

Attachment C

NCTCOG Equipment Room Site Requirements

SITE REQUIREMENTS

<u>CONTENTS</u>	<u>PAGE</u>
1. GENERAL	
1.1. Introduction	1
2. CUSTOMER SITE PREPARATION REQUIREMENTS	1
2.1. General Requirements and Guidelines	1
2.2. Equipment Area	2
2.3. Structural Requirements and Guidelines	2
2.4. Environmental Requirements and Guidelines	2
2.5. Electromagnetic Interference	2
2.6. Acoustics	2
2.7. Lighting	3
2.8. Fire Protection	3
2.09. Grounding and Bonding Information, Recommendations and Requirements	3
2.10. AC Power Requirements and Guidelines	4
2.11. Access	5

1. GENERAL

1.1. Introduction

- 1.1.1 The following information will assist the customer in preparing the PSAP site for E911 equipment installation. These requirements and guidelines are given to promote a safe environment for customer and installation personnel and to ensure a reliable E911 system.

2. CUSTOMER SITE PREPARATION REQUIREMENTS

2.1. General Requirements and Guidelines

- 2.1.1 The customer is responsible for costs associated with adhering to the requirements in this section and ensures that the requirements are met and applicable local ordinances and regulations are followed.

- 2.1.2 Any deviations from these requirements will require a review by NCTCOG personnel.

2.2. Equipment Area

- 2.2.1 A maintenance space or access area around the equipment units should be available. This area should remain clear of all desks, machines, shelves, cabinets and storage. NCTCOG personnel will not move customer material to gain access to equipment or backboards.
- 2.2.2 The equipment area should be as dust free as possible during and after installation. The floor should be clean, dry, level and free from vibration. The wall and ceiling finish should be a dust free surface that can be cleaned and will not flake.

- 2.2.3 A minimum clear ceiling height of 7'6" under girders or other obstructions throughout the equipment area should be provided.
- 2.2.4 A sheet of ¾ inch plywood, mounted 2 feet from the floor, shall be provided for mounting cross connect blocks and other E911 equipment. The plywood shall be painted or sealed per local building and fire codes. In general, if the plywood is fastened to gypsum or plaster, total equipment mounted to board should not exceed 75 pounds. If plywood is fastened to concrete, hollow block with embedded anchors, total equipment mounted to board should not exceed 100 pounds. A minimum of eight wall anchors shall be used to secure the plywood to the building wall.

2.3. Structural Requirements and Guidelines

- 2.3.1 The site floor condition should be checked before installing E911 equipment. Questionable floor construction may require moving equipment to another location or reconfiguring the equipment package.
- 2.3.2 The size of the E911 equipment location should be at least 40 square feet. However, the actual size requirements will be determined and agreed upon during the NCTCOG site visit.

2.4. Environmental Requirements and Guidelines

- 2.4.1 The ambient temperature and relative humidity in the E911 equipment area should be maintained in a range of 55 to 85 degrees Fahrenheit with relative humidity in the range of 20 to 55 percent.
- 2.4.2 The E911 equipment location should be an air-conditioned space, with adequate airflow and no condensation.
- 2.4.3 E911 equipment shall not be installed in rooms in which a major heat source (i.e., boiler room, furnace room) can affect the ambient room temperature significantly.
- 2.4.4 E911 equipment should not be installed in a flood-prone space or area with high risk of water damage.
- 2.4.5 To avoid contamination by any process or condition involving silicone based lubricants, inks, dust, solvents or other airborne contaminants, the E911 equipment shall not be located in the same room with copying machines, printing presses and card punch machines, asbestos materials and/or wet cell batteries.

2.5. Electromagnetic Interference

- 2.5.1 The E911 equipment shall be located in an area that meets the following objectives:
 - a) Interference from electromagnetic fields less than 2 volts per meter.
 - b) No interference from licensed radio communication equipment, such as in FCC Rule 15 equipment.
 - c) No interference from electromagnetic noise, such as might be generated by electric motors with commutators.

2.6. Acoustics

- 2.6.1 The sound levels in the E911 equipment area shall comply with OSHA requirements.

2.6.2 The sound level in the calltaker location should not exceed 55 dBa, as measured on a sound level meter.

2.7. Lighting

2.7.1 A light intensity of 30 to 100 foot-candles shall be provided around the E911 equipment cabinet for maintenance activities.

2.8. Fire Protection

2.8.1 The customer shall provide chemical fire protection equipment at the E911 equipment location. Water or fire extinguishers not rated for use on electrical fires shall not be used.

2.8.2 Waterless fire suppression is recommended but if an overhead sprinkler system exists in the equipment area, the E911 equipment should be protected from water damage.

2.9. Grounding and Bonding Information, Recommendations and Requirements

- 2.9.1 Isolated ground type AC receptacles are not recommended for any equipment unless required by the equipment manufacturer.
- 2.9.2 If the PSAP site is equipped with radio equipment and one or more radio antennas, it is strongly recommended that the site, including the building, the equipment within the building, each antenna and/or antenna support structure and other external and internal objects are equipped with a grounding system that, at minimum, conforms with the applicable requirements for radio sites in BSP 802-001-180MP.
- 2.9.3 All AC receptacles serving E911 equipment shall be grounded type receptacles.
- 2.9.4 AC equipment grounding (ACEG) conductors serving receptacles for E911 equipment shall meet all applicable requirements in Article 250 of the NEC and all other applicable codes. The ACEG conductor serving the E911 circuit breaker box shall be electrically continuous from the source of the AC system.
- 2.9.5 Where new feeders, distribution panels, branch circuits, etc., are installed to serve E911 equipment, it is strongly recommended that a separate ACEG conductor be installed in every added conduit and/or other raceway.
- 2.9.6 The E911 equipment area may be equipped with a bus bar and/or a system of grounding conductors connected to the site's earth electrode system. If so equipped, the customer shall allow access to the bus bar and/or grounding conductors for connection of grounding conductors serving E911 equipment, when required.
- 2.9.7 When required by the E911 equipment manufacturer or when E911 equipment contains a DC power source, a point of connection to the PSAP site's earth electrode system shall be furnished by the customer in the area where the E911 equipment is located. The preferred means of providing this point of connection is a small bus bar (Square D PK7GTA or equivalent). When a point of connection is required, a minimum #6 AWG bond shall be made from this point, in order of preference, to one or more of the following:
- a) Dedicated grounding conductor extended from the site's earth electrode system

- b) Building structural steel, provided it is bonded to the site's earth electrode system
- c) Continuous metallic water pipe, provided it is accessible along its entire length to the point where it is bonded to the site's earth electrode system
- d) Metallic conduit, raceway or panel containing service conductors
- e) Metallic shield of a copper or fiber cable that has been bonded to the site's earth electrode system at the cable entrance
- f) If it furnishes a continuous metallic path to the site's earth electrode system, a metallic conduit, raceway or panel containing feeder conductors
- g) If it furnishes a continuous metallic path to the site's earth electrode system, a metallic conduit, raceway or panel containing branch circuit conductors

NOTE 1: The locations in f) and g) should only be used when no other location is available.

NOTE 2: Any conduit bonding hardware (bushings, clamps, etc.) must be listed for the purpose.

2.10. AC Power Requirements and Guidelines

- 2.10.1 AC surge protection should be provided at all electrical outlets providing power to customer owned equipment, such as displays and printers that interface with E911 equipment.
- 2.10.2 All customer provided AC power circuitry shall comply with the NEC and local codes.
- 2.10.3 The electrical load center shall be provided as follows:
 - a) The main E911 circuit breaker box shall be wired from the commercial AC load center or UPS with an appropriately sized circuit.
 - b) The feeder breaker shall be designated "E911 Panel."
- 2.10.4 The circuit breaker box shall be surface mounted to the wall in the E911 equipment location. The circuit breaker box shall be dedicated and used exclusively for E911 equipment.
- 2.10.5 The dedicated E-911 AC power service cabinets shall be designated with name, number, voltage and type of service, e.g., "PWR DISTG SERVICE CAB 001 208V AC 60 HZ 3PH 4W. E-911 Circuits Only."
- 2.10.6 The conduit serving the E911 circuit breaker box shall have a permanent tag attached that identifies the physical location of the serving load center. Example: From Panel A in Room I04.
- 2.10.7 The "serving load center" for the E911 circuit breaker box shall be connected to the local emergency generator bus, to provide continued electrical service in the event of a commercial power failure.
- 2.10.8 To prevent E911 equipment failure caused by the loss of commercial power source, an Uninterruptable Power Supply (UPS) is strongly recommended. The UPS should provide a minimum of 15 minutes of emergency power for full functionality of the following listed elements of the E-911 system:
 - a) Operator positions (both telephone sets and displays)
 - b) ANI and ALI controllers

- c) ALI link modems and Network interfaces
- d) Telephone common equipment
- e) TDD/TTY devices
- f) Recording devices.

The UPS shall be equipped with a manual by-pass switch to allow maintenance.

- 2.10.9 Each receptacle serving E911 equipment shall be dedicated to E911 equipment and shall be on a separate circuit breaker.
- 2.10.10 The electrical outlets shall be wired from the E911 circuit breaker box with conductors sized per NEC or local prevailing codes. Label the dedicated E-911 circuit breaker with the location of the circuit being served.
- 2.10.11 Extension power cords shall not be used in permanent installation for power to E911 equipment.
- 2.10.12 When power strips are used, the total load shall not exceed the capacity of the over-current protection device for the circuit.
- 2.10.13 Each answering position shall have a minimum duplex outlet for the CRT and telephone set. However, different applications may require additional outlets.
- 2.10.14 The AC service provided for the E911 recording devices (tape drives/printers, etc.) may be served by a different AC load center than was provided for the E911 equipment location. However, these circuits also should be transferable to the emergency bus.

2.11. Access

- 2.11.1 The customer shall provide suitable access for movement of equipment into and out of the building. Such arrangements may be discussed with the NCTCOG rep during the site visit .
- 2.11.2 The customer shall provide a suitable route, per local ordinances, for installing cable:
 - a) From the E911 equipment location to the room in which the attendants are located
 - b) From the cable entry of the building to the 911 equipment area/room.
- 2.11.3 The E911 equipment location should be secured from access by unauthorized personnel. However, access to NCTCOG installation and maintenance personnel should be provided on a 24 hour basis.