



CSP-KINGSWOOD
VZW SITE UPGRADES
SITE MODIFICATION REQUEST

SITE ADDRESS

15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132

PROJECT TEAM

Kimley»Horn KIMLEY HORN AND ASSOCIATES, INC.
4582 SOUTH ULSTER ST, SUITE 1500
DENVER, CO 80237
ATTN: MATT FLECK - (720) 647-6159

verizon VERIZON WIRELESS
10000 PARK MEADOWS DRIVE, SUITE 200
LONE TREE, CO 80124

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SITE ACQ. AGENT - FOR VZW
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MARK@Q3CONSULTINC.COM

PROJECT INFORMATION

SITE NAME: CSP-KINGSWOOD
JURISDICTION: PIKES PEAK REGIONAL BUILDING DEPARTMENT
CONSTRUCTION TYPE: I-B
OCCUPANCY: B-UNMANNED
TOP OF (P) ANTENNA: 31'-4"
TOP OF (E) BUILDING HEIGHT: 24'-6" (T.O. ROOF)
32'-0" (T.O. STEALTH BUILDING EXTENSION)
NUMBER OF STORIES: N/A
GROSS BUILDING AREA: N/A
OCCUPANT LOAD: 2 / UNMANNED
BUILDING CODE: IBC 2015 WITH LOCAL AMENDMENTS
ELEVATION: (NAVD 88) 7030.3'
DESIGN WIND SPEED: 130 MPH (VULT- EXPOSURE C)

CONTRACTOR PMI REQUIREMENTS

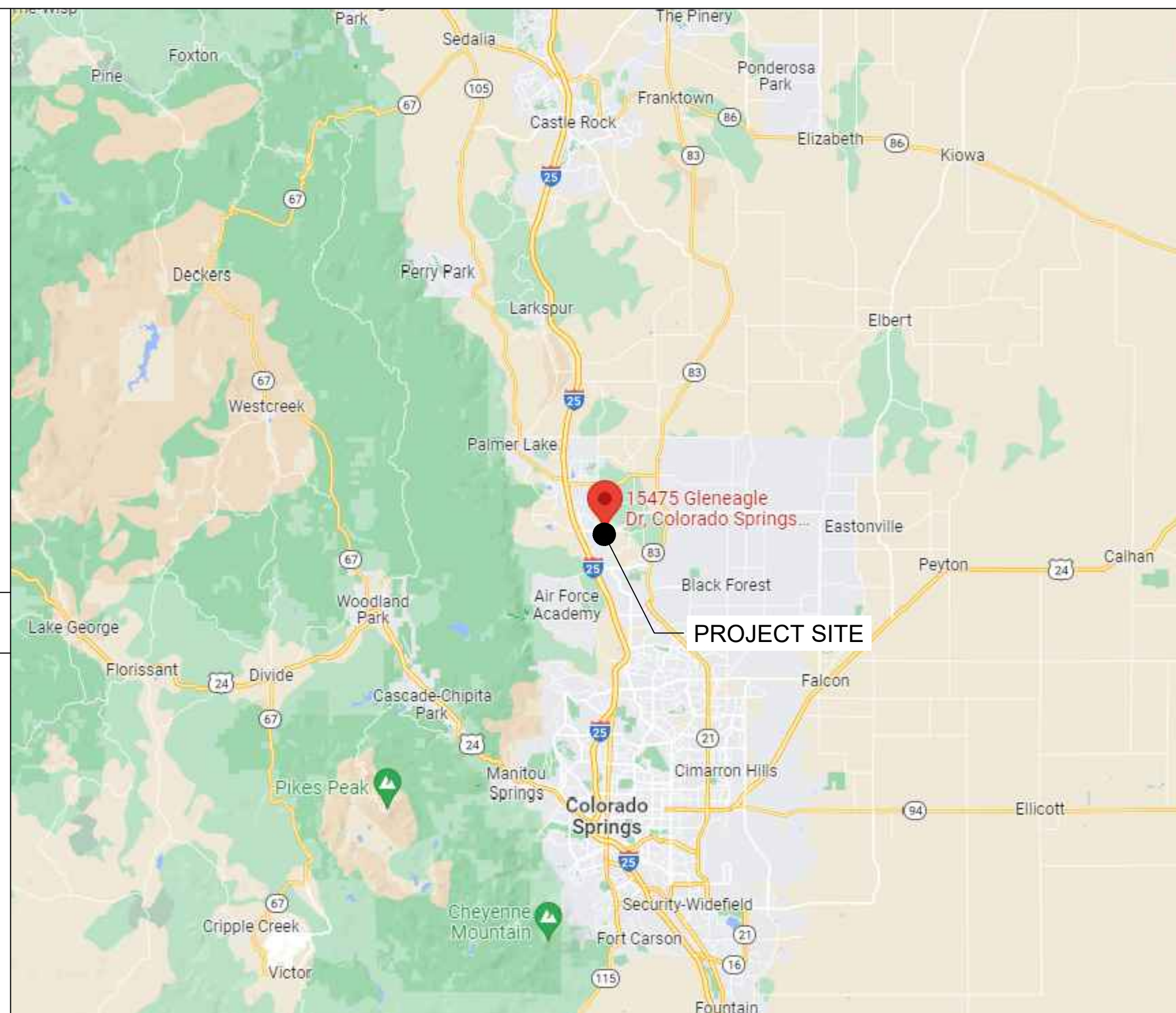
PMI DOCUMENTATION: MOUNT-SUPPORT@KIMLEY-HORN.COM
PROJECT NUMBER: 196015030
VERIZON LOCATION CODE (PSLC): 173446
*** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

MOUNT MODIFICATION REQUIRED

YES

VERIZON APPROVED VENDORS

* REFER TO MOUNT MODIFICATION DRAWINGS



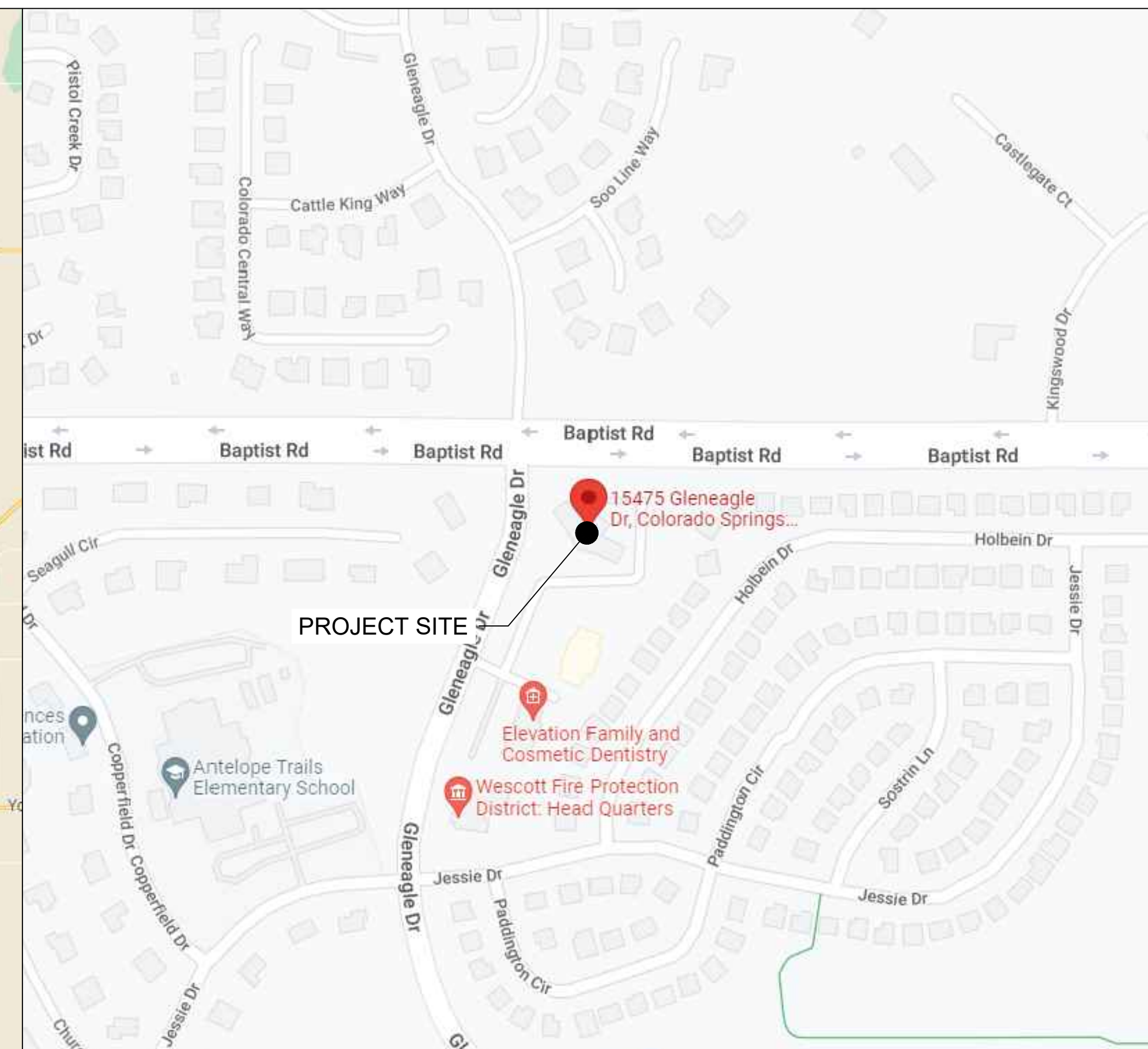
Please include:
- tax schedule number
- legal description
- lot/parcel size

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CODE ANALYSIS

FIRE SAFETY CODE: IFC 2015 BUILDING CODE: IBC 2015 WITH LOCAL AMENDMENTS
USE GROUP: U-UTILITY ELECTRICAL CODE: NEC 2020
CONSTRUCTION TYPE: IIB



VICINITY MAP

PROJECT SUMMARY

THIS PROJECT CONSISTS OF A SITE IMPROVEMENTS/MODIFICATION FOR A WIRELESS FACILITY SITE FOR VERIZON WIRELESS. ALL WORK INCLUDES:

- | | |
|--|--|
| <p>TO BE REMOVED:</p> <ul style="list-style-type: none"> (10) - EXISTING ANTENNAS (6) - RADIOS (3) - 2260 OVPS | <p>TO BE INSTALLED:</p> <ul style="list-style-type: none"> (3)-NHH-65A-R2B ANTENNAS (3)-NHHS4-65A-R3B ANTENNAS (3)-AIR6449 ANTENNAS (3)-4408 CBRS RADIOS (3)-8843 RADIOS (3)-BSAMNT-SBS-1-2 DUAL MOUNTS (1)-6648 BBU (1)-DC UP CONVERTOR (1)-6x12 LI HYBRID CABLE (2)-4520 OVPS (3)-6627 OVPS (3)-EXHAUST FANS & (3)-HOUSINGS (3)-LOUVERS ANY OTHER ASSOCIATED HARDWARE, CABLES, & STRUCTURAL MODIFICATIONS |
|--|--|

REFERENCED DOCUMENTS:
RFDS: 09/12/2021 EME: 08/03/2022 MACRO CALC: 12/28/2021
VERIFY THE MOST CURRENT DOCUMENTS PRIOR TO CONSTRUCTION

ANTENNA AND EQUIPMENT PAINT SPECIFICATION REQUIRED

NO

DRIVING DIRECTIONS

- START FROM 10000 PARK MEADOWS DRIVE
- DEPART AND HEAD EAST ON PARK MEADOWS DR
- ROAD NAME CHANGES TO E LINCOLN AVE
- TURN LEFT ONTO E LINCOLN AVE
- TAKE THE RAMP ON THE RIGHT FOR I-25 SOUTH AND HEAD TOWARD COLO SPGS
- AT EXIT 158, HEAD ON THE RAMP RIGHT AND FOLLOW SIGNS FOR BAPTIST ROAD
- BEAR RIGHT, THEN TURN LEFT ONTO W BAPTIST RD
- ROAD NAME CHANGES TO E BAPTIST RD
- TURN RIGHT ONTO GLENEAGLE DR
- THE SITE WILL BE ON THE LEFT AFTER 400 FT



10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124



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REV: DATE: DESCRIPTION: BY:

REV	DATE	DESCRIPTION	BY
C	09/26/22	FINAL CD'S	JCH
B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CDS	BAB

DRAWN BY: CHECKED BY:

BAB **MFF**

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1



GENERAL NOTES:

- FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
GENERAL CONTRACTOR
CONTRACTOR: (CONSTRUCTION)
OWNER – VERIZON
- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND VERIZON PROJECT SPECIFICATIONS.
- GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL BE FAMILIAR WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR BEING FAMILIAR WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
- GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
- ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMAN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
- SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
- THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
- THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
- THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OT 2-A:10-B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.

- 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.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.
- ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
- ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION.
- CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE CONSTRUCTION MANAGER UPON COMPLETION OF PROJECT. THIS WILL BE DONE AFTER THE SITE HAS BEEN AWARDED THE FINAL INSPECTION. TWO COPIES OF REDLINED DRAWINGS WILL BE PROVIDED TO CONSTRUCTION MANAGER.
- CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
- CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE CONSTRUCTION MANAGER IMMEDIATELY.
- CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
- ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED TO THE PROJECT MANAGER AND/OR ENGINEER SO THAT PROPER REVISIONS MAY BE MADE. MODIFICATION OF DETAILS OF CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE PROJECT MANAGER AND/OR ENGINEER.
- ALL CABLE INSTALLATIONS TO FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION. APPROXIMATELY 2 TIMES PER MONTH.
- INSTALL ALL EQUIPMENT AND MATERIALS PER MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED. OR WHERE CODES OR REGULATIONS TAKE PRECEDENCE.
- ELECTRICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- ALL EQUIPMENT, SPECIFICATIONS, PERFORMANCE, INSTALLATION AND THE FINAL LOCATION ARE TO BE APPROVED BY CONSTRUCTION MANAGER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK AND CLEARANCE REQUIRED BY OTHERS RELATED TO SAID EQUIPMENT.
- ALL WORK PERFORMED AND MATERIALS SHALL MEET THE HIGHEST TRADE STANDARDS. CONFORM WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF GOVERNING AUTHORITY BEARING ON THE PERFORMANCE OF THE WORK. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REDLINING THE CONSTRUCTION PLANS TO ILLUSTRATE THE AS-BUILT CONDITION OF THE SITE. THIS WILL BE DONE AFTER THE SITE HAS BEEN AWARDED THE FINAL INSPECTION. TWO COPIES OF REDLINED DRAWINGS WILL BE PROVIDED TO CONSTRUCTION MANAGER.
- PHOTOS SHALL BE TAKEN OF THE SITE AT THE REQUEST OF THE CONSTRUCTION MANAGER. ALL WORK TO BE BURIED OR HIDDEN MUST BE PHOTO GRAPHED AND INSPECTED BY THE CONSTRUCTION MANAGER PRIOR TO BACKFILLING ETC. UNLESS OTHERWISE SPECIFIED BY CONSTRUCTION MANAGER.

STRUCTURAL STEEL NOTES:

- DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
- PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB, ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH.

CODES:

- AT A MINIMUM, ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
A. IBC 2015 VERSION OF THE INTERNATIONAL BUILDING CODE.
B. NEC 2020 VERSION OF THE NATIONAL ELECTRIC CODE.
C. FOR VERIZON STANDARDS USE NETWORK STANDARD VERIZON GUIDELINES.
D. AMERICAN CONCRETE INSTITUTE. ACI 318-05, STANDARD BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
E. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AISC 9TH EDITION, MANUAL OF STEEL CONSTRUCTION.
F. AMERICAN WELDING SOCIETY, AWS D1.1 2002 EDITION, STRUCTURAL WELDING CODE.
G. STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS: ANSI/TIA-222-G-2009
H. FIRE SAFETY CODE IFC 2015

COAXIAL CABLE NOTES:

- TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
- CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
- TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
- CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
- ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.
- CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
- CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE.

GENERAL CABLE & EQUIPMENT NOTES:

- CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
- ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL REFERENCE THE STRUCTURAL ANALYSIS / DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION / ROUTING.
- ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
- IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
A. TEMPERATURE SHALL BE ABOVE 50° F.
B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
- ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
- ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.

RF CONNECTOR REQUIREMENTS:

- ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
- ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
- ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
- ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
- ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
- ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).
- ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM)

ABBREVIATIONS LIST:

VZW – VERIZON WIRELESS
FCC – FEDERAL COMMUNICATIONS COMMISSION
POC – POINT OF CONNECTION
RF – RADIO FREQUENCY
R.O.W. – RIGHT OF WAY
E.O.P. – EDGE OF PAVEMENT
NEC – NATIONAL ELECTRIC CODE
TIA – TELECOMMUNICATIONS INDUSTRY ASSOCIATION
A – AMPS
V – VOLTS
PVC – POLYVINYL CHLORIDE

COLOR STANDARDS			
GRAY #1 (E) EASEMENT		ORANGE FIBER	
PURPLE (P) LEASE AREA		TAN ANTENNAS	
BLUE GRAY ACCESS/UTILITY		RED PENETRATIONS	
BLUE #1 HYBRID CABLES/COAX		UMBER (P) UTILITY EASEMENT	
BLUE #2 RRHs		GRAY #2 WALL HATCH	
GREEN DC POWER		GRAY #3 EXISTING	



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PLANS PREPARED BY:



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ENGINEER SEAL:



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COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

**GENERAL
NOTES I**

SHEET NUMBER:

N-1

DEMOLITION:

- EXISTING WORK SITE CONDITIONS TO REMAIN SHALL BE PROTECTED FROM DAMAGE, WORK DAMAGED BY CONTRACTOR SHALL BE REPAIRED TO MATCH EXISTING WORK.
- AT THE END OF EACH WORK DAY AND DURING INCLEMENT WEATHER, CLOSE ALL EXTERIOR OPENINGS WITH WEATHERPROOF COVER.
- DEMOLITION SHALL BE CONTROLLED TO PREVENT THE SPREAD OF DUST. REMOVE DEBRIS AND RUBBISH FROM THE SITE DAILY. DO NOT ALLOW DEBRIS AND TRASH TO ACCUMULATE ON SITE.
- INSPECTIONS: REQUIRED BUILDING INSPECTORS SHALL BE ARRANGED NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS. UNLESS OTHERWISE SPECIFIED BY JURISDICTION.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. ALL DISTURBED LANDSCAPING SHALL BE REPLACED, RESERVED, AND REGROWN TO MATCH THE ORIGINAL CONDITIONS. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- IF NECESSARY. RUBBISH, STUMPS, DEBRIS, STICKS. STONES AND OTHER RUBBISH SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

GROUNDING NOTES:

- GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRIC CODE.
- ALL GROUNDING DEVICES SHALL BE UL APPROVED OR LISTED FOR THEIR INTENDED USE.
- ALL WIRES SHALL BE AWG THHN/THWN COPPER UNLESS NOTED OTHERWISE.
- GROUND WIRES SHALL BE #2 AWG BARE SOLID COPPER UNLESS NOTED OTHERWISE.
- GROUNDING CONNECTIONS SHALL BE EXOTHERMIC (CADWELDS) TO GROUND RODS, GROUND RING WIRE, AND FENCE POSTS UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZED PAINT.
- GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRASS MECHANICAL CONNECTORS WITH STAINLESS STEEL HARDWARE (INCLUDING SCREW SET.) CLEAN GROUND BAR TO SHINY METAL AFTER MECHANICAL CONNECTION, TREAT WITH PROTECTIVE ANTIOXIDANT COATING.
- GROUND CABLE SHIELDS AT BOTH ENDS WITH MANUFACTURER'S GROUNDING KITS.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 8" RADIUS.
- PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHIELD (TM OF JET LUBE, INC.) PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR APPROVED EQUAL.
- PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION APPLY APPROPRIATE ANTI OXIDATION PAINT.

RACEWAY NOTES:

- CONDUIT AND CONDUIT FITTINGS SHALL MEET ANSI AND NEC STANDARDS FOR MATERIALS AND WORKMANSHIP AND SHALL BE UL LISTED.
 - RIGID STEEL CONDUIT (FOR ALL ABOVE GRADE WORK) SHALL CONFORM TO ANSI C80-1 AND THE REQUIREMENTS OF NEC PARAGRAPH 346 AND BE STANDARD WEIGHT, MILD RIGID STEEL, HOT DIP GALVANIZED WITH INSIDE AND OUTSIDE FINISHED WITH A PROTECTIVE ZINC COATING. COUPLING, ELBOWS AND BENDS SHALL MEET THESE SAME REQUIREMENTS. FITTINGS SHALL BE OF THE GALVANIZED IRON OR STEEL THREADED TYPE.
 - PVC CONDUIT (FOR UNDERGROUND WORK) SHALL CONFORM TO UL STANDARD 651-89 AND THE REQUIREMENTS OF NEC. PARAGRAPH 347. CONDUIT SHALL BE HEAVY WALL TYPE, SCHEDULE 80, AND SUNLIGHT RESISTANT. FITTINGS SHALL BE OF THE UNTHREADED SOLVENT CEMENT TYPE.
 - EMT CONDUIT (FOR USE BEHIND WALLS OR ABOVE SUSPENDED CEILINGS ONLY), ELECTRIC METALLIC TUBING SHALL CONFORM TO ANSI C80.3 AND THE REQUIREMENTS OF NEC, PARAGRAPH 348 AND BE PROTECTED ON EXTERIOR WITH A ZINC COATING AND ON INTERIOR SURFACES WITH EITHER A ZINC COATING OR LACQUER ENAMEL. FITTINGS SHALL BE ZINC COATED STEEL. MINIMUM CONDUIT SIZE SHALL BE 3/4 INCH, SIZES NOT SHOWN ON DRAWINGS SHALL BE PER NEC.
- ALL SPARE CONDUITS SHALL HAVE A METALLIC OR MULL TAPE.
- CONDUIT SUPPORTS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND IN ACCORDANCE WITH THE NEC.

HOLES, SLEEVES AND OPENINGS:

- PROVIDE ALL HOLES, SLEEVES, AND OPENINGS REQUIRED FOR THE COMPLETION OF WORK AND RESTORE ALL SURFACES DAMAGED TO MATCH EXISTING AND SURROUNDING SURFACES. MAINTAIN INTEGRITY FOR ALL FIRE AND SMOKE RATED BARRIERS USING APPROVED FIRE STOPPING SYSTEMS.
- WHEN CUTTING HOLES, SLEEVES, AND OPENINGS CONTRACTOR SHALL NOT CUT, DAMAGE OR DISTURB STRUCTURAL ELEMENT OR REINFORCING STEEL UNLESS APPROVED IN WRITING BY THE PROJECTS STRUCTURAL ENGINEER.
- CONDUIT PENETRATIONS CORE DRILLING HOLES SHALL BE SIZED SO THAT AN ANNULAR SPACE OF NOT LESS THAN 1/4 INCH AND NOT MORE THAN 1 INCH IS LEFT AROUND THE CONDUIT, PIPE, ETC. WHEN OPENINGS ARE CUT IN LIEU OF CORE DRILLED, PROVIDE SLEEVE IN ROUGH OPENING. SIZE SLEEVES TO PROVIDE AN ANNULAR SPACE OF NOT LESS THAN 1/4 INCH AND NOT MORE THAN 1 INCH AROUND THE CONDUIT, PIPE, ETC. PATCH AROUND THE SLEEVE TO MATCH SURROUNDING SURFACES.

CONDUCTOR NOTES:

- ALL POWER, CONTROL AND COMMUNICATION WIRING SHALL MEET REQUIRED NEMA-RATINGS, ASTM, UL, AND NEC STANDARDS FOR MATERIAL AND WORKMANSHIP UNLESS OTHERWISE SPECIFIED.
 - SERVICE ENTRANCE CONDUCTORS SHALL BE COPPER, 200 VOLT, SUNLIGHT RESISTANT, SUITABLE FOR WET LOCATIONS, TYPE USE-2. THE GROUNDED NEUTRAL CONDUCTOR SHALL BE IDENTIFIED WHITE MARKING AT EACH TERMINATION.
 - CONDUCTORS FOR FEEDER AND BRANCH CIRCUITS SHALL COPPER 200 VOLT, TYPE THHN/THWN WITH A MINIMUM SIZE OF #12 AWG.
- ALL CONDUCTOR ACCESSORIES INCLUDING CONNECTORS, INSULATING MATERIALS, SUPPORT GRIPS, MARKER AND CABLE SHALL BE FURNISHED AND INSTALLED. THE SUPPLIERS INSTALLATION INSTRUCTIONS SHALL BE OBTAINED FOR CABLE ACCESSORIES. INSTRUCTIONS SHALL BE IN THE POSSESSION OF THE CRAFTSMAN INSTALLING THE ACCESSORIES AND SHALL BE AVAILABLE TO THE COMPANY FOR REFERENCE.
- TERMINAL CONNECTORS FOR CONDUCTORS SMALLER THAN 8 AWG SHALL BE COMPRESSION TYPE CONNECTORS SIZED FOR THE CONDUCTOR AND THE TERMINAL. THE CONNECTORS SHALL BE CONSTRUCTED OF FINE GRADE HIGH CONDUCTIVITY COPPER IN ACCORDANCE WITH QQ-C-576 AND SHALL BE TIN-PLATED IN ACCORDANCE WITH MIL-T-10727. INTERIOR SURFACE OF THE CONNECTOR WIRE BARREL SHALL SERRATED, AND THE EXTERIOR SURFACE OF THE CONNECTOR BARREL SHALL BE PROVIDED WITH CRIMP GUIDES.
- TERMINAL CONNECTORS FOR CONDUCTORS 8 AWG AND LARGER SHALL BE PRESSURE OR BOLTED CLAMP TYPE, BURNDY QUICKLUG, ARILUG OR ACCEPTABLE EQUAL; OR COMPRESSION TYPE; BURNDY TYPE YAV OFR YA (LONG BARREL), PANDUIT TYPE LCA OR LCC, OR ACCEPTABLE EQUAL. ACCEPTABLE CONNECTORS INCLUDED WITH COMPANY-FURNISHED EQUIPMENT MAY BE USED.
- TERMINATION PROVISIONS OF EQUIPMENT FOR CIRCUITS RATED 100 AMPERES OR LESS, OR MARKED FOR NOS. 14 THROUGH 1 CONDUCTORS, SHALL BE USED ONLY FOR CONDUCTORS RATED 60 DEG. C (140 DEG F). CONDUCTORS WITH HIGHER TEMPERATURE SHALL BE PERMITTED, PROVIDED THE AMPACITY OF EACH CONDUCTOR IS DETERMINED BASED ON THE 60 DEG.C (140 DEG.F) AMPACITY CONDUCTOR SIZE USED.
- TERMINATION PROVISIONS OF EQUIPMENT FOR CIRCUITS RATED AMPERES, OR MARKED FOR CONDUCTORS LARGER THAN:
 - SHALL BE USED ONLY FOR CONDUCTORS RATED 75 DEG.C (167 DEG.F). CONDUCTORS WITH HIGH TEMPERATURE RATINGS SHALL BE PERMITTED, PROVIDED THE AMPACITY OF EACH CONDUCTOR IS DETERMINED BASE ON THE 75 DEG.C (167 DEG.F) AMPACITY CONDUCTOR SIZE USED.
- ALL 600 VOLT OR LESS WIRING, WHERE COMPRESSION TYPE CONNECTORS ARE USED, SHALL BE INSULATED WITH AT LEAST ONE TURN OF "SCOTCHFILL" 200 AMP ELECTRICAL INSULATING PUTTY THEN COVERED WITH TWO HALF TURNS OF TAPE SIMILAR TO 3M COMPANY'S "33 PLUS" (33+) PLASTIC TAPE OR 88 OUTDOOR.
- THE ELECTRICAL SERVICE TO THE SITE SHALL BE GROUNDED AT THE SERVICE DISCONNECTING MEANS REQUIRED IN ARTICLE 250 OF NATIONAL ELECTRICAL CODE, IN ACCORDANCE AND ANY LOCAL CODE.
- ALL UNDERGROUND (BELOW GRADE) GROUNDING CONNECTIONS SHALL BE MADE BY THE CADWELD PROCESS (MECHANICAL LUG ATTACHMENTS BELOW GRADE ARE NOT ACCEPTABLE). CONNECTIONS SHALL INCLUDE ALL ALL CABLE TO CABLE SPLICES (TEES, XS, ETC.) ALL MATERIALS USED (MOLDS, WELDING METAL, TOOLS, ETC.) SHALL BE BY CADWELD AND INSTALLED PER MANUFACTURER'S RECOMMENDATION AND PROCEDURES.

HANGERS AND SUPPORT:

- MATERIALS: ALL HANGERS, SUPPORTS, FASTENERS, AND HARDWARE SHALL BE ZINC COATED OR OF EQUIVALENT CORROSION RESISTANCE BY TREATMENT OR INHERENT PROPERTY, AND SHALL BE MANUFACTURED PRODUCTS DESIGNED FOR THE APPLICATION. PRODUCTS & MATERIALS FOR OUTDOOR USE SHALL BE HOT DIP GALVANIZED.
- TYPES: HANGERS, STRAPS, RISER SUPPORTS, CLAMPS, U-CHANNEL, THREADED RODS, ETC. AS INDICATED OR REQUIRED.
- INSTALLATION: RIGIDLY SUPPORT AND SECURE ALL MATERIALS, RACEWAY AND EQUIPMENT TO BUILDING STRUCTURE USING HANGERS, SUPPORTS AND FASTENERS SUITABLE FOR THE USE, MATERIALS AND LOADS ENCOUNTERED, PROVIDE ALL NECESSARY HARDWARE, PROVIDE CONDUIT SUPPORTS AT MAXIMUM 5 FT. O.C.
- OVERHEAD MOUNTING: ATTACH OVERHEAD MOUNTED EQUIPMENT TO STRUCTURAL FRAMEWORK OR SUPPORTING METAL FRAMEWORK.
- WALL MOUNTING: SUPPORT WALL MOUNTED EQUIPMENT BY MASONRY. CONCRETE BLOCK, METAL FRAMING OR SUB-FRAMING.
- EXTERIOR WALLS: MOUNT ALL EQUIPMENT LOCATED ON THE INTERIOR OF EXTERIOR BUILDING WALLS AT LEAST ONE INCH AWAY FROM WALL SURFACE, USING SUITABLE SPACERS.
- STRUCTURAL MEMBERS: DO NOT CUT, DRILL OR WELD ANY STRUCTURAL MEMBER EXCEPT SPECIFICALLY APPROVED BY THE ENGINEER.
- INDEPENDENT SUPPORT: DO NOT SUPPORT MATERIALS OR EQUIPMENT FROM OTHER EQUIPMENT, PIPING, DUCTWORK OR SUPPORTS.

HANGERS AND SUPPORT (CONTINUED):

- RACEWAY SUPPORTS: RIGIDLY SUPPORT ALL RACEWAY WITH MAXIMUM SPACING PER NEC. AND SO AS TO PREVENT DISTORTION OF ALIGNMENT DURING PULLING OPERATION, USE APPROVED HANGERS, CLAMPS AND STRAPS FOR INDIVIDUAL RUNS. DO NOT USE PERFORATED STRAPS OR TIE WIRES. WHERE MULTIPLE PARALLEL RACEWAYS ARE TO RUN TOGETHER, USE TRAPEZE TYPE HANGER ARRANGEMENT MADE FROM U-CHANNEL AND ACCESSORIES. SUSPENDED FOR FUTURE INSTALLATION OF ADDITIONAL RACEWAYS, RIGIDLY ANCHOR VERTICAL CONDUITS SERVING FLOOR MOUNTED OR "ISLAND" TYPE EQUIPMENT MOUNTED AWAY FROM WALLS WITH METAL BRACKET OR RIGID STEEL CONDUIT EXTENSION SECURED TO FLOOR.
- MISCELLANEOUS SUPPORTS: PROVIDE ANY ADDITIONAL STRUCTURAL SUPPORT STEEL BRACKETS, ANGLES, FASTENERS, AND HARDWARE AS REQUIRED TO ADEQUATELY SUPPORT ALL ELECTRICAL MATERIALS AND EQUIPMENT.
- ONE HOLE STRAPS SHALL NOT BE USED FOR CONDUITS LARGER THAN 3/4 INCH.



10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124

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DENVER, CO 80237
PHONE (303) 228-2300
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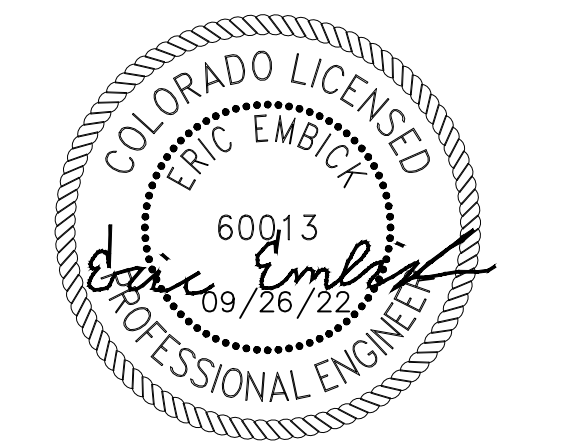
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PROJECT INFORMATION:

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COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

**GENERAL
NOTES II**

SHEET NUMBER:

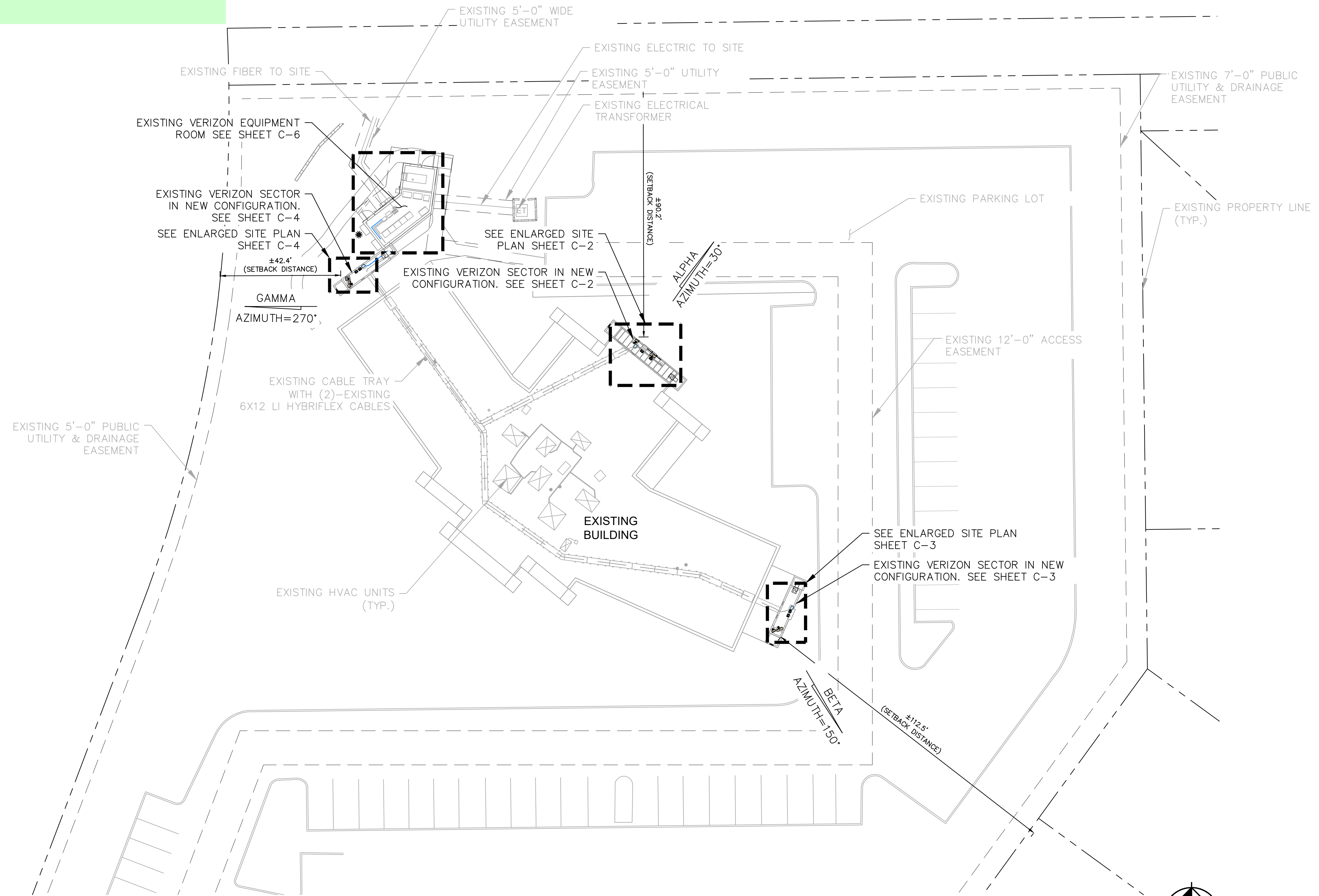
N-2

Please include:
 -location and dimensions of:
 .rights of way
 .property lines

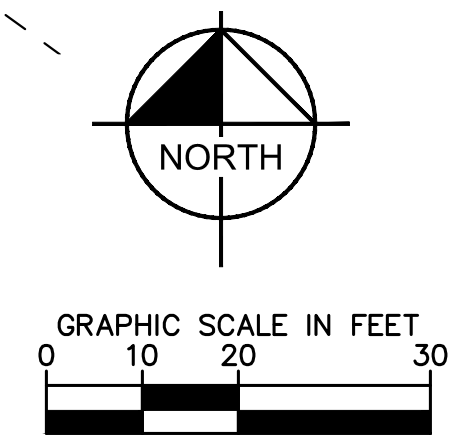
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10000 PARK MEADOWS DRIVE,
 SUITE 200, LONE TREE, CO 80124



1 SITE PLAN
 C-1 SCALE: 1" = 20'
 SCALE BASED ON 24"X36" ONLY



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ENGINEER SEAL:



PROJECT INFORMATION:

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 COLORADO SPRINGS, CO 80132
 EL PASO COUNTY

SHEET TITLE:

SITE PLAN

SHEET NUMBER:

C-1



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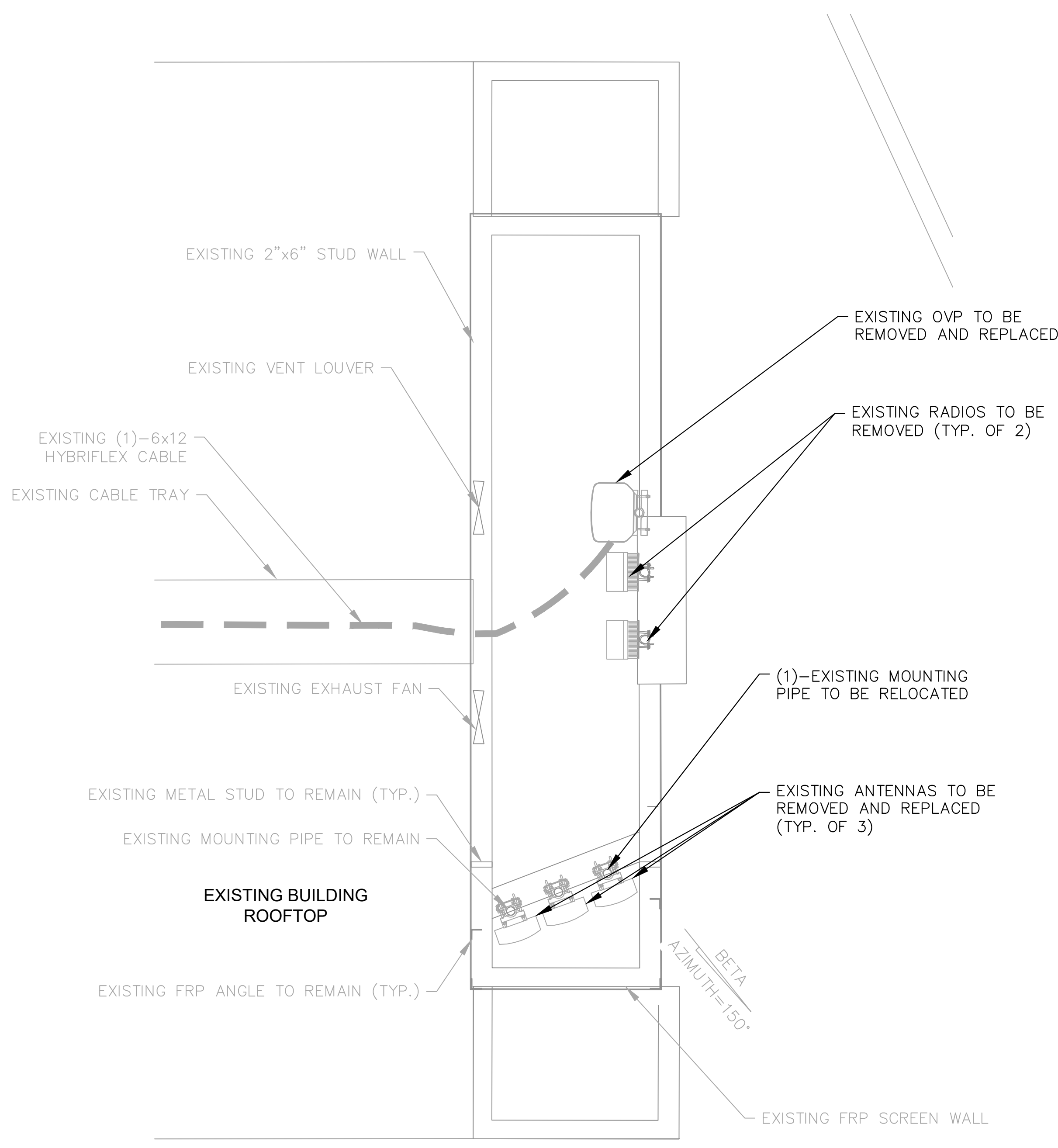
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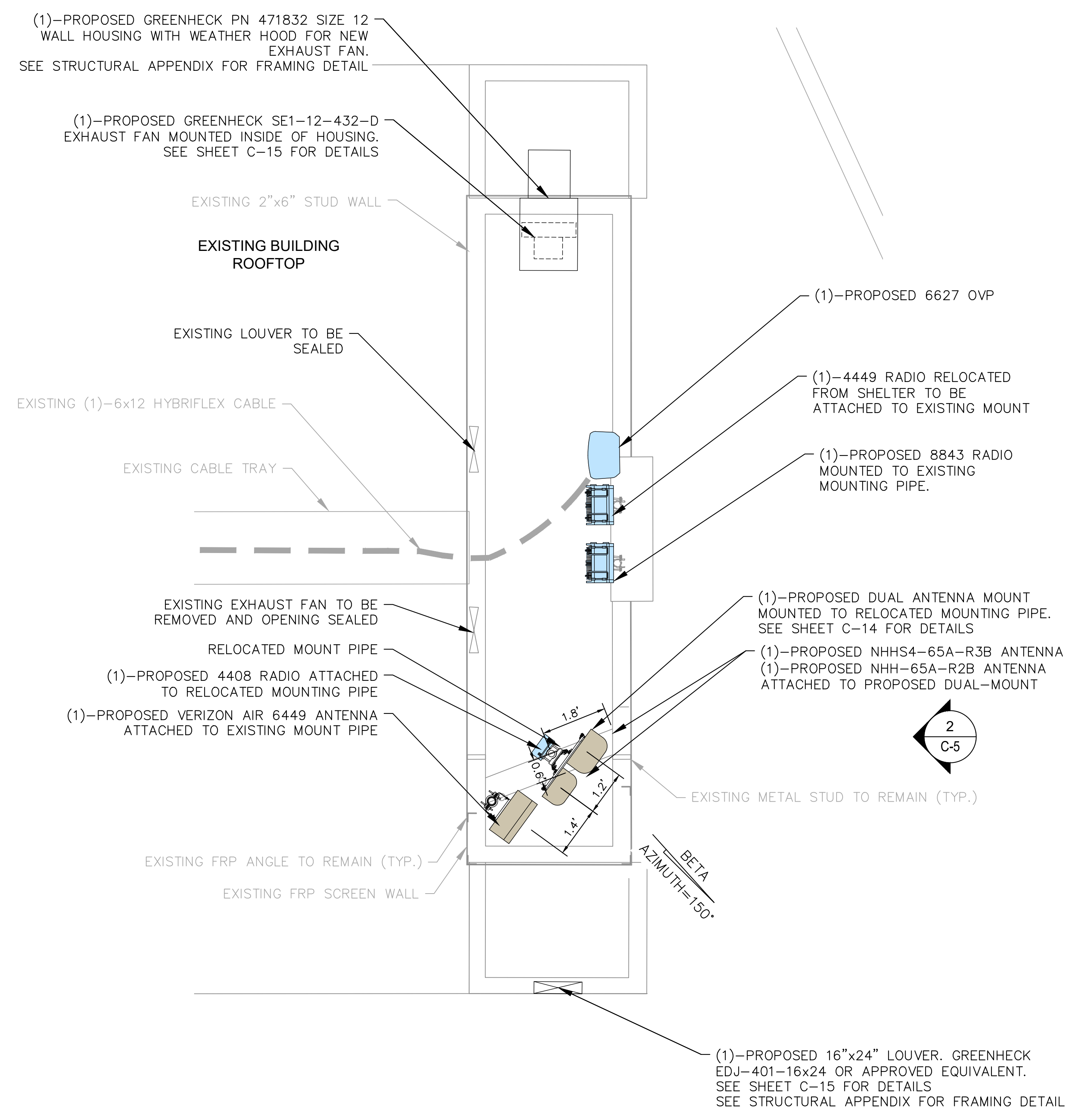
ENLARGED SITE PLAN

SHEET NUMBER:

C-3

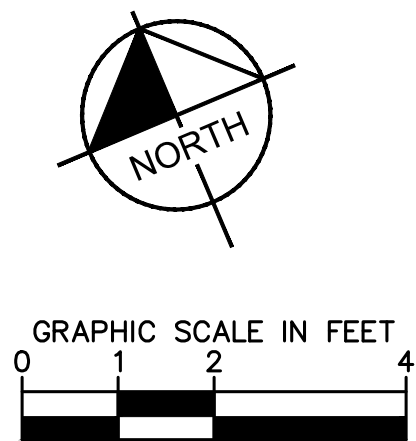


1
C-3 **ENLARGED SITE PLAN (BETA) EXISTING**
SCALE: 1" = 2'
SCALE BASED ON 24"X36" ONLY



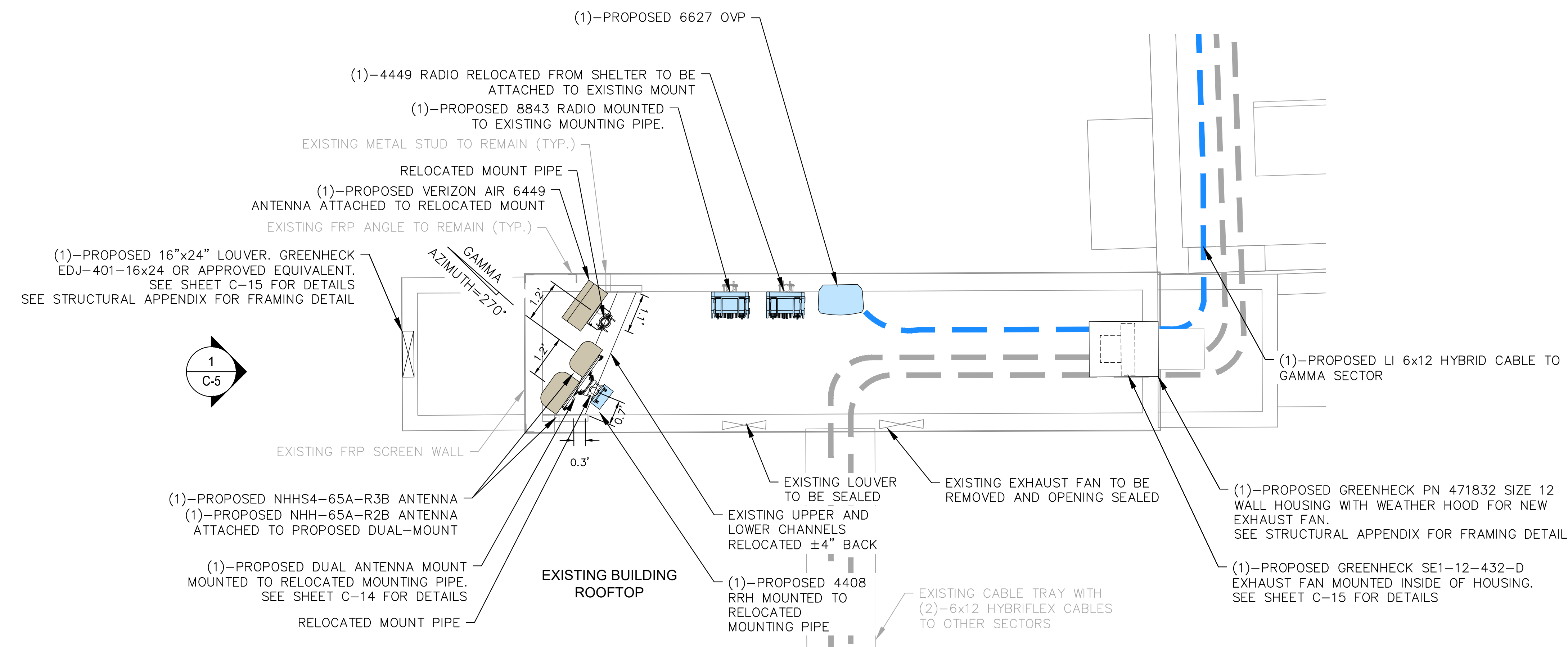
2
C-3 **ENLARGED SITE PLAN (BETA) PROPOSED**
SCALE: 1" = 2'
SCALE BASED ON 24"X36" ONLY

NOTE:
ALL EXISTING CABLE, RADIO, AND ANTENNA ATTACHMENT HARDWARE TO BE REPLACED WITH CONCEALFAB LOW-PIM EQUIVALENTS.

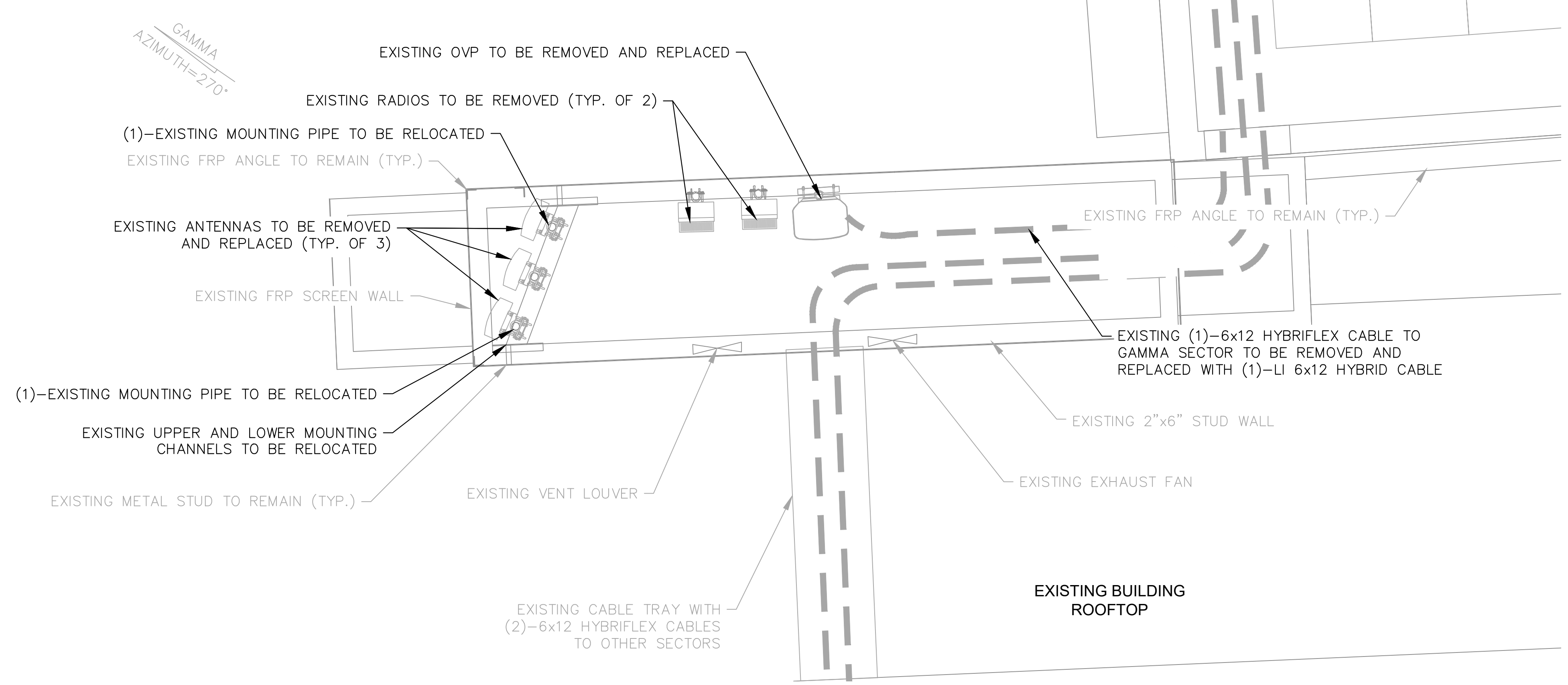




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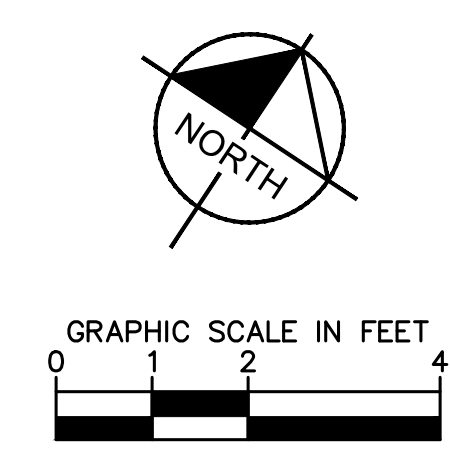


1 ENLARGED SITE PLAN (GAMMA) PROPOSED
 SCALE: 1" = 2'
 SCALE BASED ON 24"X36" ONLY



2 ENLARGED SITE PLAN (GAMMA) EXISTING
 SCALE: 1" = 2'
 SCALE BASED ON 24"X36" ONLY

NOTE:
 ALL EXISTING CABLE, RADIO, AND ANTENNA ATTACHMENT HARDWARE TO BE REPLACED WITH CONCEALFAB LOW-PIM EQUIVALENTS.



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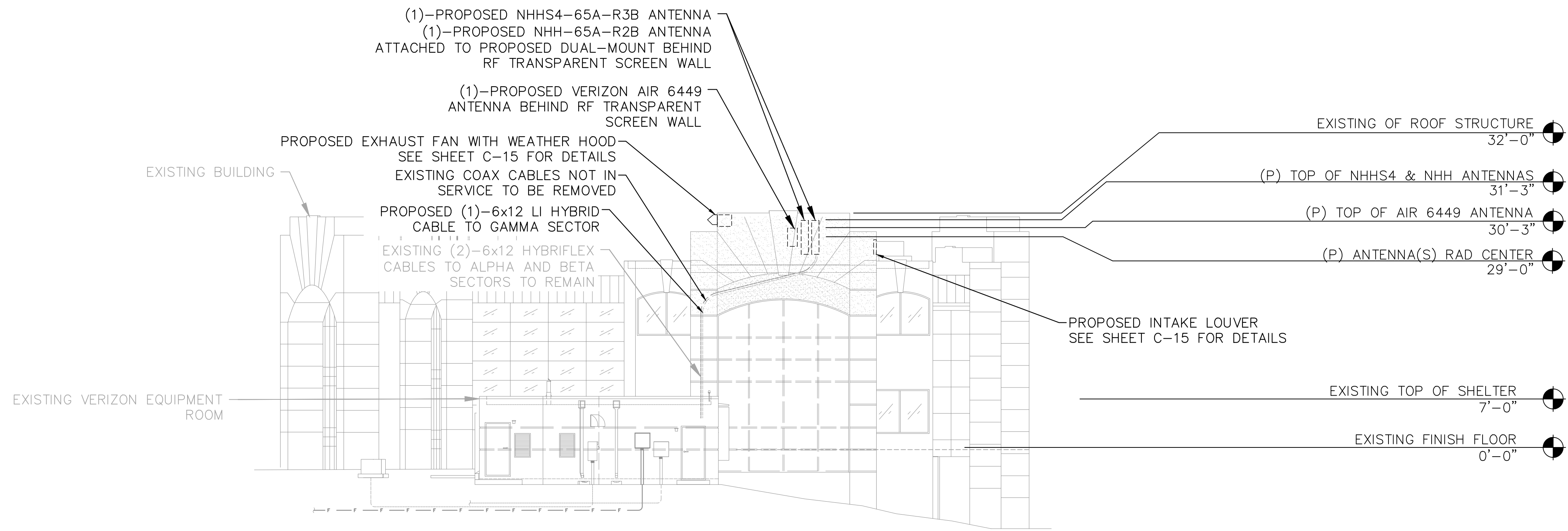
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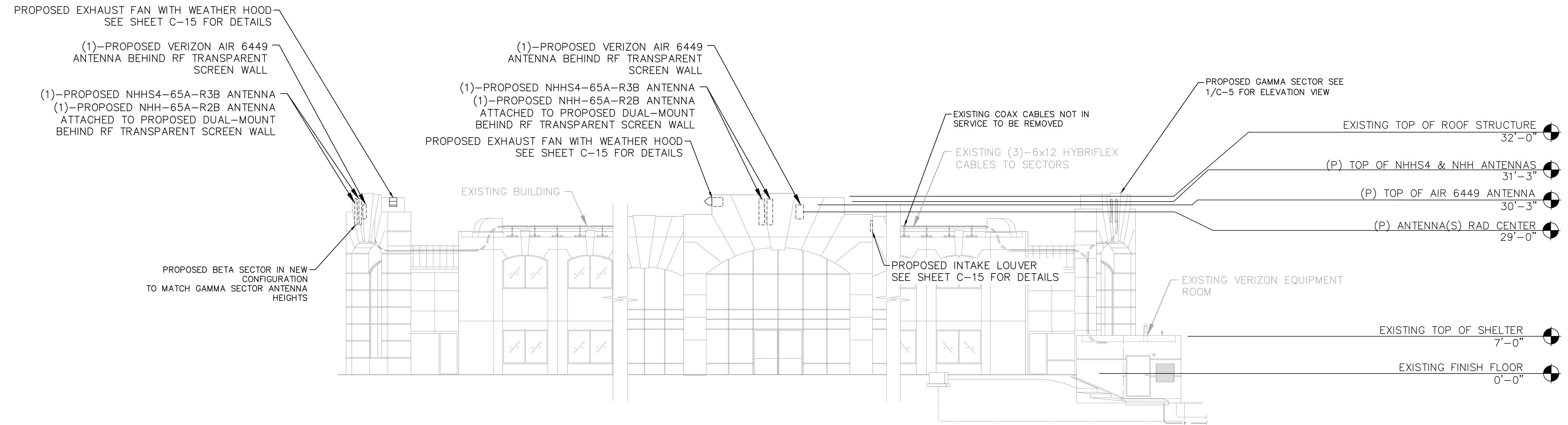
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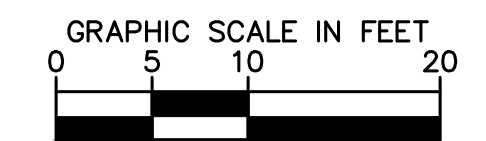




1
C-5
PROPOSED WEST ELEVATION (GAMMA)
SCALE: 1" = 10'
SCALE BASED ON 24"x36" ONLY



2
C-5
PROPOSED NORTH ELEVATION (ALPHA/BETA)
SCALE: 1" = 10'
SCALE BASED ON 24"x36" ONLY



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SHEET TITLE:

**PROPOSED
ELEVATION PLAN**

SHEET NUMBER:

C-5





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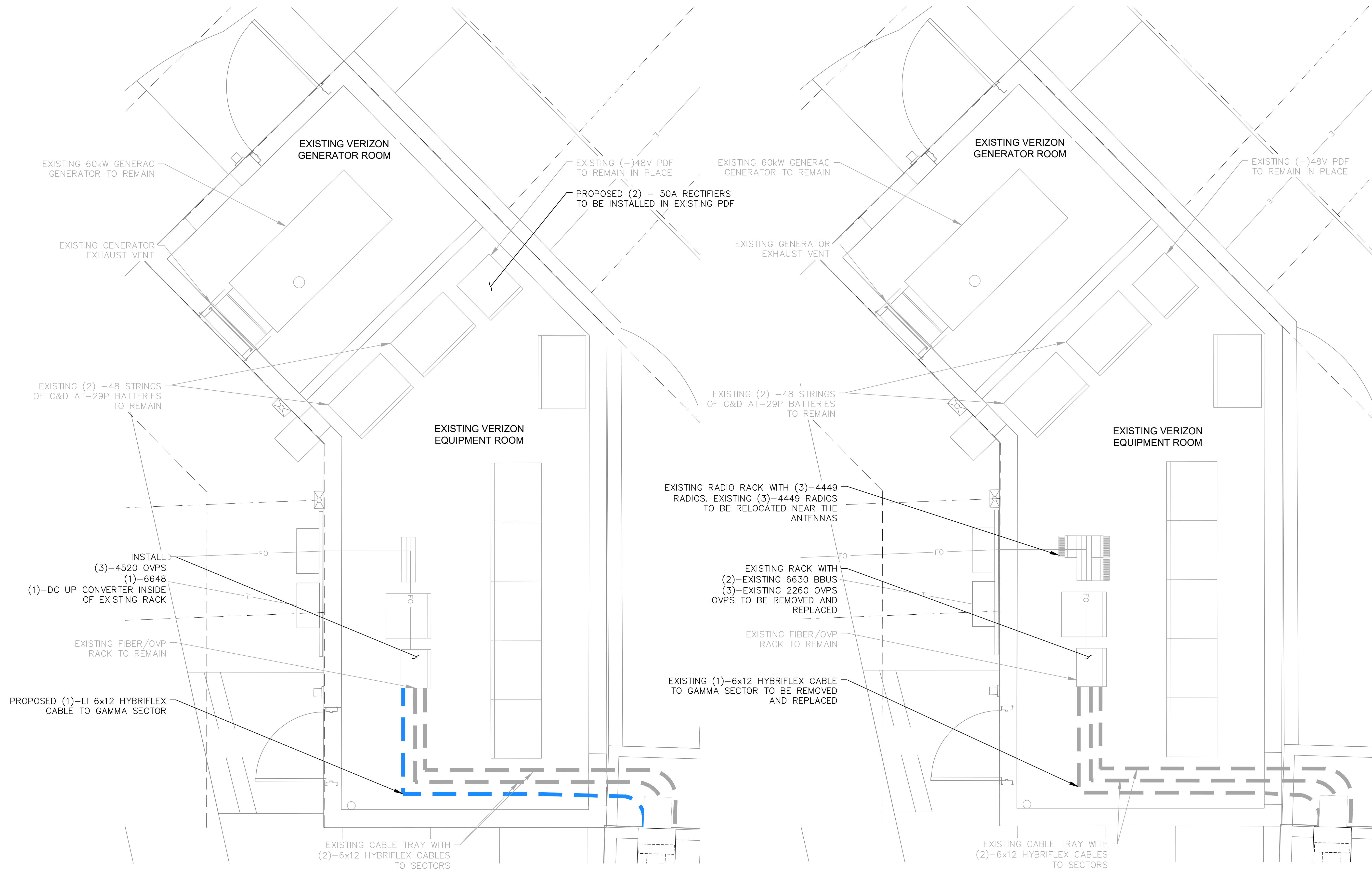
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SHEET TITLE:

**EQUIPMENT ROOM
PLAN**

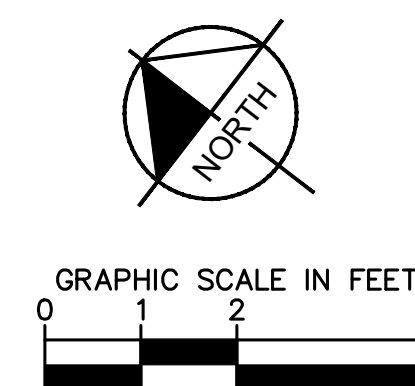
SHEET NUMBER:

C-6

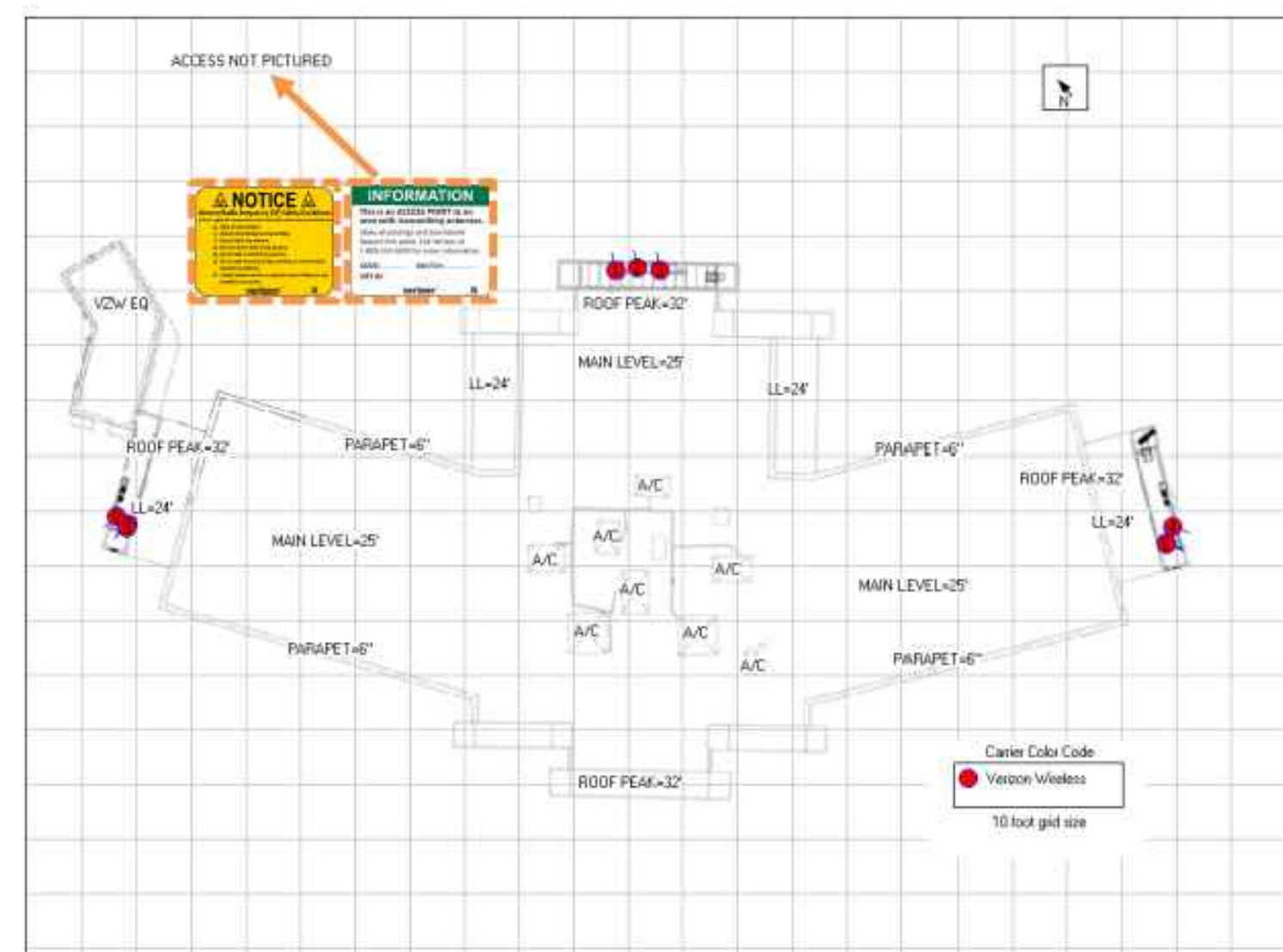


1 PROPOSED EQUIPMENT ROOM
C-6 SCALE: 1" = 2'
SCALE BASED ON 24"X36" ONLY

2 EXISTING EQUIPMENT ROOM
C-6 SCALE: 1" = 2'
SCALE BASED ON 24"X36" ONLY

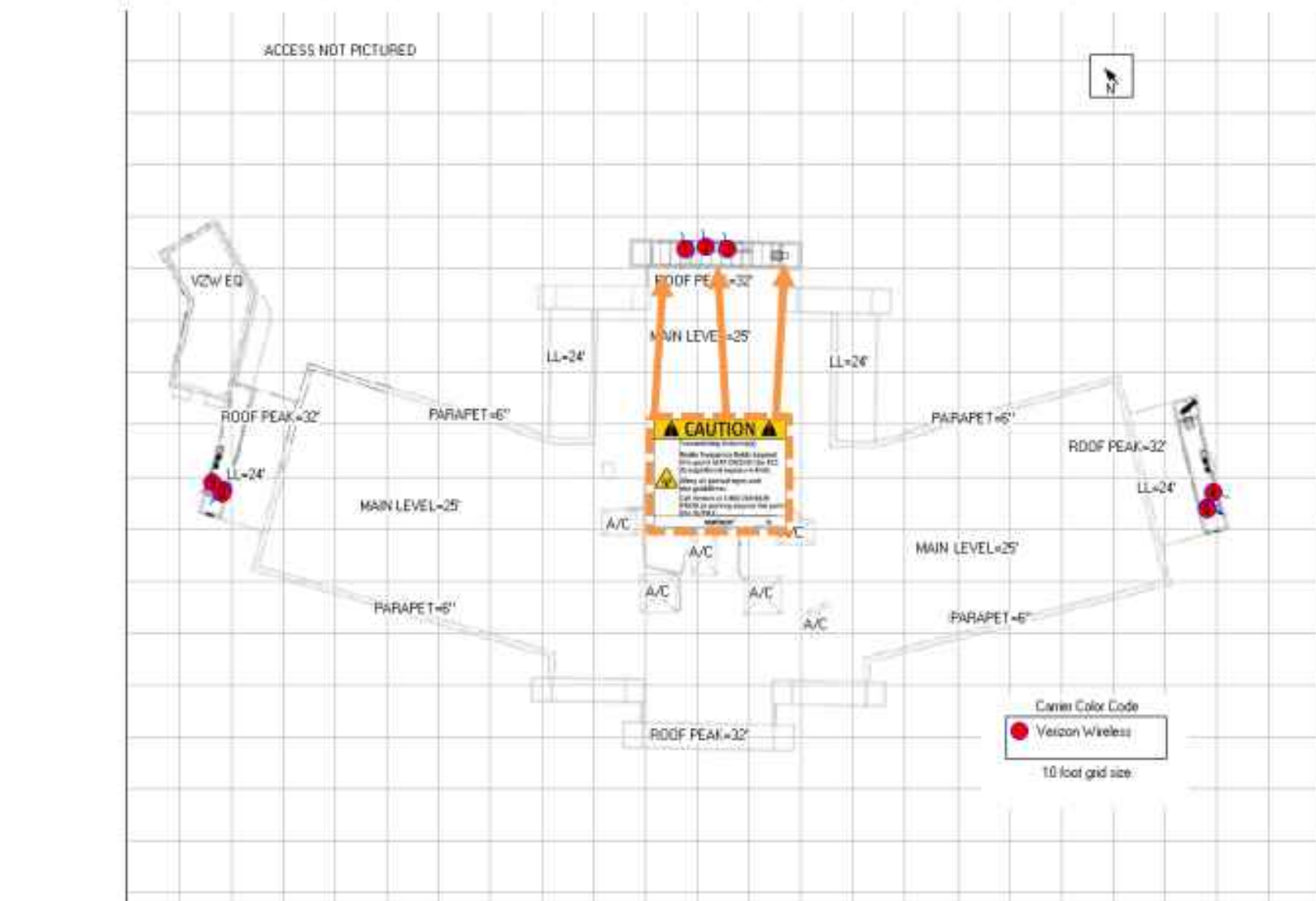


b. Signage/Barrier Diagram



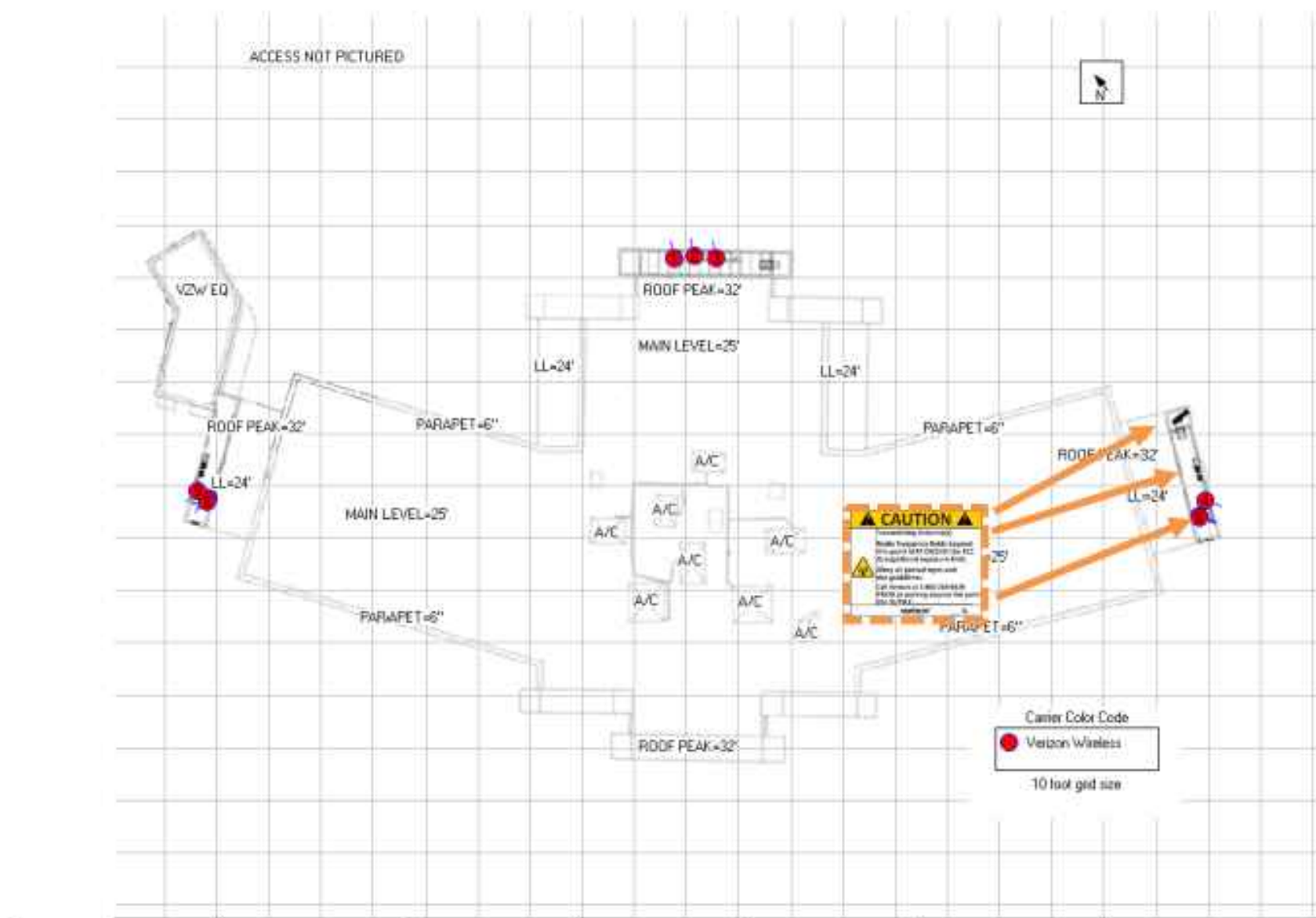
1 PROPOSED EME PLAN
C-7 SCALE: N.T.S.

c. Signage/Barrier Diagram (Alpha Sector)



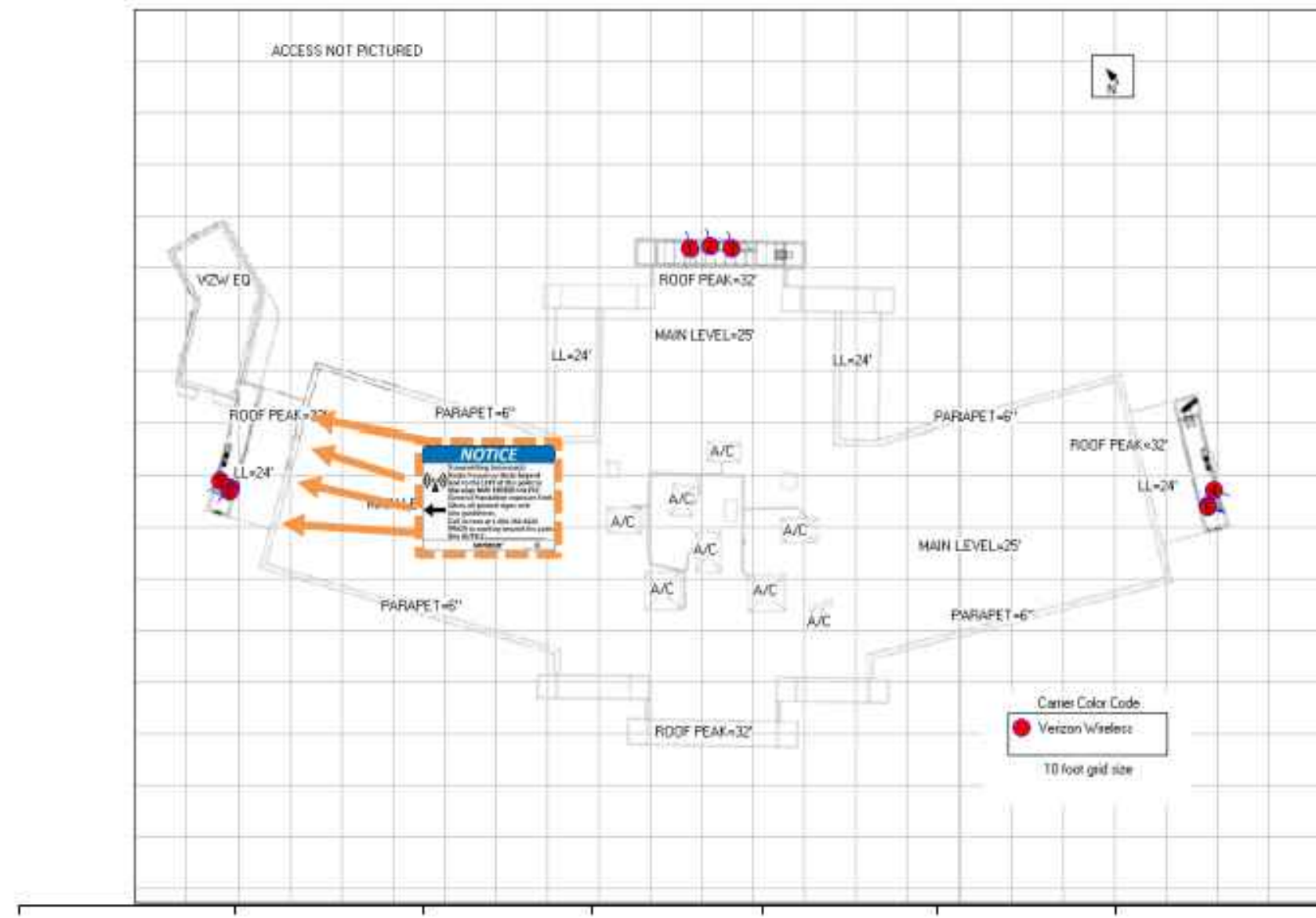
2 PROPOSED EME PLAN ALPHA
C-7 SCALE: N.T.S.

Signage/Barrier Diagram (Beta Sector)



3 PROPOSED EME PLAN BETA
C-7 SCALE: N.T.S.

Signage/Barrier Diagram (Gamma Sector)



4 PROPOSED EME PLAN GAMMA
C-7 SCALE: N.T.S.

SPECIAL OPERATING MITIGATION INSTRUCTIONS	
Alpha	3 dB power reduction below maximum for C-Band antenna to avoid impact at 0ft ground
Beta	3 dB power reduction below maximum for C-Band antenna to avoid impact at 15ft adjacent building
Gamma	N/A

5 SPECIAL OPERATING MITIGATION INSTRUCTIONS
C-7 SCALE: N.T.S.

SPECIAL MITIGATION INSTRUCTIONS	
Items to be Installed	Access: Install NOC and Guideline signs at all access points Alpha: Install [3] Caution signs behind the antennas visible from all approaches Beta: Install [3] Caution signs behind the antennas visible from all approaches Gamma: Install [4] Notice signs behind the antennas on the parapet wall visible from all approaches.
Items to be Removed	N/A
Items to be Repaired/Replaced	N/A

6 SPECIAL MITIGATION INSTRUCTIONS
C-7 SCALE: N.T.S.

INFORMATION
This is an ACCESS POINT to an area with transmitting antennas.
Obey all postings and boundaries beyond this point.
Call Verizon Wireless at 1-800-284-6620 for more information.
STATE: _____ SWITCH: _____
SITE ID: _____

A). OWNER/OPERATOR NOTIFICATION PLAQUE

NOTICE
GENERAL RADIO FREQUENCY (RF) SAFETY GUIDELINES
UNTIL ALL applicable antennas have been deactivated, please observe the following:
1. Obey all posted signs.
2. Assume all antennas are transmitting.
3. Do not touch any antennas.
4. Do not walk in front of any antennas.
5. Do not walk beyond any signs, barriers, or virtual markers towards any antennas.
6. Contact antenna owner or property owner if there are any questions or concerns.
verizon

B). RF NOTICE/SAFETY GUIDELINES SIGNAGE

CAUTION
Transmitting antennas.
Radio frequency fields beyond the point that EXCEED the FCC designated exposure limit.
Obey all posted signs and site guidelines.
Call Verizon Wireless at 1-800-284-6620 for more information.
STATE: _____ SWITCH: _____
SITE ID: _____
SECTION NAME: _____
verizon

C). EME SIGNAGE

7 EME SIGNAGE
C-7 SCALE: N.T.S.

NOTES:

- NOC INFO SIGNS & FCC GUIDELINES TO BE POSTED AT ALL PERMANENT ACCESS POINTS.
- REFERENCE FINAL EME DESIGN BY VERIZON PRIOR TO TURNING SITE ON



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PLANS PREPARED BY:



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WWW.KIMLEY-HORN.COM

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BAB MFF

KHA PROJECT NUMBER:

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ENGINEER SEAL:

FOR REFERENCE ONLY
FINAL DESIGN BY OTHERS

PROJECT INFORMATION:

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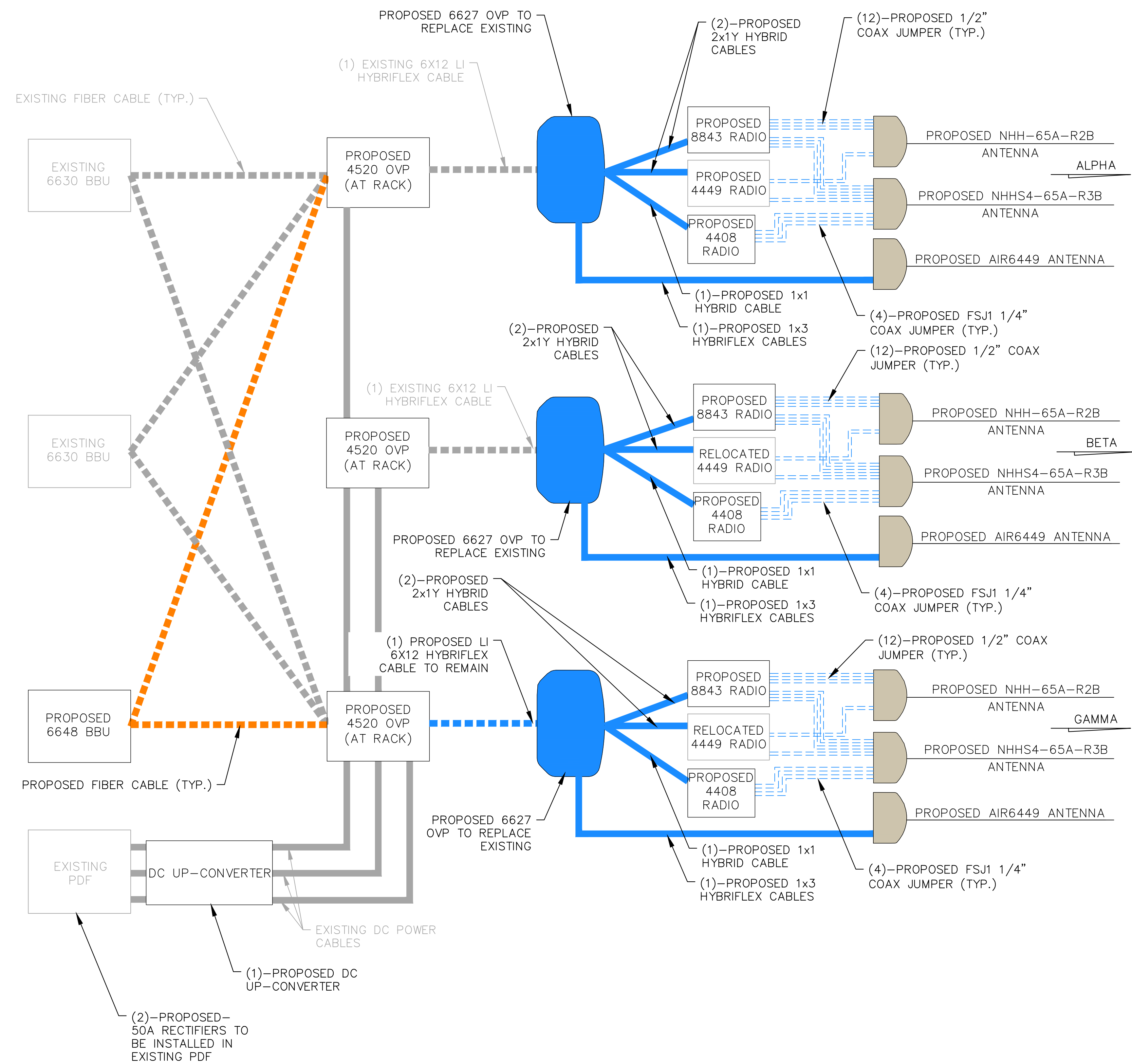
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EL PASO COUNTY

SHEET TITLE:

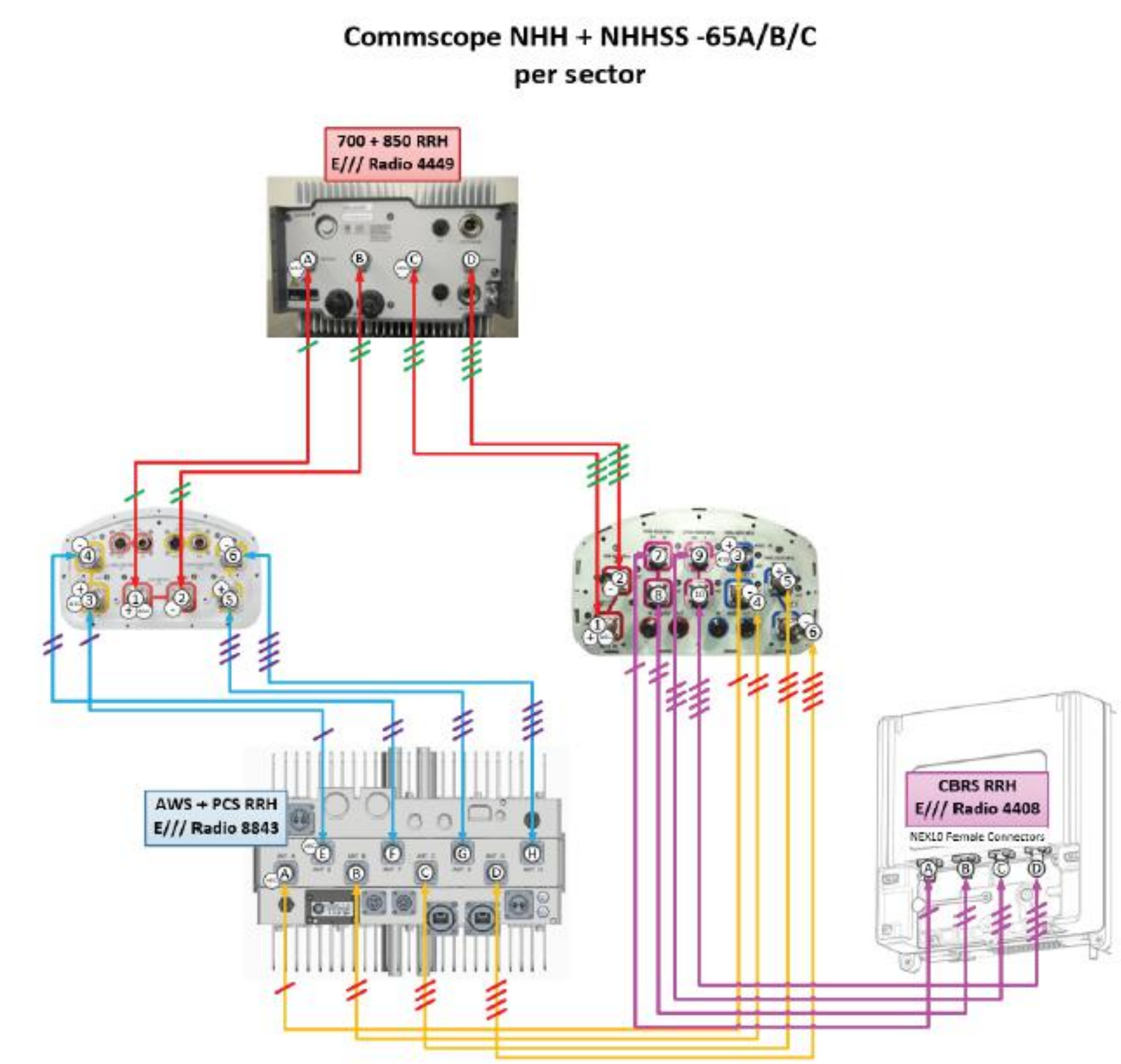
EME PLAN

SHEET NUMBER:

C-7



1
C-8 **PROPOSED CABLING DIAGRAM**
SCALE: N.T.S.



2
C-8 **PROPOSED PORT MAPPING DIAGRAM**
SCALE: N.T.S.

PLANS PREPARED BY:
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 KHA PROJECT NUMBER: **196015030**



PROJECT INFORMATION:
CSP-KINGSWOOD
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 EL PASO COUNTY

SHEET TITLE: **CABLE DIAGRAM**

SHEET NUMBER: **C-8**

FINAL ANTENNA SCHEDULE*											
ANTENNA SECTOR	ANTENNA POSITION	ANTENNA*	REMAIN/PROPOSED	LENGTH	WIDTH	DEPTH	WEIGHT (POUNDS)	HORIZONTAL DISTANCE ADJACENT BUILDING	VERTICAL DISTANCE FROM C.O.R. TO UPPER PARAPET	VERTICAL DISTANCE FROM C.O.R. TO GRADE	QTY.
ALPHA	1	NHH-65A-R2B	PROPOSED	55.6"	11.8"	7.0"	35	345'	N/A	29'-0"	1
	2	NHHS4-65A-R3B	PROPOSED	55.6"	13.8"	8.1"	51		N/A	29'-0"	1
	3	AIR 6449 PANEL/RADIO	PROPOSED	30.4"	15.9"	8.1"	88		N/A	29'-0"	1
BETA	1	NHH-65A-R2B	PROPOSED	55.6"	11.8"	7.0"	35	151'	N/A	29'-0"	
	2	NHHS4-65A-R3B	PROPOSED	55.6"	13.8"	8.1"	51		N/A	29'-0"	
	3	AIR 6449 PANEL/RADIO	PROPOSED	30.4"	15.9"	8.1"	88		N/A	29'-0"	
GAMMA	1	NHH-65A-R2B	PROPOSED	55.6"	11.8"	7.0"	35	197'	N/A	29'-0"	
	2	NHHS4-65A-R3B	PROPOSED	55.6"	13.8"	8.1"	51		N/A	29'-0"	
	3	AIR 6449 PANEL/RADIO	PROPOSED	30.4"	15.9"	8.1"	88		N/A	29'-0"	

* REFER TO FINAL RFDS PRIOR TO CONSTRUCTION

ADDED CABLE SCHEDULE**						
ANTENNA SECTOR	FROM	TO	SIZE	REMAIN/PROPOSED	QTY	LENGTH
ALPHA	OVP	4408 RRH	1X1 HYBRID	PROPOSED	1	10'
	OVP	4449 RRH	2X1Y HYBRID	PROPOSED	1	5'
	OVP	8843 RRH	2X1Y HYBRID	PROPOSED	1	10'
	OVP	AIR 6449 ANTENNA	1X3 HYBRID	PROPOSED	1	5'
	4408	NHH+NHHS4 ANTENNA	¼" FSJ1 JUMPER	PROPOSED	4	2'
	4449	NHH+NHHS4 ANTENNA	½" JUMPER	PROPOSED	4	10'
	8843	NHH+NHHS4 ANTENNA	½" JUMPER	PROPOSED	8	5'
BETA	OVP	4408 RRH	1X1 HYBRID	PROPOSED	1	15'
	OVP	4449 RRH	2X1Y HYBRID	PROPOSED	1	5'
	OVP	8843 RRH	2X1Y HYBRID	PROPOSED	1	5'
	OVP	AIR 6449 ANTENNA	1X3 HYBRID	PROPOSED	1	15'
	4408	NHH+NHHS4 ANTENNA	¼" FSJ1 JUMPER	PROPOSED	4	2'
	4449	NHH+NHHS4 ANTENNA	½" JUMPER	PROPOSED	4	15'
	8843	NHH+NHHS4 ANTENNA	½" JUMPER	PROPOSED	8	15'
GAMMA	OVP	4408 RRH	1X1 HYBRID	PROPOSED	1	15'
	OVP	4449 RRH	2X1Y HYBRID	PROPOSED	1	5'
	OVP	8843 RRH	2X1Y HYBRID	PROPOSED	1	5'
	OVP	AIR 6449 ANTENNA	1X3 HYBRID	PROPOSED	1	15'
	4408	NHH+NHHS4 ANTENNA	¼" FSJ1 JUMPER	PROPOSED	4	2'
	4449	NHH+NHHS4 ANTENNA	½" JUMPER	PROPOSED	4	15'
	8843	NHH+NHHS4 ANTENNA	½" JUMPER	PROPOSED	8	15'
	OVP AT RACK	UPPER OVP	6x12 LI HYBRID	PROPOSED	1	60'

** QTY AND LENGTH PROVIDED TO HELP CONTRACTOR WITH ESTIMATION ONLY. FINAL LENGTH TO BE VERIFIED WITH FIELD MEASUREMENTS PRIOR TO ORDERING MATERIALS.



10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124

PLANS PREPARED BY:



4582 S ULSTER ST. #1500
DENVER, CO 80237
PHONE (303) 228-2300
WWW.KIMLEY-HORN.COM

REV. = DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
C	09/26/22	FINAL CD'S	JCH
B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CD's	BAB

DRAWN BY: CHECKED BY:

BAB **MFF**

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD

15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

ANTENNA & CABLE SCHEDULE

SHEET NUMBER:

C-9



10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124

PLANS PREPARED BY:



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DENVER, CO 80237
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B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CD's	BAB

DRAWN BY: CHECKED BY:

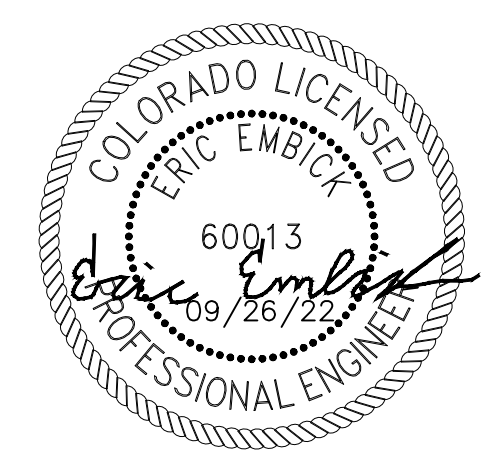
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MFF

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD

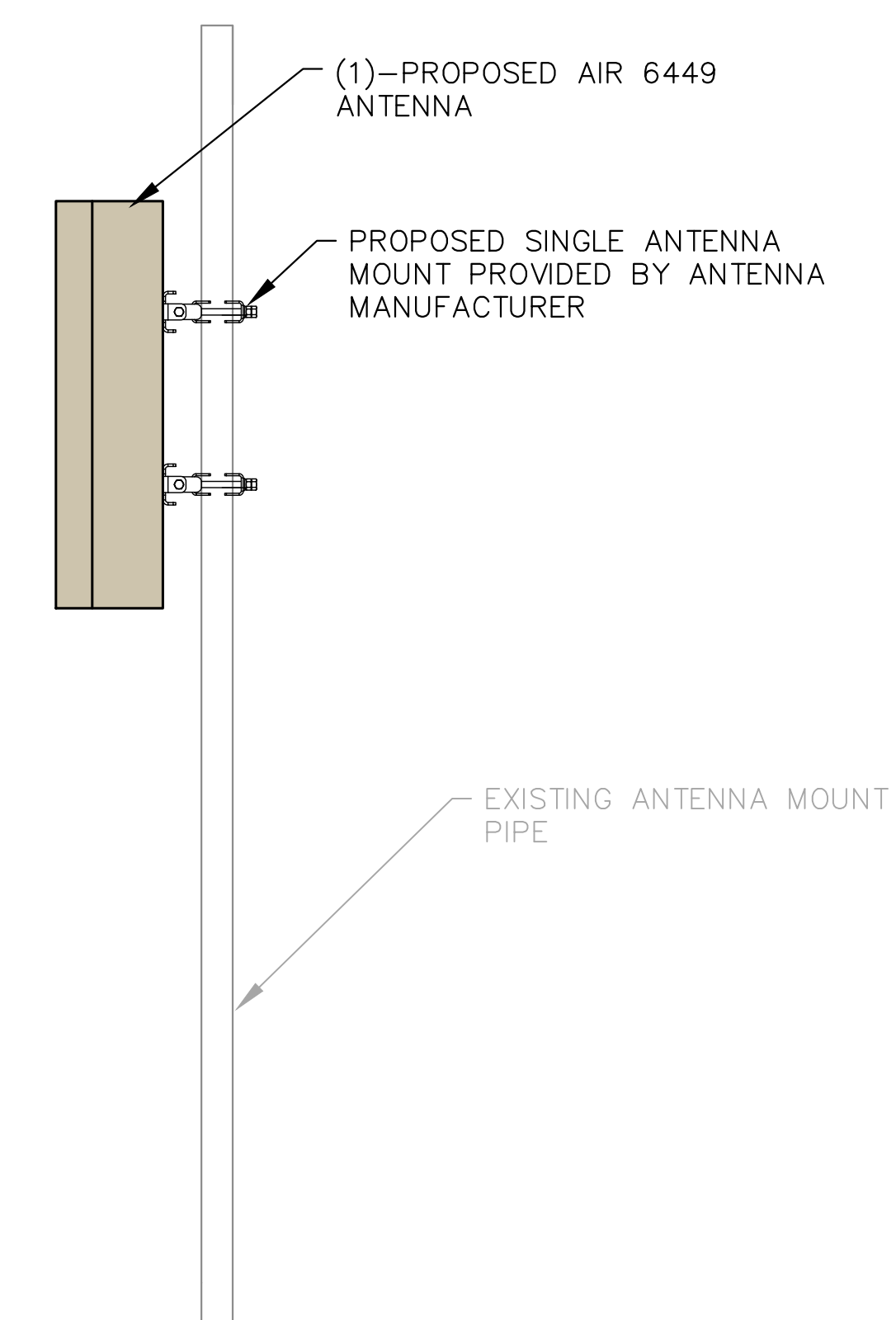
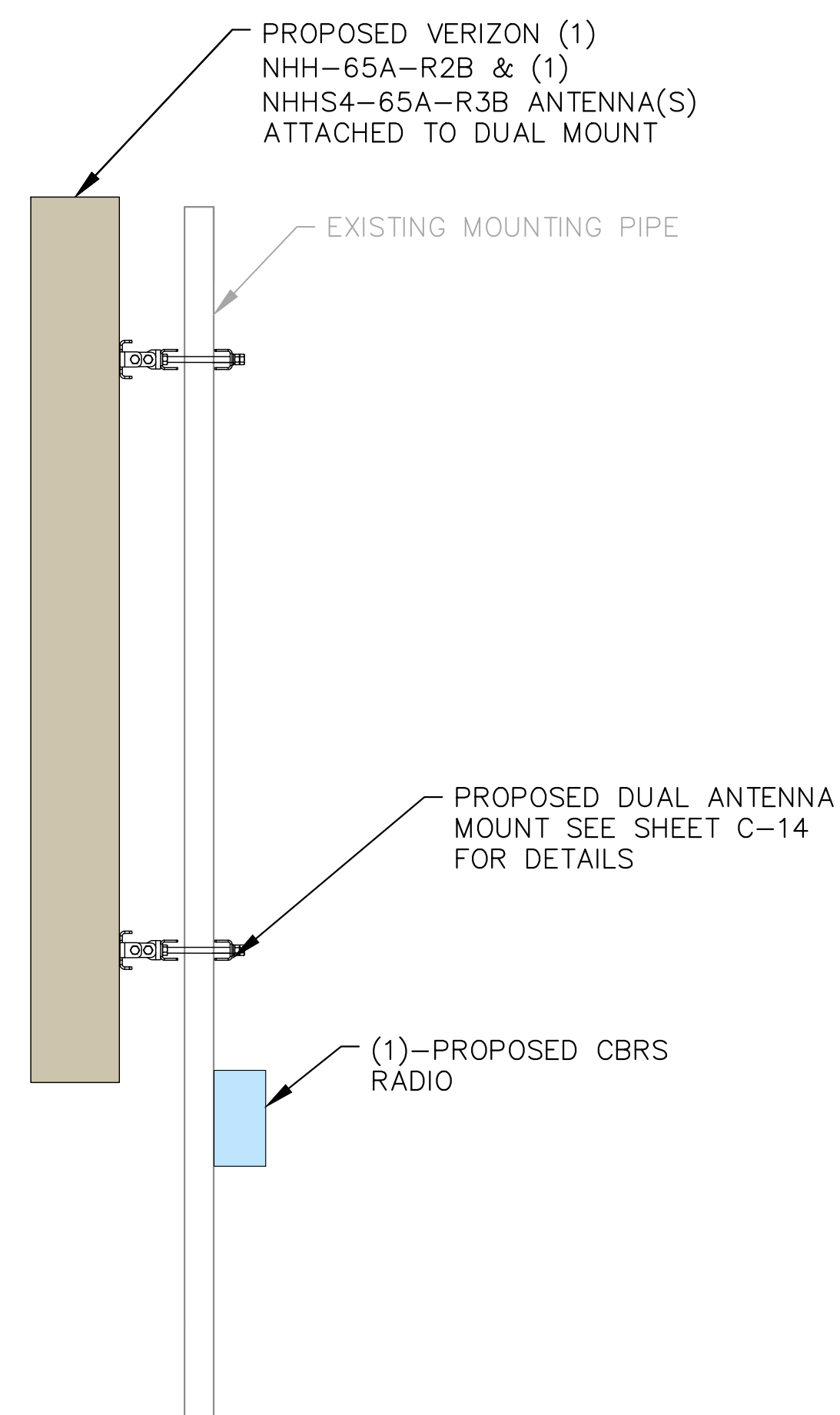
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

MOUNTING DETAILS

SHEET NUMBER:

C-10



1 PROPOSED NHH-65A-R2B & NHHS4-65A-R3B ANTENNA MOUNTING DETAIL

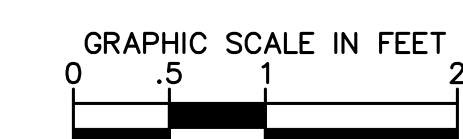
C-10 SCALE: 1" = 1'
SCALE BASED ON 24"X36" ONLY

2 PROPOSED AIR 6449 ANTENNA MOUNTING DETAIL

C-10 SCALE: 1" = 1'
SCALE BASED ON 24"X36" ONLY

NOTES:

- MOUNTING DETAILS SHOWN FOR REFERENCE ONLY.





10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124

PLANS PREPARED BY:



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C	09/26/22	FINAL CD'S	JCH
B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CDs	BAB

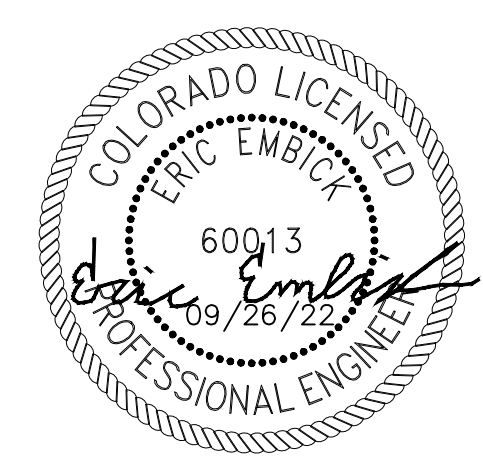
DRAWN BY: CHECKED BY:

BAB **MFF**

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

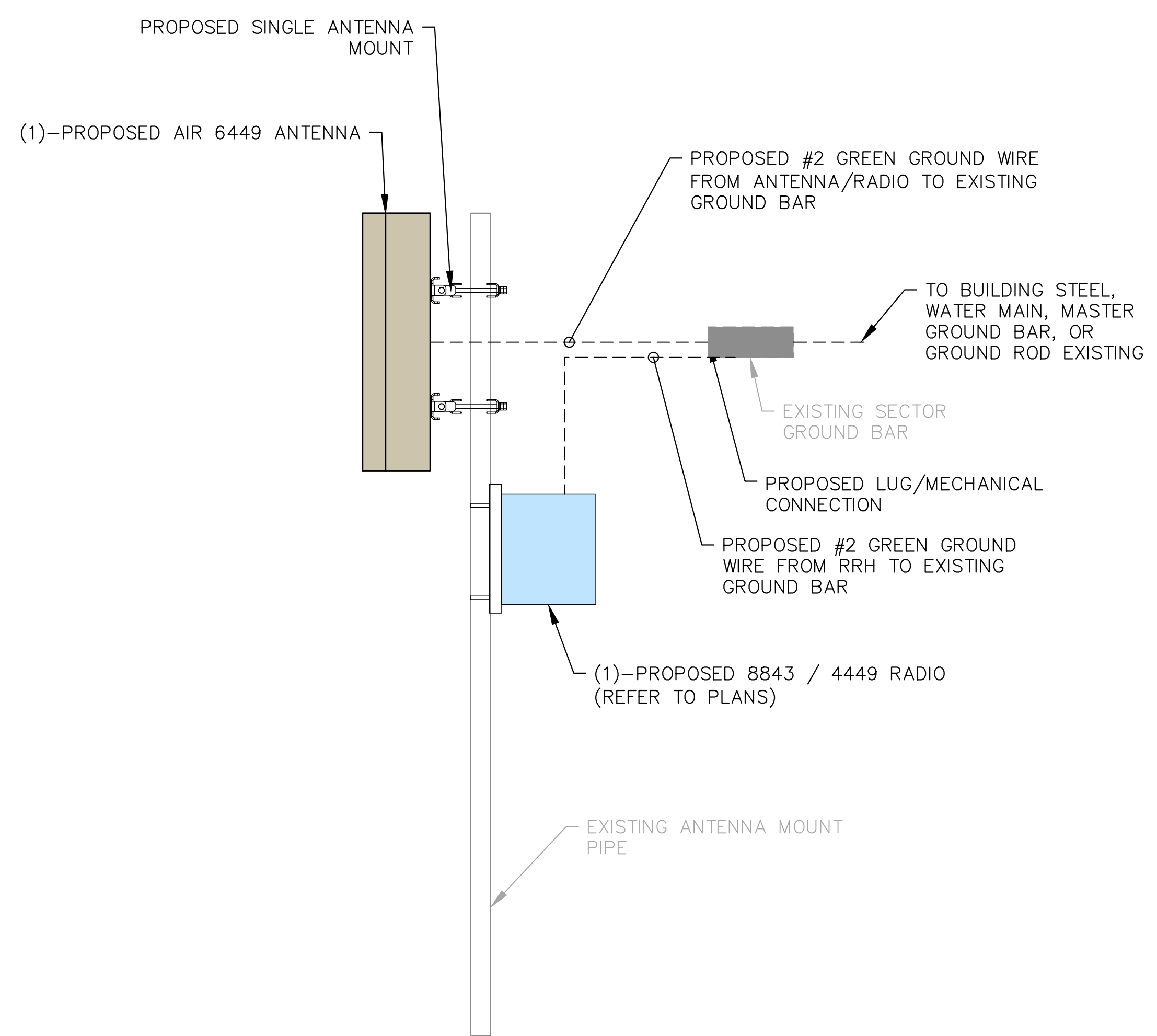
CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

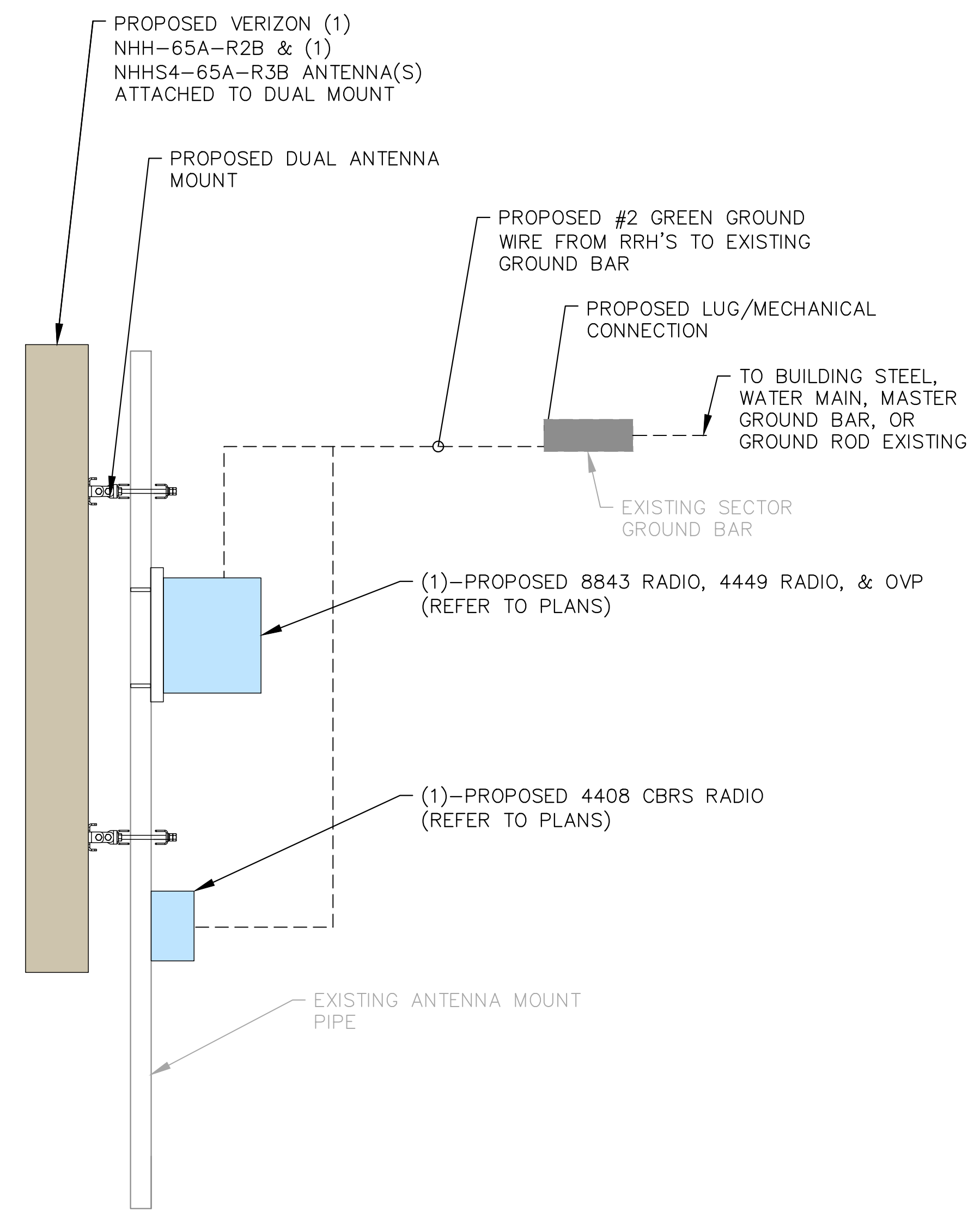
GROUNDING DETAILS

SHEET NUMBER:

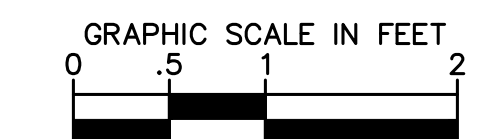
C-11

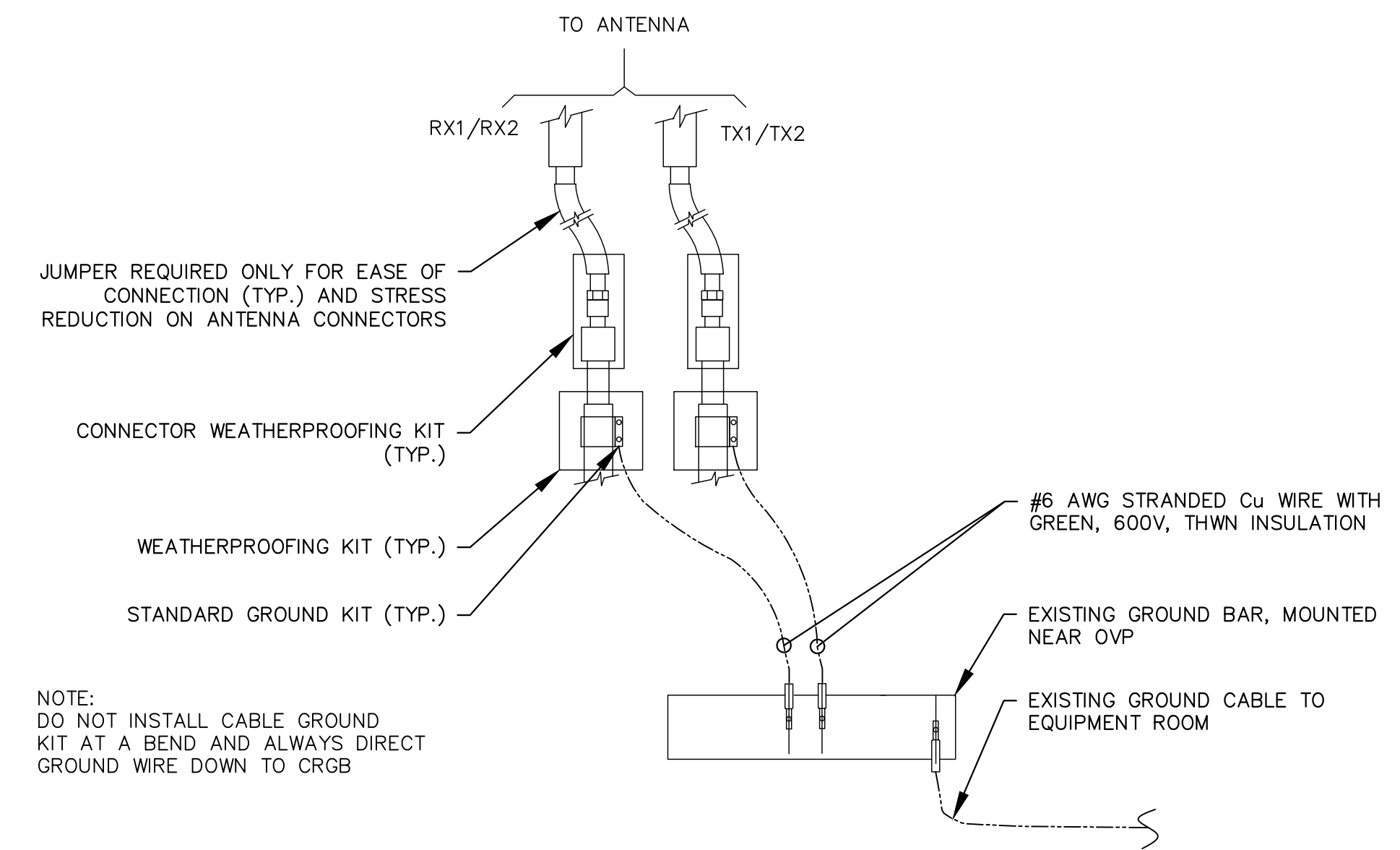


1 PROPOSED VERIZON AIR 6449 ANTENNA GROUNDING DETAIL
C-11 SCALE: 1" = 1'
SCALE BASED ON 24"X36" ONLY

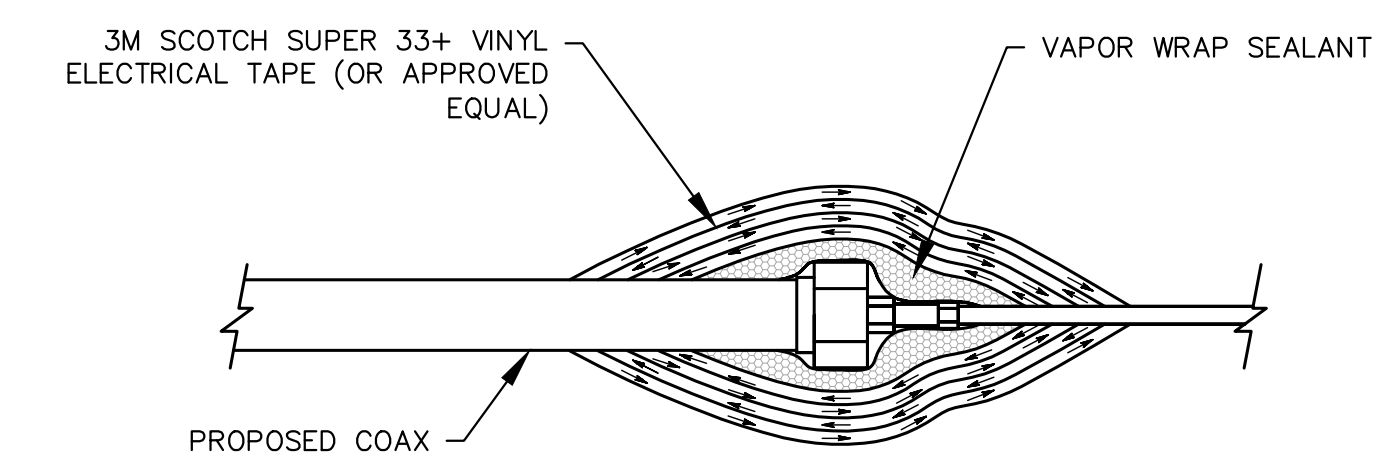


2 PROPOSED NHH-65A-R2B & NHHS4-65A-R3B ANTENNA GROUNDING DETAIL
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SCALE BASED ON 24"X36" ONLY

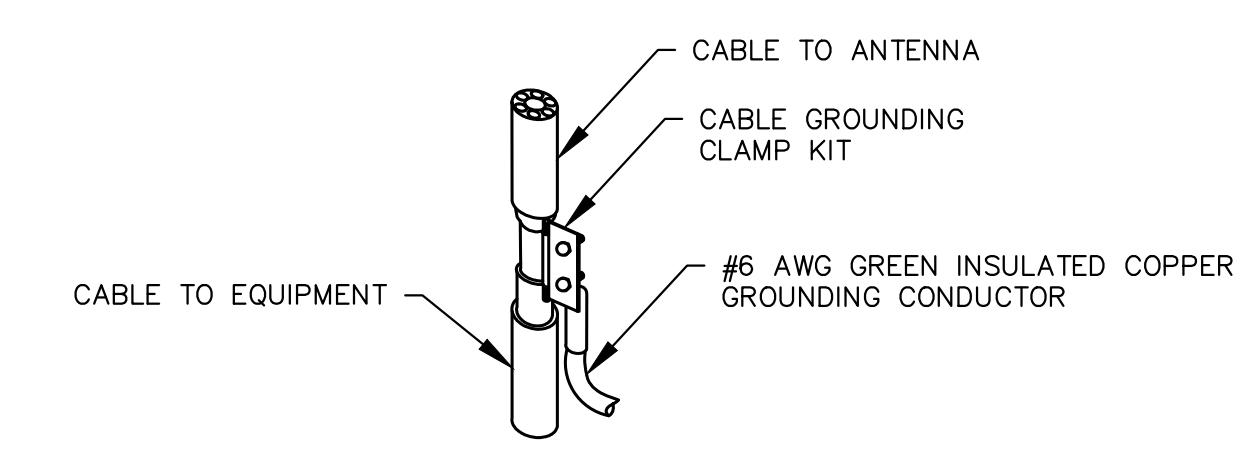




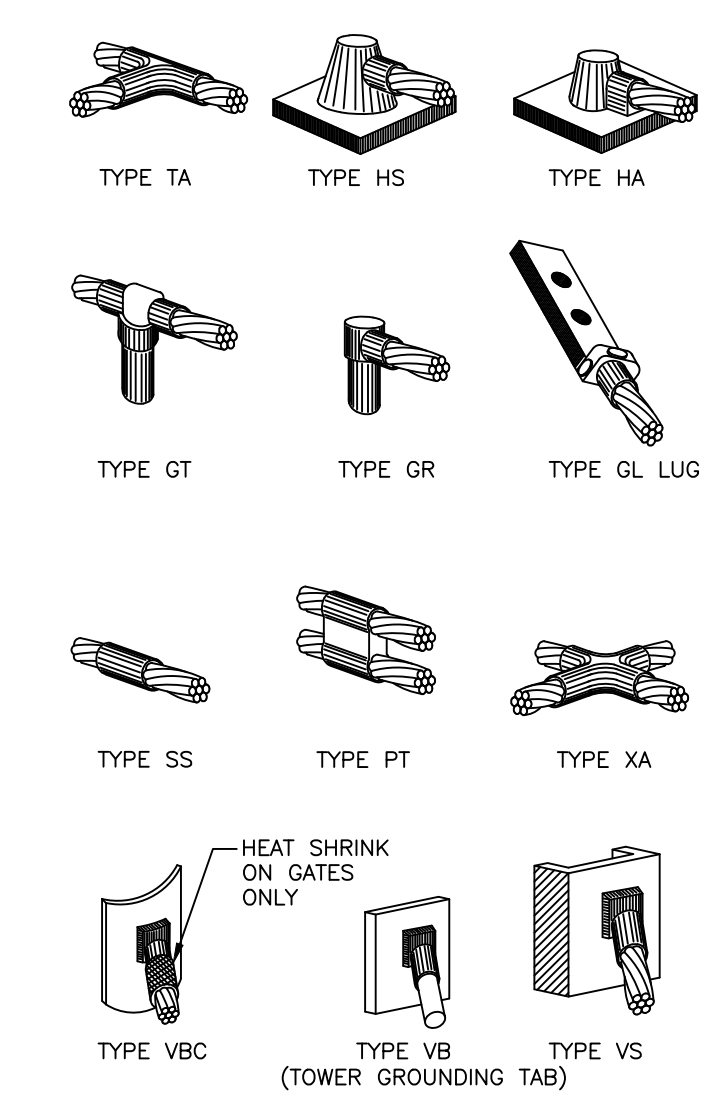
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C-12 **ANTENNA GROUNDING DETAIL**
SCALE: N.T.S.



2
C-12 **WEATHERPROOFING DETAIL**
SCALE: N.T.S.



3
C-12 **TYPICAL CABLE GROUNDING DETAIL**
SCALE: N.T.S.



NOTE:
1. CADWELD "TYPES" SHOWN ABOVE ARE EXAMPLES. PROVIDE APPROPRIATE TYPES AS REQUIRED.

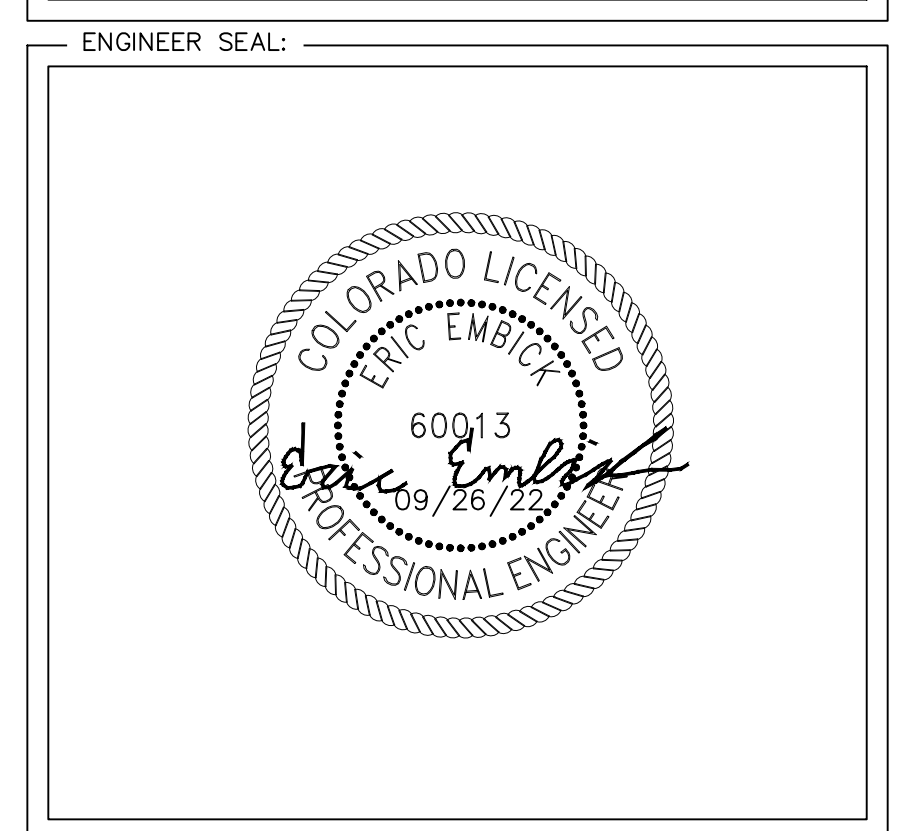
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C-12 **CADWELD DETAIL**
SCALE: N.T.S.

PLANS PREPARED BY:
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DENVER, CO 80237
PHONE (303) 228-2300
WWW.KIMLEY-HORN.COM

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A	06/17/22	CSP KINGSWOOD CD's	BAB

DRAWN BY: **BAB** CHECKED BY: **MFF**

KHA PROJECT NUMBER:
196015030



PROJECT INFORMATION:
CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
C-12

PLANS PREPARED BY:

Kimley»Horn

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PHONE (303) 228-2300
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B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CD's	BAB

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BAB **MFF**

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

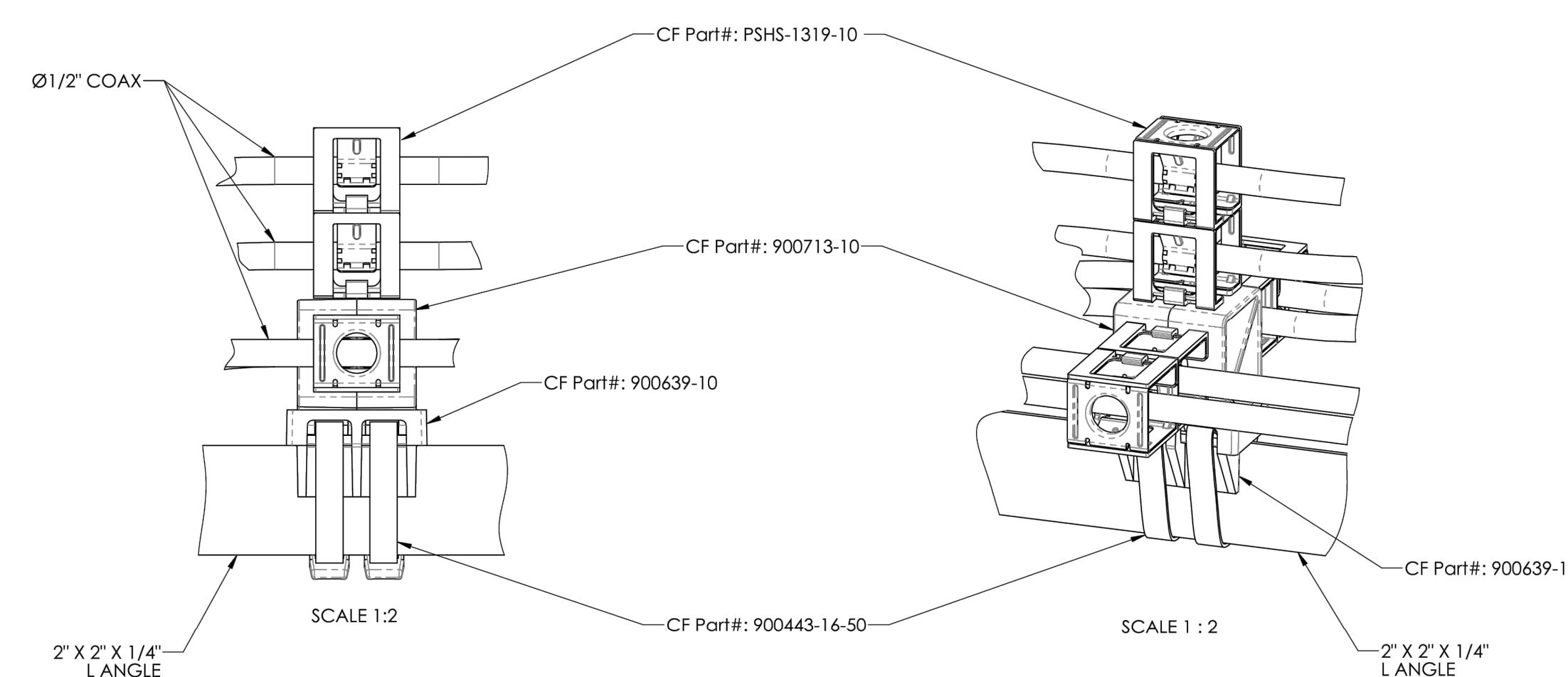
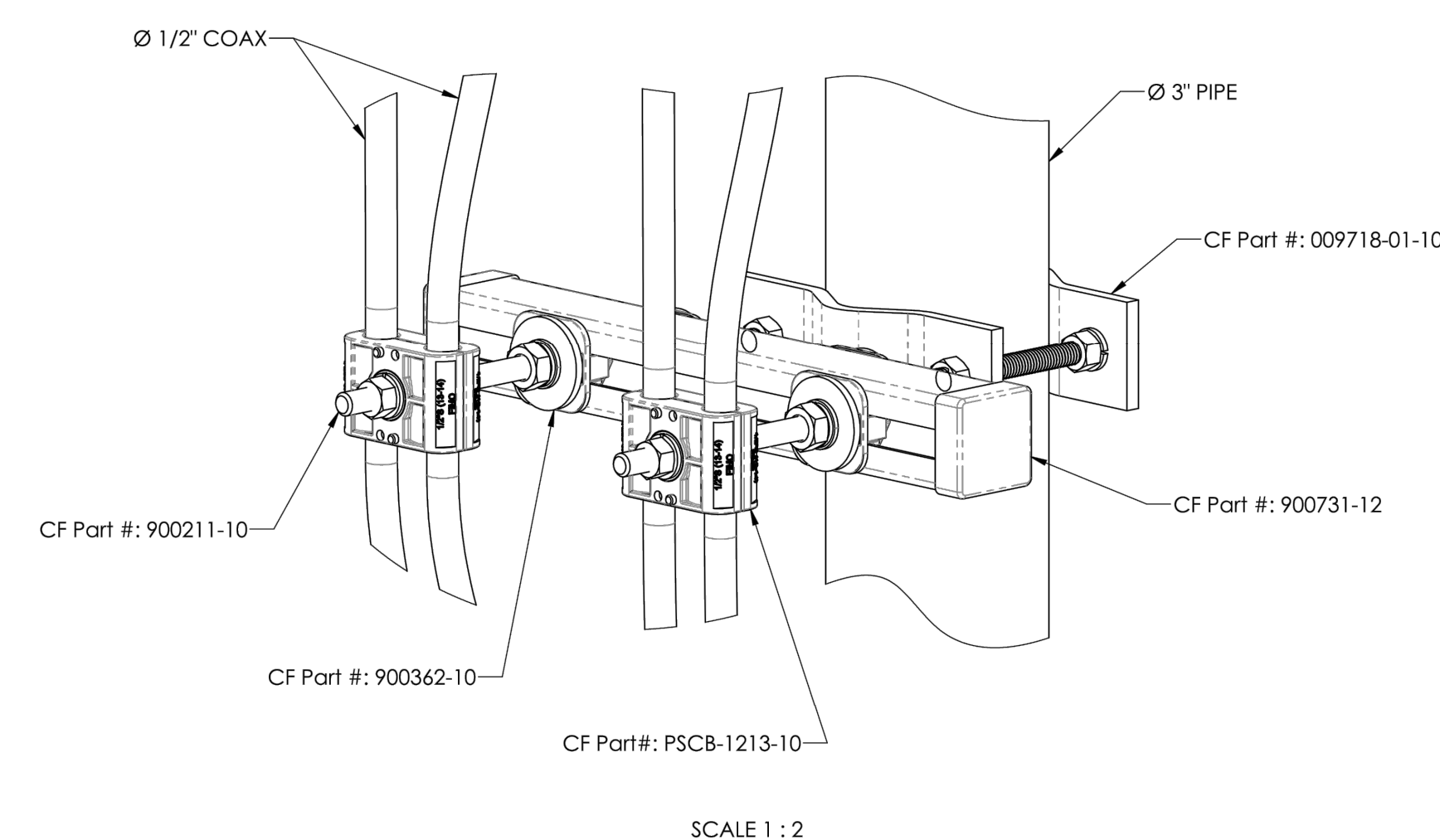
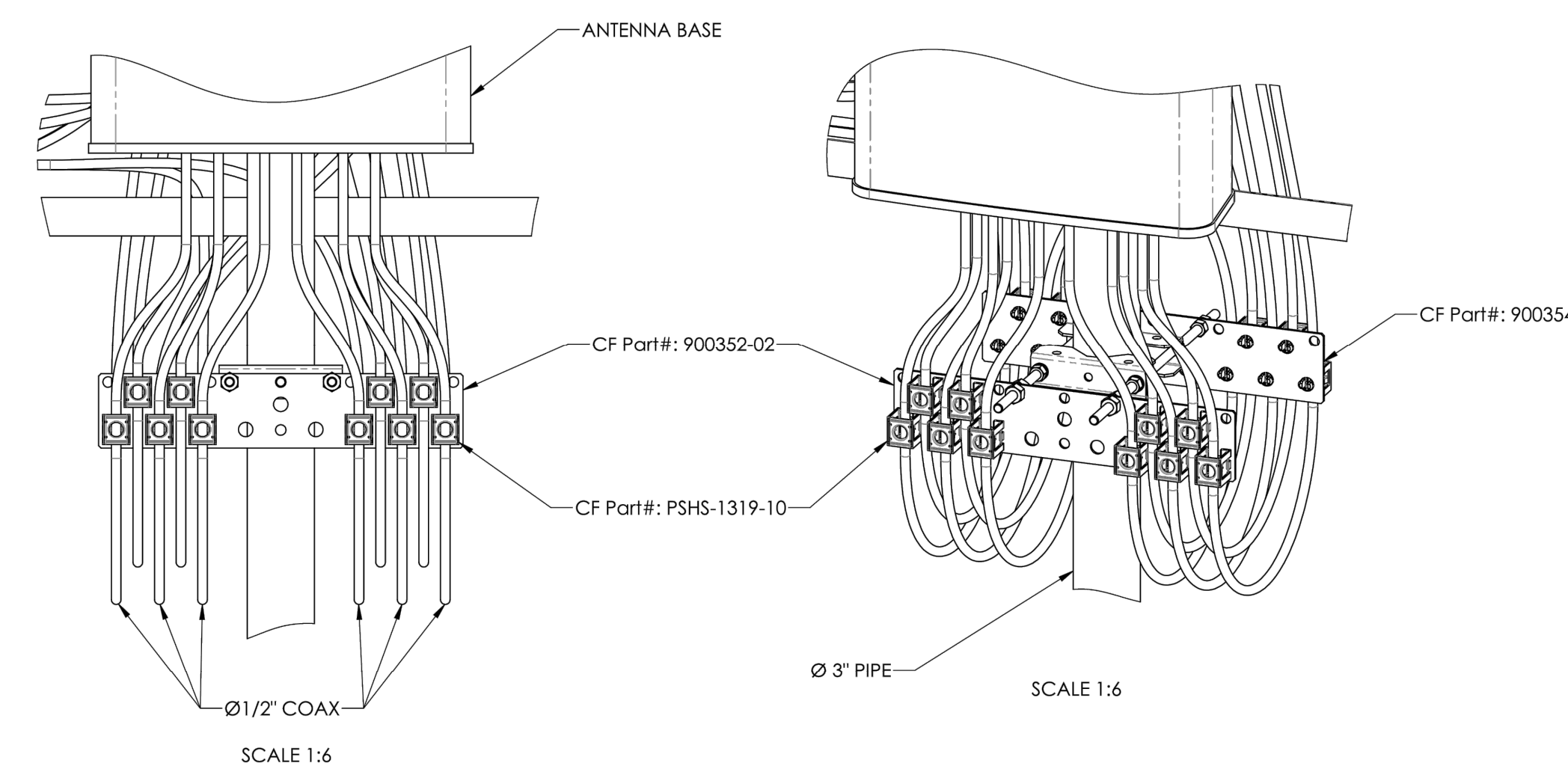
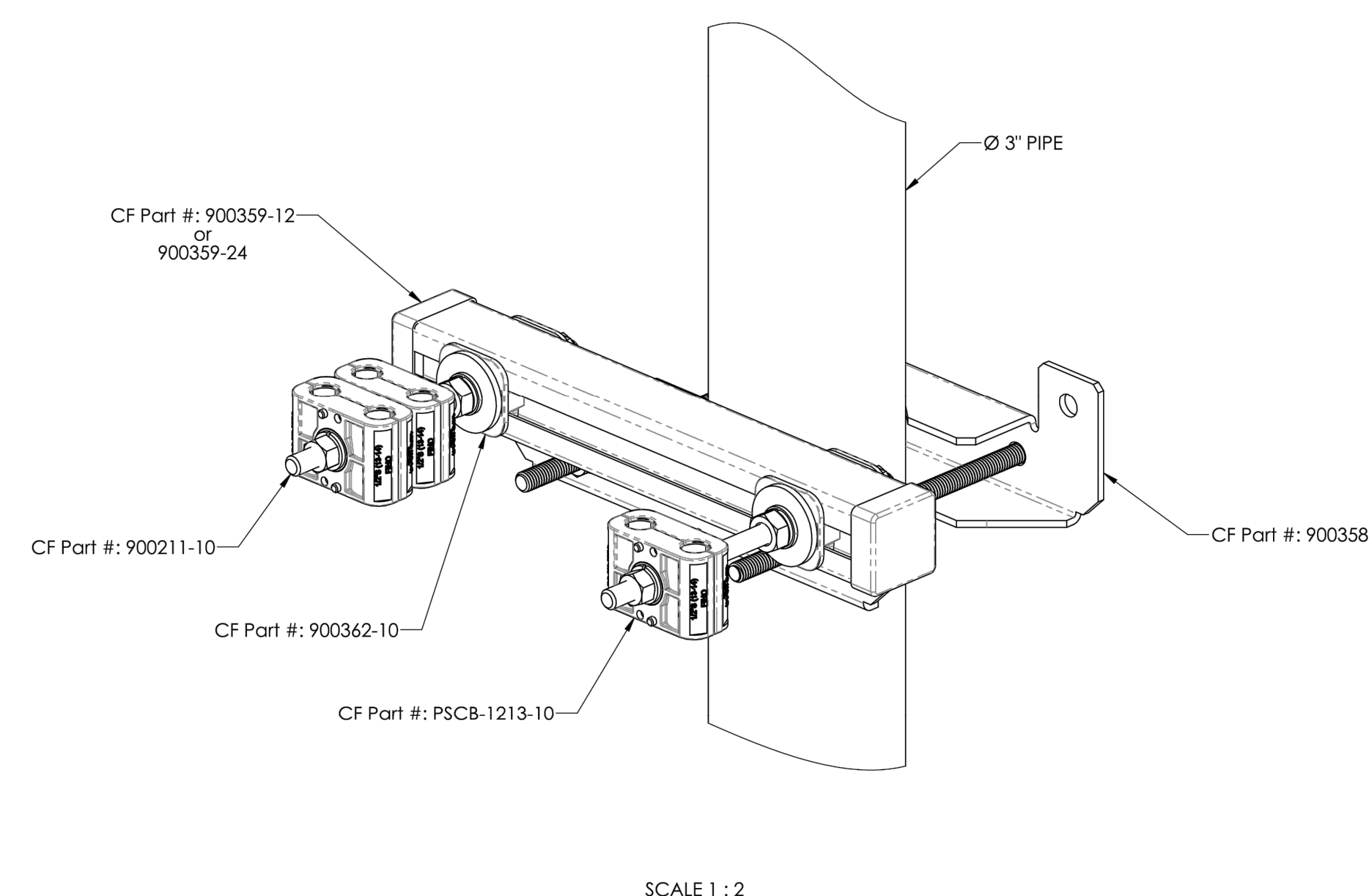
CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

**LOW PIM
MOUNTING DETAILS**

SHEET NUMBER:

C-13





10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124

PLANS PREPARED BY:

Kimley»Horn

4582 S ULSTER ST. #1500
DENVER, CO 80237
PHONE (303) 228-2300
WWW.KIMLEY-HORN.COM

REV. = DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
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B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CD's	BAB

DRAWN BY: CHECKED BY:

BAB **MFF**

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD

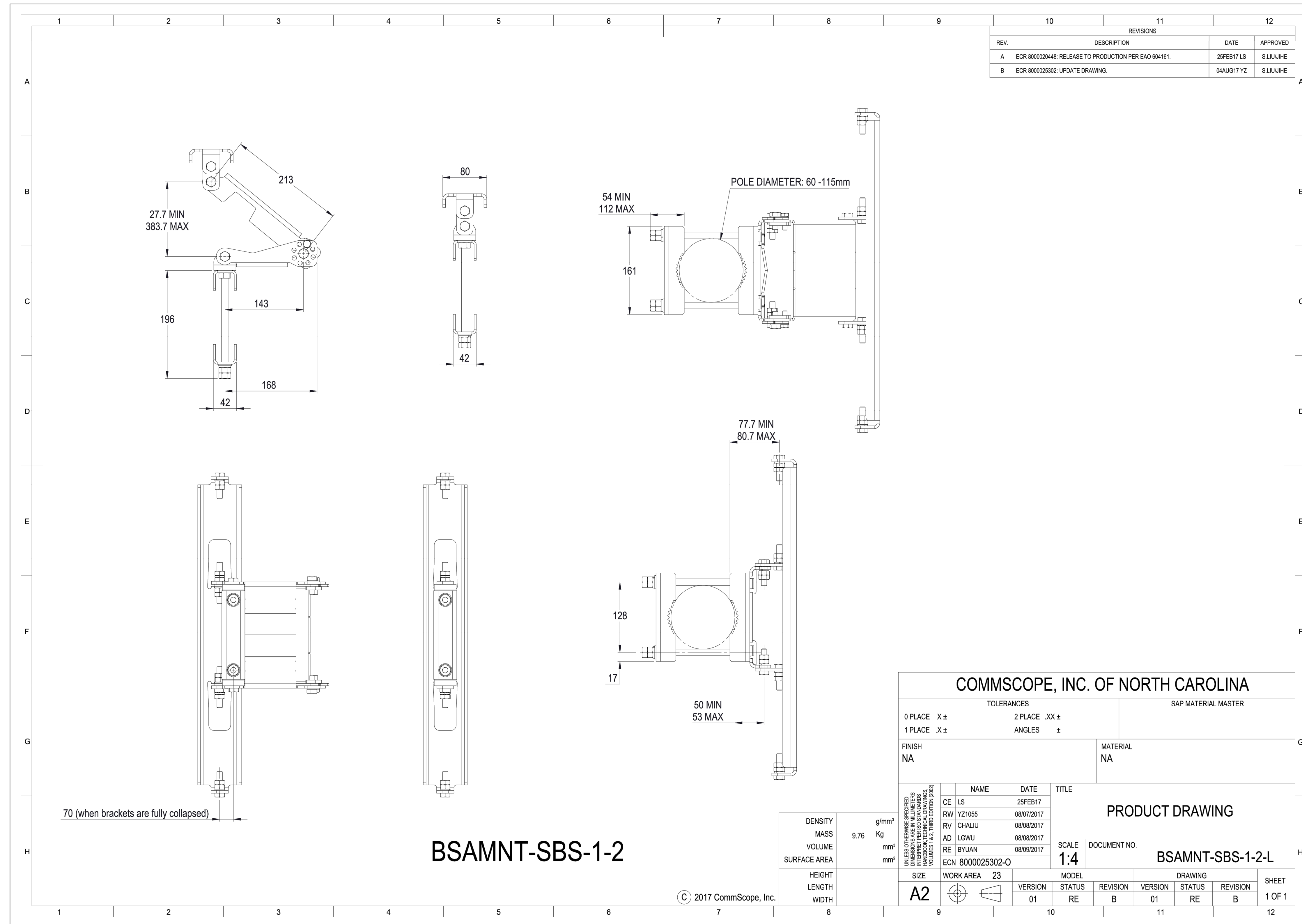
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

**DUAL-MOUNT
DETAILS**

SHEET NUMBER:

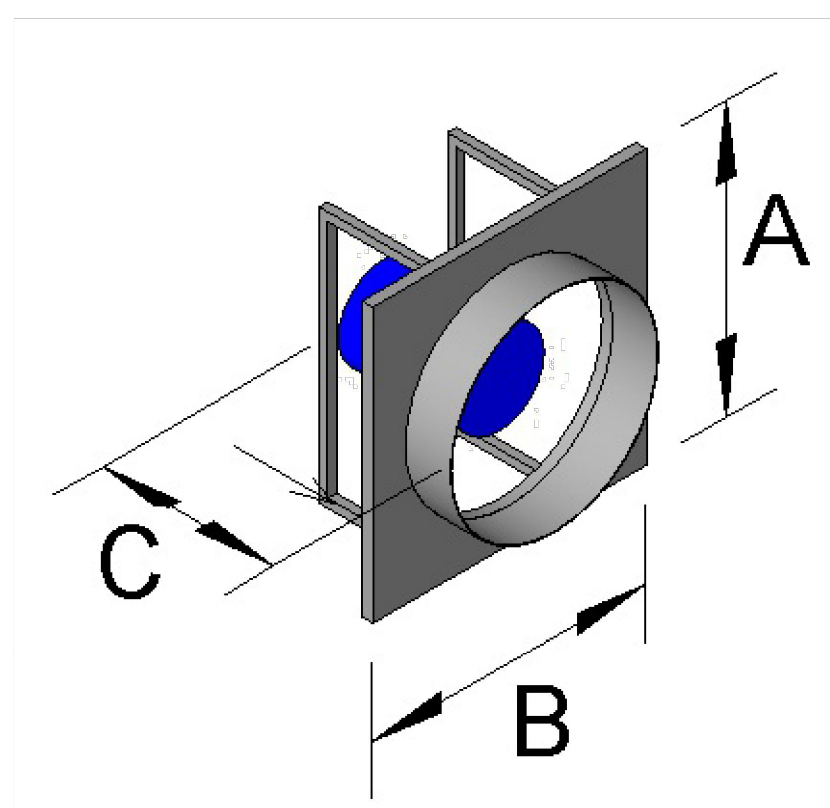
C-14



BSAMNT-SBS-1-2

COMMSCOPE, INC. OF NORTH CAROLINA																							
TOLERANCES		SAP MATERIAL MASTER																					
0 PLACE X±	2 PLACE .XX±																						
1 PLACE .X±	ANGLES ±																						
FINISH NA		MATERIAL NA																					
<table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> <th>TITLE</th> </tr> </thead> <tbody> <tr> <td>CE LS</td> <td>25FEB17</td> <td rowspan="5">PRODUCT DRAWING</td> </tr> <tr> <td>RW YZ1055</td> <td>08/07/2017</td> </tr> <tr> <td>RV CHALIU</td> <td>08/08/2017</td> </tr> <tr> <td>AD LGWU</td> <td>08/08/2017</td> </tr> <tr> <td>RE BYUAN</td> <td>08/09/2017</td> </tr> </tbody> </table>				NAME	DATE	TITLE	CE LS	25FEB17	PRODUCT DRAWING	RW YZ1055	08/07/2017	RV CHALIU	08/08/2017	AD LGWU	08/08/2017	RE BYUAN	08/09/2017						
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SCALE 1:4		DOCUMENT NO. BSAMNT-SBS-1-2-L																					
<table border="1"> <thead> <tr> <th>SIZE</th> <th>WORK AREA</th> <th>MODEL</th> <th>VERSION</th> <th>STATUS</th> <th>REVISION</th> <th>VERSION</th> <th>STATUS</th> <th>REVISION</th> <th>SHEET</th> </tr> </thead> <tbody> <tr> <td>A2</td> <td>23</td> <td></td> <td>01</td> <td>RE</td> <td>B</td> <td>01</td> <td>RE</td> <td>B</td> <td>1 OF 1</td> </tr> </tbody> </table>				SIZE	WORK AREA	MODEL	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	SHEET	A2	23		01	RE	B	01	RE	B	1 OF 1
SIZE	WORK AREA	MODEL	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	SHEET														
A2	23		01	RE	B	01	RE	B	1 OF 1														

Dimensions and Weights		
Label	Value	Description
-	28	Weight w/o accessories (lbs)
A	18	Overall Height (in)
B	18	Overall Width (in)
C	11	Overall Length (in)
-	14	Wall Opening Width (in)
-	14	Wall Opening Height (in)



*All dimensions are in inches.

Page 2 of 2

Version 3.2.0, May 2022

Model: SE1-12-432-D

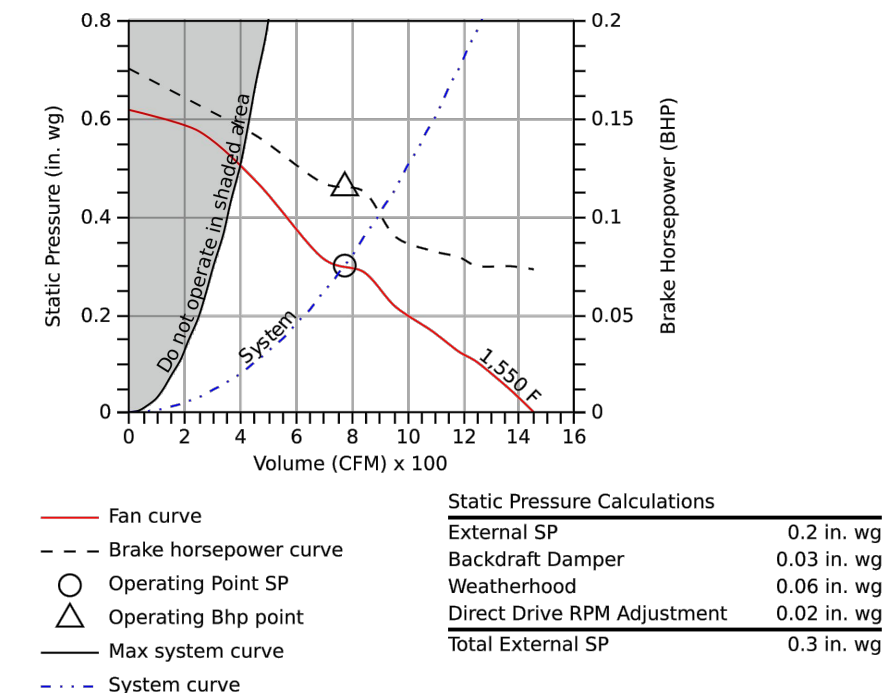
Sidewall Direct Drive Exhaust Fan

Standard Construction Features: Galvanized steel panel with fabricated galvanized steel drive frame (optional wall housing or wall collar). Propeller, aluminum. Direct driven motor in the airstream.

Fan Configuration	
Drive type	Direct

Performance	
Requested Volume (CFM)	750
Actual Volume (CFM)	712
Total External SP (in. wg)	0.3
Fan RPM	1,550
Operating Power (bhp)	0.11
Startup Power (bhp)	0.12
Air Stream Temp (F)	100
Start-up Temp (F)	70
Air Density (lbs/ft ³)	0.055
Elevation (ft)	7023
Static Efficiency (%)	32
Outlet Velocity (ft/min)	941

Motor	
Size (hp)	1/8
V/C/P	115/60/1
NEC FLA (Amps)	NA



Sound	
Octave Bands (Hz)	LWA dBA
Inlet	79 81 70 65 64 61 56 52 71 59 10.8

AMCA WORLDWIDE CERTIFIED RATINGS
SOUND AIR PERFORMANCE
GREENHECK FAN CORPORATION certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to sound and air performance ratings only. Performance certified is for installation Type A. Free Inlet. Free Outlet. Power rating does not include transmission losses. Performance ratings do not include the effects of performance. The AMCA licensed air and/or sound performance data has been modified for installation, appearance, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product. The sound ratings shown are sound power levels in hemispherical series at 1.5 m (5 ft) in a hemispherical free field calculated per ANSI/AMCA Standard 303. Values shown are for Installation Type A. Free Inlet hemispherical sound levels (dBA levels) are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet sound ratings only.

Page 1 of 2

Version 3.2.0, May 2022

1 PROPOSED EXHAUST FAN DETAIL
SCALE: N.T.S

Model: EDJ-401-16x24

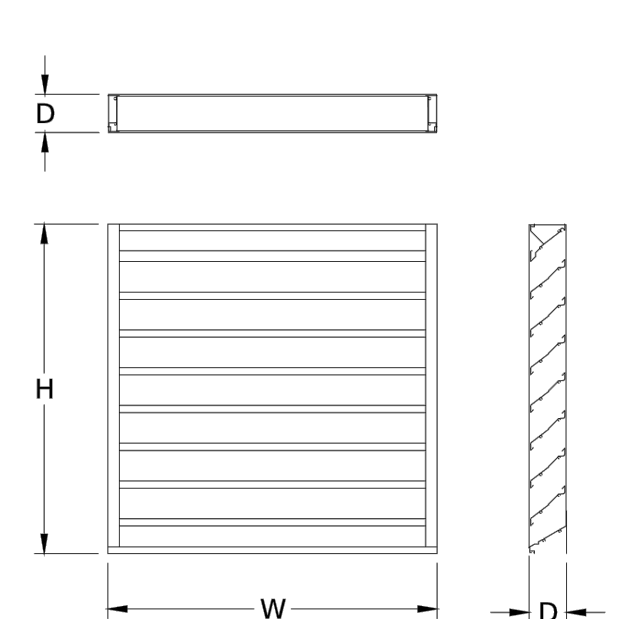
4 in. Drainable Head, J Blade Louver

Certifications/special requirements: AMCA-500-L (Air), AMCA-500-L (Water)

Construction	
Material	All
Blade Type	All
Blade Orientation	Horizontal
Weight (lbs)	8
Mullion Type	No Preference

Dimensional	
Nominal Width (in)	16
Nominal Height (in)	24
Actual Width (in)	15.75
Actual Height (in)	23.75
Blade Depth (in)	4
Sections Wide	1
Sections High	1

Performance	
Application	Intake
Volume (CFM)	750
Pressure Drop (in. wg)	0.08
Free Area Velocity (ft/min)	706
Free Area (ft ²)	1.1
Air Density (lbs/ft ³)	0.075



*Louvers are tested to figure 5.5-6.5
*Sections wide x high are as configured with a base mill finish channel frame product and may vary depending on options selected.

AMCA WORLDWIDE CERTIFIED RATINGS
WATER RESISTANCE AIR PERFORMANCE
GREENHECK FAN CORPORATION certifies that the louver shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance and water penetration ratings.

Page 1 of 1

Version 3.2.0, May 2022

2 PROPOSED LOUVER DETAIL
SCALE: N.T.S

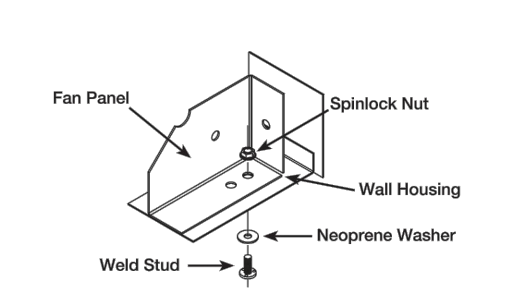
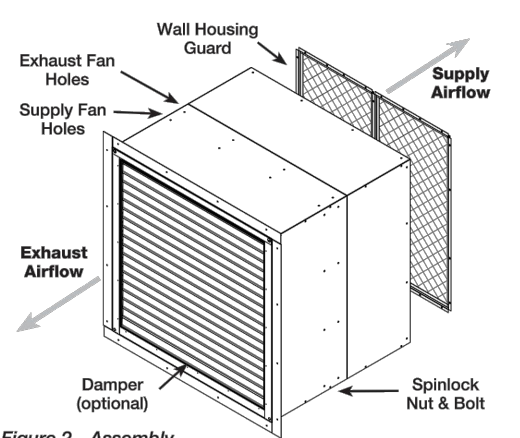
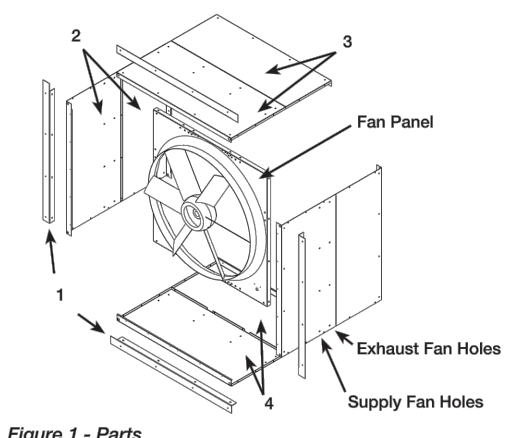
Assembly and Installation Instructions
Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Upon receiving the product, check for any damage that may have occurred during transit and report it immediately to the shipper. Also verify that all accessory items are accounted for.



Wall housings are the safest, most efficient and sturdy platform for mounting sidewall propeller fans and their optional accessories. Wall housings allow for a wide range of mounting arrangements to meet specific applications. It is constructed of galvanized steel with heavy-gauge mounting flanges and pre-punched mounting holes.

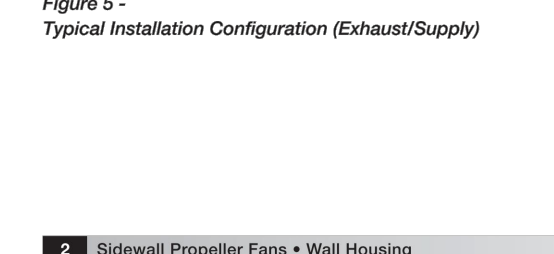
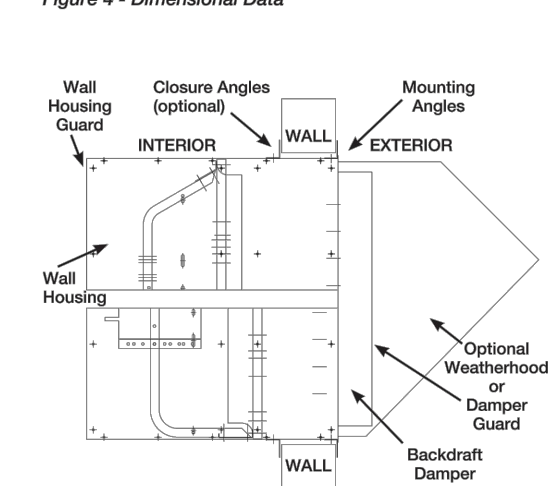
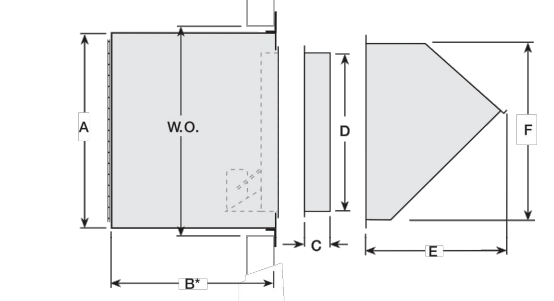
Item	Description	Quantity Size 8-18	Quantity Size 54
1	Wall Housing Mounting Angle	4	4
2	Side Panels	2	4
3	Top Panels	1	2
4	Bottom Panels	1	2
-	Fasteners	1 bag	1 bag

NOTE: Unit sizes 8-18 use spirolock fasteners in lieu of weldnuts as noted in these instructions.
NOTE: Figure 1 shows the parts for size 54. Sizes 8-18 will not require two pieces to make up the side, top and bottom panels.



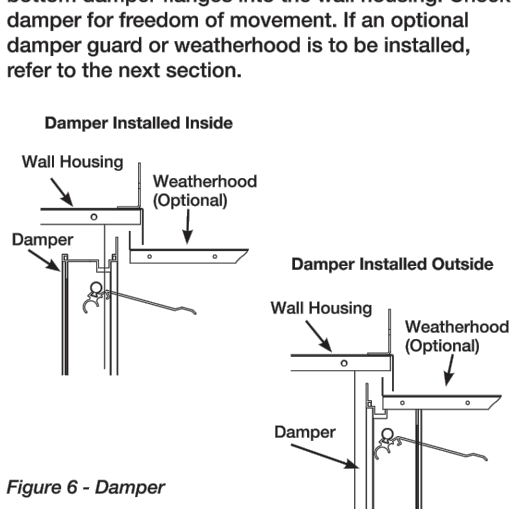
Size	Wall Housing		Damper Guard		Weatherhood		Damper	Mounting Flange	Material Gauge (ga) Thickness
	A	B*	W.O.	C	D	E			
8	13 1/2 (337)	19 (483)	14 1/2 (368)	5 1/2 (140)	10 1/2 (266)	13 1/2 (337)	11 1/2 (289)	10 1/2 (267)	10 (254)
10	15 1/2 (397)	19 (483)	16 1/2 (418)	6 1/2 (165)	12 1/2 (317)	14 1/2 (371)	11 1/2 (289)	10 1/2 (267)	12 (305)
12	18 1/2 (464)	23 (584)	19 1/2 (498)	7 1/2 (191)	14 1/2 (368)	16 1/2 (418)	13 1/2 (337)	11 1/2 (289)	14 (356)
14	20 1/2 (514)	26 (662)	21 1/2 (540)	8 1/2 (216)	16 1/2 (418)	17 1/2 (448)	13 1/2 (337)	11 1/2 (289)	16 (406)
16	22 1/2 (564)	27 (686)	23 1/2 (591)	9 1/2 (241)	18 1/2 (468)	19 1/2 (498)	13 1/2 (337)	11 1/2 (289)	18 (456)
18	24 1/2 (614)	28 (711)	25 1/2 (641)	10 1/2 (266)	20 1/2 (514)	22 (559)	13 1/2 (337)	11 1/2 (289)	20 (508)
20	26 1/2 (664)	32 (813)	27 1/2 (698)	11 1/2 (291)	22 1/2 (564)	24 1/2 (614)	13 1/2 (337)	11 1/2 (289)	22 (559)
24	32 1/2 (813)	37 (940)	33 1/2 (857)	14 1/2 (368)	26 1/2 (662)	28 1/2 (729)	13 1/2 (337)	11 1/2 (289)	26 (662)
30	38 1/2 (972)	38 (955)	39 1/2 (1010)	16 1/2 (418)	32 1/2 (813)	29 1/2 (740)	13 1/2 (337)	11 1/2 (289)	32 (813)
36	44 1/2 (1124)	39 (971)	41 1/2 (1050)	18 1/2 (468)	38 1/2 (972)	33 (838)	13 1/2 (337)	11 1/2 (289)	38 (963)
42	50 1/2 (1280)	44 (1118)	45 1/2 (1154)	20 1/2 (514)	44 1/2 (1124)	35 1/2 (908)	13 1/2 (337)	11 1/2 (289)	44 (1118)
48	56 1/2 (1432)	44 (1118)	47 1/2 (1197)	22 1/2 (564)	50 1/2 (1276)	40 1/2 (1029)	13 1/2 (337)	11 1/2 (289)	50 (1276)
54	62 1/2 (1584)	52 (1312)	53 1/2 (1378)	24 1/2 (614)	56 1/2 (1428)	44 1/2 (1124)	13 1/2 (337)	11 1/2 (289)	56 (1428)

*B dimension will increase by 6 in. (152 mm) when a heavy duty motorized backdraft damper is specified. For complete dimensional information refer to submittal. All dimensions given in inches (mm).

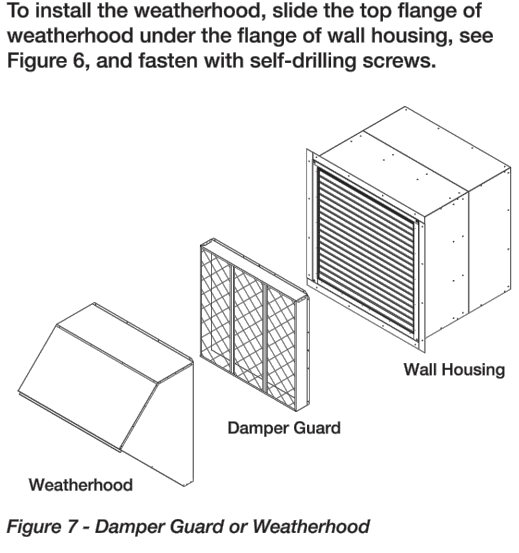


- Assembly**
- Determine if a supply fan or exhaust fan is to be used in the wall housing (see Figure 5). Two rows of holes are provided for attaching the wall housing panels to the fan panel.
NOTE: Exhaust fans are mounted farthest from the damper end. Supply fans are mounted nearest to the damper end (see Figure 5). Damper end has small holes in face of the wall housing. The guard end has larger extruded holes.
 - Using weldnuts and neoprene washers, attach the wall housing bottom panel (item 4) to the bottom of the fan panel. With the weldnut heads and neoprene washers on the exterior of the housing, refer to Figure 3, place hex nuts on the spirolock bolts and finger tighten.
 - Attach side panels to the fan panel, making sure they overlap the bottom panel for weatherproofing. Install weldnuts, neoprene washers and hex nuts. Finger tighten all fasteners.
 - Attach the top panels to the fan panel, assuring the formed edges overlap the side panels for weatherproofing. Install weldnuts, neoprene washers and hex nuts. Finger tighten all fasteners.
 - Install caplugs in the unused holes of the top and side panels to keep the wall housing weather-tight. Unused holes in the bottom panel are used as drain holes. Tighten all fasteners securely.
 - A versatile feature of the Greenheck wall housing is a mounting flange which may be used in either a standard arrangement (Figure 5) or moved anywhere along the housing. This permits the distance the wall housing protrudes outside or inside the wall to be varied. 5/16 inch holes must be drilled in the housing if the factory punched holes are not used.
 - Conduit holes are provided in each end of standard housings.

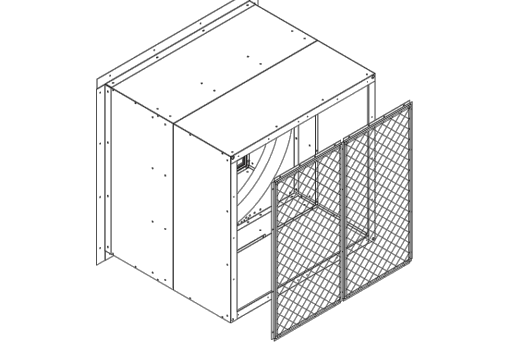
Damper Installation
To install an optional damper, refer to Figure 6. Using a pneumatic or electric drill, run the self-drilling screws through the holes provided in the side and bottom damper flanges into the wall housing. Check damper for freedom of movement. If an optional damper guard or weatherhood is to be installed, refer to the next section.



Damper Guard or Weatherhood Installation
To install the damper guard, center guard over damper and fasten to wall housing using the self-drilling screws. Refer to Figure 7.



Wall Housing Guard Installation
Attach wall housing guard to wall housing using the 1/4-20 x 3/4 thread cutting screw with washer. Refer to Figure 8.



Fit for Sidewall Propeller Fan Accessories
Figure 9 reveals the correct fit for sidewall propeller fans after all optional accessories have been assembled and installed.



NOTES:
• REFERENCE THERMAL ANALYSIS BY KIMLEY-HORN DATED 06-17-2022 FOR FURTHER INFORMATION/DETAILS

3 PROPOSED EXHAUST FAN HOUSING DETAIL
SCALE: N.T.S

10000 PARK MEADOWS DRIVE,
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REV: DATE: DESCRIPTION: BY:

C	09/26/22	FINAL CD'S	JCH
B	08/03/22	REVISED	MAK
A	06/17/22	CSP KINGSWOOD CD'S	BAB

DRAWN BY: CHECKED BY:

BAB MFF

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

EXHAUST FAN & LOUVER DETAILS

SHEET NUMBER:

C-15

1.0 INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) conducted a thermal assessment of the subject property's (3) antenna screening enclosures located at 15475 Gleneagle Dr., Colorado Springs, CO 80132.

The (3) antenna screening enclosures located at the address above were assessed for potential overheating conditions. The purpose of this report is to outline the effect on temperature conditions of the (3) antenna screening enclosures due to the addition of proposed Verizon Wireless equipment and provide a feasible solution for temperature management.

The opinions and conclusions expressed in this report were based upon information determined from Kimley-Horn's Thermal Analysis and may be amended or supplemented should new information become available. No other warranties or guarantees, expressed or implied, are made or intended. This report has been prepared solely for Verizon Wireless.

2.0 SITE MAP

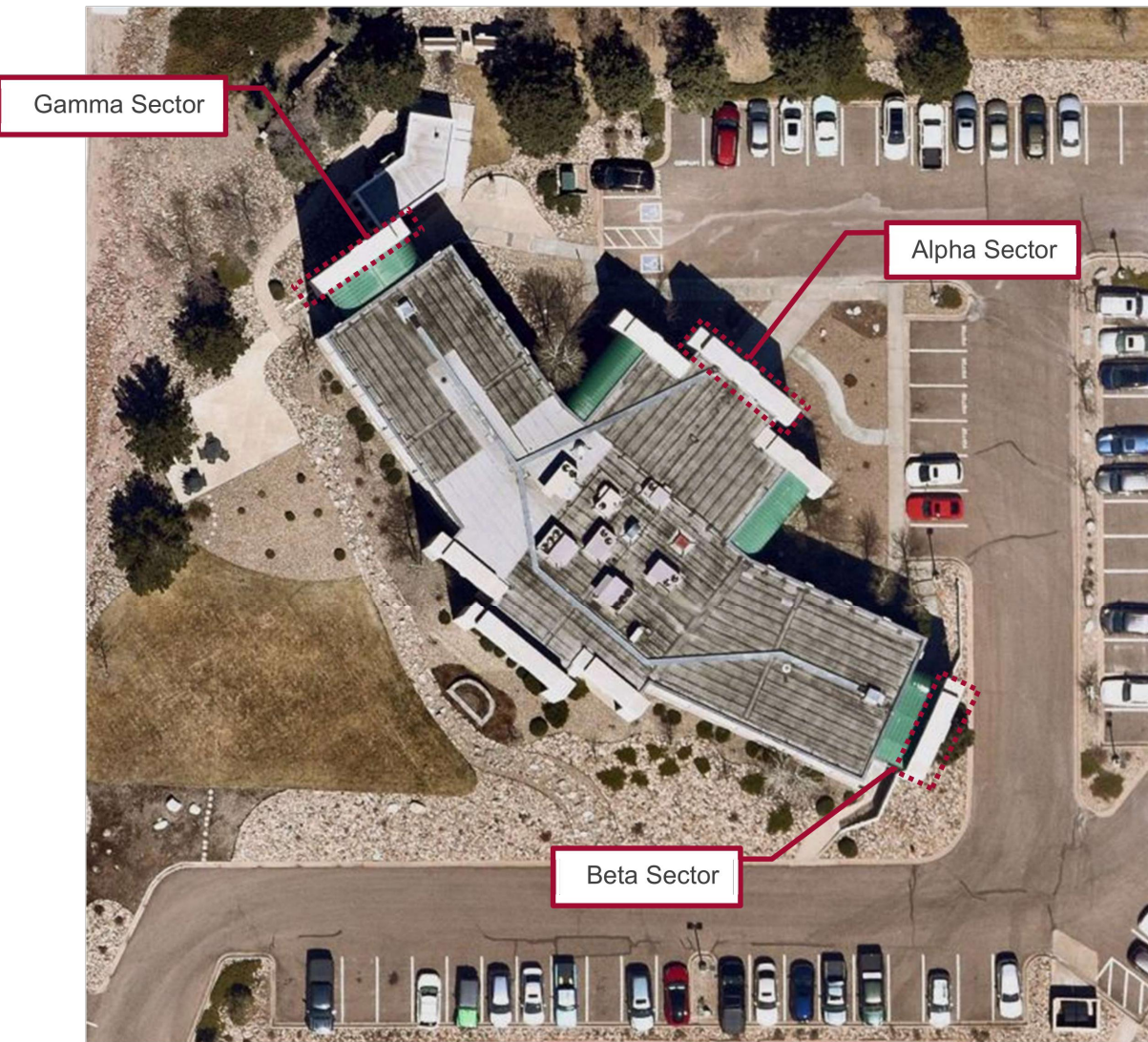


Figure 2a Overall Building

3.0 SUMMARY OF FINDINGS

Based on our understanding of the scope of the project as described in the Introduction (see page 4), our assessment findings of the (3) antenna screening enclosures are as follows:

- Verizon Wireless proposes to install the following heat generating equipment, (typical per sector) -
 - (1) Ericsson 8843 Radios
 - (1) Ericsson 4449 Radios
 - (1) Ericsson 4408 Radios
 - (1) Ericsson AIR 6449 Antennas w/ Integrated Radios
- The existing structures are FRP transparent antenna screening enclosures. Beta and Gamma enclosures are the same size with exposed surface areas of approximately 580 sqft., and the Alpha enclosure is slightly larger with an exposed surface area of approximately 710 sqft.
- The max operating temperature for the proposed equipment is 131 (°F).
- Ambient air temperature is 100 (°F) and room set point is 120 (°F).
- The structure walls have an absolute thermal resistance, R = 10 (°F-ft²-hr/BTU).
- The estimated total heat load due to proposed equipment and solar radiation is 13,106 (Btu/hr) for the Beta and Gamma sectors and 13,365 (Btu/hr) for the Alpha sector.

4.0 OBSERVATIONS

Structural Observations

Kimley-Horn's Eric Embick, P.E. arrived on site to perform a structural mapping of the (3) existing antenna screening enclosures located at 15475 Gleneagle Dr., Colorado Springs, CO 80132 on April 20, 2022.

The areas of investigation are (3) antenna screening enclosures with an exposed surface area of approximately 580 square feet for the Beta and Gamma sectors and 710 square feet for the Alpha sector. The intent of this investigation is to evaluate and assess the potential for overheating of the proposed Verizon Wireless equipment.

The condition and observations of the (3) existing antenna screening enclosures are as follows:

- The existing Verizon Wireless screening enclosures measure 7'-0" in height and 4'-6" in depth.
- The existing Verizon Wireless equipment configuration consists of:
 - (10) Antennas, to be removed and replaced
 - (6) Radios, to be removed and replaced
 - (3) OVPs, to be removed and replaced
- There are existing exhaust fans (flow rate unknown) and intake louvers positioned approximately 6' apart from one another.
- The Beta and Gamma enclosures are the same size, and the Alpha enclosure is larger.
- The existing enclosure framing consists of cripple studs spaced 24" on center, see Figure 4b.

5.0 DISCUSSION AND RECOMMENDATIONS

Based on our Thermal Analysis conducted on 6/16/2022, Kimley-Horn has determined that the existing exhaust fan and cool air intake louver are insufficient due to the existing mounting configuration:

- The existing exhaust fan and louver are currently installed in proximity too near to one another and are insufficient to provide cooling for the proposed equipment configuration, see Figure 4a.
- Install (1) Greenheck SE1-12-432-D Sidewall Direct Drive Exhaust Fan, or equivalent, on the upper portion of each screening enclosure (total of 3 fans).
*Note - existing fans may be relocated and re-used for 750 CFM (min)
- Install (1) Green Heck EDJ-401-16x24 4 in. Drainable Blade Louver, or equivalent, on the lower portion of each screening enclosure to sweep air most efficiently across the room and provide cooling for the proposed Verizon Wireless Equipment (total of 3 louvers).
- Integrate the proposed exhaust fan with the existing thermostat if feasible. If not, a replacement thermostat will need to be purchased to regulate room temperature.

Thermal Analysis

Site Name: CSP-Kingswood (Alpha)

Internal Load	Watts	Q
(1) Ericsson 8843 Radio (1,200 W each)	1200	4095.6
(1) Ericsson 4449 Radio (1,080 W each)	1080	3686.04
(1) Ericsson 6449 AIR (1,040 W each)	1040	3549.52
(1) Ericsson 4408 Radio (180 W each)	180	614.34
SUM		11946 Btu/hr

Exposed Room Area	Sqft
Walls	561.25
Roof	148.5
SUM	709.75

Solar Load	Q = U*A*ΔT (Btu/hr)
	709.75 1064.63 1419.5 1774.38 2129.25 2200.23

Total Load	Internal Load + Solar Load (Btu/hr)
	12655.25 13010.1 13365 13719.9 14074.8 14145.7

Load Calcs	Room Setpoint (131°F = max)	110	115	120	125	130	131
Outside Air Temp (°F)	100	100	100	100	100	100	100
ΔT (°F) =	10	15	20	25	30	31	
cfm req'd =	1406.14	963.71	742.5	609.77	521.29	507.02	

Thermal Analysis

Site Name: CSP-Kingswood (Beta & Gamma)

Internal Load	Watts	Q
(1) Ericsson 8843 Radio (1,200 W each)	1200	4095.6
(1) Ericsson 4449 Radio (1,080 W each)	1080	3686.04
(1) Ericsson 6449 AIR (1,040 W each)	1040	3549.52
(1) Ericsson 4408 Radio (180 W each)	180	614.34
SUM		11946 Btu/hr

Exposed Room Area	Sqft
Walls	463.25
Roof	117
SUM	580.25

Solar Load	Q = U*A*ΔT (Btu/hr)
	580.25 870.375 1160.5 1450.63 1740.75 1798.78

Total Load	Internal Load + Solar Load (Btu/hr)
	12525.75 12815.9 13106 13396.1 13686.3 13744.3

Load Calcs	Room Setpoint (131°F = max)	110	115	120	125	130	131
Outside Air Temp (°F)	100	100	100	100	100	100	100
ΔT (°F) =	10	15	20	25	30	31	
cfm req'd =	1391.75	949.32	728.11	595.38	506.9	492.63	



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DRAWN BY: CHECKED BY:

BAB MFF

KHA PROJECT NUMBER:

196015030

ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

THERMAL REPORT
FINDINGS

SHEET NUMBER:

C-16

NOTES:

- REFERENCE THERMAL ANALYSIS BY KIMLEY-HORN DATED 06-17-2022 FOR FURTHER INFORMATION/DETAILS



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EL PASO COUNTY

SHEET TITLE:

**EXISTING SECTOR
PHOTOS**

SHEET NUMBER:

C-17



1 ALPHA SECTOR PHOTO
C-17 SCALE: N.T.S.



2 BETA SECTOR PHOTO
C-17 SCALE: N.T.S.



3 GAMMA SECTOR PHOTO
C-17 SCALE: N.T.S.

ROOFTOP POST MODIFICATION INSPECTION (PMI) REPORT REQUIREMENTS

DOCUMENTS AND PHOTOS REQUIRED FROM CONTRACTOR - ROOFTOP MOUNT MODIFICATIONS

PURPOSE:

THE PURPOSE OF THESE NOTES ARE SUCH THAT THE CONTRACT PROVIDES THE REQUESTED DOCUMENTATION THAT WILL ALLOW KIMLEY-HORN TO COMPLETE THE REQUIRED ROOFTOP MOUNT DESKTOP REVIEW OF THE POST MODIFICATION INSPECTION REPORT.

CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING:

- 1.) CONTRACTOR IS RESPONSIBLE FOR PROVIDING PHOTOS AS NOTED BELOW TO VERIFY IF THE CONSTRUCTION WAS COMPLETED IN ACCORDANCE WITH THE MODIFICATION DRAWINGS.
- 2.) CONTRACTOR SHALL COMMUNICATE ANY INSTALLATION OR CONSTRUCTION ISSUES THAT IMPACT THE PERFORMANCE OF THE MOUNT, MOUNT MODIFICATIONS, AND ANY SAFETY ISSUES.

BASE REQUIREMENTS:

THE BASE REQUIREMENTS OF THE CONTRACTOR ARE AS FOLLOWS:

- 1.) IF INSTALLATION OF THE MODIFICATIONS MAY CAUSE DAMAGE TO ANY PORTION OF THE STRUCTURE, KIMLEY-HORN SHALL BE NOTIFIED PRIOR TO INSTALL. ANY REQUIRED PHOTOS BEYOND THE STANDARD LIST PROVIDED BELOW WILL BE INDICATED ON THE MODIFICATION DRAWINGS.
- 2.) PROVIDE "AS-BUILT DRAWINGS" NOTING ANY DEVIATIONS FROM THE MODIFICATION DRAWINGS, AND SHOWING CONTRACTOR'S NAME, PREPARER'S SIGNATURE, AND DATE. **NOTE:** IF LOADING DIFFERS THAT THAT SHOWN IN THE POST-MODIFICATION PASSING MOUNT ANALYSIS (MA), KIMLEY-HORN SHALL BE CONTACTED IMMEDIATELY.
- 3.) EACH PHOTO SHALL BE TIME- AND DATE-STAMPED
- 4.) PHOTOS SHALL BE HIGH-RESOLUTION (MINIMUM 1600 X 1200).
- 5.) THE PMI DOCUMENTS CAN BE UPLOADED TO THE FOLLOWING PORTAL:
<https://kimley-horn.securevdr.com/i/i0ddb801f21149a79>

PHOTO REQUIREMENTS:

THE PHOTO REQUIREMENTS OF THE CONTRACT ARE AS FOLLOWS:

- 1.) PHOTOS TAKEN AT GROUND LEVEL SHOWING THE MOUNTS AT ROOF LEVEL.
- 2.) PHOTOS OF THE SIGNS SHOWING THE TOWER OWNER, SITE NAME, AND NUMBER (GENERALLY AT ROOFTOP LEVEL).
- 3.) PHOTOS OF THE MOUNT BEFORE AND AFTER INSTALLATION OF THE MODIFICATIONS; IF MOUNTS ARE AT DIFFERENT ELEVATIONS, PICTURES MUST BE PROVIDED FOR ALL ELEVATIONS THAT THE MODIFICATIONS WERE INSTALLED.
- 4.) PHOTOS SHOWING THE CLIMBING FACILITY AND SAFETY CLIMB IF PRESENT.
- 5.) PHOTOS SHOWING EACH INDIVIDUAL SECTOR AFTER INSTALLATION OF MODIFICATIONS. EACH ENTIRE SECTOR AREA MUST BE IN ONE PHOTO TO SHOW THE INTERCONNECTION OF MEMBERS.
 - 5.1.) THESE PHOTOS SHALL ALSO CERTIFY THAT THE PLACEMENT AND GEOMETRY OF THE EQUIPMENT ON THE MOUNT IS AS DEPICTED IN THE ANTENNA PLACEMENT DIAGRAM IN THIS FORM.
- 6.) PHOTOS THAT SHOW THE MODEL NUMBER OF EACH ANTENNA INSTALLED PER SECTOR/PLATFORM.
- 7.) PHOTOS OF EACH INSTALLED MODIFICATION PER THE MODIFICATION DRAWINGS; PHOTOS SHALL ALSO INCLUDE CONNECTION HARDWARE (U-BOLTS, BOLTS, NUTS, ALL-THREADED RODS, WELDS, ETC.)

MATERIAL CERTIFICATION REQUIREMENTS:

MATERIALS UTILIZED MUST BE AS SPECIFIED ON THE DRAWINGS OR AN EQUIVALENT VALIDATED BY KIMLEY-HORN.

- YES NO - THE MATERIAL UTILIZED WAS AS SPECIFIED ON THE KIMLEY-HORN MOUNT MODIFICATION DRAWINGS
- YES NO - THE MATERIAL UTILIZED WAS AN "EQUIVALENT" AND INCLUDED AS PART OF THE PMI ARE THE KIMLEY-HORN CERTIFICATION, INVOICES, OR SPECIFICATIONS VALIDATING ACCEPTANCE.

ANTENNA & EQUIPMENT PLACEMENT AND GEOMETRY CONFIRMATION:

- THE CONTRACTOR CERTIFIES THAT THE PHOTOS SUPPORT AND THE EQUIPMENT ON THE MOUNT IS AS DEPICTED ON THE SKETCH AND TABLE INCLUDED IN THIS FORM AND WITH THE MOUNT ANALYSIS PROVIDED.

- OR -

- THE CONTRACTOR NOTES THAT THE EQUIPMENT ON THE MOUNT IS NOT IN ACCORDANCE WITH THE SKETCH AND HAS NOTED THE DIFFERENCE BELOW AND PROVIDED PHOTO DOUMENTATION OF ANY DISCREPANCIES.

COMMENTS:

SPECIAL INSTRUCTIONS/ VALIDATION AS REQUIRED FROM THE MA OR MOD DRAWINGS:

REQUEST:

RESPONSE:

CONTRACTOR CERTIFICATION:

COMPANY:

EMPLOYEE NAME:

CONTACT PHONE:

EMAIL:

DATE:

- YES NO - CONTRACTOR CERTIFIES THAT THE STRUCTURE WAS NOT DAMAGED PRIOR TO OR DURING WORK.
- YES NO - CONTRACTOR CERTIFIES NO NEW DAMAGE/OBSTRUCTIONS CREATED DURING THE CURRENT INSTALLATION.
- YES NO - MODIFICATION WAS COMPLETED IN CONJUCTION WITH THE EQUIPMENT CHANGE/INSTALLATION.

verizon

10000 PARK MEADOWS DRIVE,
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PLANS PREPARED BY:

Kimley»Horn

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ENGINEER SEAL:



PROJECT INFORMATION:

CSP-KINGSWOOD

15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE:

**PMI REPORT
REQUIREMENTS**

SHEET NUMBER:

PMI-1

1.00 GENERAL NOTES

- 1.01 ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND OR REGULATIONS APPLICABLE TO THIS PROJECT.
- 1.02 THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE PROJECT MANAGER AND/OR ENGINEER AND BE RESOLVED BEFORE PROCEEDING WITH WORK WHERE THERE IS A CONFLICT BETWEEN DRAWING AND SPECIFICATIONS.
- 1.03 ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED TO THE PROJECT MANAGER AND/OR ENGINEER OF RECORD SO THAT PROPER REVISIONS MAY BE MADE. MODIFICATION OF DETAILS OR CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE PROJECT MANAGER AND/OR ENGINEER OF RECORD.
- 1.04 CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH SITE CONDITIONS AS SHOWN ON THE ATTACHED SITE PLAN AND/OR SURVEY DRAWINGS.
- 1.05 CONTRACTOR TO PROVIDE DUMPSTER AND PORTABLE TOILET FACILITY DURING CONSTRUCTION.
- 1.06 CONSTRUCTION WASTE MAY NEITHER BE BURNED NOR BURIED AND MUST BE TAKEN TO AN APPROVED LANDFILL.
- 1.07 SECURITY TO THE SITE SHALL BE MAINTAINED AT ALL TIMES.

2.00 STRUCTURAL STEEL NOTES

- 2.01 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS UNLESS NOTED OTHERWISE:

- A. STRUCTURAL STEEL SHAPES, PLATES AND BARS. (EXCEPT W-SHAPES) - ASTM A36, Fy=36 KSI
- B. PIPE - ASTM A53, GRADE B, Fy=35 KSI.
- C. HSS-SHAPES - ASTM A500, GRADE B, Fy = 42 KSI (ROUND)
Fy = 46 KSI (RECTANGLE)
- D. ANCHOR RODS - ASTM F1554, GRADE 55
- E. ALL THREAD RODS - ASTM F1554, GRADE 105
- F. STRUCTURAL BOLTS 1/2"Ø AND LARGER - ASTM A325
- G. STRUCTURAL U-BOLTS 3/4"Ø AND SMALLER - ASTM A307B
- H. STRUCTURAL BOLTS SMALLER THAN 1/2"Ø
DIMENSIONS: ASME B18.2.1, MATERIAL SAE J429 GRADE 5
THREADING: ASME B1.1, UNC, CLASS 2A
FINISH: HOT-DIP GALVANIZED OR ZINC-PLATED
- I. NUTS FOR BOLTS/ALL-THREAD - ASTM A563 (THREADING TO MATCH BOLT)
- J. WASHERS FOR BOLTS/ALL THREADS - ASTM F436
- K. W & WT SHAPES - ASTM A36 - Fy=36 KSI.

- ALTERNATE SPEC: ASTM (IF OTHER SPEC IS UNAVAILABLE).
- 2.02 STRUCTURAL BOLTS SHALL CONFORM TO THIS NOTE. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED, WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OF HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED.

- 2.03 ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN 1/2" SHALL CONFIRM TO FE/ZN 3 AS PER ASTM F1941 WHERE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZRC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.

- 2.04 WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE - STEEL". WELD ELECTRODES SHALL BE E80XX. UNLESS OTHERWISE NOTED PROVIDE CONTINUOUS FILLET WELDS WITH MINIMUM SIZE OF 3/16" OR OF A SIZE EQUAL TO THE THICKNESS OF THE THINNER WELD LEG SIZE SHALL BE ADJUSTED AS REQUIRED TO MAINTAIN THE EFFECTIVE THROAT OF A 3/16" FILLET WELD IN A 90° JOINT. ALL WELD SIZES SHOWN IN INCHES.

- 2.05 PRIOR TO WELDING, THE CONTRACTOR SHALL SUBMIT CERTIFICATION FOR EACH WELDER STATING THE TYPE OF WELDING AND POSITIONS QUALIFIED FOR, THE CODE AND PROCEDURE QUALIFIED UNDER, STATE QUALIFIED, AND THE FIRM AND INDIVIDUAL CERTIFYING THE QUALIFICATION TESTS. THIS INFORMATION SHALL BE SUBMIT TO THE MODIFICATION INSPECTOR (SEE SHEET N-3) AS WELL AS ANY THIRD-PARTY CERTIFIED WELD INSPECTOR (CW).

- 2.06 MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

3.00 MODIFICATION NOTES

- 3.01 THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF IBC 2018, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND CONTRACT SPECIFICATIONS.
- 3.02 ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
- 3.03 ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER OF RECORD. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF THE SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING; MAINTENANCE, REPAIR, AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATION TO THE ENGINEER AS REQUESTED.
- 3.04 PROVIDE STRUCTURAL STEEL SHOP DRAWINGS(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
- 3.05 UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
- 3.06 ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

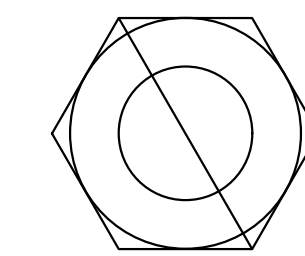
4.00 CONTRACTOR NOTES

- 4.01 PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO STRUCTURE OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATION DESCRIBED RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OF CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THE DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
- 4.02 IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
- 4.03 THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED MODIFICATIONS INSPECTOR PRIOR TO BEGINNING CONSTRUCTION, THE MODIFICATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTORS FIRM; HOWEVER, THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "MODIFICATION INSPECTION NOTES" SHEET. IT IS ALSO ACCEPTABLE FOR THE CONTRACTOR TO SUBCONTRACT THE MODIFICATION INSPECTOR DUTIES TO A THIRD PARTY FIRM MEETING THE ABOVE REQUIREMENTS.
- 4.04 THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AND TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF COMPLETION OF THE SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD WHEN PHASES OF CONSTRUCTION HAVE BEEN MOVED UP AND SHALL GIVE THE ENGINEER ADEQUATE NOTICE SO THE ENGINEER OF RECORD MAY, AT THEIR DISCRETION, INSPECT PORTIONS OF THE WORK DEEMED CRITICAL TO THE INTEGRITY OF THE STRUCTURE. FAILURE TO PROVIDE THIS NOTICE MAY RESULT IN REJECTION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL ALSO NOTIFY THE ENGINEER OF RECORD AND THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED MODIFICATION INSPECTIONS & TESTING.
- 4.05 IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED IN THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER/BUILDING CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO QUALIFIED WELDER CERTIFICATES, CERTIFIED WELDING INSPECTOR CREDENTIALS, ET CETERA.
- 4.06 THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION, THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
- 4.07 CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OF LEASE AREA AND APPROVED EASEMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- 4.08 DO NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

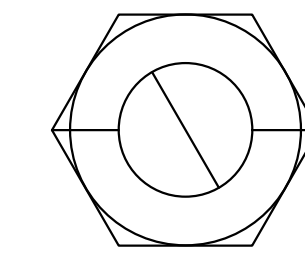
5.00 BOLT TIGHTENING PROCEDURE

- 5.01 TIGHTEN BOLTS BU AISC- "TURN OF THE NUT" METHOD, USING THE CHART BELOW:

BOLT LENGTHS UP TO & INCLUDING 4 Ø	
1/2" BOLTS UP TO & INCLUDING 2" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8" BOLTS UP TO & INCLUDING 2 1/2" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4" BOLTS UP TO & INCLUDING 3" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8" BOLTS UP TO & INCLUDING 3 1/2" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1" BOLTS UP TO & INCLUDING 4" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1 1/8" BOLTS UP TO & INCLUDING 4 1/2" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1 1/4" BOLTS UP TO & INCLUDING 5" LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1 1/2" BOLTS UP TO & INCLUDING 6" LENGTH	+1/3 TURN BEYOND SNUG TIGHT



BEFORE 1/3 TURN



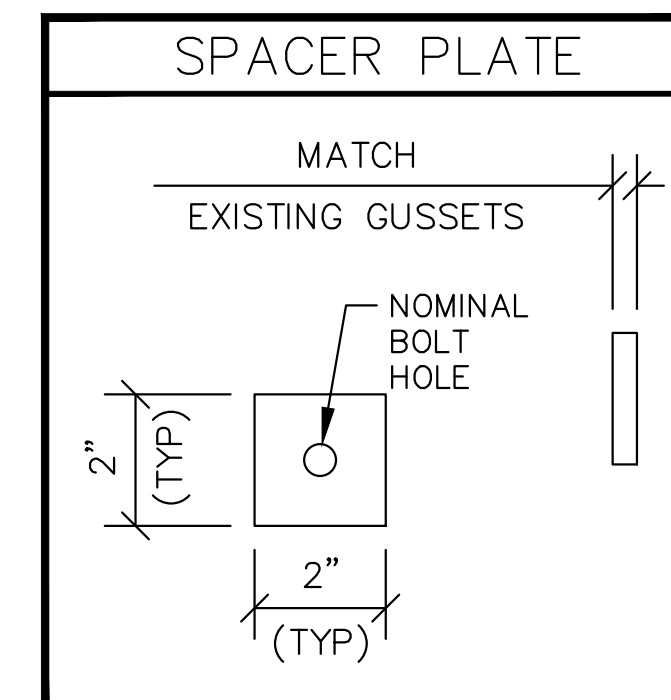
AFTER 1/3 TURN

BOLT LENGTH OVER 4 Ø BUT NOT EXCEEDING 8 Ø	
3/4" BOLTS 4.25" TO 6.0" LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8" BOLTS 3.75" TO 7.0" LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1" BOLTS 4.25" TO 8.0" LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1 1/8" BOLTS 4.75" TO 9.0" LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1 1/4" BOLTS 5.25" TO 10.0" LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1 1/2" BOLTS 6.25" TO 12.0" LENGTH	+1/2 TURN BEYOND SNUG TIGHT

- 5.02 SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8(d)(1) OF THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

"FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND BE TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8(d)(1) THROUGH 8(d)(4).

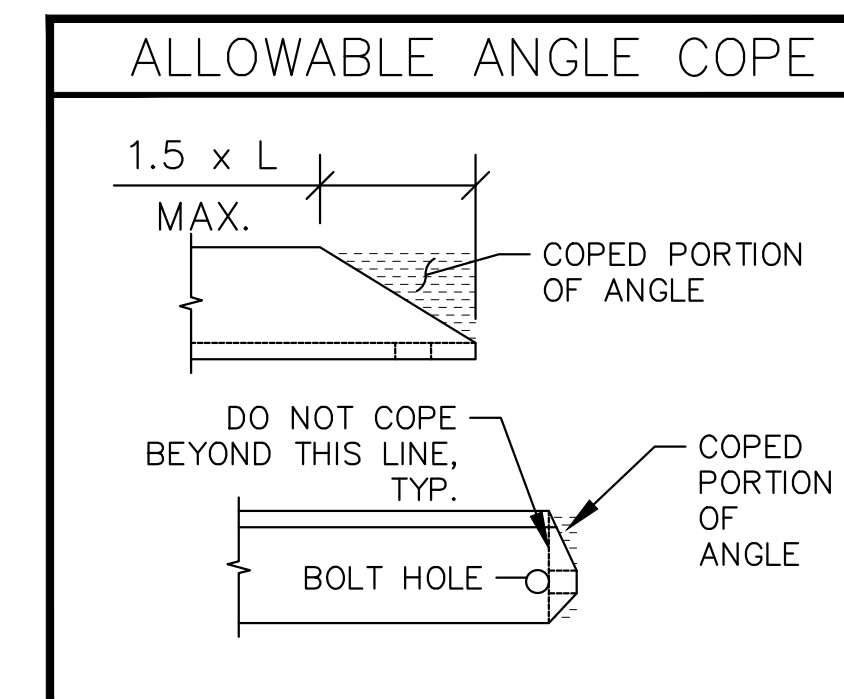
8(d)(1) TURN-OF-THE-NUT TIGHTENING
BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN THE PLIES OF A JOINT ARE IN FIRM CONTACT. THIS MAY BE OBTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. SNUG TIGHTENING SHALL PROGRESS SYSTEMATICALLY UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOW THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY



WORKABLE GAGES					
LEG	4	3 1/2	3	2	1 3/4
GAGE	2 1/2	2	1 3/4	1 3/8	1

1" G" - WORKABLE GAGES GIVEN IN INCHES
- MATCH EXISTING WHEN APPLICABLE

NOMINAL HOLE DIM'S		
BOLT Ø	STANDARD HOLE Ø	SHORT SLOT
1/2"Ø	5/8"Ø	3/16" x 1 1/8"
5/8"Ø	1 1/16"Ø	1 1/16" x 3/8"
3/4"Ø	1 3/16"Ø	1 3/16" x 1"
7/8"Ø	1 5/16"Ø	1 5/16" x 1 1/8"
1"Ø	1 1/4"Ø	1 1/4" x 5/8"



BOLT EDGE & SPACING		
BOLT Ø	MIN. EDGE	SPACING
1/2"Ø	3/8"Ø	1 1/2"
5/8"Ø	1 1/8"Ø	1 7/8"
3/4"Ø	1 1/4"Ø	2 1/4"
7/8"Ø	1 1/2"Ø	2 5/8"
1"Ø	1 3/4"Ø	3"

10000 PARK MEADOWS DRIVE,
SUITE 200, LONE TREE, CO 80124

PLANS PREPARED BY:

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REV.	DATE	DESCRIPTION	BY
A	07/21/22	FOR CONST.	EJE

DRAWN BY: **EJE** CHECKED BY: **MFF**

KHA PROJECT NUMBER: **196015030**

ENGINEER SEAL:

PROJECT INFORMATION:

CSP-KINGSWOOD
15475 GLENEAGLE DR
COLORADO SPRINGS, CO 80132
EL PASO COUNTY

SHEET TITLE: **GENERAL STRUCTURAL NOTES**

SHEET NUMBER: **S0**

