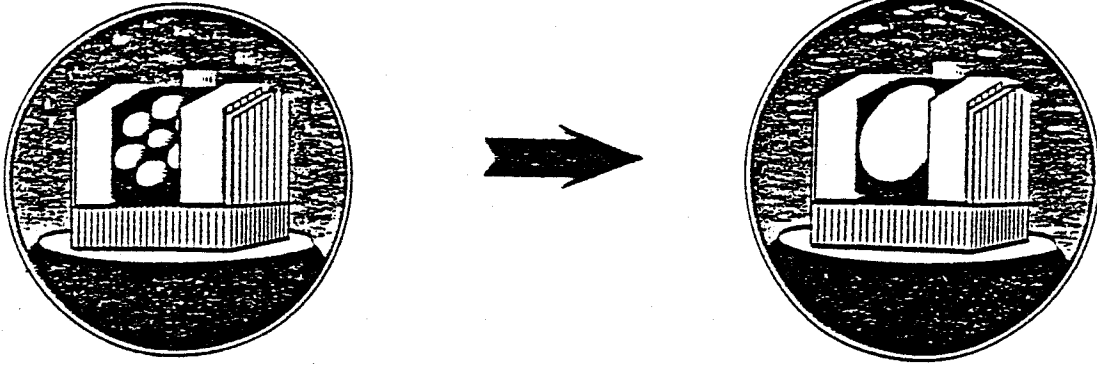


6.5 METER TELESCOPE



MMTO Conversion Technical Memorandum #96-4

Seeing Improvements Resulting from Improved Chamber Ventilation

Craig Foltz

December 11, 1996



MULTIPLE MIRROR TELESCOPE OBSERVATORY

Smithsonian Astrophysical Observatory and Steward Observatory, The University of Arizona®

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To: Interested Parties

From: Craig Foltz

Re: Seeing Improvements Resulting from Improved Chamber Ventilation

Date: December 10, 1996

I. Introduction

As part of the MMT Conversion Project, two large shutter panels were installed on the back of the MMT building during the period from May 2 through October 10, 1995. When the shutters are rolled to their retracted position, approximately 600 square feet of the back wall of the building is open to air flow. The shutters were designed to be used either fully-open or fully-closed; i.e. they are not used in a partially open configuration. We will eventually install louvers in the rear opening to baffle stray light, but these will be at a fixed angle and will not be used to control airflow, as are the louvers at the NTT.

The motivation for the installation of the rear shutters was to improve the airflow in the chamber in hopes to help to attain a near-isothermal condition in the observing chamber, thereby minimizing "dome seeing." This installation was in some sense an act of faith, in that no one had previously measured how much of our seeing was due to local effects, but it was clear from studies of the NNT and the ARC 3.5 m telescope enclosures that opening the rear of the building would help to flush air through the chamber. Since the MMTO has always taken every effort to improve the local seeing, the project was a natural one to undertake. Furthermore, since it could be piggy-backed onto the main building shutter modifications that were being done at the same time, the project's cost was lower than it would have been had we deferred it to a later date.

II. Comparison of Accumulated Seeing Data

We have now been using the rear shutters for more than 13 months. During this period the shutters were opened for the large majority of nights. The exceptions to this were nights when the weather conditions were changeable such that the building was opened and closed several times. Initially, the rear shutter drive was quite slow so, if storms were pending, the telescope operator might choose not to open the rear shutters. Furthermore, during periods of high winds and attendant blowing dust, the rear shutters sometimes were kept closed. Unfortunately, the data presented below