**CEBAF accelerator loading limits: IH1000-04g**

**Background information:**

Since returning to MEDCON5, the Lab has adopted a loading limit of 170/ft2 per person. Within a crowded area, there is potential for the atmosphere to be hazardous even with social distancing due to the number of people breathing/exhaling in the immediate environment/atmosphere. Spaces like the tunnel and service buildings have potential to create such an environment.

**Purpose:**

This procedure provides loading limits for the CEBAF tunnel and associated support buildings per zones rather than considering the tunnel and service buildings as continuous spaces. This variance provides a safer workspace in a particular zone even when social distancing is achievable since these environments have potential to be higher risk due to limited air exchanges, narrow walkways, and equipment crowding.

In the context of calculating occupancy limits, any space can be construed as a zone and proportioning can be used to create an applicable limit.  Such non-standard, but operationally appropriate spaces can be demarcated with cones.  In calculating limits, fractions of people must be rounded down.

**Training requirements:**

When loading exceeds limits noted below: COVID PPE training (SAF003PPE), medical approval for respirator protection (MED13), and respirator training & fit test (SAF200) is required.

**Loading limits:**

The accelerator tunnel is divided into sectors similar to the PSS segmentation. Given the 170/ft2 space requirement per a person, each linac can hold up to 104 people, however certain zones within the tunnel may be crowded during certain work activities. In order to provide safe environments with social distancing, it is necessary to further divide the tunnel into zones and assign load limits to those zones.

**Tunnel Linac Zones and Arcs**

* The loading limit is 3 people within a 40 foot zone or 40 foot section of an arc.
	+ Cones may be used to provide a visual indicator of 40 foot zones.
* When two teams of two or more people are needed, which would exceed the limit:
	+ All employees beyond 3 must don respirators.  For example, if 7 employees are needed, at least 4 will wear respirators.
	+ If an employee is inside a clean room within a zone, that employee will count in the tally because exhaled air is not filtered before being discharged from the enclosure.  If there is one person in a clean room and 3 outside of it, then the total is 4, and at least one of them must don a respirator.
* Working inside a portable cleanroom with another person requires a respirator since social distancing cannot be achieved.
	+ Cleanroom garments worn when social distancing is violated must be changed daily and either laundered by a vendor service or held for a 10-day quarantine to allow coronavirus sufficient time to die prior to re-donning.

**Injector Tunnel, west**

* The loading limit for the injector tunnel, west of the plastic wall to the stairwell is 8 people.
	+ When more than 8 people are necessary, all employees beyond 8 must don respirators.

**Injector Tunnel, east**

* The loading limit for the injector tunnel, east of the plastic wall towards the north linac/west arc is 3 people.
	+ When more than 3 people are necessary, all employees beyond 3 must don respirators.

**Linac Service Building Zones (Buildings 01 & 02)**

* The loading limit is 2 people for each ~30 foot zone.
	+ Cones may be used to provide a visual indicator of 30 foot zones.
* When zones need more than 2 people, all employees beyond 2 must don respirators.

**North Access Building (Building 67)**

|  |  |  |
| --- | --- | --- |
| **Room Name** | **Room Number** | **Loading Limit\*** |
| Box Supply Room | Room 107 | 7 people |
| Electronics Room | Room 100 | 2 people |
| High Bay | Room 102 | 4 people |
| Pump Room | Room 108 | 14 people |

**South Access Building Box Supply Room (Building 38, Room 107)**

|  |  |  |
| --- | --- | --- |
| **Room Name** | **Room Number** | **Loading Limit\*** |
| Box Supply Room | Room 107 | 7 people |
| Electronics Room | Room 100 | 2 people |
| High Bay | Room 102 | 4 people |
| Pump Room | Room 108 | 14 people |

**Other service buildings:**

|  |  |  |
| --- | --- | --- |
| **Building Name** | **Building Number** | **Loading Limit \*** |
| W1 Service Building | 82 | 12 people |
| W2 Service Building | 68 | Main Room: 5 peopleRF Separator Room (small room): 2 people |
| E1 Service Building | 21 | 2 people |
| E2 Service Building | 39 | 2 people |
| E3 Service Building | 49 | 2 people |
| E4 Service Building | 63 | 2 people |
| E5 Service Building | 50 | 2 people |
| W3 Service Building | 56 | 2 people |
| W4 Service Building | 40 | 2 people |
| W5 Service Building | 45 | 2 people |

**\*NOTE:** All employees working within these areas beyond the loading limits must don respirators.

**Walk-throughs**

The following work practice control can be used to protect employees without creating loading-limit-related “violations” stemming from employees walking through a zone:  An employee who needs to walk-through should stop and visualize the route to assure s/he would not encounter another person along the way.  Then the employee should walk-through in a business-like fashion while looking directly at the footpath and staying as close as possible to the wall.  Normal social behavior such as acknowledging colleagues should be avoided while walking-through.