

# cricket<sup>TM</sup> communications

750 MELROSE AVE.  
NASHVILLE, TN 37211  
ATTN: RON NALL (615) 687-7722

**SITE#: RDU-012**  
**CARRBORO**  
**CHAPEL HILL, NC 27514**

TOWER OWNER  
CROWN CASTLE  
9105 MONROE RD.  
SUITE 150  
CHARLOTTE, NC 82870  
704-321-3818  
CCI#: 811511

SITE E911 ADDRESS  
ORANGE COUNTY  
625 OLD FAYETTEVILLE RD.  
CHAPPEL HILL, NC 27514

POWER COMPANY  
PIEDMONT ELECTRIC  
BOBBY RAY  
1-800-222-3107  
ACCT #: 3790100

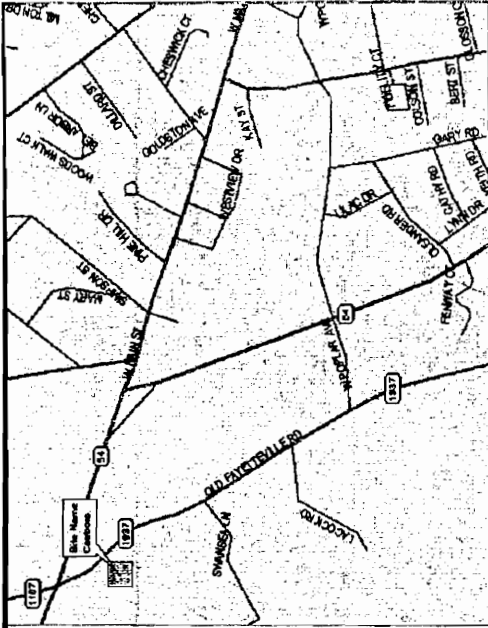
2C COORDINATES  
LAT: 55° 55' 4.1" N  
LONG: 79° 5' 57.3" W  
ELEV: 507.0'

OWNER/DEVELOPER  
CRICKET COMMUNICATIONS  
750 MELROSE AVENUE  
NASHVILLE, TN 37211

CIRCUIT ID#  
N/A

TAX PARCEL:  
TBD

TELEPHONE COMPANY  
BELLSOUTH  
WILLIAM POTTER  
919-785-7770



DIRECTIONS: FROM RALEIGH TURN ONTO I-85 N TO GREENSBORO AND GO NORTH FOR 12.4 MILES. BEAR RIGHT ON I-40 AT SIGN READING "I-40E TO RALEIGH" AND GO SOUTHEAST FOR 2.4 MILES. EXIT I-40 VIA RAMP AT SIGN READING "EXIT 261 TO HILLSBOROUGH" AND GO SOUTHEAST FOR 3 MILES. TURN RIGHT ON OLD NC 86. OLD CHAPEL HILLSBOROUGH RD AND GO SOUTH FOR 2.7 MILES. CONTINUE ON OLD NC 86 AND GO SOUTH FOR 4.7 MILES. CONTINUE AND GO SOUTH FOR 200 FT. CONTINUE ON OLD FAYETTEVILLE RD. AND GO SOUTH FOR 1.1 MILES.

## INDEX OF CONSTRUCTION DRAWINGS

- C0 TITLE SHEET
- C1 GENERAL NOTES AND LEGEND
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- C4 SITE DETAILS
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- E1 ELECTRICAL SITE PLAN
- E2 SITE GROUNDING PLAN
- E3 ELECTRICAL NOTES
- E4 ELECTRICAL DETAILS
- E5 ELECTRICAL DETAILS
- E6 ELECTRICAL DETAILS
- E7 ELECTRICAL DETAILS
- E8 UTILITY CENTER DETAILS
- E9 RF INFORMATION

DEPARTMENT	NAME	DATE
RF ENGINEER:		
CONSTRUCTION MANAGER:		
TOWER OWNER:		
SITE DEVELOPMENT MANAGER:		

COVER SHEET
RDU-012
CARRBORO
DATE: 07/06/06
REVISION: 0

**TeleCAD**  
WIRELESS SITE DESIGN, INC.  
6953 MIDDLE VALLEY ROAD - HUSSON, TN 37143  
(PHONE) 423-634-2525 - (FAX) 423-643-9589

TELECO WIRELESS INT. DESIGN 2004

**GENERAL NOTES**

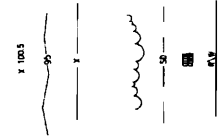
1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL APPLICABLE PERMITTING AUTHORITIES.
2. THE CONTRACTOR SHALL VERIFY THAT ALL EXISTING TOPOGRAPHY AND HORIZONTAL GEOMETRY IS AS INDICATED ON THESE DRAWINGS. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE OR REPAIR TO THESE FACILITIES CAUSED BY THE CONTRACTOR'S WORK FORCE. IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES OR INTERFERENCE WHICH AFFECT THE WORK OF THIS CONTRACT.
3. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES, CODES, AND REGULATIONS.
4. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR CONTAINMENT OF SEDIMENT AND CONTROL OF EROSION ON SITE. ANY DAMAGE TO ADJACENT OR DOWNSTREAM PROPERTIES WILL BE CORRECTED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
5. THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES. DO NOT ALLOW WATER TO STAND OR POND. ANY DAMAGE TO STRUCTURES OR 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.
6. ALL WASTE MATERIAL SHALL BE PROPERLY DISPOSED OF OFF-SITE OR AS DIRECTED BY THE CONSTRUCTION MANAGER AND IN ACCORDANCE WITH JURISDICTIONAL AUTHORITIES.
7. SEED AND MULCH ALL DISTURBED AREAS NOT COVERED BY OTHER MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS.
8. ANY PROPERTY DAMAGE CAUSED BY THE CONTRACTOR OR HIS OPERATIONS SHALL BE CORRECTED AND/OR RESTORED TO THE SATISFACTION OF THE PROPERTY OWNER(S) AND THE CONSTRUCTION MANAGER AT NO ADDITIONAL COST TO THE OWNER.
9. NOTIFY CRICKET REPRESENTATIVES TWENTY-FOUR HOURS PRIOR TO CONSTRUCTION TO ALLOW THEM TO LOOK AT THE SITE PRIOR TO EXCAVATION.

**UTILITY NOTES**

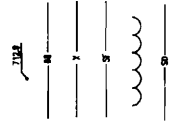
1. CONTRACTOR TO COORDINATE WITH THE ELECTRIC UTILITY COMPANY AND TELCO COMPANY IN RECORDS OF SCHEDULING PROJECT MILESTONES AND READY DATES.
2. ALL UTILITY RELATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE UTILITY REQUIREMENTS.
3. THE CONTRACTOR SHALL CONTACT UTILITY LOCATOR SERVICE A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION. (NC ONE-CALL 1-800-632-4949).

**LEGEND**

**EXISTING**



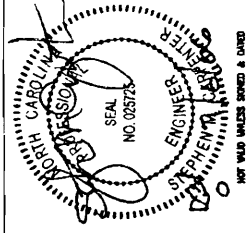
**NEW**



RDU-012  
CARRBORO

GENERAL NOTES  
& LEGEND

**TeleCAD**  
WIRELESS SITE DESIGN, INC  
6953 MIDDLE VALLEY ROAD  
HIKSON, TN 37343  
PH: 423-634-2525 FAX: 423-843-9509



DRAWN BY: DLK

CHECKED BY: CTD

PROJECT MGR: SMC

SHEET NUMBER: C1

NOTE: THIS IS A GENERAL LEGEND. SOME ITEMS MAY NOT APPLY TO THIS SITE.

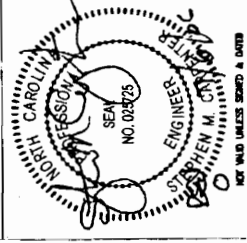
REVISION WIRELESS SITE DESIGN 2009

NO.	DATE	DESCRIPTION	BY	CHK
B	07/24/09	CONSTRUCTION ISSUE	DLK	
B	09/29/09	PRELIMINARY ISSUE	DLK	
A	09/16/09	PRELIMINARY ISSUE	DLK	
1		RECORD OF ISSUE	DLK	



RDU-012  
CARRBORO  
SITE LAYOUT  
PLAN

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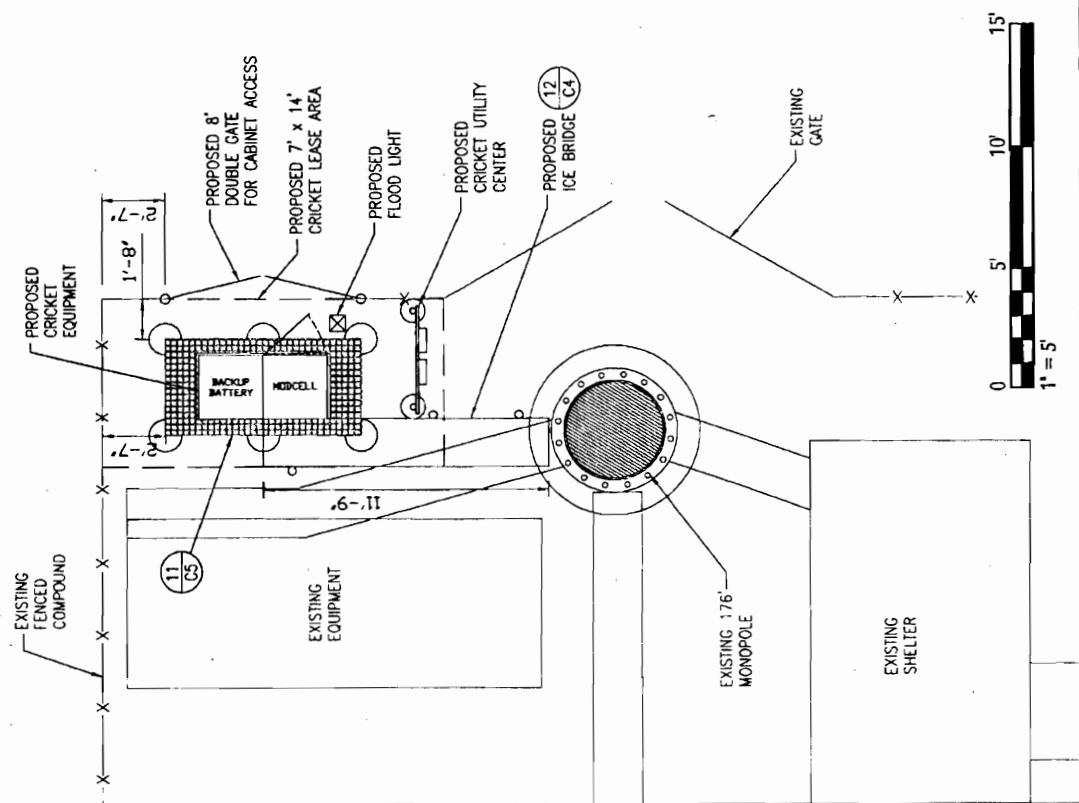


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CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: C2

**REFERENCE NOTES:**

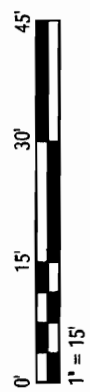
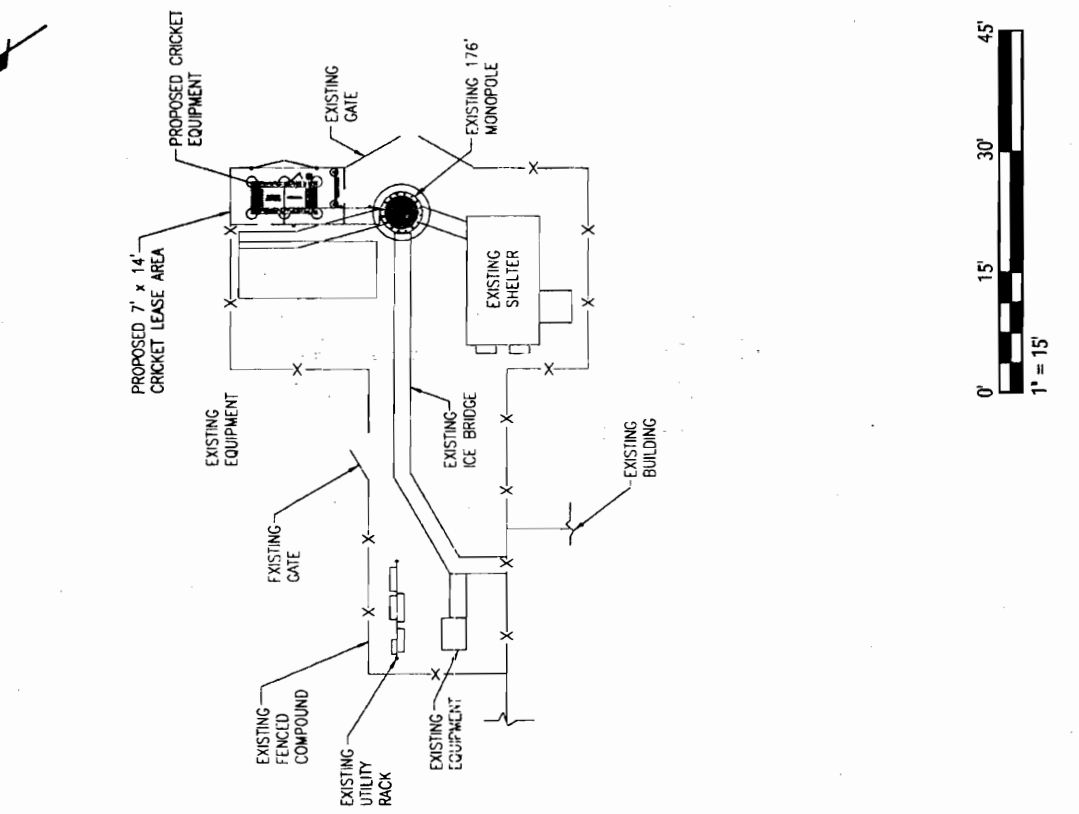
- 11 - EQUIPMENT PLATFORM. SEE DETAIL SHEET C5.
- 12 - CRICKET CABLE SUPPORT. SEE DETAIL ON SHEET C4.

CONTRACTOR TO PROVIDE  
MATCHING GREEN VINYL SLATS  
FOR FENCE EXTENSION.



**NOTES:**

- 1. THIS IS NOT AN AS-BUILT SURVEY. EXISTING EQUIPMENT LOCATIONS INSIDE FENCED AREA HAVE BEEN APPROXIMATED ACCORDING TO TAPED MEASUREMENTS BY TELECAD WIRELESS SITE DESIGN ON 06/06/06. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- 2. THE PROPOSED USE DOES NOT REQUIRE FULL OR PART TIME EMPLOYEES AT THE SITE.
- 3. ALL NORTH ARROWS ON SITE PLANS ARE TRUE NORTH, UNLESS OTHERWISE SPECIFIED.



TELECOM WIRELESS SITE DESIGN

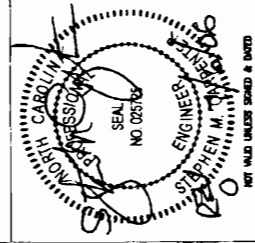
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1		RECORD OF ISSUE		



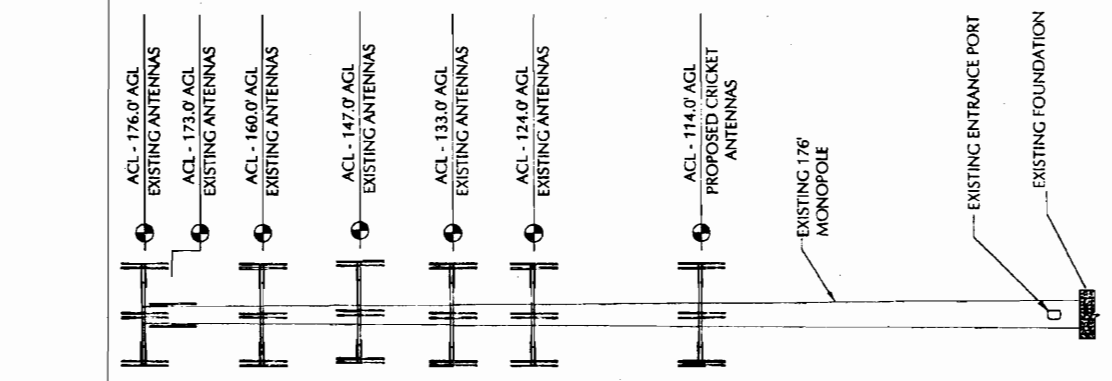
RDU-012  
CARRBORO

TOWER  
ELEVATION

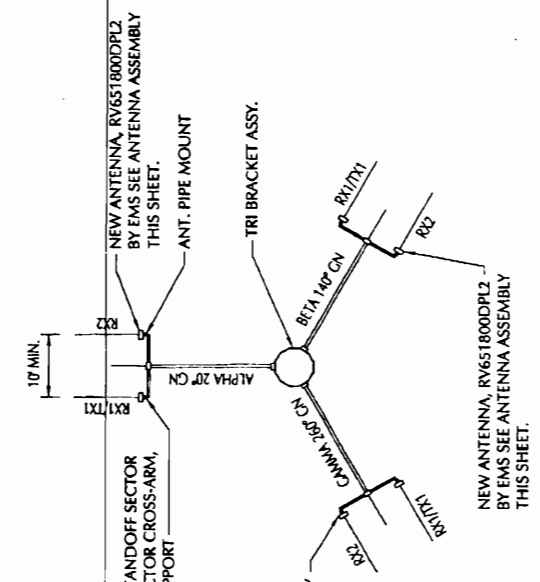
**TeleCAD**  
WIRELESS SITE DESIGN, INC  
6953 MIDDLE VALLEY ROAD  
HIXSON, TN 37343  
PH: 423-634-2325 FAX: 423-443-9509



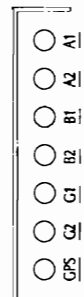
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CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: C3



10  
C2  
TOWER ELEVATION  
NTS



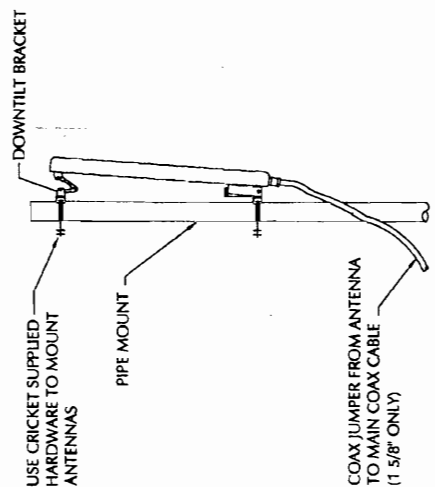
ANTENNA ORIENTATION



SECTION AT ICE BRIDGE  
LOOKING TOWARD MOBILE

COAX ROUTING DETAIL  
NTS

- NOTES:
1. ANTENNAS PROVIDED BY CRICKET AND INSTALLED BY CONTRACTOR.
  2. ANTENNA MOUNTS PROVIDED BY CRICKET AND INSTALLED BY CONTRACTOR.
  3. MOBILE CABINET, POWER CABINET, AND BATTERY CABINET PROVIDED BY CRICKET.
  4. MOBILE CABINET, POWER CABINET, AND BATTERY CABINET INSTALLED BY CONTRACTOR.



ANTENNA ASSEMBLY  
NTS

TELECOM WIRELESS SITE DESIGN

NO.	DATE	REVISION
0	07/24/08	CONSTRUCTION ISSUE
1	08/29/08	PRELIMINARY ISSUE
2	09/16/08	PRELIMINARY ISSUE
3	09/16/08	RECORD OF ISSUE

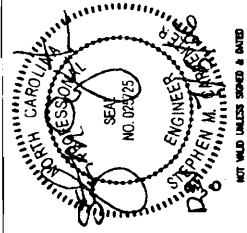


RDU-012  
CARRBORO

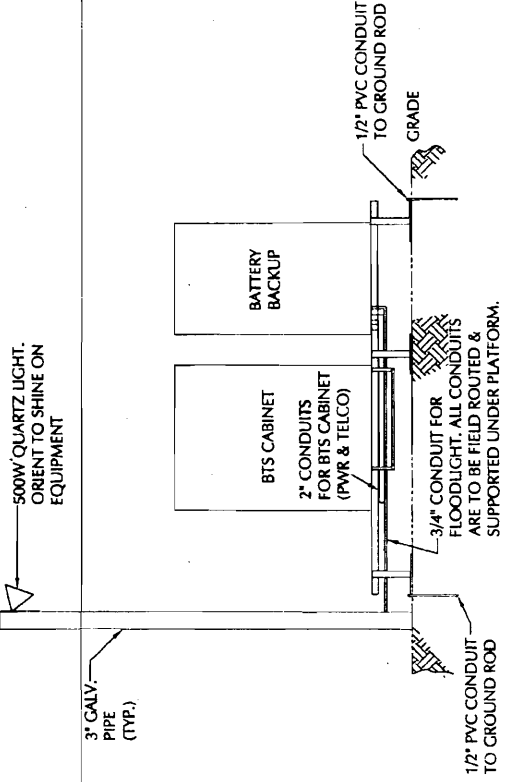
SITE  
DETAILS



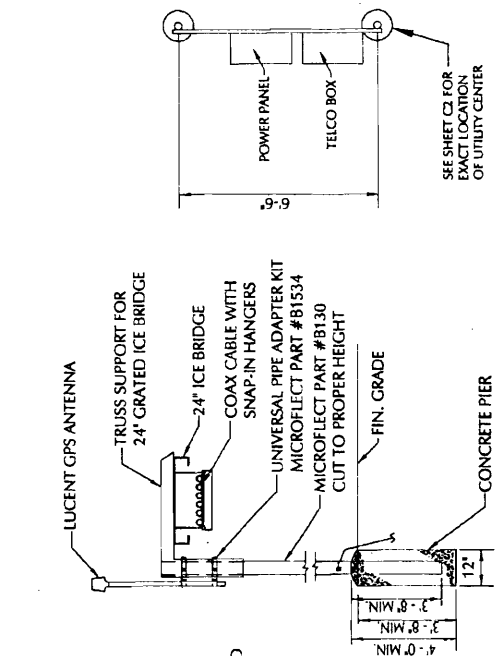
WIRELESS SITE DESIGN, INC.  
6953 MIDDLE VALLEY ROAD  
HIXSON, TN 37343  
PH: 423-634-2525 FAX: 423-843-9509



DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: C4



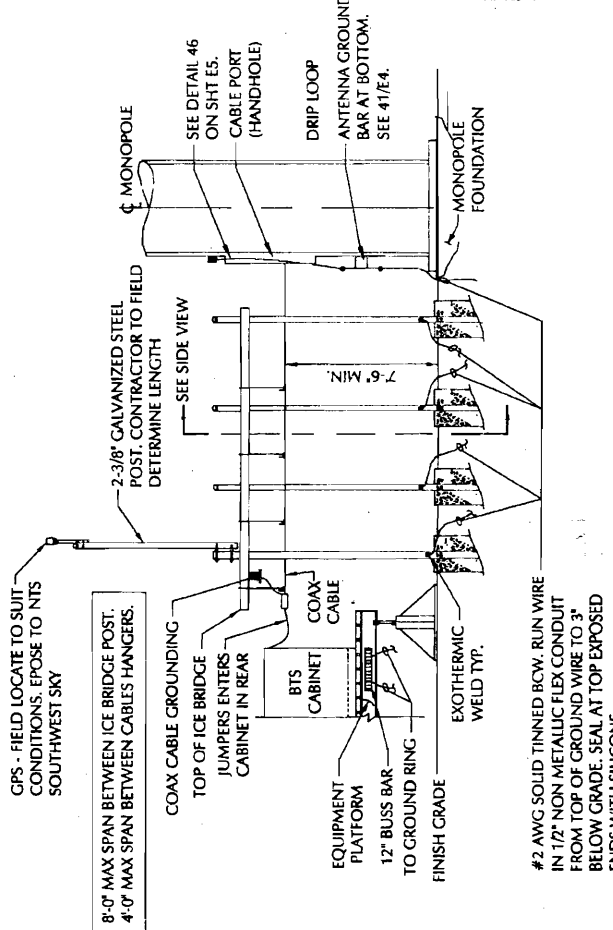
CRICKET PLATFORM ELEVATION 10 C2



SIDE VIEW

GENERAL NOTES - CONCRETE

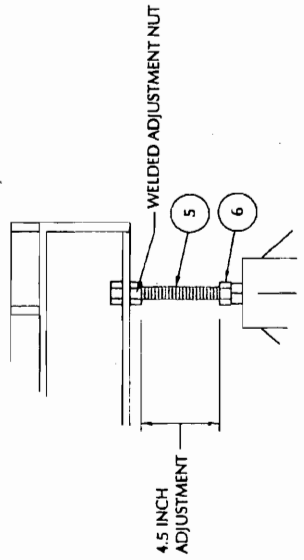
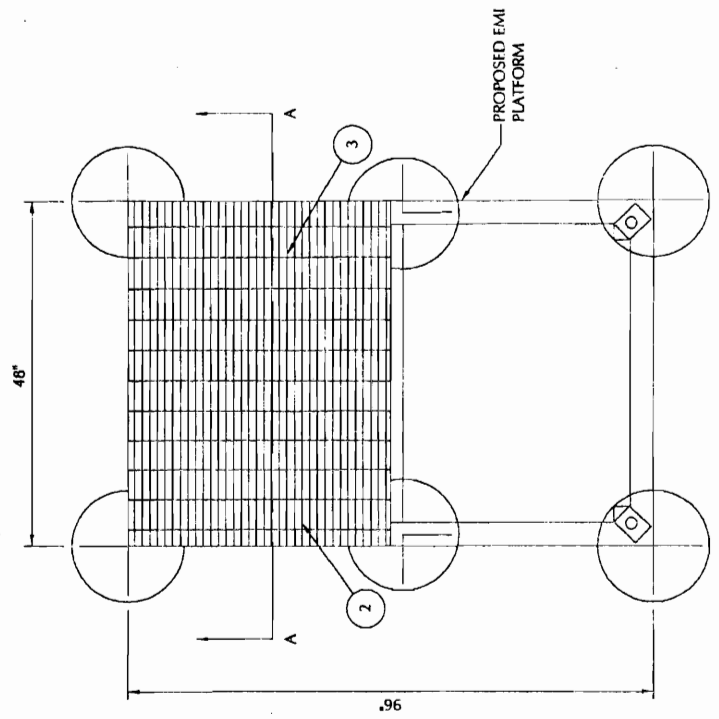
- UNLESS OTHERWISE NOTED, ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI IN 28 DAYS FOR FOUNDATIONS AND FOR SLABS AND CONDUIT ENCASMENT. TESTING ON FOUNDATION ONLY.
- UNLESS OTHERWISE NOTED, ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL, CONFORMING TO ASTM A-615, GRADE 60, DEFORMED.
- UNLESS OTHERWISE NOTED, ALL DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES. (A.C.I. 315).
- ALL BAR SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS OTHERWISE SHOWN. DEGREES CHAMFER, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, PROTECTING, AND RELOCATING AS REQUIRED ALL SERVICE AND UTILITY LINES IN VICINITY OF THE WORK SITE. ALL EXCAVATIONS NEAR THESE LINES TO BE CARRIED OUT WITH EXTREME CAUTION.



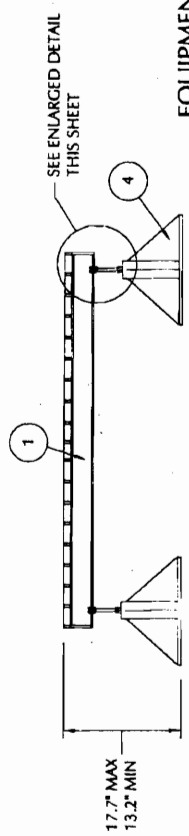
CRICKET CABLE SUPPORT 12 C2

PARTS LIST	
ITEM	DESCRIPTION
1	4' x 8' MODULAR FRAME ASSEMBLY
2	1' x 3/16" x 2" x 8' HDG SMOOTH RATING (19WA)
3	1' HDG GRATING CLIP
4	HDG ADJUSTABLE SUPPORT LEG W/ 3/8" PAD
5	HDG 9" ALL-THREAD ADJUSTER
6	HDG 3/4" NUT

NOTES:  
 1. ASSEMBLED WEIGHT: 500 LBS., SHIPPING WEIGHT: 530 LBS.  
 2. ONLY PARTIAL GRATING SHOWN FOR CLARITY.



ENLARGED DETAIL



SECTION A-A

EQUIPMENT PLATFORM  
 NTS  
 11  
 C1

PLATFORM MANUFACTURED BY: ELECTRO MECHANICAL INDUSTRIES, INC.  
 (PHONE NUMBER: 1-800-453-0050). PART#: 302-999-0004.

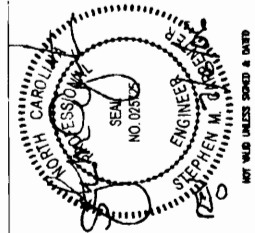
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2	08/24/08	PRELIMINARY ISSUE	DLK	CS
3		RECORD OF ISSUE	DLK	CS



RDU-012  
 CARRBORO

SITE  
 DETAILS

**TeleCAD**  
 WIRELESS SITE DESIGN, INC.  
 6953 MIDDLE VALLEY ROAD  
 HIXSON, TN 37343  
 PH: 423-434-2525 FAX: 423-443-9509



NOT WELD UNLESS SHOWN & DATED  
 DRAWN BY: DLK  
 CHECKED BY: CTD  
 PROJECT MGR: SMC  
 SHEET NUMBER: C5

TULCO WIRELESS SITE DESIGN

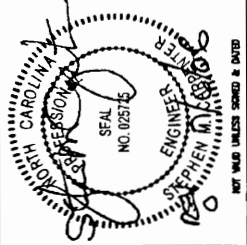
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1	08/20/09	PRELIMINARY ISSUE	DLK	CTD
2	08/20/09	PRELIMINARY ISSUE	DLK	CTD
3	08/20/09	REVISION OF ISSUE	DLK	CTD



RDU-012  
CARRBORO

UTILITY  
ROUTING PLAN

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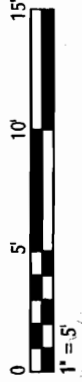
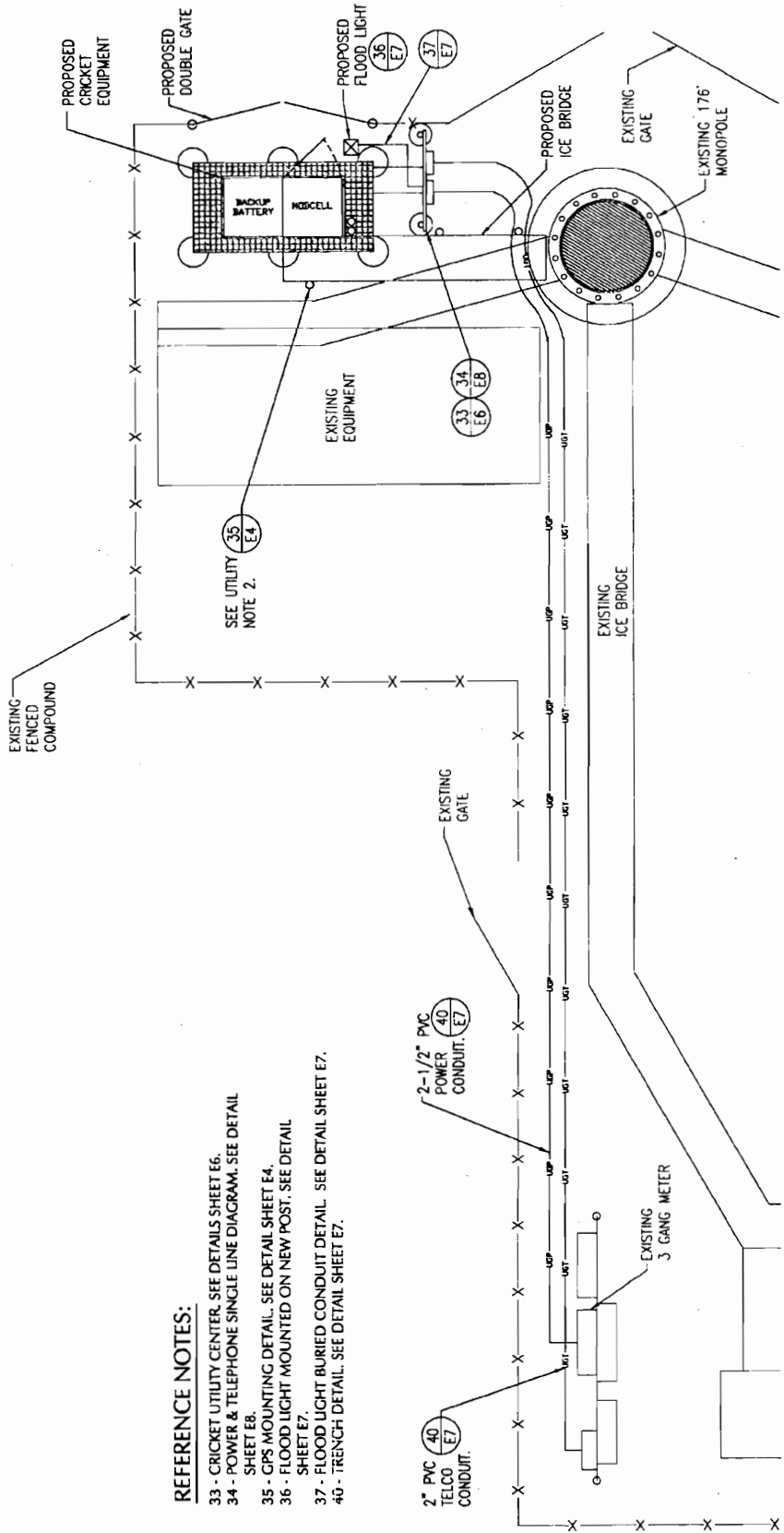
DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: E1

**UTILITY NOTES:**

1. PLACE PLUGS IN THE TOP OF STUBBED UP CONDUITS TO PREVENT MOISTURE INTRUSION.
2. CONTRACTOR SUPPLIES 1/4" x 3/4" x 5/8" x 40' GALVANIZED PIPE, 30' LONG FOR GPS MOUNTING.
3. CRICKET WILL BE RESPONSIBLE FOR INSTALLING T-1 CABLE FROM THE TRANSPECTOR CABINET TO THE MOD CELL. EXCESS CABLE TO BE COILED IN TRANSPECTOR CABINET.
4. CONTRACTOR TO INSTALL PULL STRINGS IN ALL POWER & TELCO CONDUITS.
5. CONTRACTOR TO MARK AND CAP ALL POWER & TELCO CONDUITS.
6. CONTRACTOR TO USE LONG RADIUS 90'S ON ALL CONDUIT BENDS.

**REFERENCE NOTES:**

- 33 - CRICKET UTILITY CENTER. SEE DETAILS SHEET E6.
- 34 - POWER & TELEPHONE SINGLE LINE DIAGRAM. SEE DETAIL SHEET E8.
- 35 - GPS MOUNTING DETAIL. SEE DETAIL SHEET E4.
- 36 - FLOOD LIGHT MOUNTED ON NEW POST. SEE DETAIL SHEET E7.
- 37 - FLOOD LIGHT BURIED CONDUIT DETAIL. SEE DETAIL SHEET E7.
- 40 - TRENCH DETAIL. SEE DETAIL SHEET E7.



TELECAD WIRELESS SITE DESIGN

NO.	DATE	RECORD OF TITLE	BY
B	07/26/08	CONSTRUCTION MARK	DLK
A	04/19/08	PRELIMINARY CHECK	DLK
A	04/19/08	PRELIMINARY CHECK	DLK
A	04/19/08	RECORD OF TITLE	DLK



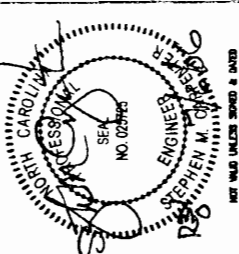
RDU-012  
CARRBORO

SITE GROUNDING  
PLAN



WIRELESS SITE DESIGN, INC.  
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HIXSON, TN 37343  
PH: 423-634-2525 FAX: 423-943-9509

DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: E2

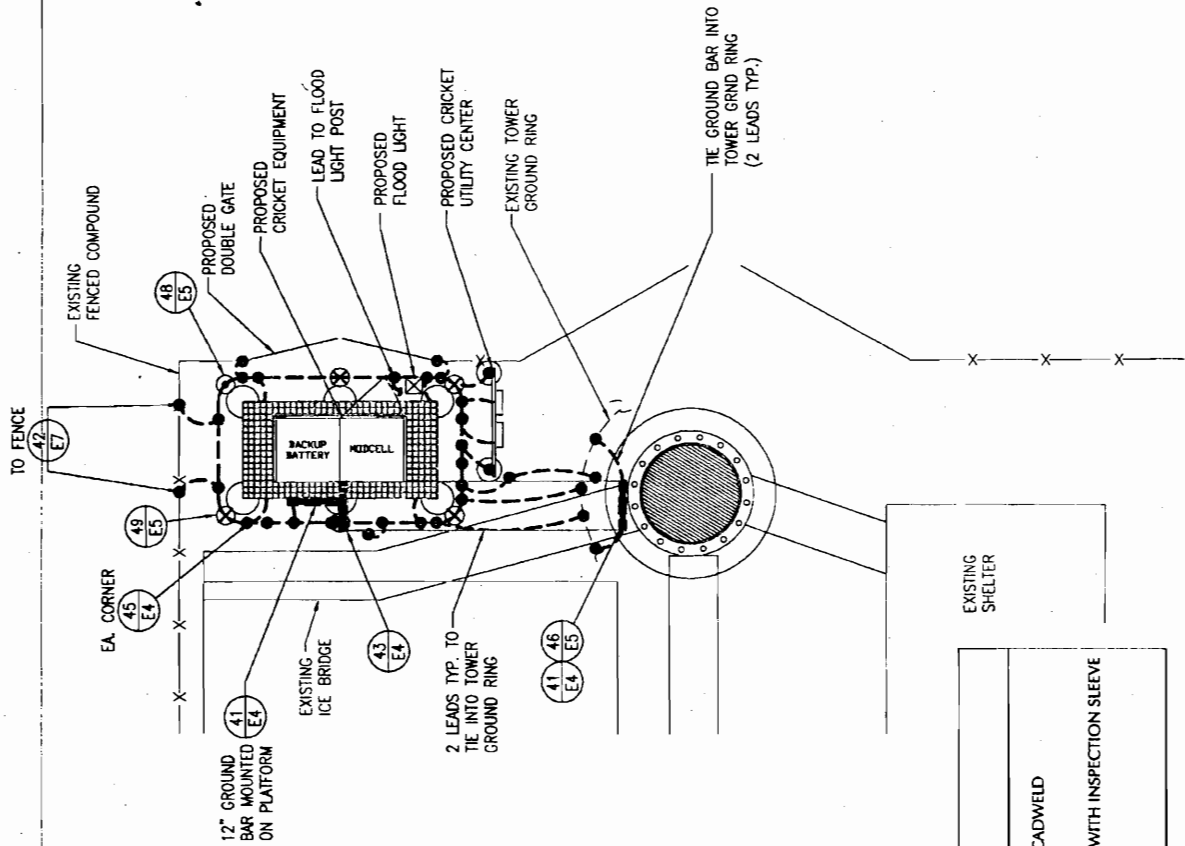


REFERENCE NOTES:

- 41 - LOWER TOWER & PLATFORM GROUND BARS. SEE DETAIL SHEET E3.
- 42 - FENCE GROUNDING. SEE DETAIL SHEET E7.
- 43 - GROUND BAR ON ICE BRIDGE. SEE DETAIL SHEET E3.
- 45 - PLATFORM GROUNDING DETAIL. SEE DETAIL SHEET E4.
- 46 - ANTENNA CABLE GROUNDING FOR MONOPOLE. SEE DETAIL SHEET E5.
- 48 - INSPECTION SLEEVE. SEE DETAIL SHEET E5.
- 49 - GROUND ROD. SEE DETAIL SHEET E5.

FOR GROUNDING NOTES SEE DETAIL SHEET E3.

GENERAL CONTRACTOR TO PROVIDE DIGITAL PHOTOS OF ALL BELOW GRADE GROUNDS AND CADWELDS.



ELECTRICAL LEGEND	
—	#2 AWG SOLID TINNED COPPER
---	GROUND CABLE RUN 30" BELOW GRADE
—	#2 AWG SOLID TINNED COPPER
---	GROUND CABLE RUN ABOVE GRADE
⊗	10" X 5/8" DIAMETER COPPER CLAD, STEEL GROUND ROD.
●	PARALLEL CADWELD
⊙	CADWELD WITH INSPECTION SLEEVE



### ELECTRICAL NOTES:

1. ALL CONDUITS ENTERING THE TRANSISTECTOR SHALL BE SEALED WITH SEALANTS THAT ARE IDENTIFIED FOR USE WITH THE CABLE INSULATION, SHIELD, OR OTHER COMPONENTS. A BEAD OF SILICONE SHALL BE PLACED AROUND ALL CONDUIT PENETRATIONS INTO THE TRANSISTECTOR.
2. ALL ELECTRICAL AND GROUNDING AT THE SITE SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE, NFPA 70 AND STANDARD FOR THE INSTALLATION OF LIGHTING PROTECTION SYSTEMS (LATEST EDITION) NFPA 780.
3. PROVIDE 2 PULL STRINGS SECURELY FASTENED AT EACH END OF ALL TELCO CONDUITS. PULL STRING TO BE 200LB. TEST POLYETHENE CORD. PROVIDE CAP ON END OF THE CONDUITS WITH IDENTIFICATION OF ROUTING.
4. PROVIDE MARKER (REBAR) AT END OF BURIED CONDUIT. MARKER SHALL BE DRIVEN SO THAT A MINIMUM OF 2 FEET REMAINS EXPOSED ABOVE GRADE. EXPOSED PORTION TO BE PAINTED BRIGHT ORANGE.
5. CONTRACTOR TO COORDINATE ALL NECESSARY STEPS INCLUDING BUT NOT LIMITED TO SCHEDULING OF INSPECTION, ETC., IN ORDER TO SECURE CONDITIONAL PERMIT IS PULLED OR AT A TIME THAT BEST FACILITATES GETTING A CRICKET METER PLACED ON SITE AND IN SERVICE.
6. GENERAL CONTRACTOR IS RESPONSIBLE FOR ENSURING THE COMPLETE COMPACTION AND RESTORATION OF ALL UTILITY TRENCHES TO THE SATISFACTION OF CRICKET AND PROPERTY OWNER, REGARDLESS OF THE PARTY PROVIDING INSTALLATION OF UTILITIES.
7. ENCASE CONDUITS IN CONCRETE WHERE THEY CROSS ROADS.

### GROUNDING NOTES:

1. TO PROTECT PERSONNEL FROM ELECTRICAL SHOCK AND ENSURE SAFE, RELIABLE OPERATION OF EQUIPMENT, THE GROUNDING SYSTEM SHALL PROVIDE A LOW IMPEDANCE PATH TO EARTH FOR LIGHTNING AND FAULT CURRENT SURGES. THE GROUNDING RESISTANCE IS REQUIRED TO BE 5 OHMS OR LESS.
2. INSTALL GROUND RING 1'-6" MIN OUTSIDE OF EQUIPMENT PLATFORM AND 24 INCHES BELOW GRADE OR 6" BELOW THE FROST LINE, WHICHEVER IS DEEPER. GROUND RING CONSISTS OF #2 AWG SOLID BARE TINNED COPPER.
3. CADWELD ALL CONNECTIONS TO BURIED GROUND RING WITH PARALLEL WELDS. EXCEPTION: USE TEE WELDS FOR CONNECTIONS TO GROUND RODS.
4. PROVIDE STAINLESS STEEL HARDWARE AND LOCKWASHERS ON ALL MECHANICAL CONNECTIONS. APPLY ANTI-OXIDE COMPOUND TO CONNECTIONS.
5. ALL ATTACHMENTS TO GROUND LOOP AND SUPPLEMENTAL GROUND CABLE ARE TO BE 90° BEND RADIUS IN 8" AND BE IN A COUNTERCLOCKWISE DIRECTION WITH PARALLEL CADWELDS. MAKE ALL GROUNDING CONNECTIONS AS SHORT AS POSSIBLE.
6. CLEAN ALL SURFACES AND BRUSH WITH BRONZE BRUSH PRIOR TO MAKING GROUND CONNECTIONS. PAINT ALL EXOTHERMIC WELDS TO GALVANIZED OBJECTS WITH GALVANIZED PAINT.
7. GROUND RODS IN LOCATIONS SHOWN ON GROUNDING PLAN SHALL BE SPACED AT APPROXIMATELY 10' INTERVALS.
8. THE TOP OF THE UTILITY METER GROUND ROD IS TO BE 6" ABOVE THE SUB-GRADE. FOR INSPECTION BY LOCAL AUTHORITY. THE GROUND ROD IS NOT TO BE TIED INTO THE COUNTERPOISE.
9. IF INSTALLING CHEMICAL GROUND RODS, GENERAL CONTRACTOR SHALL REMOVE AND PRESENT TO CONSTRUCTION MANAGER THE TAPE USED TO SEAL THE TOP AND BOTTOM OF CHEMICAL GROUND ROD.
10. EXOTHERMIC WELD IS REQUIRED FOR GROUNDING CONNECTIONS. (ALL BELOW GRADE CONNECTIONS MUST BE EXOTHERMICALLY WELDED).
11. FOR MECHANICAL COMPRESSION LUGS, ANTI-OXIDANT (COPPER SHIELD) BEFORE MAKING THE CRIMP CONNECTIONS. THE MANUFACTURERS TORQUING RECOMMENDATIONS ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS ARE TO BE FOLLOWED.
12. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
13. GROUNDING KIT AND WEATHER PROOFING KIT SHALL BE OF THE SAME TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

TELECO WIRELESS SITE DESIGN

2009

NO.	DATE	REVISION	BY	CHK
0	07/24/09	CONSTRUCTION FILE	DLK	DLK
0	08/26/09	PRELIMINARY FILE	DLK	DLK
1	08/26/09	PRELIMINARY FILE	DLK	DLK
1	08/26/09	RECORD OF TITLE	DLK	DLK

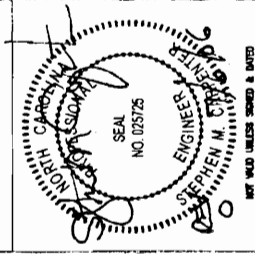
**cricket**  
communications

RDU-012  
CARRBORO

ELECTRICAL  
NOTES

**TeleCAD**

WIRELESS SITE DESIGN, INC  
6933 MIDDLE VALLEY ROAD  
HIXSON, TN 37343  
PH: 423-634-2525 FAX: 423-843-9509



DRAWN BY: DLK

CHECKED BY: CTD

PROJECT MGR: SMC

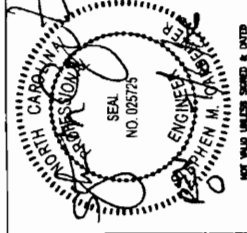
SHEET NUMBER: E3

A-9

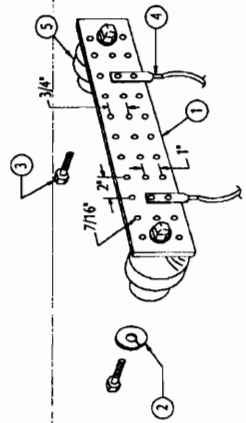
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1	04/24/08	PRELIMINARY ISSUE	DLK	DLK
2	04/24/08	PRELIMINARY ISSUE	DLK	DLK
3	04/24/08	RECORD OF ISSUE	DLK	DLK



RDU-012  
CARRBORO  
ELECTRICAL  
DETAILS



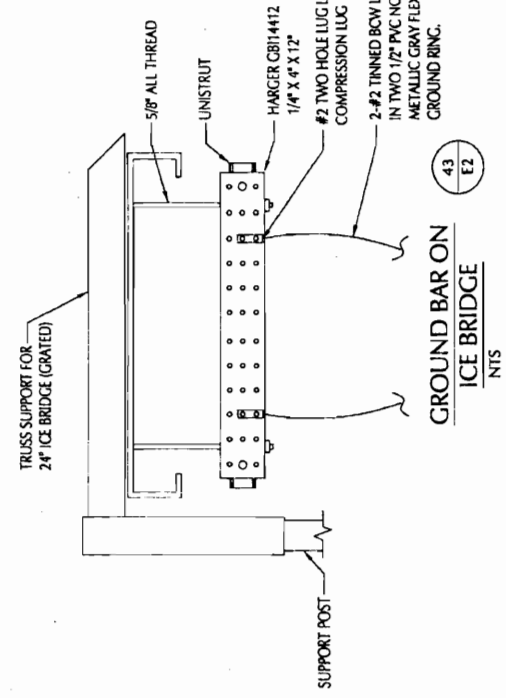
DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: E4



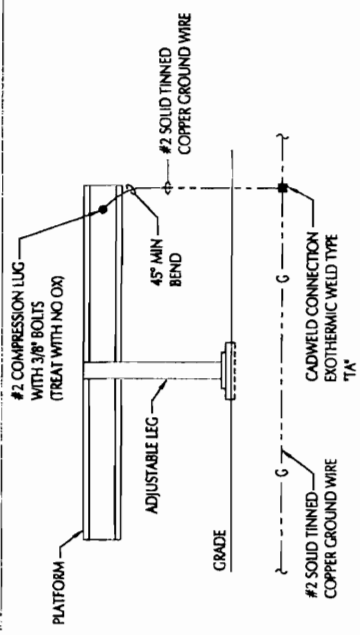
- LEGEND**
- 1- COPPER GROUND BAR.
  - 2- 5/8" LOCKWASHERS, H.K. PORTER OR APPROVED EQUIVALENT.
  - 3- 5/8-11 X 1" HMC BOLTS, H.K. PORTER OR APPROVED EQUIVALENT.
  - 4- #2 TWO HOLE LONG BARREL COMPRESSION LUG BY BURNDY OR APPROVED EQUIVALENT.
  - 5- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 (NO INSULATORS ON GROUND BAR AT TOP OF TOWER).

**LOWER TOWER & PLATFORM GROUND BARS** 41  
E2  
NTS

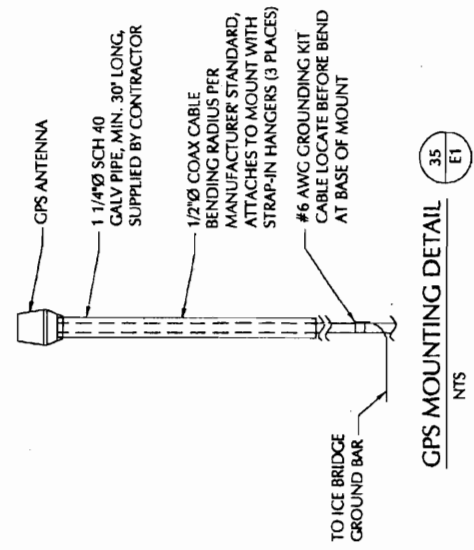
NOTE: TOP GROUND BARS BOLTED DIRECTLY TO TOWER WITH NO INSULATORS  
NO ADDITIONAL GROUND CABLE REQUIRED.



**GROUND BAR ON  
ICE BRIDGE** 43  
E2  
NTS



**PLATFORM GROUNDING DETAIL** 45  
E2  
NTS



**GPS MOUNTING DETAIL** 35  
E1  
NTS

NO.	DATE	REVISION	BY	CHK
D	07/24/08	CONSTRUCTION MARK	DU	DU
B	04/22/08	PRELIMINARY MARK	DU	DU
A	04/14/08	PRELIMINARY MARK	DU	DU
		REVISION OF ISSUE		

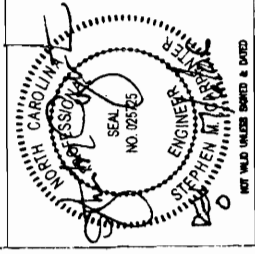
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communications

RDU-012  
CARRBORO

ELECTRICAL  
DETAILS

**TeleCAD**  
WIRELESS SITE DESIGN, INC

6953 MIDDLE VALLEY ROAD  
HIXSON, TN 37343  
PH: 423-834-2323 FAX: 423-843-9509



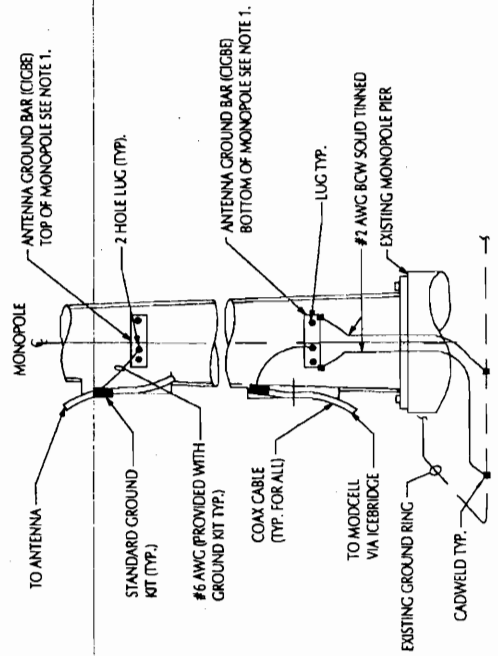
DRAWN BY: DLK

CHECKED BY: CTD

PROJECT MGR: SMC

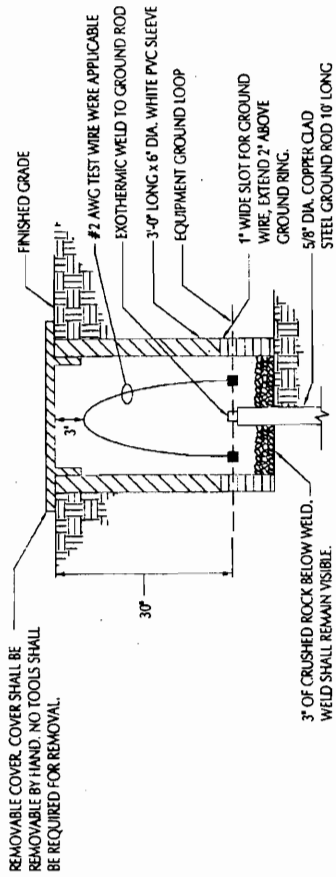
SHEET NUMBER: E5

A-11



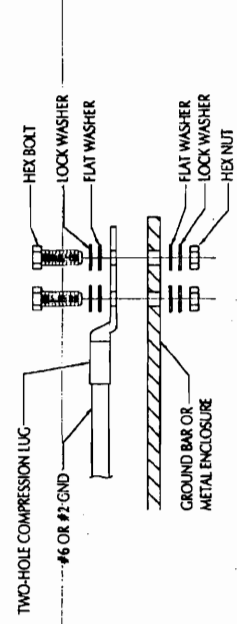
NOTES:  
1. NUMBER OF GROUNDING BARS MAY VARY DEPENDS ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.  
2. MOUNT GROUND BARS HORIZONTAL.

**ANTENNA CABLE GROUNDING FOR MONOPOLE**  
NTS



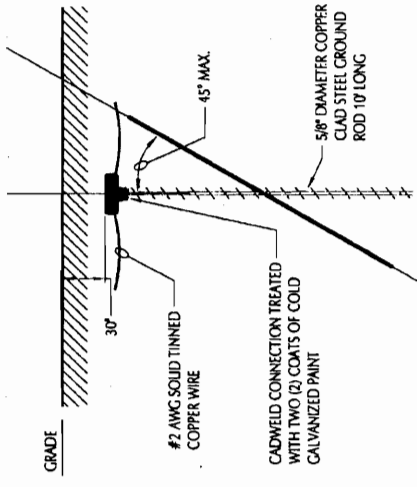
REMOVABLE COVER SHALL BE REMOVABLE BY HAND. NO TOOLS SHALL BE REQUIRED FOR REMOVAL.

**INSPECTION SLEEVE DETAIL**  
NTS



INSTALLATION NOTES:  
1. BOLTS, WASHERS, AND NUTS SHALL BE STAINLESS STEEL.  
2. SELECT BOLT LENGTH TO PROVIDE A MINIMUM OF TWO EXPOSED THREADS.  
3. BURNISH MOUNTING SURFACE TO REMOVE PAINT IN THE AREA OF LUG CONTACT.  
4. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.  
5. USE 1/4\"/>

**GROUNDING CONNECTION TO GROUND BAR OR FLAT SURFACE**  
NTS



**GROUND ROD DETAIL**  
NTS

49  
E2

46  
E2

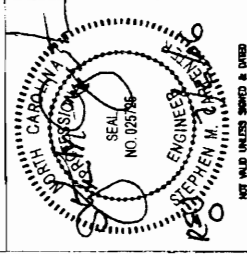
48  
E2

TELECOM WIRELESS SITE DESIGN		DATE	BY
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1	04/29/04	PRELIMINARY ISSUE	DLK
2	04/19/04	PRELIMINARY ISSUE	DLK
3		RECORD OF ISSUE	DLK

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communications

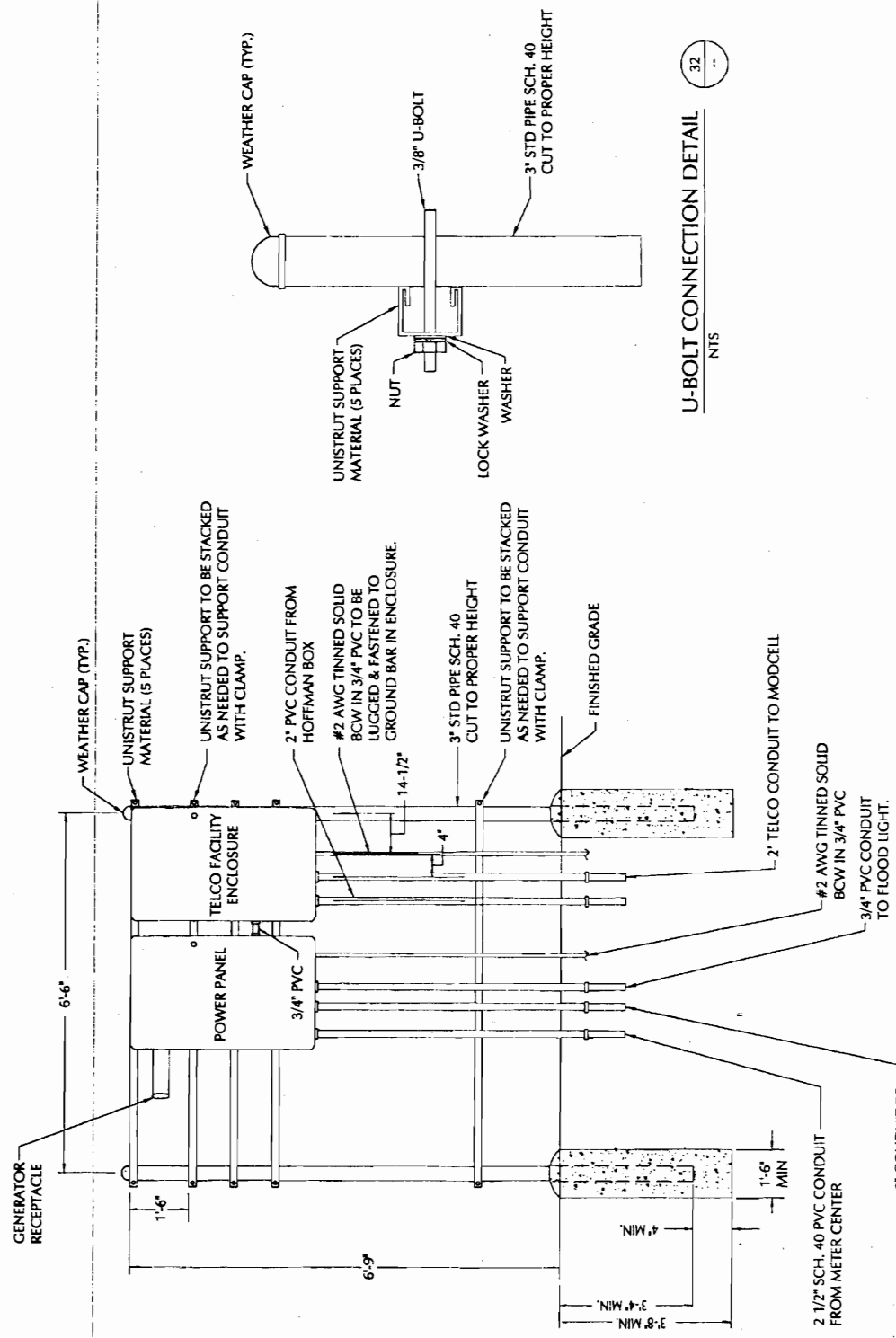
RDU-012  
CARRBORO  
ELECTRICAL  
DETAILS

**TeleCAD**  
WIRELESS SITE DESIGN, INC  
6953 MIDDLE VALLEY ROAD  
HOBSON, TN 37343  
PH: 423-634-2525 FAX: 423-643 9509



DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: E6

A-12



U-BOLT CONNECTION DETAIL  
NTS

- NOTES:
1. GROUND POWER PANELS PER LOCAL POWER CO. AND NEC REQUIREMENTS.
  2. GENERAL CONTRACTOR IS RESPONSIBLE FOR WIRING OF LIGHT AND FAN IN TELCO CABINET.
  3. GENERAL CONTRACTOR TO ATTACH A 3 FT. #6 BARE COPPER WIRE TO GROUND BAR IN TELCO ENCLOSURE.

CRICKET UTILITY CENTER  
NTS



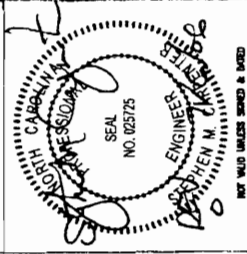
TELECO WIRELESS SITE DESIGN 2010

NO.	DATE	RECORD OF REVISION
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1	08/19/10	PRELIMINARY ISSUE
2	08/19/10	PRELIMINARY ISSUE
3	08/19/10	RECORD OF ISSUE

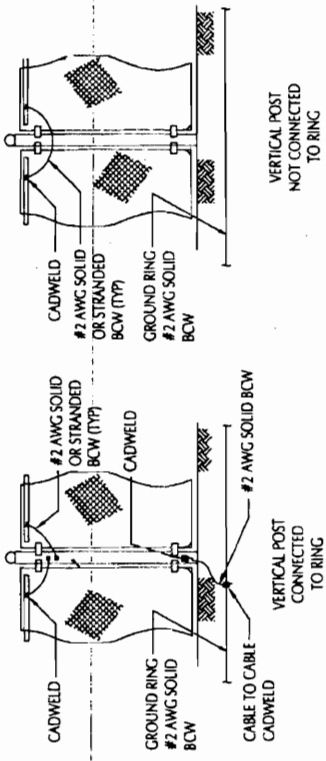


RDU-012  
CARRBORO  
ELECTRICAL  
DETAILS

**TeleCAD**  
WIRELESS SITE DESIGN, INC  
6953 MIDDLE VALLEY ROAD  
HIXSON, TN 37243  
PH: 423-634-2525 FAX: 423-643-9509



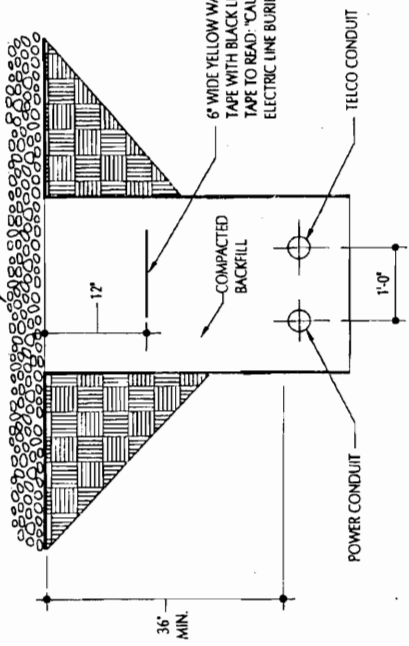
DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: E7



- NOTES:
1. VERTICAL POSTS SHALL BE BONDED TO THE RING AT EACH CORNER AND AT EACH GATE POST. AS A MINIMUM ONE VERTICAL POST SHALL BE BONDED TO THE GROUND RING IN EVERY 100 FOOT STRAIGHT RUN OF FENCE.
  2. HORIZONTAL POLES SHALL BE BONDED TO EACH OTHER.
  3. BOND EACH HORIZONTAL POLE / BRACE TO EACH OTHER AND TO EACH VERTICAL POST THAT IS BONDED TO THE EXTERIOR GROUND RING

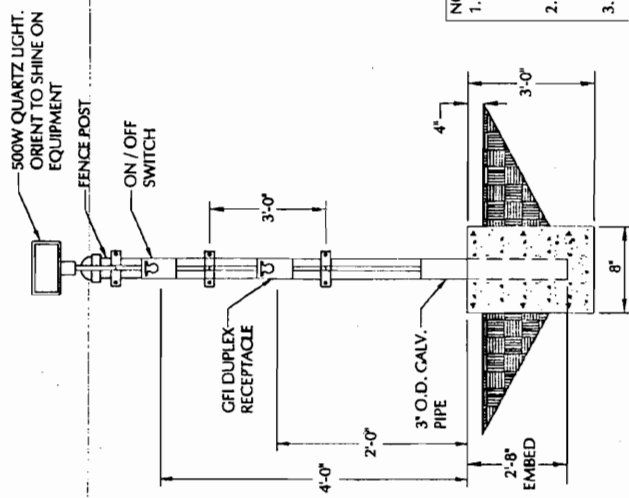
**FENCE GROUNDING**  
NTS

- NOTES:
1. SCHEDULE 40 PVC SHALL BE USED BELOW GRADE AND ABOVE GRADE, UNLESS OTHERWISE NOTED OR LOCAL CODE SPECIFIES OTHERWISE.
  2. WHERE CONDUIT SIZE BELOW GRADE DIFFERS FROM SIZE ENTERING CABINET, PROVIDE REDUCER TO ACHIEVE TRANSITION.
  3. ALL STRUCTURAL STEEL SHALL BE GALVANIZED.

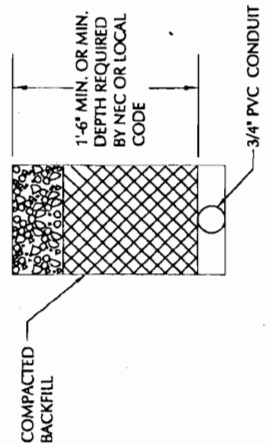


NOTE: TYPICAL SPACING FOR ALL UNDERGROUND CONDUITS

**TRENCH DETAIL**  
NTS



**FLOOD LIGHT DETAIL MOUNTED ON POST**  
NTS



**FLOOD LIGHT BURIED CONDUIT DETAIL**  
NTS

**FLOOD LIGHT BURIED CONDUIT DETAIL**  
NTS

NO.	DATE	RECORD OF REVISION	BY	CHK
1	07/24/04	CONSTRUCTION ISSUE	DLK	DLK
2	08/27/04	PERMITS/ISSUE	DLK	DLK
3	08/27/04	PERMITS/ISSUE	DLK	DLK
4	08/27/04	RECORD OF REVISION	DLK	DLK



RDU-012  
CARRBORO

UTILITY CENTER  
DETAILS



WIRELESS SITE DESIGN, INC.  
6953 MIDDLE VALLEY ROAD  
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PH: 423-634-2525 FAX: 423-843-9509



DRAWN BY: DLK

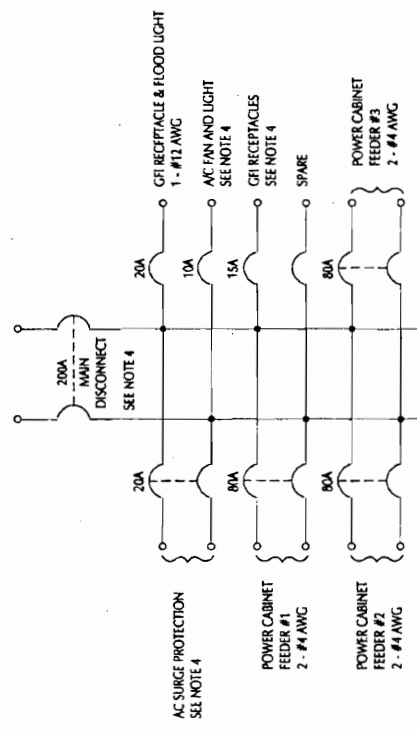
CHECKED BY: CTD

PROJECT MGR: SMC

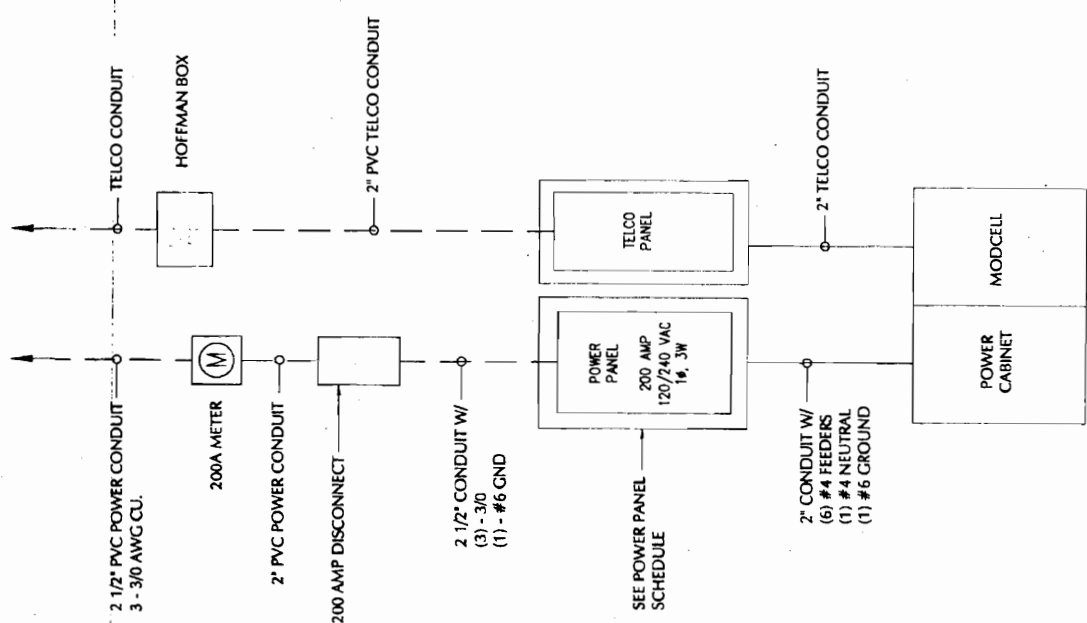
SHEET NUMBER: E8

A+14

- NOTES:**
- ELECTRICAL SERVICE SHALL BE 200A, 120V / 208V OR 240V, 1Ø 3W.
  - PROVIDE SERVICE ENTRANCE RATED FUSIBLE SERVICE DISCONNECT SWITCH MAIN DISCONNECT TO REMAIN UNLOCKED.
  - REMOVE BONDING JUMPER IN TRANSISTOR POWER CABINET AND BOND SERVICE DISCONNECT PER NEC REQUIREMENTS.
  - ITEM(S) FURNISHED & INSTALLED WITH TRANSISTOR CABINET.
  - ALL WIRING SHALL BE COPPER WITH THHN INSULATION.
  - ALL ELECTRICAL WORK INCLUDING COMPONENTS AND WIRING PER NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL CODE.
  - GENERAL CONTRACTOR TO LABEL BREAKERS IN POWER CABINET AS NOTED ON \* POWER PANEL SCHEDULE \*.
  - GENERAL CONTRACTOR TO WIRE LIGHT AND FAN INTO TELCO CABINET.



**POWER PANEL SCHEDULE**  
NTS



34  
E1

**POWER & TELCO SINGLE LINE**  
NTS

REVISION NUMBER SEE DESIGN 2000

0	07/20/00	CONTRACTOR ISSUE	DLK
1	04/25/00	PRELIMINARY ISSUE	DLK
2	04/10/00	PRELIMINARY ISSUE	DLK
3	04/10/00	RECORD OF ISSUE	DLK

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communications

RDU-012  
CARRBORO

RF INFORMATION

**TeleCAD**  
WIRELESS SITE DESIGN, INC.  
6953 MIDDLE VALLEY ROAD  
HIXSON, TN 37343  
PH: 423-434-2525 FAX: 423-643-9509

NOT VALID UNLESS SIGNED & DATED

ENGINEER  
STEPHEN M. CARR  
SEAL NO. 025725

DRAWN BY: DLK  
CHECKED BY: CTD  
PROJECT MGR: SMC  
SHEET NUMBER: E9

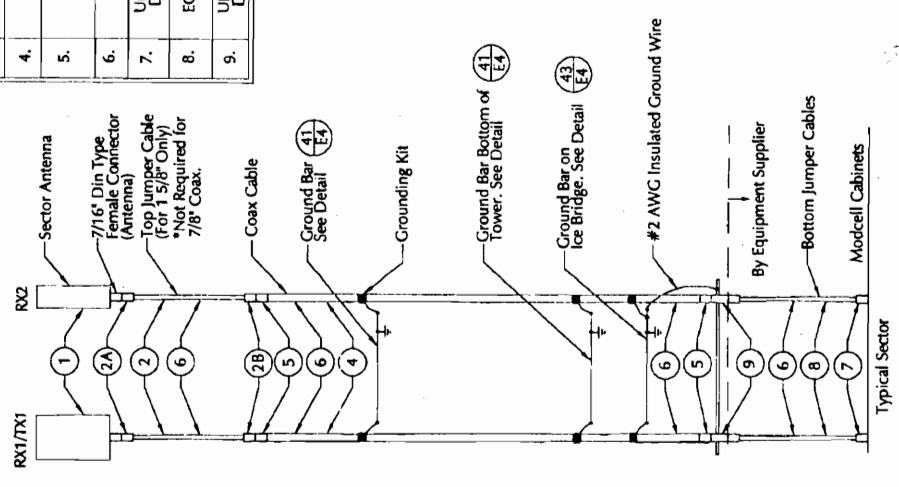
ITEM NO.	ITEM DESCRIPTION	ALPHA SECTOR AZIMUTH 20° (TN)		BETA SECTOR AZIMUTH 140° (TN)		GAMMA SECTOR AZIMUTH 260° (TN)		TOTAL QTY.
		RX1/TX1	RX2	RX1/TX1	RX2	RX1/TX1	RX2	
1.	ANTENNA VENDOR							6
	ANTENNA (SEE NOTE 6)							
	MECHANICAL DOWNTILT							
2.	ANTENNA JUMPER (FOR 1 5/8" ONLY)							6
2A.	ATTACHED MALE DIN CONNECTOR							
2B.	ATTACHED MALE DIN CONNECTOR							
4.	MAIN COAX							804'
5.	UNATTACHED 7/16 FEMALE DIN CONNECTOR							12
6.	COLOR CODE							
7.	UNATTACHED MALE DIN CONNECTOR							
8.	EQUIPMENT JUMPER							6
9.	UNATTACHED MALE DIN CONNECTOR							

ANTENNA JUMPER INSTALLATION NOTES:

1. AVOID UNNECESSARY BENDING OF JUMPER CABLES. CABLES SHALL BE INSTALLED IN SUCH A WAY AS TO KEEP BENDS TO A MINIMUM.
2. IF CABLE EXCEEDS ITS MINIMUM BEND RADIUS, OR IS CRUSHED, IT SHALL BE DISCARDED AND REPLACED AT GENERAL CONTRACTORS EXPENSE.
3. WHEN HANDLING ANTENNA JUMPERS, DO NOT REMOVE DUST CAPS UNTIL CONNECTION IS READY TO BE MADE. USE CARE WHEN CONNECTING CABLES. VISUALLY INSPECT THE CENTER CONTACT.
4. THE ANTENNA CABLE SHIELD SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER BUS BAR AT THE LOWER MOST POINT OF A VERTICAL RUN, JUST BEFORE IT BEGINS TO BEND TOWARDS THE HORIZONTAL PLANE. THE ANTENNA CABLE SHIELD SHALL ALSO BE GROUNDED AT THE HATCH PLATE BEFORE ENTERING A BUILDING OR NEAR THE EQUIPMENT. THE ANTENNA CABLES OVER 200 FEET SHALL ALSO BE EQUIPPED WITH ADDITIONAL GROUNDING AT MIDPOINT. ANY CABLE RUNNING GREATER THAN 20 FEET ON THE HORIZONTAL SHALL HAVE AN ADDITIONAL GROUND BEFORE THE END CONNECTOR.
5. UPPER JUMPER - \*DIN TO DIN (BOTH ENDS) \*LOWER JUMPER - DIN TO DIN (BOTH ENDS)

NOTES:

1. ALL MATERIAL ON THE ABOVE TABLE SHALL BE PROCURED BY CRICKET.
2. THE CONTRACTOR SHALL NOT EXCEED THE CABLE LENGTHS SPECIFIED BY R.F. ENGINEER WITHOUT RF ENGINEERING APPROVAL
3. COLOR CODE ALL MAIN CABLES AT THREE LOCATIONS: 1. TOP OF TOWER 2. BOTTOM OF TOWER 3. NEAR EQUIPMENT
4. ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWNTILT BRACKETS AND HEAVY DUTY CLAMPS SUPPLIED BY ANTENNA MANUFACTURER.
5. ANTENNA JUMPER WIRES SHALL NOT BE COILED.
6. PLACE COLOR CODE TAPE WITH IN 2' OF CONNECTORS AS DICTATED ON ANTENNA SECTOR SCHEMATIC.



TYPICAL ANTENNA SECTOR SCHEMATIC

**ATTACHMENT B**

**A RESOLUTION APPROVING THE MINOR MODIFICATION TO THE  
CONDITIONAL USE PERMIT FOR THE CROWN CASTLE  
TELECOMMUNICATION TOWER LOCATED AT  
625 OLD FAYETTEVILLE ROAD  
Resolution No. 11/2005-06**

WHEREAS, the Carrboro Board of Aldermen approved a Conditional Use Permit for a telecommunications tower at 625 Old Fayetteville Road on February 9, 1999; and

WHEREAS, the Town of Carrboro Land Use Ordinance requires that additional users on a tower shall constitute a minor modification to the original Conditional Use Permit; and

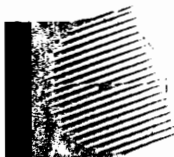
WHEREAS, the Board of Aldermen finds that the applicant has satisfied the requirements related to minor modifications for towers contained in the Land Use Ordinance.

**NOW, THEREFORE BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO:**

Section 1. The Board hereby approves the minor modification to the Crown Castle Telecommunication Tower located at 625 Old Fayetteville Road allowing Cricket Communications to install additional antennas on the tower and install additional equipment within the fenced in area at the base of the tower.

Section 2. This resolution shall become effective upon adoption.





## HARDIN & ASSOCIATES, INC.

WIRELESS BROADBAND COMMUNICATIONS

### INTERFERENCE CONTROL AND STANDARDS COMPLIANCE

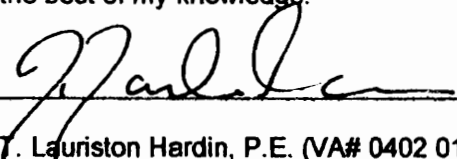
Cricket Communications ("Cricket") desires to implement a broadband wireless system at various sites in the Carrboro, NC market area. The Cricket system will utilize licensed frequencies in the PCS band as authorized by the Federal Communications Commission ("FCC") operating in the 1975 – 1980 MHz range to provide voice and data services to subscribers.

In the system implementation, Cricket will comply with all relevant engineering practices and operational requirements as mandated by the FCC Rules and Regulations applicable to the frequency band employed in the system. These include regulations regarding susceptibility to radio frequency ("RF") interference, frequency coordination requirements, general technical standards for power, antenna(s), bandwidth limitations, frequency stability, transmitter measurements and operating requirements, and other federal statutory and regulatory requirements as mandated in the Code of Federal Regulations Part 47 as relates to radio frequency interference.

Additionally, the Cricket equipment alone will not cause interference to other licensed services (e.g. broadcast television, radio and the like) operating as mandated by their associated licenses and within FCC guidelines. The operating frequency and out-of-band emission limits placed on the PCS by the FCC significantly restrict radiation into other operating frequency bands. Should interference, as defined by the applicable FCC Regulation, be found to exist due solely to the operation of Cricket's equipment, all steps deemed necessary to remove such interference will be taken by Cricket in a timely manner.

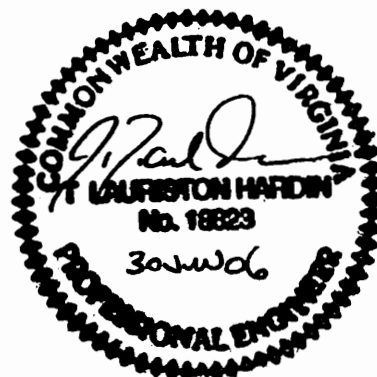
#### CERTIFICATION OF ENGINEER

I, T. Lauriston Hardin, P.E., am a Professional Engineer licensed in the Commonwealth of Virginia and my credentials are a matter of record with the Federal Communications Commission. The foregoing analysis was prepared by me or under my direct supervision. The information contained herein is true and correct to the best of my knowledge.

  
 T. Lauriston Hardin, P.E. (VA# 0402 018823)

30JW06

Date



# TOWN OF CARRBORO

## LAND USE PERMIT APPLICATION

DATE: 7-19-2006FEE: \$ 250<sup>00</sup>/<sub>100</sub>

APPLICANT: <u>Cricket Communications</u>	OWNER: <u>Southern Bell Telephone - Crown Castle Tower</u>
ADDRESS <u>750 Melrose Ave</u>	ADDRESS: <u>206 W Franklinst, Chapel Hill, NC 27514</u>
CITY/STATE/ZIP <u>Nashville, TN 37221</u>	CITY/STATE/ZIP <u>Crown Castle</u>
TELEPHONE/FAX: PHONE: <u>615-210-2828</u> FAX: <u>615-883-0094</u>	TELEPHONE/FAX: PHONE: <u>704-321-3850</u> FAX: <u>28240</u>
LEGAL RELATIONSHIP OF APPLICANT TO PROPERTY OWNER: <u>Lessee - Lessor</u>	TAX MAP(S), BLOCK(S), LOT(S): <u>PTN 9778085910</u>
PROPERTY ADDRESS: <u>625 Old Fayetteville Rd</u>	PROPOSED LAND USE & USE CLASSIFICATION: <u>Co-location of Existing Tower</u>
PRESENT LAND USE & USE CLASSIFICATION: <u>Communications Tower</u>	LOT AREA: Acres _____ Square Feet _____
ZONING DISTRICT(S) AND AREA WITHIN EACH (including Overlay Districts): <u>WM3</u>	
# OF BUILDINGS TO REMAIN	GROSS FLOOR AREA square feet
# OF BUILDINGS PROPOSED <u>0</u>	GROSS FLOOR AREA (of proposed building or proposed addition) <u>4' x 8'</u> <u>32</u> square feet

NAME OF PROJECT/DEVELOPMENT: RDU-012 Carrboro

TYPE OF REQUEST	**INFORMATION REQUESTED (Refer to Attached Key)
SUBDIV. FINAL PLAT	1, 18, 19, 21, 23, 31, 33, 34, 36
CONDITIONAL USE PERMIT (CUP)	1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 34, 35, 36
CUP MODIFICATION	SAME AS CONDITIONAL USE PERMIT (CUP)
SPECIAL USE PERMIT (SUP)	1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 34, 35, 36
SUP MODIFICATION	SAME AS SPECIAL USE PERMIT (SUP)
ZONING PERMIT (Project)	1, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 29, 30, 32, 34, 35, 36
ZONING PERMIT (Building) <i>Residential Infill &amp; Additions</i>	9, 10, 22, 24, 34, 36 (also see "Building Permit Review - Residences Only" checklist)
SIGN PERMIT	1, 10, 13, 14, 17, 20, 36
VARIANCE	4, 5, 10, 20, 29, 34, 36 Attachment A
APPEAL	4, 5, 36, Attachment B
SPECIAL EXCEPTION	1, 4, 5, 8, 10, 20, 35, Attachment C

APPLICANT: James A. [Signature]DATE: 7-19-2006OWNER: See Scanned Signature Attached

DATE: \_\_\_\_\_

**Duke University**  
**Pratt School of Engineering**  
DURHAM, NORTH CAROLINA 27708-0291

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING  
BOX 90291

TELEPHONE (919) 660-5252  
FAX (919) 660-5293  
HTTP://WWW.EE.DUKE.EDU

**Department of Electrical Engineering**  
Duke University  
Durham, N.C. 27708-0291  
email: wtj@ee.duke.edu  
(919) 660 5281

July 30, 2006

Mr. James Thomas  
Planner/Zoning Development Specialist  
Zoning Division  
Town of Carrboro  
301 West Main Street  
Carrboro, North Carolina 27510

Re: Impact of Minor Modification - adding another antenna to cell tower - on Electromagnetic Safety

Dear Mr. Thomas:

I have received your letter of 07/24/06 and the materials submitted to me for review and comment. To determine the impact on electromagnetic safety of adding Cricket Communications PCS system to present users on the tower, I have extracted the following information from the attachment that you included with your letter:

- Name and location of tower - 625 Old Fayetteville Road, Carrboro, NC.
- Height of antenna radiation center AGL - 114 feet.
- Antenna manufacturer and model number - not specified.
- User name - Cricket Communications.

- Service - PCS
- Operating frequency band - 1900 MHz (nominal).
- Number of channels per sector - 3.
- EIRP in watts per channel - 950.6.
- Vertical beamwidth between half-power (3-dB) points - not specified.

This new user (Cricket Communications) could add an estimated ground-level power density of 0.021 milliwatts per square centimeter, or 0.21 watts per square meter to the existing ground-level power density. Adding up the maximum ground-level power density from all users on the tower the total is approximately 0.58 milliwatts per square centimeter. The radiation safety guide (ANSI C95.1-1991) varies from 0.2 milliwatts per square centimeter at 300 MHz to 10 milliwatts per square centimeter at 10,000 MHz. Most of the users on the tower are centered around 2000 MHz where the safety guideline is approximately 1.1 milliwatts per square centimeter. Thus, 0.58 is getting considerably close to 1.1 milliwatts per square centimeter. While the ground-level power density produced by all transmitters on the tower would be well below approved safety guidelines, any new users or increased capacity by present users should be studied very carefully.

Sincerely,



William T. Joines  
Professor