

BBU/RRH
HYBRID & COAX CABLES
MW/FIBER EQ.
FIBER
OVI/ELEC. EQ.
POWER/GROUNDING
ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT
LEASE AREA
EXISTING EASEMENT
ANTENNAS
PENETRATIONS



SITE NAME: **DEN WAGON WHEEL**
PROJECT NEW BUILD - CONSTRUCTION DOCUMENTS
SITE ADDRESS: 4087 HARVEST LANE
BRIGHTON, CO 80601

verizon
VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014
PROJECT INFORMATION
SITE NAME
DEN WAGON WHEEL
4087 HARVEST LANE
BRIGHTON, CO 80601

EXISTING CONDITIONS



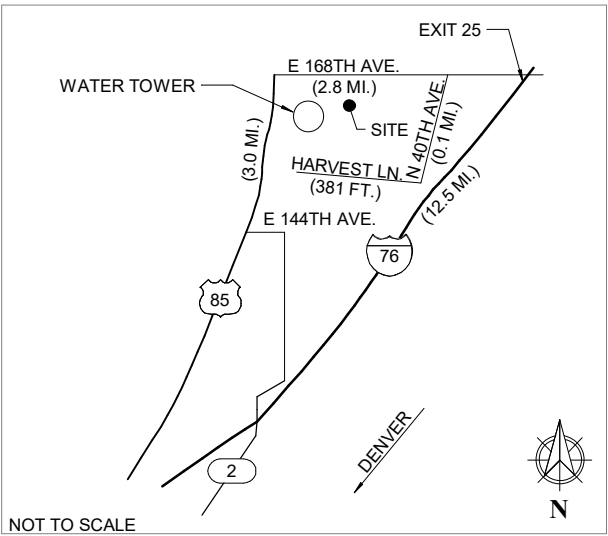
PROJECT DESCRIPTION

- REPLACE EXISTING 65'H SIREN TOWER WITH NEW 75'H SIREN TOWER WITH VERIZON WIRELESS ANTENNAS CONCEALED WITHIN CANISTER
- NEW VERIZON WIRELESS OUTDOOR EQUIPMENT ON GRADE ADJACENT TO TOWER
- NEW ELECTRIC SERVICE
- NEW FIBER SERVICE

PROJECT TEAM

OWNER CITY OF BRIGHTON GARY WARDEL 500 S 4TH AVE. BRIGHTON, CO 80601 PHONE: 303.655.2135	CLIENT VERIZON WIRELESS MARK WILSON CONSTRUCTION ENGINEER 3131 S. VAUGHN WAY SUITE 550 AURORA, CO 80014 PHONE: 303.905.9324	RF ENGINEER VERIZON WIRELESS KEVIN BROWN 3131 S. VAUGHN WAY SUITE 550 AURORA, CO 80014 PHONE: 301.787.7316	SITE ACQUISITIONIST BLACK & VETCH CORP. ALICIA WOOD 4600 S. SYRACUSE STREET SUITE 800 DENVER, CO 80237 PHONE: 720.834.4362	ARCHITECT CHARLES STECKLY, AIA CSA 5935 S. ZANG STREET SUITE 280 LITTLETON, CO 80127 CELL: 303.210.8972 OFFICE: 303.932.9974
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VICINITY MAP



DIRECTIONS

- FROM DENVER
- I-25 N FOR FORT COLLINS (4.3 MI.)
 - EXIT 216A FOR I-76 E TOWARD FORT MORGAN (7.1 MI.)
 - CONTINUE ONTO I-76 E (12.5 MI.)
 - EXIT 25 TOWARD LOCHBUIE (0.3 MI.)
 - LEFT ONTO E 168TH AVE (2.8 MI.)
 - LEFT ONTO N 40TH AVE. (0.1 MI.)
 - RIGHT ONTO HARVEST LN. (381 FT.)
 - SITE IS LOCATED BEYOND GATE ON THE RIGHT

PROJECT DATA

JURISDICTION	ADAMS COUNTY
APN	0156903201020
ZONING DESIGNATION	PUD
NEW CONSTRUCTION	
OCCUPANCY GROUP	B,U
CONSTRUCTION TYPE	V-B
FULLY SPRINKLERED	N/A
NO. STORIES	N/A

LEGAL DESCRIPTION

TRACT W, BRIGHTON EAST FARMS FILING NO. 1
COUNTY OF ADAMS, STATE OF COLORADO

GOVERNING CODES:
2012 IBC, 2012 IFC, 2012 IMC, 2006 IECC, 2014 NEC

A.D.A. COMPLIANCE
THIS FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

DRAWING INDEX

SHEET	DESCRIPTION
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G1.10	GENERATOR NOTES
G1.20	GENERATOR CLEARANCE SCHEMATICS
LS1	SITE SURVEY
LS2	SITE SURVEY
A1.00	SITE PLAN & UTILITIES PLAN
A1.10	ENLARGED SITE PLAN
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A2.00	ANTENNA PLANS & NOTES
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E4.20	ELECTRICAL & GROUNDING DETAILS

A	11/09/17	CD REVIEW	MKC
B	11/29/17	CLIENT COMMENTS	MKC

1st REVIEW ERR 2nd REVIEW SGP

**CHARLES
STECKLY**
ARCHITECTURE
5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974

**NOT FOR
CONSTRUCTION**

TITLE SHEET

T1.00

BBU/RRH
HYBRID & COAX CABLES
MW/FIBER EQ.
FIBER
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POWER/GROUNDING
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ABBREVIATIONS

@	AT	H.M.	HOLLOW METAL
°@	CENTERLINE	HORZ.	HORIZONTAL
°@	DEGREES	HR.	HOUR
Ø	DIAMETER	HT.	HEIGHT
A/C	AIR CONDITIONER	ILC	INTEGRATED LOAD CENTER
APPROX.	APPROXIMATE	INT.	INTERIOR
ARCH.	ARCHITECTURAL		
A.F.F.	ABOVE FINISH FLOOR	L.F.	LINEAR FEET
A.F.G.	ABOVE FINISH GRADE	LTE	LIMIT TO EXTEND
ALU	ALCATEL LUCENT		
ATS	AUTOMATIC TRANSFER SWITCH	MAX.	MAXIMUM
AWS	ADVANCED WIRELESS SYSTEM	MECH.	MECHANICAL
		MFR.	MANUFACTURER
BBU	BASE BAND UNIT	MGB	MAIN GROUND BAR
BCEM	BASE CHANNEL ELEMENT	MIN.	MINIMUM
MODULE		MSDS	MATERIAL SAFETY DATA SHEET
BLDG.	BUILDING	MTL.	METAL
B.O.	BOTTOM OF	MTS	MANUAL TRANSFER SWITCH
CLG.	CEILING	N.T.S.	NOT TO SCALE
COL.	COLUMN		
CONC.	CONCRETE	O.C.	ON CENTER
		O.D.	OUTSIDE DIAMETER
DBL.	DOUBLE	OVP	OVER VOLTAGE PROTECTION
DIA.	DIAMETER		
DIM.	DIMENSION	PCS	PERSONAL COMMUNICATIONS
DISC.	DISCONNECT		SERVICE
DN.	DOWN		
DWG.	DRAWING	RAD.	RADIUS
		R.O.	ROUGH OPENING
(E)	EXISTING	RRH	REMOTE RADIO HEAD
EA.	EACH		
ELEV.	ELEVATION	SHTG.	SHEATHING
ELEC.	ELECTRICAL	SIM.	SIMILAR
EQ.	EQUAL	SPEC.	SPECIFICATION
EXT.	EXTERIOR	S.S.	STAINLESS STEEL
		STL.	STEEL
		STRUCT.	STRUCTURAL
F.E.	FIRE EXTINGUISHER		
FIN.	FINISH		
FLR.	FLOOR	T.C.	TEMPERATURE CONTROL
FUT.	FUTURE	TELCO	TELECOMMUNICATIONS
		T.O.	TOP OF
		TYP.	TYPICAL
GA.	GAUGE		
GALV.	GALVANIZED		
GEN.	GENERATOR	U.G.	UNDERGROUND
GPS	GLOBAL POSITIONING SYSTEM	U.N.O.	UNLESS NOTED OTHERWISE
GWB.	GYPSTUM WALLBOARD		
		VERT.	VERTICAL
		V.I.F.	VERIFY IN FIELD
		W/	WITH

SYMBOLS LEGEND

-----	EASEMENT		
-----	LEASE LINE		ENLARGED VIEW
-----	PROPERTY LINE		ELEVATION MARKER
	WOODEN FENCE		SPOT ELEVATION
----- X -----	CHAIN LINK FENCE		SECTION CUT
----- OH -----	(E) OVERHEAD UTILITY		EXTERIOR ELEVATION
----- OHE -----	(E) OVERHEAD ELEC.		INTERIOR ELEVATION
----- SS -----	(E) SANITARY SEWER		REVISION NUMBER
----- W -----	(E) WATER LINE		
----- T -----	(E) TELCO CABLE		
----- FIBER -----	(E) FIBER CABLE		
----- E -----	(E) ELECTRICAL		
----- COAX -----	(E) COAX CABLE		

NEW WORK COLOR LEGEND

HYBRID & COAX CABLES	
DC POWER	
FIBER	
ANTENNAS	
RRH/BBU	
PENETRATIONS	

4 - ABBREVIATIONS, SYMBOLS & LEGEND

BATTERY SPECIFICATION:

(DEKA UNIGY) EACH CELL HAS AN IMMOBILIZE ELECTROLYTE CAPACITY OF 0.5 GALLONS EACH. (16) CELLS IN THIS OCCUPANCY RESULTING IN AN AGGREGATE ELECTROLYTE VOLUME OF 43.2 GALLONS.

A. STATIONARY LEAD-ACID BATTERY SYSTEM AND VALVE-REGULATED LEAD-ACID BATTERY SYSTEMS CONTAINING MORE THAN 50 GALLONS OF ELECTROLYTE SHALL COMPLY WITH IFC 608. THIS INSTALLATION IS BELOW 50 GALLONS.

CONTRACTOR TO PROVIDE HAZMAT REPORTING & ADDITIONAL PERMITS FOR BATTERY & GENERATOR SYSTEMS PER LOCAL REQUIREMENTS

3 - BATTERY HAZMAT REVIEW

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

THESE DRAWINGS ARE TO SCALE WHEN PLOTTED ON 11X17 SHEET.

CALL BEFORE YOU DIG - COLORADO LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE.

THESE DRAWINGS MAY NOT SHOW ALL UNDERGROUND PIPING AND UTILITIES. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING ALL EXCAVATION AND OTHER CONSTRUCTION ACTIVITIES.

UTILITY NOTIFICATION CENTER OF COLORADO - 1-800-922-1987

THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATES AND UTILITY RELOCATIONS REQUIRED FOR THIS INSTALLATION. THE CONTRACTOR WILL SCHEDULE AND COORDINATE ALL WORK WITH THE OWNER TO ENSURE NO DISRUPTION TO OWNERS OPERATIONS.

SUBCONTRACTORS SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

2 - GENERAL CONTRACTOR NOTES

1. DRAWINGS ARE NOT TO BE SCALED, WRITTEN DIMENSIONS TAKE PRECEDENCE, AND THIS SET OF PLANS IS INTENDED TO BE USED FOR DIAGRAMMATIC PURPOSES ONLY, UNLESS NOTED OTHERWISE. THE GENERAL CONTRACTOR'S SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR, AND ANYTHING ELSE DEEMED NECESSARY TO COMPLETE INSTALLATIONS AS DESCRIBED HEREIN. REFER TO BID PACKAGE FOR MORE DATA.

2. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTORS INVOLVED SHALL VISIT THE JOB SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE PROPOSED PROJECT WITH THE CONSTRUCTION AND CONTRACT DOCUMENTS, FIELD CONDITIONS AND CONFIRM THAT THE PROJECT MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY ERRORS, OMISSIONS, OR DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/CONSTRUCTION ENGINEER IN WRITING.

3. THE GENERAL CONTRACTOR SHALL RECEIVE WRITTEN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.

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

5. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO MANUFACTURER'S, VENDOR'S, & VERIZON WIRELESS SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE NOTIFY CONSTRUCTION ENGINEER.

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

7. THE STRUCTURAL COMPONENTS OF THIS PROJECT SITE/FACILITY ARE NOT TO BE ALTERED BY THIS CONSTRUCTION PROJECT UNLESS NOTED OTHERWISE.

8. NEW TOWERS ARE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION SUBCONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF PERSONNEL AND PROPERTY FROM HAZARDOUS EXPOSURE TO OVERHEAD DANGERS.

9. GENERAL CONTRACTOR SHALL PROVIDE AT THE PROJECT SITE A FULL SET OF PERMITTED CONSTRUCTION DOCUMENTS UPDATED WITH THE LATEST REVISIONS AND ADDENDA OR CLARIFICATIONS FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

10. DETAILS INCLUDED HEREIN ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB CONDITIONS OR SITUATIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE SCOPE OF WORK.

11. THE FACILITY IS CELLULAR RADIO EQUIPMENT, ANTENNAS, & SUPPORTING UTILITIES.

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

13. CONTRACTOR SHALL ENSURE THE GENERAL WORK AREA IS KEPT CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY, PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE ARCHITECTS/ENGINEERS HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. CONTRACTORS BIDDING THE JOB ARE NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS. THE BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CONSTRUCTION ENGINEER OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL.

15. SPECIAL INSPECTION TESTING REQUIRING SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT SPECIAL INSPECTOR PER SECTION 1704 OF THE INTERNATIONAL BUILDING CODE (IBC) FOR ITEMS NOTED ON \$1.00 IF INCLUDED IN CONSTRUCTION DOCUMENTS. THE INSPECTOR SHALL BE HIRED BY THE CONTRACTOR & COORDINATION SHALL BE ARRANGED BY THE CONTRACTOR FOR REQUIRED INSPECTIONS.



UNDERGROUND SERVICE ALERT
UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
WWW.UNCC.ORG

3 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

1 - GENERAL NOTES

verizon

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME

DEN WAGON WHEEL

4087 HARVEST LANE
BRIGHTON, CO 80601

CONSULTANT

A	11/09/17	CD REVIEW	MKC
B	11/29/17	CLIENT COMMENTS	MKC

1st REVIEW ERR 2nd REVIEW SGP

CHARLES
STECKLY

ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974

NOT FOR
CONSTRUCTION

GENERAL NOTES

G1.00


PERMIT & INSPECTION NOTES

1. CONTRACTOR SHALL PROVIDE ANY INSPECTIONS REQUIRED BY LOCAL JURISDICTION PRIOR TO FUELING THE GENERATOR.

2. LEGALLY REQUIRED EMERGENCY OR STANDBY GENERATORS SHALL BE ACCEPTANCE TESTED IN ACCORDANCE WITH NFPA 110. DOCUMENTATION SHALL BE PROVIDED BY CONTRACTOR TO THE LOCAL JURISDICTION OUTLINING THE NFPA 110 ACCEPTANCE TEST CONDUCTED AND RESULTS SHOWING CONFORMITY WITH NFPA 110 ACCEPTANCE TESTING REQUIREMENTS.

3. CONTRACTOR SHALL INQUIRE WITH LOCAL JURISDICTION FOR ANY ADDITIONAL ANNUAL PERMITS RELATING TO GENERATORS OR COMBUSTIBLE STORAGE.

2 - PERMIT NOTES



10. DIESEL SUB BASE TANK CONSTRUCTION: (IFC 5704.2.7, NFPA 30-21.4.2.1.1, UL 142)

A. FUEL CONTAINMENT BASIN: SUB BASE TANK SHALL INCLUDE WELDED STEEL CONTAINMENT BASIN SIZED AT A MINIMUM OF 125% OF THE TANK CAPACITY TO PREVENT ESCAPE OF FUEL IN THE EVENT OF A TANK RUPTURE

B. LEAK DETECTION SYSTEM: A FUEL CONTAINMENT BASIN LEAK DETECTOR SHALL BE SUPPLIED AND WIRED FOR ALARM CONDITION VISIBLE FOR GENERATOR CONTROL PANEL

C. SUB BASE TANK VENTING: NORMAL EMERGENCY VENTING SHALL BE SIZED PER UL 142 SPECIFICATION FOR WETTED SURFACE AREA OF TANK.

D. ENGINE ENVIRONMENTAL SPILL PROTECTION: TOP OF FUEL TANK BASE SHALL INCLUDE SPILL CONTAINMENT TO CATCH ANY EXCESS SPILL OR LEAKS FROM ENGINE AND COOLING SYSTEM. THIS SHALL BE SIZED FOR 125% OF ENGINE FLUIDS AND FUEL SPILL CONTAINMENT.

11. REMOTE MANUAL STOP: (NFPA 110 5.6.5.6 & 5.6.5.6.1) ROTATING PRIME MOVER EQUIPMENT (DIESEL ENGINE) SHALL HAVE A REMOTE MANUAL STOP STATION LOCATED IN AN APPROVED LOCATION. REMOTE MANUAL STOP STATION SHALL BE CLEARLY LABELED.

12. REMOTE STATUS PANEL: (CITY & COUNTY OF DENVER) (DBC AMENDMENTS 604.1.2 & 907.2.13.8) CONTRACTOR IS TO COORDINATE WITH DENVER FIRE DEPARTMENT WITH GETTING FIELD APPROVAL OF FINAL LOCATION PRIOR TO INSTALLATION. ALL GENERATORS SHALL BE PROVIDED WITH A REMOTE STATUS PANEL THAT SHOWS THE FOLLOWING:

A. OPERATING STATUS (ON-OFF) AND MALFUNCTION INDICATION PANEL (PER NFPA 110)

B. INDICATION OF TRANSFER SWITCH POSITION (NORMAL-EMERGENCY)

C. INDICATION THAT GEN. IS IN AUTOMATIC MODE

D. MAIN FUEL OIL STORAGE TANK LOW FUEL LEVEL ALARM. THE LOW FUEL SENSING SWITCH SHALL INDICATE WHEN LESS THAN THE MINIMUM FUEL NECESSARY FOR FULL LOAD RUNNING AS PER NFPA 110 SECTION 5.5.2 OR A MINIMUM OF 75% OF THE TANK SIZE.

13. GENERATOR ROOM VENTILATION (IMC 915.2, NFPA 37-6.3.5.4) GENERATOR ROOM TO BE NATURALLY VENTILATED WHEN DOOR IS OPEN. GENERATOR DOOR SIZE MUST BE 4% S.F. OF THE GENERATOR ROOM.

14. GEN. TANK MAX STATIC HEAD (IMC 1305.7) "IF THE STATIC HEAD WITH A VENT PIPE FILLED WITH OIL EXCEEDS 10 POUNDS PER SQUARE INCH (PSI) (69 KPA), THE TANK SHALL BE DESIGNED FOR THE MAXIMUM STATIC HEAD THAT WILL BE IMPOSED." VERIZON STANDARD MAX STATIC HEAD IS 5 PSI. GENERAC TANKS ARE DESIGNED TO RELEASE PRESSURE CAP LIMITING PRESSURE AT 2.5 PSI. REFER TO GENERAC TANK CUT SHEET.

15. EMERGENCY LIGHTING (NFPA 110-7.3) BATTERY POWERED EMERGENCY LIGHTING IS REQUIRED IN THE GENERATOR ROOM WITH THE CHARGING SYSTEM AND NORMAL ROOM LIGHTING SUPPLIED WITH NORMAL POWER FROM THE LOAD SIDE OF THE GENERATOR.

16. MAXIMUM ALLOWABLE QUANTITY HAZARDOUS MATERIALS (IFC TABLE 5003.1.1(1), 5003.9.10, 903.3.1.1) MAXIMUM ALLOWABLE QUANTITY OF CLASS II LIQUID IS 240 GALLONS WHEN STORED IN EXHAUSTED ENCLOSURE. AMOUNT INCREASES TO 480 GAL WHEN ALSO INSTALLING APPROVED FIRE SUPPRESSION SYSTEM.

1 - GENERATOR NOTES (CONT.)

DIESEL GENERATOR: INDOORS

EMERGENCY BACKUP POWER

80KW GENERAC DIESEL GENERATOR ABOVE GROUND SUB-BASE TANK CONTAINING 300 GALLONS OF #2D FUEL

FUEL TANK LOAD DURATION CALC:

TANK SIZE = 300 PER MFR DATA

FUEL FILL ALARM @ 90% = 270 GALLONS

FUEL CONSUMPTION RATE = 6.3 @ 100% PER MFR CUT SHEET

LOW FUEL ALARM SET @ 2HRs RUNTIME x 133% = 16.758 GALS

(6.3 GPHx 2HS x 133% = 16.758 GALS)

300 GAL TANK PROVIDED/ 6.3 GPH = 48 HR RUN TIME

1. CLEARANCES

A. WORKING SPACE (NFPA 70 TABLE 110.26.A.1) WORKING SPACE FOR ELECTRICAL EQUIPMENT OF 0-600 VOLTS SHALL BE A MINIMUM OF 3' ON FRONT/SERVICE

B. INSPECTION & REPAIR SPACE (NFPA 37 6.3.5.1.2) AT LEAST 15" MIN. CLEARANCE SHALL BE LEFT AROUND INDOOR TANKS OF 1500 GAL. OR LESS.

C. WORKING CLEARANCE (IFC 601.1.2 & NFPA 110 7.9.12.1) A MINIMUM CLEARANCE OF 3FT SHALL BE MAINTAINED ON ALL SIDES OF FUEL TANKS.

2. SIGNAGE

A. "NO SMOKING OR OPEN FLAME" (IFC 5704.2.3.1) THE FOLLOWING SIGNS MADE OF DURABLE MATERIAL ARE REQUIRED ON THE GENERATOR ROOM DOOR (SEE EXAMPLE AT BOT. OF NOTES)

B. NFPA HAZMAT PLACARD: (IFC 5003.5 & NFPA 704) VISIBLE HAZARD IDENTIFICATION SIGNS AS SPECIFIED BY NFPA 704 SHALL BE PLACED ON GENERATOR ROOM DOOR REFLECTING THE HIGHEST HAZARD WITHIN THE COMPOUND (SEE EXAMPLE)

C. FILLING INSTRUCTIONS: (IFC 5704.2.9.7.6.1) A PERMANENT SIGN SHALL BE PROVIDED AT THE FILL POINT FOR THE TANK, DOCUMENTING THE FILLING PROCEDURE AND TANK CALIBRATION CHART.

D. EMERGENCY SHUT DOWN PROCEDURES: (NFPA 37.10.2.1) PROVIDE CLEAR EMERGENCY SHUTDOWN PROCEDURES FOR SAFELY DISABLING THE GENERATOR

3. TANK VENTILATION (IFC 5704.2.9.7.2 & IFC 5704.2.7.3. & NFPA 30 & DFC 5704.2.7.3.3)

A. CLEARANCE: STORAGE TANKS MUST BE EQUIPPED WITH NORMAL AND EMERGENCY VENTING. NORMAL TANK VENT PIPES MUST EXIT STRUCTURE & SHALL BE NO SHORTER THAN 12 FEET ABOVE FINISHED GROUND. VAPORS SHALL BE DISCHARGED AWAY FROM EAVES OR OBSTRUCTIONS. EMERGENCY VENT PIPES MUST EXIT STRUCTURE & SHALL COMPLY WITH NFPA 30/22.7.

a. CITY & COUNTY OF DENVER VENT PIPES MUST ALSO TERMINATE A MIN. OF 5' FROM BUILDING OPENINGS AND A MIN. OF 10' FROM GENERATOR EXHAUST PIPE. VENT PIPES MUST NOT UTILIZE LOW MELTING POINT MATERIALS SUCH AS ALUMINUM, PLASTIC OR COPPER.

B. WEATHER PROOF CAPS: (IMC 1305.7) WEATHER PROOF CAPS SHALL BE PROVIDED ON ALL VENT PIPES WITH THE SAME FREE OPEN VENT AREA AS THE CROSS SECTION OF THE VENT PIPE. SCREENS SHALL NOT BE FINER THEN NO.4 MESH

C. VENT PIPE STATIC HEAD (IMC 1305.7) IF THE STATIC HEAD WITH A VENT PIPE FILLED WITH OIL EXCEEDS 10 PSI THE TANK SHALL BE DESIGNED FOR THE MAXIMUM STATIC HEAD THAT WILL BE IMPOSED. ALL VENT PIPES AT THIS SITE ARE 12' HIGH WHICH DO NOT EXCEED 10 PSI.

a. 1 PSI = 2.31 FT OF VENT RISE

b. 12FT H VENT / 2.31 FT = 5.19 PSI

4. GENERATOR EXHAUST PIPE: (IMC 501.3.1 & NFPA 37 8.2.3) GENERATOR EXHAUST MUST TERMINATE A MINIMUM OF 10' ABOVE GRADE, 10' FROM OPERABLE BUILDING OPENINGS, 10' FROM PROPERTY LINES AND 3' FROM EXTERIOR WALLS AND ROOFS.

5. OVERFILL PREVENTION TANKS INSIDE BUILDINGS: (5704.2.9.5.1) TANKS SHALL BE EQUIPPED WITH THE FOLLOWING:

A. A FLOAT VALVE

B. PRESET METER ON FILL LINE

C. A VALVE ACTUATED BY THE WEIGHT OF THE TANKS CONTENTS

D. LOW-HEAD PUMP WHICH IS INCAPABLE OF PRODUCING OVERFLOW OR A LIQUID TIGHT OVERFLOW PIPE AT LEAST ONE PIPE SIZE LARGER THAN THE FILL PIPE AND DISCHARGING BY GRAVITY BACK TO THE OUTSIDE SOURCE OF LIQUID OR TO A APPROVED LOCATION

6. HAZARDOUS MATERIALS INVENTORY STATEMENT: (IFC APPENDIX H)

A. ALL HAZARDOUS CHEMICALS MUST BE REPORTED TO LOCAL COUNTY FIRE DEPARTMENT PRIOR TO INSPECTION.

7. FIRE EXTINGUISHER: (IFC 906.1, NFPA-10, NFPA-76, OSHA 29 CGR 1910.157)

A. FIRE EXTINGUISHER INSTALLED SHALL BE A MIN. RATING OF 4A:40B:C

B. LOCATION:(NFPA 10-6.1.3.1) A FIRE EXTINGUISHER SHALL BE CONSPICUOUSLY LOCATED WHERE IT IS READILY ACCESSIBLE AND IMMEDIATELY AVAILABLE IN THE EVENT OF A FIRE.

C. LOCATION: (NFPA 10-6.3.1.1) A FIRE EXTINGUISHER RATED 40-B MUST BE WITHIN 30' OF CLASS B LIQUID HAZARD. FIRE EXTINGUISHER RATED 80-B MUST BE WITHIN 50' OF CLASS B LIQUID HAZARD.

D. HEIGHT: (NFPA 10-6.1.3.8) FIRE EXTINGUISHER SHALL BE INSTALLED SO THAT THE TOP OF THE FIRE EXTINGUISHER IS BETWEEN 3.5 AND 5 FT A.F.F.

8. SPILL CONTAINER KIT: (IFC 5704.2.9.7.8 & IFC 5704.2.7.5.6) A SPILL CONTAINER WITH A CAPACITY OF AT LEAST 5 GALLONS SHALL BE PROVIDED WITH EACH FILL CONNECTION. FOR TOP FILL TANKS CONTAINER MUST BE NON-COMBUSTIBLE, FIXED TO TANK AND EQUIPPED WITH MANUAL DRAIN VALVE THAT DRAINS INTO PRIMARY TANK. A PORTABLE CONTAINER IS ALLOWED WITH REMOTE FILL TANKS. MUST BE MAX. 5' A.F.G. & MIN. 5' FROM BUILDING OPENINGS.

9. INSPECTIONS: CONTRACTOR SHALL VERIFY WITH LOCAL FIRE DEPARTMENT INSPECTION REQUIREMENTS INCLUDING

A. INSPECTION TEAM WITNESS FILLING OF THE DIESEL TANK.

B. INSPECTION TEAM WITNESS DEMONSTRATION OF FLOAT SWITCH SET POINTS OF 90% & 40 %.

1 - GENERATOR NOTES

verizon

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME

DEN WAGON WHEEL

4087 HARVEST LANE
BRIGHTON, CO 80601

CONSULTANT

A11/09/17CD REVIEWMKC

B11/29/17CLIENT COMMENTSMKC

1st REVIEWERR2nd REVIEWSGP

CHARLES
STECKLY

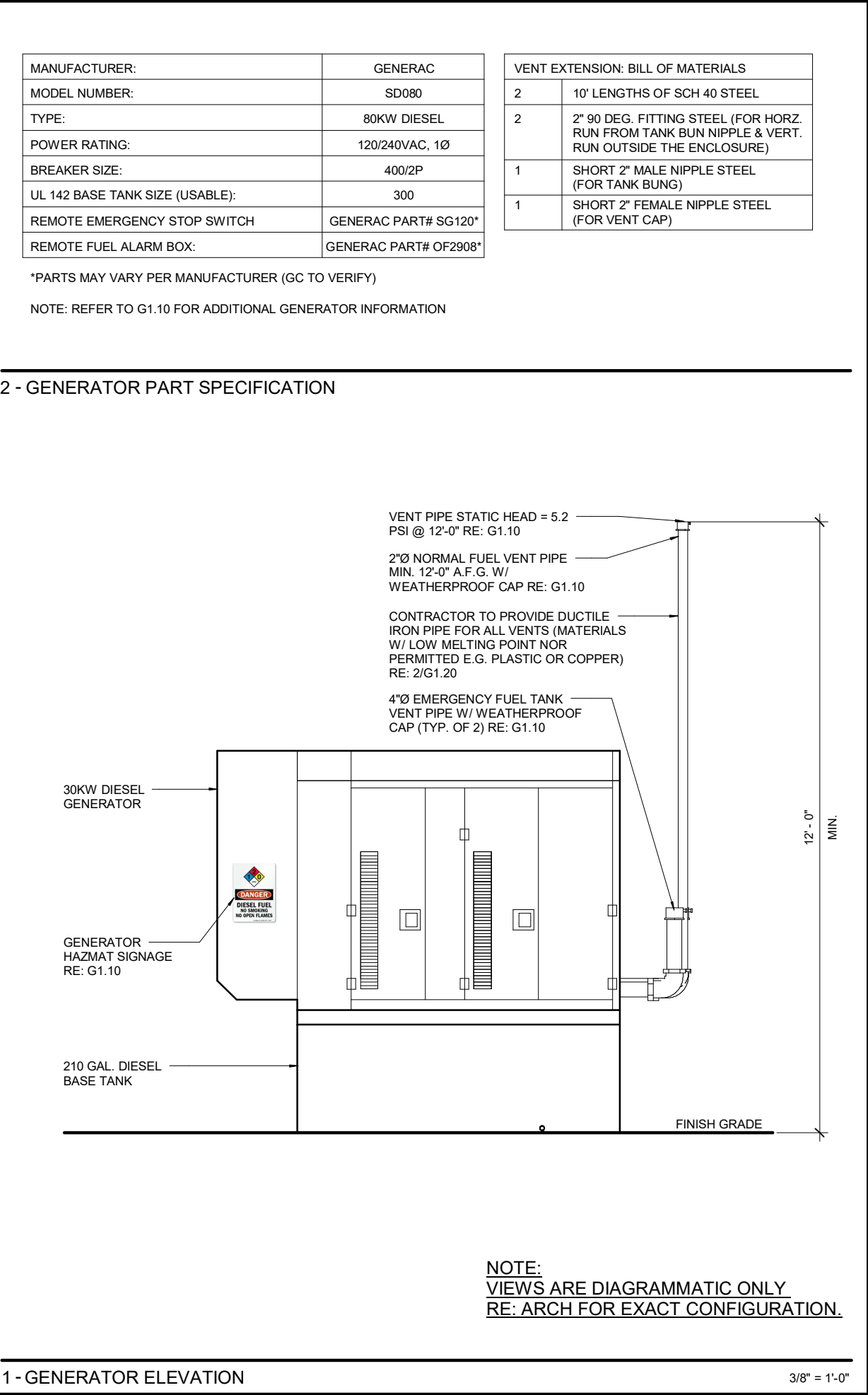
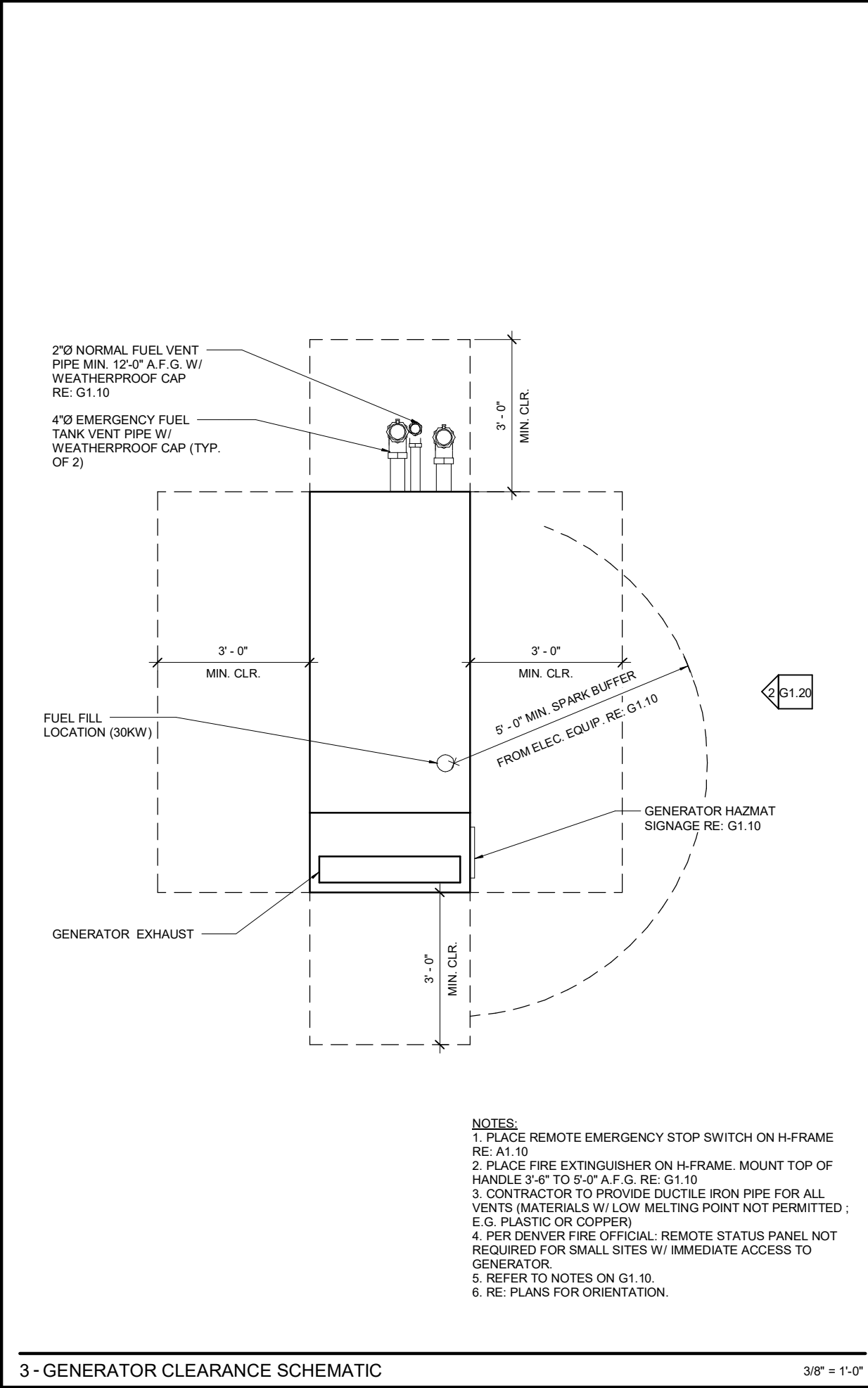
ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974

NOT FOR
CONSTRUCTION

GENERATOR NOTES

G1.10



verizon

VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME

DEN WAGON WHEEL

4087 HARVEST LANE
BRIGHTON, CO 80601

CONSULTANT

A	11/09/17	CD REVIEW	MKC
B	11/29/17	CLIENT COMMENTS	MKC

1st REVIEW ERR 2nd REVIEW SGP

CHARLES
STECKLY

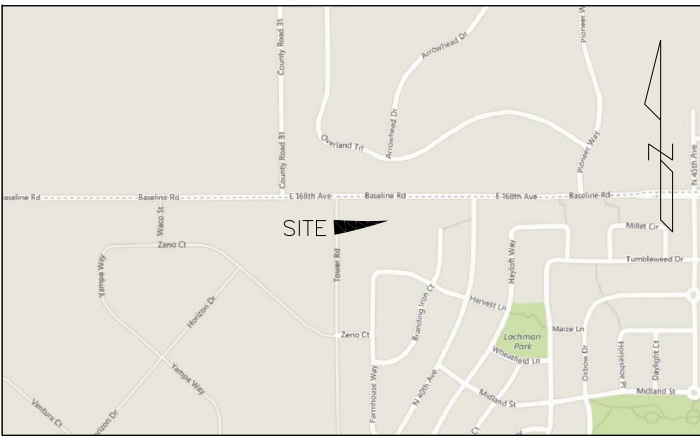
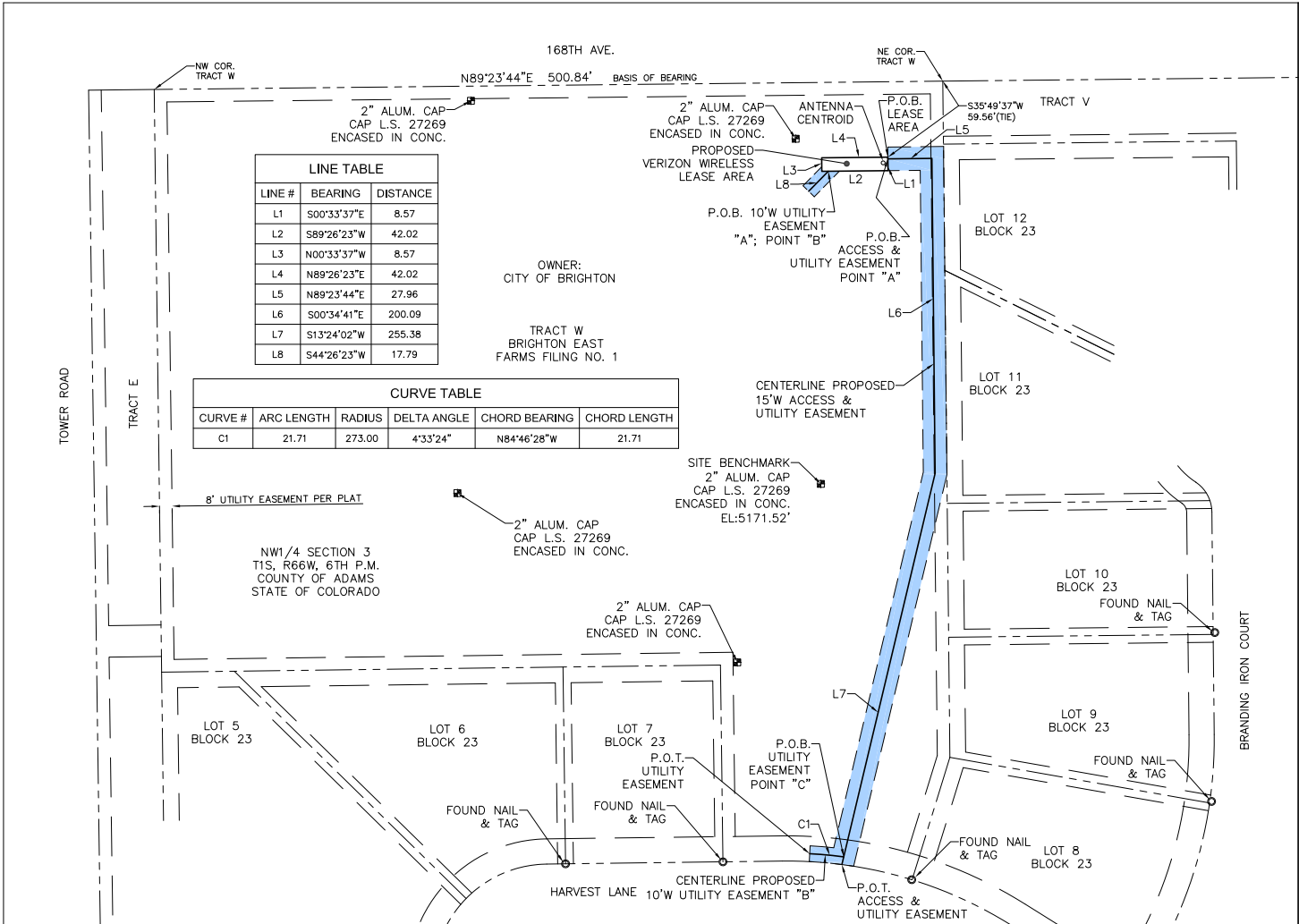
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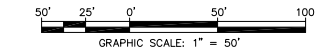
NOT FOR
CONSTRUCTION

GENERATOR
CLEARANCE
SCHEMATICS

G1.20



DOCUMENTS ARE BLANKET IN NATURE AN NOT PLOTTABLE UNLESS OTHERWISE NOTED



ANTENNA CENTROID

GROUND ELEV.=5166'

BENCHMARK

SITE BENCHMARK-2" ALUM. CAP L.S. #27269 ENCASED IN CONCRETE GROUND ELEVATION=5171.52 (NAVD88) UTILIZING GEOID 12A WITH THE VRS NETWORK

BASIS OF BEARINGS

COLORADO STATE PLANE NORTH ZONE (NAD83)
CLASSIFICATION-THIRD
MINIMUM GEOMETRIC ACCURACY STANDARD: 5.0cm + 1:10,000

NOTES

- 1.) THIS SURVEY AND ACCOMPANYING DESCRIPTION(S) ARE NOT INTENDED FOR PURPOSE OF TRANSFER OF TITLE OR SUBDIVISION OF LAND.
- 2.) THIS IS NOT A BOUNDARY SURVEY, LAND SURVEY PLAT OR IMPROVEMENT SURVEY PLAT.
- 3.) THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY PRECISION SURVEY & MAPPING, INC. TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD.
- 4.) THIS SURVEY DOES NOT PROVIDE ANY DETERMINATION CONCERNING WETLANDS, FAULT LINES, TOXIC WASTE OR ANY OTHER ENVIRONMENTAL ISSUES. SUCH MATTERS SHOULD BE DIRECTED TO AN EXPERT CONSULTANT.
- 5.) THERE MAY BE ADDITIONAL BURIED OR UNDERGROUND UTILITIES IN THE AREA WHICH THE SURVEYOR IS UNAWARE OF AND NO LIABILITY FOR SUCH IS ASSUMED HEREIN. ALL UNDERGROUND UTILITIES SHOULD BE FIELD LOCATED BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR DIGGING ON OR ADJACENT TO THE SUBJECT PROPERTY.
- 6.) THIS SURVEY IS VALID ONLY IF PRINT HAS ORIGINAL SEAL AND SIGNATURE OF THE SURVEYOR.
- 7.) THE PROPOSED ANTENNA CENTROID SHOWN HEREON WAS PROVIDED BY CLIENT. PRECISION SURVEY & MAPPING, INC. ASSUMES NO LIABILITY FOR DETERMINING PHYSICAL LOCATION OF THE PROPOSED ANTENNA.

SURVEYOR'S CERTIFICATION

I, THE UNDERSIGNED, A REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY STATE THAT THIS SITE PLAN WAS PREPARED BY ME, OR UNDER MY SUPERVISION AND ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS IS NOT A BOUNDARY SURVEY.

CHRISTOPHER P. SHOLAN, L.S. NO. 31158
FOR AND ON BEHALF OF PRECISION SURVEY & MAPPING, INC.

6/27/17
DATE



VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME
DEN WAGON WHEEL
SITE I.D.
-

TOWER ROAD & 168TH
BRIGHTON, CO. 80601

TOWER INFORMATION

CONSULTANT



9145 E. KENYON AVE., SUITE 101
DENVER, COLORADO 80237
OFFICE: (303) 753-9799
FAX: (303) 753-4044

A	01/25/17	ZD REVIEW	RM
B	01/30/17	ADD LA & ESMT'S	RM
C	06/27/17	REVD LA & ESMT'S	JN

CHARLES
STECKLY

ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
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SITE SURVEY

PSM JOB NO.
R12147

LS1



VERIZON WIRELESS SERVICES
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SITE I.D.

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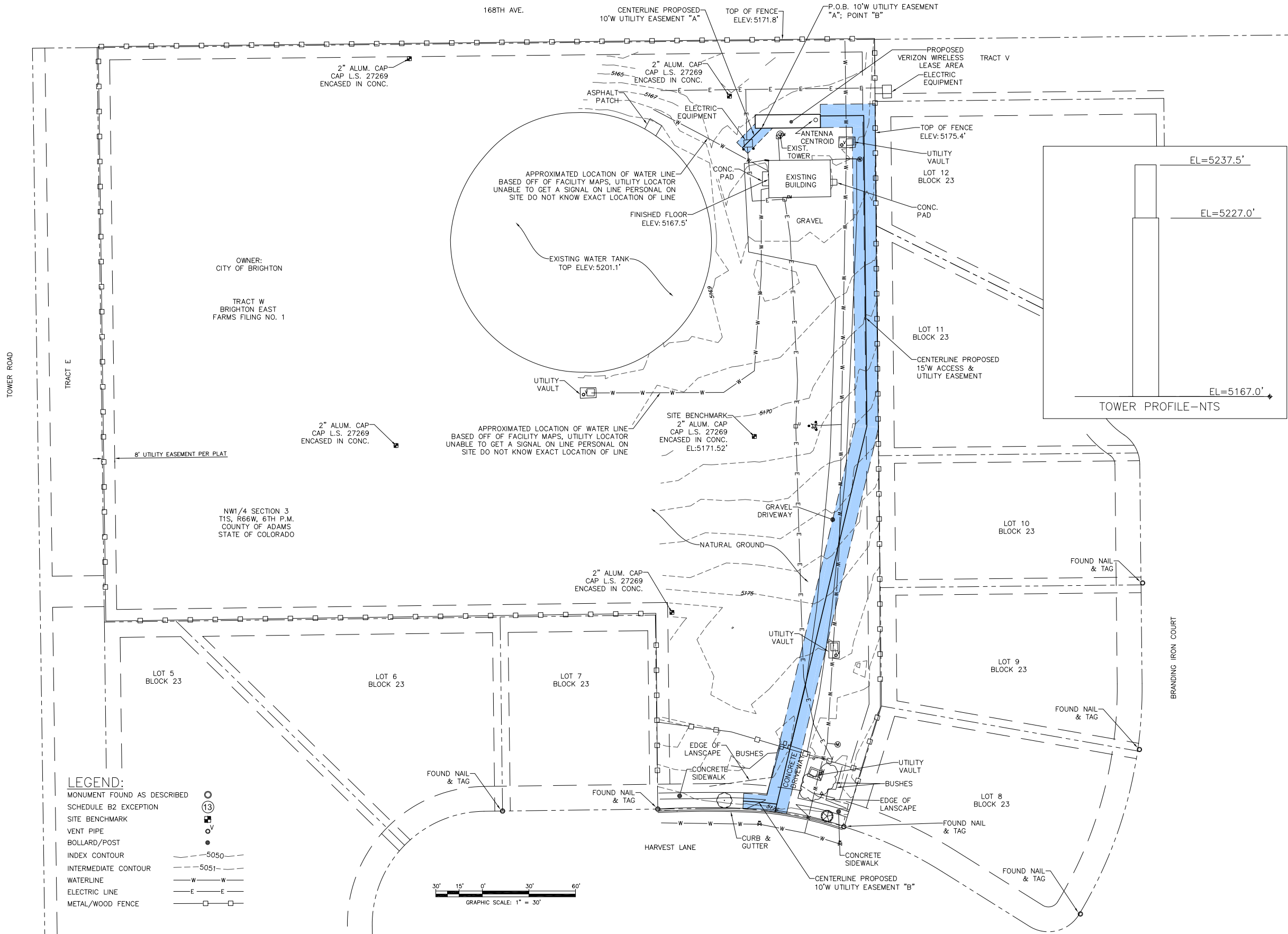
ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974

SITE SURVEY

PSM JOB NO.
R12147

LS2







VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

PROJECT INFORMATION

SITE NAME
DEN WAGON WHEEL

4087 HARVEST LANE
BRIGHTON, CO 80601

CONSULTANT

A	11/09/17	CD REVIEW	MKC
B	11/29/17	CLIENT COMMENTS	MKC

1st REVIEW ERR 2nd REVIEW SGP

**CHARLES
STECKLY**

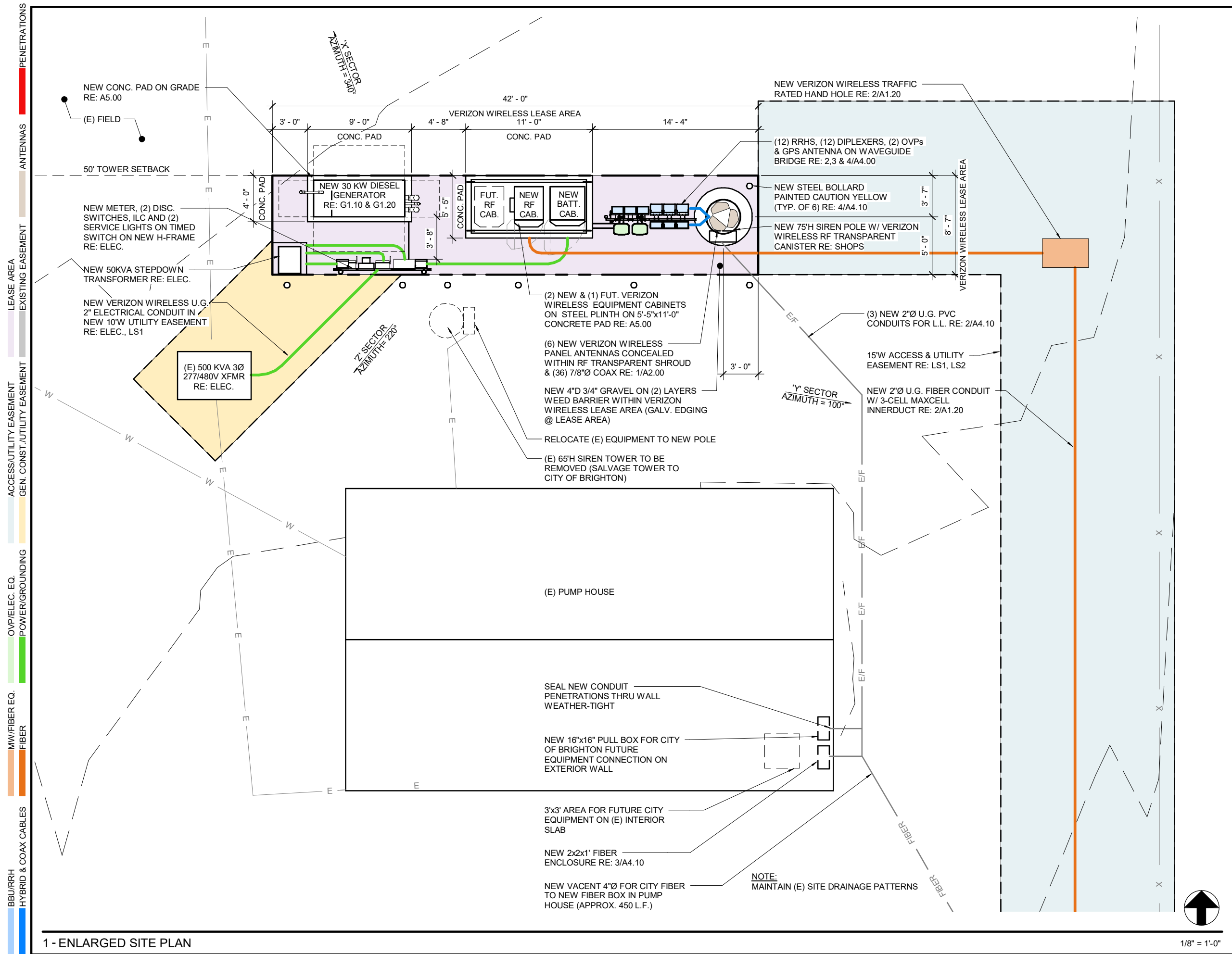
ARCHITECTURE

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**NOT FOR
CONSTRUCTION**

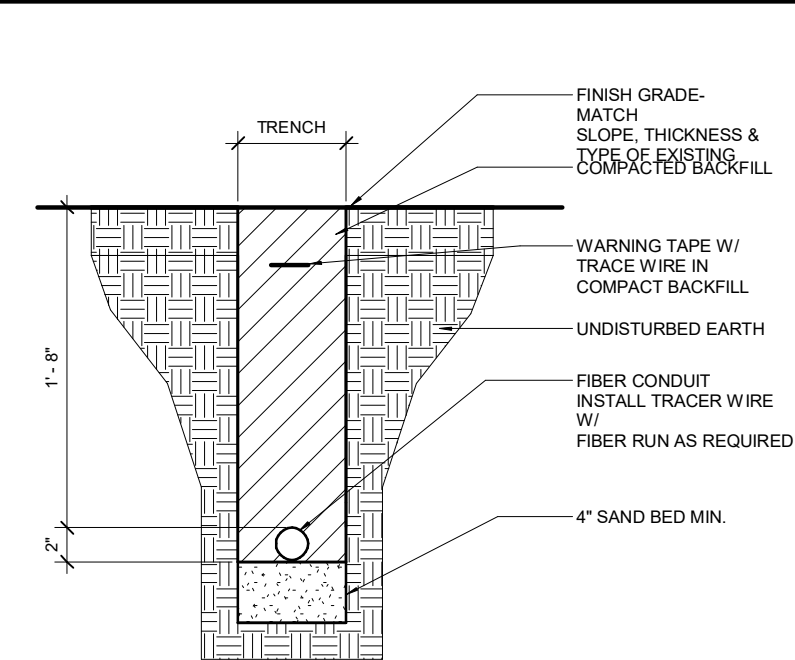
ENLARGED SITE PLAN

A1.10



1 - ENLARGED SITE PLAN

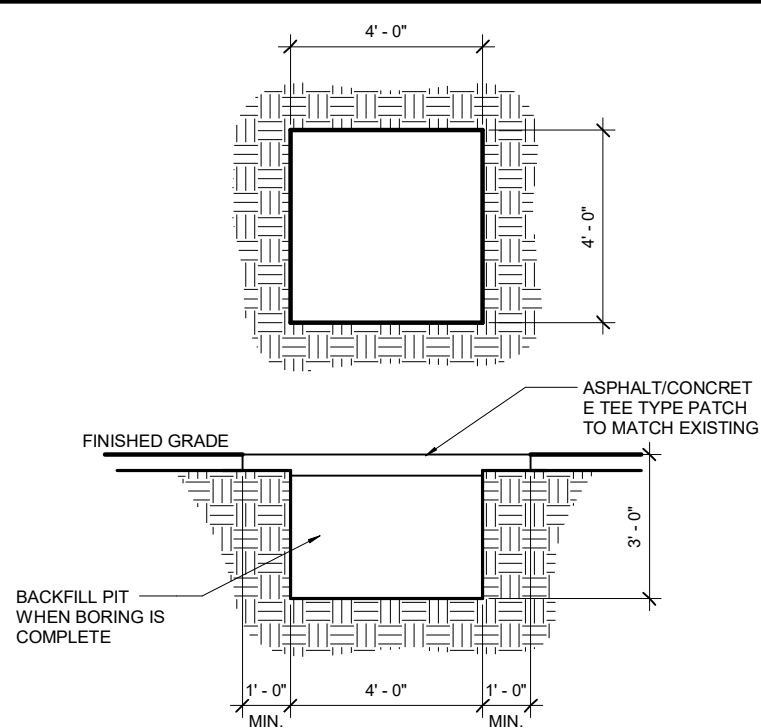
BBU/RRH
HYBRID & COAX CABLES
MW/FIBER EQ.
FIBER
OVER/ELEC. EQ.
POWER/GROUNDING
GEN. CONST./UTILITY EASEMENT
ACCESS/UTILITY EASEMENT
LEASE AREA
EXISTING EASEMENT
ANTENNAS
PENETRATIONS



- NOTES:
1. INSTALL ALL UNDERGROUND UTILITIES PER LOCAL UTILITY REQUIREMENTS.
 2. LOCATE ALL UNDERGROUND UTILITIES PRIOR TO TRENCHING / EXCAVATION.
 3. COORDINATE SIZE AND TYPE WITH LOCAL UTILITY COMPANIES REQUIREMENTS.
 4. REFER TO ELECT PLAN FOR EXACT SIZE AND LOCATION.
 5. COMPACT BACKFILL TO 95% PROCTOR DENSITY AT ALL DRIVEWAY OR HARD SURFACED AREAS. COMPACT TO 90% PROCTOR DENSITY ALL OTHER AREAS UNLESS NOTED OTHERWISE, REFER TO GEOTECHNICAL REPORT.
 6. BACKFILL, WARNING TAPE, AND SAND BED NOT REQ'D WHEN BORING.
 7. HAND DIG UTILITY TRENCH WHERE REQUIRED.

5 - FIBER TRENCH DETAIL

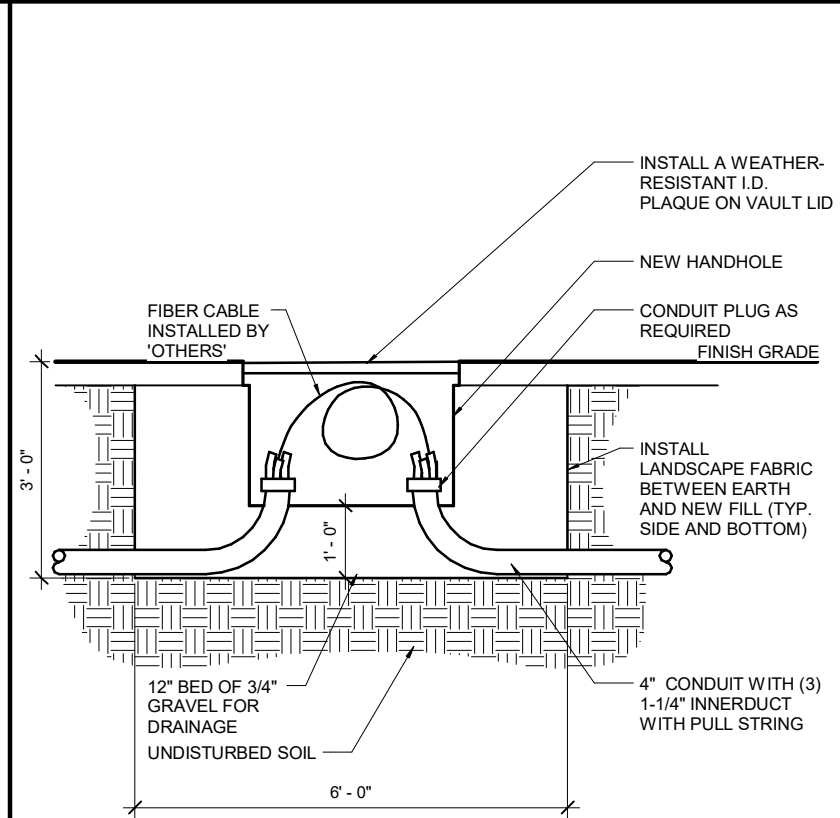
N.T.S.



- NOTES:
1. EXCAVATION FOR FOR HANDHOLES WILL ALSO BE USED FOR BORE PITS WHEN PRACTICAL TO MINIMIZE SITE DISTURBANCES
 2. ACTUAL DIMENSIONS MAY VARY DEPENDING ON IN FIELD SITE CONDITIONS.
 3. PROTECT NEARBY DOWNSTREAM STORM DRAIN INLETS FORM POTENTIAL CONTAMINATION DUE TO CONSTRUCTION.
 4. VACUUM SLURRY FROM BORING OPERATIONS AS NEEDED TO ELIMINATE SEEPAGE INTO STREETS AND DRAINS

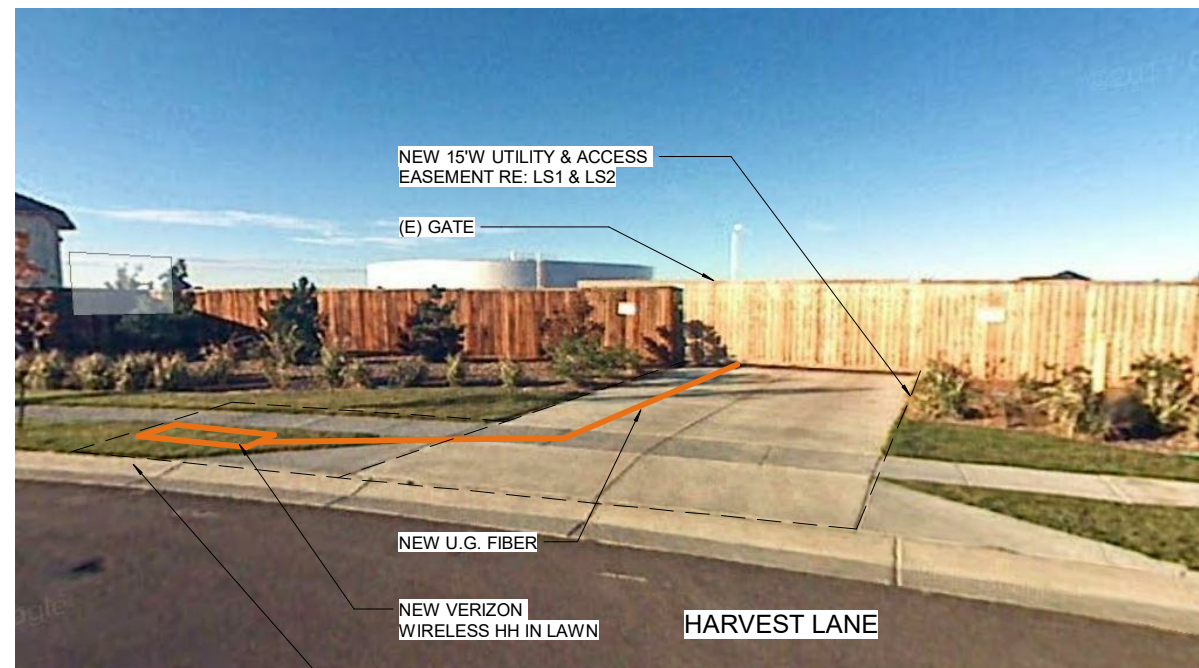
3 - BORE PIT DETAIL

N.T.S.



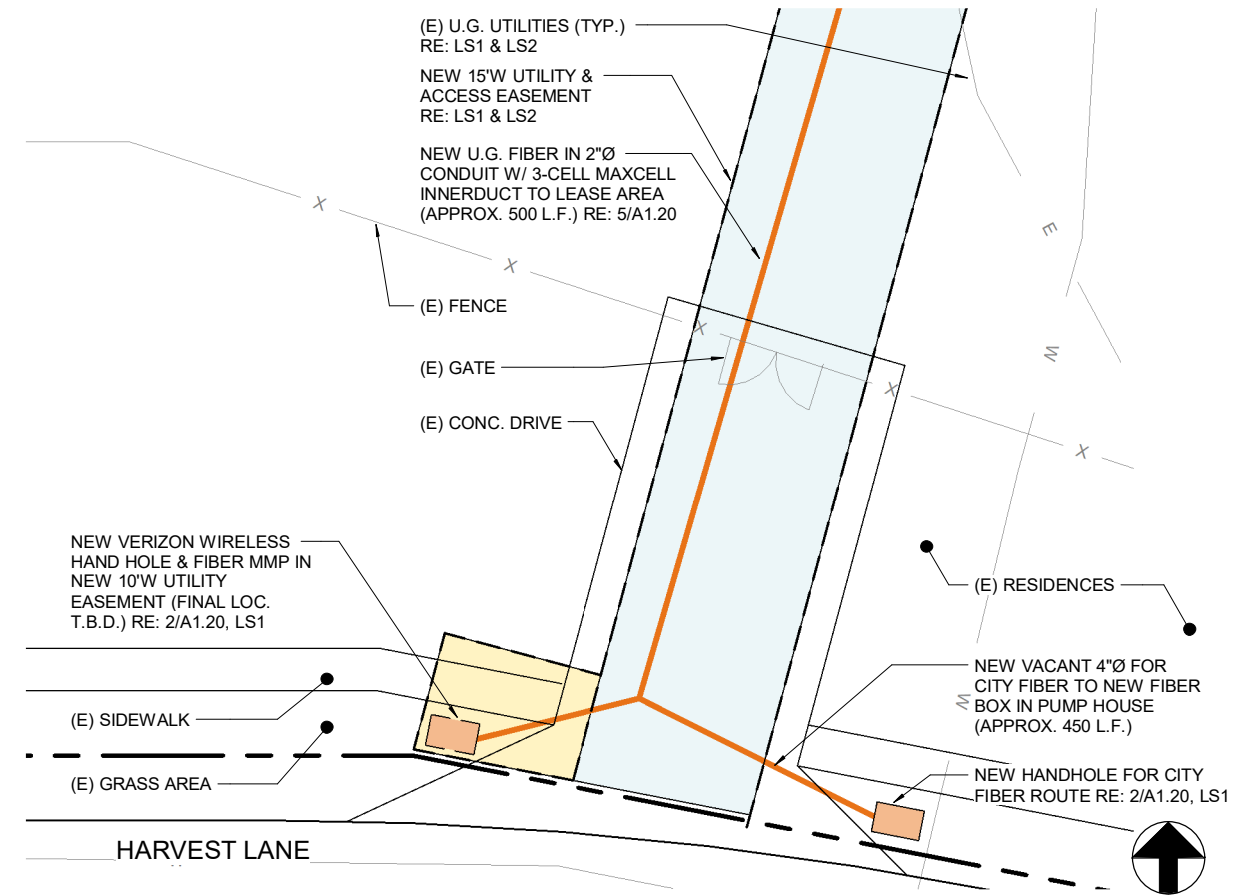
2 - HANDHOLE DETAIL

3/8" = 1'-0"



4 - FIBER MMP

1" = 1'-0"



1 - ENLARGED FIBER MMP PLAN

1/16" = 1'-0"

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VERIZON WIRELESS SERVICES
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SITE NAME

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4087 HARVEST LANE
BRIGHTON, CO 80601

CONSULTANT

A	11/09/17	CD REVIEW	MKC
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1st REVIEW ERR 2nd REVIEW SGP

CHARLES
STECKLY

ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
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NOT FOR
CONSTRUCTION

FIBER MMP

A1.20



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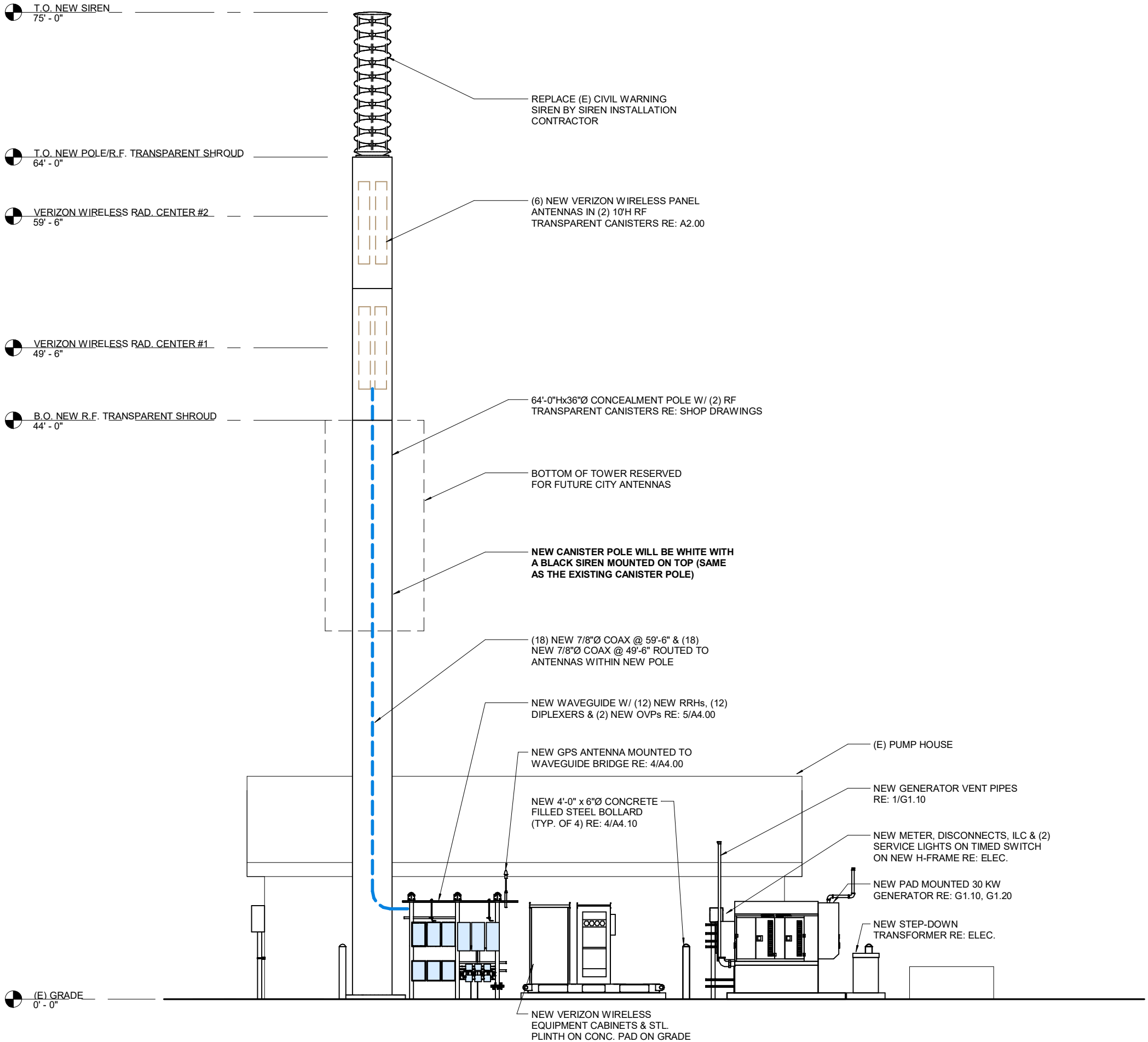
ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
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**NOT FOR
CONSTRUCTION**

NORTH ELEVATION

A3.00

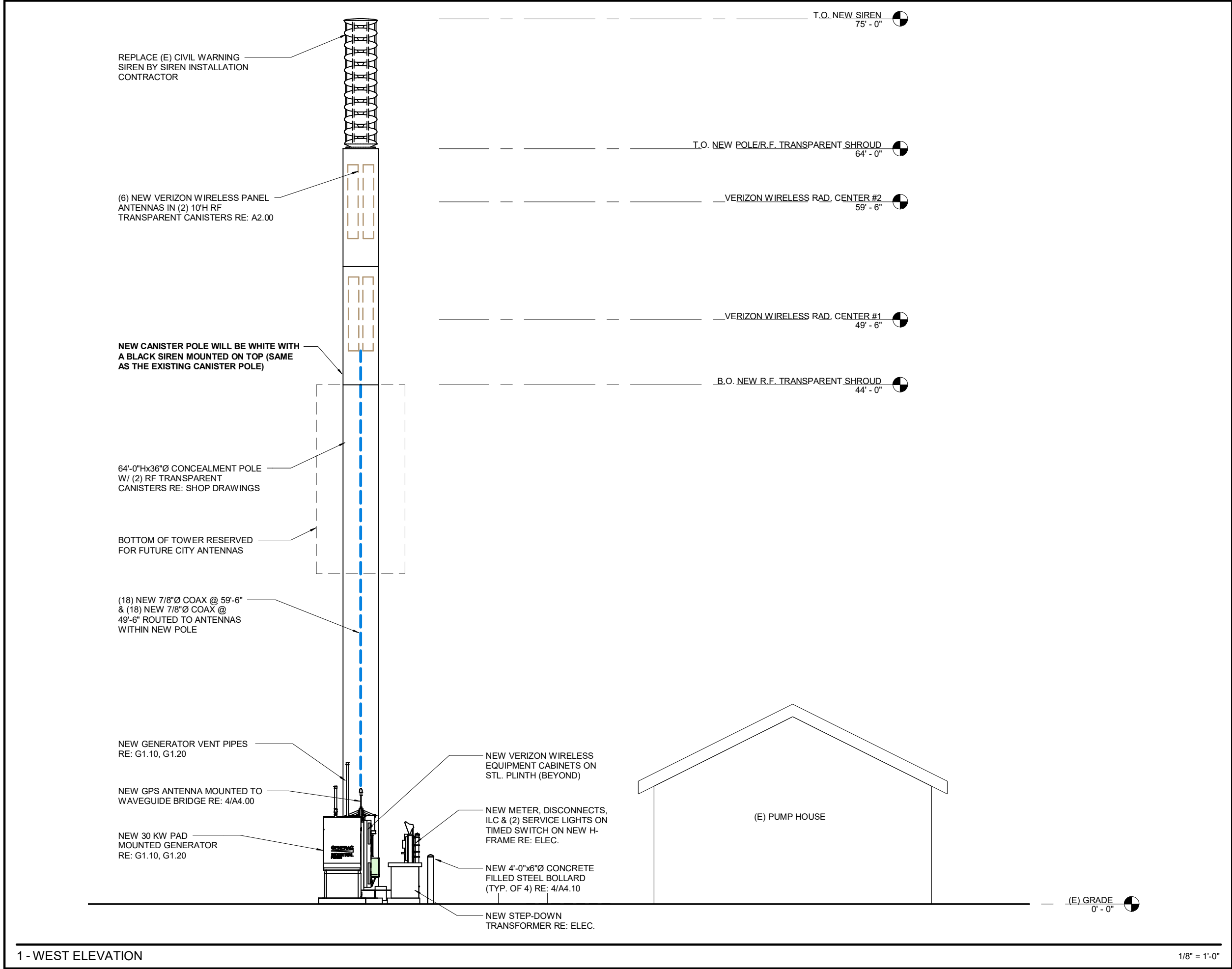


1 - NORTH ELEVATION

1/8" = 1'-0"

PENETRATIONS
ANTENNAS
LEASE AREA
EXISTING EASEMENT
ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT
OVP/ELEC. EQ.
POWER/GROUNDING
MW/FIBER EQ.
FIBER
BBU/RRH
HYBRID & COAX CABLES

BBU/RRH
HYBRID & COAX CABLES
MW/FIBER EQ.
FIBER
OV/IELEC. EQ.
POWER/GROUNDING
ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT
LEASE AREA
EXISTING EASEMENT
ANTENNAS
PENETRATIONS



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1st REVIEW ERR 2nd REVIEW SGP

**CHARLES
STECKLY**

ARCHITECTURE

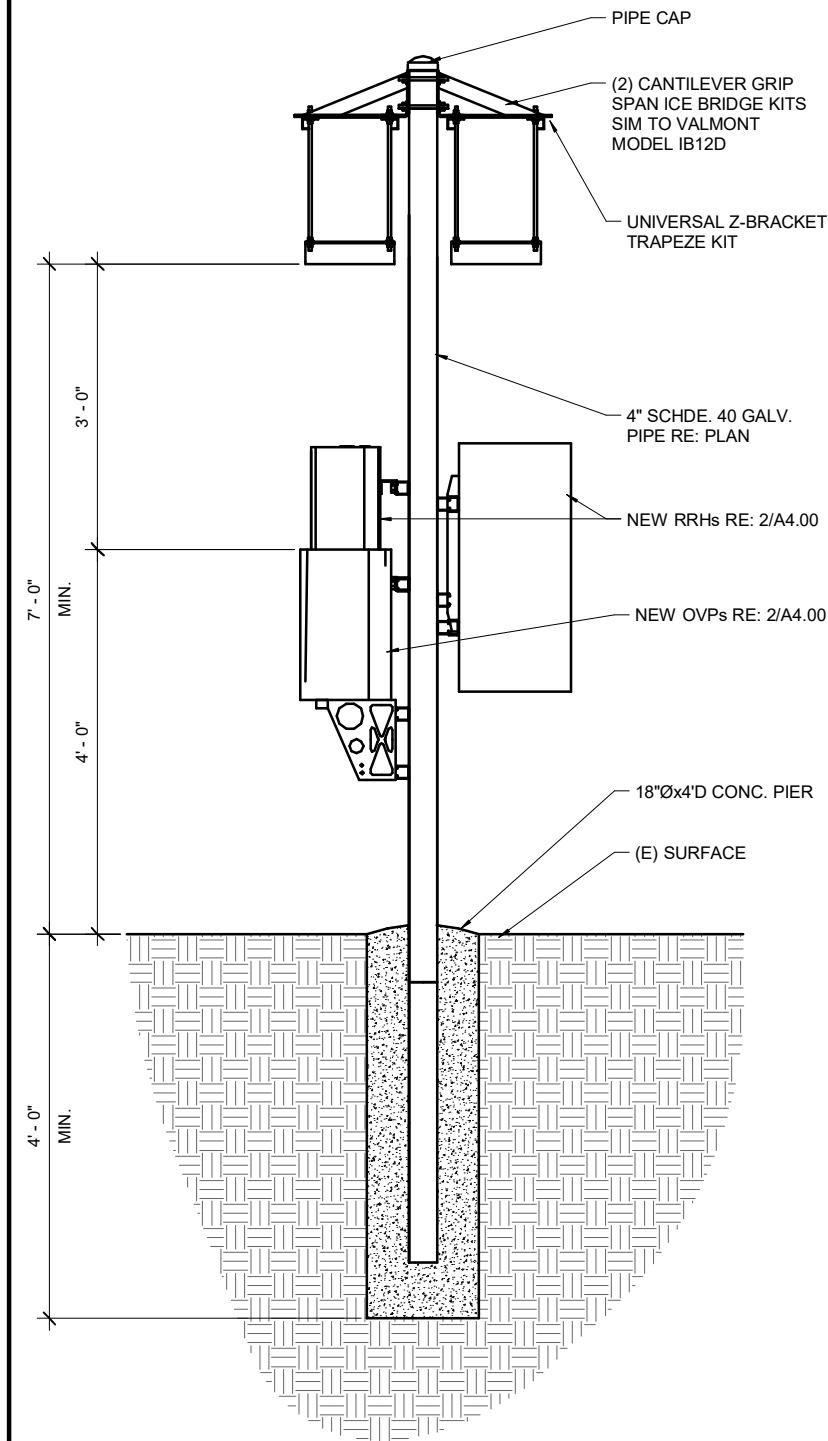
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LITTLETON, COLORADO 80127
OFFICE: 303.932.9974

**NOT FOR
CONSTRUCTION**

WEST ELEVATION

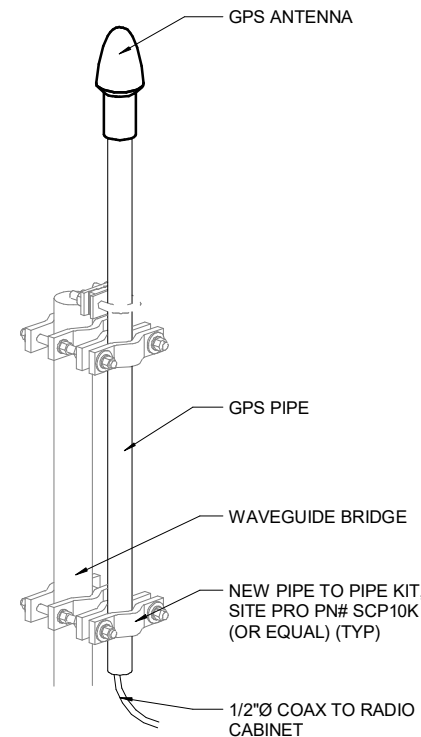
A3.10

BBU/RRH
HYBRID & COAX CABLES
MW/FIBER EQ.
FIBER
OVP/IELEC. EQ.
POWER/GROUNDING
ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT
LEASE AREA
EXISTING EASEMENT
ANTENNAS
PENETRATIONS



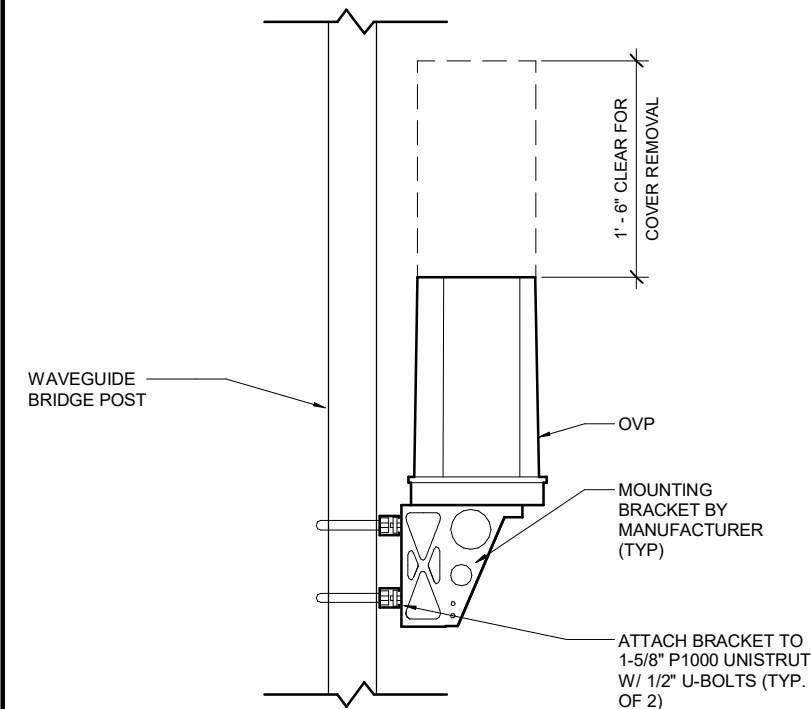
5 - WAVEGUIDE BRIDGE DETAIL

1/2" = 1'-0"



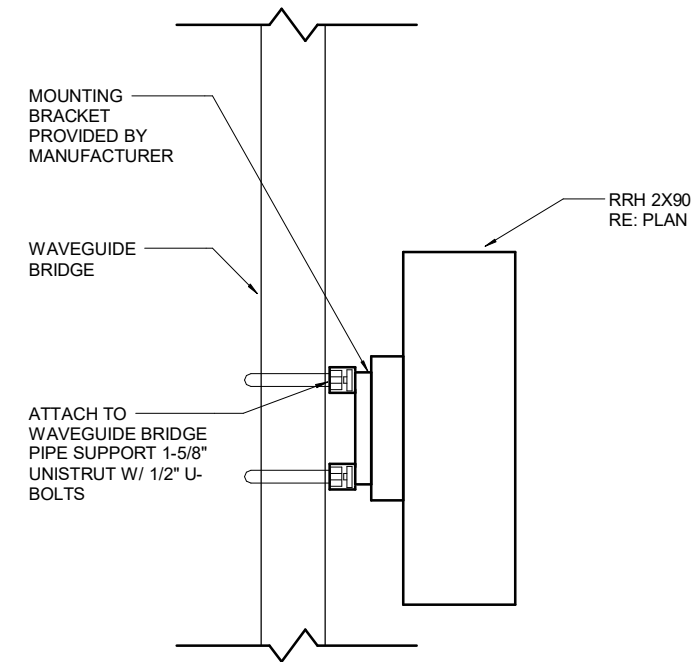
4 - GPS ANTENNA PIPE MOUNT DETAIL

N.T.S.



3 - OVP MOUNTING DETAIL

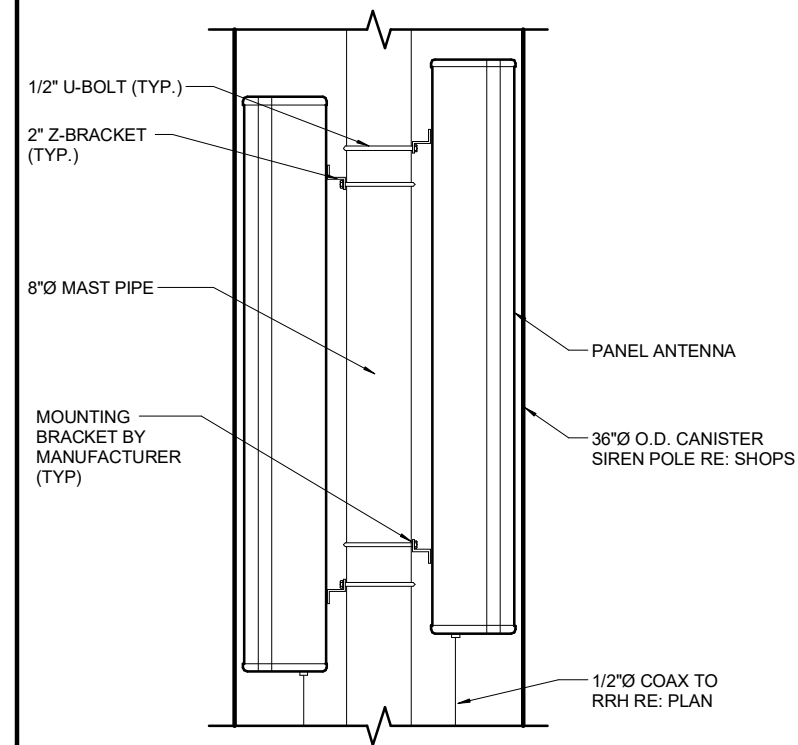
N.T.S.



2 - RRH MOUNTING DETAIL

N.T.S.

- NOTES:**
1. GROUND RRH PER VERIZON WIRELESS SPECIFICATIONS RE: ELEC.
2. OTHER RRH MOUNTING SIMILAR



1 - ANTENNA MOUNTING DETAIL

N.T.S.

NOTE:
REFER TO ANTENNA MANUFACTURER SPEC FOR QUANTITY OF MOUNTING BRACKETS REQUIRED.

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VERIZON WIRELESS SERVICES
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1st REVIEW ERR 2nd REVIEW SGP

**CHARLES
STECKLY**

ARCHITECTURE

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CONSTRUCTION**

DETAILS

A4.00

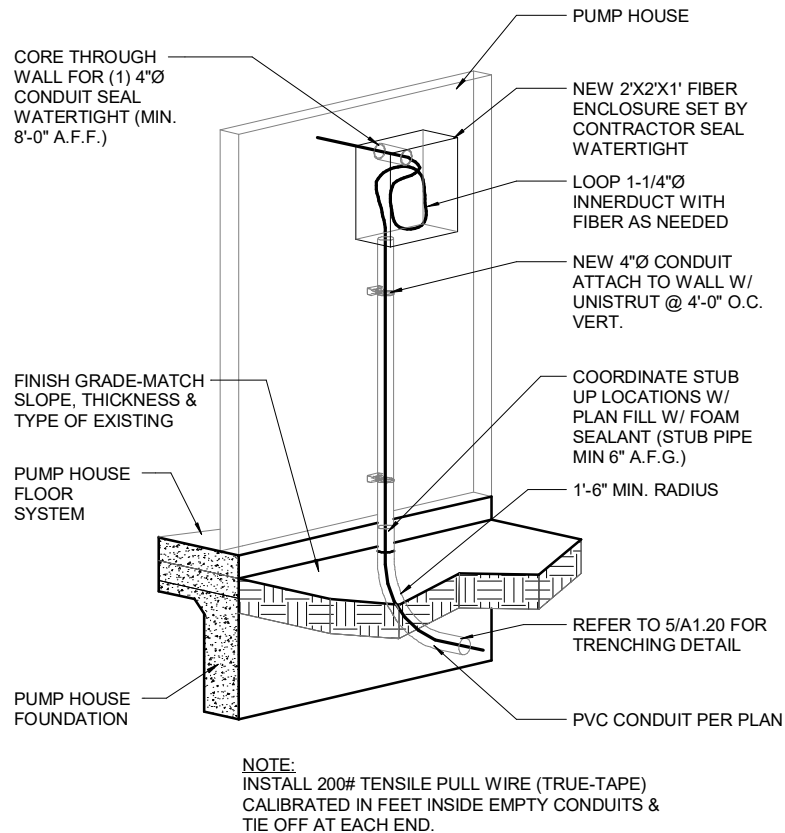
6 - NOT USED

5 - NOT USED

4 - NOT USED

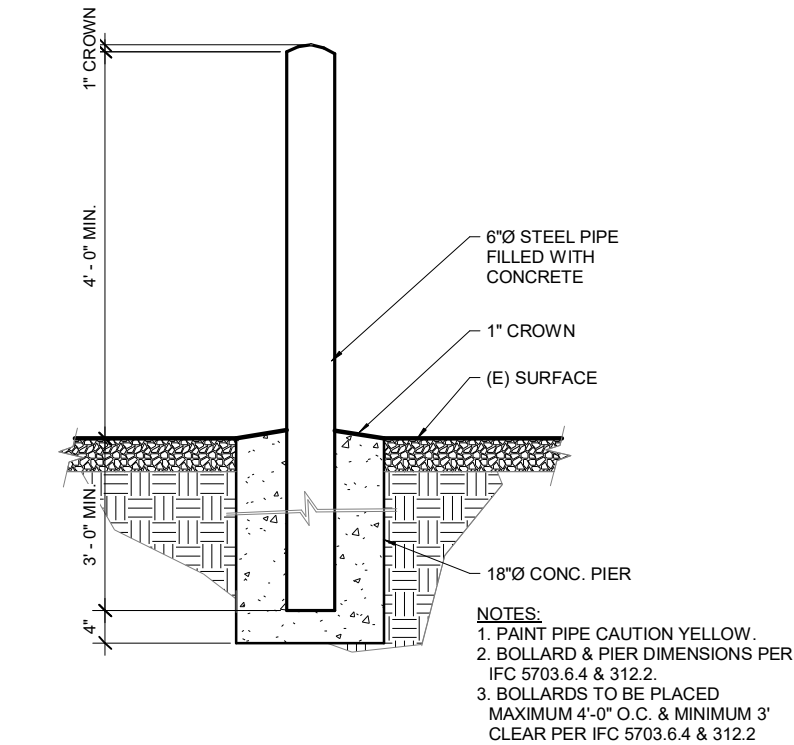
3 - FIBER ENCLOSURE DETAIL

N.T.S.



2 - TRENCHING DETAIL

3/8" = 1'-0"



1 - BOLLARD DETAIL

1/2" = 1'-0"

verizon

VERIZON WIRELESS SERVICES
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CHARLES
STECKLY

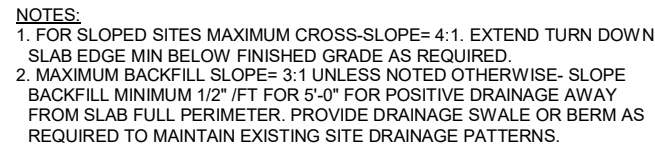
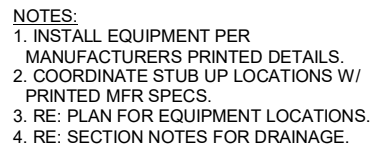
ARCHITECTURE

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NOT FOR
CONSTRUCTION

DETAILS

A4.10


$$1/2'' = 1'-0''$$

$$1/2'' = 1'-0''$$

1 - CONCRETE NOTES

1. REFER TO VERIZON WIRELESS GROUNDING SPECIFICATIONS FOR ALL GROUNDING REQUIREMENTS.
2. BOND AND GROUND ANY PROPOSED STRUCTURAL STEEL, CONCRETE REINFORCING AND OTHER METALLIC BUILDING ELEMENTS, REFER TO VERIZON WIRELESS SPECIFICATIONS FOR EXACT REQUIREMENTS.
3. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL BONDING AND GROUNDING TO THE SITE'S OUTER GROUNDING SYSTEM DURING THE CONSTRUCTION PHASE OF THE BUILDING.
4. CONTRACTOR IS TO CONDUCT FREQUENT INSPECTIONS DURING THE CONSTRUCTION PHASE TO ENSURE THAT ALL GROUNDING ARRANGEMENTS ARE MADE ACCORDING TO THE GROUNDING DESIGN SPECIFICATIONS.
5. DO NOT RETROFIT (OR UPGRADE) ESTABLISHED SITES THAT DO NOT MEET ALL THE REQUIREMENTS OF VERIZON WIRELESS GROUNDING UNLESS THERE ARE DOCUMENTED OCCURRENCES OF EQUIPMENT DAMAGES AND/OR SERVICE AFFECTING CONDITIONS.
6. USE ONLY VERIZON WIRELESS-APPROVED MATERIALS SUCH AS COPPER FOR MOST ELECTRICAL WORK AND ALUMINUM FOR CERTAIN APPLICATIONS FOR SITE GROUNDING SYSTEM, ELECTRICAL PROTECTION COMPONENTS AND AC WIRING.
7. USE THE SAME METAL THROUGHOUT THE GROUND SYSTEM WHEN POSSIBLE
8. IF DIFFERENT METALS MUST BE CONNECTED, BOND THEM BY EXOTHERMICALLY WELDING THEM TOGETHER.
9. USE TINNED COPPER WHEN CONNECTING TO GALVANIZED STEEL.
10. DO NOT BOND COPPER AND ALUMINUM TOGETHER UNLESS USING SPECIFICALLY DESIGNED EXOTHERMIC MATERIALS DESIGNED FOR THIS APPLICATION ARE USED OR A BIMETALLIC TRANSITIONAL CONNECTION IS UTILIZED.
11. MAKE ALL BONDING ATTACHMENTS TO CLEAN, UNPAINTED METAL SURFACES OR USE APPROVED PAINT PIERCING WASHERS.
12. PAINTED SURFACES MUST BE SCRAPED, CLEANED, AND LIGHTLY COATED WITH THE APPLICABLE COMPOUND.
13. ALL INDOOR OR OUTDOOR POWER OR GROUNDING CONNECTIONS SHALL BE PROTECTED AGAINST CORROSION BY USE OF A THIN COATING OF ANTI-OXIDATION COMPOUND. A COPPER COSMOLINE GREASE BASED COMPOUND (NO OX-ID) SHALL BE USED ON ALL COPPER TO COPPER CONNECTIONS. A ZINC BASED (GREY COLORED) COMPOUND SHALL BE USED ON ALL COPPER TO STEEL CONNECTIONS. WHERE OTHER COMPOUNDS SUCH AS KOPPER-SHIELD ETC EXIST, THEY MAY BE 'GRANDFATHERED' IN PLACE. PENTROX GREASE OR AN APPROVED EQUAL SHALL BE USED ON ALUMINUM CONNECTIONS.
14. DO NOT WELD GROUNDING CONDUCTORS TO THE STRUCTURAL MEMBERS OF TOWERS, INCLUDING DOWN GUYS AND ANCHOR RODS.
15. BOND ALL METALLIC OBJECTS (SUCH AS WATER PIPES, CONDUITS, METAL FUEL TANKS WITHOUT CATHODIC PROTECTION, METAL FENCES, HVAC, ETC.) THAT ARE WITHIN 6 FEET (1.8 M) OF THE GROUND RING, OR FROM ANY OTHER GROUNDED CONDUCTOR, TO GROUND RING OR TO THE GROUNDED CONDUCTOR. HARDWARE
16. ALL OUTDOOR HARDWARE (BOLTS, SCREWS, NUTS, WASHERS) SHALL BE 18-8 STAINLESS STEEL TYPE GRADE. INDOORS, GRADE 5 STEEL HARDWARE MAY BE USED. CHOOSE BOLT LENGTH TO ALLOW THE EXPOSURE OF AT LEAST TWO THREADS.
17. WHEN BONDING TO A METALLIC OBJECT WHERE ACCESS IS LIMITED TO ONLY ONE SURFACE, USE DRILLING & TAPPING OR SELF DRILLING SCREWS. DO NOT USE SHEET METAL SCREWS.
18. ALL GROUNDING CONDUCTORS SHOULD PRESERVE A DOWNWARD TO HORIZONTAL COURSE AND BE AS STRAIGHT AS POSSIBLE AND AVOID SHARP TURNS.
19. DO NOT USE U-SHAPED GROUNDING CONDUCTOR RUNS (U-TURNS IN THE WIRING) OR BONDING LAYOUTS TO REDUCE ARC-OVERS
20. ALL GROUNDING CONDUCTS MUST BE RUN IN NONMETALLIC CONDUIT. ROUTE ALL CONDUCTORS THROUGH NONMETALLIC SLEEVES WHEN PENETRATING FLOORS, CEILINGS, AND WALLS.
21. IF THE USE OF METALLIC CONDUIT CANNOT BE AVOIDED, BOND BOTH ENDS OF THE CONDUIT TO THE GROUNDING CONDUCTOR BEING ROUTED THROUGH THE CONDUIT
22. KEEP LENGTHS OF CONDUCTORS TO A MINIMUM
23. USE MULTIPLE CONDUCTING PATHS. PARALLEL PATHS ARE ONLY DESIRABLE WHEN SENSITIVE ELECTRONIC EQUIPMENT IS NOT PART OF THE CONDUCTOR PATH
24. KEEP BENDS IN CONDUCTORS TO A MINIMUM.
25. THE MINIMUM INSIDE BENDING RADIUS IS:

A. 6 INCHES (0.15M) FOR CONDUCTORS UP TO #6 GAUGE.

B. 12 INCHES (0.3M) FOR CONDUCTORS #6 TO #4/0 GAUGE.

C. 24 INCHES (0.6M) FOR CONDUCTORS #4/0 GAUGE AND LARGER
25. GROUND CONDUCTORS MUST NEVER BE ENCIRCLED WITH FERROUS METAL CLAMPS, PLACED THROUGH METAL WALLS, METAL PLATES, OR SHORT SECTIONS OF METAL CONDUIT, AND MUST NEVER BE PLACE IN THE SAME CABLE RACK AS DC POWER CABLES, HIGH FREQUENCY CABLES, ETC.
26. WHEN ATTACHING PVC CONDUITS TO ANY SURFACE UTILIZE NONCONDUCTIVE FASTENERS OR NONFERROUS FASTENERS ONLY.
27. IF CONNECTIONS BETWEEN ALUMINUM CONDUCTORS AND STEEL OBJECTS MUST BE MADE, TINNED LUGS AND PENTROX SHALL BE USED. WHERE THERE ARE CONCERNS THAT THE PENTROX MAY NOT PROVIDE ADEQUATE INTERFACING, THEN A BIMETAL SPLICE BETWEEN THE ALUMINUM CONDUCTOR AND A SHORT LENGTH OF COPPER CONDUCTOR MAY BE USED.
28. ALL OF THE BONDING AND GROUNDING CONDUCTORS SPECIFIED FOR ROOFTOP CELL AND MICROWAVE SYSTEMS IS BARE WIRE. INSULATED WIRE SHALL NOT BE SPECIFIED OR SUBSTITUTED FOR THE BONDING AND GROUNDING CONDUCTORS OF ROOFTOP INSTALLATIONS.

3 - GROUNDING NOTES

POWER PLAN SYMBOLS		GROUNDING PLAN SYMBOLS		ONE LINE DIAGRAM SYMBOLS	
	POWER CONDUCTOR		GROUND CONDUCTOR		TRANSFORMER
	PANELBOARD		COMPRESSION TYPE CONNECTION		STAND-BY GENERATOR
	DISCONNECT SWITCH		EXOTHERMIC WELD		METER
	METER		COPPER CLAD GROUND ROD (5/8" x10')		AUTOMATIC TRANSFER SWITCH
	ELECTRICAL EQUIPMENT ENCLSURE		GROUND ROD WITH INSPECTION SLEEVE		INTEGRATED TRANSFER SWITCH
	GENERATOR RECEPTACLE		PATH AND NUMBER OF CONDUCTORS		FUSED DISCONNECT
	LIGHT SWITCH		TEST WELL		LOCAL DISCONNECT
	DUPLEX OUTLET				CIRCUIT BREAKER
	QUADPLEX OUTLET				
	GFI GFCI OUTLET				

2 - ELECTRIC SYMBOLS LEGEND AND CALCULATIONS

1. SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT. CONTRACTOR IS RESPONSIBLE FOR ALL FIELD VERIFICATION.

2. THESE PLANS ARE DIAGRAMMATIC ONLY, AND NOT TO BE SCALED.

3. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.

4. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDER- WRITER'S LABORATORY AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, AND NBFU.

5. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED UNLESS OTHERWISE NOTED.

6. ELECTRICAL CONTRACTOR SHALL CARRY OUT HIS WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY, LOCAL CODES AND O.S.H.A.

7. ELECTRICAL CONTRACTOR SHALL SECURE ALL NECESSARY ELECTRICAL PERMITS, AND PAY ALL REQUIRED FEES.

8. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF NO LESS THAN ONE YEAR AFTER THE DATE OF JOB COMPLETION. ANY WORK, MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.

9. ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE, AND TRUE TAPE.

10. PROVIDE THE OWNER WITH ONE SET OF COMPLETE DIMENSIONS AND CIRCUITS, WITHIN 10 WORKING DAYS OF PROJECT COMPLETION ELECTRICAL "AS BUILT" DRAWINGS, SHOWING ACTUAL

11. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO PROJECT MANAGER AT JOB COMPLETION.

12. USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURE. ALL CONDUCTORS SHALL BE COPPER.

13. THE EXTERIOR GROUND RING SHALL BE TESTED PER VERIZON WIRELESS SPECIFICATIONS AND SHALL HAVE A RESISTANCE TO EARTH OF 5 OHMS OR LESS. IF NOT NOTIFY ENGINEER.

14. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.

15. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.

16. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.

17. IN DRILLING HOLES INTO CONCRETE (WHETHER FOR FASTENING OR ANCHORING PURPOSES OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC.) IT MUST BE CLEARLY UNDERSTOOD THAT TENDONS AND REBARS WILL NOT BE DRILLED INTO, CUT, OR DAMAGED UNDER ANY CIRCUMSTANCES.

18. LOCATION OF TENDONS AND RE-BARS ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT VIA X-RAY, OR OTHER DEVICES THAT CAN ACCURATELY LOCATE THE REINFORCING STEEL TENDONS.

19. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH APPLICABLE LOCAL BUILDING CODES. USING U.L. RATED MATERIALS

20. ELECTRICAL CONTRACTOR IS TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOK-UP COSTS SHALL BE PAID BY THE CONTRACTOR.

21. ELECTRICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND/OR CATALOG CUT-SHEETS ON ALL NON-SPECIFIED ORIGINAL MATERIALS AND EQUIPMENT, TO PROJECT MANAGER PRIOR TO COMMENCEMENT OF THE WORK.

22. UPON COMPLETION OF WORK, CONDUCT CONTINUITY AND SHORT CIRCUIT, AS WELL AS, GROUNDING TEST. GROUNDING TEST SHALL BE PERFORMED BY INDEPENDENT TESTING AGENCY, WITH WRITTEN REPORT SUBMITTED TO THE PROJECT MANAGER FOR REVIEW AND APPROVAL.

23. CLEAN PREMISES DAILY OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK PREMISES IN A COMPLETE AND UNDAMAGED CONDITION.

24. ALL EXTERIOR WALL PENETRATIONS SHALL BE SEALED WITH POLYSEAM SEALANT.

25. ALL #2 TINNED BARE COPPER DOWNLEADS TO BE PROTECTED BY 1/2" P.V.C. PIPE AND SECURED.

26. COMPRESSION FITTINGS TO BE USED ON ALL CONDUITS (NO SET SCREWS).

27. ALL #6 STRANDED COPPER WITH GREEN INSULATION TO BE ATTACHED WITH CRIMPED DOUBLE LUG, ATTACHED WITH NUTS, BOLTS AND STAR WASHERS TYPICAL AND NO-OX GREASE BETWEEN LUG AND BUS BAR.

28. ALL ABOVE GROUND CONDUIT SHALL BE EMT GALVANIZED CONDUIT WITH WEATHERPROOF FITTINGS.

29. LABEL PANEL WITH AVAILABLE FAULT VALUE (PERMANENT LABEL).

* DATE OF JOB COMPLETION SHALL BE THE DATE ON THE CONTRACTOR'S "NOTICE OF COMPLETION" SUBMITTED TO THE OWNER.

1 - ELECTRICAL NOTES



PROJECT INFORMATION

SITE NAME

DEN WAGON WHEEL

4087 HARVEST LANE
BRIGHTON, CO 80601

CONSULTANT

VERN WILLSON P.E.

3083 WHITE OAK ST.
HIGHLANDS RANCH, CO 80129
PHONE:303.883.2208

A	11/09/17	CD REVIEW	MKC
B	11/29/17	CLIENT COMMENTS	MKC

1st REVIEW ERR 2nd REVIEW SGP



NOT FOR
CONSTRUCTION

ELECTRICAL NOTES & SYMBOLS

E1.00



VERIZON WIRELESS SERVICES
3131 S. VAUGHN WAY, SUITE 550
AURORA, CO 80014

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**CHARLES
STECKLY**

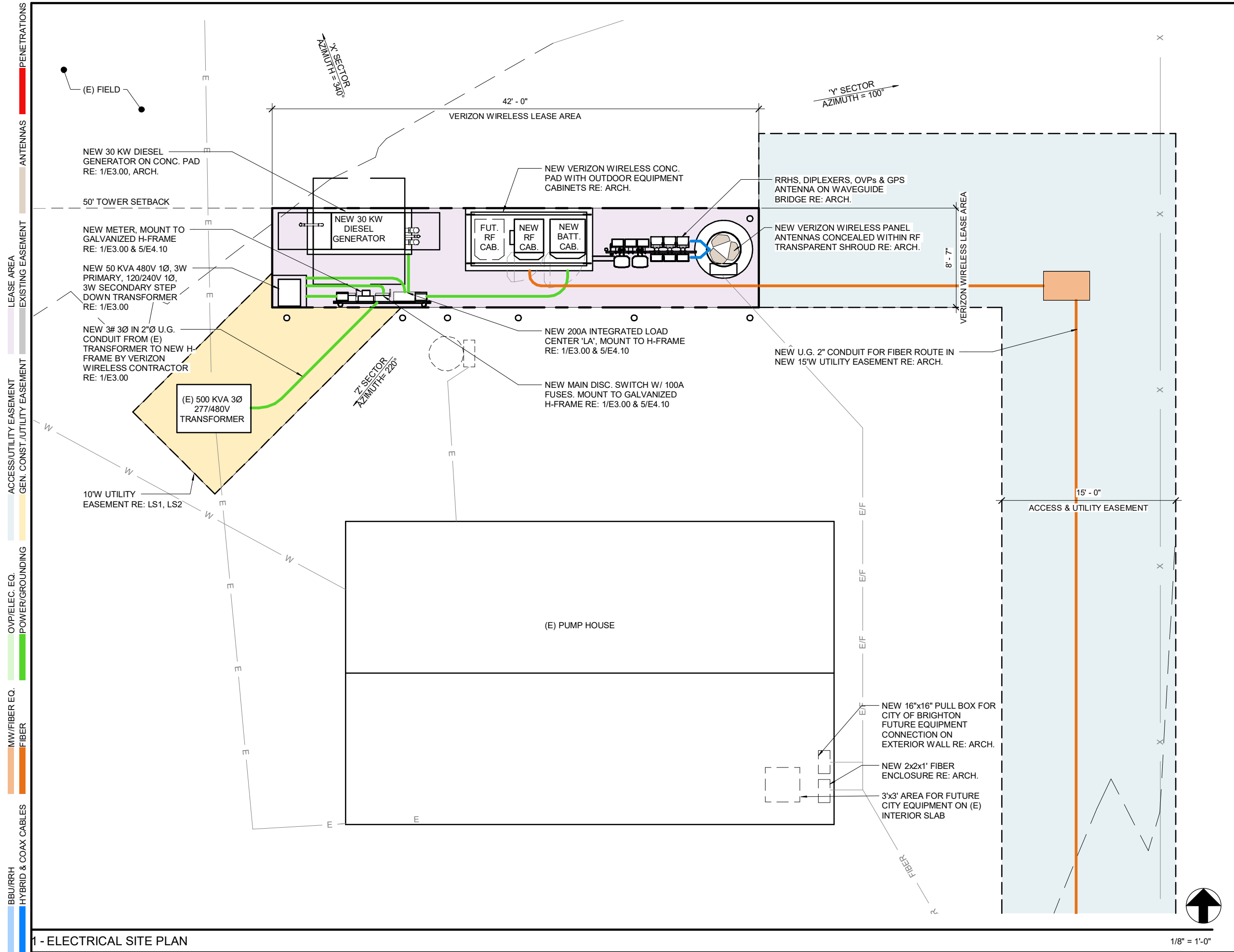
ARCHITECTURE

5935 SOUTH ZANG STREET, SUITE 280
LITTLETON, COLORADO 80127
OFFICE: 303.932.9974

**NOT FOR
CONSTRUCTION**

ELECTRICAL SITE PLAN

E2.00



PANEL: LA

120/ 240 VOLTS 1 PHASE 3 WIRES, SN, 200 AMP BUS 200 AMP MAIN MCB

10,000 A.I.C. RATING (MINIMUM), NEMA 3R ENCLOSURE SURFACE ENCLOSURE

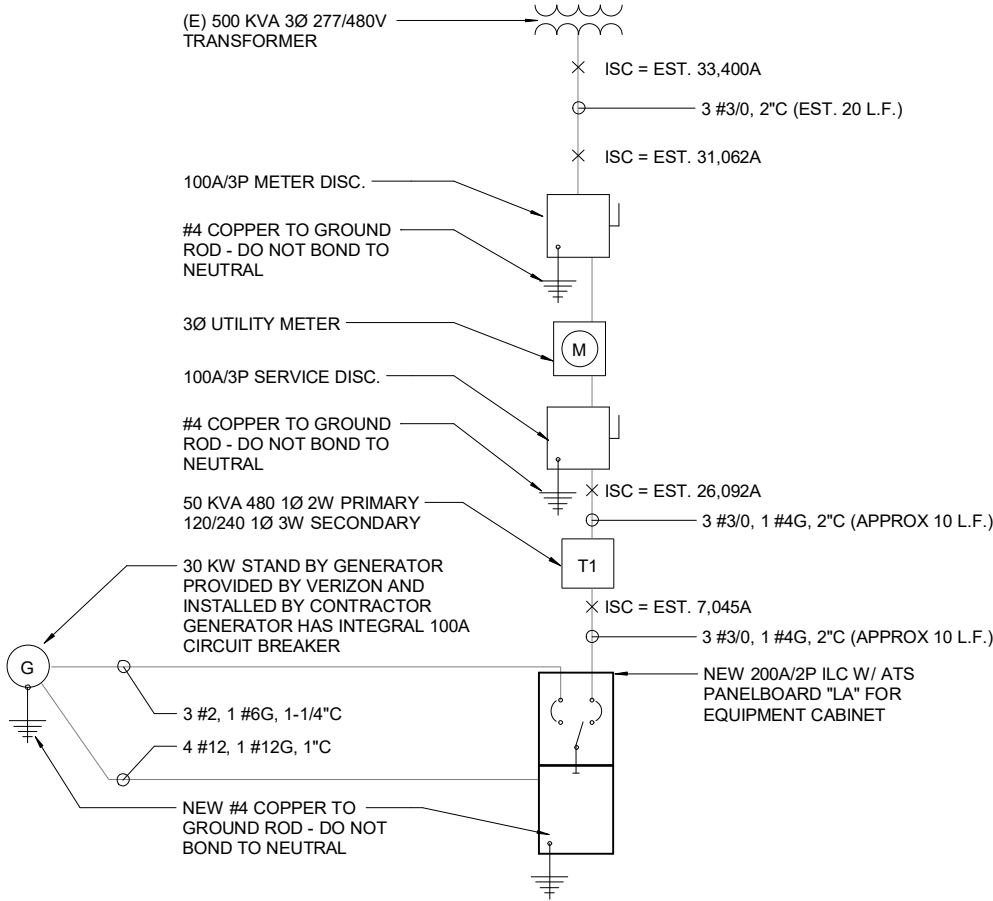
DESCRIPTION	WIR	BKR	POLE	CKT	VA	Ø	VA	CKT	POLE	BKR	WIR	DESCRIPTION
BATTERY CAB RECEPTACLE	#12	15	1	1	360	A	720	2	2	30	#10	BATTERY CABINET RECT 6
EXTERIOR LIGHTING	#12	20	1	3	600	B	720	4				
BATTERY CABINET RECT 1	#10	30	2	5	720	A	720	6	2	30	#10	BATTERY CABINET RECT 7
				7	720	B	720	8				
BATTERY CABINET RECT 2	#10	30	2	9	720	A	720	10	2	30	#10	BATTERY CABINET RECT 8
				11	720	B	720	12				
BATTERY CABINET RECT 3	#10	30	2	13	720	A	180	14	2	30	#12	RF CABINET A GFCI
				15	720	B	1000	16	2	20	#12	RF CABINET A AC UNIT
BATTERY CABINET RECT 4	#10	30	2	17	720	A	1000	18				
				19	720	B	1000	20	2	20	#12	RF CABINET B AC UNIT (FUT.)
BATTERY CABINET RECT 5	#10	30	2	21	720	A	1000	22				
				23	720	B	180	24	1	20	#12	RF CABINET B GFCI (FUT.)
BLOCK HEATER	#12	20	1	25	1000	A	-	26	-	-	-	SPARE
BATTERY CHARGER	#12	20	1	27	1000	B	-	28	-	-	-	SPARE
SPACE	-	-	-	29	-	A	-	30	-	-	-	SPACE
SPACE	-	-	-	31	-	B	-	32	-	-	-	SPACE
SPACE	-	-	-	33	-	A	-	34	-	-	-	SPACE
SPACE	-	-	-	35	-	B	-	36	-	-	-	SPACE
SPACE	-	-	-	37	-	A	-	38	-	-	-	SPACE
SPACE	-	-	-	39	-	B	-	40	-	-	-	SPACE
SPACE	-	-	-	41	-	A	-	42	-	-	-	SPACE

PHASE A: 9300 VOLTAMPS PHASE B: 9540 VOLTAMPS

PANEL LOAD CALCULATIONS

LIGHTS	<u>600</u>	VOLTAMPS X 1.25 =	<u>750</u>	VOLTAMPS
RECEPTACLES- 1ST 10KVA	<u>720</u>	VOLTAMPS X 1.00 =	<u>720</u>	VOLTAMPS
CABINET A AIR CONDITIONER	<u>2000</u>	VOLTAMPS X 1.25 =	<u>2500</u>	VOLTAMPS
CABINET B AIR CONDITIONER	<u>2000</u>	VOLTAMPS X 1.00 =	<u>2000</u>	VOLTAMPS
RECTIFIER	<u>11520</u>	VOLTAMPS X 1.00 =	<u>11520</u>	VOLTAMPS
OTHER	<u>2000</u>	VOLTAMPS X 1.00 =	<u>2000</u>	VOLTAMPS
			<u>19490</u>	TOTAL DEMAND
			<u>81</u>	AMPS,1Ø, 3W

2 - PANEL SCHEDULE



FAULT CALCULATIONS

A. SERVICE

$f = \frac{2 \times 20\text{FT} \times 33400\text{A}}{3 \times 13923 \times 480\text{V}} = 0.07$

$M = \frac{1}{1 + 0.07} = 0.93$

$I_{sc} = 0.93 \times 33400\text{A} = 31062\text{AIC}$

B. TRANSFORMER

$f = \frac{2 \times 10\text{FT} \times 31062\text{A}}{13923 \times 480\text{V}} = 0.19$

$M = \frac{1}{1 + 0.19} = 0.84$

$I_{sc} = 0.84 \times 31062\text{A} = 26092\text{AIC}$

C. TRANSFORMER

$f = \frac{2 \times 1.1 \times 26092\text{A} \times 240\text{V}}{50 \times 100,000} = 2.76$

$M = \frac{1}{1 + 2.76} = 0.27$

$I_{sc} = 0.27 \times 26092\text{A} = 7045\text{AIC}$

1 - ONE LINE DIAGRAM

12" = 1'-0"



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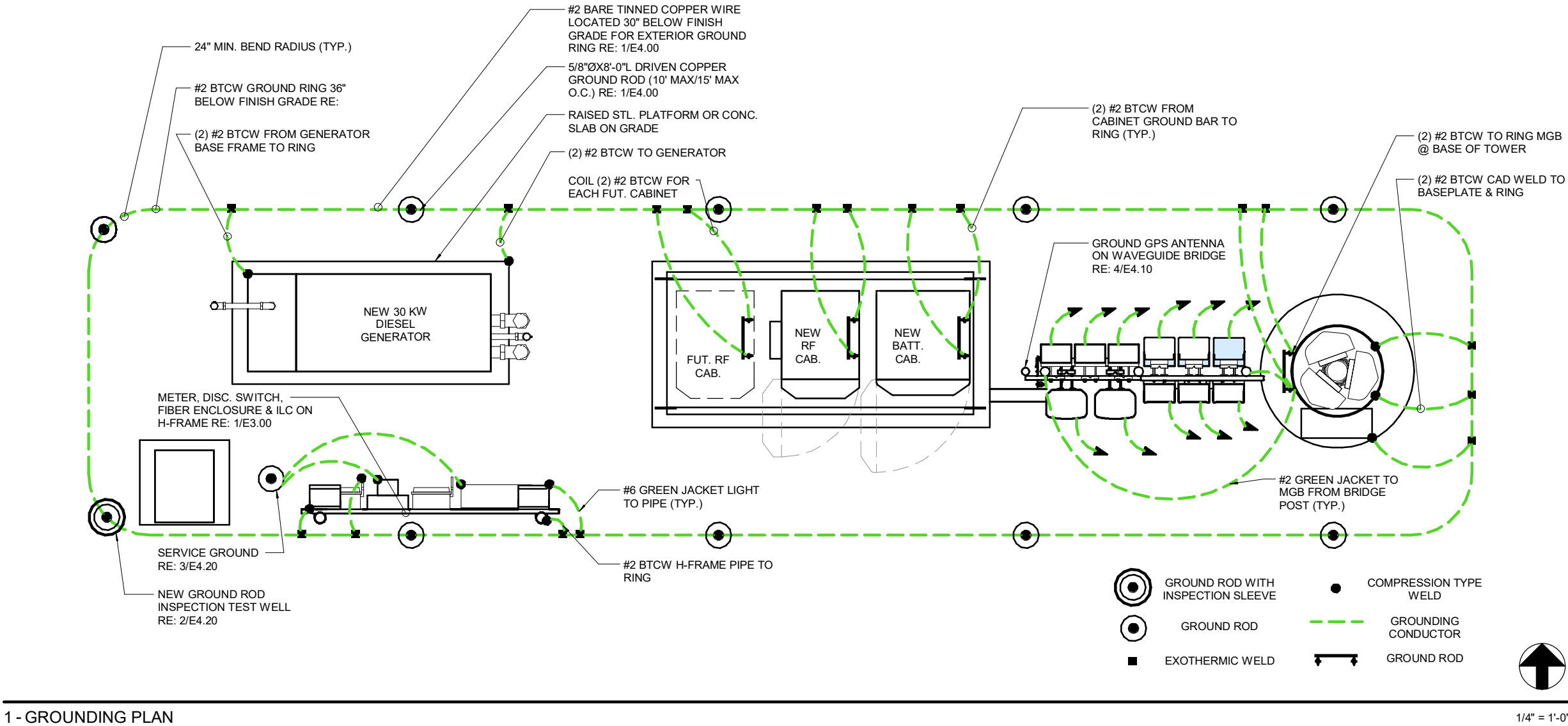
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CONSTRUCTION**

PANEL SCHEDULE &
ONE LINE DIAGRAM

E3.00

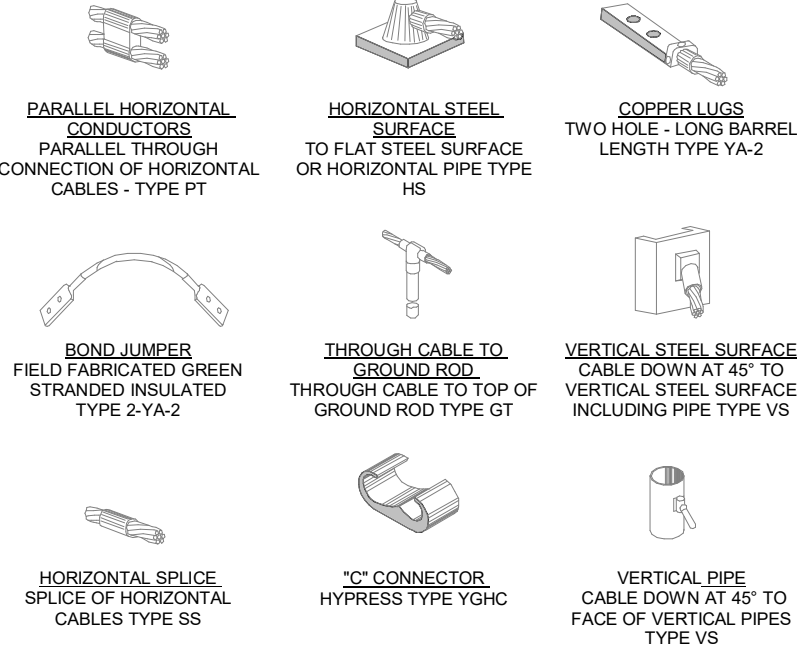
LEASE AREA
EXISTING EASEMENT
ACCESS/UTILITY EASEMENT
GEN. CONST./UTILITY EASEMENT
POWER/GROUNDING
MV/FIBER EQ.
FIBER
BBU/RRH
HYBRID & COAX CABLES
ANTENNAS
PENETRATIONS

3 - NOT USED



1 - GROUNDING PLAN

2 - CAD WELD DETAILS



VERIZON WIRELESS SERVICES
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**CHARLES
STECKLY**

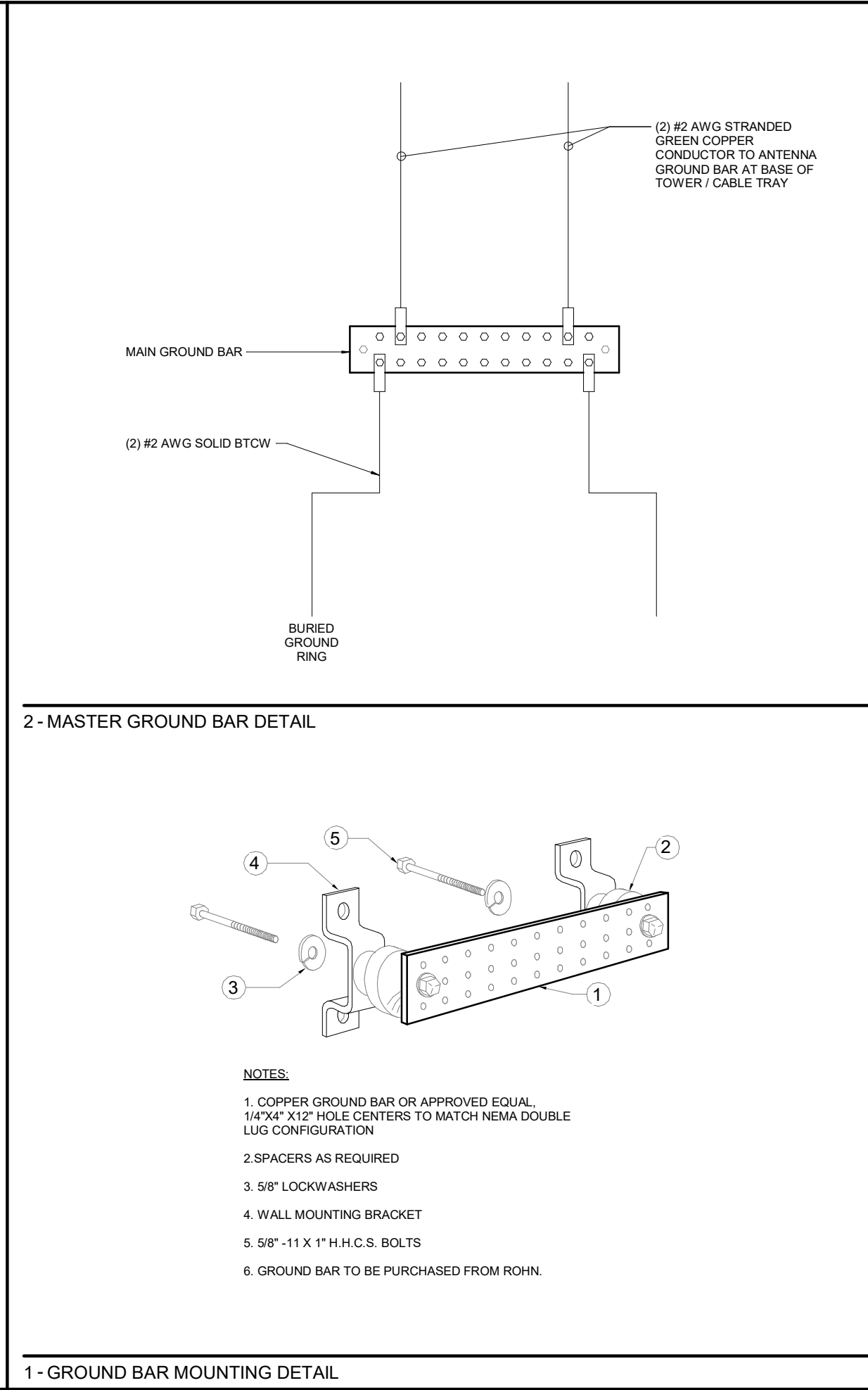
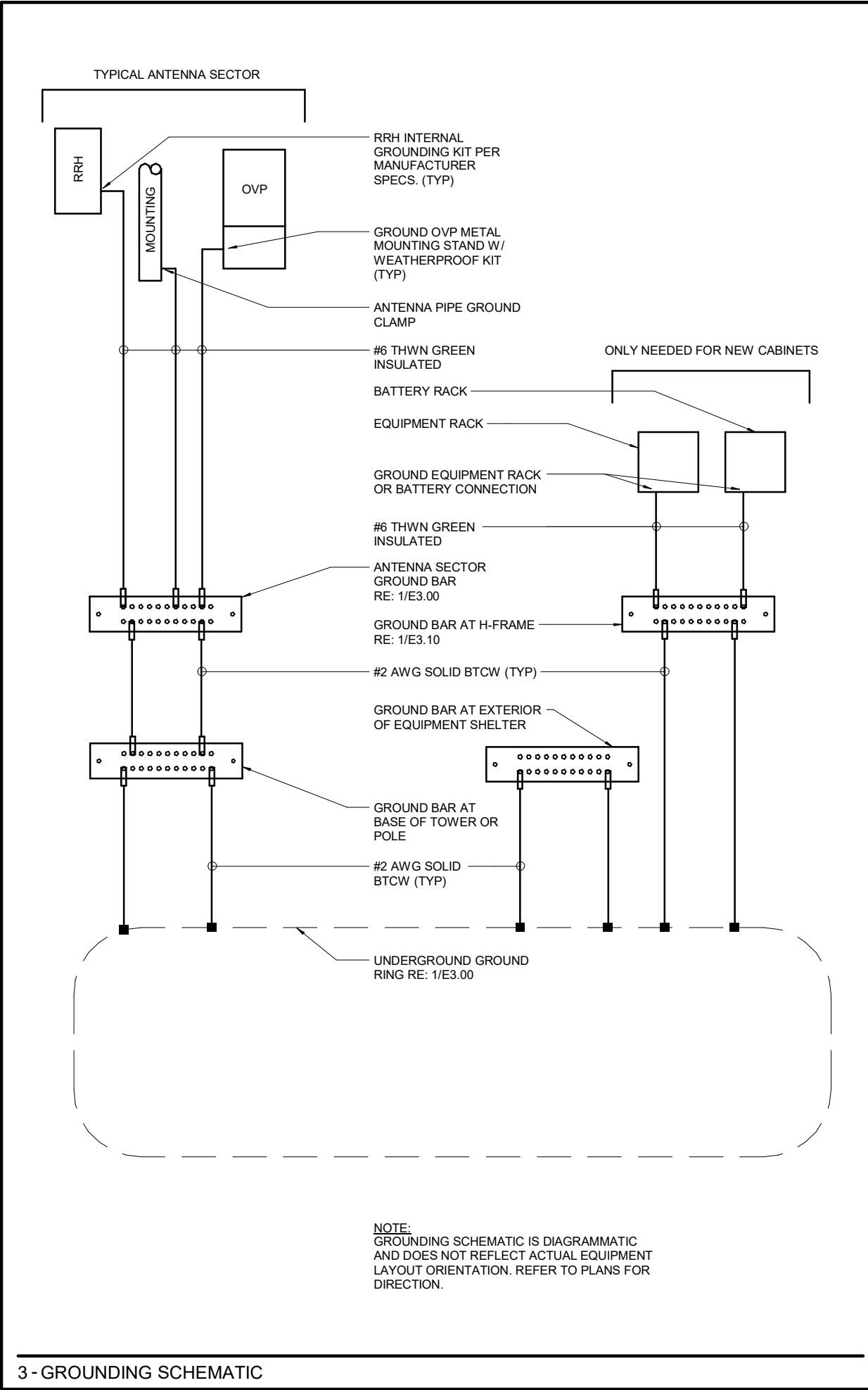
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**NOT FOR
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GROUNDING PLAN AND
DETAILS

E4.00



verizon
VERIZON WIRELESS SERVICES
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SITE NAME
DEN WAGON WHEEL
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1st REVIEW ERR 2nd REVIEW SGP

CHARLES STECKLY
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**NOT FOR
CONSTRUCTION**

**GROUNDING
SCHEMATIC & DETAILS**

E4.10

5 - NOT USED

FULL CUT-OFF 300W FLOODLIGHT
MODEL #QF300F BY RAB (OR SIM.
TYP) RE: PLAN FOR COUNT AND
LOCS.

3 HOLE OUTLET BOX BY RED
DOT #R1H31LM W/ BLANK COVER
(TYP)

1 HR TIMED SWITCH IN
WEATHERPROOF J-BOX

ILC RE: 1/E1.00

DISCONNECT (TYP. OF 2)
RE: 1/E1.00

METER RE: 1/E1.00

P1000 GALV. UNISTRUT
ATTACHED TO PIPES W/
1/2"Ø U-BOLTS (TYP)

3"Ø SCH. 40 PIPE
RE: ARCH. (TYP)

GROUND

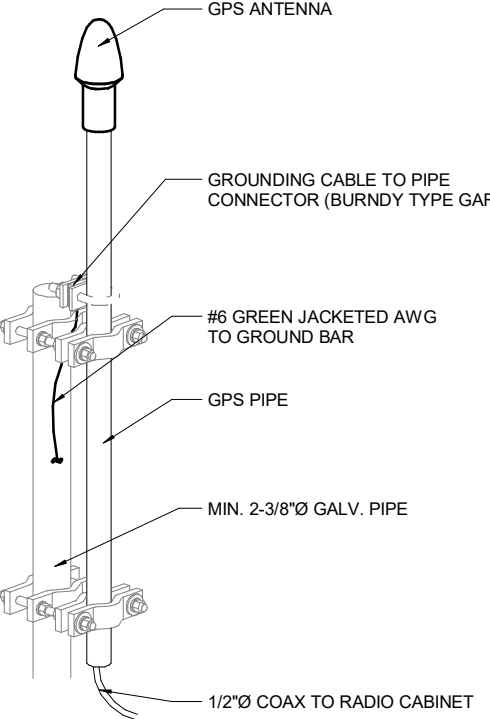
NOTE:
LIGHT FIXTURES SHALL BE MOUNTED &
ORIENTED SO DIRECT GLARE FROM THE LIGHT
SOURCE WILL NOT BE VISIBLE OFF SITE.

3 - H-FRAME DETAIL

3/8" = 1'-0"

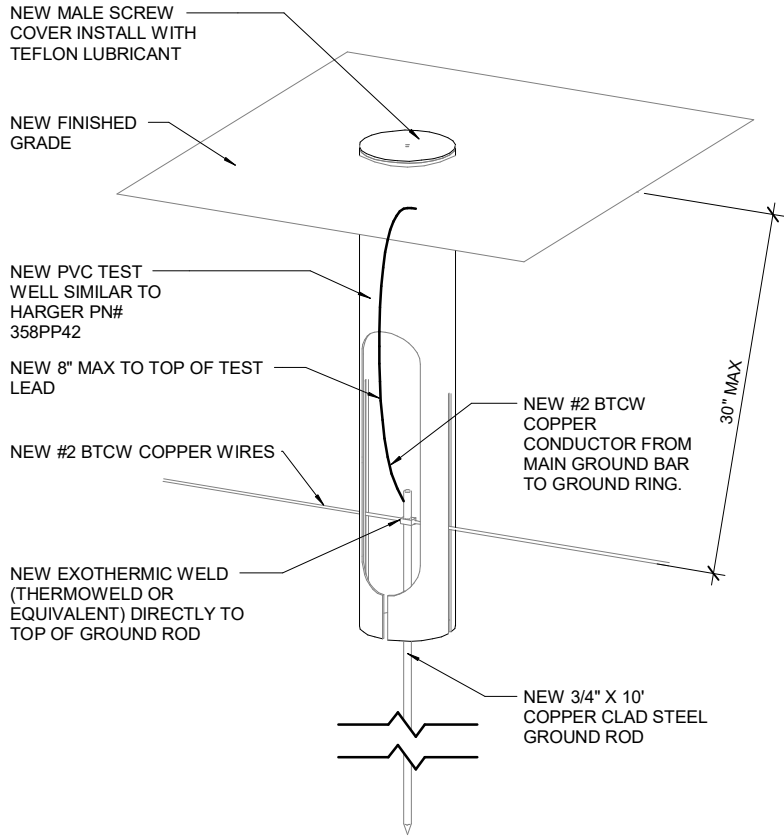
4 - GPS ANTENNA PIPE MOUNT DETAIL

N.T.S.



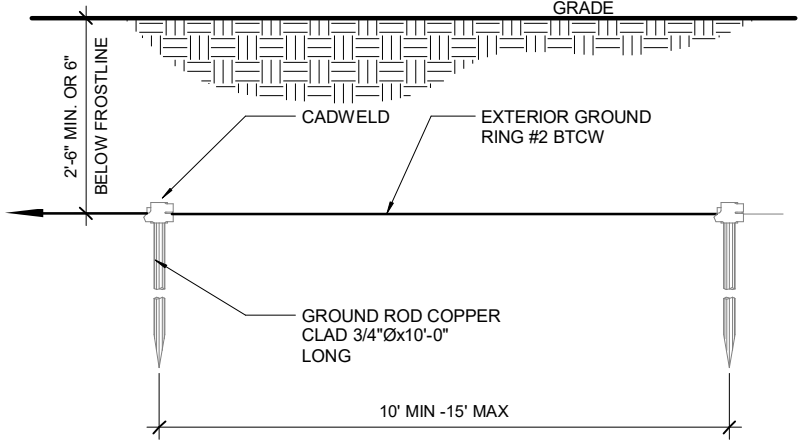
2 - INSPECTION WELL DETAIL

N.T.S.



1 - GROUND ROD DETAIL

N.T.S.



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**ELECTRICAL &
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E4.20