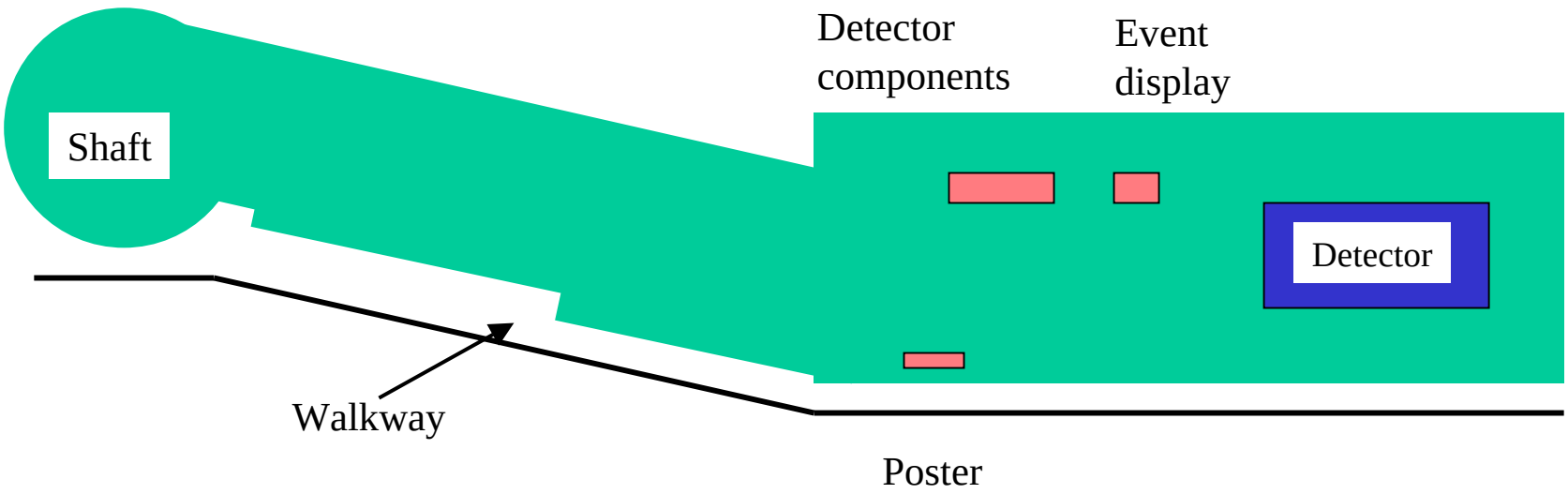
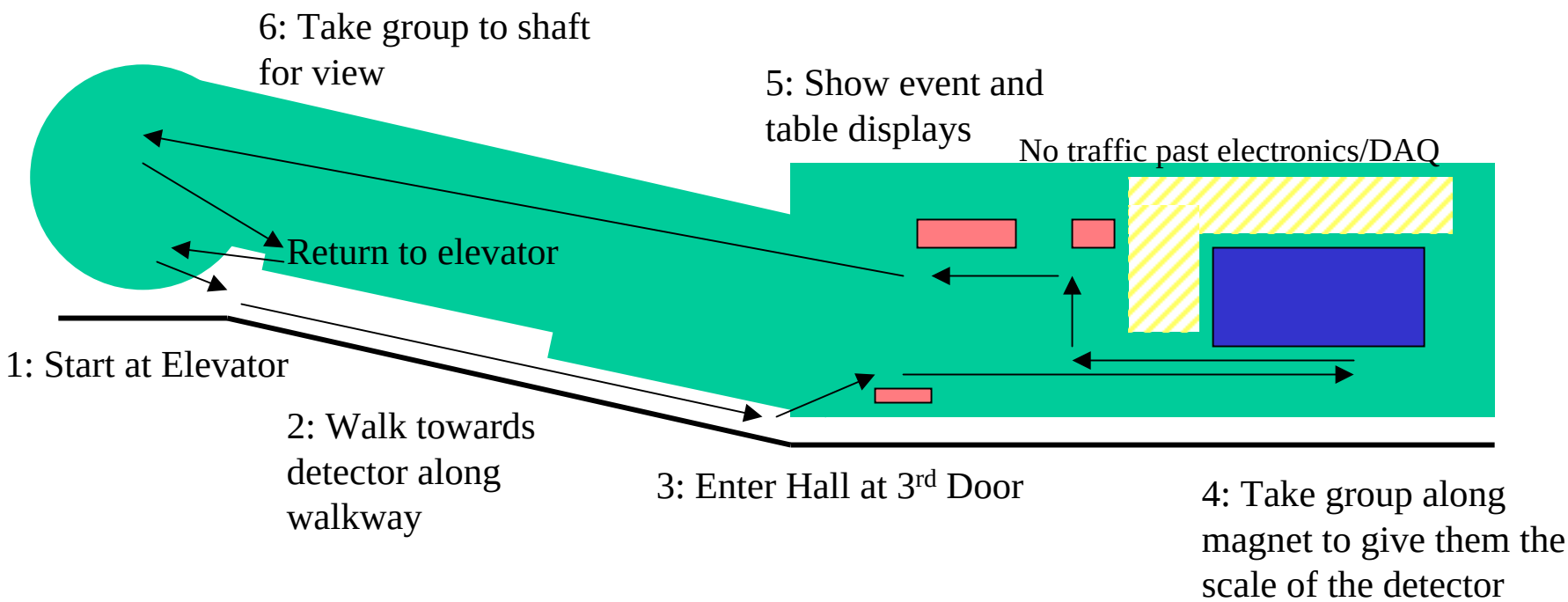
Orientation



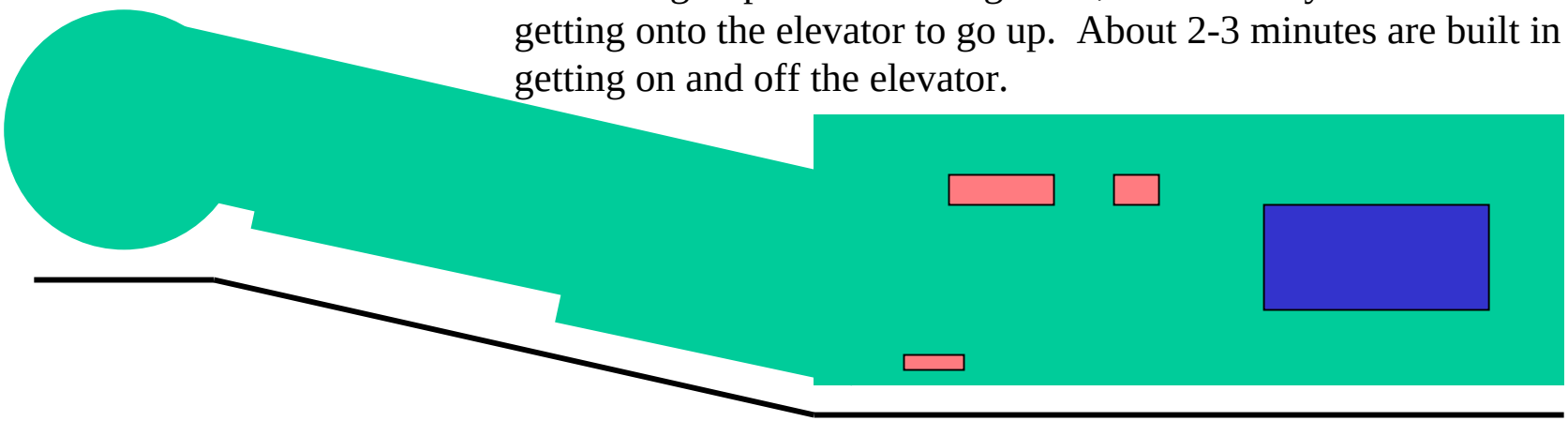
Route


6: Take group to shaft for view
5: Show event and table displays
No traffic past electronics/DAQ
Return to elevator
1: Start at Elevator
2: Walk towards detector along walkway
3: Enter Hall at 3rd Door
4: Take group along magnet to give them the scale of the detector

General Timing

•There is approximately 28 minutes for each group from boarding the elevator on top, to leaving the elevator on top.

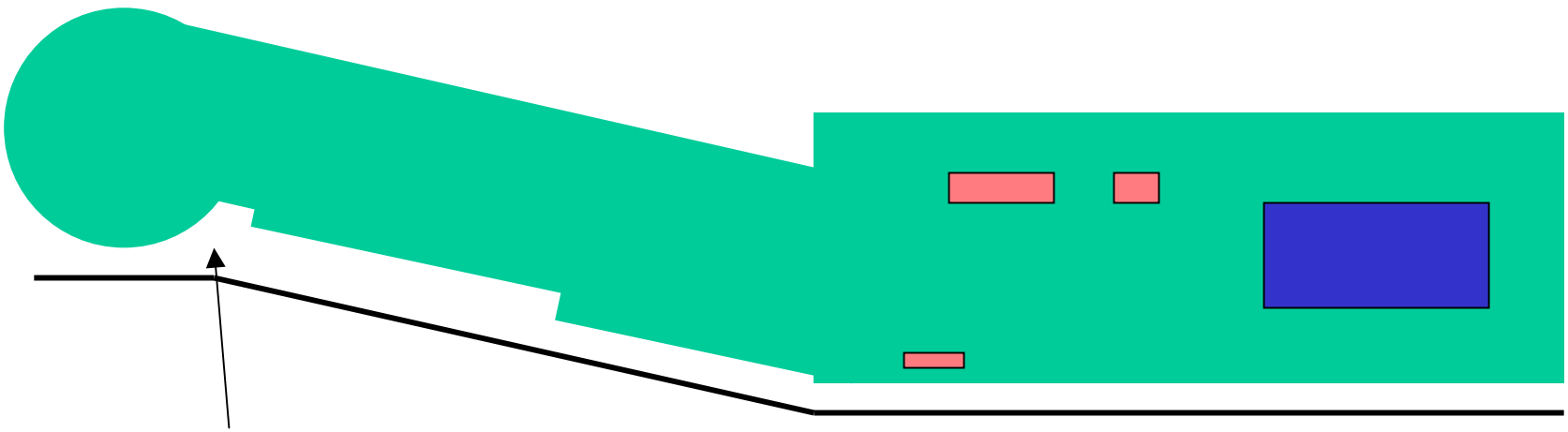
•This means there is about 20 minutes available for the tour, from when the group arrives underground, to when they have to start getting onto the elevator to go up. About 2-3 minutes are built in for getting on and off the elevator.



•Among the 3 Guides, one must be with each of the 2 groups that are underground. They should arrange swapping off with the display table demonstrator.

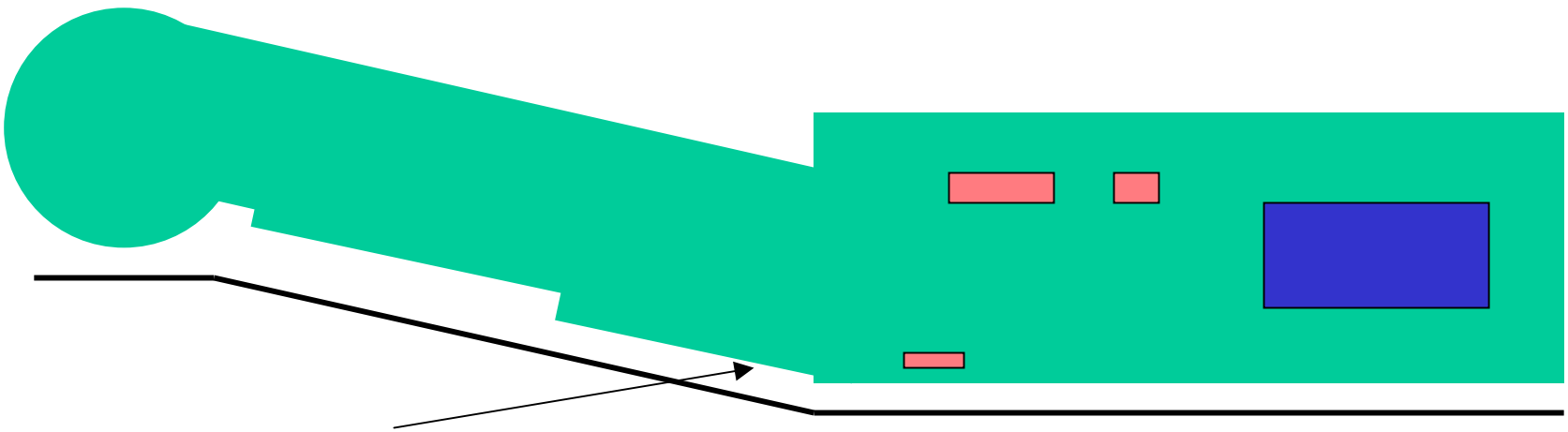
•The groups will be staggered by 15 minutes.

Arrival



Greet the group at the elevator, welcome them to the MINOS Hall
Show them the poster, pointing out the distances to the two detectors
Mention that you are now 345 feet underground

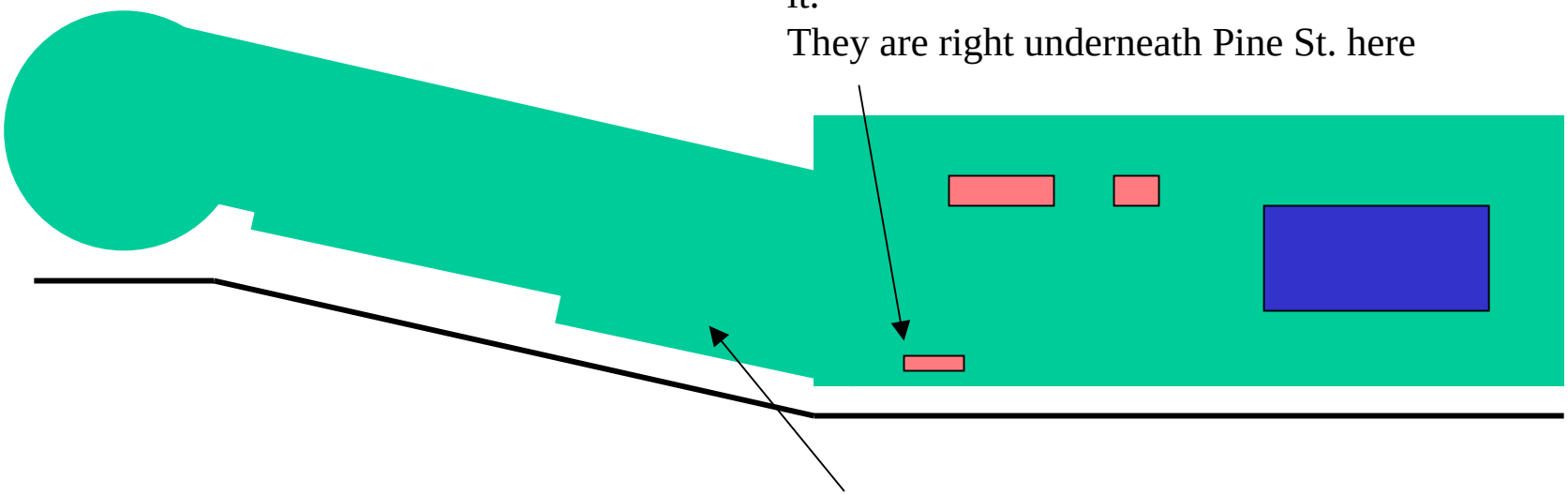
Walkway



Lead the tour along the walkway, to the 3rd door
Point out
that this is the overpressurized safety area
the shot-crete lining
Mention that this part of the complex was excavated by drilling and blasting

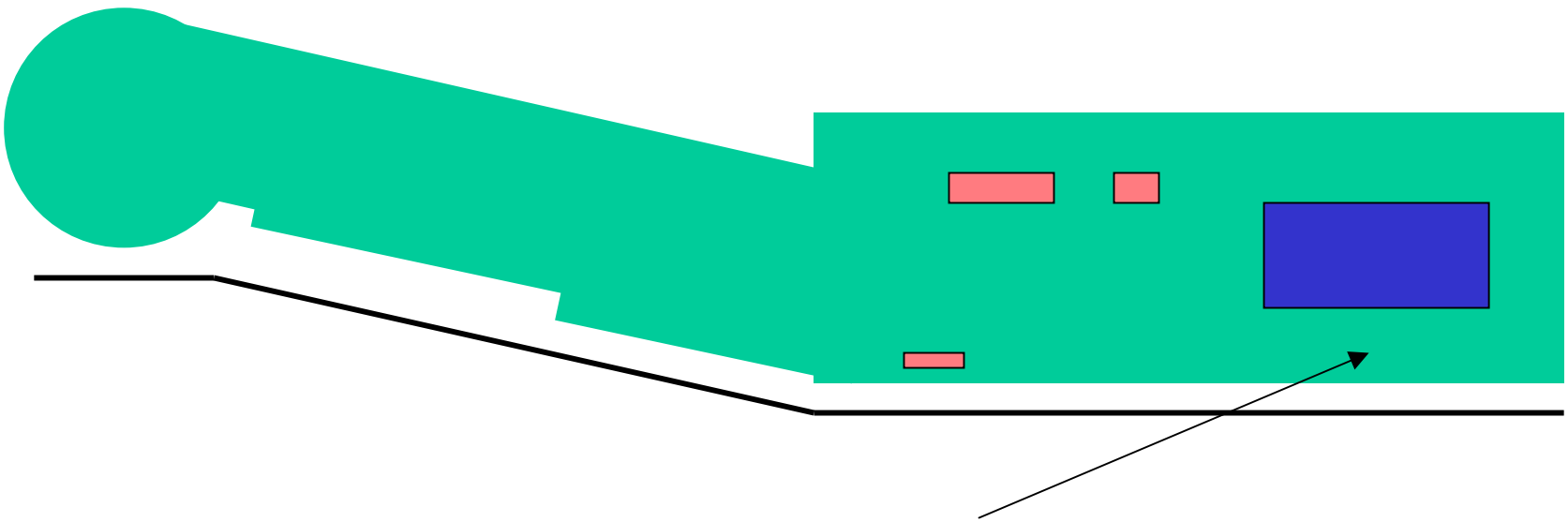
Entry to the Hall

Lead the group into the hall.
Gather around the poster, and tell them that this is an experiment to measure a beam of neutrinos, created at Fermilab, at a “Near Detector” at Fermilab, and a “Far Detector” in the Soudan Mine in Northern Minnesota. They’ve heard about this much before, but it won’t hurt to repeat it.
They are right underneath Pine St. here



Point to the bull’s-eye on the wall, that marks the center of the neutrino beam
Point out the Near Detector. It’s still a “black box” at this point in the tour.

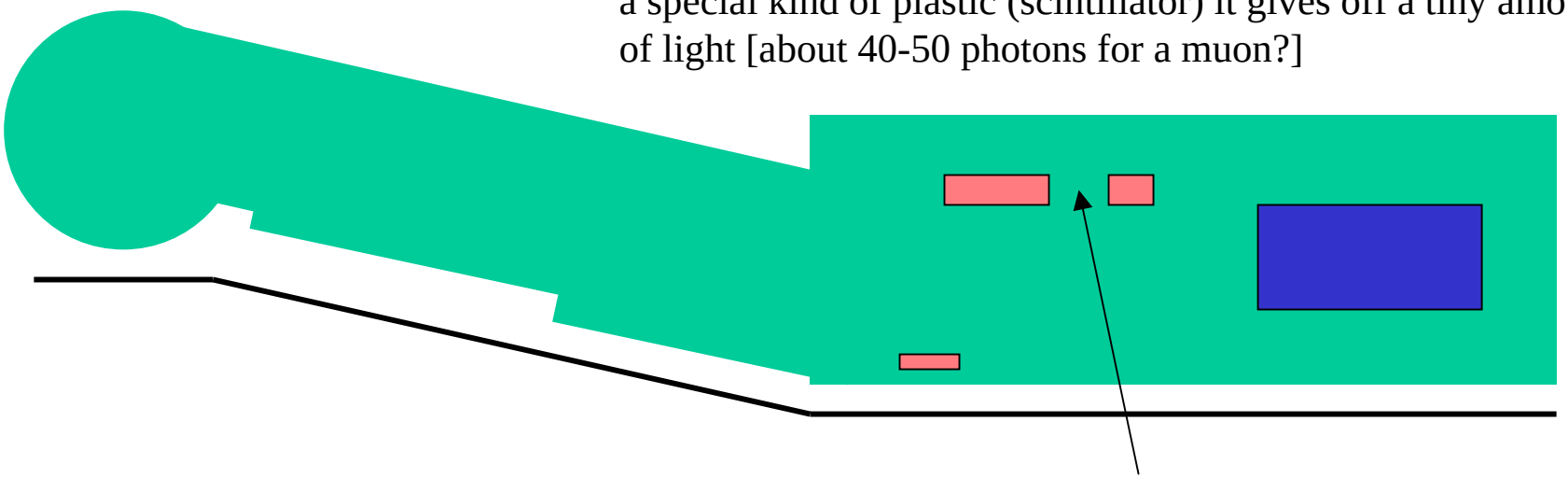
Walk towards the back staircase



Lead the group along the magnet-side of the detector. Please remind them to watch their step.
Explain the magnet coil: by running an electrical current (5000Amps!) along it, we magnetize the iron. This helps us measure the energies (speeds?) of particles by how much their paths bend in the magnetic field.

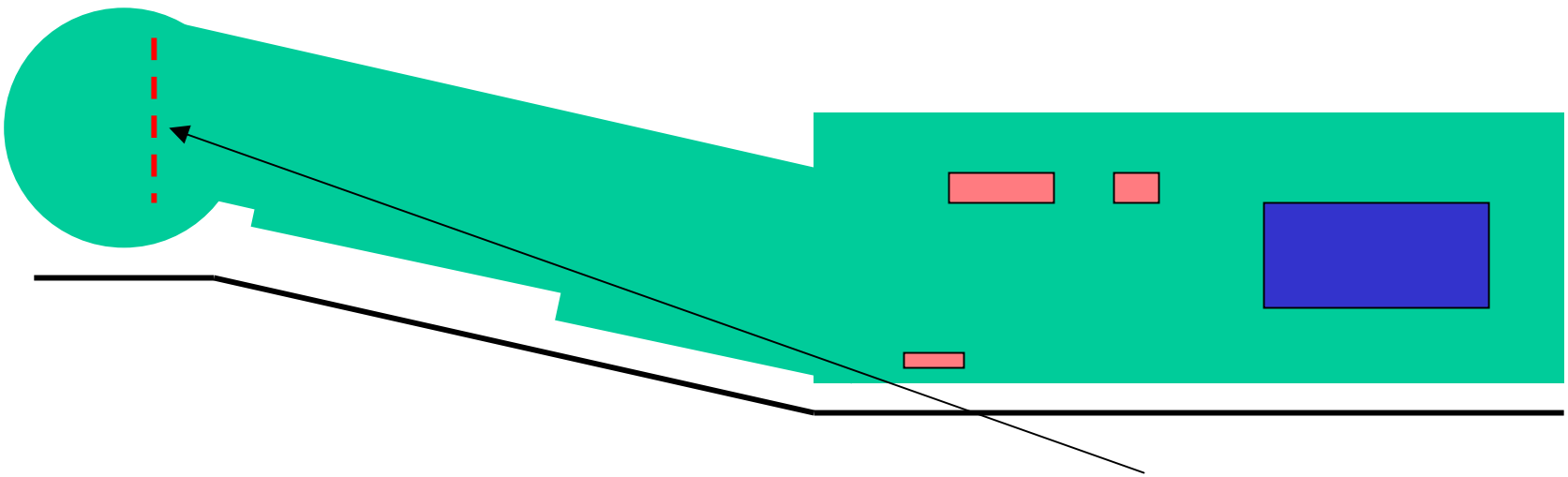
View Event Display and Detector Components

Lead them back along the magnet, and over to the event display and detector components display.
The Guide who was waiting at the table explains the material
Explain that when neutrinos interact in the detector, they produce other particles. When these other particles go through a special kind of plastic (scintillator) it gives off a tiny amount of light [about 40-50 photons for a muon?]



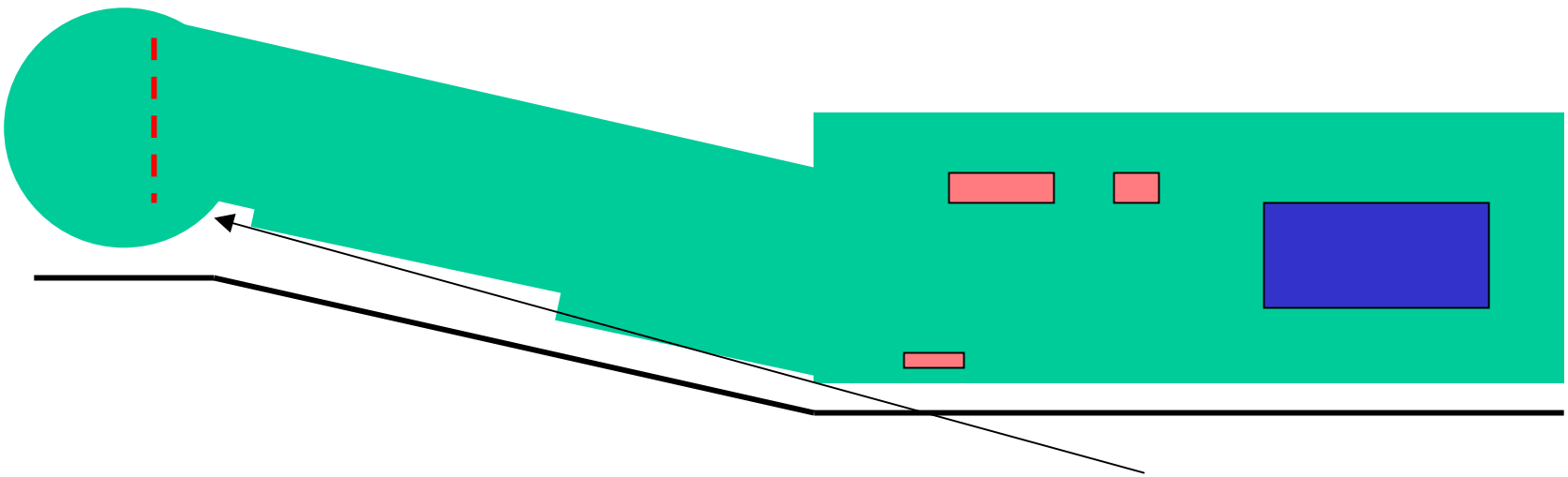
Point out the optical cables, that take the light out to Photomultiplier tubes, which turn a tiny amount of light into a tiny electrical signal.
You can point to the electronics (??) that turn those tiny signals into data, which we save.
We later use that data to reconstruct the paths of all the particles created when a neutrino interacts in the detector.

View Shaft and Tunnel to Absorber Hall



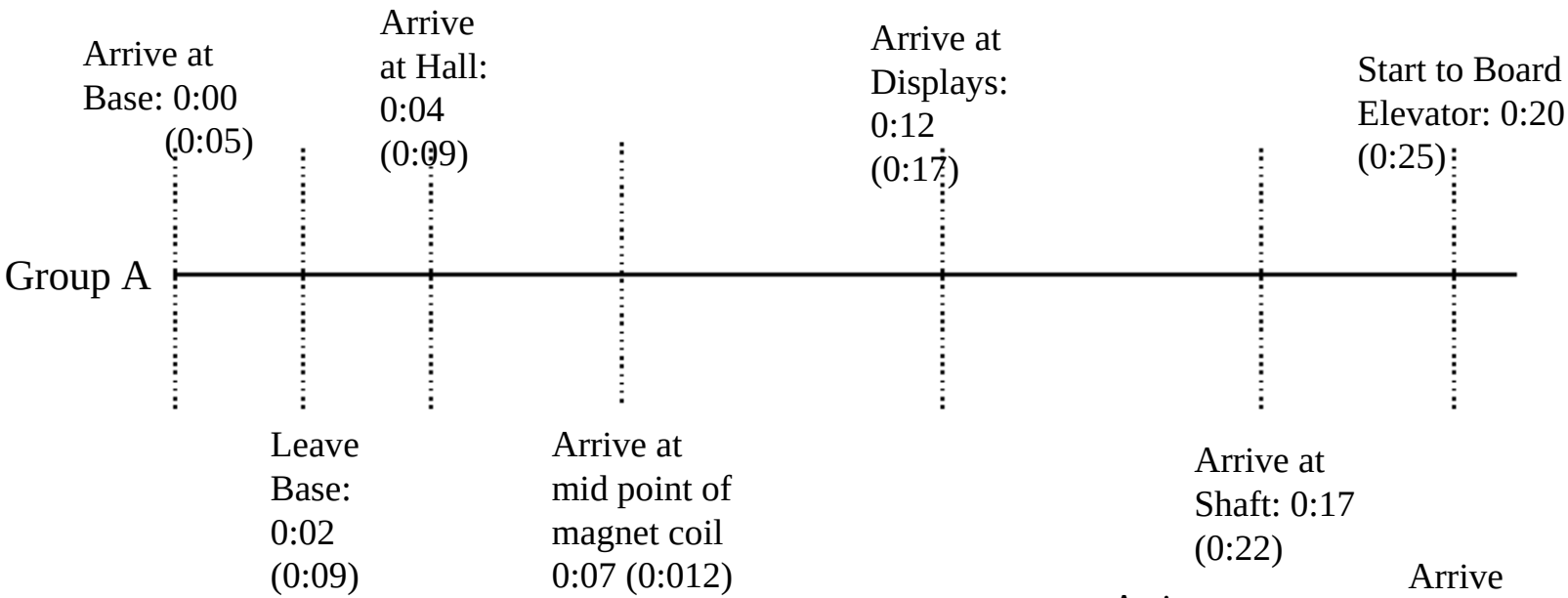
Lead the group up to the shaft. They can approach the fence, and look up to the top.
Point out the tunnel to the absorber. It was built with a tunnel boring machine, so there was no blasting for that part!

Back to the elevator

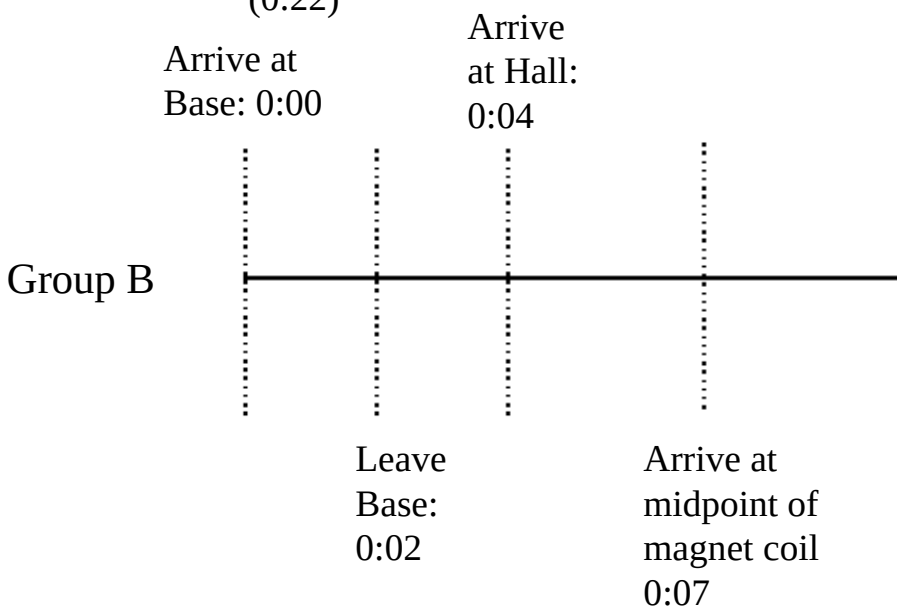


Let the group in through the door next to the elevator, and see them off.
Wait for the next group, or go with them, if it’s your last group for your shift.

Timing Diagram



0:10 – Time since arrival

(0:15) – Time since boarding elevator upstairs

Times are not tested – please use your own judgment. The key point is to have them back at the elevator in 20 +/- 2 minutes.