



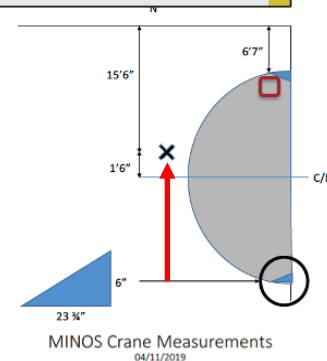
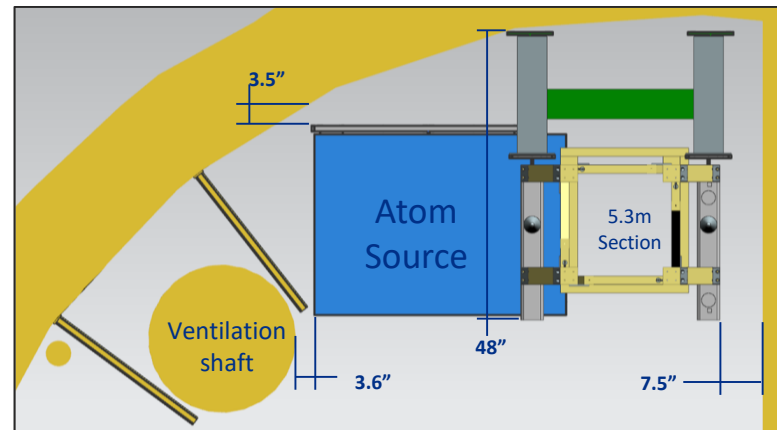
Accessibility Constraints and Requirements

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12 July 2022

MINOS Shaft Overview

- ~22 ft. diameter with grouted corners
- Overhead crane stops 18 in. past centerline
- Utilities installed while digging shaft
 - Minor work done from basket since
- Ventilation repositioning planned
- Structural mounting to all walls allowable
 - Shaft work envelope must be considered'
- Access issues due to reach
 - 6 ft. tall person can reach ~27 in. comfortably, 36 in. uncomfortably



Personnel Access System (PAS) Safety Considerations

1. PAS must remain above any suspended loads at all times
2. PAS must have a roof.
3. PAS and load must not be supported by one crane.
4. PAS must have suitable tie offs for fall protection.
5. Pinching due to any movement of PAS must be mitigated.
6. Simultaneous movement of PAS and installation crane is allowable but potentially very dangerous.
7. Risk of emergency situation due to incapacitation of PAS rider must be mitigated.
8. Control authority of PAS and installation crane must be well understood by all involved parties.



Personnel Access System (PAS) Functional Requirements

1. The PAS must meet all safety requirements and adhere to all applicable codes and standards.
2. The PAS must allow access to the entire front of the modular sections (yellow), atom sources (green), and cable trays (red) along the entire experiment length.
 - Personnel should be as close to the front of the modular sections and atom sources as possible.
3. The PAS must not interfere with the ability to run cables to and from the cable trays (red).
4. The PAS must support at least two people plus tools and small components.
5. The PAS shall be removable or storable outside of the shaft envelope so as not to interfere with standard MINOS shaft operations.
 - PAS must be ready for use from storage in a reasonable time for monthly accesses.
6. PAS must be enterable from MINOS building ground level or the shaft floor.
7. PAS must meet cost and schedule limitations.

Additional Considerations:

- Ability for the PAS to allow personnel to access the shaft wall behind the experiment would be desirable for civil construction and initial utility routing.
- A PAS independent from the auxiliary crane or the overhead building crane is desirable for installation flexibility.

