
Quality Control Checklist - Design Drawings

Date _____ Job Number _____
Company Name _____
Address _____

Telephone _____
Fax _____
Email _____

- 1) Drawing Set
 - a) Drawing one is site/location/incoming power
 - i) Should contain location map if not part of architectural set
 - b) Next drawing (s) riser, service details
 - c) Next drawing (s) feeder information
 - d) Next drawing (s) lighting plan
 - e) Next drawing (s) power plan
 - f) Last drawing is Specs if stand alone
- 2) Information from other disciplines
 - a) Civil
 - i) Pond Pumps
 - ii) Rain Water Pumps
 - b) Mechanical
 - i) HVAC
 - ii) Fans
 - iii) Compressors
 - iv) Ventilation (75 CFM/Fixture)
 - v) Ventilation Control
 - vi) Plumbing
 - vii) Irrigation
 - viii) Control
 - c) Sanitary
 - i) Control
 - ii) Sump
 - iii) Control
 - d) Architectural
- 3) Check symbol legend for accuracy, verify there is only one symbol legend
- 4) Fire Alarm
 - a) Note location of in-duct Smoke Detectors
 - b) Note location of Flow Sensor switches and location of alarm annunciator point

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- 5) Telephone
 - a) Type of Landing device
 - b) In Conduit or Rings
 - c) Network Communication
 - d) Client Supplied
 - e) In Conduit or Rings
 - f) Type of Connection

 - 6) Network Communication
 - a) Client Supplied
 - b) In Conduit or Rings
 - c) Type of connection
 - d) How is network service getting to new devices
 - e) Delineation of responsibility

 - 7) Single Line Diagram
 - a) Panel sizes
 - b) Spaces
 - c) Al/Cu busses
 - d) Interrupt Rating
 - e) Bolt in/Clip in/Rack in breakers
 - f) 100%/200% Neutral
 - g) Frame Sizes
 - h) Trip Sizes
 - i) 10% Spares

 - 8) Ground Triangle
 - a) 10 ft from outdoor XFMR.
 - b) Single Gnd/Neut Connection indoor XFMR
 - c) Two Electrodes to triangle
 - d) Electrodes To Water lines
 - e) Bond on Bldg. Side of Cathodic Protection Barrier

 - 9) Ground Notes
 - a) Isolated Ground
 - b) Hi Z Ground
 - c) GFI
 - d) Cathodic Protection

 - 10) Site Lighting

 - 11) Site Power
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- 12) Emergency Lights connected to light circuit ahead of switching devices or attached to Night Light circuit
 - 13) Emergency Lights connected to light circuit ahead of switching devices or to NL Ckts
 - 14) Exit Ways Only Lit
 - 15) Remote head over each outside door
 - 16) Quartz restrike/Nightlight Circuits in areas W/ HID Lighting
 - 17) Fault Value Shown on Single Line
 - a) Notes specifying equipment AIC that exceeds available fault
 - b) Show current limiting fusing to reduce below 10ka where applicable
 - 18) Lighting Budget Shown on Drawing
 - 19) Existing Electric devices Involved in Demolition
 - 20) Existing Electric devices that remain require power
 - 21) Lights along sidewalks
 - 22) Owner approval of lighting fixtures.
 - a) Direct/Indirect
 - b) Troffer
 - i) Parabolic
 - ii) Lensed
 - c) Surface
 - i) Parabolic
 - ii) Lensed
 - d) Industrial
 - i) MH/HPS
 - e) Restroom Lighting
 - f) Exit (Battery issues)
 - g) Emergency (Battery issues)
 - 23) Protective Devices Coordinated
 - 24) Drawings Properly Numbered.
 - a) Details Properly numbered
 - 25) Conduit + Wire Schedule
 - a) Use for Busway system where loads are known
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- i) Show bus plug size, conduit, wire, fuse size (current limiting? What to?), motor / load size.
 - b) Properly references runs
 - c) Shows Wire Sizes
 - d) Shows Proper number of wires
 - e) Shows Conduit Size
 - f) From /To Information

26) Riser Diagram

- a) XFMR/ Ownership
- b) Meter Box
- c) Meter section DP&L
- d) Mounting height
- e) Who Supplies
- f) Conduit to CT's
- g) Size/type
- h) Verify that conduit sizes are consistent on drawing

27) Service entrance

- a) Ground fault protection where required (>250V; >800 Amps)
- b) No more than six grouped disconnects
- c) Working space provided around gear (show on riser drawing and layout view)
- d) Service drop adequate height and clearance
- e) Underground detail for UG services
- f) Concrete around High Voltage lines
- g) Divided vault on Customer owned padmount
- h) Has neutral in service entrance and in gear on 4 wire transformer
- i) No neutral on 3 wire transformer
- j) Account for Utility Metering – Meter box mounting, conduit for CT/PT
- k) CT/PT Box where applicable. Note who provides/installs

28) Load Calculations shown on Single Line

- a) 125% of existing load from utility readings
- b) 125% lighting
- c) 100% of fixed equipment
- d) Diversified receptacles

29) Sched 40 PVC /no ground

- a) Depth of Conduit
- b) Sweeps
- c) THHW
- d) XFMR Pad
- e) Housekeeping Pad - 3½"
- f) Rebar 6" Centers on 2" chairs-Bonded to Copper Gnd

30) Site Grounding

- a) Rod every 150' around perimeter
- b) Ground Ring
- c) Exothermic welded
- d) 5/8" x 8' Ground rods-Copper weld

31) Symbol Legend

- a) All fixtures shown
- b) Approved Cat. Number
- c) "Or Approved Equal"

32) Lighting Drawing

- a) All Circuited
- b) 1.25 Multiplier to all load
- c) Light on roof HVAC
- d) Egress ways lit
- e) Exit lights on all rooms with 2 or more exits
- f) Emergency lights on exits

33) Receptacle Plan

- a) All Circuited - Pnl/Ckt
- b) Mounting height
- c) GFI within 6' of Sink
- d) GFI Exterior
- e) 180 VA /receptacle
- f) Split Wired receptacles off 2 Pole Breaker
- g) No Shared Neutrals
- h) Owner Selection of Style
- i) Owner Selection of Color
- j) Within 6' of all pts. Along Baseboard
- k) Within 6' of HVAC

34) Feeder Layout

- a) Supports Every 10 ft
- b) Rigid Conduit
- c) 360 ° Maximum Bend Radius
- d) 36" Flex @ Motors 100 Hp. & Greater
- e) 24" Flex @ Motors 25 >n>100
- f) 12" Flex @ Motors < 25 Hp.

35) Motors

- a) Starters Supplied
- b) Disconnects at Motors
- c) Heaters Specified
- d) Feeders sized at 125% of largest plus 100% of remainder

36) Control Wiring

- a) Garage Doors - Operators
- b) Heating - Thermostats

37) Title block

- a) Properly depicts what is on Dwg.
- b) Design Firm Noted

38) "Contractor to verify present conditions" on dwgs.

39) "Contractor to verify that specified parts and part numbers work together as intended."

40) Note: "All wiring & wiring devices shall be UL listed & installed per NEC; all wiring, devices and equipment installation to be completed in accordance with OBC. Conformance of installation of electric conductors and equipment to NFPA 70 listed in Chapter 35 of 2002 OBC shall be prima facie evidence that such installations are reasonably safe for use per Article 2701.1 2002 OBC."

41) Disconnection means for all motors in excess of ¼ horsepower (can be motor rated snap switch up to 1 hp)

42) Ground electrode sizes noted on all separately derived systems.

43) All areas with more than one exit have exit signs.

44) Note: "metal siding to be firmly attached to steel substructure, which is firmly grounded, or shall be attached to ground rod every 150 feet of building perimeter"

45) Transformers

- a) Provided transformer class rating over 112 kva (NEC 450-1)
- b) Transformers over 112.5 kva in 1 hr fire rated room or have insulation class of 155 (80 degree C rise) (NEC 450-21)
- c) Oil Containment for Liquid filled indoor transformers (containment out of doors?)
- d) Primary and secondary protection adequate
- e) Ventilation requirements
- f) Grounding details present

46) Note: "Water line attached to ground electrode within 5 feet of building entrance"

47) Provide mounting detail for "Special" fixtures. Includes high and low bay HID's. Show safety chain and hook on purlain.

- 48) All restroom outlets GFI
- 49) IDC Engineering, Inc., address, and phone is on each sheet
- 50) Notation "Drawing is property of IDC Engineering, Inc., Unauthorized use or copying is prohibited"
- 51) Notation of Preliminary or Final
- 52) Note: "Contractor to assure that sufficient work space access remains around electric equipment as required by NEC Article 110-26"
- 53) Conduits that terminate in weatherheads shall be 25% larger than required by NEC.
- 54) Note QC check by and date on drawing.

File Closeout

- 1) Design Cut Sheets
- 2) Approved Cut Sheets
- 3) Contract
- 4) Lighting Design Sheets
- 5) Correspondence
- 6) Meeting notes
- 7) Time Sheets
- 8) Outside Services Invoices
- 9) Panel Schedules
- 10) Load calculations
- 11) Design Assumptions
- 12) Photos