

# CLIC PROJECT

## DESIGN WORK FOR THE TECHNICAL INFRASTRUCTURES

**1 – TS CONTRIBUTION**

**2 – MAIN PROBLEMS / CHALLENGES**

**3 – LAYOUTS AND SECTIONS**

**4 – NEXT STEPS**

JL Baldy

TS DAY ON CLIC 5.07.07

# CLIC PROJECT

## DESIGN WORK FOR THE TECHNICAL INFRASTRUCTURES

### 1 – TS CONTRIBUTION (1)

- Preliminary Design phase aiming at establishing feasibility of the project at a “reasonable” cost for 2011.
- 3 chapters are to be developed within TS :
  - Site mapping, design and costing of Civil Engineering and other TS infrastructures (CV, EL, HM, CSE, SU)
  - Design and making of accelerating structures (MME)
  - Alignment of components (SU)
- TS will also contribute to the Time Scheduling of the project
- TS point of contact : Hans Braun and Carlo Wyss for the costing aspects

# CLIC PROJECT

## DESIGN WORK FOR THE TECHNICAL INFRASTRUCTURES

### 1 – TS CONTRIBUTION (2)

- **TS Contribution to the CLIC Project Design in the recent past and the near future :**
  - **Handed over to AB in June :**
    - **The general layouts and longitudinal section**
    - **A set of drawings of main CE underground structures**
    - **A tentative list of surface buildings**
  - **To be handed over to AB by mid September :**
    - **Civil Engineering cost estimates (Surface – Underground – Site development) with the same level of precision as was done for the ILC RDR**
    - **Cost estimates for the other TS systems based on proratas but corrected by related groups at their present best knowledge of solutions likely to be retained**
    - **Specific cost estimates for Survey and Alignment**

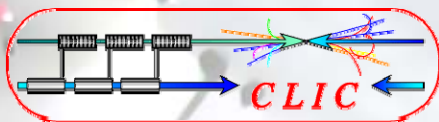


# CLIC PROJECT

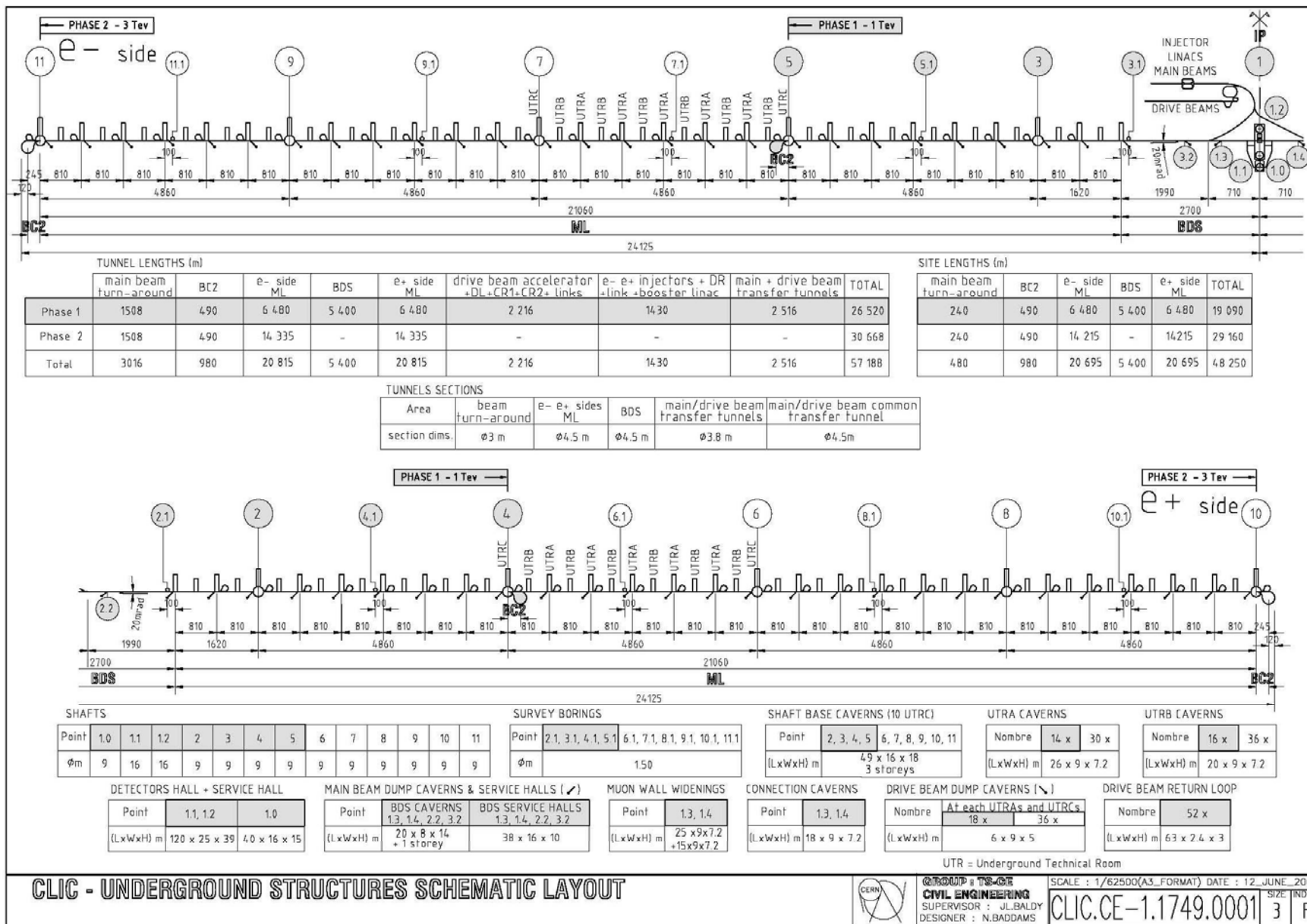
## DESIGN WORK FOR THE TECHNICAL INFRASTRUCTURES

### 2 – MAIN PROBLEMS / CHALLENGES TO BE ADRESSED BY TS (Not exhaustive!)

- Refined setting of the layout (Altitude and plan) taking into account :
  - The geological and hydrological constraints
  - The environments constraints (Both in F and CH, how to mitigate)
  - The cost of the TS infrastructure (Best value for money)
- Decision on the cooling system to be adopted
  - Closed circuit with cooling towers ?
  - Open circuit with water from the lake ?
- Decision and dimensioning of a new 400 KV sub-station
  - Is the RTE line sufficient ?
  - What to be added, what to be replaced ?
  - Basic hypothesis (likely CLIC and LHC-SPS not together)
- Review all safety aspects
- How to align the components of the machine with the required precision ?

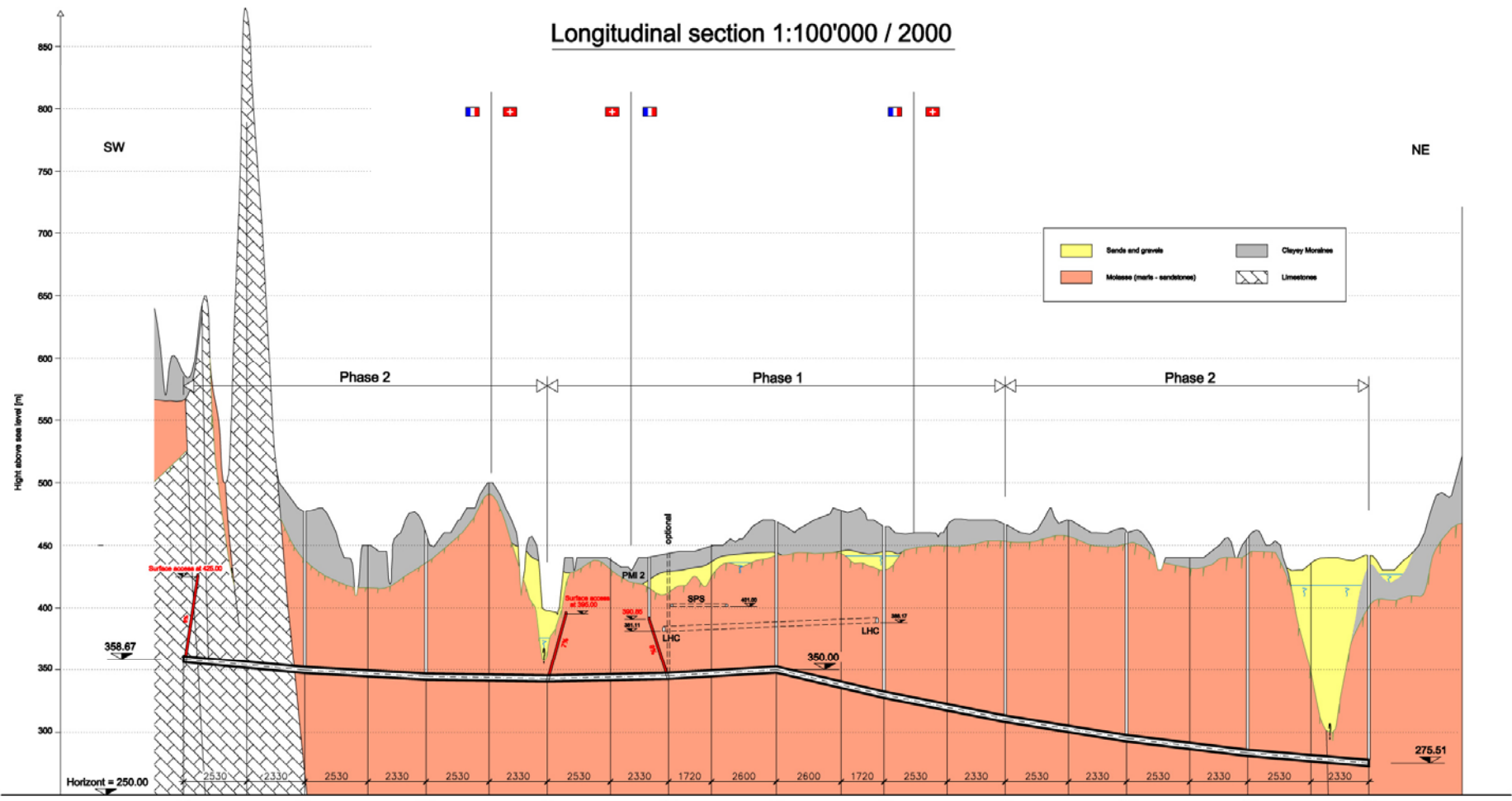


### 3 – LAYOUTS AND SECTIONS



# 3 – LAYOUTS AND SECTIONS

Longitudinal section 1:100'000 / 2000



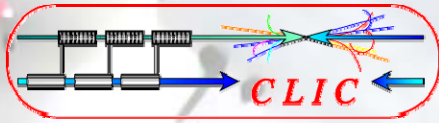
	11	11.3	9	8.1	7	6.1	5	5.1	3	3.1	IP	2.1	2	1.1	4	5.1	6	6.1	8	8.1	10	
Surface	800.0	790.0	470.0	455.0	455.0	500.0	400.0	440.0	443.0	450.0	467.0	469.0	472.0	465.0	468.0	471.0	460.0	440.0	450.0	436.0	455.0	High above sea level [m]
Project	358.67		349.89		344.41		342.54		344.98		350.0		359.86		310.71		295.27		293.54		275.51	High above sea level [m]

CLIC  
Longitudinal section  
1:100'000 / 2000

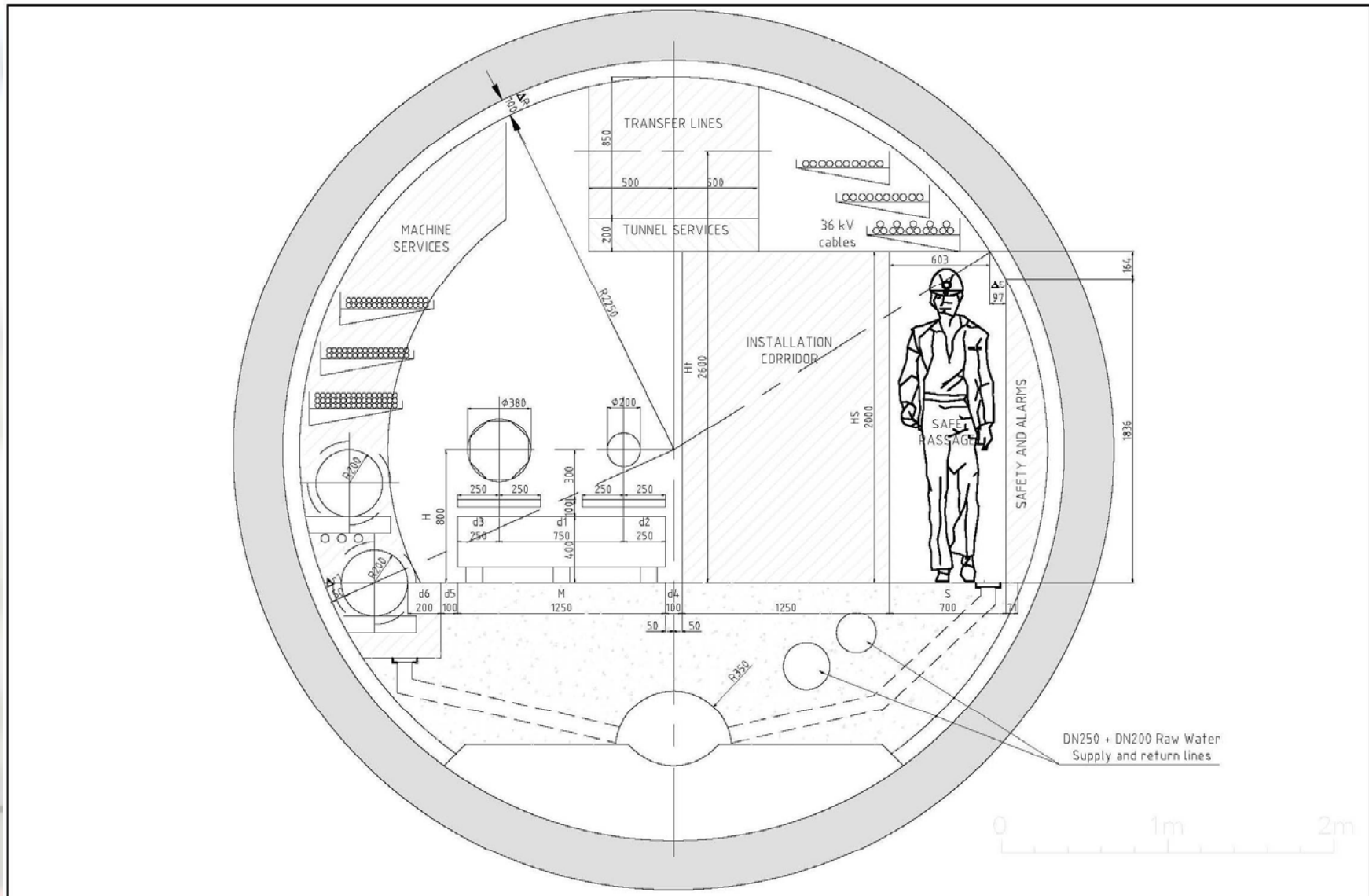
**AMBERG**

Rev.	A	B	C	D	Formul	45/93
Edm.	13.06.07				Plan. Datum	13.07.08
Des.	AM				Auftrag-Nr.	
Gepr.	HWA					
Proj.						

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### 3 – LAYOUTS AND SECTIONS



CLIC TUNNEL TYPICAL CROSS SECTION



GROUP 4 TSP-08  
**CIVIL ENGINEERING**  
 SUPERVISOR : C.WYSS  
 DESIGNER : N.BADDAMS

SCALE : 1/20(A3\_FORMAT) DATE : 14\_MAY\_2007

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# CLIC PROJECT

## DESIGN WORK FOR THE TECHNICAL INFRASTRUCTURES

### 4 – NEXT STEPS (UNTIL 2011) – TS EXCEPT MME

- Take an active part in the feasibility studies in close cooperation with AB
- Discuss, advice and possibly adopt proposed changes
- Investigate (more in depth) environmental and geological aspects
- Propose solution(s) to optimize TS systems (CV + EL challenges + many others)
- Refine costs of all TS systems (from pro-rata to actual)
- Pursue R+D within SU Group aiming at selection of equipment and methods