A New Substation For B513

Site Committee
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Background

- B513 built in early 1970's for mainframe era.
- Refresh needed prior to LHC:
  - Replace infrastructure before, not during LHC operation
  - Improve reliability for distributed computing
  - Meet space and power needs of LHC computing
- Initial Review in 2000 resulted in 3 step program:
  - Add space to meet LHC requirements and house equipment during Machine Room refurbishment
    - » Planned in 2001; now being implemented
  - Upgrade electrical and air conditioning infrastructure
    - » Planning phase now
  - Refurbish existing Machine Room

Renewal of Electricity Supply

- Include B513 in the sitewide 18kV loop.
  - To improve operational reliability.
- Replace today's single UPS by
  - A "Physics" UPS to cover the full load for short interruptions, and
  - A "Critical Services" UPS to maintain essential services only (e.g. networking and desktop computing infrastructure) in the event of a serious failure.
- Replace ageing low voltage switchgear

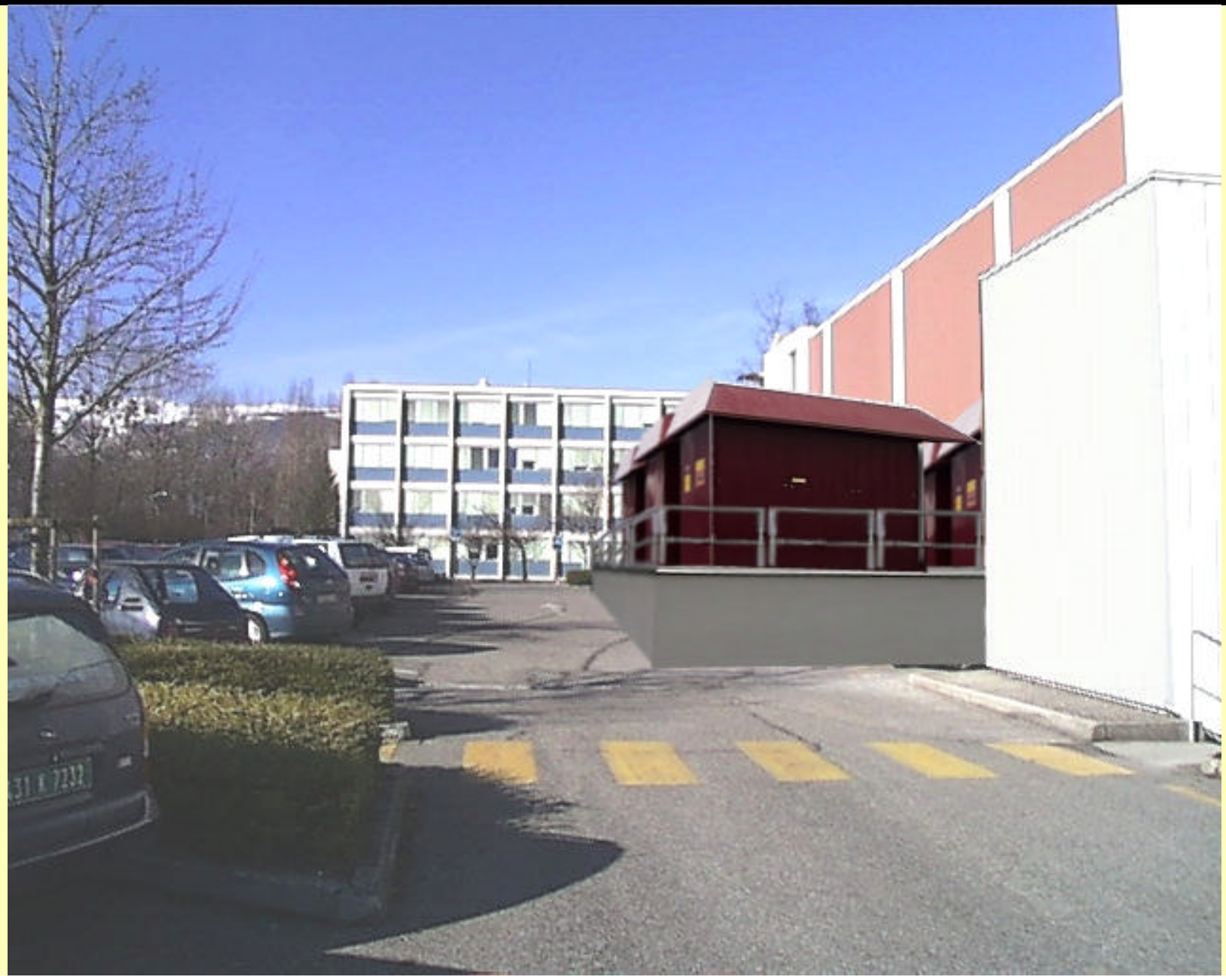
Substation Requirements

- Total space requirements estimated at 380m^2. 180m^2 of space in B513 can be reused leaving a requirement for 200m^2 of additional space.
- A number of options for providing this additional space have been considered. These include
  - Reuse of existing technical areas in the B513 basement
  - Reuse of the “archive store” (R-053) in B513
  - Various sites around B513 near to existing transformers
  - On the B513 roof.
- The favoured location in terms of logistics, cost and safety is a “bunker” on the Restaurant 2 side of B513.

View from B31 Today

View from B31 with Substation

Looking Towards B31



Summary of Impact on B513 area

- Visual impact
  - The substation is large, but the visual impact is not unreasonable when seen from B31.
- Road Traffic and Parking
  - The 10mx20m footprint leads to the suppression of 7 parking spaces. Access to loading doors is preserved.
  - The bunker extends into the lane for Jura bound traffic, but adequate width is still available. Additionally, the central parking spaces could be moved towards Restaurant 2, evening the widths of the two lanes.
- Office Space and Safety
  - 3 offices in the B513 Barn would have to be suppressed. However, these offices do not meet health and safety standards and are anyway being reallocated to equipment.
  - As elsewhere at CERN, “dry” transformers are used with a much reduced fire risk.

Proposal

- We propose to undertake an in-depth study of the substation in this location.
- This study will take 4-6 months, and include external consultancy for the civil engineering at a cost of ~40kCHF.
  - The time and costs are in line with those for the design and study for B613 (which is of a similar area).
- Once these studies are complete we will present the final project to the Site Committee prior to the construction phase.