



REVIEW of OPTIONS for Central Damping Ring and Injectors Complex

EWAN PATERSON

Nov 9, 06

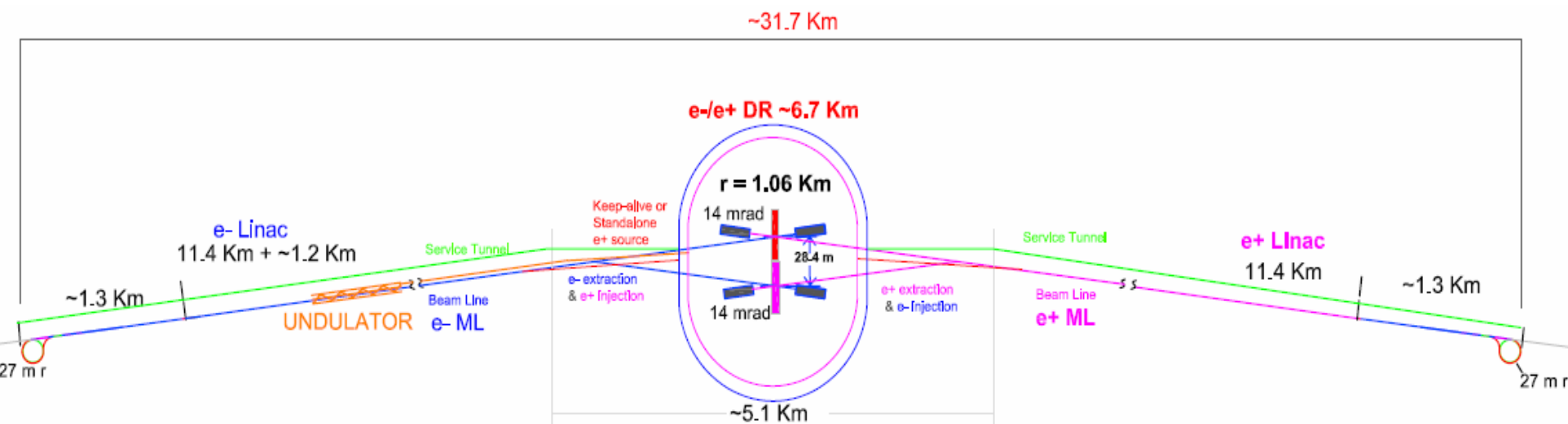


ASSUMPTIONS

- Both the E- and a Single E+ ring can share the same tunnel
- Both the E- source and the Keep Alive E+ sources remain the same and become part of a new DR/INJ Complex
- The new Central Complex is compatible with either Undulator or Conventional E+ Sources
- A definition :- The RTML's now extend from the central DR 's to the beginning of the Main Linac's.
- The general concept of the Central INJ/DR, ccr#18, is approved but can still be “**optimized**”



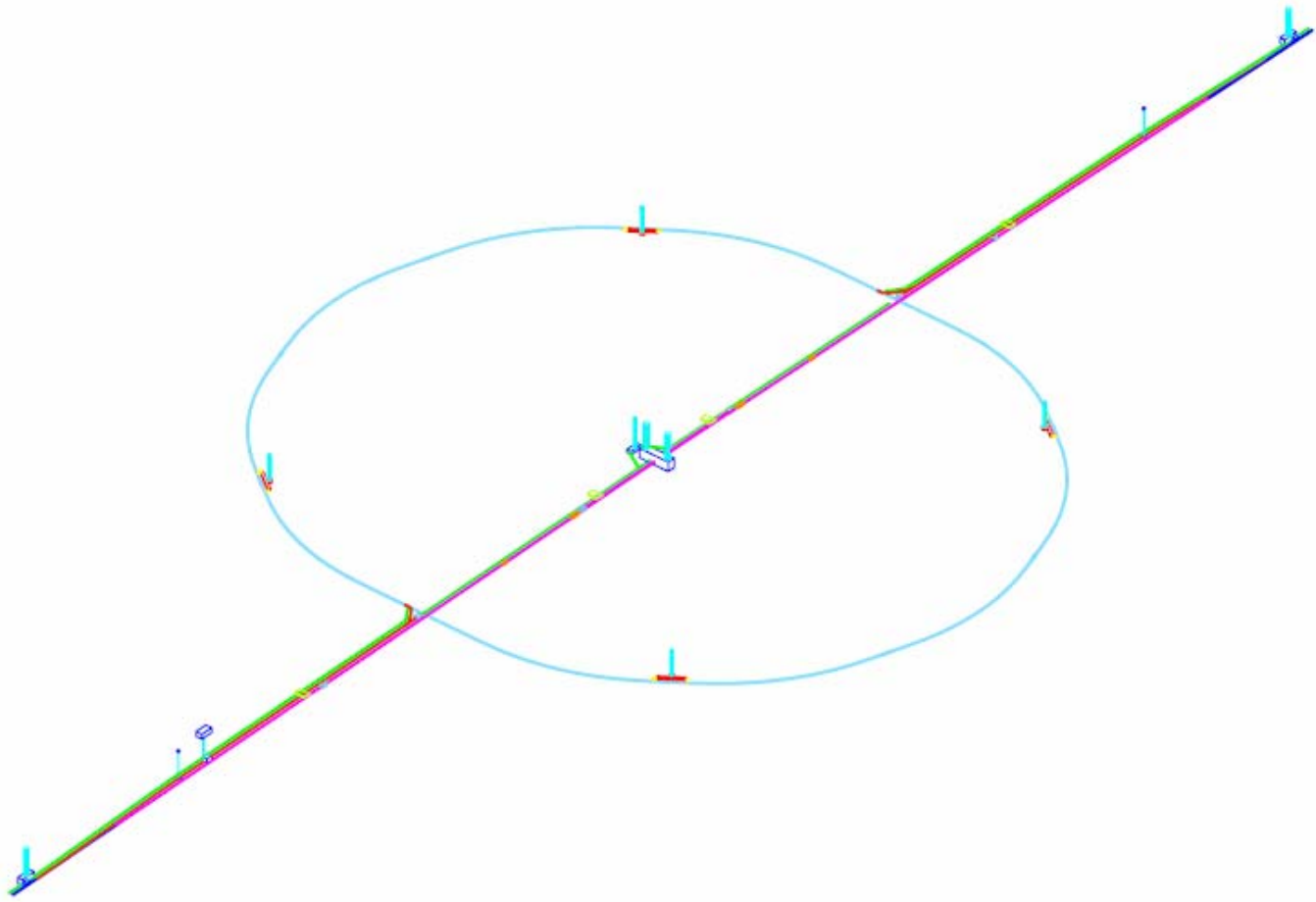
ILC Layout with 2X14mrad BDS



Schematic Layout of the 500 GeV Machine



3D Overview

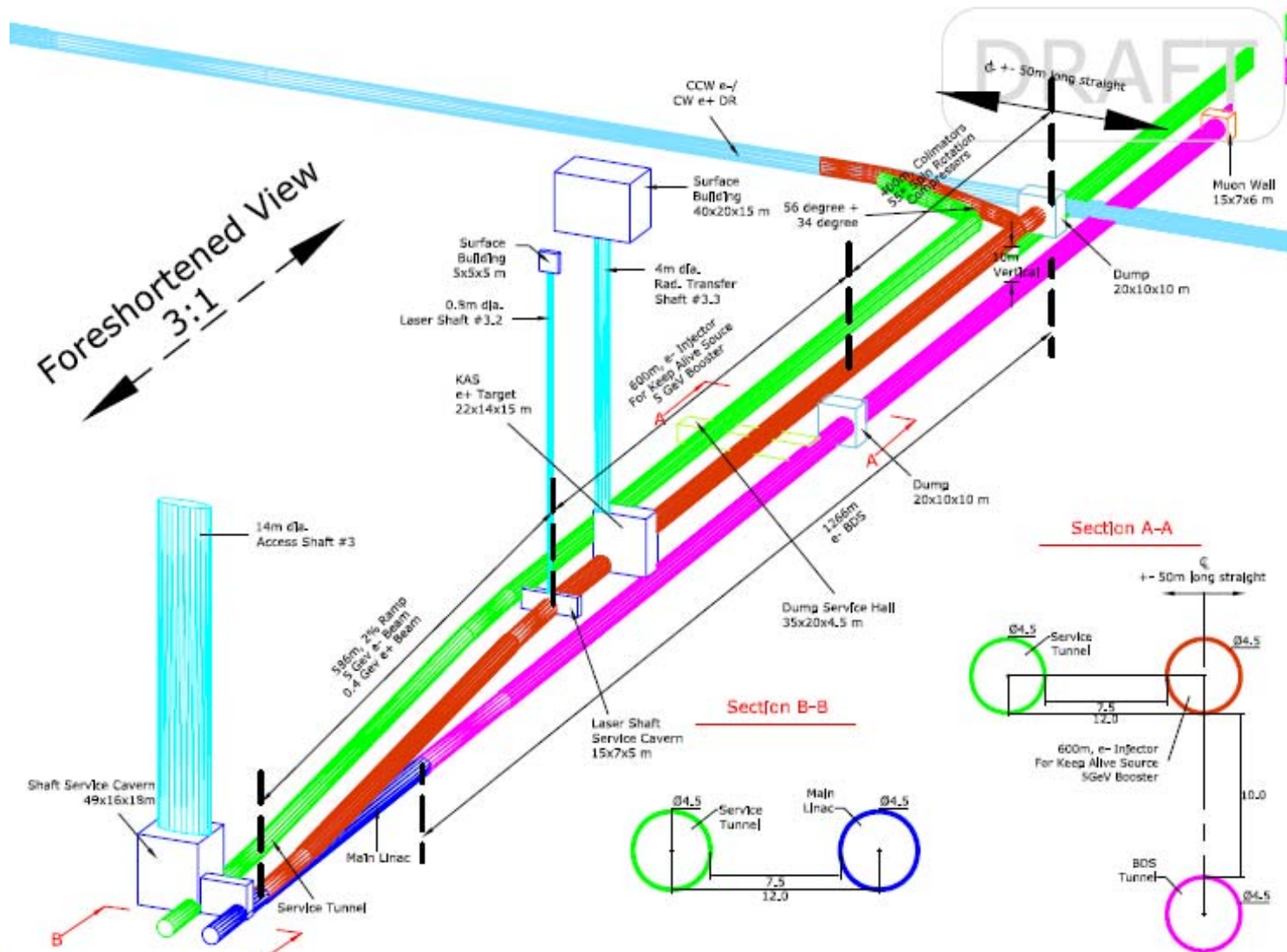


Date Event

Global Design Effort

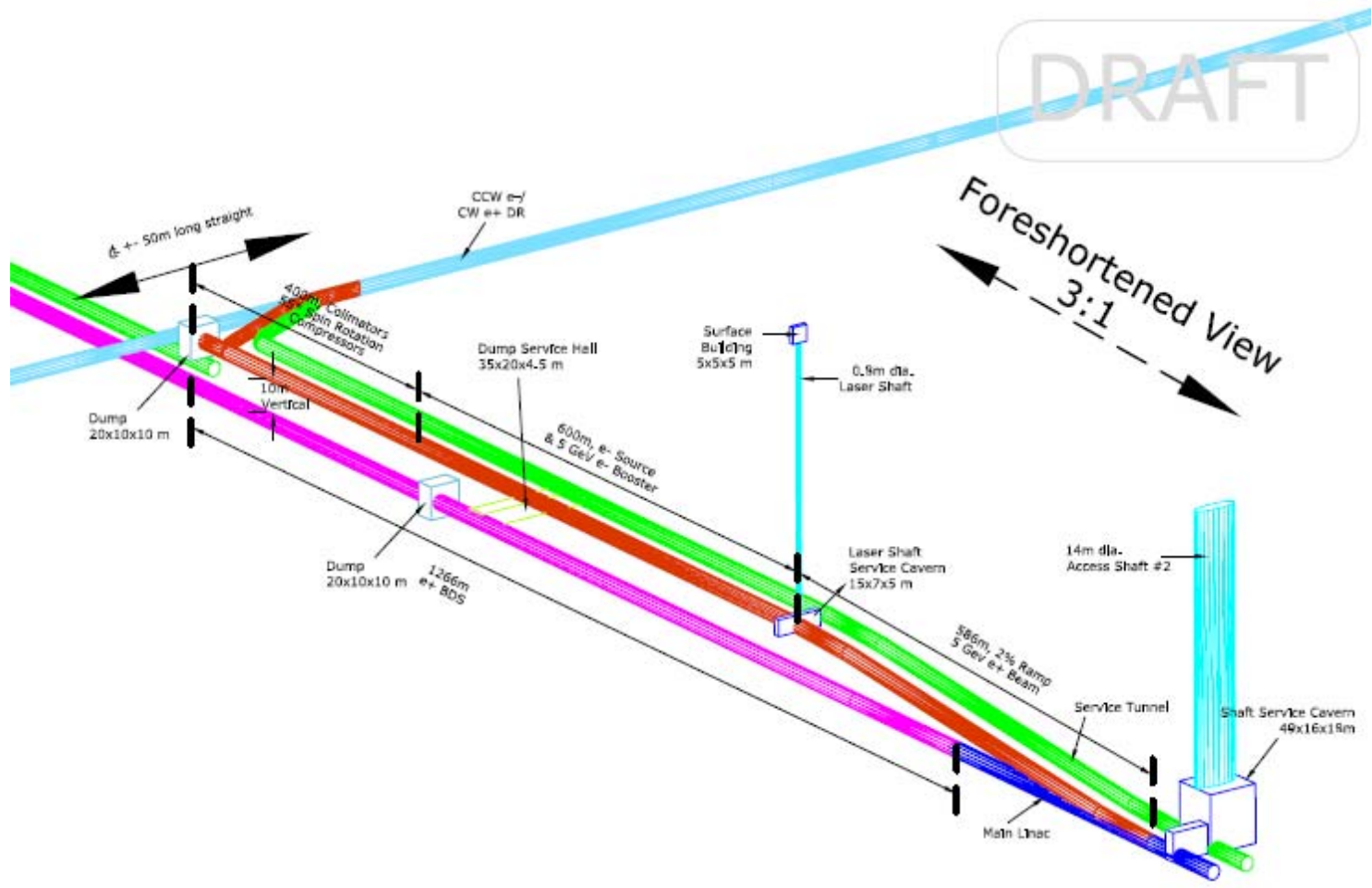


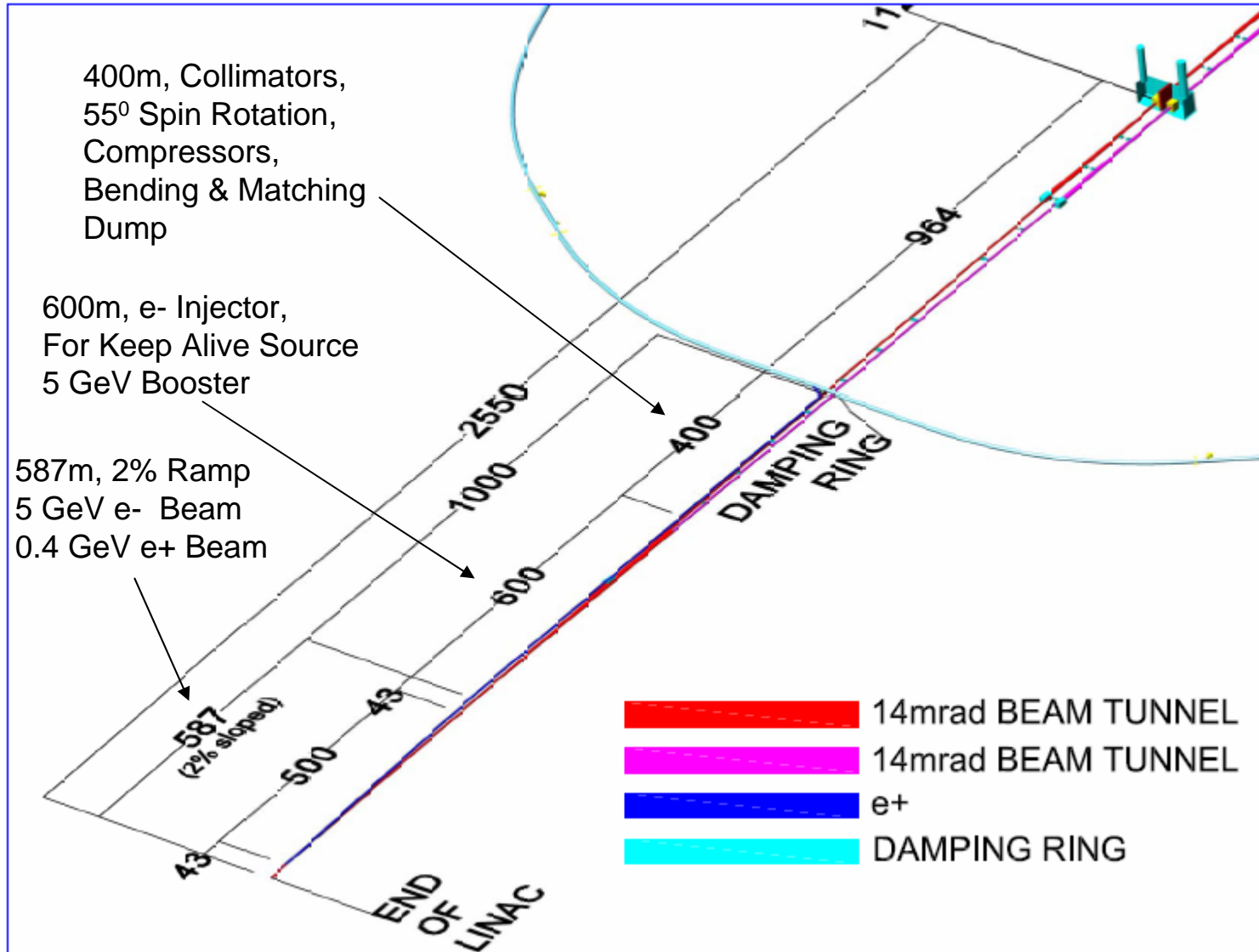
E- Linac or E+ Injection View





E+ Linac or E- Injection View





QUESTIONS

Work is required by a joint group to study cost reductions which must be possible with a CENTRAL BDS, DR, INJ complex. Many ideas will be explored at and after Valencia. Several iterations of tradeoff comparisons will be required. (A few examples, next slides). Which ONE should be adopted for the RDR?

- With this type of central complex, the whole sequence of conventional construction will have to be optimized for a cost effective schedule and to maintain the capability of early commissioning of the INJ/DR systems. Are there hidden problems with shared facilities and construction, commissioning and operation?



Examples of layouts

A) With layout as presented

Share use of service tunnel with BDS, and extend to IR?

Remove BDS alcoves and provide safety egress for single BDS case.

B) Move DR transversely by 0.5 Km

Share two DR shafts/caverns with BDS but lose most of benefits of A with service tunnels?

C) Move DR transversely by > 1 Km

DR can be in the same plane as Linac and BDS (a benefit?) and injection/extraction looks like old layout, injection and extraction in the same straight, with fewer components.

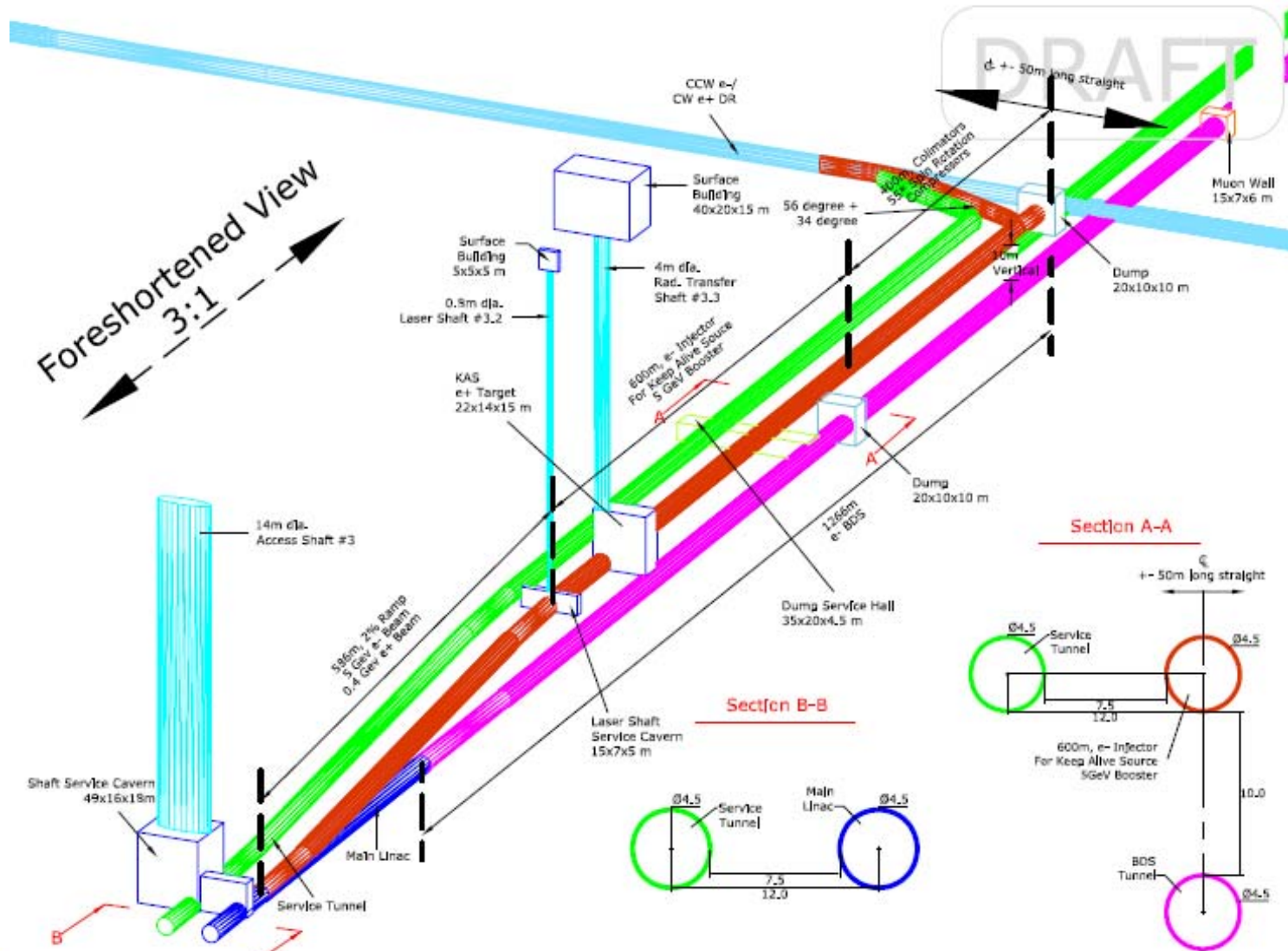
No sharing of shafts or service tunnel?

D) Combination of Every thing! Many peoples ideas.

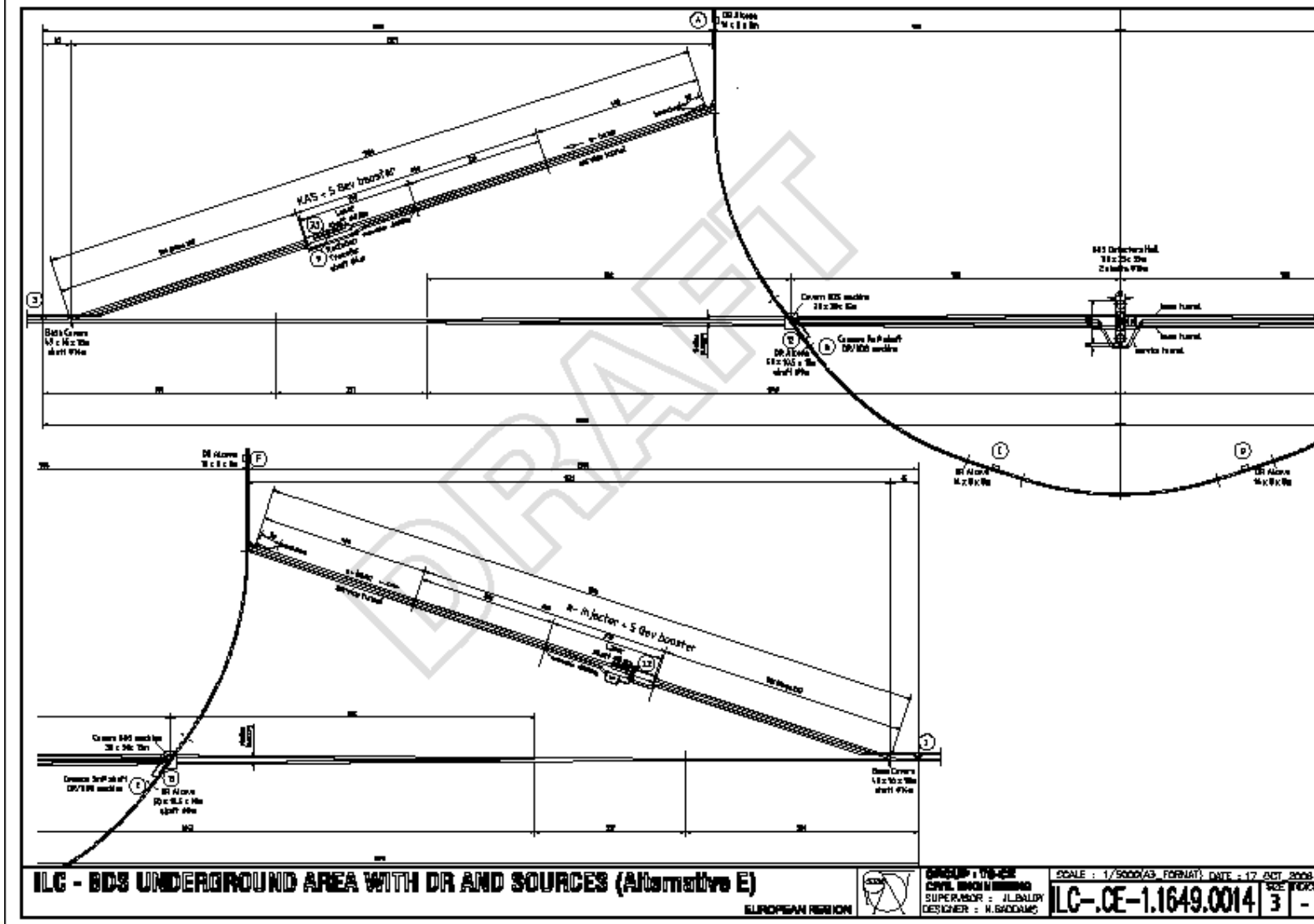
Keep vertical separation of the BDS and INJ/DR planes with injectors above a single BDS and DR long straight parallel to BDS, offset by ~100 to 200 meters.

Again one can share the service tunnel with the BDS and shafts with Damping Rings. Use an S-bend version of the spin rotator section to provide the horizontal offset. DR's use only one long straight for injection and extraction. (a busy 2 in and 2 out section)!

Example A



Example B



	GROUP : ILC-CE CIVIL, MECHANICAL SUPERVISOR : ALBALLY DESIGNER : N. BOUDAME	SCALE : 1/5000(A3 FORMAT) DATE : 17 OCT 2008 SHEET NO : 3
	ILC-CE-1.1649.0014	
	EUROPEAN REGION	

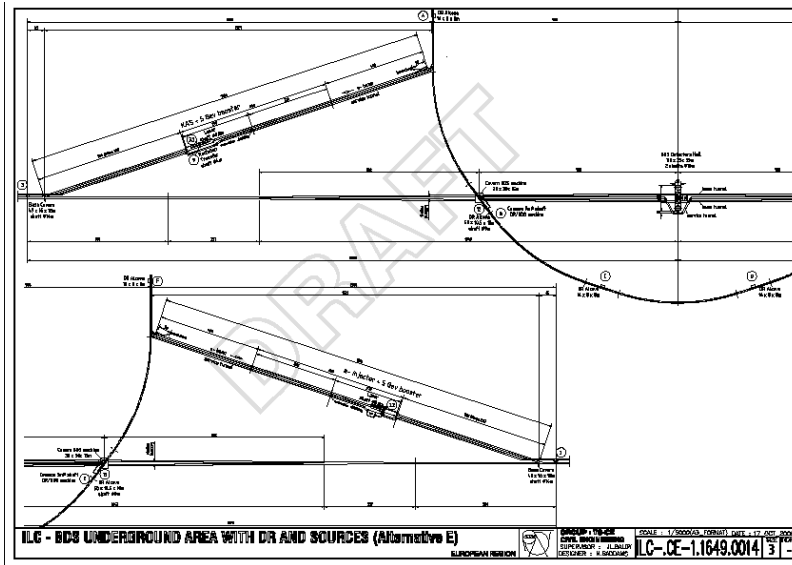
Example C

Move DR up so that the lowest point is ~ 100m clear of the IR complex and rotate 90 degrees.

Injection lines would point at the long straight, 100m from IR.

All of this could be done in the plane of the BDS.

Sharing of the service tunnel would be problematic! Distances? and no shared shafts.

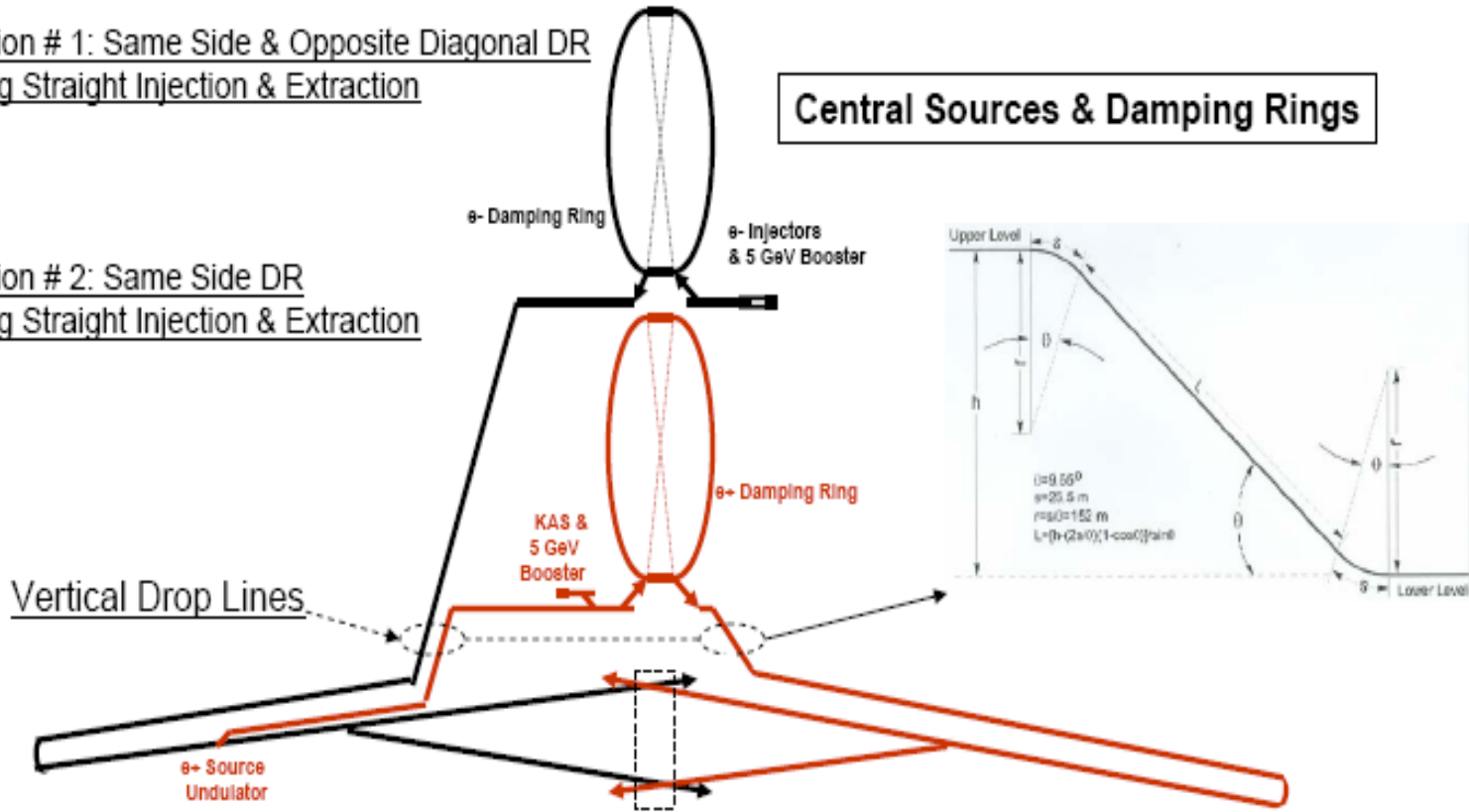


Concept D

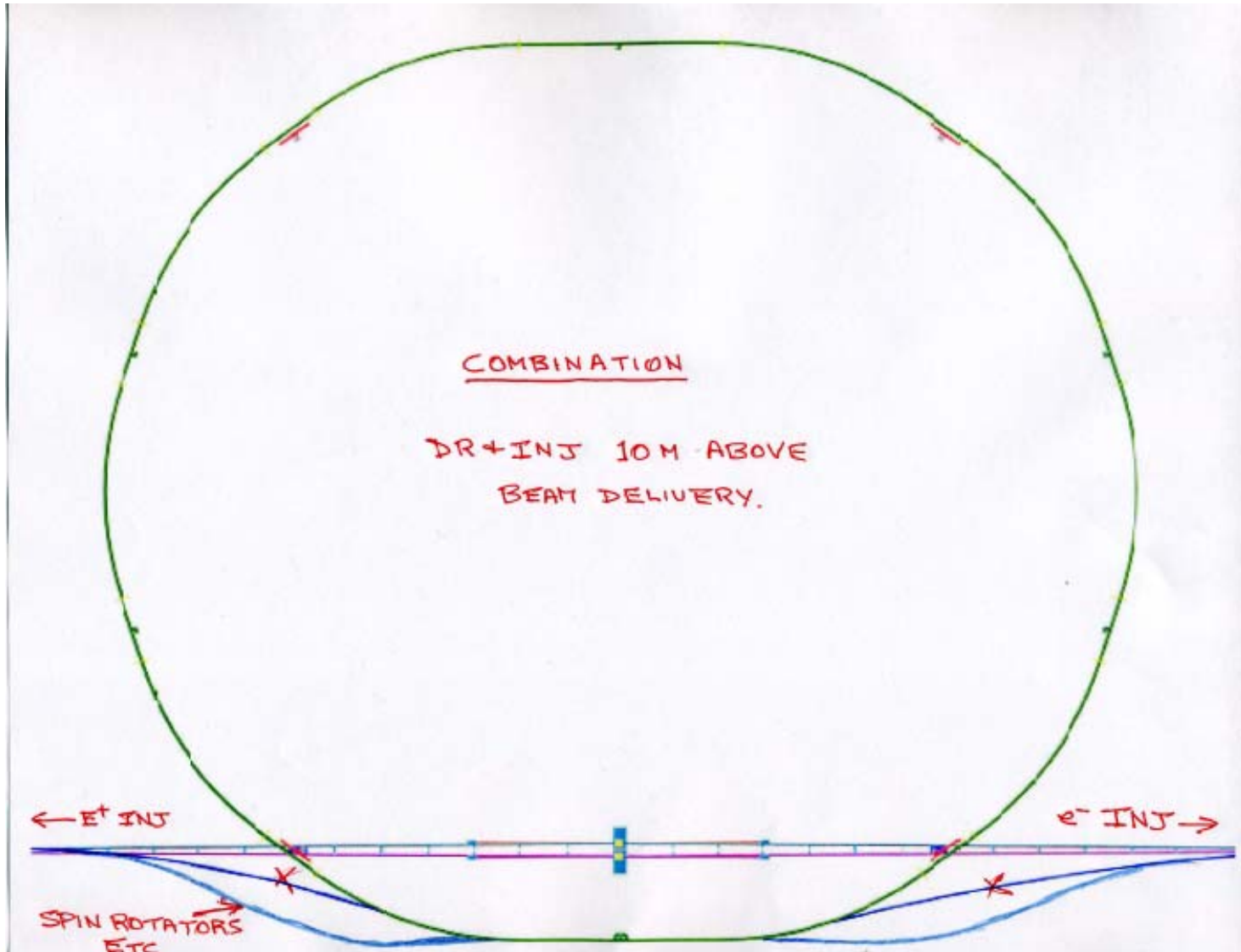
Option # 1: Same Side & Opposite Diagonal DR
 Long Straight Injection & Extraction

Option # 2: Same Side DR
 Long Straight Injection & Extraction

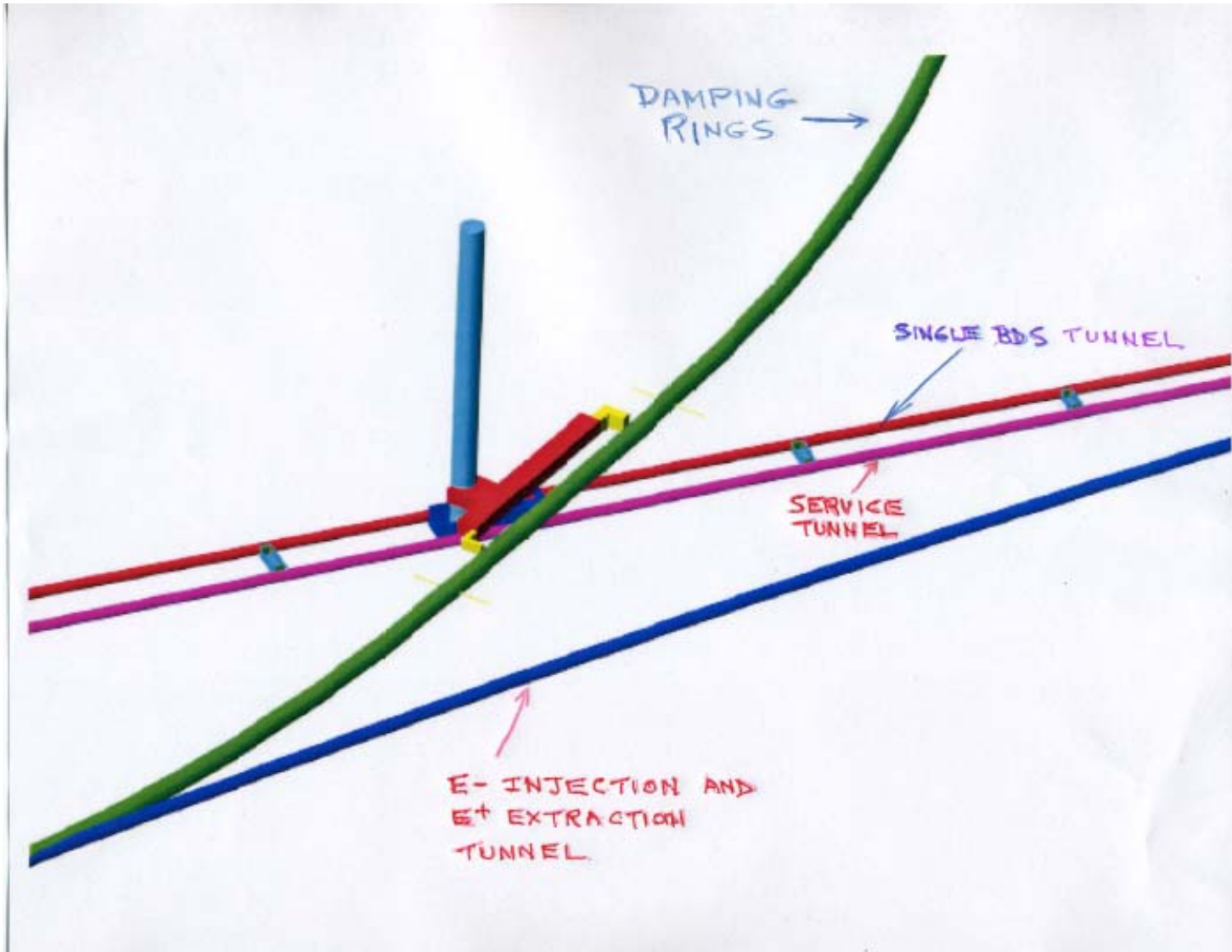
Central Sources & Damping Rings



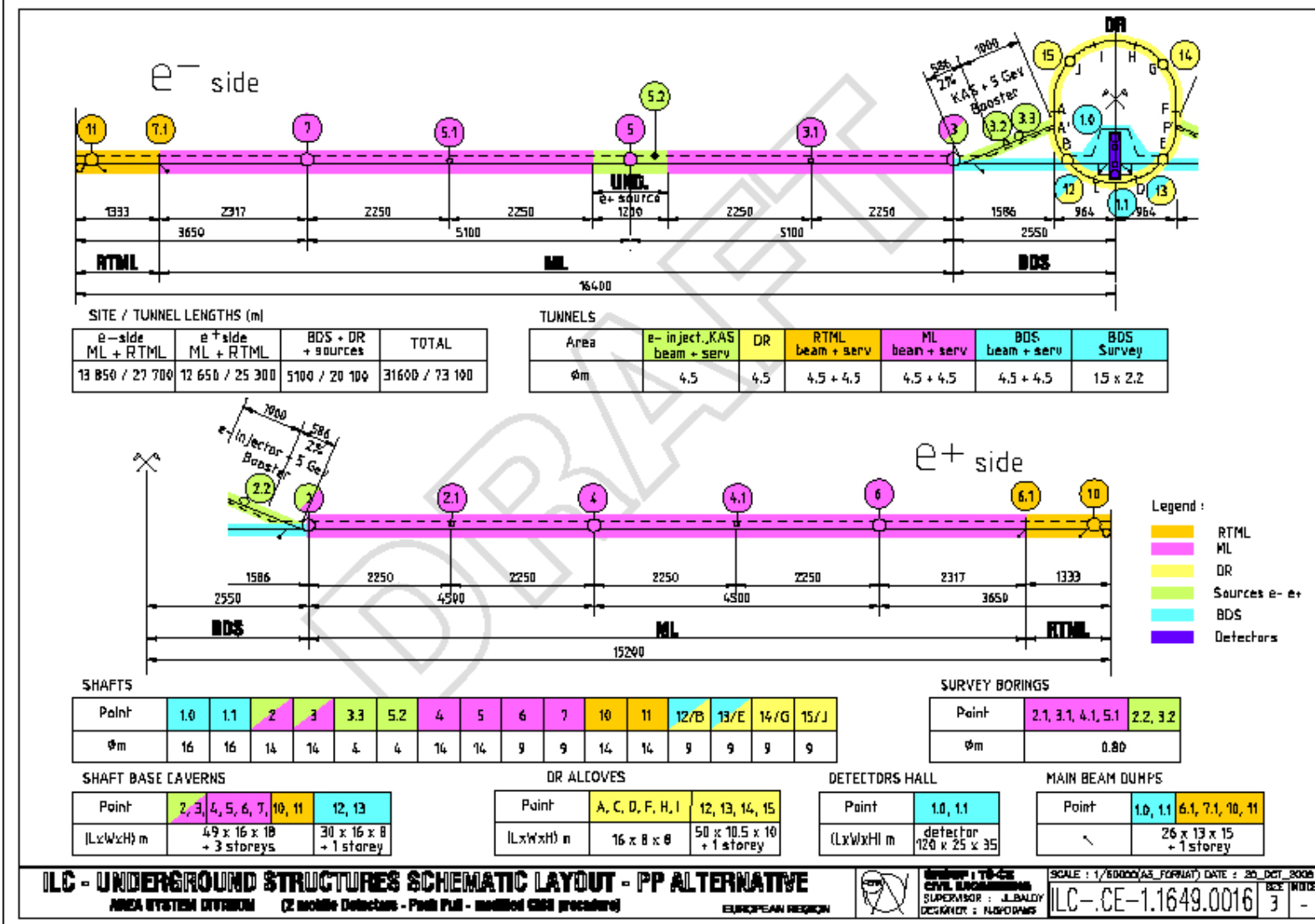
Possible Layout for D Central 2 Km only.



Example of Shared Shaft



Offset DR's without Rotation and Inline Inj/Ext



Summary

- Where are the problems with A,B,C,D
- Emphasis is on savings in civil construction.
Are we neglecting something?
- “IF” we see no problems with Example D,
should we adopt and cost it for the RDR?
Need unanimity from Sources, DR,
BDS,CF&S and even the LINAC.
- OR should we stay with “A” for the RDR and
let ideas mature for the TDR.
- **BEGIN DISCUSSIONS**
Axel, you are the chair!