



LCWS10

Americas Region Life Safety

ILC CONVENTIONAL FACILITIES AND SITING GROUP

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Current Status of Codes and Regulations

- ***There are No Codes that Directly Address Underground Accelerator Complexes***
- ***Most Initial Approaches Review Experience with Traffic Tunnels and Their Associated Guidelines and Regulations for Designs***
- ***Most Recognized Codes Evolve Over Time and are Revised, Based in Part, in Response to Fire and/or Catastrophic Failures***
- ***But Traffic Tunnel Requirements are Based on Fuel Loads that Far Exceed Those Found in Actual Accelerator Installations (i.e. Gasoline, Diesel Fuel, Oil, etc.)***



Current Regional Laboratory Approaches

- ***Most Laboratories Rely on Examples from Previous Projects to Develop Initial Criteria for Life Safety and Egress Design for a New Project***
- ***This Initial Criteria is Then Supplemented by Consultant Review, Local Underground Codes where Available and Applicable as well as Regulations/Guidelines from Funding and Project Oversight Organizations***
- ***While Most Regions do have Regulations that Directly Control Traffic Tunnel Design, in the Americas Region Two Distinct Codes have been Developed***
 - ***NFPA 130-2007, Standard for Fixed Guideway Transit Systems***
 - ***NFPA 520-2005, Standard for Subterranean Spaces***
- ***It Should be Noted that All Codes are Subject to Interpretation***

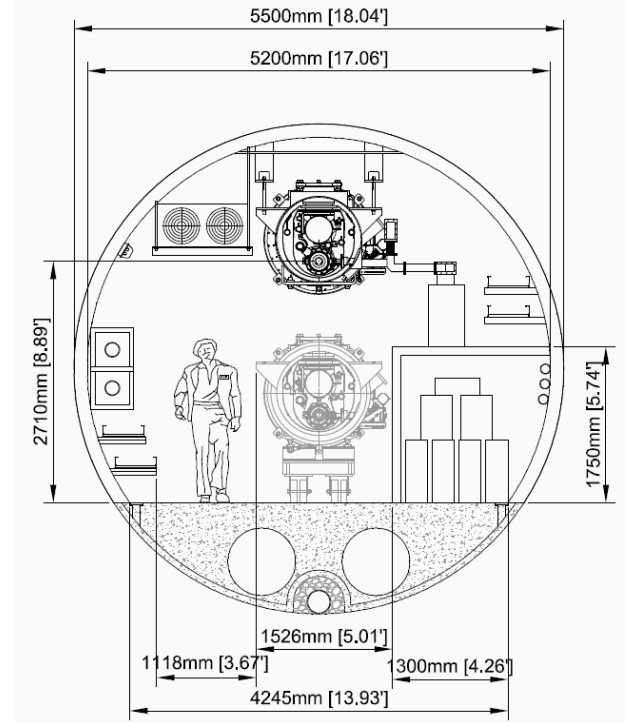
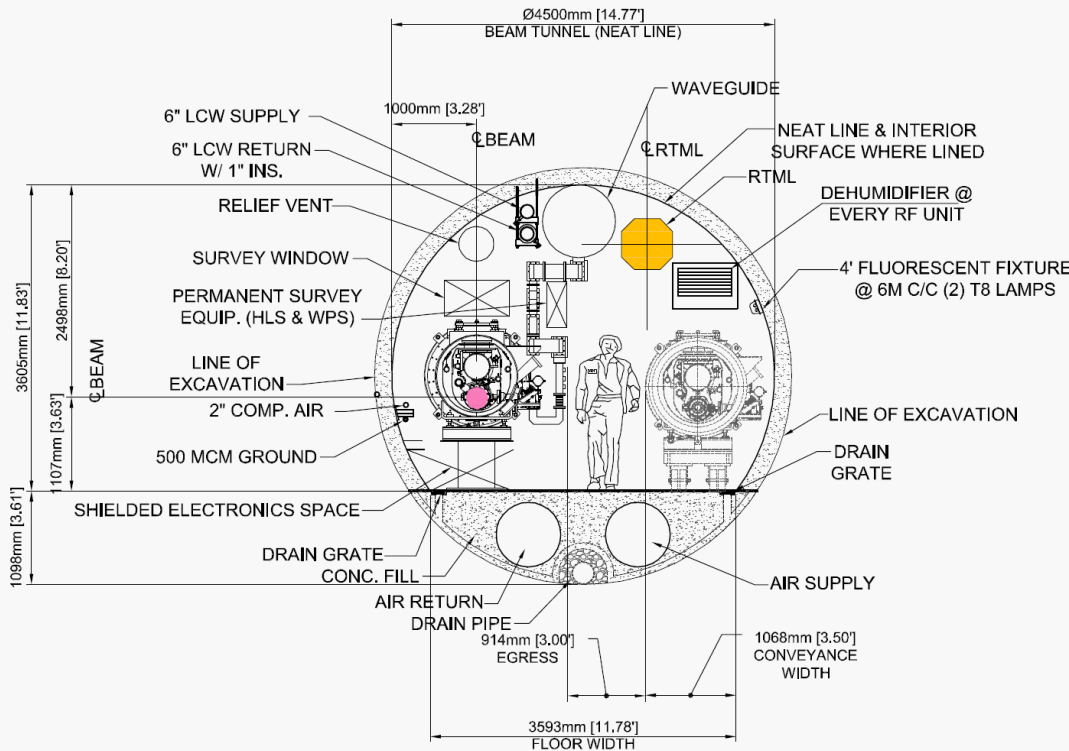


Americas Design Approach

- *Based on NFPA 520, the Main Linac Single Tunnel Must be Divided into “Building” Space (i.e. Functional or Operation Space) and “Common” Space (i.e. Space Used Only for Exit Travel to the Surface)*
- *A 2 hr Firewall and 1-1/2 hr Fire Doors Must be Used to Separate the Two Spaces*
- *Alcoves are Also Required in the Common Space to Limit the Distance to an Exit or Area of Refuge to 610 m*
- *The Americas Region has Developed a Workable Main Linac Tunnel Cross Section for Both the KCS and DRFS RF Systems*



Americas Region KCS and DRFS



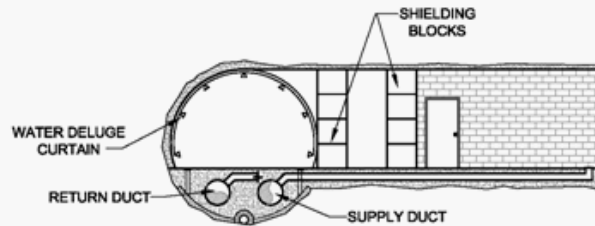
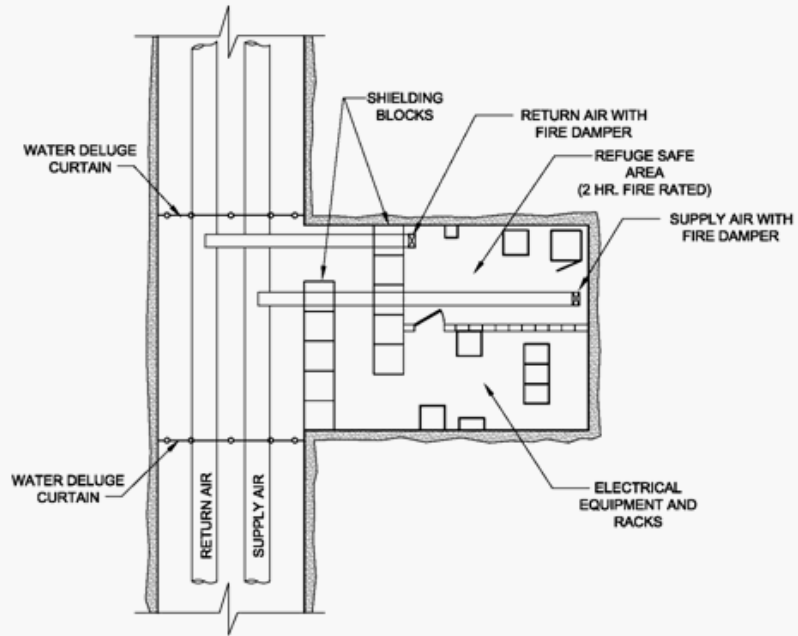
Americas Region KCS 4.5 m Dia.

Americas Region DRFS 5.2 m Dia.



Americas Areas of Refuge

Area of Refuge





Life Safety and Egress Summary

- ***The Americas Region Main Linac Life Safety Solution is Supported by an Independent Fire Protection Consultant Report Which Uses Available Applicable Fire Safety Codes***
- ***This Report will be Supplemented by a Computer Generated Model for Smoke Development and Egress Scenarios for both the KCS and DRFS RF Configurations Expected to be Completed by September, 2010***
- ***The Final Life Safety and Egress Design for the ILC if Sited in the Americas Region Cannot be Completed Until a Specific Site is Chosen and an Approving Authority has been Established***