

ELECTRICAL SPECIFICATION

I. SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS

- A. THE WORK INCLUDES FURNISHING AND INSTALLING THE MATERIAL, EQUIPMENT AND SYSTEMS COMPLETE AS SPECIFIED AND/OR INDICATED ON THE DRAWINGS. THE ELECTRICAL INSTALLATIONS WHEN FINISHED SHALL BE COMPLETE AND COORDINATED AND READY FOR SATISFACTORY SERVICE.
- B. ALL WORK UNDER THIS CONTRACT SHALL BE DONE IN STRICT ACCORDANCE WITH ALL APPLICABLE MUNICIPAL, STATE, FEDERAL AND LOCAL ELECTRICAL CODES THAT GOVERN EACH PARTICULAR TRADE AND THE 2017 NATIONAL ELECTRICAL CODE.
- C. THE CONTRACTOR SHALL COORDINATE THE ELECTRICAL EQUIPMENT INSTALLATION WITH ALL TRADES.
- D. THE CONTRACTOR SHALL MAKE APPLICATION AND PAY ALL CHARGES FOR ALL NECESSARY PERMITS, LICENSES, AND INSPECTIONS AS REQUIRED UNDER THE ABOVE CODES UPON COMPLETION OF THE WORK. THE CUSTOMARY CERTIFICATIONS OF APPROVAL SHALL BE FURNISHED.
- E. NO MATERIALS OR EQUIPMENT SHALL BE USED IN THE WORK UNTIL APPROVED. ALL MATERIALS SHALL BE U.L. LISTED.
- F. THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS AND SHALL INSPECT THE EXISTING CONDITIONS OF THE SITE. FAILURE TO COMPLY WITH THIS REQUIREMENT WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLYING WITH THE CONTRACT DOCUMENTS.
- G. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL INSTALLATIONS, DETAILS OF PROPOSED DEPARTURES DUE TO ACTUAL FIELD CONDITIONS OR OTHER CAUSES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION. REWORK OF COMPLETED ITEMS DUE TO IMPROPER FIELD COORDINATION SHALL BE AT THE CONTRACTOR'S EXPENSE.
- H. PROVIDE SUFFICIENT ACCESS AND CLEARANCE FOR ALL ITEMS OF EQUIPMENT REQUIRING SERVICING AND MAINTENANCE.
- I. THE CONTRACTOR SHALL PERFORM ALL NECESSARY CUTTING AND PATCHING AS REQUIRED TO COMPLETE THE INSTALLATIONS. PATCHING OF WALLS, FLOORS, CEILINGS, ETC. SHALL MATCH THE ADJACENT SURFACES.
- J. THE CONTRACTOR SHALL PREPARE THREE (3) COPIES OF A RECORD AND INFORMATION BOOKLET. THE BOOKLET SHALL BE BOUND IN A THREE RING LOOSE-LEAF BINDER AND INCLUDE ALL ITEMS OF ELECTRICAL EQUIPMENT.
- K. UPON COMPLETION OF THE ELECTRICAL INSTALLATION, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS OF THE ELECTRICAL CONTRACT DRAWINGS WHICH SHALL BE LEGIBLY MARKED IN RED TO SHOW ALL CHANGES AND DEPARTURES OF THE INSTALLATIONS COMPARED WITH THE ORIGINAL DESIGN. THEY SHALL BE SUITABLE FOR USE IN PREPARATION OF RECORD DRAWINGS.
- L. GUARANTEE. ALL NEW ELECTRICAL INSTALLATIONS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR BEGINNING THE DAY OF THE FINAL ACCEPTANCE OF THE WORK OR BENEFICIAL OCCUPANCY OF THE OWNER, WHICHEVER OCCURS FIRST. THE ABOVE SHALL NOT IN ANY MANNER VOID OR ABROGATE EQUIPMENT MANUFACTURER'S GUARANTEE OR WARRANTY. CERTIFICATES OF GUARANTEE SHALL BE DELIVERED TO THE OWNER UPON RECEIPT OF NOTICE FROM THE OWNER OF FAILURE OF ANY PART OF THE ELECTRICAL INSTALLATION DURING THE GUARANTEE PERIOD. NEW REPLACEMENT PARTS SHALL BE FURNISHED AND INSTALLED PROMPTLY AND AT NO COST TO VERIZON.
- M. ANY ELECTRICAL WORK WHICH WILL INTERFERE WITH THE NORMAL USE OF THE BUILDING IN ANY MANNER SHALL BE DONE AT SUCH TIME OR TIMES AS SHALL BE MUTUALLY AGREED UPON BETWEEN THE CONTRACTOR AND THE VERIZON REPRESENTATIVE.
- N. SUPPORTS, HANGERS, AND FOUNDATIONS. PROVIDE ALL SUPPORTS, HANGERS, BRACES, ATTACHMENTS, AND FOUNDATIONS REQUIRED FOR THE WORK. SUPPORT AND SET THE WORK IN A THOROUGHLY SUBSTANTIAL AND WORKMANLIKE MANNER WITHOUT PLACING STRAINS ON THE MATERIALS, EQUIPMENT, OR THE BUILDING STRUCTURE. SUPPORTS, HANGERS, BRACES AND ATTACHMENTS SHALL BE STANDARD MANUFACTURED ITEMS OR FABRICATED STRUCTURAL STEEL SHAPES.
- O. THERE SHALL BE NO INTERRUPTION OF POWER TO EXISTING ELECTRICAL SYSTEMS WITHOUT PRIOR CONSENT FROM VERIZON. SUCH INTERRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE SCHEDULED WITH THE OWNER AT LEAST THREE BUSINESS DAYS IN ADVANCE OF THE OUTAGE. ANY COST FOR WORK THAT MUST BE DONE ON AN OVERTIME BASIS SHALL BE INCLUDED IN THE BID.
- P. MOUNTING AND SUPPORTING OF ALL EQUIPMENT PROVIDED BY THIS CONTRACTOR SHALL BE COORDINATED WITH VERIZON IN THE FIELD.
- Q. PROVIDE ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THE ELECTRICAL WORK. ANY DAMAGE DONE TO THE WORK ALREADY IN PLACE BY REASON OF THIS WORK, AS SPECIFIED AND/OR INDICATED ON THE DRAWINGS, BY A QUALIFIED MECHANIC EXPERIENCED IN SUCH WORK. PATCHING SHALL BE UNIFORM IN APPEARANCE AND SHALL MATCH THE SURROUNDING SURFACE. ALL PENETRATIONS THROUGH WALLS OF NEW ROOF SHALL BE SEALED WEATHERTIGHT.

2. SECTION 16050 - BASIC ELECTRICAL MATERIALS & METHODS

A. CONDUIT & BOXES.

1. ALL CONDUIT ABOVE GRADE AND EXPOSED TO WEATHER SHALL BE SEALTIGHT OR SCHEDULE 40 GREY PVC. ALL SEALTIGHT CONNECTORS SHALL BE METALLIC.
2. JUNCTION AND PULL BOXES SHALL BE FURNISHED AND INSTALLED AS SHOWN OR WHERE REQUIRED TO FACILITATE PULLING OF WIRES OR CABLES. SUCH BOXES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. GASKETED COVER PLATES SHALL BE FURNISHED FOR OUTDOOR INSTALLATIONS.
3. ALL BOXES, WHETHER OUTLET, JUNCTION, PULL, OR EQUIPMENT SHALL BE FURNISHED WITH APPROPRIATE COVERS.
4. NO SECTIONALIZED BOXES SHALL BE USED.
5. ALL EMT CONDUIT FITTINGS SHALL BE COMPRESSION TYPE.
6. ALL FIELD CUTS OF GALVANIZED ITEMS SHALL BE BRUSHED WITH MARINE GRADE GALVANIZING.
7. ALL METALLIC OBJECTS EXPOSED TO WEATHER SHALL BE GALVANIZED STEEL.

B. WIRES & CABLE.

1. BUILDING WIRES, UNLESS OTHERWISE INDICATED, SHALL BE 600 VOLT, TYPE THHN INSULATION FOR INTERIOR AND EXTERIOR USE. CONDUCTORS SHALL BE SOFT DRAWN COPPER OF NOT LESS THAN 99.9% CONDUCTIVITY. NO RHEX OR AC (BX) CABLE WILL BE ALLOWED ON THE PROJECT.

2. NO WIRE SMALLER THAN NO. TWELVE (12) AWG SHALL BE USED UNLESS OTHERWISE INDICATED. CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND FROM TERMINAL BOARD TO POINT OF FINAL CONNECTION, AND NO SPLICE SHALL BE MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES. ALL CONDUCTORS SHALL BE OF THE SIZE AS INDICATED. ALL WIRES NO. EIGHT (8) AWG AND LARGER SHALL BE STRANDED. THE CONTRACTOR SHALL MAKE WEARING CONNECTIONS OF ALL ELECTRICAL EQUIPMENT REQUIRING ELECTRICAL SERVICE WIRES AND CABLES SHALL BE AS MANUFACTURED BY PIRELLI, ROYAL, AND TRIANGLE OR EQUIVALENT.
3. ALL WIRING SHALL BE COLOR CODED, MATCH EXISTING SYSTEM COLOR CODING WHERE APPLICABLE.

C. DISCONNECTS.

1. FURNISH AND INSTALL SAFETY SWITCHES WHERE INDICATED AND AS REQUIRED FOR MOTOR, OUTLETS OR OTHER EQUIPMENT. SWITCHES SHALL BE OF SIZE, NUMBER OF POLES AND FUSED OR NON-FUSED, AS REQUIRED FOR JOB CONDITIONS AND THE NATIONAL ELECTRICAL CODE.
- D. PANELBOARDS:

1. THE CONTRACTOR SHALL BALANCE THE LOADS ON ALL PANELBOARDS AS CLOSELY AS POSSIBLE AND TO THE SATISFACTION OF THE ENGINEER.
2. FURNISH AND INSTALL, WHERE INDICATED ON THE DRAWINGS, AUTOMATIC CIRCUIT BREAKER PANELBOARDS COMPLETE WITH ENCLOSING CABINETS, ENCLOSURES SHALL BE NEW UNLESS WHERE EXPOSED TO WEATHER AS INDICATED. PANELBOARDS AND ENCLOSING CABINETS SHALL CONFORM TO STANDARDS ESTABLISHED BY UNDERWRITERS LABORATORIES, INC. AND REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
3. ALL PANELBOARD INTERIORS SHALL BE FACTORY ASSEMBLED, COMPLETE WITH CIRCUIT BREAKERS AS SCHEDULED ON THE DRAWINGS. INTERIORS SHALL BE DESIGNED AND ASSEMBLED SO THAT ANY INDIVIDUAL BREAKER CAN BE REPLACED WITHOUT DISTURBING ADJACENT UNITS, WITHOUT REMOVING MAIN BUS, AND SHALL EMPLOY SEQUENCE BUSHING, MAIN BUSES AND BACK BARS OF DISTRIBUTION AND POWER PANELBOARDS SHALL BE OF SUCH DESIGN THAT BREAKERS CAN BE CHANGED WITH NO ADDITIONAL DRILLING, MACHINING, OR TAPPING. ALL CIRCUIT BREAKERS SHALL BE QUICK-MAKE AND SHALL BE TRIP INDICATING.
4. PANELBOARDS SHALL EMPLOY PLUG-IN BREAKERS OF NOT LESS THAN 22,000 SYMMETRICAL A.I.C. AT 120 VOLTS OR 240 VOLTS AS REQUIRED. PANELBOARDS SHALL BE EQUIPPED WITH COPPER BUS BARS, FURNISH SQUARE D, GENERAL ELECTRIC, OR WESTINGHOUSE AS INDICATED ON THE PANELBOARD SCHEDULE AND AS FOLLOWS:

MANUFACTURER	DESIGNATION	TYPE
INTERSTATE	AA3000EPH-42-3R	

(INTEGRATED LOAD CENTER PANEL WITH INTEGRAL AUTOMATIC TRANSFER SWITCH AND SURGE SUPPRESSION)

5. PANELBOARDS SHALL BE EQUIPPED WITH A TYPEWRITTEN DIRECTORY, INDICATING PLAINLY WHAT EACH CIRCUIT OF THE PANEL CONTROLS.
6. PANELBOARD SHALL BE EQUIPPED WITH A COVER THAT HAS A GLASS THAT ALLOWS FOR THE INSTALLATION OF A PAD LOCK. PANELBOARD SHALL NOT BE EQUIPPED WITH KEY LOCK COVER.
7. PANELBOARDS SHALL EMPLOY PLUG-IN CIRCUIT BREAKERS ONLY, BOLT-ON CIRCUIT BREAKERS SHALL NOT BE USED.

E. GROUNDING.

1. PROVIDE GROUND FOR ALL RACEWAY'S, DEVICES, AND UTILIZATION EQUIPMENT PERMANENTLY AND EFFECTIVELY IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AS HEREINAFTER SPECIFIED. ALL GROUNDING AND BONDING CONNECTIONS SHALL BE SOLDERLESS.
2. PROVIDE INSULATED GROUNDING CONDUCTORS FOR FEEDER AND BRANCH CIRCUIT WIRES AS CALLED FOR ON THE PLANS. PROVIDE GROUNDING BLOCKS, TERMINALS, ETC. FOR CONNECTION OF GROUND WIRE IN ALL DISTRIBUTION EQUIPMENT.

3. SECTION 16400 - SERVICE & DISTRIBUTION

A. ELECTRICAL SERVICE:

1. ELECTRICAL POWER TO THE TEMPORARY EQUIPMENT SHALL BE EXTENDED FROM THE MAIN SERVICE CAN AND SERVICE DISCONNECT SWITCH MOUNTED ON NEW ELECTRICAL SERVICE BACKBOARD, LABEL "SERVICE DISCONNECT SWITCH" AND PROVIDED WITH NAMEPLATE READING "VERIZON TEMPORARY EQUIPMENT".

B. COMMUNICATIONS SERVICE:

1. TELEPHONE SERVICE SHALL BE EXTENDED BY THE TELEPHONE COMPANY. PROVIDE SERVICE CONDUITS, BACKBOARDS, SLEEVES, AND OTHER EQUIPMENT SHOWN ON THE DRAWINGS FOR USE BY THE TELEPHONE COMPANY. ALL CHARGES BY THE UTILITY COMPANY SHALL BE PAID BY THE OWNER.
2. ALL ELBOWS IN CONDUIT RUNS SHALL BE WIDE SNEEP FIELD BENDS. INSTALL PULL BOXES AS REQUIRED AND WHERE DIRECTED BY THE TELEPHONE COMPANY AND/OR AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
3. PROVIDE 1/4" POLYPROPYLENE PULL ROPE IN ALL CONDUITS LEFT EMPTY. ALL CONDUITS SHALL BE TERMINATED WITH NYLON INSULATING BUSHINGS.
4. PROVIDE ONE (1) CONDUIT AS SHOWN ON DRAWINGS BETWEEN TELEPHONE COMPANY DEHARC AND DEHARC LOCATED ON EQUIPMENT BACKBOARD.
5. FIBER OPTICS, IF NECESSARY, SHALL BE FUSION SPLICES. MECHANICAL CONNECTIONS ARE NOT PERMITTED.

ELECTRICAL SYMBOLS LIST

NOTE: ALL MOUNTING HEIGHTS ARE TO CENTER LINE OF THE OUTLET BOX UNLESS OTHERWISE INDICATED.

	ENCLOSED CIRCUIT BREAKER
	DISCONNECT SWITCH - FUSED/NON FUSED
	120/240V, 1Ø, INTERSECT PANEL
	EQUIPMENT MOUNTING BACKBOARD
	DRAWING NOTE
	BURIED ELECTRIC FEEDERS
	BURIED TELEPHONE SERVICE
	BURIED BRANCH CIRCUIT
	METER
	GROUND CONDUCTOR BELOW GRADE
	BURIED GROUND ROD
	DESIGNATES FRONT
	DRY TYPE TRANSFORMER
	LIGHT FIXTURE - SURFACE MOUNT
	SWITCH - 120V, SINGLE POLE, 20A - TIMER

PANEL PPI					
(NEMA 3R)					
120/240 VOLTS 1Ø 3 WIRE 200 AMP MAIN C.B.					
DESCRIPTION	QTY	PKT	QTY	PKT	DESCRIPTION
EQUIPMENT LIGHTING	20	1	2	20	BATTERY CHARGER
CHARLES CABINET RECP.T	20	3	4	20	BLOCK HEATER
CHARLES CABINET RECTIFIER 1	30	5	6	30	CHARLES CABINET RECTIFIER 1
CHARLES CABINET RECTIFIER 2	30	4	11	12	CHARLES CABINET RECTIFIER 8
CHARLES CABINET RECTIFIER 3	30	15	16	30	CHARLES CABINET RECTIFIER 9
CHARLES CABINET RECTIFIER 4	30	17	18	30	CHARLES CABINET RECTIFIER 10
CHARLES CABINET RECTIFIER 5	30	21	22	30	CHARLES CABINET RECTIFIER 11
CHARLES CABINET RECTIFIER 6	30	25	26	30	CHARLES CABINET RECTIFIER 12
SPACE	-	24	30	20	GFI RECEPTACLE
SPACE	-	31	32	-	SPACE
SPACE	-	33	34	-	SPACE
SPACE	-	35	36	-	SPACE
SPACE	-	37	38	-	SPACE
SPACE	-	39	40	-	SPACE
SPACE	-	41	42	-	SPACE
LIGHTING LOAD: 0.04 KVA x 125% = 0.05 KVA					
RECEPTACLE LOAD: 0.36 KVA					
MISC. LOAD: 1.64 KVA					
CHARLES CABINET LOAD: 1152 KVA					
TOTAL LOAD: 13.62 KVA = 25.75 @ 120/240V, 1Ø, 3Ø					
* CONTRACTOR SHALL FIELD COORDINATE OVERCURRENT PROTECTION WITH MANUFACTURER'S RECOMMENDATIONS.					
** PANEL SCHEDULE SHALL NOT BE HAND-WRITTEN.					

** LIGHTING FIXTURE SCHEDULE				
TYPE	LAMPS	MOUNTING	DESCRIPTION/VOLTAGE	CATALOG NO.
A	2750 LUMENS 25 WATT LED 4000K	POST	UL LISTED PWT LOCATION LED SURFACE MOUNT WITH RUGGED DIE CAST ALUMINUM CORROSION-RESISTANT HOUSING IN DARK BRONZE OR WHITE FINISH AND SEALED LENSES, FULLY GASKETED TO PROTECT LEADS WITH TWO (2) ADJUSTABLE HEADS (120V)	LITHONIA LED FLOODLIGHT CATALOG NUMBER: H6X LED 25H 40K 120 DDB

- \* NO PHOTOCELL OR MOTION DETECTOR. FIXTURE SHALL BE CONNECTED TO SWITCHED PORTION OF LIGHTING CIRCUIT AND BE CONTROLLED BY SPRING-ROUND TIMER SWITCH.
- \*\* NO LIGHT FIXTURE SUBSTITUTIONS, FIXTURES SHALL BE PROVIDED AS SPECIFIED.



01/10/2025  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND. EXPIRATION DATE: 01/10/2026

verizon  
WOODSIDE TEMP RELO  
CONTRACT NO. 14-01-001-001  
MONTGOMERY COUNTY, MARYLAND 2010

REVISIONS:		
NO.	DESCRIPTION	DATE

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ELECTRICAL SPECIFICATIONS, SYMBOLS LIST, AND SCHEDULES

SHEET:

E-1

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