

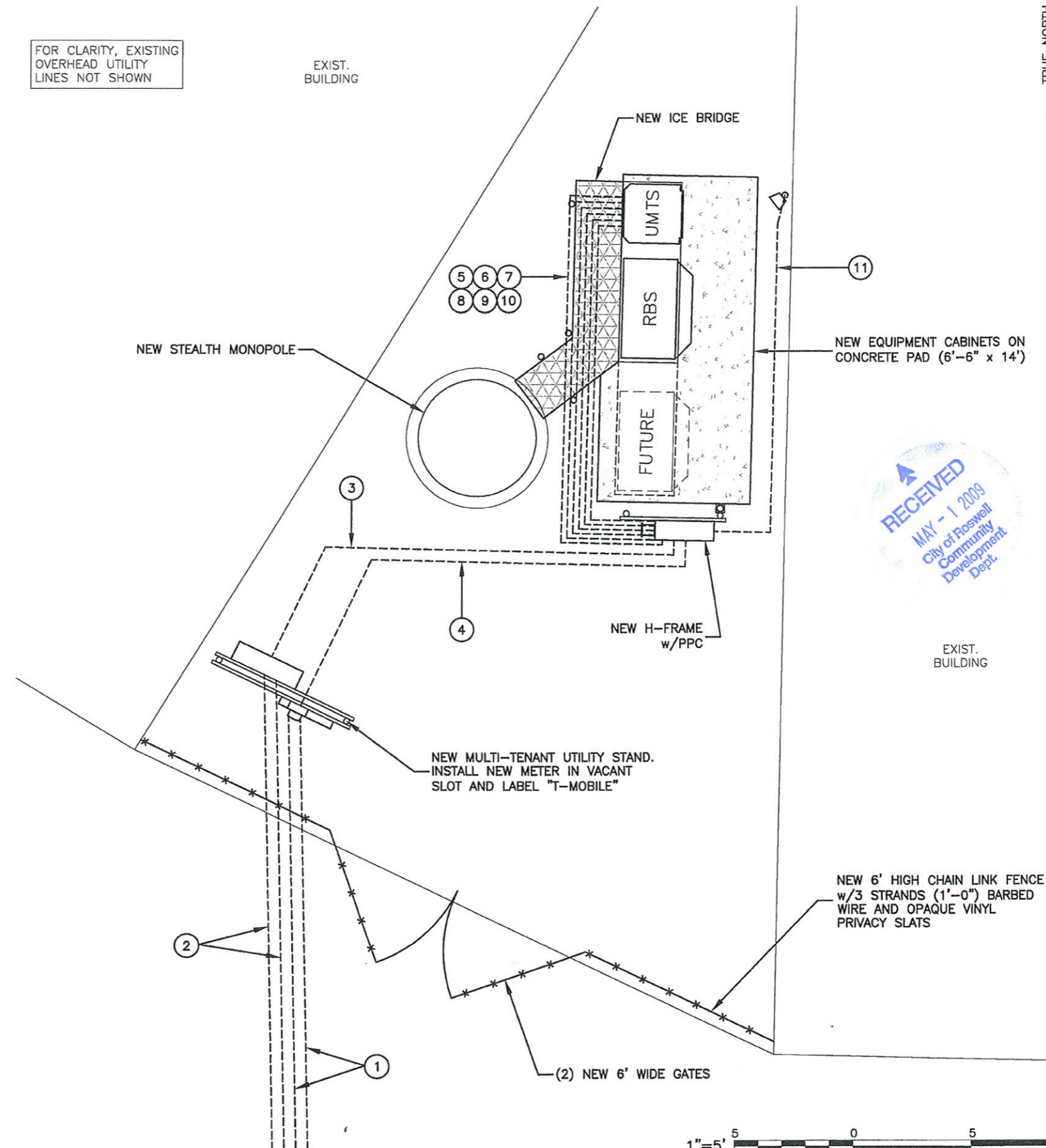
# KEY DESCRIPTION

- 1 (2) 4"Ø PVC CONDUITS w/CONDUCTORS (POWER) FROM MULTI-TENANT UTILITY STAND TO EXIST. UTILITY POLE. STUB-UP, CAP AND LABEL AS "POWER"
- 2 (2) 4"Ø PVC CONDUITS w/PULLSTRINGS (TELCO) FROM MULTI-TENANT UTILITY STAND TO EXIST. UTILITY POLE. STUB-UP, CAP AND LABEL AS "TELCO"
- 3 (1) 2"Ø PVC CONDUIT w/PULLSTRINGS (TELCO) FROM TELCO BOX TO PPC
- 4 (1) 2"Ø PVC CONDUIT w/CONDUCTORS (POWER) FROM MULTI-TENANT UTILITY STAND TO PPC  
(3) 3/0 + #4 GRD
- 5 (1) 2"Ø FLEX CONDUIT w/CONDUCTORS (POWER) FROM PPC TO RBS CABINET  
(3) #8 THHN + #6 GRD
- 6 (1) 1"Ø FLEX CONDUIT w/PULLSTRINGS (TELCO) FROM PPC TO RBS CABINET FOR ALARMS
- 7 (1) 1"Ø FLEX CONDUIT w/PULLSTRINGS (TELCO) FROM PPC TO RBS CABINET FOR T1
- 8 (1) 1"Ø FLEX CONDUIT w/PULLSTRINGS (TELCO) FROM PPC TO RBS CABINET FOR TELCO
- 9 (1) 2"Ø FLEX CONDUIT w/CONDUCTORS (POWER) FROM PPC TO UMTS CABINET  
(3) #8 THHN + #6 GRD
- 10 (1) 1"Ø FLEX CONDUIT w/PULLSTRINGS (TELCO) FROM PPC TO UMTS CABINET
- 11 (1) 3/4"Ø RIGID CONDUIT w/CONDUCTORS (POWER) FROM PPC TO AREA LIGHT  
(2) #12 + #8 GRD

CONTRACTOR TO SAW CUT AND REMOVE PAVEMENT AS REQUIRED FOR INSTALLATION OF UTILITIES. BACKFILL TRENCH PER UTILITY COMPANY STANDARDS AND REPLACE SURFACE TO MATCH EXISTING.

ALL SURFACES TO BE RESTORED TO ORIGINAL OR BETTER CONDITION FOLLOWING INSTALLATION OF EQUIPMENT, UTILITIES AND GROUNDING

FOR CLARITY, EXISTING OVERHEAD UTILITY LINES NOT SHOWN



APPLICANT/OWNER

## VERTICALITY ROSWELL, LLC

111 TOWNE LAKE PARKWAY  
SUITE 110  
WOODSTOCK, GA 30188  
770-329-2878

PREPARED BY:

## WALKER ENGINEERING INCORPORATED

8451 DUNWOODY PLACE  
SANDY SPRINGS, GA 30350  
PHONE: 770-641-7306  
FAX: 770-587-2196

REVISIONS			
REV	DATE	DESCRIPTION	BY
A	01/23/09	ISSUED FOR REVIEW	MJJ
B	01/29/09	RE-ISSUED FOR REVIEW	MJJ
0	01/30/09	ISSUED FOR CONSTRUCTION	MJJ
1	02/27/09	REVISED FENCE	MJJ
2	03/31/09	REMOVED GENERATOR	MJJ
3	04/29/09	REVISED DRYWALL	MJJ

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PROJECT LOCATION

### VILLAGE FESTIVAL

10930 CROSSVILLE ROAD  
ROSWELL, GA 30075  
FULTON COUNTY

DRAWN BY: MJJ

CHECKED BY: MJJ

DATE: 01/23/09

JOB NO.: 0901-0002T

SITE NO.: -

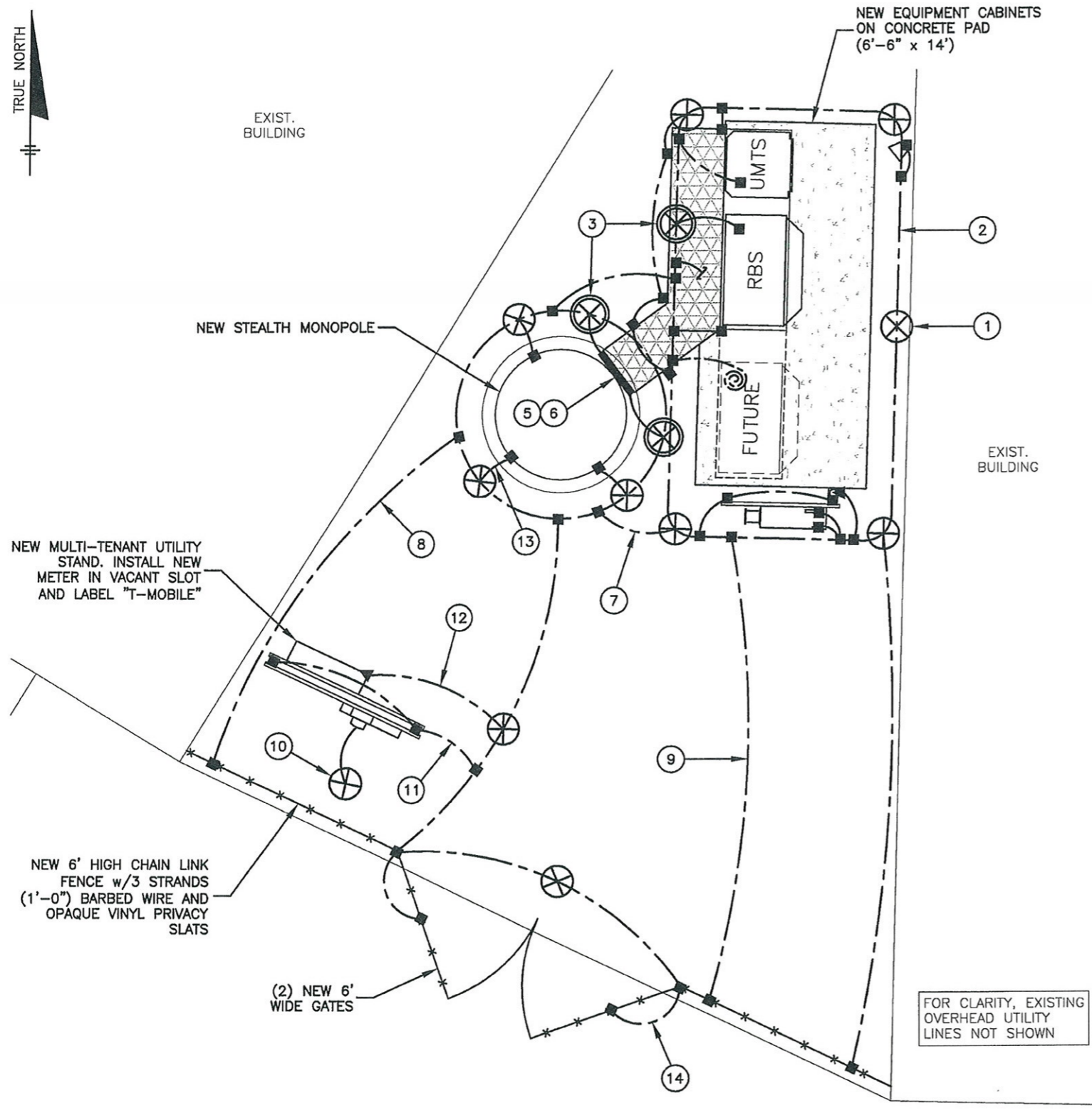
DRAWING DESCRIPTION:

## PARTIAL UTILITY PLAN

DRAWING NUMBER:

# E1.1





GROUNDING LEGEND:	
SYMBOL	DESCRIPTION
	5/8" x 10' COPPER CLAD GROUND ROD
	CADWELD CONNECTION
	BOLTED 2-HOLE GROUND LUG
	COPPER GROUND CONDUCTOR
	TEST WELL WITH GROUND ROD

**GROUNDING NOTES:**

- 5/8"Ø x 10'-0" LONG COPPER CLAD STEEL GROUND ROD. MAXIMUM SPACING IS 10'-0" O.C. TOP OF GROUND ROD SHALL BE 2'-6" (MIN.) BELOW BASE OF GRAVEL. ALL CONNECTIONS BELOW GRADE TO GROUND WIRES SHALL BE EXOTHERMIC (CADWELD OR EQUIVALENT).
- EXTERNAL GROUND RINGS SHALL BE #2 BARE TINNED SOLID COPPER WIRE BURIED 2'-6" (MIN.) BELOW BASE OF GRAVEL. ALL CONNECTIONS TO GROUND RING AT GROUND RODS SHALL BE EXOTHERMIC (CADWELD OR EQUIVALENT). GROUND RING SHALL BE LOCATED 2'-0" (MIN.) FROM OUTSIDE EDGE OF CABINET AND TOWER FOUNDATIONS.
- TEST POINTS FOR GROUND RESISTANCE SHALL BE THE TOWER GROUND LEAD AND THE EQUIPMENT GROUND LEAD. USE THE THREE-TERMINAL TEST, FALL OF POTENTIAL METHOD AND RECORD ON GROUND LOG SHEET. GROUND TEST POINTS SHALL BE BELOW GROUND AND SHALL BE LOCATED IN A COVERED WELL (SIDES OF WELL SHALL BE CONSTRUCTED OF NON-METALLIC MATERIALS).
- THE FOLLOWING PARTIAL LIST OF ITEMS SHALL BE CONNECTED TO THE EXTERNAL GROUNDING SYSTEM (IF APPLICABLE):
  - ANY METAL PLATFORM WITHIN SIX FEET OF THE EXTERNAL GROUND RING OR WITHIN SIX FEET OF ANY GROUNDED OBJECT.
  - EXISTING GROUNDING SYSTEM.
  - METAL CABINET PARTS NOT GROUNDED BY THE INTERNAL GROUND RING.
  - PROPANE TANK (USE GROUNDING CLAMP, NOT EXOTHERMIC WELD).
  - ANY SIGNIFICANT METAL OBJECT WITHIN SIX FEET OF THE EXTERNAL GROUNDING SYSTEM OR ANY OTHER GROUNDED OBJECT.
  - EXTERIOR ICE BRIDGE SHIELDS.
  - GENERATOR AND SUPPORT SKID OR BASE AND SWITCH.
  - ALL FENCE POSTS WITHIN SIX FEET OF THE EQUIPMENT.
- THE OUTER CONDUCTOR OF THE COAX CABLES AND WAVEGUIDE SHALL BE GROUNDED TO THE TOWER GROUND BAR:
  - VERTICAL RUNS THAT ARE 200 FEET OR LESS REQUIRE A GROUNDING KIT INSTALLED AT THE TOP AND BOTTOM.
  - VERTICAL RUNS THAT ARE GREATER THAN 200 FEET REQUIRE A GROUNDING KIT INSTALLED (IN ADDITION TO THE ABOVE) FROM THE TOP EVERY 150 FEET TOWARDS THE GROUND UNTIL THE DISTANCE IS LESS THAN 150 FEET FROM THE GROUND.
  - COAX CABLE GROUNDING KITS INSTALLED BEFORE ENTERING THE EQUIPMENT SHALL BE GROUNDED TO THE EXTERNAL BUSS BAR. THIS CONNECTION SHALL LEND ITSELF TO A VERTICAL DROP.
  - TOWER PAINT MUST BE REMOVED BEFORE ATTACHMENT OF GROUND BAR AND COATED AFTER ATTACHMENT WITH AN ANTIOXIDANT COMPOUND (NO-OX FOR ALL FIELD-DRILLED HOLES, FIELD CUT ENDS AND FIELD WELDS EQUAL). APPLY (2) TWO COATS OF ZRC. GALVILITE GALVANIZING REPAIR COMPOUND OR APPROVED EQUIVALENT. TOUCH-UP AND REPAIR OF GALVANIZED SURFACES SHALL BE PERFORMED PER THE REQUIREMENTS OF ASTM A-780.
- TOWER-MOUNTED GROUND BARS (BOTH TOP AND BOTTOM) SHALL BE MOUNTED DIAGONALLY TO THE TOWER STRUCTURE FOR THE COAX CABLE GROUNDING KITS. ISOLATE BOTTOM GROUND BAR FROM THE STRUCTURE.
- CONNECT EQUIPMENT GROUND RING TO TOWER GROUND RING. CADWELD IN (2) TWO PLACES.
- CONNECT TOWER GROUND RING TO NEW FENCE.
- CONNECT EQUIPMENT GROUND RING TO NEW FENCE (TYP. x 2).
- BOND NEW METER AND DISCONNECT TO SERVICE ENTRANCE GROUND ROD.
- BOND NEW H-FRAME TO EQUIPMENT OR TOWER GROUND RING.
- BOND NEW TELCO BOX TO GROUND RING.
- BOND TOWER TO TOWER GROUND RING AT GROUND ROD (3 PLACES).
- #4 GATE JUMPER (TYP. x 2).

APPLICANT/OWNER

**VERTICALITY ROSWELL, LLC**

111 TOWNE LAKE PARKWAY  
SUITE 110  
WOODSTOCK, GA 30188  
770-329-2878

PREPARED BY:

**WALKER ENGINEERING INCORPORATED**

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0	01/30/09	ISSUED FOR CONSTRUCTION	MJJ
1	02/27/09	MOVED TOWER	MJJ
2	03/31/09	REMOVED GENERATOR	MJJ
3	04/29/09	REVISED LAYOUT	MJJ

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PROJECT LOCATION

**VILLAGE FESTIVAL**  
10930 CROSSVILLE ROAD  
ROSWELL, GA 30075  
FULTON COUNTY

DRAWN BY: MJJ

CHECKED BY: MJJ

DATE: 01/23/09

JOB NO.: 0901-0002T

SITE NO.: -

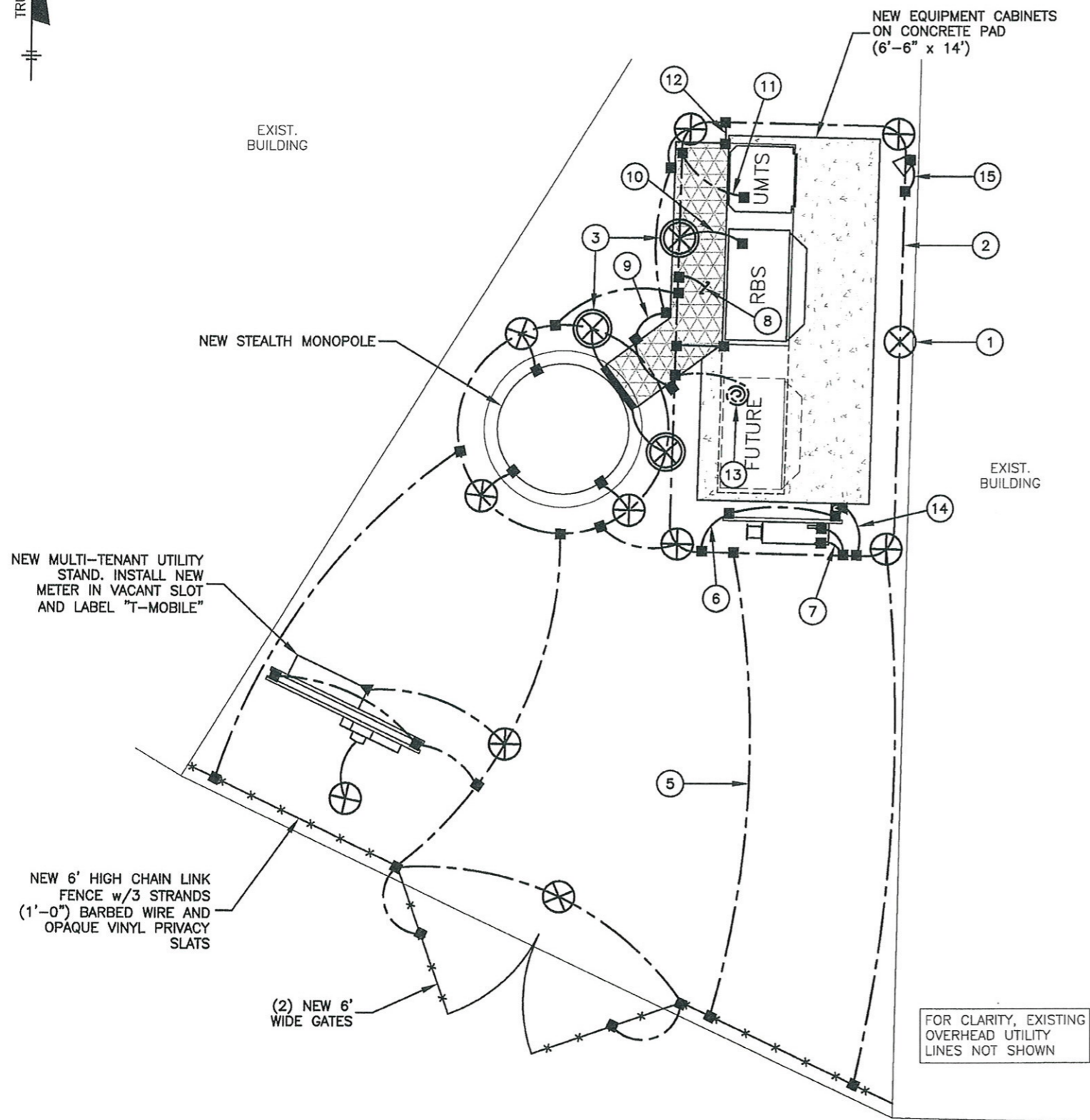
DRAWING DESCRIPTION:

**SITE GROUNDING PLAN**

DRAWING NUMBER:

**E2**

RECEIVED  
MAY - 1 2009  
City of Roswell  
Community Development  
Dept.



1"=5' 5 0 5 10

#### GROUNDING NOTES:

- ① 5/8"Ø x 10'-0" LONG COPPER CLAD STEEL GROUND ROD. MAXIMUM SPACING IS 10'-0" O.C. TOP OF GROUND ROD SHALL BE 2'-6" (MIN.) BELOW BASE OF GRAVEL. ALL CONNECTIONS BELOW GRADE TO GROUND WIRES SHALL BE EXOTHERMIC (CADWELD OR EQUIVALENT).
- ② EXTERNAL GROUND RINGS SHALL BE #2 BARE TINNED SOLID COPPER WIRE BURIED 2'-6" (MIN.) BELOW BASE OF GRAVEL. ALL CONNECTIONS TO GROUND RING AT GROUND RODS SHALL BE EXOTHERMIC (CADWELD OR EQUIVALENT). GROUND RING SHALL BE LOCATED 2'-0" (MIN.) FROM OUTSIDE EDGE OF CABINET AND TOWER FOUNDATIONS.
- ③ TEST POINTS FOR GROUND RESISTANCE SHALL BE THE TOWER GROUND LEAD AND THE EQUIPMENT GROUND LEAD. USE THE THREE-TERMINAL TEST, FALL OF POTENTIAL METHOD AND RECORD ON GROUND LOG SHEET. GROUND TEST POINTS SHALL BE BELOW GROUND AND SHALL BE LOCATED IN A COVERED WELL (SIDES OF WELL SHALL BE CONSTRUCTED OF NON-METALLIC MATERIALS).
- ④ THE FOLLOWING PARTIAL LIST OF ITEMS SHALL BE CONNECTED TO THE EXTERNAL GROUNDING SYSTEM (IF APPLICABLE):
  - A. ANY METAL PLATFORM WITHIN SIX FEET OF THE EXTERNAL GROUND RING OR WITHIN SIX FEET OF ANY GROUNDED OBJECT.
  - B. EXISTING GROUNDING SYSTEM.
  - C. METAL CABINET PARTS NOT GROUNDED BY THE INTERNAL GROUND RING.
  - D. PROPANE TANK (USE GROUNDING CLAMP, NOT EXOTHERMIC WELD).
  - E. ANY SIGNIFICANT METAL OBJECT WITHIN SIX FEET OF THE EXTERNAL GROUNDING SYSTEM OR ANY OTHER GROUNDED OBJECT.
  - F. EXTERIOR ICE BRIDGE SHIELDS.
  - G. GENERATOR AND SUPPORT SKID OR BASE AND SWITCH.
  - H. ALL FENCE POSTS WITHIN SIX FEET OF THE EQUIPMENT.
- ⑤ CONNECT EQUIPMENT GROUND RING TO NEW FENCE (TYP. x 2).
- ⑥ BOND NEW H-FRAME TO EQUIPMENT GROUND RING.
- ⑦ BOND PPC CABINET GROUND BAR AND PPC LOAD CENTER TO EQUIPMENT GROUND RING.
- ⑧ #2 AWG BARE TINNED SOLID COPPER WIRE FROM COAX TO GROUND RING.
- ⑨ #2 AWG BARE TINNED SOLID COPPER WIRE TO ICE BRIDGE POSTS.
- ⑩ #2 AWG BARE TINNED SOLID COPPER WIRE FROM RBS CABINET TO EQUIPMENT GROUND RING.
- ⑪ #2 AWG BARE TINNED SOLID COPPER WIRE FROM UMTS CABINET TO EQUIPMENT GROUND RING.
- ⑫ BOND PLINTH TO EQUIPMENT GROUND RING (2 PLACES).
- ⑬ PROVIDE 4' PIGTAIL FOR FUTURE RBS CABINET.
- ⑭ #2 GREEN INSULATED GROUND WIRE FROM DOWNLINK ANTENNA TO GROUND RING.
- ⑮ #2 AWG BARE TINNED SOLID COPPER WIRE TO AREA LIGHT.

ALL SURFACES TO BE RESTORED TO ORIGINAL OR BETTER CONDITION FOLLOWING INSTALLATION OF EQUIPMENT, UTILITIES AND GROUNDING

#### GROUNDING LEGEND:

SYMBOL	DESCRIPTION
⊗	5/8" x 10' COPPER CLAD GROUND ROD
■	CADWELD CONNECTION
▲	BOLTED 2-HOLE GROUND LUG
---	COPPER GROUND CONDUCTOR
⊗	TEST WELL WITH GROUND ROD

APPLICANT/OWNER

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SUITE 110  
WOODSTOCK, GA 30188  
770-329-2878

PREPARED BY:

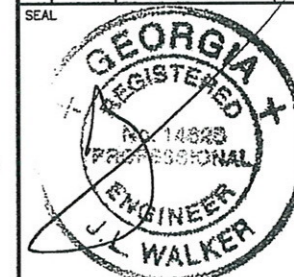
## WALKER ENGINEERING INCORPORATED

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PHONE: 770-641-7306  
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ROSWELL, GA 30075  
FULTON COUNTY

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SITE NO.: -

DRAWING DESCRIPTION:
















PARTIAL  
GROUNDING  
PLAN

DRAWING NUMBER:

E2.1



### ELECTRICAL SYMBOLS

	CHEMICAL GROUND ROD
	GROUND ROD
	CADWELD TYPE CONNECTION
	COMPRESSION TYPE CONNECTION
	DISCONNECT SWITCH
	METER
	CIRCUIT BREAKER
	GENERATOR
	GENERATOR RECEPTACLE
	AUTOMATIC TRANSFER SWITCH
	MANUAL TRANSFER SWITCH
	GROUNDING WIRE
	INDICATES CODED NUMBER
	REPRESENTS DETAIL NUMBER
	REF. DRAWING NUMBER

### SYMBOLS & ABBREVIATIONS

### ABBREVIATIONS

AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BTS	BASE TRANSMISSION SYSTEM
CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
DIA	DIAMETER
DWG	DRAWING
EMT	ELECTRICAL METALLIC TUBING
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
I	WALKING BEAM INTERLOCK
IGR	INTERIOR GROUND RING (HALO)
MIGB	MASTER ISOLATED GROUND BAR
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
RGS	RIGID GALVANIZED STEEL
RWY	RACEWAY
SS	STAINLESS STEEL
TYP	TYPICAL
AHJ	AUTHORITY HAVING JURISDICTION

### UTILITY NOTES:

1. THE CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND ENSURE ALL ELECTRICAL EQUIPMENT MEETS OR EXCEEDS AVAILABLE FAULT CURRENT.
2. GENERATOR AND INTEGRAL AUTOMATIC TRANSFER SWITCH PROVIDED BY OTHERS, INSTALLED AND CONNECTED BY CONTRACTOR (IF APPLICABLE). COORDINATE EXACT LOCATION OF CONDUIT STUB-UPS WITH CONSTRUCTION MANAGER.
3. REFER TO DWG. E5 FOR ALL CONDUCTOR SIZES.
4. COORDINATE EXACT LOCATION OF ALL UTILITY CONDUIT STUB-UPS WITH UTILITY COMPANIES AND CONSTRUCTION MANAGER.
5. THE CONTRACTOR SHALL ROUTE CONDUIT TO EXISTING UTILITY SERVICE (IF APPLICABLE). STUB-UP 6" ABOVE FINISHED GRADE, CAP AND LABEL AT DEMARC. COORDINATE CONDUIT ROUTING WITH UTILITY COMPANY.
6. THE CONTRACTOR SHALL VERIFY THE EQUIPMENT WIRING REQUIREMENTS WITH THE MANUFACTURER.
7. PROVIDE AND INSTALL WARNING TAPE 12" BELOW GRADE FOR UTILITY SERVICE CONDUITS.
8. THE CONTRACTOR IS TO PAY ALL FEES FOR SERVICES AS REQUIRED.
9. ENCASE CONDUITS IN CONCRETE WHERE CROSSING ROADS, DRIVEWAYS, ETC.
10. COORDINATE WITH THE UTILITY COMPANIES PRIOR TO DITCHING AND INSTALLATION OF UNDERGROUND CONDUITS FOR EXACT LOCATION AND INSTALLATION REQUIREMENTS.
11. THE INCOMING ELECTRICAL SERVICE SHALL BE INSPECTED BY THE AUTHORITY HAVING JURISDICTION AND A CERTIFICATE OF SUCH INSPECTION SHALL BE FURNISHED TO VERTICALITY ROSWELL, LLC WITH A COPY FORWARDED TO THAT POWER COMPANY.
12. COORDINATE METER SOCKET REQUIREMENTS WITH CONSTRUCTION MANAGER AND POWER COMPANY.
13. THIS SITE INCLUDES EXISTING CRITICAL UNDERGROUND ELECTRIC, TELEPHONE AND OTHER SERVICES IN THE VICINITY OF THE NEW UNDERGROUND SERVICES AND EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID SERVICE DISRUPTION TO THESE FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT THE UTILITY COMPANIES AND ALL OTHER APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE. ALL EXCAVATION IN THE IMMEDIATE VICINITY OF EXISTING UTILITIES SHALL BE PERFORMED BY HAND.
14. ALL WIRING SHALL BE COPPER. ALUMINUM WIRE IS NOT PERMITTED.
15. ALL ELECTRICAL WORK SHALL CONFORM TO STATE AND LOCAL APPLICABLE CODES AND THE NEC, LATEST EDITION.

### GENERAL GROUNDING NOTES:

1. SITE GROUNDING SHALL COMPLY WITH NEC ARTICLE 250 REQUIREMENTS, VERTICALITY AND T-MOBILE SOUTH, LLC GROUNDING STANDARDS, LATEST EDITION AND VERTICALITY AND T-MOBILE SOUTH, LLC GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT, THEY SHALL GOVERN.
2. ALL GROUND WIRE SHALL BE #2 AWG BARE TINNED SOLID COPPER, UNLESS INDICATED OTHERWISE.
3. GROUND RODS SHALL BE 5/8"Ø x 10' LONG COPPER CLAD STEEL.

### AT&T GROUNDING NOTES:

1. CELL PROVIDER SHALL VALIDATE SITE GROUNDING OF 5 OHMS OR LESS.
2. ONCE VALIDATED, THE CELL PROVIDER SHALL HAVE A LABEL PLACED AT THE GROUND BUSS BAR ON THE H-FRAME, WHICH STATES THE SITE IS CERTIFIED AND READY FOR TELCO SERVICE TO BE INSTALLED. PROVIDE A CONTACT NAME AND PHONE NUMBER SHOULD ANY TECHNICAL QUESTIONS ARISE.
3. AT&T's CABLE, NETWORK INTERFACE UNIT AND PRIMARY PROTECTOR SHALL BE GROUNDED TO THE BUILDING OR STRUCTURE GROUNDING ELECTRODE SYSTEM.
4. PERMANENT COMMERCIAL POWER, WHEN PROVIDED, WILL BE GROUNDED TO THE BUILDING OR STRUCTURE GROUNDING ELECTRODE SYSTEM PER NEC ARTICLE 250.
5. ONCE COMMERCIAL POWER IS BROUGHT TO SITE, THE MGN CONNECTION WILL BE MADE TO METER BOX THAT HAS ALREADY BEEN CONNECTED TO SITE GROUND ELECTRODES.
6. AC PROVIDER, HDSL MOUNTS, CABLE TERMINATIONS AND CELL EQUIPMENT WILL ALL BE CONNECTED TO THE SAME GROUND SYSTEM.

APPLICANT/OWNER

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SEAL



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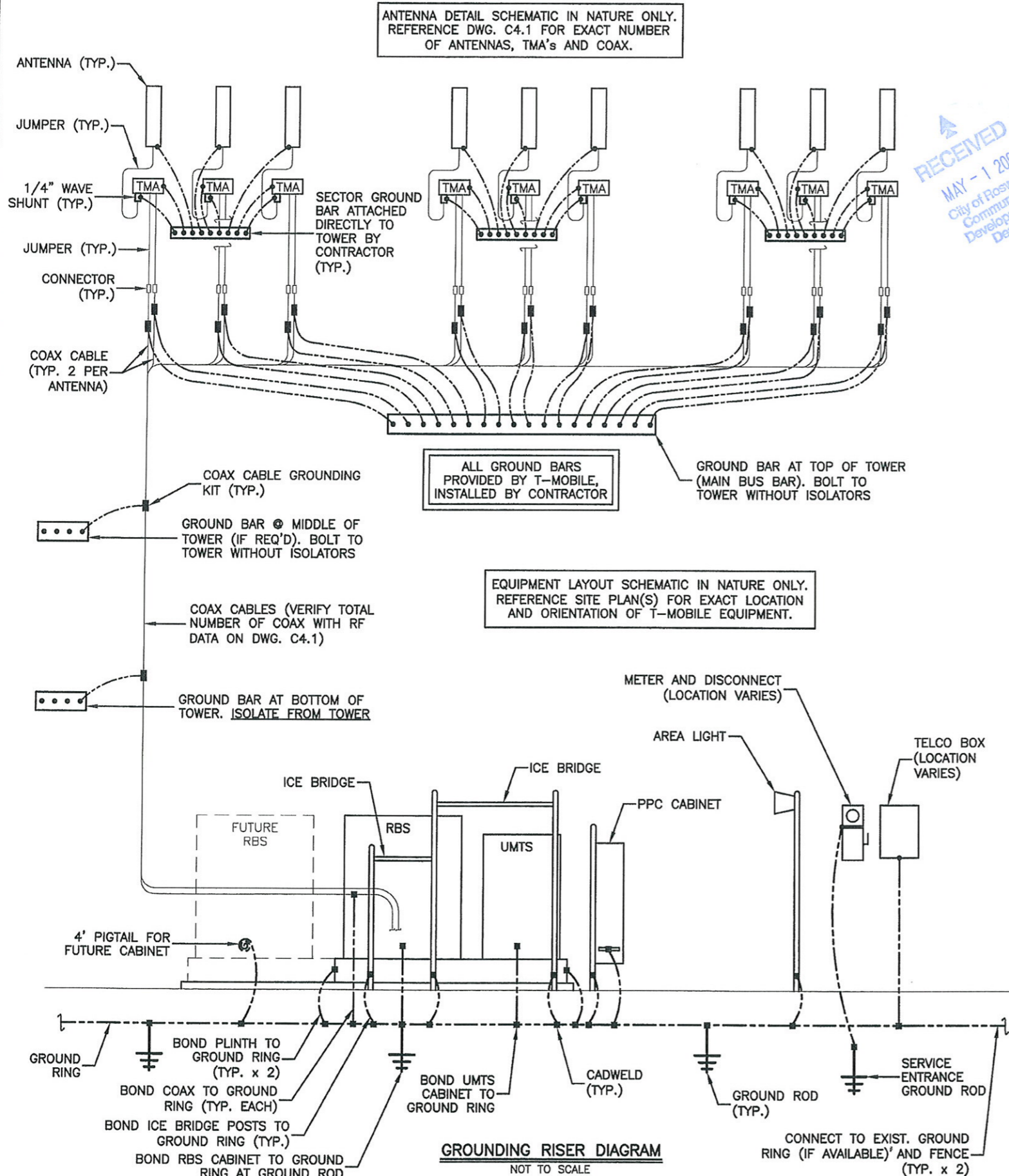
SITE NO.: -

DRAWING DESCRIPTION:  
ELECTRICAL  
NOTES &  
LEGEND

DRAWING NUMBER:

E3

RECEIVED  
MAY - 1 2009  
City of Roswell  
Community  
Development  
Dept.



# GENERAL GROUNDING NOTES:

- SITE GROUNDING SHALL COMPLY WITH VERTICALITY AND T-MOBILE GROUNDING STANDARDS, LATEST EDITION AND GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND/OR LOCAL GROUNDING CODES ARE MORE STRINGENT, THEY SHALL GOVERN. GROUNDING SHALL BE COMPLETED BEFORE ERECTION OF THE TOWER.
- GROUND RODS:**
  - 5/8"  $\phi$  x 10'-0" LONG COPPER CLAD STEEL
  - MAXIMUM SPACING: 10' O.C.
  - TOP SHALL BE 2'-6" (MIN.) BELOW BASE OF GRAVEL
- GROUND CONNECTIONS:**
  - #2 AWG BARE TINNED SOLID COPPER UNLESS INDICATED OTHERWISE.
  - IF DIRECTION OF CONDUCTOR CHANGES, CHANGE SHALL BE GRADUAL.
  - IF CONDUCTOR PASSES THROUGH CONCRETE PAD, ENCASE IN SEAL-TIGHT SLEEVE.
  - GROUND RINGS SHALL BE BURIED 2'-6" (MIN.) BELOW BASE OF GRAVEL AND BE LOCATED 2'-0" (MIN.) FROM OUTSIDE EDGE OF CABINET AND TOWER FOUNDATIONS AND OTHER SITE OBJECTS.
- GROUND CONNECTIONS:**
  - ALL CONNECTIONS SHALL BE EXOTHERMIC (CADWELD OR EQUIVALENT) UNLESS INDICATED OTHERWISE.
  - ALL MATERIALS USED SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
  - ALL CONNECTIONS TO GROUND RING SHALL BE CADWELDED, UNLESS INDICATED OTHERWISE.
- THE FOLLOWING PARTIAL LIST OF ITEMS SHALL BE CONNECTED TO THE EXTERNAL GROUNDING SYSTEM (IF APPLICABLE):
  - ANY METAL PLATFORM WITHIN SIX FEET OF THE EXTERNAL GROUND RING OR WITHIN SIX FEET OF ANY GROUNDED OBJECT.
  - EXISTING GROUNDING SYSTEM.
  - METAL CABINET PARTS NOT GROUNDED BY THE INTERNAL GROUND RING.
  - PROPANE TANK.
  - ANY SIGNIFICANT METAL OBJECT WITHIN SIX FEET OF THE EXTERNAL GROUNDING SYSTEM OR ANY OTHER GROUNDED OBJECT.
  - EXTERIOR ICE BRIDGE SHIELDS.
  - GENERATOR AND SUPPORT SKID OR BASE AND SWITCH.
  - ALL FENCE POSTS WITHIN SIX FEET OF THE EQUIPMENT.
- THE OUTER CONDUCTOR OF THE COAX CABLES AND WAVEGUIDE SHALL BE GROUNDED TO THE TOWER GROUND BAR:
  - VERTICAL RUNS THAT ARE 200 FEET OR LESS REQUIRE A GROUNDING KIT INSTALLED AT THE TOP AND BOTTOM.
  - VERTICAL RUNS THAT ARE GREATER THAN 200 FEET REQUIRE A GROUNDING KIT INSTALLED (IN ADDITION TO THE ABOVE) FROM THE TOP EVERY 150 FEET TOWARDS THE GROUND UNTIL THE DISTANCE IS LESS THAN 150 FEET FROM THE GROUND.
  - SURGE ARRESTOR IS PROVIDED BY T-MOBILE AND INSTALLED BY CONTRACTOR. CONTRACTOR SHALL MAKE ALL CONNECTIONS REQUIRED FOR INSTALLATION.
  - ALL GROUNDING KITS PROVIDED BY T-MOBILE AND INSTALLED BY CONTRACTOR.
- INSTALLATION AND TESTING:**
  - CONTRACTOR SHALL NOTIFY CONSTRUCTION MANAGER IMMEDIATELY IF THERE ARE DIFFICULTIES INSTALLING THE GROUNDING SYSTEM DUE TO FIELD CONDITIONS.
  - CONTRACTOR SHALL NOT COVER UP GROUND RING AND CONNECTIONS UNTIL AN INSPECTION HAS BEEN PERFORMED. COORDINATE INSPECTION WITH CONSTRUCTION MANAGER.
  - PROVIDE TESTING OF GROUNDING SYSTEM AS DIRECTED BY CONSTRUCTION MANAGER.
- THE MAXIMUM ALLOWABLE RESISTANCE READING SHALL BE 5 OHMS TO GROUND. IF THE RESISTANCE OF THE ENTIRE GROUNDING SYSTEM AS MEASURED AT THE MAIN GROUND TEST WELL EXCEEDS 5 OHMS, THE ELECTRICAL CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL BE NOTIFIED SO THAT ADDITIONAL GROUND LOCATIONS CAN BE UTILIZED.
- ALL ABOVE-GROUND CONNECTIONS SHALL BE ENCASED IN 3/4"  $\phi$  FLEXIBLE CONDUIT (SEAL-TIGHT OR SIMILAR).
- ALL GROUND RUNS ON TOWER SHALL BE ROUTED ON INSIDE FACE OF WAVEGUIDE LADDER.
- BACKFILL TRENCHES FOR GROUND RING WITH SITE SOIL OR #57 STONE. CONTRACTOR SHALL OBTAIN APPROVAL FOR BACKFILL MATERIALS TO BE USED FROM CONSTRUCTION MANAGER.
- CONTRACTOR SHALL PROVIDE STAINLESS STEEL FLAT AND LOCK WASHERS AS REQUIRED FOR COMPLETE INSTALLATION OF GROUND LEADS AT GROUND BARS.

APPLICANT/OWNER

## VERTICALITY ROSWELL, LLC

111 TOWNE LAKE PARKWAY  
SUITE 110  
WOODSTOCK, GA 30188  
770-329-2878

PREPARED BY:

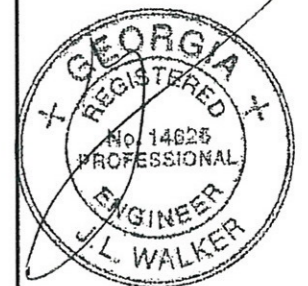
## WALKER ENGINEERING INCORPORATED

8451 DUNWOODY PLACE  
SANDY SPRINGS, GA 30350  
PHONE: 770-641-7306  
FAX: 770-587-2196

### REVISIONS

REV	DATE	DESCRIPTION	BY
A	01/23/09	ISSUED FOR REVIEW	MJJ
B	01/29/09	RE-ISSUED FOR REVIEW	MJJ
C	01/30/09	ISSUED FOR CONSTRUCTION	MJJ
1	02/27/09	ADDED NOTE	MJJ
2	03/31/09	REVISED DETAIL	MJJ

SEAL



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PROJECT LOCATION

VILLAGE FESTIVAL  
10930 CROSSVILLE ROAD  
ROSWELL, GA 30075  
FULTON COUNTY

DRAWN BY: MJJ

CHECKED BY: MJJ

DATE: 01/23/09

JOB NO.: 0901-0002T

SITE NO.: -

DRAWING DESCRIPTION:

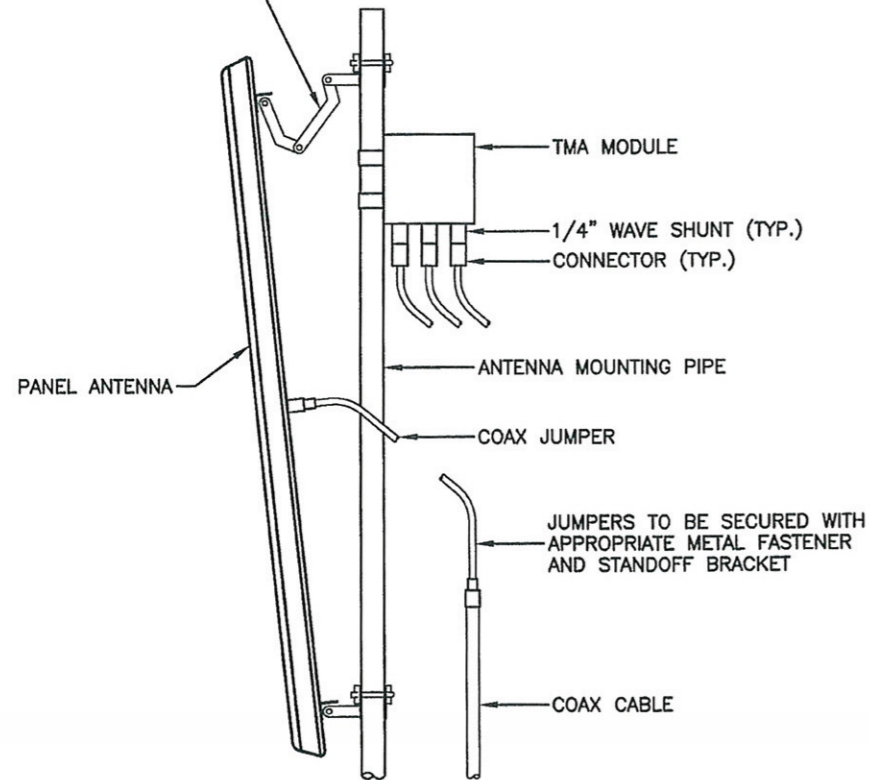
GROUNDING DIAGRAM

DRAWING NUMBER:

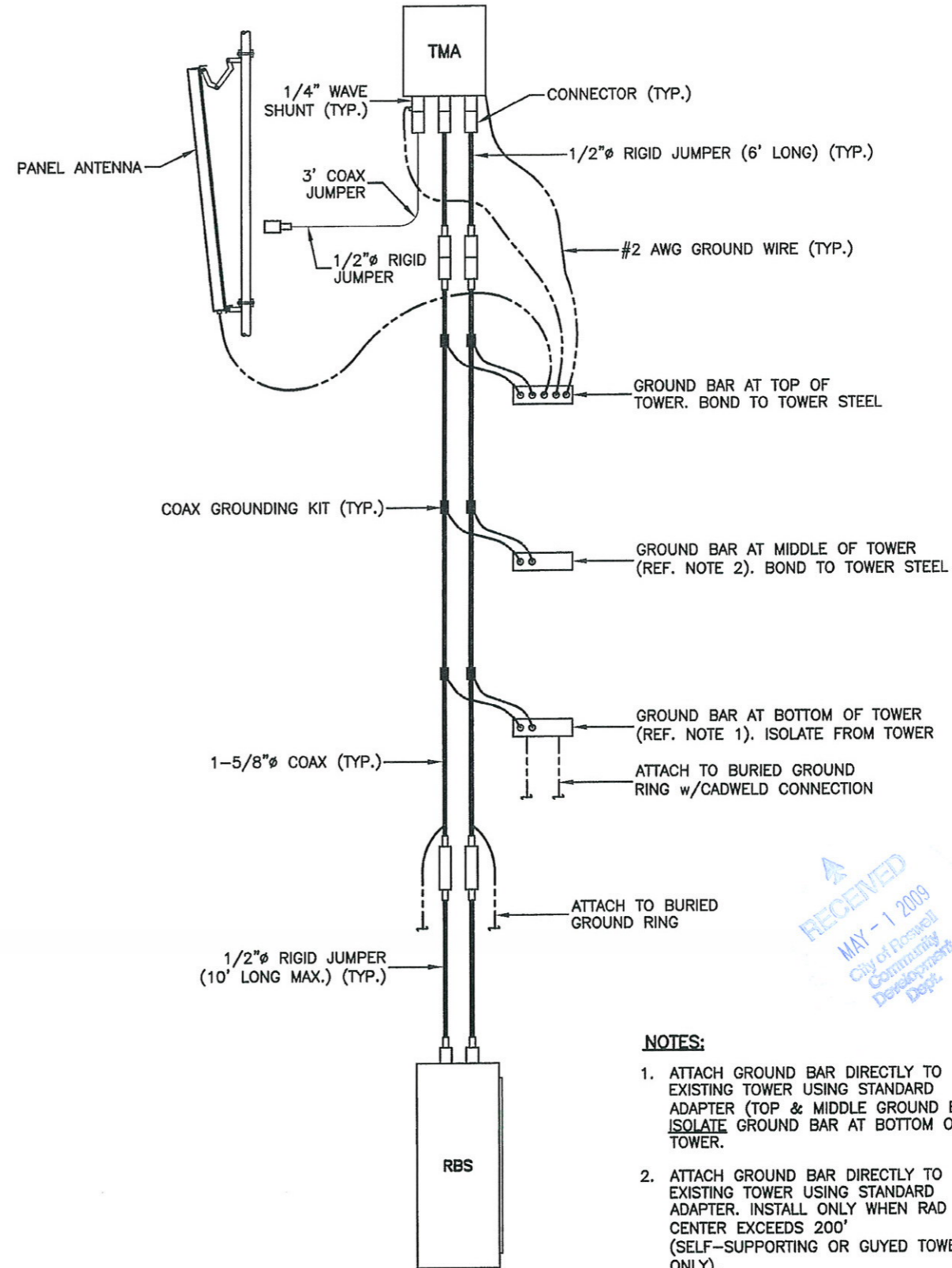
E3.1

ANTENNA DETAIL SCHEMATIC IN NATURE ONLY.  
REFERENCE DWG. C4.1 FOR EXACT NUMBER  
OF ANTENNAS, TMA's AND COAX.

DOWNTILT ASSEMBLY (REQ'D  
FOR ALL PANEL ANTENNAS)



**BACK FEED ANTENNA MOUNT DETAIL (TYP.)**  
NOT TO SCALE



**NOTES:**

1. ATTACH GROUND BAR DIRECTLY TO EXISTING TOWER USING STANDARD ADAPTER (TOP & MIDDLE GROUND BARS). ISOLATE GROUND BAR AT BOTTOM OF TOWER.
2. ATTACH GROUND BAR DIRECTLY TO EXISTING TOWER USING STANDARD ADAPTER. INSTALL ONLY WHEN RAD CENTER EXCEEDS 200' (SELF-SUPPORTING OR GUYED TOWERS ONLY).

**ANTENNA CABLE GROUNDING SCHEMATIC**  
NOT TO SCALE

APPLICANT/OWNER

**VERTICALITY  
ROSWELL, LLC**

111 TOWNE LAKE PARKWAY  
SUITE 110  
WOODSTOCK, GA 30188  
770-329-2878

PREPARED BY:

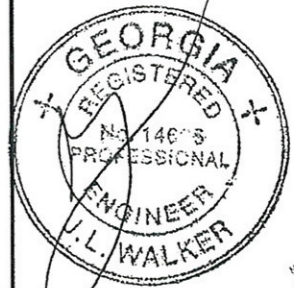
**WALKER  
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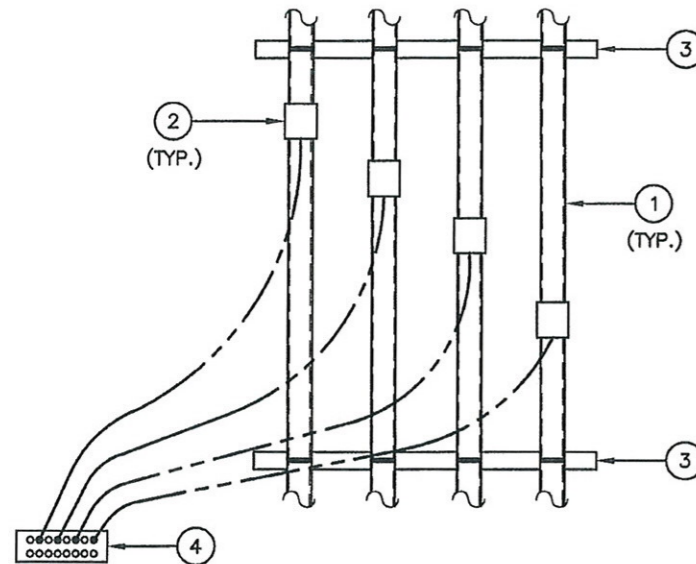
SITE NO.: -

DRAWING DESCRIPTION:

**ANTENNA  
GROUNDING  
SCHEMATIC**

DRAWING NUMBER:

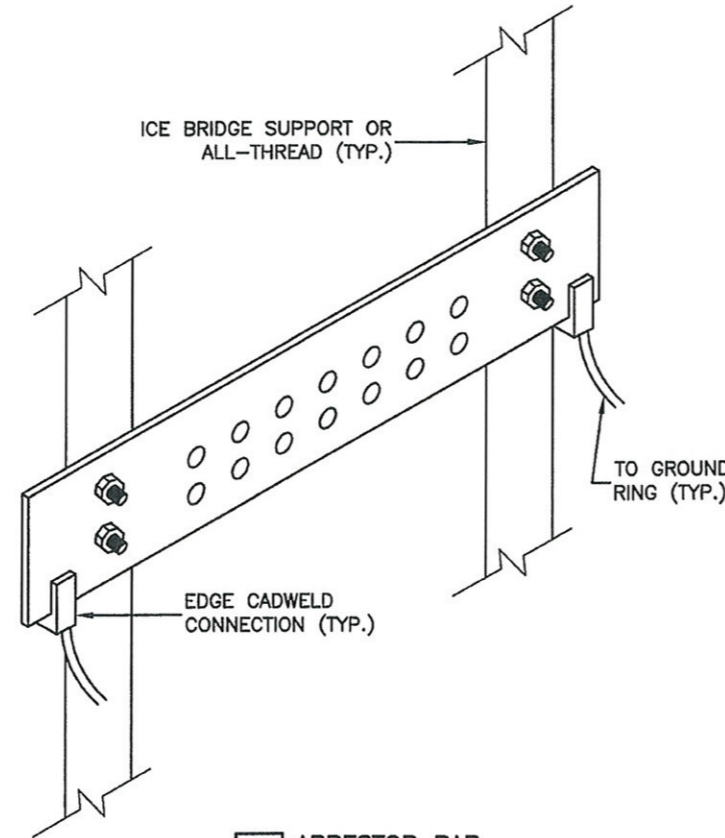
**E3.2**



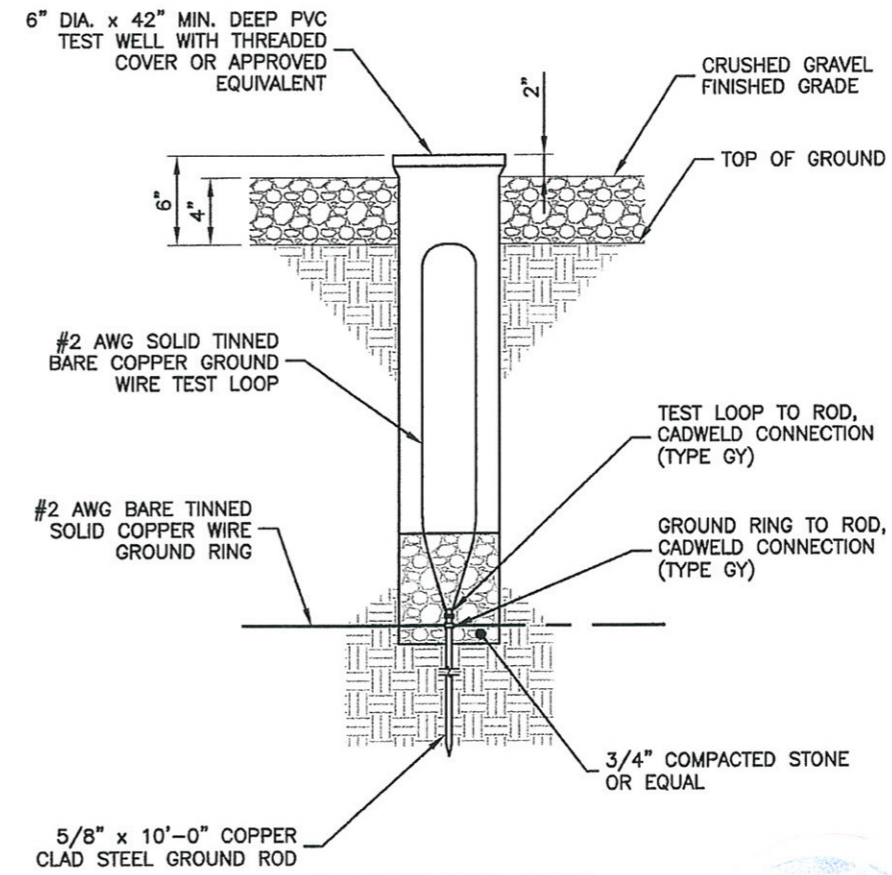
**1 COAX CABLE GROUNDING DETAIL**  
NOT TO SCALE

**KEY NOTES:**

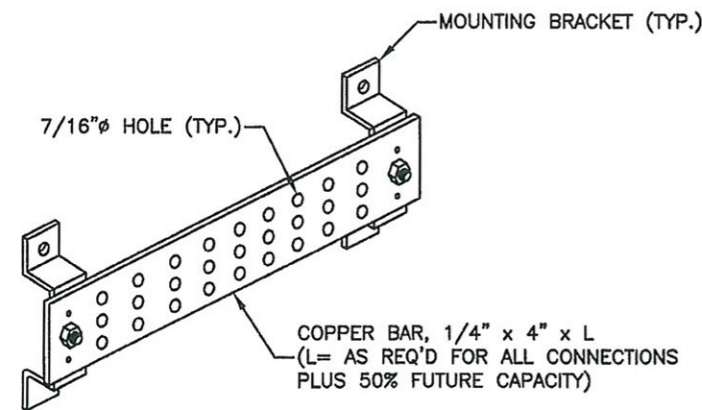
- ① COAX CABLE
- ② COAX CABLE GROUNDING KIT
- ③ COAX CABLE SUPPORT ASSEMBLY
- ④ GROUND BAR



**2 ARRESTOR BAR**  
NOT TO SCALE

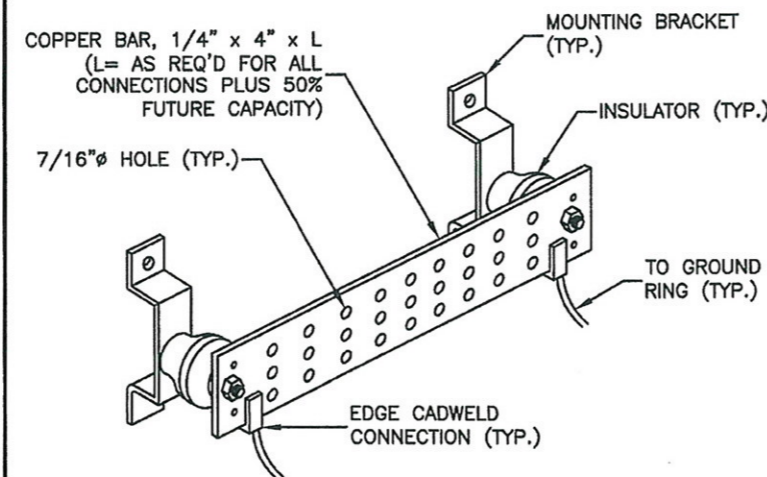


**3 TEST WELL DETAIL**  
NOT TO SCALE



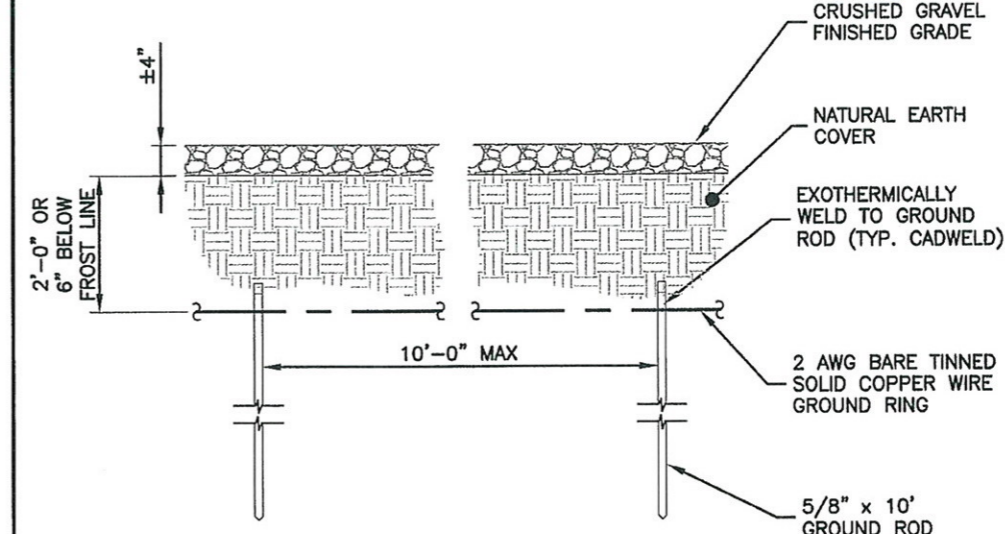
**4 GROUND BAR WITHOUT INSULATORS**  
NOT TO SCALE

**NOTE:**  
FOR USE AT TOP AND MIDDLE  
(IF REQ'D) OF TOWER



**5 GROUND BAR WITH INSULATORS**  
NOT TO SCALE

**NOTE:**  
FOR USE AT BOTTOM  
OF TOWER



**6 GROUND RING DETAIL**  
NOT TO SCALE

APPLICANT/OWNER

**VERTICALITY  
ROSWELL, LLC**

111 TOWNE LAKE PARKWAY  
SUITE 110  
WOODSTOCK, GA 30188  
770-329-2878

PREPARED BY:

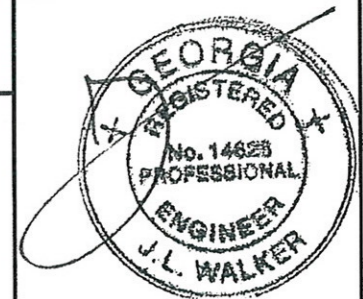
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ENGINEERING  
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FULTON COUNTY

DRAWN BY: MJJ

CHECKED BY: MJJ

DATE: 01/23/09

JOB NO.: 0901-0002T

SITE NO.: -

DRAWING DESCRIPTION:

**GROUNDING DETAILS**

DRAWING NUMBER:

**E4**