



ECR on surface technical galleries at Point 1 and Point 5

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On behalf of WP17 and WP15

HL-LHC TCC, 17 January 2019

EDMS NO.
2028260REV.
0.5VALIDITY
DRAFT

REFERENCE : LHC-K-EC-0022

HL – LHC Engineering Change Request MODIFICATION OF THE TECHNICAL GALLERIES AND BUILDING INTERFACES AT HL POINT 1

ECR DESCRIPTION

WP Originator	WP15	Process	Engineering, Integration
Equipment	SF17, SHM17, SU17, SE17, SD17, SL105, SL106, SL17	Baseline affected	Cost
Drawing	All concerning the above buildings in EDMS 1806989 V1.1 and related folders	Date of Issue	2018-12-12
Document	in EDMS 1806989 V1.1 and related folders of detailed drawings	CI responsible	P. Fessia
WPs Affected	WP9, WP17.2, WP17.3	Reference Document	TDR Version 0.1 Layout EDMS 1806989 V1.1

Detailed Description

As consequence of the integration studies several changes have been identified and analyzed on the SMR id 10 EDMS [1864762](#) to guarantee a satisfactory installation of the services of WP17.2, WP17.3, WP9
Those changes were accepted by WP17 WPL and WP 15 WPL on 2018-12-12.

EDMS NO.
2028259REV.
0.5VALIDITY
DRAFT

REFERENCE : LHC-K-EC-0021

HL – LHC Engineering Change Request MODIFICATION OF THE TECHNICAL GALLERIES AND BUILDING INTERFACES AT HL POINT 5

ECR DESCRIPTION

WP Originator	WP15	Process	Engineering, Integration
Equipment	SF57, SHM57, SU57, SE57, SD57, SL505, SL506, SL57	Baseline affected	Cost
Drawing	All concerning the above buildings in EDMS 1807193 V1.1 and related folders	Date of Issue	2018-12-12
Document	in EDMS 1807193 V1.1 and related folders of detailed drawings	CI responsible	P. Fessia
WPs Affected	WP9, WP17.2, WP17.3	Reference Document	TDR Version 0.1 Layout EDMS 1807193 V1.1

Detailed Description

As consequence of the integration studies several changes have been identified and analyzed on the SMR id 9 EDMS [1864761](#) to guarantee a satisfactory installation of the services of WP17.2, WP17.3, WP9
Those changes were accepted by WP17 WPL and WP 15 WPL on 2018-12-12.



Context

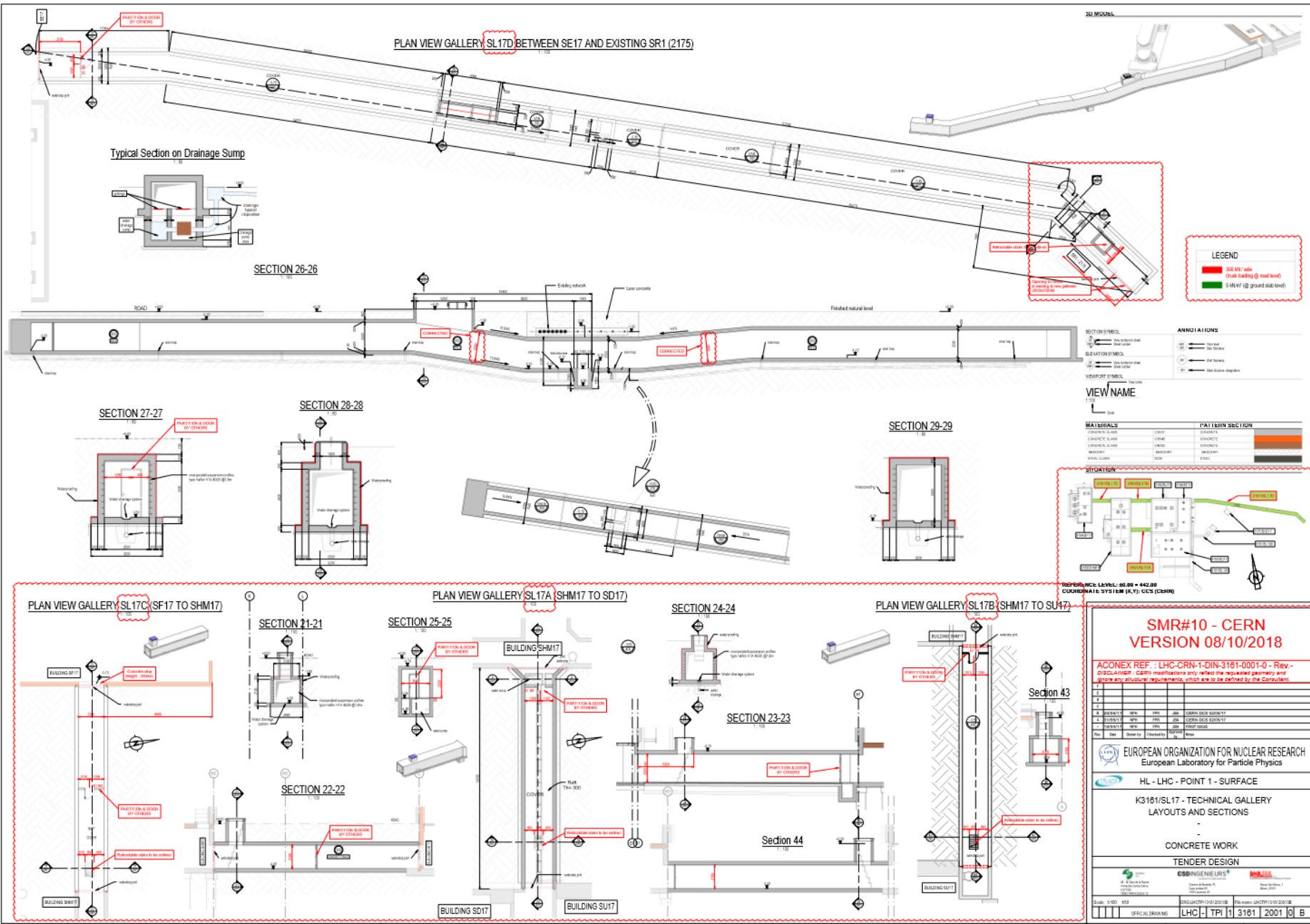
- With respect to the CE tendering specifications, iterations on the integration of services and infrastructures has requested modifications in the design of the surface technical galleries and their interfaces with the buildings.
- SMRs (Space Modification Requests) have been issued to define new requests.
- This iteration process has impact on:
 - The civil engineering design (Consultant contracts)
 - The construction works (BoQ) (Main Contractor contracts)

Point 1 before SMR process

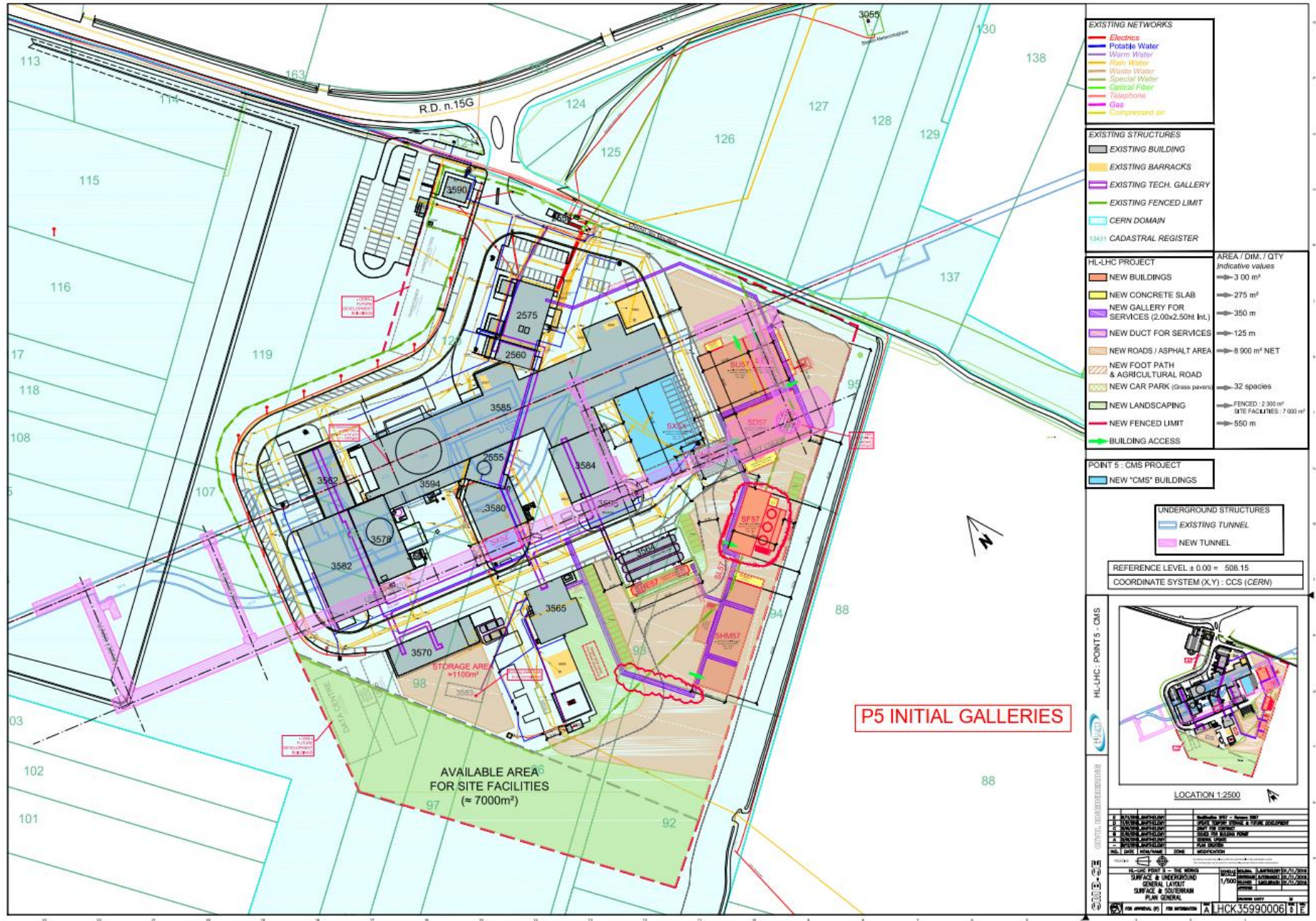


[illegible]

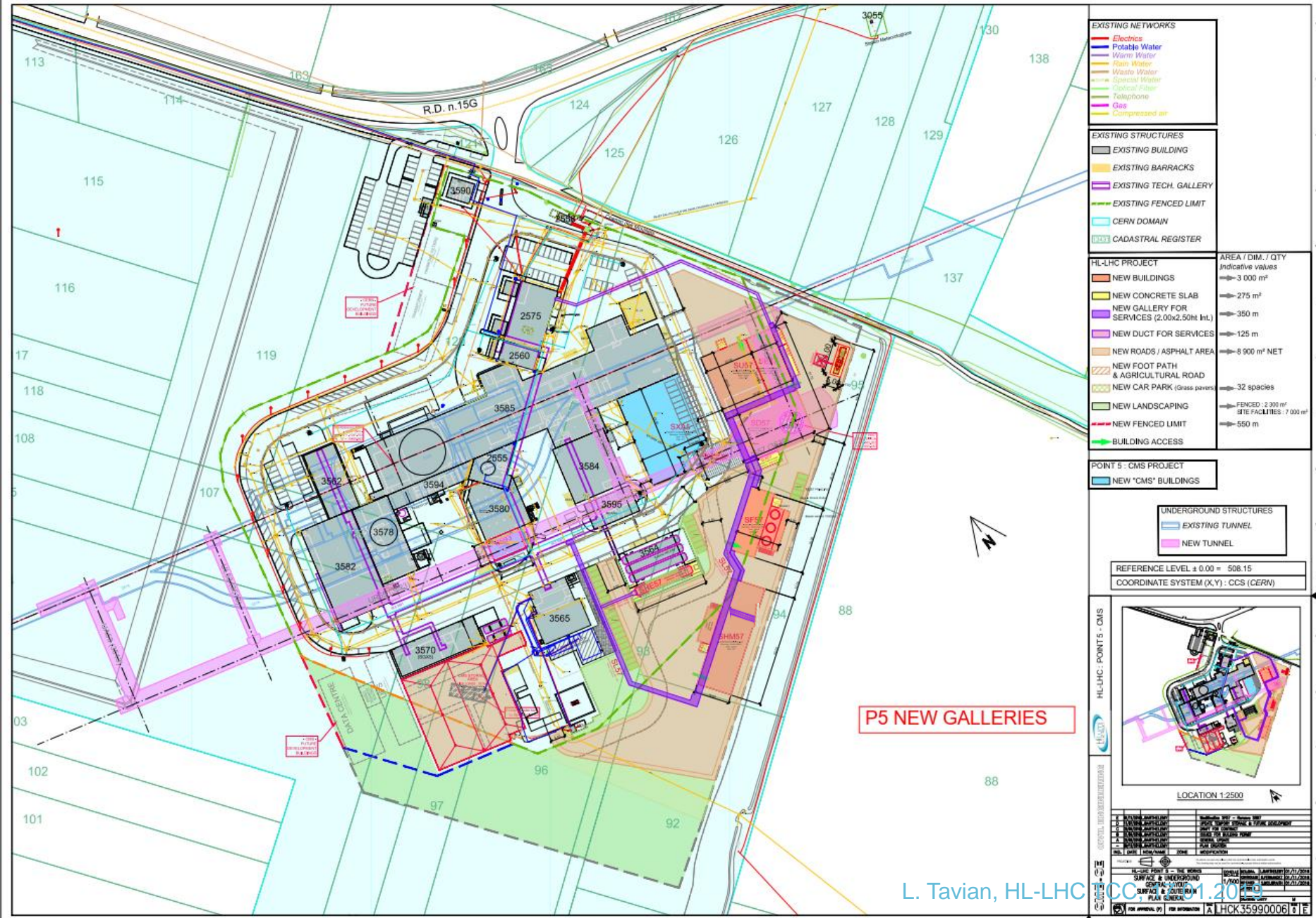
Point 1 after SMR process



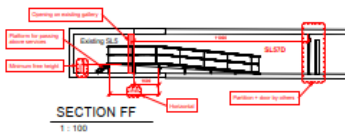
Point 5 before SMR process



Point 5 after SMR process

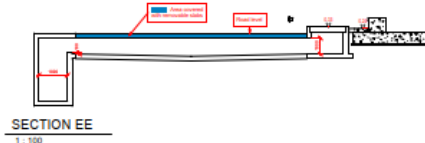


Point 5 after SMR process











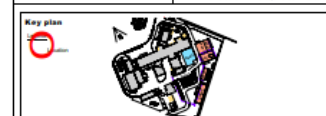
SMR#09 CERN
VERSION 12/11/2018

ACONEX REF. : LHC-CRN-1-DIN-3561-0001-0 - Rev.0
DISCLAIMER : CERN modifications only reflect the requested geometry and
ignore any structural requirements, which are to be defined by the Consultant.



DRAINAGE NETWORK TO BE DEFINED BY CONSULTANT AND CONNECTED TO SURFACE NETWORK ACCORDING WITH NEW LAYOUT OF GALLERIES AND DUCTS.

LEGEND	
MATERIALS	DESIGN ASSUMPTIONS
 Reinforced concrete wall  Reinforced concrete beam  Impacted support structural member  Reinforced concrete columns or walls  Buried structure	<ul style="list-style-type: none"> Reinforced concrete Reinforcing steel: galvanized reinforcement rebar Concrete: 4000 psi compressive strength Steel: A36 Soil: 100 lb/ft³ (15.7 kN/m³) Fill: 120 lb/ft³ (18.8 kN/m³) with 4% CA Fill: no moisture retention specific instructions
 Type 1 Concrete Slab  Type 2 Concrete Slab  Circular structure The thickness is noted	<h3>FINISHES</h3> <ul style="list-style-type: none"> (According to walling specifications notes) Plaster: 1/2" (12.7 mm) Plaster: 1/4" (6.35 mm) Plaster: 1/8" (3.18 mm) Plaster: 1/16" (1.59 mm) Plaster: 1/32" (0.79 mm) Plaster: 1/64" (0.39 mm) Plaster: 1/128" (0.19 mm) Plaster: 1/256" (0.09 mm) Plaster: 1/512" (0.04 mm) Plaster: 1/1024" (0.02 mm) Plaster: 1/2048" (0.01 mm) Plaster: 1/4096" (0.005 mm) Plaster: 1/8192" (0.0025 mm) Plaster: 1/16384" (0.00125 mm) Plaster: 1/32768" (0.000625 mm) Plaster: 1/65536" (0.0003125 mm) Plaster: 1/131072" (0.00015625 mm) Plaster: 1/262144" (0.000078125 mm) Plaster: 1/524288" (0.0000390625 mm) Plaster: 1/1048576" (0.00001953125 mm) Plaster: 1/2097152" (0.000009765625 mm) Plaster: 1/4194304" (0.0000048828125 mm) Plaster: 1/8388608" (0.00000244140625 mm) Plaster: 1/16777216" (0.000001220703125 mm) Plaster: 1/33554432" (0.0000006103515625 mm) Plaster: 1/67108864" (0.00000030517578125 mm) Plaster: 1/134217728" (0.000000152587890625 mm) Plaster: 1/268435456" (0.0000000762939453125 mm) Plaster: 1/536870912" (0.00000003814697265625 mm) Plaster: 1/1073741824" (0.000000019073486328125 mm) Plaster: 1/2147483648" (0.0000000095367431640625 mm) Plaster: 1/4294967296" (0.00000000476837158203125 mm) Plaster: 1/8589934592" (0.000000002384185791015625 mm) Plaster: 1/17179869184" (0.0000000011920928955078125 mm) Plaster: 1/34359738368" (0.00000000059604644775390625 mm) Plaster: 1/68719476736" (0.000000000298023223876953125 mm) Plaster: 1/137438953472" (0.0000000001490116119384765625 mm) Plaster: 1/274877906944" (0.00000000007450580596923828125 mm) Plaster: 1/549755813888" (0.000000000037252902984619140625 mm) Plaster: 1/1099511627776" (0.0000000000186264514923095703125 mm) Plaster: 1/2199023255552" (0.00000000000931322574615478515625 mm) Plaster: 1/4398046511104" (0.000000000004656612873077392578125 mm) Plaster: 1/8796093022208" (0.0000000000023283064365386962890625 mm) Plaster: 1/17592186044416" (0.00000000000116415321826934814453125 mm) Plaster: 1/35184372088832" (0.000000000000582076609134674072265625 mm) Plaster: 1/70368744177664" (0.0000000000002910383045673370361328125 mm) Plaster: 1/140737488355328" (0.00000000000014551915228366851806640625 mm) Plaster: 1/281474976710656" (0.000000000000072759576141834259033203125 mm) Plaster: 1/562949953421312" (0.0000000000000363797880709171295166015625 mm) Plaster: 1/1125899906842624" (0.00000000000001818989403545856475830078125 mm) Plaster: 1/2251799813685248" (0.000000000000009094947017729282379150390625 mm) Plaster: 1/4503599627370496" (0.0000000000000045474735088646411895751953125 mm) Plaster: 1/9007199254740992" (0.00000000000000227373675443232059478759765625 mm) Plaster: 1/18014398509481984" (0.000000000000001136868377216160297393798828125 mm) Plaster: 1/36028797018963968" (0.0000000000000005684341886080801486968994140625 mm) Plaster: 1/72057594037927936" (0.00000000000000028421709430404007434844970703125 mm) Plaster: 1/144115188075855872" (0.000000000000000142108547152020037174224853515625 mm) Plaster: 1/288230376151711744" (0.0000000000000000710542735760100185871124267578125 mm) Plaster: 1/576460752303423488" (0.00000000000000003552713678800500929355621337890625 mm) Plaster: 1/1152921504606846976" (0.000000000000000017763568394002500646778106689453125 mm) Plaster: 1/2305843009213693952" (0.0000000000000000088817841970012500323889533447265625 mm) Plaster: 1/4611686018427387904" (0.00000000000000000444089209850062501619447667236328125 mm) Plaster: 1/9223372036854775808" (0.000000000000000002220446049250312508097238336181640625 mm) Plaster: 1/18446744073709551616" (0.0000000000000000011102230246251562540486191680908203125 mm) Plaster: 1/36893488147419103232" (0.00000000000000000055511151231257812520240958404541015625 mm) Plaster: 1/73786976294838206464" (0.000000000000000000277555756156289062510120472022705078125 mm) Plaster: 1



P					
R					
G					
C					
B					
A					
D					

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH
European Laboratory for Particle Physics

K3561 / SL57 / Technical gallery & ducts
SL57 General

Impacts

- Impact on HL performance → no impact (big impact if we do not apply the changes, as the integration of all services was not possible).
- Impact on schedule → no impact (not anymore the case for further requests)
- Impact on cost (Scope +)
 - P1 design: 46 kCHF
 - P5 design: 50 kCHF
 - P1 construction: 401 kCHF
 - P5 construction: 247 kCHF
 - Total: 744 kCHF



Thank you !