CLIC Civil Engineering and Services (CES) WG

Agenda :

#1 - CLIC-CES Wkg

Wednesday 14 May 2008
from **14:30** to **16:00**Europe/Zurich
at **CERN** (*54-2-033*)
chaired by: ***John Andrew Osborne (CERN)***

Participants: Hans Braun; Claude Hauviller; Joaquin Inigo-Golfin; Karsten Kahle; Keith Kershaw; Antoine Kosmicki; Hélène MAINAUD DURAND; Christophe Martel; John Andrew Osborne; Daniel Parchet; Thomas pettersson; Ingo Ruehl; Ralf Trant

Wednesday 14 May 2008

Wednesday 14 May 2008

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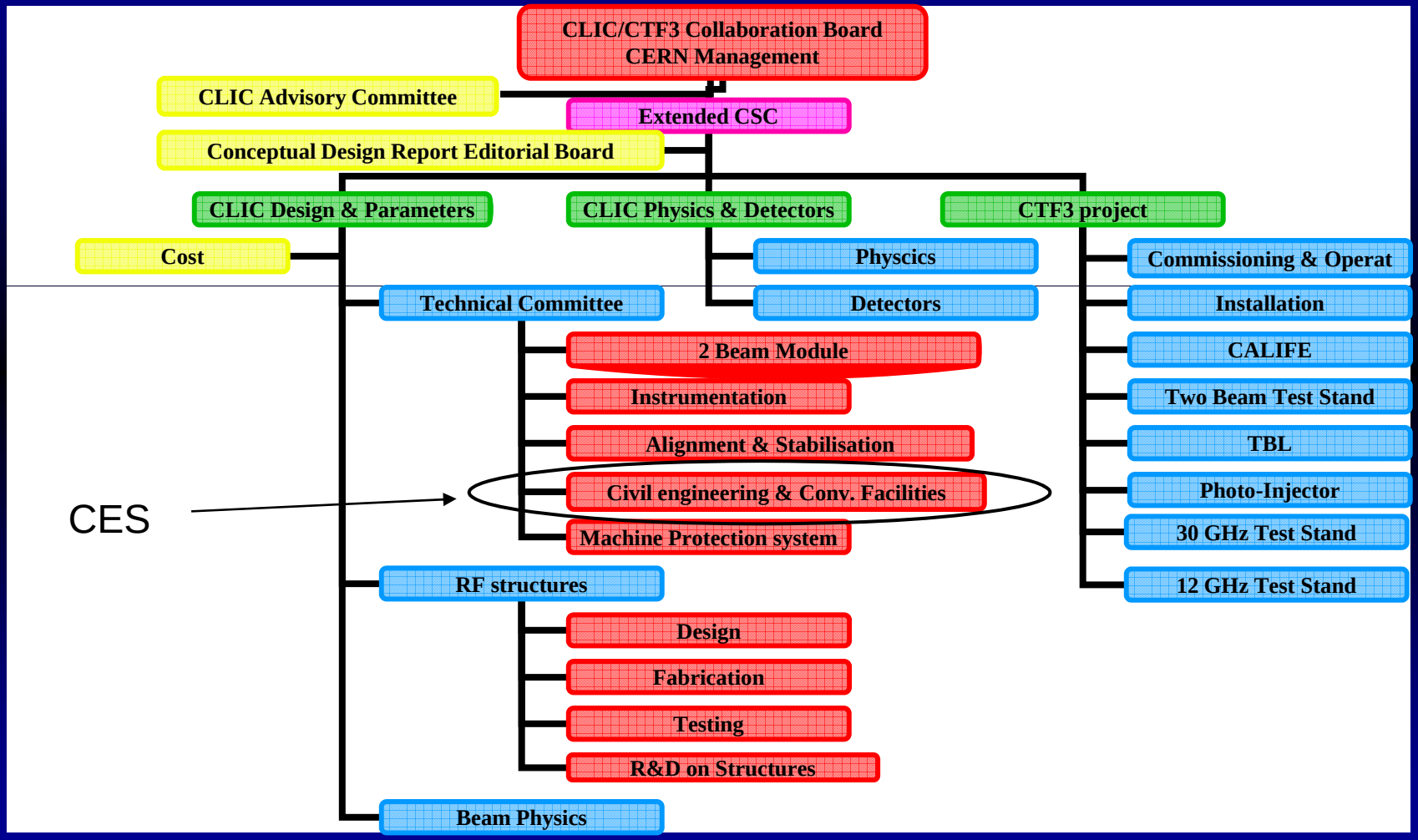
14:30	Mandate of CES Working Group and Structure (20')	John Andrew Osborne (*CERN*) , Claude Hauviller (*CERN*)
14:50	Project Breakdown Structure for CES works (20')	John Andrew Osborne (*CERN*)
15:10	Anticipated Work in 2008 (ALL) (20')	
15:30	Dates for CES meetings in 2008 (05')	

CLIC Chart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CERN Management
CLIC Advisory Committee
Extended CSC
Conceptual Design Report Editorial Board
CLIC Design & Parameters
CLIC Physics & Detectors
CTF3 project
Cost
Physcics
Commissioning & Operat
Technical Committee
Detectors
Installation
2 Beam Module
CALIFE
Instrumentation
Two Beam Test Stand
Alignment & Stabilisation
TBL
CES
Civil engineering & Conv. Facilities
Photo-Injector
Machine Protection system
30 GHz Test Stand
RF structures
12 GHz Test Stand
Design
Fabrication
Testing
R&D on Structures
Beam Physics

CLIC Civil Engineering and Services (CES) WG

Mandate :

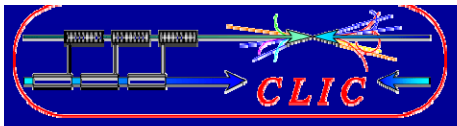
General Objective

-Develop the existing layouts for the project from a civil engineering and technical services point of view, and work with the various actors towards a realistic design for the CDR in 2010.

Specific responsibilities:

-Work will concentrate on the tunnel cross section required to accommodate the machine and it's services (e.g. ventilation, electricity, survey, controls, safety and handling equipment)
-The overall layout for the civil engineering (surface buildings, injectors, turnarounds, return loops and accelerator tunnels) will be studied for the various energy ranges i.e. 500Gev, 1Tev and 3Tev.
-Develop a layout for the interaction region.
-Work together with ILC on areas of synergy. Money available from FP7 for this !
-ILC Dubna meeting 4-6 June
This group will report back to the CLIC Technical Committee.

Regular meetings are planned for once a month on 2nd Wednesday of the month 2:30pm.
First meeting 14 May
Ad-hoc meetings on dedicated subjects eg EL 4 April, CV 29 April….



CLIC Civil Engineering and Services (CES) WG

CES Working Group Representatives :

Civil Engineering and Chairman	**J.Osborne**
CLIC Link Person	**H.Braun**
Cooling and Ventilation CV	**J.Inigo-Golfin / C.Martel**
Electricity EL	**K.Kahle**
Survey SU	**H.Mainaud Durand**
Access Controls, Safety ASE	**T.Pettersson**
Horizontal Handling HE	**K.Kershaw**
Vertical Handling HE	**I.Ruehl**
CE Layouts and cross-sections	**A.Kosmicki / D.Parchet**
SC Link Person	**R.Trant**

CLIC Civil Engineering and Services (CES) :

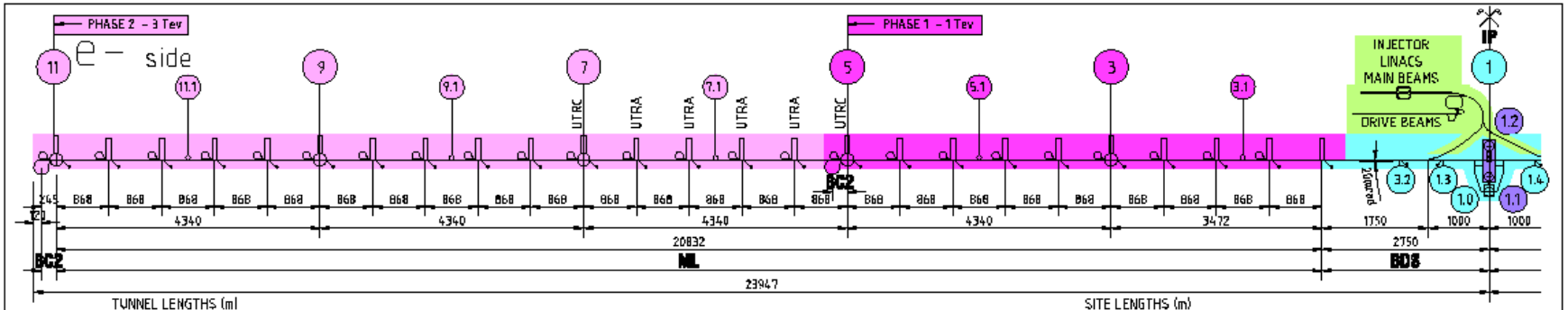
PBS Breakdown Structure :

CE and Services			
	Civil Engineering		
		Underground Facilities	
			Shafts
			Tunnels
			Experimental Area Caverns
			Caverns
			Miscellaneous works
		Surface Structures	
			Assembly Buildings
			Office Buildings
			Service Buildings
			Cryo Buildings
			Workshops
			Site Access Buildings
			Miscellaneous Buildings
		Site Development	
			Off-Site work
			Network of Monuments
			Site Preparation
			Utility Distribution
			Road, Footpaths & Parking Areas
			Landscaping
			Environmental
			Miscellaneous Site Works
	Electricity		
		AC network	
		DC network	
	Access and Communications		
		Access Control Systems	
		Data network	
	Fluids		
		Water cooling	
		Ventilation	
		Cryogenics	
		Gas	
	Handling		
		Horizontal	
		Vertical	
	Safety		
		Radiation Safety	
		Fire Safety	
	Survey		
		Geodesy and Networks	
		Machine Installation and Alignment	

This document will be used for :

- Chapters in CDR
- Costing
- Similar to ILC Breakdown

CLIC – General Layout



TUNNEL LENGTHS (ml)

	main beam turn-around	BC2	e- side ML	BDS	e+ side ML	drive beam accelerator +DL+CR1+CR2+ links	e- e+ injectors + DR +link +booster linac	main + drive beam transfer tunnels	TOTAL
Phase 1	1508	490	7 812	5 500	7 812	2 216 (to be revised)	1 430 (to be revised)	2 516	29 284
Phase 2	1508	490	12 775	-	12 775	-	-	-	27 548
Total	3016	980	20 587	5 500	20 587	2 216	1 430	2 516	56 832

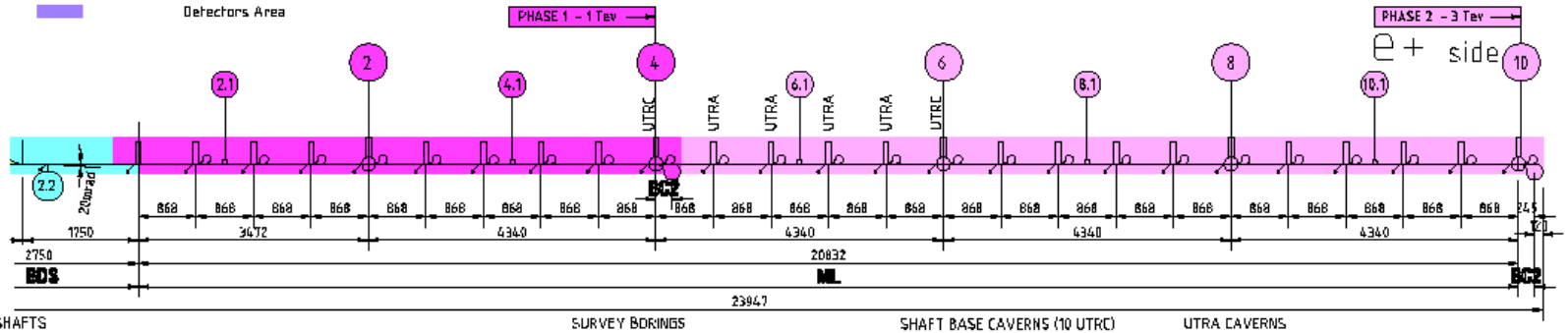
SITE LENGTHS (m)

	main beam turn-around	BC2	e- side ML	BDS	e+ side ML	TOTAL
	240	490	7 812	5 500	7 812	21 854
	240	490	12 655	-	12 655	26 040
	480	980	20 467	5 500	20 467	47 894

Legend : Phase 1 Phase 2
- ML
- Main/Drive beam Injectors
- BDS
- Detectors Area

TUNNELS SECTIONS

Area	beam turn-around	e- e+ sides ML	BDS	main/drive beam transfer tunnels	main/drive beam common transfer tunnel
section dims.	Φ3 m	Φ4.5 m	Φ4.5 m	Φ3.8 m	Φ4.5m



SHAFTS

Point	1.0	1.1	1.2	2	3	4	5	6	7	8	9	10	11
Φm	9	16	16	9	9	9	9	9	9	9	9	9	9

SURVEY BORINGS

Point	2.1, 3.1, 4.1, 5.1	6.1, 7.1, 8.1, 9.1, 10.1, 11.1
Φm	1.50	

SHAFT BASE CAVERNS (10 UTRC)

Point	2, 3, 4, 5	6, 7, 8, 9, 10, 11
(LxWxH) m	49 x 16 x 18 3 storeys	

UTRA CAVERNS

Nombre	20 x	30 x
(LxWxH) m	26 x 9 x 7.2	

DETECTORS HALL + SERVICE HALL

Point	1.1, 1.2	1.0
(LxWxH) m	120 x 25 x 39	40 x 16 x 15

MAIN BEAM DUMP CAVERNS & SERVICE HALLS (↓)

Point	BDS CAVERNS 1.3, 1.4, 2.2, 3.2	BDS SERVICE HALLS 1.3, 1.4, 2.2, 3.2
(LxWxH) m	20 x 8 x 14 + 1 storey	38 x 16 x 10

MUON WALL WIDENINGS

Point	1.3, 1.4
(LxWxH) m	25 x9x7.2 +15x9x7.2

CONNECTION CAVERNS

Point	1.3, 1.4
(LxWxH) m	18 x 9 x 7.2

DRIVE BEAM DUMP CAVERNS (↘)

Nombre	At each UTRAs and UTRCs 20 x	30 x
(LxWxH) m	6 x 9 x 5	

DRIVE BEAM RETURN LOOP

Nombre	18 x	30 x
(LxWxH) m	63 x 2.4 x 3	

INDICE A: 24 DB sectors, 868 m each and 5 DB sectors between 2 shafts

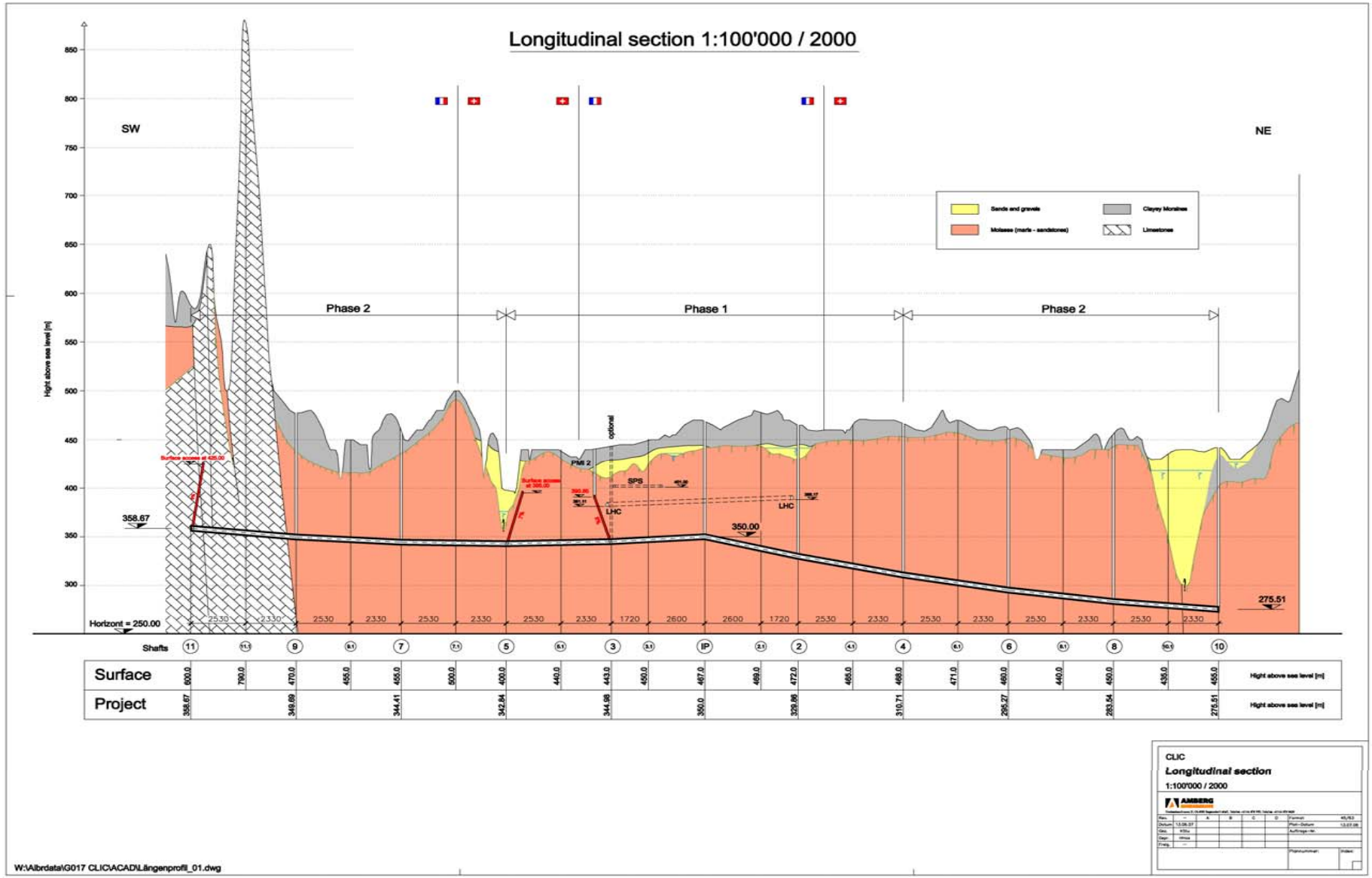
UTR = Underground Technical Room

CLIC - UNDERGROUND STRUCTURES SCHEMATIC LAYOUT(COLOURED BY ZONES)

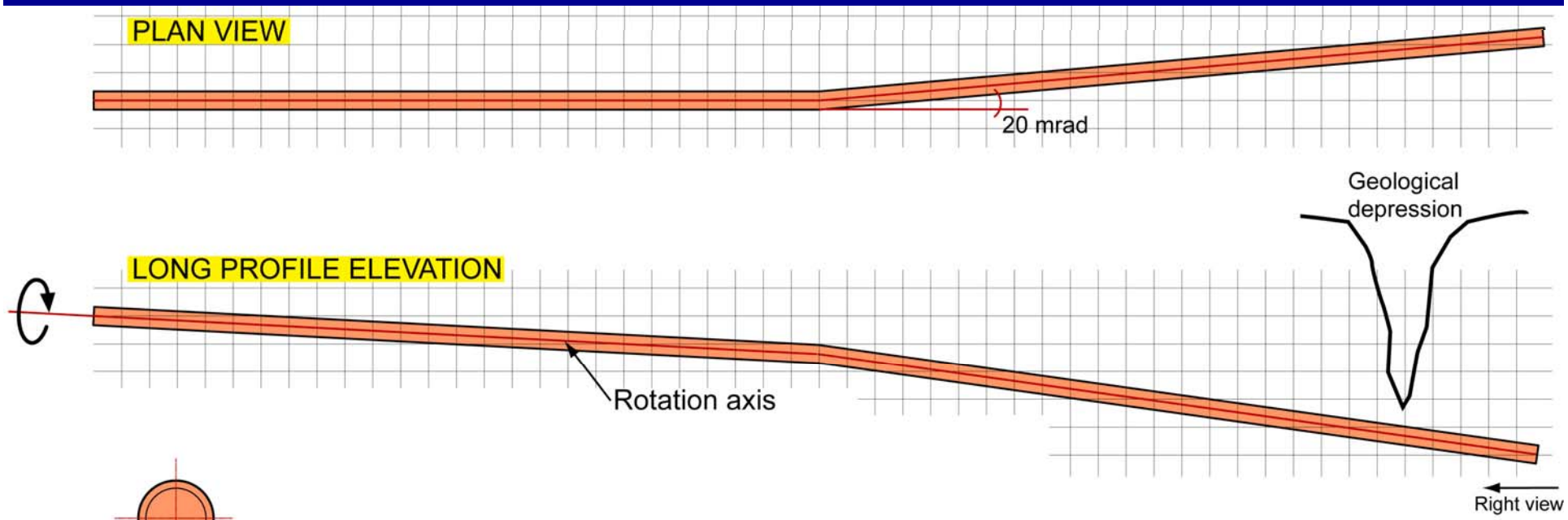
GROUP : TS-CE
CIVIL ENGINEERING
SUPERVISOR : J.OSBORNE
DESIGNER : A.KOSMICKI

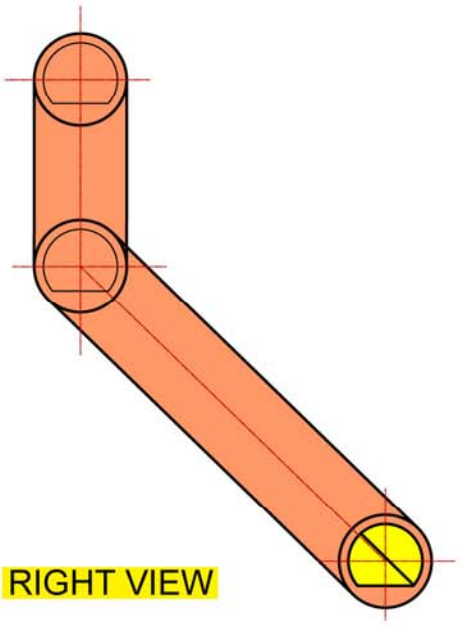
SCALE : 1/62500(A3_FORMAT) DATE : 15_JAN_2008
CLIC.CE-1.1749.0003 SIZE 3 INDICE A

CLIC – Long Profile



CLIC – Laser straight

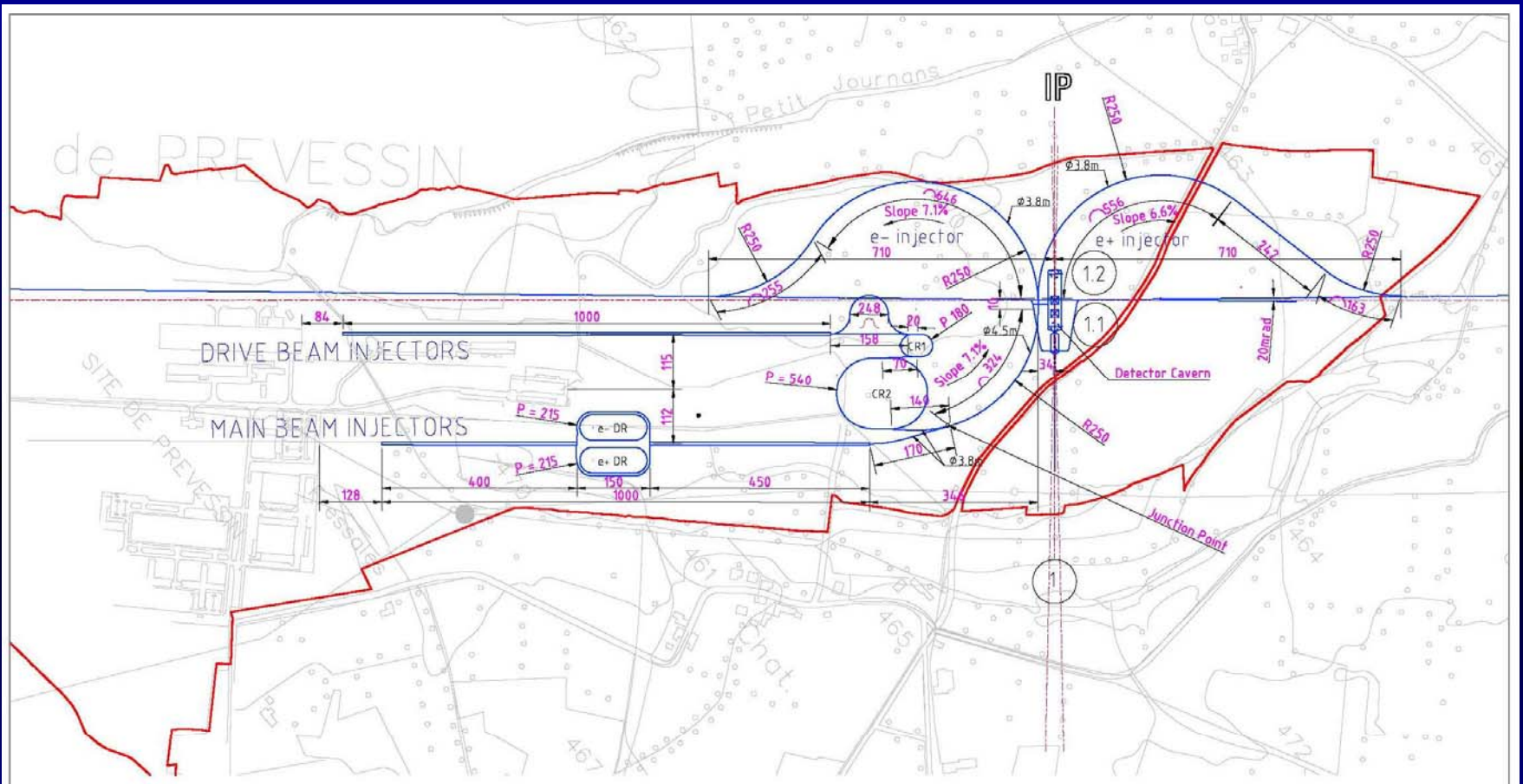




CLIC
HOW THE TUNNEL IS POSITIONNED
AK - 20080219

G:\Departments\TS\Groups\CE\Activities and Services\DO\Kosmicki\etudes\20071109-CLIC\20080218-schema positionnement tunnel

CLIC – Injectors



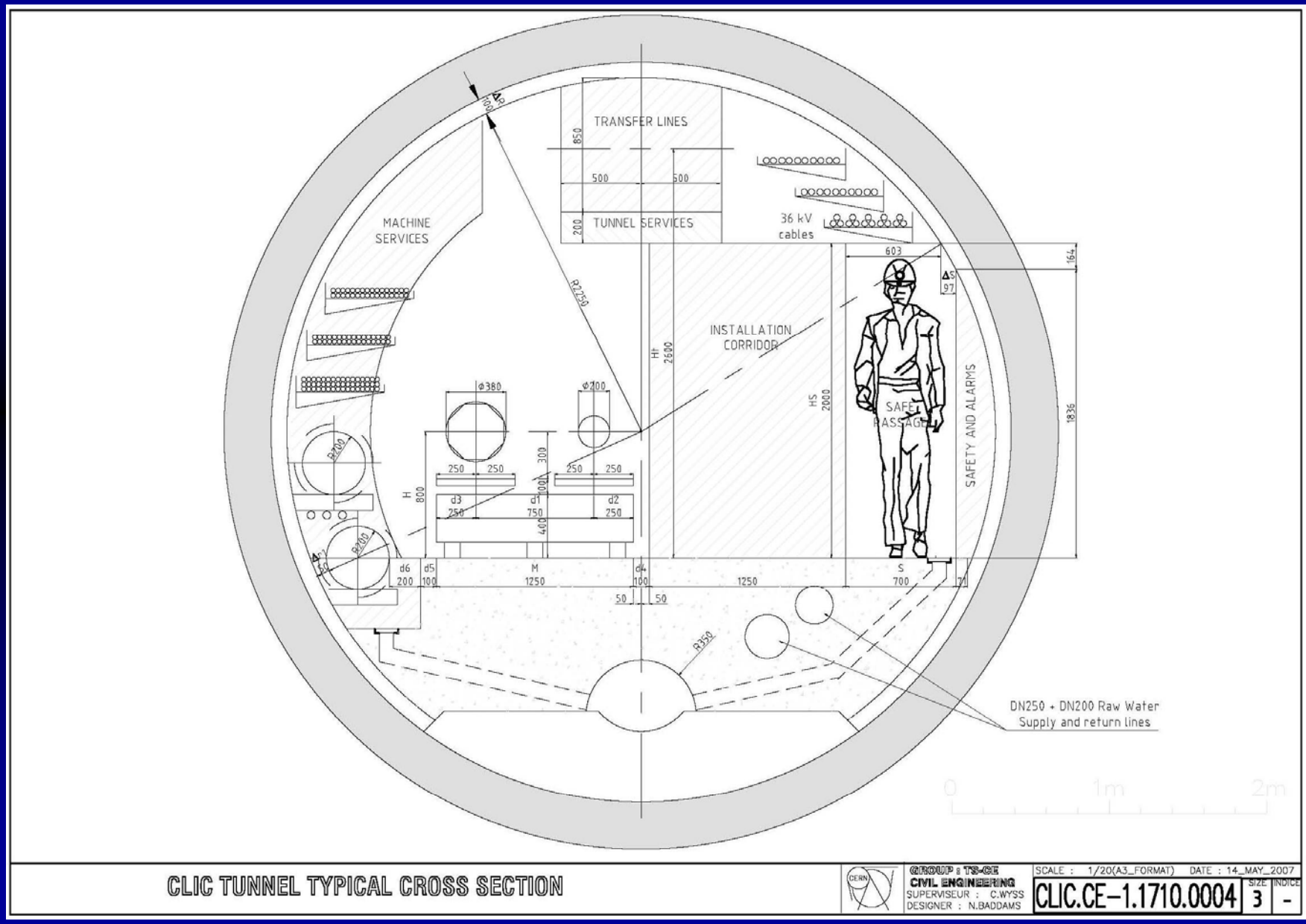
INJECTORS TUNNELS	DRIVE BEAM INJECTORS COMPLEX					MAIN BEAM INJECTORS COMPLEX						COMMON & FINAL TRANSFER TUNNELS (after Junction Point)		
	LINAC	DELAY LOOP	CR 1	CR 2	TT to Junction Point	LINAC 1	e- DR	e+ DR	DR Link	LINAC 2 + BC 1	TT to Junction Point	COMMON	e- TT	e+ TT
Length (l) m	1000	406	180	540	140	400	215	215	150	450	170	334	901	971
Section (l x h) m	6 x 3	4 x 3	4 x3	4 x 3	ϕ 3.8	3 x 3	6 x 3	6 x 3	14 x 3	3 x 3	ϕ 3.8	ϕ 4.5	ϕ 3.8	ϕ 3.8

CLIC- MAIN / DRIVE BEAM INJECTORS AND EXPERIMENTAL AREA LAYOUT

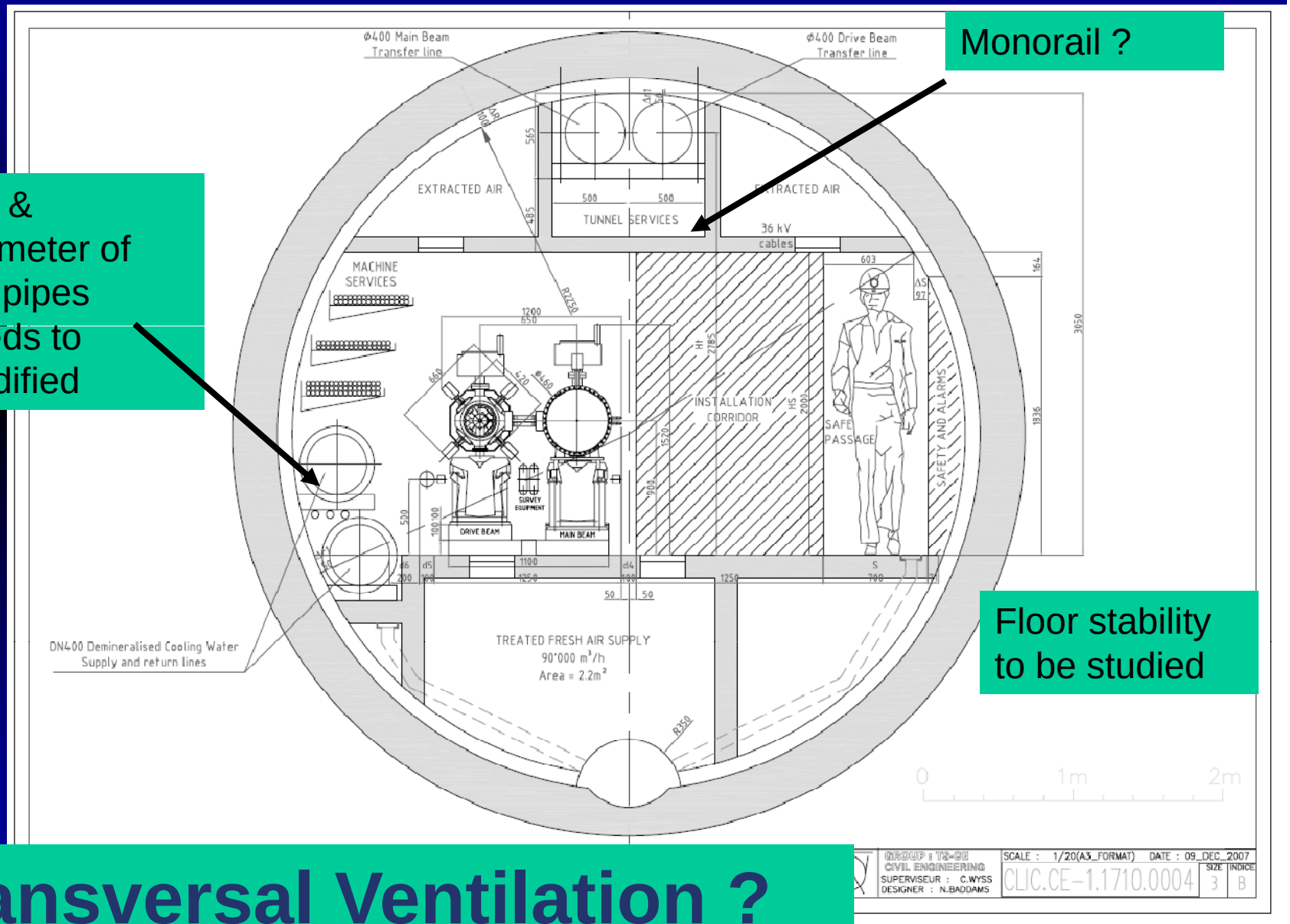
GROUP : TS-CE
CIVIL ENGINEERING
SUPERVISOR : JL.BALDY
DESIGNER : N.BADDAMS

SCALE : 16500(A3_FORMAT) DATE : 12_JUNE_2007
CLIC.CE-1.1799.0002 SIZE 3 INDICE D

CLIC – Typical Cross Section



CLIC – CV issues

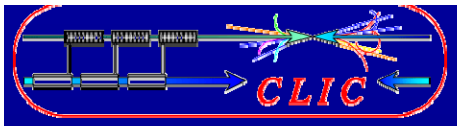


Monorail ?

No. & Diameter of CV pipes needs to modified

Floor stability to be studied

Transversal Ventilation ?



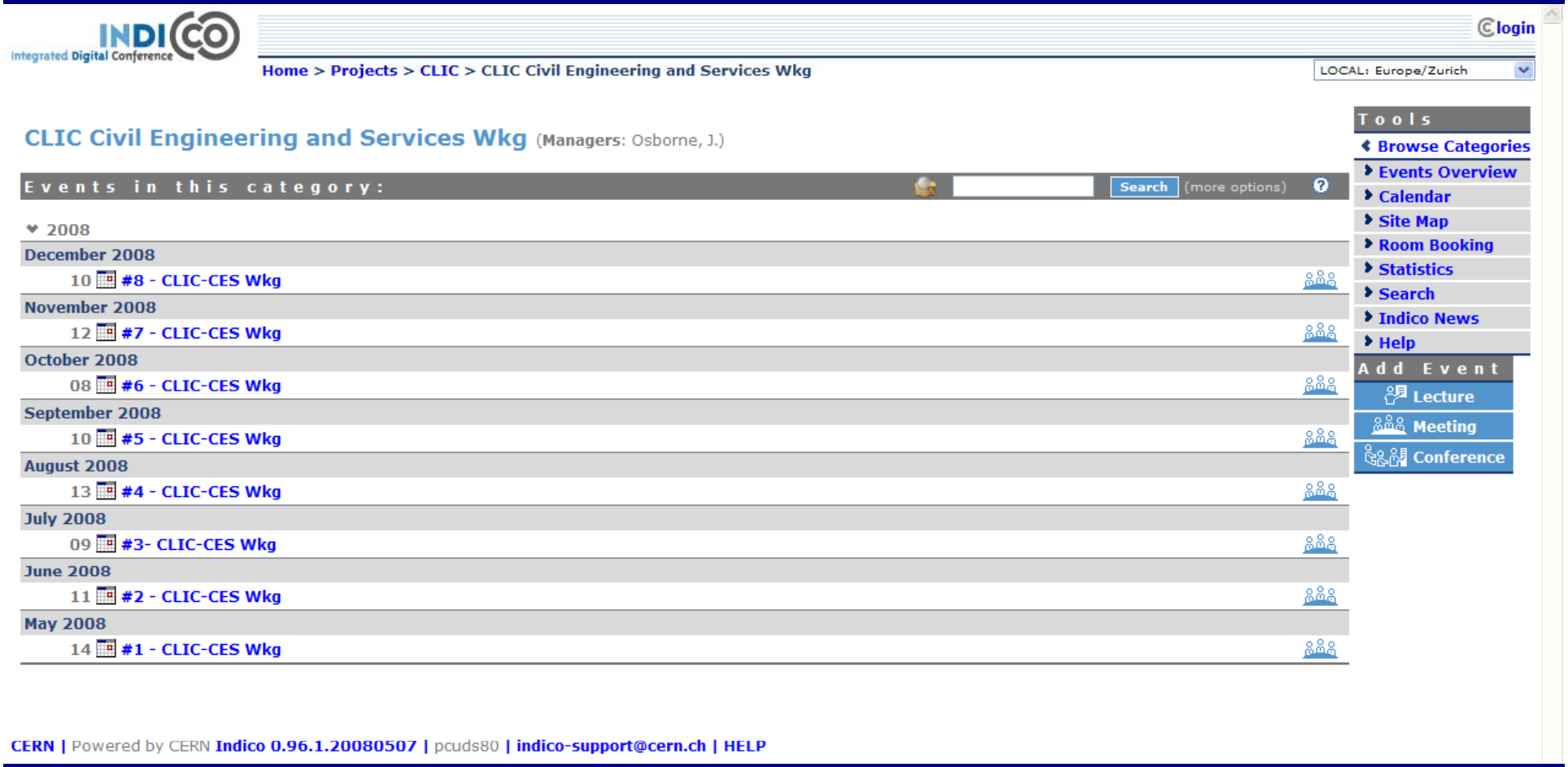
Main goals for 2008

- Develop realistic cross section, including :
  - Updated CV requirements
  - Monorail ?

- Study in detail the turnaround integration, CATIA 3d
- EL to produce ‘conceptual design’ for CLIC
- Study various energy ranges 500GeV, 1TeV & 3 TeV
- NEXT CLIC meeting October

CLIC Civil Engineering and Services (CES) :

2008 Meeting Schedule :



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If any common areas, Webex with ILC ?