STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION
TRENTON, NEW JERSEY 08625

METRIC SPECIFICATIONS FOR A REMOTE VIDEO WORKSTATION

N. J. Specification No. EBM-VIDWS2 Effective Date: July 1, 2001

New Jersey Department of Transportation Specifications for a Microprocessor Based Slow Scan Video Workstation.

The purpose of these specifications is to describe minimum acceptable design and operating requirements for a microprocessor based slow scan video workstation.

GENERAL - I

1-1 The central video workstation shall consist of a digital microprocessor units, keyboards, monitors, temporary data storage, long term data storage equipment, desk, printer, modems, standby power system, accessories and applications software, located in the Engineering and Operations Building of the New Jersey Department of Transportation, Trenton, New Jersey.

1-2 The video workstation shall provide for the operation and viewing of the compressed video and for control of the video switcher/controller utilizing one digital microprocessor unit. The microprocessor unit will be provided with a keyboard, monitor, temporary data storage, long term data storage and a modem.

1-3 The complete video workstation shall be fully debugged and all individual units and/or components must be completely compatible.

1-4 The workstation must be capable of operation in the following environment:

A. Air temperature, 16 °C to 32 °C

B. Humidity, 20% to 80%

1-5 All equipment must operate with line voltage variations of 90 to 137 volts AC at 50-60 hertz. All logic level equipment must be powered by a power supply capable of operating the specified equipment.

1-6 All equipment provided as part of this specification shall be color coordinated. The contractor will provide for approval samples of the colors and fabrics to be used.

1-7 The system shall include all cabling, connectors, cards, and other ancillary equipment required for interconnection of the processors and peripheral equipment to perform the functions as required by these specifications.

DIGITAL MICROPROCESSOR UNIT - II

2-1 The digital microprocessor unit shall enclose the microprocessor in a tower case with three disk drives, internal expansion boards, memory, and a 220 watt power supply.

2-2 The digital microprocessor units shall utilize an Intel 80486 microprocessor with an Intel 80387 math co-processor. The clock speed shall be a minimum of 66 megahertz. The unit shall provide a minimum of 10.7 MIPS. The unit shall be manufactured by IBM, Gateway or Compaq only.

2-3 The digital microprocessor units shall provide eight (8) expansion slots, one - 32 bit memory and seven - 8-/16-/32 bit EISA for adapter cards that support optional devices.

2-4 The units shall include 8 megabytes of 70 nanosecond random access memory, expanded to 64 megabytes with memory expansion card.

2-5 The disk operating system with BASIC shall be Microsoft or IBM DOS Latest Version. The unit shall also be provided with the latest revision of IBM OS/2 and Windows operating environments.

2-6 The temporary data storage shall include as a minimum the following:

A. One (1) 1.2 megabyte, 130 millimeter "Floppy Disk Drive" (External)

B. Two (2) 1.4 megabyte, 90 millimeter "Floppy Disk Drive"

C. One (1) 340 megabyte Minimum Internal Hard Disk Drive

2-7 The unit shall utilize a video display adapter board for the Super Video Graphic Adapter video display with 1 megabyte of video memory. The graphic board shall provide a 1 024 by 768 resolution with 256 colors. The graphics monitor shall be non-interlaced, and support a non-interlaced monitor.

2-8 The unit shall contain one parallel port, two serial ports and a mouse port. The mouse shall be provided.

2-9 The unit shall contain expansion boards. The boards shall provide six (6) RS-232-C serial ports for communications, configured as COM2 through COM8. The board shall also provide a 36-pin Centronics printer port, configured as LPT2.

KEYBOARDS - III

3-1 The keyboards shall be a qwerty type with 101 keys, with tactile and audio feedback.

3-2 The keyboards shall be detachable, with a 3 meter coiled cable for connection to digital microprocessor unit.

3-3 The keyboards shall contain a minimum of twelve (12) special function keys, a ten key numeric key pad, and a "print screen" key.

3-4 The keyboards shall be provided with overlays for all provided software and system functions.

3-5 LED indicators shall be provided to confirm when "number lock", "scroll lock", and "caps lock" keys are in use.

MONITORS - IV

4-1 The video display monitor shall be a high-resolution color 406 millimeter (diagonally measured) monitor. It shall provide 1 024 by 768 pixels resolution with 256 colors. The screen shall be a dark, etched screen with high contrast and reduced glare. The monitors shall have brightness and contrast controls.

4-2 The monitors shall be provided with a turntable that swivels 360° with a ± 15° tilt.

LONG TERM DATA STORAGE - V

5-1 The long term data storage shall be a tape backup unit. The tape drive shall be external to the microprocessor unit and have a capacity of 300 megabytes. The tape drive shall be supplied with ten (10) extra tapes and software to provide automatic system backups based on day and time. The tape drive maybe an internal unit of the same manufacture as the microprocessor unit.

PRINTER - VI

6-1 The video workstation shall include a printer.

6-2 The printer shall be an Hewlett Packard Series 4 or an approved equal and shall be a laser printer with resolution of 24 by 24 dots per millimeter. The printer shall be capable of printing a minimum of eight pages per minute. It shall be capable of handling A4 size paper and it shall have paper tray provided.

6-3 The printer shall have a minimum of 24 internal "soft" fonts and a postscript cartridge with 35 scaleable Adobe typefaces. An additional cartridge will be provided for premier scaleable fonts and a bar code font.

6-4 The printer shall be provided with 8 megabytes of RAM and shall be U.L. listed and have a standard 8 bit data parallel interface with a 36-pin amphenol connector and 25-pin D connector respectively.

MODEMS - VII

7-1 The modem shall be an external 28 800 baud modem - Hayes compatible and shall provide full duplex operation using a 2 wire dial up or leased lines. The modem shall be a US Robotics or an approved and tested equal. The modem shall comply with part 68, FCC docket 19528.

7-2 The data rates shall be 28 800 bits per second, and support asynchronous and synchronous communication.

7-3 The modulation shall be frequency shift keying (FSK) for low speed and phase shift keying (PSK) on a dibit basis for high speed.

7-4 Originate, manual, permanent auto answer or controlled auto answer operating modes shall be provided.

7-5 The modem shall have a line impedance of 600 ohms ± 10% transformer coupled and transient protected. The transmitter output level shall be 0 to -12 dBm programmable, with an external programming resistor.

7-6 The modem shall provide an RS-232-C and CCITT V.32 BIS with V.42 error control digital interface via a DB-25S connector.

7-7 The carrier detect sensitivity at low speed shall be -50 dBm ± 4 dB and at high speed shall be -45 dBm ± 4 dB.

7-8 The modem shall provide an auto disconnect function that will disconnect the modem due to a lack of carrier for approximately 18 seconds.

7-9 The front panel of the modem enclosure shall contain diagnostic LEDs. The indicators shall indicate modem ready, terminal ready, make busy, high speed, modem check, receive data, transmit data and test modem.

7-10 A power on-off switch shall be mounted on the modem along with the DB-25S connector, an 8-pin RJ45 data jack, and an RJ-11 telephone jack.

DESK - VIII

8-1 The desk shall be located at an existing facility as noted in the contract plans to which these specifications are part. The contractor shall furnish and install on the desk the following equipment which will include but is not limited to the video display monitor, digital microprocessor unit, keyboard, and long term data storage unit.

8-2 The desk shall be composed of a keyboard work station area. The keyboard work station area shall measures 1 829 millimeters by 762 millimeters.

8-3 A keyboard area 610 millimeters W by 254 millimeters D shall be provided in the keyboard work station. The keyboard area shall be adjustable to extend, retract, raise, lower, or tilt the keyboard. An area of 610 millimeters W by 483 millimeters D shall be provided behind the keyboard area for the monitor.

8-4 The desk shall be provided with an overhead riser and box/file draws. The riser shall contain a storage unit with a door, tackboard and task light.

8-5 The desk shall also provide a 660 millimeter W by 457 millimeter D printer area, with through top paper feed slots with edge protectors. Below this area shall be a stacking shelf for printouts. The stacking shelf shall be adjustable. Below the printer area shall be a shelf capable of holding a full carton of paper.

8-6 All cables shall pass through slots in the desk top. The desk top shall match the color, style and type of the existing desk at the location

8-7 Minor deviations in shape or dimensions shall be permitted subject to the approval of the Engineer. The desk top shall be furnished in a melamine laminate which is resistant to heat and abrasion. All edges of the desk top shall be rounded.

8-8 Two chairs shall be provided with the desk. The chairs shall be 3-way adjustable, with arm rests and have a minimum of 5 breaking casters. The chairs shall match the chairs in the existing office location in color, style, and material.

STANDBY POWER SYSTEM - IX

9-1 A standby power system shall be provided. The system is to provide power to the video workstation should power be disrupted for 6 milliseconds.

9-2 The system shall provide four (4) outlets (NEMA 5-15R) with an on-off switch.

9-3 Indicator lights shall indicate normal status and backup status.

9-4 The system shall provide a minimum of 1 200 volt-amperes from a dry lead-acid battery, and provide for a minimum of 60 minutes of operation of the system.

9-5 The system shall contain an audible alarm and an output jack for the alarm. An alarm enable/disable switch shall also be provided. The system shall provide three stage protection from voltage spikes and transients.

CONFIGURATION - X

10-1 The slow scan video work station will be configured as follows:

A. The central work station shall have full control of the slow scan video

B. The central work station shall have full control of the pan, tilt, and zoom functions through the video switcher/controller.

10-2 Each of the workstations shall have the same priority of control via the telephone lines.

SOFTWARE - XI

11-1 Remote Video

A. The Remote Video software shall operate on the specified computer equipment and shall convert the computer to the system's picture receiver and workstation and will provide for the control of pan, tilt, and zoom as required in the current New Jersey Department of Transportation Specification No. EBM-LDV-1.

B. The system software shall include a program to control the pan, tilt and zoom as required by the New Jersey Department of Transportation Specification No. EBM-LDV-1.

C. The system software shall be licensed to the Office of ITS Engineering and shall allow an unlimited number of disk to computer transfers.

11-2 Off System

The following software shall be provided:

A. Data base management program to create, sort, retrieve, and edit data files, using simple English-like commands. The program shall be RBase 4.5 Plus or latest version or an approved equal and shall be menu driven and contain an on line context-sensitive help system. The program can have data inputted immediately when a file is created or appended later. The program shall utilize an SQL file format for all data files. The files can be changed, extended and modify the applications without having to re-enter data. Records, or any part of a record, can be displayed, modified and updated. The report function allows quick organization of data. Forms and formats can be created that perform calculations and totals on a field, a record or the entire database. The program shall be fully relational and handle up to one million records per file. The data base software shall allow up to sixteen files to be open at one time. The Program shall include a compiler program to create unlimited number of custom application executable programs.

B. Word processing program with spelling and grammar correction. The program shall be Microsoft Word for Windows latest version and shall provide functions to write, edit, rearrange; file merge; boldface, underline, super and subscript; block functions; on-line help; justification; full cursor movement; headers and footers; centering; auto backup; cut and paste; printer support and proofread documents. The program shall be capable of finding mistakes using both letter and phonetic analysis with a 100 000-word dictionary and a personal dictionary of up to 5 000 words. The program shall be capable of producing personalized mailings.

C. Graphics program to prepare graphics from pull-down menus and icons. The program shall be MicroStation Version 5 or latest version. The program shall provide functions to change colors, patterns, line widths, rotate, zoom, tilt, shrink, expand, flip, invert and print to a plotter. The program shall provide for files in a.dgn format and shall use the mouse provided as an input device. The graphics program shall be capable of interfacing with the closed loop system for preparation of intersection displays. The program shall produce plans similar to the contract plans. The program shall include a raster editor IRAS.

D. Windows based communications program to provide communication with the Department's mainframe and other Department microcomputers. The program shall provide functions for transferring files with or without error detection/correction, auto-dial, auto-redial and auto-answer and transfer of files in an unattended mode.

E. Hard disk diagnostic program to re-assemble fragmented files to restore file handling speed. The program shall provide a function to sort files and directories by name, extension, date/time, or length. The program shall provide additional functions to detect failing disk sectors and move affected data to new locations on the disk. The program shall automatically backup hard disk file allocation table and place the backup in a known location on the disk. This will enable the program to recover programs and data if the disk is reformatted. The program will provide for recovery of undamaged data in the event of a hard disk crash.

ACCESSORIES - XII

12-1 A cleaning kit shall be provided. The cleaning kit shall be composed of as a minimum:

- One (1) 90 millimeter disk drive head cleaning disk
- One (1) 130 millimeter disk drive head cleaning disk
- One (1) 300 megabyte tape drive head cleaning cartridge
- Monitor screen cleaning fluid - 237 milliliters
- Anti-static spray - 946 milliliters
- Lint free cleaning wipes - 150 by 150 millimeters - 600 wipes

12-2 The following start-up and observation period supplies shall be provided.

- Ten (10) Toner Cartridges for the printer.
- Ten (10) Boxes of 90 millimeter high density Disks.
- Ten (10) Boxes of 130 millimeter high density Disks.
- Five (5) Toner Cartridge refill kits. (4 refills each)

INSTRUCTIONS AND GUARANTEES - XIII

13-1 One set of complete schematics of all equipment and maintenance manual of the equipment shall be supplied with each video workstation furnished.

13-2 One reproducible mylar and two prints of the schematic wiring diagram for the video workstation shall be supplied with each workstation furnished. The schematic wiring diagram shall contain the following information in at least 6 millimeter lettering.

A. Contract and bid date.

B. Model and number of all equipment.

13-3 One complete sets of manuals for all software shall be provided.

13-4 A list of interrupts and address of all COM ports, printer ports, modems and auxiliary peripheral shall be provided.

13-5 No changes or substitutions in these requirements will be acceptable unless authorized in writing. Inquiries regarding this equipment shall be addressed to the Manager, Office of ITS Engineering, New Jersey Department of Transportation, P.O. Box 613, 1035 Parkway Avenue, Trenton, New Jersey 08625.

13-6 The complete workstation and all equipment shall carry a one (1) year guarantee from the date of operation and acceptance against any imperfections in workmanship or materials.

13-7 The company shall test all equipment to be supplied in compliance with these specifications and as required by the supplementary specifications to which this specification applies.

13-8 The company shall furnish any and all equipment which they deem necessary for safe and reliable operation of the video workstation.

13-9 Equipment furnished under this specification must be current production equipment and of recent manufacture, identical models of which are in use for no less than one year. Untried or prototype units shall not be considered for acceptance.

13-10 Any repairs made by a manufacturer or representative shall be documented when the equipment is repaired. This documentation shall include an explanation of the exact repairs made and identification of parts replaced by part number. All warranty and maintenance repairs must be made within one day upon receiving notice or replacement equipment must be provided.