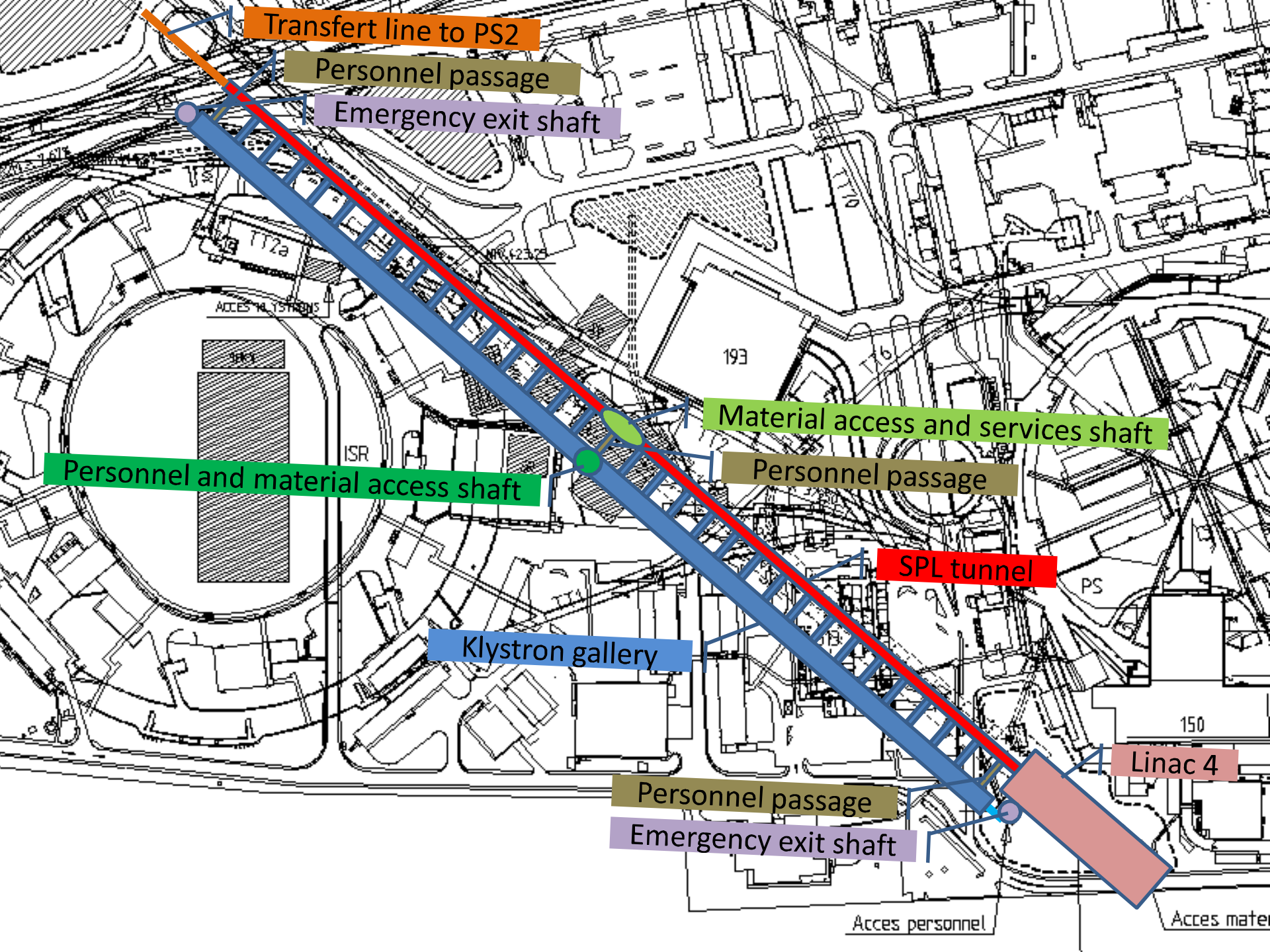
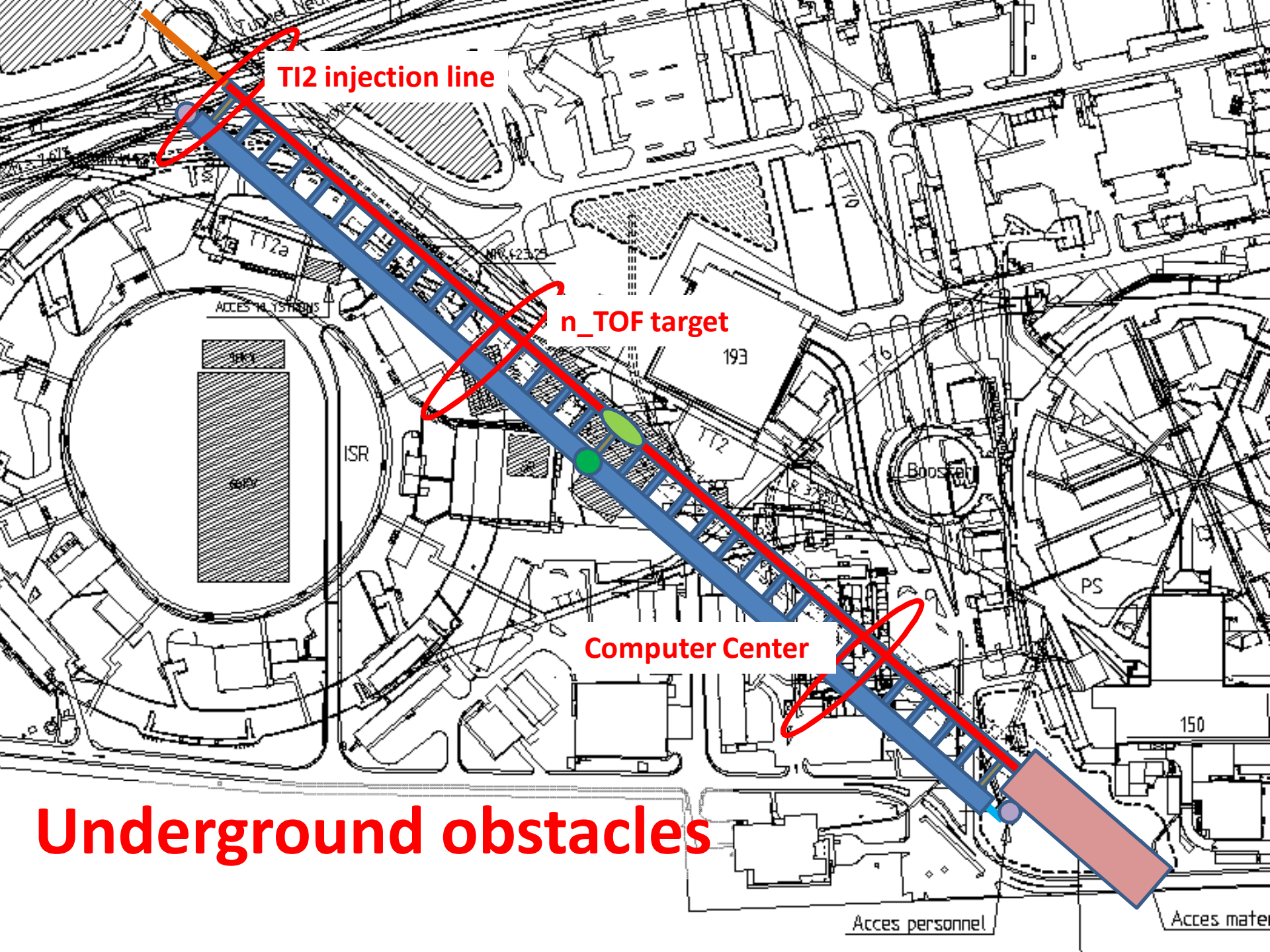


SPL Integration Layout

Impact on cryo and vacuum sectorisation

- ◇ Underground obstacles, constraints on slope and length of the SPL
- ◇ Continuous cryostat and warm magnet options
- ◇ Location of the surface buildings and of the main service shaft
- ◇ Preliminary integration, impact of the position of the couplers





T12 injection line

n_TOF target

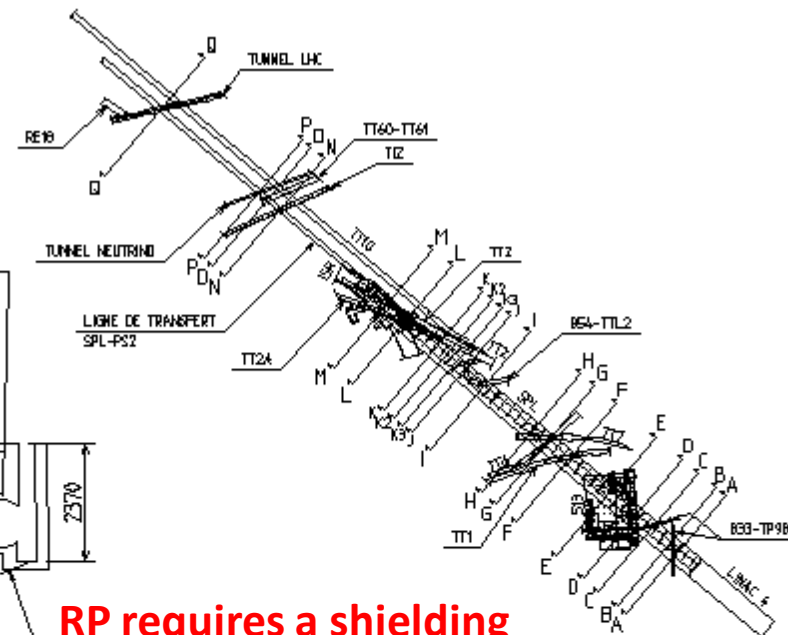
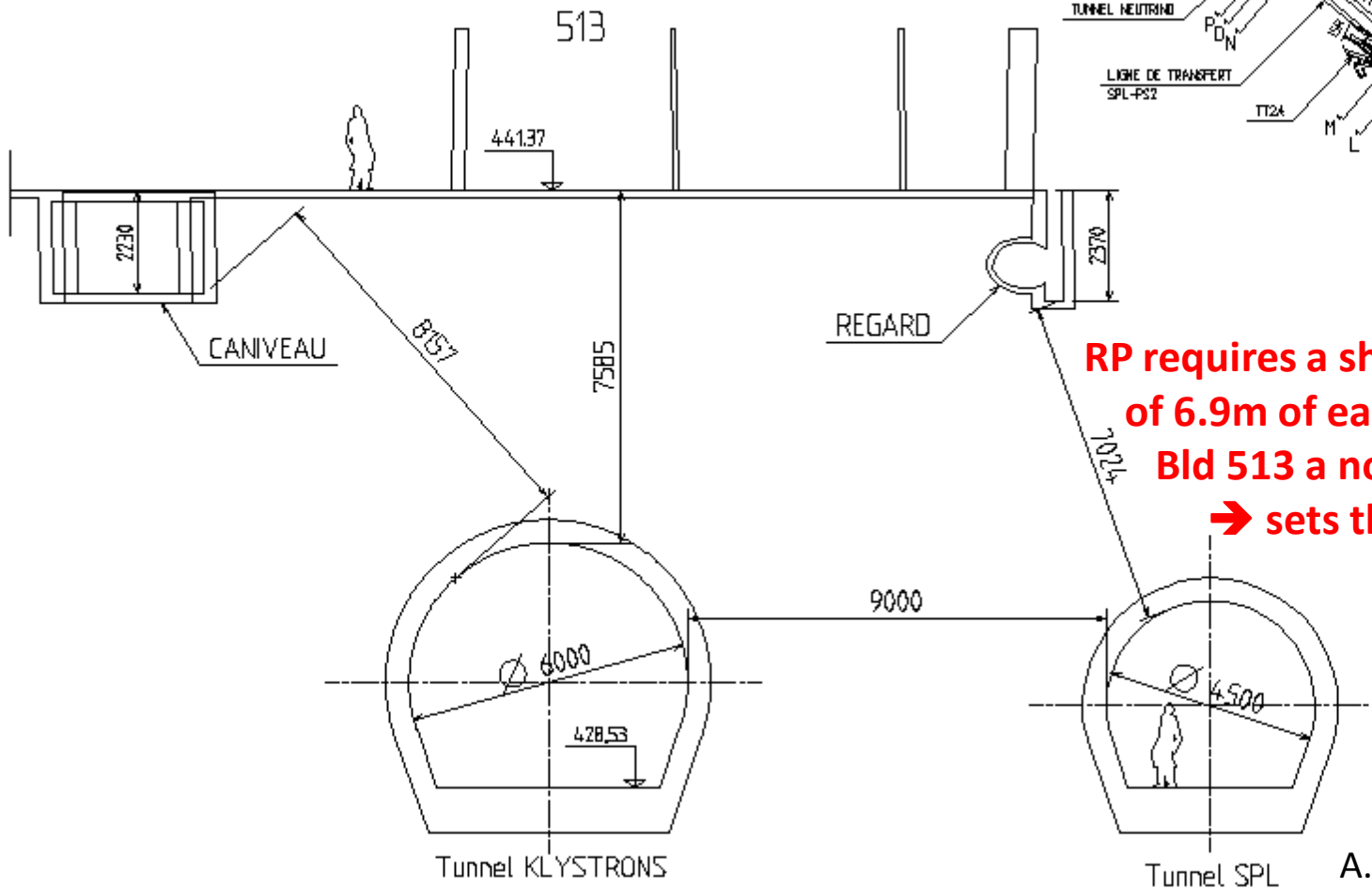
Computer Center

Underground obstacles

Acces personnel

Acces mater

Computer Center



RP requires a shielding of 6.9m of earth to keep Bld 513 a non designated area → sets the altitude of Linac4

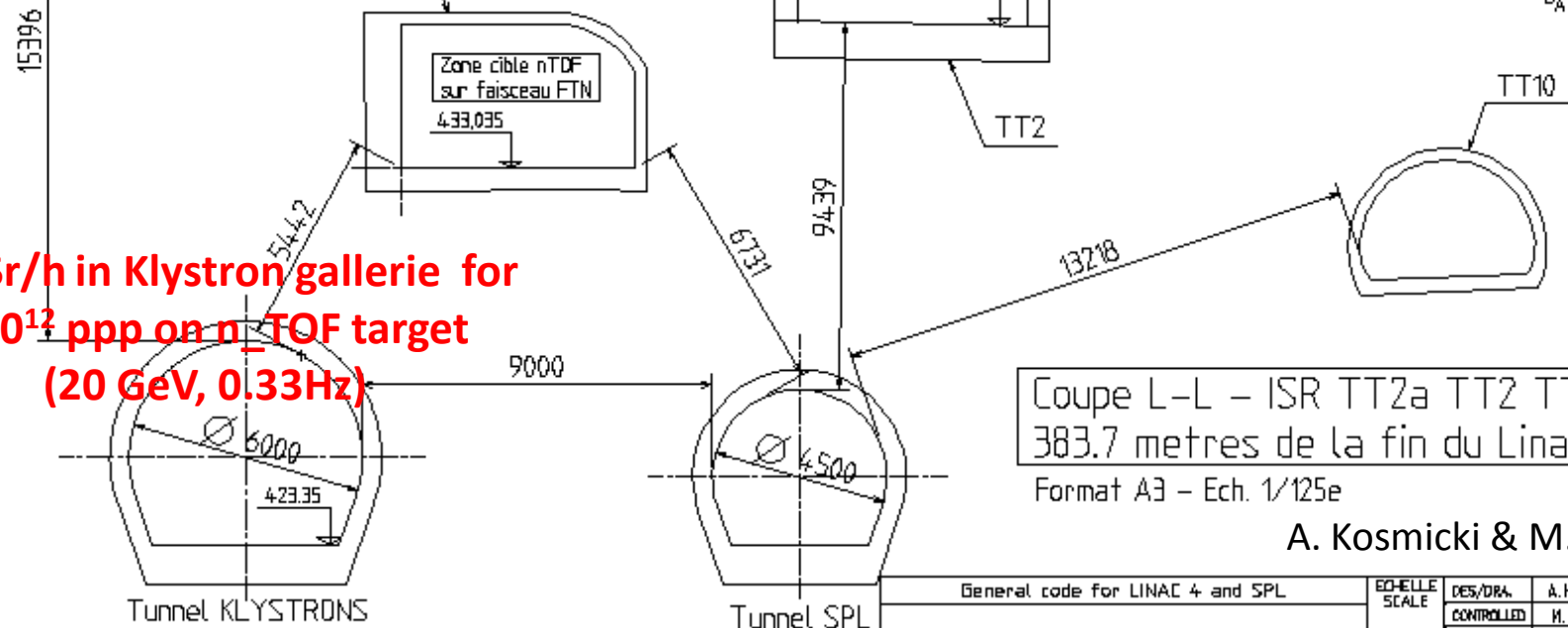
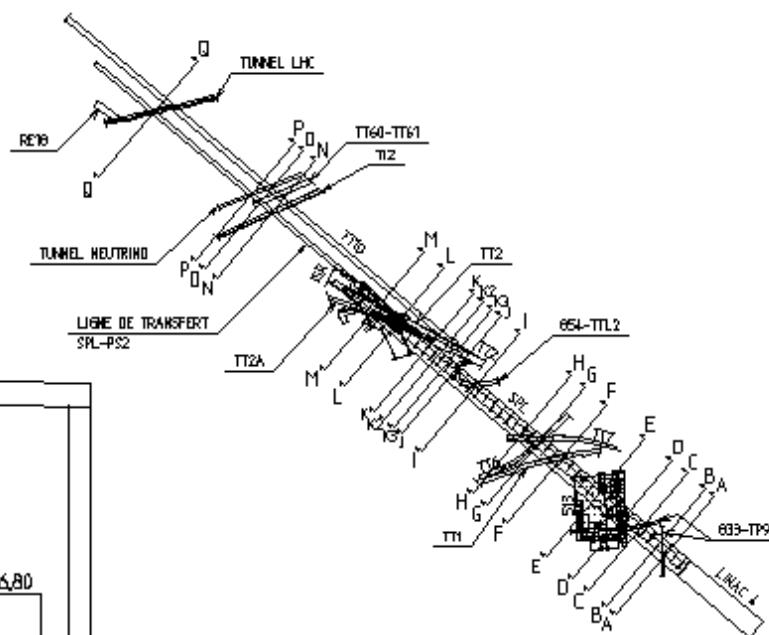
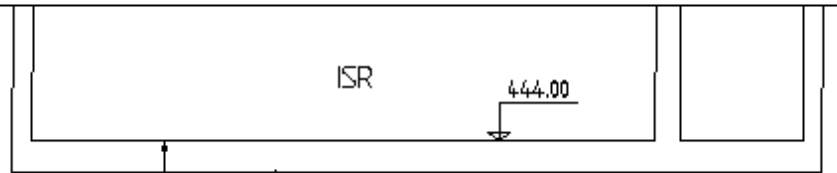
Coupe D-D - 513
 79.9 metres de la fin du Linac 4
 Format A3 - Ech. 1/100e

General code for LINAC 4 and SPL	ECHELLE SCALE	DES/DRA.	A. KOSMICKI	2008-03-13
		CONTROLLED	M. POEHLER	2008-03-14
		RELEASED	L. LOPEZ-HERNAN	2008-04-09
		APPROVED	-	-
		LHC/SURF_MET_K00U0001213PL		
SPL - CAHIER DE COUPES COUPE D-D		REPLACE/REPLACES		

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n_TOF target area

160 μ Sr/h in Klystron gallerie for
 $7 \cdot 10^{12}$ ppp on n_TOF target
 (20 GeV, 0.33Hz)

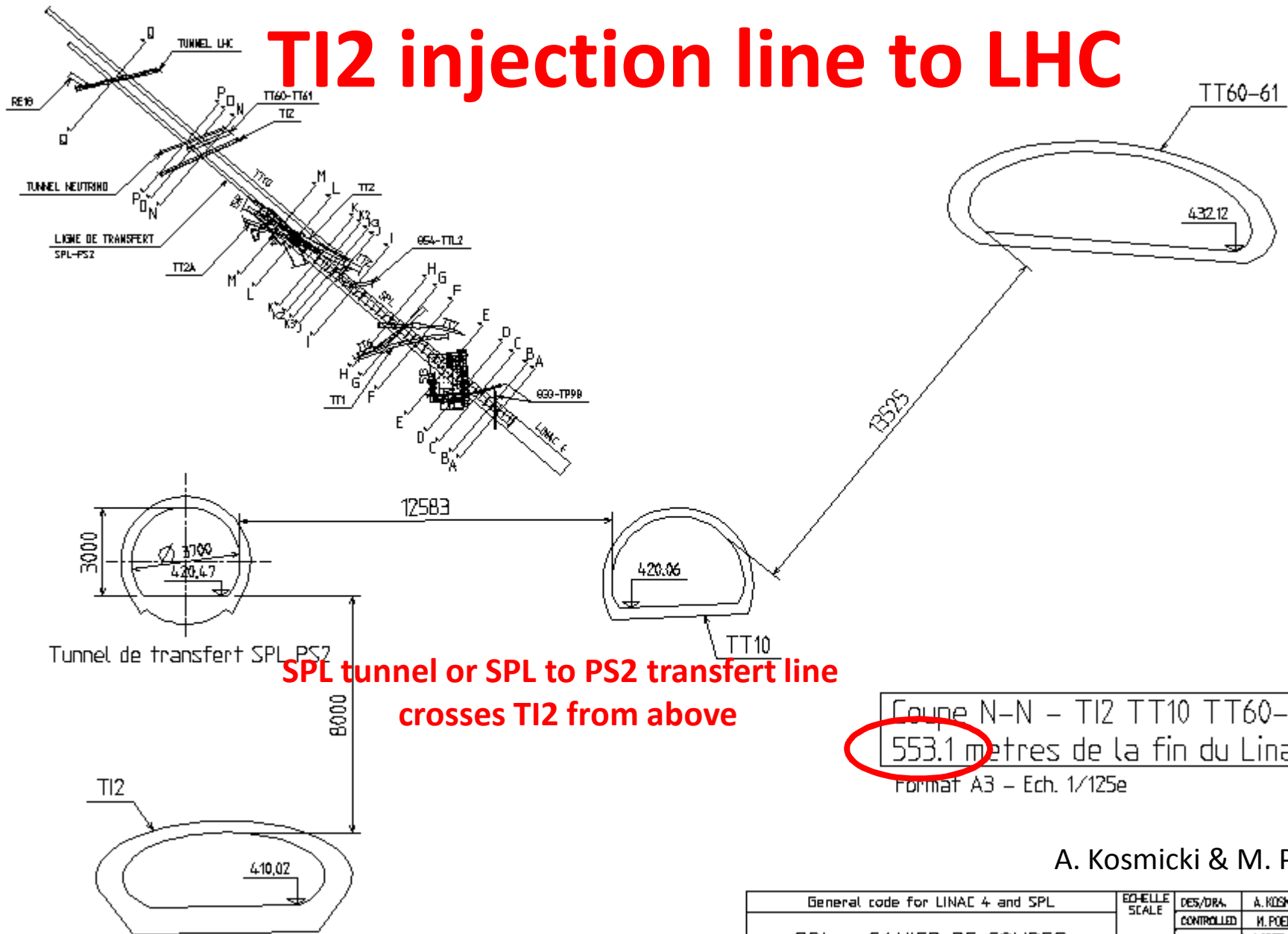


Coupe L-L - ISR TT2a TT2 TT10
 383.7 metres de la fin du Linac 4
 Format A3 - Ech. 1/125e

A. Kosmicki & M. Poehler

General code for LINAC 4 and SPL SPL - CAHIER DE COUPES COUPE L-L	ED-SCHELL	DES/DRA.	A. KOSMICKI	2008-03-13
	ED-SCHELL	CONTROLLED	M. POEHLER	2008-03-14
	ED-SCHELL	RELEASED	L. LOPEZ-HERNAN	2008-04-03
	ED-SCHELL	APPROVED	-	-
	ED-SCHELL	LHC/SURF_MEY/K001/K002/BIPL		
ED-SCHELL	REPLACE/REPLACES			

TI2 injection line to LHC



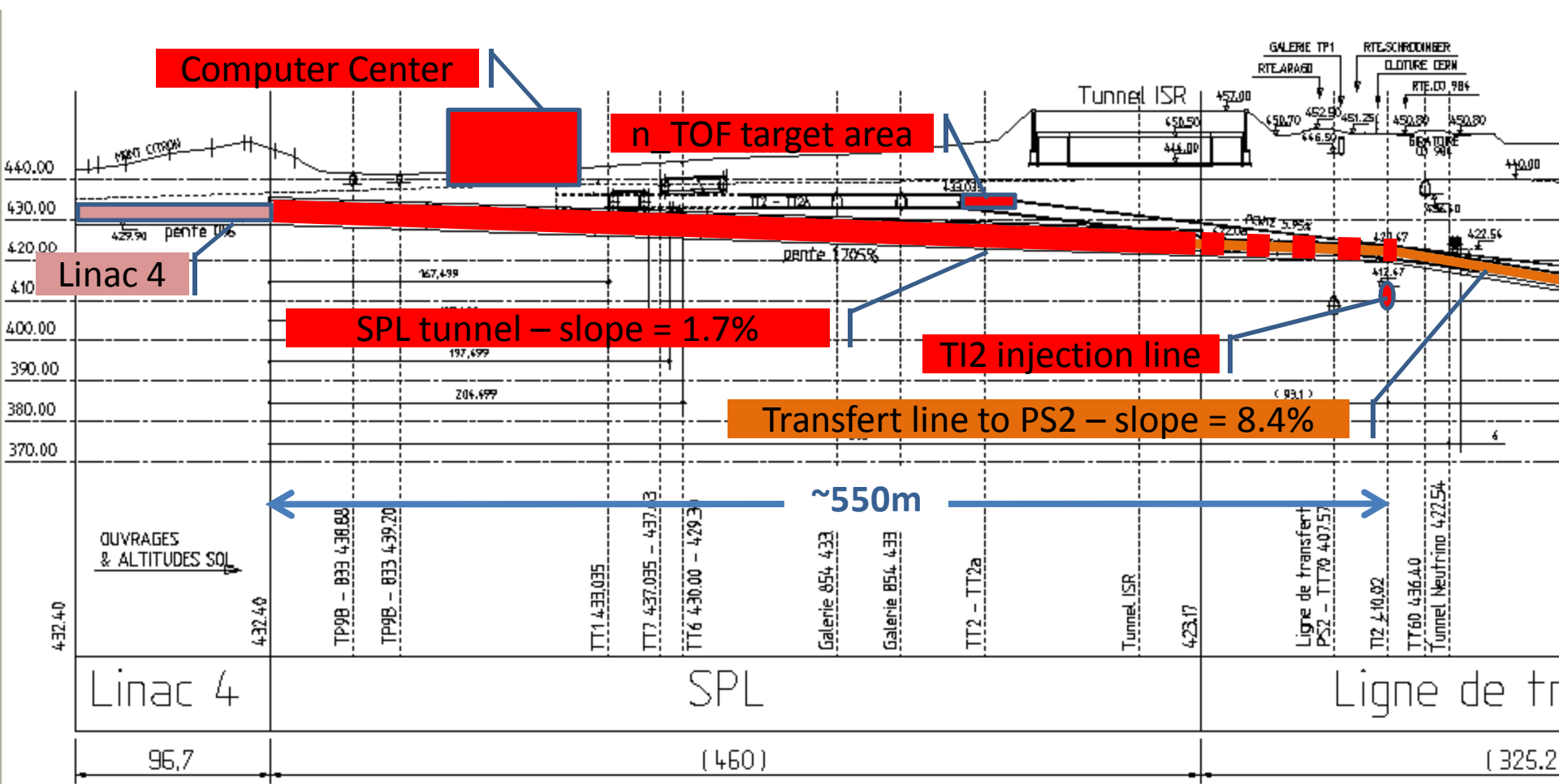
SPL tunnel or SPL to PS2 transfert line crosses TI2 from above

Coupe N-N - TI2 TT10 TT60-61
 553.1 metres de la fin du Linac 4
 Format A3 - Ech. 1/125e

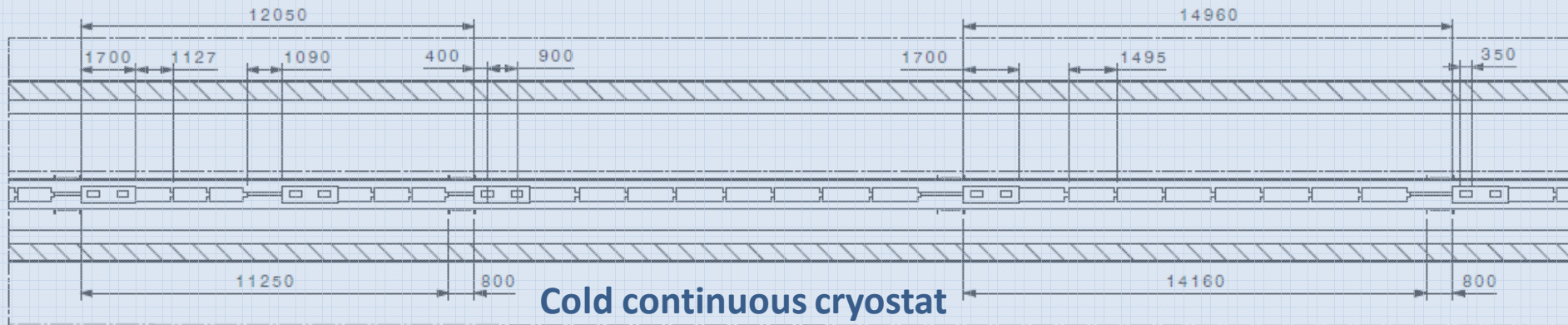
A. Kosmicki & M. Poehler

General code for LINAC 4 and SPL	ECHELLE SCALE	DES/DRA.	A. KOSMICKI	2008-03-13
		CONTROLLED	M. POEHLER	2008-03-14
		RELEASED	L. LOPEZ-HERNAN	2008-04-08
		APPROVED	-	-
		LHC<SURF_MET_K001K002>BSP		
SPL - CAHIER DE COUPES COUPE N-N		REPLACE/REPLACES		

Constraints on slope and length of the SPL



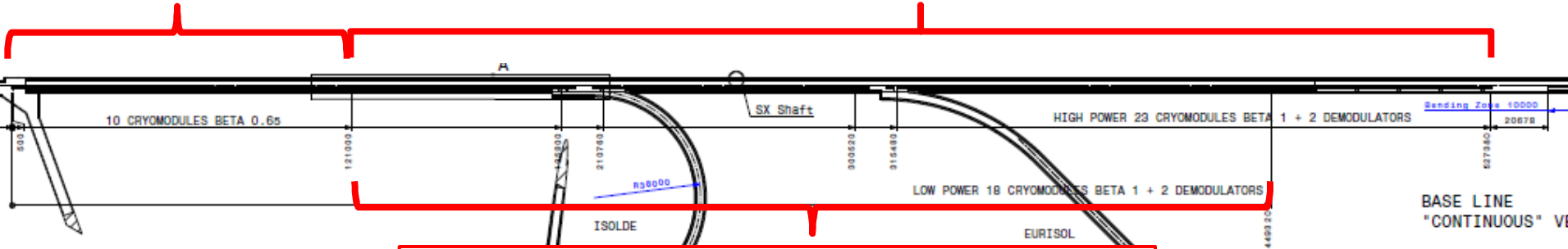
SPL "baseline" layout



10 x $\beta=.65$ modules
length = 121 m

5 Gev version (HP):
23 x $\beta=1$ modules + 2 de-modulator modules
extraction regions to Isolde and Eurisol

→ SPL length = 527.38 m

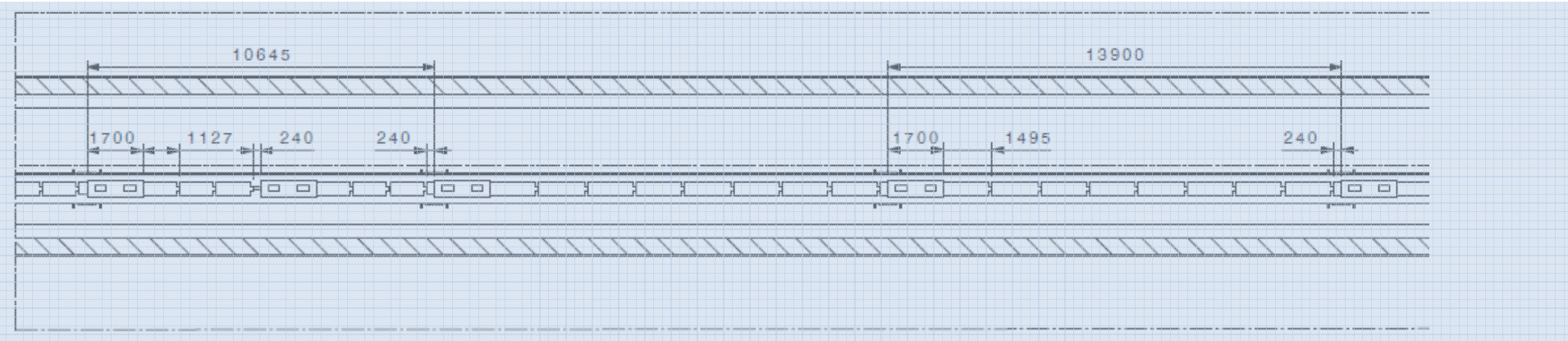


4 Gev version (LP):
18 x $\beta=1$ modules + 2 de-modulator modules
extraction regions to Isolde and Eurisol

→ SPL length = 452.58 m

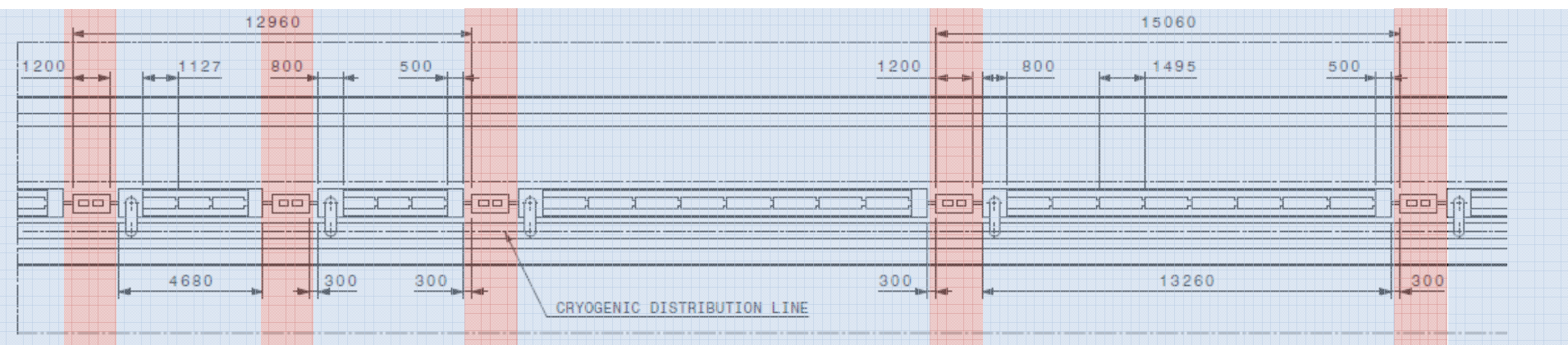
Continuous cryostat and warm magnet options

"Compact" version (gain on interconnections):

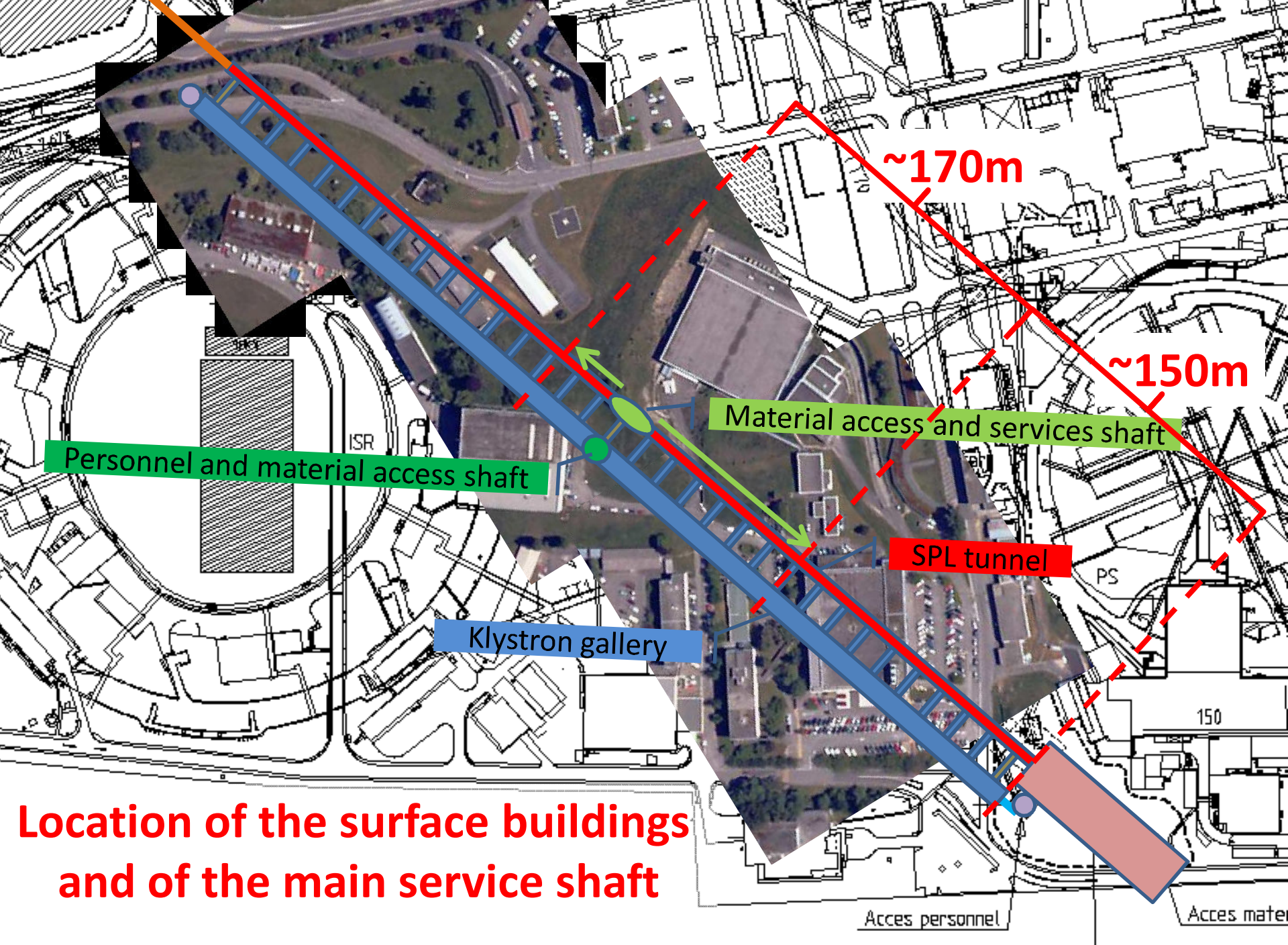


→ 5 Gev version (HP): SPL length = 485.14 m (-42.24 m with respect to "baseline")

"Warm quadrupole" version (with separate cryoline):

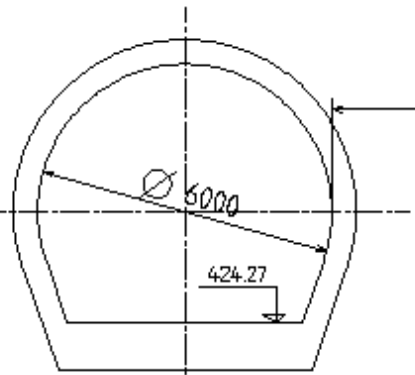
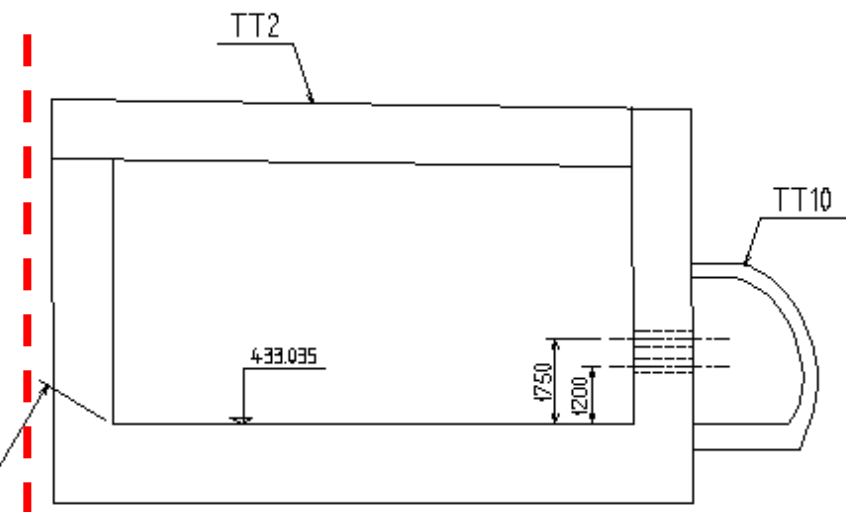
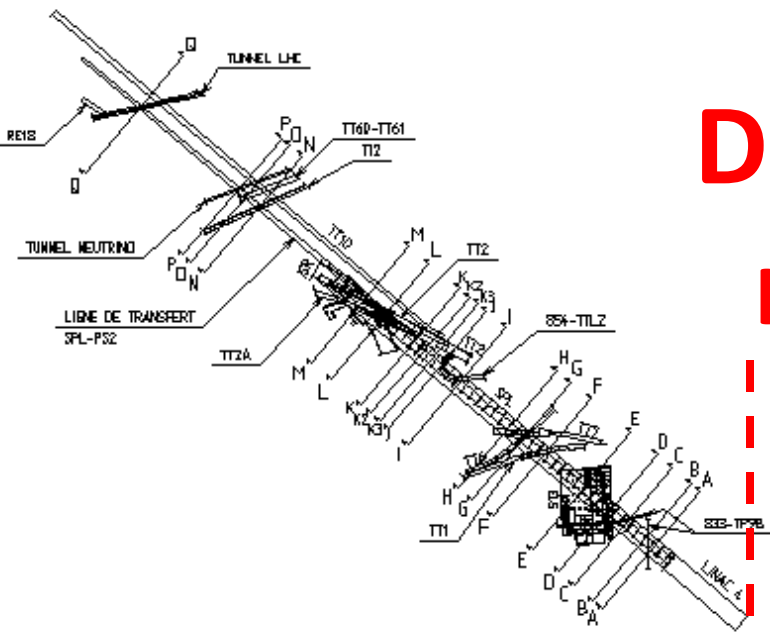


→ 5 Gev version (HP): SPL length = 535.92 m (+8.54 m with respect to "baseline")



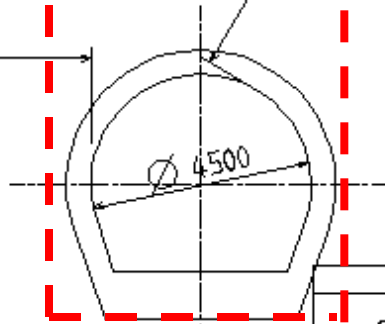
Location of the surface buildings and of the main service shaft

Downstream limit of main service shaft



Tunnel KLYSTRONS

9000



Tunnel SPL

Too far, assume 320m max.

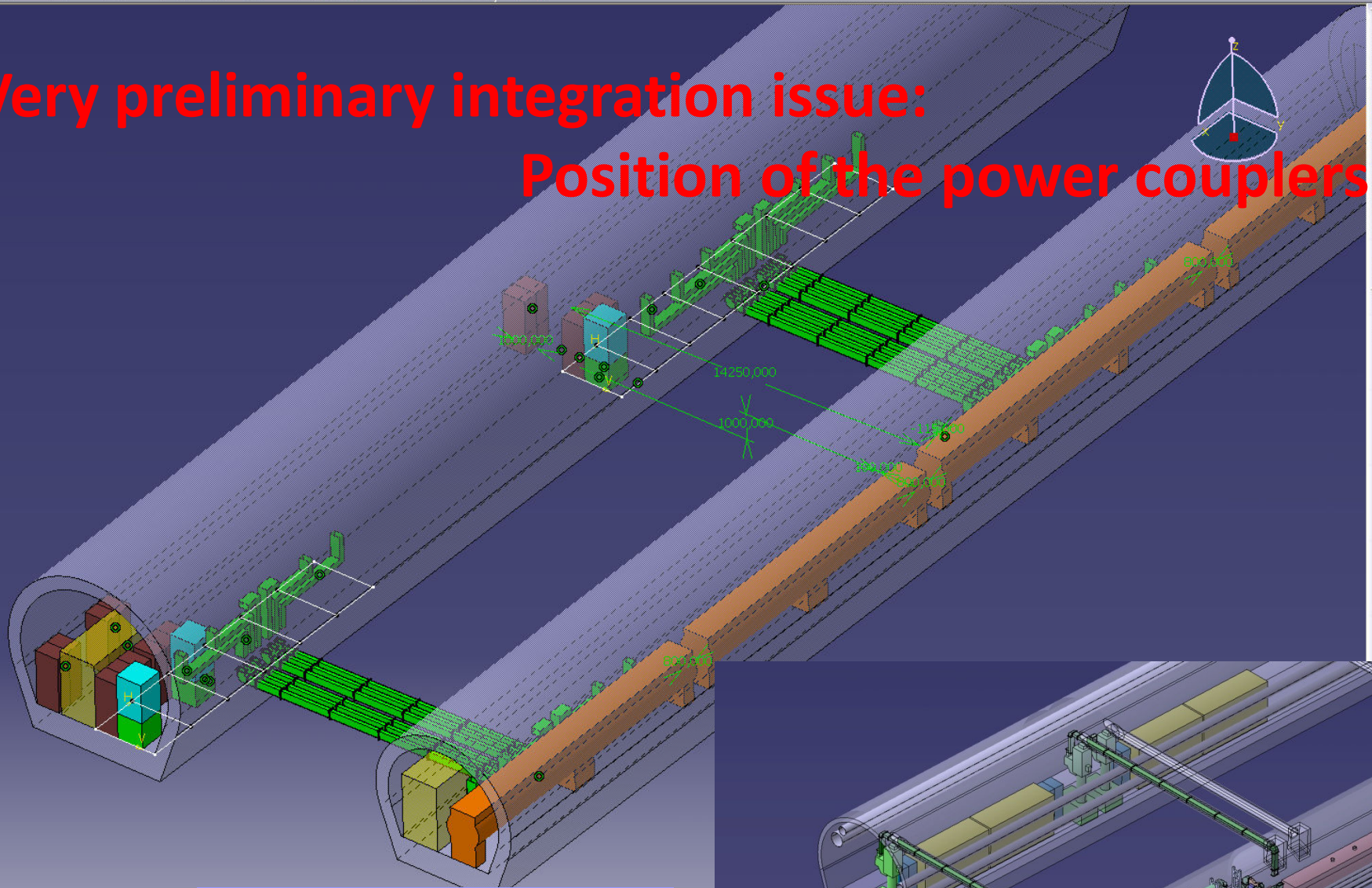
Coupe K2-K2 - TT2 TT10
 330.3 metres de la fin du Linac 4

Format A3 - Ech. 1/100e

A. Kosmicki & M. Poehler

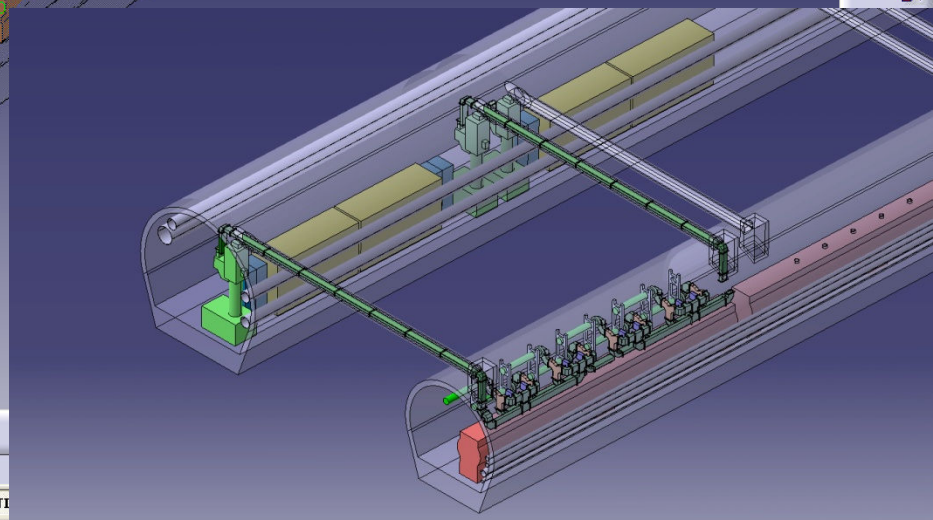
General code for LINAC 4 and SPL SPL - CAHIER DE COUPES COUPE K2-K2	EGHELLE SCALE	DES/DRA.	A. KOSMICKI	2008-03-13
		CONTROLLED	M. POEHLER	2008-03-14
		RELEASED	L. LOPEZ-HERNAN	2008-04-08
		APPROVED	-	-
		LHIC/SURF_MET_K001/0012/07PL		
	REPLACE/REPLACES			

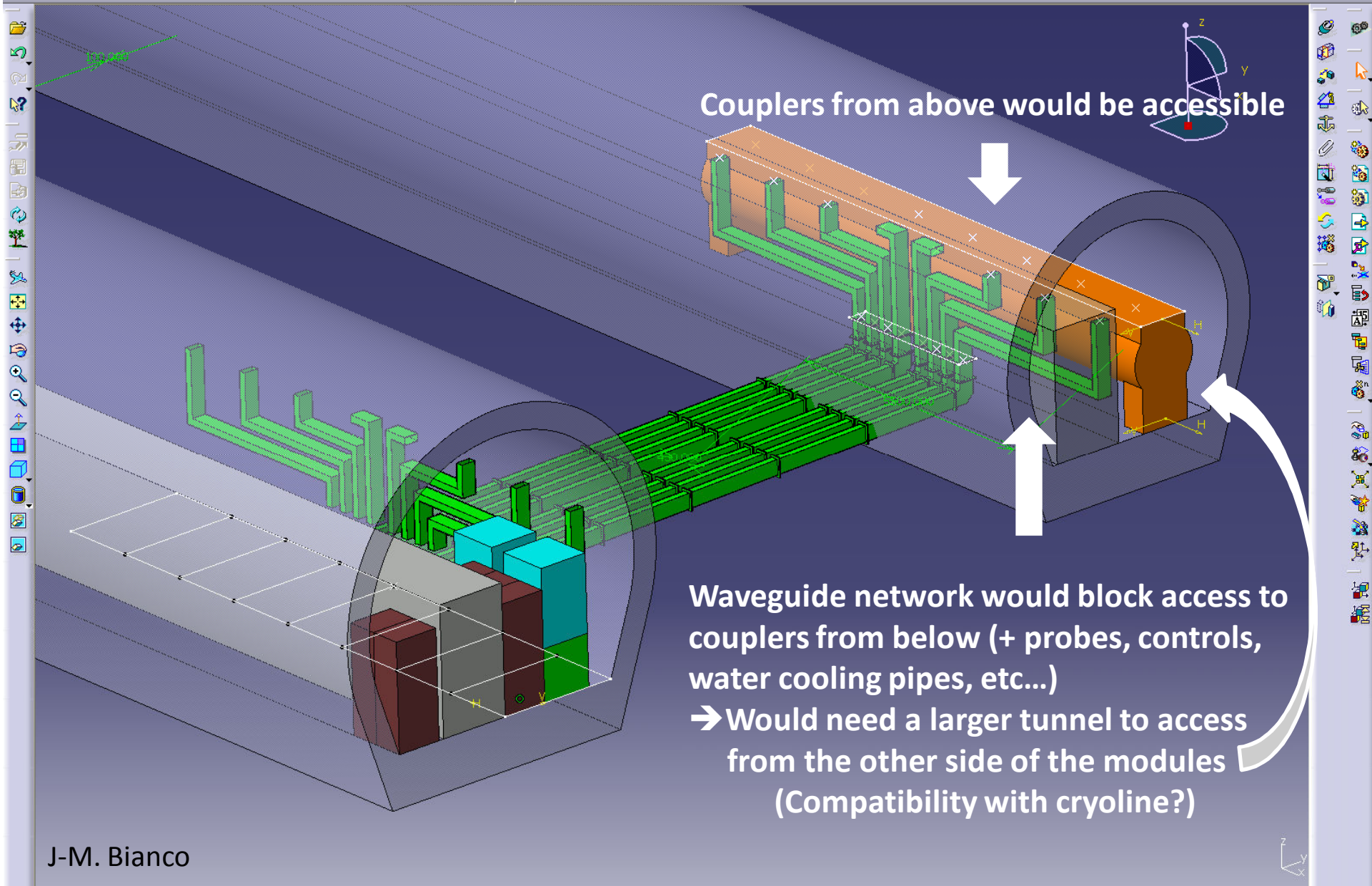
Very preliminary integration issue: Position of the power couplers



J-M. Bianco

Preferred to initial model →
if we have many waveguide
between the two tunnels





Couplers from above would be accessible

Waveguide network would block access to couplers from below (+ probes, controls, water cooling pipes, etc...)
→ Would need a larger tunnel to access from the other side of the modules (Compatibility with cryoline?)

J-M. Bianco

Summary

- ◇ **SPL would have a 1.7% slope**
- ◇ **550m should be considered as a maximum length (including debuncher and vertical bend to PS2)**
- ◇ **A warm magnet option just fits in the footprint**
- ◇ **Surface buildings and main shafts can be located around the mid-point of the SPL**
- ◇ **It would be a big advantage to install the power couplers from above**