Request For Quotes for Micro-Focusing Silicon Mirrors

for
the MHATT-CAT 7BM beamline
at the
Advanced Photon Source
July 14, 2004

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Copied from a version sent by
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1 Introduction

We are requesting two silicon mirrors: two 200mm long mirrors -- the exact mirror dimensions are given in section 4. All mirror shall be fabricated according to general procedure outlined below, the final specification of roughness and slope error for each type is given in section 3. All these specifications are the same as those of the mirrors fabricated for Peter Eng.

2 General Fabrication Procedure:

1) The mirrors shall be fabricated from a boule of single crystal CZ Si with no slip lines across the length and supplied by the Vender.
2) Mirror blanks are to be ground to the proper trapezoidal shape and thickness adding extra thickness so that the final polished mirror thickness is with in 5% of specified thickness.
3) Bevel all edges.
4) Acid etched blanks removing approximately 0.003" from all surfaces.
5) Lap and polish back side of mirror to a commercial finish.
6) Lap and polish optical surface to the specification in section 3.

3 Specifications

Each mirror type is identified by its length L, focal length F and thickness T. For each mirror a maximum slope error and roughness is given, along with minimum convex and concave radius of curvature.

Qty	Mirror Type	Maximum Slope Error[1] [μrad]	Maximum RMS Roughness [Å]	Minimum Convex Radius [km]	Minimum Concave Radius [km]
1	L = 200 mm F = 190 mm T = 6.25 mm **Fig. 3**	**1.5**	**1.0**	**0.5**	**1.5**
1	L = 200 mm F = 390 mm T = 7.0 mm **Fig. 4**	**1.5**	**1.0**	**0.5**	**2.0**

(1) With first order curvature (power) removed.

4 Mirror Shapes

The figures below show dimensions of the trapezoidal mirrors and the last figure defines the concave and convex radius. The optical surface over which the specification given in section 3 must be held is shown as the hatched area.

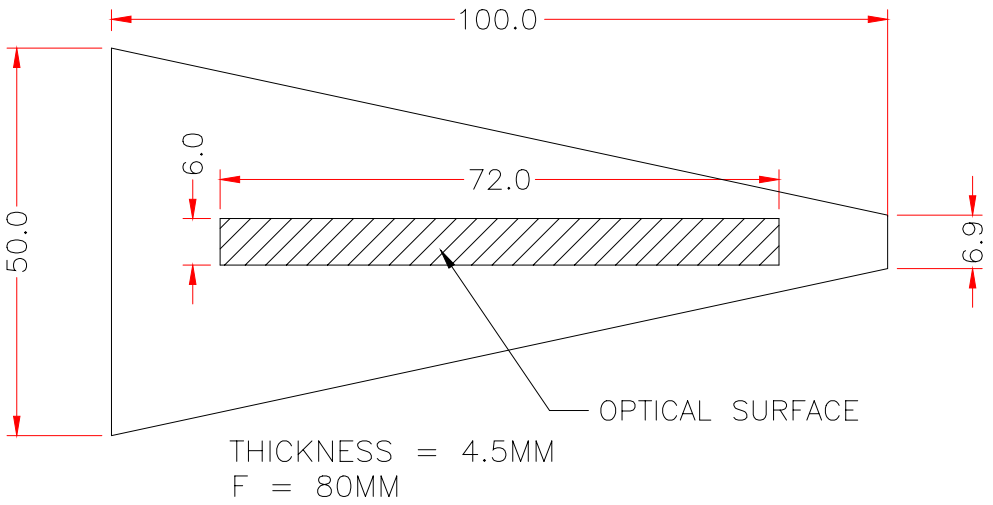

Fig. 1 Horizontal focusing mirror 100mm long.

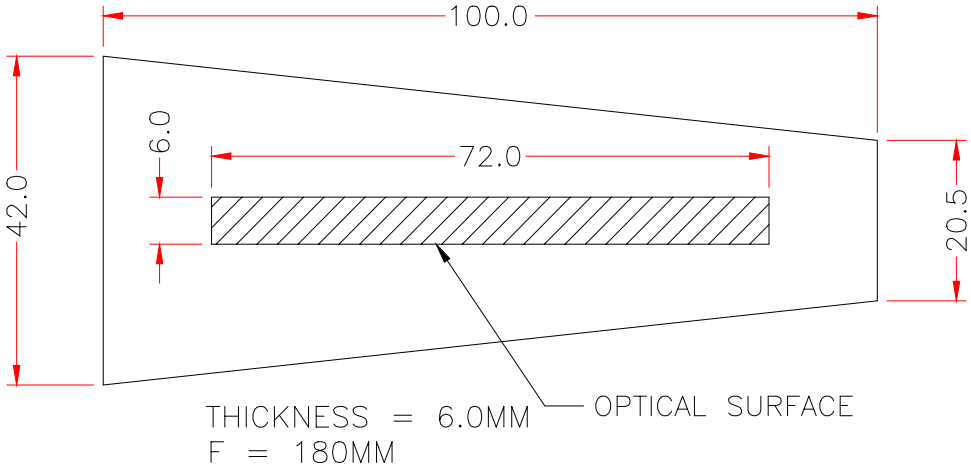

Fig. 2 Vertical focusing mirror 100 mm long.

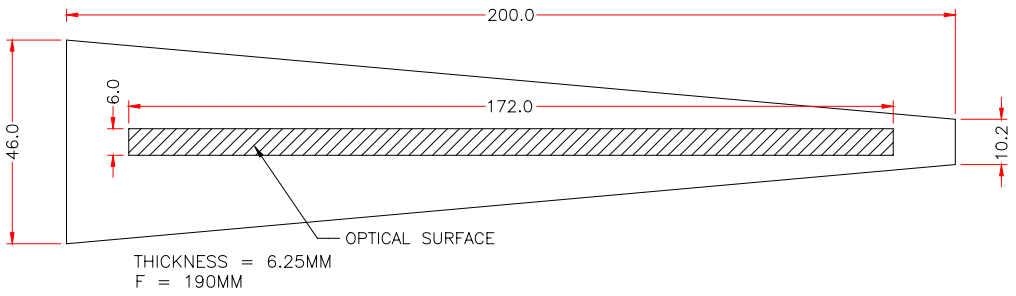

Fig. 3 Horizontal focusing mirror 200 mm long.

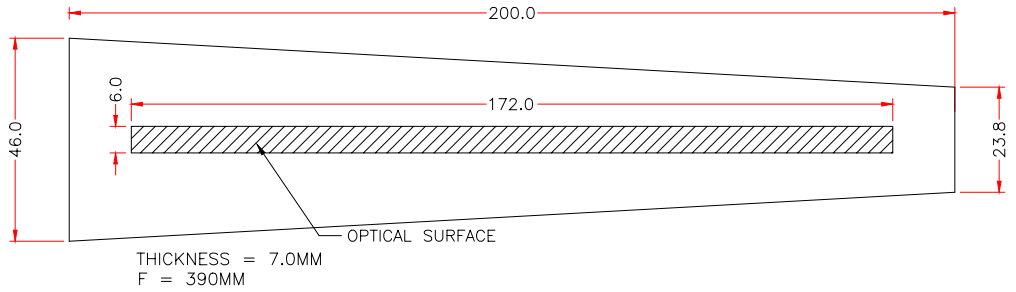

Fig. 4 Vertical focusing mirror 200 mm long.

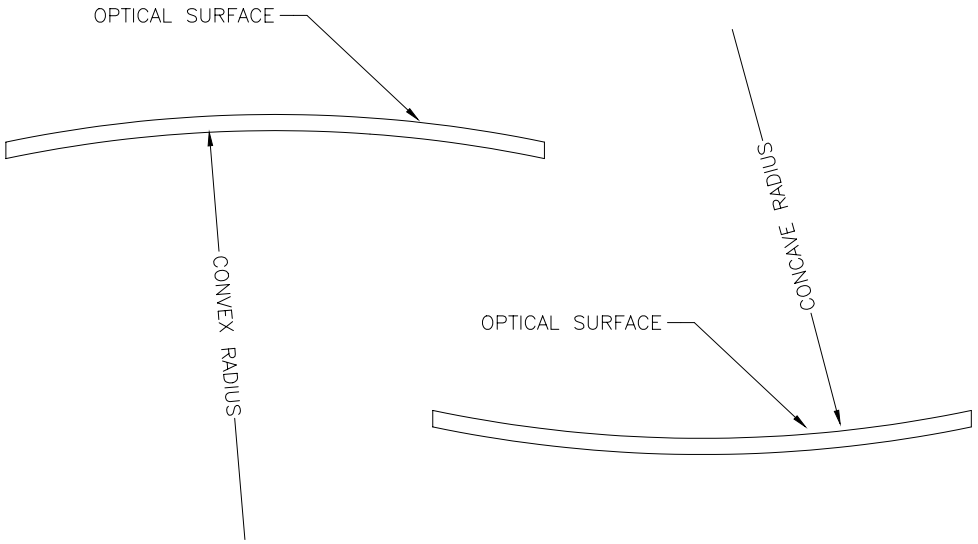

Fig. 5 Definition of convex and concave radius.