

Beautiful highway construction case study

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Abstract: In terms of the existing highway unsuitable beautiful road, in-depth analysis of various aspects of the construction and control objectives, put forward specific content design.

Beautiful highway is to adapt the product of social development, for the beautiful road construction should begin on the basis of specific conditions for starting the construction of its reasonable [].

Overview

A highway expansion project is one of the Department of Transportation National Highway upgrade "Five shot six vertical and four horizontal" 15 trunk road, is an important passage from north to south southwest region, also in Guizhou Province important one exit channel.

The road to the 1960s New, after several renovation repairs, in addition to the road can still be thought, flat vertical surface indicators road has not been fundamentally improved, currently the main problems are as follows:

Technical indicators Low: low plane index line, line of sight is not smooth, longitudinal slope is too large for too long, is not reasonable combination of horizontal and vertical defects, more prominent paragraph Hotels Pass ~ Songkan TOWN, Czech Republic array Creek - Mongolia Bridge section.

road conditions are poor tolerance:

During the investigation phase, residents along the road at random stacking bricks, sand, stone, wood, grain, and other building materials or the production thereof, taking up demi road, causing the vehicle to slow down, or even traffic accidents. At the same sections of the town with the rank of field do not match, often causing congestion. In the market day, the traffic jam is very serious.

steep bend emergency highlighted the phenomenon;

The back section of the old road of small radius curve of 18, mainly in the rocky sub - Hanjiadian paragraph (old station K2007 + 200 ~ K2011 + 200), pass - Temple Dam (old station K2030 + 500 ~ K2041 + 900). Wherein the horizontal curve radii are less than 15 meters, the minimum horizontal curve radius of about 10 meters.

Meanwhile, several are larger longitudinal curved back, synthetic longitudinal largest up to 15%, the inside lane of the curve is very difficult, especially large vehicles, because the speed is slow, laden high, can easily cause rollover, At the same route through the turn poses a serious traffic safety problems.

accident black spots and more: along the settlements are more concentrated among residents

highway hotel when street paragraphs Pass, Songkan town, Czech Republic array Township, Mongolia Bridge segment peers, people and vehicles interference, mixed traffic volume, and Poultry often broke into the road, coupled with flat intersection where and how much does not meet the requirements, there is a big security risk. At the same time, because of the high altitude road, freezing in winter snow have occurred, coupled with steep curves are sharp, vehicles on the road and formed a security risk.

insufficient roadbed width: In addition to the Czech Republic array Songkan roadbed width of the current flat vertical surface slightly better basically reached 7.5 meters, the rest of the paragraph mostly only 6.5 to 7.5 meters, less than the inside of the curve widened paragraphs. Enter the curve is very difficult, and traffic safety problems highlighted. It has not satisfied the needs of traffic growth.

bridge linear differential, load level is low: a total of seven bridges road within range. In addition to two for the highway bridge also built of reinforced concrete hollow slab bridge, the rest five are stone arch bridge. Deck width 7.5 m, respectively, 8.0 m, 9.0 m. The stone arch bridge section several road alignment is poor, lower load rating.

inadequate safety facilities: traffic signs along the guardrail facilities basically sound, traffic marking because the plurality of road re-paving surface has not been re-added after marking, waveform guardrail, concrete piers and cautionary column crash destructive phenomenon, lack of overall protection. This section of the lack of steep slopes, long downhill and flat road horizon poorer sections of the initiative safeguards. Along the seating area, plus a lack of water stations and other service facilities, service concepts and facilities are also yet to be remodeling.

Project Overview

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The proposed starting point for the road mileage is consistent K2004 + 481, with the original old road mileage, route from the north to the southeast strike direction, via the hotel Pass, rocky son, three street, then along the wiring, via Hanjiadian, under garden to Songkan town. Route segment Songkan town by town planning and disposition Songkan between the status quo across the town with the railway embankment, avoid Songkan old town section, as Songkan create a full range of border crossing, turn right onto the road after the town had Songkan south, the bridge, three yuanba, Cheng Huang Temple, the Czech Republic array township, then along the hillside over Par, Banpo Bridge to Mongolia, after beneath the railway station and into a new road connecting the town. End Stake K2043 + 687.221 = original G210 Stake K2042 + 500. 40.734567 km long route, including four broken chain, compared with the original old road mileage increased by 2.725567 kilometers, compared with the preliminary design mileage shortened 1.364988 kilometers.

Natural geography

Topography

Mountains are in your area Lou Mountains offshoot, Dalou Mountains northeast - southwest direction. Nevada Department of Lou Meng Mountains offshoot, the main vein from the middle of the westbound Lou Mountains lie in the central county and then south, north to the extension of twelve Mao south slope, north of Yao Shan. Liangfengya was the main vein to the southeast, is from north to south differentiation watershed, the south is a shallow cut Zhongshan, Bazi, the north Zhongshan deep canyon cut.

weather

Area subtropical plateau monsoon climate zone, four seasons is not clear, water and hot season, rainfall, dry, obviously wet season, long frost-free period, the wind and the arrival of spring, when there is late spring, early summer rainy summer more drought, heat not cool autumn temperatures have plunged cotton rain, "Autumn", the winter cold, cloudy scant sunlight, occasional freezing, large differences in the geographical distribution of the vertical, three-dimensional climate significantly.

Area for many years the average number of cloudy days 245 days, annual average sunshine hours 1091.6 hours. Central Weather Bureau organize a national climate of most listed Area average total cloud amount 8.4 in 1978, an average of 7.2 years of low cloud cover, low cloud cover in winter 8.5, are ranked first in the country. Area average annual temperature of 14.6 °C, the coldest month -5 °C, the hottest month 24.5 °C. The highest temperature there is 37 °C, extreme minimum temperature of -7 °C. Due to the large elevation above sea level, the difference vertical climate change significantly, "mountain has Four Seasons, different day." Area drier area belong to the province, the average annual rainfall of 1038.8 mm. Most summer rainfall, winter precipitation is minimal, was wet winter and dry summer phenomenon.

Hydrology

Lines passing through the area for the major rivers songkan River, is a small tributary of the upper reaches of the Yangtze River, the river is the northern part of Zunyi City, Guizhou Province Area counties Songkan town within a river. Total length of 64.55 km; the catchment area of 1,039.0 square kilometers. Average annual flow of 6.37 m³ / sec. Average annual runoff of 624.5 million cubic meters. Songkan Heyuan in Xishui licun dam leeks Pass, north to south, the river flows into the Yelang. Ping have originated through a small willow tree River water flowing into the potter; and 5 km from the wind hole goats have water flowing into the river; and 2.5 kilometers from the west to east to Yelang, there are pottery from the Heilongjiang River flows into the major groove; and 7 km to Mongolia crossing, the river flows into the new station.

Overall Design

The road to carry out "smooth refreshing beauty" demonstration road created to co-ordinate the concept of ecological civilization, unimpeded and secure the basic functions highlighted in Highway Reconstruction simultaneously and emphasis on comfort, the people, ecology, aesthetics, and other functions in the transformation of the extension, in order to improve service capacity and quality of road services, improve the quality of road reconstruction, so the road to further adapt to the new requirements of economic and social development and people's new expectations.

According demonstration and design phases of this project before, and with the construction, the local government to communicate the views, combined along the topography conditions and construction funds, the overall design of this paragraph, as follows:

guiding ideology

Adhere to the Ministry of Transportation, "six insisted establish six" as the guiding ideology, namely:

Adhere to the people-oriented, establish the safety-first philosophy;

Insist on harmony between man and nature, and establish respect for nature, the concept of environmental protection;

Adhere to sustainable development, and foster the concept of conservation of resources;

Insist on quality first, to establish the concept of public satisfaction;
Insist on rational use of technical indicators, establish the concept of creative design;
Adhere to ideological systems theory, and establish the concept of life-cycle costs.

design

Use of relevant research results, fully integrated with the actual situation of the project area, go to the "people-oriented, sustainable development", stressing safety and environmental protection, the construction of "smooth, safe, comfortable, beautiful" road projects.

Design goals

The objective of this project is to design, under the premise of limited funds, as much as possible to focus on road accident black spots to reinvent the original State Road reconstruction promoted to second transit country road, refer to the "second five" national road G108 and G205 Experience the transformation demonstration project, give full play, "Chang, Ann, comfortable, beautiful" design philosophy.

From a technical program, it is through improved indicators straightened, widening roadbed, special sections increase lane, towns and drainage of level crossing and other projects around the obstacle, the total elimination of road congestion, increase capacity, highlighting the "smooth"; in accordance with setting standards, the content is complete, consistent style requirements, carding perfect cross security facilities, set up by hedge lane, road traffic safety and geological disaster investigation and remediation, indicators of a balanced portfolio of horizontal and vertical line, cross-regional plane slow access, additional ditch cover, and other dangerous bridge reconstruction, the protection of "security"; take full advantage straightened old and abandoned dump yard, or set the parking break area (emergency strip) in place, add water points, point of sale of local agricultural products, services, observation deck and conservation materials stacking area and other services and custody facilities, and "Shu"; introduction of landscape design techniques take advantage of locally grown plants suitable to carry out greening and beautifying the highway design, basically artifacts is not exposed, while demonstrating along the natural landscape, folk customs, history, culture and industry culture, combined with industry regulators and government support remediation road domain environment, strengthen the pavement recycled materials use and energy saving design, enhanced "beauty."

Design Principles

To highlight the "Chang Anshu American Road · Colorful Guizhou line" to create a theme, combining functional orientation Highway, along the landscape, adhere to a moderate level of investment and other standards to ensure quality and to create a demonstration effect. My company through on-site research and dynamic design, to fully grasp the dynamics of project implementation, the requirements of owners, local government views. For along ecological good, the beautiful natural landscape, rich in history and culture, provinces (municipalities) and other key node sections of the border focus on building. Strengthen highway greening, landscaping and landscape design, highlighting the "practical is beautiful" principle, do not blindly follow the trend, in order to "have" and design; ensure that there are landscape scene, prominent highlights. In accordance with the principle of "financial philosophy, strong greening" can be set. Specific principles:

- (1) ecological protection, protection of the environment;
- (2) landscape point of refinement, not make up a more;

- (3) full use of the existing road embankment, and strive to "zero" waste;
- (4) improve traffic safety facilities, unified style;
- (5) harmonization of road and landscape
- (6) saving investment, land conservation, maximize investment returns.

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