

# **Veterans Benefits Administration**

## **Information Technology Design Guide**

### **VBA Regional Office - Workstation Power Guideline**



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A computer workstation is defined as a desk or modular unit designed for one employee typically using, one PC (80 watts), up to two (2) monitors (40 watts each), telephone (10 watts) and desk lamps (50 watts). Each workstation shall be provided with three duplex receptacles. Additional electronic hardware added to the workstation circuit will require recalculation of the loading density that is acceptable per 20A dedicated circuit. Receptacles shall utilize ordinary solid grounding receptacles and wiring methods per NEC.

Wiring and cabling distribution utilizing a short raised floor is preferred over distribution through a plenum (dropped ceiling). Where raised access floors are utilized in general office areas, modular power distribution / data / voice systems are recommended. They offer increased flexibility in open office spaces and reduced maintenance expense incurred during reorganizations, downsizing and changing personnel requirements and function relocations found in today's VBA offices. When overhead distribution of utilities is necessary because there is no raised floor, dedicated utility poles dropped from the ceiling should be used with isolated channels that fully separate data and power circuits. Where workstation groups are located next to building columns, these columns can also be used to feed utilities to the workstation group.

Note that system furniture supplied power strips, including data and telephone connections, must be coordinated with the types of power/telephone and data connections provided in the office area. When planning for installation, be aware that a variety of devices (hardwired and other) are available although not from all furniture manufacturers. These devices are not necessarily compatible with floor or wall mounted power/telephone and data outlets - compatibility should be specified. We highly recommend that telephone, data and power for workstations be connected below the desktop or work surface level. Separation of the workstations outlets from the building infrastructure will increase the flexibility of changes that can occur within a regional office.

In low-density areas place six (6) workstations on each 20A circuit using three (3) duplex receptacles and associated wiring for each workstation. In higher density areas such as training rooms, telephone pool and dense system furniture areas a maximum of eight (8) workstations may be placed on the 20A dedicated circuit. Laser printers and copiers can draw about 10A ea. and shall have dedicated 20A circuits. An absolute maximum of two (2) printer/copiers shall be placed on one (1) dedicated 20A circuit. Printers and copiers shall not be placed on circuits that will be used for workstations. In areas where a large number of PC's, printers, modems and related ADP loads are to be located, it is particularly important to specify step-down transformers rated at K-13 rated or higher.

This transformer should be "step down" (480 - 208/120VAC) type to minimize feeder size to the local distribution panel and can be located in the electrical closet or in the PDU where branch circuits originate. The transformers shall be sized, installed and protected per manufacturer's recommendations; Code requirements and allowance will be designed in for 30% additional capacity.

The associated PDU/distribution panel will provide power to receptacles for computer loads in general office areas. PDU's / power distribution panels shall have a minimum of 30% spare, 3-pole breaker spaces and 10% spare single, two phase and three phase breakers as are required for initial equipment installation. The panel shall have full capacity neutral and ground buses. Equipment to be powered from these panels includes: printers, scanners, PC's and other ADP equipment not on UPS power. Adequate cooling shall be provided in electrical

closets to remove all sensible heat from transformers, lighting and other heat producing equipment within the closets. Workstations shall not be powered from the VBA RO UPS system within the computer room.

All circuits powering ADP equipment shall be installed with oversized neutrals to reduce neutral heating. Neutrals shall have current ratings of at least 1.7 X phase rating to achieve these results. The oversized neutral may be utilized for each 3-phase feed. A green safety ground wire shall be pulled for each circuit regardless of conduit type used.

# 1. Document Versions

| <i>Version</i> | <i>Date</i> | <i>Changes</i>  |
|----------------|-------------|---|
| 1.00           | 4/21/03     | Original Document   |
| 1.10           | 3/10/10     | This version has a minor change to how many workstations are allowed on one 20A circuit. The previous version only allowed a max of 3 in dense areas. With new modular furniture the density has increased while power requirements for monitors and PCs have remained the same or lower then previous CRTs and PCs. Using a max of 4 per workstation will allow cost savings in the renovation and construction of new VBA RO Offices.   |
| 2.00           | 2/17/11     | This version has a large amount of changes to the previous version. This new version has increased significantly how many workstations are allowed on one 20A dedicated circuit. The Isolated Ground (IG) receptacle requirement was also eliminated in this new version. In recent years it's fallen out of practice to use the IG circuits in buildings due to the controversial advantages and disadvantages of them. Installation of IG circuits is also cost prohibitive in older buildings due to all the retrofitting that's needed to install IG circuits. Elimination of the IG requirement and increasing the maximum number of workstations per dedicated circuit will allow an even larger cost savings in the renovation and construction of new VBA RO Offices than the previous version. |
| 2.10           | 3/9/11      | This version has a minor change to the wording regarding the placement of outlets and telecommunications outlets at the workstations in the third paragraph of the document. Correction of a "should" for a "shall" when referring to the number of printers allowed on one circuit.  |
| 2.11           | 5/5/11      | This version is for error correction. Correction in fourth paragraph, first line "each 20A circuit using <i>one</i> (3) duplex receptacles" to "each 20A circuit using <i>three</i> (3) duplex receptacles".  |