

# ILCTA\_IB1\_VTS

An in-ground vertical test facility  
for ILC SRF cavities at Fermilab

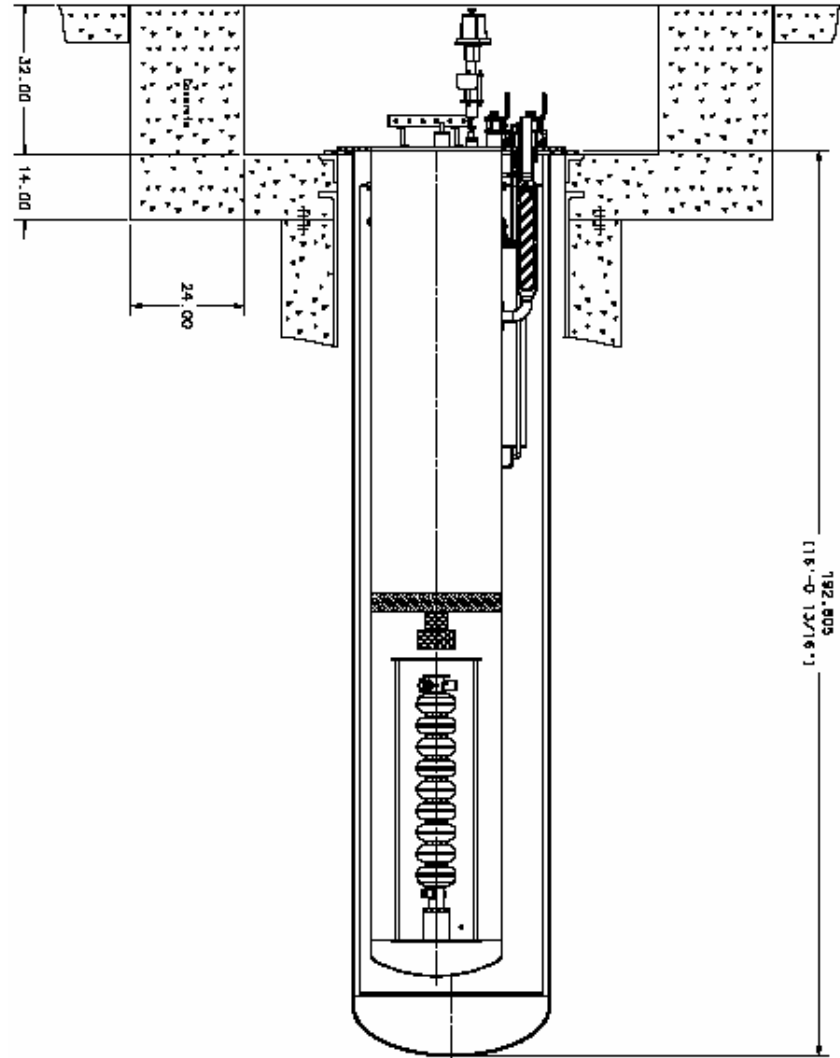
**Camille M. Ginsburg**  
**ILC SRF Technical Status Meeting**  
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**for the ILCTA\_IB1\_VTS group:**

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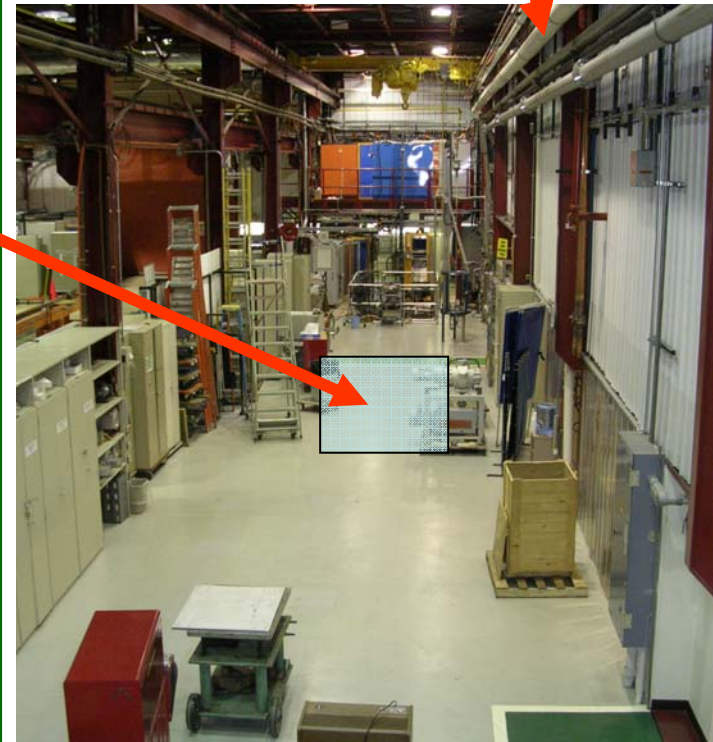
# ILCTA\_IB1\_VTS Specification

- Test bare 1.3 GHz 9-cell SRF cavities
- Measure Q vs. T
- Measure Q vs.  $E_{acc}$  at 2 K
- 250 W (CW) max RF power required
  - for  $Q > 5 \times 10^9$ ,  $E_{acc} < 35$  MV/m



# ILCTA\_IB1\_VTS Location

- Existing Magnet Test Facility → cryogenic cooling capability of 125 W at 2 K
- Install in a vertical pit in the floor
- Protect existing offices and work spaces
- Maintain “Controlled Area” status
  - ✓ <5 mrem/hr immediately outside shielding
  - ✓ <0.25 mrem/hr in normal working areas

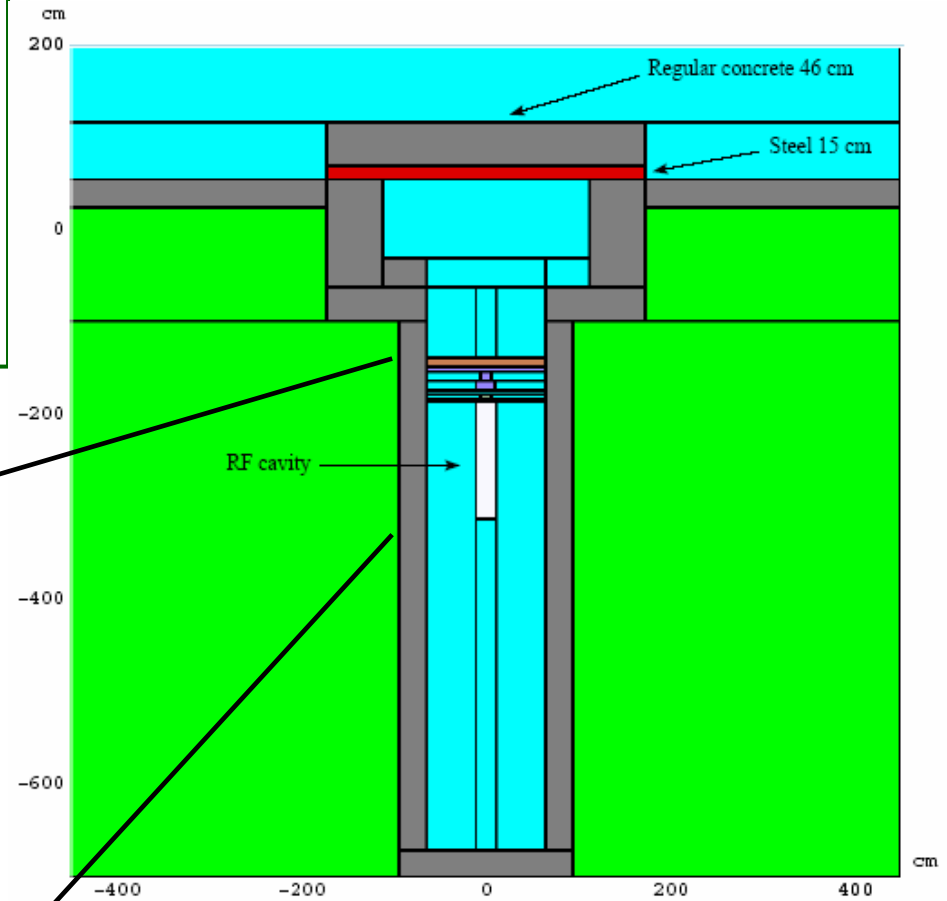
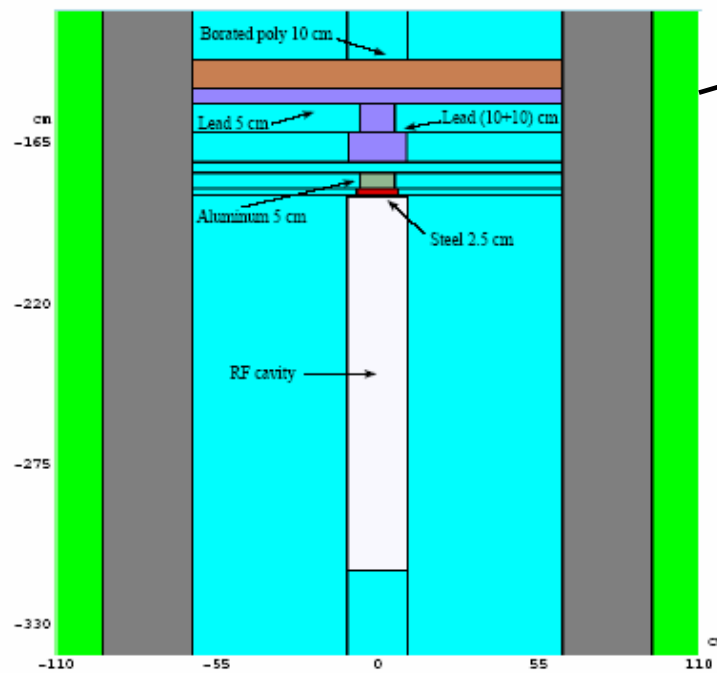


Existing  
cryogenic  
utilities &  
vacuum  
lines

Fermilab Industrial Building 1

# ILCTA\_IB1\_VTS Rad Shielding

- X-rays est'd from DESY data
- Shielding design ~complete
- Tritium production negligible
- "Controlled area" satisfied



# ILCTA\_IB1\_VTS Status

- Civil construction (shaft, pit, in-ground radiation shielding) design done, in vendor bid process
- Radiation shielding lid design ~done
- Cryogenic capability study completed, document in preparation
- Cryostat design is advanced, order soon, then complete top plate design
- P&ID (process and instrumentation diagram) for cryogenic system complete, order instrumentation soon
- Instrumentation, rack layout, etc. has begun
- RF, LLRF, controls system design underway

# ILCTA\_IB1\_VTS → end FY06

- Civil construction to be done ~ end July
- Fabricate cryostat (vendor) and top plate (Fermilab), purchase valves, instrumentation, pumps, magnetic shielding, etc.
- Design radiation shielding lid mechanical engineering aspects (movement, plan to assemble the pieces), procure parts, and begin radiation safety interlock design
- Cryogenic infrastructure modifications
- RF, LLRF, controls system design well underway and start procurement

# ILCTA\_IB1\_VTS FY07 plans

- Install cryostat into prepared pit
- Assemble radiation shielding lid
- Complete installation of RF, controls, instrumentation, etc.
- Assemble radiation safety interlock system
- Complete test stand assembly
- Operational readiness review
- Commission cryogenic system
- Commission test stand
- Begin cavity tests (!)