



# Memorandum

## Planning & Development Services Division

**To:** Planning and Public Works Committee

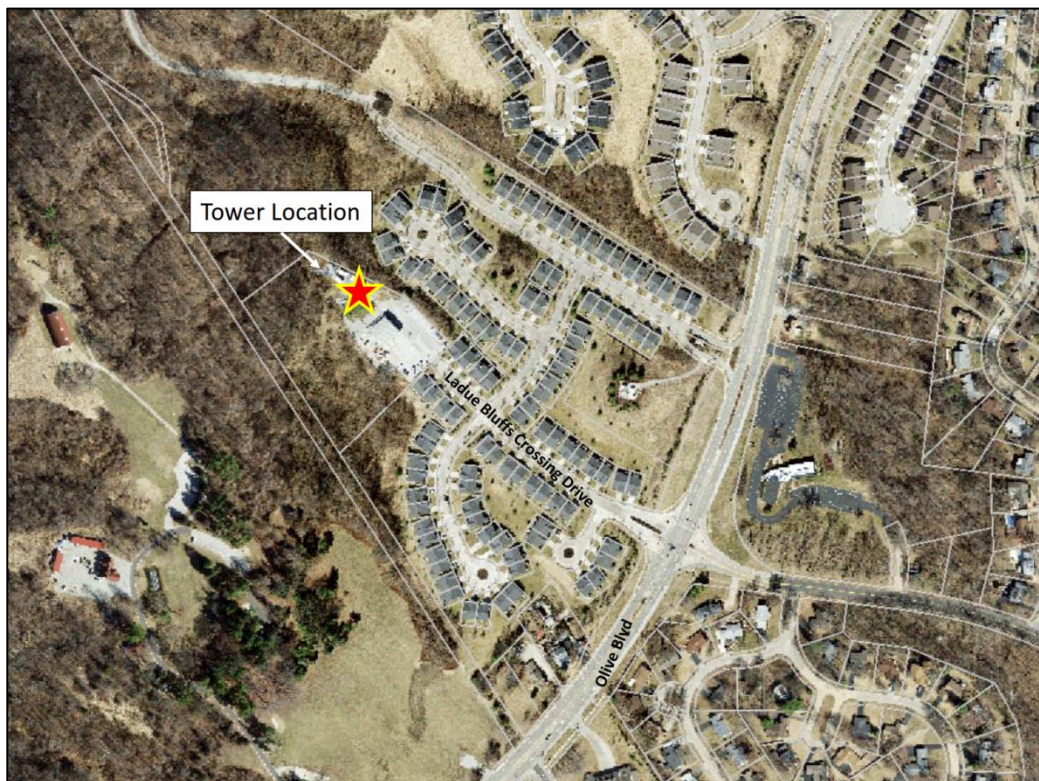
**From:** John Boyer, Senior Planner

**Date:** February 5, 2015

**RE:** **T.S.P. 45-2014 Sprint (14847 Ladue Bluffs Crossing):** A request to obtain approval for a Telecommunications Siting Permit to accommodate three (3) new panel antennas for an existing monopole tower within the "NU" Non-Urban District of land located at the terminus of Ladue Bluffs Crossing Drive, approximately 900 feet northwest of Olive Road.

### **Summary**

Russell Been of Collective Solutions, LLC on behalf of Sprint (applicant) has submitted a request for a Telecommunications Siting Permit (TSP) for the above referenced property. The proposed TSP is to accommodate three (3) additional panel antennas for an existing 165 foot tall monopole tower. The antennas are planned to be located on an existing antenna platform/array of the tower located 165 feet above the surrounding grade. This tower was constructed in 2002 as allowed by a Conditional Use Permit (CUP) 24-01, prior to the adoption of the City's current Telecommunication requirements. The tower is one of three (3) telecommunication facilities on this lot which is owned by St. Louis County and serves as their Emergency Operations center. Since this tower is planning to add additional antennas, the tower must receive a Telecommunications Siting Permit (TSP) as required by code.



**Figure 1: Aerial Photo with Tower Location**

**Discussion**

The Unified Development Code (UDC) requires that any new equipment or updates to an existing telecommunication facility receive a TSP or amend the existing TSP. Since this tower was constructed prior to current ordinance authority via a CUP, no TSP has ever been applied for nor issued for this tower and is therefore considered a legal non-conforming use or also known as a grandfathered use. The tower is currently compliant with the CUP approval, has no outstanding property maintenance issues nor has the City received any complaints on the facility.

The UDC permits applications for equipment upgrades to be submitted for sites that do not currently hold a Telecommunications Siting Permit (TSP) without the need for a public hearing if the update does not reflect a Material Modification. A Material Modification is defined by the UDC as an important, essential or significant change to an existing wireless telecommunication facility. Material modifications do not include collocations which do not increase the height or increase the existing antenna array. In this application, three (3) antennas are requested which will collocate on the facility and will not increase the height nor increase the array size since they will be placed upon existing supports of the facility. The intent of the definition of Material Modification is to ensure a facility which exceeds the previous City approval by a substantial height increase or major visual change would require the re-review of the site. Staff has reviewed the request by Sprint against the UDC and has determined that the proposal is not a material modification and therefore may receive a TSP without a public hearing. Staff recommends approval of a TSP for Sprint as proposed.

After receiving a recommendation from the Planning and Public Works Committee, this request may be forwarded to the City Council for review. Attached please find a copy of the construction plans.

Respectfully submitted,



John Boyer  
Senior Planner

cc. Aimee Nassif, Planning and Development Services Director





**Figure 2: Photo of Towers On-Site**



**Figure 3: Closer Photo of Towers- Monopole to the Right is the Tower in Question**



# Sprint



12/23/14



12/23/14  
MARTIN VALENTINE, PROFESSIONAL ENGINEER  
REGISTRATION NUMBER: 2007005050

PROJECT: 2.5 EQUIPMENT DEPLOYMENT

SITE NAME: NEXTEL POLICE TOWER

SITE CASCADE: ST23XC274-A

SITE NUMBER: ST23XC274

SITE ADDRESS: 14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SITE TYPE: 165'-MONOPOLE

PLANS PREPARED FOR:

**Sprint**  
6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE+ENGINEERING  
3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
630.390.7444 | fax 630.437.5800 | shive-hattery.com  
Iowa | Illinois | Missouri  
S/H PROJ # 8135100-77

ENGINEERING LICENSE:

RECEIVED  
City of Chesterfield  
DEC 29 2014

Department of Public Services

**SITE INFORMATION**

**PROPERTY OWNER:**  
ST. LOUIS COUNTY  
41 S. CENTRAL AVE.  
ST. LOUIS, MO 63105

**LATITUDE (NAD83):**  
38° 40' 18.30" N  
38.671667°

**LONGITUDE (NAD83):**  
90° 32' 16.02" W  
-90.53778°

**COUNTY:**  
ST. LOUIS COUNTY

**ZONING JURISDICTION:**  
CITY OF CHESTERFIELD, MO

**ZONING DISTRICT:**  
NU NON-URBAN

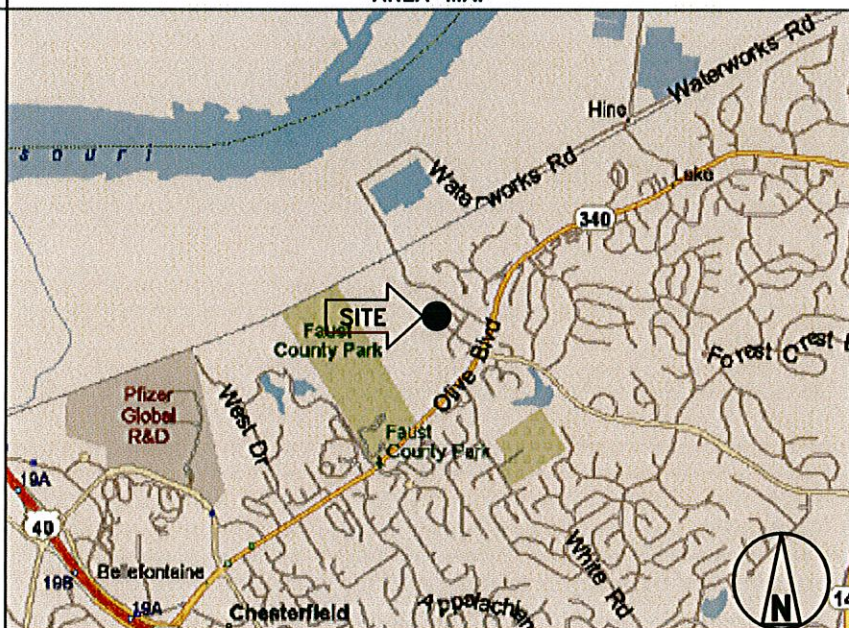
**POWER COMPANY:**  
AMEREN  
PHONE: 800-552-7583

**AAV PROVIDER:**  
AT&T  
PHONE: 800-257-0902

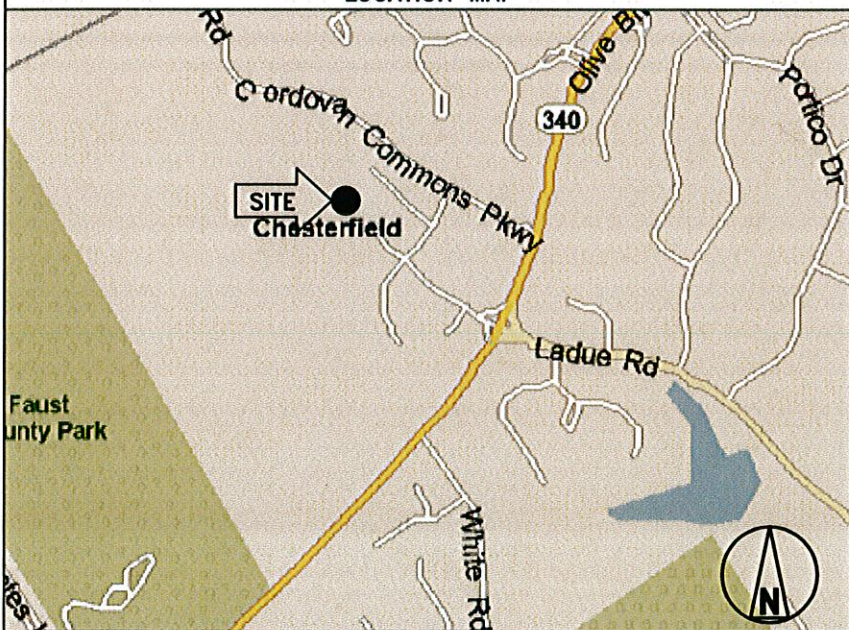
**SPRINT CM:**  
NAME: CODY RUBENACKER  
PHONE: (618) 231-3911

**EQUIPMENT SUPPLIER:**  
ERICSSON  
6300 LEGACY DR.  
PLANO, TX 75024  
CONTACT: T.B.D.  
PHONE: (972) 583-0000

**AREA MAP**



**LOCATION MAP**



**PROJECT DESCRIPTION**

- INSTALL (1) NEW RECTIFIER IN EXISTING RBS CABINET
- INSTALL (3) 2.5 MHz PANEL ANTENNAS
- INSTALL (3) 2.5 MHz RRH'S TO PROPOSED 2-7/8"x96" ANTENNA MAST
- INSTALL (21) 1/2" COAX JUMPERS
- INSTALL (1) 3/8" RET CABLE
- INSTALL (1) 0.867" FIBER CABLE
- INSTALL (1) RF FILTER AT GAMMA SECTOR

**APPLICABLE CODES**

WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF 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.

1. INTERNATIONAL BUILDING CODE - 2009
2. INTERNATIONAL MECHANICAL CODE - 2009
3. ANSI/TIA-222 STRUCTURAL STANDARD - REV. G
4. UNIFORM PLUMBING CODE - 2009
5. NATIONAL ELECTRICAL CODE - 2008



**DRAWING INDEX**

SHEET NO:	SHEET TITLE	REV	ENGINEER
T-1	TITLE SHEET	2	B. HARDING
SP-1	SPRINT SPECIFICATIONS	2	B. HARDING
SP-2	SPRINT SPECIFICATIONS	2	M. VALENTINE
A-1	PARTIAL SITE PLAN	2	B. HARDING
A-2	TOWER ELEVATION & CABLE PLAN	2	B. HARDING
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	2	B. HARDING
A-4	SHEET INTENTIONALLY OMITTED	2	N / A
A-5	SHEET INTENTIONALLY OMITTED	2	N / A
A-6	RF DATA SHEET	2	M. VALENTINE
A-7A	EQUIPMENT DETAILS	2	M. VALENTINE
A-7B	EQUIPMENT DETAILS	2	M. VALENTINE
A-8	EQUIPMENT DETAILS	2	M. VALENTINE
E-1	GROUNDING & ELECTRICAL PLAN	2	M. VALENTINE
E-2	GROUNDING DETAILS	2	M. VALENTINE
E-3	DC POWER & DISTRIBUTION	2	M. VALENTINE
E-4	AC POWER & DISTRIBUTION	2	M. VALENTINE
E-5	DC SUB PANEL DETAILS	2	M. VALENTINE

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**REVISIONS:**

DESCRIPTION	DATE	BY	REV
2.5 DRAWINGS FOR REVIEW	06/10/14	SMS	0
2.5 DRAWINGS FINAL	07/24/14	SMS	1
-	-	-	-
-	-	-	-
-	-	-	-

**SITE NAME:**

NEXTEL POLICE TOWER

**SITE CASCADE:**

ST23XC274

**SITE ADDRESS:**

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

**SHEET DESCRIPTION:**

TITLE SHEET

**SHEET NUMBER:**

T-1



THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

**SECTION 01 100 – SCOPE OF WORK**

**THE WORK:**  
SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF.

**PRECEDENCE:**  
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 FAMILIARITY:**  
CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

**ON-SITE SUPERVISION:**  
THE 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 PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS 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 DIMENSIONS 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 PERFORM WORK AS DESCRIBED IN

- A. COAX COLOR CODING SWEEPS AND FIBER TESTING TS-0200 AND EL-0568
- B. CABLE LABELING EN-2012-00
- C. APPLICABLE INSTALLATION MOPS IDENTIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS

**SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT**

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

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

CONTRACTOR RESPONSIBLE FOR RECEIPT OF SPRINT FURNISHED EQUIPMENT AT CELL SITE OR CONTRACTORS LOCATION. CONTRACTOR TO COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

**SECTION 01 300 – CELL SITE CONSTRUCTION**

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

**SITE CLEANLINESS:**  
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 RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

**SECTION 01 400 – SUBMITTALS & TESTS**

**ALTERNATES:**  
AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINTS 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. AGL, AZIMUTH AND DOWNTILT PROVIDE AN AUTOMATED REPORT UPLOADED TO SITERRA USING A COMMERCIAL MADE-FOR THE PURPOSE ELECTRONIC ANTENNA ALIGNMENT TOOL (AAT). INSTALLED AZIMUTH, CENTERLINE AND DOWNTILT MUST CONFORM WITH RF CONFIGURATION DATA

- 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.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
  - 1. AZIMUTH, DOWNTILT, AGL FROM SUNSIGHT INSTRUMENTS – ANTENNA ALIGNMENT TOOL (AAT)
  - 2. SWEEP AND FIBER TESTS
  - 3. SCALABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
  - 4. ALL AVAILABLE JURISDICTIONAL PERMIT AND OCCUPANCY INFORMATION
  - 5. PDF SCAN OF REDLINES PRODUCED IN FIELD
  - 6. A PDF SCAN OF REDLINE MARK-UPS SUITABLE FOR USE IN ELECTRONIC AS-BUILT DRAWING PRODUCTION
  - 7. LIEN WAIVERS
  - 8. FINAL PAYMENT APPLICATION
  - 9. REQUIRED FINAL CONSTRUCTION PHOTOS
  - 10. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
  - 11. APPLICABLE POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).
  - 12. CLOSEOUT PHOTOGRAPHS AND CLOSEOUT CHECKLIST: SPRINT WILL PROVIDE SEPARATE GUIDANCE

**SECTION 11 700 – ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION**

**SUMMARY:**  
THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRU'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

**ANTENNAS AND RRU'S:**  
THE NUMBER AND TYPE OF ANTENNAS AND RRU'S TO BE INSTALLED IS DETAILED 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.

**JUMPERS AND CONNECTORS:**  
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRU'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRU'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE, MIN LENGTH FOR JUMPER SHALL BE 10"-0".

**REMOTE ELECTRICAL TILT (RET) CABLES:**

**MISCELLANEOUS:**  
INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

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

- A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.
- 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 INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.
- C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.
  - 1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE INSTALLED INSIDE MONOPOLE WITH CABLE SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER.
  - 2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE RBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
    - a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH @ 18" OC. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
    - b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
  - 3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS 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 TWISTING AND CROSSOVERS.
    - c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURERS RECOMMENDED MAXIMUM BEND RADIUS.

165'-MONOPOLE

PLANS PREPARED FOR:




6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE + ENGINEERING  
3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
630.390.7444 | fax 630.437.5800 | shive-hattery.com  
Iowa | Illinois | Missouri

S/H PROJ # 8135100-77

ENGINEERING LICENSE:



*Handwritten signature and date: 12/23/14*

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REVISIONS:

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-	-	-	-
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-	-	-	-

SITE NAME:

**NEXTEL POLICE TOWER**

SITE CASCADE:

**ST23XC274**

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-1**



**CONTINUE FROM SP-1**

- 5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED 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. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
  - 1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
  - 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 SLJM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
  - 4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

**SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBS) AND RELATED EQUIPMENT**

**SUMMARY:**

- A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).
- B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.
- C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

**DC CIRCUIT BREAKER LABELING**

- A. NEW DC CIRCUIT IS REQUIRED IN MMBS CABINET SHALL BE CLEARLY IDENTIFIED AS TO RRU BEING SERVICED

**SECTION 26 100 - BASIC ELECTRICAL REQUIREMENTS**

**SUMMARY:**  
THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS.

**QUALITY ASSURANCE:**

- A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.
- B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.
- C. **MATERIALS AND EQUIPMENT:** ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS

**SUPPORTING DEVICES:**

- A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.
- B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.
- C. **MATERIALS AND EQUIPMENT:** ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS

**SUPPORTING DEVICES:**

- A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
  - 1. ALLIED TUBE AND CONDUIT
  - 2. B-LINE SYSTEM
  - 3. SUNISTRUT DIVERSIFIED PRODUCTS
  - 4. THOMAS & BETTS
- B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
  - 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. TOGGLE 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 HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
  - 8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
  - 9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

**SUPPORTING DEVICES:**

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

**ELECTRICAL IDENTIFICATION:**

- 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.

**SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT**

**EXISTING STRUCTURE:**

- A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT 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.

**CONDUIT AND CONDUCTOR INSTALLATION:**

- A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
- B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

**CONDUIT:**

- A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR ENCASED RUNS IN CONCRETE. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED - SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.
- B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.
- C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.
- D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.
- E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6- FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRE BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.
- F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

**HUBS AND BOXES:**

- 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 LOCKNUT AND NEOPRENE 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/GEDNEY OR EQUAL BY ROX TEC.
  - 2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.
- C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.
- D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKETED COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM B OR EQUAL.
- E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

**SUPPLEMENTAL GROUNDING SYSTEM**

- A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM TO THE EXTENT INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS EXCEPTED AS OTHERWISE NOTED.
- 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 SPADES WITH NO OX.
- C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

165'-MONOPOLE

PLANS PREPARED FOR:



6580 Sprint Parkway  
Overland Park, Kansas 66251


PLANS PREPARED BY:



3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
630.390.7444 | fax 630.437.5800 | shive-hattery.com  
Iowa | Illinois | Missouri

S/H PROJ # 8135100-77

ENGINEERING LICENSE:



MARTIN VALENTINE, PROFESSIONAL ENGINEER  
REGISTRATION NUMBER: 2007005050  
12/23/14

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2.5 DRAWINGS FINAL	07/24/14	SMS	1
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-	-	-	-
-	-	-	-
-	-	-	-

SITE NAME:

**NEXTEL POLICE TOWER**

SITE CASCADE:

**ST23XC274**

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

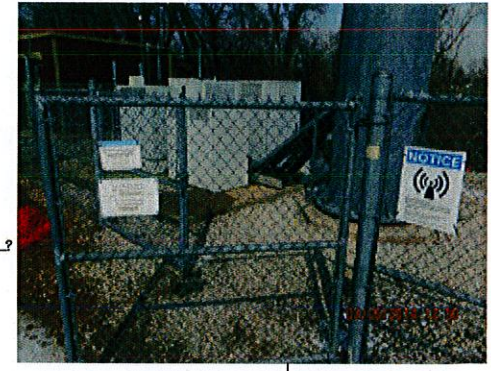
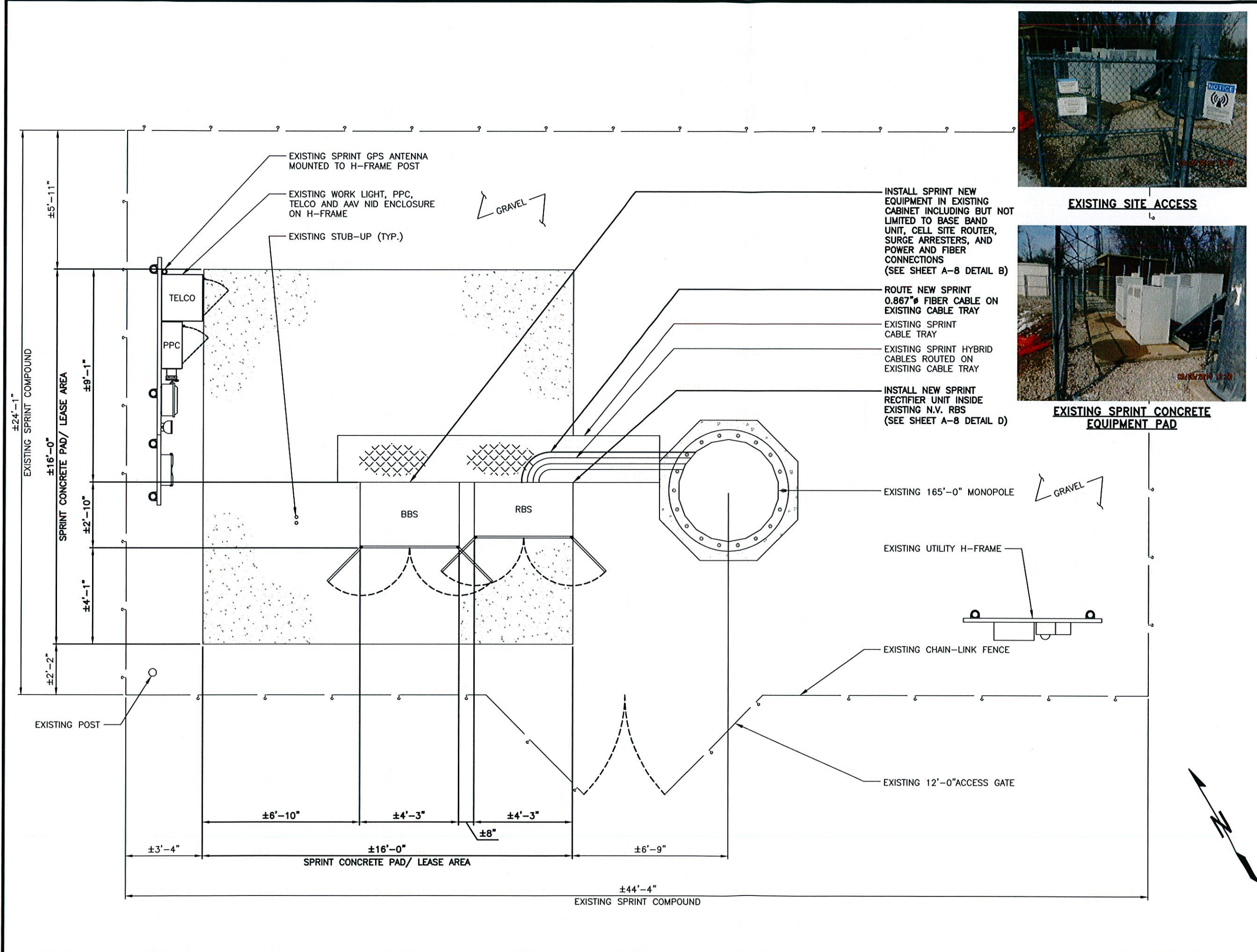
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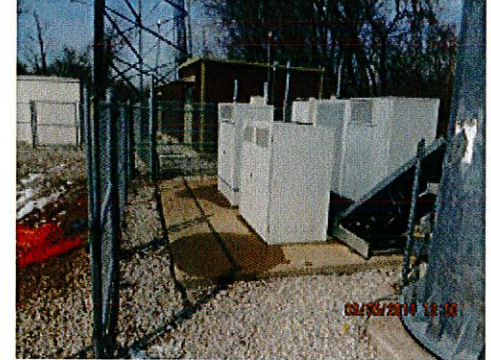
SHEET NUMBER:

**SP-2**





EXISTING SITE ACCESS



EXISTING SPRINT CONCRETE EQUIPMENT PAD

165'-MONOPOLE

PLANS PREPARED FOR:

6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE+ENGINEERING

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ARCHITECT

*12/23/14*

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SITE NAME:

**NEXTEL POLICE TOWER**

SITE CASCADE:

**ST23XC274**

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

**PARTIAL SITE PLAN**

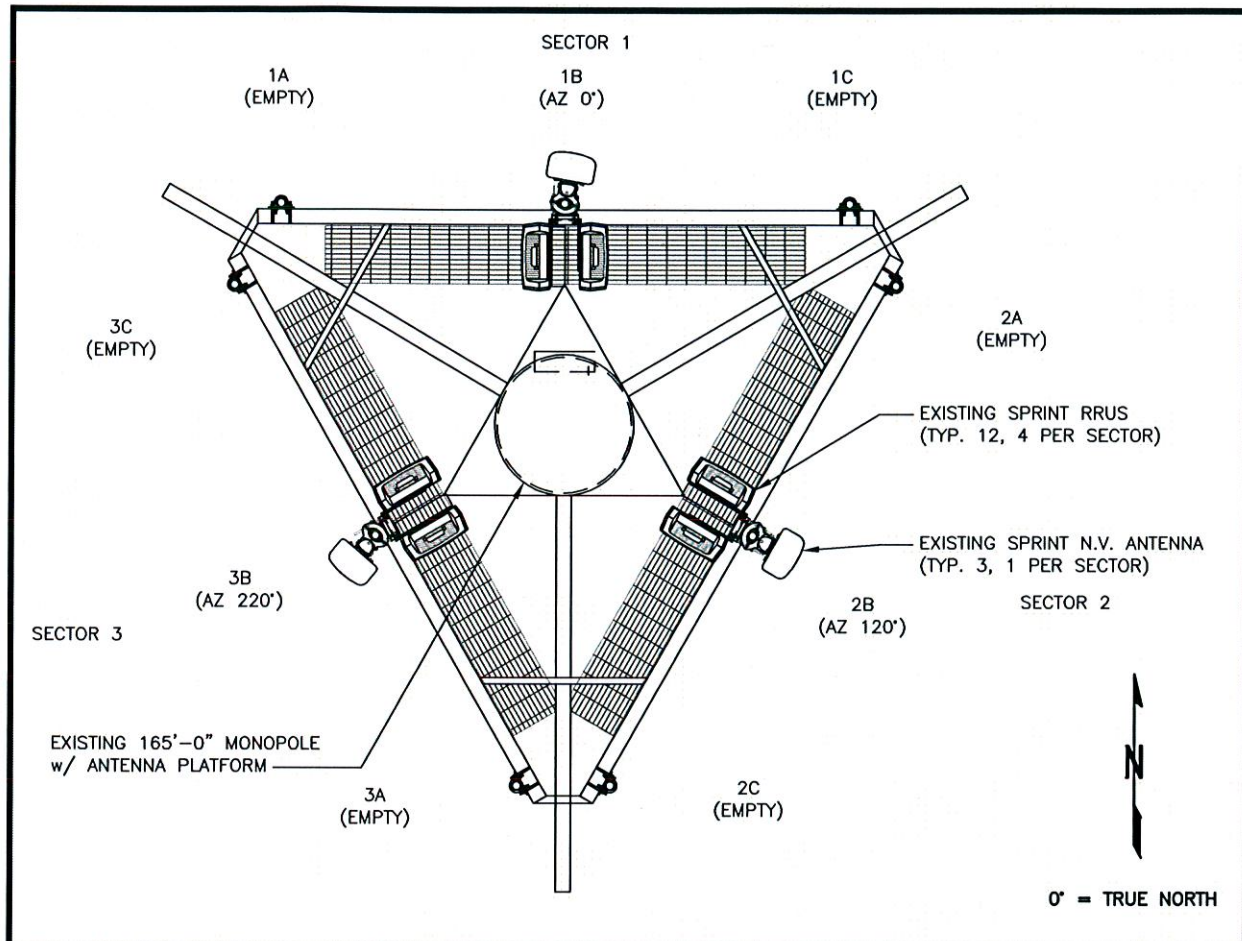
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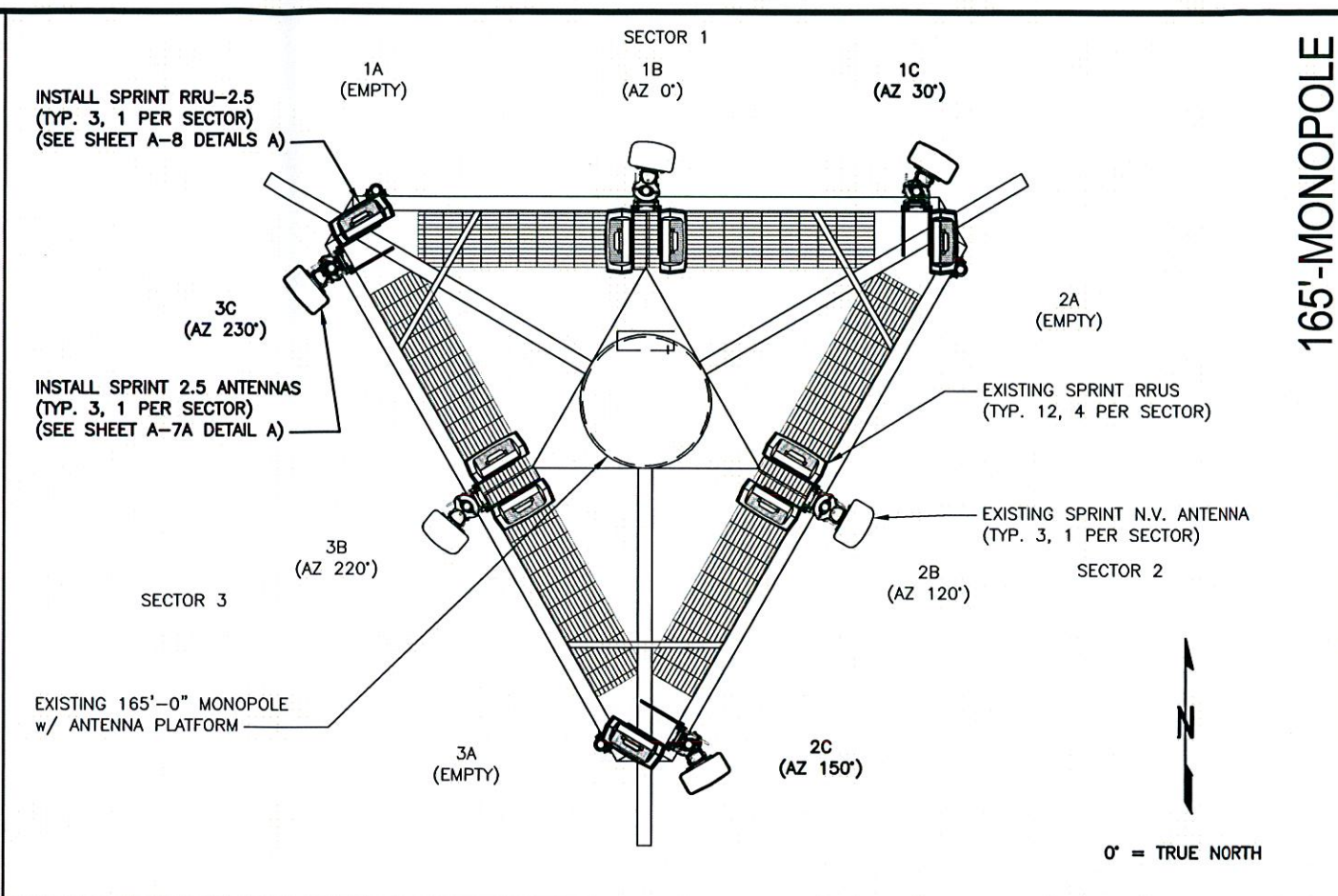




EXISTING ANTENNA & RRU LAYOUT • 165'

NO SCALE

C



FINAL ANTENNA LAYOUT • 165'

NO SCALE

A

165'-MONOPOLE

PLANS PREPARED FOR:

6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE+ENGINEERING  
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SITE NAME:

**NEXTEL POLICE TOWER**

SITE CASCADE:

**ST23XC274**

SITE ADDRESS:

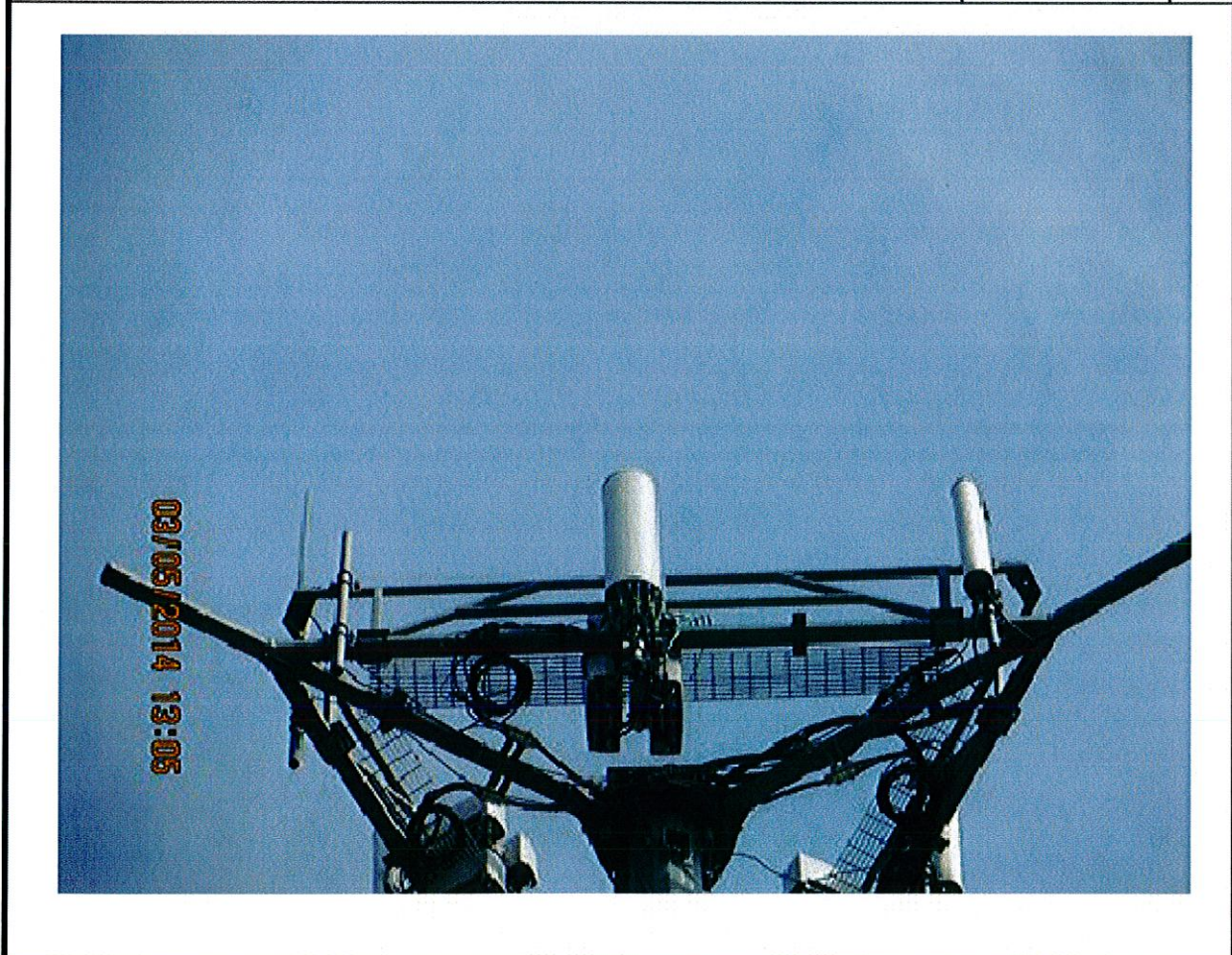
14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

**ANTENNA LAYOUT & MOUNTING DETAILS**

SHEET NUMBER:

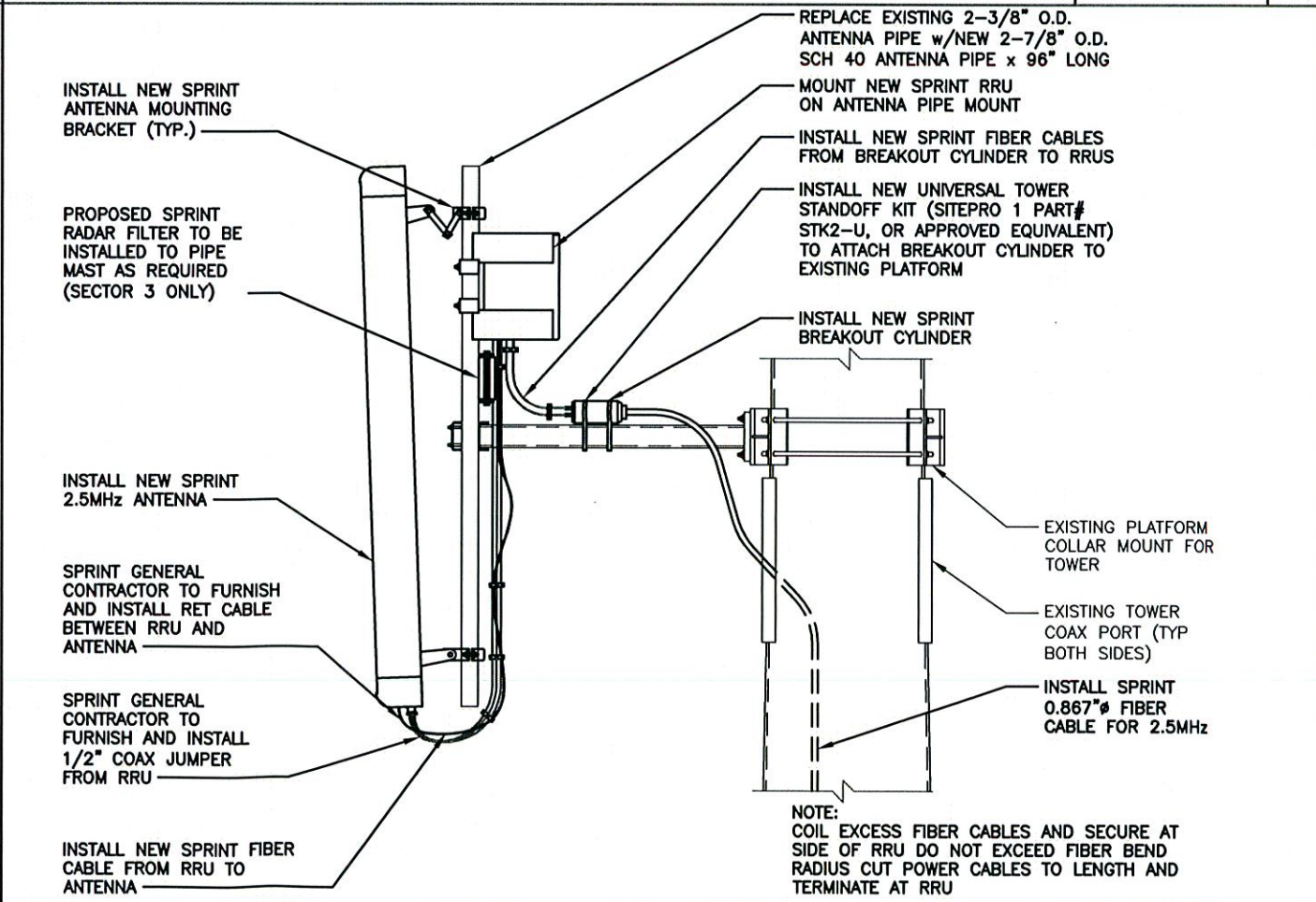
**A-3**



EXISTING PLATFORM

NO SCALE

D



ANTENNA, RRU & BREAK-OUT MOUNTING DETAILS

NO SCALE

B

NOTE:  
COIL EXCESS FIBER CABLES AND SECURE AT SIDE OF RRU DO NOT EXCEED FIBER BEND RADIUS CUT POWER CABLES TO LENGTH AND TERMINATE AT RRU





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SITE NAME:  
**NEXTEL POLICE TOWER**

SITE CASCADE:  
**ST23XC274**

SITE ADDRESS:  
14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:  
**RF DATA SHEET**

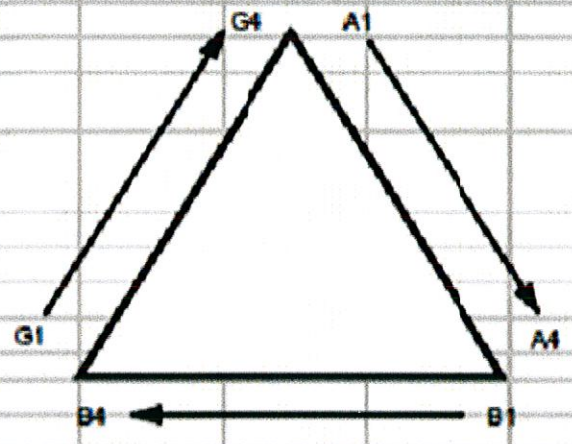
SHEET NUMBER:  
**A-6**

**CABLE MARKING COLOR CONVENTION TABLE**

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	Purple		
2 Beta	2	Yellow	Yellow		Yellow	Purple	
3 Gamma	3	Yellow	Yellow	Yellow		Yellow	Purple

**Figure 1: Antenna Orientation**



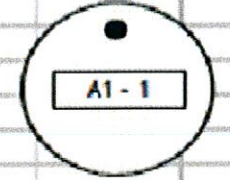
Issue 5, October 2013

- NOTE\*: All color code tape shall be 3M-35 and shall be installed using a minimum of (3) wraps of tape.
- NOTE\*: All color bands installed at the tower top shall be a minimum of 3" wide and shall have a minimum of 1/4" of spacing between each color.
- NOTE\*: All color bands installed at or near the ground may be only 3/4" wide. Each top-jumper shall be color coded with (1) set of 3" wide bands.
- NOTE\*: Each main coax shall be color coded with (1) set of 3" bands near the top-jumper connection and with 3/4" color bands just prior to entering the BTS or transmitter building.
- NOTE\*: All bottom jumpers shall be color coded with (1) set of 3/4" bands on each end of the bottom jumper.
- NOTE\*: All color codes shall be installed so as to align neatly with one another from side-to-side.
- NOTE\*: Each color band shall have a minimum of (3) wraps and shall be neatly trimmed and smoothed out so as to avoid unraveling.
- NOTE\*: X-Pole Antennas should use "XX-1" for the "+45" port, "XX-2" for the "-45" port.
- NOTE\*: Colorband #4 refers to the Frequency Band: ORANGE=850, VIOLET=1900. Used on jumpers only.
- NOTE\*: RF feedline shall be identified with a metal tag (stainless or brass) and stamped with the sector, antenna position, and cable number.
- NOTE\*: Antennas must be identified, using the sector letter and antenna number, with a black marker prior to installation.

**CABLE MARKING TAGS**

TO PROVIDE ADDITIONAL IDENTIFICATION RF CABLES SHALL BE IDENTIFIED WITH A METAL TAG MADE OF STAINLESS STEEL OR BRASS AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER "CABLE MARKING LOCATIONS TABLE". THE TAG SHOULD BE ATTACHED WITH CORROSIVE PROOF WIRE OR WAX STRING AROUND THE CABLE. THE TAG SHOULD BE LABELED AS SHOWN BELOW IN FIGURE 2.

**Figure 2: Tag Detail Example**



**CABLE MARKING LOCATIONS TABLE**

TAPE	TAG	LOCATIONS
X		EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
X		EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
	X	MARKING TAGS SHALL BE ATTACHED AT CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER
X		ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF BOTTOM JUMPER.

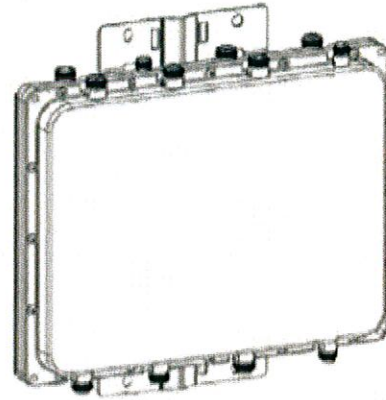
165'-MONOPOLE



## Sprint - NSN Radar Co-Location Filter Overview

**Sprint Requirement:**  
The solution will comply with the option of utilizing an external filter for OOB signal suppression of -90dBm/MHz between 2704 MHz and 2996 MHz summed across four ports. For BTX configuration, each four-port OOB should be -93dBm/MHz. Summing shall have precedence.

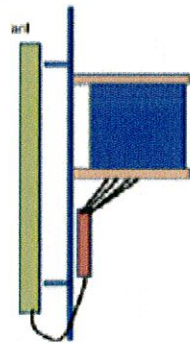
Description	Radars Co-location Filter
2496.0 – 2690.0 MHz IL	<1.0dB
Rejection (Filter / 3TS+Filter) 2704 – 2996 MHz	60dB/79dB total
Weight without mounting bracket	~15.5lbs*
Dimensions without mounting bracket	~W11.8" x H9.5" x T3.0"*
Return Loss	18dB min
Group Delay – Pass band (5MHz/194MHz)	30/60ns max
Pass band Ripple	0.9dB max
Antenna Connector Type	Mini-DIN, 4.1/9.5



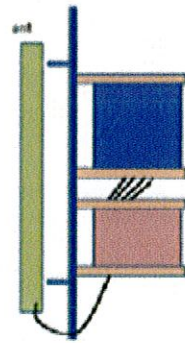
**nsn**

## Sprint - NSN Radar Co-Location Filter Mounting

- Key Sprint Considerations/Concerns
  - Minimize overall IL impact due to RF jumper connections
  - Minimize space use & wind loading impacts
  - RF connector placement approach should be made to accommodate the above
  - Assume antenna vendor which has worst case antenna width dimension for analysis (12 inches)



Filter mounted parallel to & behind antenna\*

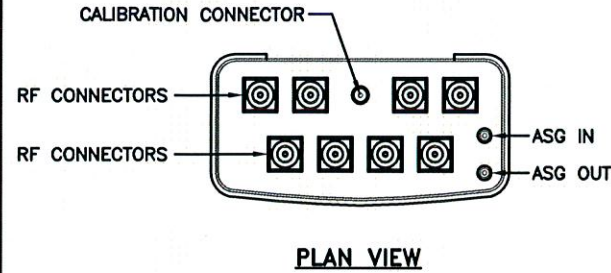


Filter mounted perpendicular to antenna

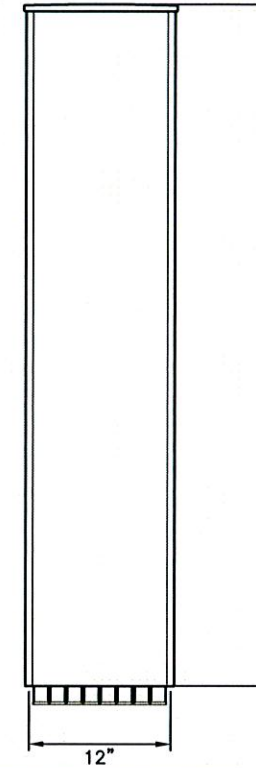
**nsn**

## COMMSCOPE-TTTT65AP-1XR

RADOME COLOR: LIGHT GRAY  
DIMENSIONS, HxWxD.in(mim): 63.2"x12"x5"  
WEIGHT: 33 lbs  
CONNECTORS: (1) DIN-FEMALE  
(1) N-FEMALE



PLAN VIEW



165'-MONOPOLE

2.5 ANTENNA

NO SCALE

A

PLANS PREPARED FOR:

**Sprint**

6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE+ENGINEERING

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REGISTRATION NUMBER: 2007005050

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SITE NAME:

NEXTEL POLICE TOWER

SITE CASCADE:

ST23XC274

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

EQUIPMENT DETAILS

SHEET NUMBER:

A-7A

RF FILTER DETAILS

NO SCALE

C

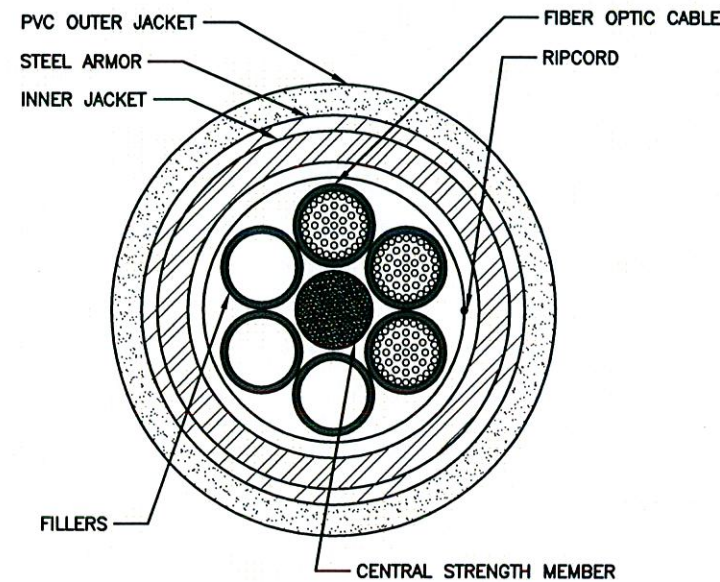
DETAIL NOT USED

NO SCALE

B



165'-MONOPOLE



NOTE: CABLE CROSS-SECTION NOT DRAWN TO SCALE

CABLE TYPE	Number, size (awg)	6/C 6 AWG + 2/C 18 AWG
	Voltage	600
	Outer Jacket	PVC
	Shielding	Corrugated Copper
	Max shield resistance (ohm/ft @ 20 c)	0.0035
	Drain	n/a
	Ripchord	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 Cables	SM
	Outer Diameter (in) - Nominal	.07
	Weight (lb/ft)	.12
	Minimum Bend Radius (in)	15
	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, G657.A2  IEC 60793-2-50 Type B.1.3 & Type B.6 A&B
Fiber Coating Diameter (um)		.242 +/- 0.007mm 0.9 +/- 0.005mm
Fiber Count		24
Number of fiber subunits		1
Fiber count each units		24
Fiber count jackets		FR Jacket
Max attenuation, 1310 nm (db/km)		Less than equa 0.5
Max attenuation, 1550 nm (db/km)		Less than equa 0.5

PLANS PREPARED FOR:

**Sprint**  
6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE+ENGINEERING  
3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
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SITE NAME:

NEXTEL POLICE TOWER

SITE CASCADE:

ST23XC274

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

EQUIPMENT DETAILS

SHEET NUMBER:

A-7B

DETAIL NOT USED

NO SCALE

B

FIBER CABLE X-SECTION AND DATA

NO SCALE

A





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REGISTRATION NUMBER: 2007005050  
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NEXTEL POLICE TOWER

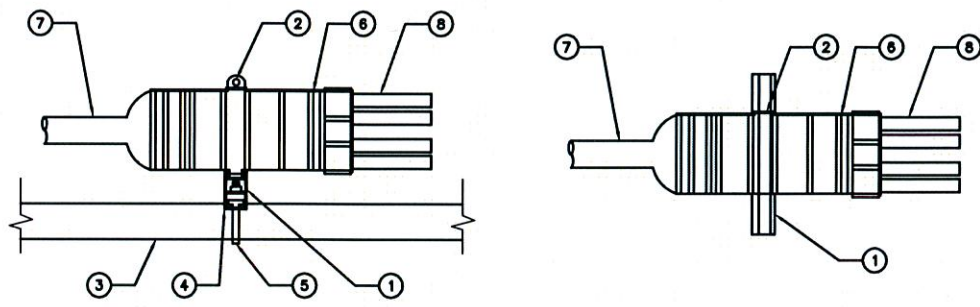
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14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

EQUIPMENT DETAILS

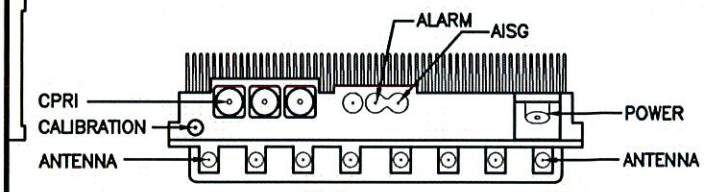
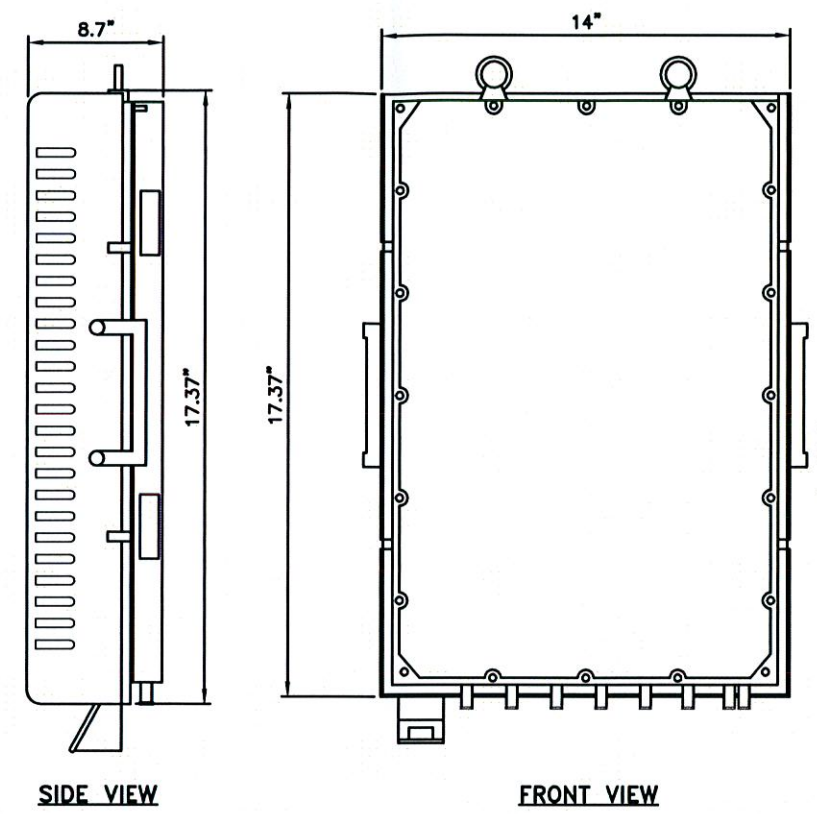
A-8

165'-MONOPOLE



**NOTES**

- 1-5/8" x 1-5/8" UNISTRUT (6" LONG)
- 4" PIPE HANGER.
- EXISTING SUPPORT PIPE
- STANDOFF BRACKET ANDREW PART NO. 30848-4. CONTRACTOR TO SUPPLY 3/8" CONNECTION HARDWARE.
- ROUND MEMBER ADAPTER SIZED FOR PIPE SUPPORT.
- CABLE BREAKOUT UNIT.
- HYBRID/FIBER CABLE.
- FIBER & POWER CABLES FROM BREAKOUT.



**PLAN VIEW**

DIMENSIONS - HxWxD: (17.4"x14.0"x8.7")  
RRU WEIGHT: 55.2 LBS  
MOUNTING KIT WEIGHT: 12.0 LBS

**NOTES**

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRU'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRU PACKAGES IN THE RAIN

**BREAKOUT DETAIL**

NO SCALE

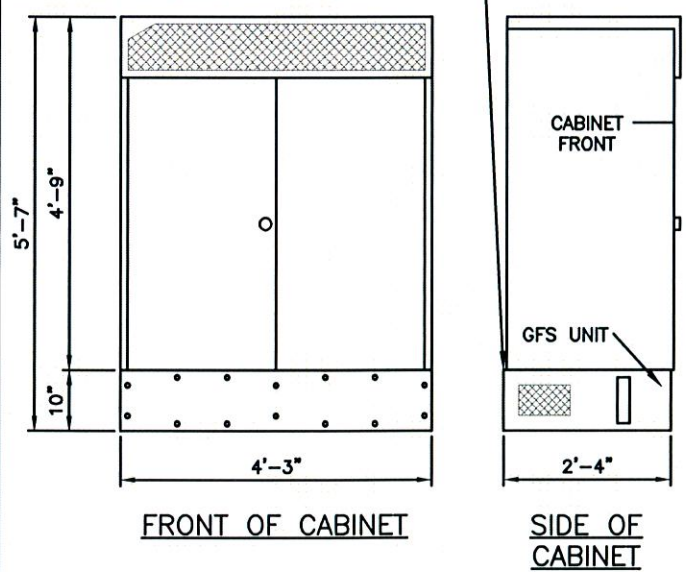
C

**2.5 RRUS**

NO SCALE

A

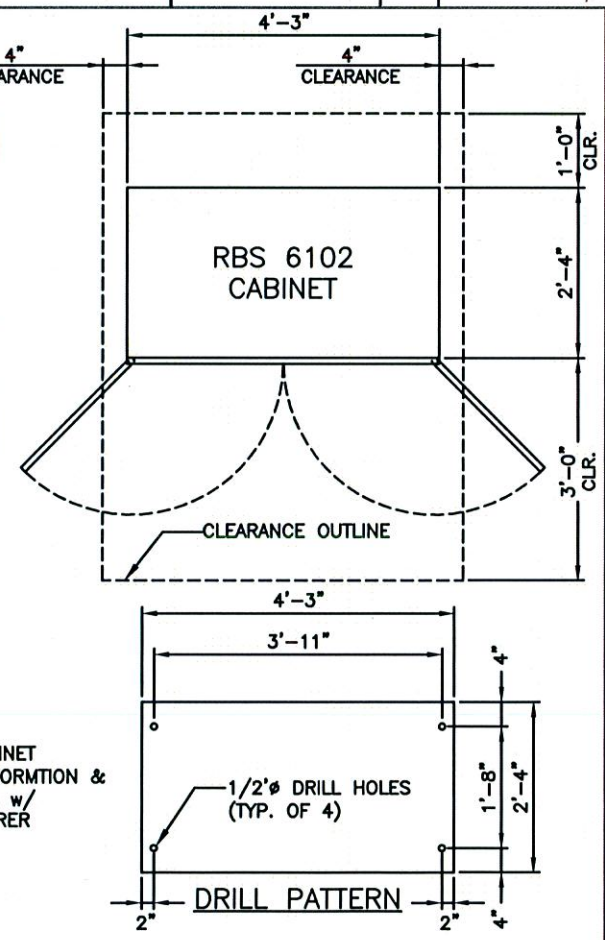
APPLY 1-1/2" x 1/4" CLOSED NEOPRENE SELF ADHESIVE WEATHER STRIPPING BETWEEN RBS CABINET AND PLINTH.



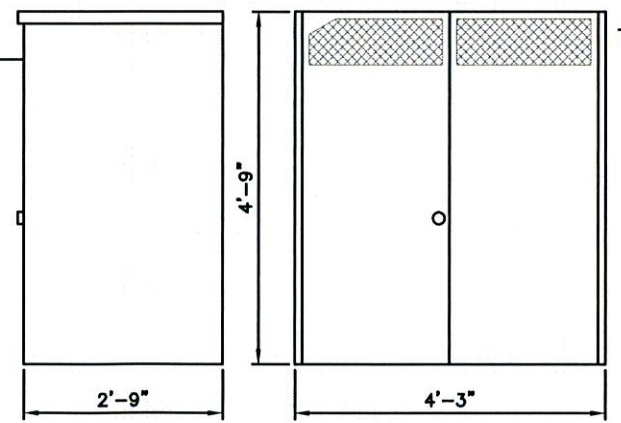
ERICSSON RBS 6102			
DIMENSIONS	51.18"W x 27.56"D x *66.93"H		
WEIGHT	**727 LBS.		
MINIMUM CLEARANCES			
FRONT	SIDES	REAR	
3'-0"	4"	1'-0"	

NOTE: VERIFY CABINET DETAILS/INFORMTION & DIMENSIONS w/ MANUFACTURER

\*HEIGHT SHOWN ON THE TABLE INCLUDES GLOBAL BASE UNIT PROVIDE BY ERICSSON.  
\*\*WEIGHT SHOWN ON THE TABLE INCLUDES GLOBAL BASE UNIT PROVIDE BY ERICSSON.



**CABINET FRONT**

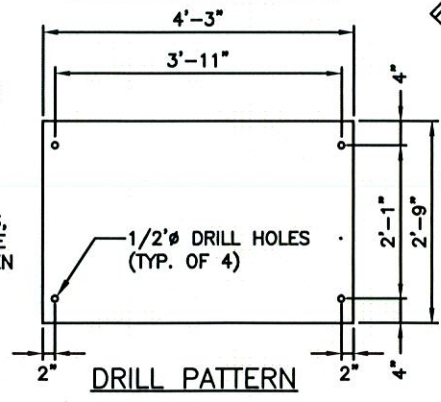


**SIDE OF CABINET**

NOTE: VERIFY CABINET DETAILS/INFORMTION & DIMENSIONS w/ MANUFACTURER

BATTERIES TO BE INSTALLED AS PER ERICSSON REQUIREMENTS, NO SUBSTITUTES WILL BE ALLOWED WITHOUT WRITTEN PERMISSION FROM ERICSSON PROJECT MANAGER.

**FRONT OF CABINET**



ERICSSON BBS 6102			
DIMENSIONS	51.18"W x 27.56"D x *66.93"H		
WEIGHT	***2821 - 3153 LBS.		
MINIMUM CLEARANCES			
FRONT	SIDES	REAR	
3'-0"	4"	1'-0"	

\*\*\*WEIGHT SHOWN ON THE TABLE INCLUDES OPzV BATTERIES

**ERICSSON 6102 CABINET RBS**

NO SCALE

D

**ERICSSON 6102 CABINET BBS**

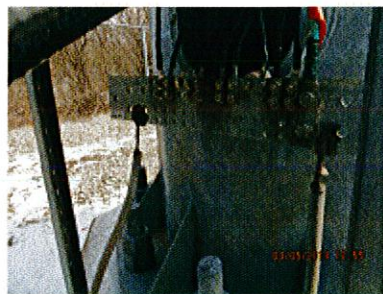
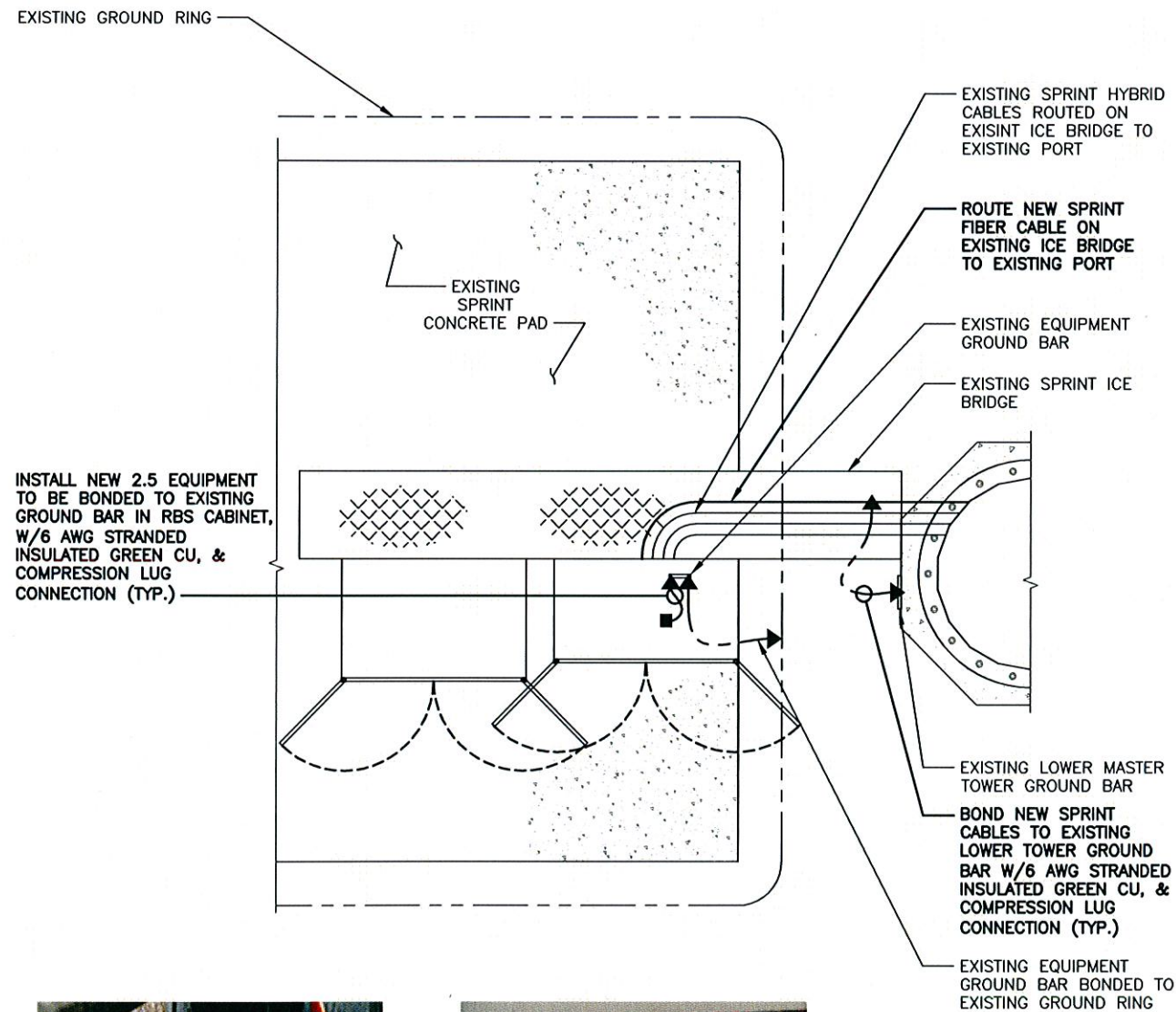
NO SCALE

B

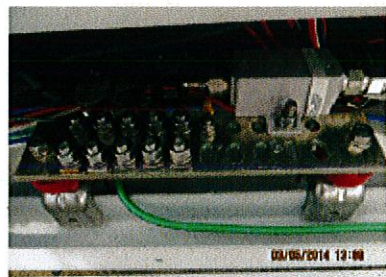


**LEGEND:**

- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD



LOWER TOWER GROUND BAR



RBS CABINET GROUND BAR



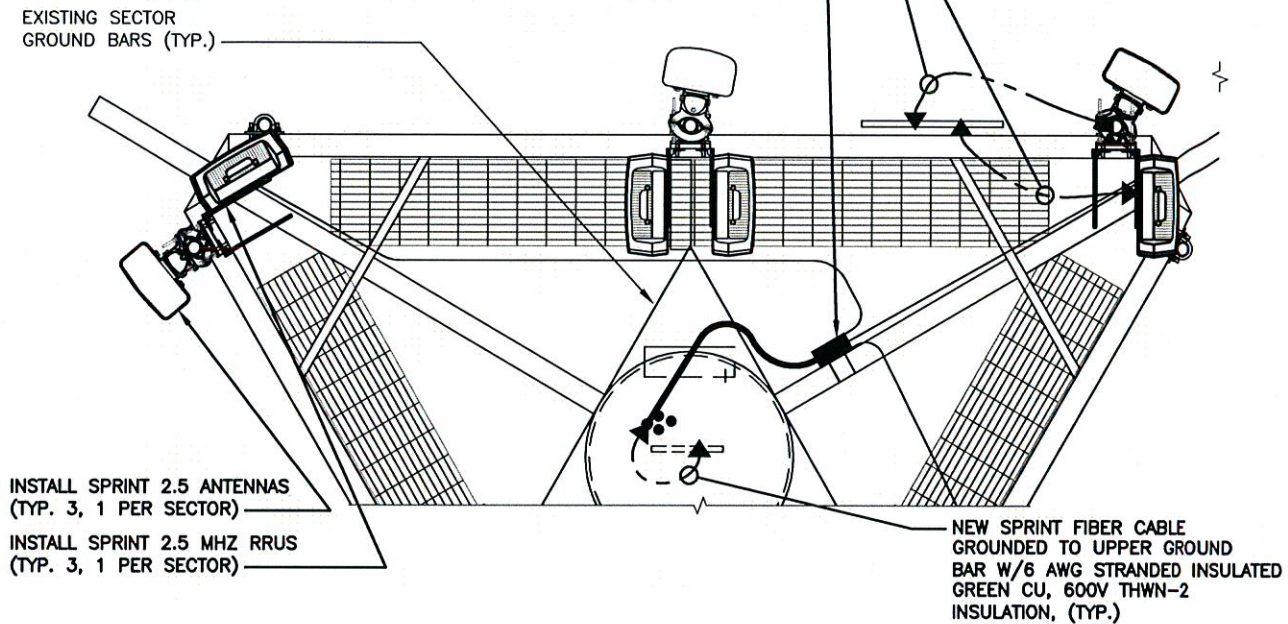
**EQUIPMENT GROUNDING PLAN**

NO SCALE

C



EXISTING SECTOR GROUND BAR (TYP.)



**ANTENNA GROUNDING PLAN (TYP.)**

NO SCALE

A

INSTALL NEW SPRINT 2.5 EQUIPMENT IN EXISTING CABINET

EXISTING BBS CABINET

INSTALL NEW SPRINT 2.5 EQUIPMENT TO BE BONDED TO EXISTING GROUND BAR IN RBS CABINET, W/6 AWG STRANDED INSULATED GREEN CU, & COMPRESSION LUG CONNECTION (TYP.)

INSTALL SPRINT (1) 0.867"ø FIBER CABLE

NEW SPRINT FIBER CABLE TO BE BONDED TO LOWER MAIN TOWER GROUND

INSTALL SPRINT W/6 AWG STRANDED INSULATED GREEN CU GROUND FOR CABLES TO LOWER TOWER GROUND BAR

EXISTING LOWER TOWER GROUND MAIN BAR

**FIBER CABLE GROUNDING**

NO SCALE

B

165'-MONOPOLE

PLANS PREPARED FOR:



6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
ARCHITECTURE+ENGINEERING

3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
630.390.7444 | fax 630.437.5800 | shive-hattery.com  
Iowa | Illinois | Missouri

S/H PROJ # 8135100-77

ENGINEERING LICENSE:



MARTIN VALENTINE, PROFESSIONAL ENGINEER  
REGISTRATION NUMBER: 2007005050

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REVISIONS:

DESCRIPTION	DATE	BY	REV
2.5 DRAWINGS FOR REVIEW	06/10/14	SMS	0
2.5 DRAWINGS FINAL	07/24/14	SMS	1
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-	-	-	-
-	-	-	-
-	-	-	-

SITE NAME:

NEXTEL POLICE TOWER

SITE CASCADE:

ST23XC274

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

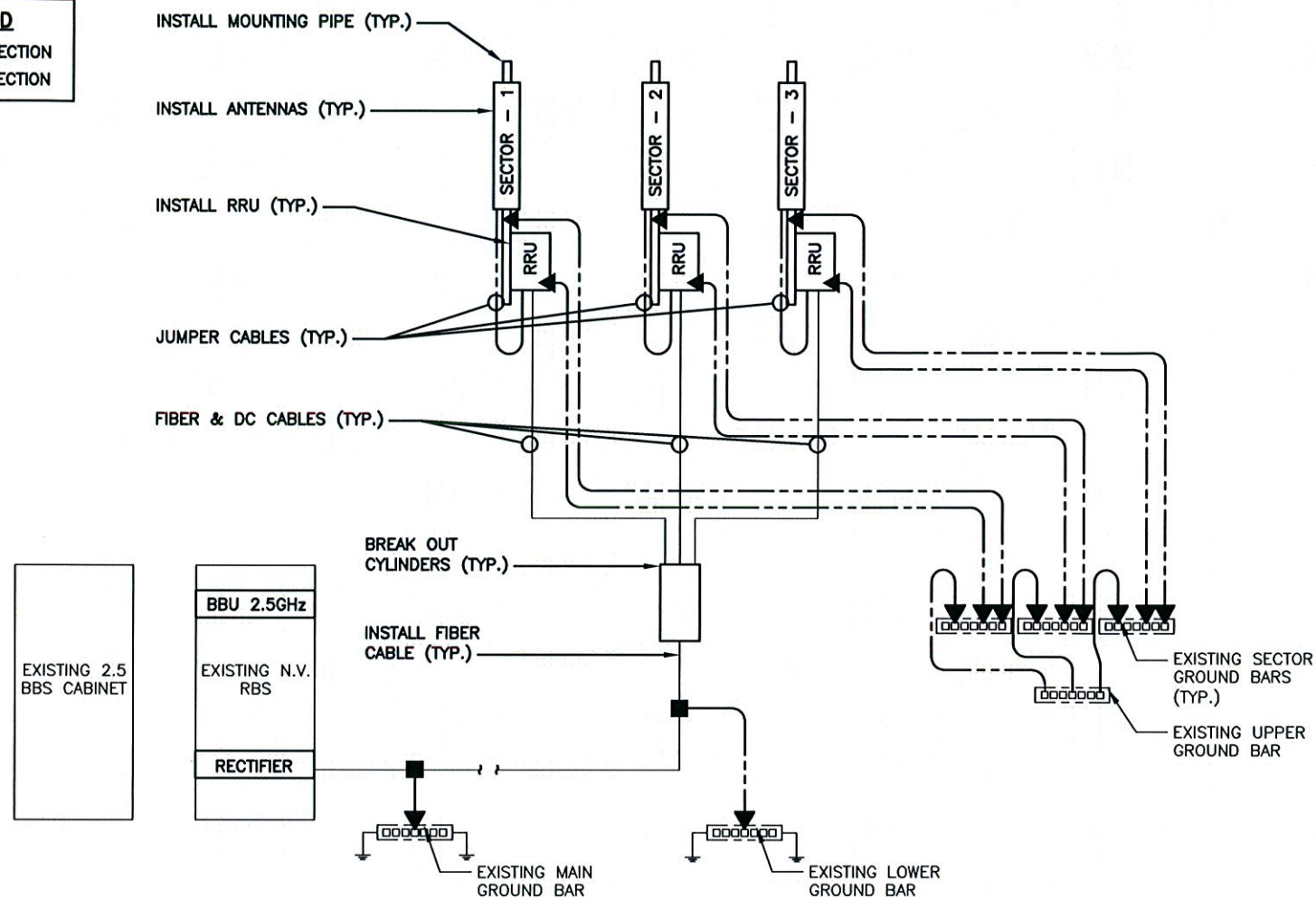
GROUNDING &  
ELECTRICAL PLAN

SHEET NUMBER:

E-1



SYMBOL LEGEND	
■	EXOTHERMIC CONNECTION
▲	MECHANICAL CONNECTION



**GROUNDING RISER DIAGRAM**

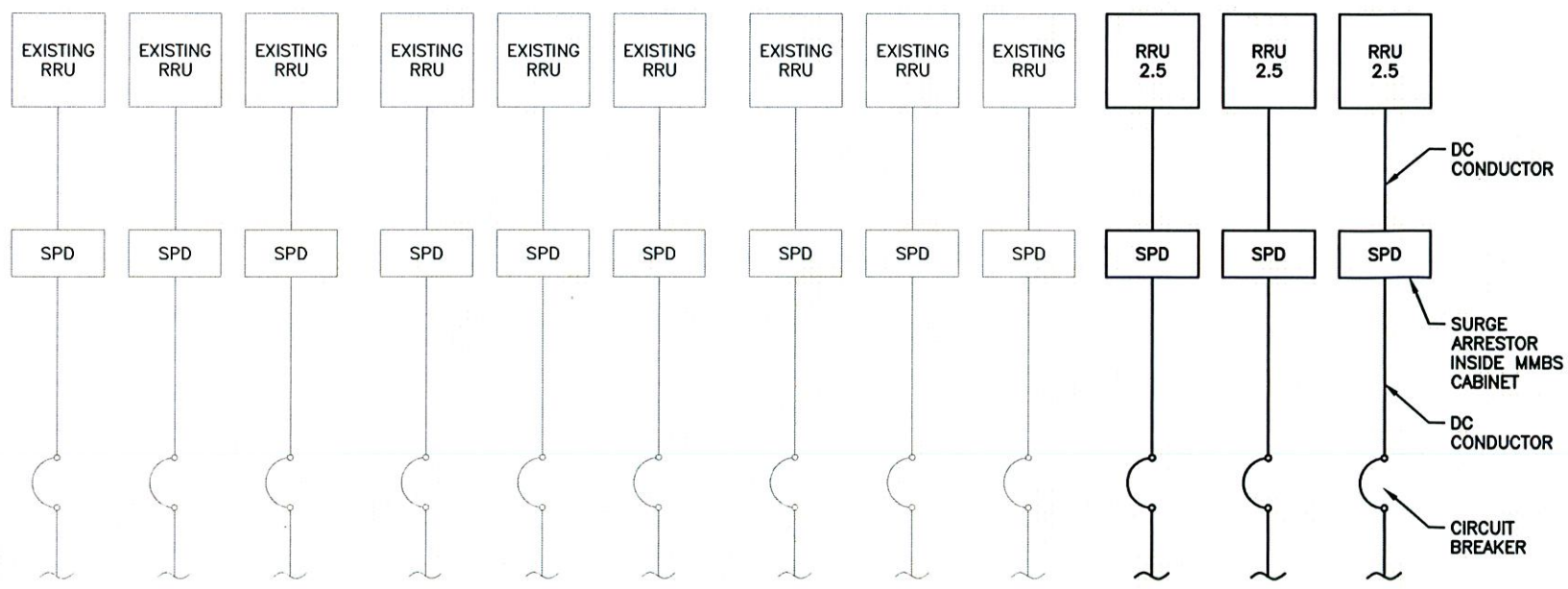
NO SCALE

C

**2-HOLE SPADE CONNECTIONS AT GROUND BARS**

NO SCALE

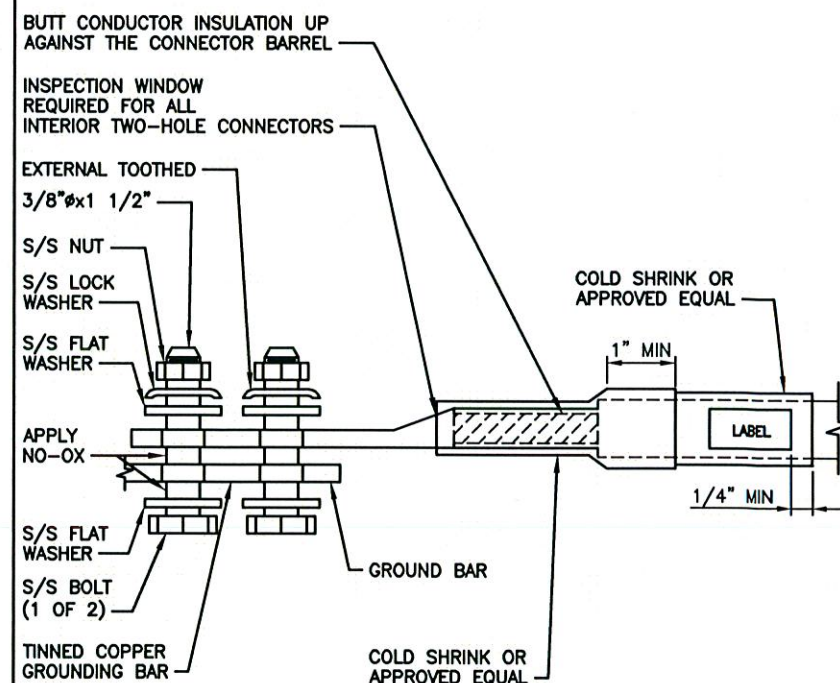
A



**DC ONE LINE RISER**

NO SCALE

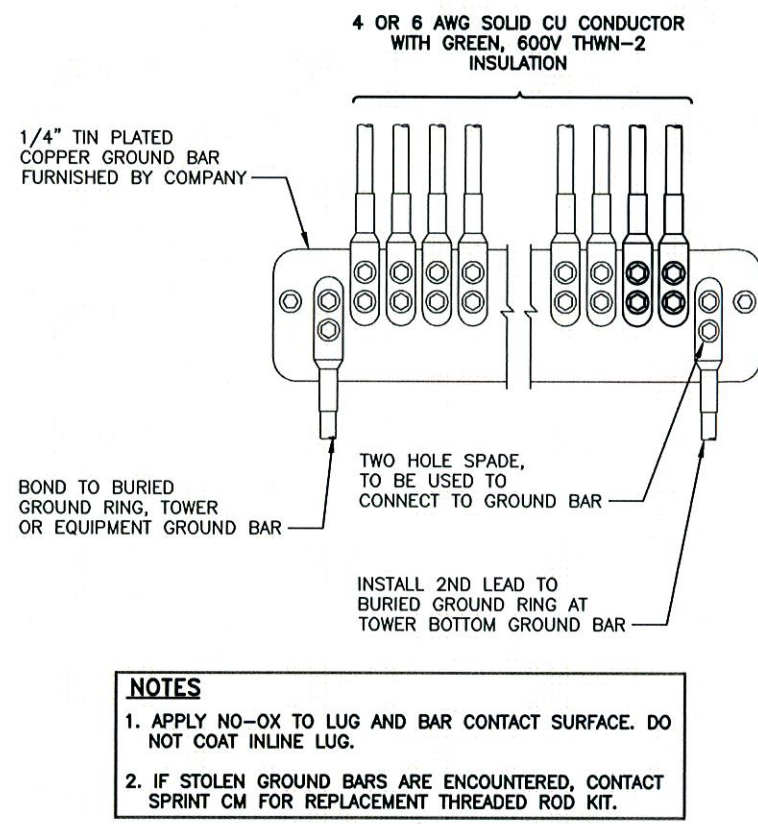
D



**TWO HOLE LUG**

NO SCALE

B



- NOTES**
1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
  2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

PLANS PREPARED FOR:



PLANS PREPARED BY:

**SHIVE-HATTERY**  
ARCHITECTURE+ENGINEERING  
3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
630.390.7444 | fax 630.437.5800 | shive-hattery.com  
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ENGINEERING LICENSE:



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2.5 DRAWINGS FINAL	07/24/14	SMS	1
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-	-	-	-
-	-	-	-
-	-	-	-

SITE NAME:

**NEXTEL POLICE TOWER**

SITE CASCADE:

**ST23XC274**

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

**GROUNDING DETAILS**

SHEET NUMBER:

**E-2**



# DC POWER CONVERTERS & RECTIFIERS DATA SHEET

Sprint Cascade: **ST23XC274**  
 Location Name: **F2-R6 POLICE TOWER**

Date Completed: **3/5/2014**

## Power Distribution Unit / Converters

### Nameplate Information

Manufacturer: **Ericsson**  
 Model No.: **RBS 5102**  
 Serial No.: **SVB:54600/33R1A**

### PDU / Converter Information

PDU / Converter #	Volt Rating, VDC (24 or 48)	Mfr Part #	Amp Reading, (if possible)	Mfr Serial # (if Possible)
1	48	BM0 980 336/6		SX05 2030941
2	48	BM0 980 336/6		SX05 1985145
3	48	BM0 980 336/6		SX05 1985199
4	48	BM0 980 336/6		SX05 1988224
5	48	BM0 980 336/6		SX05 2030996
6	48	BM0 980 336/6		SX05 2030966
7				
8				
9				
10				

## Rectifiers

### Nameplate Information

Manufacturer: **Ericsson**  
 Model No.: **BML161 174/1**  
 Serial No.: **NA**

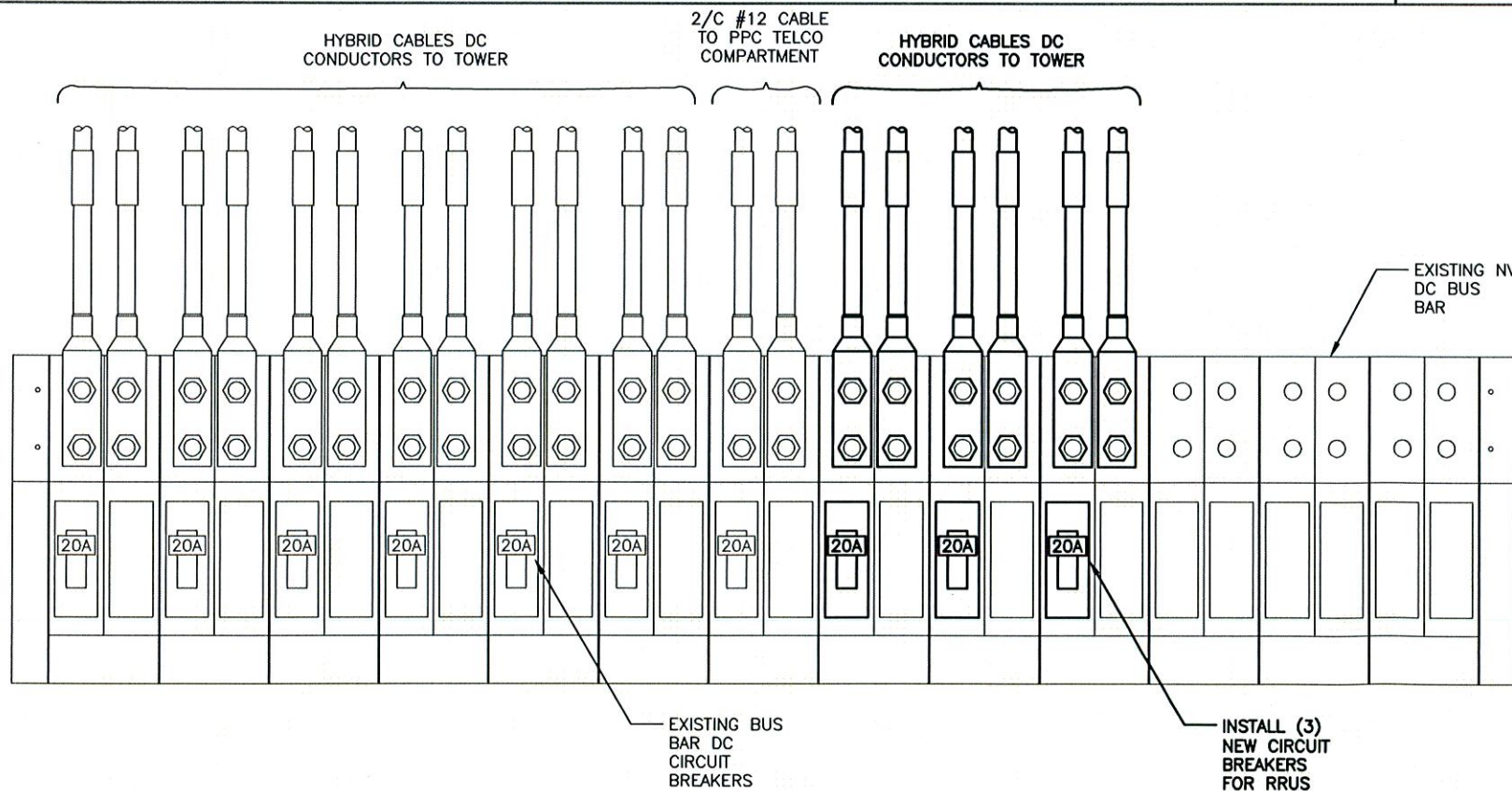
### Rectifier Information

Voltage READING, VDC:	<b>53.9</b>	
Number of existing rectifiers:	<b>7</b>	1-hole
How many rectifier shelves are there?:	<b>2</b>	2-hole
Is there room for another rectifier shelf if required? (Yes/No):	<b>YES</b>	Neither
How many open slots are there for more rectifiers?:	<b>3</b>	Both
Is there a 1-hole or 2-hole lug to tap onto existing bus bar?:	<b>2</b>	Other

## DC DATA

NO SCALE

B



## DC DISTRIBUTION

NO SCALE

C

DETAIL NOT USED

NO SCALE

A

165'-MONOPOLE

PLANS PREPARED FOR:



6580 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED BY:

**SHIVEHATTERY**  
 ARCHITECTURE + ENGINEERING

3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
 630.390.7444 | fax 630.437.5800 | shive-hattery.com  
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S/H PROJ # 8135100-77

ENGINEERING LICENSE:



MARTIN VALENTINE, PROFESSIONAL ENGINEER  
 REGISTRATION NUMBER: 2007005050

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2.5 DRAWINGS FINAL	07/24/14	SMS	1
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SITE NAME:

**NEXTEL POLICE TOWER**

SITE CASCADE:

**ST23XC274**

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
 CHESTERFIELD, MO 63017

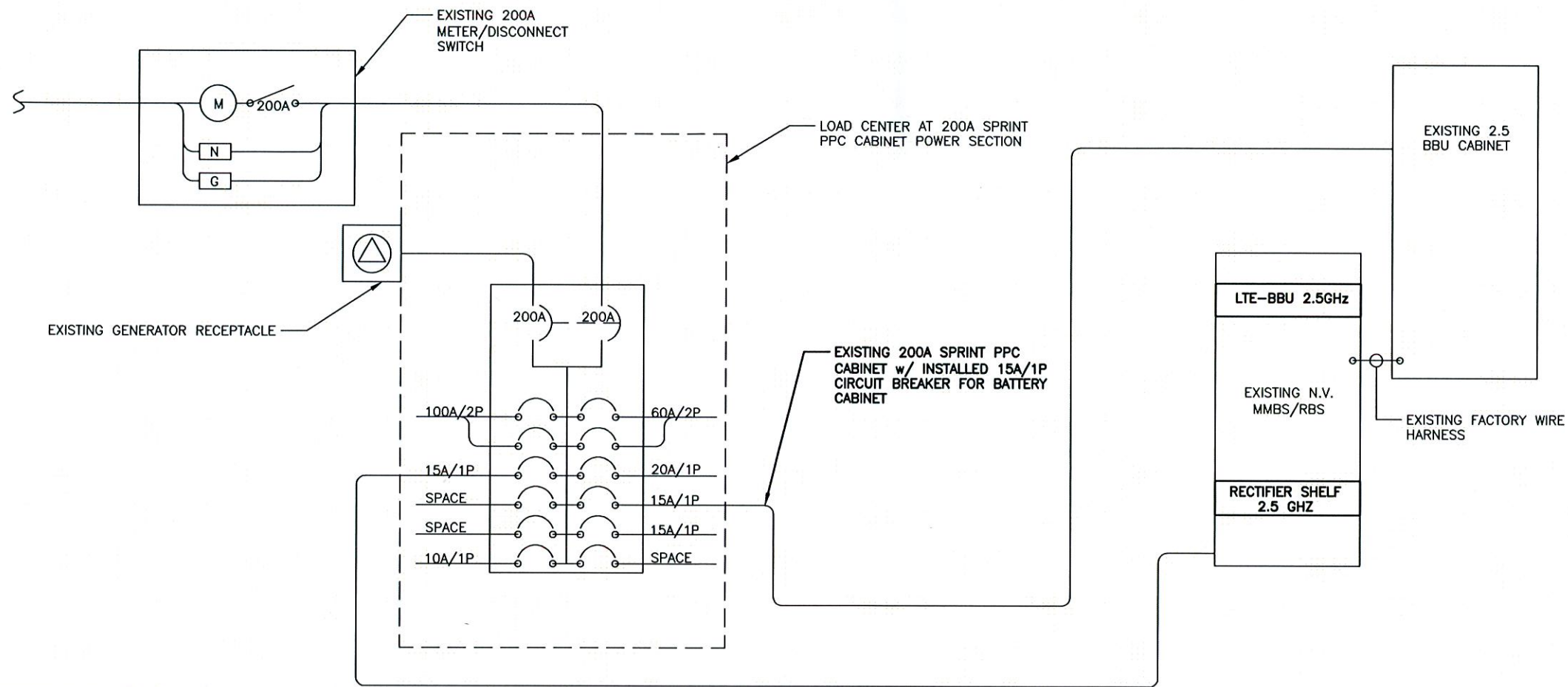
SHEET DESCRIPTION:

**DC POWER & DISTRIBUTION**

SHEET NUMBER:

**E-3**





165'-MONOPOLE

ELECTRICAL ONE-LINE DIAGRAM & LOAD CALCULATION

NO SCALE

A

**AC POWER SUMMARY DATA SHEET**



Sprint Cascade: **ST23XC274**  
 Location Name: **F2-R6 POLICE TOWER**

Power Company Name: **AMEREN UE** Date Completed: **3/5/2014**

**AC Service**

AC Service Feed	Meter No.*	Service (Amps)	Service (Voltage)	Notes
1	7736849	200	240	
2				

**AC Panel Summary**

Complete one AC Panel Data Sheet for each panel listed

Panel #	Main or Sub	# of breaker positions	Generator on Site	Does panel take feed from generator?
1	MAIN	12	NO	NO
2				
3				
4				
5				
6				

AC PANEL AT PPC POWER STATION

NO SCALE

C

SITE NUMBER:	ST23XC274	PHASE:	1	WIRE:	3
VOLTAGE:	240V/120	BUS RATING:	225 AMPS	AIC:	TBD
MAIN BREAKER:	200 AMP	NEUTRAL BAR:	YES	GROUND BAR:	TBD
		SERVICE ENTRANCE:	YES/NO		

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	PHASE A VA	PHASE B VA	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT	
1	--	--	--	--	3600	2	60	SURGE ARRESTOR	7	
2	BT5	100	2	3600	--	--	--	--	8	
3	RECTIFIER	15	1	900	--	1	20	WORKLIGHT	9	
4	SPACE	--	--	--	400	1	15	BATTERY CABINET	10	
5	SPACE	--	--	180	--	1	15	TELCO GFI	11	
6	TELCO FAN	10	1	--	200	--	--	SPACE	12	
				4580	4200	TOTAL KVA		8.38	TOTAL CONNECTED LOAD	
						AMPS		37.00		

\*FACTORY INSTALLED

AC PANEL AT PPC POWER STATION

NO SCALE

B

PLANS PREPARED FOR:



PLANS PREPARED BY:

**SHIVEHATTERY**  
 ARCHITECTURE+ENGINEERING  
 3025 Highland Pkwy Suite 140 | Downers Grove, Illinois 60515  
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 REGISTRATION NUMBER: 2007005050

12/23/14

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2.5 DRAWINGS FINAL	07/24/14	SMS	1
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--	--	--	--

SITE NAME:

NEXTEL POLICE TOWER

SITE CASCADE:

ST23XC274

SITE ADDRESS:

14847 LADUE BLUFFS CROSSING  
 CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

AC POWER DISTRIBUTION

SHEET NUMBER:

E-4



PLANS PREPARED FOR:




6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

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ARCHITECTURE+ENGINEERING  
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630.390.7444 | fax 630.437.5800 | shive-hattery.com  
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S/H PROJ # 8135100-77

ENGINEERING LICENSE:



MARTIN VALENTINE  
NUMBER 2007005050  
PROFESSIONAL ENGINEER  
MARTIN VALENTINE, PROFESSIONAL ENGINEER  
REGISTRATION NUMBER: 2007005050  
12/23/14

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2.5 DRAWINGS FINAL	07/24/14	SMS	1
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SITE NAME:

NEXTEL POLICE TOWER

SITE CASCADE:

ST23XC274

SITE ADDRESS:

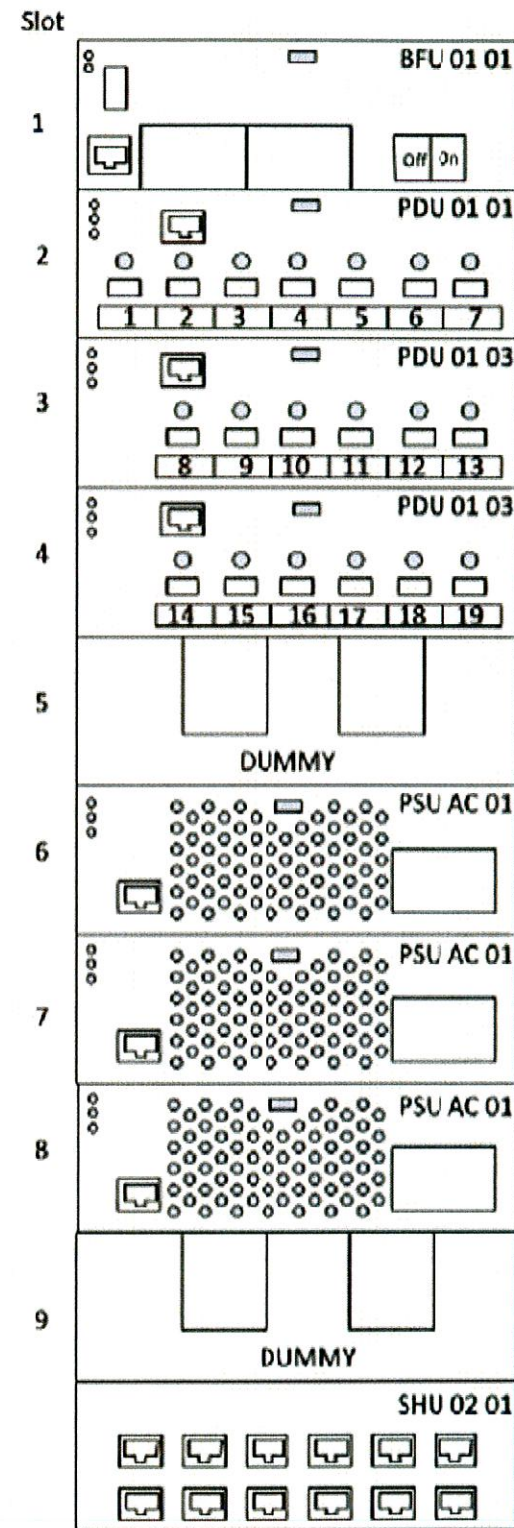
14847 LADUE BLUFFS CROSSING  
CHESTERFIELD, MO 63017

SHEET DESCRIPTION:

DC SUB PANEL  
DETAILS

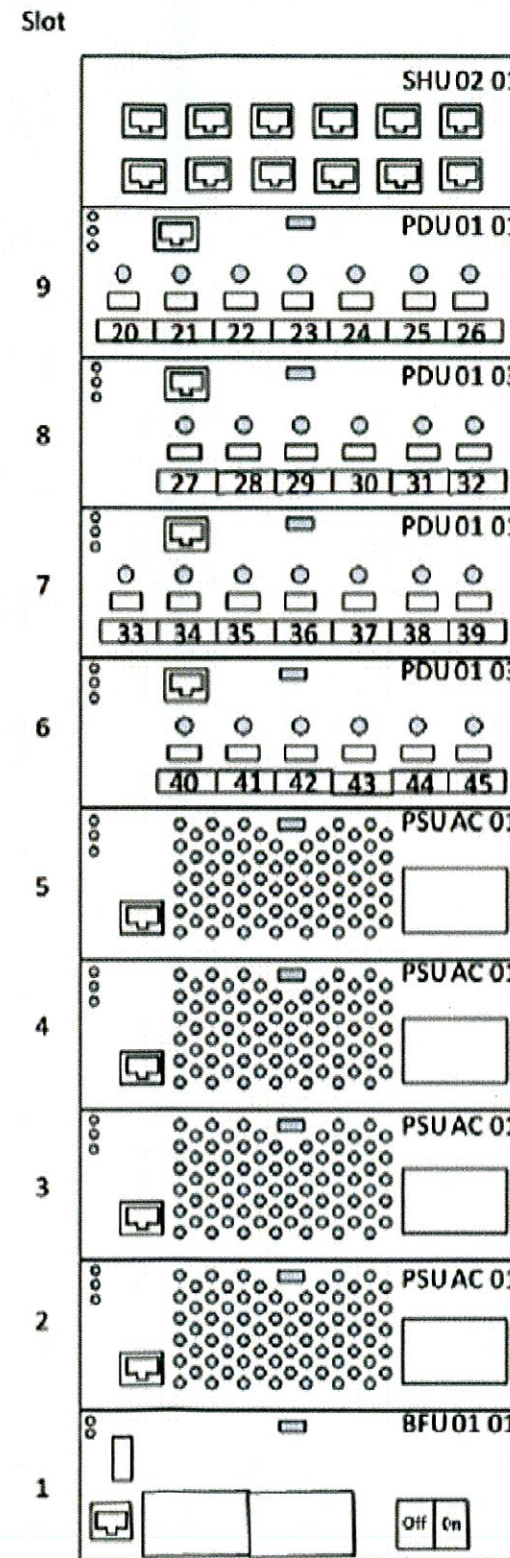
SHEET NUMBER:

E-5



- CB1 \_\_\_\_\_
- CB2 \_\_\_\_\_
- CB3 \_\_\_\_\_
- CB4 \_\_\_\_\_
- CB5 \_\_\_\_\_
- CB6 \_\_\_\_\_
- CB7 \_\_\_\_\_
- CB8 \_\_\_\_\_
- CB9 \_\_\_\_\_
- CB10 \_\_\_\_\_
- CB11 \_\_\_\_\_
- CB12 \_\_\_\_\_
- CB13 \_\_\_\_\_
- CB14 \_\_\_\_\_
- CB15 \_\_\_\_\_
- CB16 \_\_\_\_\_
- CB17 \_\_\_\_\_
- CB18 \_\_\_\_\_
- CB19 \_\_\_\_\_

Horizontal Subrack



- CB20 \_\_\_\_\_
- CB21 \_\_\_\_\_
- CB22 \_\_\_\_\_
- CB23 \_\_\_\_\_
- CB24 \_\_\_\_\_
- CB25 \_\_\_\_\_
- CB26 \_\_\_\_\_
- CB27 \_\_\_\_\_
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- CB44 \_\_\_\_\_
- CB45 \_\_\_\_\_