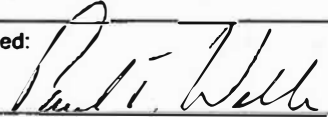


|                                                                                                                                                                                                                                                                                                                                                      |                                                                                    |                                                                                                                                                                                                  |                                                      |
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| <p><b>SUPERSEDED BY EI 97-009</b><br/><b>EFFECTIVE 8/14/97</b></p>                                                                                                                                                                                                                                                                                   |  | <p><b>ENGINEERING INSTRUCTION</b><br/><i>New York State<br/>Department of<br/>Transportation</i></p>                                                                                             | <p><b>94-028</b><br/><br/>Supersedes:<br/>94-021</p> |
| <p>Title: <b>MICROCOMPUTER SYSTEM SPECIFICATION</b><br/><b>ITEM 15637.34 (ENGLISH) &amp; 15637.34_M (METRIC)</b></p>                                                                                                                                                                                                                                 |                                                                                    |                                                                                                                                                                                                  |                                                      |
| <p>Distribution:</p> <p><input checked="" type="checkbox"/> Central Office(30)    <input type="checkbox"/> Local Gov.(31)</p> <p><input checked="" type="checkbox"/> Regions(32)        <input checked="" type="checkbox"/> Contractors/AGC(39)</p> <p><input checked="" type="checkbox"/> Consultants(34)    <input type="checkbox"/> _____ ( )</p> |                                                                                    | <p>Approved:  <u>8/1/94</u></p> <p>P.T. Wells<br/>Deputy Chief Engineer<br/>Construction Division<br/>Date</p> |                                                      |

Engineering Instruction 94-021, issued 7-15-94, transmitted English and metric specifications for the Microcomputer System. The pay item numbers assigned to the specifications were incorrect.

This Engineering Instruction reissues the English and metric specification for the Microcomputer System under its correct pay items.

The following item specifications will be effective with the letting date of 11/17/94 (PS&E: August 11,1994)

ITEM 15637.34      MICROCOMPUTER SYSTEM  
ITEM 15637.34\_M   MICROCOMPUTER SYSTEM (METRIC)

The specification for item 15637.32 MICROCOMPUTER SYSTEM is rescinded with the letting date 11/17/94.

Information pertinent to these items is as follows:

1. The estimated bid price for use with the Engineers Estimate is still \$6000.00.
2. The item specification warrant criteria for incorporation of this item into a capital construction contract has not been changed. The criteria remains as follows:

Engineers Estimate:      >    \$350,000  
Project Duration:        >    6 Months  
Number of Items:        >    30

3. The Basis of Payment is now "Each" instead of "Lump Sum". Seventy percent of the price bid will be paid when the system has been installed and is operational; the balance of thirty percent will be paid at the final estimate. The item number has also been serialized.

|                                             |                   |                        |        |
|---------------------------------------------|-------------------|------------------------|--------|
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| Subject: MICROCOMPUTER SYSTEM SPECIFICATION |                   |                        |        |

4. The English and metric versions of the item specification are identical in the actual requirements of the microcomputer system.
5. The item specifications will continue to be treated as a main office insert and inserted into the contract proposals by the Design Quality Assurance Bureau.

The specification changes were made to supply construction field offices with equipment consistent with the Department's Field Office Automation Plan and current field staff responsibilities. The major changes include the following:

Increased RAM  
Larger Hard Disk  
Higher Resolution Monitor  
Fax/Modem  
Close-Up Software

Distribution of the actual item specifications, as an attachment to this EI, was made as follows:

List 30: Recipients received 1 copy.

List 32: Copies have been sent to the Regional Design Engineer, Regional Estimating Engineer, and Regional Construction Engineer.

List 34: 1 copy each.

List 39: 1 copy.

Copies of the item specifications may be requested from the Main Office Construction Division.

Questions should be directed to Jianguo Tang, Construction Division at (518) 457-3225.

AJT:mr

15637.34 MICROCOMPUTER SYSTEM

Description. This work shall consist of providing a fully operational microcomputer system for the Engineer's field office. This item may be deleted from the Contract.

Materials. The system shall include the following components: microcomputer (see Attachment 1); printer (see Attachment 2); microcomputer software programs (see attachment 3); and a hard-disk (see Attachment 4).

The Contractor may also be required to provide, install, and maintain various other microcomputer hardware components and software packages. Such additional items shall be incorporated by Order-on-Contract with compensation to be made in accordance with SS. 109-05. However, profit and overhead shall be computed at 5% instead of the 20% specified SS. 109-05 B2(6).

Construction Details. The Contractor shall install, prior to the start of work, and maintain, a microcomputer system in the Engineer's field office. The Contractor shall make the system fully operational prior to the start of any contract work. The Contractor shall be responsible for all modifications to the Engineer's field office, such as, but not limited to, the office electrical system, necessary to make it compatible with and capable of supporting the Microcomputer System. The system shall remain in service until the Engineer requests its removal in writing or the State relinquishes the Engineer's field office in which the system is installed. Data Diskettes and Diskette Storage Containers, as specified in Attachment 1 of this item specification, shall remain the property of the State.

The Contractor shall maintain all furnished equipment and software in good working condition and shall provide replacement due to breakdown, damage, or theft within ten working days.

All equipment and software furnished shall be subject to approval by the Engineer.

Method of Measurement. The microcomputer system will be measured on an "Each" pay unit basis.

Basis of Payment. The price bid for the microcomputer system(s) will include the cost of furnishing, installing, maintaining, and removing all equipment for the system(s).

Seventy percent of the price bid will be paid when the system has been installed and is operational; the balance of thirty percent will be paid at the final estimate.

## ATTACHMENT 1: MICROCOMPUTER SPECIFICATION

The Contractor shall provide the Engineer with one Personal Microcomputer that is 100% IBM compatible and which also meets the following specifications. A DOS environment (non-windows) is required.

### Specifications:

- A) A minimum of an 80-486 DX based Central Processor Unit (CPU) operating at a minimum clock speed of 33 MHZ
- B) A minimum of 4.0 Megabyte RAM (Random Access Memory) with 640k directly addressable, expandable to 32.0 Megabyte
- C) Two (2) 1440k, 3.50 inch internal disk drives, labeled A & B, w/controller card
- D) Parallel and Serial interface ports
- E) Battery operated clock and calendar functions
- F) High resolution graphic capabilities such as provided by an IBM Extended Video Graphic Array, EVGA (1024 X 768)
- G) Eighty (80) column display function
- H) Latest operations manual & diskettes
- I) Minimum of MS-DOS 5.0 system manual & diskettes or approved equal as required to properly operate disk drive configuration supplied
- J) QBasic program and documentation
- K) Enhanced Keyboard with 101 Keys and number pad with key on-off indicator lights.

### Additional Items:

- A) High Resolution (EVGA) color 14-inch (minimum) monitor with a maximum DOT Pitch of .31 supporting the required microcomputer graphic capabilities
- B) SURGE PROTECTOR, 15 amps, four outlets w/circuit breaker control and surge failure indicator light
- C) Clear plastic dust cover for microcomputer and a separate dust cover for the keyboard
- \*D) 100 diskettes, which shall remain the property of the State, and are compatible with the specified disk drives
- \*E) Diskette storage containers, 2-100 count & 5-10 count, which shall remain the property of the State
- F) A 2400/4800/9600 Baud Fax/Modem meeting the following requirements:

Hayes-compatible AT command set  
Group III Fax compatible

- G) Fax/Modem/Phone automatic switch

\* The Contractor shall replenish the items as required by the Engineer and be of a type, size and capacity acceptable to the Engineer.

## ATTACHMENT 2: PRINTER SPECIFICATION

The Contractor shall provide the Engineer with a printer, which is totally compatible with the microcomputer, software and hard-disk provided in Attachments 1, 3 and 4 of this item specification.

### Specifications:

- A) A 24 Pin, 132-column (15-inch carriage) dot matrix printer w/IBM Graphics Character Set capabilities, both tractor and friction feed with a minimum draft mode of 180 cps (characters per second) and a minimum near letter quality (NLQ) mode of 30 cps. An Operator-Accessible Selector (control panel) with functions of paper feed, mode, and pitch
- B) DOT Configuration Graphics capability of 1/360" horizontal and 1/180" vertical
- C) Line feed and form feed functions
- D) Variable pitch characters per inch (both 10 and 12 cpi) with compressed print function (17 cpi)
- E) Variable lines per inch (both 6 and 8)
- F) Interface cable (parallel port)
- G) Latest user manuals
- H) Clear plastic dust cover for printer
- I) Steel table-top printer stand with slot for bottom paper feed
- \*J) Two replacement printer ribbons or cartridges
- \*K) One box each of 132-column (14 7/8" x 11") and 80-column (9 1/2" x 11") continuous feed, 20# bond weight printer paper (min. 2000 sheets per box). The 80-column paper shall be letter quality with disappearing perforations on the edges
- \*L) 500 mailing labels on continuous form paper for use in the printer (1 1/2" x 4" minimum label size).

\* The Contractor shall replenish the items as required by the Engineer and be of a type acceptable to the Engineer.

### ATTACHMENT 3: SOFTWARE SPECIFICATION

The Contractor shall provide the Engineer with the latest available DOS version of the following microcomputer software packages, which are totally compatible with the microcomputer, printer, and hard disk provided in Attachments 1, 2, and 4 of this item specification.

- A) Professional Write
- B) Professional File
- C) Lotus 1-2-3, Version 2.xx
- D) Norton Anti-Virus
- E) Close-Up: Customer/Terminal Version

It is the Contractor's responsibility to ensure that the Personal Microcomputer supplied also operates the following Department Software Application:

- 1) Computerized Engineer's Estimate System, CEES

#### ATTACHMENT 4: HARD-DISK SPECIFICATION

The Contractor shall provide the Engineer with a hard disk, labeled C drive, which is totally compatible with the microcomputer, printer, and software programs provided in Attachments 1, 2, & 3 of this item specification.

##### Specifications:

- A) Only an internal unit may be provided
- B) Formatted capacity of a minimum of 180 Mega-Bytes labeled C drive
- C) All cables, controller card(s) and software necessary to make the unit fully operational
- D) Average Access Time (Milliseconds): <20
- E) Direct microcomputer-booting from hard disk
- F) Partitioning command for hard disk
- G) Automatic hard disk safe zone landing when unit is turned off and/or power is cut from unit
- H) Head-Parking command for unit relocation
- I) Latest guide to operations and/or user manuals

File: AJT-MICROCSYS

## 15637.34\_M MICROCOMPUTER SYSTEM

Description. This work shall consist of providing a fully operational microcomputer system for the Engineer's field office. This item may be deleted from the Contract.

Materials. The system shall include the following components: microcomputer (see Attachment 1); printer (see Attachment 2); microcomputer software programs (see attachment 3); and a hard-disk (see Attachment 4).

The Contractor may also be required to provide, install, and maintain various other microcomputer hardware components and software packages. Such additional items shall be incorporated by Order-on-Contract with compensation to be made in accordance with SS. 109-05. However, profit and overhead shall be computed at 5% instead of the 20% specified SS. 109-05 B2(6).

Construction Details. The Contractor shall install, prior to the start of work, and maintain, a microcomputer system in the Engineer's field office. The Contractor shall make the system fully operational prior to the start of any contract work. The Contractor shall be responsible for all modifications to the Engineer's field office, such as, but not limited to, the office electrical system, necessary to make it compatible with and capable of supporting the Microcomputer System. The system shall remain in service until the Engineer requests its removal in writing or the State relinquishes the Engineer's field office in which the system is installed. Data Diskettes and Diskette Storage Containers, as specified in Attachment 1 of this item specification, shall remain the property of the State.

The Contractor shall maintain all furnished equipment and software in good working condition and shall provide replacement due to breakdown, damage, or theft within ten working days.

All equipment and software furnished shall be subject to approval by the Engineer.

Method of Measurement. The microcomputer system will be measured on an "Each" pay unit basis.

Basis of Payment. The price bid for the microcomputer system(s) will include the cost of furnishing, installing, maintaining, and removing all equipment for the system(s).

Seventy percent of the price bid will be paid when the system has been installed and is operational; the balance of thirty percent will be paid at the final estimate.

## ATTACHMENT 1: MICROCOMPUTER SPECIFICATION

The Contractor shall provide the Engineer with one Personal Microcomputer that is 100% IBM compatible and which also meets the following specifications. A DOS environment (non-windows) is required.

### Specifications:

- A) A minimum of an 80-486 DX based Central Processor Unit (CPU) operating at a minimum clock speed of 33 MHZ
- B) A minimum of 4.0 Megabyte RAM (Random Access Memory) with 640k directly addressable, expandable to 32.0 Megabyte
- C) Two (2) 1440k, 89mm internal disk drives, labeled A & B, w/controller card
- D) Parallel and Serial interface ports
- E) Battery operated clock and calendar functions
- F) High resolution graphic capabilities such as provided by an IBM Extended Video Graphic Array, EVGA (1024 X 768)
- G) Eighty (80) column display function
- H) Latest operations manual & diskettes
- I) Minimum of MS-DOS 5.0 system manual & diskettes or approved equal as required to properly operate disk drive configuration supplied
- J) QBasic program and documentation
- K) Enhanced Keyboard with 101 Keys and number pad with key on-off indicator lights.

### Additional Items:

- A) High Resolution (EVGA) color 355mm (minimum) monitor with a maximum DOT Pitch of .31 supporting the required microcomputer graphic capabilities
- B) SURGE PROTECTOR, 15 amps, four outlets w/circuit breaker control and surge failure indicator light
- C) Clear plastic dust cover for microcomputer and a separate dust cover for the keyboard
- \*D) 100 diskettes, which shall remain the property of the State, and are compatible with the specified disk drives
- \*E) Diskette storage containers, 2-100 count & 5-10 count, which shall remain the property of the State
- F) A 2400/4800/9600 Baud Fax/Modem meeting the following requirements:

Hayes-compatible AT command set  
Group III Fax compatible

- G) Fax/Modem/Phone automatic switch

\* The Contractor shall replenish the items as required by the Engineer and be of a type, size and capacity acceptable to the Engineer.

## ATTACHMENT 2: PRINTER SPECIFICATION

The Contractor shall provide the Engineer with a printer, which is totally compatible with the microcomputer, software and hard-disk provided in Attachments 1, 3 and 4 of this item specification.

### Specifications:

- A) A 24 Pin, 132-column (380mm carriage) dot matrix printer w/IBM Graphics Character Set capabilities, both tractor and friction feed with a minimum draft mode of 180 cps (characters per second) and a minimum near letter quality (NLQ) mode of 30 cps. An Operator-Accessible Selector (control panel) with functions of paper feed, mode, and pitch
- B) DOT Configuration Graphics capability of 0.07 millimeters horizontal and 0.14 millimeters vertical
- C) Line feed and form feed functions
- D) Variable pitch characters per 25.4 millimeters (both 10 and 12) with compressed print function (17)
- E) Variable lines per 25.4 millimeters (both 6 and 8)
- F) Interface cable (parallel port)
- G) Latest user manuals
- H) Clear plastic dust cover for printer
- I) Steel table-top printer stand with slot for bottom paper feed
- \*J) Two replacement printer ribbons or cartridges
- \*K) One box each of 132-column (378mm x 279mm) and 80-column (241mm x 279mm) continuous feed, 75 grams per square meter bond weight printer paper (min. 2000 sheets per box). The 80-column paper shall be letter quality with disappearing perforations on the edges
- \*L) 500 mailing labels on continuous form paper for use in the printer (38mm x 102mm minimum label size).

\* The Contractor shall replenish the items as required by the Engineer and be of a type acceptable to the Engineer.

### ATTACHMENT 3: SOFTWARE SPECIFICATION

The Contractor shall provide the Engineer with the latest available DOS version of the following microcomputer software packages, which are totally compatible with the microcomputer, printer, and hard disk provided in Attachments 1, 2, and 4 of this item specification.

- A) Professional Write
- B) Professional File
- C) Lotus 1-2-3, Version 2.xx
- D) Norton Anti-Virus
- E) Close-Up: Customer/Terminal Version

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## ATTACHMENT 4: HARD-DISK SPECIFICATION

The Contractor shall provide the Engineer with a hard disk, labeled C drive, which is totally compatible with the microcomputer, printer, and software programs provided in Attachments 1, 2, & 3 of this item specification.

### Specifications:

- A) Only an internal unit may be provided
- B) Formatted capacity of a minimum of 180 Mega-Bytes labeled C drive
- C) All cables, controller card(s) and software necessary to make the unit fully operational
- D) Average Access Time (Milliseconds): < 20
- E) Direct microcomputer-booting from hard disk
- F) Partitioning command for hard disk
- G) Automatic hard disk safe zone landing when unit is turned off and/or power is cut from unit
- H) Head-Parking command for unit relocation
- I) Latest guide to operations and/or user manuals

File: AJT-MICROCSYS

August, 1994