rules of thumb for selecting a structural system

from: *the architect's studio companion*

DESIGN CRITERIA & *RATIONALE*	light-frame timber	heavy-frame timber	masonry bearing wall [stone, brick]	steel frame [hinge connections]	steel frame [rigid connections]	steel open web joists	steel **space** frame [slow erection time]	steel decking	site-cast concrete: **One**-way **slab**	site-cast concrete: **Two**-way **plate**	site-cast concrete: **Two**-way **slab**	site-cast concrete: **One**-way **joists**	site-cast concrete: WAFFLE slab	PRE-cast concrete: solid slab	PRE-cast concrete: hollow-core slab	PRE-cast concrete: single-tee	PRE-cast concrete: double-tee
exposed fire resistant construction *inherently fire resistant (no steel, no dimensional lumber)*		●	●						●	●	●	●	●	●	●	●	●
irregular building form *simple, site-fabricated systems*	●		●						●	●	●						
irregular column placement *systems without beams in roofs or floors*										●	●		●				
minimize floor thickness *pre-cast concrete systems without ribs*									●	●				●	●		
allow for future renovations *short-span, one-way, easily modified*	●	●	●	●	●	●	●	●	●			●		●	●		
permit construction in poor weather *quickly erected, avoid site-cast concrete or masonry*	●	●		●	●	●	●	●						●	●	●	●
minimize off-site fabrication time *easily formed or built on site; avoid steel, pre-cast or heavy timber*	●		●						●	●	●	●	●				
minimize on-site erection time *highly pre-fabricated; MODULAR components; no steel space frame, no lite timber* — *no masonry*		●		●	●	●		●						●	●	●	●
minimize low-rise construction time *lightweight, easily formed or prefabricated; NO concrete*	●	●		●	●	●		●									
minimize medium-rise construction time *pre-cast, site-cast concrete; steel frames*				●	●	●		●	●	●	●	●	●	●	●	●	●
minimize high-rise construction time *strong; prefabricated; lightweight; STEEL*				●	●	●		●									
minimize shear walls or diagonal bracing *capable of forming RIGID joints*			●		●				●	●	●	●	●				
minimize dead loads on foundations *lightweight, short-span systems (steel & timber)*	●	●		●	●	●	●	●									
minimize damage due to foundation settlement *systems WITHOUT rigid joints*	●	●		●		●		●						●	●	●	●
minimize number of separate trades on job *multipurpose components (simple wood frame; masonry)*	●		●														
provide concealed space for mechanical services *systems that inherently provide voids*	●					●	●								●		
minimize the number of supports *two-way, long span systems*							●										
long spans *long span systems*						●	●									●	