# Great Door Architecture Meeting 3/18/24

I met with Corey Martin / THA, Mike Taylor / KNCC, and Vernon Threlkeld to report and discuss issues involving the UUFCO Great Doors. Our main concern is the on-going difficulty in operating the doors – they are heavy and hard to open and close. The doors move on “cars”, one at each end, mechanisms consisting of an integrated rolling/guide wheel supported by two tapered roller bearings, rolling on steel tracks in the floor. I presented my findings that indicate that the difficulty is not due to bearing faults but rather friction due to unequal loading on the mis-aligned floor tracks.

In discussion and trials both Martin and Taylor agreed that the bearings operated smoothly and quietly, and did not seem to present a problem. Furthermore, the force to move the doors varied along the length of the tracks – faulty bearings would present a constant drag. The bearings are over-designed and see only intermittent static loads.

Examination of the tracks showed obvious patterns of wear suggesting that vertical mis-alignment of the parallel running surfaces was causing an unequal distribution of load on the rollers and resulting in friction against the guide wheels. We observed that a recent application by our Building Supervisor Adam Braham of dry graphite lubricant to the inner surface of the tracks made an immediate and obvious improvement in the door’s operability.

The consensus opinion is that lubrication of the tracks presents the best affordable solution at the present time. Regular lubrication and sweeping of the track channels was recommended.

<u>Other observations and suggestions:</u>

- The tracks are not shifting relative to the adjacent floor slab. The mis-alignment probably dates from initial construction.
- Grip tape on the floor would provide foot support to persons getting the doors moving. Once moving the operating force is acceptable.
- Mechanical dampers to smooth the motion (shown on architectural details) were not installed during construction due to space constraints, according to Mike Taylor.
- The doors take a large impact when reaching the stops at the end of their travel. This may take a toll on the car mechanism over time. Elastomeric snubbers at either end may help.
- Lifting the ends of the doors an inch or two to access and lubricate the cars is not out of the question. A specialized jack would need to be acquired. Consideration of clearances at the top guide rollers is necessary. Should this work become necessary, it would be advisable to hire a contractor with the appropriate expertise and tools.
- It may be possible to add motorized assistance to the operation of the doors.
- There is an unnoticed small (2’ x 2’ ?) hatch in the ceiling in front of the doors on sanctuary side that would allow access to the guide mechanisms at the top of the doors. It was not clear if the top guides present a problem.

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