

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING NETWORK.

- INSTALL (3) SECTOR MOUNTS
- INSTALL (12) PANEL ANTENNAS W/ (12) RRHs AND (12) INLINE SURGE PROTECTORS
- INSTALL (3) SURGE PROTECTORS
- INSTALL (1) MW DISH ANTENNA W/ (1) ODU
- INSTALL (1) CHAIN MOUNT AND (1) STRUT KIT
- INSTALL (1) INTERFACE CABLE (CAT5 ETHERNET)
- INSTALL (1) DC POWER SUPPLY CABLE
- INSTALL (2) 7/8" FEEDLINES
- INSTALL (1) ICE BRIDGE
- INSTALL (1) SMARTSKY UTILITY H-FRAME WITH DISCONNECT AND NEMA CABINET
- INSTALL (1) SMARTSKY CABINET ON PROPOSED (5'-0"x5'-0") CONCRETE PAD IN (5'-0"x9'-0") LEASE AREA
- INSTALL GPS ANTENNA ON PROPOSED CABINET
- INSTALL POWER TO CABINET

DESIGN PACKAGE BASED ON THE APPLICATION #: 53706, v5

SITE SUMMARY

SITE TYPE:

CO-LOCATION

TYPE OF OCCUPANCY:

TELECOMMUNICATIONS

TOWER TYPE:

MONOPOLE

TOWER HEIGHT:

186'

TOWER LATITUDE:

39° 06' 25.4" N (39.1071)

TOWER LONGITUDE:

104° 06' 29.3" W (-104.1081)

ZONING JURISDICTION:

EL PASO COUNTY

COUNTY:

EL PASO

PARCEL NUMBER:

100000161

GROUND ELEVATION:

6236'

A.D.A. COMPLIANCE:

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

POWER COMPANY:

MVEA

(800) 388-9881

TELEPHONE COMPANY:

N/A

PROJECT DIRECTORY

TOWER OWNER:

SBA COMMUNICATIONS CORPORATION
8051 CONGRESS AVE
BOCA RATON, FL 33487

PROPERTY OWNER:


JOHN W. STARK, JR.
P.O. BOX 42
RAMAH, CO 80832
PHONE: (719) 541-2533

APPLICANT:

SMARTSKY
4690 FIRST FLIGHT DRIVE
CHARLOTTE, NC 28208

SITE DESIGN:


FDH INFRASTRUCTURE SERVICES
6521 MERIDIEN DRIVE
RALEIGH, NC 27616
CONTACT: DAMARIS SQUIRES
PHONE: (919) 755-1012



UNDERGROUND
SERVICE ALERT

811

48 HOURS BEFORE YOU DIG



SMARTSKY FIRST TIME INSTALL
CONSTRUCTION DRAWINGS



SMARTSKY SITE NUMBER: CO100A SBA SITE NAME: SIMLA SBA SITE NUMBER: CO46078-A

SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832
(EL PASO COUNTY)

VICINITY MAP



LOCAL MAP



DIRECTIONS TO THE SITE

FROM CHARLOTTE, NC:
START OUT GOING NORTHEAST ON 1ST FLIGHT DR. TURN RIGHT TO STAY ON 1ST FLIGHT DR. 1ST FLIGHT DR BECOMES MINUTEMAN WAY. TURN LEFT ONTO MORRIS FIELD DR. TAKE THE 1ST LEFT ONTO BILLY GRAHAM PKWY. MERGE ONTO I-85 S TOWARD GASTONIA. MERGE ONTO US-74 W VIA EXIT 10B TOWARD KINGS MOUNTAIN/SHELBY. MERGE ONTO I-40 W VIA EXIT 31B ON THE LEFT TOWARD CANTON/KNOXVILLE (CROSSING INTO TENNESSEE). KEEP RIGHT TO TAKE I-40 W TOWARD NASHVILLE. KEEP RIGHT TO TAKE I-24 W VIA EXIT 211 TOWARD I-65 N/CLARKSVILLE/LOUISVILLE. KEEP LEFT TO TAKE I-24 W VIA EXIT 88B TOWARD CLARKSVILLE (PASSING THROUGH KENTUCKY, THEN CROSSING INTO ILLINOIS). MERGE ONTO I-57 N VIA THE EXIT ON THE LEFT TOWARD CHICAGO. MERGE ONTO I-64 W VIA EXIT 96 ON THE LEFT TOWARD ST LOUIS. MERGE ONTO I-70 W VIA EXIT 3B TOWARD IL-3 N/KANSAS CITY (CROSSING INTO MISSOURI). KEEP LEFT TO TAKE I-670 W TOWARD I-35 S/TOPEKA/WICHITA (CROSSING INTO KANSAS). I-670 W BECOMES I-70 W (PORTIONS TOLL). KEEP RIGHT TO TAKE I-70 W VIA EXIT 183 TOWARD US-40/KS-4/TOPEKA/SALINA (PORTIONS TOLL) (CROSSING INTO COLORADO). TAKE EXIT 359 TOWARD LIMON. TURN LEFT ONTO US-40 E/US HIGHWAY 24. CONTINUE TO FOLLOW US HIGHWAY 24. TURN SLIGHT LEFT ONTO CARIBOU ST/US-24 W. TURN LEFT ONTO WASHINGTON AVE. WASHINGTON AVE BECOMES SIMLA HWY (PORTIONS UNPAVED). TURN RIGHT ONTO RAMAH RD E (PORTIONS UNPAVED). TURN LEFT ONTO OIL WELL RD (PORTIONS UNPAVED). SITE IS ON THE RIGHT.

CODE COMPLIANCE	
ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING:	
<ul style="list-style-type: none">• 2015 INTERNATIONAL BUILDING CODE• 2015 INTERNATIONAL EXISTING BUILDING CODE• 2015 INTERNATIONAL PLUMBING CODE• 2015 INTERNATIONAL MECHANICAL CODE• 2015 INTERNATIONAL FUEL GAS CODE• 2015 INTERNATIONAL FIRE CODE• 2015 INTERNATIONAL ENERGY CONSERVATION CODE	<ul style="list-style-type: none">• 2017 NATIONAL ELECTRICAL CODE• NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS• CITY/COUNTY ORDINANCES• ANSI/TIA-222-G• FAA COMPLIANCE• FCC COMPLIANCE

Approved

By: Craig Dossey, Executive Director

Date: 07/29/2019

El Paso County Planning & Community Development

Previous Files: AL-05-002 (all conditions met), EX-05-001, PPR-05-023

LOCAL JURISDICTION APPROVAL:

SIGNATURE _____ DATE _____

PROJECT MANAGER APPROVAL:

SIGNATURE _____ DATE _____

CONSTRUCTION MANAGER APPROVAL:

SIGNATURE _____ DATE _____

SHEET INDEX			
SHEET NO.	DESCRIPTION	REV. NO.	REVISION DATE
T-1	TITLE SHEET	4	06/20/19
GN-1	GENERAL NOTES	4	06/20/19
GN-2	GENERAL NOTES	4	06/20/19
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G-4	GROUNDING DETAILS	4	06/20/19
1 OF 3	MOUNT DETAILS	4	06/20/19
2 OF 3	MOUNT DETAILS	4	06/20/19
3 OF 3	SITE SURVEY	4	06/20/19

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION, THEREFORE HANDICAP ACCESS IS NOT REQUIRED. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



SMARTSKY
NETWORKS

PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIEN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



06/20/19

DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY:

CLS

CHECKED BY:

DRS

APPV'D:

DDA

PROJECT ID:

19BGGM1950

SUBMITTALS			
DATE	DESCRIPTION	REV	ISSUED BY
07/05/18	CONSTRUCTION	0	DRS
08/30/18	CONSTRUCTION	1	DRS
03/20/19	CONSTRUCTION	2	DRS
04/25/19	CONSTRUCTION	3	DRS
06/20/19	CONSTRUCTION	4	DRS

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. REPRODUCTION OR CAUSING TO BE REPRODUCED THE WHOLE OR ANY PART OF THESE DRAWINGS WITHOUT THE PERMISSION OF FDH INFRASTRUCTURE SERVICES IS PROHIBITED.

SMARTSKY SITE NUMBER:
CO100A

SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
TITLE
SHEET

SHEET NUMBER
T-1

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH LATEST VERSION OF ANSI/ASSE A10.48 "CRITERIA FOR SAFETY PRACTICES WITH THE CONSTRUCTION, DEMOLITION, MODIFICATION AND MAINTENANCE OF COMMUNICATION STRUCTURES"
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNER’S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
13. NOTICE TO PROCEED – NO WORK TO COMMENCE PRIOR TO COMPANY’S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA–222 (LATEST EDITION), OSHA AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA–222 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4”ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
3. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8”ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER’S RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL, OR ROD SHALL CONFORM TO MANUFACTURER’S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN OF THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER’S MAXIMUM ALLOWABLE LOADS.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND AIR–ENTRAINED AT 5.5% ± 1%, UNLESS NOTED OTHERWISE. SLAB FOUNDATION DESIGN ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 1000 PSF.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS “B” AND ALL HOOKS SHALL BE STANDARD, UNLESS NOTED OTHERWISE.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER.....2 IN.
#5 AND SMALLER & WWF.....1–1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALLS.....3/4 IN.
BEAMS AND COLUMNS.....1–1/2 IN.
5. A CHAMFER 3/4” SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

MASONRY NOTES:

1. HOLLOW CONCRETE MASONRY UNITS SHALL MEET ASTM SPECIFICATION C90, GRADE N. TYPE 1. THE SPECIFIED DESIGN COMPRESSIVE STRENGTH OF CONCRETE MASONRY (F’m) SHALL BE 1500 PSI.
2. MORTAR SHALL MEET THE PROPERTY SPECIFICATION OF ASTM C270 TYP. ”S” MORTAR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. GROUT SHALL MEET ASTM SPECIFICATION C475 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
4. CONCRETE MASONRY SHALL BE LAID IN RUNNING (COMMON) BOND.
5. WALL SHALL RECEIVE TEMPORARY BRACING. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL GROUT IS FULLY CURED.

GENERAL NOTES:

1. FOR THE PURPOSES OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR – _____
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
CARRIER – SMARTSKY
TOWER OWNER – SBA
OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR AND TOWER OWNER.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
4. DRAWING PROVIDE HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER’S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR’S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER’S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISED IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

GENERAL NOTES TO APPLY IN APPLICABLE SITUATIONS ONLY













ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
REF	REFERENCE
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS LIST:

(SYMBOLS SHOWN MAY NOT BE USED ON THIS PROJECT)

	SOLID GROUND BUS BAR
	SOLID NEUTRAL BUS BAR
	SUPPLEMENTAL GROUND CONDUCTOR
	2–POLE THERMAL–MAGNETIC CIRCUIT BREAKER
	SINGLE–POLE THERMAL–MAGNETIC CIRCUIT BREAKER
	CHEMICAL GROUND ROD
	TEST WELL
	DISCONNECT SWITCH
	METER
	EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
	MECHANICAL CONNECTION
	GROUND WIRE

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487–7483

PREPARED FOR:



PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919–755–1012 FAX: 919–755–1031



06/20/19

DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY:	CLS
CHECKED BY:	DRS
APPV'D:	DDA
PROJECT ID:	19BGGM1950

SUBMITTALS			
DATE	DESCRIPTION	REV	ISSUED BY
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SMARTSKY SITE NUMBER:
CO100A

SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

GN-1

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC. HILTI EPOXY ANCHORS ARE REQUIRED BY TOWER OWNER.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
5. CABLES SHALL NOT BE ROUTED THROUGH LADDER–STYLE CABLE TRAY RUNGS.
6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E. HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2” PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID’S).
8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 AEG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMPED–STYLE COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIDGED NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES, AND WIREWAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

21. WIREWAYS SHALL BE EPOXY–COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNATED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER).
22. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER, OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHIN ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
23. EQUIPMENT CABINETS, TERMINAL BOXED, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL; SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
24. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
25. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
28. INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "SMARTSKY".
29. ALL CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES’S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 91) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUND SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COOPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACKED TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES, AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1–#2 AWG TIN–PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS, OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 TINNED SOLID IN 3/4” LIQUID TIGHT CONDUIT FROM 24” BELOW GRADE TO WITHIN 3” TO 6” OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

GENERAL NOTES TO APPLY IN APPLICABLE SITUATIONS ONLY

NEC INSULATOR COLOR CODE		
DESCRIPTION	PHASE/CODE LETTER	WIRE COLOR
240/120 1ø	LEG 1	BLACK
	LEG 2	RED
AC NEUTRAL	N	WHITE
GROUND (EGC)	G	GREEN
VDC POS	–	*RED–POLARITY MARK AT TERMINATION
VDC NEG	–	*BLACK–POLARITY MARK AT TERMINATION
240V OR 208V, 3ø	PHASE A	BLACK
	PHASE B	RED (ORG. IF HI LEG)
	PHASE C	BLUE
480V, 3ø	PHASE B	BROWN
	PHASE A	ORANGE
	PHASE C	YELLOW

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PREPARED FOR:



PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919–755–1012 FAX: 919–755–1031



DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS
CHECKED BY: DRS
APPV'D: DDA
PROJECT ID: 19BGGM1950

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SMARTSKY SITE NUMBER:
CO100A

SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

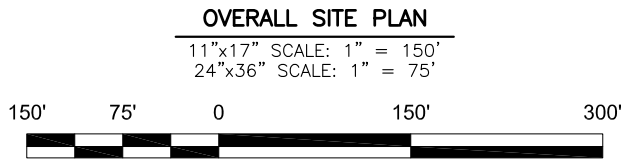
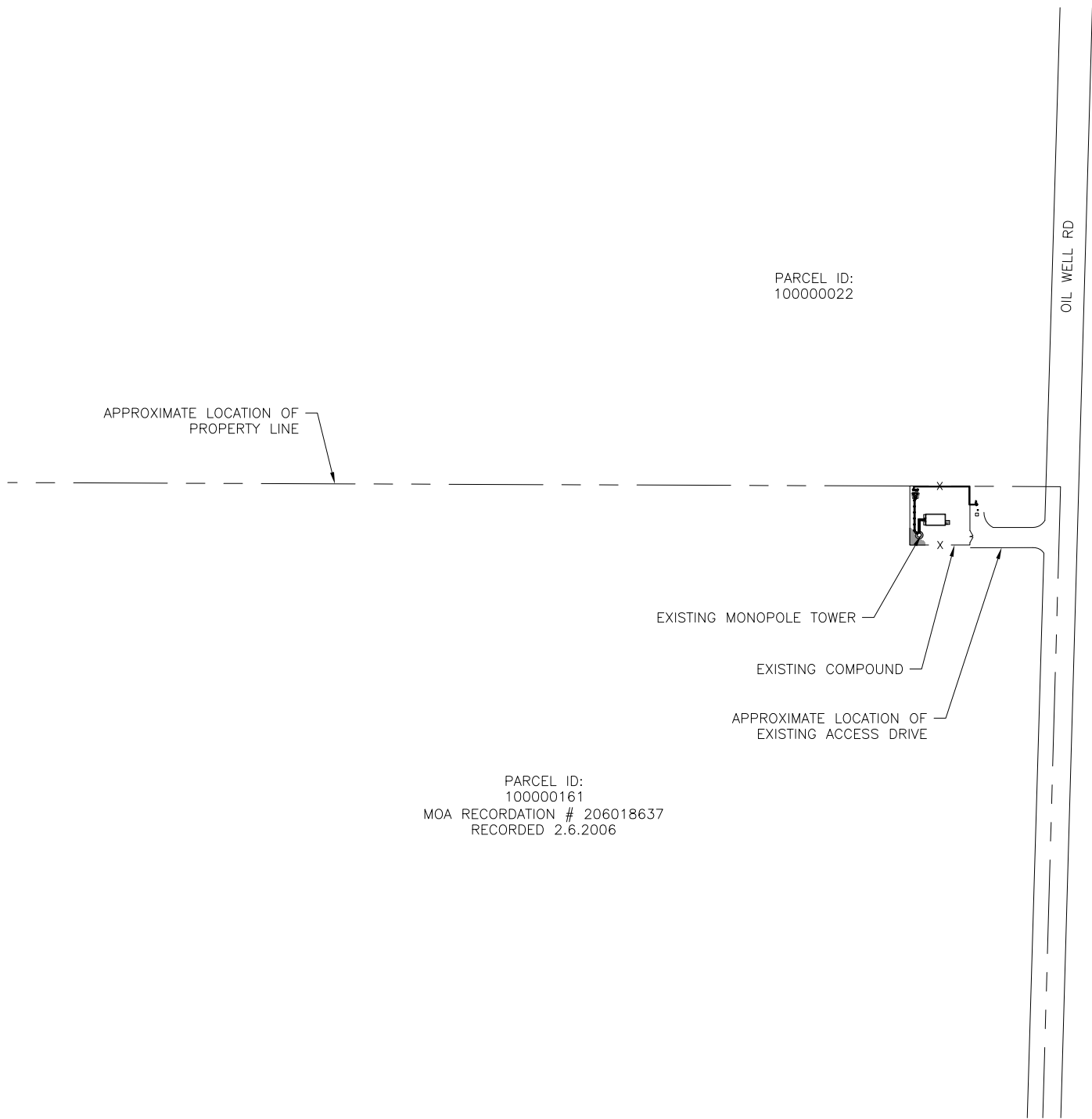
SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

GN-2



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PREPARED FOR:


SMARTSKY
NETWORKS

PREPARED BY:

FDH **INFRASTRUCTURE SERVICES** 

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06/20/19

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RAMAH, CO 80832**

SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
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SHEET TITLE
OVERALL SITE PLAN

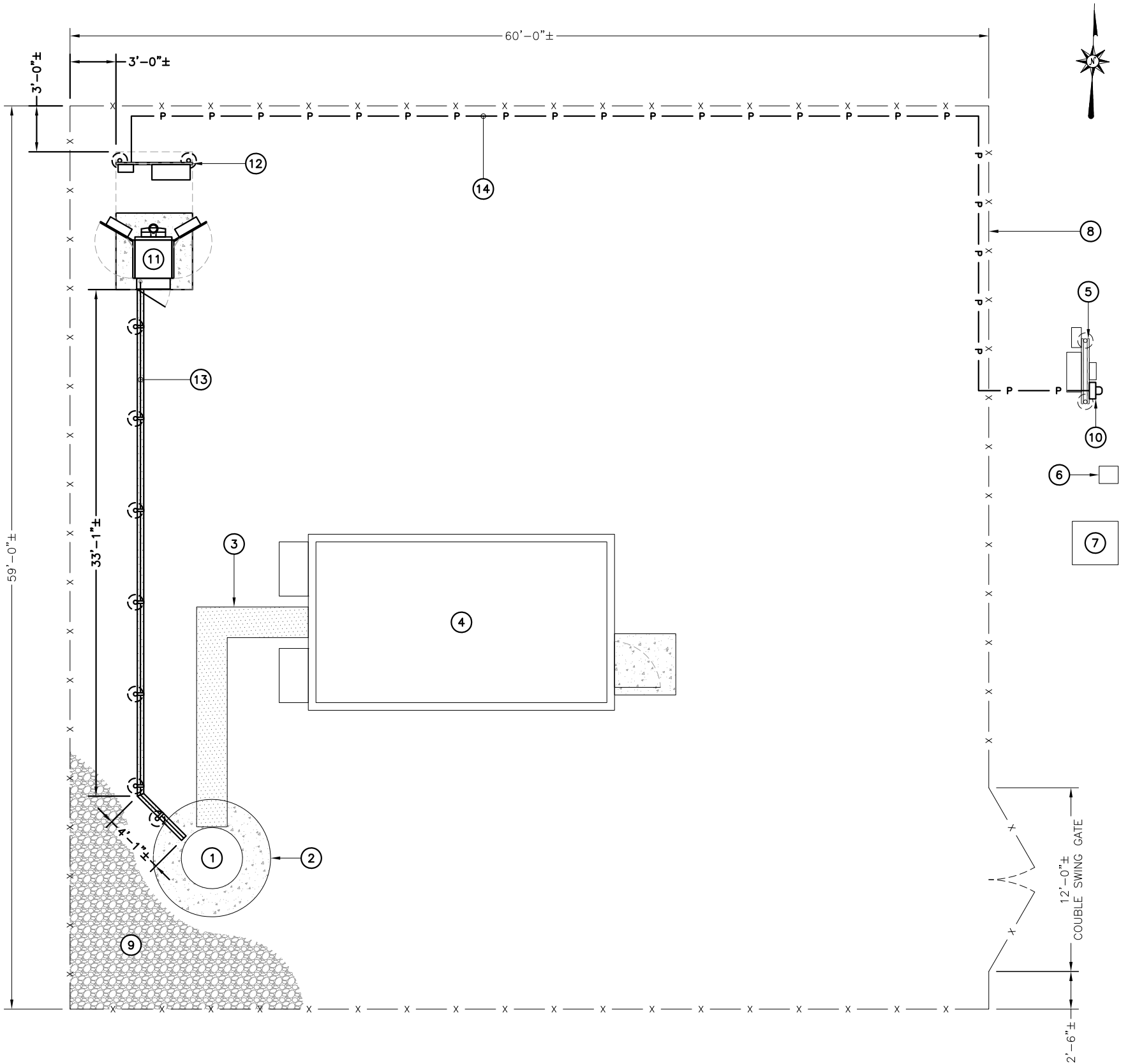
SHEET NUMBER
S-1

NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THE DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF THE WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED EQUIPMENT, EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS, OR ANY OTHER EQUIPMENT. CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE TOWER OWNER'S SPECIFICATIONS.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE CONSTRUCTION MANAGER AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE, NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
4. USE EXISTING WAVEGUIDE LADDER/MOUNT FOR VERTICAL CABLE RUN WHERE FEASIBLE. COAX ATTACHMENT TO THE TOWER CANNOT BE INSTALLED ON THE CLIMBING LADDER. QUICK TIES ARE NOT AN ACCEPTABLE METHOD OF COAX ATTACHMENT.
5. INSTALLATION OF ICE BRIDGE SHALL NOT OBSTRUCT GPS ANTENNA ON TOP OF CABINET.
6. PULL BOX(ES) ARE REQUIRED WHEN THE EQUIVALENT FOR FOUR 90 DEGREE BENDS, INCLUDING THE BENDS LOCATED AT AN OUTLET OR FITTING, ARE USED BETWEEN PULL POINTS; 150 FEET OF CONDUIT LENGTH IS EQUIVALENT TO AN ADDITIONAL 90 DEGREES.

NOTES BY SYMBOL:

- ① EXISTING MONOPOLE TOWER
- ② EXISTING TOWER FOUNDATION
- ③ EXISTING OVERHEAD ICE BRIDGE (TYP.)
- ④ EXISTING EQUIPMENT SHELTER (OTHER CARRIER)
- ⑤ EXISTING COMPOUND UTILITY H-FRAME
- ⑥ EXISTING TELCO PEDESTAL
- ⑦ EXISTING TRANSFORMER
- ⑧ EXISTING CHAIN-LINK COMPOUND FENCE
- ⑨ EXISTING GRAVEL COMPOUND TERRAIN
- ⑩ PROPOSED SMARTSKY METER
- ⑪ PROPOSED SMARTSKY CABINET ON PROPOSED SMARTSKY (5'-0"x5'-0") EQUIPMENT PAD IN (5'-0"x9'-0") LEASE AREA (SEE SHEET C-5 FOR DETAILS)
- ⑫ PROPOSED SMARTSKY UTILITY H-FRAME WITH DISCONNECT AND (30"x30"x12") QUAD RECEPTACLE NEMA CABINET
- ⑬ ROUTE HYBRID FEEDLINE ALONG PROPOSED ICE BRIDGE FROM PROPOSED SMARTSKY SURGE PROTECTOR MOUNTED ON PROPOSED SMARTSKY CABINET TO SMARTSKY SURGE PROTECTOR MOUNTED ON TOWER (FIELD COORDINATE TERMINATIONS WITH MANUFACTURER'S REQUIREMENTS)
- ⑭ PROPOSED (1) PVC POWER CONDUIT TO BE ROUTED FROM PROPOSED METER ON EXISTING COMPOUND UTILITY H-FRAME TO PROPOSED DISCONNECT ON PROPOSED H-FRAME (APPROX. 95'±) (FIELD COORDINATE TERMINATIONS WITH MANUFACTURER'S REQUIREMENTS)



COMPOUND PLAN

11"x17" SCALE: 1" = 8'
24"x36" SCALE: 1" = 4'



NOTES:

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(800) 487-7483

PREPARED FOR:



PREPARED BY:



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PHONE: 919-755-1012 FAX: 919-755-1031



DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS

CHECKED BY: DRS

APPV'D: DDA

PROJECT ID: 19BGGM1950

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SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

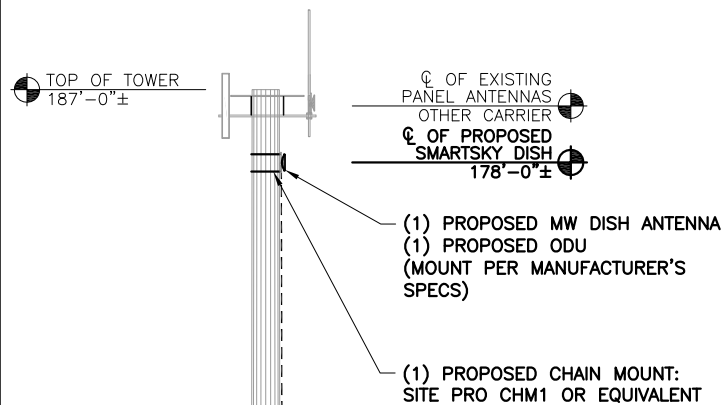
SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER

C-1



THE REQUIRED FAA LIGHTING MUST NOT BE BLOCKED IN ANY WAY BY THE ANTENNAS. THE REQUIRED 360° LIGHTING VISIBILITY MUST BE MAINTAINED.

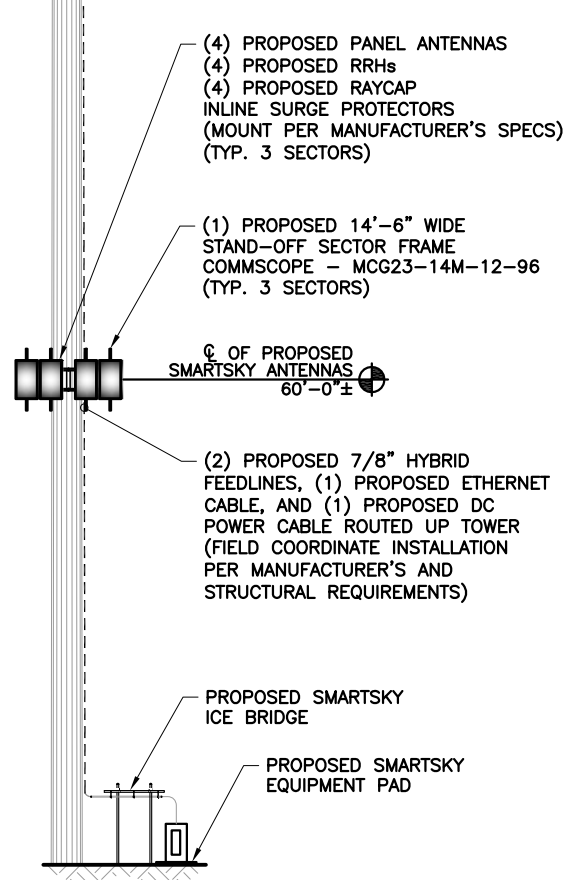
A STRUCTURAL ANALYSIS OF THIS TOWER WAS PERFORMED BY TES. CONTRACTOR TO REFER TO STRUCTURAL ANALYSIS DATED 02/08/18 FOR ANTENNA MOUNTING, COAX ROUTING/STACKING, AND TOWER EXTENSION DETAILS PRIOR TO INSTALLATION.

ALL PROPOSED EQUIPMENT SHALL BE PAINTED TO MATCH EXISTING MONOPOLE

SCHEMATIC LAYOUT ONLY; SEE RF SCHEDULE ON C-2 FOR DISH SIZE; DISH TO BE MAXIMUM OF 4' DIAMETER

NOTES:

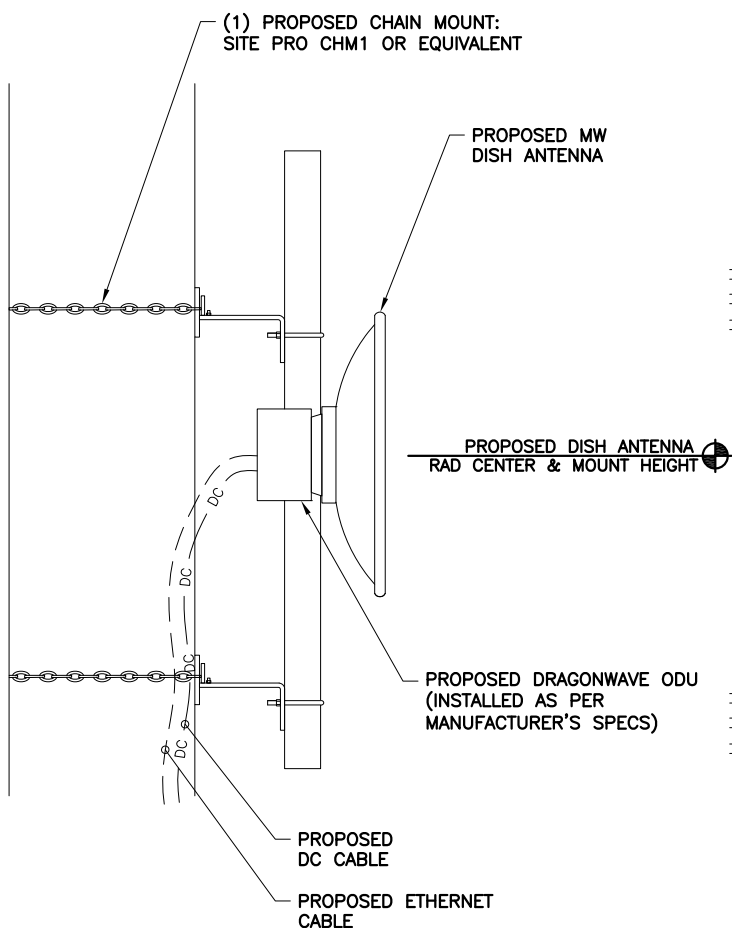
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE TOWER OWNER'S CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, FEEDLINES, AND ANTENNAS ARE BASED ON THE STRUCTURAL ANALYSIS.
- ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, CABLES, ETC. SHALL BE MOUNTED IN ACCORDANCE TO THE TOWER STRUCTURAL ANALYSIS ON FILE WITH THE SBA CM.
- USE EXISTING WAVEGUIDE LADDER/MOUNT FOR VERTICAL CABLE RUN WHERE FEASIBLE. CABLE ATTACHMENT TO THE TOWER CANNOT BE INSTALLED ON THE CLIMBING LADDER. QUICK TIES ARE NOT AN ACCEPTABLE METHOD OF CABLE ATTACHMENT.



TOWER ELEVATION

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

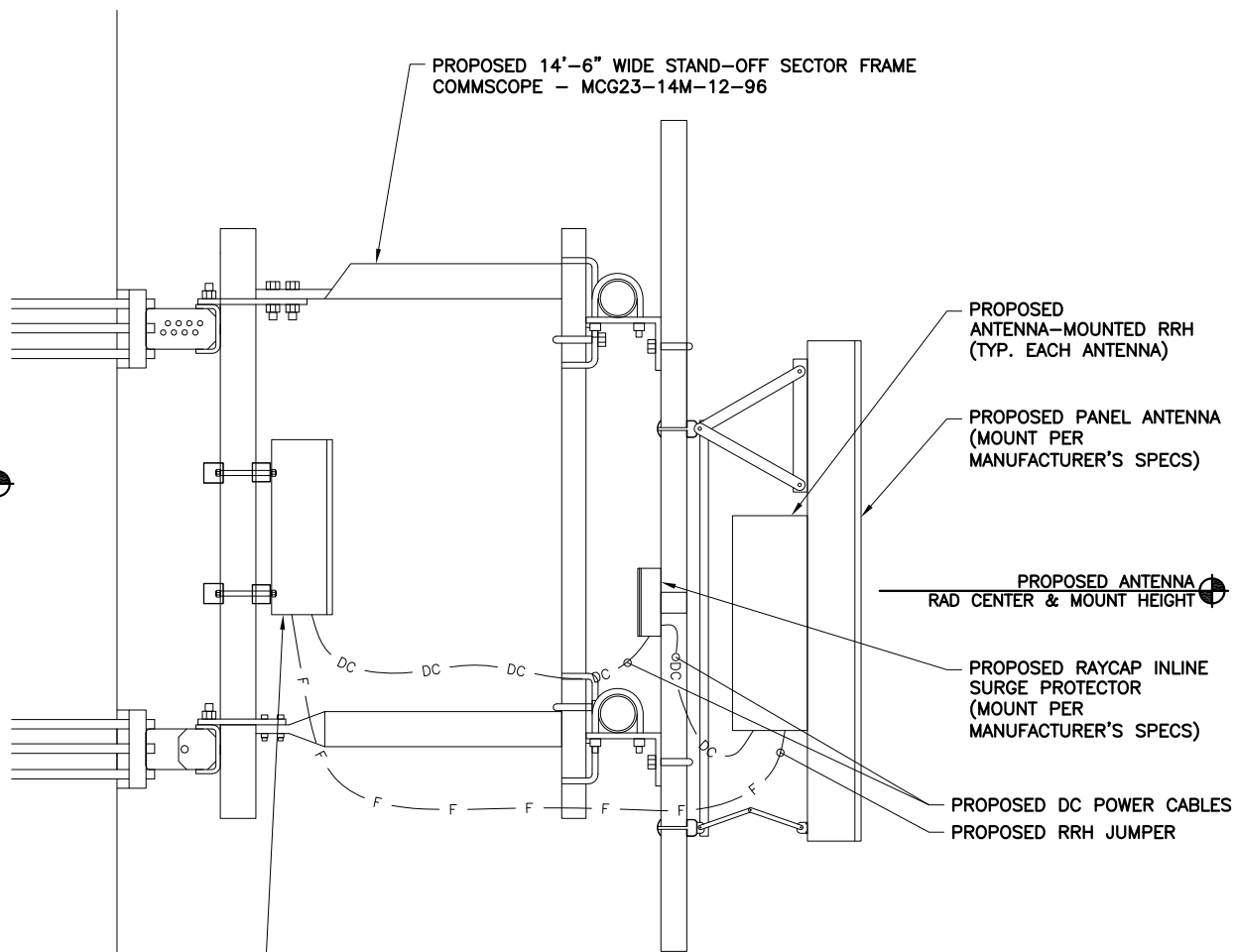
THE TOWER DRAWING IS ONLY A GRAPHIC REPRESENTATION OF THE STRUCTURE. THE ACTUAL TOWER MAY VARY IN THE FIELD



PROPOSED RAYCAP SURGE PROTECTOR MOUNTED TO SECTOR FRAME (MOUNT PER MANUFACTURER'S SPECS)

PROPOSED ANTENNA MOUNTING DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



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PREPARED BY:



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DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

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18406 OIL WELL ROAD
RAMAH, CO 80832

SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
TOWER ELEVATION

SHEET NUMBER

C-2

RF EQUIPMENT SCHEDULE & B.O.M.								
ITEM	MANUFACTURER	PART NUMBER	SUPPLIER	QUANTITY	LENGTH	RAD CENTER	AZIMUTH (TRUE NORTH)	COMMENTS
PANEL ANTENNA WITH RRH	CCI	BFA8F-A5A	CUSTOMER	12	N/A	60'-0"	15°/45°/75°/105°/135°/165°/ 195°/225°/255°/285°/315°/345°	5° UPTILT
SURGE PROTECTOR (1390)	RAYCAP	RHCDC-1390-PF-48	CUSTOMER	2	N/A	60'-0"	N/A	
INLINE SURGE PROTECTOR (3441)	RAYCAP	RHCDC-3441-P-48-NA	CUSTOMER	12	N/A	60'-0"	N/A	INLINE DC SURGE SUPPRESSION
HYBRID CABLE (FIBER & POWER)	EUPEN	78-12C6-24MM5	CUSTOMER	2	TBD	60'-0"	N/A	
FIBER JUMPER (1390 TO RRH)	EUPEN	HF2M900LCFA-A/A	CUSTOMER	12	29' (SEE NOTE 2)	60'-0"	N/A	2 FIBERS MULTI-MODE, LC/UPC
DC JUMPER (3441 TO RRH)	CHOGORI	1IZ00116061701	CUSTOMER	12	15' (SEE NOTE 2)	60'-0"	N/A	2x14 AWG CONDUCTORS (B/W)
DC JUMPER (1390 TO 3441)	EUPEN	HP206	CUSTOMER	2	75' (SEE NOTE 2)	N/A	N/A	SPOOL OF 75' CUT TO LENGTH ON SITE
MW DISH WITH HEMC RADIO	COMMSCOPE	VHLP2-11W-6WH/A	CUSTOMER	1	N/A	178'-0"	252.19°	2' MW DISH ASSEMBLY
INTERFACE CABLE (CAT5 ETHERNET)	COMMSCOPE	5ENS4ZH-BR	CUSTOMER	1	198'	N/A	N/A	-
DC POWER SUPPLY CABLE	ALPHA WIRE	15-1787-BK001	CUSTOMER	1	198'	N/A	N/A	-

- NOTES:**
1. BASED ON APPROVED SBA APPLICATION. CONFIRM WITH SBA CONSTRUCTION MANAGER FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS.
 2. JUMPER AND DC POWER CABLE LENGTH SHOWN REFERS TO SHORTEST PRECUT LENGTH THAT WILL REACH RRH/INLINE SURGE PROTECTOR. ETHERNET AND DC POWER CABLE LENGTH SHOWN REFERS TO SHORTEST PRECUT LENGTH THAT WILL REACH SURGE ARRESTOR.
 3. THE ANTENNAS LISTED IN THIS B.O.M. ARE ONLY USED TO REPRESENT A BASIS OF DESIGN DIMENSIONS FOR THE ANTENNA AND MOUNT ORIENTATION PER THE APPLICATION. THE CUSTOMER WILL PROVIDE ANTENNA MODELS AFTER PRELIMINARY DRAWINGS ARE SUBMITTED.
 4. EXCESS COAX TO BE COILED.

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SBA

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PREPARED FOR:

SMARTSKY NETWORKS

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SHEET TITLE
RF SCHEDULE
& ANTENNA LAYOUT

SHEET NUMBER
C-3

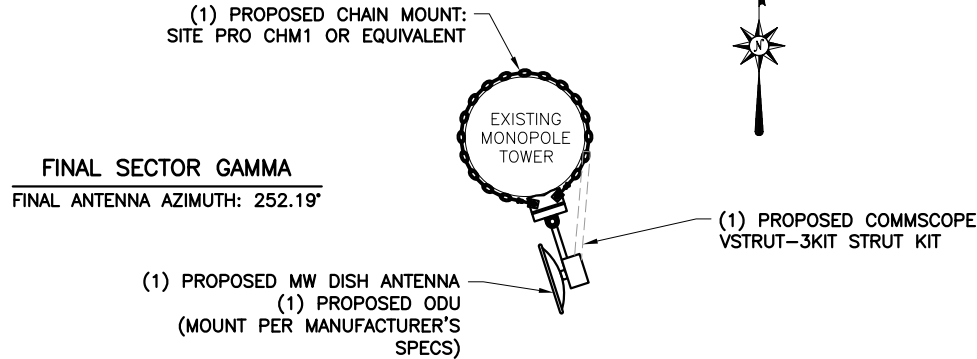
INSTALLER NOTE:

DIRECT MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ CLIMBING PEGS/STEPS AND SAFETY CLIMB.

NOTE:

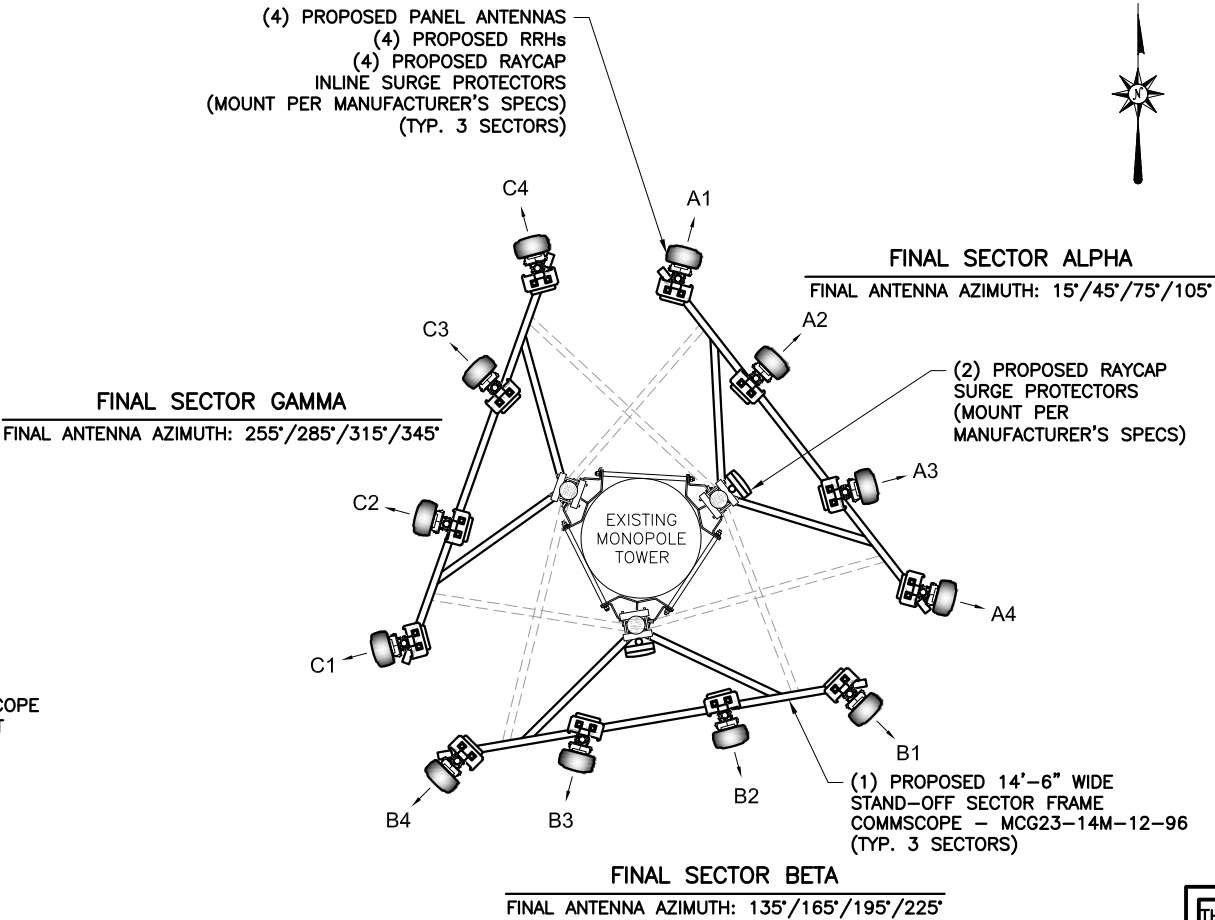
ORIENT MOUNTS TO PROVIDE ADEQUATE SEPARATION BETWEEN ANTENNAS AND TO AVOID CAUSING RF INTERFERENCE (MOUNT AZIMUTHS ARE SHOWN FOR REFERENCE ONLY).

SCHEMATIC LAYOUT ONLY;
SEE RF SCHEDULE ON C-2 FOR DISH SIZE;
DISH TO BE MAXIMUM OF 4' DIAMETER



FINAL ANTENNA LAYOUT @ ELEVATION 178'-0" A.G.L.

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



FINAL ANTENNA LAYOUT @ ELEVATION 60'-0" A.G.L.

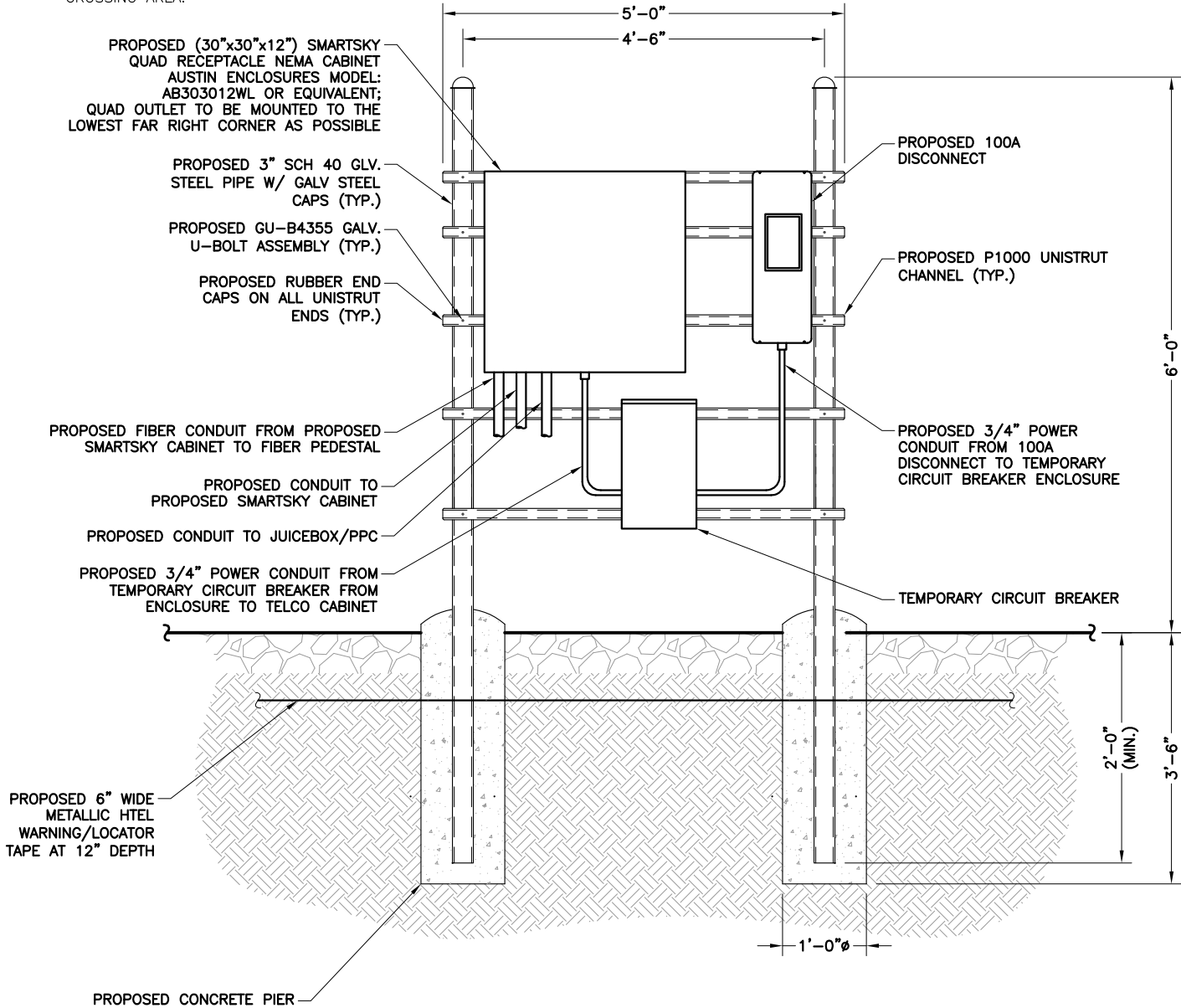
11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

- GENERAL NOTES:**
1. THIS ANTENNA ORIENTATION PLAN IS A SCHEMATIC. THE CONTRACTOR SHALL VERIFY TOWER ORIENTATION AND FIELD COORDINATE REQUIRED ADJUSTMENTS TO ACHIEVE THE DESIRED ANTENNA AZIMUTHS.
 2. ANTENNA CENTERLINE HEIGHT REFERENCED FROM GROUND AT BASE OF TOWER, ASSUMING HEIGHT OF 0'-0" AT SAID REFERENCE POINT.
 3. ALL ANTENNAS, CABLES AND MOUNTS SHALL BE INSTALLED IN ACCORDANCE WITH THE TOWER ENGINEER'S RECOMMENDATIONS IN A MANNER CONSISTENT WITH THE STRUCTURAL ANALYSIS REPORT.
 4. ALL ANTENNA BRACKETS PER ANTENNA MANUFACTURER, OR EQUAL. CONTRACTOR TO COORDINATE REQUIRED MECHANICAL DOWNTILT WITH SMARTSKY.
 5. ALL ANTENNA INFORMATION TO BE CONFIRMED WITH SMARTSKY RF DESIGN PRIOR TO INSTALLATION.
 6. ALL ANTENNA INFORMATION BASED ON LATEST RFDS FOR THIS SITE.

THE INFORMATION PROVIDED ON THIS SHEET IS DERIVED FROM RFDS INFORMATION PROVIDED BY CLIENT. FDH INFRASTRUCTURE SERVICES DOES NOT ASSUME ANY RESPONSIBILITY AND IS NOT LIABLE FOR THE ACCURACY OF THIS INFORMATION OR THE SUITABILITY FOR THIS APPLICATION. (CONTRACTOR SHALL REFER TO RFDS INFORMATION PROVIDED BY OTHERS.)

NOTES:

1. ALL EXPOSED ELECTRICAL CONDUITS MUST BE GALVANIZED STEEL RIGID CONDUIT.
2. THREADLESS CONNECTORS ARE NOT ALLOWED.
3. EMT CONDUIT CAN ONLY BE USED INSIDE.
4. USE ONLY COMPRESSION TYPE FITTINGS ON EMT CONDUIT.
5. USE ONLY STRANDED CONDUCTORS FOR ALL ELECTRICAL WIRING. (EXCEPT TELCO AND THERMOSTAT)
6. USE SCHEDULE 80 CONDUIT UNDER DRIVEWAYS AND/OR ANY VEHICLE CROSSING AREA.



PROPOSED H-FRAME DETAIL (FRONT VIEW)

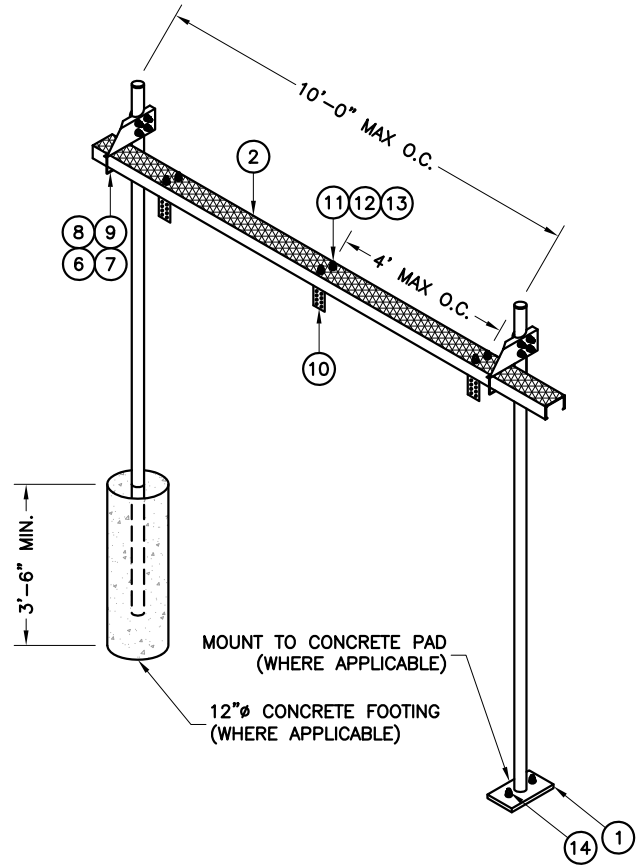
11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

UTILITY METER ENCLOSURE INSTALLATION
TO BE COORDINATED WITH THE LOCAL
ELECTRICAL PROVIDER

CONTRACTOR TO LABEL ALL CONDUITS
WITH A LABEL MAKER

NOTES:

1. WHERE POSSIBLE AND AS APPLICABLE, THE CONTRACTOR SHALL UTILIZE EXISTING ICE BRIDGE, CABLE LADDER, COAX SUPPORTS, AND COAX PORTS. BEFORE UTILIZING, CONTRACTOR SHALL VERIFY THAT ALL ASPECTS OF THE COMPONENTS MEET THE TOWER OWNER'S SPECIFICATIONS. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF NEW ICE BRIDGE, CABLE LADDER, COAX SUPPORT, AND COAX PORT, AS REQUIRED, WITH THE TOWER OWNER'S CONSTRUCTION MANAGER.
2. BOTTOM MOST PORTION OF ICE BRIDGE TO BE NO LOWER THAT 7' A.G.L.



CABLE LADDER – BILL OF MATERIALS

ITEM	PART NUMBER	DESCRIPTION	ITEM	PART NUMBER	DESCRIPTION
1	MF126.01	BASE SHOE	8	GWL-04	1/2" GALV LOCK WASHER
2	WB-CY0510	SAFETY GRATING 5" X 10'	9	GN-04	1/2" GALV HEX NUT
3	PC-034	PIPE CAP 3-1/2"	10	ZBV601	SINGLE 6 CABLE BRACKET
4	WBLB0501	5" ICE BRIDGE SUPPORT BRACKET	11	MT-387	SQUARE WASHER, 1-1/2" X 1-1/2" W/ 7/16" HOLE
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	12	GWf-03	3/8" GALV FLAT WASHER
6	WB-JB-6	1/2" J-BOLT	13	GB-03205	3/8" X 2" GALV BOLT KIT
7	GWf-04	1/2" GALV FLAT WASHER	14	MT-287	3/4" X 7" WEDGE ANCHOR

NOTE:

CONTRACTOR SHALL USE PARTS MANUFACTURED BY COMMSCOPE AS SHOWN OR APPROVED EQUIVALENT.

ICE BRIDGE KIT

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



PREPARED BY:



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6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS
CHECKED BY: DRS
APPV'D: DDA
PROJECT ID: 19BGGM1950

SUBMITTALS			
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04/25/19	CONSTRUCTION	3	DRS
06/20/19	CONSTRUCTION	4	DRS

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SMARTSKY SITE NUMBER:
CO100A

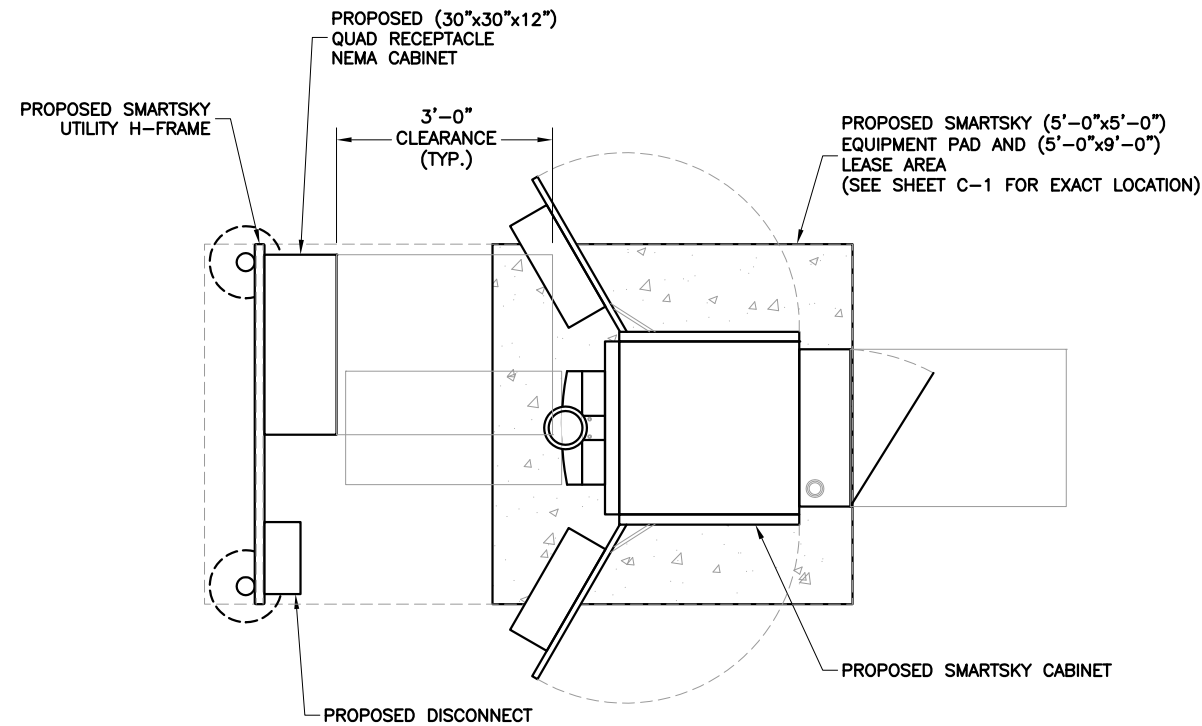
SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

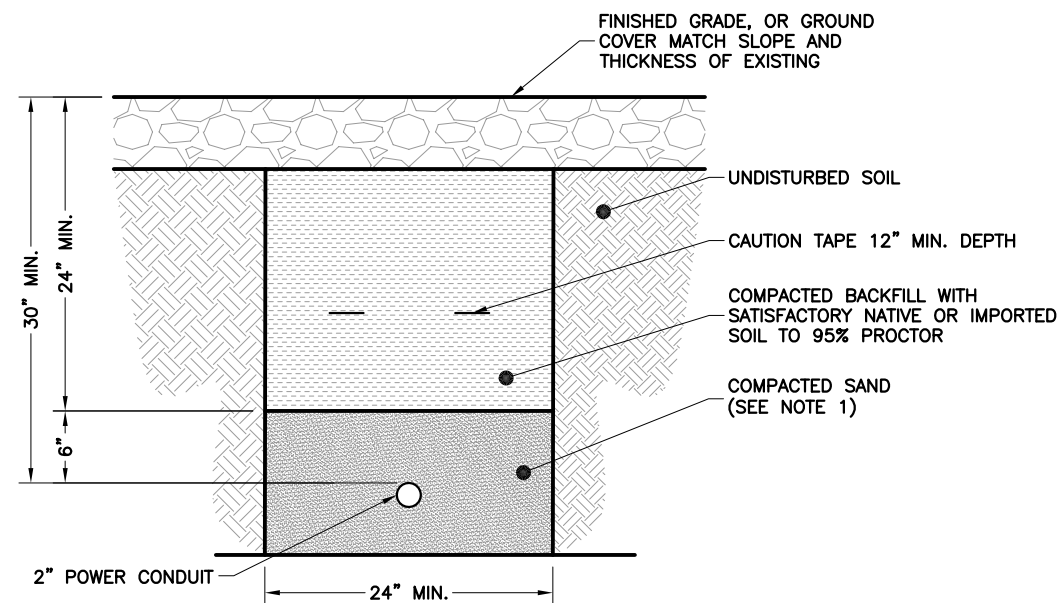
SHEET TITLE
CIVIL DETAILS

SHEET NUMBER



TYPICAL DETAILED EQUIPMENT LAYOUT

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

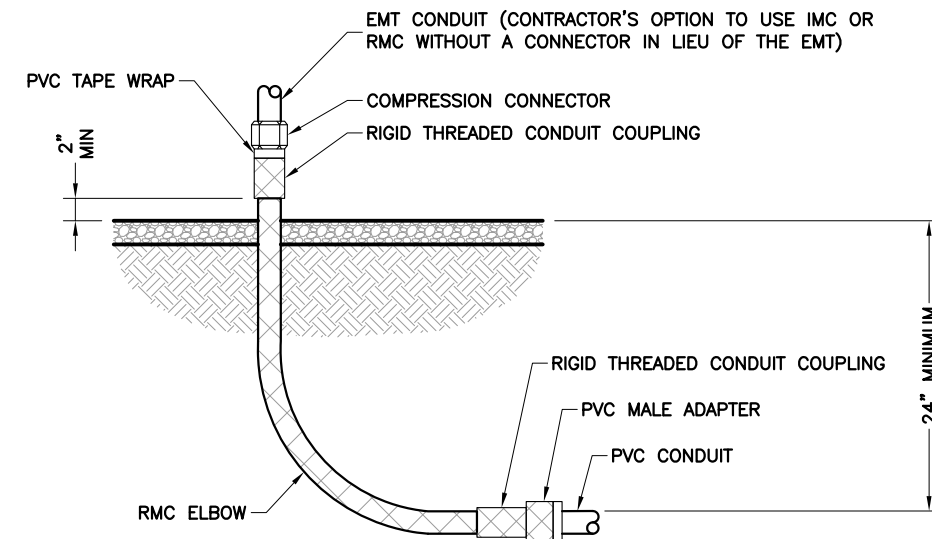


TRENCH DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

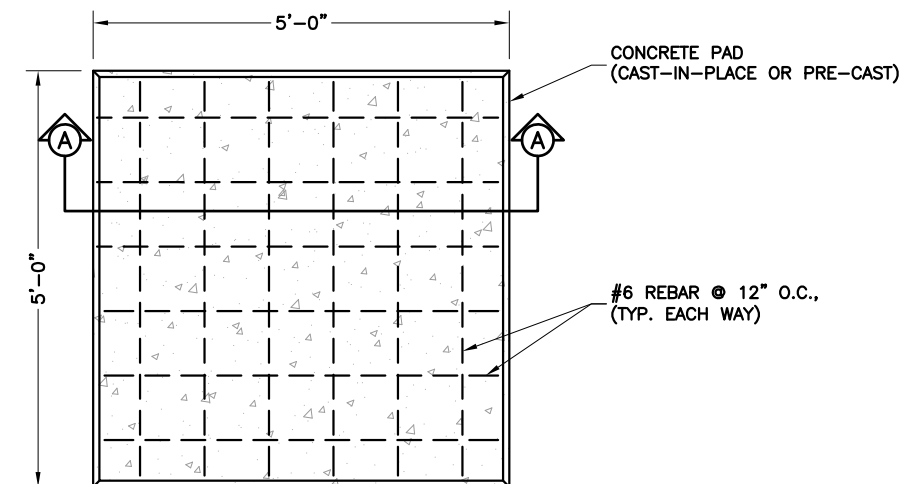
NOTE:

- LEAN CONCRETE, RED-COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND

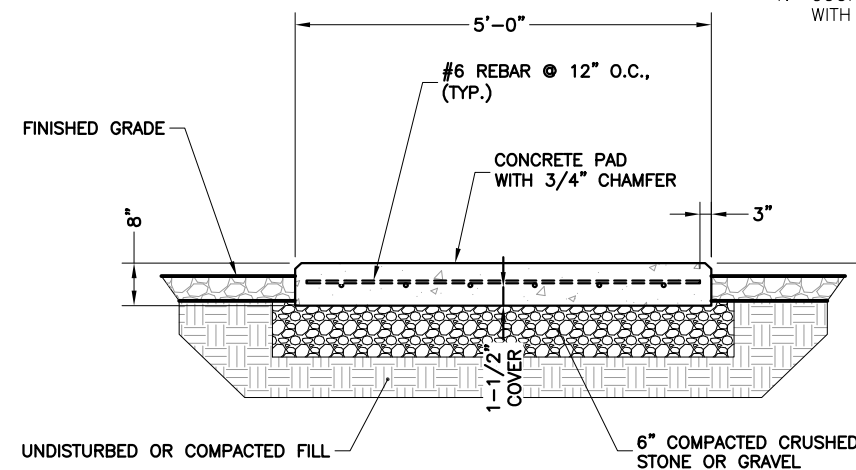


CONDUIT STUB-UP DETAIL

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



PLAN VIEW



SECTION (A-A)

CONCRETE PAD FOR MINOR EQUIPMENT

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

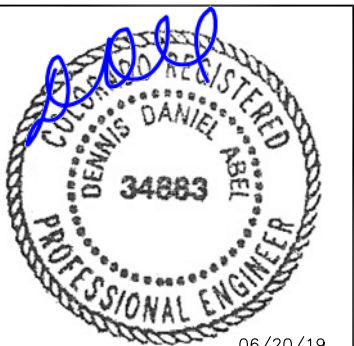
PREPARED FOR:



PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



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RAMAH, CO 80832

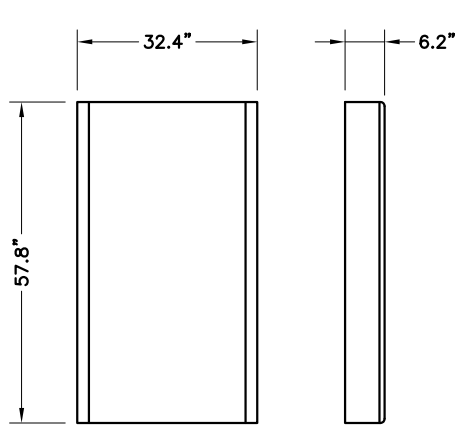
SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
CIVIL DETAILS

SHEET NUMBER

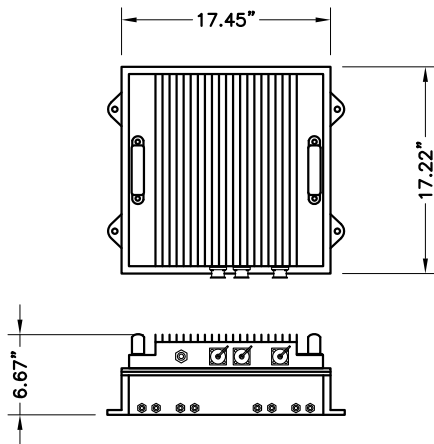
C-5



WEIGHT: 84 LBS

CCI BFA8F-A5A DETAILS

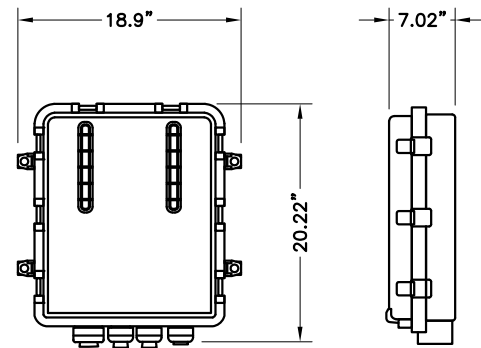
11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



WEIGHT: 51.5 LBS
(WITHOUT MOUNTING HARDWARE:)

HARRIS RRH DETAILS

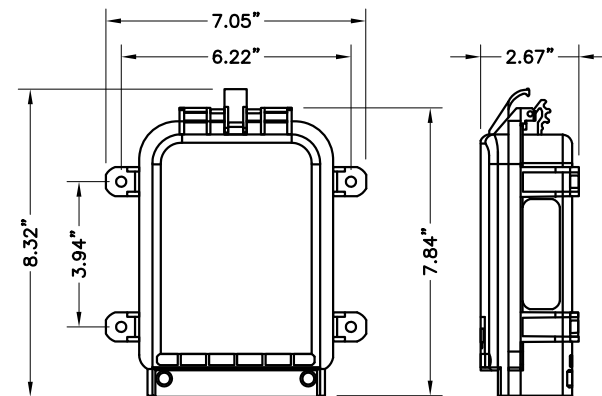
11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



WEIGHT: 19.95 LBS

RAYCAP RHCDC-1390-PF-48 DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



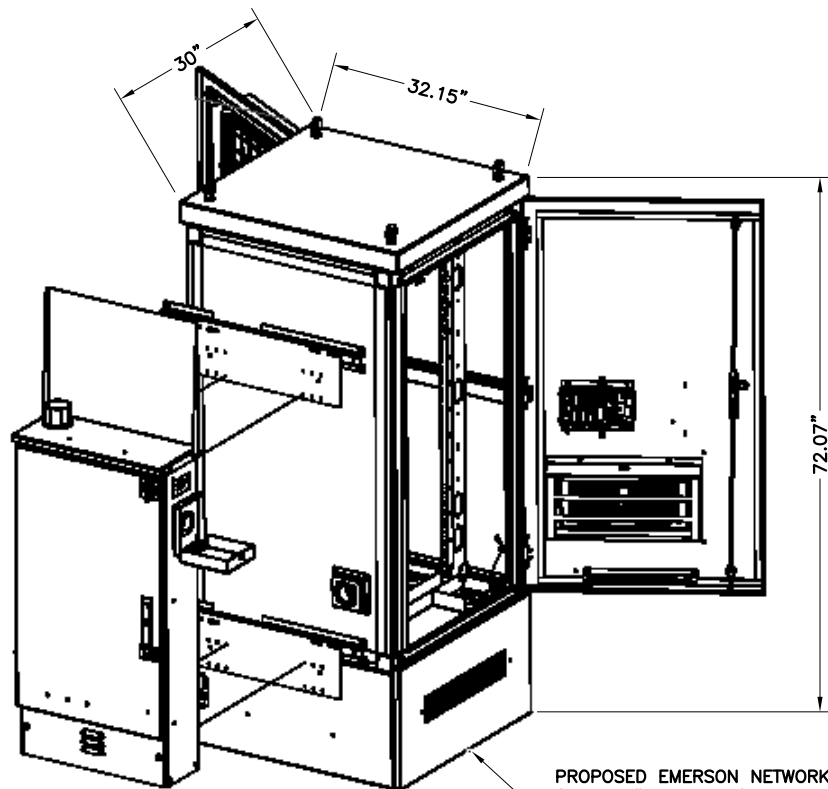
WEIGHT: 2.9 LBS

RAYCAP RHCDC-3441-P-48-NA DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

NOTE:

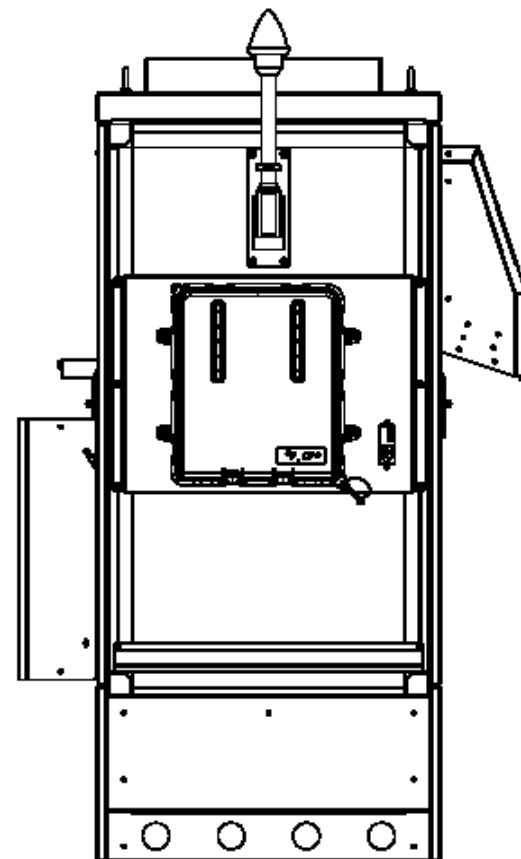
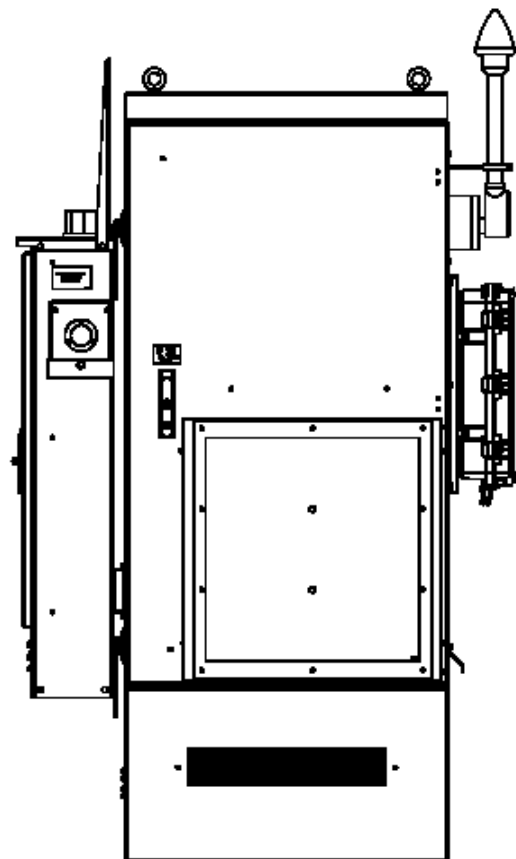
1. ATTACH CABINET TO CONCRETE PAD USING 1/2" STAINLESS STEEL ISO 898-1 CLASS 5.8 CONCRETE ANCHOR W/HIT-RE-500SD EPOXY. 2 13/16" EMBEDDED IN 1/2Ø3-1/2" DEEP HOLE. ICC ESR-1990.
2. INSTALL 2" SQUARE GALVANIZED STEEL SHIM PLATE WHERE REQUIRED TO LEVEL EQUIPMENT.
3. INSTALL AC NID INSIDE CABINET BEFORE CONVERTING TO DC POWER.



PROPOSED EMERSON NETWORK POWER CABINET
(MODEL # F1010927)
(FOR MORE INFORMATION REFER TO
MANUFACTURER'S SPECIFICATIONS)

EMERSON NETWORK POWER CABINET DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS
CHECKED BY: DRS
APPV'D: DDA
PROJECT ID: 19BGGM1950

SUBMITTALS

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06/20/19	CONSTRUCTION	4	DRS

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SITE ADDRESS:
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RAMAH, CO 80832

SBA SITE NAME:
SIMLA

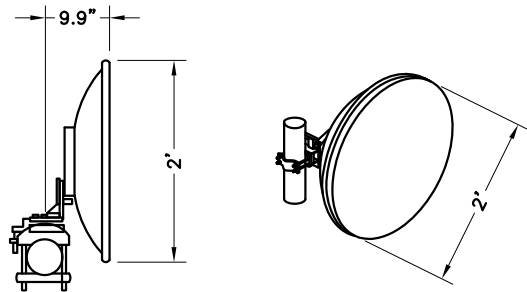
SBA SITE NUMBER:
CO46078-A

SHEET TITLE
CIVIL DETAILS

SHEET NUMBER

C-6

SCHEMATIC LAYOUT ONLY;
SEE RF SCHEDULE ON
C-2 FOR DISH SIZE;
DISH TO BE MAXIMUM OF
4' DIAMETER

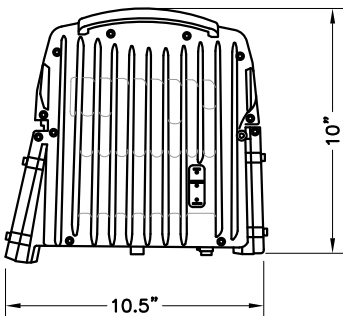


WEIGHT: 17 LBS

COMMSCOPE VHLP2-11W-6WH/A MW DISH DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

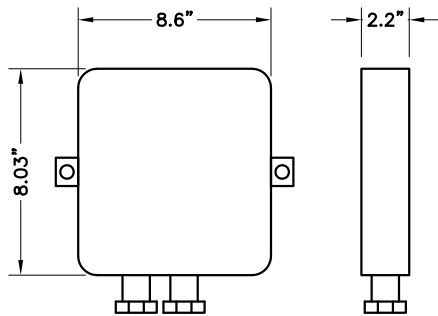
DEPTH = 6.2"



WEIGHT: 16.5 LBS

DRAGONWAVE HARMONY ENCHANCED MC ODU DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



WEIGHT: 1.2 LBS

SURGE ARRESTOR DETAILS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

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8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



PREPARED BY:



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DENNIS D. ABEL, P.E.
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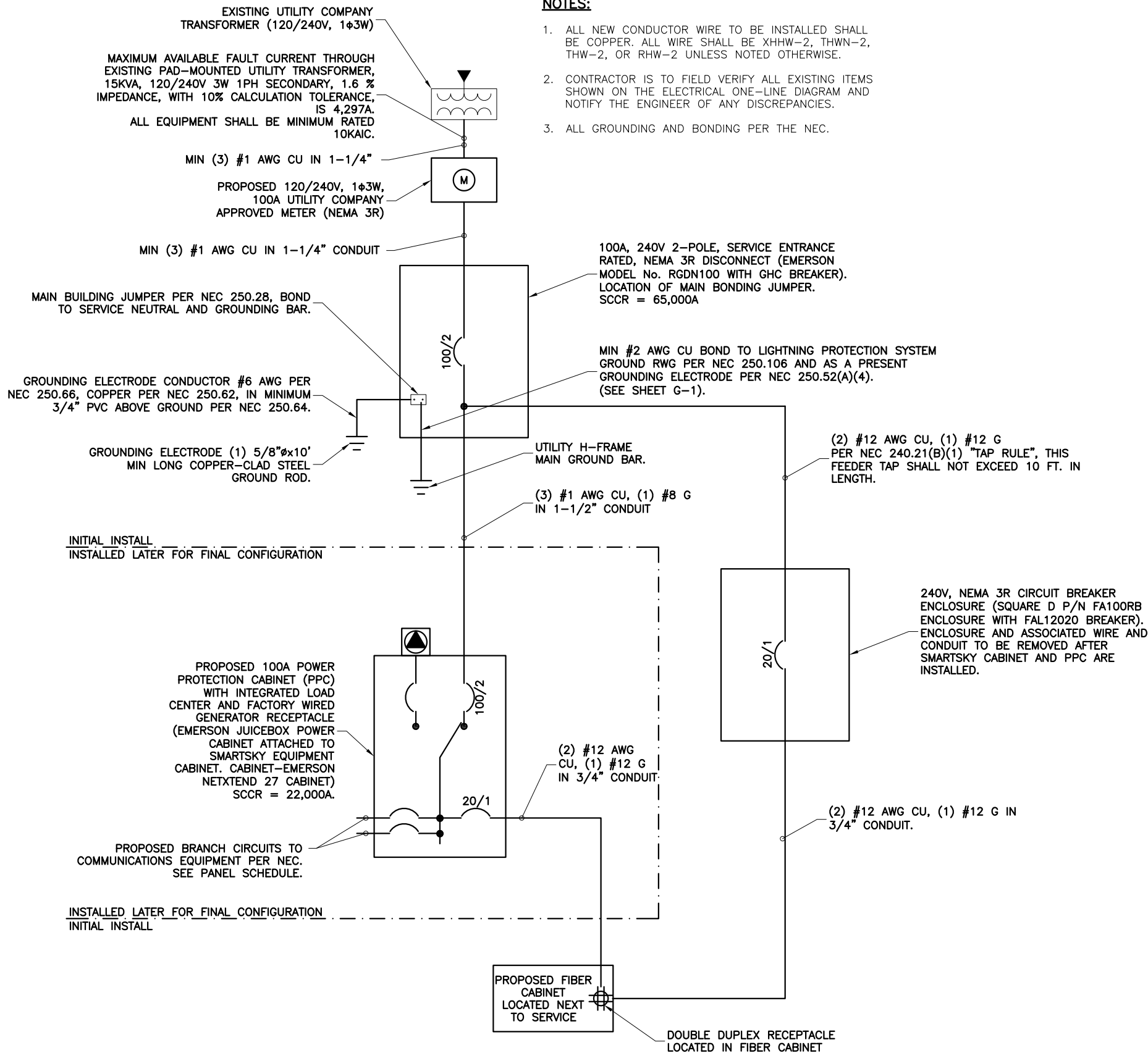
SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
CIVIL DETAILS

SHEET NUMBER

C-7



NOTES:

1. ALL NEW CONDUCTOR WIRE TO BE INSTALLED SHALL BE COPPER. ALL WIRE SHALL BE XHHW-2, THWN-2, THW-2, OR RHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.

ONE-LINE DIAGRAM

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



PREPARED BY:



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06/20/19

DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS
CHECKED BY: DRS
APPV'D: DDA
PROJECT ID: 19BGGM1950

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RAMAH, CO 80832

SBA SITE NAME:
SIMLA

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CO46078-A

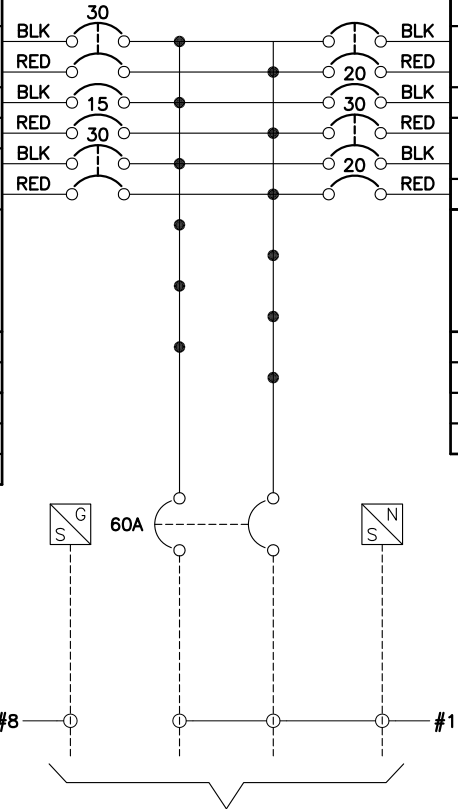
SHEET TITLE
ELECTRICAL SCHEMATIC

SHEET NUMBER

E-1

PANEL CIRCUIT AND LOAD SCHEDULE

CIRCUIT		LOAD PER PHASE (VA)		PROTECTION AMP	POLES	LOADS NON-CONTINUOUS	LOADS CONTINUOUS	
NO	DESCRIPTION	PHASE						
		A	B					
1	LIEBERT SURGE ARRESTOR	50		30	2		X	
3			50				X	
5	SPACE							
7	CABINET HTR		1440	15	1		X	
9	DC RECTIFIER #2	1750		30	2		X	
11			1750				X	
		SUBTOTAL CONTINUOUS	1800	3240				
		SUBTOTAL NON-CONTINUOUS	0	0				
VOLTAGE: 120/240		CYCLE: 60			PHASE: 1		WIRE: 3	
NEUTRAL: 100 AMPS								
MAIN BREAKER: 125 AMP FRAME				A.I.C.: 10,000			TRIP: 100 AMPS	
MAIN LUGS: AMPS		MAIN COPPER BUS: 125 AMPS						
MAINS:		TOP	<input type="checkbox"/>	BOTTOM	<input checked="" type="checkbox"/>			



120/240 VAC 1Ø 100 AMP SERVICE SUPPLIED & INSTALLED BY
SITE ELECTRICAL CONTRACTOR

PANEL SCHEDULE

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

SERVICE: 120/240 VAC

DESIGNATION: PPC CABINET PNL

LOCATION:

	LOADS CONTINUOUS	LOADS NON-CONTINUOUS	POLES	PROTECTION AMP	LOAD PER PHASE (VA)		CIRCUIT		
					PHASE		DESCRIPTION	NO	
					A	B			
							SPACE		2
							SPACE		4
		X	1	20		1920	NID HARDWARE		6
	X		2	30	1750		DC RECTIFIER #1		8
	X					1750			10
		X	1	20	180		GCFI OUTLET		12
					1750	1750	SUBTOTAL CONTINUOUS	TOTAL KVA CONTINUOUS x 1.25	10.7
					180	1920	SUBTOTAL NON-CONTINUOUS	TOTAL KVA NON-CONTINUOUS	2.1
MANUFACTURER: HARRIS								TOTAL KVA	12.8
MODEL NUMBER: UNKNOWN									
NO EQUAL: <input type="checkbox"/> APPROVED EQUAL: <input checked="" type="checkbox"/>								TOTAL AMPS	68
MOUNTING: SURFACE: <input checked="" type="checkbox"/> FLUSH: <input type="checkbox"/>									

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
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PREPARED FOR:



PREPARED BY:



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SHEET TITLE
PANEL SCHEDULE

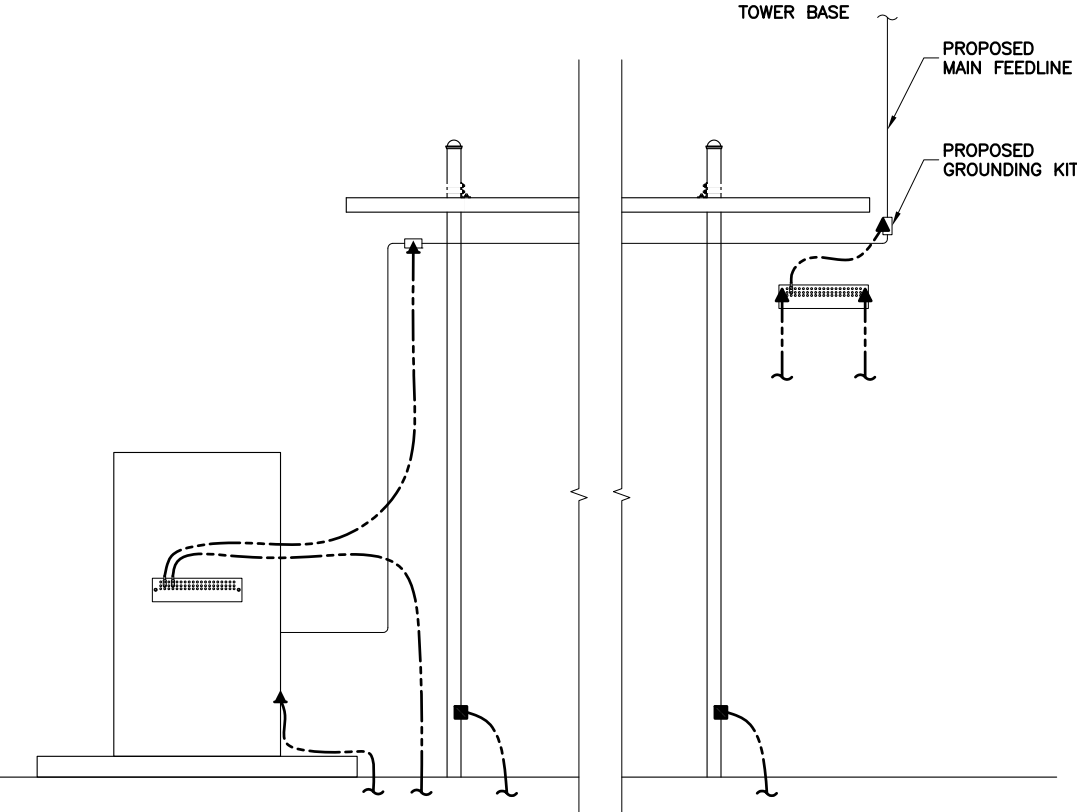
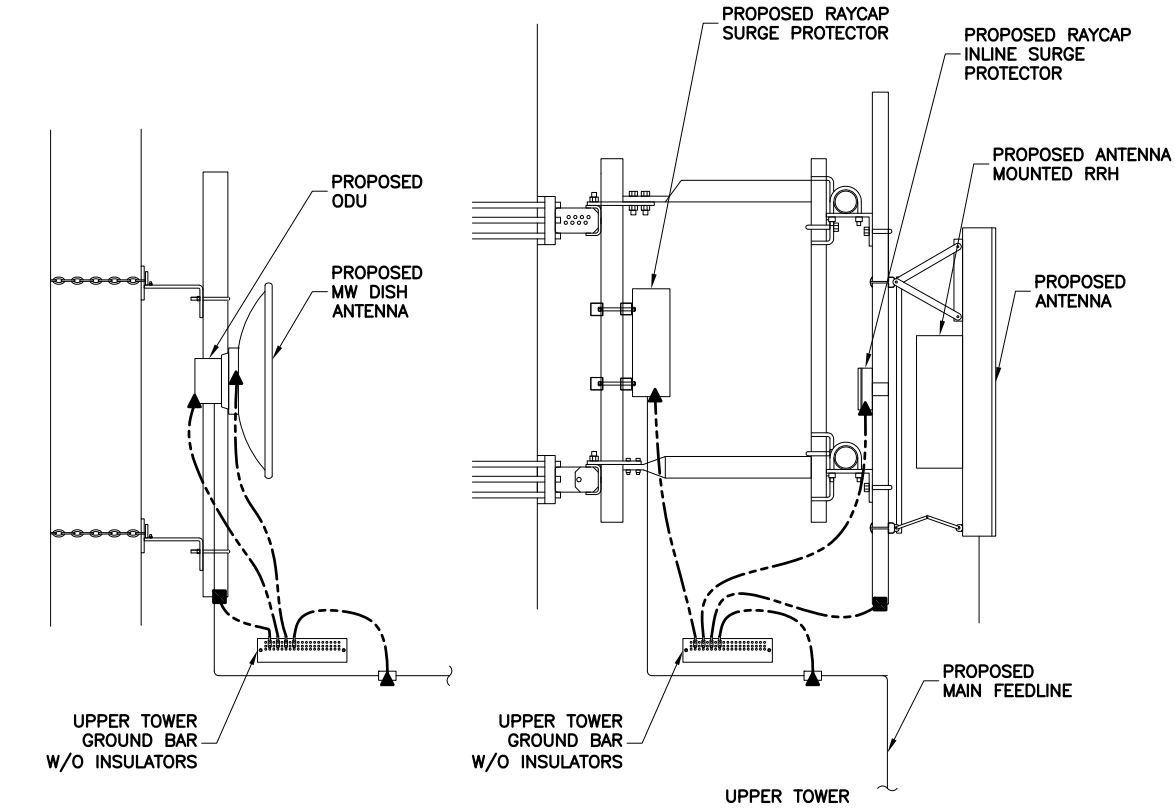
SHEET NUMBER

E-2

NOTES:

- ALL NEW GROUND BARS SHALL BE TIED TO EXISTING GROUND RING OR BONDED TO EXISTING GROUND BARS.
- CONTRACTOR SHALL MAKE GROUNDING CONNECTIONS TO CABINET PER OEM SPECIFICATIONS.

SCHEMATIC LAYOUT ONLY;
SEE RF SCHEDULE ON
C-2 FOR DISH SIZE;
DISH TO BE MAXIMUM OF
4' DIAMETER



TYPICAL GROUNDING RISER DIAGRAM

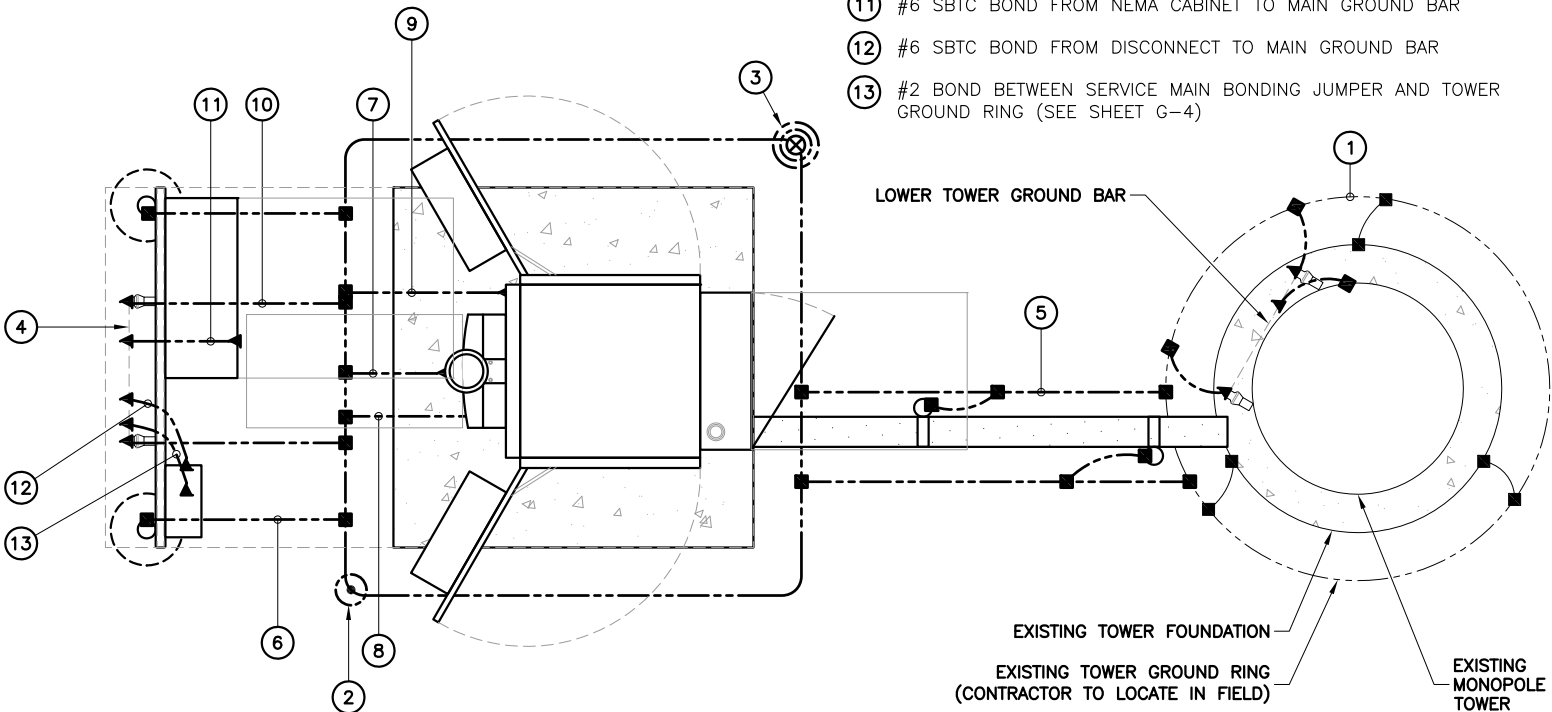
11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

GROUNDING NOTES:

- ALL EQUIPMENT ENCLOSURES, DEVICES, AND CONDUITS SHALL BE GROUNDED TO CONFORM WITH THE LATEST REQUIREMENTS OF THE NEC BY THE INSTALLATION OF A SEPARATE, GREEN, INSULATED GROUND CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS. GROUND CONDUCTORS SHALL BE OF THE SIZE INDICATED ON THE DRAWINGS. GROUND CONDUCTORS SHALL BE CONTINUOUS IN LENGTH AND SHALL BE BONDED TO EACH ENCLOSURE THEY PASS THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING CIRCUIT.

LIGHTNING AND SURGE PROTECTION:

- LIGHTNING AND SURGE PROTECTION:
 - BE #2 AWG SOLID BARE TINNED COPPER (SBTC) FOR ALL GROUNDING SYSTEM WIRE UNLESS OTHERWISE NOTED, OR OTHERWISE REQUIRED BY CODE.
 - BE MINIMUM 12" BEND RADIUS. KEEP NUMBER OF BENDS TO A MINIMUM.
 - AVOID LONG BONDING CONNECTION RUNS. MAKE DIRECT AS POSSIBLE.
 - NOT HAVE ANY U-SHAPED RUNS.
 - BE IN NON-METALLIC CONDUIT ONLY, IF IN CONDUIT.
 - BE PLACED THROUGH NON-METALLIC SLEEVES IN FLOORS, WALLS, CEILINGS, ETC.
 - PROTECTED IN NON-METALLIC CONDUIT WHERE EXPOSED ABOVE GRADE.
- INSTALL ALL GROUNDING RINGS AND RADIALS WITH CONDUCTIVE CEMENT, SANKOSHA AS DISTRIBUTED BY ELECTRIC MOTION COMPANY, INC., WINSTED, CT 06098, OR AS SPECIFICALLY INDICATED. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
- GROUND RINGS SHALL BE:
 - MINIMUM 30" ABOVE GRADE OR BELOW FROST LINE WHICHEVER IS DEEPER.
 - MINIMUM 2'-0" FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS, AND ALL CONDUCTIVE OBJECTS.
 - WITH MINIMUM 12" BEND RADII.
 - WITH ALL CONNECTIONS IN CONTACT WITH EARTH, BONDED BY EXOTHERMIC WELDING.
 - BONDED TO A SINGLE POINT GROUND (SPG) WITH A SINGLE WIRE AS INDICATED ON DRAWINGS.
- GROUND RODS SHALL BE:
 - MINIMUM 5/8" DIAMETER.
 - MINIMUM 10'-0" LONG.



INSTALLER NOTE:

REFER TO SITE PLAN DRAWING FOR EXACT LOCATION OF ICE BRIDGE AND ANTENNA SUPPORT STRUCTURE

TYPICAL GROUNDING PLAN SCHEMATIC

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

- COPPER-CLAD GALVANIZED STEEL OR STAINLESS STEEL.
 - PLACED IN UNDISTURBED SOIL AND BELOW FROST LINE.
 - INSTALLED WITH MINIMUM SEPARATION DISTANCE OF TWICE THE DEPTH OF THE ROD(S), OR AS INDICATED ON DRAWINGS.
 - MINIMUM OF TWO (2) RODS ON THE TOWER RING OR ONE (1) PER LEG WHICHEVER IS LARGER, MINIMUM FOUR (4) RODS ON EVERY EQUIPMENT BUILDING RING WITH ONE AT EACH CORNER OR AS INDICATED, MINIMUM ONE (1) ROD FOR POWER SERVICE GROUNDING ELECTRODE, AND MINIMUM ONE (1) ROD AT END OF EACH RADIAL.
- CONDUCTIVE OBJECTS, SUCH AS FENCES, SHALL BE BONDED TO THE GROUNDING SYSTEM IF WITHIN 20'-0" OF THE TOWER GROUNDING SYSTEM, OR 5'-0" OF ANY OTHER GROUNDED COMPONENT.
 - INSTALL ADDITIONAL TOWER GROUND BAR SO AS NOT TO EXCEED 300' BETWEEN GROUND BARS.

GROUNDING KEYED NOTES:

- #2 SBTC EQUIPMENT PAD GROUND RING
- 5/8"Øx10'-0" GROUND ROD
- 5/8"Øx10'-0" GROUND ROD WITH TEST WELL
- PROPOSED MAIN GROUND BAR ATTACHED TO H-FRAME
- #2 SBTC BOND FROM TOWER GROUND RING TO EQUIPMENT PAD GROUND RING
- #2 SBTC BOND FROM H-FRAME POSTS TO EQUIPMENT PAD GROUND RING (TYP. EVERY POST)
- #2 SBTC BOND FROM GPS ANTENNA TO EQUIPMENT PAD GROUND RING
- #2 SBTC BOND FROM SURGE PROTECTOR TO EQUIPMENT PAD GROUND RING
- #2 SBTC BOND FROM SMARTSKY CABINET TO EQUIPMENT PAD GROUND RING
- #2 SBTC BOND FROM MAIN GROUND BAR TO EQUIPMENT PAD GROUND RING (TYP. OF 2)
- #6 SBTC BOND FROM NEMA CABINET TO MAIN GROUND BAR
- #6 SBTC BOND FROM DISCONNECT TO MAIN GROUND BAR
- #2 BOND BETWEEN SERVICE MAIN BONDING JUMPER AND TOWER GROUND RING (SEE SHEET G-4)

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



SMARTSKY
NETWORKS

PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



06/20/19

DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS

CHECKED BY: DRS

APPV'D: DDA

PROJECT ID: 19BGGM1950

SUBMITTALS				
DATE	DESCRIPTION	REV	ISSUED BY	
07/05/18	CONSTRUCTION	0	DRS	
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06/20/19	CONSTRUCTION	4	DRS	

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SMARTSKY SITE NUMBER:

CO100A

SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

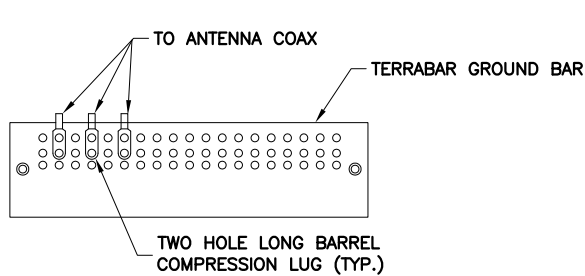
SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-1

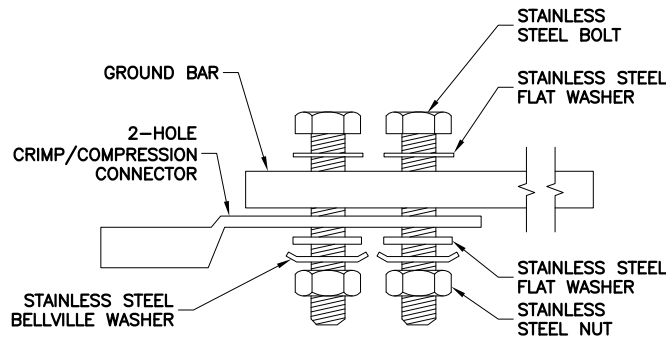


NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

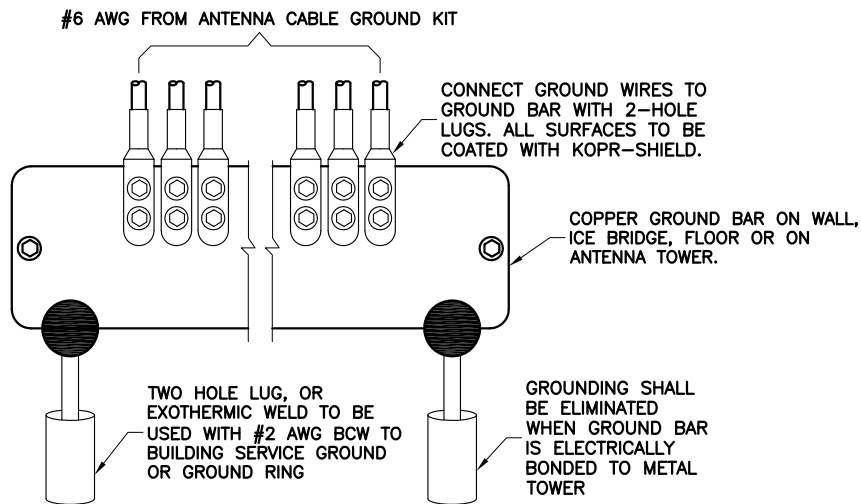
ANTENNA GROUND BAR DETAIL

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



SINGLE CONNECTOR AT GROUND BARS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

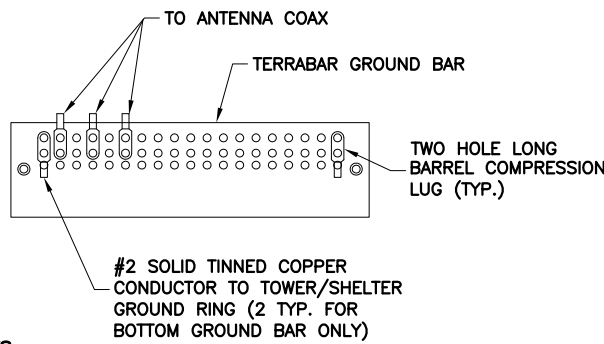


NOTES:

1. ANTENNA GROUND BARS NOT TO USE INSULATORS.
2. GROUND BARS AT BOTTOM OF TOWERS SHALL ONLY USE EXOTHERMIC WELDS.
3. GENERAL CONTRACTOR IS TO FURNISH AND INSTALL A 2x6-HOLE GROUND BAR IN THE GBF OF THE RBS AND TIE-IN TO EXISTING GROUND RING.

GROUNDWIRE INSTALLATION

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

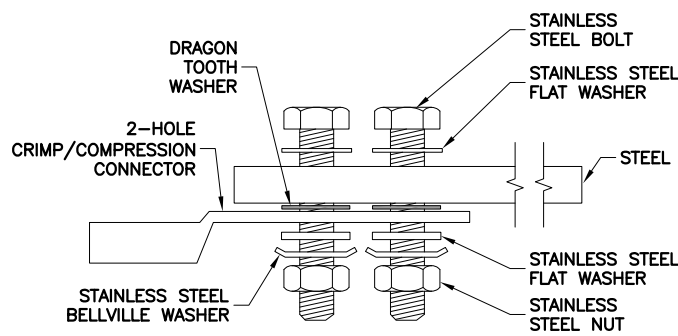


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. INSTALL GROUND BARS AT 75 FT. INTERVAL MAXIMUM.
4. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

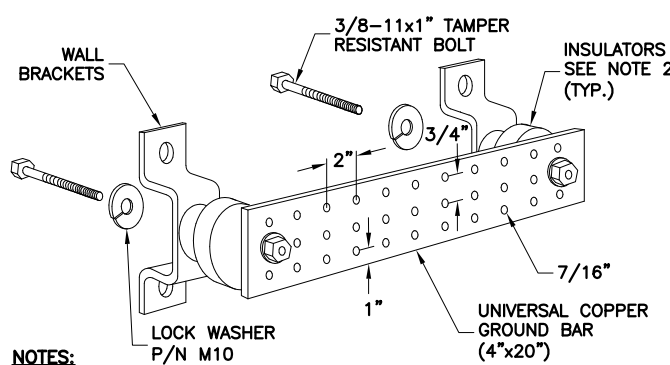
TOWER/SHELTER GROUND BAR DETAIL

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



SINGLE CONNECTOR AT STEEL OBJECTS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

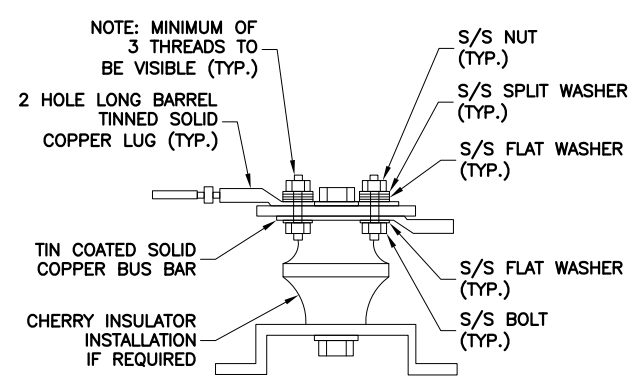


NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON TOWERS. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTER.

GROUND BAR DETAIL

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

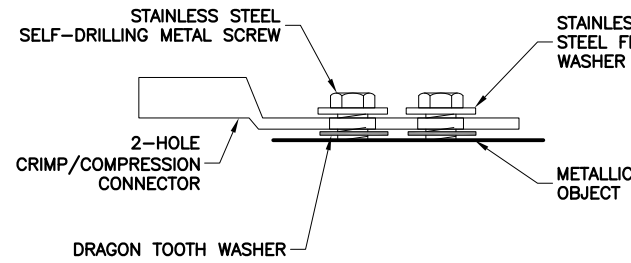


NOTES:

1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHER.
2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUS BARS PRIOR TO MATING AND BOLTING.

LUG DETAIL

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

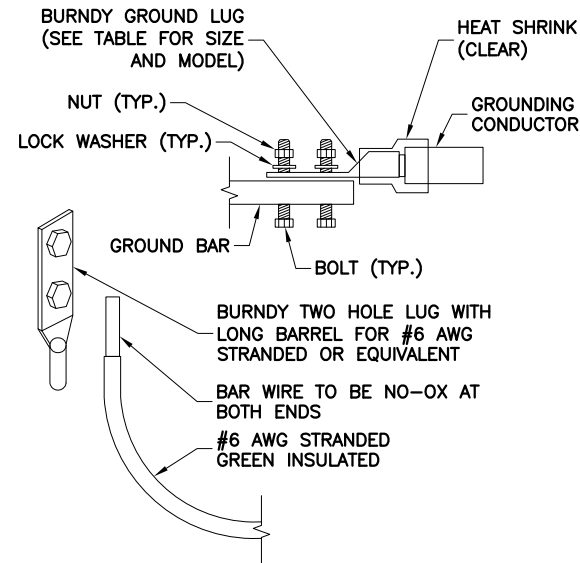
NOTES:

1. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.
2. COPPER SHIELD, ANTIOX, CR NO-OX OR EQUIVALENT SHALL BE PLACED WHERE ALL DISSIMILAR METALS CONNECT.
3. ALL LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID DINNED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT

MECHANICAL LUG CONNECTION

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.



PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

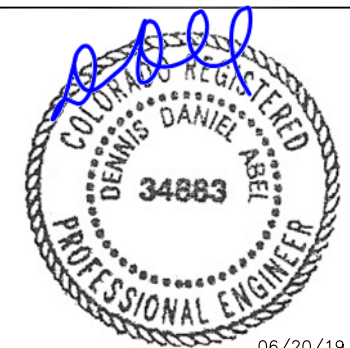
PREPARED FOR:



PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY: CLS

CHECKED BY: DRS

APPV'D: DDA

PROJECT ID: 19BGGM1950

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SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A











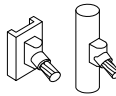

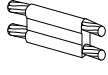
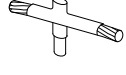
SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-2



- ### GROUND ROD TEST WELL DETAIL

				
<u>TYPE HS</u>	<u>TYPE 2-YA-2</u>	<u>TYPE XA</u>	<u>TYPE YA-2</u>	<u>TYPE GY</u>
				
<u>TYPE W</u>	<u>TYPE VN</u>	<u>TYPE NC</u>	<u>TYPE SS</u>	<u>TYPE GR</u>
				
<u>TYPE VS</u>	<u>TYPE VB</u>	<u>TYPE PT</u>	<u>TYPE GT²</u>	

NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.
3. HOME RUN GROUND LEADS ARE NOT PERMITTED ON CLIENT SITES. ALL TOWER GROUNDS ARE TO BE MECHANICAL IN NATURE. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE ARE ARE NOT PERMITTED

CADWELD GROUNDING CONNECTIONS

NOTES:

- ### GROUND ROD DETAIL

TO ANTENNA

ANTENNA GROUND BAR LOCATED AT MCL (BONDED TO TOWER STEEL)

2 HOLE LUG (TYP.)

2 AWG Cu SOLID BARE TINNED COPPER WIRE

SEE NOTE 2

STANDARD GROUND KIT (TYP.)

HYBRID FEEDLINE (TYP.)

ANTENNA GROUND BAR BOTTOM OF TOWER SEE NOTE 1

TO BTS EQUIPMENT VIA TRAY OR ICE BRIDGE

6 AWG STRANDED Cu WIRE WITH GREEN, 600V, THWN INSULATION (OR AS PROVIDED WITH GROUND KIT) (TYP.)

2 WG Cu SOLID BARE TINNED COPPER WIRE

GROUND WIRE SEE NOTE 3

FINISHED GRADE

GROUND WIRE SEE NOTE 3

INSPECTION WELL

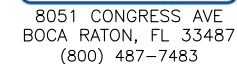
CADWELD WELD (TYP.)

NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET IN/ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CLIENT TOWER. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANIT-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222 AND NFPA 780. FOR TOWERS BEING BUILT TO REV G OF THE STANDARD. THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE 2/0 AWG. STRANDED IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM 8 FEET TO 10 FEET.

TYPICAL ANTENNA CABLE GROUNDING

PREPARED FOR:



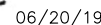
PREPARED FOR:



PREPARED BY:



FDH INFRASTRUCTURE SERVICES, LLC
6521 MERIDIEN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031



DENNIS D. ABEL, P.E.
COLORADO LICENSE NO. 34883

DRAWN BY:	CLS
CHECKED BY:	DRS
APPV'D:	DDA
PROJECT ID:	19BGGM1950

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06/20/19	CONSTRUCTION	4	DRS

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SITE ADDRESS:
18406 OIL WELL ROAD
RAMAH, CO 80832

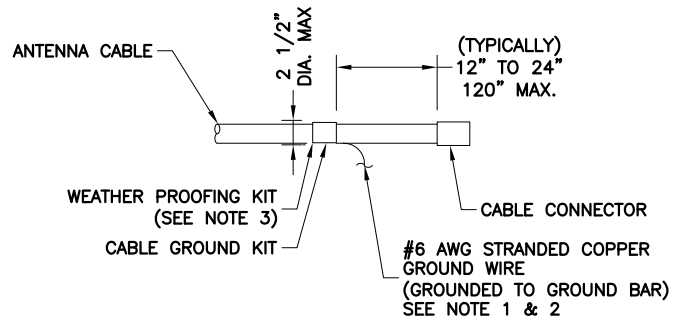
SBA SITE NAME:
SIMLA

SBA SITE NUMBER:
CO46078-A

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-3

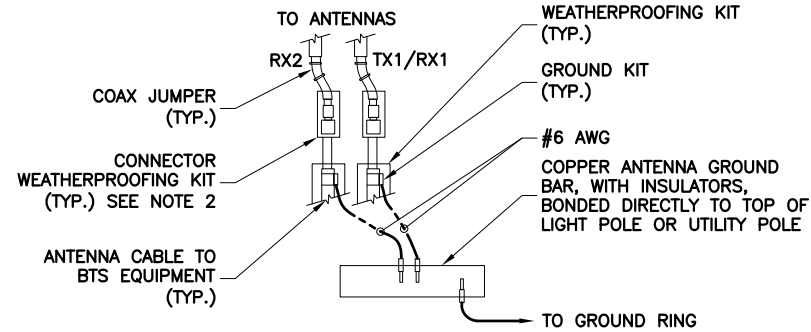


NOTES:

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

CABLE GROUND KIT CONNECTION

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

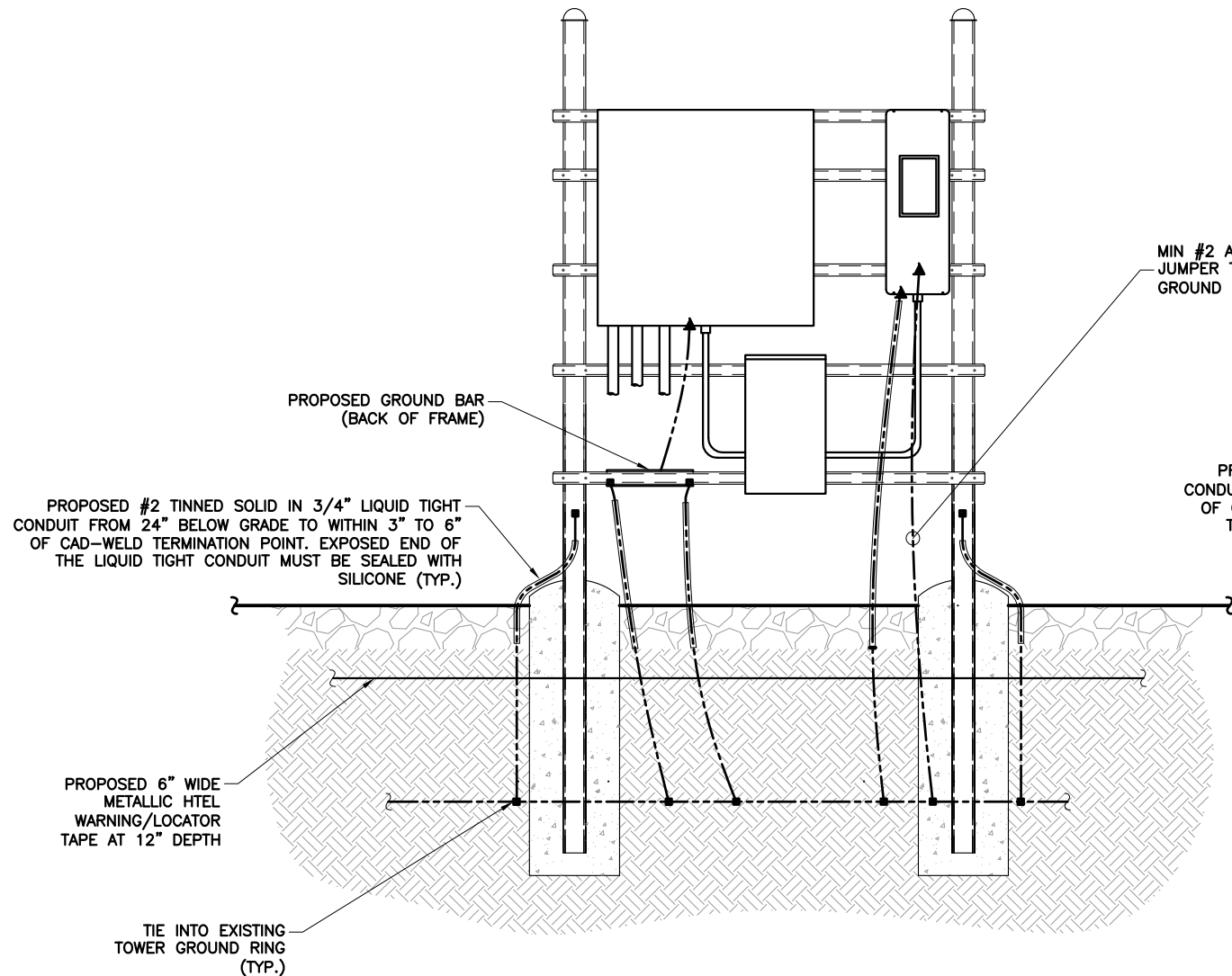


NOTES:

- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
- WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

GROUND CABLE CONNECTION

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24"x36" SCALE: N.T.S.

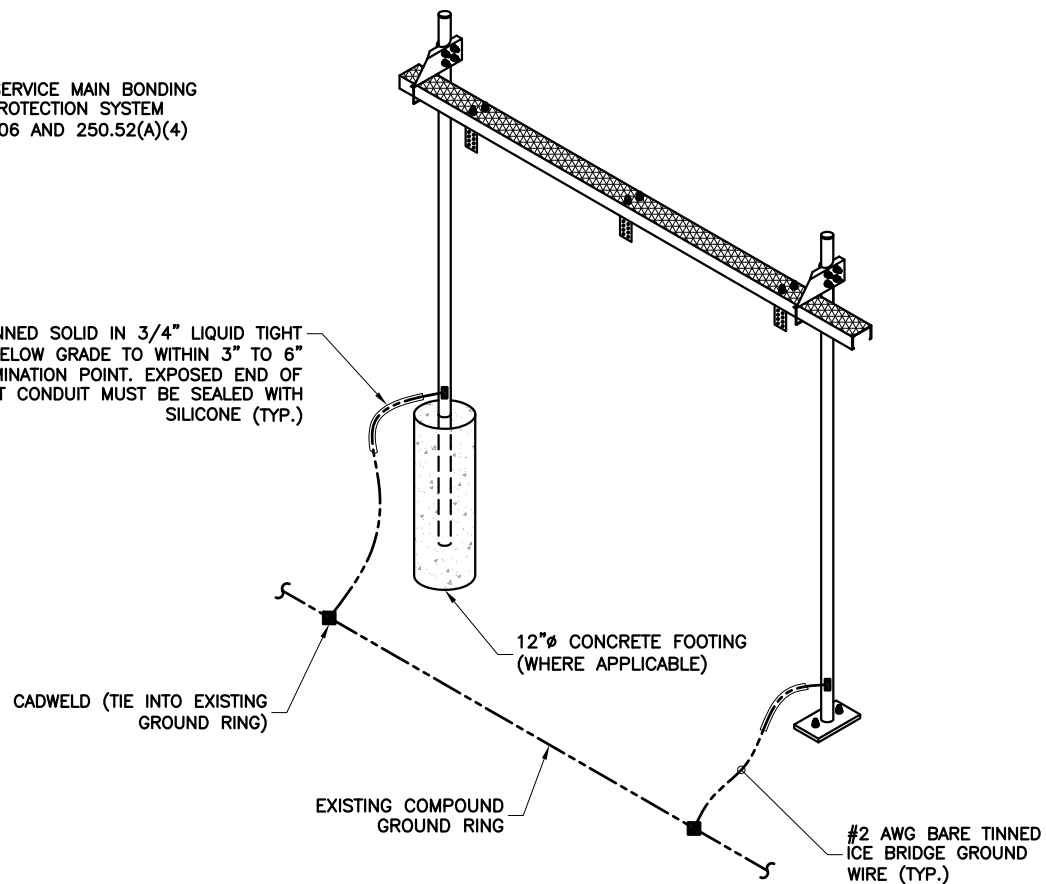


H-FRAME GROUNDING

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

MIN #2 AWG CU BOND SERVICE MAIN BONDING JUMPER TO LIGHTNING PROTECTION SYSTEM GROUND PER NEC 250.106 AND 250.52(A)(4)

PROPOSED #2 TINNED SOLID IN 3/4" LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE (TYP.)



ICE BRIDGE GROUNDING

11"x17" SCALE: N.T.S.
24"x36" SCALE: N.T.S.

PREPARED FOR:



8051 CONGRESS AVE
BOCA RATON, FL 33487
(800) 487-7483

PREPARED FOR:



PREPARED BY:



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6521 MERIDIAN DRIVE RALEIGH, NC 27616
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SBA SITE NAME:
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GROUNDING DETAILS

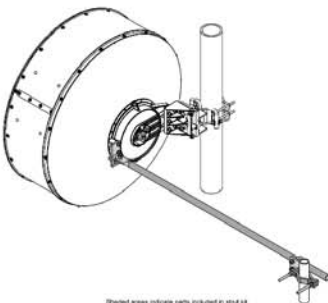
SHEET NUMBER

G-4

Product Specifications



SCHEMATIC LAYOUT ONLY;
SEE RF SCHEDULE ON
C-2 FOR DISH SIZE;
DISH TO BE MAXIMUM OF
4' DIAMETER



VSTRUT-3KIT
Inboard Side Strut Kit for ValuLine® VHLP(X)3 antennas

General Specifications

Diameter, nominal	1.0 m 3 ft
Includes	Bracket Clamp assembly Hardware Strut
Material Type	Galvanized steel

Mechanical Specifications

Aligning Function	Fixed
Mounting Pipe Length	1550.00 mm

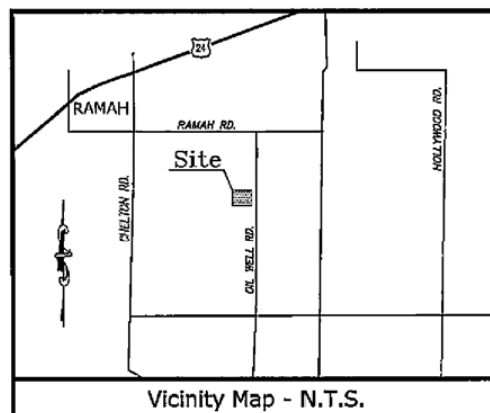
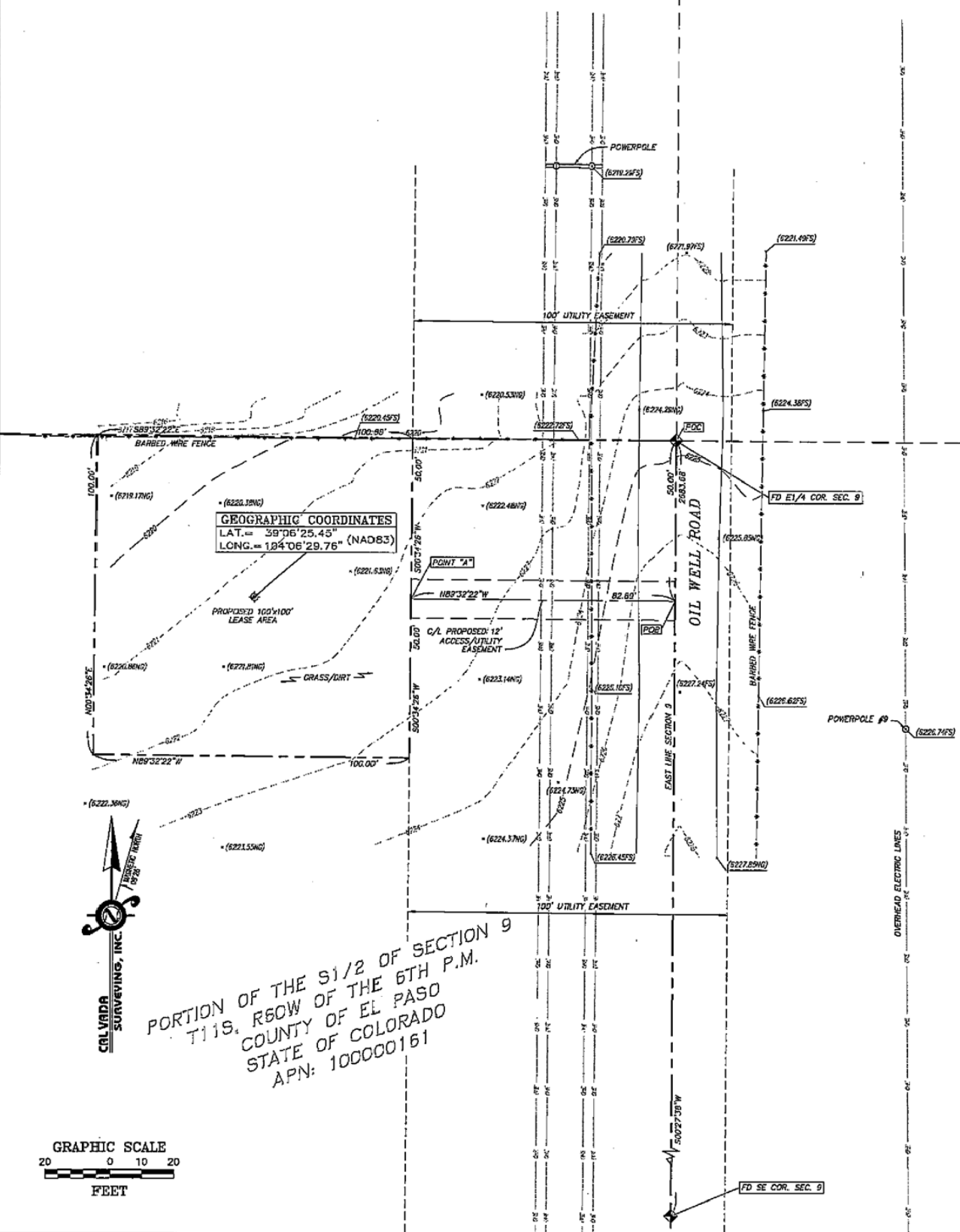
Packed Dimensions

Gross Weight	5.0 kg 11.0 lb
Height	4.8 cm 1.9 in
Length	170.0 cm 66.9 in
Volume	3916.8 cc
Width	4.8 cm 1.9 in

Regulatory Compliance/Certifications

Agency	Classification
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Site Detail
Scale: 1" = 20'



Title Report

PREPARED BY: US TITLE SEARCH, INC.
COMMITMENT NO.: 6377
COMMITMENT DATE: SEPTEMBER 1, 2004

Legal Description

THE SOUTH HALF OF SECTION 9 IN TOWNSHIP 11 SOUTH, RANGE 60 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO.

Assessor's Parcel No.

100000161

Easements

NO DOCUMENTS REPORTED.

Lease Area/Access & Utility Easements

ACCESS/UTILITY EASEMENT

BEING A 12.00 FOOT STRIP OF LAND SITUATED IN THE SOUTH HALF OF SECTION 9, TOWNSHIP 11 SOUTH, RANGE 60 WEST OF THE 6TH P.M., COUNTY OF EL PASO, STATE OF COLORADO, BEING 6.00 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 9; THENCE S00°27'38"W ALONG THE EAST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 9, A DISTANCE OF 50.00 FEET TO THE POINT OF BEGINNING; THENCE N88°32'22"W, A DISTANCE OF 82.89 FEET TO A POINT HEREINAFTER REFERRED TO AS POINT "A", ALSO BEING THE END OF SAID STRIP.

THE SIDELINES OF SAID STRIP SHALL BE EXTENDED OR SHORTENED TO ELIMINATE GAPS AND OVERLAPS.

EXCEPT ANY PORTION LYING WITHIN OIL WELL ROAD RIGHT OF WAY.

LEASE AREA

BEING A TELECOMMUNICATIONS LEASE PARCEL SITUATED IN THE SOUTH HALF OF SECTION 9, TOWNSHIP 11 SOUTH, RANGE 60 WEST OF THE 6TH P.M., COUNTY OF EL PASO, STATE OF COLORADO BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT POINT "A" DESCRIBED ABOVE; THENCE S00°34'26"W, A DISTANCE OF 50.00 FEET; THENCE N88°32'22"W, A DISTANCE OF 100.00 FEET; THENCE N00°34'26"E, A DISTANCE OF 100.00 FEET; THENCE S88°32'22"E, A DISTANCE OF 100.00 FEET; THENCE S00°34'26"W, A DISTANCE OF 50.00 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINING 10,000.00 SQUARE FEET/0.230 ACRES MORE OR LESS.

Geographic Coordinates as Shown

1983 DATUM: LATITUDE 39° 06' 25.45" LONGITUDE 104° 05' 29.76"

Date of Survey

OCTOBER 6, 2004

Basis of Bearings

THE COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (NAD83).

Bench Mark

NGS CONTROL POINT "RAMAH", ELEVATION = 6141.00 FEET (NAVD 88)

Legend

○	BOLLARD	□	LIGHT STANDARD
—	CONCRETE PAVEMENT	NG	NATURAL GROUND
⊙	CONIFEROUS TREE	—OHC—	OVERHEAD ELECTRICAL LINE
⊙	DIAMETER	—	POWER POLE
⊙	DECIDUOUS TREE	—R.O.W.	PROPERTY LINE
FS	FINISH SURFACE	—	RIGHT OF WAY
FL	FLOW LINE	—	SEWER MANHOLE
●	FOUND MONUMENT AS NOTED	—	SIGN POST
⊙	GAS METER	—	TYPICAL
⊙	FIRE HYDRANT	—	WATER METER
⊙	GEOGRAPHIC LOCATION	—	WATER VALVE
⊙	TELEPHONE PEDESTAL	—	EDGE OF ASPHALT
		—	IRRIGATION CONTROL VALVE
		—	POINT OF BEGINNING
		—	POINT OF COMMENCEMENT

Certificate of Survey

THIS IS TO CERTIFY THAT THIS TOPOGRAPHIC MAP AND IMPROVEMENTS SHOWN ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.
DATE: 01/17/05

JOSEPH W. STICE III, PLS 53072

THIS DOES NOT REPRESENT A MONUMENTED SURVEY.

REFERENCE IS MADE TO A COMMITMENT FOR TITLE INSURANCE NUMBER 6377, ISSUED BY US TITLE SEARCH, INC. AND HAVING AN EFFECTIVE DATE OF SEPTEMBER 1, 2004. THIS SURVEYOR HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR ENCUMBRANCES OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE, OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE. THE LESSOR'S LEGAL DESCRIPTION AND RECORD BOUNDARY ARE SHOWN HEREON FOR REFERENCE ONLY.
THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY SURVEY OF THE LESSOR'S PROPERTY.

NEXTEL
NEXTEL COMMUNICATIONS



TETRA TECH, INC.
333 INVERNESS DRIVE SOUTH
ENGLEWOOD, CO 80112

PROJECT INFORMATION:

SIMLA
CO-0430

18620 OIL WELL ROAD
RAMAH, CO. 80832
COUNTY OF EL PASO

CURRENT ISSUE DATE:

1/11/05

ISSUED FOR:

DESIGN

REV. DATE DESCRIPTION BY:

△	10/12/04	SUBMITTAL	JT
△	12/17/04	UPDATE TITLE INFORMATION	JTS
△	1/11/05	UPDATED LEASE AREA & ACCESS EASEMENT	AMM
△			
△			
△			
△			
△			

PLANS PREPARED BY:

KDC

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JT JAL JS

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Phone: (720) 488-1303 ~ Fax: (720) 488-1306

JOB NO. CO-04231

SHEET TITLE:

TOPOGRAPHIC
SURVEY

SHEET NUMBER:

LS1