CROWN CASTLE

MERCER ISLAND
SMALL CELL SOLUTION

MIN 10

WA-CLEC, LLC

CONSTRUCTION DRAWINGS

PROJECT INFORMATION

PROJECT NAME:	MERCER ISLAND SMALL CELL SOLUTION
DESIGN TYPE:	SMALL CELL SOLUTION
AUTHORITY HAVING JURISDICTION (AHJ):	MERCER ISLAND
COUNTY:	KING COUNTY
STATE:	WASHINGTON
UTILITY COMPANY:	PUGET SOUND ENERGY
OCCUPANCY:	N/A | UNMANNED COMMUNICATIONS FACILITY
CONSTRUCTION TYPE:	TYPE V-B
FULLY SPRINKLED:	NOT REQUIRED
A.D.A. COMPLIANCE:	THIS FACILITY IS UNMANNED AND NOT INTENDED FOR HABITATION
GOVERNING CODES:	INTERNATIONAL BUILDING CODE W/ AMEND. [2012]
	WASHINGTON CITIES ELECTRICAL CODE [CURRENT]
	TIA 222 | REVISION G. [2009]

CONTACT INFORMATION

CONSTR. MNGR:

WA-CLEC, LLC (CROWN CASTLE)
CONTACT: PHIL REAGAN
PHONE: (425) 354-0043
EMAIL: philip.reagan@crowncastle.com

ENGINEERING FIRM:

WYCO FIELD SERVICES, LLC
CONTACT: VIC PETERSON
PHONE: (253) 906-7727
EMAIL: vpeterson@wycofs.com

PROJECT MGR:

WA-CLEC, LLC (CROWN CASTLE)
CONTACT: MARCUS HAILEY
PHONE: (206) 336-7399
EMAIL: marcus.hailey@crowncastle.com

SURVEYOR:

SURVEYOR T.B.D.
CONTACT: T.B.D.
PHONE: T.B.D.
EMAIL: T.B.D.

APPROVALS / SIGNATURES

PROJECT MANAGER:
CITY REPRESENTATIVE:
CROWN PROJECT MANAGER:
COUNTY REPRESENTATIVE:
CUSTOMER REPRESENTATIVE:
PSE FIELD INSPECTOR:

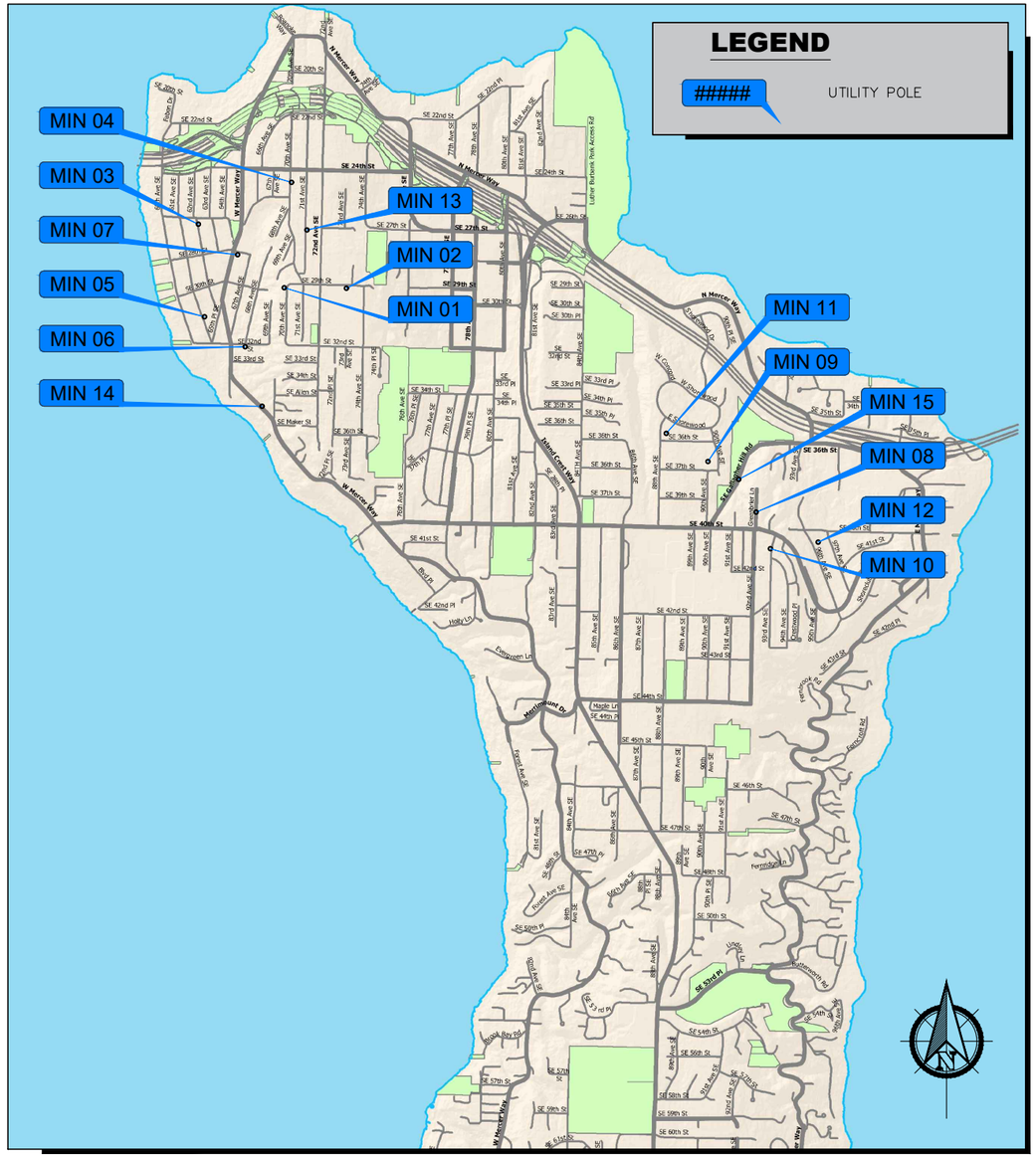
NODE INFORMATION

NODE:	MIN 10
ADDRESS:	4027 93RD AVE SE
CITY, STATE, ZIP:	MERCER ISLAND, WA 98040
POLE ID:	221222-165911
EXISTING POLE HEIGHT:	36'-3"
PROPOSED POLE HEIGHT:	45'-8"

DRAWING INDEX

CAUTION
FOREIGN UTILITY LOCATIONS ARE APPROXIMATE.
IT IS THE CONSTRUCTION CONTRACTOR'S RESPONSIBILITY TO CONTACT THE LOCAL ONE CALL AGENCY 48 HOURS PRIOR TO CONSTRUCTION FOR EXACT UTILITY LOCATIONS AT:
1-800-424-5555 (or 811)

Washington 811 — Know what's below. Call or Click before you dig. washington811.com



CROWN CASTLE
WA-CLEC, LLC

Engineering Firm:
WYCO FIELD SERVICES
WHERE QUALITY STILL COUNTS
6390 E. 49th Avenue
Commerce City, CO 80020
www.WYCOFS.com

Engineer Seal:

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LONGITUDE: -122.2152083

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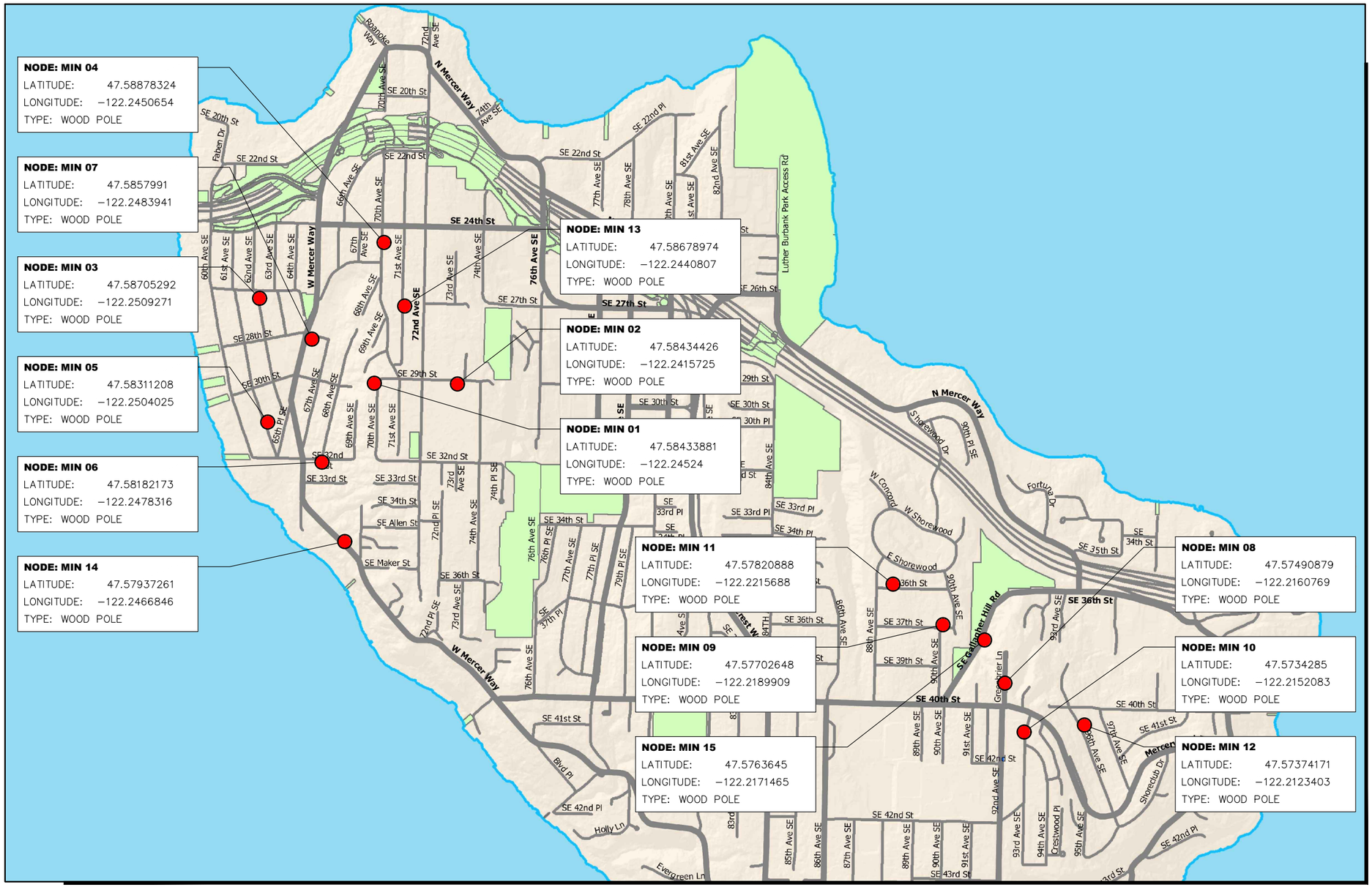
Sheet Title:
TITLE SHEET

Sheet Number:
T-1

MERCER ISLAND SMALL CELL SOLUTION



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VICINITY MAP

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T-2

#	POUNDS OR LBS.
A	AMPERES (ELEC)
A.B.	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
ACI	AMERICAN CONCRETE INSTITUTE
AF	AMPERES FRAME (BREAKER RATING) (ELEC)
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
A.G.L.	ABOVE GROUND LEVEL
AH	AMPERE HOURS (ELEC)
AIA	AMERICAN INSTITUTE OF ARCHITECTS
AIC	AMPS INTERRUPTING CAPACITY
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
AMSL	ABOVE MEAN SEA LEVEL
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
A.P.L.	ABOVE PARAPET LEVEL
AR	AUDIENCE RIGHT
A.R.L.	ABOVE ROOF LEVEL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AT	AMPERES TRIP (BREAKER SETTING)
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
AZ or AZ.	AZIMUTH
BKR	BREAKER
BPS	BOLTED PRESSURE SWITCH
BTS	BASE TRANSCEIVER STATION
BW	BUTT WELD
C	CONDUIT
CB	CIRCUIT BREAKER
CC or CROWN	CROWN CASTLE, INC.
C.J.	CONTROL JOINT
CKT	CIRCUIT
CMU	CONCRETE MASONRY UNIT
CT	CURRENT TRANSFORMER
DEMO	DEMOLITION
DIM	DIMENSION
DISC	DISCONNECT
DL	DEAD LOAD
DP	DISTRIBUTION PANEL
DS	DOWNSTAGE
DWG	DRAWING

EA	EACH
EC	ELECTRICAL CONTRACTOR
E.F.	EACH FRAME
E.G.	EQUIPMENT GROUND
EGB	EXTERIOR GROUND BUS
E.J.	EXPANSION JOINT
ELEC	ELECTRICAL
EM / EMERG	EMERGENCY
EME	ELECTROMAGNETIC ENERGY
EMT	ELECTRICAL METALLIC TUBING
EO	ELECTRICALLY OPERATED
E.S.	EACH SIDE
E.W.	EACH WAY
EXIST. / (E)	EXISTING
EXT.	EXTERIOR
XP	EXPLOSION PROOF
FA	FIRE ALARM
FAB.	FABRICATE
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FDN	FOUNDATION
FLA	FULL LOAD AMPS
FLR	FLOOR
FLUOR	FLUORESCENT
F.O.M.	FACE OF MASONRY
FU	FUSE
FW	FILLET WELD
FY	YIELD STRESS OF STEEL
G	GROUNDING (ELEC)
GA	GAGE OR GAUGE
GALV	GALVANIZED
GB	GRADE BREAK
GEN	GENERATOR
GRD	GRADE OR EXISTING GRADE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G.S.N.	GENERAL STRUCTURAL NOTES
HOA	HAND-OFF-AUTO (ELEC)
HVAC	HEATING, VENTILATION AND AIR CONDITIONING EQUIP.
HP	HORSEPOWER
HV	HIGH VOLTAGE
HZ	HERTZ
IBC	INTERNATIONAL BUILDING CODE
ICBO	INTERNATIONAL CONFERENCE OF BUILDING CODES
ICC	INTERNATIONAL CODE COUNCIL
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
IGZ	ISOLATED GROUND ZONE

IPGB	INTERNAL PERIMETER GROUND BUS CONDUCTOR - 'HALO'
IPS	INTERNATIONAL PIPE STANDARD
JB	JUNCTION BOX
KIP	1000 POUNDS (#)
KV	KILOVOLT
KVA	KILOVOLT - AMPERES
KW	KILOWATT
KWH	KILOWATT - HOURS
LA	LIGHTNING ARRESTOR
LL	LIVE LOAD
LP	LIGHTING PANEL
LDP	LIGHTING DISTRIBUTION PANEL
LPG	LIQUEFIED PROPANE GAS
LTV	LET-THROUGH VOLTAGE
LVLD	LOW-VOLTAGE LOAD DISCONNECT
LWC	LIGHT WEIGHT CONCRETE
MAS	MASONRY
MAX	MAXIMUM
M.B.	MACHINE BOLT
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MGB	MASTER GROUND BUS
MIN	MINIMUM
MISC.	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MO	MASONRY OPENING
MOE	MODULES OF ELASTICITY
MPE	MECHANICAL, PLUMBING, AND ELECTRICAL
MTD	MOUNTED
MTG	MOUNTING
NIU	NETWORK INTERFACE UNIT
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSIBLE
NFPA	NATIONAL FIRE PROTECTION AGENCY
NIC	NOT IN CONTRACT
NIST	NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NSF	NET SQUARE FEET
NTS	NOT TO SCALE
OC or O.C.	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
P	POLE

PB	PUSHBUTTON STATION (ELEC)
PC or P.C.	PRECAST
PCA	PORTLAND CEMENT ASSOCIATION
PCF	POUNDS PER CUBIC FOOT
PCI	PRECAST/PRESTRESSED CONCRETE INSTITUTE
PDP	POWER DISTRIBUTION PANEL
PH	PHASE
PL	PLATE
P.L.	PROPERTY LINE
PLF	POUNDS PER LINEAR FOOT
PLY	PLYWOOD
PP	PANEL POINT
PSI or P.S.I.	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PTI	POST TENSIONING INSTITUTE
PVI	POINT OF VERTICAL INTERSECTION
PXFMR	POTENTIAL TRANSFORMER
RAD	RADIUS
RBS	RADIO BASE STATION
RCP	REINFORCED CONCRETE PIPE
RDP	RECEPTACLE DISTRIBUTION PANEL
RECEPT.	RECEPTACLE
RF	RADIO FREQUENCY
RP	RECEPTACLE PANEL
(R)	RELOCATED
RSC	RIGID STEEL CONDUIT
RX or Rx	RECEIVE
SCHED	SCHEDULE
SD	SERVICE DISCONNECT SWITCH
SDC	SEISMIC DESIGN CATEGORY
SDI	STEEL DECK INSTITUTE
SEI	STRUCTURAL ENGINEERING INSTITUTE (ASCE)
SES	SERVICE ENTRANCE SECTION
SJI	STEEL JOIST INSTITUTE
SN	SOLID NEUTRAL
SOG	SLAB ON GRADE
SPD	SURGE PROTECTION DEVICE (SEE TVSS)
SSGB	SHELTER GROUND BUS / SUB-STATION GROUND BUS
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TIA-222-G	CODE FOR TOWER CONSTRUCTION - REVISION "G"
TGB	TOWER GROUND BUS BAR

TELECOM	TELECOMMUNICATIONS
TMS	THE MASONRY SOCIETY
TNND or T	TINNED
T.C.	TOWER CENTER
TOC	TOP OF CURBING OR TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TAMPER PROOF
TTB	TELEPHONE TERMINAL BACKBOARD
TX or Tx	TRANSMIT
TYP or TYP.	TYPICAL
XFMR / TR	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UA or U/A	UNDERGROUND ALARMS (I.E. MONITOR LINE)
UE or U/E	UNDERGROUND ELECTRICAL
UG or U/G	UNDERGROUND
UL or U.L.	UNDERWRITERS LABORATORIES, INC.
U.N.O.	UNLESS NOTED OTHERWISE
UT or U/T	UNDERGROUND TELCO
V	VOLTS
VSWR	VOLTAGE STANDING WAVE RATIO
W	WIRE
WP	WEATHERPROOF - NEMA 3R

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ABBREVIATIONS

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SYMBOLS

SYMBOL	DESCRIPTION
1	REVISION INDICATOR
1	KEYED NOTES
1	KEYED NOTES
100	ROOM NUMBER
1 / X-1	DETAIL REFERENCE
1 / X-1	ELEVATION REFERENCE
	SECTION REFERENCE
	GROUT OR PLASTER
	(E) BRICK
	(E) MASONRY
	CONCRETE
	EARTH
	GRAVEL
	PLYWOOD
	SAND
	STEEL
CUT / FILL	SLOPE BANK (1.5:1 MAX. FILL / 2:1 MAX. CUT)
332.0	PROPOSED ELEVATION
332.0	EXISTING CONTOURS
	TRUE NORTH ARROW

SYMBOL	DESCRIPTION
	PROPOSED ANTENNA
	EXISTING ANTENNA
	GROUND ROD
	GROUND BUS BAR
	MECHANICAL GROUND
	CADWELD
	ELECTRIC BOX
T	TELEPHONE BOX
	LIGHT POLE
	UTILITY POLE
	POLE DOWN GUY
	FIRE HYDRANT
	TRANSFORMER
	TRAFFIC SIGNAL CABINET
	ELECTRIC VAULT
	FIBER VAULT
VAULT	EXISTING VAULT
S	MANHOLE-SEWER
W	MANHOLE-WATER
SD	MANHOLE-STORMDRAIN
E	MANHOLE-ELECTRIC
T	MANHOLE-TELCO
	SURVEY MONUMENT
	TREE

LINETYPE	DESCRIPTION
— — —	PROPOSED ANTENNA
— – – —	EXISTING ANTENNA
— – – —	GROUND ROD
— — — — — — —	GROUND BUS BAR
R/W	MECHANICAL GROUND
GAS GAS	CADWELD
W	ELECTRIC BOX
T	TELEPHONE BOX
E	LIGHT POLE
SEW	UTILITY POLE
SD	POLE DOWN GUY
TV	FIRE HYDRANT
STM	TRANSFORMER
OIL	TRAFFIC SIGNAL CABINET
M M M	ELECTRIC VAULT
P P P	FIBER VAULT
X	EXISTING VAULT
UNK	MANHOLE-SEWER
E/T	MANHOLE-WATER
	MANHOLE-STORMDRAIN
	MANHOLE-ELECTRIC

LINETYPE	DESCRIPTION
EOP	CENTER LINE
FIBER	PROPERTY LINE
A	LOT LINE
G	EASEMENT LINE
	RIGHT OF WAY
	GAS LINE
	WATER
	TELEPHONE
	ELECTRIC
	SANITARY SEWER (SEW)
	STORM DRAIN
	CABLE TV
	STEAM
	OIL
	MONITOR CONDUIT
	POWER POLE LINE
	BARBED WIRE FENCE
	UNKNOWN UTILITY
	U/G JOINT UTILITY TRENCH
	DRAINAGE DITCH (2' WIDTH)
	GRAVEL BAGS

LINETYPE	DESCRIPTION
	EDGE OF PAVEMENT
	FIBER
	COAXIAL CABLE
	GROUNDING ELECTRODE CONDUCTOR

NOTE:
SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

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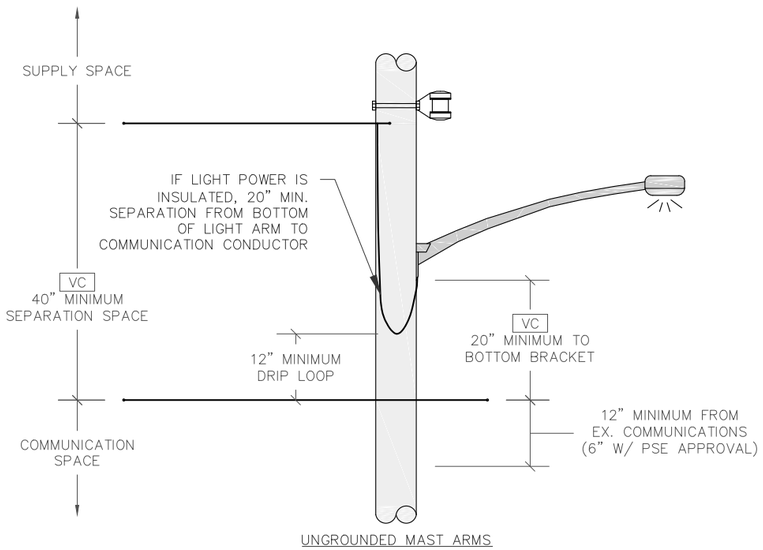


UNGROUNDED MAST ARMS

(PSE ASSUMES ALL STREETLIGHTS IN THEIR SYSTEMS ARE UNGROUNDED)

NESC INSPECTION CRITERIA:

NESC CLEARANCE SHOWN UNDER LOADED CONDITIONS.

*INDICATED RAILROAD MEASUREMENT MAY VARY AS DETERMINED BY THE PERMITTING RAILROAD; CLEARANCE MAY BE AS HIGH AS 36' FT. CHECK WITH RAILROAD FOR CLEARANCE REQUIREMENTS.

CS–CLIMBING SPACE IMPAIRED
STARTING ON THE FIELD SIDE OF THE POLE, A CLEAR SPACE (CLIMBING SPACE) IS REQUIRED THAT ALLOWS A 30"Wx30"Dx40"H OBJECT TO BE ELEVATED UP THE POLE. THIS SPACE CAN ROTATE A MAXIMUM OF 90 DEGREES EVERY 6" OF POLE HEIGHT. PREFER A SINGLE CLIMBING SPACE, WITHOUT ROTATION, FROM THE GROUND TO THE TOP OF THE POLE.

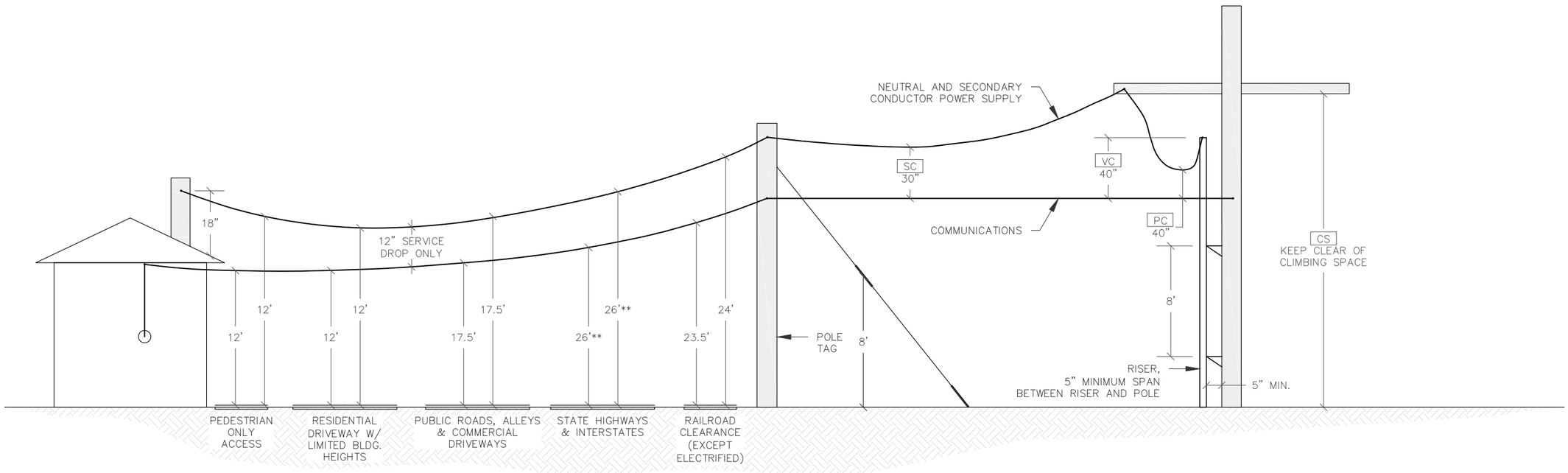
PC–POWER CLEARANCE
IMPAIRED CLEARANCE BETWEEN PSE NEUTRAL, TX, QX OR SECONDARY CONDUCTORS AND COMMUNICATION CONDUCTORS ON THE POLE. A MINIMUM OF 40" CLEARANCE IS REQUIRED.

SC–SPAN CLEARANCE
IMPAIRED CLEARANCE BETWEEN PSE CONDUCTORS AND COMMUNICATION CONDUCTORS MIND–SPAN, POLE–TO–POLE AND/OR POLE–TO–SERVICE CONNECTION. PSE NEUTRAL OR SECONDARY WIRE OF TX, QX OR INSULATED OPEN WIRE RUNNING ABOVE AND PARALLEL TO COMMUNICATIONS CONDUCTORS FROM POLE–TO–POLE REQUIRE A MINIMUM 30" OF CLEARANCE. SERVICE DROPS REQUIRE A MINIMUM OF 12" OF CLEARANCE.

VC–VERTICAL CLEARANCE
VERTICAL CONDUCTORS IN COMMUNICATIONS SPACE. MINIMUM 40" OF CLEARANCE REQUIRED BETWEEN THE TOP OF THE CONDUIT RISER AND COMMUNICATIONS CONDUCTORS, THE STREET LIGHT ATTACHMENT BRACKET, AT THE POLE, REQUIRES 20" OF CLEARANCE FROM COMMUNICATIONS CONDUCTORS. STREET LIGHT DRIP LOOPS REQUIRE 12" OF CLEARANCE FROM COMMUNICATION CONDUCTORS, BUT IF IN NON–METALLIC CONDUIT THE REQUIRED CLEARANCE (FROM STREET LIGHT DRIP LOOP) MAY BE REDUCED TO 3".

RC–ROAD CLEARANCE
IMPAIRED CLEARANCE OVER ROADS OR AREAS SUBJECT TO TRUCK TRAFFIC. HEIGHT REQUIREMENTS SHALL BE OVER ANY PORTION OF THE ROAD.

**FOR CLEARANCES OVER STATE HIGHWAYS REVIEW APPLICABLE STATE CODE.



1 PSE INSPECTION CRITERIA

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PART 1: SCOPE OF WORK

1.1 CODES AND REGULATIONS

1.1.1 COMPLY WITH GOVERNING FEDERAL, STATE & LOCAL LAW, ORDINANCE, CODE, RULES & REGULATIONS, SAFETY AND OSHA REGULATIONS/DIRECTIVE. WHERE CONTRACT DOCUMENTS EXCEED THESE REQUIREMENTS, CONTRACT DOCUMENTS SHALL GOVERN. IN NO CASE SHALL WORK BE INSTALLED CONTRARY TO OR BELOW MIN. LEGAL STANDARDS. IT IS CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL STANDARDS ARE MET, AND TO PRODUCE VERIFICATION OF THESE ITEMS UPON REQUEST.

1.1.2 UNLESS INDICATED OTHERWISE, THE LATEST PUBLISHED STANDARDS OF THE FOLLOWING ASSOCIATIONS/ORGANIZATIONS SHALL BE FOLLOWED AND APPLIED WHERE APPLICABLE, AS MIN. REQUIREMENTS.

1.1.2.01 (AHJ) AUTHORITY HAVING JURISDICTION; ALL APPLICABLE AND CURRENT LOCAL JURISDICTIONS AND GOVERNING CODES
1.1.2.02 (AISC) AMERICAN INSTITUTE OF STEEL CONSTRUCTION
1.1.2.03 (ANSI) AMERICAN NATIONAL STANDARDS INSTITUTE
1.1.2.04 (ASTM) AMERICAN SOCIETY FOR TESTING AND MATERIALS
1.1.2.05 (AWS) AMERICAN WELDING SOCIETY
1.1.2.06 (BOCA) BUILDING OFFICIALS & CODE ADMINISTRATORS
1.1.2.07 (ETL) ELECTRICAL TESTING LABORATORY
1.1.2.08 (IBC) INTERNATIONAL BUILDING CODE
1.1.2.09 (ICC) INTERNATIONAL CODE COUNCIL
1.1.2.10 (ICEA) INSULATED CABLE ENGINEERS ASSOCIATION
1.1.2.11 (IEEE) INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
1.1.2.12 (NBFU) NATIONAL BOARD OF FIRE UNDERWRITERS
1.1.2.13 (NEC) NATIONAL ELECTRICAL CODE
1.1.2.14 (NEMA) NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
1.1.2.15 (NESC) NATIONAL ELECTRIC SAFETY CODE
1.1.2.16 (NFPA) NATIONAL FIRE PROTECTION ASSOCIATION.
1.1.2.17 (IMC) INTERNATIONAL MECHANICAL CODE
1.1.2.18 (UL) UNDERWRITER'S LABORATORIES
1.1.2.19 (SJI) STANDARD JOIST INSTITUTE

1.2 GENERAL

1.2.1 CROWN CASTLE, INC. IS HERINAFTER TERMED "CROWN".

1.2.2 CONTRACTOR WILL PROVIDE ALL LABOR, MATERIAL, TOOLS, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR AND INCIDENTAL TO COMPLETION OF ALL WORK AS INDICATED ON DRAWINGS, SPECIFICATIONS, SCOPE OF WORK, BILL OF MATERIALS, AND ANY OTHER DOCUMENT ISSUED BY OWNER/CLIENT AND/OR CROWN.

1.2.3 DRAWINGS & SPECIFICATIONS (SPECS.) ARE GENERAL DIRECTIVES FOR THE SCOPE OF WORK. EXACT EQUIPMENT LOCATIONS & ROUTINGS, ETC. SHALL BE GOVERNED BY FIELD CONDITIONS AND CROWN'S INSTRUCTIONS. CONTRACTOR SHALL VERIFY DIMENSIONS & LOCATIONS AND REPORT ANY DISCREPANCIES TO CROWN PRIOR TO COMMENCING RELATED WORK. MINOR ERRORS OR OMISSIONS IN DRAWINGS AND SPECS DO NOT EXCUSE CONTRACTOR FROM COMPLETING PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS.

1.3 DRAWING USE AND INTERPRETATION

1.3.1 DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS & EQUIPMENT UNLESS INDICATED OTHERWISE BY DIMENSIONS OR DETAILS.

1.3.2 CONTRACTOR IS RESPONSIBLE FOR SCHEDULING ALL INSPECTIONS AND TESTING REQUIRED FOR EACH PROJECT. 48-HOUR NOTIFICATION TO CROWN IS REQUIRED FOR ALL INSPECTIONS AND TESTING. FIELD COPY OF ALL INSPECTION AND TESTING REPORTS AS WELL AS TRUCK TICKETS MUST BE SUBMITTED TO CROWN WITHIN 24 HOURS OF INSPECTION OR TEST.

1.3.3 CONTRACTOR IS RESPONSIBLE FOR MAINTAINING PRESENT CONDITION OF EXISTING BUILDINGS, LANDSCAPING, FENCING, EQUIPMENT, WALKS, DRIVES, AND ATTACHMENTS. IF ANY DAMAGE SHOULD OCCUR, CONTRACTOR IS RESPONSIBLE TO RESTORE DAMAGE TO A BETTER OR NEW CONDITION.

1.3.4 PERMITS SHALL BE ON-SITE AT ALL TIMES DURING & AFTER CONSTRUCTION.

1.4 QUALITY

1.4.1 GENERAL – ALL MATERIALS AND EQUIPMENT SHALL BE IN ACCORDANCE WITH CONTRACT DOCUMENTS AND STANDARD PRODUCTS OF THE VARIOUS MANUFACTURERS, WITH ALL MATERIALS AND EQUIPMENT TO BE NEW, CLEAN, UNDAMAGED, AND FREE OF DEFECTS AND CORROSION.

1.4.2 PRODUCT OF AN APPROVED MANUFACTURER IS ACCEPTABLE ONLY WHEN PRODUCT COMPLIES WITH OR IS MODIFIED AS NECESSARY TO COMPLY WITH ALL REQUIREMENTS OF CONTRACT DOCUMENTS.

1.4.3 TESTING EQUIPMENT AND METHODS SHALL BE CODE AND MFGR. COMPLIANT AND ACCEPTED BY CROWN AND OWNER/CLIENT PRIOR TO TESTING.

1.4.4 AFTER TESTING AND/OR INSPECTION BY OWNER/CLIENT OR CROWN, CONTRACTOR SHALL CORRECT DEFICIENCIES AND REPLACE MATERIALS & EQUIPMENT SHOWN TO BE DEFECTIVE OR UNABLE TO PERFORM AT DESIGN OR RATED CAPACITY.

1.4.5 FURNISH AND INSTALL MATERIALS AS REQUIRED FOR COMPLETE SYSTEMS, WHETHER SPECIFICALLY INDICATED OR NOT. SYSTEMS SHALL BE FULLY ASSEMBLED, TESTED, ADJUSTED, & DEMONSTRATED READY FOR OPERATION PRIOR TO OWNER'S ACCEPTANCE.

1.4.6 CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY PROJECT SITE. REMOVE AND DISPOSE ALL RUBBISH, WASTE, LITTER, AND FOREIGN SUBSTANCES IN LEGAL MANNER OFF SITE DAILY. EXCESS MATERIAL WILL BE RETURNED TO CROWN AND DELIVERED TO WAREHOUSE FACILITY PER DIRECTION OF CROWN. REMOVE PETROCHEMICAL SPILLS, STAINS, AND OTHER FOREIGN DEPOSITS IN COMPLIANCE WITH OSHA REGULATIONS. RETURN ALL SURFACES TO ORIGINAL CONDITION.

1.4.7 TOUCH-UP PAINTING – RESTORE & REFINISH TO ORIGINAL CONDITION ALL SURFACES OF EQUIPMENT THAT IS SCRATCHED, MARRED AND/OR DENTED DURING SHIPPING, HANDLING, OR INSTALLATION. REMOVE ALL RUST, AND PRIME/PAINT AS RECOMMENDED BY MANUFACTURER.

1.5 SUBMITTALS & DELIVERABLES

1.5.1 CONTRACTOR SHALL PROVIDE THE FOLLOWING DELIVERABLES TO CROWN:

1.5.1.01 MATERIAL TESTING OF CONCRETE, STRUCTURAL STEEL AND ANY OTHER MATERIAL USED AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

1.5.1.02 INSPECTION SIGN-OFFS, WITH ATTACHED TESTING & INSPECTION REPORTS

1.5.1.03 THIRD-PARTY INSPECTION

1.5.1.04 GROUNDING SYSTEM TESTING

1.5.1.05 ANTENNA SWEEP & PIM TESTING

1.5.1.06 CERTIFICATE OF AUTHENTICITY (IF REQUIRED)

1.5.1.07 BUILDING AND ELECTRICAL PERMITS

1.5.1.08 RELEASE OF WAIVER & LIENS

1.5.1.09 ANTENNA PACKETS (EQUIPMENT INFORMATION, PAPERS, ETC.)

1.5.1.10 WARRANTIES ON ALL ITEMS INSTALLED AND WORK PERFORMED

1.5.1.11 PHOTOGRAPHS OF SITE BEFORE, DURING, AND AFTER CONSTRUCTION, DAILY REPORTS, ALL VENDOR DATA SUBMITTALS AND O&M MANUALS ISSUED WITH INSTALLED PRODUCTS.

1.5.1.12 LIST OF CONTRACTORS; SUPPLIERS; PRODUCT DATA; SHOP DRAWINGS; AND VARIOUS ADMINISTRATIVE SUBMITTALS.

1.5.1.13 DAILY FIELD REPORTS, JOB SAFETY ANALYSIS (JSA'S), AND SAFETY MEETING MINUTES

1.5.1.14 COMPLETED AND APPROVED FINAL WALK-THRU PUNCH-LIST

1.5.1.15 CERTIFICATE OF OCCUPANCY (IF REQUIRED)

1.5.1.16 CONTRACTOR SHALL MAINTAIN A FIELD COPY WITH MARKUPS TO GENERATE AS-BUILT DRAWING THROUGHOUT THE PROJECT TO INDICATE INSTALLED LOCATIONS OF EQUIP. & DEVICES, ROUTING OF MAJOR INTERIOR RACEWAY, LOCATION OF CONCEALED & UNDERGROUND EQUIP & RACEWAY, ALL APPROVED MODIFICATIONS TO CONTRACT DOCS, AND DEVIATIONS. THESE DRAWINGS SHALL BE CURRENT & UPDATED DAILY. A NEW, CLEAN SET OF CONTRACT DOCUMENTS WILL BE ISSUED TO CONTRACTOR NEAR COMPLETION TO TRANSFER INFORMATION FROM FIELD DRAWINGS TO NEW AS-BUILT COPY. THIS SHALL BE SUBMITTED WITH DELIVERABLES TO CROWN WITH CLOSE-OUT DOCUMENTS.

1.6 MATERIALS

1.6.1 WHERE MORE THAN ONE OF ANY SPECIFIC ITEM IS REQUIRED, ALL SHALL BE OF THE SAME TYPE AND MANUFACTURER.

1.6.2 MATERIALS & EQUIPMENT SHALL BE UNDERWRITERS LABORATORIES (UL) LISTED AND LABELED.

1.6.3 UNLESS THIS CONTRACT SPECIFIES OTHERWISE, THE CONTRACTOR REPRESENTS THAT THE SUPPLIES AND COMPONENTS, ARE NEW (NOT USED, RECYCLED OR RECONDITIONED) AND ARE NOT OF SUCH AGE OR SO DETERIORATED AS TO IMPAIR THEIR USEFULNESS OR SAFETY. IF THE CONTRACTOR BELIEVES THAT FURNISHING USED OR RECONDITIONED SUPPLIES OR COMPONENTS WILL BE IN THE END-USER'S INTEREST, THE CONTRACTOR SHALL SO NOTIFY CROWN IN WRITING PRIOR TO THE UTILIZATION OF SUCH MATERIALS. THE CONTRACTOR'S NOTICE SHALL INCLUDE THE REASONS FOR THE REQUEST ALONG WITH A PROPOSAL FOR ANY CONSIDERATION TO BE ISSUED BACK TO THE END-USER IF CROWN AND THE END-USER AUTHORIZES THE USE OF SUCH USED OR RECONDITIONED SUPPLIES OR COMPONENTS.

1.7 CONDITION VERIFICATION

1.7.1 THE CONTRACTOR SHALL EXAMINE AREAS & CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND IDENTIFY ANY CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

1.8 EXECUTION

1.8.1 ALL WORK SHALL BE PERFORMED UNDER CONTRACTOR'S DIRECT SUPERVISION, USING SUFFICIENT AND QUALIFIED PERSONNEL AS NECESSARY TO COMPLETE WORK IN ACCORDANCE WITH PROGRESS SCHEDULE. CONTRACTOR SHALL ASSIGN ONE OR MORE COMPETENT SUPERVISORS WHO HAVE AUTHORITY TO ACCEPT & EXECUTE ORDERS & INSTRUCTION, AND WHO SHALL COOPERATE WITH CONTRACTORS, ENGINEERS, AND CROWN IN ALL MATTERS TO RESOLVE CONFLICTS AND AVOID DELAYS.

1.8.2 MATERIALS AND EQUIPMENT SHALL BE INSTALLED PER MFGR SPECS, BY MECHANICS EXPERIENCED AND SKILLED IN THEIR TRADE, IN NEAT AND WORKMANLIKE MANNER IN ACCORDANCE WITH STANDARDS OF TRADE, AND SO AS NOT TO ALTER OR VOID WARRANTY OR (UL) LISTING. INSTALLATION OF ALL WORK SHALL BE IN ACCORDANCE WITH INTENT OF CONTRACT DOCS.

1.9 COORDINATION

1.9.1 SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATION OF MATERIALS & EQUIPMENT FOR EFFICIENT FLOW OF WORK IN CONJUNCTION WITH OTHER TRADES. REVIEW DRAWINGS FOR WORK OF ASSOCIATED TRADES AND REPORT AND RESOLVE ANY DISCOVERED DISCREPANCIES PRIOR TO COMMENCING WORK. COOPERATE WITH OTHER CONTRACTORS AND INDIVIDUAL DISCIPLINES FOR PLACEMENT, ANCHORAGE, & ACCOMPLISHMENT OF WORK.

1.10 LAYOUT

1.10.1 INSTALL MATERIALS & EQUIPMENT LEVEL, PLUMB, PARALLEL, AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS.

1.10.2 INSTALL EQUIPMENT, RACEWAYS, AND ETC. TO READILY FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS, AND TO MIN. INTERFERENCE WITH OTHER EQUIPMENT AND INSTALLATIONS.

1.10.3 PRIOR TO COMMENCING WORK, VERIFY THAT EQUIPMENT WILL ADEQUATELY FIT AND CONFORM TO MANUFACTURED SPECS AND CODE CLEARANCES AND AS INDICATED ON DRAWINGS. IF REARRANGEMENT IS REQUIRED, SUBMIT PLAN AND ELEVATION DRAWINGS OR SKETCHES INDICATING THE PROPOSED REARRANGEMENT FOR THE ENGINEER'S APPROVAL. DO NOT REARRANGE WITHOUT EXPRESSED WRITTEN PERMISSION OF CROWN.

1.10.4 PRIOR TO LAYOUT, COORDINATE SPACE FOR ELECTRICAL WIRING, STEAM AND CONDENSATE LINES, SANITARY LINES, DRAIN LINES, FIRE PROTECTION PIPING, AND SHEET METAL DUCT WORK. PROVIDE OFFSETS AS REQUIRED AVOIDING CONFLICTS. RESOLVE CONFLICTS BEFORE COMMENCING INSTALL.

1.11 IDENTIFICATION

1.11.1 GENERAL – LOCATE NAME PLATE MARKING OR OTHER IDENTIFICATION MEANS ON OUTSIDE OF EQUIPMENT OR BOX FRONT COVERS WHEN ABOVE CEILINGS AND WHEN IN MECHANICAL OR ELECTRICAL EQUIPMENT ROOMS OR OTHER UNFINISHED AREAS, AND ON INSIDE OF FRONT COVER WHEN IN FINISHED ROOMS/ AREAS. USE CONTRACT DOCUMENT DESIGNATIONS FOR IDENTIFICATION UNLESS OTHERWISE NOTED.

1.11.2 NAMEPLATES/PLACARDS – PROVIDE NAME PLATE ENGRAVED WITH EQUIP. DESIGNATION FOR EACH OF THE FOLLOWING ITEMS:

	PLACARD	LETTER & PLACARD SIZE:
1.11.2.01	SAFETY/DISCONNECT	1/2" LETTER; 1" (w) x 2" (l) x1/8" (d)
1.11.2.02	PANEL BOARD	1/2" LETTER; 1" (w) x 2" (l) x 1/8" (d)
1.11.2.03	OUTLETS (CB# IN PANEL)	1/4" LETTER; 3/4" (w) x 1" (l) x 1/8" (d)
1.11.2.04	TRANSFORMER	1/2" LETTER; 1" (w) x 2" (l) x 1/8" (d)
1.11.2.05	MOTOR STARTER	1/2" LETTER; 1" (w) x 2" (l) x 1/8" (d)

1.11.3 UNDERGROUND WARNING TAPE – DURING TRENCH BACK FILLING FOR EACH UNDERGROUND ELECTRICAL, TELEPHONE, SIGNAL AND COMMUNICATIONS LINE, PROVIDE A CONTINUOUS UNDERGROUND WARNING TAPE AS SPECIFIED. TYPICALLY USE 6" WIDE POLYETHYLENE TAPE PERMANENTLY BRIGHT COLORED WITH CONTINUOUS PRINT INDICATING GENERAL TYPE OF UNDERGROUND LINE BELOW AND "CAUTION". COLORS AS FOLLOWS:

1.11.3.1 RED = ELECTRIC
1.11.3.2 ORANGE = COMMUNICATIONS

1.11.4 MARK EACH JUNCTION AND PULL BOX INDICATING SOURCE DESIGNATION AND CIRCUIT NUMBER(S) FOR THE ENCLOSED CONDUCTORS. SEE § 1.11.2.

1.11.5 LABEL ALL WIRES AND CABLES AT EVERY POINT OF TERMINATION AND IN ALL PULL BOXES AND JUNCTION BOXES. FOR POWER CIRCUITS, APPLY WIRE TAGS INDICATING APPROPRIATE CIRCUIT OR FEEDER NUMBER TO EACH CONDUCTOR PRESENT IN DISTRIBUTION PANEL AND PANEL BOARD GUTTERS, AND TO EACH CONDUCTOR IN PULL AND JUNCTION BOXES.

1.11.6 AT COMPLETION OF PROJECT, ACCURATELY COMPLETE EACH PANEL BOARD CIRCUIT DIRECTORY CARD, IDENTIFYING LOAD SERVED OR CIRCUITS AT EXISTING PANEL BOARD, UPDATE EXISTING (OR PROVIDE NEW) CIRCUIT DIRECTORY CARD TO ACCURATELY REFLECT FINAL CONDITIONS.

1.12 SYSTEM DEMONSTRATION

1.12.1 INSTRUCT CROWN'S REP. IN STARTUP, OPERATION & MAINTENANCE OF ELECTRICAL SYSTEMS & EQUIPMENT AS REQUESTED BY OWNER/CLIENT.

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PART 2: CIVIL / EARTH WORK

2.1 EXECUTION

2.1.1 IT IS CONTRACTOR'S SOLE RESPONSIBILITY TO CALL LOCAL LOCATING AUTHORITIES (OR PRIVATE LOCATING SERVICES) AND PERFORM OTHER STEPS AS REQUIRED TO VERIFY LOCATION OF UNDERGROUND UTILITIES OR LINES THAT EXIST WITHIN ENTIRE PROJECT AREA. CONTRACTOR SHALL PLACE THESE ITEMS ON AS-BUILT DRAWINGS.

2.3 ANTI-EROSION

2.3.1 DITCHES – USE RIP-RAP IN AREAS WITH SLOPE GREATER THAN 2:1 IN ENTIRE DITCH, AND FOR 6' IN ALL DIRECTIONS AT CULVERT OPENINGS & WHERE INDICATED ON PLANS.

2.3.1.01 CONTRACTOR SHALL PROTECT ALL AREAS FROM WASHOUTS AND SOIL EROSION. EROSION CONTROL SHALL BE PLACED AT INLET APPROACH TO ALL NEW OR EXISTING CULVERTS.

2.3.1.02 SEED, FERTILIZER, AND STRAW COVER SHALL BE APPLIED TO ALL OTHER DISTURBED AREAS, DITCHES, DRAINAGE, AND SWELLS NOT OTHERWISE RIP-RAPPED. SEED AND FERTILIZER SHALL BE APPLIED TO SURFACE CONDITIONS THAT WILL ENCOURAGE ROOTING. PREPARE SURFACE PROPERLY TO ACCEPT SEEDS. SOW SEEDS IN TWO OPPOSITE DIRECTIONS IN TWICE THE QUANTITY RECOMMENDED BY SEED PRODUCER.

2.3.1.03 CONTRACTOR IS RESPONSIBLE TO ENSURE GROWTH OF SEEDED AND LANDSCAPED AREAS BY WATERING, STRAW, MULCH, NET, AND APPROPRIATE LANDSCAPING METHODS.

2.3.2 AREAS MUST HAVE SUSTAINED GROWTH BY COMPLETION OF PROJECT.

PART 6: ANTENNAS & COAX

6.1 PROCESS

6.1.1 CONTRACTOR SHALL INSTALL LINES AND CONDUITS IN NEAT, ORDERLY AND STRAIGHT FASHION PROVIDING ANCHORING AS RECOMMENDED BY MANUFACTURER AND WHERE NECESSARY TO SUPPORT LINES PROPERLY, AND TO RESIST LATERAL WIND & SEISMIC LOADS AS REQUIRED BY IBC AND ASCE.

6.1.2 THE FOLLOWING TABLE WILL BE USED TO DETERMINE MIN. RADIUS OF EACH CABLE:

BENDING RADIUS	DIAM. OF CABLE	CABLE TYPE
5"	3/8"	BBDGE; CAT5E
1"	1/4"	FSJ1
1.25"	1/2"	FSJ4
4.5"	1/2"	LDF4
10"	7/8"	LDF5; AVA5-50FX

6.2 COAXIAL CABLE

6.2.1 COAXIAL CABLE SIZE SHALL BE AS SHOWN ON DRAWINGS. SHOULD THERE BE AN INCONSISTENCY BETWEEN THE DRAWINGS AND THE RADIO FREQUENCY DATA SHEET (RFDS), IT SHALL BE BROUGHT TO THE ATTENTION OF THE CROWN REPRESENTATIVE UPON THE DISCOVERY, AND THE INSTALLATION SHALL CEASE UNTIL FURTHER NOTICE. NO WORK SHALL COMMENCE WITHOUT WRITTEN AUTHORIZATION OF ANY CHANGES.

6.2.2 COAXIAL CABLE SHALL BE SUPPORTED INSIDE MONOPOLES WITH "KELLEM" GRIP TYPE PRODUCTS.

6.2.3 COAXIAL CABLES ON OPEN WAVEGUIDES AND ICE BRIDGES SHALL BE SECURE & SUPPORTED AS INDICATED ON DRAWINGS.

6.2.4 COAXIAL CABLES SHALL BE GROUNDED TO GROUND BAR AT ANTENNAS USING GROUNDING KITS AS SPECIFIED ON DRAWINGS.

6.2.5 COAXIAL CABLES SHALL BE GROUNDED TO GROUND BAR AT BOTTOM OF TOWER OR MONOPOLE USING KITS SPECIFIED ON DRAWINGS.

6.2.6 COAXIAL CABLES SHALL BE GROUNDED TO GROUND BAR AT BULKHEADS USING GROUNDING KITS AS SPECIFIED ON DRAWINGS.

6.3 CABLE TRAY

6.3.1 PROVIDE COMPLETE CABLE TRAY SYSTEM WITH BENDS, FITTINGS, ACCESSORIES, ETC. AS REQUIRED.

6.3.2 DESCRIPTION--ALUMINUM ALLOY CONSTRUCTION. TYPE--LADDER WITH 18" MAX. SPACING. DEPTH--MIN. 4". WIDTH--AS INDICATED ON DRAWINGS (MIN. 12" HORIZ. RUNS, MIN. 6" VERTICAL RUNS). SUPPORT SPAN--8' MIN. UNLESS OTHERWISE NOTED. LOADING--400 POUNDS/FOOT. RADIUS--36" MIN. (SMALLER RADIUS MAY BE PERMITTED IF APPROVED BY CROWN. COVER--VENTILATED .063 ALUMINUM, PROVIDE WHERE INDICATED.

6.3.3 SUSPENDED CABLE TRAY SHALL BE SEISMICALLY BRACED FOR SITES HAVING IBC SEISMIC DESIGN CATEGORY OF C, D, E, OR F.

6.4 TESTING

6.4.1 PRIOR TO TESTING, CONTRACTOR WILL PERFORM INSPECTION OF ANTENNA AND COAXIAL SYSTEM AND RECORD FINDINGS ON "ANTENNA INSPECTION FORM." ALL ITEMS SHOULD BE LISTED AS COMPLETE ON FORM PRIOR TO ANTENNA SYSTEM TESTING. CONTRACTOR SHALL VERIFY ALL AZIMUTHS & DOWN TILTS ARE TRUE, AND ENSURE ALL CONNECTORS HAVE BEEN INSTALLED TO MANUFACTURER SPECIFIED TORQUE VALUES (IF APPLICABLE).

6.4.2 CONTRACTOR SHALL NOTIFY THE CROWN REPRESENTATIVE A MIN. OF 48 HOURS PRIOR TO ANTENNA SYSTEMS TESTING.

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WHERE QUALITY STILL COUNTS

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GN-2

1 EXISTING VIEW OF SITE

2 PROPOSED VIEW OF SITE

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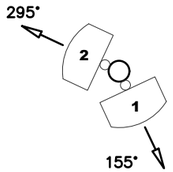
Sheet Title:
SIMULATION

Sheet Number:
C-0

ANTENNA AZIMUTH ORIENTATION

ANT #	MANUF.	MODEL	QTY	AZIMUTH
1	AMPHENOL	HTXCWW631114	1	155°
2	AMPHENOL	HTXCWW631114	1	295°

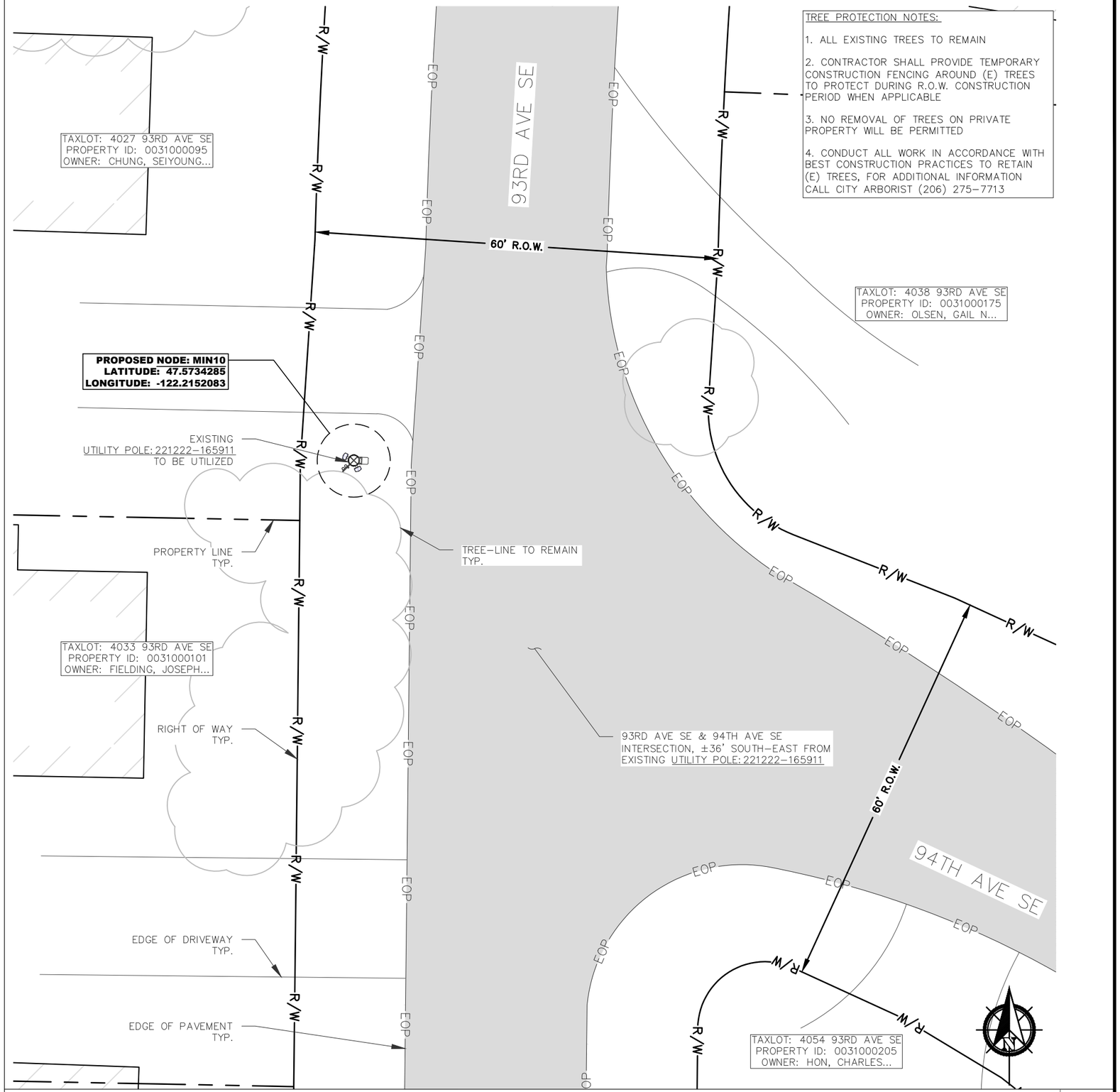


NOTES:

1. FIBER & POWER LINES ARE FOR REFERENCE ONLY. REFER TO FIBER DESIGN DRAWINGS FOR ACTUAL PLACEMENT AND DETAILS.
2. PULLBOXES ARE SHOWN FOR GENERAL LOCATION ONLY. ACTUAL LOCATION TO BE FIELD LOCATED AND SITUATED TO AVOID ANY IMPENDING SITE FEATURES, SUCH AS ROCKS, TREES, LANDSCAPING, FENCE POSTS, SIGNAGE, ETC. WHEN APPLICABLE.

SITE WORK GENERAL NOTES:

1. THE CONTRACTOR SHALL COMPLETE A FULL UTILITY LOCATE SERVICE PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, IRRIGATION, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES. WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, UTILITIES SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES WHEN APPLICABLE.
3. CONTRACTOR AND SUB-CONTRACTORS SHALL VERIFY ALL UTILITY SERVICE CONNECTION LOCATIONS AND VERIFY ALL DIMENSIONS AND NOTES PRIOR TO PROCEEDING WITH WORK.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL SURFACE REPAIRS SHALL MEET AHJ REQUIREMENTS, IF APPLICABLE.
6. THE CONTRACTOR SHALL COORDINATE LOCATION OF POLE AND EQUIPMENT WITH THE SURVEYOR OF RECORD PRIOR TO COMMENCING WORK. ALL NEW POLE INSTALLATIONS SHALL BE 2' MIN. FROM EXISTING SIDEWALKS TO MEET AHJ REQUIREMENTS.
7. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TELECOMMUNICATIONS AREAS, IF APPLICABLE.
8. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND, NOR SHALL ANY FROZEN MATERIALS, SNOW OR ICE BE PLACED IN FILL OR EMBANKMENT. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
9. OPEN EXCAVATIONS, SHALL BE BARRICADED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC OR LEFT EXPOSED OVER NIGHT.
10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. ALL DISTURBED LANDSCAPING SHALL BE REPLACED, RESEED, AND REGROWN TO MATCH THE ORIGINAL CONDITION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
11. ALL WORK IS BEING PERFORMED IN THE RIGHT-OF-WAY. VERIFY ALL R.O.W. LINES, EQUIPMENT LOCATION AND INSTALLATIONS WITH SURVEYED DATA. NO MATERIALS SHALL BE STORED ON PRIVATE PROPERTY.
12. LANE CLOSURES OR OBSTRUCTIONS SHALL BE COORDINATED WITH THE AHJ.
13. TEMPORARY LIGHTING WILL BE COORDINATED WITH THE AHJ AND PSE PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
14. REASONABLE BEST EFFORTS TO DESIGN AND LOCATE ANY IMPROVEMENTS ARE DONE SO IN A WAY TO PRESERVE AND PROTECT LARGE (REGULATED) TREES PER ORDINANCE: MICC 19.10.040.B.2



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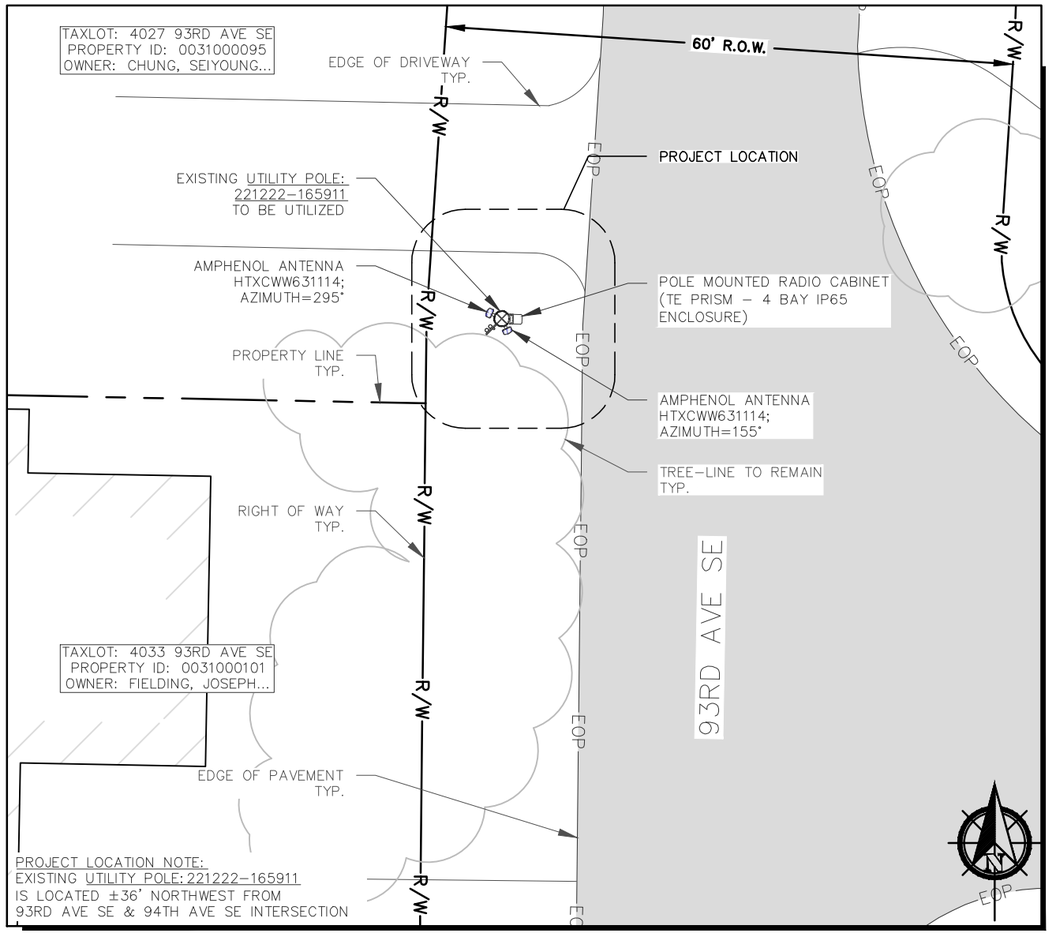
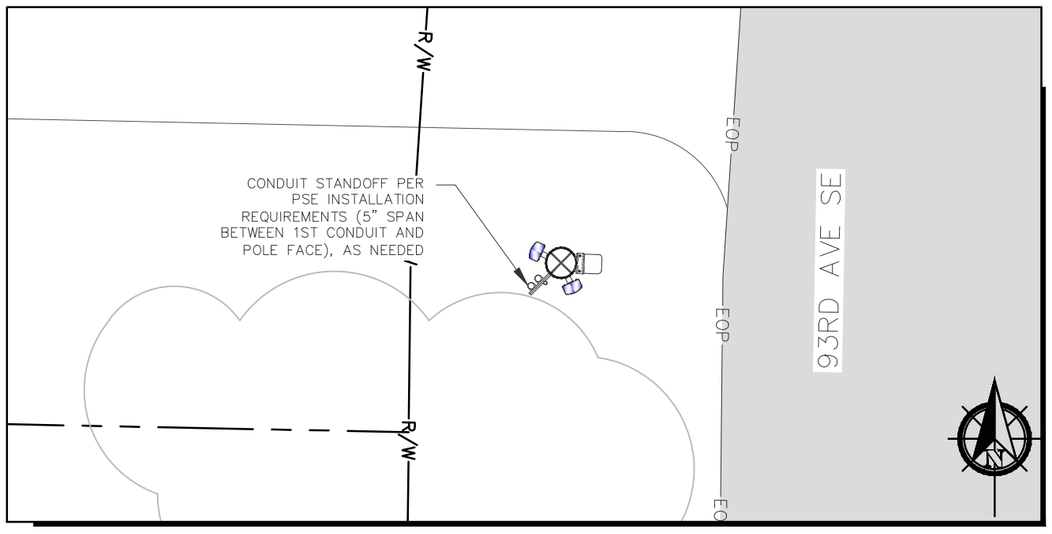


1 ENLARGED GROUND DESIGN

SCALE: 1/16"=1'



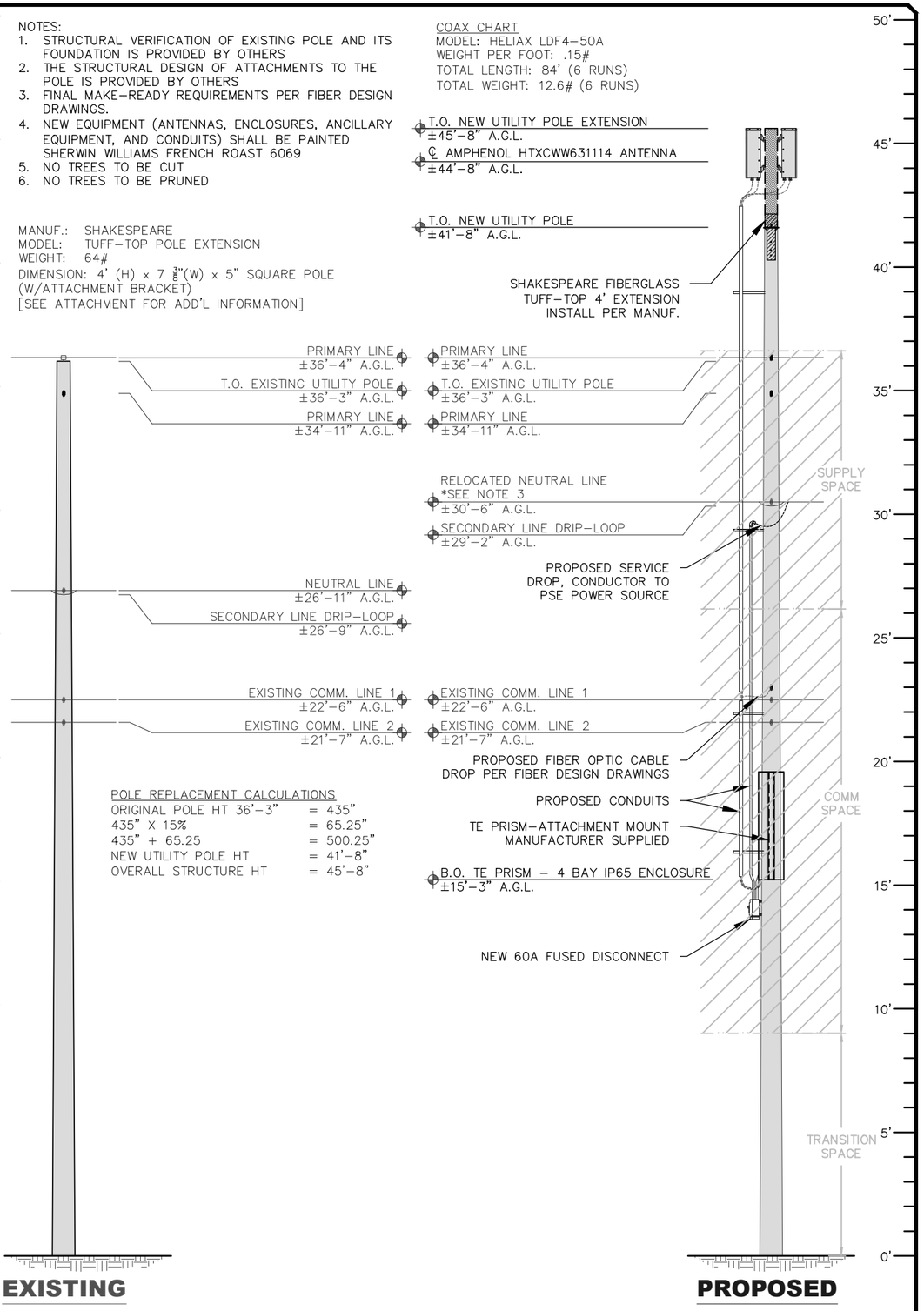
2 CONDUIT ROUTING & SPACING

SCALE: 1/8"=1'

NOTES:
1. STRUCTURAL VERIFICATION OF EXISTING POLE AND ITS FOUNDATION IS PROVIDED BY OTHERS
2. THE STRUCTURAL DESIGN OF ATTACHMENTS TO THE POLE IS PROVIDED BY OTHERS
3. FINAL MAKE-READY REQUIREMENTS PER FIBER DESIGN DRAWINGS.
4. NEW EQUIPMENT (ANTENNAS, ENCLOSURES, ANCILLARY EQUIPMENT, AND CONDUITS) SHALL BE PAINTED SHERWIN WILLIAMS FRENCH ROAST 6069
5. NO TREES TO BE CUT
6. NO TREES TO BE PRUNED

MANUF.: SHAKESPEARE
MODEL: TUFF-TOP POLE EXTENSION
WEIGHT: 64#
DIMENSION: 4' (H) x 7 ⅝"(W) x 5" SQUARE POLE (W/ATTACHMENT BRACKET)
[SEE ATTACHMENT FOR ADD'L INFORMATION]

COAX CHART
MODEL: HELIAX LDF4-50A
WEIGHT PER FOOT: .15#
TOTAL LENGTH: 84' (6 RUNS)
TOTAL WEIGHT: 12.6# (6 RUNS)



POLE REPLACEMENT CALCULATIONS

ORIGINAL POLE HT 36'-3"	= 435"
435" X 15%	= 65.25"
435" + 65.25	= 500.25"
NEW UTILITY POLE HT	= 41'-8"
OVERALL STRUCTURE HT	= 45'-8"

EXISTING **PROPOSED**

3 POLE ELEVATION - EAST

SCALE: 3/16"=1'

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Commerce City, CO 80020
www.WYCOFS.com

Engineer Seal:

Revision:	Drawn By:	Ck'd By:	Date:
2	WA	VP	02/09/17

Issued For:
Construction Drawings

Project:
MERCER ISLAND
SMALL CELL SOLUTION

Node:
MIN 10

Street Address:
4027 93rd Ave SE
Mercer Island, WA 98040
Pole ID: 221222-165911

Coordinates (NAD 84):
LATITUDE: 47.5734285
LONGITUDE: -122.2152083

Paper Size & Scales:
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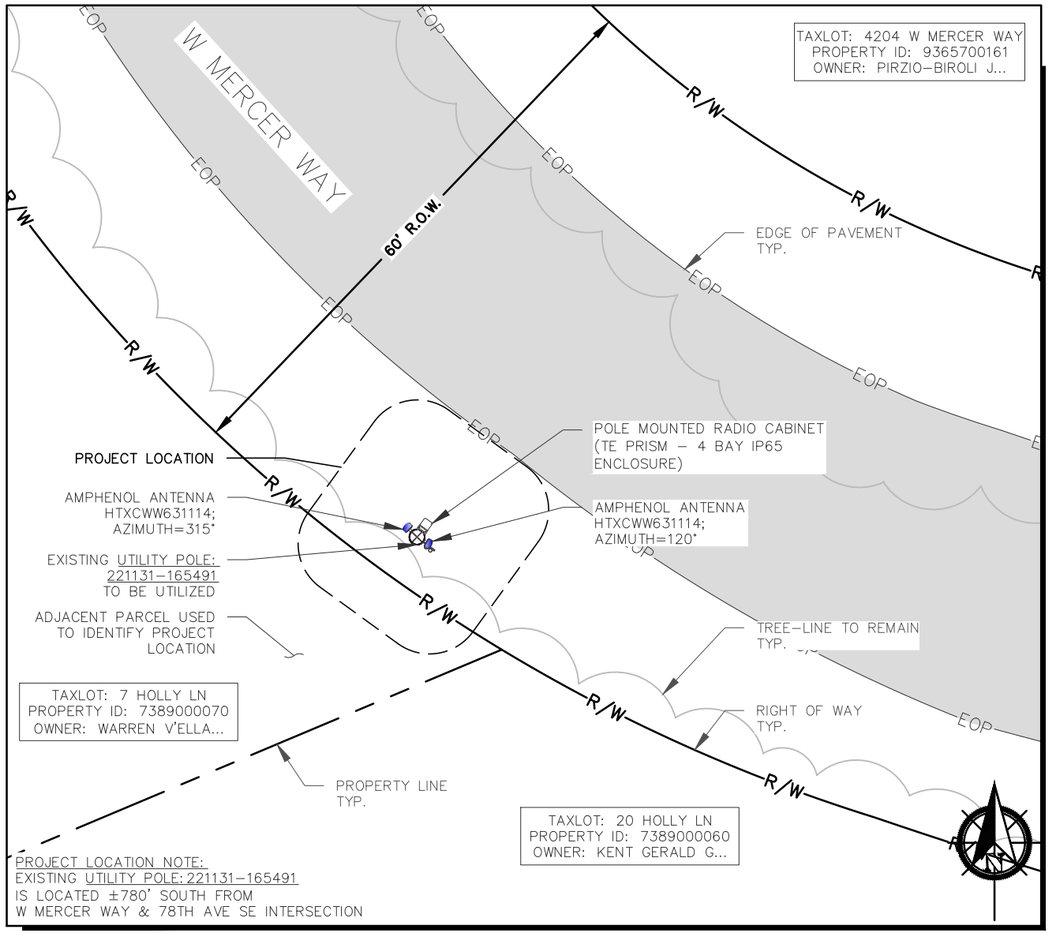
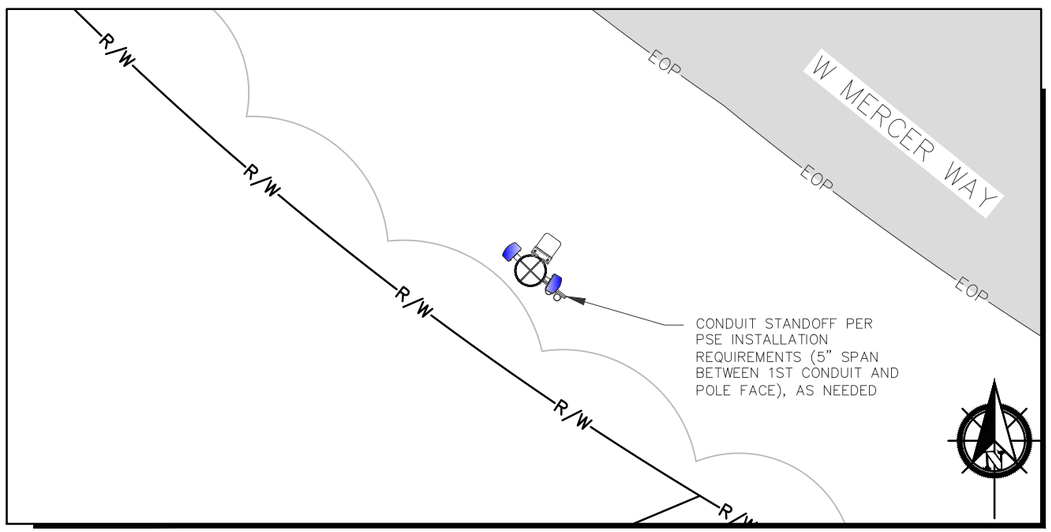
Sheet Title:
ENLARGED GROUND DESIGN & POLE ELEVATION

Sheet Number:
C-2



1 ENLARGED GROUND DESIGN

SCALE: 1/16"=1'



2 CONDUIT ROUTING & SPACING

SCALE: 1/8"=1'

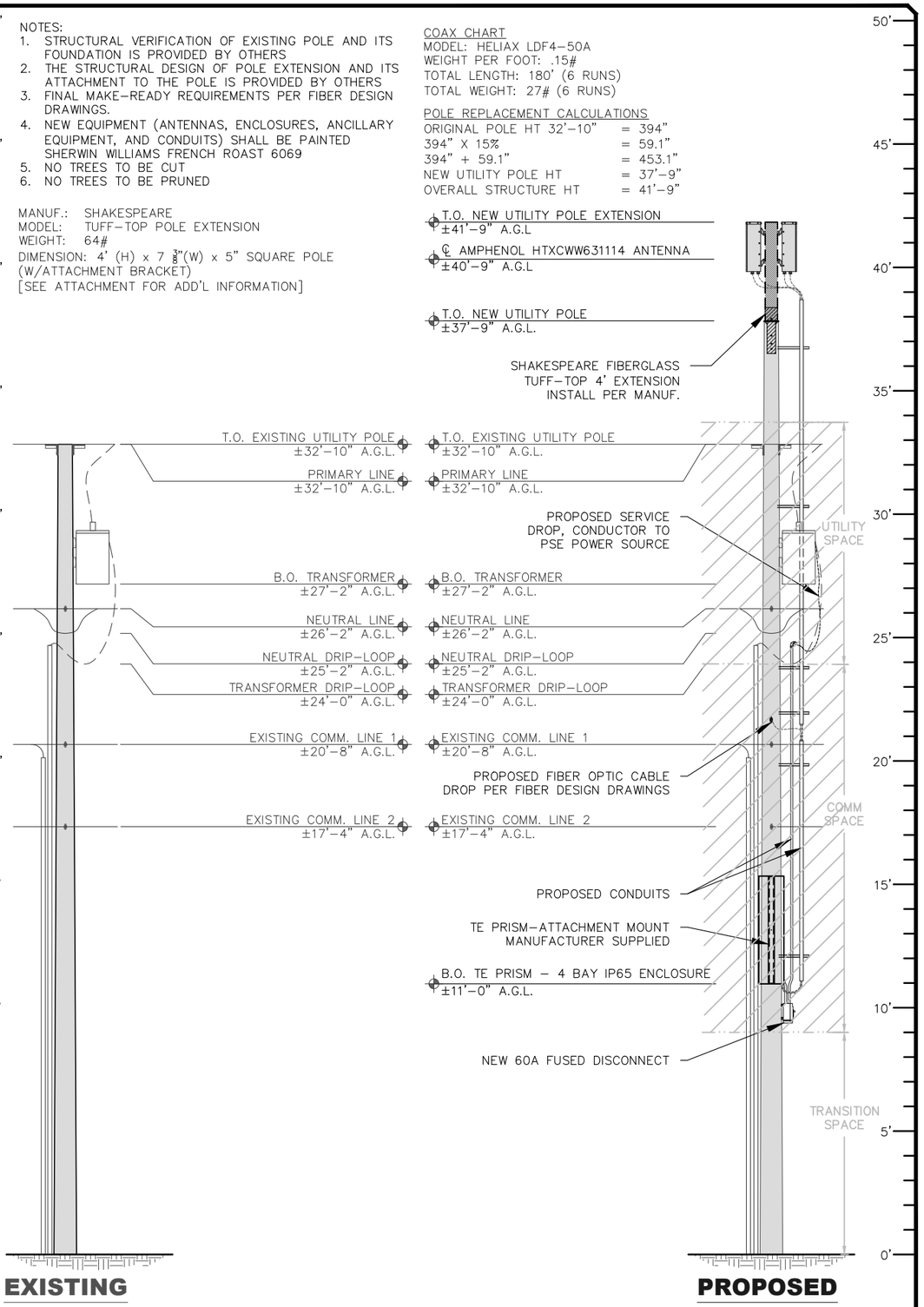
NOTES:
1. STRUCTURAL VERIFICATION OF EXISTING POLE AND ITS FOUNDATION IS PROVIDED BY OTHERS
2. THE STRUCTURAL DESIGN OF POLE EXTENSION AND ITS ATTACHMENT TO THE POLE IS PROVIDED BY OTHERS
3. FINAL MAKE-READY REQUIREMENTS PER FIBER DESIGN DRAWINGS.
4. NEW EQUIPMENT (ANTENNAS, ENCLOSURES, ANCILLARY EQUIPMENT, AND CONDUITS) SHALL BE PAINTED SHERWIN WILLIAMS FRENCH ROAST 6069
5. NO TREES TO BE CUT
6. NO TREES TO BE PRUNED

MANUF.: SHAKESPEARE
MODEL: TUFF-TOP POLE EXTENSION
WEIGHT: 64#
DIMENSION: 4' (H) x 7 3/8"(W) x 5" SQUARE POLE (W/ATTACHMENT BRACKET)
[SEE ATTACHMENT FOR ADD'L INFORMATION]

COAX CHART
MODEL: HELIAX LDF4-50A
WEIGHT PER FOOT: .15#
TOTAL LENGTH: 180' (6 RUNS)
TOTAL WEIGHT: 27# (6 RUNS)

POLE REPLACEMENT CALCULATIONS

ORIGINAL POLE HT 32'-10"	= 394"
394" X 15%	= 59.1"
394" + 59.1"	= 453.1"
NEW UTILITY POLE HT	= 37'-9"
OVERALL STRUCTURE HT	= 41'-9"



3 POLE ELEVATION - NORTHEAST

SCALE: 3/16"=1'

CROWN CASTLE

WA-CLEC, LLC

Engineering Firm:
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Pole ID: 221131-165491

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LONGITUDE: -122.2325158

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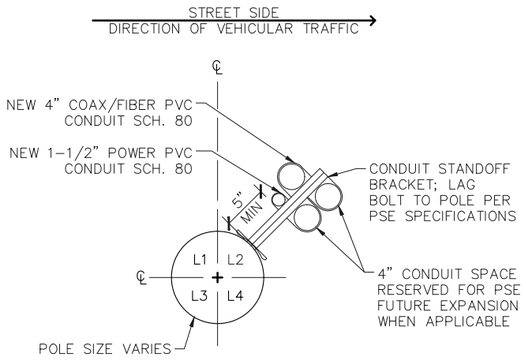
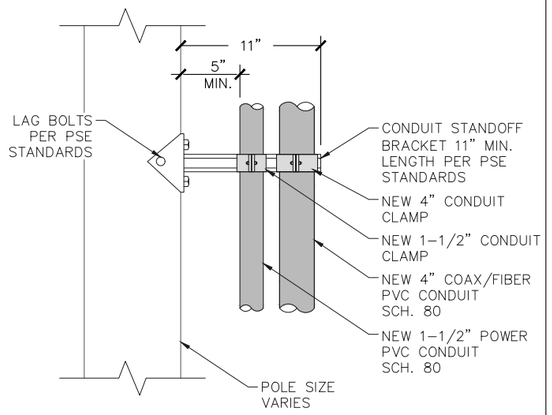
C-2

DETAIL NOTES:
1. CONTRACTOR TO COORDINATE CONDUIT INSTALLATION WITH PUGET SOUND ENERGY (PSE).
2. POLE MOUNTED ANTENNAS ARE NOT SHOWN FOR CLARITY.
3. MOUNT STANDOFFS ON POLE FACE PER PLAN 1/C-2. THIS DETAIL IS FOR STANDOFF BRACKET INFORMATION ONLY.



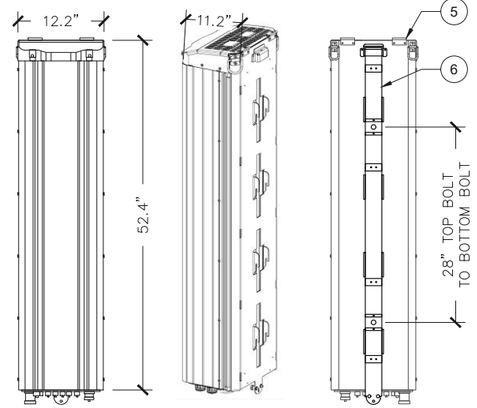
1 CONDUIT ATTACHMENT — SCALE: N.T.S.

DETAIL NOTES:
1. USE PRE-DRILLED HOLES WHEN AVAILABLE.
2. FOR FIELD-DRILLED HOLES, WHEN APPROVED BY PSE, SHALL BE TREATED WITH A 2% COPPER NAPHTHENATE SOLUTION OR OTHER PSE-APPROVED PRESERVATIVE.



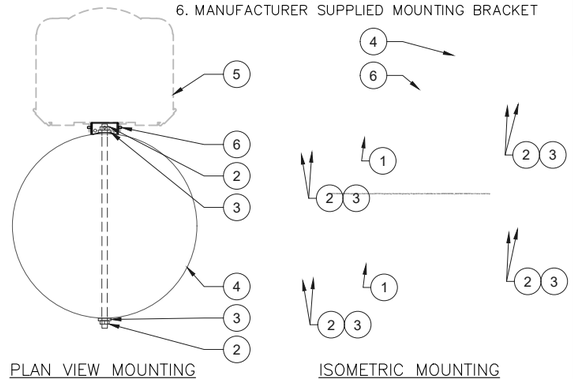
2 ATTACHMENT DETAIL — SCALE: N.T.S.

MANUF.: TE CONNECTIVITY
MODEL: PRISM
WEIGHT: 116 LBS
WEIGHT: 188 LBS W/ MODULES



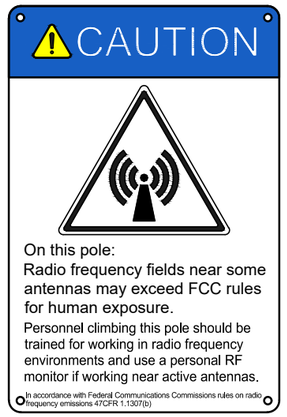
FRONT VIEW | ISOMETRIC VIEW | BACK VIEW

KEYED NOTES:
1. (2) 1/2"ø SQUARE-HEAD THROUGH-BOLT OR EQUIVALENT PER MANUF.
2. (2) 1/2"ø SQUARE NUT OR EQUIVALENT PER MANUF.
3. (2) 1/2"ø SQUARE WASHER PER MANUF.
4. PSE UTILITY POLE
5. TE PRISM OUTLINE
6. MANUFACTURER SUPPLIED MOUNTING BRACKET

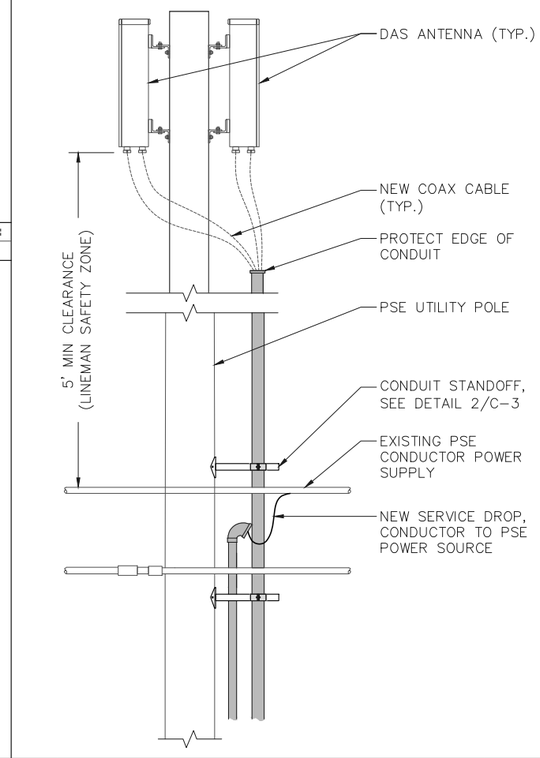


PLAN VIEW MOUNTING | ISOMETRIC MOUNTING

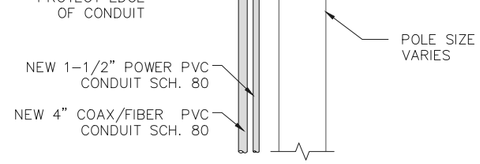
3 TE PRISM - POLE MOUNTED CABINET DETAILS — SCALE: N.T.S.



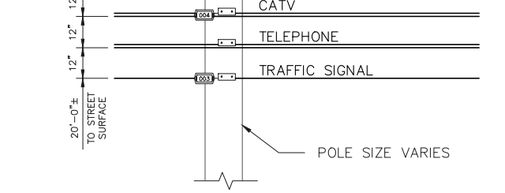
DETAIL NOTES:
1. CONTRACTOR TO COORDINATE CONDUIT INSTALLATION WITH PUGET SOUND ENERGY (PSE).
2. ALL CONDUIT RISERS MUST BE MOUNTED ON CONDUIT STANDOFF BRACKETS WITH A MINIMUM OF 5" BETWEEN THE POLE FACE AND THE 1ST CONDUIT.



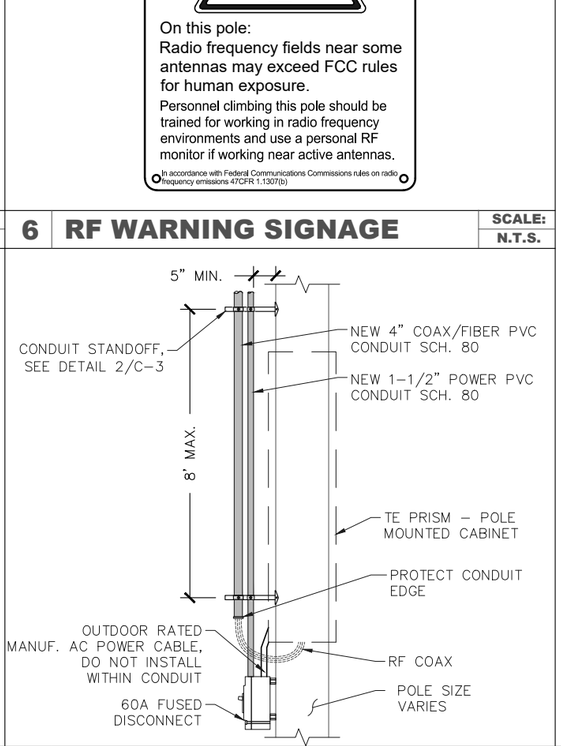
10 CONDUIT ROUTING (TYP.) — SCALE: N.T.S.



4 WEATHERHEAD DETAIL — SCALE: N.T.S.

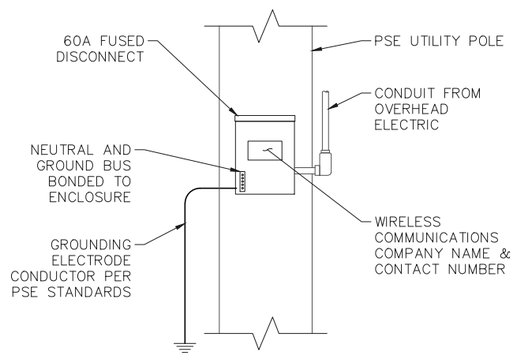


5 LINE SPACING (TYP.) — SCALE: N.T.S.



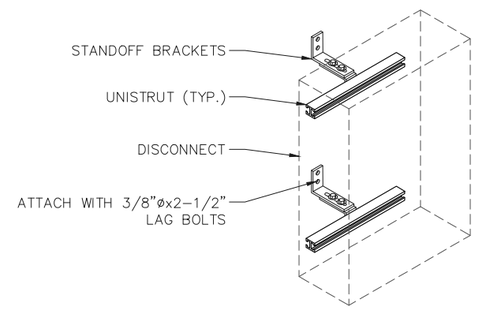
9 CONDUIT INSTALLATION — SCALE: N.T.S.

DETAIL NOTES:
1. NEW DISCONNECT ENCLOSURE TO BE NEMA 3R RATED OR BETTER.



7 SERVICE EQUIPMENT (TYP.) — SCALE: N.T.S.

DETAIL NOTES:
1. NEW DISCONNECT ENCLOSURE TO BE NEMA 3R RATED OR BETTER.



MANUF.: NEWAVE TOWER COMPONENTS
MODEL: CUSTOM EQUIPMENT MOUNT
WEIGHT: ~4 LBS

8 SERVICE MOUNT (TYP.) — SCALE: N.T.S.

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Sheet Title:
CIVIL DETAILS

Sheet Number:
C-3

NOTES:

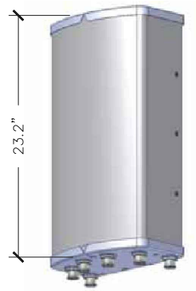
1. ACTUAL CABLE LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR. INSTALLED LENGTHS SHALL BE RECORDED.
2. THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED.
3. RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.
4. ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G., OUTDOORS, INDOORS–OCCUPIED, INDOORS–UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.
5. ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE JMA WIRELESS 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS, EXCEPT GPS ANTENNA WITH N–TYPE CONNECTOR WHEN APPLICABLE.
6. ANTENNAS, POWER SPLITTERS, AND DIPLEXERS SHALL BE PAINTED WHEN REQUIRED BY THE LANDLORD OR AUTHORITY HAVING JURISDICTION, IN ACCORDANCE WITH MANUFACTURERS' SURFACE PREPARATION AND PAINTING REQUIREMENTS. REMOTE RADIO UNITS AND ACTIVE ANTENNAS SHALL NOT BE PAINTED UNLESS SPECIAL ACCEPTANCE IS OBTAINED FROM CROWN CASTLE.
7. CABLE SHIELDS, AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER, WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. VERTICAL RUNS EXCEEDING 200 FEET SHALL ALSO BE GROUNDED AT THE MIDPOINT AND AT INTERVALS OF 100 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.
8. APPROVED GROUNDING KITS, WHICH INCLUDE GROUNDING STRAPS, SHALL BE USED TO GROUND THE COAXIAL CABLE SHIELDS AND CONDUITS. GROUNDING KITS SHALL BE PLACED ONLY ON A STRAIGHT SECTION OF THE COAXIAL CABLE. THE GROUND CONDUCTORS FOR THE KITS AT THE TOP OF THE TOWER, AND IN THE MIDDLE SECTION OF THE TOWER, ARE BONDED DIRECTLY TO TOWER STEEL USING BOLTED, OR APPROVED CLAMP CONNECTIONS. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
9. ALL RADIO SIGNAL CABLE SHALL BE LABELED AND COLOR CODED PER MARKET REQUIREMENTS.
10. ANTENNA FEED LINE SYSTEM SWEEP TESTING SHALL BE PERFORMED AND REPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF PROJECT SPECIFICATIONS. CONTRACTOR WILL NOT ACCEPT A RADIO SIGNAL CABLE INSTALLATION WITH UNSATISFACTORY SWEEP TEST RESULTS.
11. PIM TESTS SHALL BE PERFORMED ON NEW AND MOVED OR MODIFIED COAXIAL CABLE INSTALLATIONS. TEST SHALL BE PERFORMED AND REPORTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
12. DC CONNECTORS AT OUTDOOR BIAS–Ts OR DIPLEXER/TRIPLEXER PORTS SHALL BE WEATHERPROOFED PER MANUFACTURER'S RECOMMENDATIONS.
13. CABLES AND CONNECTORS MUST BE PREPARED AND INSTALLED USING THE TOOLS RECOMMENDED BY THE COAXIAL CABLE MANUFACTURER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE CORRECT TOOLS ARE USED FOR THE SIZE AND TYPE OF COAX AND CONNECTOR. ALL ASPECTS OF INSTALLATION OF ALL COAXIAL CABLE SHALL FOLLOW THE CABLE MANUFACTURER'S RECOMMENDATIONS, INCLUDING THOSE FOR PULLING, MOUNTING AND GROUNDING.
14. COAXIAL CABLE SIZES 1/4" AND 1/2" SHALL HAVE A MINIMUM 6 INCH STRAIGHT SECTION WHERE IT IS TERMINATED. CABLE SIZES 5/8" AND LARGER SHALL HAVE A MINIMUM STRAIGHT SECTION OF 12 INCHES.
15. PROVIDE A CABLE SUPPORT DIRECTLY BELOW THE GROUND KIT ON A VERTICAL RUN OF COAX CABLE GREATER THAN 1/2 INCH.

1 RF NOTES

SCALE: N.T.S.

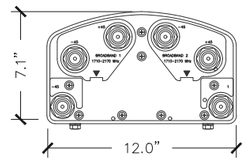
4 NOT USED

SCALE: N.T.S.



ILLUSTRATION

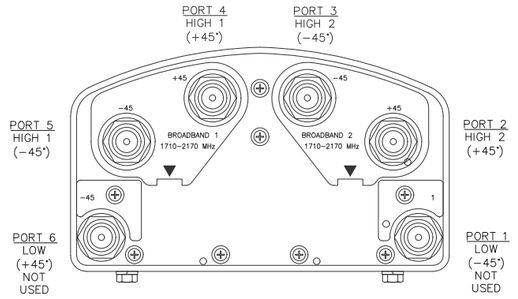
MANUF.: AMPHENOL
MODEL: HTXCWW63111414
BAND: TRI
FREQ. (LOW): 696–960
FREQ. 2x(HIGH): 1710–2170
POLARIZATION: DUAL (45°)
WEIGHT: 13 LBS.



BOTTOM VIEW

3 DAS ANTENNA SPECS.

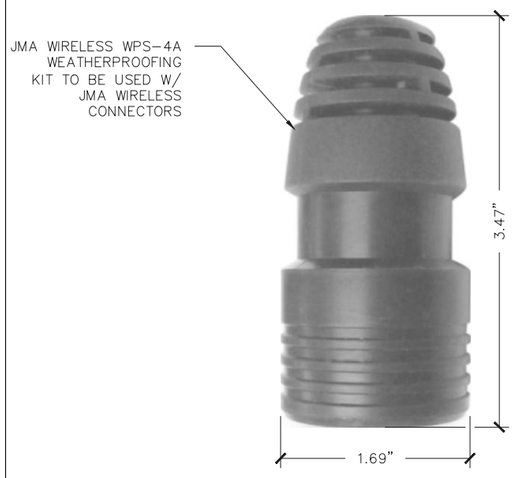
SCALE: N.T.S.



4 PORT DESIGNATIONS

SCALE: N.T.S.

MANUF.: JMA WIRELESS
MODEL: WPS–4A
WEIGHT: 0.12 LBS.

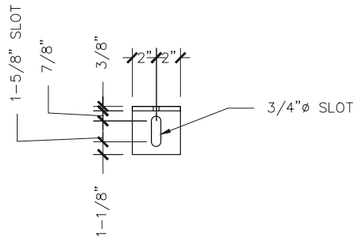


5 WEATHERPROOFING

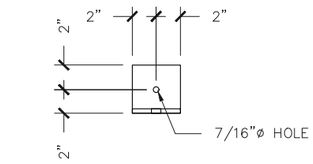
SCALE: N.T.S.

AMPHENOL ANTENNA MOUNT KEYED NOTES:

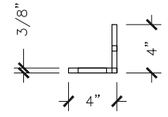
1. AMPHENOL HTXCWW63111414 ANTENNA
2. EXISTING OR NEW UTILITY POLE, POLE SIZE VARIES
3. ANGLE BRACKET TYP OF 2 SETS PER ANTENNA, SEE DETAIL BELOW
4. GALV. 3/8" THREADED ROD, 3/8" WASHER, LOCKWASER, NUT HEX AT BOTH ENDS (2 PLCS)
5. RECESS PLATE TO SIT FLUSH ON WOOD POLE
6. GALV. 5/8" BOLT, NUT, WASHER, AND LOCKWASHER TYP OF 4



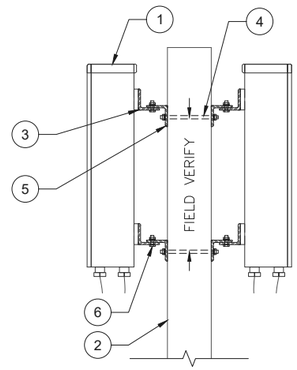
ANGLE BRACKET PLAN VIEW



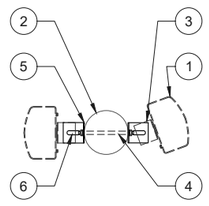
ANGLE BRACKET FRONT VIEW



ANGLE BRACKET SIDE VIEW



TYPICAL ELEVATION VIEW



TYPICAL PLAN VIEW

NOTE:
1. BRACKETS GALVANIZED AFTER FABRICATION
2. UTILIZE GALVANIZED FASTENERS DURING CONSTRUCTION
3. VERIFY BRACKET DIMENSIONS PRIOR TO FABRICATION

6 ANTENNA MOUNTING (TYP.)

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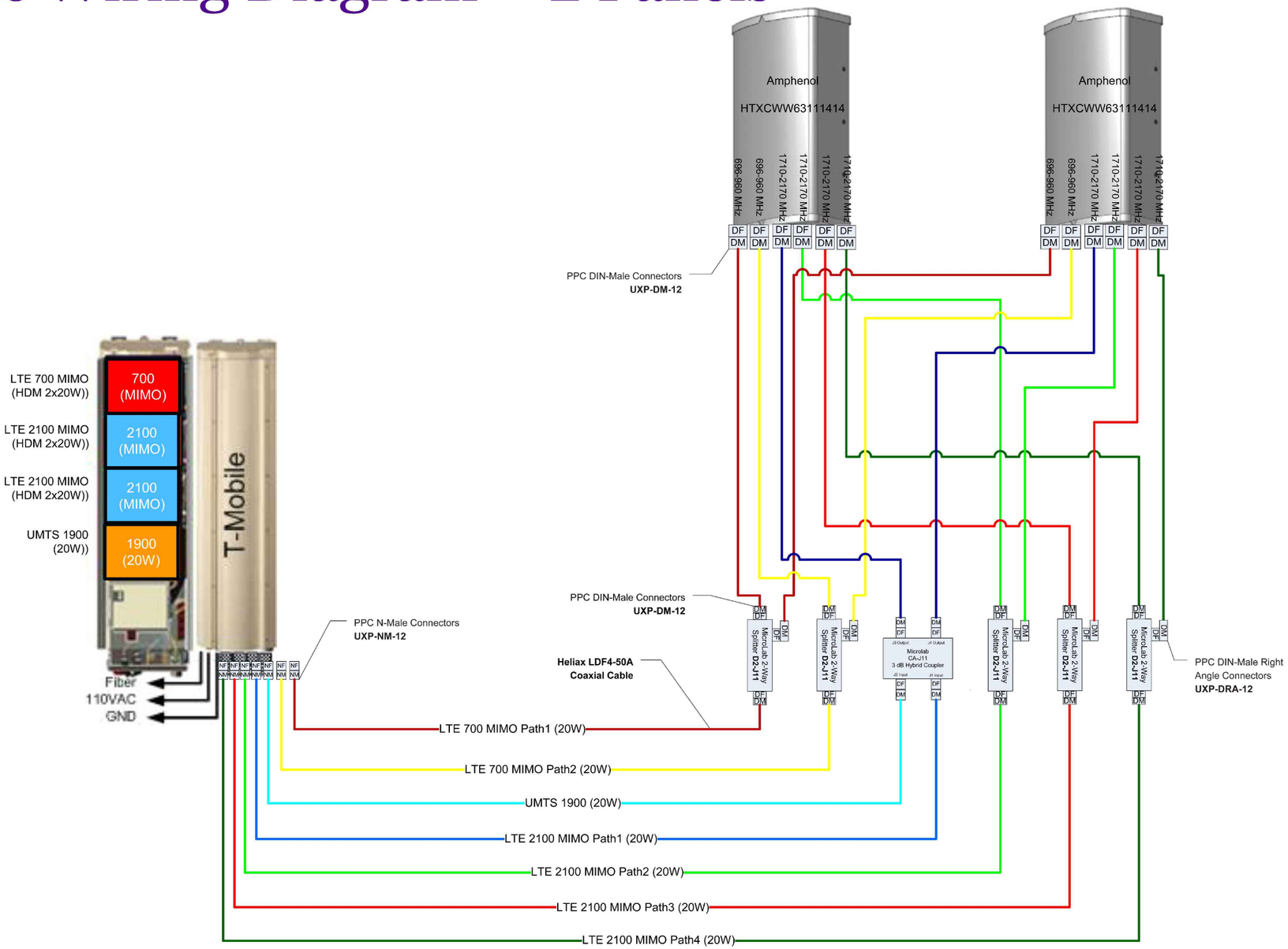
RF NOTES & DETAILS

Sheet Number:
C-4

Node Wiring Diagram – 2 Panels



CROWN CASTLE

Proprietary & Confidential

Mercer Island

1 RF WIRING DIAGRAM

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Sheet Title:
RF WIRING DIAGRAM

Sheet Number:
C-5

FlexWave Prism

Flexible Outdoor Wireless Coverage and Capacity

REMOTE UNIT ENVIRONMENTAL SPECIFICATIONS

Outside Ambient

Temp Rating:	-40° C to +50° C (-40º F to +122º F)
Storage Temperature:	-40° C to +70° C (-40º F to +158º F)
Humidity:	10% to 90% non-condensing
Lightning Protection:	20kA IEC 1000-45 8/30 µs Waveform

Remote Unit

Enclosure:	IP-65, (Fan IP-55)
Mounting:	Wall, Pole, Inside Pole, and Vault
Cooling:	Fan (external only)
Optical Connectors:	Sealed HMFOC (Multi-fiber connector - 8 fibers) or pass-through
Dimensions:	

	Dimensions (H x W x D)			Weight (Chassis Only)	Weight (With RF Modules)	Volume
Single-Band	25.2"	12.2"	11.2"	65 lbs.	83 lbs.	1.56 cubic ft
	64 cm	30.99 cm	28.45 cm	29 kg	38 kg	.044 cubic M
Dual-Band	33.2"	12.2"	11.2"	81 lbs.	117 lbs.	2.10 cubic ft
	84.33 cm	30.99 cm	28.45 cm	37 kg	53 kg	.059 cubic M
Tri-Band	41.2"	12.2"	11.2"	97 lbs.	151 lbs.	2.64 cubic ft
	104.65 cm	30.99 cm	28.45 cm	44 kg	68 kg	.075 cubic M
Quad-Band	52.4"	12.2"	11.2"	116 lbs.	188 lbs.	3.40 cubic ft
	133.10 cm	30.99 cm	28.45 cm	53 kg	85 kg	.096 cubic M

Host Unit

Mounting:	19-inch rack
Dimensions (H x W x D):	5.25" x 19" x 8.43" (13.34 cm x 48.26 cm x 21.41 cm) (3 RUs)
Weight:	<25 Pounds (<11 kg)

Remote Unit Power Requirements

Power Supply:	100-240 VAC, 50-60 Hz 48 VDC (OPTIONAL)
Battery Backup:	Yes (optional external UPS)

Host Unit Power Requirements

Power Source:	21 to 60 VDC

Element Management

Embedded EMS:	Yes
SNMP Based Management:	Yes

Note: Unless noted otherwise specifications are typical and subject to change
Fully Populated.

The Remote Unit may be field upgraded and serviced.

MANUF.: TE CONNECTIVITY
MODEL: PRISM
WEIGHT: 116 LBS
WEIGHT: 188 LBS W/ MODULES

The Remote Units are available in single, dual, tri and quad band sizes to support up to four bands.

1 TE PRISM ENCLOSURE SCALE: N.T.S.

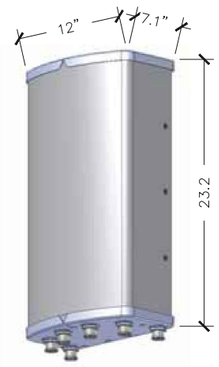
Amphenol ANTENNA SOLUTIONS

696-960 / 1710-2170 / 1710-2170 MHz

HTXCWW63111414Fxy0

Tri Band | FET Panel | XXX-Pol | 65° / 65° / 65° | 11.0 / 14.0 / 14.0 dBi | Fixed Tilt

- Tri band, fixed tilt panel antenna, 6 connectors
- Wide band performance
- Ideal solution for Small Cell applications



MANUF.: AMPHENOL
MODEL: HTXCWW63111414
BAND: TRI BAND
FREQ. (LOW): 696–960
FREQ. (HIGH): 1710–2170
POLARIZATION: ±45°
WEIGHT: 13 LBS

Ordering Options					
When ordering, replace "x" in the model number with the desired low band electrical downtilt and "y" with the desired high band electrical downtilt (same tilt for both high bands). Tilt options are shown below under Electrical Tilt (°).					
Electrical Characteristics	**Low Band 696-960 MHz**		**High Band #1 and #2: 1710-2170 MHz**		
Frequency Bands (MHz)	696-806	806-960	1710-1880	1850-1990	1900-2170
Polarization	±45°		2x ±45°		
Horizontal Beamwidth	75°	70°	65°	70°	75°
Vertical Beamwidth	42°	40°	18°	16°	14°
Gain	10.5 dBi	11.0 dBi	13.5 dBi	14.0 dBi	14.0 dBi
Electrical Downtilt (°)	(x) 0, 5		(y) 0, 2, 4, 6		
Impedance	50Ω		50Ω		
VSWR	≤ 1.5:1		≤ 1.5:1		
Front-to-Back Ratio	> 20 dB		> 25 dB		
Isolation Between Ports	> 25 dB		> 25 dB		
IM3 (2x20W carrier)	< -150 dBc		< -150 dBc		
Input Power	500 W		300 W		
Lightning Protection	Direct Ground				
Connector(s)	6 ports / 7/16 -DIN / Female / Bottom				
Mechanical Characteristics					
Dimensions (Height x Width x Diameter)	589 x 305 x 180 mm		23.2 x 12.0 x 7.1 in		
Weight without Mounting Brackets	5.9 kg		13 lbs		
Survival Wind Speed	241 km/hr		150 mph		
Wind Area	Front: 0.18 m^2 Side: 0.11 m^2		Front: 1.9 ft^2 Side: 1.1 ft^2		
Wind Loads (160 km/hr or 100 mph)	Front: 219 N Side: 129 N		Front: 49 lbf Side: 29 lbf		

2 AMPHENOL HTXCWW63111414 ANTENNA SCALE: N.T.S.

DPB222R

Molded Case Switch

Main Ampere Rating	Maximum hp Rating 120V	240V	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Galvanized Steel				
60	—	10	#14–3	**DPB222R** ④
Non-Metallic/Polycarbonate Enclosure				
60	—	10	#14–2	**B60NARNM-A2** ④

Notes

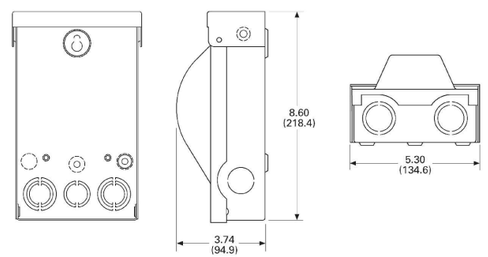
① For replacement pullout head, order part number **96-3258-4**.
② To obtain a Service Entrance Rating, the addition of a **DPFG** (ground bar kit) is required.
③ To obtain a Service Entrance Rating, the addition of a **GB4NM** (ground bar kit) is required.
④ For replacement molded case switch, order part number **BR260NA**.

Technical Data and Specifications

- 10,000 amperes rms symmetrical interrupting rating
- Horsepower rated
- Fusible and non-fusible pullout and molded case switch designs
- 30 and 60 amperes available in fusible
- 60 amperes available in non-fusible and molded case switch
- Class H fuse clips provided on fusible pullout design
- WRTR (weather-resistant/tamper-resistant) receptacle options available

DPB222R and DPU362R

Approximate Dimensions in Inches (mm)



3 EATON 60 AMP DISCONNECT SCALE: N.T.S.

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2	WA	VP	02/09/17

Issued For:
Construction Drawings

Project:
MERCER ISLAND
SMALL CELL SOLUTION

Node:
MIN 10

Street Address:
4027 93rd Ave SE
Mercer Island, WA 98040
Pole ID: 221222-165911

Coordinates (NAD 84):
LATITUDE: 47.5734285
LONGITUDE: −122.2152083

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Sheet Title:
EQUIPMENT SPECIFICATIONS

Sheet Number:
C-6

GROUNDING GENERAL NOTES:

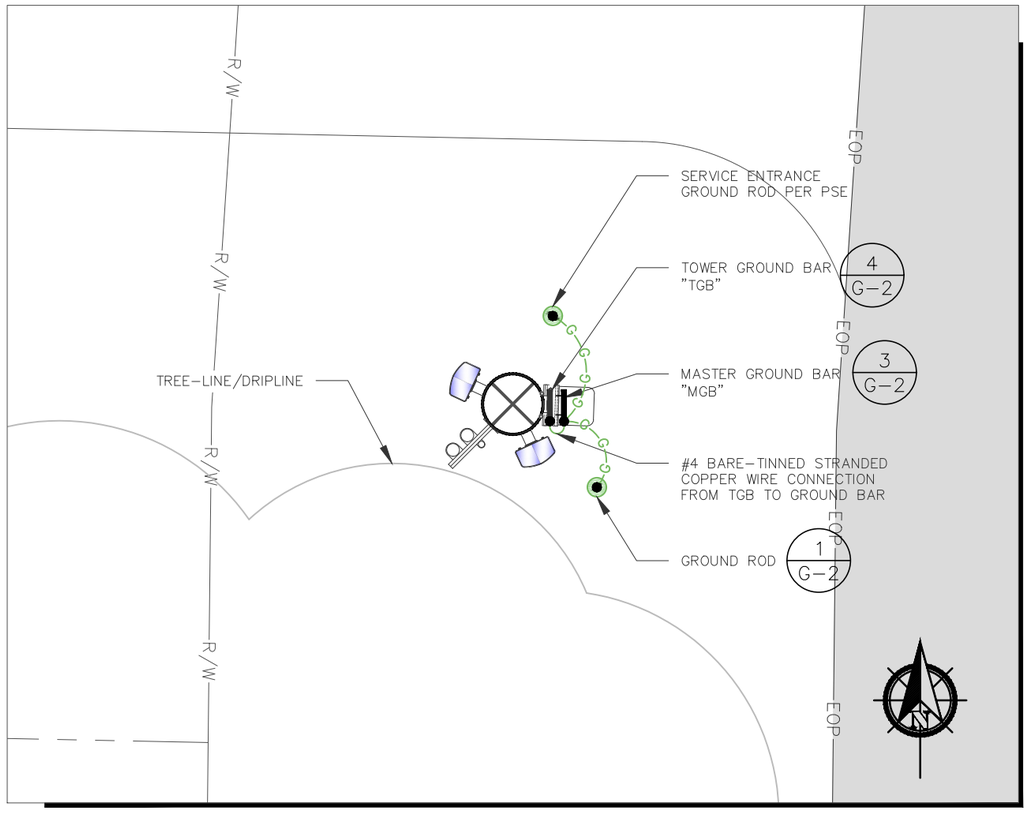
1. ALL GROUND WIRE THAT IS TO BE PLACED BELOW GROUND (I.E. EXTERIOR GROUND RING) SHALL BE #4 BARE–TINNED STRANDED COPPER WIRE OR COARSER. ALL CONNECTIONS BELOW GRADE SHALL BE EXOTHERMICALLY WELDED. GROUND RING SHALL BE A MINIMUM OF 30" BELOW GRADE OR BELOW LOCAL FROST LINE, WHICHEVER IS GREATER, WHEN APPLICABLE.
2. ANY GROUND LEADS CONNECTING FROM ABOVE SURFACE CONNECTIONS LEADING TO THE EXTERIOR GROUND RING BELOW GRADE, WHEN APPLICABLE, SHALL BE COVERED WITH 1/2" LFNC AND SEALED WITH CLEAR SILICONE.
3. ALL MECHANICAL CONNECTIONS SHALL BE U.L. LISTED AND INTENDED FOR THE USE.
4. ALL GROUND LUGS SHALL NOT HAVE INSPECTION WINDOWS DUE TO THE OUTDOOR APPLICATION OF THE PROJECT.
5. ALL CONNECTIONS BETWEEN GROUND LUGS AND THE SURFACE TO BE GROUNDED SHALL HAVE THE PAINT EFFECTIVELY REMOVED AND A LAYER OF ANTIOXIDANT COMPOUND APPLIED PRIOR TO THE LUG MAKING CONTACT WITH THE SURFACE.
6. ALL GROUNDING CONDUCTORS AND HEAT SHRINK SHALL BE "BLACK" IN COLOR AND SHALL BE THHN.
7. ALL HARDWARE SHALL BE STAINLESS STEEL.
8. GROUND RODS SHALL NOT BE PLACED WITHIN A TREE'S DRIPLINE. DRIPLINE IS DEFINED BY OUTERMOST LEAVES ON A TREE.

1 GROUNDING GENERAL NOTES

SCALE: N.T.S.

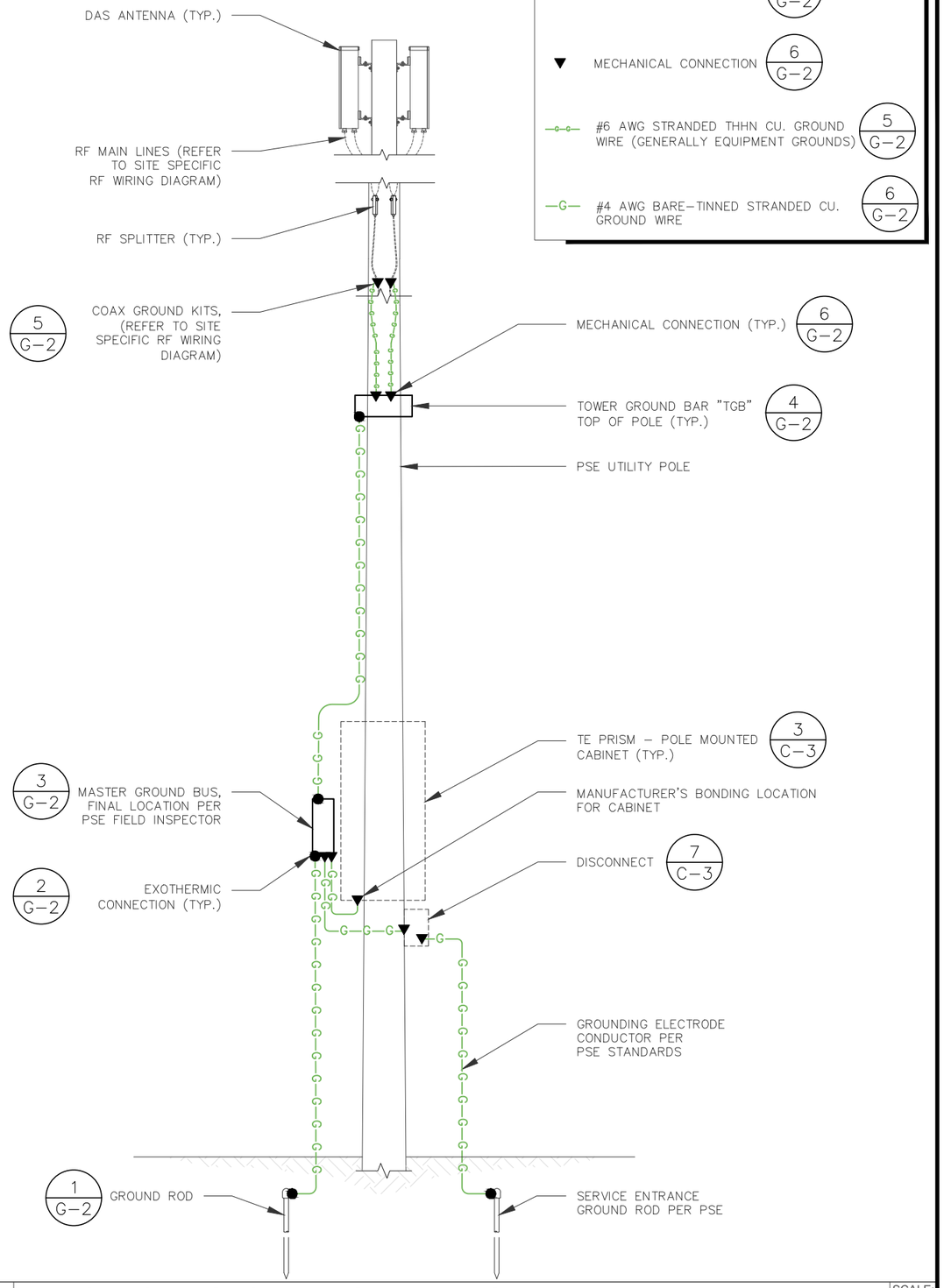
LEGEND

- EXOTHERMIC CONNECTION — 2 / G–2
- MECHANICAL CONNECTION — 6 / G–2
- TOWER GROUND BAR "TGB" — 4 / G–2
- #4 BARE–TINNED STRANDED COPPER WIRE — 1 / G–2
- 5/8" DIA. x 8' LONG CU. CLAD–STEEL GROUND ROD — 1 / G–2
- 2"x6"x1/4"MAIN GROUND BAR
- TOWER GROUND BAR



2 SITE GROUNDING PLAN

SCALE: 1/4" =1'



LEGEND

- EXOTHERMIC CONNECTION — 2 / G–2
- MECHANICAL CONNECTION — 6 / G–2
- #6 AWG STRANDED THHN CU. GROUND WIRE (GENERALLY EQUIPMENT GROUNDS) — 5 / G–2
- #4 AWG BARE–TINNED STRANDED CU. GROUND WIRE — 6 / G–2

3 TYPICAL SITE GROUNDING ELEVATION

SCALE: N.T.S.

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GROUNDING PLAN & ELEVATION

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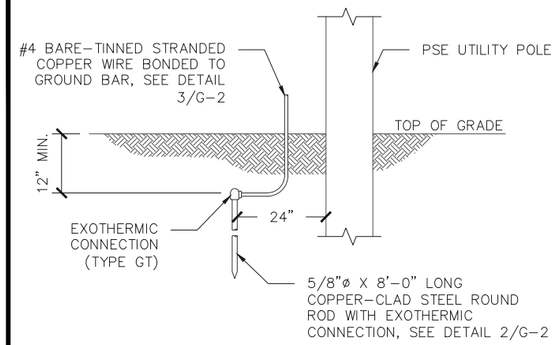
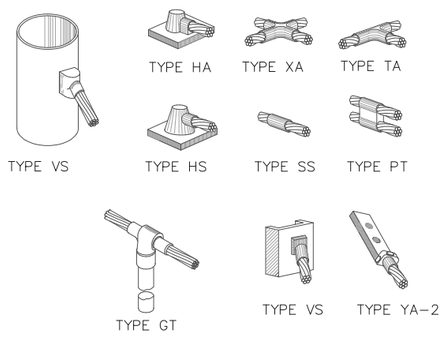
G-1



1 GROUND ROD DETAIL

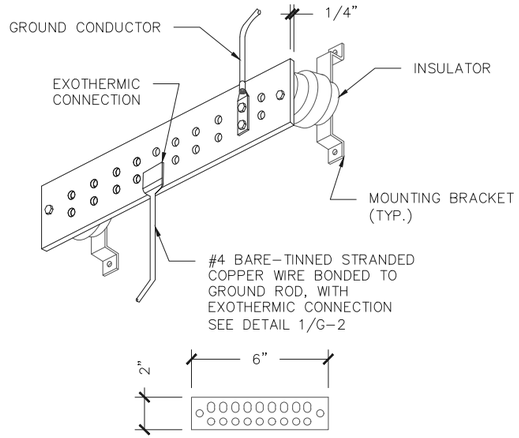
SCALE: N.T.S.

NOTE: ERICO CADWELD "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.



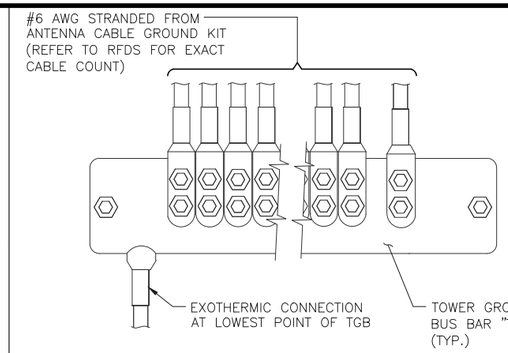
2 EXOTHERMIC WELD TYPES

SCALE: N.T.S.



3 MASTER GROUND BUS

SCALE: N.T.S.

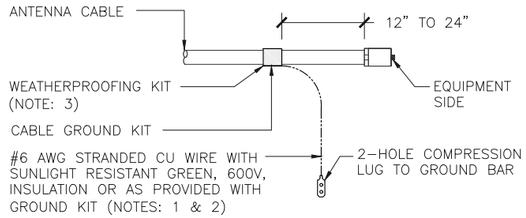


DETAIL NOTES:

1. ALL GROUND WIRES AND HEAT SHRINK SHALL BE "BLACK" IN COLOR.
2. ALL GROUND LUGS SHALL BE UL LISTED. GROUND LUGS SHALL NOT HAVE INSPECTION WINDOWS DUE TO OUTDOOR APPLICATION.
3. CONTRACTOR TO UTILIZE ANTIOXIDANT ON ALL LUG CONNECTIONS.
4. ALL HARDWARE SHALL BE STAINLESS STEEL.

4 TOWER GROUND BAR (TGB)

SCALE: N.T.S.

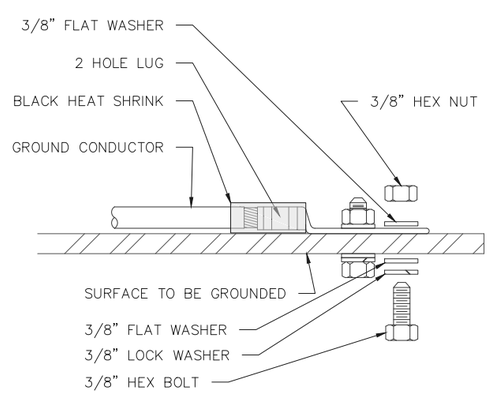


DETAIL NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHERPROOFING SHALL BE (TYPE AND PART NUMBER) AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER AND APPROVED BY CROWN CONSTRUCTION MANAGER.

5 GROUND KIT TO COAX (TYP)

SCALE: N.T.S.



6 MECHANICAL GROUND (TYP.)

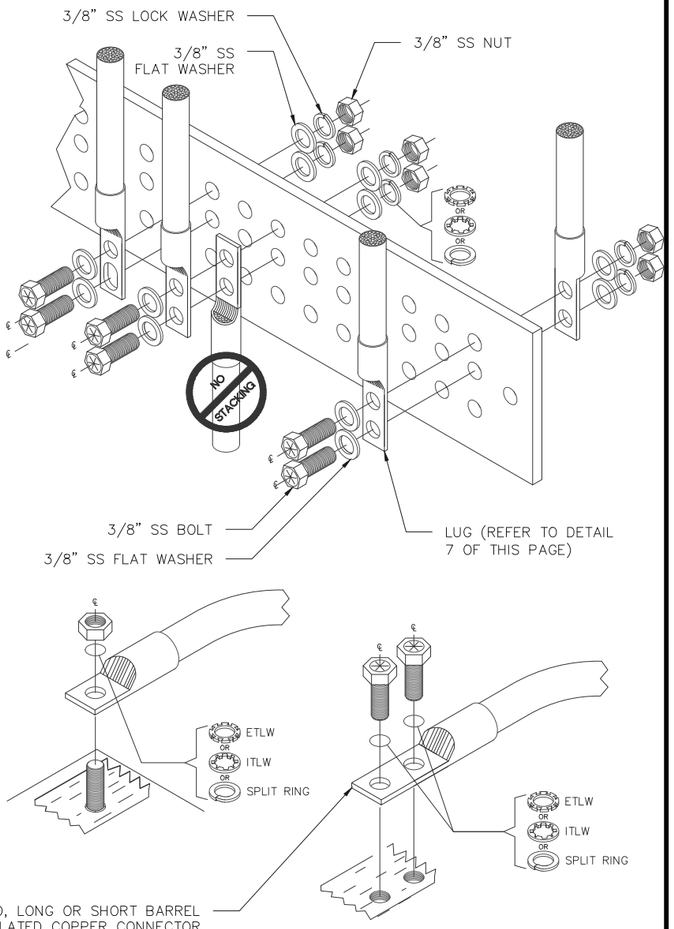
SCALE: N.T.S.

DETAIL NOTES:

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

DETAIL NOTES:

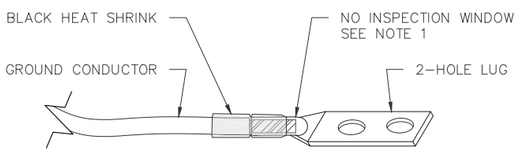
1. TWO-HOLE BOLTED TONGUE COMPRESSION CONNECTORS SHALL BE USED EXCEPT WHERE EQUIPMENT MANUFACTURER HAS PROVIDED FOR A SINGLE-BOLT CONNECTION.
2. IF A SINGLE HOLE CONNECTOR IS SPECIFIED, AND THE SURFACE IS NOT PREPARED BY CLEANING AND THE APPLICATION OF AN ANTI-OXIDENT COMPOUND, THE SECURING HARDWARE SHALL INCLUDE AN EXTERNAL TOOTH TYPE LOCK WASHER (STAR WASHER) PLACED BETWEEN THE CONNECTOR AND THE SURFACE TO WHICH THE CONNECTOR IS SECURED. THE CONNECTION SHALL ALSO HAVE A SPLIT RING OR EXTERNAL TOOTH LOCK WASHER INSTALLED BETWEEN THE LUG AND THE BOLT HEAD SECURING IT.
3. A THIN LAYER OF CONDUCTIVE ANTI-OXIDANT COMPOUND SHALL BE APPLIED TO MATING SURFACES; INDOORS AND OUTDOORS. USE STAINLESS STEEL BOLTS, NUTS AND WASHERS FOR ALL CONNECTIONS TO OUTDOOR SURFACES OR OF DISSIMILAR METALS. STAINLESS STEEL OR SILICON BRONZE HARDWARE MAY BE USED INDOORS. ALL HARDWARE ON ANY ONE LUG SHALL BE OF THE SAME MATERIAL.
4. CORRECTLY SIZED WASHERS SHOULD BE USED WITH A NUT AND BOLT. THE WASHER SHOULD CARRY THE SAME SIZE DESIGNATION AS THE BOLT, SUCH AS 1/4 INCH. USING A WASHER THAT IS TOO LARGE MAY CAUSE THE BOLT OR NUT TO PULL THROUGH THE WASHER OR TO MAKE FULL CONTACT WITH IT'S INTENDED SURFACE.
5. WHEN ACCESS IS RESTRICTED TO TIGHTEN THE NUT, THE BOLT HEAD W/FLAT WASHER MAY BE PLACED BEHIND THE GROUND BAR AND THE NUT, LOCK WASHER AND FLAT WASHER ON THE LUG.
6. WHEN THE NUMBER OF GROUNDING POSITIONS IS LIMITED, IT IS PERMISSIBLE TO PLACE TWO GROUND TERMINALS ON THE SAME POSITIONS PROVIDED;
   - THE GROUND LUGS ARE ON OPPOSITE SIDES OF THE GROUND BAR.
   - THE GROUND WIRES ARE NOT FROM THE SAME PIECE OF EQUIPMENT.



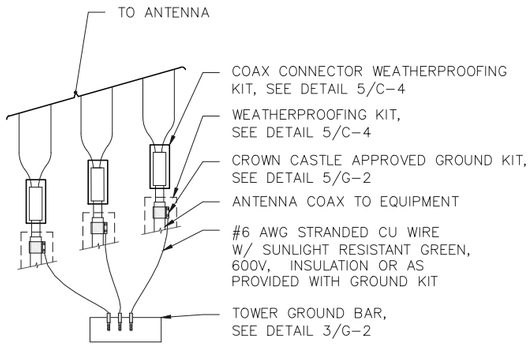
COMPRESSION TERMINAL (LUG) SCHEDULE		
WIRE SIZE	BURNDY MODEL #	ITEM(S) TO GROUND
#6 AWG	YA6C-2TC38	3/8" - 16 NC S 3 BOLT
#4 AWG STRANDED	YA4C-2TC38	3/8" - 16 NC S 3 BOLT
#2 AWG SOLID	YA3C-2TC38	3/8" - 16 NC S 3 BOLT

7 GROUND LUG SCHEDULE

SCALE: N.T.S.



1. ALL GROUNDING CONDUCTORS TO BE THHN AND BLACK IN COLOR.
2. ALL HEAT SHRINK TO BE BLACK IN COLOR.



8 COAX GROUNDING DETAIL

SCALE: N.T.S.

9 GROUND BAR CONNECTION SCHEMATIC

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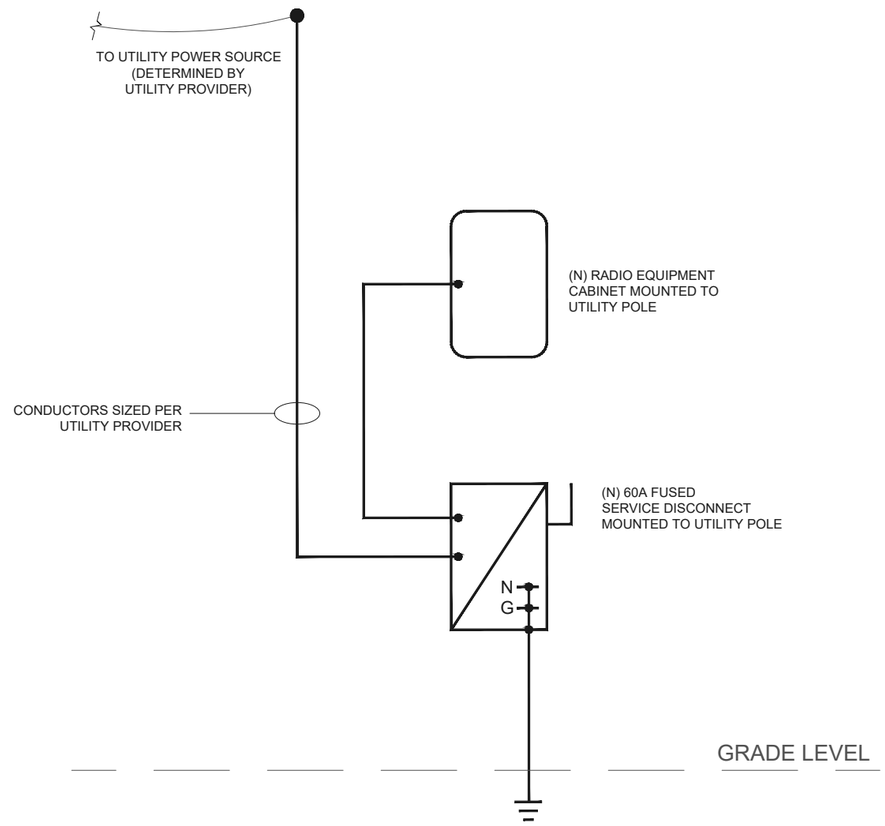
Sheet Title:
GROUNDING DETAILS

Sheet Number:
G-2

GENERAL PROJECT NOTES:

1. THE CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL NECESSARY FOR A COMPLETE AND FUNCTIONING ELECTRICAL SYSTEM.
2. MATERIALS AND INSTALLATION SHALL COMPLY WITH CODES, LAWS AND ORDINANCES OF FEDERAL, STATE AND LOCAL GOVERNING BODIES HAVING JURISDICTION.
3. ALL MATERIAL, EQUIPMENT, WIRING DEVICES, ETC. SHALL BE NEW, UNLESS SPECIFICALLY INDICATED AS EXISTING TO BE REUSED.
4. PROVIDE COMPLETE METALLIC RACEWAY SYSTEMS AND ENCLOSURES FOR ALL WIRING THROUGHOUT THE EXTENT OF THE REQUIRED SYSTEM.
5. FINAL CONNECTIONS MAY BE MADE WITH LIQUID TIGHT FLEXIBLE STEEL CONDUIT, 1/2 INCH MINIMUM.
6. ALL CONDUCTORS INSTALLED IN INTERIOR DRY LOCATIONS SHALL BE TYPE THWN OR THHN THERMOPLASTIC 600V INSULATED COPPER CONDUCTORS. NO WIRE SMALLER THAN NO. 12 SHALL BE USED FOR LIGHTING OR POWER WIRING. WIRE NO. 8 AND LARGER SHALL BE STRANDED. ALL CONDUCTORS INSTALLED IN EXTERIOR OR WET LOCATIONS SHALL BE TYPE THWN 600V INSULATED COPPER CONDUCTORS.
7. ALL CIRCUIT BREAKERS SHALL MATCH THE PANELBOARD MANUFACTURER AND BREAKER TYPES RECOMMENDED BY THE MANUFACTURER. THE CONTRACTOR SHALL PROVIDE NEW TYPE WRITTEN PANEL DIRECTORIES FOR ALL PANELS.
8. CONDUITS SHALL BE FASTENED WITH LOCKNUTS AND BUSHINGS AND ALL UNUSED KNOCKOUTS MUST BE SEALED. THERE MUST BE SUFFICIENT ROOM FOR WIRES AND BUSHINGS.
9. ALL EQUIPMENT SHALL BE SECURELY AND ADEQUATELY SUPPORTED. PROVIDE UNISTRUT OR SIMILAR FRAMING AS REQUIRED FOR MOUNTING OF SERVICE EQUIPMENT, RACEWAYS, CABLE AND ALL OTHER REQUIRED ELECTRICAL COMPONENTS ON POLE.
10. PROVIDE COLD SEQUENCE METERING AS REQUIRED BY UTILITY. INSTALL A FUSED DISCONNECT AHEAD OF THE UTILITY METER WHERE REQUIRED.
11. FIELD VERIFY THE UTILITY POINT OF DELIVERY LOCATION AND INSTALL ALL WORK IN ACCORDANCE WITH THE UTILITY CONSTRUCTION STANDARDS. ALL WORK MUST BE PERMITTED, INSPECTED AND APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND APPROVED BY UTILITY BEFORE METER IS INSTALLED.
12. PROVIDE NEW WIRING TO LIGHT FIXTURE MOUNTED ON POLE. PROVIDE LIGHT FIXTURE WITH PHOTOCELL FOR DUSK TO DAWN OPERATION.
13. PROVIDE NEW WIRING FOR ALL NEW CIRCUITS, DEVICES, AND ELECTRICAL SYSTEM COMPONENTS AS REQUIRED. PROVIDE CONVENIENCE OUTLETS INSIDE SECURED CABINET. FIELD VERIFY ALL DEVICE AND WIRING REQUIREMENTS WITH OWNER, EQUIPMENT PROVIDERS. AND TELCO/UTILITY PROVIDERS. PROVIDE BREAKER SPACE FOR FUTURE CABINET SUPPLY AND EXHAUST FANS IF NECESSARY.
14. NUMBERED CIRCUITS ARE FOR CONVENIENCE OF DESIGN ONLY.



1 / E-1 ONE LINE DIAGRAM

SCALE: N.T.S.

ELECTRICAL LEGEND NOTE: NOT ALL ITEMS APPEAR ON DRAWINGS. SYMBOLS MAY DIFFER FROM EXISTING AND DEMO WORK OR DEVICES REFERENCED FROM DRAWINGS BY OTHERS.

- EQUIPMENT DISCONNECT SWITCH
- EQUIPMENT FUSED DISCONNECT SWITCH
- ELECTRICAL PANEL BOARD
- T TRANSFORMER

ABBREVIATIONS

GFI	GROUND FAULT INTERRUPTING
E.C.	ELECTRICAL CONTRACTOR
WP	WEATHER PROOF
AHJ	AUTHORITY HAVING JURISDICTION

ONE LINE DIAGRAM GENERAL NOTES:

1. E.C. TO FIELD VERIFY SITE CONDITIONS.
2. ALL EQUIPMENT IS NEW UNLESS NOTED.
3. ALL EXTERIOR EQUIPMENT TO BE WEATHERPROOF.
4. CONDUCTORS SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH WASHINGTON CITIES ELECTRICAL CODE (CURRENT)

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