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CHINESE CAVE HOUSES

Abstract. Cave dwellings are located in the north-west of China on the Leso plateau. This is a kind of earthen building in which there is harmony between man and nature. Such a home is warm in winter and cool in summer. It is easy to maintain, economical in use of materials and durable. In ancient times, construction was carried out manually. At first they dug a hole, then they dealt with the hearth and openings. The next stage in construction is the installation of a chimney, doors and windows. Such houses are on the plains of China, on the slopes of the mountains and on the banks of rivers. Their device is characterized by the presence of a furnace, which can be with a deep foundation, round or rectangular in plan. Arched openings of windows and doors allow the sun to penetrate deep into the home, making it comfortable for living at any time of the year.

Keywords: earthworks, cave dwellings, China, plateau, stove, arch

Mining method

First we dig the foundation : After determining the orientation of the cave dwelling, they dig out the foundation, and the foundation of the cave type is the type of cave ditch that you dig first. If there is a ditch in front of the door, you can use a truck with a shelf to dig the ground and push it into the ditch. If you want to dig a hole, poor families, or areas that are not conducive to mechanical construction, it is very difficult to rely on labor to bear the burden one by one. After the general shape of the foundation has been excavated, the surface must be repaired and leveled.

Next follow the digging of the caves.

When the foundation is dug, a cave is dug. Dig a cave shape and move the soil. Do not rush to dig a cave. The soil in the soil is too large and easily destroyed. After digging a cave, select the arch on top of the stove and clean the cave to make it even more complete. After the caves were allowed to dry, loess and mashed wheat straw and mud were used for the mud oven. The dirt in the mud furnace is made of dry soil and has tendons, and the plane formed by the dirt is smooth and smooth. Moist soil and dirt are not easy to use. A clay oven has at least two layers of dirt, one layer of coarse dirt, one layer of fine dirt and three layers of dirt. After a long stay in the future, the walls of the cave turned black and could become dirty.

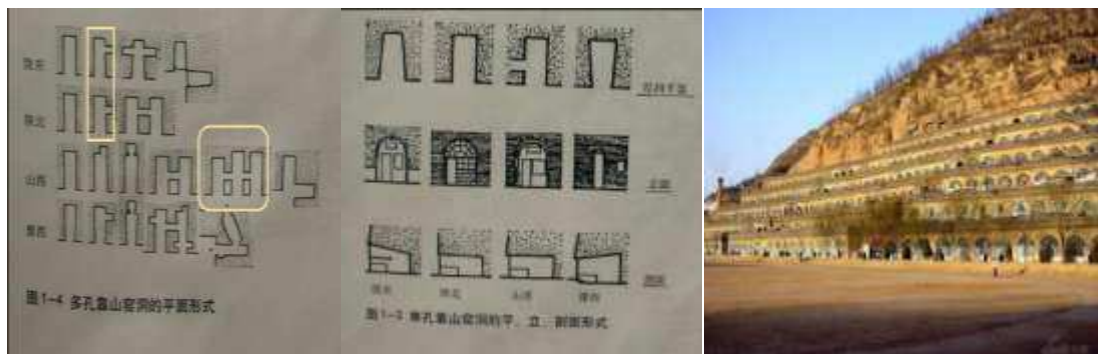
The third step is to make chimneys, doors and windows.

The earth is used to make chimneys, security doors and windows, usually high windows on the door and low windows next to the door. The door rests on the windowsill,

and the outer part of the pipe is attached to the wall.

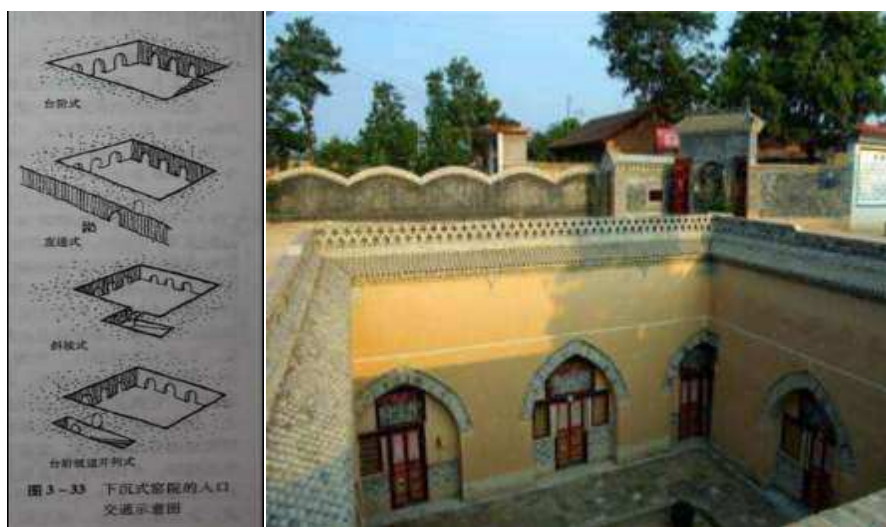
Type of cave

1. Zhuang Yao. Usually it is located on a mountainside, on a ditch, using the potential of a cliff, the surface of the cliff is first flattened, and then trees are dug up to dig a furnace. In the village of Veksi, Nin County, there is a thousand-year-old cave dwelling with an area of 200 square meters with five windows and one door. In Dong Zhiyuan, Cao Shenyuan and other large plains, there are people who use hutongs to repair villages. Due to the low potential of the cliff, you need to dig a few meters, and then dig a furnace, which often forms three sides high and one side low. Zhuang.



Pic. 1. Zhuang Yao

2. Pit oven. This type of stove is built on the plain. Firstly, a large rectangular hole was dug in the ground, usually five to eight meters deep. The pit was cut into rocks from all sides, and then a pit for the furnace was dug on the rock, and a long slope was built on one side. A road or a slanting hole, right across the starting side, like a sidewalk. This cave dwelling is actually a basement, and its characteristics “warm winter and cool summer” are even more noticeable.



Pic. 2. Pit oven

3. Furnacecircle. An annular kiln is usually made of soil germ and wheat straw yellow mud, forming the main wall and the upper part of the annular kiln. The upper part of the furnace is filled with gable soil, wiped with wheat straw mud and pressed back and forth to shorten the cornice. Rich people are still covered with green tiles on top.



Pic. 3. Furnace circle

Architectural features

The biggest feature of the cave residential building is that it is warm and cool in summer in the winter. The traditional cave-like space has a circular arch. Although this is very common, the shape of the arc is lighter and more vibrant against the backdrop of a monotonous loess. The shape obtained from nature not only reflects the idea of a round place in traditional thinking, but, more importantly, the high arches on the doorways and high windows can cause the sun to penetrate deeper into the cave in winter, so the solar radiation can be fully used, and the internal the space is curved, which increases the vertical space inside, making people feel open and comfortable. My mentor, Mr. Liu Jiaping, used to evaluate cave dwellings as follows: cave houses are warm in winter and cool in summer, they are comfortable and energy-efficient. At the same time, traditional spaces are permeated with harmony with nature. The simple appearance is also unique in architectural aesthetics.

Spatial sequence of cave dwellings

When people enter cave dwellings, they can pass through the spatial scale, changes in light and shadow. In the process of entering the cave dwelling, you need to go from the ground to the underground through a ramp and stairs, or you need to climb a hill to a hill and then go along different fork roads to get to the entrance to the building. In this process, people experience the process from public space to semi-public space. In this process, the light of the space environment gradually weakens, and the feeling of the space surrounding the space gradually increases. This implies a change in the space of the environment of people in many aspects, giving people a kind of more closed feeling: after entering the cave, a dwelling in the cave was opened. The space suddenly opened. After passing through the darkness of the underground slope, the contrast made the space of the courtyard brighter and wider, and also marked the official entrance to the private space of the cave dweller. The courtyard was surrounded by four sides. The wall is fenced and natural light penetrates from the open top to ensure privacy of the owner's space, while at

the same time giving nature the greatest degree of openness. It is also a process in which the space changes from semi-public to semi-private, and then enters the yard from different directions and functions. In the room, space is again transformed from semi-private to personal space. The space is surrounded by six sides, and at the entrance only doors and windows are lit, so that the building gives people a sense of stability in life and in life. In the process of penetrating inside the building from the outside, a change in the space environment leads to a change in the psychological feelings of people, and the transition from public to private makes the spatial sequence saturated and complete.

The daughter wall in the upper part of the furnace is a low wall built in the upper part of the front wall of the furnace. It has two functions: one is to prevent the walls from flushing with rain. Since most of the holes in the furnace are made of unprocessed soil, the surface has poor water resistance. The second is to prevent pedestrians from falling into the cave. At the same time, this is also the upper horizon of the cave dwellings, and the contact area under the daughter wall with the front wall of the furnace is a canopy to protect the wall. In the mountainous area, natural stone slabs are used for eaves, and blue tiles and slabs are used for canopies. The wall of the daughter is made of both masonry and massive flowers.

Interior decoration

The interior of the cave dwelling is filled with local style. Due to the peculiarities of residential buildings, there are few interior decorations, even for decoration, it is mostly practical. There is usually only one room inside a cave dwelling. The whole room is functionally differentiated. Outside the building is a kitchen, and inside is a residential quarter. Red, red window, red curtain are more used in flower decoration, they are not related to folk customs, but also provide many regional features.



Pic. 4. Paper-cut, Drumstone, Carving

Regional

Cave dwellings have obvious regional characteristics - from building materials to architectural styles, and the architectural art of cave dwellings was born in response to the needs of the cave dwelling itself, which makes cave dwellings decorative and applied art, features of the space node and architectural spatial sequences. All have obvious regional characteristics. The decoration on the daughter's wall depicts stone patterns, the doors and windows have wooden patterns, and on the doors and windows are red paintings carved from paper, which depict simple and original features of northwest China.

Expiration date

The architectural art of the cave dwelling was not decorated for decoration, but was born with the formation of the building. The decoration has become part of the building. The cavity of the daughter wall not only has an aesthetic effect, but also reduces the use of materials and the weight of the upper part of the building. , In spatial sequence, the transition from public to private is a process of gradual deepening from the outside to the inside and the process of walking from earth to earth. In this process, a change in spatial sequence occurs, which corresponds to the naturally formed psychological changes of people.



Pic. 5. Cave dwelling

Practicality

Since the purpose of the construction and use of dwellings is more direct, the most important feature of buildings is their practicality, as well as decorative art. When processing the yard, the direct use of bare land and planting low shrubs or crops can satisfy the most basic needs of the building, as well as revitalize the cave courtyard.

Current status and development prospects of cave dwellings

Forest cave was once the main life form of people in the loess area because it is adapted to local conditions, cheap, warm in winter and cool in summer. There are four main situations in which it is used:

1. Rural residents who are not rich.
2. Older people whose lifestyle is not easy to change.
3. Storage of grain, hardware and livestock.
4. Loess Cave Cave Hotel for Artistic Sketches and Tourism.

Compared to loess caves, stone caves are now more widely used: they are more durable, clean and elegant than loess caves. In addition, the improved masonry stove is more beautiful and tidy, and lighting, ventilation and drainage are more scientific and reasonable. However, such cave dwellings should occupy an empty space, and in an increasingly tense land their development does not cause optimism.

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КИТАЙСКИЕ ПЕЩЕРНЫЕ ЖИЛИЩА

Абстракт. Пещерные жилища располагаются на северо-западе Китая на плато Лесо. Это своеобразное земляное сооружение, гармонично сочетающее человека и природу. В таком жилище тепло зимой и прохладно летом. Оно простое в обслуживании, экономное в использовании материалов и долговечное. В древние времена строительство таких зданий велось ручным способом. Сначала рыли общую яму - площадку, потом определяли расположение помещений и рыли их. В каждом помещении устраивалась печь, ее выполняли из глины, смешанной с соломой, и давали хорошо просохнуть. Следующий этап в строительстве – это устройство дымохода, дверей и окон. Такие дома расположены на равнинных участках Китая, на склонах гор и на берегу рек. Их устройство отличается наличием печи, которая может быть с глубоким фундаментом, круглая или прямоугольная в плане. Арочные проемы окон и дверей позволяют проникать солнечным лучам глубоко в жилище, делая его комфортным для жизни в любое время года. Простой внешний вид таких сооружений уникален и эстетически привлекателен.

Ключевые слова: земляное сооружение, пещерные жилища, фундамент, Китай, плато, печь, арка.