. IBC -- INTERNATIONAL BUILDING CODE
    F. NFPA -- NATIONAL FIRE CODES

- 4. DO NOT SCALE ELECTRICAL DRAWINGS, REFER TO SITE PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, AND CONFIRM WITH 'CONSTRUCTION MANAGER' ANY SIZES AND AND LOCATIONS WHEN
- EXISTING SERVICES: CONTRACTOR SHALL NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE GDIT AND PROPERTY OWNER.
- 6. CONTRACTOR SHALL PAY FOR ANY/ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR IS TO OBTAIN PERMITS AND APPROVED SUBMITTALS PRIOR TO THE WORK BEGINNING OR ORDERING EQUIPMENT.
- 7. THE TERM "PROVIDE" USED IN CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, INDICATES THAT THE
- 8. CONTRACTOR SHALL CONFIRM WITH LOCAL UTILITY COMPANY ANY/ALL REQUIREMENTS SUCH AS THE: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, SIZE OF TRANSFORMERS, SCHEDULED DOWNTIME FOR THE OWNERS' CONFIRMATION, ETC. ANY/ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER, PRIOR TO BEGINNING ANY WORK
- 9. MINIMUM WIRE SIZE SHALL BE #12 AWG, NOT INCLUDING CONTROL WIRING, UNLESS NOTED OTHERWISE. ALL CONDUCTORS SHALL BE COPPER WITH THWN INSULATION.
- 10. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET/DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
- 11. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF THE CONSTRUCTION.
  CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND
  PROVIDE ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
- 12. ELECTRICAL SYSTEM SHALL BE AS COMPLETELY AND EFFECTIVELY GROUNDED, AS REQUIRED BY SPECIFICATION, SET FORTH BY SPRINT.
- 13. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS, WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULL OPERATIVE AND SUBJECT TO REGULATORY INSPECTION AND APPROVAL BY CONSTRUCTION MANAGER.
- 14. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF
- 15. CONTRACTOR SHALL GUARANTEE ANY/ALL MATERIALS AND WORK FREE FROM DEFECTS OR A PERIOD OF NOT LESS THAN TWO YEARS FROM DATE OF CUSTOMER'S ACCEPTANCE.
- 16. THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OF THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN WITHIN 48 HOURS.
- 17. ADEQUATE AND REQUIRED LIABILITY INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LOSS AND ANY/ALL PROPERTY DAMAGE FOR THE DURATION OF WORK.
- 18. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES AND DEVICES FOR ALL
- DITCHING AND BACK FILL: CONTRACTOR SHALL PROVIDE FOR ALL UNDERGROUND INSTALLED CONDUIT AND/OR CABLES INCLUDING EXCAVATION AND BACKFILLING AND COMPACTION. REFER TO NOTES AND REQUIREMENTS. EXCAVATION, AND BACKFILLING.
- 20. MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SHALL APPEAR ON THE LIST OF U.L. APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NEC, NEMA AND IEEE.
- 21 CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR MANUFACTURES CATALOG INFORMATION OF ANY/AL LIGHTING FIXTURES, SWITCHES AND ALL OTHER ELECTRICAL ITEMS FOR APPROVAL BY THE CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
- 22. ANY CUTTING OR PATCHING DEEMED NECESSARY FOR ELECTRICAL WORK IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY AND SHALL BE INCLUDED IN THE COST FOR WORK AND PERFORMED TO THE SATISFACTION OF THE 'CONSTRUCTION MANAGER' LIPON FINAL ACCEPTANCE
- 23. THE ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS WITH ONLY TYPEWRITTEN DIRECTORIES. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
- 24. DISCONNECT SWITCHES SHALL BE H.P. RATED HEAVY-DUTY, QUICK-MAKE AND QUICK-BREAK ENCLOSURES, AS REQUIRED BY EXPOSURE TYPE.
- 25. ALL CONNECTIONS SHALL BE MADE WITH A PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO-OXIDE A" BY DEARBORNE CHEMICAL CO. COAT ALL WIRE SURFACES BEFORE CONNECTING. EXPOSED COPPER SURFACES, INCLUDING GROUND BARS, SHALL BE TREATED - NO SUBSTITUTIONS.
- 26. REACEWAYS: CONDUIT SHALL BE SCHEDULE 40 PVC MEETING OR EXCEEDING NEMA TC2 1990. CONTRACTOR SHALL PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS — 200 LBS TEST POLYETHYLENE CORD. ALL CONDUIT BENDS SHALL BE A MINIMUM OF 2 FT. RADIUS. RGS CONDUITS WHEN SPECIFIED, SHALL MEET UI.—6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIGID CONDUIT. COAT ALL THREADS WITH 'BRITE ZING' OR 'GOLD CALV'
- 27. SUPPORT OF ALL ELECTRICAL WORK SHALL BE AS REQUIRED BY NEC
- 28. CONDUCTORS: CONTRACTOR SHALL USE 98% CONDUCTIVITY COPPER WITH TYPE THWN INSULATION, 600 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG. USE STRANDED CONDUCTORS FOR WIRE ABOVE NO. 8 AWG.
- 29 CONNECTORS FOR POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8
- 30. SERVICE: 240/120V, SINGLE PHASE, 3 WIRE CONNECTIONS AVAILABLE FROM UTILITY COMPANY. OWNER OR OWNERS AGENT WILL APPLY FOR POWER.
- 31. TELEPHONE SERVICE: CONTRACTOR SHALL PROVIDE EMPTY CONDUITS WITH MULE TAPE AS INDICATED ON
- 32. ELECTRICAL AND TELCO RACEWAYS TO BE BURIED A MINIMUM OF 2' DEPTH.
- 33. CONTRACTOR SHALL PLACE TWO LENGTHS OF WARNING TAPE AT A DEPTH OF 12" BELOW GROUND AND DIRECTLY ABOVE ELECTRICAL AND TELCO SERVICE CONDUITS. CAUTIONS TAPE TO READ "CAUTION BURIED ELECTRIC" OR "BURIED TELECOM"
- 34. ALL BOLTS SHALL BE STAINLESS STEEL

#### ANTENNA & COAX NOTES

- 1. VERIFY EACH COAXIAL CABLE LENGTH, DIAMETER, ROUTING, COLOR CODING AND ALL APPURTENANCES WITH
- 2. THE MAXIMUM COAXIAL CABLE LENGTH AND CORRESPONDING COAXIAL CABLE DIAMETER IS SHOWN ON SHEET A-4. THIS CABLE LENGTH IS TO BE USED FOR FABRICATION OR CONSTRUCTION. ACTUAL ANTENNA CABLE LENGTH(S) MUST BE VERIFIED. COAXIAL CABLE SHALL BE PROVIDED BY GDIT.
- 3 ALL COAX CABLES SHALL UTILIZE GROUND KITS GROUNDED AS FOLLOWS:
  - A. NEAR ANTENNA RAD CENTER ELEVATION.
- B. MIDDLE OF TOWER (MID-HEIGH OF ANTENNA), IF CABLE RUN IS OVER 200', C. BOTTOM OF TOWER,
- D. AT MASTER GROUND BAR 3'-0" FROM MMBS-BBU CABINET

- 4. ALL TOP JUMPERS SHALL BE LENGTHS AS SHOWN AND INSTALLED BY CONTRACTOR.
- 5. ALL CABLES SHALL BE COLOR CODED AS SHOWN ON SHEET RF-1 AND IN ACCORDANCE WITH SPRINT
- 6. BANDING SHALL BE IN ACCORDANCE WITH SHEET A-4, RF-1 AND AS FOLLOWS:
  - A. MAIN LINE COLOR BANDS SHALL BE 2" WIDE, MAINTAIN 1" SPACING BETWEEN COLORS.
  - B. FREQUENCY COLOR BANDS SHALL BE 2" WIDE WITH 1" SPACE.

    C. JUMPER COLOR BANDS SHALL BE 1" WIDE WITH 10" SPACE.

  - D. START COLOR BANDS 2" BEYOND WEATHERPROOFING. E. START SELECTOR COLOR NEXT TO END CONNECTORS.
- 7. FINAL COAXIAL ANTENNA CABLE SIZES SHALL BE DETERMINED BY SAMSUNG RF ENGINEER. SEE ANTENNA SCHEDULE SHEET A-4. BASED ON FINAL CABLE RUN LENGTHS DETERMINED BY GD.
- 8. SEE CONSTRUCTION MANAGER FOR ANTENNA SUPPORT ASSEMBLY TYPE
- 9. ALL COAXIAL CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 3' OR THE CABLE MANUFACTURES SPECIFICATIONS WHICHEVER IS LESS, WITH HARDWARE SPECIFIED IN THE COAXIAL CABLE ROUTING DETAILS OF THE SUPPLIED STRUCTURAL REPORT.
- 10. PROVIDE AT LEAST 6" OF SLACK IN THE MAIN COAXIAL CABLES AT THE ANTENNA MOUNTING ELEVATION TO PROVIDE FOR FUTURE CONNECTOR REPLACEMENT.

#### ANTENNA & HYBRID CABLE NOTES

- 1. VERIFY EACH HYBRID CABLE LENGTH, ROUTING, DIAMETER, COLOR CODING AND ALL APPURTENANCES WITH GDIT.
- 2. THE HYBRID CABLE AND DIAMETER LENGTH IS SHOWN ON A-4. EXCESS CABLE LENGTHS TO BE DRESSED IN MANNER APPROVED BY GDIT, CABLES CANNOT BE CUT TO FIT.
- 3. HYBRID CABLE INTERNAL GROUND WIRE TO BE GROUNDED AT TOP AND BOTTOM PER SAMUSUNG'S (SPRINT) SPECIFICATIONS.
- 4. EXCESS TOP 15' HYBRID CABLE FIBER JUMPERS TO BE DRESSED IN A MANNER APPROVED BY GDIT, CANNOT BE COILED, MUST BE SECURED TO TOWER MOUNTS.
- 5. ALL MAIN CABLES SHALL BE COLOR CODED AS SHOWN ON SHEET RF-1 & IN ACCORDANCE WITH SPRINT SPECIFICATIONS.
- 6. BANDING SHALL BE IN ACCORDANCE WITH SHEET A-4, RF-1.
  - B. JUMPER COLOR BANDS SHALL BE 2" WIDE MAINTAIN 1" SPACING BETWEEN.
    B. JUMPER COLOR BANDS SHALL BE 1" WIDE WITH 1" SPACE.

  - C. START COLOR BANDS 2" BEFORE MAIN CABLE END.
- 7. FINAL HYBRID CABLE SIZES SHALL BE DETERMINED BY SAMSUNG RF ENGINEER. SEE HYBRID CABLE SCHEDULE SHEET RF-1, BASED ON FINAL CABLE RUN LENGTHS DETERMINED BY GDIT.
- 8. ALL HYBRID CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 3' HORIZONTALLY OR 4' VERTICALLY OR THE CABLE MANUFACTURER'S SPECIFICATIONS WHICHEVER IS LESS, WITH HARDWARE SPECIFIED IN THE HYBRID CABLE ROUTING DETAILS OF THE SUPPLIED STRUCTURAL SUPPORT

#### SITE WORK NOTES

- 1. DO NOT EXCAVATE OR DISTURB BEYOND THE PROPERTY LINES OR LEASE LINES, UNLESS OTHERWISE NOTED.
- 2. DO NOT SCALE BUILDING DIMENSIONS FROM DRAWING.
- 3. SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILT DRAWINGS BY GENERAL CONTRACTOR AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.
- 4. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ENGINEER AND OWNER ASSUME NOT RESPONSIBILITY WHATSDEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING LITHIUTIES.
- 5. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS/HER OWN RISK AND EXPENSE
- 6. CONTRACTOR SHALL CALL LOCAL DIGGER HOT LINE FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF
- 7. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK.
- 8. GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.
- ALL TEMPORARY EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
- 10. STRUCTURAL FILLS SUPPORTING PAVEMENTS SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR
- 11. NEW GRADES NOT IN BUILDING AND DRIVEWAY IMPROVEMENT AREA TO BE ACHIEVED BY FILLING WITH APPROVED CLEAN FILL AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.
- 12. ALL FILL SHALL BE PLACED IN UNIFORM LIFTS. THE LIFTS THICKNESS SHOULD NOT EXCEED THAT WHICH CAN BE PROPERLY COMPACTED THROUGHOUT ITS ENTIRE DEPTH WITH THE EQUIPMENT AVAILABLE.
- 13. ANY FILLS PLACED ON EXISTING SLOPES THAT ARE STEEPER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE AS DIRECTED BY A GEOTECHNICAL ENGINEER. 14. CONTRACTOR SHALL CLEAN ENTIRE SITE DAILY AFTER CONSTRUCTION SUCH THAT NO PAPERS, THRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF—SITE BY THE GENERAL CONTRACTOR.
- 15. ALL TREES AND SHRUBS SHALL BE PROTECTED BY THE GENERAL CONTRACTOR.
- 16. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.
- 17. SITE SHALL BE RESTORED TO EXISTING CONDITION OR BETTER AT THE COMPLETION OF THE WORK.
- 18 CONTRACTOR SHALL SUBMIT A MINIMUM OF 20 DIGITAL PHOTOS OF THE SITE AND WORK AREAS PRIOR TO MOBILIZATION AND 20 DIGITAL PHOTOS OF THE SITE (FROM THE SAME VANTAGE POINTS) AT THE COMPLETION OF THE WORK PRIOR TO DEMOBILIZATION. PHOTOS SHALL BE SUBMITTED TO THE PROPERTY OWNER ON FLASH DRIVE OR CD.
- 19. CONTRACTOR SHALL CONDUCT A PUNCH LIST WALK THROUGH WITH THE PROPERTY OWNER PRIOR TO DEMOBILIZATION AND SHALL ADDRESS ALL PUNCH LIST ITEMS WITHIN 7 CALENDAR DAYS OF RECEIVING THE
- 20. ALL DISTURBED LAWN AREAS SHALL BE SCARIFIED, TOP SOILED, AND HYDROSEEDED.





GENERAL DYNAMICS

WIRELESS SERVICES



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GENERAL NOTES

SHEET NUMBER



REVISION:

HE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

#### FOUNDATION, EXCAVATION AND BACKFILL NOTES

- 1. ALL FINAL GRADED SLOPES SHALL BE A MAXIMUM OF 3 HORIZONTAL TO 1 VERTICAL
- 2. ALL EXCAVATIONS PREPARED FOR PLACEMENT OF CONCRETE SHALL BE OF UNDISTURBED SOILS, SUBSTANTIALLY HORIZONTAL AND FREE FROM ANY LOOSE, UNSUITABLE MATERIAL OR FROZEN SOILS, AND WITHOUT THE PRESENCE OF POUNDING WATER, DEWATERING FOR EXCESS GROUND WATER SHALL BE PROVIDED WHEN REQUIRED, COMPACTION OF SOILS UNDER CONCRETE PAD FOUNDITIONS SHALL NOT BE LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR THE SOIL IN ACCORDANCE WITH ASTM
- CONCRETE FOUNDATIONS SHALL NOT BE PLACED ON ORGANIC OR UNSUITABLE MATERIAL. IF INADEQUATE BEARING CAPACITY IS REACHED AT THE DESIGNED EXCAVATION DEPTH, THE UNSATISFACTORY SOIL SHALL BE EXCAVATED TO ITS FULL DEPTH AND EITHER BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION SHALL BE FILLED WITH CONCRETE OF THE SAME TYPE SPECIFIED FOR THE FOUNDATION, CRUSHED STONE MAY BE USED TO STABILIZE THE BOTTOM OF THE EXCAVATION. ANY STONE SUB BASE MATERIAL, IF USED, SHALL NOT SUBSTITUTE FOR REQUIRED THICKNESS OF CONCRETE.
- ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIAL SUCH AS VEGETATION, TRASH, DEBRIS, AND SO FORTH PRIOR TO BACK FILLING. BACK FILL SHALL CONSIST OF APPROVED MATERIALS SUCH AS EARTH, LOAM SANDY CLAY, SAND AND GRAVEL, OR SOFT SHALE, FREE FROM CLODS OR LARGE STONES OVER 2 1/2" MAX DIMENSIONS. ALL BACK FILL SHALL BE PLACED IN COMPACTED LAYERS.
- ALL FILL MATERIALS AND FOUNDATION BACK FILL SHALL BE PLACED MAXIMUM 6" THICK LIFTS BEFORE COMPACTION. EACH LIFT SHALL BE WETTED IF REQUIRED AND COMPACTED TO NOT LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR SOIL IN ACCORDANCE WITH ASTM D1557.
- NEWLY PLACED CONCRETE FOUNDATIONS SHALL CURE A MINIMUM OF 72 HRS PRIOR TO BACK FILLING.
- FINISHED GRADING SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE AND PREVENT STANDING WATER. THE FINAL (FINISH) ELEVATION OF SLAB FOUNDATIONS SHALL SLOPE AWAY IN ALL DIRECTIONS FROM THE CENTER. FINISH GRADE OF CONCRETE PADS SHALL BE A MAXIMUM OF 4 INCHES ABOVE FINAL FINISH GRADE LEVATIONS. PROVIDE SURFACE FILL GRAVEL TO ESTABLISH SPECIFIED ELEVATIONS WHERE REQUIRED.
- NEWLY GRADED SURFACE AREAS TO RECEIVE GRAVEL SHALL BE COVERED WITH GEOTEXTILE FABRIC TYPE: NEWLY GRADED SURFACE AREAS TO RECEIVE GRAVEL SHALL BE COVERED WITH GEOTEXTILE FABRIC TYPE: TYPAR-35401 AS MANUFACTURED BY "CONSTRUCTION MATERIAL 1-800-239-3841" OR AN APPROVED EQUIVALENT, SHOWN ON PLANS. THE GEOTEXTILE FABRIC SHALL BE BLACK IN COLOR TO CONTROL THE RECURRENCE OF VEGETATIVE GROWTH AND EXTEND TO WITHIN 1 FOOT OUTSIDE THE SIFE FENCING OR ELECTRICAL GROUNDING SYSTEM PERIMETER WHICH EVER IS GREATER. ALL FABRIC SHALL BE COVERED WITH A MINIMUM OF 4" DEEP COMPACTED STONE OR GRAVEL AS SPECIFIED. I.E. FDOT TYPE No. 57 FOR FENCED COMPOUND; FDOT TYPE No. 67 FOR ACCESS DRIVE AREA.
- IN ALL AREAS TO RECEIVE FILL, REMOVE ALL VEGETATION, TOPSOIL, DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND DELETERIOUS MATERIALS FROM GROUND SURFACE. PLOW STRIP OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SUCH THAT FILL MATERIAL WILL BIND
- 10. WHEN SUB GRADE OR PREPARED GROUND SURFACE HAS A DENSITY LESS THAN THAT REQUIRED FOR THE FILL MATERIAL, SCARIFY THE GROUND SURFACE TO DEPTH REQUIRED, PULVERIZE, MOISTURE—CONDITION AND/OR AERATE THE SOILS AND RE-COMPACT TO THE REQUIRED DENSITY PRIOR TO PLACEMENT OF FILLS.
- 11. IN AREAS WHICH EXISTING GRAVEL SURFACING IS REMOVED OR DISTURBED DURING CONSTRUCTION OPERATIONS, REPLACE GRAVEL SURFACING TO MATCH ADJACENT GRAVEL SURFACING AND RESTORED TO THE SAME THICKNESS AND COMPACTION AS SPECIFIED. ALL RESTORED GRAVEL SURFACING SHALL BE FREE FROM CORRUGATIONS AND WAVES
- 12. EXISTING GRAVEL SURFACING MAY BE EXCAVATED SEPARATELY AND REUSED WITH THE CONDITION THAT ANY UNFAVORABLE AMOUNTS OF ORGANIC MATTER, OR OTHER DELETERIOUS MATERIALS ARE REMOVED PRIOR TO REUSE. FURNISH ANY ADDITIONAL GRAVEL RESURFACING MATERIAL AS NEEDED TO PROVIDE A FULL DEPTH COMPACTED SURFACE THROUGHOUT SITE.
- 13. GRAVEL SUB SURFACE SHALL BE PREPARED TO REQUIRED COMPACTION AND SUB-GRADE FLEVATIONS BEFORE GRAVEL SURFACING IS PLACED AND/OR RESTORED. ANY LOOSE OR DISTURBED MATERIALS SHALL BE THOROUGHLY COMPACTED AND ANY DEPRESSIONS IN THE SUB GRADE SHALL BE FILLED AND COMPA WITH APPROVED SELECTED MATERIAL. GRAVEL SURFACING MATERIAL NOT BE USED FOR FILLIN DEPRESSIONS IN THE SUB GRADE.
- 14. PROTECT EXISTING GRAVEL SURFACING AND SUB GRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE.
- 15. DAMAGE TO EXISTING STRUCTURES AND/OR UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED AND/OR REPLACED TO THE OWNERS SATISFACTION AT NO ADDITIONAL COST TO THE CONTRACT.
- 16. ALL SUITABLE BORROW MATERIAL FOR BACK FILL OF THE SITE SHALL BE INCLUDED IN THE BID. EXCESS TOPSOIL AND UNSUITABLE MATERIAL SHALL BE DISPOSED OF OFF SITE AT LOCATIONS APPROVED BY GOVERNING AGENCIES AT NO ADDITIONAL COST TO THE CONTRACT.

#### ENVIRONMENTAL NOTES

- ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH ISSUED PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF FINES AND PROPER CLEAN UP FOR AREAS IN VIOLATION.
- 2. CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS AND SHALL BE MAINTAINED IN PLACE THROUGH FINAL JURISDICTIONAL INSPECTION & RELEASE
- 3. CONTRACTOR SHALL INSTALL/CONSTRUCT ALL NECESSARY SEDIMENT/SILT CONTROL FENCING AND PROTECTIVE MEASURES WITHIN THE LIMITS OF SITE DISTURBANCE PRIOR TO CONSTRUCTION.
- NO SEDIMENT SHALL BE ALLOWED TO EXIT THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ADEQUATE MEASURES FOR CONTROLLING EROSION. ADDITIONAL SEDIMENT CONTROL FENCING MAY BE REQUIRED IN ANY AREAS SUBJECT TO EROSION
- 5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES WITH SILT AND EROSION CONTROL MEASURES WANTAINED ON THE DOWNSTREAM SIDE OF SITE DRAINAGE, ANY DAMAGE TO ADJACENT PROPERTY AS A RESULT OF EROSION WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS AND ANY REPAIRS OF ALL SEDIMENT CONTROL MEASURES INCLUDING SEDIMENT REMOVAL AS NECESSARY.
- CLEARING OF VEGETATION AND TREE REMOVAL SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM
- 8. SEEDING SAND MULCHING AND/OR SODDING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE PROJECT FACILITIES AFFECTING LAND DISTURBANCE.
- 9. CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS, AND CHECK DAMS.
- 10. RIP RAP OF SIZES INDICATED SHALL CONSIST OF CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY STONE FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI, OR OTHER DELETERIOUS SUBSTANCES.

#### STRUCTURAL STEEL NOTES

- ALL STEEL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION. STEEL SECTIONS SHALL BE IN ACCORDANCE WITH ASTM AS INDICATED BELOW: W-SHAPES: ASTM A992, 50 KSI ANGLES, BARS CHANNELS: ASTM A36, 36 KSI HSS SECTIONS: ASTM 500 46 KS PIPE SECTIONS: ASTM A53-E. 35 KSI
- 2. ALL EXTERIOR EXPOSED STEEL AND HARDWARE SHALL BE HOT DIPPED GALVANIZED.
- 3. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP
- 4. NON-STURCUTRAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
- FIELD MODIFICATIONS ARE TO BE COATED WITH ZINC ENRICHED PAINT.
- 6. NO WELDING TO STRUCTURAL OR NON-STRUCTURAL STEEL IS PERMITTED WITHOUT WRITTEN PERMISSION FROM THE PROPERTY OWNER

#### CONCRETE MASONRY NOTES

- 1. CONCRETE MASONRY UNITS SHALL BE MEDIUM WEIGHT UNITS CONFORMING TO ASTM C90, GRADE N-1, (F'M=1,500 PS), MEDIUM WEIGHT (115 PCF),
- 2. MORTAR SHALL BE TYPE "S" (MINIMUM 1,800 PSI AT 28 DAYS).
- 3. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
- 4. ALL CELLS CONTAINING REINFORCING STEEL OR EMBEDDED ITEMS AND ALL CELLS IN RETAINING WALLS AND WALLS BELOW GRADE SHALL BE SOLID GROUTED.
- 5. ALL HORIZONTAL REINFORCEMENT SHALL BE PLACED IN BOND BEAM OR LINTEL BEAM UNITS.
- 6. WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE GROUT POUR 1-1/2" BELOW TOP OF THE UPPERMOST UNIT.
- 8. PROVIDE INSPECTION AND CLEAN-OUT HOLES AT BASE OF VERTICAL CELLS HAVING GROUT LIFTS IN EXCESS OF 4'-0" OF HEIGHT
- 9. ALL GROUT SHALL BE CONSOLIDATED WITH A MECHANICAL VIBRATOR.
- 10, CEMENT SHALL BE AS SPECIFIED FOR CONCRETE.
- 11. REINFORCING BARS SEE NOTES UNDER "STRUCTURAL CONCRETE NOTES" FOR REQUIREMENTS.
- 12. PROVIDE ONE BAR DIAMETER (A MINIMUM OF 1/2") GROUT BETWEEN MAIN REINFORCING AND MASONRY
- 13. LOW LIFT CONSTRUCTION, MAXIMUM GROUT POUR HEIGHT IS 4 FEET.
- 14. HIGH LIFT GROUTED CONSTRUCTION MAY BE USED IN CONFORMANCE WITH PROJECT SPECIFICATIONS
- 15. ALL CELLS IN CONCRETE BLOCKS SHALL BE FILLED SOLID WITH GROUT, EXCEPT AS NOTED IN THE DRAWINGS OR SPECIFICATIONS.
- 16. CELLS SHALL BE IN VERTICAL ALIGNMENT, DOWELS IN FOOTINGS SHALL BE SET TO ALIGN WITH CORES
- 17. REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE AND HEIGHT OF UNITS, LAYING PATTER AND JOINT
- 18. SAND SHALL BE CLEAN, SHARP AND WELL GRADED, FREE FROM INJURIOUS AMOUNTS OF DUST, LUMPS, SHALE ALKAU OR ORGANIC MATERIAL
- 19 BRICK SHALL CONFORM TO ASTM C-62 AND SHALL BE GRADE MW OR BETTER

#### STRUCTURAL CONCRETE NOTES

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301-05, ACI 318-05 AND THE SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- 2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH fc'=3.000 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 CLASS "B" AND ALL HOOKS SHALL BE STANDARD UNLESS NOTED
- 4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS

CONCRETE CAST AGAINST FARTH......

CONCRETE EXPOSED TO FARTH OR WEATHER: 

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.

- 5. A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE U.N.O. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4
- 6. HOLES TO RECEIVE EXPANSION/WEDGE ANCHORS SHALL BE 1/8" LARGER IN DIAMETER THAN THE ANCHOR BOLT, DOWEL OR ROD AND SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. LOCATE AND AVOID CUTTING EXISTING REBAI WHEN DRILLING HOLES IN ELEVATED CONCRETE SLABS.
- 7. USE AND INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER ICBO & MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURES

#### WEATHERPROOFING NOTES

STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES

3.6 WEATHERPROOFING CONNECTORS AND GROUND KITS:

A. ALL CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED USING BUTYL RUBBER
WEATHERPROOFING AND TAPE. THIS INSTALLATION MUST BE DONE IN ACCORDANCE WITH THE
MANUFACTURER'S RECOMMENDATION OR AS SHOWN ON THE CONSTRUCTION DRAWINGS (WHICHEVER IS
GREATER). IF NO DIRECTION IS PROVIDED, WEATHERPROOFING MUST BE DONE PER THE FOLLOWING
INSTALLATION.

1. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE ENCOMPASSED INTO COLD SHRINK AND COMPLETELY WRAPPED WITH 2 INCH WIDE ELECTRICAL TAPE OVERLAPPING EACH ROW BY APPROXIMATELY 1/2+ AND EXTENDING PAST THE CONNECTION BY TWO INCHES AS DISCUSSED BELOW; OR THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH LAYERS OF

ELECTRICAL/BUTYL RUBBER/ELECTRICAL TAPE AS DISCUSSED BELOW; OR 3. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH TWO LAYERS OF 1.5 INCH

WIDE SELF-AMALGAMATING TAPE COVERED WITH TWO LAYERS OF ELECTRICAL TAPE AS DISCUSSED WIDE SELF-MANAGEMENT OF THE SELF-MANAGEMENT O

2. REQUIRED TOOLS: KNIFE AND TAPE MEASURE

REQUIRED TOOLS: KNIFE AND TAPE MEASURE
STEP 1: THOROUGHLY CLEAN AND DRY THE SURFACE OF COAXIAL CABLE AND CONNECTOR TO REMOVE
ALL GREASE AND DIRT. MARK THE MAIN FEED (LARGER DIAMETER) COAXIAL CABLE AT LEAST TWO
INCHES ABOVE THE CONNECTION AS THE SPECIFIED START DIMENSION FOR THE COLD SHRINK.
STEP 2: SLIDE THE COLD SHRINK TUBE OVER THE PRE-CONNECTORIZED END OF THE LARGER
DIAMETER COAXIAL CABLE PRIOR TO MATING CONNECTOR INTERFACES. MAKE THE CONNECTION. DIAMETER COAXIAL CABLE PRIOR TO MATING CONNECTOR INTERFACES. MAKE THE CONNECTION.
STEP 3: REMOVE WAX PAPER FROM A SPACER HALF AND PRESS ONTO COAXIAL CABLE DIRECTLY
BEHIND THE CONNECTOR. REMOVE THE WAX PAPER FROM THE OTHER SPACER HALF AND ALIGN THE
TWO SPACER HALVES WITH ADHESIVE PORTIONS FACING EACH OTHER. PRESS THE SPACER HALVES
TOGETHER. THE SPACER WILL BE PLACED NEXT TO THE CONNECTOR ON THE SMALLER DIAMETER
COAXIAL CABLE SIDE.
STEP 4: SLIDE THE COLD SHRINK TUBE OVER THE CONNECTION TO THE SPECIFIED START DIMENSION
MARK. HOLD THE COLD SHRINK TUBE AND COAXIAL CABLE IN ONE HAND SO THAT THE EDGE OF COLD
SHRINK TUBE IS IN LINE WITH THE MARK.
STEP 5: WITH YOUR FREE HAND, BEGIN REMOVING COLD SHRINK TUBE CORE. THE CORE WILL BE

STEP 5: WITH YOUR FREE HAND, BEGIN REMOVING COLD SHRINK TUBE CORE. THE CORE WILL BE REMOVED BY UNWINDING IN A COUNTERCLOCKWISE DIRECTION WHILE LIGHTLY PULLING THE ATTACHED CORD AWAY FROM THE TUBE.

STEP 6: USE BOTH HANDS TO CONTINUE THE UNWINDING PROCESS AS THE COLD SHRINK TUBE BEGINS TO COLLAPSE INTO POSITION. CONTINUE THE UNWINDING PROCESS UNTIL THE CORE IS COMPLETELY REMOVED AND THE COLD SHRINK TUBE IS INSTALLED.

STEP 7: EXCESS COLD SHRINK TUBE EXTENDING TWO INCHES BEYOND THE SPACER HALVES CAN BE REMOVED OR LEFT IN PLACE. EXCESS COLD SHRINK TUBE CAN BE CARREFULLY CUT OFF WITH A KNIFE.

STEP 8: WRAP OVER THE COLD SHRINK TUBE WITH ONE LAYER OF BLACK ELECTRICAL TAPE 2. INCH. WIDTH OVERLAPPING EACH ROW BY 1/2 INCH. THIS TOP LAYER MUST BE WRAPPED USING A SHINGLED EFFECT. THE LAYER SHALL BE WRAPPED SO THAT THE ENDS ARE IN THE UPWARD DIRECTION CREATING A SHINGLED EFFECT WITH THE TAPE SO WATER WILL BE REPELLED AND NOT ALLOWED TO COLLECT AND A SHINGLED EFFECT WITH THE TAPE SO WATER WILL BE REPELLED AND NOT ALLOWED TO COLLECT AND POOL. THIS TOP LAYER OF ELECTRICAL TAPE WUST EXTEND TWO INCHES (THE TAPE WIDTH) PAST THE COLD SHRINK TUBE ONTO THE UNDERLYING CABLE. TAPE SHALL BE WRAPPED SO THAT NO VOIDS OR AIR PACKETS ARE PRESENT. TAPE SHALL BE CUT WITH A SHARP KNIFE.
BUTYL RUBBER TAPE INSTALLATION PROCEDURE:
REQUIRED MATERIAL: BLACK ELECTRICAL TAPE—2 INCH WIDE AND BUTYL RUBBER TAPE 2 TO 3 INCHES

KNIFE OR SCISSORS.

WIDE.

2. REQUIRED TOOLS: KNIFE OR SCISSORS.
STEP 1: THOROUGHLY CLEAN AND DRY THE SURFACE OF COAXIAL CABLE AND CONNECTOR TO REMOVE ALL GREASE AND DIRT. WRAP CONNECTOR/GROUND KIT WITH TWO LAYERS OF BLACK ELECTRICAL
TAPE--2 INCH WIDTH OVERLAPPING EACH ROW BY APPROXIMATELY 1/2 INCH. THESE LAYERS OF TAPE
MUST BE WRAPPED TIGHT ENOUGH SO THAT NO VOIDS OR AIR PACKETS ARE PRESENT AND MUST EXTEND ONE INCH PAST THE CONNECTOR/GROUND KIT ON EACH SIDE. TWO ROWS SHALL BE APPLIED, ONE IN EACH DIRECTION, WITH THE TOP ROW SHINGLED TO PROMOTE WATER RUNOFF. STEP 2: WRAP CONNECTOR/GROUND KIT WITH ONE LAYER OF BUTYL RUBBER TAPE (2 TO 3 INCHES WIDTH) OVER THE BLACK FLECTRICAL TAPE OVERLAPPING FACH ROW BY APPROXIMATELY 1/2 INCH. THE BUTYL RUBBER TAPE MUST EXTEND 2 TO 3 INCHES (THE TAPE WIDTH) PAST THE ELECTRICAL TAPE AND COME IN GOOD CONTACT WITH THE UNDERLYING CABLE. ON CONNECTORS, WHEN WEATHERPROPING FROM THE MAIN LINE TO THE JUMPER, BUILD UP THIS AREA WITH EXTRA BUTYL RUBBER TAPE TO INSURE A SMOOTH TRANSITION FREE OF VOIDS AND AIR PACKETS DOWN TO THE SMALLER DIAMETER CABLE.

SMALLER DIAMELER CABLE.

STEP 3: WARP CONNECTOR/GROUND KIT WITH TWO LAYERS OF BLACK ELECTRICAL TAPE 2 INCH WIDTH OVERLAPPING EACH ROW BY 1 INCH. THESE LAST TWO LAYERS MUST BE WRAPPED USING A SHINGLED EFFECT. THE TOP LAYER SHALL BE WRAPPED SO THAT THE ENDS ARE IN THE UPWARD DIRECTION CREATING A SHINGLED EFFECT WITH THE TAPE SO WATER WILL BE REPELLED AND NOT ALLOWED TO COLLECT AND POOL. THESE TOP LAYERS OF ELECTRICAL TAPE MUST EXTEND TWO INCHES (THE TAPE WIDTH) PAST THE BUTYL RUBBER TAPE ONTO THE UNDERLYING CABLE.
ALL LAYERS OF TAPE SHALL BE WRAPPED SO THAT NO VOIDS OR AIR PACKETS ARE PRESENT. THE
LAST WRAP OF TAPE SHALL NOT BE PULLED OR STRETCHED. ALL TAPE SHALL BE CUT WITH A SHARP

D. SELF-AMALGAMATING TAPE INSTALLATION PROCEDURE:

1. REQUIRED MATERIAL: SELF-AMALGAMATING TAPE - 1.5 INCHES WIDE AND BLACK ELECTRICAL TAPE - 2

REQUIRED MATERIAL: SELF-AMALGAMATING TAPE -1.5 INCHES WIDE AND BLACK ELECTRICAL TAPE - 2 INCHES WIDE.

REQUIRED TOOLS: KNIFE OR SCISSORS.

STEP 1: THOROUGHLY CLEAN AND DRY THE SURFACE OF COAXIAL CABLE AND CONNECTOR TO REMOVE ALL GREASE AND DIST.

STEP 2: START WRAPPING SELF-AMALGAMATING TAPE ON THE CABLE AT LEAST 2 INCHES FROM THE

CONNECTOR/GROUND KIT. MAKE SURE TAPE IS STRETCHED TIGHT DURING THIS APPLICATION.
STEP 3: WHILE STRETCHING TAPE, MAKE ONE WRAP OF THE TAPE AROUND THE CABLE, MAKING SURE
THE TAPE IS WRAPPED ONTO ITSELF. THE TAPE WILL ONLY ADHERE TO ITSELF.
STEP 4: CONTINUE WRAPPING THE CABLE AND CONNECTOR/GROUND KIT USING HALF OVERLAP (0.75 INCH WIDE) LAYERS

INCH WIDE) LAYERS.

STEP 5: WRAP OVER AND PAST THE CONNECTOR/GROUND KIT AT LEAST 2 INCHES.

STEP 6: TO TERMINATE THE SELF-AMALGAMATING TAPE, WRAP THE TAPE AT LEAST ONE FULL ROUND OVER THE CABLE STRETCHING THE TAPE TIGHT. CUT THE TAPE USING KNIFE OR SCISSORS AND APPLY THE LOOSE END TO THE UNDERLYING SELF-AMALGAMATING TAPE USING THUMB PRESSURE.

STEP 7: TWO ROWS OF SELF-AMALGAMATING TAPE SHALL BE APPLIED IN THIS MANNER, IN ALTERNATING DIRECTIONS. THE TOP LAYER SHALL BE WRAPPED SO THAT THE ENDS ARE IN AN UPWARD DIRECTION CREATING A SHINGLED EFFECT WITH THE TAPE SO WATER WILL BE REPELLED.

STEP 8: WRAP OVER SELF-AMALGAMATING TAPE WITH TWO LAYERS OF BLACK ELECTRICAL TAPE—2 INCH WIDTH OVERLAPING EACH ROW BY 1 INCH. THESE TOP TWO LAYERS MUST ALSO BE WRAPPED USING A SHINGLED EFFECT WITH THE TAPE SO WATER WILL BE REPELLED AND NOT DIRECTION CREATING A SHINGLED EFFECT WITH THE TAPE SO SO WATER WILL BE REPELLED AND NOT ALLOWED TO COLLECT AND POOL. THESE TOP LAYERS OF ELECTRICAL TAPE MUST EXTEND TWO INCHES THE TAPE AMALGAMATING TAPE ONTO THE LIDER OF BUST EXTEND TWO INCHES THE TAPE WIDTH) PAST THE SELF-AMALGAMATING TAPE ONTO THE UNDERLYING CABLE. ALL LAYERS OF TAPE SHALL BE WRAPPED SO THAT NO VOIDS OR AIR PACKETS ARE PRESENT. THE LAST WRAP OF TAPE SHALL NOT BE PULLED OR STRETCHED. ALL TAPE SHALL BE CUT WITH A SHARP KNIFE OR

..... F. ALL PENETRATIONS SHALL BE PROPERLY SEALED AND BOOTED. EXPANSION FOAM AROUND COAX CABLES IS NOT AN ACCEPTABLE MEANS OF SEALING/WEATHERPROOFING."

- NEW ANTENNAS AND STEEL ON THE EXTERIOR OF THE WATER TOWERS SHALL BE PAINTED TO MATCH. THE PROPERTY OWNER CAN PROVIDE THE PANTONE COLORS IF NEEDED.
- 2. COATINGS SHALL BE COMPATIBLE WITH THE COATING SYSTEM ON THE WATER TOWERS. THE PROPERTY OWNER CAN PROVIDE THE COATING SYSTEM IF NEEDED.
- 3. IN THE CASE WHERE STEEL PIPE AND/OR SUPPORTS MAY CONTACT THE EXTERIOR PAINT OF THE WATER TOWER DIELECTRICS SHALL BE PROVIDED TO PREVENT CORROSION.





GENERAL DYNAMICS

WIRELESS SERVICES



100 E. SHENANGO STREET

SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

# CITY WATER DE49XC513

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

ISSUE DATE: 06-18-2013

ISSUED FOR: CONSTRUCTION DWGS

	REVISIONS							
	REV.	DATE	DESCRIPTION	INITIALS				
	Α	5/21/12	ISSUED FOR CDs 90%	ССМ				
	В	03/01/13	ISSUED FOR CDs 100%	ССМ				
	C	06/18/13	ISSUED FOR CDs FINALS	ССМ				

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET



SHEET TITLE:

GENERAL NOTES

SHEET NUMBER

C

#### **GENERAL NOTES**

THIS IS NOT A SITE SURVEY:
ALL PROPERTY BOUNDARIES, ORIENTATION OF TRUE
NORTH AND STREET HALF-WIDTHS HAVE BEEN
OBTAINED FROM A TAX PARCEL MAP AND ARE
APPROXIMATE.

#### SURVEYOR'S NOTE

THE BOUNDARY OF THIS SURVEY IS LLUSTRATED FROM RECORD AFFORMATION AND IS APPROXIMATE THE TUPOGRAPHICAL SURVEY FOR THIS MAP WAS PERFORMED ON MARCH 3, 2000.

#### **ELEVATION DATUM**

CONTOURS ARE SHOWN AT 1.0' INTERNALS. ALL ELEVATIONS ARE BASED ON NOVO DATUM B.N. - FOUND CONCRETE MONUMENT ELEVATION - 674,20

#### BASIS OF BEARINGS

#### FLOODPLAIN INFORMATION

WE HAVE CONSULTED THE "FEDERAL EMERGENCY MANAGEMENT AGENCY (FEM.) MATIONAL PLODO INSURANCE MAY AS PREPARED FOR THE CITY OF MAN ARESER MAY AS PREPARED FOR THE COUNTY, MCNOCAN, COMMUNITY PANEL MANGERY 2023 — COUNTY, MCNOCAN, COMMUNITY PANEL MANGERY ADDRESS — COUNTY, MCNOCAN, COMMUNITY PANEL MANGERY ADDRESS — COUNTY, MCNOCAN, COMMUNITY PANEL MANGERY ADDRESS — COUNTY, MCNOCAN, CONTRACTOR OF THE CONSIGNATION TO THE CONSIGNATION

#### LATITUDE & LONGITUDE

LATTUDE AND LONGITUDE OF SITE REFERENCE POINT ARE BASED ON GEODETIC DESERVATIONS.

#### FAA CERTIFICATION

I HEREBY CERTIFY TO: SPRINT PCS

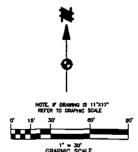
#### SITE INFORMATION

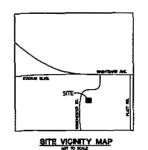
SITE ADDRESS. 2011 MANCHESTER RD.

OWNER: CITY OF ARM ARBOR CONTACT: KRISTEN LARCOM (734) 994-2670 TOTAL SITE AREA. 0.32± ACRES

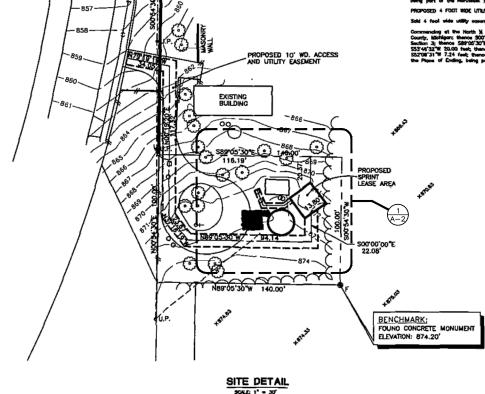
LATTUDE: 42'15'28.56"N LONGITUDE: 83'42"32.29"W TRASH RECEPTACLE - HOT PROPOSED. LEASE HOLDER WILL PICK UP DEBRIS WITHIN LEASE AREA WEEKLY OR AS MEEDED



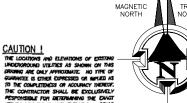




### LEASE DETAIL 0 PROPOSED 4' WD. UTILITY EASEMENT 0 FXISTING SHELTER 8 N21 11 50 W PROPOSED LEASE 13.47 N90'00'00"W S52'08'31"W -EXISTING WATER TANK PROPOSED 10' WD. ACCESS & UTILITY EASEMENT







SHEET NUMBER:

REVISION: C

OVERALL SITE PLAN

# Sprint >



#### GENERAL DYNAMICS

WIRELESS SERVICES



#### 100 E. SHENANGO STREET SHARPSVILLE, PA 16150

724.962.5999

#### PROJECT INFORMATION: NETWORK VISION MMBS LAUNCH CITY WATER

# **TOWER** DE49XC513

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

ISSUE DATE: 06-18-2013

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SHEET TITLE:

OVERALL SITE PLAN

ALL CONDUIT RUNS ARE CONSIDERED TO BE INSIDE COMPOUND AT BASE OF WATER TOWER EXISTING CARRIER EQUIPMENT PAD - AT&T MMP ON EXISTING H-FRAME PL (1) 2" BURIED CONDUIT FOR APX 50' -FROM NETWORK COMMUNICATIONS BOX TO MEET ME POINT [MMP] EXISTING SPRINT 200A PPC CABINET EXISTING SPRINT TELCO CABINET EXISTING CARRIER EQUIPMENT SHELTER NEW SPRINT NETWORK COMMUNICATIONS BOX EXISTING SPRINT CHAIN LINK GATE PL (1) 2" PVC CABLE FOR 14' ALONG -PLATFORM PERIMETER FROM MBBS TO NETWORK COMMUNICATIONS BOX PROPOSED SPRINT BATTERY CABINET PROPOSED SPRINT MMBS CABINET EXISTING SPRINT CHAIN LINK FENCE

NOTE: STRUCTURAL ANALYSIS MUST BE PREFORMED ON ALL ROOFTOPS, FLAGPOLES AND TOWER SITES BEFORE INSTALLATION OF NEW ANTENNAS, NEW RRUS, & NEW CABINETS/TEMPORARY PLATFORMS. STRUCTURAL ANALYSIS PROVIDÉD BY GENERAL DYNAMICS.

ALL WORK PERFORMED SHALL CONFORM TO THE CODE(S) OF THE GOVERNING JURISDICTION(S).
ALL TRENCHING WILL BE PROPERLY BACKFILLED AND COMPACTED.

ALL CONSTRUCTION DEBRIS AND TRASH WILL BE REMOVED FROM SITE AT COMPLETION OF WORK BY CONTRACTOR.





#### **GENERAL DYNAMICS**

WIRELESS SERVICES



#### POWDER RIVER

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

# CITY WATER TOWER

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

DE49XC513

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SHEET TITLE:

ENLARGED SITE PLAN

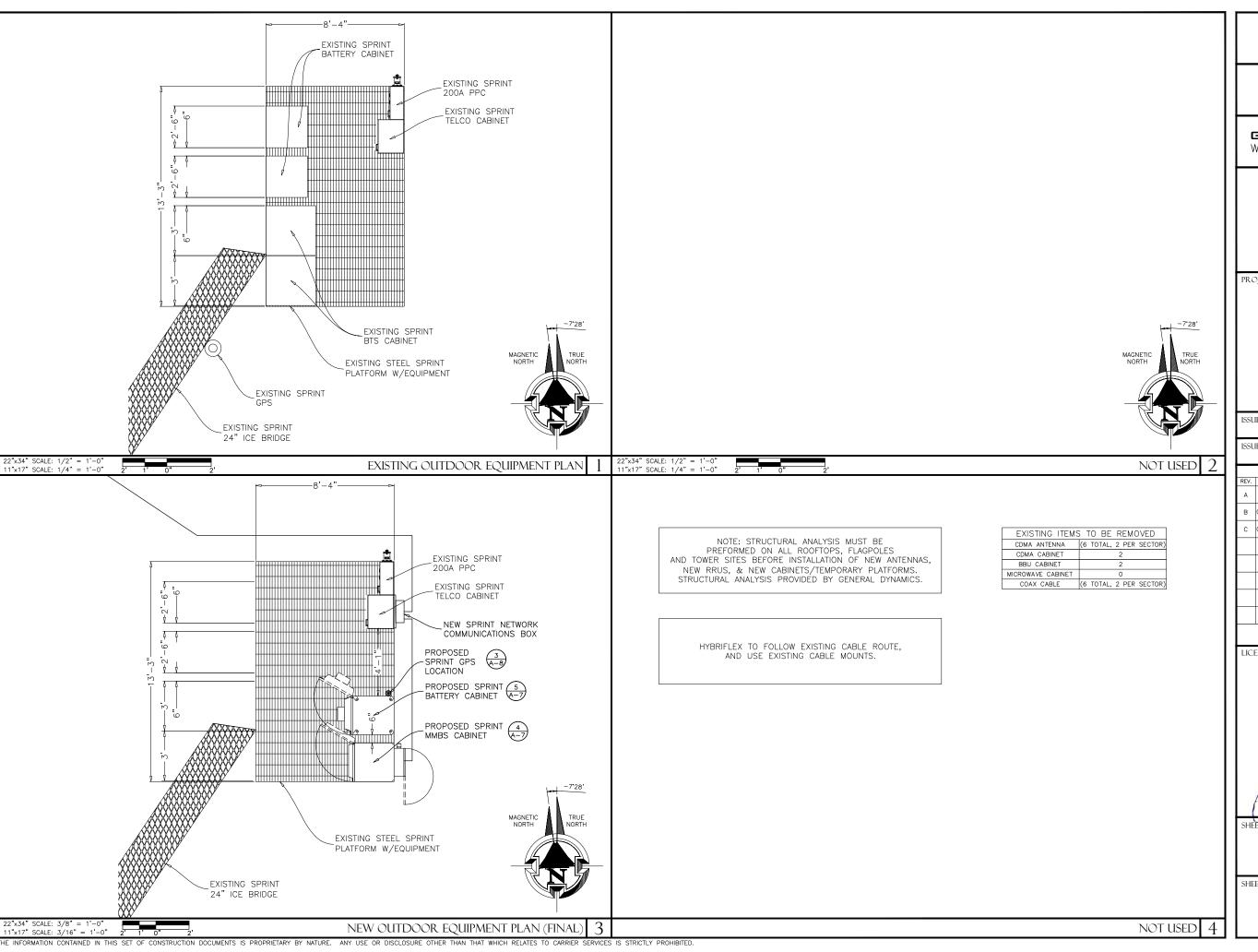
SHEET NUMBER:

PRDS PROJ.NO. 2249-052112

REVISION:

ENLARGED SITE PLAN

MAGNETIC







WIRELESS SERVICES



POWDER RIVER

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

# NETWORK VISION MMBS LAUNCH CITY WATER TOWER

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

DE49XC513

ISSUE DATE: 06-18-2013

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2			REVISIONS	
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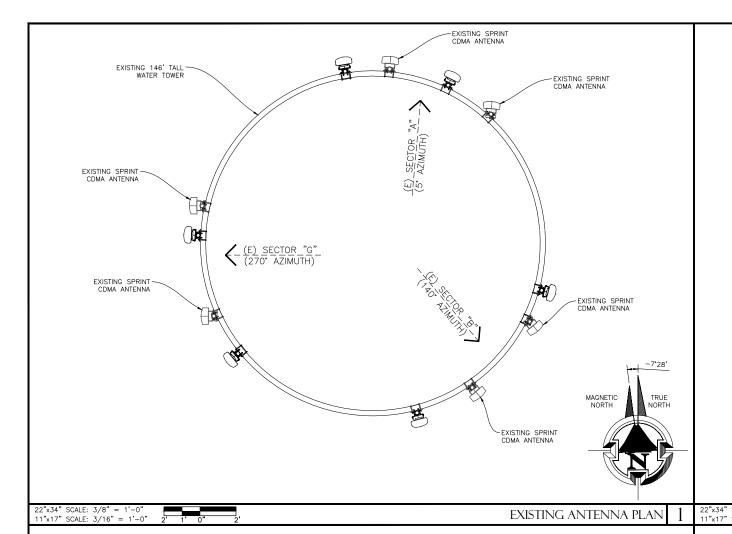


SHEET TITLE:

**ENLARGED EQUIPMENT PLANS** 

SHEET NUMBER:

PRDS PROJ.NO. 2249-052112



NEW SPRINT 1900MHZ ANTENNA -

(P) SECTOR "G" (270° AZIMUTH)

NEW SPRINT 800MHZ/1900MHZ RRU-(1 PAIR PER SFCTOR)

NEW SPRINT 1900MHZ ANTENNAMOUNTED ON NEW SPRINT 1900MHZ ANTENNA-

22"x34" SCALE: 3/8" = 1'-0" 11"x17" SCALE: 3/16" = 1'-0" NOT USED 2

RRU / HYBRID CABLE SCHEDULE HYBRID CABLE HYBRID CABLE JUMPER JUMPER RET RET CABLE RET CABLE LENGTH DIAMETER SIZE LENGTH LENGTH MANUFACTURER MODEL NUMBER RRU FREQUENCY RRU MODEL SECTOR RRH-P4 (1)1900MHz 1/2" 6' 9.8' COMMSCOPE IRET AISGV1.1 ALPHA N/A RRH-P4 BETA (1)1900MHz N/A 1/2" 6' 9.8' COMMSCOPE IRET AISGV1.1 1/2" 6' 9.8' COMMSCOPE IRET AISGV1.1 GAMMA RRH-P4 (1)1900MHz N/A

1900 EQUIPMENT ONLY

-NEW SPRINT 1900MHZ RRU(3-5)(1 PAIR PER SECTOR)

-NEW SPRINT 1900MHZ ANTENNA MOUNTED ON NEW PIPE

MAGNETIC

ANTENNA SCHEDULE									
SECTOR ANTENNA ANTENNA ANTENNA MODEL ANTENNA AZIMUTH RAD CENTER ANT. SIZE ELECT TILT MECH							MECH TILT		
ALPHA	1900 MHz	RFS	APXVRR13-C-A20	1 (PER SECTOR)	5*	150'-0"	4'-3"	6,	0,
BETA	1900 MHz	RFS	APXVRR13-C-A20	1 (PER SECTOR)	140*	150'-0"	4'-3"	4*	0,
GAMMA	1900 MHz	RFS	APXVRR13-C-A20	1 (PER SECTOR)	270°	150'-0"	4'-3"	5*	0,





#### **GENERAL DYNAMICS**

WIRELESS SERVICES



#### POWDER RIVER

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

### CITY WATER TOWER DE49XC513

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

ISSUE DATE: 06-18-2013

ISSUED FOR: CONSTRUCTION DWGS

11"x17" SCALE: 3/16" = 1'-0" 2' 1' 0" 2'			REVISIONS	
	REV.	DATE	DESCRIPTION	INITIALS
NOTE: STRUCTURAL ANALYSIS MUST BE PREFORMED ON ALL ROOFTOPS, FLAGPOLES AND TOWER SITES BEFORE INSTALLATION OF NEW ANTENNAS, NEW RRUS, & NEW CABINETS/TEMPORARY	Α	5/21/12	ISSUED FOR CDs 90%	ссм
PLATFORM. STRUCTURAL ANALYSIS PROVIDED BY GENERAL DYNAMICS.  NOTE:	В	03/01/13	ISSUED FOR CDs 100%	ССМ
EXISTING ANTENNAS ARE CDMA UNLESS NOTED OTHERWISE.	С	06/18/13	ISSUED FOR CDs FINALS	ССМ
NEW SPRINT ANTENNAS INCLUDE RESPECTIVE RRU'S WHICH SHALL BE MOUNTED ON THE PIPE BEHIND THE ANTENNA SIMILAR TO THAT SHOWN ON DETAIL 1, SHEET A-6.				
FIELD VERIFY EXISTING AZIMUTH BEFORE RELOCATING THE ANTENNA, IF REQUIRED. PRIOR APPROVAL FROM SPRINT TO BE GRANTED BEFORE RELOCATION OF ANTENNAS.				
NOTES: ALL AZIMUTHS ARE TO BE ESTABLISHED CLOCKWISE FROM THE TRUE NORTH HEADING. CONTRACTOR SHALL VERIFY NEW ANTENNA RAD CENTER AND ORIENTATIONS WITH SPRINT PCS PRIOR TO INSTALLATION OF ANTENNAS. PRIOR TO ATTACHING ANTENNAS AND MOUNTING SECTIONS, EXISTING TOWER AND TOWER FOUNDATION MUST BE ANALYZED BY A LICENSED STRUCTURAL ENGINEER TO VERIFY TOWER IS CAPABLE OF SUPPORTING THE NEW LOADS. REFER TO STRUCTURAL ANALYSIS BY OTHERS. CONTRACTOR SHALL REFER TO TOWER				
STRUCTURAL CALCULATIONS FOR ADDITIONAL LOADS. NO ERECTION OF MODIFICATION OF TOWER SHALL BE MADE WITHOUT APPROVAL OF STRUCTURAL ENGINEER.				

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET



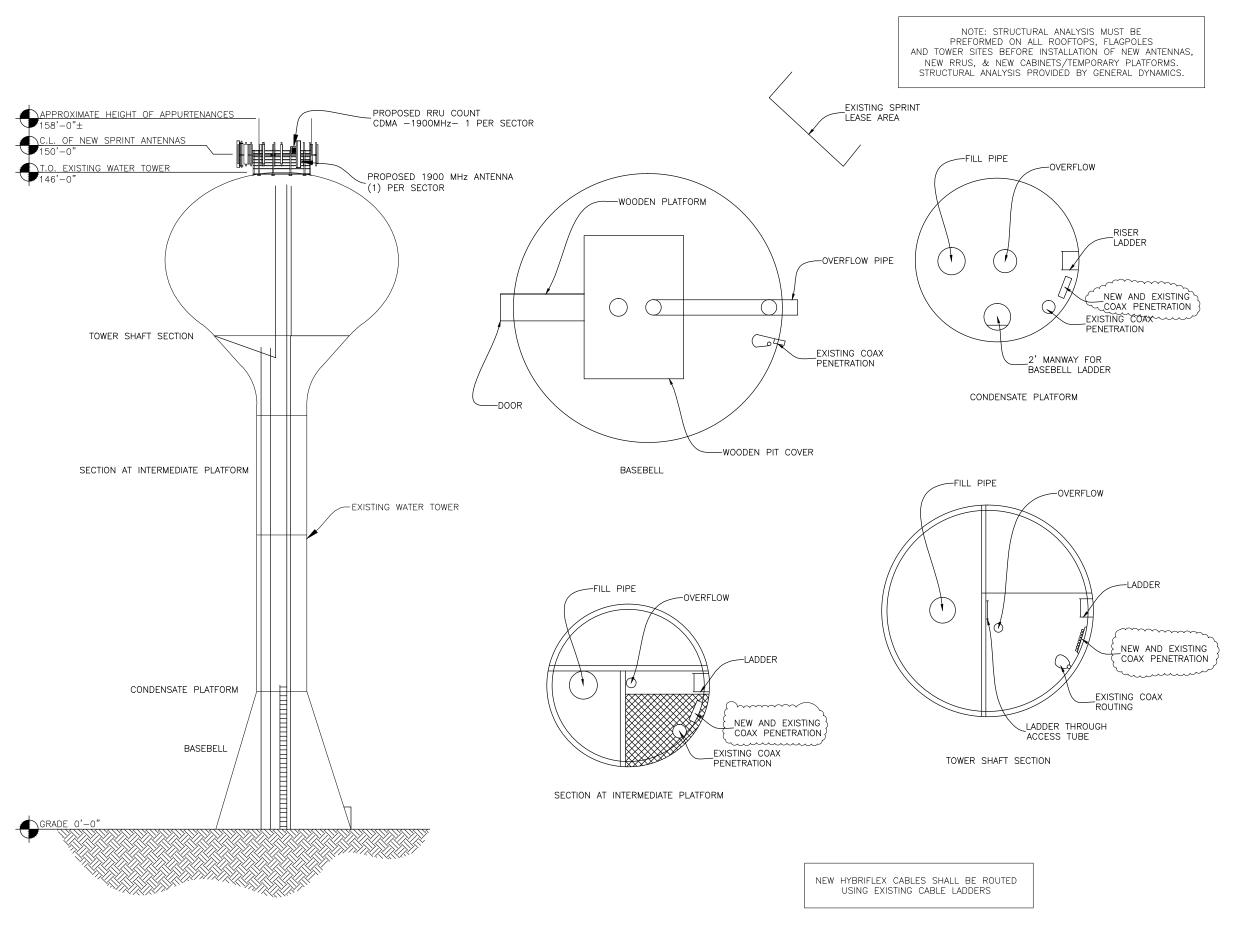
ANTENNA PLANS & **SCHEDULES** 

SHEET NUMBER:

PRDS PROJ.NO. 2249-052112

REVISION:

NOTES & ANTENNA SCHEDULE







WIRELESS SERVICES



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PROJECT INFORMATION:

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# CITY WATER TOWER

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	В	03/01/13	ISSUED FOR CDs 100%	ССМ
	O	06/18/13	ISSUED FOR CDs FINALS	ССМ

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SHEET TITLE:

NEW ELEVATION

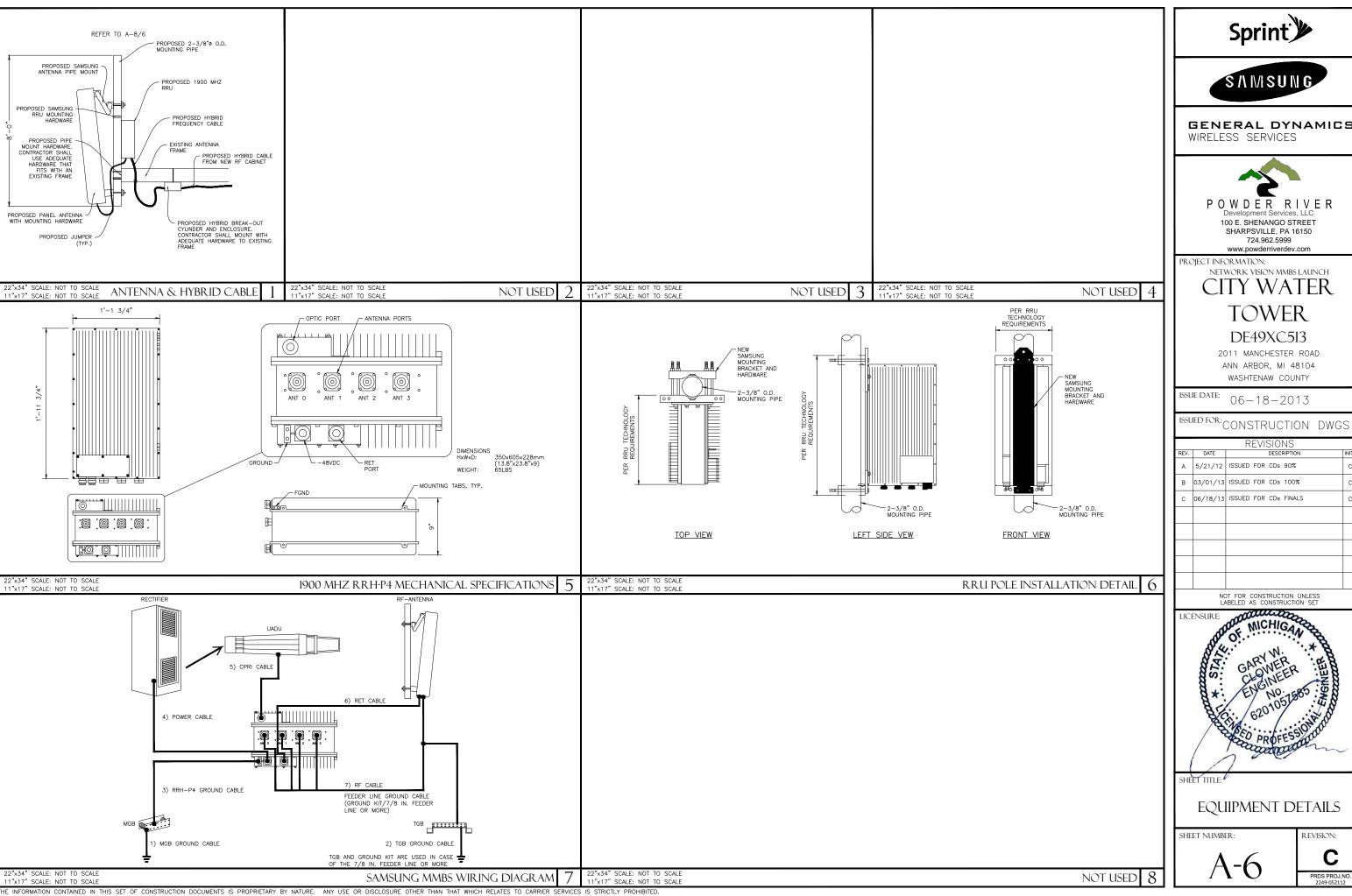
SHEET NUMBER:

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PRDS PROJ.NO. 2249-052112

REVISION:

NEW ELEVATION







POWDER RIVER

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999

NETWORK VISION MMBS LAUNCH

# CITY WATER TOWER

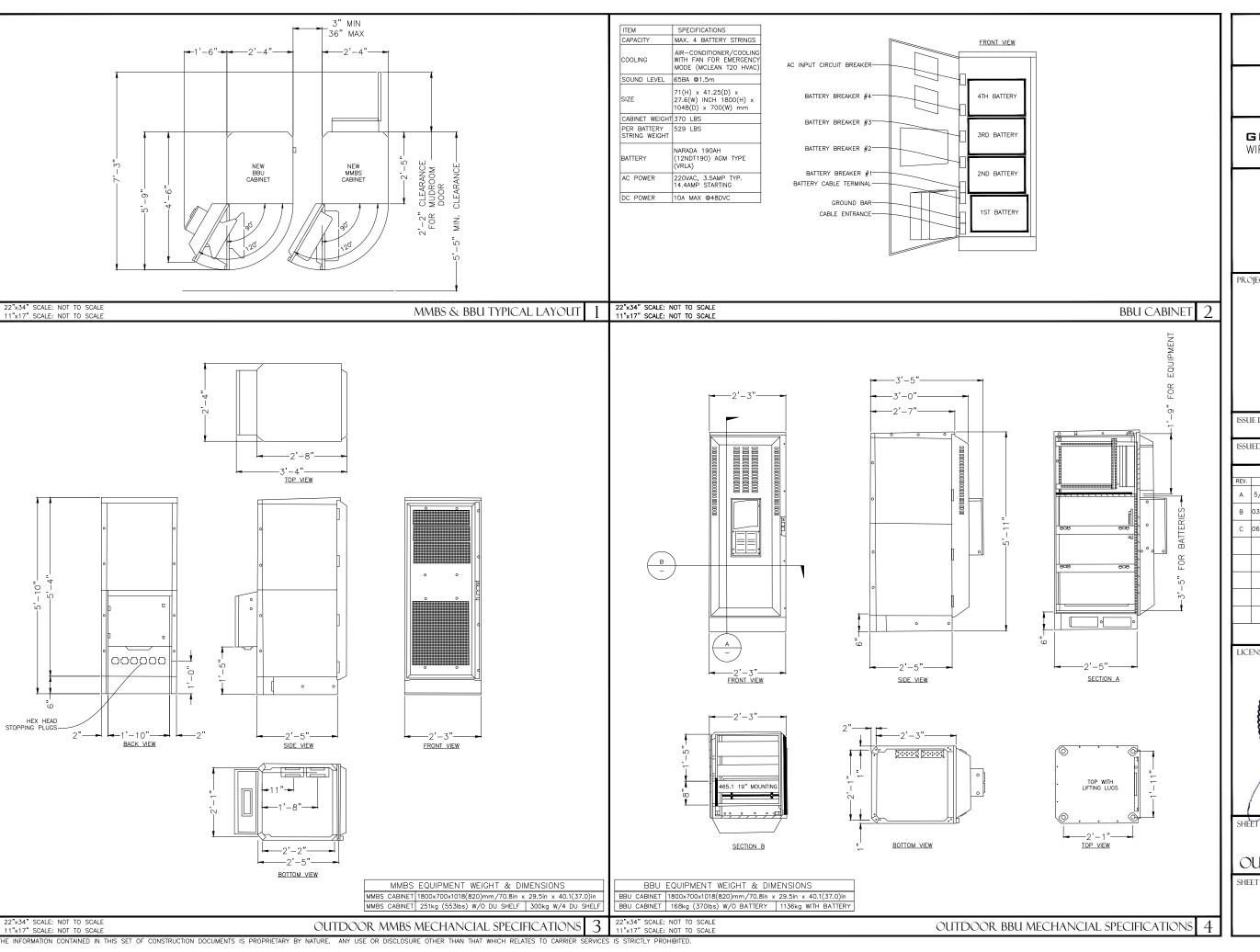
2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

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В	03/01/13	ISSUED FOR CDs 100%	ССМ
С	06/18/13	ISSUED FOR CDs FINALS	ССМ
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**EQUIPMENT DETAILS** 

C PRDS PROJ.NO. 2249-052112







WIRELESS SERVICES



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PROJECT INFORMATION:

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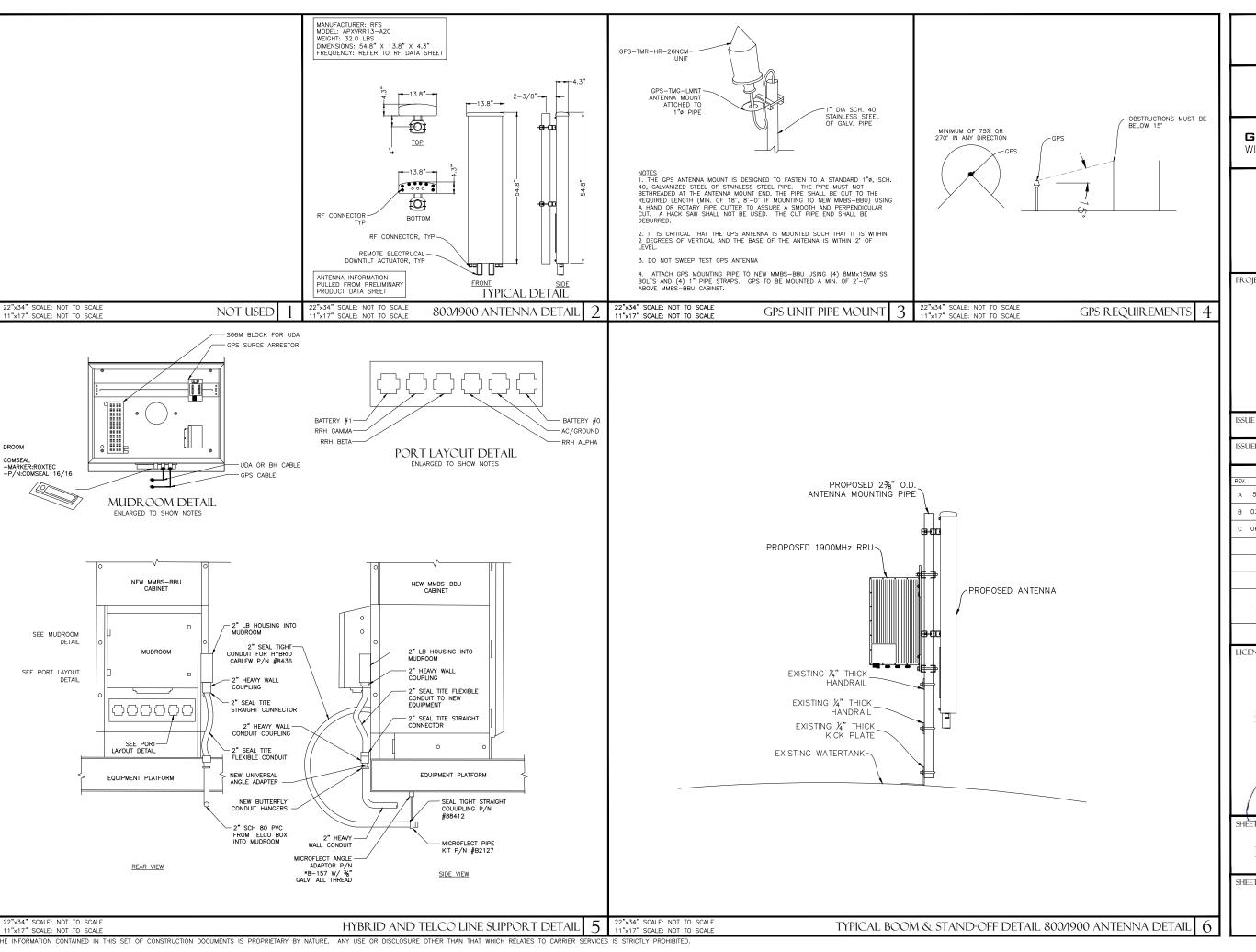
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EQUIPMENT DETAILS **OUTDOOR SPECIFICATIONS** 

SHEET NUMBER:

C PRDS PROJ.NO. 2249-052112







WIRELESS SERVICES



P O W D E R R I V E R
Development Services, LLC

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

# CITY WATER TOWER

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

**DE49XC513** 

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SHEET TITLE:

**EQUIPMENT DETAILS** 

SHEET NUMBER:

**A-8** 

PRDS PROJ.NO. 2249-052112

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	SINIM	SUNG
	GENERAL Wireless ser	<b>DYNAMIC</b> RVICES
	100 E. SHEN SHARPSVI 724.9	R R V E R It Services, LLC IANGO STREET LLE, PA 16150 962.5999
22"x34" SCALE: NOT TO SCALE  NOT USED 1  NOT USED 2  22"x34" SCALE: NOT TO SCALE 11"x17" SCALE: NOT TO SCALE 11"x17" SCALE: NOT TO SCALE	PROJECT INFORMATION NETWORK VISIO	erriverdev.com  I: ON MMBS LAUNCH  WATER
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ON DWGS

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C PRDS PROJ.NO. 2249-052112

TYPICAL HYBRID CABLE COLOR CODE									
SECTOR	FIRST RING	SECOND RING	THIRD RING						
Α	GREEN	NO TAPE	NO TAPE						
В	GREEN	GREEN	NO TAPE						
G	GREEN	GREEN	GREEN						

FREQUENCY COLOR AND FIBER CABLES		
FREQUENCY COLOR CODE	FIRST RING	SECOND RING
1900 MHz	YELLOW	RED

TYPICAL JUMPER CABLE COLOR CODE										
FREQUENCY	ANTENNA PORT	RRU PORT	CABLE COLOR							
	PCS1 -45°	ANT 0	BLUE							
	PCS1 +45*	ANT 1	WHITE							
1900 MHz	PCS2 -45°	ANT 2	GREEN							
	PCS2 +45°	ANT 3	BROWN							
	RET	RET	RED							

SUP	PLIER	S	AMSUNG	<b>FIBEROP</b>	TICS		ASIA	TAI	
TYPE	LENGTH	TOTAL	WEIGHT	WEIG	HT/LF	TOTAL	WEIGHT	WEIG	HT/LF
HEL	(FT)	(KG)	(LBS)	(KG)	(LBS)	(KG)	(LBS)	(KG)	(LBS)
TYPE 1  TYPE 2  TYPE 3  TYPE 4	60	13	28	0.2	0.5	19	41	0.3	0.7
	75	16	35	0.2	0.5	22	49	0.3	0.7
	90	19	42	0.2	0.5	26	57	0.3	(LBS) (LBS) (0.7 (0.7 (0.7 (0.7 (0.7 (0.7 (0.7 (0.7
	105	30	66	0.3	0.6	29	65	0.3	0.7
	120	34	75	0.3	0.6	33	73	0.3	0.7
TYPE 2	135	38	85	0.3	0.6	46	101	0.3	0.7
	150	43	94	0.3	0.6	51	112	0.3	0.7
	165	47	104	0.3	0.6	55	122	0.3	0.7
	180	69	151	0.4	0.8	72	160	0.3	0.7
TYPE 3	195	75	164	0.4	0.8	78	173	0.3	0.7
	210	80	177	0.4	0.8	85	187	0.3	0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7
	225	89	196	0.4	0.9	102	224	0.3	0.7
TYPE 4	240	95	209	0.4	0.9	109	239	0.3	0.7
	255	101	222	0.4	0.9	115	254	0.3 0.7 0.3 0.7	
	270	133	293	0.5	1.1	122	270	0.3	0.7
	285	141	310	0.5	1.1	152	335	0.3	0.7
TYPE 5	300	148	326	0.5	1.1	160	353	0.3	0.7
	315	155	342	0.5	1.1	168	371	0.3	0.7
	330	163	359	0.5	1.1	176	388	0.3	0.7

	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6	TYPE 7
TOTAL LENGTH	~114'-9.95"	~180'-5.35"	~213'-3.05"	~262'-5.60"	~328'-1"	~420'-0"	~550'-0"
HYBRID POWER CABLE CONFIGURATION	AWG 12 3 PAIR AWG 10 3 PAIR		AWG 6 1 PAIR, AWG 8 1 PAIR, AWG 10 2 PAIR	AWG 6 1 PAIR, AWG 8 3 PAIR	AWG 4 1 PAIR, AWG 6 1 PAIR, AWG 8 2 PAIR	AWG 4 1 PAIR, AWG 6 3 PAIR	AWG 2 1 PAIR, AWG 4 3 PAIR
CABLE DIAMETER	0.98"	1.06"	1.18"	1.18"/1.25"	1.25"	1.56"	1.69"
BENDING RADIUS	11.81"	12.99"	15.35"	17.71"	17.71"	18.00"/30.00"	21.00"/35.00"
OPTIC CABLE			LC/PC-	to-LC/PC, SINGL	E MODE		
DU CABINET (POWER CABLE TERMINAL MAX SIZE AWG 4)			2 PAIR POWER	AND OPTIC CABLE	WITH PE PIPE		
RRU POWER CABLE SPEC				8 AWG CABLES 4 PAIRS			
NON USE POWER	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE		2 PAIR POWER AND OPTIC CABLE WITH PE PIPE	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE			

JUMPER CABLE CONNECTION AT RRU AND ANTENNA

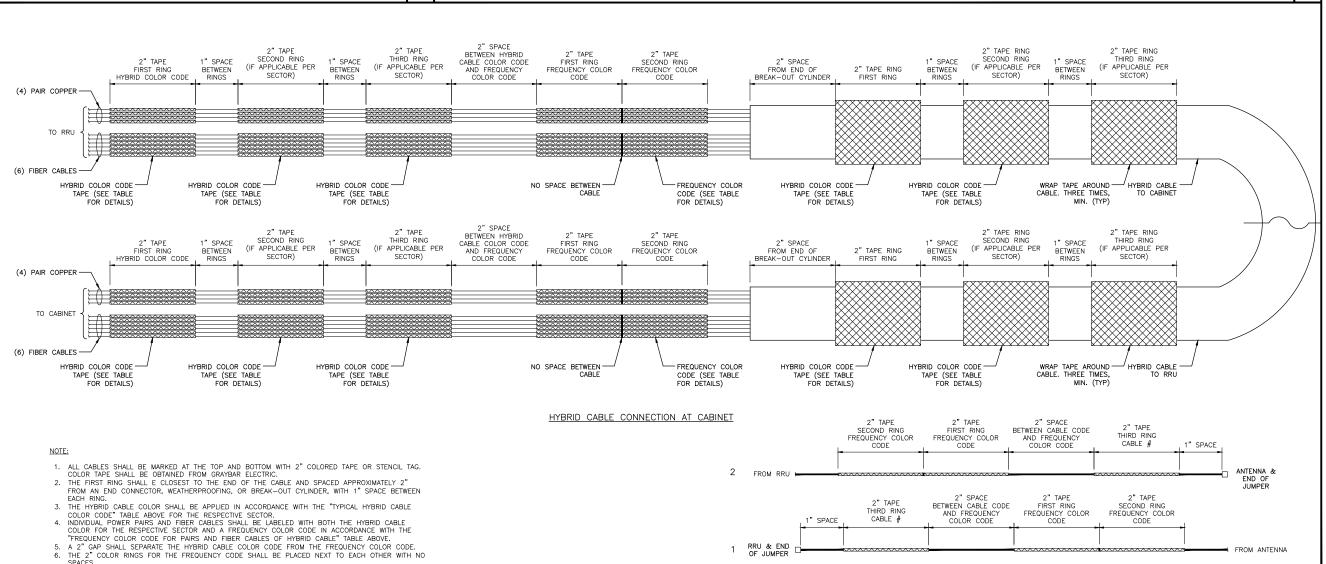
SUP	PLIER	TES:	sco
TYPE	LENGTH	TOTAL	WEIGHT
1156	(FT)	(KG)	
	1	0.73	1.6
TYPE 6	1000	732	1613
	420	402	887
	1	1	2.2
TYPE 7	1000	1006	2218
	550	553	1220

 $\underline{\text{NOTES}};$  on high capacity sites or on four-sector sites needing an additional line and RRU contact golt site supervisor for color code information on additional lines.

22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
HYBRID AND JUMPER CABLES COLOR CODING

22"x34" SCALE: NOT TO SCALE 11"x17" SCALE: NOT TO SCALE

HYBRID CABLE TYPES 2



HYBRID CABLE COLOR SCHEME DETAIL

Sprint 🎾



GENERAL DYNAMICS

WIRELESS SERVICES



POWDER RIVER

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

# CITY WATER TOWER DE49XC513

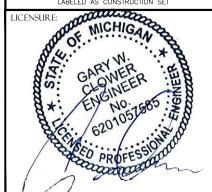
2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

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1		С	06/18/13	ISSUED FOR CDs FINALS	ССМ
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SHEET TITLE:

ANTENNA AND CABLE COLOR CODING DETAILS

SHEET NUMBER:

RF-1

PRDS PROJ.NO. 2249-052112

REVISION:

SPACES.

7. THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE HYBRID CABLE OR INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS

8. COLOR BAND ON JUMPERS SHALL BE 2" WIDE WITH A 2" SPACE.

22"x34" SCALE: NOT TO SCALE

#### ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL LOCAL AND STATE CODE, LAWS. AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
- CONTRACTOR SHALL COORDINATE WITH LOCAL POWER COMPANY FOR REQUIREMENTS OF POWER SERVICE LINE TO THE METER BASE, WHEN REQUIRED. POWER SERVICE REQUIREMENT IS COMMERCIAL. AC NOMINAL 120/208 VOLT OR 120/240 VOLT, SINGLE PHASE WITH 200 AMP RATING.
- 3. CONTRACTOR SHALL COORDINATE WITH LOCAL TELEPHONE COMPANY FOR SERVICE LINE REQUIREMENTS TO TERMINATE AT THE PPC CABINET.
- 4. CONTRACTOR SHALL FURNISH AND INSTALL ELECTRIC METER BASE AND 200A DISCONNECT SWITCH PER SITE PLAN DETAIL DRAWINGS AND PER LOCAL UTILITY COMPANIES SPECIFICATION, WHEN REQUIRED. THE METER BASE SHOULD BE LOCATED IN A MANNER WHERE ACCESSIBLE BY THE LOCAL POWER COMPANY.
- 5. LOCAL POWER COMPANY SHALL PROVIDE 200 AMP ELECTRIC METER. CONTRACTOR SHALL COORDINATE INSTALLATION OF METER WITH LOCAL POWER COMPANY.
- 6. UNDERGROUND POWER AND TELCO SERVICE LINES SHALL BE ROUTED IN A COMMON TRENCH. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 AND CONDUIT EXPOSED ABOVE GROUND SHALL BE GALVANIZED RIGID STEEL TUBING UNLESS OTHERWISE INDICATED.
- 7. ALL TELCO CONDUIT LINES SHALL BE 4" SCH. 40 PVC CONDUIT UNLESS OTHERWISE INDICATED. THE TELCO CONDUIT FROM THE PPC SHALL BE ROUTED AND TERMINATED AT DESIGNATED TELCO DEMACATION OR 2-FEET OUTSIDE FENCED AREA, NEAR UTILITY POLE (IN FENCED AREA), OR END CAP OFF AND PROVIDE MARKER STAKE PAINTED BRIGHT ORANGE WITH DESIGNATION FOR TELCO SERVICE.
- 8. CONDUITS INSTALLED AT PCS EQUIPMENT ENDS PRIOR TO THE EQUIPMENT INSTALLATION SHALL BE STUBBED AND CAPPED AT 6" ABOVE GRADE OR PLATFORM. IF SERVICE LINES CAN'T BE INSTALLED INITIALLY, PROVIDE NYLON PULL CORD IN CONDUITS.
- 9. THE SPRINT CABINET, INCLUDING 200 AMP LOAD PANEL AND TELCO PANEL, SHALL BE PROVIDED BY OWNER AND INSTALLED BY THE CONTRACTOR. CONTRACTOR IS TO INSTALL BREAKER(S) NOT PROVIDED BY MANUFACTURER. SEE PANEL SCHEDULE ON THIS SHEET FOR BREAKER REQUIREMENTS.
- 10. LOCATION OF ELECTRIC METER AND DISCONNECT SWITCH TO BE PROVIDED BY GENERAL CONTRACTOR.
- 11. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS. THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- 12. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO POLICE IN
- THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
- 14. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

22"x34" SCALE: NOT TO SCALE

#### ELECTRICAL NOTES (CON'T)

- 16. ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH NEC TABLE 346-10. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
- 17. ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
- ALL WIRE SHALL BE "TYPE THWN, SOLID, ANNEALED COPPER UP TO SIZE 1/10 AWG (18 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C, (167 DEGREES F), 98" CONDUCTIVITY. MINIMUM #12.
- ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES. J-BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY, OR APPROVED EQUAL.
- 20. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- 21. CONDUIT ROUGH—IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION TO CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
- 22. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN NOT HAND WRITTEN.
- 23. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES. PULLBOXES, AND ALL DISCONNECT SWITCHES, STARTERS. AND EQUIPMENT CABINETS.
- 24. THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS. DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
- 25. ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENDLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS.) PROVIDE SAMPLE FOR CONSTRUCTION MANAGER'S APPROVAL
- 26. ALL ELECTRICAL DEVICES AND INSTALLATIONS OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
- 27. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTION MANAGERS AND THE PROPERTY OWNER'S APPROVAL. SLEEVES ANO/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.
- 28. ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH—IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE MAMEPLATE DATA FURNISHED ON THE EQUIPMENT (THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS).
- 29. LOCATION OF ALL OUTLET, BOXES, ETC., AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROLLEH-IN

VOLT MAIN MOUI ENCL	BREAKER: 200 NT: SUR OSURE TYPE: NEW	IV/120 I AMP RFACE MA 3R	PHASI BUSS NEUTF N to	RATING RAL BAF	: R: D BOND:	TBD 1 200 AMP YES FIELD VE YES		WIRI A/C GRC	:: :: :: :: :: :: :: :: :: :: :: :: ::	t:	3 YES FIELD	VERIFY	
CKT	LOAD DESCRIPTION	N.		REAKER AMPS		BREAKER STATUS					DESCRIPTION		СКТ
	BTS	•		100	2	ON	ON	2			PROTECTION		2
3						ON	ON						4
5	BLANK					N/A	ON	1	10	TELCO	FAN		6
7	SAMSUNG MMBS (	CABINET		100	2	NEW	ON	1	20	GFCI			8
9						NEW	ON	1	20	LIGHT			10
11	SAMSUNG BBU CA	ABINET		15	1	NEW	N/A			BLANK			12
13	BLANK					N/A	N/A			BLANK			14
15	BLANK					N/A	N/A			BLANK			16
17	BLANK					N/A	N/A			BLANK			18
19	BLANK					N/A	N/A			BLANK			20
21	BLANK					N/A	N/A			BLANK			22
23	BLANK					N/A	N/A			BLANK			24

#### NOTES

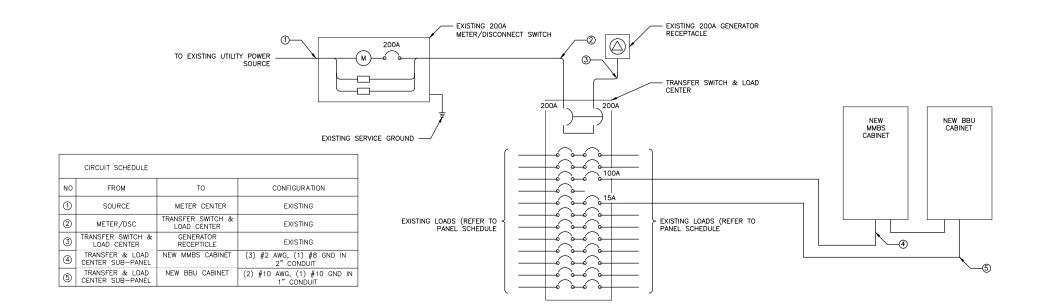
GENERAL CONTRACTOR TO CHECK REQUIREMENTS WITH LOCAL POWER COMPANY AND JURISDICTION. ADDITIONAL SUB PANEL OFF THE PPC CABINET MIGHT BE REQUIRED TO FEED NEW NETWORK VISION EQUIPMENT.

22"x34" SCALE: NOT TO SCALE

11"x17" SCALE: NOT TO SCALE

ELECTRICAL NOTES 1

ELECTRICAL PANEL SCHEDULE



ELECTRICAL ONE-LINE DIAGRAM





#### GENERAL DYNAMICS

WIRELESS SERVICES



Development Services, LLC 100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724,962,5999

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

www.powderriverdev.com

## CITY WATER TOWER

DE49XC513

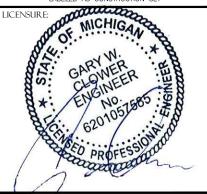
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SHEET TITLE:

ONE-LINE DIAGRAM & POWER PANEL SCHED.

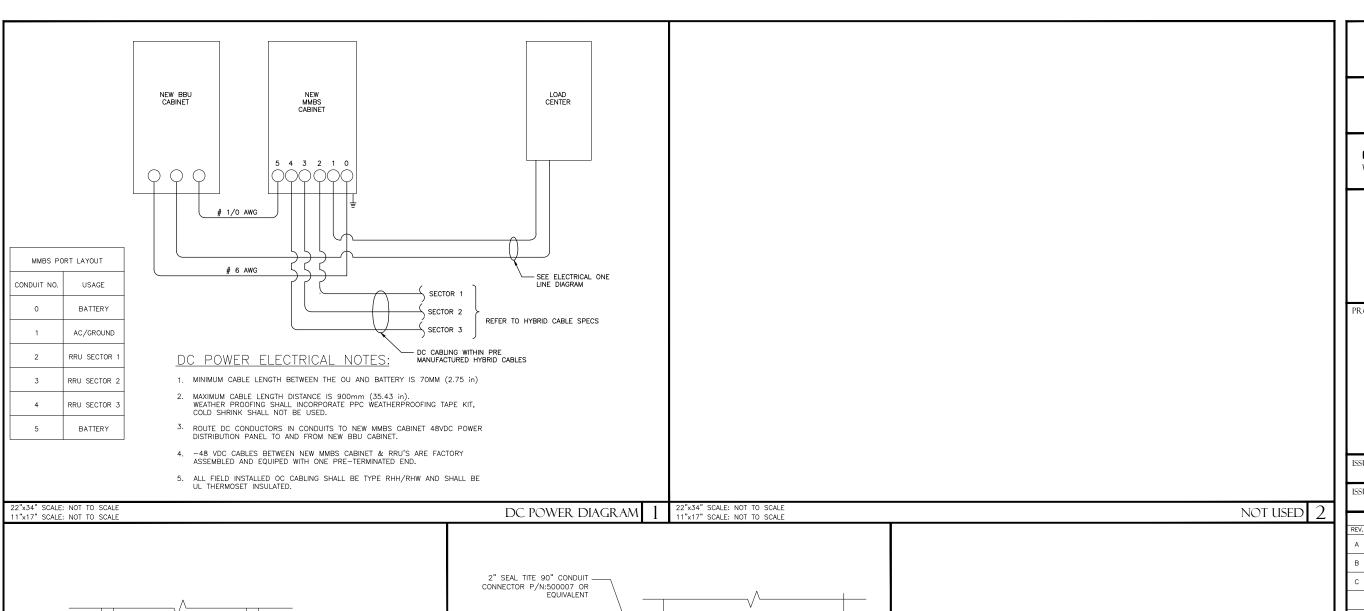
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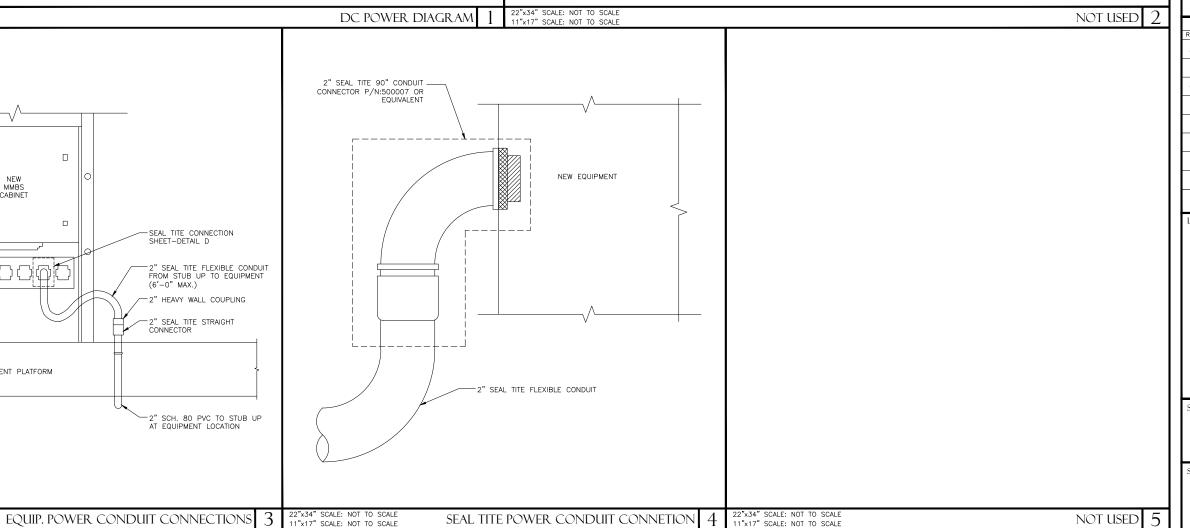


PRDS PROJ.NO. 2249-052112

REVISION:

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WIRELESS SERVICES



POWDER RIVER

100 E. SHENANGO STREET SHARPSVILLE, PA 16150 724.962.5999 www.powderriverdev.com

PROJECT INFORMATION:

NETWORK VISION MMBS LAUNCH

## CITY WATER TOWER

DE49XC513

2011 MANCHESTER ROAD ANN ARBOR, MI 48104 WASHTENAW COUNTY

ISSUE DATE: 06-18-2013

ISSUED FOR: CONSTRUCTION DWGS

2			REVISIONS	
	REV.	DATE	DESCRIPTION	INITIALS
	А	5/21/12	ISSUED FOR CDs 90%	ССМ
	В	03/01/13	ISSUED FOR CDs 100%	ССМ
	С	06/18/13	ISSUED FOR CDs FINALS	ССМ

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET



DC POWER ONE-LINE DIAGRAM

SHEET NUMBER:

REVISION:

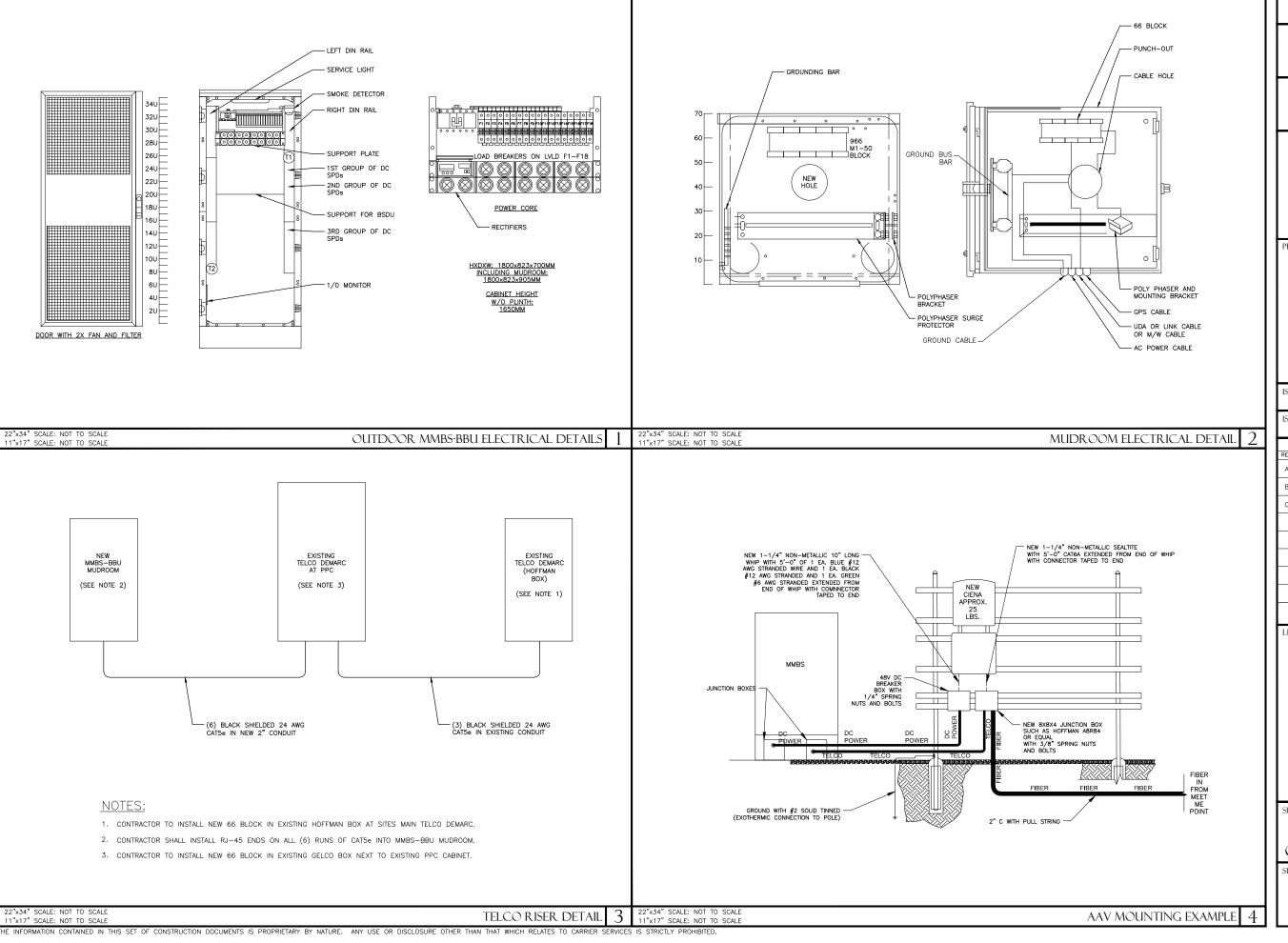
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MMBS

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EQUIPMENT PLATFORM







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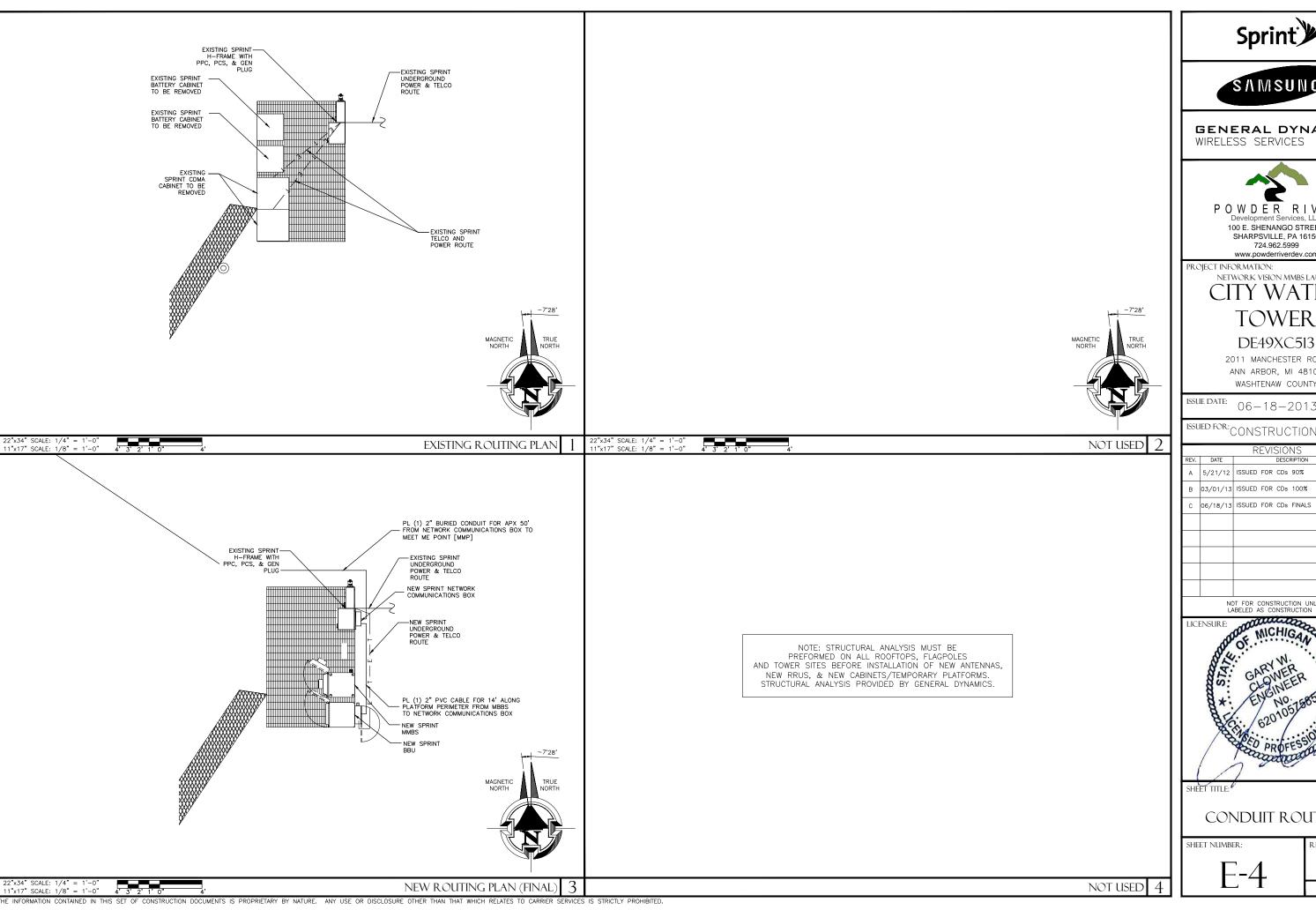
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ELECTRICAL DETAILS **OUTDOOR SPECIFICATIONS** 

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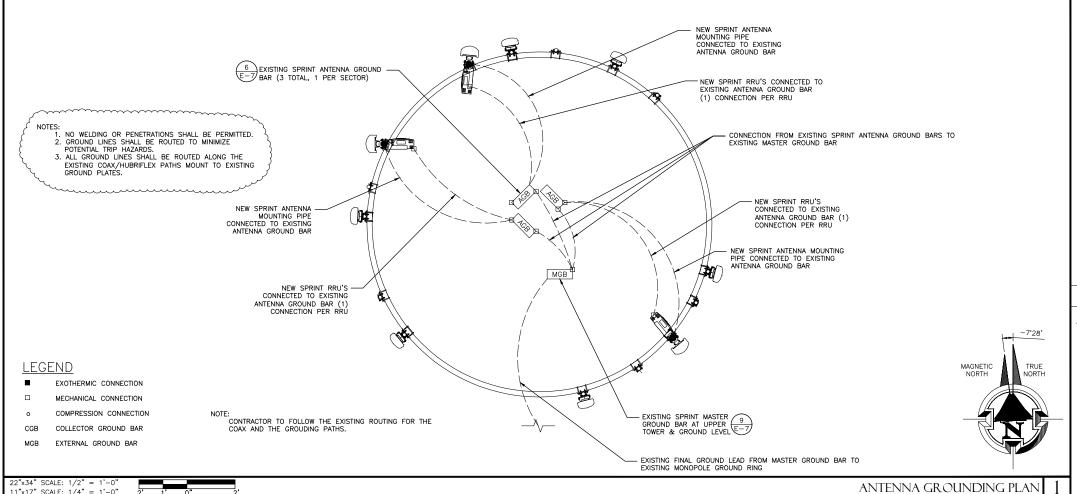
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CONDUIT ROUTING



CONNECTION FROM (N)
SPRINT ORS TO (E)
MASTER GROUND BAR TO

(E) EQUIPMENT GROUND RING

(C) SPRINT MASTER GROUND

(C) SPRINT MASTER GROUND

(DATE OF THE CONNECTED TO (E) SPRINT MASTER GROUND

(C) SPRINT MASTER GROUND

(C) SPRINT MASTER GROUND

(C) SPRINT MASTER GROUND

(C) SPRINT MASTER

(E) SPRINT

 $11"\times17"$  SCALE: 1/8" = 1'-0"

- ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
- 2. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING GROUND WIRES AND CONNECT TO SUFFACE MOUNTED BUS BARS. FOLLOW ANTENNA AND BTS MANUFACTURERS PRACTICES FOR GROUNDING REQUIREMENTS. GROUND COAX SHIELD AT BOTH ENDS AND EXIT FROM TOWER OR POLE USING MFR'S PRACTICES.
- . ALL GROUND CONNECTIONS SHALL BE EXOTHERMIC. ALL WIRES SHALL BE COPPER THHN/THWN. ALL GROUND WIRE SHALL BE GREEN INSULATED WIRE ABOVE GROUND.
- . CONTRACTOR TO VERIFY AND TEST GROUND TO SOURCE.
  GROUNDING AND OTHER OPERATIONAL TESTING WILL BE WITNESSED BY SPRINT WIRELESS, LLC. REPRESENTATIVE.
- REFER TO DIVISION 16 GENERAL ELECTRIC; GENERAL ELECTRICAL PROVISION AND COMPLY WITH ALL REQUIREMENTS OF GROUNDING STANDARDS.
- 6. ELECTRICAL CONTRACTOR TO PROVIDE DETAILED DESIGN OF GROUNDING SYSTEM PER SPRINT STANDARD GROUNDING METHOD, AND RECEIVE APPROVAL OF DESIGN BY AUTHORIZED SPRINT MOBILITY REPRESENTATIVE, PRIOR TO INSTALLATION OF GROUNDING SYSTEM. PHOTO DOCUMENT ALL EXOTHERMIC AND GROUND RING
- NOTIFY CONSTRUCTION MANAGER IF THERE ARE ANY DIFFICULTIES
  INSTALLING GROUNDING SYSTEM DUF TO SITE SOIL CONDITIONS.
- . ALL EXISTING GROUND BARS, WIRES & CONNECTIONS SHALL BE FIELD VERIFIED. ANY DEFICIENT ITEMS SHALL BE REPLACED AS REQUIRED TO ACHIEVE ADEQUATE GROUNDING REQUIRED BY SPRINT.

#### GENERAL GROUNDING NOTES

#### GROUNDING NOTES

- EXOTHERMIC WELDS (2), 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
- EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.
- 3. ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING, ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.
- FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
- 5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION ON ALL GROUNDING TERMINATIONS. THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
- NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
- 7. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
- 8. WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
- 9. SUPPLIED AND INSTALLED BY CONTRACTOR.

EQUIPMENT GROUNDING PLAN (FINAL

- 10. WHEN THE SCOPE OF WORK REQUIRES THE ADDITION OF A GROUNDING BAR TO AN EXISTING TOWER, THE SUBCONTRACTOR SHALL OBTAIN APPROVAL FROM THE TOWER OWNER PRIOR TO MOUNTING THE GROUNDING BAR TO THE TOWER.
- 11. EXTEND TWO (2) 2 AWG TINNED CU CONDUCTOR FROM BURIED GROUNDING RING AND CONNECT TO THE NEW TOWER. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR GROUNDING CONNECTIONS TO THE TOWER. (APPLICABLE TO NEW TOWERS ONLY.)
- 12. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUNDING BARS AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
- 13. EXPOSED GROUND WIRES TO BE NON METALLIC LIQUID TIGHT.





#### GENERAL DYNAMICS

WIRELESS SERVICES



### P O W D E R R I V E R Development Services, LLC

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SHEET TITLE:

GROUNDING PLAN

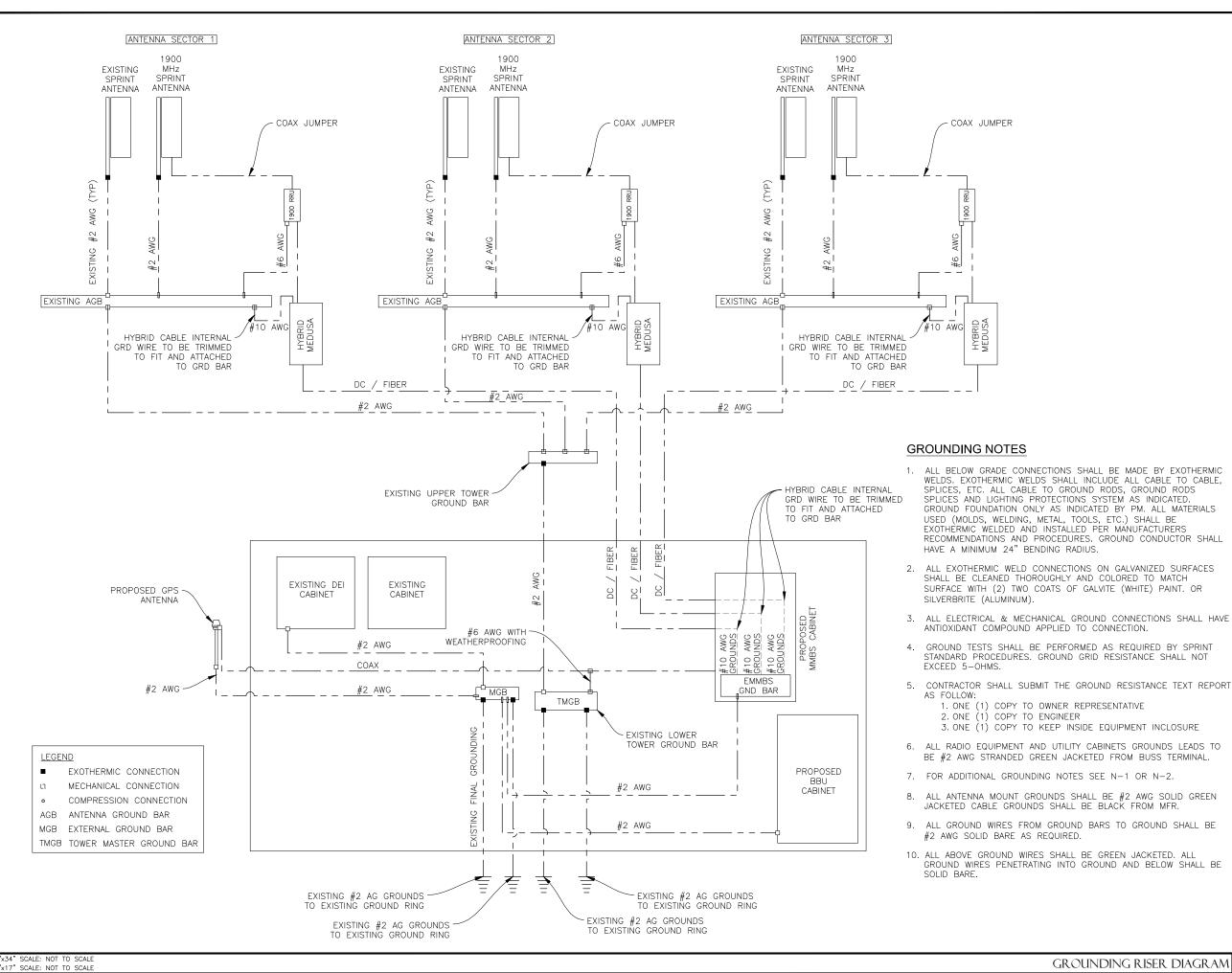
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SHEET TITLE:

GROUNDING DETAILS

REVISION:

SHEET NUMBER:

GROUNDING RISER DIAGRAM

1. ONE (1) COPY TO OWNER REPRESENTATIVE

3. ONE (1) COPY TO KEEP INSIDE EQUIPMENT INCLOSURE

2. ONE (1) COPY TO ENGINEER

COAX JUMPER

