

SECTION 14 -- OPERATIONS SUPPORT SYSTEMS

<u>CONTENTS</u>	<u>PAGE</u>
1. GENERAL.....	14-1
1.1. Introduction.....	14-1
1.2. Location and Layout.....	14-1
1.3. Environmental Controls.....	14-2
1.4. Power Requirements.....	14-2
1.5. Alarms.....	14-4

TABLE 14-1 – SUMMARY OF CHANGES IN SECTION 14

Revision Date	Item	Action	Requirements Change Notification

1. GENERAL

1.1. Introduction

- 1.1.1 This section covers requirements for the engineering of Operations Support Systems (OSS).
- 1.1.2 Changes in this issue of Section 14 are summarized in Table 14-1.
- 1.1.3 All new OSS shall adhere to ATT-TP-76400. Modifications to existing OSS should be engineered to incorporate these requirements.
- 1.1.4 Due to the large variety of OSS, only general information is included in this section. Where manufacturer’s documentation provides the necessary requirements for a specific OSS, that documentation shall take precedence over ATT-TP-76400.

1.2. Location and Layout

- 1.2.1 In general, the weights of OSS components are well within the range of normal floor loading specifications. The AT&T Equipment Engineer will determine floor loading based upon equipment weight information and system configuration from the computer manufacturer’s specifications.
- 1.2.2 Many OSS require the use of a raised floor. A notation that raised floors are being utilized will be made in the TEO. Raised floors may be provided for system cable control or for under-floor cooling requirements.
- 1.2.3 When raised flooring is used as an air plenum, the cabling requirements shall be as follows:

- a) Data processing interconnecting cables and connecting cables do not require a plenum rating if the plenum meets the criteria of the National Fire Protection Association (NFPA) 70-465, and the plenum has a smoke detection system.
 - b) Communication cables, as defined in the NFPA 70-800-51, shall meet the listing requirements of types CMP, MP or MPR for use in ducts, plenums, and other space used for environmental air.
 - c) Plenum rated interconnecting cables and connecting cables meeting the requirements of type CMP, MP, or MPR, shall be used in a plenum space.
 - d) These are the minimum requirements: local codes may be more stringent. Therefore, before beginning any large scale data processing cabling project, the DESP shall refer to the relevant codes.
- 1.2.4 Raised floor designs shall provide an insulating floor surface. The raised floor grid is utilized as a signal reference plane and shall be a part of the common bonding system.
- 1.2.5 Metallic hardware that penetrates the floor and contacts the metal undersurface or support structure shall not be used. Nonmetallic fasteners shall be used.
- 1.2.6 Within the Carrier Communications Space environment, metal hold down bolts for OSS framework that penetrates a floor shall be furnished with nylon bushings or other suitable nonconductive hardware. This prevents electrical continuity through the bolting material. Computer hardware shall not be bolted through the floor.

1.3. Environmental Controls

- 1.3.1 Temperature and humidity alarms shall be set to alarm as specified by the equipment manufacturer.
- 1.3.2 When the OSS is clustered in one location, the system with the most stringent temperature and humidity requirements shall be used for the environmental provisioning.
- 1.3.3 OSS equipment is sensitive to excessive vibration and shock. Isolation from the source of the vibration and shock shall be provided.

1.4. Power Requirements

- 1.4.1 A master disconnect switch shall be provided and controlled from a location near the main AC control panel and the exit doors. This disconnect switch shall discontinue the flow of power to all equipment in the OSS area.
- 1.4.2 The requirements for grounding an OSS are contained in Section 13 of ATT-TP-76400.
- 1.4.3 To clarify interrelationships, the various sources and combinations of AC supplies that can be used to power OSS installations are summarized as follows:
- a) Unconditioned commercial AC power is the least expensive form of power supply suitable for OSS installation. This supply is not adequate for most OSS installations. Commercial power sources are subject to interruptions, spikes, sags, surges, and other transients generated on the incoming lines. Computers served by unconditioned commercial power may experience processing interruptions and occasional damage to components.

- b) Standby power from an engine generator is generally available in COs to provide power to units classified as essential loads. Essential loads are defined as loads that are capable of tolerating power interruptions of more than five seconds without damage. This scenario is not an acceptable alternative in the computer data centers.
 - c) Standby inverter plants operated from the CO battery supply switch standby AC power during a commercial power failure to loads classified as protected. Such loads are those that can tolerate interruptions from a few milliseconds up to five seconds without interfering with operations.
 - d) Continuous operation inverters operated from a DC power plant (i.e., CO battery) are employed to supply interruption proof AC power when the OSS cannot tolerate processing interruptions. The AC output is not affected by noise that may be present on the commercial AC supply.
 - e) Uninterruptible Power Supply (UPS) is utilized in cases where interruptions are too great for OSS that requires no-break power. UPS typically provides coverage for interruptions of short duration.
- 1.4.4 Autotransformers do not interrupt the AC neutral. Certain UPS employ an autotransformer that allows the neutral to be continuous from the main AC switchboard to the OSS. Units that maintain neutral continuity from feeders to downstream distribution circuits shall not provide local ground to the distribution grounded (neutral) conductor.
- 1.4.5 When commercial AC supply does not allow satisfactory operation of OSS, the supply shall be conditioned. Available devices for treating the commercial power include Line Voltage Regulators (LVR), isolating transformers, motor-alternators, inverters, and UPS. Logical combinations are acceptable. An LVR or nonregulating transformers may be interposed between the power source and the load to regulate sags, surges, and to block spurious line transients. Conditioning devices may be used to establish a separately derived system.
- 1.4.6 Certain conditioning units isolate the grounded (neutral) conductors of the distribution circuits from the neutral of the feeder circuit, if a feeder neutral is provided.
- 1.4.7 An LVR may be interposed between the power source and the panel board serving the OSS, to address voltage sags. Unless an autotransformer is used, the LVR establishes a separately derived system.
- 1.4.8 Isolating transformers provide isolation from transient and high frequency common-mode noise. Isolating transformers always create a separately derived system. Isolating transformers are used:
- a) When other equipment attached to the building AC imposes excessive noise on the feeder serving the OSS;
 - b) In place of LVR when voltage sags are not a problem;
 - c) As part of some power distribution units.

1.4.9 An inverter is customarily connected to a panelboard on a one-to-one basis; however, when the load is restricted to the capacity of one inverter, a pair of inverters may be connected to one panelboard to protect the system if an inverter fails.

1.5. Alarms

1.5.1 At a minimum, alarm systems shall be provided for the OSS which include the following:

- a) Computer sanity alert (such as a watchdog or sanity check circuit)
- b) Loss of power to the OSS
- c) Fire alarm
- d) High temperature
- e) High and low humidity
- f) Water alarms
- g) Loss of commercial power.

1.5.2 The OSS shall be alarm compatible with external maintenance and monitoring systems. The AT&T Equipment Engineer will specify interconnection requirements for external maintenance and monitoring.

1.5.3 The alarm system shall function whether using normal or emergency power.

[END OF SECTION]