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DEVELOPMENT SERVICES

ELECTRICAL
PLAN SUBMITTAL CHECKLIST

Checklist intended for Electrical installation. **Note: All references comply with 2023 National Electrical Code (NEC) and 2024 International Building Code (IBC) including City of Mesa amendments.**

Contents

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Review Key

"M –" = City of Mesa Amendment

Administrative

- ☐ 1. Provide **detailed** project narrative.
- ☐ 2. Identify site address.
- ☐ 3. Provide vicinity map showing areas surrounding the site.
- ☐ 4. Provide project site plan.

General / Site Plan

- ☐ 1. Sheets with Arizona professional registrant seals require legible seals and signatures. Additionally, the seal shall have the registrant's license number and signature date.
- ☐ 2. Show utility power feed and transformer pad locations and sizes.
- ☐ 3. Show service entrance section (SES) and panel board feeding equipment location(s).
- ☐ 4. Identify fault current and verify equipment AIC ratings per NEC 110.9 and 110.10.
- ☐ 5. Provide short circuit and selective coordination study analysis report from an Arizona registrant engineer.
- ☐ 6. Identify burial depths. (NEC Table 300.7 (A))
- ☐ 7. For EVSE over 60A or 150V to ground, provide disconnect 15 to 50 feet from equipment. (M-NEC 625.43)
- ☐ 8. Provide light pole foundation design.

Building Lighting

- ☐ 1. Provide complete fixture schedule.
- ☐ 2. Provide exit signage. (IBC 1013)
- ☐ 3. Emergency lighting shall be 1 foot-candle minimum. (IBC 1008)
- ☐ 4. Emergency systems shall comply with NEC 700, 701, and 702.
- ☐ 5. Provide emergency disconnects for dwelling units. (NEC 225.41)
- ☐ 6. Show all ground-fault circuit interrupter (GFCI) receptacles. (NEC 210.8)

☐ 7. Where sign circuit protection devices is required for commercial occupancy, provide an independent outlet supported by a branch circuit rated 20 amperes minimum. (NEC 600.5 (A))

Building Power

☐ 1. Show location(s) of all electrical distribution equipment.

☐ 2. Provide working clearances around all electrical equipment. (NEC 110.26)

☐ 3. Show dedicated equipment space including dimensions. (NEC 110.26(E))

☐ 4. Show location(s) of HVAC disconnect. (NEC 440.14)

☐ 5. Provide arc-fault circuit interrupter (AFCI) protection where required. (NEC 210.12)

☐ 6. Provide details on all conduit piping. (NEC 250.104)

☐ 7. Identify size of equipment bonding systems grounding conductors (EGC). (NEC 250.122)

☐ 8. Provide additional EGC for electrical metallic tubing (EMT). (M-NEC 250.118(A)(4))

☐ 9. Service disconnect marking shall be engraved or riveted. (M-NEC 230.70(B))

☐ 10. Provide surge protection. (NEC 215.18; 230.67)

☐ 11. General use receptacles shall be within 25 feet of all mechanical equipment. (NEC 210.63)

☐ 12. Provide GFCI receptacle outlets in all wet environments including but not limited to: (NEC 210.8)

a. Bathrooms.
b. Outdoors.
c. Rooftops.
d. Kitchens within 6 feet of sinks.
e. Indoor wet locations.
f. Locker rooms with associated showering.
g. Garages.
h. Service bays.
i. Crawl spaces at or below grade level.

Special Inspection and Electrical Observation

☐ 1. Provide electrical observation for hazardous locations, health care facilities, and electrical systems exceeding 600 volts. (M-IBC 1704.7)

2. Provide an electrical observations statement explaining frequency and extent of observation. (M-IBC 1704.7.1)
3. Obtain completed special inspection certificate form prior to permit issuance. (M-IBC 1704.7.3)
4. Electrical special inspections for qualifying equipment shall be completed per M-IBC 1705.22.

Refurbished / Reconditioned Equipment

1. Identify all refurbished, reconditioned, rebuilt, or relocated electrical equipment.
    a. Clearly label as new, existing, or refurbished.
2. If refurbished, provide documentation describing scope of cleaning, repair, rebuild, reconditioning, retrofitting, modifications, etc.
3. Provide listing or field evaluation documentation. (NEC 110.3(B))
4. Reconditioned equipment shall comply with manufacturer's recommendation.
    a. Identify equipment capabilities shall be labelled. (NEC 110.21(A)(2))
5. Equipment shall be suitable for intended environment (corrosion, moisture, temperature). (NEC 110.11)
6. Equipment shall be listed and labeled by a recognized testing laboratory (RTL). (NEC 110.3)

Special Systems – Fueling Stations

1. Provide fueling locations and classifications. Required for all Class I, Divisions 1 and 2 areas. (NEC 514)
2. Appropriately classify all dispensers, pits, sumps, and vents. (NEC 514.3; 500.5)
3. All wiring and classified equipment locations shall comply with NEC 501.
4. Equipment installed in Class I, Division 1 locations shall be explosion proof or intrinsically safe. (NEC 501.10(A))
5. For Class I, Division 2 equipment locations shall comply with NEC 501.10(B).
6. Provide conduit seals as required. (NEC 501.15; 514.9)

- ☐ 7. Underground wiring in classified areas shall be threaded rigid metal conduit (RMC) or intermediate metal conduit (IMC). (NEC 514.8)
- ☐ 8. Conduit passing under or through classified (hazardous) areas shall be sealed within 10 feet of emergence above grade. (NEC 514.8)
- ☐ 9. No unions, couplings, or fittings shall be installed between seal and point of emergence. (NEC 514.8)
- ☐ 10. Bonded metallic raceways and dispenser components shall comply with NEC 250; 514.13.
- ☐ 11. Provide emergency electrical disconnect (E-Stop) to shut off all fuel dispensers. (NEC 514.11)
- ☐ 12. Maintain 20-foot minimum and 100-foot maximum separation distance between fuel dispensers and emergency disconnect device. (NEC 514.11)

Special Systems – Repair Garages

- ☐ 1. Provide classification of hazardous (classified) locations. Show all Class I, Divisions 1 and 2 areas. (NEC 511.3)
- ☐ 2. Use NEC Table 511.3(C) to determine the extent of classified locations. Clearly delineate vertical and horizontal boundaries.
- ☐ 3. Areas below grade level (pits, below floor areas) used for repair of heavier-than-air fueled vehicles shall be classified in compliance with requirements. (NEC 511.3(A))
- ☐ 4. Provide classification for lubrication pits, service pits, and below-grade work areas.
- ☐ 5. Electrical equipment located in Class I locations shall comply with NEC 501.
- ☐ 6. Wiring methods in classified locations shall comply with NEC 501.10.
- ☐ 7. Underground wiring in classified locations are threaded rigid metal conduit (RMC) or intermediate metal conduit (IMC). (NEC 511.8)
- ☐ 8. Provide sealing fittings at classified locations boundaries. (NEC 501.15; 511.9)
- ☐ 9. Seals shall apply to horizontal and vertical boundaries of Class I locations. (NEC 511.9)
- ☐ 10. Wiring systems shall not pass through classified areas unless permitted and properly sealed.

- ☐ 11. Battery chargers and charging equipment shall not be located within classified areas. (NEC 511.10)
- ☐ 12. All 125-volt, 15- and 20-ampere receptacles used for hand tools, portable diagnostic equipment, and portable lighting shall be GFCI protected.
- ☐ 13. Lights installed in classified areas shall be suitable for the hazardous location. (NEC 410.10; 511)
- ☐ 14. Ventilation systems for areas used for CNG, hydrogen, or alternative fuel vehicles shall be coordinated with classification requirements.
- ☐ 15. Where compressed natural gas (CNG) vehicles are serviced, verify classification of ceiling areas and ventilation requirements. (NEC 511.3(B))
- ☐ 16. Bonding of metal piping systems and structural steel shall comply with NEC 250.96; 250.104.
- ☐ 17. Vehicle lifts and associated metallic equipment shall be grounded and bonded. (NEC 250.110)
- ☐ 19. Equipment located above classified zones shall maintain required clearance above floor. (NEC 511)
- ☐ 20. No open flame or spark-producing equipment shall be installed within classified locations unless specifically permitted.

Special Systems – Aircraft Hangars

- ☐ 1. Provide hazardous (classified) location plan. (NEC 513.3)
- ☐ 2. Identify all Class I, Division 1 and Division 2 areas. (NEC 500.5; 513.3)
- ☐ 3. Delineate vertical and horizontal boundaries of classified zones. (NEC 500.5; 513.3)
- ☐ 4. Classify areas within 5 feet horizontally of aircraft fuel tank openings and drain valves. (NEC 513.5(C))
- ☐ 5. Classify areas up to 18 inches above floor level where aircraft fueling systems are present. (NEC 513.5(B))
- ☐ 6. Classify pits, trenches, and below-grade areas as required. (NEC 513.3(A))
- ☐ 7. Provide documentation if ventilation is used to modify classification. (NEC 513.5(D))
    a. Wiring in Class I locations shall comply with NEC 501 or NEC 505.

- ☐ 8. Wiring installed in or under hangar floors shall comply with Class I, Division 1 requirements. (NEC 513)
- ☐ 9. Underground wiring in classified locations shall be RMC or IMC where required.
- ☐ 10. Provide sealing fittings at all classified location boundaries. (NEC 501.15; 505.16)
- ☐ 11. Seals shall apply to both horizontal and vertical boundaries. (NEC 501.15(A); 501.15(B))
- ☐ 12. Lights installed in classified areas shall be listed for hazardous locations. (NEC 410.10(A); 513.7)
- ☐ 13. Flexible cords and portable equipment shall be suitable for the classified location. (NEC 400.7; 400.12; 513.8)
- ☐ 14. Provide drainage for wiring installed in vaults, pits, or ducts. (NEC 513.8)
- ☐ 15. No unclassified electrical equipment shall be in pits within classified areas. (NEC 501.10(A); 513.3(A))
- ☐ 16. External aircraft power sources shall be mounted 18 inches minimum above floor level. (NEC 513.10(C)(1))
- ☐ 17. Aircraft power equipment shall not be operated within classified areas. (NEC 513.10(C)(2))
- ☐ 18. Provide overcurrent protection and disconnecting means for aircraft power units.
- ☐ 19. Provide required warning signage on mobile battery chargers. (NEC 513.10(B))
- ☐ 20. Bond metallic piping, structural steel, and servicing equipment shall be installed in compliance with NEC 250.104.
- ☐ 21. Equipment grounding conductor(s) size shall comply with NEC 250.122.
- ☐ 22. Provide grounding electrode system. (NEC 250.50 through 250.70)

Special Systems – Spray Booths

- ☐ 1. Provide hazardous (classified) location plan. (NEC 516.3 - 516.5)
- ☐ 2. Identify all Class I, Division 1 and Division 2 areas. (NEC 516)
- ☐ 3. Classify areas within spray booths and spray rooms. (NEC 516)
- ☐ 4. Classify areas around open containers of flammable liquids. (NEC 516)

- ☐ 5. Classify areas for spray application operations. (NEC 516.5; 516.6)
- ☐ 6. Identify horizontal and vertical boundaries of classified zones. (NEC 500.5)
- ☐ 7. Wiring and equipment in Class I locations shall comply with NEC 501.
- ☐ 8. Wiring methods in classified areas shall comply with NEC 501.10.
- ☐ 9. Provide sealing fittings at classified location boundaries. (NEC 501.15; 516.7)
- ☐ 10. Seals shall apply to both horizontal and vertical boundaries. (NEC 501.15)
- ☐ 11. Conduit(s) shall be RMC or IMC where required in classified areas. (NEC 501.10(A))
- ☐ 12. No unions, couplings, or fittings shall be located between seal and boundary. (NEC 501.15)
- ☐ 13. Electrical equipment shall not be located inside spray booths unless specifically listed for use in hazardous locations. (NEC 516.7(A))
- ☐ 14. Equipment in exhaust ducts shall be suitable for the classified location. (NEC 516.7(A))
- ☐ 15. Equipment in direct path of spray shall be listed for exposure to ignitable deposits. (NEC 516.6(A))
- ☐ 16. Illumination within spray booths shall comply with NEC 516.8(C).
- ☐ 17. Light shall be totally enclosed and gasketed where required. (NEC 516.8(C))
- ☐ 18. Open flame or spark-producing equipment shall not be located within classified areas. (NEC 516.7(A)(3))
- ☐ 19. Show location of ovens, heaters, compressors, and other ignition sources relative to classified zones.
- ☐ 20. Fixed electrostatic equipment shall comply with NEC 516.10(A).
- ☐ 21. Hand-held electrostatic spraying equipment shall comply with NEC 516.10(B).
- ☐ 22. Powder coating processes shall comply with NEC 516.10(C).
- ☐ 23. Printing, dipping, and coating processes shall comply with NEC 516.29.
- ☐ 24. Bond spray booths, ductwork, and metal enclosures shall comply with NEC 250.104 and 516.9.

- ☐ 25. Bond piping systems used for flammable liquids shall comply with NEC 250.104(B).
- ☐ 26. Equipment grounding conductor(s) size shall comply with NEC 250.122.
- ☐ 27. Ventilation system shall not alter hazardous classification without proper engineering documentation. (NEC 516.5)
- ☐ 28. Electrical equipment in exhaust air streams shall be suitable for classified location. (NEC 516.7(A))
- ☐ 29. Receptacles within classified areas shall be listed for the location. (NEC 501.145)
- ☐ 30. All receptacles shall be GFCI protected. (NEC 210.8(B))
- ☐ 31. Working clearances shall comply with NEC 110.26.
- ☐ 32. Classify areas around open mixing containers. (NEC 516.7(B))
- ☐ 33. Provide conduit seals at spray booth boundary. (NEC 501.15)
- ☐ 34. Non-rated lights inside booth shall comply with NEC 516.8(C).
- ☐ 35. Ignition sources located inside Division 2 areas shall comply with NEC 516.7(A)(3).
- ☐ 36. EMT used in Class I Division 1 areas (not permitted) shall comply with NEC 501.10(A).

Special Systems – Health Care Facilities

- ☐ 1. Identify facility type and spaces in narrative (hospital, nursing home, clinic, outpatient surgical, etc.) and clearly label patient care spaces and patient care vicinity on plans.
- ☐ 2. Provide electrical observation when work falls within NEC 517. (M-IBC 1704.7(1))
- ☐ 3. Provide statement of electrical observations on plans (frequency/extent). (M-IBC 1704.7)
- ☐ 4. Show completed electrical special inspection for emergency or standby power, selective coordination verification, gear 1000 amperes or greater, etc. (M-IBC 1705.22)
- ☐ 5. Provide an effective ground-fault current path in patient care spaces using metal raceway, metallic sheath or armor cable, or other compliant method. (NEC 517.13)

- ☐ 6. Bond or ground all metal boxes, enclosures, and non-current carrying conductive surfaces likely to become energized in-patient care vicinity. (NEC 517.13; 517.14)
- ☐ 7. Provide required insulated copper equipment grounding conductor and bonding method as applicable. (NEC 517.13; 517.14)
- ☐ 8. Provide required interconnection of grounding terminal buses serving same patient care vicinity. (NEC 517.14)
- ☐ 9. Provide minimum number of receptacles at each patient bed location (general care). (NEC 517.18(B))
- ☐ 10. Provide minimum number of receptacles at each critical care patient bed location and required separation or transfer switch criteria where applicable. (NEC 517.19(B))
- ☐ 11. Provide required number of branch circuits serving each patient bed location. (NEC 517.18(A); 517.19(A))
- ☐ 12. Receptacles serving patient bed locations shall be supplied by required systems and be readily identifiable (panel/ckt identification). (NEC 517.18(A); 517.19(A))
- ☐ 13. Provide “hospital grade” receptacles where required. (NEC 517.18(B); 517.19(B))
- ☐ 14. Electrical receptacles in wet locations, sinks, etc. shall be GFCI protected. (NEC 210.8)
- ☐ 15. Where GFCI is required in patient care areas, design shall not compromise continuity of critical power for required circuits (coordination with essential electrical system design). (NEC 517)
- ☐ 16. Provide tamper-resistant (TR) receptacles or listed TR covers in pediatric patient care spaces where required. (NEC 517.18(C))
- ☐ 17. Provide essential electrical system where required. (NEC 517.25; 517.30; 517.31)
- ☐ 18. Show life safety branch distribution. (NEC 517.33)
- ☐ 19. Show critical branch distribution. (NEC 517.34)
- ☐ 20. Show equipment branch distribution. (NEC 517.35)
- ☐ 21. Show required transfer equipment arrangement and branch separations. (NEC 517.30; 517.31)

- ☐ 22. Provide selective coordination for essential electrical systems where required. (NEC 517; 700.32 / 701.32)
- ☐ 23. Provide one-line diagram showing normal source, alternate source(s), transfer switches, distribution, and branch separation. (NEC 517.30–517.35)
- ☐ 24. Provide additional levels of ground-fault protection downstream where required. (NEC 517.17)
- ☐ 25. Where isolated power is provided, show line isolation monitor(s), panel location(s), and compliant wiring. (NEC 517.160)
- ☐ 26. Identify locations using medical gases and show extent of any hazardous (classified) areas. (NEC 517.60; 517.61)
- ☐ 27. Provide wiring methods or equipment for any hazardous (classified) areas associated with medical gases where applicable. (NEC 517.6; NEC 500–505 as applicable)
- ☐ 28. Provide dedicated branch circuits where required for X-ray or medical imaging equipment of larger ratings. (NEC 517.71)
- ☐ 29. Show location of readily accessible disconnecting means. (NEC 517.72)
- ☐ 30. Provide conductor or overcurrent sizing based on equipment ratings. (NEC 517.73)
- ☐ 31. Panel schedules shall clearly identify critical or essential system circuits and required separation. (NEC 408.4; 517)
- ☐ 32. Identify equipment short-circuit current ratings (SCCR/AIC) and available fault current at service or distribution equipment. (NEC 110.9, 110.10)
- ☐ 33. Provide load calculations including essential electrical system loads and demand factors as applicable. (NEC 517)

Special Systems – Restaurants

- ☐ 1. Provide complete load calculations for service and feeders per NEC 220.40 and 220.61.
- ☐ 2. Where feeder serves total restaurant load, demand calculation may be permitted per NEC 220.56.
- ☐ 3. Provide available fault current and verify AIC ratings per NEC 110.9 and 110.10.
- ☐ 4. Provide surge protection at service equipment where required per NEC 230.67.

- ☐ 5. Provide working clearances per NEC 110.26.
- ☐ 6. All receptacles in commercial kitchens shall be GFCI protected. (NEC 210.8(B)(2))
- ☐ 7. Receptacles within 6 feet of sinks shall be GFCI protected. (NEC 210.8(B)(7))
- ☐ 8. Receptacles in wet locations shall comply with NEC 406.9.
- ☐ 9. Provide proper disconnecting means for permanently connected appliances per NEC 422.30.
- ☐ 10. Show disconnect location and grouping for kitchen equipment per NEC 422.31(B).
- ☐ 11. Cord- and plug-connected equipment shall comply with NEC 422.16.
- ☐ 12. Lights installed in commercial cooking hood systems shall comply with NEC 410.10(C).
- ☐ 13. Wiring methods serving hood exhaust fans shall comply with environmental conditions per NEC 110.11.
- ☐ 14. Fire suppression system interlocks shall be coordinated. Provide power shutoff where required.
- ☐ 15. GFCI protection shall not interfere with fire safety equipment.
- ☐ 16. Provide disconnects for HVAC equipment. (NEC 440.14)
- ☐ 17. Receptacle shall be within 25 feet of rooftop HVAC equipment. (NEC 210.63)
- ☐ 18. Refrigeration equipment shall comply with NEC 440.
- ☐ 19. Identify conductor sizing for motor loads per NEC 430 and NEC 440.
- ☐ 20. Receptacles at bar sinks shall be GFCI protected. (NEC 210.8(B)(7))
- ☐ 21. Spacing distances and GFCI protected countertop receptacles shall comply with NEC 210.52(C) and M-NEC 210.52(C)(2).
- ☐ 22. Ice machines and beverage equipment disconnect shall comply with NEC 422.30.

One-Line Diagram

- ☐ 1. Provide complete one-line diagram showing service through final distribution. (NEC 110.3(B); 215.5)
- ☐ 2. Identify and label all equipment as new, existing, or relocated. (NEC 110.22(A))

3. Show service voltage, phase, system type, and grounding method. (NEC 110.22(A); 250.20)
4. Identify service disconnect location, rating, and grouping compliance. (NEC 230.70; 230.71)
5. Identify available fault current at service and equipment interrupting ratings. (NEC 110.9; 110.10)
6. Show surge protective device where required. (NEC 230.67)
7. Show ground-fault protection where service is 1000A or greater. (NEC 230.95)
8. Provide service and feeder load calculations with demand factors. (NEC 220; 215.2)
9. Provide neutral load calculation where nonlinear loads exist. (NEC 220.61)
10. Show feeder conductor size, type, insulation rating, and ampacity adjustments. (NEC 310.15)
11. Show equipment grounding conductor(s) size. (NEC 250.122)
12. Identify separately derived systems and bonding jumper. (NEC 250.30)
13. Show grounding electrode system and conductor sizing. (NEC 250.50; 250.66)
14. Show transformer kVA, primary or secondary voltages, and overcurrent protection (OCP) sizing. (NEC 450)
15. Identify panel bus and main breaker ratings. (NEC 408.36; 240.4)
16. Provide arc energy reduction method for breakers 1200A and larger. (NEC 240.87)
17. Identify and label series-rated systems. (NEC 110.22(B); 240.8)
18. Clearly separate normal and emergency systems. (NEC 700.10)
19. Provide selective coordination documentation where required. (NEC 700.32)

Schedules and Details

1. Provide panel schedule for all panelboards. (NEC 408.4(A))
2. Identify panel as new, existing, or relocated. (NEC 110.22(A); 408.4(A))
3. Provide panel designation. For example: LP-1, PP-1, EDP, etc. (NEC 110.22(A), 408.4(A))

- ☐ 4. Identify panel voltage, phase, and system type. (NEC 110.22(A), 408)
- ☐ 5. Identify panel location within building. (NEC 110.22(A))
- ☐ 6. Identify main breaker or main lugs configuration. (NEC 408.36)
- ☐ 7. Provide panel bus rating and main breaker rating. (NEC 408.36; 240.4)