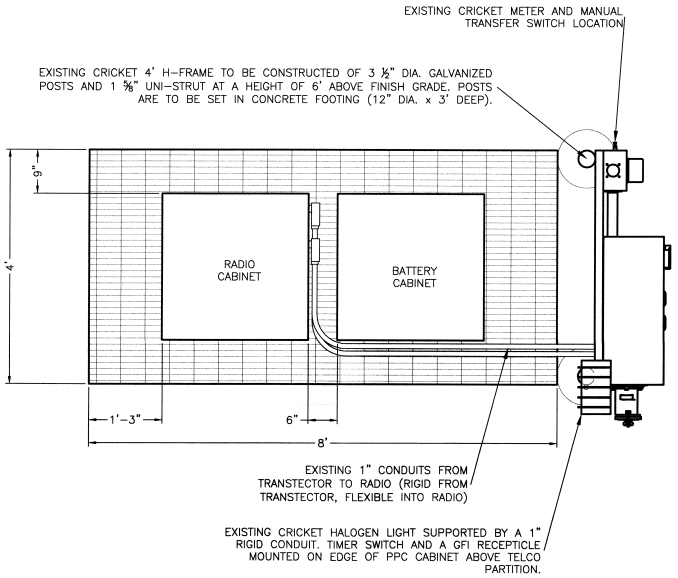
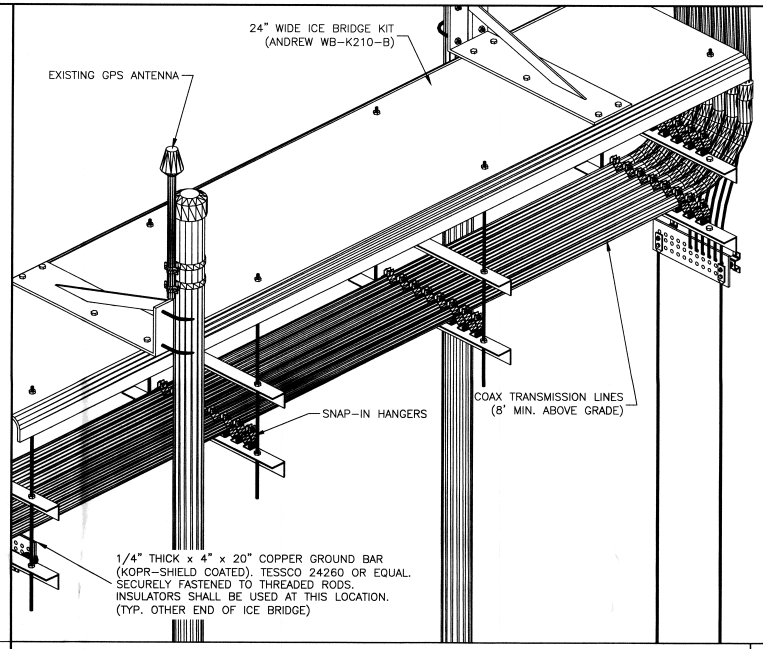
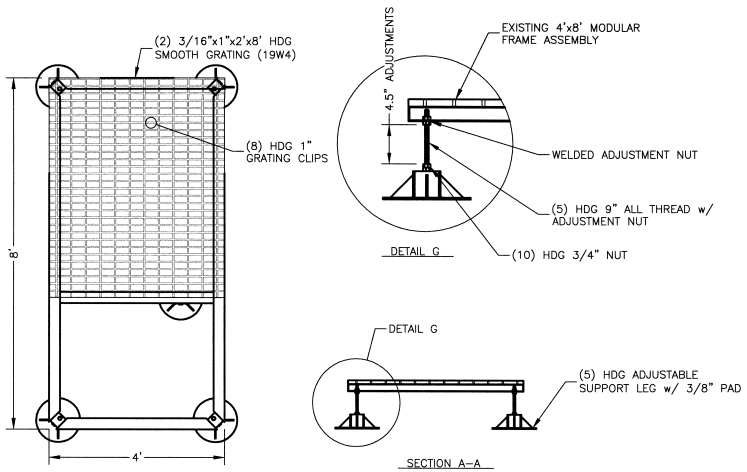


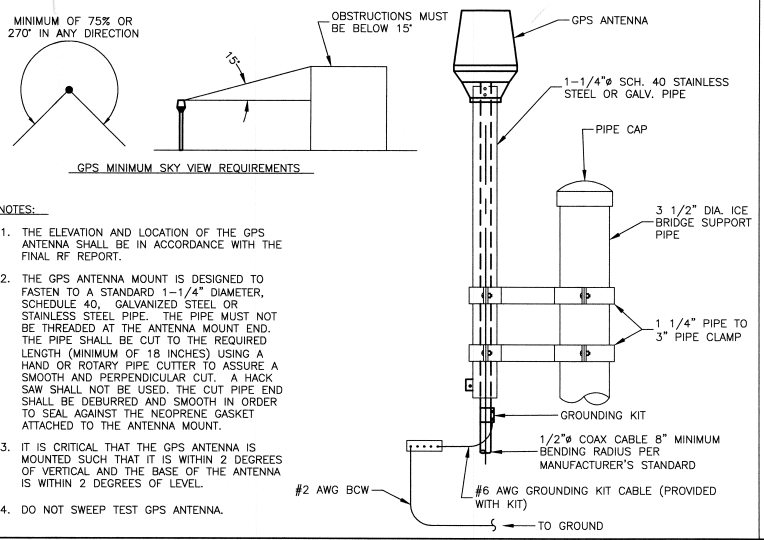
TYPICAL PLATFORM LAYOUT | 2



ICE BRIDGE DETAIL | 1



PLATFORM DETAIL (AS MAUNF. BY EMI 800-453-0050 OR APPROVED EQUAL) | 4



NOTES:

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1-1/4" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
3. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
4. DO NOT SWEEP TEST GPS ANTENNA.

GPS DETAILS | 3

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SUBMITTALS			
3	05/15/12	FINAL	ARM
2	04/19/12	FINAL	BAL
1	04/13/12	REDLINE REVISIONS	TM
0	04/03/12	ISSUED FOR REVIEW	TM

PROJ. NO.: 2052-022812

CHECKED BY: G.W.C.

STATE OF MISSOURI GARY W. CLOWER NUMBER PE-2010029706 PROFESSIONAL ENGINEER

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES WATER TOWER

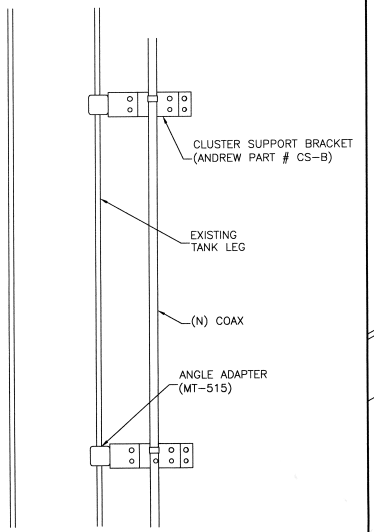
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

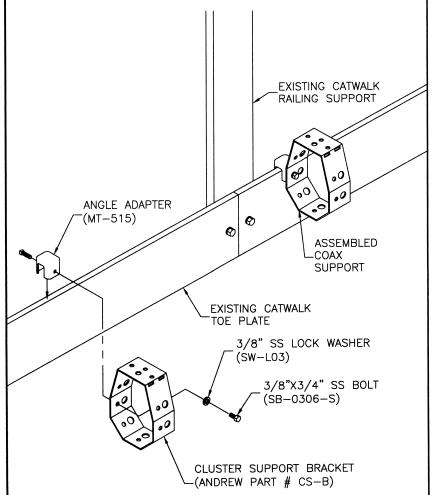
PLATFORM, ICE BRIDGE, AND GPS DETAILS

SHEET NUMBER:

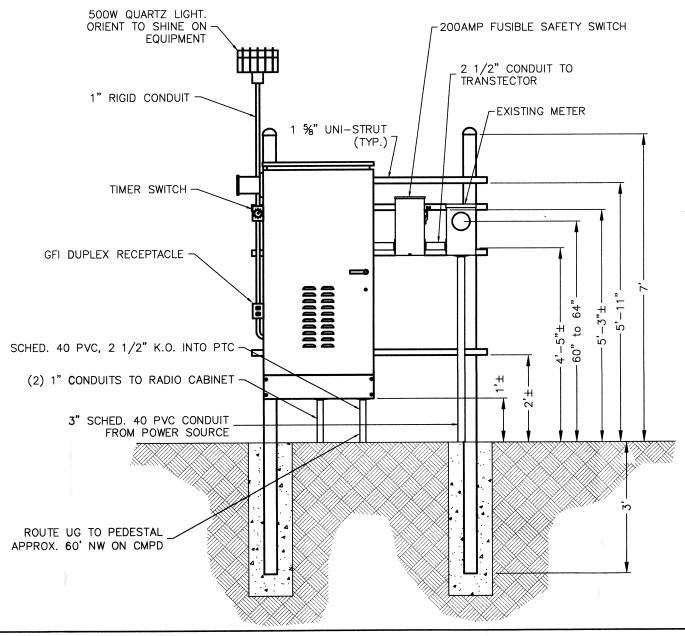
A-4



COAX-TO-LEG DETAIL | 4



COAX-TO-CATWALK DETAIL | 3



BACKBOARD DETAIL | 2

FENCE DETAIL (IF REQUIRED) | 1

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STATE OF MISSOURI
GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER

SITE INFORMATION:

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GALE COMMUNITIES
WATER TOWER

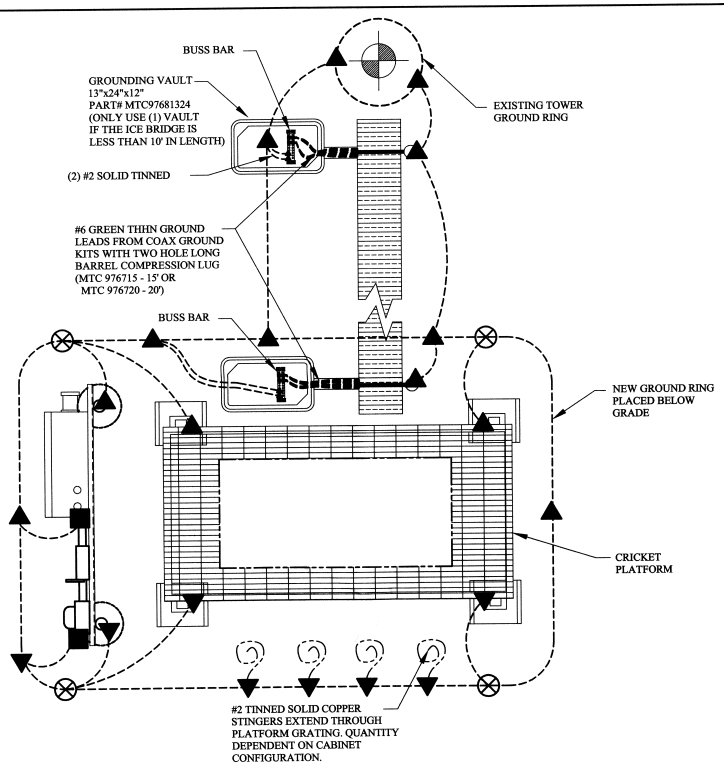
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

SITE DETAILS

SHEET NUMBER:

A-5



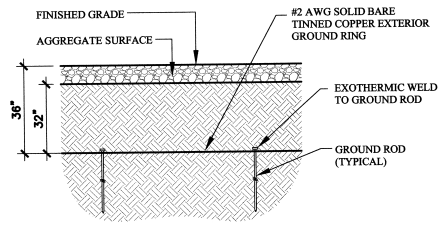
GROUNDING PLAN (NOT SITE SPECIFIC) | 1

GROUNDING NOTES:

1. ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.
2. IF THE AC PANEL IN THE POWER CABINET IS WIRED AS SERVICE ENTRANCE, THE AC SERVICE GROUND CONDUCTOR SHALL BE CONNECTED TO GROUND ELECTRODE SYSTEM. WHEN THE AC PANEL IN THE POWER CABINET IS CONSIDERED A SUB-PANEL, THE GROUND WIRE SHALL BE INSTALLED IN THE AC POWER CONDUIT. THE INSTALLATION SHALL BE PER LOCAL AND NATIONAL ELECTRIC CODE (NFPA-70).
3. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL. OTHERWISE, THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES. LONG BARREL LUGS OR DOUBLE CRIMP CLAMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH ANTIOXIDANT (COPPER SHIELD) BEFORE MAKING THE CONNECTIONS. THE MANUFACTURER'S TORQUING RECOMMENDATIONS ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS ARE TO BE FOLLOWED.
4. THE ANTENNA CABLES SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN FOR LIGHTING PROTECTION. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER GROUND BUSS AT THE LOWER MOST POINT OF A VERTICAL RUN JUST BEFORE IT BEGINS TO BEND TOWARD THE HORIZONTAL PLANE. WIRE RUNS TO GROUND SHALL BE KEPT AS STRAIGHT AND SHORT AS POSSIBLE. ANTENNA CABLE SHIELD SHALL BE GROUNDED JUST BEFORE ENTERING THE CELL CABINET. ANY ANTENNA CABLES OVER 200 FEET IN LENGTH SHALL ALSO BE EQUIPPED WITH ADDITIONAL GROUNDING AT MID-POINT.
5. ALL GROUNDING CONDUCTORS INSIDE THE BUILDING SHALL BE RUN IN CONDUIT RACEWAY SYSTEM, AND SHALL BE INSTALLED AS STRAIGHT AS PRACTICAL WITH MINOR BENDS TO AVOID OBSTRUCTIONS. THE BENDING RADIUS OF ANY #2 GROUNDING CONDUCTOR IS 8". PVC RACEWAY MAY BE FLEXIBLE OR RIGID PER THE FIELD CONDITIONS. GROUNDING CONDUCTORS SHALL NOT MAKE CONTACT WITH ANY METALLIC CONDUITS, SURFACES OR EQUIPMENT.
6. PROVIDE PVC SLEEVES WHERE GROUNDING CONDUCTORS PASS THROUGH THE BUILDING WALLS AND /OR CEILINGS.
7. INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUSS IN THE PANEL BOARD.
8. GROUND ANTENNA BASES, FRAMES, CABLE RACKS AND OTHER METALLIC COMPONENTS WITH #2 GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
9. GROUND COAXIAL SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.
   GROUND FIELD TEST PROCEDURE:
   A. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A "FALL OF POTENTIAL" TEST ON THE NEW SUPPLEMENTAL GROUND FIELD PRIOR TO FINAL CONNECTION OF THE GROUNDING SYSTEM TO EQUIPMENT. THE TEST SHALL BE PERFORMED BY A QUALIFIED AND CERTIFIED TESTING AGENT. PROVIDE INDEPENDENT TEST RESULTS TO THE PROJECT MANAGER FOR REVIEW. THE GROUND SYSTEM RESISTANCE TO EARTH GROUND SHALL NOT EXCEED FIVE (5) OHMS. IF THE GROUND TEST EXCEEDS THE MAXIMUM OF 5 OHMS THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL GROUND CONNECTIONS AS REQUIRED TO MEET THE 5 OHMS MAXIMUM.

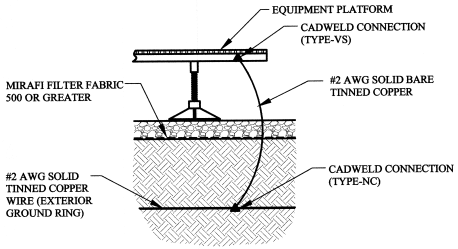
GROUNDING LEGEND:

- -5/8"x8'-0" COPPERCLAD GROUND ROD AT EACH CORNER
- -GROUND TEST WELL AT ROD
- -XIT GROUND ROD
- -MECHANICAL CONNECTION
- -EXOTHERMIC WELD (CADWELD)
- #2 AWG BCW
- #2 STRANDED INSULATED (FROM EQUIPMENT TO MGB)



GROUNDING RING DETAIL | 2

NOT USED | 3



PLATFORM GROUNDING DETAIL | 4

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0	04/03/12	ISSUED FOR REVIEW	TM

PROJ. NO.: 2052-022812

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STATE OF MISSOURI
GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES
WATER TOWER

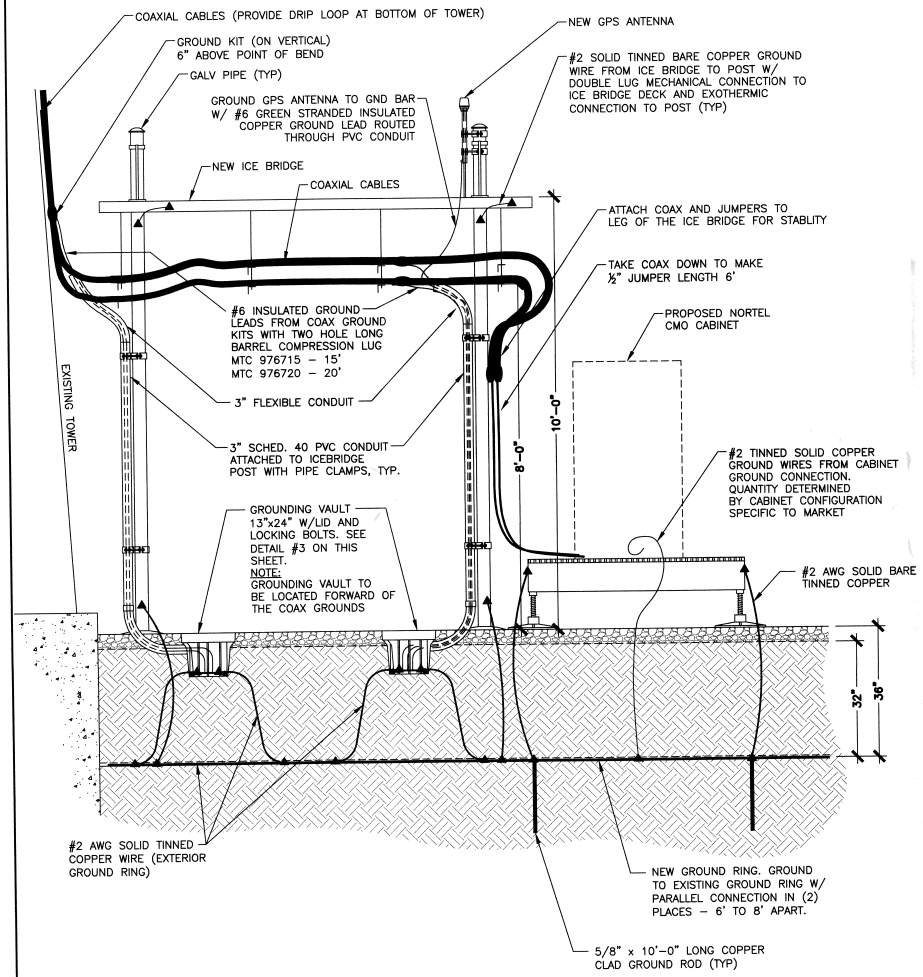
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

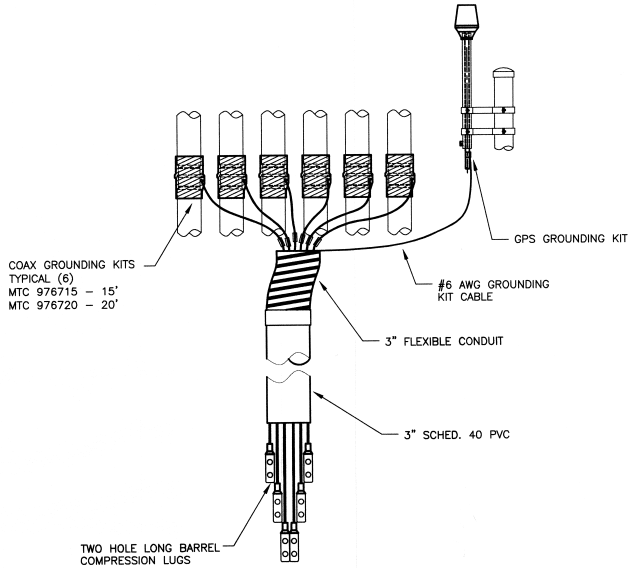
GROUNDING PLAN & DETAILS

SHEET NUMBER:

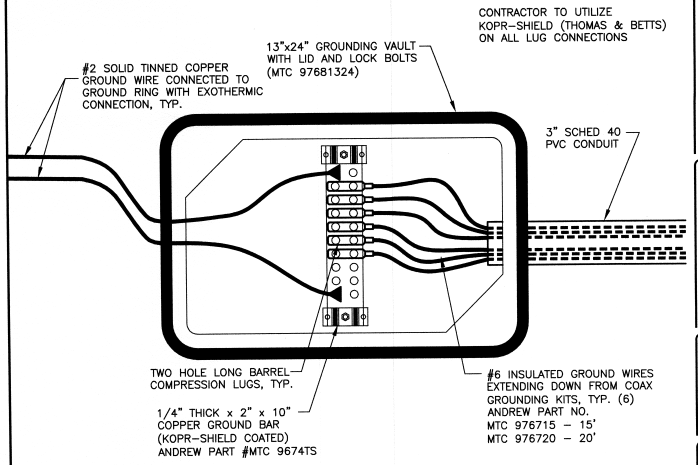
E-1



ICE BRIDGE ELEVATION DETAIL | 1



COAX GROUNDING | 2



GROUNDING VAULT | 3

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CHECKED BY: G.W.C.

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GARY W. CLOWER
NUMBER PE-2010025704
PROFESSIONAL ENGINEER

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES WATER TOWER

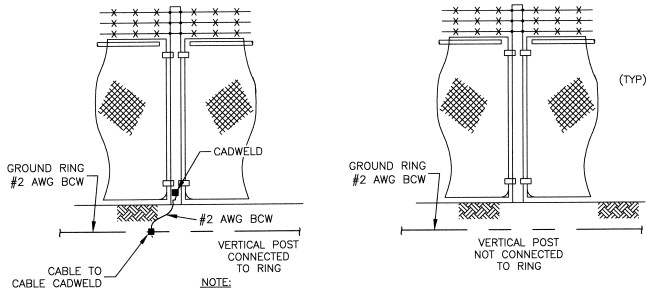
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

GROUNDING DETAILS

SHEET NUMBER:

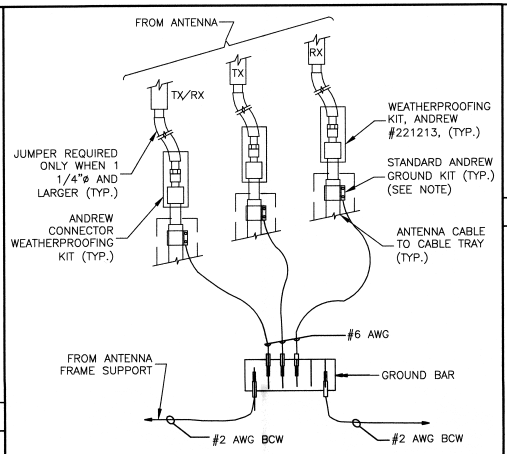
E-1.1



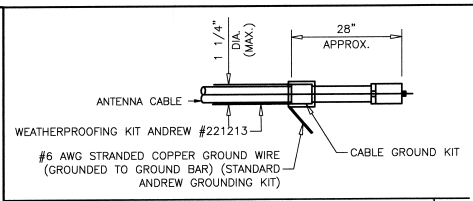
NOTE:

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

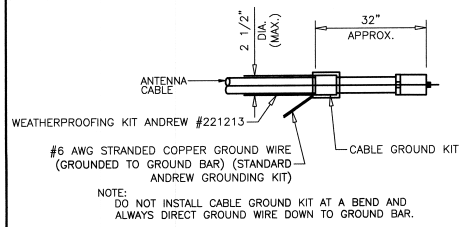
GATE GROUNDING DETAIL (IF APPLICABLE) | 4



ANTENNA GROUNDING DETAIL | 3

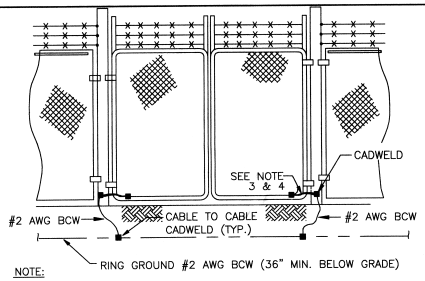


GPS CABLE GROUND | 1



NOTE:
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

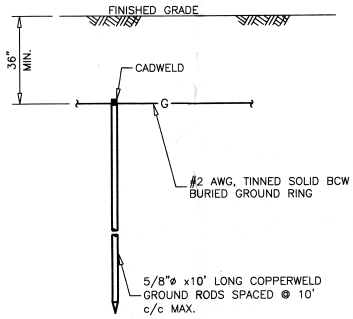
COAX CABLE GROUND | 2



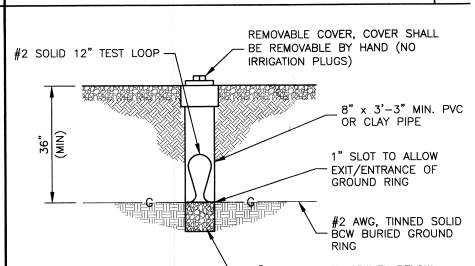
NOTE:

1. THE #2 AWG, BCW, FROM THE RING GROUND SHALL BE CADWELDED TO THE POST ABOVE GRADE.
2. BOND EACH HORIZONTAL POLE/BRACE TO EACH OTHER AND TO EACH VERTICAL POLE BONDED TO THE EXTERIOR GROUND RING
3. GATE JUMPER SHALL BE #4/0 AWG WELDING CABLE WITH SLEEVES ON EACH END DESIGNED FOR EXOTHERMIC WELDING.
4. GATE JUMPER SHALL BE INSTALLED SO THAT IT WILL NOT BE SUBJECTED TO DAMAGING STRAIN WHEN GATE IS FULLY OPEN IN EITHER DIRECTION.

FENCE GROUNDING DETAIL (IF APPLICABLE) | 7



GROUND ROD DETAIL | 6

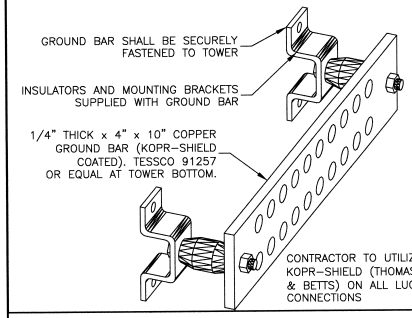


NOTE:
ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND RING AND THE EQUIPMENT GROUND RING.

GROUND TEST WELL DETAIL | 5

GROUND LEADS

(2) TWO HOLE LUG TO BE USED WITH #2 AWG BCW TO GROUND RING.

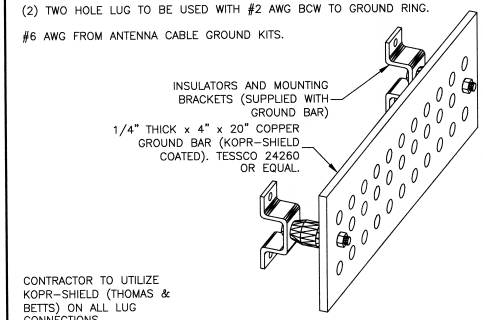


BOTTOM TOWER GROUND BAR DETAIL | 10

GROUND LEADS

(2) TWO HOLE LUG TO BE USED WITH #2 AWG BCW TO GROUND RING.

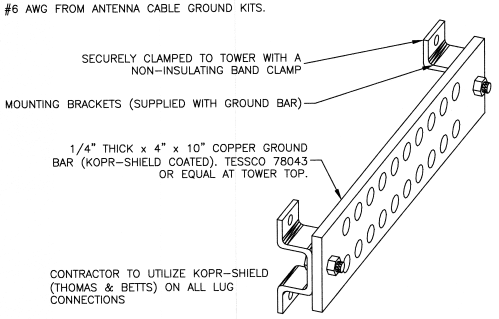
#6 AWG FROM ANTENNA CABLE GROUND KITS.



MAIN GROUND BAR DETAIL | 9

GROUND LEADS

#6 AWG FROM ANTENNA CABLE GROUND KITS.



TOP TOWER GROUND BAR DETAIL | 8

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CHECKED BY: G.W.C.

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES
WATER TOWER

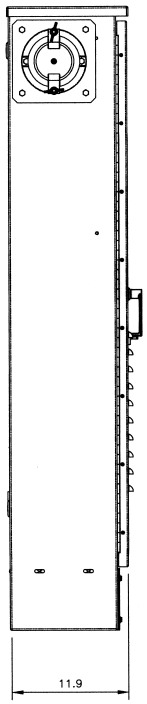
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

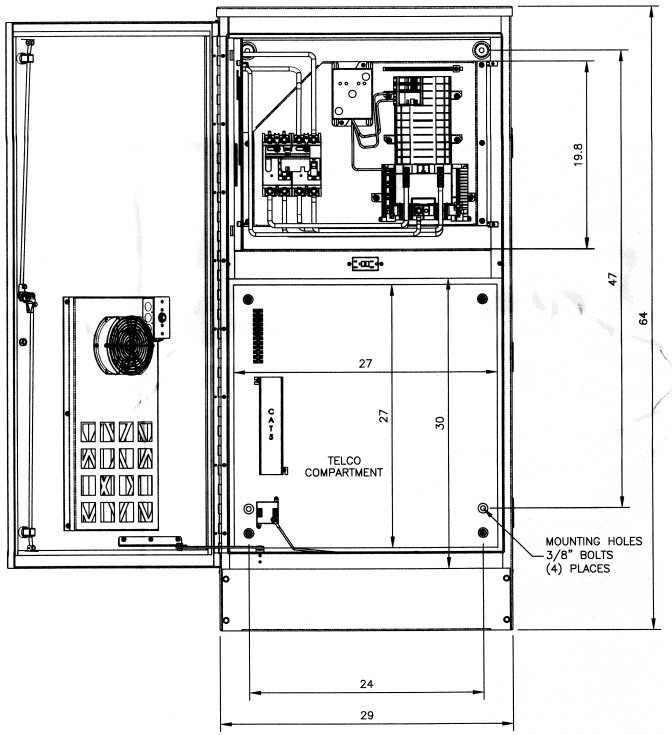
SHEET TITLE:

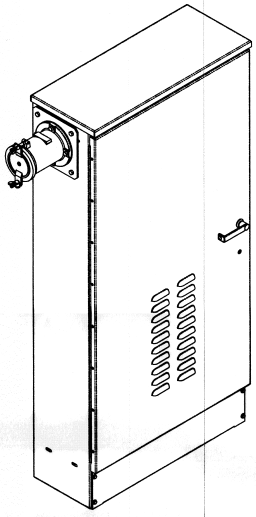
GROUNDING DETAILS

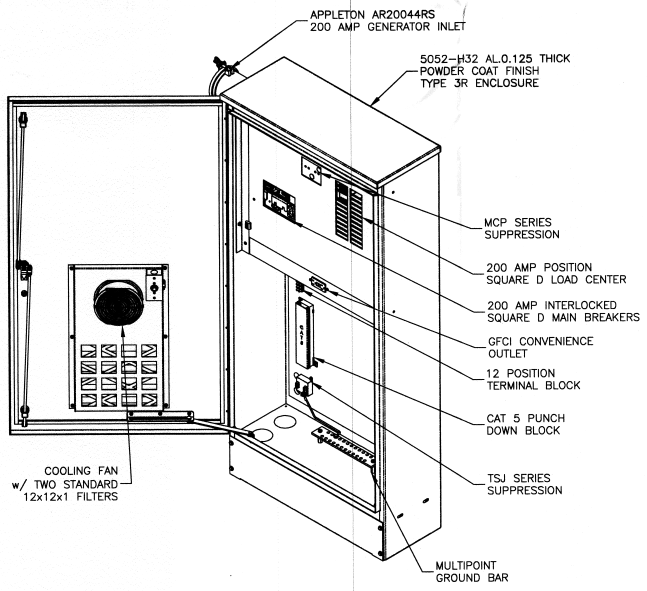
SHEET NUMBER:

E-2









OVER/UNDER CABINET 64x30 OUTDOOR AS MANUF. BY TRANSTECTOR SYSTEMS, INC.

1

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GALE COMMUNITIES
WATER TOWER

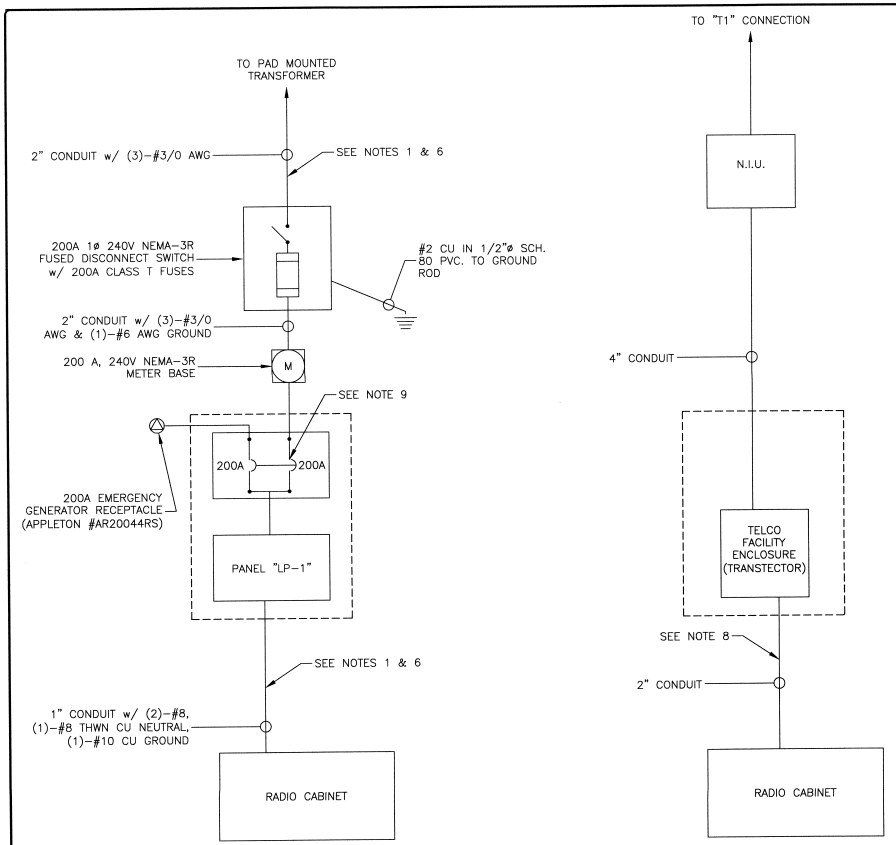
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

PPC CABINET
DETAILS

SHEET NUMBER:

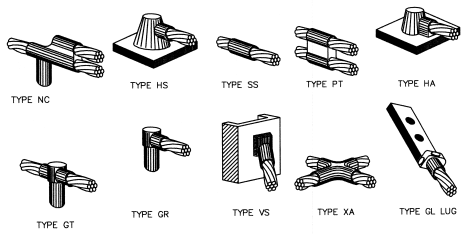
E-3



NOTES:

1. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRIC CODES AND ALL LOCAL AND STATE CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC.
2. POWER SERVICES REQUIREMENTS SHALL BE COMMERCIAL AC NOMINAL 120/208 VOLT OR 120/240 VOLT, SINGLE PHASE WITH 200 AMP RATING. CONTRACTOR SHALL CONTACT LOCAL POWER COMPANY FOR REQUIREMENTS OF POWER SERVICE LINE TO THE METER BASE.
3. CONTRACTOR SHALL ALSO CONTACT LOCAL TELEPHONE COMPANY FOR REQUIREMENTS OF "T1" SERVICE LINE TO TERMINATE AT THE UTILITY MOUNTING STAND.
4. CONTRACTOR SHALL PROVIDE METER BASE AND DISCONNECT PANELS PER LOCAL POWER COMPANY SPECIFICATIONS AND REQUIREMENTS. POWER COMPANY SHOULD PROVIDE THE 200 AMP SERVICE.
5. CRICKET SHALL PROVIDE THE TRANSTECTOR POWER CABINET AND TELCO FACILITY ENCLOSURE. CONTRACTOR TO FURNISH AND INSTALL METER BASE, FUSED DISCONNECT SWITCH AND UTILITIES MOUNTING STAND. THE METER BASE SHOULD BE LOCATED IN A MANNER WHERE ACCESSIBLE FOR READING BY THE POWER COMPANY.
6. UNDERGROUND POWER AND TELCO SERVICE LINES SHALL BE ROUTED IN A COMMON TRENCH AS MUCH AS PRACTICAL. ALL UNDERGROUND CONDUIT SHALL PVC SCHEDULE 40. CONDUIT EXPOSED ABOVE GROUND SHALL BE RIGID GALVANIZED STEEL UNLESS OTHERWISE INDICATED. POWER CONDUIT SHALL BE SIZED AS REQUIRED PER CABLE SIZING AND NEC REQUIREMENTS.
7. ALL TELCO CONDUIT LINES SHALL BE 4" CONDUIT UNLESS NOTED OTHERWISE.
8. ENDS OF CONDUITS ALONG PAD FOR SERVICE TO EQUIPMENT SHALL BE STUBBED AND CAPPED AT 6" ABOVE GRADE. IF SERVICE LINES CAN'T BE INSTALLED INITIALLY, PROVIDE NYLON PULL CORD IN CONDUIT.
9. THESE TWO BREAKERS ARE INTERLOCKED TO OPERATE AS A "TRANSFER SWITCH" SUCH THAT ONLY ONE BREAKER SHALL BE IN THE "ON" POSITION AT ANY ONE TIME.

POWER & TELCO DISTRIBUTION & INTERCONNECTION SINGLE LINE DIAGRAM 4



TYPICAL CADWELD TYPE CONNECTIONS 1

1. 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 OF 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.
2. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROUGH-IN.
3. THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
4. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
5. ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH THE NEC. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
6. ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
7. ALL WIRE SHALL BE TYPE THWN, SOLID, ANNEALED COPPER UP TO SIZE #10 AWG (#8 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C, (167 DEGREES F), 98% CONDUCTIVITY, MINIMUM #12.
8. 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.
9. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
10. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
11. ALL PANEL DIRECTORIES SHALL BE TYPED NOT HAND WRITTEN.
12. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, AND ALL DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.
13. 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.
14. ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS.)
15. ALL ELECTRICAL DEVICES AND INSTALLATIONS OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
16. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTION MANAGER'S AND THE STRUCTURAL ENGINEER'S APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.
17. ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON
18. THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DRAWING AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS. 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.

ELECTRICAL NOTES 2

VOLTS: 120/240V | FEED: BOTTOM | MAIN C/B: 200 AMP | LOCATION: INSIDE PPC CAB. | PANEL: PTC 'LP-1'
PHASE: 1ø, 3 WIRE | BUSS: 225 AMP | MOUNTING: FLOOR | TYPE: 1

DESCRIPTION	øA	øB	BREAKER	CKT #	A	B	CKT #	BREAKER	øA	øB	DESCRIPTION
BTS #1	4500		40 / 2	1			2	20 / 1	180		RECEPTACLE
		4500		3			4	20 / 1		111	FAN & LIGHTS
SPARE			40 / 2	5			6	15 / 1	–		SPARE
				7			8	20 / 1		–	SPARE
SURGE PROTECTION			60 / 2	9			10	20 / 1	–		SPARE
		–		11			12			–	SPACE
SPACES	–			13-23			14-24				SPACES
TOTAL WATTS:	4500	4500							180	111	:TOTAL WATTS
TOTAL WATTS / PHASE:	ø	4680	ø	4611	LCL = 9291W x .25 = 2323W						
TOTAL WATTS / ALL PHASES:	9291 + 2323 = 11614				11614 / 240VOLTS, 1 ø =						
TOTAL AMPS / ALL PHASES:	48.4										
MAIN CIRCUIT BREAKERS TO HAVE 42,000 A.I.C. MINIMUM.											

NOTES:
1. ALL EQUIPMENT (FUSES, CIRCUIT BREAKERS, BUSSING, ETC.) SHALL HAVE A SHORT CIRCUIT RATING EQUAL TO, OR GREATER THAN, THE AVAILABLE SHORT CIRCUIT CURRENT AT THE LOCATION.
2. PANEL IS 24 CIRCUIT. CIRCUITS NOT INDICATED SHALL BE DESIGNATED AS FUTURE SPACES.

PANEL SCHEDULE 3

cricket communications
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720-201-7385

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SUBMITTALS

3	05/15/12	FINAL	ARM
2	04/19/12	FINAL	BAL
1	04/13/12	REDLINE REVISIONS	TM
0	04/03/12	ISSUED FOR REVIEW	TM

PROJ. NO.: 2052-022812
CHECKED BY: G.W.C.

STATE OF MISSOURI
GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER

SITE INFORMATION:
MCI-242-A
GALE COMMUNITIES WATER TOWER
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:
ELECTRICAL DETAILS

SHEET NUMBER:
E-4

IMPORTANT NOTE:

THE CONTRACTOR MUST PROVIDE CLOSE-OUT DOCUMENTS AT THE FINAL INSPECTION WALK BEFORE PAYMENTS WILL BE MADE.

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FORM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) CRICKET'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR EMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED THEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL MAINTAIN A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FORM PLAIN SPOTS, DUST OR SMUDGES OF ANY KIND.

13. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE APPLICABLE BUILDING CODES AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

14. THE CONTRACTOR SHALL NOTIFY CRICKET'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY CRICKET'S REPRESENTATIVE.

15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

16. THE CONTRACTOR SHALL NOTIFY THE RF ENGINEER FOR ANTENNA AZIMUTH VERIFICATION (DURING ANTENNA INSTALLATION) PRIOR TO COORDINATING SITE SWEEPING.

17. THE CONTRACTOR SHALL SUBMIT, AT THE END OF THE PROJECT, A COMPLETE SET OF AS-BUILT DRAWINGS TO CRICKET'S PROJECT MANAGER.

SITE WORK AND DRAINAGE

EARTHWORK, EXCAVATION, AND GRADING

PART 1 GENERAL

1.01 WORK INCLUDED: REFER TO SURVEY AND SITE PLAN FOR WORK INCLUDED.

1.02 RELATED WORK

A. CONSTRUCTION OF EQUIPMENT FOUNDATIONS

B. INSTALLATION OF ANTENNA SYSTEM

1.03 DESCRIPTIONS

A. ACCESS ROAD, TURNAROUND AREAS, AND SIRES ARE CONSTRUCTED TO PROVIDE A WELL DRAINED, EASILY MAINTAINED, EVEN SURFACE FOR MATERIAL AND EQUIPMENT DELIVERIES AND MAINTENANCE PERSONNEL ACCESS.

1.04 QUALITY ASSURANCE

A. APPLY SOIL STERILIZER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION (USE AS NEEDED)

B. VEGETATION LANDSCAPING, IF INCLUDED WITHIN THE CONTRACT WILL BE PLACED AND MAINTAINED AS RECOMMENDED BY NURSERY INDUSTRY STANDARDS.

1.05 SEQUENCING

A. CONTRACTOR IS RESPONSIBLE FOR LAYOUT AND CONSTRUCTION STAKING.

B. GRUB THE COMPLETE ROAD AND SITE AREA PRIOR TO FOUNDATION CONSTRUCTION OR PLACEMENT OF BACKFILL OR SUB-BASE MATERIAL.

C. CONSTRUCT TEMPORARY CONSTRUCTION ZONE ALONG ACCESS DRIVE.

D. THE SITE AREA WILL BE BROUGHT TO SUB-BASE COURSE ELEVATION AND THE ACCESS ROAD TO BASE COURSE ELEVATION PRIOR TO FORMING FOUNDATIONS.

E. APPLY SILT STERILIZER PRIOR TO PLACING BASE MATERIALS.

F. IF REQUIRED, GRADE, SEED, FERTILIZE AND MULCH DISTURBED AREAS IMMEDIATELY AFTER BRINGING THE SITE AND ACCESS ROAD TO BASE ELEVATION. WATER TO ENSURE GROWTH.

G. REMOVE EXCESS GRAVEL FROM TEMPORARY CONSTRUCTION ZONE.

H. AFTER APPLICATIONS OF FINAL SURFACES, APPLY SOIL STERILIZER TO THE STONE SURFACES.

1.06 SUBMITTALS

A. BEFORE CONSTRUCTION

1. IF LANDSCAPING IS APPLICABLE TO THE CONTRACT, SUBMIT TWO COPIES OF THE LANDSCAPING PLAN UNDER NURSERY LETTERHEAD. IF A LANDSCAPE ALLOWANCE IS INCLUDED IN THE CONTRACT, PROVIDE AN ITEMIZED LISTING OF PROPOSED COSTS UNDER NURSERY LETTERHEAD (REFER TO SITE PLAN FOR LANDSCAPING REQUIREMENT).

2. SUBMIT FOR APPROVAL 1/2 CUBIC FOOT OF THE PROPOSED SURFACE COURSE MATERIAL.

3. LANDSCAPING WARRANTY STATEMENT, IF REQUIRED.

PART 2 PRODUCTS

2.01 MATERIALS

A. ROAD AND SITE MATERIALS; FILL MATERIAL SHALL BE ACCEPTABLE, SELECT FILL SHALL BE IN ACCORDANCE WITH LOCAL DEPARTMENT OF HIGHWAY AND PUBLIC TRANSPORTATION STANDARD SPECIFICATIONS.

B. SOIL STERILIZER SHALL BE EPA REGISTERED OF LIQUID COMPOSITION AND OF PRE-EMERGENCE DESIGN.

C. SOIL STABILIZER FABRIC SHALL BE MIRAFI OR EQUAL – 500X AT ACCESS ROAD AND SOAK AT COMPOUND.

D. GRAVEL FILL; WELL GRADED, HARD, DURABLE, NATURAL SAND AND GRAVEL, FREE FROM ICE AND SNOW, ROOTS, SOD RUBBISH, AND OTHER DELETERIOUS OR ORGANIC MATTER. MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS.

U. S. SIEVE NO.	% PASSING BY WEIGHT
4"	100
1/2"	50-85
#4	40-75
#10	30-60
#40	10-30
#100	5-20
#200	0-8

GRAVEL FILL TO BE PLACED IN LIFTS OF 9" MAXIMUM THICKNESS AND COMPACTED TO 95% DENSITY.

2.02 EQUIPMENT

A. COMPACTION SHALL BE ACCOMPLISHED BY MECHANICAL MEANS. LARGER AREAS SHALL BE COMPACTED BY SHEEPS FOOT, VIBRATORY OR RUBBER TIED ROLLERS WEIGHING AT LEAST FIVE TONS. SMALLER AREAS SHALL BE COMPACTED BY POWER-DRIVER, HAND HELD TAMPERS.

B. PRIOR TO OTHER EXCAVATION AND CONSTRUCTION EFFORTS GRUB ORGANIC MATERIAL TO A MINIMUM OF 6" BELOW ORIGINAL GROUND LEVEL.

C. UNLESS OTHERWISE INSTRUCTED BY CRICKET COM. REMOVE TREES, BRUSH AND DEBRIS FROM THE PROPERTY TO AN AUTHORIZED DISPOSAL LOCATION.

D. PRIOR TO PLACEMENT OF FILL OR BASE MATERIALS, ROLL THE SOIL.

E. WHERE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, LINE THE GRUBBED AREAS WITH STABILIZER MAT PRIOR TO PLACEMENT OF FILL OR BASE MATERIAL.

3.03 INSTALLATION

A. THE SITE AND TURNAROUND AREAS SHALL BE AT THE SUB-BASE COURSE ELEVATION PRIOR TO FORMING FOUNDATIONS. GRADE OR FILL THE SITE AND ACCESS ROAD AS REQUIRED TO PRODUCE EVEN DISTRIBUTION OF SPOILS RESULTING FROM FOUNDATION EXCAVATIONS. THE RESULTING GRADE SHALL CORRESPOND WITH SAID SUB-BASE COURSE, ELEVATIONS ARE TO BE CALCULATED FORM FINISHED GRADES OR SLOPES INDICATED.

B. CLEAR EXCESS SPOILS, IF ANY, FROM JOB SITE AND DO NOT SPREAD BEYOND THE LIMITS OF CRICKET INC. LEASE PROPERTY UNLESS AUTHORIZED BY PROJECT MANAGER.

C. THE ACCESS ROAD SHALL BE BROUGHT TO BASE COURSE ELEVATION PRIOR TO FOUNDATION CONSTRUCTION.

D. DO NOT CREATE DEPRESSIONS WHERE WATER MAY POND.

E. THE CONTRACT INCLUDES ALL NECESSARY GRADING, BANKING, DITCHING AND COMPLETE SURFACE COURSE FOR ACCESS ROAD. ALL ROADS OR ROUTES UTILIZED FOR ACCESS TO PUBLIC THOROUGHFARE IS INCLUDED IN SCOPE OF WORK UNLESS OTHERWISE INDICATED.

F. WHEN IMPROVING AN EXISTING ACCESS ROAD, GRADE THE EXISTING ROAD TO REMOVE ANY ORGANIC MATTER AND SMOOTH THE SURFACE BEFORE PLACING FILL OR STONE.

G. PLACE FILL OR STONE IN 3" MAXIMUM LIFTS AND COMPACT BEFORE PLACING NEXT LIFT.

H. THE FINISH GRADE, INCLUDING TOP SURFACE COURSE, SHALL EXTEND A MINIMUM OF 12" BEYOND THE SITE FENCE AND SHALL COVER THE AREA AS INDICATED.

I. RIPRAP SHALL BE APPLIED TO THE SIDE SLOPES OF ALL FENCED AREAS, PARKING AREAS AND TO ALL OTHER SLOPES GREATER THAN 2:1.

J. RIPRAP SHALL BE APPLIED TO THE SIDES OF DITCHES OR DRAINAGE SWALES AS INDICATED ON PLANS.

K. RIPRAP ENTIRE DITCH FOR 6'-0" IN ALL DIRECTIONS AT CULVERT OPENINGS.

L. SEED, FERTILIZER AND STRAW COVER SHALL BE APPLIED TO ALL OTHER DISTURBED AREAS AND DITCHES, DRAINAGE, SWALES, NOT OTHERWISE RIP-RAPPED.

M. UNDER NO CIRCUMSTANCES SHALL DITCHES, SWALES OR CULVERTS BE PLACED SO THEY DIRECT WATER TOWARDS, OR PERMIT STANDING WATER IMMEDIATELY ADJACENT TO SITE. IF OWNER DESIGNS OR IF DESIGN ELEVATIONS CONFLICT WITH THIS GUIDANCE ADVISE THE OWNER IMMEDIATELY.

cricket communications

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PROJ. NO.: 2052-022812

CHECKED BY: G.W.C.

STATE OF MISSOURI
GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES WATER TOWER

499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

GN-1

N. IF A DITCH LIES WITH SLOPES GREATER THAN TEN PERCENT, MOUND DIVERSIONARY HEADWALLS IN THE DITCH FOR 6'-0" ABOVE THE CULVERT ENTRANCE.

O. SEED AND FERTILIZER SHALL BE APPLIED TO SURFACE CONDITIONS WHICH WILL ENCOURAGE ROOTING. RAKE AREAS TO BE SEEDED TO EVEN THE SURFACE AND TO LOOSEN THE SOIL.

P. SOW SEED IN TWO DIRECTIONS IN TWICE THE QUANTITY RECOMMENDED BY THE SEED PRODUCER.

Q. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE GROWTH OF SEEDED AND LANDSCAPED AREAS BY WATERING UP TO THE POINT OF RELEASE FROM THE CONTRACT. CONTINUE TO REWORK BARE AREAS UNTIL COMPLETE COVERAGE IS OBTAINED.

3.04 FIELD QUALITY CONTROL

A. COMPACTION SHALL BE 90% MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D-1557 FOR SITE WORK AND 95% MAXIMUM DENSITY UNDER SLAB AREAS. AREAS OF SETTLEMENT WILL BE EXCAVATED AND REFILLED AT CONTRACTOR'S EXPENSE.

3.05 PROTECTION

A. PROTECT SEEDED AREAS FORM EROSION BY SPREADING STRAW TO A UNIFORM LOOSE DEPTH OF 1"-2". STAKE AND TIE DOWN AS

REQUIRED. USE OF EROSION CONTROL MESH OR MULCH NET SHALL BE AN ACCEPTABLE ALTERNATIVE.

B. ALL TIRES PLACED IN CONJUNCTION WITH A LANDSCAPE CONTRACT SHALL BE WRAPPED, TIED WITH HOSE PROTECTED WIRE AND SECURED TO STAKES EXTENDING 2'-0" INTO THE GROUND ON FOUR SIDES OF THE TREE.

C. ALL EXPOSED AREAS SHALL BE PROTECTED AGAINST WASHOUTS AND SOIL EROSION. STRAW BALES SHALL BE PLACED AT THE INLET APPROACH TO ALL NEW OR EXISTING CULVERTS.

CHAIN LINK FENCE

PART 1 - GENERAL

4.01 SEQUENCING

A. IF THE SITE AREA HAS BEEN BROUGHT UP TO SURFACE COURSE ELEVATION PRIOR TO FENCE CONSTRUCTION, FENCE POST EXCAVATION SPOILS MUST BE CONTROLLED TO PRECLUDE CONTAMINATION OF SAID SURFACE COURSE.

4.02 APPLICABLE STANDARDS

ASTM-A120 SPECIFICATION FOR PIPE, STEEL BLACK AND HOT-DIPPED ZINC COATED (GALVANIZED) WELDED AND SEAMLESS FOR ORDINARY USES.

ASTM-A123 ZINC (HOT-DIP GALVANIZED) COATING ON IRON AND STEEL PRODUCTS.

ASTM-A525 STANDARD SPECIFICATION FOR STEEL SHEET ZINC COATED (GALVANIZED) BY THE HOT-DIPPED PROCESS.

FEDERAL SPECIFICATION RR-F-191-FENCING, WIRE AND POST METAL (AND GATES, CHAIN LINK FENCE FABRIC AND ACCESSORIES).

PART 2 - PRODUCTS

4.03 FENCE MATERIALS

A. ALL FABRIC WIRE, RAILS, POLES, HARDWARE AND OTHER STEEL MATERIALS SHALL BE HOT-DIPPED GALVANIZED.

B. FABRIC SHALL BE 8'-0" HIGH X 2" CHAIN LINK MESH OF NO. 9 GAUGE (0.148) WIRE. THE FABRIC SHALL HAVE A TWISTED AND BARBED FINISH FOR THE TOP EDGES AND A KNUCKLED FINISH FOR THE BOTTOM EDGES, FABRIC SHALL CONFORM TO THE SPECIFICATIONS OF ASTM A-392 CLASS 1.

C. BARBED WIRE SHALL BE DOUBLE-STRAND, 12 GAUGE TWISTED WIRE, WITH 14 GAUGE 4 POINT ROUND BARBS SPACED AT 5" O.C.

D. ALL POSTS SHALL BE SCHEDULE 20-GALVANIZED STEEL PIPE AND SHALL BE TYPE 1 ASTM A-123 AND OF THE FOLLOWING DIAMETER (OD PER FENCE INDUSTRY STANDARDS).

LINE.	2 3/8"
CORNER	4"
GATE	3"

E. EXTEND GATE AND CORNER POSTS 12", INCLUDING DOME CAP, TO PROVIDE FOR ATTACHMENT OF BARBED WIRE.

F. ALL TOP AND BRACED RAIL SHALL BE 1 5/8" DIAMETER SCHEDULE - 20 MECHANICAL - SERVICE PIPE. FRAMES SHALL HAVE WELDED CORNERS.

G. GATE FRAMES SHALL HAVE A FULL-HEIGHT VERTICAL BRACE AND A FULL-WIDTH HORIZONTAL BRACE, SECURED IN PLACE BY USE OF GATE BRACE CLAMPS.

H. GATE HINGES SHALL BE MERCHANTS METAL MODEL 64386 HINGE ADAPTER WITH MODEL 6409, 188 DEGREE ATTACHMENT, OR EQUAL.

I. THE GUIDE (LATCH ASSEMBLY) SHALL BE TAMPER PROOF.

J. LATCHES, STOPS, AND KEEPERS SHALL BE PROVIDED FOR ALL GATES.

K. ALL STOPS SHALL HAVE A FULL-HEIGHT PLUNGER BAR WITH DOME CAP.

L. DOUBLE GATES SHALL HAVE A FULL-HEIGHT PLUNGER BAR WITH DOME CAP.

M. A NO. 7 GAUGE ZINC COATED TENSION WIRE SHALL BE USED AT THE BOTTOM OF THE FABRIC, TERMINATED WITH BAND CLIPS AT CORNER AND GATE POSTS.

N. A 6" X 1/2" EYE-BOLT TO HOLD TENSION WIRE WILL BE PLACED AT LINE POSTS.

O. STRETCHER BARS SHALL BE 3/16" X 3/4" OR HAVE EQUIVALENT CROSS SECTIONAL AREA.

P. ALL CORNER, GATE AND END PANELS SHALL HAVE A 3/8" TRUSS ROD WITH TURNBUCKLES AND BE BRACED WITH ONE 1-5/8" HORIZONTAL COMPRESSION MEMBER, SECURELY ATTACHED WITH IRON FITTINGS.

R. PROVIDE OTHER HARDWARE INCLUDING BUT NOT LIMITED TO TIE CLIPS, BAND CLIPS AND TENSION BAND CLIPS.

S. BARBED WIRE GATE GUARDS SHALL BE FITTED WITH DOME CAPS.

T. BARBED WIRE SUPPORT ARMS SHALL BE CAST IRON WITH SET BOLT AND LOCK WIRE IN THE ARM.

U. ALL CAPS SHALL BE CAST STEEL.

V. INSTALL REDWOOD SLATTING IN BETWEEN ALL FABRIC WIRE - FULL HT.

PART 3 - EXECUTION

4.04 EQUIPMENT: EXCAVATE POST HOLES WITH MECHANICAL AUGER EQUIPMENT

4.05 INSPECTION: EXCAVATE POST HOLES PER CONSTRUCTION DOCUMENT CONFIRM PROPER DEPTH AND DIAMETER OF POST HOLE EXCAVATIONS.

4.06 INSTALLATION

A. POST FOUNDATIONS SHALL HAVE A MINIMUM 6" CONCRETE COVER UNDER POST.

B. ALL FENCE POSTS SHALL BE VERTICALLY PLUMB WITHIN 1/4" IN 8'-0".

C. AT CORNER POSTS, GATE POST AND SIDES OF GATE FRAME, FABRIC SHALL BE ATTACHED WITH STRETCHER AND TENSION BAND-CLIPS AT 1'-3" INTERVALS.

D. AT LINE POSTS, FABRIC SHALL BE ATTACHED WITH BAND-CLIPS AT 1'-3" INTERVALS.

E. ATTACH FABRIC TO BRACE RAILS, TENSION WIRE AND TRUSS RODS WITH TIE CLIPS AT 2'-0" INTERVALS.

F. A MAXIMUM GAP OF 1" WILL BE PERMITTED BETWEEN THE CHAIN LINK FABRIC AND THE FINAL GRADE.

G. GATES SHALL BE INSTALLED SO LOCKS ARE ACCESSIBLE FROM BOTH SIDES.

H. GATE HINGE BOLTS SHALL HAVE THEIR THREADS PEENED OR WELDED TO PREVENT UNAUTHORIZED REMOVAL.

4.07 PROTECTION: UPON COMPLETION OF ERECTION, INSPECT FENCE MATERIAL AND PAINT FIELD CUTS OR GALVANIZING BREAKS WITH ZINC-BASED PAINT COLOR TO MATCH THE GALVANIZING PROCESS.

CONCRETE

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

WORK INCLUDES CONSTRUCTION OF CAST-IN-PLACE CONCRETE FOUNDATIONS, INCLUDING FURNISHING AND INSTALLING READY-MIX CONCRETE, REINFORCING, FORMWORK, AND ACCESSORY MATERIALS AS SHOWN ON THE DRAWINGS. CAST-IN-PLACE CONCRETE INCLUDES ALL SITE CONCRETE, INCLUDING FOUNDATIONS, SLABS ON GRADE, EQUIPMENT PADS, AND GUARDPOST FOUNDATIONS.

1.02 RELATED WORK

A. COORDINATE UNDER SLAB CONDUITS.

B. COORDINATE WITH GROUNDING.

1.03 APPLICABLE STANDARDS

A. ACI-301 - SPECIFICATIONS FOR STRUCTURAL CONCRETE BUILDINGS.

B. ACI 347 - GUIDE TO FORMWORK FOR CONCRETE.

C. ASTM C33 - CONCRETE AGGREGATES.

D. ASTM C94 - READY-MIXED CONCRETE.

E. ASTM C150 - PORTLAND CEMENT.

F. ASTM C260 - AIR-ENTRAINING ADMIXTURES FOR CONCRETE.

G. ASTM C309 - LIQUID MEMBRANE FORMING COMPOUNDS FORMING COMPOUNDS FOR CURING CONCRETE.

H. ASTM C494 - CHEMICAL ADMIXTURES FOR CONCRETE.

I. ASTM A615 - STEEL WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT.

J. ASTM A185 - STEEL WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT.

1.04 QUALITY ASSURANCE

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER.

1.05 TESTS

CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER AS THE WORK PROGRESSES. FAILURE TO DETECT ANY DEFECTIVE WORK OR MATERIAL SHALL NOT IN ANY WAY PREVENT LATER MATERIAL REJECTION WHEN SUCH DEFECT IS DISCOVERED NOR SHALL IT OBLIGATE THE ENGINEER FOR FINAL ACCEPTANCE.

A. FIVE CONCRETE TEST CYLINDERS SHALL BE TAKEN OF THE TOWER AND PIER FOUNDATION. TWO SHALL BE TESTED @ THREE DAYS, TWO @ TWENTY-EIGHT DAYS. THE FIFTH CYLINDER SHALL BE KEPT SEPARATELY. IF REQUIRED TO BE USED IN THE FUTURE.

B. ONE ADDITIONAL TEST CYLINDER SHALL BE TAKEN DURING COLD WEATHER AND CURED ON SITE UNDER SAME CONDITIONS AS CONCRETE IT REPRESENTS.

C. ONE SLUMP TEST SHALL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN.

PART 2 - PRODUCT

2.01 CONCRETE MATERIALS

CONCRETE SHALL BE COMPOSED OF PORTLAND CEMENT, WATER, FINE AND COARSE AGGREGATES, AND ADMIXTURES AS SPECIFIED BELOW. ALL WELL MIXED AND BROUGHT TO PROPER CONSISTENCY.

A. CEMENT: CEMENT SHALL BE TYPE II, GRAY COLOR, LOW-ALKALI PORTLAND CEMENT CONFORMING TO ASTM C150.

B. FINE AND COARSE AGGREGATES: AGGREGATES FOR USE IN CONCRETE SHALL COMPLY WITH ASTM C33.

C. WATER: WATER FOR MIXING AND CURING CONCRETE SHALL BE FREE FROM SEWAGE, OIL, ACID, ALKALI, AND SLATS AND SHALL BE FREE FORM OBJECTIONABLE QUANTITIES OF SILT, AND OTHER DELETERIOUS SUBSTANCES.

2.02 ADMIXTURES

A. AIR ENTRAINMENT: AIR ENTRAINING AGENT SHALL CONFORM TO ASTM C280. THE ADMIXTURE SHALL BE ADDED AS PART OF THE COMPUTED MIXING WATER REQUIREMENTS. AGENTS PREPARED IN SOLUTION SHALL BE MAINTAINED AT A UNIFORM STRENGTH AND SHALL BE BATCH BY MEANS OF RELIABLE MECHANICAL DISPENSERS.

B. CHEMICAL ADMIXTURES: ASTM 494, TYPE A-WATER REDUCING AND RETARDING.

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PROJ. NO.: 2052-022812

CHECKED BY: G.W.C.

STATE OF MISSOURI
GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER
5/14/12

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES
WATER TOWER

499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

GN-2

2.03 CURING COMPOUND: ASTM C309, TYPE 1, CLASS B; TRANSLUCENT.

2.04 ACCESSORIES

A. NONSHRINK GROUT: PREMIXED COMPOUND CONSISTING OF NONMETALLIC AGGREGATE, CEMENT, WATER REDUCING AND PLASTICIZING AGENTS; CAPABLE OF DEVELOPING MINIMUM COMPRESSIVE STRENGTH OF 7,000 PSI IN 28 DAYS.

B. JOINT FILLERS BITUMINOUS TYPE, ASTM D1751 OR NON-BITUMINOUS TYPE, ASTM D1752.

C. ANCHOR BOLTS: ASTM A307. UNPRIMED.

2.05 CONCRETE MIX

A. CONCRETE SHALL BE PROPORTIONED FOR WORKABILITY, MAXIMUM DENSITY, STRENGTH, AND DURABILITY REQUIREMENTS IN ACCORDANCE WITH ACI 301, THE 28-DAY DESIGN COMPRESSIVE STRENGTH OF CONCRETE SHALL BE AS SPECIFIED ON THE DRAWINGS. CONCRETE FURNISHED MAY BE A COMMERCIAL READY-MIX PROVIDED THAT DELIVERY TO THE PLACING LOCATION IS SATISFACTORILY ESTABLISHED AS OCCURRING NOT LATER THAN 45 MINUTES AFTER ADDITION OF WATER TO THE MIX. SLUMP OF DELIVERED CONCRETE SHALL NOT EXCEED 5".

B. THE FOLLOWING STRENGTHS SHALL BE USED:

1. FENCE POSTS FOUNDATIONS – DESIGN COMPRESSIVE STRENGTH AT 28 DAYS OF 2,000 PSI.

2. EQUIPMENT FOUNDATIONS – DESIGN COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.

3. ALL OTHER CONCRETE NOT SPECIFIED – DESIGN COMPRESSIVE STRENGTH AT 28 DAYS OF 3,000 PSI.

4. CONCRETE SPECIFICATION FOR MONOPOLE OR TOWER FOUNDATION SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS.

C. USE ACCELERATING ADMIXTURES IN COLD WEATHER ONLY WHEN APPROVED BY THE ENGINEER. USE OF ADMIXTURES WILL NOT RELAX COLD WEATHER PLACEMENT REQUIREMENTS.

D. USE SET-RETARDING ADMIXTURES DURING HOT WEATHER ONLY WHEN APPROVED BY THE ENGINEER.

E. ADD AIR ENTRAINING AGENT TO CONCRETE MIX FOR CONCRETE WORK SUBJECT TO OR EXPOSED TO EXTERIOR.

PART 3 – EXECUTION

3.01 INSPECTION

THE CONTRACTOR SHALL VERIFY ANCHORS, SEATS, PENETRATIONS, PLATES, REINFORCEMENT, AND OTHER ITEMS TO BE CAST INTO CONCRETE ARE ACCURATELY PLACED, HELD SECURELY, AND SHALL NOT CAUSE HARDSHIP IN PLACING CONCRETE.

3.02 PREPARATION

A. THE CONTRACTOR SHALL PREPARE PREVIOUSLY PLACED CONCRETE BY CLEANING WITH STEEL BRUSH AND APPLYING BONDING AGENT. APPLY BONDING AGENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3.03 PLACING CONCRETE

A. THE ENGINEER SHALL BE NOTIFIED NOT LESS THAN 24 HOURS IN ADVANCE OF CONCRETE PLACEMENT. UNLESS INSPECTION IS WAIVED IN EACH CASE, PLACING OF CONCRETE SHALL BE PERFORMED ONLY IN THE PRESENCE OF THE ENGINEER.

CONCRETE SHALL NOT BE PLACED UNTIL ALL FORMWORK, EMBEDDED PARTS, STEEL REINFORCEMENT, FOUNDATION SURFACES, AND JOINTS INVOLVED IN THE PLACING HAVE BEEN APPROVED, AND UNTIL FACILITIES ACCEPTABLE TO THE A.N.B. REPRESENTATIVE HAVE BEEN PROVIDED AND MADE READY FOR ACCOMPLISHMENT OF THE WORK AS SPECIFIED. CONCRETE MAY NOT BE ORDERED FOR PLACEMENT UNTIL ALL ITEMS HAVE BEEN APPROVED AND A.N.B. HAS PERFORMED A FINAL INSPECTION AND GIVEN APPROVAL TO START PLACEMENT TESTING.

B. PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301.

C. THE CONTRACTOR SHALL ENSURE THAT REINFORCEMENT, INSERTS, EMBEDDED PARTS, FORMED JOINTS, AND VAPOR BARRIERS ARE NOT DISTURBED DURING CONCRETE PLACEMENT.

3.04 SURFACE FINISHES

A. SURFACES AGAINST WHICH BACKFILL OR CONCRETE SHALL BE PLACED REQUIRE NO TREATMENT EXCEPT REPAIR OF DEFECTIVE AREAS.

B. SURFACES THAT WILL BE PERMANENTLY EXPOSED SHALL PRESENT A UNIFORM FINISH PROVIDED BY THE REMOVAL OF FINS AND THE FILLING OF HOLES AND OTHER IRREGULARITIES WITH DRY PACK GROUT, OR BY SACKING WITH UTILITY OR ORDINARY GROUT.

C. SURFACES THAT WOULD NORMALLY BE LEVEL AND WHICH WILL BE PERMANENTLY EXPOSE TO THE WEATHER SHALL BE SLOPED FOR DRAINAGE. UNLESS ENGINEER'S DESIGN DRAWING SPECIFIES A HORIZONTAL SURFACE OF SURFACES, SUCH AS STAIR THREADS, WALLS, CURBS, AND PARAPETS SHALL BE SLOPED APPROXIMATELY 1/4 FT.

D. SURFACES THAT WILL BE COVERED BY BACKFILL OR CONCRETE SHALL BE SMOOTH SCREENED.

E. EXPOSED SLAB SURFACES SHALL BE CONSOLIDATED, SCREENED, FLOATED, AND STEEL TROWELED. HAND OR POWER-DRIVEN EQUIPMENT MAY BE USED FOR FLOATING SHALL BE STARTED AS SOON AS THE SCREENED SURFACE HAS ATTAINED A STIFFNESS TO PERMIT FINISHING OPERATIONS. FLOATING SHALL BE CONTINUED THE MINIMUM TIME REQUIRED TO PRODUCE A SURFACE UNIFORM IN TEXTURE AND FREE FROM SCREENED MARKS OR OTHER IMPERFECTIONS. THE FINAL FINISH SHALL BE PRODUCED BY USE OF STEEL-BLADED FINISHING TROWELS. STEEL TROWLING SHALL COMMENCE ONLY AFTER THE SURFACES TO BE FINISHED HAVE BEEN BROUGHT TO CORRECT ELEVATION AND ALL SURFACE IMPERFECTIONS CORRECTED, AND SHALL BE CONTINUED ONLY UNTIL THE SURFACE IS SMOOTH AND UNIFORM IN TEXTURE AND APPEARANCE. IF FREE WATER IS BROUGHT TO THE SURFACE DURING THE FINISHING OPERATIONS, IT SHALL BE REMOVED BY SPONGING. FINISHING SHALL BE TIMED AND PERFORMED SO THAT EXTRA WATER NEED NOT BE APPLIED TO THE SURFACE BEING TROWELED.

3.05 PATCHING

THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON REMOVAL OF THE FORMS TO OBSERVE CONCRETE SURFACE CONDITIONS. IMPERFECTIONS SHALL BE PATCHED ACCORDING TO THE ENGINEER'S DIRECTION.

3.06 DEFECTIVE CONCRETE

THE CONTRACTOR SHALL NOTIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LEVELS AND LINES, DETAILS, AND ELEVATIONS AS SPECIFIED IN ACI 301.

3.07 PROTECTION

A. IMMEDIATELY AFTER PLACEMENT. THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.

B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.

C. ALL CONCRETE SHALL BE WATER CURED BY CONTINUOUS (NOT PERIODIC) FINE MIST SPRAYING OR SPRINKLING ALL EXPOSED SURFACES. WATER SHALL BE CLEAN AND FREE FROM ACID, ALKALI, SLATS, OIL, SEDIMENT, OR ORGANIC MATTER. SUCCESSFUL CURING SHALL BE ASSURED BY USE OF AN AMPLE WATER SUPPLY UNDER PRESSURE IN PIPES, WITH ALL NECESSARY APPLIANCES OF HOSE, SPRINKLERS, AND SPRAYING DEVICES.

METALS

PART 1 – GENERAL

1.01 WORK INCLUDED

A. THE WORK CONSISTS OF THE FABRICATION AND INSTALLATION OF ALL MATERIALS TO BE FURNISHED, AND WITHOUT LIMITING THE GENERALITY THEREOF, INCLUDES ALL EQUIPMENT, LABOR AND SERVICES REQUIRED FOR ALL STRUCTURAL STEEL WORK INCLUDING ALL ITEMS INCIDENTAL THERETO AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS. INCLUDING:

1. STEEL FRAMING INCLUDING BEAMS, ANGLES, CHANNELS AND PLATES.

2. WELDING AND BOLTING OF ATTACHMENTS.

1.02 REFERENCE STANDARDS

A. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER SIGHTED HEREIN:

1. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, 196 RACE STREET, PHILADELPHIA, PA 19103, USA AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS IN BUILDING CODES".

2. AWS: AMERICAN WELDING SOCIETY INC., 2501 NW 7TH STREET, MIAMI, FL 33125 USA AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES": "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

PART 2 – PRODUCTS

2.01 MATERIALS

A. STRUCTURAL STEEL: SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A36 AND A50 FOR STRUCTURAL STEEL.

2.02 WELDING

A. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.

B. WELDING ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING SHALL CONFORM TO ASTM 1-233, E70 SERIES. BARE ELECTRODES AND GRANULAR FLUX USED IN THE SUBMERGED ARC PROCESS SHALL CONFORM TO AISC SPECIFICATIONS.

C. FIELD WELDING SHALL BE DONE AS PER AWSD1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.

D. STUD WELDING SHALL BE ACCOMPLISHED BY CAPACITOR DISCHARGE (CD) WELDING TECHNIQUE USING MIDWEST FASTENERS, INC. CD100 CAPACITOR DISCHARGE STUD WELDER OR EQUAL.

2.2 PROVIDE STUD FASTENERS OF MATERIALS AND SIZES SHOWN ON DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER FOR STRUCTURAL LOADINGS REQUIRED.

2.3 FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS TO PROPERLY SELECT AND INSTALL STUD WELDS.

2.03 BOLTING

A. BOLTS SHALL BE 3/4" (MINIMUM) CONFORMING TO ASTM A325, HOT DIP GALVANIZED OR ASTM A153, NUTS SHALL BE HEAVY HEX TYPE.

B. ALL BOLTS SHALL BE INSTALLED IN SLIP CRITICAL CONNECTIONS CONFORMING TO AISC METHOD, CONFORMING TO THE 1/4 TURN METHOD.

2.04 FABRICATION

A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS STANDARDS AND CODES.

2.05 FINISH

A. STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.

2.06 PROTECTION

A. UPON COMPLETION OF ERECTION INSPECT ALL GALVANIZED STEEL AND PAINT ANY FIELD CUTS, WELDS, OR GALVANIZED BREAKS WITH ZINC BASED PAINT, COLOR TO MATCH THE GALVANIZING PROCESS.

3.01 ERECTION OF STEEL

A. PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION, BUT ARE NECESSARY FOR ITS PROPER ERECTION.

B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.

C. TEMPORARY BRACING, GUYING, AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SET AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.

SPECIAL CONSTRUCTION
ANTENNA INSTALLATION

PART 1 – GENERAL

1.01 WORK INCLUDED

A. ANTENNAS AND COAXIAL CABLES ARE FURNISHED BY A.N.B. UNDER SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPERTY.

B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND A.N.B. COM. SPECIFICATIONS.

C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.

D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AS INDICATED ON DRAWINGS.

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GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER
5/11/12

SITE INFORMATION:

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499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

GN-3

E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TEST UNDER HEWLETT–PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER (FDR) TEST RESULTS TO THE PROJECT MANAGER. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.

F. INSTALL COAXIAL CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.

G. ANTENNA AND COAXIAL CABLE GROUNDING:

1. ALL EXTERIOR #6 GREEN GROUND WIRE DAISY CHAIN CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE 3221213 OR EQUIVALENT.

2. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS).

1.02 RELATED WORK

FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:

1. FLASHING OF OPENING INTO OUTSIDE WALLS.
2. SEALING AND CAULKING ALL OPENINGS.
3. PAINTING.
4. CUTTING AND PATCHING.

1.03 REQUIREMENTS OF REGULATOR AGENCIES

A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.

B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. EIA – ELECTRONIC INDUSTRIES ASSOCIATION RS–22. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. FAA – FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7480–IH, CONSTRUCTION MARKING AND LIGHTING.
3. FCC – FEDERAL COMMUNICATION COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES
4. AISC – AMERICAN INSTITUTE OF STEEL CONSTRUCTION FOR STRUCTURAL JOINTS USING ASTM 1325 OR A490 BOLTS.
5. NEC – NATIONAL ELECTRIC CODE – ON TOWER LIGHTING KITS.
6. UL – UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
7. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
8. LIFE SAFETY CODE NFPA, LATEST EDITION.

ELECTRICAL SPECIFICATIONS

GENERAL PROPERTIES

A. REQUIREMENTS: FURNISH ALL LABOR, MATERIALS, SERVICE, EQUIPMENT, AND APPLIANCES REQUIRED TO COMPLETE THE INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS AND CONTRACT DRAWINGS.

B. REQUIREMENTS OF REGULATORY AGENCIES AND STANDARDS: INSTALLATION, MATERIAL, EQUIPMENT AND WORKMANSHIP SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRIC CODE (NEC) – APPLICABLE STATE ELECTRIC CODES, THE NATIONAL ELECTRICAL SAFETY CODES (NESC), AND THE TERMS AND THE CONDITIONS OF THE AUTHORITIES HAVING LAWFUL JURISDICTION PERTAINING TO THE WORK REQUIRED. ALL MODIFICATIONS REQUIRED BY THESE CODES, RULES, REGULATIONS, AND AUTHORITIES SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL CHARGE TO THE UNDERWRITER'S LABORATORIES (UL): ALL MATERIALS, APPLIANCES, OR DEVICES SHALL CONFORM TO THE APPLICABLE STANDARDS OF UNDERWRITER'S LABORATORIES, INC. THE LABEL OF, OR LISTING BY: U.L. IS REQUIRED.

C. MATERIALS: ALL SIMILAR MATERIALS AND EQUIPMENT SHALL BE THE PRODUCT OF THE SAME MANUFACTURER WHERE NO SPECIFIC MATERIAL APPARATUS OR APPLIANCE IS MENTIONED. MANUFACTURER MAY BE USED PROVIDING IT CONFORMS TO THE CONTRACT REQUIREMENTS AND MEETS THE APPROVAL OF THE OWNER. MATERIAL AND EQUIPMENT SHALL BE THE STANDARD PRODUCTS OF MANUFACTURER'S REGULARLY ENGAGED IN THE PRODUCTIONS OF SUCH MATERIAL AND SHALL BE THE MANUFACTURER'S CURRENT IN STANDARD AND DESIGN.

D. EXECUTION: FABRICATION, ERECTION, AND INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM SHALL BE DONE IN A FIRST CLASS WORKMANLIKE MANNER BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH WORK AND SHALL PROCEED IN AN ORDERLY MANNER SO AS NOT TO HOLD UP PROGRESS OF THE PROJECT.

E. PERFORMANCE TESTS: THOROUGHLY TEST FEEDERS, EQUIPMENT AND ALL CIRCUITS FOR PROPER OPERATING CONDITION AND FREEDOM FROM GROUNDS AND SHORT CIRCUITS BEFORE ACCEPTANCE IS REQUESTED. ALL EQUIPMENT, APPLIANCES, AND DEVICES SHALL BE OPERATED UNDER LOAD CONDITIONS.

F. AS–BUILT DRAWINGS: DURING PROCESS OF THE WORK, MAINTAIN AN ACCURATE RECORD OF THE INSTALLATION OF THE SYSTEM, LOCATING EACH CIRCUIT PRECISELY BY DIMENSION. UPON COMPLETION OF THE INSTALLATION, TRANSFER ALL RECORD DATA TO BLUE LINE PRINTS OF THE ORIGINAL DRAWINGS.

RACEWAYS, BOXES, AND FITTINGS

A. CONDUITS, ELECTRICAL, METALLIC TUBING (MET): MILD STEEL, ZINC COATED ON THE OUTSIDE AND EITHER ZINC COATED OR COATED WITH AN APPROVED CORROSION RESISTANT COATING ON THE INSIDE. MAXIMUM, SIZE 2 ELECTRICAL TRADE SIZE UNLESS NOTED ON THE DRAWINGS OR SPECIFICALLY APPROVED FOR EQUIPMENT CONNECTIONS. SIZES NOT NOTED ON DRAWINGS SHALL BE AS REQUIRED BY NEC.

B. CONDUIT FITTINGS: CONNECTORS AND COUPLINGS: EMT COUPLINGS AND CONNECTORS EITHER STEEL OR MALLEABLE IRON ONLY. CONCRETE TIGHT OR RAIN TIGHT AND EITHER THE GLAND AND RING COMPRESSION TYPE OR THE STAINLESS STEEL MULTIPLE LOCKING TYPE, CONNECTORS TO HAVE INSULATED THROATS, EMT FITTINGS USING SET SCREWS OR INDENTATIONS AS A MEANS OF ATTACHMENT ARE NOT TO BE PERMITTED. BUSHINGS: INSULATED TYPE, DESIGNED TO PREVENT ABRASION OF WIRES WITHOUT IMPAIRING THE CONTINUITY OF THE CONDUIT, IMC AND RIGID ALUMINUM CONDUIT.

C. CONDUIT INSTALLATIONS: CONDUITS SYSTEMS, EMT, OR RIGID NONMETALLIC CONDUIT UNLESS NOTED. CONDUIT INSTALLATION: INSTALL CONCEALED CONDUIT AND EMT IN AS DIRECT LINES AS POSSIBLE. INSTALL EXPOSED CONDUITS AND EMT PARALLEL TO OR AT RIGHT ANGLES TO THE LINES OF THE BUILDING. RIGHT ANGLE BENDS IN EXPOSED CONDUIT AND EMT RUNS SHALL BE MADE WITH STANDARD ELBOWS, SCREW JOINTED CONDUIT FITTINGS OR CONDUIT BENT TO RADIUS NO LESS THAN THOSE OF STANDARD ELBOWS.

D. CONDUIT SUPPORTS: PROVIDE SUPPORTS FOR HORIZONTAL CONDUITS AND EMT NOT MORE THAN 8 FEET APART WITH NOT LESS THAN TWO ELBOW OR BEND INCLUDING RUNS ABOVE SUSPENDED CEILINGS AND WITHIN 3 FEET OF ALL JUNCTION BOXES, SWITCHES, FITTINGS, ETC. INSTALL ONE HOLD PIPE STRAPS ON CONDUITS 1 INCH OR SMALLER INSTALL INDIVIDUAL PIPE HANGERS FOR CONDUITS LARGER THAN 1 INCH. SPRING STEEL FASTENERS WITH HANGER RODS MAY BE USED IN DRY LOCATIONS IN LIEU OF PIPE STRAPS.

CONDUCTORS

A. WIRES AND CABLES (600 VOLTS): CONFORM TO THE APPLICABLE UL AND IPCEA STANDARDS FOR THE USE INTENDED. COPPER CONDUCTORS WITH 600 VOLTS INSULATION UNLESS OTHERWISE SPECIFIED OR NOTED ON THE DRAWINGS. STRANDED CONDUCTORS FOR NO. 8 OR LARGER WHERE ELSEWHERE SPECIFIED OR NOTED ON THE DRAWINGS. USE OF ALUMINUM CONDUCTORS WILL NOT BE PERMITTED. INSULATION SHALL BE TYPE THHN/THWN INSULATION 75° C FOR ALL CONDUCTORS, OTHERWISE SPECIFIED CONDUCTORS COLOR–CODED IN ACCORDANCE WITH NEC. CONNECT ALL CONDUCTORS OF THE SAME PHASE CONDUCTOR, COLOR CODING SHALL BE A–BLACK, B–RED, N–WHITE, WITH GREEN FOR ALL GROUND CONDUCTORS.

B. CONNECTORS AND LUGS: FOR COPPER CONDUCTORS NO. 6 AND SMALLER: 3M SCOTCH–LOK OR T & B STA–KON COMPRESSION OR INDENT TYPE CONNECTORS WITH INTEGRAL OR SEPARATE INSULATING CAPS. FOR COPPER CONDUCTORS LARGER THAN NO. 6 SOLDERLESS, INDENT HEX SCREW OR BOLT TYPE PRESSURE CONDUCTORS, PROPERLY TAPED OR INSULATED.

C. SPLICES: (480 VOLTS AND UNDER): CONDUCTOR LENGTHS SHALL BE CONTINUOUS FROM TERMINATION TO TERMINATION WITHOUT SPLICES UNLESS APPROVED BY THE BUILDING INSPECTOR.

CIRCUIT BREAKERS

A. PROVIDE MOLDED CASE, BOLT–ON, THERMAL MAGNETIC TRIP, SINGLE, TWO, OR THREE POLE BRANCH CIRCUIT BREAKERS AS SHOWN ON DRAWINGS. MULTIPLE POLE BREAKERS SHALL BE SINGLE HANDLE, COMMON TRIP, A/C RATING TO MATCH EXISTING OR AS REQUIRED FOR AVAILABLE FAULT CURRENTS.

GROUNDING

A. ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.

B. IF THE AC PANEL IN THE POWER CABINET IS WIRED AS SERVICE ENTRANCE, THE AC SERVICE GROUND CONDUCTOR SHALL BE CONNECTED TO GROUND ELECTRODE SYSTEM. WHEN THE AC PANEL IN THE POWER CABINET IS CONSIDERED A SUB–PANEL, THE GROUND WIRE SHALL BE INSTALLED IN THE AC POWER CONDUIT. THE INSTALLATION SHALL BE PER LOCAL AND NATIONAL ELECTRIC CODE (NFPA–70).

C. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE, THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE–2 HOLES. LONG BARREL LUGS OR DOUBLE CRIMP CLAMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH ANTIOXIDANT (COPPER SHIELD) BEFORE MAKING THE CRIMP CONNECTIONS. THE MANUFACTURER'S TORQUING RECOMMENDATIONS ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS ARE TO BE FOLLOWED.

D. THE ANTENNA CABLES SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN FOR LIGHTING PROTECTION. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER GROUND BUS AT THE LOWERMOST POINT OF A VERTICAL RUN JUST BEFORE IT BEGINS TO BEND TOWARD THE HORIZONTAL PLANE. WIRE RUNS TO GROUND SHALL BE KEPT AS STRAIGHT AND SHORT AS POSSIBLE. THE ANTENNA CABLE SHIELD SHALL BE GROUNDED JUST BEFORE ENTERING THE CELL CABINET. ANY ANTENNA CABLES OVER 200 FEET IN LENGTH SHALL ALSO BE EQUIPPED WITH ADDITIONAL GROUNDING AT MID–POINT.

6. ALL GROUNDING CONDUCTORS INSIDE THE BUILDING SHALL BE RUN IN CONDUIT RACEWAY SYSTEM, AND SHALL BE INSTALLED AS STRAIGHT AS PRACTICAL WITH MINOR BENDS TO AVOID OBSTRUCTIONS. THE MINIMUM BENDING RADIUS OF ANY #2 GROUNDING CONDUCTOR IS 8". PVC RACEWAY MAY BE FLEXIBLE OR RIGID PER THE FIELD CONDITIONS. GROUNDING CONDUCTORS SHALL NOT MAKE CONTACT WITH ANY METALLIC CONDUITS, SURFACES, OR EQUIPMENT.

7. PROVIDE PVC SLEEVES WHERE GROUNDING CONDUCTORS PASS THROUGH THE BUILDING WALLS AND/OR CEILINGS.

8. INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANELBOARD.

9. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.

10. GROUND COAXIAL SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES.

11. GROUND FIELD TEST PROCEDURE

THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A "FALL OF POTENTIAL" TEST ON THE NEW SUPPLEMENTAL GROUND FIELD PRIOR TO FINAL CONNECTION OF THE GROUNDING SYSTEM TO EQUIPMENT. THE TEST SHALL BE PERFORMED BY A QUALIFIED AND CERTIFIED TESTING AGENT. PROVIDE INDEPENDENT TEST RESULTS TO THE PROJECT MANAGER FOR REVIEW. THE GROUND SYSTEM RESISTANCE TO EARTH GROUND SHALL NOT EXCEED TEN (10) OHMS. IF THE GROUND TEST EXCEEDS THE MAXIMUM OF 10 OHMS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL GROUND CONNECTIONS AS REQUIRED TO MEET THE 10 OHMS MAXIMUM.

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720-201-7385

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Development Services, LLC

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SHARPSVILLE, PA 16150

724.962.5999

www.powderriverdev.com

SUBMITTALS

3	05/15/12	FINAL	ARM
2	04/19/12	FINAL	BAL
1	04/13/12	REDLINE REVISIONS	TM
0	04/03/12	ISSUED FOR REVIEW	TM

PROJ. NO.: 2052-022812

CHECKED BY: G.W.C.

STATE OF MISSOURI
GARY W. CLOWER
NUMBER PE-2010029704
PROFESSIONAL ENGINEER
5/14/12

SITE INFORMATION:

MCI-242-A

GALE COMMUNITIES
WATER TOWER

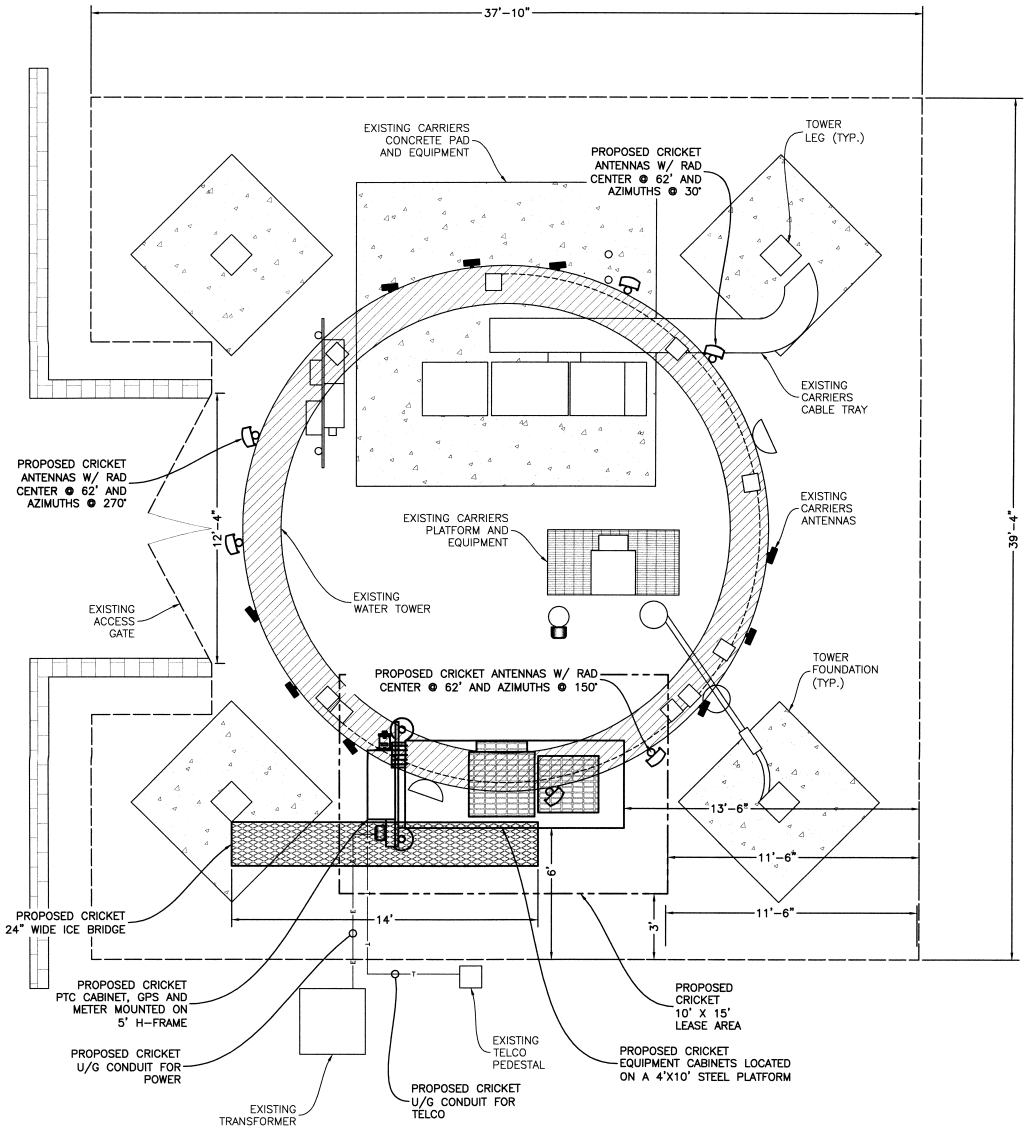
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

GN-4



NOTES:

1. ALL GROUND MOUNTED EQUIPMENT AND PROPOSED ICE BRIDGE SHALL BE SCREENED FROM PUBLIC VIEW BY THE EXISTING FENCE. ANY PORTION OF THE EQUIPMENT OR ICE BRIDGE THAT EXTENDS ABOVE THE TOP OF THE FENCE MAY BE SUBJECT TO ADDITIONAL SCREENING MEASURES.

N

0 4'

3/16"=1' (11x17)
3/8"=1' (24x36)

ARCHITECTURAL SITE PLAN

1

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SITE INFORMATION:

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GALE COMMUNITIES WATER TOWER

499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

SHEET TITLE:

ARCHITECTURAL SITE PLAN

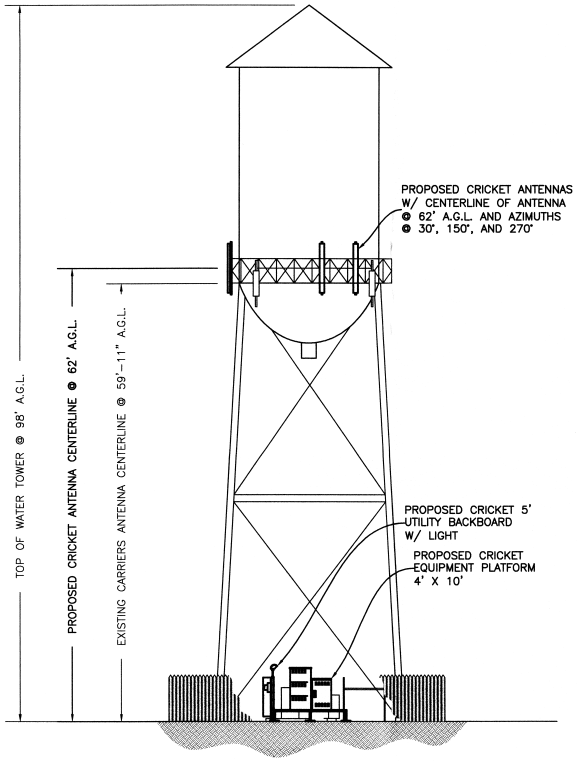
SHEET NUMBER:

A-1

NOTES:

1. ALL EQUIPMENT MOUNTED TO TOWER AND ASSOCIATED CABLING SHALL BE PAINTED TO MATCH THE COLOR OF THE TOWER AND SURROUNDING MOUNTED EQUIPMENT

2. ALL GROUND MOUNTED EQUIPMENT AND PROPOSED ICE BRIDGE SHALL BE SCREENED FROM PUBLIC VIEW BY THE EXISTING FENCE. ANY PORTION OF THE EQUIPMENT OR ICE BRIDGE THAT EXTENDS ABOVE THE TOP OF THE FENCE MAY BE SUBJECT TO ADDITIONAL SCREENING MEASURES.



4' 0 4' 8' 12'
1/16"=1' (11x17)
1/8"=1' (24x36)

ELEVATION | 1

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GALE COMMUNITIES WATER TOWER

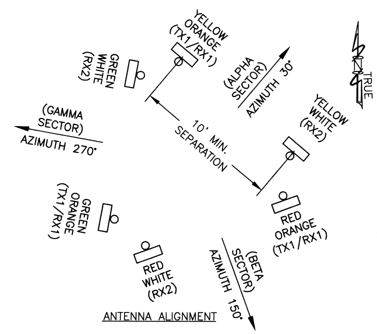
499 SW TOWER PARK DR
LEE'S SUMMIT, MO. 64081

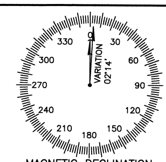
SHEET TITLE:

ELEVATION

SHEET NUMBER:

A-2





MAGNETIC DECLINATION

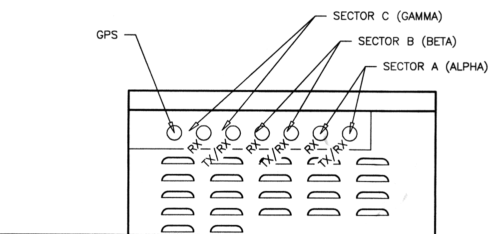
NOTES:

1. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS, PRIOR TO ORDERING CABLE, CONTRACTOR TO VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
2. CONTRACTOR SHALL VERIFY THE DOWNTILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
3. CONTRACTOR TO CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION.
4. COLOR BANDING SHALL BE 2" WIDE ON THE MAIN LINE (5 WRAP MIN.). SPACING TO BE 1" BETWEEN COLORS. COLOR BAND ON JUMPERS 1" WIDE WITH 1" SPACE. START COLOR BANDS 2" BEYOND WEATHERPROOFING. START SECTOR COLOR NEXT TO END CONNECTOR.

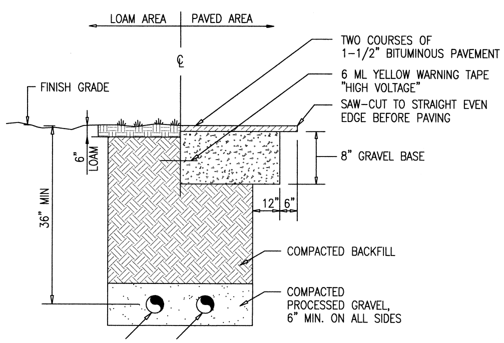
ANTENNA ORIENTATION DETAIL 7

			RF CONFIGURATION
	SECTOR 1	SECTOR 2	SECTOR 3
AZIMUTH:	30	150	270
ANTENNA HT (ft)	62'	62'	62'
# OF ANTENNAS	2	2	2
ANTENNA MODEL	CMA-B_6521_E0-6_RET_TB05	CMA-B_6521_E0-6_RET_TB05	CMA-B_6521_E0-6_RET_TB05
ANTENNA MODEL - OTHER	–	–	–
ELECTRICAL DOWN - TILT	3	2	4
MECHANICAL DOWN - TILT	0	0	0
CABLE LENGTH (ft)	85'	85'	85'
CABLE TYPE (inches)	1-5/8" in	1-5/8" in	1-5/8" in
TOP JUMPER LENGTH (ft)	6	6	6
BOTTOM JUMPER LENGTH (ft)	6	6	6

RF CONFIGURATION INFORMATION 6

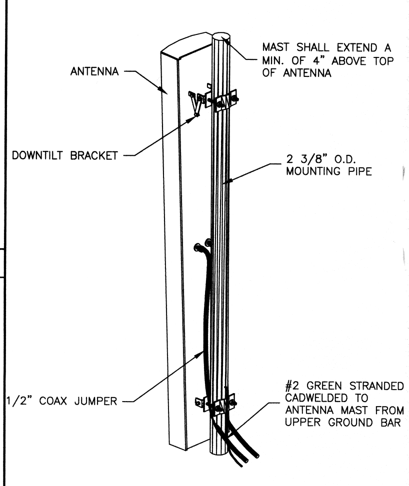


CABINET TO COAX CONFIGURATION DETAIL 5



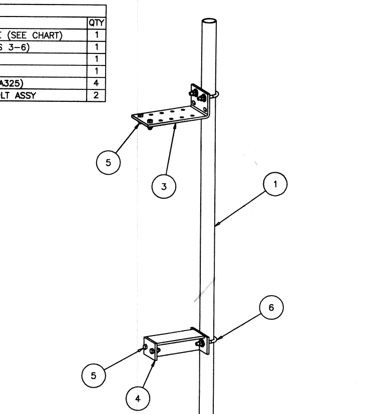
SCHEDULE 40 CONDUITS FOR NEW ELECTRICAL AND TELEPHONE SERVICES SEE UTILITY AND SITE PLANS. PROVIDE APPROVED PULL BOXES AS REQUIRED, AND COORDINATE INSTALLATION W/ ALL UTILITY COMPANIES FOR INTERFACING AT TERMINATION POINTS. PROVIDE FULL LENGTH PULL ROPES (TYP.).

TYPICAL UTILITY TRENCH DETAIL 2



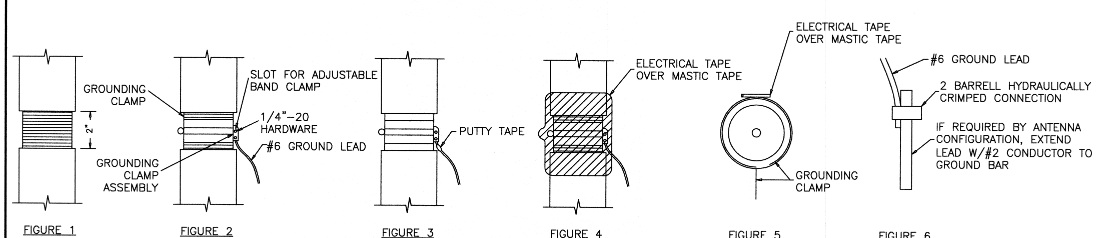
TYPICAL ANTENNA DETAIL 4

Parts List			
ITEM	PART NO.	Description	QTY
1	MT-XXX-XXX	PLAIN END PIPE 2-3/8" OD PIPE (SEE CHART)	1
2	WT-HRM2-B	HANDRAIL MOUNT BASE KIT (ITEMS 3-6)	1
3	WT-HRM2.01	UPPER BRACKET	1
4	WT-HRM2.02	WELDMENT- LOWER BRACKET	1
5	GB-0412A	1/2" x 1-1/4" GALV BOLT KIT (A325)	4
6	GUB-4240	1/2" x 2-1/2" x 4" GALV U-BOLT ASSY	2



LAP 12/28/00 WT-HRM2-SERIES
TP 1 OF 1 WATER TOWER HANDRAIL MT. FOR 2-3/8" OD
Assembly Drawing
B NTS
A36, A53
NONE
ANDREW. ORLAND PARK, IL 60462 U.S.A.
DO NOT SCALE THIS PRINT

ANTENNA MOUNT DETAIL 3



TYPICAL WEATHERPROOFING DETAILS 1

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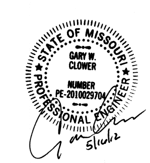

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GALE COMMUNITIES WATER TOWER

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SHEET TITLE:

RF, ANTENNA, AND TRENCH DETAILS

SHEET NUMBER:

A-3