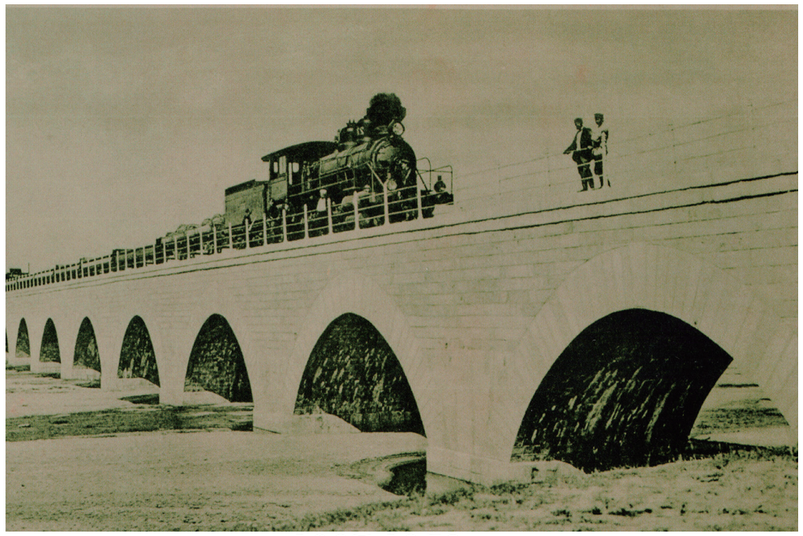
A Train Trip through the Past, the Present and the Future

Revealing and Revitalizing the Chinese Eastern Railway Heritage



1897-1952



1952-2010s

Future?

2010s-

P5 Presentation

Xiaoqian Cheng | 19/6/2024

Tutors
Eric Luiten
Wido Quist

Master track of Landscape Architecture
TU Delft Faculty of Architecture and the Built Environment

heritage, railway, history, adandonment, interstices, spontaneous nature.....







I.Research for design

Railway Heritage | Problem Analysis | Theory and Approach

II. Research by design

Spatial Analysis | Design exploration | Design implemention

III. Conclusion&Reflection

Conclusion&Reflection

What is the Chinese Eastern Railway?



Chinese Eastern Railway



part of Siberian railway

geostrategic heritage linking Russia and China

1897-1935
Russian colonial period



1935-1945
Janpanese colonial period



1945-1952
China and the Soviet Union

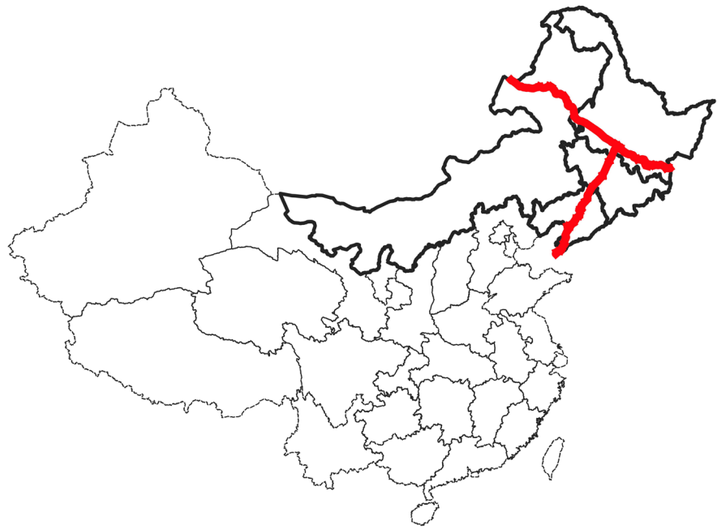


1952-
China



Chinese Eastern Railway



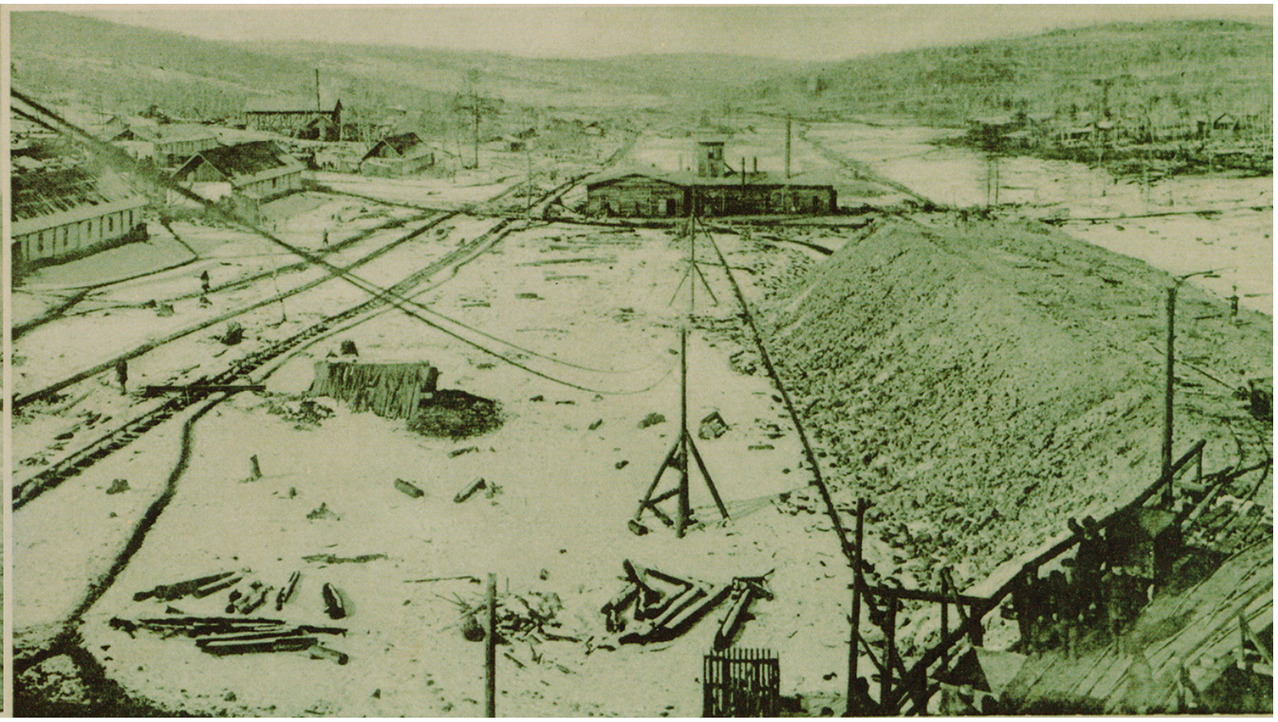




Chinese Eastern Railway Heritage

"Various architectural remains with certain cultural heritage value, directly related to the construction, operation, and development of the China Eastern Railway." (Fan.W, 2018)





Chinese Eastern Railway Heritage

Engineering facilities

tunnel





culvert





stone arch bridges




steel I-beam bridges




steel truss bridges




Railway spiral loops




Architectural Heritage

Railway traffic and industrial architecture

Station



Locomotive garage



Office



Water tower



Freight warerhouse



Work area



Other facilities



Factory



Public buildings and integrated service facilities

Office



Hospital



School



Railway Club



Church



Public bath



Public toilet



Park



Buildings for military and police stations

Command



Military camp



Stables



Magazine



Fortification



Small camp



Police Station



Prison



Residential buildings

Senior official residence



House



Joint residence



residential building









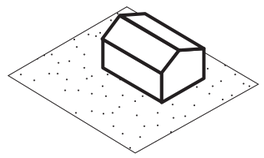


Chinese Eastern Railway Heritage

over 2000 heritage buildings and facilities distributed along 2500km CER



Railway Heritage | Problem Analysis | Theory and Approach | Spatial Analysis | Design exploration | Design implementation | Reflection

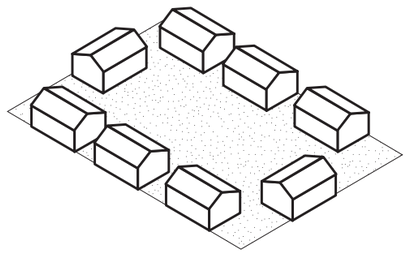


Hengdaohezi historic map



1903 Hengdaohezi Town





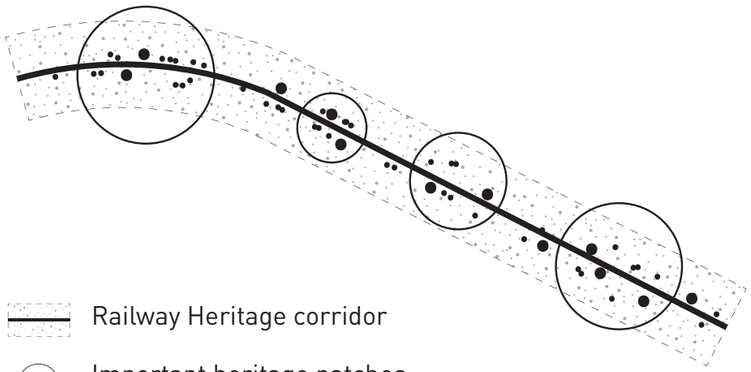
Hengdaozi current map



2015 Hengdaohezi Town



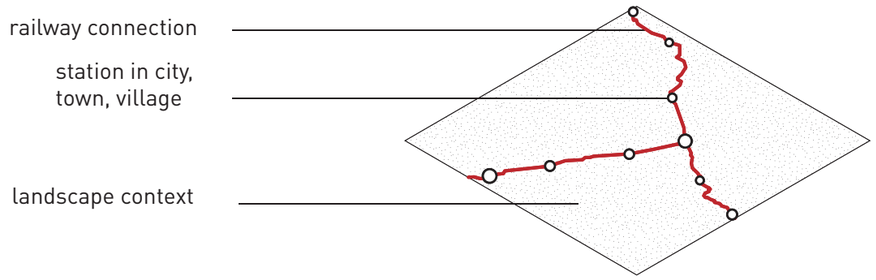
Chinese Eastern Railway Heritage——Railway Heritage Corridor



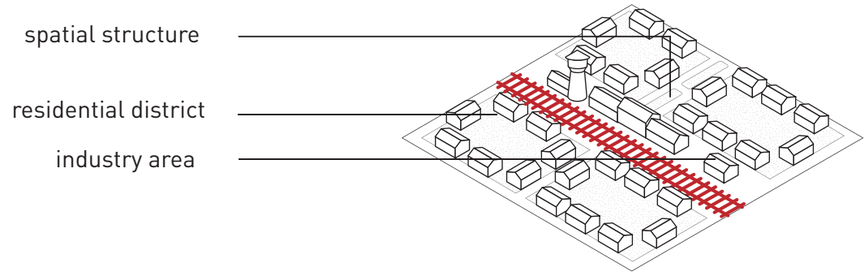
Chinese Eastern Heritage Corridor structure

Almost 2,000 heritage buildings and facilities form nearly a hundred heritage patches with historical stations as the core, and 2,000km of railways connect them in series to form a corridor.

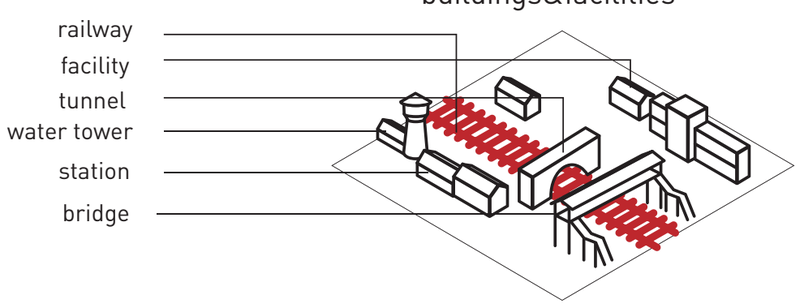
railway corridor



urban patches



buildings&facilities



heritage connection



https://www.toutiao.com/article/6852212330126967309/?&source=m_redirect

heritage collection



https://weibo.com/5906151643/My1NqgtnaIndividual heritage

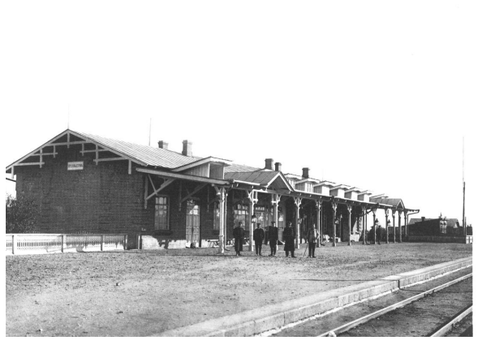


https://weibo.com/5906151643/NpwPFaIEG

Chinese Eastern Railway Heritage——Heritage protection

a continuous process of heritagization

Palimpsest:Mudanjiang Railway station



1901



1935



1990



2015

1990s-2006
Low awareness of the value of railway heritage



2006-2013
Increased awareness of heritage protection



2013-

better proection and development



Actual Protection Measures



Conservation ladder

Preservation/maintenance

Repair

Reconstruction

Copy

Imitation

Improvement

Most are in the preservation state

"Mark" sign



Inadequate protection after marking



a few heritage buildings are in the repair state

destructive preservation measures





First impression: Abandoned and Neglected heritage







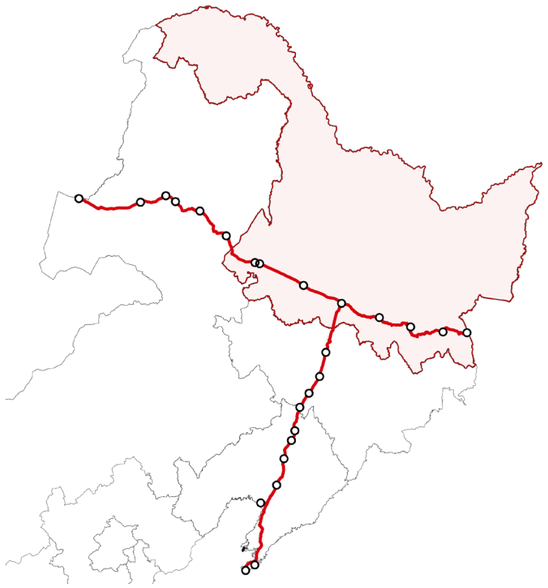




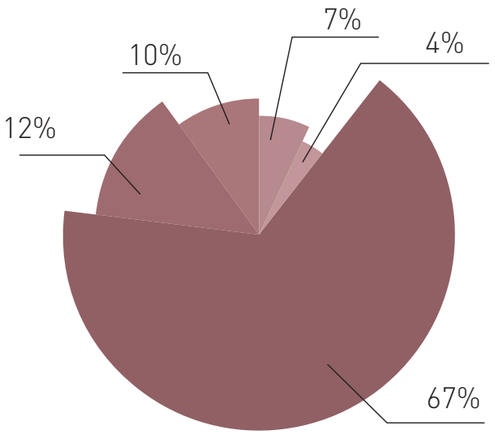



Poor heritage condition

Report about Status of Preservation of Heritage along the CER in Heilongjiang province



Heilongjiang section
1220 Heritage buildings/facilities



-90% of the heritage buildings are in unused state

-23% of the heritage buildings are structural issues

7%

- Intact structure
- minimal exterior damage
- distinctive architectural style and complete layout
- **original functionality maintained**



Xiangfang Station House

4%

- Intact structure
- minor exterior damage
- distinctive architectural style and layout mostly intact
- **currently in use**



Harbin CER museum

67%

- Mostly Intact structure
- some exterior damage
- distinctive architectural style missing but restorable, complete layout
- **currently unused**



Russian-style residence

12%

- Structural issues
- half of the exterior damaged
- architectural style altered and layout missing
- **currently unused**



Fan-shaped Locaomotive Garage

10%

- Structural issues
- Risk of collapse
- **currently unused**

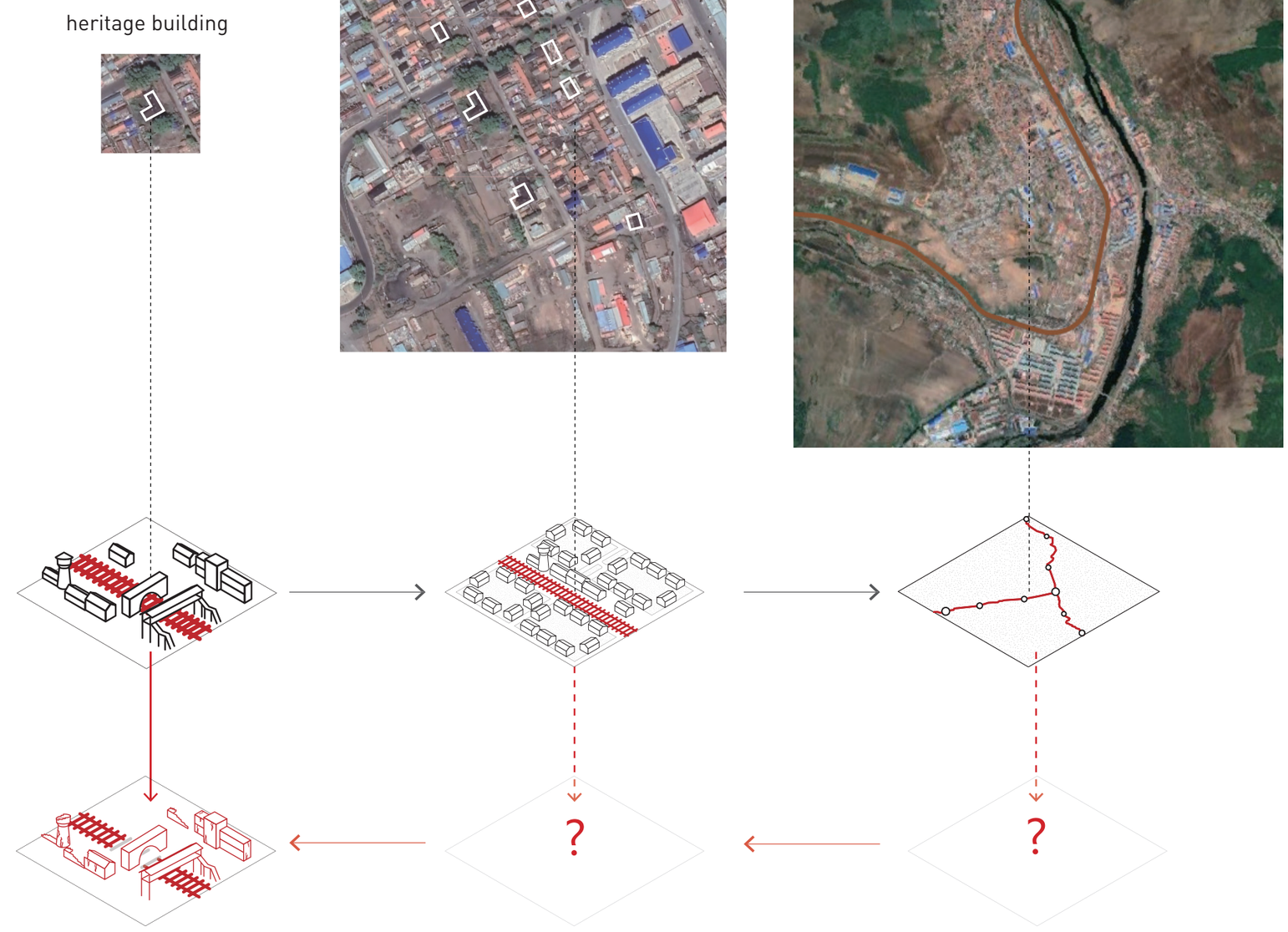


Guxiangtun Station house

Problems through scales

"Industrial heritage consists not only of production sites, but also includes workers' residences, transportation systems used, and social gathering places. While each of these elements holds value, their true significance can only be highlighted within the framework of the overall landscape. Additionally, it is through this framework that we can study the interconnections among these factors. ***The concept of the overall landscape is crucial for understanding industrial heritage.***"

— *Louis Bergeron*



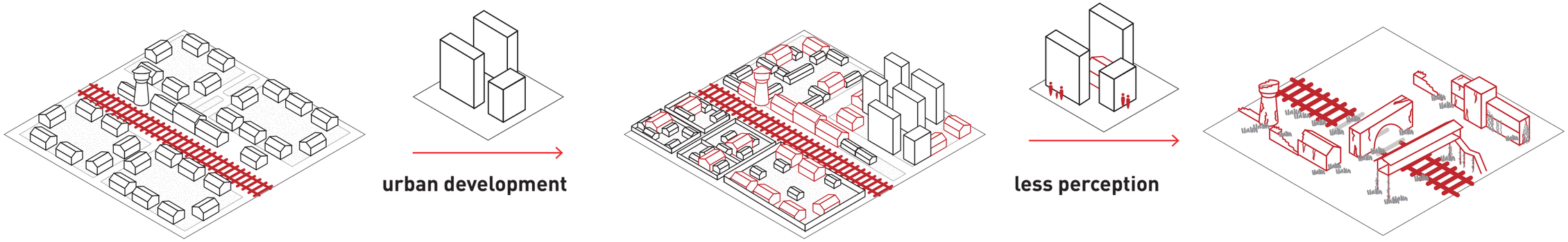
perceive heritage buildings in 1900s



perceive heritage buildings in the current urban environment



Urban development——losing identity and perception



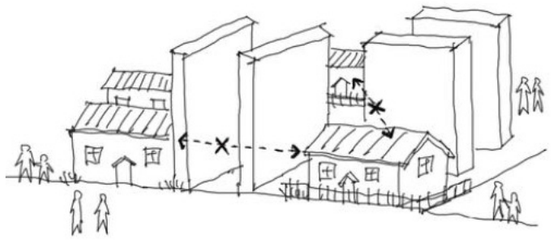
Historic pattern

destroyed historic context

abandoned and neglected condition

Problems through scales——urban scale

Fragmented



street view in 1900s

street view in 1900s



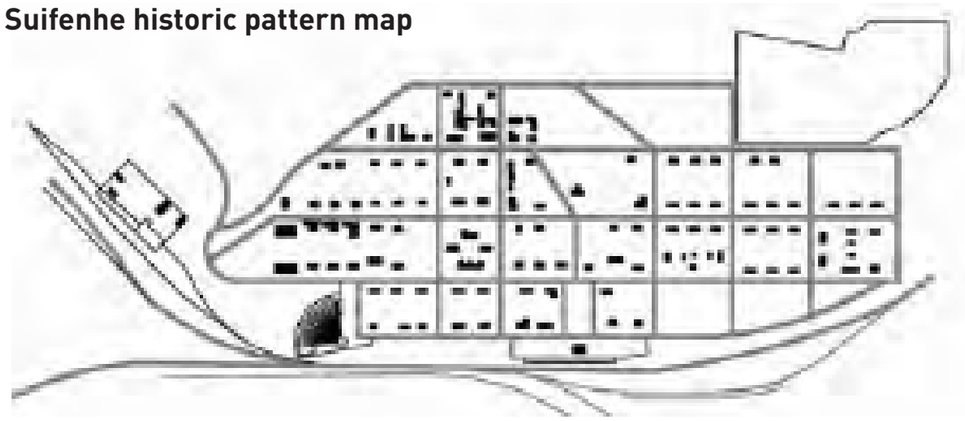
The Construction Album of Chinese Eastern Railway (1897-1903)

one street view in 2024



taken by author

Suifenhe historic pattern map

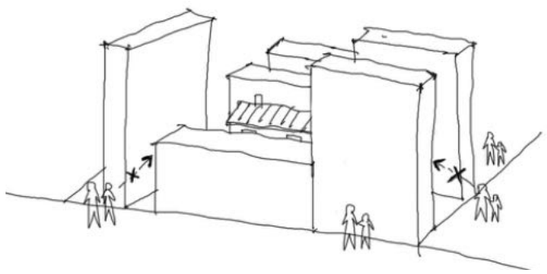


Suifenhe current heritage map

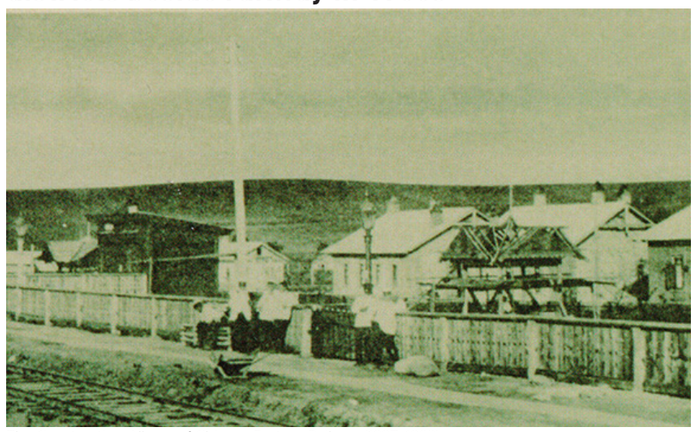


Problems through scales——urban scale

Isolated



districts beside railway in 1900s



The Construction Album of Chinese Eastern Railway (1897-1903)

heritage districts beside railway in 2024



data from Baidu map

Shangzhi heritage district beside railway



Xiangfang heritage site beside railway



Problems through scales——urban scale

Concealed

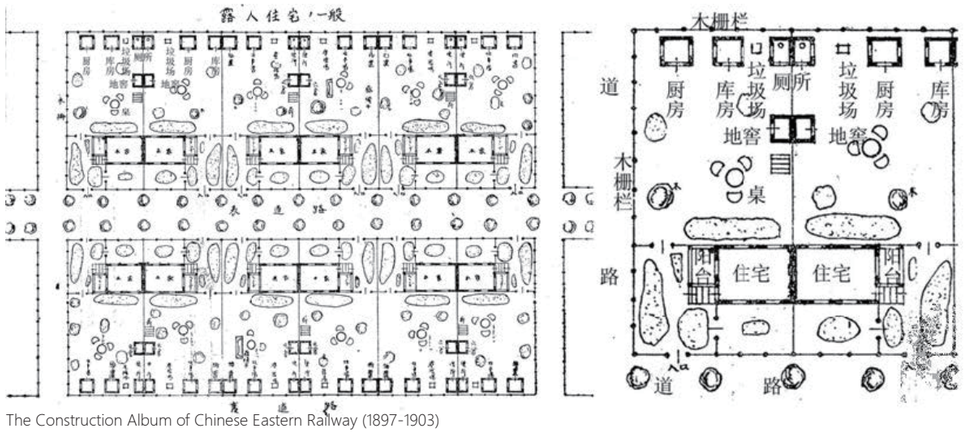


residential street view in 1900s



The Construction Album of Chinese Eastern Railway (1897-1903)

Historic building block



The Construction Album of Chinese Eastern Railway (1897-1903)

residential street view in 1900s



taken by author

Heritage building block in Yimianpo town



Problems through scales——railway scale

Running railway section





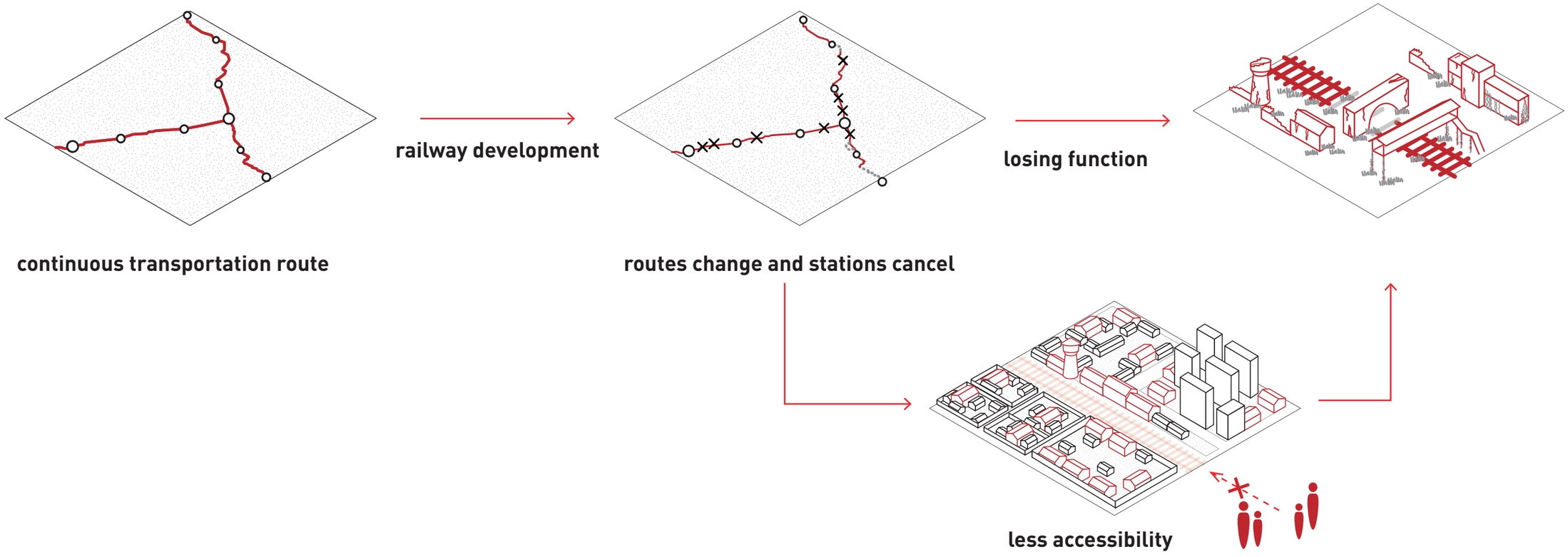
Cancelled railway section





Problems through scales——railway scale

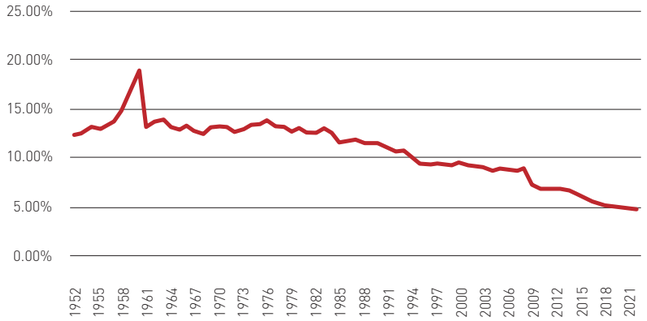
Railway development——less accessibility and usability



Problems through scales——intangible scale

Social background——Economic decline and Population loss

The proportion of GDP of the Northeast Region to the national GDP(1952-2021)

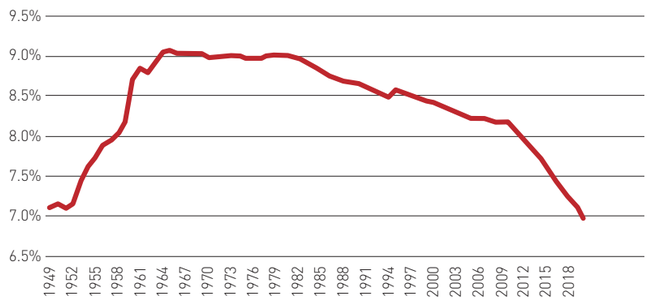


Vacant heritage buildings





The proportion of the permanent population of the Northeast region to the national population(1949-2018)

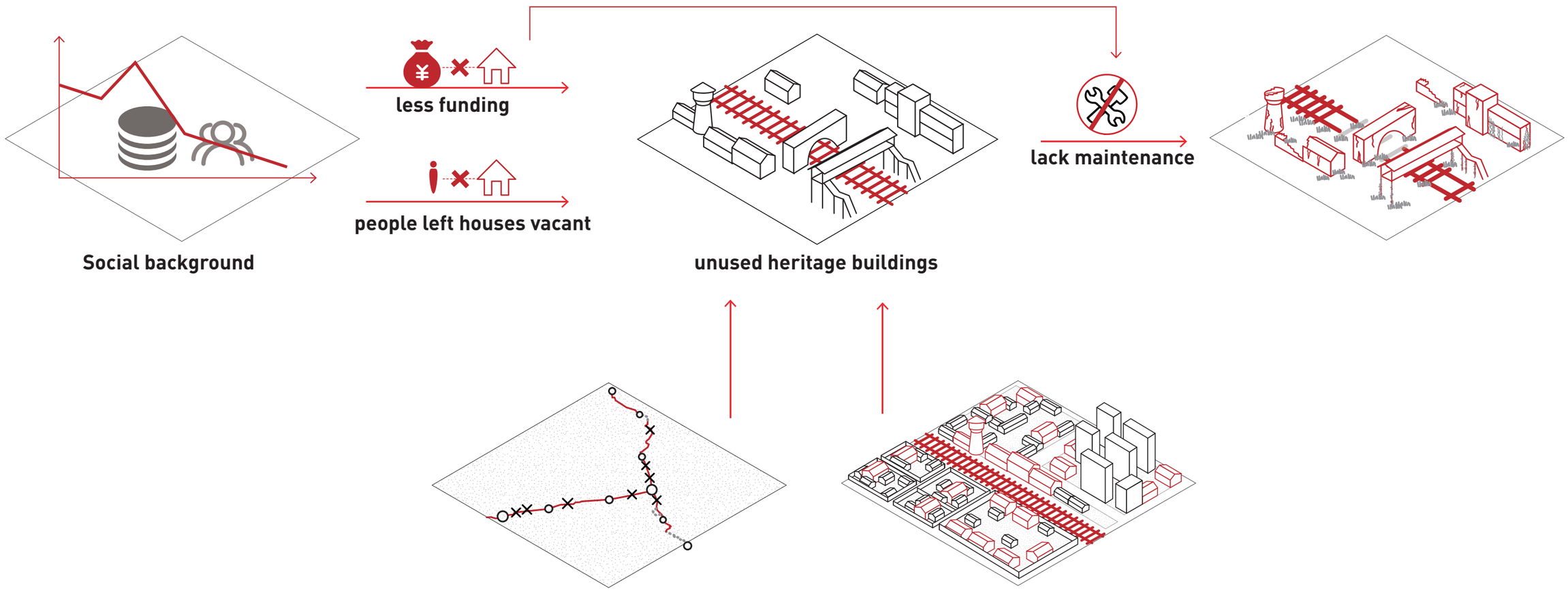


Heritage without adequate protection and management

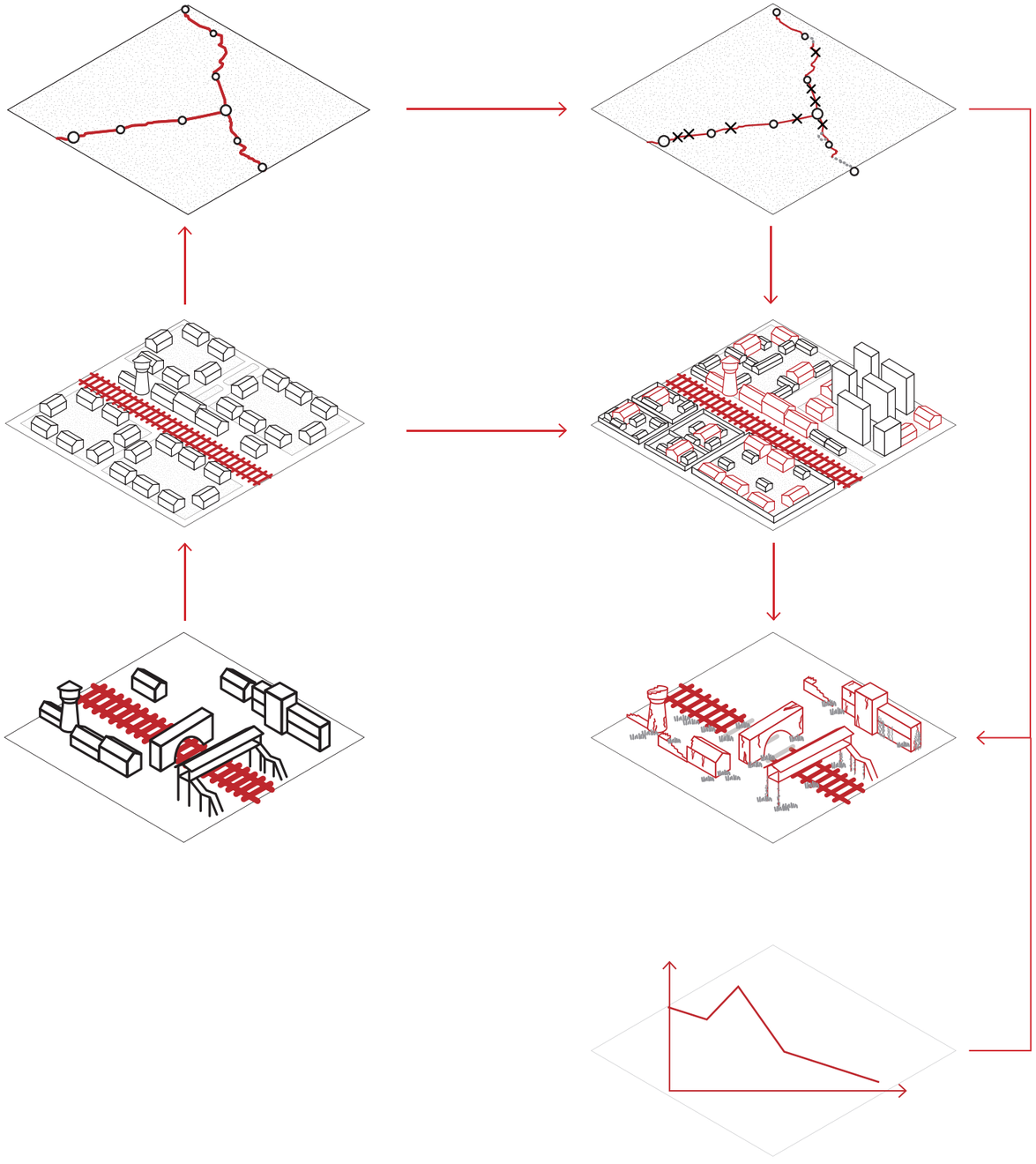




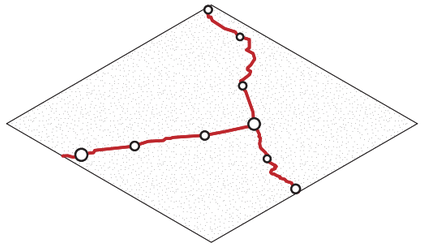
Social background——Insufficient heritage protection funding and awareness

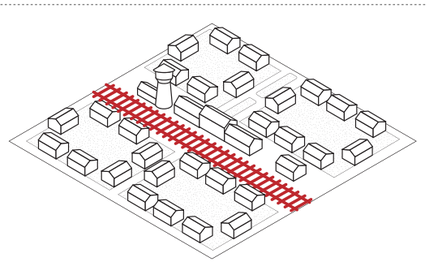


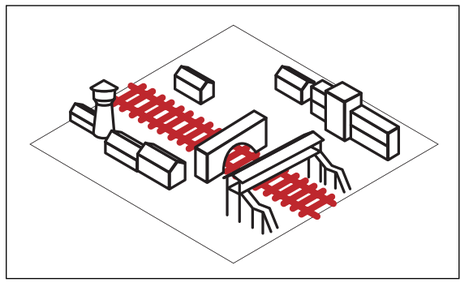
Problems through scales



Current heritage development







historic district





CER museum



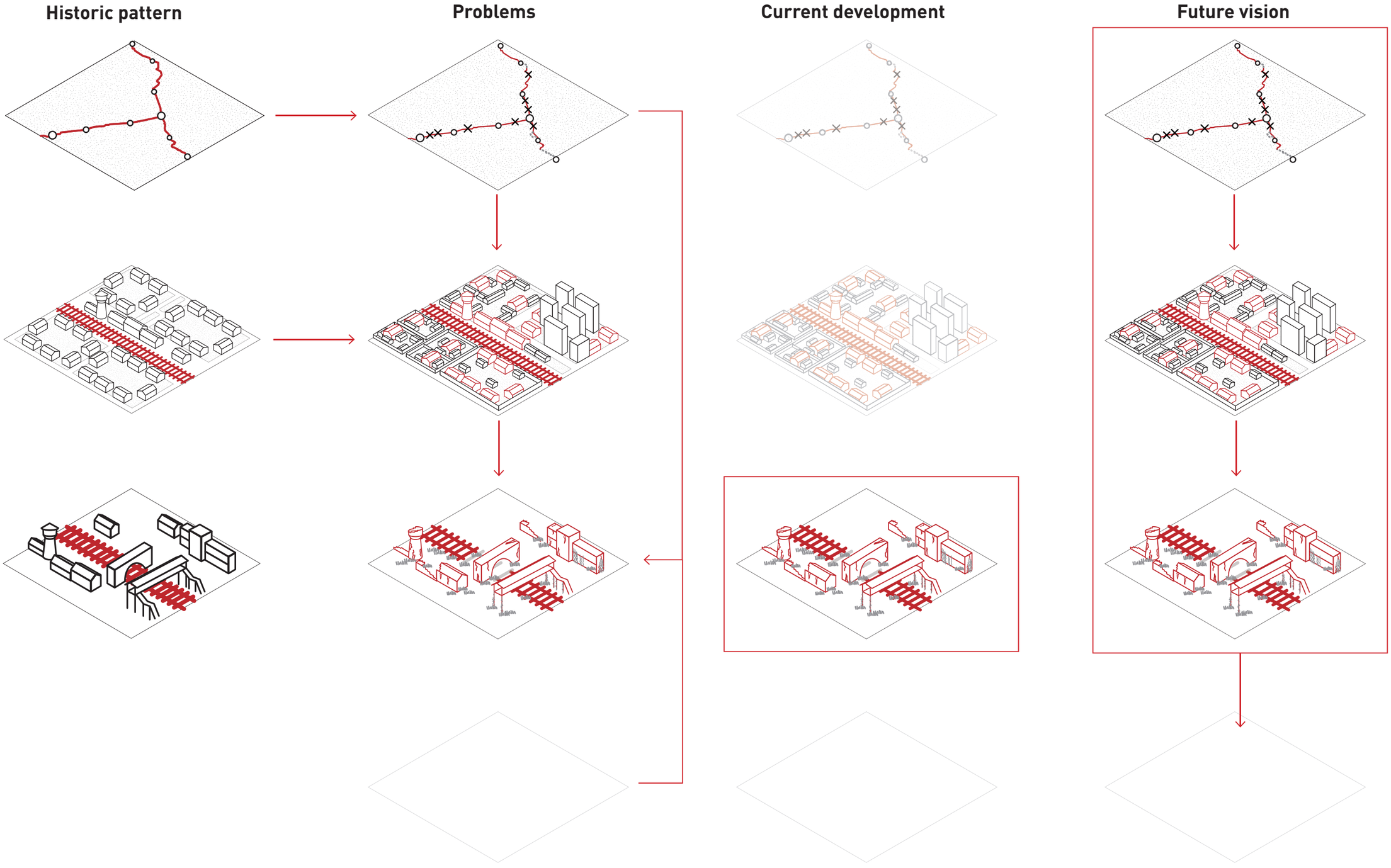






Focus on the reuse of individual buildings and often homogenized, but pay less attention to issues from a larger context

Problems statement



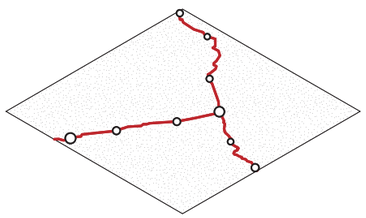
"*The concept of the overall landscape is crucial for understanding industrial heritage.*"
— *Louis Bergeron*

How to reveal and revitalize the abandoned and neglected Chinese Eastern Railway heritage from a landscape perspective?

reveal and revitalize heritage

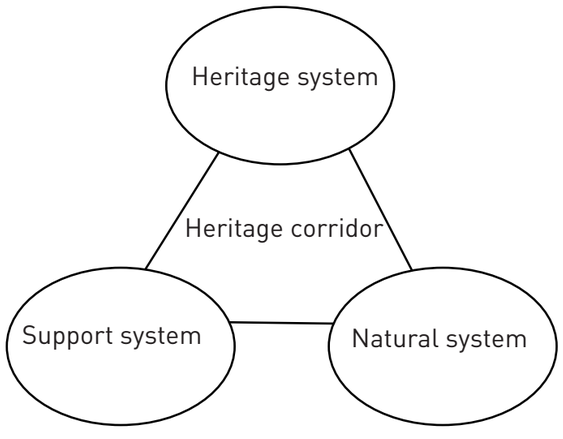
architectural heritage and landscape

Heritage corridor



" *A heritage corridor is a type of linear landscape that serves as a collection of unique cultural resources. Typically, a heritage corridor has a clear* ***economic focus****. The strategies and measures employed include* ***promoting tourism, adaptive tourism, and adaptive reuse of old buildings****.* ***These efforts are accompanied by improvements in recreational facilities and the environment.*** *The techniques, designs, and methods used for green corridors are also applicable to heritage corridors.* "

– – *Schwarz et al.*



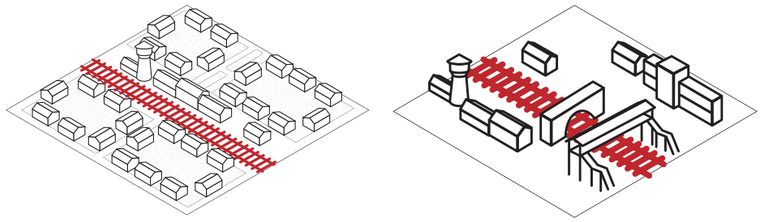
Datong Great Wall



Master plan

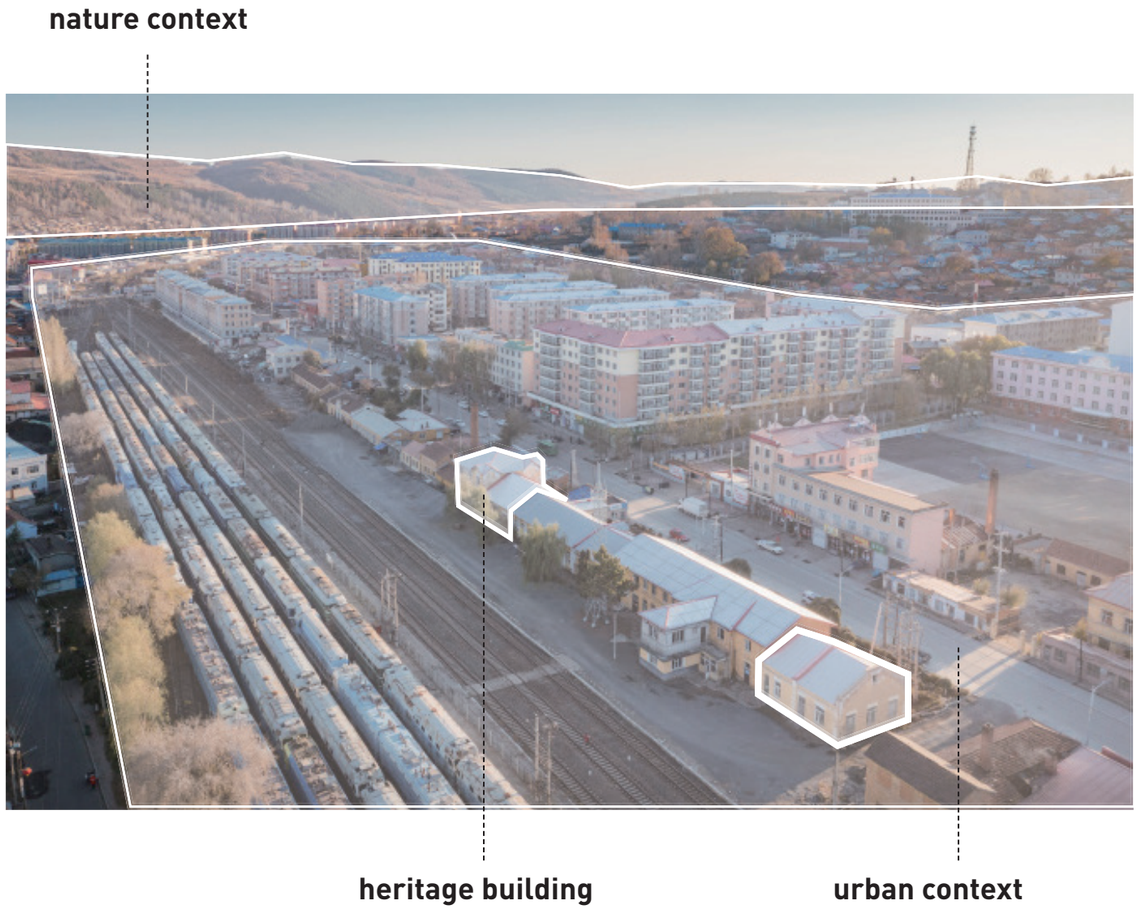


Historic Urban Landscape



" *The Historic Urban Landscape is the urban settlement understood as a historic layering of cultural and natural values, extending beyond the notion of "historic centre" or "ensemble" to include the broader urban context and its geographical setting.* ***This wider context includes the site's topography, geomorphology and natural features; its built environment, both historic and contemporary; its infrastructures above and below ground; its open spaces and gardens; its land use patterns and spatial organization; its visual relationships; and all other elements of the urban structure. It also includes social and cultural practices and values, economic processes, and the intangible dimensions of heritage as related to diversity and identity.*** "

– – UNESCO



Hengdaohezi historic town planning, China



Before and after



Pearling pathway, Muharraq



Public square



Heritage as sector, factor and vector

"Heritage is a highly malleable concept that is constantly in flux and whose substance and meaning are continuously being redefined by society. From such a dynamic perspective, it is inevitable that new approaches and practices have developed for dealing with heritage in the context of planned development. A conceptual framework is introduced that frames ***three approaches to the heritage planning treatment of heritage; the sector, factor and vector approach****, respectively."*
— — Janssen, Joks, et al.



Paleis op de Dam





Image result for locomotive hall tilburg



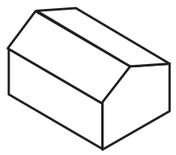


Glass Farm (commercial center)



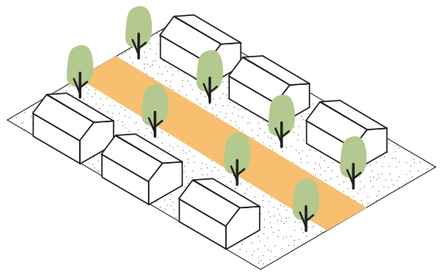
Conclusion

What to preserve



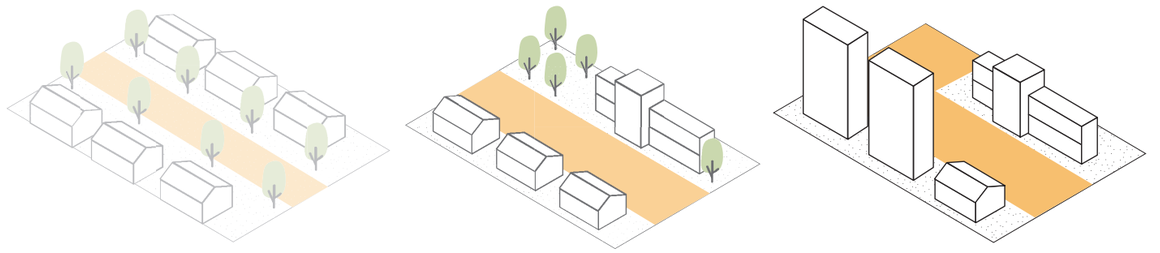
valued heritage resource

tangible entities such as heritage buildings/falicities



wider context of heritage sites

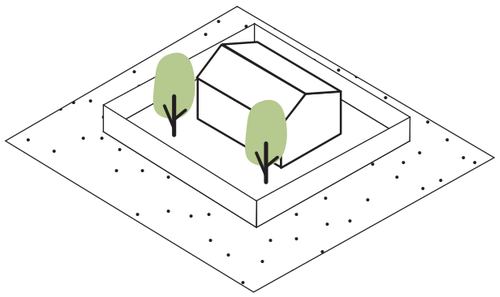
natural environment and urban context



intangible/disappeared historic elements

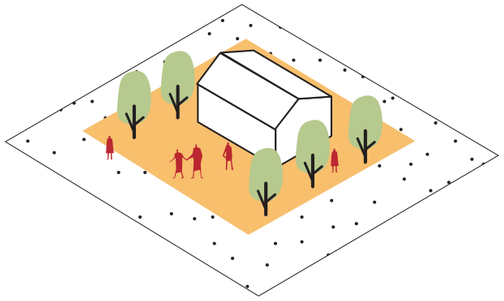
historic information/environment from different layers

How to preserve



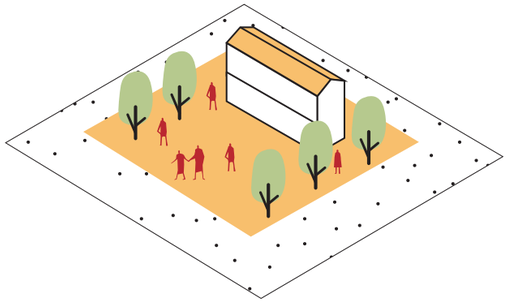
restore

restore its historic state, focus on keeping authenticity and integrity



reintegrate

reintegrate into urban development, focus on reusing heritage and revitalizing the whole heritage area



reinteprete

Reinterpreting tangible, intangible, or disappeared historic elements, focusing on preserving heritage memory and identity for future spatial development

Conclusion

How can landscape play a role in the conservation and development of architectural heritage?

Focus on the preservation and development of the historic environment



Preserving historic information that offers a readable context for understanding heritage buildings



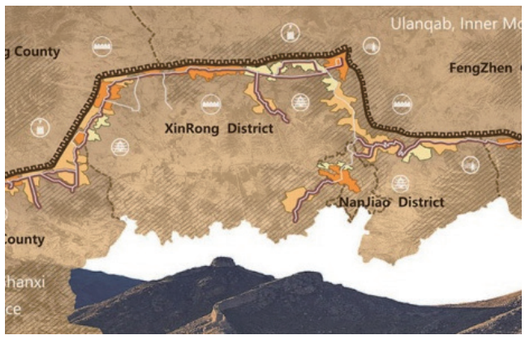
Helps to shape urban characteristics and keep the identity and quality of historic areas



The foundation for developing a meaningful and high-quality urban environment

Conclusion

landscape design aspects from different scales



comprehensively protect the heritage as a whole as a regional scope



enhancing and developing historic urban landscape



improving open spaces around heritage sites

Overall plan strategy: Heritage tourism development

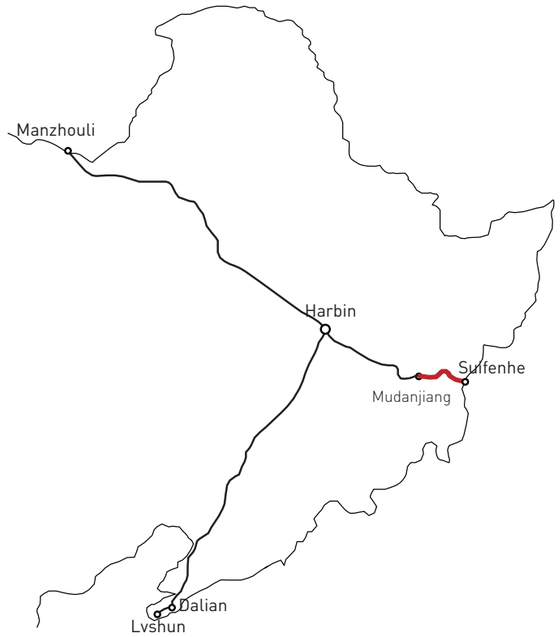


-connecting dispersed heritage buildings by the same theme or routes to form an integrated collection

-guidance for the direction of reuse and redevelopment of heritage buildings

-promoting local social and economic growth and change

Intervention area——Mudanjiang-Suifenhe line



Musui Line——200km the easternmost section of the railway

Abandoned railway



Heritage buildings



Fast railway



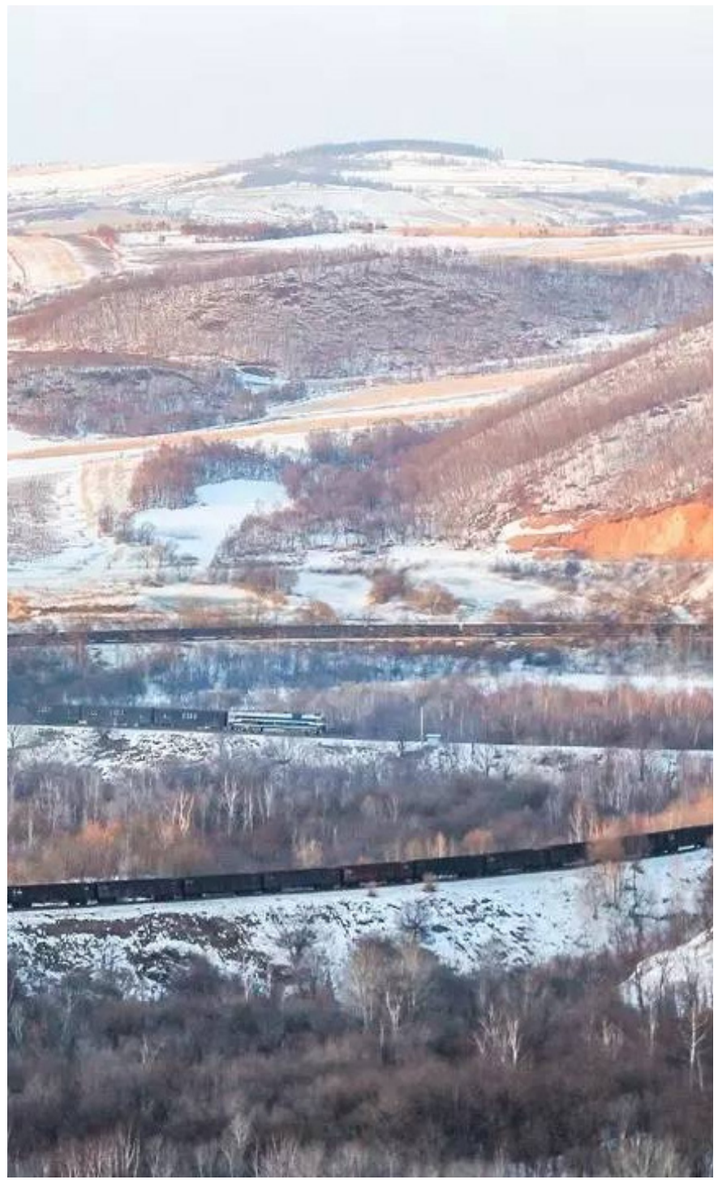
Intervention area——Mudanjiang-Suifenhe line

great tourism potential

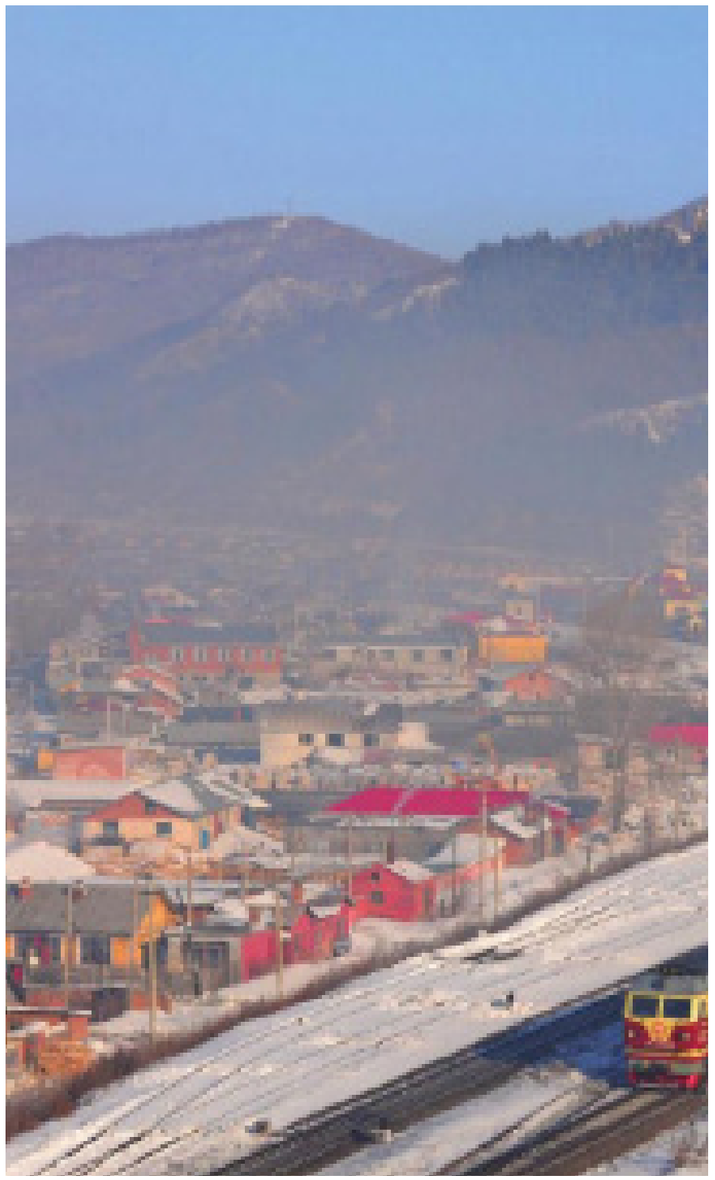
Autumn scenery: Five Flower Mountain



Spiral loop



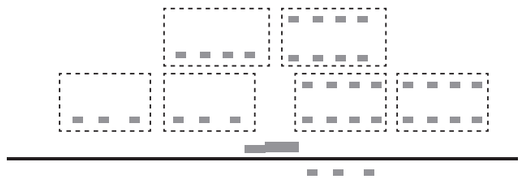
Historic town along the railway



Intervention area——Mudanjiang-Suifenhe line

Current heritage urban patches within the line

- **Type I**



-clear street structure
-more heritage and larger building group

- **Type II**



-no clear urban structure
-scattered and less heritage

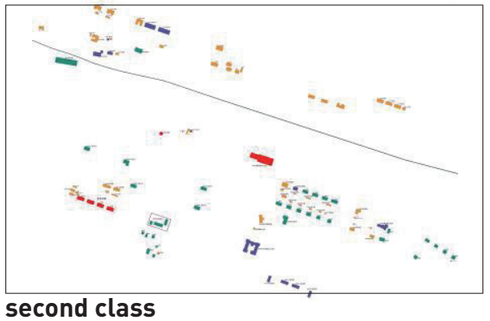
different levels of stations have different standard construction scale

Harbin map(The Construction Album of Chinese Eastern Railway,1897-1903)



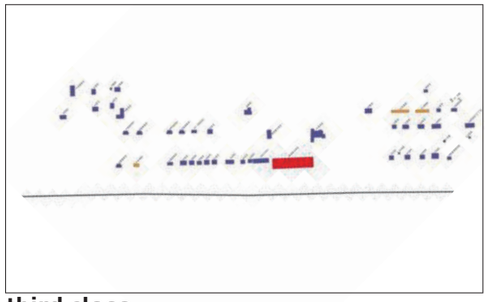
first class

Suifenhe map(The Construction Album of Chinese Eastern Railway,1897-1903)



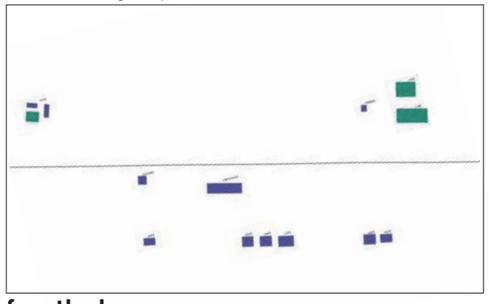
second class

Anda map(Fei. G, 2017)



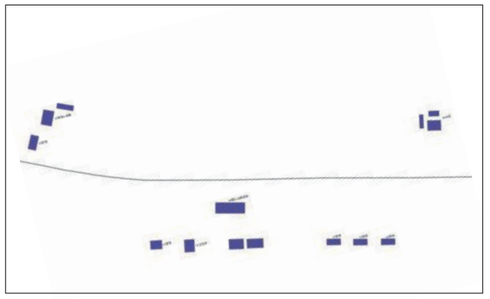
third class

Modaoshi heritage map(Fei.G, 2017)



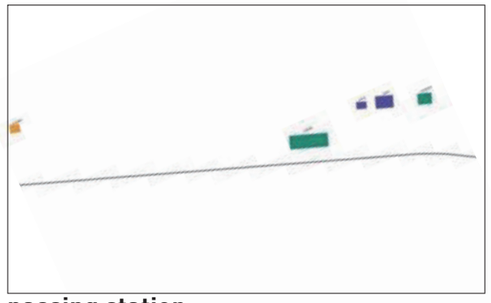
fourth class

Maoershan heritage map(Fei.G, 2017)

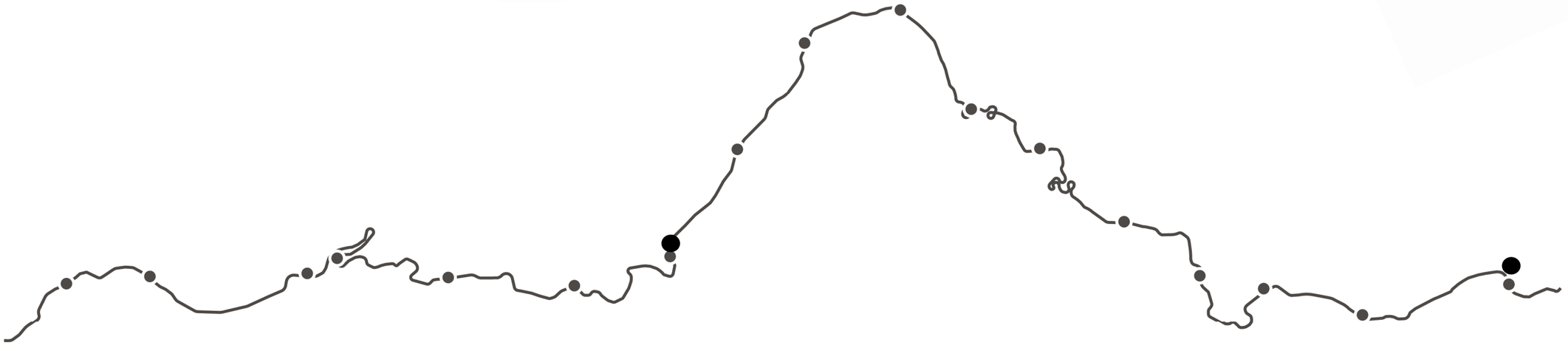


fifth class

Hailin heritage map(Fei.G, 2017)

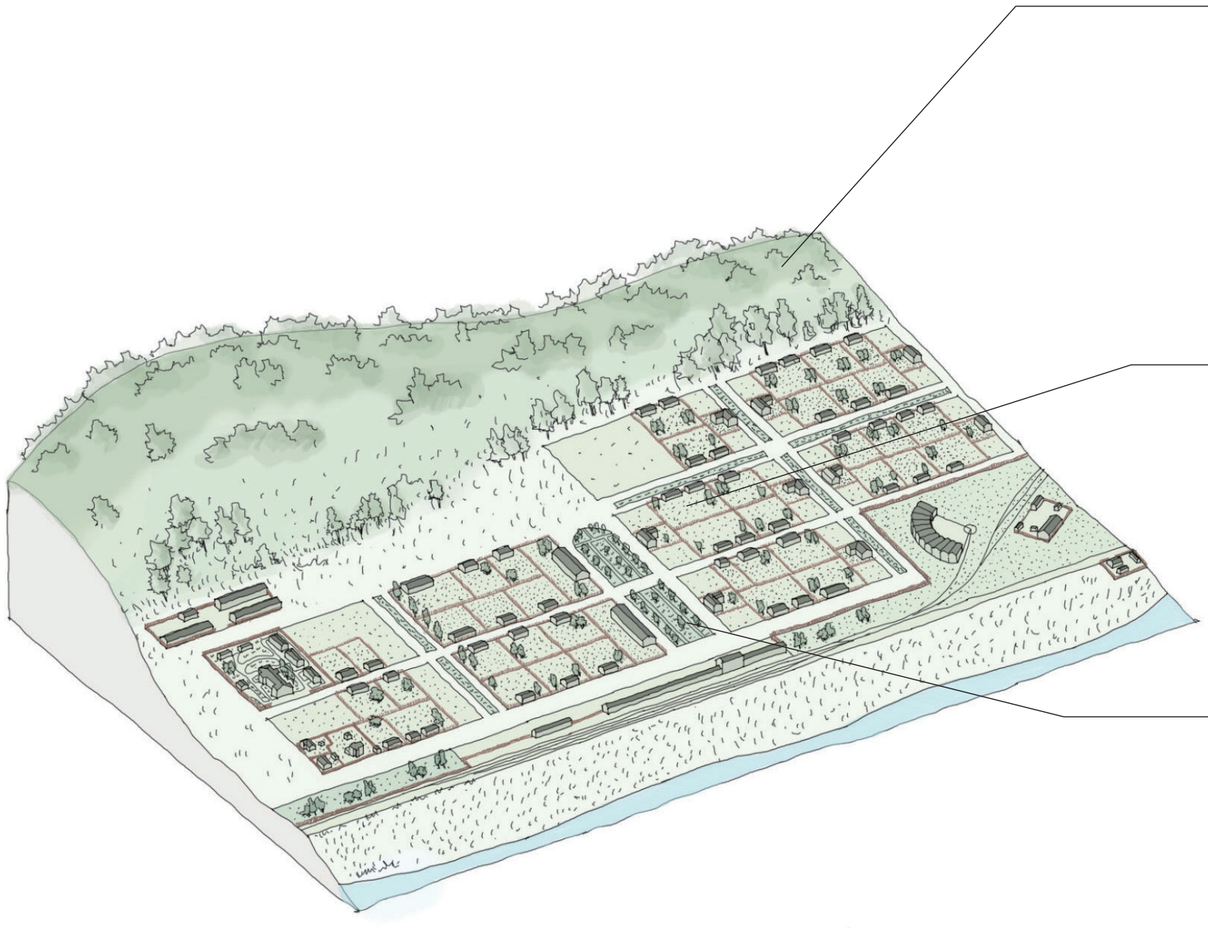


passing station



Intervention area——Mudanjiang-Suifenhe line

Historic urban landscape pattern



natural and geographical environment



historic fabric and spatial organization



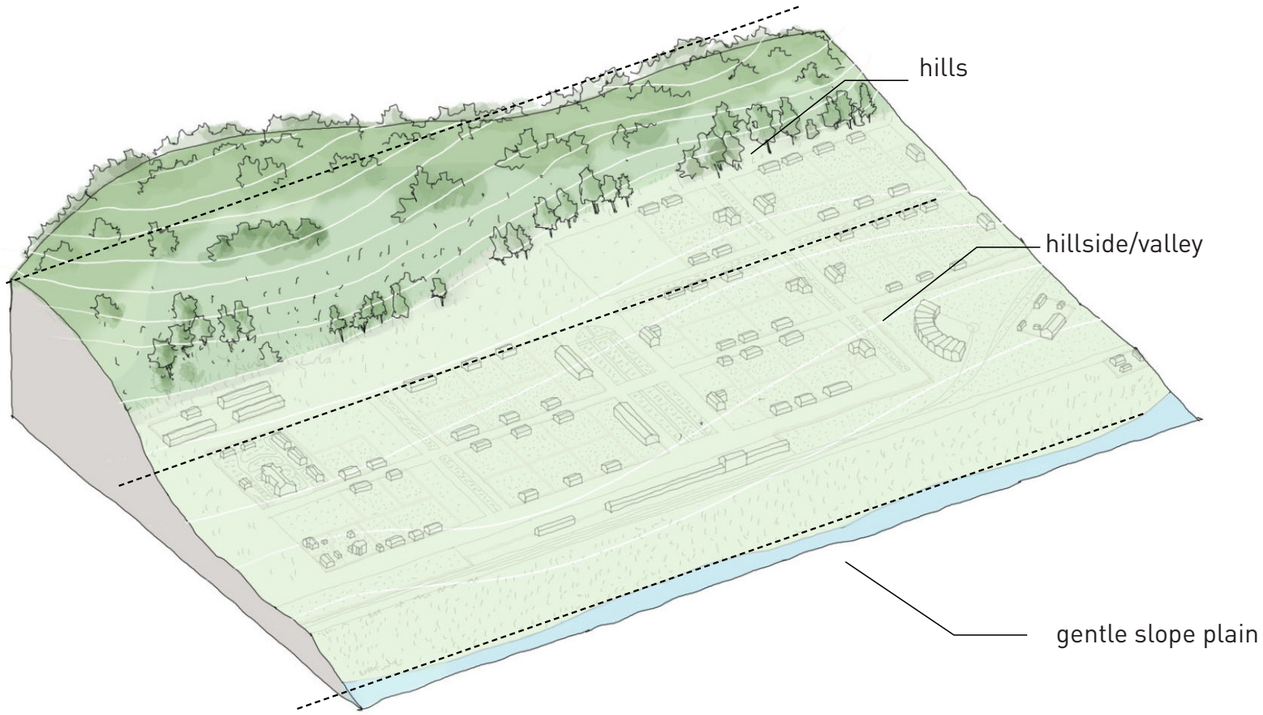
green open space design





Intervention area——Mudanjiang-Suifenhe line

natural and geographical environment



Hilly landscape

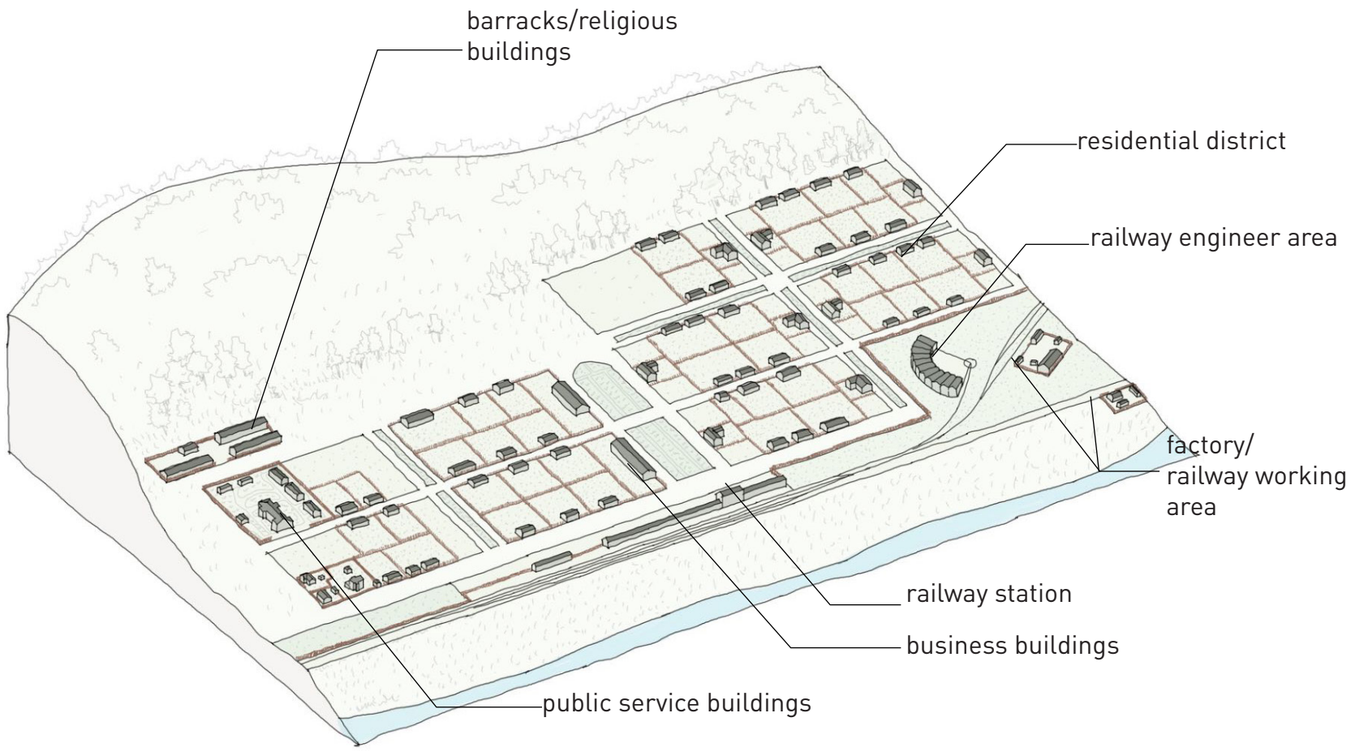


Spatial and visual axis

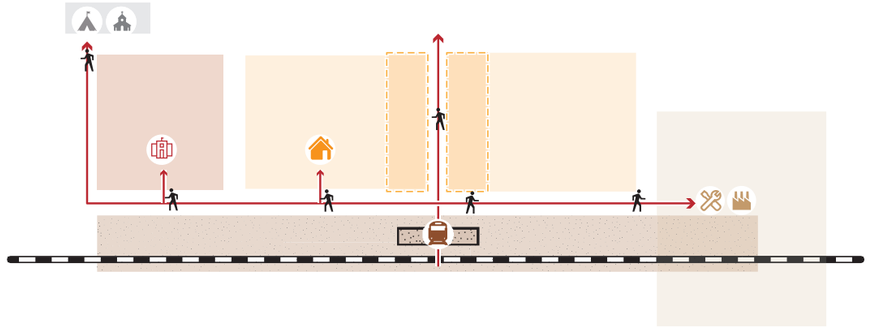


Intervention area——Mudanjiang-Suifenhe line

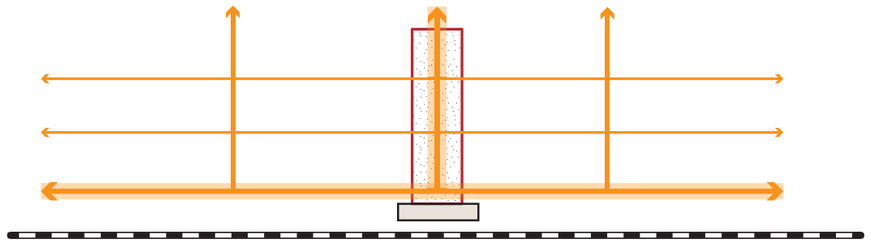
historic fabric and spatial organization



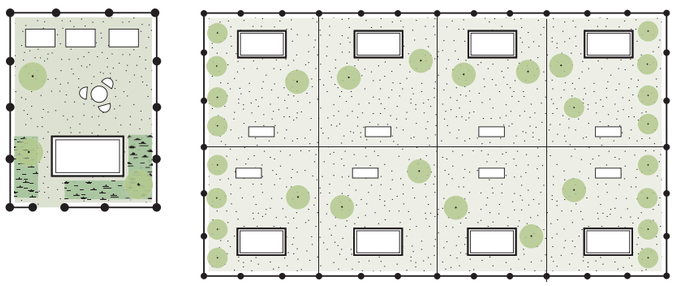
Land use pattern



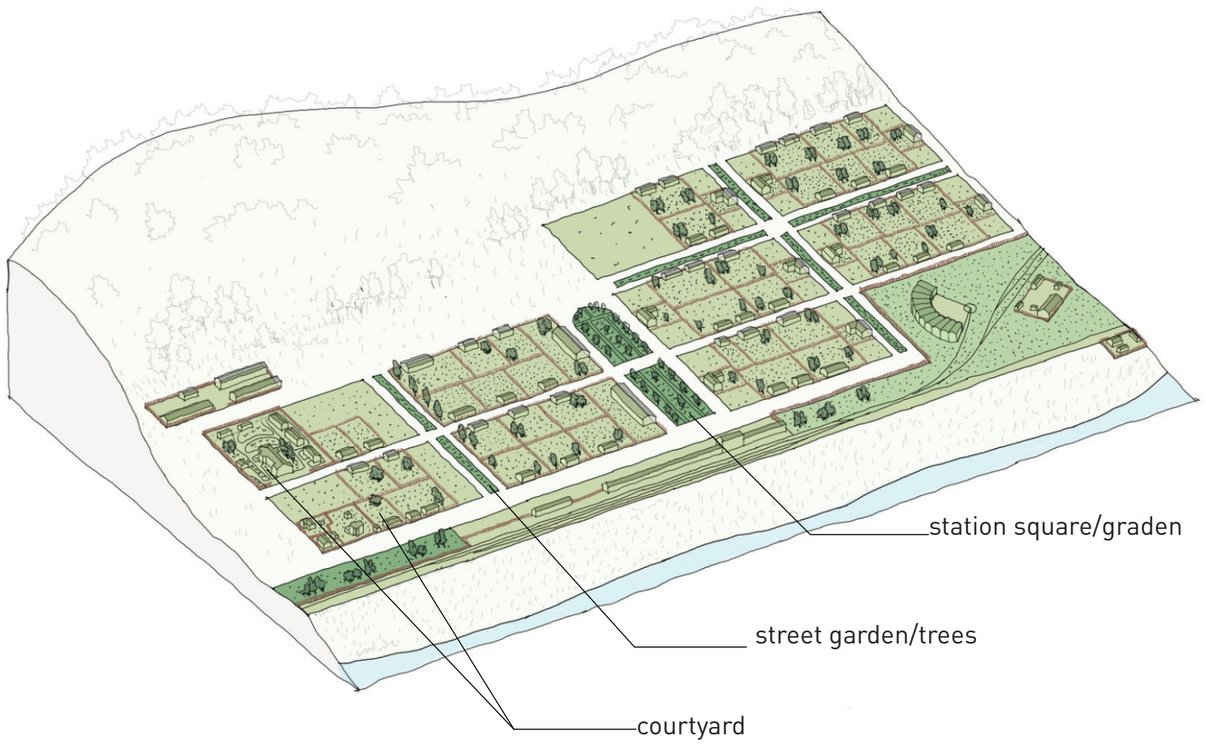
Street structure



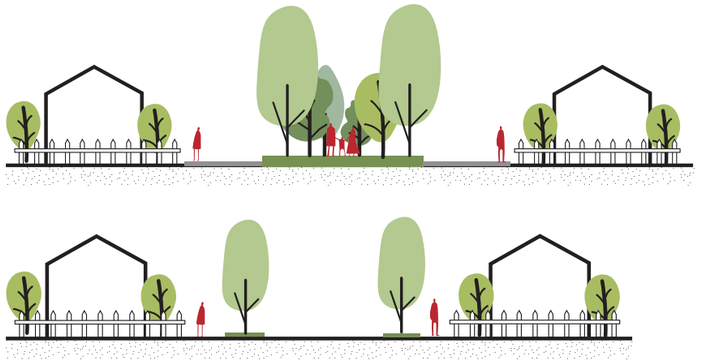
Building block



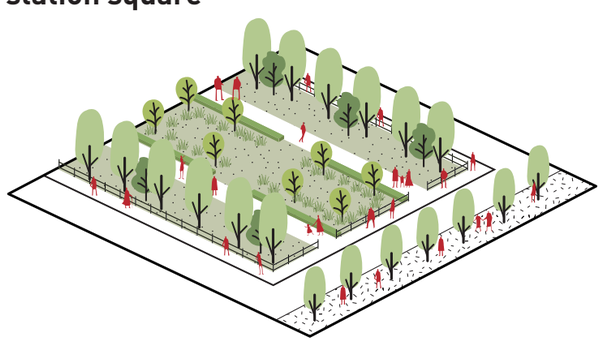
green open space design



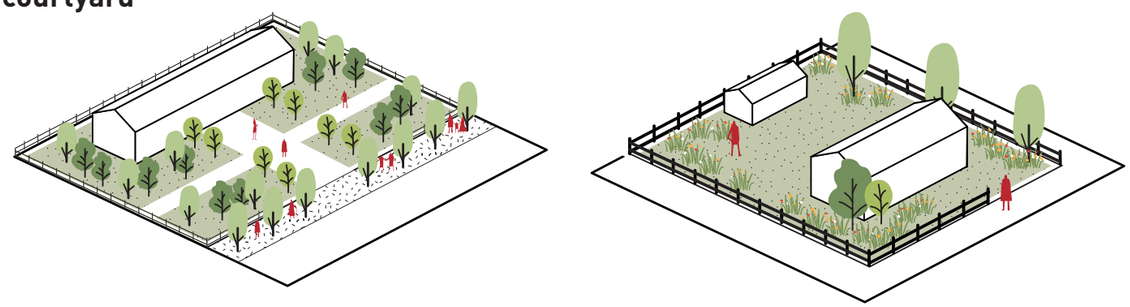
street green



station square

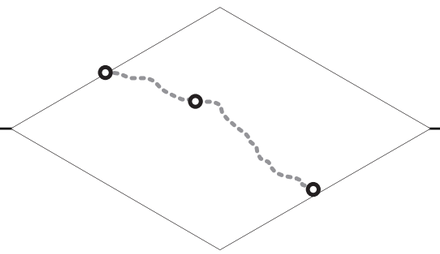


courtyard

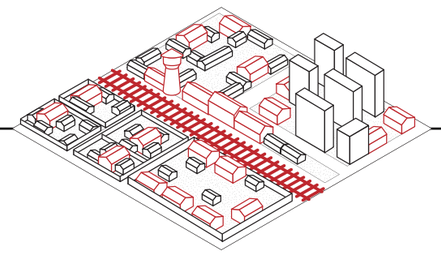


Design exploration——design strategy

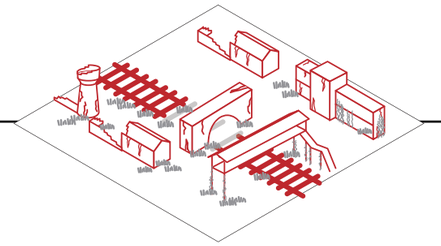
regional scale



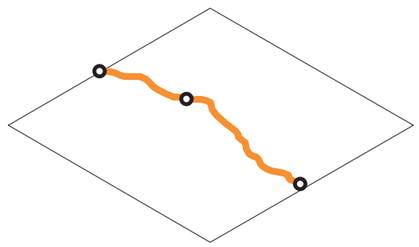
urban scale



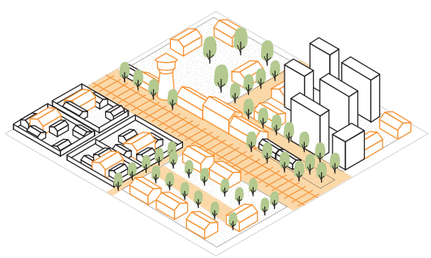
Architecture scale



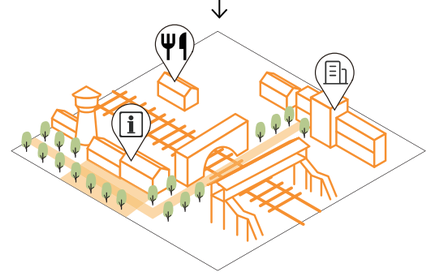
Tourism deveopment



Promoting Heritage tourism

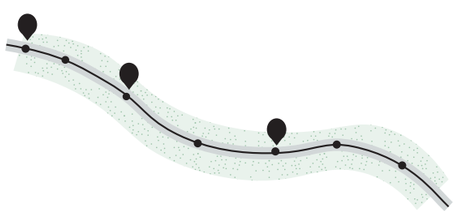


Heritage preservation plan integrating tourism-oriented spatial development

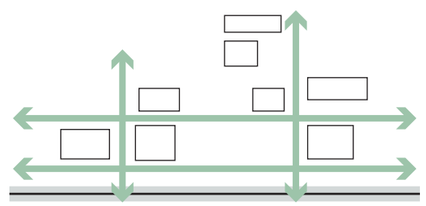


Transforming heritage sites into a series of tourist attractions and serving facilities

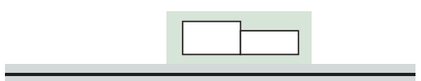
landscape interventions



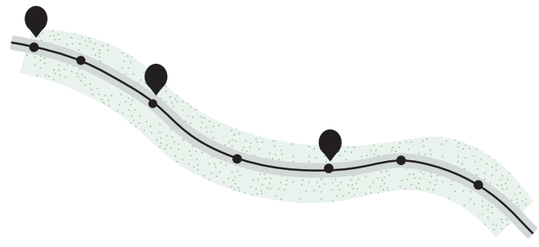
Developing heritage touristic facilities



enhancing historic urban fabric and building up guiding route

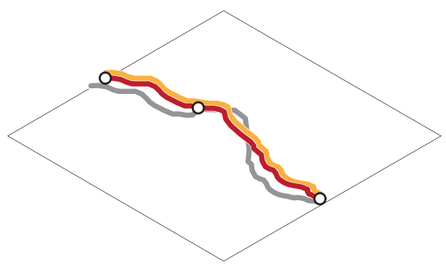


Improving heritage sites environment and reuse heritage facilities as landscape structures

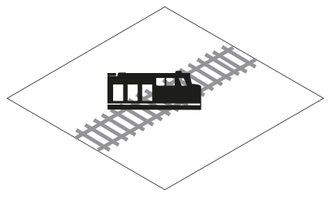


Developing heritage touristic facilities

1.Multiple transportation and guided routes planning

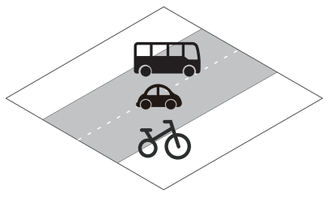


Railway



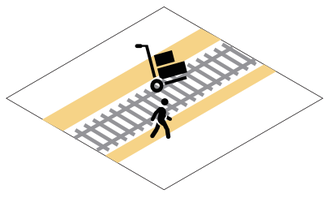
set tourism train using old railway

Road



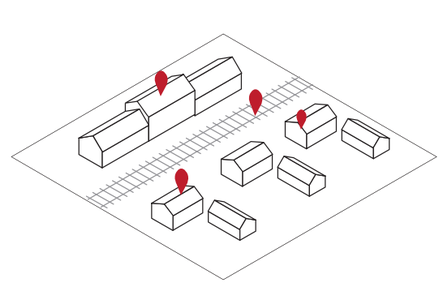
improve road connection

Hiking trail

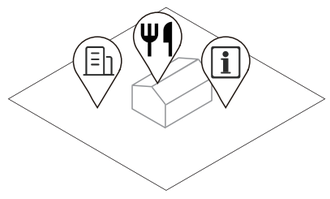


transform some railway into hiking route

2.Creating heritage attractions and service facilities

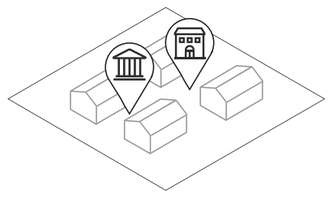


Service facilities

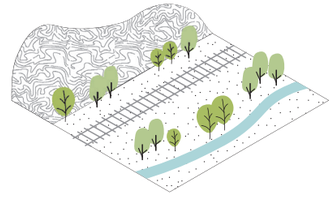


hotel, tourism center, restaurant

Tourism attractions

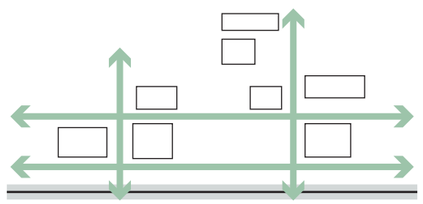


museum, heritage buildings, districts



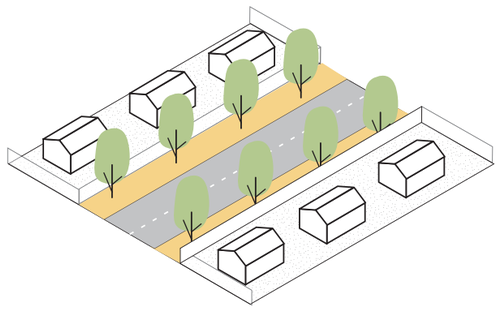
railway structures within landscape

Design interventions——Urban scale

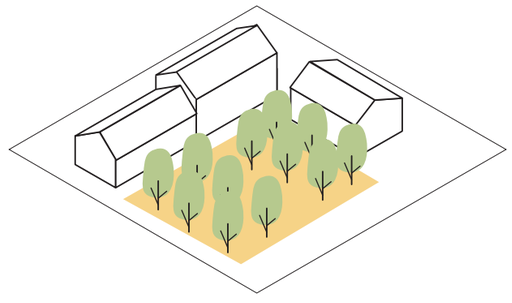


enhancing historic urban fabric and building up guiding route

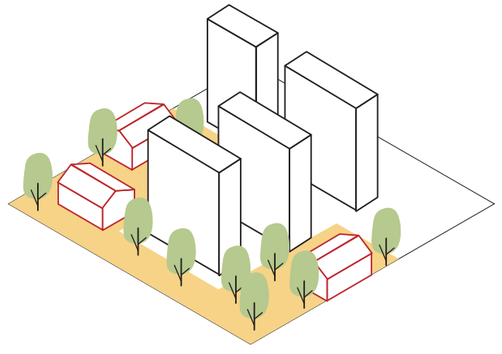
1. open up green pedestrian areas to enhance grid street structure and visual/spatial axis



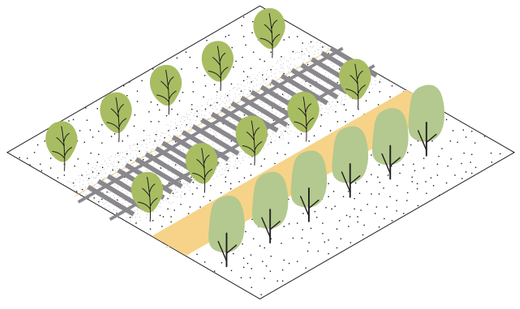
2.reinterpreting historic green/ public space and landscape quality



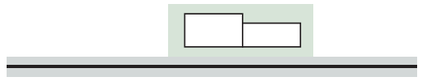
3. connect scattered heritage by green street structure or adding green plots/public space nodes



4.Transform historic railway line into green connection



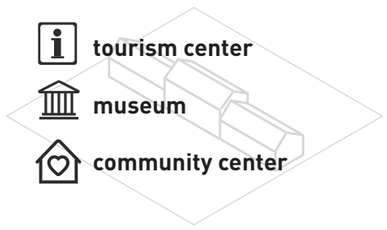
Design interventions——Architecture scale

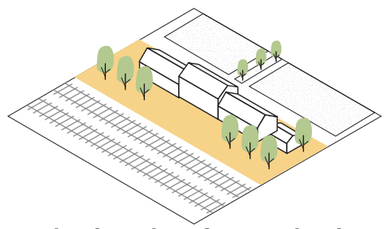


Improving heritage sites environment and reuse heritage facilities as landscape structures

1.historic center: station buildings



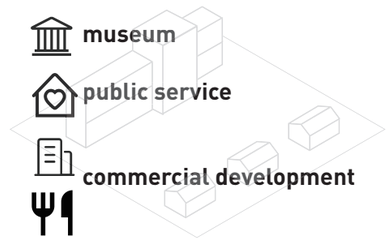


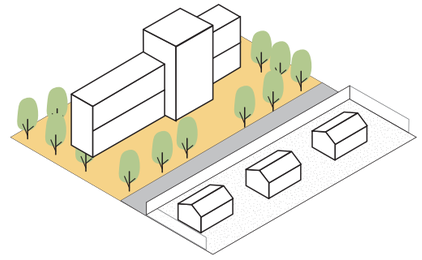


gathering place&central axis

4.scattered spots: other public service buildings



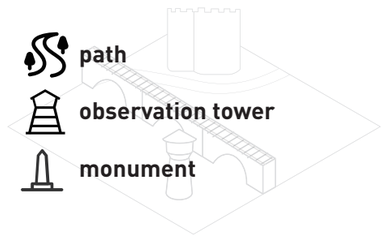


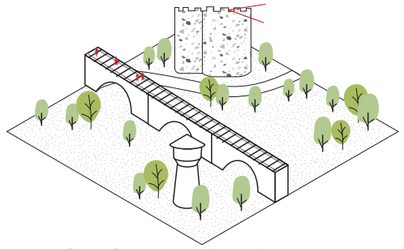


green public space around site

2.Landmark: engineering facilities





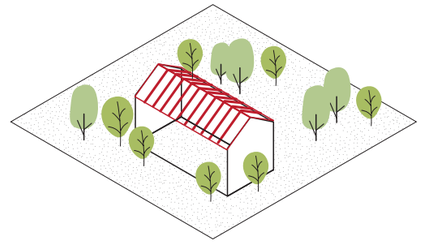


landscape structures

5.Remians: Heritage building ruins



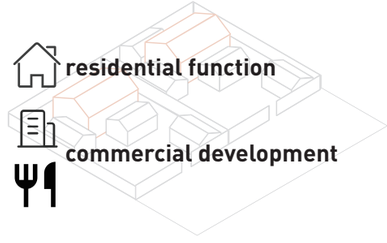


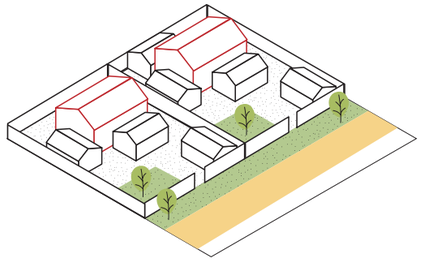


landscape structures

3.Heritage matrix:residential house group



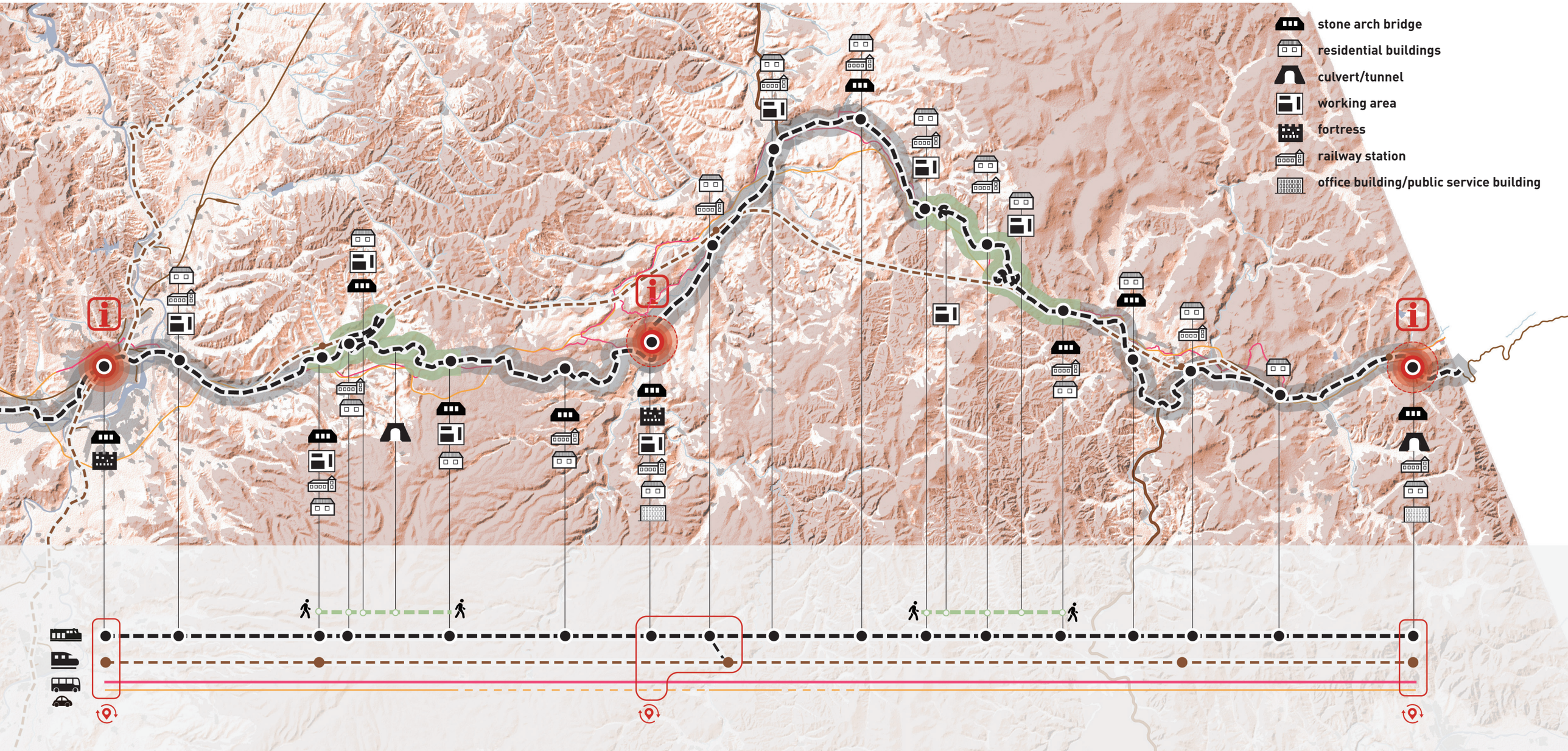




private coutryard
front door garden

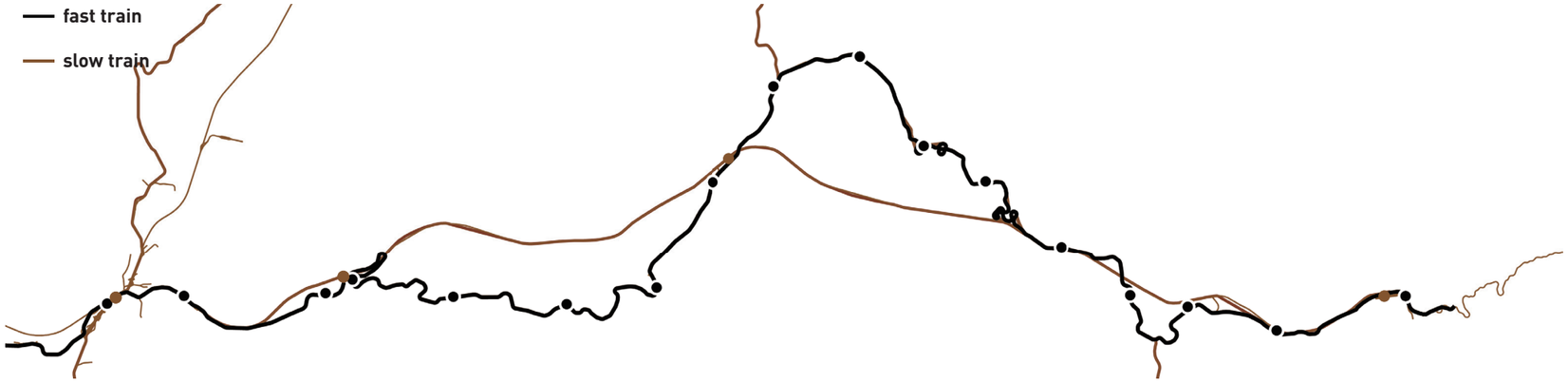
Regional scale: railway cultural and natural journey

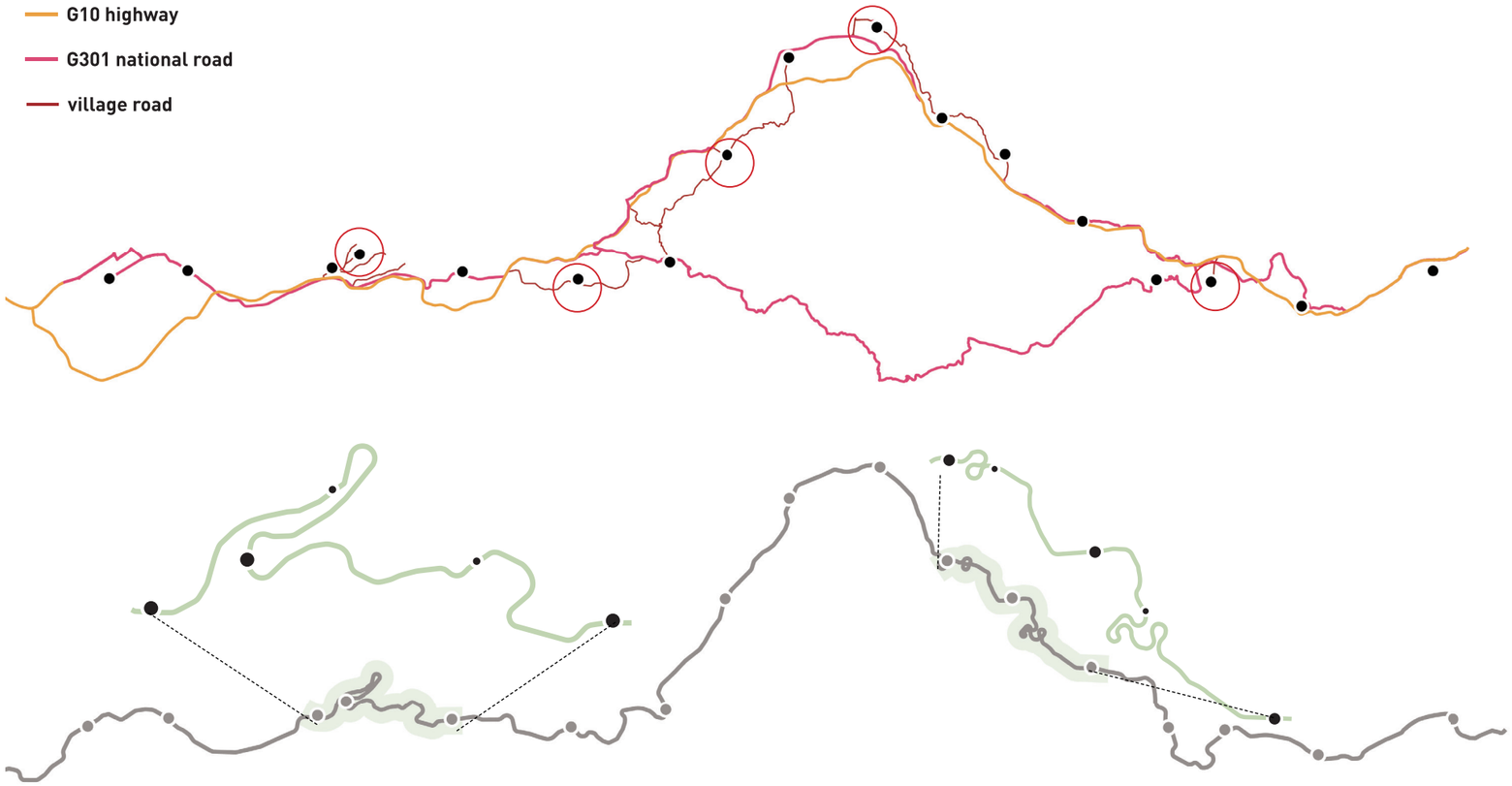
Route plan&tourist attractions



Regional scale: railway cultural and natural journey

Different transportation





reuse old railway line as a slow train line for tourists



slow tourism trains

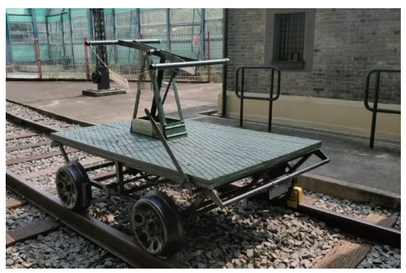
improve road connection with remote villages and countryside



adding signage indicating heritage location

hiking route transformed from spiral loop



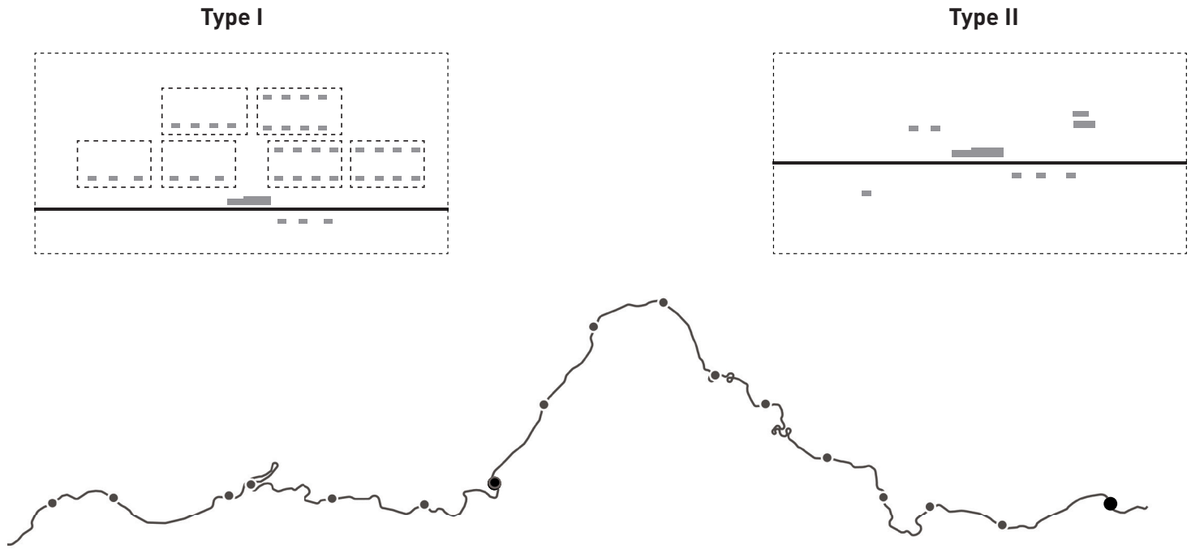


hiking&railway handcar

Urban scale&Architecture scale: historic urban landscape protect and improve

Choosing urban patches

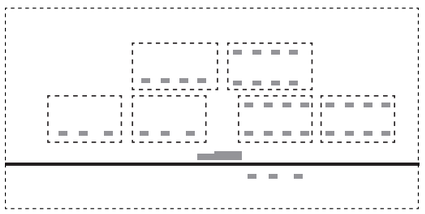
1. current historic urban patches

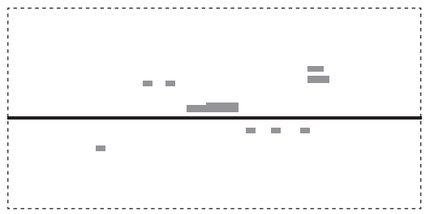


Urban scale&Architecture scale: historic urban landscape protect and improve

Choosing urban patches

1. current historic urban patches





2.considering and combining evolved different context









Urban scale&Architecture scale: historic urban landscape protect and improve

Choosing urban patches

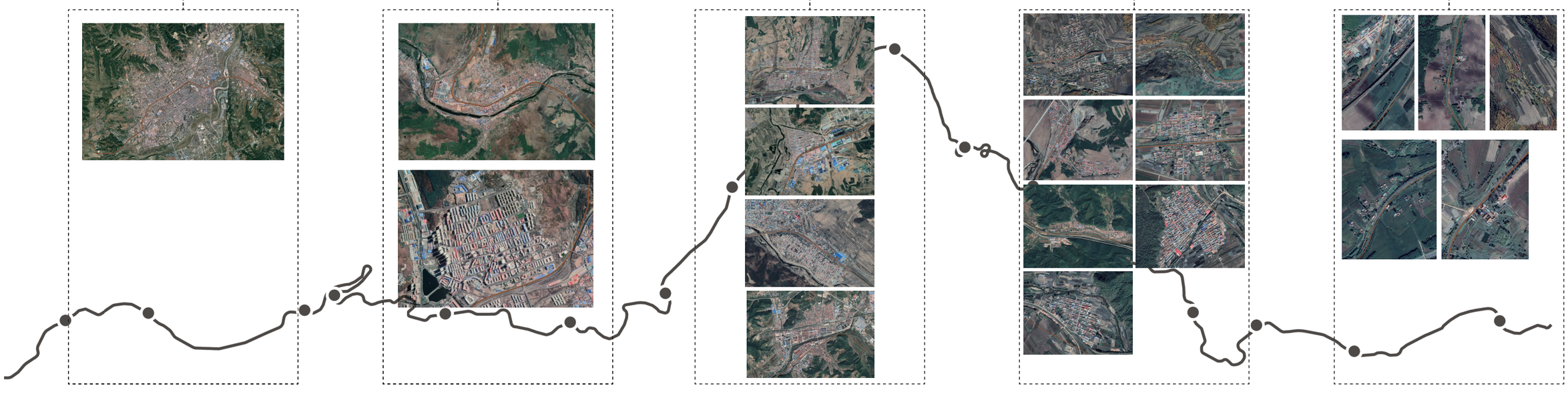
1.current historic urban patches



2.considering and combining evolved different context

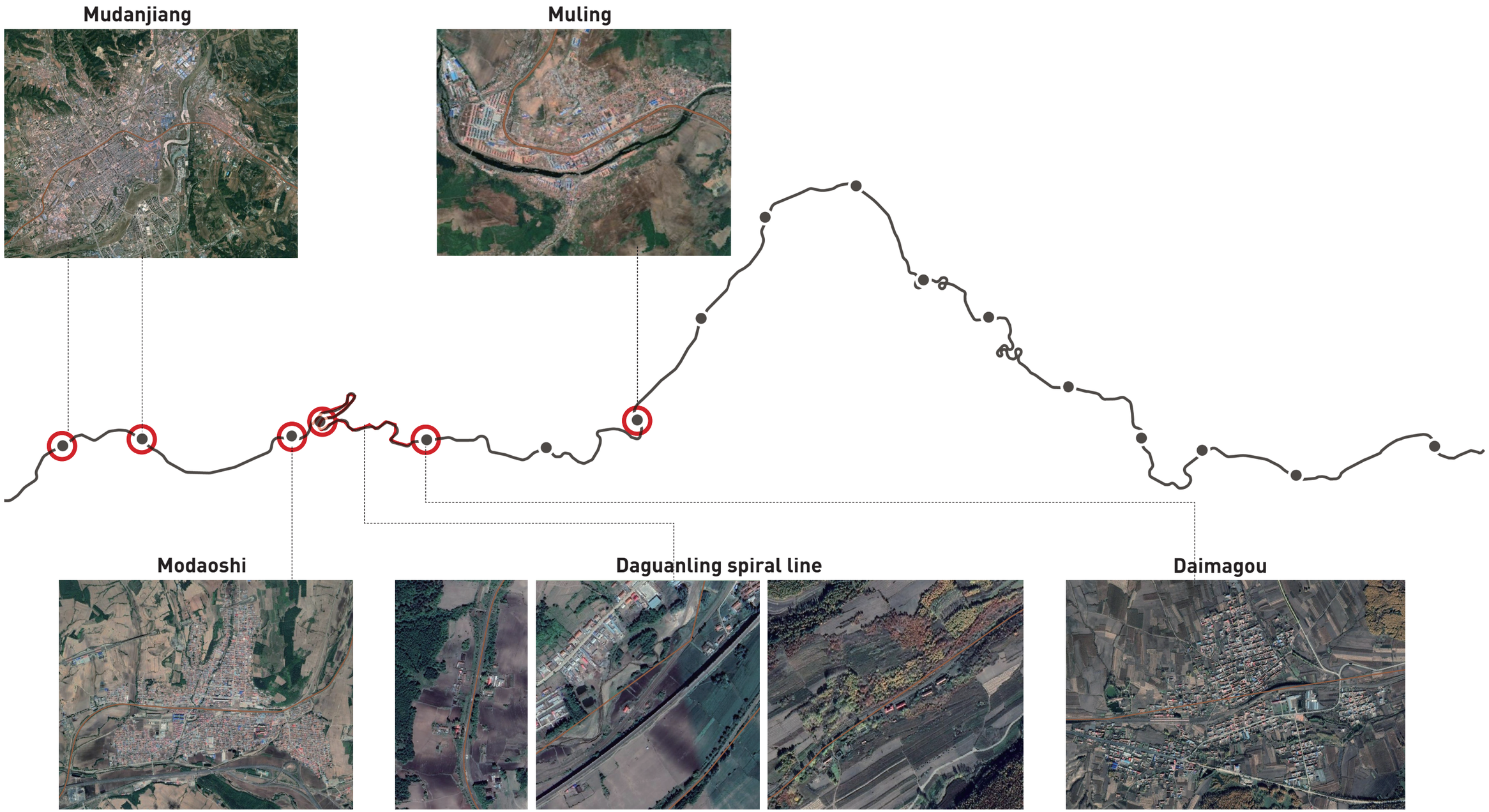


3.current heritage pattern and context——five types along binsui line



Urban scale&Architecture scale: historic urban landscape protect and improve

5 testing urban patches



Design site 1: Mudanjiang



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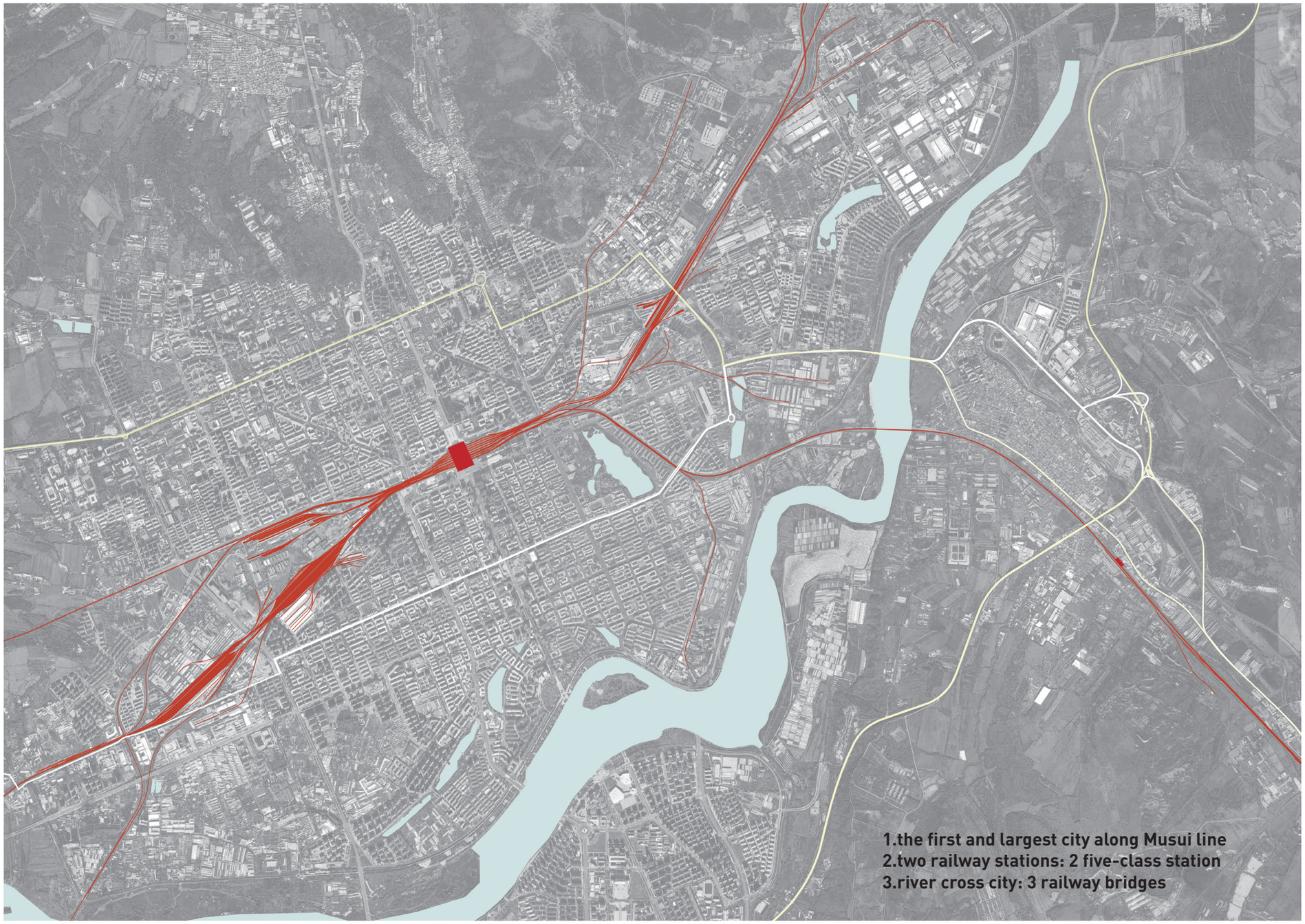
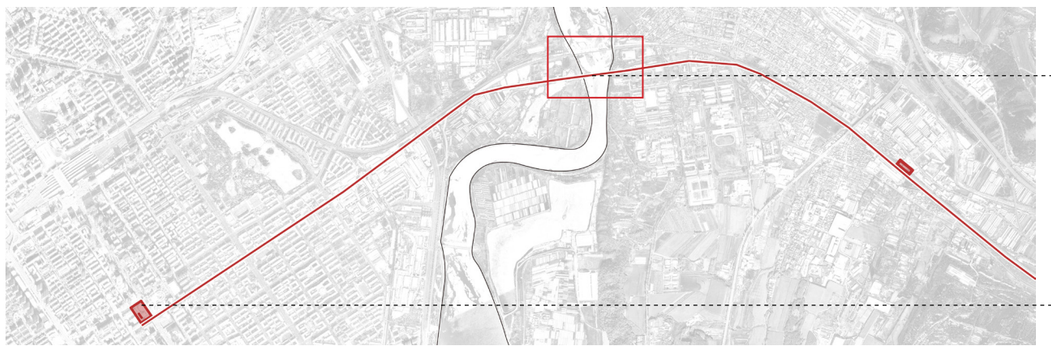


Design site 1: Mudanjiang

History analysis

1901-1935 Russian control





First Mudanjiang railway station



Mudanjiang steel bridge

-built first railway station in Mudanjiang, as well as the railway bridge

1935-1939 Japanese control

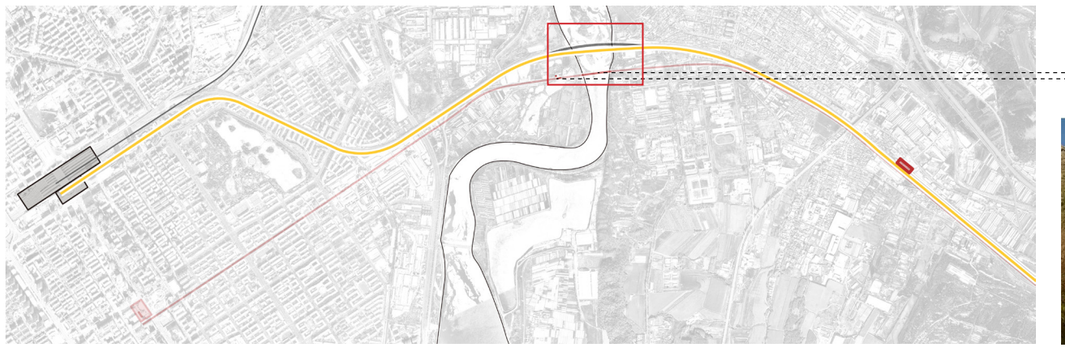


Old Mudanjiang railway station

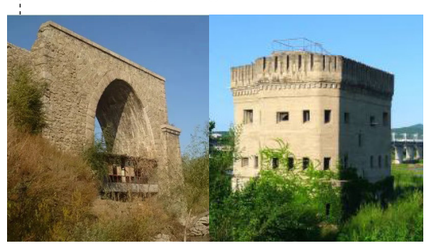
Japanese bridge(right)

-demolished the Russian railway bridge and railway line
-built new railway line, bridge and station

now super-fast railway development



Mudanjiang bridge ruins

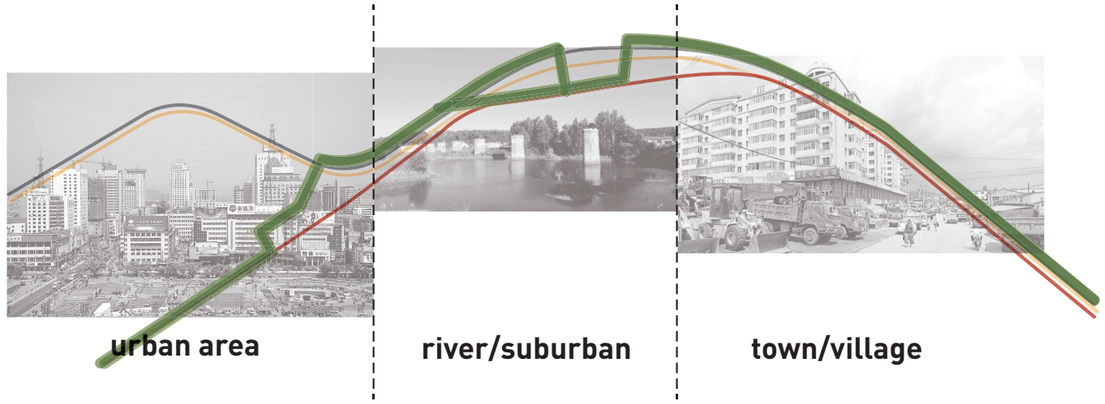


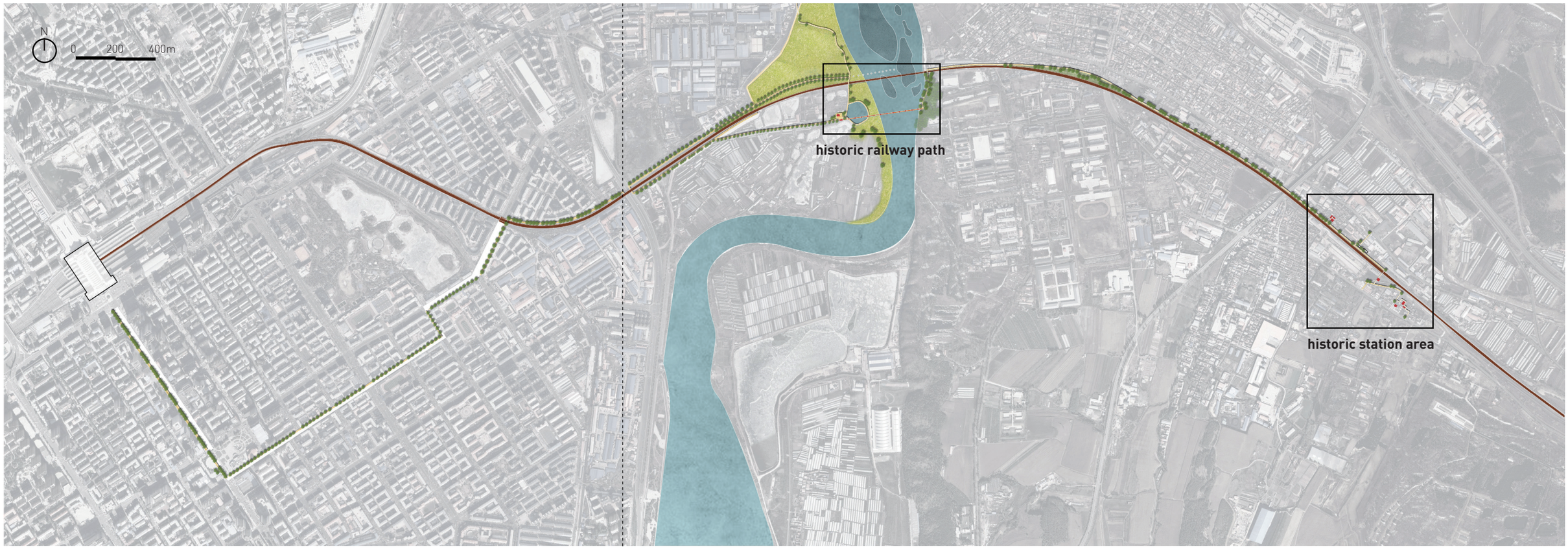


-demolished the Russian railway station
-changed Japanese railway line for Super-fast railway, demolished some sections and Japanese bridge

Design site 1: Mudanjiang

Green and historic connection





Design site 1: Mudanjiang

Green connection

urban area——new green padestrain

before



current



design vision



Design site 1: Mudanjiang

Green connection

suburban area——green path

before



downloaded from Baidu street map

current



downloaded from: Baidu street map(redrawn by author)

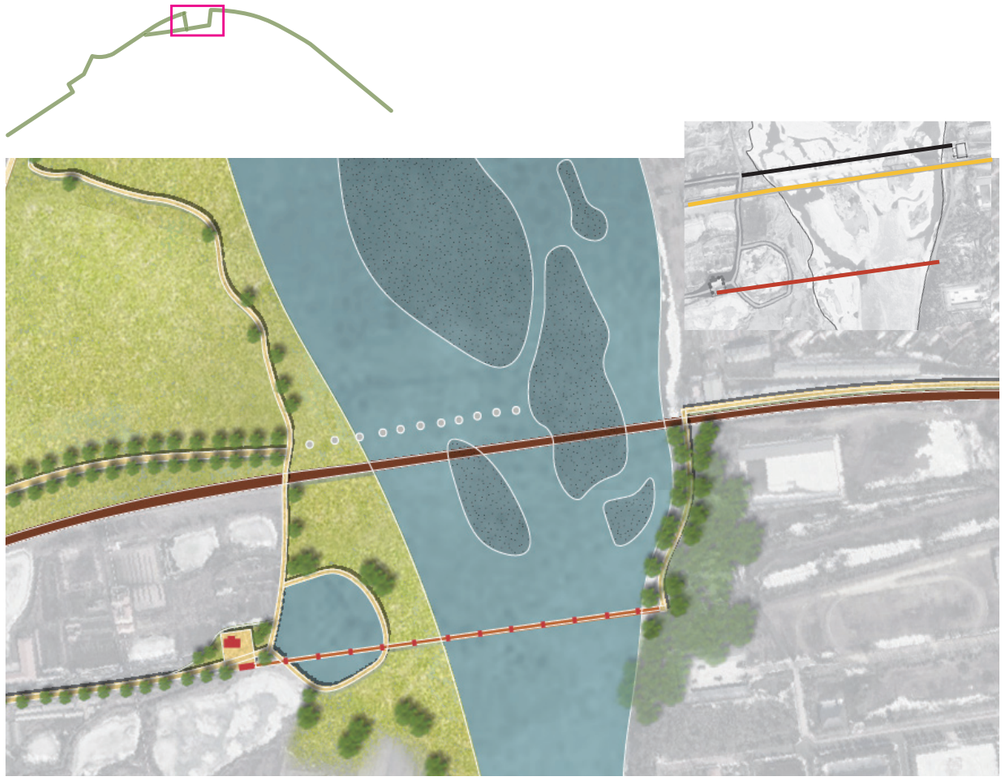
design vision



FIG. 6.8 Design vision for new green pedestrain/drawn by author

Design site 1: Mudanjiang

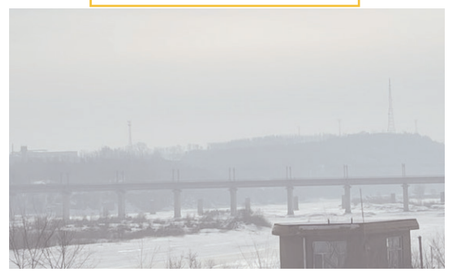
historic railway path



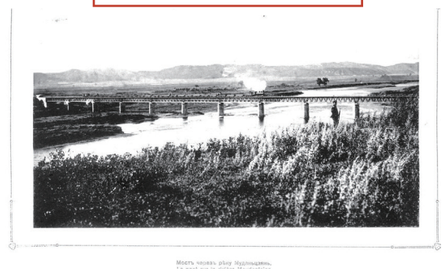
Japanese bridege



fast railway bridge



Russian bridege



Japanese bridege ruins



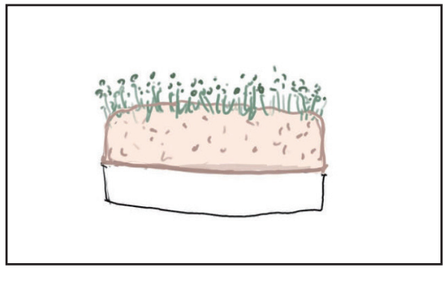
fast railway bridge



Russian bridege piers



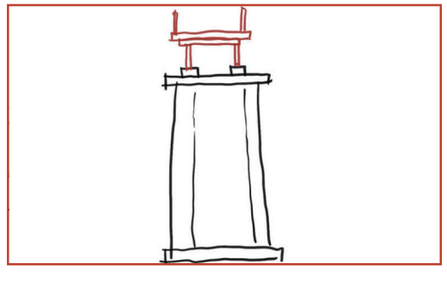
ecological island



fast railway bridge



pedestrian bridge



Design site 1: Mudanjiang

historic railway path

Japanese bridege——ecological island



Russian bridege —— pedestrian bridge



Design site 2: Muling



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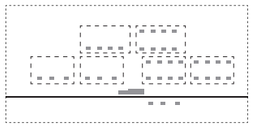
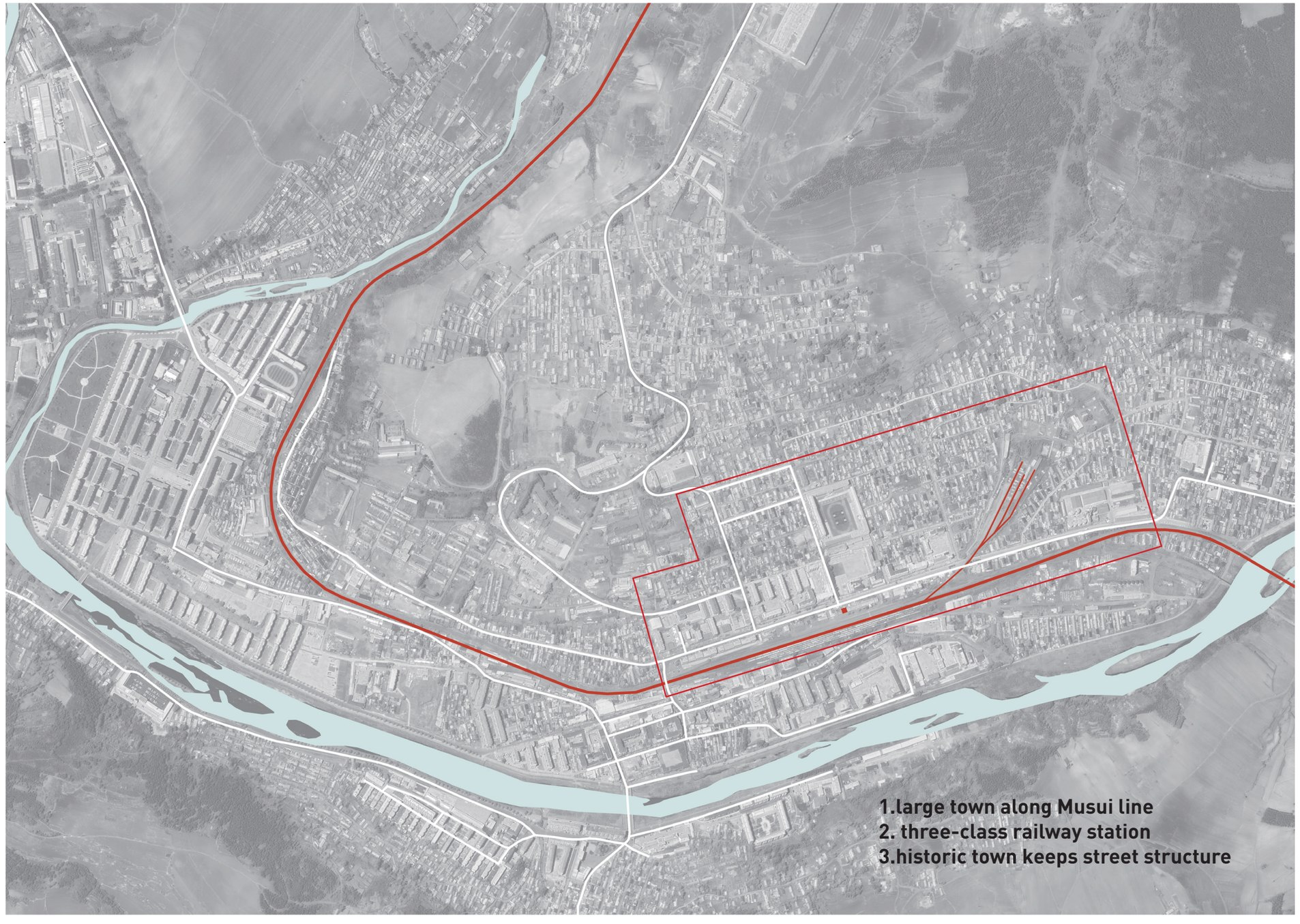




Design site 2: Muling

Heritage analysis

residential buildings



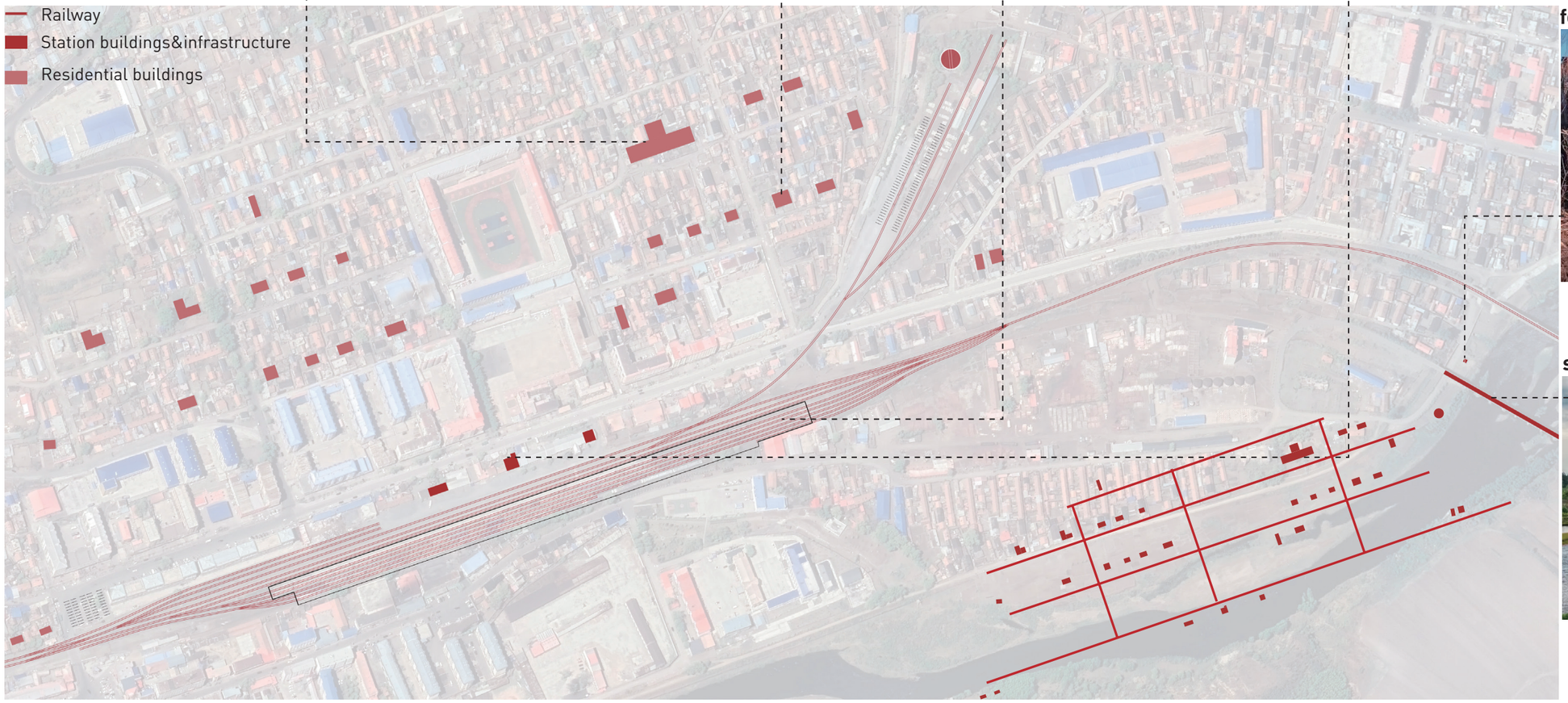


locomotive warehouse



railway station





fortress ruins

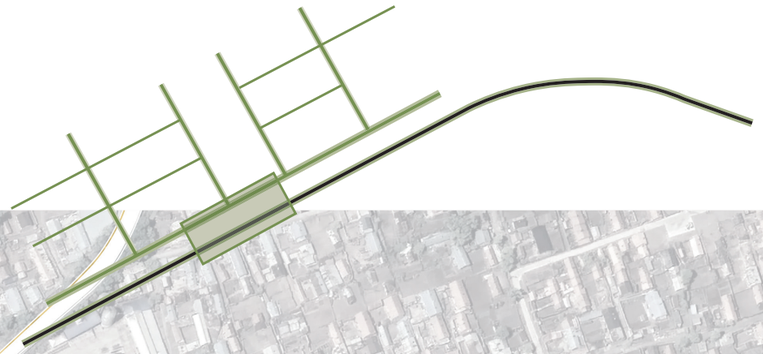


stone arch bridge



Design site 2: Muling

railway historic town

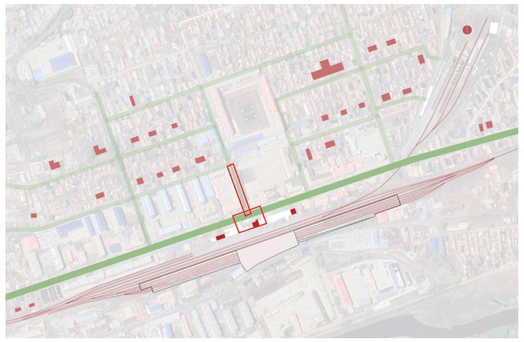


-build the green pedestrian to emphasize historic structure as well as improve spatial quality, indicating heritage sites

-transform the depot area into a parking lot, the locomotive train parking area into a train museum, reuse the heritage site and improve attractiveness

Design site 2: Muling

Station square



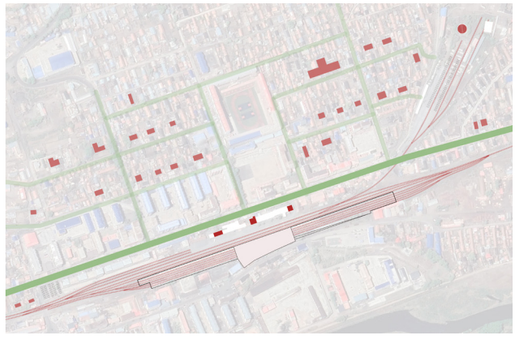
current situation





Design site 2: Muling

Green streets——main street



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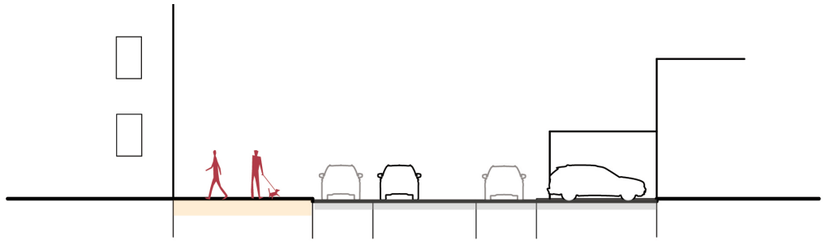
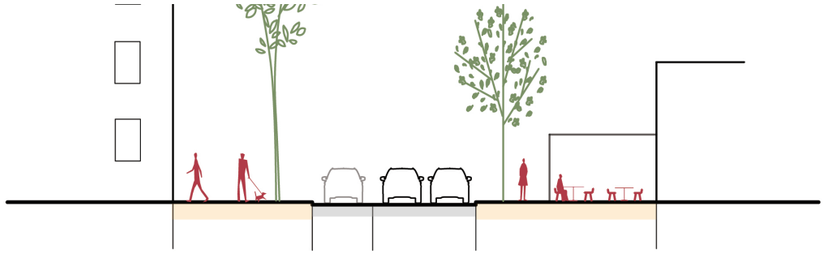


design



now

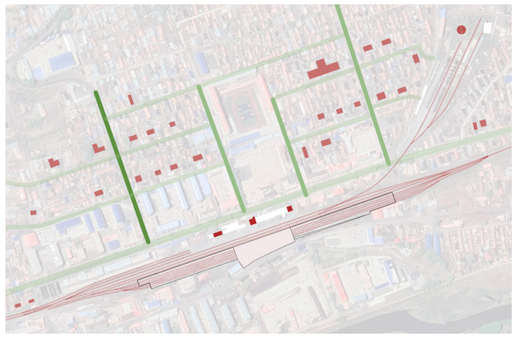


design vision



Design site 2: Muling

Green streets——secondary street



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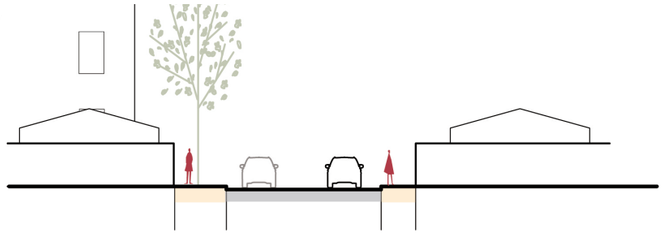
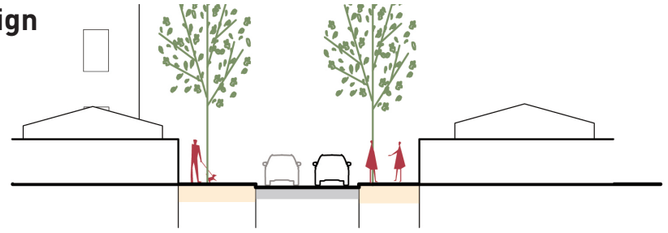


design



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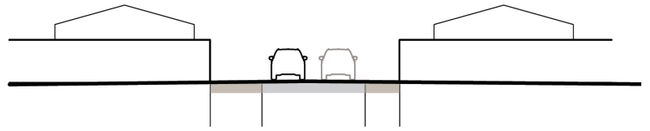

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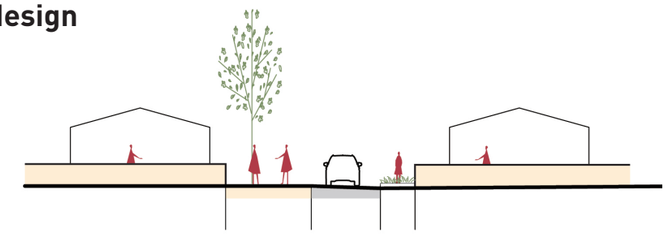


now



surface channel



ecological ditch

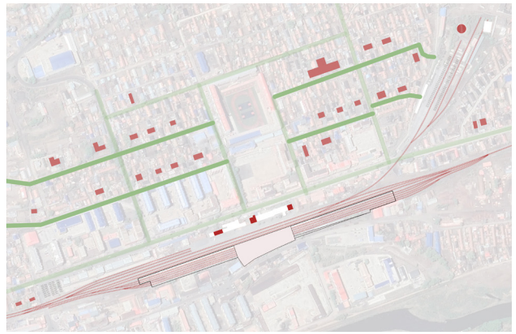


design vision



Design site 2: Muling

Green streets——shared street



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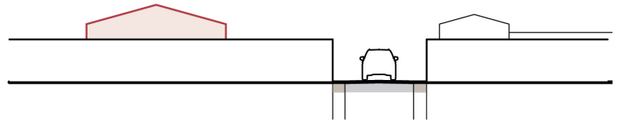
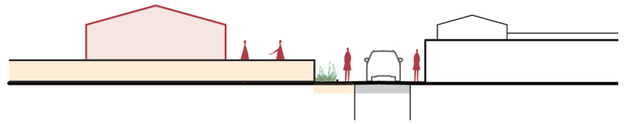


design



now



design vision



Design site 3: Modaoshi



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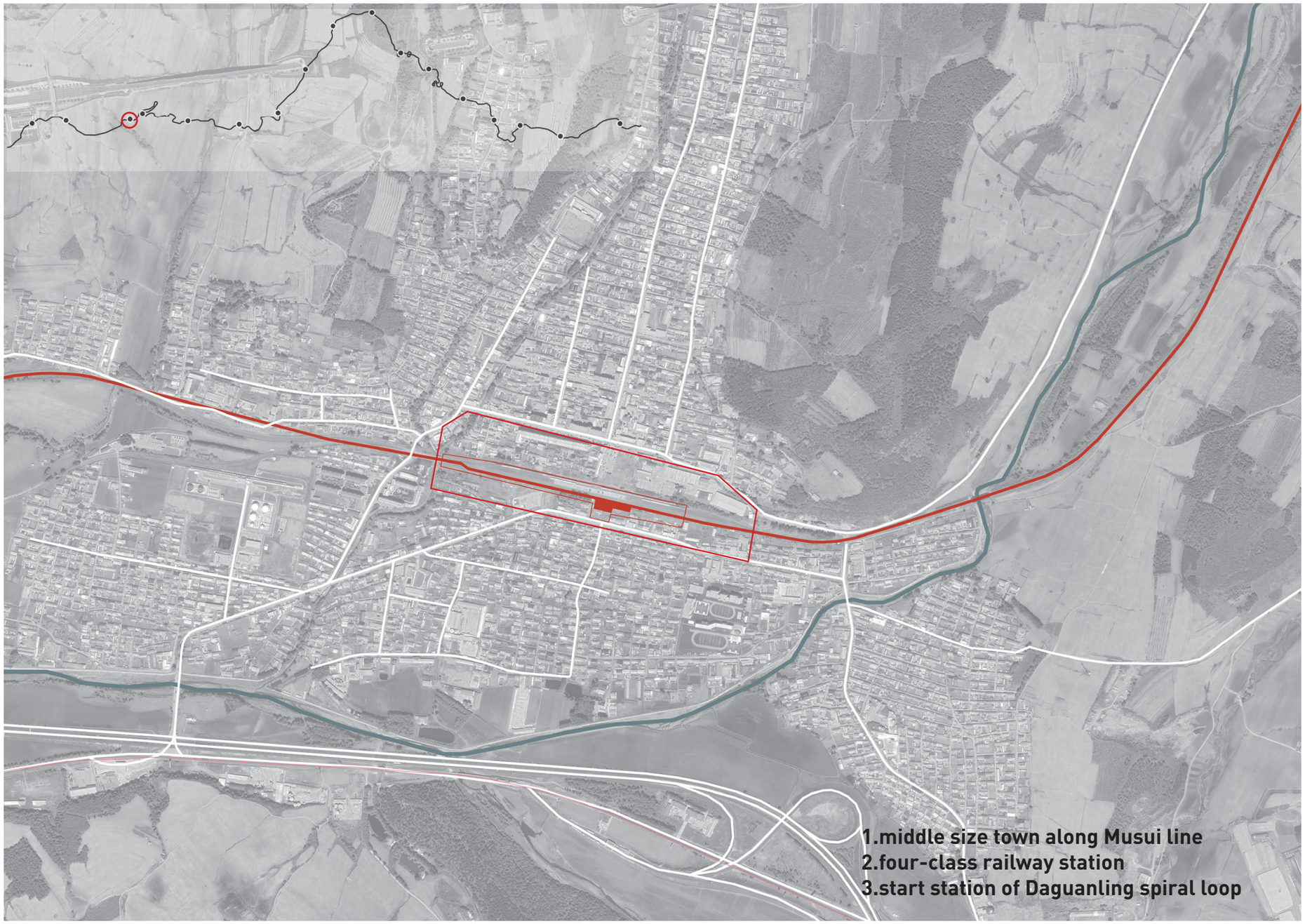
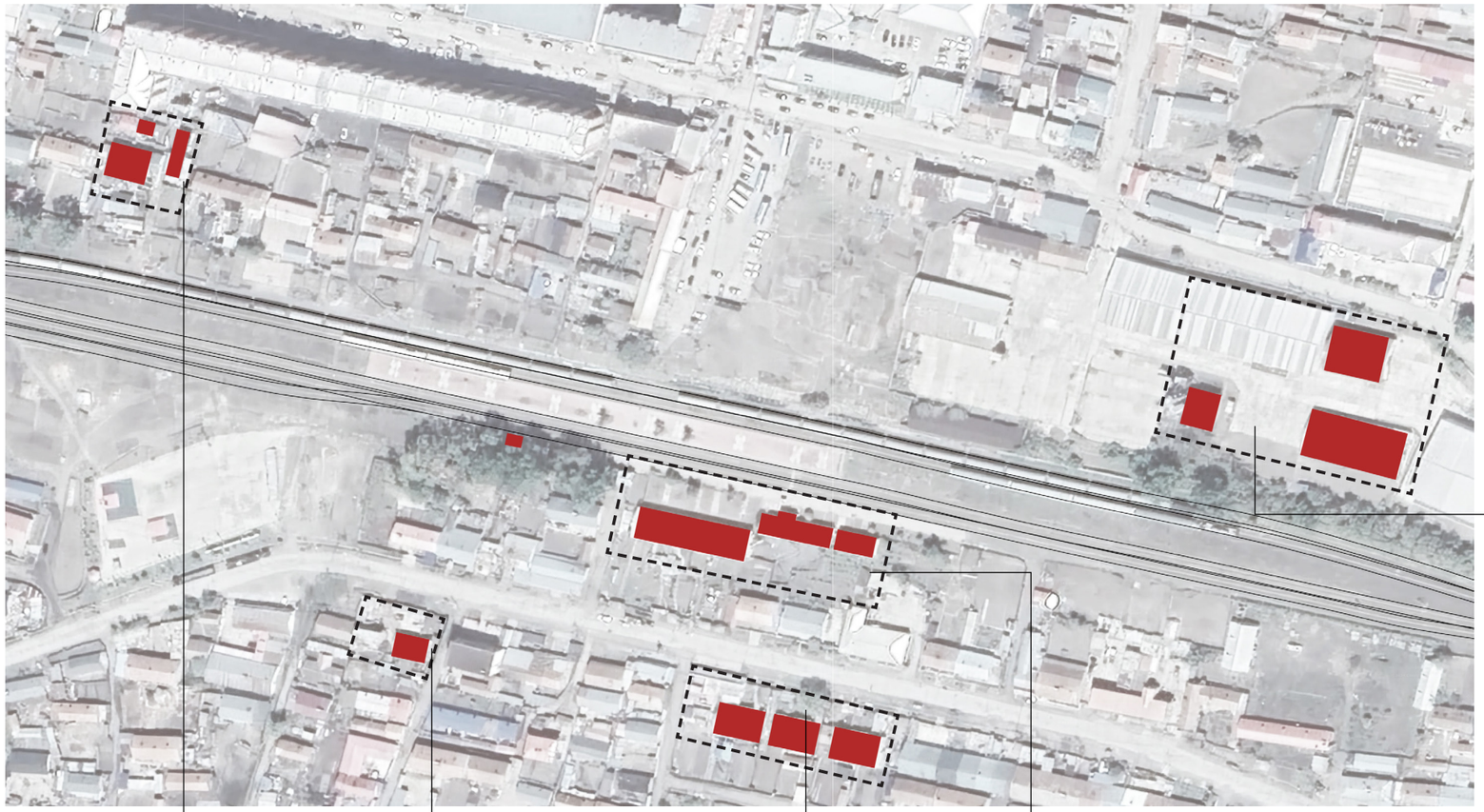
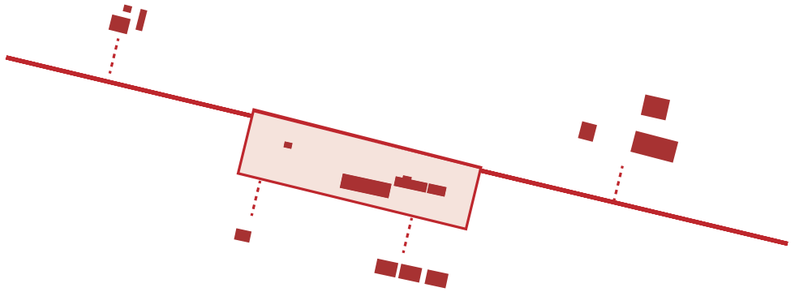


Design site 3: Modaoshi

Heritage analysis





warehouse



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working area



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residential building



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station building



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station toilet



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Design site 3: Modaoshi

Site analysis



Street market



Taken by author



Taken by author

Chaotic Parking lot



Taken by author

Inactive station area



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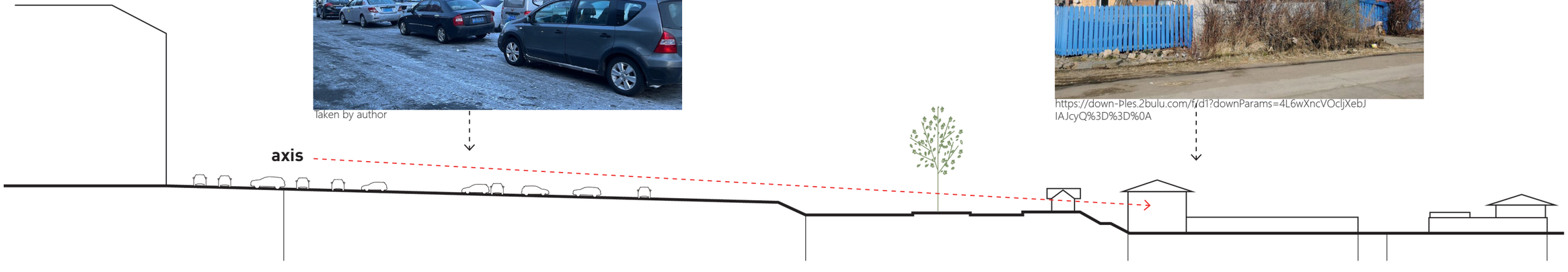
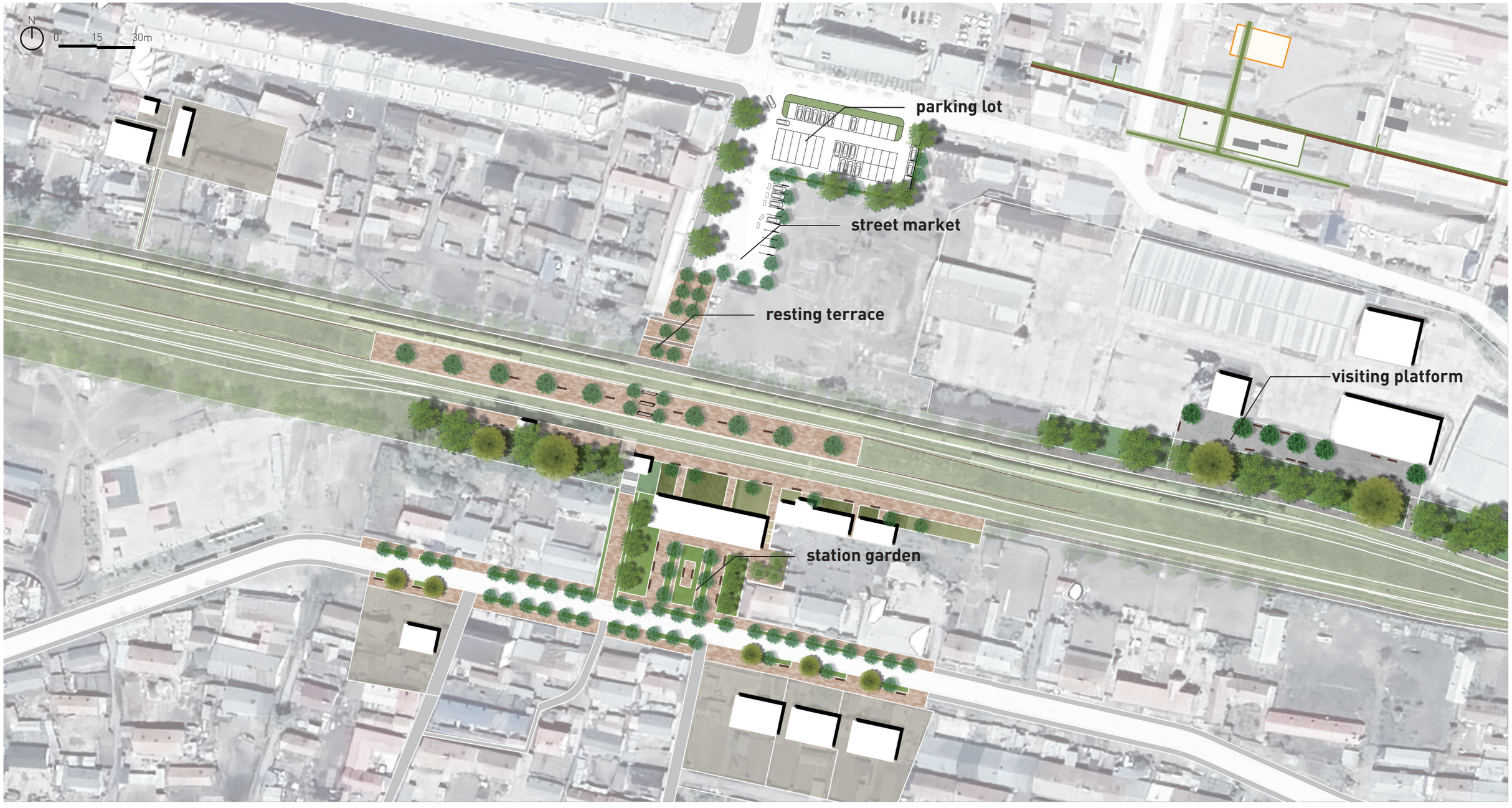
Current section A-A'



Design site 3: Modaoshi

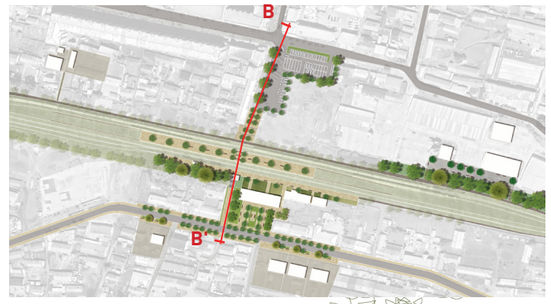
Historic center axis



Design site 3: Modaoshi

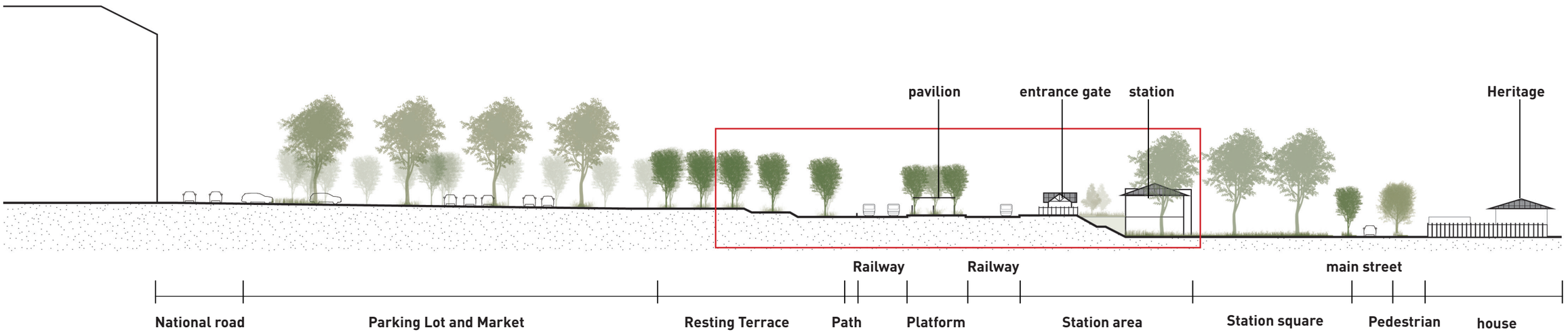
New green axis

Zoom in green axis





Site section B-B'



Design site 4: Daimagou



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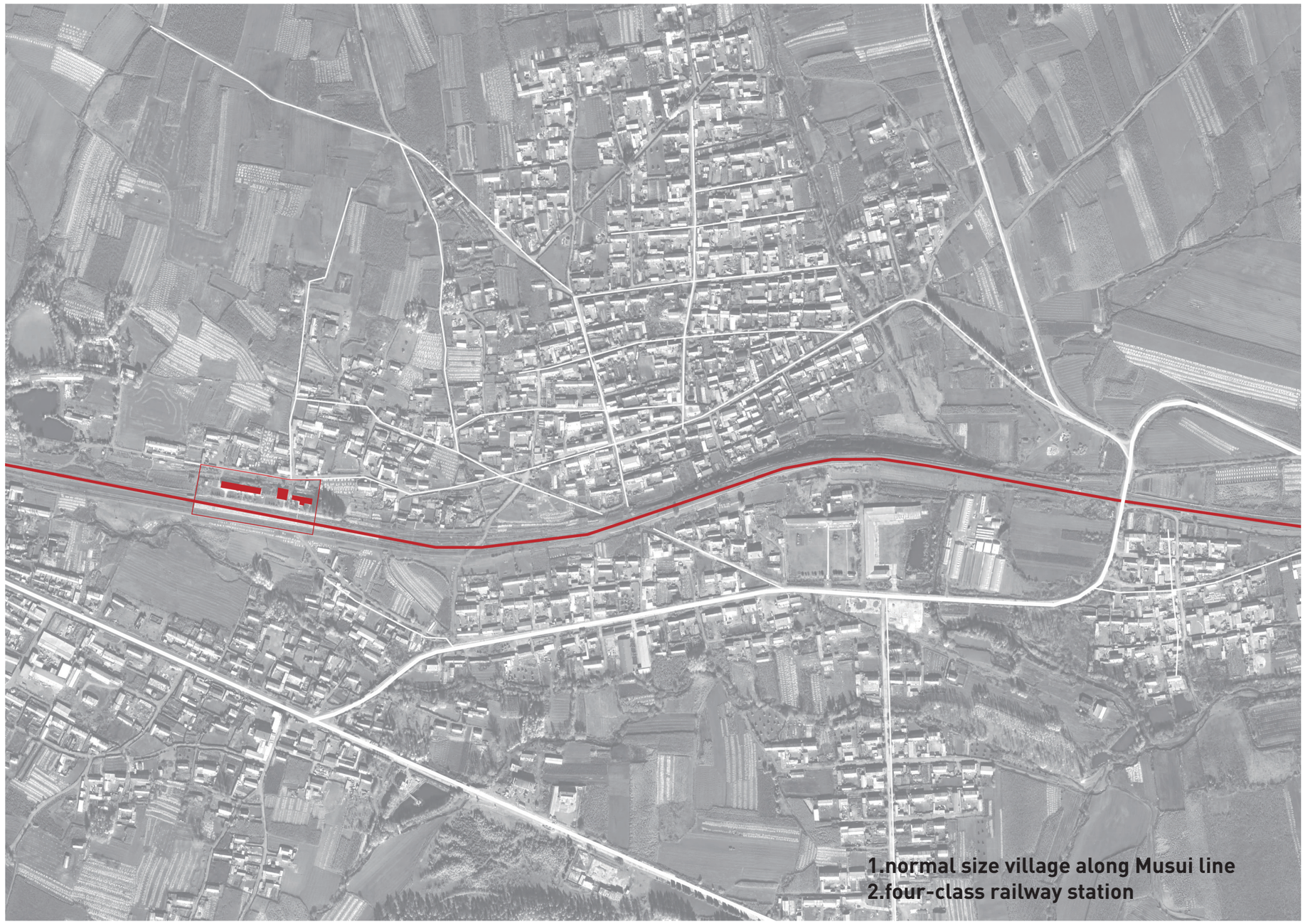

Design site 4: Daimagou

Heritage analysis

station building



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residential building



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water pump house



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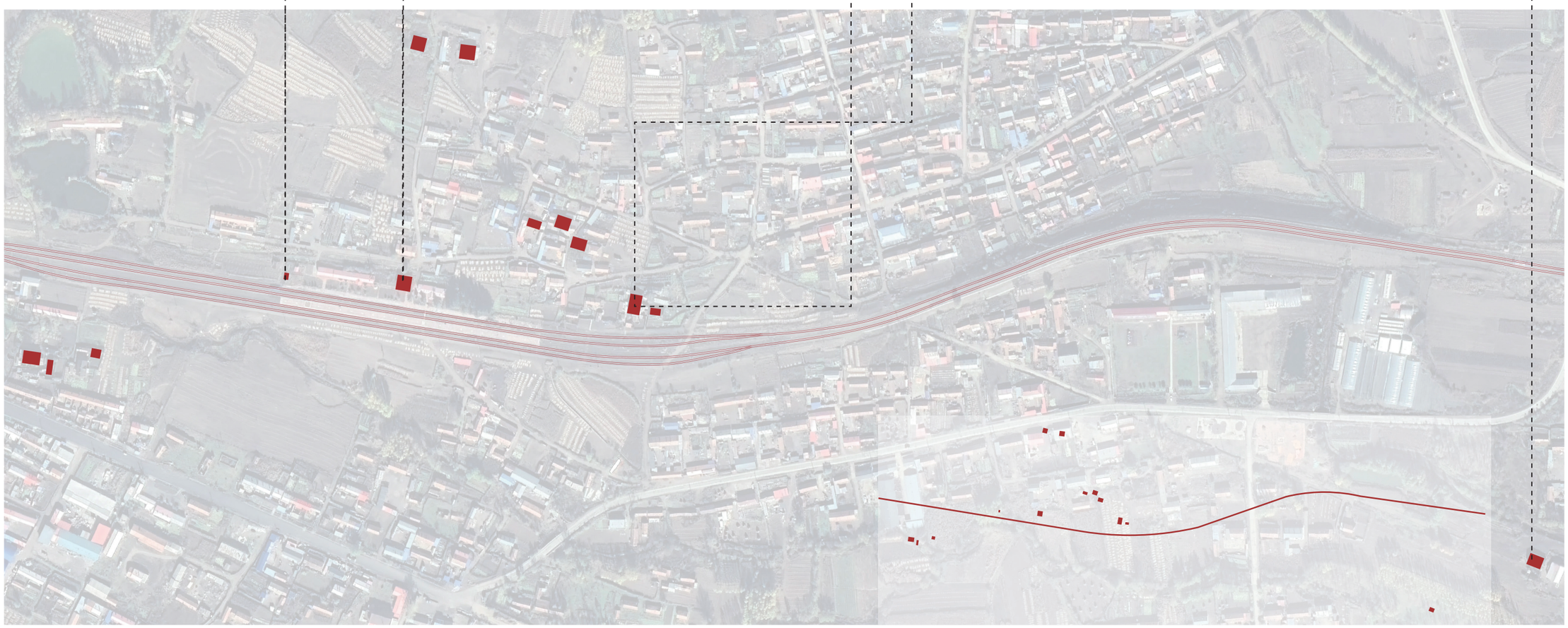
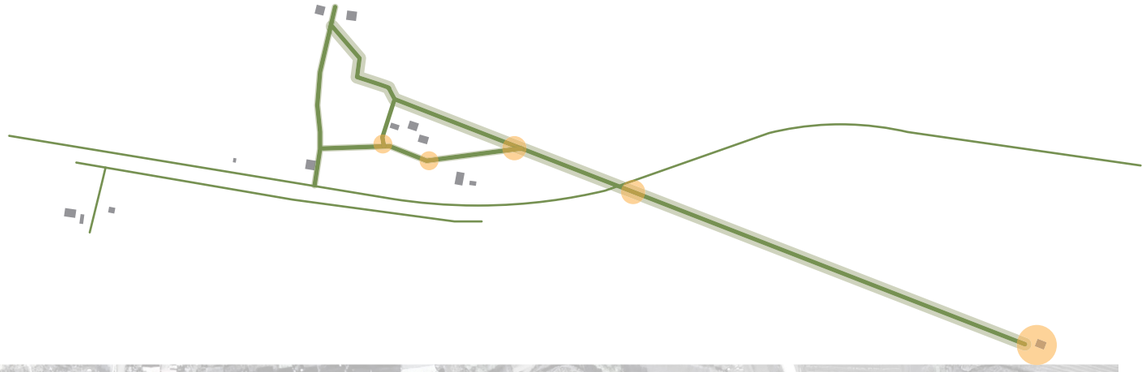
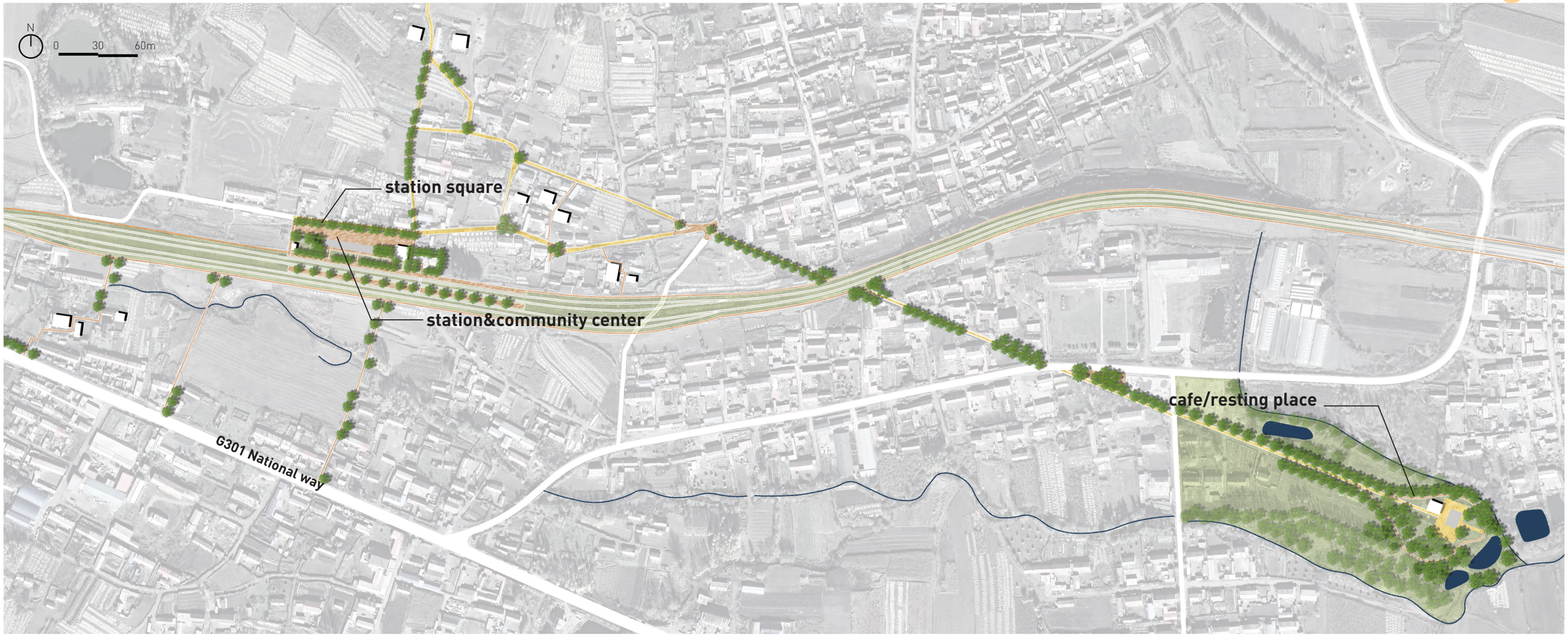


Design site 4: Daimagou

Historic village

-connect scattered heritage sites by small public nodes and green tree lines, guiding visitors while improving spatial quality





Design site 4: Daimagou

the path to the pond

small public square



Design site 4: Daimagou

the path to the pond

tree lines



Design site 4: Daimagou

The path to the pond

the path through trees and by the pond



Design site 5: Daguanling Spiral loop



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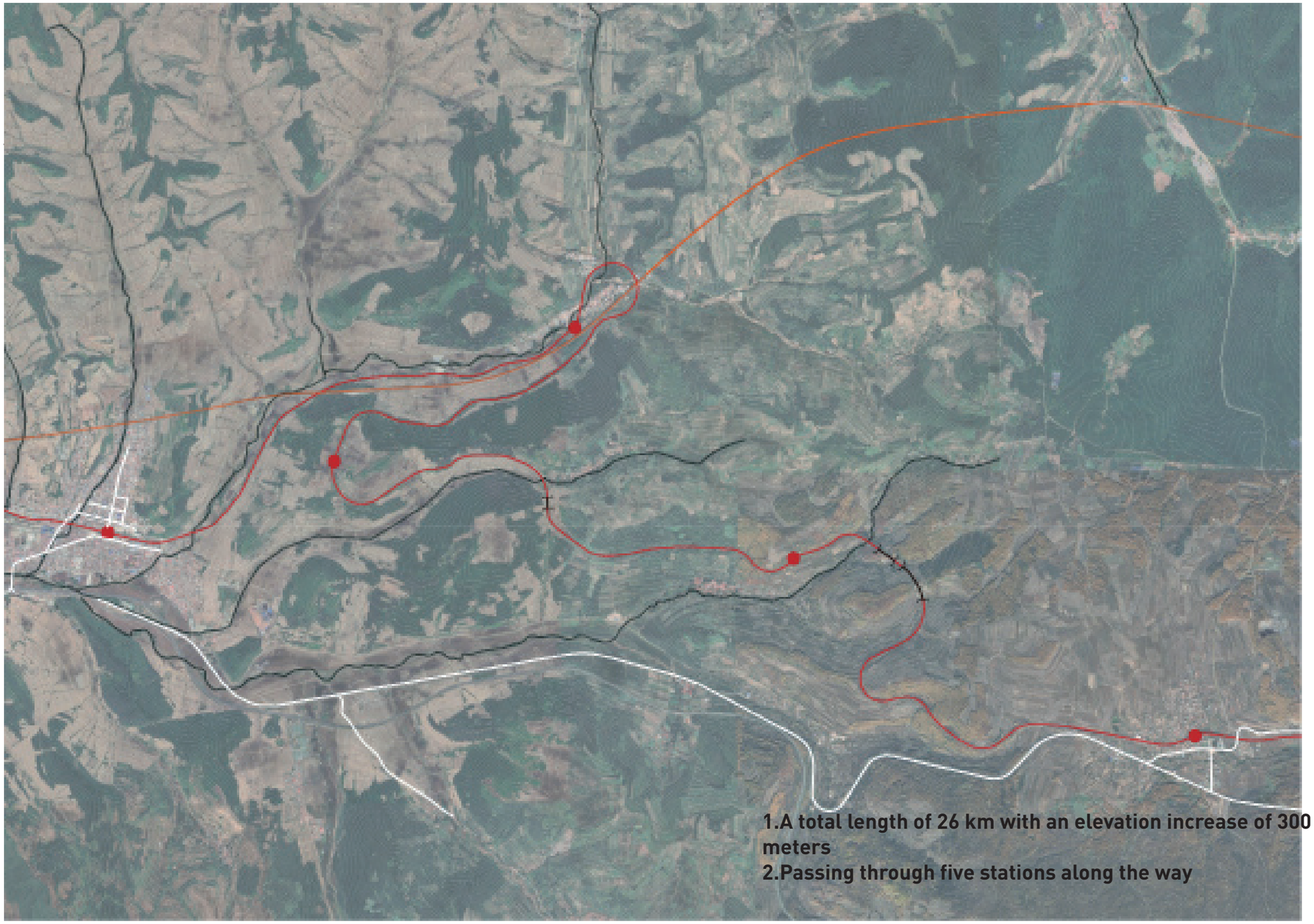

Design site 5: Daguanling Spiral loop

Heritage analysis

residential building



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https://down-ples.2bulu.com/f/d1?downParams=YaLJIq0KNSK%2B4r6cKF7JpA%3D%3D%0A

stone arch bridge



https://www.sohu.com/a/166441191_655962

stone arch bridge



taken by author

working area



https://down-ples.2bulu.com/f/d1?downParams=h0Wt8RaEDLIKBLYt1Quxlw%3D%3D%0A



https://down-ples.2bulu.com/f/dn1?downParams=KCDWXPO9gFSbRoMU7yFIGQ==&p_appVersion=7.6.6&p_userId=35049030&p_productType=0&sdkLevel=15.6&p_terminalType=3&deviceName=iPhone%2013

station area



taken by author



taken by author

tunnel

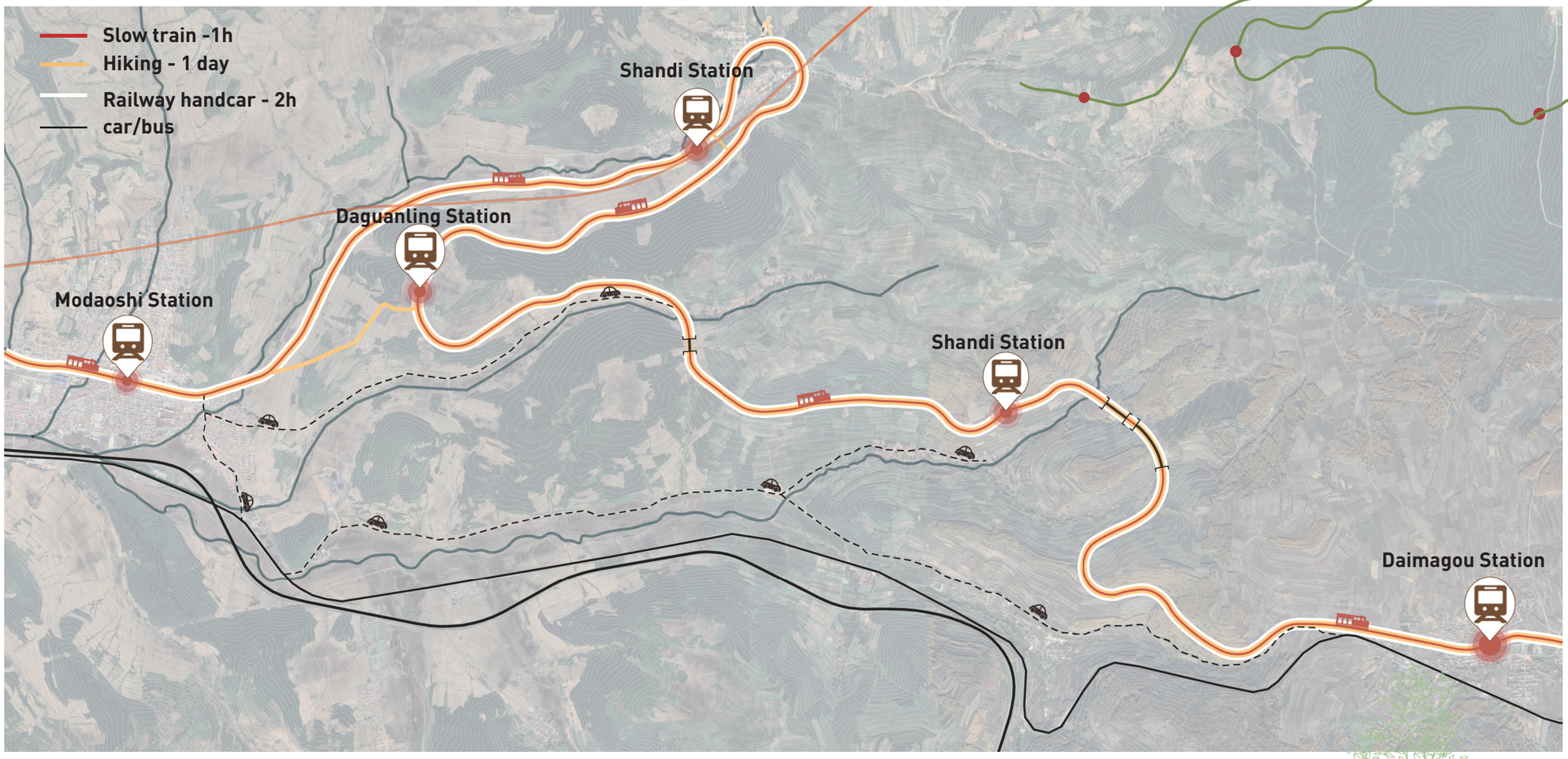


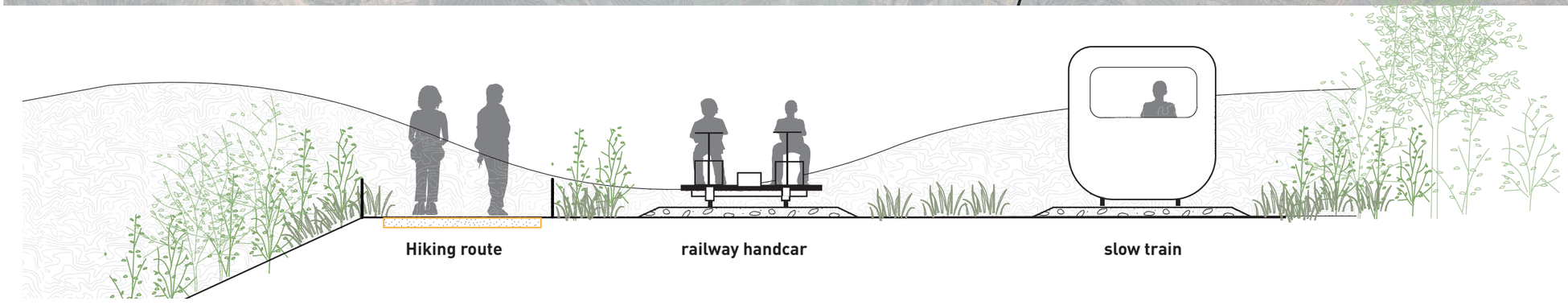


https://m.8264.com/thread-1458171-1.html?utm_source=s14363562&utm_campaign=p15131331&turn=1&hasPd=159

Design site 5: Daguanling Spiral loop

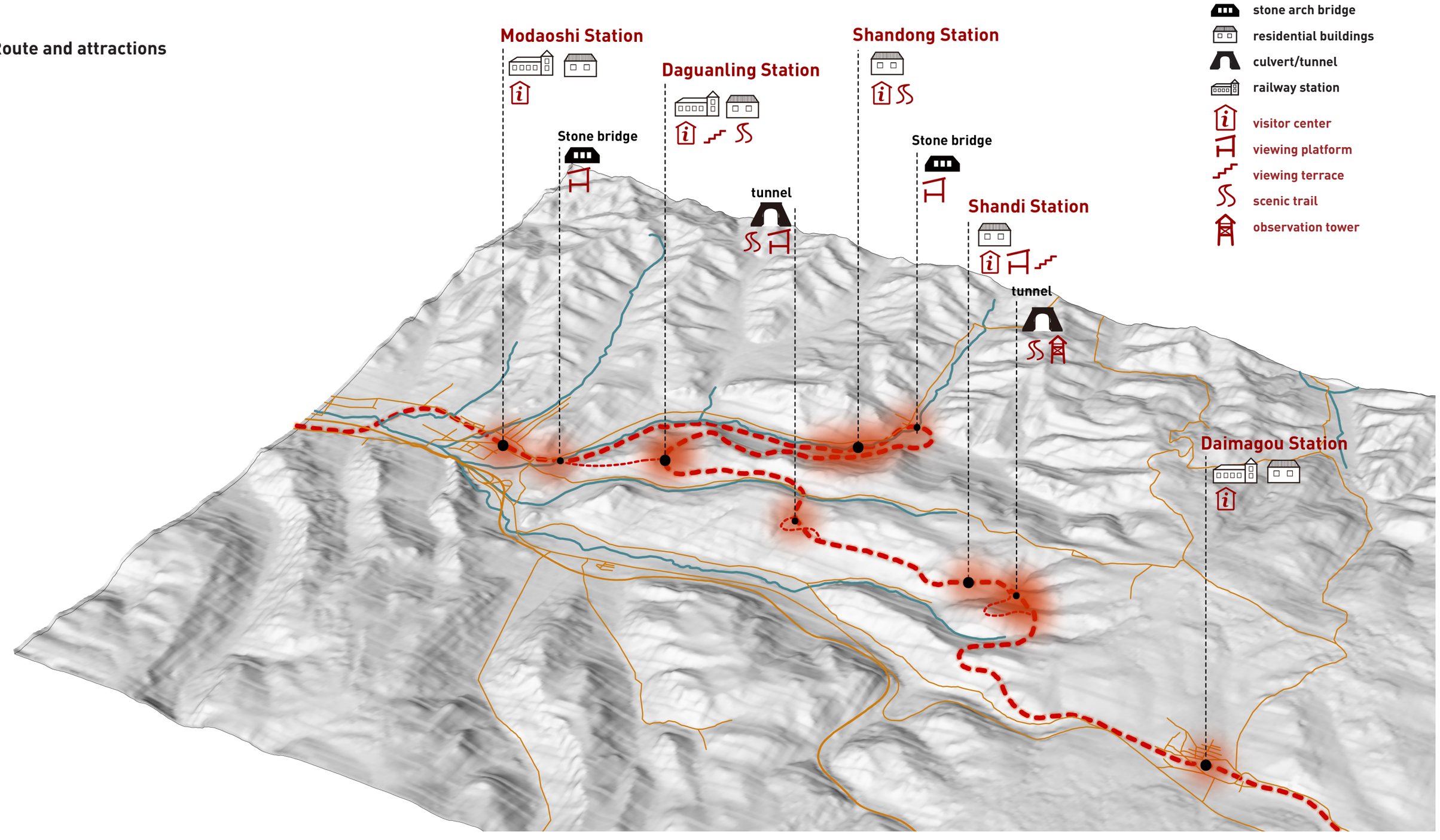
hiking route design



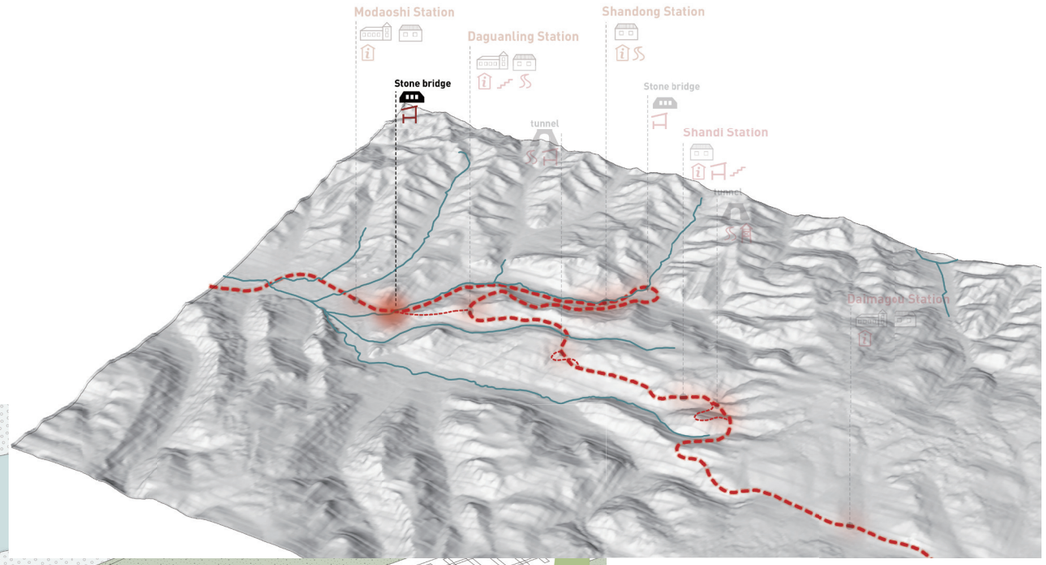


Design site 5: Daguanling Spiral loop

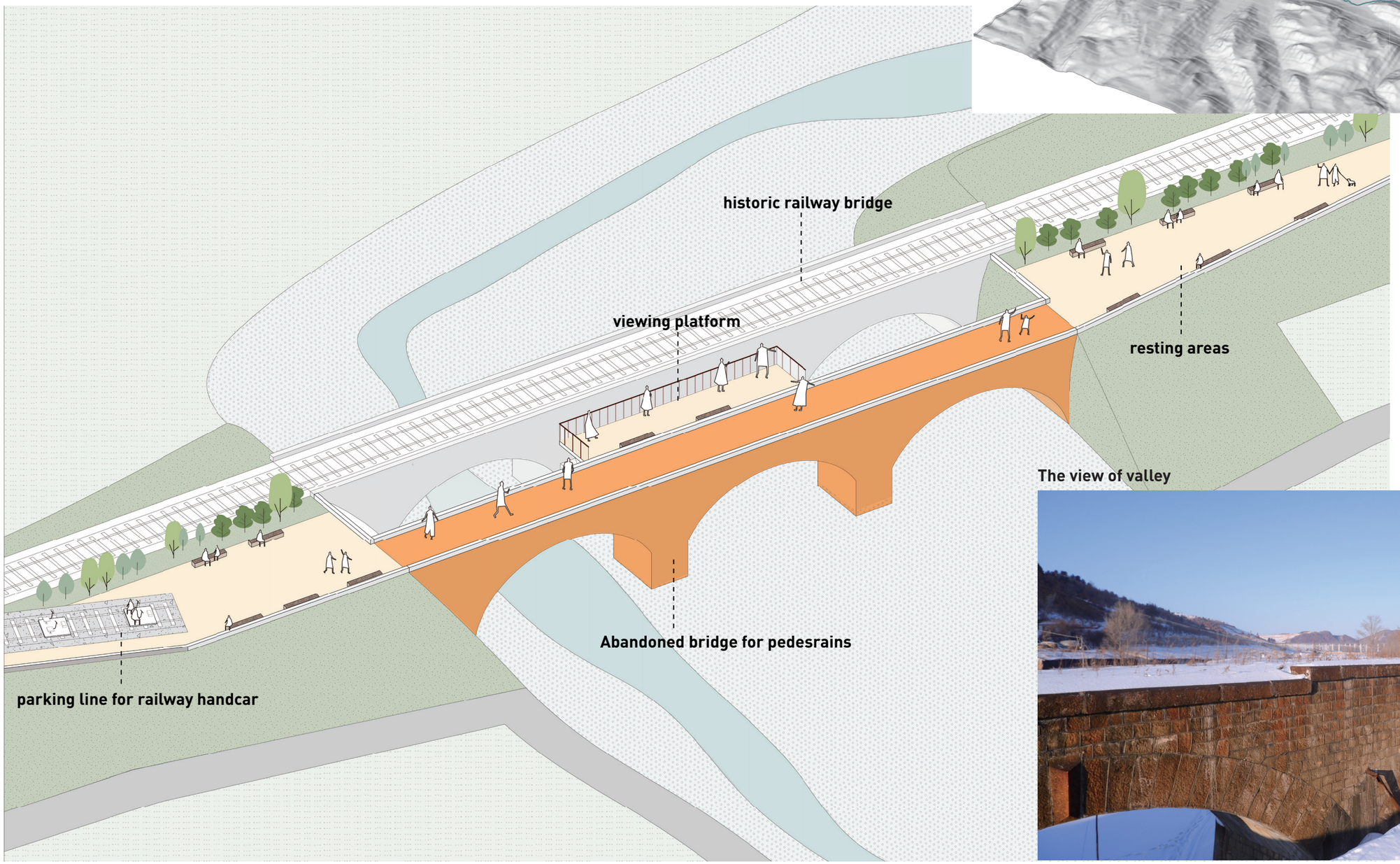
Route and attractions



Design site 5: Daguanling Spiral loop



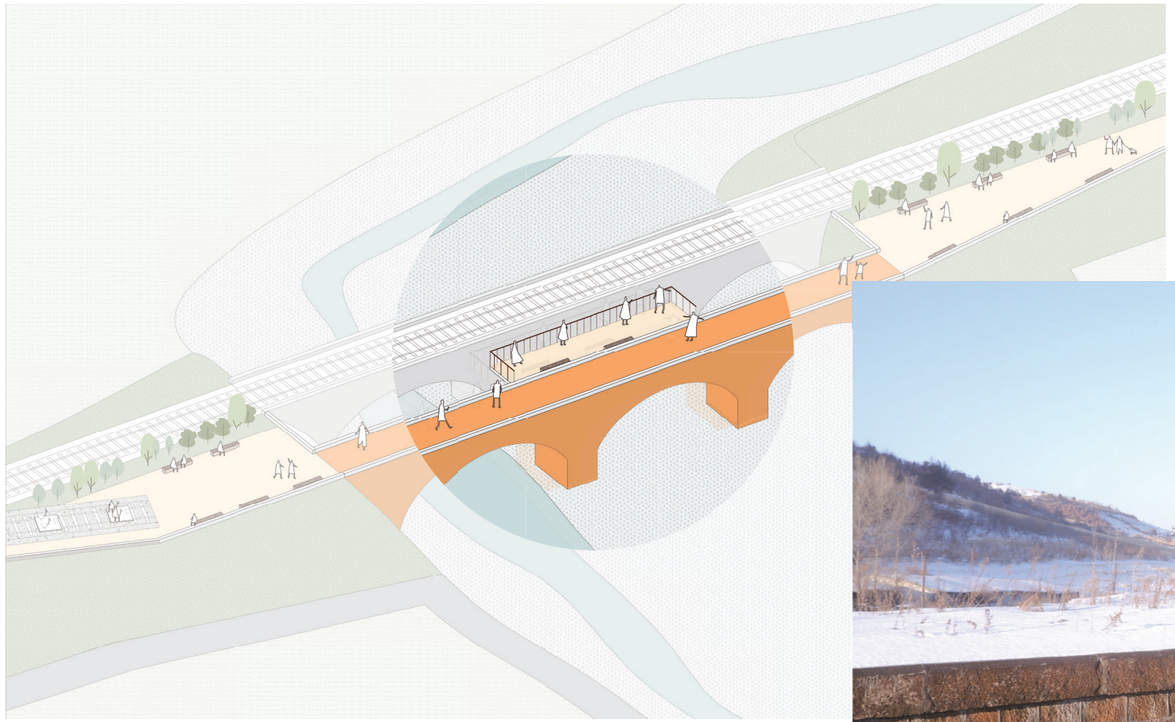
Design plot1: a viewing platform



The view of valley

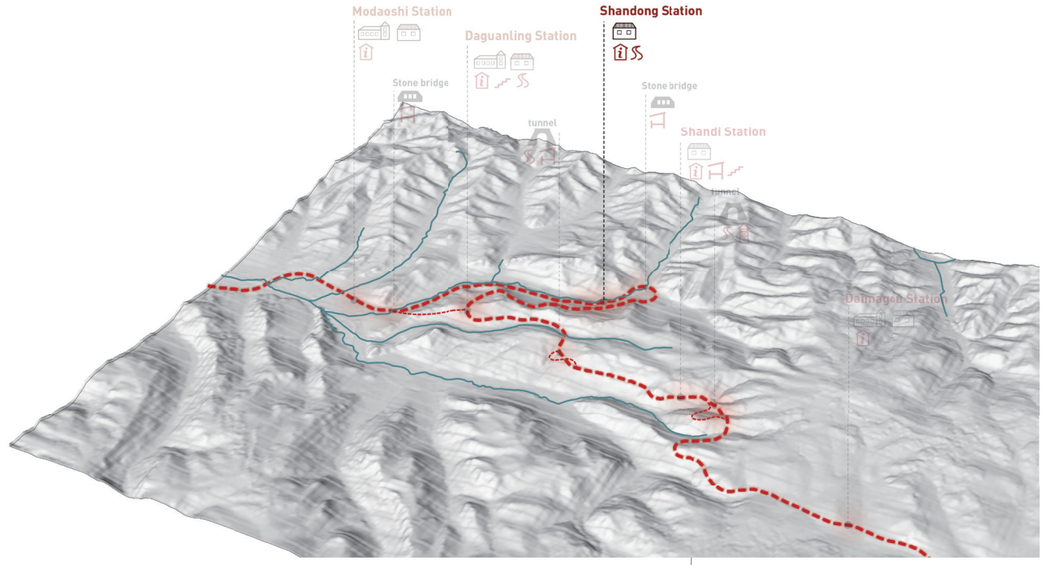
Design site 5: Daguanling Spiral loop

Design plot1: a viewing platform

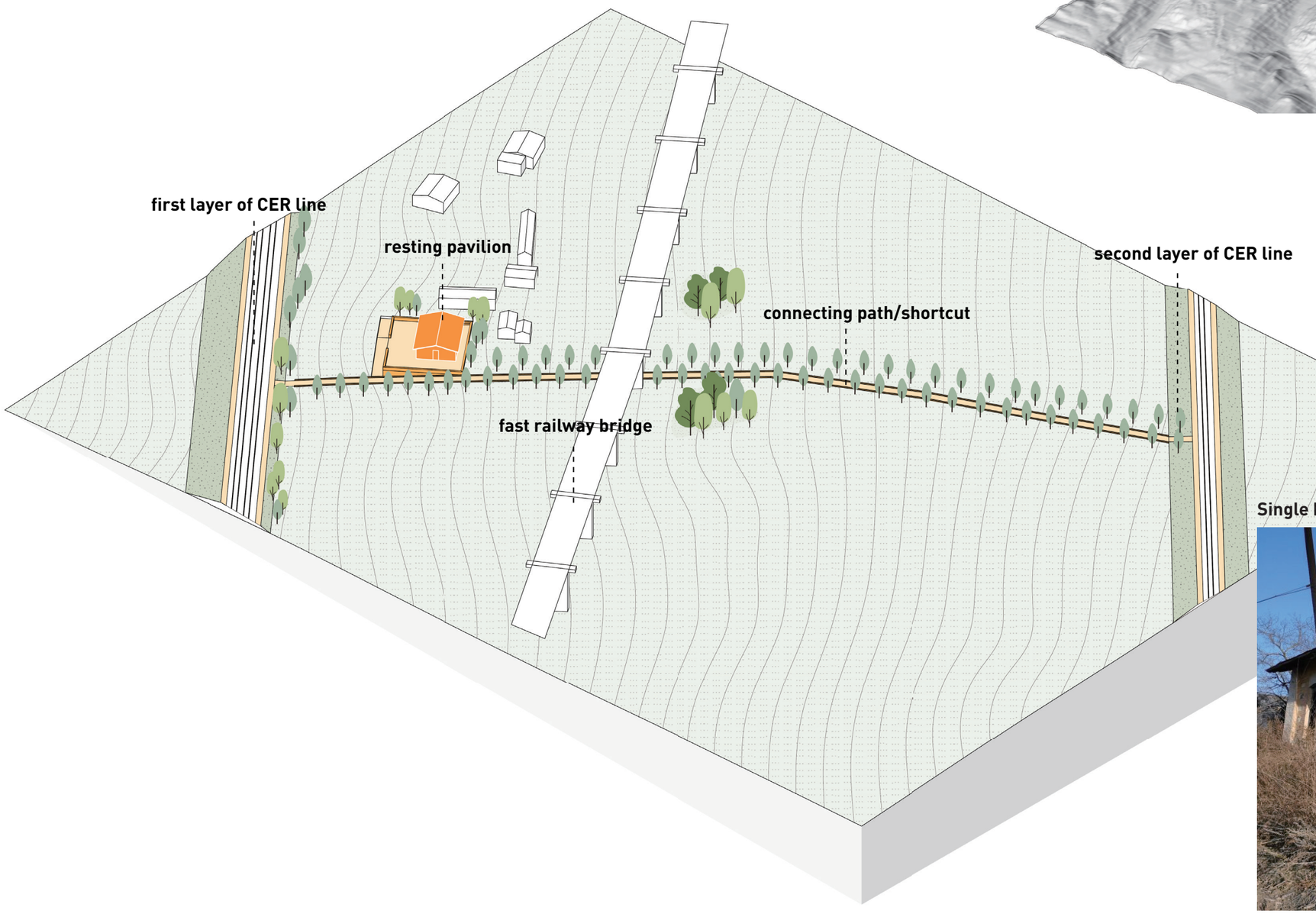




Design site 5: Daguanling Spiral loop



Design plot2: A pathway connecting the two levels of the railway spiral loop line

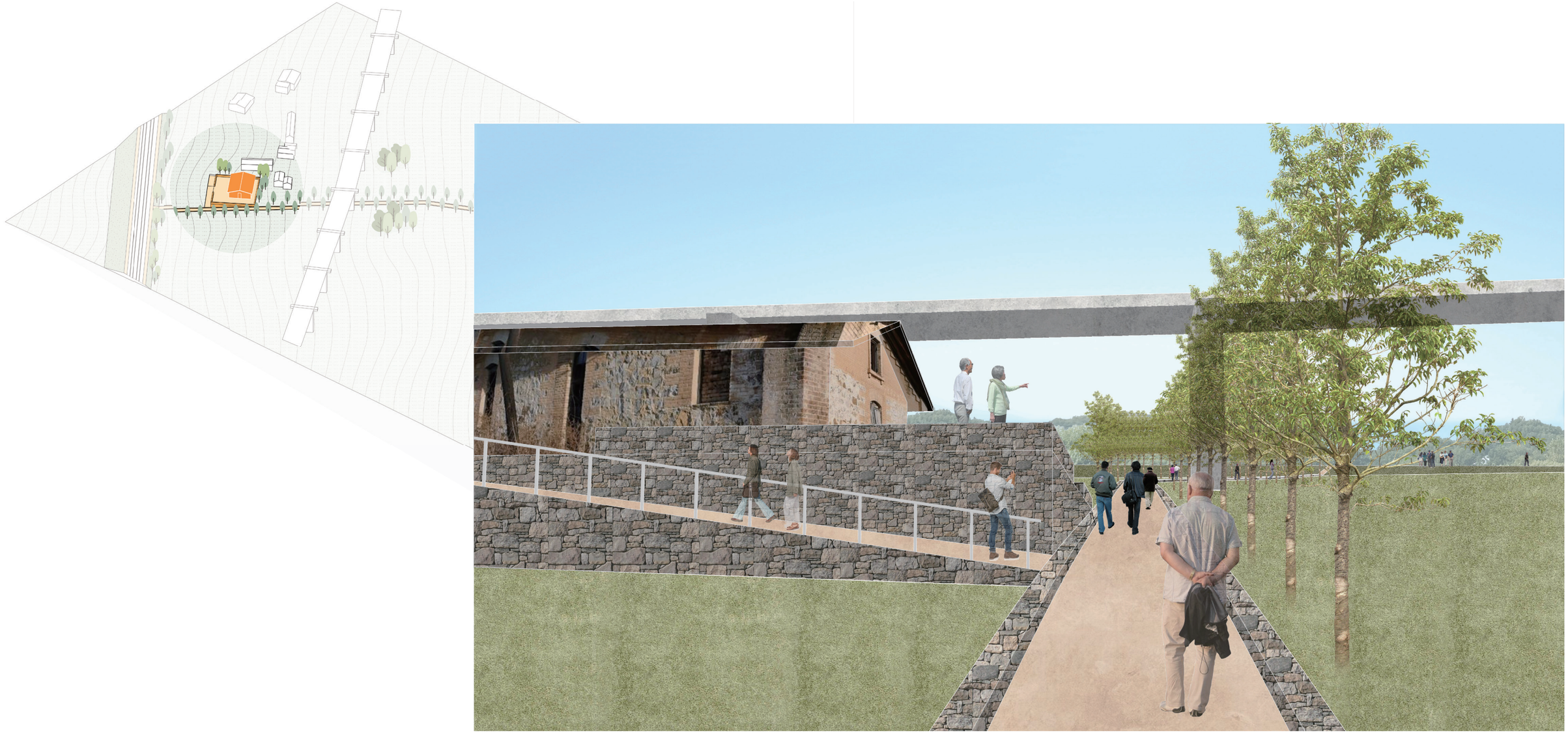


Single herigage building under the fast railway bridge

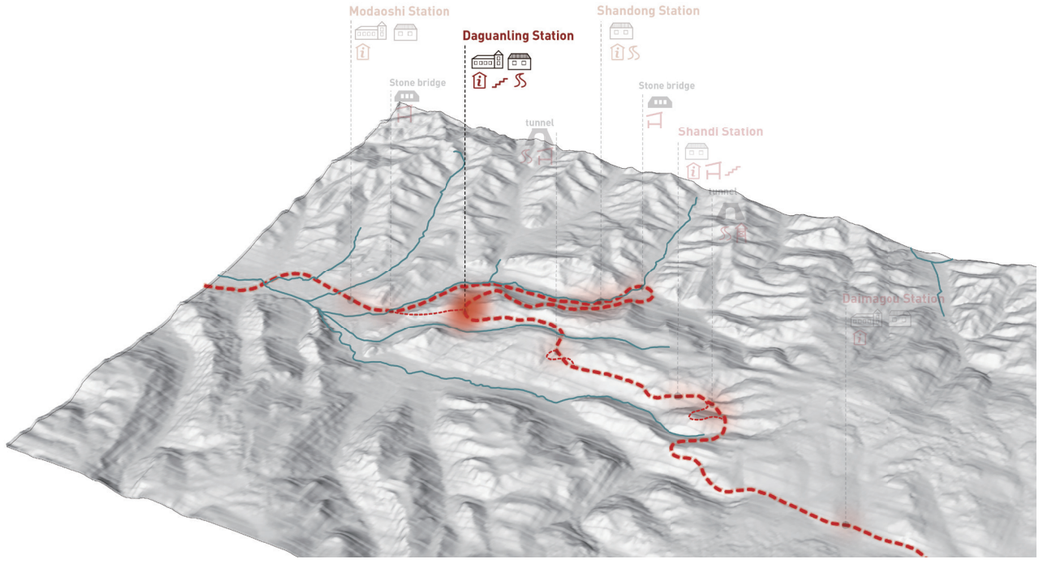


Design site 5: Daguanling Spiral loop

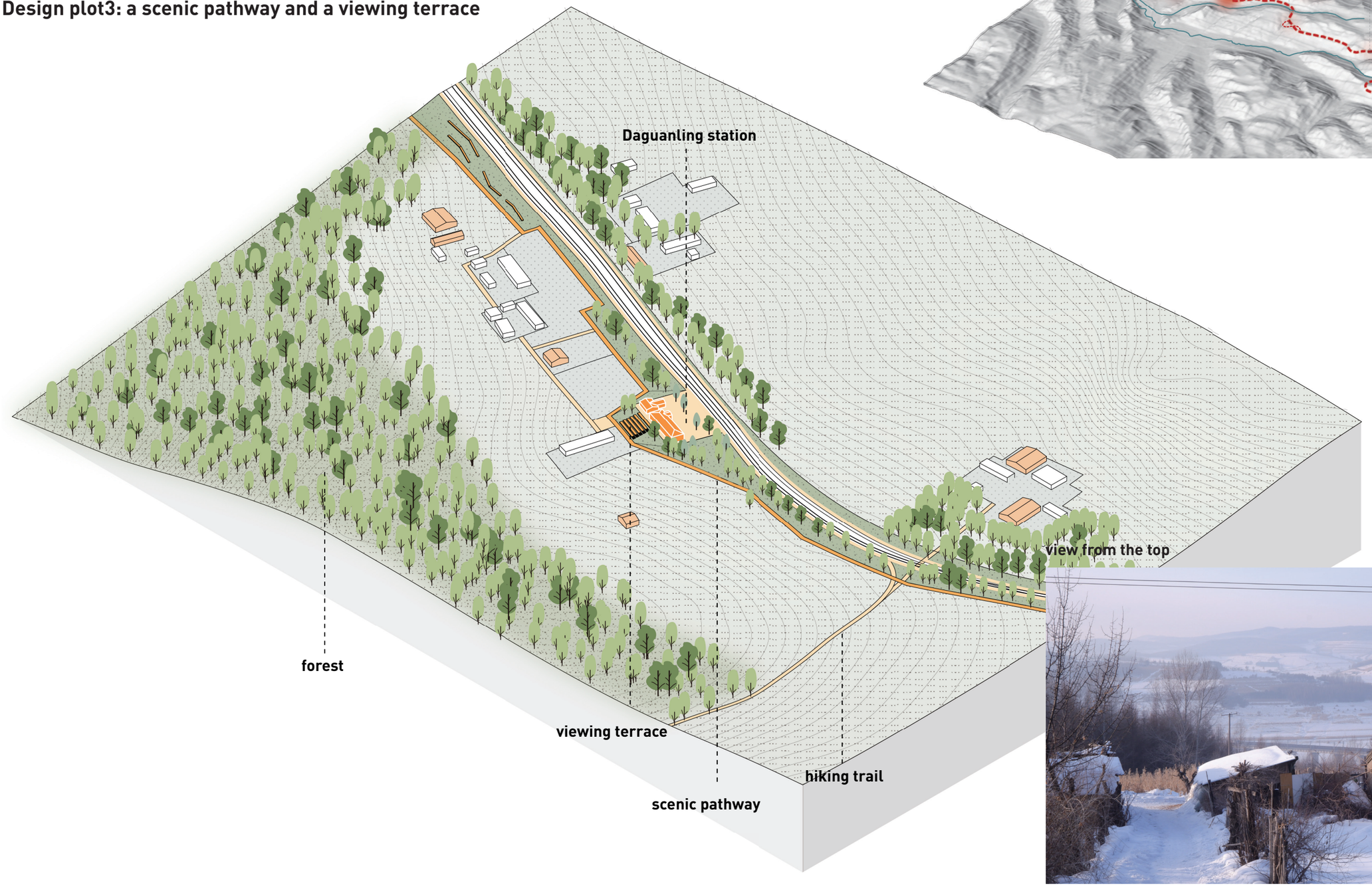
Design plot2: A pathway connecting the two levels of the railway spiral loop line



Design site 5: Daguanling Spiral loop

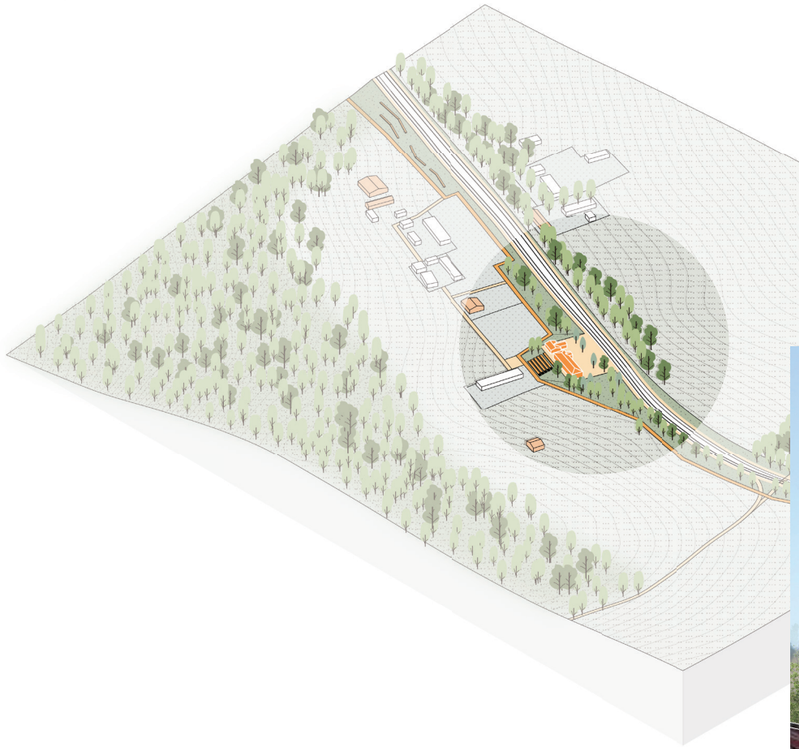


Design plot3: a scenic pathway and a viewing terrace



Design site 5: Daguanling Spiral loop

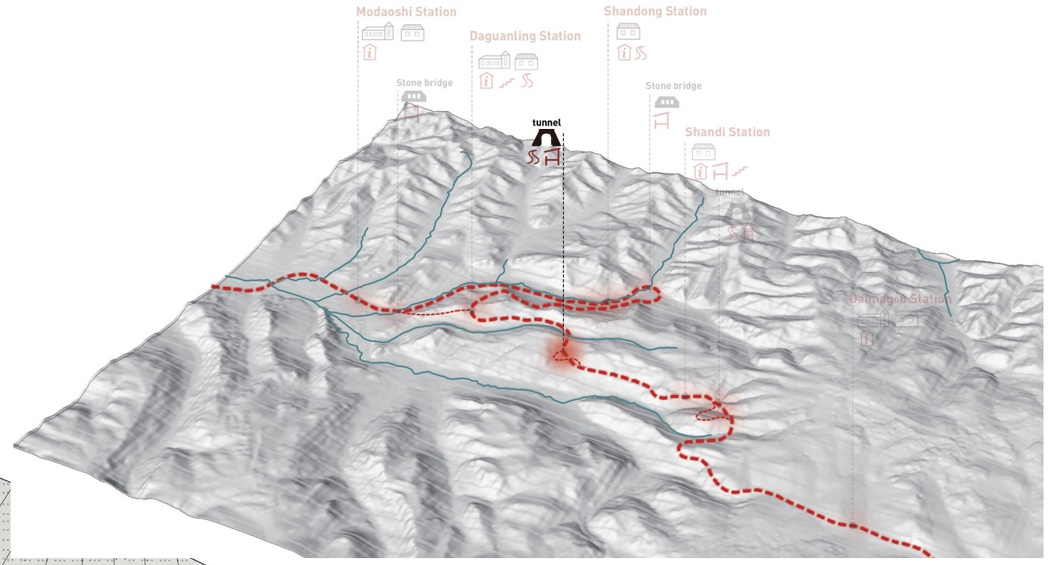
Design plot3: a scenic pathway and a viewing terrace

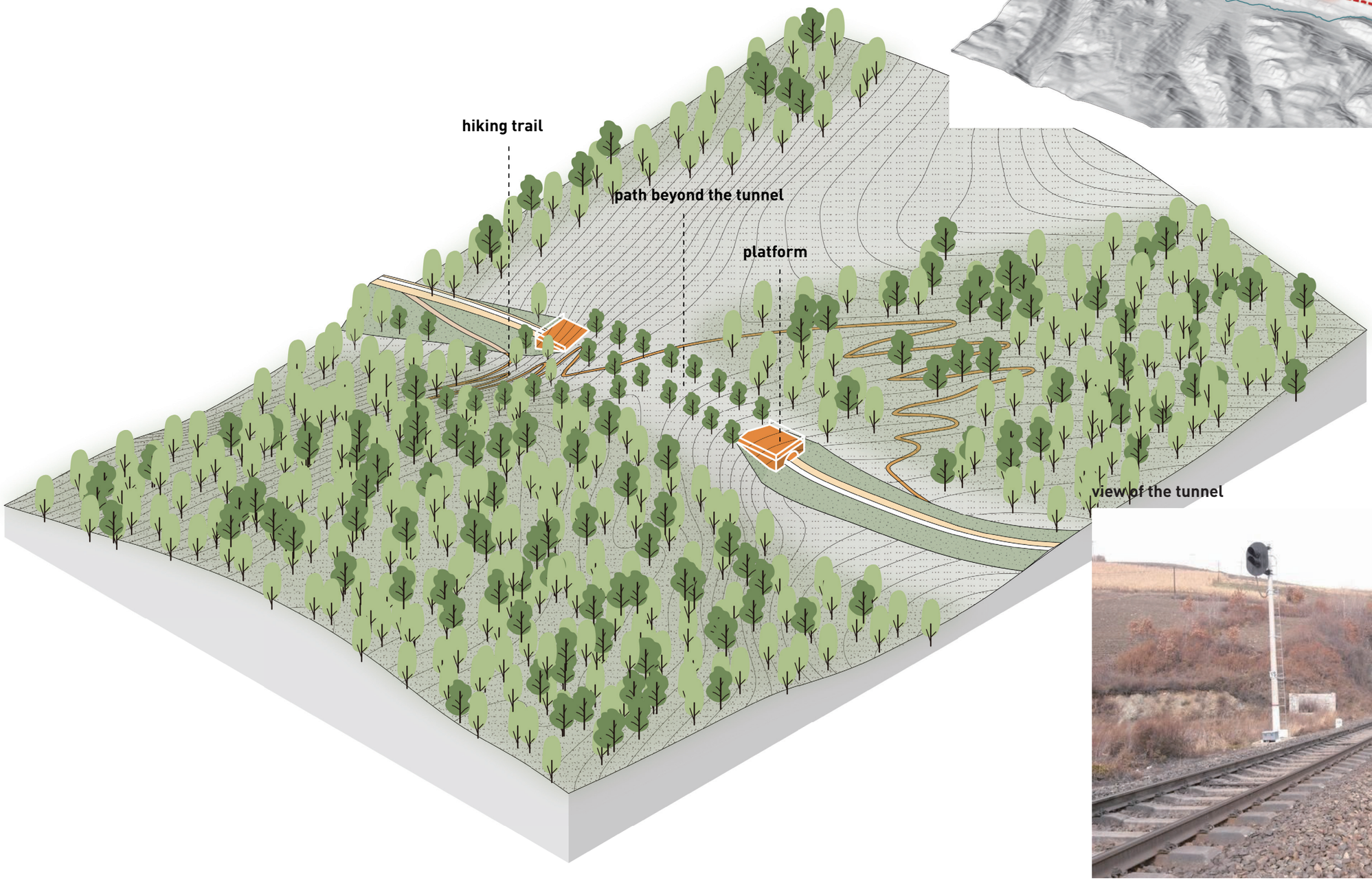




Design site 5: Daguanling Spiral loop

Design plot4: a trail and an observation platform



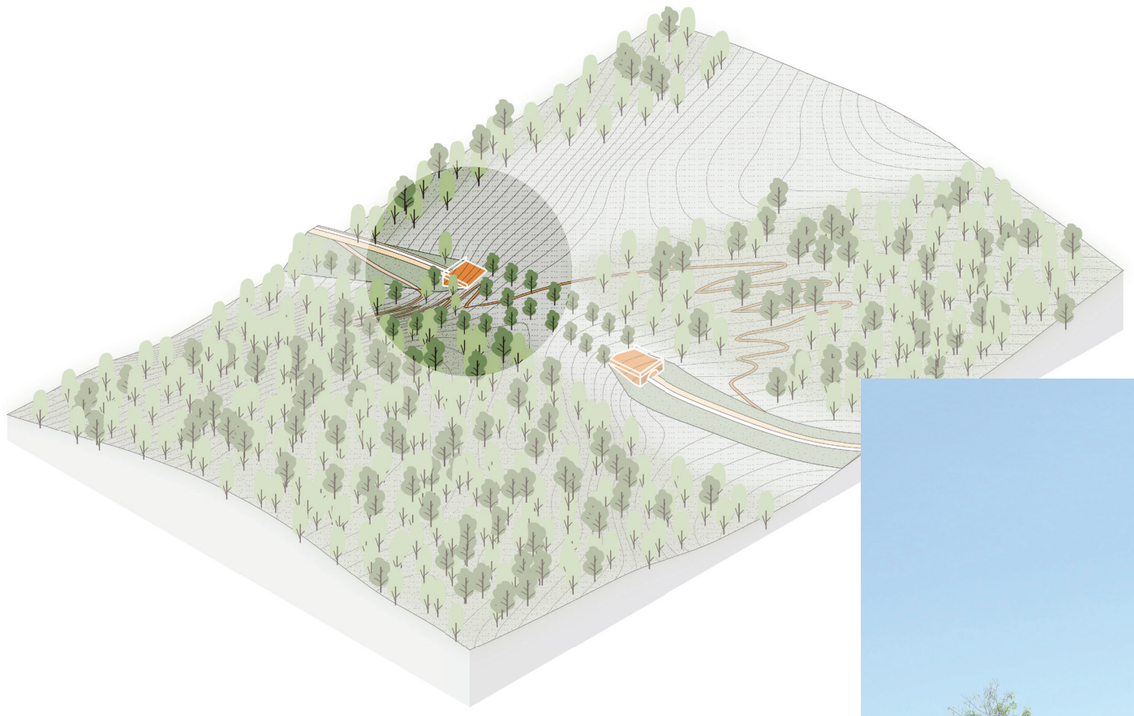


view of the tunnel



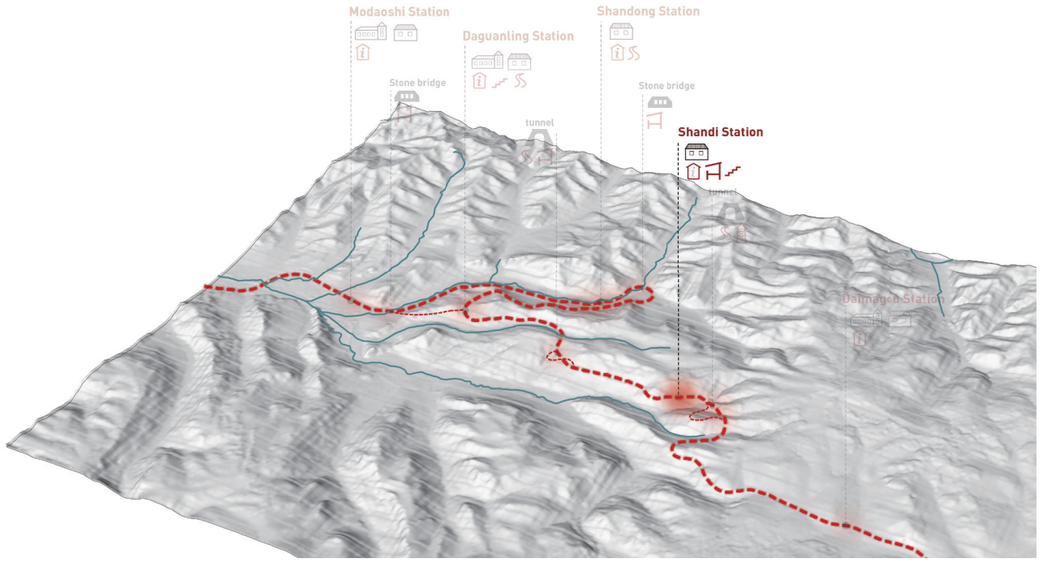
Design site 5: Daguanling Spiral loop

Design plot4: a trail and an observation platform

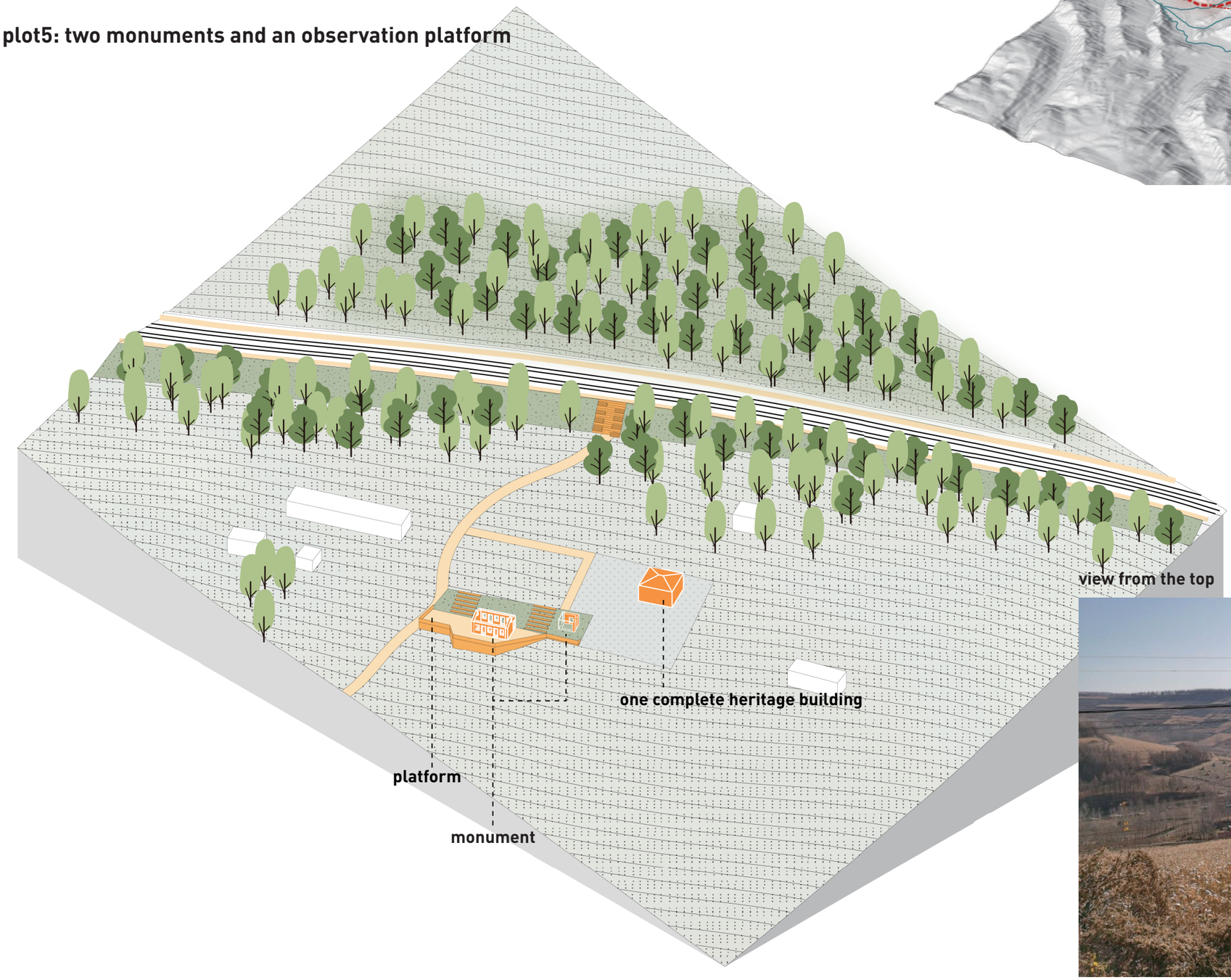




Design site 5: Daguanling Spiral loop



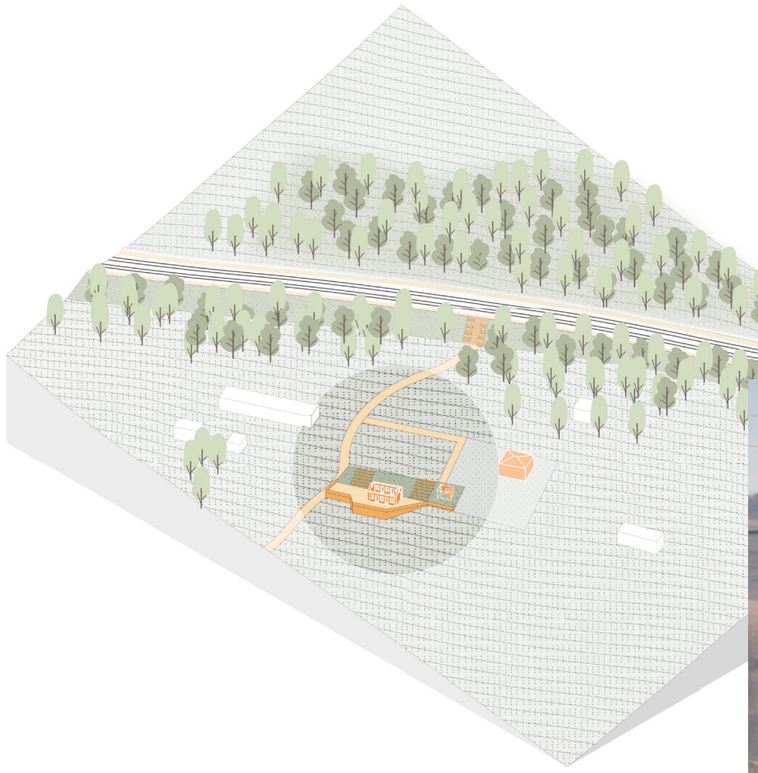
Design plot5: two monuments and an observation platform





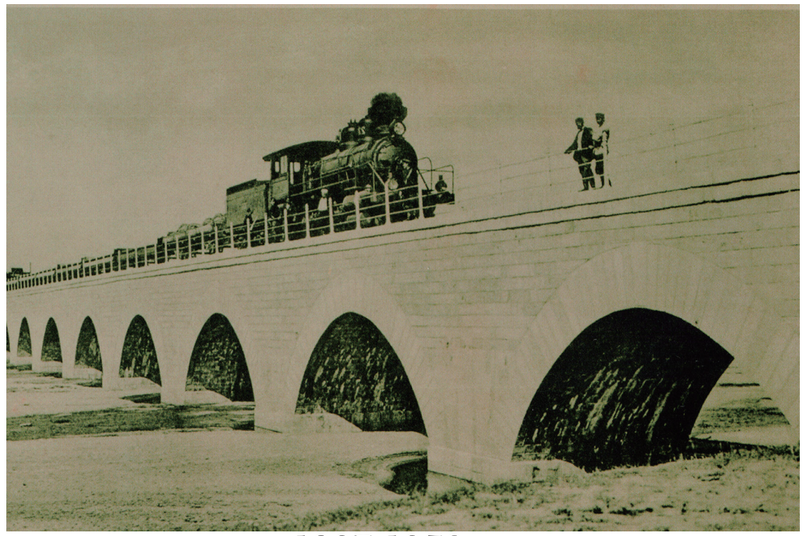
Design site 5: Daguanling Spiral loop

Design plot5: two monuments and an observation platform





Conclusion



1897-1952



1952-2010s



2010s-

Conclusion

How to reveal and revitalize the abandoned and neglected Chinese Eastern Railway heritage from a landscape perspective?

design exploration　landscape aspects　theory support

what&why

reveal and revitalize heritage　　architectural heritage and landscape

The role of landscape in revealing and revitalizing architectural heritage

The preservation and development of historic environment

reflects

aspects

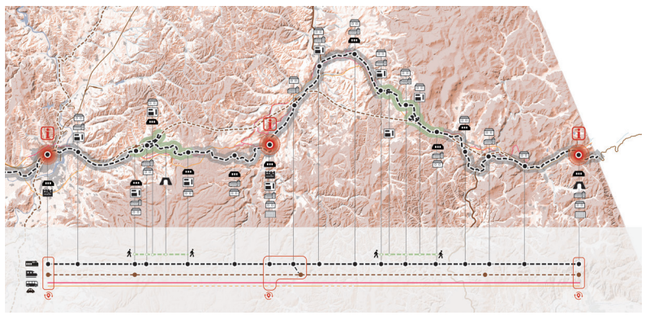
-comprehensive background including natural context and infrastructure

-historic urban landscape

-open spaces around heritage sites

reflects

apply







General lesson about heritage planning



Attention on the non-built enviroment



Scale continuum of the whole heritage system



actively adaptive to the social and urban development