

SPLITTING THE SEAM:
Exploring the tension between natural and
manufactured spaces in abandoned granite
quarries along coastal Maine

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Abstract

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Exploring the tension between natural and manufactured spaces in abandoned granite quarries along coastal Maine

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The ruined sites of the extractive industries in America reveal the tension between the past and present, and between nature and industry. The processes of mining and quarrying have left behind not just the remains of physical structures but lasting scars on the landscape. These manufactured landscapes are a place where the power of natural forces and technological ones are held in balance.

This thesis proposes a series of built interventions for a series abandoned granite quarry along the coast of Maine near the boarder town of Calais. These installations intend to provide opportunities to connect with the historical industry on the site through active memory and a sense of discovery. The interventions leverage the inherent spatial qualities of the site while providing access to activate and discover the spaces left abandoned by the extractive industry.

The negative space left on the land, and the stereotomic characteristic of the granite contrasts with the tensile bridge structures derived from machinery used during the quarrying processes. The interventions will bridge the gap between past and present by referencing the process of stone and the original topography of the site. This thesis proposes to explore the tension of natural and manufactured landscapes through a series of interventions that promote active memory and a sense of discovery.

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INTRODUCTION

The nature of industry is constantly evolving with shifts in human needs and new technologies. As they change industries leave behind physical ruins and scars on the earth memorializing the extinct processes they once supported. Exposed to time and the elements, these sites are left to decay, creating derelict and yet powerful ruins. While often dismissed as unattractive and useless, the industrial ruin is meaningful as a record of the past and as a place of active memory. As these sites undergo the inevitable process of decay they begin to take on a new character. With the decay of the physical structures that have lost their original function, nature is often allowed to return as the dominant force on these sites. The inherent character of the industrial ruin as poised between human and natural processes is thus revealed.

These abandoned places of industry are typically considered as blights on the landscape and described in negative terms. As these spaces of waste are gradually taken over by the forces of nature, they also often become places for acts of human destruction. No longer maintained and considered outside the order of society they become a testing ground for disorderly, “unprogrammed” activities of human existence. As these abandoned sites are located in more remote locations they become engulfed in trash and vegetation, they can become eventually all but forgotten. But even these derelict



1. Birches Growing In Decayed Books, from Detroit Disassembled, Andrew Moore



2. Whales Back Quarry, Sullivan Maine

places of industrial ruin continue to hold meaning, by retaining the memories of the past orderly processes of industry.

The ruined sites of the extractive industries are especially revealing of this tension between the past and present, and between nature and industry. The processes of mining and quarrying have left not just the remains of physical structures but large lasting scars on the landscape. These sites are particularly revealing of the way in which the power of natural forces and technological ones are held in a fragile balance. This thesis proposes that these abandoned quarries retain the marks and spatial characteristics left by their former industrial use and can be activated in a way to connect them to modern activities while not forgetting their past use. A series of built interventions are proposed for a series of abandoned quarry sites along the boundary waters of the Passamaquoddy bay on coast of Maine. These interventions are intended to provide opportunities for visitors to access and experience the quarried void spaces in a new way, and to discover the history of the site and industry through increased access and interaction to the site. that is relevant to the region by revisiting the quarrying trade in a renewed way. The role of architecture will be seen as exploiting the seam of these extractive landscapes-between nature and industry, and between past and present.

THE RUIN

Since the Renaissance the fascination with the ruin has been documented by artists and writers as a way to read the past as a valuable remnant of a lost time and place. In his article, "Fragments from the History of the Ruin," Brian Dillon observes that in the eighteenth century Classical Greek and Roman ruins came to be thought of as both "readable and mysterious," like books with missing pages, creating gaps that could be filled in by the viewer's imagination¹. He states that renaissance painters were the first to place their human subjects amongst ruins, posing these fragile figures of suffering against backgrounds of broken columns and crumbling arches, enhancing the sense of despair of the scene². Throughout the nineteenth century artists continued to use the inherent qualities of the ruin in order to evoke a sense of emotion and of timelessness in their paintings.

In his 1911 essay, Georg Simmel describes how the architectural ruin makes visible the tension between past and present, and between nature and the human spirit³. A photograph of an abandoned mill in Italy captures this fragile balance between the act of building, and the natural landscape that it seeks to conquer. Simmel describes the process of decay of the ruin as when "natural forces begin to become master over the work of man"⁴. He argues that it is this tension between the will of man and nature that is preserved in

"...it is the fascination of the ruin that here the work of man appears to us entirely as a product of nature."

-Georg Simmel The Ruin



3. St. Sebastian by Andrea Mantegna, 1480



4. Abandoned Mill from 1866, Sorrento Italy

the architectural ruin.

Interventions on abandoned ruins can highlight the contrast between the past and the present by altering the visitors' perspective of the site. The shelter in Gloucestershire, England designed by Feilden Clegg Bradley Studios seeks to preserve the remains of a roman villa while also making it more accessible⁵. The addition of a lightweight timber frame shelter that sits delicately atop of the existing walls is intended to protect the ruins from weather and provide better access for visitors. In its effort to preserve, this approach however, separates the viewer from the site. The preserved ruins are displayed like precious objects in a museum, removed from the natural processes of decay, and losing the inherent importance of an object as a cultural link to the past.

The ruin is a way for the present to connect with the past. The value of these classical ruins that have survived through time has been acknowledged in architectural projects aimed at preservation. Another example is the adaption of the ruins of a Roman villa located in Montornes del Valles in Barcelona, Spain⁶. Architect Tori Girones makes use of the stone debris accumulated in the archeological excavation to reshape the site. A new series of terraces is formed by backfilling this broken stone and earth in walls of open steel mesh, emphasizing the fragmented character of the remains. The minimalist character of the intervention gives the site a new function



5. Interior view of the larch-clad shelter by Feilden Clegg Bradley Studios



6. The Roman Ruins of Can Tacó by, Toni Girones

as it serves as a viewing point for viewing the city. The juxtaposition of the new materials with the past fragments enables the site to bridge past and present. In this way the project reconnects the ruins to the surrounding community by adding another layer of meaning and use that changes the way the site is perceived.

INDUSTRIAL RUIN

“Industrial ruins...are not the romantic ruins of the countryside and classical Rome. They are messy, dirty and decaying. Nevertheless, they are places we can visit to escape the seamless conformity of so many of our cities, places of mystery and conjecture.”

-Tim Edensor⁷

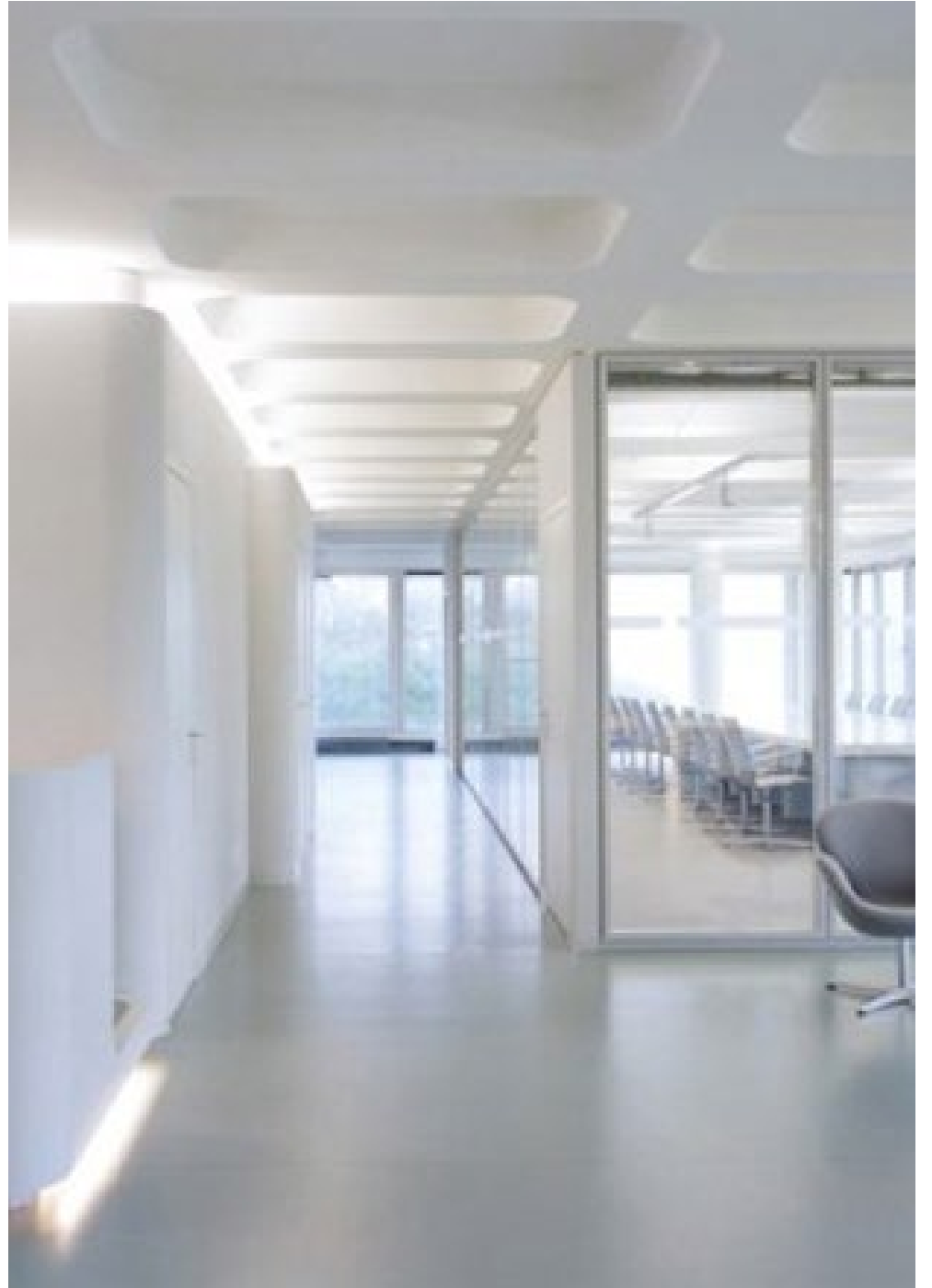
As Edensor points out the ruins of industry are very different than those sacred and romanticized sites of the distant past are more often celebrated. In place of the remains of historic churches and palaces are the derelict forms of more recently abandoned warehouses and factories. These built works once housed the now obsolete processes and objects. Unlike the classical ruins, these built remains of industry are typically seen as insignificant, their former uses more recent in society's collective memory. Rather than being venerated, they are treated as degraded waste, evidence of

extinct technologies and failed industries.

As Edensor notes, these waste spaces, that are often considered dangerous and without value, actually offer a much-needed alternative to the increasingly ordered and sanitized built environment. Modern cities typically measure their success on the cleanliness and the efficiency of their public spaces: Paths inside and outside buildings are designed for their most direct and uncluttered routes, and their smoothest and cleanest surfaces. Edensor points out that architects are designing “landscapes” where the senses are repressed and experiences have become homogenized. Smells are deodorized, lighting is even, sounds are regulated, and texture is only applied deliberately. The regulation of spaces makes for sterile environments, which significantly diminish the sensory experience.⁸ He argues that the industrial ruin offers a unique opportunity for city dwellers to reconnect with the senses. As seen in the photograph of the old Keddy Mill, the decaying and twisted structure of the ruin offers a vivid spatial experience to the viewer. The low light enters the space through a scattering of broken windows so the eye is constantly adjusting. The photograph allows the viewer to imagine how mold and rot might spark the sense of smell. The body responds viscerally to every sound in the ruin as the heartbeat begins to race. The industrial ruin offers a certain stimulating experience that evokes the senses in ways that efficient



7. Keddy Mill, Windham Maine



8. Simple white office interior



9. Abandoned factory in Milwaukee, WI



10. "The Lady of Moat View" from Abandoned Fashion Series, Luke Woodford

modern spaces cannot.

These remnants of industry can become a place for transgression, a place to vandalize and destroy, where human actions can begin to align with natural forces to promote the decay. As Edensor notes, "In the ruin, there is no price to pay for destroying things that have already been consigned to the category of waste and belong to nobody."⁹ But at the same time these sites of the industrial ruin can act as a desirable aesthetic backdrop for scenes of modern life. It becomes a place for creative expression, a place to graffiti, set fires, make music videos and stage fashion photo-shoots. Like the setting for a theatrical performance these ruined sites can inspire the collective imagination and foster a certain kind of creativity and growth that is not restricted by formal spaces

EXTRACTIVE RUIN

The sites of industrial ruins take on various unique forms that depend on the processes once housed there. Extractive industries like mining and quarrying are especially unique, as they are characterized not simply by the built structures that remain, but the negative space that is the result of the extraction process. Photographer Edward Burtynsky has documented these landscapes where mining and quarrying have left indelible traces on the earth. His images of abandoned quarries in Vermont are especially memorable



11. Edward Burtynsky, Rock of Ages #15, Barre VT



12. Granite foundation, Eastport ME



13. Maine Granite making up the exterior of the St. Louis Public Library, MO

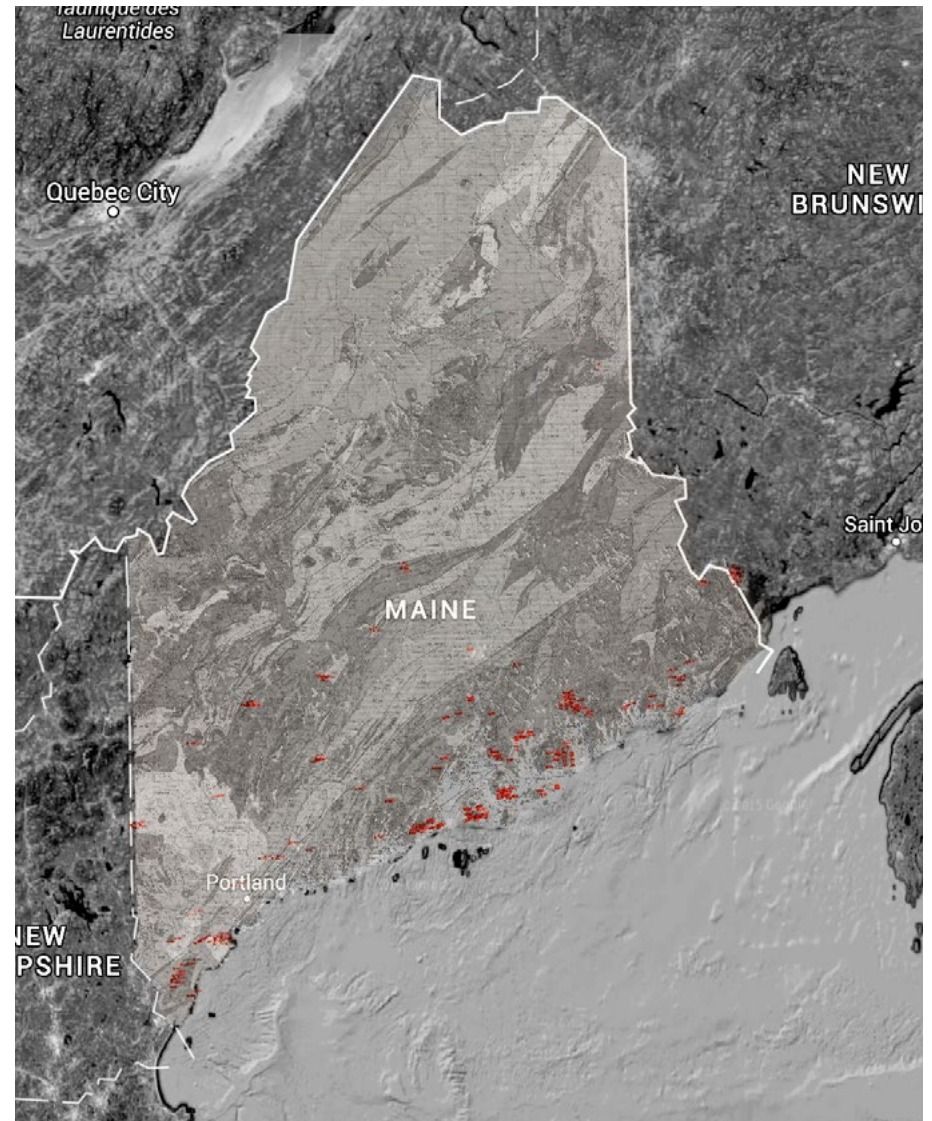
as they document these sites that once produced dimensional stone. In what is thought to be among the deepest quarries in the world, the white slabs form horizontal bands that reveal the forces of humans and nature at work. Burtynsky describes these sites as a kind of “inverted architecture” that results from the human “pursuit of raw materials”.¹⁰ His photos of these ruins of quarrying document the scars of this human activity that are deeply embedded into the geology of the landscape.

QUARRIES IN MAINE

Like many areas in the eastern United States, quarrying in New England began as a local source for building and road material. Most early settlements in New England had a local granite quarry serving for the production of stones for the building of foundations and road pavers.¹¹ In the state of Maine the granite industry expanded beyond local demands as the rich variety of local bedrock geology fueled a thriving quarrying industry. Beginning in the 1800s Maine led the granite industry in the United States for a century, supplying material that was used in the construction of post offices, courthouses and monuments all along the eastern seaboard. The unique glacial geology as well as the close proximity to transportation by river and ocean made coastal Maine a primary area for the dimensional granite industry meaning natural rock was

extracted in order to produce blocks of a specific measured size. Granite quarrying continued to grow in Maine to the point where the state was the leader in the value of granite produced in the nation in 1901.¹² However, as steel and concrete technologies advanced in the beginning of the twentieth century, the demand for granite as a building material drastically diminished, forcing most of the granite quarries in the state to close. Some were even deserted mid operation, despite the nearly limitless supply of workable granite. Today, only one remains, located on Crotch Island along the coast in Stonington.

The abandoned granite quarries along the coast of Maine survive as relics of an abandoned and nearly extinct industry. These abandoned sites have been taken over by nature and by human visitors. Local residents have begun to take the quarries over in their own way, using the tall cliffs produced by the material extraction of the past as platforms to jump off into pools of water that have gathered in pits left by the quarrying process. The seemingly natural landscape of the quarry has not been treated in a sacred way, but as any other industrial ruin, decorated with artifacts and scars from the industry, layered with teenage transgressions. As Georg Simmel observes, it is this balance between the natural and the human order of decay that make these ruins of the extractive industries so compelling.



14. Map of Maine quarries



15. Sullivan Quarry: Graffiti on the rocks

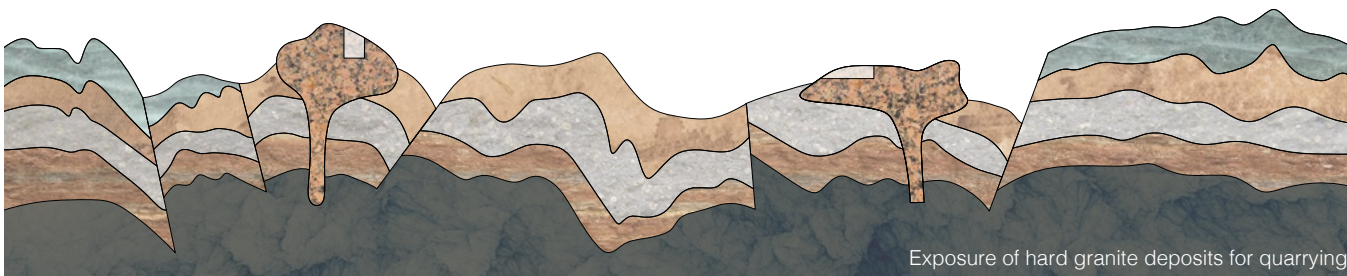
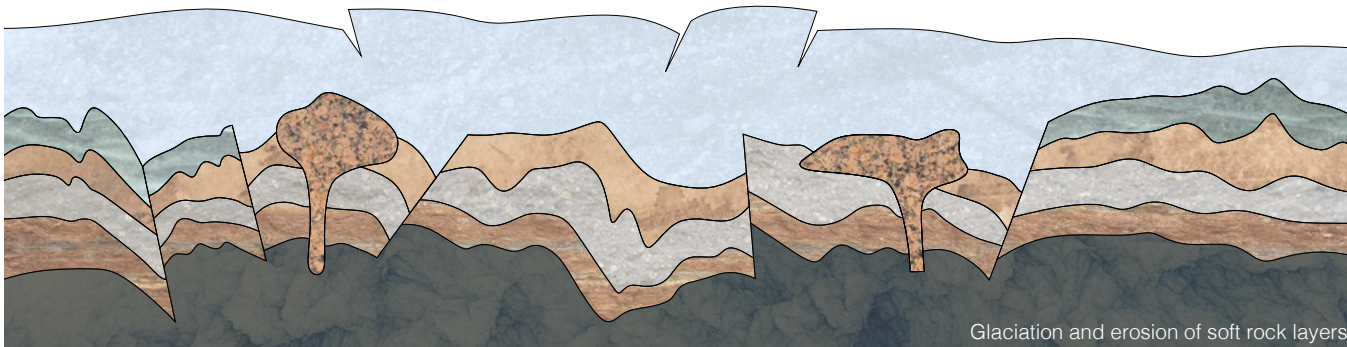
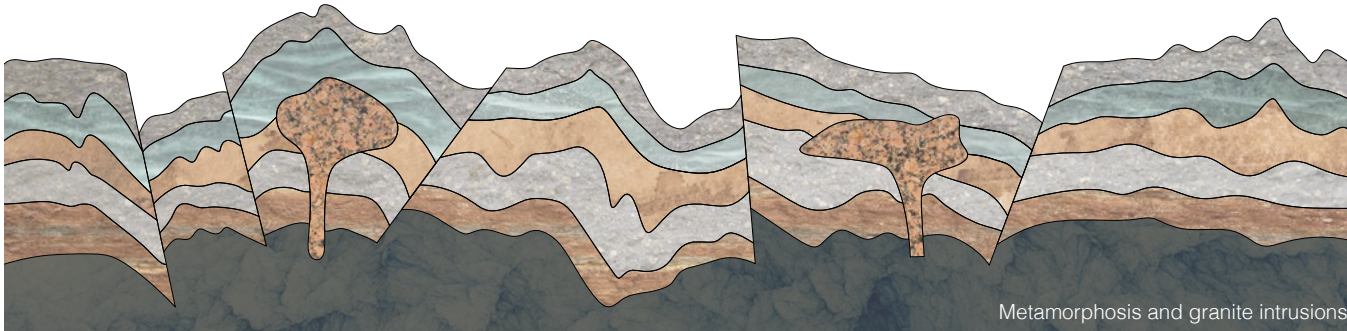


16. Sullivan Quarry: Cliff Diving

“Thus purpose and accident, nature and spirit, past and present here resolve the tension of their contrasts—or, rather, preserve this tension.”

-Georg Simmel¹³

These relics of an abandoned industry offer a fascinating view into the past. They are discernible, not by the additive skeletal building remnants of most industrial ruins, but by the subtractive void left in the earth. The clear disturbance by man on a seemingly natural landscape creates tension between what is commonly recognized as industry and nature. These unique places should be explored, and discovered. This thesis proposes to intervene on the extracted landscape in order to explore the tension between the natural and the manufactured space.



17. Geologic Formation Diagram



18. Marquette Courthouse, MI



19. American Museum of Natural History, New York City

THE SITE

HISTORY

The rise of the granite industry in Maine was a product of the meeting of the natural geologic history of the state and of human forces. The last glaciation event also created the distinctive coastline that is unique to the state. Granite quarrying began locally, with townships often having one or two quarries to provide building material for the early settlements. As the towns developed in many cases the nearby quarries were filled in to allow more land for expansion. More extensive granite operations propagated to meet the demand for building material along the eastern seaboard, the industry of quarrying grew to include more complex operations consisting of a series of small quarries. Granite deposits along the coast and rivers were more economically viable since they could be more efficiently transported by water.¹⁴

The high compressive strength and unique pinkish color made the Red Beach Granite highly prized in monumental building construction as seen in the Marquette County courthouse in Michigan, and the American Museum of Natural History in New York City. The quarry operation was located in the Passamaquoddy bay, three quarters of a mile inland from Red Beach Cove in Washington County, Maine. It was adjacent to the historic St. Croix Island where French settlers led by Samuel de Champlain in 1604 made one of

their first attempts at year round settlements. The township Red Beach gets its name from the distinctive pink granite formations that occur naturally along the shoreline. In 1908 Red Beach Cove became home to the Smith and Young Granite Manufacturing Company.¹⁵ The company consisted of an extraction operation and extensive polishing works along the Beaver Brook, which meets the ocean in Red Beach Cove, a deep coastal port, for transportation.¹⁶ In addition to shipping finished granite pieces from Red Beach quarries, schooners would bring in rough cut granite from other quarries along the eastern seaboard to be polished at the Red Beach polishing works. The Beaver Brook was dammed in several locations to power the water operated polishing equipment that included eight lathes that ran 24 hours a day.¹⁷

After changing ownership multiple times, the Red Beach Quarry came to an abrupt end when several buildings were destroyed during a fire in 1926, and the company never rebuilt. Today almost ninety years later the once thriving industry has been largely forgotten. But the site still remains, containing remnants of polished stone grown over. Known to local residents as 'the archive'. The ruins of the polishing works still stand in the middle of a forest, with moss with roots growing over huge columns on their side. In the middle of a forest, one is able to imagine the history and operation that once prospered on that very spot. These derelict



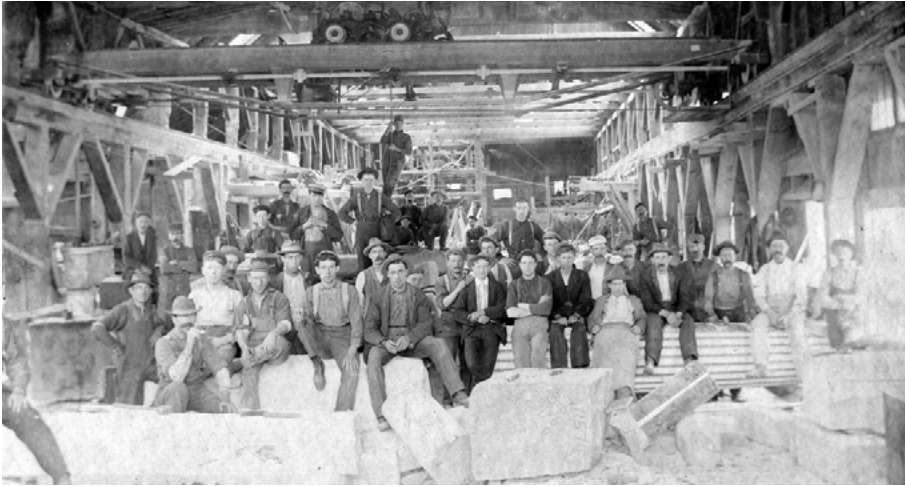
20. Red Beach Cove



21. Overgrown remnants from the polishing works, known to locals as 'the archive'



22. Site Map
a. Pit site
b. Chip site
c. Former polishing works, now 'archive'



23. Historical photograph of the polishing works



24. Historical photograph of the southern quarry site, showing derricks and oxen

sites of lost industry allow one to imagine the thriving industries of the past, inspiring the fascination with the ruin described by George Simmel. The quarries have left these unique manufactured sites with layers of mysterious meaning as they mimic the natural erosion and landscape processes and the left behind traces of the human occupation.

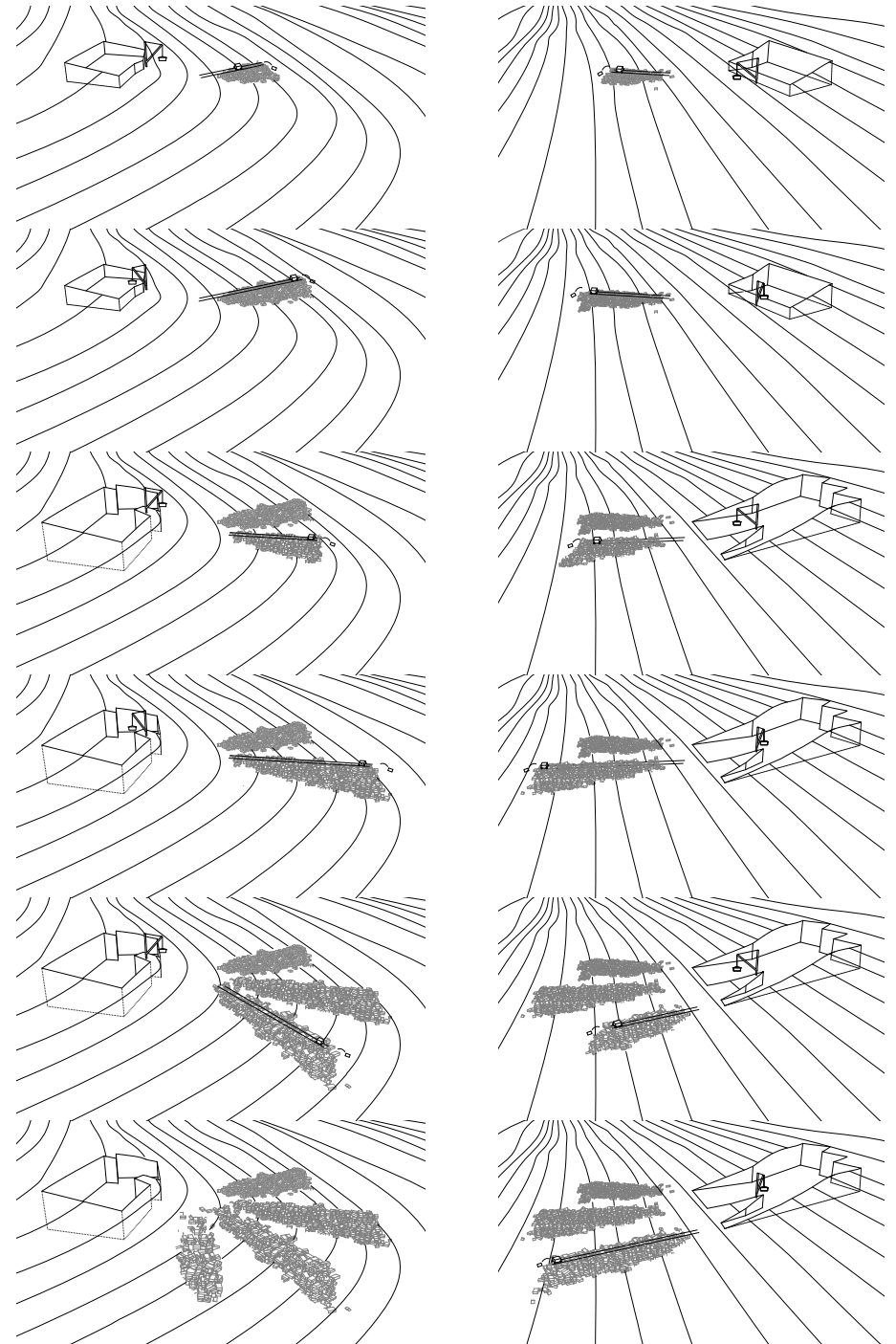
CURRENT CONDITION

The area, which was once a bustling complex of industrial activities connected by robust roads is now an overgrown and underused trail system. The industry that was once paramount to the lives of the residents has been nearly lost from the collective memory. The former transportation routes are currently being used for mountain biking, four wheeling, snowmobiling, hiking and fishing, and they completely bypass the former sites of industry. To the local residents, all that remains of this once extensive operation to are the physical conduits.

The interventions will focus on two sites one north, and one south of Beaver Brook. The site to the south of Beaver Brook, 'the chip' was formed when granite was removed laterally from the earth. It is characterized by its sheer vertical walls which taper down as the ground plane meets up with the original topography. The other site for intervention, located north of Beaver Brook, 'the pit' was

formed when granite was extracted vertically from the ground and is defined as a container for water. In addition to the steep walls and negative space made on the earth, sites of granite quarrying also have large heaps of waste rock that can be found adjacent to the void. The blocks that were extracted from the quarry that were not the correct size or shape, or had some kind of deformity would be cast aside. The waste often made up 70 to 80 percent of volume quarried. At the Red Beach quarry with its steep topography, the stones were cast down the hill forming fin-like platforms radiating away from a central staging area.

These two sites are directly adjacent to the existing trail system, yet are completely bypassed, leaving these unique sites unoccupied, and unused. This thesis proposes to activate these manufactured landscapes through a series of built interventions which will leverage the spatial qualities left over from the abandoned extractive industry and will connect with the existing trail network allowing these unique remnants of an abandoned industry to be experienced.

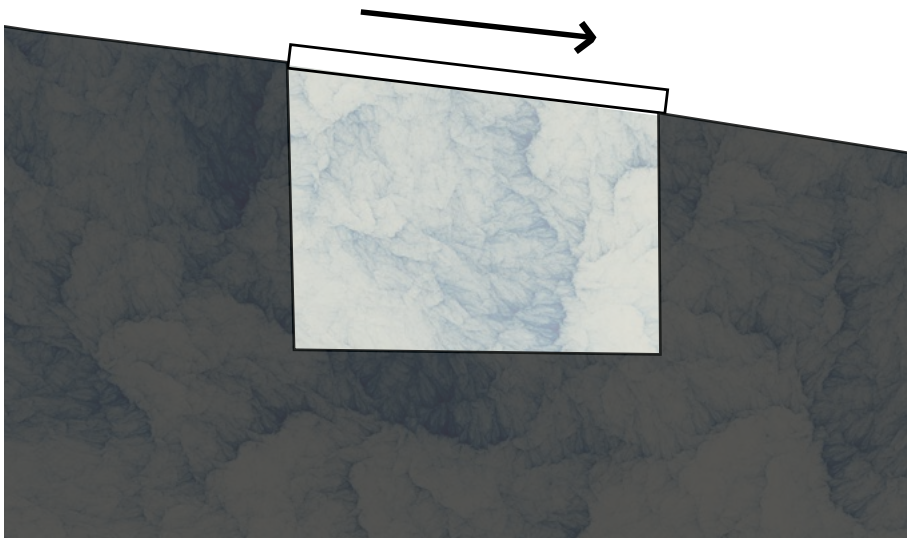
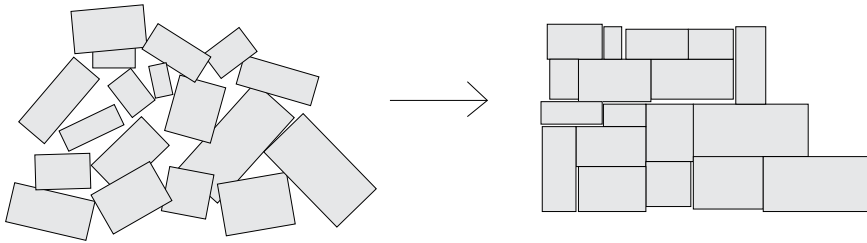


25. Diagram showing site formation of void and waste block piles

DESIGN RESPONSE

STRATEGY

Quarries have inherent architectural qualities at many scales that provide a basis for intriguing design characteristics: the distinction between the stereotomic qualities of the granite mass, and the lightness of the tensile machinery used to extract, also the negative space in relation to the unseen buildings made from the void. The interventions on the two sites explore these tensions, in addition to bringing attention and access to the site. The built interventions address both the piles of waste rock as well as the void space left from extraction. Two main strategies for these sites are to reorganize the piles of waste stone, and to bridge over the void. The reordering of the waste blocks is a similar approach taken in Toni Girones' adaptation of the Roman ruins, by using the onsite material another layer of human intervention is added to the place and draws attention to the random way in which the piles were initially formed through the contrasting organized intervention. Spanning over the void provides access to the site and offers a new perspective for visitors, as it relates to the original topography of the site. Both sites will use wood, and steel materials which will begin to decay at different times, and at different rates, marking the progress of the ruin.



26. Diagrams of site strategies

THE CHIP

The site of the first intervention is defined by sheer vertical walls which taper down as the ground plane begins to meet up with the topography. Currently the site is nearly impossible to access, the objective for this intervention is to provide access to the site so that it can be explored and activated.

When entering the site from the south visitors first pass through an expansive blueberry field before they encounter a tensile bridge connecting to the shear wall at the tallest point in the quarry. The bridge follows the original topography of the site, the structure of which relates directly to the derricks, the pulley devices that once lifted the heavy stone from the site. The bridge plane seemingly floats over the void, giving visitors a new perspective of the site. The path then pivots on a remnant outcropping left behind after operations ceased. And the user is then directed towards a slot made from the waste rock piles which have been reconfigured. The new opening between the waste piles has steep walls which relate to the vertical walls of the excavated void. The slot guides the visitor toward the Beaver Brook, where the path reconnects with the trail system.

By providing access to this place, one can begin to discover the unique characteristics left behind from quarrying industry. The site provides shelter from the wind, and shallow pools make the site a great place to have a bonfire, or bathe in a pool on a warm day.



27. Vicinity Plan of 'the Chip' with new trail through chip site highlighted in pink



28. View from remnant outcropping looking southwest



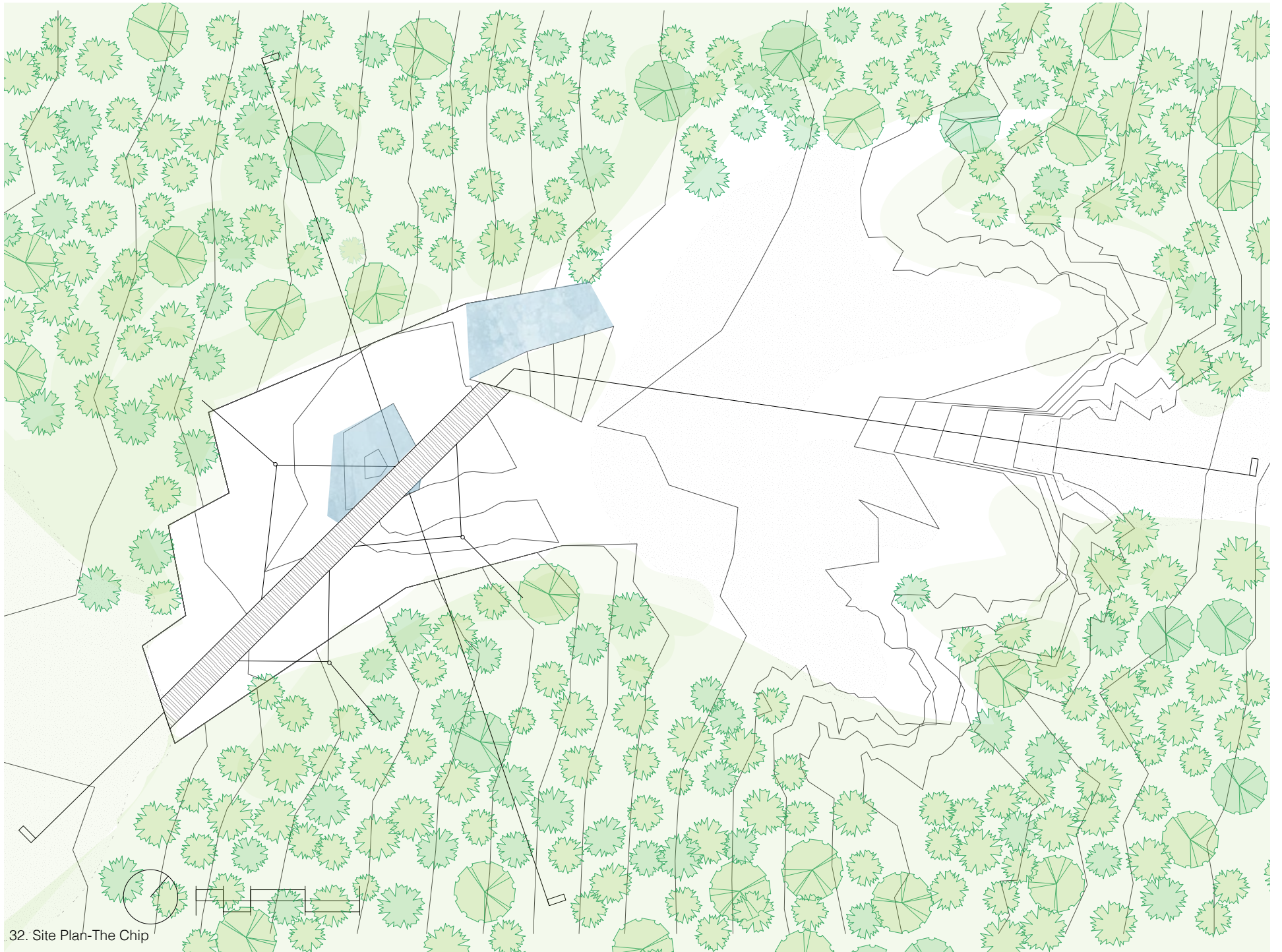
29. Shear walls define the void



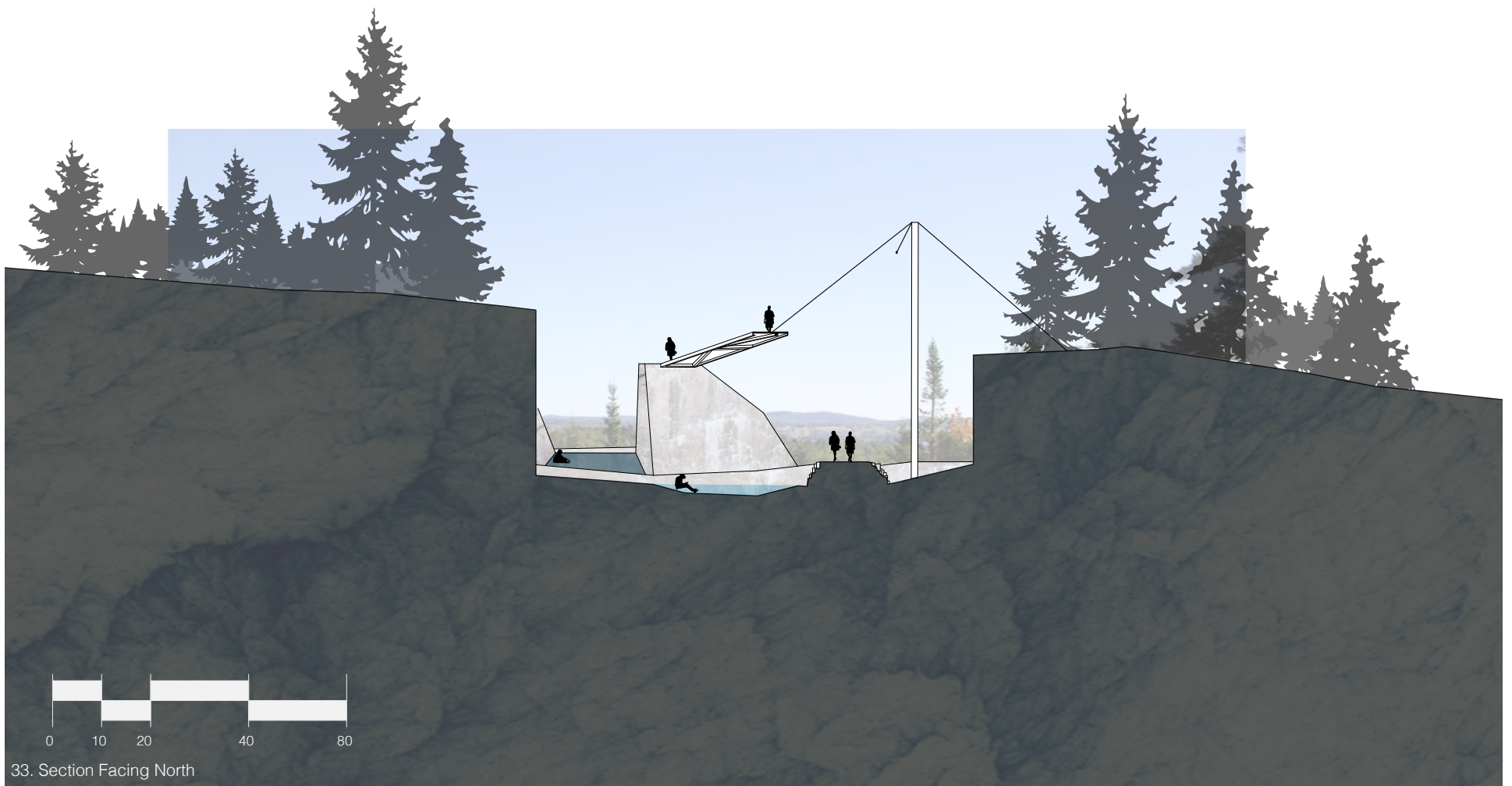
30. Waste rock piles project out from the hillside

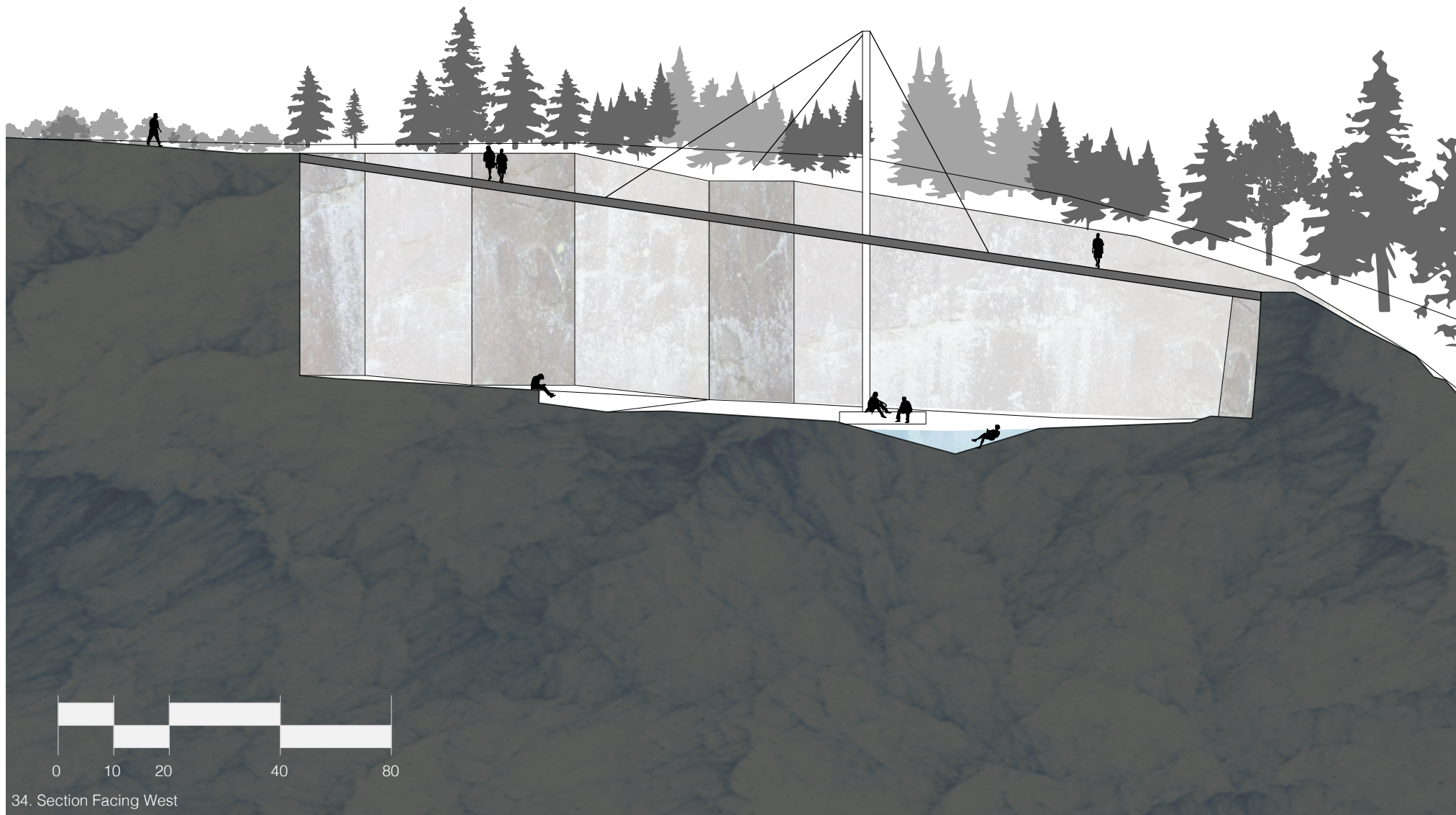


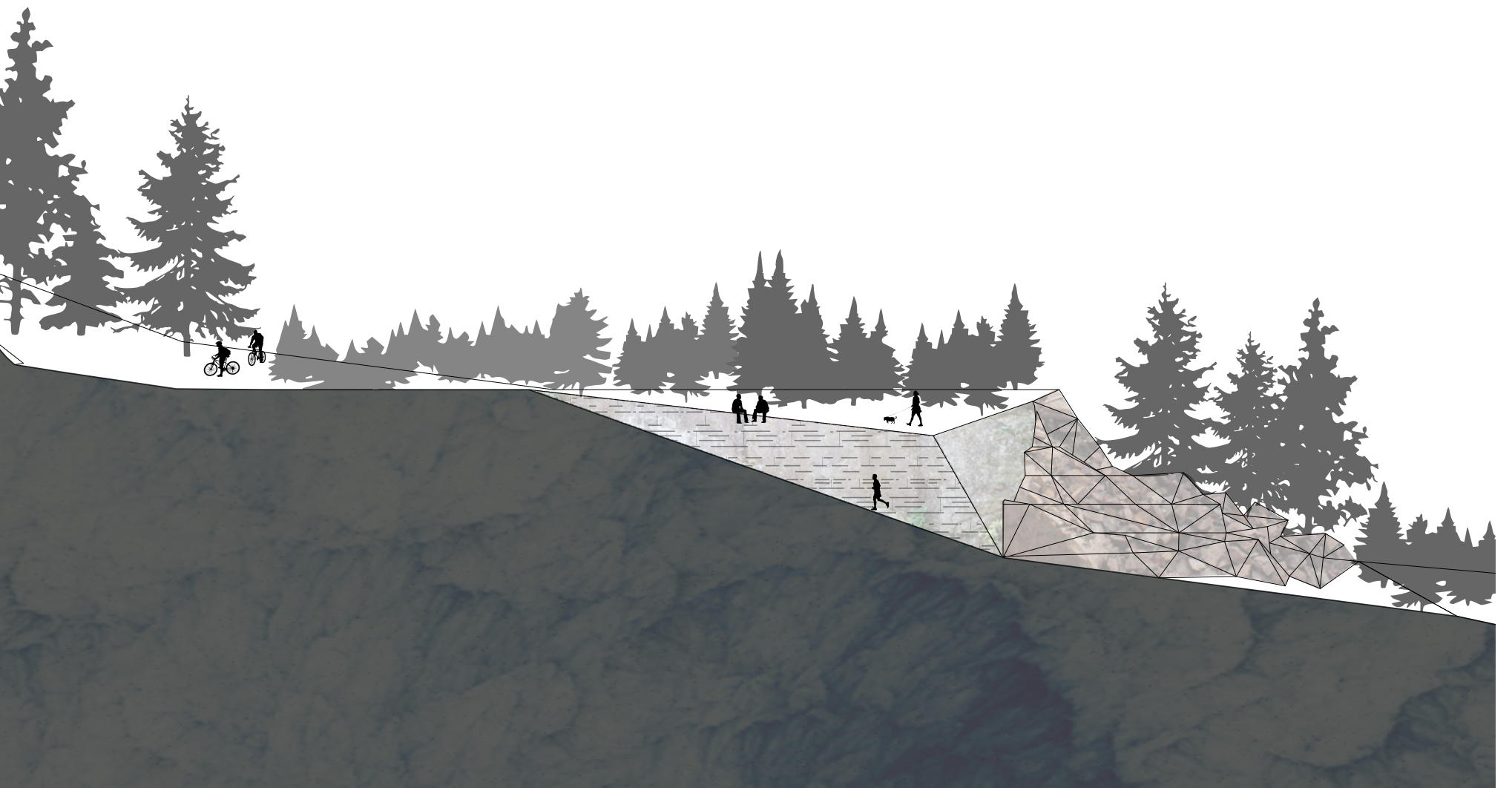
31. Tool marks left on waste rock



32. Site Plan-The Chip





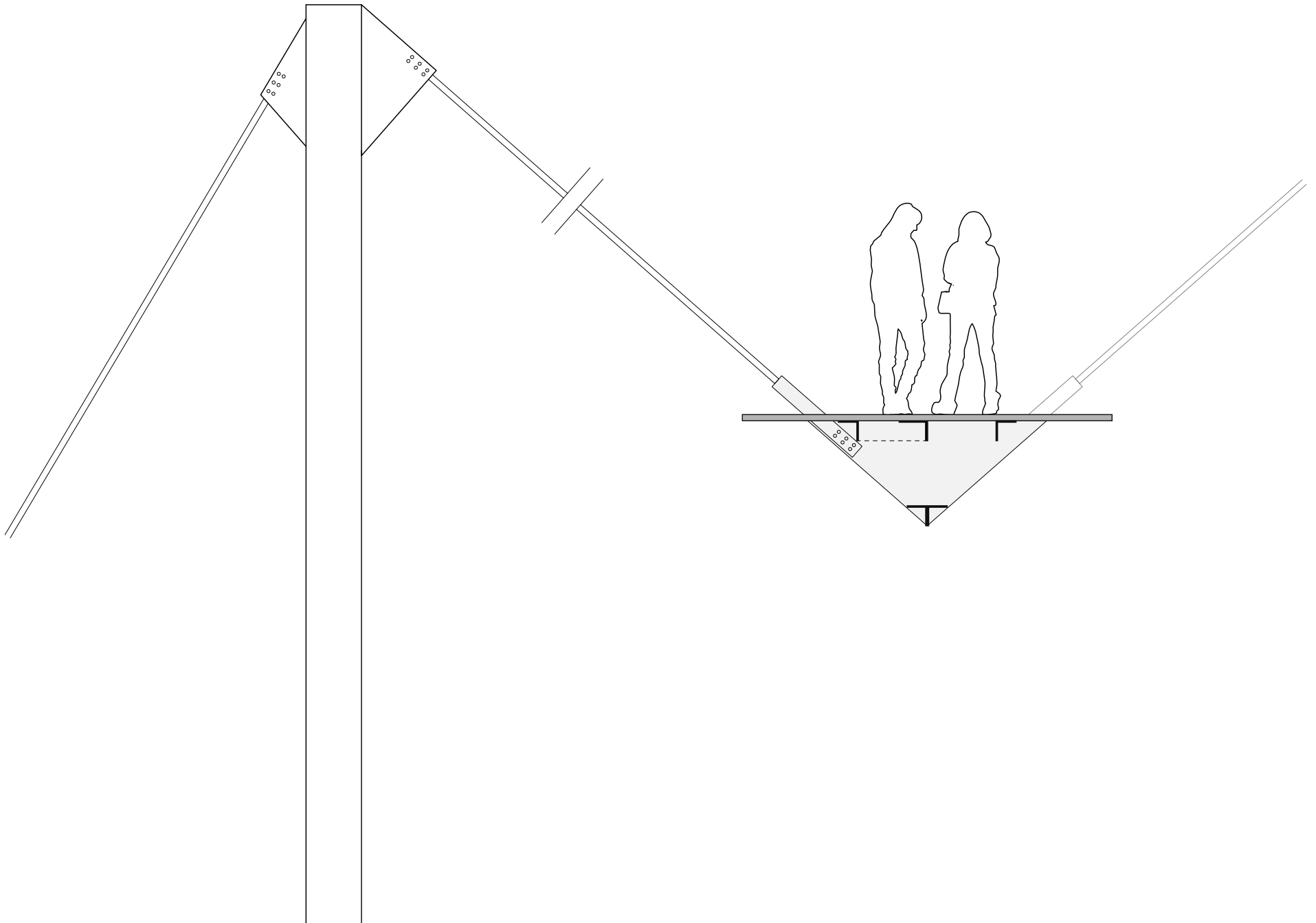




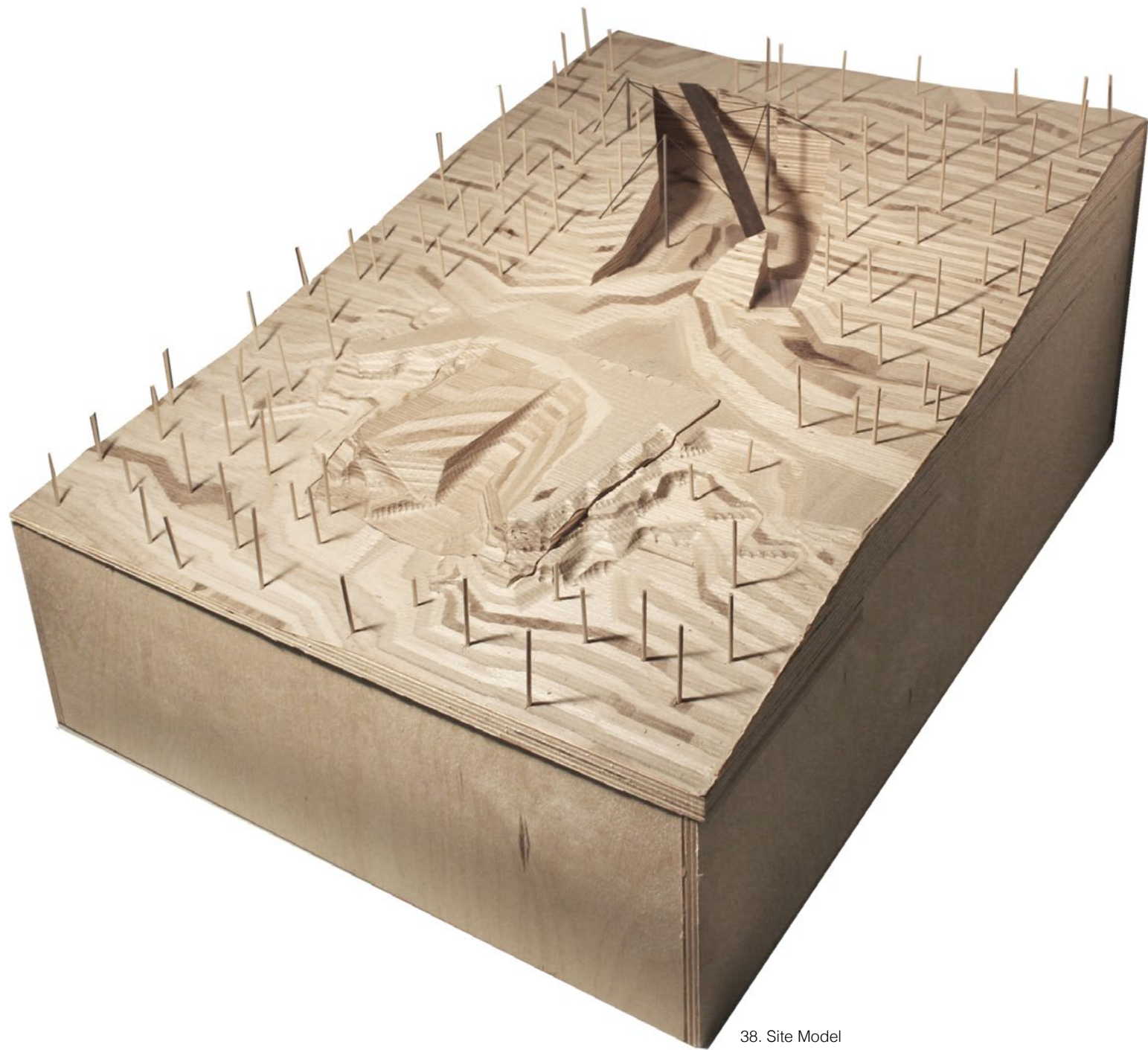
35. View of site through the new slot



36. View from inside the void looking out to the Northeast



37. Detailed section of bridge



38. Site Model

THE PIT

The pit site is more typical of what people imagine an abandoned quarry to be like, it collects water making a natural pool. This location already has some activity, since it is known by local residents who come to swim in it's deep clear water. The intervention of this site aims to connect it to the widespread trail network in the area through a kinetic bridge that crosses the pit.

The bridge is a series of swim platforms that can be manually raised and lowered in relation to each other, making them able to react to the water level in the pool, and to the bravery of the person diving off. The dynamic nature of the bridge is a playful way in which visitors can experience the processes of the past in a new and tactile way. It follows a ridge in the pit that separates the water into two pools when the water level is low. The platforms straddle the ridge, reducing the chance of jumping into shallow water, resulting in safer diving. The movement of the platforms relates to the way that granite blocks were once raised from the void. The bridge is located centrally over the pit reinforcing the inward focus of the site defined by the walls of the container.

The waste rock piles are reorganized into an outdoor amphitheater that faces west and projects out of the steep hillside creating spectacular views of the surrounding landscape. The new formation can be used for performances, sun bathing, sledding, viewing sunsets or fall foliage or whatever else a visitor might imagine.



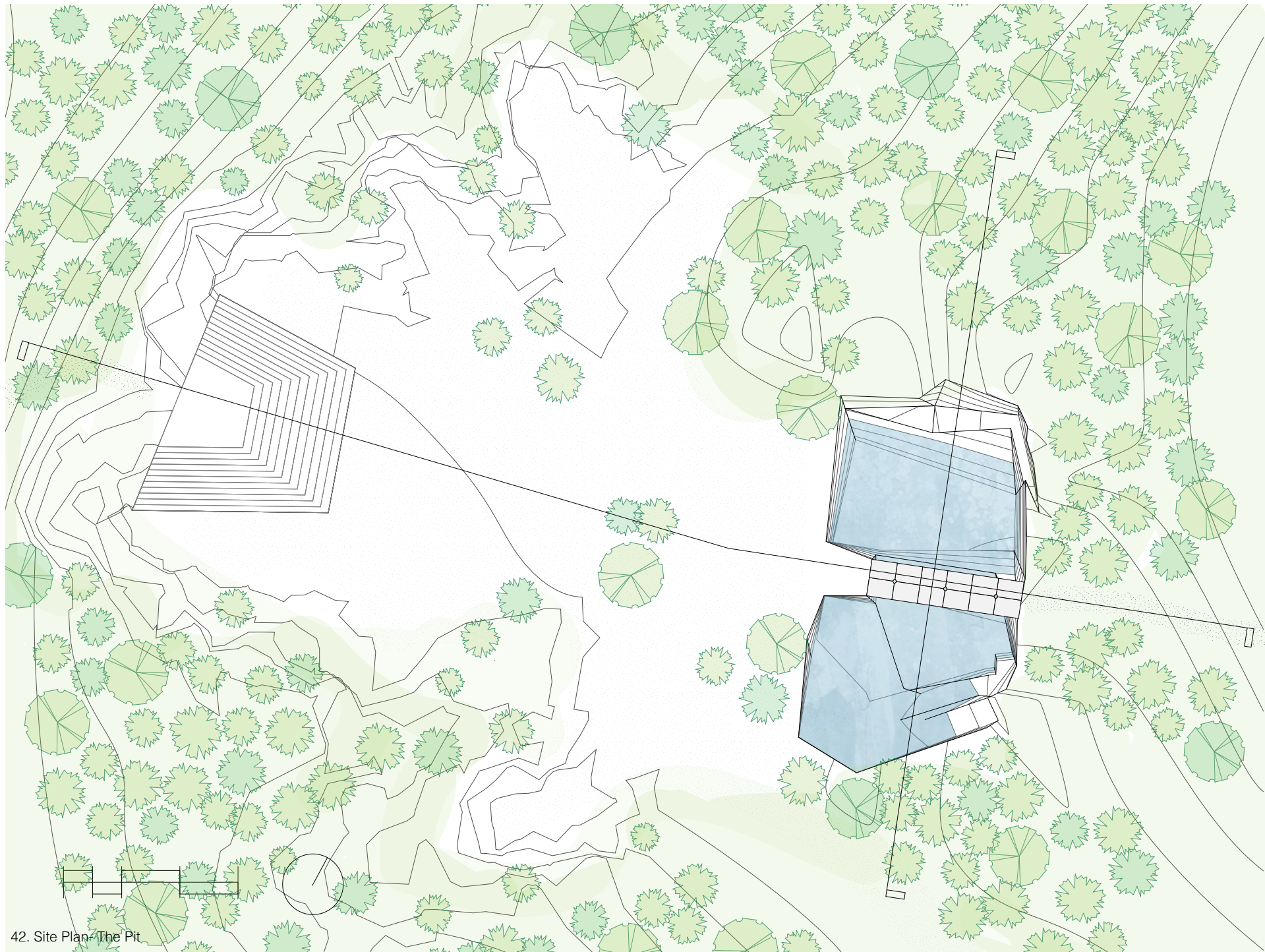
39. Vicinity Plan of 'the Pit' with new trail through site highlighted in pink



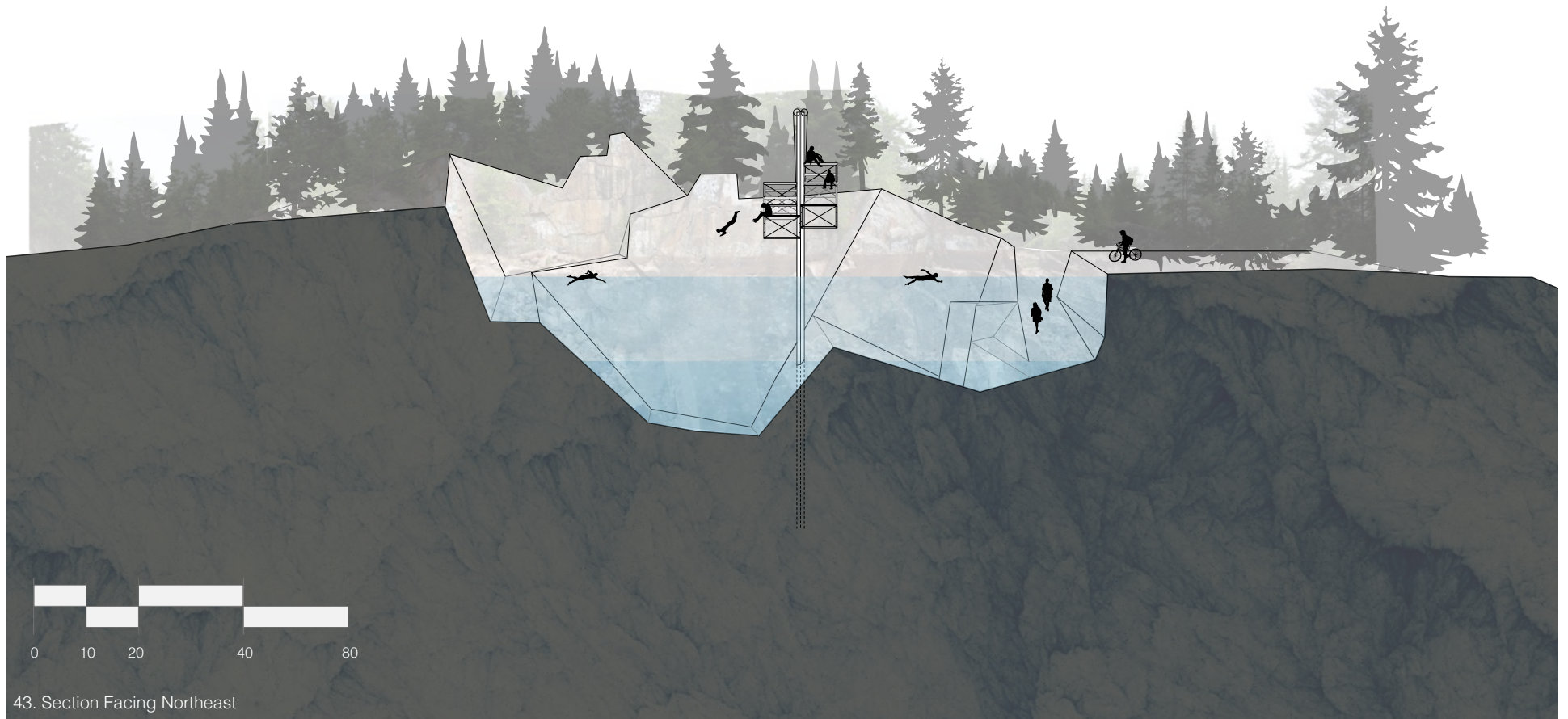
40. Panoramic view of the pit, currently being drained of water

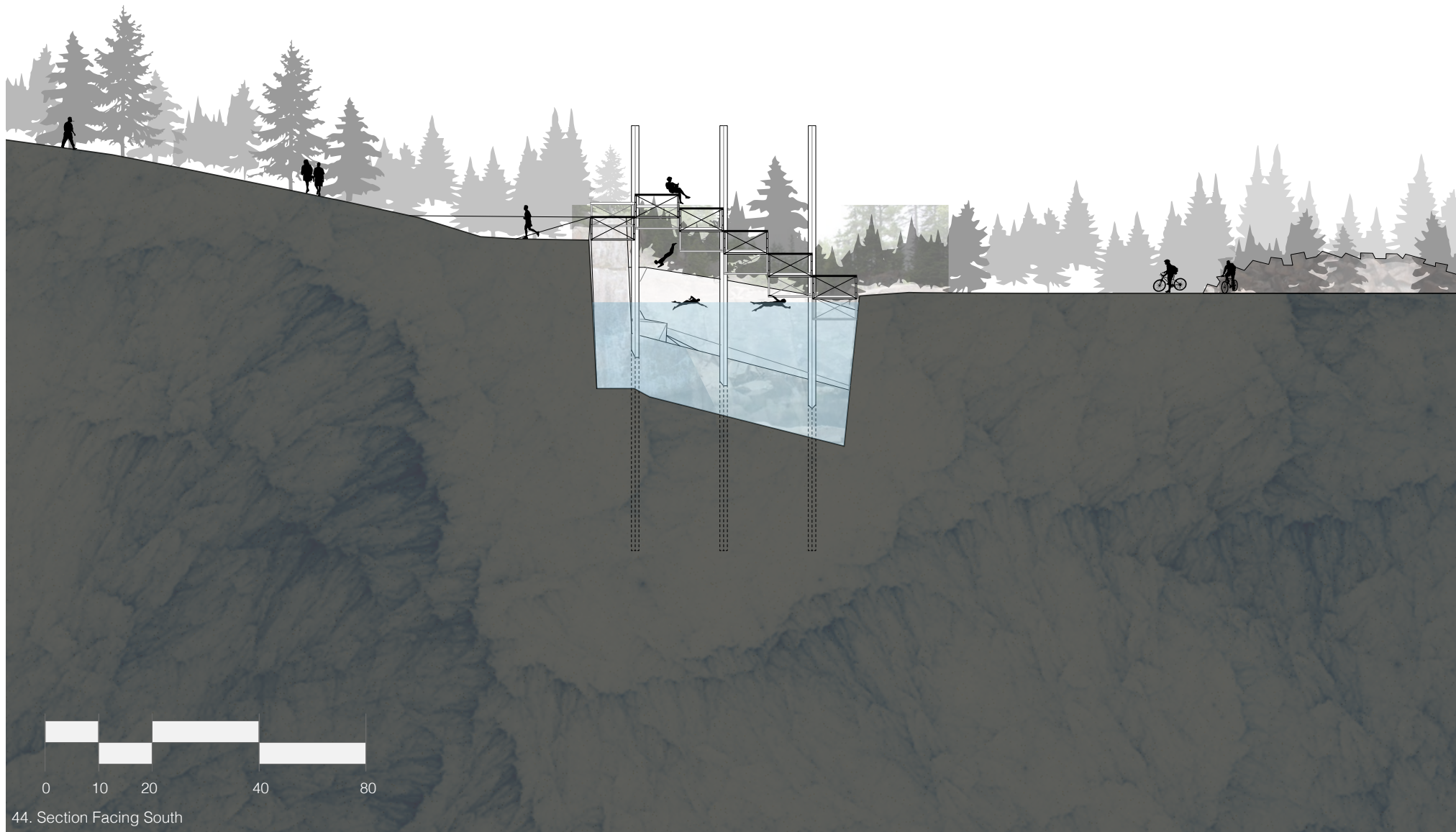


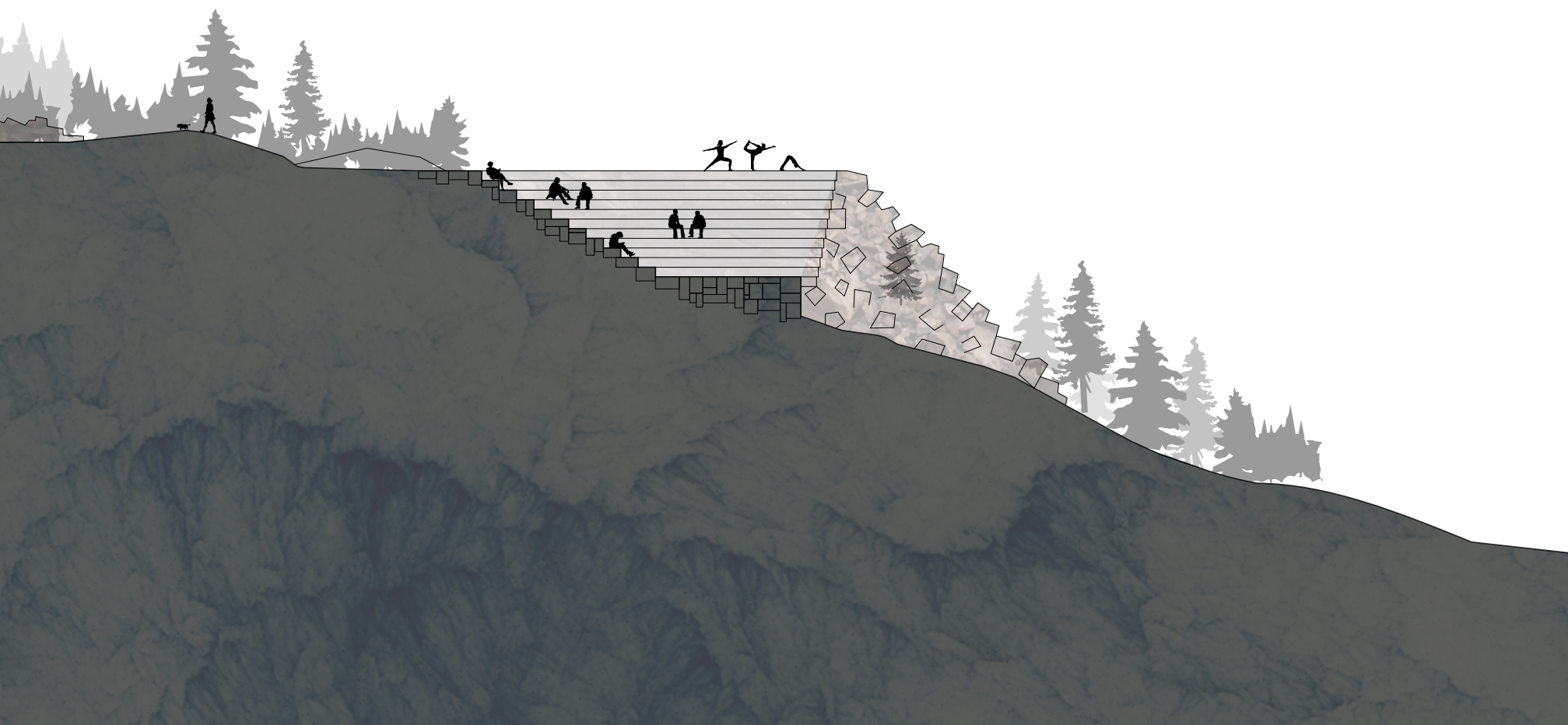
41. View to the west over the waste rock piles



42. Site Plan- The Pit









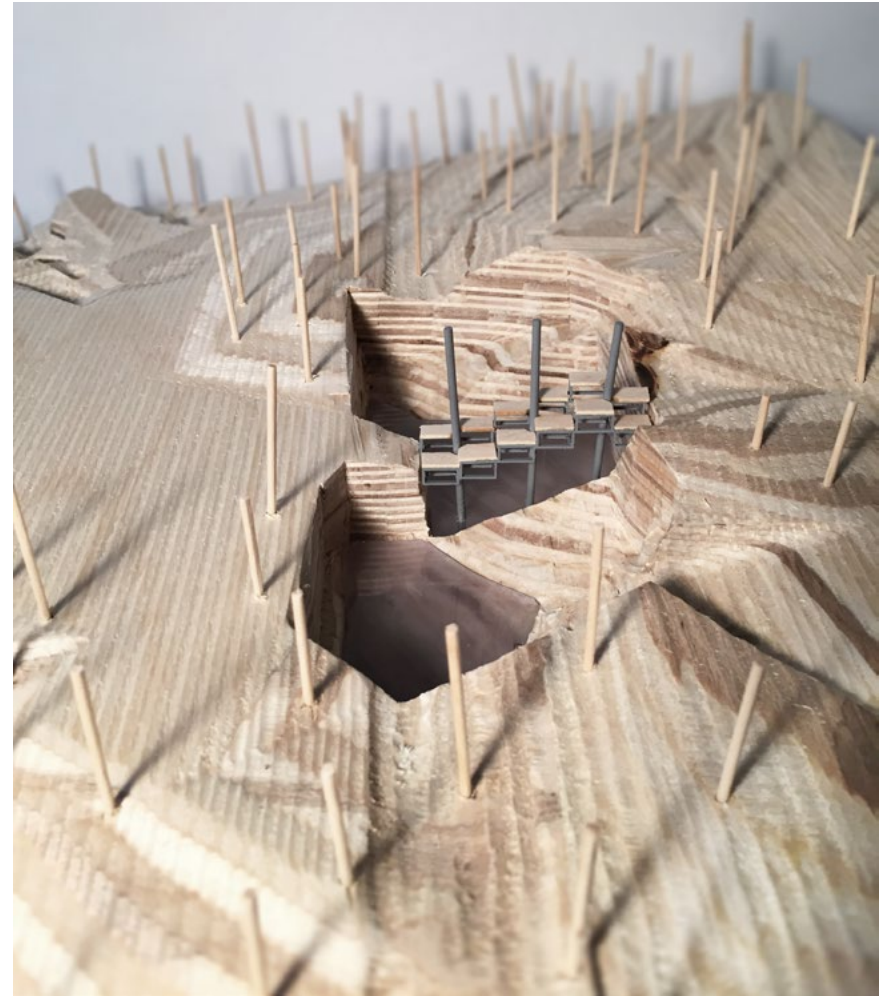
45. View of Swim Platform/Bridge



46. Looking out over amphitheater to the west



47. Photograph of 1/4" section model showing one bay of platform



48. Model of kinetic bridge in site



49. Site Model

CONCLUSION

These site interventions are not proposing to preserve the ruin, as seen in the example of the Roman ruin shelter in Gloucestershire England, nor do they prevent the natural processes of decay and erosion from occurring. Rather they add another layer of manufactured intrusion to the landscape, highlighting the split between the natural and the man-made. The bridges provide access to these unique spaces so that they can be activated and experienced by people.

Like other industrial ruins these are not sacred sites to be protected or preserved but rather places for the senses to be awakened, and for people to do with what they please. By simply being able to explore and discover these sites, visitors can see how the land was formed by the extractive industry of quarrying. The built interventions provide access and structurally imitate the past processes to engage with the memory of the site. Imaginations are stimulated as these sites of extraction are explored, and one is able to envision the activity that once occurred in these unique places. Returning the lost and abandoned industry to the collective memory.

In the future these built interventions will be taken over by the natural elements. The kinetic bridge will stop moving and rust into its final configuration. The wood will rot away, and the metal will oxidize and deteriorate. Eventually the sites will be enveloped back into the fold of the earth, yielding entirely to the processes of nature.



50. Chip site being taken over by natural forces



51. Pit site bridge reacting to natural processes

ENDNOTES

- ¹ Dillon, Brian. "Fragments from a History of Ruin." P.1
- ² Ibid. P.3
- ³ Simmel, Georg. "The Ruin." P.266
- ⁴ Ibid. P.259
- ⁵ Tebbutt, Luke. "Larch-Clad Shelter Designed for Roman Ruins.
- ⁶ Girones, Toni. Adaptation of the Roman Ruins
- ⁷ Edensor, Tim. British Industrial Ruins. Introduction.
- ⁸ Edensor, Tim. Sensing the Ruin. P.230
- ⁹ Ibid. P.229
- ¹⁰ Burtynsky, Edward. "Quarries." P.7
- ¹¹ Rand, John. "Maine Granite Quarries and Prospects." P.3
- ¹² Maine History online. "Extracting Wealth"
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Conversation with Stephen Haynes July 26th 2015 in Mount Desert Island at the Maine Granite Industry Historical Society Museum

IMAGE REFERENCES

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