

A	B	C	D	E	F
ELECTRICAL ABBREVIATIONS					
A	G	P	R	S	T
A AMPERE	GC GENERAL CONTRACTOR	P PILOT	R RELAY	S SURGE ARRESTER	T TOP OF
AC ABOVE COUNTER/ALTERNATING CURRENT	GEC GROUNDING ELECTRODE CONDUCTOR	PB LIGHT PUSHBUTTON	RC REMOTE CONTROL	SCHD SCHEDULE	TB TERMINAL BOARD
ACB AIR CIRCUIT BREAKER	GEN GENERATOR	PC PHOTOCELL	RCPT RECEPTACLE	SCHM SCHEMATIC	TC TIMECLOCK
AF AMPERE RATING OF FUSE	GFI GROUND FAULT CIRCUIT INTERRUPTER	PF POWER FACTOR	REF REFER, REFERENCE	SP SINGLE POLE	TCC TEMPERATURE CONTROL CONTRACTOR
AFF ABOVE FINISHED FLOOR	GFP GROUND FAULT PROTECTOR	PFM POWER FACTOR METER	REQD REQUIRED	SPKR LOUDSPEAKER	TD CD TIME DELAY CLOSE ON DENERGIZATION
AL ALUMINUM	GND GROUND, GROUNDING CONDUCTOR	PNL PANEL	RGS RIGID GALVANIZED STEEL CONDUIT	ST STATION	TDOD TIME DELAY OPEN ON DENERGIZATION
ALT ALTERNATE	GR GROUND ROD	PRI PRIMARY		STBY STANDBY	TDOE TIME DELAY OPEN ON ENERGIZATION
AM AMMETER	GW GROUND WELL	PS PRESSURE SWITCH		SBSTA SUBSTATION	TEL TELEPHONE
AS AMMETER SWITCH		PT POTENTIAL TRANSFORMER		SW SWITCH	TEMP TEMPERATURE
AT AMPERE TRIP RATING		PVC POLYVINYLCHLORIDE, PVC CONDUIT		SWBD SWITCHBOARD	TERM TERMINAL
APPROX APPROXIMATELY		PWR POWER		SWGR SWITCHGEAR	TSTAT THERMOSTAT
ATC AUTOMATIC TEMPERATURE CONTROL	H			SYNC SYNCHRONIZE, (ING), (ACTION) SYSTEM	TV TELEVISION
ATS AUTOMATIC TRANSFER SWITCH	HGT HEIGHT			SYS SYSTEM	TYP TYPICAL
AUTO AUTOMATIC	HH HANDHOLE				
AUX AUXILIARY	HID HIGH INTENSITY DISCHARGE				
AWG AMERICAN WIRE GAUGE	HP HORSEPOWER				
	HPS HIGH PRESSURE SODIUM				
B	HTN HEATER				
BAS BUILDING AUTOMATION SYSTEM	HZ HERTZ, FREQUENCY IN CYCLES PER SECOND				
BD BUS DUCT					
BRKR BREAKER					
BLDG BUILDING	I				
BM BILL OF MATERIALS	IMC INTERMEDIATE METALLIC CONDUIT				
BUZ BUZZER	INCAND INCANDESCENT				
	INTCONN INTERCONNECTION				
C	J	K	L	M	N
C CONTRACTOR	JB JUNCTION BOX	K KEY OPERATED	LG LENGTH	MAN MANUAL	NC NORMALLY CLOSED
CAB CABINET	JCT JUNCTION	KMCL THOUSAND CIRCULAR MILS	LIM LIMIT	MATL MATERIAL	NF NON-FUSED
CB CIRCUIT BREAKER		KV KILOVOLT	LPS LOW PRESSURE SODIUM	MCC MECHANICAL CONTRACTOR	NIC NOT IN CONTRACT
CCTV CLOSED CIRCUIT TELEVISION		KVA KILOVOLT-AMPERE	LTG LIGHTING	MCP MOTOR CIRCUIT PROTECTOR	NEC NATIONAL ELECTRICAL CODE
CKT CIRCUIT		KVAR KILOVOLT-AMPERE REACTIVE	LVG LOW VOLTAGE	MFR MANUFACTURER	NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CL CENTERLINE		KW KILOWATT	LVSS LOW VOLTAGE SURGE SUPPRESSION	MH MANHOLE	NTS NOT TO SCALE
CLG CEILING		KWH KILOWATT-HOUR		MIC MICROPHONE	
COMM COMMUNICATIONS CONNECT, CONNECTED,				MLO MAIN LUGS ONLY	
CONN CONNECTOR				MTR MOUNT, MOUNTED, MOUNTING	
CONC CONCRETE				MVA MEGAVOLT-AMPERE	
COND CONDUCTOR				MVAR MEGAVOLT-AMPERE REACTIVE	
CONTR CONTRACTOR				MW MEGAWATT	
CP CONTROL PANEL				MWH MEGAWATT-HOUR	
CPT CONTROL POWER TRANSFORMER					
CR CONTROL RELAY					
CT CURRENT TRANSFORMER					
CU COPPER					
D					
DC DIRECT CURRENT					
DIA DIAMETER					
DIAG DIAGRAM					
DIM DIMMER CONTROL					
DISC DISCONNECT					
DIV DIVISION					
DN DOWN					
DP DOUBLE POLE					
DT DOUBLE THROW					
DWG DRAWING					
E					
EC ELECTRICAL CONTRACTOR					
EL ELEVATION					
ELEC ELECTRICAL					
EMER EMERGENCY					
EMT ELECTRICAL METALLIC TUBING					
ENG ENGINEER					
EPO EMERGENCY POWER OFF					
ETM ELAPSED (RUN) TIME METER					
EWC ELECTRIC WATER COOLER					
EXH EXHAUST					
EXIST EXISTING					
F					
FA FUSE					
FACFP FIRE ALARM CONTROL PANEL					
FC FOOTCANDLE					
FDR FEEDER					
FF FURNITURE FEED					
FHP FRACTIONAL HORSEPOWER					
FL FLOODLIGHT					
FLEX FLEXIBLE, FLEXIBLE CONDUIT					
FLR FLOOR					
FLUOR FLUORESCENT					
FREQ FREQUENCY					
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A	B	C	D	E	F
ELECTRICAL GENERAL NOTES					
1.	ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY THE STATE, THE STATE AMENDMENTS, LOCAL/MUNICIPAL CODES AND ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).				
2.	IT IS THE INTENT OF THESE DOCUMENTS TO COMPLY WITH THE APPLICABLE CODES, WHERE DISCREPANCIES OCCUR, NOTIFY THE ENGINEER/ARCHITECT IN WRITING FOR INTERPRETATION. CORRECT ANY INSTALLATION THAT FAILS TO COMPLY WITH THE CODES AND STANDARDS AT NO ADDITIONAL COST TO THE OWNER.				
3.	CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.				
4.	ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).				
5.	COORDINATE ELECTRICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF ELECTRICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.				
6.	DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL VERIFY ALL CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.				
7.	ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED OFF AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.				
8.	NO ENERGIZED CONDUCTORS SHALL BE EXPOSED AT ANYTIME EXCEPT WHEN THE IMMEDIATE AREA IS UNDER THE SUPERVISION OF A QUALIFIED ELECTRICIAN.				
9.	WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE 1-HOLE OR 2-HOLE CONDUIT STRAPS.				
10.	REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF BUILDING EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS, UNLESS THE CONDUIT IS BELOW SLAB IN THE COMPACTED GRANULAR FILL. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANUFACTURER'S WRITTEN RECOMMENDATIONS.				
11.	PENETRATIONS THROUGH FIRE RATED WALLS BY DIVISION 26 CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.				
12.	THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER.				
13.	THESE DRAWINGS SHALL NOT BE SCALED TO OBTAIN DIMENSIONS. REFER TO DIMENSIONED ARCHITECTURAL FLOOR PLANS. IF THE DIMENSIONS CANNOT BE DETERMINED BY THE INFORMATION GIVEN, CONTRACTOR SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION.				
14.	PERIODIC SITE OBSERVATION BY THE ENGINEER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.				
15.	THE INFORMATION CONTAINED ON THE ELECTRICAL DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS. THE SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC., AND SHALL BE CONSIDERED THE CONTRACT DOCUMENTS AND WITH ALL THEREIN BY REFERENCE, WHICH THE CONTRACTOR CERTIFIES KNOWLEDGE OF BY SIGNING THE CONTRACT.				
16.	CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY, UNRELIEVED BY REVIEW OF SHOP DRAWINGS OR PERIODIC OBSERVATION OF CONSTRUCTION, FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.), FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE. VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.				

A	B	C	D	E	F
ELECTRICAL SPECIFICATIONS:					
1. BASIC MATERIALS AND METHODS					
A. PART 1 - GENERAL					
a.	ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY THE STATE, THE STATE AMENDMENTS, LOCAL/MUNICIPAL CODES AND ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).				
b.	REFERENCES:				
	1. AMERICANS WITH DISABILITIES ACT (ADA)				
	2. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)				
	3. ELECTRICAL TESTING LABORATORIES (ETL)				
	4. FEDERAL COMMUNICATIONS COMMISSION (FCC)				
	5. NATIONAL ELECTRICAL CODE (NEC)				
	6. NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)				
	7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)				
	8. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) NFPA101				
	9. UNDERWRITERS' LABORATORIES, INC (UL)				
c.	CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.				
d.	PRIOR TO BID, CONTRACTOR SHALL VISIT THE EXISTING SITE AND BECOME FAMILIAR WITH THE CONDITIONS AS THEY EXIST, OR THAT WILL IN ANY MANNER AFFECT THE WORK. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY, IN THIS CONNECTION, ON THE BEHALF OF THE CONTRACTORS FOR ANY ERROR OR NEGLIGENCE ON THEIR PART.				
e.	AT THE TIME OF BIDDING, IF THE CONTRACTOR NOTES ANY PARTS OF THE DRAWINGS OR SPECIFICATIONS THAT DO NOT COMPLY WITH THE CODES OR REGULATIONS, THEY SHALL INFORM THE ARCHITECT/ENGINEER IN WRITING, REQUESTING A CLARIFICATION PRIOR TO THE BID. SUBMITTING A BID MEANS THE CONTRACTOR HAS READ THE COMPLETE DRAWINGS AND SPECIFICATIONS, WHERE TWO OR MORE CODES OR STANDARDS ARE IN CONFLICT, THAT REQUIRING THE HIGHEST ORDER OF WORKMANSHIP SHALL TAKE PRECEDENCE, BUT SUCH QUESTIONS SHALL BE REFERRED TO ARCHITECT/ENGINEER FOR FINAL DECISION.				
f.	COORDINATE ELECTRICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF ELECTRICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.				
g.	DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.				
h.	THESE DRAWINGS SHALL NOT BE SCALED TO OBTAIN DIMENSIONS. REFER TO DIMENSIONED ARCHITECTURAL FLOOR PLANS. IF THE DIMENSIONS CANNOT BE DETERMINED BY THE INFORMATION GIVEN, CONTRACTOR SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION.				
i.	REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF BUILDING EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS, UNLESS THE CONDUIT IS BELOW SLAB IN THE COMPACTED GRANULAR FILL. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANUFACTURER'S WRITTEN RECOMMENDATIONS.				
j.	PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, AND PARTITIONS BY ELECTRICAL CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED ASSEMBLIES. PENETRATIONS THROUGH EXISTING FLOORS SHALL BE ASSUMED TO REQUIRE FIRE PROOFING, MINIMUM 2 HOUR, WHERE CONDUIT OR SLEEVES PASS THROUGH WALLS, FLOORS, OR PARTITIONS NOT CARRYING A FIRE RATING. PENETRATIONS SHALL BE SEALED WITH GROUT OR CAULK.				
k.	THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER.				
l.	PERIODIC SITE OBSERVATION BY THE ENGINEER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.				
m.	THE INFORMATION CONTAINED ON THE ELECTRICAL DRAWINGS IS IN ITSELF INCOMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC., AND SHALL BE CONSIDERED THE CONTRACT DOCUMENTS AND WITH ALL THEREIN BY REFERENCE, WHICH THE CONTRACTOR CERTIFIES KNOWLEDGE OF BY SIGNING THE CONTRACT.				

A	B	C	D	E	F
C. PART 1 - GENERAL (CONTINUED)					
n.	CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY, UNRELIEVED BY REVIEW OF SHOP DRAWINGS OR PERIODIC OBSERVATION OF CONSTRUCTION, FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.), FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE. VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.				
o.	PROVIDE MATERIALS, LABOR, AND SUPERVISION AS NECESSARY TO PROVIDE HANGERS AND SUPPORTS FOR CONDUIT, FIXTURES, AND EQUIPMENT.				
p.	DUE TO SCALED DRAWINGS, CERTAIN BASIC ITEMS SUCH AS COUPLING, PULL OR SPLICE BOXES MAY NOT BE SHOWN. WHERE SUCH ITEMS ARE REQUIRED BY CODE OR BY OTHER SECTIONS OF PROJECT SPECIFICATIONS OR WHERE REQUIRED FOR PROPER INSTALLATION OF WORK, SUCH ITEMS SHALL BE FURNISHED AND INSTALLED.				
B. PART 2 - PRODUCTS					
a.	ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).				
b.	PROVIDE A MINIMUM FIVE (5) YEAR WARRANTY FOR ALL FIXTURES, EQUIPMENT, MATERIALS, AND WORKMANSHIP.				
c.	MATERIALS AND EQUIPMENT SHALL BE GUARANTEED BY THE CONTRACTOR TO BE FREE FROM DEFECTS.				
C. PART 3 - EXECUTION					
a.	NO ENERGIZED CONDUCTORS SHALL BE EXPOSED AT ANYTIME EXCEPT WHEN THE IMMEDIATE AREA IS UNDER THE SUPERVISION OF A QUALIFIED ELECTRICIAN.				
b.	WHEN CHANGES REQUIRE SHUT-DOWN OF ELECTRICAL SERVICES, THE CONTRACTOR SHALL NOTIFY THE OWNER, PROPER BUILDING AUTHORITIES, OR OWNER'S REPRESENTATIVE NOT LESS THAN 48 HOURS IN ADVANCE AND OBTAIN APPROVAL FROM THESE AUTHORITIES BEFORE MAKING CHANGES.				
c.	MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.				
d.	VERIFY ALL PERTINENT DIMENSIONS AT THE JOB SITE BEFORE ORDERING ANY CONDUIT, CONDUCTORS, WIREWAYS, BUS DUCT, FITTINGS, ETC. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO THE WORK OF OTHER TRADES OR TO THE BUILDING AND ITS CONTENTS CAUSED BY THE ELECTRICAL INSTALLATION.				
e.	SUBMITTALS:				
	1. PROVIDE SUBMITTALS FOR THE FOLLOWING:				
	a. WIRING DEVICES				
	b. LIGHTING FIXTURES				
	c. LIGHTING CONTROLS				
	d. ENCLOSED SWITCHES				
	e. PANELBOARDS				
	f. TRANSFORMERS				
	g. TELECOMMUNICATION SYSTEMS				
	h. FIRE ALARM				
	i. CENTRAL BATTERY EQUIPMENT				
	2. REFER TO ASSOCIATED SPECIFICATION SECTION FOR ADDITIONAL SUBMITTAL REQUIREMENTS.				
	3. SUBMITTALS SHALL AT A MINIMUM INCLUDE MANUFACTURER'S STANDARD CATALOG INFORMATION WITH SUBMITTED PRODUCT TYPE FOR REVIEW OUTLINED.				
	4. ENGINEER WILL REVIEW SHOP DRAWINGS SOLELY TO ASSIST CONTRACTOR IN CORRECTLY INTERPRETING THE PLANS AND SPECIFICATIONS. CONTRACTOR REQUIREMENTS CANNOT BE CHANGED BY SHOP DRAWINGS WHICH DIFFER FROM CONTRACT DRAWINGS AND SPECIFICATIONS.				
f.	OPERATION AND MAINTENANCE MANUALS				
	1. SUBMIT THE OPERATION AND MAINTENANCE MANUALS INCLUDING BOUND COPIES OF APPROVED SHOP DRAWINGS, RECORD DOCUMENTS, SPARE PARTS, AND EXTRA MATERIALS IN QUANTITIES SPECIFIED IN THESE SPECIFICATIONS. INCLUDING INSPECTION AND TESTING REPORT BY THE FIRE ALARM SYSTEM MANUFACTURER.				

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DAKINS LAKE CABIN

A	B	C	D	E	F
ELECTRICAL SPECIFICATIONS:					
2 CONDUIT	3. BOXES	4. WIRES AND CABLES	5. WIRING DEVICES	6. GROUNDING	7. ENCLOSED SWITCHES
1. PART 1 - GENERAL	A. PART 1 - GENERAL	A. PART 1 - GENERAL	A. PART 1 - GENERAL	A. PART 1 - GENERAL	A. PART 1 - GENERAL
<p>a. CONTRACTOR SHALL FURNISH ALL MATERIALS, TOOLS, LABOR, AND SUPERVISION NECESSARY TO FABRICATE AND INSTALL COMPLETE CONDUIT SYSTEMS.</p> <p>b. CONDUIT SYSTEMS SHALL BE PROVIDED FOR ALL WIRING, EXCEPT WHERE DRAWINGS INDICATE THAT CERTAIN WIRING MAY BE INSTALLED ELSEWHERE.</p> <p>c. DO NOT USE CONDUIT AND ASSOCIATED FITTINGS FOR APPLICATIONS OTHER THAN AS PERMITTED BY NFPA 70 AND PRODUCT LISTING.</p>	<p>a. DO NOT USE BOXES AND ASSOCIATED ACCESSORIES FOR APPLICATIONS OTHER THAN AS PERMITTED BY NFPA 70 AND PRODUCT LISTING.</p> <p>b. PROVIDE ALL BOXES, FITTINGS, SUPPORTS, AND ACCESSORIES REQUIRED FOR A COMPLETE RACEWAY SYSTEM AND TO ACCOMMODATE DEVICES AND EQUIPMENT TO BE INSTALLED.</p> <p>c. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.</p> <p>d. WHERE BOX SIZE IS NOT INDICATED, SIZE TO COMPLY WITH NFPA 70 BUT NOT LESS THAN APPLICABLE MINIMUM SIZE REQUIREMENTS SPECIFIED.</p>	<p>a. CONDUCTORS USED THROUGHOUT THIS PROJECT SHALL BE COPPER.</p> <p>b. CONDUCTORS SHALL BE INSULATED FOR 600 VOLTS UNLESS SHOWN OTHERWISE.</p> <p>c. ALL WIRES AND CABLES NOT INSTALLED IN SEALED CONDUIT SHALL BE PLENUM RATED.</p> <p>d. COLOR CODING OF WIRING SHALL MATCHING EXISTING.</p>	<p>a. DEVICES, OUTLETS, AND JUNCTION BOXES SHOWN ON DRAWINGS ARE DIAGRAMMATIC. COORDINATE EXACT PLACEMENT OF ALL DEVICES WITH OWNER AND OTHER TRADES PRIOR TO INSTALLATION. VERIFY DOOR SWING PRIOR TO INSTALLATION OF ALL SWITCH BOXES. ADJUSTMENT OF LOCATION PRIOR TO INSTALLATION, SHALL BE DONE WITH NO ADDITIONAL COST TO THE OWNER.</p> <p>b. RECEPTACLES SHALL HAVE A GROUNDING POLE.</p>	<p>a. THE ELECTRICAL SYSTEM GROUND SHALL CONFORM TO THE REQUIREMENTS OF THE NEC AND DETAILS INDICATED ON THE DRAWINGS.</p> <p>b. RACEWAY SYSTEMS SHALL NOT BE USED AS SOLE GROUND PATH.</p>	<p>a. FURNISH AND INSTALL SAFETY DISCONNECTS AND MOTOR RATED SWITCHES SHOWN OR AS INDICATED ON THE ELECTRICAL AND MECHANICAL COORDINATION SCHEDULE, IF INDICATED AS FURNISHED WITH EQUIPMENT, ELECTRICAL CONTRACTOR SHALL INSTALL.</p>
2. PART 2 - PRODUCTS	B. PART 2 - PRODUCTS	B. PART 2 - PRODUCTS	B. PART 2 - PRODUCTS	B. PART 2 - PRODUCTS	B. PART 2 - PRODUCTS
<p>a. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE NOTED.</p> <p>b. MINIMUM UNDERGROUND EXTERIOR CONDUIT SIZE SHALL BE 1" UNLESS OTHERWISE NOTED.</p> <p>c. THREADED TYPE CONNECTIONS AND COUPLINGS SHALL BE USED WITH RIGID AND INTERMEDIATE METAL CONDUIT.</p> <p>d. CONNECTORS FOR EMT SHALL BE STEEL OR MALLEABLE IRON AND OF THE COMPRESSION TYPE. INDENTOR, FRICTION, OR SET SCREW TYPE OF THOSE MADE FROM DIE CAST METAL WILL NOT BE PERMITTED ON THIS PROJECT.</p> <p>e. WHERE CONNECTIONS ARE MADE TO VIBRATING EQUIPMENT, A MAXIMUM SIX FOOT LENGTH OF FLEXIBLE STEEL CONDUIT WITH APPROPRIATE FITTINGS SHALL BE USED. IN WET LOCATIONS, USE LIQUID-TIGHT FLEXIBLE STEEL CONDUIT.</p>	<p>a. OUTLET AND DEVICE BOXES UP TO 100 CUBIC INCHES, INCLUDING THOSE USED AS JUNCTION AND PULL BOXES:</p> <ol style="list-style-type: none"> USE SUITABLE MASONRY TYPE BOXES WHERE FLUSH-MOUNTED IN MASONRY WALLS. USE RAISED COVERS SUITABLE FOR THE TYPE OF WALL CONSTRUCTION AND DEVICE CONFIGURATION WHERE REQUIRED. USE SHALLOW BOXES WHERE REQUIRED BY THE TYPE OF WALL CONSTRUCTION. DO NOT USE "THROUGH-WALL" BOXES DESIGNED FOR ACCESS FROM BOTH SIDES OF WALL. BOXES FOR SUPPORTING LUMINAIRES: LISTED AS SUITABLE FOR THE TYPE AND WEIGHT OF LOAD TO BE SUPPORTED; FURNISHED WITH FIXTURE STUD TO ACCOMMODATE MOUNTING OF LUMINAIRE WHERE REQUIRED. BOXES FOR GANGED DEVICES: USE MULTIGANG BOXES OF SINGLE-PIECE CONSTRUCTION. DO NOT USE FIELD-CONNECTED GANGABLE BOXES. MINIMUM SIZE SHALL BE 4" SQUARE BY 2-1/8" DEEP. REFER TO TELECOMMUNICATIONS AND LOW VOLTAGE SPECIFICATION SECTION FOR ADDITIONAL REQUIREMENTS. <p>b. JUNCTION AND PULL BOXES LARGER THAN 6 SQUARE FEET SHALL BE PROVIDED WITH HINGED-COVER ENCLOSURES.</p> <p>c. FLOORBOXES AND POKE-THRUS:</p> <ol style="list-style-type: none"> FURNISH AS INDICATED ON DRAWINGS. FURNISH WITH BARRIER TO SEPARATE HIGH AND LOW VOLTAGE SYSTEMS. FURNISH DUPLEX RECEPTACLES PER WIRING DEVICES SPECIFICATION SECTION. FURNISH COMPLETE WITH NECESSARY GASKETS, PLATES, SPACERS, COVERS, AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION. UNUSED OPENINGS SHALL BE COVERED WITH BLANK COVERPLATES AND FITTINGS REQUIRED TO MAINTAIN RATING. FINISH SHALL BE DETERMINED DURING SUBMITTAL REVIEW. <p>d. IN-GROUND HANDHOLES SHALL BE POLYMER CONCRETE CONSTRUCTION WITH OPEN BOTTOM STACKABLE. QUAZITE PG STYLE OR EQUAL.</p> <ol style="list-style-type: none"> ALL STAINLESS STEEL HARDWARE WITH MINIMUM TWO FASTENERS PER LID. EXTRA HEAVY DUTY COVERS WITH NON-SKID SURFACE, TIER 22, 22,500 LB VERTICAL AND 800 IBS/SQ. FT. LATERAL DESIGN LOADS, UNLESS NOTED OTHERWISE. MINIMUM SIZE TO BE 11"x18", UNLESS NOTED OTHERWISE. 	<p>a. INSULATION SHALL BE THERMOPLASTIC TYPE THWN, THHN, OR XHHW. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID.</p> <p>b. CONDUCTORS SMALLER THAN #12 SHALL NOT BE USED ON THIS PROJECT UNLESS SPECIFICALLY NOTED.</p> <p>c. NO TYPE AC, MC, OR TYPE NM CABLES WILL BE ALLOWED.</p> <p>d. WIRING SYSTEM SHALL BE COLOR CODED TO INDUSTRY STANDARD APPLICATIONS.</p> <p>e. EACH SINGLE PHASE BRANCH CIRCUIT CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANELBOARD.</p> <p>d. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET.</p> <p>e. PULL ALL CONDUCTORS INTO RACEWAY AT THE SAME TIME.</p> <p>f. UTILIZE STRANDED TYPE CONDUCTORS FOR ALL VIBRATION TYPE INSTALLATIONS (I.E. MOTORS, ETC.).</p> <p>g. SPLICES IN BRANCH CIRCUIT WIRES SHALL BE MADE ONLY IN ACCESSIBLE JUNCTION BOXES. KEEP CONDUCTOR SPLICES TO A MINIMUM.</p> <p>h. PROVIDE SEPARATE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.</p> <p>i. ALL CABLE FOR MAJOR FEEDERS SHALL BE CONTINUOUS FROM ORIGIN TO TERMINATION, UNLESS OTHERWISE INDICATED.</p> <p>j. WHERE CIRCUITS PASS THROUGH AN OUTLET BOX AND IS TAPPED, ALL LEADS SHALL BE PITGAILED TO THE WIRING DEVICE, INCLUDING EQUIPMENT GROUND.</p>	<p>a. REFER TO MATERIAL LIST FOR ADDITIONAL INFORMATION.</p> <p>b. WIRING DEVICE MANUFACTURERS:</p> <ol style="list-style-type: none"> LEVITON LEGRAND - PASS AND SEYMOUR/WIREMOLD HUBBELL COOPER <p>c. ALL DEVICES SHALL BE HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE OR BETTER.</p> <p>d. INTERIOR COVERPLATES SHALL BE NYLON AND MATCH THE DEVICES. USE JUMBO SIZE PLATES FOR OUTLETS INSTALLED IN MASONRY WALLS. USE GALVANIZED STEEL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE MOUNTED OUTLETS, UNLESS OTHERWISE NOTED.</p> <p>e. PROVIDE QUIET TYPE TOGGLE SWITCHES RATED 120/277V, 20 AMP.</p> <p>f. RECEPTACLES:</p> <ol style="list-style-type: none"> REFER TO MATERIAL LIST FOR MORE INFORMATION. POKE THRU/FLOORBOX DEVICES: <ol style="list-style-type: none"> REFER TO MATERIAL LIST FOR MORE INFORMATION. COORDINATE EXACT LOCATIONS AND ELECTRICAL REQUIREMENTS WITH FURNITURE AND AV VENDORS PRIOR TO ORDERING AND ROUGH-IN. DO NOT SCALE DRAWINGS FOR LOCATIONS. POKE-THRU DEVICE LOCATIONS ARE SCHEMATIC AND SHALL BE COORDINATED WITH EXISTING STRUCTURAL MEMBERS PRIOR TO DRILLING. DEVICES SHALL BE COMPLETE WITH NECESSARY GASKETS, PLATES, SPACES, COVERS, FASTENERS, BRACKETS, AND COVERPLATES SUITABLE FOR ALL DEVICES LOCATED WITHIN. MANUFACTURER SPECIFIC BLANK COVERPLATES SHALL BE FURNISHED FOR ALL UNUSED OPENINGS. WHERE POKE-THRUS ARE LOCATED ABOVE AN INACCESSIBLE CEILING SPACE, FURNISH RECEPTACLES WITH LEADS SUITABLE TO BE EXTENDED TO NEAREST ACCESSIBLE CEILING SPACE. 	<p>a. PROVIDE GREEN GROUNDING WIRE IN ALL BRANCH CIRCUITS AND FEEDERS. CONNECT TO GROUND BAR IN PANELBOARDS AND TO GROUND TERMINAL OR CHASSIS ON EQUIPMENT.</p> <p>c. PART 3 - EXECUTION</p> <p>a. BOND MECHANICAL DUCTWORK AND PIPING TO GROUND SYSTEM.</p>	<p>a. REFER TO MATERIAL LIST FOR MORE INFORMATION.</p> <p>b. ALL DISCONNECTS SHALL BE HEAVY DUTY TYPE UNLESS NOTED OTHERWISE.</p> <p>c. ENCLOSED SWITCH MANUFACTURERS:</p> <ol style="list-style-type: none"> SQUARE D GENERAL ELECTRIC EATON <p>d. INTERIOR DEVICES SHALL HAVE A NEMA 1 RATED HOUSING UNLESS OTHERWISE NOTED.</p> <p>e. EXTERIOR DEVICES SHALL HAVE A NEMA 3R RATED HOUSING UNLESS OTHERWISE NOTED.</p> <p>f. MOTOR STARTERS SHALL BE MANUAL WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS.</p> <p>g. FURNISH AND INSTALL FUSES FOR EQUIPMENT AS REQUIRED. COORDINATE FUSE RATING WITH EQUIPMENT MANUFACTURER'S RECOMMENDATION.</p> <p>h. POLES, RATINGS, AND FUSES SHALL MATCH BRANCH CIRCUIT AND LOAD CHARACTERISTICS.</p>
3. PART 3 - EXECUTION	C. PART 3 - EXECUTION	C. PART 3 - EXECUTION	C. PART 3 - EXECUTION	C. PART 3 - EXECUTION	C. PART 3 - EXECUTION
<p>a. CONDUIT AND OUTLET INSTALLATIONS SHALL BE CONCEALED UNLESS OTHERWISE NOTED.</p> <p>b. CONDUIT APPLICATIONS:</p> <ol style="list-style-type: none"> UNDER SLAB ON GRADE, DIRECT BURIED: RIGID PVC CONDUIT. EXTERIOR, EXPOSED: GALVANIZED STEEL RIGID METAL CONDUIT (GRS) OR INTERMEDIATE METAL CONDUIT (IMC). CONCEALED WITHIN HOLLOW STUD WALLS: INTERIOR: ELECTRICAL METALLIC TUBING (EMT) CONCEALED ABOVE ACCESSIBLE CEILINGS: ELECTRICAL METALLIC TUBING (EMT). CONNECTIONS TO LUMINAIRES ABOVE ACCESSIBLE CEILINGS: FLEXIBLE METAL CONDUIT, MAXIMUM LENGTH 6 FEET. FISHED IN EXISTING WALLS WHERE NECESSARY: USE FLEXIBLE METAL CONDUIT. TELECOMMUNICATIONS: REFER TO CORRESPONDING SPECIFICATION SECTION FOR REQUIREMENTS. <p>c. PVC CONDUIT SHALL NOT BE INSTALLED ABOVE GRADE.</p> <p>d. WHERE PVC CONDUIT IS PROVIDED, TRANSITION TO GALVANIZED STEEL RIGID METAL CONDUIT WHERE EMERGING FROM UNDERGROUND. TRANSITION SHALL OCCUR BELOW GRADE STARTING WITH ASSOCIATED ELBOW.</p> <p>e. ALL FIRE ALARM CABLING SHALL BE ROUTED IN CONDUIT.</p> <p>f. CONDUIT SHALL NOT BE USED AS THE SOLE GROUNDING MEANS.</p> <p>g. CONDUIT SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE. DO NOT PROVIDE SUPPORT FROM PIPING, DUCTWORK, CEILING GRID OR OTHER SYSTEMS.</p> <p>h. PROVIDE CONDUIT SUPPORTS IN ACCORDANCE WITH NEC REQUIREMENTS FOR WIRING METHOD USED. COMPLY WITH NECA-1.</p> <p>i. WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE A 1-HOLE OR 2-HOLE CONDUIT STRAP.</p> <p>j. DO NOT USE POWDER ACTUATED ANCHORS IN EXISTING STRUCTURE.</p> <p>k. CONDUIT SHALL BE ROUTED IN A NEAT, WORKMAN LIKE MANNER.</p>	<p>a. ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC, UNLESS NOTED OTHERWISE IN SCHEDULE ON DRAWINGS.</p> <p>b. MULTIPLE GANG SWITCH OUTLETS SHALL CONSIST OF THE REQUIRED NUMBER OF GANG BOXES APPROPRIATE TO THE QUANTITY OF SWITCHES COMPRISING THE GANG. PROVIDE PLASTER RINGS AND COVERS AS NEEDED.</p> <p>c. PULL AND JUNCTION BOXES, GALVANIZED STEEL, SIZED PER NEC.</p> <p>d. INDEPENDENTLY SUPPORT BOXES. BOXES SHALL NOT BE SUPPORTED BY CONDUIT.</p> <p>e. FLOORBOXES AND POKE-THRUS SHALL BE CLEANED OF ALL DIRT AND DEBRIS.</p> <p>f. COORDINATE ALL CORING WITH TENANT BELOW AS APPLICABLE. ALL CORING SHALL TAKE PLACE OUTSIDE OF NORMAL BUSINESS HOURS.</p> <p>g. FLOORBOX AND POKE-THRU LAYOUTS PROVIDED FOR SCOPING PURPOSES ONLY. EXACT DIMENSIONS SHALL BE COORDINATED WITH STRUCTURE AND FURNITURE PROVIDER AS REQUIRED PRIOR TO ROUGH-IN. WHERE DISCREPANCIES EXIST, COORDINATE NECESSARY ADJUSTMENTS WITH DESIGN TEAM.</p> <p>h. FOR POKE-THRUS LOCATED ABOVE INACCESSIBLE CEILING SPACE, LOW VOLTAGE CABLING SHALL BE INSTALLED WITHIN CONDUIT.</p>	<p>a. WIRING SHALL BE IN CONDUIT OR APPROVED RACEWAYS.</p> <p>b. NO MORE THAN 3 PHASE CONDUCTORS TO A CONDUIT.</p> <p>c. EACH SINGLE PHASE BRANCH CIRCUIT CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANELBOARD.</p> <p>d. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET.</p> <p>e. PULL ALL CONDUCTORS INTO RACEWAY AT THE SAME TIME.</p> <p>f. UTILIZE STRANDED TYPE CONDUCTORS FOR ALL VIBRATION TYPE INSTALLATIONS (I.E. MOTORS, ETC.).</p> <p>g. SPLICES IN BRANCH CIRCUIT WIRES SHALL BE MADE ONLY IN ACCESSIBLE JUNCTION BOXES. KEEP CONDUCTOR SPLICES TO A MINIMUM.</p> <p>h. PROVIDE SEPARATE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.</p> <p>i. ALL CABLE FOR MAJOR FEEDERS SHALL BE CONTINUOUS FROM ORIGIN TO TERMINATION, UNLESS OTHERWISE INDICATED.</p> <p>j. WHERE CIRCUITS PASS THROUGH AN OUTLET BOX AND IS TAPPED, ALL LEADS SHALL BE PITGAILED TO THE WIRING DEVICE, INCLUDING EQUIPMENT GROUND.</p>	<p>a. MOUNTING DIMENSIONS INDICATED FOR DEVICES SHALL BE HEIGHT TO CENTER OF DEVICE ABOVE FINISHED FLOOR (18" AFF IF NOT SHOWN).</p> <p>b. RECEPTACLES AND DATA NOTED AS 'AC', SHALL BE MOUNTED VERTICALLY 8" ABOVE COUNTER TOP OR 4" ABOVE BLACKSPASH UNLESS OTHERWISE NOTED/SHOWN.</p> <p>1. RECEPTACLE GROUND POLE TO BE DOWN FOR VERTICAL MOUNT OR NEUTRAL POLE UP FOR HORIZONTAL MOUNT.</p> <p>c. SWITCHES AND RECEPTACLES SHALL BE MOUNTED AT THE HEIGHTS SHOWN. ONLY SCREW TYPE TERMINATIONS SHALL BE USED. COORDINATE DISCREPANCIES WITH DESIGN TEAM PRIOR TO ROUGH-IN.</p> <p>d. WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES INSTALLED.</p> <p>e. TO REDUCE NOISE BETWEEN WALLS, CONTRACTOR SHALL AVOID INSTALLING POWER OR DATA OUTLETS LOCATED BACK TO BACK. WHERE OUTLETS ARE REQUIRED TO BE LOCATED BACK TO BACK, CONTRACTOR SHALL PROVIDE SOUND PROOFING MATERIAL BETWEEN DEVICE BOXES.</p> <p>f. ALL GFI TYPE RECEPTACLES SHALL BE INSTALLED WHERE GFI NOTATION IS SHOWN ON PLANS. DOWNSTREAM PROTECTION OF RECEPTACLES IS ONLY ALLOWED WHERE SPECIFICALLY INDICATED ON DRAWINGS.</p> <p>1. ROUTE GREEN INSULATED GROUNDING CONDUCTOR FROM GROUND BAR IN BRANCH PANEL TO GROUND TERMINAL ON WIRING DEVICES.</p>	<p>a. INDICATE SOURCE AND CIRCUIT NUMBER ON FRONT OF COVERPLATES LOCATED IN UNFINISHED SPACES.</p> <p>2. INDICATE SOURCE AND CIRCUIT NUMBER ON INSIDE FACE OF COVERPLATES LOCATED IN EXPOSED FINISHED SPACES.</p> <p>b. COVERPLATES FOR RECEPTACLES AND SWITCHES:</p> <ol style="list-style-type: none"> INDICATE SOURCE AND CIRCUIT NUMBER SERVING THE DEVICE ON BACK OF COVERPLATE <p>c. WHERE CONDUIT LEAVES A PANELBOARD, IDENTIFY EACH CONDUIT INDICATING CIRCUITS CONTAINED WITHIN.</p> <p>d. ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED 'OFF' AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.</p> <p>e. UTILIZE ENGRAVED PLASTIC LAMINATE SIGN: 1/2" HIGH LETTERING ON 1-1/2" HIGH SIGN, WHITE LETTERING IN BLACK FIELD. PROVIDE TEXT MATCHING TERMINOLOGY AND CIRCUIT NUMBERING ON THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIECES OF EQUIPMENT:</p> <ol style="list-style-type: none"> PANELBOARDS, CABINETS, ENCLOSURES DISTRIBUTION BOARD DISTRIBUTION BOARD CIRCUIT BREAKERS DISCONNECTS, STARTERS, AND DRIVES INVERTERS 	<p>a. MOUNT THE TOP OF SWITCH AT A MAXIMUM HEIGHT OF 6'-0" TO TOP OF ENCLOSURE FROM GROUND.</p> <p>b. REFER TO APPROVED MECHANICAL AND PLUMBING EQUIPMENT SUBMITTAL DRAWINGS FOR EQUIPMENT RATINGS AND SIZES. COST OF CHANGES TO ELECTRICAL INSTALLATION RESULTING FROM SUBMISSION OF ALTERNATE EQUIPMENT FROM THAT SCHEDULED ON THE MECHANICAL DRAWINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR/VENDOR PROVIDING SUCH EQUIPMENT.</p> <p>1. WHERE DISCONNECT SWITCHES CANNOT BE MOUNTED ON WALL, PROVIDE SUPPORT RACKS FABRICATED OF GALVANIZED U-CHANNEL STRUT.</p>
2	2	2	2	2	2
<p>c. CONDUIT SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE. DO NOT PROVIDE SUPPORT FROM PIPING, DUCTWORK, CEILING GRID OR OTHER SYSTEMS.</p> <p>h. PROVIDE CONDUIT SUPPORTS IN ACCORDANCE WITH NEC REQUIREMENTS FOR WIRING METHOD USED. COMPLY WITH NECA-1.</p> <p>i. WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE A 1-HOLE OR 2-HOLE CONDUIT STRAP.</p> <p>j. DO NOT USE POWDER ACTUATED ANCHORS IN EXISTING STRUCTURE.</p> <p>k. CONDUIT SHALL BE ROUTED IN A NEAT, WORKMAN LIKE MANNER.</p> <p>l. CONDUIT RUNS ARE NOT SHOWN TO ALLOW THE CONTRACTORS TO CHOOSE THEIR OWN ROUTE TO VARIOUS ELECTRICAL EQUIPMENT AND DEVICES. HOWEVER, CARE SHALL BE TAKEN TO COORDINATE THE CONDUIT RUNS WITH EXISTING CONDITIONS AND WORK TO BE INSTALLED BY OTHER TRADES.</p> <p>m. CONDUITS INSTALLED UNDERGROUND OR EMBEDDED IN CONCRETE MAY BE ROUTED IN THE SHORTEST POSSIBLE MANNER UNLESS OTHERWISE INDICATED. ROUTE ALL OTHER CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL.</p> <p>n. UNLESS OTHERWISE APPROVED, DO NOT ROUTE CONDUIT EXPOSED:</p> <ol style="list-style-type: none"> ACROSS FLOORS ACROSS BUILDING EXTERIOR SURFACES BELOW CEILING ELEMENTS (ACT, CLOUDS, BAFFLES, ETC) <p>o. AREAS OPEN TO STRUCTURE:</p> <ol style="list-style-type: none"> CONDUIT SHALL BE ROUTED TIGHT TO STRUCTURE UNLESS OTHERWISE REQUIRED BY CODE. ROUTE CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL. CONDUIT SHALL BE HIDDEN ABOVE CEILING CLOUDS/BAFFLES AND HIDDEN FROM PUBLIC VIEW WHERE POSSIBLE. 	<p>a. ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC, UNLESS NOTED OTHERWISE IN SCHEDULE ON DRAWINGS.</p> <p>b. MULTIPLE GANG SWITCH OUTLETS SHALL CONSIST OF THE REQUIRED NUMBER OF GANG BOXES APPROPRIATE TO THE QUANTITY OF SWITCHES COMPRISING THE GANG. PROVIDE PLASTER RINGS AND COVERS AS NEEDED.</p> <p>c. PULL AND JUNCTION BOXES, GALVANIZED STEEL, SIZED PER NEC.</p> <p>d. INDEPENDENTLY SUPPORT BOXES. BOXES SHALL NOT BE SUPPORTED BY CONDUIT.</p> <p>e. FLOORBOXES AND POKE-THRUS SHALL BE CLEANED OF ALL DIRT AND DEBRIS.</p> <p>f. COORDINATE ALL CORING WITH TENANT BELOW AS APPLICABLE. ALL CORING SHALL TAKE PLACE OUTSIDE OF NORMAL BUSINESS HOURS.</p> <p>g. FLOORBOX AND POKE-THRU LAYOUTS PROVIDED FOR SCOPING PURPOSES ONLY. EXACT DIMENSIONS SHALL BE COORDINATED WITH STRUCTURE AND FURNITURE PROVIDER AS REQUIRED PRIOR TO ROUGH-IN. WHERE DISCREPANCIES EXIST, COORDINATE NECESSARY ADJUSTMENTS WITH DESIGN TEAM.</p> <p>h. FOR POKE-THRUS LOCATED ABOVE INACCESSIBLE CEILING SPACE, LOW VOLTAGE CABLING SHALL BE INSTALLED WITHIN CONDUIT.</p>	<p>a. WIRING SHALL BE IN CONDUIT OR APPROVED RACEWAYS.</p> <p>b. NO MORE THAN 3 PHASE CONDUCTORS TO A CONDUIT.</p> <p>c. EACH SINGLE PHASE BRANCH CIRCUIT CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANELBOARD.</p> <p>d. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET.</p> <p>e. PULL ALL CONDUCTORS INTO RACEWAY AT THE SAME TIME.</p> <p>f. UTILIZE STRANDED TYPE CONDUCTORS FOR ALL VIBRATION TYPE INSTALLATIONS (I.E. MOTORS, ETC.).</p> <p>g. SPLICES IN BRANCH CIRCUIT WIRES SHALL BE MADE ONLY IN ACCESSIBLE JUNCTION BOXES. KEEP CONDUCTOR SPLICES TO A MINIMUM.</p> <p>h. PROVIDE SEPARATE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.</p> <p>i. ALL CABLE FOR MAJOR FEEDERS SHALL BE CONTINUOUS FROM ORIGIN TO TERMINATION, UNLESS OTHERWISE INDICATED.</p> <p>j. WHERE CIRCUITS PASS THROUGH AN OUTLET BOX AND IS TAPPED, ALL LEADS SHALL BE PITGAILED TO THE WIRING DEVICE, INCLUDING EQUIPMENT GROUND.</p>	<p>a. MOUNTING DIMENSIONS INDICATED FOR DEVICES SHALL BE HEIGHT TO CENTER OF DEVICE ABOVE FINISHED FLOOR (18" AFF IF NOT SHOWN).</p> <p>b. RECEPTACLES AND DATA NOTED AS 'AC', SHALL BE MOUNTED VERTICALLY 8" ABOVE COUNTER TOP OR 4" ABOVE BLACKSPASH UNLESS OTHERWISE NOTED/SHOWN.</p> <p>1. RECEPTACLE GROUND POLE TO BE DOWN FOR VERTICAL MOUNT OR NEUTRAL POLE UP FOR HORIZONTAL MOUNT.</p> <p>c. SWITCHES AND RECEPTACLES SHALL BE MOUNTED AT THE HEIGHTS SHOWN. ONLY SCREW TYPE TERMINATIONS SHALL BE USED. COORDINATE DISCREPANCIES WITH DESIGN TEAM PRIOR TO ROUGH-IN.</p> <p>d. WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES INSTALLED.</p> <p>e. TO REDUCE NOISE BETWEEN WALLS, CONTRACTOR SHALL AVOID INSTALLING POWER OR DATA OUTLETS LOCATED BACK TO BACK. WHERE OUTLETS ARE REQUIRED TO BE LOCATED BACK TO BACK, CONTRACTOR SHALL PROVIDE SOUND PROOFING MATERIAL BETWEEN DEVICE BOXES.</p> <p>f. ALL GFI TYPE RECEPTACLES SHALL BE INSTALLED WHERE GFI NOTATION IS SHOWN ON PLANS. DOWNSTREAM PROTECTION OF RECEPTACLES IS ONLY ALLOWED WHERE SPECIFICALLY INDICATED ON DRAWINGS.</p> <p>1. ROUTE GREEN INSULATED GROUNDING CONDUCTOR FROM GROUND BAR IN BRANCH PANEL TO GROUND TERMINAL ON WIRING DEVICES.</p>	<p>a. INDICATE SOURCE AND CIRCUIT NUMBER SERVING THE DEVICE ON BACK OF COVERPLATE</p> <p>c. WHERE CONDUIT LEAVES A PANELBOARD, IDENTIFY EACH CONDUIT INDICATING CIRCUITS CONTAINED WITHIN.</p> <p>d. ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED 'OFF' AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.</p> <p>e. UTILIZE ENGRAVED PLASTIC LAMINATE SIGN: 1/2" HIGH LETTERING ON 1-1/2" HIGH SIGN, WHITE LETTERING IN BLACK FIELD. PROVIDE TEXT MATCHING TERMINOLOGY AND CIRCUIT NUMBERING ON THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIECES OF EQUIPMENT:</p> <ol style="list-style-type: none"> PANELBOARDS, CABINETS, ENCLOSURES DISTRIBUTION BOARD DISTRIBUTION BOARD CIRCUIT BREAKERS DISCONNECTS, STARTERS, AND DRIVES INVERTERS 	<p>a. REFER TO MATERIAL LIST FOR MORE INFORMATION.</p> <p>b. PROVIDE NEW DEVICES AS SHOWN ON PLANS COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM.</p> <p>c. STROBE LIGHTS SHALL BE THE CANDELA RATING MATCHING THE VALUE INDICATED ON THE FLOOR PLAN. MOUNTED CEILING DEVICES NO HIGHER THAN 12' ABOVE FINISHED FLOOR. MOUNT ALL DEVICES 6" BELOW ACCESSIBLE CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER.</p>
3	3	3	3	3	3
<p>c. CONDUIT SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE. DO NOT PROVIDE SUPPORT FROM PIPING, DUCTWORK, CEILING GRID OR OTHER SYSTEMS.</p> <p>h. PROVIDE CONDUIT SUPPORTS IN ACCORDANCE WITH NEC REQUIREMENTS FOR WIRING METHOD USED. COMPLY WITH NECA-1.</p> <p>i. WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE A 1-HOLE OR 2-HOLE CONDUIT STRAP.</p> <p>j. DO NOT USE POWDER ACTUATED ANCHORS IN EXISTING STRUCTURE.</p> <p>k. CONDUIT SHALL BE ROUTED IN A NEAT, WORKMAN LIKE MANNER.</p> <p>l. CONDUIT RUNS ARE NOT SHOWN TO ALLOW THE CONTRACTORS TO CHOOSE THEIR OWN ROUTE TO VARIOUS ELECTRICAL EQUIPMENT AND DEVICES. HOWEVER, CARE SHALL BE TAKEN TO COORDINATE THE CONDUIT RUNS WITH EXISTING CONDITIONS AND WORK TO BE INSTALLED BY OTHER TRADES.</p> <p>m. CONDUITS INSTALLED UNDERGROUND OR EMBEDDED IN CONCRETE MAY BE ROUTED IN THE SHORTEST POSSIBLE MANNER UNLESS OTHERWISE INDICATED. ROUTE ALL OTHER CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL.</p> <p>n. UNLESS OTHERWISE APPROVED, DO NOT ROUTE CONDUIT EXPOSED:</p> <ol style="list-style-type: none"> ACROSS FLOORS ACROSS BUILDING EXTERIOR SURFACES BELOW CEILING ELEMENTS (ACT, CLOUDS, BAFFLES, ETC) <p>o. AREAS OPEN TO STRUCTURE:</p> <ol style="list-style-type: none"> CONDUIT SHALL BE ROUTED TIGHT TO STRUCTURE UNLESS OTHERWISE REQUIRED BY CODE. ROUTE CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL. CONDUIT SHALL BE HIDDEN ABOVE CEILING CLOUDS/BAFFLES AND HIDDEN FROM PUBLIC VIEW WHERE POSSIBLE. 	<p>a. ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC, UNLESS NOTED OTHERWISE IN SCHEDULE ON DRAWINGS.</p> <p>b. MULTIPLE GANG SWITCH OUTLETS SHALL CONSIST OF THE REQUIRED NUMBER OF GANG BOXES APPROPRIATE TO THE QUANTITY OF SWITCHES COMPRISING THE GANG. PROVIDE PLASTER RINGS AND COVERS AS NEEDED.</p> <p>c. PULL AND JUNCTION BOXES, GALVANIZED STEEL, SIZED PER NEC.</p> <p>d. INDEPENDENTLY SUPPORT BOXES. BOXES SHALL NOT BE SUPPORTED BY CONDUIT.</p> <p>e. FLOORBOXES AND POKE-THRUS SHALL BE CLEANED OF ALL DIRT AND DEBRIS.</p> <p>f. COORDINATE ALL CORING WITH TENANT BELOW AS APPLICABLE. ALL CORING SHALL TAKE PLACE OUTSIDE OF NORMAL BUSINESS HOURS.</p> <p>g. FLOORBOX AND POKE-THRU LAYOUTS PROVIDED FOR SCOPING PURPOSES ONLY. EXACT DIMENSIONS SHALL BE COORDINATED WITH STRUCTURE AND FURNITURE PROVIDER AS REQUIRED PRIOR TO ROUGH-IN. WHERE DISCREPANCIES EXIST, COORDINATE NECESSARY ADJUSTMENTS WITH DESIGN TEAM.</p> <p>h. FOR POKE-THRUS LOCATED ABOVE INACCESSIBLE CEILING SPACE, LOW VOLTAGE CABLING SHALL BE INSTALLED WITHIN CONDUIT.</p>	<p>a. WIRING SHALL BE IN CONDUIT OR APPROVED RACEWAYS.</p> <p>b. NO MORE THAN 3 PHASE CONDUCTORS TO A CONDUIT.</p> <p>c. EACH SINGLE PHASE BRANCH CIRCUIT CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANELBOARD.</p> <p>d. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET.</p> <p>e. PULL ALL CONDUCTORS INTO RACEWAY AT THE SAME TIME.</p> <p>f. UTILIZE STRANDED TYPE CONDUCTORS FOR ALL VIBRATION TYPE INSTALLATIONS (I.E. MOTORS, ETC.).</p> <p>g. SPLICES IN BRANCH CIRCUIT WIRES SHALL BE MADE ONLY IN ACCESSIBLE JUNCTION BOXES. KEEP CONDUCTOR SPLICES TO A MINIMUM.</p> <p>h. PROVIDE SEPARATE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.</p> <p>i. ALL CABLE FOR MAJOR FEEDERS SHALL BE CONTINUOUS FROM ORIGIN TO TERMINATION, UNLESS OTHERWISE INDICATED.</p> <p>j. WHERE CIRCUITS PASS THROUGH AN OUTLET BOX AND IS TAPPED, ALL LEADS SHALL BE PITGAILED TO THE WIRING DEVICE, INCLUDING EQUIPMENT GROUND.</p>	<p>a. MOUNTING DIMENSIONS INDICATED FOR DEVICES SHALL BE HEIGHT TO CENTER OF DEVICE ABOVE FINISHED FLOOR (18" AFF IF NOT SHOWN).</p> <p>b. RECEPTACLES AND DATA NOTED AS 'AC', SHALL BE MOUNTED VERTICALLY 8" ABOVE COUNTER TOP OR 4" ABOVE BLACKSPASH UNLESS OTHERWISE NOTED/SHOWN.</p> <p>1. RECEPTACLE GROUND POLE TO BE DOWN FOR VERTICAL MOUNT OR NEUTRAL POLE UP FOR HORIZONTAL MOUNT.</p> <p>c. SWITCHES AND RECEPTACLES SHALL BE MOUNTED AT THE HEIGHTS SHOWN. ONLY SCREW TYPE TERMINATIONS SHALL BE USED. COORDINATE DISCREPANCIES WITH DESIGN TEAM PRIOR TO ROUGH-IN.</p> <p>d. WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES INSTALLED.</p> <p>e. TO REDUCE NOISE BETWEEN WALLS, CONTRACTOR SHALL AVOID INSTALLING POWER OR DATA OUTLETS LOCATED BACK TO BACK. WHERE OUTLETS ARE REQUIRED TO BE LOCATED BACK TO BACK, CONTRACTOR SHALL PROVIDE SOUND PROOFING MATERIAL BETWEEN DEVICE BOXES.</p> <p>f. ALL GFI TYPE RECEPTACLES SHALL BE INSTALLED WHERE GFI NOTATION IS SHOWN ON PLANS. DOWNSTREAM PROTECTION OF RECEPTACLES IS ONLY ALLOWED WHERE SPECIFICALLY INDICATED ON DRAWINGS.</p> <p>1. ROUTE GREEN INSULATED GROUNDING CONDUCTOR FROM GROUND BAR IN BRANCH PANEL TO GROUND TERMINAL ON WIRING DEVICES.</p>	<p>a. INDICATE SOURCE AND CIRCUIT NUMBER SERVING THE DEVICE ON BACK OF COVERPLATE</p> <p>c. WHERE CONDUIT LEAVES A PANELBOARD, IDENTIFY EACH CONDUIT INDICATING CIRCUITS CONTAINED WITHIN.</p> <p>d. ALL ELECTRICAL PANELS WITH ANY BRANCH CIRCUIT/LOAD REVISIONS (DEMOLITION OR NEW WORK) SHALL HAVE A NEW TYPED UPDATED CIRCUIT DIRECTORY CARD INSTALLED INSIDE THE DOOR OF THE ELECTRICAL PANEL. THE CONTRACTOR SHALL VERIFY THAT ALL UNUSED CIRCUIT BREAKERS ARE TURNED 'OFF' AND PROPERLY INDICATED AS 'SPARE' ON THE NEW CIRCUIT DIRECTORY CARD. THE CONTRACTOR SHALL INSTALL FILLER PLATES WHERE BREAKERS ARE REMOVED AS PART OF THIS PROJECT OR HAVE BEEN REMOVED PREVIOUSLY.</p> <p>e. UTILIZE ENGRAVED PLASTIC LAMINATE SIGN: 1/2" HIGH LETTERING ON 1-1/2" HIGH SIGN, WHITE LETTERING IN BLACK FIELD. PROVIDE TEXT MATCHING TERMINOLOGY AND CIRCUIT NUMBERING ON THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIECES OF EQUIPMENT:</p> <ol style="list-style-type: none"> PANELBOARDS, CABINETS, ENCLOSURES DISTRIBUTION BOARD DISTRIBUTION BOARD CIRCUIT BREAKERS DISCONNECTS, STARTERS, AND DRIVES INVERTERS 	<p>a. REFER TO MATERIAL LIST FOR MORE INFORMATION.</p> <p>b. PROVIDE NEW DEVICES AS SHOWN ON PLANS COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM.</p> <p>c. STROBE LIGHTS SHALL BE THE CANDELA RATING MATCHING THE VALUE INDICATED ON THE FLOOR PLAN. MOUNTED CEILING DEVICES NO HIGHER THAN 12' ABOVE FINISHED FLOOR. MOUNT ALL DEVICES 6" BELOW ACCESSIBLE CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER.</p>
4	4	4	4	4	4
<p>c. CONDUIT SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE. DO NOT PROVIDE SUPPORT FROM PIPING, DUCTWORK, CEILING GRID OR OTHER SYSTEMS.</p> <p>h. PROVIDE CONDUIT SUPPORTS IN ACCORDANCE WITH NEC REQUIREMENTS FOR WIRING METHOD USED. COMPLY WITH NECA-1.</p> <p>i. WHERE CONDUIT IS SURFACE MOUNTED TO A WALL AND RUN VERTICALLY DOWN TO A SWITCH/OUTLET BOX, UTILIZE A 1-HOLE OR 2-HOLE CONDUIT STRAP.</p> <p>j. DO NOT USE POWDER ACTUATED ANCHORS IN EXISTING STRUCTURE.</p> <p>k. CONDUIT SHALL BE ROUTED IN A NEAT, WORKMAN LIKE MANNER.</p> <p>l. CONDUIT RUNS ARE NOT SHOWN TO ALLOW THE CONTRACTORS TO CHOOSE THEIR OWN ROUTE TO VARIOUS ELECTRICAL EQUIPMENT AND DEVICES. HOWEVER, CARE SHALL BE TAKEN TO COORDINATE THE CONDUIT RUNS WITH EXISTING CONDITIONS AND WORK TO BE INSTALLED BY OTHER TRADES.</p> <p>m. CONDUITS INSTALLED UNDERGROUND OR EMBEDDED IN CONCRETE MAY BE ROUTED IN THE SHORTEST POSSIBLE MANNER UNLESS OTHERWISE INDICATED. ROUTE ALL OTHER CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL.</p> <p>n. UNLESS OTHERWISE APPROVED, DO NOT ROUTE CONDUIT EXPOSED:</p> <ol style="list-style-type: none"> ACROSS FLOORS ACROSS BUILDING EXTERIOR SURFACES BELOW CEILING ELEMENTS (ACT, CLOUDS, BAFFLES, ETC) <p>o. AREAS OPEN TO STRUCTURE:</p> <ol style="list-style-type: none"> CONDUIT SHALL BE ROUTED TIGHT TO STRUCTURE UNLESS OTHERWISE REQUIRED BY CODE. ROUTE CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURE AND SURFACES, FOLLOWING SURFACE CONTOURS WHERE PRACTICAL. CONDUIT SHALL BE HIDDEN ABOVE CEILING CLOUDS/BAFFLES AND HIDDEN FROM PUBLIC VIEW WHERE POSSIBLE. 	<p>a. ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC, UNLESS NOTED OTHERWISE IN SCHEDULE ON DRAWINGS.</p> <p>b. MULTIPLE GANG SWITCH OUTLETS SHALL CONSIST OF THE REQUIRED NUMBER OF GANG BOXES APPROPRIATE TO THE QUANTITY OF SWITCHES COMPRISING THE GANG. PROVIDE PLASTER RINGS AND COVERS AS NEEDED.</p> <p>c. PULL AND JUNCTION BOXES, GALVANIZED STEEL, SIZED PER NEC.</p> <p>d. INDEPENDENTLY SUPPORT BOXES. BOXES SHALL NOT BE SUPPORTED BY CONDUIT.</p> <p>e. FLOORBOXES AND POKE-THRUS SHALL BE CLEANED OF ALL DIRT AND DEBRIS.</p> <p>f. COORDINATE ALL CORING WITH TENANT BELOW AS APPLICABLE. ALL CORING SHALL TAKE PLACE OUTSIDE OF NORMAL BUSINESS HOURS.</p> <p>g. FLOORBOX AND POKE-THRU LAYOUTS PROVIDED FOR SCOPING PURPOSES ONLY. EXACT DIMENSIONS SHALL BE COORDINATED WITH STRUCTURE AND FURNITURE PROVIDER AS REQUIRED PRIOR TO ROUGH-IN. WHERE DISCREPANCIES EXIST, COORDINATE NECESSARY ADJUSTMENTS WITH DESIGN TEAM.</p> <p>h. FOR POKE-THRUS LOCATED ABOVE INACCESSIBLE CEILING SPACE, LOW VOLTAGE CABLING SHALL BE INSTALLED WITHIN CONDUIT.</p>	<p>a. WIRING SHALL BE IN CONDUIT OR APPROVED RACEWAYS.</p> <p>b. NO MORE THAN 3 PHASE CONDUCTORS TO A CONDUIT.</p> <p>c. EACH SINGLE PHASE BRANCH CIRCUIT CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANELBOARD.</p> <p>d. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET.</p> <p>e. PULL ALL CONDUCTORS INTO RACEWAY AT THE SAME TIME.</p> <p>f. UTILIZE</p>			

ELECTRICAL SPECIFICATIONS:

1. BASIC MATERIALS AND METHODS

A. PART 1 - GENERAL

- a. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY THE STATE, THE STATE AMENDMENTS, LOCAL/MUNICIPAL CODES AND ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION, THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).
- b. REFERENCES:
1. AMERICANS WITH DISABILITIES ACT (ADA)
2. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
3. ELECTRICAL TESTING LABORATORIES (ETL)
4. FEDERAL COMMUNICATIONS COMMISSION (FCC)
5. NATIONAL ELECTRICAL CODE (NEC)
6. NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)
7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
8. NATIONAL FIRE PROTECTION ASSOCIATED (NFPA) NFPA101
9. UNDERWRITERS' LABORATORIES, INC (UL)

- c. CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY INCLUDING ALL LABOR, MATERIALS, PERMITS, TAXES, FEES, INSPECTIONS, HARDWARE, AND COST FOR INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
- d. PRIOR TO BID, CONTRACTOR SHALL VISIT THE EXISTING SITE AND BECOME FAMILIAR WITH THE CONDITIONS AS THEY EXIST, OR THAT WILL IN ANY MANNER AFFECT THE WORK. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY, IN THIS CONNECTION, ON THE BEHALF OF THE CONTRACTORS FOR ANY ERROR OR NEGLIGENCE ON THEIR PART.

- e. AT THE TIME OF BIDDING, IF THE CONTRACTOR NOTES ANY PARTS OF THE DRAWINGS OR SPECIFICATIONS THAT DO NOT COMPLY WITH THE CODES OR REGULATIONS, THEY SHALL INFORM THE ARCHITECT/ENGINEER IN WRITING, REQUESTING A CLARIFICATION PRIOR TO THE BID. SUBMITTING A BID MEANS THE CONTRACTOR HAS READ THE COMPLETE DRAWINGS AND SPECIFICATIONS, WHERE TWO OR MORE CODES OR STANDARDS ARE IN CONFLICT, THAT REQUIRING THE HIGHEST ORDER OF WORKMANSHIP SHALL TAKE PRECEDENCE, BUT SUCH QUESTIONS SHALL BE REFERRED TO ARCHITECT/ENGINEER FOR FINAL DECISION.

- f. COORDINATE ELECTRICAL INSTALLATION WITH ALL TRADES PRIOR TO INSTALLATION. IF ELECTRICAL WORK INSTALLED INTERFERES WITH OTHER TRADES AFTER INSTALLATION, THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO CORRECT THE CONDITION AT NO ADDITIONAL COST TO THE OWNER.

- g. DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.

- h. THESE DRAWINGS SHALL NOT BE SCALED TO OBTAIN DIMENSIONS. REFER TO DIMENSIONED ARCHITECTURAL FLOOR PLANS. IF THE DIMENSIONS CANNOT BE DETERMINED BY THE INFORMATION GIVEN, CONTRACTOR SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION.

- i. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF BUILDING EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS, UNLESS THE CONDUIT IS BELOW SLAB IN THE COMPACTED GRANULAR FILL. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANUFACTURE'S WRITTEN RECOMMENDATIONS.

- j. PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, AND PARTITIONS BY ELECTRICAL CONTRACTOR SHALL BE SEALED WITH APPROPRIATE FIRE PROOFING MATERIAL TO RESTORE FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED ASSEMBLIES. PENETRATIONS THROUGH EXISTING FLOORS SHALL BE ASSUMED TO REQUIRE FIRE PROOFING, MINIMUM 2 HOUR, WHERE CONDUIT OR SLEEVES PASS THROUGH WALLS, FLOORS, OR PARTITIONS NOT CARRYING A FIRE RATING. PENETRATIONS SHALL BE SEALED WITH GROUT OR CAULK.

- k. THE CONTRACTOR SHALL KEEP THE WORK AREA CLEAN OF ALL DEBRIS ON A DAILY BASIS. ALL NEW MATERIALS AWAITING INSTALLATION SHALL BE KEPT IN AREAS DESIGNATED BY THE OWNER.

- l. PERIODIC SITE OBSERVATION BY THE ENGINEER IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.

- m. THE INFORMATION CONTAINED ON THE ELECTRICAL DRAWINGS IS IN ITSELF COMPLETE AND VOID UNLESS USED IN CONJUNCTION WITH ALL OTHER DISCIPLINE DRAWINGS, SPECIFICATIONS, TRADE PRACTICES, OR APPLICABLE STANDARDS, CODES, ETC., AND SHALL BE CONSIDERED THE CONTRACT DOCUMENTS AND WITH ALL THEREIN BY REFERENCE, WHICH THE CONTRACTOR CERTIFIES KNOWLEDGE OF BY SIGNING THE CONTRACT.

C. PART 1 - GENERAL (CONTINUED)

- n. CONTRACTOR IS TO ASSUME FULL RESPONSIBILITY, UNRELIEVED BY REVIEW OF SHOP DRAWINGS OR PERIODIC OBSERVATION OF CONSTRUCTION, FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SETS OF DRAWINGS FOR FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORM WORK, ETC.), FOR COORDINATION OF THE VARIOUS TRADES, AND FOR SAFE CONDITIONS ON THE JOB SITE. VARIATIONS IN FIELD CONDITIONS RELATIVE TO THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER AS SOON AS THEY ARE FOUND. WORK SHALL NOT PROGRESS UNTIL WRITTEN PERMISSION FROM THE ENGINEER IS OBTAINED.

- o. PROVIDE MATERIALS, LABOR, AND SUPERVISION AS NECESSARY TO PROVIDE HANGERS AND SUPPORTS FOR CONDUIT, FIXTURES, AND EQUIPMENT.

- p. DUE TO SCALED DRAWINGS, CERTAIN BASIC ITEMS SUCH AS COUPLING, PULL OR SPLICE BOXES MAY NOT BE SHOWN. WHERE SUCH ITEMS ARE REQUIRED BY CODE OR BY OTHER SECTIONS OF PROJECT SPECIFICATIONS OR WHERE REQUIRED FOR PROPER INSTALLATION OF WORK, SUCH ITEMS SHALL BE FURNISHED AND INSTALLED.

B. PART 2 - PRODUCTS

- a. ALL MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE NEW, COMPLETE WITH MANUFACTURER'S GUARANTEE OR WARRANTY AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).

- b. PROVIDE A MINIMUM FIVE (5) YEAR WARRANTY FOR ALL FIXTURES, EQUIPMENT, MATERIALS, AND WORKMANSHIP.

- c. MATERIALS AND EQUIPMENT SHALL BE GUARANTEED BY THE CONTRACTOR TO BE FREE FROM DEFECTS.

C. PART 3 - EXECUTION

- a. NO ENERGIZED CONDUCTORS SHALL BE EXPOSED AT ANYTIME EXCEPT WHEN THE IMMEDIATE AREA IS UNDER THE SUPERVISION OF A QUALIFIED ELECTRICIAN.

- b. WHEN CHANGES REQUIRE SHUT-DOWN OF ELECTRICAL SERVICES, THE CONTRACTOR SHALL NOTIFY THE OWNER, PROPER BUILDING AUTHORITIES, OR OWNER'S REPRESENTATIVE NOT LESS THAN 48 HOURS IN ADVANCE AND OBTAIN APPROVAL FROM THESE AUTHORITIES BEFORE MAKING CHANGES.

- c. MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

- d. VERIFY ALL PERTINENT DIMENSIONS AT THE JOB SITE BEFORE ORDERING ANY CONDUIT, CONDUCTORS, WIREWAYS, BUS DUCT, FITTINGS, ETC. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO THE WORK OF OTHER TRADES OR TO THE BUILDING AND ITS CONTENTS CAUSED BY THE ELECTRICAL INSTALLATION.

- e. SUBMITTALS:

- 1. PROVIDE SUBMITTALS FOR THE FOLLOWING:

- a. WIRING DEVICES
b. LIGHTING FIXTURES
c. LIGHTING CONTROLS
d. ENCLOSED SWITCHES
e. PANELBOARDS
f. TRANSFORMERS
g. TELECOMMUNICATION SYSTEMS
h. FIRE ALARM
i. CENTRAL BATTERY EQUIPMENT

- 2. REFER TO ASSOCIATED SPECIFICATION SECTION FOR ADDITIONAL SUBMITTAL REQUIREMENTS.

- 3. SUBMITTALS SHALL AT A MINIMUM INCLUDE MANUFACTURER'S STANDARD CATALOG INFORMATION WITH SUBMITTED PRODUCT TYPE FOR REVIEW OUTLINED.

- 4. ENGINEER WILL REVIEW SHOP DRAWINGS SOLELY TO ASSIST CONTRACTOR IN CORRECTLY INTERPRETING THE PLANS AND SPECIFICATIONS. CONTRACTOR REQUIREMENTS CANNOT BE CHANGED BY SHOP DRAWINGS WHICH DIFFER FROM CONTRACT DRAWINGS AND SPECIFICATIONS.

- f. OPERATION AND MAINTENANCE MANUALS

- 1. SUBMIT THE OPERATION AND MAINTENANCE MANUALS INCLUDING BOUND COPIES OF APPROVED SHOP DRAWINGS, RECORD DOCUMENTS, SPARE PARTS, AND EXTRA MATERIALS IN QUANTITIES SPECIFIED IN THESE SPECIFICATIONS. INCLUDING INSPECTION AND TESTING REPORT BY THE FIRE ALARM SYSTEM MANUFACTURER.

MECHANICAL AND ELECTRICAL COORDINATION SCHEDULE

GENERAL NOTES:

- A. MOCP SIZES SHOWN BELOW ARE FOR BIDDING PURPOSES ONLY. VERIFY MOCP WITH EQUIPMENT NAME PLATE DATA PRIOR TO ORDERING EQUIPMENT.
B. MINIMUM WIRE SIZE SHALL BE #12 AWG AND MINIMUM CONDUIT SIZE SHALL BE 3/4".
C. INCLUDE A SEPARATE, GREEN, CONDUCTOR IN ALL FEEDER AND BRANCH CIRCUIT CONDUITS.

ABBREVIATIONS:

- EC - ELECTRICAL CONTRACTOR
MC - MECHANICAL CONTRACTOR
MFR - MANUFACTURER
TCC - TEMPERATURE CONTROL CONTRACTOR
OWN - OWNER

REMARKS:

- 1. XXX.
2. XXX.

Table with columns: MARK, VOLTAGE, PHASE, FLA, MCA, MOCP, HP, FUSE, WATTAGE, CONDUIT AND WIRE SIZE, CONTROL OR STARTER, CONTROLLER OR STARTER FURNISHED / INSTALLED, DISCONNECT TYPE, DISCONNECT FURNISHED / INSTALLED, REMARKS. Rows include AHU-1, CU-1, EF, EWH.

PRELIMINARY - NOT FOR CONSTRUCTION

Table with project information: DRAWN BY, APPROVED BY, ISSUED FOR, ISSUE DATE, PROJECT NUMBER, FIELD BOOK.