

There are several integration areas that need preliminary work beyond the scope of the DBD. These are listed here in the hope that some serious effort can be found.

#### Machine – Detector Integration

1. Forward region integration with QD0, including movers, services, vacuum & beam instrumentation, etc. Validity of QD0 dimensions.
2. Alignment of detector to beamline after transport on platform. This presumably needs a coarse system covering the full range of motion, and an additional system with a conservative 1 mm tolerance measuring xyz and roll at both ends of the detector.
3. Platform design progress. There is substantial interest in the choice between rollers and airpads. Preliminary work is needed for door motion rail design; seismic restraints; and any tolerances for detector placement on the platform.
4. Surface Assembly Facilities. Only a crude estimate of the space require for detector subsystem assembly was made.
  - a. Transport vehicles with capacities up to 200 tonnes will be needed to move subsystem components to the underground.
5. Local Control Rooms. What is scope of permanent facilities associated with the experiment? Are onsite “hotel” facilities provided?
6. Interaction Region Hall utilities:
  - a. HVAC
  - b. Lighting
  - c. Power
    - i. Clean power to detector
    - ii. Power to walls for tools, welding
  - d. Chilled water
  - e. Low Conductivity water
  - f. Compressed air
  - g. He Supply and Suction – need first sizing of suction lines for 2K systems.
  - h. Fire suppression systems
7. Welding constraints: Ventilation, permits, etc.
8. Local machine shop.
9. Detector access: Man lifts, crane baskets?

#### Detector Specific Integration

1. Review and document:
  - a. Radiation shielding properties of SiD
  - b. Magnetic field leakage
    - i. Identify any orientation issues for power transformers, motors, etc.
2. Iron optimization: Review:
  - a. Doors for “unneeded” iron.
  - b. Door segmentation for transport and assembly issues.

- c. Door segmentation for muon tracking.
  - d. Barrel design for transport and assembly issues.
  - e. Assembly handling fixtures.
- 3. Solenoid mechanics, including support system and associated detector space.
- 4. Detector seismic restraints.
- 5. Detector Alignment Procedures:
  - a. Initial assembly alignment
  - b. Ongoing internal alignment with FSI.
- 6. Internal Detector Services:
  - a. Preliminary space assignment for electronics.
  - b. Preliminary cable routing
  - c. Preliminary gas cooling system for VXD and tracker; including duct routing.
  - d. Cooling system for EMCal.
  - e. Cooling system for HCal.
  - f. VESDA?
- 7. Vents:
  - a. He
  - b. Steam? (Dump resistor)
  - c. Other
- 8. Detector platforms and access stairs.