CITY OF EL PASO, TEXAS
AGENDA ITEM
DEPARTMENT HEAD'S SUMMARY FORM

DEPARTMENT: AIRPORT

AGENDA DATE: April 24, 2012

CONTACT PERSON NAME AND PHONE NUMBER: Monica Lombraña/780-4724

DISTRICT(S) AFFECTED: All Districts

SUBJECT:

APPROVE a resolution / ordinance / lease to do what? OR AUTHORIZE the City Manager to do what? Be descriptive of what we want Council to approve. Include $ amount if applicable.

This item is a Resolution to authorize the City Manager to sign "Supplemental Lease Agreement No. 2" to Lease No. GS-07B-16867 by and between the City of El Paso and the United States of America regarding the Transportation Security Administration's (TSA) rental of space in the El Paso International Terminal building to allow for the installation and usage of communication equipment.

BACKGROUND / DISCUSSION:

Discussion of the what, why, where, when, and how to enable Council to have reasonably complete description of the contemplated action. This should include attachment of bid tabulation, or ordinance or resolution if appropriate. What are the benefits to the City of this action? What are the citizen concerns?

Both under the auspices of the Department of Homeland Security, the Transportation Security Administration (TSA) and the U. S. Customs and Border Protection (USCBP) are collaborating to install communication equipment, including an antenna, to improve radio communications among law enforcement agencies operating at the El Paso International Airport. This item is an acknowledgement and approval to allow for the installation of equipment and the antenna.

PRIOR COUNCIL ACTION:

Has the Council previously considered this item or a closely related one?

August 9, 2011 – Approval of SLA No. 1 to Lease No. GS-07B-16867, which changed the lease effective date and rental payment start date from November 1, 2011, to September 1, 2011, and to accept the tenant improvements as substantially completed.

May 24, 2011 – Approval of Lease No. GS-07B-16867, effective November 1, 2011, by and between the City of El Paso and the United States of America for space in the terminal building of the El Paso International Airport to be occupied by the Transportation Security Administration (TSA).

AMOUNT AND SOURCE OF FUNDING:

How will this item be funded? Has the item been budgeted? If so, identify funding source by account numbers and description of account. Does it require a budget transfer?

N/A – this is a revenue-generating item

BOARD / COMMISSION ACTION: N/A

Enter appropriate comments or N/A

**********REQUIRED AUTHORIZATION**********

DEPARTMENT HEAD: Monica Lombraña

Monica Lombraña, A.A.E.
Director of Aviation

(If Department Head Summary Form is initiated by Purchasing, client department should sign also)

Information copy to appropriate Deputy City Manager

RESOLUTION

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EL PASO:

That the City Manager be authorized to sign "Supplemental Lease Agreement No. 2" to Lease No. GS-07B-16867 by and between the City of El Paso and the United States of America regarding the Transportation Security Administration's rental of space in the El Paso International Airport Terminal building to allow for the installation and usage of communication equipment.

ADOPTED this _____ day of _____ 2012.

THE CITY OF EL PASO

_____
John. F. Cook
Mayor

ATTEST:

_____
Richarda Duffy Momsen
City Clerk

APPROVED AS TO FORM:

Theresa Cullen
Deputy City Attorney

APPROVED AS TO CONTENT:

Monica Lombraña, A.A.E.
Director of Aviation

11-1003-008/107309/Reso SLA#2-communication equip.

GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE	SUPPLEMENTAL AGREEMENT NO. 2 (FIFTEEN PAGES)	DATE
SUPPLEMENTAL LEASE AGREEMENT	TO LEASE NO. GS-07B-16867	

ADDRESS OF PREMISES El Paso International Airport
6701 Convair Road
El Paso, TX 79925

THIS AGREEMENT, made and entered into this date by and between

CITY OF EL PASO

whose address is 6701 Convair Road
El Paso, TX 79925

hereinafter called the Lessor, and the UNITED STATES OF AMERICA, hereafter called the Government:

WHEREAS, the parties desire to provide for Department of Homeland Security – U.S. Custom & Border Protection (DHS-CBP) communication equipment, including antenna(s).

NOW THEREFORE, the parties for the considerations hereinafter mentioned covenant and agree that the said Lease is amended as set forth in this SLA # 2, as follows:

Lessor acknowledges and approves the installation and usage of the communication equipment (including antenna(s)) more particularly described on the drawings and specifications, attached to this SLA # 2 as Exhibit "1" (13 pages).

No additional rental, fees or other charges are assessable as a result of or related to the referenced telecommunications equipment. Lessor waives restoration.

***** SEE ATTACHED ADDENDUM – SLA NUMBER TWO (2) –**

-- PAGES 2 THROUGH 15 ***

All other terms and conditions of the lease shall remain in force and effect.

LESSOR: CITY OF EL PASO

BY _____ City Manager
(Signature) (Title)

IN PRESENCE OF

see page 2 (addendum) for additional signatures 2 Civic Center Plaza, El Paso, TX 79901
(Signature) (Address)

UNITED STATES OF AMERICA

CONTRACTING OFFICER
GENERAL SERVICES ADMINISTRATION

BY _____ 819 TAYLOR ST., FT. WORTH , TX 76102
(Signature) (Official Title)

CONTINUED (ADDENDUM) --

Additional required signatories for lessor:

APPROVED AS TO FORM:

Theresa Cullen
Deputy City Attorney

APPROVED AS TO CONTENT:

Monica Lombraña, A.A.E.
Director of Aviation

*** END – SUPPLEMENTAL LEASE AGREEMENT, TWO (2) ***

INITIALS

GOV'T LESSOR

PROJECT TEAM

CFE CONTACT

CFE TELECOM
CONTACT: PRAVEEN RATHORE
PROJECT MANAGER
4544 S. LAMAR BLVD., BLDG. G-300
AUSTIN, TEXAS 78745

PHONE: 817.966.7720
FAX: 512.495.9473

SAIC PROJECT MANAGER

JOHN G. CARTER, JR.
MOBILE: 571.455.2678
EMAIL: JOHN.G.CARTER.JR@SAIC.COM

ENGINEER

CFE TELECOM
CONTACT: DALE B. SHUMAKER, P.E.
4544 S. LAMAR BLVD., BLDG. G-300
AUSTIN, TEXAS 78745
PHONE: 512.495.9470
FAX: 512.495.9473

PROJECT DATA

SITE LOCATION

APPLICANT

UTILITIES

ONE CALL
CONTRACTOR TO CALL BEFORE DIGGING!!!
PHONE: 811 OR 1.800.344.8377

POWER FROM BUILDING
PHONE: N/A

AT&T
PHONE: 888.328.2988

PERMITTING

COUNTY: EL PASO
JURISDICTION: CITY OF EL PASO
CODE: 2009 IBC
OCCUPANCY: N/A
ZONING: C4
USE: UNMANNED PUBLIC SAFETY TELECOMMUNICATIONS FACILITY

PROPERTY OWNER

OWNER: CITY OF EL PASO
CONTACT: GABRIELA MARTINEZ
6701 CONVAIR ROAD
EL PASO, TEXAS 79925
PHONE: 915.780.4729
EMAIL: MARTINEZGZ@ELPASOTEXAS.GOV

TOWER OWNER

N/A

SERVICE ROOM OWNER

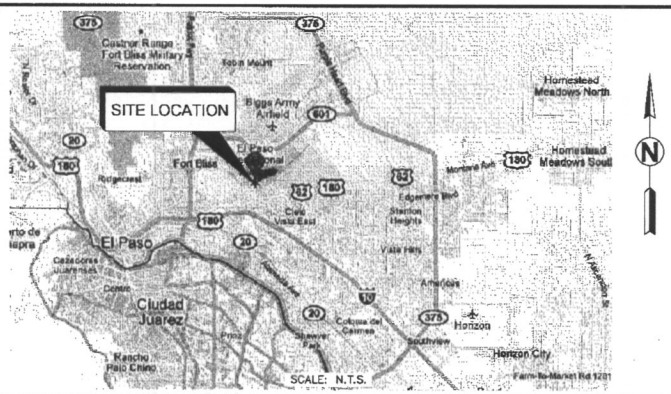
N/A

LEGAL PARCEL NUMBER/LEGAL DESCRIPTION

UNKNOWN

DRIVING DIRECTIONS

LOCATION MAP



MODERNIZATION PROJECT
EL PASO FOCUS AREA

SITE

EL PASO AIRPORT

SITE ADDRESS

6701 CONVAIR ROAD
EL PASO, TEXAS 79925

SCOPE OF WORK

COLLOCATION ON AIRPORT ROOF, (NO NEW ROOF PENETRATION) AND NEW EQUIPMENT IN A SERVICE ROOM WITHIN THE AIRPORT

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ATTACHMENTS

APPROVALS

CBP PROJECT MANAGER	DATE
SAIC PROJECT MANAGER	DATE
MOTOROLA RF ENGINEER	DATE
STONECROP RF ENGINEER	DATE

STATE OF TEXAS
DALE B. SHUMAKER
86380
LICENSED
PROFESSIONAL ENGINEER
4.4.12

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EL PASO AIRPORT

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REVISIONS

NO.	DATE	DESCRIPTION

TITLE SHEET

T1

EXHIBIT 1
Pg. 3

DIVISION 1 STANDARD PROVISIONS
PART 1 GENERAL

1.1 INTENT

A. THESE SPECIFICATIONS AND THE CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR THE CONSTRUCTION OF THIS PROJECT.

B. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.

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

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

E. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED WITHOUT ISSUING A CHANGE ORDER.

1.2 CONFLICTS

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSIONS, WHICH MAY BE FOUND, SHALL BE SUBMITTED TO THE CONSTRUCTION MANAGER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.

1.3 STORAGE

A. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

1.4 CLEAN UP

A. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY HIS EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK, HE SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL HIS TOOLS, SCAFFOLDING, AND SURPLUS MATERIALS AND SHALL LEAVE HIS WORK CLEAN AND READY FOR USE.

B. EXTERIOR: VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.

C. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.

D. IF NECESSARY TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.

1.5 QUALITY ASSURANCE

A. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE BUT NOT BE LIMITED TO THE LATEST VERSION OF THE FOLLOWING:

ANSI/TIA – 222 – G – 2006
INTERNATIONAL BUILDING CODE (IBC) 2009
BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA) 1990
NATIONAL ELECTRICAL CODE (NEC) WITH LOCAL AMENDMENTS 2011
UNDERWRITER LABORATORIES APPROVED ELECTRICAL PRODUCTS
AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS (AISC)
ANSI/NFPA – 70 LIFE SAFETY CODE NFPA – 101 – 1990

B. ALL WORK SHALL BE DONE IN ACCORDANCE WITH MOTOROLA'S R56 STANDARDS AND GUIDELINES FOR COMMUNICATIONS SITES.

1.6 ADMINISTRATION

A. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THE PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF ANY WORK.

B. SUBMIT A BAR CHART TYPE PROGRESS SCHEDULE NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE. INDICATE A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK. SHOW COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.

C. PRIOR TO COMMENCING CONSTRUCTION, THE CONSTRUCTION MANAGER SHALL SCHEDULE AN "ON-SITE" MEETING WITH ALL MAJOR PARTIES. THIS SHALL INCLUDE (THOUGH NOT LIMITED TO) THE PROPERTY OWNER, POWER COMPANY, RF ENGINEER AND THE CONTRACTOR.

D. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE CONSTRUCTION MANAGER NOR WILL CELLULAR SERVICE BE ARRANGED.

E. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AND SAFETY GLASSES AT ALL TIMES. THE CONTRACTOR MUST COMPLY WITH ALL APPLICABLE OSHA REQUIREMENTS.

F. PROVIDE DAILY UPDATES ON SITE PROGRESS, EITHER VERBAL OR WRITTEN.

G. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.

H. THE CONSTRUCTION MANAGER SHALL BE NOTIFIED NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND SERVICE ROOM PLACEMENTS.

COMPLIANCE NOTE:

ALL WORK WILL BE COMPLETED IN ACCORDANCE WITH EL PASO INTERNATIONAL AIRPORT STANDARDS, INCLUDING BUT NOT LIMITED TO, NOT CREATING ANY NEW PENETRATIONS TO THE ROOF AT THE INSTALLATION SITE. EXISTING ROOF PENETRATIONS FOR CABLE AND CONDUIT MUST BE USED FOR THIS PROJECT.

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REVISIONS

NO.	DATE	DESCRIPTION

GENERAL NOTES

GN1

DIVISION 2 – SITE WORK:
WORK AND DRAINAGE

PART 1 GENERAL

2.1 WORK INCLUDED

A. SITE WORK AND DRAINAGE DETAILS ARE WRITTEN TO COVER A VARIETY OF POSSIBLE SITE CONFIGURATIONS. SPECIFIC SERVICES WILL BE PERFORMED AS INDICATED IN THE SITE PLAN AND AGREED UPON BY CUSTOMER AND THE CONSTRUCTION MANAGER.

B. REFER TO COMPLETE DRAWING SET AND REFERENCED SPECIFICATIONS / STANDARDS FOR WORK INCLUDED.

2.2 RELATED WORK

A. CONSTRUCTION FOR BUILDING FOUNDATION
B. PLACEMENT OF SERVICE ROOM
C. INSTALLATION OF GROUNDING & ELECTRICAL SYSTEM
D. INSTALLATION OF ANTENNA SYSTEM

2.3 DESCRIPTIONS

A. ACCESS ROAD, TURNAROUND AREAS, AND COMPOUND AREAS SHALL BE CONSTRUCTED TO PROVIDE A WELL–DRAINED, EASILY MAINTAINED, EVEN SURFACE FOR MATERIAL AND EQUIPMENT DELIVERIES AND MAINTENANCE PERSONNEL ACCESS.

2.4 QUALITY ASSURANCE

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

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

2.5 SEQUENCING

A. CONFIRM SURVEY STAKES AND SET ELEVATION STAKES PRIOR TO ANY CONSTRUCTION. PLACE SILT FENCE OR OTHER REQUIRED EROSION CONTROLS DOWN GRADIENT OF CONSTRUCTION AREA.

B. THE COMPLETED ROAD AND SITE AREA WILL BE CLEARED OF HEAVY GROWTH OF GRASS, TREES, SHRUBS AND TOPSOIL PRIOR TO FOUNDATION CONSTRUCTION OR PLACEMENT OF BACKFILL OR SUB–BASE MATERIAL.

C. CONSTRUCT TEMPORARY CONSTRUCTION ZONE ALONG ACCESS DRIVE WHEN REQUIRED FOR NEW TOWERS.

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 SOIL HERBICIDE PRIOR TO PLACING BASE MATERIALS.

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

G. REMOVE GRAVEL FROM TEMPORARY CONSTRUCTION ZONE.

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

PART 2 PRODUCTS

2.8 MATERIALS

A. ROAD AND SITE MATERIALS: FILL MATERIAL – ACCEPTABLE SELECT FILL SHALL BE IN ACCORDANCE WITH LOCAL DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

B. SOIL HERBICIDE SHALL BE EPA REGISTERED OF LIQUID COMPOSITION AND OF PRE–EMERGENCE DESIGN.

C. SOIL STABILIZER FABRIC SHALL BE MIRAFI – 500X.

2.9 EQUIPMENT

A. COMPACTION SHALL BE ACCOMPLISHED BY MECHANICAL MEANS.

B. ALL LARGER AREAS SHALL BE COMPACTED BY SHEEPS FOOT, VIBRATORY OR RUBBER TIRED ROLLERS WEIGHING AT LEAST FIVE TONS.

C. SMALLER AREAS SHALL BE COMPACTED BY POWER– DRIVER, HAND HELD TAMPERS.

PART 3 EXECUTION

2.10 INSPECTIONS

A. LOCAL BUILDING INSPECTION SHALL RECEIVE ADEQUATE NOTIFICATION IN ADVANCE OF CONCRETE POURS WHEN REQUIRED.

2.11 PREPARATION

A. CLEAR TREES, BRUSH AND DEBRIS FROM SITE AREA AND ACCESS ROAD RIGHT OF WAY (IF REQUIRED).

B. PRIOR TO OTHER EXCAVATION AND CONSTRUCTION EFFORTS CLEAR SITE OF ORGANIC MATERIAL TO MINIMUM OF SIX INCHES BELOW ORIGINAL GROUND LEVEL.

C. DO NOT REMOVE TREES, BRUSH, OR DEBRIS FROM THE PROPERTY WITHOUT CONSTRUCTION MANAGER APPROVAL.

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

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

2.12 INSTALLATION

A. THE COMPOUND 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 IN ORDER THAT THERE IS EVEN DISTRIBUTION OF SPOILS RESULTING FROM FOUNDATION EXCAVATIONS. THE RESULTING GRADE WILL CORRESPOND WITH SAID SUB–BASE COURSE. ELEVATIONS ARE TO BE CALCULATED FROM FINISHED GRADES OR SLOPES, AS INDICATED.

B. IF ANY, EXCESS SPOILS WILL BE CLEARED FROM JOB SITE AND NOT SPREAD BEYOND THE LIMITS OF OWNER/LEASED PROPERTY UNLESS AUTHORIZED BY PROJECT MANAGER.

C. THE ACCESS ROAD SHALL BE BROUGHT TO BASE COURSE ELEVATION PRIOR TO FOUNDATION CONSTRUCTION TO PERMIT USE. COMPACTION SHALL BE DONE DURING CONSTRUCTION OF THE SITE.

D. AVOID CREATING DEPRESSIONS WHERE WATER MAY POND.

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

F. THE FINISH GRADE, INCLUDING TOP SURFACE COURSE, SHALL EXTEND A MINIMUM OF ONE FOOT BEYOND THE SITE FENCE AND SHALL COVER THE AREA AS INDICATED.

G. RIPRAP SHALL BE APPLIED TO THE SIDES OF DITCHES OR DRAINAGE SWALES.

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

I. RIPRAP ENTIRE DITCH FOR SIX FEET IN ALL DIRECTIONS AT CULVERT OPENINGS OR AS INDICATED IN THE DRAWINGS.

J. SEED, FERTILIZER AND STRAW COVER SHALL BE APPLIED TO ALL OTHER DISTURBED AREAS AND DITCHES, DRAINAGE, SWALES NOT OTHERWISE RIPRAPPED.

K. UNDER NO CIRCUMSTANCES WILL DITCHES, SWALES NOR CULVERTS BE PLACED SO THEY DIRECT WATER TOWARDS, OR PERMIT STANDING WATER IMMEDIATELY ADJACENT TO SITE. IF DESIGN OR ELEVATIONS CONFLICT WITH THIS GUIDANCE, THE CONSTRUCTION MANAGER SHOULD BE ADVISED IMMEDIATELY.

L. IF DITCH LIES WITH SLOPES GREATER THAN TEN PERCENT, MOUND DIVERSIONARY HEADWALLS IN THE DITCH AT CULVERT ENTRANCES 45 DEGREES OFF THE DITCH LINE. RIPRAP THE UPSTREAM SIDE OF THE HEADWALL AS WELL AS THE DITCH FOR SIX FEET ABOVE THE CULVERT ENTRANCE.

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

N. PLACE SEED AS DIRECTED BY THE SEED PRODUCER.

O. 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 RE–WORK BARE AREAS UNTIL COMPLETE COVERAGE IS OBTAINED.

2.13 FIELD QUALITY CONTROL

A. COMPACTION SHALL BE AT LEAST 95% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D–1557.

B. ALL TREES PLACED IN CONJUNCTION WITH A LANDSCAPE CONTRACT WILL BE WRAPPED, TIED WITH HOSE–PROTECTED WIRE AND SECURED.

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

DIVISION 3 – FENCE
PART 1 GENERAL

3.1 WORK INCLUDED

A. FENCE DETAILS ARE WRITTEN TO COVER A VARIETY OF POSSIBLE SITE CONFIGURATIONS. SPECIFIC SERVICES WILL BE PERFORMED AS INDICATED IN THE SITE PLAN AND AGREED UPON BY CUSTOMER AND PROJECT MANAGERS.

B. REFER TO THE SITE PLANS FOR SIZE AND LOCATION OF FENCE AND GATES TO BE INSTALLED.

3.2 RELATED WORK

A. COORDINATE FENCE GROUNDING WITH ELECTRICAL CONTRACTOR.

B. REFER TO S1 FOR SPECIFICATION OF CONCRETE AND GROUT.

C. REFER TO SITE PLAN FOR APPLICABLE LOCATIONS OF ACCESS ROAD GATES.

3.3 DESCRIPTION

A. A SECURITY FENCE IS PROVIDED IN ORDER TO INHIBIT UNAUTHORIZED ACCESS TO THE SITE AREA.

3.4 QUALITY ASSURANCE

A. ALL STEEL MATERIALS UTILIZED IN CONJUNCTION WITH THIS SPECIFICATION WILL BE GALVANIZED OR STAINLESS STEEL. WEIGHT OF ZINC COATING ON THE FABRIC SHALL BE NOT LESS THAN 1 OUNCE PER SQUARE FOOT OF MATERIAL COVERED, ASTM A392, CLASS 1. POSTS SHALL BE HOT–DIPPED IN GRADE 'E' ZINC, 1.8 OUNCES PER SQUARE FOOT.

3.5 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 SURFACE COURSE.

3.6 SUBMITTALS

A. MANUFACTURER'S DESCRIPTIVE LITERATURE.

B. CERTIFICATE OF COMPLIANCE THAT SPECIFICATIONS HAVE BEEN MET.

PART 2 PRODUCTS

3.7 FENCE MATERIAL

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

B. FABRIC SHALL BE TWO–INCH CHAIN LINK ZINC–COATED MESH OF NO. 9 GAUGE (0.148") WIRE. THE FABRIC SHALL HAVE A KNUCKLED FINISH FOR THE TOP AND BOTTOM SELVAGES. 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 ON FIVE–INCH CENTERS.

D. ALL POSTS SHALL BE SCHEDULE – 40 GALVANIZED STEEL PIPE AND SHALL BE ASTM F1083, TYPE 1.

E. GATE POSTS SHALL BE EXTENDED 12 INCHES, INCLUDING DOME CAP, TO PROVIDE FOR ATTACHMENT OF BARBED WIRE.

F. ALL TOP AND BRACE RAILS SHALL BE 1 1/2" DIAMETER SCHEDULE – 40 TYPE 1 PIPE. FRAMES SHALL HAVE WELDED CORNERS.

G. GATE FRAMES SHALL BE A FULL – WIDTH HORIZONTAL BRACE, WELDED W/3 COATS COLD GALVANIZED TO CLEANED SURFACES.

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

I. ALL STOPS SHALL HAVE KEEPERS CAPABLE OF HOLDING THE GATE LEAF IN THE OPEN POSITION.

J. DOUBLE GATES SHALL HAVE A FULL HEIGHT PLUNGER BAR WITH DOME CAP 1.

K. A NO. 7 GAUGE ZINC COATED MARCELLED TENSION WIRE ASTM A824, TYPE LL, SHALL BE USED AT THE BOTTOM OF THE FABRIC, TERMINATED WITH BAND CLIPS AT CORNER AND GATE POSTS.

L. STRETCHER BARS SHALL BE HOT DIPPED GALVANIZED STEEL 3/16" X 3/4" OR HAVE EQUIVALENT CROSS SECTIONAL AREA.

M. ALL CORNER GATE AND END PANELS SHALL HAVE A 3/8" TRUSS ROD WITH TURNBUCKLES IF LONGER THAN 50'.

N. ALL POSTS EXCEPT GATE POSTS SHALL HAVE A COMBINATION GATE AND BARBED WIRE SUPPORTING ARM. GATE POSTS SHALL HAVE A DOME CAP.

O. OTHER HARDWARE INCLUDES BUT MAY NOT BE LIMITED TO TIE CLIPS, BAND CLIPS AND TENSION BAND CLIPS IN CONFORMANCE WITH CLFMI MANUAL.

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

Q. BARBED WIRE SUPPORT ARMS SHALL BE PRESSED STEEL OR CAST IRON, ASTM F626, WITH SET BOLT LOCK WIRE IN THE ARM.

R. ALL CAPS SHALL BE FABRICATED FROM PRESSED STEEL OR CAST STEEL, ASTM F626, OR ALUMINUM.

S. WHERE THE USE OF CONCERTINA HAS BEEN SPECIFIED, 24 INCH DIAMETER COIL, BARBED TAPE, STAINLESS STEEL, CYCLONE FENCE MODEL GRIP TO TYPE III SHALL BE FURNISHED. IT SHALL BE SUPPORTED ABOVE THE TOP RAIL BY USE OF SIX WIRE BARBED WIRE ARMS POSITIONED ATOP EACH LINE/CORNER POST.

3.8 EQUIPMENT

A. ALL POST HOLE EXCAVATION WILL BE BY USE OF MECHANICAL AUGER EQUIPMENT.

PART 3 EXECUTION

3.9 INSPECTION

A. TO CONFIRM PROPER DEPTH AND DIAMETER OF POST HOLE EXCAVATIONS. ALL POST HOLES WILL BE EXCAVATED AS PER CONSTRUCTION DOCUMENTS.

3.10 INSTALLATION

A. INSTALL FENCE TO COMPLY WITH ASTM F567.

B. ALL FENCE POSTS SHALL BE SET IN A VERTICAL POSITION PLUMB AND IN–LINE.

C. POST FOUNDATIONS SHALL HAVE A MINIMUM THREE–INCH CONCRETE COVER UNDER POST.

D. AT CORNER POSTS, GATE POSTS AND SIDES OF GATE, FRAME FABRIC SHALL BE ATTACHED WITH STRETCHER AND TENSION BAND–CLIPS AT 15 INCH INTERVALS.

E. AT LINE POSTS, FABRIC SHALL BE ATTACHED WITH TIE–CLIPS AT 15 INCH INTERVALS.

F. FABRIC SHALL BE ATTACHED TO BRACE RAILS, TENSION WIRE AND TRUSS RODS WITH TIE–CLIPS AT TWO FOOT INTERVALS.

G. A MAXIMUM GAP OF 2" WILL BE PERMITTED BETWEEN THE CHAIN LINK FABRIC AND THE FINAL GRADE.

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

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

J. CONCRETE SHALL BE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

3.11 PROTECTION

A. UPON COMPLETION OF ERECTION, INSPECT FENCE MATERIAL AND PAINT FIELD CUTS OR GALVANIZING BREAKS WITH GALVANIZING REPAIR PAINT W/3 COATS COLD GALVANIZED TO CLEANED SURFACES.

APPLICABLE STANDARDS:

ASTM–F1083 STANDARD SPECIFICATION FOR PIPE, STEEL HOT DIPPED ZINC COATED (GALVANIZED) WELDED FOR FENCE STRUCTURES.

ASTM–F626 STANDARD SPECIFICATIONS FOR FENCE FITTINGS.

ASTM–A392 STANDARD SPECIFICATIONS FOR ZINC COATED

ASTM–A817 STANDARD SPECIFICATION FOR METALLIC COATED STEEL WIRE FOR CHAIN LINK FENCE FABRIC, TYPE I, ALUMINUM COATED.

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

ASTM–A570 SPECIFICATION FOR HOT–ROLLED CARBON STEEL SHEET AND TRIP STRUCTURAL QUALITY.

ASTM–A585 STANDARD SPECIFICATION FOR ALUMINUM COATED STEEL BARBED WIRE, TYPE I.

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CIVIL NOTES

C1

DIVISION 4 ANTENNA SYSTEM
PART 1 GENERAL

4.1 WORK INCLUDED

A. INSTALL WAVEGUIDE BRIDGE AS INDICATED ON DRAWINGS. INSTALL NEW COAX, ANTENNAS, AND MOUNTS AS INDICATED ON DRAWINGS AND VERIFIED BY RF ENGINEER.

B. SUPPLY AND INSTALL GROUND BARS AND GROUNDING SUPPLIES AS INDICATED IN THE DRAWINGS.

C. LABEL CABLES.

D. MICROWAVE OPTIMIZATION WILL BE PERFORMED BY OTHERS.

4.2 RELATED WORK

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

1. FLASHING OPENING INTO OUTSIDE WALLS.
2. SEALING AND CAULKING ALL OPENINGS.
3. PAINTING.
4. CUTTING AND PATCHING.
5. ENTRY PORT/PORT HOLE CUSHIONS.
6. ANTENNNA/CABLE GROUNDING.

4.3 REQUIREMENTS OF REGULATORY AGENCIES

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

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

C. EIA–ELECTRICAL INDUSTRIES ASSOCIATION RS–222, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

D. FAA–FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460–IH, OBSTRUCTION MARKING AND LIGHTING.

E. AISC–AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.

F. NEC–NATIONAL ELECTRICAL CODE–ON TOWER LIGHTING KITS.

G. UL–UNDERWRITERS' LABORATORIES APPROVED.

H. 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 OF SPECIFICATIONS.

I. 2000 LIFE SAFETY CODE NFPA–101.

4.4 MATERIALS

A. ALL MATERIALS/HARDWARE SHALL BE HOT–DIPPED GALVANIZED OR STAINLESS STEEL UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

4.5 COAX LABELING

CONTRACTOR SHALL PROVIDE EASY IDENTIFICATION AND UNIFORM MARKING OF ANTENNA CABLING PER THE FOLLOWING INSTRUCTIONS:

A. TYPE: ALL MARKINGS SHALL BE MADE USING BRASS TAGS AND COLOR TAPE BANDS (1" WIDE). TAPE SHALL BE FADE–RESISTANT, WEATHER RESISTANT, UV–RESISTANT AND CHEMICAL RESISTANT.

B. LOCATION: FIXED AT SIX PLACES ON THE COAX CABLE RUN AS FOLLOWS:

FIRST – ON THE COAX AT THE CONNECTOR NEAREST THE ANTENNA (WHERE THE COAX AND JUMPER ARE CONNECTED).

SECOND – AT THE MIDDLE OF THE TOWER STRUCTURE

THIRD – AT THE TOWER BASE

FOURTH – AT A POINT OUTSIDE THE EQUIPMENT SERVICE ROOM (JUST PRIOR TO EXTERNAL GROUND BUS).

FIFTH – AT A POINT JUST INSIDE THE EQUIPMENT SERVICE ROOM (JUST AFTER THE MASTER GROUND BUS)

SIXTH – WITHIN FIVE FEET OF THE EQUIPMENT END ITEM

C. IDENTIFICATION METHOD SPECIFICS:

TAPE:
ONE BAND OF TAPE FOR FIRST MICROWAVE DISH, TWO BANDS FOR SECOND MICROWAVE DISH, AND SO ON.

TX1 – RED
TX2 – RED X 2 ETC.
RX1 – GREEN
RX2 – GREEN X 2 ETC.
CAT 5e – YELLOW
DUPLEXED ANTENNA – BLUE

BRASS TAGS:

LMR OMNI ANTENNA COAX TAGS SHALL BE STAMPED WITH "CBP", THE ANTENNA ELEVATION AND THE TOWER LEG ON WHICH IT IS MOUNTED.

MW DISH COAX TAGS SHALL BE STAMPED WTIH "CBP", CENTERLINE ELEVATION, THE TOWER LEG ON WHICH IT IS MOUNTED, AND THE SITE NAME AT THE OTHER END OF THE LINK, USING THE OTHER SIDE OF THE TAG AS NECESSARY.

4.6 GROUNDING

B. ANTENNA AND CABLE GROUNDING SHALL BE INSTALLED CONTEMPORANEOUSLY WITH INSTALLATION. NO UNGROUNDED COAX SHALL BE ROUTED INTO THE SERVICE ROOM OR CONNECTED TO EQUIPMENT.

C. REFERENCE SEPARATE GROUNDING NOTES SHEET E1 FOR ADDITIONAL NOTES.

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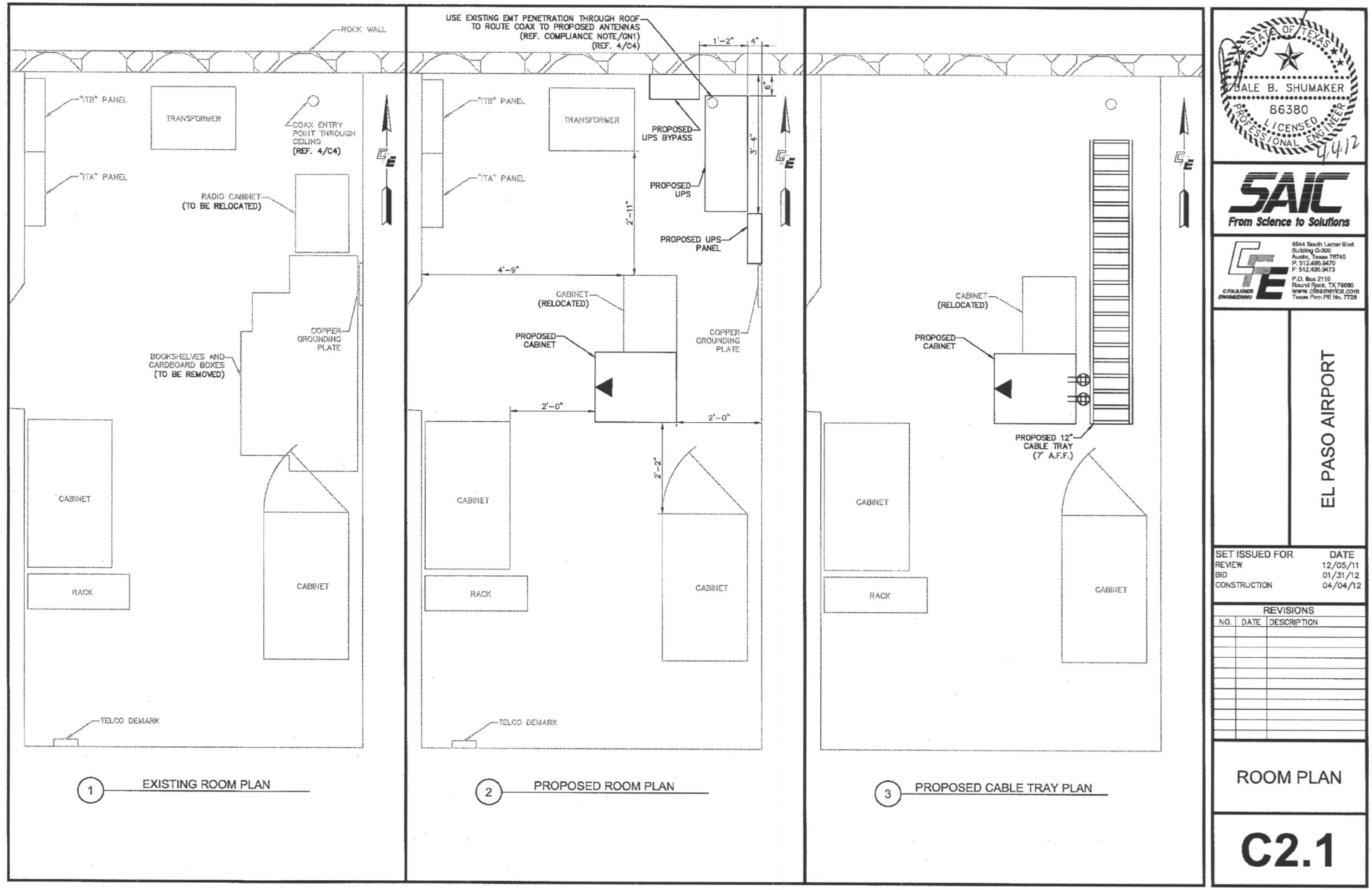
CIVIL NOTES

C1.1



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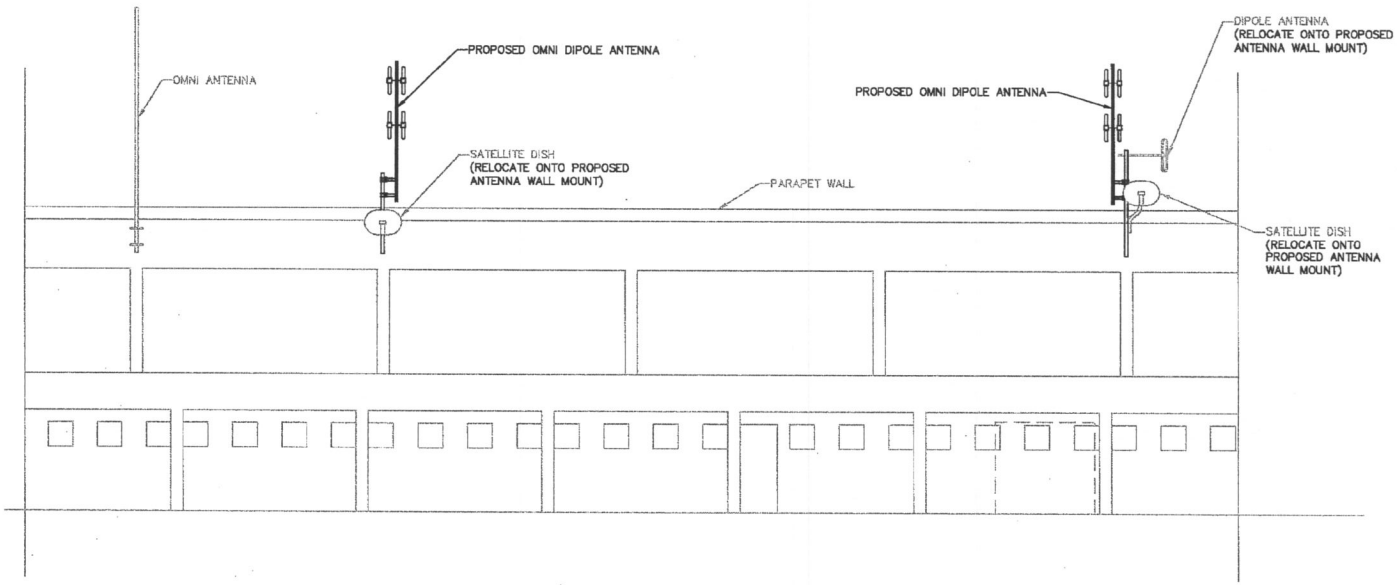
ROOM PLAN

C2.1

NOTES

1. ANTENNA CONFIGURATION IS SUBJECT TO CHANGE. VERIFY ANTENNA HEIGHT, DOWN TILT, AND AZIMUTH WITH PROJECT MANAGER PRIOR TO CONSTRUCTION.



1 BUILDING ELEVATION
N.T.S.

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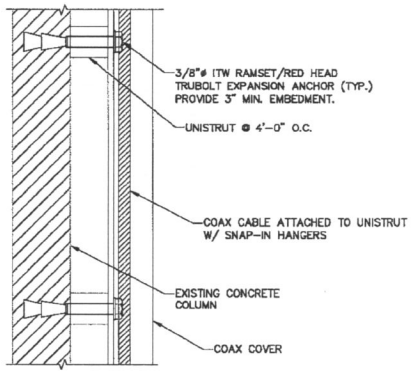
BUILDING ELEVATION

C3



1 UNI-STRUT MOUNTING DETAIL
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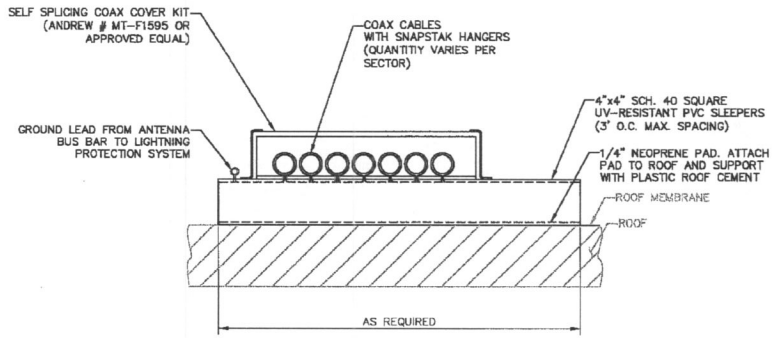

3 CABLE TRAY DETAIL
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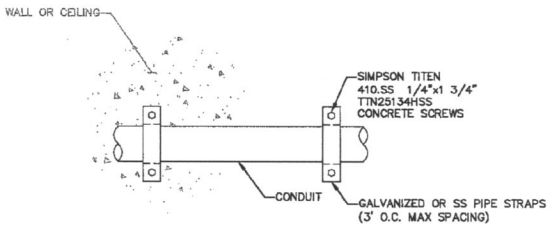

2 WALL MOUNTED
CONDUIT SUPPORT DETAIL
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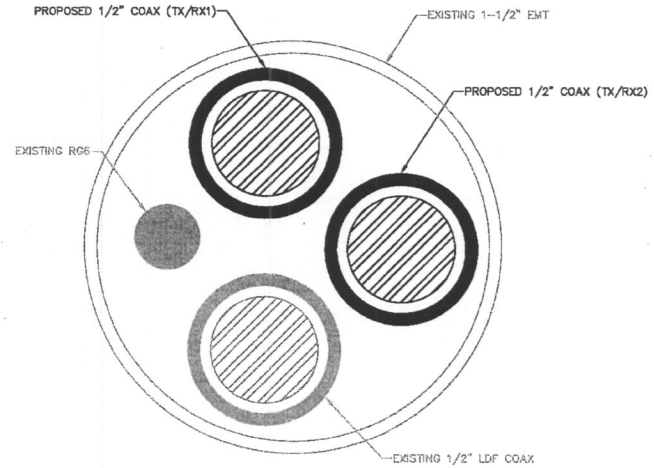

4 ENTRY PORT
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ICE BRIDGE DETAILS

C4

ELECTRICAL SPECIFICATIONS

GENERAL:

A. CONTRACTOR SHALL PROVIDE ALL ITEMS OF LABOR AND MATERIALS TO MAKE A COMPLETE INSTALLATION OF ELECTRICAL WORK, AS SHOWN ON DRAWINGS, AS SPECIFIED, AND AS NECESSARY FOR COMPLETE SYSTEMS, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

1. MAIN POWER BRANCH/FEEDERS AS REQUIRED.
2. BRANCH FEEDER FOR POWER AND LIGHTING.
3. ALL ELECTRICAL CONDUCTORS AND CONDUIT.
4. ALL WIRING DEVICES, SAFETY SWITCHES.
5. ALL LIGHTING FIXTURES AND LAMPS.
6. ALL COMMUNICATION EMPTY CONDUIT SYSTEMS.
7. LIGHTNING SURGE PROTECTION DEVICE.
8. ANTENNA AND EQUIPMENT GROUNDING.

ELECTRICAL REQUIREMENTS

A. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL AND NATIONAL ELECTRICAL CODES.

B. ALL WORK SHALL BE COMPLETED BY A CERTIFIED MASTER ELECTRICIAN.

C. ALL WORK SHALL CONFORM TO THE LATEST VERSION OF MOTOROLA R56 STANDARDS.

D. AFTER INSTALLATION TEST ALL CONDUCTORS FOR SHORTS AND GROUNDS BEFORE ENERGIZING.

GUARANTEE:

A. THE CONTRACTOR SHALL FURNISH A WRITTEN CERTIFICATE, GUARANTEEING ALL MATERIALS, EQUIPMENT AND LABOR FURNISHED BY CONTRACTOR TO BE FREE OF ALL DEFECTS FOR A PERIOD OF ONE YEAR FROM AND AFTER THE DATE OF FINAL ACCEPTANCE OF ELECTRICAL WORK. THE CONTRACTOR SHALL FURTHER GUARANTEE THAT IF ANY DEFECTS APPEAR WITHIN THE STIPULATED GUARANTEED PERIOD, SUCH WORK SHALL BE REPLACED WITHOUT COST TO THE OWNER.

FEEDERS, SWITCHES, METERING EQUIPMENT:

A. MAKE ARRANGEMENTS WITH OWNERS AS NEEDED TO BRING IN BRANCH FEEDERS FOR ELECTRICAL SERVICE AS SHOWN ON DRAWINGS. PAY ALL CHARGES INVOLVED THEREWITH. FURNISH, INSTALL FEEDER WIRE TO OWNER DISTRIBUTION PANEL. PROVIDE METER AS SHOWN ON DRAWINGS.

PANELBOARD CONSTRUCTION:

A. PANELBOARDS SHALL CONSIST OF A CAN, FRONT, INTERIOR AND CIRCUIT PROTECTIVE DEVICES AND SHALL BE MANUFACTURED IN ACCORDANCE WITH UNDERWRITER'S LABORATORIES. THE GAUGE OF METAL USED AND THE GUTTER SPACE SHALL BE IN ACCORDANCE WITH APPLICABLE UL STANDARDS. EACH PANEL SHALL HAVE A DOOR MOUNTED ON A SEMI-CONCEALED HINGES WITH A CYLINDER LOCK, INDEX CARD HOLDER PROPERLY FILLED IN AS TO CIRCUIT; ALL PANELS WITH MASTER KEY. ALL PANELS SHALL BE FINISHED WITH BAKED-ON GRAY ENAMEL, OVER RUST INHIBITOR COAT. PANEL BOARDS SHALL BE AS MANUFACTURED BY G.E., ITE, SQUARE "D" OR CUTLER HAMMER.

WIRING:

A. CONDUCTORS SHALL BE TYPE "THHN/THWN" INSULATION.

B. INSTALL CONDUCTORS IN CLEAN, DRY CONDUITS. USE UL APPROVED PULLING LUBRICANT WHERE REQUIRED.

C. USE #12 AS MINIMUM CONDUCTOR SIZE FOR POWER SYSTEMS. ALL CONTROL WIRES SHALL BE STRANDED AND TERMINATED WITH CRIMPED-ON LUGS.

D. MAKE CONNECTION, SPLICES AND TAPS ONLY IN APPROVED BOXES AND FITTINGS. FOR SMALL BRANCH CIRCUIT CONDUCTORS, FIRST TWIST CONDUCTORS TOGETHER, THEN INSTALL A "SCOTCHLOK" OR EQUAL SPRING CONNECTOR OF PROPER SIZE. FOR LARGE CONDUCTORS USE SPLIT-BOLT OR HYDRAULICALLY COMPRESSED CONNECTIONS, THEN APPLY ENOUGH LAYERS OF VINYL ELECTRICAL TAPE TO EQUAL THE INSULATION VALUE OF THE CONDUCTOR INSULATION.

E. WHERE FACTORY COLOR CODED CONDUCTORS ARE NOT AVAILABLE, INSTALL BANDS OF COLORED VINYL PLASTIC TAPE AT EACH END OF EACH CONDUCTOR.

CONDUIT:

A. PROVIDE A COMPLETE ASSEMBLY OF CONDUIT, TUBING OR DUCT WITH FITTINGS, INCLUDING, BUT NOT LIMITED TO, CONNECTORS, NIPPLES, COUPLINGS, LOCKNUTS, BUSHINGS, EXPANSION FITTINGS, OTHER COMPONENTS AND ACCESSORIES AS NEEDED. CONNECTIONS AND COUPLING MUST BE COMPRESSION TYPE TO MEET R56 FOR BONDING REQUIREMENTS.

B. FITTINGS SHALL BE DESIGNED AND APPROVED FOR THE SPECIFIC USE INTENDED. PROVIDE INSULATED THROATS OR BUSHINGS FOR ALL CONDUITS. GROUNDING BUSHINGS SHALL ALSO HAVE INSULATED THROATS.

C. MINIMUM CONDUIT SIZE IN ALL CASES SHALL BE 1/2" UNLESS MINIMUM SIZE IS SPECIFIED TO BE LARGER FOR SPECIFIC SYSTEMS SPECIFIED ELSEWHERE IN THE SPECIFICATIONS OR ON THE DRAWINGS.

D. RIGID STEEL CONDUIT SHALL BE HEAVY-WALL STEEL TUBE WITH METALLIC CORROSION-RESISTANT COATING ON INTERIOR AND EXTERIOR, HOT-DIPPED GALVANIZED, FREE FROM DEFECTS, MANUFACTURED IN ACCORDANCE TO ANSI STANDARDS, AND UL-LISTED. USE THREADED COUPLINGS. USE RIGID GALVANIZED STEEL CONDUIT IN ALL LOCATIONS UNLESS NOTED OTHERWISE.

E. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC (UNLESS NOTED OTHERWISE).

F. AS A MINIMUM, CONDUIT SIZES SHALL BE IN ACCORDANCE WITH NEC CONDUIT FILL REQUIREMENTS, REGARDLESS OF SIZE SCHEDULE OR INDICATED. IF LARGER SIZE IS SCHEDULED OR INDICATED, THE LARGER SIZE SHALL BE USED.

G. INSTALLATION:

1. ANCHOR CONDUIT WITH HANGERS, CONDUIT STRAPS OR OTHER DEVICES SPECIFICALLY DESIGNED FOR THE PURPOSE. WIRE TIES SHALL NOT BE PERMITTED. USE TRAPEZE HANGERS FOR MULTIPLE PARALLEL CONDUIT RUNS.
2. ALL CONCRETE INSERTS SHALL BE GALVANIZED OR CADMIUM PLATED; INDIVIDUAL HANGERS, TRAPEZE HANGERS AND RODS SHALL BE PRIME COATED.
3. INSTALL HORIZONTAL RUNS OF CONDUIT TO PROVIDE A NATURAL DRAIN TO PREVENT MOISTURE COLLECTING IN THE POCKETS OR TRAPS.
4. CAP CONDUIT ENDS UNTIL CONDUCTOR IS INSTALLED TO PREVENT FOREIGN OBJECTS FROM ENTERING CONDUIT.
5. FITTINGS AND CONDUITS SHALL BE APPROVED FOR GROUNDING PURPOSES OR SHALL BE JUMPERED WITH A COPPER GROUNDING CONDUCTOR OF PROPER AMPACITY. LEAVE TERMINATION OF SUCH JUMPERS EXPOSED.
6. INSTALL (2) 200 POUND NYLON PULL CORDS IN ROUGH-IN RACEWAYS.
7. INSTALL OFFSETS, PULL BOXES AND ELBOWS AS REQUIRED TO ACCOMPLISH A HARMONIOUS ROUTING OF THE SYSTEMS.
8. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANT RATED CONSTRUCTION SHALL BE FIRE-STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANT RATING.

JUNCTION AND PULL BOXES:

A. USE GALVANIZED PULL AND JUNCTION BOXES THAT COMPLY WITH NEC AS TO SIZE AND CONSTRUCTION.

B. FOR JUNCTION AND PULL BOXES, USE BOXES NOT LESS THAN 4" SQUARE AND 1 1/2" DEEP WITH REMOVABLE COVERS.

C. IN WET AREAS OR OUTDOORS, USE CAST ALUMINUM OR CAST IRON BOXES WITH THREADED HUBS AND GASKETED COVERS.

D. INSTALL JUNCTION AND PULL BOXES IN ACCESSIBLE LOCATIONS. POSITION BOXES SO COVERS CAN BE REMOVED.

E. INSTALL BOXES ON CONCEALED CONDUITS WITH COVERS FLUSH WITH FINISH.

LP-GAS CONTAINERS

A. ALL ELECTRICAL EQUIPMENT AND WIRING WITHIN (5) FIVE FEET SHALL BE CLASS 1 DIVISION 1.

B. ELECTRICAL WIRING AND EQUIPMENT (5) FIVE FEET TO (10) TEN FEET SHALL BE CLASS 1 DIVISION 2.

GROUNDING

GENERAL

A. GROUNDING SHALL BE INSTALLED PER MOTOROLA R56 STANDARDS AND GUIDELINES FOR COMMUNICATIONS SITES.

CONNECTIONS

A. ALL EXTERNAL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS, BY IRREVERSIBLE HIGH COMPRESSION, AND/OR BY 2-HOLE LONG BARREL LUGS. NO SINGLE-HOLE, CRIMP-ON, OR SOLDER CONNECTIONS SHALL BE USED. CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE SPLICE. ALL MATERIALS USED (MOLDS, WELDING METAL, TOOLS, ETC.) SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.

B. ALL INTERIOR GROUNDING AND BONDING CONDUCTORS SHALL BE CONNECTED BY TWO HOLE-TYPE (COMPRESSION) CONNECTIONS. MECHANICAL CONNECTIONS, FITTINGS OR CONNECTIONS THAT DEPEND SOLELY ON SOLDER SHALL NOT BE USED.

GROUND RODS

A. ALL GROUND RODS SHALL BE COPPER-CLAD STEEL 5/8" DIAMETER X 8'-0" LONG AND OF THE NUMBER AND AT LOCATIONS INDICATED. GROUND RODS SHALL BE DRIVEN FULL LENGTH VERTICALLY IN UNDISTURBED EARTH.

B. GROUND RODS SHALL BE LOCATED SO AS TO AVOID THE TOWER FOUNDATION.

C. IF ROCK IS ENCOUNTERED, GROUND RODS MAY BE DRIVEN AT AN OBLIQUE ANGLE OF NOT GREATER THAN 45 DEGREES FROM VERTICAL OR MAY BE BURIED HORIZONTALLY AND PERPENDICULAR TO THE BUILDING, IN A TRENCH AT LEAST 36" DEEP.

D. GROUND RODS SHALL BE BURIED TO A MINIMUM DEPTH OF 30 INCHES BELOW FINISHED GRADE, WHERE POSSIBLE, OR BURIED BELOW THE FREEZE LINE, WHICHEVER DEPTH IS GREATER.

E. GROUND RODS SHALL NOT BE INSTALLED MORE THAN 16 FEET APART (OR TWICE THE LENGTH OF THE ROD) AND NOT LESS THAN 8 FEET (PER NFPA 70, ARTICLE 250-56).

GROUND BARS

A. ALL GROUND BARS SHALL BE 1/4" THICK BARE COPPER PLATES AND OF SUFFICIENT SIZE TO GROUND ATTACHMENTS INDICATED IN THE DRAWINGS (MIN. 2" X 12"). HOLES SHALL BE 7/16" DIAMETER ON 3/4" CENTERS TO PERMIT THE CONVENIENT USE OF TWO-HOLE LUGS.

B. THE METHOD OF ATTACHMENT OF THE GROUNDING ELECTRODE CONDUCTOR TO EXTERIOR AND TOWER GROUND BARS SHALL BE EXOTHERMIC OR IRREVERSIBLE HIGH COMPRESSION.

CABLES

A. ALL EXTERIOR GROUNDING CABLES SHALL BE STANDARD #2 AWG TINNED SOLID BARE COPPER WIRE UNLESS INDICATED OTHERWISE ON DRAWINGS.

B. WHEN THE DIRECTION OF THE CONDUCTOR MUST CHANGE, IT SHALL BE DONE GRADUALLY. ALL BENDS SHALL BE MADE WITH THE GREATEST PRACTICAL RADIUS AND SHALL NOT BE LESS THAN 8".

C. ALL CONDUITS SHALL BE METALLICALLY SUPPORTED.

D. ALL CONDUITS USED AS RACEWAYS FOR GROUNDING CONDUCTORS SHALL BE BONDED AT BOTH ENDS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).

E. PROVIDE WIRE PROTECTION PIPES AT ALL GROUND WIRES AT GRADE LEVEL.

GROUNDING RING

A. THE GROUND RING ENCIRCLING THE BUILDING SHALL BE A MINIMUM SIZE OF NO. 2 AWG BARE TINNED SOLID COPPER CONDUCTOR IN DIRECT CONTACT WITH THE EARTH AT A MINIMUM DEPTH OF 36 INCHES. CONDUCTOR BENDS SHALL HAVE A MINIMUM RADIUS OF 8 INCHES.

B. ALL EXTERNAL GROUND RINGS ARE TO BE JOINED TOGETHER AND ALL CONNECTIONS SHALL BE EXOTHERMIC OR IRREVERSIBLE HIGH COMPRESSION. NO LUGS OR CLAMPS WILL BE ACCEPTED.

FENCE/GATE

A. GROUND ALL SECTIONS OF FENCE AND GATE AS INDICATED ON DRAWINGS. GROUND EACH GATE POST AND CORNER POST. ALL CONNECTIONS FOR THE FENCE GROUND SYSTEM SHALL BE EXOTHERMIC WELD AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.

DISSIMILAR METALS

A. BONDING OF TWO DISSIMILAR METALS MAY RESULT IN GALVANIC CORROSION, A REACTION THAT OCCURS AT THE JUNCTION OF DISSIMILAR METALS WHEN THEY ARE EXPOSED TO MOISTURE. THE DEGREE AND RATE OF CORROSION DEPENDS ON THE RELATIVE POSITION OF THE METALS IN THE ELECTROCHEMICAL SERIES. TO DETERMINE THE LIKELIHOOD OF TWO METALS REACTING REFERENCE SECTION 6.5.2 IN THE R56 SPECIFICATIONS.

1. THE SAME METAL SHALL BE USED THROUGHOUT THE SYSTEM WHEN POSSIBLE.
2. EXOTHERMICALLY WELD CONNECTIONS OF DIFFERENT METALS WHEN WELD MATERIAL IS AVAILABLE FOR THE METALS BEING BONDED.
3. COPPER CONDUCTORS SHALL NOT BE INSTALLED ON ALUMINUM ROOFING OR SIDING.
4. ALUMINUM AND COPPER SHALL NOT BE DIRECTLY CONNECTED TO EACH OTHER UNLESS USING EXOTHERMIC WELDING MATERIALS SPECIFICALLY INTENDED FOR THESE TWO METALS TO MAKE THE CONNECTION. ALUMINUM AND COPPER MAY BE JOINED WITH THE USE OF A LISTED BIMETALLIC TRANSITION CONNECTOR OF STAINLESS STEEL. THESE CONNECTORS SHALL BE LISTED FOR THE SIZE AND NUMBER OF CONDUCTORS AND MARKED WITH AL/CU. THESE CONNECTIONS SHALL BE LIBERALLY COATED WITH A CONDUCTIVE ANTIOXIDANT AT THE POINT OF INSERTION INTO THE CONNECTOR.
5. COPPER SHALL NOT COME IN CONTACT WITH GALVANIZED STEEL.
6. TINNED COPPER SHALL BE USED WHEN CONNECTING TO A GALVANIZED STEEL STRUCTURE.

ANTI-OXIDANT

A. ANTI-OXIDANT COMPOUND SHALL BE USED BETWEEN ALL EXTERNAL MECHANICAL CONNECTIONS. CARE SHALL BE TAKEN TO USE THE APPROPRIATE ANTI-OXIDANT TYPE. ZINC ANTI-OXIDANT (GRAY COLOR) SHALL BE USED WHEN CONNECTING TO GALVANIZED AND ALUMINUM OBJECTS AND COPPER ANTI-OXIDANT (COPPER COLOR) SHALL BE USED WHEN CONNECTING TO COPPER OBJECTS.

TEST PROCEDURE

A. THE GROUND SYSTEM RESISTANCE SHALL NOT EXCEED 10 OHMS. A DESIGN GOAL OF 5 OHMS IS RECOMMENDED. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 6.6 IN MOTOROLA R56 SPECIFICATIONS (DATED 9-1-05).

B. GROUND TEST MUST BE PERFORMED PRIOR TO UTILITY CONNECTION AND GROUND CONNECTION TO EXISTING SITE COMMON GROUNDING ELECTRODE SYSTEM.

INTERIOR GROUNDING

A. AT A MINIMUM ALL EQUIPMENT WILL BE BONDED AS REQUIRED BY THE NATIONAL ELECTRIC CODE; ADDITIONALLY THE FOLLOWING IS REQUIRED:

B. THE INTERNAL PERIMETER GROUND BUS (IPGB), ALSO KNOWN AS THE HALO GROUND WILL BE COMPRISED OF BARE STRANDED #2 AWG LOCATED 12" FROM THE CEILING OR 8' ABOVE THE FLOOR, WHICH EVER IS GREATER.

C. ELECTRICAL CONDUIT CONNECTIONS AND COUPLINGS WILL BE COMPRESSION TYPE FITTINGS.

D. LINEUP FEEDER OF #2 GREEN WILL BE RUN ALONG EACH CABLE LADDER LINEUP.

E. ALL METALLIC SUPPORT APPARATUS, INCLUDING METALLIC CONDUITS WITHIN AN EQUIPMENT SERVICE ROOM, ROOM, A GENERATOR OR POWER DISTRIBUTION ROOM, OR SPECIFIC EQUIPMENT AREA LOCATED WITHIN 8' VERTICALLY OR 5' HORIZONTALLY OF GROUND OR GROUNDED METAL OBJECTS (NFPA 70-2005, ARTICLE 250 RIGID METALLIC CONDUIT (RMC) AND ELECTRICAL METALLIC TUBING (EMT). EXCEPTION: WHEN THE CONDUITS ARE EFFECTIVELY JOINED WITH THREADED COUPLING, OR THREAD LESS COMPRESSION CONNECTOR, THAT TERMINATE IN BONDED METALLIC ENCLOSURES, THEY MAY BE CONSIDERED ADEQUATELY BONDED AND DO NOT REQUIRE ADDITIONAL BONDING (ANSI T1.334-2002).

1. IF METALLIC CONDUIT DOES NOT MEET THE ABOVE SPECIFICATIONS, THE ELECTRICAL METALLIC CONDUITS SHALL BE BONDED TO THE IPGB CONDUCTOR AT ANY POINT WHERE THEY CROSS WITHIN 8" OF THE IPGB CONDUCTOR.

F. METALLIC CONDUIT RUN PARALLEL TO THE IPGB CONDUCTOR SHALL BE BONDED AT THE POINTS WHERE IT ENTERS TO WITHIN 8" OF THE IPGB CONDUCTOR AND AT THE POINT WHERE IT TRANSITIONS AWAY FROM THE IPGB CONDUCTOR.

G. ALL SET-SCREW TYPE CONNECTORS AND COUPLINGS SHALL BE BRIDGED WITH A BONDING JUMPER.

H. EACH METALLIC CONDUIT MAY BE CONNECTED TO THE IPGB CONDUCTOR WITH A CONTINUOUS EQUIPMENT GROUNDING CONDUCTOR USING REMOVABLE SADDLE CLAMPS OR OTHER CLAMPS THAT SPECIFICALLY PERMIT THE USE OF A SINGLE CONTINUOUS CONDUCTOR FOR GROUNDING MULTIPLE RUNS OF CONDUIT. IF MULTIPLE CONDUITS ARE GROUDNED USING A SINGLE CONDUCTOR, THE CONDUCTOR SHALL BE CLAMPED TO EACH CONDUIT RUN SUCH THAT REMOVAL OF ONE CLAMP DOES NOT INTERRUPT THE PATH TO GROUND FOR THE OTHER CONDUIT RUNS.

I. THE CONDUIT SHALL NOT BE USED AS THE AC EQUIPMENT GROUNDING CONDUCTOR. AN INDIVIDUAL CIRCUIT EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN EACH CONDUIT EXITING THE PANEL BOARD AND BE CONNECTED ELECTRICALLY.

J. THE ARRANGEMENT OF GROUNDING CONNECTIONS SHALL BE SUCH THAT THE DISCONNECTION OR REMOVAL OF A RECEPTACLE, FIXTURE, OR OTHER DEVICE FED FROM THE BOX WILL NOT INTERFERE WITH (OR INTERRUPT) THE EQUIPMENT GROUNDING CONDUCTOR CONTINUITY.

K. THE CONDUIT SHALL BE SECURELY FASTENED EVERY 10' AND WITHIN 3' OF ANY RECEPTACLE BOX, JUNCTION BOX, PANEL BOARD OR ANY TERMINATION OF THE CONDUIT. (SEE NFPA 70-2011, ARTICLE 358.30 FOR ADDITIONAL INFORMATION.)

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CONSTRUCTION	04/04/12

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ELECTRICAL AND GROUNDING NOTES

E1

EXHIBIT 1
Pg. 10

ELECTRICAL ABBREVIATIONS

ABBREVIATION LIST	
#	NUMBER
(E)	EXISTING
(R)	REMOVE
A	AMPERE
A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT
ADJ	ADJUSTABLE
AF	AMPS FRAME (FRAME SIZE)
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AH	AMP HOURS
AIC	AVAILABLE INTERRUPTING CURRENT
ANNUN	ANNUNCIATOR
APD	AIR PRESSURIZATION AND DEHUMIDIFICATION
APPROX	APPROXIMATELY
AT	AMPS TRIP (TRIP SETTING)
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE (WIRE SIZE)
B/S	BUILDING STANDARD
BAS	BUILDING AUTOMATION SYSTEM
BLDG	BUILDING
BLK	BLOCK
BMR	BASE MOBILE RADIO
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT SIZE AS NOTED
CB	CIRCUIT BREAKER
CB	CIRCUIT BREAKER
CCT	CIRCUIT
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CKT	CIRCUIT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CONDUIT ONLY
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DEF	DUAL ELEMENT FUSES
DEMO	DEMOLITION
DIA, Ø	DIAMETER
DIAG	DIAGONAL
DIAG	DIAGRAM
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DP	DISTRIBUTION PANEL
DS	DISCONNECT SWITCH
DTL, DETL	DETAIL
DWG	DRAWING
E	EAST, EMERGENCY
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EGB	EXTERNAL GROUND BUS BAR
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING (THIN WALL)
ENCL	ENCLOSURE
EPO	EMERGENCY POWER OFF
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXIST	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FDR	FEEDER
FIN	FINISH
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FLUOR	FLUORESCENT
FMC	FLEXIBLE METALLIC CONDUIT
FMT	FLEXIBLE METALLIC TUBING
FT	FOOT
FUT	FUTURE
FVNR	FULL VOLTAGE, NON REVERSING
G OR GRD	GROUND
GA	GAUGE
GALV	GALVANIZED(D)
GC	GENERAL CONTRACTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GRC	GALVANIZED RIGID CONDUIT
GRD	GROUND
GWB	GYPSUM WALL BOARD
GYP BD	GYPSUM BOARD
H	HEIGHT
HARD'WD	HARDWOOD
HH	HANDHOLE
HOA	HAND-ON/OFF/AUTO
HORIZ	HORIZONTAL
HP	HORSE POWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HT	HEIGHT
HV	HIGH VOLTAGE
HVAC	HEATING, VENTING AND AIR CONDITIONING
IA	INSIDE DIAMETER
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
IPGB	INTERIOR PERIMETER GROUND BUS BAR
ISO	ISOLATION
JB	JUNCTION BOX
KCMIL	KILO CIRCULAR MILS (WIRE SIZE)
KV	KILOVOLT
KVA	KILO VOLT AMPERE
KW	KILOWATT
KWH	KILOWATT-HOUR
LB(S)	POUND(S)
LC	LIGHTING CONTACTOR
LDP	LIGHTING DISTRIBUTION PANEL
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LNFC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LP	LIGHTNING PROTECTION
LTG	LIGHTING
LV	LOW VOLTAGE
LVBD	LOW VOLTAGE BATTERY DISCONNECT
M	METER
MAN	MANUAL
MAX	MAXIMUM
MBM	MAINTENANCE BYPASS MODULE
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCM	KILO CIRCULAR MILS (WIRE SIZE)
MECH	MECHANICAL
MECH	MECHANICAL
MET, MTL	METAL
MFR	MANUFACTURE
MFR	MANUFACTURER
MGB	MASTER GROUND BUS BAR
MGR	MANAGER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY
MOP	METHOD OF PROCEDURE
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
NEUT	NEUTRAL
NF	NON FUSIBLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC, O/C	ON CENTER
OCPD	OVER-CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OE	OVERHEAD ELECTRIC
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OPG	OPENING
OPP	OPPOSITE
OT	OVERHEAD TELEPHONE
P	POLE
PB	PULL BOX
PC	PHOTOCELL
PDP	POWER DISTRIBUTION PANEL
PH	PHASE
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PRI	PRIMARY
PROJ	PROJECT
PROP	PROPERTY
PT	PRESSURE TREATED
PVC	SCHEDULE 40 PLASTIC CONDUIT
PWR	POWER
REC	RECESSED
RECP, RECPT	RECEPTACLE
REQ'D	REQUIRED
RGB	RACK MOUNTED GROUND BUS BAR
RGS	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RMC	RIGID METAL CONDUIT
RNMC	RIGID NONMETALLIC CONDUIT
RSC	RIGID STEEL CONDUIT
RO	ROUGH OPENING
S	SOUTH
SD	SMOKE DETECTOR
SEC	SECONDARY
SEQ	SEQUENCE
SHT	SHEET
SIM	SIMILAR
SP	SPARE
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSGB	SUBSYSTEM GROUND BUS BAR, SERVICE ROOM GROUND BUS BAR
ST	SHUNT TRIP
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SURF	SURFACE
SUSP	SUSPENDED
SV	SHEET VINYL
SVS	SERVICE
SW	SWITCH
SWGR	SWITCH GEAR
TB	TERMINAL BLOCK
TEL	TELEPHONE
TGB	TOWER GROUND BUS BAR
THRU	THROUGH
TINNED	TINNED
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UE	UNDERGROUND ELECTRIC
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS' LABORATORY
UON	UNLESS OTHERWISE NOTED
UT	UNDERGROUND TELEPHONE
V	VOLTS
VA	VOLT AMPERES
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VERT	VERTICAL
VFC	VARIABLE FREQUENCY DRIVE CONTROLLER
VFCI	VENDOR FURNISHED CONTRACTOR INSTALLED
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST, WATT OR WIRE
W/	WITH
W/O	WITHOUT
WIN	WINDOW
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL SYMBOLS

TRANSFORMER

SERVICE METER

SERVICE DISCONNECT WITH NEUTRAL TO GROUND BOND

FUSED DISCONNECT WITH ENCLOSURE

CIRCUIT BREAKER WITH ENCLOSURE

DUPLEX RECEPTACLE

SIMPLEX RECEPTACLE

QUAD RECEPTACLE WITH QUAD COVER PLATE

GFCI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE

WP — WEATHER PROOF WHILE IN USE ENCLOSURE CONTAINING GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE

AUTOMATIC TRANSFER SWITCH (ATS)

PANEL BOARD OR LOAD CENTER

GENERATOR

TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS)

ALARM RELAY

EQUIPMENT RACK (ARROW INDICATES FRONT)

OE — OVERHEAD ELECTRIC

OT — OVERHEAD TELCO

OE&T — OVERHEAD ELECTRIC & TELCO

UA — UNDERGROUND ALARM

UE — UNDERGROUND ELECTRIC

UE&T — UNDERGROUND ELECTRIC & TELCO

UFC — UFC — UNDERGROUND FIBER OPTICS CABLE

LP — UNDERGROUND LP

GAS — GAS — UNDERGROUND GAS

UL — UL — UNDERGROUND LIGHTING

UT — UNDERGROUND TELCO

UE&UA — UNDERGROUND ELECTRIC & ALARM

E — E — E — INTERIOR ELECTRIC

A — A — ALARM CONDUIT

GROUND ROD

GROUND ROD & INSPECTION WELL

GROUND BAR

EXOTHERMIC WELD

IRREVERSIBLE HIGH COMPRESSION CONNECTION

#2 TINNED SOLID BARE COPPER GROUND WIRE (EXTERIOR)
#2 STRANDED GREEN JACKET (INTERIOR)

MECHANICAL CONNECTION (2-HOLE LUG, CONDUIT GROUND CLAMP, ETC.)

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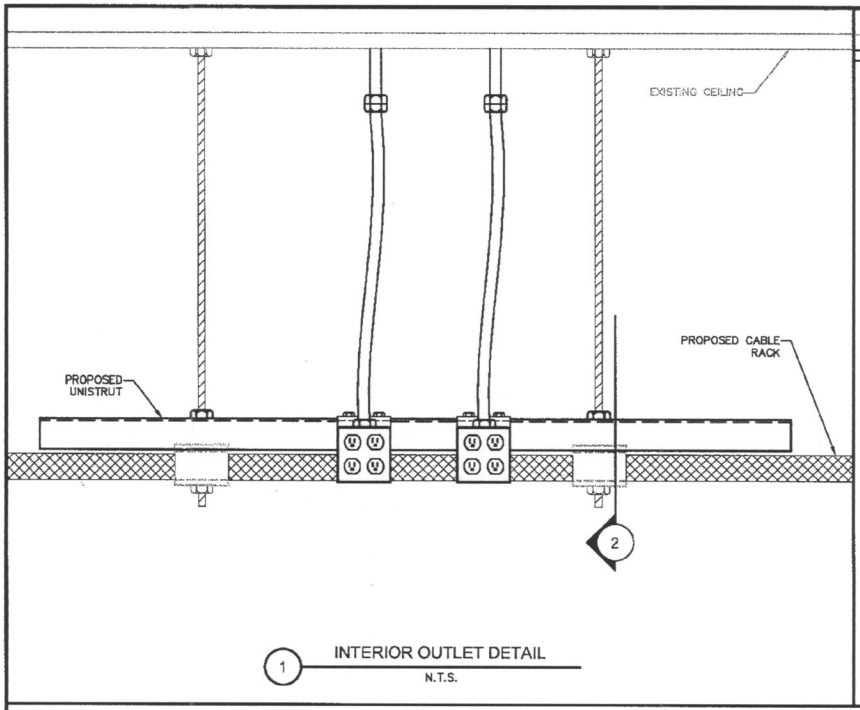
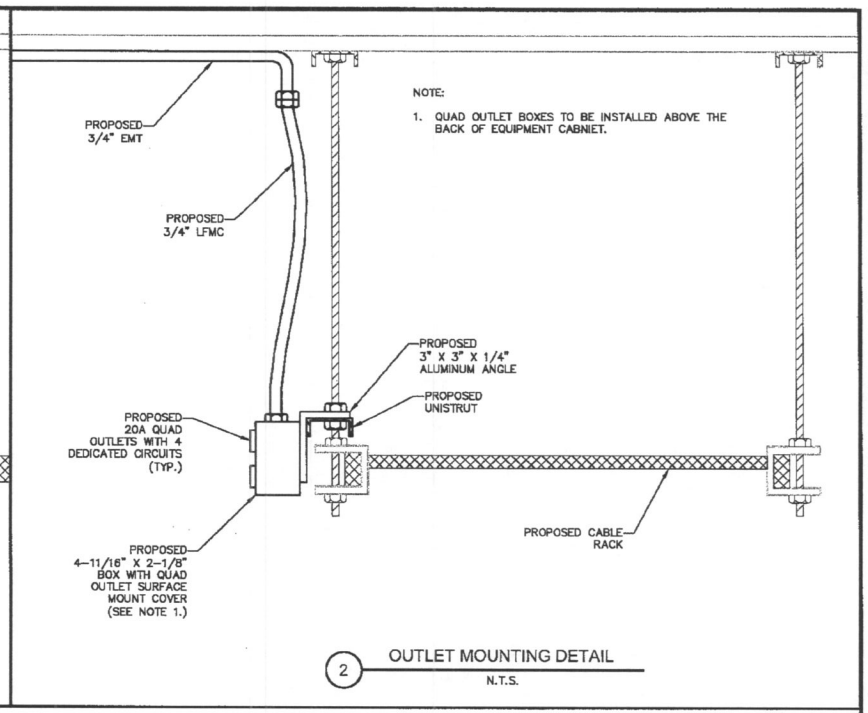
ELECTRICAL ABBREVIATIONS & SYMBOLS

E1.1



1 INTERIOR OUTLET DETAIL
N.T.S.



2 OUTLET MOUNTING DETAIL
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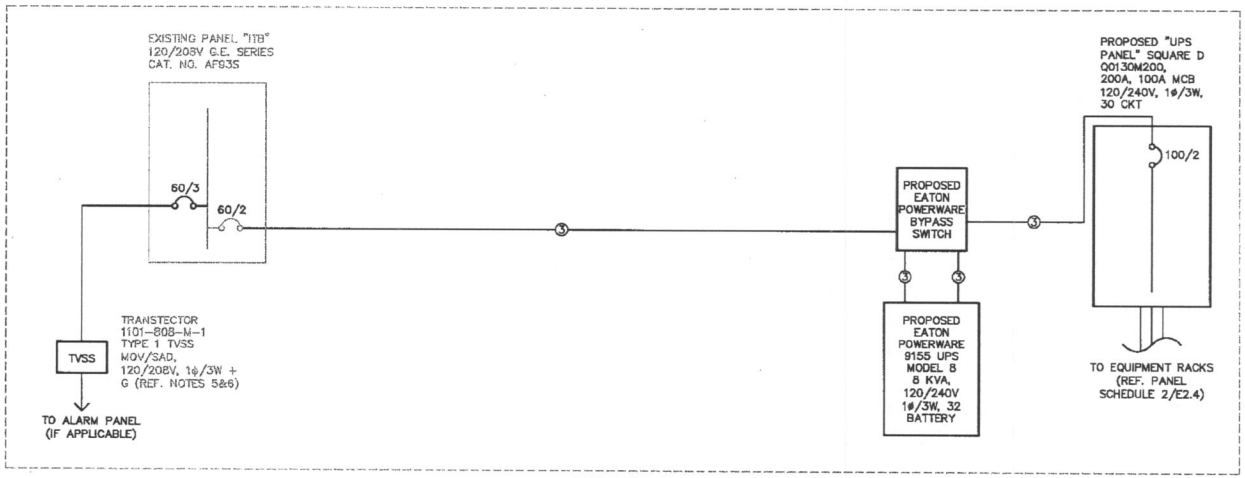
SERVICE ROOM INTERIOR DETAILS

E2.1



EXISTING SERVICE ROOM

WIRING LEGEND:

① (3) 3/0 AND (1) #6 AWG GROUND IN 2 INCH EMT
② (3) #4 AWG AND (1) #4 AWG GROUND IN 1-1/4 INCH EMT
③ (3) #2 AWG AND (1) #6 AWG GROUND IN 1-1/4 INCH EMT

NOTES:

1. INSTALL 2-POLE BREAKER ON PHASES B AND C
2. INSTALL TVSS WITHIN FOUR (4) FEET OF THE AC POWER SOURCE.
3. USE SPECIFIED PARTS OR EQUAL.

1 ONE-LINE ELECTRICAL DIAGRAM AT EXISTING SERVICE ROOM
N.T.S.

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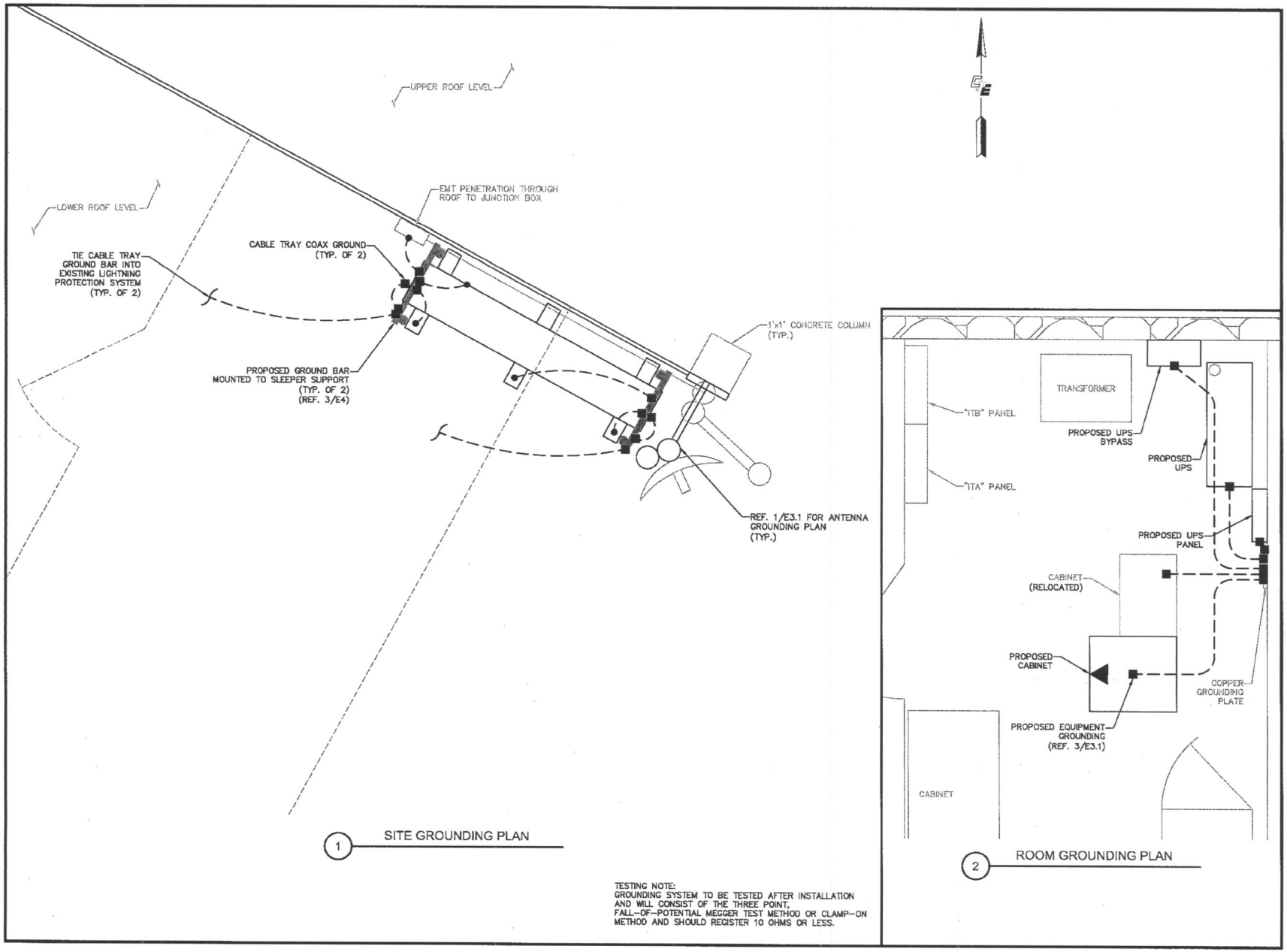
ONE-LINE ELECTRICAL DIAGRAM

E2.3



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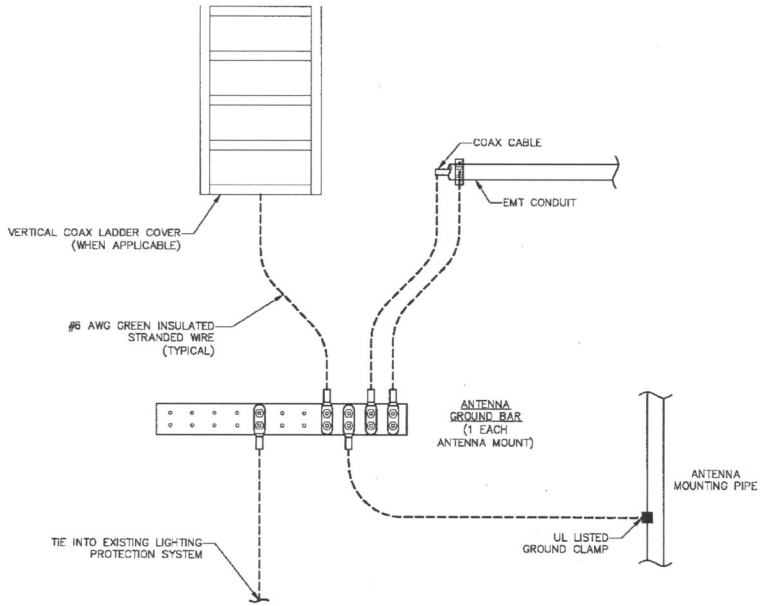
SITE GROUNDING PLAN

E3



GROUNDING NOTES:

1. ALL HOLES MUST BE SUITABLE FOR CONNECTIONS OF THE LUGS.
2. COVER TIPS, LUGS AND COPPER GROUND BAR WITH "PENETROX E" FROM "BURNDY"OR "KOPR-SHIELD" FROM "T&B".
3. INSTALL 2-HOLE COMPRESSION LUGS "BURNDY/HYTUG" TYPE YAL2T FOR GROUND CONDUCTORS C/W DURIUM BOLTS, NUTS AND WASHERS OR EQUIVALENT.
4. THE MGB SHALL INCLUDE HOLES FOR 2 #2 CABLE.

1 ANTENNA GROUNDING PLAN
N.T.S.

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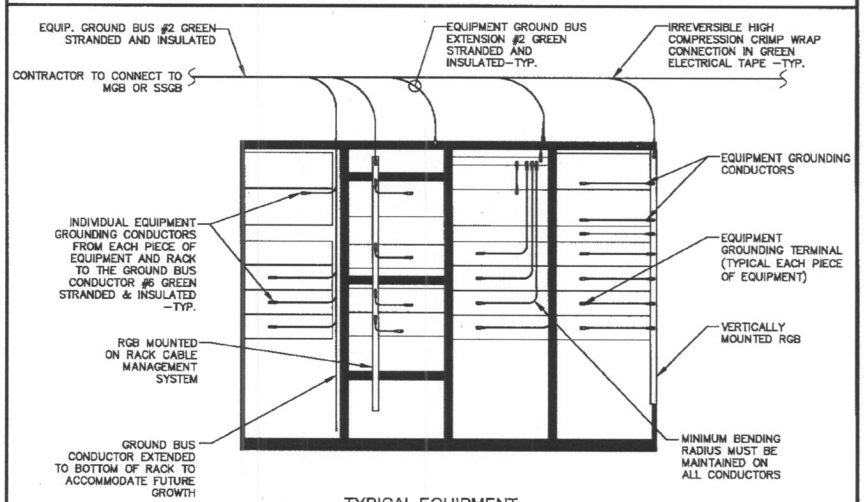

3 TYPICAL EQUIPMENT CABINET GROUNDING
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EQUIPMENT GROUNDING SYSTEM

E3.1