W. M. JORDAN COMPANY'S ADDENDUM NO. _4__

PROJECT: THE WILMINGTON FOOD BANK CD SET

DATE: 12/15/21

Please reference this Addendum on the bid form.

1. Reminder to review the "Supplementary Instructions to Bidders". Bids are to be submitted on the **project bid form** per the plans/specifications in conjunction with the trade specific **bid scopes**.
2. Project bid form was included in previous Addendum No.1. See plan room.
3. A sample contract and insurance requirements are posted in the plan room for review. Please pay attention to the insurance coverage amounts.
4. Attached to this Addendum located are revised drawings E0.1, E0.2, E0.3, E0.4, E0.5, E0.6, E0.8, EP1.1, EP1.2 and specifications 260500 and 270500. Most of the revisions came from tele/data questions and a meeting between CBHF and the owners' security vendor. Some of the changes have already been addressed verbally in previous addenda. Please review all revised drawings for this Addendum located in the planroom.

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ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	CEILING FAN, SEE LIGHTING FIXTURE SCHEDULE FOR TYPE
	2x4 LIGHT FIXTURE, RECESSED OR SURFACE MOUNTED
	2x2 LIGHT FIXTURE, RECESSED OR SURFACE MOUNTED
	4FT OR 8FT LIGHT FIXTURE, RECESSED OR SURFACE MOUNTED
	4FT OR 8FT CHANNEL LIGHT FIXTURE, SUSPENDED OR SURFACE MOUNTED
	UNDER COUNTER LIGHT FIXTURE
	DIRECT/INDIRECT FIXTURE, SUSPENDED
	TRACK WITH LIGHT KIT
	RECESSED LIGHT FIXTURE
	SURFACE LIGHT FIXTURE
	RECESSED WALL WASH LIGHT FIXTURE
	WALL MOUNTED LIGHT FIXTURE
	EXIT SIGN, SINGLE FACE, CEILING, CHEVRON INDICATES DIRECTION.
	EXIT SIGN, DOUBLE FACE, CEILING MOUNTED, CHEVRON INDICATES DIRECTION.
	EXIT SIGN W/EMERGENCY LIGHTING UNIT, CEILING MOUNTED, CHEVRON INDICATES DIRECTION.
	EXIT SIGN, SINGLE FACE, WALL/END MOUNTED, CHEVRON INDICATES DIRECTION.
	EXIT SIGN, DOUBLE FACE, WALL/END MOUNTED, CHEVRON INDICATES DIRECTION.
	EXIT SIGN W/EMERGENCY LIGHTING UNIT, WALL/END MOUNTED, CHEVRON INDICATES DIRECTION.
	EMERGENCY LIGHTING UNIT, 2-HEAD WITH BATTERY BACK-UP, WALL MOUNTED, "NOT SWITCHED"
	EMERGENCY LIGHTING UNIT, 2-HEAD WITH BATTERY BACK-UP, CEILING MOUNTED, "NOT SWITCHED"
	**FOR ALL LIGHTING FIXTURE TYPES ABOVE: LETTER ADJACENT TO FIXTURE INDICATES FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE
	POWER & SWITCH LEG
	UNSWITCHED LEG
	CONDUIT, HOME RUN TO PANEL BOARD
PE	PHOTOCELL, REMOTE MOUNTED, 120V, 10 SECOND TIME DELAY, UL WET LOCATION, RATED FOR 1500 W @ 120 VAC AND 4000 W @ 277 VAC (FOR USE WITH LAMP SOURCE(S) SHOWN.
$	SWITCH, SINGLE POLE, 120/277VAC, 20A, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED, SEE ELECTRICAL DEVICES MOUNTING HEIGHT DETAIL. LOWER CASE LETTER INDICATES FIXTURE SWITCHING, WHEN INDICATED.
$3	3-WAY SWITCH, 120/277 VAC, 20A, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED SEE ELECTRICAL DEVICES MOUNTING HEIGHT DETAIL. LOWER CASE LETTER INDICATES FIXTURE SWITCHING, WHEN INDICATED.
$4	4-WAY SWITCH 120/277 VAC, 20A, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED SEE ELECTRICAL DEVICES MOUNTING HEIGHT DETAIL. LOWER CASE LETTER INDICATES FIXTURE SWITCHING, WHEN INDICATED.
$$	INDICATES BI-LEVEL SWITCHING, 1 SWITCH SWITCHES OUTSIDE LAMPS, 1 SWITCH SWITCHES INSIDE LAMPS. SEE ELECTRICAL DEVICES MOUNTING HEIGHT DETAIL. LOWER CASE LETTER INDICATES FIXTURE SWITCHING, WHEN INDICATED.
$WP	WEATHERPROOF SWITCH, SINGLE POLE 120/277 VAC, 20A, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
D$	DIMMER SWITCH, 0-10V OR LINE VOLTAGE RATING AS REQUIRED BY LIGHTING FIXTURE(S). LINE VOLTAGE RATED DIMMERS MUST BE 1500W FOR 120 VAC AND 4000W 277VAC MINIMUM.
AFC$	ADJUSTABLE FAN CONTROL, 120/277VAC, SINGLE POLE, 20A, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED, SEE ELECTRICAL DEVICES MOUNTING HEIGHT DETAIL. LOWER CASE LETTER INDICATES FIXTURE SWITCHING, WHEN INDICATED

SYMBOL	DESCRIPTION
OS	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, 360° COVERAGE 2 = SECOND CONTACT TO BE PROVIDED FOR CONNECTION TO BUILDING MANAGEMENT
OS	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, LONG RANGE COVERAGE 2 = SECOND CONTACT TO BE PROVIDED FOR CONNECTION TO BUILDING MANAGEMENT
OS	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, 180° COVERAGE 2 = SECOND CONTACT TO BE PROVIDED FOR CONNECTION TO BUILDING MANAGEMENT
OS	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, PIR TECHNOLOGY OCCUPANCY SENSOR, LOW VOLTAGE (24VDC) 19mA DRAW, WATTSTOPPER CX100-1, LONG RANGE SENSOR. INSTALL WHERE FREE OF OBSTRUCTIONS.
OS	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, PIR TECHNOLOGY OCCUPANCY SENSOR, LOW VOLTAGE (24VDC) 19mA DRAW, WATTSTOPPER CX100-3, TWO SIDED AISLEWAY. INSTALL WHERE FREE OF OBSTRUCTIONS.
O$	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, SINGLE BUTTON ON/OFF CONTROL, 180° COVERAGE, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
O$2	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, DUAL BUTTON ON/OFF CONTROL, 180° COVERAGE, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
O$D	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, DUAL BUTTON ON/OFF CONTROL WITH 0-10V DIMMING, 180° COVERAGE, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED. WATTSTOPPER DW-311 OR EQUAL.
O$F	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, DUAL BUTTON ON/OFF CONTROL, 180° COVERAGE, ADDITIONAL POWER SUPPLY FOR FAN OPERATION, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
$T	WALL MOUNTED DIGITAL TIMED SWITCH (5 MIN'S TO 12 HR'S), SINGLE BUTTON ON/OFF CONTROL, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
	RECESSED SINGLE GANG BOX WITH BLANK COVER PLATE, MOUNTED 16" AFF, UNLESS OTHERWISE NOTED
	RECESSED DEDICATED SINGLE OUTLET, 120VAC, 20A, MOUNTED AS INDICATED ON DRAWING.
	RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED 16" AFF, UNLESS OTHERWISE NOTED. SEE ELECTRICAL MOUNTING HEIGHT DETAIL
	RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED 6" ABOVE COUNTER TOP OR BACK SPLASH.
	RECEPTACLE, QUADPLEX, 120VAC, 20A MOUNTED 16"AFF UNLESS OTHERWISE NOTED. SEE ELECTRICAL MOUNTING HEIGHT DETAIL
	RECEPTACLE, QUADPLEX, 120VAC, 20A, MOUNTED 6" ABOVE COUNTER TOP OR BACK SPLASH
	RECEPTACLE, DUPLEX, GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A, MOUNTED 16" AFF, UNLESS OTHERWISE NOTED. SEE ELECTRICAL MOUNTING HEIGHT DETAIL
	RECEPTACLE, DUPLEX, GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A, MOUNTED 6" ABOVE COUNTER TOP OR BACK SPLASH.
	RECEPTACLE, QUADPLEX, GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A MOUNTED 16"AFF UNLESS OTHERWISE NOTED. SEE ELECTRICAL MOUNTING HEIGHT DETAIL
	RECEPTACLE, QUADPLEX, GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A, MOUNTED 6" ABOVE COUNTER TOP OR BACK SPLASH.
	RECEPTACLE, 208VAC, 2 POLE, 3 WIRE, WALL MOUNTED, SIZE AS INDICATED ON DRAWING
	RECEPTACLE, 480VAC, 2 POLE, 3 WIRE, WALL MOUNTED, SIZE AS INDICATED ON DRAWING
	RECEPTACLE, DUPLEX, 120VAC, 20A CEILING MOUNTED (LAY-IN / GYPBOARD / SUSPENDED)
	RECEPTACLE, DUPLEX, 120VAC, 20A RECESSED FLOOR MOUNTED.
	UPS FED RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED 16" AFF, UNLESS OTHERWISE NOTED. SEE ELECTRICAL MOUNTING HEIGHT DETAIL
	UPS FED RECEPTACLE, QUADPLEX, 120VAC, 20A, MOUNTED 16" AFF, UNLESS OTHERWISE NOTED. SEE ELECTRICAL MOUNTING HEIGHT DETAIL
	**FOR ALL RECEPTACLE TYPES ABOVE: •XX" - INDICATES MOUNTING HEIGHT OF DEVICE IN INCHES AFF (IF PROVIDED). SEE ELECTRICAL MOUNTING HEIGHT DETAIL WP - LISTED WEATHER-RESISTANT TYPE DEVICE WITH WEATHERPROOF IN USE COVER TR - TAMPER RESISTANT S - INDICATES THE TOP RECEPTACLE OF THE DEVICE IS CONTROLLED VIA WALL SWITCH H - DEVICE MOUNTED HORIZONTALLY U - USB IN-WALL CHARGER
30A/3/3R, W/ 30AF	DISCONNECT SWITCH, FUSED, HEAVY DUTY, SIZE AS INDICATED ON DRAWINGS ##A = DISCONNECT SIZE / # = NUMBER OF POLES / # = NEMA RATING, /##AF = FUSE SIZE
CB	ENCLOSED BREAKER, HEAVY DUTY, SIZE AS INDICATED ON DRAWINGS ##A = BREAKER SIZE / # = NUMBER OF POLES / # = NEMA RATING,
VFD	VARIABLE FREQUENCY DRIVE (VFD)
"Equip" #AMP HMCP (#HP) NEMA #	COMBINATION STARTER WITH CIRCUIT BREAKER DISCONNECT, FULL VOLTAGE, SIZE AS INDICATED ON DRAWINGS
M$##	MANUAL MOTOR STARTER, ELECTRICAL CONTRACTOR SHALL COORDINATE POLES AND SIZE WITH EQUIPMENT ## = AMPERAGE RATING WHEN INDICATED ON DRAWING
	1 BUTTON CONTROLLER

SYMBOL	DESCRIPTION
	2 START/STOP PUSHBUTTON CONTROLLER
	3 UP/STOP/DN PUSHBUTTON CONTROLLER
EPO	WALL MOUNTED 120V EMERGENCY OFF PUSH BUTTON WITH RED MUSHROOM STYLE HEAD WITH MANUAL PULL REST, NORMALLY OPEN, WITH CLEAR PROTECTIVE COVER. MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
	WALL MOUNTED PUSH PLATE MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED.
208/120V	PANELBOARD, SURFACE OR RECESSED MOUNTED AS SHOWN. SIZE, RATINGS, AND MOUNTING AS INDICATED ON PANEL SCHEDULE. CONTRACTOR IS RESPONSIBLE FOR REQUIRED CLEARANCE IN FRONT OF ELECTRICAL PANEL. SEE NEC TABLE 110.26 WORKING SPACES FOR ADDITIONAL CLEARANCE CONDITIONS.
	TRANSFORMER, SIZE AS INDICATED ON DRAWING
	METER
M	ELECTRICAL MOTOR
	GROUND BUS, "E" INDICATES ELECTRICAL GROUND BAR, "TG" INDICATES TELECOMMUNICATIONS GROUND BAR
	CABLE TRAY, LADDER TYPE
	CABLE TRAY, CENTER HUNG TYPE
	CABLE TRAY, BASKET TYPE
1	KEY NOTE SYMBOL
1	REVISION DELTA
WP WAP WALL CLNG	WIRELESS ACCESS POINT, PROVIDE AND INSTALL ONE CAT6 BLUE DATA CABLE IN A DUAL GANG BOX WITH A SINGLE GANG PLASTER RING TO ELECTRICAL ROOM 127. OWNER SHALL PROVIDE SURGE PROTECTOR AND WAP DEVICE TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR. WP - LISTED WEATHER-RESISTANT TYPE DEVICE
	COMBINATION DATA/TELEPHONE OUTLET, MOUNTED 18" AFF UNLESS OTHERWISE NOTED. PROVIDE 1 1/4" WITH PULL STRING TO ABOVE ACCESSIBLE GRID CEILING. FOR OUTLETS LOCATED BELOW HARD (GYPBOARD) CEILINGS, PROVIDE 11/4" CONDUIT WITH PULL STRING TO ADJACENT ACCESSIBLE CEILING GRID OR TO ELECTRICAL ROOM 127. PROVIDE AND INSTALL TWO CAT6 BLUE AND ONE CAT6 WHITE CABLES TO ELECTRICAL ROOM 127
	WALL TELEPHONE OUTLET, MOUNTED 60" AFF UNLESS OTHERWISE NOTED. PROVIDE 11/4" CONDUIT TO ABOVE ACCESSIBLE GRID CEILING WITH PULL STRING. FOR OUTLETS LOCATED BELOW HARD (GYPBOARD) CEILINGS, PROVIDE 11/4" CONDUIT WITH PULL STRING TO ADJACENT ACCESSIBLE CEILING GRID OR TO ELECTRICAL ROOM 127. PROVIDE AND INSTALL ONE CAT6 BLUE AND ONE CAT6 WHITE CABLES TO ELECTRICAL ROOM 127.
2G MB	COMBINATION POWER/DATA/TELEPHONE BOX, RECESSED FLOOR MOUNTED (CAST-IN-PLACE). PROVIDE BRASS COVER PLATE WITH FLUSH ACCESS COVERS FOR EACH PLUG IN CONNECTION. PROVIDE 1 1/4" CONDUIT WITH PULL STRING UNDER SLAB TO ELECTRICAL ROOM 127. PROVIDE AND INSTALL TWO CAT6 BLUE AND ONE CAT6 WHITE CABLES TO ELECTRICAL ROOM 127. 2G = GANG FLOOR BOX WITH ONE DUPLEX RECEPTACLE AND ONE GANG FOR VOICE AND DATA
	JUNCTION BOX - WALL MOUNTED •##" - INDICATES MOUNTING HEIGHT OF DEVICE IN INCHES AFF (IF PROVIDED)
	JUNCTION BOX - CEILING / ABOVE CEILING MOUNTED
2	JUNCTION BOX - FLOOR MOUNTED
A	ACCESS CONTROL SYSTEM CARD READER. PROVIDE AND INSTALL FLUSH MOUNTED TWO GANG OUTLET BOX AT 48 "AFF WITH 1" EMPTY C. WITH PULL STRING TO CEILING CAVITY OR INTERIOR OF BUILDING IF CEILING IS NOT PRESENT. CARD READER AND ASSOCIATED CABLES PROVIDED AND INSTALLED BY SECURITY VENDOR

SYMBOL	DESCRIPTION
1	WALL MOUNTED DOUBLE GANG BOX FOR TELEVISION MOUNTED AT 72" AFF UNLESS NOTED OTHERWISE. BOX SHALL HAVE DUPLEX RECEPTACLE AND DATA CONNECTION FOR TELEVISION. BOX SHALL BE PASS & SEYMOUR TV2MW OR APPROVED EQUIVALENT. PROVIDE 1 1/4" CONDUIT WITH PULL STRING TO ACCESSIBLE CEILING CAVITY. FOR BOXES LOCATED BELOW HARD (GYPBOARD) CEILINGS, PROVIDE 1 1/4" CONDUIT WITH PULL STRING TO ELECTRICAL ROOM 127. PROVIDE AND INSTALL ONE CAT6 BLUE CABLE TO ELECTRICAL ROOM 127
	CEILING MOUNTED DOUBLE GANG BOX FOR TELEVISION RECESSED IN CEILING. BOX SHALL HAVE DUPLEX RECEPTACLE AND DATA CONNECTION FOR TELEVISION. BOX SHALL BE PASS & SEYMOUR TV2MW OR APPROVED EQUIVALENT. FOR BOXES LOCATED IN HARD (GYPBOARD) CEILING, PROVIDE 1 1/4" CONDUIT WITH PULL STRING TO ELECTRICAL ROOM 127. PROVIDE AND INSTALL ONE CAT6 BLUE CABLE TO ELECTRICAL ROOM 127.
	ELECTRIC STRIKE
	MAGNETIC LOCK
	DOOR CONTACTS
	CARD READER
	KEYPAD
	MOTION DETECTOR (TYPE DENOTED)
WP	WALL MOUNTED CAMERA, WP INDICATES WEATHERPROOF
	CEILING MOUNTED CAMERA
S	CEILING MOUNTED SPEAKER
S	WALL MOUNTED SPEAKER
	FLOOR MOUNTED DATA RACK
	WALL MOUNTED DATA RACK
	PROJECTOR PAN, CEILING MOUNTED
	1 HOUR RATED FIRE WALL
(X)	1 HOUR RATED FIRE WALL - EXISTING
	2 HOUR RATED FIRE WALL
(X)	2 HOUR RATED FIRE WALL - EXISTING
	3 HOUR RATED FIRE WALL
(X)	3 HOUR RATED FIRE WALL - EXISTING
OHP	OVERHEAD PRIMARY CONDUCTORS
(X)OHP	OVERHEAD PRIMARY CONDUCTORS - EXISTING
UGP	UNDERGROUND PRIMARY CONDUCTORS
(X)UGP	UNDERGROUND PRIMARY CONDUCTORS - EXISTING
OHS	OVERHEAD SECONDARY CONDUCTORS
(X)OHS	OVERHEAD SECONDARY CONDUCTORS - EXISTING
UGS	UNDERGROUND SECONDARY CONDUCTORS
(X)UGS	UNDERGROUND SECONDARY CONDUCTORS - EXISTING
	COPPER CLASS 1 CONDUCTOR ON ROOF
	ALUMINUM CLASS 1 CONDUCTOR ON ROOF
UGG	COPPER CLASS 1 CONDUCTOR BELOW GRADE
C C	CONTROL CABLE CONDUIT

LOAD SUMMARY - NORMAL

VOLTAGE	PHASE
208	3
LARGEST MOTOR APPROX. AMPS	50 AMPS
LARGEST MOTOR APPROX. AMPS x .25	13 AMPS
HVAC	
HVAC LOAD	49,509 VA
SUB-TOTAL HVAC DEMAND	49,509 VA
SUB-TOTAL HVAC DEMAND	137 AMPS
EQUIPMENT	
FORK LIFT CHARGERS	38,904 VA
GAS HEATERS	1,080 VA
MISC. EQUIPMENT	14,040 VA
SUB-TOTAL EQUIPMENT DEMAND	54,024 VA
SUB-TOTAL EQUIPMENT DEMAND	150 AMPS
ADD FOR LARGEST MOTOR	13 AMPS
TOTAL EQUIPMENT DEMAND	162 AMPS
LIGHTING	
LIGHTS (INTERIOR, BASED ON NEC 220.12)	6,658 VA
LIGHTS (EXTERIOR) (est)	2,186 VA
SIGN	1,500 VA
TOTAL LIGHTING LOAD	10,344 VA
TOTAL DEMAND FOR LIGHTING	29 AMPS
RECEPTACLES	
RECEPTACLES	21,640 VA
FIRST 10000VA	10,000 VA
REMAINDER @ 50%	5,820 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	15,820 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	44 AMPS
TOTAL DEMAND BUILDING AMPS	373 AMPS
TOTAL DEMAND BUILDING AMPS	134,200 VA
TOTAL BUILDING CONNECTED LOAD	131,614 VA

LOAD SUMMARY - OVERALL

VOLTAGE	PHASE
208	3
LARGEST MOTOR APPROX. AMPS	50 AMPS
LARGEST MOTOR APPROX. AMPS x .25	13 AMPS
HVAC	
HVAC LOAD	107,189 VA
SUB-TOTAL HVAC DEMAND	107,189 VA
SUB-TOTAL HVAC DEMAND	288 AMPS
EQUIPMENT	
WALK-IN COOLERS/FREEZER CONDENSORS	54,868 VA
WALK-IN COOLERS/FREEZER EVAPORATORS	25,119 VA
COMPACTOR	9,906 VA
LEVELERS	4,704 VA
FORK LIFT CHARGERS	58,356 VA
ELECTRIC HEATERS	10,920 VA
GAS HEATERS	4,388 VA
FANS	22,157 VA
MOTORIZED DOORS	10,824 VA
DISH MACHINE	26,661 VA
MISC. EQUIPMENT	17,142 VA
SUB-TOTAL EQUIPMENT DEMAND	245,045 VA
SUB-TOTAL EQUIPMENT DEMAND	680 AMPS
ADD FOR LARGEST MOTOR	13 AMPS
TOTAL EQUIPMENT DEMAND	693 AMPS
KITCHEN EQUIPMENT	
KITCHEN EQUIPMENT	49,608 VA
SUB-TOTAL EQUIPMENT DEMAND	49,608 VA
DEMAND FACTOR 65% (6 UNITS OR OVER)	32,245 VA
SUB-TOTAL EQUIPMENT DEMAND	138 AMPS
TOTAL EQUIPMENT DEMAND	90 AMPS
LIGHTING	
LIGHTS (INTERIOR, BASED ON NEC 220.12)	41,786 VA
LIGHTS (EXTERIOR) (est)	3,122 VA
SIGN	1,500 VA
TOTAL LIGHTING LOAD	46,408 VA
TOTAL DEMAND FOR LIGHTING	129 AMPS
RECEPTACLES	
RECEPTACLES	36,300 VA
FIRST 10000VA	10,000 VA
REMAINDER @ 50%	13,150 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	23,150 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	64 AMPS
TOTAL DEMAND BUILDING AMPS	1,273 AMPS
TOTAL DEMAND BUILDING AMPS	458,540 VA
TOTAL BUILDING CONNECTED LOAD	454,361 VA

LOAD SUMMARY - STANDBY

VOLTAGE	PHASE
208	3
LARGEST MOTOR APPROX. AMPS	50 AMPS
LARGEST MOTOR APPROX. AMPS x .25	13 AMPS
HVAC	
HVAC LOAD	57,680 VA
SUB-TOTAL HVAC DEMAND	57,680 VA
SUB-TOTAL HVAC DEMAND	160 AMPS
EQUIPMENT	
WALK-IN COOLERS/FREEZER CONDENSORS	54,868 VA
WALK-IN COOLERS/FREEZER EVAPORATORS	25,119 VA
COMPACTOR	9,906 VA
LEVELERS	4,704 VA
FORK LIFT CHARGERS	19,452 VA
ELECTRIC HEATERS	10,920 VA
GAS HEATERS	3,308 VA
FANS	22,157 VA
MOTORIZED DOORS	10,824 VA
DISH MACHINE	26,661 VA
MISC. EQUIPMENT	3,102 VA
SUB-TOTAL EQUIPMENT DEMAND	191,021 VA
SUB-TOTAL EQUIPMENT DEMAND	530 AMPS
ADD FOR LARGEST MOTOR	13 AMPS
TOTAL EQUIPMENT DEMAND	543 AMPS
KITCHEN EQUIPMENT	
KITCHEN EQUIPMENT	49,608 VA
SUB-TOTAL EQUIPMENT DEMAND	49,608 VA
DEMAND FACTOR 65% (6 UNITS OR OVER)	32,245 VA
SUB-TOTAL EQUIPMENT DEMAND	138 AMPS
TOTAL EQUIPMENT DEMAND	90 AMPS
LIGHTING	
LIGHTS (INTERIOR, BASED ON NEC 220.12)	35,128 VA
LIGHTS (EXTERIOR) (est)	936 VA
TOTAL LIGHTING LOAD	36,064 VA
TOTAL DEMAND FOR LIGHTING	100 AMPS
RECEPTACLES	
RECEPTACLES	14,660 VA
FIRST 10000VA	10,000 VA
REMAINDER @ 50%	2,330 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	12,330 VA
TOTAL DEMAND FOR RECEPTACLE/POWER PANELS	34 AMPS
TOTAL DEMAND BUILDING AMPS	927 AMPS
TOTAL DEMAND BUILDING AMPS	333,843 VA
TOTAL BUILDING CONNECTED LOAD	322,747 VA

TYPICAL ABBREVIATIONS:

A, AMP	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BOF	BOTTOM OF FIXTURE
BRKR	BREAKER
C, CND	CONDUIT
CAB	CABINET
CAT	CATALOG
CL	CHLORINE
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CP	CONTROL PANEL
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL SWITCH
CV	CONTROL VALVE
CT	CURRENT TRANSFORMER
CU	COPPER
EF	EXHAUST FAN
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQ, EQIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EPRF	EXPLOSION PROOF
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
FLR	FLOOR
FWE	FURNISHED WITH EQUIPMENT
GEN	GENERATOR
G, GND	GROUND
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
Hz	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
INCAND	INCANDESCENT
JB	JUNCTION BOX
K	THOUSAND
Kcmil	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERE
KW	KILOWATTS
KWH	KILOWATT-HOURS
LP	LIGHTING PANEL, LIGHT POLE
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N, NEUT	NEUTRAL
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NIL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, PUSH-BUTTON
PF	POWER FACTOR
PH,ϕ	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL, POWER POLE
PT	POTENTIAL TRANSFORMER
PWR	POWER
RECPT,RCP	RECEPTACLE
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RTU	REMOTE TELEMETRY UNIT
SCR	DC MOTOR DRIVE
SH	SHEET
SM	SURFACE MOUNTED
SPEC	SPECIFICATION
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TEL	TELEPHONE
TPS	TWISTED PAIR SHIELDED
TVSS, SPD	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UG, UGND	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE, WATT
WH	WATT-HOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER
(X)	EXISTING

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The Wilmington Food Bank
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Wilmington, North Carolina 28403

REV.	DATE	DESCRIPTION
2	12-10-21	SECURITY SYSTEM
1	12-10-21	TELECOM REVISION

NO.	DATE	ISSUE NOTE

Project Manager	Drawn By WPJ
Date 11.09.2021	Reviewed By JPF
Project ID	CBHF: 20187

Sheet Title
ABBREVIATIONS, LEGEND AND SUMARIES

Sheet No.
E0.1

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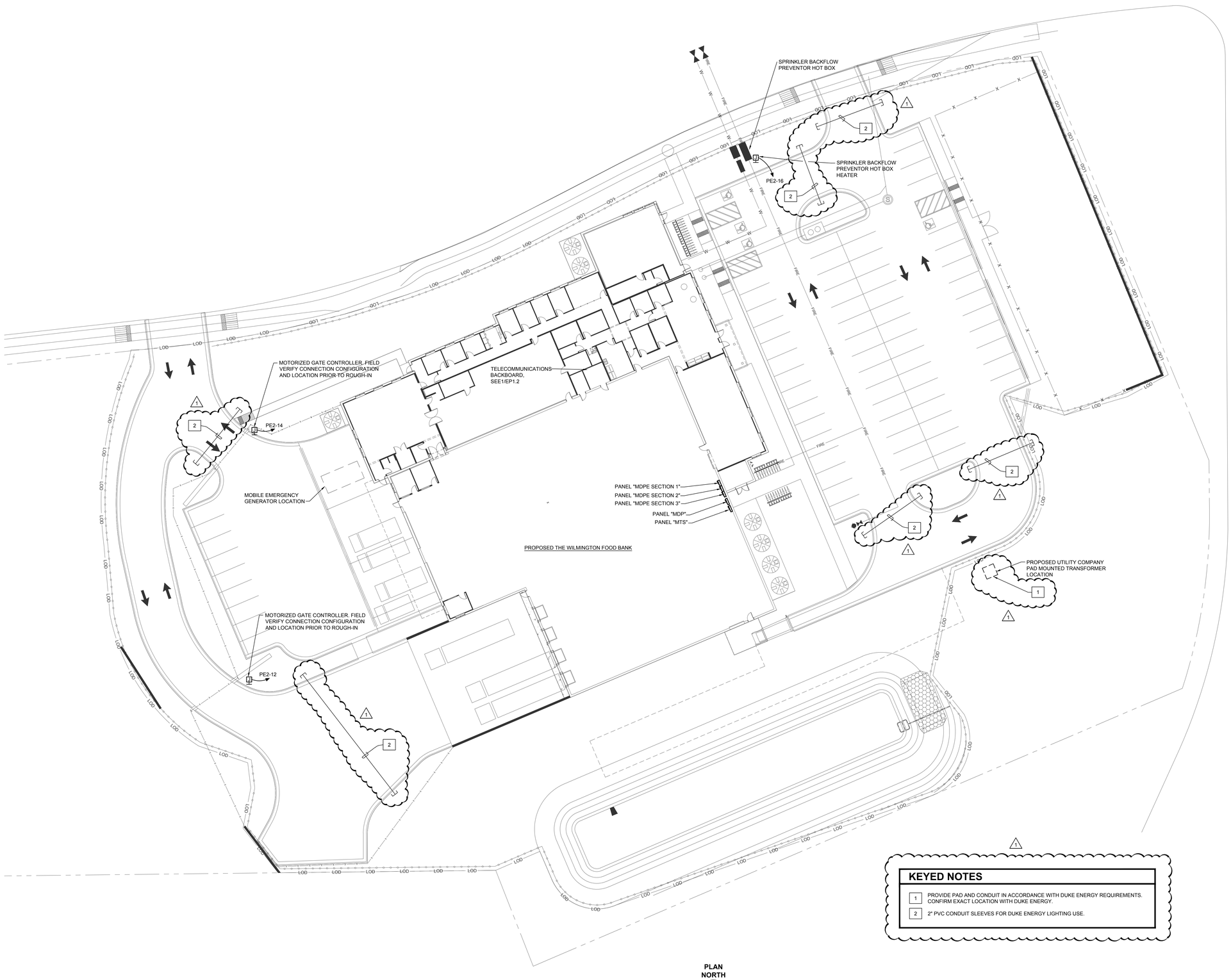

KEYED NOTES

1. PROVIDE PAD AND CONDUIT IN ACCORDANCE WITH DUKE ENERGY REQUIREMENTS. CONFIRM EXACT LOCATION WITH DUKE ENERGY.
2. 2" PVC CONDUIT SLEEVES FOR DUKE ENERGY LIGHTING USE.

1 ELECTRICAL SITE PLAN
1" = 20'-0"

PLAN NORTH

0 20 40

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The Wilmington Food Bank
Greenfield Street
Wilmington, North Carolina 28403

REV.	DATE	DESCRIPTION
1	12-10-21	GENERAL COORD.

NO.	DATE	ISSUE NOTE

Project Manager	Drawn By WPJ
Date 11.09.2021	Reviewed By JPF
Project ID	CBHF: 20187

Sheet Title
ELECTRICAL SITE PLAN

Sheet No.
E0.2

ELECTRICAL GENERAL NOTES

1. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS FOR WORK REQUIREMENTS, THE AMOUNT OF SPACE AVAILABLE FOR ELECTRICAL EQUIPMENT, AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER.

2. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THOROUGHLY FAMILIARIZING HIMSELF WITH ANY CONTRACTUAL REQUIREMENTS AS MAY BE SET FORTH IN THE OTHER DIVISIONS OF THE PROJECT SPECIFICATIONS.

3. UNLESS SPECIFICALLY NOTED OTHERWISE, SYSTEMS PROVIDED OR INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE COMPLETE AND FULLY-FUNCTIONING AFTER INSTALLATION. INCIDENTAL COMPONENTS MAY NOT BE SHOWN, AND ALL WORK WHICH MAY BE REASONABLY IMPLIED AS BEING INCIDENTAL TO THIS WORK, BUT REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT OR SYSTEM, SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE BID. ADDITIONAL CIRCUITS SHALL BE INSTALLED WHEREVER NEEDED TO CONFORM TO THE SPECIFIC REQUIREMENTS OF EQUIPMENT.

4. TEMPORARY POWER CONNECTIONS AS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE BID. ALL TEMPORARY EQUIPMENT WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. THE CONTRACTOR SHALL PROVIDE DETAILS, METHODS, MATERIALS, ETC. FOR REVIEW PRIOR TO MAKING TEMPORARY CONNECTIONS. FURNISH AND INSTALL ALL EQUIPMENT AND MATERIALS INCLUDING CONTROL EQUIPMENT, MOTOR STARTERS, BRANCH AND FEEDER CIRCUIT BREAKERS, PANELBOARDS, TRANSFORMERS, ETC. FOR TEMPORARY POWER. COORDINATE WITH THE ELECTRICAL UTILITY COMPANY AS REQUIRED.

5. THE WORK SHALL INCLUDE COMPLETE TESTING OF ALL EQUIPMENT AND WIRING AT THE COMPLETION OF WORK AND ANY MINOR CORRECTIONS, CHANGES OR ADJUSTMENTS NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM AND EQUIPMENT.

6. ALL EQUIPMENT SHOWN DOTTED OR DASHED IS BY OTHERS.

7. ALL ELECTRICAL EQUIPMENT SHALL, AT ALL TIMES DURING CONSTRUCTION, BE ADEQUATELY PROTECTED AGAINST MECHANICAL INJURY, OR DAMAGE BY WATER AND/OR THE ELEMENTS. ELECTRICAL EQUIPMENT SHALL NOT BE STORED OUT OF DOORS, BUT SHALL BE STORED IN DRY PERMANENT SHELTERS. IF AN APPARATUS HAS BEEN DAMAGED, OR HAS BEEN SUBJECT TO POSSIBLE INJURY BY WATER OR THE ELEMENTS, SUCH DAMAGE SHALL BE REPLACED AT NO ADDITIONAL COST.

8. DO NOT SCALE ELECTRICAL DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS.

9. CIRCUIT LAYOUTS ARE NOT INTENDED TO SHOW THE NUMBER OF FITTINGS, OR OTHER INSTALLATION DETAILS. UNLESS NOTED OTHERWISE, THE EXACT ROUTING OF FEEDER AND BRANCH CIRCUIT RACEWAYS AND CABLES IS THE RESPONSIBILITY OF THE CONTRACTOR. RISER AND GENERAL CIRCUIT ARRANGEMENTS ARE SHOWN SCHEMATICALLY/DIAGRAMMATICALLY ONLY. THE CONTRACTOR SHALL ROUTE CONDUITS AS REQUIRED BY THE CONDITIONS OF THE INSTALLATION.

10. UNLESS DIMENSIONED, DEVICE LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ADJUST EXACT LOCATIONS AS REQUIRED TO SERVE THE INTENDED PURPOSE AND TO AVOID CONFLICTS AND INTERFERENCES WITH OTHER TRADES. EXACT DEVICE LOCATIONS SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS OR AS DIMENSIONED. IF NOT SHOWN ON THE ARCHITECTURAL DRAWINGS OR DIMENSIONED ON THE ELECTRICAL DRAWINGS, VERIFY EXACT LOCATION WITH THE ARCHITECT/ENGINEER PRIOR TO ROUGH-IN.

11. CONDUIT TERMINATING IN PRESSED STEEL BOXES SHALL HAVE DOUBLE LOCKNUTS AND INSULATED BUSHINGS. CONDUITS TERMINATING IN GASKETED ENCLOSURES SHALL BE TERMINATED WITH GROUNDING TYPE CONDUIT HUBS.

12. DEVICE BOXES SHOWN BACK-TO-BACK SHALL BE OFFSET A MINIMUM OF TWELVE (12) INCHES TO REDUCE SOUND TRANSMISSION BETWEEN ROOMS.

13. BRANCH CIRCUIT HOMERUNS SHOWN ON DRAWINGS INDICATE PHASE CONDUCTORS, NEUTRAL AND EQUIPMENT GROUND CONDUCTORS AS REQUIRED. ADDITIONAL CONDUCTORS REQUIRED FOR CONTROL SHALL BE INCLUDED EVEN IF NOT EXPLICITLY SHOWN.

14. SEAL ALL CONDUIT OPENINGS THROUGH EXTERIOR BUILDING WALLS WATERTIGHT.

15. IN WET LOCATIONS AND EXTERIOR, ALL WIRING DEVICES SHALL BE WEATHER-RESISTANT LISTED WITH WEATHERPROOF WHILE IN USE COVER. LIGHTING FIXTURES SHALL BE APPROPRIATELY RATED AND LISTED FOR THE ENVIRONMENT INCLUDING 0 DEGREE BALLASTS FOR FLUORESCENT.

16. RACEWAYS PENETRATING FLOORS, CEILINGS OR WALLS SHALL BE PROPERLY SEALED SMOKETIGHT.

17. RACEWAYS PENETRATING RATED FLOOR, CEILING OR WALL ASSEMBLIES SHALL BE PROPERLY SEALED IN ACCORDANCE WITH THE CORRESPONDING UNDERWRITERS LABORATORIES (OR OTHER APPROVED THIRD PARTY TESTING AGENCY) APPROVED AND LISTED FIRESTOPPING MATERIALS AND MANUFACTURER APPROVED INSTALLATION TECHNIQUES COMPLYING WITH ALL APPLICABLE CODES. SEE ARCHITECTURAL DRAWINGS FOR IDENTIFICATION OF RATED WALLS AND CEILINGS.

18. LIGHTING FIXTURES, SPEAKER ASSEMBLIES, ETC. MOUNTED IN FIRE-RATED CEILINGS SHALL BE PROVIDED WITH UL-LISTED, PRE-FABRICATED OR FIELD FABRICATED SHROUDS/ACCESSORIES NECESSARY TO MAINTAIN THE CEILING FIRE RATING.

19. ALL RACEWAYS SHALL BE CONCEALED WHERE POSSIBLE EXCEPT THOSE SHOWN TO BE EXPOSED ON DRAWINGS.

20. INSTALL EXPOSED RACEWAYS PARALLEL TO OR AT RIGHT ANGLES TO NEARBY SURFACES OR STRUCTURAL MEMBERS, AND FOLLOW THE SURFACE CONTOURS AS MUCH AS POSSIBLE. NO DIAGONAL RUNS WILL BE ALLOWED. ALL CONDUITS SHALL BE RUN STRAIGHT AND TRUE. RUN PARALLEL OR BANKED RACEWAYS TOGETHER ON COMMON SUPPORTS WHERE PRACTICAL. MAKE BENDS IN PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL.

21. PROVIDE AND PLACE ALL SLEEVES FOR CONDUITS PENETRATING WALLS, FLOORS, PARTITIONS, ETC. LOCATE ALL NECESSARY SLOTS FOR ELECTRICAL WORK AND FORM BEFORE CONCRETE IS POURED.

22. PATCHING OF WATERPROOFED SURFACES SHALL RENDER THE AREA OF THE PATCHING COMPLETELY WATERPROOF.

23. ALL MOTORS AND OTHER VIBRATING EQUIPMENT SHALL BE CONNECTED TO THE CONDUIT SYSTEM BY MEANS OF A SHORT SECTION (18 INCH MINIMUM) OF FLEXIBLE CONDUIT UNLESS OTHERWISE INDICATED. AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED INSIDE THE FLEXIBLE CONDUIT AND TERMINATE AT THE LOAD END WITH AN APPROVED GROUNDING CLAMP OR LUG.

24. SURFACE MOUNTED PANELBOARDS, JUNCTION, OUTLET AND PULL BOXES, RACEWAYS, ETC., INSTALLED ON EXTERIOR SURFACES OR INSIDE ON EXTERIOR WALLS SHALL BE SUPPORTED BY SPACERS TO PROVIDE A 1/4" MINIMUM CLEARANCE BETWEEN THE WALL AND EQUIPMENT.

25. CEILING MOUNTED DEVICES INSTALLED IN ACOUSTICAL TILE CEILING AREAS SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE WITH RODS OF SUFFICIENT SIZE TO PREVENT VERTICAL MOVEMENT OF THE OUTLET BOX. BRIDGES ALONE ARE NOT ADEQUATE UNLESS SPECIFICALLY APPROVED. CEILING MOUNTED EXIT LIGHT FIXTURES SHALL BE INSTALLED LEVEL. DO NOT SUPPORT DEVICES FROM ACCOUSTICAL CEILING TILE.

26. EXCAVATION AND TRENCHING REQUIRED FOR THE INSTALLATION OF ELECTRICAL POWER AND TELECOMMUNICATIONS RACEWAYS SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF DIVISION 26 OF THE PROJECT SPECIFICATIONS.

27. PRIOR TO TRENCHING IN ANY AREA, THE CONTRACTOR SHALL CONTACT ELECTRICAL, COMMUNICATIONS/DATA/FIBER, CABLE TELEVISION, GAS AND WATER UTILITY PROVIDERS AND HAVE ALL UTILITIES IN THE AREA IDENTIFIED. DAMAGE TO ANY UNDERGROUND UTILITIES OR STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.

28. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED BY UNDERGROUND LINE MARKING TAPE LOCATED DIRECTLY ABOVE THE RACEWAY AT 6 TO 8 INCHES BELOW FINISHED GRADE. SEE SPECIFICATIONS SECTION 260553.

29. PROVIDE ADHESIVE BACKED RECEPTACLE DEVICE PLATE LABELS IDENTIFYING THE CIRCUIT FEEDING THE DEVICE. LABELS SHALL INDICATE PANEL AND CIRCUIT NUMBER. ALSO PROVIDE IDENTIFICATION FOR MULTIWIRE BRANCH CIRCUIT PHASE CONDUCTORS IN PANELBOARD. SEE SPECIFICATIONS SECTION 260553 FOR REQUIREMENTS.

30. FINAL TYPED PANELBOARD DIRECTORIES INSTALLED IN THE PANELBOARD DOOR POCKET SHALL INCLUDE FINAL ACTUAL ROOM NAMES AND NUMBERS IN ADDITION TO THE GENERAL DESCRIPTION SHOWN ON THE PANEL SCHEDULES ON THE DRAWINGS.

31. CONDUCTOR SIZING IS BASED ON 75 DEGREE C. COPPER NEC RATINGS, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL VERIFY, PRIOR TO INSTALLATION OF CONDUCTORS OR CONDUIT FEEDING ANY EQUIPMENT, THE ELECTRICAL EQUIPMENT IS RATED FOR USE WITH 75 DEGREE C. WIRING. IF ANY EQUIPMENT IS RATED FOR USE WITH LESS THAN 75 DEGREE C. CONDUCTORS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY FOR EVALUATION/CORRECTION.

32. DO NOT PULL CONDUCTORS UNTIL THE CONDUIT SYSTEM IS COMPLETE IN EVERY DETAIL. IN THE CASE OF CONCEALED WORK, "COMPLETE" MEANS UNTIL ALL ROUGH PLASTERING OR MASONRY HAS BEEN COMPLETED.

33. WHERE SIZE IS NOT SHOWN ON THE DRAWINGS, BRANCH CIRCUITS SHALL CONSIST OF #12 OR #10 AWG MINIMUM PHASE, NEUTRAL AND EQUIPMENT GROUND CONDUCTORS IN 1/2" MINIMUM RACEWAY.

34. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS WITH A TOTAL INSTALLED LENGTH GREATER THAN 75 FEET AND/OR BRANCH CIRCUIT HOMERUNS LONGER THAN 50 FEET, I.E.; #12 AWG INCREASED TO #10 AWG FOR RECEPTACLE BRANCH CIRCUITS OVER 75 FEET TOTAL LENGTH (INCLUDING THE HOMERUN SEGMENT) AND HOMERUNS OVER 50 FEET.

35. ALTERNATE MULTIWIRE RECEPTACLE CIRCUITS SUCH THAT ADJACENT RECEPTACLES ARE ON DIFFERENT CIRCUITS

36. COMMON NEUTRAL CONDUCTORS OF MULTIWIRE RECEPTACLE BRANCH CIRCUIT HOMERUNS SHALL BE #10 AWG MINIMUM.

37. PROVIDE SEPARATE, INDIVIDUAL NEUTRAL CONDUCTORS FOR RECEPTACLE CIRCUITS MARKED FOR COMPUTER OR PRINTER USE. SEE LEGEND AND/OR DRAWINGS FOR DEFINITION.

38. KEEP CONDUCTOR SPLICES TO A MINIMUM. INSTALL SPLICES AND TAPES THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN CONDUCTORS BEING SPLICED. USE SPLICE AND TAP CONNECTORS COMPATIBLE WITH CONDUCTOR MATERIAL. INSTALL CONDUCTORS AT EACH OUTLET WITH AT LEAST 6 INCHES OF SLACK. CONNECT OUTLETS AND COMPONENTS TO WIRING AND TO GROUND AS INDICATED AND INSTRUCTED BY THE MANUFACTURER.

39. DO NOT SPLICE BRANCH CIRCUIT HOMERUNS WITHOUT THE PERMISSION OF THE ARCHITECT/ENGINEER. HOMERUNS SHALL BE CONTINUOUS FROM THE LAST OUTLET BOX TO THE SERVING PANELBOARD.

40. DO NOT COMBINE BRANCH CIRCUIT HOMERUNS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS.

41. DO NOT CHANGE CIRCUITING SHOWN WITHOUT PERMISSION OF THE ARCHITECT/ENGINEER.

42. TROUGH TAPS SHALL BE AT SWITCH AMPACITY, UNLESS NOTED OTHERWISE.

43. INSTALL WIRING DEVICES AT HEIGHTS AS SHOWN ON THE DRAWINGS. ALSO COORDINATE MOUNTING HEIGHTS WITH THE ARCHITECTURAL DRAWINGS AND CASEWORK DETAILS. IF CONFLICTING, ARCHITECTURAL DRAWINGS AND DETAILS SHALL GOVERN.

44. PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL IN ACCORDANCE WITH THE NEC INCLUDING ALL ELECTRIC WATER COOLERS, EXTERIOR RECEPTACLES AND RECEPTACLES IN AREAS SUBJECT TO POSSIBLE WET CONDITIONS. ALL RECEPTACLES INSTALLED WITHIN 6 FEET OF A SINK SHALL BE GFI PROTECTED. ALL RECEPTACLES IN NON-RESIDENTIAL KITCHENS SHALL BE GFI PROTECTED.

45. IN AREAS IN WHICH DUAL LEVEL SWITCHING IS INDICATED (TYPICALLY BY 2 OR MORE ADJACENT, GANGED SWITCHES), PROVIDE THE APPROPRIATE NUMBER OF CONDUCTORS TO FACILITATE THIS FUNCTION (AS TYPICALLY SHOWN).

46. CONNECT BATTERY PACK TYPE EMERGENCY AND EXIT LIGHTING TO THE UNSWITCHED LIGHTING CIRCUIT SERVING THE SPACE LIGHTED BY THE EMERGENCY AND EXIT FIXTURES. THESE CONNECTIONS ARE INTENTIONALLY NOT SHOWN TO MAINTAIN DRAWING FOR CLARITY.

47. COORDINATE LIGHTING FIXTURE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN. IF CONFLICTS ARE NOTED, REQUEST CLARIFICATION FROM THE ARCHITECT/ENGINEER BEFORE PROCEDING.

48. ADJACENT SWITCHES SHALL BE GANGED. INSTALL BARRIERS BETWEEN UNLIKE VOLTAGE SECTIONS.

49. SEPARATE NEUTRALS ARE REQUIRED FOR ALL DIMMED LIGHTING CIRCUITS.

50. WHERE THE DRAWINGS INDICATE A LIGHTING FIXTURE IS TO BE PROVIDED WITH SPECIAL FEATURES/SWITCHING (DIMMING, EMERGENCY BATTERY BALLAST, MULTI-LEVEL, ETC), THE CONTRACTOR SHALL PROVIDE THESE FIXTURES WITH THE APPROPRIATE BALLASTING TO ACCOMMODATE THE SPECIAL FEATURE. THE CONTRACTOR SHALL PROVIDE THE FIXTURES AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE WITH MODIFICATIONS AS REQUIRED BY DRAWING NOTES.

51. COORDINATE LOCATIONS OF PLUMBING, MECHANICAL, FOOD SERVICE, DATA AND TELEPHONE AND AUDIO/VISUAL EQUIPMENT AND OF OWNER-PROVIDED EQUIPMENT WITH THE RESPECTIVE CONTRACTORS AND VENDORS AND THE OWNER BEFORE ROUGH-IN. ADJUST LIGHTING FIXTURES, RECEPTACLES AND ELECTRICAL EQUIPMENT TO ACCOMMODATE THIS EQUIPMENT. ADVISE THE ARCHITECT/ENGINEER OF CONFLICTS BEFORE ROUGH-IN

52. BEFORE COMMENCING WORK OR ORDERING MATERIALS, THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND VERIFY THE NAMEPLATE RATINGS OF ALL EQUIPMENT (MOTORS, HEATERS, COMPRESSORS, ETC.) AND ADJUST THE RATINGS OF THE ELECTRICAL EQUIPMENT (SWITCHES, FUSES, CIRCUIT BREAKERS, FEEDERS, ETC.) AS APPROPRIATE TO SERVE THIS EQUIPMENT.

53. ENERGIZE EQUIPMENT ONLY AFTER OBTAINING PERMISSION FROM THE CONTRACTOR PROVIDING THE EQUIPMENT.

54. UNLESS SPECIFICALLY NOTED OTHERWISE, THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL UTILIZATION EQUIPMENT SHOWN ON THE DRAWINGS. VERIFY THE TYPE OF FINAL CONNECTION AND PROVIDE APPROPRIATE WIRING METHOD. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL, PLUMBING AND GENERAL CONTRACTORS, PRIOR TO ORDERING OR INSTALLATION OF ANY EQUIPMENT, TO VERIFY MECHANICAL AND PLUMBING EQUIPMENT REQUIREMENTS ARE PROVIDED IN THE ELECTRICAL DESIGN. THE CONTRACTOR WILL NOT BE COMPENSATED FOR COSTS ASSOCIATED WITH CHANGING THE ELECTRICAL SYSTEMS TO MATCH UTILIZATION EQUIPMENT, EVEN IF THE ELECTRICAL WORK IS INSTALLED PER THE ELECTRICAL DRAWINGS.

55. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL FURNISH ALL STARTERS AND CONTROLS FOR THEIR EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL MOUNT STARTERS FURNISHED BY THE MECHANICAL AND PLUMBING CONTRACTORS, THE ELECTRICAL CONTRACTOR PROVIDE ALL SAFETY SWITCHES, WIRING AND CONNECTIONS TO LINE SIDE AND LOAD SIDE OF STARTERS AND SAFETY SWITCHES COMPLETE TO MECHANICAL EQUIPMENT. FOR RESISTANCE TYPE LOADS WHERE STARTERS OR CONTACTORS ARE NOT REQUIRED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL POWER WIRING AND CONNECTIONS COMPLETE TO EQUIPMENT. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL PROVIDE ALL CONTROL WIRING AND CONNECTIONS AND DEVICES FOR THEIR EQUIPMENT.

56. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT TERMINATIONS, PLUGS AND CORDSETS WITH VENDOR EQUIPMENT AND VERIFY ALL DEVICE LOCATIONS FOR SPECIALITY EQUIPMENT WITH CASEWORK PRIOR TO ROUGH-IN.

57. THE LAYOUT AND PLACEMENT OF ELECTRICAL DISTRIBUTION EQUIPMENT IN ELECTRICAL AND MECHANICAL EQUIPMENT ROOMS IS BASED ON PUBLISHED EQUIPMENT SIZES AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. DEVIATIONS FROM CONFIGURATIONS SHOWN IS THE RESPONSIBILITY OF THE CONTRACTOR. PROVIDE NATIONAL ELECTRIC CODE REQUIRED CLEARANCES FOR ALL ELECTRICAL EQUIPMENT, PANELBOARDS, TRANSFORMERS, SAFETY SWITCHES, SWITCHBOARDS, ETC. COORDINATE RESOLUTION OF CONFLICTS WITH OTHER TRADES. ADVISE THE ARCHITECT/ENGINEER OF CONFLICTS BEFORE ROUGH-IN.

58. COORDINATION WITH THE UTILITY COMPANY FOR PLACEMENT OF THE UTILITY'S FACILITIES AND THE CONTRACTOR'S SERVICE ENTRANCE RACEWAYS AND CONNECTIONS TO THE CONTRACTOR'S SERVICE ENTRANCE CONDUCTORS IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

59. TELECOMMUNICATIONS AND DATA CABLES WILL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.

60. PROVIDE TELEPHONE, CABLE TELEVISION, FIBER AND DATA SERVICE ENTRANCE CONDUIT IN SIZES AND LOCATIONS AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY THE OWNER AND THE SERVICE UTILITIES. CABLE TELEVISION UTILITY SERVICE ENTRANCE CABLES WILL BE PROVIDED AND INSTALLED BY THE OWNER'S SERVICE UTILITIES. LEAVE PULL WIRES OR ROPES OF ADEQUATE TENSILE STRENGTH IN ALL EMPTY CONDUITS.

61. EXACT SPACING OF SMOKE AND HEAT DETECTORS AND A/V DEVICES SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE WITH POSITIONS SHOWN ON THE DRAWINGS. DETECTOR SPACING IS BASED UPON NFPA 72 INCLUDING APPENDIX A. SLIGHT ADJUSTMENTS MAY BE MADE IN SPACING IF REQUIRED BY FIELD CONDITIONS, BUT SPACING SHALL NOT EXCEED ADA, NFPA AND EQUIPMENT MANUFACTURERS SPACING CRITERIA. DO NOT INSTALL SMOKE DETECTORS WITHIN 3 FEET OF SUPPLY AIR DIFFUSERS OR RETURN GRILLES. PROVIDE FLEX CONDUIT CONNECTION TO SMOKE AND HEAT DETECTORS OF ADEQUATE LENGTH TO ALLOW HORIZONTAL ADJUSTMENT OF FOUR FEET FROM POSITION INDICATED ON DRAWINGS.

62. SHOP DRAWINGS MUST BE SUBMITTED BY THE FIRE ALARM CONTRACTOR COMPLYING WITH THE FIRE ALARM PLAN REVIEW REQUIREMENTS POLICY - JANUARY 2006 BEFORE PERMITTING BY THE WILMINGTON FIRE DEPARTMENT. THESE DRAWINGS DO NOT CONSTITUTE APPROVAL AND MAY CHANGE AFTER A FULL REVIEW BY THE WILMINGTON FIRE DEPARTMENT. A SEPARATE PERMIT MUST BE OBTAINED PRIOR TO INSTALLATION.

63. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR FIRE ALARM WORK ON THIS PROJECT. THIS INCLUDES BUT NOT LIMITED TO DE-PROGRAMMING REMOVED DEVICES, PUTTING SYSTEM ON TEST, PROTECTING EXISTING DEVICES DURING CONSTRUCTION, ETC. EC SHALL INCLUDE IN BID THE COST FOR THE SCHOOL'S FIRE ALARM VENDOR TO PERFORM THIS WORK. THE CURRENT NHCS FIRE ALARM VENDOR IS KELLER'S INC. THE EC SHALL BE RESPONSIBLE FOR PAYING FOR ANY FALSE ALARMS CAUSED BY THE CONSTRUCTION FOR THIS PROJECT.

64. INSTALLATION INFORMATION PACKED WITH LIGHTING FIXTURES, DEVICES AND EQUIPMENT SHALL BE RETAINED FOR INCLUSION IN THE OPERATIONS AND MAINTENANCE MANUALS.

65. SAFETY: COMPLY WITH OSHA AND NEC ARC FLASH PROTECTION REQUIREMENTS.

66. ALL SWITCHES, RECEPTACLE AND LIGHTS SHALL COMPLY WITH ANSI 117.2 FOR ADA REQUIREMENTS.

67. FOOD SERVICE EQUIPMENT ELECTRICAL NOTES

A. THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL ELECTRICAL CONNECTIONS TO ALL FOOD SERVICE AND RELATED KITCHEN EQUIPMENT.

B. THE CIRCLE SYMBOL WITH NUMBER IDENTIFIES FOOD SERVICE EQUIPMENT AS IT IS SHOWN ON THE FOOD SERVICE EQUIPMENT DRAWINGS. SEE FOOD SERVICE EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION.

C. SEE FOOD SERVICE EQUIPMENT DRAWINGS FOR EXACT EQUIPMENT LOCATIONS, DIMENSIONS, CONNECTION TYPE, POWER AND CIRCUIT REQUIREMENTS, CIRCUIT BREAKER SIZE. WIRING DEVICE TYPE, RATING AND CONFIGURATION AND ROUGH-IN LOCATIONS AND PROVIDE SUITABLE ELECTRICAL EQUIPMENT, DEVICES, CONNECTIONS, CIRCUITS AS REQUIRED BY THE FOOD SERVICE EQUIPMENT DRAWINGS.

D. THE ELECTRICAL CONTRACTOR SHALL VERIFY ROUGH-IN REQUIREMENTS, LOCATIONS, MOUNTING HEIGHTS, ORIENTATION, VOLTAGE, PHASE, AMPS, HP, KW, ETC. FOR ALL FOOD SERVICE EQUIPMENT PRIOR TO ROUGH-IN.

E. PROVIDE LOCAL DISCONNECTING MEANS FOR EQUIPMENT AS REQUIRED BY CODES AND THE AHJ.

F. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL DISCONNECT SWITCHES, INTERLOCKS, CONDUIT, WIRING AND INSTALLATION AS SPECIFICALLY OUTLINED ON THE FOOD SERVICE EQUIPMENT DRAWINGS.

G. FINAL CONNECTION TO HARD WIRED FOOD SERVICE EQUIPMENT SHALL BE MADE WITH LIQUIDTIGHT FLEXIBLE CONDUIT.

H. COORDINATE ALL CONNECTIONS TO EQUIPMENT WITH THE FOOD SERVICE EQUIPMENT CONTRACTOR.

I. ENERGIZE EQUIPMENT ONLY AFTER OBTAINING PERMISSION FROM THE CONTRACTOR PROVIDING THE EQUIPMENT.

J. ALL CONVENIENCE OUTLETS IN THE KITCHEN SHALL BE INSTALLED HORIZONTALLY AND RATED 20 AMPS UNLESS NOTED OTHERWISE OR REQUIRED BY EQUIPMENT. ALL 125 VOLT RECEPTACLES MOUNTED IN THE KITCHEN SHALL BE GFCI TYPE. RECEPTACLES SHALL BE OF STANDARD NEMA CONFIGURATIONS.

K. ALL RACEWAYS SHALL BE CONCEALED IN WALLS WHERE POSSIBLE, OTHERWISE, STUB UP THROUGH FLOOR AT EQUIPMENT APPROX. 6" ABOVE FLOOR TO CLEAR EQUIPMENT BASES.

L. THE EXHAUST HOOD WILL BE FURNISHED PREWIRED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR WITH LIGHT FIXTURES AND SWITCHES/CONTROLS FOR LIGHTS AND FANS. THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO THE ELECTRICAL TERMINAL BOX PROVIDED WITH THE HOOD AND MAKE CONNECTIONS FROM THE TERMINAL BOX TO THE EXHAUST AND MAKE UP AIR FANS AS SHOWN.

M. FURNISH SHUNT TRIP CIRCUIT BREAKERS FOR ELECTRICAL FOOD SERVICE EQUIPMENT INSTALLED UNDER THE EXHAUST HOOD. CONNECT TO DE-ENERGIZE THESE UNITS UPON ACTIVATION OF THE EXHAUST HOOD FIRE SUPPRESSION SYSTEM. COORDINATE CONNECTIONS WITH THE FOOD SERVICE EQUIPMENT CONTRACTOR.

N. THE DISH MACHINE WILL BE FURNISHED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR PREWIRED TO AN INTEGRAL CONTROL PANEL READY FOR FINAL CONNECTION BY THE ELECTRICAL CONTRACTOR.

O. PROVIDE SEAL-OFF FITTINGS FOR ALL CONDUITS ENTERING OR LEAVING REFRIGERATED WALK-IN BOXES.

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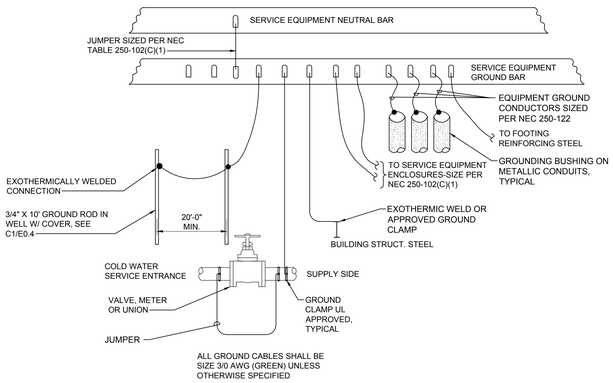
REV.	DATE	DESCRIPTION
1	12-06-21	ADDENDUM #1

NO.	DATE	ISSUE NOTE

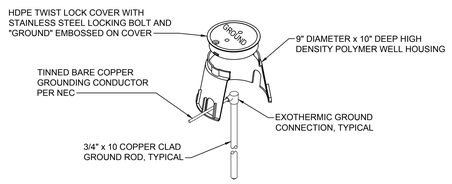
Project Manager	Drawn By: WPJ
Date: 11.09.2021	Reviewed By: JPF
Project ID: CBHF: 20187	

Sheet Title: ELECTRICAL GENERAL NOTES

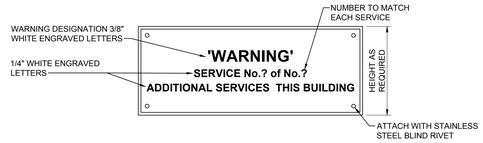
Sheet No.: E0.3



B1 SERVICE GROUNDING DETAIL
NOT TO SCALE

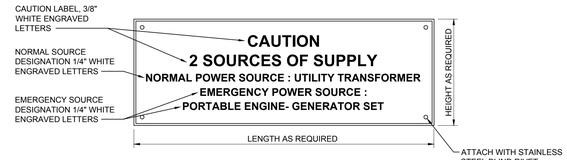


C1 GROUNDING INSPECTION WELL DETAIL
NOT TO SCALE



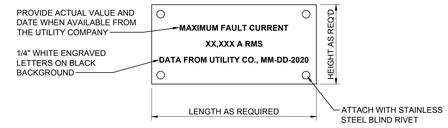
NOTE:
PROVIDE A WARNING SIGN AT EACH SERVICE ENTRANCE THAT INDICATES AN ADDITIONAL SERVICE AT INDICATED LOCATION. THE SIGNS SHALL BE 1/2" WIDER THAN TEXT WIDTH AND HEIGHT (RED FACE). LETTERS ARE TO BE WHITE WITH SIZES AS INDICATED. LABEL PER NEC 230.2(E)

A3 WARNING LABEL DETAIL (TYPICAL EACH SERVICE)
NOT TO SCALE

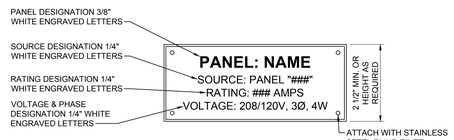


NOTE: SEE SPECS. SECTION 260553 FOR NAMEPLATE MATERIAL AND ENGRAVING COLORS.

A4 CAUTION NAMEPLATE DETAIL
NOT TO SCALE

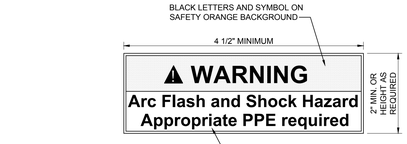


A5 FAULT CURRENT NAMEPLATE DETAIL
NOT TO SCALE



NOTE: SEE SPECS. SECTION 260553 FOR NAMEPLATE MATERIAL AND ENGRAVING COLORS.

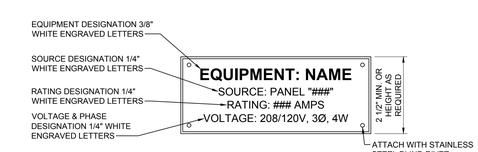
B2 TYPICAL PANELBOARD NAMEPLATE DETAIL
NOT TO SCALE



NOTES:
1. LABEL SHOWN CAN BE SOURCED FROM SAFETYSIGN.COM, OTHER SUPPLIERS ARE COMPLIANTSIGNS.COM & SETON.COM

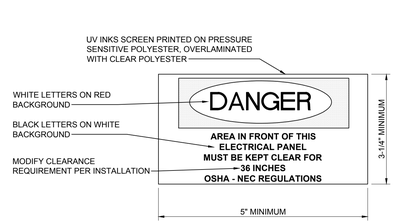
2. THIS WARNING LABEL MINIMALLY COMPLIES WITH NEC, HOWEVER IF ELECTRICAL EQUIPMENT IS LIKELY TO REQUIRE EXAMINATION OR MAINTENANCE WHILE ENERGIZED A DETAILED SHORT CIRCUIT AND ARC FLASH HAZARD ANALYSIS IS RECOMMENDED.

B4 ELECTRICAL EQUIPMENT WARNING LABEL DETAIL
NOT TO SCALE



NOTE: SEE SPECS. SECTION 260XXX FOR NAMEPLATE MATERIAL AND ENGRAVING COLORS.

B5 TYPICAL EQUIPMENT NAMEPLATE DETAIL
NOT TO SCALE



C5 NEC WORKING SPACE LABEL DETAIL
NOT TO SCALE

AVAILABLE FAULT CURRENT

AT PANEL MTS: 28,939 AMPS
AT PANEL MDP: 13,715 AMPS
AT PANEL MDPE SECT 1: 28,070 AMPS
AT PANEL MDPE SET 2: 28,070 AMPS
AT PANEL MDPE SECT 3: 28,070 AMPS
AT PANEL P1: 4,628 AMPS
AT PANEL P2: 5,951 AMPS
AT PANEL PE1: 7,853 AMPS
AT PANEL PE2: 5,542 AMPS
AT PANEL PE3: 4,774 AMPS
AT PANEL K: 10,027 AMPS
AT PORTABLE E-G CONNECTION PANEL: 17,929 AMPS

NOTE:
1. SHORT CIRCUIT CALCULATION COMPLETED ON 11/09/2021. BASED ON A 500 KVA PAD MOUNTED TRANSFORMER @ 2.8% IMPEDANCE, AND 4.8 X/R. WITH 143 FEET OF SERVICE ENTRANCE CONDUCTOR. VERIFY ACTUAL PARAMETERS WITH UTILITY COMPANY PRIOR TO INSTALLATION

2. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH MAX. AVAILABLE FAULT CURRENT, INCLUDING THE DATE THE FAULT CURRENT CALCULATIONS WERE PERFORMED, PER NEC 110.24

PANEL "MTS" KIRK KEY OPERATION

PANELBOARD MTS - 1200A COPPER BUS, 3 PHASE, 4 WIRE, 120/208V WITH 100% COPPER NEUTRAL AND EQUIPMENT GROUND BUSES, NEMA-3R ENCLOSURE, 65,000 AIC PANELBOARD RATING AND 3 CIRCUIT BREAKERS:
CB#1: MAIN (UTILITY) CIRCUIT BREAKER, 1200A, 3 POLE, LSIG ELECTRONIC TRIP
CB#2: BRANCH (PORTABLE GENERATOR FEEDER) CIRCUIT BREAKER, 1200A, 3 POLE, LSI ELECTRONIC TRIP
CB#3: BRANCH (PANEL MDPE FEEDER) CIRCUIT BREAKER, 1200A, 3 POLE, THERMAL MAGNETIC TRIP

PANELBOARD WILL FUNCTION AS A MAIN SERVICE CIRCUIT BREAKER AND A MANUAL TRANSFER SWITCH TO POWER PANEL MDPE FROM THE PORTABLE GENERATOR VIA A REMOTE GENERATOR CONNECTION BOX WITH CAM LOCK CONNECTIONS.

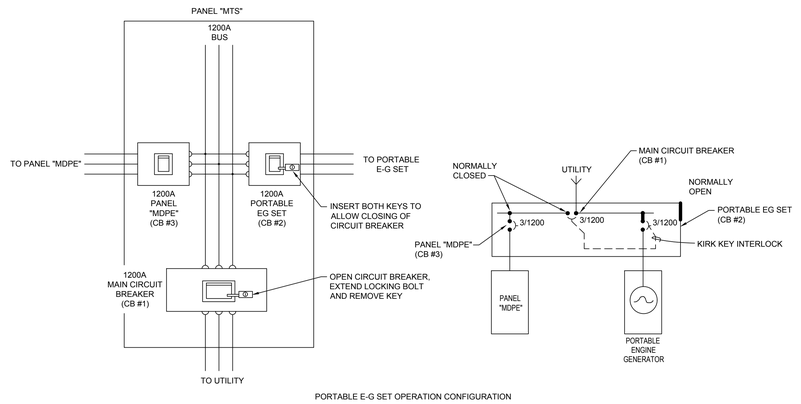
PROVIDE KIRK KEY MECHANICAL INTERLOCKS FOR CIRCUIT BREAKERS CB#1 AND CB#2.

KEY INTERLOCK SCHEME TO TRANSFER TO PORTABLE GENERATOR SOURCE POWER FOR PANEL MDPE:
1) OPEN CB#1 (UTILITY MCB), ROTATE KIRK KEY TO LOCK THE BREAKER HANDLE IN THE OPEN POSITION AND REMOVE KEY.
2) OPEN CB#3 (PANEL MDPE FEEDER) CIRCUIT BREAKER,
5) VERIFY THE PANEL BUS IS DE-ENERGIZED,
3) INSERT KEY IN CB#2 (PORTABLE GENERATOR FEEDER) KIRK KEY MECHANICAL INTERLOCK AND ROTATE TO ALLOW THE BREAKER TO BE CLOSED,
6) CLOSE CB#2,
7) CONNECT THE PORTABLE GENERATOR TO THE CONNECTION BOX, START THE PORTABLE GENERATOR AND ALLOW IT TO STABILIZE,
5) VERIFY THE PANEL BUS IS ENERGIZED AT THE PROPER VOLTAGE BETWEEN ALL PHASES AND PHASE TO NEUTRAL,
8) CLOSE CB#3 (PANEL MDPE FEEDER) CIRCUIT BREAKER,
9) PANEL MDPE IS NOW ENERGIZED BY THE PORTABLE GENERATOR AND PANEL MDP IS DE-ENERGIZED.

RETURN TO UTILITY POWER SEQUENCE:
1) OPEN CB#3 (PANEL MDPE FEEDER) CIRCUIT BREAKER,
2) OPEN CB#2 (PORTABLE GENERATOR FEEDER) AND INSERT KEY INTO THE KIRK KEY MECHANICAL INTERLOCK AND LOCK THE BREAKER HANDLE IN THE OPEN POSITION,
3) VERIFY THE PANEL BUS IS DE-ENERGIZED,
4) REMOVE THE KEY FROM CB#2 (PORTABLE GENERATOR FEEDER) MECHANICAL INTERLOCK AND INSERT THE KEY IN CB#1 (UTILITY MCB) MECHANICAL INTERLOCK AND ROTATE THE KEY TO ALLOW THE BREAKER TO BE CLOSED,
5) CLOSE CB#1,
6) PANELS MDP AND MDPE ARE NOW ENERGIZED BY THE UTILITY.
7) SHUT DOWN THE PORTABLE GENERATOR FOLLOWING THE RECOMMENDED COOL DOWN TIME.

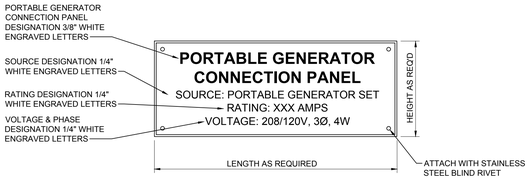
ONLY QUALIFIED PERSONNEL SHOULD PERFORM OPERATIONS. FOLLOW NFPA 70E GUIDELINES AND WEAR PROPER PPE DURING ALL CIRCUIT BREAKER OPERATIONS.

PROVIDE A PERMANENT PLACARD STATING THE ABOVE OPERATING INSTRUCTIONS AND CAUTIONS, BOTH ADDING THE PORTABLE GENERATOR SOURCE AND RETURNING TO UTILITY SOURCE POWER.



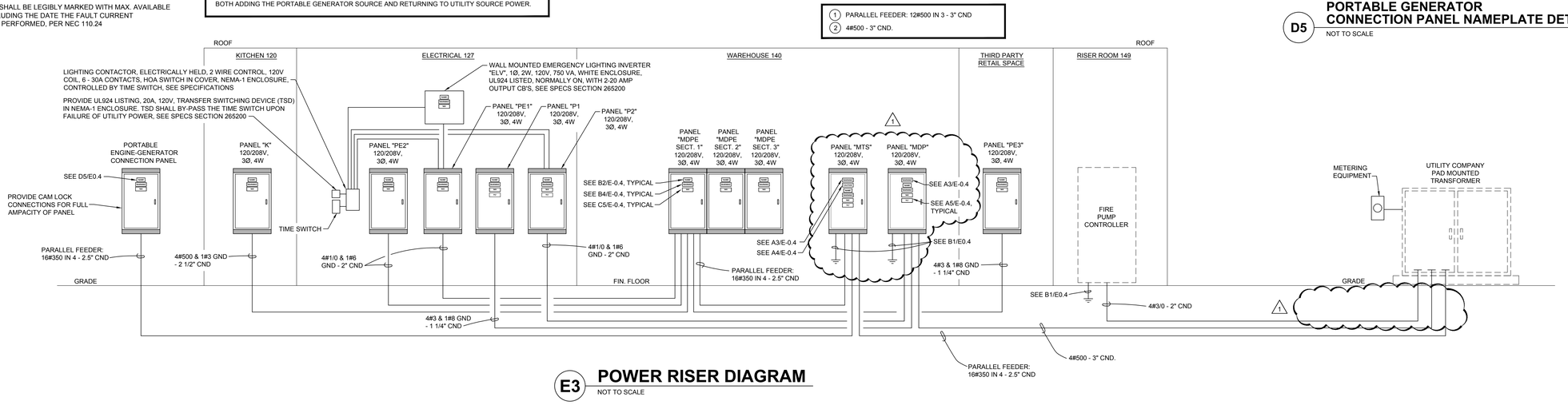
PORTABLE E-G SET OPERATION CONFIGURATION

D3 PANEL "MTS" KIRK KEY DETAIL
NOT TO SCALE



NOTE: SEE SPECS. SECTION 260553 FOR NAMEPLATE MATERIAL AND ENGRAVING COLORS

D5 PORTABLE GENERATOR CONNECTION PANEL NAMEPLATE DETAIL
NOT TO SCALE



E3 POWER RISER DIAGRAM
NOT TO SCALE

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com
NC# P-0506

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514 Market Street
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Tel - (910) 762-2621
Fax - (910) 762-8506

The Wilmington Food Bank
Greenfield Street
Wilmington, North Carolina 28403

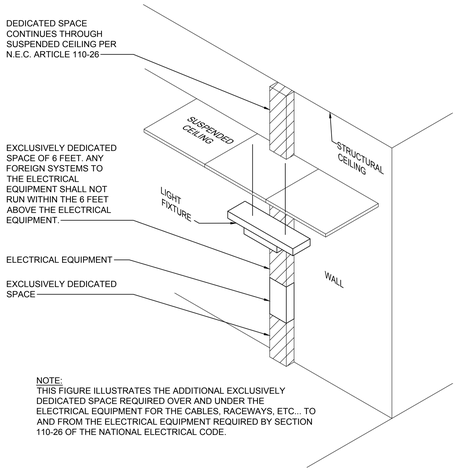
REV.	DATE	DESCRIPTION
1	12-10-21	GENERAL COORD.

NO.	DATE	ISSUE NOTE

Project Manager	Drawn By WPJ
Date 11.09.2021	Reviewed By JPF
Project ID CBHF: 20187	

Sheet Title
ELECTRICAL POWER RISER DIAGRAM AND DETAILS

Sheet No.
E0.4



B1 **DEDICATED SPACE FOR ELECTRICAL**
NOT TO SCALE

TABLE 110.26(A)(1) - WORKING SPACES

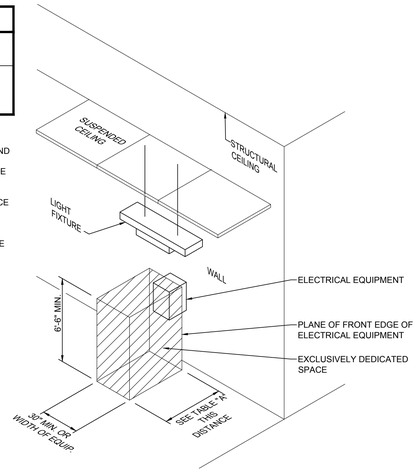
NOMINAL VOLTAGE TO GROUND	MINIMUM CLEAR DISTANCE (FEET)		
	CONDITION 1	CONDITION 2	CONDITION 3
0 - 150	900mm (3 ft)	900mm (3 ft)	900mm (3 ft)
151 - 600	900mm (3 ft)	1.0m (3 ft 6 in.)	1.2 m (4 ft.)
151 - 600	900mm (3 ft)	1.2 m (4 ft.)	1.5 m (5 ft.)

NOTE: WHERE THE "CONDITIONS" ARE AS FOLLOWS:

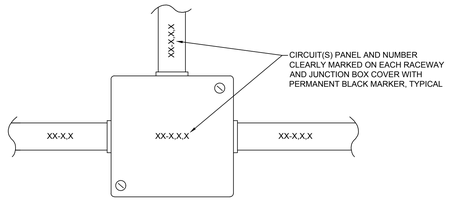
CONDITION 1 - EXPOSED LIVE PARTS ON ONE SIDE OF WORKING SPACE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE THAT ARE EFFECTIVELY GUARDED BY INSULATING MATERIALS.

CONDITION 2 - EXPOSED LIVE PARTS ON ONE SIDE OF THE WORKING SPACE AND GROUNDED PARTS ON THE OTHER SIDE OF WORKING SPACE. CONCRETE BRICK, OR TILE WALLS SHALL BE CONSIDERED GROUNDED.

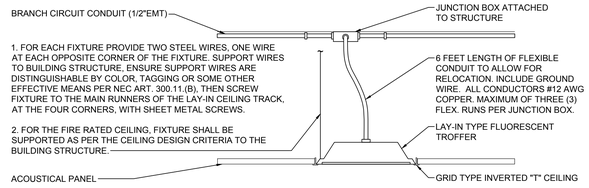
CONDITION 3 - EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE



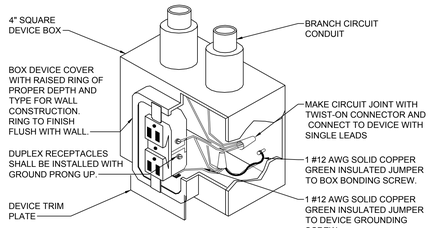
B3 **WORKING CLEARANCE FOR ELECTRICAL**
NOT TO SCALE



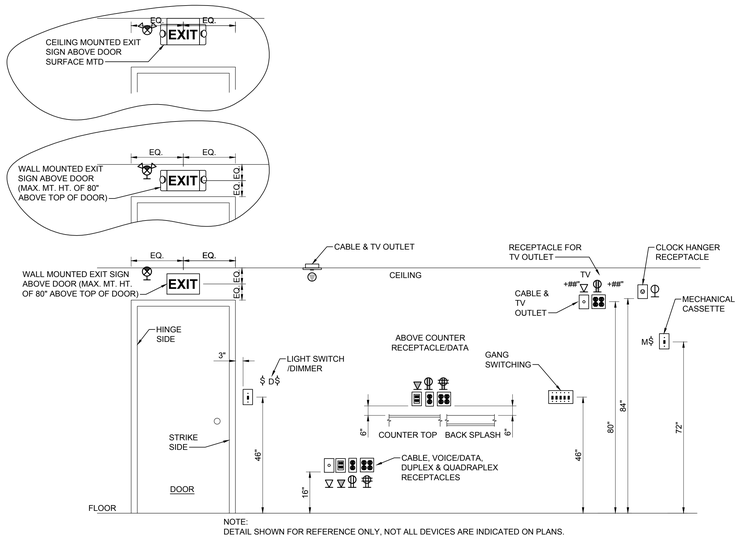
A5 **CIRCUIT IDENTIFICATION DETAIL**
NOT TO SCALE



B5 **LIGHTING FIXTURE MOUNTING DETAIL**
NOT TO SCALE



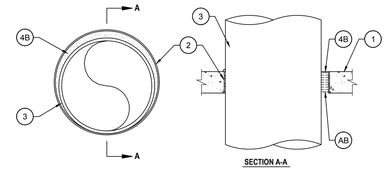
C1 **RECEPTACLE GROUNDING DETAIL**
NOT TO SCALE



E1 **ELECTRICAL DEVICES - MOUNTING HEIGHT DETAIL**
NOT TO SCALE

System No. C-AJ-1226
January 07, 2015

ANSI / UL1479 (ASTM E814)	CAN / ULC S115
F Ratings - 3 Hr	F Ratings - 3 Hr
T Ratings - 0 Hr	FT Ratings - 0 Hr
L Ratings at Ambient - Less Than 1 CFM / sq ft	FH Ratings - 3 HR
L Ratings at 400 F - 4 CFM / sq ft	FTH Ratings - 0 Hr
	L Rating At Ambient - Less Than 1 CFM / sq ft
	L Ratings at 400 F - 4 CFM / sq ft



1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. (114 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 32 IN. (813 MM).
2. METALLIC SLEEVE — (OPTIONAL) NORN 32 IN. (813 MM) DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR ASSEMBLY, FLUSH WITH FLOOR OR WALL SURFACES OR EXTENDING A MAX OF 3 IN. (76 MM) ABOVE FLOOR OR BEYOND BOTH SURFACES OF WALL.

2A. SHEET METAL SLEEVE — (OPTIONAL) MAX 6 IN. (152 MM) DIAM, MIN 26 GA. GALV STEEL PROVIDED WITH A 26 GA GALV STEEL SQUARE FLANGE THE SLEEVE AT APPROX MID-HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. (51 MM) LARGER THAN THE SLEEVE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4 IN. (102 MM) BELOW THE BOTTOM OF THE DECK AND A MAX OF 1 IN. (25 MM) ABOVE SURFACE OF THE CONCRETE FLOOR.

2B. SHEET METAL SLEEVE — (OPTIONAL) - MAX 12 IN. (305 MM) DIAM, MIN 24 GA GALV STEEL PROVIDED WITH A 24 GA GALV STEEL SQUARE FLANGE TO THE SLEEVE AT APPROX MID-HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. (51 MM) LARGER THAN THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4 IN. (102 MM) BELOW THE BOTTOM OF THE DECK AND A MAX OF 1 IN. (25 MM) ABOVESURFACE OF THE CONCRETE FLOOR.

3. THROUGH-PENETRANT — ONE METALLIC PIPE, TUBE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PENETRANT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 1-7/8 IN. (48 MM). PENETRANT WITH CONTINUOUS POINT CONTACT. PENETRANT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND PENETRANTS MAY BE USED:
   A. STEEL PIPE — NORN 30 IN. (762 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE — NORN 30 IN. (762 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   C. COPPER PIPE — NORN 6 IN. (152 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
   D. COPPER TUBING — NORN 6 IN. (152 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   E. CONDUIT - NORN 6 IN. (152 MM) DIAM (OR SMALLER) STEEL CONDUIT.
   F. CONDUIT — NORN 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT

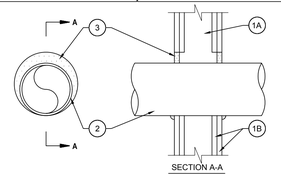
4. FIRESTOP SYSTEM — THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
   A. PACKING MATERIAL — MIN 4 IN. (102 MM) THICKNESS OF MIN 4 PCF (64 KG/M3) MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR SLEEVE OR FROM BOTH SURFACES OF WALL OR SLEEVE AS ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
   B. FILL, VOID OR CAVITY MATERIAL* — SEALANT — MIN 1/4 IN. (6 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP FLOOR OR SLEEVE OR WITH BOTH SURFACES OF WALL OR SLEEVE. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PENETRANT AND CONCRETE A MIN 1/4 IN. (6 MM) DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE OR SLEEVE/ PIPE PENETRANT INTERFACE ON THE TOP SURFACE AND ON BOTH SURFACES OF WALL.

* INDICATES SUCH PRODUCTS SHALL BEAR THE UL OR CUL CERTIFICATION MARK FOR JURISDICTIONS EMPLOYING THE UL OR CUL CERTIFICATION.

E3 **3 HOUR FIREWALL PENETRATION DETAIL**
NOT TO SCALE

System No. W-L-1054
January 21, 2020

ANSI / UL1479 (ASTM E814)	CAN / ULC S115
F Ratings - 1 and 2 Hr (See Items 1 & 3)	F Ratings - 1 and 2 Hr (See Items 1 & 3)
T Ratings - 0 Hr	FT Ratings - 0 Hr
L Ratings at Ambient - Less Than 1 CFM / sq ft	FH Ratings - 1and 2 HR (See Items 1 and 3)
L Ratings at 400 F - Less Than 1 CFM / sq ft	FTH Ratings - 0 Hr
	FTH Ratings - 0 Hr L Rating at Ambient - Less Than 1 CFM / sq ft
	L Ratings at 400 F - Less Than 1 CFM / sq ft



1. WALL ASSEMBLY — THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. FOR M RATING, STEEL STUDS TO BE MIN 3-5/8 IN. (92 MM) WIDE. WHEN STEEL STUDS ARE USED AND THE DIAM OF OPENING EXCEEDS THE WIDTH OF STUD CAVITY, THE OPENING SHALL BE FRAMED ON ALL SIDES USING LENGTHS OF STEEL STUD INSTALLED BETWEEN THE VERTICAL STUDS AND SCREW-ATTACHED TO THE STEEL STUDS AT EACH END. THE FRAMED OPENING IN THE WALL SHALL BE 4 TO 6 IN. (102 TO 152 MM) WIDER AND 4 TO 6 IN. (102 TO 152 MM) HIGHER THAN THE DIAM OF THE PENETRATING ITEM SUCH THAT, WHEN THE PENETRATING ITEM IS INSTALLED IN THE OPENING, A 2 TO 3 IN. (51 TO 76 MM) CLEARANCE IS PRESENT BETWEEN THE PENETRATING ITEM AND THE FRAMING ON ALL FOUR SIDES.
   B. GYPSUM BOARD* — 5/8 IN. (16 MM) THICK, 4 FT (122 CM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 32-1/4 IN. (819 MM) FOR STEEL STUD WALLS. MAX DIAM OF OPENING IS 14-1/2 IN. (368 MM) FOR WOOD STUD WALLS. THE F AND FH RATINGS OF THE FIRESTOP SYSTEM ARE EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY. THE M RATING IS APPLICABLE ONLY TO 1 HR RATED WALLS.
2. THROUGH-PENETRANTS — ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 2-1/4 IN. (57 MM). PIPE MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
   A. STEEL PIPE — NOM 30 IN. (762 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE — NOM 30 IN. (762 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   C. CONDUIT — NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. (152 MM) . DIAM STEEL CONDUIT.
   D. COPPER TUBING — NOM 6 IN. (152 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   E. COPPER PIPE — NOM 6 IN. (152 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. FILL, VOID OR CAVITY MATERIAL* — SEALANT — MIN 5/8 IN. (16 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PIPE AND WALL, A MIN 1/2 IN. (13 MM) DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE WALL INTERFACE ON BOTH SURFACES OF WALL.

Movement Direction	Penetrant Item	Nominal Penetrant Diameter	Annular Space	Movement	Sealant Depth	F-Rating	L Rating with Movement
Y	2A, 2C*	2 in.	Max 2-1/4 in.	5%	5/8 in.	1 hr	N/A
Z	2A, 2C*	2 in.	2-1/4 in.	0.25 in.	5/8 in.	1 hr	N/A

* INDICATES SUCH PRODUCTS SHALL BEAR THE UL OR CUL CERTIFICATION MARK FOR JURISDICTIONS EMPLOYING THE UL OR CUL CERTIFICATION

E5 **1 AND 2 HOUR FIREWALL PENETRATION DETAIL**
NOT TO SCALE

CBHF
Engineers, PLLC
2246 Yaupon Drive
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SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 35230 JOSEPH P. FAMIGLIETTI

The Wilmington Food Bank
Greenfield Street
Wilmington, North Carolina 28403

REV.	DATE	DESCRIPTION

NO.	DATE	ISSUE NOTE

Project Manager	Drawn By
	WPJ
Date	Reviewed By
11.09.2021	JPF
Project ID	CBHF: 20187

Sheet Title
ELECTRICAL DETAILS

Sheet No.
E0.5

PANEL MTS

SERVICE EQUIPMENT LISTED

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: WALL | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: BOTTOM | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
PANEL "MDPE"		3/1200	1				2	3/1200		PORTABLE E-G SET
							TOTAL V. AMPS		1,200	A. BUS (COPPER)
NOTE:							CONN. AMPS		1,200	A. MAIN CIRCUIT BREAKER

**ARC ENERGY REDUCTION REQUIRED AT ALL BREAKERS 1200AMPS OR MORE.

65 KAIC MIN.

PANEL MDP

SERVICE EQUIPMENT LISTED

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: WALL | CHECKED: | XX | NEUTRAL BUS
| FEED: BOTTOM | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
	3,242			6,484					3,242	
LIFT TRUCK CHARGER	3,242	3/35	1		6,484		2	3/35	3,242	LIFT TRUCK CHARGER
	3,242					6,484			3,242	
	3,242			6,484					3,242	
LIFT TRUCK CHARGER	3,242	3/35	3		6,484		4	3/35	3,242	LIFT TRUCK CHARGER
	3,242					6,484			3,242	
SPARE		3/30	5				6	3/20		SPARE
				2,882					2,882	
SPARE		3/30	7		2,882		8	3/35	2,882	RTU01
						2,882			2,882	
	2,306			4,612					2,306	
RTU04	2,306	3/30	9		4,612		10	3/30	2,306	RTU05
	2,306					4,612			2,306	
	2,882			5,764					2,882	
RTU03	2,882	3/40	11		5,764		12	3/40	2,882	RTU02
	2,882					5,764			2,882	
	6,921			16,330					9,409	
PANEL "P1"	8,795	3/150	13		19,313		14	3/150	10,518	PANEL "P2"
	7,018					13,612			6,594	
SPACE		3/100	15				16	3/100		SPACE
NOTE:				42,556	45,539	39,839	TOTAL V. AMPS		400	A. BUS (COPPER)
				355	379	332	CONN. AMPS		400	A. MAIN CIRCUIT BREAKER

42 KAIC MIN.

PANEL MDPE1 - SECT 1

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: TOP | | | GUTTER TAPS
| | | | | | | XX | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
WALK-IN COOLER #1 EVAP. UNIT	408	2/20	1	815			2	2/20	408	WALK-IN COOLER #2 EVAP. UNIT
	408		3		815		4		408	
WALK-IN COOLER #1 EVAP. UNIT	408	2/20	5			815	6	2/20	408	WALK-IN COOLER #2 EVAP. UNIT
	408		7	815			8		408	
WALK-IN FREEZER EVAP. UNIT	3,236	2/50	9		3,413		10	2/20	177	WALK-IN COOLER #1 MOTORIZED DOOR
	3,236		11			3,413	12		177	
WALK-IN FREEZER EVAP. UNIT	3,236	2/50	13	3,413			14	2/20	177	WALK-IN COOLER #2 MOTORIZED DOOR
	3,236		15		3,413		16		177	
WALK-IN FREEZER EVAP. UNIT	3,236	2/50	17			3,413	18	2/20	177	WALK-IN COOLER #2 MOTORIZED DOOR
	3,236		19	3,413			20		177	
SPARE		2/30	21		177		22	2/20	177	WALK-IN FREEZER MOTORIZED DOOR
			23			177	24			
PANEL "PE3"		3/100	25	2,496			26	2/30	2,496	WALK-IN FREEZER MOTOR.DOOR HTR.
			27		2,496		28		2,496	
	8,696		29			17,631	30		8,935	
PANEL "PE2"	12,390	3/150	31	19,753			32	3/150	7,363	PANEL "PE1"
	8,294		33		16,344		34		8,050	
			35			31,458	36		31,458	
SPACE		3/400	37	26,690			38	3/400	26,690	PANEL "K"
			39		29,719		40		29,719	
NOTES:				57,397	56,378	56,909	TOTAL V. AMPS		1,200	A. BUS (COPPER)
				478	470	474	CONN. AMPS		1,200	A. MAIN LUGS

65 KAIC MIN.

PANEL MDPE2 - SECT 2

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: TOP | | | GUTTER TAPS
| | | | | | | XX | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
	3,302		1			4,647	2		1,345	
TRASH COMPACTOR	3,302	3/35	3	4,647			4	3/20	1,345	PV08
	3,302		5		4,647		6		1,345	
	3,242		7			4,587	8		1,345	
LIFT TRUCK CHARGER	3,242	3/35	9	4,587			10	3/20	1,345	PV09
	3,242		11		4,587		12		1,345	
	3,242		13			4,587	14		1,345	
LIFT TRUCK CHARGER	3,242	3/35	15	4,587			16	3/20	1,345	PV10
	3,242		17		4,587		18		1,345	
	4,035		19			5,152	20		1,117	
RTU06	4,035	3/50	21	5,152			22	3/20	1,117	KEF-1
	4,035		23		5,152		24		1,117	
	3,363		25			4,479	26		1,117	
RTU07	3,363	3/50	27	4,479			28	3/20	1,117	KEF-2
	3,363		29		4,479		30		1,117	
	4,035		31			5,152	32		1,117	
RTU08	4,035	3/50	33	5,152			34	3/20	1,117	KEF-3
	4,035		35		5,152		36		1,117	
			37			7,794	38		7,794	
SPARE		3/80	39	7,794			40	3/80	7,794	KMUA1
			42		7,794		42		7,794	
NOTES:				38,062	38,062	37,230	TOTAL V. AMPS		1,200	A. BUS (COPPER)
				317	317	310	CONN. AMPS		1,200	A. MAIN LUGS

65 KAIC MIN.

PANEL MDPE3 - SECT 3

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: TOP | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
	2,027		1	4,496			2		2,469	
COOLER 1 COND. UNIT	2,027	3/35	3		4,496		4	3/40	2,469	FREEZER 1 COND. UNIT
	2,027		5			4,496	6		2,469	
	2,027		7	4,496			8		2,469	
COOLER 1 COND. UNIT	2,027	3/35	9		4,496		10	3/40	2,469	FREEZER 1 COND. UNIT
	2,027		11			4,496	12		2,469	
	2,027		13	4,496			14		2,469	
COOLER 2 COND. UNIT	2,027	3/35	15		4,496		16	3/40	2,469	FREEZER 1 COND. UNIT
	2,027		17			4,496	18		2,469	
	2,027		19	2,027			20			
COOLER 2 COND. UNIT	2,027	3/35	21		2,027		22	3/		SPACE
	2,027		23			2,027	24			
			25				26			
SPACE		3/	27				28	3/		SPACE
			29				30			
			31				32			
SPACE		3/	33				34	3/		SPACE
			35				36			
			37				38			
SPACE		3/	39				40	3/		SPACE
			41				42			
NOTES:				15,516	15,516	15,516	TOTAL V. AMPS		1,200	A. BUS (COPPER)
				129	129	129	CONN. AMPS		1,200	A. MAIN LUGS

65 KAIC MIN.

PANEL P1

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: TOP | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
RECEPTACLES 140	1,080	1/20	1	2,080			2	1/20	1,000	REFRIGERATOR 128
SPARE		1/20	3		1,500		4	1/20	1,500	MICROWAVE 128
SPARE		1/20	5			1,000	6	1/20	1,000	RECEPTACLE 128
SPARE		1/20	7	1,000			8	1/20	1,000	VENDING MACHINE 128 (NOTE 1)
SPARE		1/20	9		1,000		10	1/20	1,000	VENDING MACHINE 128 (NOTE 1)
SPARE		1/20	11			1,000	12	1/20	1,000	VENDING 135 (NOTE 1)
SPARE		1/20	13	1,000			14	1/20	1,000	VENDING 135 (NOTE 1)
SPARE		1/20	15		1,000		16	1/20	1,000	VENDING 135 (NOTE 1)
SPARE		1/20	17			900	18	1/20	900	RECEPTACLES ON ROOF
SPARE		1/20	19	1,260			20	1/20	1,260	RECEPTACLES ON ROOF
SPARE		1/20	21		1,260		22	1/20	1,260	EXTERIOR RECEPTACLES
SPARE		1/20	23				24	1/20		SPARE
SPARE		1/20	25				26	1/20		SPARE
DHP02	832	2/15	27		832		28	1/20		SPARE
	832		29			832	30	1/20		SPARE
DHP03	749	2/15	31	749			32	1/20		SPARE
	749		33		749		34	1/20		SPARE
DHP04	832	2/15	35			832	36	1/20		SPARE
	832		37	832			38	1/20		SPARE
DHP01	2,454	2/40	39		2,454		40	2/40		SPARE
	2,454		41			2,454	42			SPARE
NOTES:				6,921	8,795	7,018	TOTAL V. AMPS		100	A. BUS (COPPER)
1. GFCI CIRCUIT BREAKER				58	73	59	CONN. AMPS		100	A. MAIN LUGS

10 KAIC MIN.

PANEL P2

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: TOP | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
LIGHTING 101,102,104-108, 110-113	983	1/20	1	2,063			2	1/20	1,080	RECEPTACLES 112,113
LIGHTING 103	978	1/20	3		1,978		4	1/20	1,000	RECEPTACLE 110
LIGHTING 123,125,126,128,131-134,143,145	794	1/20	5			1,794	6	1/20	1,000	RECEPTACLE 110
EXTERIOR LIGHTING THRU TS	386	1/20	7	1,386			8	1/20	1,000	RECEPTACLE 110
EXTER. BUILDING SIGNAGE THRU TS	1,800	1/20	9		2,880		10	1/20	1,080	RECEPTACLES 108,111
RECEPTACLES 101,102109,125	1,260	1/20	11			2,340	12	1/20	1,080	RECEPTACLES 106,107
RECEPTACLES 103	720	1/20	13	2,340			14	1/20	1,620	RECEPTACLES 104,105
RECEPTACLES 103	540	1/20	15		1,080		16	1/20	540	RECEPTACLES 109,114
FIRE ALARM CONTROL UNIT (NOTE 1)	200	1/20	17			700	18	1/20	500	MOTORIZED PROJECTION SCREEN 115
RECEPTACLES 135	1,080	1/20	19	1,280			20	1/20	200	PROJECTOR 115
SPARE		1/20	21		500		22	1/20	500	MOTORIZED PROJ. PLATFORM 115
SPARE		1/20	23			360	24	1/20	360	RECEPTACLES 117,118
SPARE		1/20	25	1,620			26	1/20	1,620	RECEPTACLES 143,144,145
SPARE		1/20	27		1,920		28	1/20	1,920	IRRIGATION CONTROLLER AND PUMP
SPARE		1/20	29			500	30	1/20	500	EWC 135 (NOTE 2)
SPARE		1/20	31	360			32	1/20	360	RECEPTACLES 134
SPARE		1/20	33		540		34	1/20	540	RECEPTCLES 135
SPARE		1/20	35			540	36	1/20	540	RECEPTACLES 128
SPARE		1/20	37	360			38	1/20	360	RECEPTACLES 138,139
SPARE		1/20	39		1,620		40	1/20	1,620	RECEPTACLES 131,132,133
SPARE		1/20	41			360	42	1/20	360	RECEPTACLES 123,129
NOTES:				9,409	10,518	6,594	TOTAL V. AMPS		225	A. BUS (COPPER)
				78	88	55	CONN. AMPS		150	A. MAIN LUGS

1 PROVIDE CIRCUIT BREAKER LOCKING DEVICE FOR FACU ALONG WITH IDENTIFYING CIRCUIT BREAKER IN ACCORDANCE WITH NEC 760.41
2 GFI CIRCUIT BREAKER

22 KAIC MIN.

PANEL K

TYPE: NEMA 4X | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: FLUSH | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: TOP | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
INSUL. HOT HOLD CAB. (17) - NOTE 3	1,560	1/20	1	3,360			2	1/20	1,800	36" RANGE (1) - NOTE 1
INSUL. HOT HOLD CAB. (17) - NOTE 3	1,560	1/20	3		1,560		4			SPACE FOR SHUNT TRIP FEATURE
INSUL. HOT HOLD CAB. (17) - NOTE 3	1,560	1/20	5			3,360	6	1/20	1,800	36" RANGE (1) - NOTE 1
TRAY SEALING SYSTEM (21) - NOTE 3	720	1/20	7	720			8			SPACE FOR SHUNT TRIP FEATURE
TRAY SEALING SYSTEM (21) - NOTE 3	720	1/20	9		1,440		10	1/20	720	DOUBLE GAS OVEN (4) - NOTE 1
2 DOOR FREEZER (22) - NOTE 3	1,320	1/20	11			1,320	12			SPACE FOR SHUNT TRIP FEATURE
2 DOOR REFRIGERATOR (23) - NOTE 3	648	1/20	13	2,448			14	1/20	1,800	CONVECTION OVEN (5) - NOTE 1
GAS SHUTOFF VALVE	200	1/20	15		200		16			SPACE FOR SHUNT TRIP FEATURE
HOOD TEMP. SENSORS	200	1/20	17			1,400	18	1/20	1,200	TILTING STEAM KETTLE (6) - NOTE 1
HOOD CONTROLS/LIGHTS	1,800	1/15	19	1,800			20			SPACE FOR SHUNT TRIP FEATURE
HOOD EXTINGUISHING SYSTEM	200	1/20	21		800		22	1/20	600	TILTING SKILLET (8) - NOTE 1
SPARE		1/20	23				24			SPACE FOR SHUNT TRIP FEATURE
SPARE		1/20	25	100			26	1/20	100	WALK-IN COOLER DOOR HEATER/LTS
SPARE		1/20	27		200		28	1/20	200	WALK-IN FREEZER DOOR HEATER/LTS
SPARE		1/20	29			192	30	1/20	192	WALK-IN COOLER EVAP UNIT (20)
SPARE		1/15	31	540			32	1/20	540	RECEPTACLES 120
SPARE		1/20	33				34	1/20		SPARE
SPARE		1/20	35				36	1/20		SPARE
QUICKTHERM OVEN (18) - NOTE 3	5,200	2/50	37	6,323			38	2/20	1,123	WALK-IN FREEZER EVAP. UNIT (20)
	5,200		39		6,323		40		1,123	
QUICKTHERM OVEN (18) - NOTE 3	5,200	2/50	41			7,280	42	2/30	2,080	WALK-IN COOLER COND. UNIT(19)
	5,200		43	7,280			44		2,080	
QUICKTHERM OVEN (18) - NOTE 3	5,200	2/50	45		7,280		46	2/30	2,080	WALK-IN FREEZER COND. UNIT (20)
	5,200		47			7,280	48		2,080	
			49	8,887			50		8,887	
SPACE		3/100	51		8,887		52	3/100	8,887	CONVEYOR RACK MACHINE (9)
			53			8,887	54		8,887	NOTE 3
NOTES:				31,458	26,690	29,719	TOTAL V. AMPS		400	A. BUS (COPPER)
				262	222	248	CONN. AMPS		350	A. MAIN LUGS

1 PROVIDE SHUNT TRIP CIRCUIT BREAKER.
2. HVAC AND REFRIG. EQUIPMENT SHALL USE HACR BREAKERS.
3. GFI CIRCUIT BREAKER.
4. CONFIRM CIRCUIT BREAKER REQUIREMENTS WITH EQUIPMENT VENDOR

22 KAIC MIN.

PANEL PE1

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: BOTTOM | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
LIGHTING 135,136	1,260	1/20	1	2,160			2	1/20	900	RECEPTACLES 115
LIGHTING 109,114,123,127,129,138,139	1,286	1/20	3		2,366		4	1/20	1,080	RECEPTACLES 115
LIGHTING 120,121,122	1,693	1/20	5			2,413	6	1/20	720	FLOORBOXES 115
LIGHTING 115, 117,118,119	1,151	1/20	7	2,151			8	1/20	1,000	RECEPTACLE 103
LIGHTING 140	325	1/20	9		1,325		10	1/20	1,000	RECEPTACLE 103
LIGHTING 140	1,561	1/20	11			2,561	12	1/20	1,000	RECEPTACLE 103
LIGHTING 140	1,044	1/20	13	2,044			14	1/20	1,000	RECEPTACLE 103
LIGHTING 140	522	1/20	15		1,522		16	1/20	1,000	RECEPTACLE 103
EXTER. LIGHTING THRU ELV AND TS	456	1/20	17			1,456	18	1/20	1,000	RECEPTACLE 103
EXTERIOR LIGHTING THRU TS	480	1/20	19	1,480			20	1/20	1,000	RECEPTACLE 103
SPARE		1/20	21		1,000		22	1/20	1,000	RECEPTACLE 103
SPARE		1/20	23			720	24	1/20	720	TELECOM BACKBOARD 127
SPARE		1/20	25	200			26	1/20	200	GWH1, GWH2 126
SPARE		1/20	27		250		28	1/20	250	CP1, CP2
SPARE		1/20	29			900	30	1/20	900	RECEPTACLES 136
SPARE		1/20	31	900			32	1/20	900	RECEPTACLES 136
SPARE		1/20	33		900		34	1/20	900	RECEPTACLES 136
SPARE		1/20	35			720	36	1/20	720	SECURITY EQUIPMENT
SPARE		1/20	37				38	1/20		SPARE
SPARE		1/20	39				40	1/20		SPARE
SPARE		1/20	41				42	1/20		SPARE
NOTES:				8,935	7,363	8,770	TOTAL V. AMPS		225	A. BUS (COPPER)
				74	61	73	CONN. AMPS		150	A. MAIN LUGS

1 PROVIDE CIRCUIT BREAKER LOCKING DEVICE FOR FACU ALONG WITH IDENTIFYING CIRCUIT BREAKER IN ACCORDANCE WITH NEC 760.41
2. PROVIDE GFI BREAKER (HEAT TRACE)

22 KAIC MIN.

PANEL PE2

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: BOTTOM | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
GUH01,02,03,04	1,776	1/20	1	2,616			2	1/20	840	WALK-IN FREEZER DOOR HEATERS
GUH05,06,07	1,332	1/20	3		2,292		4	1/20	960	WALK-IN FREEZER DRAIN HEATER
LOUVER L1,L2,L3	300	1/20	5			500	6	1/20	200	WALK-IN FREEZER LIGHTS
SPARE		1/20	7	200			8	1/20	200	WALK-IN COOLER #1 AND #2 LIGHTS
OVERHEAD DOOR 140	1,176	1/20	9		2,856		10	1/20	1,680	WALK-IN COOLER #1 AND #2 DOOR HTR
OVERHEAD DOOR 140	1,176	1/20	11			2,352	12	1/20	1,176	GATE CONTROLLER
OVERHEAD DOOR 140	1,176	1/20	13	2,352			14	1/20	1,176	GATE CONTROLELR
OVERHEAD DOOR 140	1,176	1/20	15		2,976		16	1/20	1,800	SPRINKLER HOT BOX HEATER
OVERHEAD DOOR 140	1,176	1/20	17			1,536	18	1/20	360	SECURITY SYSTEM RACK
OVERHEAD DOOR 140	1,176	1/20	19	1,176			20	1/20		SPARE
OVERHEAD DOOR 140	1,176	1/20	21		1,176		22	1/20		SPARE
DOCK LEVELER 140	1,176	1/20	23			1,176	24	1/20		SPARE
DOCK LEVELER 140	1,176	1/20	25	1,176			26	1/20		SPARE
DOCK LEVELER 140	1,176	1/20	27		1,176		28	1/20		SPARE
DOCK LEVELER 140	1,176	1/20	29			1,176	30	1/20		SPARE
OVERHEAD DOOR 140	1,176	1/20	31	1,176			32	1/20		SPARE
SPARE		1/20	33				34	1/20		SPARE
SPARE		1/20	35				36	1/20		SPARE
	793		37	793			38	1/20		SPARE
JOCKEY PUMP CONTROLLER	793	3/20	39		2,707		40	2/20	1,914	EUH01 149
	793		41			2,707	42		1,914	
NOTES:				9,489	13,183	9,447	TOTAL V. AMPS		225	A. BUS (COPPER)
				79	110	79	CONN. AMPS		150	A. MAIN LUGS

1 PROVIDE CIRCUIT BREAKER LOCKING DEVICE FOR FACU ALONG WITH IDENTIFYING CIRCUIT BREAKER IN ACCORDANCE WITH NEC 760.41
2. PROVIDE GFI BREAKER (HEAT TRACE)

22 KAIC MIN.

PANEL PE3

TYPE: NEMA 1 | 208 V, | 3 PH, | 4 WIRE | PROVIDE IF | XX | EQUIP. GND BUS
BOLT-ON | MOUNT: SURFACE | CHECKED: | XX | NEUTRAL BUS
DOOR-IN-DOOR, HINGED FRONT COVER | FEED: BOTTOM | | | GUTTER TAPS
| | | | | | | | SUB-FEED LUGS

LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA A	LOAD VA B	LOAD VA C	CKT #	CKT BKR	LOAD VA	LOAD SERVED
SPARE		1/20	1				2	1/20		SPARE
SPARE		1/20	3				4	1/20		SPARE
SPARE		1/20	5				6	1/20		SPARE
SPARE		1/20	7				8	1/20		SPARE
SPARE		1/20	9				10	1/20		SPARE
SPARE		1/20	11				12	1/20		SPARE
SPARE		1/20	13				14	1/20		SPARE
SPARE		1/20	15				16	1/20		SPARE
SPARE		1/20	17				18	1/20		SPARE
SPARE		1/20	19				20	1/20		SPARE
SPARE		1/20	21				22	1/20		SPARE
SPARE		1/20	23				24	1/20		SPARE
SPARE		1/20	25				26	1/20		SPARE
SPARE		1/20	27				28	1/20		SPARE
SPARE		1/20	29				30	1/20		SPARE
NOTES:							TOTAL V. AMPS		100	A. BUS (COPPER)
							CONN. AMPS		100	A. MAIN LUGS

10 KAIC MIN.

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SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 35230 JOSEPH FAMIGLIETTI

The Wilmington Food Bank
Greenfield Street
Wilmington, North Carolina 28403

REV.	DATE	DESCRIPTION
2	12-10-21	SECURITY SYSTEM
1	12-10-21	GENERAL COORD.

NO.	DATE	ISSUE NOTE

Project Manager	Drawn By: WPJ
Date: 11.09.2021	Reviewed By: JPF
Project ID: CBHF: 20187	

Sheet Title: ELECTRICAL PANEL SCHEDULES

Sheet No.: E0.6

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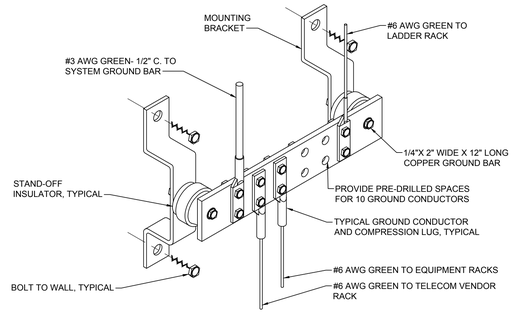
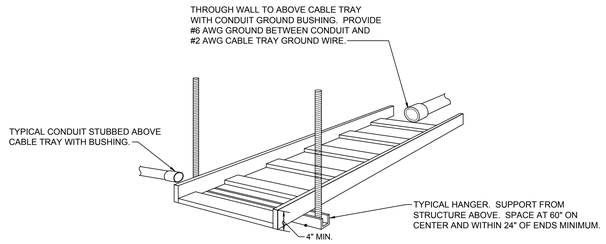
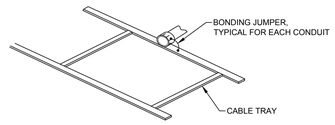


C1 TELECOMMUNICATIONS GROUND BAR DETAIL
NOT TO SCALE

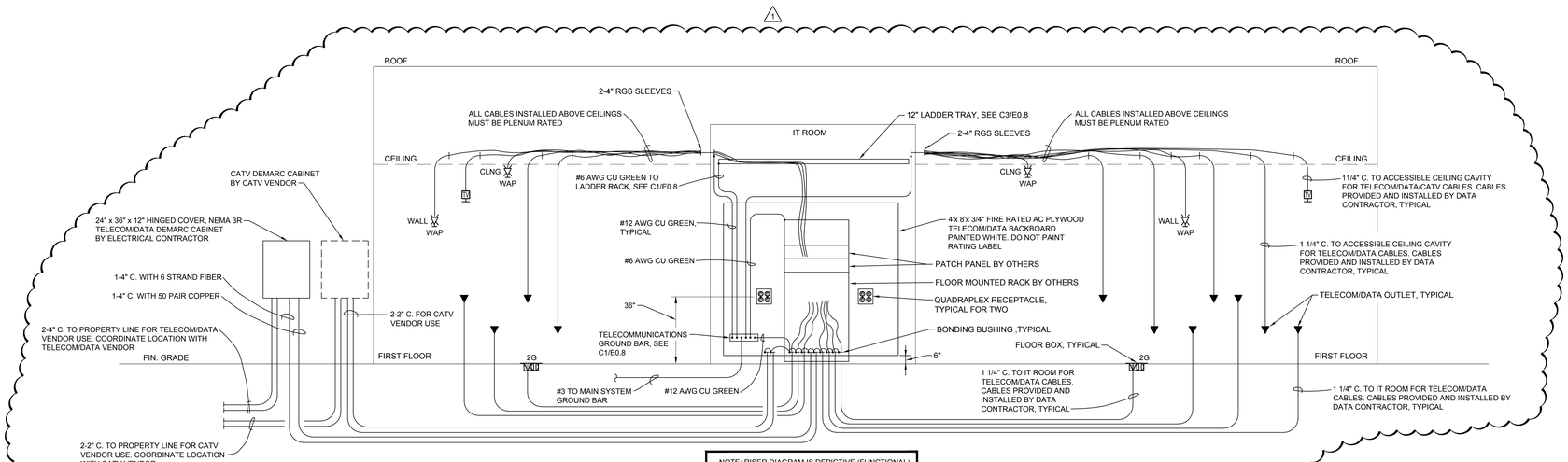


NOTES:
1. CONTRACTOR SHALL PROVIDE PATHWAY FOR ALL LISTED SYSTEMS CABLING. TRAY MUST COMPLY WITH UFC 3-580-1 FOR CABLE TRAY FILL REQUIREMENTS. IN NO CASE MAY THE CABLE TRAY BE LESS THAN THE STATED MINIMUM SIZE.
2. MOUNT CABLE TRAY AT A MINIMUM OF 12" BELOW MECHANICAL DUCT WORK BUT AS HIGH AS POSSIBLE TO AVOID TAMPERING.
3. TYPICAL MOUNTING METHOD.

C3 LADDER AND BASKET TRAY DETAIL
NOT TO SCALE



C5 CONDUIT/TRAY BONDING DETAIL
NOT TO SCALE



NOTE: RISER DIAGRAM IS DEPICTIVE (FUNCTIONAL) ONLY. ALL DEVICES ARE NOT SHOWN

E2 FUNCTIONAL TELECOMMUNICATION / CATV RISER DIAGRAM
NOT TO SCALE

The Wilmington Food Bank
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REV.	DATE	DESCRIPTION
1	12-10-21	TELECOM REVISION

NO.	DATE	ISSUE NOTE

Project Manager	Drawn By WPJ
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Sheet Title
ELECTRICAL TELECOMM. / CATV RISER DIAGRAM AND DETAILS

Sheet No.
E0.8

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TELEVISION, FIELD VERIFY EXACT LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH-IN, TYPICAL

MOTORIZED PROJECTION SCREEN, FIELD VERIFY EXACT LOCATION

PROJECTOR MOUNTED ON MOTORIZED PROJECTOR PLATFORM, FIELD VERIFY EXACT LOCATION AND CONFIGURATION

MOTORIZED PROJECTOR PLATFORM, FIELD VERIFY EXACT LOCATION

PORTABLE ENGINE-GENERATOR CONNECTION PANEL

TELECOM/DATA RACEWAYS IN OFFICE 144 AND 145 SHALL EXTEND TO WAREHOUSE SPACE

MOTORIZED OVERHEAD DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

INTERLOCK LOUVER L3 WITH PV10

MOTORIZED OVERHEAD DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

TELECOM/DATA RACEWAYS IN OFFICE 14 SHALL EXTEND TO WAREHOUSE SPACE

SECURITY SYSTEM RACK

MOUNTED IN CEILING, FIELD VERIFY EXACT LOCATION WITH EQUIPMENT

DOOR HEATER AND LIGHTS (19)

WALK-IN COOLER CONDENSING UNIT SAFETY SWITCH 30/1/4X W/ 25AF

WALK-IN COOLER EVAP

WALK-IN FREEZER CONDENSING UNIT SAFETY SWITCH 30/1/4X W/ 25AF

DOOR HEATER AND LIGHTS (20)

TEMPERATURE SENSOR (TS), FIELD VERIFY EXACT LOCATIONS WITH HOOD VENDOR DRAWINGS, TYPICAL FOR 3

WALK-IN FREEZER EVAP

2#12 & 1#12 GND - 1/2" CND

2#10 & 1#10 GND - 1/2" CND

NUMBER IN HEXAGON REPRESENTS FOOD SERVICE EQUIPMENT NUMBER AS IDENTIFIED IN THE FOOD SERVICE EQUIPMENT SCHEDULE, TYPICAL

HOOD EXTINGUISHING SYSTEM

EXHAUST HOOD CONTROLS/LIGHTS (K-19)

EXHAUST HOOD TEMPERATURE SENSORS

GAS SHUTOFF VALVE, FIELD VERIFY EXACT LOCATION (K-15)

DOOR HEATER

FREEZER LIGHTING FIXTURES, COORDINATE EXACT LOCATIONS WITH FREEZER VENDOR

FREEZER

MDPE1-9,11

WALK-IN FREEZER EVAP. UNIT

2#8 & 1#10 GND - 3/4" CND

MDPE1-1315

WALK-IN FREEZER EVAP. UNIT

MDPE1-17,19

2#8 & 1#10 GND - 3/4" CND

2#8 & 1#10 GND - 3/4" CND

MOTORIZED DOOR HEATER

DRAIN LINE HEATER

DOOR HEATER

2#12 & 1#12 GND - 1/2" CND

MDPE1-26,28

MDPE1-22,24

MOTORIZED DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

COOLER #2 LIGHTING FIXTURES, COORDINATE EXACT LOCATIONS WITH COOLER VENDOR

COOLER #2

2#12 & 1#12 GND - 1/2" CND

DOOR HEATER

MDPE1-18,20

2#12 & 1#12 GND - 1/2" CND

MDPE1-2,4

WALK-IN COOLER #1 EVAP. UNIT

2#12 & 1#12 GND - 1/2" CND

MDPE1-6,8

MOTORIZED DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

2#12 & 1#12 GND - 1/2" CND

MDPE1-14,16

MDPE1-1,3

WALK-IN COOLER #1 EVAP. UNIT

2#12 & 1#12 GND - 1/2" CND

MDPE1-5,7

DOOR HEATER

COOLER #1

COOLER #1 LIGHTING FIXTURES, COORDINATE EXACT LOCATIONS WITH COOLER VENDOR

MOTORIZED DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

PV10 OVERRIDE SWITCH, INSTALL ADJACENT TO PV10 THERMOSTAT, SEE C5/M-5.1

2#12 & 1#12 GND - 1/2" CND

MDPE1-10,12

NOTE: FIELD VERIFY ELECTRICAL CONNECTIONS FOR ALL EQUIPMENT ASSOCIATED WITH THE WAREHOUSE COOLERS AND FREEZER WITH THE REFRIGERATION VENDOR PRIOR TO ROUGH-IN

BUILDING SIGNAGE, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION, SEE 1/A3.0

FLOORBOX WITH ONE DUPLEX RECEPTACLE AND TELECOM/DATA OUTLET

DAH03 FED FROM DHP03

PANEL "PE3"

BUILDING SIGNAGE, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION, SEE 2/A3.0

DEVICES MOUNTED IN MILLWORK, FIELD VERIFY EXACT LOCATION WITH ARCHITECTURAL MILLWORK DETAILS

PV09 OVERRIDE SWITCH, INSTALL ADJACENT TO PV09 THERMOSTAT, SEE C5/M-5.1

BUILDING SIGNAGE, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION, SEE 1/A3.0

VENDING (2)

SEE 2 AND 3/EP1.2

DAH4 FED FROM DHP04

VENDING (3)

BUILDING SIGNAGE, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION, SEE 2/A3.0

MOTORIZED OVERHEAD DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

INTERLOCK LOUVER L2 WITH PV09

PANEL "MDPE SECT 1"

PANEL "MDPE SECT 2"

PANEL "MDPE SECT 3"

PANEL "MTS"

PANEL "MDP"

FIRE PUMP

EUH01

JOCKEY PUMP CONTROLLER

FIRE PUMP CONTROLLER

MAINTAIN NEC CLEARANCE REQUIREMENTS

IRRIGATION PUMP CONTROLLER AND PUMP, FIELD VERIFY EXACT LOCATION

MDPE2-7,9,11

MDPE2 13,15,17

MD1-1

MDP-3

MDP-2

3#8 & 1#10 GND - 3/4" CND., TYPICAL FOR 6 FORK LIFT CHARGERS

MDP-4

FORK LIFT CHARGER, TYPICAL FOR 6 LOCATIONS. FIELD VERIFY EXACT LOCATIONS PRIOR TO ROUGH-IN, COORDINATE DEVICE RATING AND CONFIGURATION WITH OWNER SUPPLIED FOR LIFT CHARGERS

MOTORIZED OVERHEAD DOOR, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

INTERLOCK LOUVER L1 WITH PV08

PV08 OVERRIDE SWITCH, INSTALL ADJACENT TO PV08 THERMOSTAT, SEE C5/M-5.1

AGENCY PICK-UP

INCOMING FOOD TRUCK

DOCK LEVELER DISCONNECT?

OVERHEAD DOOR DISCONNECT?

DOCK LEVELER CONTROL PANEL, FIELD VERIFY EXACT LOCATION AND CONNECTION CONFIGURATION

KEYED NOTES

1	CONNECT POWER VENTILATOR TO OPERATE WITH LIGHTING FIXTURE(S) AND LIGHTING LIGHTING OCCUPANCY SENSOR SERVING THIS SPACE

1 ELECTRICAL POWER FIRST FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

0 4' 8' 16'

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NO.	DATE	ISSUE NOTE

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Sheet Title: ELECTRICAL POWER FIRST FLOOR PLAN

Sheet No.: EP1.1

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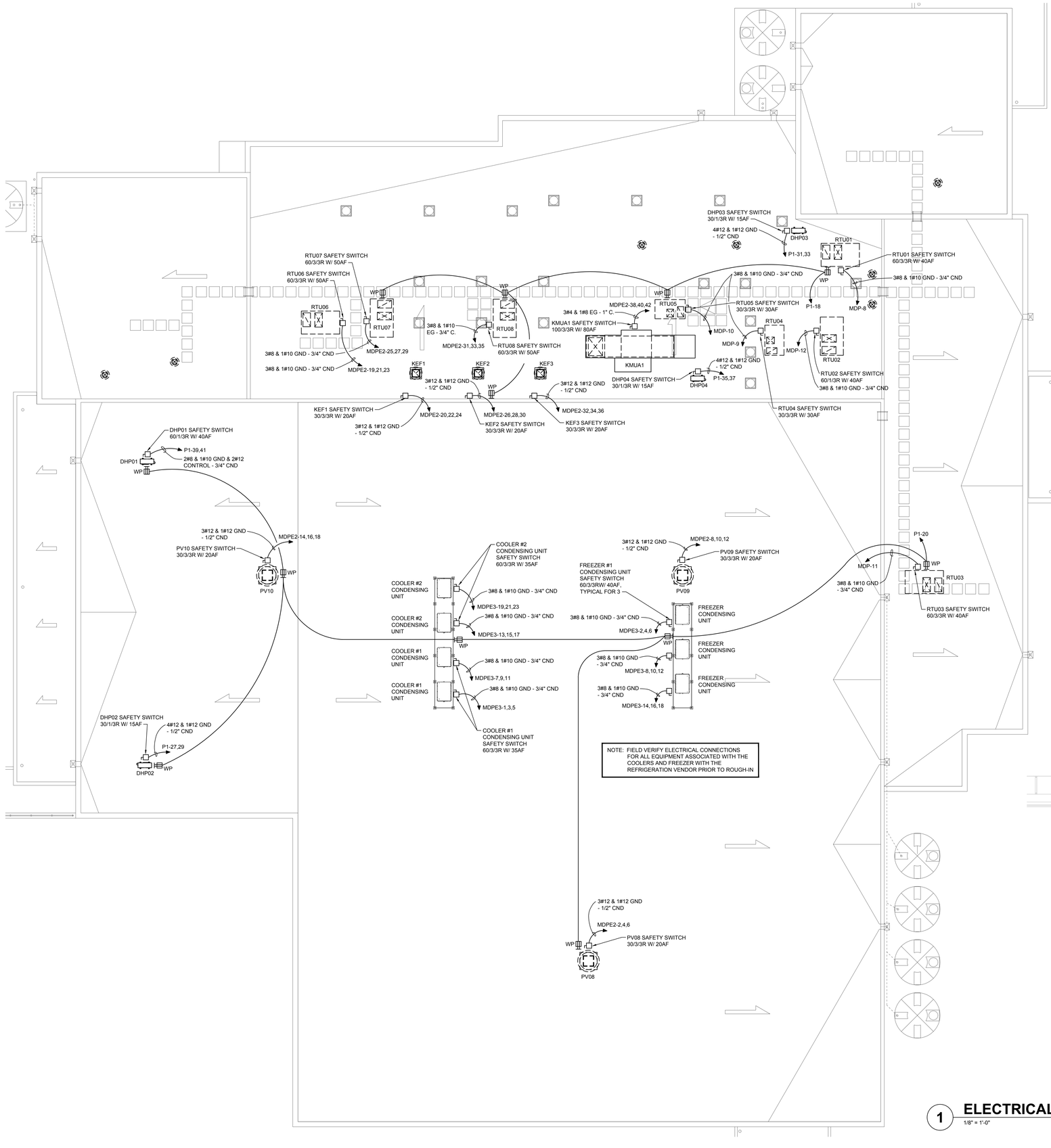
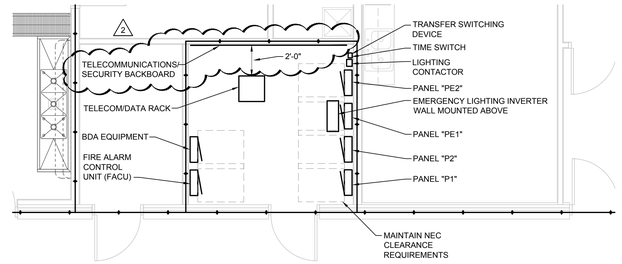
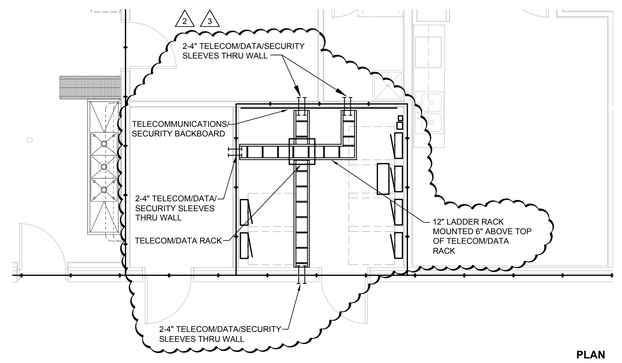


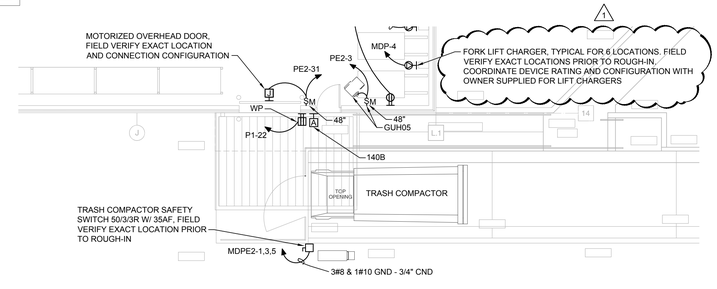
1 ELECTRICAL POWER ROOF PLAN
1/8" = 1'-0"



2 ENLARGED ELECTRICAL ROOM 124B PLAN
1/4" = 1'-0"



3 ENLARGED TELE/.DATA ROOM 124B PLAN
1/4" = 1'-0"



4 PARTIAL ELECTRICAL FIRST FLOOR POWER PLAN
1/4" = 1'-0"

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Project Manager	Drawn By WPJ
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Sheet Title
ELECTRICAL POWER ROOF AND ENLARGED PLANS

Sheet No.
EP1.2

SECTION 260500 - GENERAL ELECTRICAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Instructions to Bidders, General Conditions of the Contract, Supplementary General Conditions and Division 1 bound herewith are a component part of this Division of the specifications and shall apply to this Division with equal force and shall be consulted in detail for instructions pertaining to the work.

B. Furnish all labor, materials and equipment and incidentals required to make ready for use complete electrical systems as shown on the Drawings and specified herein.

C. It is the intent of these Specifications that the electrical systems shall be suitable in every way for the service required. All material and all work which may be reasonably implied as being incidental to the work of this Division shall be furnished at no extra cost.

D. The work shall include, but not be limited to, furnishing, coordinating, and installing the following:
   1. Underground electrical service from pad mounted transformer to service equipment.
   2. Electrical distribution system for power, lighting, receptacles and miscellaneous power as shown on the contract drawings.
   3. Electrical lighting systems as shown on the contract drawings, complete with indicated switching, circuiting, etc.
   4. Electrical receptacle systems as shown on the contract drawings.
   5. Exit and emergency lighting systems.
   6. Power supplies for equipment furnished by others.
   7. Fire alarm system.
   8. Raceway and outlet systems (including cabling where noted) for telecommunications, data, and other special systems.
   9. Grounding.
   10. Seismic restraint systems.
   11. Other special requirements and/or systems where shown.

E. Each bidder (or Representative) shall, before preparing a proposal, visit all areas of the existing site. If the work includes demolition, restoration, renovation and/or addition; then existing buildings and structures should be carefully inspected. The submission of the proposal by this Bidder shall be considered evidence that the Bidder (or Representative) has visited the site and noted the locations and conditions under which the work will be performed and that the Bidder takes full responsibility for a complete knowledge of all factors governing the work.

F. The work shall include complete testing of all equipment and wiring at the completion of work and making any minor correction changes or adjustments necessary for all the proper functioning of the system and equipment. All work shall be of the highest quality; substandard work will be rejected.

1.2 SUBMITTALS

A. Shop drawings shall be submitted for all equipment, apparatus, and other items as required by the Architect/Engineer. Submit under provisions of relevant sections of the General and Supplemental General Conditions and Division 1 Specifications Sections.

B. Submittals are required for all materials shown in the individual specifications sections.

C. Submittals are required for materials and specific methods used for penetrations of rated assemblies and for seismic restraints.

D. Transmit each shop drawing submittal with provided Shop Drawing Submittal Cover Form, attached, for each item of equipment/material or each specification section/paragraph.

E. All shop drawings and submittals shall be submitted at the same time. Partial shop drawing and submittals will be rejected and not processed. Materials, equipment and long lead items that require special handling, if identified and requested by the contractor, will be processed separately.

F. Proposed equipment and/or materials substitutions shall be clearly indicated in shop drawings. All deviations from the specified quality, functionality, appearance or performance of the proposed equipment and/or materials shall be clearly summarized in the preface of each submittal.

G. The project shall be bid based on the equipment listed in these specifications and on the drawings. After award of the Electrical Contract the Contractor may wish to substitute equipment other than that specified, subject to approval. The Electrical Contractor shall bear the "burden of proof" for demonstrating substitute equipment equivalency and suitability.

H. The Electrical Contractor shall be required to replace installed "equivalent" equipment if the operation of this equipment does not meet the full design intent of the specified system.

I. Physical size of equipment used in the design layout are those of reputable equipment manufacturers. The Contractor is responsible for providing equipment which will fit the space provided. If the Contractor elects to use other manufacturer's equipment, any resulting conflicts with space clearance or codes shall be the responsibility of the Contractor to correct at the Contractor's expense.

J. The Contractor assumes all responsibility for providing code clearances. Submit a scale drawing of each electrical equipment room showing exact size and location of all proposed electrical equipment with code clearances and working space clearly indicated.

1.3 COORDINATION OF WORK

A. It is understood and agreed that the Contractor is, by careful examination, satisfied as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the general and local conditions and all other matters which can and may affect the work under this contract. The Contractor shall be held responsible for visiting the site and thoroughly familiarizing himself with the existing conditions and also any contractual requirements as may be set forth in the other Divisions of

these Specifications. No extras will be considered because of additional work necessitated by obvious job conditions that are not indicated on the drawings.

B. The Contractor shall compare the electrical drawings and specifications with the drawings and specifications for other trades, and shall report any discrepancies between them to the Architect/Engineer and obtain written instructions for changes necessary in the electrical work. The electrical work shall be installed in cooperation with other trades installing interrelated work. Before installation, the Contractor shall make proper provisions to avoid interferences in a manner approved by the Architect/Engineer. All changes required in the work of the Contractor caused by neglect to do so shall be made at the expense of the Contractor.

C. Location of electrical raceways, switches, panels, equipment, fixtures, etc., shall be adjusted to accommodate the work to interferences anticipated and encountered. The Contractor shall determine the exact route and location of each electrical raceway prior to make up and assembly.
   1. Right of Way: Lines which pitch shall have the right of way over those which do not pitch. For example, steam, condensate and plumbing drains shall normally have right of way. Lines whose elevations cannot be changed shall have the right of way over lines whose elevations can be changed.
   2. Offsets and changes in direction of electrical raceways shall be made as required to maintain proper headroom and to clear pitched lines whether or not indicated on the drawings. The Contractor shall furnish and install elbows, pull boxes, etc., as required to affect these offsets, transitions, and changes in directions. Conflicts between electrical raceways, fixtures, etc., and ductwork or piping which cannot be resolved otherwise, will be resolved by the Architect/Engineer.

D. Installation and Arrangements: The Contractor shall install all electrical work to permit removal (without damage to other parts) of any equipment requiring periodic replacement or maintenance. The Contractor shall arrange electrical raceways and equipment to permit ready access to valves, cocks, traps, starters, motors, control components, etc., and to clear the opening of swinging and overhead doors and of access panels.

1.4 EQUIPMENT AND MATERIALS (GENERAL)

A. In compliance with North Carolina General Statute 133.3, the Architect/Engineer has, wherever possible, specified the required performance and design characteristics of all materials utilized in this construction. In some cases it is impossible to specify the required performance and design characteristics and when this occurs the Architect/Engineer has specified three or more examples of equal design or equivalent design, establishing an acceptable range for items of equal or equivalent design. Cited examples are used only to denote the quality standard of product desired and do not restrict bidders to a specific brand, make, manufacturer or specific name and are used only to set forth and convey to bidders the general style, type, character and quality of product desired. Equivalent products will be acceptable.

B. Substitution of materials, items, or equipment of equal or equivalent design shall be submitted to the Architect/Engineer for approval or disapproval. Equal or equivalent shall be interpreted to mean an item of material or equipment, similar to that named and which is suitable for the same use and capable of performing the same functions as that named, the Architect/Engineer being the judge of equality.

C. The materials used in all systems shall be new, unused and as hereinafter specified and shall bear the manufacturer's name, trade name and third party testing agency label in every case where a standard has been established for the particular material. Equipment furnished under this specification shall be essentially the standard product of manufacturers regularly engaged in the production of the required type of equipment, and shall be the manufacturer's latest approved design. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or manufacturer's specifications shall be submitted for approval as required by the Architect/Engineer.

D. Protection: Electrical equipment shall at all times during construction be adequately protected against damage Equipment shall be tightly covered and protected against dirt, water and chemical or mechanical injury and theft. Electrical equipment shall not be stored out of doors. Electrical equipment shall be stored in dry, permanent shelters. If an apparatus has been damaged, such damage shall be repaired at no additional cost. If any apparatus has been subject to possible injury by water, it shall be replaced at no additional cost to the Owner. At the completion of the work, fixtures, equipment, and materials shall be cleaned and polished thoroughly and turned over to the Owner in a condition satisfactory to the Architect/Engineer. Damage or defects, developing before acceptance of the work shall be made good at the Contractor's expense.

E. Any damage to factory applied paint finish shall be repaired using touch up paint furnished by the equipment manufacturer. The entire damaged panel or section shall be repainted per the field painting specifications in Division 9, at no additional cost to the Owner.

F. Where materials such as wiring devices and plates, fire alarm equipment, paging system components, etc. are specified to match existing, provide materials to match existing equipment in finish, color, capacity, ratings, operating characteristics, performance, etc. **All cabling, devices, components of all systems above lay-in ceilings must be plenum rated.**

G. Delivery and Storage: Equipment and materials shall be delivered to the site and stored in original containers, suitably sheltered from the elements, but readily accessible for inspection by the Architect/Engineer until installed.

H. Equipment and materials of the same general type shall be of the same make throughout the work to provide uniform appearance, operation and maintenance.

I. Manufacturer's directions shall be followed completely in the delivery, storage, protection, and installation of all equipment and materials. The Contractor shall promptly notify the Architect/Engineer, in writing, of any conflicts between any requirements of the Contract Documents and the manufacturer's directions and shall obtain the Architect/Engineer's written instructions before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's direction or such written instructions from the Architect/Engineer, the Contractor shall bear all costs arising in correcting the deficiencies.

1.5 OPERATION AND MAINTENANCE MANUALS

A. Submit under relevant sections of the General and Supplemental General Conditions and Division 1 Specifications Sections.

B. The Contractor shall provide two compilations of catalog data, bound in suitable loose leaf binders, for each manufactured item of equipment used in the electrical work. These shall be presented to the Architect/Engineer for transmittal to the Owner before the final inspection is made. Data shall include printed installation, operation and maintenance instructions for each item, indexed by product with heavy sheet dividers and tabs. All warranties shall be included with each item. Each manufacturer's name, address and telephone number shall be clearly indicated.

C. Shop drawings with Architect/Engineer's "as noted" markings are not acceptable for the above. "Approved" shop drawings are acceptable if adequate information is contained therein. Generally, shop drawings alone are not adequate.

1.6 PAINTING

A. All painting will be performed by the General Contractor for the project, except as noted below and unless specifically indicated otherwise.

B. The Electrical Contractor shall clean all exposed electrical work for painting. Should the Electrical Contractor delay in installing exposed conduit and outlets until the General Contractor has begun painting, the Electrical Contractor shall be required to paint all exposed electrical work at the Electrical Contractor's own expense. Such painting will be accomplished in accordance with the detailed specifications for the Project.

C. Conductors exposed in boxes and cabinets shall be protected against painting. Devices, cover plates, trims, etc., for panel boards and cabinets shall not be installed until painting has been completed.

D. The Electrical Contractor shall be responsible for touch up painting that may be required for electrical material or apparatus furnished with factory applied finish.

1.7 LOCATIONS AND MEASUREMENTS

A. Outlets and appliances are shown and located on the drawings as accurately as possible. All measurements shall be verified on the project and in all cases the work shall suit the surrounding trim, finishes and/or construction. The locations of outlets for special appliances shall be installed so that when extended, they are flush with the finished wall or ceiling and permit the proper installation of fixtures and/or devices. Heights of all outlets shown on the drawings are approximate only. Slight relocations of outlets, devices and equipment shall be made by the Contractor as required or as directed by the Architect/Engineer at no additional cost to the Owner.

1.8 QUALITY OF WORK

A. All work shall be executed as required by this specifications and the accompanying drawings and shall be done by skilled mechanics, and shall present a neat, trim, and mechanical appearance when completed. All work shall be performed as required by the progress of the job.

1.9 SUPERVISION

A. The Contractor shall personally, or through an authorized and competent representative, constantly supervise the work from the beginning to completion and final acceptance. So far as possible, the Contractor shall keep the same foreman and mechanics throughout the project duration.

B. During the progress of the work it shall be subject to inspection by representatives of the Architect/Engineer, the Owner, and local inspection authorities, at which time the Contractor shall furnish such required information and data on the project as requested.

C. The Electrical Contractor shall coordinate the electrical work with other Contractors and cooperate in the preparation and maintenance of a master schedule for the completion of the project.

1.10 EXCAVATION, TRENCHING AND BACKFILLING

A. The Electrical Contractor shall do all excavating, trenching and backfilling in connection with this contract. All such excavation shall be done in a manner as not to endanger or damage existing utility lines and other structures. If damage occurs, the Contractor shall pay for and repair damage to the satisfaction of the Architect/Engineer.

B. It shall be the responsibility of the Contractor to investigate conditions before excavation and to exercise care during the excavation to avoid any utilities or other objects which may not be shown. Whether or not utilities, etc., are shown on the drawings shall not relieve the Contractor from the responsibility to repair any damage caused by this work. Location of all ditching shall be laid out at grade and shall be approved by the Architect/Engineer before excavating and no work shall be done until such approval has been obtained.

C. All surplus earth shall be removed by the Contractor from the site and disposed of at the Contractor's expense.

D. All excavation, trenching and shoring shall be in accordance with rules and regulations set forth in Article XXI, Bulletin 1 "Trenching" as published in a separate bulletin by the North Carolina Department of Labor, Division of Standards and Inspection Construction Bureau.

E. Backfilling shall be in 6" layers with each layer tamped. No boulders or debris shall be used for backfill material. Where trenching passes through areas designated as streets, driveways, walkways, or parking areas, backfill shall be tamped with power tamps to 95 percent compaction.

F. Excavation shall be bid unclassified with no extra payment for removal of rock.

1.11 CLOSING IN WORK

A. Work shall not be covered up or enclosed until it has been inspected, tested and approved by the authorities having jurisdiction over this work. Should any of the work be enclosed or covered up before such inspection and test, the Contractor shall uncover the work at the Contractor's

expense; after it has been inspected, tested and approved, the Contractor shall restore the work to its original condition.

1.12 REFERENCE STANDARDS

A. All electrical equipment, materials, and installation shall be in accordance with the latest edition of the following codes and standards:
   1. American Association of Edison Illuminating Companies (AEIC)
   2. American National Standards Institute (ANSI)
   3. American Society for Testing and Materials (ASTM)
   4. Building Officials Code Administrators (BOCA)
   5. Institute of Electrical and Electronic Engineers (IEEE)
   6. Insulated Cable Engineers Association (ICEA)
   7. International Code Council (ICC)
   8. International Conference of Building Officials (ICBO)
   9. National Electrical Code (NEC) 2020 edition
   10. National Electrical Contractor's Association (NECA)
   11. National Electrical Installation Standards (NEIS)
   12. National Electrical Manufacturer's Association (NEMA)
   13. National Electrical Safety Code (NESC)
   14. National Fire Protection Association (NFPA)
   15. North Carolina Energy Conservation Code, 2012 (NCECC)
   16. North Carolina State Building Code (NCSBC)
   17. Occupational Safety and Health Act (OSHA)
   18. Requirements of the Americans with Disabilities Act (ADA), latest edition.
   19. Underwriters Laboratories Inc (U.L.)
   20. Southern Building Code Congress International (SBCCI)
   21. Toxicity Characteristics Leaching Procedure (TCLP)

B. All electrical equipment and material shall be listed by an approved third party testing agency approved by the NCBCC and shall bear the appropriate testing agency's listing mark or classification marking. Equipment, materials, etc. utilized not bearing a third party testing agency certification shall be field or factory third party testing agency certified prior to equipment acceptance and use.

C. Where reference is made to one of the above standards, the revision in effect at the time of the bid opening shall apply.

1.13 ENCLOSURE TYPES

A. Unless otherwise specified herein or shown on the Drawings, electrical enclosures shall have the following ratings:
   1. NEMA 1 for dry, indoor locations.
   2. NEMA 3R for outdoor locations, rooms below grade (including basements and buried vaults), "DAMP" and "WET" locations.
   3. NEMA 4X for kitchen and locations subject to corrosion when specifically noted.

1.14 CODES, INSPECTION AND FEES

A. All equipment, materials and installation shall be in accordance with the requirements of the local authority having jurisdiction.

B. The Electrical Contractor shall obtain all necessary permits and pay all fees required for permits and inspections of electrical work.

1.15 TESTS AND SETTINGS

A. Test all systems furnished under Division 26, 27 & 28 and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

B. Make the following minimum tests and checks prior to energizing electrical equipment:
   1. Mechanical inspection, testing and settings of all circuit breakers, disconnect switches, motor starters, control equipment, etc., for proper operation.
   2. Check all wire and cable terminations. Verify to the Architect/Engineer that connections meet the equipment torque requirements.
   3. Check rotation of motors, obtain permission from other contractors to start motor, and proceed to check for proper rotation. If the motor rotates in the wrong direction, correct it. Take all necessary precautions not to damage any equipment.
   4. Provide all instruments and equipment for the tests specified herein.

C. All testing shall be scheduled and coordinated by the Contractor. Notify the Owner at least two (2) weeks in advance of conducting tests. The Contractor shall have qualified personnel present during all testing.

D. All tests shall be completely documented with the time of day, date, temperature, and all other pertinent test information. All required documentation of readings indicated shall be submitted to the Architect/Engineer prior to, and as one of the prerequisites for, final acceptance of the project.

E. Electrical Distribution System Tests: All current carrying phase conductors and neutrals shall be tested as installed, and before load connections are made, for insulation resistance and accidental grounds. This shall be done with a 500 volt megger. The following procedures shall be as follows:
   1. Minimum readings shall be one million (1,000,000) ohms or more for #6 AWG wire and smaller; 250,000 ohms or more for #4 AWG wire or larger. Measurement to be taken between conductors and between conductor and the grounded metal raceway.
   2. After all fixtures, devices and equipment are installed and all connections completed to each panel, the Contractor shall disconnect the neutral feeder conductor from the neutral bar and take a megger reading between the neutral bar and grounded enclosure. If this reading is less than 250,000 ohms, the Contractor shall disconnect the branch circuit neutral wires from this neutral bar. The Contractor shall then test each one separately to the panel until the low reading ones are found. The Contractor shall correct troubles, reconnect and retest until at least 250,000 ohms from the neutral bar to the grounded panel can be achieved with only the neutral feeder disconnected.
   3. The Contractor shall send a letter to the Architect/Engineer, and to the North Carolina State Construction Office certifying that the above has been done and tabulating the

megger readings for each panel. This shall be done at least four (4) days prior to final inspection.

4. At inspection, the Contractor shall furnish a megger and show Architect/Engineer's representative that the panels comply with the above requirements. The Contractor shall also furnish a clamp type ammeter and a voltmeter and take current and voltage readings as directed by the representatives.
5. At inspection, the Contractor shall furnish ladders, required tools, and mechanics to open fixtures, boxes, panels, or any other equipment to enable the Architect/Engineer's representatives to see into any parts of the installation that may be requested.

F. Electrical Grounding System Tests: Provide documentation showing values of earth ground impedance for the system ground. See Specifications Section 260526 for testing requirements.

G. For services 1000 amperes and larger, the following circuit breaker tests shall be performed on the service circuit breakers and all distribution circuit breakers by a qualified factory technician at the project site. All readings shall be tabulated and submitted to the Architect for approval.
1. Phase tripping tolerance (within 20% of UL requirements).
2. Trip time (per phase) in seconds.
3. Instantaneous trip (amperes) per phase.
4. Insulation resistance (in megaohms) at 100 volts (phase to phase and line to load).

1.16 SLEEVES AND FORMS FOR OPENINGS

A. Anchor bolts, sleeves, inserts, supports, etc., that may be required for electrical work shall be furnished, located and installed by the Electrical Contractor. The Electrical Contractor shall give sufficient information (marked and located) to the General Contractor in time for proper placement in the construction schedule. Should the Electrical Contractor delay or fail to provide sufficient information in time, then the Electrical Contractor shall cut and patch construction as necessary and required to install electrical work. Such cutting and patching will be done by the General Contractor but paid for by the Electrical Contractor.

B. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc. Locate all necessary slots for electrical work and form before concrete is poured.

C. Where exact locations are required by equipment for stubbing up and terminating conduit concealed in floor slabs, request shop drawings, equipment location drawings, foundation drawings, and any other data required to locate the concealed conduit before the floor slab is poured.

D. Where such data is not available in time to avoid delay in scheduled floor slab pours, the Architect/Engineer may elect to allow the installations of such conduits to be exposed. No additional compensation for such change will be allowed and written approval must be obtained from the Architect/Engineer.

E. Seal all openings, sleeves, penetration, and slots as specified and as shown on the Contract Drawings.

1.17 CUTTING AND PATCHING

A. For the purposes of the Electrical Contract, “cutting and patching” shall be defined as that work required to introduce new electrical work into existing construction. Work required to install or fit electrical boxes, conduit, enclosures, equipment, etc. into new construction is not “cutting and patching”.

B. The Electrical Contractor shall perform all cutting and patching necessary to install all equipment as required under his contract and shall re-establish all finishes to their original condition where cutting and patching occur.

C. All cutting and patching shall be done in a thoroughly workmanlike manner.

D. Core drill holes in existing concrete floors and walls as required.

E. Install work at such time as to require the minimum amount of cutting and patching.

F. Do not cut joists, beams, girders, columns or any other structural members without first obtaining written permission from the Architect/Engineer.

G. Cut opening only large enough to allow easy installation of the conduit.

H. Patching is to be of the same kind of material as was removed.

I. The completed patching work shall restore the surface to its original appearance.

J. Patching of waterproofed surfaces shall render the area of the patching completely waterproofed.

K. Remove rubble and excess patching materials from the premises.

L. Raceways and ducts penetrating rated floor, ceiling or wall assemblies shall be properly sealed in accordance with the corresponding Underwriters Laboratories approved method utilizing approved and listed materials.

1.18 INTERPRETATION OF DRAWINGS

A. The Electrical drawings and specifications are complementary each to the other and what may be called for by one shall be as binding as if called for by both. The drawings are diagrammatic and indicate generally the location of outlets, devices, equipment, wiring, etc. Drawings shall be followed as closely as possible; however, all work shall suit the finished surroundings and/or trim.

B. Do not scale electrical drawings. Refer to the architectural drawings for dimensions.

C. Where the words “furnish and install” or “provide” are used, it is intended that this contractor shall purchase and install completely any and/or all material necessary and required for this particular item, system, equipment, etc.

D. Where the words “the Contractor” or “this Contractor” appear in either the Electrical Drawings or Division 26 Specifications, it shall mean the Electrical Contractor.

E. Any omission from either the drawings or these specifications are unintentional, and it shall be the responsibility of this Contractor to call to the attention of the Architect/Engineer any pertinent omissions before submitting a bid. Complete and working systems are required, whether every small item of material is shown and specified or not.

F. Where no specific material or equipment type is mentioned, a high quality product of a reputable manufacturer may be used provided it conforms to the requirements of these specifications. These materials shall be listed or labeled by a Third Party Testing Agency accredited by the NCBCC to label electrical equipment.

G. The electrical drawings show the general arrangement of raceways, equipment, fixtures, and appurtenances and shall be followed as closely as actual building construction and the work of other trades will permit. Some adjustment of routings and installation of conduit, cable tray and devices should be expected. The electrical work shall conform to the requirements shown on all of the drawings. General and Structural drawings shall take precedence over Electrical Drawings. Because of small scale of the electrical drawings, it is not possible to indicate offsets, fittings and accessories which may be required. The Contractor shall investigate the structural and finish conditions affecting the work and shall arrange his work accordingly, providing such fittings and accessories as may be required to meet such conditions, without additional cost to the Owner and as directed by the Architect/Engineer.

H. Each 3 phase circuit shall be run in a separate conduit unless otherwise shown on the Drawings.

I. Unless otherwise approved by the Architect/Engineer, conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.

J. Where circuits are shown as “home runs” all necessary fittings and boxes shall be provided for a complete raceway installation.

K. Verify with the Architect/Engineer the exact locations and mounting heights of lighting fixtures, switches and receptacles prior to installation.

L. Any work installed contrary to or without approval by the Architect/Engineer shall be subject to change as directed by the Architect/Engineer, and no extra compensation will be allowed for making these changes.

M. The locations of equipment, fixtures, outlets, and similar devices shown on the Drawings are approximate only. Exact locations shall be as approved by the Architect/Engineer during construction. Obtain in the field all information relevant to the placing of electrical work and in case of any interference with other work, proceed as directed by the Architect/Engineer and furnish all labor and materials necessary to complete the work in an approved manner.

N. Surface mounted panel boxes, junction boxes, conduit, etc., shall be supported by spacers to provide a clearance between wall and equipment.

O. Circuit layouts are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of equipment.

P. All connections to the equipment shall be made as required, and in accordance with the approved shop and setting drawings.

Q. Redesign of electrical work, which is required due to the Contractor's use of an alternate item, arrangement of equipment and/or layout other than specified herein, shall be done by the Contractor at the Contractor's expense. Redesign and detailed plans shall be submitted to the Architect/Engineer for approval. No additional compensation will be provided for changes in the work, either the Electrical Contractor's or others, caused by such redesign.

R. All floor mounted electrical equipment shall be placed on 4 inch thick concrete housekeeping pads. Edges shall be chamfered.

1.19 SIZE OF EQUIPMENT

A. Investigate each space in the structure through which equipment must pass to reach its final location. If necessary, the manufacturer shall be required to ship his materials in sections sized to permit passing through such restricted areas in the structure.

B. The equipment shall be kept upright at all times. When equipment has to be tilted for ease of passage through restricted areas during transportation, the manufacturer shall be required to suitably brace the equipment, to insure that the tilting does not impair the functional integrity of the equipment.

1.20 RECORD DRAWINGS

A. As the work progresses, legibly record all field changes on one set of project contract drawings, herein after called the "record drawings".

B. Record drawings shall accurately show the installed condition of the following items:
1. Power distribution one line diagram(s).
2. Panel schedule(s).
3. Lighting fixture schedule(s).
4. Service, feeder, branch circuit conduit and conductor sizes.
5. Lighting fixture, receptacle, and switch outlets, interconnections and homeruns with circuit identification.
6. Underground raceway routing.
7. Plan view, sizes and locations of distribution transformers, and panelboards.
8. Fire alarm system for fire protection monitoring and air handler shutdown.
9. Telecommunications system.

1.21 CORROSION PROTECTION

A. All equipment, raceways, hardware, etc., furnished under the electrical contract shall be protected from corrosion by factory applied coatings, paint and galvanizing, or shall be fabricated of high quality 300 series stainless steel. All exposed hardware shall be hot dip galvanized. The requirements of preceding section entitled "Delivery and Storage" shall be strictly followed. Touch up any scratched metallic surfaces immediately to prevent corrosion.

Apply cold galvanizing compound to all galvanized surfaces damaged during installation, i.e., cutting, etc. Rusted or corroded materials shall be replaced before final acceptance of the work.

1.22 SEISMIC REQUIREMENTS

A. All equipment furnished under the electrical contract shall be installed in a manner to be fully compliant with the seismic restraint requirements of the North Carolina State Building Code (NCSBC). The Contractor shall provide any and all seismic restraint details and calculations that may be required by the NCSBC and/or the Authority Having Jurisdiction.

B. Requirements for restraints are detailed in the NCSBC. All tables and references shall conform to building's location. Restraints shall be per Seismic Performance Category stated on Architectural Drawings.

C. The Contractor shall retain the services of a Professional Engineer registered in the State of North Carolina to design seismic restraint elements required for this project. The Engineer's calculations, bearing his professional seal, shall accompany shop drawings and shall demonstrate Code compliance including certification that the seismic system components comply with the testing requirements of NCSBC Section 1708.5. Calculations and shop drawings shall be submitted for review prior to the purchasing of materials, equipment, systems and assemblies. Internal seismic restraint elements of manufactured equipment shall be certified by a professional engineer retained by the manufacturer. Such certificate applies only to internal elements of the equipment. All equipment anchorage requirements shall be coordinated with the building structure and shall be compatible thereto. All such anchorages shall be subject to the review and approval of the project's structural engineer

D. The Professional Engineer retained for seismic restraint calculations shall visit the job site upon completion of the seismic restraint installation to comply with the Special Inspections requirement of the Code. This engineer shall provide written verification of compliance of the installation with the approved seismic submittal. This verification shall be submitted as a Special Inspections Report and shall bear the Engineer's professional seal. Job site inspections by other than this engineer are not acceptable.

E. Review of the seismic design computations and shop drawings by the Architect/Engineer or his agent shall not relieve the Contractor of his responsibility to comply with the seismic or any other requirements of the North Carolina State Building Code.

1.23 GUARANTEE

A. The Contractor shall guarantee the materials and workmanship covered by these drawings and specifications for a period of one year from the date of acceptance by the Owner. The Contractor shall repair and/or replace any parts of any system that may prove to be defective at no additional cost to the Owner within the guarantee period. All equipment warranties shall be as specified and included in the Contract Documents.

1.24 PHASING OF THE WORK

A. The Electrical Contractor shall schedule his work as described in the relevant sections of the General and Supplemental General Conditions and Division 1 Specifications Sections.

1.25 ALTERNATE BIDS

A. Alternate bid items are described in relevant sections of the General and Supplemental General Conditions and Division 1 Specifications Sections.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION 260500

SECTION 270500 - DATA AND VOICE COMMUNICATIONS

PART 1 GENERAL

1.01 SUMMARY

Section includes termination devices, racks, and premises wiring for telephone and data communication circuits by certified manufacturers and contract installers with certification and testing of all equipment and cabling.

1.02 REFERENCES

TIA/EIA 568 (Telecommunications Industries Association/Electronic Industries Association) - Commercial Building Telecommunication Wiring Standard.

TIA/EIA 569 (Telecommunications Industries Association/Electronic Industries Association) - Commercial Building Standard for Telecommunications Pathways and Spaces.

TIA/EIA 606A Administrative Standard (Labeling).

TIA/EIA 607 - Commercial Building Grounding/Bonding Requirements.

NETA ATS (International Electrical Testing Association) - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

NFPA 70 - National Electrical Code.

UL 969 - Standard for Marking and Labeling Systems.

ISO/IEC 11801 - Information Technology, Generic cabling for customer premises.

BISCI - Building Industries Consulting Services International.
BISCI TDMM - Telecommunications Distribution Methods Manual.
BISCI CO-OSP - Customer Outside Plant Design Manual

1.03 SYSTEM DESCRIPTION

A. Provide, ready for operation, a complete and operational communication network system that is a manufacturer certified Category 6 system. The system shall include, but not be limited to, cabling (copper and fiber optic), cable protectors, patch panels, racks, faceplates, connectors, hardware, accessories, connections, grounding, and all other material, labor and operations required for a complete system in this building. **All cabling and components of the telecommunications system above lay-in ceilings, must be plenum rated.**

B. Cabling shall be installed in conduit as shown on the Drawings. Cable support structure shall be as specified hereinafter.

C. The horizontal wiring shall consist of the wiring from the MDF/IDF cabinets to the information services outlet. (The horizontal wiring includes the wiring termination components in the MDF/IDF cabinets, the horizontal wiring itself, and the termination components at the outlet).

D. Backbone cabling shall consist of fiber (optical fiber cabling) and copper cables to connect data and voice services as required and/or as shown on the Drawings.

E. The system shall provide for current and future voice and data requirements by a planned end-to-end manufacturers system, while recognizing the need for future bandwidth and fault tolerance. The proposed system shall utilize a network of fiber optic and unshielded twisted pair (UTP), riser, tie and station cables. Fiber cables shall terminate on Fiber Distribution Centers and/or modular patch panels as required and/or as shown on the Drawings. Cables and terminations shall be identified at all locations and cables shall terminate in an alphanumeric sequence at all termination locations. The complete system shall be fully standards compliant with guaranteed A Channel performance. All UTP end-to-end Channel Configurations as defined by TIA/EIA 568C-1,2,3 shall be provided by a single manufacturer.

1.04 SUBMITTALS

A. Submit under provisions of relevant sections of the General and Supplemental General Conditions and Division 1 Specifications Sections.

B. Certifications: Copies of Cable Installation Technician Certifications shall be submitted with the equipment shop drawings.

C. Product Data: Submit catalog data for each termination device, cable, rack, etc.

D. Test Reports: Indicate procedures and results for specified field testing and inspection.

E. Test Cables on receipt at Project site:

1. Test optical fiber cable to determine the continuity of the strand end to end. Use optical loss test set.
2. Test optical fiber cable while on reels. Use an optical time domain reflectometer to verify the cable length and locate cable defects, splices, and connector, including the loss value of each. Retain test data and include the record in maintenance data.
3. Test each pair of UTP cable for open and short circuits.

1.05 CLOSEOUT SUBMITTALS

A. Submit under provisions of relevant sections of the General and Supplemental General Conditions and Division 1 Specifications Sections.

B. Project Record Documents: Record actual locations and sizes of pathways and outlets.

C. Provide a certificate of completion of the installation with verifications that each copper cable pair has been tested to Category 6 standards.

D. Provide a certificate of completion of the installation with verifications that each fiber optic cable has been tested to industry standards.

E. Provide a Certified Installation Warranty Certificate.

F. Provide Test results for each cable and outlet.

G. Provide marked up Drawings showing additions, deletions, and modifications also identifying cable routs.

H. Provide electronic copies of marked up final Drawings.

I. Provide wall mounted copies of the final system Drawings in each telecommunications room.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer: Company specializing in installing products specified in this section with minimum five years documented experience on projects utilizing infrastructure work similar to that required for this project, and with service facilities within 100 miles of project.

1. The Installer shall be an experienced firm regularly engaged in the layout and the installation of cabling infrastructure systems. Documentation shall be provided to show that the Contractor has successfully completed projects of similar size and scope within the previous twelve months.
2. The Telecommunication Project Manager shall:

    a. be certified as BICSI RCDD
    b. be experienced in this type of project and provide technical support.
    c. attend monthly progress meetings and additional meetings as scheduled or required.
    d. be a permanent employee. Use of a temporary employee or sub-contracted employee is not permitted.

3. Contractor and authorized sub-contractors shall use manufacturer certified technicians for all cable terminations, use of temporary or un-certified technicians is not permitted.

C. Testing Agency: Company member of International Electrical Testing Association and specializing in testing products specified in this section with minimum three years documented experience.

1.07 PRE-INSTALLATION MEETING

Convene minimum two weeks prior to commencing Work of this section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, the manufacturers offering products that may be incorporated into the Work are limited to the following

1. Siemons
2. CommScope
3. Panduit
4. Leviton
5. Hitachi Cable America Inc. (Basis of design for cable)

2.02 COMMUNICATIONS BACKBONE CABLES

A. UTP Cable

1. Description: 100-ohm, 25-pair UTP, covered with a thermoplastic jacket

a. Comply with TIA/EIA-568-C.1 for performance specifications.
b. Comply with TIA/EIA-568-C.2, Category 3.
c. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
i. Communications, Riser Rated: Type CMR, complying with UL 1666.

B. UTP Cable Hardware

1. General Requirements for Cable Connecting Hardware: Comply with TIA/EIA-568-C.2, IDC type, with modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of same category or higher.
2. Connecting Blocks: 110-style IDC for Category 6. Provide blocks for the number of cables terminated on the block, plus 25 percent spare. Integral with connector bodies, including plugs and jacks where indicated.
3. Patch Panel: Modular panels housing multiple-numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables.

a. Number of Jacks per Field: One for each four-pair UTP cable, plus spares and blank positions adequate to suit specified expansion criteria.

4. Jacks and Jack Assemblies: Modular, color-coded, eight-position modular receptacle units with integral IDC-type terminals.
5. Patch Cords: Factory-made, 4-pair cables in 48-inch (1200-mm) lengths; terminated with 8-position modular plug at each end.

a. Patch cords shall have bend-relief-compliant boots and color-coded icons to ensure Category 6 performance. Patch cords shall have latch guards to protect against snagging.

C. OPTICAL FIBER CABLE

1. Description: Multi mode, 6 -fiber, OM3, nonconductive, tight buffer, optical fiber cable.

    a. Comply with ICEA S-83-596 for mechanical properties.
    b. Comply with TIA/EIA-568-C.3 for performance specifications.
    c. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:

        i. General Purpose, Nonconductive: Type OFN or OFNG
        ii. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.
        iii. Riser Rated, Nonconductive: Type OFNR complying with UL 1666.

    d. Maximum Attenuation: 0.4 dB/km at 1310 nm; 0.4 dB/km at 1383 nm; 0.3 dB/km at 1550 nm.

2. Jacket:

    a. Jacket Color: OM3 - Aqua
    b. Cable cordage jacket, fiber, unit, and group color shall be according to TIA/EIA-598-C.
    c. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

D. OPTICAL FIBER CABLE HARDWARE

1. Cross-Connects and Patch Panels: Modular panels housing multiple-numbered, duplex cable connectors.

    a. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.

2. Patch Cords: Factory-made, dual-fiber cables in 36-inch lengths. Provide quantities required for patch panels installed plus 25% spare.

3. Cable Connecting Hardware:

    a. Comply with Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-2, TIA/EIA-604-3-A, and TIA/EIA-604-12. Comply with TIA/EIA-568-C.3.
    b. Quick-connect, simplex and duplex, Type LC connectors. Insertion loss not more than 0.75 dB.

2.03 COMMUNICATIONS HORIZONTAL CABLES

A. UTP Cable

1. Description: 100-ohm, 4-pair UTP, covered with a blue thermoplastic jacket and white thermoplastic jacket for voice.

    a. Comply with TIA/EIA-568-C.1 for performance specifications.
    b. Comply with TIA/EIA-568-C.2, Category 6.
    c. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:

i. Communications, General Purpose Rated: Type CM or CMG.

B. UTP Cable Hardware

1. General Requirements for Cable Connecting Hardware: Comply with TIA/EIA-568-C.2, IDC type, with modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of same category or higher.
2. Connecting Blocks: 110-style IDC for Category 6. Provide blocks for the number of cables terminated on the block, plus 25 percent spare. Integral with connector bodies, including plugs and jacks where indicated.
3. Patch Panel: Modular panels housing multiple-numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables.
   a. Number of Jacks per Field: One for each four-pair UTP cable, plus spares and blank positions adequate to suit specified expansion criteria.
4. Jacks and Jack Assemblies: Modular, color-coded, eight-position modular receptacle units with integral IDC-type terminals.
5. Patch Cords: Factory-made, 4-pair cables in 48-inch (1200-mm) lengths; terminated with 8-position modular plug at each end.
   a. Patch cords shall have bend-relief-compliant boots and color-coded icons to ensure Category 6 performance. Patch cords shall have latch guards to protect against snagging.

2.04 BUILDING ENTRANCE PROTECTORS

Provide building entrance protectors which shall be 66 IN termination and 66 OUT termination configured as standard 489ACA1-100 fully loaded with 4c1s protector 5-pin protector modules. Provide rack mounted protectors where indicated or where required.

2.05 COMMUNICATIONS FACEPLATES AND CONNECTORS

A. Jacks: 100-ohm, balanced, twisted-pair connector; four-pair, eight-position modular. Comply with TIA/EIA-568-C.1.

B. Workstation Outlets:

1. Two-port-connector assemblies mounted in single faceplate.
2. Four-port-connector assemblies mounted in multigang faceplate.
3. See drawings for other outlet quantities for number of ports. Mount assemblies in multigang faceplate.
4. Metal Faceplate: Stainless steel, complying with requirements in Section "Wiring Devices."
5. Flush mounting snap-in jacks.
6. Provide blanks for unused portions of faceplates.
7. Legend: Machine printed, in the field, using adhesive-tape label.

2.06 RACKS, PATCH PANELS AND IDF CABINETS.

A Racks: Racks shall be two post rack with 44 rack mount spaces of 19” width and an overall interior depth of 28”; black paint with matte (satin) finish. For singular or multiple rack configurations, provide tops, rear doors, and one set of side panels for a singular viewing

aspect of each configuration. Secure to floor and wall and cable tray (if utilized) with manufacturers recommended hardware and accessories providing a stable rack, racks shall be connected to the electrical ground system in compliance with TIA/EIA 607. Horizontal and vertical cable management panels shall be provided installed above and below each data patch panel to provide neat and orderly routing of patch cables. Cable management panels shall be sized to accommodate the maximum number of patch cables for the patch panels.

B Station cable terminations shall be accomplished using patch panels with 66 style IDC connectors. Patch panels will not exceed 2 RU (3.5") in height.

C Telephone backbone and station cables shall be terminated on 66 style terminal blocks. The number of blocks will be determined by installed cables plus 20% capacity. Mount blocks on the telephone backboard in accordance with BICSI TDMM specification for telephone backboards.

D Fiber Optic cables shall be terminated in rack mount enclosures in each wiring closet. Enclosures shall be sized based on installed cable count plus 10% spare capacity.

E Each rack shall have (2) 120V twist-lock NEMA L5-30 outlets installed on a rear post (one above the other) of the data rack approximately 42 inches above the finished floor or on wall adjacent to rack.

F Each rack shall have (2) dedicated 110V 20A circuits installed on a rear post of the data rack. These two circuits shall be installed in a quad-type manner and mounted approximately 42 inches above the finished floor.

G Each rack shall have (2) horizontal Power Distribution Units.

H Patch Panels: TIA/EIA 568C Category 6 compliant rack-mounted assembly or terminals and accessory patch cords, with adequate capacity for all active and 25% spare circuits. Provide Category 6 green patch cords for all patch panel jacks, evenly divided between 3, 5 and 7 foot cords, plus 15% spare of each length. Provide Category 6 green patch cord for all telecommunications outlets throughout the facility, evenly divided into 7 and 10 foot cords, plus 15% spare of each length. All supplied from one manufacturer. Provide 1 foot patch cables for WAP's. Provide ten (10) 20 foot patch cables for labs 710 and 614. Data cables shall terminate on manufacturer's specified end-to-end Cat 6 solution.

I Communication Cable Management and Ladder Rack

1. Horizontal Cable managers shall be provided for routing of cable between termination points and active components. Provide cable managers for each patch panel and/or fiber enclosure in a rack plus one spare. Provide cable managers for each patch panel and/or fiber enclosure in a rack plus one spare. Example, if an TR rack has three switches it would receive 4 wire managers. The passive rack has three patch panels and one fiber enclosure. It would receive 5 wire managers. All patch panels shall be located at top of rack followed by management, switch, management, switch, switch, management, switch, switch management and UPS.
2. Vertical Cable managers shall be provided for routing of cable between termination points and active components. Provide 12"wide vertical cable managers of appropriate

height. Provide one manager for exterior of each rack and one in between racks if more than one rack is installed.

3. A system of overhead ladder racks shall be installed in each TR to support and distribute all cabling from where it enters the room to its appropriate termination location. Racks shall be 12" wide min. with 9" spacing between support rungs.
4. Overhead ladder racks shall be installed below finished ceiling, mounted at 7'- 4" and attached to the equipment racks and walls. They shall be supported at least every 6". One cable runway support bracket shall be mounted on top of each equipment rack. Ladder rack shall be bolted to the top of each cable runway support bracket to allow attachment to the equipment rack.
5. Vertical ladder racks shall be installed to tie into any wireways and conduits that enter the TR above 9' AFF. All vertical ladder racks shall be connected to the horizontal ladder rack system.

J Station cable terminations shall be accomplished using patch panels with 66 style IDC connectors. Patch panels will not exceed 2 RU (3.5") in height.

K Telephone backbone and station cables shall be terminated on 66 style terminal blocks. The number of blocks will be determined by installed cables plus 20% capacity. Mount blocks in IDF rack.

L Fiber Optic cables shall be terminated in MDF and IDF rack.

M Provide receptacle in IDF rack.

PART 3 EXECUTION

3.01 INSTALLATION

A. The project manager and crew shall be consistent through out the project. The project manager shall be present when any work is being performed. The project manager shall contact the Owner designated contact at the beginning and end of each day that work is to be performed.

B. Cable shall be installed and terminated per manufacturer's specifications.

C. Notify the Owner when ready for Owner-furnished equipment to be installed.

D. Install wire and cable in accordance with TIA/EIA 568C.1,2,3 and TIA/EIA 569A.

E. All penetrations through walls and floors shall be sleeved. All sleeves shall have permanently attached bushings. Sleeves shall be sized to accept 50% growth. All sleeves shall be fire-stopped using UL7 approved methods and shall maintain assembly fire ratings. All sleeves between floors shall be supported with a conduit riser clamp installed per the manufacturer direction and shall be installed tight to the ceiling with enough sleeve to attach the bushing and rise up three inches above the floor on the opposite end.

F. All cable shall be installed in a complete, neat and orderly fashion. Install cable with sufficient bending radius as not to kink, shear or damage binders. Bend radius shall meet manufacturers specifications for horizontal cable, fiber-optic cable, inter- and intra- building cable and copper inter- and intra- building cable. Cables shall be groomed, such that cables to be terminated on the left side of the patch panels are routed down the left side of the rack, and cables to be terminated on the right side of the patch panels are to be routed down the right side of the rack.

G. Terminate all data and telephone cables at outlet devices. Terminate data cables on specified rack designated by the manufacturer's end-to-end solution equipment. Terminate telephone cables on specified rack using manufacturer's end-to-end solution for Cat 6.

H. Install pullwire in each empty telephone or data conduit.

I. A minimum of three feet of slack should be left in an appropriate tidy fashion in the IDF Cabinet.

J. All cables shall be installed according to TIA/EIA 568C-1,2,3 /569A standards. Care shall be taken during the installation to prevent nicks, abrasions, burning and scuffing of the cable. Cables found to be damaged will be replaced at the contractor's expense regardless of whether the cable passes Cat 6 Level III testing standards.

3.02 GROUNDING AND BONDING

A. Ground and bond pathways, cable shields, racks and equipment under the provisions of Section 260526 and TIA/EIA - 607 - Commercial Building Grounding/Bonding Requirements.

B. Grounding conductors shall be installed neatly, with as few bends as possible, and routed such as to minimize the length of the conductor runs.

C. The grounding conductors may be wall mounted or fastened to ladder racks with plastic cable ties. While they may be routed adjacent to telecommunications cables, they should not be attached to them in any way.

D. An acceptable bond between the grounding conductor and painted metal surfaces is required. In these cases, a small area of the paint should be removed by blade or wire brush prior to the attachment of the ground lug. In TRs, this typically applies to the surface of metal wire ways and to the surface of equipment racks.

E. Definitions

1. Bonding conductor (BC) for telecommunications. This conductor links the telecommunications grounding system to the main electrical power grounding system for the building. It originates in the TR.
2. Telecommunications main grounding bus bar (TMGB). This bar is located in the TR and serves as the hub for the telecommunications grounding system in the entire building. Bond the TMGB to the BC, TBB, and local building steel.
3. Telecommunications bonding backbone (TBB). This conductor links the TGB in each TC back to the TMGB.

F. Required Grounding Configuration

1. TGB. One telecommunications grounding busbar shall be installed onto the plywood on the wall of each TC. It shall be installed at 24" AFF. The bar shall be electrically insulated from its mounting bracket.

2. TBB. One insulated, stranded, #6 copper wire shall be installed from the TGB in the TC to the TMGB in the TR. This conductor shall be routed inside the riser conduit system along side the telecommunications riser cables. It shall be fastened to the TGB.

3. Equipment racks. A #6 grounding conductor shall be installed between one equipment rack and the TGB using the appropriate grounding lug. The remaining equipment racks shall be connected together in series to the first rack to provide a continuous connection to all racks..

4. Ladder racks. A #6 grounding conductor shall be installed between one section of overhead ladder rack to the TGB or to one of the equipment racks.

5. Pathway components. A #6 grounding conductor shall be installed from each distinct wireway or conduit (over 1" in diameter) which exits the TR and houses either horizontal or riser cabling back to the TGB, ladder rack, or equipment rack. As needed, these components may be connected in series to provide a continuous connection to all components. Grounding lugs shall be used to connect the conductor to wireways. Grounding bushings should be installed on conduit ends to connect these conduits to the conductor.

3.03 LABELING

A. Manufacturers Identification: Each major component of equipment shall have the manufacturers name, address, model number, and rating on a plate securely affixed in a conspicuous place. NEMA code ratings, UL label, or other data which is die-stamped into the surface of the equipment shall be stamped in a location easily visible.

B. Custom Panel Identification and Nomenclature: Switches, connectors, jacks, receptacles, outlets, cables and cable terminations shall be logically and permanently marked in a manner approved by the Owner. Custom panel nomenclature shall be engraved, etched, or screened. Marking for these items are purposely detailed in the drawings to ensure consistency and clarity. Verify any changes in working type size, and/or placement with the owner prior to marking. Mount on the custom rack panels as described above a designation of each source machine, which correlates to the system architecture. Submit a sample layout for Architect approval.

C. Terminal Blocks and Rack Mounted Equipment Identification: All terminal blocks, rack mounted equipment, and active slots of card frame systems shall be clearly and logically labeled in a manner acceptable to the Owner as to their function, circuit, or system as appropriate. Labeling on manufactured equipment shall be engraved plastic laminate with white lettering on black background or dark background. Handwritten identification is not permitted. The contractor may substitute metallized polyester permanent identification labels with black printing on silver, white, or another light color background for the phenolic labels above.

D. Cable Identification: All cable terminations shall be clearly and permanently labeled with appropriate cable number. Labeling of termination system shall be provided on white labels with black typed lettering. Handwritten labels shall not be permitted. Provide a sample of labeling material and example of the numbering scheme planned for use at the facility with project submittals. The contractor will endeavor to utilize the environmental room number the facility administrators plan to use for new construction projects. If environmental room numbers are not available, the contractor will utilize the most recent set of architectural floor plan room numbers for the cable numbers. Once the contractor has utilized a set of room numbers, those numbers and floor plans showing those numbers must be used for all documentation purposes from that point forward for the project unless changes are approved in writing by the Owners Agent.

E. The intent of this labeling scheme is to assist in troubleshooting cable problems. Therefore the cables are labeled in a manner that will direct the technician to the opposite end of the cable to allow for testing and troubleshooting.

F. All fiber backbone cables will be labeled with a unique identifier at each end and at junction / pull boxes. Fiber backbone cables shall be labeled 12" from each end of the cable with a destination tag that identifies each cable=s remote destination and the unique identifier.

Example: A fiber strand from Room 503 to the MDF 500D would be labeled:
In MDF 500D: = ARoom 503-O1≅
In Room 503: = ARoom 500D-O1≅
Example: A fiber cable from Room 617A would be labeled:
In MDF 500D: ARoom 617A-O4≅
In Room 617A: ARoom 500D-O4≅

G. All telecommunication outlet (TO) cables shall be labeled within 12" of each end of the cable using the above described identifier. TO numbers in each room are determined by numerical sequence starting from the main doorway of each room and continuing in a clockwise manner around the room. Each faceplate containing data ports shall be labeled starting in the upper left hand corner of each 1 gang section and assigned in a left to right and top to bottom direction.

H. Switch: Ports shall be labeled using the Room ID- Port ID of the TO serviced by the patch panel port. Telecommunication Outlets (TO) that are serviced by a patch panel will be labeled using IDF ID - Patch Panel ID - Port ID. Example: Patch panel AA≅, Port 26 in Room 500D servicing Port #2 in Room 500 = 500D-A-26

I. All test report documentation will contain a complete circuit identification based on the applicable labeling scheme.

3.04 TESTING

A. A Certified Cat 6 cable tester, Level III, shall perform the certification test on all Cat 6 cables and adhere to TIA/EIA-568C.

B. All test equipment shall be consistent throughout the installation. All test equipment shall be available for inspection by the Owner at any time. A valid and current calibration certificate

traceable to the National Institute of Standards and Technology for any test equipment to be used shall be provided to the Owner.

C. Upon substantial completion of the data network, test every data port for the functional requirements as listed in previously. Document, on a contractor generated form, the compliance of every port. The testing individual will initialize the results of each location. Submit a electronic copy of the reports detailing the results of initial adjustments and verification tests including all relevant drawings, charts, and photographs.

D. Copper Cable Tests: Test and document results for each four (4) pair UTP data cable for the following conditions. (These tests are minimum requirements for Cat 3 Cable). A wire map test of the cable may be used to demonstrate conformance of the cable to the following parameters where applicable.

a. Proper polarity
b. No reversals
c. No transpositions
d. Continuity
e. No shorts
f. No AC voltage
g. No DC voltage
h. No opens
i. Proper numbering at each termination

All Cat 6 UTP cable testing shall be in accordance with proposed TIA/EIA TSB-67 Transmission Performance Specification test parameters for the permanent link. Testing shall be performed using Level IIe test equipment and shall meet or exceed the following performance parameters:

a. Length of cable =/< 90 meters/300 feet
b. Attenuation @ 100Mhz =/<24dB
c. Pair-to-Pair Near-end Crosstalk (P-P NEXT) =/> 30dB
d. Power Sum Near-End Crosstalk (PS NEXT) =/> 27dB
e. Far-End Crosstalk (ELFEXT) =/> 19dB
f. Power Sum Far-End Crosstalk =/> 16dB
g. Return Loss =/> 10.1 dB
h. Calculated ACR =/> 6dB
i. Calculated PS ACR =/> 3dB

E. Fiber Testing

1. Factory Testing: All fiber optic cable shall be factory tested on a reel basis with performance data for each cable supplied to the contractor and to the owner. Tests shall be conducted utilizing an OTDR (Optical Time Domain Reflectometer) at 850nm and 1300 nm with the attenuation in dB/km recorded for each fiber.
2. Post Rough-In Test: Upon completion of the installation of all fiber optic cable and prior to termination, each fiber optic strand shall be tested for light continuity to insure no damage occurred during installation. (The contractor may wish to perform a light continuity test on each fiber optic strand of the cable upon receipt of reel from manufacturer to insure no damage occurred during shipping.

3. Termination Testing: After completion of the installation provide the following tests. An Optical Test Set consisting of an Optical Source (transmitter) and Optical Meter (receiver) shall be used to determine end-to-end attenuation and fiber length. This testing shall be in Accordance with EIA/TIA-526-14 Method B: Optical Power Loss Measurement of Installed Multi-mode Fiber Optic Plant. Each fiber shall be measured in one direction at both 850 and 1300 wavelengths. Record each measurement and provide copies to the Owner. Use of an OTDR for this measurement is acceptable provided the Contractor utilize the appropriate launch and receive jumper cables in front of and behind the cable being tested.

F. Test parameters shall be verifiable by independent parties. Provide electronic copies of tests for every cable as part of the Verification Test Report.

G. The Contractor is responsible for bringing any copper or fiber that fails to meet the standards into compliance at the Contractors expense.

H. Two printed copies of the computer generated reports of the test results (in 8.5" by 11" hard cover binders) are required plus two compact disc copies.

3.05 FIELD QUALITY CONTROL

A. Field inspection and testing shall be performed under provisions of the General and Supplemental General Conditions and Division 1 Specifications Sections.

B. Inspect, test and certify all cabling and equipment and terminations as specified and in accordance with TIA/EIA 568 C.

3.06 WARRANTY

The Contractor shall provide the following minimum warranty:

A. All materials and equipment shall be new and warranted free of faulty workmanship and damage.

B. The warranty shall include all parts, labor (including travel), expenses and equipment necessary to perform replacement and/or repairs.

C. The total system (parts and labor) shall be warranted free of defects for a period of one (1) year from date of final acceptance.

D. Replacement of defective materials and repair of faulty workmanship shall take place within 48 hours of notification by Owner and shall be guaranteed at no cost to the Owner during the warranty period.

E. The minimum warranty provisions specified above shall not diminish the terms of individual equipment manufacturers warranties.

END OF SECTION