

ITEM 18403.9997 M - BENDING BEAM RHEOMETER

DESCRIPTION

The Bending Beam Rheometer (BBR) is a simple apparatus that allows the rapid and accurate measurement of the flexural creep stiffness of asphalt binders in the temperature range of -40°C to 0°C. A simply supported beam of asphalt binder is loaded in flexure with a constant load, the deflection at the mid-span of the beam is then measured as a function of time.

MATERIALS

BENDING BEAM RHEOMETER

The Bending Beam Rheometer (BBR) supplied will meet the following requirements:

- A. Standards:** The BBR shall conform to the specifications set forth by the Federal Highway Administration for the "pooled fund" purchase of this item. The BBR shall be able to perform all testing as described in AASHTO Provisional Test Method TP1. The BBR shall have the capability of being controlled and operated remotely through the use of a computer.
- B. Apparatus:** The BBR shall include a test frame for loading and measuring the deflections of an asphalt beam, a confining air bearing loading system, Linear Variable Differential Transformer (LVDT), specimen supports, and load cell.
- C. Control Unit:** The BBR shall include a control unit for controlling the air pressure in the air bearing loading system, with integral liquid bath into which the specimen, the supports, and lower part of the test frame are submerged.
- D. Refrigerated cooling unit:** The BBR shall include an integral refrigerated cooling unit with circulating pump and liquid bath. The BBR shall be a single unit with no separate bath and pumping unit.
- E. Circulating Pump:** The BBR shall include a circulating pump capable of pumping a solution of 60% glycol, 15% water, and 25% methanol at -40° C. The cooling system shall be a "thermoelectric cooling" system. Temperature range: 0°C to -36°C to an accuracy of 0.1°C with a stability of ±0.02°C.
- F. Calibration:** The BBR load cell shall be calibrated in one operational sequence when the load cell is working.
- G. Computer (minimum requirements):**
 - 1. Processor:** The processor shall be a Pentium 166 Mhz computer with 16 M RAM, 1 M Video RAM, 6 expansion slots, 1 GB hard disk and 1.44 MB floppy drive.
 - 2. Monitor:** The monitor shall be a 15" SVGA Color monitor.
 - 3. Printer:** LJ6MP 600 x 600 DPI Laser Jet Printer or equivalent with cable.

ITEM 18403.9997 M - BENDING BEAM RHEOMETER

- 4. Software:** The software shall control the operation of the BBR and perform and store all calculations as described in the AASHTO Provisional standards referenced above. The software must be able to output data to an ASCII file for incorporation into other software.

H. Power Requirements: The BBR shall operate on standard 115 volts AC, 50/60 Hz.

I. Molds: The BBR shall include six (6) extra sets of aluminum beam molds with mylar separators.

J. Manuals: Clear and simple operating and instruction manuals supplied for the BBR and operational software.

K. Installation: The BBR shall include on-site installation and training.

L. Warranty: The warranty will cover parts and labor for a period of two years.

BENDING BEAM RHEOMETER POTENTIAL VENDOR LISTING

Applied Test Systems, Inc
348 New Castle Road
P.O. Box 1529
Butler, PA 16003

Cannon Instrument Company
P.O. Box 16
2139 High Tech Road
State College, PA 16804-0016

Gilson Company
P.O. Box 677
Worthington, Ohio 43085

CONSTRUCTION DETAILS

Within sixty-days of the award of the bid the Bending Beam Rheometer shall be delivered to the New York State Department of Transportation - Materials Bureau, Building 7, Room 206, State Office Campus, 1220 Washington Ave, Albany, New York, 12232. Within thirty days of delivery the Bending Beam Rheometer shall be installed and in-house training completed.

METHOD OF MEASUREMENT

Payment will be made at the lump sum price bid for this Item.

BASIS OF PAYMENT

The price bid for this Item shall include the cost of the Bending Beam Rheometer, six (6) extra sets of aluminum beam molds with mylar separators, and all other miscellaneous materials, equipment, and labor to complete the requirements of this Item.

Progress payments will be made as follows:

ITEM 18403.9997 M - BENDING BEAM RHEOMETER

1. 50% of the lump sum price will be paid after the BBR is delivered to the address shown in the Construction details.
2. 50% of the lump sum will be paid after the BBR is installed and the in-house training completed in accordance with Materials Section K. Installation.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM</u>	<u>PAY UNIT</u>
18403.9997M	Bending Beam Rheometer	Lump Sum