

Case	Application	Limit values for concrete composition according to SIA 262.051 (EN-206) 2021 edition (Table NA.6) or other recommendations						What other parameters or data on the concrete composition should still be determined? If so, what steps would be needed to do this?
		Cement type	Cement Dosage (kg/m ³)	W/C (W/C _{eq})	Water dosage (L/m ³)	D _{max} (mm)	Minimum fines content (kg/m ³)	
1	Administrative building slab (prestressed concrete, thickness 0.25 m, concrete placed by crane)	CEM II/B-M (T-LL) 42.5 N or CEM II/A-LL 42,5 N	a) >280 b) >300	< 0.65 < 0.50	<182 <150	32 32	> 350	a) superplasticizer not required for exposure class XC1, but shrinkage and risk of cracking under restraint are high because W/C =0.65 is high b) for a concrete with moderate shrinkage → enforce expos. Class XC4 (virtual here) – imposes W/C≤0.5 – Sort C → Superplasticizer required*.
2	Covered trench road (L=1.5 km) walls and top slab in reinforced concrete pumped concrete, elements thickness of 0.50 to 1 m. Switzerland, alt. 700 m. Surveys indicate the presence of sulfated water in the soil, measured sulfates content = 1'150 mg/L	CEM I 42.5 N HS (old terminology) SR0 or SR3 (new terminology) or CEM III/B 32.5 N SR (HS: old terminology)	> 320 (probably 350 to 375 required depending on needed workability and fines in aggregates *)	< 0.45	<144	32	> 350 + (30 à 50 for pumping) → > 380 to 400	<i>Variant possible without air entrainer</i> Superplasticizer admixture: dosage to be determined on the basis of preliminary tests*. Preliminary tests essential (to check performance required) <u>NB</u> : SCC variant possible (casting everything at once) with limited number of concreting steps and no more issues of restrained thermal shrinkage between concreting steps.

* For any concrete with high and/or special performance requirements, it is essential to carry out preliminary tests in order to define more precisely and optimize the mix-design, depending on the quality of the aggregates available, and to ensure that all requirements are met (on fresh concrete and on hardened concrete). **Note that there are always several possible responses to the composition of a specified concrete.**