

Magnet and Infrastructure

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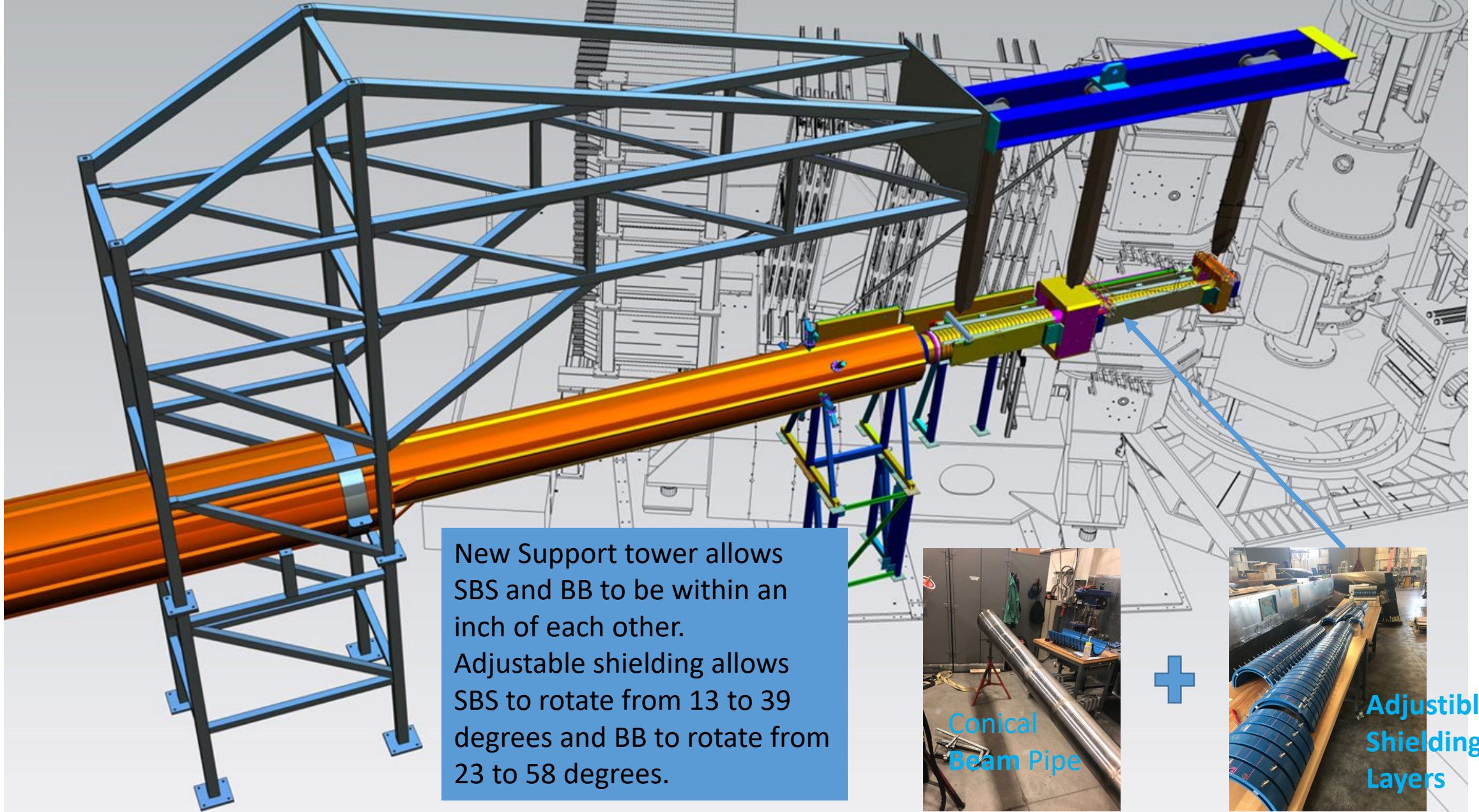
SBS E/D Status – Gen-RP, GMn, WAPP, nTPE

- **Scattering chamber existing- clamshell windows in fabrication, window test setup ready**
- **New beamline- connections from scattering chamber to corrugated line defined, all parts on order or in house**
- **SBS Magnet- in house, LCW and power connections to be configured by technicians, sieve slit to be ordered, field clamps in house- upstream field clamp to be modified**
- **SBS Magnet Counterweight Support- in house, building temporary support leg for use during assembly**
- **Beamline tower support- in house**
- **Corrector Magnets- in house, LCW and power connections being configured by technicians**
- **GEn-RP detectors- all part in house ready for assembly**
- **BB Magnet –field clamp to be modified and sieve slit holder being built**
- **BB Detectors- in house, support being modified to allow more locations**
- **HCAL- in house**
- **Electronics Huts and cable routing- parts in house, draft layouts done**
- **Lead shielding wall- parts on order to extend wall and add lead in magnet cutout**

Other SBS experiments

- **Continue working on polarized ^3He target**
- **Continue working on ECAL and ECAL support**
- **Continue on details of beamline connections**

New beamline for SBS



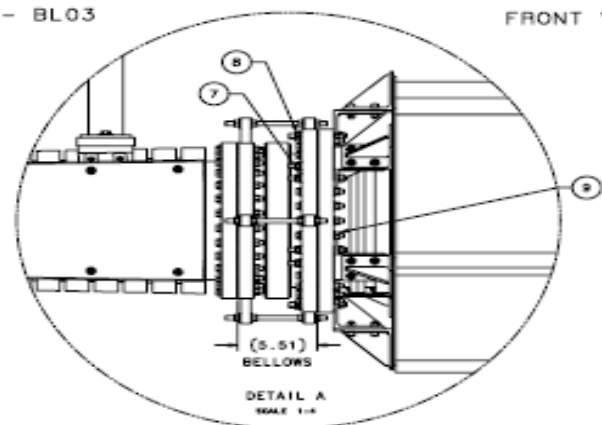
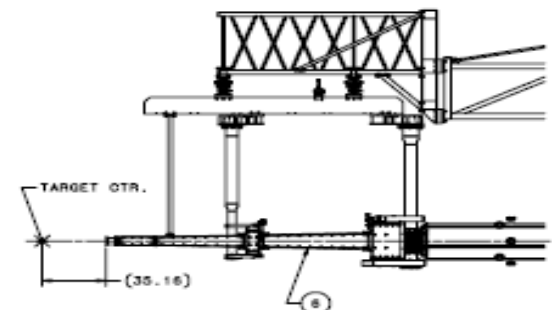
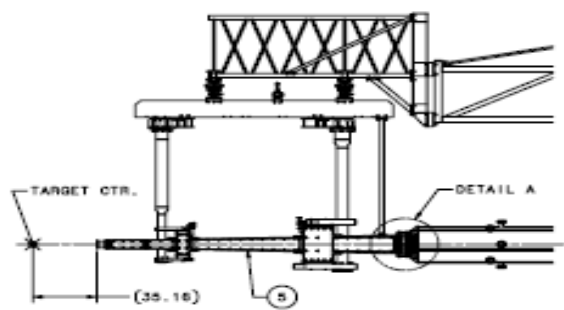
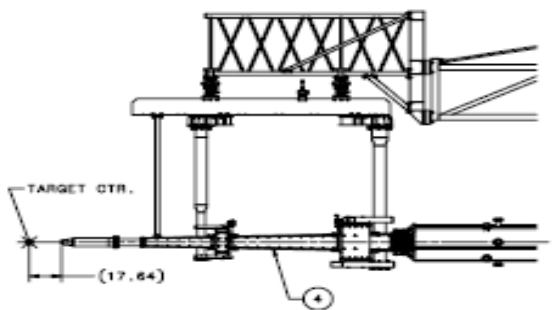
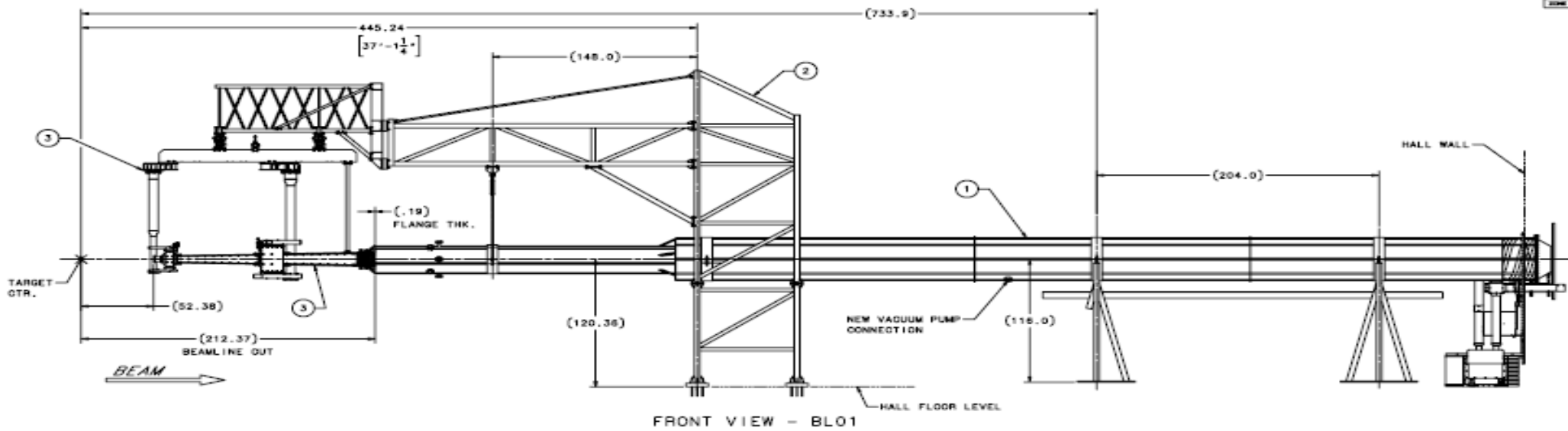
New Support tower allows SBS and BB to be within an inch of each other. Adjustable shielding allows SBS to rotate from 13 to 39 degrees and BB to rotate from 23 to 58 degrees.



Conical Beam Pipe



Adjustable Shielding Layers



| QTY | NO | DESCRIPTION | MATERIAL | REMARKS |
|-----|----|---|----------------------|---------|
| 1 | 10 | MFG 191028 18.5 OD OF 14.11 TO GASKET DPT | COPPER DPT | |
| 38 | 9 | FASTDIAL 77732 HEX NUT 3/8-24 UNF-2B | STAINLESS STEEL 316 | |
| 38 | 8 | FASTDIAL 77148 HEX CAP SCREW 3/8-24 X 3.00 | STAINLESS STEEL 316 | |
| 72 | 7 | FASTDIAL 0174735 FLAT WASHER 3/8 X 0.00.75 | STAINLESS STEEL 18-8 | |
| 1 | 8 | A00018-02-00-2000 SHIELDED BEAMLINE GBN 13.5 | | |
| 1 | 5 | A00018-02-00-1000 SHIELDED BEAMLINE GBN 3.5-12.0 | | |
| 1 | 4 | A00018-02-00-1000 SHIELDED BEAMLINE GEN | | |
| 1 | 3 | A07108-02-00-1000 SHIELDED BEAMLINE GEP | | |
| 1 | 2 | A00000-02-08-6000 SHIELDED BEAMLINE SBS SPLIT STRUT | | |
| 1 | 1 | A00000-02-08-0100 EXIT BEAM PIPE SBS | | |

PARTS LIST
 HALL A - A00000 - TEMPLATE
 BEAMLINE 01, 02, 03 & 04 SBS
 EXIT BEAMLINE SBS ASSY
 A00000-02-08-0300
 1:32

New SBS beam line assembly- allowing for 14 different configurations of new Spectrometer. First run group accommodates 4 experiments. Details of each beamline configuration being defined.

NOTES:
 1. IN ACCORDANCE WITH THE JEFFERSON LAB ESHAQ MANUAL SUBJECT MATTER EXPERT (SME) SIGNATURES MAY BE REQUIRED.

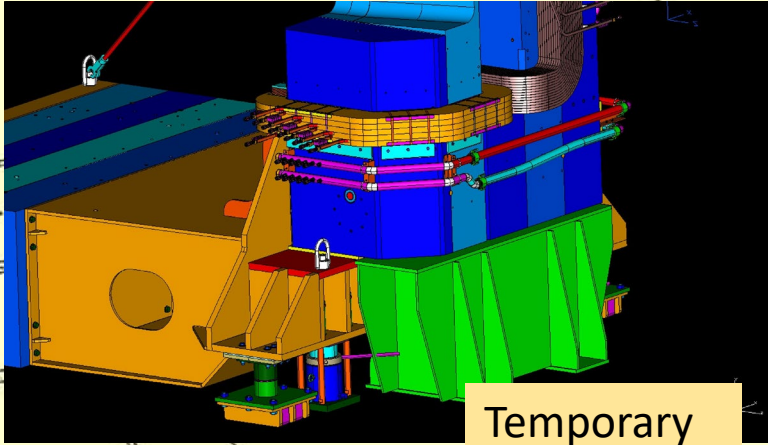
GMn – SBS magnet

SBS Counterweight support allows Spectrometer magnet to be placed within 1.6 meters of target and pivot area.

Counterweight support fabricated from retired magnet steel from BNL

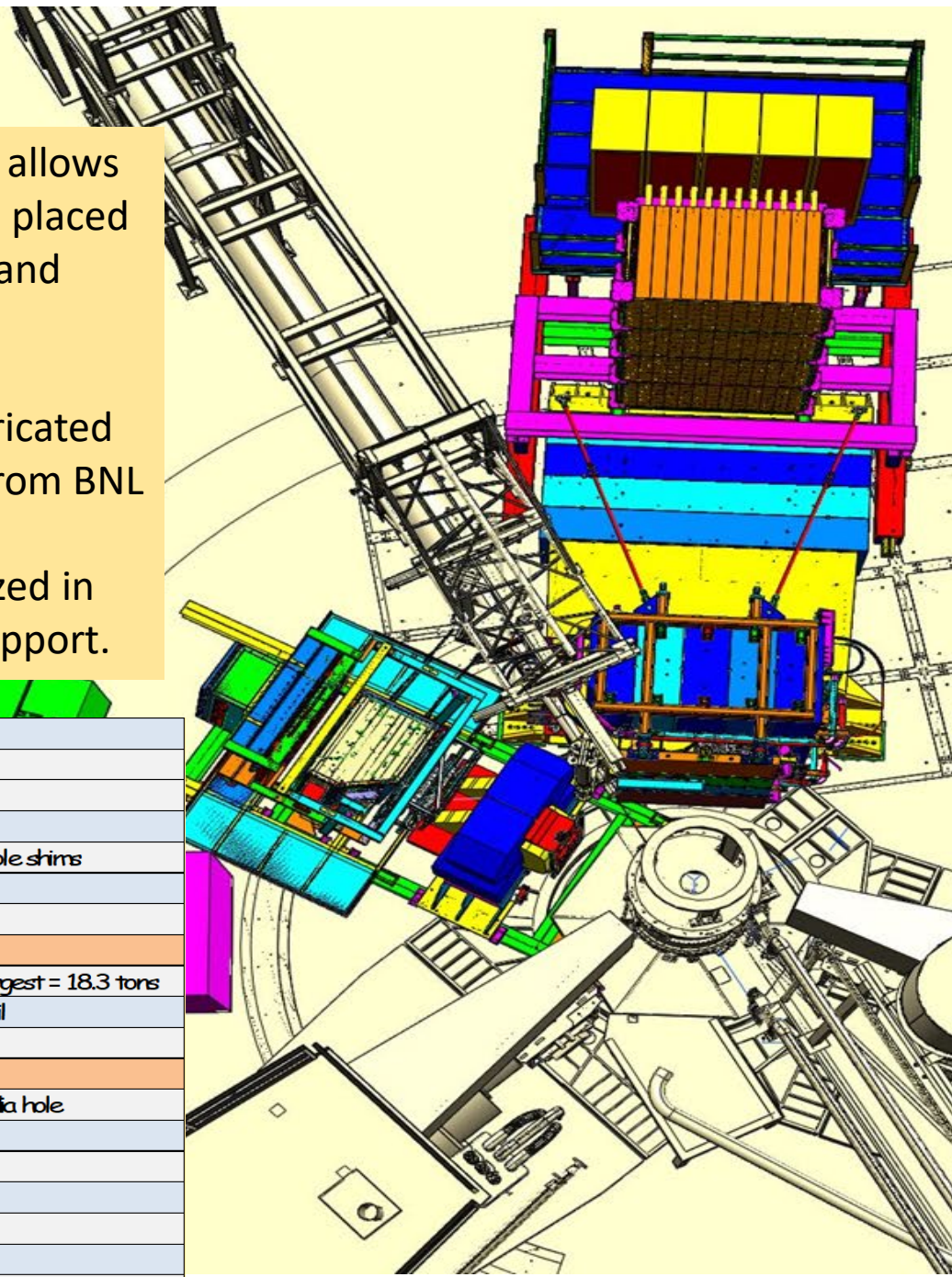
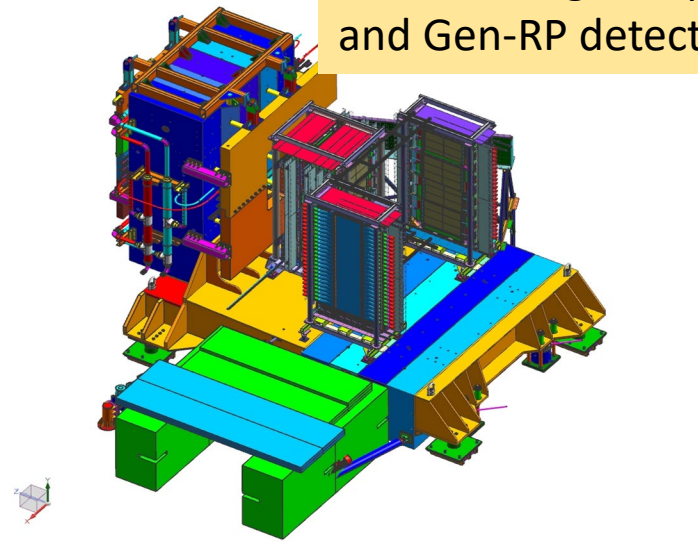
Temporary support leg utilized in building SBS magnet and support.

| SBS Magnet Parameters | |
|--------------------------|---|
| Dipole Field Orientation | horizontal, Bx |
| Maximum Field | 1.69T |
| Integral Field Strength | 20 T-m, 25 T-m with pole shims |
| Yoke Length | 1.22m |
| Gap | 46.99cm x 121.92cm |
| Weight Yoke | 84.7 tons |
| | 7 1008 steel sectors, largest = 18.3 tons |
| Number of turns per pole | 3 coils, 120 turns per coil |
| Length of conductor | 1693 m |
| Weight of coil | 5.2 ton per coil |
| Dimensions of conductor | 2.18cm square, 1.27cm dia hole |
| Current | 2000A |
| Resistance | 0.110 ohm |
| Voltage | 220V |
| Power | 576kW |
| Water flow | 150psi, 100gpm |
| Temperature rise | 17C |



Temporary support leg

SBS Magnet, Counterweight Support and Gen-RP detectors



SBS Detectors

