

# Journey into Caldera

by  
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## AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

## ABSTRACT

There is a dormant volcano in the northern province of Jilin, China, called the Baekdu/Chang Bai Mountain. At the top of this 2,744 m mountain is a large caldera filled with water, named "Heaven Lake". Geologically, this caldera straddles China and North Korea, split by the man-made border. As a sacred mountain to both people, there have always been ongoing cultural and political disputes surrounding the site. Despite the tentative agreement between the two governments, their people refute each other's historical claims, declaring the mountain as their own. As one born not 5 hours from this caldera with both heritages, I have experienced first hand this issue of identity.

Originating from China, shibori is the ancient Japanese method of dyeing textiles. It is the union of two elements, the indigo dye and the resistance of the fabric, swirling in a steaming bath, transforming into an entirely new character. Through hours and days of folding, knotting, and wrapping, the shibori maker works in tandem with the nature of the fabric to create a unique and beautiful piece every time. The symbiotic nature of this ancient art offers a new perspective to the ongoing territorial conflict.

Impacted by the trip to the mountain, and inspired by the methods of shibori, the thesis choreographs a journey into caldera. As an inspiration, Shibori is the possibility that two opposing forces, the relentless indigo dye and the resisting white fabric, can unite to emerge as a new identity. Transcribing the caldera as a physical manifestation of this unity between two cultures, the thesis proposes an intervention on this highly contested pilgrimage site. It does not offer a definitive solution to the political conflict around Baekdu/Changbai, but rather examines the lines of connections between the shibori and the caldera through architecture as a platform that promotes a harmonious existence of two forces.

## ACKNOWLEDGEMENTS

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Thank you to my parents who were supportive throughout this bumpy ride. I know sometimes it's hard to tell, but I will always appreciate and reciprocate your love. This thesis is really dedicated to you.



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## 6. CONCLUSION





# 1. FOREWORD

For the longest time I have been the sole member of my family that has not visited the fabled Baekdu/Chang Bai mountain. I never had a particular interest in this place of pilgrimage, despite being born near the site and knowing of its importance in my culture. My grandparents would repeatedly regale me with tales of its magnificance. My maternal grandfather in particular, who've visited multiple times, would tell me stories of how he swam in the bone-chilling waters of the Heaven Lake back in his days. He would describe how at dawn the clouds would slip in between the mountain tops to gently blanket the lake with a layer of fog, recall how it was simply breathtaking to see the sun rising between the snow-capped peaks. To a young, impressionable child, they were simply stories.

I've always known the mountain in both languages: Baekdu Mountain (백두산) and Chang Bai Mountain (長白山). To me, these two names are both valid, interchangeable names for this cultural symbol. The caldera in a sense embodies the duality of my personal background; both Chinese and Korean, but neither completely. The co-existence of these two cultures, prior to the now-predominant Canadian perspective, has been a dichotomy of my life that I've never addressed directly until now.

## 2. INTO THE CALDERA

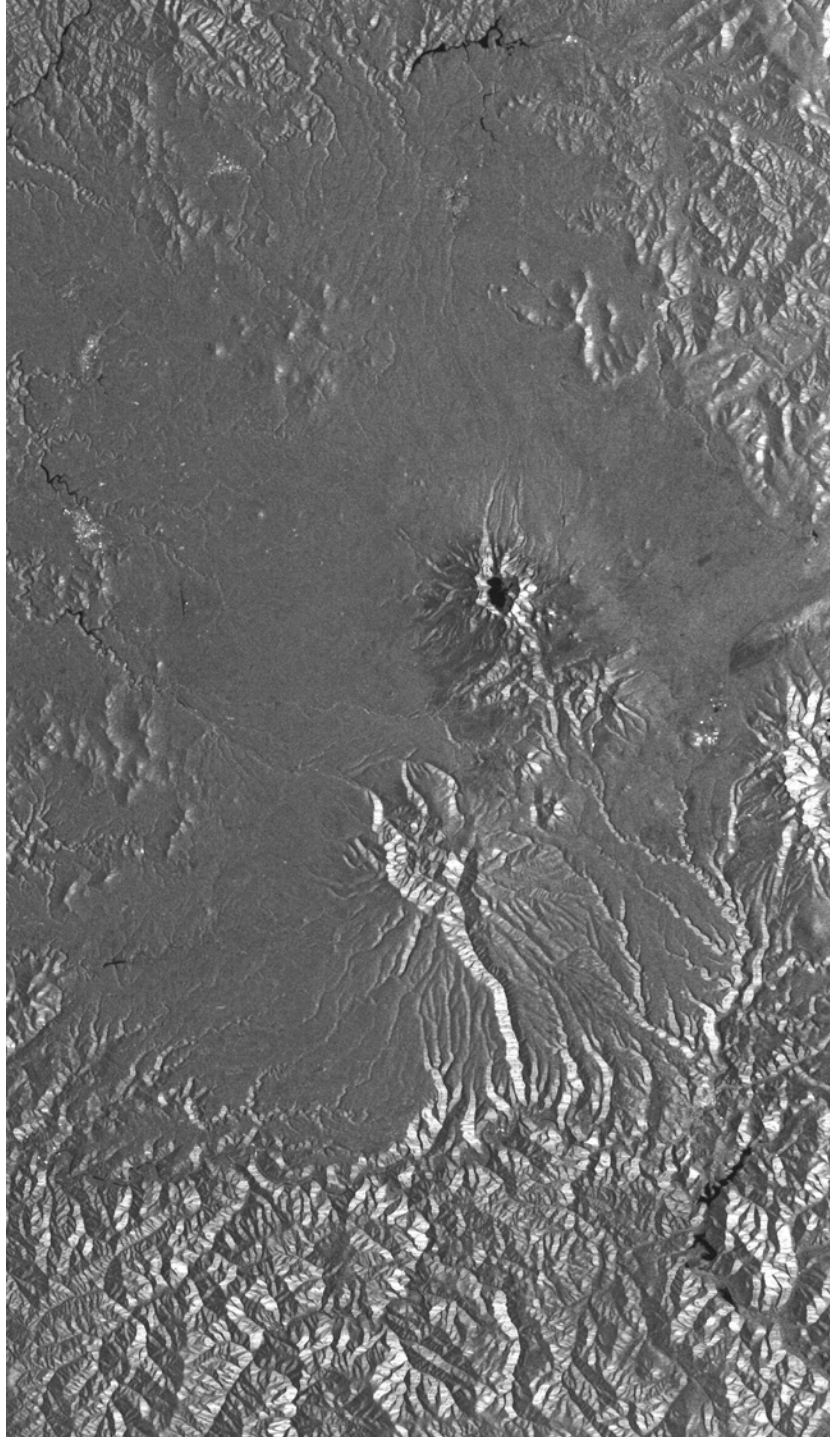


Fig 2.01 Baekdu Mountain satellite image



Fig 2.02 Baekdu Mountain satellite image

## 2.1 ERUPTION

Baekdu/Chang Bai Mountain is a sleeping volcano in the northern province of Jilin, China. At the top of this 2,744 m mountain is a large caldera about 5 km wide and 850 m deep. <sup>1</sup> Moulded by fire and water, the making of the caldera takes millennia, beginning with a Plinian eruption\*. There is immense pressure beneath the crust of the earth as magma builds for centuries below the mountain. When that pressure peaks to a critical level, an earth-shattering explosion discharges large amounts of falling plume\* and ash. <sup>2</sup>

\* See Glossary

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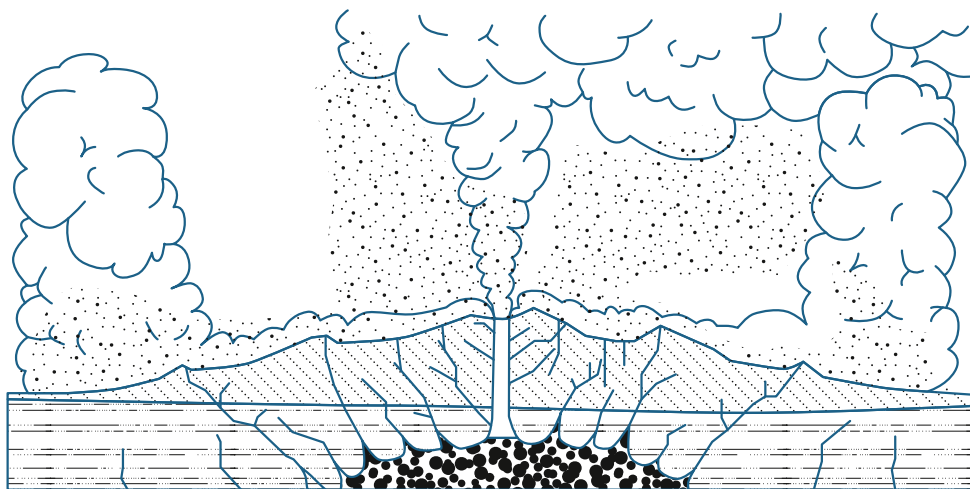
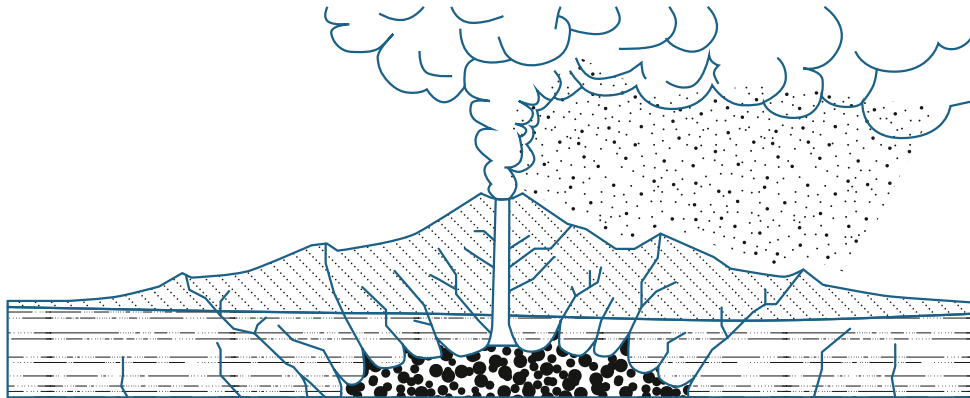
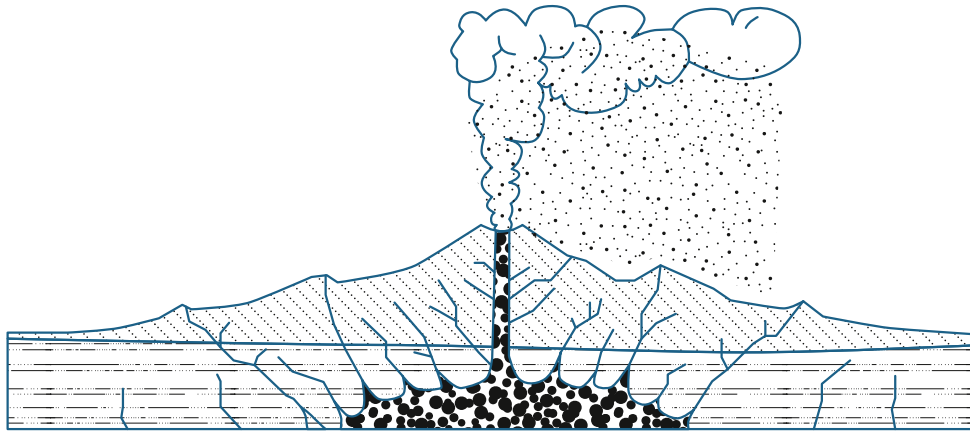


Fig 2.03 Caldera geological formation through history - part 1.

The exact geological forces behind the creation of Baekdu Mountain are still a mystery. On record however, the 946 AD eruption that activated this stratovolcano\* is called the "Millennium eruption".<sup>1</sup> This was one of the largest and most violent eruptions in the last 5000 years, with a Volcanic Explosivity Index\* rating of 7.<sup>2</sup> It is powerful enough to be responsible for a brief but significant change in climate to the surrounding area.<sup>3</sup>

The emptying of the magma chamber underneath earth creates soaring columns of volcanic gas into the atmosphere and discharges large amounts of falling plume and ash.<sup>4</sup> Even Japanese records witnessed the "white ash rain" that could be a result of this eruption.<sup>5</sup> Following this are the pyroclastic flows\*, shooting out hot gases and rocks collectively called tephra\* at incredible speeds.<sup>6</sup> It is deduced that this process lasts from 4 to 14 days in total, ending with the collapse of the magma chamber as it creates a crater atop the volcano.<sup>7</sup> Over centuries this gaping hole in the earth collects snow and rain to form the "Heaven Lake".<sup>8</sup>

\* See Glossary

.....

1. Pan, Bo; Xu, Jiandong. "Climatic impact of the Millennium eruption of Changbaishan volcano in China: New insights from high-precision radiocarbon wiggle-match dating". *Geophysical Research Letters*. 2013. Accessed February 21, 2017. <http://adsabs.harvard.edu/abs/2013GeoRL..40...54X>.
2. Smithsonian Institution, Global Volcanism Program | Changbaishan.
3. Ibid.
4. Ibid.
5. Ibid.
6. Horn, Susanne. "Volatile emission during the eruption of Baitoushan Volcano (China/North Korea) ca. 969 AD". *Bull Volcanol*. 2000. Accessed February 21, 2017. <http://link.springer.com/article/10.1007/s004450050004>.
7. Ibid.
8. Ibid.

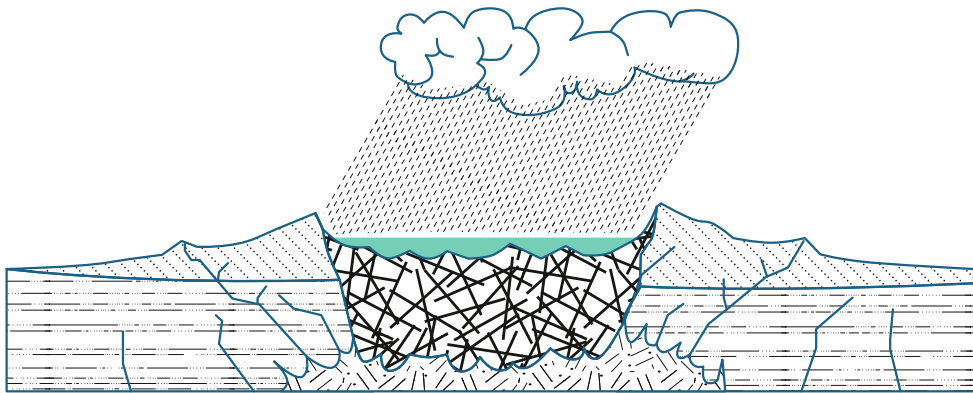
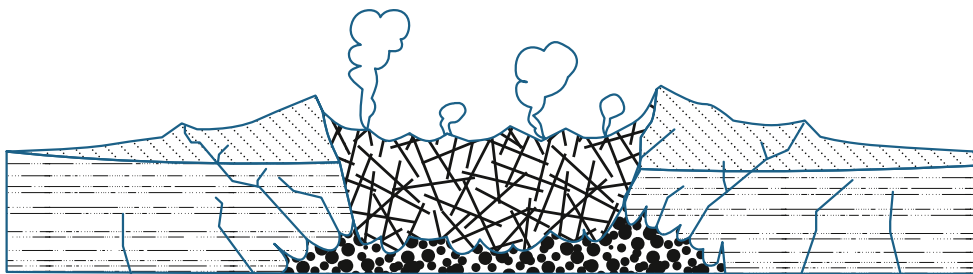


Fig 2.04 Caldera geological formation through history - part 2.



Following this most violent eruption are four confirmed small outbreaks, each in 1668, 1702, 1898, and 1903. <sup>1</sup> Scientists say that this volcano erupts every century and recent studies show a very real possibility of Mount Baekdu erupting in the near future. <sup>2</sup> A seismologist, Stephen Grand from the University of Texas at Austin, confirms that the “risk of a destructive eruption here is very real.” <sup>3</sup>

\* See Glossary

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1. Smithsonian Institution, Global Volcanism Program | Changbaishan.  
2. Drake, Nadia. “Sacred Volcano in North Korea May Be Waiting to Blow.” National Geographic. April 15, 2016. Accessed February 22, 2017. <http://news.nationalgeographic.com/2016/04/160415-sacred-volcano-north-korea-waiting-eruption-science/>.  
3. Ibid.



Fig 2.05 Painting from the Manchu Veritable Records with the names of Mount Paektu in Manchu, Chinese, and Mongolian.

## 2.2 LEGENDS AND HERITAGE

### CHINA

Changbai was first recorded in Chinese geographical texts, referenced as Buxian Shan, dating back to the Shanhai Jing, "Classic of Mountains and Seas," of the 3rd century B.C.<sup>1</sup> For most Chinese people, Changbai "might be just one of China's mountains", as Han Zhenqian, a professor from Beijing University claims.<sup>2</sup> However, for some, Changbaishan is undoubtedly a sacred mountain, especially for the Manchu people. The Manchus, one of the ethnic minorities of the Northeast Provinces of China, consider the mountain as their original homeland. The mountain range is the mythical birthplace of Bukuri Yongson, ancestor to the founders of the Manchu state and the Qing Dynasty.<sup>3</sup> During their ruling of China from 1644 to 1911, annual rites were held on Changbai to celebrate their origins.<sup>4</sup>

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1. Ahn, Yonson. "China and the Two Koreas Clash Over Mount Paekdu/Changbai: Memory Wars Threaten Regional Accommodation." *The Asia-Pacific Journal: Japan Focus*. July 3, 2007. Accessed February 22, 2017. <http://apjif.org/-Yonson-Ahn/2483/article.html>.

2. Ibid.

3. Ibid.

4. Ibid.

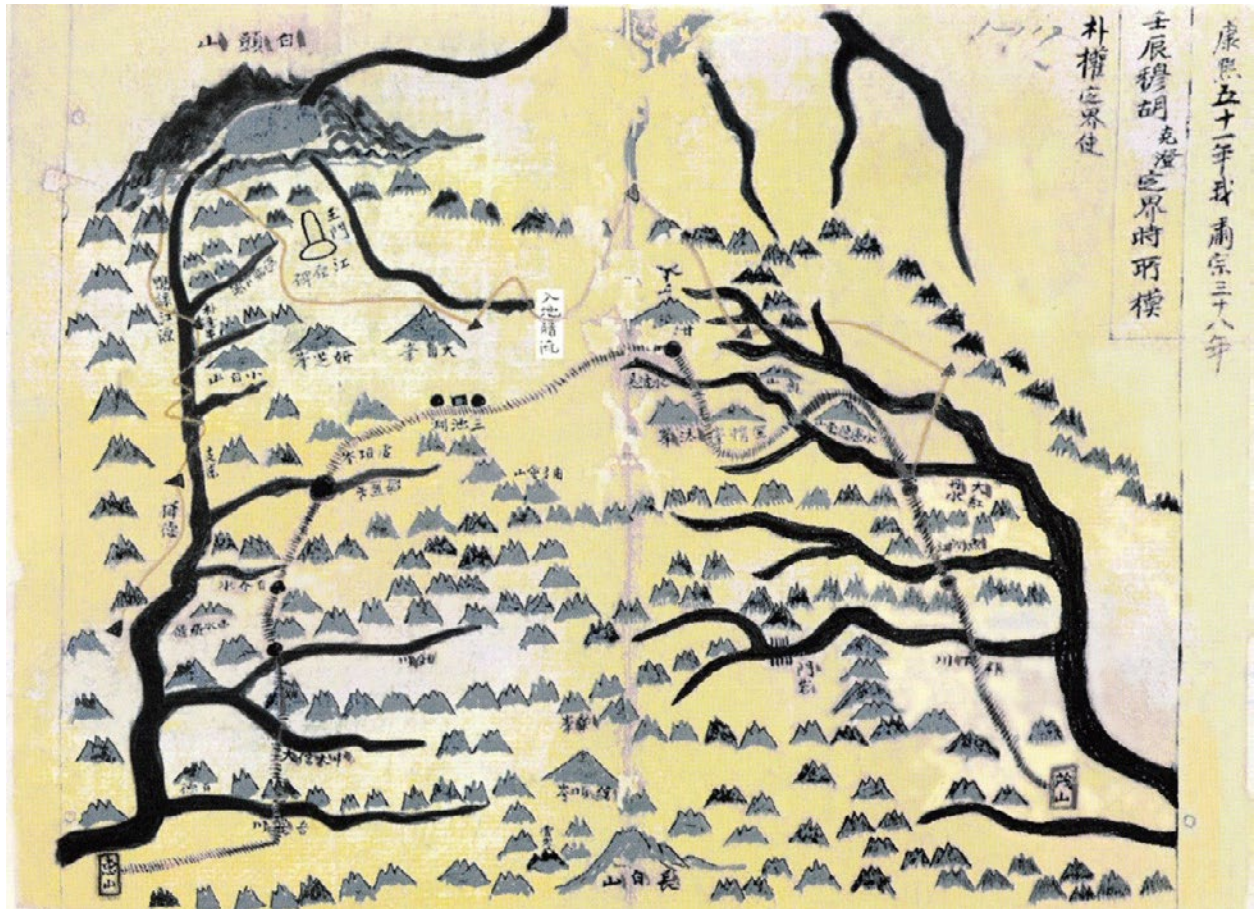


Fig 2.06 Painting from the Manchu Veritable Records with the names of Mount Paektu in Manchu, Chinese, and Mongolian.

Manchu is a dying culture in the predominantly Han-Chinese nation. Over time, fewer people understand the language and history of this ethnic minority. In the province of Jilin, there is a Changbaishan Manchu Culture Museum, the only one in China centred on Changbaishan Manchu traditional culture that highlights the region's bright ethnic characters.<sup>1</sup> It is no mystery why Manchu Chinese stake a strong claim on the mountain as their sacred site when their unique regional culture is diminishing overtime. For them, Changbaishan symbolizes the beginnings of their traditions, as an identity distinct from the Han Chinese.

Further official claims from China states that "The Manchus originated from Changbai ... while the Koreans came to Changbai later."<sup>2</sup> Jilin provincial government is in full support of this Manchu heritage with the recent development around the area.

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1. "Inheriting Manchu traditional culture - Jilin, China." Jilin, China. October 20, 2016. Accessed February 21, 2017. [http://www.chinadaily.com.cn/m/2016jilin/2016-10/20/content\\_27122631.htm](http://www.chinadaily.com.cn/m/2016jilin/2016-10/20/content_27122631.htm).

2. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai" Memory Wars Threaten Regional Accommodation.



Fig 2.07 Modern religious painting of Dangun with Baekdu Mountain in the background.

## KOREAS

"Why have Korean nationalists been so outraged over China's recent actions? What does Mount Paekdu mean for them? Koreans consider Paekdu, the highest mountain on the Korean Peninsular and in China's Northeast, to be the ancestral birthplace of their people. " <sup>1</sup>

For the Koreans, Mount Baekdu is entwined with their earliest history. According to legend, the God Hwanung - "the king that comes from the sky" landed on the volcano to couple with a woman who then conceived a son, Tangun - "the king of the birch-tree", who in 2333 B.C. founded the kingdom of Choson, regarded as being the first Korean state. <sup>2</sup> To Koreans, Mount Baekdu, the highest mountain on the Korean Peninsular is the emblem of their "national spirit". <sup>3</sup> There is a Korean saying to describe the stretch of their land - "from Halla to Baekdu". The first sentence of the South Korean national anthem pays homage to the sacred mountain. The mountain is intrinsically intertwined with the sense of nationalism and identity to proud South Koreans.

"There is something about Baekdusan that makes all Koreans patriotic," states Lee Byong-Cchul, a senior at the institute for Peace and Corporation in Seoul, after his visit to the sacred mountain. <sup>4</sup> For both North and South Korea, Baekdu Mountain is viewed with a near-religious reverence. <sup>5</sup> It is considered as their spiritual home, a pilgrimage site to visit before they die. Many are moved to tears facing the caldera, overwhelmed by their deep-set patriotism. "There, Koreans feel they have come to their roots." <sup>6</sup>

1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai" Memory Wars Threaten Regional Accommodation.

2. Ibid.

3. Ibid.

4. Sang-Hun, Choe. "For South Koreans, a Long Detour to Their Holy Mountain." The New York Times. September 26, 2016. Accessed February 20, 2017. <https://www.nytimes.com/2016/09/27/world/asia/korea-china-baekdu-changbaishan.html>.

5. Ibid.

6. Ibid.



Fig 2.08 Kim Jong Un on the peak of Mt. Baekdu.



Fig 2.09 North Korean emblem with Baekdu Mountain.



## NORTH KOREANS

For the North Koreans in particular, Mt. Baekdu is perhaps an even more holy place. North Korea officially claims the mountain as the birthplace of their leader, Kim Il-Sung.<sup>1</sup> The 2000 edition of the magazine Democratic People's Republic of Korea describes Baekdu as "the ancestral mountain...the symbol of Korea and the cradle of Korea."<sup>2</sup> They further state that "Kim Jong Il grew up there as the 'son of Mt Paekdu'..."<sup>3</sup> essentially glorifying the mountain as the site of revolution.

Furthermore, North Korea appropriates the mountain's mythology in its propaganda and uses it like a brand name. The peak is featured on the Emblem of North Korea, defined in Article 169 of the Constitution, which describes Mt. Paektu as "the sacred mountain of the revolution".<sup>4</sup> Little is known on what the North Korean people think of the sacred mountain. However, when it comes to the matter regarding this sacred mountain, the two Koreas seem to be of a united stance – mainly that it is their ancestral holy place. As unrealistic as North Korea's claims are, it can be interpreted as the importance of Baekdu Mountain in their history.

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1. Cannon, Jon. "In North Korea", London Review of Books, Vol.22, No.15.

2. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai" Memory Wars Threaten Regional Accommodation.

3. Ibid.

4. Ibid.



Fig 2.10 Nearby towns displaying both Chinese and Korean language on signs.

## YANBIAN

Evidently, Baekdu/Changbai Mountain is documented in both ancient Chinese and Korean records as a sacred mountain worshipped by people from both cultures. Unique to the area, the surrounding Chinese towns use both languages, accommodate both traditions, and embrace the two heritages harmoniously.

I come from a special prefecture surrounding the Baekdu Mountain that boasts a unique mix of cultures. It is common to see local shops and buildings display their signs in both Korean and Chinese, as most people living in this area utilize both languages.

This is the result of the Korean migration to the area that began as a trickle in the 1880s, and developed into a large flow by the early 1920s.<sup>1</sup> Some of these settlers fled the persecution of Japanese colonial occupiers at home, but many more were attracted by fertile lands easily available to migrant farmers in what was then known as Manchuria.<sup>2</sup> During the Chinese Civil War, most local Koreans sided with the communists, which helped boost their standing after 1949.<sup>3</sup> The local Koreans were officially recognized as a "minority nationality", and in 1952 the entire area was made into an autonomous prefecture of Yanbian, with the Korean language becoming co-official with Mandarin.<sup>4</sup>

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1. Lankov, Andrei. "Yanbian: Korea-in-China." *The Korea Times*. October 21, 2007. Accessed February 22, 2017. [http://www.koreatimes.co.kr/www/news/opinion/2010/01/166\\_12290.html](http://www.koreatimes.co.kr/www/news/opinion/2010/01/166_12290.html).

2. Ibid.

3. Ibid.

4. Ibid.



Fig 2.11 To mark the 60th anniversary of the founding of Yanbian Korean Autonomous Prefecture, China Central Television is now airing a series named “My Home under Changbai Mountain”.

This results in most people from the region, myself included, identifying as being ethnically Korean, nationally Chinese. There is a harmonious existence of both cultures embodied through generations in the people of Yanbian. To us, Baekdu/Changbai is just as sacred and perhaps even more relevant, than to the Koreans or the Chinese. In addition to the myths and history surrounding the mountain, we grow up with the mountain as a proud local destination, a 5-hour weekend drive, and a monumental creation of nature right in our backyard. Baekdu/Changbai is the destination to see, a must when visiting Yanbian. The image of the caldera is plastered throughout the airport, the highway towards the mountain, and used as a brand name in our bottled waters. It is a mountain intrinsically tied to the local culture, a tangible part of life growing up in the Yanbian prefecture. To some, it is a symbol of a distinctive identity - **neither Korean nor Chinese, but inseparably both.**

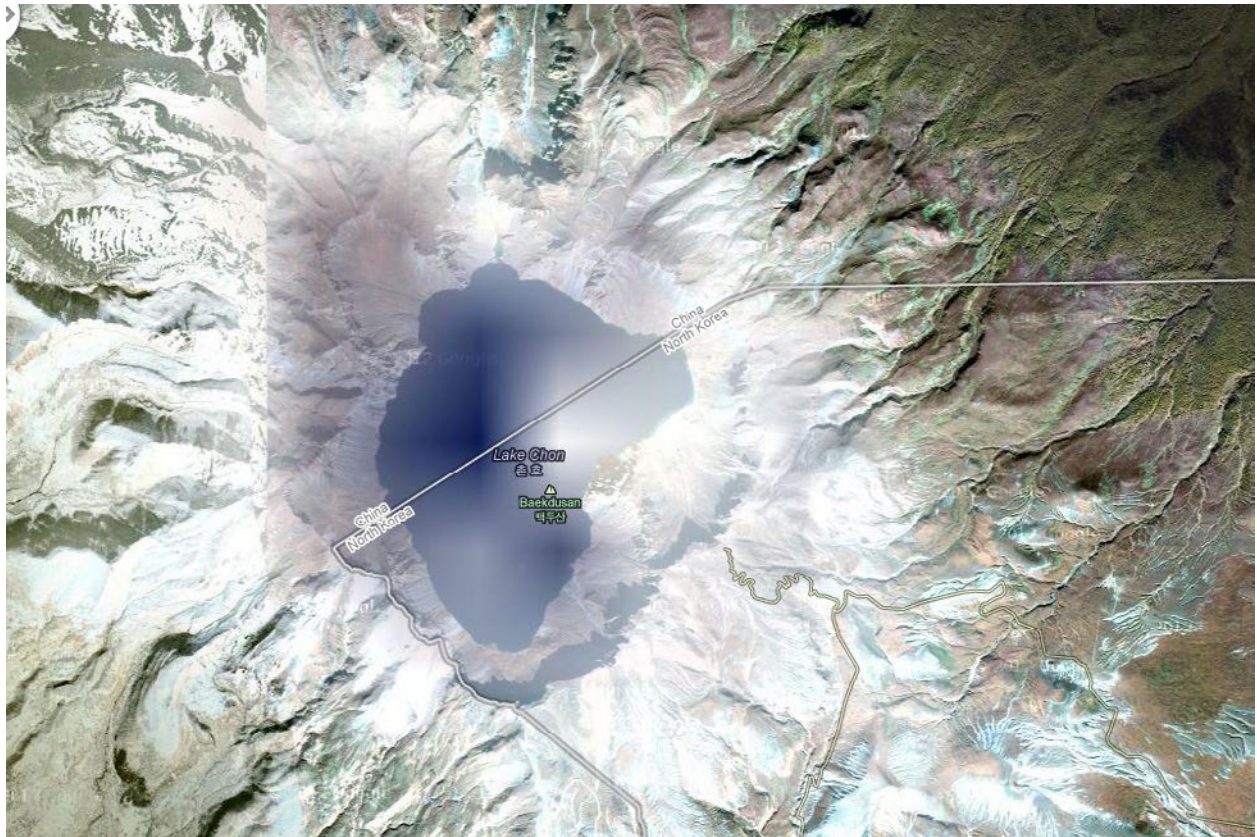


Fig 2.12 Google Map showing current border line splitting the caldera.

## 2.3 DISPUTE

### OF LAND

Geologically, the caldera straddles the border between China and North Korea, and as a result, there have been countless land disputes throughout history. As seen in the timeline (Fig. 2.13), Baekdu/Changbai has passed through many hands over millennia, from “Gojosen”\* in 200 B.C. through several Chinese dynasties, to the Japanese occupancy, and ultimately to the signed treaty of 1962.<sup>1</sup>

The beginning of this land dispute dates back to 1712, when the Chinese Emperor Kangxi (1662-1723) of the Qing dynasty forced an unwilling Korea to accept an equal division of the mountain between the two sides.<sup>2</sup> At the time, Korea was a vassal state of its powerful neighbour with little choice on the matter, and even to this day Korean nationalists, especially from the South, vocally resent this event.<sup>3</sup> The Agreement of 1962 tentatively resolved this dispute by allocating three-fifths of the mountain to North Korea and the rest to China.<sup>4</sup> However, some experts questioned the legitimacy of this agreement, claiming that it simply constituted “a general framework rather than a concrete territorial treaty.”<sup>5</sup> This issue subsided during the Japanese occupation of Korea, but gained some momentum once more in the backdrop of the Korean Cultural Revolution, escalating to a few military skirmishes in 1968 and 1969 around the mountain peaks.<sup>6</sup> However, similar to the sleeping caldera itself, this on-going dispute has now become somewhat dormant.

#### \* See Glossary

1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/Changbai” Memory Wars Threaten Regional Accommodation.
2. Lidarev, Ivan. “Will Mount Paektu Erupt Again?” The Diplomat. February 28, 2016. Accessed February 21, 2017. <http://thediplomat.com/2016/02/will-mount-paektu-erupt-again/>.
3. Pinilla, Daniel Gomà. “Border Disputes between China and North Korea.” China Perspectives. April 19, 2007. Accessed February 20, 2017. <http://chinaperspectives.revues.org/806#ftn4>.
4. Lidarev, Will Mount Paektu Erupt Again?.
5. Ibid.
6. Ibid.

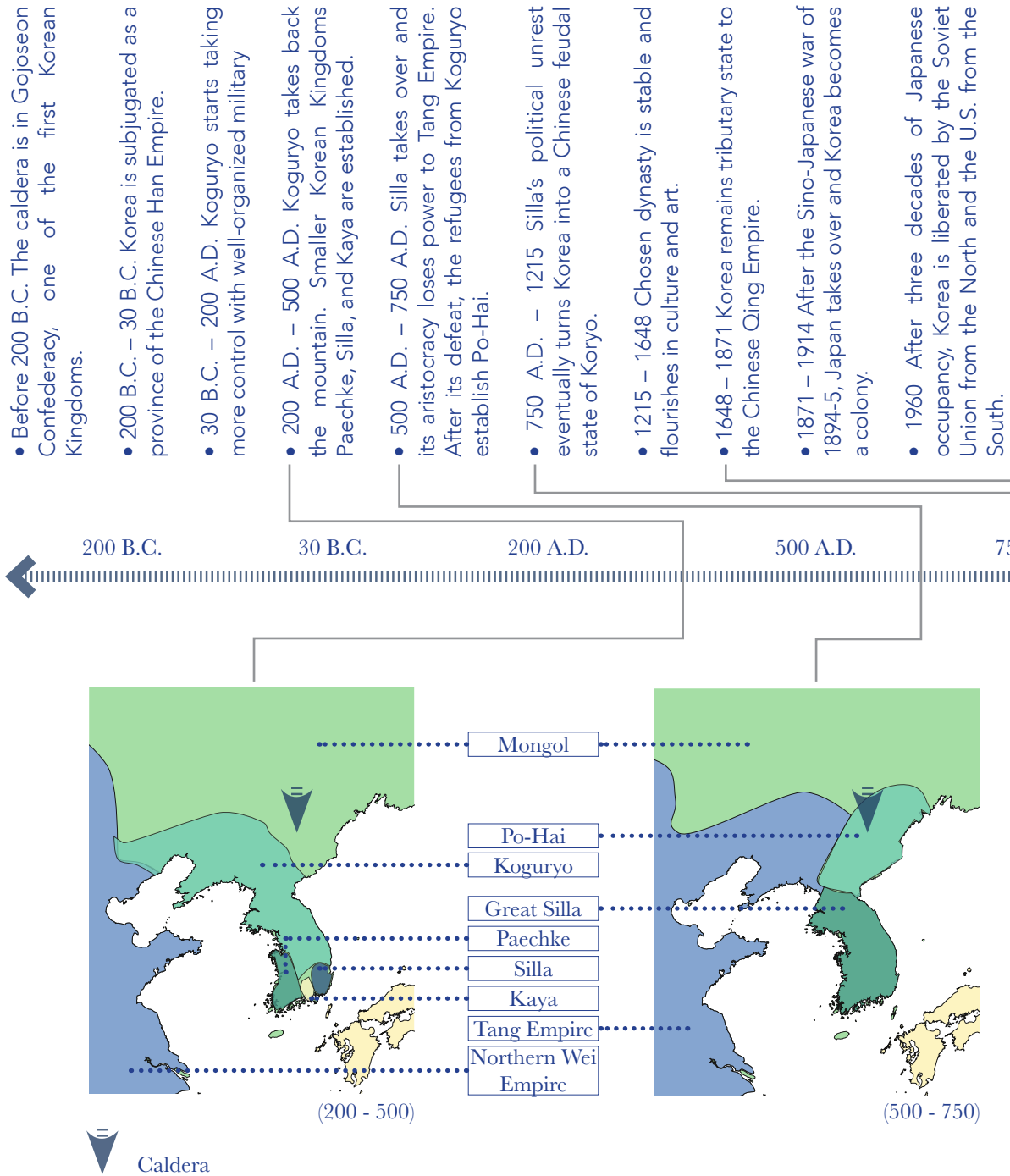
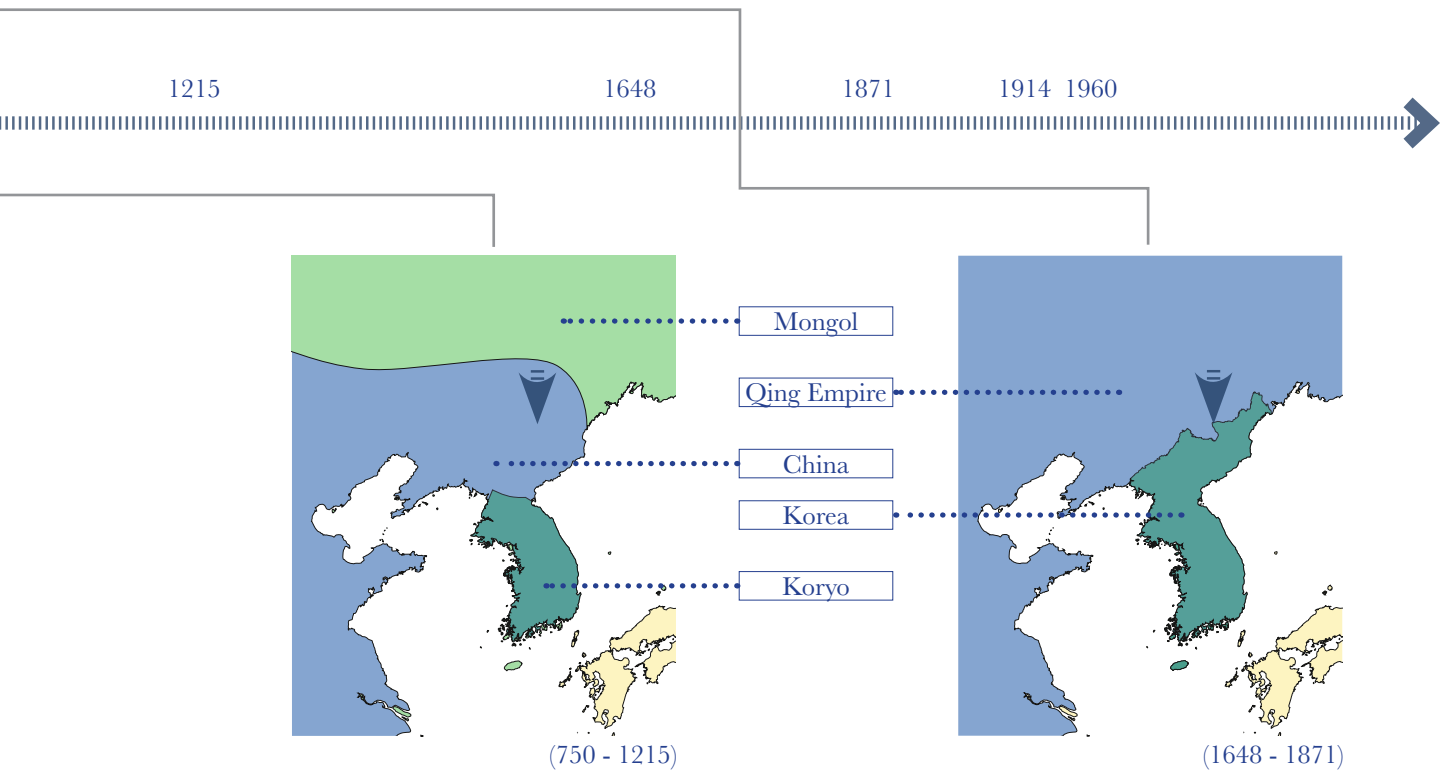


Fig 2.13 Land disputes around the caldera throughout history.



Nevertheless, Baekdu/Changbai is seen as a valuable piece of earth not only because of its geological placement, but also for its cultural significance. The crux of the matter is that both China and the Koreans utilized this cultural interest to mask a more political statement. The land dispute surrounding this sacred mountain is as much a cultural claim by the people as it is a political move of the nations.

\* Historical timeline based on source. <sup>1</sup>



1. TimeMaps Ltd. "TimeMaps." TimeMaps Atlas of World History. Accessed February 8, 2017. <http://www.timemaps.com/history/east-asia-500ad>.

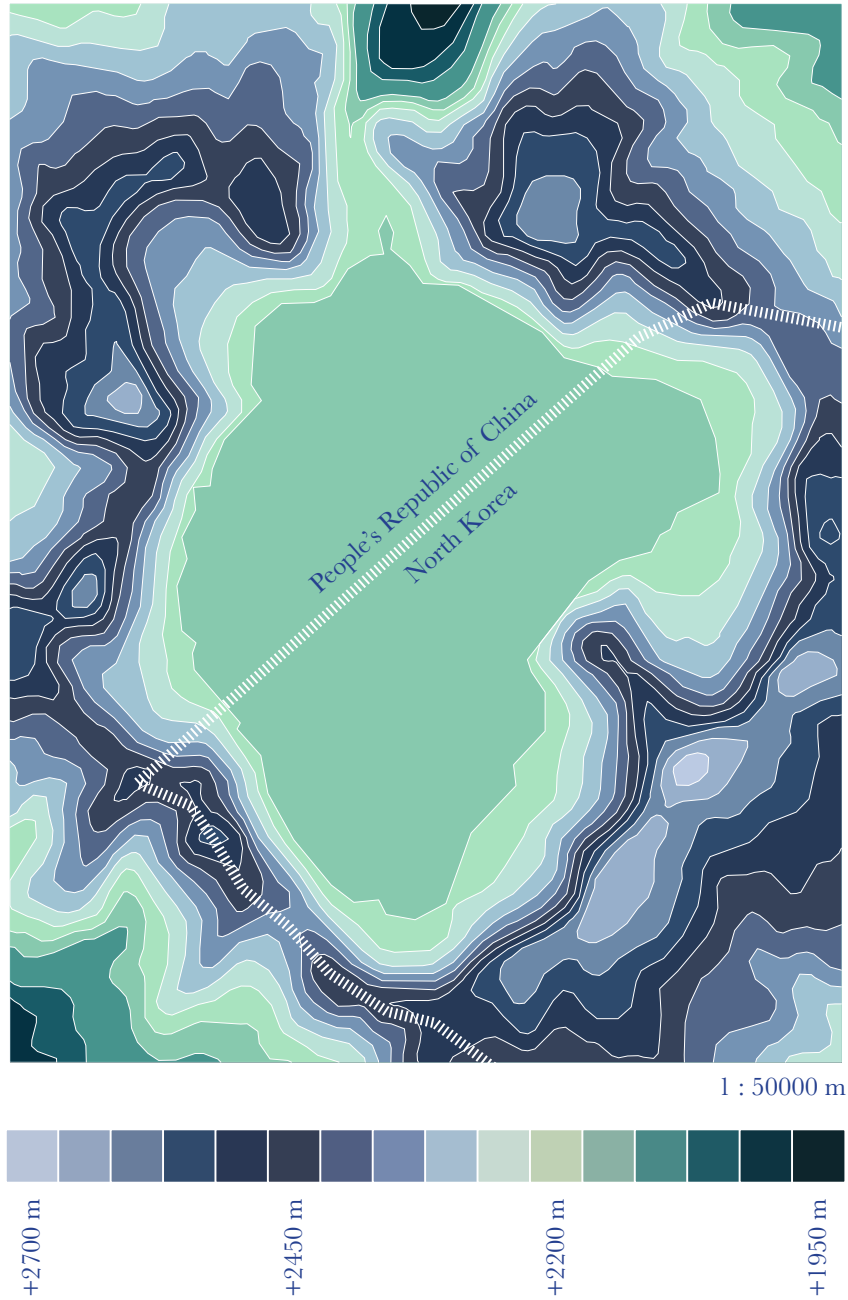


Fig 2.14 North Korea and People's Republic of China sign a treaty to split the administration over the mountain. (1962-3)<sup>1</sup>

1. TimeMaps Ltd, TimeMaps Atlas of World History.

## OF POLITICS

The Baekdu/Changbai controversy is closely knit with the China-Korea history wars that ranged over the ancient kingdom of Koguryo/Gao Gu Li. Originally, the mountain was located in the old territory of Koguryo, and China's claim on this kingdom would consequently ensure that Changbai would be theirs. <sup>1</sup> In 2006, China began its preparations to list the mountain as a UNESCO Natural World Heritage site. <sup>2</sup> The World Heritage Project agrees to Chinese claims with implications for sovereignty, which have sparked conflicts from North and especially South Korea, accusing this political action as a Chinese attempt to monopolize the tourism industry surrounding the Changbai Mountain. <sup>3</sup> Moreover, Baekdu Mountain is an area with great economic potential. Recently, both the North and South Korea have taken interested in promoting Baekdu Mountain tourism as another way of staking their claim on the land internationally. <sup>4</sup> China however, has already developed the Changbai Mountain area into a major tourist destination. The homepage of the provincial Department of Commerce states, "Let's make more and more foreigners know Changbai Mountain and know Jilin." <sup>5</sup>

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1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai" Memory Wars Threaten Regional Accommodation.

2. Ibid.

3. Ibid.

4. Ibid.

5. Ibid.



Fig 2.15 Caldera during winter with frozen Heaven Lake.

For South Koreans, the only way to their sacred mountain opened in 1992 when they forged diplomatic ties with China.<sup>1</sup> Perhaps because of this limited access, South Koreans by far, are the most vocal about the developments around Baekdu Mountain. Unsurprisingly, they consider China's declaration of Koguryo kingdom as an "ethnic regime constituting a portion of China's national history"<sup>2</sup> as a direct attack in attempt to diminish the Korean national history and culture. Koreans view China's "Mount Baekdu Project" as a political program that addresses and alters various historical, geographical, and ethnic issues relating to China's Northeastern provinces.<sup>3</sup> These political agendas would change the history of the land that embodies the very notion of Korean nationhood, and the Korean people have spoken against this on international stages.

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1. Choe, For South Koreans, a Long Detour to Their Holy Mountain.

2. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai" Memory Wars Threaten Regional Accommodation.

3. Ibid.



Fig 2.16 South Korean national skaters declare Baekdu mountain as theirs.

During the 2007 Winter Asian Games, the South Korean short track skate team proclaimed “Baekdu Mountain belongs to Korea” at their medal ceremony, adding tension to this border dispute between nations. <sup>1</sup> Chinese officials considered this a “politically-motivated move undermining China’s territorial sovereignty”, but the Korean Olympic committee responded that it was simply an unplanned incident with no political meaning. <sup>2</sup> Evidently, despite the apparent political agreement between China and North Korea, South Korean people are most actively concerned about the ownership of Baekdu Mountain.

Currently, South Koreans are banned from reaching the mountain from the North Korean side. Once on the Chinese half of the mountaintop, many South Koreans take pictures with their national flag while singing their national anthem. <sup>3</sup> Today, the tour guides inform visitors of a strict Chinese government ban against these patriotic behaviours. <sup>4</sup> Most of these tour guides are ethnically Korean people from the immediate area of the mountain. The ongoing controversies surrounding Baekdu/Changbai directly influence these locals because of their geographical and cultural proximity to this hot spot of cultural war.

.....  
1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai” Memory Wars Threaten Regional Accommodation.  
2. Ibid.  
3. Choe, For South Koreans, a Long Detour to Their Holy Mountain.  
4. Ibid.



Fig 2.17 Locals rely on the fame of Baekdu Mountain for profit, cooking eggs and corn near the base of the mountain using the geothermal hot spring water. .



## OF LOCAL PEOPLE

The conflict between the three nations places the “Korean Chinese” Yanbian people in a precarious position, concerned over the loss of their ethnic autonomy. When the Jilin Provincial Government established the “Committee for Protection, Development and Management of Mount Changbai” in May 2005, the Yanbian Korean Autonomous Prefecture’s right to manage Mount Baekdu was transferred to Jilin Province.<sup>1</sup> This change negatively affects Yanbian’s tourism industry. Not only do they lose the revenue generated from the tourism to the mountain, but also the “Path to Mt. Baekdu”.<sup>2</sup> The old roads and infrastructure leading towards the mountain from the Yanbian area become obsolete since the developing highways and airports now provide a direct route to the mountain without involving the prefecture.<sup>3</sup> In short, Baekdu Mountain would no longer be synonymous with Yanbian.

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1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai” Memory Wars Threaten Regional Accommodation.

2. Ibid.

3. Ibid.



Fig 2.18 View of caldera covered with a layer of cloud from the plane.

***“For us, Changbai is a sacred mountain, too. When I was on the summit of the mountain, our land, Choson, could be seen.”***

- Kim Kwang Il, a third-generation Korean Chinese <sup>1</sup>

Only to the people of Yanbian, the two names of the mountain, Baekdu and Changbai, are interchangeable. They are the people most immediate to the sacred mountain with the least amount of influence on its recent developments. Because they are ethnically Korean and nationally Chinese, Yanbian people are in a sensitive position, unable to publically voice their opinions on this on-going land dispute. These political power plays between China and the two Koreas are not concerned for this unique group of people with differing national and cultural identities. The exclusive territorial claims between nations can only inflame cross-border tensions, with the local people of Yanbian as primary victims.

This past summer, I’ve managed to take the long-overdue trip to the caldera. The expectations were high. Research shows beautiful aerial images advertised on tourism websites with stellar reviews. With repeated recommendations from family, I was at last on my way towards this most sacred pilgrimage site.

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1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai” Memory Wars Threaten Regional Accommodation.

### 3. PURSUIT



Fig 3.01 Cloud drift over the peak of Mount Paektu



Fig 3.02 In line for the bus (series)

## 3.1 VISIT

The plane lands in the airport of the small city of Yanji. By car, it is a 5-hour drive to the Northern entrance of the Tianchi Tourism Holiday Village. From then on, unauthorized vehicles are not allowed inside the designated scenic areas. Hundreds of tour buses from Japan, Korea, and other parts of China wait in the large parking lot in front of the entrance. There is approximately an hour waiting period to the ticket booths. The admission is a pricy purchase of 125.00 Yuan per person and an additional bus ticket of 85.00 Yuan per person.

There are several roads up the mountain; the most tourist-friendly one being the Northeastern entrance. The North entrance that leads directly up to the Heaven Lake was closed off at the time and the West entrance did boast the best views of the Lake according to the tourist pamphlets. The large, "eco-friendly" buses take visitors to a stop that consists of a large parking lot, a gift shop, and another ticket booth for the additional bus fare up to the actual peaks of the mountain. The designated waiting areas all have warning signs informing tourists to be wary of pickpockets. There are around 200 identical 10-seater mini-vans that take visitors up to the base of the mountain on a winding roller coaster road. People prone to carsickness are advised to take medication beforehand, as the drivers do not slow down on this extremely narrow ride with sharp turns.



Fig 3.03 Caldera Fog (series)



The dense fog draped over the top of the caldera become visible near the end of the ride. The mini-vans stop at a large clearing near the base of the mountain peaks. It consists of a large clearing, a weather research building inaccessible to the public, as well as a large gift shop selling food and Changbai Mountain paraphernalia. For those unprepared for the high-altitude mountain wind and precipitation, thick winter jackets are also available with overpriced tags. Visitors must trek by foot from this point onwards, towards the narrowing pathways up the mountain peaks. Due to high volume of people, the wait time is around an hour in an unsheltered area.

The slow shuffle towards the peak overlooking the heaven lake is on fenced, boarded, wooden steps, roughly 1.5m wide. There is often not enough room for two people to pass comfortably. This narrow passageway widens along the peaks where, on an extremely sunny and cloud-less day, visitors get a chance to see the infamous Heaven Lake.



Fig 3.04 Sea of people to the top of the caldera (series)

It is not uncommon to see 5 layers of rows of people stretched along the metal railings around the peaks. The entire area is fenced off with guards watching over the endless crowd. Due to unpredictable mountain weather, sunny periods with clear skies are extremely rare. Visitors often have to frantically scramble with all their recording devices to capture the 30-seconds of semi-clear skies. The guards are there not only to prevent people from plummeting towards the Heaven Lake, but also to stop the crowd from getting too aggressive in their attempts to take pictures.

The entire process can be both physically and mentally draining. There is no resting area, or even a simple bench for visitors to sit and take in the landscape. The fact that this is a dormant volcano capable of great destruction is only noted on the information plaques, not experienced through real interaction with the site. The allure of barely-visible Heaven Lake from such a distance is lost and unremarkable in comparison to the professional photographs. The whole endeavour is so rushed that, in a sense, it is a quick drive-through with the pictures and videos the only evidence of the trip to this sacred mountain. Additionally, only a tiny portion of the mountain is open to the public and any ventures outside the designated areas can be dangerous. In one of the worst-case scenarios, one can be mistakenly viewed as illegally attempting to cross over to the North Korean side. The way down the mountain is a similar one and the entire trip ends at the obligatory gift shop areas.



Fig 3.05 Rock at the top of the caldera (series)

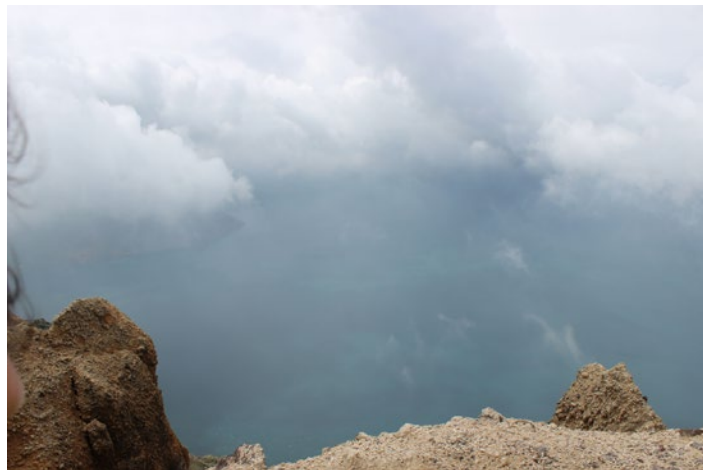


Fig 3.06 Heaven Lake (series 1)



Fig 3.07 Heaven Lake (series 2)



Fig 3.08 Heaven Lake (series 3)



Fig 3.09 Heaven Lake visible through the fog



## 3.2 PROBLEM

This disappointing trip shattered any illusions I had for Baekdu Mountain. The journey essentially consisted of the initial anticipation, the millions of people, the hours of waiting, with only a hint of those precious clear seconds. Instead of the “Sacred Mountain”, the site was a fully developed tourist spot, completely commercialized, and perfectly moulded to maximize economical gain. From the boardwalk steps, the identical vehicles, to the railings, all parts of the expedition were limited and controlled. This underwhelming visit was not an accurate embodiment of the history and cultural significance of Baekdu Mountain.

“The Rough Guide to China” addresses this problem further.

“Visitors, mostly domestic tourists, South Koreans and Japanese, come here in great numbers, and a tourist village has grown up on the mountain, with the result that the scenery and atmosphere are somewhat marred by litter, souvenir stalls and hawkers. (Chapter Dongbei)... Despite its remoteness, Changbai Shan averages around 10,000 visitors a day in summer - and as you’re herded from one spot to the next, it’s easy to feel the outdoors experience has been diluted a bit. (The Reserve)”<sup>1</sup>

It’s evident that with the recent tourism developments around the mountain, the “sacredness” of the caldera is slowly being buried in favour of economical agendas. People are no longer visiting to pay pilgrimages to this historically rich site, but to simply use it as another backdrop for their newest social media profile.

.....  
1. Leffman, David, and Simon Lewis. The rough guide to China. 6th ed. London: Rough Guides, 2014. 2011. Accessed February 23, 2017. [mountain&source=bl&ots=zP20xWrTB6&sig=ZleZrOIT56YxYNyRRpJK2\\_gL4f0&hl=en&sa=X&ved=0ahUKEwj-v\\_fLhM3RAhWS3oMKHfFCs04ChDoAQg\\_MAc#v=onepage&q&f=false](#)



Fig 3.10 The holiest site in Judaism, the Temple Mount.

A larger, on-going problem is of course, the international border conflict surrounding the caldera. The mountain is a highly contested pilgrimage site, similar in a sense, to the Old City of Jerusalem. Decidedly much more contested than the caldera because of the wider international attention it receives, this holy place has been debated between the three Abrahamic religions - Christianity, Judaism, and Islam. It is easily the most "contentious piece of real estate in the world,"<sup>1</sup>

All three faiths teach that the Messiah will eventually return to Jerusalem, a portal to paradise.<sup>2</sup> However, each religion has a different tale to tell when it comes to the holy site. As professor Samuel Heilman states, "everybody's story is just one of many, and so they not only try to make their story the right story, they try to delegitimize everyone else's."<sup>3</sup> It's this exclusive claim over this piece of land that brews conflict.

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1. Burke, Daniel. "Jerusalem's 5 most contested holy sites." CNN. September 15, 2013. Accessed February 22, 2017. <http://religion.blogs.cnn.com/2013/09/15/the-battle-for-jerusalem-the-sacred-citys-five-most-contested-sites/>.

2. Ibid.

3. Ibid.



Fig 3.11 Violence arises around contested sites such as Jerusalem.

*"Heaven and Earth are said to meet atop Jerusalem's sacred mounts, but the city's stony streets have seen more than their share of violence." <sup>1</sup>*

*- Daniel Burke*

Much like the Mt. Baekdu/Changbai, this need for **exclusive claim** over a piece of land by different groups of people is the main catalyst to this type of border conflict. Whether the issue is religion, national, or cultural history, there is a lack of communication between these groups with different beliefs, resulting in a lack of understanding (or willingness to understand). Violent conflicts over such a sacred site are therefore unavoidable. The conflict over Mt. Baekdu has yet to escalate to the extent of the case in Jerusalem, but is certainly a constant pressure point, waiting to erupt.

While lining up to see the caldera, there was an underlying sense of dislike towards the Koreans from the Chinese people, and vice versa. For people who understand both languages such as myself, it was not difficult to hear the murmured distastes towards the other group of people.

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1. Burke, Jerusalem's 5 most contested holy sites.



Fig 3.12 Foggy pathway towards the caldera waterfall.

## 3.3 PROPOSAL

This proposal is a speculative response to the site. The political conditions surrounding Baekdu/Changbai would likely never allow for this type of intervention, and the information around this precarious border is severely limited for a site survey to be feasible. It is clear that this caldera is tightly intertwined with both Chinese and Korean culture, and the sacred mountain is split down the middle in an attempt to appease all parties. This solution however, evidently seems to be unsatisfactory to all countries involved.

This reason for nationalizing geographical space such as Mt. Baekdu is to “determine the distinctions between ‘us’ and ‘them’”.<sup>1</sup> The tension between the nations will not extinguish unless both countries share the geographic space. Then, instead of claiming exclusive rights in support of the political agenda of a single nation, **Mt. Baekdu/Changbai should be treated as a shared understanding of territory and history.** This thesis proposes Mt. Baekdu to become a symbol of unity, recognizing both sides of history that flow from this caldera - a “buffer zone” of culture. Similar to the Korean Demilitarized Zone\* (DMZ)<sup>2</sup>, the mountain becomes a piece of land claimed by no one and protected by everyone – like myself, simultaneously Korean and Chinese, but also neither completely. The border would then curve around the mountain, liberating the caldera from cultural and political clutches. (See fig. 3.13-14)

\* See Glossary

- .....
1. Ahn, China and the Two Koreas Clash Over Mount Paekdu/ Changbai: Memory Wars Threaten Regional Accommodation.
  2. O’Neill, Tom. “Korea’s DMZ: Dangerous Divide - National Geographic Magazine.” Korea’s DMZ: Dangerous Divide - National Geographic Magazine. July 2003. Accessed February 21, 2017. <http://ngm.nationalgeographic.com/features/world/asia/north-korea/dmz-text/1>.

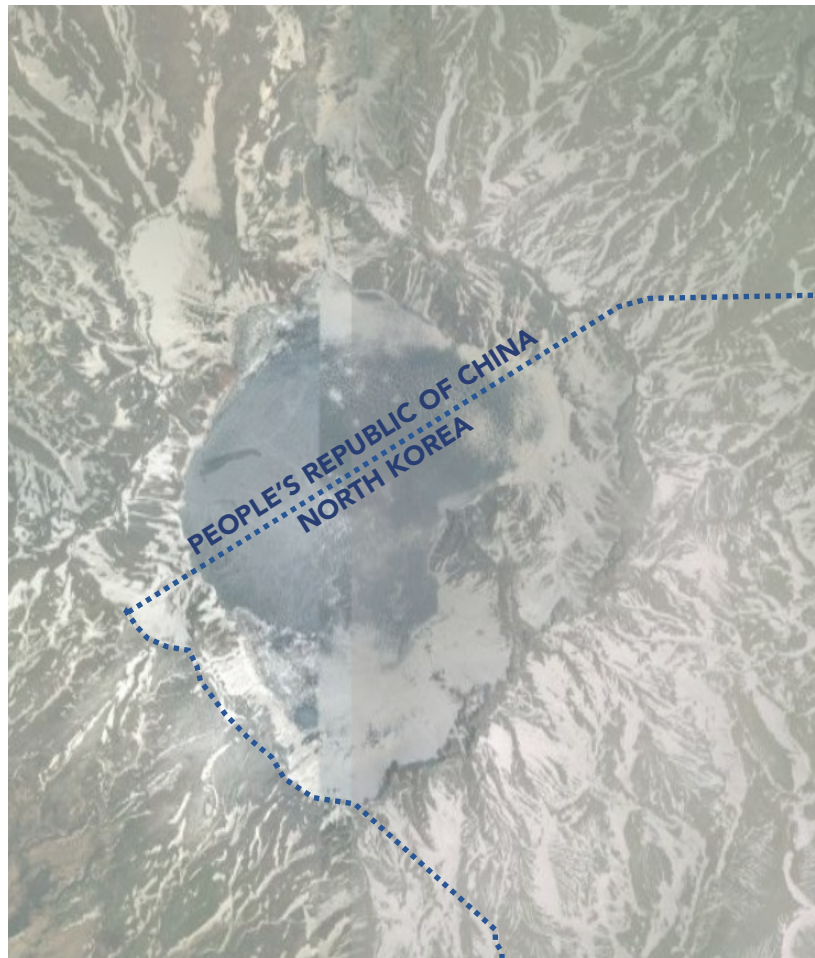


Fig 3.13 Current border line between China and North Korea.

1 km





Fig 3.14 Proposed border line between China and North Korea to incorporate a protected zone around the caldera.



Fig 3.15 Rocky Baekdu/Changbai Mountain side with Heaven Lake waterfall.

This thesis proposes a choreographed journey connecting several small pavilions around the Heaven Lake. The proposal questions how architectural interventions intensify people's encounters with the landscape and with each other. **How does one create a buffer zone that promotes a coexistence of two opposing views or forces?** Architecture can become a platform to open discussions, and facilitate the exchange of conflicting perspectives between these different groups of people.

This choreographed pathway is designed to submerge people in the atmosphere of the caldera. During this rigorous hike around the Heaven Lake, visitors can shed their political and national identities. Nature, especially a spectacular one such as Baekdu Mountain, has the ability to disarm people. There is a phenomenon that happens while walking on a nature trail or going camping. Strangers often trade simple greetings with fellow hikers or share park benches while taking a break to continue the conversation. These encounters are based on nothing more than a sense of companionship in the wild. Mountain hiking in particular creates a sense of community, encouraging hikers to develop bonds with strangers they would otherwise never speak to.



Fig 3.16 Simple Tungestølen mountain lodges by Snohetta.

This journey is as much a place to communicate with others, as it is a chance to reflect on the self. Similar to the intentions of Snøhetta's mountain lodge design in Tungeestølen, "it's about living in the moment. **Mountains can help build relations between the individual self and the outside world**, and we wanted our cabins to do the same. It's a space for self-reflection." <sup>1</sup> These simple lodges have communal buildings with cafes, restaurants, and courtyards, all designed with intimacy in mind. They are "spaces for dialogue and contemplation between guests." <sup>2</sup> In response to the expanding tourist villages that boast large, all-inclusive hotels and spas, this thesis is similar to the lodges in its intent – to design a place of communication and reconciliation between people in the face of a devastating natural phenomenon.

As a response against the over-development of tourism surrounding Baekdu/Changbai Mountain, this journey promotes responsible visits that are conscious of the conservation of the natural environment as well as the building of cultural awareness and respect. It stimulates a symbiotic relationship between the two conflicting national and historical beliefs, transforming the sacred mountain into a beacon that demonstrates the possibility of two forces coexisting harmoniously. The ancient art of Shibori is one manifestation of this unity.

.....

1. Megson, Kim . "Architecture and design news from CLAD - Snøhetta-designed hiking cabins offer 'space for self-reflection' in the shadow of a Norwegian glacier." CLAD: for leisure architects, designers, investors & developers. December 19, 2015. Accessed February 20, 2017. [http://www.cladglobal.com/CLADnews/architecture-design/Sn%C3%B8hetta\\_designed\\_hiking\\_cabins\\_offer\\_space\\_for\\_self\\_reflection\\_in\\_the\\_shadow\\_of\\_a\\_Norwegian\\_glacier/320213?source=news](http://www.cladglobal.com/CLADnews/architecture-design/Sn%C3%B8hetta_designed_hiking_cabins_offer_space_for_self_reflection_in_the_shadow_of_a_Norwegian_glacier/320213?source=news).

2. Ibid.

## 4. SHIBORI



Fig 4.01 Shibori Kimono outer layer.



Fig 4.02 Townscape woodblock print famous Arimatsu-Shibori shop by Utagawa Hiroshige. (circa 1842-1843)



## 4.1 HUMBLE BEGINNINGS

Originating from China, Shibori is the Japanese method of using resistance to colour textiles. Shibori comes from the Japanese word “Shiboru”, meaning to **wring**, **squeeze**, or **press**.

<sup>1</sup> It has its humble beginnings with the poor. As a result of poverty, people who couldn’t afford new clothes had to re-dye and reuse old fabrics. Indigo was a particular favourite because of its dark hue and availability. <sup>2</sup>

During the Tokugawa Peace Era of 17th and 19th century, Shibori was developed into an art form, integrated into the everyday lives of the peasants as well as the nobility.<sup>3</sup> With growing popularity and further development in techniques, the aristocracy began commissioning artisans to create extravagant pieces in silk and cotton.<sup>4</sup> Since it was a labour-intensive form of art, entire houses were renovated for this specific purpose, and this art form flourished. <sup>5</sup>

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1. Roth, Katherine. “Shibori, an ancient Japanese dying technique, goes mainstream.” Global News. January 28, 2014. Accessed February 12, 2017. <http://globalnews.ca/news/1113014/shibori-an-ancient-japanese-dying-technique-goes-mainstream/>.

2. Wada, Yoshiko Iwamoto., Mary Kellogg Rice., and Jane Barton. “Shibori: the inventive art of Japanese shaped resist dyeing.” Tokyo: Kodansha International, 1983.

3. Wada, Yoshiko Iwamoto., Mary Kellogg Rice., and Jane Barton. Memory on cloth: shibori now. New York, NY: Kodansha USA, 2002.

4. Ibid.

5. Ibid.



Fig 4.03 Shibori master at work.



Fig 4.04 Detailed shibori techniques.

## 4.2 PROCESS

During Shibori, the fabric, usually cotton or silk, undergoes a strenuous process of transforming from a 2 dimensional surface into a 3 dimensional object, tightly bound by methods of **sewing, knotting, clamping, wrapping, or twisting**. This process can take from hours to days of arduous labour and patience. It is then dipped in a steaming vat of fermented indigo dye, wrung, and dried. When the bindings are released, what results in the end is rarely predictable, even by a Shibori master. <sup>1</sup>

---

1. "As Tradition." World Shibori Network. July 01, 2015. Accessed February 12, 2017. <https://shibori.org/traditions/>.

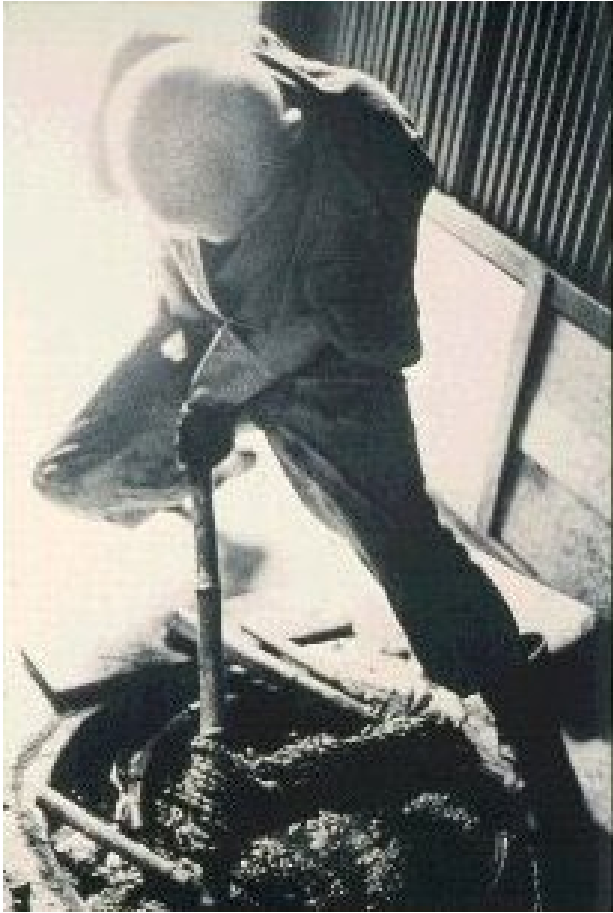


Fig 4.05 Shibori master Motohiko Katano at work.

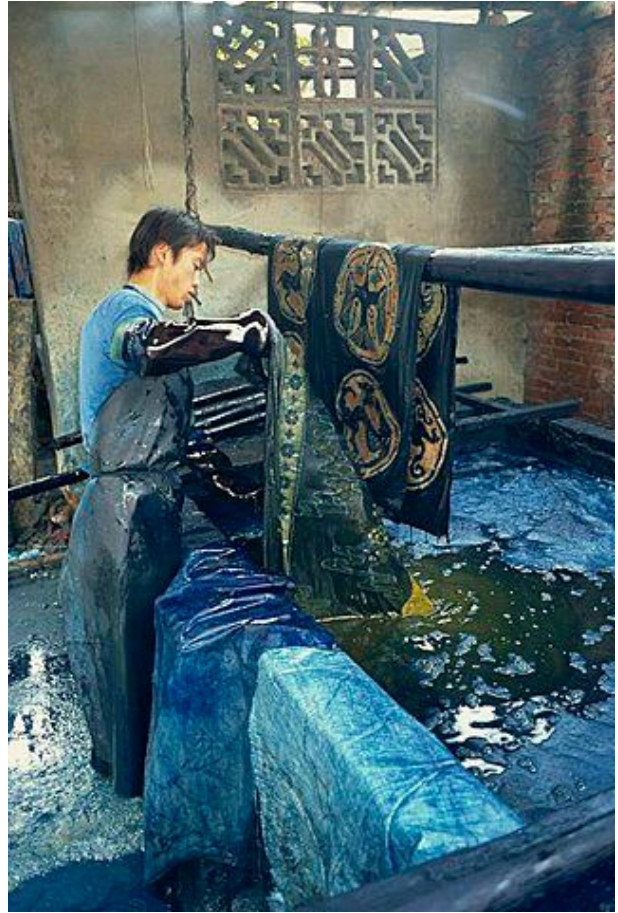


Fig 4.06 Evolved Chinese style indigo fabric dying.

This **element of surprise** is an important distinction of Shibori.<sup>1</sup> The Chinese counterpart, as it had more time to develop, strives for perfection, manipulating the fabric to create extravagant patterns to the dyers' intentions. In shibori however, the dyer never fights the fabric, allowing the material's nature to take its course. Hence, every piece created is never the same, a process that appreciates the unpredictable, yet beautiful union of two opposing forces - the relentless indigo dye and the resisting white fabric.

Below are my personal explorations on the process of Shibori to discover its method and meaning through the act of making.

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1. World Shibori Network, As Tradition.



Fig 4.07 Kumo shibori process 1.

Type of Shibori: Kumo Shibori  
Process Action: Twisting and Binding  
Speed: Slow  
Difficulty: High

## 4.3 EXPLORATIONS

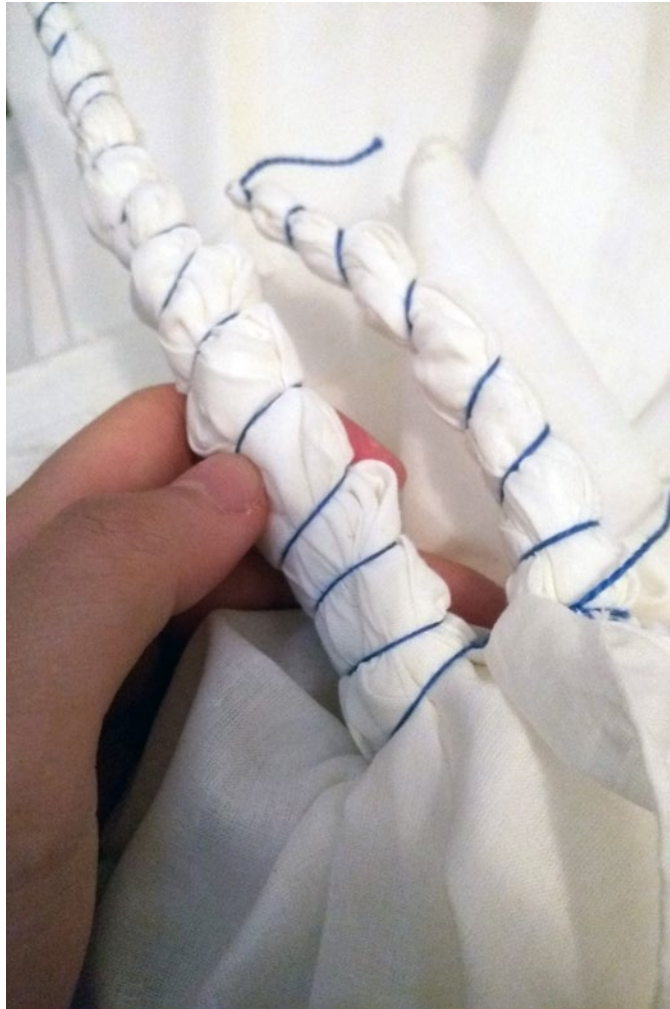


Fig 4.08 Kumo shibori process 2.



Fig 4.09 Itajime shibori process 1.

Type of Shibori: Itajime Shibori  
Process Action: Twisting and Binding around a pole  
Speed: Medium  
Difficulty: Medium





Fig 4.10 Itajime shibori process 2.



Fig 4.11 Itajime shibori process 3.



Fig 4.12 Itajime shibori process 4.



Fig 4.13 Arashi shibori process 1.

Type of Shibori: Arashi Shibori  
Process Action: Folding and Clamping with wood  
Speed: Slow  
Difficulty: Medium



Fig 4.14 Arashi shibori process 2.



Fig 4.15 Kanoko shibori process 1.

Type of Shibori: Kanoko Shibori  
Process Action: Sewing and Tightening  
Speed: Slow  
Difficulty: High



Fig 4.16 Kanoko shibori process 2.



Fig 4.17 Itajime Shibori with cotton.



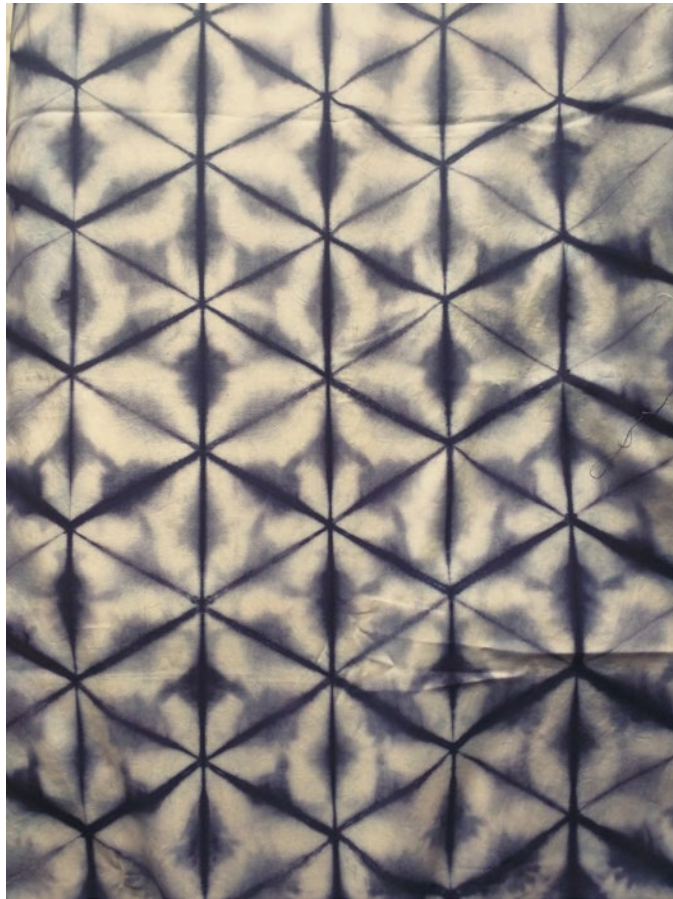


Fig 4.18 Arashi Shibori with cotton.



Fig 4.19 Itajime Shibori with silk.



Fig 4.20 Kumo Shibori with cotton.



Fig 4.21 Resistance of the stitched white fabric against the indigo dye in Nui shibori.



Fig 4.22 Aerial view of Baekdu Mountain in the winter by An Seung Il.

## 4.4 A TIE TO CALDERA

There are two essential forces flowing through shibori. **The dialogue of these two opposing intentions, one to resist and one to penetrate,** transforms the fabric and the ink into an entirely new identity. The negative spaces between the fabric are where the indigo seeps in to create unpredictable movements. The clash of this rigid form and the fluid movement can be transcribed into architecture. This thesis explores the design of spaces through the interaction of these two basic elements and its relationship with the landscape.

The caldera in itself is also a **dichotomy of two elemental forces.** Geologically, the lava erupts through the resisting earth to create a cavernous hole. The water gathered forms an icy calm lake, with the rumbling forces of the molten lava underneath, separated only by a layer of earth. Politically and culturally, the conflicts surrounding Mt. Baekdu are also caused by the clash between two perspectives refusing to acknowledge each other. By employing shibori as an inspiration, a new identity can emerge from the encounter of these two forces.

Shibori began as a humble craft, its process cooperation between man and nature. When architecture is too overbearing, it imposes on the people and the landscape. **Shibori-inspired design would not overwhelm the landscape,** taking a supporting role to highlight its surroundings instead. Shibori inspires architecture that is conscious of its environment, acting as a facilitator between the users and their landscape. Against the over-commercialized developments growing in the Mt. Baekdu Conservation Area, a simple architecture that works in tandem with its settings is an appropriate response.

The thesis explores these various lines of connections between Shibori and the caldera through the design of a journey in an attempt to return the sacredness to the mountain.



Fig 4.23 Snohetta reindeer pavilion exterior.

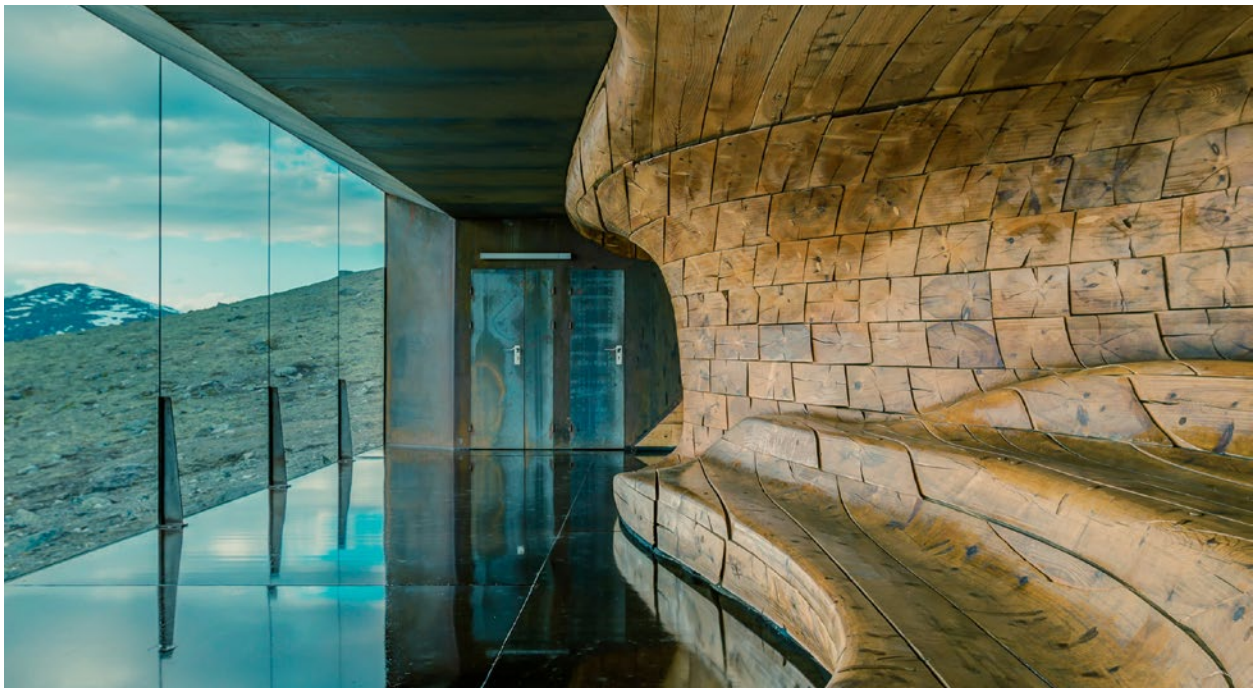


Fig 4.24 Snohetta reindeer pavilion timelapse screenshot.

## SHIBORI ARCHITECTURE

*"The building design is based on a **contrast between ideas - a rigid outer shell and a soft, organic inner core.** The wooden core is shaped like rock or ice that has been eroded by natural forces like wind and running water, and is placed within a rectangular frame of raw steel and glass."*<sup>1</sup>

- Snøhetta

The Reindeer Pavilion by Snøhetta in Norway is an example that exhibits a shibori-like architecture. The simple yet elegant viewing platform is visually a clash of the flowing wood and the clear-cut glass and metal facades. It is located in the Dovrefjell mountain ranges, which holds a unique place in Norwegian history filled with tales and myths connected to its mountains.<sup>2</sup> This simple viewing platform built on a historically rich site speaks to its surroundings in direct ways. The rigid metal outer layer is in contrast to its tumbling landscape while the smooth fluid interior mirrors the more natural topography. The clash of these two elements embody a Shibori-like architecture in its design.

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1. Frearson, Amy. "Snøhetta Timelapse." Timelapse movie tours Snøhetta's Reindeer Observation Pavilion in Norway. October 2, 2016. Accessed February 21, 2017. <https://www.dezeen.com/2016/10/02/reindeer-observation-pavilion-snohetta-movie-norway-alejandro-villanueva/>.

2. Ibid.

## 5. INTERVENTION



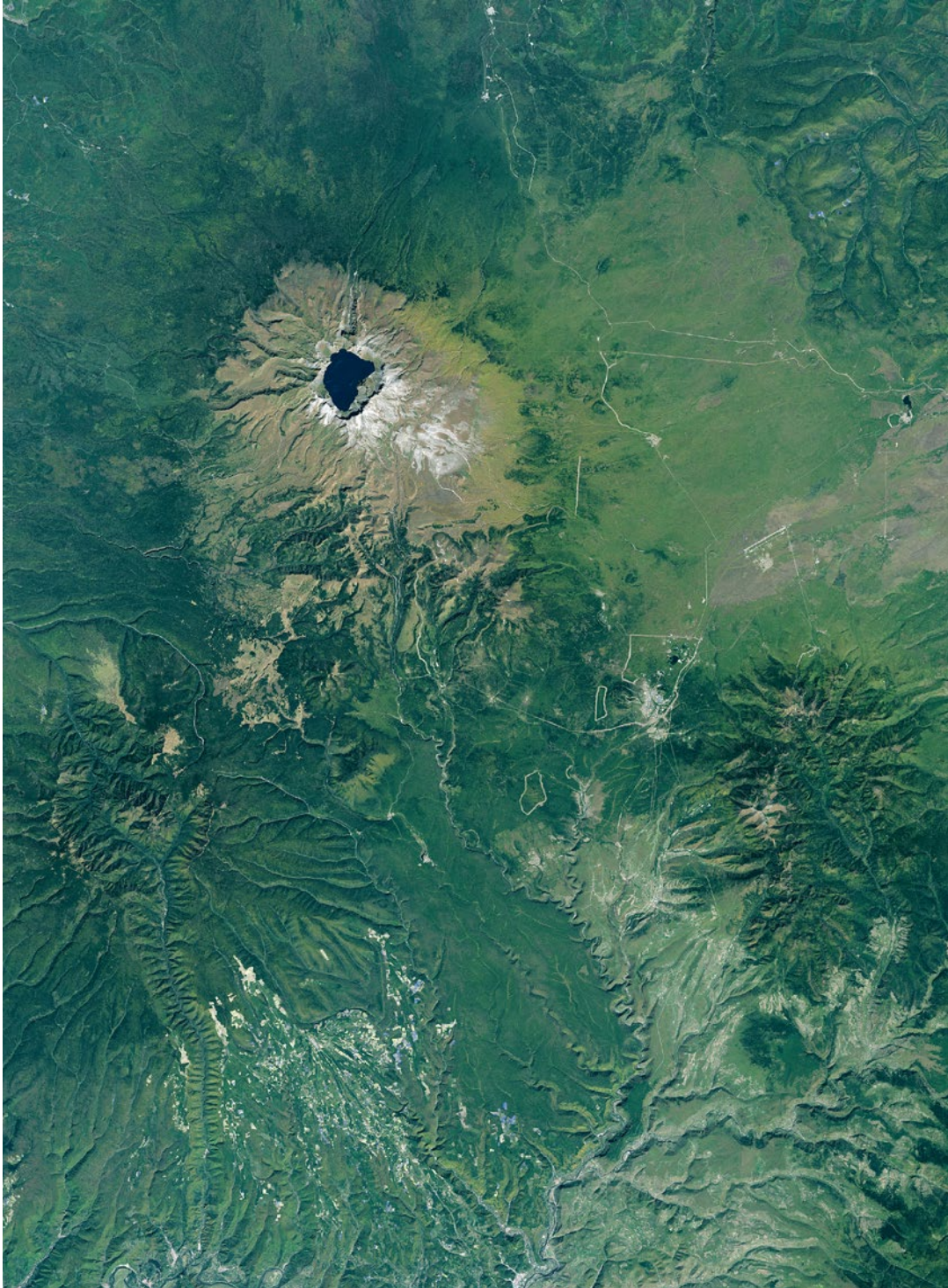


Fig 5.01 View of caldera from space, taken by NASA.



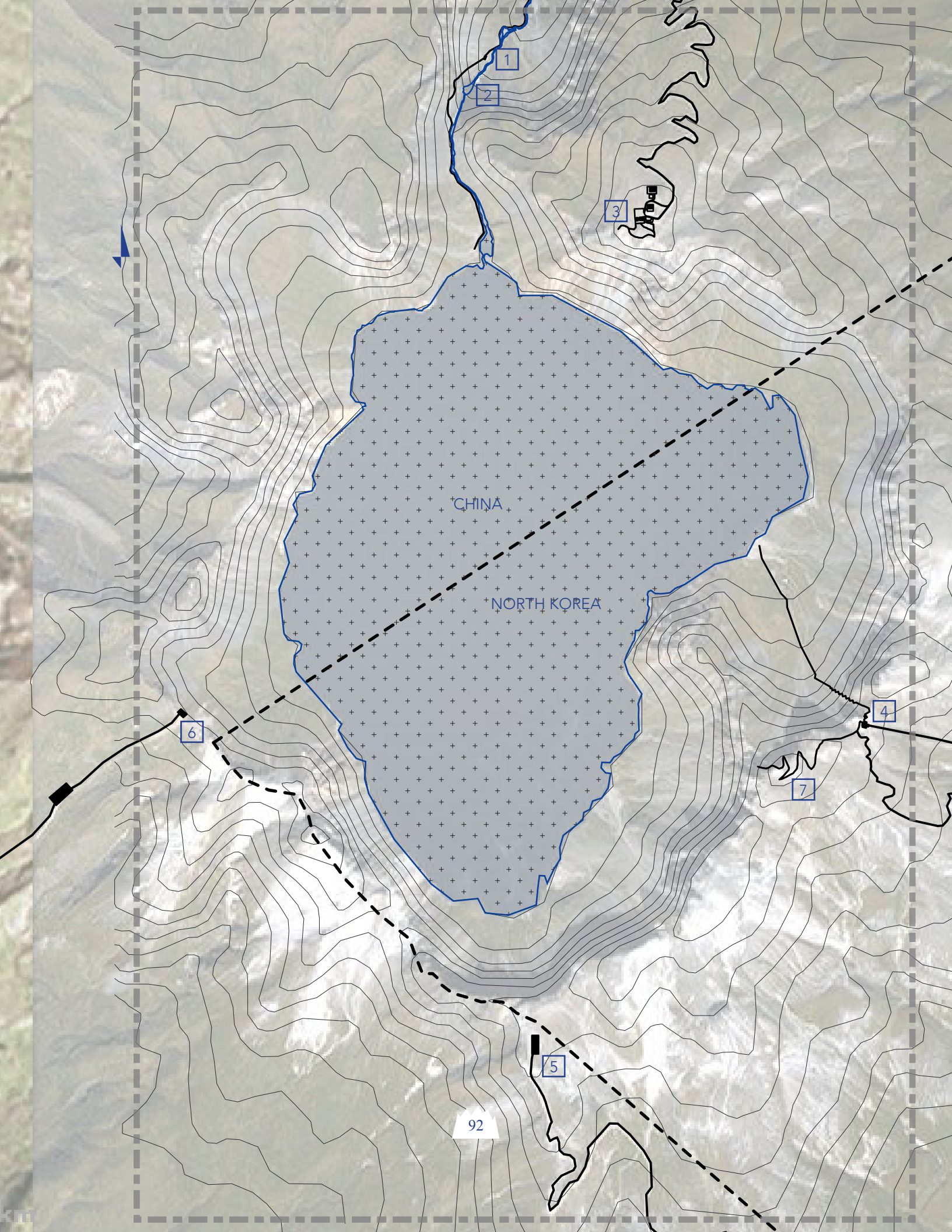
Fig 5.02 Frozen Heaven Lake.

## 5.1 SITE CONDITIONS

The Changbai Mountains Reserve has an extremely diverse, vertically distributed ecosystem. Regarded as the “rare species gene bank”<sup>1</sup> it serves as a natural laboratory for forest ecology research. In 1980, it joined “Man and Biosphere” (MAB) Program of UNESCO.<sup>2</sup> Since the volcano is over 2,600 m in elevation, this region includes well-defined bioclimatic zones from “temperate vegetation in the valleys to alpine tundra on the upper slopes”.<sup>3</sup>

There can be drastic temperature difference between the base of the mountain and the top, especially during summer months. When the leaves are still green at the base of the mountain, the peaks remain snow-capped (hence the name Changbai, meaning “forever white”). During the winter, the Heaven Lake freezes and only hikers with special permits are allowed on the designed pathways. The weather is often unpredictable because of the high altitude as it ranges from sunny, high-twenties to snowy with icy cold winds. It is often foggy at the top of the caldera, but relatively dry and sunny at the base.

- .....
1. Changbai Mountain Academy of Sciences. “Impacts and Countermeasures of Global Climate Changes on Alpine Areas” Report on Evaluation of Changbai Mountain Reserve. PDF. Jilin province: Changbai Mountain Academy of Sciences, December 8, 2009.
  2. Ibid.
  3. Carpenter, Chris. “Eastern Asia: China and North Korea.” WWF. Accessed March 09, 2017. <https://www.worldwildlife.org/ecoregions/pa0414>.



CHINA

NORTH KOREA

1

2

3

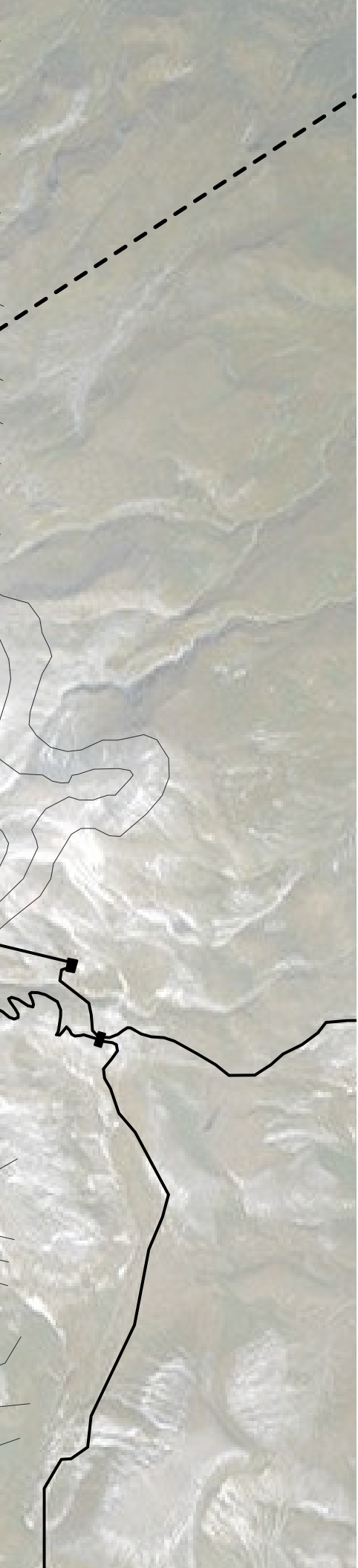
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7

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92



## EXISTING LANDMARKS

There are currently several entrances into the caldera area and most of them are from the Chinese side. Figure 5.03 indicates existing landmarks and pathways based on Google Earth. The limited information is due to the lack of data available, especially from the North Korean side.

1. Existing Chinese North Entrance
2. Waterfall
3. Existing Chinese North-eastern Entrance (main)
4. North Korean South-eastern Entrance
5. Chinese South Entrance (unclear)
6. Chinese West Entrance
7. "Janggum Peak" – highest of the 16 peaks exceeding 2,500 m lining the caldera rim around the Heaven Lake is located in North Korea.




-  ENLARGED 1:10 000 SITE AREA
-  EXISTING PATHWAYS
-  CURRENT BORDER

Fig 5.03 Existing site map at 1:30 000



Fig 5.04 Pathway by landscape architect Inge Dahlman.



Fig 5.05 Tungeneset rest stop access ramp by Code Arkitektur and Aurora Landskap.

## 5.2 PRECEDENTS

### National Tourist Routes in Norway

*"In Norway, there is a long tradition for adapting buildings to arduous terrain. Designers have drawn on this tradition in their efforts to upgrade the national tourist routes. **The architecture should facilitate the experience of nature**, while also appearing as an attraction in its own right. Artworks along the road are there to reinforce the character of the route and invoke other suggestive narratives."*<sup>1</sup>

- Nasjonale turistveger

This designed tourist highway boasts numerous lookout points and pathways by various architects. The aim is to allow pauses along a journey where people can come together and interact with the landscape. Architecture elements are integrated into the landscape to highlight its existing features, as well as to provide platforms to observe nature.

This unique project is a collaboration between many architects such as Peter Zumthor and artist Louise Bourgeois.<sup>2</sup> These small-scale projects that can be spotted along the scenic drives along the Norwegian countryside is an example of unobtrusive architecture that are congruent with its surroundings. It is a journey that immerses visitors in the landscape.

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1. Nasjonale Turistveger. "Architecture and art." Nasjonale Turistveger - National Tourist Routes in Norway. Accessed February 10, 2017. <http://www.nasjonaleturistveger.no/en/about-us/architecture-and-art>.

2. Ibid.



Fig 5.06 Trollstigen viewing platform by Reiulf Ramstad Architects 1.



Fig 5.07 Trollstigen viewing platform by Reiulf Ramstad Architects 2.





Fig 5.08 Stegastein viewing platform by Todd Saunders and Tommie Wilhelmsen.



Fig 5.09 Trollstigen lookout by Reiulf Ramstad Architects.



Fig 5.10 Riverwalk Moment 1

## Willamette Falls Riverwalk

Location: Oregon City, Oregon, USA

Architects: Snohetta

Timeline: 2015 - ongoing

Size: 1/2 miles long

*"The magnetism of Willamette Falls is the genesis and spirit of place. The new design will provide an experiential glimpse of the fall's power, one that **transports visitors deep into history** and highlights its ephemeral qualities."*<sup>1</sup>

- Snohetta

The project aims to create a river walk that connects people to the historically rich Willamette falls. The design is focussed on showcasing the falls and the complex material layers of the site. This connects to the site's story of "deep geology, dynamic hydrology, and vibrant ecology, together forming the spirit of place."<sup>2</sup> There is actually minimal architecture designed on the site, consisting of mostly walkways. The architecture does not overwhelm its site conditions, and is considerate of its landscape while providing a pathway for community building.

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1. Snohetta. "Willamette Falls Riverwalk." Snohetta. Accessed January 10, 2017. <http://snohetta.com/project/233-willamette-falls-riverwalk>.

2. Ibid.

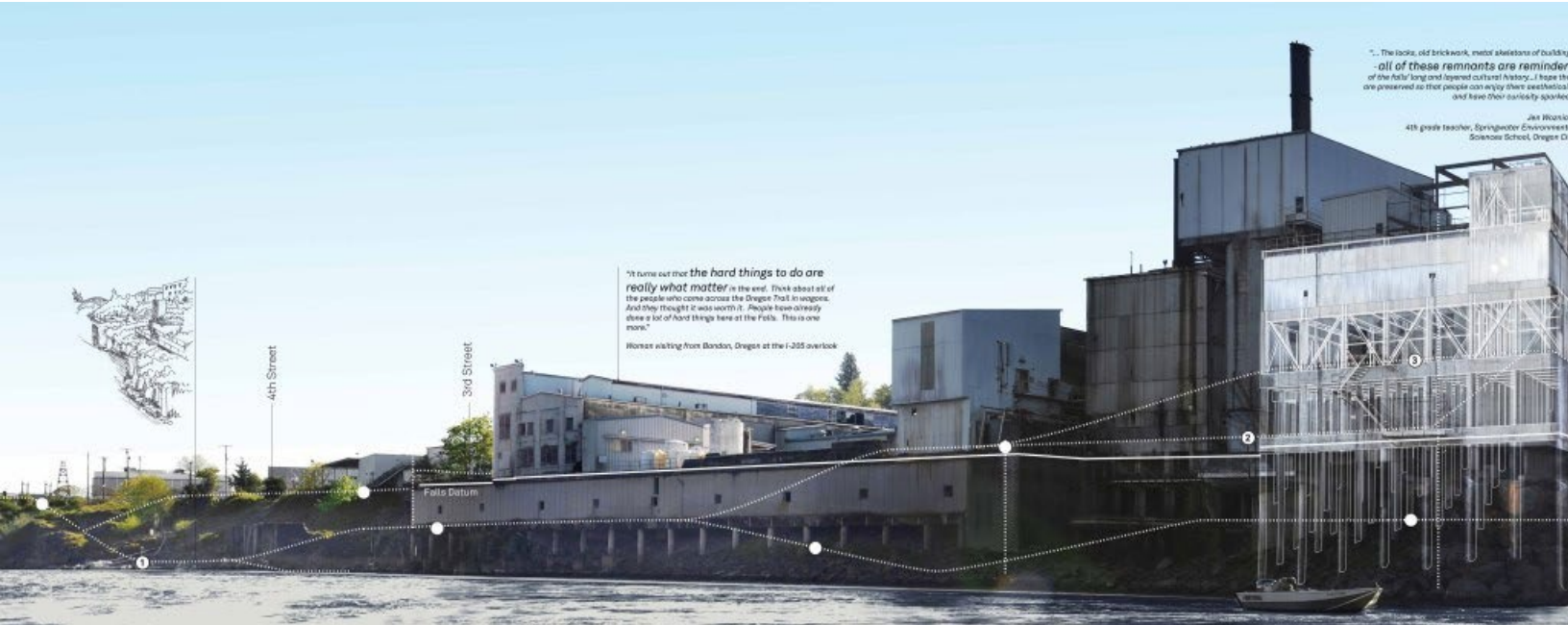


Fig 5.11 Riverwalk Unfolded Site Render



Fig 5.12 Riverwalk Moment 2

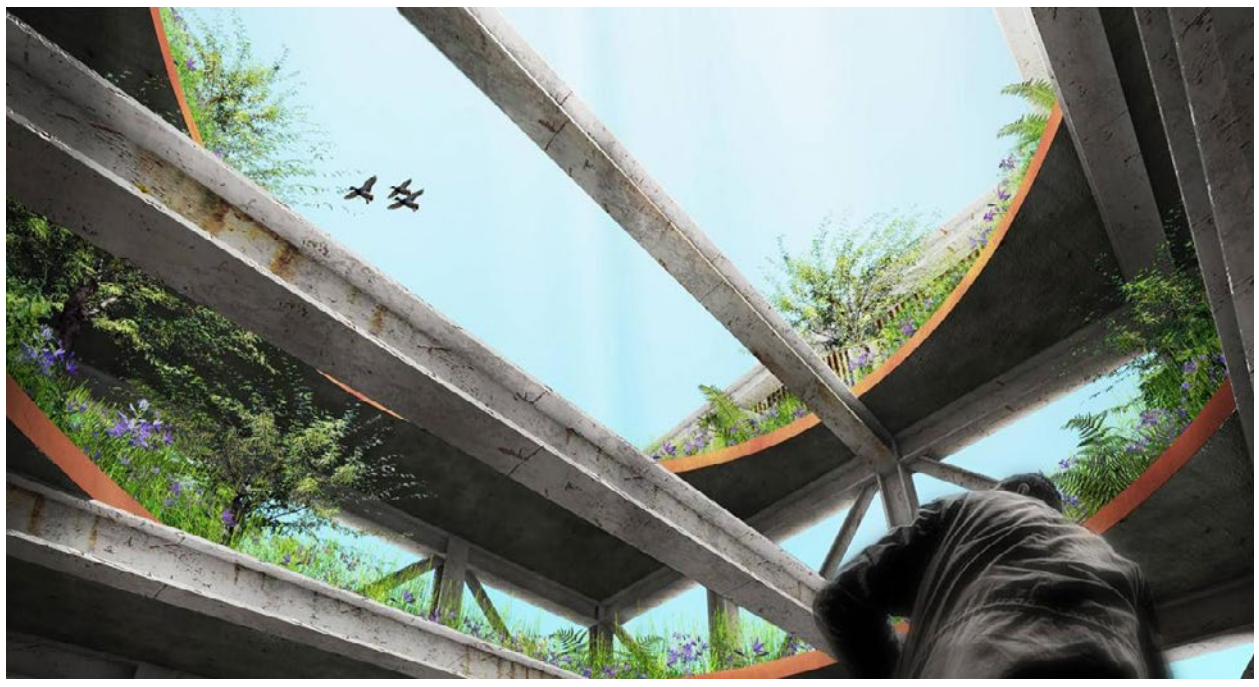
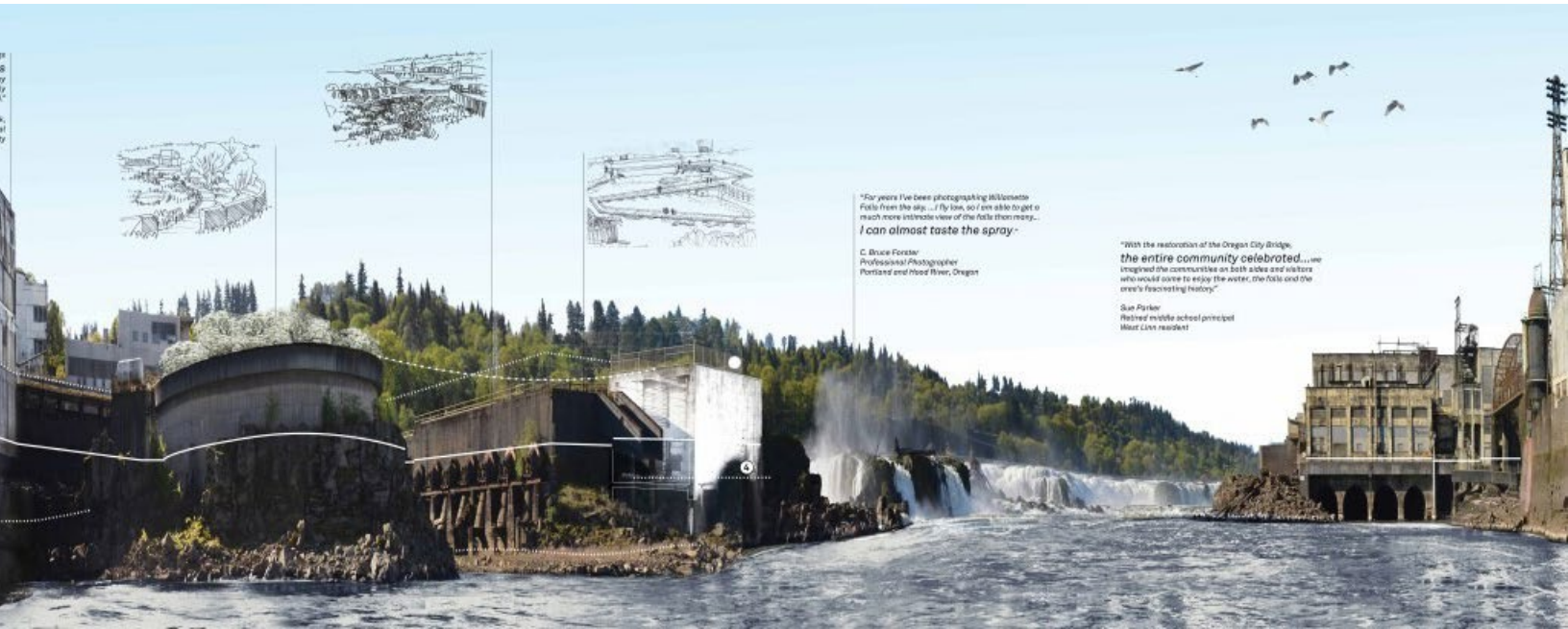


Fig 5.13 Riverwalk Moment 3



Fig 5.14 The Therme Vals in Graubünden, Switzerland designed by Peter Zumthor in 1996

## Therme Vals

Location: Graubünden, Switzerland

Architects: Peter Zumthor

Timeline: 1996

*"The meander, as we call it, is a **designed negative space between** the blocks, a space that connects everything as it flows throughout the entire building, creating a peacefully pulsating rhythm. Moving around this space means making discoveries. You are walking as if in the woods. Everyone there is looking for a path of their own."*<sup>1</sup>

- Peter Zumthor

This hotel and spa was designed in response to the fascination for the mystic qualities of a world of stone within the mountain. Darkness and light, for light reflections on the water or in the steam saturated air, pleasure in the unique acoustics of the bubbling water in a world of stone, a feeling of warm stones and naked skin, the ritual of bathing – these notions guided the architect.<sup>2</sup>

Zumthor designs a complete sensory experience for the visitors by carefully modelling pathways and controlling perspectives. The architecture is informal to allow the body to relax in this sensuous environment. There is also a contrast between the geometric walls and the fluid meandering circulation similar to the dichotomy of the shibori. Zumthor is able to create a smooth journey for the visitors by carefully designing the negative spaces between simple walls that visitors occupy.

---

1. "The Therme Vals / Peter Zumthor." Arch Daily. February 10, 2009. Accessed January 10, 2017. <http://www.archdaily.com/13358/the-therme-vals>.

2. Ibid.





*“Mountain, stone, water – building in the stone, building with the stone, into the mountain, building out of the mountain, being inside the mountain – **how can the implications and the sensuality of the association of these words be interpreted, architecturally?**”<sup>1</sup>*

- Peter Zumthor

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1. Arch Daily, The Therme Vals / Peter Zumthor.



Fig 5.17 Geometric Hot Springs view 1.



Fig 5.18 Geometric Hot Springs View 2.

## Germán del Sol

Location: Panguipulli, Los Ríos, Chile

Architects: José Luis Ibañez G., Carlos Venegas, José Instroza

Timeline: 2005

Size: 450 m

These series of pools are located in the middle of native forests of the Villarrica National Park, in the 13,5 km of the road that crosses the Park between Coñaripe and Pucón. <sup>1</sup> Seventeen pools were carved along 450 meters, with red wooden paths and ramp without steps. <sup>2</sup> Visitors walk through the project to pick a pool to bath in. Because of the thermal water that runs through the pathway, the wooden walkway does not freeze even in the winter. <sup>3</sup>

There are resting areas called “quincho” (meeting place) <sup>4</sup> built with simple native wood assembly methods, which provide a place for people to sit and chat after bathing. The red wooden pathway that follows the geothermal ravine distinguishes itself from the rest of the greenery without being overpowering. The architecture is of simple construction that allows visitors to **focus on experiencing the surrounding landscape**. The project provides an active platform for the interaction between human and nature, as well as a place of relaxation and self-reflection.

.....  
1. “Geometric Hot Springs / Germán del Sol.” Arch Daily. August 09, 2008. Accessed February 10, 2017. <http://www.archdaily.com/4190/geometric-hot-springs-german-del-sol>.

2. Ibid.

3. Ibid.

4. Ibid.

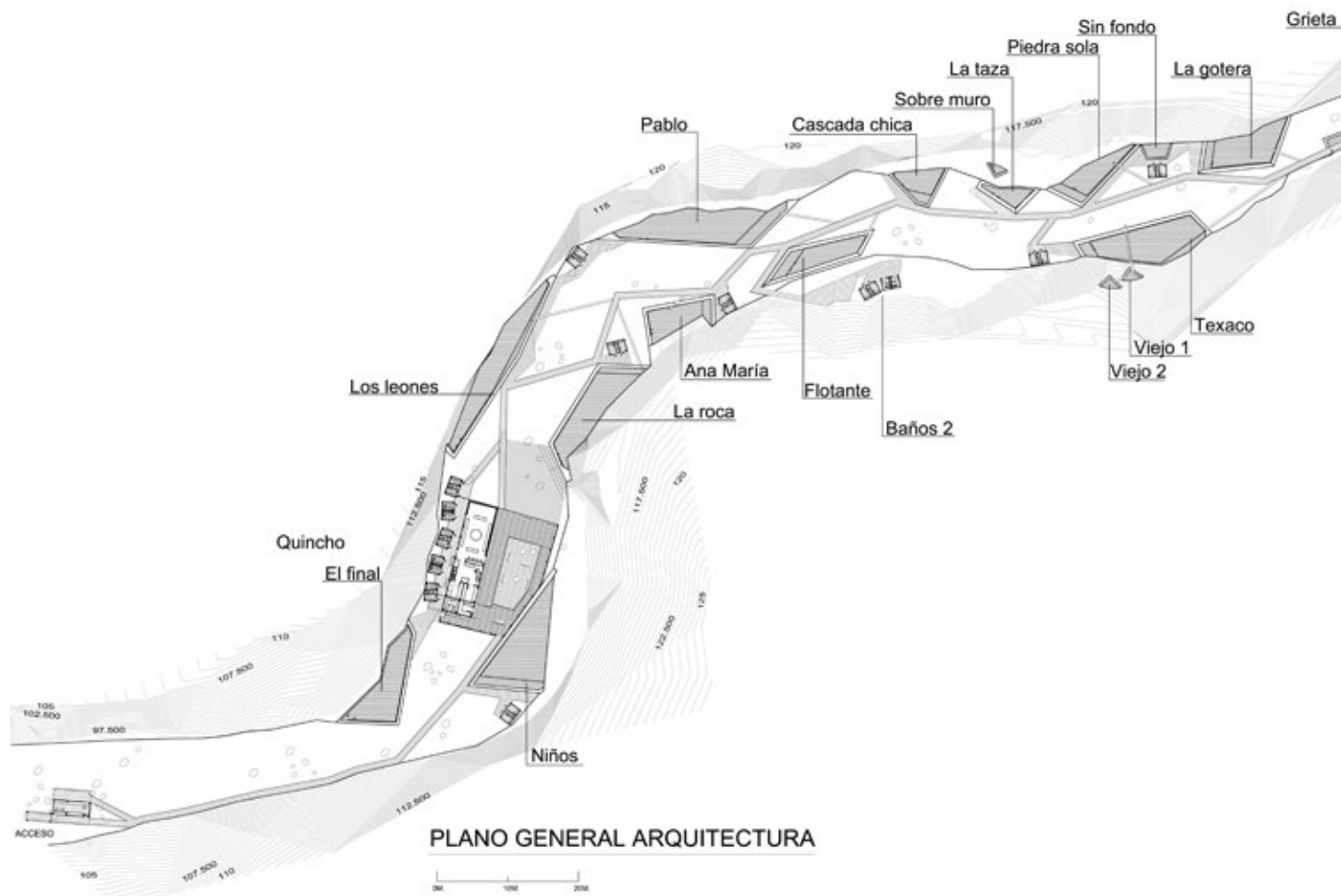


Fig 5.19 Geometric Hot Springs site plan.





Fig 5.20 One of the oldest swimming pools in Iceland.

## **Seljavallalaug in Iceland**

Location: Seljavellir, Iceland

Architects: Bjorn Andresson berjaneskoti

Timeline: 1923

Size: 250 m<sup>2</sup>

Seljavallalaug is a 25-metre outdoor pool in southern Iceland. <sup>1</sup> This hidden, protected, pool is one of the oldest swimming pools filled with hot spring water from Eyjafjallajokull, a volcano completely covered by an ice cap. <sup>2</sup> It demonstrates the seamless dialog between man-made structure and its natural environment. The pool is built into this valley of rocks and vegetation, but the landscape retaliates by seeping into the pool as well. This project demonstrates a non-aggressive form of architecture that coexists peacefully with its surroundings.

---

1. Mailonline, Becky Pemberton For. "Come on in, the water's lovely! Incredible hidden pool nestled in the mountains of Iceland is filled by a hot spring and free to use (if you can find it)." Daily Mail Online. May 12, 2015. Accessed February 09, 2017. [http://www.dailymail.co.uk/travel/travel\\_news/article-3077992/Come-water-s-lovely-Incredible-hidden-pool-Icelandic-mountains-filled-hot-spring-s-changing-room-feeling-modest.html](http://www.dailymail.co.uk/travel/travel_news/article-3077992/Come-water-s-lovely-Incredible-hidden-pool-Icelandic-mountains-filled-hot-spring-s-changing-room-feeling-modest.html).

2. Ibid.



Fig 5.21 Stairway up towards the Heaven lake



## 5.3 THE JOURNEY

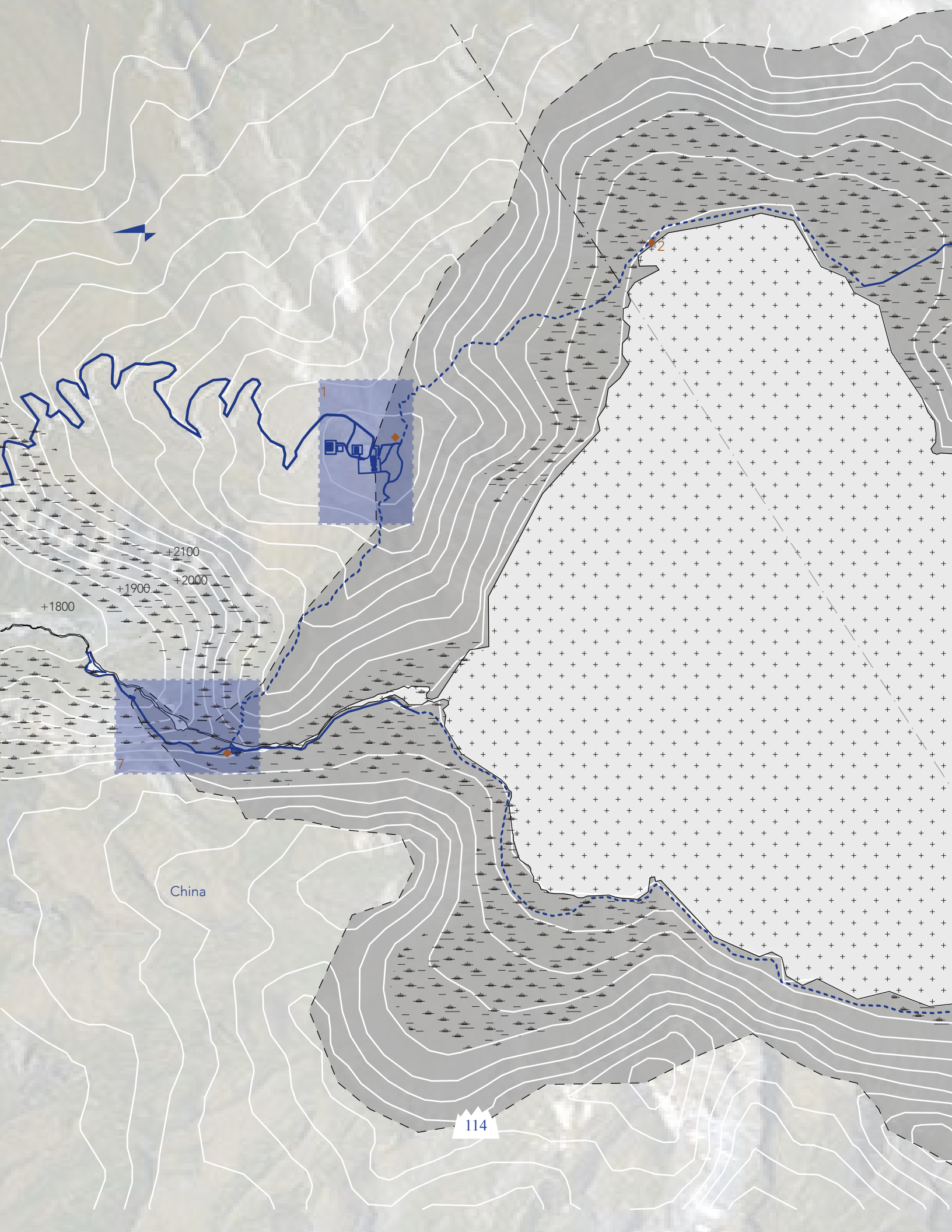
The proposed border connecting the mountain peaks creates a protected caldera zone around the heaven lake with various checkpoints that allow visitors from both countries through. The proposed pathways connect the existing pathways to form a looping hike around the Heaven lake. The pathway goes through various natural conditions, from grassy plains to lake-side beach areas to steep rocky mountain hikes. The existing checkpoints are currently equipped with restrooms, simple snack bars, and heated resting areas for hikers.

The proposed rest areas designed interspersed throughout the pathway further provide opportunities for interaction between hikers. The aim is to provide a place for different cultural practices to interact peacefully. The landscape moves into the architecture in these rest areas, allowing a repositioning of the body and mind, creating powerful, collective experiences between strangers. The different programmes of the rest areas also provide an opportunity to process the landscape in different scales. Visitors can experience the elements of the caldera in a more intimate and tactile scale.

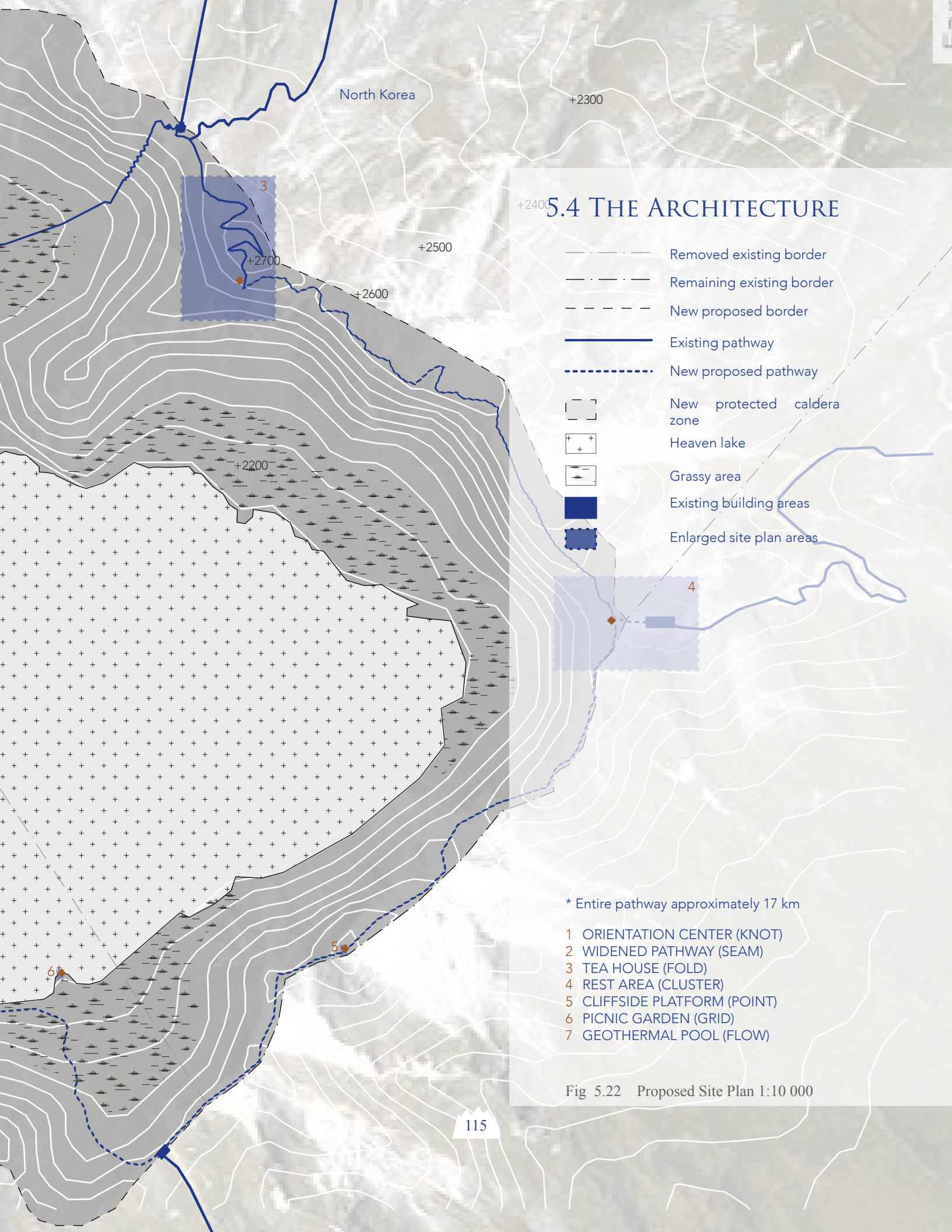
*"It's about living in the moment. Mountains can help build relations between the individual self and the outside world... It's a space for self-reflection."<sup>1</sup>*

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1. Megson, Architecture and design news from CLAD - Snøhetta-designed hiking cabins offer 'space for self-reflection' in the shadow of a Norwegian glacier.



China



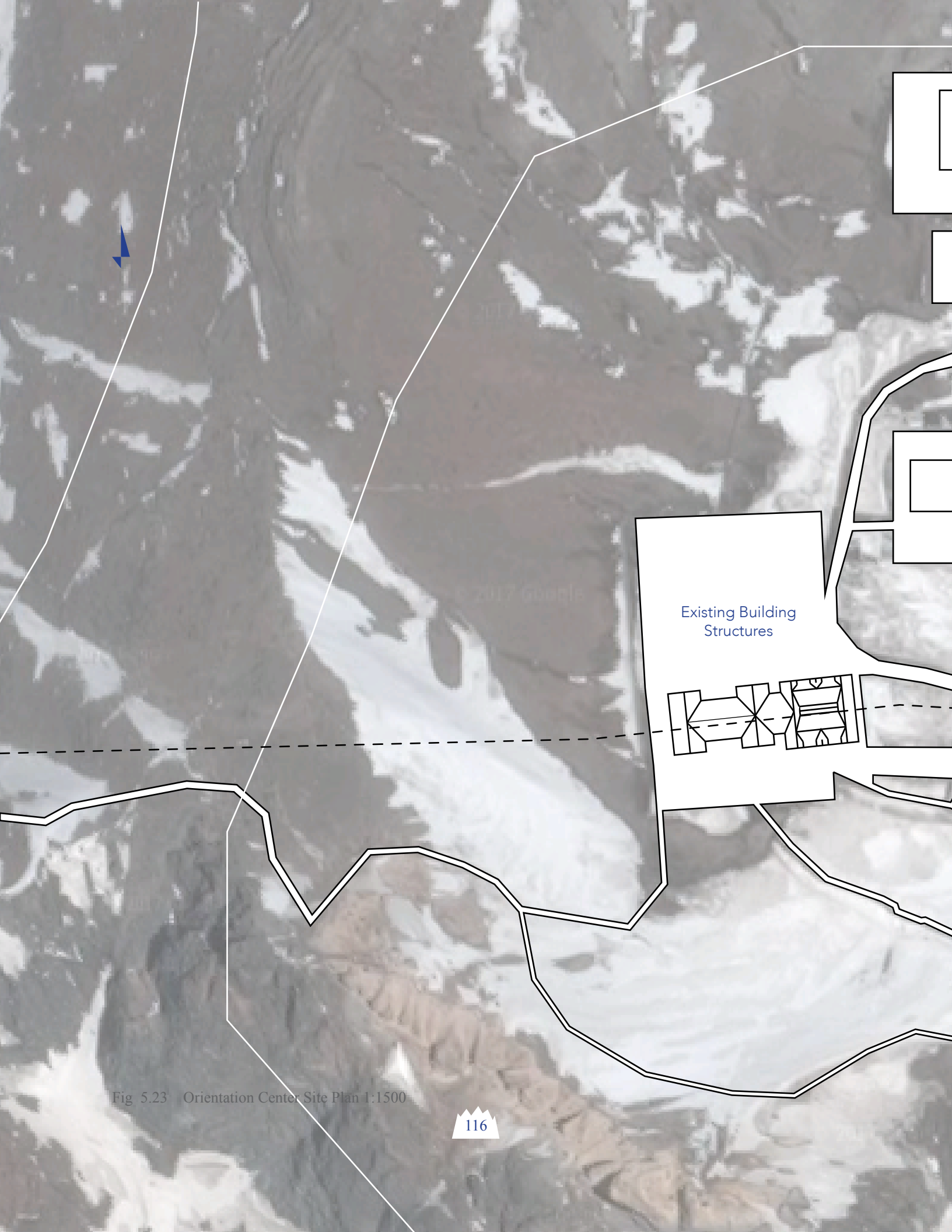
## 5.4 THE ARCHITECTURE

- Removed existing border
- - - Remaining existing border
- - - New proposed border
- Existing pathway
- - - New proposed pathway
- [ ] New protected caldera zone
- [+ ] Heaven lake
- [ ] Grassy area
- [ ] Existing building areas
- [ ] Enlarged site plan areas

\* Entire pathway approximately 17 km

- 1 ORIENTATION CENTER (KNOT)
- 2 WIDENED PATHWAY (SEAM)
- 3 TEA HOUSE (FOLD)
- 4 REST AREA (CLUSTER)
- 5 CLIFFSIDE PLATFORM (POINT)
- 6 PICNIC GARDEN (GRID)
- 7 GEOTHERMAL POOL (FLOW)

Fig 5.22 Proposed Site Plan 1:10 000



Existing Building Structures

Fig 5.23 Orientation Center Site Plan 1:1500



**1. Orientation Center**  
[KNOT]

Connected to the existing north entrance parking lot, this orientation centre is the start of the journey. Majority of the visitors will most likely be entering from this entrance, as it is the most developed site and connected to a well-established mountain route. For the visitors, this centre marks the transition point from a tourist site to the beginnings of a pilgrimage journey.

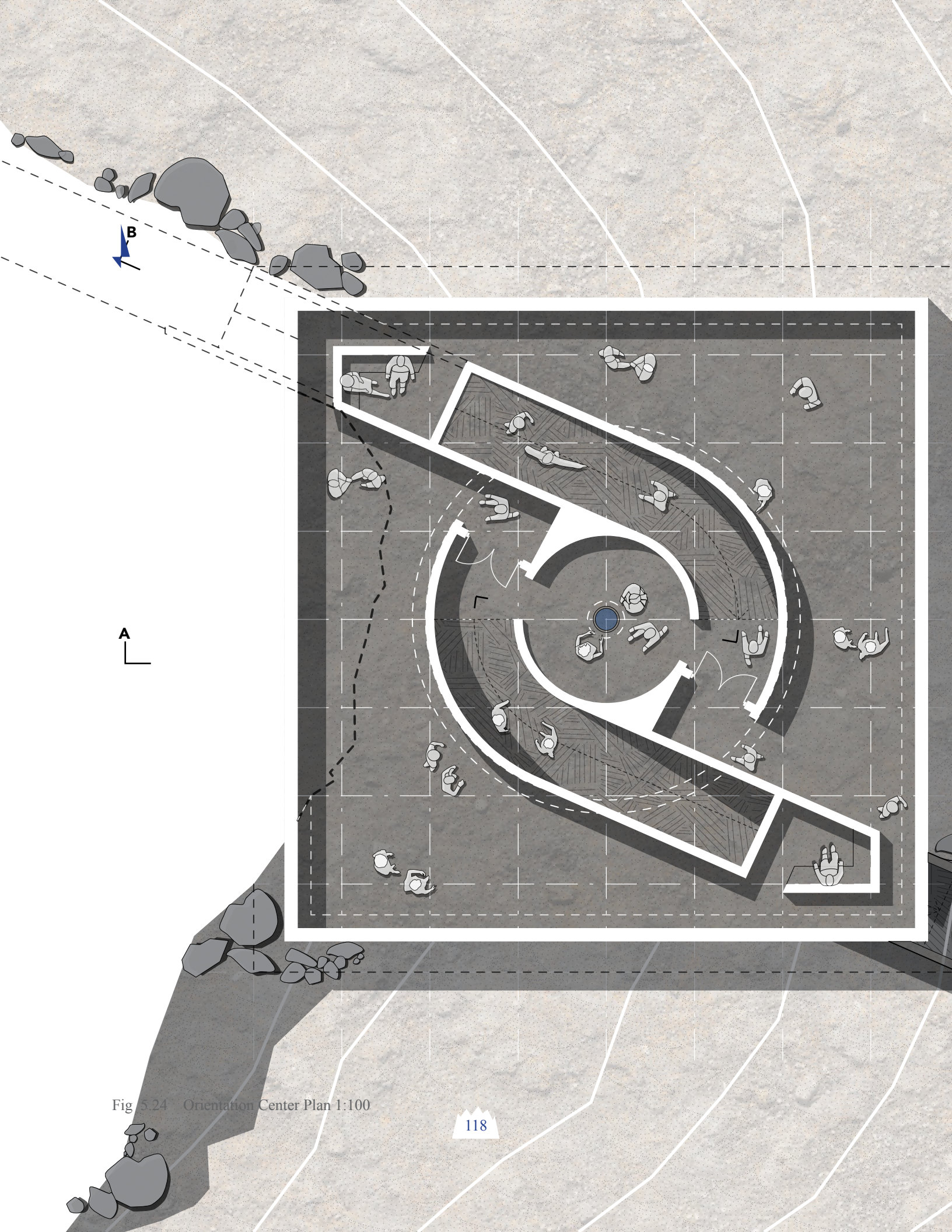
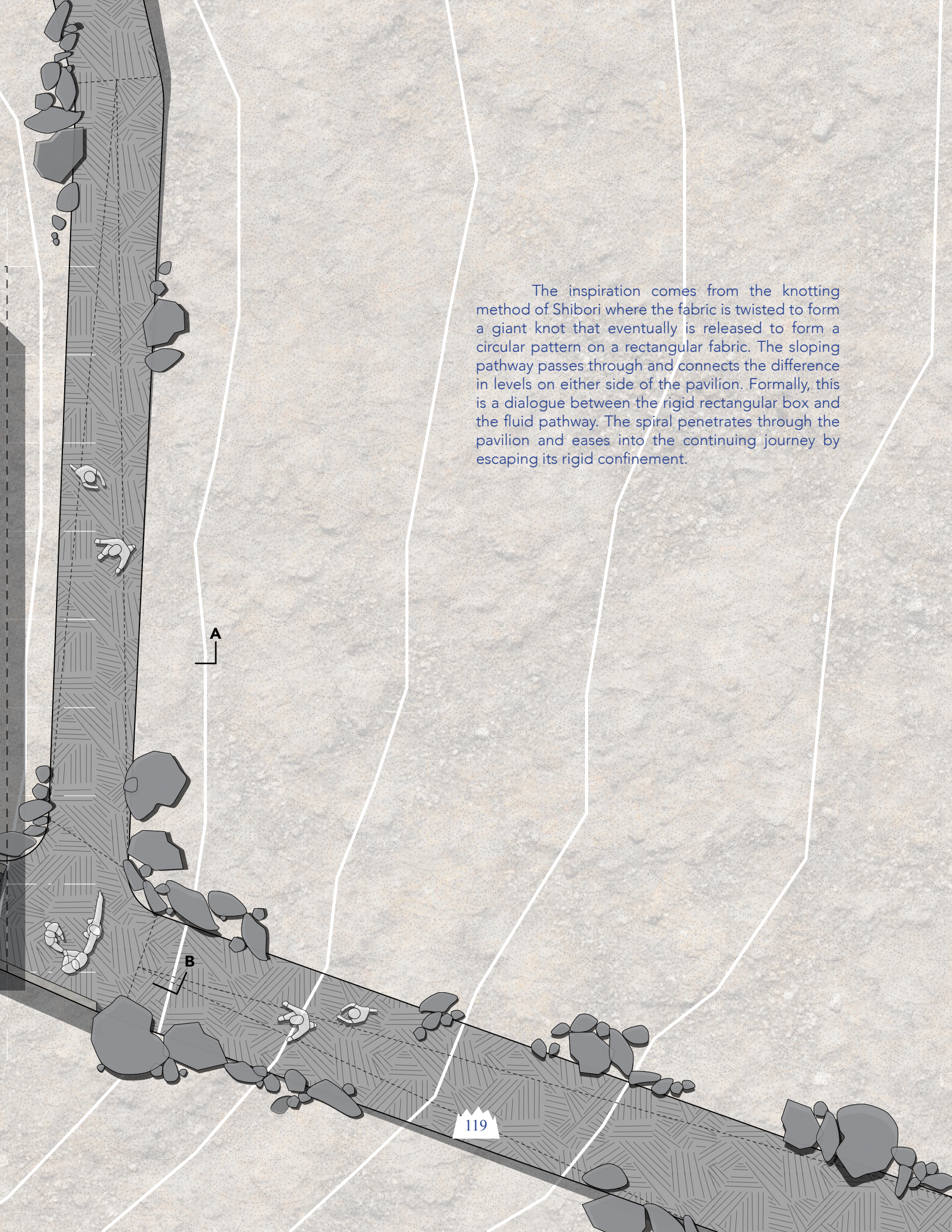


Fig 5.24 Orientation Center Plan 1:100

An architectural section drawing of a pavilion. The drawing shows a vertical wall on the left with a complex, woven texture. A sloping pathway, indicated by a white line, descends from the top left and curves to the right. The pathway is bordered by a series of grey, irregular shapes representing rocks or steps. The interior of the pavilion is a light grey, textured surface. A white line outlines the structure of the pavilion. Two callouts, 'A' and 'B', are present. Callout 'A' is a small L-shaped symbol pointing to the wall. Callout 'B' is a similar symbol pointing to the sloping pathway. The overall style is technical and illustrative.

The inspiration comes from the knotting method of Shibori where the fabric is twisted to form a giant knot that eventually is released to form a circular pattern on a rectangular fabric. The sloping pathway passes through and connects the difference in levels on either side of the pavilion. Formally, this is a dialogue between the rigid rectangular box and the fluid pathway. The spiral penetrates through the pavilion and eases into the continuing journey by escaping its rigid confinement.

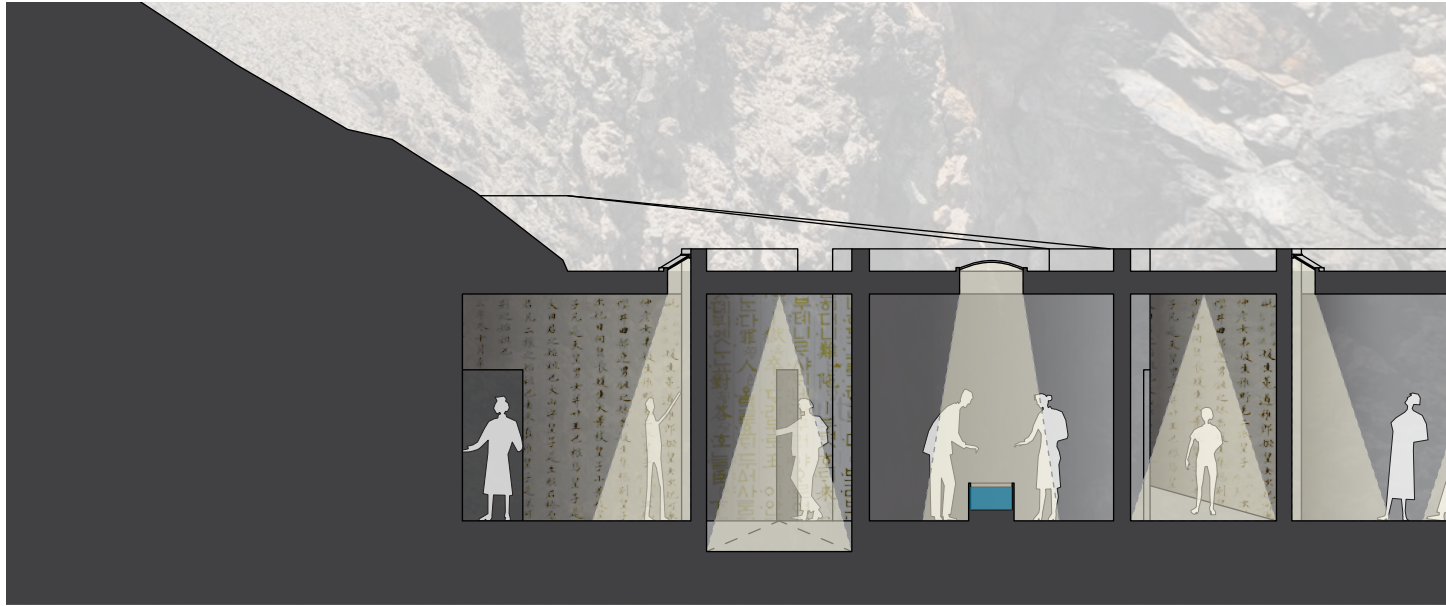


Fig 5.25 Orientation Section AA 1:100

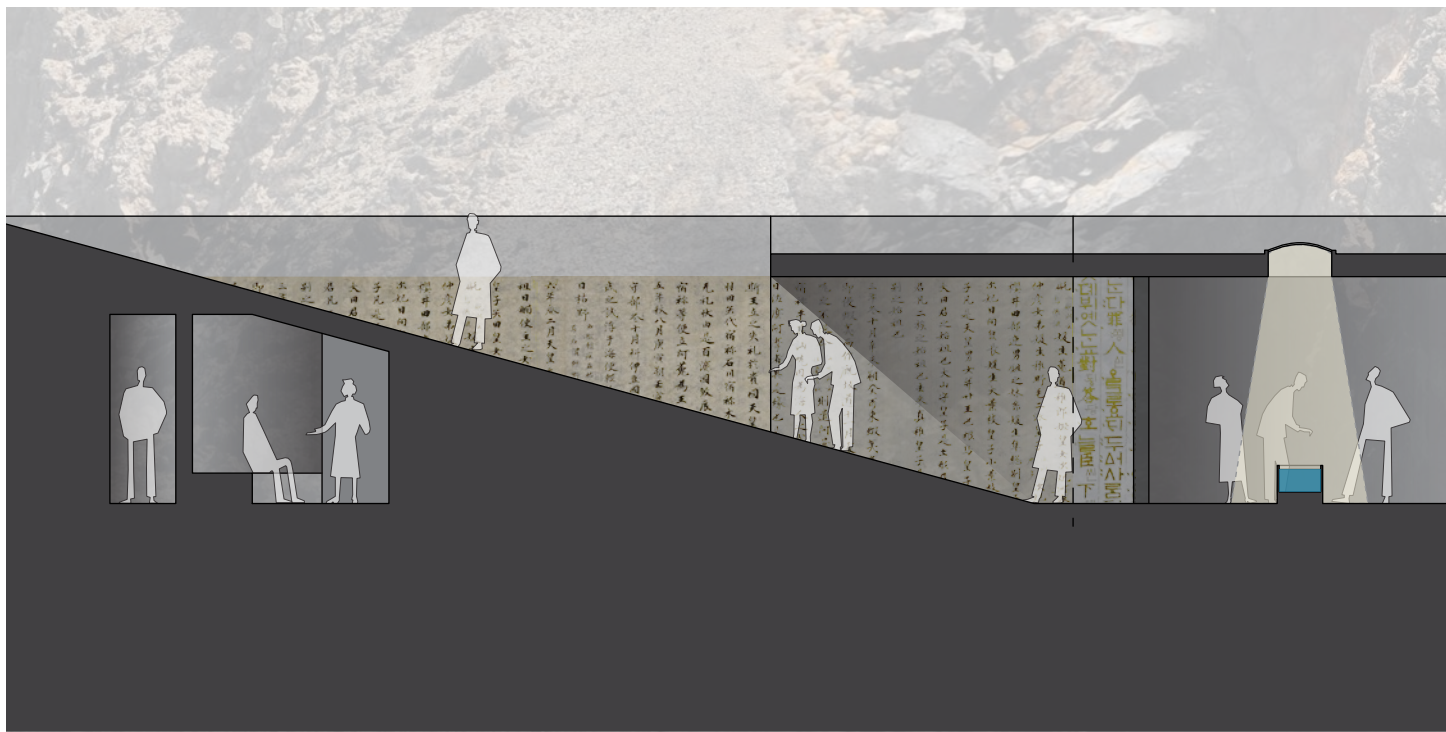
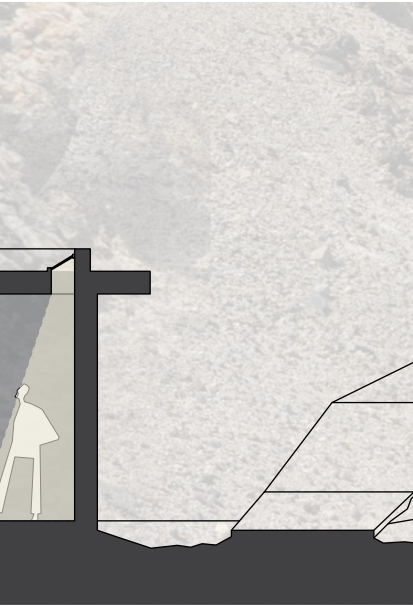


Fig 5.26 Orientation Section BB 1:100





Approaching the building from above, the visitor sees the top of the building with the walls of the spiral ramp jutting out of the roof. Descending the slopes into the centre, the walls of the spiral are carved with the history of the caldera from both the Chinese and Korean perspectives, thus allowing the visitor to appreciate both sides of the story. The ramp is covered with non-slip surface and lined with glow-in-the dark strips for evening hikes. Regardless of the direction of travel, visitors are encouraged to slow down and read these texts on the walls to better understand the rich history of the site.

The entire pavilion is lit from above with natural lights as well as artificial light. In the centre of the structure is a small shallow basin lit from above, filled with the water from the Heaven Lake. There is a pause for the visitor as they wash their hands or touch the water almost ritualistically. There are small openings in this continuous spiral that allow the visitors to step into the rectangular enclosure part of the building and view the curved walls from the "outside". The visitor steps back to acknowledge the long history and the physical vastness of the caldera that is reflected on the wall carvings in this space. The small semi-enclosed rooms on the two corners of the pavilion act as a place of quiet reflection, where people can rest without distractions. To exit, visitors re-enter the spiral that connects to the rest of the journey.

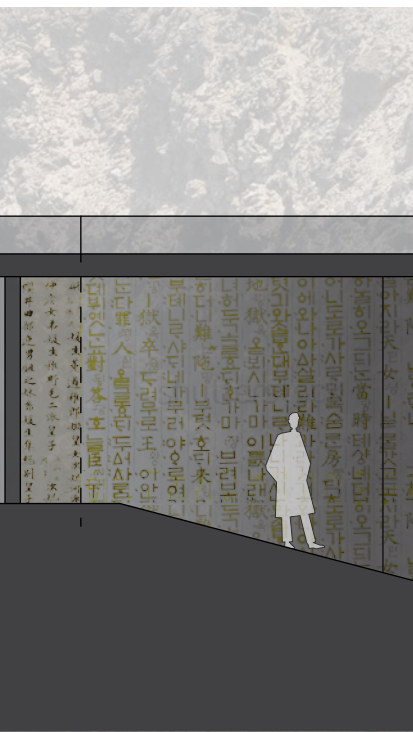




Fig 5.27 Orientation Center Interior Render



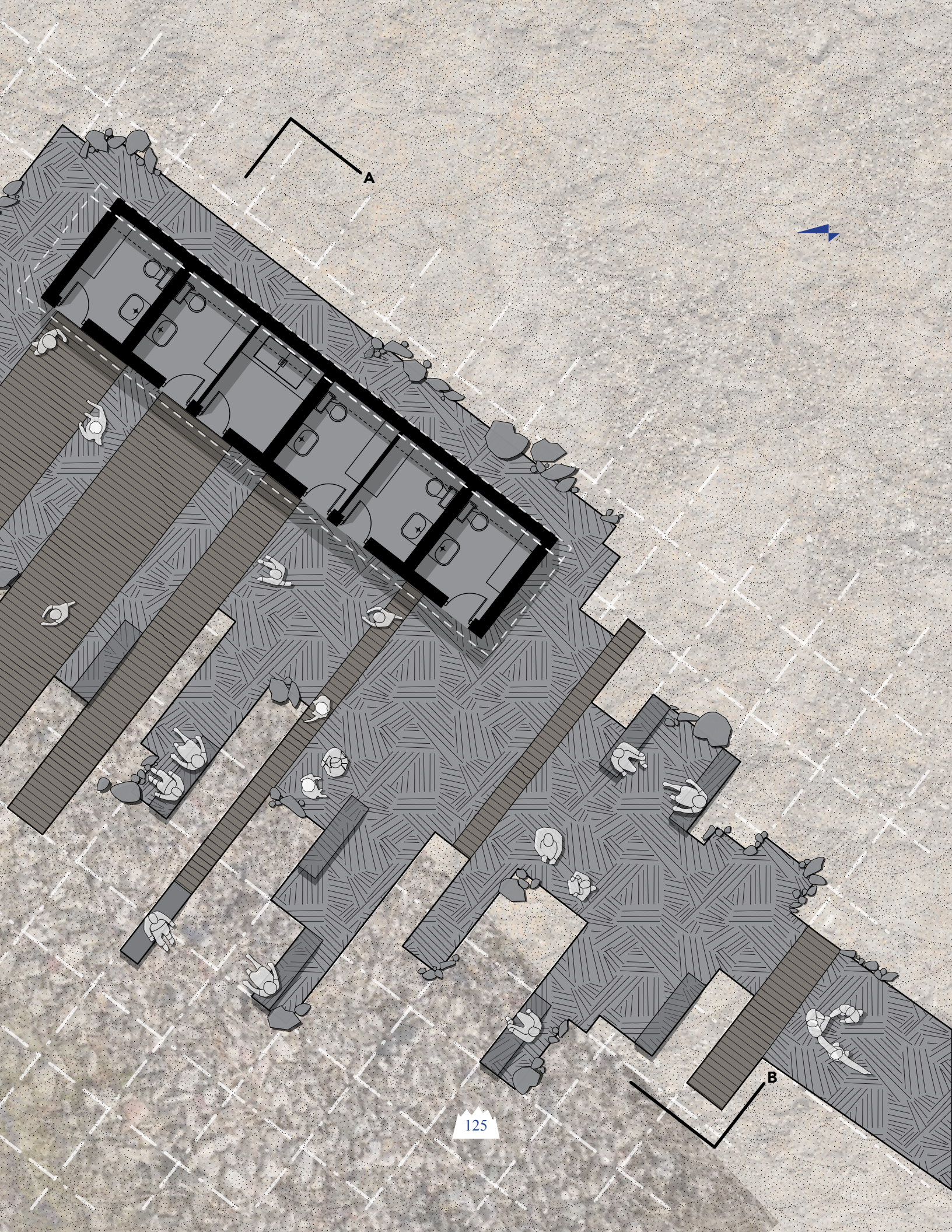
## 2. Widened Pathway

[ SEAM ]

This pavilion is situated on a relatively flat part of the journey on the water's edge, ideal for a restroom and a closer interaction with the lake. This widened pathway is a seam that connects the water's edge to the rocky shores of the caldera. The ground alternates between cast concrete and wooden boardwalks that seem to thread together the connection between the structure and the landscape. Just like the way Shibori sews together fabric, the pavilion stitches together the man-made structure, the rocky lakeshore, and the cold Heaven Lake. The visitor pauses either to use the restrooms or to rest on one of the many benches that emerge from the ground. The benches come up in strips from the pathway to form a temporary resting area in close proximity to the lake. It is designed to be a gathering place in this long journey.

Fig 5.28 Widened Pathway Plan 1:100





A



B

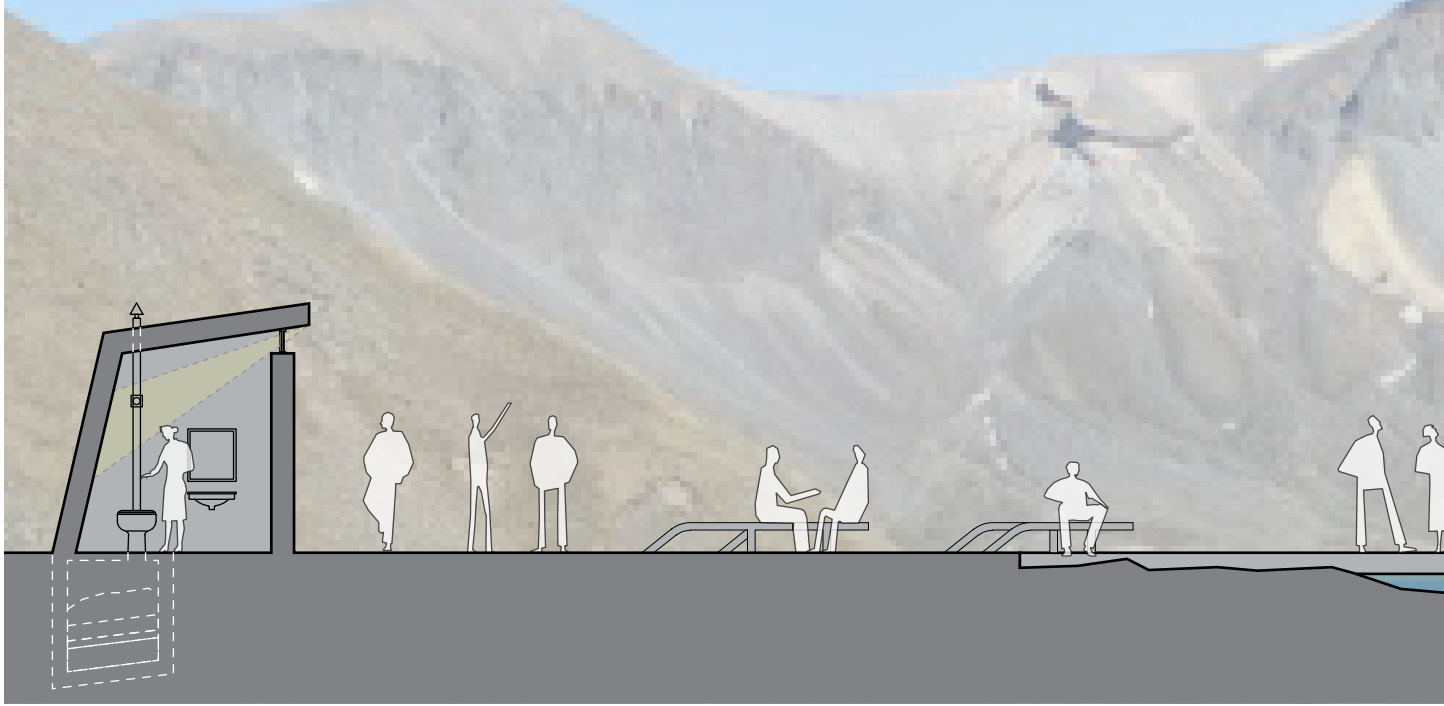


Fig 5.29 Widened Pathway Section AA 1:100

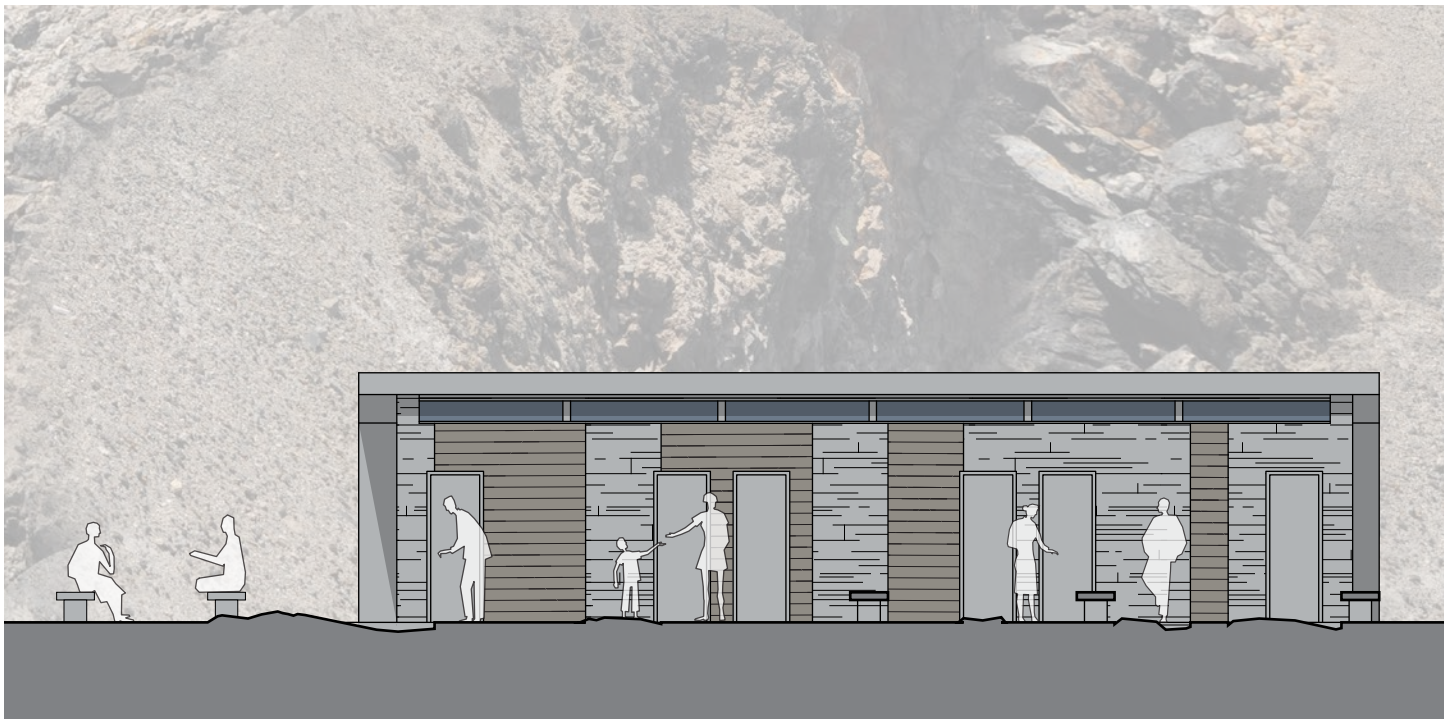
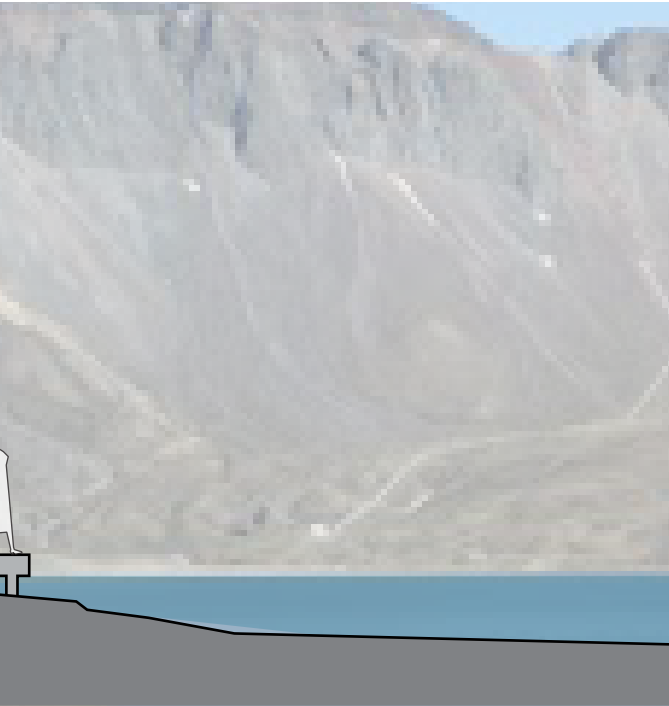


Fig 5.30 Widened Pathway Section BB 1:100



Because of the remote location of Changbai Mountain, a simple composting toilet (that is collected every month) is more appropriate than a complex waste-management system. Although it might be uncomfortable for some, it isn't such a cultural shock to most of the local population, especially ones who come from a rural background. In some parts of China, outhouses are still a common part of daily life.

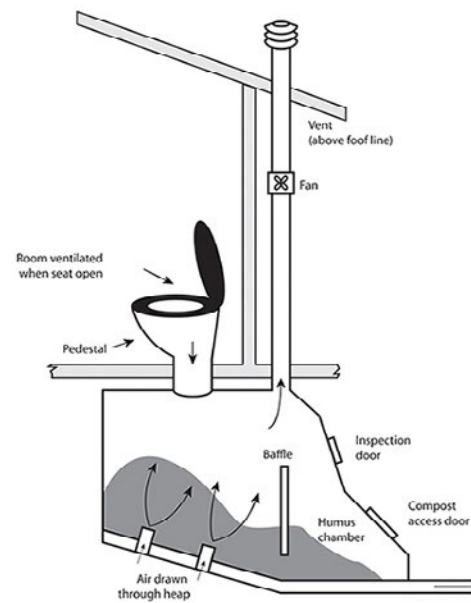
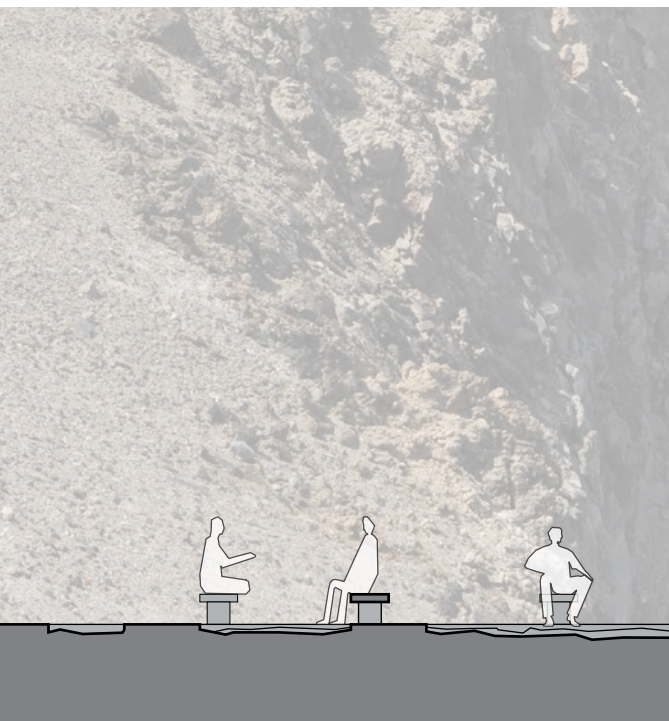


Fig 5.31 Composting toilet example



Fig. 4.32 Tea House Site Plan at 1:500

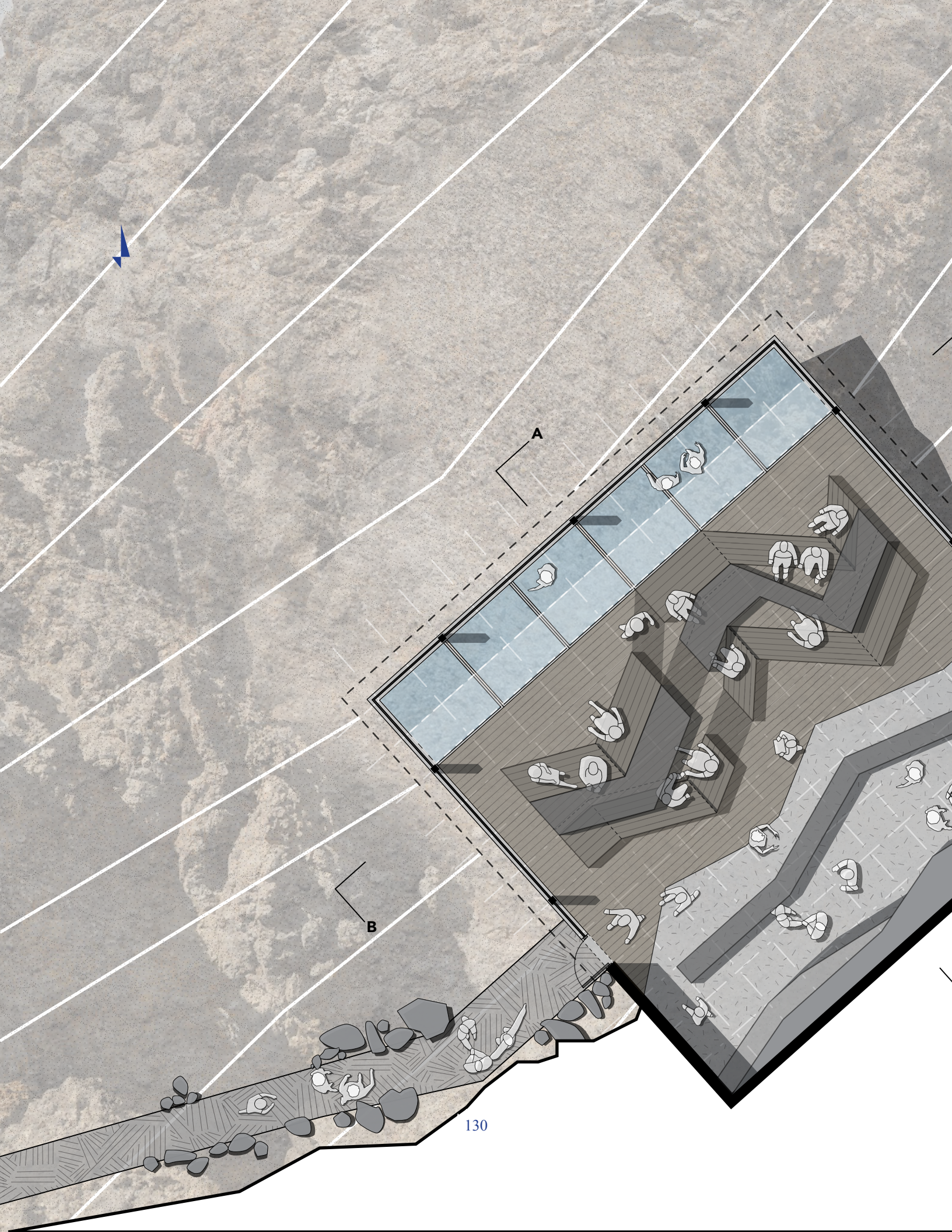


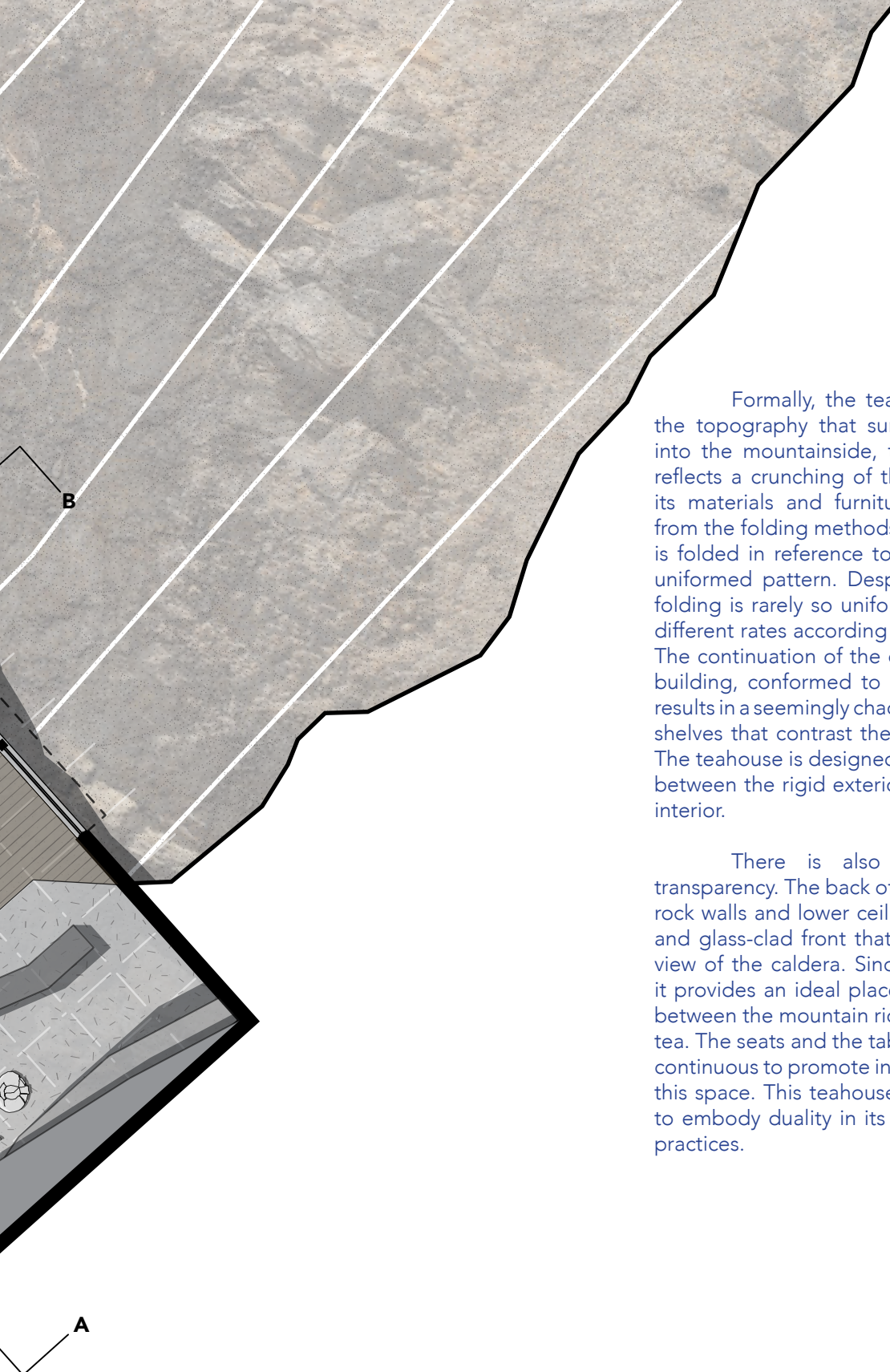


### 3. Tea House

[ FOLD ]

Utilizing the existing North Korean entrance, this teahouse is situated on the side of the tallest peak in the Baekdu mountain range (Daggun Peak). The altitude allows visitors to overlook the entire caldera from this pavilion. Tea is an incredibly important ritual prominent in both Chinese and Korean cultures. Hence a teahouse is an integral part of this pilgrimage. Originating from China, the tea rituals differ depending on the culture and country. One distinctive contrast between the Chinese and the Korean teahouses (aside from the tea) are perhaps the sitting positions. Traditionally, the Chinese teahouses consist of elaborately carved wooden chairs and tables while the Korean counterpart features elevated floors with a short table where people sit cross-legged on the ground. This teahouse architecturally accommodates this difference by providing both these seating styles. The visitors can choose the tea as well as the seating style of their choice.





Formally, the teahouse is a continuation of the topography that surrounds the building. Inset into the mountainside, the inside of the teahouse reflects a crunching of the rocky exterior surface in its materials and furniture. The inspiration comes from the folding methods of Shibori where the fabric is folded in reference to a rigid system to create a uniformed pattern. Despite this, the results of this folding is rarely so uniformed as the ink seeps in at different rates according to the tightness of the fold. The continuation of the cliff line is folded inside the building, conformed to a 2-meter grid system that results in a seemingly chaotic angled seats, tables, and shelves that contrast the clean, rectangular exterior. The teahouse is designed to present this relationship between the rigid exterior and the erratically folded interior.

There is also a gradual transition in transparency. The back of the teahouse features solid rock walls and lower ceilings compared to the open and glass-clad front that expands into a panoramic view of the caldera. Since the teahouse faces west, it provides an ideal place to experience sun setting between the mountain ridges while having afternoon tea. The seats and the tables are also designed to be continuous to promote interaction between visitors in this space. This teahouse is architecturally designed to embody duality in its form, material, and cultural practices.

Fig 5.33 Tea House Plan 1:100

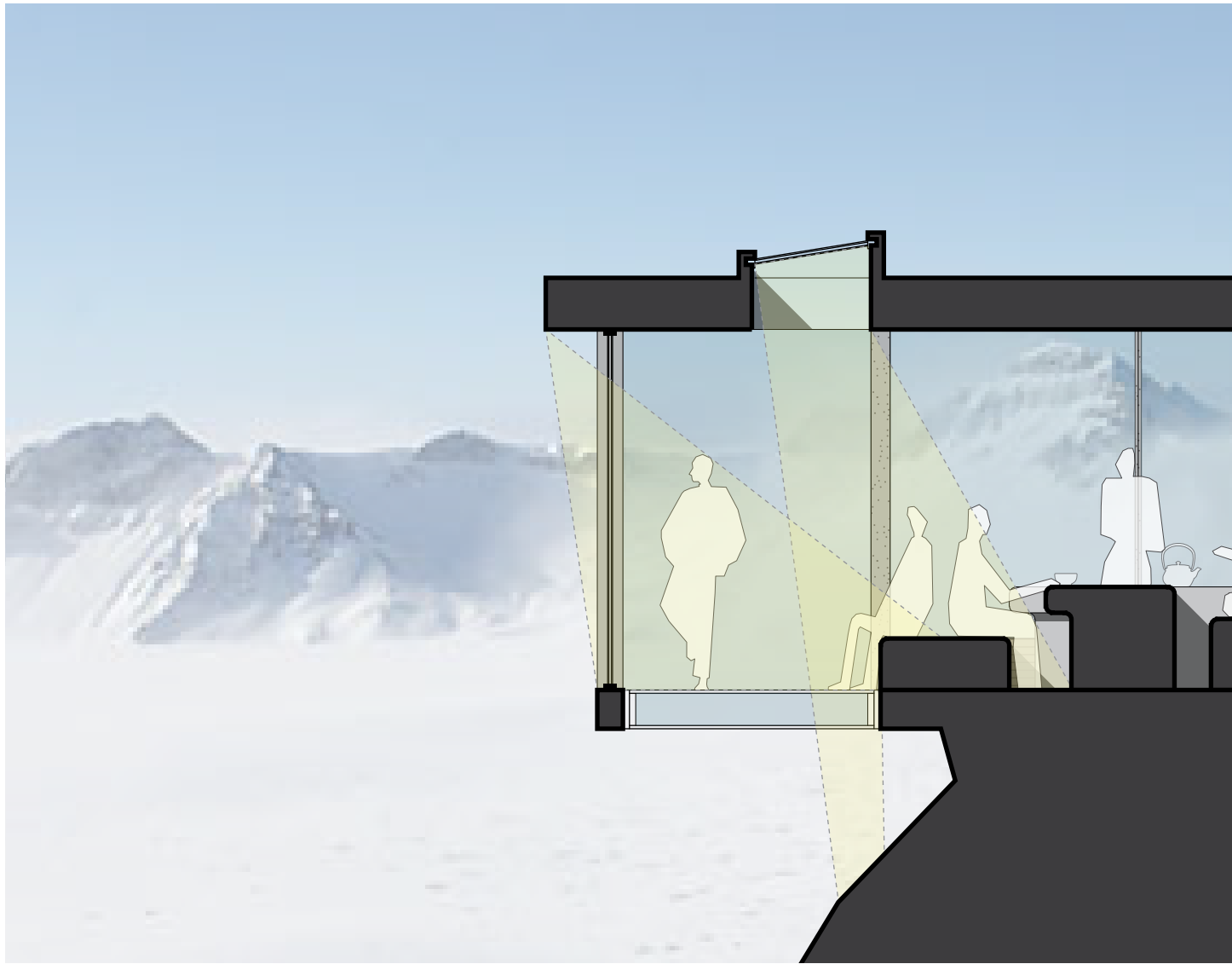


Fig 5.34 Tea House Section AA 1:50

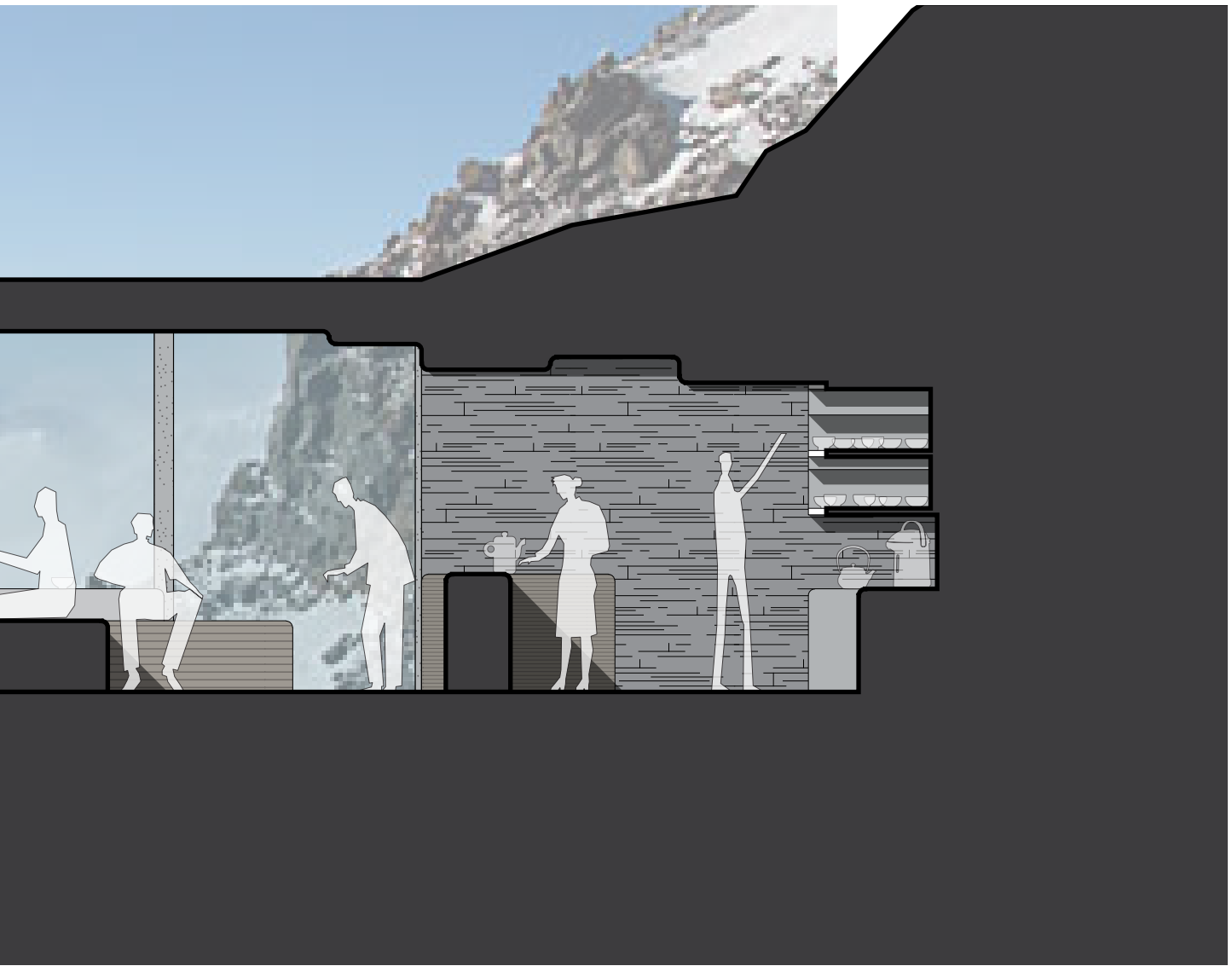




Fig 5.35 Tea House Section BB 1:50



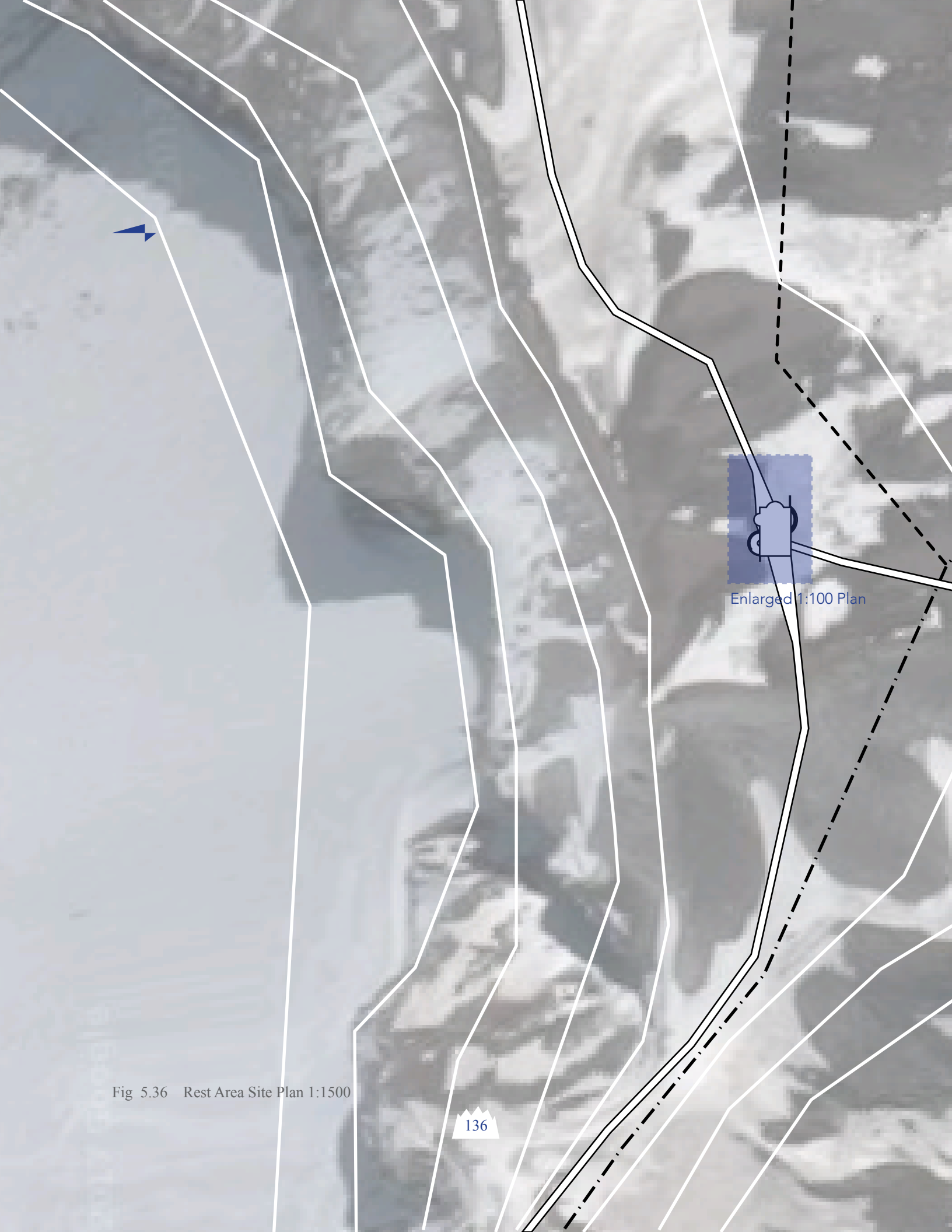


Fig 5.36 Rest Area Site Plan 1:1500

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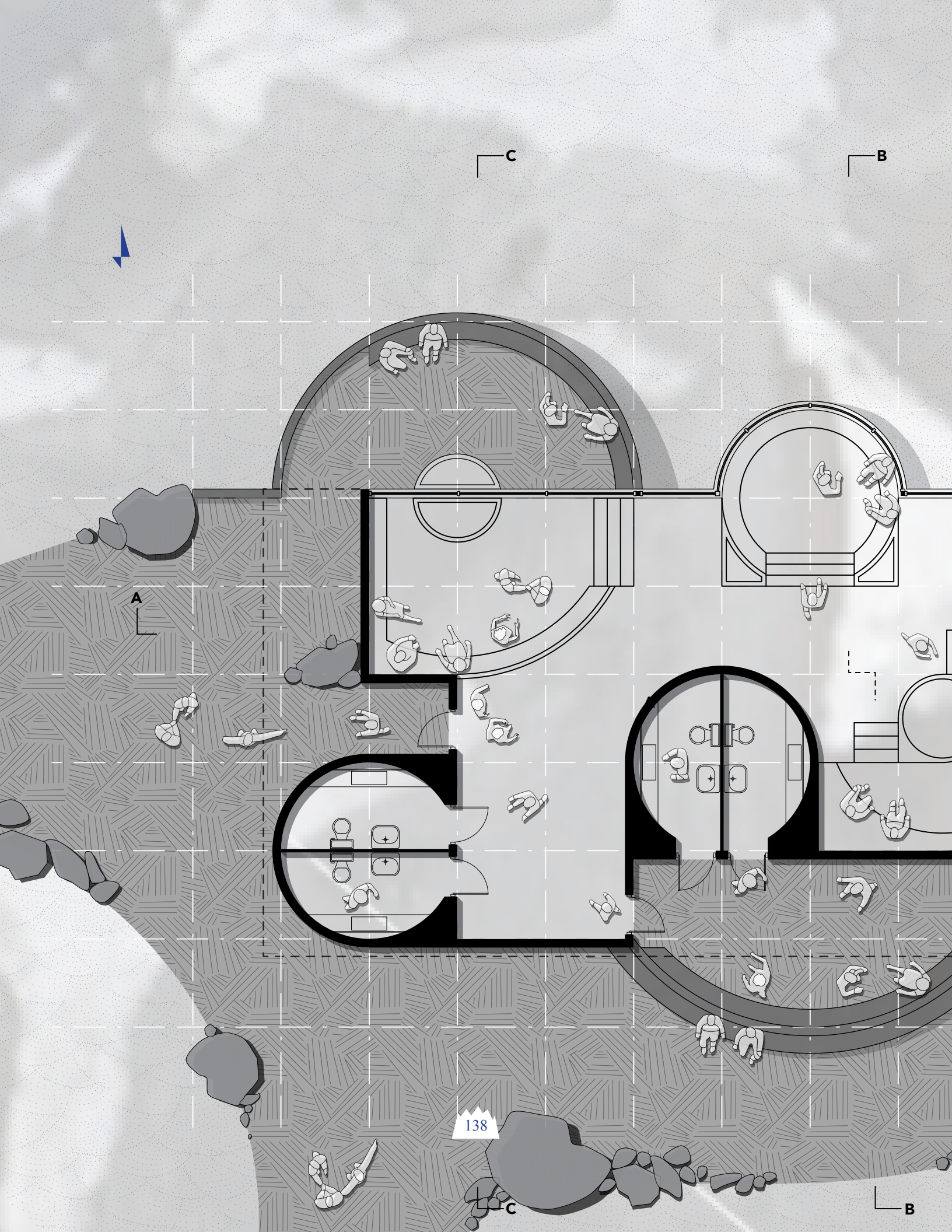
An aerial photograph of a rocky, mountainous landscape. A trail, shown as a dashed line, winds through the terrain. A rectangular area is highlighted in the center, containing a building group. A text box on the right provides details about this rest area.

#### 4. Rest Area

[CLUSTER]

This rest area is situated on the south side of the caldera, directly opposite the outlet of Heaven Lake. It is the nearest entrance from the North Korean side of the caldera. The landscape is a rocky flat plane in between two peaks connecting three pathways. The site is an ideal spot for a gathering place and a rest stop for hikers because of its topography and location.

Existing Unidentified  
Building Group



C

B

A

C

B



Fig 5.37 Rest Area Plan 1:100

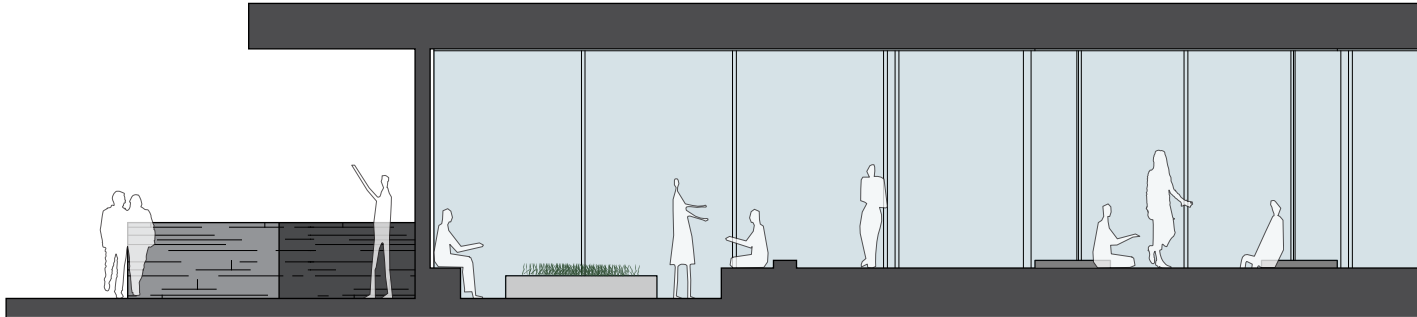


Fig 5.38 Rest Area Section AA 1:100

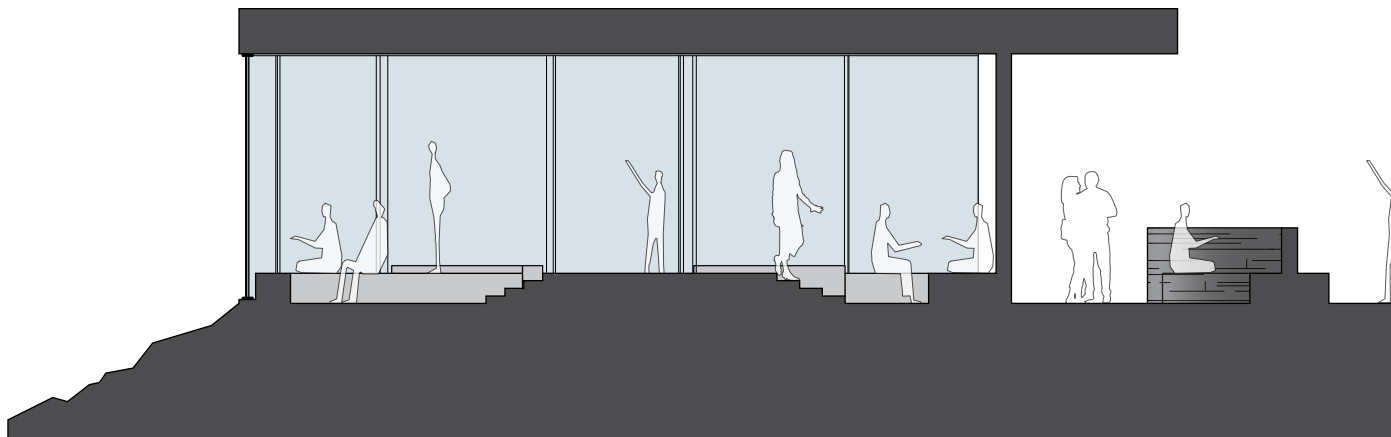
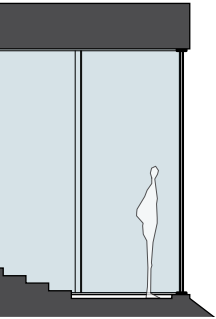


Fig 5.39 Rest Area Section BB 1:100



Fig 5.40 Rest Area Section CC 1:100



The inspiration of this pavilion comes from the cluster of knots seen in Shibori. Various localized knots are made on the fabric and depending on the size of these clusters, the end results form circle patterns varying in size. The rest area is an interaction between a rectangular form and various circular knots interlocked in reference to a grid system. The interaction between these two forms creates interesting negative spaces inside the rest stop. The circular forms are designed to provide sunken seats that encourage conversation between visitors. These curved seating areas also provide some outside benches overlooking the caldera. On the south side facing North Korea, the benches form a semi-enclosed waiting area for the restrooms. This overlapping of the curved and straight walls creates an irregular space inside that is designed to limit the visitor's views and encourage meandering through the building.



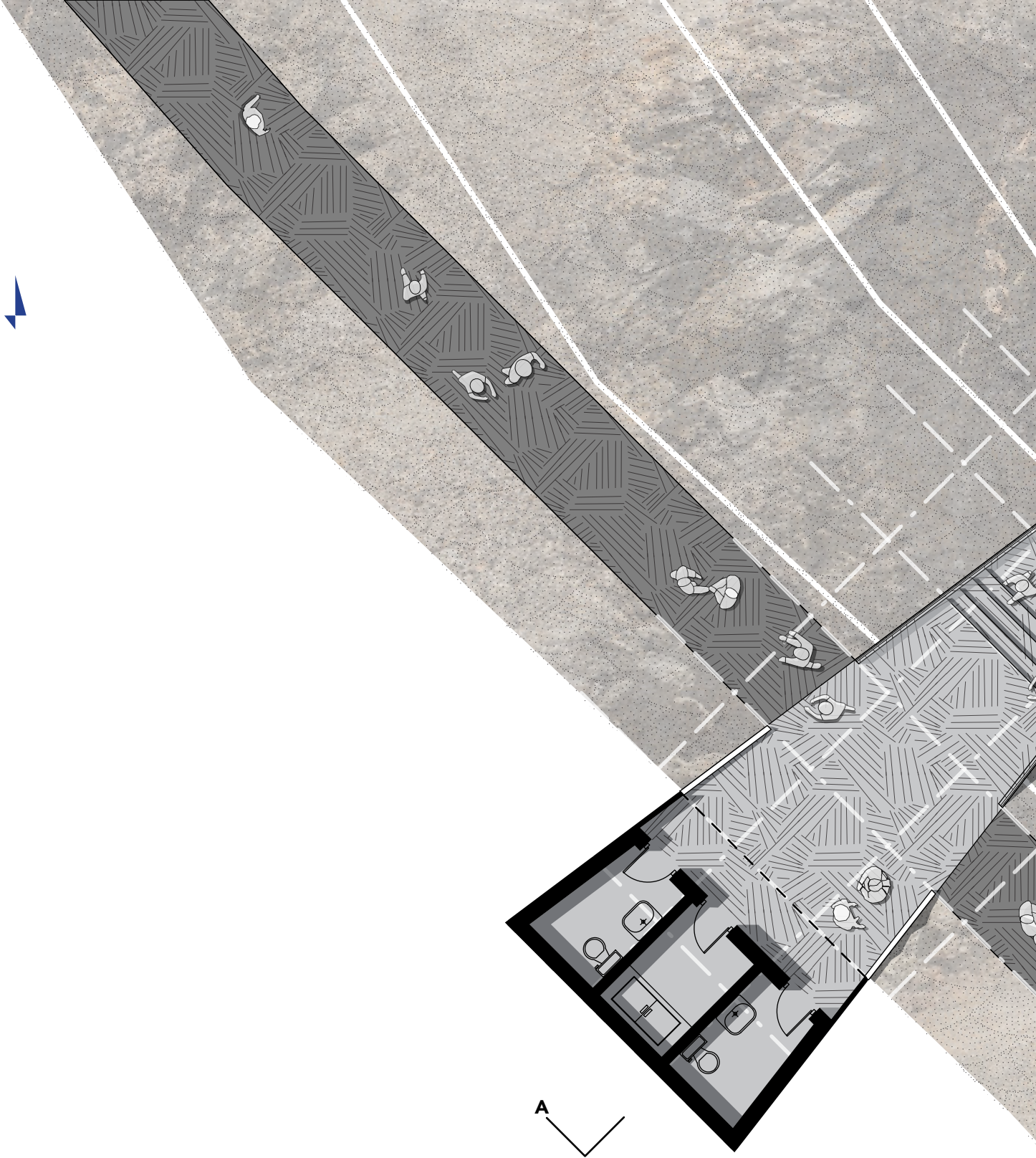
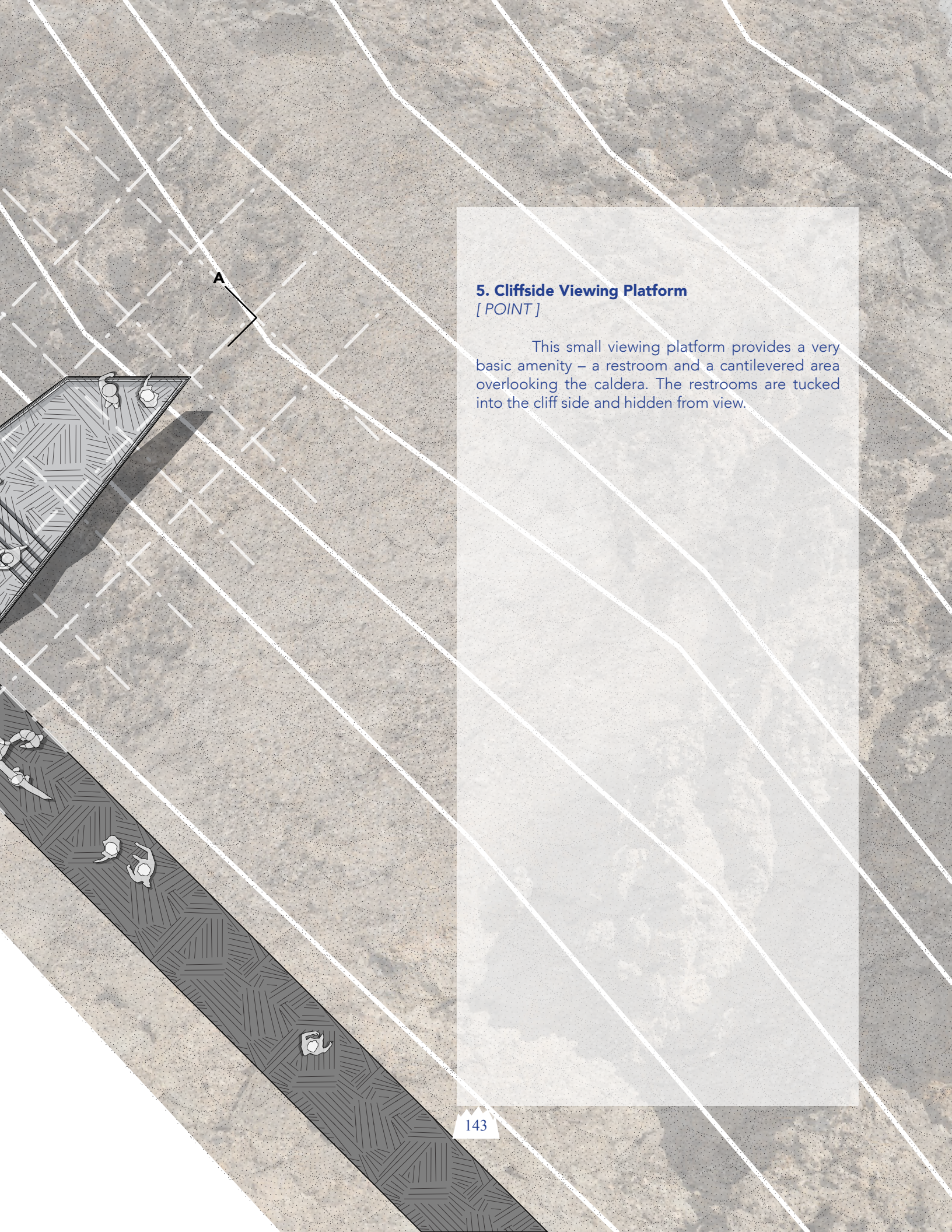


Fig 5.41 Cliffside Viewing Platform Plan 1:100



## 5. Cliffside Viewing Platform [ POINT ]

This small viewing platform provides a very basic amenity – a restroom and a cantilevered area overlooking the caldera. The restrooms are tucked into the cliff side and hidden from view.

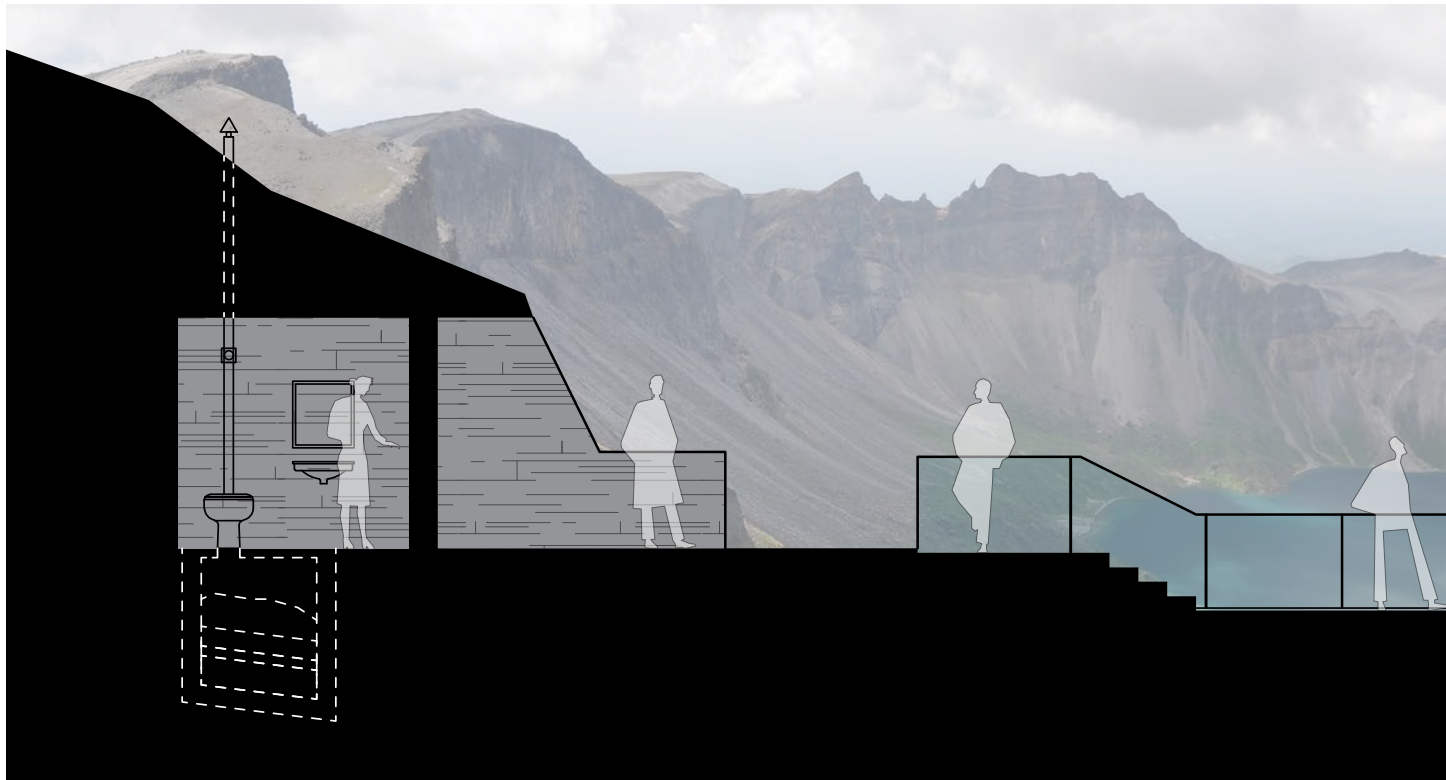
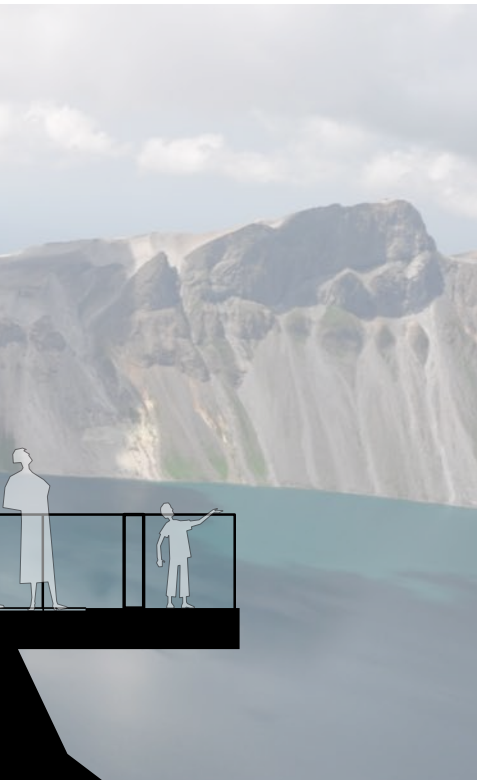


Fig 5.42 Cliffside Viewing Platform Section AA 1:100



The form is inspired from the Shibori method of forming a sharp point in the fabric using a piece of wire. The fabric is twisted and folded onto this piece of wire to form a sharp point that results in a fanned circle after dye and release. The platform is a beacon that pauses a visitor's journey briefly. The surrounding landscape is extremely steep and rocky which creates a difficult climb. This peak offers an intermission and acts as a reminder of the purpose of this pilgrimage with a stunning view of the caldera. The visitor is immersed into the landscape as they stand on the outmost point of the platform while the glass railings disappear from the peripheral.



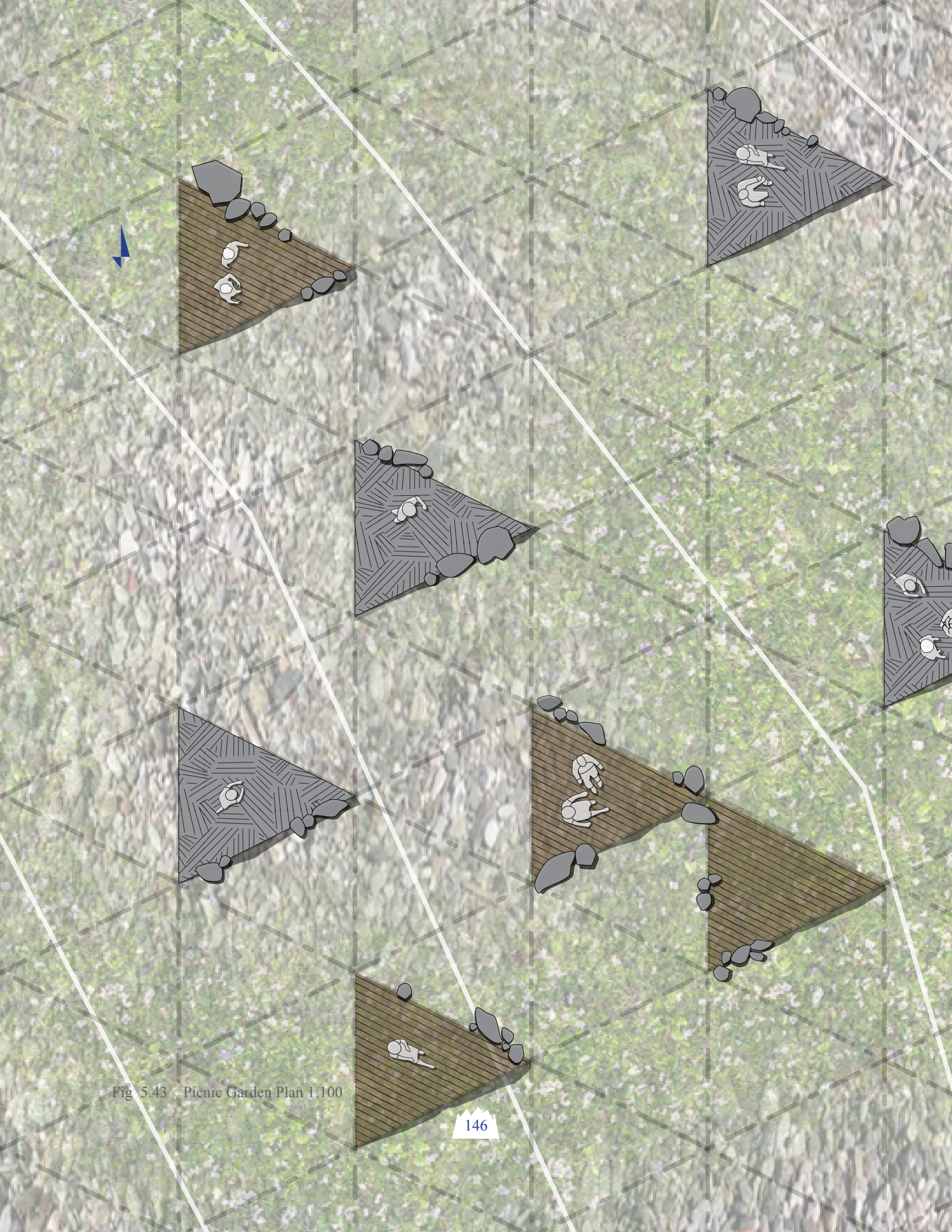
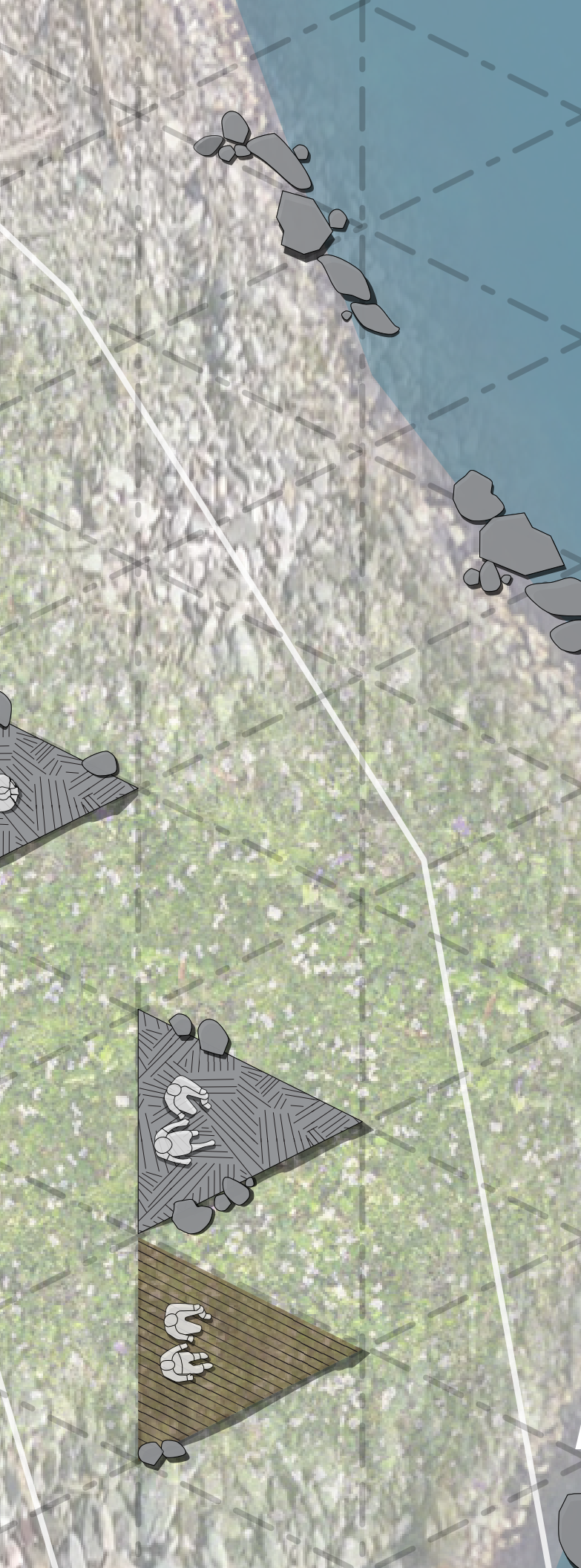


Fig 5.43 Picnic Garden Plan 1:100



## 6. Picnic Garden

[ GRID ]

This pavilion has minimal structure. The site is on a flat grassy plane near the water's edge filled with rare plants and flowers. The site also faces directly east, making it an ideal place to view the famous sunrise of the Baekdu Mountain. There are visitors who wake up at 3 am to climb to this spot for the glimpse of the sun rising between the peaks. The pavilion is simply a series of triangular surfaces of wooden boards or stone in material pointing towards the sunrise, formed via a grid system inspired by arashi shibori (Fig. 4.18). This particular method begins by creating equilateral triangles by folding, however ends with an unpredictable snowflake pattern in most cases, as the ink seeps in at different rates due to imperfections in the folds. Just like the shibori, the initially pristine platforms will eventually be overgrown with unpredictable vegetation and weathering and become one with the landscape. The stones would be worn down to a smooth surface while the wooden boards would be covered with surrounding plants overtime.



Fig 5.44 Picnic Garden Section 1:25



Just like the shibori, the initially pristine platforms will eventually be overgrown with unpredictable vegetation and weathering and become one with the landscape. The stones would be worn down to a smooth surface while the wooden boards would be covered with surrounding plants overtime.



An aerial photograph of a valley with a blue-shaded area representing a geothermal pool. A white line indicates a pathway or road. A dashed line shows a boundary or contour. The background is a grayscale aerial view of the terrain.

### 7. Geothermal Pool [FLOW]

The site of the geothermal pool is in the valley between two mountain peaks. It stretches along the outlet river of the Heaven Lake near the waterfall. There is already an existing pathway that leads from the base of the waterfall to the edge of the Heaven Lake. The site was chosen because geothermal water runs closer to the surface of the earth in this particular area.

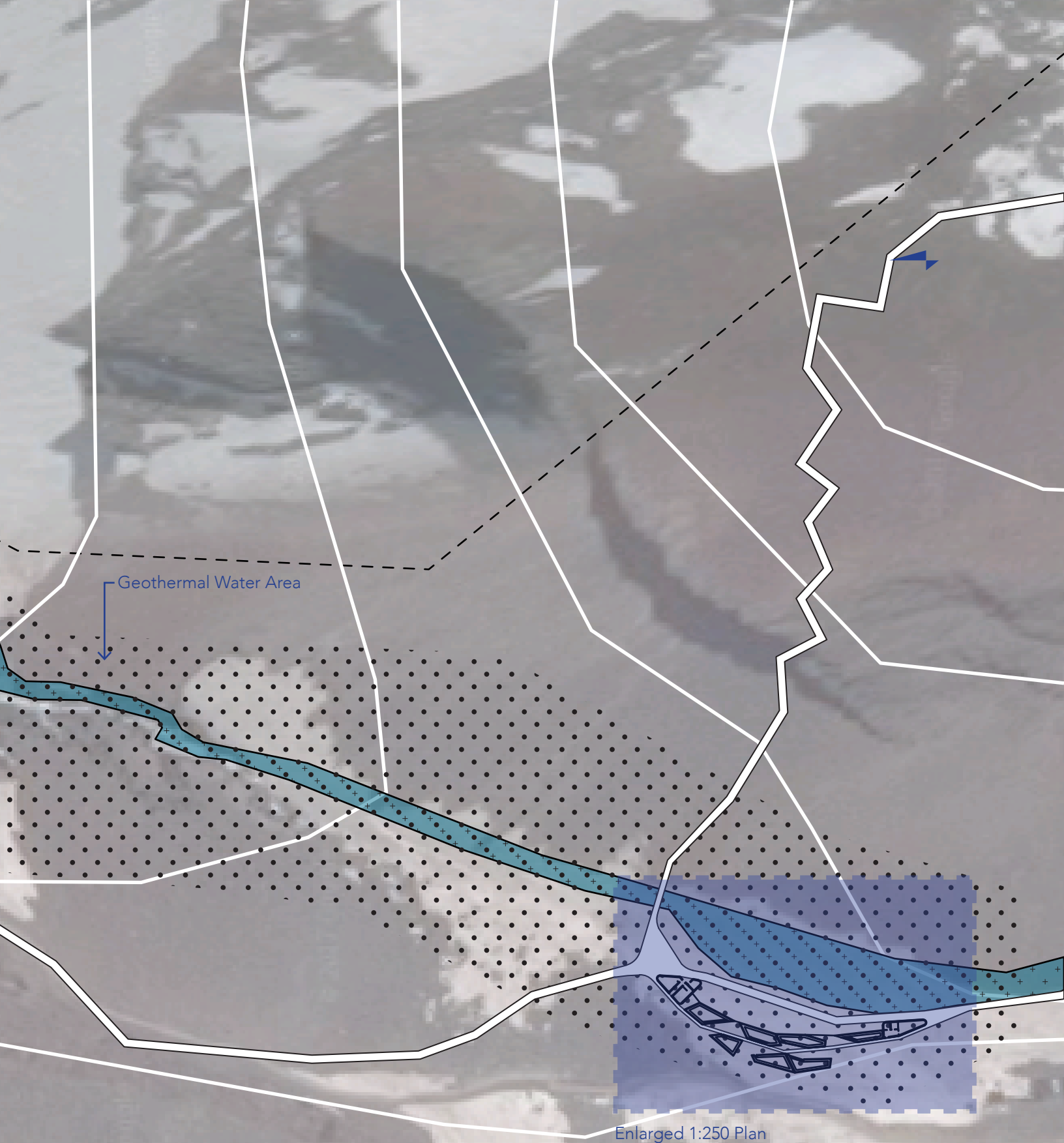


Fig 5.45 Geothermal Pool Site Plan 1:1500



Fig 5.46 Geothermal hot spring area near the caldera



Fig 5.47 Geothermal hot spring hand-washing basin



Less than 1km from the site is the famous “Hot Springs” of the Changbai region. The heavy smell of sulphur permeates a large open area connected by wooden bridges. Visitors are only allowed to wash their hands in a dedicated area of the hot spring, not able to fully experience the natural geothermal water.

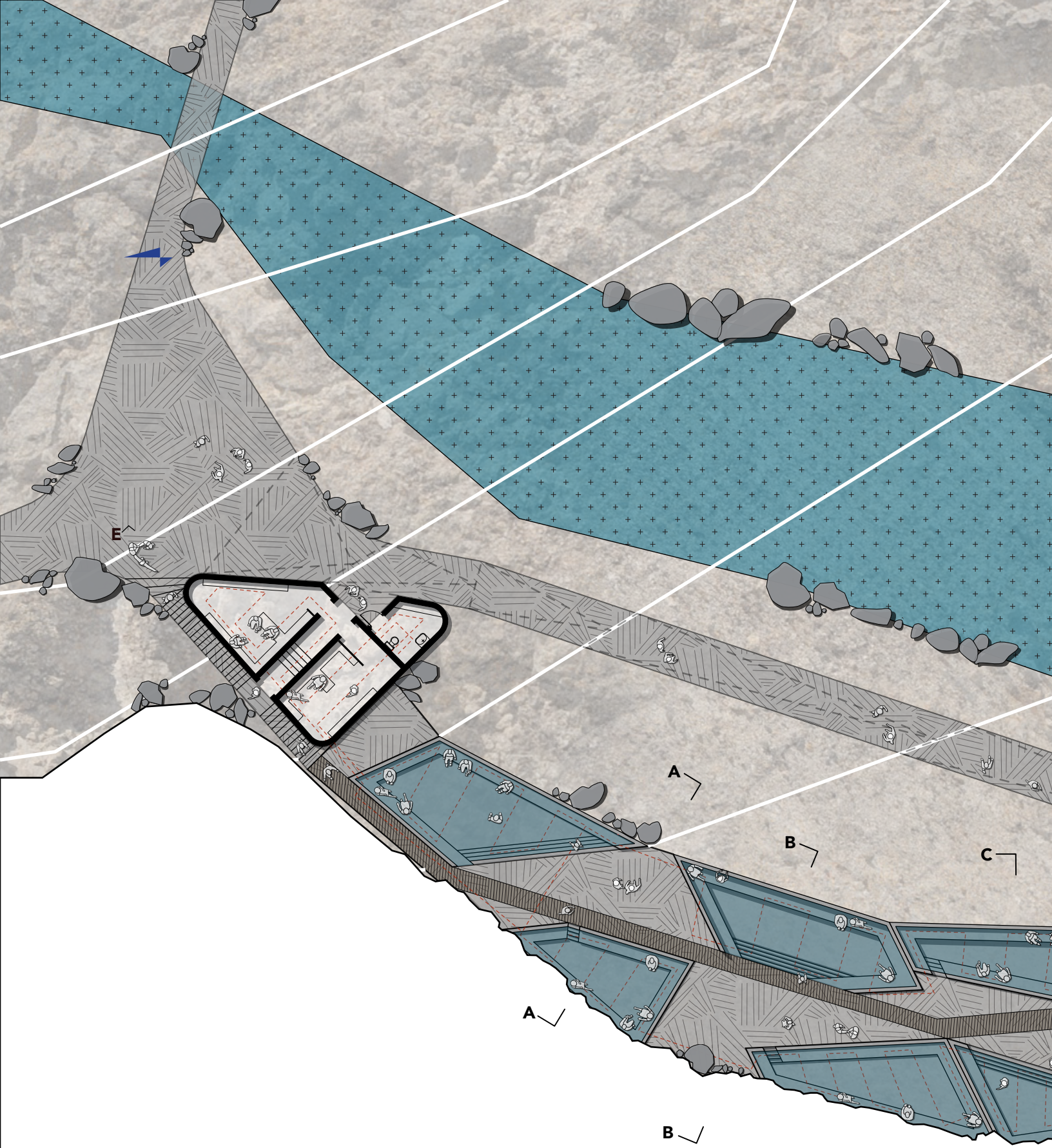
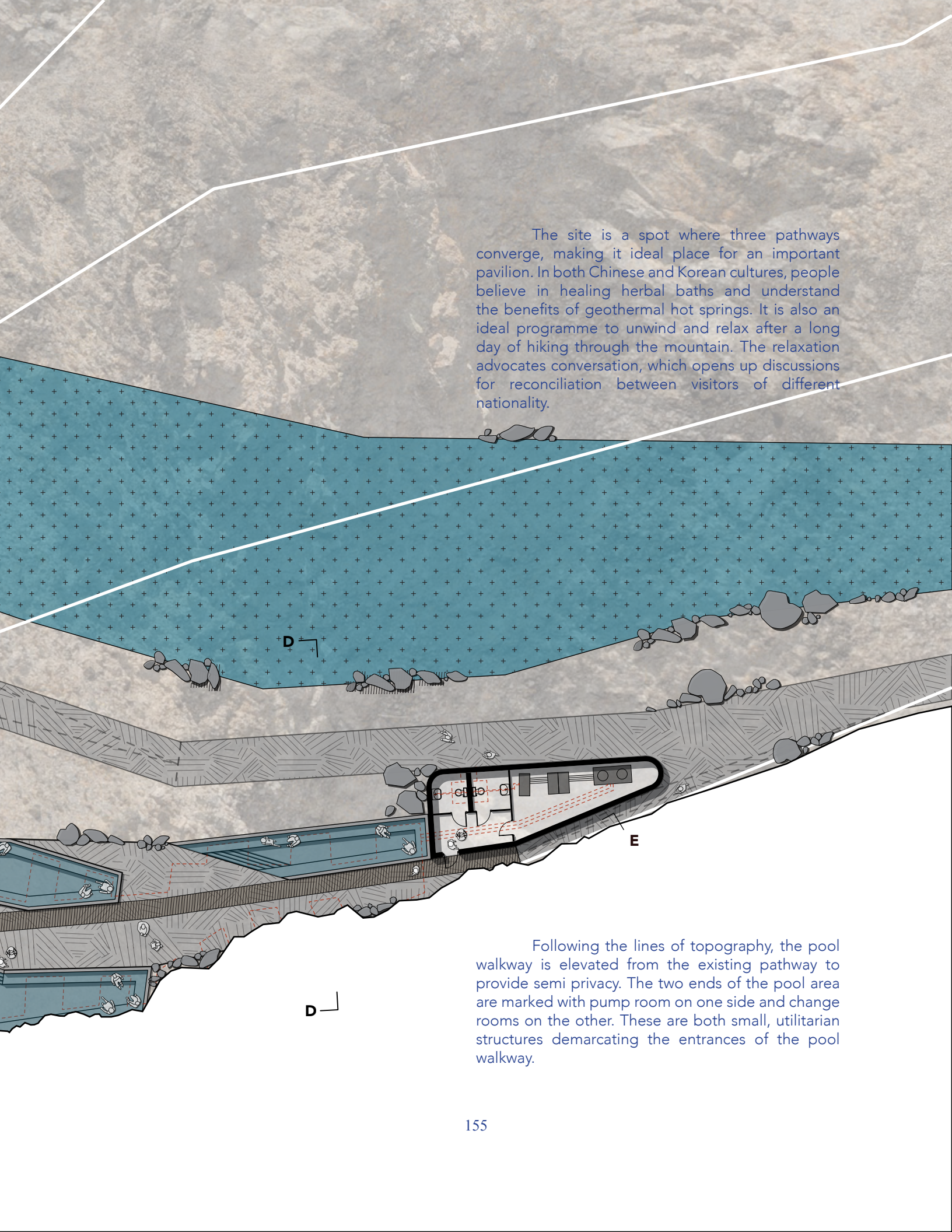
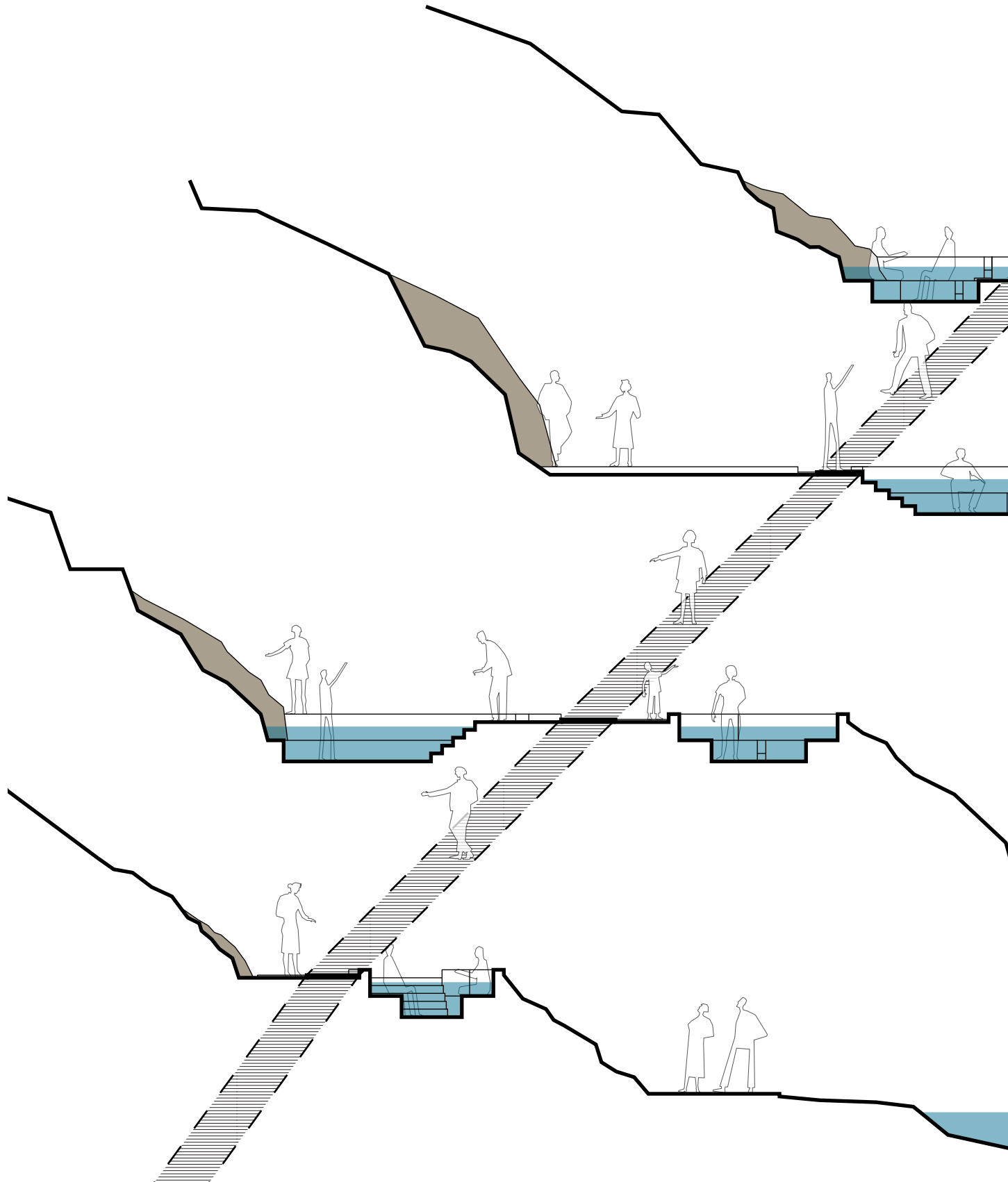


Fig 5.48 Geothermal Pool Plan 1:250

The image is a detailed architectural site plan of a hot spring facility. At the top, a large, textured grey area represents a mountain slope. A white line, likely a path or boundary, runs diagonally across the upper portion. Below this, a wide, blue-shaded area with a grid of small white crosses represents a large pool or hot spring. A white line crosses this area diagonally. Further down, a grey-shaded area with a diagonal hatching pattern represents a paved or stone-paved area. In the center of this paved area is a rectangular building with a black outline, representing the pavilion. To the left of the pavilion, there are three smaller, rectangular pools, each with a blue interior and a grey exterior, arranged in a descending line. Red dashed lines indicate the layout of the pool walkway and the placement of pump rooms and change rooms. The letter 'D' is placed in two locations: one near the large pool and another near the bottom left corner. The letter 'E' is placed near the pavilion building. The overall design follows the topography of the site.

The site is a spot where three pathways converge, making it ideal place for an important pavilion. In both Chinese and Korean cultures, people believe in healing herbal baths and understand the benefits of geothermal hot springs. It is also an ideal programme to unwind and relax after a long day of hiking through the mountain. The relaxation advocates conversation, which opens up discussions for reconciliation between visitors of different nationality.

Following the lines of topography, the pool walkway is elevated from the existing pathway to provide semi privacy. The two ends of the pool area are marked with pump room on one side and change rooms on the other. These are both small, utilitarian structures demarcating the entrances of the pool walkway.



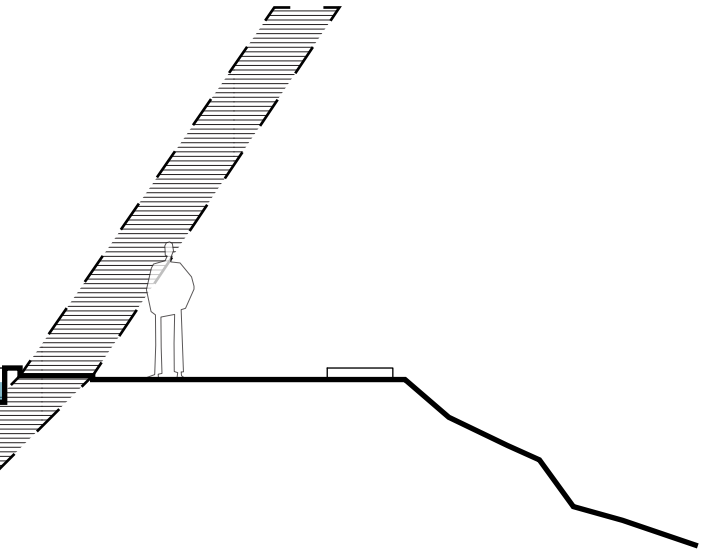


Fig 5.49 Geothermal Pool Section AA  
1:100

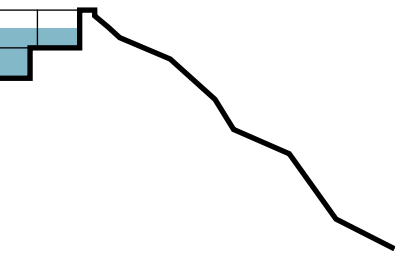


Fig 5.50 Geothermal Pool Section BB  
1:100



Fig 5.51 Geothermal Pool Section CC  
1:100



Fig 5.52 Geothermal Pool Section DD  
1:100

Entering the walkway on either end, the visitor is presented with a number of choices. The walkway itself is made of wood, designed for the comfort of bare feet. Walking along the wooden pathway, one can choose which pools to enter. The shapes of the pools follow the lines of topography to form sharp edges. In contrast, the two end buildings have smooth curved walls. The walkway widens and narrows in certain sections to control the flow of people and to provide gathering spaces. The rocky mountain wall extends into the pools in certain areas that allow the visitor to experience the caldera on a more tactile scale. Pools on the other side present the transformation of the still lake water into a flowing river. This geothermal path is designed to provide a more intimate interaction with the caldera. The rock face, the water, and the heat surround the visitor to create an experience that covers all senses.

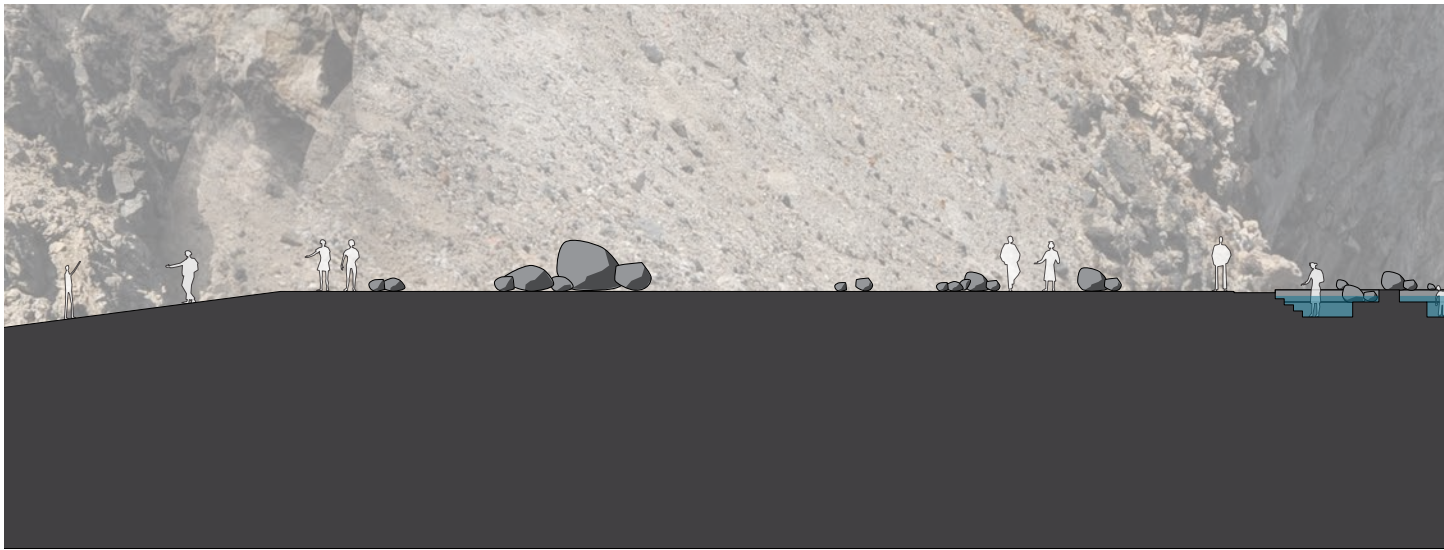


Fig 5.53 Geothermal Pool Long Unfolded Section EE 1:250





Fig 5.54 Approaching Orientation Center Experiential Section



## 5.5 MOMENTS



Fig 5.55 Typical Cliffside Pathway



Fig 5.56 Cliffside Platform Point



Fig 5.57 Approaching Picnic Garden



Fig 5.58 Picnic Garden Sunrise



Fig 5.59 Winter Lakeside Pathway

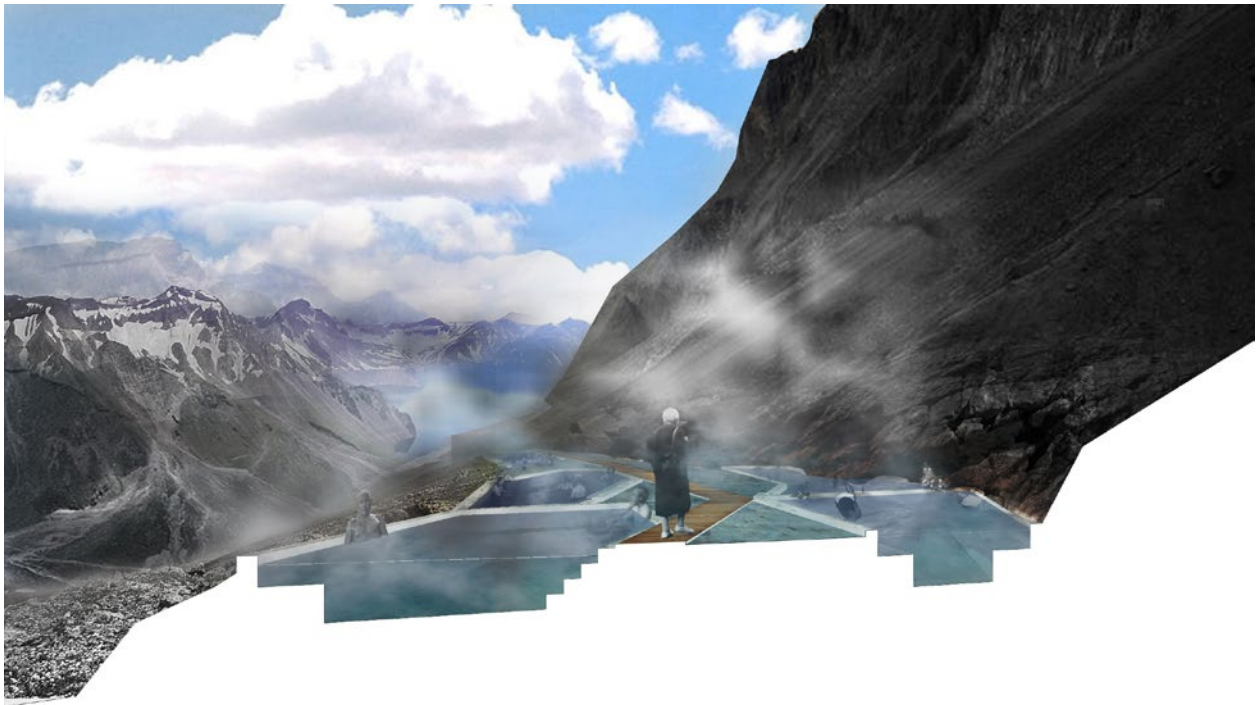


Fig 5.60 Walking through Geothermal Pools



Fig 5.61 Typical Steep Mountain Road

## 6. CONCLUSION

This process I started back in September of 2015 crashed through numerous transformations, almost all of them unintentional and terrifying. How did I go from designing a space suit to choreographing a journey through a dormant volcano? The biggest takeaway from this process might be that trying to plan everything to the end in reach for a specific goal is futile in my pursuit of thesis. One of the greatest difficulties was this need to reach "The Goal", to finish.

The uncertainty was a constant drawback throughout the process. How does one evaluate a self-directed thesis with no concrete end in sight? An architectural thesis would typically end in a designed building. Yet the turning point of this project was giving up the goal of "building". Trained in an architecture program, the architect's imperative is to solve all problems by designing a comprehensive structure and letting the building take centre-stage. This initial impulse to a challenge of the project is what held back the thesis. The escape in the traditional role of the architect (to build buildings) opened up more possibilities.

The site is really the focus of the thesis, and just as unpredictable as a volcano, trying to control and justify every aspect of the thesis is impossible. The scale of intervention increased drastically and the difficulties of the site became the rigors of the journey. It seems appropriate that the biggest inspiration was the act of making shibori. The most exciting part was when I released the bindings to see the parts I didn't intend or consciously design come to life in dark indigo dye.

The question this thesis ultimately asks is "how as an architect, can I make this site a place?" Through many renditions, failed attempts, and drastic changes, the end result became an exploration of who I am. Learning to let go of architecture and creating an intimate relationship with the site by choreographing a journey, one doesn't have to build a building to solve a problem.





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# GLOSSARY

## **Demilitarized Zone (DMZ)**

An area in which treaties or agreements between nations, military powers or contending groups forbid military installations, activities, or personnel. <sup>1</sup>

## **Volcanic Explosivity Index**

A relative measure of the explosiveness of volcanic eruptions. It was devised by Chris Newell of the United States Geological Survey and Stephen Self at the University of Hawaii in 1982. The scale is open-ended with the largest volcanoes in history given magnitude 8. <sup>2</sup>

## **“Gojosen”**

An ancient Korean kingdom that was legendarily established in 2333 BCE. It is first mentioned in the Chinese text in c. 700 B.C. <sup>3</sup>

## **Plinian Eruption**

Plinian eruptions are marked by columns of gas and volcanic ash extending high into the stratosphere, the second layer of Earth’s atmosphere. The key characteristics are ejection of large amount of pumice and very powerful continuous gas blast eruptions. <sup>4</sup>

## **Plume**

A volcanic plume is a mixture of particles and gas emitted by an eruption. Plumes may reach heights of 80 km in large eruptions. The plume is generated by fragmentation of magma. <sup>5</sup>

## **Pyroclastic Flows**

A pyroclastic flow is a fast-moving current of hot gas and volcanic matter (tephra), which reaches speeds moving away from a volcano of up to 700 km/h. <sup>6</sup>

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**Strato Volcano**

A conical volcano built up by many layers (strata) of hardened lava, tephra, pumice, and volcanic ash. They are characterized by a steep profile and periodic explosive eruptions and effusive eruptions, although some have collapsed craters called calderas.<sup>7</sup>

**Tephra**

Fragmental material produced by a volcanic eruption regardless of composition, fragment size or emplacement mechanism.<sup>8</sup>

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