

BILL NO. R-15-03-22

RESOLUTION NO. _____

**A RESOLUTION APPROVING THE LICENSE
AGREEMENT – DUPONT WATER TOWER
BETWEEN THE CITY OF FORT WAYNE AND
SPRINTCOM, INC. BY AND THROUGH ITS
BOARD OF PUBLIC WORKS FOR CITY
UTILITIES.**

WHEREAS, City Utilities, through the Board of Public Works, (Resolution Number: 102-3-18-15-1) desires to lease space on the Dupont Water Tower located at 1016 East Dupont Road, Fort Wayne, In to SprintCom, Inc. for a wireless communication site; and

WHEREAS, the Initial Term of lease shall be for five (5) years commencing on the date as set forth in the License Agreement Section 2. Term. Said License Agreement shall automatically renew for four (4) additional successive periods of five (5) years; and

WHEREAS, the License Fee revenue of said Lease shall be THIRTY-TWO THOUSAND, SEVENTEEN AND 50/100 DOLLARS – (\$32,017.50) payable on an annual basis. On each anniversary of the effective date of the Initial Term and Renewal Term the fee shall be increased by four percent (4%); and

WHEREAS, said Lease Agreement requires the approval of the Common Council of the City of Fort Wayne.

**NOW, THEREFORE, BE IT RESOLVED BY THE COMMON COUNCIL OF THE
CITY OF FORT WAYNE, INDIANA:**

SECTION 1. That said License Agreement between the City of Fort Wayne, Indiana, and SprintCom, Inc. (Exhibit "A" attached hereto and made a part hereof), is hereby approved by the Common Council of the City of Fort Wayne, Indiana.

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SECTION 2. That this Resolution shall be in full force and effect from and after its passage and any and all necessary approval by the Mayor.

Council Member

APPROVED AS TO FORM AND LEGALITY

Carol Helton, City Attorney

Memo

City Utilities
Engineering

Date: March 19, 2015
To: Common Council Members
From: Ben Groeneweg, City Utilities Engineering
Re: Lease of wireless communication site Resolution Number: 102-3-18-15-1

Council District #2

City Utilities is proposing to lease space on the Dupont Water Tower to Sprint for a wireless communication site.

Implication of not being approved:

- The Utility will be out the revenue from the lease. The potential is between \$173k (five year minimal) and \$1.3M (25 year maximum)

If Prior Approval is being Requested, Justify: Not required for this contract

City Utilities recommends, and the Board of Public Works has approved, the lease to Sprint for \$32,017.50/ year with an annual increase of 4%. The term of the lease will be five years with the option to renew four more times at five years each.

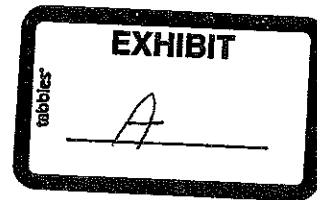
The revenue of said lease will fund City Utilities O&M and capital projects.

Council Introduction Date: March 24, 2015

CC: BOW
Matthew Wirtz
Diane Brown
File

Dupont Water Tower
1016 Dupont Road
Fort Wayne, IN 46825

Resolution #102-3-18-15-1
Lease of Wireless Communication Site



Site Number 884384

LICENSE AGREEMENT

This License Agreement ("License") is made and entered into effective the 16 day of March, 2015, by and between the Board of Public Works, City of Fort Wayne, Indiana ("Licensor") and SprintCom, Inc., a Kansas corporation ("Licensee"), and is entered into under the following circumstances:

- a. Licensor owns the real estate located in Allen County, State of Indiana, and the legal description is set forth in the attached Exhibit A ("Land").
- b. Licensor agrees to grant Licensee a license to occupy and use a portion of the Land for purposes of allowing Licensee to operate its communications business on the Land.

NOW THEREFORE, in mutual consideration of the promises contained herein, the parties agree as follows:

1. License Granted

- a. **Premises.** Licensor grants to Licensee a license to occupy and use a portion of the Land generally shown on Exhibit B attached hereto ("Site"), together with all appropriate easements, rights and privileges in order to allow Licensee (and its employees, agents and sublicensees, with prior written approval of Licensor, such approval shall not be unreasonably withheld, conditioned or delayed) access from public roads and utility sources to the Site and to provide utility services to the Site over the Land ("Easements") and for the use by Licensee in its communications business (Tower Business (as defined below)) (the Site and Easements may be referred to as the "Premises").
- b. **Licensee's Tower Business.** Licensee's Tower Business generally consists of the installation, construction, and maintenance of a communications tower and other improvements, personal property and facilities necessary to operate its communications system, including, without limitation, radio transmitting and receiving antennas, microwave dishes, equipment shelters and/or cabinets and related cables and utility lines and a location based system, as such location based system may be required by any county, state or federal agency/department, including, without limitation, mounting hardware, coaxial cable, base units and other associated equipment ("Tower") on the Site in support of its communications business. In connection with its Tower Business, Licensee has the right to install, construct, remove, replace and maintain the Tower. If Licensor's proposed Site consists of a pre-existing water tower or similar structure owned and maintained by Licensor, all references to Licensee's construction of a communications tower shall not apply and "Tower" shall refer instead only to the other improvements and other associated equipment.

- c. **Storage Buildings.** Licensee (or its sublicensees) shall have the right to build and maintain equipment cabinets or storage buildings on the Site for purposes of storing equipment owned by Licensee or its sublicensees ("Storage Buildings").
 - d. **Right of Access.** Without otherwise limiting the foregoing, Licensee and its sublicensees shall have the right of access to, and the right of ingress and egress from and to the Premises from a public road for purposes of the operation by Licensee of its Tower Business and by the sublicensees for operation of their communications business. Licensee and its sublicensees shall have unrestricted right of access to the Premises on a 24-hour per day and 365-day per year basis. Access to Licensor owned water towers will require twenty four (24) hour advance notice and Licensor approval which shall not be unreasonably withheld or delayed. Licensor will have its employees present during any and all Licensee access to the water towers. Other than during the initial construction/installation of the Tower, Licensee will be allowed to access the water tower for a total of five (5) visits per year without additional charge from Licensor. Additional visits to the water tower will be charged at a rate of \$250 visit (assuming visit is no greater than 4 hours).
2. **Term.** This License shall have a term ("Initial Term") of five (5) years commencing on the date all the conditions precedent set forth in Section 18 have been satisfied or waived by Licensee ("Effective Date") and ending on the fifth (5th) anniversary of the Effective Date, unless terminated prior thereto pursuant to this License. The License and the Initial Term shall automatically renew for four (4) additional successive periods of five (5) years ("Renewal Term"); provided however, that Licensee may terminate this License by giving written notice to Licensor of the intention by Licensee not to renew at least six (6) months prior to the expiration of the Initial Term or any Renewal Term by certified mail to the notice address as set-out in this License.
3. **License Fee.**
- a. Initial License Fee. Licensee shall pay to Licensor as a license fee hereunder the sum of Thirty Two Thousand Seventeen and 50/100 dollars (\$32,017.50) payable on an annual basis ("License Fee"), up front and on the anniversary of the Effective Date of this License every year during the Initial Term and each Renewal Term.
 - b. License Fee Increases On each anniversary of the Effective Date during the Initial Term and Renewal Term, the Fee shall be increased by four percent (4%) over that in effect immediately prior to such date.
4. **Representations and Warranties by Licensor.** Licensor represents and warrants to Licensee as follows:
- a. Licensor has the full power, right, and authority to enter into this License

and Licensor has obtained all necessary approvals and complied with all applicable statutory, regulatory, or other legal requirements prerequisite to executing this License.

- b. The persons executing this License on behalf of Licensor have the authority to sign the License on behalf of Licensor.
 - c. The License is the legal, valid, and binding obligation of Licensor and is enforceable against Licensor in accordance with its terms.
 - d. With respect to environmental matters, (i) Licensor has no knowledge of the existence of Hazardous Materials of any kind on, in or under the Premises, (ii) there are no proceedings pending or threatened where allegations have been made that there are violations of the Environmental Laws with respect to the Premises, and (iii) Licensor has not received any notice from any governmental authority or any person or entity claiming that there have been any violations of the Environmental Laws with respect to environmental contamination of the Premises. "Hazardous Materials" means any hazardous or toxic substance, material, or waste which is or becomes regulated by or designated as a hazardous substance or waste by any governmental authority, and includes, without limitation, a hazardous substance as defined in Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act and any hazardous waste defined pursuant to Section 1004 of the Federal Resource Conservation and Recovery Act. "Environmental Laws" means the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation and Liability Act and all other federal, state, and local laws or regulations dealing with environmental matters (including without limitation laws and regulations dealing with underground storage tanks).
5. **Utilities.** Licensee shall be responsible for and provide payment of all utility services used by Licensee or any of Licensee's sublicensees. Licensee shall separately meter charges for the consumption of electric and any other utilities associated with its use of the Property and shall pay all costs associated therewith. All utilities will be buried. The location of all utilities will be approved by Licensor prior to installation.
6. **Insurance.**
- a. Licensor is a self-insured governmental entity, with limited liability subject to Indiana Code, as set forth in the attached certificate.
 - b. Licensee shall maintain in full force and effect during the term of this License (including any Renewal Terms) comprehensive general liability insurance with limits of \$2,000,000 per occurrence/ \$5,000,000 aggregate for bodily injuries or death of persons, and property damage occurring on or with respect to the Premises and Licensor shall be listed as an

additional insured under this policy. Licensee, as a condition precedent to the issuance of this license, shall provide to Licensor a certificate of insurance (Exhibit E) certifying that such insurance coverage is in effect and the certificate shall provide that the insurance Licensee shall not terminate or modify the coverage without providing at least ten (10) days prior written notice to Licensor. The coverage amounts set forth may be met by a combination of underlying and umbrella policies so long as in combination the limits equal or exceed those stated.

- c. Licensee shall maintain in full force and effect such property and casualty insurance as it deems necessary or desirable with respect to its Tower (not Licensor water tower) and other improvements made or added to the Premises by Licensee.

7. **Destruction of the Tower.** In the event Licensee's Tower is totally demolished or substantially destroyed as a result of any casualty, then Licensee may, upon approval by Licensor, rebuild the Tower. If Licensee decides to rebuild the Tower, Licensee may construct and maintain on the Premises a temporary tower or other structure in order to continue its Tower Business. If Licensee elects to terminate the License, then Licensee shall give written notice to Licensor of its election to terminate the License within thirty (30) days after the casualty and the License shall terminate effective as of the date of such notice.
8. **Destruction of Water Tower.** If the water tower is destroyed, dismantled, or removed, Licensee shall, upon approval by Licensor, have the right to construct its own tower, at its cost, of design approved by Licensor, which approval shall not be unreasonably withheld or delayed, at a location as close as reasonably possible to the location of the water tower so as to give Licensee similar radio signal coverage as Licensee enjoyed from the water tower. Licensor may deny construction of a replacement tower for any and all reasons that it, in its sole option, considers reasonable. In such a case the License would be considered terminated as described below. If a replacement water tower is constructed anywhere on Licensor's property, Licensee shall have the right to place Licensee's antenna and appurtenance on top of the new replacement water tower at Licensee's cost and in a similar manner as Licensee's antenna and appurtenance on the existing water tower. If the Property, water tower, or Antenna Facilities are destroyed or damaged so as, in Licensee's judgment to render the site unusable for Licensee's Tower Business, Licensee may elect to terminate this License upon thirty (30) days written notice to Licensor. In the event Licensee elects to terminate this License, Licensee shall be entitled to reimbursement of any prepaid fee prorated prior to the date of termination.
9. **Repainting of Water Tower.** Licensee agrees to cooperate with and accommodate repairs and routine maintenance (including but not limited to preparation and containment for painting) of the water tower. Such repairs and maintenance shall be completed by Licensor at Licensor's sole cost in an expeditious manner so as to minimize disruption of Licensee's use of the

Premises. Any special accommodation required to protect or dismount equipment owned by Licensee will be an expense borne by Licensee, provided that Licensor will notify Licensee at least forty-five (45) days in advance of the date when the water tower is scheduled to be painted, repaired, rebuilt or scheduled for general maintenance. Shortly before the painting date, Licensee may place a temporary antenna array on a crane parked near the site. Licensee may then remove the antennas from the water tower and the painting will proceed as it normally does. If cabling or related structure is determined to interfere with painting it will be removed as well. Once the painting or repair is finished, Licensee will then re-attach the antennas where they were and will have them painted to match the newly repaired/painted water tower. All costs incurred in removing the antenna, placement of a temporary antenna array, reattaching and painting the antennas shall be the sole responsibility of Licensee.

10. Assignment. Licensee may assign or transfer this License only with the prior written consent of Licensor, upon ninety (90) days prior written notice, and such consent shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, Licensee will have the right without consent of Licensor but with written notice, to sublease (or other transfer or allow the use of) all or any portion of the Premises or assign its right under this License in whole or in part to: (a) any entity controlling, controlled by or under common control with Licensee (b) any entity acquiring substantially all of the assets of Licensee; (c) any entity that is authorized to sell telecommunications products or services under the "Sprint" or "Sprint PCS" brand name or any successor brand name(s) or other brand name(s) used or licensed by Licensee's parent corporation ("Contract Affiliate"); or (d) any successor entity in a merger or consolidation involving Licensee. Licensor will not be entitled to any additional rent or other fee for its review or approval. Tenant or any Contract Affiliate will not be released from its obligations under this License.

11. Default by Licensee. A default by Licensee will have occurred under this License if anyone or more of the following has occurred:

- a. Licensee fails to pay the full amount of any installment of the Fee when due and Licensee has not paid such amount within fifteen (15) days after receipt of notice of default from Licensor; or
- b. Licensee fails to observe or perform any other provision of this License for thirty (30) days after Licensor has given Licensee written notice of the nature of Licensee's failure (Section 14 Noninterference may supersede this clause); provided however that so long as Licensee diligently pursues a cure of said default, Licensee shall be entitled to an additional thirty (30) days to cure any said default, or
- c. Licensee files a petition in bankruptcy or Licensee seeks the appointment of a receiver under state law or Licensee consents to or acquiesces in such a petition or appointment of a receiver or liquidator, or Licensee makes an assignment for the benefit of creditors; or

- d. Licensee admits its inability to pay debts as they become due, or Licensee fails to obtain a dismissal of any petition under the bankruptcy law or for a receiver or liquidator under state law within thirty (30) days after the commencement of that proceeding.

12. Remedies of Licensor for Default by Licensee. Upon Licensee's default, in addition to all other rights or remedies available at law or in equity, Licensor may terminate this License and Licensee shall remove the fence and Storage Buildings and the Tower to one (1) foot below grade and restore the Site to a reasonably even grade (any and all property restored to the condition it was when originally received), unless at Licensor's option, Licensor has provided written notice to Licensee within fifteen (15) days after giving Licensee notice of default of Licensor's desire that the Tower remain on the Land, in which case Licensee shall have no obligation to remove the fence, Storage Buildings and the Tower and the fence, Storage Buildings and the Tower shall become the property of Licensor. In the event of Licensee's default and if so requested by Licensee at the time of such default, Licensor shall mail written notice of such default to Licensee's lender to the address provided by Licensee.

13. Taxes. The parties recognize that Licensor, as a municipal corporation, is a political subdivision of the State of Indiana and the Land is currently tax exempt. If the Land or the Premises should ever become taxable, then Licensor shall pay when due all real property taxes for the Land, including the Premises. In the event that Licensor fails to pay any such real property taxes or other fees and assessments, Licensee shall have the right, but not the obligation, to pay such owed amounts and deduct them from the Fee due under this License. Notwithstanding the foregoing, Licensee agrees to pay all taxes assessed against the Tower, the Storage Buildings, or other improvements or property owned by Licensee or any of Licensee's sublicensees only for so long as this License remains in effect. If Licensor receives notice of any personal property or real property tax assessment against Licensor, which may affect Licensee and is directly attributable to Licensee's installation, Licensor shall provide timely notice of the assessment to Licensee sufficient to allow Licensee to consent to or challenge such assessment, whether in a Court, administrative proceeding, or other venue, on behalf of Licensor and/or Licensee. Further, Licensor shall provide to Licensee any and all documentation associated with the assessment and shall execute any and all documents reasonably necessary to effectuate the intent of this Section 13. In the event real property taxes are assessed against Licensor or Licensee for the Premises or the Land, Licensee shall have the right, but not the obligation, to terminate this License without further liability after thirty (30) days' written notice to Licensor, provided Licensee pays any real property taxes assessed as provided herein.

14. Noninterference. If the Tower is a water tower owned and maintained by Licensor, Licensee's installation, operation, and use of its transmission facilities under this License shall not damage or interfere in any way with Licensor's water tower operations or related repair and maintenance activities. Licensor, at all

times during this License, reserves the right to take any action it deems necessary, in its sole discretion, to repair, maintain, alter, or improve the Tower and to temporarily interfere with Licensee's improvements as may be reasonably necessary in order to carry out any of such activities. Licensor agrees to give reasonable advance notice of such activities to Licensee and reasonably cooperate with Licensee to carry out such activities with a minimum amount of interference with Licensee's transmission operations.

- a. Licensee agrees to install radio equipment of types and frequencies which shall at all times and at Licensee's sole cost, comply with such technical industry standards as may from time to time be established by Licensor for the Premises, consistent with FCC requirements, including without limitation, technical standards relating to frequency compatibility, radio interference protection, antenna type and location and physical installation. The current standards include, are but not limited to all applicable federal, state and local laws, ordinances, and regulations (including without limitation the Federal Communication Commission, Federal Aviation Administration, and local building and fire codes) and the rules and regulations and access and safety procedures for the Premises adopted from time to time by Licensor. In the event Licensee requires the Site to offer electrical power and phone service, the costs of supplying these types of services will be the sole expense of Licensee. If, in the sole and reasonable judgment of Licensor, any electrical, electromagnetic, radio frequency or other interference to equipment properly located on the Tower and Premises shall result from the operation of Licensee's equipment, provided that such equipment is in operation as of the date of this License, Licensee shall eliminate such interference within twenty-four (24) hours following verbal notice from Licensor or, otherwise, cease operations (except for short tests necessary for the elimination of such interference) until the interference has been corrected, provided, however, that if an emergency situation exists, which Licensor reasonably determines in its sole judgment to be attributable to Licensee's equipment, Licensor shall immediately notify Licensee verbally, who shall act immediately. Licensee shall defend, by counsel reasonably acceptable to Licensor and hold Licensor and the owner and their respective agents, partners, and employees harmless from and against any and all losses, damages, liabilities, claims, liens, costs and expenses, including without limitation court costs and reasonable attorneys' fees and expenses, arising in connection with such shutdown. Licensee agrees to cease operation (except for short tests necessary for the elimination of the interference) until the interference has been corrected to the satisfaction of Licensor in the case of interference attributable to Licensee's equipment. If such interference has not been corrected within ten (10) days, Licensor or Licensee may, at their sole option, either terminate this License, or may require that Licensee immediately remove from the Premises the specific item of equipment causing such interference. All installations, additions, partitions, hardware, fixtures and improvements, temporary or permanent,

placed there by Licensee ("Premises Improvements") shall, within ninety (90) days of the termination of this License ("Removal Term") by lapse of time or otherwise or upon the earlier termination of Licensee's right to possession, be removed from the Premises at Licensee's sole cost and expense. Licensee shall continue to pay the then current monthly rent during the Removal Term until Licensee has removed all Premises Improvements from the Premises. If Licensee does not remove its equipment from the Premises within 60 days after expiration or termination of this License, Owner may remove and store the equipment at Tenant's expense. Tenant must reimburse Owner for the actual removal and storage costs within 30 days after Owner provides to Tenant an invoice for the costs and reasonable supporting documentation. Licensee shall be liable for all claims, damage, cost, expenses, awards, fines, judgments, and attorney fees (including, without limitation, costs, attorney fees, expert witness fees, and other expenses of litigation) of every nature arising out of or in connection with Premises Improvements as long as Premises Improvements remain on the Premises. Licensee shall repair any damage to the Premises caused by the Premises Improvements and the removal thereof, and restore the Premises to its condition prior to the execution of this License, reasonable wear and tear excepted. Licensee's removal of Premises Improvements from the Premises shall be deemed complete upon Licensor's approval, not to be unreasonably withheld, of an independent third party engineer's inspection of the Premises. Licensee shall keep its equipment and the areas immediately surrounding neat and clean. Licensee shall conduct its business and control its agents, employees, invitees and visitors in such manner as not to create any nuisance, or interfere with, annoy or disturb any other Licensee or occupant to the Storage Building. Licensor shall have no obligation to maintain, operate or safeguard the equipment. Licensor agrees to cause the prompt elimination of any disruption or interference with Licensee's equipment attributable to the equipment of Licensor's licensees operating in or about the Premises which is placed in operation after the date of this License. If such disruption or interference is not cured within ten (10) days following written notice from Licensee, Licensee may terminate this License at any time while such interference continues. Licensor agrees to protect Licensee's antenna or antenna equipment from the interference from future licensees or tenants of Licensor.

- 15. Property of Licensee and Its Sublicensees.** The Tower, the Storage Buildings, and the radio and communications equipment owned by Licensee or Licensee's sublicensees shall at all times remain personal property and shall not be considered fixtures or otherwise be considered permanently installed on or in the Premises. Upon expiration or termination of the License, Licensee shall promptly remove the Tower and all footers associated with said Tower and restore the Site to a reasonably even grade. Licensee shall further remove all associated facilities and feed cables and take all action necessary to restore the Site to its original condition, reasonable wear and tear excepted. Licensee shall have sole

responsibility for the maintenance, repair, and security of its Tower, Storage Buildings, and any other of its improvements, and shall keep the same in good repair and condition during the License term. Licensee shall adhere to OSHA safety requirements. Licensee shall place no advertising on the Site or on any structure on the Site, other than signs required by law or regulation. No equipment shall be stored on the Property outside of the Storage Buildings, and all appropriate permits must be obtained prior to construction and use of the Storage Buildings. All antenna panels shall be painted to match the water tower.

16. Covenants by Licensee to Comply with Laws. Licensee covenants and agrees that it shall at all times comply with all laws with respect to its possession of the Premises and the operation of its Tower Business on the Premises. Without otherwise limiting the foregoing, Licensee shall at all times comply with the Environmental Laws with respect to its possession of the Premises and the operation of its Tower Business.

17. Indemnification.

- a. Licensee agrees to indemnify and hold Licensor harmless from and against any and all injuries or damage to property as a result of the ownership and maintenance of the Tower by Licensee and Licensee's or sublicensee's operation of the Tower Business; provided, however, Licensee or sublicensee shall not be obligated to indemnify Licensor in the event the injuries or property damage are caused by the negligence or willful misconduct of Licensor.
- b. Licensor agrees to indemnify and hold Licensee harmless from and against any and all injuries or damage to property, to the extent allowable by law, as a result of the ownership of the Premises by Licensor and the operation of any business activities by Licensor, ; provided, however, that Licensor shall not be obligated to indemnify Licensee in the event the injuries or property damage are caused by the negligence or willful misconduct of Licensee or its sublicensees.

18. Conditions Precedent to Licensee's Obligations. Licensee's obligations under this License are subject to the completion and satisfaction of the following conditions precedent ("Conditions Precedent"):

- a. Licensee's obligations under this License are conditioned upon Licensee's satisfaction, at Licensee's sole cost and expense, in its sole discretion, with the status of the title to the Premises and that the Premises are free and clear of any liens, encumbrances, or exceptions other than those which do not interfere with Licensee's intended Tower Business (Exhibit D).

Licensee must, at Licensee's sole cost and expense, obtain an evaluation done by Dixon Engineering, Inc. 1104 Third Ave., Lake Odessa, Michigan (phone: (616) 374-3221), determining and verifying the structural integrity of the water tower and the water tower's ability to adequately

carry the loads imposed by the antennas and their associated cables, brackets, etc. In addition the installation should be reviewed to verify non-interference with other operating issues with the tank. That includes, but is not limited to, installation of cables, cable trays and hangers, etc. Such installation plan must be approved to preclude the need for removal when painting of the Tower may happen. Finally, work must be designed to meet applicable OSHA standards. Dixon Engineering's certification along with their review must be provided to and approved by Licensor as a condition precedent to the issuing of this License (Exhibit E).

c.If as a result of the search of the title or otherwise it is disclosed there is a mortgage on the Premises, then the mortgagee must execute a non-disturbance agreement in form acceptable to Licensee which assures Licensee of its right to occupy and use the Premises in the event of default on the mortgage.

- b. Licensee's satisfaction, in its sole discretion, of the condition of the Premises, including without limitation, the environmental condition of the Premises and the suitability of installing the Tower on the Premises.
- c. The determination by Licensee, in its sole discretion, that the Premises are properly zoned to allow Licensee to operate its Tower Business, including without limitation the construction of the Tower on the Premises.
- d. Licensor's written approval of the location of the Premises as shown on the Survey and of all construction plans the Tower and Storage Buildings, which approval shall not be unreasonably withheld.

Licensor shall reasonably cooperate with and assist Licensee in causing the Conditions Precedent to be completed and satisfied, and including without limitation, Licensor shall execute such documents and otherwise cooperate with and assist Licensee in obtaining the title insurance, the Survey, soil tests, environmental tests, and any necessary permits, approvals, consents and licenses from any applicable governmental authorities or agencies (including proper zoning classification). However, Licensor does not guarantee any such necessary permits, approvals, consents, and/or Licenses shall be granted to Licensee.

19. Information and Documents to be Provided by Licensor and Licensee's Right of Access to Premises. Upon execution of this License, Licensee (and its agents) may enter upon the Premises for purposes of obtaining the Survey, conducting soil tests, performing environmental studies, inspecting the Premises, and otherwise conducting such other tests as it deems necessary or desirable for purposes of determining the suitability of operating its Tower Business on the Premises, excluding the inner most Water Tank compound without scheduling an escort.

20. Completion of Construction. Licensee shall provide Licensor "as built" drawings of the equipment installed on the water tower and improvements

installed on the Property which show the actual location of all equipment and improvements. Such drawings shall be accompanied by a completed and detailed inventory of all equipment, personal property, and antenna facilities actually placed on the water tower. Licensor reserves the right to have all installation work inspected by a qualified third party consultant to ensure that it has been installed per the original plans and specifications. The third party inspection fees are the responsibility of the Licensee. Any modifications made during the construction must be reviewed and approved by Dixon Engineering and Licensor prior to installation.

21. Modification of Tower. Licensee may update or replace the Tower from time to time with the prior written approval of Licensor, provided that the replacement facilities are not greater in number or size than the existing facilities and provided that their location on the licensed portions of the water tower is satisfactory to Licensor. Licensee shall submit to Licensor a proposal for any such replacement facilities, and for any supplemental materials as may be reasonably requested for Licensor's evaluation and approval, which approval shall not be unreasonably withheld or delayed. All costs for required structural studies, plan review, and third party inspection, shall be paid by Licensee within thirty (30) days of receipt of a detailed invoice.

22. Confidentiality of City Information/Non-Disclosure. Licensee understands and agrees that data, materials, fees and information disclosed to Licensee may contain confidential and protected data. Therefore, the Licensee promises and assures that data, material, fees and information gathered, based upon or disclosed to the Supplier for the purpose of this contract, will not be disclosed to others or discussed with other parties without the prior written consent of the City. This contract and the terms associated with it may not be released to any other party without prior written consent of the City of Fort Wayne, Indiana.

23. Miscellaneous.

- a. **Benefit of Parties.** All of the terms and provisions of this License shall be binding upon and inure to the benefit of the parties and their respective successors, assigns, entities, and heirs.
- b. **Counterparts.** This License may be executed simultaneously in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.
- c. **Notices.** All notices, requests, demands or other communications which are required or may be given pursuant to the terms of this License shall be in writing, and delivery shall be sufficient in all respects if delivered personally or by registered or certified mail, postage prepaid, or by fax, or by private courier, addressed as follows:

If to Licensor:

City Utilities Engineering
200 E Berry Street, Suite 270
Fort Wayne, Indiana 46802

With a copy to:

City Attorney
200 E Berry Street, Suite 430
Fort Wayne, Indiana 46802

If to Licensee:

BY MAIL:

Sprint Property Services

Mailstop: KSOPHT0101-Z2650

6391 Sprint Parkway

Overland Park, KS 66251-2650

with a copy to:

Sprint Legal Department

Mailstop: KSOPHT0101-Z2020

6391 Sprint Parkway

Overland Park, KS 66251-2020

Attn: Real Estate Attorney

or to such other address as may be specified in writing by any of the above.

- d. **Entire Agreement.** This License, including the Exhibits attached hereto and any documents or agreements specifically referred to herein, contain the entire understanding of the parties with respect to the subject matter hereof. There are no representations, promises, warranties, covenants, agreements or undertakings other than those expressly set forth or provided for in this License. This License supersedes all prior agreements and understandings between the parties with respect to the transactions contemplated hereby.
- e. **Governing Law.** This License shall be governed by and construed and enforced according to the laws of the State of Indiana. If any provision hereof is held to be invalid or unenforceable, it shall be enforceable to the fullest extent allowed by law and the remainder of this License shall continue in full force and effect.
- f. **Construction of License.** For purposes of interpreting and construing this License, no party shall be considered the drafter of the License.

- g. **Memorandum of License.** At Licensee's request, Licensor shall execute a recordable Memorandum of this License and such other documents reasonably requested by Licensee as may be necessary to protect Licensee's license interest.

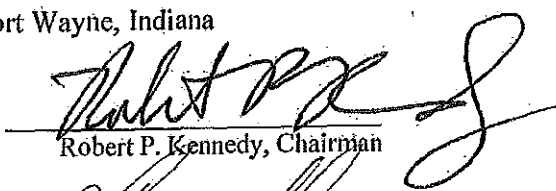
IN WITNESS WHEREOF, the parties have entered into this License effective as of the first date set forth above.

LICENSOR:

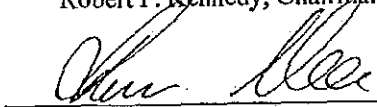
BOARD OF PUBLIC WORKS

City of Fort Wayne, Indiana

BY:


Robert P. Kennedy, Chairman

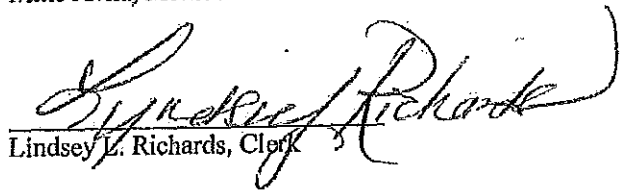
BY:


Kumar Menon, Member

BY:


Mike Avila, Member

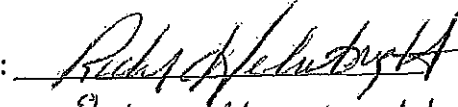
ATTEST:


Lindsey L. Richards, Clerk

LICENSEE:

SPRINTCOM, INC., a Kansas corporation

By:


Richard Helmbright

STATE OF OHIO)
) SS:
COUNTY OF FRANKLIN)

Before me, the Undersigned, a Notary Public in and for said County and State, this _____ day of _____ 2015, personally appeared Richard Helmbricht, the Market Manager of SprintCom, Inc., and acknowledged the execution of the above and foregoing License Agreement on behalf of said corporation.

WITNESS my hand and notarial seal.

My Commission Expires:

Oct 10, 2018

Kerstin Palmer
Notary Public's Signature

Kerstin Palmer
Notary Public's Printed Name

Resident of Franklin County, OHIO

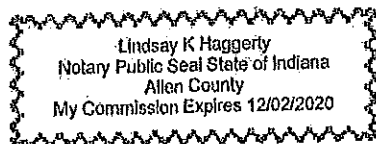


STATE OF IN)
) SS:
COUNTY OF Allen)

Before me the undersigned, a Notary Public in and for said county and state this 18 day of March 2015, personally appeared Robert P. Kennedy Director, Fort Wayne Board of Public Works and acknowledged the execution of the above and foregoing License Agreement to be his voluntary act and deed for the uses and purposes therein set forth.

My Commission Expires:

12/02/2020



Lindsay K Haggerty
Notary Public's Signature

Lindsay K Haggerty
Notary Public's Printed Name

Resident of Allen County, Indiana.

EXHIBIT A
(legal description)

Part of the Northeast Quarter of Section 1, Township 31 North, Range 12 East, Allen County, Indiana, more particularly described as follows:

Beginning at the Northwest corner of the Northeast Quarter of Section 1, Township 31 North, Range 12 East, Allen County, Indiana; thence Easterly along the North line of the NE 1/4 of Section 1-31-12 a distance of 100.0 feet; thence Southerly with a deflection angle to the right of 89 degrees 24 minutes and parallel to the West line of the NE 1/4 of Section 1-31-12 a distance of 190 feet; thence Westerly with a deflection angle to the right of 90 degrees 36 minutes and parallel to the North line of Section 1-31-12 a distance of 100.0 feet to a point on the West line of the NE 1/4 of Section 1-31-12; thence Northerly with a deflection angle to the right of 89 degrees 24 minutes and along the West line of the NE 1/4 of Section 1-31-12 a distance of 190 feet to the point of beginning, containing 0.44 acres of land, more or less.

Dupont Water Tower
1016 Dupont Road
Fort Wayne, IN 46825

EXHIBIT B
(site)

Sprint®



PROJECT: OCEAN
 NETWORK VISION & 2.5 EQUIPMENT
 SITE NAME: USC 884403 FORT WAYNE
 SITE CASCADE: CH51XC384
 SITE NUMBER: 884384
 SITE ADDRESS: 1016 EAST DUPONT ROAD
 FORT WAYNE, IN 46825
 SITE TYPE: EXISTING 150'-0" WATER TANK

PLANS PREPARED FOR:
Sprint
 6580 Sprint Parkway
 Overland Park,
 Kansas 66251

PLANS PREPARED BY:
FIRST GROUP ENGINEERING
 5925 LAKESIDE BLVD.
 INDIANAPOLIS, IN 46278

DATE:
 [Blank]

MLA PARTNER:
 [Blank]

ENGINEERING LICENSE:

DRAWING NOTICE:
 THESE DOCUMENTS ARE
 CONFIDENTIAL AND ARE THE SOLE
 PROPERTY OF SPRINT AND MAY NOT
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 REDISTRIBUTED WITHOUT THE
 EXPRESS WRITTEN CONSENT OF
 SPRINT.

REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR S&S FINAL		05/20/14 MHL		0
ISSUED FOR S&S FINAL		05/22/14 MHL		1
ISSUED FOR S&S FINAL		07/16/14 MHL		2
ADDED ORION S SHEETS		06/20/15 MHL		3

SITE NAME:
**USC 884403
 FORT WAYNE**

SITE CASCADE:
884384 - CH51XC384

SITE ADDRESS:
**1016 EAST DUPONT ROAD
 FORT WAYNE, IN 46825**

SHEET DESCRIPTION:
TITLE SHEET

SHEET NUMBER:
T-1

SITE INFORMATION

PROPERTY OWNER:
 FORT WAYNE CITY UTILITIES
 200 EAST BERRY STREET, ROOM 130
 FORT WAYNE IN 46802
CONTACT: STEVE SAMONS
 PHONE: (260) 740-1624
SITE ADDRESS:
 1016 EAST DUPONT ROAD
 FORT WAYNE, IN 46825
 ALLEN COUNTY

GEOGRAPHIC COORDINATES:
 LATITUDE: 41° 10' 38.2800" N. (41.177300)
 LONGITUDE: 85° 07' 50.5200" W. (-85.130700)

ZONING JURISDICTION:
 CITY OF FORT WAYNE

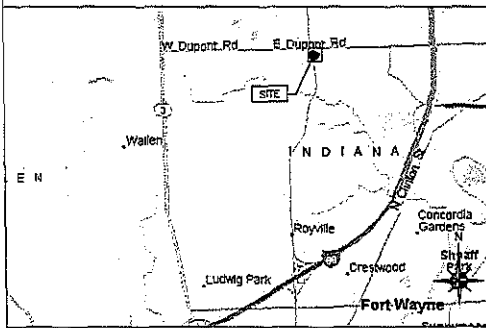
ZONING DISTRICT:
 UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

POWER COMPANY:
 NORTHEASTERN REG.
 CUSTOMER SERVICE: (260) 244-5111

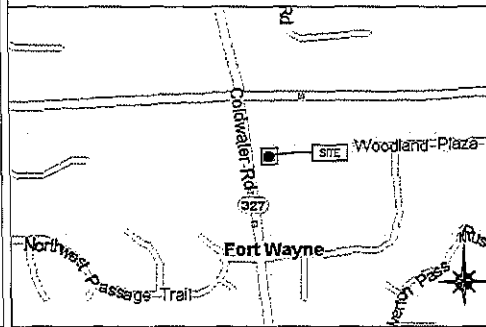
AAV PROVIDER:
 US SIGNAL
 CUSTOMER SERVICE: (866) 2-SIGNAL
SPRINT CONSTRUCTION MANAGER:
 RICHARD DUNLAP
 PHONE: (317) 680-2341
 EMAIL: richard.dunlap@sprint.com

EQUIPMENT SUPPLIER:
 SAMSUNG TELECOMMUNICATIONS AMERICA (STA)
 1301 EAST LOOKOUT DRIVE
 RICHARDSON, TX 75082-4124
 PHONE: (972) 761-7000

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

- INSTALL NETWORK VISION & 2.5 EQUIPMENT
- INSTALL MMS BBU CABINET
- INSTALL (16) BATTERIES IN PROPOSED MMS BATTERY CABINET
- INSTALL (6) ANTENNA PIPES AND MOUNTS
- INSTALL (6) PANEL ANTENNAS
- INSTALL (9) RRH'S MOUNT TO PROPOSED PIPE
- INSTALL (3) HYBRID CABLES
- INSTALL PROPOSED PPC CABINET
- INSTALL PROPOSED 8' X 16' ELEVATED STEEL PLATFORM

APPLICABLE CODES

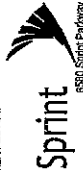
• ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.
 ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:
 2006 INDIANA BUILDING CODE (2006 IBC WITH STATE AMENDMENTS)
 1999 INDIANA PLUMBING CODE
 2009 INDIANA MECHANICAL CODE
 2009 INDIANA ELECTRICAL CODE (2009 NEC WITH AMENDMENTS)
 IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL.



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SHEET INDEX

SHT NO:	SHEET TITLE:	REV:	ENGINEER:
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SP-2	SPRINT SPECIFICATIONS	2	DWC
A-1	SITE PLAN	2	DWC
A-2	TOWER ELEVATIONS & ANTENNA DETAILS	2	DWC
A-2A	ANTENNA & HYBRID CABLE DETAILS	2	DWC
A-3	RF DATA SHEET	2	DWC
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A-7	BREAKOUT & EQUIPMENT DETAILS	2	DWC
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A-8	EQUIPMENT DETAILS	2	DWC
EF-1	ANTENNA & CABLE COLOR CODING DETAILS	2	DWC
E-1	GROUNDING DETAILS	2	DWC
E-2	DC POWER DETAILS & PANEL SCHEDULES	2	DWC
E-3	DC POWER ONE-LINE DETAILS	2	DWC
F-1	OVERALL FIBER PLAN	2	DWC
F-2	ENLARGED FIBER PLAN	2	DWC
F-3	AAV (NID) ENCLOSURE ONE-LINE DIAGRAM	2	DWC
F-4	STANDARD DETAILS	2	DWC
S-1	STRUCTURAL DRAWINGS	2	OTHERS
S-2	STRUCTURAL DRAWINGS	2	OTHERS
S-3	PLATFORM DETAILS	2	DWC
S-4	PLATFORM DETAILS	2	DWC

 880 Sprint Parkway Indianapolis, IN 46225	PLANS PREPARED FOR: PLANS PREPARED BY: FIRST GROUP ENGINEERING 5925 LAKESIDE BLVD. INDIANAPOLIS, IN 46278	DATE:	PLA PARTNER:		ENGINEERING LICENSE:	DRAWING NOTES: 1. THESE DOCUMENTS ARE THE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.	<table border="1"> <thead> <tr> <th>REVISIONS</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ISSUED FOR S&S FINAL</td> <td>06/27/2014</td> <td>W.C.</td> </tr> <tr> <td>2</td> <td>ISSUED FOR S&S FINAL</td> <td>07/09/2014</td> <td>W.C.</td> </tr> <tr> <td>3</td> <td>ISSUED FOR S&S FINAL</td> <td>07/09/2014</td> <td>W.C.</td> </tr> </tbody> </table>	REVISIONS	DESCRIPTION	DATE	BY	1	ISSUED FOR S&S FINAL	06/27/2014	W.C.	2	ISSUED FOR S&S FINAL	07/09/2014	W.C.	3	ISSUED FOR S&S FINAL	07/09/2014	W.C.	SITE NAME: USC 884403 FORT WAYNE	SITE ADDRESS: 884384 - CH51XC384	SHEET DESCRIPTION: 1016 EAST DUPONT ROAD FORT WAYNE, IN 46825	SHEET NUMBER: SPRINT SPECIFICATIONS	SHEET NUMBER: SP-1
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SECTION 11.700 - ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION

SUMMARY:
THIS SECTION SPECIFIES INSTALLATION OF ANTENNA, RIRTS, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RIRTS:
THE NUMBER AND TYPE OF ANTENNAS AND RIRTS TO BE INSTALLED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:
HYBRID CABLE WILL BE DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

JUMPER CABLES AND CONNECTORS:
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RIRTS AND ANTENNAS, JUMPER CABLES BETWEEN THE RIRTS AND ANTENNAS OR TOWER TOP ANTENNAS SHALL CONSIST OF 1/2" INCH FIBER OPTIC, OUTDOOR RATED COAXIAL CABLE MIN. LENGTH FOR JUMPER SHALL BE 10'-0".

REMOTE ELECTRICAL INT. (RETI) CABLES:
INSTALL JUMPER CABLES, CONNECTORS, FUSERS PER RF DATA SHEET, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:
ANTENNAS SHALL BE ASSEMBLED AS ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATION ON THE CONSTRUCTION DRAWINGS.

INSTALLATION:
A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM SHROUD IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1/8".

B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

HYBRID CABLE INSTALLATION:
A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. THE INSTALLATION OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADIUS.

C. EXTERIOR CASE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

1. PASTING MAN SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER.

2. PASTING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (JUNCTION) WITHIN THE CASE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER.

3. PASTING JUMPER: SECURE JUMPER TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL 1/8" W/APS OR STAINLESS STEEL BUTTERFLY CLIPS.

4. CABLE INSTALLATION:
a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE. NOTIFY THE CONSTRUCTION MANAGER.

b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TRIPPING AND CROSSOVERS.

c. HOST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS.

5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDING AS INDICATED ON DRAWINGS.

6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED IN TS 0200 REV 4.

7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1.

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS.

A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.

B. WEATHERPROOFING USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.

1. COLD SHRINKING ENVELOPES: CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A 3M COLD SHRINK TUBING ENVELOP 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK TUBING ENVELOP 2" BEYOND TUBING.

2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.

3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.

4. OPEN BLANK ON JOB SITE IS NOT ACCEPTABLE.

SECTION 01.300 - CELL SITE CONSTRUCTION

SUMMARY:
NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF WORK ORDER.

SITE CLEANUP:
CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBER, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIAL.

CONTRACTOR SHALL:
SUBMIT TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED.

TESTS AND INSPECTIONS:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.

2. AZIMUTH AND ELEVATION: PROVIDE AN AUTOMATED REPORT UPLOADED TO SPRINT USING A SPRINT PROVIDED AUTOMATED REPORTING TOOL. REPORT SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

4. ALL TESTING REQUIRED BY APPLICABLE INSTALLATION MOPS.

5. REQUIRED CLOSOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. AZIMUTH, DOWNWIND, AGL FROM SUNSHINE INSTRUMENTS - ANTENNA ALIGNMENT TOOL (AAT).

2. SWEEP AND FIBER TESTS.

3. SCALABLE IMAGE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SPECIALIZED EQUIPMENT.

4. ALL AVAILABLE JURISDICTIONAL PERMIT AND OCCUPANCY INFORMATION.

5. PPT SCAN OF REFINED MARK-UPS SUITABLE FOR USE IN ELECTRONIC AS-BUILT DRAWING PRODUCTION.

6. LEN WALKERS.

7. FINAL PAYMENT APPLICATION.

8. REQUIRED FINAL CONSTRUCTION PHOTOS.

9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS.

10. APPLICABLE POST AND TAGS INCLUDING DOCUMENT UPLOADED TO SPRINT'S (SPRINT'S) DOCUMENT REPOSITORY (OF RECORD).

11. CLOSOUT PHOTOGRAPHS AND CLOSOUT CHECKLIST SPRINT WILL PROVIDE SEPARATE GUIDANCE.

SECTION 01.100 - SCOPE OF WORK

THE WORK:
SHALL COMPLY WITH ALL APPLICABLE CODES AND STANDARDS, AND PORTIONS THEREOF.

REFERENCE:
SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE.

SITE EVALUATION:
CONTRACTOR SHALL BE RESPONSIBLE FOR EVALUATING THEMSELVES WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

ON-SITE SUPERVISION:
CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE:
THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. PROVIDE ALL MATERIALS AND LABOR AS REQUIRED TO CONSTRUCT THE WORK. DIMENSIONS AND TOLERANCES SHALL BE INCLUDED AS PART OF THE WORK.

B. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB CONDITIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

C. MARK THE FIELD SET OF DRAWINGS IN RED, DOCUMENTING ANY CHANGES FROM THE CONSTRUCTION DOCUMENTS.

METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION:
CONTRACTOR SHALL FURNISH WORK AS DESCRIBED IN:

A. COAX COLOR CODING SWEEPS AND FIBER TESTING TS-0200 AND EL-C588

B. CABLE LABELING EN-2012-00

C. APPLICABLE INSTALLATION MOPS IDENTIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS

SECTION 01.200 - COMPANY FURNISHED MATERIAL AND EQUIPMENT

A. COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DRAWINGS.

B. CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT TO ENSURE IT IS PROTECTED AND HANDLED PROPERLY THROUGHOUT THE CONSTRUCTION DURATION.

C. CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED EQUIPMENT AT CELL SITE OR CONTRACTOR'S LOCATION. CONTRACTOR TO COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

ABSTRACTS

- A. THIS SECTION SPECIFIES WIRE CHANNELS, POWER CHANNELS, AND INTERNAL CABLEWAYS, INCLUDING BUT NOT LIMITED TO RECEPTS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (CIR).
- B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CHANNEL OR NEW CHANNEL AS SHOWN ON DRAWINGS AND AS REQUIRED BY THE APPLICABLE INSTALLATION WPS.
- C. COMPLY WITH MANUFACTURER'S INSTALLATION AND START-UP REQUIREMENTS.

A. NEW DC CIRCUIT IS REQUIRED IN MMS CABINET SHALL BE CLEARLY IDENTIFIED AS TO PERU BEING SERVICED.

SUMMARY

THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS.

A. ALL EQUIPMENT F

- B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALL AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.**

A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:

1. ALLIED TUBE AND CONDUIT.
2. B-JUNE SYSTEM.
3. UNISTRUT DIVERSIFIED PRODUCTS.
4. THOMAS & BETTS.

1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.

2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
4. TUGGLE BOLTS ON HOLLOW MASONRY UNITS.
5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
7. EXPLOSIVE DEVICES FOR ATTACHING HANDERS TO STRUCTURE SHALL NOT BE PERMITTED.
8. DO NOT WELD CONDUIT, PIPE STRAPS, OR TEARS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
9. IN PACKITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.

- B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:
1. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.
 2. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

- A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.
- B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

CONCLUSIONS

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

- D. UNDERLINOING CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR USE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE GALVAN ELECTRICAL PRODUCTS OR APPROVED EQUAL.
- E. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEET RADIUS ELBOWS.
- F. END OF RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SURFACES CONCEALED IN WALLS AND CEILINGS. EXTS SHALL BE WELD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR GALVANNEAL. CONDUIT SHALL BE IDENTIFIED BY THE MANUFACTURER'S MARKING AND SHALL BE SPECIFICATION W-6-C-43-1 AND SHALL BE AS LISTED. EXT SHALL BE MANUFACTURED BY ALIAD, REPUBLIC OF WHATELAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION, SET SUREF CONVECTIONS SHALL NOT BE ACCEPTABLE.
- G. RIGID STEEL FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO THE INTERIOR OF CONDUIT SYSTEM. SET SUREF CONVECTIONS SHALL NOT BE ACCEPTABLE. INTEGRITY OF CONDUIT SYSTEM SHALL BE MAINTAINED. ALL CONDUIT SHALL BE PROTECTED AND SUPPORTED AS REQUIRED BY THE MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CAROL, ALMONDA, METAL HOSE (2 INCH), OR APPROVED EQUAL.
- H. MINIMUM SIZE CONDUIT SHALL BE 3/4" NCH (21MM).

A. AT ENTRANCES

- A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS, PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKWAT AND NIDEPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.
- B. CABLE TERMINATION FITTINGS FOR CONDUIT
1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/EDNEY OR EQUAL.

PRODUCTS BY ROXTEC.

- C. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CIRCUSE-HINGO, COOPER, ADLATE, APPLATION, D-2, GEDNEY, PACO, OR APPROVED EQUAL.
 - D. CONDUIT SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CIRCUSE-HINGO FORM B OR EQUAL.
 - E. MANUFACTURER FOR BOXES SHALL BE HOFFMAN, SQUARE "D", CIRCUSE-HINGO, COOPER, ADLATE, APPLATION, D-2, GEDNEY, PACO, OR APPROVED EQUAL.
- SUPPLEMENTAL GROUNDING SYSTEM:

GROMMETS. GROUNDING CONNECT

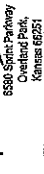
- B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPACES WITH NO-OK.
- C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPIRINT OR FOR OTHERWISE NOTED.

A. EXISTING EXPOSED

- SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

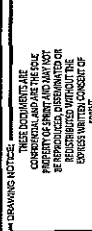
A. CONDUITS SHALL BE FASTENED SECURELY.

- CONDUITS SHALL BE PLACED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.



FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

MILÁ PARTNER:



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	ISSUED FOR S-S FINAL	09/29/14	WML	1
	ISSUED FOR S-S FINAL	07/16/14	WML	1
	ADDED DOOR & SHEETS	02/05/15	WML	1

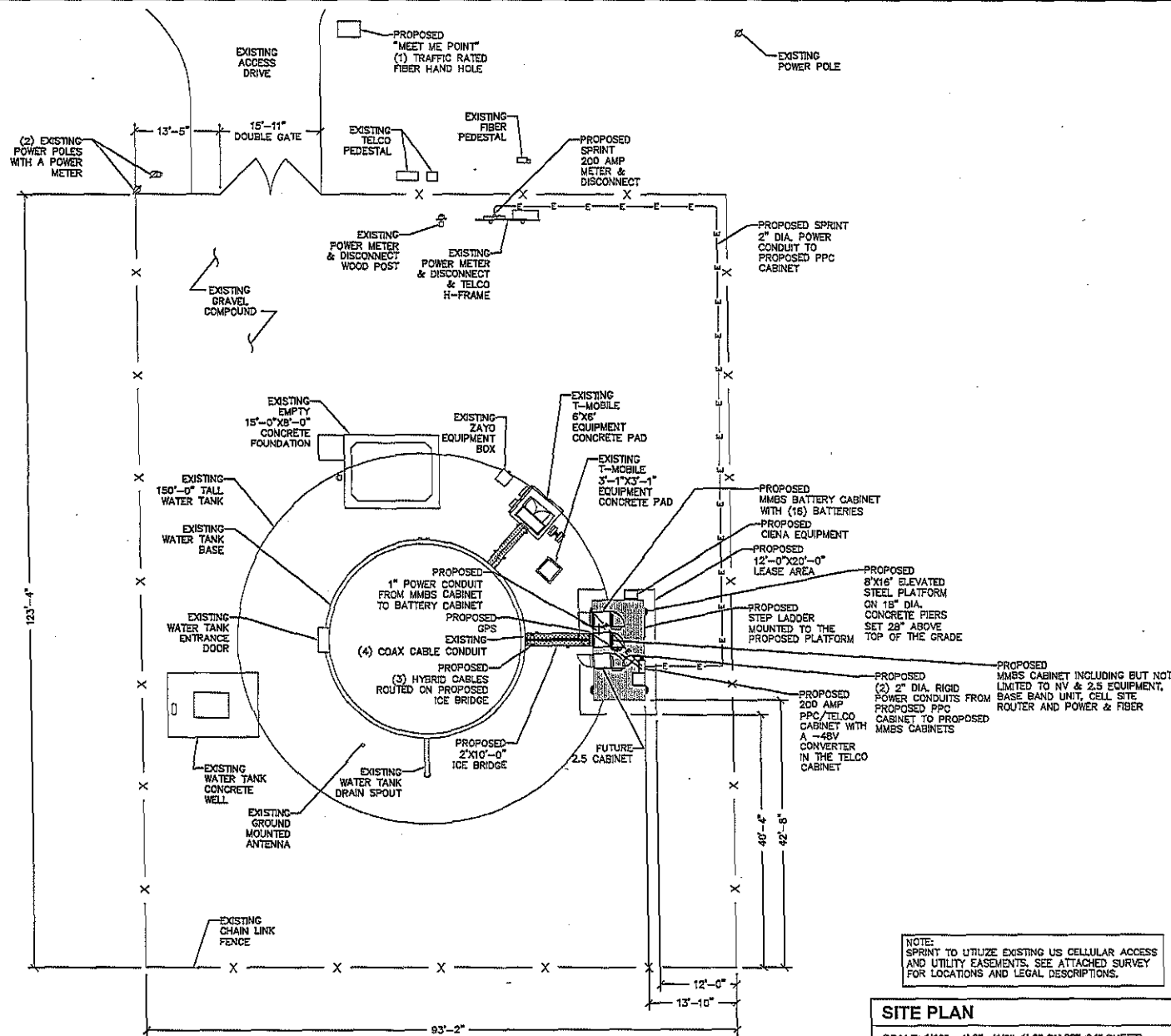
USC 884403
FORT WAYNE

884384 - CH51XC384

1016 EAST DUPONT ROAD

SPRINT SPECIFICATIONS

SP-2



NOTE:
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AND UTILITY EASEMENTS. SEE ATTACHED SURVEY
FOR LOCATIONS AND LEGAL DESCRIPTIONS.

SITE PLAN
SCALE: 1/16" = 1'-0" (1/8"=1'-0" ON 22"x34" SHEET)

6880 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

ENGINEERING LICENSE

Dennis W. Coble

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ISSUED FOR S/S FINAL		07/16/14	MMH	2
ADDED DESIGN SHEETS		02/04/15	MMH	3

SITE NAME:

**USC 884403
FORT WAYNE**

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

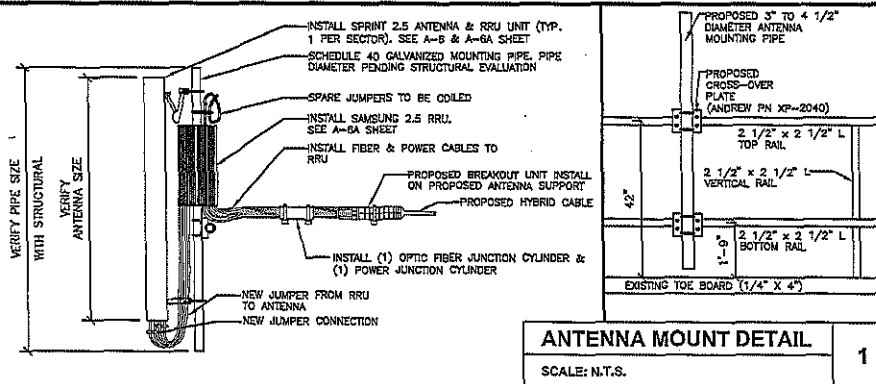
SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

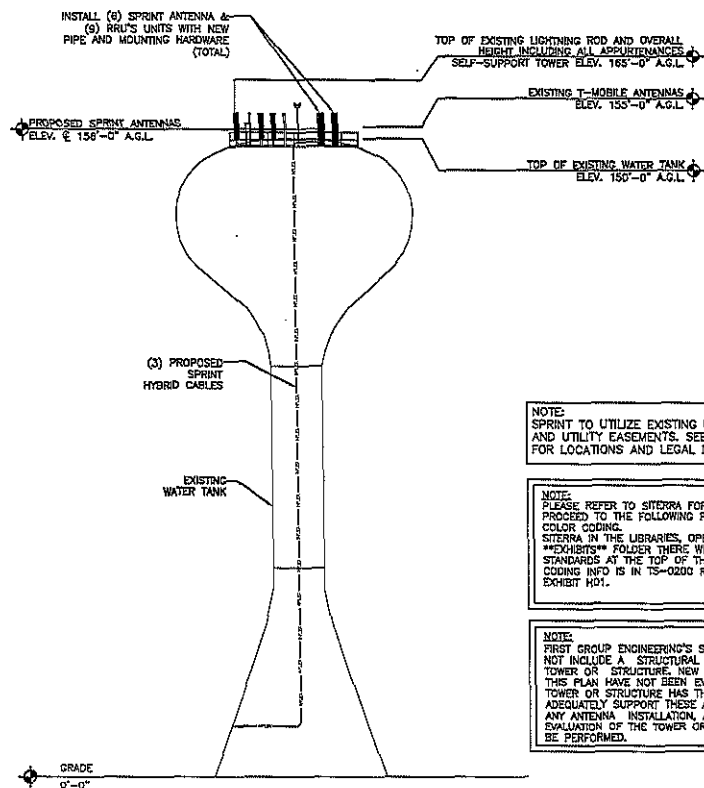




ANTENNA MOUNT DETAIL

SCALE: N.T.S.

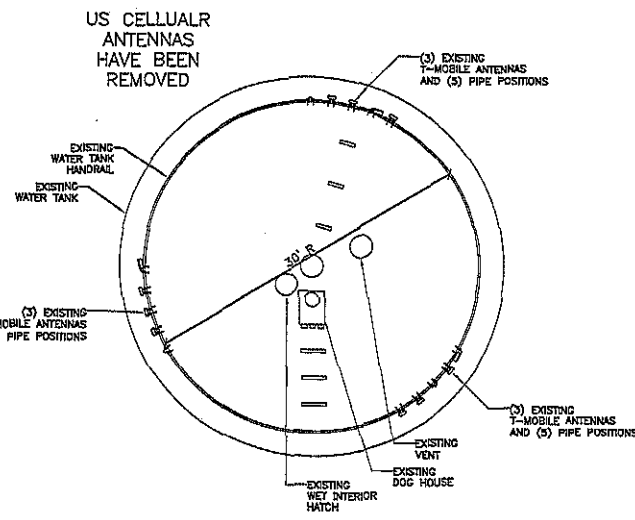
1



FINAL TOWER ELEVATION

SCALE: 1" = 40'-0" (1" = 20'-0" ON 22"x34" SHEET)

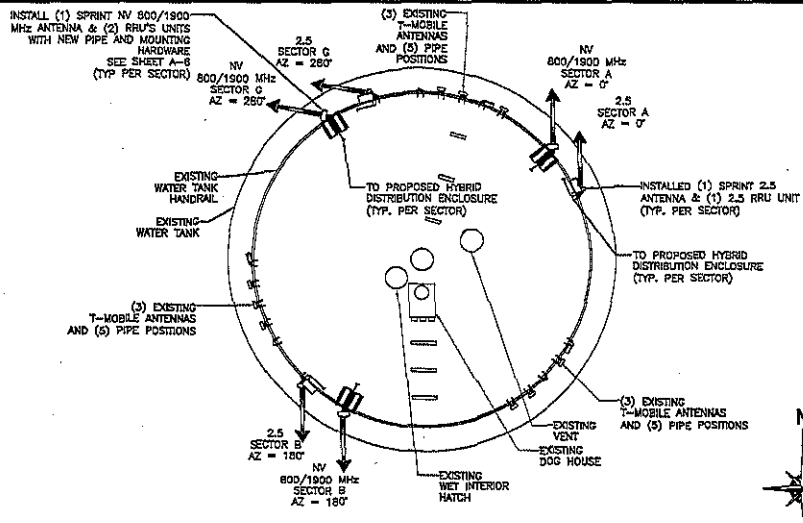
2



EXISTING ANTENNA & RRU LAYOUT

SCALE: N.T.S.

3



FINAL ANTENNA & RRU LAYOUT

SCALE: N.T.S.

4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

CODE:

PLA PARTNER:

ENGINEERING LICENSE:

DENNIS W. COPE
No. 18232
Professional Engineer
Electrical
State of Indiana
02/05

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ADDED DIXON'S SHEETS		02/05/15	NWE	3

SITE NAME:

USC 884403
FORT WAYNE

SITE CARCADE:

884384 - CH51XC384

SITE ADDRESS:

1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

SHEET DESCRIPTION:

TOWER ELEVATIONS & ANTENNA DETAILS

SHEET NUMBER:

A-2

PROPOSED 800/1900 ANTENNA SCHEDULE													
SECTOR	ANTENNA NUMBER	ANTENNA MANUFACTURER	ANTENNA MODEL	HYBRID CABLES	CABLE JUMPERS	AZIMUTH	RAD CENTER	ELECT TILT	MECH TILT	RRH MODEL	JUMPER SIZE	JUMPER LENGTH	RF FILTERS
1B	800/1900 MHz	KMW	ET-X-TS-70-15-62-18-IR-RD	(3) SAMSUNG HYBRID CABLE 240' LONG	(4) @ 45°	0°	156'	-2	0	RRH-C2/RRH-P4	1/2"	8'	N/A
2B	800/1900 MHz	KMW	ET-X-TS-70-15-62-18-IR-RD		(4) @ 45°	180°	156'	-2	0	RRH-C2/RRH-P4	1/2"	8'	N/A
3B	800/1900 MHz	KMW	ET-X-TS-70-15-62-18-IR-RD		(4) @ 45°	280°	156'	-2	0	RRH-C2/RRH-P4	1/2"	8'	N/A

PROPOSED 2.5 ANTENNA SCHEDULE													
SECTOR	ANTENNA NUMBER	ANTENNA MANUFACTURER	ANTENNA MODEL	AUXILIARY HYBRID CABLES	AUXILIARY CABLE JUMPERS	AZIMUTH	RAD CENTER	ELECT TILT	MECH TILT	RRH MODEL	JUMPER SIZE	JUMPER LENGTH	RF FILTER
1C	2500 MHz	KMW	ET-X-WM-18-65-8P	EXISTING	(2) @ 45'	0°	156'	-2	0	RRH-V3	1/2"	8'	N/A
2C	2500 MHz	KMW	ET-X-WM-18-65-8P		(2) @ 45'	180°	156'	-2	0	RRH-V3	1/2"	8'	N/A
3C	2500 MHz	KMW	ET-X-WM-18-65-8P		(2) @ 45'	280°	156'	-2	0	RRH-V3	1/2"	8'	N/A

NOTES

1. DIMENSIONS OF EXISTING ANTENNAS SPACING OR PLATFORMS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY PRIOR TO START OF CONSTRUCTION (SEE GENERAL NOTES, SHEETS CN-1 AND CN-2).

2. PROPOSED SPRINT ANTENNAS INCLUDE RESPECTIVE RRH'S WHICH SHALL BE MOUNTED ON A PIPE BEHIND THE ANTENNA SIMILAR TO THAT SHOWN ON SHEET A-2.

3. FIELD TO VERIFY EXISTING AZIMUTH BEFORE RELOCATING THE ANTENNA, IF REQUIRED. PRIOR APPROVAL FROM SPRINT TO BE GRANTED BEFORE RELOCATION OF ANTENNAS.

NOTE:
SPRINT TO UTILIZE EXISTING US CELLULAR ACCESS AND UTILITY EASEMENTS. SEE ATTACHED SURVEY FOR LOCATIONS AND LEGAL DESCRIPTIONS.

ANTENNA & HYBRID CABLE DETAILS

SCALE: N.T.S.

PLANS PREPARED FOR:



PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:



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ADDED DESIGN SHEETS		02/05/15 MHL	3	

SITE NAME:

USC 884403
FORT WAYNE

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

SHEET DESCRIPTION:

ANTENNA & HYBRID
CABLE DETAILS

SHEET NUMBER:

A-2A

Site Information		Antenna Schedule & Parts List	
Measured Site Location: Site Name: EAST DUPONT ROAD FORT WAYNE Site City: FORT WAYNE Site State: IN Site Zip: 46825	Measured Site Location: Site Name: EAST DUPONT ROAD FORT WAYNE Site City: FORT WAYNE Site State: IN Site Zip: 46825	ANTENNA SCHEDULES & PARTS LIST SCALE: N.T.S.	
Antenna Schedule		Parts List	
Antenna	Antenna Schedule	Part	Part Description
Antenna 1	Antenna 1	Antenna 1	Antenna 1
Antenna 2	Antenna 2	Antenna 2	Antenna 2
Antenna 3	Antenna 3	Antenna 3	Antenna 3
Antenna 4	Antenna 4	Antenna 4	Antenna 4
Antenna 5	Antenna 5	Antenna 5	Antenna 5
Antenna 6	Antenna 6	Antenna 6	Antenna 6
Antenna 7	Antenna 7	Antenna 7	Antenna 7
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Antenna 9	Antenna 9	Antenna 9	Antenna 9
Antenna 10	Antenna 10	Antenna 10	Antenna 10
Antenna 11	Antenna 11	Antenna 11	Antenna 11
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Antenna 100	Antenna 100	Antenna 100	Antenna 100

**NOT USED
AT THIS TIME**

PLANS PREPARED FOR:



PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:



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ISSUED FOR S/S FINAL		07/16/14	MHL	2
ADDED DIXON S SHEETS		02/05/15	MHL	3

SITE NAME:

USC 884403
FORT WAYNE

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

SHEET DESCRIPTION:

RF DATA SHEET

SHEET NUMBER:

A-4

RRU CABLE MARKING LOCATIONS DIAGRAM

SCALE: N.T.S.

1

NOT USED
AT THIS TIME

RRU CABLE MARKING LOCATIONS DIAGRAM

SCALE: N.T.S.

1

ANTENNA MOUNTING NOTES

1. APPROXIMATE LENGTH OF (1) HYBRID CABLE RUN = APPROX. LENGTH OF ICE BRIDGE + ANTENNA MOUNTING HEIGHT + 20 FEET
2. CONTRACTOR SHALL VERIFY THE DOWNTILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
3. CONTRACTOR TO CONFIRM HYBRID CABLE COLOR CODING PRIOR TO CONSTRUCTION.

CABLE MARKING NOTES

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE.
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

PLANS PREPARED FOR:



PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

M/A PARTNER:

ENGINEERING LICENSE:



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ISSUED FOR S&S FINAL		05/27/14 MWL	T	
ISSUED FOR S&S FINAL		07/16/14 MWL	Z	
ADDED PUNCH 5 SHEETS		02/03/15 MWL	S	

SITE NAME:

USC 884403
FORT WAYNE

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

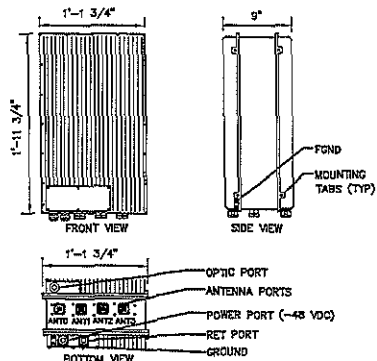
1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

SHEET DESCRIPTION:

RF DATA SHEET

SHEET NUMBER:

A-5

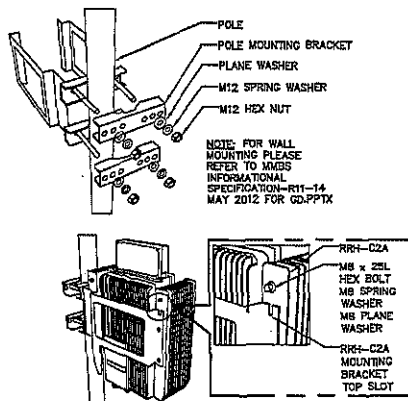


1900 MHz RRH-P4 MECHANICAL SPECIFICATIONS

SCALE: N.T.S.

800 MHz RRH-C2A MECHANICAL SPECIFICATIONS

SCALE: N.T.S.



800 MHz RRH 2ND GEN POLE MOUNT

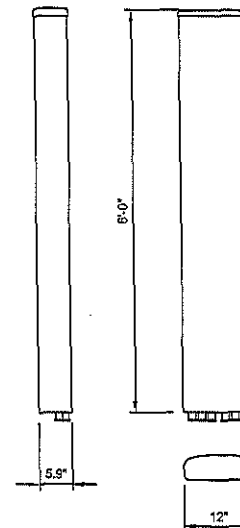
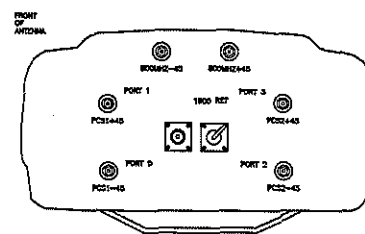
SCALE: N.T.S.

KMW ANTENNA ET-X-TS-70-16-62-18-iR-RD

DIMENSIONS, HxWxD: 1829x300x150mm (72.0"x12"x5.9")

WEIGHT, W/O CLAMP: 39.65 lbs

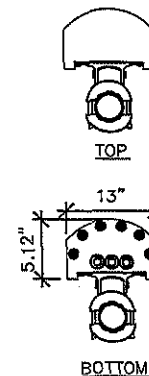
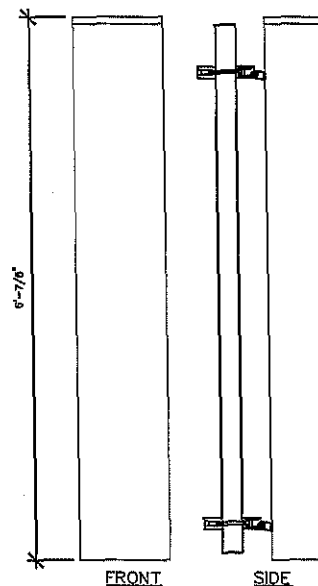
CONNECTOR: (6) 7/16 DIN FEMALE



PROPOSED ANTENNA SPECIFICATIONS

SCALE: N.T.S.

RFS ANTENNA APXV9ERR18-C-A20



MANUFACTURER: RFS
MODEL: APXV9ERR18-C-A20
WEIGHT W/O MOUNTING HARDWARE: 40 LBS
DIMENSIONS: HxWxD: 81.69"x13.0"x5.12"
FREQUENCY: REFER TO RF DATA SHEET

PROPOSED ANTENNA SPECIFICATIONS

SCALE: N.T.S.

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park,
Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:



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ISSUED FOR 3rd FINAL	07/16/14	MML	2
ADDED 5 SHEETS	02/05/14	MML	3

SITE NAME:

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FORT WAYNE**

SITE CASCADE:

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SITE ADDRESS:

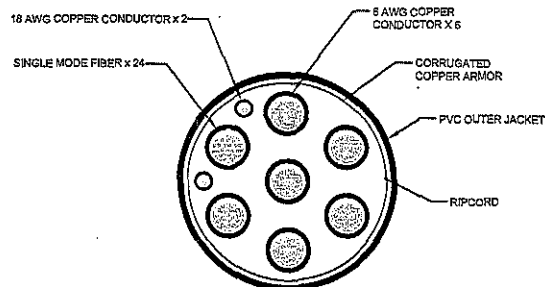
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

**ANTENNA & HYBRID
CABLE DETAILS**

SHEET NUMBER:

A-6



NOTE: CABLE CROSS-SECTION NOT DRAWN TO SCALE

CABLE TYPE	Number, size (awg)	6/C #6 + 2/C #18
Voltage		600
Outer Jacket		PVC
Shielding		Corrugated Copper
Max shield resistance (ohm/ft @ 20 c)		0.0035
Drain		n/a
Ripcord		Kevlar
Dc conductor material		Copper
Dc conductor size (awg)		6
Max Dc resistance (ohm/1000ft)		0.411 @ 20 deg C
Color Code		Black/Red
Alarm Conductor Material		Copper
Alarm conductor size (awg)		18
Max Dc resistance (ohm/1000ft)		6.7
Color Code		TBD
Fiber Cores		SM
Outer Diameter (in) - Nominal		1.24
Weight (lb/ft)		1.05
Minimum Bend Radius (in)		16
Bend Moment (lb/ft)		TBD
Tensile Strength (lb)		325
Crush Resistance, FOTP-41 (N/mm)		22
Strength Member		No
Operating Temperature Range (low)		-40 deg C
Operating Temperature Range (high)		+80 deg C
Fiber Type		Low Water Peak Single Mode Loose Tube
Fiber Standard Compliance		ITU-T Rec. G.652.D, G.657.A2
		IEC 60793-2-50 Type B.1.3 & B.6 A&B
Fiber Coating Diameter (um)		242 +/- 0.007mm 0.5 +/- 0.005mm
Fiber Count		24
Number of fiber subunits		1
Fiber count each unit		24
Fiber count jackets		FR Jacket
Max attenuation, 1310 nm (dB/km)		Less than equal 0.5
Max attenuation, 1550 nm (dB/km)		Less than equal 0.5

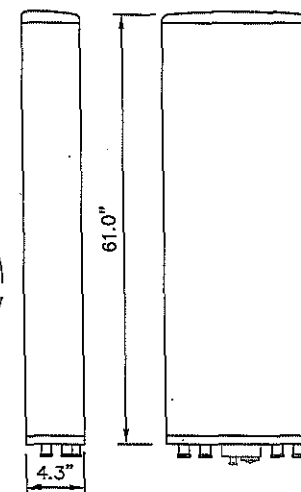
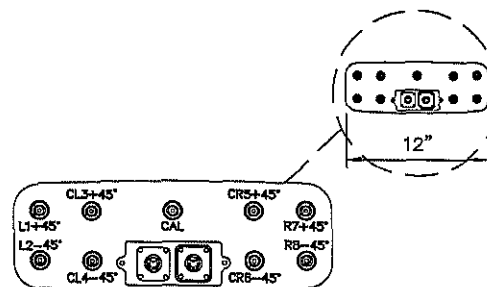
HYBRID CABLE CROSS-SECTION & DATA

SCALE: N.T.S.

1

KMW ANTENNA ET-X-WM-18-65-8P

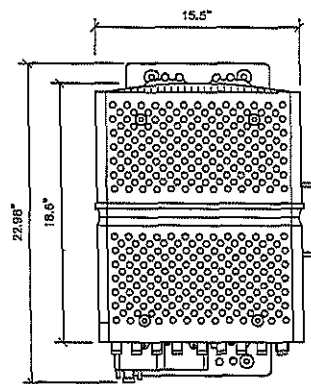
DIMENSIONS, LxWxD: 1550x305x110mm (61.0"x12"x4.3")
WEIGHT, WITH PRE-MOUNTED BRACKETS: 36.4 lbs
CONNECTOR: (8) 7/16 DIN FEMALE / BOTTOM



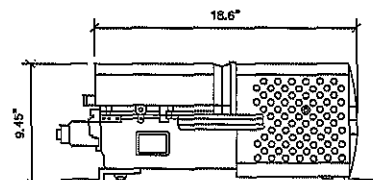
2.5 ANTENNA DETAIL

SCALE: N.T.S.

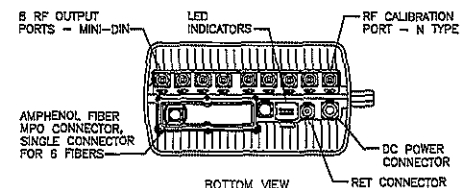
2



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

DIMENSIONS, HxWxD: (18.6"x15.5"x9.45")
RRU WEIGHT: 59.5 lbs
MOUNTING KIT WEIGHT: 12.32 lbs

2.5 RRU DETAIL

SCALE: N.T.S.

3



PLANS PREPARED BY:
FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

CSA:
MLA PARTNER:



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ADDED DODON 5 SHEETS		02/05/15 MWL	3	

SITE NAME:
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FORT WAYNE**

SITE CASCADE:
884384 - CH51XC384

SITE ADDRESS:
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:
**ANTENNA & HYBRID
CABLE DETAILS**

SHEET NUMBER:
A-6A

2. Auxiliary Hybrid Fiber Cable

Auxiliary Hybrid Fiber Cables are slightly different from NV HFCs. They will differ depending on cable manufacturer. Figure 1. Samsung's FTTA Solution – Auxiliary Hybrid Fiber Cable shows Samsung's FTTA solution for the Auxiliary Hybrid Fiber cable, and Table 1. Samsung's FTTA Solution – Auxiliary Hybrid Fiber Cable Specifications shows its general specifications.

Figure 1. Samsung's FTTA Solution – Auxiliary Hybrid Fiber Cable

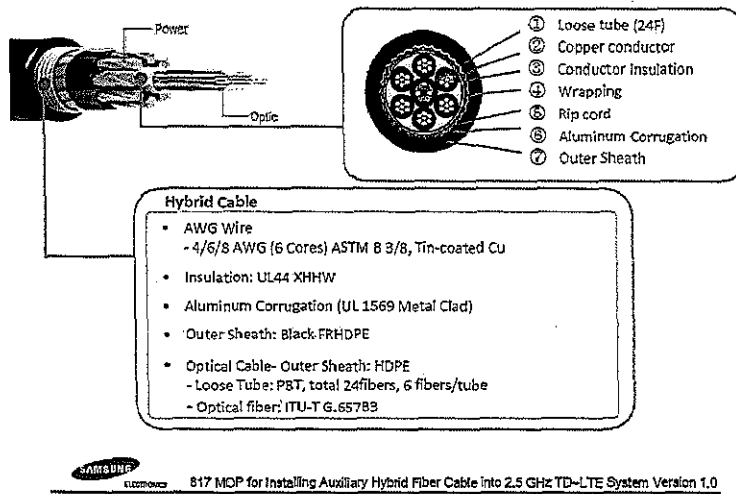


Table 1. Samsung's FTTA Solution – Auxiliary Hybrid Fiber Cable Specifications

	#8 AWG	#6 AWG	#4 AWG
Distance Range	30 ft – 135 ft	135 ft – 225 ft	225 ft – 390 ft
Wire size/count	#8 / 3 pairs	#6 / 3 pairs	#4 / 3 pairs
Fiber count	24 fibers	24 fibers	24 fibers
Fiber breakout (Top)	4 sets of 6 fibers MFC connector	4 sets of 6 fibers MFC connector	4 sets of 6 fibers MFC connector
Fiber breakout (Bottom)	4 sets of 6 fibers, LC connectors	4 sets of 6 fibers, LC connectors	4 sets of 6 fibers, LC connectors
Diameter	-1.13 Inch	-1.2 Inch	-1.4 inch
Weight per foot	-0.725 lb/ft (2.38 lb/m)	-0.97 lb/ft (3.17 lb/m)	-1.36 lb/ft (4.47 lb/m)
Bend radius	16.9 Inches	18 inches	21 inches
Rating	UL and UV	UL and UV	UL and UV
Outer Sheath (Thickness)	1.6 mm	1.6 mm	1.6 mm
Aluminum conduit (Thickness)	0.4 mm	0.4 mm	0.4 mm

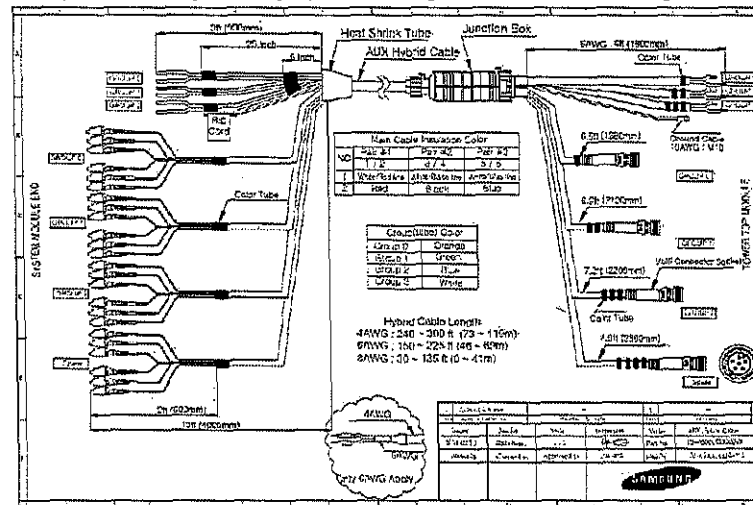
AUXILIARY HYBRID FIBER CABLE & DATA

SCALE: N.T.S.

1

The overall description of Samsung Auxiliary Hybrid Fiber Cable is shown in Figure 2. Samsung Auxiliary Hybrid Fiber Optic Cable – Overall Description.

Figure 2. Samsung Auxiliary Hybrid Fiber Optic Cable – Overall Description



AUXILIARY HYBRID FIBER OPTIC CABLE DETAIL

SCALE: N.T.S.

2

PLANS PREPARED FOR:

Sprint
6500 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:

DEWITT W. LEE
REGISTERED PROFESSIONAL ENGINEER
STATE OF INDIANA
No. 12334
Exp. 12/31/2015

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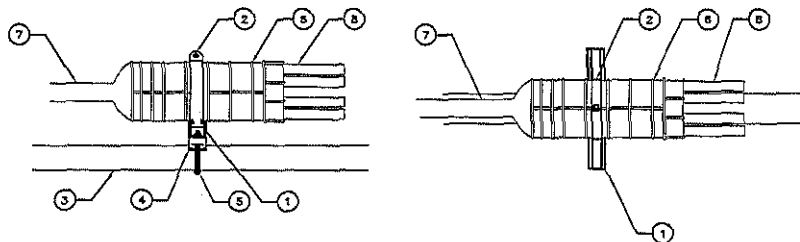
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

**AUXILIARY HYBRID
CABLE DETAILS**

SHEET NUMBER:

A-6B



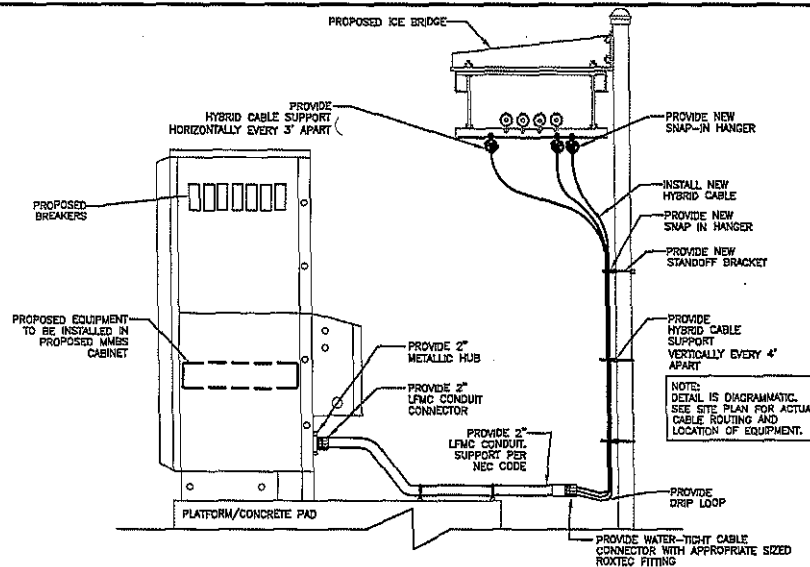
NOTES:

1. 1-5/8" x 1-5/8" UNISTRUT (6" LONG)
2. 4" PIPE HANGER
3. EXISTING SUPPORT PIPE
4. NEW STANDOFF BRACKET ANDREW PART NO. 30845-4, CONTRACTOR TO SUPPLY 3/8" CONNECTION HARDWARE
5. NEW ROUND MEMBER ADAPTER SIZED FOR PIPE SUPPORT
6. NEW CABLE BREAKOUT UNIT
7. NEW HYBRID CABLE
8. NEW FIBER & POWER CABLES FROM BREAKOUT

HYBRID BREAKOUT DETAIL

SCALE: N.T.S.

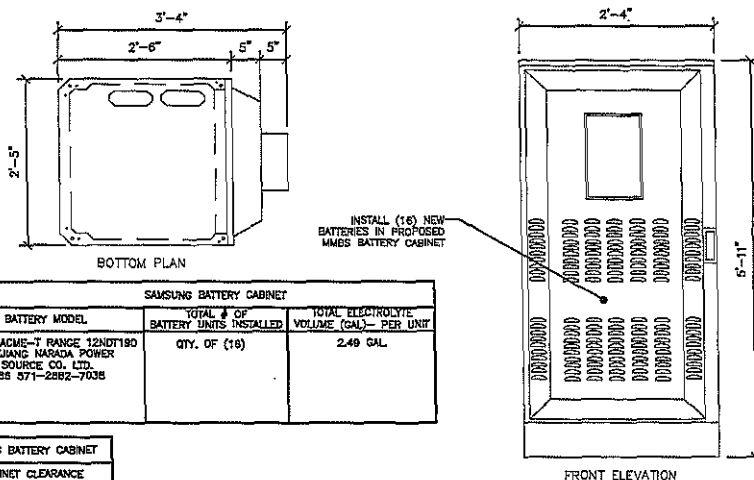
1



PROPOSED CABLE ROUTE FROM CABINET

SCALE: N.T.S.

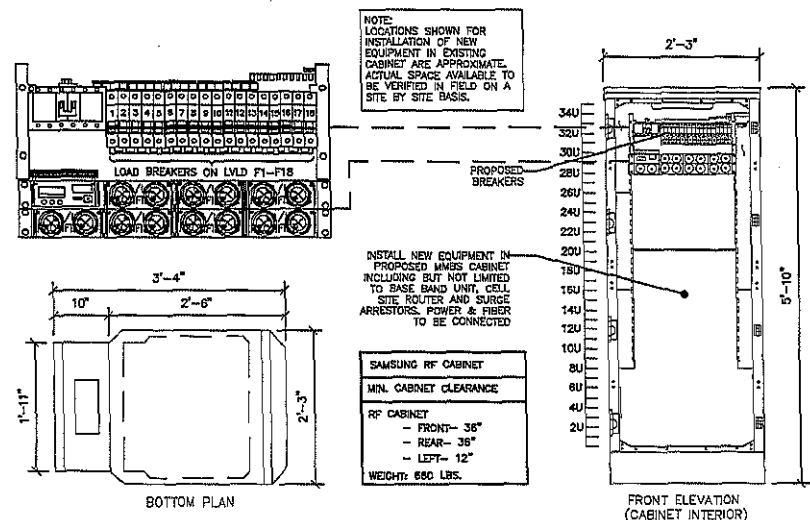
2



PROPOSED BBU CABINET

SCALE: N.T.S.

3



PROPOSED MMBS CABINET

SCALE: N.T.S.

4



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FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE: _____
DRAWN BY: _____
CHECKED BY: _____
IN CHARGE: _____

ENGINEERING LICENSE:
DANIEL W. COLE
1223
PROFESSIONAL ENGINEER
STATE OF INDIANA
02/02/02

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ADDED DIXON'S SHEETS	02/05/15	MMW	3

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FORT WAYNE**

SITE CASCADE:
884384 - CH51XC384

SITE ADDRESS:
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:
**BREAKOUT &
EQUIPMENT DETAILS**

SHEET NUMBER:
A-7

2.3.1 Power Supply

The following shows the configuration of the A-type single cabinet's power supply.

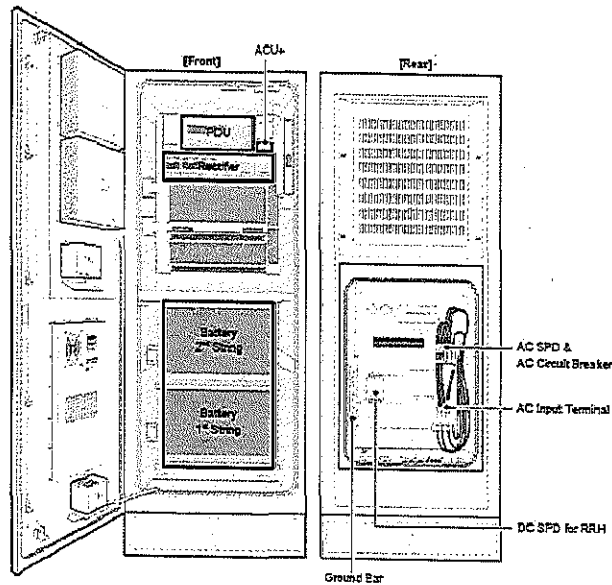


Figure 23. Power Supply Configuration of A-Type Single Cabinet

Unit	Quantity	Description
PDU	1	Power Distribution Unit Divides the DC power from the rectifier to provide a supply to the UADU, RRH and additional devices.
ACU+	1	Advanced Controller Unit Plus Controls the rectifier and collects alarms reported by the I/O monitor.

Power Input

The following are the power specifications for the Smart MBS:

Classification	Specification
DU Input Voltage	-48 VDC (Voltage Variation Range: -40~-56 VDC)
RRH-B8 Input Voltage	-48 VDC (Voltage Variation Range: -35~-56 VDC)
a. UADU and RRH-B8 are supplied with -48 VDC power from DU cabinet's rectifier.	
b. Voltage variation range is based on instantaneous input power.	

FRONT & REAR CABINET DETAILS

SCALE: N.T.S.

1

2.3 A-Type Single Cabinet

A UADU can be installed on A-type single cabinet to support outdoor environment as shown below:

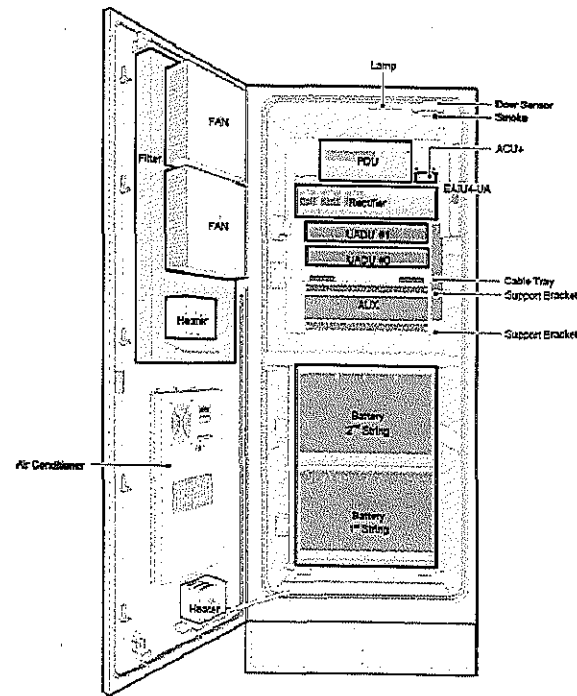


Figure 21. A-Type Single Cabinet Configuration (Front)

Cabinet Dimension and Weight

The following are the dimension and weight of the Smart MBS.

Classification	Specification
Size	UADU (W x D x H) 17.09 x 15.16 x 3.48 (in.)
	434 x 385 x 88 (mm)
	RRH-B8 (Only): 13.78 x 6.75 x 17.72 (in.)
	350 x 171.5 x 450 mm
Weight	RRH-B8 (including finger guard and MFC box): 15.03 x 6.03 x 21.28 (in.)
	382 x 204 x 540 mm
	Outdoor Cabinet (W x D x H) 27.56 x 44.37 x 78.74 (in.)
	700 x 1127 x 2,000 (mm)
Weight	UADU: About 30.9 lbs (14 kg)
	RRH-B8: RRH-B8 (Only): 56.09 lb (25.4 kg)
	RRH-B8 (including finger guard and MFC box): 59.74 lb (27.1 kg)
	Outdoor Cabinet: 806.9 lb (366 kg) (without battery and equipment)

SINGLE CABINET DETAILS

SCALE: N.T.S.

2



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5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:
M/A PARTNER:

ENGINEERING LICENSE:
DENNIS W. COOK
No. 10239
Professional Engineer
State of Indiana

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FORT WAYNE**

SITE ADDRESS:
884384 - CH51XC384

SHEET DESCRIPTION:
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:
**FRONT CABINET
DETAILS**

SHEET NUMBER:
A-7A

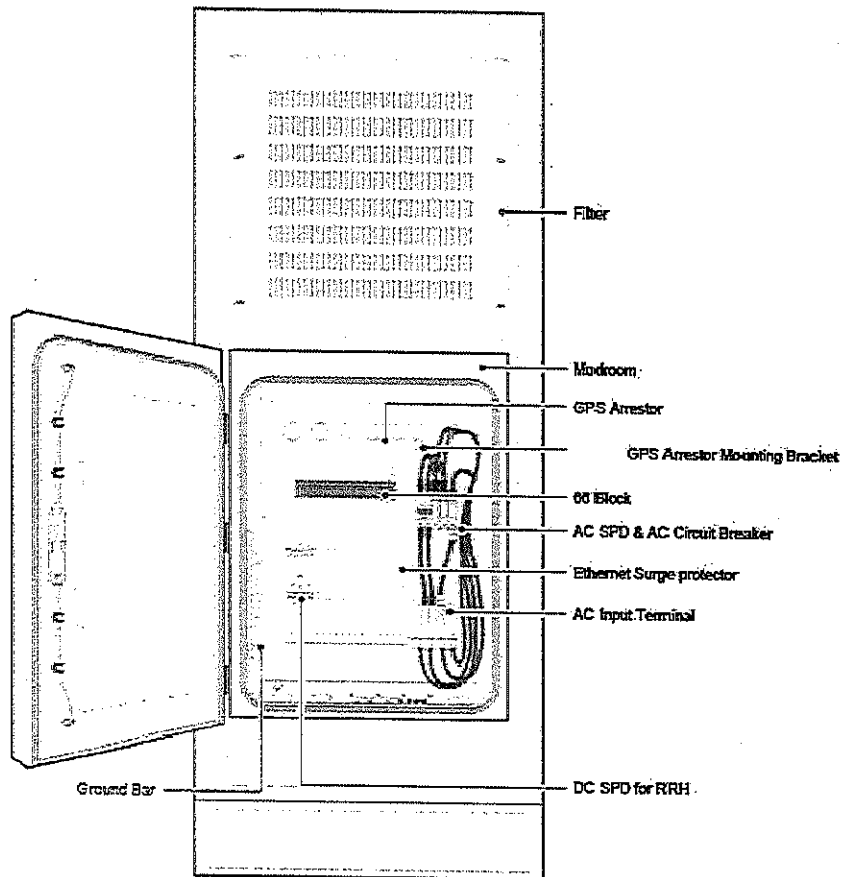


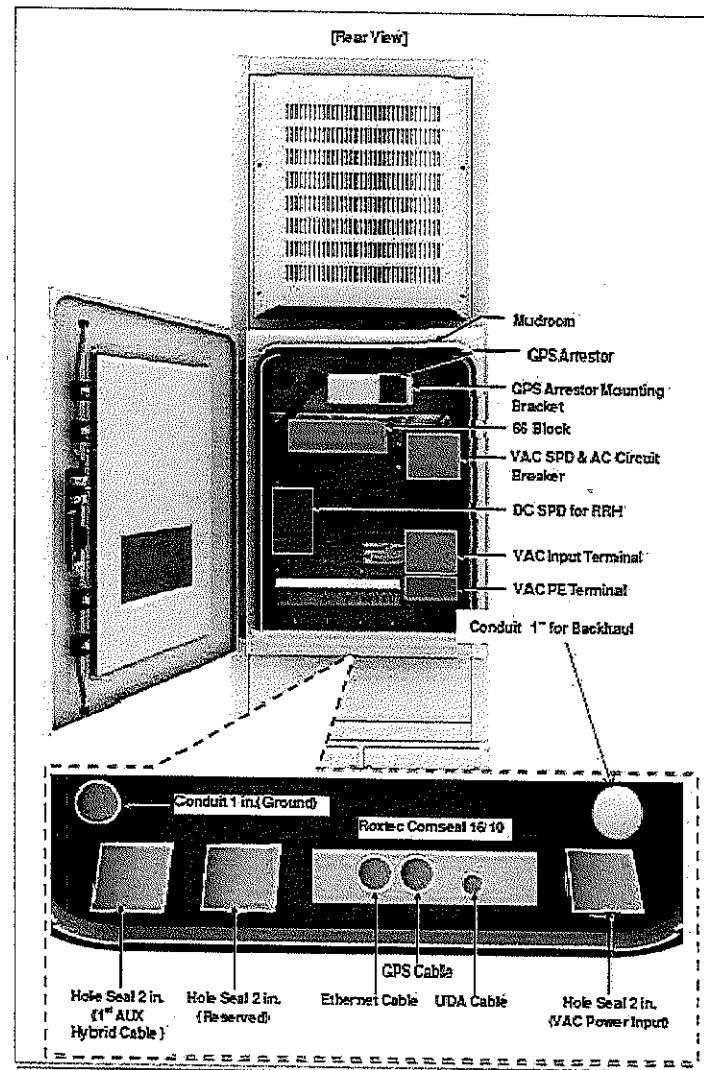
Figure 22. A-Type Single Cabinet Configuration (Rear)

REAR CABINET DETAILS

SCALE: N.T.S.

1

A-Type Single Cabinet



SINGLE CABINET DETAILS

SCALE: N.T.S.

2

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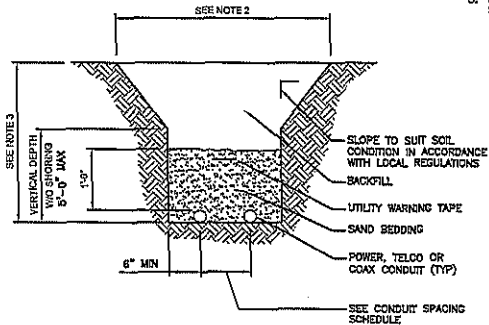
SHEET DESCRIPTION:

REAR CABINET
DETAILS

SHEET NUMBER:

A-7B

CONDUIT SPACING SCHEDULE		
CONDUIT #1	MINIMUM CONDUIT SEPARATION	CONDUIT #2
POWER	* = 6 INCHES	POWER
POWER	* = 12 INCHES	TELCO, COMMUNICATIONS & CONTROL CIRCUITS
TELCO, COMMUNICATIONS & CONTROL CIRCUITS	* = 6 INCHES	TELCO, COMMUNICATIONS & CONTROL CIRCUITS



NOTES

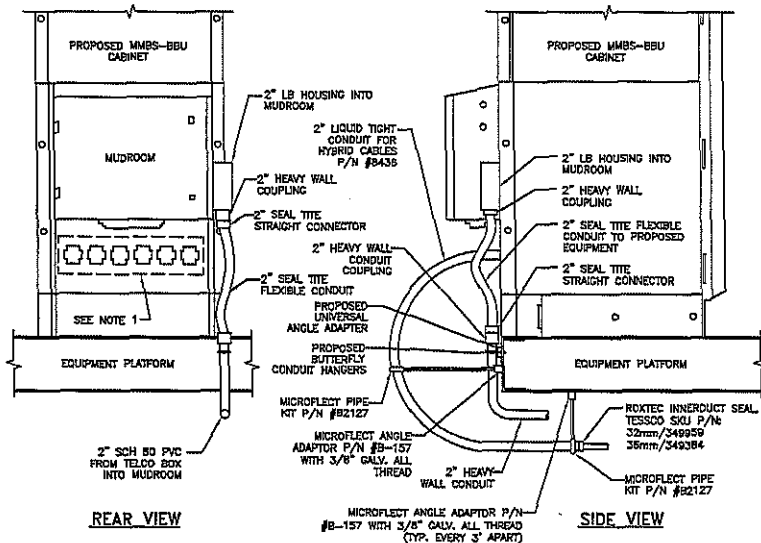
- MULTIPLE CONDUITS CAN BE PLACED IN THE SAME TRENCH AS LONG AS A MINIMUM SEPARATION PER THE LOCAL UTILITY COMPANIES IS MAINTAINED.
- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
- DEPTH PER LOCAL UTILITY OR CROWN CASTLE STANDARDS; WHICHEVER REQUIREMENT IS DEEPER.

"ONE CALL" SERVICE SHALL BE CALLED PRIOR TO EXCAVATION

TYPICAL UTILITY TRENCH DETAIL

SCALE: N.T.S.

1



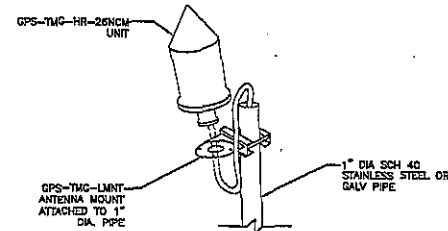
NOTE

- REFER TO LOCAL JURISDICTION FOR CONDUIT ROUTING REQUIREMENTS.

HYBRID & TELCO LINE SUPPORT DETAIL

SCALE: N.T.S.

3



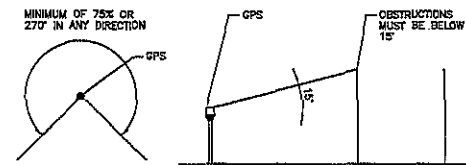
NOTES

- THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES, 8'-0" IF MOUNTING TO PROPOSED MMBS-BBU) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED.
- IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
- DO NOT SWEEP TEST GPS ANTENNA.
- ATTACH GPS MOUNTING PIPE TO PROPOSED MMBS-BBU USING (4) 3/8"x15MM SS BOLTS AND (4) 1" PIPE STRAPS. GPS TO BE MOUNTED A MINIMUM OF 2'-0" ABOVE PROPOSED MMBS-BBU CABINET.

GPS UNIT PIPE MOUNT

SCALE: N.T.S.

2



GPS MINIMUM SKY VIEW REQUIREMENTS

SCALE: N.T.S.

4

PLANS PREPARED FOR:



PLANS PREPARED BY:

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5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

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ISSUED FOR S&S FINAL		05/27/14 MRL		1
ISSUED FOR S&S FINAL		07/16/14 MRL		2
ADDED DIXON 5 SHEETS		05/05/15 MRL		3

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884384 - CH51XC384

SITE ADDRESS:

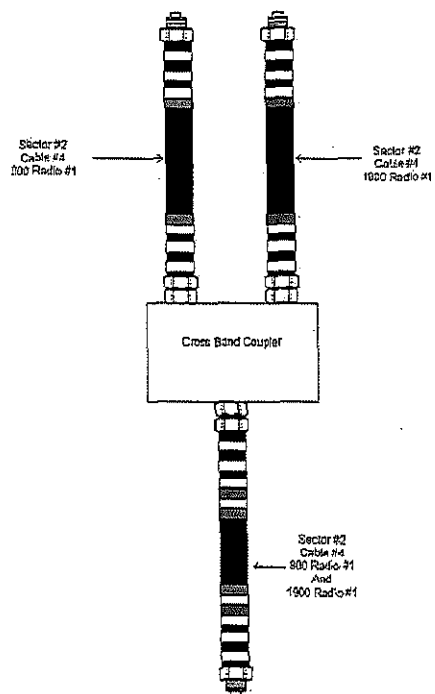
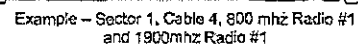
1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

SHEET DESCRIPTION:

EQUIPMENT DETAILS

SHEET NUMBER:

A-8



ANTENNA & CABLE COLOR CODE

1

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1		No Tape	No Tape
	2		No Tape	No Tape
	3		No Tape	No Tape
	4	White	No Tape	No Tape
	5		No Tape	No Tape
	6	Grey	No Tape	No Tape
	7		No Tape	No Tape
	8	Orange	No Tape	No Tape
2 Beta	1			No Tape
	2			No Tape
	3			No Tape
	4	White	White	No Tape
	5			No Tape
	6	Grey	Grey	No Tape
	7			No Tape
	8	Orange	Orange	No Tape
3 Gamma	1			
	2			
	3			
	4	White	White	White
	5			
	6	Grey	Grey	Grey
	7			
	8	Orange	Orange	Orange

COAXIAL CABLE COLOR CODE

2

Frequency/Radio	Indicator	ID
800 #1	Yellow	Blue
1900 #1	Yellow	
1900 #2	Yellow	
1900 #3	Yellow	
1900 #4	Yellow	Grey
800 #2	Yellow	Orange
2500 #1	Yellow	White
2500 #2	Yellow	

FREQUENCY COLOR CODE

1

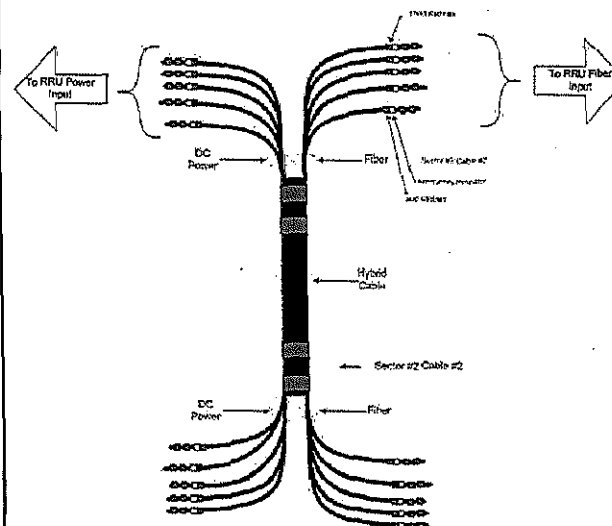
2500MHz #1 Cal Cable - Sector	Cable	First Ring	Second Ring	Third Ring	Forth Ring	Fifth Ring	Sixth Ring
1 Alpha	1	Yellow		Yellow	White		
2 Beta	2	Yellow	Yellow		Yellow	White	
3 Gamma	3	Yellow	Yellow	Yellow		Yellow	White

2500MHz #2 Cal Cable - Sector	Cable	First Ring	Second Ring	Third Ring	Forth Ring	Fifth Ring	Sixth Ring
1 Alpha	1	Yellow		Yellow			
2 Beta	2	Yellow	Yellow		Yellow		
3 Gamma	3	Yellow	Yellow	Yellow		Yellow	

2500MHz RADIO CALIBRATION CABLE COLOR CODE

1

NOTE:
FIBER/HYBRID CABLE WILL BE MARKED IN A SIMILAR MANNER AS COAX CABLE DESCRIBED IN THE "ANTENNA & CABLE COLOR CODE" DETAIL LOCATED ON THIS SHEET. THE MAIN "TRUCK" OF THE HYBRID WILL NOT BE MARKED WITH THE FREQUENCY CODE AS THE FIBER/HYBRID CABLE IN MANY CASES WILL CONTAIN ALL TECHNOLOGIES, THE INDIVIDUAL POWER PAIRS AND FIBER CABLES WILL BE LABELED WITH BOTH THE FREQUENCY AND SECTOR CABLE MARKINGS.



HYBRID CABLE COLOR CODE

1

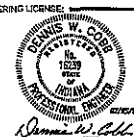


MECHANISMS OF PREPARATION

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

QPM: _____

MI & PARTNER



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ISSUED FOR S&S FINAL	05/20/14	MWL	0	
ISSUED FOR S&S FINAL	05/27/14	MWL	1	
ISSUED FOR S&S FINAL	07/18/14	MWL	2	
ADDED DIXON S SHEETS	02/03/15	MWL	3	

and SITE Name:

USC 884403
FORT WAYNE

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

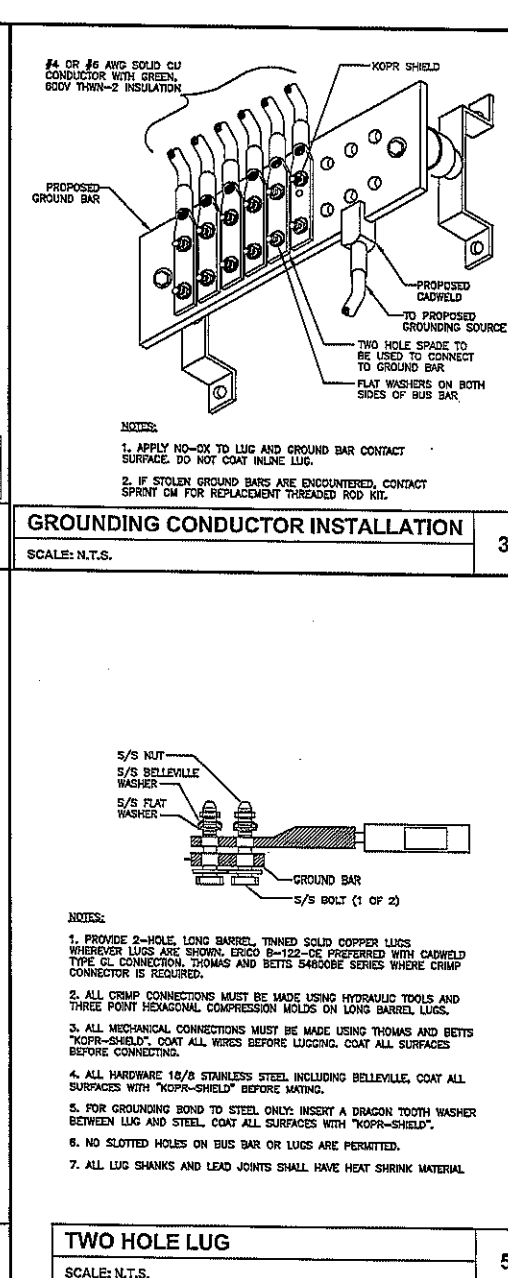
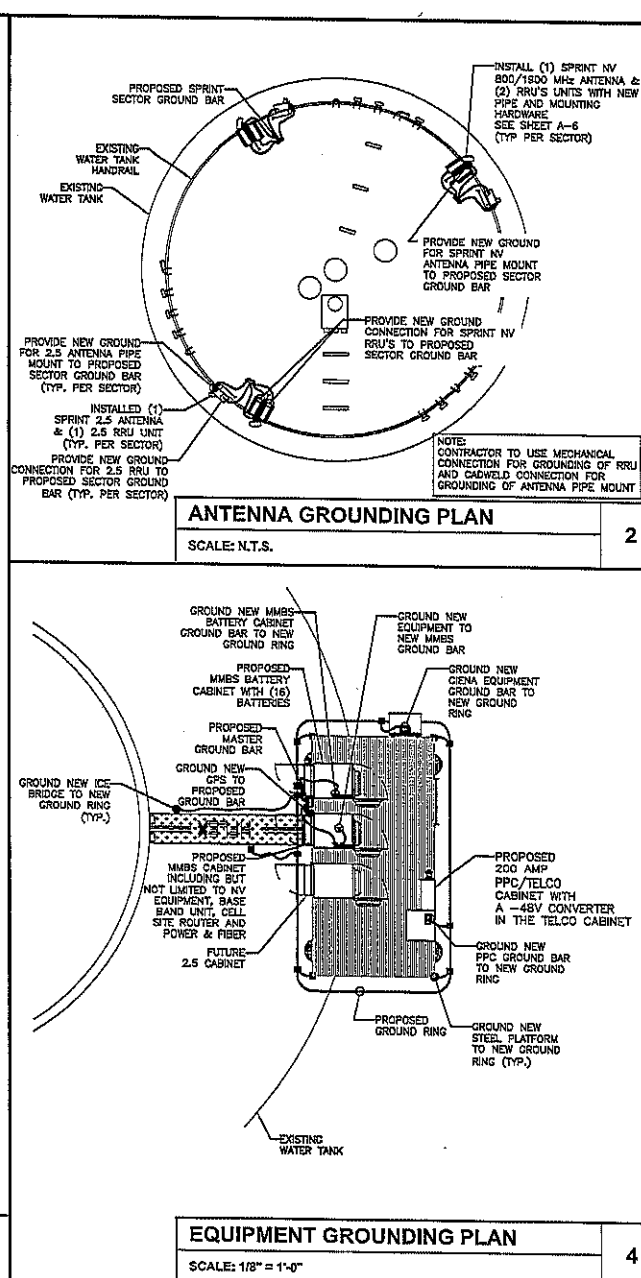
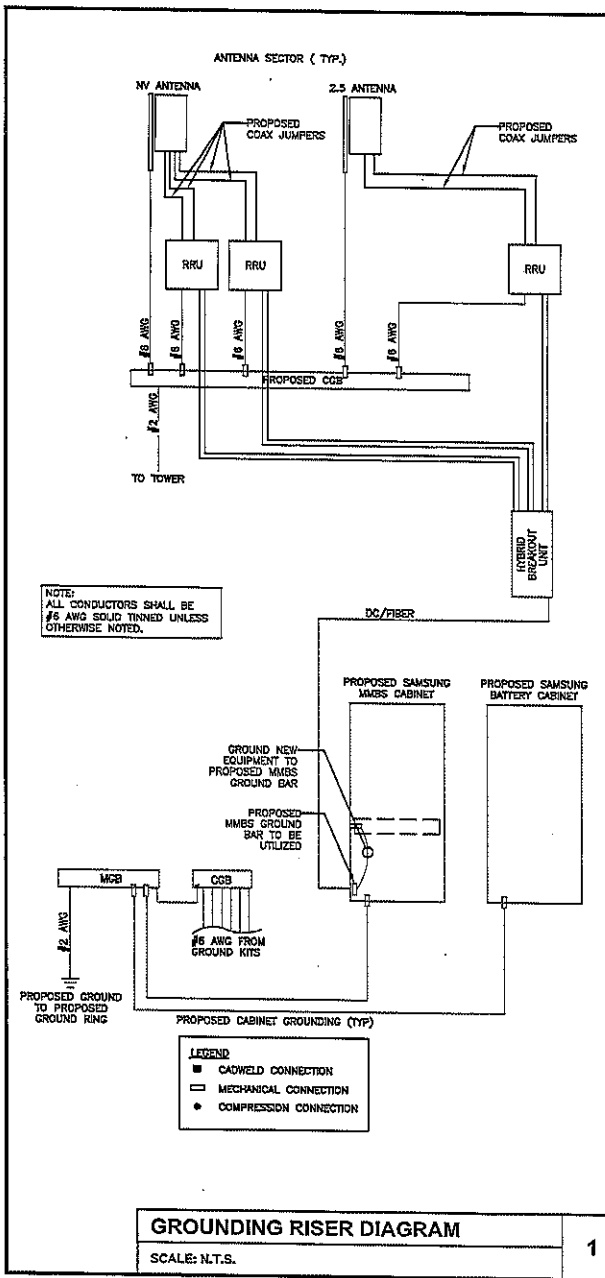
1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

SHEET DESCRIPTION:

ANTENNA & CABLE COLOR CODING DETAILS

SHEET NUMBER:

RF-1



PLANS PREPARED FOR:

Sprint
8580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

CEM:

M/A PARTNER:

ENGINEERING LICENSE

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REVISIONS	DESCRIPTION	DATE	BY	REV
ISSUED FOR S/S FINAL		05/26/14	MMH	1
ISSUED FOR S/S FINAL		05/27/14	MMH	2
ADDED DIXON 5 SHEETS		07/05/14	MMH	3

SITE NAME:

**USC 884403
FORT WAYNE**

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

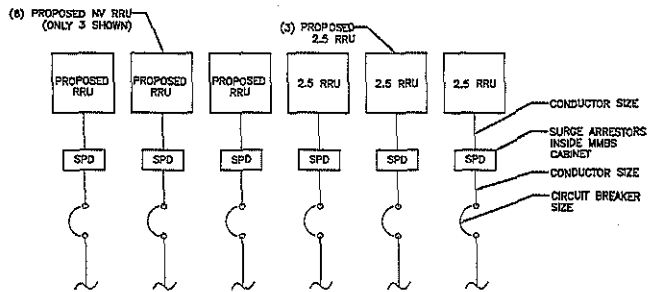
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

GROUNDING DETAILS

SHEET NUMBER:

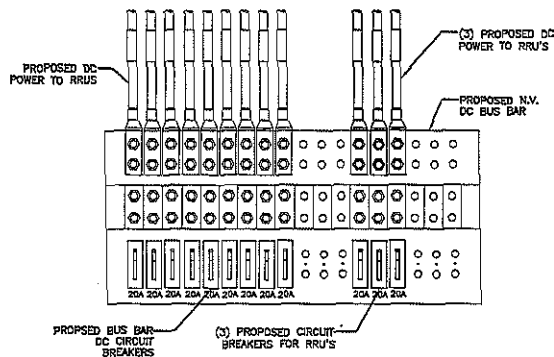
E-1



DC ONE-LINE DIAGRAM

SCALE: N.T.S.

1



DC POWER DISTRIBUTION

SCALE: N.T.S.

2

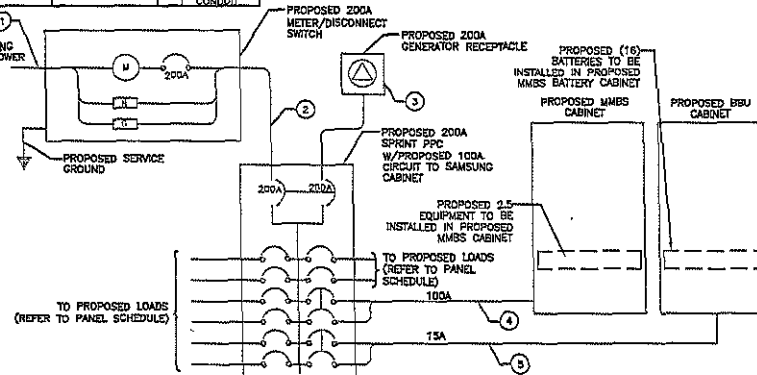
SITE NUMBER: CH51XC384				MODEL NUMBER: 24P720				DISCRETION 20A PFF							
VOLTAGE: 480VAC				PHASES: 1				WIRE: 2							
MAIN BREAKER: 250 AMP				CIRCUIT RATING: 250 AMPS				WIRE: 2							
MOUNT: SURFACE				NEUTRAL BAR: YES				GROUND BAR: YES							
ENCLOSURE TYPE: NEMA 3R				N & GROUND BONDING: YES				INTERNAL TVSS: YES							
PANEL STATUS: PNC				INTERNAL TVSS: YES											
CKT	LOAD DESCRIPTION	BREAKER AMP	BREAKER POLES	STATUS	DISCRETION 20A PFF	SERVICE LOAD VA	LEGACY FACTOR	PHASE A VA	PHASE B VA	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMP	LOAD DESCRIPTION	CKT
1	SAMSUNG MMS BBU CABINET	100	2	ON	7600	1.00	1.00	9130	1.00	0	ON	2	60	SAMSUNG	2
2				ON	7600	1.00	1.00	9130	1.00	0	ON	2	60		4
3	SAMSUNG MMS BATTERY CABINET	100	2	ON	7600	1.00	1.00	9130	1.00	0	ON	2	60	SAMSUNG	4
4				ON	7600	1.00	1.00	9130	1.00	0	ON	2	60		6
5				ON	7600	1.00	1.00	9130	1.00	0	ON	2	60		8
6				ON	7600	1.00	1.00	9130	1.00	0	ON	2	60		10
7	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	10
11	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	12
12	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	14
13	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	16
14	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	18
15	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	20
16	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	22
17	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	24
18	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	26
19	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	28
20	BLANK	N/A	N/A	N/A	0	0.00	0.00	0.00	0	N/A	N/A	N/A	N/A	BLANK	30
SPRINT NETWORK VISION								8730	8730	VA	TOTAL KVA		10.40		
											AMPS		81.17		

FINAL A/C LOAD CALCULATION

SCALE: N.T.S.

4

CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	(3) #2 AWG, (1) #6 GND IN 4" CONDUIT
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	(3) #2 AWG, (1) #6 GND IN 4" CONDUIT
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	(3) #2 AWG, (1) #6 GND IN 2" CONDUIT
4	TRANSFER & LOAD CENTER	PROPOSED MMS CABINET	(3) #2 AWG, (1) #6 GND IN 2" CONDUIT
5	TRANSFER & LOAD CENTER	PROPOSED BBU CABINET	(3) #2 AWG, (1) #12 GND IN 1" CONDUIT



ELECTRICAL ONE-LINE DIAGRAM

SCALE: N.T.S.

5

Sprint

6500 Sprint Parkway
Overland Park,
Kansas 66261

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

CEM:

MLA PARTNER:

ENGINEERING LICENSE



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ISSUED FOR S&S FINAL		05/27/14	ML	1
ISSUED FOR S&S FINAL		07/16/14	ML	2
ADDED DIGNON S SHEETS		02/05/15	ML	3

SITE NAME:

USC 884403
FORT WAYNE

SITE ADDRESS:

884384 - CH51XC384

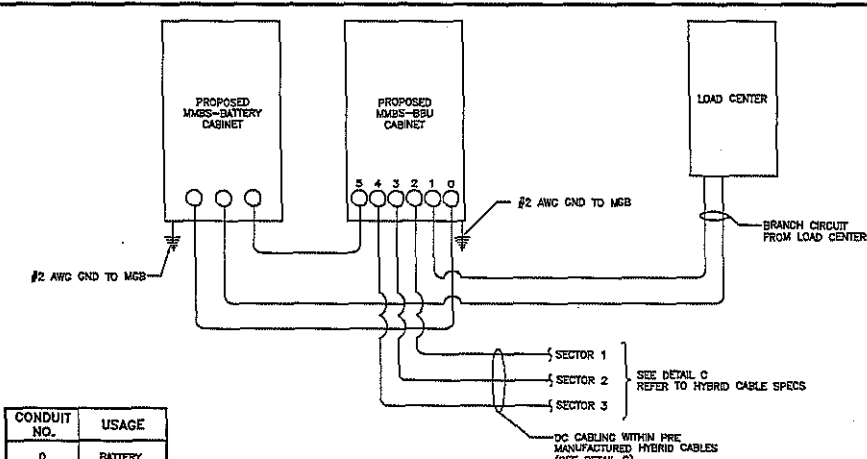
SHEET DESCRIPTION:

1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

DC POWER DETAILS
& PANEL SCHEDULES

SHEET NUMBER:

E-2



CONDUIT NO.	USAGE
0	BATTERY
1	AC/GROUND
2	RRU SECTOR 1
3	RRU SECTOR 2
4	RRU SECTOR 3
5	BATTERY

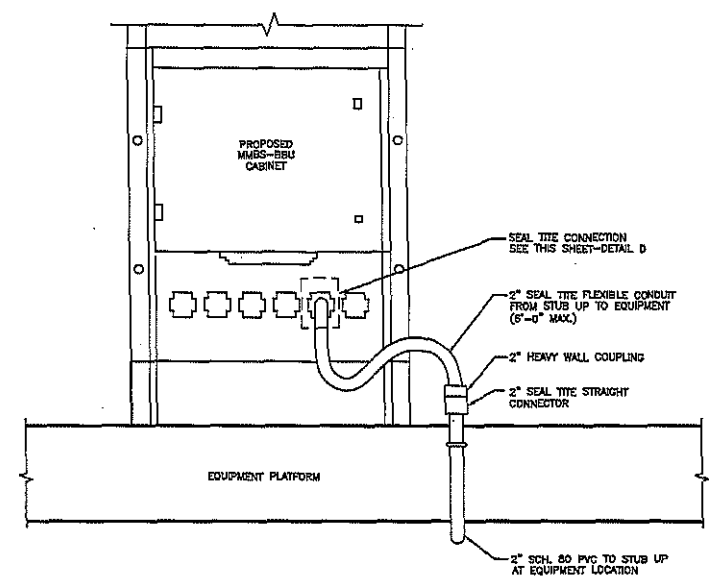
DC POWER ELECTRICAL NOTES

1. MINIMUM CABLE LENGTH BETWEEN THE BU AND BATTERY IS 70MM (2.75 in).
2. MAXIMUM CABLE LENGTH DISTANCE IS 900mm (35.43" in).
3. ROUTE DC CONDUCTORS IN CONDUITS TO PROPOSED MMBS-BBU CABINET 48VDC POWER DISTRIBUTION PANEL TO AND FROM PROPOSED MMBS-BATTERY CABINET.
4. -48 VDC CABLES BETWEEN PROPOSED MMBS-BBU CABINET & RRU'S ARE FACTORY ASSEMBLED AND EQUIPPED WITH ONE PRE-TERMINATED END.
5. ALL FIELD INSTALLED DC CABLES SHALL BE TYPE RHH/RHW AND SHALL BE UL THERMOSET INSULATED.

DC POWER DIAGRAM

SCALE: N.T.S.

1



EQUIPMENT POWER CONDUIT CONNECTIONS

SCALE: N.T.S.

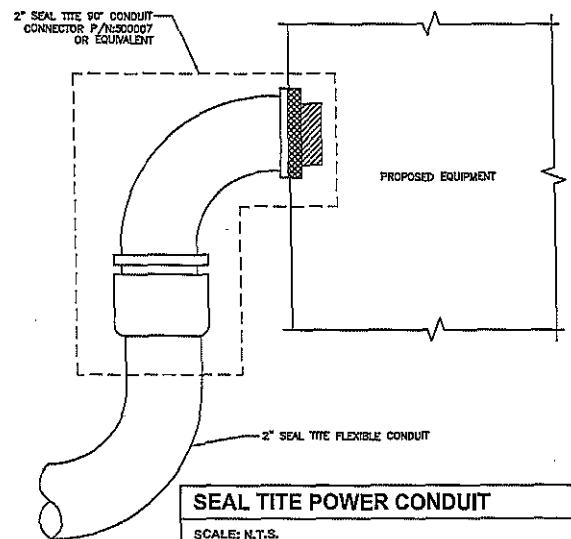
2

	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
TOTAL LENGTH	~ 40m (~132')	~ 50m (~164')	~ 75m (~246')	~ 80m (~262')	~ 110m (~361')
HYBRID POWER CABLE CONFIGURATION	AWG 10, 1 PAIR AWG 12, 3 PAIR	AWG 8, 1 PAIR AWG 10, 3 PAIR	AWG 8, 1 PAIR AWG 8, 1 PAIR AWG 10, 2 PAIR	AWG 8, 1 PAIR AWG 8, 3 PAIR	AWG 4, 1 PAIR AWG 8, 3 PAIR
CABLE DIAMETER	25mm (0.98")	27mm (1.08")	30mm (1.18")	30/32mm (1.26")	32mm (1.26")
BENDING RADIUS	300mm (11.81")	330mm (12.99")	390mm (15.35")	450mm (17.72")	450mm (17.72")
OPTIC CABLE	LC/PC-TO-LC/PC, SINGLE MODE				
MMBS-BBU CABINET (POWER CABLE TERMINAL MAX SIZE AWG 4)	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE				
RRU POWER CABLE SPEC	AWG 8, 15.7mm (0.62") AWG 10, 12.2mm (0.48")				
NON USE POWER AND OPTIC CABLE PROTECTION	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	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE

HYBRID CABLE TYPE

SCALE: N.T.S.

3



SEAL TITE POWER CONDUIT

SCALE: N.T.S.

4

PLANS PREPARED FOR:

Sprint
8500 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:

Professional Engineer
No. 12319
Indiana

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ISSUED FOR S&S FINAL	05/27/14 MWL	1	
ISSUED FOR S&S FINAL	07/16/14 MWL	2	
ADDED CROWN 3 SHEETS	02/10/15 MWL	3	

SITE NAME:

**USC 884403
FORT WAYNE**

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

**DC POWER ONE-LINE
& DETAILS**

SHEET NUMBER:

E-3

650 Sprint Parkway
Overland Park, KS 66204
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PLANS PREPARED BY:

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INDIANAPOLIS, IN 46278

CSA:

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2	ISSUED FOR S&B FINAL	05/27/08	WPC	WPC
3	ISSUED FOR S&B FINAL	07/19/08	WPC	WPC
4	ISSUED FOR S&B FINAL	07/19/08	WPC	WPC
5	ISSUED FOR S&B FINAL	07/19/08	WPC	WPC

SITE NUMBER:

USC 804403
FORT WAYNE

SITE ADDRESS:

884384 - CH51XC384

SITE ADDRESS:

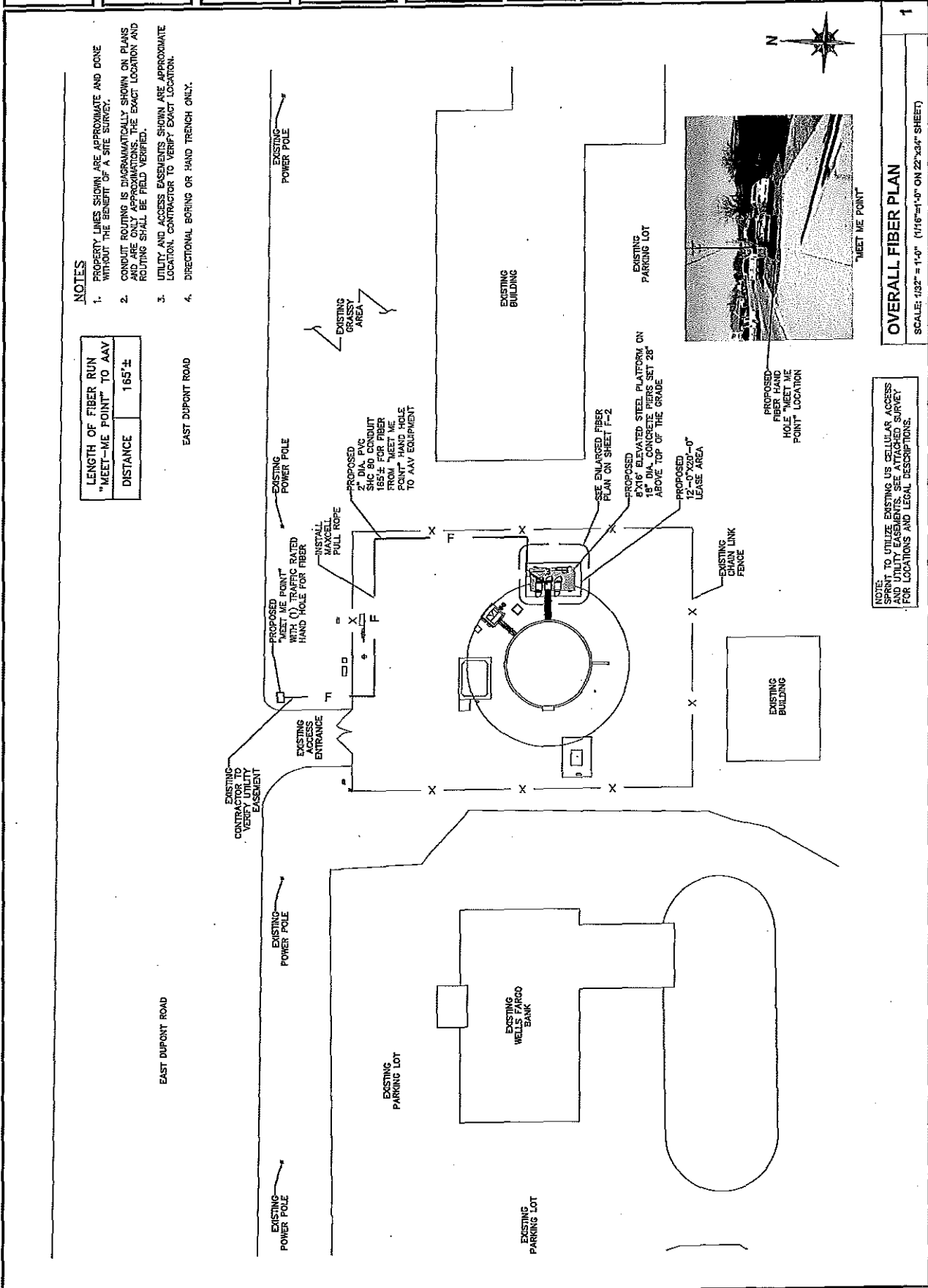
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FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

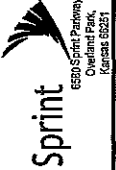
OVERALL FIBER PLAN

SHEET NUMBER:

F-1



PLANS PREPARED FOR



PLANS PREPARED BY

FIRST GROUP ENGINEERING
5975 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

C&E

M&A PARTNER



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REVISION	DESCRIPTION	DATE	BY
1	ISSUED FOR B&S FINAL	10/27/14	W.C.
2	ISSUED FOR B&S FINAL	10/27/14	W.C.
3	ISSUED FOR B&S FINAL	10/27/14	W.C.
4	ADDED DRAWING SHEETS	10/27/14	W.C.

SITE NAME
USC 884403
FORT WAYNE

SITE ADDRESS
884384 - CH51XC384

SITE ADDRESS
1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

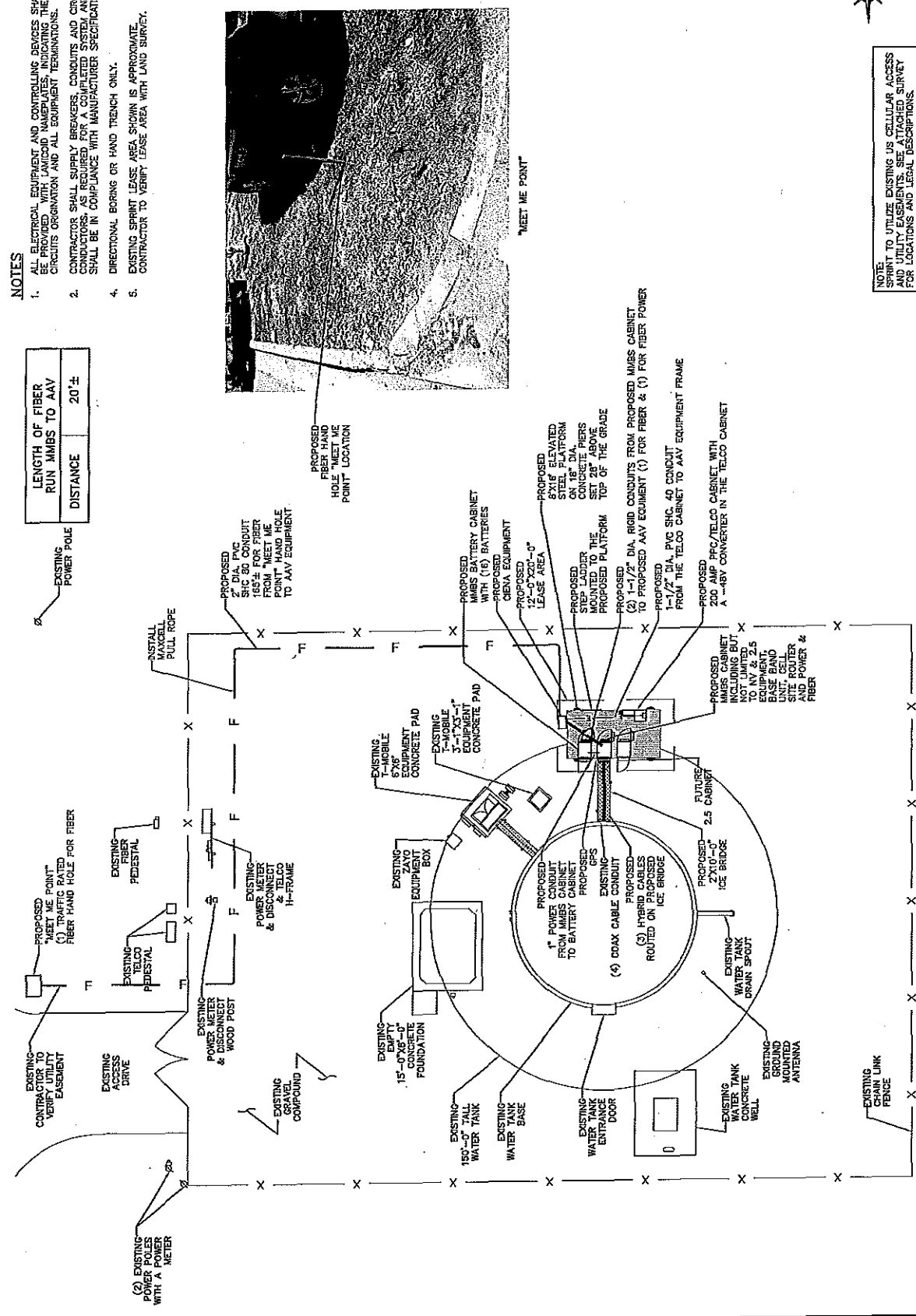
SHEET DESCRIPTION
ENLARGED FIBER
PLAN

SHEET NUMBER
F-2

NOTES

1. ALL ELECTRICAL EQUIPMENT AND CONTROLLING DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL EQUIPMENT TERMINATIONS.
2. CONTRACTOR SHALL SUPPLY BREAKERS, CONDUITS AND CIRCUIT BREAKERS AS REQUIRED FOR A COMPLETED SYSTEM AND SHALL BE IN COMPLIANCE WITH MANUFACTURER SPECIFICATIONS.
3. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION.
4. DIRECTIONAL BORING OR HAND TRENCH ONLY.
5. EXISTING SPRINT LEASE AREA SHOWN IS APPROXIMATE. CONTRACTOR TO VERIFY LEASE AREA WITH LAND SURVEY.

LENGTH OF FIBER RUN MMBS TO AAV	DISTANCE	20' ±
------------------------------------	----------	-------



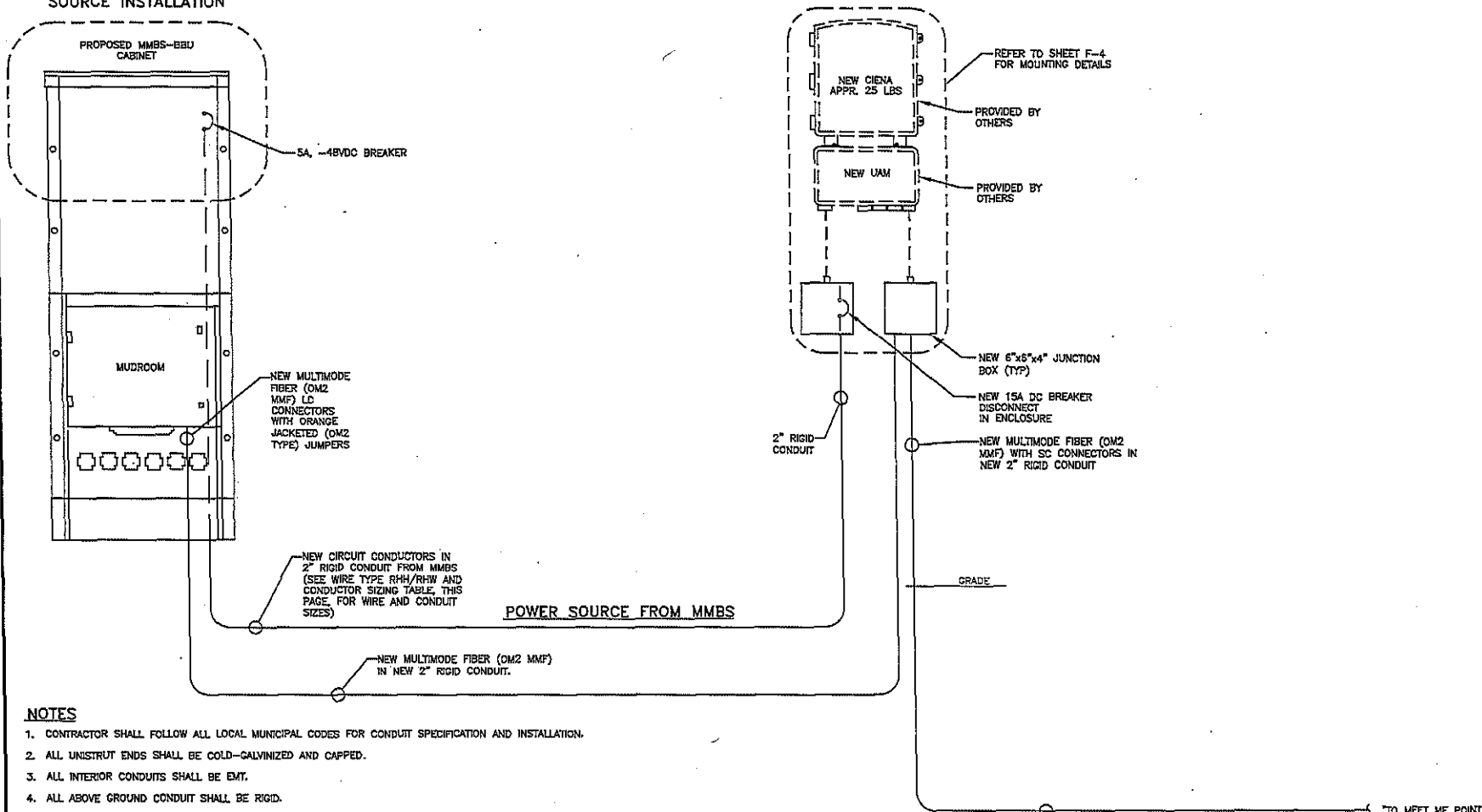
NOTE:
SPRINT TO UTILIZE EXISTING US CELLULAR ACCESS
AND UTILITY EASEMENTS. SEE ATTACHED SURVEY
FOR LOCATIONS AND LEGAL DESCRIPTIONS.

ENLARGED FIBER PLAN

SCALE: 1/16" = 1'-0" (18"=1'-0" ON 22"x34" SHEET)

1

TYPICAL AAV (NID) POWER SOURCE INSTALLATION



NOTES

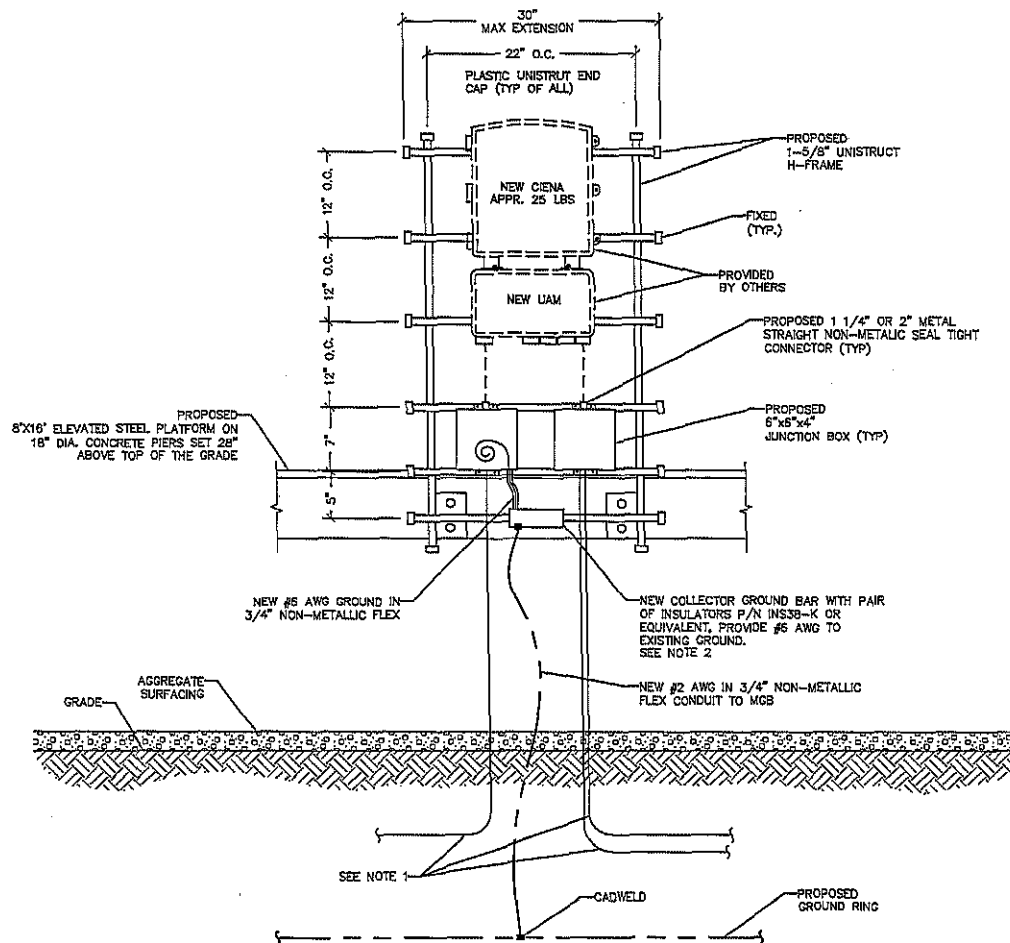
1. CONTRACTOR SHALL FOLLOW ALL LOCAL MUNICIPAL CODES FOR CONDUIT SPECIFICATION AND INSTALLATION.
2. ALL UNISTRUT ENDS SHALL BE COLD-GALVANIZED AND CAPPED.
3. ALL INTERIOR CONDUITS SHALL BE EMT.
4. ALL ABOVE GROUND CONDUIT SHALL BE RIGID.

WIRE TYPE RHH/RHW AND CONDUCTOR SIZING TABLE (48VDC @ 96W/2.0 AMPS)				
DISTANCE (FT)	0'-180'	180'-280'	280'-460'	460'-720'
CIRCUIT CONDUCTOR SIZE	(2) #12 AWG	(2) #10 AWG	(2) #8 AWG	(2) #6 AWG
GND CONDUCTOR SIZE	(1) #12 AWG	(1) #12 AWG	(1) #12 AWG	(1) #10 AWG
CONDUIT SIZE	1"	1"	1"	1"

AAV (NID) ENCLOSURE ONE-LINE DIAGRAM

PLANS PREPARED FOR: 6580 Sprint Parkway Overland Park, Kansas 66251																					
PLANS PREPARED BY: FIRST GROUP ENGINEERING 5925 LAKESIDE BLVD. INDIANAPOLIS, IN 46278																					
CLIENT:																					
MLA PARTNER:																					
ENGINEERING LICENSE: 																					
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DESCRIPTION	DATE	BY	REV																		
ISSUED FOR S&S FINAL	05/20/14	MMH	0																		
ISSUED FOR S&S FINAL	05/27/14	MMH	1																		
ISSUED FOR S&S FINAL	07/16/14	MMH	2																		
ADDED DIXON S SHEETS	02/05/15	MMH	3																		
SITE NAME: USC 884403 FORT WAYNE																					
SITE CASCADE: 884384 - CH51XC384																					
SITE ADDRESS: 1016 EAST DUPONT ROAD FORT WAYNE, IN 46825																					
SHEET DESCRIPTION: AAV (NID) ENCLOSURE ONE-LINE DIAGRAM																					
SHEET NUMBER:	1																				

F-3



SIDE MOUNT ONTO PLATFORM

NOTES

1. REFER TO SHEET F-3 FOR CONDUIT ROUTING DETAIL.
2. CONTRACTOR TO SUPPLY GROUND TO NEAREST ACCESSIBLE MASTER GROUND OR MAIN GROUNDING SYSTEM.
3. CONTRACTOR TO VERIFY PROPOSED PLATFORM, STRUCTURALLY SOUND, AND ADEQUATELY CONNECTED TO STEEL PLATFORM BEFORE INSTALLING NEW AAV (NID).

AAV (NID) INSTALLATION DETAIL (AS REQUIRED)

STANDARD DETAILS

1

STANDARD DETAILS

F-4

PLANS PREPARED FOR:



PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:



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REVISIONS:	DESCRIPTION:	DATE:	BY:	REV:
ISSUED FOR S/S FINAL		05/20/14	MLK	0
ISSUED FOR S/S FINAL		05/27/14	MLK	1
ISSUED FOR S/S FINAL		07/16/14	MLK	2
ADDED DIMON'S SHEETS		02/05/15	MLK	3

SITE NAME:

USC 884403
FORT WAYNE

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825

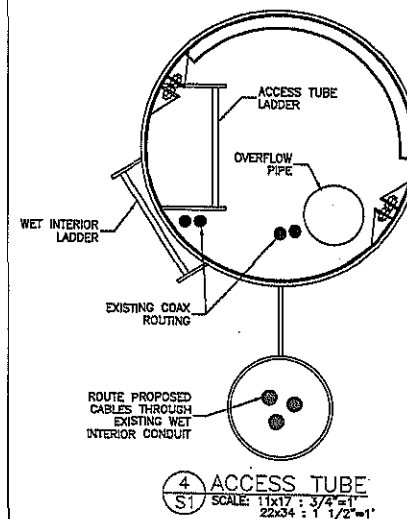
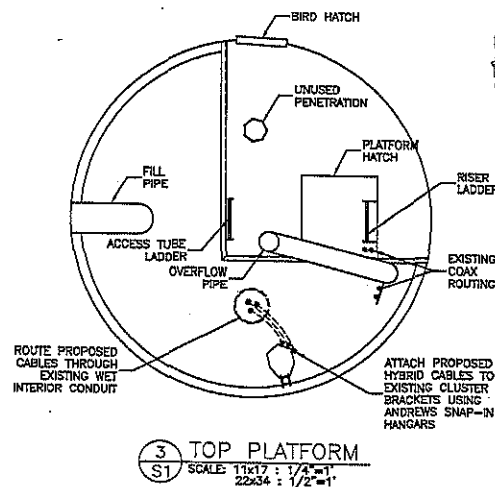
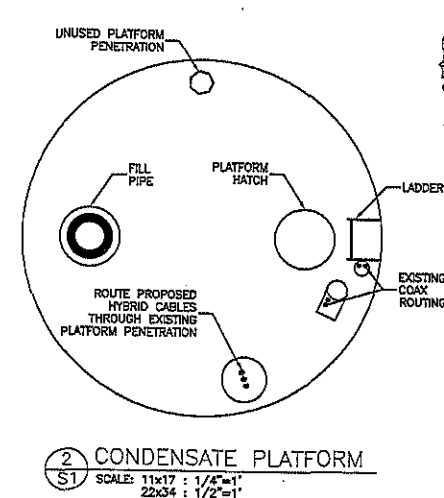
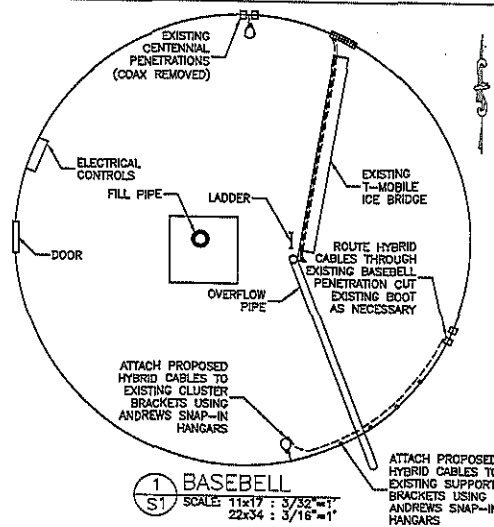
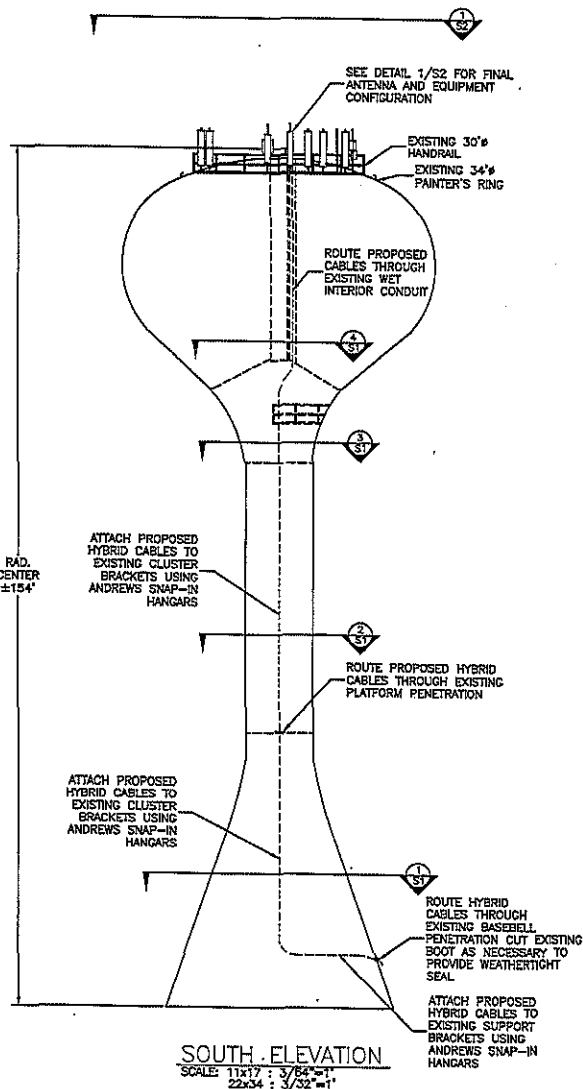
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STANDARD DETAILS

SHEET NUMBER:

1

F-4



USC 88440 FORT WAYNE
1016 EAST DUPONT RD.
FORT WAYNE, IN

DATE	02/03/05
REVISION/DESCRIPTION	SUBMITTED FOR REVIEW/ISSUE
NO.	
FL.	

CARRIER SITE NO.
CHS1XC384

LOCAL PROJECT NO.
14-44-01-15

DESIGN BY
AS.

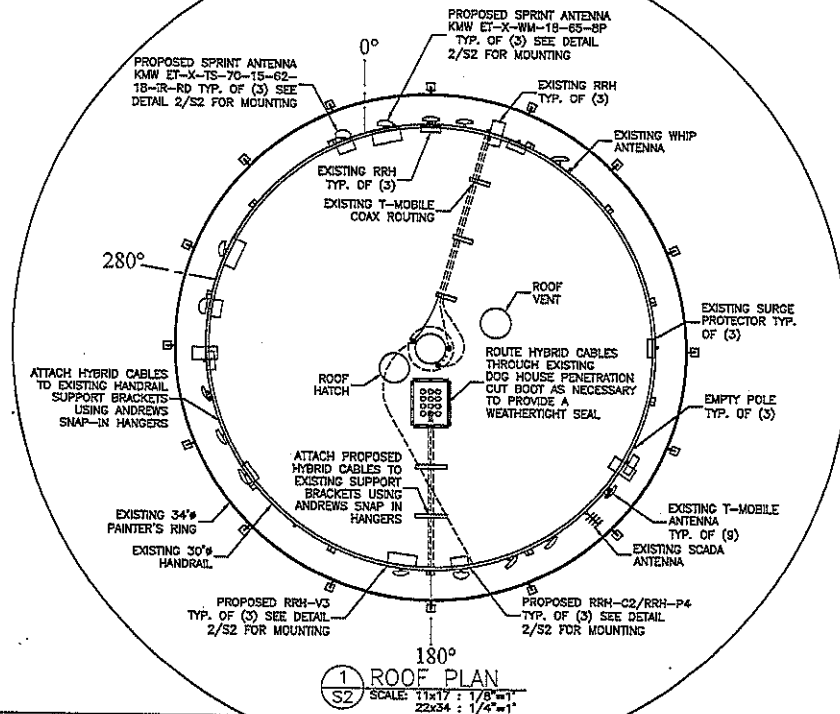
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IMC

SHEET TITLE

STRUCTURAL
DRAWINGS

S1

STRUCTURAL SHEETS S1, S2



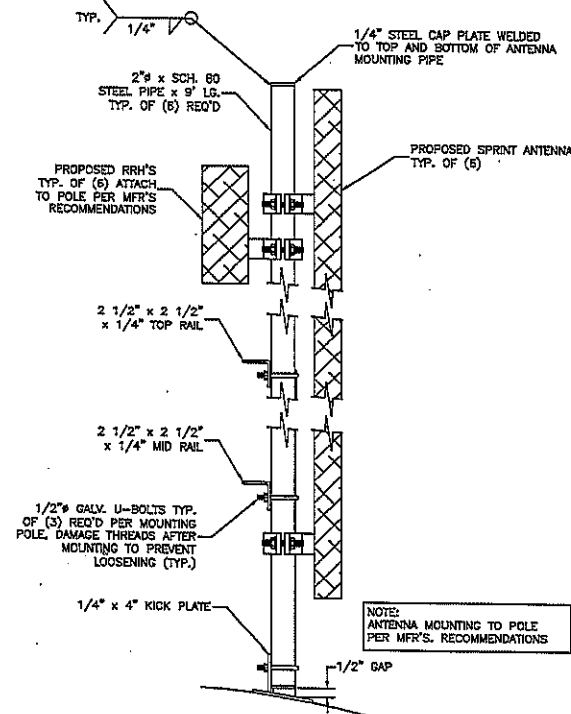
ANTENNA/EQUIPMENT SPECIFICATIONS

PROPOSED SPRINT ON ROOF HANDRAIL:

- (3) KMW ET-X-TS-70-15-62-18-IR-RD (72"x12"x5.9", 39.68lbs), HEIGHT = 4'-6" ABOVE ROOF
- (3) KMW ET-X-WM-18-65-8P (61"x12"x4.3", 36.4lbs), HEIGHT = 4'-6" ABOVE ROOF
- (3) RRH-C2/RRH-P4 (23.75"x13.75"x9", WEIGHT UNKNOWN)
- (3) RRH-V3 (28.8"x22.8"x10.8", 59.5lbs)

EXISTING ON ROOF HANDRAIL:

- (9) APX17DW-17DW (76"x14"x3", WEIGHT UNKNOWN) HEIGHT = 4'-6" ABOVE ROOF
- (3) NOKIA RRH (18"x16"x5.5", WEIGHT UNKNOWN)
- (3) NOKIA RRH (20"x10"x22", WEIGHT UNKNOWN)
- (1) 10' WHIP ANTENNA
- (3) SURGE PROTECTORS RNSDC-7771-PF-48 (SIZE AND WEIGHT UNKNOWN)
- (1) SCADA ANTENNA



2 ANTENNA MOUNT
SCALE: 11x17 : 1"=1'
22x34 : 2"=1'



USC 88440 FORT WAYNE
1016 EAST DUPONT RD.
FORT WAYNE, IN

DATE	06/05/2015
REVISION/DESCRIPTION	SUBMITTED FOR REVIEW/DRAWING
NO.	
REV.	

CUSTOMER SITE NO.
CH51XC384

DIXON PROJECT NO.
14-44-01-15

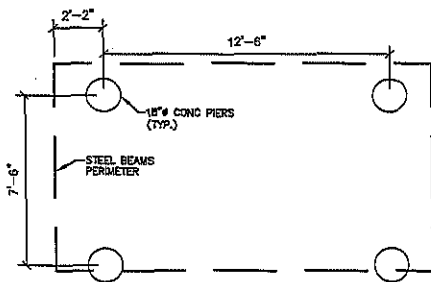
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SHEET TITLE

STRUCTURAL
DRAWINGS

S2



FOUNDATION PLAN

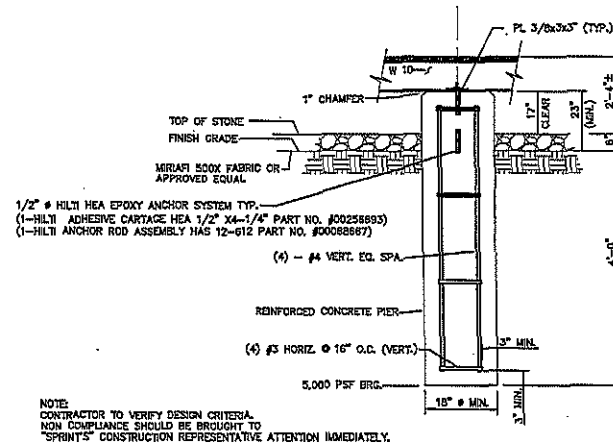
SCALE: 3/16"=1'-0"

1

DETAIL NOT USED

SCALE: N.T.S.

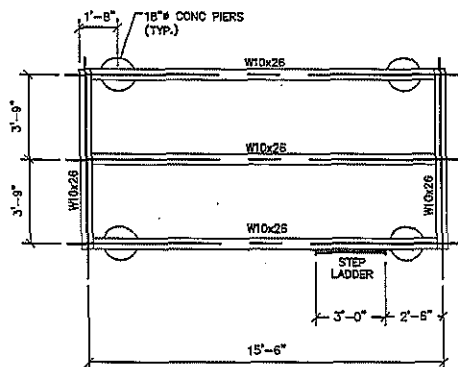
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CONCRETE PIER SUPPORT

SCALE: N.T.S.

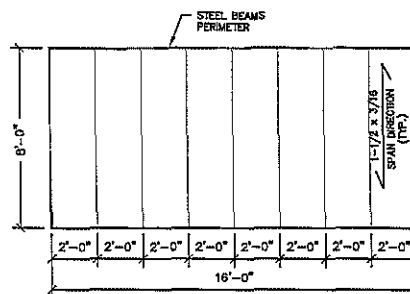
3



STEEL LAYOUT PLAN

SCALE: 3/16"=1'-0"

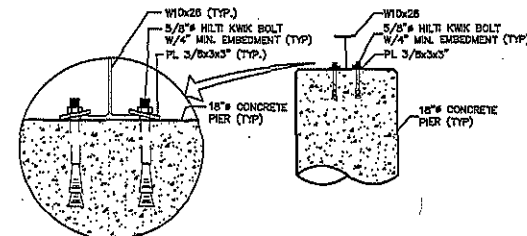
4



GRATING PLAN

SCALE: 3/16"=1'-0"

5



CONCRETE PIER ATTACHMENT DETAIL

SCALE: N.T.S.

6

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park,
Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

DATE:

MLA PARTNER:

ENGINEERING LICENSE:



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REVISIONS	DESCRIPTION	DATE	BY	REV
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ISSUED FOR SHS FINAL		05/27/14	MMK	1
ISSUED FOR SHS FINAL		07/15/14	MMK	2
ADDED EXCISE SHEETS		02/05/15	MMK	3

SITE NAME:

**USC 884403
FORT WAYNE**

SITE CASCADE:

884384 - CH51XC384

SITE ADDRESS:

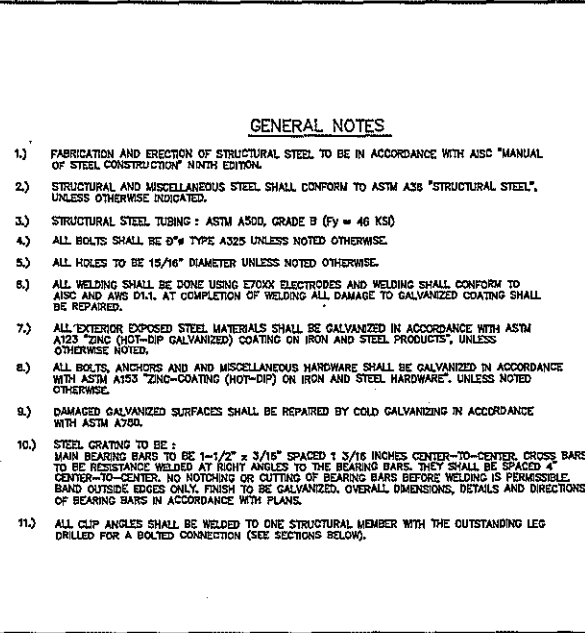
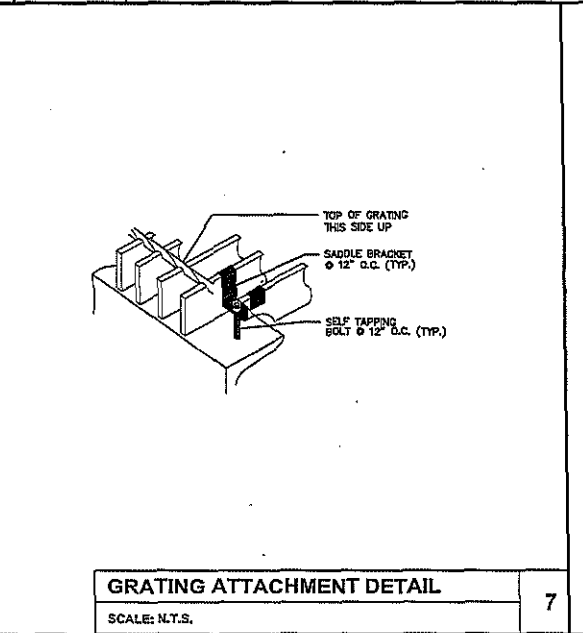
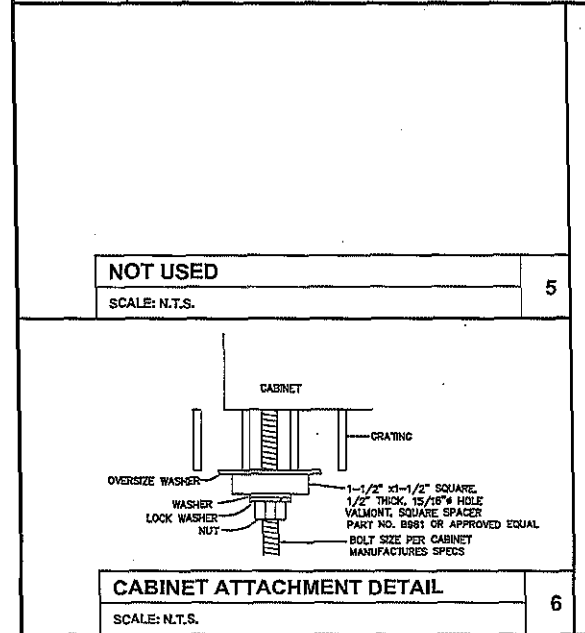
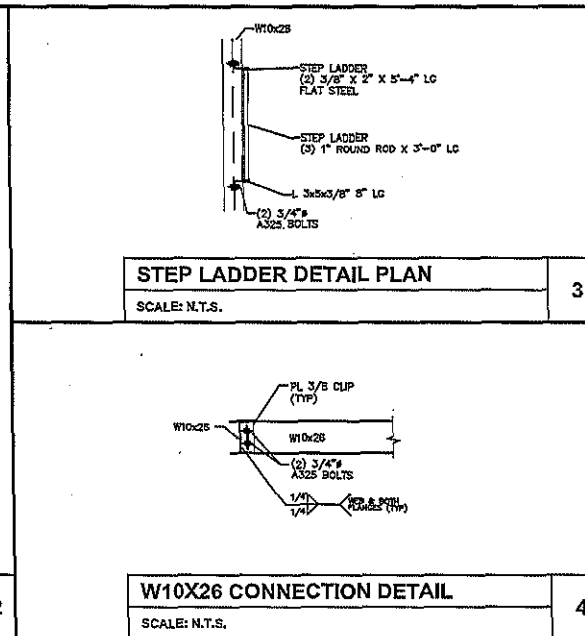
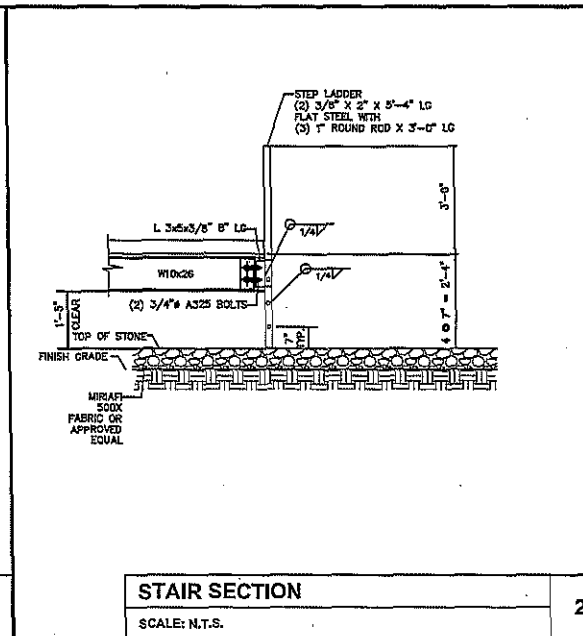
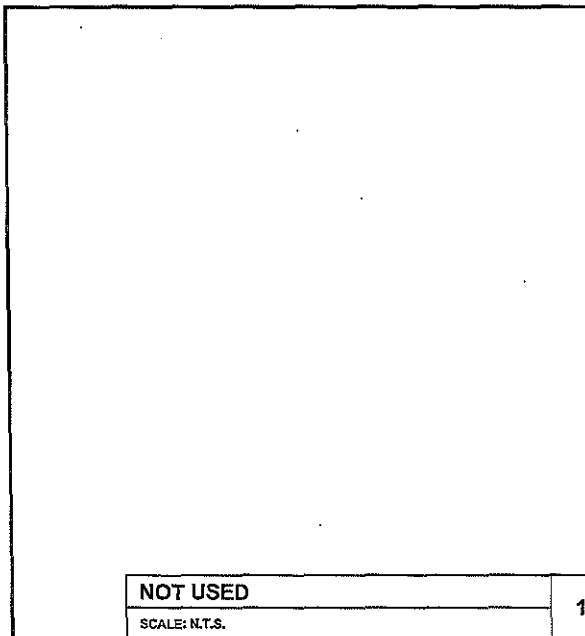
**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

PLATFORM DETAILS

SHEET NUMBER:

S-3



GENERAL NOTES

- 1.) FABRICATION AND ERECTION OF STRUCTURAL STEEL TO BE IN ACCORDANCE WITH AISC "MANUAL OF STEEL CONSTRUCTION" NINTH EDITION.
- 2.) STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 "STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
- 3.) STRUCTURAL STEEL TUBING : ASTM A500, GRADE B (Fy = 46 KSI)
- 4.) ALL BOLTS SHALL BE 9" TYPE A325 UNLESS NOTED OTHERWISE.
- 5.) ALL HOLES TO BE 15/16" DIAMETER UNLESS NOTED OTHERWISE.
- 6.) ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. AT COMPLETION OF WELDING ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
- 7.) ALL EXTERIOR EXPOSED STEEL MATERIALS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATING ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- 8.) ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
- 9.) DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A750.
- 10.) STEEL GRATING TO BE :
MAIN BEARING BARS TO BE 1-1/2" x 3/16" SPACED 1 3/16" INCHES CENTER-TO-CENTER. CROSS BARS TO BE RESISTANCE WELDED AT RIGHT ANGLES TO THE BEARING BARS. THEY SHALL BE SPACED 4" CENTER-TO-CENTER. NO NOTCHING OR CUTTING OF BEARING BARS BEFORE WELDING IS PERMISSIBLE. BAND OUTSIDE EDGES ONLY. FINISH TO BE GALVANIZED, OVERALL DIMENSIONS, DETAILS AND DIRECTIONS OF BEARING BARS IN ACCORDANCE WITH PLANS.
- 11.) ALL CLIP ANGLES SHALL BE WELDED TO ONE STRUCTURAL MEMBER WITH THE OUTSTANDING LEG DRILLED FOR A BOLTED CONNECTION (SEE SECTIONS BELOW).

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park,
Kansas 66251

PLANS PREPARED BY:

FIRST GROUP ENGINEERING
5925 LAKESIDE BLVD.
INDIANAPOLIS, IN 46278

ENGINEERING LICENSE

DENNIS W. COB
REGISTERED PROFESSIONAL ENGINEER
STATE OF INDIANA
01515
Dennis W. Cobb

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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR S&S FINAL		05/20/14 MRL	0	
ISSUED FOR S&S FINAL		05/27/14 MRL	1	
ISSUED FOR S&S FINAL		07/16/14 MRL	2	
ADDED EDOON 5 SHEETS		02/05/15 MRL	3	

SITE NAME:

**USC 884403
FORT WAYNE**

SITE CADD:

884384 - CH51XC384

SITE ADDRESS:

**1016 EAST DUPONT ROAD
FORT WAYNE, IN 46825**

SHEET DESCRIPTION:

PLATFORM DETAILS

SHEET NUMBER:

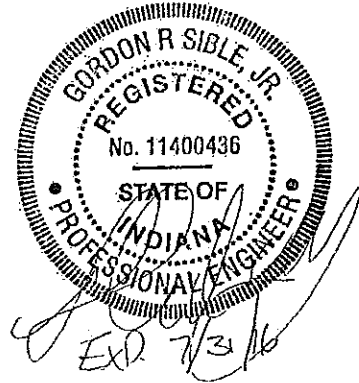
S-4

EXHIBIT C
(Dixon Engineering's Review)

Water Tower Antenna Installation Analysis

Prepared For:
Dave Helton Associates

Prepared By:
Dixon Engineering, Inc.
March 5, 2015



Location:
Fort Wayne, IN East Dupont Rd Water Tank
500,000 Gallon Spheroid Elevated Water Storage Tank

Antenna Provider:
Sprint

Site #:
CH15XC384

Dixon Engineering, Inc. has completed overturn calculations for the proposed antenna installation with consideration for any affect the antennas will have on the tank with respect to wind loading.

1. The extra weight of the antennas and cables is insignificant in comparison to the weight of water in the tank.
2. The increase in overturning moment is conservatively calculated and is within AWWA D100 design safety factors. This installation will not have any adverse structural effect on the tank.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the existing antennas and the proposed addition of (6) panel-type antennas mounted on the roof.		

Overturn Moment of Structure & Equipment @ 90 MPH		Combined Overturn Moment with Structure		% Increase
5,752,232	Foot-Pounds	5,752,232	Foot-Pounds	0.00%
Proposed Sprint Panels				
83,217	Foot-Pounds	5,835,449	Foot-Pounds	1.45%
Proposed Sprint Panels (2)				
70,718	Foot-Pounds	5,822,950	Foot-Pounds	1.23%
Proposed Sprint Misc Equip				
74,108	Foot-Pounds	5,826,340	Foot-Pounds	1.29%
Exist Panel				
281,865	Foot-Pounds	6,034,097	Foot-Pounds	4.90%
Exist Misc Equip				
50,327	Foot-Pounds	5,802,559	Foot-Pounds	0.87%
Exist Whip				
3,787	Foot-Pounds	5,756,019	Foot-Pounds	0.07%
Handrail				
137,669	Foot-Pounds	5,889,901	Foot-Pounds	2.39%

Total Percent Increase in Overturn Moment	12.20%
--	---------------

***The increase in weight added to the tank by the antennas and associated equipment is insignificant with respect to the weight of the tank

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the proposed addition of (3) ET-X-TS-70-15-62-18-Ir-RD panel-type antennas located on the roof.		

Antenna Overturn Moment Calculations for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed

90 MPH

Tank Specifications:

Height to the Low Water Level:

111 feet

Height to the High Water Level:

145 feet

Diameter of the Tank:

55.5 feet

Diameter of the Stem:

12 feet

Lower Diameter of the Basecone:

40.5 feet

Height of the Basecone:

44.5 feet

Distance Between High Water Level & the Roof:

4.5 feet

Antenna Specifications:

Number of Antennas:

3 Quantity

Height of Antennas:

72 inches

Width of Antennas:

12 inches

Height Above Roof Projection (Est) to the Center of the Antennas:

4.5 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:

1678.2 feet²

Moment Arm of Ball:

130.3 feet

Area of Stem:

798.0 feet²

Moment Arm of Stem:

77.8 feet

Area of Basecone:

1168.1 feet²

Moment Arm of Basecone:

18.2 feet

Total Overturn Moment of Tank:

5,752,232 Foot-lbs

Area of Antennas & Moment Arm Lengths:

Area of One Antenna :

6.0 feet²

Antenna Moment Arm:

154.0 feet

Area of One Antenna Post:

1.4

Antenna Post Moment Arm:

149.5

Number of Antennas and Posts Shielded 50%

1.0

Overturn Moment of Antennas:

83,217 Foot-lbs

Combined Overturn Moment (tank & antennas):

5,835,449 Foot-lbs

Total Percent Increase in Overturn Moment:

1.45%

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the proposed addition of (3) ET-X-WM-18-65-8P panel-type antennas located on the roof.		

Antenna Overturn Moment Calculations for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed 90 MPH

Tank Specifications:

Height to the Low Water Level:	111 feet
Height to the High Water Level:	145 feet
Diameter of the Tank:	55.5 feet
Diameter of the Stem:	12 feet
Lower Diameter of the Basecone:	40.5 feet
Height of the Basecone:	44.5 feet
Distance Between High Water Level & the Roof:	4.5 feet

Antenna Specifications:

Number of Antennas:	3 Quantity
Height of Antennas:	61 inches
Width of Antennas:	12 inches
Height Above Roof Projection (Est) to the Center of the Antennas:	4.5 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:	1678.2 feet ²
Moment Arm of Ball:	130.3 feet
Area of Stem:	798.0 feet ²
Moment Arm of Stem:	77.8 feet
Area of Basecone:	1168.1 feet ²
Moment Arm of Basecone:	18.2 feet

Total Overturn Moment of Tank:

5,752,232 Foot-lbs

Area of Antennas & Moment Arm Lengths:

Area of One Antenna :	5.1 feet ²
Antenna Moment Arm:	154.0 feet
Area of One Antenna Post:	1.2
Antenna Post Moment Arm:	149.5
Number of Antennas and Posts Shielded 50%	1.0

Overturn Moment of Antennas:

70,718 Foot-lbs

Combined Overturn Moment (tank & antennas):

5,822,950 Foot-lbs

Total Percent Increase in Overturn Moment:

1.23%

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the proposed miscellaneous antenna equipment (3 RRH-C2, 3 RRH-V3) located on the roof.		

Misc. Equipment Overturn Moment Calcs for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed: 90 MPH

Tank Specifications:

Height to the Low Water Level:	111 feet
Height to the High Water Level:	145 feet
Diameter of the Tank:	55.5 feet
Diameter of the Stem:	12 feet
Lower Diameter of the Basecone:	40.5 feet
Height of the Basecone:	44.5 feet
Distance Between High Water Level & the Roof:	4.5 feet

Equipment Specifications:

Number of Components:	6 Quantity
Average Height of the Equipment:	26.5 inches
Average Width of the Equipment:	18.3 inches
Average Height Above Roof Projection (Est) to the Center of the Components:	4.5 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:	1678.2 feet ²
Moment Arm of Ball:	130.3 feet
Area of Stem:	798.0 feet ²
Moment Arm of Stem:	77.8 feet
Area of Basecone:	1168.1 feet ²
Moment Arm of Basecone:	18.2 feet

Total Overturn Moment of Tank: 5,752,232 Foot-lbs

Area of Miscellaneous Equipment & Moment Arm Lengths:

Equipment Area:	20.2 feet ²
Miscellaneous Equipment Moment Arm:	154.0 feet

Overturn Moment of the Equipment: 74,108 Foot-lbs

Combined Overturn Moment (tank & misc. equipment): 5,826,340 Foot-lbs

Total Percent Increase in Overturn Moment: 1.29%

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the existing (9) panel-type antennas located on the roof.		

Antenna Overturn Moment Calculations for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed

90 MPH

Tank Specifications:

Height to the Low Water Level:

111 feet

Height to the High Water Level:

145 feet

Diameter of the Tank:

55.5 feet

Diameter of the Stem:

12 feet

Lower Diameter of the Basecone:

40.5 feet

Height of the Basecone:

44.5 feet

Distance Between High Water Level & the Roof:

4.5 feet

Antenna Specifications:

Number of Antennas:

9 Quantity

Height of Antennas:

76 inches

Width of Antennas:

14 inches

Height Above Roof Projection (Est) to the Center of the Antennas:

4.5 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:

1678.2 feet²

Moment Arm of Ball:

130.3 feet

Area of Stem:

798.0 feet²

Moment Arm of Stem:

77.8 feet

Area of Basecone:

1168.1 feet²

Moment Arm of Basecone:

18.2 feet

Total Overturn Moment of Tank:

5,752,232 Foot-lbs

Area of Antennas & Moment Arm Lengths:

Area of One Antenna :

7.4 feet²

Antenna Moment Arm:

154.0 feet

Area of One Antenna Post:

1.5

Antenna Post Moment Arm:

149.5

Number of Antennas and Posts Shielded 50%

4.0

Overturn Moment of Antennas:

281,865 Foot-lbs

Combined Overturn Moment (tank & antennas):

6,034,097 Foot-lbs

Total Percent Increase in Overturn Moment:

4.90%

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the existing miscellaneous antenna equipment (6 Nokia RRH) located on the roof.		

Misc. Equipment Overturn Moment Calcs for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed

90 MPH

Tank Specifications:

Height to the Low Water Level:

111 feet

Height to the High Water Level:

145 feet

Diameter of the Tank:

55.5 feet

Diameter of the Stem:

12 feet

Lower Diameter of the Basecone:

40.5 feet

Height of the Basecone:

44.5 feet

Distance Between High Water Level & the Roof:

4.5 feet

Equipment Specifications:

Number of Components:

6 Quantity

Average Height of the Equipment:

19 inches

Average Width of the Equipment:

13 inches

Average Height Above Roof Projection (Est) to the Center of the Components:

4.5 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:

1678.2 feet²

Moment Arm of Ball:

130.3 feet

Area of Stem:

798.0 feet²

Moment Arm of Stem:

77.8 feet

Area of Basecone:

1168.1 feet²

Moment Arm of Basecone:

18.2 feet

Total Overturn Moment of Tank:

5,752,232 Foot-lbs

Area of Miscellaneous Equipment & Moment Arm Lengths:

Equipment Area:

10.3 feet²

Miscellaneous Equipment Moment Arm:

154.0 feet

Overturn Moment of the Equipment:

50,327 Foot-lbs

Combined Overturn Moment (tank & misc. equipment):

5,802,559 Foot-lbs

Total Percent Increase in Overturn Moment:

0.87%

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the existing whip-type antenna located on the roof.		

Antenna Overturn Moment Calculations for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed

90 MPH

Tank Specifications:

Height to the Low Water Level:

111 feet

Height to the High Water Level:

145 feet

Diameter of the Tank:

55.5 feet

Diameter of the Stem:

12 feet

Lower Diameter of the Basecone:

40.5 feet

Height of the Basecone:

44.5 feet

Distance Between High Water Level & the Roof:

4.5 feet

Antenna Specifications:

Number of Antennas:

1 Quantity

Height of Antennas:

10 feet

Width of Antennas:

1.5 inches

Height Above Roof Projection (Est) to the Center of the Antennas:

9.5 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:

1678.2 feet²

Moment Arm of Ball:

130.3 feet

Area of Stem:

798.0 feet²

Moment Arm of Stem:

77.8 feet

Area of Basecone:

1168.1 feet²

Moment Arm of Basecone:

18.2 feet

Total Overturn Moment of Tank:

5,752,232 Foot-lbs

Area of Antennas & Moment Arm Lengths:

Area of One Antenna :

1.3 feet²

Antenna Moment Arm:

159.0 feet

Number of Antennas Shielded 50%

0.0

Overturn Moment of Antennas:

3,787 Foot-lbs

Combined Overturn Moment (tank & antennas):

5,756,019 Foot-lbs

Total Percent Increase in Overturn Moment:

0.07%

FOR DIXON ENGINEERING, INC.

Owner:	Fort Wayne, IN	
Location:	East Dupont Rd Water Tank	
For:	Dave Helton Associates	
Date:	March 5, 2015	
Antenna Provider:	Sprint	
Tank Type:	Spheroid	
Tank Volume:	500,000	Gallons
Increase in overturn moment with the existing roof handrail.		

Handrail Overturn Moment Calculations for Spheroid Type Tank Due to Wind Load

Wind Evaluation Speed

90 MPH

Tank Specifications:

Height to the Low Water Level:

111 feet

Height to the High Water Level:

145 feet

Diameter of the Tank:

55.5 feet

Diameter of the Stem:

12 feet

Lower Diameter of the Basecone:

40.5 feet

Height of the Basecone:

44.5 feet

Distance Between High Water Level & the Roof:

4.5 feet

Handrail Specifications:

Number of Handrail Divisions:

3 Quantity

Average Height of each Division:

3 inches

Diameter of the Handrail:

30 feet

Number of Handrail Legs

16

Width of Handrail Legs

2.5 inches

Height of Handrail Legs

3.5 feet

Height Above Roof Projection (Est) to the Center of the Handrail:

0 feet

Areas of Tank Sections & Moment Arm Lengths:

Area of Ball:

1678.2 feet²

Moment Arm of Ball:

130.3 feet

Area of Stem:

798.0 feet²

Moment Arm of Stem:

77.8 feet

Area of Basecone:

1168.1 feet²

Moment Arm of Basecone:

18.2 feet

Total Overturn Moment of Tank:

5,752,232 Foot-lbs

Area of Handrail & Moment Arm Length:

Handrail Area:

33.8 feet²

Area of One Handrail Leg

0.729 feet²

Handrail Moment Arm:

149.5 feet

Number of Handrail Legs Shielded 50%

8

Overturn Moment of Handrail:

137,669 Foot-lbs

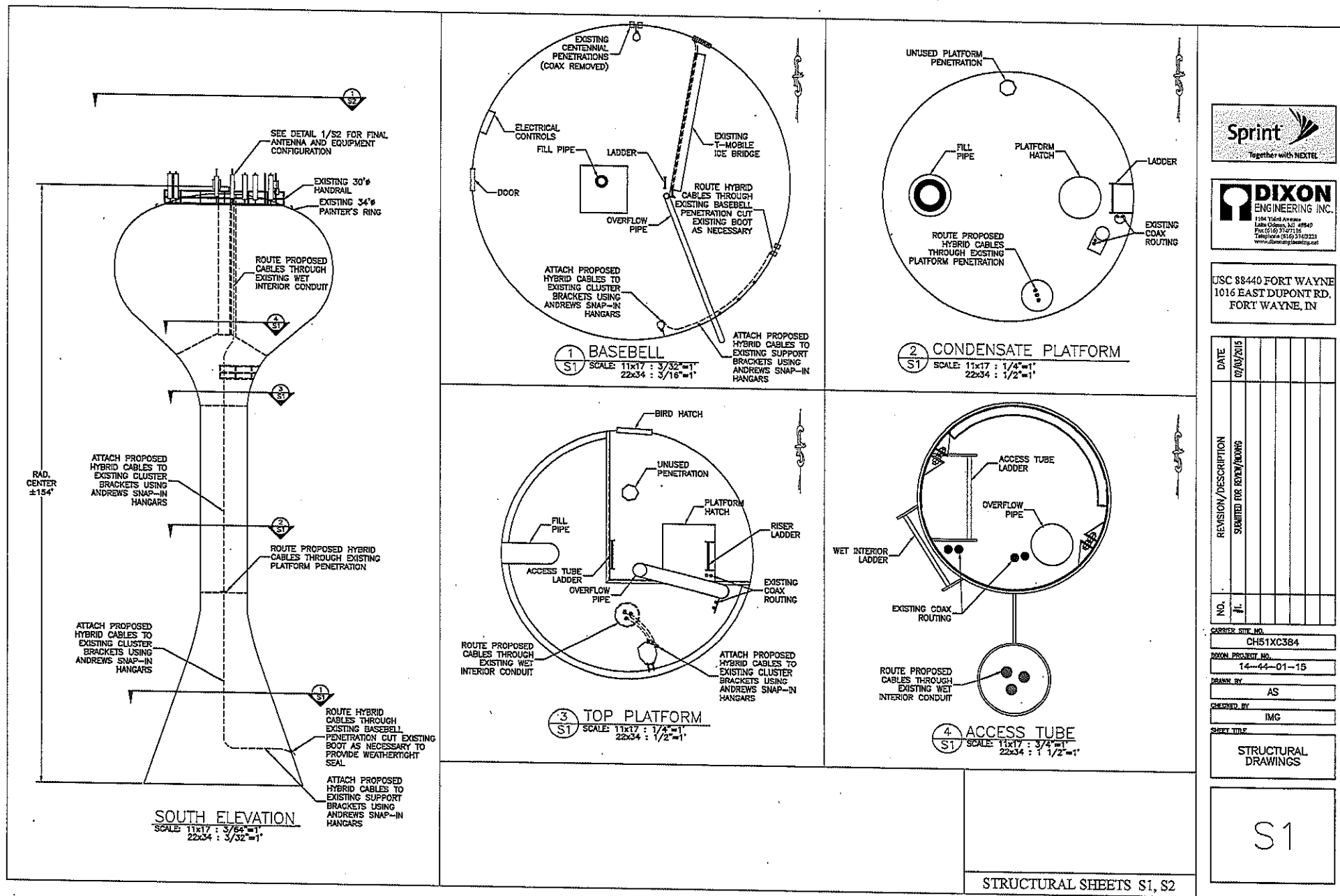
Combined Overturn Moment (tank & handrail):

5,889,901 Foot-lbs

Total Percent Increase in Overturn Moment:

2.39%

FOR DIXON ENGINEERING, INC.



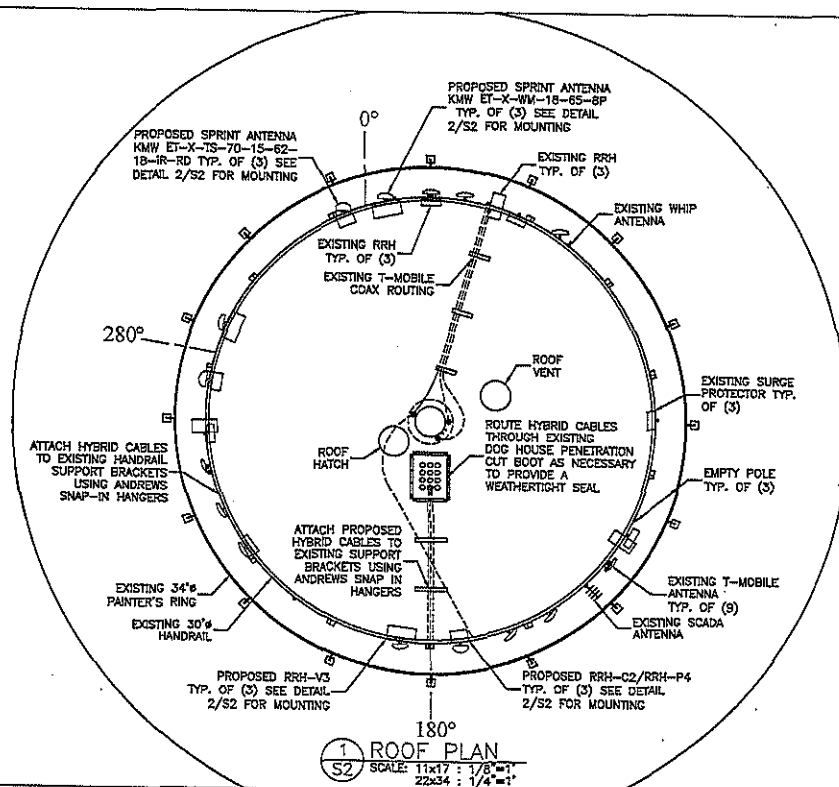
USC 88440 FORT WAYNE
1016 EAST DUPONT RD.
FORT WAYNE, IN

DATE	07/20/2015
REVISION/DESCRIPTION	REVISION FOR REVIEW/ISSUE
NO.	
FILE	

CARRIER SITE NO.	CH51XC384
DIXON PROJECT NO.	14-44-01-15
DRAWN BY	AS
CHECKED BY	IMC
SHEET TITLE	STRUCTURAL DRAWINGS

S1

STRUCTURAL SHEETS S1, S2



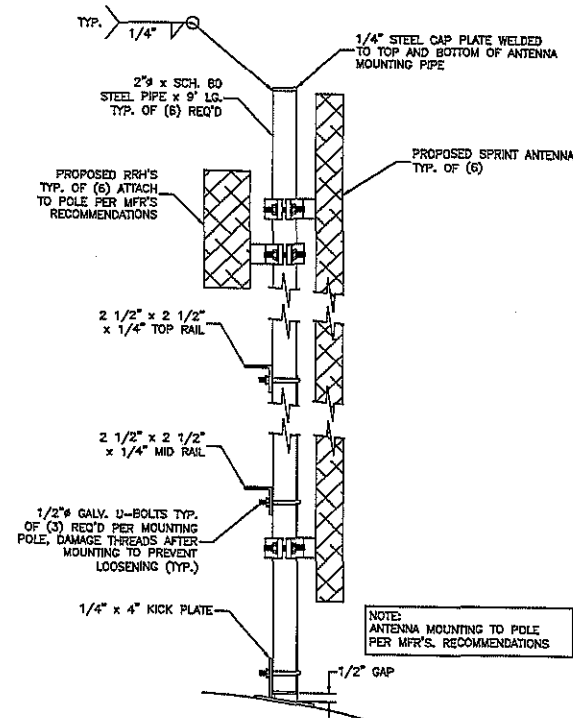
ANTENNA/EQUIPMENT SPECIFICATIONS

PROPOSED SPRINT ON ROOF HANDRAIL:

- (3) KMW ET-X-TS-70-15-62-18-IR-RD (72"x12"x5.9", 39.68lbs), HEIGHT = 4'-6" ABOVE ROOF
- (3) KMW ET-X-WM-18-65-8P (61"x12"x4.3", 36.4lbs), HEIGHT = 4'-6" ABOVE ROOF
- (3) RRH-C2/RRH-P4 (23.75"x13.75"x9", WEIGHT UNKNOWN)
- (3) RRH-V3 (28.8"x22.8"x10.8", 59.5lbs)

EXISTING ON ROOF HANDRAIL:

- (9) APX17DWV-17DW (76"x14"x3", WEIGHT UNKNOWN) HEIGHT = 4'-6" ABOVE ROOF
- (3) NOKIA RRH (18"x16"x5.5", WEIGHT UNKNOWN)
- (3) NOKIA RRH (20"x10"x22", WEIGHT UNKNOWN)
- (1) 10' WHIP ANTENNA
- (3) SURGE PROTECTORS RNSDC-7771-PF-48 (SIZE AND WEIGHT UNKNOWN)
- (1) SCADA ANTENNA



USC 88440 FORT WAYNE
1016 EAST DUPONT RD.
FORT WAYNE, IN

DATE	07/01/15
REVISION/DESCRIPTION	SUBMITTED FOR REVIEW/ISSUE
NO.	1

CADDER SIZE NO.
CHS1XC384

ORIGN PROJECT NO.
14-44-01-15

DRAWN BY
AS

CHECKED BY
IMG

SHEET TITLE
STRUCTURAL DRAWINGS

S2