All materials and methods shall be in accordance with applicable codes, regulations and/or ordinances and meet the approval of local inspection authority having jurisdiction. The latest edition of NFPA 70 (National Electrical Code, NEC) and NFPA 72 shall be the minimum requirement for all work.

All materials and equipment shall be new and shall bear a UL listing or similar testing agency listing. Material and equipment shall be suitable for installed environment, temperature range, strength, durability, voltage, etc. Install all equipment with code required and manufacturer recommended minimum clearances for operation and maintenance.

Perform work under this contract in close harmony with other contractors so completed work shall present a neat and workmanlike installation. Consult all other disciplines drawings and coordinate with contractors in field before performing work so that this work will not interfere with other disciplines work.

Exposed finished materials and equipment shall be carefully cleaned and wiped to remove grease, smudges, fingerprints, dust and other spots. During the progress of the work, the electrical sub-contractor shall carefully clean the job site and shall leave the premises and all portions of the building in which he is working free of debris and in a clean and safe condition.

Neatly provide all cutting and patching required for the admission of work. Patching shall match quality of surroundings to owner's satisfaction. Seal all new floor, ceiling, wall, slab, etc. penetrations to match or exceed existing assembly fire ratings.

Provide two clean sets of contract drawings reserved for showing a complete picture of the work as actually installed at completion of project. Provide two neatly bound and tabbed copies of all maintenance books, instruction books and parts list pertaining to all equipment

All work, materials, and equipment shall have a one year warranty after acceptance of the work by the Owner. Any defective items shall be removed and replaced at the electrical sub-contractor's expense and to the satisfaction of the engineer and owner's representative. Train the owner's representatives of each system to the satisfaction of the owner's representative.

Provide product data submittals for each of the following sections. Provide submittals as individual PDFs by section. Provide cover sheet for and naming of each submittal per http://www.klhengrs.com/the-firm/contractor-resources.html

26 05 19.00 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES 26 05 26.00 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS 26 05 29.00 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

26 05 33.00 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

26 09 23.00 LIGHTING CONTROL DEVICES 26 24 16.00 PANELBOARDS 26 27 13.00 ELECTRICITY METERING

28 46 21.25 FIRE ALARM SYSTEM EXTENSION

26 27 26.00 WIRING DEVICES 26 29 13.13 ACROSS-THE-LINE MOTOR CONTROLLERS

26 51 00.00 LIGHTING

All metallic conduit, surface raceways, wireways, supports, cabinet and equipment shall be grounded per NEC.

Provide temporary lighting, power and life safety measures in areas affected by construction.

Where demolition is required, selectively demolish equipment, conduit, wiring, devices, etc. to accommodate project demolition and as required to accommodate new construction. Restore power to all downstream devices not affected by demolition. Reinstall work that is intended to be operational after demolition and construction is complete. Appropriately and legally dispose of items demolished.

Provide 600V rated conductors (#12 AWG minimum) wire with color coded insulation/jacket to identify phases, grounded conductor and ng conductor. Insulation snall de 1441/144VIN-2 uniess installed underground or subject to moisture where it snall de X44VV-2 Provide copper conductors unless stated otherwise on drawings. Provide insulated equipment grounding conductor for each branch circuit. Do not share neutrals. Provide copper jumpers for final terminations of aluminum conductors where required by equipment.

Provide Type MC cable for feeders and branch circuits indoors, Schedule 40 PVC conduit for underground wiring, and EMT conduit for other applications. Conduit and cable shall be independently supported directly from structural members by approved straps, fasteners and hangers. Conduit and cables shall be neatly installed parallel and perpendicular to structural members. Noncompliant work shall be removed and replaced to satisfaction of owner. Do not support conduit or cables from roof deck or install within 4" of roof deck. Provide flexible conduit or fittings, and leave slack in cables, at all expansion joints. Provide separate raceways for normal and emergency branches of power compliant. Install raceways and cables concealed in new construction. Provide surface raceway for existing surfaces.

Recessed steel boxes shall not be less than 4" x 1-1/2" deep. No ganged boxes. Cut in box neatly. Verify all box/device mounting heights and locations in field with Owners representative.

Where technology devices shown on plan, provide 4" x 2-1/8" deep square box, with at least (1) 1" conduit (with plastic bushings or insulated throats at end fittings) to above accessible ceiling and pull string to facilitate future cable installation. Where no accessible ceiling route to technology room. Provide blank wall plates for boxes that are not immediately deviced.

Provide engraved plastic laminate naming identification for all electrical equipment and circuit identification for junction boxes and conductors. Provide accurate typed panel schedules.

Provide all necessary electrically related work as required to render all fire protection, plumbing, mechanical, electrical, technology, architectural and Owner equipment fully operational and fully compliant with manufacturer instructions and codes. Review equipment submittal data and coordinate with installing contractors to ensure the correct size, rating and quantity of conductors and overcurrent protective devices (OCP's) are provided. Provide electrical disconnect ahead of all equipment. Locate electrical equipment to maintain clearances required by respective manufacturers and by NEC 110.26. Provide boxes and conduits to controlled equipment for control and monitor devices of other trades (thermostats, other environmental control devices, alarms, etc.).

Provide exterior photocells equal to Tork 210# series for surface mount and Tork 30## for flush applications.

Provide occupancy sensor switches equal to Wattstopper DW-100-24.

providing additional unswitched "hots" where required for operation.

Provide ceiling mounted occupancy sensors equal to Wattstopper DT-300. Provide enough sensors for 100% coverage without nuisance tripping. Provide BZ-150 power packs and other accessories for a complete system.

Provide specification grade wiring devices. Provide WR type and NEMA 3R while-in-use covers for wiring devices installed outdoors and other areas exposed to water. All GFCI receptacles shall be accessible or protect the circuit with a GFCI circuit breaker. Device colors shall be ivory. Provide standard size stainless steelwall plates. Provide neutral in each switch box. Unless noted otherwise, install receptacles 18" to center and switches 46" to center. Ensure that lighting control devices are fully compatible with luminaires controlled.

Provide motor starters, manual or combination type, of sizes, ratings and control types as required per coordination schedules and per requirements of equipment that will actually be provided.

Provide luminaires and/or luminaire outlet boxes to properly support luminaire weight. All luminaires installed in suspended ceiling systems shall be independently supported directly to the building structural system. Connect all emergency lighting ahead of switching

Provide all work in strict compliance with all prevailing codes, standards and ordinances. Provide a complete multiplexed intelligent addressable fire alarm system throughout the building. All equipment and devices shall be UL listed and labeled. Provide the final Fire Alarm System design completed by an approved and certified Fire Alarm System contractor, who shall coordinate the final design with all national and local codes, regulations and AHJ (Authority/Authorities Having Jurisdiction). Fire alarm contractor with system manufacturer shall provide detailed shop drawings including floor plans, wiring diagrams, risers, battery calculations and product data. Demonstrate testing to AHJ as required for occupancy. Provide 120V power to new battery cabinets. Furnish and wire duct smoke detectors where shown, interlock to shutdown mechanical equipment, and programmed to report as alarm or supervisory signal to the fire alarm system and monitoring central station based on prevailing codes and direction from AHJ – verify in field with AHJ). For smoke or fire/smoke dampers, provide 120V power and smoke detector interlocked to damper. Receive, install, wire, connect and test ownerfurnished digital communicator - programmed to report to the owner's UL approved Central Station monitoring agency. Install new wiring in EMT unless special permission granted from Owner to "free-air" cable using J-hooks. Provide all specified items, plus all incidentals and required items necessary to provide a complete and working system, installed in a professional manner, and in accordance with applicable codes and industry accepted "best practices", including all monitoring and alarming associated with fire suppression systems. Provide isolation modules and wiring configurations (using Class A, or Class A and B, pathways) for fault isolation so that any one fault will not cause any part of the system to go down other than the zone of the fault; provide zoning compliant with prevailing codes, with at least one zone per floor (more if areas are subdivided into multiple zones by fire and/or smoke barriers). Initiating Device, Notification Appliance and Signaling Line Circuits: Class A or Class A and B (provide Class A for circuits that provide isolation module protection for zones). Provide power-limited cables that have a temperature rating of at least 60 degrees C; provide additional marking for conductor size and temperature ratings for cables rated in excess of 60 ℃ (140 ℉). Program detailed device and room descriptions so that any trouble, supervisory or alarm condition clearly annunciates floor level, room number, room name, device, and indication of normal, alarm, trouble and supervisory status at fire alarm control panel(s), at fire alarm annunciator panel(s) and at the supervising central station. Provide documentation (hard-copy and digital) of fire alarm system documentation, and provide a single documentation cabinet at the main fire alarm control unit, including Chapter 7. Qualifications of system designers, installers, programming personnel, inspection personnel, testing personnel and maintenance personnel shall be trained and certified by manufacturer for installation of units required for this Project, and shall be qualified in compliance with requirements prevailing codes, standards and authorities. Refer to Division 26 sections for requirements associated with all electrical work not specifically defined in this section, which shall be considered additional and concurrent scope of work that is associated with work of this section. Provide submittals for equipment, materials and systems specified in this section. Include cuts, descriptive information, technical data, wiring diagrams, plan-view layouts, legend, point-to-point wiring, etc. Identify all information that is specific to this project. Submit to applicable authority or authorities having jurisdiction and obtain fire alarm permit prior to submitting to consultant for review.

Provide conventional photoelectric duct smoke detector with sampling tube. Install the duct detector in an indoor accessible location. Provide sampling tube, test station and all other required accessories.

Install all duct smoke detectors in the return air duct/plenum of the respective air handling equipment, or in multiple locations of the return duct branches if necessary to meet the minimum straight distances that are required by manufacturer of smoke duct detectors. Refer to HVAC ductwork drawings, and to HVAC installer's coordination drawings, for configurations when determining actual locations and quantities of duct smoke detectors. Where more than one detector is already indicated associated with a particular piece of air handling equipment, there are special reasons for the additional detectors (i.e. split returns, return risers serving multiple floors, etc.); coordinate all locations for same with the HVAC installer. Provide all required power and control wiring so that upon detection of smoke, the following sequence of operations occurs: An alarm

signal is sent to alarm system (fire alarm system or remote test station or both as applicable); The HVAC unit shut down (including

Provide keyed test/monitor station (with status/alarm/trouble indicating LED's) on the ceiling or wall (flush in finished areas) beneath the duct detector at discreet but readily visible location as determined in field unless specific location is shown on drawings. Provide engraved (or approved equivalent method) plate at each remote station to read: "#### Duct Smoke Detector", where #### is the equipment identification used on drawings. Connect to fire alarm system.

applicable dampers); Associated smoke dampers close, if present (wired to automatically re-open on duct detector reset).

If required by authority having jurisdiction, provide identified key-operated air handler reset station on the ceiling or wall (flush in finished areas) beneath the air handler at discreet but readily visible location as determined in field unless specific location is shown on drawings. Provide engraved (or approved equivalent method) plate at each reset station to read: "#### Reset Switch to reset #### after a duct smoke detection event has been cleared and the fire alarm system has been reset.", where #### is the equipment identification used on drawings. Coordinate with authority having jurisdiction for verification of, or required modification to, the language to be engraved. Connect to fire alarm system.

Provide 20A/120VAC power as required to energize components. This requirement applies whether or not such power work is shown on the drawings. Dedicate branch circuits serving fire alarm related equipment to fire alarm related equipment only.

Properly identify system components, wiring, cabling, and terminals. Install framed instructions in a location visible from fire-alarm control unit. Provide red color on jacket of all fire alarm cables associated with the fire alarm system. Provide red-colored breaker handle and red-colored lock-on device at source circuit breakers that feed fire alarm related equipment. Provide red coloring for all fire alarm system junction boxes, along with identification.

TECHNOLOGY LEGEND							
	SYMBOL	DESCRIPTION					
	TECHNOLOGY (ROUGH-IN ONLY)						
COORDINATE WITH SYSTEM INSTALLERS PRIOR TO INSTALLATION FOR LOCATIONS, HEIGHTS, CONDUIT TERMINATIONS, ETC. ALL OUTLET BOXES FOR ROUGH-IN SHALL BE MINIMUM 2-1/4" DEEP.							
	$\bowtie$	COMMUNICATION OUTLET - VOICE, DATA, VOICE/DATA RESPECTIVELY LEFT TO RIGHT - PROVIDE 4"X4" OUTLET BOX WITH 1-GANG RING AND (1) 1" CONDUIT TO ABOVE ACCESSIBLE CEILING UNLESS NOTED OTHERWISE.					

## **GENERAL ELECTRICAL NOTES**

BEFORE SUBMITTING THE BID PROPOSAL, THE CONTRACTOR SHALL VISIT THE JOB SITE AND FULLY ACQUAINT HIMSELF WITH THE JOB CONDITIONS AND VERIFY SERVICE CONNECTIONS, INCLUDING ALL NECESSARY PULL BOXES, SIZE AND NUMBER OF CONDUITS AND CONDUCTORS, SWITCH GEAR, METERING, CABLE CHARGES ETC. WHETHER SHOWN ON DRAWINGS OR NOT BUT REQUIRED BY SERVICE UTILITY CO. TO MAKE A COMPLETE AND OPERATING ELECTRICAL SERVICE WITHOUT ADDITIONAL COST TO THE TENANT. VERIFY

- SERVICES AND CHARGES WITH POWER AND TELEPHONE COMPANIES CONTRACTOR SHALL VERIFY ALL REQUIREMENTS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND SPECIFICATIONS, AND SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED BY THE CONTRACTOR FOR COMPLETE INSTALLATION.
- VERIFY LOCATION AND REQUIREMENTS OF MECHANICAL EQUIPMENT WITH CONTRACTOR, (DOOR HEATERS, UNIT HEATERS, ROOF TOP UNITS, TRANSFER FANS, ETC.). ELECTRICAL WORK AND MATERIALS SHALL COMPLY WITH LATEST 'N.E.C.' AND ALL LOCAL CODES AND ORDINANCES. IN CASES OF
- CONFLICT AMONG REQUIREMENTS, THE MOST RESTRICTIVE SHALL ALL CONDUCTORS SHALL BE # 12 AWG COPPER. EXCEPT AS OTHERWISE NOTED OR AS REQUIRED FOR VOLTAGE DROP (SEE SPECS.). ALL CONDUIT SHALL BE 1/2" MINIMUM EXCEPT AS OTHERWISE

NOTED OR AS REQUIRED FOR CONDUCTORS.

- TENANT'S ELECTRICAL EQUIPMENT SHALL BE RELOCATED AS REQUIRED TO MINIMIZE LENGTH OF CONDUIT/CONDUCTOR BETWEEN SERVICE DISCONNECT SWITCH AND PANEL "MDP". OBTAIN APPROVAL FROM TENANT'S ARCHITECTURAL DEPARTMENT OF PROPOSED LOCATION PRIOR TO INSTALLATION. COST CLAIMS FOR CONDUIT/CONDUCTOR IN EXCESS OF BASE BID WILL NOT BE CONSIDERED IF PANEL RELOCATION IS NOT PROPOSED TO MINIMIZE
- THESE COSTS PRIOR TO INSTALLATION. TELEPHONE: FURNISH AND INSTALL ALL NECESSARY CONDUIT, DEVICE BOXES AND PLATES. NEW TELEPHONE SERVICE TO TENANT'S SPACE. NEW TELEPHONE EQUIPMENT BOARD. COORDINATE WITH LANDLORD AND TELEPHONE
- CO. AS REQUIRED FOR INSTALLING THIS SERVICE. FURNISH AND INSTALL 3/4" CONDUIT FROM EACH TELEPHONE OUTLET 1'-0" INTO CEILING CAVITY, OR UP TO JOIST WHERE NO CEILING IS INSTALLED. FIRE ALARM SYSTEM:
- a. IF THERE IS NO EXISTING FIRE ALARM SYSTEM AND THE NATIONAL, STATE, OR LOCAL CODES, OR LOCAL FIRE AUTHORITY HAVING JURISDICTION NOW REQUIRES A FIRE ALARM SYSTEM. FURNISH AND INSTALL DEVICES. COMPONENTS, ETC., AS DIRECTED BY ENFORCING AGENCY. CONNECT ALARM CONTACT(S) OF SPRINKLER SYSTEM FLOW SWITCH AND SUPERVISED VALVE AND AIR DUCT DETECTORS TO FIRE ALARM SYSTEM AS REQUIRED. IF REQUIRED, CONNECT FIRE ALARM DEVICES (AIR DUCT DETECTORS, ETC.) AND ANY OTHER ASSOCIATED
- ALARM DEVICES WHERE NOT CONNECTED TO FIRE ALARM SYSTEM VERIFY ALL REQUIREMENTS AND FURNISH AND INSTALL IN ACCORDANCE WITH NFPA, NATIONAL, STATE, LOCAL CODES, LOCAL FIRE AUTHORITY HAVING JURISDICTION AND LANDLORD REQUIREMENTS.

**EXISTING CONDITIONS - GENERAL NOTES** 

PLANNING REFERENCE ONLY

EXCEEDED, NOTIFY DESIGN PROFESSIONAL.

WITH AUTHORITIES HAVING JURISDICTION.

CANNOT BE PERMANENTLY SEALED WITHIN FOUR HOURS.

AFTER TEMPORARY LIGHTING AND POWER IS NO LONGER NEEDED.

ROUTES. REMOVE THIS SCOPE WHEN NO LONGER NEEDED.

(IF ANY) ON THE CONSTRUCTION SCHEDULE.

SAFETY WORK WHEN NO LONGER NEEDED.

REMAIN OR TO BE RELOCATED.

INTENT OF DOCUMENTS: EXISTING CONDITIONS SHOWN ON THE DRAWINGS ARE BASED ON VISUAL FIELD

ELECTRICAL WORK IS SHOWN TO A VERY LIMITED EXTENT ON THE DRAWINGS AND IS SHOWN FOR GENERAL

REUSE OF REMOVED MATERIALS: DO NOT REUSE REMOVED ELECTRICAL MATERIALS UNLESS SPECIFICALLY

DEVICES) OVERCURRENT PROTECTION DEVICES (OCPs) TO MATCH THOSE ALREADY IN PLACE. INCLUDING

IN PROJECT DOCUMENTS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE IN FIELD

NFPA 70 OR IS NOT CONSISTENT WITH EXISTING CONDITIONS, MODIFY TO COMPLY

OBSERVATIONS AND THE REVIEW OF PREVIOUS DRAWINGS THAT MAY NOT HAVE BEEN CERTIFIED "AS-BUILTS". IT IS

NOT THE INTENT OF THE ELECTRICAL DOCUMENTS THAT EXISTING CONDITIONS BE ACCURATELY SHOWN. EXISTING

PRE-BID SURVEY: PERFORM A DETAILED PRE-BID WALK-THROUGH FIELD INSPECTION AND SURVEY TO REVIEW THE

EXISTING STRUCTURES AND PREMISES, TO ACCURATELY DETERMINE EXISTING CONDITIONS, AND TO DETERMINE SCOPE OF REQUIRED ELECTRICALLY RELATED WORK. INCLUDE APPLICABLE ACCESSIBLE CEILING CAVITY AREAS IN

INDICATED IN PROJECT DOCUMENTS. EXISTING WIRING SYSTEMS MAY BE UTILIZED ONLY TO THE EXTENT INDICATED

EXISTING POWER DISTRIBUTION EQUIPMENT: WHERE MODIFICATIONS ARE MADE TO EXISTING POWER DISTRIBUTION EQUIPMENT, COMPLETELY RE-TYPE PANELBOARD DIRECTORIES USING ACCURATE "AS-BUILT" INFORMATION. WHEN

ADDING COMPONENTS TO EXISTING POWER DISTRIBUTION EQUIPMENT, PROVIDE FULL SIZE (NO SPLIT OR TANDEM

FIELD-INSTALLED HANDLE TIES) IN THE SAME GUTTER FOR MULTI-POLE DEVICES. PROVIDE SWITCHING DUTY (SWD),

EXISTING BRANCH CIRCUITS: MAINTAIN, AND RECONNECT IF REQUIRED, BRANCH CIRCUITS THAT ARE EXISTING TO

LOAD DOES NOT EXCEED 80 PERCENT OF THE SOURCE CIRCUIT BREAKER AMPERE RATING. IF THAT LOAD IS

HACR AND HID RATINGS WHERE APPLICABLE FOR LOADS. PROVIDE HANDLE LOCK-ON DEVICES FOR EMERGENCY AND

REMAIN. UNLESS NOTED OTHERWISE, ALL CIRCUIT DESIGNATIONS SHOWN ON THE DRAWINGS INDICATE NEW CIRCUIT

REASSIGNMENT OF EXISTING CIRCUITS: IN CASES WHERE EXISTING CIRCUITS ARE REUSED (BASED ON INFORMATION

THEIR ORIGINAL BREAKER, MODIFY COLOR-CODING AS REQUIRED IF THE NEW BREAKER ASSIGNMENT IS CONNECTED.

SHOWN ON DRAWINGS OR BASED ON FIELD CONDITIONS) BUT MUST BE CONNECTED TO BREAKERS OTHER THAN

TO A DIFFERENT LINE/PHASE THAN THE ORIGINAL ONE. USE MEANS AND METHODS COMPLIANT WITH NFPA 70 AND

ELECTRICAL WORK TO REMAIN OR BE RELOCATED: IF REQUIRED TO ACCOMMODATE CONSTRUCTION RELATED ACTIVITIES OR WHERE SPECIFICALLY SHOWN ON THE DRAWINGS, TEMPORARILY REMOVE, STORE IN PROTECTED

PROTECTIVE BARRIERS: PROVIDE AND MAINTAIN TEMPORARY PARTITIONS AND DUST BARRIERS ADEQUATE TO

PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT FINISHED AREAS AND OTHER SYSTEM COMPONENTS.

PROTECT ADJACENT INSTALLATIONS DURING CUTTING AND PATCHING OPERATIONS. REMOVE PROTECTION AND

BARRIERS AFTER DEMOLITION OPERATIONS ARE COMPLETE. PREVENT AIRBORNE DUST AND PARTICULATE MATTER

OPERATING HVAC SYSTEMS. MEET WITH OWNER AND HVAC INSTALLER TO DETERMINE SPECIAL INDOOR AIR QUALITY

(IAQ) REQUIREMENTS RELATED TO ELECTRICAL THAT MAY APPLY TO THIS PROJECT. COOPERATE FULLY WITH HVAC

PENETRATIONS: MAKE REQUIRED ELECTRICAL OPENINGS THROUGH WALLS, FLOORS, ETC. IMMEDIATELY PRIOR TO

INSTALLATION OF WORK. PROVIDE TEMPORARY SEALS FOR APPLICATIONS WHERE PENETRATIONS ARE MADE BUT

PRE-EXISTING CODE VIOLATIONS: INSPECT EXISTING ELECTRICAL WORK IN AREAS ACCESSED UNDER THIS PROJECT

THAT IT APPLIES TO PRE-EXISTING GENERAL INSTALLATION METHODS SUCH AS MISSING JUNCTION BOX PLATE, OPEN

JUNCTION BOX KNOCKOUT, MINOR CONDUIT RE-ANCHORING AND MINOR EXPOSED WIRING/CONNECTIONS. IF MORE

EXTENSIVE CODE OR SAFETY VIOLATIONS ARE DISCOVERED, IMMEDIATELY BRING THEM TO THE ATTENTION OF THE

OWNER'S REPRESENTATIVE (DETAILED IN WRITING) ALONG WITH PROPOSED COST FOR CORRECTIONS AND IMPACT

TEMPORARY LIGHTING AND POWER: COMPLY WITH NFPA 70 (INCLUDING ARTICLE 590), NFPA 70E AND ALL OTHER PREVAILING CODES. PROVIDE SUFFICIENT LIGHTING AND POWER CENTERS THROUGHOUT INTERIOR OF NEW WORK

OR RENOVATION SCOPE. PROVIDE GFCI PROTECTION FOR ALL WORK. COORDINATE WITH GENERAL CONTRACTOR

AND OTHER TRADES, AND PROVIDE ANY ADDITIONAL TEMPORARY ELECTRICAL NEEDS THAT ARE REQUIRED. FULLY

ACCORDINGLY. PROVIDE TEMPORARY SERVICE FROM UTILITY IF PERMISSION TO USE EXISTING BUILDING POWER IS

ASSOCIATED FEES FOR INSPECTIONS, CONNECTIONS, ETC., AND PAY FOR UTILITY ELECTRIC USAGE/CONSUMPTION

COSTS. RESTORE ASSOCIATED SITE AND BUILDING MATERIALS TO THEIR PRE-CONSTRUCTION STATE AND CONDITION

INTERIM LIFE-SAFETY PROVISIONS: PROVIDE INTERIM FIRE ALARM AND CODE MINIMUM LIGHTING IN DEMOLITION AND

DETECTOR MANUFACTURER, OVER EXISTING SMOKE DETECTORS WITHIN PROJECT AREA, AND IN ADJACENT AREAS

THAT ARE EXPOSED TO CONSTRUCTION-RELATED DUST OR AIRBORNE PARTICULATES. REMOVE ALL TEMPORARY LIFE

MANUFACTURER OR OBTAINED FROM A THIRD PARTY AND SPECIFICALLY APPROVED FOR SUCH USE BY SMOKE

INTERIM EGRESS PATH PROVISIONS: PROVIDE TEMPORARY UL 924 COMPLIANT EXIT AND/OR EGRESS LIGHTING ALONG EGRESS ROUTES THAT MUST REMAIN ACCESSIBLE DURING CONSTRUCTION. PROVIDE TEMPORARY FIRE

ALARM SYSTEM PULL STATIONS AND AUDIO/VISUAL ALARM NOTIFICATION DEVICES ALONG ALL AFFECTED EGRESS

NOT GRANTED BY OWNER'S REPRESENTATIVE; ARRANGE WITH LOCAL UTILITY FOR TEMPORARY SERVICE AND PAY

DEMOLISH TEMPORARY ELECTRIC BY END OF PROJECT. LIPON RECEIVING WRITTEN PERMISSION FROM OWNER'S

REPRESENTATIVE. TEMPORARY ELECTRICAL SERVICE(S) MAY BE DERIVED FROM EXISTING BUILDING ENERGIZED

SERVICE. PROVIDE OVERCURRENT PROTECTION, DISCONNECTS, CABLES, CONDUCTORS, RACEWAY, ETC.

CONSTRUCTION AREAS. PROVIDE TEMPORARY PLASTIC COVERS, OBTAINED FROM SMOKE DETECTOR

AND BRING INTO COMPLIANCE WITH NFPA 70. THIS APPLIES ONLY TO THE EXTENT THAT SUCH WORK IS UNCOVEREI

IN THE IMMEDIATE PROJECT AREAS AFFECTED BY CONSTRUCTION ACTIVITIES. AND ONLY TO THE LIMITED EXTENT

NSTALLATION OF WORK. PROPERLY AND PERMANENTLY SEAL ELECTRICAL OPENINGS IMMEDIATELY AFTER

RESULTING FROM ELECTRICAL WORK FROM ENTERING OCCUPIED SPACES, AND FROM ENTERING AIR INTAKES TO

IAQ REQUIREMENTS THAT AFFECT ELECTRICAL WORK AND ARE AFFECTED BY ELECTRICAL WORK.

LOCATION ON SITE, AND REINSTALL CONFLICTING ELECTRICAL EQUIPMENT, LUMINAIRES, OR DEVICES THAT ARE TO

MANUFACTURER, MODEL/SERIES, SHORT CIRCUIT CURRENT (SCCR/AIC) RATINGS. PROVIDE COMMON TRIPS (NO

EQUIPMENT TO DEDICATED 120V CIRCUIT.

PROVIDE LOCAL STATUS INDICATOR AND ALARM FOR

	• <b>♦</b> ₽¤₽@@	LUMINAIRE (REFER TO THE LUMINAIRE SCHEDULE) NOTE THAT OTHER SHAPES MAY ALSO BE USED TO REPRESENT LUMINAIRES	400	}
JTLET E.	• <b>•</b> ••	SHADED LUMINAIRES DENOTE THOSE CONNECTED TO EMERGENCY OR STANDBY POWER AS APPLICABLE (UNSWITCHED LUMINAIRES ARE EGRESS LIGHTS AND/OR NIGHT-LIGHTS THAT OPERATE 24/7)	PANEL NAME	
	WALL 18 8 MOUNT 18 TO 18	SINGLE / DOUBLE SIDED EXIT SIGN CONNECT AHEAD OF SWITCHING & CONFIGURE ARROWS TO INDICATE DIRECTION OF EGRESS TRAVEL	$\sim$	
	<b></b> ≌ ₹ ±	EMERGENCY LIGHTING UNIT WITH 90-MINUTE BATTERY BACKUP AND ASSOCIATED REMOTE HEADS WHERE APPLICABLE. CONNECT TO LOCAL LIGHTING CIRCUIT AHEAD OF SWITCHING		
	A NL a EL	A = LUMINAIRE TYPE, NL = NIGHT-LIGHT (UNSWITCHED), a = SWITCHING DESIGNATION, EL = EGRESS LUMINAIRE (ILLUMINATES PATH OF EGRESS, ON ALL TIMES SPACE IS OCCUPIED)	LP/	A-1,3
	\$	LIGHTING SWITCH (KEYS: 2 = 2-POLE, 3 = 3-WAY, 4 = 4-WAY, D=DIMMER, K=KEYED, LV = LOW VOLTAGE M = MOMENTARY-CONTACT 1PDT W/CENTER-REST, P = SWITCH W/PILOT LIGHT, T = TIMER SWITCH)		
	<b>™</b> TYPE	CEILING-MOUNTED OCCUPANCY SENSOR. DUAL TECHNOLOGY UNLESS OTHERWISE NOTED BY TYPE. TYPE "IR" = INFRARED, TYPE "US" = ULTRASONIC		
	TYPE#	WALL-MOUNTED OCCUPANCY SENSOR SWITCH. DUAL TECHNOLOGY UNLESS OTHERWISE NOTED BY TYPE. TYPE "IR"=INFRARED, TYPE "US"=ULTRASONIC, "V"=VACANCY SENSOR, "#" = CONTROLLED CIRCUITS.		
	LCP# LCP#	LIGHTING CONTROL PANEL	0	
	RE	CEPTACLES AND MISCELLANEOUS OUTLETS	J	
	Φ Φ 🖶	SINGLE ("SIMPLEX"), DUPLEX, AND DOUBLE DUPLEX ("QUAD") RECEPTACLE RESPECTIVELY	Р	
	ф <b>ф</b>	GFI / GFCI RECEPTACLES		ш
		ISOLATED GROUND RECEPTACLES	<u> </u>	
	<b>0 +</b>	FULL SWITCHED RECEPTACLES	•	
	∅ Φ	CEILING MOUNTED RECEPTACLES	UPO <sub>DN</sub>	J
	Φ <sup>H</sup> Φ <sup>C</sup> T Φ <sup>42"</sup> Φ <sup>W</sup> Φ <sup>SW</sup> Φ <sup>L</sup>	RECEPTACLE ATTRIBUTES  42" = MOUNT RECEPTACLE AT THIS HEIGHT ABOVE GRADE / FINISHED FLOOR  C = INSTALL ABOVE COUNTER AND BACKSPLASH  H = INSTALL RECEPTACLE HORIZONTALLY  L = LIT (PROVIDE ILLUMINATED FACE OR INDICATOR LIGHT TO INDICATE THERE IS POWER TO RECEPTACLE)  SW = SPLIT WIRED  T = TAMPER-RESISTANT  W = WEATHER PROOF WHILE IN USE COVER AND WEATHER RESISTANT RECEPTACLE	(R) 42"	RELO DISTA PAVE
		DOOR OPERATORS/DEVICES	AF AFCI	AMP I BREA ARC-I
		ELECTRIC DOOR OPERATOR MANUAL (LEFT) AUTOMATIC (RIGHT)	AIC AT	AMPS AMP BREA
	•	PUSH PLATE FOR MANUAL CONTROL OF ELECTRIC DOOR OPERATOR	ATS BAS	AUTO BUILD
	⊏ধ	DOOR BELL WITH TRANSFORMER & PUSHBUTTONS	C.T.C.	WORI APPL
		MISCELLANEOUS	C/B CH DW	CIRCU COUN DISHV
	•	INDICATES DIRECT CONNECTION TO EQUIPMENT	E E.C.	EMER
	\$ \$ <sup>MS</sup> \$ <sup>MSR</sup>	MOTOR RATED TOGGLE SWITCH, MANUAL STARTER WITH PILOT LIGHT, AND MANUAL STARTER WITH PILOT LIGHT WITH EXTERNAL RELAY FOR CONTROL OR MONITORING RESPECTIVELY - ALL MAY BE KEYED "K"	EMS EPO ER	ENER EMER EQUIF
		HEAVY DUTY DISCONNECT SWITCH (NON-FUSED) (LEFT) HEAVY DUTY DISCONNECT SWITCH (FUSED) (RIGHT)	ERM ESP ETR	ENER EMEF EXIST
	<u>a</u>	HAND DRYER	EWC EX.	ELEC' EXIST
		PLYWOOD EQUIPMENT BOARD	FBO	FURN WIRE
		ELECTRICAL PANELBOARD OR DISTRIBUTION BOARD (DIMENSIONS MAY VARY / FLUSH OR SURFACE MOUNTED AS INDICATED)	FIBO FP	FURN WIRE RECE
	PAD POLE	OIL FILLED TRANSFORMER	FWE	DISPL FURN INST <i>A</i>
	(T) (TS)	LOW VOLTAGE THERMOSTAT (LEFT) AND TEMPERATURE SENSOR (RIGHT)	GD GFEP	GARE GROL
	L R	LINE VOLTAGE THERMOSTAT (LEFT) AND REVERSE ACTING THERMOSTAT (RIGHT)	GFI / GFCI GND	GROL GROL
	H) HS	HUMIDITY STAT (LEFT) AND HUMIDITY SENSOR (RIGHT)	H.C. H.O.A.	WORI "HANI

ELECTRIC LEGEND

LIGHTING AND LIGHTING CONTROLS

DESCRIPTION

SYMBOL

## PRESSURE STAT (LEFT) AND PRESSURE SENSOR (RIGHT) **ELECTRIC DESIGN CRITERIA** APPLICABLE BUILDING CODES 2022 NEW YORK STATE BUILDING CODE (BASED ON THE 2015 INTERNATIONAL BUILDING CODE) 2017 NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) 2016 NFPA 72 - NATIONAL FIRE ALARM AND SIĞNALİNG CODE 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) TESTING/COMMISSIONING FOR LIGHTING CONTROLS LIGHTING CONTROL DEVICES AND SYSTEMS SHALL BE TESTED TO ENSURE THE HARDWARE AND SOFTWARE IS CALIBRATED, PROGRAMMED, AND IN PROPER WORKING ORDER. INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED INSTALLATION CERTIFICATES AND SHALL PROVIDE MANUALS FOR LIGHTING CONTROL DEVICES TO OWNER PRIOR TO PROJECT CLOSE-OUT. INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR CONTRACTING WITH APPROPRIATE PARTIES TO ARRANGE FOR TESTING/COMMISSIONING OF THE LIGHTING CONTROL SYSTEMS AND SHALL BE RESPONSIBLE FOR ENSURING ALL REQUIRED FUNCTIONAL TESTING FORMS ARE COMPLETED AND SUBMITTED TO THE OWNER AND LOCAL AHJ PRIOR TO PROJECT

**UTILITY COORDINATION - CONTRACTOR RESPONSIBILITY** COORDINATE UTILITY SERVICE WORK CONTAINED WITHIN THIS DRAWING SET WITH RESPECTIVE LOCAL UTILITY COMPANY. UTILITY COORDINATION HAS NOT BEEN PERFORMED AS PART OF THIS DRAWING SET. FAULT CURRENT VALUES SHOWN ON THE DRAWINGS ARE

ASSUMED VALUES BASED ON SERVICE SIZE, AND EXPECTED UTILITY TRANSFORMER SIZE. VERIFY THE AVAILABLE FAULT CURRENT AND NOTIFY ENGINEER OF ANY DISCREPANCIES. OBTAIN AND COMPLY WITH ALL UTILITY INSTALLATION DETAILS AND STANDARDS.

ASSIGNMENTS, NOT EXISTING. WHERE COLOR CODING OF BRANCH CIRCUIT CONDUCTORS DOES NOT COMPLY WITH CONTACT 811 "CALL BEFORE YOU DIG" SERVICE PRIOR TO COMMENCING WITH ANY UNDERGROUND WORK. ADDED LOADS TO EXISTING CIRCUITS: IN CASES WHERE NEW LOADS ARE INDICATED TO BE CONNECTED TO EXISTING CUITS WITH EXISTING LOADS, METER THE EXISTING CIRCUIT IN ADVANCE AND ENSURE THE EXISTING PLUS ADDED

PRIOR TO BEGINNING ELECTRICAL DEMOLITION WORK.

## **EXISTING CONDITIONS - DEMOLITION NOTES**

- DEFINITION OF DEMOLITION: WHERE THE TERM "DEMOLITION" IS USED IN ELECTRICAL DOCUMENTS, INTERPRET IT TO MEAN "DEMOLITION" OR "SELECTIVE DEMOLITION" AS APPLICABLE FOR THE RESPECTIVE SCOPE OF WORK. WHERE THE TERM "DEMOLISH", "REMOVE" OR SIMILAR TERMS ARE USED IN ELECTRICAL DOCUMENTS, INTERPRET TO MEAN "DISCONNECT, REMOVÉ, DISPOSE OF, AND REMOVE ALL RELATED ELECTRICAL CONDUIT, RACEWAYS, WIRING,
- CABLES, BOXES, SUPPORTS, ETC. GENERAL ACCOMMODATIONS: PROVIDE ELECTRICAL DEMOLITION WORK AS REQUIRED TO ACCOMMODATE PROJECT DEMOLITION AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION. DISCONNECT AND REMOVE WORK TO BE ABANDONED, AND AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES. IN AREAS AFFECTED BY THIS PROJECT UNLESS SPECIFICALLY NOTED OTHERWISE. COORDINATE PHASING OF WORK CAREFULLY WITH OWNER
- REMOVAL OF ABANDONED WORK: REMOVE ACCESSIBLE ABANDONED, INACTIVE AND OBSOLETE RACEWAY SYSTEMS. EQUIPMENT, LUMINAIRES, DEVICES, CONDUIT, WIRING, CABLES, BOXES, SUPPORTS, CONTROLS, ETC. ABANDONED RACEWAYS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. THIS APPLIES FOR ALL ELECTRICAL WORK, AND ALL COMMUNICATIONS AND INFORMATION ECHNOLOGY TYPE WORK, INCLUDING ALL SUCH WORK ABOVE CEILINGS, ETC. REMOVE RELATED ABANDONED UNUSED RACEWAY BACK TO THE NEAREST RESPECTIVE "UPSTREAM" JUNCTION BOX THAT REMAINS ACTIVE EVEN IF OUTSIDE OF THE CONFINES OF THE PROJECT AREA. REMOVE ABANDONED UNUSED WIRING AND CABLES BACK TO RESPECTIVE SOURCES SOURCE EVEN IE SOURCES ARE OUTSIDE THE CONFINES OF THE PROJECT AREA.
- CONSTRUCTION AND NOT CONFLICTING WITH OVERHEAD OR CEILING CAVITY REQUIREMENTS, MAY BE RE-USED AT THE DISCRETION OF THE ELECTRICAL INSTALLER IF IT COMPLIES WITH THESE CONTRACT DOCUMENTS AFTER ALL ABANDONED CONDUCTORS AND CABLES HAVE BEEN REMOVED FROM THEM. DO NOT EXCEED NFPA 70 REQUIRED CONDUIT FILL AND DO NOT INSTALL WIRING FED FROM DIFFERENT SOURCES IN COMMON CONDUIT. MODIFICATIONS TO ACCOMMODATE NEW WORK: REMOVE AND RELOCATE EQUIPMENT, LUMINAIRES, DEVICES, ONDUIT, RACEWAYS, WIRING, CABLES, BOXES, SUPPORTS, ETC. THAT CONFLICT WITH CONSTRUCTION RELATED
- WORK OF ALL TRADES AS NECESSARY TO ACCOMMODATE NEW WORK OF RESPECTIVE TRADES. REWORK AND EXTEND RACEWAY AND WIRING AS REQUIRED TO ACCOMMODATE NEW OR RELOCATED ELECTRICAL WORK. MAINTAIN (OR RECONNECT IF APPLICABLE) REMAINING WIRING. PROVIDE ELECTRICAL DISCONNECTIONS, AND RECONNECTIONS WHERE APPLICABLE, FOR EQUIPMENT TO BE REMOVED (OR RELOCATED) BY OTHER TRADES. CUTTING AND PATCHING: PERFORM CUTTING AND PATCHING REQUIRED FOR DEMOLITION, RESTORED TO MATCH SURROUNDING REMAINING SURFACES, INCLUDING FIRE/SMOKE RATINGS. LUMINAIRES: FOR ALL EXISTING LUMINAIRES WHICH ARE SCHEDULED FOR REUSE. REMOVE FROM EXISTING CEILINGS DURING DEMOLITION: PROTECT DURING CONSTRUCTION: CLEAN, SERVICE (IF REQUIRED), RE-LAMP (WITH LAMPS TO

MATCH BUILDING STANDARD) AND REINSTALL AT LOCATIONS INDICATED. FOR ALL EXISTING LUMINAIRES WHICH ARE

SCHEDULED TO BE REMOVED AND TURNED OVER TO OWNER, THE LUMINAIRES SHALL BE DISCONNECTED, CAREFULLY REMOVED AND TURNED OVER TO OWNER. TRANSFER SUCH LUMINAIRES TO STORAGE AREA AS DISPOSAL OF MATERIALS: REFER TO OWNER'S REPRESENTATIVE FOR DISPOSAL INSTRUCTIONS FOR ABANDONED ELECTRICAL MATERIALS REMOVED DURING DEMOLITION AND THEREAFTER. NEATLY STORE ELECTRICAL MATERIALS THAT THE OWNER ELECTS TO RETAIN AT THE SITE AS DESIGNATED BY THE OWNER'S REPRESENTATIVE. LEGALLY DISPOSE OF MATERIALS THAT THE OWNER ELECTS NOT TO RETAIN. DISCONNECT AND REMOVE ELECTRICAL MATERIALS DESIGNATED FOR SALVAGE (REMOVAL AND REUSE. OR FOR TURNING OVER TO OWNER) UNDAMAGED. DISCONNECT AND REMOVE WIRING AND "WHIPS" FROM FOLIPMENT TERMINAL POINTS. CAREFULLY TRANSPORT SALVAGED ELECTRICAL MATERIALS TO A PROTECTED ON-SITE STORAGE LOCATION AS DIRECTED IN FIELD AND NEATLY STORE THEM GROUPED BY SYSTEM TYPE CLEANING OF REUSED COMPONENTS: CLEAN COMPONENTS TO BE REUSED INSIDE AND OUT, AND REINSTALL WHERE

INDICATED ON DRAWINGS. MODIFY AND EXTEND RELATED EXISTING WIRING IN CONDUIT ACCORDINGLY.

n.o.a.	HAND - OFF - AUTO SWITCH	WG WR	WIRE GUARD WEATHER RESISTANT			
PLAN-VIEW AND GRAPHIC LINE TYPES						
	BOLD-CONTINUOUS INDICATES NEW WORK RWISE INDICATED)					
	FADED INDICATES EXISTING WORK TO REMAIN OR NETRINISE INDICATED)	W WORK BY OTH	HERS AS APPLICABLE			
	BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORKING RWISE INDICATED)	ORK				

U.L.S.E.

VFD / VSD

W/WP

UNO

ELECTRIC LEGEND

SINGLE LINE DIAGRAM

WIRE / CABLE / RACEWAY

BRANCH CIRCUIT HOME RUN WITH PANEL NAME AND CIRCUIT NUMBER(S)

CABLING / RACEWAY INSTALLED CONCEALED IN WALLS OR ABOVE CEILING

JUNCTION BOX AT OVERHEAD STRUCTURE IN AREAS WITH NO CEILING

SINGLE-SERVICE SURFACE RACEWAY (ONE COMPARTMENT - POWER)

SERVICE POLE - POWER AND TECHNOLOGY WHERE APPLICABLE

LUSH MOUNTED JUNCTION BOX OR PULL BOX AS APPLICABLE FOR APPLICATION

MULTI-SERVICE SURFACE RACEWAY (TWO COMPARTMENT - POWER AND TECHNOLOGY)

ISOLATED GROUND

LEGALLY REQUIRED STANDBY

LONG - SHORT - INSTANTANEOUS

LONG - SHORT - INSTANTANEOUS - GROUND

NOT IN CONTRACT (SHOWN FOR REFERENCE

OWNER-FURNISHED EQUIPMENT - INSTALLED

ONG - INSTANTANEOUS

MAIN CIRCUIT BREAKER

MANUAL TRANSFER SWITCH

MANUFACTURER

MAIN LUGS ONLY

NOT TO SCALE

MICROWAVE OVEN

OPTIONAL STANDBY

TAMPER RESISTANT

**VENDING MACHINE** VANDAL PROOF

WEATHERPROOF

WORK UNDER DIVISION 22

SHORT CIRCUIT CURRENT RATING

SURGE PROTECTIVE DEVICE

TO ABOVE ACCESSIBLE CEILING

TELEPHONE TERMINAL BOARD

UNDER COUNTER REFRIGERATOR

JNDERWRITER'S LABORATORY

LISTED FOR SERVICE ENTRANCE

UNLESS NOTED OR INDICATED OTHERWISE ON

VARIABLE FREQUENCY / SPEED DRIVE

DRAWINGS OR IN SPECIFICATIONS

**ABBREVIATIONS** 

CABLING / RACEWAY INSTALLED BELOW FLOOR OR GRADE

UNCTION BOX ABOVE ACCESSIBLE CEILING

HEAVY DUTY DISCONNECT SWITCH (NON-FUSED)(LEFT) (FUSED)(RIGHT)

SIZES MAY BE SHOWN ONLY IN SCHEDULE

SURGE PROTECTIVE DEVICE

FLUSH MOUNTED PULL BOX

CONDUIT UP OR DOWN

RELOCATE FIXTURE, EQUIPMENT OR DEVICE

DISTANCE ABOVE FINISHED FLOOR / GRADE /

AMP FRAME OF FUSED SWITCH OR CIRCUIT

AMP TRIP OF FUSED SWITCH OR CIRCUIT

ARC-FAULT CIRCUIT INTERRUPTER

AMPS INTERRUPTING CURRENT

**AUTOMATIC TRANSFER SWITCH** 

**BUILDING AUTOMATION SYSTEM** 

WORK UNDER DIVISION 26

EMERGENCY POWER OF

QUIPMENT ROOM

EXISTING

WIRED BY E.C

**ENERGY MANAGEMENT SYSTEM** 

EMERGENCY STANDBY RATING

INSTALLED AND WIRED BY E.C.

GARBAGE DISPOSAL

WORK UNDER DIVISION 23

"HAND - OFF - AUTO" SWITCH

ELECTRIC WATER COOLER

APPLICABLE

CIRCUIT BREAKER

DISHWASHER

WORK UNDER DIVISION 27 OR 28 AS

COUNTER HEIGHT OR SPECIAL HEIGHT DEVICE

ENERGY REDUCTION MAINTENANCE SWITCH

FURNISHED BY OTHERS - INSTALLED AND

FURNISHED AND INSTALLED BY OTHERS -

RECEPTACLE TO BE USED FOR A FLAT PANEL

FURNISHED WITH EQUIPMENT BY OTHERS

GROUND FAULT EQUIPMENT PROTECTION

GROUND FAULT CIRCUIT INTERRUPTER DEVICE

CABLE TRAY

ELECTRICAL PANELBOARD OR DISTRIBUTION BOARD

DESCRIPTION

SYMBOL

## ELECTRIC CONDUIT AND WIRE MATERIAL SCHEDULE

MC - METAL CLAD CABLE ARC - ALUMINUM RIGID CONDUIT MI - MINERAL INSULATED CABLE EMT - ELECTRIC METALLIC TUBING ENT - ELECTRIC NON-METALLIC TUBING HMC - HEALTHCARE METAL CLAD CABLE USE - UNDERGROUND SERVICE ENTRANCE CABLE FMC - FLEXIBLE METALLIC CONDUIT SE - SERVICE ENTRANCE CABLE GRC - GALVANIZED RIGID STEEL CONDUIT HDPE - HIGH DENSITY POLYETHYLENE CONDUIT UF - UNDERGROUND FEEDER NM - NON-METALLIC SHEATHED CABLE IMC - INTERMEDIATE METAL CONDUIT RMC - RIGID METAL CONDUIT LFMC - LIQUID-TIGHT FLEXIBILE METALLIC CONDUIT RNC - RIGID NON-METALLIC CONDUIT LFNC - LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT RTRC - REINFORCED THERMOSETTING RESIN CONDUIT SCH 40 PVC - SCHEDULE 40 POLYVINYL CHLORIDE CONDUIT

CONDUIT APPLICATION	CONDUCTOR TYPE	RACEWAY TYPE	RACEWAY AND CONDUCTOR NOT
FIRE ALARM			
EXISTING HOLLOW PARTITIONS	NON-PLENUM RATED	EMT	
CONCEALED	NON-PLENUM RATED	EMT	
EXPOSED	NON-PLENUM RATED	EMT	
POWER - INDOOR			
EXISTING HOLLOW PARTITIONS	THHN	MC	
CONCEALED	THHN	MC	
VERTICAL RISERS FROM BELOW GRADE INCLUDING ELBOW	XHHW-2	RMC (GRC)	
CONNECTION TO SYSTEMS FURNITURE	THHN	LFMC	
LUMINAIRE WHIPS IN ACCESSIBLE CEILING, 72" MAX	THHN	MC	
CONNECTION TO VIBRATING EQUIPMENT, 72" MAX	THHN	LFMC	
EXPOSED	THHN	EMT	
UNDERGROUND	XHHW-2	RNC (SCH 40 PVC)	
POWER - OUTDOOR			
EXPOSED	XHHW-2	RMC (GRC)	
EXPOSED TO DIRECT SUNLIGHT, ROOF	XHHW-2	RMC (GRC)	
TECHNOLOGY			
EXISTING HOLLOW PARTITIONS	NON-PLENUM RATED	EMT	
CONCEALED, ABOVE INACCESSIBLE CEILINGS	NON-PLENUM RATED	EMT	
CONCEALED, ABOVE ACCESSIBLE CEILINGS	PLENUM RATED	J-HOOKS	

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