



Contract Number: CTN-IT-13 \* 201-01  
 Effective Date : 8-5-14  
 Term Date : 12-6-2035  
 Cost : 409,320.-  
 Revenue : 409,320.-  
 Total : \_\_\_\_\_ NTE: \_\_\_\_\_  
 Renewal By : \_\_\_\_\_ Action 9-1-2035  
 Term : \_\_\_\_\_  
 Reviewed by: [Signature] 12-6-2035

**BOARD OF SUPERVISORS AGENDA ITEM SUMMARY**

Requested Board Meeting Date: August 5, 2014

**ITEM SUMMARY, JUSTIFICATION &/or SPECIAL CONSIDERATIONS:**

*This Amendment to the Structure Co-Location Agreement with New Cingular Wireless PCS, LLC allows the vendor to upgrade its equipment on the County's tower located at the Rincon Valley Fire Station #1 communications site and revises the fee schedule accordingly. In addition, insurance language is updated to reflect recent requirements from Risk management. The original Agreement is a 25-year term, with expiration December 6, 2035.*

*Revenue collected from this agreement is shared with Rincon Valley Fire District per terms of the Site Specific Agreement between Pima County and the Rincon Valley Fire District.*

CONTRACT NUMBER (If applicable): CTN-IT-13000000000000000201  
 (fka 11-80-N-143609-1210)

**STAFF RECOMMENDATION(S):**

The Information Technology Department recommends that the Pima County Board of Supervisors adopt and the Chairman sign the Structure Co-Location Amendment #1 for New Cingular Wireless PCS, LLC.

CORPORATE HEADQUARTERS: Delaware

Page 1 of 2

*Ver. 2  
Vendor-1  
Pgs 24*

*To: CoB - 7-23-14  
Agenda - 8-5-14  
(2)*

CLERK OF BOARD USE ONLY: BOS MTG. \_\_\_\_\_

ITEM NO. \_\_\_\_\_

PIMA COUNTY COST: \_\_\_ and/or REVENUE TO PIMA COUNTY: \$ 103,320.00

FUNDING SOURCE(S): New Cingular Wireless PCS, LLC

(i.e. General Fund, State Grant Fund, Federal Fund, Stadium D. Fund, etc.)

**Advertised Public Hearing:**

		YES	X	NO
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**Board of Supervisors District:**

1		2		3		4	X	5		All	
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**IMPACT:**

**IF APPROVED:**

New Cingular Wireless PCS, LLC will be permitted to upgrade its equipment on the County's tower at the Rincon Valley Fire Station #1 communications site to improve service for its customers (Pima County residents). In exchange, the County will receive increased revenue for the remainder of the term, to be shared 50/50 with Rincon Valley Fire District.

**IF DENIED:**

New Cingular Wireless PCS, LLC will not be allowed to upgrade its equipment on the County's tower at the Rincon Valley Fire Station #1 communications site, service will not be improved, and neither the County nor Rincon Valley Fire District will receive additional revenue from the vendor.

DEPARTMENT NAME: Information Technology

CONTACT PERSON: Julie K McWilliams TELEPHONE NO.: 724-8066

**PIMA COUNTY DEPARTMENT OF INFORMATION TECHNOLOGY**

**PROJECT:** Structure Co-Location Agreement  
**CONTRACTOR:** New Cingular Wireless PCS, LLC  
**CONTRACT NO.:** CTN-IT-1300000000000000201  
(Formerly 11-80-N-143609-1210)  
**CONTRACT AMENDMENT NO.:** One (#01)

**CONTRACT**

NO. CTN-IT-1300000000000000201  
AMENDMENT NO. 01

This number must appear on all invoices, correspondence and documents pertaining to this contract.

**ORIG. CONTRACT TERM:** 12/07/2010 – 12/06/2035  
**TERMINATION DATE PRIOR AMENDMENT:** N/A  
**TERMINATION THIS AMENDMENT:** 12/06/2035

**ORIG. CONTRACT AMOUNT:** \$600,000.00  
**PRIOR AMENDMENTS:** N/A  
**AMOUNT THIS AMENDMENT:** \$103,320.00  
**REVISED CONTRACT AMOUNT:** \$703,320.00

Market: AZ-NM  
Cell Site Number: PHNXAZT936  
Cell Site Name: RINCON VALLEY FD  
Fixed Asset Number: 10107214

**STRUCTURE CO-LOCATION AMENDMENT #1  
Rincon Valley Fire Station #1**

THIS AMENDMENT is entered into by and between Pima County ("County"), a political subdivision of the State of Arizona, and New Cingular Wireless PCS, LLC, ("Co-Locator"), a Delaware limited liability company, and shall be effective upon endorsement by the Pima County Board of Supervisors.

RECITALS

County and Co-Locator, entered into a Structure Co-Location Agreement effective December 7, 2010, and recorded on January 28, 2011, Sequence 20110280013, in the office of the Pima County, Arizona, Recorder.

With this First Amendment to Agreement, the parties desire to amend the Agreement to upgrade equipment at the Rincon Valley Fire Station #1 Communications Site located at 8850 South Camino Loma Alta, Vail Arizona; modify the fee structure accordingly; and update insurance requirements.

AGREEMENT

WHEREFORE, the parties agree as follows:

**CHANGE:** Contract number:

From: 11-80-N-143609-1210  
To: CTN-IT-1300000000000000201

**CHANGE:** Section 6.1 - Rent:

From: "... a monthly rental payment of Two Thousand and No/100 Dollars (\$2,000.00)..."

To: "... a monthly rental payment of Two Thousand, Four Hundred and Twenty and No/100 Dollars (\$2,420.00)..."

**ADD:** Section 10.4 - Insurance:

The Co-Locator's insurance shall be primary insurance and non-contributory with respect to all other available sources.

**ADD:** Exhibit C is added.

**ADD:** Exhibit D is added.

**ADD:** Exhibit E is added.

(THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

All other provisions of the Agreement, not specifically changed by this Amendment, shall remain in effect and be binding upon the parties.

IN WITNESS THEREOF, the parties have affixed their signatures to this Amendment on the dates written below.

**PIMA COUNTY:**

\_\_\_\_\_  
Chair, Board of Supervisors

\_\_\_\_\_  
Date

**CO-LOCATOR:**

New Cingular Wireless PCS, LLC,  
a Delaware limited liability company  
By: AT&T Mobility Corporation  
Its: Manager

By: Shah Khalid  
Name: SHAH KHALID  
Its: AREA MANAGER  
Date: 06/20/14

**ATTEST:**

\_\_\_\_\_  
Clerk of the Board of Supervisors

\_\_\_\_\_  
Date

**APPROVED AS TO CONTENT:**

Jesse Rodriguez  
Jesse Rodriguez, Chief Information Officer  
7-2-14  
Date

**APPROVED AS TO FORM:**

TOBIN ROSEN  
for Marc Natelsky, Deputy County Attorney  
6/16/14  
Date

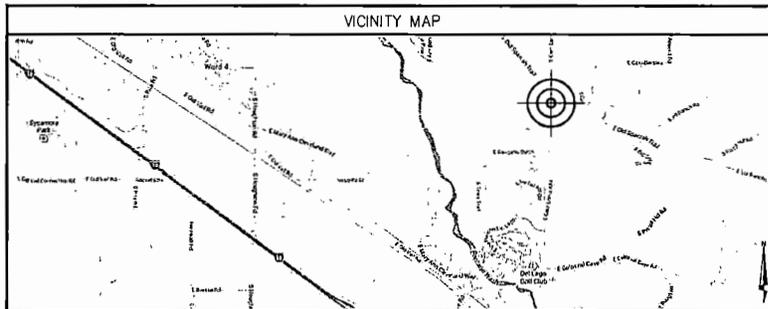
# EXHIBIT C



**at&t**

**LTE (WAVE 6)  
T936**

**S. OLD SPANISH & CAMINO DORETEA  
8850 SOUTH CAMINO LOMA ALTA  
VAIL, AZ 85641  
PIMA COUNTY**



### DRIVING DIRECTIONS

FROM AT&T OFFICE: 20830 N. TATUM BLVD., #400, PHOENIX, AZ 85050.  
FROM THE AT&T OFFICE TAKE THE RAMP ONTO AZ-101 LOOP W. TAKE EXIT 28 FOR ARIZONA 51 SOUTH. MERGE ONTO AZ-51 S. KEEP LEFT AT THE FORK. FOLLOW SIGNS FOR I-10 E/TUCSON AND MERGE ONTO I-10 E. KEEP LEFT TO STAY ON I-10 E. TAKE EXIT 279 FOR MONTGOMERY RD TOWARD VAIL RD. TURN LEFT ONTO S MONTGOMERY RD. CONTINUE ONTO E COLLOSSAL CAVE RD. TURN RIGHT TO STAY ON E COLLOSSAL CAVE RD. TAKE THE 2ND LEFT ONTO S CAM LOMA ALTA. DESTINATION WILL BE ON THE LEFT.

### CODE COMPLIANCE

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (A/H/J) FOR THE LOCATION. THE EDITION OF THE A/H/J ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: INTERNATIONAL BUILDING CODE 2012 (W/ AMENDMENTS)  
ELECTRICAL CODE: NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70  
NATIONAL ELECTRICAL CODE 2011 (W/ AMENDMENTS)  
LIGHTNING PROTECTION CODE: NFPA 780 - 2000, LIGHTNING PROTECTION CODE

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:  
AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE  
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION  
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-C, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES  
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) #1, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM  
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT  
IEEE C82.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")  
TELECORDIA GR-1275, GENERAL INSTALLATION REQUIREMENTS  
TELECORDIA GR-1503, COAXIAL CABLE CONNECTIONS  
ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

### GENERAL CONTRACTOR NOTES

**DO NOT SCALE DRAWINGS**  
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

### GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT BE OPEN TO ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

### PROJECT TEAM

#### CLIENT REPRESENTATIVE

COMPANY: SMARTLINK, LLC  
ADDRESS: 605 WEST ANKA ROAD, SUITE 210  
CITY, STATE, ZIP: TEMPE, AZ 85284  
CONTACT: MICHAEL WARGO  
PHONE: (480) 797-8328  
E-MAIL: michael.wargo@smartlink.com

#### ZONING / REAL ESTATE SPECIALIST

COMPANY: SMARTLINK, LLC  
ADDRESS: 605 WEST ANKA ROAD, SUITE 210  
CITY, STATE, ZIP: TEMPE, AZ 85284  
CONTACT: REY ROMAN  
PHONE: (480) 540-7168  
E-MAIL: reynolds.roman@smartlink.com

#### ZONING / REAL ESTATE MANAGER

COMPANY: AT&T  
ADDRESS: 20830 N. TATUM BLVD., #400  
CITY, STATE, ZIP: PHOENIX, AZ 85050  
CONTACT: SCOTT SUTHERLAND  
PHONE: (480) 919-7188  
E-MAIL: ssut@att.com

#### ENGINEER

COMPANY: SMARTLINK, LLC  
ADDRESS: 14432 SE EASTGATE WAY, SUITE 280  
CITY, STATE, ZIP: BELLEVUE, WA 98007-1483  
CONTACT: VAD DIACONU  
PHONE: (425) 274-4444 x148  
E-MAIL: vad.diaconu@smartlink.com

#### RF ENGINEER

COMPANY: AT&T  
ADDRESS: 20830 N. TATUM BLVD., #400  
CITY, STATE, ZIP: PHOENIX, AZ 85050  
CONTACT: STEVE ISRELL  
PHONE: (480) 515-7075  
E-MAIL: isv32@att.com

#### CONSTRUCTION MANAGER

COMPANY: AT&T  
ADDRESS: 20830 N. TATUM BLVD., #400  
CITY, STATE, ZIP: PHOENIX, AZ 85050  
CONTACT: CECO GRAYES  
PHONE: (480) 652-1281  
E-MAIL:

### SITE INFORMATION

#### APPLICANT/LESSEE

AT&T  
20830 N. TATUM BLVD., #400  
PHOENIX, AZ 85050

#### PROPERTY OWNER

PERKINS INVESTMENTS, LLC  
8850 S. CAMINO LOMA ALTA  
VAIL, AZ 85641

LATITUDE: 32° 5' 26.4" N  
LONGITUDE: -107° 41' 12.7" W  
LAT./LONG. TYPE: NAD 83  
GROUND ELEVATION: 5200' AMSL  
APN #: 205-54-6550  
AREA OF CONSTRUCTION: EXISTING  
ZONING/AIRSDICTION: PIMA COUNTY  
CURRENT ZONING: CUP-3  
EXISTING USE: UNMANNED TELECOMMUNICATIONS FACILITY  
HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.

### APPROVALS

AT&T (RF): \_\_\_\_\_ DATE: \_\_\_\_\_  
AT&T (CONST.): \_\_\_\_\_ DATE: \_\_\_\_\_  
AT&T (OPS): \_\_\_\_\_ DATE: \_\_\_\_\_  
LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_

### SUMMARY RF EQUIPMENT

NUMBER OF SECTORS: 3  
NUMBER OF ANTENNAS: 12  
NUMBER OF TMA'S: 3  
NUMBER OF RH'S: 9  
NUMBER OF FIBER/DC SQUIDS: 1  
NUMBER OF DC SQUIDS: 1  
NUMBER OF OPTICAL TRUNK CABLES: 1  
NUMBER OF DC TRUNK CABLES: 3  
NUMBER OF RF CABLES: 6

### PROJECT DESCRIPTION

THIS PROJECT WILL BE COMPOSED OF:  
CHANGES TO THE EXISTING LATEX TOWER:  
• REMOVE (4) ANTENNA PER SECTOR, (3) SECTORS; TOTAL OF (12) ANTENNAS  
• (4) NEW AT&T ANTENNA PER SECTOR, (3) SECTORS; TOTAL OF (12) ANTENNAS  
• (3) NEW AT&T RH'S PER SECTOR, (3) SECTORS; TOTAL OF (9) RH'S  
• (1) NEW AT&T FIBER/DC AND (1) DC RATEPAID SURGE SUPPRESSOR  
• (1) EXISTING AT&T TMA'S PER SECTOR, (3) SECTORS; TOTAL OF (3) TMA'S TO BE RELOCATED  
• (1) NEW FIBER AND (3) NEW DC POWER TRUNK  
• NEW ANTENNAS TO BE PAINTED WITH "THE TRANSPARENT" PAINT TO MATCH EXISTING ANTENNAS ON TOWER

#### CHANGES IN THE EXISTING AT&T CONCRETE FOUNDMENT PAD:

• (1) NEW LTE CABINET

#### CHANGES IN THE EXISTING EQUIPMENT COMPOUND:

• (1) NEW AT&T UPS ANTENNA MOUNTED TO THE EXISTING AT&T ICE BRIDGE

#### A/C SCOPE:

##### DC FEMER PLAN REVIEW:

• EXISTING ALPHA DC POWER PLANT IS EQUIPPED WITH (6) CORDEX 3.1 KW 24V/300A RECTIFIERS. NO ADDITIONAL RECTIFIERS REQUIRED.  
• ADD (2) 250 AMPS DC BEAKERS FOR DC/DC CONVERTER FOR LTE, AND (4) MODULES

#### BATTERY CHECK:

• (30) EXISTING BATTERIES (MARATHON W12V597(12V)) MEET REQUIRED RESERVE TIME. NO ADDITIONAL BATTERIES REQUIRED.

#### A/C PANEL REVIEW:

• LOADS FOR CIRCUITS 6 AND 8 TO BE SWAPPED FOR LOAD BALANCING PURPOSES

#### HVAC LIMITS:

• OUTDOOR EQUIPMENT. NO UPGRADE REQUIRED

### RFDS SHEET

DESIGN PACKAGE BASED ON RF DATA SHEET  
RFDS NAME: AZ10936  
REVISION: 4.1  
ISSUED: 10/15/13

### SHEET DESCRIPTION

SHEET	DESCRIPTION
T-1	TITLE SHEET
T-2	SPECIFICATIONS
T-3	GENERAL REQUIREMENTS, LEGEND & ABBREVIATIONS
A-1	ENLARGED SITE PLAN
A-2	EQUIPMENT & ANTENNA LAYOUTS
A-3	ELEVATIONS - EXISTING AND NEW
A-4	DETAILS
A-5	DETAILS
A-6	SYSTEM SCHEMATIC & LTE ALARM BLOCK
A-7	CONNECTION DIAGRAM AND CONDUIT SIZES
E-1	ELECTRICAL PANEL AND ELECTRICAL NOTES
G-1	GROUNDING PLANS, DETAILS & NOTES



THE INFORMATION CONTAINED IN THIS SET OF DRAWINGS IS PROPRIETARY & CONFIDENTIAL TO AT&T WIRELESS.  
ANY USE OR DISCLOSURE OTHER THAN AS IT RELATES TO AT&T WIRELESS IS STRICTLY PROHIBITED.



REV.	DATE	REVISION DESCRIPTION
2	01-24-11	CONSTRUCTION FINALS
1	01-04-11	CONSTRUCTION REDLINES
0	12-17-10	90% CONSTRUCTION DRAWINGS

### PROJECT INFORMATION:

**T936  
S. OLD SPANISH & CAMINO DORETEA  
8850 S. CAMINO LOMA ALTA  
VAIL, AZ 85641  
PIMA COUNTY**

DRAWN BY: JD  
CHECKED BY: VD

SHEET TITLE: TITLE SHEET

SHEET NUMBER: T-1  
REV: 2

**GENERAL CONSTRUCTION NOTES:**

- FOR THE PURPOSE OF CONTRACT DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER - AT&T MOBILITY  
OEM - ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF OWNER.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. 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 THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL, JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- DELETED.
- 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 FOR APPROVAL BY THE CONTRACTOR.
- CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND TV CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TROOP PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE OWNER. ROUTING OF TRENCHING SHALL BE APPROVED BY OWNER.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, FINISHES, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PARTS SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
- CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SOLID MATERIALS SUCH AS COARIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
- ALL NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
- ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.
- CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 24782-000-SAPS-A002-00002, "GENERAL CONSTRUCTION SERVICES".
- CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY THE OWNER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT INTERRUPT THE EXISTING OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH THE OWNER. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL DOSE EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

DETAIL 100  
NTS

**CONCRETE AND REINFORCING STEEL NOTES:**

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "TV" AND ALL HOOKS SHALL BE STANDARD, UNLESS NOTED OTHERWISE.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  
CONCRETE CAST AGAINST EARTH 3 IN.  
CONCRETE EXPOSED TO EARTH OR WEATHER 2 IN.  
#4 AND SMALLER & W/ 1-1/2 IN.  
CONCRETE NOT EXPOSED TO EARTH OR WEATHER, NOR CAST AGAINST THE GROUND: 3/4 IN.  
SLAB AND WALL 1-1/2 IN.  
BEAMS AND COLUMNS 1-1/2 IN.
- A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, CONE OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL. WHEN DRILLING HOLES IN CONCRETE, EXPANSION BOLTS SHALL BE PROVIDED BY HAMMER/REDHEAD OR APPROVED EQUAL.
- CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 30 CUBIC YARDS (800 1000.8 L3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER:  
(A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT.  
(B) CERTIFICATION OF MINIMUM COMPRESSION STRENGTH FOR THE CONCRETE GRADE SUPPLIED.  
FOR GREATER THAN 30 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

DETAIL 102  
NTS

**SPECIFICATIONS**

**GROUNDING NOTES:**

- THE CONTRACTOR SHALL REVIEW AND VERIFY THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNER AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AIA), THE SITE-SPECIFIC (UL, LP, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TEXAS AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVISE FINDINGS TO THE OWNER FOR RESOLUTION.
- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GECS) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- THE CONTRACTOR SHALL PERFORM ILLUMINATION FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND IEC) FOR NEW GROUND ELECTRODE SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 24782-000-SAPS-A002-00002, DESIGN & TESTING OF FACILITY DRAWINGS FOR CELL SITES.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BITS EQUIPMENT.
- EACH BITS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BITS; 2 AWG STRANDED COPPER FOR OUTDOOR BITS.
- ELECTRICIAN WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- APPROVED ANTI-OXIDANT COMPOUNDS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
- ALUMINUM CONDUIT OR COPPER CLAD STEEL CONDUIT SHALL NOT BE SUPPORTS FOR GROUNDING CONNECTIONS.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND BUNDLES SHALL BE BONDED TO THE GROUND RING IN ACCORDANCE WITH THE NEC.
- NETAL CONDUIT AND TRAY SHALL BE GROUNDING AND WARE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING AROUND THE DISCONTINUITY WITH A 6WG COPPER WIRE OR APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- GROUND CONDUCTORS USED IN THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUIT, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOLED IN CONDUIT TO MEET CODE REQUIREMENTS FOR LOCAL CONDITIONS. HOT METAL MATERIALS SUCH AS PIVC PLASTIC CONDUIT SHALL BE USED, WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE). THE GROUND CONDUIT SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222 FOR TOWERS BEING BUILT TO REV 0 OF THE STANDARD. THE WEG SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM 6 FEET TO 10 FEET.

DETAIL 113  
NTS

**SITE WORK GENERAL NOTES:**

- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING FIELDS OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE WORKING AREA. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONTINUED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBER, STAMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND LOCAL UTILITIES.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T MOBILITY SPECIFICATION FOR SITE SIGNAGE.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BITS EQUIPMENT AND TOWER AREAS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND, FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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 EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

DETAIL 619  
NTS

**ELECTRICAL INSTALLATION NOTES:**

- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TIA/ETIA.
- CONTRACTOR SHALL VERIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT AND TRANSPORT CABLEING TO THE NEW BITS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO OWNER FOR APPROVAL.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TIA/ETIA.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, GROUNDING, AND TV CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMINATED PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT IDS).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMINATED PLASTIC LABELS.
- ALL THE WIRING WHERE PERMITTED SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL, TO REMOVE SHARP EDGES. USE LOW PROFILE TRIM WIPERS.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (12 AWG OR LARGER), 600 V, UL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (NET AND DRY) OPERATION, LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (6 AWG OR LARGER), 600 V, UL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (NET AND DRY) OPERATION, LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR 2 AWG SOLID THINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
- POWER WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (12 AWG OR LARGER), 600 V, UL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (NET AND DRY) OPERATION, WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE COMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL), LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (165°F) IF AVAILABLE.
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- NEW RACEWAY OR CABLE TRAY SHALL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (E.I., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80) FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL NONMETALLIC TUBING (EMT), ELECTRIC NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- CALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (E.I., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND, DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR INCREASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD, SHALL BE PANDRUIT TYPE (E OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE CALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- METAL ACCEPTABLE SWITCH, AND DEVICE BOXES SHALL BE CALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 544A AND NEMA OS 1, AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

DETAIL 115  
NTS



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REV.	DATE	REVISION DESCRIPTION
2	01-24-11	CONSTRUCTION FINALS
1	01-06-14	CONSTRUCTION REDLINES
0	12-17-13	90% CONSTRUCTION DRAWINGS

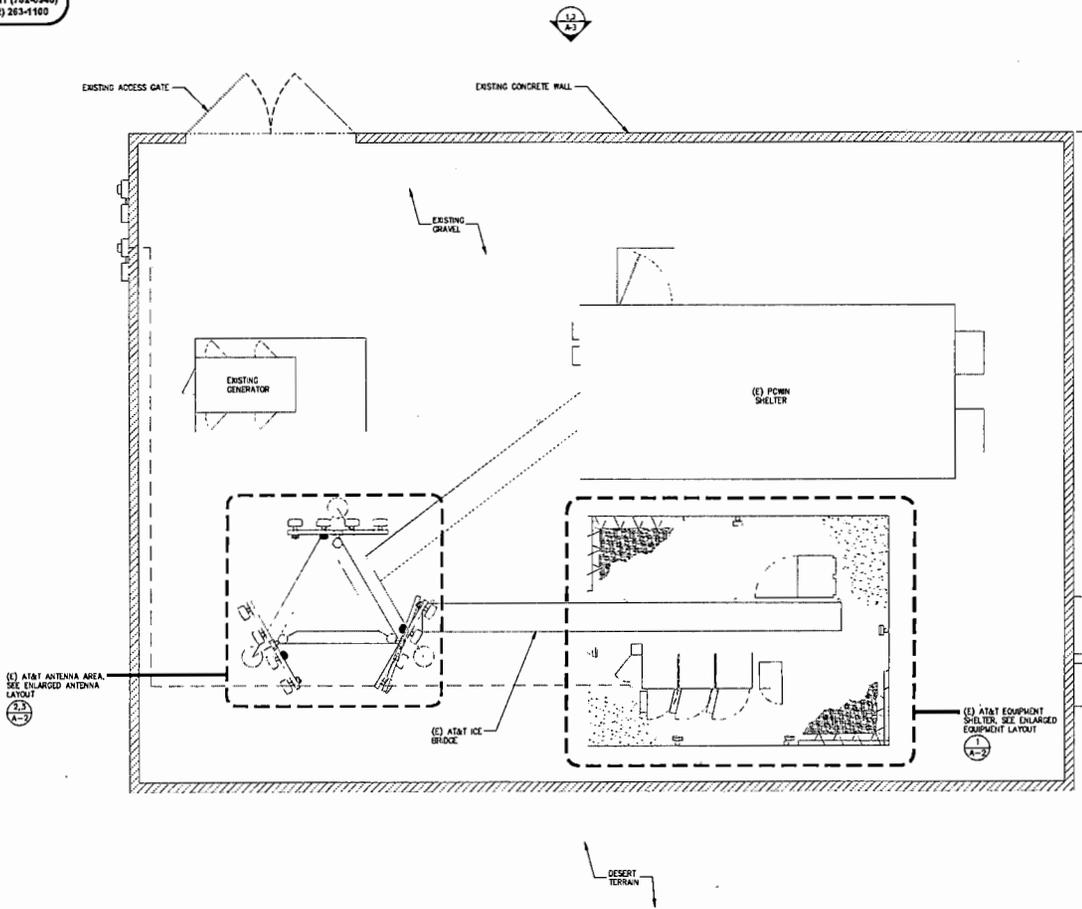
PROJECT INFORMATION:  
T936  
S. OLD SPANISH & CAMINO DORATEA  
8850 S. CAMINO LOMA ALTA  
VAIL, AZ 85641  
PIMA COUNTY

DRAWN BY:	JD	CHECKED BY:	VD
SHEET TITLE:	SPECIFICATIONS		
SHEET NUMBER:	T-2	REV.:	2



Call at least two full working days before you begin excavation.

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REV.	DATE	REVISION DESCRIPTION
2	01-26-14	CG CONSTRUCTION FINALS
1	01-09-14	CONSTRUCTION REDLINES
0	12-17-13	90% CONSTRUCTION DRAWINGS

PROJECT INFORMATION:  
**T936**  
**S. OLD SPANISH & CAMINO DORETEA**  
8850 S. CAMINO LOMA ALTA  
VAIL, AZ 85641  
PIMA COUNTY

DRAWN BY: JD      CHECKED BY: VD

SHEET TITLE:  
**ENLARGED SITE PLAN**

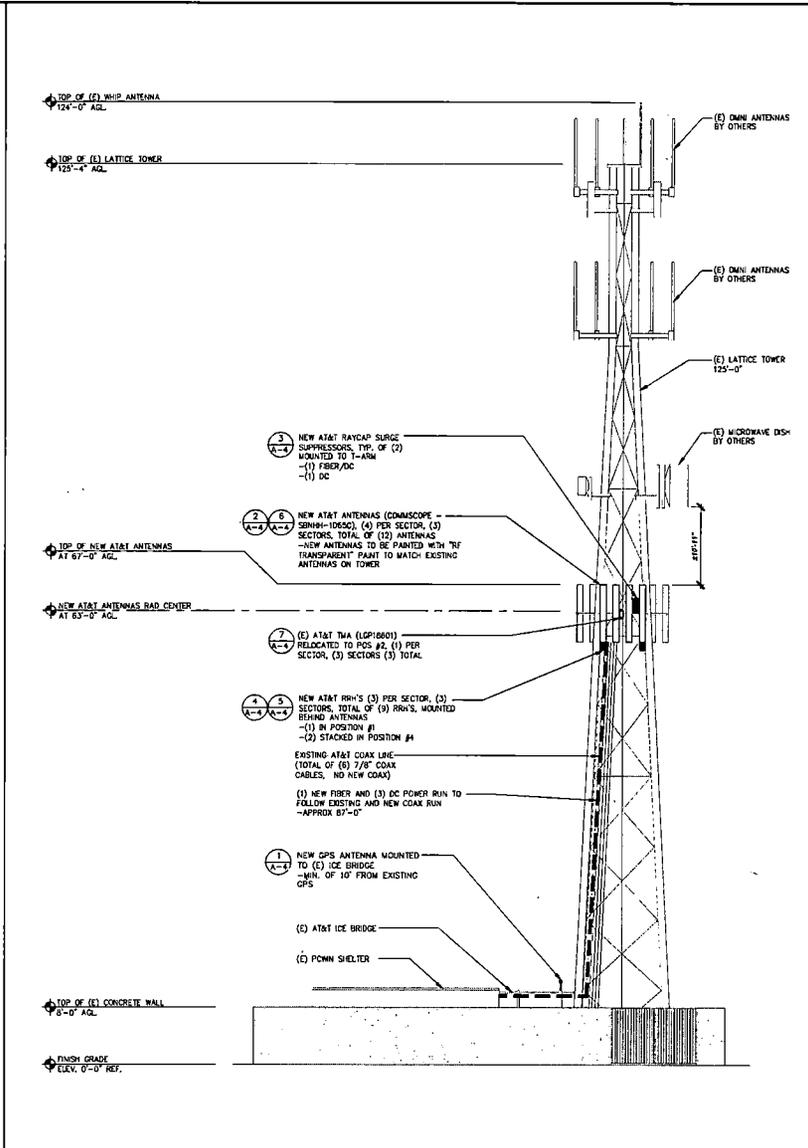
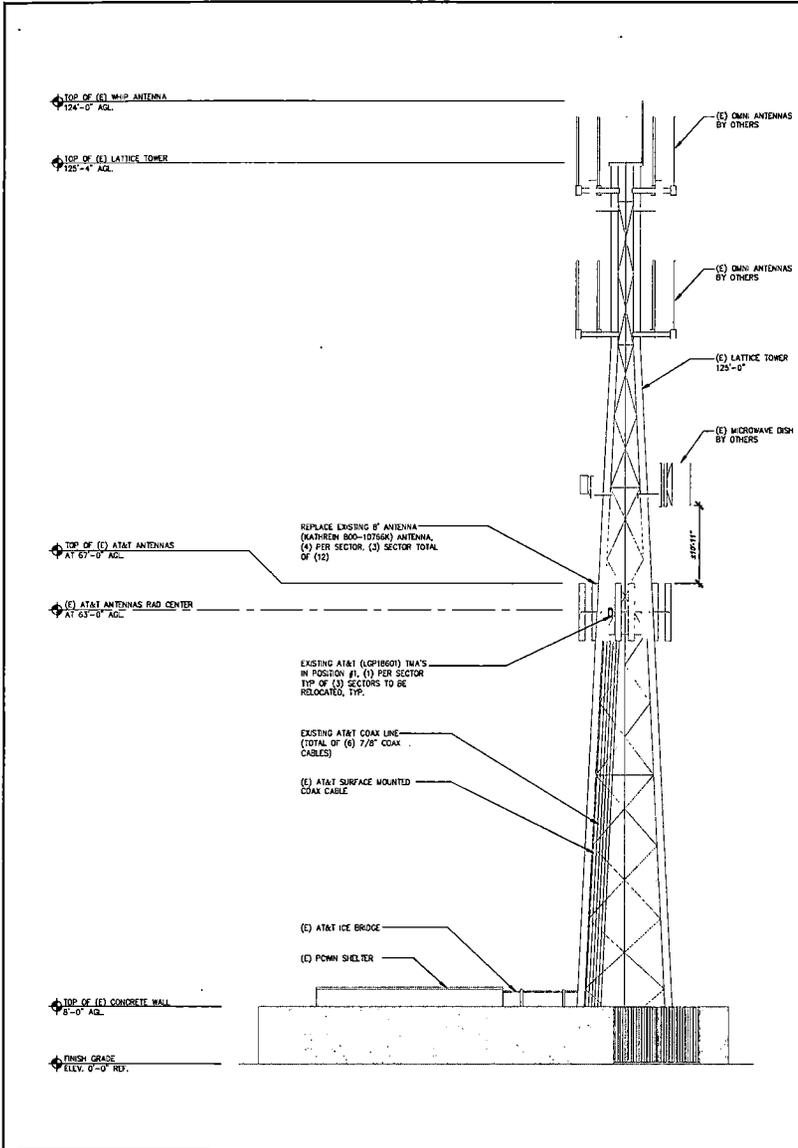
SHEET NUMBER: **A-1**      REV: **2**

**ENLARGED SITE PLAN**

22"x34" SCALE: 1/4" = 1'-0"  
11"x17" SCALE: 1/8" = 1'-0"      1

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2	01-26-14	CONSTRUCTION FINALS
1	01-06-14	CONSTRUCTION REDLINES
0	12-18-13	90% CONSTRUCTION DRAWINGS

REV.	DATE	REVISION DESCRIPTION

PROJECT INFORMATION:  
  
 T936  
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 & CAMINO DORETEA  
 8850 S. CAMINO LOMA ALTA  
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 PIMA COUNTY

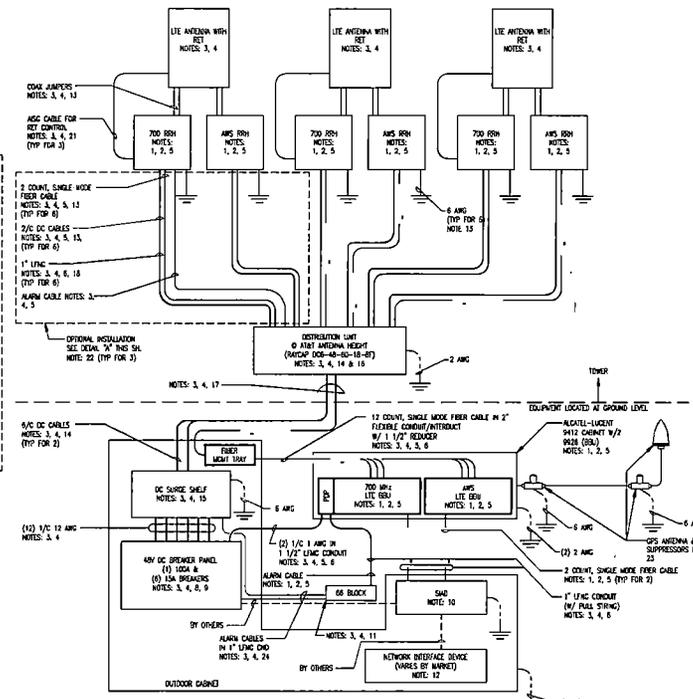
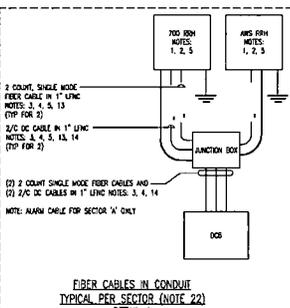
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SHEET NUMBER:  A-3	REV.:  2

NORTH ELEVATION - EXISTING 1 NORTH ELEVATION - NEW 2

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**NOTES:**

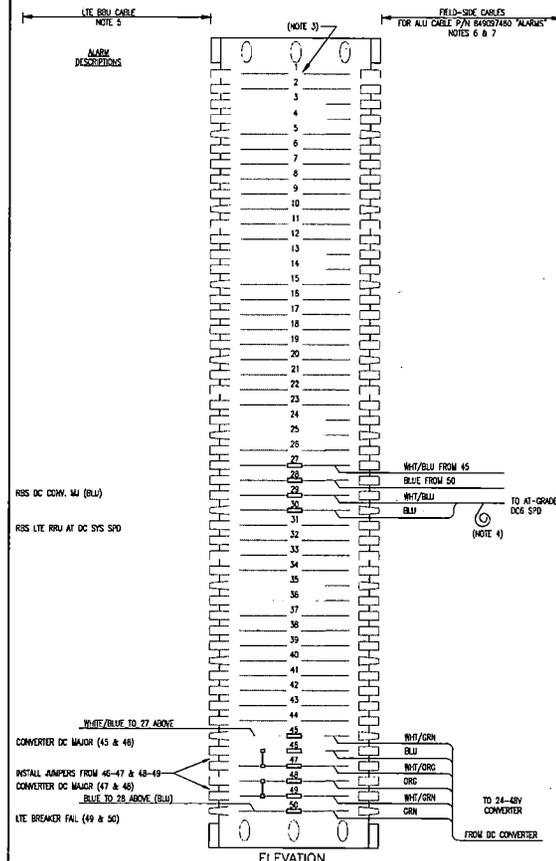
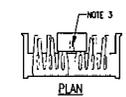
- FURNISHED BY OEM/VAR.
- INSTALLED BY OEM OR AS SCOPE BY MARKET.
- FURNISHED BY CONTRACTOR.
- INSTALLED BY CONTRACTOR.
- FINAL CONNECTION BY OEM OR AS SCOPE BY MARKET.
- OPEN END OF CONDUIT TO BE LEFT WEATHERPROOFED UNTIL TERMINATED.
- DELETED.
- PART OF DC POWER PLANT. BIDDERS SPECIFIED SEPARATELY.
- BIDDERS TO BE TAGGED AND LOGGED OUT.
- SAW IS FURNISHED AND INSTALLED BY OTHERS AND INCLUDES POWER CONNECTIONS AND FIBER TO THE UNIT OR AS SCOPE BY MARKET. WHEN IN CONTRACTOR SCOPE, INSTALL 10 AWG CLASSIC COUPLER, PROVIDE (2) 10A BREAKERS FROM A 24V DC POWER SOURCE OR (2) 2A BREAKERS FROM A 48V DC POWER SOURCE AND CONNECT USING WIR POWER CABLE WITH SPECIAL CONNECTOR.
- EQUIPMENT LOCATED IN EXISTING FIELD BOX.
- USE TO FURNISH AND INSTALL NETWORK INTERFACE DEVICE.
- LEAVE COILED AND PROTECTED UNTIL TERMINATED.
- 10C SERGE WIRE SHALL BE RATCHET 200-40-40-100. SEE DETAIL 3/A-7 FOR INTERNAL WIRING DIAGRAM.
- SEE DETAIL 3/A-7 FOR INTERNAL WIRING DIAGRAM.
- SUPPORT FIBER & DC POWER CABLES WITH 3/8" x 3" HANGERS SPACED NO GREATER THAN 3 FEET AWAY ON TOWER. SUPPORT FIBER AND DC POWER CABLES PER THE MONOPOLY WITH CABLE HANGING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH DISTANCE AND CLIP OFFSPRINGS.
- CONDUIT TO BE USED ON A TOWER IF THE RISE IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
- DC POWER CABLES SHALL BE COPPER CLAD OR STAINLESS TYPE. BOND/TEMP IS LISTED FOR RPT. DRIFT/TEMP MET INSTALLATION UNLESS NOTED OTHERWISE.
- GROUNDING WIRE SHALL BE COPPER TAP/TEMP IS LISTED FOR RPT. DRIFT/TEMP MET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
- NET CONNECTION FROM THE PWR IS AN ORIGINAL METHOD OF CONNECTION. REFER TO "D" DATA SHEET FOR APPLICABILITY.
- FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPE BY MARKET.
- SEE DETAIL 3/A-7 FOR OPS INTENT.
- SEE DETAIL 7/A-6 FOR ALARM CABLE REQUIREMENTS.



**NOTES:**

1. MOUNT 68 BLACK HEAT RESISTING ALUMINUM BLOCKS.
2. WIRE TO PROVIDE CONTINUITY WHICH CONDITION IS NORMAL.
3. INSTALL BRIDGING CLIPS AS REQUIRED.
4. ALL SPARE UNUSED CONDUCTORS SHALL BE TUNED BACK AND STORED FOR POSSIBLE FUTURE USE.
5. ALUMINUM-LIGHT PRE-ASSEMBLED LITE BBU CABLE SHALL BE USED UNLESS OTHERWISE DIRECTED BY THE MARKET. INSIDE FIELD ASSEMBLY, THE CABLE SHALL BE 16-PROTECTED PAPER, 24 AWG. SOLID BASE COPPER, SHIELDED UL TYPE CMR/CMG WITH PVC JACKET. THE BBU END SHALL BE FITTED WITH FOUR 10-15 PLOCS CONNECTED AS SHOWN.
6. FIELD-SIZE CABLES SHALL BE TESTED PAPER, 24 AWG. SOLID BASE COPPER, UNSHIELDED (PREFERRED) OR SHIELDED. CABLES FOR INDOOR INSTALLATION SHALL BE UL TYPE CMR/CMG OR CMG WITH PVC JACKET. CABLES FOR OUTDOOR INSTALLATION SHALL BE UL TYPE CMR-OUTDOOR OR MOISTURE RESISTANT. THE NUMBER OF PAPER SHALL BE AS NECESSARY FOR THE REDUCED ALUMINUM ANGI STANDARD COLOR CODE 5 SHOWN. APPROVED ALTERNATE COLOR CODE MAY BE USED AND SHALL BE DOCUMENTED ON AS-BUILT DRAWINGS.
7. TWO ALU CABLE TYPES MAY BE SUPPLIED. ALU CABLE P/N 849005840, LABELED "ALUMINUM" AND ALU CABLE P/N 849005840, LABELED "71/1" AND "ALUMINUM". PUNCH DOWN OTHER CABLE IN SINGULAR COLOR CODE SEQUENCE AS SHOWN. ALL ALUMINUM PUNCH POINT HANGERS ARE DIFFERENT FOR THE TWO CABLE TYPES. PUNCH DOWN FIELD SIDE AS SHOWN FOR ALU CABLE TYPE FURNISHED FOR THE SITE.

ALL PINS MUST BE CONNECTED		
ALARM PINS	PIN (-)	PIN (COMMON)
1, 5, 9 & 13	1	2
2, 6, 10 & 14	3	6
3, 7, 11 & 15	5	4
4, 8, 12 & 16	7	8



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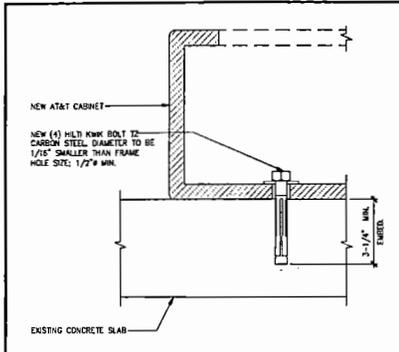
REV.	DATE	REVISION DESCRIPTION
2	01-29-14	CONSTRUCTION FINALS
1	01-09-14	CONSTRUCTION REDLINES
0	12-17-13	90% CONSTRUCTION DRAWINGS

PROJECT INFORMATION		
<b>T936 S. OLD SPANISH &amp; CAMINO DORETEA 8850 S. CAMINO LOMA ALTA VAIL, AZ 85641 PIMA COUNTY</b>		
DRAWN BY:	JD	CHECKED BY: VD
SHEET TITLE:	LTE ALARM BLOCK	
SHEET NUMBER:	A-6	REV: 2

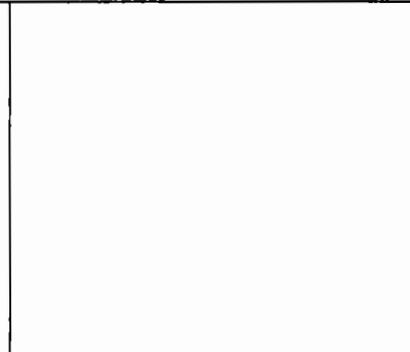
**SYSTEM DIAGRAM - LTE**

**2 LTE ALARM BLOCK ASSIGNMENTS - ALU 1**

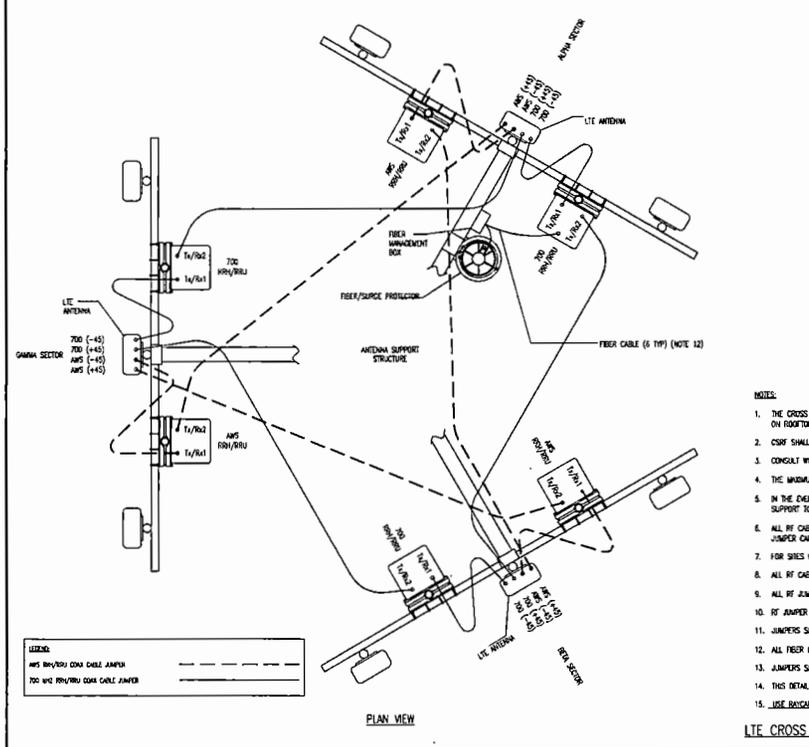
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CABINET ANCHORAGE DETAIL NOT TO SCALE 1 NOT USED

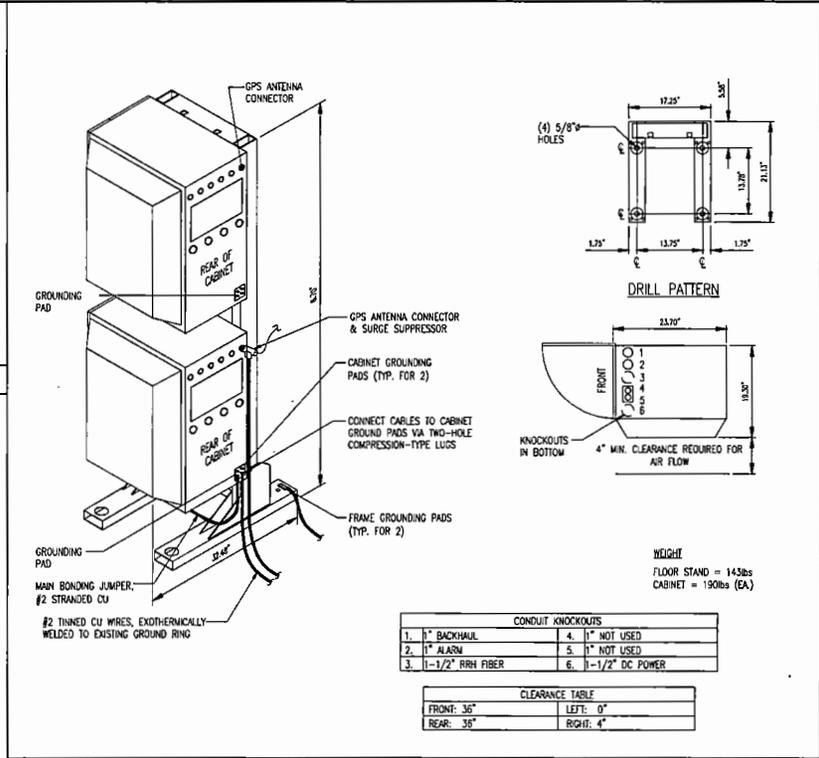


NOT TO SCALE 2



LTE CROSS SECTOR REDUNDANCY

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ALU 9412 EQUIPMENT CABINET NOT TO SCALE 5

- NOTES:
1. THE CROSS SECTOR REDUNDANCY FEATURE (CSR) SHALL BE IMPLEMENTED ONLY ON TOWER SITES WHERE THE REMOTE BANDS (RRH/RRU) ARE MOUNTED ON THE TOP OF THE TOWER. CSR SHALL NOT BE DEPLOYED ON ROOFTOP SITES OR SYSTEMS ON WHICH THE RRH/RRU IS MOUNTED ON THE GROUND.
  2. CSR SHALL NOT BE DEPLOYED ON TOWER TOP SITES WHICH HAVE TWO DIFFERENT RADIATION CENTER LINES ACROSS ANY TWO OR MORE SECTORS.
  3. CONSULT WITH AT&T MARKET PERSONNEL TO DETERMINE UPON WHICH LTE BAND, THE CSR WILL BE DEPLOYED.
  4. THE MAXIMUM JUMPER LENGTH SHOULD NOT EXCEED 35 FEET FOR 700 MHz AND AWS FREQUENCIES. (CONSULT WITH LOCAL MARKET RF FOR ADDITIONAL GUIDANCE).
  5. IN THE EVENT TOWER TOP SITES CANNOT MEET THESE IMPLEMENTATION RESTRICTIONS, THE RRH/RRU SHALL BE CONNECTED TO THE ANTENNA IN THE TRADITIONAL CONFIGURATION. (E.G. LOW RF HEIGHT ON A SELF SUPPORT TOWER, WHERE THE DISTANCE BETWEEN SECTORS WOULD REQUIRE EXCESSIVELY LONG JUMPERS BETWEEN ADJACENT SECTORS).
  6. ALL RF CABLE (JUMPER) LENGTHS SHALL BE WITHIN 9 FEET OF EACH OTHER ACROSS ALL SECTORS. FOR EXAMPLE, ALPHA SECTORS SHORTEST JUMPER IS 6 FEET IN LENGTH. THEREFORE, GAMMA SECTORS LONGEST JUMPER CAN BE NO LONGER THAN 15 FEET LONG (6 + 9 = 15).
  7. FOR SITES WHERE CSR WILL BE IMPLEMENTED WITH EXISTING LTE EQUIPMENT, EXISTING RF JUMPER MAY BE REUSED. INSTALLER SHALL MEASURE JUMPERS AND ENSURE LENGTHS COMPLY WITH NOTE 6.
  8. ALL RF CABLES JUMPERS SHALL USE PRE-MADE JUMPERS WITH PRE-INSTALLED CONNECTORS ON BOTH ENDS.
  9. ALL RF JUMPERS SHALL BE LDF OR LDF12 JUMPERS FROM APPROVED RF JUMPER CABLE MANUFACTURERS (ANDER AND RFS).
  10. RF JUMPER CONNECTORS SHALL BE INSTALLED WITH PROPER TORQUE AND WEATHER-PROOFING.
  11. JUMPERS SHALL HAVE RF SHEET PERFORMED.
  12. ALL RFER CABLES SHALL BE OF THE SAME LENGTH FROM THE FIBER/OFC SURGE PROTECTION BOX TO THE RRH/RRU. ANY EXCESS FIBER SHOULD BE SPOOLED IN THE FIBER MANAGEMENT BOX.
  13. JUMPERS SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 3 FEET.
  14. THIS DETAIL SHOWS LTE RF JUMPER CONNECTION ROUTING IS DIAGNOSTIC. SEE ANTENNA PLAN IN THIS SET OF DRAWINGS FOR ACTUAL LOCATION OF ANTENNAS AND REMOTE BANDS.
  15. USE REVERSE DOOR ALARM CABLE TO CONNECT FROM THE TOWER TOP SLOTTED TO THE ALPHA BANDS.

LTE CROSS SECTOR REDUNDANCY FEATURE (CSR) JUMPER CONFIGURATION

NOT TO SCALE 4



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REV.	DATE	REVISION DESCRIPTION
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1	01-09-14	CONSTRUCTION REDLINES
0	12-11-13	80% CONSTRUCTION DRAWINGS

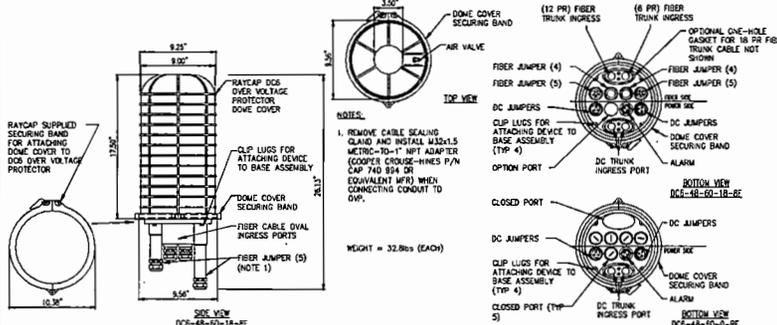
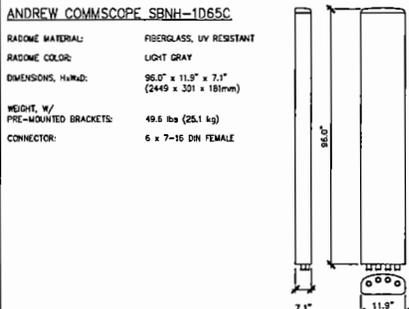
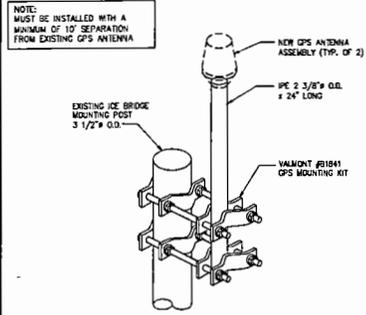
CONDUIT KNOCKOUTS	
1. 1" BACKHAUL	4. 1" NOT USED
2. 1" ALARM	5. 1" NOT USED
3. 1-1/2" RRH FIBER	6. 1-1/2" DC POWER

CLEARANCE TABLE	
FRONT: 36"	LEFT: 0"
REAR: 36"	RIGHT: 4"

PROJECT INFORMATION:  
 T936  
 S. OLD SPANISH & CAMINO DORETEA  
 8850 S. CAMINO LOMA ALTA  
 VAIL, AZ 85641  
 PIMA COUNTY

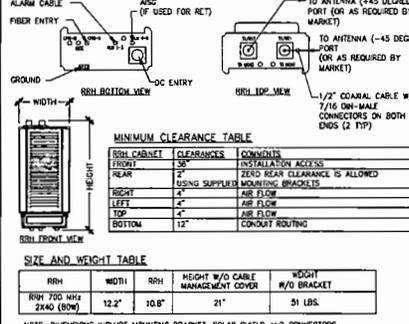
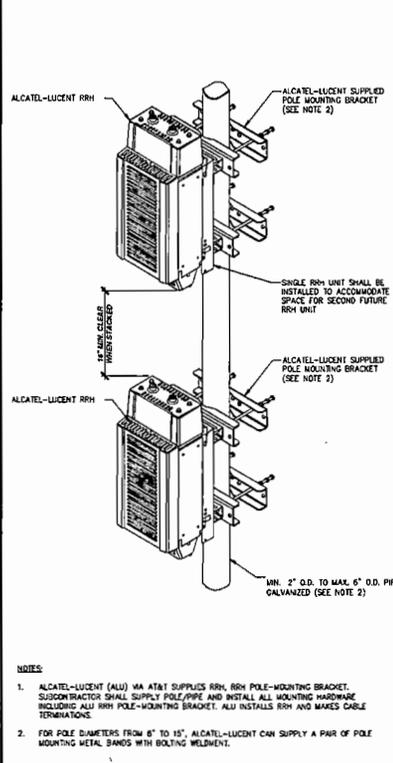
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SHEET TITLE: DETAILS	
SHEET NUMBER: A-5	REV: 2



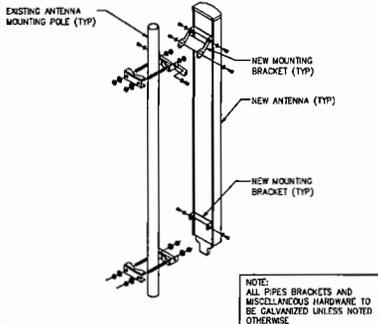
GPS ANTENNA MOUNTING NOT TO SCALE 1

ANTENNA DETAIL NOT TO SCALE 2

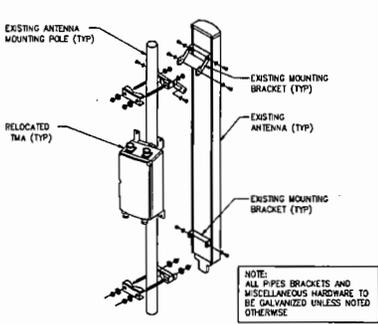
SURGE SUPPRESSOR NOT TO SCALE 3



RRH DETAIL NOT TO SCALE 5



ANTENNA MOUNTING DETAIL NOT TO SCALE 6



TMA MOUNTING DETAIL NOT TO SCALE 7

RRH MOUNTING NOT TO SCALE 4

NOT USED NOT TO SCALE 8

NOT USED NOT TO SCALE 9

NOT USED NOT TO SCALE 10

20830 N TATUM BLVD #400  
PHOENIX, AZ 85050

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REV.	DATE	REVISION DESCRIPTION
2	01-20-11	CONSTRUCTION FINALS
1	01-06-11	CONSTRUCTION FIELD LINES
0	10-17-10	W/PL CONSTRUCTION DRAWINGS

PROJECT INFORMATION:

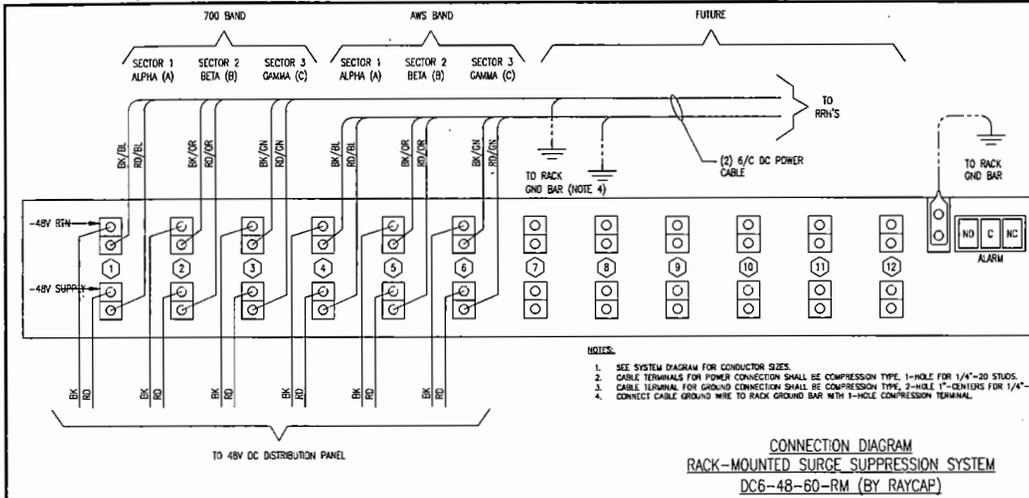
T936  
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 8850 S. CAMINO LOMA ALTA  
 VAIL, AZ 85641  
 PIMA COUNTY

DRAWN BY: JD CHECKED BY: VD

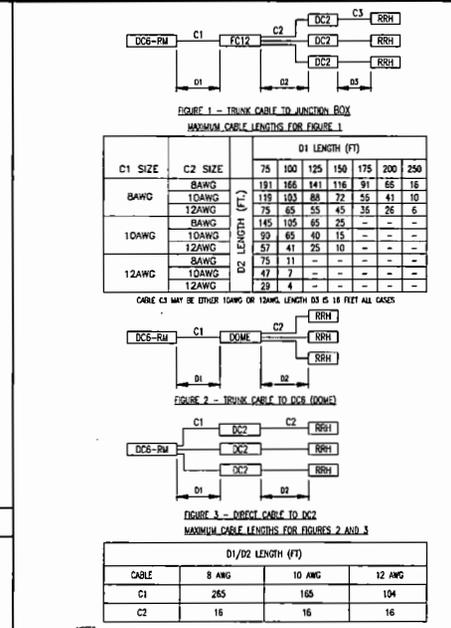
SHEET TITLE: DETAILS

SHEET NUMBER: A-4 REV: 2

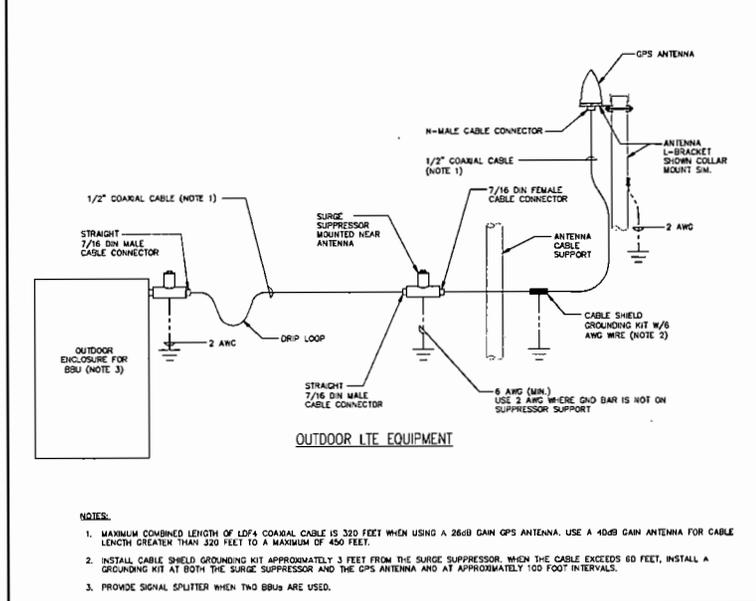
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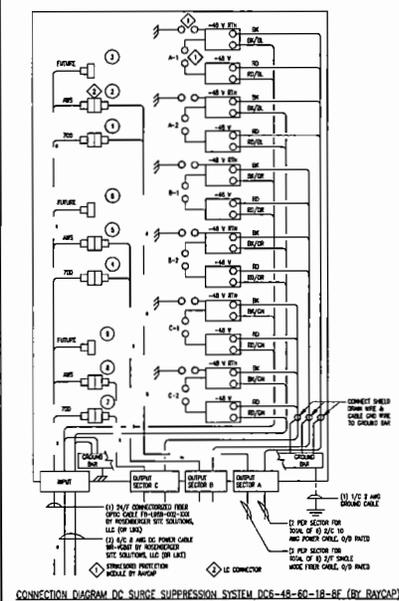
DC SURGE SUPPRESSION SYSTEM- RACK MOUNTED 4



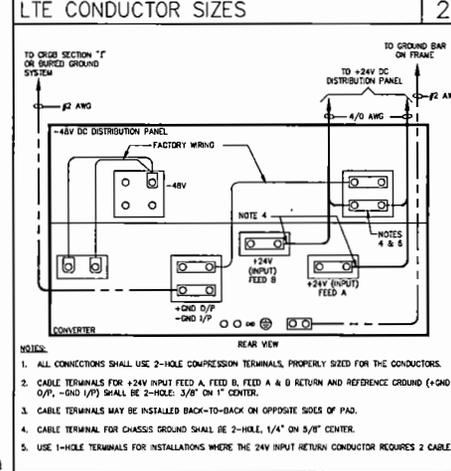
LTE CONDUCTOR SIZES 2



NEW GPS GROUNDING 5



DC SURGE SUPPRESSION SYSTEM 3



WIRING DIAGRAM - 24V TO 48V DC 1

20830 N TATUM BLVD #400  
PHOENIX, AZ 85090

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REV.	DATE	REVISION DESCRIPTION
2	01-24-14	CONSTRUCTION FINALS
1	01-09-14	CONSTRUCTION HEADLINES
0	12-17-13	80% CONSTRUCTION DRAWINGS

PROJECT INFORMATION:

**T936  
S. OLD SPANISH  
& CAMINO DORETEA  
8850 S. CAMINO LOMA ALTA  
VAIL, AZ 85641  
PIMA COUNTY**

DRAWN BY: JD	CHECKED BY: VD
6 SHEET TITLE: CONNECTION DIAGRAMS AND CONDUCTOR SIZES	
SHEET NUMBER: A-7	REV: 2

AC POWER PANEL No. 1 (Existing)									
120/240 VOLTS, 1-PHASE, 3-WIRE, 200A					SYSTEM VOLTAGE (V): 240				
MAIN BREAKER RATING (A)		L1		L2		POSN		DESCRIPTION	
DESCRIPTION	VA	cm <sup>2</sup>	BKR	POSN	cm <sup>2</sup>	VA	cm <sup>2</sup>	BKR	POSN
GFCI EXT RECEP	180	nc	1	180	2	30/2			SPARE (RECT # 8)
RECTIFIER # 1	1740	c	30/2	3	1740	4			
RECTIFIER # 2	1740	c	30/2	7	1920	8	15	nc	1564 DC POWER PLANT A/C
RECTIFIER # 3	1740	c	30/2	9	1740	10			BLANK
RECTIFIER # 4	1740	c	30/2	11	1740	12			BLANK
RECTIFIER # 5	1740	c	30/2	15	1740	16			BLANK
RECTIFIER # 6	1740	c	30/2	17	2040	18	20	nc	300 TECH LIGHTING
RECTIFIER # 7	1740	c	30/2	19	1920	20	20	nc	180 UMTS GFCI RECEP
RECTIFIER # 8	1740	c	30/2	21	2520	22	20	nc	780 AUX BATT CAB A/C
RECTIFIER # 9	1740	c	30/2	23	1920	24	20	nc	180 AUX BATT CAB GFCI RECEP
RECTIFIER # 10	1740	c	30/2	25	2520	26	20	nc	780 MAIN BATT CAB A/C
SPARE (RECT # 7)			30/2	27	180	28	20	nc	180 MAIN BATT CAB GFCI RECEP
PHASE TOTALS (kVA)		29		360					
CURRENT PER PHASE (A)		146		115				Amps/phase cannot exceed main breaker rating	
PANEL TOTAL (VA)		25564						Legend: c = continuous, nc = non-continuous	

PANEL CAPACITY (kVA): 48.0  
 PANEL LOADING (100% non-cont. load) (kVA): 2.8  
 PANEL LOADING (125% continuous load) (kVA): 28.5  
 PANEL LOADING (TOTAL) (kVA): 31.3  
 SPARE CAPACITY (kVA): 16.7

AC POWER PANEL No. 1 (Proposed)									
120/240 VOLTS, 1-PHASE, 3-WIRE, 200A					SYSTEM VOLTAGE (V): 240				
MAIN BREAKER RATING (A)		L1		L2		POSN		DESCRIPTION	
DESCRIPTION	VA	cm <sup>2</sup>	BKR	POSN	cm <sup>2</sup>	VA	cm <sup>2</sup>	BKR	POSN
GFCI EXT RECEP	180	nc	15	1	180	2	30/2		SPARE (RECT # 8)
RECTIFIER # 1	1740	c	30/2	3	1740	4			
RECTIFIER # 2	1740	c	30/2	7	1920	8	15	nc	180 DC POWER PLANT GFCI
RECTIFIER # 3	1740	c	30/2	9	1740	10			SPACE
RECTIFIER # 4	1740	c	30/2	11	1740	12			SPACE
RECTIFIER # 5	1740	c	30/2	15	1740	16			SPACE
RECTIFIER # 6	1740	c	30/2	17	2040	18	20	nc	300 TECH LIGHTING
RECTIFIER # 7	1740	c	30/2	19	1920	20	20	nc	180 UMTS GFCI RECEP
RECTIFIER # 8	1740	c	30/2	21	2520	22	20	nc	780 AUX BATT CAB A/C
RECTIFIER # 9	1740	c	30/2	23	1920	24	20	nc	180 AUX BATT CAB GFCI RECEP
RECTIFIER # 10	1740	c	30/2	25	2520	26	20	nc	780 MAIN BATT CAB A/C
SPARE (RECT # 7)			30/2	27	180	28	20	nc	180 MAIN BATT CAB GFCI RECEP
PHASE TOTALS (kVA)		29		360					
CURRENT PER PHASE (A)		131		130				Amps/phase cannot exceed main breaker rating	
PANEL TOTAL (VA)		25564						Legend: c = continuous, nc = non-continuous	

PANEL CAPACITY (kVA): 48.0  
 PANEL LOADING (100% non-cont. load) (kVA): 2.8  
 PANEL LOADING (125% continuous load) (kVA): 28.5  
 PANEL LOADING (TOTAL) (kVA): 31.3  
 SPARE CAPACITY (kVA): 16.7

- NOTES:
- EXISTING ALPHA DC POWER PLANT IS EQUIPPED WITH (6) CORDEX 3.1 kW 24V/130A RECTIFIERS.
  - NO ADDITIONAL RECTIFIERS NEEDED TO MEET THE NEW LOAD REQUIREMENT OF THE SITE.
  - LOADS FOR CIRCUITS # 6 & 8 TO BE SWAPPED FOR LOAD BALANCING PURPOSES.
  - AFFECTED CIRCUITS ARE DEPICTED IN BOLD AND ARE MARKED WITH AN ASTERISK.
  - SWITCH OFF ALL SPARE CIRCUIT BREAKERS AND CAP BRANCH CIRCUIT WIRING AT BOTH ENDS.
  - PROVIDE NEW TYPE WRITTEN PANEL SCHEDULE TO CORRESPOND WITH THE ABOVE.



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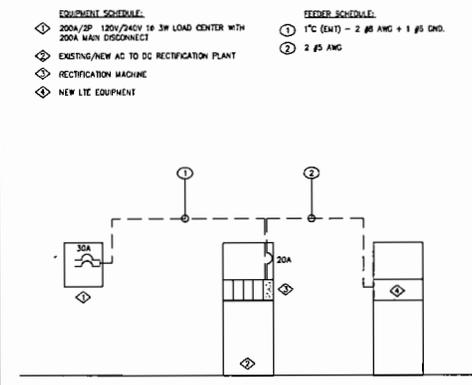
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REV.	DATE	REVISION DESCRIPTION
2	04-29-14	CONSTRUCTION FINALS
1	04-06-14	CONSTRUCTION REDLINES
0	10-15-13	90% CONSTRUCTION DRAWINGS

(E) A/C PANEL

NOT TO SCALE 2 NEW A/C PANEL

NOT TO SCALE 1



- SYMBOLS**
- GROUND ROD WITH ACCESS
  - XIT GROUND ROD
  - GROUND ROD
  - DISCONNECT SWITH
  - UTILITY METER
  - CIRCUIT BREAKER
  - FUSE
  - GENERATOR
  - LIGHT SWITCH
- ABBREVIATIONS**
- ACCA ANTENNA CABLE COVER ASSEMBLY
  - AWG AMERICAN WIRE GAUGE
  - BTCW BARE TINNED COPPER WIRE
  - C CONDUIT
  - COBE COAX INSULATED GROUND
  - CEB EXTERNAL CONDUIT ONLY
  - CD DRAWING
  - EMT ELECTRICAL METALLIC TUBING
  - NEW OR EX. EXISTING
  - GEN GENERATOR
  - GFI GROUND FAULT CIRCUIT INTERRUPTER
  - GND GROUND
  - GPS GLOBAL POSITIONING SYSTEM
  - GR GROUND
  - IDR INTERIOR GROUND RING (HALC)
  - MGB MASTER ISOLATED GROUND BAR
  - (N) NEW (PROVIDE AND INSTALL UNLESS NOTED OTHERWISE)
  - PCS PERSONAL COMMUNICATION SERVICE
  - PFC POWER PROTECTION CABINET
  - PRC PRIMARY RADIO CABINET
  - PVC POLYVINYL CHLORIDE CONDUIT
  - RDS RIGID GALVANIZED STEEL
  - RWY RACEWAY
  - S.L.D. SINGLE LINE DIAGRAM
  - AT&T LIMITED PARTNERSHIP
  - TDL TELEPHONE
  - TYP. TYPICAL
  - WP WEATHERPROOF EQUIPMENT

- AC/DC SCOPE:**
- EXISTING ALPHA DC POWER PLANT IS EQUIPPED WITH (6) CORDEX 3.1 kW 24V/130A RECTIFIERS. NO ADDITIONAL RECTIFIERS REQUIRED.
  - ADD (2) 250 AMPS DC BREAKERS FOR DC/DC CONVERTER FOR LTE, AND (4) MODULES.
- BATTERY CHECK:**
- (30) EXISTING BATTERIES (MARATHON M12V150F(12V)) MEET REQUIRED RESERVED TIME. NO ADDITIONAL BATTERIES REQUIRED.
- A/C PANEL REVIEW:**
- LOADS FOR CIRCUITS 6 AND 8 TO BE SWAPPED FOR LOAD BALANCING PURPOSES

TYPICAL WIRING SCHEMATIC - ALL NOT TO SCALE 5 SYMBOLS & ABBREVIATIONS

NOT TO SCALE 4 SUMMARY OF A/C PANEL SCOPE OF WORK

NOT TO SCALE 3

PROJECT INFORMATION

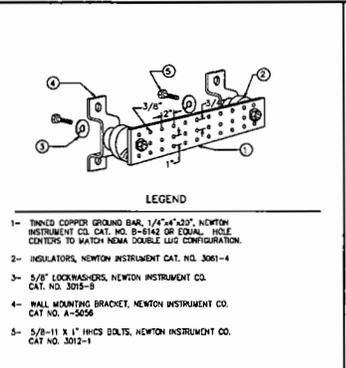
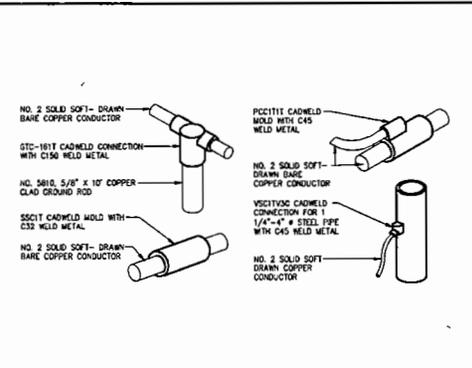
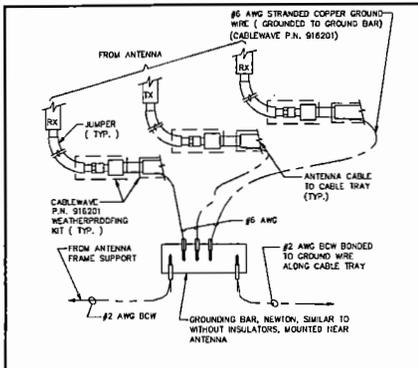
T936  
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 VAIL, AZ 85641  
 PIMA COUNTY

DRAWN BY: JD CHECKED BY: VD

SHEET TITLE: ELECTRICAL PANEL & GENERAL NOTES

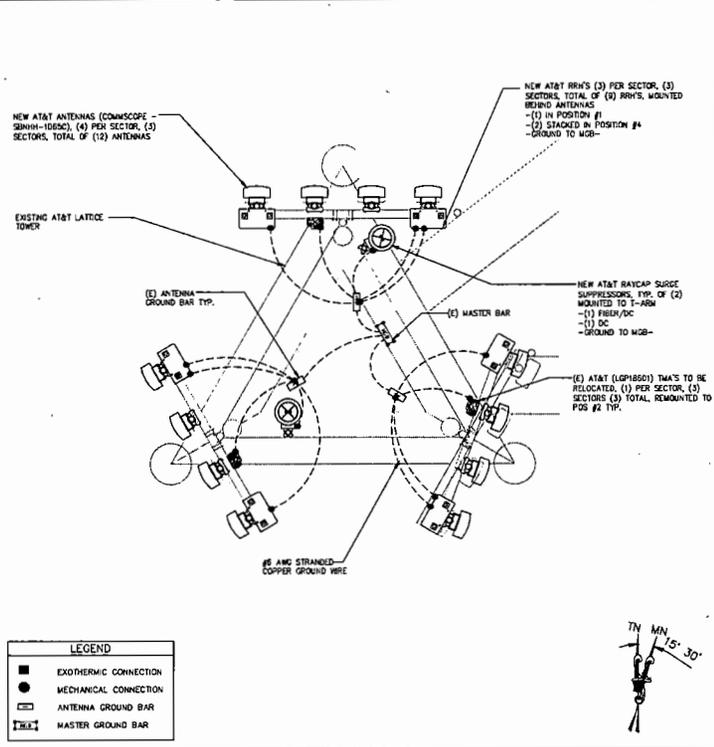
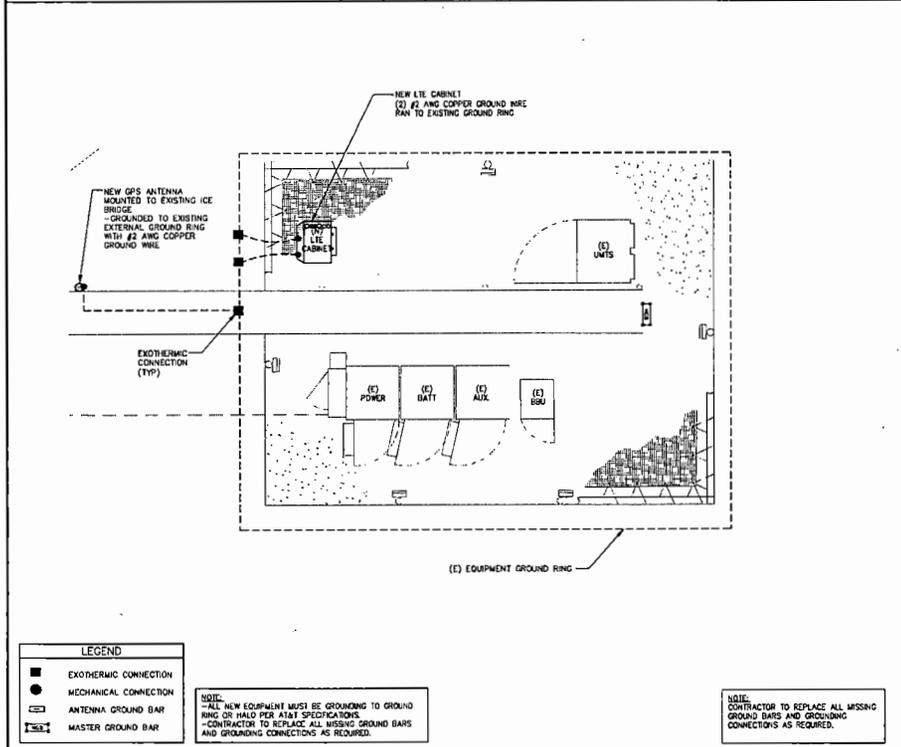
SHEET NUMBER: E-1 REV: 2

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1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION REQUIREMENTS AND CONSTRUCTION ACCORDING TO SITE CONDITIONS.
2. ALL GROUNDING CONDUCTORS, #2 THIN STRANDED FURNISHED AND INSTALLED BY THE VENDOR.
3. GROUND BAR LOCATED IN BASE OF EQUIPMENT WILL BE PROVIDED.
4. ALL BELOW GRADE CONNECTIONS: EXOTHERMIC WELD TYPE, ABOVE GRADE CONNECTIONS: EXOTHERMIC WELD TYPE.
5. GROUND RING SHALL BE LOCATED A MINIMUM OF 30" BELOW GRADE OR 6" MINIMUM BELOW THE FROST LINE, WHICH EVER IS DEEPER.
6. INSTALL GROUND CONDUCTORS AND GROUND ROD MINIMUM OF 1'-0" FROM EQUIPMENT CONCRETE SLAB, SPREAD FOOTING, OR FENCE.
7. EXOTHERMIC WELD GROUND CONNECTION TO FENCE POST; TREAT WITH A GOLD GALVANIZED SPRAY.
8. GROUND BARS:
  - A. EQUIPMENT GROUND BUS BAR (EGB) LOCATED AT BOTTOM OF ANTENNA POLE/MAST FOR MARKING GROUNDING JUMPER CONNECTIONS TO COAX FEEDER CABLES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. JUMPERS (FURNISHED BY OWNERS) SHALL BE INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR.
  - B. MAIN GROUND BUS BAR (MGB) LOCATED NEAR THE BASE OF THE RADIO EQUIPMENT CABINET(S) SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
9. ALL GROUNDING INSTALLATIONS AND CONNECTIONS SHALL BE MADE BY ELECTRICAL CONTRACTOR.
10. OBSERVE N.E.C. AND LOCAL UTILITY REQUIREMENTS FOR ELECTRICAL SERVICE GROUNDING.
11. GROUNDING ATTACHMENT TO TOWER SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS OR AT GROUNDING POINTS PROVIDED (2 WORKMAN).

ANTENNA CABLE GROUND 1 CADWELDS 2 MASTER GROUND BAR 3 GROUNDING NOTES 4



EQUIPMENT GROUNDING PLAN 5 ANTENNA GROUNDING PLAN

27"x36" SCALE: 1/8" = 1'-0" 11"x17" SCALE: 3/16" = 1'-0" 27"x36" SCALE: 1/8" = 1'-0" 11"x17" SCALE: 3/16" = 1'-0"



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REV.	DATE	REVISION DESCRIPTION
2	01-26-14	CONSTRUCTION FINALS
1	01-06-14	CONSTRUCTION REDLINES
0	10-17-13	80% CONSTRUCTION DRAWINGS

PROJECT INFORMATION:  
 T936  
 S. OLD SPANISH & CAMINO DORETEA  
 8850 S. CAMINO LOMA ALTA  
 VAIL, AZ 85641  
 PIMA COUNTY

DRAWN BY: JD	CHECKED BY: VD
SHEET TITLE: GROUNDING PLANS & NOTES	
SHEET NUMBER: G-1	REV: 2

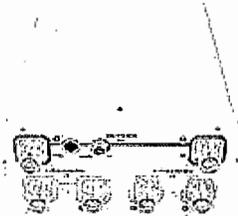
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# Product Specifications

## EXHIBIT D

COMMSCOPE®

POWERED BY



### SBNHH-1D65C

**Andrew® Tri-band Antenna, 1 x 698–896 MHz and 2 x 1710–2360 MHz, 65° horizontal beamwidth, internal electrical tilt. Both high bands share the same electrical tilt.**

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- The values presented on this datasheet have been calculated based on N-P-BASTA White Paper version 9.6 by the NGMN Alliance

### Electrical Specifications

Frequency Band, MHz	698–806	806–896	1710–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	15.8	15.6	17.3	17.8	18.2	18.1
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.5	±0.3	±0.2	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0°   16.0 5°   16.0 11°   15.5	0°   15.8 5°   15.8 11°   15.2	0°   17.3 4°   17.4 7°   17.3	0°   17.7 4°   17.8 7°   17.7	0°   18.0 4°   18.2 7°   18.1	0°   17.9 4°   18.2 7°   18.2
Beamwidth, Horizontal, degrees	66	64	70	65	63	58
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.9	±3.4	±3.8	±4.7	±3.7
Beamwidth, Vertical, degrees	8.9	7.8	5.7	5.2	5.0	4.4
Beamwidth, Vertical Tolerance, degrees	±0.6	±0.5	±0.3	±0.2	±0.3	±0.2
Beam Tilt, degrees	0–11	0–11	0–7	0–7	0–7	0–7
USLS, dB	13	14	17	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	26	24	27	25	25	26
CPR at Boresight, dB	29	22	20	21	19	21
CPR at Sector, dB	14	11	13	11	9	5
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR   Return Loss, dB	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0
PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150	-150	-150	-150
Input Power per Port, maximum, watts	400	400	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm
Lightning Protection	dc Ground	dc Ground	dc Ground	dc Ground	dc Ground	dc Ground

### General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® tri-band
Band	Multiband
Brand	DualPol®   Teletilt®
Operating Frequency Band	1710 – 2360 MHz   698 – 896 MHz

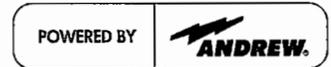
### Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity, total	6
Lightning Protection	dc Ground
Radiator Material	Aluminum   Low loss circuit board
Radome Material	Fiberglass, UV resistant
Wind Loading, maximum	879.0 N @ 150 km/h

# Product Specifications

COMMSCOPE®

SBNHH-1D65C



Wind Speed, maximum 197.6 lbf @ 150 km/h  
241.4 km/h | 150.0 mph

## Dimensions

Depth 181.0 mm | 7.1 in  
Length 2438.0 mm | 96.0 in  
Width 301.0 mm | 11.9 in  
Net Weight 22.5 kg | 49.6 lb

## Remote Electrical Tilt (RET) Information

Annual Failure Rate, maximum 0.01%  
Power Consumption, idle state, maximum 2.0 W  
Power Consumption, normal conditions, maximum 11.0 W  
Power Input 10–30 V  
Protocol 3GPP/AISG 2.0 Multi-RET  
RET Interface RS-485 Female (daisy chain port ,1) | RS-485 Male (input port, 1)  
RET Interface, quantity 1 female | 1 male  
RET System Teletilt®

## Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system



## Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.5 - 4.5 in (64 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

# ALCATEL-LUCENT RRH4X25-WCS

The Alcatel-Lucent RRH4x25-WCS is the new addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solution, aimed at facilitating the RF site acquisition and civil engineering.

**Supporting 2Tx/4Tx MIMO and 4 ways Rx diversity**, it allows North American operators to have a compact radio solution to deploy LTE in the new Wireless Communication Services band (WCS - 2.3 GHz, 3GPP band 30), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent RRH4x25-WCS product has four transmit RF paths, delivering either 4x25 or 2x50 W RF output power, and four receive RF paths. It supports 4Rx diversity and offers the possibility to select, just by Software, 2Tx or 4Tx MIMO configurations with an instantaneous bandwidth of either 5MHz or 10MHz.

The Alcatel-Lucent RRH4x25-WCS is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH4x25-WCS is compact and weights less than 30 kg, eliminating the need for a crane to hoist the equipment to the rooftop.

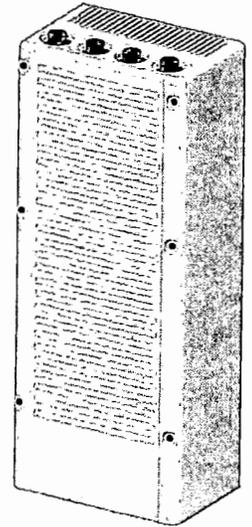
Thanks to its small sizes and weight, the Alcatel-Lucent RRH4x25-WCS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH4x25-WCS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder and installation costs are reduced or even eliminated.

## FEATURES

- Operating in 2.3 GHz band (WCS, 3GPP band 30)
- LTE 2Tx or 4Tx MIMO (switchable) and 4Rx Diversity
- Output power: Up to 2x50W or 4x25W
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

## BENEFITS

- Compact to reduce additional footprint when adding LTE in WCS band
- MIMO scheme operation selection (2Tx or 4Tx) by Software only
- Improves Downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4RxDiv capability and best in class Rx sensitivity
- Easy installation, with a unit that can be carried and set up by one person
- Flexible mounting options: Pole/Wall/Floor



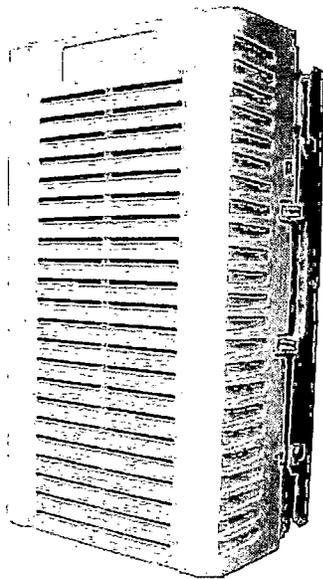
# TECHNICAL SPECIFICATIONS

Features & performance	
<b>Number of TX/RX paths</b>	4 duplexed (either 4T4R or 2T4R by SW)
<b>Frequency band</b>	WCS band (3GPP band 30) DL: 2350 - 2360 MHz UL: 2305 - 2315 MHz
<b>Instantaneous bandwidth - #carriers</b>	10MHz - 1 LTE carrier (5 or 10MHz)
<b>RF output power</b>	2x50W or 4x25W (by SW)
<b>Noise figure – RX Diversity scheme</b>	2.5 dB typ. (<3 dB max) – 2 or 4 ways Rx diversity
<b>Sizes (HxWxD) in mm (in.)</b>	800 x 305 x 220 (31.5" x 12" x 8.7") (with solar shield)
<b>Volume</b>	54 l
<b>Weight in kg (lb) (w/o mounting HW)</b>	31.5 (70)
<b>DC voltage range</b>	-40.5 to -57V at full performance, -38 to -57V at full performance (but power consumption)
<b>DC power consumption (@ -48V)</b>	500W typical @100% RF load in 2Tx operation, 550W typical in 4Tx operation
<b>Environmental conditions</b>	40°C (-40°F) / +55°C (+131°F) IP65
<b>Wind load (@150km/h or 93mph)</b>	Frontal: <300N / Lateral : <200N
<b>Antenna ports</b>	2 ports 7/16 DIN female (50 ohms) VSWR < 1.5
<b>CPRI ports</b>	2 CPRI ports (@4.9 Gbps) SFP single mode dual fiber
<b>AISG interfaces</b>	1 AISG2.0 output (RS485) Integrated Bias Tee on 2 duplexed RF ports
<b>Misc. Interfaces</b>	6 external alarms (2 connectors) – 2 Tx monitor ports - 1 DC block
<b>Installation conditions</b>	Pole and wall mounting
<b>Regulatory compliance</b>	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / UL 60950-1 / FCC Part 27

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# ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET RRH2X60-1900A-4R FOR BAND 2 APPLICATIONS

The Alcatel-Lucent RRH2x60-1900A-4R is a high power, small form factor Remote Radio Head operating in the PCS 1900MHz frequency band (3GPP Band 2) for WCDMA and LTE technologies. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-1900A-4R is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along

with operations, administration and maintenance (OA&M) information.

#### SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-1900A-4R integrates all the latest technologies. This allows to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

#### OPTIMIZED TCO

The Alcatel-Lucent RRH2x60-1900A-4R is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

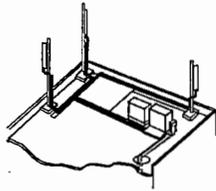
The Alcatel-Lucent RRH2x60-1900A-4R is a very cost-effective solution to deploy LTE MIMO.

#### EASY INSTALLATION

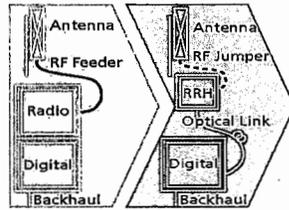
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-1900A-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-1900A-4R is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

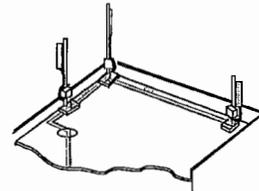
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-1900A-4R is compact and weighs about 21 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

**FEATURES**

- RRH2x60-1900A-4R integrates two power amplifiers of 60W rating (at each antenna connector)
- RRH2x60-1900A-4R can operate WCDMA only, LTE only or a mix of WCDMA and LTE
- RRH2x60-1900A-4R offers the possibility for WCDMA (non MIMO) to operate the two radio chains independently (2 blocks of 20MHz anywhere in the band)
- RRH2x60-1900A-4R is a very compact and lightweight product

- Advanced power management techniques are embedded to provide power savings, such as PA bias control or second PA path switch-off

**BENEFITS**

- MIMO deployment and/or WCDMA and LTE simultaneous operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power

consumption by 50% compared to conventional solutions

- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

**TECHNICAL SPECIFICATIONS**

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

**Dimensions and weights**

- HxWxD : 510x285x193mm (28 l with solar shield)
- Weight : 21kg (46lbs)

**Electrical Data**

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption (ETSI average traffic load reference) : 110W for @1x20W; 250W @2x60W

**RF Characteristics**

- Frequency band: 1900 (3GPP band 2)
- Output power: 2x60W at antenna connectors
- Technologies supported: W-CDMA and LTE
- Instantaneous bandwidth: 20MHz (MIMO) or 2x20MHz (non MIMO)
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity (3GPP 25.104): -125.7 dBm for WCDMA and -105 dBm for LTE

**Connectivity**

- Two CPRI optical ports for daisy chaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 20km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

**Environmental specifications**

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

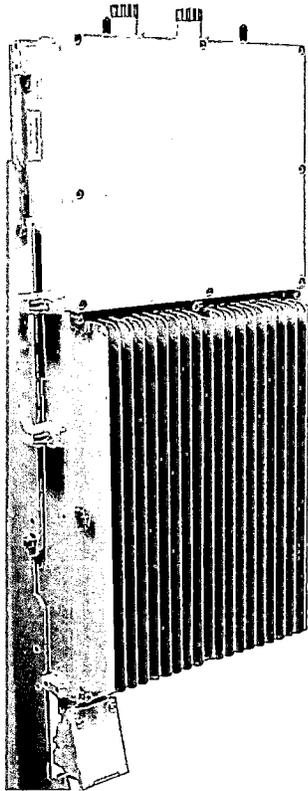
**Safety and Regulatory Data**

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089
- Safety : IEC60950-1, EN 60825-1
- Regulatory : CE Mark – European Directive : 2002/95/EC (ROHS); 2002/96/EC (WEEE); 1999/5/EC (R&TTE)
- Health : EN 50385

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# ALCATEL-LUCENT RRH2X40-07L-AT 700 MHZ LOWER RELEASE LA5

The Alcatel-Lucent RRH2x40w-07L-AT is a new high-power, small form-factor advanced technology Remote Radio Head (RRH) operating in the 3GPP North American Bands 12 and 17. The Alcatel-Lucent RRH2X40-07L-AT is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements.



A distributed eNodeB expands deployment options by using two components, a baseband unit (BBU) containing the digital assets and a separate RRH containing the radio frequency (RF) elements. This modular design optimizes available space and allows the main components of an eNodeB to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2X40-07L-AT is linked to the baseband unit by an optical fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. This product has two transmit RF paths, with 40 W RF output power per transmit path, dual duplexers, and is designed to manage up to two-way receive diversity. This product is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation with an instantaneous bandwidth of the whole band defined by 3GPP.

Moreover, Alcatel-Lucent RRH2X40-07L-AT is designed to make available all the benefits of a distributed eNodeB with excellent RF characteristics at low cost. The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipments, thus leaving coverage holes, or requires expensive cranes to be employed for rooftop installations. However, many of these sites can host an Alcatel-Lucent RRH2X40-07L-AT because its easy installation provides more flexible site selection and improved network quality, along with greatly reduced installation time and costs.

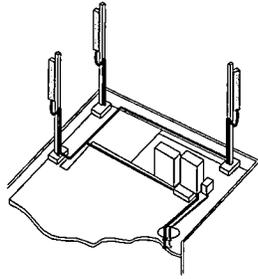
## FAST, LOW-COST INSTALLATION AND DEPLOYMENT

The Alcatel-Lucent RRH2X40-07L-AT is a zero-footprint solution and operates silently, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2X40-07L-AT is compact and weighs less than 24 kg (53 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day – a fraction of the time required for a traditional BTS.

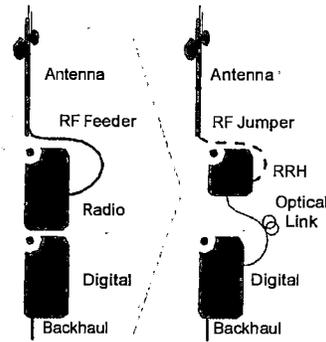
## EXCELLENT RF PERFORMANCE

Because of its small size and weight, the Alcatel-Lucent RRH2X40-07L-AT can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2X40-07L-AT where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2X40-07L-AT provides more RF power while at the same time consuming less electricity.

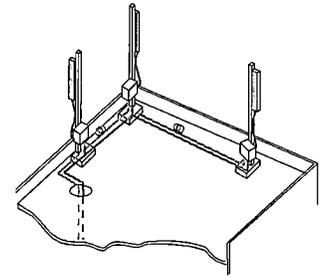




Macro



RRH for space-constrained cell sites



Distributed

## FEATURES

- Zero-footprint deployment with flexible mounting options – pole/wall/floor mounting options
- Easy installation – a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless), silent and heaterless unit
- Best-in-class power efficiency, with significantly reduced energy consumption

## BENEFITS

- Leverages existing real estate with lower site costs
- Smaller size reduces installation costs, with fewer installation materials and simplified logistics
- High efficiency, which minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning

## TECHNICAL SPECIFICATIONS

### Dimensions (H x W x D)

- Approx. 25.2 H x 12.2 W x 6.1 D (inches) (without mounting kit and solar shield)

### Weight

- Approx. 52.1 lbs (without mounting kit)

### Mount

- Pole/wall/floor mounting options

### Power

- DC variant: - 48V
- Power consumption  
 ≈ 280 W (typical)  
 ≈ 350 W (max)

### Optical interface

- Type/number of fibers
- Up to 2.4 Gb/s
- Single-mode:  
 one SM fiber per RRH2x40 carrying UL + DL using CWDM (1550/1310 nm)
- Multi-mode:  
 Two MM fibers per RRH2x40, one for UL and second for DL (850 nm)
- Optical fiber length
- Up to 500 m, using MM fiber
- Up to 15/40 km, using SM fiber

### Certification

- UL
- FCC

### Electromagnetic compatibility (EMC)

- FCC part 15 Class B
- OET-65
- GR-3108-CORE
- GR-1089-CORE

### Safety

- ANSI/NFPA 70
- UL60950-1
- UL60950-22
- CAN/CSA-C22.2 No. 950-95

### Radio characteristics

- Frequency band:  
 DL: 729 - 746MHz  
 UL: 699 - 716MHz
- Bandwidth: 5, 10 MHz LTE carrier
- Total RF output power:  
 2x40W – Dual power amplifiers
- RF output power at antenna port: 40W nominal RF power for each Tx port
- Rx diversity: Two-way diversity
- Noise figure: 2.2 dB typical, 2.9 dB max.
- RF features: TMA and RET support (AISG 2.0) VSWR test

# EXHIBIT E

## Summary of Frequencies T936: S. Old Spanish & Camino Doretea

Service Type	Technology			Start	Stop	Start	Stop
1	LTE WCS	LTE (WCS)	59.2	2305	2320	2345	2360
2	UMTS 1900 (A & C Band)	UMTS	62.5	1930	1945	1850	1865
				1975	1990	1895	1910
3	GSM 1900 (A & C Band)	GSM	61	1930	1945	1850	1865
				1975	1990	1895	1910
4	LTE 1900 (A & C Band)	LTE	59.2	1930	1945	1850	1865
				1975	1990	1895	1910
5	LTE 700	LTE	59.2	704	722	734	746

- 1) Service Type 1 (TX/RX)- Antenna Position 1 (/Sector)
- 2) Service Type 2 (TX/RX)- Antenna Position 2 (/Sector)
- 3) Service Type 3 (TX/RX)- Antenna Position 3 (/Sector)
- 4) Service Types 4 & 5 (TX/RX)- Antenna Position 4 (/Sector)

EXHIBIT E