

Memorandum

Department of Planning & Development Services



To: Planning and Public Works Committee
From: Jessica Henry, Assistant City Planner *jh*
Date: August 9, 2018

RE: **FSP 55-2018 ExteNet Systems, Inc. (N. Spirit Drive):** A request for a new Facilities Siting Permit to install a new wireless telecommunications facility located along North Spirit Drive on property addressed as 17839 Chesterfield Airport Road. (Ward 4)

Summary

ExteNet Systems, Inc. has submitted a Facilities Siting Permit (FSP) application to install a new wireless telecommunications facility along North Spirit Drive on a parcel addressed as 17839 Chesterfield Airport Road, as shown in the aerial image below. The installation will be located within an existing utility easement as depicted on the property survey provided by the applicant.

The proposed installation consists of a standard wood utility pole to be purchased from and installed by Ameren. Equipment and antennas will be mounted on the pole. The pole with the antenna mounted on top will total 32'6" in height.

Article 6 of the Unified Development Code was amended in early 2018 to comply with a new State law that severely limited the ability of Missouri municipalities to regulate wireless communication facilities. The proposed installation is compliant with the requirements of Article 6 of the Unified Development Code and State Law.

Attached to this report, please find additional information regarding the proposed installation. In accordance with Article 6 of the Unified Development Code, final approval of the installation must be granted by the City Council.



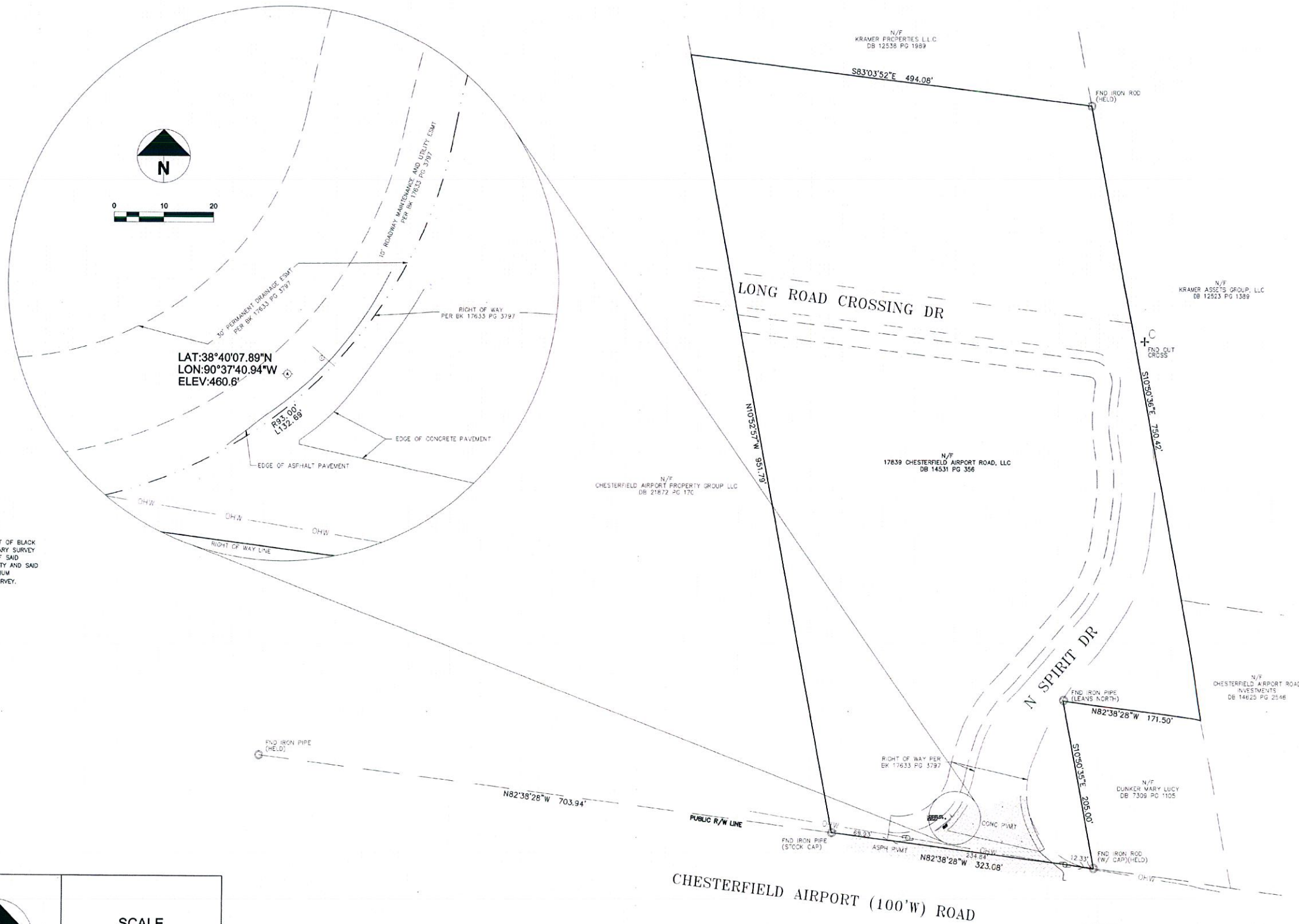
BOUNDARY SURVEY

SPRINT D10

A TRACT OF LAND BEING PART OF LOT 1 OF THE SUBDIVISION OF SPENCER TYLER ESTATES AS RECORDED IN DEED BOOK 7 PAGE 25, CITY OF CHESTERFIELD, ST. LOUIS COUNTY, MISSOURI



- LEGEND**
- COMMUNICATION UTILITY VAULT
 - UTILITY POLE
 - ELECTRIC UTILITY VAULT
 - WATER METER
 - GUY WIRE
 - PROPOSED LOCATION
 - OVERHEAD WIRE
 - FENCE



PROJECT: SPRINT D 10
 BLACK AND VEATCH
 CHESTERFIELD AIRPORT ROAD
 BLACK AND VEATCH CORPORATION
 10950 GRANDVIEW DRIVE
 OVERLAND PARK, KS 66210

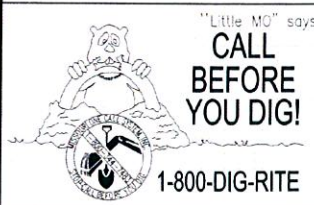
DATE: 07/18/2018

REVISION/DATE	DESCRIPTION OF CHANGES

SHEET NUMBER: V1

PROJECT NO: 1805011
 DRAWN BY: D. SHRYOCK
 CHECKED BY: D. MAXWELL

FINAL SURVEY

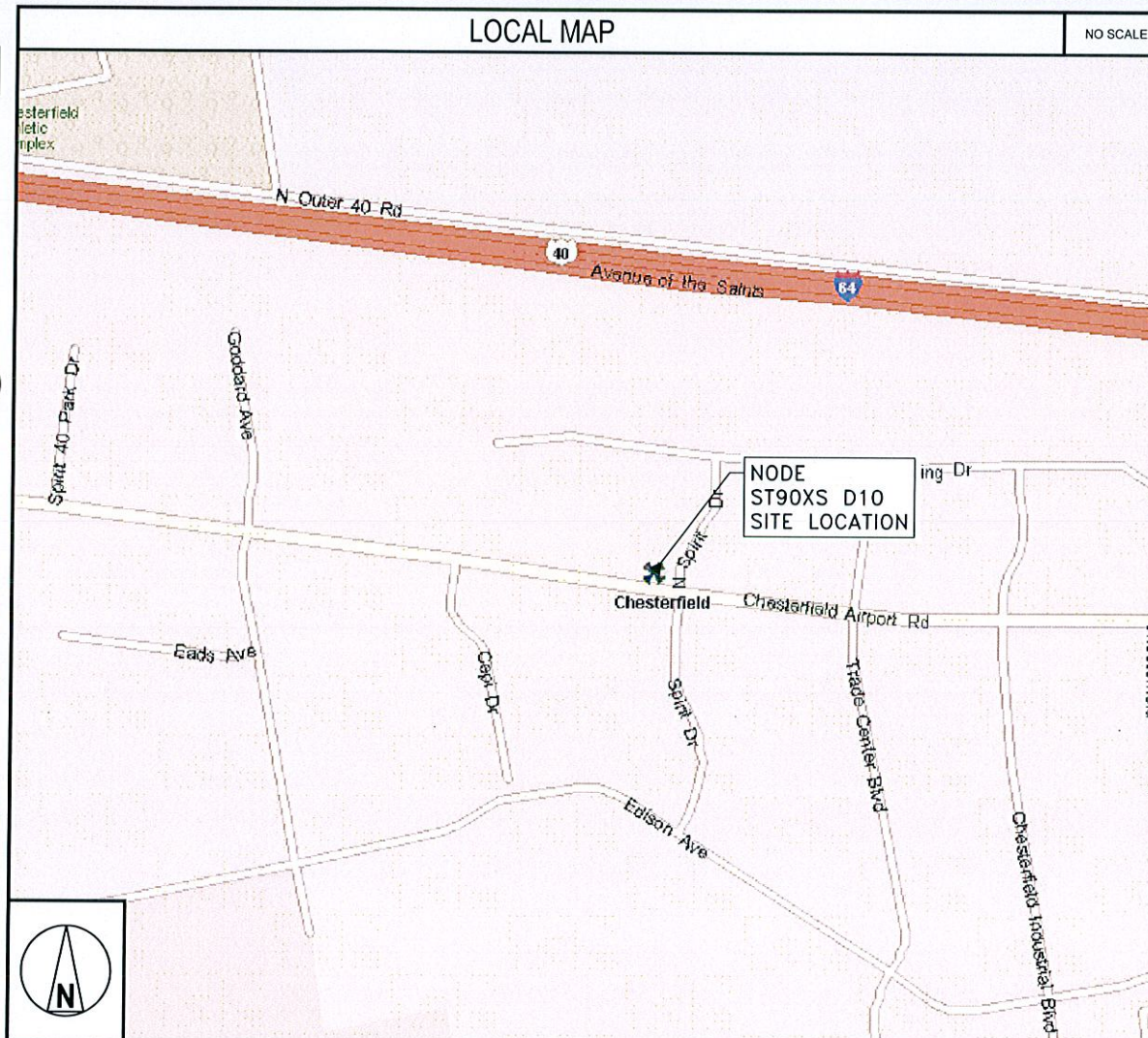
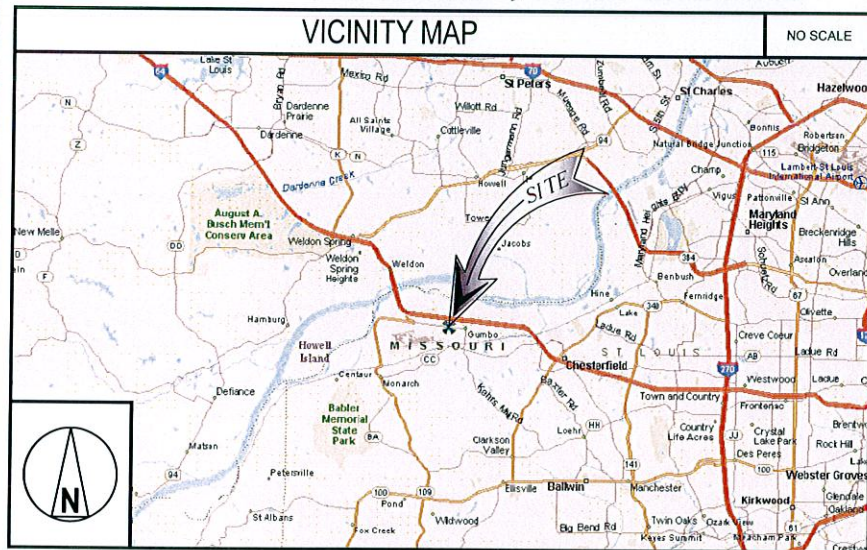


This Survey has been prepared solely for the benefit of the parties set forth in this Surveyors Certification and may not be quoted or relied upon by, nor may copies be delivered to any other party or used for any other purpose including, without limitation, the preparation of zoning reports or any other third party reports, without the prior written consent of Premier Civil Engineering. Premier Civil Engineering expressly disclaims any duty or obligation towards any party that is not identified in this Surveyors Certification.

Please be advised that Premier Civil Engineering will not include the providers of any third party reports in the Surveyors Certification.

NC-MO-STLOUIS-00050-N ST90XS D10

(PROW)
ADJACENT TO 17891 CHESTERFIELD
AIRPORT RD. ON N SPIRIT DR.
CHESTERFIELD, MO 63005



BENCHMARK LOCATION

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SHEET NO:	SHEET TITLE
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A-2	POLE ELEVATIONS AND RISER DETAILS
D-1	EQUIPMENT DETAILS
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E-1	ELECTRICAL AND GROUNDING DETAILS
OSP-1	OSP

IF USING 11"X17" PLOT, DRAWINGS WILL BE HALF SCALE

SUBCONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

PROJECT INFORMATION

POLE OWNER	APPLICANT	CONSTRUCTION	TELCO / BACKHAUL
COMPANY: EXTENET SYSTEMS, INC. ADDRESS: 3030 WARRENVILLE RD. SUITE 340 LISLE, IL 60532 PHONE: (630) 505-3800 FAX: (630) 577-1332	COMPANY: EXTENET SYSTEMS, INC. ADDRESS: 3030 WARRENVILLE RD. SUITE 340 LISLE, IL 60532 PHONE: (630) 505-3800 FAX: (630) 577-1332	COMPANY: - CONTACT: - PHONE: -	COMPANY: - CONTACT: - PHONE: -

PROJECT MANAGER	REGIONAL DIRECTOR	PROJECT DATA
COMPANY: EXTENET SYSTEMS, INC. CONTACT: DALE DISHMAN PHONE: (316) 640-8801 E-MAIL: DDISHMAN@EXTENETSYSTEMS.COM	COMPANY: EXTENET SYSTEMS, INC. CONTACT: KENNETH KORTE PHONE: (630) 245-2108 E-MAIL: -	LATITUDE: 38.66889 LONGITUDE: -90.62805 POLE #: N/A ELEVATION: - ZONING JURISDICTION: CITY OF CHESTERFIELD ZONING DISTRICT: PUBLIC RIGHT-OF-WAY (ROW) A.P.N.: - OCCUPANCY: U, UNMANNED CONSTRUCTION TYPE: ATTACHMENTS TO A WOOD UTILITY POLE TITLE 24 REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. THIS PROJECT IS EXEMPT.

DESIGNER	ENGINEER
COMPANY: BLACK & VEATCH CORP. CONTACT: LAUREN WALKER PHONE: (952) 896-0855 E-MAIL: WALKERL2@BV.COM	COMPANY: BLACK & VEATCH CORP. CONTACT: AARON EVANS PHONE: (952) 896-0751 E-MAIL: EVANSRA@BV.COM

CODE COMPLIANCE

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

- IBC-2012
- MISSOURI ADMINISTRATIVE REGULATIONS
- ANSI-EIA-222-G LIFE SAFETY CODE NFPA
- BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)
- MISSOURI ELECTRICAL CODE NEC-2014
- INTERNATIONAL MECHANICAL CODE (IMC) 2009
- INTERNATIONAL PLUMBING CODE (IPC) 2012
- CITY AND/OR COUNTY ORDINANCES
- 2012 INTERNATIONAL FIRE CODE

PROJECT DESCRIPTION

THESE DRAWINGS DEPICT A PORTION OF A DISTRIBUTED ANTENNA SYSTEM (DAS) TELECOMMUNICATIONS NETWORK, TO BE CONSTRUCTED, OWNED AND OPERATED BY EXTENET SYSTEMS, IN THE PUBLIC RIGHT-OF-WAY/PUBLIC UTILITY EASEMENT PURSUANT TO AUTHORITY GRANTED BY THE MISSOURI PUBLIC UTILITIES COMMISSION.

THE MAIN COMPONENTS OF THIS INSTALLATION ARE:

- (1) OMNI ANTENNA
- (1) RF FILTER
- (1) UE RELAY (WHERE REQUIRED)
- (1) MICROWAVE ANTENNA (WHERE REQUIRED)
- (1) RADIO UNIT
- (1) A/C POWER UNIT
- ASSOCIATED ELECTRICAL COMPONENTS AND MOUNTING BRACKETS AS REQUIRED, LOCATED ON A WOOD POLE.

GENERAL PROJECT NOTES

1. PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF/HERSELF WITH THE SCOPE OF WORK AND ALL CONDITIONS AFFECTING THE NEW PROJECT.
2. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS OF THE JOB SITE AND CONFIRM THAT WORK AS INDICATED ON THESE CONSTRUCTION DOCUMENTS CAN BE ACCOMPLISHED AS SHOWN PRIOR TO COMMENCEMENT OF ANY WORK.
3. ALL FIELD MODIFICATIONS BEFORE, DURING OR AFTER CONSTRUCTION SHALL BE APPROVED IN WRITING BY A EXTENET WIRELESS REPRESENTATIVE.
4. INSTALL ALL EQUIPMENT AND MATERIALS PER THE MANUFACTURER'S RECOMMENDATIONS, UNLESS INDICATED OTHERWISE.
5. NOTIFY EXTENET WIRELESS, IN WRITING, OF ANY MAJOR DISCREPANCIES REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS, AND DESIGN INTENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATIONS FROM A EXTENET WIRELESS REPRESENTATIVE, AND ADJUSTING THE BID ACCORDINGLY.
6. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF THE WORK UNDER THE CONTRACT.
7. CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS AND FINISHES THAT ARE TO REMAIN. CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY OCCUR DURING THE CONSTRUCTION TO THE SATISFACTION OF A EXTENET WIRELESS REPRESENTATIVE.
8. CONTRACTOR PLANS TO ILLUSTRATE THE AS-BUILT CONDITION OF THE SITE, FOLLOWING THE FINAL INSPECTION BY EXTENET WIRELESS, THE CONTRACTOR SHALL PROVIDE EXTENET WIRELESS WITH ONE COPY OF ALL RED-LINED DRAWINGS.
9. VERIFY ALL FINAL EQUIPMENT WITH A EXTENET WIRELESS REPRESENTATIVE. ALL EQUIPMENT LAYOUT, SPECS, PERFORMANCE INSTALLATION AND THEIR FINAL LOCATION ARE TO BE APPROVED BY EXTENET WIRELESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS/HER WORK WITH THE WORK AND CLEARANCES REQUIRED BY OTHERS RELATED TO SAID INSTALLATIONS.

811 / 1-800-DIG-RITE
MISSOURI ONE CALL SYSTEM
ALWAYS CALL BEFORE YOU DIG

UNDERGROUND SERVICE ALERT
811 or 1-800-344-7483
48 HOURS BEFORE YOU DIG

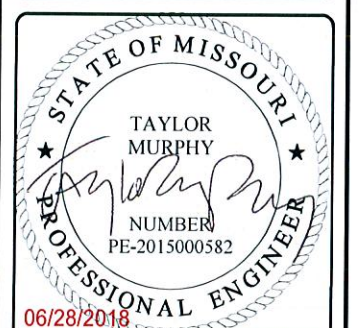
811 Know what's below. Call before you dig.



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PROJECT NO.	DRAWN BY	CHECKED BY
196954.2113	YJG	LW

REV	DATE	DESCRIPTION
0	06/25/18	ISSUED FOR CONSTRUCTION



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

EXTENET SYSTEMS
NC-MO-STLOUIS-00050-N
SMALL CELL

SITE ADDRESS
ST90XS D10
N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION/SEDIMENT CONTROL PRIOR TO COMPLETION OF FINAL IMPROVEMENTS, SHALL BE PERFORMED BY THE CONTRACTOR OR QUALIFIED PERSON AS INDICATED BELOW:

- ALL REQUIREMENTS OF THE CITY, COUNTY AND STATE "STORM WATER STANDARDS" MUST BE INCORPORATED INTO THE DESIGN AND CONSTRUCTION OF THE PROPOSED GRADING/IMPROVEMENTS CONSISTENT WITH THE APPROVED STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WATER QUALITY TECHNICAL REPORT (WQTR), AND/OR WATER POLLUTION CONTROL PLAN (WPCP).
- FOR STORM DRAIN INLETS, PROVIDE A GRAVEL BAG SILT BASIN IMMEDIATELY UPSTREAM OF INLET AS INDICATED ON DETAILS.
- FOR INLETS LOCATED AT SUMPS ADJACENT TO TOP OF SLOPES, THE CONTRACTOR SHALL ENSURE THAT WATER DRAINING TO THE SUMP IS DIRECTED INTO THE INLET AND THAT A MINIMUM OF 1.00' FREEBOARD EXISTS AND IS MAINTAINED ABOVE THE TOP OF THE INLET. IF FREEBOARD IS NOT PROVIDED BY GRADING SHOWN ON THESE PLANS, THE CONTRACTOR SHALL PROVIDE IT VIA TEMPORARY MEASURE, I.E. GRAVEL BAGS OR DIKES.
- THE CONTRACTOR OR QUALIFIED PERSON SHALL BE RESPONSIBLE FOR CLEANUP OF SILT AND MUD ON ADJACENT STREET(S) AND STORM DRAIN SYSTEM DUE TO CONSTRUCTION ACTIVITY.
- THE CONTRACTOR OR QUALIFIED PERSON SHALL CHECK AND MAINTAIN ALL LINED AND UNLINED DITCHES AFTER EACH RAINFALL.
- THE CONTRACTOR SHALL REMOVE SILT AND DEBRIS AFTER EACH MAJOR RAINFALL.
- EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
- THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER OR RESIDENT ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.
- THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION/SEDIMENT CONTROL MEASURE AS MAY BE REQUIRED BY THE RESIDENT ENGINEER DUE TO UNCOMPLETED GRADING OPERATIONS OR UNFORESEEN CIRCUMSTANCES, WHICH MAY ARISE.
- THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.
- ALL EROSION/SEDIMENT CONTROL MEASURES PROVIDED PER THE APPROVED GRADING PLAN SHALL BE INCORPORATED HEREON. ALL EROSION/SEDIMENT CONTROL FOR INTERIM CONDITIONS SHALL BE DONE TO THE SATISFACTION OF THE RESIDENT ENGINEER.
- GRADED AREAS AROUND THE PROJECT PERIMETER MUST DRAIN AWAY FROM THE FACE OF THE SLOPE AT THE CONCLUSION OF EACH WORKING DAY.
- ALL REMOVABLE PROTECTIVE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS IMMINENT.
- THE CONTRACTOR SHALL ONLY GRADE, INCLUDING CLEARING AND GRUBBING FOR THE AREAS FOR WHICH THE CONTRACTOR OR QUALIFIED PERSON CAN PROVIDE EROSION/SEDIMENT CONTROL MEASURES.
- THE CONTRACTOR SHALL ARRANGE FOR WEEKLY MEETINGS DURING OCTOBER 1ST TO APRIL 30TH FOR PROJECT TEAM (GENERAL CONTRACTOR, QUALIFIED PERSON, EROSION CONTROL SUBCONTRACTOR IN ANY, ENGINEER OF WORK, OWNER/DEVELOPER THE RESIDENT ENGINEER) TO EVALUATE THE ADEQUACY OF THE EROSION/SEDIMENT CONTROL MEASURE AND OTHER RELATED CONSTRUCTION ACTIVITIES.

SPECIAL NOTES

INDEMNIFICATION CLAUSE

THE CONTRACTOR AGREES AND SHALL:

- ASSUME SOLE AND COMPLETE RESPONSIBILITY OF THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTIES. THAT THESE REQUIREMENTS SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND CONDITIONS. THE CONTRACTOR FURTHER AGREES TO DEFEND INDEMNIFY AND HOLD EXTENET, REPRESENTATIVES, AND ENGINEERS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT.
- PRIOR TO THE BEGINNING OF ANY CONSTRUCTION AND THROUGHOUT THE COURSE OF CONSTRUCTION WORK, THE CONTRACTOR SHALL FULLY COMPLY WITH "MISSOURI OCCUPATIONAL SAFETY AND HEALTH" ACT OF 1973 INCLUDING ALL REVISIONS AND AMENDMENTS THERETO.
- ALL WORK SHALL CONFORM TO THE LATEST STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AS ADOPTED BY THE CITY, COUNTY OR STATE AS MODIFIED BY STANDARD PLANS AND ADDENDUMS.
- THE EXISTENCE AND LOCATION OF UTILITIES AND OTHER AGENCY'S FACILITIES AS SHOWN HEREON ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. OTHER FACILITIES MAY EXIST. THE CONTRACTOR SHALL VERIFY PRIOR TO THE START OF CONSTRUCTION AND SHALL USE EXTREME CARE AND PROTECTIVE MEASURES TO PREVENT DAMAGE TO THESE FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITY OR AGENCY FACILITIES WITHIN THE LIMITS OF WORK, WHETHER THEY ARE SHOWN ON THIS PLAN OR NOT.
- THE CONTRACTOR SHALL NOTIFY THE CITY, COUNTY OR STATE ENGINEER INSPECTION DEPARTMENT, AT LEAST TWO DAYS BEFORE START OF ANY WORK REQUIRING THEIR INVOLVEMENT.
- THE CITY, COUNTY OR STATE SHALL SPECIFY THE EXPIRATION PERIOD OF THE PERMIT FOR THIS CONSTRUCTION PROJECT.
- THE MINIMUM COVER FOR ALL CONDUITS PLACED UNDERGROUND SHALL BE 36 INCHES TO THE FINISHED GRADE AT ALL TIMES.
- THE CONTRACTOR SHALL TUNNEL ALL CURB AND GUTTER AND BORE ALL CONCRETE DRIVEWAY AND ALWAYS AT THE DIRECTION OF THE CITY, COUNTY OR STATE ENGINEER.
- ALL A.C. AND/OR CONCRETE PAVEMENT SHALL BE REPLACED AT THE DIRECTION OF THE CITY, COUNTY OR STATE ENGINEERS.
- ALL SHRUBS, PLANTS OR TREES THAT HAVE BEEN DAMAGED OR DISTURBED DURING THE COURSE OF THE WORK, SHALL BE REPLACED AND/OR REPLACED SO AS TO RESTORE THE WORK SITE TO ITS ORIGINAL CONDITION.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PROCESSING OF ALL APPLICANT PERMIT FORMS ALONG WITH THE REQUIRED LIABILITY INSURANCE FORMS. CLEARLY DEMONSTRATING THAT EXTENET, THE CITY, COUNTY OR STATE IS ALSO INSURED WITH THE REQUIRED LIABILITY INSURANCE FOR THIS CONSTRUCTION PROJECT.
- VAULTS, PEDESTALS, CONDUITS AND OTHER TYPES OF SUBSTRUCTURE ARE EITHER SPECIFIED ON THIS PLAN OR WILL BE SPECIFIED BY THE CONSTRUCTION ENGINEER, IN WRITING, BEFORE INSTALLATION THEREOF.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES INCLUDING SEWER LATERALS AND WATER SERVICES TO INDIVIDUAL LOTS BOTH VERTICAL AND HORIZONTAL PRIOR TO COMMENCING IMPROVEMENT OPERATIONS.

- CONTRACTOR SHALL MAKE EXPLORATION EXCAVATION AND LOCATE EXISTING FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISION TO PLANS IF REVISION IS NECESSARY BECAUSE OF LOCATION OF EXISTING UTILITIES.
- THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE FROM EXISTING RECORDS AND CORROBORATED, WHERE POSSIBLE, WITH FIELD TIES. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE LOCATIONS SHOWN, BOTH HORIZONTALLY AND VERTICALLY. PRIOR TO CONSTRUCTION, IF EXISTING LOCATIONS VARY SUBSTANTIALLY FROM THE PLANS, THE ENGINEER SHOULD BE NOTIFIED TO MAKE ANY CONSTRUCTION CHANGES REQUIRED.

GENERAL NOTES

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LAND SURVEYOR MUST FIELD LOCATE, REFERENCE, AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK. IF DESTROYED, SUCH MONUMENTS SHALL BE REPLACED WITH APPROPRIATE MONUMENTS BY A LAND SURVEYOR. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED AS REQUIRED BY THE PROFESSIONAL LAND SURVEYORS ACT.
- IMPORTANT NOTICE: CALL MISSOURI ONE CALL SYSTEM 811/1-800-DIG-RITE, AT LEAST THREE DAY BEFORE YOU DIG.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE POT HOLE AND LOCATING FO ALL EXISTING UTILITIES THAT CROSS THE PROPOSED TRENCH LINE AND MUST MAINTAIN A 1' MINIMUM VERTICAL CLEARANCE.
- CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNAL LOOPS, CONDUIT, AND LANE STRIPING DAMAGED DURING CONSTRUCTION.
- MANHOLES OR COVERS SHALL BE LABELED EXTENET.

R.O.W. GROUND CONSTRUCTION NOTES

- 120/240 POWER REQUIRED FOR 3-WIRE SERVICE.
- GC TO REMOVE/CLEAN ALL DEBRIS, NAILS, STAPLES, OR NON-USED VERTICALS OFF THE POLE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MUNICIPAL, COUNTY, STATE, AND FEDERAL STANDARDS AND REGULATIONS.
- CALL 811, 72 HOURS PRIOR TO EXCAVATING AT (800) 344-7483.
- ALL LANDSCAPING TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.
- ALL EQUIPMENT TO BE BONDED.
- METERING CABINET REQUIRES 3' CLEARANCE AT DOOR OPENING.
- CAULK CABINET BASE AT PAD.

STANDARD GROUNDING NOTES

- GROUND TESTED AT 5 OHMS OR LESS.
- 5/8"x8" ROD. CAD WELD BELOW GRADE.
- #6 GROUND AND BOND WIRE.
- WOOD MOLDING, STAPLED EVERY 3' AND AT EACH END.
- GROUNDS 3' FROM POLE.
- PLACE 3 #10GA WIRES FROM BREAKER TO METER BOX.

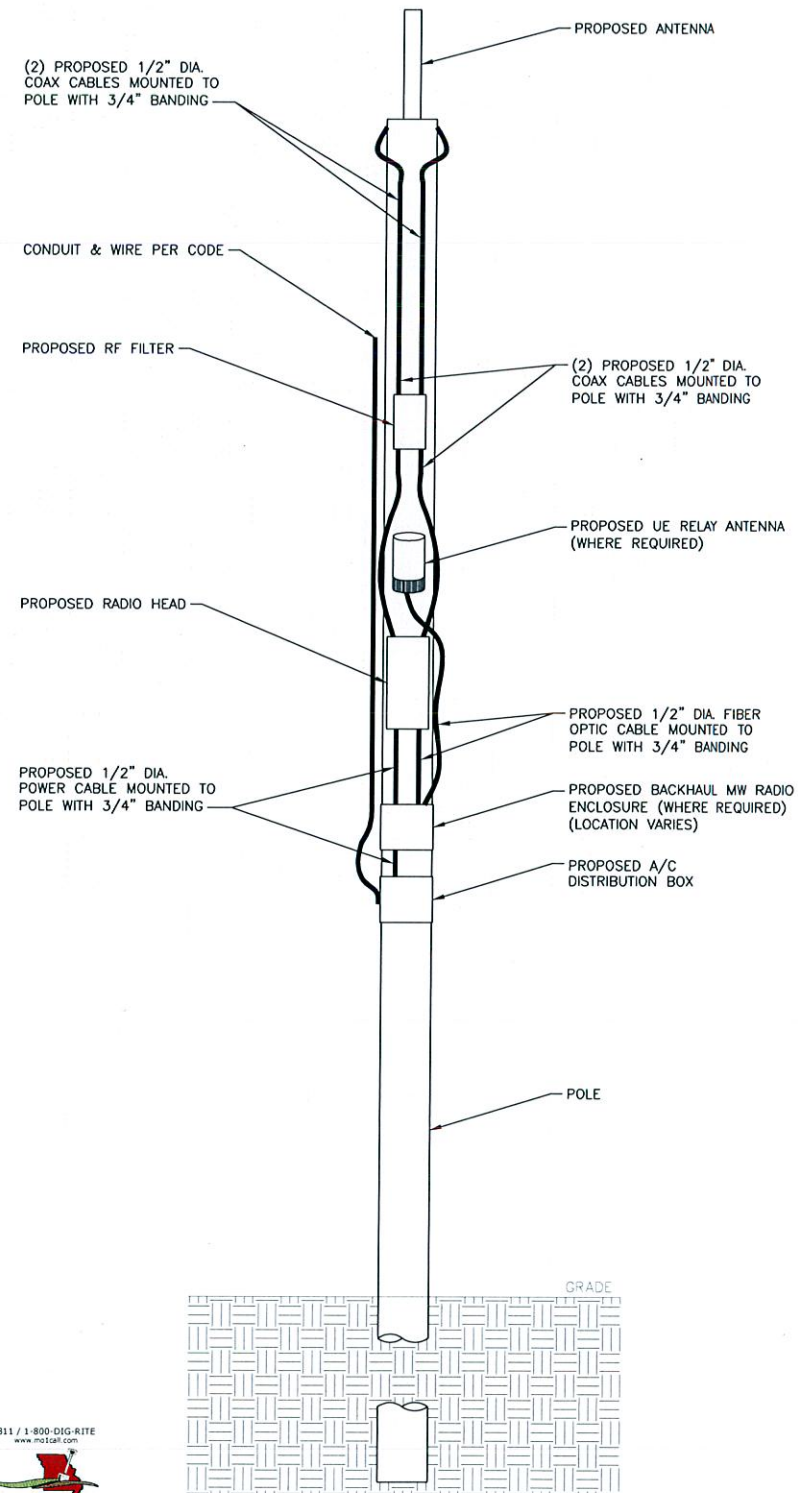
STANDARD CONDUIT NOTES

- FOR UNDERGROUND USE SCHEDULE 40.
- FOR RISERS USE SCHEDULE 80.
- PLACE 2" GALVANIZED STEEL CONDUIT FOR ANY CONDUIT UNDER 3", STUB UP 10' THEN CONVERT TO SCHEDULE 80.
- CONVERT 4" CARRIER CONDUIT TO 3" AT BASE OF POLE.
- GC TO STUB UP POLE 10" W/3" POWER CONDUIT. POWER CO. TO CONVERT FROM 3" SCH. 80 TO 2" SCH. 80 FROM TOP OF STUB UP.
- ALL CONDUIT WILL BE MAN DRILLED AND EQUIPPED WITH 3/8" PULL ROPE.

STANDARD TRENCHING NOTES

- MAINTAIN 40" MINIMUM COVER FOR ELECTRICAL CONDUIT.
- MAINTAIN 30" MINIMUM COVER FOR COMMUNICATIONS CONDUIT.
- SAND SHADING MINIMUM 1" UNDER CONDUITS, AND 6" COVERING ON TOP REQUIRED.
- ALL ELECTRICAL SERVICE CONDUITS FROM POWER COMPANY, WHETHER FROM POLES, TRANSFORMERS, OR OTHER LOCATIONS, WILL BE SLURRY BACKFILLED.
- IN STREET SLURRY TO GRADE AND MILL DOWN 1-1/2" FOR AC CAP.
- IN DIRT SLURRY 18" FROM GRADE, AND FILL WITH 95% COMPACTION NATIVE SOIL FOR BALANCE.
- PLACE WARNING TAPE IN TRENCH 12" ABOVE ALL CONDUITS AND #18 WARNING TAPE ABOVE GROUND RING.

NOTE
CABLING DIAGRAM IS FOR CLARITY OF CABLE ROUTE AND TERMINATION ONLY. CONTRACTOR SHALL INSTALL CABLES AND EQUIPMENT WITH MINIMAL VISUAL IMPACT ON PROPOSED STRUCTURE. SEE ELEVATION DRAWING ON SHEET C-2 FOR EQUIPMENT AND ANTENNA LOCATIONS.



TYPICAL EQUIPMENT LAYOUT DIAGRAM

GENERAL NOTES AND SCHEDULES

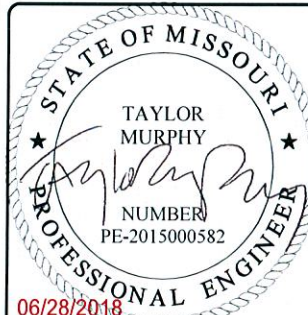


BLACK & VEATCH CORPORATION
7760 FRANCE AVENUE SOUTH
SUITE 1200
BLOOMINGTON, MN 55435

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196954.2113	YJC	LW

REV	DATE	DESCRIPTION
0	06/25/18	ISSUED FOR CONSTRUCTION



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EXTENET SYSTEMS
NC-MO-STLOUIS-00050-N

SMALL CELL

SITE ADDRESS
ST90XS D10
N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
GENERAL NOTES
AND TYPICAL DESIGN

SHEET NUMBER
GN-1

GENERAL CONSTRUCTION NOTES

- FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
 - CONTRACTOR: (CONSTRUCTION)
 - OWNER – SPRINT
- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND SPRINT PROJECT SPECIFICATIONS.
- GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
- GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
- ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMAN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
- SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
- WORK PREVIOUSLY COMPLETED IS REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
- THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
- THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OR 2-A-10-B-C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
- THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.

- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE-APPROVED BY THE LOCAL JURISDICTION.
- ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
- ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
- CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
- CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
- THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).
- OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY TECHNICIANS.
- NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
- ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION OF SPRINT SPECIFICATIONS. IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.
- CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
- CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
- INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.
- ALL CABLE INSTALLATIONS TO FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

ANTENNA MOUNTING

- DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
- 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.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
- PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS.

TORQUE REQUIREMENTS

- ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
- ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
 - RF CONNECTION BOTH SIDES OF THE CONNECTOR.
 - GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
- ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
- ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
- ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
- ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).
- ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM).

FIBER & POWER CABLE MOUNTING

- THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED

- INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
- THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.

COAXIAL CABLE NOTES

- TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
- CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
- CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION.
- TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
- CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
- CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.
- ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.
- CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
- CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE WITH SPRINT STANDARDS.

GENERAL CABLE AND EQUIPMENT NOTES

- CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
- ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL REFERENCE THE STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
- ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
- IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
 - TEMPERATURE SHALL BE ABOVE 50° F.
 - PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
 - FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
 - DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
- ALL PROPOSED GROUND BAR DOWNLOADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLOADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
- ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.

ROW UTILITY POLE CONSTRUCTION NOTES

- NO BOLT THREADS TO PROTRUDE MORE THAN 1-1/2" (.038M).
- FILL ALL HOLES LEFT IN POLE FROM REARRANGEMENT OF CLIMBERS.
- ALL CLIMB STEPS NEXT TO CONDUIT SHALL HAVE EXTENDED STEPS.
- CABLE NOT TO IMPEDE 15" (.381M) CLEAR SPACE OFF POLE FACE (12:00).
- 90 SHORT SWEEPS UNDER ANTENNA ARM. ALL CABLES MUST ONLY TRANSITION ON THE INSIDE OR BOTTOM OF ARMS (NO CABLE ON TOP OF ARMS).
- USE 90 CONNECTOR AT CABLE CONNECTION TO ANTENNAS.
- PLACE GPS ON ARM WITH SOUTHERN SKY EXPOSURE AT MINIMUM 6" [1.53] FROM TRANSMIT ANTENNA, WHICH IS 24" [61M] AWAY FROM CENTER OF POLE.
- USE 1/2" [.013M] CABLE ON ANTENNAS UNLESS OTHERWISE SPECIFIED.
- FILL VOID AROUND CABLES AT CONDUIT OPENING WITH FOAM SEALANT TO PREVENT WATER INTRUSION.

GENERAL NOTES



BLACK & VEATCH

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PROJECT NO.	DRAWN BY	CHECKED BY
196954.2113	YJG	LW

REV	DATE	DESCRIPTION
0	06/25/18	ISSUED FOR CONSTRUCTION



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

EXTENET SYSTEMS
NC-MO-STLOUIS-00050-N

SMALL CELL

SITE ADDRESS
ST90XS D10
N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

GN-2

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

- A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION PERFORMANCE FOR THE WORK UNDER THIS SECTION.
- C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWING SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES:

- A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

1.3 REFERENCES:

- A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE. THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS OTHERWISE NOTED. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.

1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
3. ICE (INSULATED CABLE ENGINEERS ASSOCIATION)
4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
7. UL (UNDERWRITERS LABORATORIES, INC.)

1.4 SCOPE OF WORK:

- A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND BE OPERATIONAL.
- B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.
- D. THE CONTRACTOR SHALL FURNISH TO THE OWNER WITH CERTIFICATES OF A FINAL INSPECTION AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION.
- E. THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS-BUILT DRAWINGS, DOCUMENT ALL WIRING EQUIPMENT CONDITIONS, AND CHANGES WHILE COMPLETING THIS CONTRACT. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT.

PART 2 - PRODUCTS

2.1 GENERAL:

- A. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED, NEW, AND FREE FROM DEFECTS.
- B. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.
- C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

2.2 MATERIALS AND EQUIPMENT:

A. CONDUIT:

1. RIGID METAL CONDUIT (RMC) SHALL BE HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE TIGHT TYPE. GROUNDING BUSHINGS WITH INSULATED THROATS SHALL BE INSTALLED ON ALL CONDUIT TERMINATIONS.
4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40/80 PVC. INSTALL USING SOLVENT-CEMENT-TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

B. CONDUCTORS AND CABLE:

1. AC CONDUCTORS SHALL BE FLAME-RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN-2, 600 VOLT, SIZE AS INDICATED, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR USED.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS, COMPRESSION-TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN-RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J-BOXES, EQUIPMENT AND CABINETS AND SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD-FRONT, QUICK-MAKE, QUICK-BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, SQUARE-D OR

ENGINEERED APPROVED EQUAL.

E. SYSTEM GROUNDING:

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED, COPPER. ABOVE GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH-CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO-HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS. INTERIOR CONNECTIONS USE TWO-HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE ERICO #615800, COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, 5/8"x10'-0".
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE SPRINT SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.

F. OTHER MATERIALS:

1. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
2. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

PART 3 - EXECUTION

3.1 GENERAL:

- A. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- B. EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

3.2 LABOR AND WORKMANSHIP:

- A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN, IN A NEAT AND WORKMAN-LIKE MANNER.
- B. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.
- C. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

3.3 COORDINATION:

- A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER-FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

3.4 INSTALLATION:

A. CONDUIT:

1. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4 INCH TRADE SIZE.
2. PROVIDE RIGID PVC SCHEDULE 80 CONDUITS FOR ALL RISERS, RMC OTHERWISE NOTED. EMT MAY BE INSTALLED FOR EXTERIOR CONDUITS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
3. INSTALL SCH. 40 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL OTHER NON-TRAFFIC APPLICATIONS (REFER TO 2008 NEC, TABLE 300.5).
4. USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION TO EQUIPMENT WITH MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORT TO ALLOW FOR EXPANSION AND CONTRACTION.
5. A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE QUARTER-BENDS. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
6. FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
7. PROVIDE INSULATED GROUNDING BUSHING FOR ALL CONDUITS.
8. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
9. ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
10. INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
11. INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
12. CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.

B. CONDUCTORS AND CABLE:

1. ALL POWER WIRING SHALL BE COLOR CODED AS FOLLOWS:

DESCRIPTION	208/240/120 VOLT SYSTEMS
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUNDING	GREEN

2. SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAY CONDULETS APPROVED FOR THIS PURPOSE.
3. PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
4. CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES & EQUIPMENT TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS IS PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

C. DISCONNECT SWITCHES:

1. INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS INDICATED.

D. GROUNDING:

1. ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUFACTURER, AND THE NATIONAL ELECTRICAL CODE.
2. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
4. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
5. CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE-IN-POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
6. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION BEFORE BEING PERMANENTLY CONCEALED.
7. APPLY CORROSION-RESISTANCE FINISH TO FIELD CONNECTIONS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE KOPR-SHIELD ANTI-OXIDATION COMPOUND ON ALL COMPRESSION GROUNDING CONNECTIONS.
8. A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
9. BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE 6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
10. DIRECT BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 36" MINIMUM BELOW GRADE, OR 6" BELOW THE FROST LINE, USE THE GREATER OF THE TWO DISTANCES.
11. ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
12. THE INSTALLATION OF CHEMICAL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
13. DRIVE GROUND RODS UNTIL TOPS ARE A MINIMUM DISTANCE OF 36" DEPTH OR 6" BELOW FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
14. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

3.5 ACCEPTANCE TESTING:

- A. CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.
- B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NON-COMPLYING ITEMS SHALL BE REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE FOR NON-COMPLIANCE.
- C. TEST PROCEDURES:
 1. ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. PROVIDE WRITTEN DOCUMENTATION FOR ALL TEST RESULTS.
 2. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
 3. MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
 4. PERFORM GROUNDING TEST TO MEASURE GROUNDING RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3-POINT "FALL-OF-POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

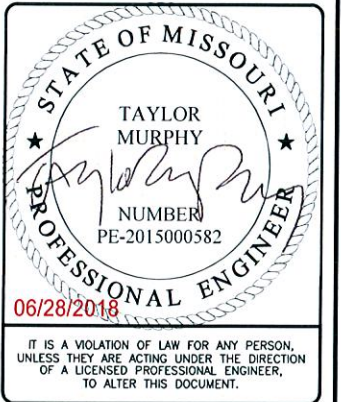
GENERAL NOTES



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PROJECT NO.	DRAWN BY	CHECKED BY
196954.2113	YJC	LW

REV	DATE	DESCRIPTION
0	06/25/18	ISSUED FOR CONSTRUCTION

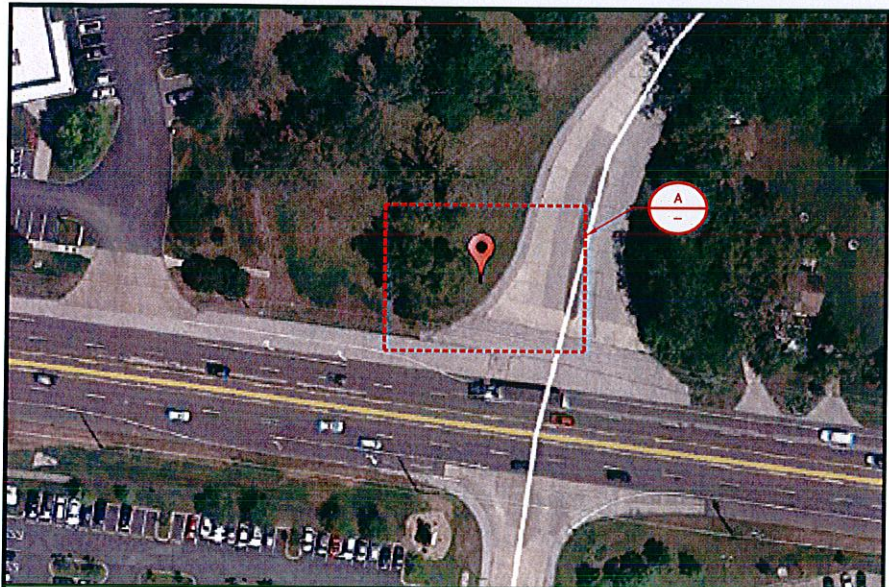


EXTENET SYSTEMS
NC-MO-STLOUIS-00050-N
SMALL CELL

SITE ADDRESS
ST90XS D10
N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3



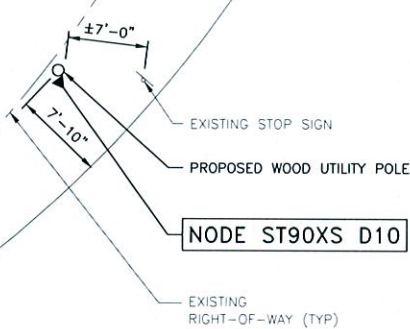
AERIAL SITE MAP

NO SCALE

1

THIS DRAWING IS NOT A SITE SURVEY
 THE PURPOSE OF THIS DRAWING IS TO SHOW HOW THE DEVELOPED SITE RELATES TO THE PARENT PARCEL AND ADJACENT PROPERTIES.

A.P.N.
17V610051



EXISTING UTILITY POLE (TYP)

CHESTERFIELD AIRPORT RD.



OVERALL SITE PLAN

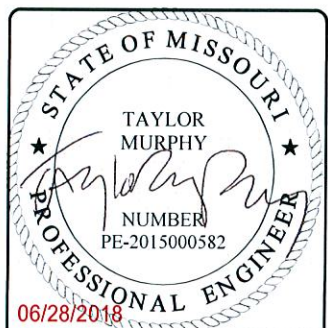


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EXTENET SYSTEMS
 NC-MO-STLOUIS-00050-N
 SMALL CELL

SITE ADDRESS
 ST90XS D10
 N SPIRIT DR.
 CHESTERFIELD, MO 63005

SHEET TITLE
 OVERALL SITE PLAN

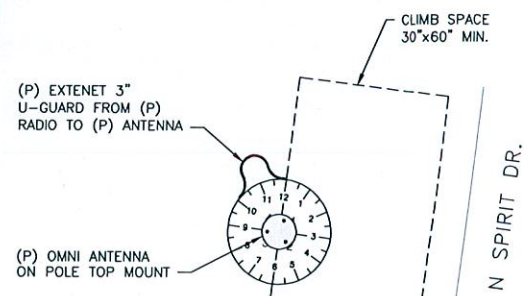
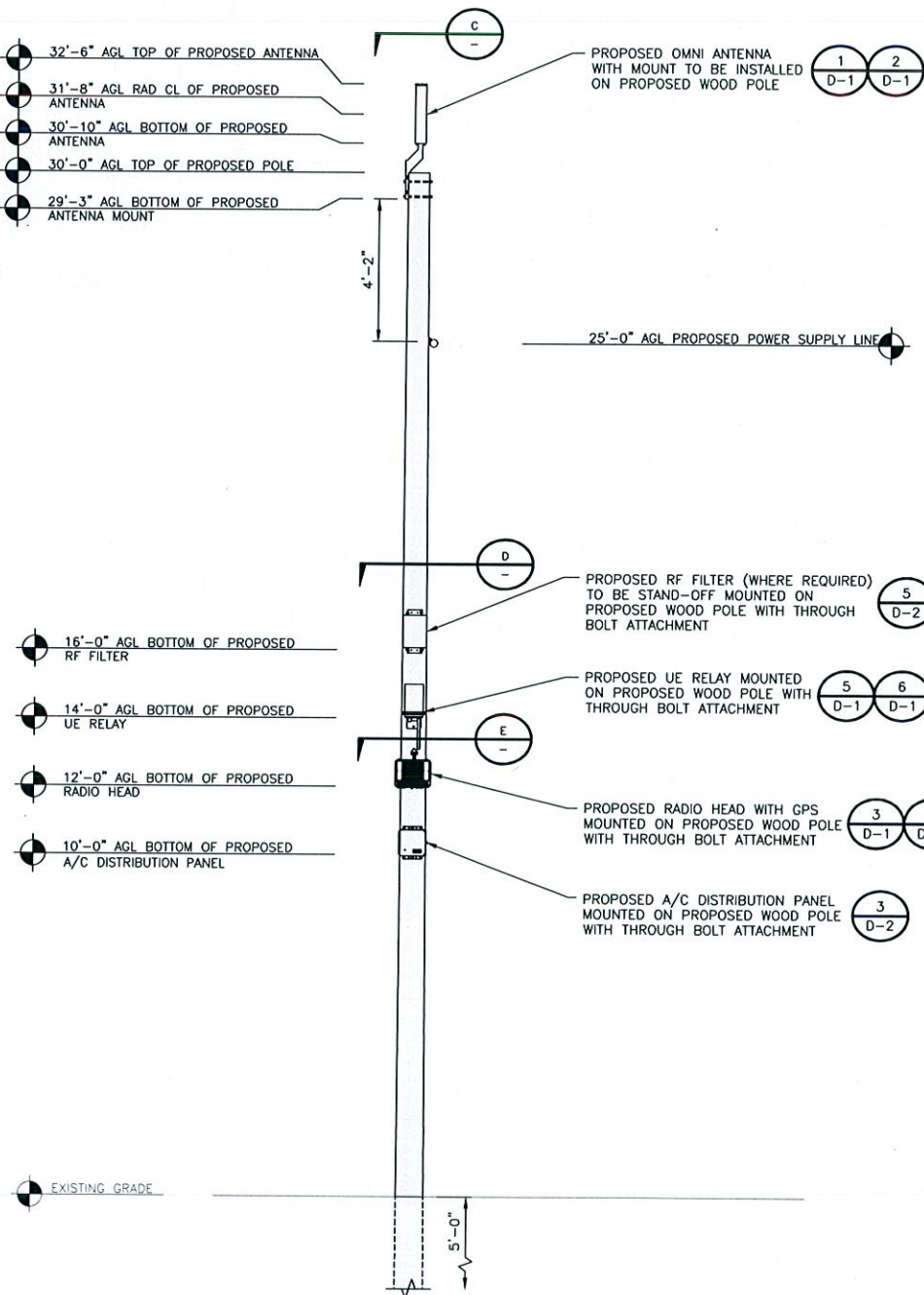
SHEET NUMBER
A-1

NOTE

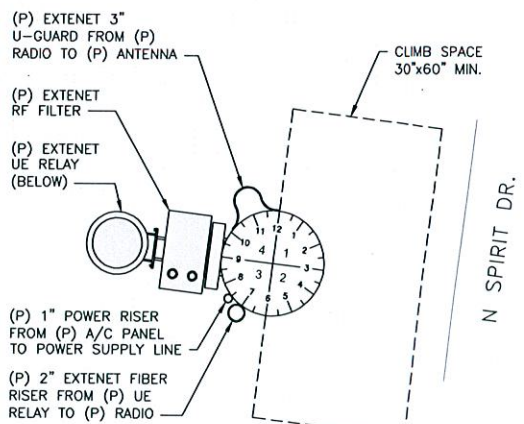
THESE DRAWINGS HAVE BEEN CREATED BASED ON THE ASSUMPTION THAT THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING. IT IS THE RESPONSIBILITY OF THE POLE OWNER TO CONFIRM THAT THE PROPOSED LOADING IS WITHIN THE ORIGINAL DESIGN CAPACITY OF THE STRUCTURE.

COMMUNICATIONS MAKE-READY

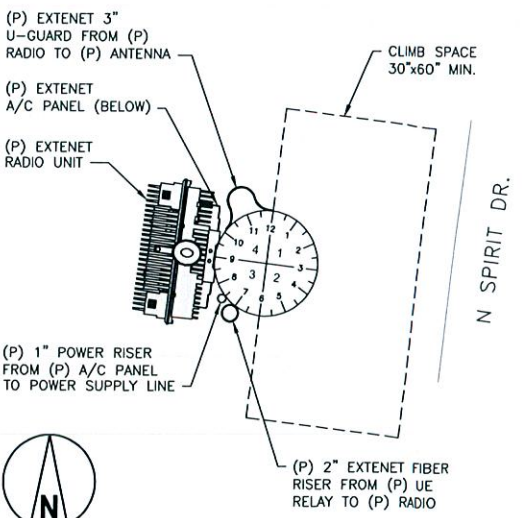
1. REPLACE POLE WITH PROPOSED 35'-0" POLE SUNK 5'-0".
2. INSTALL 3" SCH 80 U-GUARD OVER COAX AT 11:00 POSITION.
3. INSTALL EXTENET 2" SCH 80 CONDUIT RISER FOR FIBER AT 7:00 POSITION.
4. INSTALL 1" SCH 80 CONDUIT RISER FOR POWER AT 7:30 POSITION.
5. INSTALL PROPOSED EQUIPMENT AT 9:00 POSITION.
6. INSTALL PROPOSED ANTENNA ON TOP OF PROPOSED POLE.
7. PROPOSED CONDUIT RISERS NOT SHOWN FOR CLARITY.



ANTENNA PLAN VIEW NO SCALE C



RISER PLAN VIEW NO SCALE D



EQUIPMENT PLAN VIEW NO SCALE E



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EXTENET SYSTEMS
NC-MO-STLOUIS-00050-N

SMALL CELL

SITE ADDRESS
ST90XS D10
N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
POLE ELEVATIONS
AND RISER DETAILS

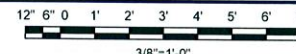
SHEET NUMBER
A-2

NOT USED

NO SCALE

A

PROPOSED WEST ELEVATION



B

EQUIPMENT PLAN VIEW

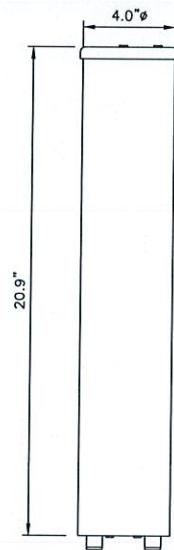
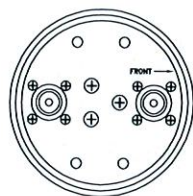
NO SCALE

E

CCI WIRELESS SCA-OM-360FX-Q-H2

DIAMETER: 4.0" (102mm)
 HEIGHT: 20.9" (530mm)
 TOTAL WEIGHT (WITHOUT MOUNT): 3.2 lbs (1.45 kg)
 CONNECTOR INTERFACE: (2) 4.1-9.5 FEMALE
 RF CONNECTOR LOCATION: BOTTOM
 ELECTRICAL DOWNTILT (*): 7/12/14'

(* FIXED ELECTRICAL DOWNTILT ORDERING IS SPECIFIED IN THE MODEL AS F7, F12, F14



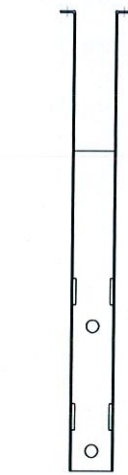
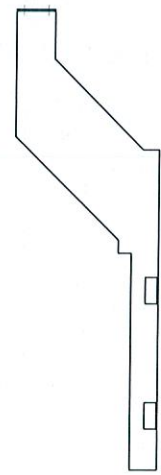
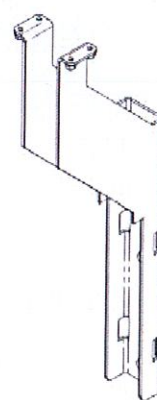
ANTENNA SPECIFICATIONS

NO SCALE

1

CCI WIRELESS MBC-06 BRACKET

TOTAL WEIGHT: 2.0 lbs (0.9 kg)
 MOUNTING POLE DIMENSION: 4" (10 cm) AND GREATER



ISO VIEW

SIDE VIEW

FRONT VIEW

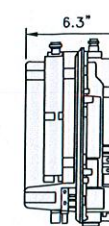
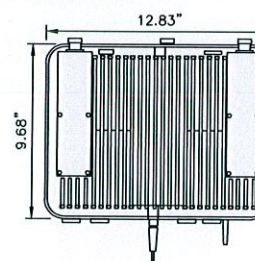
ANTENNA MOUNTING BRACKET

NO SCALE

2

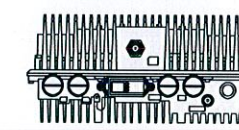
NOKIA B41 HIGH POWER RADIO HEAD

TOTAL WEIGHT: 26.45 lbs (12 kg)
 DIMENSION (HxWxD): 9.68"x12.83"x6.3"



FRONT VIEW

SIDE VIEW



BOTTOM VIEW

RADIO HEAD SPECIFICATIONS

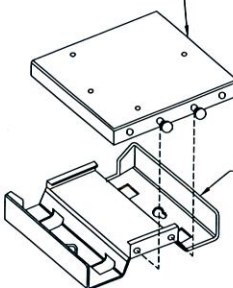
NO SCALE

3

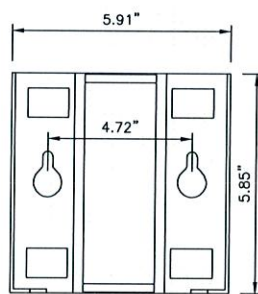
FLEXI_ZONE FMWA 472858A MOUNTING BRACKET

DIMENSIONS (HxWxD): 5.85"x5.91"x1.3" (148.5x150x33 mm)
 STATIC BRACKET WEIGHT: 1.54 lbs (0.7 kg)
 RRH COMPATIBILITY: NOKIA B26 AND B41 (HIGH & LOW POWER)

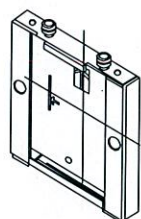
*INTERFACE BRACKET (MOUNTS TO RRH)



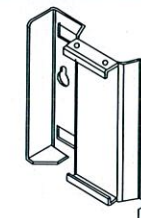
STATIC MOUNTING BRACKET



STATIC BRACKET FRONT VIEW



INTERFACE BRACKET



STATIC BRACKET

* INTERFACE BRACKET USES 2 HEX DRIVE CAPTIVE SCREWS TO SECURE TO STATIC BRACKET.

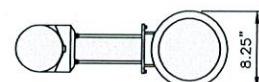
RADIO MOUNTING BRACKET SPECIFICATIONS

NO SCALE

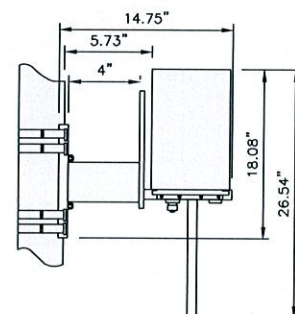
4

UE RELAY MOUNT

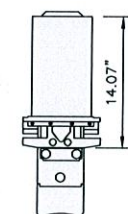
DIMENSION (HxWxD): 18.08"x8.25"x22.75" (459x210x578 mm)
 TOTAL WEIGHT: 12.0 lbs (5.44 kg)



PLAN VIEW



SIDE VIEW



FRONT VIEW

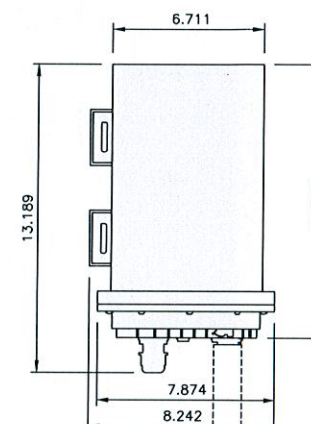
UE RELAY MOUNTING DETAIL

NO SCALE

5

NOKIA GEMTEK UE RELAY

TOTAL WEIGHT: 5.51 lbs (2.5 kg)
 DIMENSION (HxD): 11.41"x6.69" (300mm x 170mm)
 DIAMETER: 7.87" (200mm)

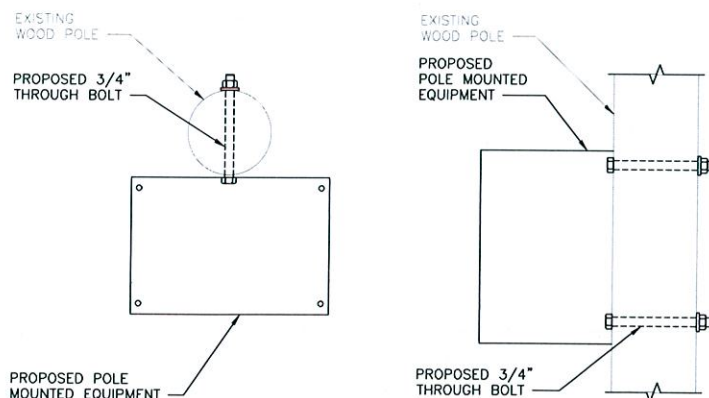


EXTERNAL ANTENNA 1-5/16" X 12-3/4"

UE RELAY SPECIFICATIONS

NO SCALE

6



WOOD POLE EQUIPMENT MOUNTING DETAIL

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9



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196954.2113	YJG	LW

REV	DATE	DESCRIPTION
0	06/25/18	ISSUED FOR CONSTRUCTION



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EXTENET SYSTEMS
 NC-MO-STLOUIS-00050-N
 SMALL CELL

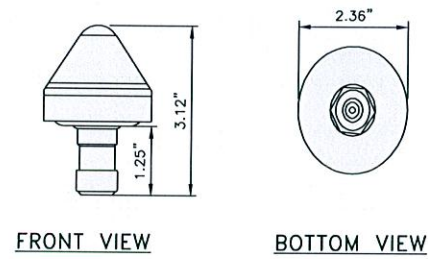
SITE ADDRESS
 ST90XS D10
 N SPIRIT DR.
 CHESTERFIELD, MO 63005

SHEET TITLE
 EQUIPMENT DETAILS

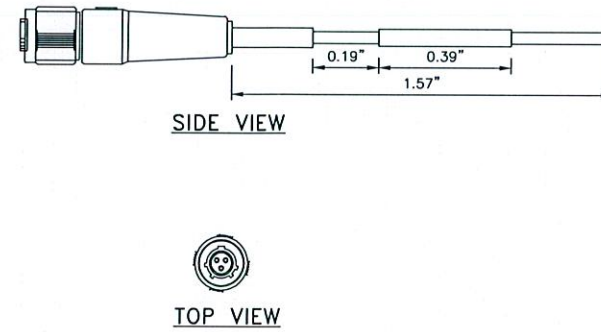
SHEET NUMBER
D-1

NOKIA MM GPS ANTENNA

TOTAL WEIGHT: 3.34 lbs (0.14 kg)
 DIMENSION (HxW): 3.12"x 2.36"

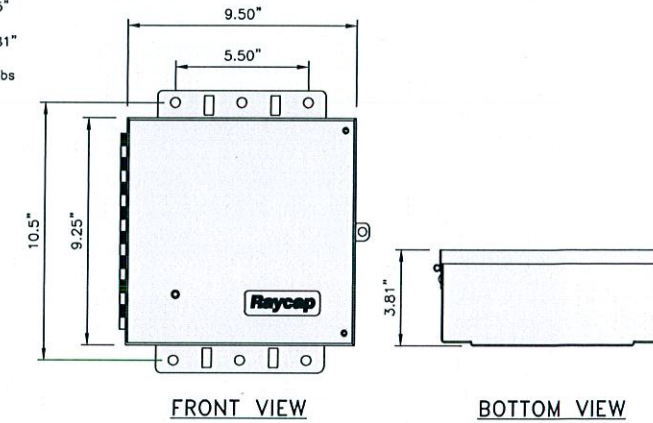


NOKIA MM RADIO HEAD AC POWER CABLE



RAYCAP RSTAC-3112-P-120

HEIGHT: 9.25"
 WIDTH: 9.5"
 DEPTH: 3.81"
 WEIGHT: 14lbs



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EXTENET SYSTEMS
 NC-MO-STLOUIS-00050-N
 SMALL CELL

SITE ADDRESS
 ST90XS D10
 N SPIRIT DR.
 CHESTERFIELD, MO 63005

SHEET TITLE
 EQUIPMENT DETAILS

SHEET NUMBER
D-2

GPS ANTENNA DEATIL

NO SCALE

1

A/C POWER CABLE DETAIL

NO SCALE

2

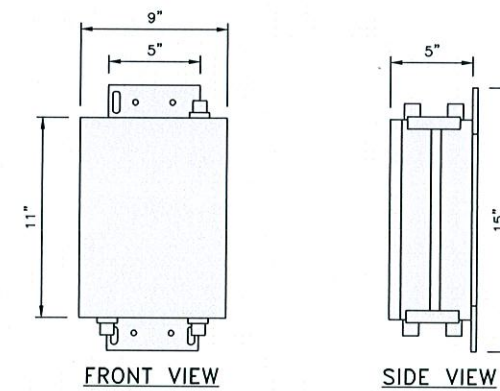
A/C DISTRIBUTION PANEL SPECIFICATIONS

NO SCALE

3

RF FILTER

DIMENSIONS (HxWxD): 11"x9"x5" (279x229x127 mm)



NOT USED

NO SCALE

4

RF FILTER SPECIFICATIONS

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

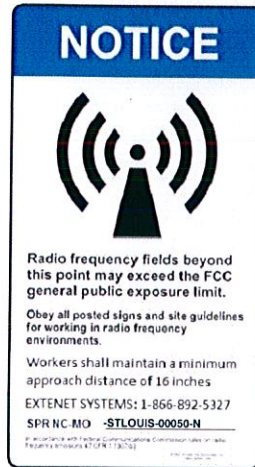
NOT USED

NO SCALE

9

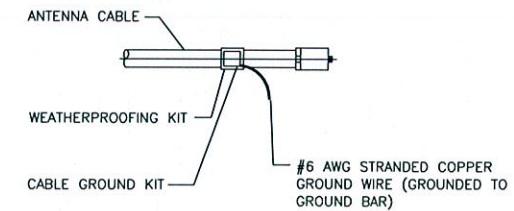
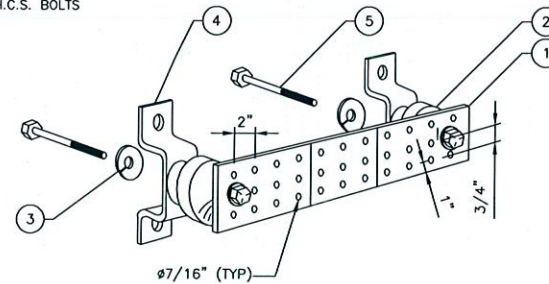
NOTE

1. SPECIFIC EME PLACARD WILL BE PLACED AFTER EME REPORT.



LEGEND

1. COPPER TINNED GROUND BAR HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2. INSULATORS
3. 5/8" LOCKWASHERS
4. WALL MOUNTING BRACKETS
5. 5/8"-11 X 1" H.H.C.S. BOLTS



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RF SIGNAGE DETAIL

NO SCALE

1

GROUND BAR DETAIL

NO SCALE

2

ANTENNA CABLE GROUND KIT DETAIL

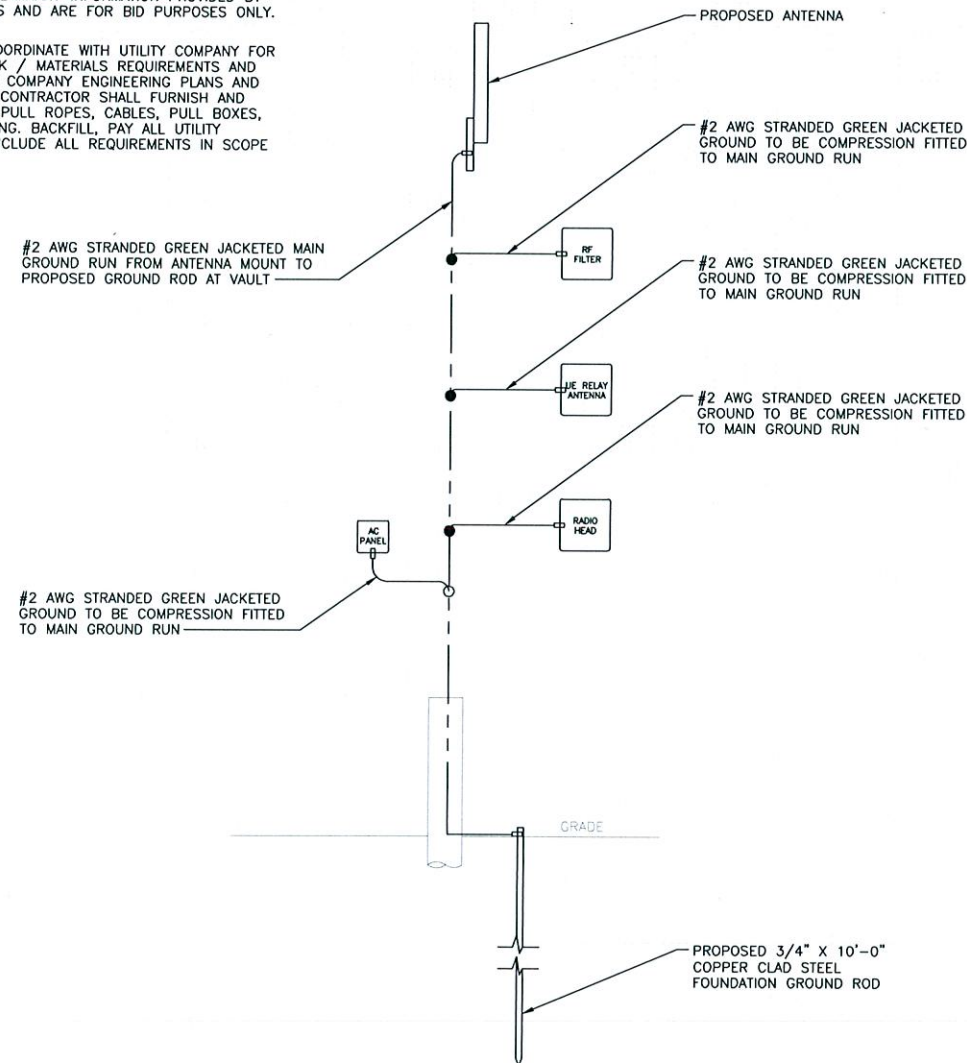
NO SCALE

3

UTILITY GENERAL NOTES

1. UTILITY POINTS OF SERVICE AND WORK / MATERIALS SHOWN ARE BASED UPON PRELIMINARY INFORMATION PROVIDED BY THE UTILITY COMPANIES AND ARE FOR BID PURPOSES ONLY.

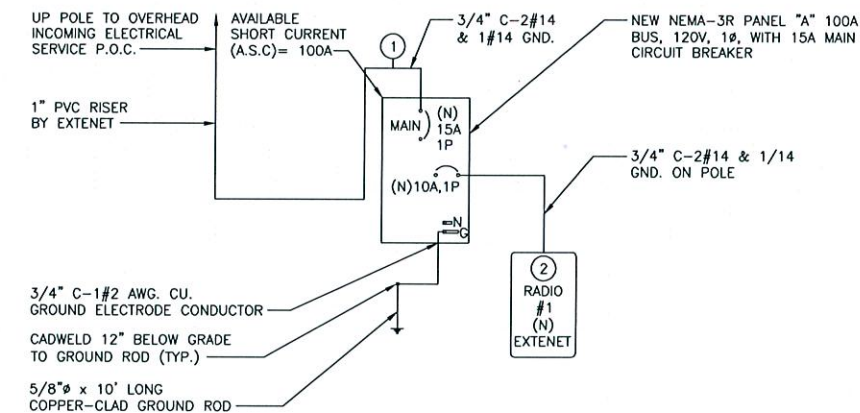
2. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR FINAL AND EXACT WORK / MATERIALS REQUIREMENTS AND CONSTRUCT TO UTILITY COMPANY ENGINEERING PLANS AND SPECIFICATIONS ONLY. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, PULL ROPE, CABLES, PULL BOXES, POLE RISERS, TRENCHING, BACKFILL, PAY ALL UTILITY COMPANY FEES AND INCLUDE ALL REQUIREMENTS IN SCOPE OF WORK.



GROUNDING SCHEMATIC

NO SCALE

4



VOLTAGE DROP			
①	2#14 AWG. CU.	L<10'	%VD=NEGL.
②	2#14 AWG. CU.	L<10'	%VD=NEGL.
③	2#14 AWG. CU.	L<10'	%VD=NEGL.

SINGLE LINE DIAGRAM OVERHEAD SERVICE

NO SCALE

5

PROJECT NO.	DRAWN BY	CHECKED BY
196954.2113	YJC	LW

REV	DATE	DESCRIPTION
0	06/25/18	ISSUED FOR CONSTRUCTION



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

EXTENET SYSTEMS
NC-MO-STLOUIS-00050-N

SMALL CELL

SITE ADDRESS
ST90XS D10
N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
ELECTRICAL AND
GROUNDING DETAILS

SHEET NUMBER

E-1


UTILITY NOTES

1. USE EXTREME CAUTION NEAR COMED FACILITIES. HAND DIG WHILE CROSSING 69/138/345 KV TRANSMISSION LINE. COMED TRANSMISSION SHALL BE NOTIFIED 2 BUSINESS DAYS PRIOR TO THE START OF WORK. TO SCHEDULE AN ONSITE INSPECTION DURING CONSTRUCTION, CONTACT LESLIE PASCHAL AT (630) 437-4767.
2. HAND EXCAVATION IS REQUIRED TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF THE 24-INCH WATER MAIN PRIOR TO CROSSING. A MINIMUM OF 4 FEET OF UNDISTURBED SOIL IS TO REMAIN ON EITHER SIDE OF THIS EXISTING FEEDER MAIN. EXTREME CAUTION MUST BE TAKEN TO AVOID DAMAGE TO THESE WATER FACILITIES. IF ANY DAMAGE OCCURS TO THIS DEPARTMENT'S FACILITIES THE CONTRACTOR AND/OR OWNER WILL BE RESPONSIBLE FOR THE COST OF REPAIRING OR REPLACING THE DAMAGED FACILITIES.

GENERAL NOTE

1. THE FULL PERIMETER OF THE ASPHALT RESTORATION LIMITS SHALL BE SEALED COMPLETELY AT THE EDGE OF THE CUT SMOOTHING IRON OR BY MEANS OF INFRARED TREATMENT TO PREVENT WATER SEEPAGE INTO THE PAVEMENT. UNLESS OTHERWISE DIRECTED BY THE COMMISSIONER.

LEGEND

 UTILITY TRENCH OR UTILITY/STREET CUT WITHIN THIS ZONE

 CITY STANDARD FOR CONCRETE SIDEWALK RESTORATION

 CITY STANDARD FOR ASPHALT RESTORATION



BLACK & VEATCH

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7760 FRANCE AVENUE SOUTH
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BLOOMINGTON, MN 55435

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NC-MO-STLOUIS-00050-N
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SITE ADDRESS
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N SPIRIT DR.
CHESTERFIELD, MO 63005

SHEET TITLE
OSP

SHEET NUMBER
OSP-1