



City of Aurora Public Works Department

DNG3XC021

BUILDING PERMIT APPLICATION

Building Division • 15151 E. Alameda Parkway, Ste 2400 • Aurora, CO 80012 • 303-739-7420 • Fax: 303-739-7412
Email: permitcounter@auroragov.org

* NEED G.C.

Project Address <u>15301 E. Iliff Ave</u>		Unit # <u>NA</u>
Project Name: <u>Sprint 2.5 Upgrade</u>		
Contractor Company Name <u>TBD</u>	Phone	Fax
Contact Person	Phone	
Email	Fax	
Architect and/or Engineer Contact Information for correction items <u>Centerline Solutions</u>		
Architect or Engineer name <u>Jeff Noseworthy</u>	Email <u>jeffn@centerlinesolutions.com</u>	
Phone <u>303-993-3293</u>	Fax <u>NA</u>	
Owner (Required for Certificate of Occupancy) only <u>NA Sprint Telecom Site</u>		
Owner address <u>contact Darren Hunter w/questions & when permit is ready</u>		
Email <u>dhunter@atecs.com 913.634.1245</u>		
Valuation / FDA: \$ <u>\$30,000</u> ✓	Materials Cost: \$ <u>\$10,000</u>	
<p>FDA = Fee Determination Assessment. (Also known as the value of project) has no relationship to the construction costs for the building which can vary greatly. Rather, The assessment is used only to determine the appropriate level of fees to fund our code compliance activities.</p>		
<p>Describe The Work You Will Be Doing: _____</p> <p><u>Telecommunication Site Modification - Addition of one antenna and RRU (remote radio unit) per sector and new equipment components installed into the existing equipment cabinet.</u></p>		

I declare under penalty that this application has been examined by me and that the statements made herein are made in good faith pursuant to City of Aurora tax and licensing regulations; and to the best of my knowledge and belief are true, correct and complete.

Print Name Darren Hunter Signature Darren Hunter Date 03/06/2014 7/30/14

BOARD OF APPEALS: Contractor's Appeals and Standards Board. Applicants have the right to have the board hear appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of the building code. Any application for appeal to the board shall be based on a claim that the true intent of the code or the rules legally adopted there under have been incorrectly interpreted, the provisions of the building code do not fully apply or an equally good or better form of construction is proposed.

Route to RAN16

THIS SPACE FOR OFFICE USE ONLY

Fee Determination Assessment: \$ <u>30,000.00</u>	PRE APPROVAL Initial _____ <input type="checkbox"/> Zoning <input type="checkbox"/> Water
Change of occupancy/use: <input type="checkbox"/> Yes <input type="checkbox"/> No	Exterior changes? <input type="checkbox"/> Yes <input type="checkbox"/> No
REVIEWS	Homeowner verified: <input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Structural	Permit Type: <u>LT</u>
<input type="checkbox"/> Mechanical	Mid roof / Ave Bldg Height: <u>N/A</u>
<input type="checkbox"/> Plumbing	Parent Permit RSN: <u>847295</u>
<input checked="" type="checkbox"/> Electrical	Plans Examiner: <u>JMK</u>
<input type="checkbox"/> Fire-Life Safety	Subtype: <u>Roof-top Antenna</u>
<input type="checkbox"/> Building Life Safety	RSN: <u>920731</u>
Intake Date: <u>7/30/14</u>	Plans Picked Up By: _____
Balance Due: \$ _____	Company Name: _____
	Phone Number: _____



Atecs, Our Professional Services Division
MC2, Our Construction Division
16360 Table Mountain Pkwy
Golden, CO 80403
P: 303-993-3293 / F: 303-993-3019

April 17, 2014

Ms. Danielle Huxtable
Sprint

RE: DN63XC021
"Walgreens"
Concrete Slab and Steel Frame Structural Review

Dear Ms. Huxtable:

Centerline Solutions performed a structural review of the existing Sprint equipment concrete slab and steel frame. The existing slab and frame, by inspection, can safely support the new Sprint 2.5 Base Band Unit (100 lbs) in the existing Network Vision MMBS cabinet.

Our review assumes the concrete slab and frame were properly analyzed for the existing Network Vision equipment during the previous site upgrade.

All new equipment shall be placed as shown in the construction drawings issued by this office.

Please contact us with any questions.

Sincerely,



Ryan Guerrero, PE

14 - 869520



16360 Table Mountain Pkwy, Golden, CO 80403 / 303.993.3293

April 15, 2014

Ms. Danielle Huxtable
Sprint

**RE: Sprint 2.5 Project
DN63XC021
"Walgreens"
Antenna Mount Analysis**

Dear Ms. Huxtable:

Centerline Solutions performed a structural review of the existing antenna mount at the above referenced site. The existing antenna mounts can safely support the new Sprint 2.5 Antennas and RRU's.

All new antennas and equipment shall be placed on the building as shown in the drawings issued by this office.

Please contact us with any questions.

Sincerely,



Ryan Guerrero, PE

ATT: Calculations

14 - 869520



Sprint



Know what's below.
Call before you dig.

2.5 EQUIPMENT DEPLOYMENT

WALGREENS

DN63XC021

15301 E. ILIFF AVENUE
AURORA, CO. 80013
ARAPAHOE COUNTY

LONGITUDE: -104.8093900°
LATITUDE: 39.6751900°

ROOFTOP 35'-0"
COLORADO MARKET

PLANS PREPARED FOR:



6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

△			
△			
△			
△			
△	7/1/14	FINAL CONST	ML
△	6/26/14	100% CONST	JN
△	4/16/14	90% CONST	ML
REV.	DATE	REVISION DESCRIPTION	BY

ISSUED FOR
CONSTRUCTION

PLANS PREPARED BY:

CENTERLINE SOLUTIONS
Advancing Wireless Networks

16360 TABLE MOUNTAIN PARKWAY
Golden, CO 80403
303-993-3293
WWW.CENTERLINESOLUTIONS.COM



ALL SCALES ARE SET FOR A SIZE "D" 24"X36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY:	CHECKED BY:	APPROVED BY:
ML	JN	KS

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T1

CODE

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.

BUILDING/DWELLING CODE IBC 2009
STRUCTURAL CODE IBC 2009
MECHANICAL CODE IMC 2009
ELECTRICAL CODE NEC 2011
FIRE/LIFE SAFETY CODE IFC 2009

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



PROJECT SUMMARY

SITE INFORMATION:
SITE NAME: WALGREENS

SITE #: DN63XC021
SITE ADDRESS: 15301 E. ILIFF AVE
CITY, STATE & ZIP: AURORA, CO 80013
COUNTY: ARAPAHOE COUNTY

PROPERTY/TOWER OWNER:
COMPANY: CKT-AURORA LLC
CONTACT: NICK STUDEN JR.
ADDRESS: 8900 GROOSMONT BLVD #3
LA MESA, CA 91941
PHONE: (303) 466-6794

SPRINT CONSTRUCTION MANAGER (CM):
COMPANY: SPRINT
CONTACT: BRANDON WHINERY
EMAIL: BRANDON.WHINERY@SPRINT.COM
PHONE: (303) 505-5750

SPRINT PROJECT MANAGER:
COMPANY: SPRINT
CONTACT: DANIELE L. HUXTABLE
EMAIL: DANIELE.HUXTABLE@SPRINT.COM
PHONE: (720) 420-6915

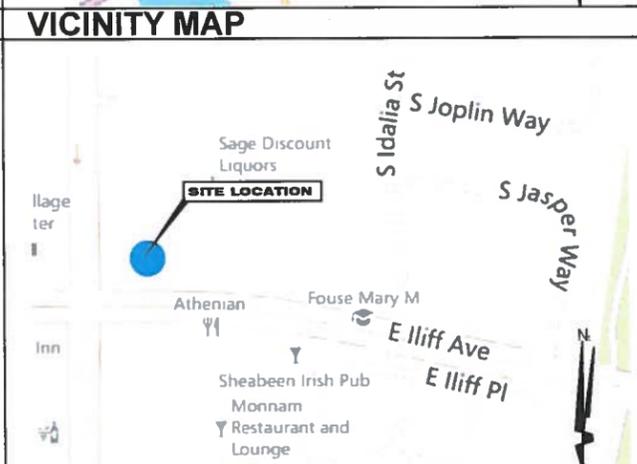
SHEET INDEX

SHEET	DESCRIPTION
T1	TITLE SHEET
SP1	SPRINT SPECIFICATONS
SP2	SPRINT SPECIFICATONS
A1	OVERALL SITE PLAN
A2	SITE PLAN
A3	EX. & NEW EQUIPMENT PLANS
A4	EX. & NEW ANTENNA PLANS, ANTENNA & RRU SPECS
A5	ELEVATIONS
A6	EQUIPMENT DETAILS
A7	RFDS
A8	COLOR CODING
A9	EQUIPMENT DETAILS
E1	EXISTING AC & DC POWER DISTRIBUTION
E2	GROUNDING DETAILS

PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY

- INSTALL (3) NEW PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (3) NEW RRU'S (1 PER SECTOR)
- INSTALL (3) NEW FIBER JUNCTION CYLINDERS (1 PER SECTOR)
- INSTALL (3) NEW POWER JUNCTION CYLINDERS (1 PER SECTOR)
- INSTALL (1) NEW BBU KIT IN EXISTING MMBS CABINET



SITE ACQ. PROJECT MANAGER:
COMPANY: CENTERLINE SOLUTIONS, LLC
CONTACT: AMANDA BERNARD
EMAIL: ABERNARD@CENTERLINESOLUTIONS.COM
PHONE: (404) 304-3066

A&E FIRM:
COMPANY: CENTERLINE SOLUTIONS, LLC
CONTACT: JEFF NOSEWORTHY
EMAIL: JEFFN@CENTERLINESOLUTIONS.COM
PHONE: (303) 993-3293 X 414

SIGNATURE BLOCK

APPROVAL	SIGNATURE	DATE
SITE ACQ. MGR		
CONSTRUCTION MGR		
A&E MGR		
PLANNING CONS.		
RF MGR		
RF ENGINEER		
PROPERTY OWNER		

DRIVING DIRECTIONS

FROM INTERSECTION OF I-25 & I-70:
WEST ON I-70 FROM I-25 TO I-225 WHERE YOU WILL HEAD SOUTHWEST (TURN RIGHT). TAKE EXIT 5 ON TO E. ILIFF AVE AND HEAD EAST. WALGREENS WILL BE ON THE LEFT SIDE AT THE CORNER OF S. CHAMBERS RD.

PROJECT TEAM

6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251
TEL: (913) 624-8000

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED
DATE 8/2/14

16360 TABLE MOUNTAIN PARKWAY
Golden, CO 80403
303-993-3293
WWW.CENTERLINESOLUTIONS.COM

14-869520

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 THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

This sheet of drawings has not been reviewed for code compliance.

- A. TOP HAT
- B. HOW TO INSTALL A NEW CABINET
- C. BASE BAND UNIT IN EXISTING UNIT
- D. INSTALLATION OF BATTERIES
- E. INSTALLATION OF HYBRID CABLE
- F. INSTALLATION OF RRU'S
- G. CABLING
- H. TS-0200 REV 4 – ANTENNA LINE ACCEPTANCE STANDARDS
- I. SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.
- J. COMMISSIONING MOPS
- K. GROUNDING NE-312-201
- L. SPRINT INTEGRATED CONSTRUCTION STANDARDS VERSION 4.0

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. 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. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
- 4. ALL AVAILABLE JURISDICTIONAL 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. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).
- 12. CLOSEOUT PHOTOGRAPHS:
 - a. PROVIDE PHOTOGRAPHS OF FINAL PROJECT PER THE FOLLOWING LIST.
 - ADDITIONAL PHOTOGRAPHS MAY BE REQUIRED TO SUPPORT ACCEPTANCE PROCESSES
 - (i) MAIN HYBRID CABLE ROUTE (MINIMUM TWO PHOTOS)
 - (ii) PHOTOS OF EACH ANTENNA AND RRU
 - (iii) MANUFACTURERS NAME TAG FOR ALL SERIALIZED EQUIPMENT
 - (iv) PULL AND DISTRIBUTION BOXES INTERMEDIATE BETWEEN RRU'S AND MMBS (DOOR OPEN)
 - (v) MMBS CABINET WITH DOOR OPEN SHOWING MODIFICATIONS
 - (vi) POWER CABINET, DOORS OPEN, BATTERIES INSTALLED
 - (vii) BREAK OUT CYLINDERS
 - (viii) ASR SIGNAGE FOR SPRINT OWNED TOWERS
 - (ix) RADIATION EXPOSURE WARNING SIGNS
 - (x) PHOTOGRAPH FROM EACH SECTOR FROM APPROXIMATELY RAD CENTER OF ANY NEW ANTENNA AT HORIZON.
 - b. LOAD PHOTOS TO SITERRA PROJECT LIBRARY 15. IN 15 CREATE NEW CATEGORY; 2.5 DEPLOYMENT, AND SECTION; PERMANENT CONSTRUCTION. LABEL PHOTOS WITH SITE CASCADE AND VIEW BEING DEPICTED. CAMERAS USED TO TAKE PHOTOGRAPHS SHALL GPS ENABLED SUCH THAT THE GPS COORDINATES ARE INCLUDED IN THE PHOTO MEDIA-FILE INFORMATION.

COMMISSIONING:
PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPS

INTEGRATION:
PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPS

SECTION 07 500 – ROOF CUTTING, PATCHING AND REPAIR

SUMMARY:
THIS SECTION SPECIFIES CUTTING AND PATCHING EXISTING ROOFING SYSTEMS WHERE CONDUIT OR CABLES EXIT THE BUILDING ONTO THE ROOF OR BUILDING-MOUNTED ANTENNAS, AND AS REQUIRED FOR WATERTIGHT PERFORMANCE. ROOFTOP ENTRY OPENINGS IN MEMBRANE ROOFTOPS SHALL BE CONSTRUCTED TO COMPLY WITH LANDLORD, ANY EXISTING WARRANTY, AND LOCAL JURISDICTIONAL STANDARDS.

- A. **PRE-CONSTRUCTION ROOF PHOTOS:** COMPLETE A ROOF INSPECTION PRIOR TO THE INSTALLATION OF SPRINT EQUIPMENT ON ANY ROOFTOP BUILD. AT A MINIMUM INSPECT AND PHOTOGRAPH (MINIMUM 3 EA.) ALL AREAS IMPACTED BY THE ADDITION OF THE SPRINT EQUIPMENT.
- B. PROVIDE SIMILAR PHOTOGRAPHS SHOWING ROOF CONDITIONS AFTER CONSTRUCTION (MINIMUM 3 EA.)
- C. ROOF INSPECTION PHOTOGRAPHS SHOULD BE UPLOADED WITH CLOSEOUT PHOTOGRAPHS.

SECTION 09 900 – PAINTING
QUALITY ASSURANCE:

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR THREE YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. COMPLY WITH ALL ENVIRONMENTAL REGULATIONS FOR VOLATILE ORGANIC COMPOUNDS.

MATERIALS:

A. MANUFACTURERS: BENJAMIN MOORE, ICI DEVOE COATINGS, PPG, SHERWIN WILLIAMS OR APPROVED EQUAL. PROVIDE PREMIUM GRADE, PROFESSIONAL-QUALITY PRODUCTS FOR COATING SYSTEMS.

PAINT SCHEDULE:

A. EXTERIOR ANTENNAE AND ANTENNA MOUNTING HARDWARE: ONE COAT OF PRIMER AND TWO FINISH COATS. PAINT FOR ANTENNAE SHALL BE NON-METALLIC BASED AND CONTAIN NO METALLIC PARTICLES. PROVIDE COLORS AND PATTERNS AS REQUIRED TO MASK APPEARANCE OF ANTENNAE ON ADJACENT BUILDING SURFACES AND AS ACCEPTABLE TO THE OWNER. REFER TO ANTENNA MANUFACTURER'S INSTRUCTIONS WHENEVER POSSIBLE.

B. **ROOF TOP CONSTRUCTION:** TOUCH UP – PREPARE SURFACES TO BE REPAIRED. FOLLOW INDUSTRY STANDARDS AND REQUIREMENTS OF OWNER TO MATCH EXISTING COATING AND FINISH.

PAINTING APPLICATION:

- 1. INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
- 2. COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
- 3. MATCH APPROVED MOCK-UPS FOR COLOR, TEXTURE, AND PATTERN. RE-COAT OR REMOVE AND REPLACE WORK WHICH DOES NOT MATCH OR SHOWS LOSS OF ADHESION.
- 4. CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

- 1. GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
- 2. FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- 3. ALL METAL COMPONENTS SHALL BE HANDLED WITH CARE TO PREVENT DAMAGE TO THE COMPONENTS, THEIR PRESERVATIVE TREATMENT, OR THEIR PROTECTIVE COATINGS.

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. DO NOT USE SUPERFLEX OUTDOORS. JUMPERS SHALL BE FACTORY FABRICATED IN APPROPRIATE LENGTHS WITH A MAXIMUM OF 4 FEET EXCESS PER JUMPER AND HAVE CONNECTORS AT EACH END, MANUFACTURED BY SUPPLIER. IF JUMPERS ARE FIELD FABRICATED, FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION OF CONNECTORS

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.

PLANS PREPARED FOR:



6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

△			
△			
△			
2	7/1/14	FINAL CONST	ML
1	6/26/14	100% CONST	JN
0	4/16/14	90% CONST	ML
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ISSUED FOR
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PLANS PREPARED BY:

CENTERLINE SOLUTIONS
Advancing Wireless Networks

16360 TABLE MOUNTAIN PARKWAY
Golden, CO 80403
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ALL SCALES ARE SET FOR A SIZE "D" 24"x36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY	CHECKED BY:	APPROVED BY:
ML	JN	KS

SHEET TITLE
SPRINT SPECIFICATIONS

SHEET NUMBER
SP1

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 CABLES 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 RADI.

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 PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.

2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBS 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.

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 SLIM 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. LABEL CIRCUIT BREAKERS ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1.

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

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

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.
- 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 8 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 AS 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 AS INDICATED.

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.

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.

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14 - 869520

PLANS PREPARED FOR:



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△	6/26/14	100% CONST	JN
△	4/16/14	90% CONST	ML
REV	DATE	REVISION DESCRIPTION	BY

ISSUED FOR
CONSTRUCTION

PLANS PREPARED BY:

CENTERLINE SOLUTIONS
Advancing Wireless Networks
16360 TABLE MOUNTAIN PARKWAY
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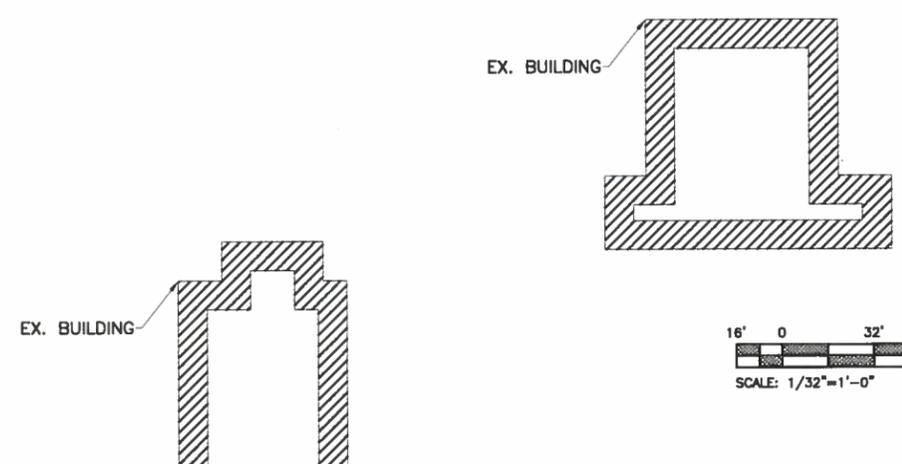
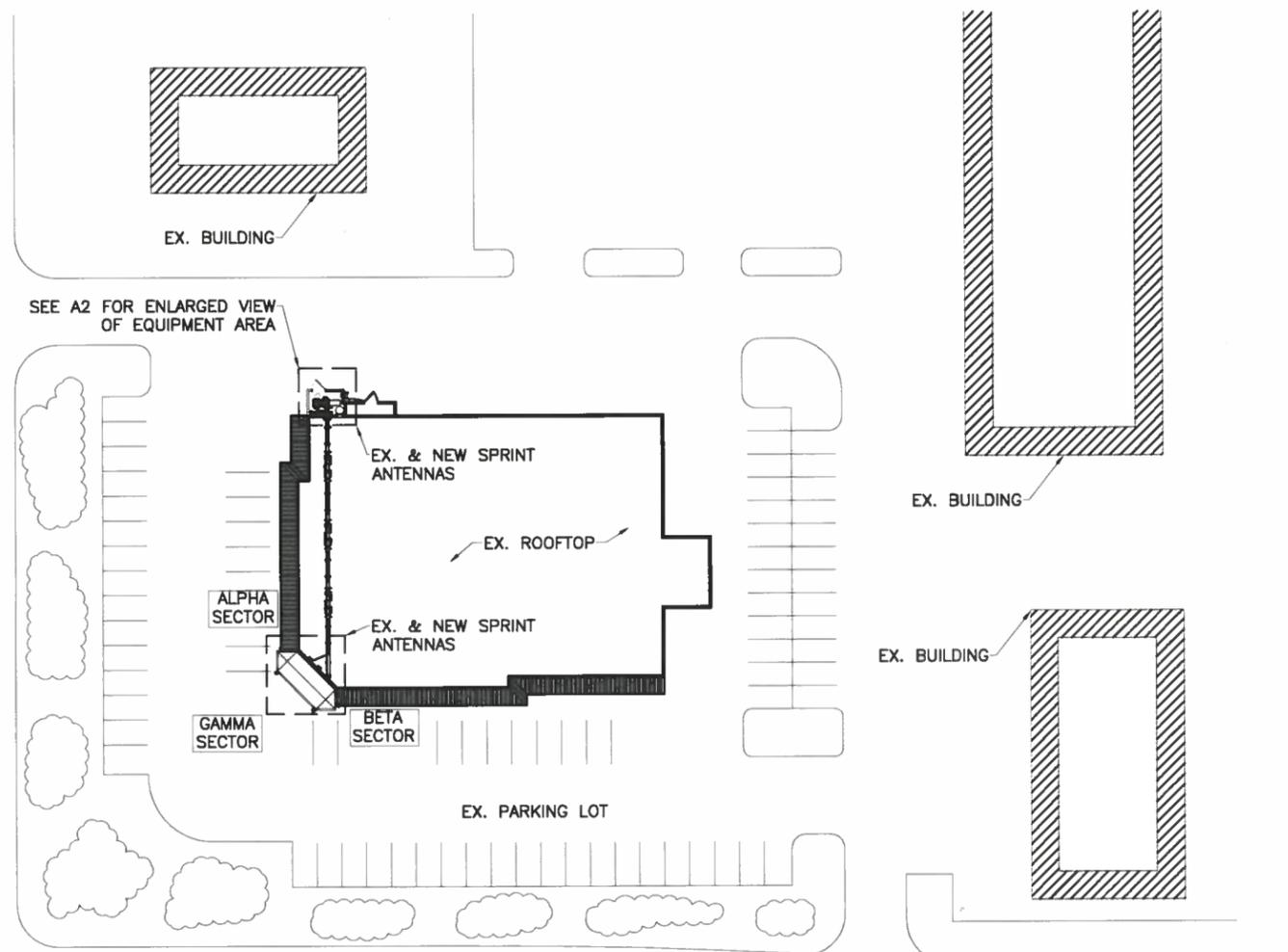
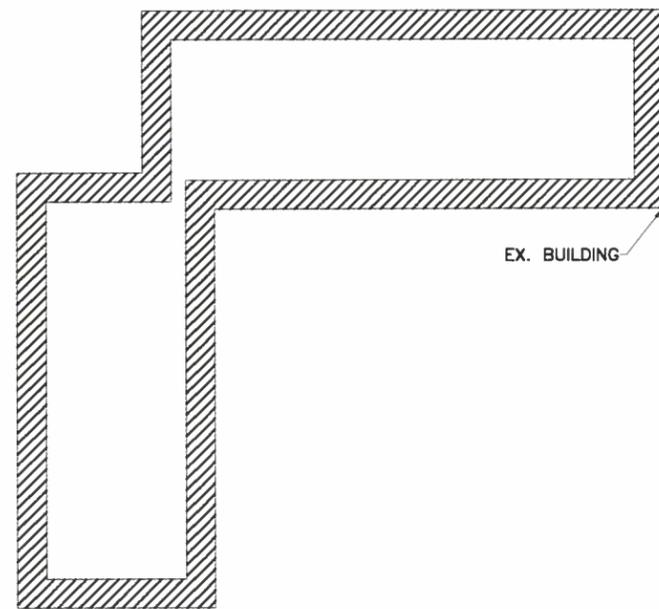
ALL SCALES ARE SET FOR A SIZE "D" 24"x36" SHEET
PROJECT INFORMATION:

WALGREENS
DN63XC021
15301 E. IUFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

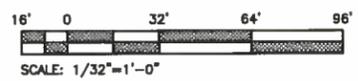
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SHEET TITLE
SPRINT SPECIFICATIONS

SHEET NUMBER
SP2



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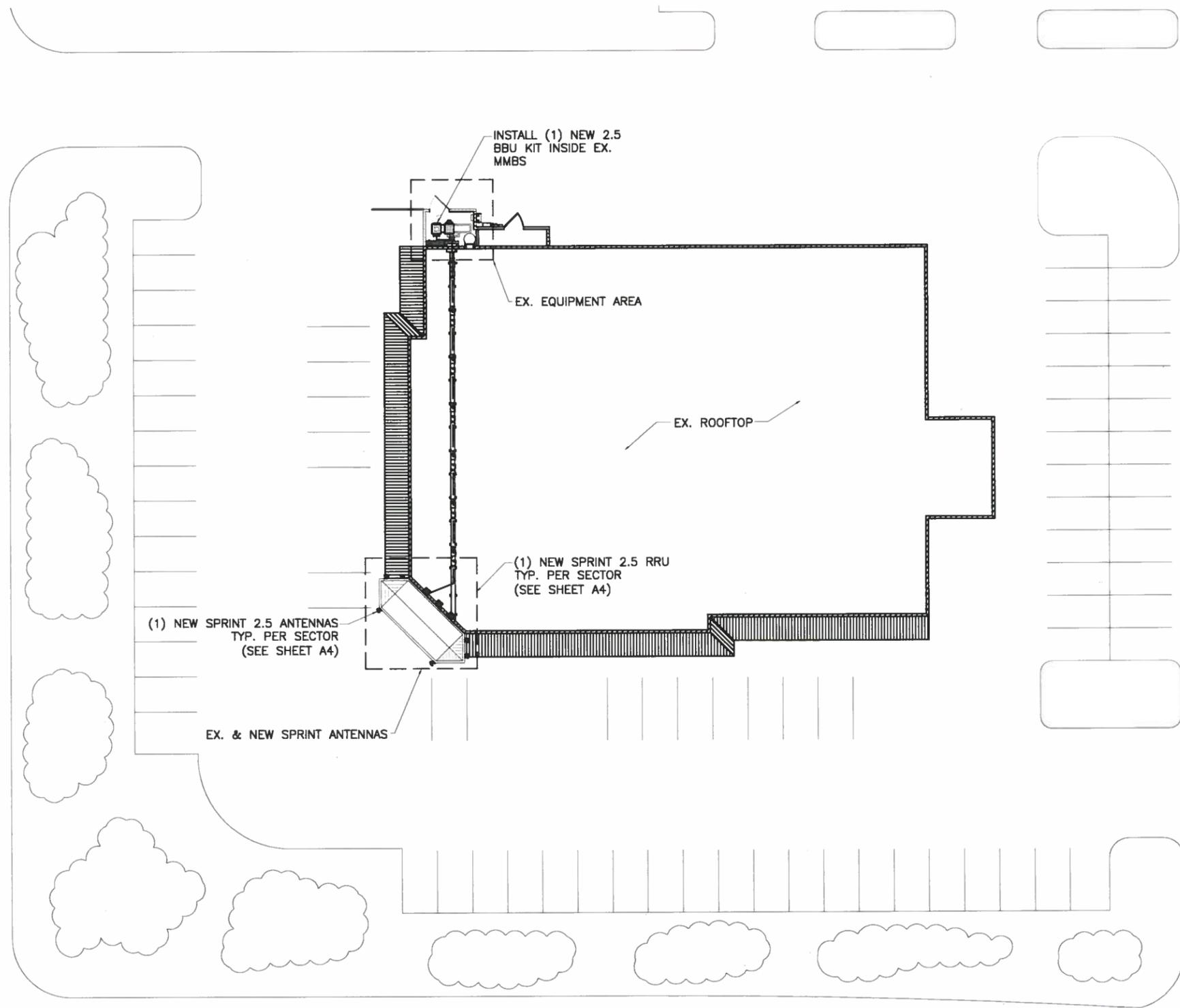
PROJECT INFORMATION
WALGREENS
 DN63XC021
 15301 E. ILIFF AVE.
 AURORA, CO 80013
 ARAPAHOE COUNTY

DRAWN BY: ML	CHECKED BY: JN	APPROVED BY: KS
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SHEET TITLE
OVERALL SITE PLAN

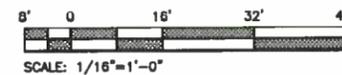
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A1

S. CHAMBERS RD



E. ILIFF AVE

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ALL SCALES ARE SET FOR A SIZE "D" 24"X36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

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SHEET TITLE
SITE PLAN

SHEET NUMBER
A2

14 - 869520

Sprint®

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OVERLAND PARK, KS 66251

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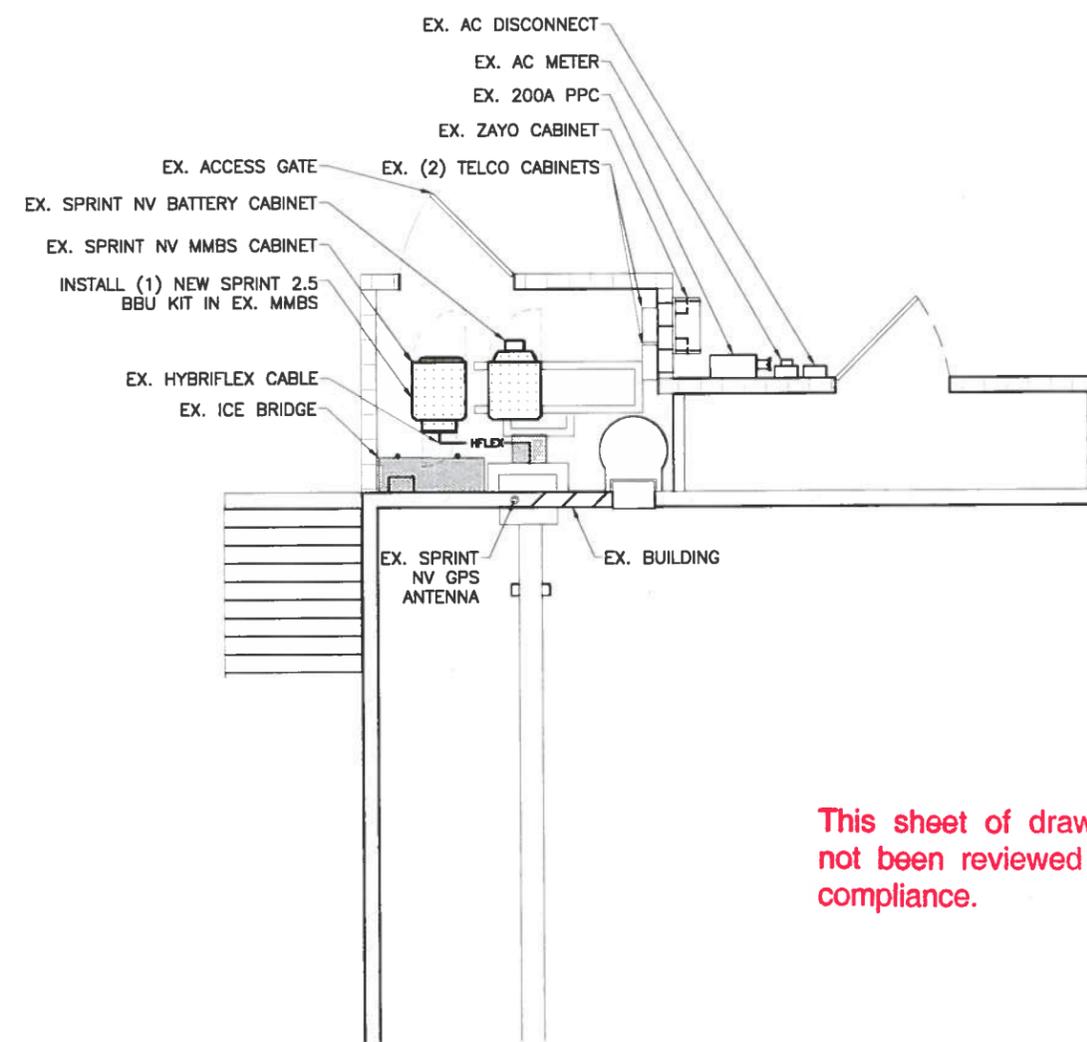
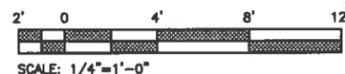
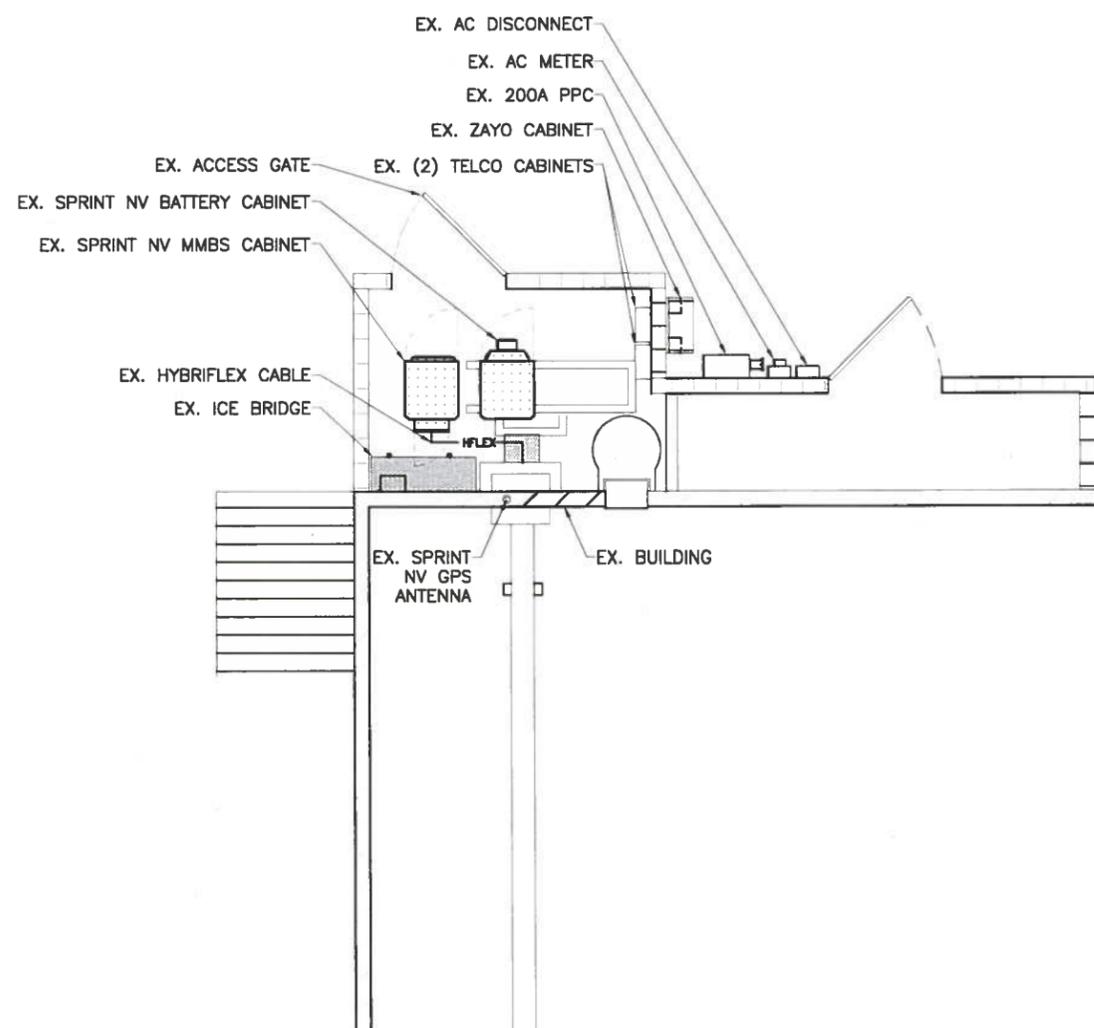
ALL SCALES ARE SET FOR A SIZE "D" 24"X36" SHEET

PROJECT INFORMATION
**WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY**

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ML	JN	KS

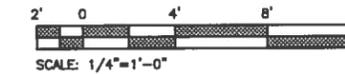
SHEET TITLE
**EXISTING & NEW
EQUIPMENT PLANS**

SHEET NUMBER
A3



This sheet of drawings has not been reviewed for code compliance.

14-869520

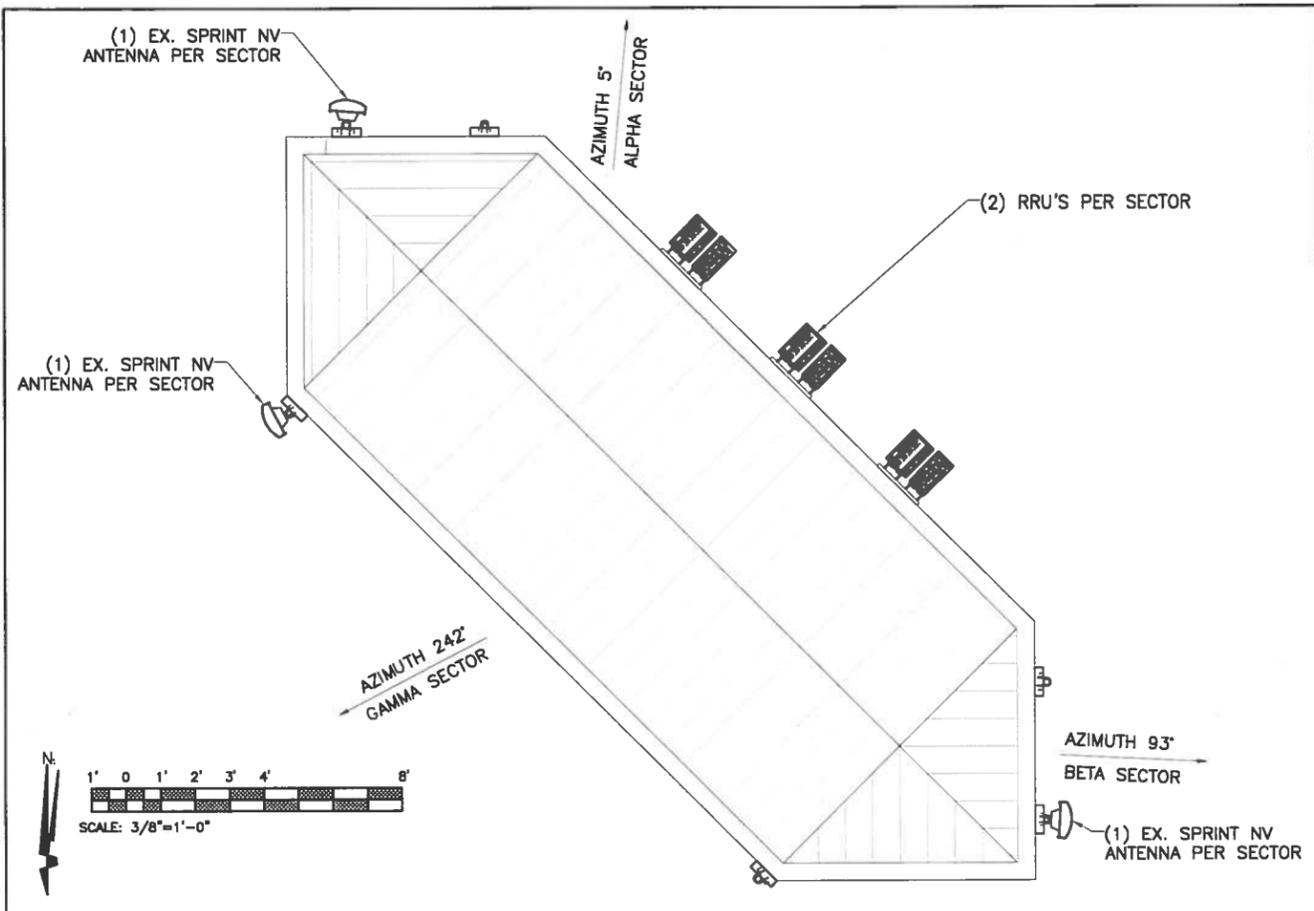


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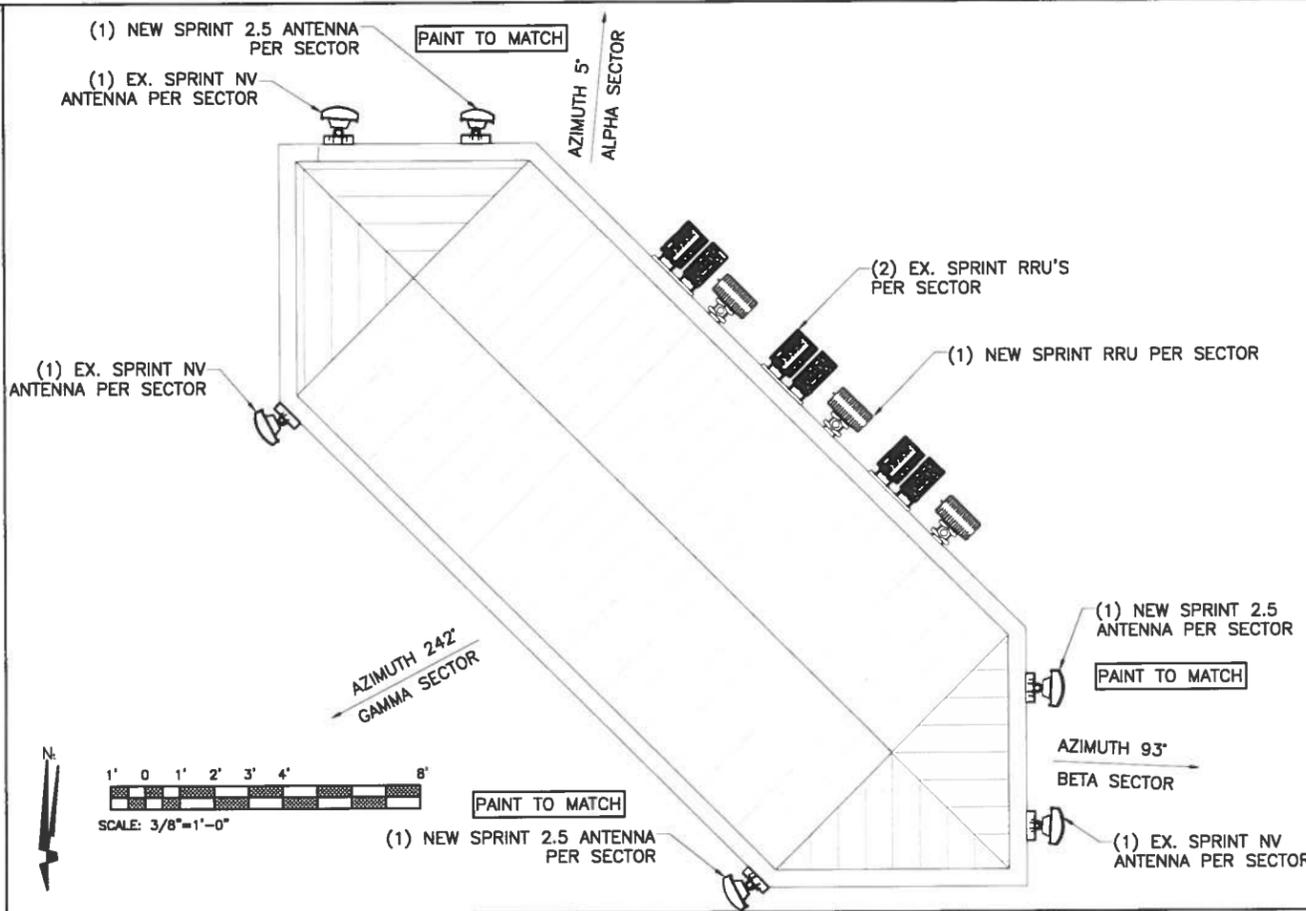
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2 NEW EQUIPMENT PLAN

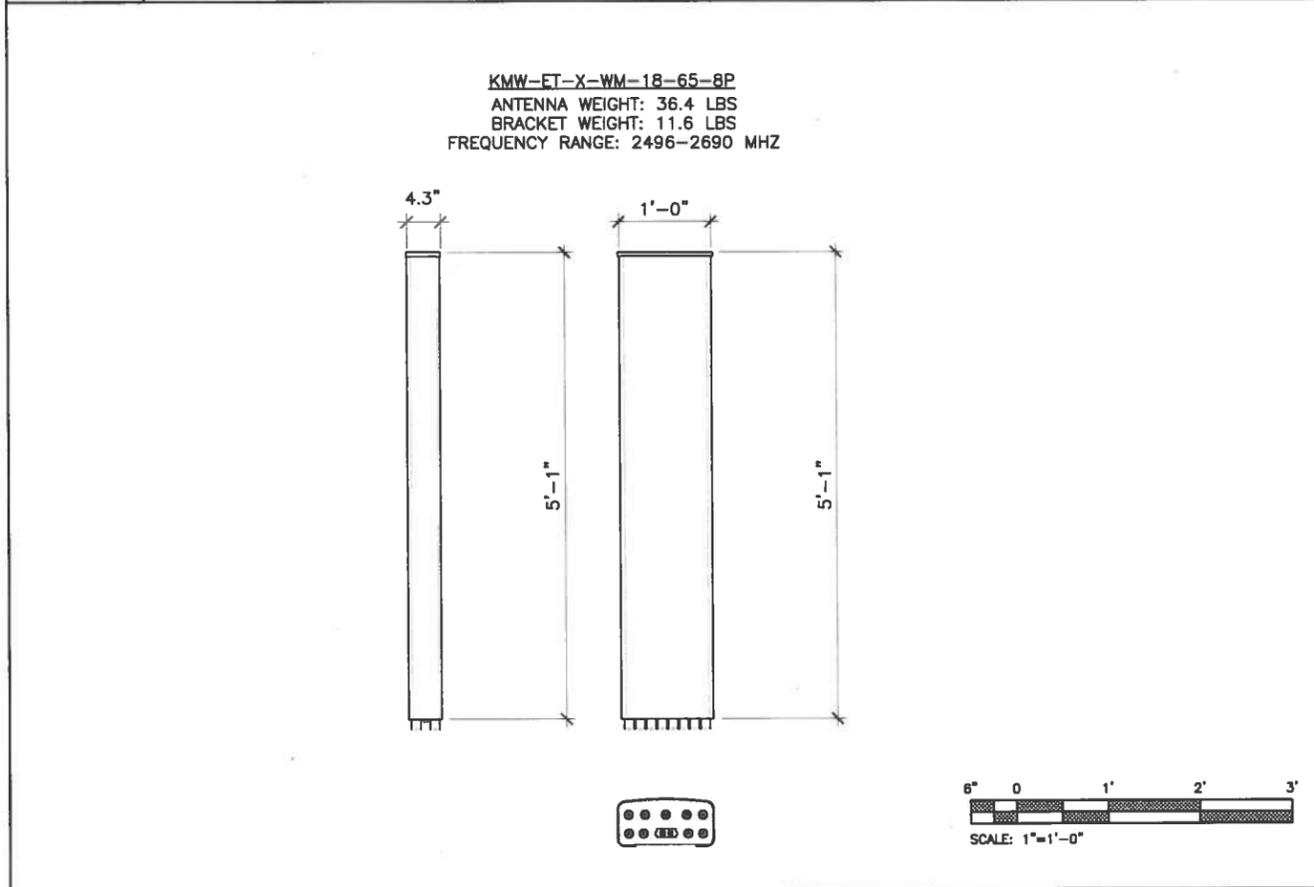
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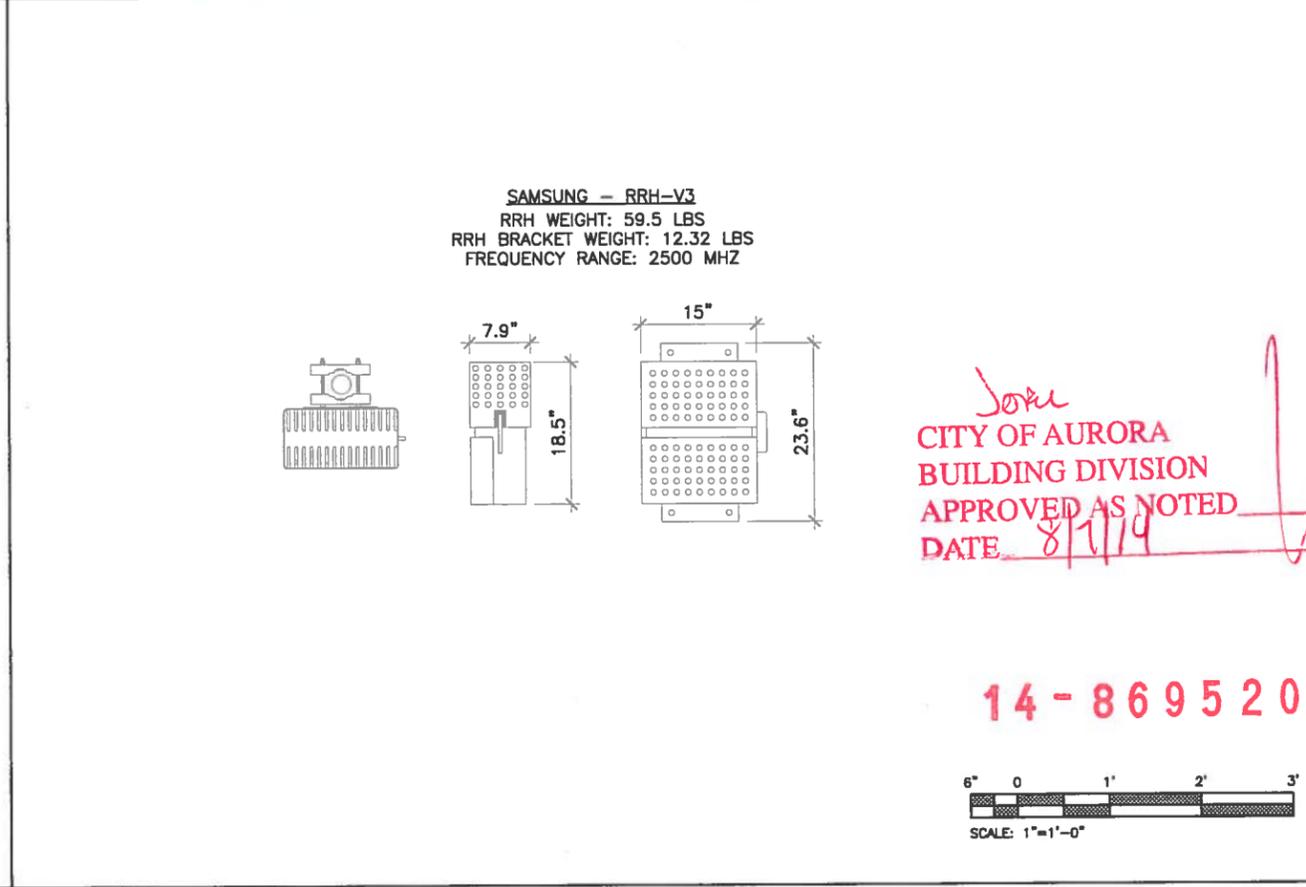
1 EXISTING ANTENNA PLAN SCALE: 3/8"=1'-0"



2 NEW ANTENNA PLAN SCALE: 3/8"=1'-0"



3 2.5 ANTENNA SPEC SCALE: 1"=1'-0"



4 RRU SPEC & PORT LAYOUT SCALE: 1"=1'-0"

PLANS PREPARED FOR:

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John
CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED
DATE 8/1/14

ALL SCALES ARE SET FOR A SIZE "D" 24"X36" SHEET

PROJECT INFORMATION:

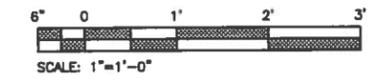
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15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY:	CHECKED BY:	APPROVED BY:
ML	JN	KS

SHEET TITLE:
EX. & NEW ANTENNA
PLANS, ANTENNA
& RRU SPECS

SHEET NUMBER:
A4

14-869520





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OVERLAND PARK, KS 66251

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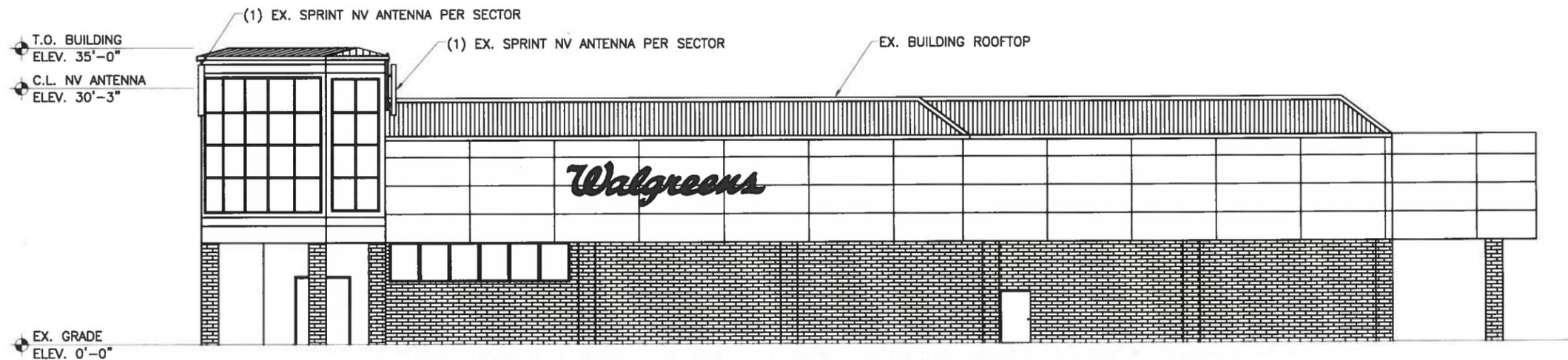
ALL SCALES ARE SET FOR A SIZE 10" X 24" X 36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

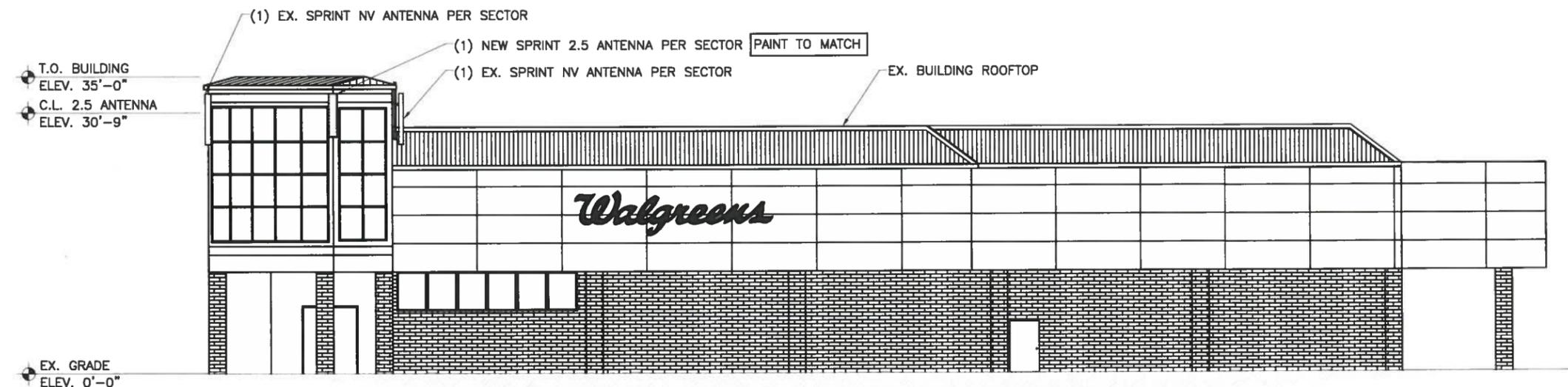
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SHEET TITLE
ELEVATIONS

SHEET NUMBER
A5



1 EXISTING ELEVATION SCALE: 1/8"=1'-0"



2 NEW ELEVATION SCALE: 1/8"=1'-0"

**STRUCTURAL NOTES/SPRINT
STRUCTURAL SERVICES COMPLIANCE
NOTE:**

NO WORK SHALL COMMENCE WITHOUT THE APPROVED STRUCTURAL TOWER/ANTENNA/MOUNT ANALYSIS REPORT (SIGNED AND SEALED) TO BE PROVIDED UNDER SEPARATE COVER. CONTRACTOR PRIOR TO CONSTRUCTION SHALL REVIEW THE APPROVED TOWER/ANTENNA/MOUNT ANALYSIS REPORT SUPPLIED BY SPRINT AND MODIFY IF REQUIRED ALL APPLICABLE MEMBERS AS INDICATED IN CERTIFIED STRUCTURAL REPORT PRIOR TO INSTALLATION ON STRUCTURE.

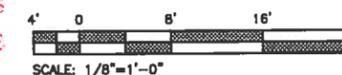
ANTENNA NOTES:

1. THE SIZE, HEIGHT AND DIRECTION OF THE ANTENNA SHALL BE ADJUSTED TO MEET SYSTEM REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY HEIGHT OF ANTENNA WITH SPRINT REPRESENTATIVE.
3. ALL ANTENNA AZIMUTHS ARE TO BE TAKEN FROM TRUE NORTH.

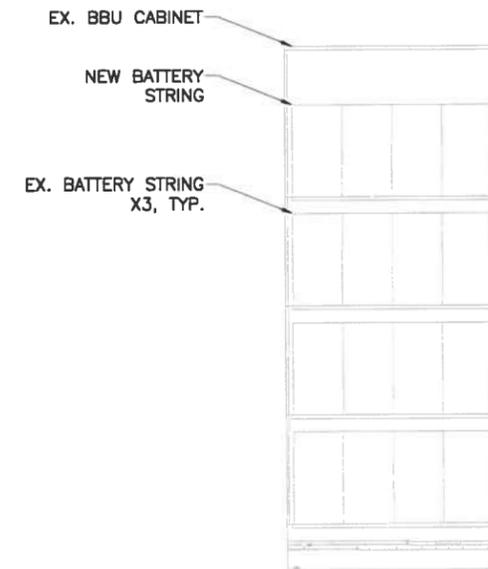
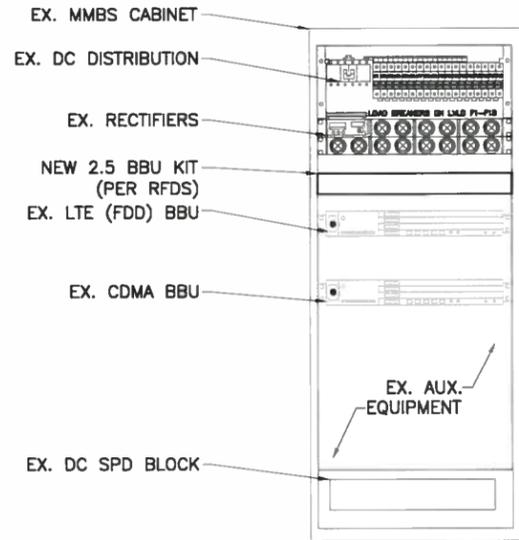
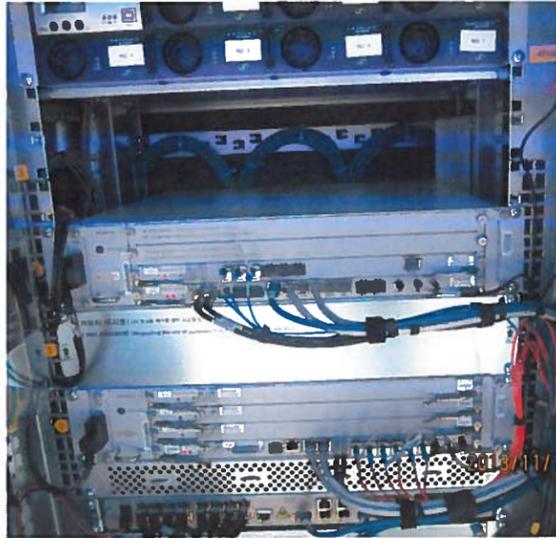
**RF WARNING SIGNAGE &
EMERGENCY SIGNAGE NOTES:**

CONTRACTOR TO CONFIRM THAT THE SITE IS COMPLIANT WITH RF WARNING SIGNAGE & EMERGENCY SIGNAGE AS REQUIRED BY THE FEDERAL GUIDELINES & AS PER SPRINT GUIDELINES.

This sheet of drawings has not been reviewed for code compliance.



14-869520



1 EX. MMBS CABINET

SCALE: N.T.S.

2 EX. MMBS CABINET W/ 2.5 EQUIPMENT

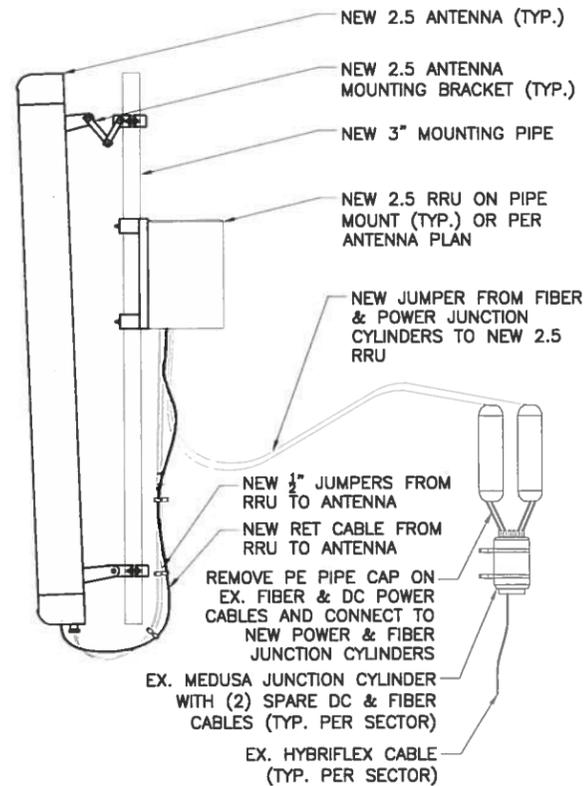
SCALE: N.T.S.

3 EX. BBU CABINET

SCALE: N.T.S.

4 EX. BBU CABINET W/ 2.5 EQUIPMENT

SCALE: N.T.S.



5 NOT USED

SCALE: N.T.S.

6 TYP. 2.5 ANTENNA & RRU DETAIL

SCALE: N.T.S.

6 NOT USED

SCALE: N.T.S.

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14-869520

PLANS PREPARED FOR:



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OVERLAND PARK, KS 66251

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△			
△	2	7/1/14	FINAL CONST ML
△	1	6/26/14	100% CONST JN
△	0	4/16/14	90% CONST ML
REV.	DATE	REVISION DESCRIPTION	BY

ISSUED FOR
CONSTRUCTION

PLANS PREPARED BY
CENTERLINE SOLUTIONS
Advancing Wireless Networks

16360 TABLE MOUNTAIN PARKWAY
Golden, CO 80403
303-993-3293
WWW.CENTERLINESOLUTIONS.COM



ALL SCALES ARE SET FOR A SIZE "D" 24"X36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY ML	CHECKED BY JN	APPROVED BY KS
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SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A6

RF Design Sheet Version 3.1

***NOTE: Build site assuming future growth (ie 13.3 forecast).

Basic Information

Note: Italic text are RFDS instructions for RF Engineer. Please remove these comments prior to issuing RFDS form and remove italic formatting.

Cascade Number	DN63XC021
Site Name	F2/FILL-IN/AURORA/DEN367/WALGREEN'S
Site Number 1 or 2 (for more than 3 sector site)	1 0
99 Market Name	Colorado
OEM	Samsung
Cluster ID	Colorado11
Issue Date	02/24/2014
Revision Date	
Solution ID	
PID	
RFDS Engineer (OEM RF Engineer)	Jonghak Jung / Safwat Issa
Sprint RF Engineer	Kraig Clark
Sprint RF Engineer (phone/e-mail)	(O) 720-439-3197 (M) 720-350-3279 / Kraig.X.Clark@sprint.com
Sprint RF Manager	Mike Waterman
Sprint RF Manager (phone/email)	(O) 720-439-3198 (M) 949-278-9702 / Michael.J.Waterman@sprint.com
RF Need By Date	
Project Description	New 2.5G TDD LTE service at existing site. Add new antennas, RRH and RAN equipment.

Location Information

Latitude (decimal only)	39.67519
Longitude (decimal only)	-104.809375
Address	15301 E. Iliff Av.
City, State, Zip Code	Aurora Colorado 80013
County, E911 Phase	Arapahoe Phase 2

Site Level Design Information 2500Mhz

	Number of Sectors	Carrier Count when 2.5G is on air	Tx and Rx start and stop frequencies
LTE 2500	3	3	Band41
3G 1900 Mhz			
LTE PCS G Block			
LTE PCS Block A-F			
3G 800Mhz			
LTE 800Mhz			
Microwave Backhaul			
Existing BTS Location			
Existing BTS Type			
New Growth Cabinet Make/Model	NA		
New Growth Cabinet Quantity	NA		
New Growth Cabinet Dimensions (L x W x H in inches)	NA		
New Growth Cabinet Loaded weight (lbs)	NA		
New Top Hat Make/Model			
New Top Hat Cabinet Quantity			
New Top Hat Dimensions (L x W x H in inches)			
New Top Hat Loaded weight (lbs)			
Incremental Power Draw needed by new Growth Cabinet or Top Hat	75 Amps (3750 Watt)		
Site Structure Type	ROOFTOP		
Current Ethernet Speed			
Required Ethernet Speed			
Radio Configuration	8T8R		
Split Mode			
Radio Scenario	1		
Plumbing Diagram Number	SPRINT PD ST8TR3A1XX		
RRH / RRU Model	RRU_2.5TEV3_10KM		
RRH / RRU Qty	3		
RRH/RRU Weight (lbs including mount)	71.82 lbs each		
RRH/RRU Dimensions (L x W x H in inches)	21.1" x 15.03" x 9.45" each with Fingure guard		
Power Junction Cylinder Make/Model	Amphenol Fiber Optic		
Power Junction Cylinder Qty	3		
Power Junction Cylinder Dimensions (L x W x H in inches)	1.5" X 3.9" (Cylindrical)		
Power Junction Cylinder Weight (lbs)	6 lb Including Bracket and clamps		
Optical Junction Cylinder Make/Model	Amphenol Fiber Optic		
Optical Junction Cylinder Qty	3		
Optical Junction Cylinder Dimensions (L x W x H in inches)	1.5" X 3.9" (Cylindrical)		
Optical Junction Cylinder Weight (lbs)	3.7 lb Including Bracket and clamps		
Hybrid/Fiber Cable Make/Model	NA		
Hybrid/Fiber Qty	NA		
Hybrid/Fiber Length	NA		
Hybrid/Fiber Diameter (Inches)	NA		
Hybrid/Fiber weight per foot (lbs)	NA		
HomeRun Coax Cable Make/Model	NA		
HomeRun Coax Cable Qty	NA		
HomeRun Coax Cable Length	NA		
HomeRun Coax Cable Diameter (inches)	NA		
HomeRun Coax Cable weight per foot (lbs)	NA		

1) Does Home Run AISG (RET) Cable Exist? 2) If so, How many? 3) If new ones will be run, incremental additional number of cables.
Additional GPS antenna required?

RF Design Sheet Version 3.1

***NOTE: Build site assuming future growth (ie 13.3 forecast).

Final/New Configuration	Sector 1	Sector 2	Sector 3
Azimuth	345	120	225
Antenna Center Line (ft)	36	36	36
Antenna Manufacturer	KMW	KMW	KMW
Antenna Model	ET-X-WM-18-65-8P	ET-X-WM-18-65-8P	ET-X-WM-18-65-8P
Antenna Weight (lbs including mount)	50	50	50
Antenna Dimensions (L x W x H in inches)	61.0" x 12.0" x 4.3"	61.0" x 12.0" x 4.3"	61.0" x 12.0" x 4.3"
Antenna Qty	1	1	1
Antenna Mechanical Downtilt	0	0	0
Antenna Electrical Downtilt	2	2	2
Combined with *			
Upper Splitter Make/Model			
Upper Splitter Qty			
Upper Splitter Dimensions (L x W x H in Inches)			
Upper Splitter Weight (lbs)			
Top Jumper Make/Model	JMA or Other equivalent	JMA or Other equivalent	JMA or Other equivalent
Top Jumper Quantity	8X8' RF + 1X8' Calib	8X8' RF + 1X8' Calib	8X8' RF + 1X8' Calib
Top Jumper length in feet	8'	8'	8'
Bottom Jumper Make/Model	NA	NA	NA
Bottom Jumper Quantity	NA	NA	NA
Bottom Jumper length in feet	NA	NA	NA
Surge Arrestor			
Upper Diplexer/Triplexor/Duplexor Model			
Upper Diplexer/Triplexor/Duplexor Qty			
Upper Diplexer/Triplexor/Duplexor Dimensions (L x W x H in inches)			
Upper Diplexer/Triplexor/Duplexor Weight (lbs)			
Upper Diplexer/Triplexor/Duplexor Model			
Upper Diplexer/Triplexor/Duplexor Qty			
DC Block (specify port)			
RF Filter Make/Model			
RF Filter Quantity	0	0	0
RF Filter Dimensions (L x W x H in inches)			
RF Filter Weight (lbs)			

PLANS PREPARED FOR:



6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

△			
△			
△			
2	7/1/14	FINAL CONST	ML
1	6/26/14	100% CONST	JN
0	4/16/14	90% CONST	ML
REV	DATE	REVISION DESCRIPTION	BY

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PLANS PREPARED BY
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Advancing Wireless Networks

16360 TABLE MOUNTAIN PARKWAY
Golden, CO 80403
303 993 3293
WWW.CENTERLINESOLUTIONS.COM



ALL SCALES ARE SET FOR A SIZE 'D' 24" X 36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILLIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY	CHECKED BY	APPROVED BY
ML	JN	KS

SHEET TITLE
RFDS

SHEET NUMBER
A7

This sheet of drawings has not been reviewed for code compliance.

CONTRACTOR TO OBTAIN MOST RECENT RFDS FROM SPRINT PRIOR TO CONSTRUCTION

14-869520

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

1 TECHNOLOGY COLOR CODING

SCALE: N.T.S.

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

2 2500 MHz RADIO CALIBRATION CABLE COLOR CODING

SCALE: N.T.S.

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

3 HYBRID CABLE COLOR CODING

SCALE: N.T.S.

This sheet of drawings has not been reviewed for code compliance.

14 - 869520

PLANS PREPARED FOR:



6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

△			
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△			
△	7/1/14	FINAL CONST	ML
△	6/26/14	100% CONST	JN
△	4/16/14	90% CONST	ML
REV	DATE	REVISION DESCRIPTION	BY

ISSUED FOR

CONSTRUCTION

PLANS PREPARED BY:



Advancing Wireless Networks

16360 TABLE MOUNTAIN PARKWAY
Golden, CO 80403
303 993-3293
WWW.CENTERLINESOLUTIONS.COM



ALL SCALES ARE SET FOR A SIZE "D" 24"X36" SHEET

PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY	CHECKED BY	APPROVED BY
ML	JN	KS

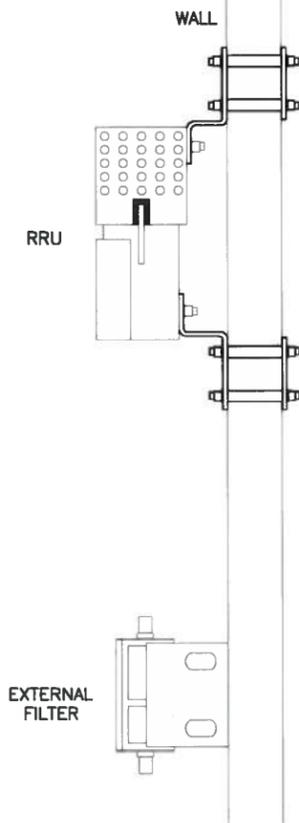
SHEET TITLE

COLOR CODING

SHEET NUMBER

A8

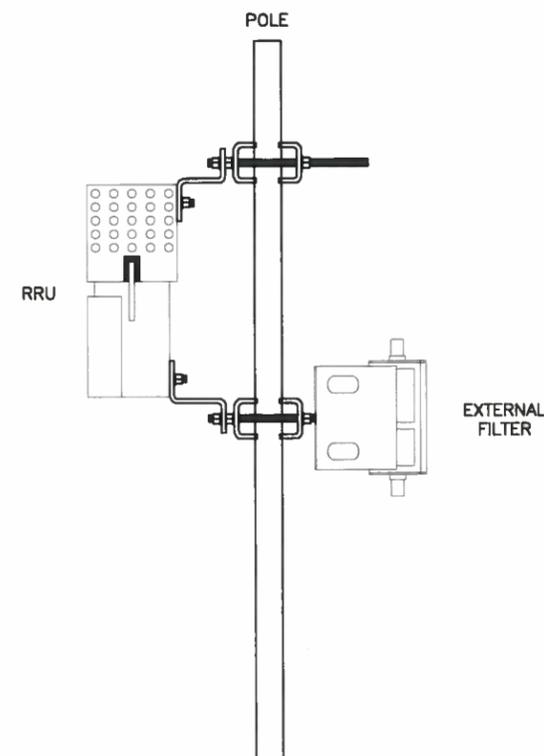
NOTES:
RRUS & FILTERS TO BE
INSTALLED PER MFG.'S
SPECIFICATIONS TO BE
PROVIDED PRIOR TO
INSTALLATION OF THE
APPROVED EQUIPMENT PER
LATEST RFDS PROVIDED BY
SPRINT.



1 TYPICAL RRU & RF FILTER ONE SECTOR WALL MOUNT

SCALE: N.T.S.

NOTES:
RRUS & FILTERS TO BE
INSTALLED PER MFG.'S
SPECIFICATIONS TO BE
PROVIDED PRIOR TO
INSTALLATION OF THE
APPROVED EQUIPMENT PER
LATEST RFDS PROVIDED BY
SPRINT.

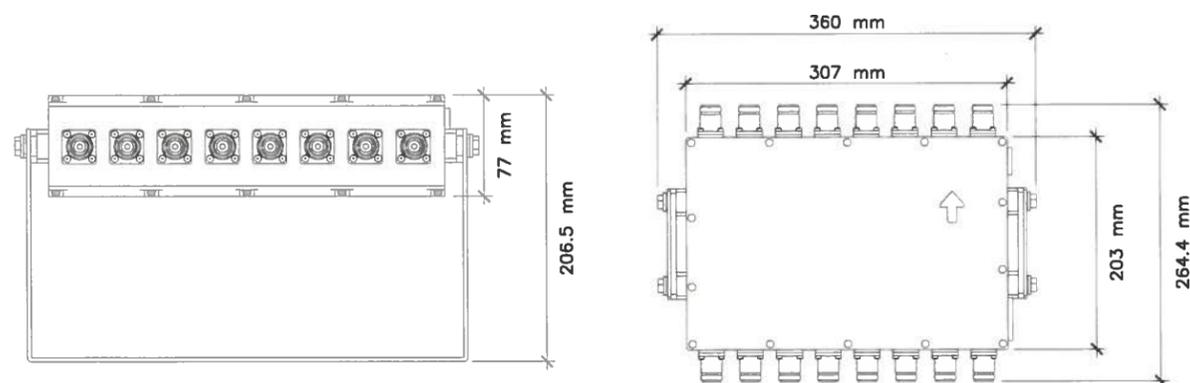


2 TYPICAL RRU & RF FILTER ONE SECTOR POLE MOUNT

SCALE: N.T.S.

SPRINT 8T8R 2.5G 8T8R RADAR FILTER

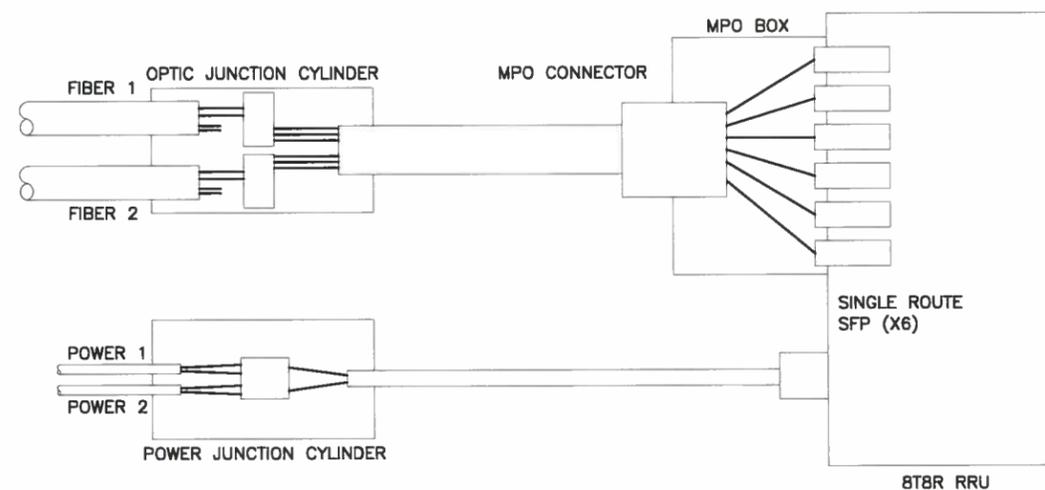
FILTER & BRACKET WEIGHT:
<10KG
FREQUENCY RANGE: 2500
MHZ



NOTES:
CONTRACTOR TO INSTALL APPROVED RF FILTER AT SITES
REQUIRING RADAR FILTER PER LATEST RFDS PROVIDED BY SPRINT.

3 SPRINT 8T8R 2.5G 8T8R RADAR FILTER

SCALE: N.T.S.



This sheet of drawings has
not been reviewed for code
compliance.

14-869520

4 CYLINDER SCHEMATIC DETAIL

SCALE: N.T.S.

PLANS PREPARED FOR:



6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

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△			
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303-993-3293
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ALL SCALES ARE SET FOR A SIZE 'D' 24"X36" SHEET
PROJECT INFORMATION

WALGREENS
DN63XC021
15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY: ML
CHECKED BY: JN
APPROVED BY: KS

SHEET TITLE
DETAILS

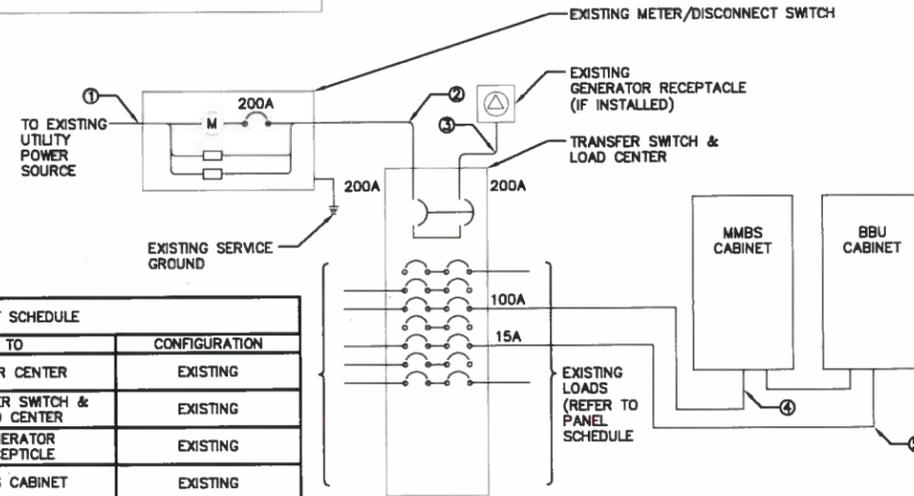
SHEET NUMBER
A9



1 EXISTING AC POWER DISTRIBUTION

SCALE: N.T.S.

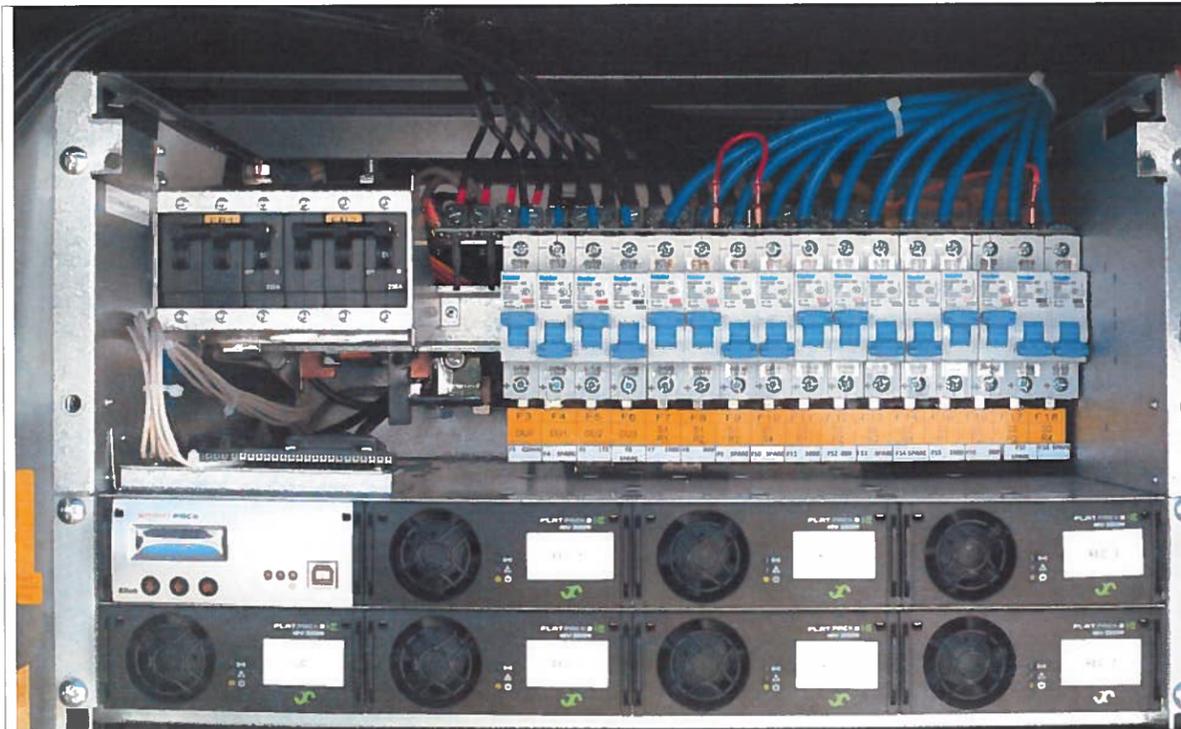
NOTES:
 1. ONE-LINE SHOWN PER FINAL SPRINT NETWORK VISION CONSTRUCTION DRAWINGS BY KDC DATED 08/08/2013.
 2. NO WORK TO BE PERFORMED WITHIN THE EXISTING AC PANEL



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	SOURCE	METER CENTER	EXISTING
2	METER/DSC	TRANSFER SWITCH & LOAD CENTER	EXISTING
3	TRANSFER SWITCH & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER SUB-PANEL	MMBS CABINET	EXISTING
5	TRANSFER & LOAD CENTER SUB-PANEL	BBU CABINET	EXISTING

3 EXISTING ONE LINE DIAGRAM

SCALE: N.T.S.

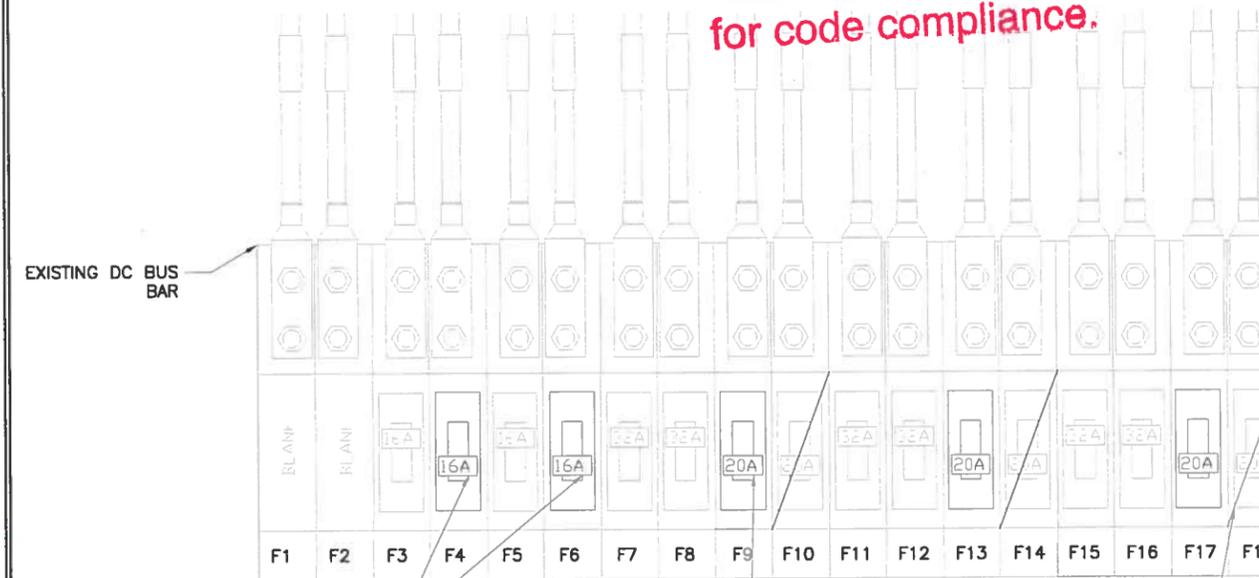


2 EXISTING DC POWER DISTRIBUTION

SCALE: N.T.S.

NOTES:
 1. (2) DU BREAKERS TO BE UPGRADED FROM 16A TO 25A.
 2. (3) RRU BREAKERS TO BE UPGRADED FROM 20A TO 32A.
 3. REMAINING/UNUSED RRH BREAKERS TO BE TAGGED OUT AS "CANNOT BE USED"

This sheet of drawings has not been reviewed for code compliance.



(2) EXISTING 16A BREAKERS TO BE UPGRADED TO 25A BREAKER FOR NEW LTE TD DU

(3) EXISTING 20A BREAKERS TO BE UPGRADED TO 32A BREAKERS FOR NEW 2.5 GHZ RRU'S

(3) EXISTING 16A BREAKERS TO BE TAGGED OUT AS "CANNOT BE USED"

4 TYPICAL DC POWER DISTRIBUTION

SCALE: N.T.S.

PLANS PREPARED FOR



6100 SPRINT PARKWAY
 OVERLAND PARK, KS 66251

△			
△			
△			
△			
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△	4/16/14	90% CONST	ML
REV.	DATE	REVISION DESCRIPTION	BY

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 PROJECT INFORMATION

WALGREENS
 DN63XC021
 15301 E. ILIFF AVE.
 AURORA, CO 80013
 ARAPAHOE COUNTY

DRAWN BY: ML
 CHECKED BY: JN
 APPROVED BY: KS

SHEET TITLE
EXISTING AC & DC POWER

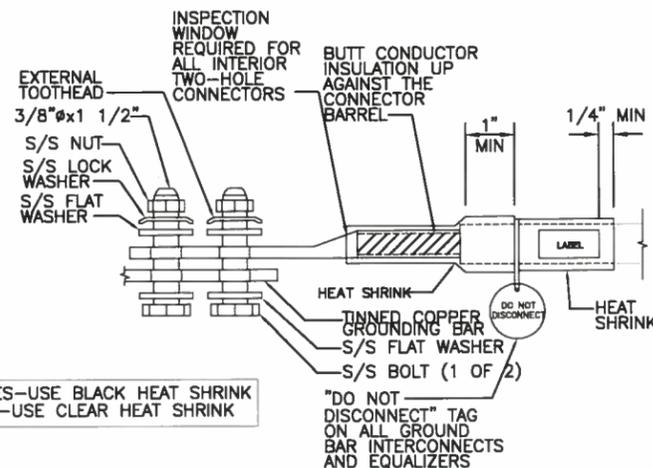
SHEET NUMBER
E1

14-869520

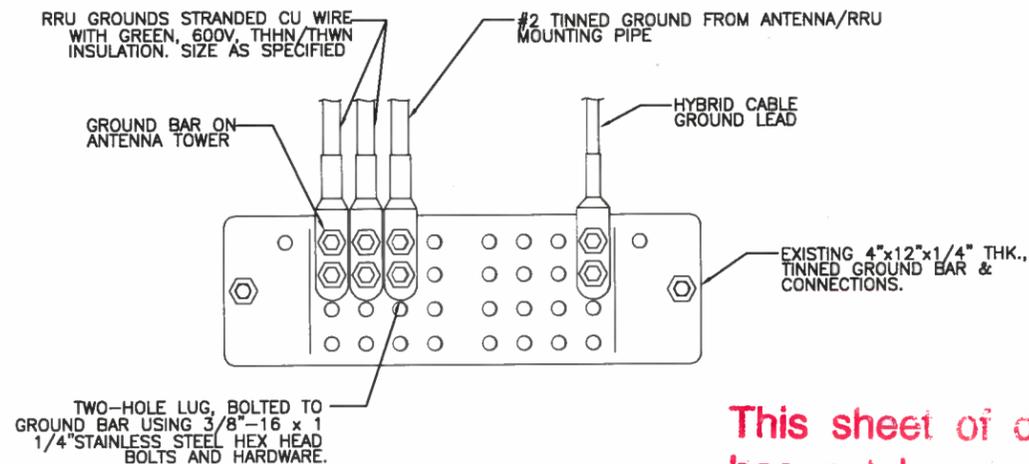


6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

NOTE:
*PROVIDE NO-OX GREASE AT CONTACT SURFACE BETWEEN LUG AND GROUND BAR
*CONTRACTOR WILL VERIFY BUSS BAR GROUNDING TO THE TOWER OR RING.



1. OUTDOOR SITES—USE BLACK HEAT SHRINK
2. INDOOR SITES—USE CLEAR HEAT SHRINK



This sheet of drawings has not been reviewed for code compliance.

△			
△			
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△	7/1/14	FINAL CONST	ML
△	6/26/14	100% CONST	JN
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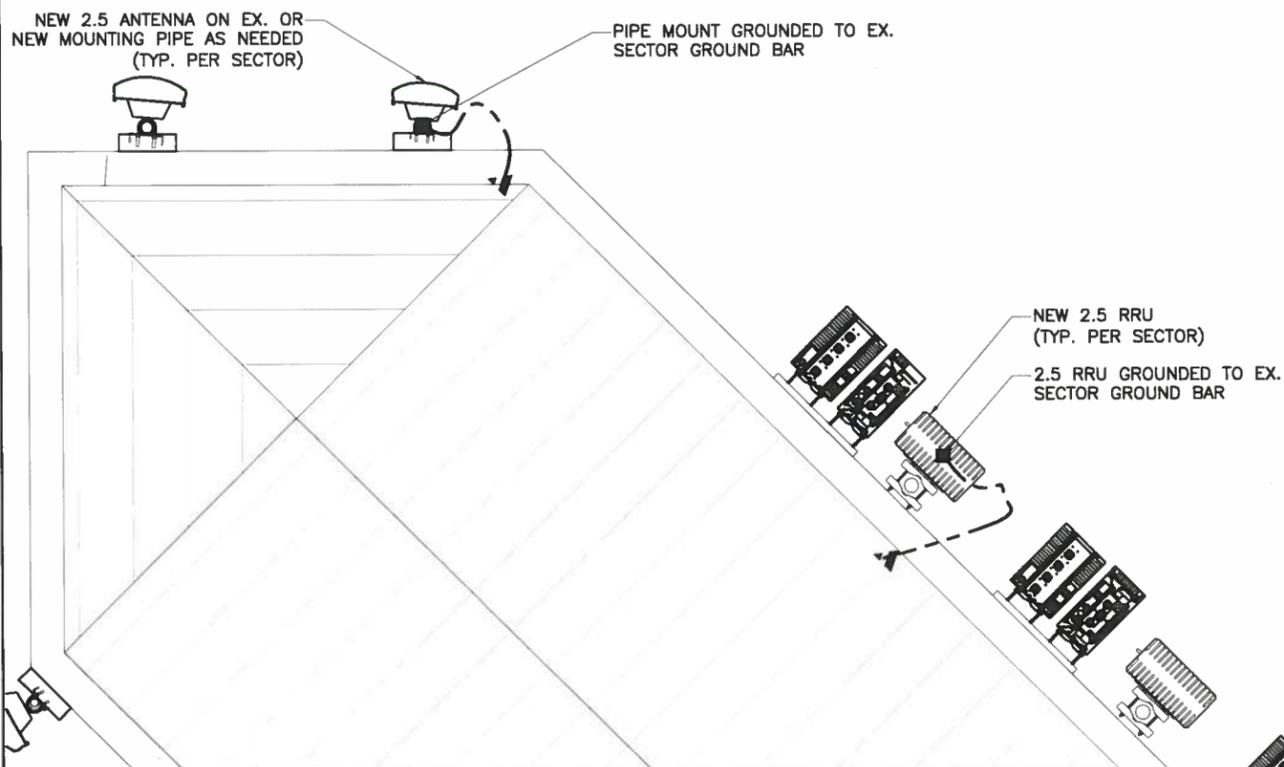
16360 TABLE MOUNTAIN PARKWAY
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1 MECHANICAL CONNECTION LUG

SCALE: N.T.S.

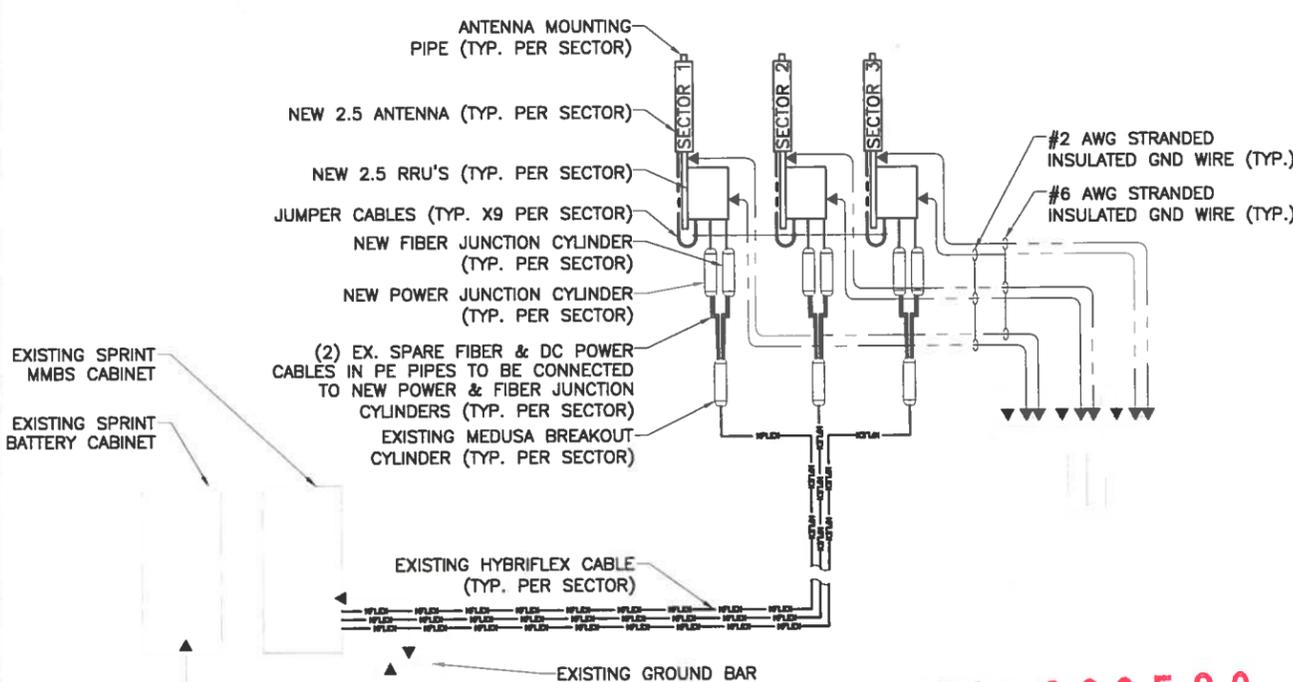
2 SECTOR GROUND BAR CONNECTIONS

SCALE: N.T.S.



3 TYP. ANTENNA GROUNDING

SCALE: N.T.S.



4 GROUNDING RISER DIAGRAM

SCALE: N.T.S.



ALL SCALES ARE SET FOR A SIZE 11" x 17" SHEET
PROJECT INFORMATION

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15301 E. ILIFF AVE.
AURORA, CO 80013
ARAPAHOE COUNTY

DRAWN BY ML	CHECKED BY JN	APPROVED BY KS
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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E2

14-869520