ARCHITECTURE

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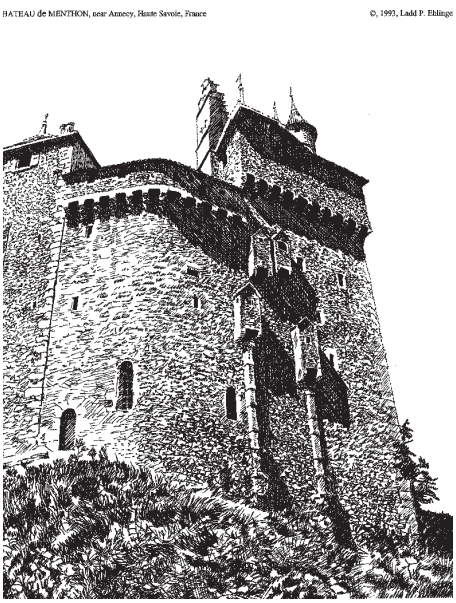

CHATEAU de MENTHON

The present Chateau de Menthon, the subject of this issue's limited edition signed print by Ladd P. Ehlinger, dates from the 1100's. It covers over all evidence of probable earlier wooden structures on this site that guards the road from Geneva to Italy. The site is a high promontory of rock seven miles from Annecy, France, giving a natural defense to the Chateau so that no moat was required for protection.

Menthon means "on the rock" and is derived from a pre-Celtic word for the use of the site. The de Menthon family has continuously occupied the Chateau since they first built it. Each generation of the family has altered or added to the chateau. The de Menthon family was very wealthy by 1190 with lands extending to Geneva. The "tax" extracted from travelers to and from Italy was the foundation of their wealth. They played an important part in the politics of the area of Geneva, in France and in Italy. The Chateau escaped destruction during the French revolution as the de Menthons were allied at that time with the Kingdom of Sardinia.

The massive towers date from the middle ages, and they were connected in the 1500's with more comfortable living quarters when the need for a fortress was less important. The turrets date from the 1850's when René de Menthon, a poet and a dreamer, added them. The turrets give the Chateau its fairy tale appearance, and probably served as a model for Disney in creating the "Magic Kingdom".

The view in the sketch is of the weapons tower and projecting from its walls are gardrobes. These are toilets with enclosed chutes designed such that they are unclimbable by any potential enemy. The machiolations at the top most levels, which project the highest most portions of the tower out from the wall below, allow stones to be dropped on the enemy from trapdoors in the floor.

The interiors of the Chateau have been well preserved and maintained over the years. The chapel, salon, library, master bedroom and kitchen are extraordinary in their appointments and furnishings of antiques.

St. Bernard, the patron saint of travelers, was born in the Chateau in 1008. According to legend, he jumped from a window in the Chateau the night before he was to be married, escaping to become a deacon in Aosta, Italy. St. Bernard eliminated bandits from the mountain passes, built hospices for safe shelter of travelers, and founded the Order now known as the Canons of Grand St. Bernard in Valais. The Canons bred the now famous St. Bernard dogs to assist them in carrying out the Saints work in the mountain passes in the Alps between France and Italy.

THE ADA

The ADA, (the Americans with Disabilities Act not the *Attorney Deployment Act),* affects all of us in one way or another. This Federal law is an addition to the Civil Rights Act, and makes it unlawful to discriminate against persons with disabilities in employment, housing, transportation, and in access to public buildings and buildings open to the public, including places of business. Churches are exempt.

In the case of existing buildings, the ADA accessibility requirements are vague in the sense that the law prescribes that a building owner shall make his existing building accessible if it is *readily achievable.* Readily achievable is defined in the law as a varying standard, a Standard that changes with the circumstances of the owner of the building. One owner of a building may not be able to readily achieve accessibility in his building because his economic circumstances prohibit the expense of the alterations, whereas an owner of an identical building may be able to readily achieve the alterations because of differing financial capability.

The ADA does define a minimum of accessibility though, and does set standards of accessibility in the sense of goals if they are not readily achievable now, perhaps in the future they will be.

Some of the ADA requirements have been incorporated into building codes already, and have influenced building codes such that components of new buildings will have to be larger in the future to accommodate the disabled. For instance, a minimum width stair used to be 44 inches wide, with the handrails (Y wide each) allowed to encroach into the 44 inch dimension. Now, a minimum stair, if it is to serve the disabled as well, has to be 48 inches wide between handrails, or a total of 54 inches wide an increase of 10 inches in total width.

Similarly, hallways have to be widened to allow wheelchair access to open and close doors. If the building is not sprinkled in certain occupancies of certain populations, zones of refuge for wheelchairs have to be provided in proportion to the total building population with direct access to or directly in the exit stairs. Every entrance to the building should be accessible, not just one. In large assembly type buildings, such as auditoriums and stadia, seating for the

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disabled has to be dispersed throughout the facility so that the disabled have a choice in type of seating location. All of this will add significant square footage to new building construction.

Failure to comply with the ADA with regard to accessibility may result in litigation between the owner of the business and the disabled person and possibly also the U.S. Justice Department, and may result in civil fines, penalties, damages to the disabled plaintiff and the requirement and expense to alter the building as well.

NEW DEVELOPMENTS IN BUILTUP ROOFS

Builtup roofs (BUR) are continuing to evolve as a component for commercial and institutional buildings. Flat roofs as the layman calls them, are changing with the changes experienced in other building technologies, sometimes not for the better.

One type that has changed not for the better is coal tar pitch fiberglass felt BURs. Coal tar pitch is the residue that results when coal is heated in an airless environment in the manufacture of coke or carbon used in the manufacture of steel. Traditionally, coal tar pitch BURs were valued for their self healing qualities. When the sun shone, the coal tar bitumen softened and liquefied, healing any punctures in the membrane, even in relatively cool weather. Low slopes to dead flat configurations of the roof deck were used, along with a gravel surfacing to retard the coal tar bitumen flow as it could run off the roof. The only weakness of the coal tar BUR was the felts themselves. The felts were typically organic felts, that is they were sheets of paper that had been saturated with the coal tar bitumen. If wetted by dew or rainfall during the application of the coal tar BUR, the entrapped moisture would vaporize during the application of the flood coat of coal tar bitumen just prior to the application of the gravel, or it would vaporize when warmed by the sun. In either case, the vapor would make interply blisters, that eventually would destroy the coal tar BUR membrane.

To rectify this problem, the coal tar BUR manufacturers adopted the use of fiberglass felts which had been used quite successfully in asphalt bitumen BURs. These felts were non absorptive of moisture. Attempts to saturate the fiberglass felts with coal tar bitumen were not very successful as the fiberglass felts have a great deal more porosity than the organic felts and the coal tar bitumen failed to stay in the fiberglass felts. The manufacturers then decided to use an asphalt saturated felt with coal tar interply mopping to attach each layer of felt, and a coal tar bitumen flood coat.

Initially, this strategy was very successful. But, asphalt bitumen is incompatible with coal tar bitumen. The two bitumens will not mix or emulsify; each retains its separate chemical identity within the BUR membrane. The asphalt, coupled with the high porosity of the fiberglass felts, soon exhibited the phenomenon of floating and/or sinking felts accompanied by cleavage of the coal tar bitumen by the asphalt that was loosened by the floating or sinking felts.

In the case of the floating felts, the coal tar is draining to a lower point and leaving the felts exposed to the weather to deteriorate and eventually leak, due to insufficient bitumen. This usually occurs at the perimeter edge where there is no gravel at cants.

In the case of the sinking felts, the weight of the gravel forces the felts to the bottom of the BUR assembly. All the bitumen, both coal tar and asphalt rises to the top and engulfs the gravel. When the BUR is suddenly cooled in a rain shower and hardens, the vertical cleavage planes formed by the asphalt cause the coal tar to crack at these locations and allow the entry of water, some of which reaches all the way down to the deck. When the BUR is rewarmed by the sun, some of the water that is trapped in the cleavage cracks gets totally trapped by the coal tar and forms what are called blackberries. If one pops them, free water is emitted. Some of the water saturates the deck if it is a porous deck, and during rewarming by the sun, makes huge blisters of the entire BUR membrane. The BUR membrane in both cases is unbalanced, unravelling, and leaking.

These types of coal tar BUR membranes should not be used until this basic defect is corrected by the manufacturers.

Modified bitumen BUR membranes are a very significant development in recent years. These are asphalt based bitumens most of which have been modified by SBS (styrene butadiene styrene) rubber polymers to improve the performance of the asphalt. These membranes are in effect factory assembled into a thick puncture resistant membrane, with the kind of quality control that is rendered by a factory.

There are three types of modified bitumen membranes in terms of their internal mat reinforcing structure: polyester reinforced, fiberglass reinforced, and combination polyester and fiberglass reinforced. Each has its advantages and disadvantages. The polyester is better for those applications where recovery from stretching is the most important factor. The fiberglass is better when resistance to tearing is more important, and the combination is better when both factors are equally important.

Usually, modified bitumen BURs are a two ply system: the first ply is nailed to the roof deck, and the second ply is attached to it by torching or by mopping of interply asphalt. The top most ply usually has ceramic granules factory applied to its exposed surface to protect it from ultraviolet light deterioration and to provide a more durable light duty walking surface.