# RADIATION

- Full LHC Dossier de Surete to be finished by end 2005 (LHC/CNGS/SPS).
- Separate paper to be prepared for sector test.
- Short paper ready by October 2005.
- To Paris April 2006.

# INB report

Have template…

1. Description of infrastructure concerned by test
2. Description of the tests envisaged
3. Potential Risks
    1. External (earthquakes, planes
    2. Internal (beam, being underground…
4. Provisions pertaining to:
    1. Radiation protection
    2. Security

Cut ‘n’ paste ‘n’ reduce from RPS

Need designated authors…

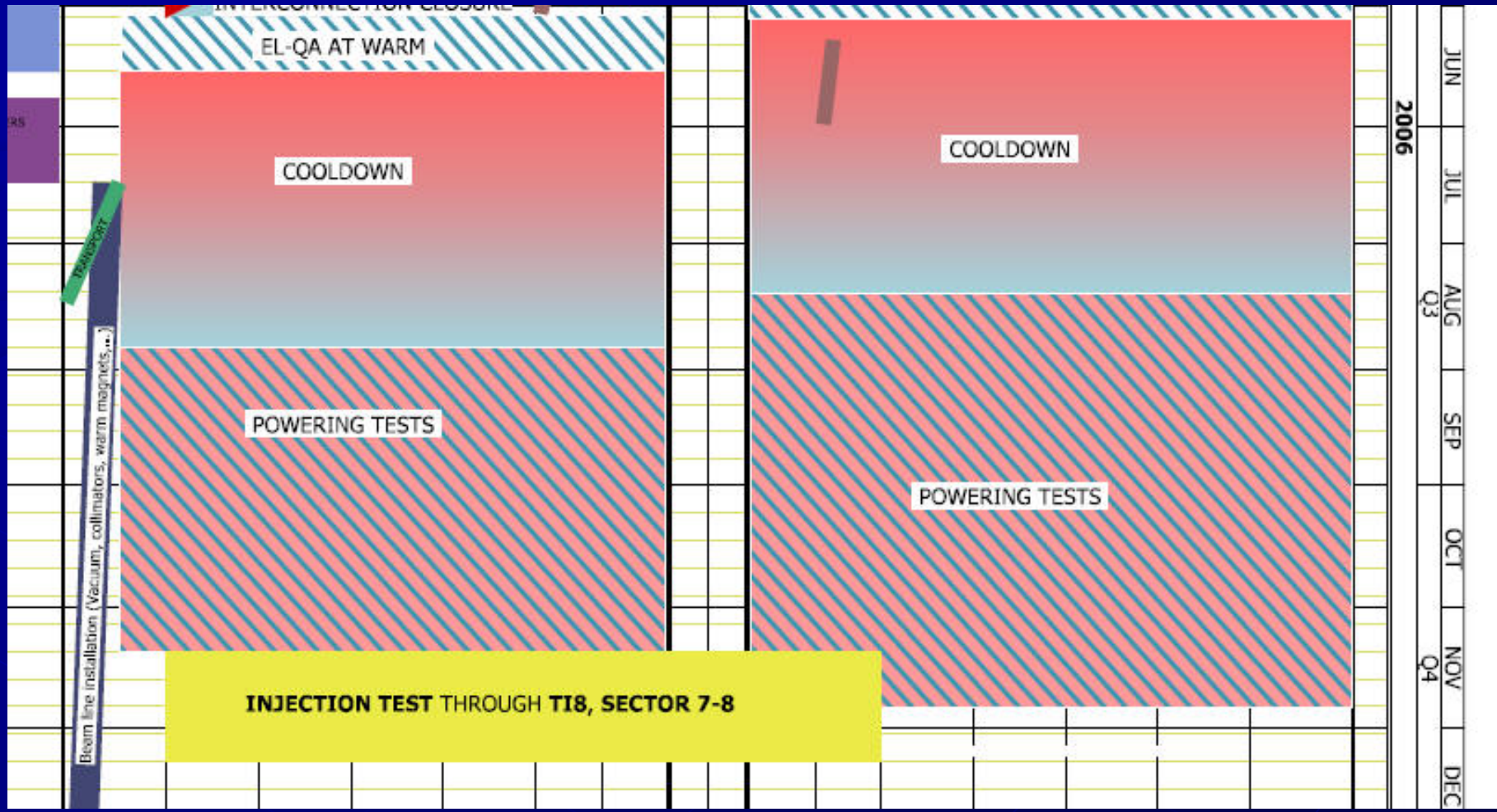
# Radiation – open questions

- Proton loss points other than dump - where and how much can we expect?
- Permitted dose rates in LHCb, corresponding number of protons that can be lost.
- Required sensitivity of radiation detectors in LHCb to ensure we don't exceed maximum dose?
- Given time displacement of test - do LHCb still need to keep their cavern clean?
- Check with other equipment groups the implications of irradiation during test.
- (Helium lines, chilled water pipes in IR7 - is this an issue?)

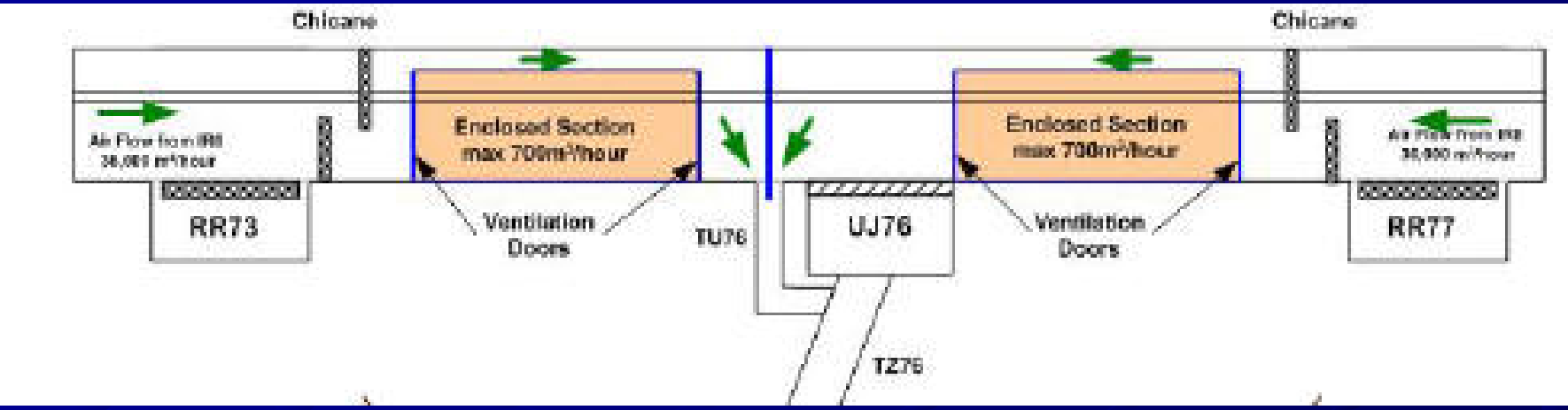
- Manpower in RP to look specifically at sector test from January 2006.

- Need to firm up total proton estimates
  - On TDI
  - Into LHCb
  - Onto TED

    - Critical run through of proposed tests and intensities next time


EL-QA AT WARM
COOLDOWN
POWERING TESTS
COOLDOWN
POWERING TESTS
INJECTION TEST THROUGH TI8, SECTOR 7-8
Beam line installation (Vacuum, collimators, warm magnets,..)
TRANSPORT
2006
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Q3
Q4

# IR7




The collimators will be enclosed - ventilation doors - collimators between D3 and D4 should NOT be there for the test. See below.

Dump has to get through enclosure ventilation door nearest IP if it is installed. Transport of dipoles foreseen.

There will be a chicane IP side of RR77 - this is between Q6 and Q7 - not an issue for test

Iron shielding in RR77 - not a issue for test

DQR stacking - not an issue for test

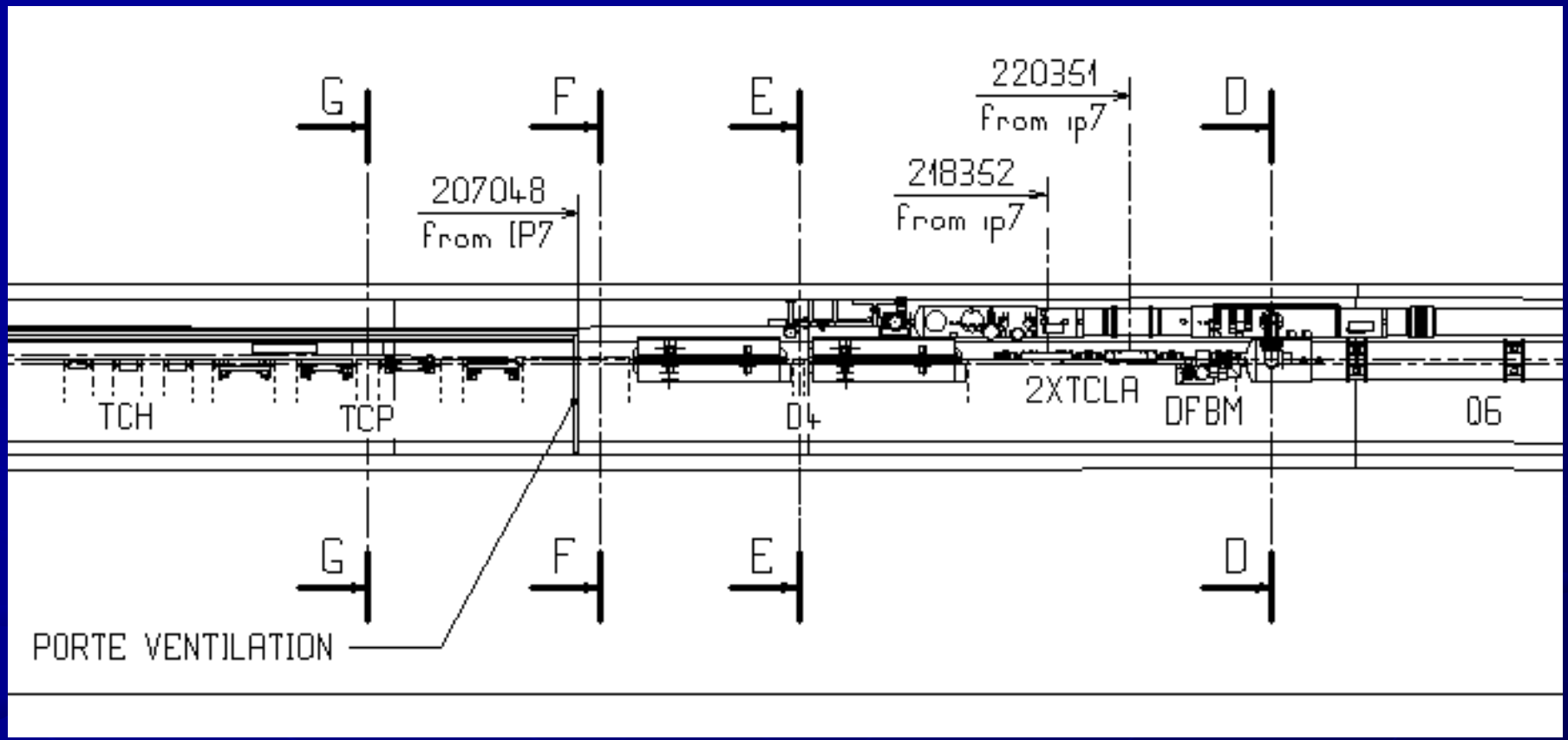
| P7 - right side | Dates |
|---|---|
| Piping | Oct-Nov 05 |
| Power converters/ DQR & DQS | Nov- Dec 05 |
| Cabling/ DQR & DQS/ DFBA DFBM | Jan - March 06 |
| Short circuit tests | March - April 06 |
| Shielding installation | ~Jan 06 |
| Sector 7-8 commissioning including DS | June - November 06 |
| Transport into LSS.R7 | July/August 06 |

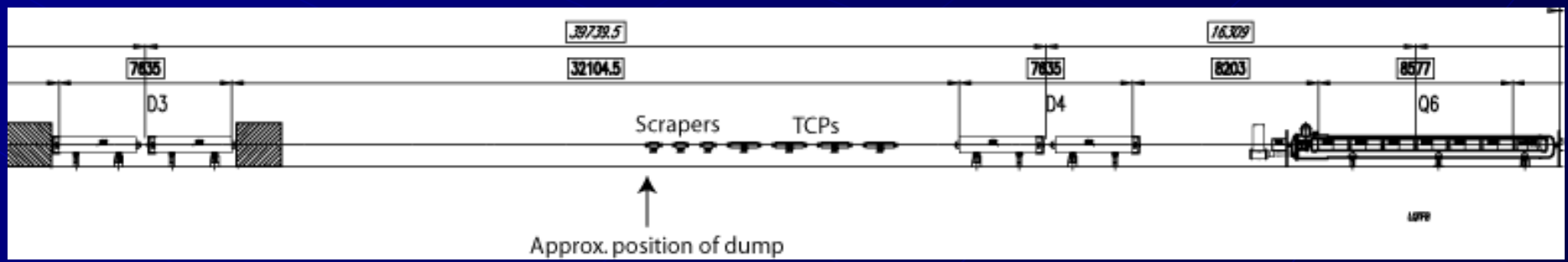
Beam line installation (vacuum, collimators, warm magnets)

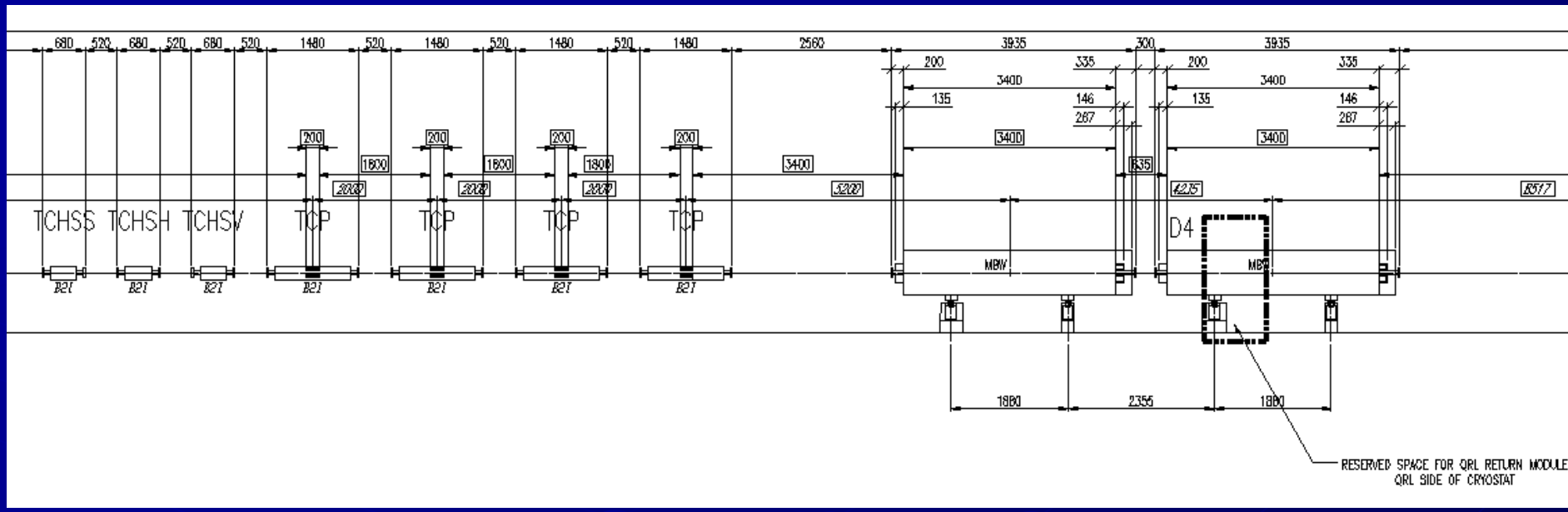
July 06 - February 07

# Position of dump

- Somewhere between D3 and D4 positions. Have to come beyond position of D4 to avoid QRL return module.
- A temporary vacuum pipe would be necessary from the cold section to the beam dump. Propose 4 sections of 7 m. to get beyond D4 and give us a bit of room to install BCT, screen etc.
- ~17 metres from Q6 to proposed position of first TCP (counting from Q6). Collimators take 4*2 m. plus 3*1.2 m.)
- 28.5 metres from Q6 to end of last scraper - therefore approx position of temporary dump
- 18 metres between last scraper and D3 - not in conflict.
- Vacuum pipe stops a few cms. before dump, titanium window.

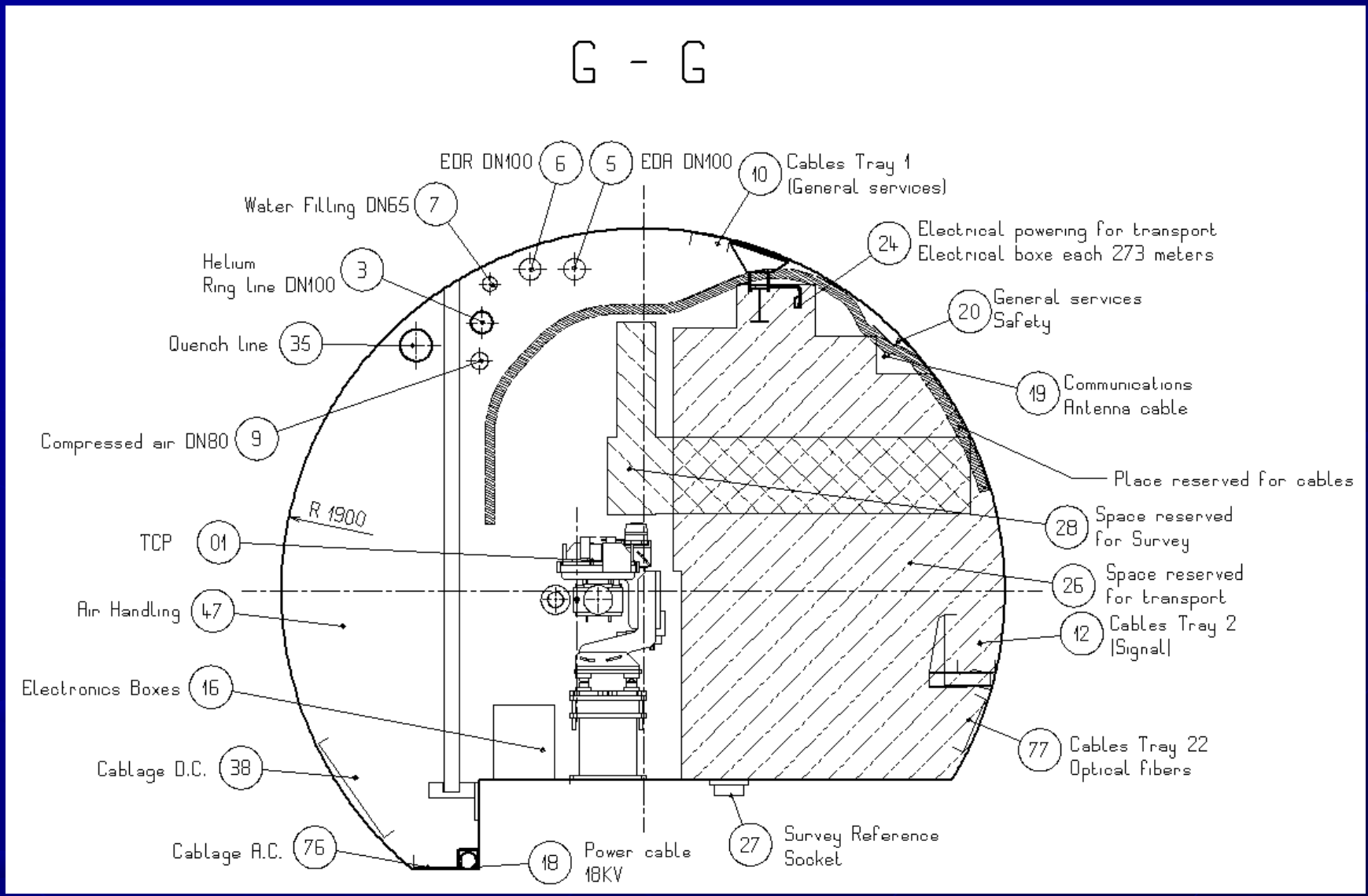

G
F
E
220351
from ip7
D
207048
from IP7
218352
from ip7
TCH
TCP
D4
2XTCLA
DFBM
Q6
G
F
E
D
PORTE VENTILATION


39739.5
32104.5
16309
7635
7635
8203
8577
D3
D4
Q6
Scrapers
TCPs
Approx. position of dump

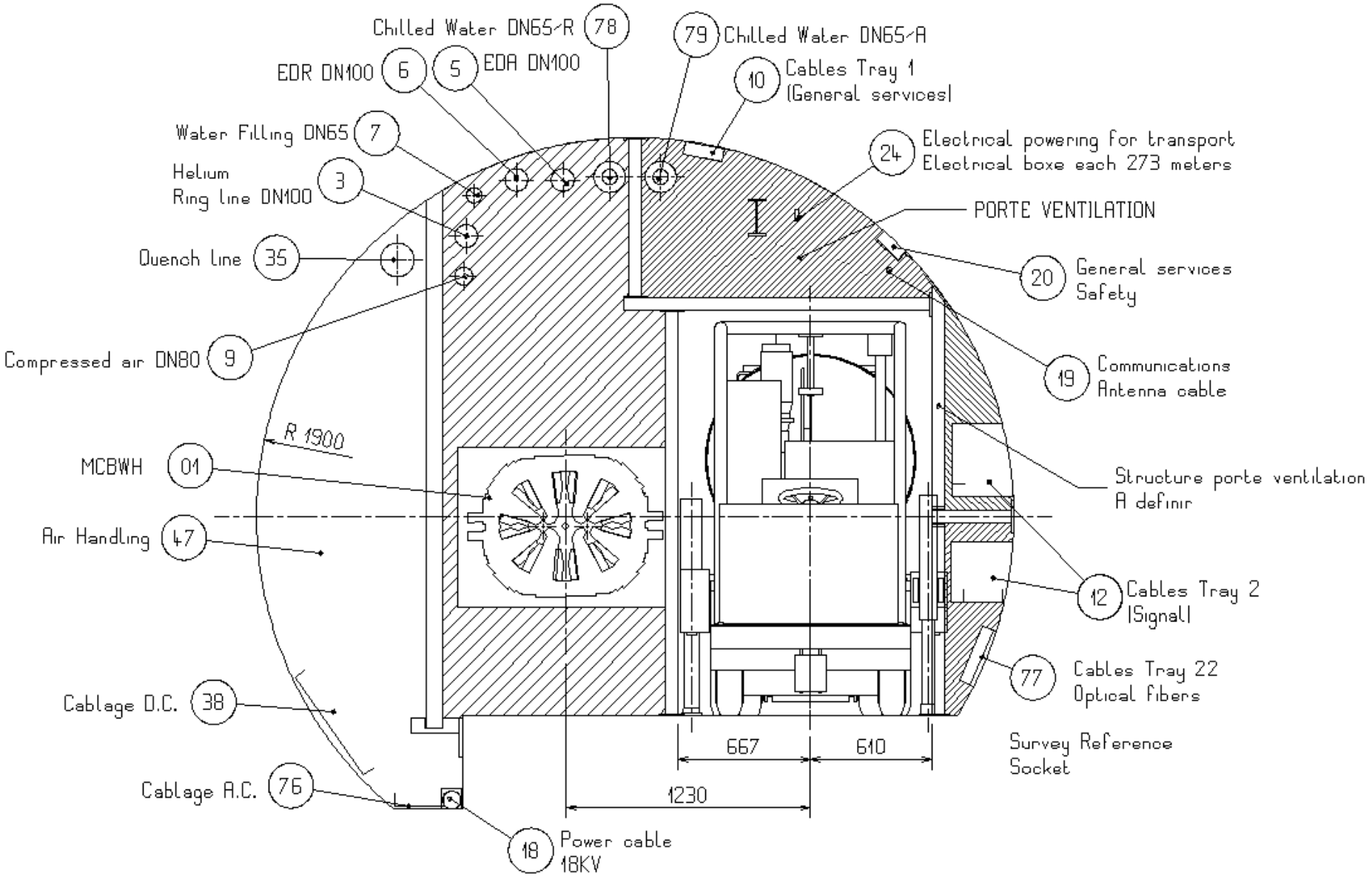



Therefore: constraints for the injection test

- D4 not installed
- 4 primary collimators and 3 scrapers between D3 and D4 not installed
- D3 may be installed
- Access through ventilation door for dump assured or preferably door not there.


G - G
EDR DN100
6
5
EDA DN100
10
Cables Tray 1
(General services)
Water Filling DN65
7
Helium
Ring line DN100
3
24
Electrical powering for transport
Electrical boxe each 273 meters
20
General services
Safety
Quench line
35
19
Communications
Antenna cable
Compressed air DN80
9
Place reserved for cables
R 1900
TCP
01
28
Space reserved
for Survey
26
Space reserved
for transport
Air Handling
47
12
Cables Tray 2
(Signal)
Electronics Boxes
16
77
Cables Tray 22
Optical fibers
Cablage D.C.
38
Cablage A.C.
76
18
Power cable
18KV
27
Survey Reference
Socket


TED 400354
ID 04
NE PAS
MARCHER


Chilled Water DN65-R 78
79 Chilled Water DN65-A
EDR DN100 6
5 EDA DN100
10 Cables Tray 1
(General services)
Water Filling DN65 7
24 Electrical powering for transport
Electrical boxe each 273 meters
Helium
Ring line DN100 3
PORTE VENTILATION
Quench line 35
20 General services
Safety
Compressed air DN80 9
19 Communications
Antenna cable
R 1900
MCBWH 01
Structure porte ventilation
A definir
Air Handling 47
12 Cables Tray 2
(Signal)
77 Cables Tray 22
Optical fibers
Cablage D.C. 38
667
610
Survey Reference
Socket
Cablage A.C. 76
1230
18 Power cable
18KV