Contract Number: CTN-IT-14*87
Effective Date: 7-7-14
Term Date: 4-14-17
Cost:
Revenue: ✓
Total: NTE:
Action
Renewal By: 1-1-17
Term: 4-14-17
Reviewed by: VL

BOARD OF SUPERVISORS AGENDA ITEM SUMMARY

Requested Board Meeting Date: 01/07/2014

ITEM SUMMARY, JUSTIFICATION &/or SPECIAL CONSIDERATIONS:

Sprint-Spectrum, L.P. was issued a Tower Lease Agreement for use of the Nanini Governmental tower and facilities, 7300 N. Shannon Road, effective April 15, 1997 through April 14, 2007, with an automatic extension effective April 15, 2007 through April 14, 2017. Sprint-Spectrum, L.P. is now known as Sprint Spectrum Realty Company, L.P.

This Tower Lease Amendment recognizes the change of name to Sprint Spectrum Realty Company, L.P. and allows the vendor to add new antennas/equipment on the Nanini Governmental tower (Exhibit B). A structural analysis of the tower was conducted to ascertain viability of the project. This Amendment also revises/updates the contract number, insurance requirements, and notice information. Per terms of the original Lease Agreement, there is no change in the fee schedule.

*CONTRACT NUMBER (If applicable): CTN-IT-14000000000000000087 fka CTN-IT-12*0578*

STAFF RECOMMENDATION(S):

The Information Technology Department recommends that the Pima County Board of Supervisors adopt and the Chairman sign the Tower Lease Amendment for Sprint Spectrum Realty Company, L.P.

CORPORATE HEADQUARTERS: Delaware

To: CoB - 12.24.13
Agenda 1.7.14
(2)

CLERK OF BOARD USE ONLY: BOS MTG. _____

ITEM NO. _____

PIMA COUNTY COST: ___ and/or REVENUE TO PIMA COUNTY:$___N/A___

FUNDING SOURCE(S): *N/A*
(i.e. General Fund, State Grant Fund, Federal Fund, Stadium D. Fund, etc.)

Advertised Public Hearing:

	YES	***X***	***NO***

Board of Supervisors District:

1	X	2		3		4		5		All	

IMPACT:

IF APPROVED:

Sprint Spectrum Realty Company, L.P. will install new equipment on the communications tower located at the Nanini Governmental Center, 7300 N. Shannon Road, to improve its cellular communication services to Pima County residents.

IF DENIED:

Sprint Spectrum Realty Company, L.P. will not install new equipment on the communications tower located at the Nanini Governmental Center, 7300 N. Shannon Road, and the quality of cellular communication services to Pima County residents will remain unchanged.

DEPARTMENT NAME: *Information Technology*

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

PIMA COUNTY DEPARTMENT OF: **INFORMATION TECHNOLOGY** **PROJECT:** TOWER LEASE AGREEMENT **TENANT:** Sprint Spectrum Realty Company, L.P. **CONTRACT NO.:** CTN-IT-14000000000000000087 fka CTN-IT-12000000000000000578 **CONTRACT AMENDMENT NO.:** One (#01)	CONTRACT NO CTN-IT 14/00000000000000087 **AMENDMENT NO.** _____ This number must appear on all invoices, correspondence and documents pertaining to this contract.

TOWER LEASE AMENDMENT
Nanini Governmental Center, 7300 N. Shannon Road

THIS AMENDMENT is entered into by and between Pima County ("Landlord"), a political subdivision of the State of Arizona, and Sprint Spectrum Realty Company, L.P., ("Tenant"), a Delaware limited partnership, and shall be effective upon execution by the Pima County Board of Supervisors.

RECITALS

Landlord and Sprint-Spectrum, L.P., a Delaware limited partnership, entered into a Lease Agreement ("the Lease") dated April 15, 1997, with expiration date of April 14, 2007. Per terms outlined under Section 1, the Lease automatically renewed for an additional ten year period, effective April 15, 2007 through April 14, 2017. Sprint Spectrum Realty Company, L.P. subsequently succeeded to the interests of Sprint-Spectrum, L.P.

With this First Amendment to Lease, the Tenant desires to replace three (3) antennas, add three (3) radio heads, add one (1) new GPS antenna, and add one (1) junction box at the existing platform on the tower located at located at the Nanini Governmental Center, 7300 N. Shannon Road, Tucson, Arizona. A Structural Analysis was conducted to ascertain viability of the project.

AGREEMENT

WHEREFORE, the parties agree as follows:

1. CHANGE: NAME OF TENANT:

   From: "Sprint-Spectrum, L.P."

   To: "Sprint Spectrum Realty Company, L.P."

2. CHANGE: CONTRACT NUMBER:

From: "CTN-IT-12000000000000000578"

To: "CTN-IT-14000000000000000087"

3. Section 7 is replaced in its entirety as follows:

The insurance requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract. Pima County in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this contract by the Contractor, its agents, representatives, employees or subcontractors, and Contractor is free to purchase additional insurance.

A. MINIMUM SCOPE AND LIMITS OF INSURANCE: Contractor shall provide coverage with limits of liability not less than those stated below.

1) Commercial General Liability – Occurrence Form

Policy shall include bodily injury, property damage, and personal and advertising injury coverage.

- Each Occurrence $ 1,000,000
- General Aggregate $ 1,000,000
- Broad Form Contractual Liability $ 1.000,000

a. The policy shall be endorsed to include the following additional insured language: "***Pima County, its departments, boards, commissions, and its officers, officials, agents, and employees are named as additional insureds with respect to liability arising out of the activities performed by or on behalf of the Contractor.***"

2) Business Automobile Liability

- Bodily Injury and Property Damage for any owned, hired, and/or non-owned vehicles used in the performance of this Contract with a Combined Single Limit (CSL) of $1,000,000.

a. The policy shall be endorsed to include the following additional insured language: "***Pima County, its departments, boards, commissions, and its officers, officials, agents, and employees are named as additional insureds with respect to liability arising out of the activities performed by or on behalf of the Contractor, involving automobiles owned, leased, hired or borrowed by the Contractor.***"

b. Such additional insured shall be covered to the full limits of liability purchased by the Contractor, even if those limits of liability are in excess of those required by this Contract.

3) Worker's Compensation and Employers' Liability

Workers' Compensation insurance to cover Arizona Statutory requirements and Employer's Liability insurance of not less than:

• Each Accident	$ 1,000,000
• Disease – Each Employee	$ 1,000,000
• Disease – Policy Limit	$ 1,000,000

4) If this Contract involves professional services:

Professional Liability (Errors and Omissions Liability)

Each Claim	$1,000,000
Annual Aggregate	$1,000,000

a. In the event that the professional liability insurance required by this Contract is written on a claims-made basis, Contractor warrants that any retroactive date under the policy shall precede the effective date of this Contract; and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of two (2) years beginning at the time work under this Contract is completed.

b. The policy shall cover professional misconduct or negligent acts for those positions defined in the Scope of Work of this contract.

B. <u>ADDITIONAL INSURANCE REQUIREMENTS:</u>

1) Coverage provided by the Contractor shall not be limited to the liability assumed under the indemnification provisions of this Contract.

2) Additional insured endorsements shall be to the full limits of liability purchased by the Contractor, even if those limits of liability are in excess of those required by this Contract.

3) The Contractor's General Liability, Automobile and Workers' Compensation Policies shall contain a waiver of subrogation endorsement in favor of Pima County, its departments, agencies, boards, commissions, and its officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Contractor.

4) The Contractor's policies shall stipulate that the insurance afforded the contractor shall be primary insurance and that any insurance carried by Pima County shall be excess and not contributory insurance.

C. <u>NOTICE OF CANCELLATION</u>: With the exception of (10) day notice of cancellation for non-payment of premium, any changes material to compliance with this contract in the insurance policies above shall require (30) days written

notice to Pima County. Such notice shall be sent directly to the Department and shall be sent by certified mail, return receipt requested.

D. ACCEPTABILITY OF INSURERS: Contractors insurance shall be placed with companies duly licensed in Arizona or hold approved non-admitted status on the Arizona Department of Insurance List of Qualified Unauthorized Insurers. Insurers shall have an "A.M. Best" rating of not less than A- VII or duly authorized to transact Workers' Compensation insurance in Arizona. Pima County in no way warrants that the above-required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

E. VERIFICATION OF COVERAGE: Contractor shall furnish Pima County with certificates of insurance (ACORD form or equivalent approved by Pima County) as required by this Contract. The certificates for each insurance policy are to be signed by an authorized representative.

All certificates and endorsements are to be received and approved by Pima County before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract, or to provide evidence of renewal, is a material breach of contract.

All certificates required by this Contract shall be sent directly to the Department. The Pima County project name or contract number and project description shall be noted on the certificate of insurance. Pima County reserves the right to require complete copies of all insurance policies required by this Contract at any time.

F. SUBCONTRACTORS: Contractors' certificate(s) shall include all subcontractors as insureds under its policies or Contractor shall, upon request, furnish to Pima County separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to the minimum requirements identified above.

G. PROPERTY INSURANCE: Tenant shall obtain and keep in force during the term of this agreement a policy of insurance covering loss or damage to the premises in the amount of the full replacement value thereof, providing protection against all vandalism, malicious mischief, special extended perils (all risk) and shall deliver to Landlord a Certificate of Liability insurance, with Landlord named as additional insured. Said Certificate must be satisfactory to the Landlord.

4. Section 11 is revised to add the following:

"All transmission lines shall be grounded per industry standard, including grounding kits, surge suppressor devices, and irreversible crimp lugs. Site

grounding will be inspected upon project completion. Any deficiencies associated with the new installation shall be corrected at the provider's expense."

5. ADD Section 25: NOTICES:

All notices, requests, demands, and communications hereunder will be given by first-class, certified, or registered mail, return-receipt requested, or by a nationally recognized overnight courier, postage prepaid, to be effective when properly sent and received, refused, or returned undelivered. Notices will be addressed to the parties as follows:

If to Tenant:
Sprint Nextel Property Services
Mailstop: KSOPHT0101-Z2650
6391 Sprint Parkway
Overland Park KS 66251-2650
Attention: Mark Weisbrod
Phone: 480-246-5619
Email: Mark.2.Weisbrod@sprint

If to Landlord:
Pima County Government
Information Technology Department
Attn: Contract Administrator
150 West Congress, 6th Floor
Tucson, AZ 85701
Phone: 520-724-8113
Email: contract.administrator@pima.gov

With payment to:
Pima County Revenue Management
130 W Congress
Mail Stop: DT-BAB6-404
Tucson, AZ 85701

Either party hereto may change the place for the giving of notice to it by giving thirty (30) days' prior written notice to the other as provided herein.

6. Exhibit B is added.

7. All other provisions of the Lease shall remain in effect and continue to be binding upon the parties.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

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

LANDLORD:

_____

Chair, Board of Supervisors

Date:_____

TENANT:

_____

Authorized Officer Signature

Randy S. Jones, Area SDM

Printed Name and Title

Date: 6 Dec 13

ATTEST

_____

Clerk of Board

Date:_____

APPROVED AS TO CONTENT

_____

Chief Information Officer

12/13/13

Date

APPROVED AS TO FORM

TOBIN ROSEN

_____

for Marc Natelsky, Deputy County Attorney

Date: 12/3/13

EXHIBIT B

Sprint
NETWORK VISION MMBTS LAUNCH

TUC NORWEST
PH04XC034

7300 N. SHANNON RD
TUCSON, AZ 85741
PIMA COUNTY

APPROVALS

TITLE	SIGNATURE	DATE
PROJECT MANAGER		
CONSTRUCTION MANAGER		
RF ENGINEER		
SITE ACQUISITION		
PLANNING CONSULTANT		
PROPERTY OWNER		
OTHER		

PREPARED FOR:
Sprint
Alcatel·Lucent

CONSULTANT:
GoodmanNetworks
6400 INTERNATIONAL PARKWAY
SUITE 1000
PLANO, TX 75093
Tel: (972) 406.9692

SITE NAME:
TUC NORWEST
SITE NUMBER:
PH04XC034
SITE ADDRESS:
7300 N. SHANNON RD
TUCSON, AZ 85741
PIMA COUNTY

STAMP:
Registered Professional Engineer (Civil)
CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/2c/13
ARIZONA U.S.A.
Expires 06/30/2016

LEVEL 5
CONSULTING ENGINEERS, INC
19315 FM 2252, STE. 301
GARDEN RIDGE, TX 78266
PH: (210) 542-5911

DRAWN BY:	LC
APPROVED BY:	TH, DH

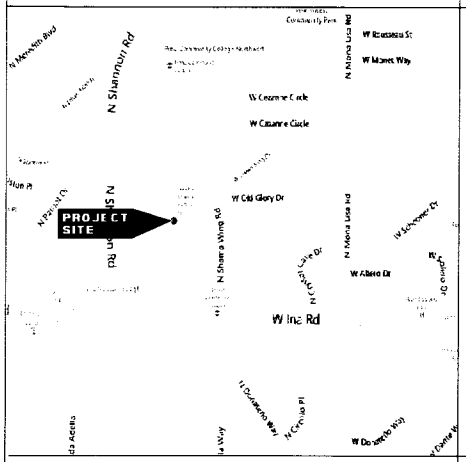
REVISION

NO	DESCRIPTION	BY	DATE
A	90% ISSUED FOR REVIEW	LC	02/06/13
0	ISSUED FOR CONSTRUCTION	JS	03/20/13
1	REVISED PER COMMENTS	JS	07/16/13

SHEET TITLE
COVER SHEET

SHEET NUMBER:
T1.0

VICINITY MAP



DEVELOPMENT SUMMARY

OWNER/LANDLORD:	COUNTY OF PIMA 201 N. STONE, 6TH FLOOR TUCSON, AZ 85701
APPLICANT:	SPRINT 8040 S. 48th STREET, SUITE 200 PHOENIX, AZ 85044
TOWER HEIGHT, TYPE:	90' MONOPOLE
EXISTING SITE TYPE:	W.C.F.
ASSESSORS PARCEL NUMBER:	225-43-026A
LATITUDE:	32.339097°
LONGITUDE:	-111.026875°
EXISTING ZONING:	PIMA COUNTY
EXISTING PROJECT AREA:	N/A
PROJECT AREA INCREASE:	N/A
NEW OCCUPANCY:	UNMANNED
EXISTING OCCUPANCY:	UNMANNED
JURISDICTION:	PIMA COUNTY
ELECTRICAL PROVIDER:	TEP
AAV PROVIDER:	CENTURYLINK

APPLICABLE CODES

ARIZONA STATE CODE COMPLIANCE:

ALL WORK AND MATERIALS SHALL BE PREFORMED 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.

- 2012 IBC, STANDARDS AND AMENDMENTS
- 2012 IMC, STANDARDS AND AMENDMENTS
- 2012 IFC, STANDARDS AND AMENDMENTS
- 2012 IPC, STANDARDS AND AMENDMENTS
- 2011 NEC, STANDARDS AND AMENDMENTS

ACCESSIBILITY REQUIREMENTS:

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE.

SHEET INDEX

#	SHEET TITLE	REV
T1.0	COVER SHEET	-
N1.0	GENERAL NOTES	-
N1.1	GENERAL NOTES	-
N1.2	GENERAL NOTES	-
G1.0	SIGNAGE AND NOTES	-
A1.0	OVERALL AREA PLAN	-
A1.1	ENLARGED SITE PLAN	-
A1.2	EQUIPMENT PLANS	-
A2.0	TOWER ELEVATION	-
A2.1	ANTENNA PLANS AND DETAIL	-
A3.0	DETAILS	-
RF1.0	ANTENNA & CABLE COLOR CODING DETAILS	-
E1.0	ELECTRICAL AND GROUNDING PLANS	-
E1.1	ONE-LINE DIAGRAM AND PANEL SCHEDULES	-
E2.0	ANTENNA GROUNDING PLAN & SCHEMATIC	-
E3.0	GROUNDING DETAILS	-
	APPENDIX - PLUMBING DIAGRAM SCENARIO	

DRIVING DIRECTIONS

FROM SPRINT OFFICE (8040 S. 48TH STREET):

TURN RIGHT ONTO W BASELINE RD. TURN RIGHT TO MERGE ONTO I-10 E TOWARD TUCSON. TAKE EXIT 248 TOWARDS INA RD. MERGE ONTO I-10 FRONTAGE RD. TURN LEFT ONTO W INA RD. TURN LEFT ONTO N SHANNON RD. TURN RIGHT TO STAY ON N SHANNON RD. 7300 N. SHANNON RD WILL BE ON THE LEFT.

Call at least two full working days before you begin excavation.
ARIZONA 811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County (602) 263-1100

PROJECT DESCRIPTION

SPRINT TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY:

- REMOVE (5) EXISTING PANEL ANTENNAS ((2) PER SECTORS 1 & 2, (1) PER SECTOR 3)
- INSTALL (3) NEW PANEL ANTENNAS (1 PER SECTOR)
- REMOVE (1) EXISTING POWER CABINET
- RETROFIT (1) MOD-CELL CABINET
- REPLACE (1) EXISTING BATTERY CABINET (1) NEW EMERSON BATTERY CABINET
- INSTALL (1) NEW FIBER JUNCTION BOX
- INSTALL (1) NEW GPS ANTENNA AND CABLE
- REMOVE EXISTING SPRINT ANTENNA COAXIAL CABLES
- INSTALL (3) NEW HYBRIFLEX FIBER OPTIC CABLES USING EXISTING COAX ROUTE (1 PER SECTOR)
- INSTALL (3) NEW REMOTE RADIO HEADS (1 PER SECTOR)

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION TO AN EXISTING TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. LEVEL 5 CONSULTING ENGINEERS HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER & MOUNT.

GENERAL NOTES

- CONTRACTOR & CREWS SHALL ABIDE BY SPRINT CONSTRUCTION STANDARDS/REQUIREMENTS AS DESCRIBED IN THE A.U. SPRINT SAFETY HANDBOOK.
- OSHA REGULATIONS/STANDARDS SHALL BE REVIEWED & FOLLOWED BY ALL EQUIPMENT INSTALLERS AND TOWER/ROOF TOP CONTRACTORS/SUBCONTRACTORS DURING CONSTRUCTION.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REMEDY ALL FAULTY, INFERIOR AND/OR IMPROPER MATERIALS, DAMAGED GOODS, AND/OR FAULTY WORKMANSHIP FOR ONE (1) YEAR AFTER THE PROJECT IS COMPLETE AND ACCEPTED UNDER THIS CONTRACT UNLESS NOTED OTHERWISE IN THE CONTRACT BETWEEN THE OWNER AND THE CONTRACTOR. (EXCEPTION: THE ROOFING SUBCONTRACTOR SHALL FURNISH A MAINTENANCE AGREEMENT FOR ALL WORK DONE, COSIGNED BY THE GENERAL CONTRACTOR, TO MAINTAIN THE ROOFING IN A WATERPROOF CONDITION FOR A PERIOD OF TWO (2) YEARS STARTING AFTER THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT, UNLESS OTHERWISE WRITTEN IN THE CONTRACT BETWEEN THE OWNER AND THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION FOR THE SAFETY OF THE OWNER'S EMPLOYEES & WORKMEN AT ALL TIMES DURING THE CONSTRUCTION OF THE PROJECT.
- THE CONTRACTOR SHALL BE REQUIRED TO PAY FOR ALL NECESSARY PERMITS AND/OR FEES WITH RESPECT TO THE WORK TO COMPLETE THE PROJECT. BUILDING PERMIT APPLICATIONS SHALL BE FILED BY THE OWNER OR HIS REPRESENTATIVE. CONTRACTOR SHALL OBTAIN PERMIT AND MAKE FINAL PAYMENT FOR SAID DOCUMENT.
- SPRINT GC TO VERIFY ALL MEASUREMENTS OF EXISTING CONDUITS FOR FIBER RUN AND ANY POWER RUNS.

CLIENT REPRESENTATIVE

OWNER:
SPRINT
8040 S. 48th STREET, SUITE 200
PHOENIX, AZ 85044

G-NET:
GOODMAN NETWORKS
20783 N. 83rd AVE.
#103-182
PEORIA, AZ 85382
CONTACT: NEIL MIDDLETON
PHONE: 214-842-3403

DEVELOPER:
ALCATEL LUCENT
2500 W. UTOPIA ROAD
PHOENIX, AZ 85027
CONTACT: KEITH WAGER
PHONE: 520-483-6922

DEVELOPER AGENT:
GOODMAN NETWORKS
6400 INTERNATIONAL PKWY
SUITE 1000
PLANO, TX 75093
CONTACT: JOEL HENRIE
PHONE: 972-406-9692

ZONING & PERMITTING:
CLEAR BLUE SERVICES
1701 S. 48th STREET
SUITE 210
PHOENIX, AZ 85044
CONTACT: KENT FLAKE
PHONE: 602-426-9500

A&E:
LEVEL 5 CONSULTING ENG.
19315 FM 2252, S.E. 301
GARDEN RIDGE, TX 78266
CONTACT: TONY HUEBEL
PHONE: 210-542-5911

COMPLY WITH THESE STANDARDS UNLESS OTHERWISE REQUIRED BY APPLICABLE CODES. CONSTRUCTION TO CONFORM TO SPRINT NEXTEL INTEGRATED CONSTRUCTION STANDARDS.

1.0 GENERAL REQUIREMENTS

1.1 PURPOSE AND INTENT

A. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH. SHOULD THERE BE ANY DISCREPANCIES BETWEEN REQUIREMENTS SHOWN IN BOTH, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

B. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.

C. THE PURPOSE OF THE SPRINT WIRELESS CONSTRUCTION SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.

1.2 CONFLICTS

A. VERIFY ALL MEASUREMENTS AT THE SITE BEFORE ORDERING MATERIAL OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION WILL BE ALLOWED DUE TO DIFFERENCES BETWEEN ACTUAL DIMENSIONS OR DIMENSIONS SHOWN ON PLANS. SUBMIT NOTICE OF ANY DISCREPANCY IN DIMENSIONS OR OTHERWISE TO SPRINT WIRELESS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

B. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST OR OF DIFFICULTIES OF CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS GOVERNING THE WORK.

1.3 CLEANING

KEEP THE SITE FREE FROM ACCUMULATION OF WASTE AND RUBBISH CAUSED BY EMPLOYEES AT THE COMPLETION OF THE WORK. REMOVE ALL WASTE AND NON-CONSTRUCTION MATERIAL INCLUDING ALL CONTRACTOR TOOLS, SCAFFOLDING AND SURPLUS MATERIAL AND LEAVE SITE CLEAN AND READY FOR USE.

1.4 CODES

CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS AND RULES PROMULGATED BY FEDERAL, STATE AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE SITE. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.

1.5 LICENSING

HAVE AND MAINTAIN A VALID CONTRACTORS LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTORS PERFORMING THOSE TRADES SHALL BE LICENSED. RESEARCH AND COMPLY WITH LICENSING LAWS, PAY LICENSE FEES, AND SELECT AND INFORM SUBCONTRACTORS REGARDING THESE LAWS.

1.6 OSHA

FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS, AND STATE LAWS BASED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT. THESE REGULATIONS INCLUDE BUT ARE NOT LIMITED TO REGULATIONS DEALING WITH TOWER CONSTRUCTION AND SAFETY, EXCAVATIONS AND TRENCHING, AND WORK IN CONFINED SPACES. ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES DURING CONSTRUCTION.

1.7 PHOTOS

PROVIDE PHOTOGRAPHIC EVIDENCE OF ALL SCOPE RELATED WORK, INCLUDING BUT NOT LIMITED TO GROUNDING AND TRENCHING AFTER PLACEMENT OF UTILITIES PRIOR TO BACKFILL.

1.8 BUILDING PERMITS

SPRINT WIRELESS WILL SUBMIT CONSTRUCTION DOCUMENTS TO THE JURISDICTIONAL AUTHORITY FOR PLAN CHECK AND REVIEW. CONTRACTOR WILL SUBMIT LICENSING AND WORKMAN'S COMPENSATION INFORMATION TO THE JURISDICTION AS REQUIRED TO OBTAIN THE BUILDING PERMIT. CONTRACTOR SHALL COORDINATE AND SCHEDULE REQUIRED INSPECTIONS AND POST REQUIRED PERMITS AT THE JOB SITE. COMPLY WITH SPECIFIC PROJECT RELATED REQUESTS AND SUGGESTIONS MADE BY BUILDING INSPECTOR AND INFORM CONSTRUCTION MANAGER OF ANY SUCH WORK THAT MAY BE BEYOND THE SCOPE OF THE CONTRACT OR DEVIATE FROM THE CONSTRUCTION DOCUMENTS. SPRINT WIRELESS WILL REIMBURSE THE CONTRACTOR FOR FEES FOR PLAN REVIEW, BUILDING PERMIT, CONNECTIONS AND INSPECTION.

1.9 ZONING REGULATIONS AND CONDITIONAL USE PERMITS

SPRINT WIRELESS WILL SUBMIT FOR AND OBTAIN ALL ZONING AND CONDITIONAL USE PERMITS. SOME USE PERMITS MAY HAVE SPECIFIC REQUIREMENTS RELATED TO THE CONSTRUCTION SUCH AS NOISE REGULATIONS, HOURS OF WORK, ACCESS LIMITATIONS, ETC. THE CONSTRUCTION MANAGER WILL INFORM THE CONTRACTOR OF THESE REQUIREMENTS AT THE PRE-BID MEETING OR AS SHOWN IN CONSTRUCTION DOCUMENTS.

1.10 FAA PERMIT AND TOWER LIGHTING

REFER TO CONSTRUCTION DOCUMENTS AND CONSTRUCTION MANAGER FOR FAA AND STATE LIGHTING REQUIREMENTS. CONTRACTOR SHALL PROVIDE TEMPORARY FAA APPROVED LIGHTING UNTIL PERMANENT LIGHTING IS OPERATIONAL.

1.11 TOWER SECURITY

TOWER MUST BE FENCED, TEMPORARILY OR PERMANENTLY WITHIN 24 HOURS OF ERECTION. DO NOT ALLOW THE GATE ACCESSING THE TOWER AREA TO REMAIN OPEN OR UNATTENDED AT ANY TIME FOR ANY REASON. KEEP THE GATE CLOSED AND LOCKED WHEN NOT IN USE.

1.12 SITE CONTROL

A. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR CONTAINMENT OF SEDIMENT AND CONTROL OF EROSION AT THE SITE. ANY DAMAGE TO ADJACENT OR DOWNSTREAM PROPERTIES WILL BE CORRECTED BY THE CONTRACTOR AT NO EXPENSE TO SPRINT WIRELESS.

B. THE CONTRACTOR IS TO MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES. DO NOT ALLOW WATER TO STAND OR POND. ANY DAMAGE TO STRUCTURES OF WORK ON THE SITE CAUSED BY INADEQUATE MAINTENANCE OF DRAINAGE PROVISIONS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND ANY COST ASSOCIATED WITH REPAIRS FOR SUCH DAMAGE WILL BE AT THE CONTRACTOR'S EXPENSE.

C. ALL WASTE MATERIAL SHALL BE PROPERLY DISPOSED OF OFF-SITE OR AS DIRECTED BY THE CONSTRUCTION MANAGER AND IN ACCORDANCE WITH JURISDICTIONAL AUTHORITIES.

2.0 SITE PREPARATION

2.1 SCOPE OF WORK INCLUDES:

A. PROTECTION OF EXISTING TREES, VEGETATION AND LANDSCAPING MATERIALS WHICH MIGHT BE DAMAGED BY CONSTRUCTION ACTIVITIES.

B. TRIMMING OF EXISTING TREES AND VEGETATION AS REQUIRED FOR PROTECTION DURING CONSTRUCTION ACTIVITIES.

C. CLEARING AND GRUBBING OF STUMPS, VEGETATION, DEBRIS, RUBBISH, DESIGNATED TREES, AND SITE IMPROVEMENTS.

D. TOPSOIL STRIPPING AND STOCKPILING.

E. TEMPORARY EROSION CONTROL, SILTATION CONTROL AND DUST CONTROL CONFORMING TO LOCAL REQUIREMENTS AS APPLICABLE.

F. TEMPORARY PROTECTION OF ADJACENT PROPERTY, STRUCTURES, BENCHMARKS AND MONUMENTS.

G. PROTECTION AND TEMPORARY RELOCATION, STORAGE AND RE-INSTALLATION OF DUSTING FENCING AND OTHER SITE IMPROVEMENTS SCHEDULED FOR REUSE.

H. REMOVAL AND LEGAL DISPOSAL OF CLEARED MATERIALS.

2.2 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS NOTED IN CONSTRUCTION DOCUMENTS.)

A. MATERIALS USED FOR TREE PROTECTION, EROSION CONTROL, SILTATION CONTROL AND DUST CONTROL AS SUITABLE FOR SPECIFIC SITE CONDITIONS.

3.0 EARTH WORK

3.1 SCOPE OF WORK INCLUDES:

A. EXCAVATION, TRENCHING, FILLING, COMPACTION, AND GRADING FOR STRUCTURES, SITE IMPROVEMENTS AND UTILITIES.

B. MATERIALS FOR SUB-BASE DRAINAGE FILL, FILL, BACKFILL AND GRAVEL FOR SLABS, PAVEMENTS AND IMPROVEMENTS.

C. ROCK EXCAVATION WITHOUT BLASTING.

D. SUPPLY OF ADDITIONAL MATERIALS FROM OFFSITE AS REQUIRED.

E. REMOVAL AND LEGAL DISPOSAL OF EXCAVATED MATERIALS AS REQUIRED.

3.2 QUALITY ASSURANCE

A. COMPACTION:

1. UNDER STRUCTURES, BUILDING SLABS, PAVEMENTS AND WALKWAYS WILL OBTAIN A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE.

B. GRADING TOLERANCES OUTSIDE BUILDING CODES:

1. LAWNS, UNPAVED AREAS AND WALKS PLUS OR MINUS 1 INCH.

2. UNDER PAVEMENTS PLUS OR MINUS 1/2 INCH.

C. GRADING TOLERANCE FOR FILL UNDER ALL CONCRETE APPLICATIONS: PLUS OR MINUS 1/2 INCH MEASURED WITH 10 FOOT STRAIGHTEDGE.

3.3 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS NOTED IN CONSTRUCTION DOCUMENTS.)

A. SUBBASE MATERIAL GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE OR SLAG, AND NATURAL SAND.

B. WASHED MATERIAL EVENLY GRADED MIXTURE OF CRUSHED STONE OR GRAVEL WITH 95 PERCENT PASSING A 1 1/2 INCH SIEVE.

C. GRADING MATERIAL WILL CONSIST OF: SATISFACTORY NATIVE OR IMPORTED SOIL MATERIALS FREE OF CLAY, ROCK OR GRAVEL NOT LARGER THAN 2 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS AND OTHER UNSUITABLE MATERIALS WILL NOT BE ALLOWED FOR USE. IMPORTED MATERIALS SHALL HAVE A CLAY CONTENT NO MORE THAN 5 PERCENT.

D. BACKFILL MATERIALS WILL CONSIST OF: SATISFACTORY NON-COHESIVE NATIVE OR IMPORTED SOIL MATERIALS FREE OF CLAY, ROCK OR GRAVEL NOT LARGER THAN 4 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, AND OTHER UNSUITABLE MATERIALS. IMPORTED MATERIAL SHALL HAVE A CLAY CONTENT OF NO MORE THAN 5 PERCENT.

E. GRAVEL MATERIAL EVENLY GRADED MIXTURE OF CRUSHED STONE OR GRAVEL WITH 95 PERCENT PASSING A 1 1/2 INCH SIEVE.

F. GEOTEXTILE FABRIC AS PER CONSTRUCTION DOCUMENTS.

3.4 CLEARING AND GRUBBING REMOVE ALL VEGETATION AND MATERIALS AS REQUIRED REMOVE STUMPS COMPLETELY UNDER FOUNDATIONS AND ROADWAY. DISPOSE OF CLEARING AND GRUBBING OFF SITE, OR IN AN ON SITE LOCATION APPROVED BY CONSTRUCTION MANAGER.

3.5 STRIPPING

STRIP NOT LESS THAN 3 INCHES OF SOD AND TOPSOIL FROM AREAS THAT WILL UNDERLAY GRAVEL PAVEMENT, NEW STRUCTURES OR NEW EMBANKMENTS. STOCKPILE STRIPPING ON-SITE FOR RE-USE IN FINAL LANDSCAPING.

3.6 COMMON EXCAVATION

1. EXCAVATE TO DEPTH, LINES AND GRADES SHOWN ON THE PLANS OR AS OTHERWISE SPECIFIED.

2. TEMPORARILY STOCKPILE ON-SITE EXCAVATION AT AN APPROVED LOCATION WITHIN THE WORK AREA UNTIL SITE GRADING IS COMPLETE. STOCKPILE SHALL NOT EXCEED 15 FEET IN HEIGHT.

3. LEGALLY DISPOSE OF EXCESS COMMON EXCAVATION OFF-SITE.

3.7 EMBANKMENT

A. CONSTRUCT EMBANKMENT TO THE LINES AND GRADE SHOWN ON THE DRAWINGS.

B. CONSTRUCT EMBANKMENT FROM ON-SITE EXCAVATION MATERIALS WHEN SUITABLE. USE IMPORTED BACKFILL ONLY AFTER AVAILABLE ON SITE EXCAVATION MATERIALS HAVE BEEN USED.

C. CONSTRUCT IN LIFTS OF NOT MORE THAN 12 INCHES IN LOOSE DEPTH. THE FULL WIDTH OF THE CROSS SECTION SHALL BE BROUGHT UP UNIFORMLY.

D. MATERIAL SHALL NOT BE PLACED IN LAYERS AND SHALL BE NEAR OPTIMUM MOISTURE CONTENT BEFORE ROLLING TO OBTAIN THE PRESCRIBED COMPACTION. WETTING OR DRYING OF THE MATERIAL AND MANIPULATION TO SECURE A UNIFORM MOISTURE CONTENT THROUGHOUT THE LAYER MAY BE REQUIRED. SUCH OPERATIONS SHALL BE INCLUDED IN THE APPROPRIATE BID ITEM. SHOULD THE MATERIAL BE TOO WET TO PERMIT PROPER COMPACTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE MATERIAL WITH AN ACCEPTABLE MOISTURE CONTENT.

E. DO NOT PLACE FROZEN MATERIAL IN THE EMBANKMENT AND DO NOT PLACE EMBANKMENT MATERIAL UPON FROZEN MATERIAL.

F. CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF EMBANKMENTS AND THE REPLACEMENT OF ANY PORTION WHICH HAS BECOME UNSPLACED DUE TO THE CONTRACTORS OPERATIONS.

G. START LAYERS IN THE DEEPEST PORTION OF THE FILL, AND AS PLACEMENT PROGRESSES, CONSTRUCT LAYERS APPROXIMATELY PARALLEL TO THE FINISHED GRADE LINE.

H. ROUTE EQUIPMENT, BOTH LOADED AND EMPTY, OVER THE FULL WIDTH OF EMBANKMENT TO ENSURE UNIFORMITY OF MATERIAL PLACEMENT.

I. COMPACT EMBANKMENT UNDERLYING NEW GRAVEL PAVING, FLOOR SLABS AND STRUCTURES TO A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT. COMPACT NON-STRUCTURAL AREA EMBANKMENTS TO A MINIMUM OF 90 % OF ASTM D-1557.

3.8 SITE GRADING

A. USING ON-SITE EXCAVATION MATERIALS SHAPE, TRIM, FINISH AND COMPACT SURFACE AREAS TO CONFORM TO THE LINES, GRADES AND CROSS SECTIONS SHOWN ON THE DRAWINGS OR AS DESIGNATED BY THE CONSTRUCTION MANAGER.

B. GRADE SURFACES TO DRAIN AND ELIMINATE ANY PONDING OR EROSION.

C. ELIMINATE WHEEL RUTS BY REGRADING.

D. COMPACT AREAS UNDERLYING NEW GRAVEL PAVING, FLOOR SLABS AND STRUCTURES TO A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1551 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.

E. CONSTRUCT FINISHED SURFACE OF SITE GRADING AREAS WITHIN ONE INCH FROM SPECIFIED GRADE.

3.9 SUBGRADE PREPARATION

A. SHAPE TOP OF SUBGRADE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS.

B. MAINTAIN TOP OF SUBGRADE TO A FREE-DRAINING CONDITION.

C. DO NOT STOCKPILE MATERIALS ON TOP OF SUBGRADE UNLESS AUTHORIZED BY CONSTRUCTION MANAGER.

D. COMPACT THE TOP 12 INCHES OF SUBGRADE TO A 95% COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.

E. CONSTRUCT TOP OF SUBGRADE WITHIN ONE INCH OF ESTABLISHED GRADE AND CROSS SECTION.

3.10 GEOTEXTILE FABRIC

A. LAY GEOTEXTILE FABRIC OVER COMPACTED SUBGRADE AS PER CONSTRUCTION DOCUMENTS IN THE COMPOUND AREA AND UNDER LENGTH OF ROAD (WHEN REQUIRED). LAP ALL JOINTS TO A MINIMUM OF 36 INCHES.

3.11 GRAVEL SURFACING

A. CONSTRUCT GRAVEL SURFACING AREAS USING CRUSHED AGGREGATE BASE AND FINISH COURSES AS SPECIFIED BY CONSTRUCTION MANAGER OR CONSTRUCTION DOCUMENTS.

B. SPREAD GRAVEL AND RAKE TO OBTAIN A UNIFORM SURFACE AREA.

4.0 TRENCHING

CALL LOCAL UNDERGROUND UTILITY LOCATING SERVICE BEFORE ANY EXCAVATION OR TRENCHING.

4.1 MATERIALS

FILL MATERIAL SHALL BE OBTAINED, WHEN POSSIBLE FROM MATERIALS EXCAVATED FROM TRENCHES. ON-SITE STRUCTURAL FILL SAND OR SLURRY SHALL BE APPROVED BY THE CONSTRUCTION MANAGER AND SHALL CONFORM TO LOCAL GOVERNING JURISDICTIONS AND UTILITY COMPANY REQUIREMENTS. THE FILL MATERIAL SHALL CONTAIN NO ORGANIC MATERIAL OR ROCKS, NOR SHALL CONTAIN OBJECTIONABLE MATERIALS AND OR MATERIALS DESIGNATED AS HAZARDOUS OR INDUSTRIAL BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE FILL MATERIAL SHALL CONTAIN FINES SUFFICIENT TO FILL ALL VOIDS IN THE MATERIAL. COMPACTION OF BACKFILL OR BORROW SOIL SHALL BE PLACED IN 12 INCH LOOSE LIFTS WHEN UTILIZING HEAVY COMPACTION EQUIPMENT OR 6 INCH LOOSE LIFTS WHEN UTILIZING HAND OPERATED TAMPERS.

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CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/3/13
ARIZONA U.S.A.
Expires 06/30/2016

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4.2 PIPE DETECTION AND IDENTIFICATION

A. UTILIZING WARNING TAPE: ALL ELECTRIC SERVICE TRENCHES SHALL BE MARKED WITH WARNING TAPE.

4.3 TRENCH EXCAVATION

A. DIG TRENCH TO LINES AND GRADES SHOWN ON THE PLANS OR AS DIRECTED BY CONSTRUCTION MANAGER.
B. TRENCH LENGTH SHALL BE SUFFICIENT TO ALLOW FOR SATISFACTORY CONSTRUCTION AND INSPECTION OF THE PROJECT WITHOUT ENDANGERING OTHER CONSTRUCTION WORK OR ADJACENT FACILITIES.
C. DISPOSE OF EXCESS AND UNSUITABLE EXCAVATION MATERIAL PROPERLY AS DIRECTED BY CONSTRUCTION MANAGER.
D. USE HAND METHODS FOR EXCAVATION THAT CANNOT BE ACCOMPLISHED WITHOUT ENDANGERING EXISTING OR NEW STRUCTURES OR OTHER FACILITIES.

4.4 TRENCH PROTECTION

A. PROVIDE MATERIALS, LABOR AND EQUIPMENT NECESSARY TO PROTECT TRENCHES AT ALL TIMES.
B. SHEETING AND BRACING: MEET OR EXCEED OSHA REQUIREMENTS.

4.5 BACKFILLING

A. NOTIFY THE CONSTRUCTION MANAGER AT LEAST 24 HOURS IN ADVANCE OF BACKFILLING.
B. BACKFILL TRENCH WITH LIFTS UP TO 12 INCHES, LOOSE MEASURE.
C. PROTECT CONDUIT FROM LATERAL MOVEMENT, DAMAGE FROM IMPACT OR UNBALANCED LOADING TO AVOID DISPLACEMENT OF CONDUIT AND/OR STRUCTURES. DO NOT FREE FALL BACKFILL INTO TRENCH UNTIL AT LEAST 12 INCHES OF COVER IS OVER THE CONDUIT.

4.6 COMPACTION

A. COMPACT BACKFILL TO A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.
B. IF REQUIRED COMPACTION DENSITY HAS NOT BEEN OBTAINED, REMOVE THE BACKFILL FROM THE TRENCH OR STRUCTURE, REPLACE WITH APPROVED BACKFILL AND RECOMPACT AS SPECIFIED.
C. ANY SUBSEQUENT SETTLEMENT OF TRENCH OR STRUCTURE BACKFILL DURING MAINTENANCE PERIOD SHALL BE CONSIDERED THE RESULT OF IMPROPER COMPACTION AND SHALL BE PROMPTLY CORRECTED.

5.0 CHAIN LINK FENCES AND GATES

5.1 GENERAL

A. PROVIDE CHAIN LINK FENCES AND GATES AS COMPLETE UNITS BY A SINGLE SUPPLY SOURCE INCLUDING NECESSARY ERECTION ACCESSORIES, FITTINGS AND FASTENERS.

5.2 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS WITHIN CONSTRUCTION DOCUMENTS)

A. COMPOUND FABRIC 84 INCHES HIGH AND OVER WITH 2-INCH MESH SHALL BE KNUCKLED AT ONE SELVAGE AND TWISTED AT THE OTHER.
B. STEEL FABRIC.
COMPLY WITH CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL. FURNISH ONE PIECE OF FABRIC WIDTHS. WIRE SIZE INCLUDES ZINC OR ALUMINUM COATING.
1. SIZE: 2-INCH MESH 9 GAUGE (0.148-INCH DIAMETER) WIRE
2. GALVANIZED STEEL FINISH: ASTM A 392, CLASS 2, WITH A MINIMUM 2.0 OZ. ZINC PER SQ. FT. OF UNCOATED WIRE SURFACE.
C. FRAMEWORK AND ACCESSORIES:
1. GENERAL REQUIREMENTS: EXCEPT AS INDICATED OTHERWISE CONFORM TO THE CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL INDUSTRIAL STEEL GUIDE FOR FENCE RAILS, POSTS, GATES AND ACCESSORIES INCLUDING TABLE III.
2. STRENGTH REQUIREMENTS FOR POSTS AND RAILS CONFORMING TO ASTM F 669.
3. TYPE 1 PIPE HOT-DIPPED GALVANIZED STEEL PIPE CONFORMING TO ASTM F 1083, PLANE ENDS, STANDARD WEIGHT (SCHEDULE 40) WITH NO LESS THAN 1.8 OZ. ZINC PER SQ. FT. OF SURFACE AREA COATED.
4. FITTINGS: COMPLY WITH ASTM F 626. MILL FINISHED ALUMINUM OR GALVANIZED IRON STEEL TO COMPLY WITH MANUFACTURER'S REQUIREMENTS.
5. TOP RAIL MANUFACTURERS LONGEST LENGTHS, WITH EXPANSION TYPE COUPLINGS, APPROXIMATELY 6 INCHES LONG, FOR EACH JOINT. PROVIDE MEANS FOR ATTACHING TOP RAIL SECURELY TO EACH GATE CORNER, PULL AND END POST.
D. GALVANIZED STEEL 11/4 INCH NPS (1.66 INCH OD) TYPE 1 OR II STEEL PIPE OR 1.625 INCH x 1.25 INCH ROLL-FORMED C SECTIONS WEIGHING 1.35 LBS. PER FT.
E. SWING GATES:
COMPLY WITH ASTM F 900. PROVIDE HARDWARE AND ACCESSORIES FOR EACH GATE. GALVANIZED PER ASTM A 153, AND IN ACCORDANCE WITH THE FOLLOWING:
1. HINGES: NON LIFT-OFF TYPE, OFFSET TO PERMIT 180 DEG. GATE OPENING.
2. LATCH: MTS MULTI-LOCKING DEVICE MT-06477 OR APPROVED EQUAL.
3. KEEPER: PROVIDE KEEPER FOR VEHICLE GATES, WHICH AUTOMATICALLY ENGAGES GATE LEAF AND HOLDS IT IN OPEN POSITION UNTIL MANUALLY RELEASED.

F. CONCRETE:
PROVIDE CONCRETE CONSISTING OF PORTLAND CEMENT, ASTM C 150, AGGREGATES ASTM C 33, AND CLEAN WATER. MIX MATERIALS TO OBTAIN CONCRETE WITH A MINIMUM OF 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.

6.0 LANDSCAPING

A. FURNISH, INSTALL AND MAINTAIN LANDSCAPE WORK AS SHOWN AND OR REQUIRED WITHIN THE CONSTRUCTION DOCUMENTS OR AS SPECIFIED IN THE SPRINT WIRELESS CONSTRUCTION SPECIFICATIONS.

7.0 CONCRETE FORMWORK

A. FORMS: SMOOTH AND FREE OF SURFACE IRREGULARITIES. UTILIZE FORM RELEASE AGENTS.
B. CHAMFER: EXPOSED EDGES OF ALL TOWER FOUNDATIONS SHALL RECEIVE A 3/4" BY 3/4" 45 DEGREE CHAMFER. OTHER EXPOSED EDGES SHALL RECEIVE A ROUNDED RADIUS FINISH.
C. UPON COMPLETION, REMOVE ALL FORMS, INCLUDING THOSE CONCEALED OR BURIED.
D. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

8.0 CONCRETE REINFORCEMENT

REFER TO STRUCTURAL DRAWINGS FOR ALL REQUIREMENTS.

9.0 CAST IN PLACE CONCRETE

FOR STRUCTURAL CONCRETE (FOOTINGS, FOUNDATIONS, ETC.), REFER TO STRUCTURAL DRAWINGS FOR REQUIREMENTS. FOR ANY MISCELLANEOUS CONCRETE, REFER TO SPECIFICATION BOOK OR OBTAIN REQUIREMENTS FROM CONSTRUCTION MANAGER.
A. ALL CONCRETE SHALL COMPLY WITH ASTM C94 UNLESS NOTED OTHERWISE.
B. MINIMUM COMPRESSIVE STRENGTH (F'C) AT 28 DAYS: 4000 PSI FOR TOWER FOUNDATION AND 3500 PSI FOR ALL OTHER CONCRETE UNLESS SPECIFIED IN CONSTRUCTION DOCUMENTS.
C. AIR ENTRAINMENT: PROVIDE 4 TO 8% AIR ENTRAINMENT FOR ALL CONCRETE SUBJECT TO FREEZE-THAW CYCLE.
D. CONCRETE TESTING: ALL FOUNDATION CONCRETE SHALL BE TESTED BY AN INDEPENDENT TESTING AGENCY APPROVED BY THE CONSTRUCTION MANAGER. ALL STRUCTURAL TOWER FOUNDATION CONCRETE MUST BE TESTED. EQUIPMENT OR BUILDING PADS ARE NOT REQUIRED TO BE TESTED, UNLESS OTHERWISE NOTED BY CONSTRUCTION MANAGER. PROVIDE A MINIMUM OF 5 CYLINDERS (2-7-DAY, 2-28-DAY, 1-SPARE) FOR EACH DATS POUR, OR FOR EVERY 50 YARDS PLACED, WHICHEVER IS GREATER. ADDITIONAL TESTS OR CYLINDERS MAY BE REQUIRED BY CONSTRUCTION MANAGER. A SLUMP, AIR, AND TEMPERATURE TEST SHALL BE PERFORMED FOR EACH SET OF CYLINDERS CAST. PREFERABLY, TESTS SHALL BE PERFORMED AT THE LOCATION OF ANCHOR BOLTS (PIERS – FOR MAT & PIERS, CAISSONS – TOP 1/3 OF CAISSON). TESTS SHALL ALSO BE REQUIRED FOR CONCRETE CONSIDERED BEING LESS THAN DESIRABLE BY CONCRETE SPECIFICATION STANDARDS. THE TESTING AGENCY HAS THE AUTHORITY TO NOT ACCEPT CONCRETE MEETING THESE SPECIFICATIONS FOR SPRINT WIRELESS. THE CONTRACTOR IS RESPONSIBLE FOR ANY CONCRETE NOT MEETING THESE STANDARDS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE TESTING AGENCY A MINIMUM OF 24 HOURS IN ADVANCE OF EACH FOUNDATION POUR. TEST REPORTS SHALL BE FORWARDED TO SPRINT CONSTRUCTION MANAGER WITHIN 24 HOURS OF LAB TEST.
E. VIBRATE ALL CONCRETE USING SUFFICIENT HIGH FREQUENCY LOW AMPLITUDE MECHANICAL IMMERSION TYPE VIBRATORS. INSERT VIBRATORS IN CONCRETE AT REGULAR INTERVALS AND OVER ENTIRE SURFACE TO SOLIDLY FILL CONCRETE. MECHANICAL IMMERSION TYPE VIBRATORS, INSERT VIBRATORS IN CONCRETE AT REGULAR INTERVALS AND OVER ENTIRE SURFACE TO SOLIDLY FILL CONCRETE AROUND AND BETWEEN REINFORCEMENT BARS AND INTO CORNERS AND IRREGULARITIES. VIBRATE THOROUGHLY THROUGH EACH LIFT TO THE PREVIOUS LIFE. REVERBERATION AS LATE AS THE RUNNING VIBRATOR WILL SINK THROUGH UPPER LAYERS OF ITS WEIGHT IS RECOMMENDED. DISCONTINUE VIBRATION WHEN RISING ENTRAPPED AIR BUBBLES STOP, BREAKING THE LEVELING SURFACE. DO NOT OVER VIBRATE AS THIS MAY CAUSE SEGREGATION.
F. FINISHING EXPOSED CONCRETE SURFACES:
1. THESE PROVISIONS APPLY TO ALL EXPOSED AND ALL FORMED CONCRETE, EXTERIOR OR INTERIOR, UNLESS SPECIFICALLY DETAILED OTHERWISE. PERFORM PROCEDURES PRIOR TO APPLICATION OF ANY CURING COMPOUNDS.
2. ALL SURFACES: THOROUGHLY CLEAN OFF ALL STAINS, SPATTER AND LOOSE MATERIAL.
3. FINS, RIDGES AND HIGH SPOTS: HONE SMOOTH WITH ABRASIVE POWER GRINDERS WHILE CONCRETE IS GREEN, IMMEDIATELY AFTER FORM REMOVAL.
4. FORM TIE HOLES AND DEEP DEPRESSIONS: FLUSH THOROUGHLY WITH CLEAN WATER AND TAMP TO OVERFULL WITH DRYPACK. CURE 10 DAYS AND HONE FLUSH AND SMOOTH.
5. ROCK POCKETS, HONEYCOMB, SAND STREAKS, DEBRIS AND VOIDS CUT OUT AT LEAST 1 INCH DEEP WITH SIDES PERPENDICULAR TO SURFACE. FLUSH THOROUGHLY WITH CLEAN WATER. COAT SURFACE WITH NEAT CEMENT PASTE AND TAMP TO OVERFULL WITH DRYPACK IN AT LEAST TWO LAYERS. CURE FOR 10 DAYS AND HONE FLUSHED AND SMOOTH.
G. CONTRACTOR SHALL VERIFY ALL SIZES AND LOCATIONS OF ALL ELECTRICAL OPENINGS AND EQUIPMENT/BUILDING PADS WITH THE ELECTRICAL DRAWINGS AND SHOP DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION FOR ALL UTILITIES.
CONTRACTOR SHALL REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND PROCESSES NOT SHOWN ON STRUCTURAL DRAWINGS.
PRIOR TO POURING CONCRETE THE INDEPENDENT TESTING AGENCY SHALL INSPECT ALL FOUNDATION STEEL AND FOUNDATION SUBGRADE.

10.0 STRUCTURAL STEEL

MEET OR EXCEED MANUFACTURER'S RECOMMENDATIONS.

A. UNLESS OTHERWISE NOTED, ALL DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315).
B. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL, CONFORMING TO ASTM A-615, GRADE 60, DEFORMED.
C. HEATING AND WELDING OF BARS IS PROHIBITED WITH THE EXCEPTION OF WRITTEN APPROVAL BY THE STRUCTURAL ENGINEER.
D. ALL REINFORCEMENT BARS TO BE FREE FROM LOOSE RUST AND SCALE.
E. UNLESS OTHERWISE NOTED, ALL REINFORCEMENT SHALL HAVE A MINIMUM CONCRETE COVERAGE OF 3 INCHES. THIS MAY REQUIRE SPACERS AND CHAIRS AS REQUIRED BY TESTING AGENCY OR CONSTRUCTION MANAGER.
F. SPLICES IN REINFORCEMENT STEEL ARE PROHIBITED, UNLESS APPROVED BY CONSTRUCTION MANAGER. ALL SPLICES MUST THEN MEET ALL APPLICABLE ASTM STANDARDS FOR SPLICING.

11.0 GROUNDING

MEET ALL APPLICABLE CODES, REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS AND SPRINT WIRELESS CONSTRUCTION SPECIFICATIONS.

GENERATOR SPECIFICATIONS
1. SWITCHES AND STANDARD FEATURES
   A. CYCLIC CRANKING
   B. ALARM HORN WITH SILENCING SWITCH
   C. VOLTAGE ADJUSTING RHEOSTAT
   D. OVERVOLTAGE PROTECTION
   E. REMOTE TWO-WIRE AUTO START SYSTEM
   F. LAMP TEST SWITCH
   G. RUN OFF RESET/AUTO SWITCH (ENGINE START)
   H. ENGINE COOL DOWN TIMER (5 MINUTES)
2. ERROR-PROOF WIRING HARNESS FOR ELECTRICAL CONNECTIONS
3. PANEL LAMPS
4. DC CIRCUIT PROTECTION

UNIT ACCESSORIES
1. WEATHER HOUSING-STANDARD WITH ROOF MOUNTED SILENCER
2. MOUNTED VERTICAL GRADE EXHAUST SILENCER
3. TAIL PIPE AND RAIN CAP

COOLING SYSTEM ACCESSORIES
1. UNIT MOUNTED RADIATOR
2. ENGINE BLOCK HEATER

FUEL SYSTEM ACCESSORIES
1. FLEXIBLE FUEL LINES
2. ENGINE BLOCK HEATER
3. SUBBASE FUEL TANK-172 GALLONS
4. DOUBLE WALL CONSTRUCTION WITH LEAK DETECTION MONITOR
5. UL 142 LISTED
6. FUEL LEVEL GAUGE
7. LOW FUEL LEVEL ALARM
8. FILL PIPE EXTENDED 10% INTO TANK
9. HIGH FUEL LEVEL ALARM SET AT 95%
10. 7.5 GALLON LOCKABLE FILL WITH SPILL CONTAINMENT

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GENERAL NOTES:

1. THE GENERAL CONTRACTOR MUST VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS BEFORE STARTING WORK. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER IN ACCORDANCE WITH ACCEPTED CONSTRUCTION PRACTICES.

2. IT IS THE INTENTION OF THESE DRAWINGS TO SHOW THE COMPLETED INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING, SHORING, LIFTS, FORM WORK, ETC. IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL ORDINANCES TO SAFELY EXECUTE ALL WORK AND SHALL BE RESPONSIBLE FOR SAME. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES.

3. THE CONTRACTOR SHALL USE ADEQUATE NUMBER OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK.

4. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY. THAT REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO INDEMNIFY AND HOLD DESIGN ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH PERFORMANCE OF WORK ON THIS PROJECT.

5. SITE GROUNDING SHALL COMPLY WITH SPRINT/NEXTEL GROUNDING STANDARDS, LATEST EDITION AND COMPLY WITH SPRINT/NEXTEL GROUNDING CHECKLIST. LATEST VERSION WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT, THEY SHALL GOVERN. GROUNDING SHALL BE COMPLETED BEFORE ERECTION OF A NEW TOWER.

6. ALL WORK SHALL COMPLY WITH OSHA AND STATE SAFETY REQUIREMENTS. PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION. IF TEMPORARY LIGHTING AND MARKING ARE REQUIRED BY THE FEDERAL AVIATION ADMINISTRATION (FAA), IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE NECESSARY LIGHTS AND NOTIFY THE PROPER AUTHORITIES IN THE EVENT OF A PROBLEM.

7. ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES OR ORDINANCES. THE MOST STRINGENT CODE WILL APPLY IN THE CASE OF DISCREPANCIES OR DIFFERENCES IN THE CODE REQUIREMENTS.

8. ANY DAMAGE TO ADJACENT PROPERTIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AMPLE NOTICE TO THE BUILDING INSPECTION DEPARTMENT TO SCHEDULE THE REQUIRED INSPECTIONS. A MINIMUM OF 24 HOURS OF NOTICE SHOULD BE GIVEN AND THE BUILDING INSPECTION DEPARTMENTS HAVE REQUESTED THAT GROUPS OF TWO OR THREE SITES BE SCHEDULED AT ONE TIME IF POSSIBLE.

10. FOR NEW TOWERS, SPRINT WILL CONFIRM FAA APPROVAL OF TOWER LOCATION BY ISSUING TOWER RELEASE FORM. NO TOWER SHALL BE CONSTRUCTED UNTIL TOWER RELEASE FORM IS ISSUED TO THE CONTRACTOR.

11. THE COMPLETE BID PACKAGE INCLUDES THESE CONSTRUCTION DRAWINGS ALONG WITH THE SPECIFICATIONS AND TOWER DRAWINGS/ANALYSIS. CONTRACTOR IS RESPONSIBLE FOR REVIEW OF THE TOTAL BID PACKAGE PRIOR TO BID SUBMITTAL.

12. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE CONSTRUCTION LIMITS PRIOR TO CONSTRUCTION.

13. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES. SILT AND EROSION CONTROL SHALL BE MAINTAINED ON THE DOWNSTREAM SIDE OF THE SITE AT ALL TIMES. ANY DAMAGE TO ADJACENT PROPERTIES WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.

14. CLEARING OF TREES AND VEGETATION ON THE SITE SHOULD BE KEPT TO A MINIMUM. ONLY THE TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED. ANY DAMAGE TO PROPERTY OUTSIDE THE LEASED PROPERTY SHALL BE REPAIRED BY THE CONTRACTOR.

15. ALL SUITABLE BORROW MATERIAL FOR BACKFILL OF THE SITE SHALL BE INCLUDED IN THE BID. EXCESS TOPSOIL AND UNSUITABLE MATERIAL SHALL BE DISPOSED OF OFF SITE AT LOCATIONS APPROVED BY GOVERNING AGENCIES PRIOR TO DISPOSAL.

16. SEEDING AND MULCHING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE SITE DEVELOPMENT. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING AN ADEQUATE COVER OF VEGETATION OVER THE SITE FOR A ONE YEAR PERIOD.

17. PERMITS: THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, FEES, INSPECTIONS, ETC. AND PROVIDE EBTI ADDRESS TO SPRINT WIRELESS.

18. RECORD DRAWINGS: MAINTAIN A RECORD OF ALL CHANGES, SUBSTITUTIONS, ETC., BETWEEN THE WORK AS SPECIFIED AND INSTALLED. RECORD CHANGES ON A CLEAN SET OF CONTRACT DRAWINGS WHICH SHALL BE TURNED OVER TO THE CONSTRUCTION MANAGER UPON COMPLETION OF THE PROJECT.

EXCAVATION AND GRADING NOTES:

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM.

2. ALL EXCAVATIONS ON WHICH CONCRETE IS TO BE PLACED SHALL BE SUBSTANTIALLY HORIZONTAL ON UNDISTURBED AND UNFROZEN SOIL AND BE FREE FROM LOOSE MATERIAL AND EXCESS GROUND WATER. DEWATERING FOR EXCESS GROUND WATER SHALL BE PROVIDED IF REQUIRED.

3. CONCRETE FOUNDATIONS SHALL NOT BE PLACED ON ORGANIC MATERIAL. IF SOUND SOIL IS NOT REACHED AT THE DESIGNATED EXCAVATION DEPTH, THE UNSATISFACTORY SOIL SHALL BE EXCAVATED TO ITS FULL DEPTH AND EITHER BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION SHALL BE FILLED WITH CONCRETE OF THE SAME QUALITY SPECIFIED FOR THE FOUNDATION.

4. ANY EXCAVATION OVER THE REQUIRED DEPTH SHALL BE FILLED WITH EITHER MECHANICALLY COMPACTED GRANULAR MATERIAL OR CONCRETE OF THE SAME QUALITY SPECIFIED FOR THE FOUNDATION. CRUSHED STONE MAY BE USED TO STABILIZE THE BOTTOM OF THE EXCAVATION. STONE, IF USED, SHALL NOT BE USED AS COMPUTING CONCRETE THICKNESS.

5. AFTER COMPLETION OF THE FOUNDATION AND OTHER CONSTRUCTION BELOW GRADE AND BEFORE BACKFILLING, ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIAL SUCH AS VEGETATION, TRASH, DEBRIS AND SO FORTH.

6. ALL BACKFILLING SHALL (1) USE APPROVED MATERIALS CONSISTING OF EARTH, LOAM, SANDY CLAYS, SAND AND GRAVEL OR SOFT SHALE, (2) BE FREE FROM CLODS OR STONES OVER 2 1/2" MAXIMUM DIMENSION, AND (3) BE PLACED IN LAYERS AND COMPACTED.

7. SITE FILL MATERIAL AND FOUNDATION BACKFILL SHALL BE PLACED IN LAYERS MAXIMUM 6" DEEP BEFORE COMPACTION. EACH LAYER SHALL BE SPRINKLED IF REQUIRED AND COMPACTED BY HAND OR MACHINE TAMPERS TO 95% OF MAXIMUM DENSITY, AT THE OPTIMUM MOISTURE CONTENT OF +2% AS DETERMINED BY ASTM DESIGNATION D-698, UNLESS OTHERWISE APPROVED. SUCH BACKFILL SHALL NOT BE PLACED BEFORE 3 DAYS AFTER PLACEMENT OF CONCRETE.

8. THE FOUNDATION AREA SHALL BE GRADED TO PROVIDE WATER RUNOFF AND PREVENT WATER FROM STANDING. THE FINAL GRADE SHALL SLOPE AWAY IN ALL DIRECTIONS FROM THE FOUNDATION AREA (UP TO ONE FOOT OUTSIDE THE FENCE OR GROUND SYSTEM PERIMETER) AND SHALL BE COVERED WITH A GEOTEXTILE FABRIC MIRAFI 500X OR APPROVED EQUAL TO PREVENT REOCCURRENCE OF VEGETATIVE GROWTH. AN THEN SHALL BE COVERED WITH 4" DEEP COMPACTED STONE OR GRAVEL.

9. THE CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, CITY, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENT FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS FROM LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS AND CHECK DAMS.

10. FILL PREPARATION: REMOVE ALL VEGETATION, TOPSOIL, DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS AND DELETERIOUS MATERIAL FROM GROUND SURFACE PRIOR TO PLACING FILLS. PLOW STRIP OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SO FILL MATERIAL WILL BOND WITH EXISTING SURFACE. WHEN SUBGRADE OR EXISTING GROUND SURFACE TO RECEIVE FILL HAS A DENSITY LESS THAN THAT REQUIRED FOR FILL, BREAK UP GROUND SURFACE TO REQUIRED DEPTH, PULVERIZE, MOISTURE CONDITION OR AERATE SOIL AND RECOMPACT TO REQUIRED DENSITY.

11. REPLACE EXISTING GRAVEL SURFACING ON AREAS FROM WHICH GRAVEL SURFACING IS REMOVED DURING CONSTRUCTION OPERATIONS. GRAVEL SURFACING SHALL BE REPLACED TO MATCH EXISTING ADJACENT GRAVEL SURFACING AND SHALL BE OF THE SAME THICKNESS. SURFACES AND GRAVEL SURFACING SHALL BE FREE FROM CORRUGATIONS AND WAVES. EXISTING GRAVEL SURFACING MAY BE EXCAVATED SEPARATELY AND REUSED IF INJURIOUS AMOUNTS OF EARTH, ORGANIC MATTER, OR OTHER DELETERIOUS MATERIALS ARE REMOVED PRIOR TO REUSE. FURNISH ALL ADDITIONAL GRAVEL RESURFACING MATERIAL AS REQUIRED. BEFORE GRAVEL SURFACING IS REPLACED, SUBGRADE SHALL BE GRADE TO CONFORM TO REQUIRED SUBGRADE ELEVATIONS, AND LOOSE OR DISTURBED MATERIALS SHALL BE THOROUGHLY COMPACTED. DEPRESSIONS IN THE SUBGRADE SHALL BE FILLED AND COMPACTED WITH APPROVED SELECTED MATERIAL. GRAVEL SURFACING MATERIAL SHALL NOT BE USED FOR FILLING DEPRESSIONS IN THE SUBGRADE.

12. PROTECT EXISTING GRAVEL SURFACING AND SUBGRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE. USE PLANKING OR OTHER SUITABLE MATERIALS DESIGNED TO SPREAD EQUIPMENT LOADS. REPAIR ANY DAMAGE TO EXISTING GRAVEL SURFACING OR SUBGRADE WHERE SUCH DAMAGE IS DUE TO THE CONTRACTOR'S OPERATIONS.

13. DAMAGE TO EXISTING STRUCTURES AND UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED/REPLACED TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE.

14. CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH THE PROPERTY OWNER SO AS TO AVOID INTERRUPTIONS TO PROPERTY OWNER'S OPERATIONS.

15. ENSURE POSITIVE DRAINAGE DURING AND AFTER COMPLETION OF CONSTRUCTION.

16. RIPRAP SHALL BE CLEAN, HARD, SOUND, DURABLE AND UNIFORM IN QUALITY AND FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI OR OTHER DELETERIOUS SUBSTANCE.

ANTENNA & COAX NOTES:

1. VERIFY EACH CABLE LENGTH, DIAMETER, ROUTING, COLOR CODING AND ALL APPURTENANCES.

2. THE MAXIMUM COAXIAL CABLE LENGTH AND CORRESPONDING COAXIAL DIAMETER IS SHOWN ON A2.0. THIS CABLE LENGTH IS TO BE USED FOR FABRICATION OR CONSTRUCTION. ACTUAL CABLE LENGTH(S) MUST BE VERIFIED. COAXIAL CABLE SHALL BE PROVIDED BY SPRINT.

3. ALL COAX CABLES SHALL UTILIZED GROUND KITS, GROUNDED AS FOLLOWS:
   A. NEAR ANTENNA RAD CENTER ELEVATION
   B. MIDDLE OF TOWER (MID-HEIGHT OF ANTENNA), IF CABLE RUN IS OVER 200'-0"
   C. BOTTOM OF TOWER
   D. AT MASTER GROUND BAR 3'-0" FROM MMBS-BBU CABINET

4. ALL TOP JUMPERS SHALL BE LENGTHS AS SHOWN AND INSTALLED BY CONTRACTOR.

5. ALL CABLES SHALL BE COLOR CODED AS SHOWN ON SHEET RF1.0 AN IN ACCORDANCE WITH SPRINT SPECIFICATIONS.

6. BANDING SHALL BE IN ACCORDANCE WITH SHEET A2.0, RF1.0 AND AS FOLLOWS:
   A. MAIN LINE COLOR BANDS SHALL BE 2" WIDE, MAINTAIN 1" SPACING BETWEEN COLORS.
   B. FREQUENCY COLOR BANDS SHALL BE 2" WIDE WITH NO SPACE BETWEEN COLORS
   C. JUMPER COLOR BANDS SHALL BE 1" WIDE WITH 1" SPACE
   D. START COLOR BANDS 2" BEYOND WEATHERPROOFING.
   E. START SELECTOR COLOR NEXT TO END CONNECTORS.

7. FINAL COAXIAL ANTENNA CABLE SIZES SHALL BE DETERMINED BY ALU SPRINT RF ENGINEER. SEE ANTENNA SCHEDULE SHEET A2.0. BASE ON FINAL CABLE RUN LENGTHS DETERMINED BY SPRINT.

8. SEE CONSTRUCTION MANAGER FOR ANTENNA SUPPORT ASSEMBLY TYPE.

9. ALL COAXIAL CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 3' OR THE CABLE MANUFACTURES SPECIFICATIONS WHICHEVER IS LESS, WITH HARDWARE SPECIFIED IN THE COAXIAL CABLE ROUTING DETAILS OF THE SUPPLIED STRUCTURAL REPORT BY OTHERS.

10. PROVIDE AT LEAST 6" OF SLACK IN THE MAIN COAXIAL CABLES AT THE ANTENNA MOUNTING ELEVATION TO PROVIDE FOR FUTURE CONNECTOR REPLACEMENT.

ANTENNA & HYBRID CABLE NOTES:

1. VERIFY EACH HYBRID CABLE LENGTH, ROUTING, DIAMETER, COLOR CODING AND ALL APPURTENANCES WITH SPRINT.

2. THE HYBRID CABLE AND DIAMETER LENGTH IS SHOWN ON A2.0. EXCESS CABLE LENGTHS TO BE DRESSED IN A MANNER APPROVED BY SPRINT. CABLES CANNOT BE CUT TO FIT.

3. HYBRID CABLE INTERNAL GROUND WIRE TO BE GROUNDED AT TOP AND BOTTOM PER SAMSUNG'S (SPRINT SPECIFICATIONS.

4. EXCESS TOP 15' HYBRID CABLE FIBER JUMPER TO BE DRESSED IN A MANNER APPROVED BY SPRINT. CANNOT BE COILED, MUST BE SECURED TO TOWER MOUNTS.

5. ALL MAIN CABLES SHALL BE COLOR CODED AS SHOWN ON RF1.0 AND IN ACCORDANCE WITH SPRINT SPECIFICATIONS.

6. BANDING SHALL BE IN ACCORDANCE WITH SHEET A2.0 AND RF1.0
   A. MAIN LINE COLOR BANDS SHALL BE 2" WIDE, MAINTAIN 1" SPACING BETWEEN.
   B. JUMPER COLOR BANDS SHALL BE 1" WIDE WITH 1" SPACE
   C. START COLOR BANDS 2" BEFORE MAIN CABLE END.

7. FINAL HYBRID CABLE SIZES SHALL BE DETERMINED BY ALU SPRINT RF ENGINEER. SEE HYBRID CABLE SCHEDULE SHEET RF1.0, BASED ON FINAL CABLE RUN LENGTHS DETERMINED BY SPRINT.

8. ALL HYBRID CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 3' HORIZONTALLY OR 4' VERTICALLY OR THE CABLE MANUFACTURES SPECIFICATIONS WHICHEVER IS LESS, WITH HARDWARE SPECIFIED IN THE HYBRID CABLE ROUTING DETAILS OF THE SUPPLIED STRUCTURAL SUPPORT.

PREPARED FOR:

Sprint

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TUC NORWEST

SITE NUMBER:

PH04XC034

SITE ADDRESS:
7300 N. SHANNON RD
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PIMA COUNTY

STAMP:

Registered Professional Engineer (Civil)
CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/2c/13
ARIZONA U.S.A.
Expires 06/30/2016

LEVEL 5
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DRAWN BY:	LC
APPROVED BY:	TH, DH

REVISION

NO	DESCRIPTION	BY	DATE
A	90% ISSUED FOR REVIEW	LC	02/06/13
0	ISSUED FOR CONSTRUCTION	JS	03/20/13
1	REVISED PER COMMENTS	JS	07/16/13

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

N1.2

BATTERY INFORMATION NOTES:

BATTERY MANUFACTURER	EAST PENN MANUFACTURING	
MODEL NUMBER	12AVH-145ET	
ELECTROLYTE CONTENT PER BATTERY	2.17 GALLONS	
ELECTROLYTE HAZARD CLASSIFICATION PER (8.7 % SULFURIC ACID)	CORROSIVE	
NO. OF BATTERIES TO BE INSTALLED	20 MAX	QUANTITIES LESS THAN 50 GAL. ARE EXEMPT FROM 2012 IFC SECTION 608, AND SHALL NOT REQUIRE PERMIT
TOTAL ELECTROLYTE CONTAINED ON SITE (2.17 x 20 = 43.4)	43.4 GALLONS MAX	ANY CHANGES OR ADDITIONS TO BACK-UP BATTERIES MUST COMPLY WITH 2012 IFC, AND SHALL NOT CONTAIN ELECTROLYTE QUANTITIES IN EXCESS OF 50

1 REQUIRED NFPA SIGNAGE
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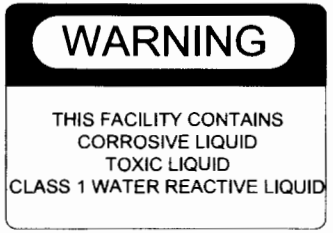

2 HAZARDOUS MATERIALS SIGNAGE
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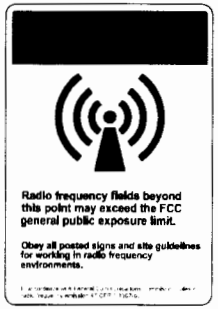

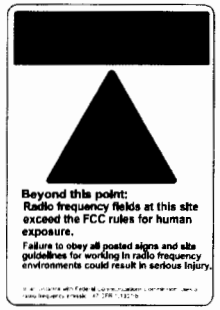

3 RF SIGNAGE
SCALE: N.T.S.

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SITE NUMBER:
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SITE ADDRESS:
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TUCSON, AZ 85741
PIMA COUNTY

STAMP

Registered Professional Engineer (Civil)
CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/26/13
ARIZONA U.S.A.
Expires 06/30/2016

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SHEET TITLE
SIGNAGE & NOTES

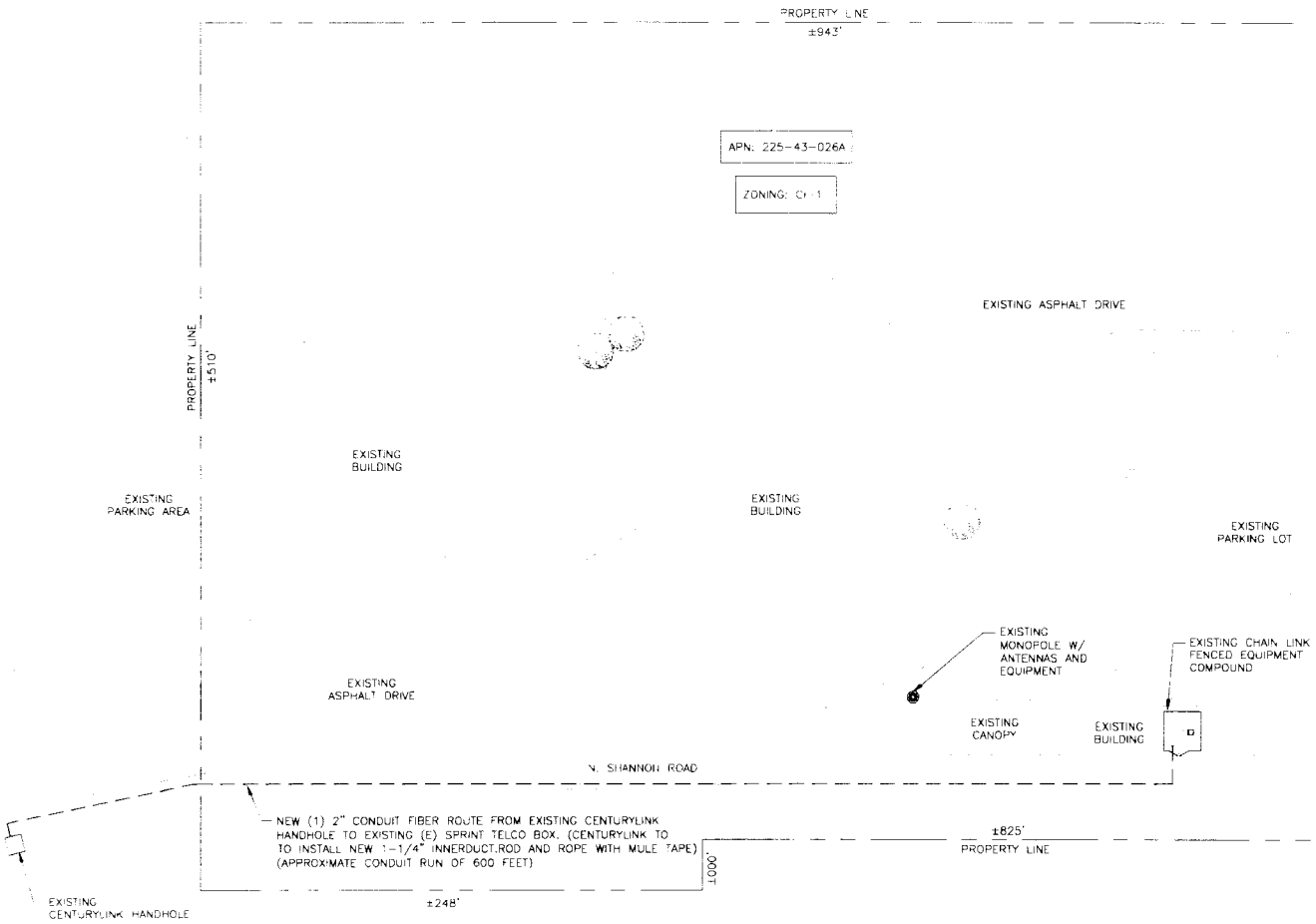
SHEET NUMBER:
G1.0

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
BTS	BASE TRANSMISSION STATION
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DWG	DRAWING
FT	FOOT (FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
EXISTING	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
LTE	LONG TERM EVOLUTION
MAX	MAXIMUM
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
N.T.S.	NOT TO SCALE
NEW	NEW
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
RBS	RADIO BASED STATION
RRU	REMOTE RADIO UNIT
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S) or #	POUND(S)
SF	SQUARE FOOT
ST	STEEL
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

DISCLAIMER

1. THIS PLAN WAS CREATED WITH THE AID OF THE PIMA COUNTY ASSESSOR MAP.
2. SITE PLAN WAS DEVELOPED FROM AN AERIAL IMAGE.
3. ALL INFORMATION SHOWN PROVIDED BY OTHERS. CONTRACTOR MUST CONFIRM REQUIREMENTS WITH OWNER PRIOR TO BIDDING AND INSTALLATION.



TRUE NORTH

1 OVERALL AREA PLAN

FULL SIZE PLOT SCALE: 1" = 30'
HALF SIZE PLOT SCALE: 1" = 60'

0 15' 30' 60'

PREPARED FOR:

Sprint

Alcatel·Lucent

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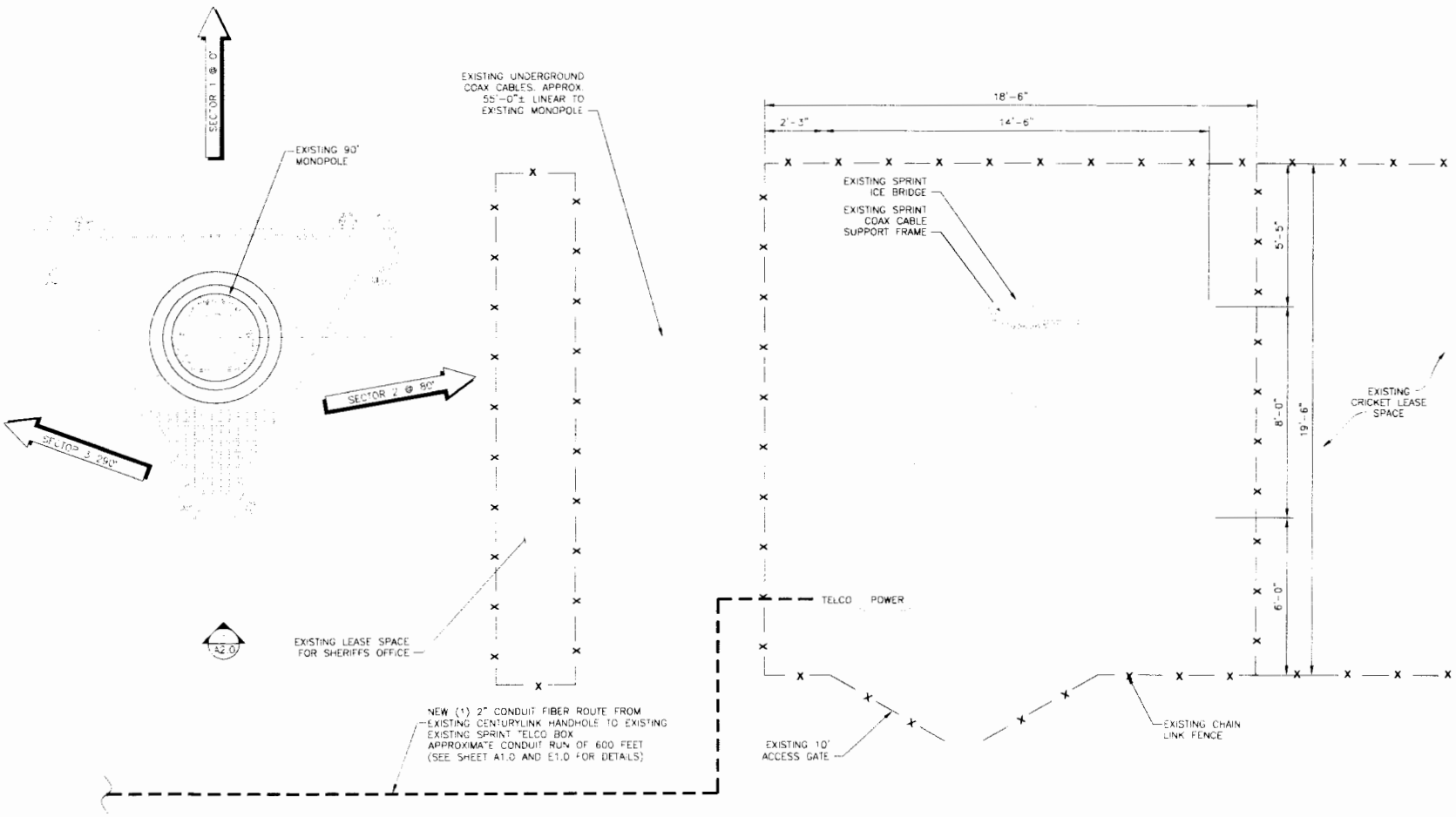
SHEET TITLE:

OVERALL AREA PLAN

SHEET NUMBER:

A1.0



TRUE NORTH

1 EXISTING ENLARGED SITE PLAN

FULL SIZE PLOT SCALE 1/2" = 1'-0"
HALF SIZE PLOT SCALE 1/4" = 1'-0"

0 2' 4'

PREPARED FOR:

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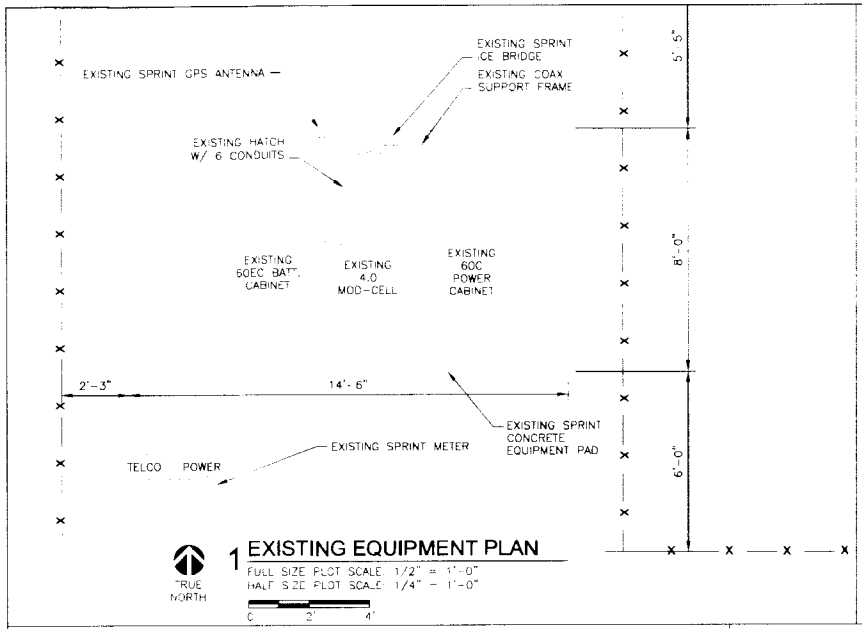
SHEET TITLE:

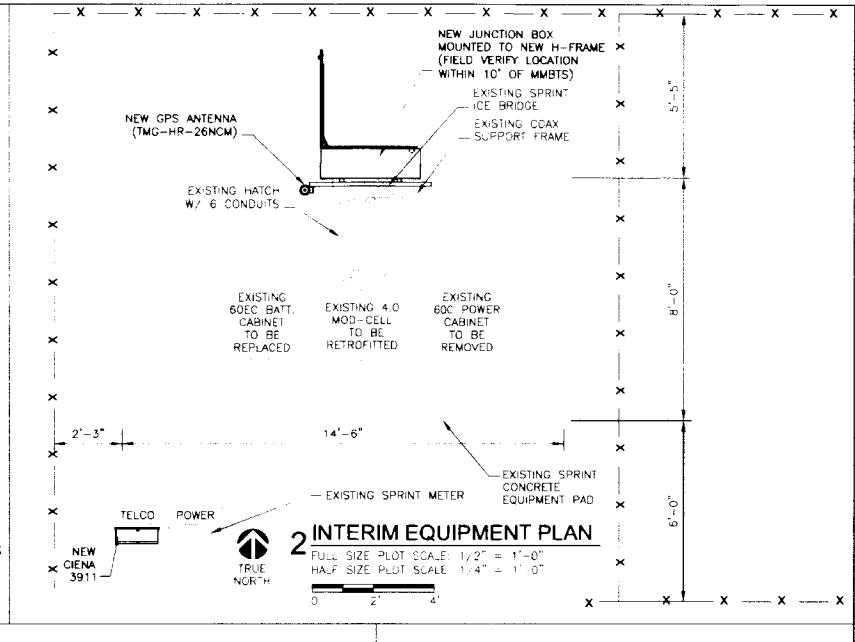
ENLARGED SITE PLAN

SHEET NUMBER:

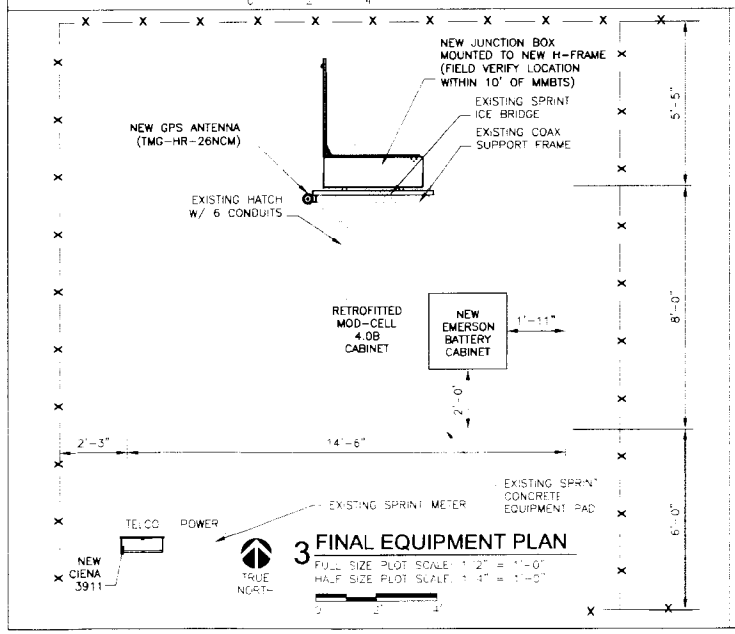
A1.1



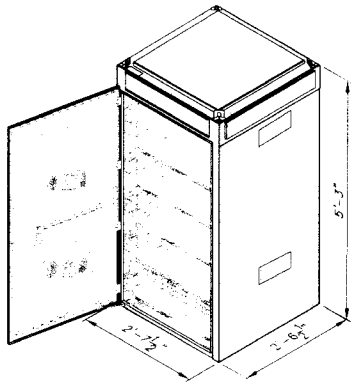
1 EXISTING EQUIPMENT PLAN
FULL SIZE PLOT SCALE: 1/2" = 1'-0"
HALF SIZE PLOT SCALE: 1/4" = 1'-0"



2 INTERIM EQUIPMENT PLAN
FULL SIZE PLOT SCALE: 1/2" = 1'-0"
HALF SIZE PLOT SCALE: 1/4" = 1'-0"

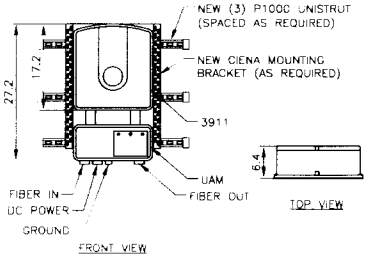


3 FINAL EQUIPMENT PLAN
FULL SIZE PLOT SCALE: 1/2" = 1'-0"
HALF SIZE PLOT SCALE: 1/4" = 1'-0"



HEIGHT:	63"
WIDTH:	31.5"
DEPTH:	30.5"
WEIGHT:	400lbs (EMPTY)
	2500lbs MAX.

4 EMERSON BATTERY CABINET
SCALE: N.T.S.



MANUFACTURER: CIENA
MODEL: 3911 W/ UN. ACCESS MODULE (UAM)
DIMENSIONS: 27.2" X 16.2" X 6.4"
WEIGHT: APPROX. 32.8 LBS

5 CIENA DETAIL
SCALE: N.T.S.

PREPARED FOR:

Sprint

Alcatel·Lucent

CONSULTANT:

GoodmanNetworks
6400 INTERNATIONAL PARKWAY
SUITE 1000
PLANO, TX 75093
Tel: (972) 406.9692

SITE NAME:

TUC NORWEST

SITE NUMBER:

PH04XC034

SITE ADDRESS:
7300 N. SHANNON RD
TUCSON, AZ 85741
PIMA COUNTY

STAMP:

Registered Professional Engineer (Civil)
CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/3/13
ARIZONA U.S.A.
Expires 06/30/2016

LEVEL 5
CONSULTING ENGINEERS, INC.
19315 FM 2252, STE. 301
GARDEN RIDGE, TX 78266
PH: (210) 542-5911

DRAWN BY:	LC
APPROVED BY:	TH, DH

REVISION

NO	DESCRIPTION	BY	DATE
A	90% ISSUED FOR REVIEW	LC	02/06/13
0	ISSUED FOR CONSTRUCTION	JS	03/20/13
1	REVISED PER COMMENTS	JS	07/16/13

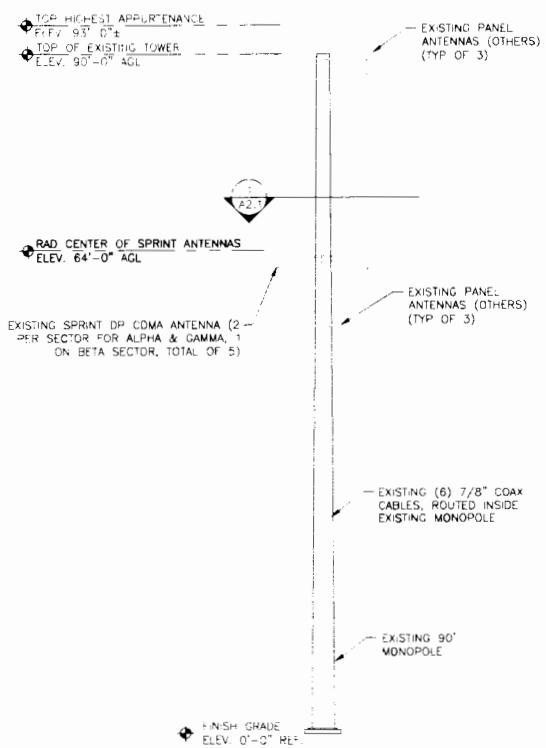
SHEET TITLE:

EQUIPMENT PLANS

SHEET NUMBER:

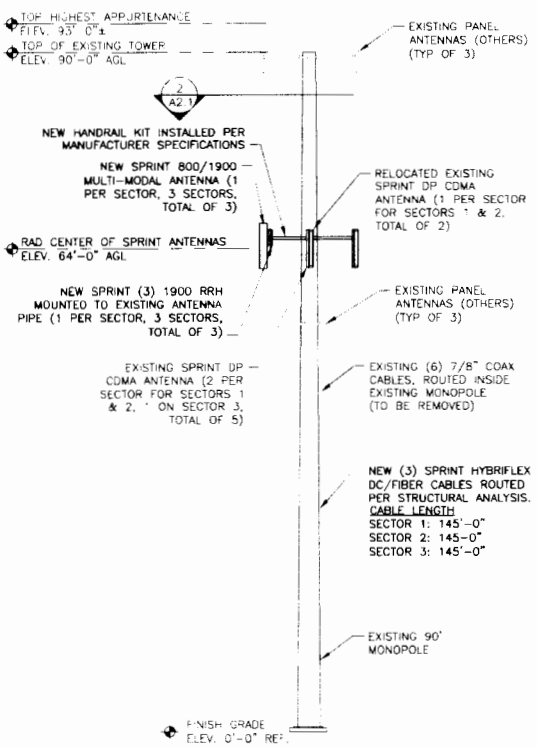
A1.2

COLLOCATION NOTE
STRUCTURAL ANALYSIS PERFORMED BY OTHERS. CONTRACTOR TO THOROUGHLY REVIEW AND ADHERE TO THE PASSING STRUCTURAL ANALYSIS SPECIFIC TO THIS PROJECT. REFER TO THE ANALYSIS FOR STRUCTURAL INFORMATION INCLUDING BUT NOT LIMITED TO STRUCTURAL UPGRADES, MOUNTING TYPES, ANTENNA DETAILS AND HEIGHTS, CABLE ROUTING, ETC. ANY DISCREPANCY BETWEEN THE DRAWINGS AND STRUCTURAL ANALYSIS AND/OR TOWER PLANS SHOULD BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER PRIOR TO BIDDING AND INSTALLATION.



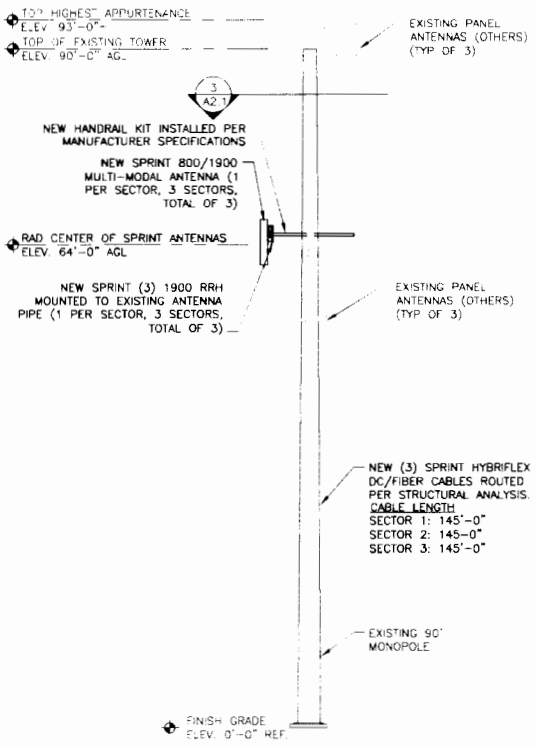
1 EXISTING TOWER ELEVATION

FULL SIZE PLOT SCALE: 1/8" = 1'-0"
HALF SIZE PLOT SCALE: 1/16" = 1'-0"



2 INTERIM TOWER ELEVATION

FULL SIZE PLOT SCALE: 1/8" = 1'-0"
HALF SIZE PLOT SCALE: 1/16" = 1'-0"



3 FINAL TOWER ELEVATION

FULL SIZE PLOT SCALE: 1/8" = 1'-0"
HALF SIZE PLOT SCALE: 1/16" = 1'-0"

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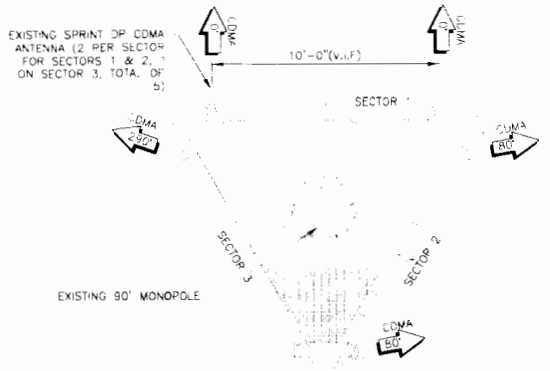
1	REVISED PER COMMENTS	JS	07/16/13

SHEET TITLE:

TOWER ELEVATIONS

SHEET NUMBER:

A2.0

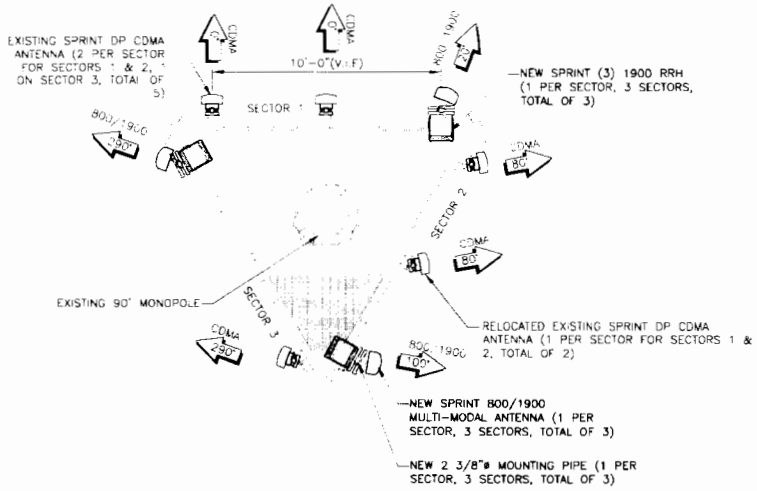


TRUE NORTH

1 EXISTING ANTENNA PLAN

FULL SIZE PLOT SCALE: 3/8" = 1' 0"
HALF SIZE PLOT SCALE: 3/16" = 1'-0"

0 2' 4' 8'

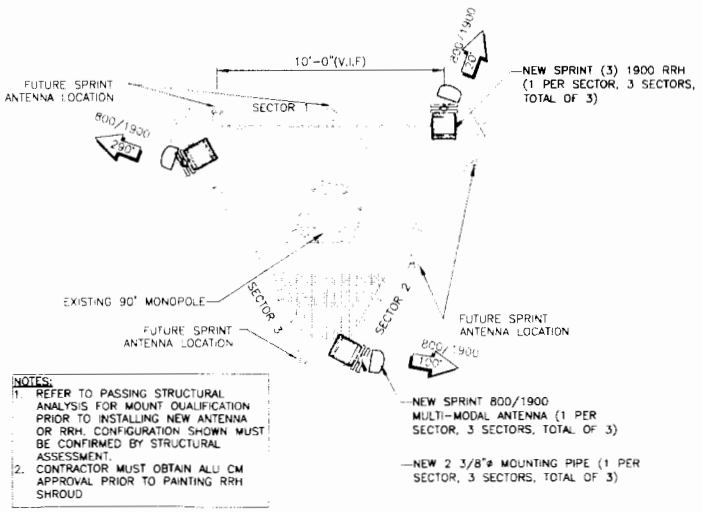


TRUE NORTH

2 INTERIM ANTENNA PLAN

FULL SIZE PLOT SCALE: 3/8" = 1' 0"
HALF SIZE PLOT SCALE: 3/16" = 1'-0"

0 2' 4' 8'



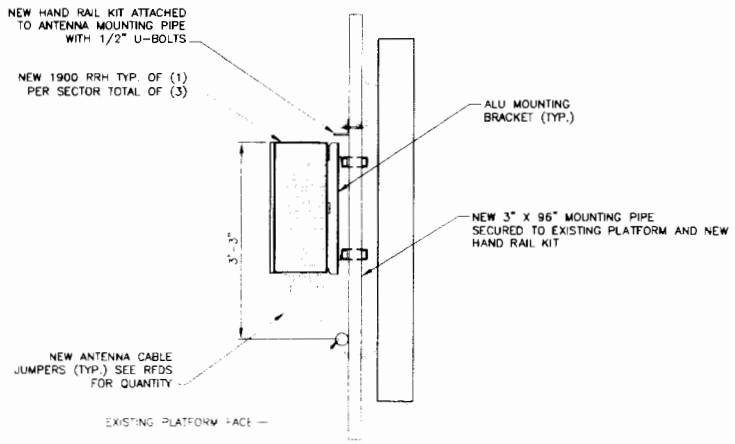
NOTES:
1. REFER TO PASSING STRUCTURAL ANALYSIS FOR MOUNT QUALIFICATION PRIOR TO INSTALLING NEW ANTENNA OR RRH. CONFIGURATION SHOWN MUST BE CONFIRMED BY STRUCTURAL ASSESSMENT.
2. CONTRACTOR MUST OBTAIN ALU CM APPROVAL PRIOR TO PAINTING RRH SHROUD

TRUE NORTH

3 FINAL ANTENNA PLAN

FULL SIZE PLOT SCALE: 3/8" = 1'-0"
HALF SIZE PLOT SCALE: 3/16" = 1'-0"

0 2' 4' 8'



4 RRH MOUNT DETAIL

SCALE: N.T.S.

PREPARED FOR:

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Alcatel·Lucent

CONSULTANT:

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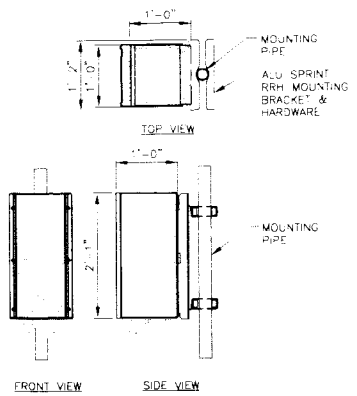
SHEET TITLE

ANTENNA PLANS & DETAIL

SHEET NUMBER:

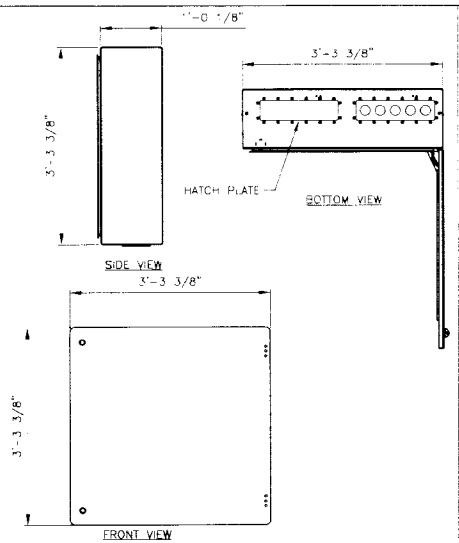
A2.1



MANUFACTURER: ALU
WEIGHT: 60 LBS
DIMENSIONS: HxWxD: 25"x12.4"x12.2"
POWER SUPPLY: 48VDC
POWER CONSUMPTION: <700W TYPICAL
OPERATING TEMP RANGE: -40°C/+55°C

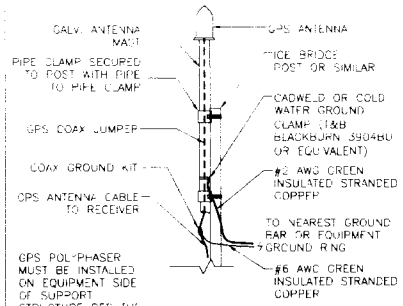
1 ALU 1900 RRH DETAIL
SCALE: N.T.S

2 NOT USED
SCALE: N.T.S

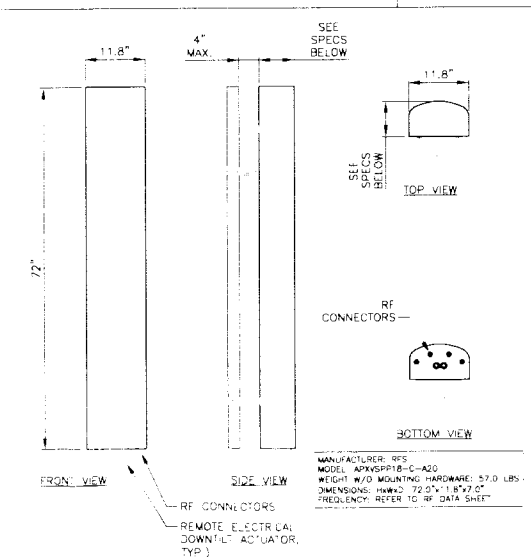


3 JUNCTION BOX DETAIL
SCALE: N.T.S

MANUFACTURER:	POTEL
MODEL#:	CPS-TMG-HR-26NCM
DIMENSIONS:	5.0"H x 3.2"D
WEIGHT:	3.6 LBS

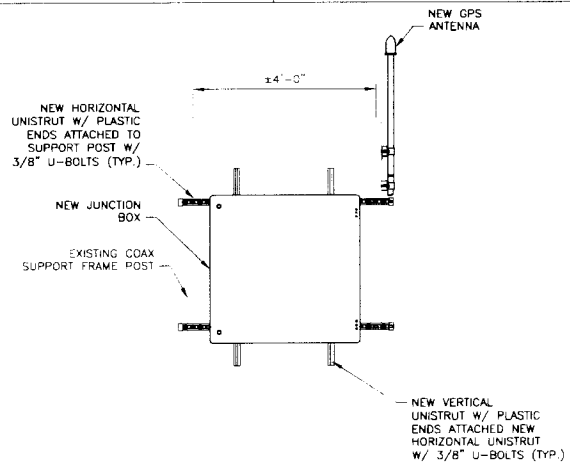


4 GPS ANTENNA DETAIL
SCALE: N.T.S

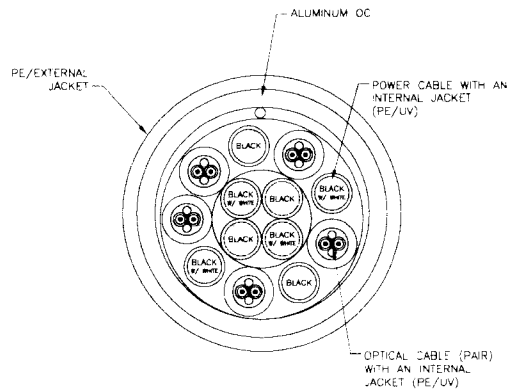


MANUFACTURER: RFS
MODEL: APXVSPP18-C-A20
WEIGHT W/O MOUNTING HARDWARE: 57.0 LBS
DIMENSIONS: HxWxD: 72.0"x11.8"x7.0"
FREQUENCY: REFER TO RF DATA SHEET

5 RFS PANEL ANTENNA DETAIL
SCALE: N.T.S.



6 JUNCTION BOX MOUNTING DETAIL
SCALE: N.T.S



FIBER OPTIC PROPERTIES	
VERSION	MULTI MODE
QUANTITY, FIBER COUNT	5 PAIRS
PRIMARY COATING (ARCYLATE)	245
BUFFER DIAMETER, NORMAL	900
SECONDARY PROTECTION JACKET NOMINAL	0.08"

DC CABLE PROPERTIES	
SIZE	8.4mm² AWG
QUANTITY, FIBER COUNT	8 (4 PAIRS)
TYPE	UV PROTECTED
STRANDS	19
PRIMARY JACKET DIAMETER, NOMINAL	0.24"

7 HB114-1-08U4-M5F DETAIL
SCALE: N.T.S

PREPARED FOR:

Sprint

Alcatel·Lucent

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Registered Professional Engineer (Civil)
CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/3/13
ARIZONA U.S.A.
Expires 06/30/2016

LEVELS CONSULTING ENGINEERS, INC
19315 FM 2252, STE. 301
GARDEN RIDGE, TX 78266
PH: (210) 542-5911

DRAWN BY:	LC
APPROVED BY:	TH, DH

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0	ISSUED FOR CONSTRUCTION	JS	03/20/13
1	REVISED PER COMMENTS	JS	07/16/13

SHEET TITLE

DETAILS

SHEET NUMBER

A3.0

RRH / HYBRID SCHEDULE

SECTOR	RRH 1900 (MHz) MODEL	RRH 800 (MHz) MODEL	HYBRID CABLE LENGTH	HYBRID CABLE DIAMETER	JUMPER SIZE (INCHES)	JUMPER LENGTH (FEET)
SECTOR 1	(1) ALU 1900 4x45 65MHz	N/A	145'-0"	1.54	1/2"	10'-0"
SECTOR 2	(1) ALU 1900 4x45 65MHz	N/A	145'-0"	1.54	1/2"	10'-0"
SECTOR 3	(1) ALU 1900 4x45 65MHz	N/A	145'-0"	1.54	1/2"	10'-0"

ANTENNA SCHEDULE

SECTOR	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA SIZE	ANTENNA FREQUENCY (MHz)	ANTENNA QUANTITY	AZIMUTH	RAD CENTER (A.G.L.)	1900 MHz ELEC. TILT	800 MHz ELEC. TILT	MECH. TILT
SECTOR 1	RFS	APXVSPP18-C-A20	6'-0"	800/1900	1	20°	64'-0"	-6°	N/A	N/A
SECTOR 2	RFS	APXVSPP18-C-A20	6'-0"	800/1900	1	100°	64'-0"	-2°	N/A	N/A
SECTOR 3	RFS	APXVSPP18-C-A20	6'-0"	800/1900	1	290°	64'-0"	-1°	N/A	N/A

1 ANTENNA SCHEDULE
SCALE: N.T.S

TYPICAL HYBRID CABLE COLOR CODE

SECTOR	FIRST RING	SECOND RING	THIRD RING
SECTOR 1	GREEN	NO TAPE	NO TAPE
SECTOR 2	GREEN	GREEN	NO TAPE
SECTOR 3	GREEN	GREEN	GREEN

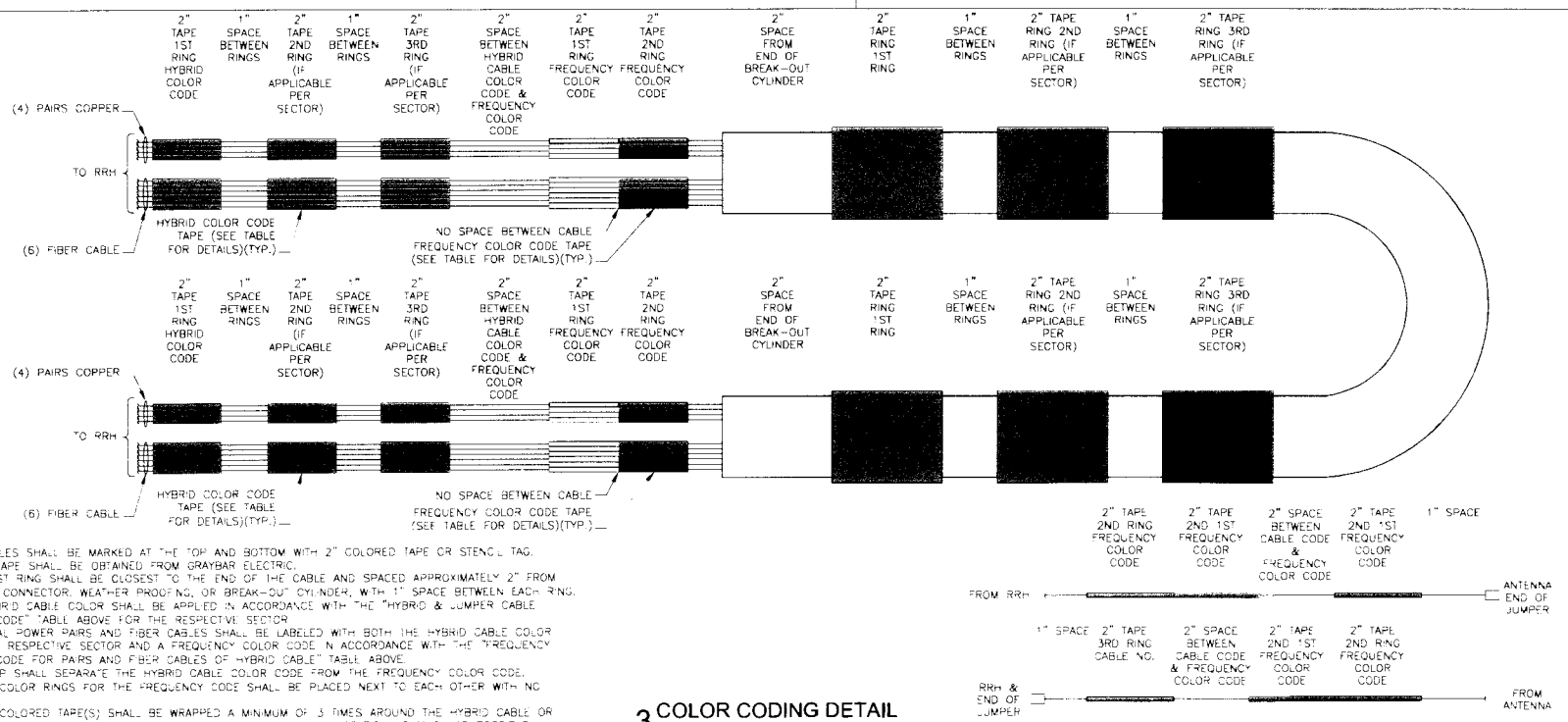
FREQUENCY COLOR CODE FOR PAIRS & FIBER CABLES OF HYBRID CABLE

FREQUENCY COLOR CODE	FIRST RING	SECOND RING
800 MHz	YELLOW	GREEN
1900 MHz	YELLOW	RED

TYPICAL JUMPER CABLE COLOR CODE

FREQUENCY	ANTENNA PORT	RRH PORT	CABLE COLOR
800 MHz	RET	RET	N/A
	800MHz +45°	ANT 1	WHITE
	800MHz -45°	ANT 0	BLUE
1900 MHz	PCS1 -45°	ANT 0	BLUE
	PCS1 +45°	ANT 1	WHITE
	PCS2 -45°	ANT 2	GREEN
	PCS2 +45°	ANT 3	BROWN
	RET	RET	RED

2 HYBRID & JUMPER COLOR CODING
SCALE: N.T.S.



NOTES:
1. ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE OR STENCIL TAG. COLOR TAPE SHALL BE OBTAINED FROM GRAYBAR ELECTRIC.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM AN END CONNECTOR, WEATHER PROOFING, OR BREAK-OUT CYLINDER, WITH 1" SPACE BETWEEN EACH RING.
3. THE HYBRID CABLE COLOR SHALL BE APPLIED IN ACCORDANCE WITH THE "HYBRID & JUMPER CABLE COLOR CODE" TABLE ABOVE FOR THE RESPECTIVE SECTOR.
4. INDIVIDUAL POWER PAIRS AND FIBER CABLES SHALL BE LABELED WITH BOTH THE HYBRID CABLE COLOR FOR THE RESPECTIVE SECTOR AND A FREQUENCY COLOR CODE IN ACCORDANCE WITH THE "FREQUENCY COLOR CODE FOR PAIRS AND FIBER CABLES OF HYBRID CABLE" TABLE ABOVE.
5. A 2" GAP SHALL SEPARATE THE HYBRID CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE.
6. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
7. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE HYBRID CABLE OR INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
8. COLOR BAND ON JUMPERS SHALL BE 2" WIDE WITH A 2" SPACE.

3 COLOR CODING DETAIL
SCALE: N.T.S

PREPARED FOR:

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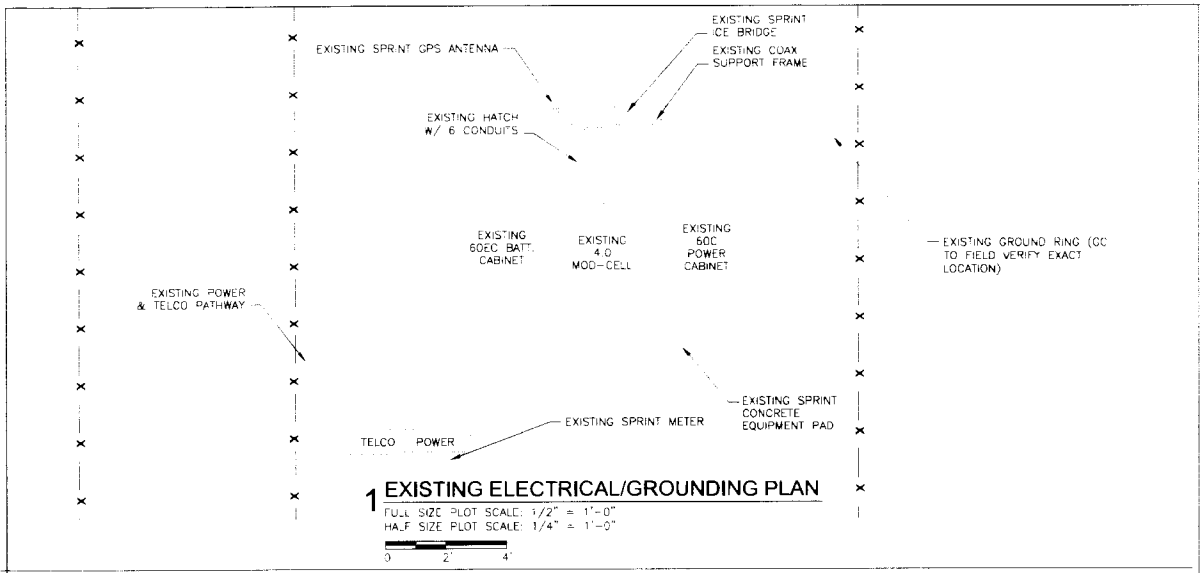
SHEET TITLE:

ANTENNA & CABLE COLOR CODING DETAILS

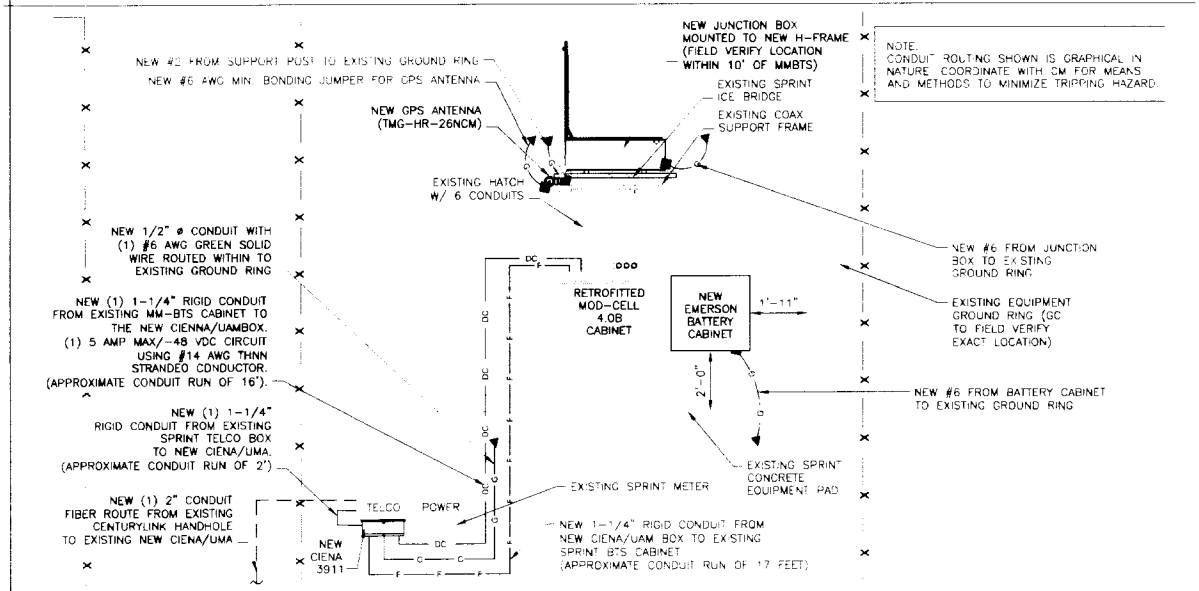
SHEET NUMBER:

RF1.0



1 EXISTING ELECTRICAL/GROUNDING PLAN

FULL SIZE PLOT SCALE: 1/2" = 1'-0"
HALF SIZE PLOT SCALE: 1/4" = 1'-0"



2 FINAL ELECTRICAL/GROUNDING PLAN

FULL SIZE PLOT SCALE: 1/2" = 1'-0"
HALF SIZE PLOT SCALE: 1/4" = 1'-0"

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL LOCAL AND STATE CODE, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
2. CONTRACTOR SHALL COORDINATE WITH LOCAL POWER COMPANY FOR REQUIREMENTS OF POWER SERVICE LINE TO THE METER BASE. POWER SERVICE REQUIREMENTS IS COMMERCIAL AC NOMINAL 120/208 VOLT OR 120/240 VOLT, SINGLE PHASE WITH 200 AMP RATING.
3. CONTRACTOR SHALL COORDINATE WITH LOCAL TELEPHONE COMPANY FOR SERVICE LINE REQUIREMENTS TO TERMINATE AT THE PPC CABINET.
4. CONTRACTOR SHALL FURNISH AND INSTALL ELECTRIC METER BASE AND 200A DISCONNECT SWITCH PER SITE PLAN AND DETAIL DRAWINGS. THE METER BASE SHOULD BE LOCATED IN A MANNER WHERE ACCESSIBLE BY THE LOCAL POWER COMPANY.
5. LOCAL POWER COMPANY SHALL PROVIDE 200 AMP ELECTRIC METER. CONTRACTOR SHALL COORDINATE INSTALLATION OF METER WITH LOCAL POWER COMPANY.
6. UNDERGROUND POWER AND TELCO SERVICE LINES SHALL BE ROUTED IN A COMMON TRENCH. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 AND CONDUIT EXPOSED ABOVE GROUND SHALL BE GALVANIZED RIGID STEEL TUBING UNLESS OTHERWISE INDICATED.
7. ALL TELCO CONDUIT LINES SHALL BE 4" SCH. 40 PVC CONDUIT UNLESS OTHERWISE INDICATED. THE TELCO CONDUIT FROM THE PPC SHALL BE ROUTED AND TERMINATED AT DESIGNATED TELCO DEMARCATION OR 2-FEET OUTSIDE FENCED AREA, NEAR UTILITY POLE (IN FENCED AREA), OR END CAP OFF AND PROVIDE MARKER STAKE PAINTED BRIGHT ORANGE WITH DESIGNATION FOR TELCO SERVICE.
8. CONDUITS INSTALLED AT PCS EQUIPMENT ENDS PRIOR TO THE EQUIPMENT INSTALLATION SHALL BE STUBBED AND CAPPED AT 6" ABOVE GRADE OR PLATFORM. IF SERVICE LINES CAN'T BE INSTALLED INITIALLY, PROVIDE NYLON PULL CORD IN CONDUITS.
9. THE SPRINT CABINET, INCLUDING 200 AMP LOAD PANEL AND TELCO PANEL, SHALL BE PROVIDED BY OWNER AND INSTALLED BY THE CONTRACTOR. CONTRACTOR IS TO INSTALL BREAKER(S) NOT PROVIDED BY MANUFACTURER. SEE PANEL SCHEDULE ON THIS SHEET FOR BREAKER REQUIREMENTS.
10. LOCATION OF ELECTRIC METER AND DISCONNECT SWITCH TO BE PROVIDED BY GENERAL CONTRACTOR.
11. #2 WIRE TO BE UTILIZED IN ELECTRIC SERVICE RUNS EXCEEDING 100'.
12. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OR WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
13. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROGH-IN.
14. THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
15. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
16. ALL CONDUITS SHALL BE MET WITH BENDS IN ACCORDANCE WITH NEC TABLE 346-10. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12 MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
17. ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
18. ALL WIRE SHALL BE "TYPE THWN" SOLID, ANNEALED COPPER UP TO SIZE 1/10 AWG (18 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C. (167 DEGREES F), 98% CONDUCTIVITY, MINIMUM #12.
19. ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES, J-BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY OR APPROVED EQUAL.
20. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
21. CONDUIT ROGH-IN SHALL COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION TO CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
22. ALL PANEL DIRECTORIES SHALL BE TYPE WRITTEN NOT HAND WRITTEN.
23. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES AND ALL DISCONNECT SWITCHES, STARTERS AND EQUIPMENT CABINETS.
24. THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS. DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
25. ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAME PLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS). PROVIDE SAMPLE FOR CONSTRUCTION MANAGER'S APPROVAL.
26. ALL ELECTRICAL DEVICES AND INSTALLATION OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
27. ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAME PLATE DATE FURNISHED ON THE EQUIPMENT (THE DESIGN OF THESE PLANS ARE BASE UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS.).
28. LOCATION OF ALL OUTLET, BOXES, ETC. AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.

PREPARED FOR

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Tel: (972) 406.9692

SITE NAME:

TUC NORWEST

SITE NUMBER:

PH04XC034

SITE ADDRESS:
7300 N. SHANNON RD
TUCSON, AZ 85741
PIMA COUNTY

STAMP

Registered Professional Engineer (Civil)
CERTIFICATE NO. 54522
DAVID J. HILDEBRANDT
Date Signed 7/3c/13
ARIZONA U.S.A.
Expires 06/30/2016

LEVEL 5
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19315 FM 2252, STE. 301
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PH: (210) 542-5911

DRAWN BY:	LC
APPROVED BY:	TH, DH

REVISION

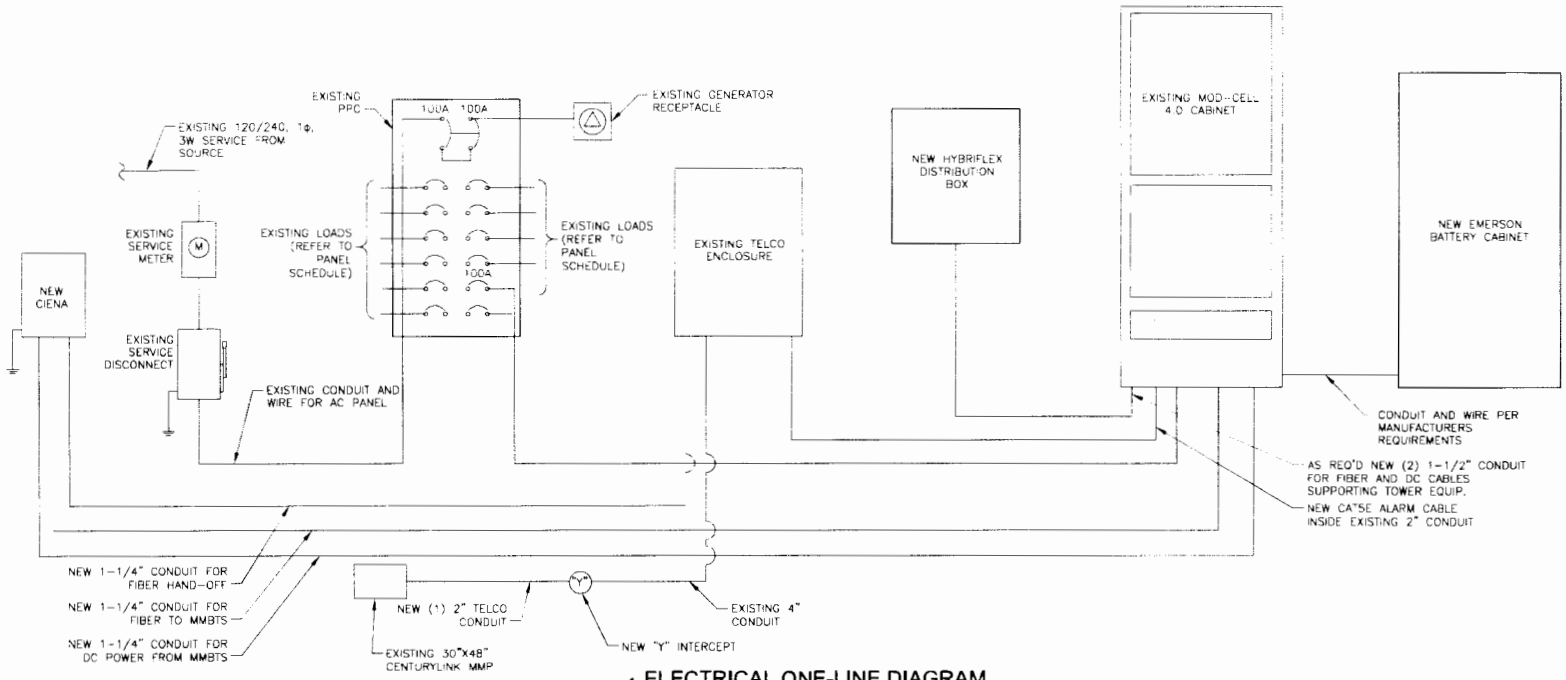
NO	DESCRIPTION	BY	DATE
A	90% ISSUED FOR REVIEW	LC	02/06/13
0	ISSUED FOR CONSTRUCTION	JS	03/20/13
1	REVISED PER COMMENTS	JS	07/16/13

SHEET TITLE:

ELECTRICAL/ GROUNDING PLANS

SHEET NUMBER:

E1.0



1 ELECTRICAL ONE-LINE DIAGRAM

SCALE: N.T.S.

PANEL "A" SCHEDULE (EXISTING)

120/240, 1Φ, 3W
100A MCB

CKT NO.	CKT BREAKERS AMPS	CKT BREAKERS POLES	DESCRIPTION	VA	LOAD (VA) L1	LOAD (VA) L2	VA	DESCRIPTION	CKT BREAKERS AMPS	CKT BREAKERS POLES	CKT NO.
1	100	2	EXISTING BTS	4600	4600	--	---	SURGE PROTECTOR	60	2	7
2				4600	--	4600	---				8
3			KNOCKOUT		1920	--	1920	EXISTING POWER CABINET	60	2	9
4			KNOCKOUT		--	1920	1920				10
5	20	1	MICROWAVE OUTLET	360	720	--	360	TELCO GF	20	1	11
6	10	1	EXISTING FAN	240	--	240		KNOCKOUT			12
PHASE TOTAL (VA)					7240	6760					
TOTAL CONNECTED (VA)					14000						
25% OF CONTINUOUS LOAD					3500						
TOTAL LOAD (VA)					17500						
TOTAL LOAD (AMPS)					73						

PANEL "A" SCHEDULE (NEW)

120/240, 1Φ, 3W
100A MCB

CKT NO.	CKT BREAKERS AMPS	CKT BREAKERS POLES	DESCRIPTION	VA	LOAD (VA) L1	LOAD (VA) L2	VA	DESCRIPTION	CKT BREAKERS AMPS	CKT BREAKERS POLES	CKT NO.
1	100	2	EXISTING BTS	4600	4600	--	---	SURGE PROTECTOR	60	2	7
2				4600	--	4600	---				8
3			KNOCKOUT		0	--	--	SPARE	60	2	9
4			KNOCKOUT		--	0	--				10
5	20	1	MICROWAVE OUTLET	360	720	--	360	TELCO GFI	20	1	11
6	10	1	EXISTING FAN	240	--	240		KNOCKOUT			12
PHASE TOTAL (VA)					5320	4840					
TOTAL CONNECTED (VA)					10160						
25% OF CONTINUOUS LOAD					2540						
TOTAL LOAD (VA)					12700						
TOTAL LOAD (AMPS)					53						

2 PANEL SCHEDULE

SCALE: N.T.S.

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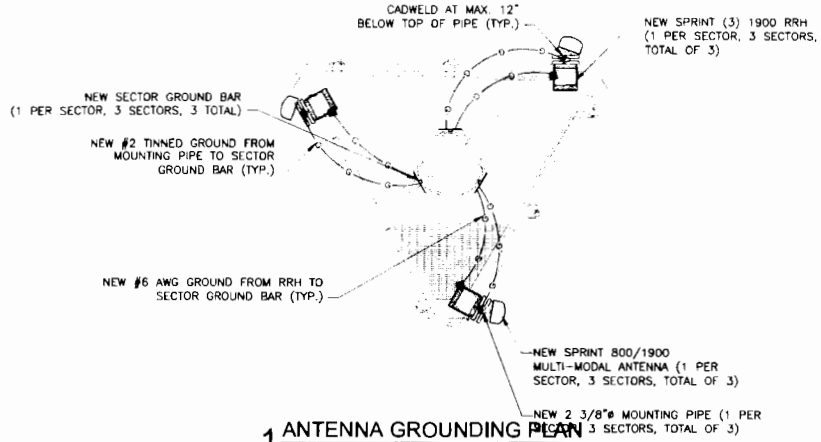
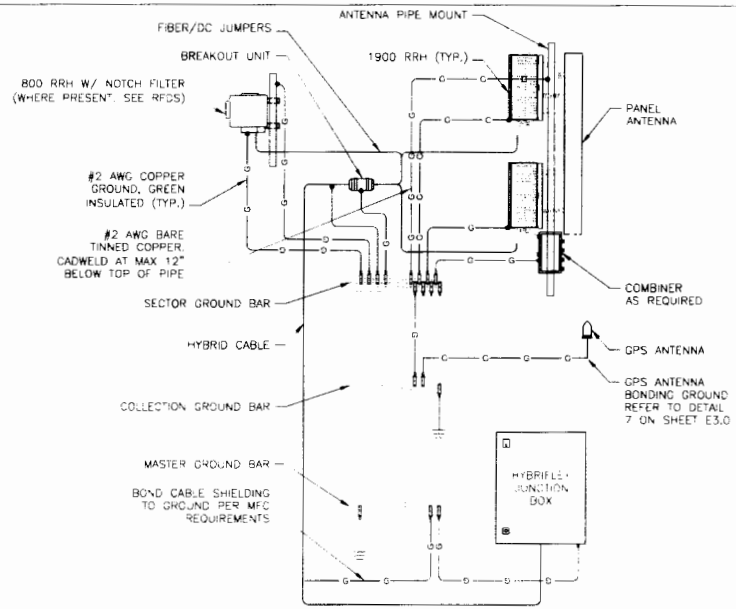
1	REVISED PER COMMENTS	JS	07/16/13

SHEET TITLE:
ONE-LINE DIAGRAM & PANEL SCHEDULE

SHEET NUMBER:
E1.1



1 ANTENNA GROUNDING PLAN
SCALE: N.T.S.



2 GROUNDING SCHEMATIC
SCALE: N.T.S.

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC AND AT&T ND-00071.

2. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.

3. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS PER NEC AND AT&T ND-00071.

4. CONNECTIONS TO THE GROUND BAR SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BAR ARE PERMITTED.

5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH NEC, SHALL BE FURNISHED AND INSTALLED WITH POWER CIRCUITS TO BTS EQUIPMENT.

6. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

7. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/ GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TIN PLATED COPPER UNLESS OTHERWISE INDICATED.

9. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

10. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

11. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH NEC.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.

13. GROUND ALL RF EQUIPMENT INCLUDING BUT NOT LIMITED TO COAX, DIPLEXERS, SURGE ARRESTORS, TMA'S, AND ANTENNA PIPE MOUNTS PER NEC AND AT&T ND-00071.

14. ALL CONNECTIONS TO GROUND RING SHALL BE EXOTHERMICALLY WELDED. GROUND RING SHALL BE A MINIMUM DEPTH BELOW GRADE OF 18 INCHES OR 6 INCHES BELOW FROST, WHICHEVER IS GREATER.

15. WHERE MECHANICAL GROUNDING CONNECTIONS ARE SPECIFIED, BOLTED, COMPRESSION-TYPE CLAMPS OR SPLIT-BOLT TYPE CONNECTORS SHALL BE USED.

16. AT CONNECTION POINTS, GRIND OFF ANY GALVANIZING OR PAINT WHEN PRESENT. EXOTHERMICALLY WELD #2 CONDUCTOR AT 6 INCHES ABOVE GRADE OR FOUNDATION, WHICHEVER IS HIGHER. COLD-GALV AFTER EXOTHERMICALLY WELD OTHER END TO GROUND.

17. GROUND CONDUCTORS CONNECTING TO GROUND RING SHALL BE ENCASED IN 3/4" PVC CONDUIT TO GRADE. MOUNT PVC WITH GALVANIZED "U" CLAMPS. SEAL TOP ENDS.

18. FOLLOWING COMPLETION OF WORK, CONDUCT GROUND TEST. SUBMIT WRITTEN TEST TO CONSTRUCTION MANAGER AND PROJECT MANAGER.

19. WHEN REQUIRED, GROUND RODS SHALL NEVER BE SPACED HORIZONTALLY CLOSER THAN TWICE THE GROUND ROD LENGTH.

20. NOTIFY THE CONSTRUCTION MANAGER 24 HOURS IN ADVANCE WHEN THE BURIED GROUND WIRE IS INSTALLED SO THAT A REPRESENTATIVE CAN INSPECT PRIOR TO BACKFILL.

21. CONTRACTOR TO VERIFY EXISTING GROUNDING CONDITIONS. THE CONTRACTOR SHALL BRING SITE UP TO AT&T SPECIFICATIONS, CORRECTING ANY DEFICIENCIES TO BE INCLUDED IN ORIGINAL PRICING AND CORRECT DEFICIENCIES DURING NEW CONSTRUCTION. INCLUDING MISSING GROUND BARS, BAD GROUND WELDS, MISSING GROUND LEADS OR BROKEN GROUND LEADS, ETC.

PREPARED FOR:

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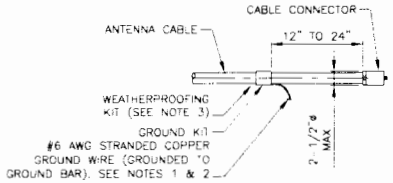
SHEET TITLE:

ANTENNA GROUND PLAN & SCHEMATIC

SHEET NUMBER:

E2.0

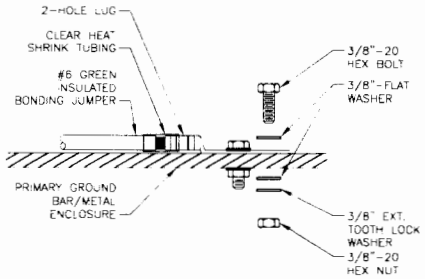
1 NOT USED
SCALE: N.T.S.



NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHERPROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

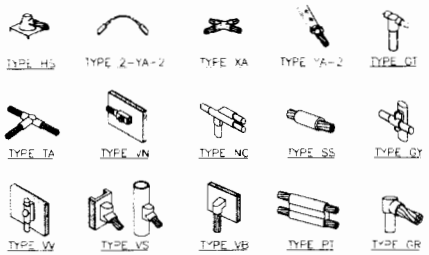
2 CABLE GROUNDING
SCALE: N.T.S

3 NOT USED
SCALE: N.T.S.



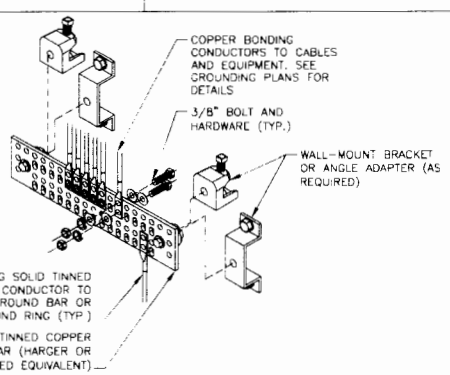
NOTE:
1. SELECT BOLT LENGTH TO PROVIDE A MINIMUM OF TWO EXPOSED THREADS.
2. BURNISH MOUNTING SURFACE TO REMOVE PAINT IN THE AREA OF LUG CONTACT.
3. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.
4. USE SOLID COPPER WIRE AND MECHANICAL 2-HOLE LUG FOR ALL EXTERIOR GROUNDING.

4 TWO-HOLE LUG DETAIL
SCALE: N.T.S.



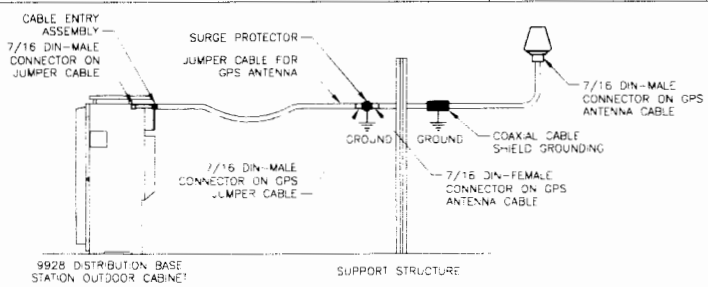
NOTE:
1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH PROJECT MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.

5 EXOTHERMIC WELD CONNECTIONS
SCALE: N.T.S



6 GROUND BAR CONNECTIONS
SCALE: N.T.S.

7 NOT USED
SCALE: N.T.S.



8 GPS ANTENNA GROUNDING DETAIL
SCALE: N.T.S

9 NOT USED
SCALE: N.T.S.

PREPARED FOR

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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER:
E3.0

Click Below to go to Sheet

SHEET INDEX

SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
BD1	BLOCK DIAGRAM FOR TOWER TOP MOUNTED RRH'S
BD2	BLOCK DIAGRAM FOR GROUND MOUNTED RRH'S
EC1	1900MHz EQUIPMENT CONNECTIONS FOR TOWER MOUNTED RRH
EC2	GROUND MOUNTED EQUIPMENT CONNECTIONS
EC3	1900MHz EQUIPMENT CONNECTIONS FOR GROUND MOUNTED RRH
EC4	DISTRIBUTION BOX EQUIPMENT CONNECTIONS FOR TOWER MOUNTED RRH
EC5	DISTRIBUTION BOX EQUIPMENT CONNECTIONS FOR GROUND MOUNTED RRH
N1	DRAWING NOTES

REVISIONS/CHANGES

6/17/2013 V2.5 Corrected grounding detail on EC2
4/23/2013 V2.4 No change. Version release update only.
3/8/2013 V2.3 No change. Version release update only.
2/11/2013 V2.2 No change. Version release update only.
1/24/2013 V2.1 No change. Version release update only.
12/13/2012 V2.0 Color code change
11/13/2012 V1.0 Draft
Initial draft. Sectors in Unrecognized Scenario List (Unknown Scenario ID 34) Site Example SD34XC506

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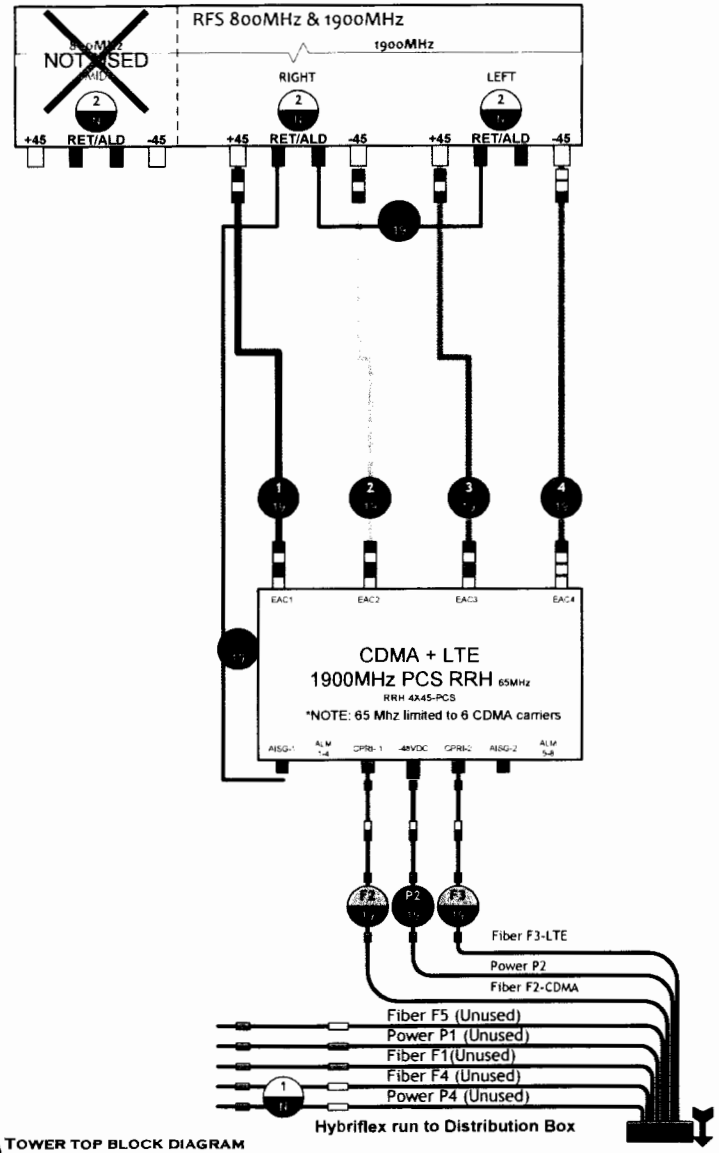
SCENARIO 177_V2.5.VSD

SHEET DESCRIPTION
TITLE SHEET

SHEET NUMBER
T-1



1 BD1 **TOWER TOP BLOCK DIAGRAM**
SCALE: N.T.S

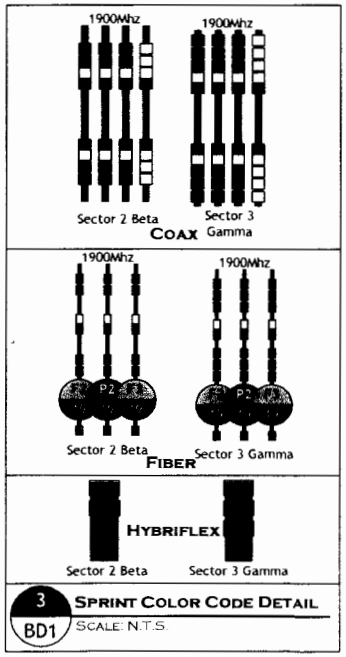
Power Feed Polarity Definition:
IF wires are BLACK AND BLACK/ WHITE STRIPE:
- Black= -48VDC Feed (Battery)
- Black/White Stripe= Return

IF wires are RED AND BLACK:
- Red= -48VDC Feed (Battery)
- Black= Return

NOTE: For power feed use the same Hybriflex OEM color designator as the fiber.

- MM Pair 1= F1= Green= P1(Green)
- MM Pair 2= F2= Blue= P2(Blue)
- MM Pair 3= F3= Red= P3(Red)
- MM Pair 4= F4= Yellow= P4(Yellow)
- MM Pair 5= F5= Orange= (No P5 power feed)

2 BD1 **HYBRIFLEX OEM COLOR CODE**
SCALE: N.T.S.



3 BD1 **SPRINT COLOR CODE DETAIL**
SCALE: N.T.S.

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0 COAX
0 FIBER
0 POWER
NOTES
FREQ

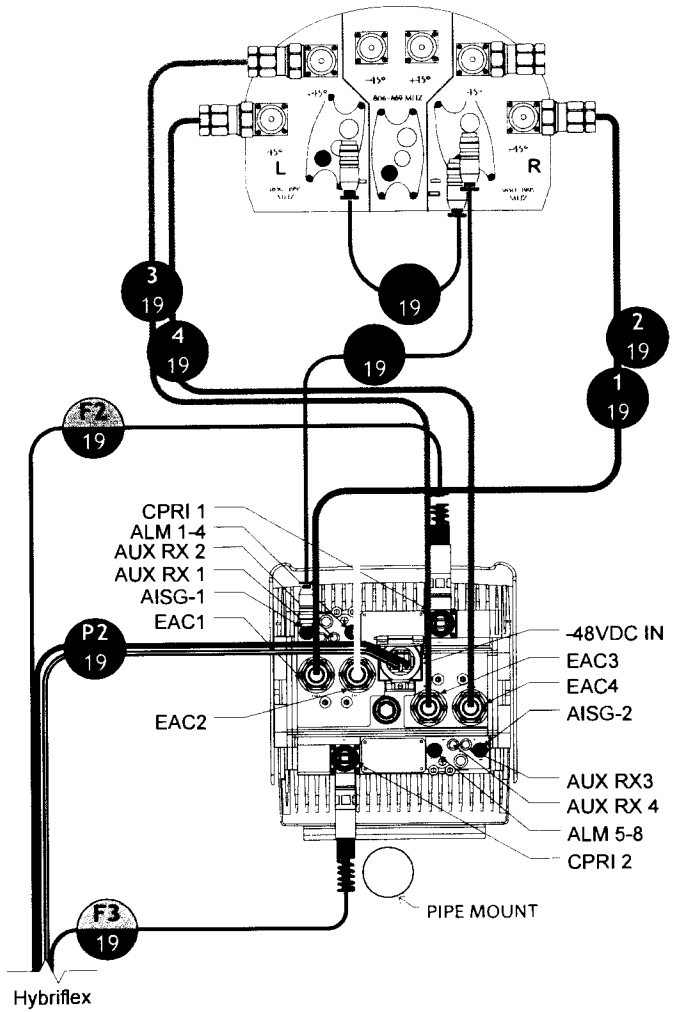
4 BD1 **DIAGRAM LEGEND**
SCALE: N.T.S.

BACK TO TITLE SHEET

SCENARIO 177_V2.5.VSD

SHEET DESCRIPTION
TOWER TOP BLOCK DIAGRAM

SHEET NUMBER
BD1



1 EC1 **ALU 1900MHz 4X45W (65MHz) RRH**

SCALE 2" = 1'-0

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COAX
POWER
NOTES
FREQ

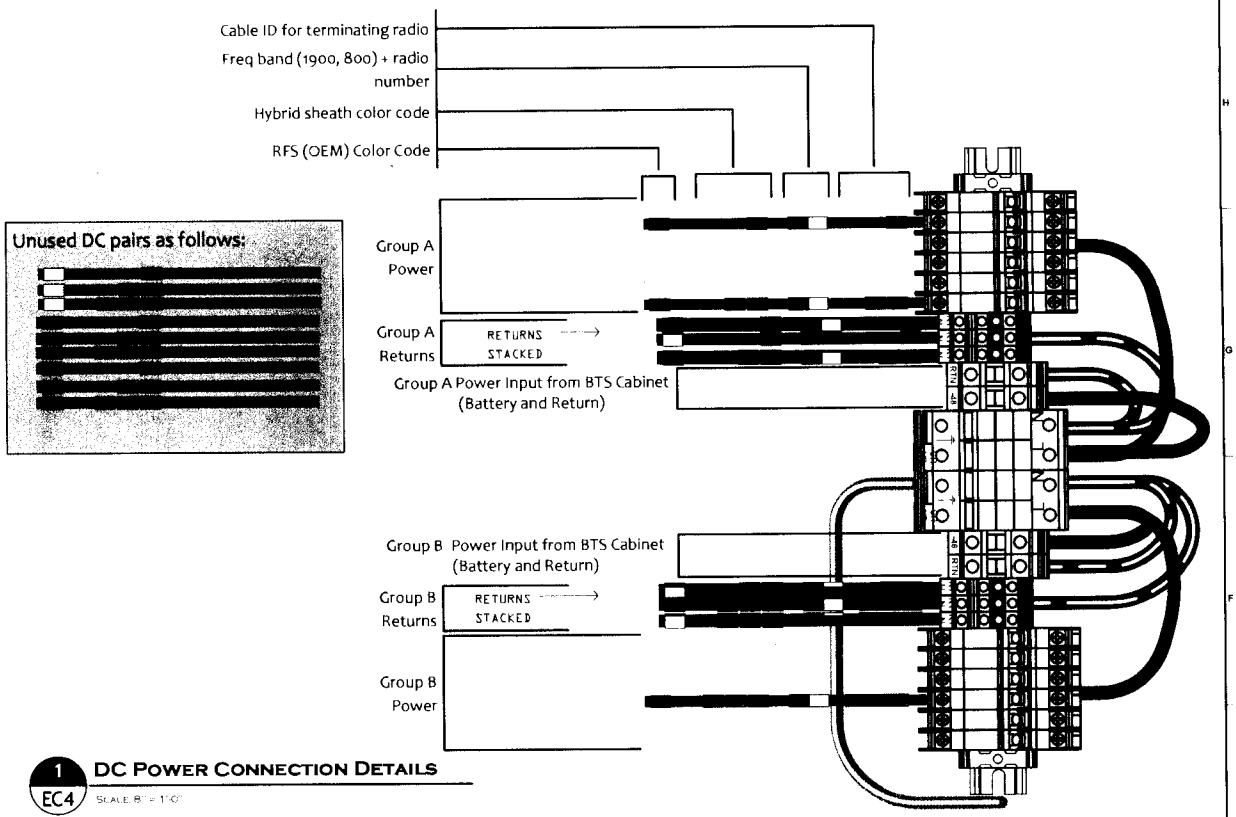
2 EC1 DIAGRAM LEGEND
SCALE: N.T.S

BACK TO TITLE SHEET

SCENARIO
177_V2.5.VSD

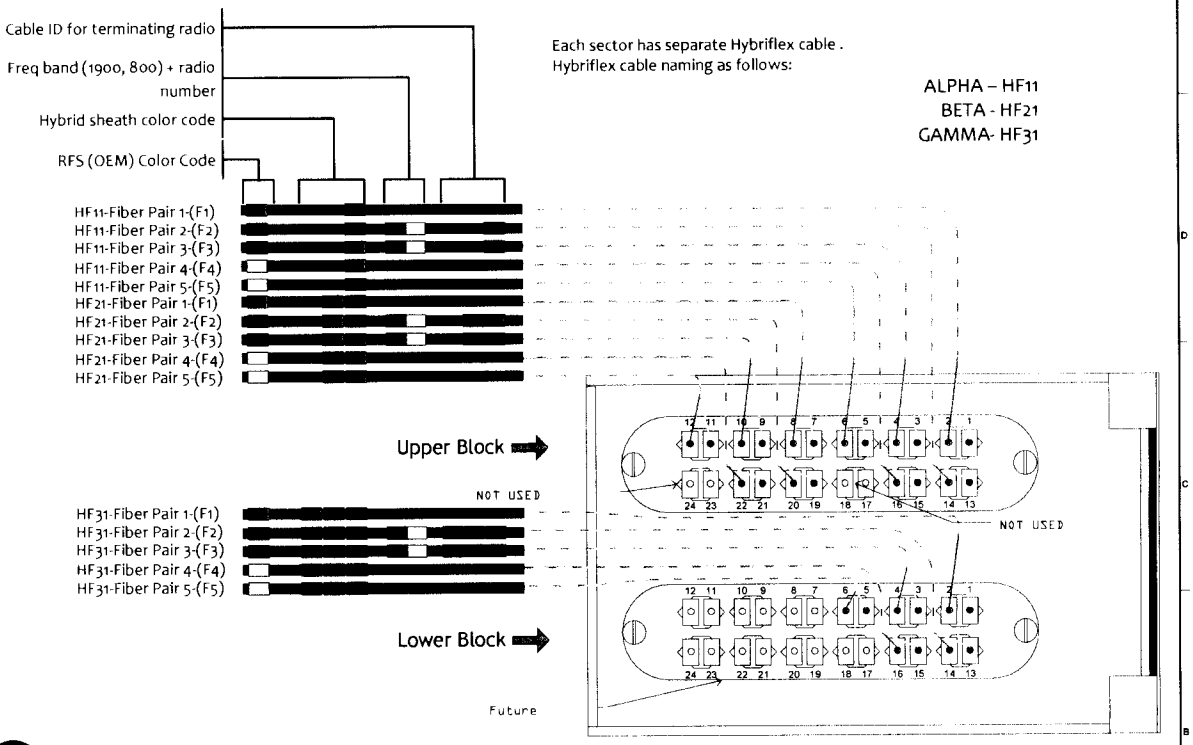
SHEET DESCRIPTION
1900MHZ TOWER MOUNTED RRH CONNECTIONS

SHEET NUMBER
EC1



1 EC4 **DC POWER CONNECTION DETAILS**

SCALE 8" = 1'-0"



2 EC4 **FIBER CONNECTION DETAILS**

SCALE 8" = 1'-0"

SHEET NUMBER EC4	SHEET DESCRIPTION DISTRIBUTION BOX CONNECTION DETAILS FOR TOWER MOUNTED RRH	FILE NAME SCENARIO 177_V2.5.VSD	BACK TO TITLE SHEET

Sprint

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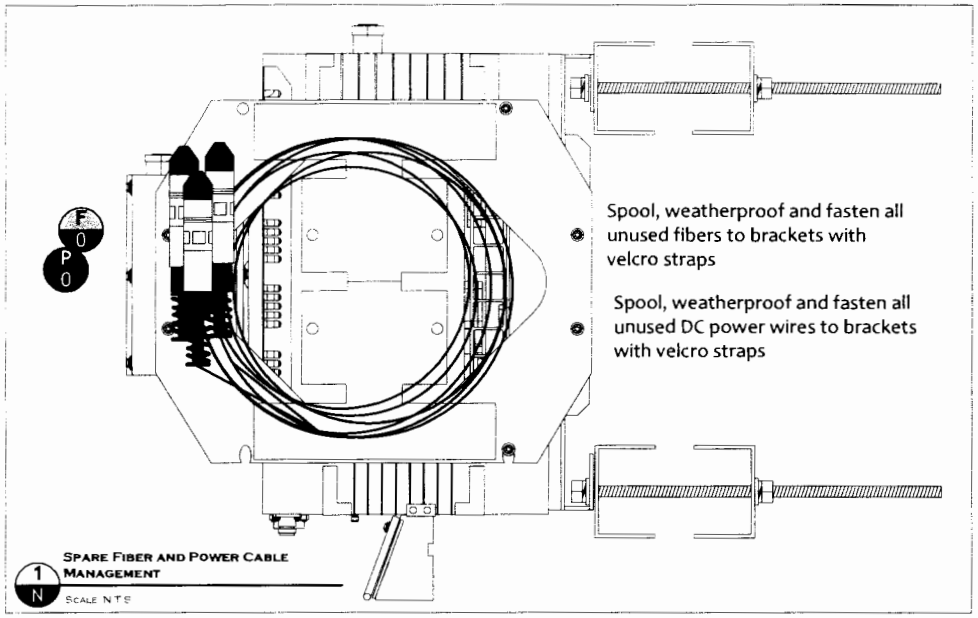
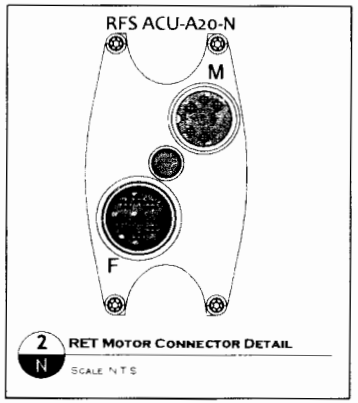


1 N **Spare Fiber and Power Cable Management**
Scale N.T.S



2 N **RET Motor Connector Detail**
Scale N.T.S

1 N	Spare Fiber Pairs & DC Power terminated, weatherproofed, spooled and tie wrapped to side of 800Mhz RRH. (cable management) Notes
2 N	RFS ACU-A20-N RET Motor connection details Notes

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SHEET DESCRIPTION
DRAWING NOTES

SHEET NUMBER
N1