































































ELECTRICAL SYMBOLS LIST

POWER






	SINGLE POLE SWITCH o = CONTROLLING OUTLET 'o' 2 = DOUBLE POLE 3 = THREE-WAY 4 = FOUR-WAY D = DOOR K = KEY OPERATED MO = MOMENTARY CONTACT T = TIME SWITCH P = PILOT LIGHT
	DISCONNECT SWITCH – TOGGLE TYPE WITH THERMAL OVERLOAD – 277V HP RATED
	DISCONNECT SWITCH – TOGGLE TYPE MOTOR RATED, 20A, 1P, U.O.N.
	WALL DIMMER – TYPE 'A' NUMBER INDICATES WATTAGE RATING
	OCCUPANCY SENSOR, CEILING MOUNTED
	OCCUPANCY SENSOR, WALL MOUNTED
	PHOTO CONTROL SWITCH
	TRANSFORMER
	20A, 125V DUPLEX RECEPTACLE – FLUSH WALL MOUNTED CONTROLLED FROM WALL SWITCH 'o'
	20A, 125V QUADRUPLEX RECEPTACLE – FLUSH WALL MOUNTED
	20A, 125V ISOLATED GROUND, DUPLEX RECEPTACLE, FLUSH FLOOR MOUNTED
	20A, 125V DUPLEX RECEPTACLE – FLUSH WALL MOUNTED, GFI TYPE
	20A, 125V EMERGENCY DUPLEX RECEPTACLE – FLUSH WALL MOUNTED, WITH TWO (2) INTEGRALLY POWERED USB PORTS
	20A, 125V EMERGENCY DUPLEX RECEPTACLE – FLUSH WALL MOUNTED, WITH TWO (2) INTEGRALLY POWERED USB PORTS
	SINGLE RECEPTACLE – FLUSH WALL MOUNTED
	20A, 125V DUPLEX RECEPTACLE – SURFACE MOUNTED
	20A, 125V SURGE SUPPRESSION DUPLEX RECEPTACLE – FLUSH WALL MOUNTED
	20A, 125V DUPLEX RECEPTACLE – FLUSH FLOOR MOUNTED
	20A, 125V QUADRUPLEX RECEPTACLE – FLUSH FLOOR MOUNTED
	SPECIAL PURPOSE RECEPTACLE – FLUSH WALL MOUNTED A = TYPE
	PLUG-IN SURFACE METAL RACEWAY – LETTER INDICATES TYPE – WITH SPECIAL PURPOSE RECEPTACLES WHERE INDICATED
	HOMERUN—NUMERAL WHERE USED INDICATES CIRCUIT NUMBER FOR REFERENCE ONLY. 2#12+1#12G-3/4°C FOR ONE CKT, HOMERUN, U.O.N. 3#12+1#12G-3/4°C FOR TWO CKT, HOMERUN, U.O.N. 4#12+1#12G-3/4°C FOR THREE CKT, HOMERUN, U.O.N.
	HOMERUN – NUMERAL WHERE USED INDICATES CIRCUIT NUMBER FOR REFERENCE ONLY.
	MOTOR CONTROLLER
	COMBINATION MOTOR CONTROLLER AND DISCONNECT SWITCH SWITCH AMPS/# OF POLES, VOLTAGE RATING AS REQUIRED
	UNFUSED DISCONNECT SWITCH SWITCH AMPS/# OF POLES, VOLTAGE RATING AS REQUIRED
	FUSED DISCONNECT SWITCH; SWITCH AMPS/FUSE AMPS/ # OF POLES, VOLTAGE RATING AS REQUIRED
	ENCLOSED CIRCUIT BREAKER TRIP AMPS/# OF POLES, VOLTAGE RATING AS REQUIRED NA = NON-AUTOMATIC
	SURFACE MOUNTED LIGHTING PANELBOARD
	FLUSH MOUNTED LIGHTING PANELBOARD
	SURFACE MOUNTED POWER PANELBOARD
	FLUSH MOUNTED POWER PANELBOARD
	SURFACE MOUNTED POWER DISTRIBUTION PANELBOARD

	CEILING MOUNTED JUNCTION BOX
	FLUSH WALL MOUNTED JUNCTION BOX
	FLUSH FLOOR MOUNTED JUNCTION BOX
	PULLBOX
	POWER POLE
	EXISTING CONDUIT TO BE REMOVED
	NEW CONCEALED CONDUIT
	NEW EXPOSED CONDUIT
	NEW UNDERGROUND/IN SLAB CONDUIT
	NEW EMERGENCY CONDUIT
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CONDUIT STUB-UP WITH FLEXIBLE EQUIPMENT CONNECTION
	FLEXIBLE EQUIPMENT CONNECTION
	CAPPED CONDUIT
	PUSH BUTTON K = KEY OPERATED H = HOLD UP P = PANIC
	SECTION A-A













SINGLE LINE DIAGRAM

	POWER TRANSFORMER VOLTAGES, WINDINGS AND SIZE AS INDICATED
	AUTOMATIC TRANSFER SWITCH ATS = AUTOMATIC TRANSFER MTS = MANUAL TRANSFER POLES AND RATING AS NOTED
	MOTOR
	GENERATOR
	GROUND CONNECTION
	FUSED SWITCH 100 AMP SWITCH / 90 AMP / 3 POLE
	UNFUSED SWITCH – 100 AMP SWITCH / 3 POLE
	CIRCUIT BREAKER – MOLDED CASE TYPE 90 AMP TRIP / # OF POLES LT = LONG TIME SETTING ST = SHORT TIME SETTING I = INSTANTANEOUS SETTING
	DIGITAL MULTIMETER
	CURRENT TRANSFORMER NUMBER AND RATIO AS INDICATED
	COMBINATION MOTOR CONTROLLER AND FUSED DISCONNECT SWITCH; SWITCH AMPS / FUSE AMPS / # OF POLES, VOLTAGE RATING & STARTER SIZE AS REQUIRED
	COMBINATION MOTOR CONTROLLER AND CIRCUIT BREAKER TRIP AMPS / # OF POLES, VOLTAGE RATING & STARTER SIZE AS REQUIRED











CONTROL UNITS (PANELS)

	FIRE ALARM CONTROL PANEL
	FIRE ALARM DATA GATHERING PANEL
	FIRE ALARM ANNUNCIATOR
	UNINTERRUPTIBLE POWER SUPPLY
	ELEVATOR STATUS/RECALL






SIGNAL INITIATING DEVICE & ACTIVATION SWITCH

	MANUAL STATION – PULL STATION/FIRE ALARM BOX, 'XX' DENOTES TYPE: CO2 = CARBON DIOXIDE DC = DRY CHEMICAL HL = HALON F = FIRE ALARM FO = FOAM WC = WET CHEMICAL CA = CLEAN AGENT WM = WATER MIST DL = DELUGE FIRE SPRINKLER PRE = PREACTION
	HEAT DETECTOR/SENSOR (THERMAL DETECTION) ORIENTATION NOT TO BE CHANGED
	HEAT DETECTOR/SENSOR, 'XX' DENOTES TYPE: R/F = COMBINATION RATE OF RISE/FIXED TEMPERATURE R/C = RATE COMPENSATION F = FIXED TEMPERATURE R = RATE OF RISE ONLY
	SMOKE DETECTOR/SENSOR, 'XX' DENOTES TYPE: AS = AIR SAMPLING P = PHOTOELECTRIC I = IONIZATION R = RELAY BASE SS = SINGLE STATION SB = SOUNDER BASE ID = IN DUCT
	SMOKE/HEAT DETECTOR/SENSOR COMBINATION
	SMOKE DETECTION/SENSOR FOR DUCT
	FLOW DETECTOR/SWITCH
	PRESSURE DETECTOR/SWITCH
	ADDRESSABLE INPUT MODULE
	ADDRESSABLE OUTPUT MODULE
	ADDRESSABLE INPUT/OUTPUT MODULE # DENOTES NUMBER OF INPUTS AND OUTPUTS
	NON-ADDRESSABLE OUTPUT RELAY

NOTIFICATION APPLIANCE

	NOTIFICATION APPLIANCE SUBSCRIPTS ('XX') WP = WEATHERPROOF WG = WIRE GUARD H = HIGH AUDIBLE SETTING L = LOW AUDIBLE SETTING C = CEILING MOUNT nW = WATTAGE SETTING (n = SPEAKER TAP) P = PENDENT SL = SIGNAL LIGHT RI = REMOTE INDICATOR
	HORN ONLY C = CEILING MOUNT
	SPEAKER ONLY C = CEILING MOUNT
	VISIBLE ONLY (STROBE) – WALL MOUNT CD = CANDELA RATING/SETTING
	VISIBLE ONLY (STROBE) – CEILING MOUNT CD = CANDELA RATING/SETTING
	COMBINATION HORN/VISIBLE CD = CANDELA RATING/SETTING C = CEILING MOUNT
	COMBINATION SPEAKER/VISIBLE CD = CANDELA RATING/SETTING C = CEILING MOUNT
	REMOTE INDICATOR – WALL MOUNT
	REMOTE ALARM INDICATING AND TEST SWITCH
	REMOTE INDICATOR – CEILING MOUNT

RELATED EQUIPMENT

	DOOR HOLDER
	DOOR CLOSER
	END OF LINE RESISTOR
	ISOLATOR MODULE (STYLE 6 OR 7 FAULT PROTECTION)
	JUNCTION BOX

ABBREVIATIONS

+	SPECIAL MOUNTING HEIGHT, COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS
1P	SINGLE POLE
2P	TWO POLE
3P	THREE POLE
A	AMPERE
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
CAB	CABINET
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CTL	CONTROL
CONN	CONNECTED
CONT	CONTINUATION
CU	COPPER
DEG	DEGREE
°C	DEGREE CELSIUS
°F	DEGREE FAHRENHEIT
DIA	DIAMETER
DISC	DISCONNECT
DIV	DIVISION
DN	DOWN
DP	DISTRIBUTION PANEL BOARD
DWG	DRAWING
(E)	EXISTING TO REMAIN
EA	EACH
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
EM	EMERGENCY
EQUIP	EQUIPMENT
(ER)	EXISTING TO BE REMOVED
(ERR)	EXISTING TO BE REMOVED & RELOCATED
EXIST,EX	EXISTING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAP	FIRE ALARM ANNUNCIATOR PANEL
FDR	FEEDER
FIXT	FIXTURE
FL	FLOOR
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
G	GROUND
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
HP	HORSE POWER
HZ	HERTZ
IG	ISOLATED GROUND
INCAND	INCANDESCENT
JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MH	MANHOLE
MLO	MAIN LUG ONLY
MTD	MOUNTED
N	NEUTRAL
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
PB	PULL BOX
ø	PHASE
PNL	PANEL
PWR	POWER
(RE)	RELOCATED EXISTING
RECEPT,REC	RECEPTACLE
(RRO)	EXISTING TO BE REMOVED AND RETURN TO OWNER
SCHED,SCH	SCHEDULE
SPEC	SPECIFICATION
SPKR	SPEAKER
SW	SWITCH
SYS	SYSTEMS
TRANSF,XFMR	TRANSFORMER
UON	UNLESS OTHERWISE NOTED
V	VOLT OR VOLTAGE

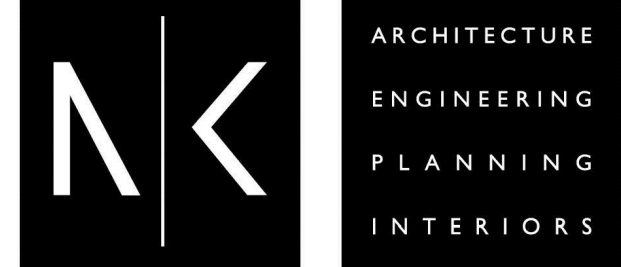
ELECTRICAL DEMOLITION NOTES

- THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL COSTS ASSOCIATED WITH REMOVALS AND RELOCATIONS OF ELECTRICAL WORK AS DESCRIBED IN THE SPECIFICATIONS WITH ALLOWANCES FOR EXPECTED OR UNFORESEEN DIFFICULTIES WHEN CONCEALED WORK HAS BEEN OPENED. NO CLAIMS FOR ADDITIONAL WORK ASSOCIATED WITH DEMOLITION WILL BE ACCEPTED, EXCEPT IN CERTAIN CASES CONSIDERED JUSTIFIABLE BY THE ARCHITECT.
- THE CONTRACTOR SHALL REMOVE AND/OR RELOCATE ALL EXISTING ELECTRICAL WORK WHICH INTERFERES WITH THE NEW ARCHITECTURAL AND ELECTRICAL LAYOUTS IN FULL COORDINATION WITH THE ARCHITECT'S DEMOLITION PLANS. ALL SYSTEMS WHICH ARE NO LONGER REQUIRED TO FUNCTION SHALL BE DE-ENERGIZED AND DISCONNECTED AT THE SOURCE OF POWER SUPPLY.
- THE CONTRACTOR SHALL PERFORM DEMOLITION AND REMOVAL WORK WITH MINIMUM INTERFERENCE WITH FUNCTIONING ELECTRICAL SYSTEMS. ALL AFFECTED SYSTEMS SHALL BE RECONNECTED AND RESTORED.
- DEMOLITION AND REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER. THE CONTRACTOR SHALL PATCH, REPAIR OR OTHERWISE RESTORE ANY DAMAGED INTERIOR OR EXTERIOR BUILDING SURFACE TO ITS ORIGINAL CONDITION.
- THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL OUTLETS, SWITCHES AND OTHER DEVICES, COMPLETE WITH ASSOCIATED WIRING, CONDUITS, ETC., FROM PARTITIONS THAT ARE TO BE REMOVED. WHERE THE REMOVAL OF THESE ITEMS DISRUPTS EXISTING WIRING THAT IS TO REMAIN, THE CONTRACTOR SHALL INSTALL JUNCTION BOXES AND OTHER DEVICES AND PROVIDE BYPASS CONNECTIONS NECESSARY TO MAKE CIRCUITS AFFECTED CONTINUOUS AND READY FOR OPERATION. OTHERWISE, WIRING SHALL BE REMOVED BACK TO THE NEAREST ELECTRICAL JUNCTION BOX THAT IS TO REMAIN OR TO PANELBOARD.
- ALL RACEWAYS WHICH BECOME EXPOSED DURING THE ALTERATION WORK SHALL BE REMOVED AND REROUTED CONCEALED BEHIND FINISHED SURFACES.
- ALL UNUSED OUTLET BOXES OR CAPPED FLOOR OUTLETS SHALL BE PROVIDED WITH MATCHING BLANK COVERS.
- EXISTING PANEL DIRECTORIES AFFECTED BY THE ALTERATION WORK SHALL BE MODIFIED TO REFLECT THE BRANCH CIRCUIT WIRING CHANGES.
- PORTIONS OF FEEDER RUNS TO BE REMOVED OR ABANDONED AS A RESULT OF DEMOLITION WORK, BUT WHICH ARE REQUIRED TO REMAIN ENERGIZED, SHALL BE CUT AT CONVENIENT LOCATIONS, REROUTED AND RECONNECTED. NEW FEEDER EXTENSIONS SHALL MATCH EXISTING ONES IN ALL RESPECTS, CABLE TYPE, CONDUCTOR AMPACITY, CONDUIT SIZES, ETC.
- THE CONTRACTOR SHALL NOTIFY THE OWNER AT THE APPROPRIATE TIME OF THE PROJECTED DEMOLITION AND PHASING SCHEDULE SO THAT REMOVAL OR RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN COORDINATION WITH THE PROJECT REQUIREMENTS. THE CONTRACTOR SHALL FOLLOW CLOSELY THE ARCHITECT'S DEMOLITION AND PHASING SCHEDULE AND PROCEED IN THE SPECIFIED SEQUENCE.
- ALL EXISTING MATERIAL AND EQUIPMENT IN USABLE CONDITION, WHICH IS TO BE REMOVED UNDER THIS CONTRACT, SHALL REMAIN THE PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THE ELECTRICAL CONTRACTOR, AS DIRECTED BY THE OWNER.
- ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVER TIME, IF REQUIRED, TO ASSURE THAT SYSTEMS WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTIONS TO THE EXISTING SYSTEMS.
- THE SHUTDOWN OF EXISTING BUILDING ELECTRICAL SERVICES SHALL BE COORDINATED WITH THE OWNER. MAKE ARRANGEMENTS AT LEAST 5 BUSINESS DAYS PRIOR TO A SHUTDOWN.

ELECTRICAL GENERAL NOTES

- GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL ELECTRICAL DRAWINGS.
- ALL WORK IS NEW UNLESS OTHERWISE NOTED.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM AND SPACE CONDITIONS.
- SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). WALLS, RAIL, PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
- PASS RACEWAYS OVER WATER, STEAM OR OTHER PIPING WHEN PULL BOXES ARE NOT REQUIRED. NO RACEWAY WITHIN 3 INCHES OF STEAM OR HOT WATER PIPES OR APPLIANCES (EXCEPT PIPE CROSSINGS WHERE RACEWAY SHALL BE AT LEAST 1 INCH FROM PIPE COVERS).
- CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREAD OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.
- HORIZONTAL OR CROSS RUNS IN PARTITIONS AND WALLS ARE NOT PERMITTED. DO NOT RUN CONDUIT IN PRECAST ROOF SLABS, IN 2 INCH SLABS OR IN TERRAZZO FLOOR FINISH.
- LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
- SET BOXES SQUARE AND TRUE WITH BUILDING FINISH. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRONS.
- VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT. VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRAMA, PANELINGS, HUNG CEILINGS AND THE LIKE, CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
- LOCATIONS INDICATED FOR LOCAL WALL SWITCHES ARE SUBJECT TO MODIFICATIONS AT OR NEAR DOORS. COORDINATE WITH ARCHITECT AND INSTALL SWITCH ON SIDE OPPOSITE HINGE. VERIFY FINAL HINGE LOCATIONS IN FIELD PRIOR TO SWITCH OUTLET INSTALLATION.
- COVERS OF JUNCTION AND PULLBOXES SHALL BE READILY ACCESSIBLE.
- PROVIDE PULLBOXES WHERE INDICATED, WHERE REQUIRED BY CODE AND WHEREVER NECESSARY TO FACILITATE PULLING OF WIRE. COORDINATE PULLBOX LOCATIONS WITH OTHER TRADES.
- EMPTY RACEWAY RUNS: PROVIDE PULLBOXES EVERY 100 FT AND AS INDICATED. COORDINATE LOCATIONS WITH OTHER TRADES.
- JUNCTION AND PULLBOXES: LOCATE GENERALLY NOT EXPOSED IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT.
- SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
- ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
- CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
- PROVIDE 2#14 INDICATING PILOT LIGHT WIRES FROM PILOT LIGHT IN CONTROLLER TO LOAD SIDE OF DISCONNECT SWITCH. RUN WIRES IN BRANCH CIRCUIT CONDUIT AND INCREASE CONDUIT SIZE AS REQUIRED.
- PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32°F (0°C). PROVIDE CABLE SUPPORTS FOR WIRE IN RISER CONDUITS AS REQUIRED BY CODE.
- PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF NORMAL AND EMERGENCY CIRCUITS. COMMON BOXES: PROVIDE BARRIERS BETWEEN EMERGENCY AND NORMAL WIRING.
- HEIGHTS OF OUTLETS FROM FINISHED FLOOR TO CENTERLINE OF OUTLET:
RECEPTACLES AND TELEPHONES:
GENERALLY 1'-6"
OVER WORK BENCHES 3'-6"
WALL SWITCHES 4'-0"
WALL FIXTURES 7'-0"
MOTOR CONTROLLERS 5'-0"
GONGS AND HORNS 7'-6"
FIRE ALARM STATIONS 4'-0"
CLOCKS 7'-6"
STROBE LIGHTS 6'-8" TO BOTTOM
EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE REQUIREMENTS, AS NOTED OR DIRECTED.
CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND CONFIRMING ALL MOUNTING HEIGHTS WITH ARCHITECT AND ARCHITECTURAL DRAWINGS.
- WIRE COLOR CODING: AS PER CODE. WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION FOR OVERLAP COLOR TAPING OF CONDUCTORS (MINIMUM LENGTH 6") IN ACCESSIBLE LOCATIONS. COLOR CODING, ONCE SELECTED, MUST BE USED CONSISTENTLY FOR THE ENTIRE PROJECT.
- INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS: ONLY WITH WRITTEN CONSENT OF OWNER. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES. ALARM AND EMERGENCY SYSTEMS ARE NOT TO BE INTERRUPTED.
- FIRESTOPPING SHALL BE INSTALLED WHENEVER WIRING OR RACEWAYS CROSS FIRE RATED CONSTRUCTION.
- LIGHTING FIXTURE SCHEDULE STANDARD NOTE: LIGHTING FIXTURE SCHEDULE SHOWN ON ENGINEER'S DRAWINGS ARE FOR INFORMATION PURPOSES ONLY. LIGHTING FIXTURES SHOWN ARE THOSE SELECTED BY ARCHITECT. ENGINEER SHALL NOT BE RESPONSIBLE FOR INFORMATION SHOWN RELATED TO FIXTURE SELECTION AND OVERALL LIGHTING DESIGN. REFER TO ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.

ARCHITECTS



95 WASHINGTON STREET, MORRISTOWN, NJ 07960
t. 973.539.5353 f. 973.539.0916
THE WOOLWORTH BUILDING
233 BROADWAY SUITE 2150, NEW YORK, NY 10279
t. 212.982.7900 f. 212.982.8111
www.nkarchitects.com

ALLEN R. KOPELSON, AIA
BEN P. LEE, AIA
STEPHEN P. ALUOTTO, AIA
PAUL J. DRAGG, AIA
WALTER J. KNEIS, AIA
DANIEL J. TOPPING, AIA
AI 05644
AI 07017
AI 05269
AI 17553
AI 10887
AI 16283

THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF NADASKAY KOPELSON ARCHITECTS. THE DOCUMENT AND THE INFORMATION IT CONTAINS MAY NOT BE REPRODUCED OR USED FOR OTHER THAN THE SPECIFIC PROJECT FOR WHICH IT WAS PREPARED WITHOUT THE EXPRESS CONSENT OF NADASKAY KOPELSON ARCHITECTS.

WILLIAM PATERSON UNIVERSITY
NEW ACADEMIC BUILDING SOLAR ARRAY
300 Pompton Road
Wayne, New Jersey 07470

AKF
1500 Walnut Street, Suite 1400
Philadelphia, PA 19102
T: 215.735.7290 F: 215.735.6706
ARCHITECT / BUILDING / INTERIOR / LANDSCAPE / NEW YORK
PHOTOGRAPHY / RECEPTION / PUBLIC / ROOFING / STAIRCASE
DESIGNER / ANALYST / SPECIAL DESIGN / ARCHITECTURAL DESIGN / CONSULTING
CODE COMPLIANCE / CONSTRUCTION / DESIGN / DESIGN / DESIGN / DESIGN / DESIGN
RE-DESIGN / RE-DESIGN / RE-DESIGN / RE-DESIGN / RE-DESIGN

NOT FOR CONSTRUCTION
01-25-2016

1	ISSUED FOR BID	01-25-16
NO.	DESCRIPTION	DATE

DRAWING TITLE

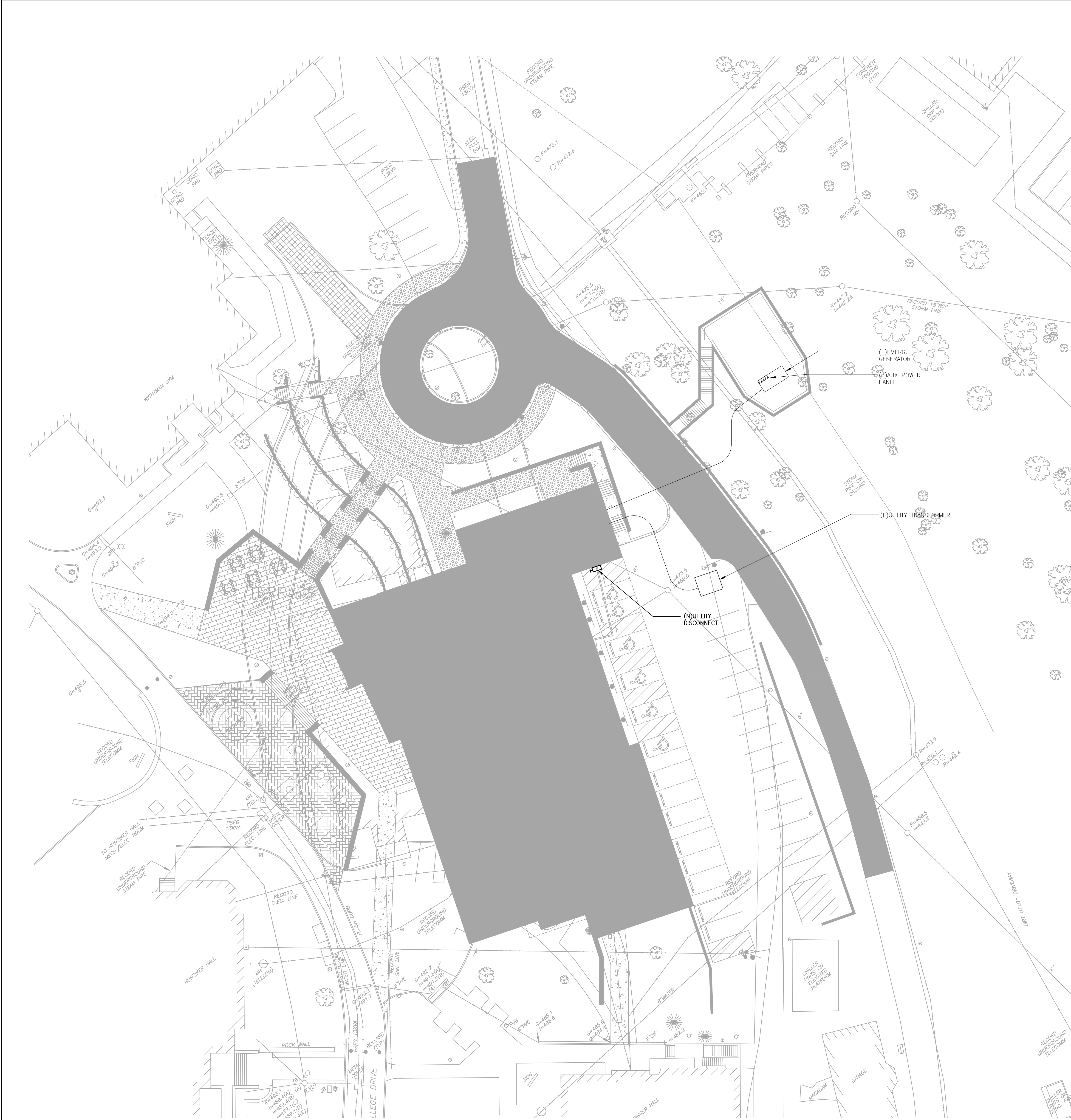
ELECTRICAL COVER SHEET

DATE
01-25-2016
SCALE
NONE
DRAWN
CAD
CHECKED

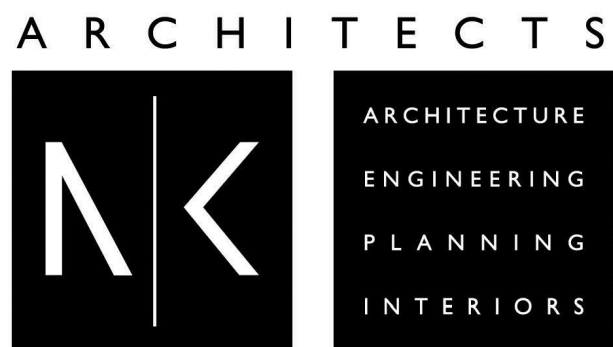
DRAWING NUMBER

PVE-000

AKF PROJECT NUMBER R150112-000



- DRAWING NOTES:**
1. REFER TO SPECIFICATION SECTION 263100 FOR ADDITIONAL INFORMATION ON PV REQUIREMENTS.
 2. REFER TO PVE-200 FOR SINGLE LINE DIAGRAM.
 3. PULL BOXES SHALL BE PROVIDED BY ELECTRICAL INSTALLER AS REQUIRED BY INSTALLATION.
 4. ELECTRICAL INSTALLER SHALL COORDINATE ALL CONDUITS WITH OTHER TRADES. CONDUITS SHALL BE RUN FULLY CONCEALED WHERE EVER POSSIBLE IN FINISHED SPACES. IF CONDUITS ARE NOT FULLY CONCEALED, NOTIFY ENGINEER & ARCHITECT TO DISCUSS POSSIBLE SOLUTIONS.
 5. ALL DISTRIBUTION EQUIPMENT FOR THE PV SYSTEM, INCLUDING THE MAIN BUILDING PANEL SHALL BE PROPERLY LABELED PER THE NEC 2014 ARTICLE 690. THIS INCLUDES SIGNAGE FOR MULTIPLE SOURCES OF POWER AT THE MAIN BUILDING PANEL.
 6. ALL INSTALLATION SHALL MEET FM GLOBAL DESIGN REQUIREMENTS.



95 WASHINGTON STREET, MORRISTOWN, NJ 07960
t. 973.539.5353 f. 973.539.0916
THE WOOLWORTH BUILDING
233 BROADWAY SUITE 2150, NEW YORK, NY 10279
t. 212.982.7900 f. 212.982.8111
www.nkarchitects.com

ALLEN R. KOPELSON, AIA
BEN P. LEE, AIA
STEPHEN P. ALUOTTO, AIA
PAUL J. DRAGO, AIA
WALTER J. KNEIS, AIA
DANIEL J. TOPPING, AIA

A1 05644
A1 07017
A1 05209
A1 17553
A1 10887
A1 16283

THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF NADASKAY KOPELSON ARCHITECTS. THE DOCUMENT AND THE INFORMATION IT CONTAINS MAY NOT BE REPRODUCED OR USED FOR OTHER THAN THE SPECIFIC PROJECT FOR WHICH IT WAS PREPARED WITHOUT THE EXPLICIT CONSENT OF NADASKAY KOPELSON ARCHITECTS.

WILLIAM PATERSON UNIVERSITY
NEW ACADEMIC BUILDING ARRAY

300 Pompton Road
Wayne, New Jersey 07470

AKF

1500 Walnut Street, Suite 1400
Philadelphia, PA 19102
T: 215.735.7290 F: 215.735.6706
ARIZONA / BOSTON / DENVER / DALLAS / HOUSTON / NEW YORK
PHILADELPHIA / PITTSBURGH / RICHMOND / ROCKFORD / STAMFORD
TAMPA / WASHINGTON, DC / WASHINGTON, DC / WASHINGTON, DC
WWW.AKFARCHITECTS.COM

NOT FOR CONSTRUCTION
01-25-2016

1	ISSUED FOR BID	01-25-16
NO.	DESCRIPTION	DATE

DRAWING TITLE
ELECTRICAL SITE PLAN

DATE

01-25-2016

SCALE

1"=20'-0"

DRAWN

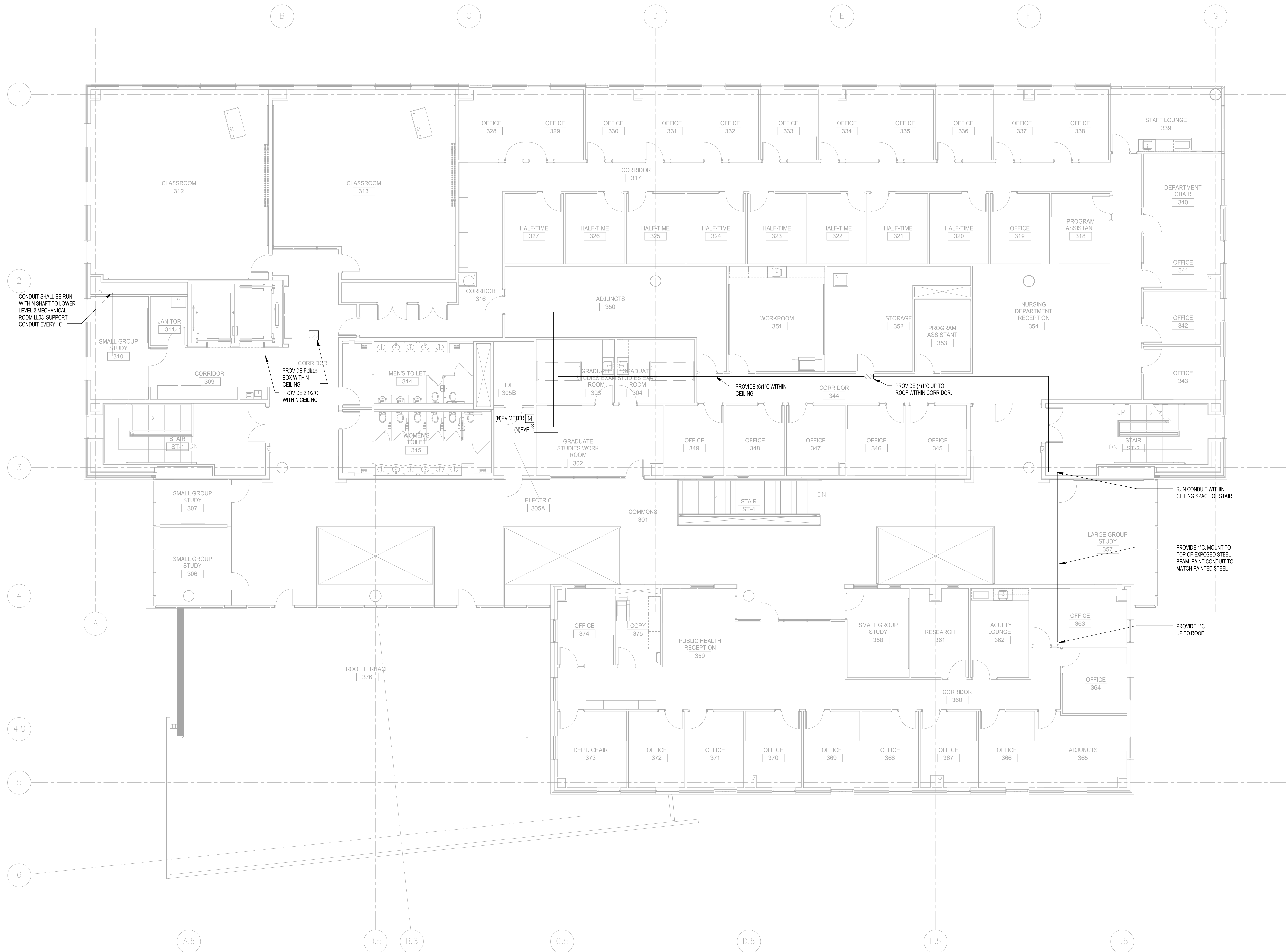
CAD

CHECKED

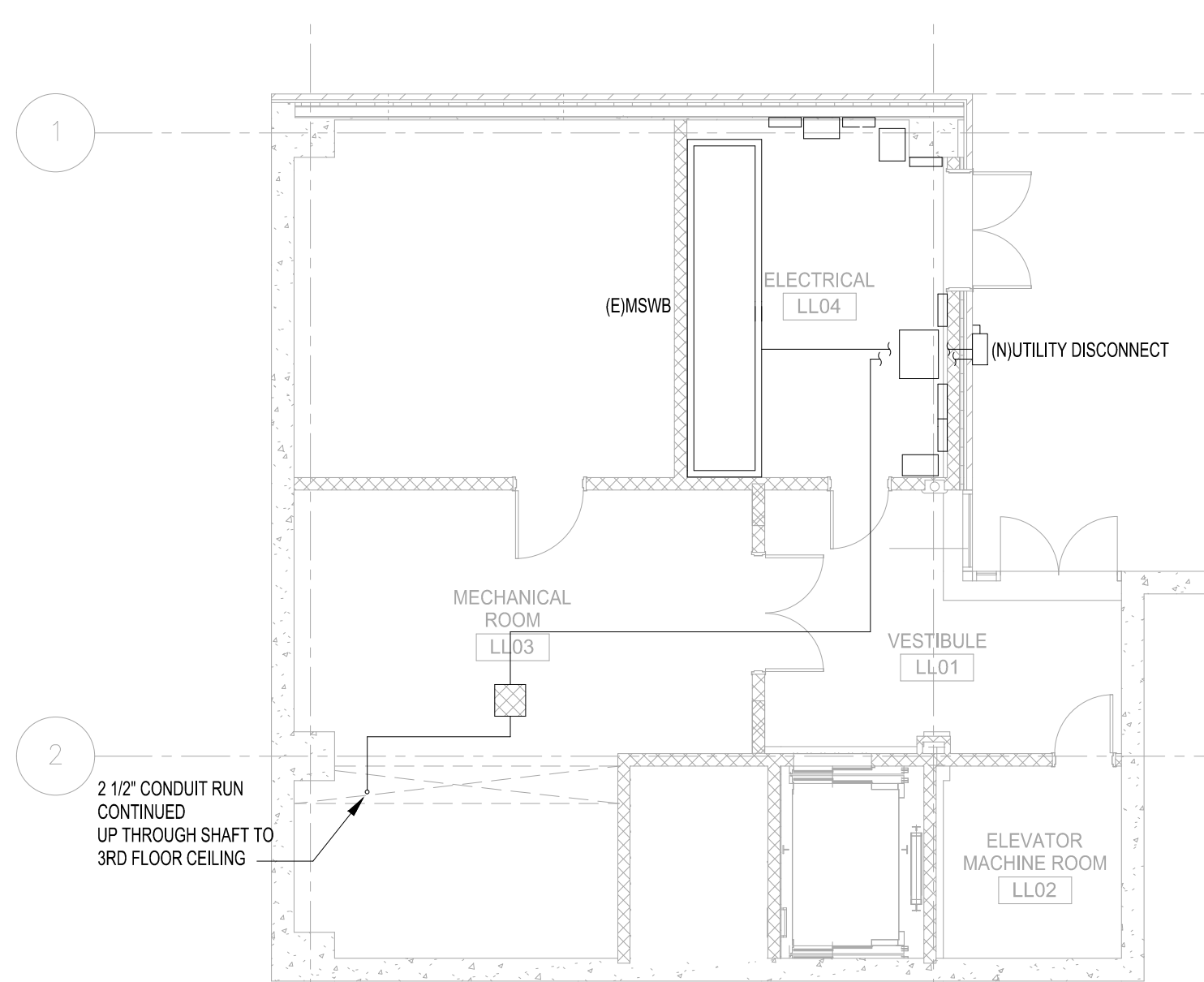
DRAWING NUMBER

PVE-001

AKF PROJECT NUMBER **R150112-000**

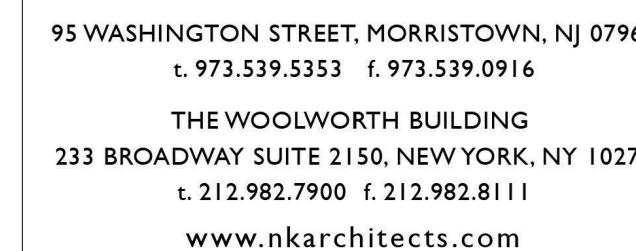


1 THIRD FLOOR PLAN
SCALE: 1/8"=1'-0"



2 PARTIAL LL2 PLAN
SCALE: 1/8"=1'-0"

- DRAWING NOTES:
1. REFER TO SPECIFICATION SECTION 263100 FOR ADDITIONAL INFORMATION ON PV REQUIREMENTS.
 2. REFER TO PVE-200 FOR SINGLE LINE DIAGRAM.
 3. PULL BOXES SHALL BE PROVIDED BY ELECTRICAL INSTALLER AS REQUIRED BY INSTALLATION.
 4. ELECTRICAL INSTALLER SHALL COORDINATE ALL CONDUITS WITH OTHER TRADES. CONDUITS SHALL BE RUN FULLY CONCEALED WHERE EVER POSSIBLE IN FINISHED SPACES. IF CONDUITS ARE NOT FULLY CONCEALED, NOTIFY ENGINEER & ARCHITECT TO DISCUSS POSSIBLE SOLUTIONS.
 5. ALL DISTRIBUTION EQUIPMENT FOR THE PV SYSTEM, INCLUDING THE MAIN BUILDING PANEL SHALL BE PROPERLY LABELED PER THE NEC 2014 ARTICLE 690. THIS INCLUDES SIGNAGE FOR MULTIPLE SOURCES OF POWER AT THE MAIN BUILDING PANEL.
 6. ALL INSTALLATION SHALL MEET FM GLOBAL DESIGN REQUIREMENTS.
 7. METER SHALL CONNECT INTO BMS SYSTEM FOR ENERGY MONITORING.



**WILLIAM
PATERSON
UNIVERSITY**

**NEW ACADEMIC
BUILDING SOLAR
ARRAY**

AKF

1500 Walnut Street, Suite 1400
Philadelphia, PA 19102
T: 215.735.7290 F: 215.735.6706

ARLINGTON / BOSTON / MEXICO CITY / MINNEAPOLIS / NEW YORK
PRINCETON / PRINCETON / PUEBLO / ROCHESTER / STAMFORD

ENGINEERING / ANALYSIS & TESTING / BUSINESS MANAGEMENT SYSTEMS / CAPITAL STRUCTURE
CODE CONSULTING / COMMUNICATIONS / CRITICAL SYSTEMS / ENERGY & SUSTAINABILITY
FIRE PROTECTION / HEALTH/SAFETY / LOGISTICS / DESIGN / SPECIAL INVESTIGATIONS
STRUCTURAL ANALYSIS

1	ISSUED FOR BID	01-25-
NO.	DESCRIPTION	DATE

ELECTRICAL ROOF PLAN

DRAWING NUMBER

AKF PROJECT NUMBER: R150112-000



1. REFER TO SPECIFICATION SECTION 263100 FOR ADDITIONAL INFORMATION ON PV REQUIREMENTS.
2. REFER TO E-200 FOR SINGLE LINE DIAGRAM.
3. PV PANELS SHALL BE ACHIEVE A PERFORMANCE OF 15.36 W/SF PER PV PANEL OR GREATER. ALL PV PANELS SHALL BE MOUNTED AT A MINIMUM OF A 5 DEGREE TILT AND MOUNTED ON A BALANCED RACKING SYSTEM, UNLESS OTHERWISE NOTED. REFER TO STRUCTURAL DRAWINGS FOR PV MOUNTING DETAILS.
4. PROVIDE AND INSTALL GROUNDING FOR THE ENTIRE PHOTOVOLTAIC SYSTEM. THIS INCLUDES PV PANELS, SUPPORTS, COMBINER BOXES, FEEDERS, INVERTERS AND ALL DISCONNECT SWITCHES AND CIRCUIT BREAKERS ASSOCIATED WITH THIS SYSTEM. GROUNDING SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC 2014 ARTICLE 690 PART V.
5. ALL DISTRIBUTION EQUIPMENT FOR THE PV SYSTEM, INCLUDING THE MAIN BUILDING PANEL SHALL BE PROPERLY LABELED PER THE NEC 2014 ARTICLE 690. THIS INCLUDES SIGNAGE FOR MULTIPLE SOURCES OF POWER AT THE MAIN BUILDING PANEL.
6. PV PANELS SHALL BE RUN PARALLEL TO SOUTH END OF THE BUILDING FOR BALANCED RACKING SYSTEM, A SPACE NO SMALLER THAN 1 FOOT WIDE SHALL BE PROVIDED BETWEEN PV PANEL ROWS TO ALLOW ACCESS AND TO PREVENT PV PANEL ROWS FROM SELF SHADING. BALANCED PV BACKSHEET SHALL BE USED TO PREVENT PV PANELS FROM AIR PENETRATIONS ARE REQUIRED TO SECURE THE PANELS TO THE ROOF.
7. ALL COMBINER BOXES SHALL BE MOUNTED ON THE PV RACKING SYSTEM. FOR ALL COMBINER BOXES SHOWN AT THE ENDS OF PV PANEL RUNS, MOUNT BOX HORIZONTALLY AND EXTEND RACKING SYSTEM TO ACCOMMODATE MOUNTING OF COMBINER BOX.
8. INVERTERS SHALL BE SIMILAR TO SMA SUNNY TRIPOWER SERIES. INVERTER A.D.E. & F SHALL BE SIMILAR TO SUNNY TRIPOWER MODEL 20000T-US. INVERTER B SHALL BE SIMILAR TO SUNNY TRIPOWER MODEL 24000T-US. INVERTER C SHALL BE SIMILAR TO SUNNY TRIPOWER MODEL 15000T-US.
9. ALL INVERTERS SHALL BE LOCATED ON THE ROOF WHERE INDICATED. COORDINATE FINAL LOCATIONS WITH ALL MECHANICAL EQUIPMENT AND STRUCTURAL FOR MOUNTING POINTS. INVERTERS SHALL BE MOUNTED ON AN INVERTER RACK SIMILAR TO SMA READY ROOF RACKING SYSTEM. THE SYSTEM SHALL BE FIXED TO THE BUILDING STRUCTURE AS REQUIRED.
10. ALL INVERTERS SHALL AUTOMATICALLY DISCONNECT THE PV SYSTEM UPON LOSS OF GRID POWER. INVERTERS SHALL BE INSTALLED IN SUCH A MANNER THAT THEY WILL NOT AND SHALL AUTOMATICALLY DISCONNECT TO PREVENT NIGHT TIME TRICKLE LOSSES.
11. ELECTRICAL INSTALLER SHALL COORDINATE ALL CONDUITS WITH OTHER TRADES. CONDUITS SHALL BE RUN FULLY CONCEALED WHERE EVER POSSIBLE IN FINISHED SPACES. IF CONDUITS ARE NOT FULLY CONCEALED, NOTIFY ENGINEER & ARCHITECT TO DISCUSS POSSIBLE SOLUTIONS. UNLESS OTHERWISE NOTED, CONDUITS FOR PV WIRING, AND C WIRING TO THE INVERTERS SHALL BE RUN ON THE ROOF AND CONCEALED FROM VIEW FROM THE GROUND AND FROM ANY WINDOWS INSIDE THE BUILDING.
12. ALL PV CIRCUITING IS SUGGESTED WIRING. FINAL LAYOUT AND WIRING SHALL BE PROVIDED BY THE SOLAR INSTALLER AND SHALL BE ADJUSTED ACCORDING TO THE FINAL SELECTION FOR PV PANELS AND INVERTERS.
13. PULL BOXES SHALL BE PROVIDED BY ELECTRICAL INSTALLER AS REQUIRED BY INSTALLATION.
14. PENETRATIONS PERFORMED ON ROOF SHALL BE IN ACCORDANCE WITH ROOF MANUFACTURERS REQUIREMENTS TO NOT VOID WARRANTY. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.
15. ELECTRICAL INSTALLER SHALL COORDINATE ALL PV CONDUITS WITH OTHER TRADES.
16. PROVIDE SOLAR ENERGY MONITORING PROGRAM INDEPENDENT OF SYSTEM METER AND BMS SYSTEM MONITORING SHALL TRACK ENERGY CONSUMPTION, GENERATION AND REPORT DATA TO A WEBSITE FOR EXTERNAL REVIEW BY CAMPUS STAFF, FACULTY, AND STUDENTS.
17. INVERTER SHALL PROVIDE RESIDUAL DC MONITORING ON +/- FEEDER CIRCUITS.
18. INTERLOCKS SHALL BE INSTALLED TO TRIP THE DC FEED TO THE INVERTER AND INITIATE AN ON-SITE BUILDING ALARM, ON THE BMS, ALARM SHALL CALL FOR A PROMPT INVESTIGATION OF THE GROUND FAULT. PROVIDE ETHERNET CONNECTION FROM ALL INVERTERS TO BMS AS REQUIRED.
19. ALL INVERTERS SHALL HAVE SURGE PROTECTION ON BOTH THE AC AND DC SIDE.
20. REVERSE CURRENT OVERLOAD FUSES SHALL BE USED FOR EACH STRING OF PANELS.
21. ALL INSTALLATION SHALL MEET FM GLOBAL DESIGN REQUIREMENTS.

PV STRING HOME RUN KEY:

