

Specifications for Optical Link Pipe between Beam Generating  
Systems of Interferometers in Separate Mass Tanks.

1. The pipe vacuum is kept separate from the vacuum in the beam conditioning tanks by an optical quality window (antireflection coated) at each end.
2. Pressure: 10<sup>-4</sup> tor is adequate, allowing use of viton O-ring joints for simplicity.
3. Clear aperture 6 inches diameter. With 1 inch baffles (spacing tbd) this requires an 8 inch pipe, if plain tubing used.
4. The pipe to be straight (+/\_ .25 inch), with right angle corners. At each corner there is a corner module, consisting of a small vacuum tank (18 in ID, 18 inch tall, similar to the bottom part of the standard tank design used in the Bridge lab and in the 40m prototype, but simplified by elimination of the bottom port). This will contain 2 beam bending mirrors in angular motorized mounts, and 4 quadrant diode beam position monitoring units; all mounted on a small 2-stage bare rubber antiseismic stack within the tank (similar to stacks inside the annex tanks of the 40-m prototype). The corner module itself is not isolated, but is mounted to the floor or to an adjacent conditioning modular tank.
5. In phase A there is one link pipe, between the 2 beam conditioning systems. In Phase B the horizontal part of the pipe is continued to each conditioning system in turn, with additional deflecting mirrors and beam position monitors in the appropriate 18 inch corner modules.
6. For flexibility, bellows may be incorporated between the junctions of the pipe sections and the corner modules, if required.

R. Drever. (3/10/89)

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