ELECTRICAL NOTES:

1. ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE MOST RECENT ADOPTED NFPA, NATIONAL ELECTRIC CODE, AND LOCAL CODES.
2. ALL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE NEW AND LABEL LISTED BY AN APPROVED THIRD PARTY TESTING AGENCY APPROVED BY THIS STATE.
3. WIRING SHALL BE COPPER SINGLE CONDUCTORS. MINIMUM WIRE SIZE IS #12 AWG. CONDUCTORS #8 AND LARGER SHALL BE TYPE THHN OR THWN STRANDED. #12 THRU #10 SHALL BE THWN SOLID. WIRE TO LIGHT FIXTURES SHALL BE AS REQUIRED BY U.L. LABEL. COLOR CODE CONDUCTORS.
4. CONDUITS SHALL BE STEEL INDOOR & OUTDOOR. SCHEDULE 40 PVC SHALL BE ALLOWED ONLY BELOW FLOOR SLAB OR GRADE. EMT SHALL BE USED FOR SIZES 1/2" THROUGH 3 1/2".
5. CONNECT ALL HVAC, PLUMBING AND OTHER CONTRACTOR OR OWNER FURNISHED EQUIPMENT. VERIFY ALL LOCATIONS OF HVAC, PLUMBING AND OTHER CONTRACTOR OR OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN. CHECK EQUIPMENT SHOP DRAWINGS AND COORDINATE WITH HVAC, PLUMBING, AND ALL OTHER EQUIPMENT CONTRACTORS FOR DISCONNECT SWITCH, CONDUIT, WIRING REQUIREMENTS (THIS INCLUDES VERIFYING IF A NEUTRAL CONDUCTOR IS REQUIRED), FUSE AND BREAKER SIZES, WIRING OF STARTERS, VOLTAGE REQUIREMENTS, AND LOCATIONS. PROVIDE A TIMER FOR ALL PLUMBING RECIRCULATION PUMPS. MAKE ALL NECESSARY REVISIONS TO THESE ITEMS AT NO ADDITIONAL COST TO THE OWNER.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE LOAD DATA SHEET, TO THE POWER COMPANY, AT THE BEGINNING OF THE PROJECT, AS PER LOAD BREAKDOWN SHOWN ON PLANS.
8. THE ELECTRICAL CONTRACTOR SHALL VISIT THE JOBSITE PRIOR TO SUBMISSION OF BID TO FAMILIARIZE HIMSELF WITH THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED AND THE EXTENT OF WORK REQUIRED. INCLUDE ALL COST IN BID PRICE.
9. SUPPORT ALL CONDUITS WITH STRAPS AND CLAMPS. RUN ALL CONDUIT PARALLEL OR PERPENDICULAR TO BUILDINGS.
10. ELECTRICAL DEMOLITION, RELOCATION OF EXISTING EQUIPMENT, CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF THIS NEW WORK IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. THE EXTENT OF THE WORK REQUIRED SHALL BE DETERMINED DURING THE PREBID JOBSITE VISIT.
11. ALL ELECTRICAL SYSTEMS AND EQUIPMENT SHALL COMPLY WITH ARTICLE 1613 OF THE INTERNATIONAL BUILDING CODE.
12. PROVIDE MIN. 24" HORIZONTAL SEPARATION BETWEEN BOXES INSTALLED IN OPPOSITE SIDES OF A SAME WALL AS INDICATED IN N.E.C. 300.21.
13. ALL DISCONNECTS SHALL BE HEAVY DUTY RATED, WITH ARC GUARD, AND SHALL HAVE A MECHANICAL INTERLOCK TO PREVENT THE DOOR FROM BEING OPENED, WITHOUT DEFEATING THE INTERLOCK. THE MECHANICAL INTERLOCK SHALL ALSO PREVENT ACTIVATING THE SWITCH WHEN THE DOOR IS OPEN. THE MECHANICAL INTERLOCK SHALL BE DEFEATABLE BY A SPECIAL TOOL, AND SHALL BE U.L. LISTED AS PART OF THE DISCONNECT. EXTERNAL OPERATING HANDLE SHALL INDICATE ON AND OFF POSITION AND SHALL HAVE LOCK-OPEN PADLOCKING PROVISIONS.
14. SERVICE GROUND IMPEDANCE SHALL BE MEASURED, AND SHALL BE 5 OHMS OR LESS. IF UPON MEASUREMENT, SERVICE GROUND READING EXCEEDS 5 OHMS, THEN ADDITIONAL GROUND RODS SHALL BE DRIVEN TO REDUCE READING TO 5 OHMS OR LESS. NOTIFY ENGINEER OF FINAL SERVICE GROUND MEASUREMENT.
15. BREAKERS THAT FEED CONTACTORS AND TIME CLOCKS TO BE CURRENT LIMITING TO ALLOW A MAXIMUM LET THRU OF 22K AIC WITH 80K AIC AVAILABLE.
16. ALL TERMINATIONS ON PANELS SHALL HAVE DUAL RATED 60°C/75°C LUGS.
17. PROVIDE INTERNAL OR EXTERNAL DISCONNECTING MEANS FOR EACH FLUORESCENT LUMINARE THAT UTILIZES DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE TO COMPLY WITH N.E.C. 410.130(G).
18. ELECTRICAL CONTRACTOR TO PROVIDE SEPARATE NEUTRAL FOR EACH BRANCH CIRCUIT TO MEET NEC 210.4, MULTIWIRE BRANCH CIRCUITS. SHARED NEUTRALS WILL NOT BE ALLOWED. FOR FURNITURE BRANCH CIRCUITS, ALL FURNITURE SHALL BE WIRED PER N.E.C. 605. FURNITURE BRANCH CIRCUITS SHALL BE FED WITH SINGLE POLE BREAKERS. INSTALL UL APPROVED HANDLE TIES ON SINGLE POLE BREAKERS AS REQUIRED FOR TWO AND THREE CIRCUITS FEEDING FURNITURE. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE FURNITURE SYSTEM IN THE FIELD PRIOR TO CONNECTION AND PROVIDE ADDITIONAL NEUTRAL AND/OR GROUND CONDUCTORS AS REQUIRED. ALL OTHER NEW CIRCUITS TO HAVE SEPARATE NEUTRAL IN LIEU OF HANDLE TIES. FOR CONDITIONS WHERE ONE OR MORE EXISTING LIGHT FIXTURES OR RECEPTACLES ARE BEING RELOCATED, THE ENTIRE CIRCUIT MUST BE RENOVATED TO MEET NEC 210.4. THIS MEANS THE ELECTRICAL CONTRACTOR MUST PROVIDE A SEPARATE NEUTRAL FOR EACH REVISED CIRCUIT, OR PROVIDE A HANDLE TIE WITH THE CIRCUITS IN WHICH THIS RENOVATED CIRCUIT SHARES A NEUTRAL. IF THE ELECTRICAL CONTRACTOR CHOOSES TO USE HANDLE TIES IN LIEU OF SEPARATE NEUTRALS, THEN HE/SHE MUST FIELD VERIFY IF ANY SHARED NEUTRAL CIRCUITS BEING RENOVATED ARE CONTINUOUS WITHIN THE PANEL, AND ADJUST THE BREAKERS ACCORDINGLY WITHIN THE PANEL, SO THAT HANDLE TIES CAN BE INSTALLED. THIS MUST BE DONE PRIOR TO BID AND SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BID PRICE.
19. SERVICE CONDUCTORS SHALL CONFORM TO N.E.C. 230.6.
20. ALL METAL HALIDE BALLASTS SHALL BE PULSE START TYPE.
27. ALL TELECOMMUNICATIONS CONDUIT, SLEEVES, OR PATHWAYS ARE TO BE LONG SWEEPING TYPE. ALL CONDUITS (BENDING RADIUS) ARE TO BE INSTALLED PER MANUFACTURER'S AND TELECOM CONTRACTOR'S RECOMMENDATIONS.
21. THE ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE INTERIORS OF ALL PANELS AND SWITCHGEAR IN WHICH BREAKERS ARE BEING INSTALLED, AND VERIFY THAT ALL INTERIOR BUSSING AND FRAMES ARE AVAILABLE PRIOR TO SUBMISSION OF BID. ANY ADDITIONAL BUSSING REQUIRED WITHIN PANELS AND SWITCHGEAR SHALL BE INCLUDED IN BID PRICE.
22. NO OPEN FLAME DEVICES SHALL BE UTILIZED TO BEND PVC CONDUIT. ALL HEATING DEVICES MUST BE ENCLOSED FLAME (HEAT GUN OR HEAT ROLLER, NO TORCHES). ALL HEATING METHODS MUST BE APPROVED BY ELECTRICAL ENGINEER PRIOR TO INSTALLATION. ANY CONDUIT THAT HAS BEEN HEATED TO WHERE PVC IS DAMAGED OR DISCOLORED SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST.
23. ALL BALLASTS IN FLUORESCENT LIGHT FIXTURES THAT ARE CONTROLLED BY OCCUPANCY SENSORS ARE TO BE PROGRAM START BALLASTS.
24. ALL BREAKERS THAT FEED TRANSFORMERS WHICH ARE NOT LOCATED IN THE SAME ROOM AS THE TRANSFORMER ARE TO HAVE A PERMANENT BREAKER LOCK AND THE LOCATION OF THE BREAKER SHALL BE FIELD MARKED ON THE TRANSFORMER AS PER NEC 450.14.
25. AS PER N.E.C. 230.95 (C), THE PERFORMANCE TEST FOR GFPE SHALL BE PROVIDED FOR AUTHORITY HAVING JURISDICTION, AHJ, AT THE TIME OF INSPECTION.

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance:

Energy Code: ☒ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)

- lamp type required in fixture – see lighting fixture schedule
- number of lamps in fixture – see lighting fixture schedule
- ballast type used in the fixture – see lighting fixture schedule
- number of ballasts in fixture – see lighting fixture schedule
- total wattage per fixture – see lighting fixture schedule
- total interior wattage specified vs. allowed (whole building or space by space) N/A (LESS THAN 50% OF FIXTURES REPLACED / NO ADDITIONAL LOAD)
- total exterior wattage specified vs. allowed N/A (LESS THAN 50% OF FIXTURES REPLACED / NO ADDITIONAL LOAD)

Additional Prescriptive Compliance

- ☐ 506.2.1 More Efficient Mechanical Equipment
- ☒ 506.2.2 Reduced Lighting Power Density
- ☐ 506.2.3 Energy Recovery Ventilation Systems
- ☐ 506.2.4 Higher Efficiency Service Water Heating
- ☐ 506.2.5 On-Site Supply of Renewable Energy
- ☐ 506.2.6 Automatic Daylighting Control Systems

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
WP	WEATHERPROOF
AWG	AMERICAN WIRE GUAGE
EMS	ENERGY MANAGEMENT SYSTEM
NL	NIGHT LIGHT (NOT CONTROLLED BY EMS)
V	VOLTS
VA	VOLT AMPS
W	WATTS
CTL	CONTROL
AB. FL.	ABOVE FLOOR
TYP	TYPICAL
PH	PHASE
A	AMPS
EXIST.	EXISTING
SEC.	SECTION
P	POLE
C	CONDUIT
W/	WITH
ATS	AUTOMATIC TRANSFER SWITCH
PF	POWER FACTOR
XFMR	TRANSFORMER
LTG	LIGHTING
FRZR	FREEZER
CHRGR	CHARGER
RECEPTS.	RECEPTACLES
BRKR	BREAKER
COND	CONDENSING
GND	GROUND
CU	COPPER
MOPD	MAXIMUM OVERCURRENT PROTECTION DEVICE
CIR	CIRCUIT
OTC	OVER THE COUNTER
AIC	AMPERE INTERRUPTING CAPACITY
E.C.	ELECTRICAL CONTRACTOR
3W	3 WIRE
4W	4 WIRE
MLO	MAIN LUG ONLY
IG	ISOLATED GROUND
MCA	MINIMUM CIRCUIT AMPS
MOCP	MAXIMUM OVERCURRENT PROTECTION
KW	KILOWATT
KVA	KILO-VOLT-AMPERE
KWD	KILOWATT DEMAND
HTRS	HEATERS
RCPT	RECEPTACLE
DEF	DEFROST
J.B.	JUNCTION BOX
HGT.	HEIGHT
MDLP	MEDIUM DECK LOW PROFILE
REF.	REFRIGERATION
MECH.	MECHANICAL
CONT.	CONTINUED
MERCH.	MERCHANDISE
CKT	CIRCUIT
NEC	NATIONAL ELECTRICAL CODE
ST.	STREET
VA	VIRGINIA

SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	DISTRIBUTION PANELBOARD.
	CONDUIT RUN CONCEALED IN CEILING OR IN WALL.
	CONDUIT RUN CONCEALED IN FLOOR OR WALL.
	CIRCUIT RUN HOME. NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS.
	FLUORESCENT LIGHTING FIXTURE. LETTER INDICATES TYPE. SEE LIGHTING FIXTURE SCHEDULE.
	EMERGENCY BATTERY PACK. SEE LIGHTING FIXTURE SCHEDULE. CONNECT AHEAD OF SWITCHLEG
	FLUORESCENT STRIP. LETTER INDICATES TYPE. SEE LIGHTING FIXTURE SCHEDULE.
	INCANDESCENT OR HID LIGHTING FIXTURE CEILING OR WALL MOUNTED RESPECTIVELY. LETTER INDICATES TYPE. SEE LIGHTING FIXTURE SCHEDULE.
	TRACK LIGHTING. SEE LIGHTING FIXTURE SCHEDULE.
	MONO POINT TRACK HEAD. SEE LIGHTING FIXTURE SCHEDULE.
	PHOTOLUMINESCENT EXIT SIGN.
S	SINGLE POLE, 120/277 VOLT, 20 AMP, RECESSED WALL SWITCH WITH PLATE. MOUNT WITH CENTER LINE 48" UP.
S_2	DOUBLE POLE, 120/277 VOLT, 20 AMP, RECESSED WALL SWITCH WITH PLATE. MOUNT WITH CL 48" UP.
S_3	THREE WAY, 120/277 VOLT, 20 AMP, RECESSED WALL SWITCH WITH PLATE. MOUNT WITH CL 48" UP.
S_m	FRACTIONAL HP MANUALLY OPERATED MOTOR STARTER WITH BUILT IN OVERLOAD PROTECTION.
	DUPLEX, GROUNDING TYPE, 120 VOLT, 20 AMP, 3 WIRE RECEPTACLE WITH PLATE. PROVIDE #12 GREEN GROUND JUMPER. MOUNT 18" UP UNLESS OTHERWISE SHOWN.
WP	SAME AS ABOVE EXCEPT MOUNTED IN WP-D8 WEATHERPROOF ENCLOSURE.
	SAME AS ABOVE EXCEPT MOUNTED ABOVE TABLE OR COUNTER.
GFI	SAME AS ABOVE EXCEPT GROUND FAULT TYPE.
IG	ISOLATED GROUND RECEPTACLE. PROVIDE PLATE. MOUNT 18" UP UNLESS OTHERWISE NOTED.
	CEILING MOUNTED OR CORD DROP RECEPTACLE. SEE ASSOCIATED ESD AND/OR NOTED DESCRIPTION ON POWER PLANS.
	FLUSH MOUNTED FLOOR BOX WITH DUPLEX RECEPTACLE, DIVIDER, AND TRIM.
	FLUSH MOUNTED FLOOR BOX WITH QUAD RECEPTACLE, DIVIDER, AND TRIM.
	SPECIAL USE RECEPTACLE. VOLTAGE, PHASE AND AMPERAGE BASED ON LOAD SERVED. COORDINATE NEMA CONFIGURATION WITH EQUIPMENT REQUIREMENTS.
TS	TEMPERATURE SENSOR – COORDINATE REQUIRMENTS WITH THE REFRIGERATION INSTALLATION CONTRACTOR.
DT	DEFROST TERMINATION – COORDINATE REQUIRMENTS WITH THE REFRIGERATION INSTALLATION CONTRACTOR.
	PLUGMOLD. SEE SPECIFICATIONS.
	DISCONNECT SWITCH AMPERAGE AND FUSES AS SHOWN ON DRAWINGS.
J	JUNCTION BOX. 120V UNLESS INDICATED OTHERWISE.
E	ELECTRICAL CONNECTION UNDER CASE.
	MOTOR OR FAN CONNECTION. SEE ASSOCIATED NOTES FOR VOLTAGE, PHASE, HP INFORMATION.
	FLUSH MOUNTED TELE/DATA OUTLET, 18" A.F.F. RUN ONE 3/4" CONDUIT W/ PULL STRING TO 12" ABOVE CEILING OR INTO STRUCTURE ABOVE. COORDINATE EXACT LOCATIONS, MOUNTING HEIGHTS AND REQUIREMENTS WITH THE LOW VOLTAGE CABLING CONTRACTOR AND BEACON DRAWINGS.
	SAME AS ABOVE EXCEPT MOUNTED 6" ABOVE COUNTER TOP OR 60" HIGH ON WALL OR COLUMN.
SC	FLUSH MOUNTED SCALE COMMUNICATIONS OUTLET. PROVIDE 3/4" CONDUIT W/ PULL WIRE TO ECR ROOM. COORDINATE EXACT LOCATIONS, MOUNTING HEIGHTS AND REQUIREMENTS WITH THE LOW VOLTAGE CABLING CONTRACTOR AND BEACON DRAWINGS.
TV	FLUSH MOUNTED CATV OUTLET. RUN ONE 3/4" CONDUIT W/ PULL STRING TO 12" CEILING OR INTO STRUCTURE ABOVE. COORDINATE EXACT LOCATIONS, MOUNTING HEIGHTS AND REQUIREMENTS WITH THE LOW VOLTAGE CABLING CONTRACTOR AND BEACON DRAWINGS.
FPN	FUSE PER NAMEPLATE
LC	LIGHTING CONTACTOR IN ENCLOSURE. SEE ASSOCIATED KEY NOTE FOR SPECIFICS.
	LOW VOLTAGE PUSHBUTTON. SEE DRAWINGS FOR SPECIFICS.
B	LOW VOLTAGE AUDIBLE NOTIFICATION DEVICE. SEE DRAWINGS FOR SPECIFICS.
	POWER POLE. CHECKLANE POWER POLES PROVIDED BY OWNER. ALL OTHERS PROVIDED BY ELECTRICAL CONTRACTOR. SEE SPECIFICATIONS.
	CORD DROP RECEPTACLE. SEE ESD-16 AND ESD-16A. COORDINATE NEMA CONFIGURATION WITH EQUIPMENT SERVED. PROVIDE SO CORD WITH STRAIN RELIEF AS PER SPECIFICATIONS. USE WHITE SO CORD IN SALES AREA AND OTHER AREAS IN VIEW OF CUSTOMERS (INDICATED WITH "W"). PROVIDE BLACK SO CORD IN AREAS NOT IN VIEW OF CUSTOMERS (INDICATED WITH "B").
LLS	LIGHT LEVEL SENSOR.
R	REFRIGERANT LEAK DETECTION SYSTEM NOTIFICATION DEVICE

NOTE:
NOT ALL SYMBOLS WILL BE USED FOR THIS PROJECT

CAPSTONE
project services, plc

2211 WIDMAN WAY
SUITE 220
FORT MYERS, FL 33901

ARCHITECT

COMMONWEALTH OF VIRGINIA
HUBERT CORDETT KENNEDY, JR
Lic. No. 0402062759
PROFESSIONAL ENGINEER

4-5-2021

SEAL

HUBERT C. KENNEDY, JR P.E.
ELECTRICAL ENGINEER
P.O. BOX 37291
CHARLOTTE, NC
(704) 333-6590
haasandkennedyengineers.com

CONSULTANT

A REMODEL FOR:
KROGER R-334
1980 RIO HILL CENTER CHARLOTTESVILLE, VA

PROJECT INFO

4-5-2021
CONSTRUCTION SET

DATE

ELECTRICAL SYMBOLS AND GENERAL NOTES

SHEET TITLE

REVISIONS

MARK	DATE	DESCRIPTION

PROJECT NO: 20516
CAD DWG FILE: R-334 E0.1
DRAWN BY: WSM
CHK'D BY: HCK

E0.1

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