

3.3 *Straws*

Straw tube drift chambers will be employed as part of the forward tracking system. These are segmented multiwire proportional chambers. Each straw tube contains a small diameter sense wire, which is held in the center of the tube. The straw is metalized and will be connected to a “ground” voltage that will be defined by the straw tube analog front-end electronics. The sense wire will be connected to positive high voltage. A blocking capacitor will allow the front-end electronics to operate at low voltage with respect to local ground. High voltage will be distributed to the sense wires by the same printed circuit board that holds the front-end electronics. Each printed circuit board is expected to service 32 straws. The baseline BTeV design calls for the use of only one straw tube diameter, but it is possible that this design will be changed, and two or three different diameter straw tubes will be employed. In principal, all straw tubes channels with the same diameter straws will be able to operate at a single high voltage. In practice, it is likely that it will be desirable to bias straws very close to the beam using a separate high voltage channel. The maximum number of high voltage channels quoted here and in Table 1 corresponds to biasing each group of 32 straw tube channels with a separate high voltage channel.

- **Requirement 3.3-1:** The supply must produce a positive voltage that is adjustable over the range of ~ 0 V (supply may be a hundred volts or so from zero) to 2200 V. The computer monitor must be accurate to 0.5% of full scale.
- **Requirement 3.3-2:** Ripple {unknown at this time}
- **Requirement 3.3-3:** Stability {unknown at this time}
- **Requirement 3.3-4:** The current shall be adjusted to 1% in the range of 0 to 10 μ A.
- **Requirement 3.3-5:** The current monitor resolution shall be 1% of full scale.
- **Quotation Requirement 3.3-1:** The quotation shall be for the number of high voltage outputs along with the required number of base units as follows: 100 HV channels, 1000 channels, and 4000 channels plus spares in Quotation Requirement 3.3-2.
- **Quotation Requirement 3.3-2:** The spares shall be two subrack base units or 5%, which ever is more, and 10% of the modules required for the system but no less than one full subrack of modules.