INTERNATIONAL ENERGY CONSERVATION CODE

A COMMISSIONING PLAN MUST BE DEVELOPED BY A REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY. THE PLAN SHALL INCLUDE THE FOLLOWING ITEMS:
- A NARRATIVE DESCRIPTION OF THE ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING.
- A LISTING OF THE SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED AND A DESCRIPTION OF THE TESTS TO BE PERFORMED.
- FUNCTIONS TO BE TESTED.
- CONDITIONS UNDER WHICH THE TEST WILL BE PERFORMED.
- MEASURABLE CRITERIA FOR PERFORMANCE

LIGHTING COMMISSIONING NOTES

- LIGHTING SYSTEM COMMISSIONING ACTIVITIES INCLUDE BUT SHALL NOT BE LIMITED TO:
  - SUBMITTAL REVIEWS
  - FIELD OBSERVATION
  - ENSURE ALL FIXTURES HAVE LAMPS AND ARE OPERATIONAL
  - TEST EMERGENCY LIGHTING (INCLUDING EXIT SIGNS)
  - ENSURE ALL OCCUPANCY & DAYLIGHT SENSORS HAVE BEEN INSTALLED PER THE MANUFACTURERS INSTRUCTIONS AND ARE OPERATING AS INTENDED.
  - VERIFY STATUS INDICATORS ON DEVICES ARE CORRECT.
  - CONFIRM SWITCHES AND DEVICES CONTROL LIGHT FIXTURES AS INDICATED ON THE DRAWINGS.
- THE LIST OF COMMISSIONED SYSTEMS INCLUDES, BUT SHALL NOT BE LIMITED TO:
  - LIGHT FIXTURES
  - EXIT SIGNS
  - EMERGENCY EGRESS LIGHTING
  - OCCUPANCY SENSORS
  - DAYLIGHT SENSORS
  - TIME-CLOCK & TIME-SWITCH CONTROLS
  - DIMMER SYSTEMS
  - BAS INTERFACE
- DOCUMENTATION CERTIFYING THE INSTALLED LIGHTING CONTROLS MEET DOCUMENTED PERFORMANCE CRITERIA OF SECTION C405.2 AND TESTING CRITERIA OF SECTION C408.3 OF THE IECC ARE TO BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS OF THE RECEIPT OF THE CERTIFICATE OF OCCUPANCY.

ELECTRICAL HVAC EQUIPMENT NOTES

1. ALL ELECTRICAL SIZING OF HVAC EQUIPMENT INCLUDING OVERCURRENT DEVICES, DISCONNECT SWITCHES, CONDUIT/WIRE, ETC. ARE SELECTED BASED ON EQUIPMENT SHOWN ON MECHANICAL DRAWINGS. E.C. TO FIELD VERIFY EQUIPMENT SUPPLIED BY HVAC TO VERIFY ALL REQUIREMENTS INCLUDING BUT NOT LIMITED TO VOLTAGE, PHASE, MOCP, AND SINGLE POINT CONNECTION REQUIREMENTS. REVISE ELECTRICAL AS REQUIRED AND NOTIFY ELECTRICAL ENGINEER IMMEDIATELY OF ALL NECESSARY CHANGES TO MATCH ACTUAL EQUIPMENT SUPPLIED BY MECHANICAL CONTRACTOR.
2. COORDINATE LOCATION OF ALL DISCONNECT SWITCHES, STARTERS, CONTROL STATIONS, ETC CALLED OUT IN THE ELECTRICAL DRAWINGS. E.C. SHALL INSTALL SUCH DEVICES IN COMPLIANCE WITH CODE REQUIRED CLEARANCE REQUIREMENTS. ALL SUCH DEVICES SHALL BE ACCESSIBLE AFTER EQUIPMENT ARE IN PLACE AND SATISFY CODE CLEARANCE REQUIREMENTS. REMOVE AND RE-INSTALL DEVICES THAT ARE INACCESSIBLE OR WITH INADEQUATE CODE CLEARANCE. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR
3. E.C. TO FIELD VERIFY EXTERNAL STARTER REQUIREMENTS FOR HVAC EQUIPMENT BASED ON ACTUAL EQUIPMENT SUPPLIED. E.C. TO PROVIDE EXTERNAL STARTERS ONLY FOR REQUIRED EQUIPMENT WITHOUT INTERNAL STARTER MEANS.
4. FOR OUTDOOR PAD-MOUNTED A/C EQUIPMENT, CONNECT A/C EQUIPMENT TO OUTDOOR NEMA 3R DISCONNECT SWITCHES WITH UNDERGROUND RIGID CONDUIT FEEDER. STUB UP CONDUIT NEAR EQUIPMENT CONNECTION POINT. PROVIDE SEALTITE FROM CONDUIT STUB UP TO EQUIPMENT, MAXIMUM LENGTH OF SEALTITE 5 FEET. SEALTITE LONGER THAN 5 FEET IS NOT ALLOWED.
5. E.C. TO COORDINATE EXHAUST FAN CONTROL REQUIREMENTS WITH MECHANICAL DRAWING SCHEDULES. WHERE EXHAUST FANS ARE INDICATED AS INTERLOCKED WITH HVAC EQUIPMENT, E.C. SHALL PROVIDE ALL REQUIRED RELAYS, CONDUIT/CONTROL WIRES, ETC AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. COORDINATE INTERLOCK REQUIREMENTS WITH HVAC CONTRACTOR.

POWER GENERAL NOTES

A. REMOVE ALL UNUSED CABLING, WIRE AND CONDUIT IN THIS SPACE. TERMINATE CONDUITS OUTSIDE ELECTRICAL ROOM WITH A JUNCTION BOX. TURN BREAKER OFF AND UPDATE PANEL DIRECTORY TO INDICATE SPARE BREAKER AND DATE OF CHANGE.
B. COORDINATE LOCATIONS OF ALL DEVICES AND JUNCTION BOXES WITH THE EQUIPMENT INSTALLER.
C. CONTRACTOR SHALL NOT INSTALL MORE THAN THREE CIRCUITS (3 PHASE WIRES, 1 NEUTRAL + 1 GROUND) IN A COMMON CONDUIT, EXCEPT WHERE SPECIFICALLY NOTED AND ALLOWED. WHERE MORE THAN THREE CURRENT CARRYING CONDUCTORS (EXAMPLES: 3 PHASE WIRES + 1 CURRENT CARRYING NEUTRAL CONDUCTOR) ARE INSTALLED IN A COMMON CONDUIT, THE AMPACITY OF ALL CURRENT-CARRYING CONDUCTORS SHALL BE DERATED PER NEC ARTICLE 310.15 (B)(3)(A). PROVIDE COMMON TRIP BREAKERS FOR MULTIWIRE CIRCUITS PER NEC ARTICLE 210.4 (B).

LIGHTING GENERAL NOTES

A. REFER TO ARCH. REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL FIXTURES
B. VERIFY COLOR OF ALL FIXTURES WITH ARCHITECT/OWNER.
C. DRAWINGS DO NOT SHOW DETAILS OF FIXTURE MOUNTING. ELECTRICAL CONTRACTOR TO PROVIDE ALL NECESSARY AND REQUIRED MOUNTING HARDWARE AND ACCESSORIES AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. SLOPED CEILING: PROVIDE SLOPED-CEILING ADAPTORS AS REQUIRED FOR ALL FIXTURES INSTALLED IN SUCH CEILING.
D. ALL 2'x4' FIXTURES SUPPORTED BY FRAMING MEMBER BY MECHANICAL MEANS, SUCH AS BOLTS, SCREWS, OR RIVETS. CLIPS IDENTIFIED FOR USE WITH THE TYPE OF CEILING FRAMING MEMBER(S) AND FIXTURE(S) SHALL BE PERMITTED. ALL FOUR SIDES OF FIXTURES SHALL BE FASTENED TO CEILING FRAMING MEMBERS. REFERENCE N.E.C. ARTICLE 410-36(B).
E. ALL LAMPS ARE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE (THIS APPLIES TO ALL NEW FIXTURES). REPLACE ALL BURNT OUT OR DEFECTIVE LAMPS AND BALLAST WITHIN 6 MONTHS AFTER ACCEPTANCE OF SUBSTANTIAL COMPLETION AT NO ADDITIONAL COST TO THE OWNER (THIS APPLIES TO NEW FIXTURES ONLY, NOT REUSED/EXISTING FIXTURES).
F. ALL FIXTURES SHALL BE FACTORY PAINTED-AFTER-FABRICATION TYPE.
G. IN GENERAL, ALL FIXTURES IN AREAS WITH LAY-IN CEILING ARE CONNECTED USING EMT CONDUIT AND 6-FT (MAXIMUM LENGTH) FIXTURE WHIP. ON PLAN DRAWINGS, FIXTURE CIRCUITING AND CONNECTION ARE SHOWN DIAGRAMMATICALLY WITH ARCS AND CURVES. SUCH DIAGRAMMATIC REPRESENTATION DOES NOT IMPLY OR INDICATE EXCLUSIE USE OF ARMORED OR METAL CLAD CABLE (TYPE BX OR MC). ALL FIXTURE CONNECTION IN AREAS WITH LAY-IN CEILING SHALL BE MADE WITH CONDUIT AND WHIPS.

SITE PLAN GENERAL NOTES

A. PLAN REPRESENTS ENGINEER'S PROPOSED DESIGN. COORDINATE LOCATION AND INSTALLATION OF ELECTRICAL AND TELECOM SERVICE AND ALL RELATED DEVICES AND EQUIPMENT WITH OWNER AND UTILITY.
B. UNDERGROUND SITE WORK: CONTRACTOR IS REQUIRED TO USE LINE LOCATOR TO IDENTIFY LOCATION(S) OF ALL EXISTING UTILITY LINES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL DAMAGES TO ANY EXISTING UTILITY LINES CAUSED BY EXCAVATION AND SUBSEQUENT REPAIR OF UTILITY LINES.
C. AS-BUILT UNDERGROUND UTILITY DRAWINGS MUST BE PROVIDED SHOWING SPECIFIC LOCATIONS OF ALL UTILITIES BURIED ON THE ENTIRE SITE.

ELECTRICAL GENERAL NOTES

- ALL CIRCUIT NUMBERS SHOWN ARE FOR REFERENCE ONLY. FIELD VERIFY ACTUAL CIRCUIT NUMBERS REQ'D AND ADJUST ACCORDINGLY. PROVIDE TYPE-WRITTEN DIRECTOR(IES) REFLECTING ACTUAL CIRCUIT NUMBERS USED, WITH FIELD REVISED/ RELOCATED CIRCUITS CLEARLY INDICATED. DIRECTOR(IES) SHALL INCLUDE DATE AND PROJECT DESCRIPTION, EXAMPLE : 2006 NEW BLDG.
- EACH CIRCUIT IS SHOWN WITH AN INDIVIDUAL HOMERUN. E.C. MAY ELECT TO COMBINE TWO OR MORE CIRCUITS IN ONE COMMON CONDUIT AND WITH COMMON NEUTRAL WHERE ALLOWED (CIRCUITS WITH HIGH CONTENT OF HARMONIC CURRENTS MAY NOT USE COMMON NEUTRAL, EXAMPLE: CIRCUITS WITH NON-LINEAR ELECTRONIC POWER SUPPLIES SUCH AS COMPUTERS, COPIERS, PRINTERS, ETC). NOTE: AMPACITIES OF CONDUCTORS SHALL BE REDUCED IF MORE THAN THREE CURRENT CARRYING CONDUCTORS ARE INSTALLED IN A RACEWAY. SEE N.E.C. ARTICLE 310.15(B)(2)(A) "ADJUSTMENT FACTORS". **CONDUCTORS SHALL BE DERATED IF 4 OR MORE WIRES ARE INSTALLED IN ONE CONDUIT (SEE RELATED NOTE "G3" ON TEMPERATURE LIMITATION OF CONDUCTOR AMPACITY)**, TYPICAL EXAMPLES FOR 20-AMP CIRCUITS ARE SHOWN BELOW:

CURRENT CARRYING CONDUCTORS	IN TABLES AS ADJUSTED FOR TEMP IF NECESSARY	OR MORE WIRE IN ONE CONDUIT 60°C WIRE (E.G.: TW)	OR MORE WIRE IN ONE CONDUIT 75°C WIRE (E.G.: THWN)	OR MORE WIRE IN ONE CONDUIT 90°C WIRE (E.G.: THHN)
4 THRU 6	80%	#12	#12	#12
7 THRU 9	70%	#10	#10	#12
10 THRU 20	50%	#8	#8	#10
21 THRU 30	45%	#6	#8	#8
31 THRU 40	40%	#6	#8	#8
41 AND ABOVE	35%	#4	#6	#6

- TEMPERATURE LIMITATIONS ON AMPACITY OF CONDUCTOR: THE AMPACITY OF A CONDUCTOR SHALL BE SELECTED BASED ON THE NATIONAL ELECTRICAL CODE ARTICLES 310.15 AND 110.14.(C)(1),(2). THE TEMPERATURE LIMITATIONS NOTED IN 110.14.(C)(1),(2) MAY BE PARAPHRASED AS FOLLOWS : (A) CIRCUITS RATED 100 AMP OR LESS: USE 60-DEGREE C RATED CONDUCTORS ONLY. 75-DEGREE C AND 90-DEGREE C CONDUCTOR MAY BE USED BUT ONLY AT 60-DEGREE C AMPACITY. EXCEPTIONS: HIGHER TEMPERATURE CABLE ARE ALLOWED PROVIDED THE EQUIPMENT IS LISTED AND IDENTIFIED FOR USE WITH THE HIGHER RATED CONDUCTORS. (B) CIRCUITS RATED MORE THAN 100 AMP OR CONDUCTOR LARGER THAN #1 AWG: USE 75-DEGREE C RATED CONDUCTORS ONLY. 90-DEGREE C CONDUCTOR MAY BE USED BUT ONLY AT 75-DEGREE C AMPACITY. EXCEPTIONS: HIGHER TEMPERATURE CABLE ARE ALLOWED PROVIDED THE EQUIPMENT IS LISTED AND IDENTIFIED FOR USE WITH THE HIGHER RATED CONDUCTORS.
- WIRES OVERSIZED TO ALLEVIATE VOLTAGE DROP: WHERE OVERSIZED WIRES ARE USED TO ALLEVIATE VOLTAGE DROP, CONTRACTOR TO PROVIDE REDUCER LUGS AND/OR J-BOXES AS REQUIRED TO TERMINATE WIRES IN EQUIPMENT.
- ALL CONDUIT AND WIRE MUST BE CONCEALED FROM VIEW. EXPOSED CONDUIT AND WIRE ARE NOT ACCEPTABLE, EXCEPTIONS ARE CENTRAL PLANT, MECHANICAL/ELECTRICAL ROOMS.
- ALL ELECTRICAL AND COMMUNICATION DEVICES (LIGHT SWITCHES, RECEPTACLES, TELEPHONE, DATA ETC.) SHALL BE RECESSED MOUNTED UNLESS NOTED OTHERWISE. FIELD VERIFY RECEPTACLE MOUNTING REQUIREMENTS WITH OWNER/ ARCH., MOUNT ALL DUPLEX RECEPTACLES WITH THE "U" GROUND TERMINAL ON TOP, UNLESS NOTED OTHERWISE OR AS REQUIRED BY OWNER/ARCH. NEUTRAL TERMINAL SHALL BE ON TOP FOR HORIZONTALLY MOUNTED RECEPTACLES.
- ALL OUTLETS ON DEDICATED CIRCUITS (MARKED "DED" OR "D" ON PLANS) SHALL BE PROPERLY IDENTIFIED BY USING DISTINCTIVE COLOR DEVICES (USE BROWN OR GRAY DEVICES. CONFIRM COLOR REQUIREMENTS WITH ARCHITECT/OWNER.). COVER PLATES SHALL BE MARKED WITH CIRCUIT NUMBER(S) AND LOADS SERVED. EXAMPLE : CKT # LA-1 COPY MACHINE.
- EQUIPMENT LAYOUT IS BASED ON SQUARE D AND/OR SIEMENS. EQUIPMENT BY OTHER MANUFACTURERS SUCH AS GE MAY HAVE LARGER DIMENSIONS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE EQUIPMENT WITH SIMILAR DIMENSIONS THAT WOULD FIT IN THE SPACE NOTED.
- VERIFY LOCATION OF ALL OUTLETS (POWER & COMMUNICATION) WITH OWNER/ARCH PRIOR TO ROUGH-IN. OWNER RESERVES THE RIGHT TO MOVE ANY OUTLETS 5 FEET IN ANY DIRECTION PRIOR TO ROUGH-IN. ALL RECEPTACLES WITHIN 6 FEET OF ANY WET AREA (EXAMPLE : SINK, DISHWASHER, ETC..) SHALL HAVE GROUND FAULT PROTECTION, WHETHER SPECIFICALLY INDICATED OR NOT ON DRAWINGS.
- MOUNTING HEIGHTS OF ALL OUTLETS (RECEPTACLES, SWITCHES, TELEPHONE, DATA, ETC.) IN AREAS WITH COUNTERTOP **SHALL BE VERIFIED WITH ARCH/OWNER**. GENERALLY ALL OUTLETS ARE TO BE MOUNTED ABOVE COUNTERTOP EXCEPT OUTLETS FOR DISPOSERS, UNDERCOUNTER DISHWASHER, UNDERCOUNTER REFRIGERATORS ETC. REFER TO ARCH INTERIOR ELEVATIONS.
- ALL WEATHERPROOF/WET LOCATION AND/OR OUTDOOR RECEPTACLES SHALL HAVE "WEATHERPROOF-IN-USE" COVERS (NEC ARTICLE 406.8(B)). PROVIDE RACO BELL RAYNTITE II COVERS OR EQUAL.
- ESTIMATED LOADS : INFORMATION AND DATA ON SPECIALTY EQUIPMENT MAY NOT BE AVAILABLE DURING THE DESIGN PROCESS. SOME LOADS ARE NECESSARILY ESTIMATED. SUCH ESTIMATED LOADS ARE INDICATED AS (EST.) ON PLANS, RISER DIAGRAMS AND/OR PANEL SCHEDULES. CONTRACTOR SHALL BID THE PROJECT USING THE ESTIMATED FEEDER/BREAKER/SWITCHES SHOWN ON DRAWINGS. HOWEVER, THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND VERIFICATION OF ALL SUCH ESTIMATED LOADS WITH THE APPROPRIATE VENDORS/SUPPLIERS. ALL SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR SHALL INCLUDE CERTIFICATION THAT THE CONTRACTOR HAS CONFIRMED/VERIFIED ANY ESTIMATED LOADS SHOWN ON THE DRAWINGS. CONTRACTOR WILL NOT BE DUE ANY ADDITIONAL COMPENSATION FOR HIS FAILURE TO VERIFY THE ESTIMATED LOADS SHOWN ON DRAWINGS. PROVIDE CREDIT TO THE OWNER IF ACTUAL LOADS ARE SMALLER THAN ESTIMATED LOADS, CREDIT SHALL BE GIVEN FOR SIZE REDUCTION ON FEEDER/ BREAKER/ SWITCHES.
- EXAMPLE OF EQUIPMENT LOADS THAT ARE TYPICALLY ESTIMATED : SPECIAL COPY MACHINE, WELDING EQPT OUTLET, ELEVATOR MACHINERY, ...
- PROVIDE HOUSE KEEPING CONCRETE PAD (MINIMUM 4" HIGH) FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT INCLUDING TRANSFORMERS, SWITCHBOARDS, M.C.C., TRANSFER SWITCHES ETC. PROVIDE ALL REQUIRED AND NECESSARY GALVANIZED UNISTRUT SUPPORT FOR ALL INDOOR/OUTDOOR ELECTRICAL EQUIPMENT.
- FIRE WALL : DO NOT INSTALL RECEPTACLES, TELEPHONE, DATA OUTLETS ETC. BACK-TO-BACK IN FIRE/SMOKE PARTITIONS OR WITHIN THE SAME SPACE ENCLOSED BY TWO ADJACENT STUDS. ALSO APPLY TO ALL CORRIDOR WALLS.
- FOR EACH 2-POLE OR 3-POLE BRANCH CIRCUIT, NEUTRAL WIRE **MAY BE OMITTED** IF NOT REQUIRED BY EQUIPMENT.

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ELECTRICAL NOTES
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DIAMOND POINT DEVELOPMENT
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