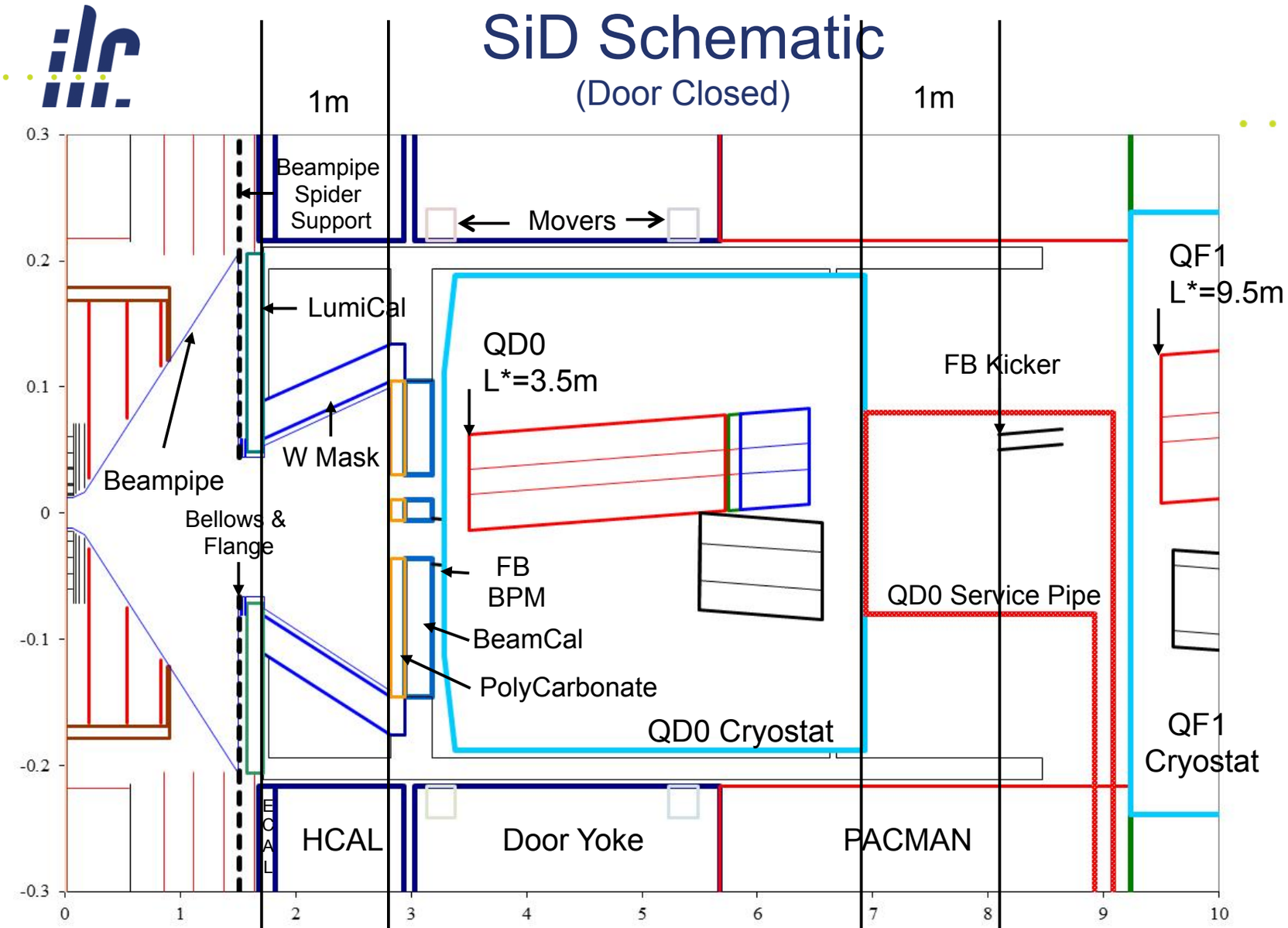
L* Issues for SiD and ILD

LCWS14, Belgrade
Karsten Buesser
07.10.2014

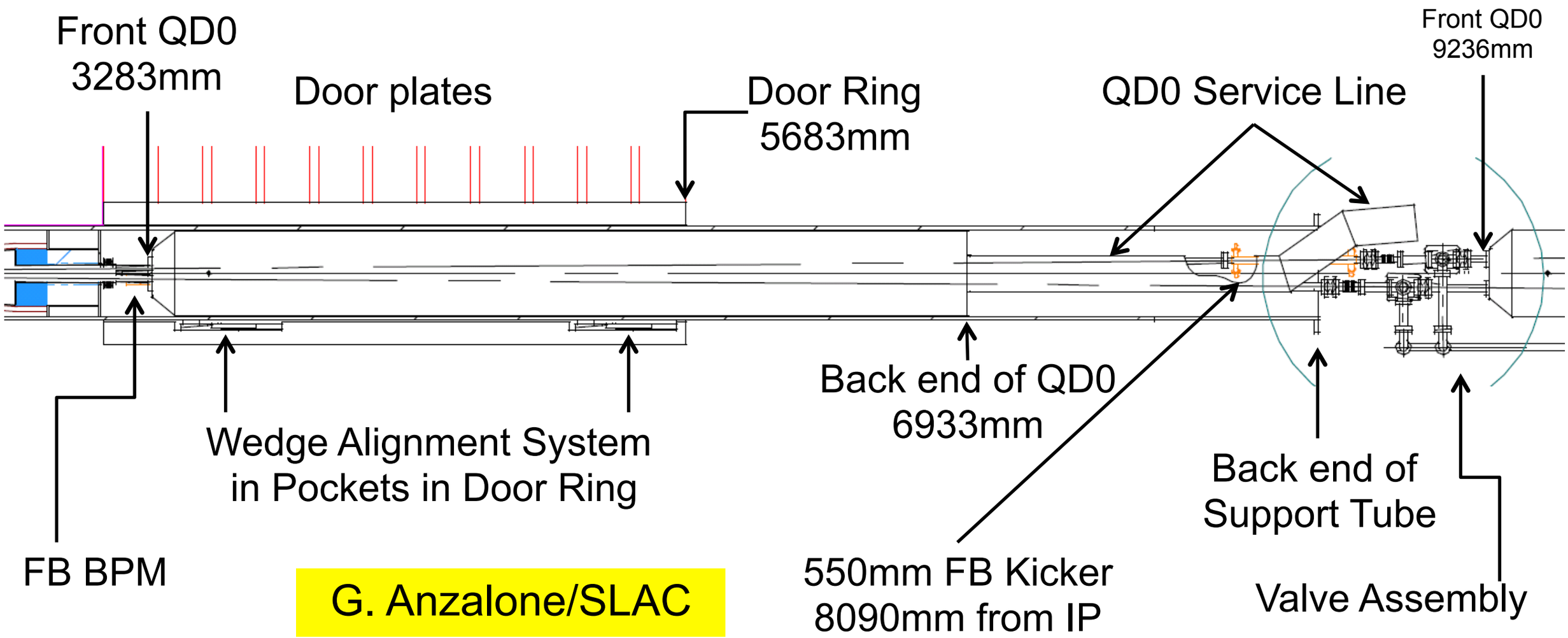
L* at SiD

- SiD has actually L*=3.5m
- Can accommodate anything between 2.6 and 4.5m
- SiD supports the ILC change request and prefers small L*



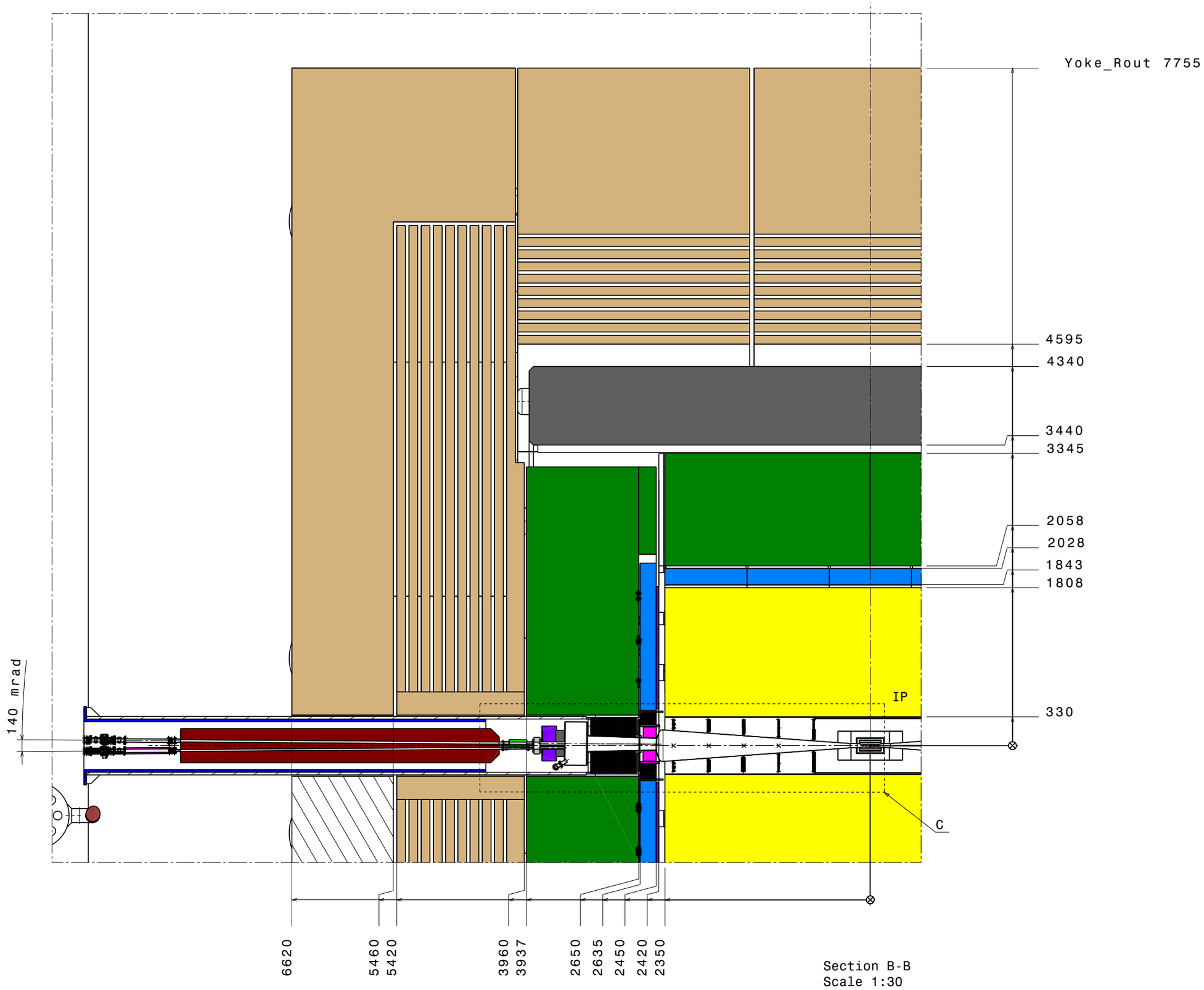
Evolution of QD0-QF1 region

- Valve/Pump Out/RGA assemblies near QF1 end
- QD0 Service Line to 2K chiller extended maximally to rear
- Support tube behind QD0 extends to allow 2.8m door opening transitioning to a half-cylinder for access

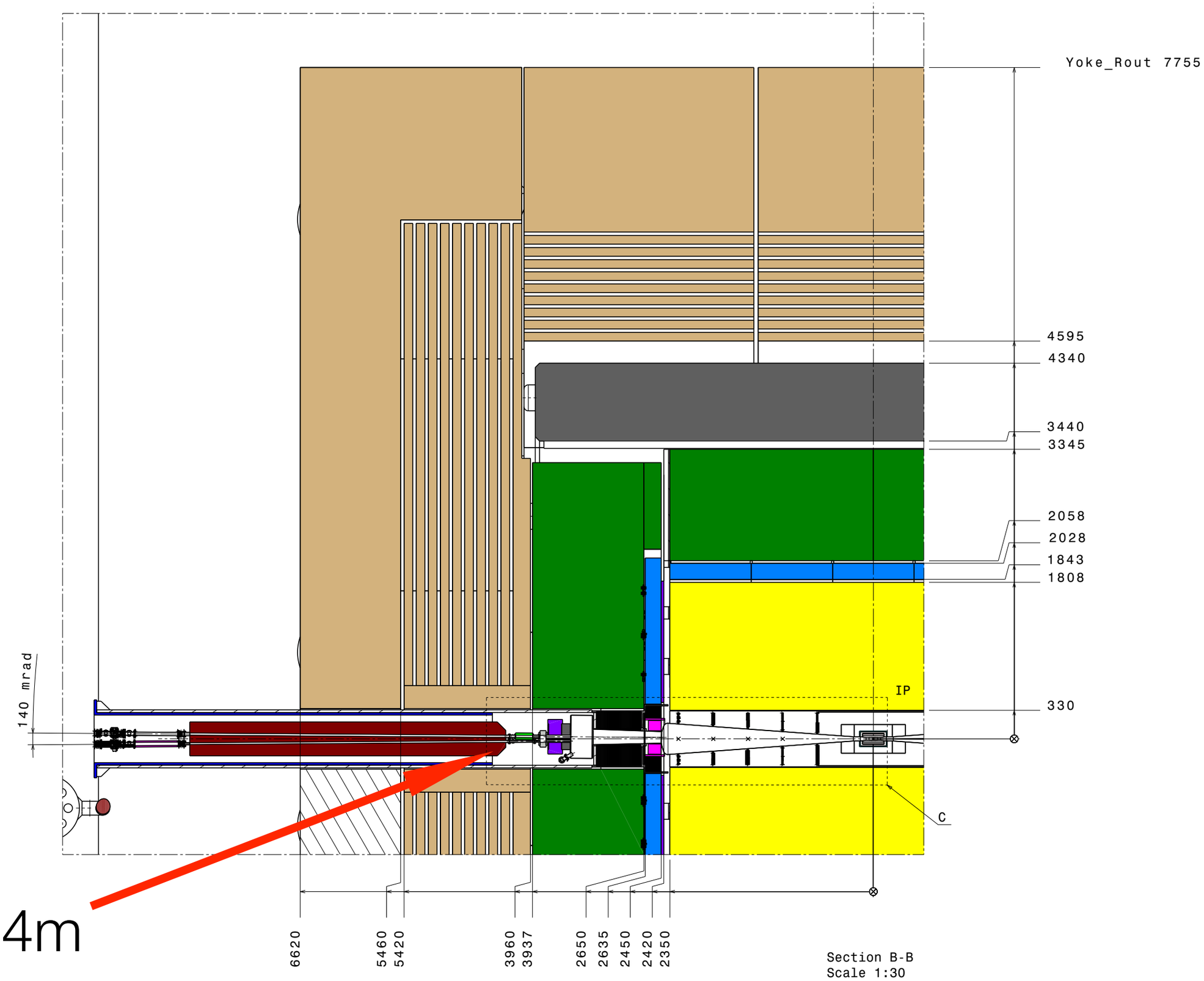


G. Anzalone/SLAC

ILD Dimensions

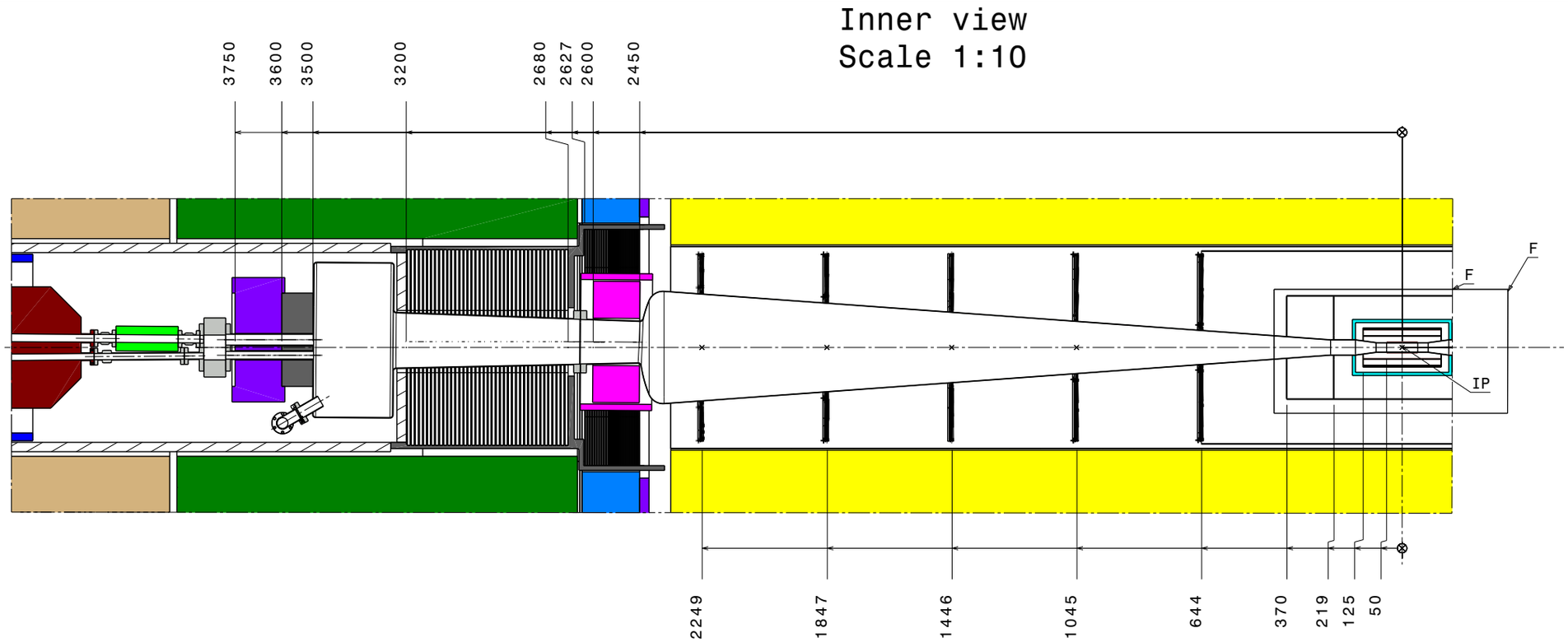


ILD Dimensions



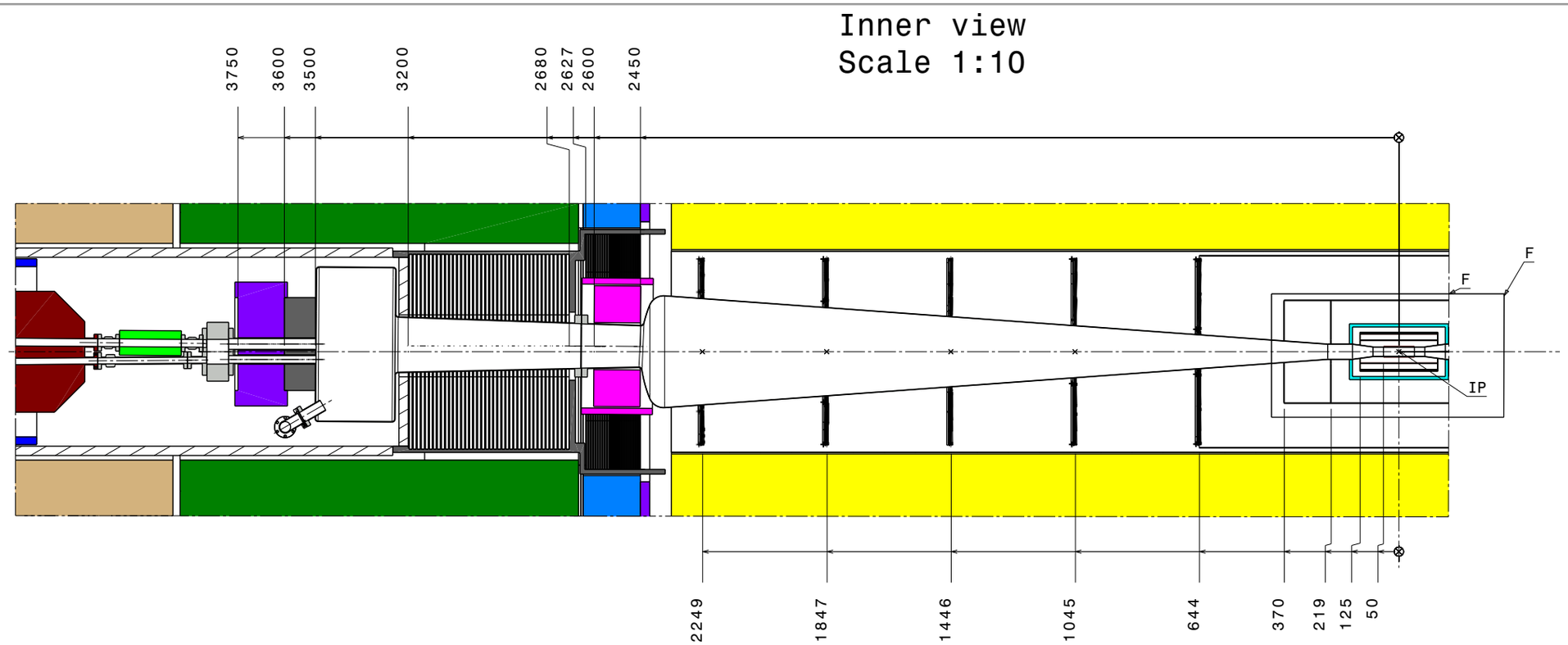
L*=4.4m

ILD: Current Lower Constraints on L*



- Detailed design of forward region:
  - LumiCal, LHCAL, BeamCal
  - Beam Pipe, Bellows, Flanges, Vacuum Pumps
  - Optimised (many FTEs in the last ~10y) for
    - operations: no FCAL or masks inside the tracking volume
    - assembly and maintenance
    - physics: VTX (occupancies and layer radii), FCAL performance, hermeticity

ILD: Discussion Items



- What needs to be done to go to L* of 4m?
  - Is the pump needed at this location?
    - revisit vacuum requirements and conditions
    - impact on cold QD0?
  - Revisit FCAL design
- Discussions have started at this LCWS

Summary

- Both detector groups see the benefits in the L*change request
- SiD can accommodate L* between 2.6 and 4.5m without major design issues
- ILD has started initiative to push L* towards 4m
  - Need to re-design forward region
  - Study on vacuum requirements needed
  - Revisit design of FCALs
  - will be very hard to go below 4m