

Minutes and Action List of August 3 2020 ArgonCube2x2 Installation Meeting

- Attendee: Tom, Angela, Min Jeong, Steve, Gary and Ting
- News: The decommissioning is going well. We are projecting to finish MINERvA mid of September. We need MINOS handrail re-installed before start MINOS module removal.
- Min Jeong discussed recent development on ArgonCube2x2 cryostat access platform design requirement:
 - More electronics equipment are being planned to be located on the platform. Those equipment are to be on clean AC power.
 - There is a new requirement of minimum distance from cryostat metal shell and platform support beam. Gary to check what we have now in the module and will adjust the space accordingly.
 - We discussed the egress requirement of the platform. Middle section (cryostat top plate) should not be part of the safety pathway. Thus people on west half of the platform should go to west catwalk in emergency escape, people on east should take the east catwalk then go downstream through overhead bridge for emergency.
 - Downstream overhead can not be removed as it is part of the egress -- we will avoid to do this if possible.
 - Considering potential more space requirement downstream for other experiment tests, it is suggested to move the whole 2x2+MINERvA module layout further upstream by ~2m.
 - detail to be decided after the MINOS handrail design
 - Width of the access platform now is more than 2 meters. This is more than 36" requirement
 - The gate opening on both east and west should also meet minimum width egress requirement --- Angela will check the code and get back on this
 - We also had some discussion on the requirement of the platform handrails on the south and north sides.
 - The minimum height requirement should be checked out -- Angela will get back on this
 - The fall protection requirement depends on the height of the platform -- Min Jeong will make a measurement
 - We decided we need to make the handrail removable:
 - to remove tall object over the platform
 - to access MINERvA electronics
 - For removable handrail, we need fall protection thus anchor points for harness etc.
 - It is pointed out we need to have updated cryostat top module to have more complete equipment layout including feedthrough, cryogenic instrumentation and electronics. We will work with BERN group and our cryogenic team to do this.
- Discuss on MINOS handrail replacement design is postponed to next meeting. It will be nice to distribute layout drawing etc. to the group before the meeting

- Action task list:
 - Gary to check spacing between cryostat shell and access platform support beam and increase them to 8" or more if needed
 - Angela to check access platform gate opening width requirement
 - Min Jong and Gary to "measure" access platform height (to the floor) in the module
 - Angela to check access platform handrail height requirement

- AOB: We will meet in two weeks to focus on MINOS handrail replacement design

From: Angela M Aparicio <asands@fnal.gov>

Sent: Monday, August 3, 2020 3:12 PM

To: Min Jeong Kim <mjkim@fnal.gov>

Cc: Ting Miao <tmiao@fnal.gov>

Subject: ArgonCube gate width

Hi Min Jeong,

I've found the width requirements for the gates on the cryostat platform. OSHA says they must be at least 28 inches, the NFPA Life Safety Code says no less than 22 inches. We need to follow the OSHA standard (this OSHA standard interpretation says that if your exit width is less than 28 inches you are in violation: <https://www.osha.gov/laws-regs/standardinterpretations/2000-04-27>). I have also included the Life Safety Code and OSHA requirements when there is a change in elevation. You didn't say, but are there plans to include a step or stairs at the egress points for the platform?

1910.36(g)(2)

An exit access must be at least 28 inches (71.1 cm) wide at all points. Where there is only one exit access leading to an exit or exit discharge, the width of the exit and exit discharge must be at least equal to the width of the exit access.

1926.1051(a)

A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches (48 cm) or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.

NFPA 101: Life Safety Code:

7.1.7 Changes in Level in Means of Egress.

7.1.7.1 Changes in level in means of egress shall be achieved by an approved means of egress where the elevation difference exceeds 21 in. (535 mm).

7.1.7.2* Changes in level in means of egress not in excess of 21 in. (535 mm) shall be achieved either by a ramp complying with the requirements of 7.2.5 or by a stair complying with the requirements of 7.2.2.

7.1.7.2.1 Where a ramp is used to meet the requirements of 7.1.7.2, the presence and location of ramped portions of walkways shall be readily apparent.

7.1.7.2.2 Where a stair is used to meet the requirements of 7.1.7.2, the tread depth of such stair shall be not less than 13 in. (330 mm).

7.1.7.2.3 Tread depth in industrial equipment access areas as provided in 40.2.5.3 shall be permitted.

40.2.5.3 Industrial Equipment Access.

40.2.5.3.1 Industrial equipment access doors, walkways, platforms, ramps, and stairs that serve as a component of the means of egress from the involved equipment shall be permitted in accordance with the applicable provisions of Chapter 7, as modified by Table 40.2.5.3.1.

40.2.5.3.2 Any means of egress component permitted by 40.2.5.3.1 shall serve not more than 20 people.

Table 40.2.5.3.1 Industrial Equipment Access Dimensional Criteria

| Feature | Dimensional Criteria |
|--|-------------------------------------|
| Minimum horizontal dimension of any walkway, landing, or platform | 22 in. (560 mm) clear |
| Minimum stair or ramp width | 22 in. (560 mm) clear between rails |
| Minimum tread width | 22 in. (560 mm) clear |
| Minimum tread depth | 10 in. (255 mm) |
| Maximum riser height | 9 in. (230 mm) |
| Handrails are permitted to terminate, at the required height, at a point directly above the top and bottom risers. | |
| Maximum height between landings | 12 ft (3660 mm) |
| Minimum headroom | 6 ft 8 in. (2030 mm) |
| Minimum width of door openings | 22 in. (560 mm) clear |

1910.29(b)(13)

When guardrail systems are used around holes that serve as points of access (such as ladderways), the guardrail system opening:

1910.29(b)(13)(i)

Has a self-closing gate that slides or swings away from the hole, and is equipped with a top rail and midrail or equivalent intermediate member that meets the requirements in paragraph (b) of this section; or

1910.29(b)(13)(ii)

Is offset to prevent an employee from walking or falling into the hole;

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