

Cultural Threshold:
Framing the Anthropocene

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Abstract

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This thesis investigates humanity's relationship to the natural world. With the recognition of the Anthropocene, humanity raises awareness to the scale of impact of resource extraction and consumption from the natural world. Defined by the interconnection of natural systems and human endeavors, the Anthropocene acknowledges that humanity acts on a planetary. However, this awareness remains in the abstract, with nothing to viscerally connect the magnitude or scale to an individual's life experiences. This thesis proposes an intervention at the scale of the landscape that provides a visceral intervention and reference to the scale of man's impact on the planet. The intention is not to remedy the situation in one move, but to provide an experience that removes visitors from their normal surroundings and consider human interaction with the natural world.

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Thesis by Charles Landefeld

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I. Midnite in the Anthropocene

Architecture is resource-intensive; to build requires extraction and consumption of significant resources. The human extraction and consumption of resources on a planetary scale significantly impacts the environment. This cumulative effect of resources extraction and consumption on the planet has begun to disrupt natural cycles and processes; climate change, pollution, and destruction of natural ecosystems have pushed the planetary balance into a new era where planetary systems are now intertwined with the activities of man.

Anthro - (of man) + -cene (geological era of time) = Anthropocene

This era has been named the Anthropocene. Recognition and contemplation of this era links exposes the relationship of humanity and the planet. Consideration of the relationship between these two precipitates, dread, and willful ignorance; from this vantage, the desire to retreat from the discomfort is understandable, but a reckoning must be made. To exist in the Anthropocene, an understanding of the magnitude of humanity's impact on the planet must be established. The question is not what technology will alleviate the symptoms and do less harm, but how to bring scale and awareness to humanity's impact on the planet.

This thesis recognizes the complexity and scale of the topic addressed, but does not focus on addressing all simultaneously. Instead, the focus will be on an intervention that highlights the scale of human intervention on the planetary scale. To explore this, the scale of humanity's interventions and aspirations is put into perspective with the natural world, in terms of both physical and temporal scales, in a way that is unmistakable and intentional.

II. Framework: From Dawn to Dusk

How does Architecture enter the Anthropocene - the age of rampant resource exploitation and global environmental change? Architecture represents cultural attitudes and forces. As such, from architecture the human relationship to the environment will continue to be analyzed. Currently, this relationship embodies the idea of the World-For-Us (E. Thacker, 1). This relationship places the focus on humanity, with the resources of the planet defined in terms of value to humanity. To investigate the meanings of the Anthropocene, a broader framework is necessary, from which the significance and complexity of this epoch can be explored. Only from this awareness is it responsible to explore the role and place architecture. In exploring the Anthropocene the writings of Eugene Thacker are helpful in understanding humanity's relationship towards the natural world. There is the World-For-Us that humans inhabit and give meaning to, the World-In-Itself which is the world that is appropriated by the human into the World-For-Us, and lastly there is the World-Without-Us that exists with the subtraction of humanity (E. Thacker, 1-3). To understand the Anthropocene these terms will distinguish what the latent intentions of human actions are.

*"[The] starting point is to define the Anthropocene more simply as an act of writing ourselves into the rock record."
- Noah Herringman*

The name derives from two Greek roots, Anthro- from man, and -cene, for era of time. Combined, they refer to the era of geological time that is dominated by humanity's impacts upon the planet. Simply identifying the Anthropocene is Anthropocentric, emblematic of humanity's relationship to nature and desire for



Figure 2.1: Panorama of the Three-Gorges Dam under construction. While China is the most recent nation to undertake such large scale water infrastructure projects, the legacy of these projects has shaped the Western United States
 Photograph By: Edward Burtynsky

cosmic significance. To identify the Anthropocene is to write ourselves into the rock record, on equal footing to the species found in the fossil record - from the iconic dinosaurs to the beginnings of life on Earth. Only a species that thinks highly of themselves could achieve this. While the recognition of the Anthropocene is an attempt to remove the human from the center, the change is subtle, moving to the level of the World-In-Itself, where the world is viewed as a separate entity from humanity yet re-appropriated by the human.

By defining a new geological era a much broader consideration of time is necessary, on a planetary scale rather than a human scale. The interaction between humanity and the

environment has been one-sided up until the most recent sliver of time, with humanity remaining dependent on and separate from the natural world. This is a significant difference, as the stability of planetary ecology was separate from humanity, and therefore existed as a resilient and balanced system. With the continual appropriation of the World-In-Itself into the World-For-Us and associated resource demands via the expansion of the human niche a tipping point has been reached, where human activities overpower the natural planetary ecosystem and World-In-Itself. The Anthropocene occurs at the tipping point of this relationship, where the human is no longer dependent on the natural system, but the two become intertwined. The World-In-Itself has become

the World-For-Us.

*“Epoch Seventh, and last. When the power of humanity assisted the operation of Nature”
 - Buffon, 1778*

Debates attempting to ‘pin down’ the beginning of the Anthropocene (Herringman, 58) miss the forest for the trees. Humanity did not develop without exploiting resources and altering the landscape (appropriating the World-In-Itself into the World-For-Us) (Ellis, 22). The realization of the connection between humanity and nature seems to us a contemporary idea, from a historical vantage that witnessed the industrial revolution and rise capitalist societies. Buffon, however, was the 18th century post-French Revolution director of the Musée National de Histoire Naturel in Paris, in his writing on Geological history introduces the possibility of widespread human impacts on the planet. The prescience in this comments is striking in hindsight. This position represents the outlook post-industrial revolution, where there is no question that humanity has the ability to assist, or disrupt, nature in his activities. The most pressing point from this passage is acknowledgment of the connection between the World-For-Us and World-In-Itself, that humanity possesses the capability to upend the delicate equilibrium.

*“...the anthropocene thesis not only challenges this inherited assumption [of an ontological distinction between humanity and nature], but demands of it a fatal conceit: with the arrival of the anthropocene, the distinction is de-ontologized.”
 - Etienne Turpin, 3*

The de-ontologizing of humanity and nature is a critical point and raises many questions about the future of this relationship - will it be parasitic or symbiotic? Will humanity simply augment the operations of nature, allowing the coexistence of the World-In-Itself and World-For-Us, or will the of humanity instead appropriate the World-In-Itself into the World-For-Us? Is it, as French Landscape Architect Gilles Clément suggests, that humanity depends on nature or nature on humanity?

*“Humanity depends on the diversity it exploits, but over the course of its evolution, it has reached a point where the environment itself - its diversity - has become dependent on humanity. At the height of this interdependence, it takes only one element of the system to disappear for another in turn to disappear... For the first time in its history, the human race discovers that one false move sends everyone - poor and rich - to the same precipice.”
 - Gilles Clément*

This shift is the Anthropocene. The connotations of this era run deeper than simply being aware of humanity’s entanglement with planetary ecology. This point cannot be lost, that the distinction between humanity and nature, debated for centuries, has been eschewed. This brings about a reconnection of sorts, where the technological forces unleashed at the dawn of the industrial revolution that separated humanity from the natural world, through an appropriation of the World-In-Itself into the World-For-Us, have impacted the natural world to the extent that



Figure 2.2: Perceived separation of humanity / nature

humanity finds their fate once again intertwined. Despite our best efforts to ontologize the human and nature we are inexorably tied, that through the rampant conversion of the World-In-Itself and nature into the World-For-Us we have eclipsed the World-In-Itself and tied the fate of nature to ours.

“The machine stencils the pattern of the mind onto the world, allowing humans to make nature an extension of

their will.”
- David Nye

The acceleration of this intersection between humanity and nature began with the Industrial Revolution of the 18th century, when the power of coal combustion was harnessed to drive energy and the era of Carbon Capitalism was born. As David Nye comments, it is with industrialization and mechanization

Figure 2.3: With the ANthropocene, humanity and nature become de-ontologized

that humanity obtained the power to remake the landscape on geological scales. The same cultural relationship of the human to the natural world, the continual appropriation of the World-In-Itself into the World-For-Us, has prevailed since. The dominance of excess has marked this age, where the continued growth of capitalism has become tied to further production of cheap, carbon based, energy, leading to the term Carbon Capitalism (Scranton, 43). This mindset does not consider long-term ecological or

planetary impacts instead isolating itself from these considerations and considering only the World-For-Us.

Solutions and approaches to transition away from a carbon-based economy have been proposed for decades. Amongst the scientific community there is consensus on the trends. However, there is a policy gulf, a lack of communication on a global level where the best intentions are not realized, and business continues as usual. One aspect of this conundrum is the manifestation of the

global power hierarchy coded into the petro-industry. Currently carbon is built into our lifestyles and society and even the prospect of societal collapse has been unable to cause a shift (Scranton, 53). With such seemingly bleak outlooks the need is established to communicate the magnitude of the Anthropocene in a new way.

“More powerful still is the unrivaled ability of our species to transmit strategic knowledge for producing these infrastructures across societies in generational time, enabling this social-ecological capital to accumulate over time.”

- Erle Ellis

The ability of human culture to communicate ideas through time is instrumental in our success as a species. The carving of the human niche (via technology) has been catalyzed by the Holocene, a period of remarkable climactic stability in the geological history of our planet (Rockstrom). This period, stability stretching back approximately 11,700 years, (Rockstrom) gave rise to ever greater innovations that allowed for further expansion of human society. During this period of time, human interaction with and modification of the landscape has been ongoing, converting the World-In-Itself into the World-For-Us. From the earliest bands of hunter-gatherers 10,000 years ago to the dawn of agriculture, in a direct relationship with the natural environments. The cross-generational transmission of social structures, practices, knowledge, and associated interactions with the natural world has enabled humanity to learn from and improve on the past (Ellis). This ability to communicate through time has contributed greatly to the success of humanity by enabling the knowledge and lessons

of the past to be heard by subsequent generations. To enter the Anthropocene, these same methods must be employed.

ii. Entering the Anthropocene

“The current fascination with deep time slightly predates the Anthropocene as a topic of discussion and might even be seen as its antithesis, since the concept of deep time presupposes the insignificance of human tenure on the planet.”

- Noah Herringman

Herringman makes a critical point - that to comprehend the Anthropocene requires transcending the usual human time-scales of consideration. Instead of considering the World-For-Us, much greater scales must be considered into geological time and the reality of the World-Without-Us acknowledged. Shifting to this mindset requires subtracting the human from the center - the world has existed before humanity, as evidenced through deep time, and will continue to exist without us. In the gulf of time, humanity could be but a footnote, whose presence is not testified through architecture, culture, or any of the ways in which we define our society, but instead manifested forward in deep time by proxy environmental signifier - a reef gap in the fossil record (N. Herringman, 57), or other geological anomalies will be all that marks humanity in five million years.

“I don’t want to suggest, however, that the age of humanity can be overcome by man. This is perhaps the very same arrogance that produced the Anthropocene, the human

tendency to believe in its own power, its problem-solving capabilities, even as it has undertaken ruinous activity...”

- Elizabeth Grosz (Collected by E. Turpin)

Moving forward into the Anthropocene requires an embracing of the limits, rather than thinking they can again be transcended. Instead of thinking of the present as an island in time, the ability to communicate through time, that has led society to their current predicament will be the same that move us forward. To move into the Anthropocene, Scranton posits that we need to let society die; “While life beats its red rhythms and humans dance to the compulsion of strife, the interrupter practices dieing.” (Scranton, 88). To exist in the Anthropocene, the magnitude of the human interaction must be made clear.

While this sounds extreme, it must not be taken literally. It is not to roll over in defeat, but to interrupt carbon-capitalism and the sedimentation of cultural forces that have delivered humanity to this point in time, and allow that form of society to die. Societal changes have occurred in the past, when social structures were found no longer beneficial or when forced by environmental conditions (Ellis, 21 & Scranton, 56). The transition from hunter-gatherers to agrarian society or more recently the shift from pastoral and earth-bound connected societies to societies of industrialization extraction occurred with the annexation of the World-In-Itself into the World-For-Us. Societal transitions have occurred in the past, and will occur in the future - the present track of global society will change either through resource depletion and crises or by incremental awareness of the impending crisis. In removing the human from the center, as aforementioned, the door to change is opened. The same skills that have enabled human

dominance of the planet will move us forward; the transmission of knowledge and technological know-how (Scranton, 109 & Ellis, 22).

Comprehending and moving forward into the Anthropocene implies large cultural transitions. A shift from viewing the planet as solely the World-For-Us is needed by raising awareness of the World-Without-Us, that the presumed duality between the World-For-Us and World-In-Itself is a false read that is anthropo-centric. The scales on which the World-Without-Us changes dwarf the human. This thesis interjects at the point of grounding man, manifesting the impact of humanity on a planetary scale band providing a point of reference from which to enter the Anthropocene.

III. Methodology: Learning from Erratics

i. Goals

To enter the Anthropocene the Architectural intervention will focus on communicating the magnitude of humanity's impact on the planet through time. To put humanity's impact into perspective a site will be chosen that exhibits both extensive human impact in juxtaposition to manifestations of geological activity. The collision of these two landscape altering forces will provide stark juxtaposition and scale for human interventions.

The aim of the Architectural intervention is to bring awareness to the Anthropocene. To do this, the intervention needs to focus attention on large forces that have arranged the landscape in a distant temporal time. The best way to imagine this action is through the Glacial Erratic; a large boulder that has been displaced during a period of glaciation. Such a rock exists temporally disconnected and physically removed from the forces of its origin, yet it bears testament to this actions forward into geological time.

ii. Site

"There is something unsettling, even alarming, about the scenes that show such massive human incursion into the earth."

- Edward. Burtynsky, 21

To provide contrast for geological time a site in Eastern Washington has been identified. In this regard, Burtynsky's words ring true, that until large-scale human infrastructure projects are viewed within a wider framework their enormity and significance

is often under-appreciated. Located approximately 11 miles South of the Interstate 90 bridge in Vantage, WA is Sentinel Gap (figure 1). Flanked by basalt cliffs, the Columbia River punches through the Saddle Mountains on its meander South. The Sentinel Gap site provides a collision of time scales and interventions; it is a place where the grand ambitions of humanity can be observed in juxtaposition to the natural world.

This natural gateway along the Columbia River bears testament to multiple human interventions. To the North and South are two large hydroelectric dams, the Wanapum and Priest Rapids dams, built in 1963 and 1961 respectively and owned by Chelan County Public Utilities District. Energy from the dams is used locally and sold to surrounding municipalities. These dams, along with the others up and downstream, have severely altered the hydrology of the Columbia River. Their young age is a testament to how quickly and vastly humanity has developed the capacity to alter the landscape on geological scales. In addition to the dams, a rail cut from the first quarter of the 20th century runs along a East / West axis.

Stepping backwards into geological time there are many layers to the landscape at this site. Sentinel Gap corresponds to the historical flow of the Columbia, but was periodically re-scoured during the glacial outburst floods at the end of the Pleistocene, the most recent ice age that covered large swathes of North America under miles of ice, as floodwaters traveled Southwest. More removed in time were the flood basalt episodes that formed the iconic and rugged landscape of Easter Washington. There is no single event responsible for depositing the basalt, but no less than 8 distinct episodes between 15.6 and 6 million years ago. Differing chemical composition and intervals of millions of years



(Above) Figure 3.1: Three Gorges Dam photographed by Nadav Kander are responsible for the stepping of the cliffs at site.

Beyond bearing testament to temporally distant events the current site provides a range of connections to the surrounding world. The proximity to various vectors of travel; by boat on the Columbia, by foot or bicycle on the Iron Horse Trail, or by car on SR-243. The convergence of these various vectors of travel opens the site to travelers of various means and intentions. Pilgrims crossing the cascades on the Iron Horse trail now have a prominent overlook and destination. Travelers along the I-90 corridor - by car in the near future or by foot, rail, or other means



(Facing) Figure 3.2: Yangtze River by Nadav Kander of transportation in the far future, have only a slight detour to the site.

iii. Architecture + Program

“Architecture, in short, has the capability to both extend humanity’s destruction of the environment but also, at its best but much more rarely, it retains the capacity to invent new modes of co-existence, more sustainable ways of living, and more aesthetic experiences of inhabitation...”

- Elizabeth Grosz (Collected by E. Turpin)

The aim of the intervention is not to act as a model for how to approach architecture within the anthropocene. Instead the goal is to explore how architecture can bring awareness to the magnitude of the Anthropocene (figure 2). Achieving this will require interacting with the full range of time scales at the site, no small task when the concerns of contemporary culture seem to change by the month. The site selection will play an important part in reconnecting human visitors with the natural world by highlighting the magnitude of our impact.

“Starting anew with a clean slate has been one of the most harmful ideas in history. It treats previous knowledge as an impediment and imagines that only present knowledge deployed in theoretical parity can make real the wondrous new vision.”

- Stewart Brand

In addition to reconnecting humanity with the vastness of the natural world, the Architecture will also serve as a ‘Cultural Arc’ by acting as a monument or repository built at the dawn of

the anthropocene. It will mark a point in time when the balance switched, when the World-For-Us completely absorbed the World-In-Itself. The need to convey this message is essential, as explored through Ellis and again highlighted by Stewart Brand. Without conveying this message forward in time, the experience will be rendered moot, and nothing would be gained by society in the future.

For architecture to interact with these layers of geological time and raise awareness of the current unsustainable relationship of the World-For-Us and World-In-Itself, the intervention must be memorable. Prominence can move from the realm of memory to include visual awareness across the site, so that the intervention is visible from long distances, raising curiosity in viewers. Regardless of the individual interpretations and responses to the intervention it will be designed for long periods of time, standing as testament to what once was - communicating the entry into the anthropocene for millennia.

Necessity of a fixed program in addressing the anthropocene is not a foregone conclusion. Seemingly relevant programmatic elements included a natural history museum and seed vault and were analyzed as part of a broader understanding of architectural responses to future, uncertainty, and climate change. However, the inclusion of a natural history museum is an attempt at normalizing the anthropocene and subjugating it to the continuation of contemporary architectural practices. A seed vault may present as more apt, as it requires consideration of extensive periods of time. However, as demonstrated by the recent flooding of the Svalbard Seed Vault, even the best human attempts to predict the future have fallen short. Instead, the possibility of



no program or a monument is more intriguing and appropriate for a project involved with as nebulous an issue. This would free the architecture from practical needs and means, allowing the exploration to focus on means with which to convey emotion and meaning for time scales that eclipse human lifetimes.

iv. Precedent Studies

Two examples will be studied here but they will not represent the exhaustive list of inspirations and short studies for this thesis. The first project examined is the Svalbard Seed Vault,

a built works designed to safely house viable seeds on a remote arctic island. The second is the Spiral Jetty, land art in the Great Salt Lake, UT completed by Robert Smithson. The third is the Mausoleo Delle Fosse Ardeatine, an experiential memorial to the massacre of Roman citizens during WWII. These three studies provide a range of topics and approaches but each provides relevancy on different levels.

The Svalbard Seed Vault, located on the Island of Svalbard at 78° N, is far-removed from civilization. The vault is designed to act as an emergency repository and genetic bank, so that in the event of rampant crop disease or climate disruption there remains

(Above) Figure 3.3: Mausoleo Delle Fosse Ardeatine, Rome, Italy. Photo: Elena Mattia



a cache of viable seeds. The choice of location was intentional. Administrated by Norway, a stable developed social democracy, the island is not politically volatile and will similarly be far removed from war and conflict should Europe be engulfed. The northern latitudes were ideal for long-term storage, as the prevalent permafrost reduces the cooling loads necessary to preserve the seeds.

Utilizing the site topography, the majority of the space is buried 130m into a North-facing hillside. This move provides greater temperature control and protection for the contents of the vault (figure 3). As the majority of the structure is below-grade, the architectural expression of the above-ground entrance is stalwart. Facing both the harsh arctic winters and uncertain future the entrance is monolithic in character. Emerging from the ground as a shard adorned with colored glass which gives a hint of the life contained inside. The majority of this building is functional - it was designed to face an increasingly uncertain future as a global last-resort and stopgap. Internal arrangement is straightforward with a single access tunnel leading past offices and security to the doors to the vaults. The linear arrangement gives the impression that more separate vaults can be added in the future should the need arise without adding additional entry points.

Functioning as a seed vault, the experience is not catered to visitors but to the functional needs. While the mission of the vault extends into uncertain futures, it does not offer any opportunities for contemplation or perspective (apart from the fact that it exists) for visitors. Despite the reasons behind the construction, the vault needs retrofitting due to melting permafrost that has flooded the entry tunnel during the winter of 2016 / 2017 (archdaily.com). Despite the best efforts of humanity, the effects of climate change

Figure 3.3: Aerial view of Smithson's Spiral Jetty, Utah

a handful of years into the future were not fully considered. This vault represents the will of the human to fully control the world - the programmatic requirements leave no room for the world to act as the World-Without-Us, as the future had only been considered as the World-For-Us (and the appropriated World-In-Itself).

Robert Smithson's Spiral Jetty provides a new perspective on the surroundings, but at different scales. Going beyond of communicating through its existence, as the Svalbard Seed Vault does, the Spiral Jetty provides a sensory experience of the landscape that is open to time and possibility. Constructed in 1970, the Spiral Jetty is made of a 15' wide path 1500' into the Great Salt Lake in Utah (figure 4). The path winds in on itself, so that visitors walking to the center must observe the entirety of their surrounds before reaching their objective. In the words of Robert Smithson, he was drawn to this area "...an expanse of salt flats... caught in its sediments were bits of wreckage." (Smithson, 113). This location wasn't chosen for its isolation or protection but rather because it exhibited evidence of prior human intervention and industry along the shores of the Great Salt Lake.

The Spiral Jetty is unique in that it is entirely open to the World-Without-Us. There was no preconception that it should function in one way or another - simply that it should exist in the world. Testament to this are the fluctuating lake levels. For decades the Spiral Jetty was lost beneath the waters of the lake. For visitors, the circular path provides a reorientation (via disorientation) as they move in a spiral to the center. They are forced to look outwards towards the salt flats, mountains, and wreckage. In this way the landscape and surroundings become the focus as opposed to the Jetty itself. The intervention transcends itself by returning the focus to the surroundings.

Mausoleo Delle Fosse Ardeatine provides an excellent study of experiential architecture. Commemorating the massacre of 335 Romans of all faiths and professions at the hands of occupying Nazi troops at a quarry outside of Rome, the memorial arose out of a post-war competition. The Mausoleo comprises of a 3.5m thick concrete box floating over a room containing the 335 graves and a twisting path through the dark tunnels of the old quarry.

"...once the art object stimulates in the viewer a particular complex of ideas, emotions, and responses that then come to exist in the viewer independent of further content with the piece of art, it can wither away, its task accomplished."
- James Young

The procession of the Mausoleo Delle Fosse Ardeatine follows the route of the martyrs into the tunnels. Glimpses of the sky can be caught through recessed skylights that provide occasional relief to the disorientation of the tunnels. This path proceeds to the site where they were killed where an altar has been placed. From there the visitors are able to enter the concrete-lidded room to consider the events they had just been made witness to. The power of the Mausoleo Delle Fosse Ardeatine is in this emotional journey that brings the experience of the martyrs to the visitors. It is not a diorama or a plaque, but a visceral experience that offers visitors the experience of the sacrificial victim, arousing and directing emotion from the convoluted beginning to the scrupulous conclusion of the ritual. The effect is then transferred to the visitor in the manner that Young describes, and the monument is no longer necessary to the people as the

IV. Design



i. Site Analysis | Reading Sentinel Gap

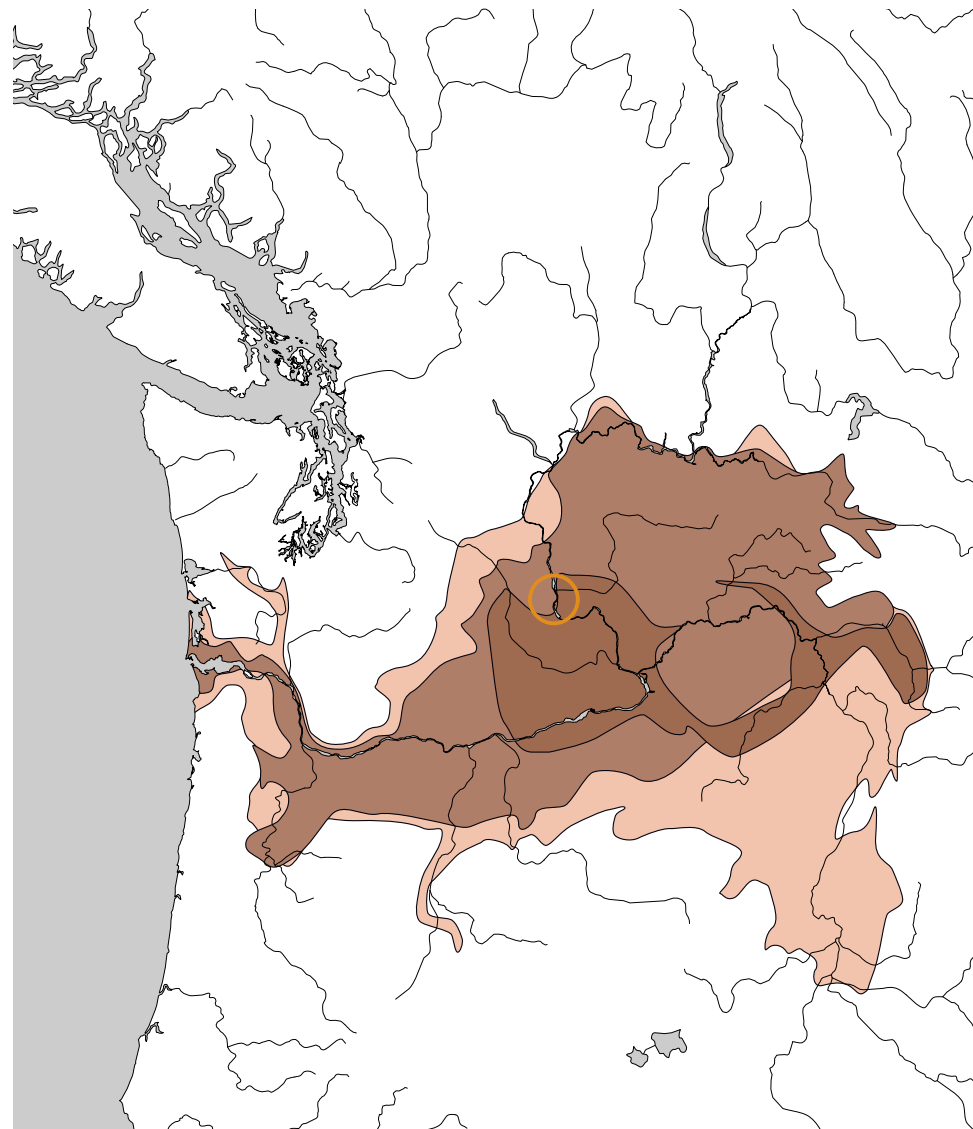
In exploring the requirements of a site to bring awareness to the Anthropocene, a site that told stories with every visit was needed. Similarly, a site devoid of visible human alteration of some scale could be eliminated. By choosing a site that has layers of human intervention and infrastructure laid over it, a greater number of stories and methods of human alteration of the environment could be understood.

Simultaneously the choice a super-fund site, such as the Midnite Mine North of Spokane, WA, would be too blunt. In a landscape such as this, there is no ambiguity of the legacy of humanity's modification of the landscape (in this case, in the pursuit of Uranium which was refined to weapons grade Uranium at Hanford). Instead, a new connection or association wanted to be made. To illustrate the less dramatic ways in which the landscape has and continues to be altered by human hands.

"The magic site is, simply, the place where the hiddenness of the world presents itself in its paradoxical way (revealing itself - as hidden). In some cases magic sites are like magic circles, constructed by human beings for specific purposes. More often than not, however, the magic site spontaneously happens without any human intervention."

-Eugene Thacker, p. 82

The magic site in relation to this design intervention is located at Sentinel Gap - four river miles south of Vantage, WA along the Columbia River. Sentinel Gap highlights both the scale of the natural world through exposed geological features and the relative scale of alteration of the landscape through various



- Grande Ronde Basalts
- Wanapum Basalts
- Saddle Mountain Basalts

Figure 4.1: Map showing extent of flood basalt outpourings visible at Sentinel Gap (circled)

infrastructural projects. The scale and traces of both the natural and human-created features are not completely understood at first encounter. Instead, the myriad of interactions and layers starts to unfold with consideration.

With Sentinel Gap, the site exhibits both characteristics of the magic; the hiddenness and intentional construction by human beings. Devoid of human infrastructure, Sentinel Gap tells the story of the forces that shaped Central and Eastern Washington - volcanic and hydrologic. Inversely, if only the human construction is read, the relationship between humanity and nature can be analyzed. Through this dual-reading and interpretation, the site becomes stronger than a site that relies on simply one attribute - either natural or human as exemplified in the pristine area and the super-fund site respectively.

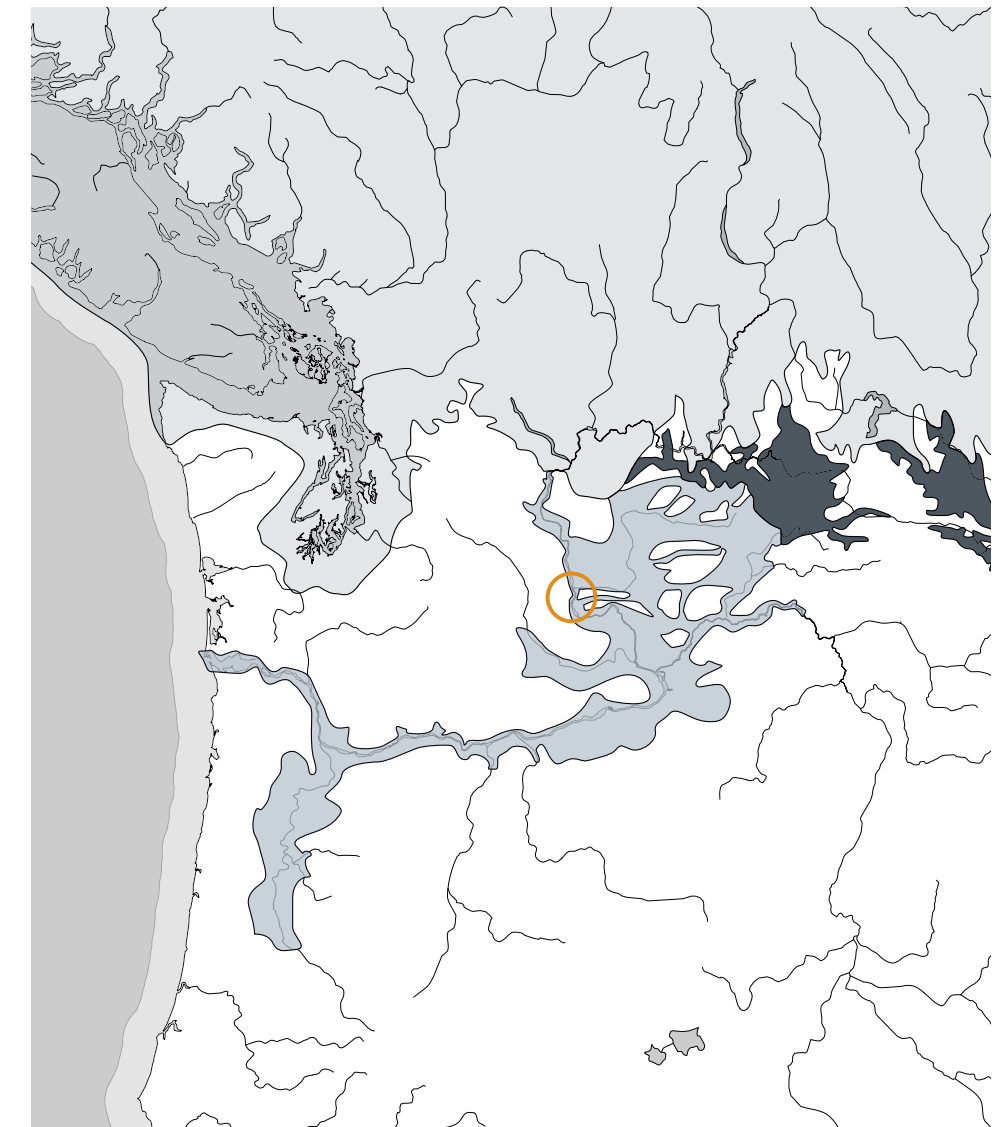
Shifting the frame of view from history to the future, Sentinel Gap will be dynamically affected by the interplay of nature (geological force) and humanity into the future. The present day course of the Columbia remains relatively static as long as the dams along the course of the river remain intact. Without these human impositions over the power of the river, the seasonal flood cycle would return scouring new bends and channels in the course of the Columbia. Less speculative than imagining the flow of the Columbia River in millenia is the knowledge that adjacent to the site lies the Hanford Super-fund Site. Human intervention and monitoring are necessities as long as Governmental forces are held accountable. However, beyond or in the absence of this stabilizing force, the high pollution levels will continue to impact the surrounding ecosystems for hundreds of thousands of years.

Giving physical scale to the forces that shape the

landscape is easier than conveying the temporal scales and periods over which these events took place. Moving forwards in time, the sequence of events that have shaped the landscape are the flood basalt outpourings, glacial out-wash floods, and finally the imposition of the human layer on the landscape. Human layer broadly defines the entirety of human interventions; whether construction of road cuts for interstate highways, strip mining operations, construction, or simple acts such as diversion of water for irrigation. Together these events span three geological Epochs; the Miocene (23.03 - 5.33 million years ago), Pliocene (5.33 - 2.58 million years ago), and Pleistocene (2.58 million years ago - Present).

Although collectively referred to as flood basalts, there was not one singular event that deposited this material. Instead, hundreds of individual flood basalt events occurred over an 11 Million Year (Ma) period of time. The oldest identified flood basalt event comprises the Grande Ronde Basalts, the next the Wanapum flood basalts and the youngest being the Saddle Mountain flood basalts.

Sentinel Gap is located at a cut through the Saddle Mountains. This cut was formed during the glacial out-wash floods (4.2) that occurred during the Pleistocene (the most recent ice age event). During this cool period glacially impounded lakes formed behind ice dams. Occasionally these dams would break, unleashing torrents of water across the Columbia River basin. The actual number of glacial outwash flood events is unknown; but estimates have placed it in the dozens. The floodwaters would hit the Saddle Mountains which impeded their flow. Sentinel Gap formed when the floodwaters scoured a passage through the mountains, exposing many layers of flood basalts that would



- Glacial Outwash Floods Extent
- Sheet Ice
- Glacial Lakes

Figure 4.2: Pleistocene glacial out-wash flood extent. The map doesn't show one event, but the cumulative inundation of all events

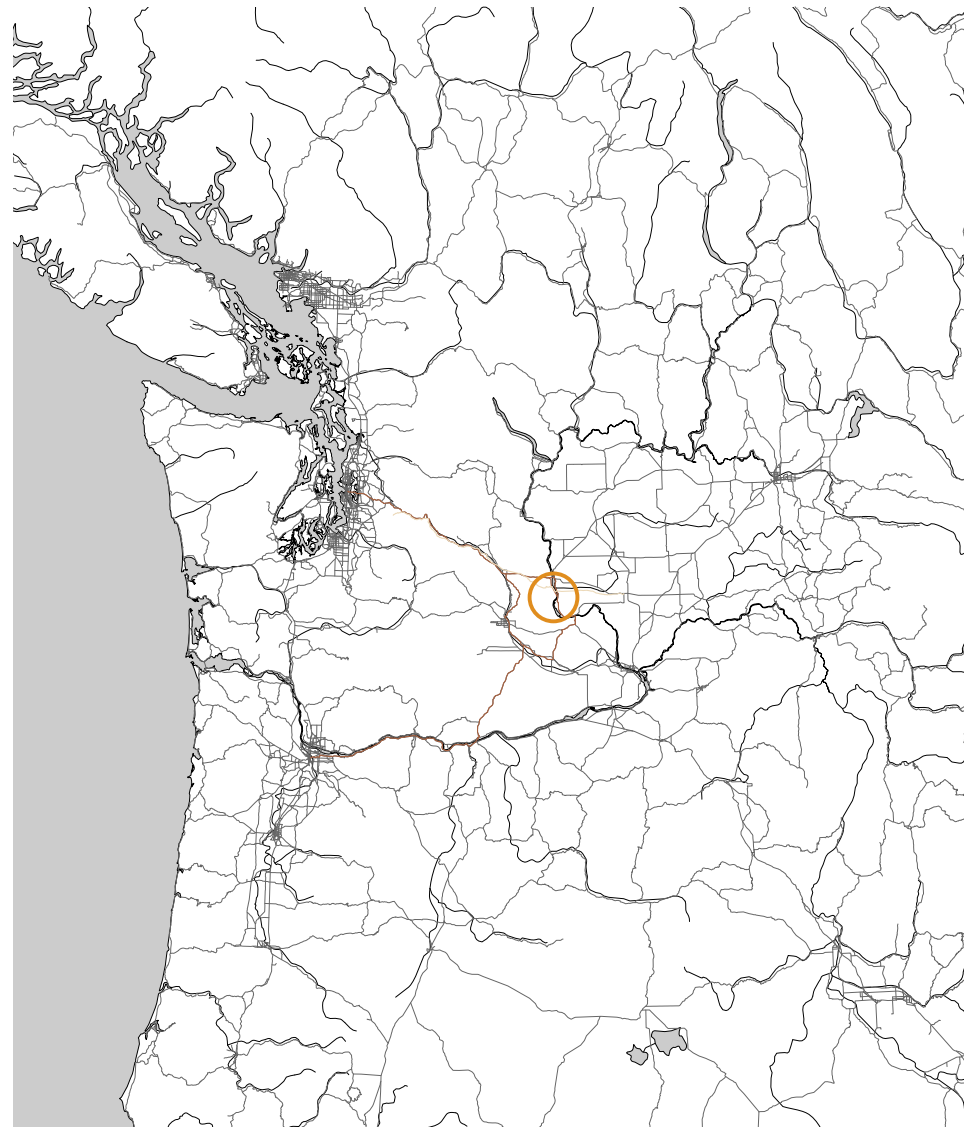


Figure 4.3: Map showing extent of flood basalt outpourings visible at Sentinel Gap (circled)

otherwise be hidden from view.

These events gave form to the landscape of Sentinel Gap. The third significant site-shaping force is more recent and comprises of the overlay of human infrastructure at Sentinel Gap. A local representation of the broader planetary exploitation and utilization by humanity, this layer was laid down relatively recently. In the case of Sentinel Gap, within the past 125 years. This time frame represents the intensive large scale alterations of the site; from the Milwaukee rail bridge in 1909 to the Wanapum dam in 1963. This wave of infrastructure projects represents an approach to the natural world that arises from the industrial revolution, subjugating and appropriating according to industrial utility.

The temporal magnitudes of these events are not easily grasped. The natural world is often taken at first pass, without consideration of the geological history or future of the site. To understand the current state of Sentinel Gap comprises a 17 million year time-scale (Figure 4.4). Of this period, the majority of the time was dominated by flood basalt outpourings. Only by magnifying the past 50,000 years can the glacial out-wash events be given a visible temporal magnitude. What barely registers at this scale is the period of human alteration of the natural world. However, when observing the natural world, this discrepancy is highlighted through the widespread presence of the human hand. Whether through physical presence in the form of mines, urban areas, or roads or in chemical presence, in the form of planet wide pollutants, the scale of humanity's impact on the planet is at odds with the time period over which it has occurred.

The present-day site is located adjacent to the towns of Beverly and Schwana, Washington. Old railroad towns located

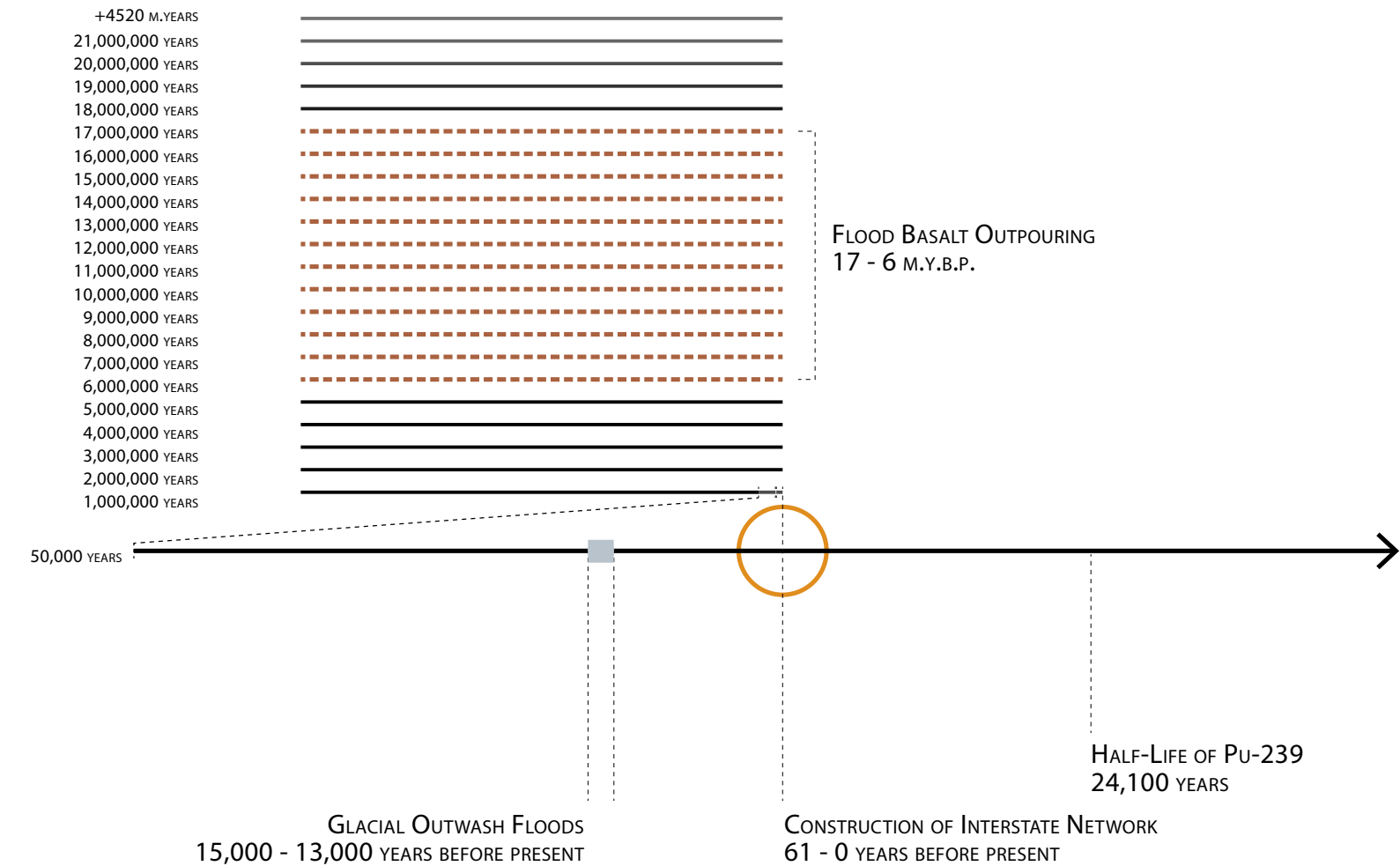


Figure 4.4: Timeline showing the temporal scales of the geological events that have shaped Sentinel Gap. The lowest line is an expansion of the most recent 50,000 years - onto which the building of human infrastructure on geological scales registers as a hairline.

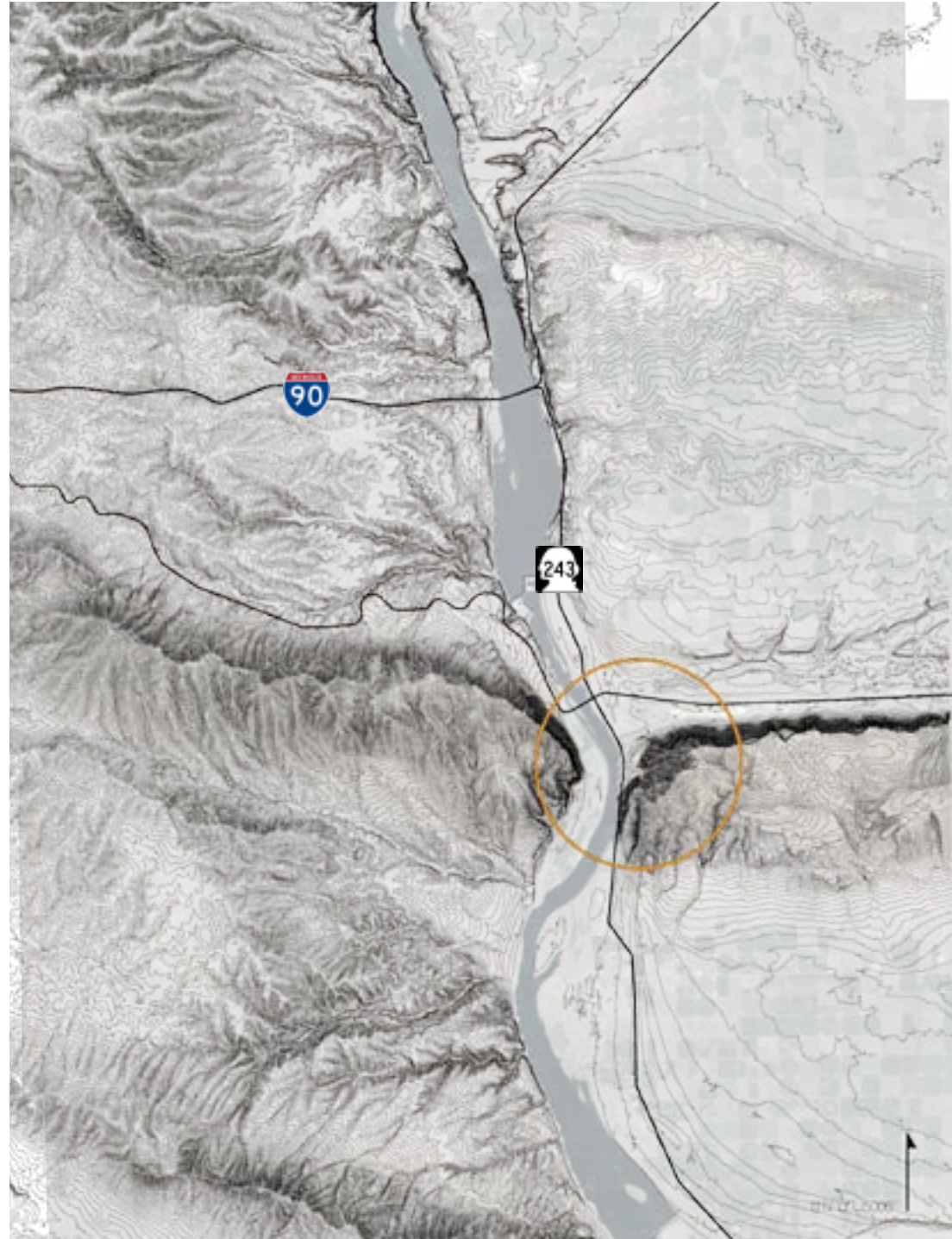


Figure 4.5: Expanded site map with major roads listed. In addition to roads, there are access vectors to the site via boat on the Columbia as well as foot and bicycle via the John Muir

at the base of the climb out of the Columbia River gorge, these towns primarily house agricultural workers nowadays. Washington state route 243 runs North - South through the site, carrying traffic from I-90 to and from the communities of Hanford and Mattawa to the South. I-90 crosses the Columbia River four river miles North of Sentinel Gap (Figure 4.5). The Saddle Mountains run East - West across the site and are dotted with radio towers, crossed by high voltage lines, and even spotted with decommissioned nuclear missile launch sites.

It is within this geological, temporal, and physical context that this thesis is proposed. The integration of this myriad of factors brings into play things that are ripe for consideration

ii. Design Proposal

Guiding the design at Sentinel Gap was the goal of communicating the scale of humanity's impact on the planet. To achieve this, numerous site elements and relationships were developed:

i. Dual reading of carving. Highlighting the difference in form, scale, and temporal duration of carving via the human hand vs. geological processes

ii. Thresholds where the intervention began or ended; these were developed along an experience that highlights various site elements. These thresholds are also places where control was not imposed or dictated

iii. Due to the nature of this cut, this intervention will have a dynamic lifestyle. It will serve as a marker of a threshold in time (or potentially a return from a threshold). It will erode and crumble over geologic time scales until the cut is indiscernible from the surrounding Saddle Mountains

The intervention at Sentinel Gap comprises of two constructed portions; a 35' wide bridge crossing Crab Creek and a 35' wide incision into the side of the Saddle Mountains. The surfaces of both the bridge and the cut are detailed in the same manner to integrate the experiences even though the interventions are physically separate. The walking surface is based on a 5' module and comprised two 17 1/2' x 5' basalt slabs laid end-to-end. The basalt slabs are quarried from the cut and are both texturally and physically distinct from the surrounding desert scrub.

Interaction and visits to Sentinel Gap occur on the same patterns as a day hike in the cascade, and can be broken into three distinct portions, each with unique mindsets and expectations; the arrival, the experience, and the return.

A range of arrival vectors bring different experiences and perceptions of the landscape. The experience of the intervention begins before the site has been physically reached. Traveling from the Western Slope of the Cascades, there is a dramatic change in landscape. The Western slope of the mountains is dominated by verdant forests, hills, and mountains that re-define and bring the horizon higher. In addition, the land is dominated by human intervention. Roads partition the ground surface into tidy parcels that are developed into shopping centers, apartments, office towers, and individual homes. In this region many connections to natural processes have been subsumed into the built environment. There is no question that the natural world still permeates in this environment, seeking opportunities and niches, but rather that most observers would not identify these aspects, and hence define this area as dominated by human intervention.

Traversing the crest of the Cascade Mountains on I-90, the relentless division of the surroundings into Cartesian plots for housing developments and shopping centers has eased. Verdant evergreen forests climb the hills, obscuring and softening the underlying geological features. Views of the horizon are constrained by mountain peaks, re-orienting views up and through narrow mountain valleys, and providing a different perspective from the urban and suburban landscapes. Cartesian orientation and modifications of the landscape, evidence of human activity, become more blatantly juxtaposed against forests and mountain ridges shaped by millenia of slow growth and erosion. Despite



(Above) Figure 4.6: Landscape shift traveling over the Cascade Crest from West to East



Figure 4.7: Prominence of the basalt cliffs at Sentinel Gap

the scale of human intervention, soaring roadways and road cuts incised into the bedrock, the path of the roadways is dictated by the surroundings. In contrast to the apparent dynamic of the foothills, where the natural world is subsumed by human modification, the inverse appears to be true. Placing human scale against mountains it can seem that the scale of the natural world is vast.

However, remembering that the forests are second growth, the lakes and streams in the Cascades diverted and controlled for power, agricultural needs, and protection of human constructions,

the scales at which humanity interacts with the natural world rival those of the natural processes that initially shaped our surroundings.

Emerging from the Cascades into the gently rolling hill country of Central Washington provides the final shift in surroundings and perspectives. Here, the horizon line recedes into the distance as the valleys broaden, hilltops drop in elevation, and the verdant forests of the Western slope of the Cascades are replaced by sage desert. The larger vistas and reduction in forested cover shift the focus to the geological features that

define the landscape. Gently rolling hills are slowly replaced by exposed basalt cliffs and ridges as the Interstate descends towards the Columbia River. The prominence of geological features, not obscured by forests or the built environment of urban areas, brings attention to the age of the landscape. Providing a visual connection to geological processes and layering, Sentinel Gap emerges as a site of contrast. Adjacencies between large-scale human infrastructure projects from the State Routes to the Wanapum Dam highlight the conflation of scales. The human hand working on the same scales as the landscape is immediately contrasted with the scale of the Columbia River and the Saddle Mountains.



ARRIVAL: FRAMING SENTINEL GAP

The arrival sequence ranges in duration from several hours to several days. Each of the approaches to Sentinel Gap provides a different pre-ambule to consider the landscape. Experiencing the landscape via the Columbia River exposes visitors to a different set of experiences and landmarks than approaching via foot, bicycle, or car over the rest of the Cascades. Regardless of the vector, arriving at the site, the juxtaposition of the approach would be fresh in the minds of visitors.

The scale and distance of the intervention and trip to Sentinel Gap is scaled around a day hike. This ritual is well-known to many people; the anticipation and travel to the local, the hike and trip into the world, and the return. Physically, the distances covered by the intervention are similar to a mildly strenuous day hike. Similarly, the distance to Sentinel Gap is well within the range of a day trip from major metropolitan areas. For those who desire differing experiences, the range of arrival vectors presents opportunities to integrate a stop at Sentinel Gap into a larger expedition or pilgrimage.

The incision into the hillside of the Saddle Mountains acts on the scale of the surrounding hillsides (Figure 4.8 & 4.9). From distance, this signals an undeniably human alteration has been made at Sentinel Gap. The scale of the cut acknowledges humanity's ability to alter the natural world on scales of magnitude previously reserved for geological and other natural processes. It is the ability to act on these scales that aids in defining the Anthropocene and removes the perceived separation between humanity and nature. The cut also acts by arousing curiosity; the form and scale do not relate to any specific industrial or extractive

industry - it cannot be readily identified and leaves unanswered questions.

The resolution to these curiosities is not instantaneous, instead suspense builds through an oblique approach that obscures the cut. The approach begins at the end of a farm access road south of Rd 17 SW, which follows Crab Creek East - West on the Northern slope of the Saddle Mountains. Irrespective of arrival vector, the Saddle Mountains rise across Crab Creek to the South.

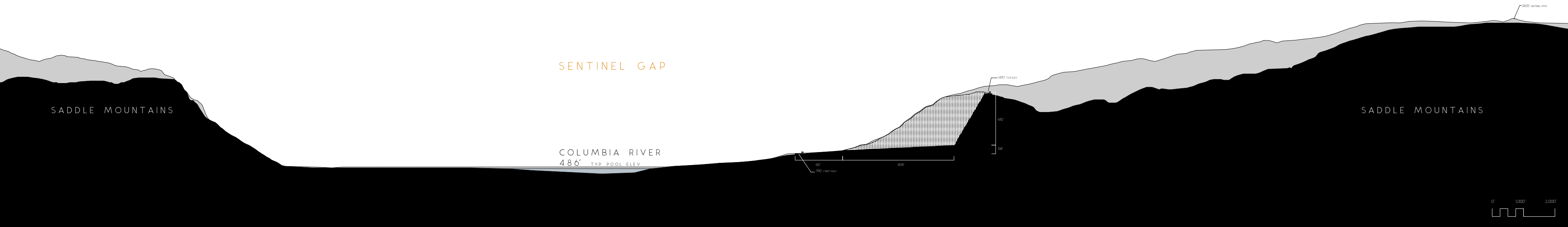


Figure 4.8: Site section showing relationship of cut to immediate site context. The cut itself, responding to the scale of sentinel gap, does not reach the highest point on the ridge-line

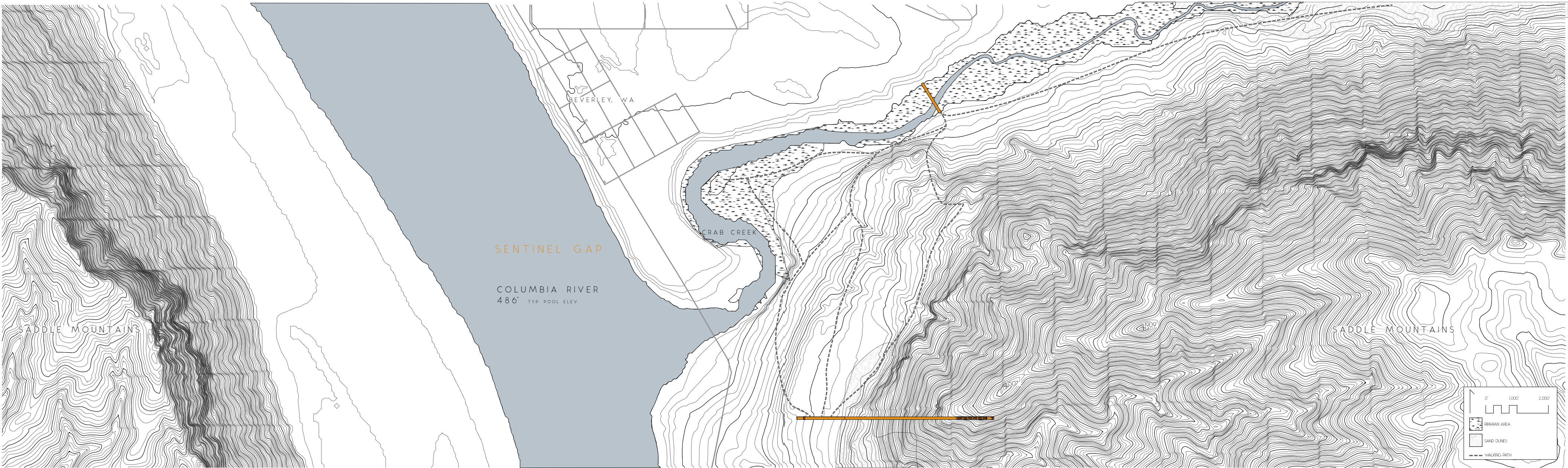
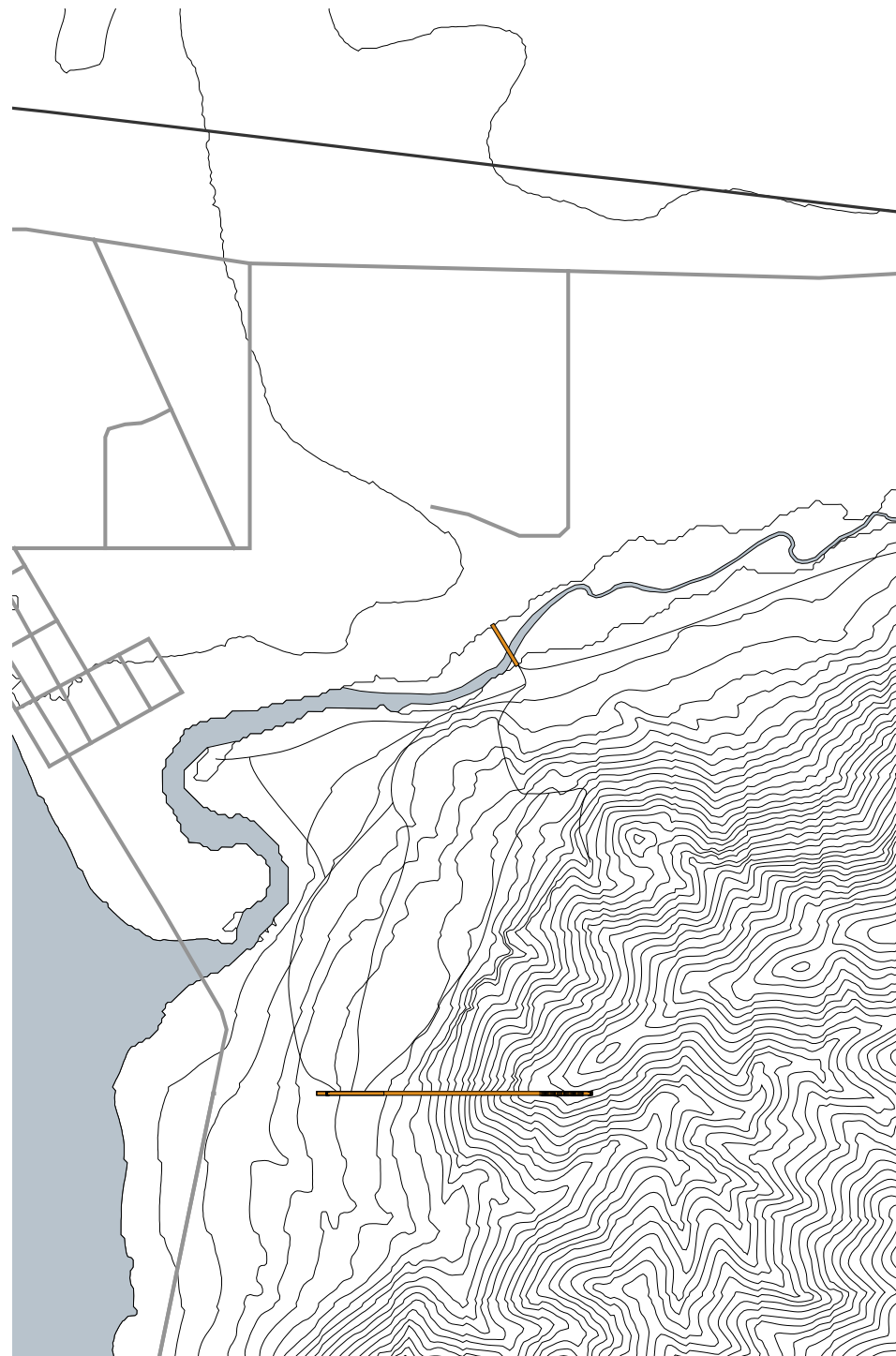


Figure 4.9: Site plan showing relationship of intervention to immediate context.



CROSSING: BRIDGE at CRAB CREEK

The first of the two constructed works at Sentinel Gap is the bridge walkway at Crab Creek. By re-orienting visitors to a linear experience, the bridge does not attempt to blur the lines between the work of the human hand and the natural world. Instead, this walkway is an intentional manifestation of the human hand on the landscape.

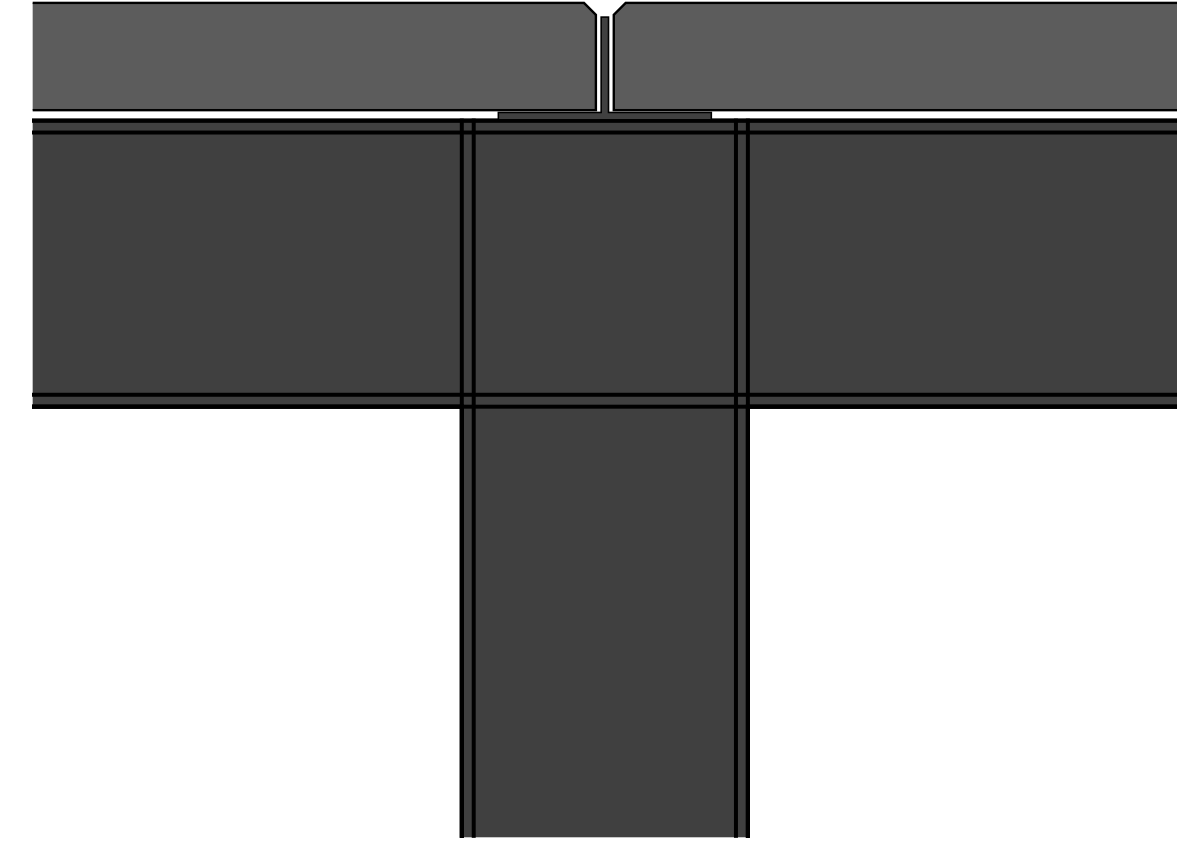
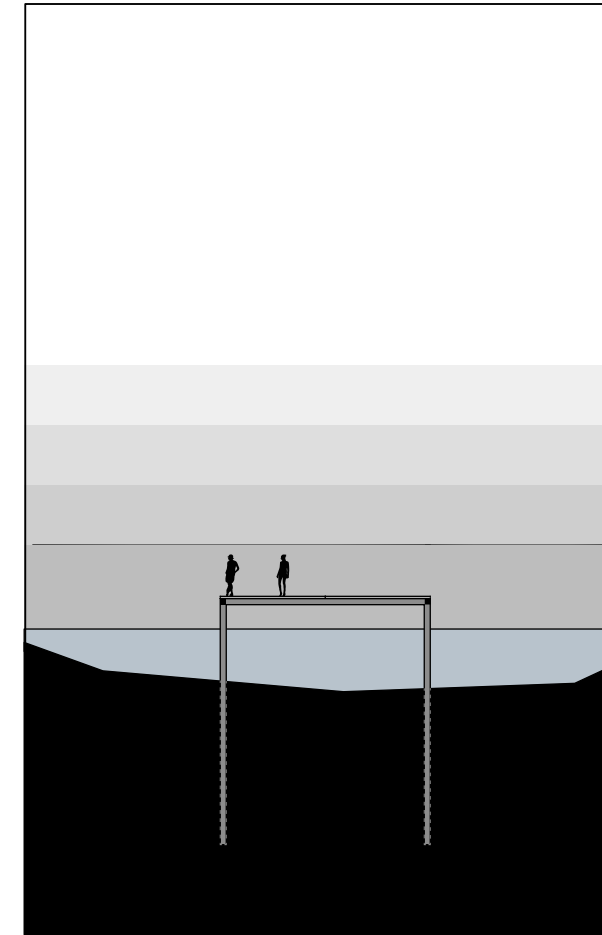
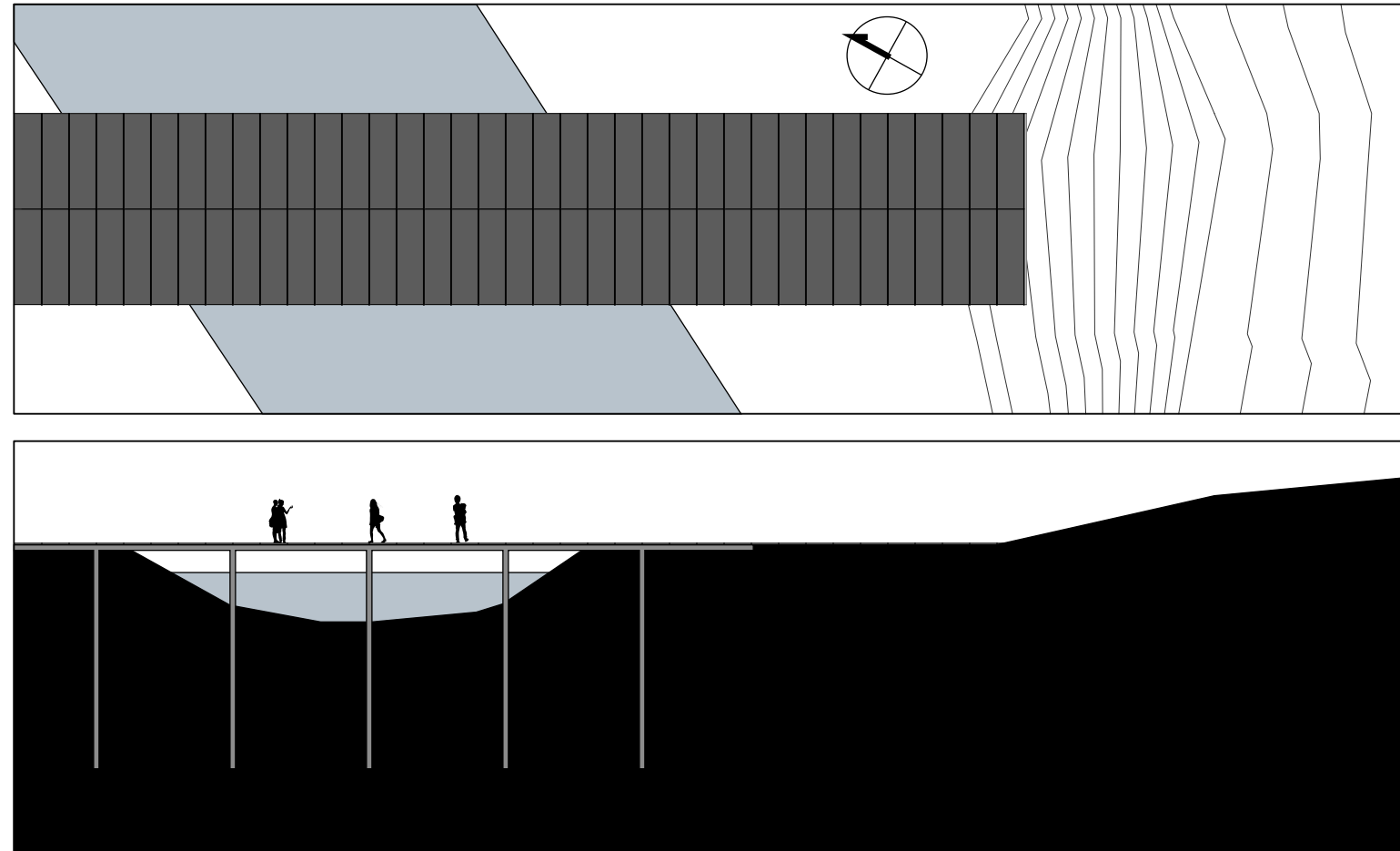
Crossing Crab Creek, visitors are presented with a path from which to experience the surroundings. At the center of the bridge span over Crab Creek; uninterrupted panoramic views unfold in all directions and the scale of the surroundings can be absorbed. Unknown to first-time visitors, the experience of crossing Crab Creek acts as an inverse to that of the Cut. The horizon lines are reversed - expanding horizontally interrupted only to the South by the rise of the Saddle Mountains. Simultaneously Crab Creek, and the adjacent Columbia River, are testaments to the power of natural systems to carve rock, juxtaposed again against the narrow Cartesian carving of the cut.

The walkway and bridge stretch 90' across the riparian area, provide access to the far bank of Crab Creek, and direct human traffic to a durable surface, sparing the surrounding ecologically sensitive riparian areas. The walkway that continues onto the Bridge is made of 17' - 6" x 5' x 4" basalt slabs that are laid end-to-end to make a 35' wide path (Figure 4.12 & 4.13). The underlying structure of the bridge is constructed from steel I-beams that are driven into the ground. The structure for the bridge continues 30' beyond the current river channel so that as the river meanders the bridge will not immediately wash out or fail. The basalt slabs rest on stainless steel T-sections running across the width of the

Figure 4.10: Site map showing the bridge over Crab Creek



Figure 4.11: Early morning perspective looking back at the bridge over Crab Creek



(Left & Facing Pages) Figure 4.12: Details of bridge at Crab Creek
 (Above) Figure 4.13: Details of basalt slabs and steel bridge connections

bridge. These slabs are chamfered at these T-sections (Figure 4.13) to create a contrast between the coarse dark basalt and highlight the steel in the construction. This detail shows the ways in which humanity can alter the landscape - through tooling realized through industrial innovations.

Intended to be inundated during periods of high water flow, the bridge is situated at the same elevation as the flood banks of the river. These flood banks are incised by flooding but do not indicate a maximum floodwater stage. A visit to Sentinel Gap that coincides with periods of high precipitation could find visitors

rebuffed by high waters - a reminder of the latent power of a seemingly benign landscape. The same height of the bridge above the normal water level, 4' on average, is high enough that fly fisherman who access the river via boat would not find themselves rebuffed.

The basalt walkway rises 4" above the surrounding landscape where it touches the ground. This small step provides a visceral register to visitors, bringing attention to the re-orientation to the Cartesian dimensions of the rectilinear walkway. This threshold is further reaffirmed by a change in substrate from the

sandy soils that slip out from underfoot to the solid stones that comprise the walkway.

As a realization of the human will within the natural world, it cannot be imagined that this intervention will remain unchanged on a timescale exceeding 100 years, on the long end for unmaintained galvanized steel, without human upkeep. The use of materials that would degrade without upkeep was intentional. Instead of designing the bridge to be indefinitely sustainable, a distinction is made between human interventions as separate from the natural world.

Similarly, as an expression of the human hand on the landscape, stainless and galvanized steel are selected because these products are dependent upon human industry and technology. As such, there is no attempt to blend them into the natural world. Similarly, the detailing and precise cutting of the basalt slabs distinguishes them from geological weathering processes as distinctly human-made.



4.14: Spread depicting the approach to the cut. Visible in the mid-ground is a set of Basalt Monoliths serving as a way-finding marker, while also orienting views towards the cut

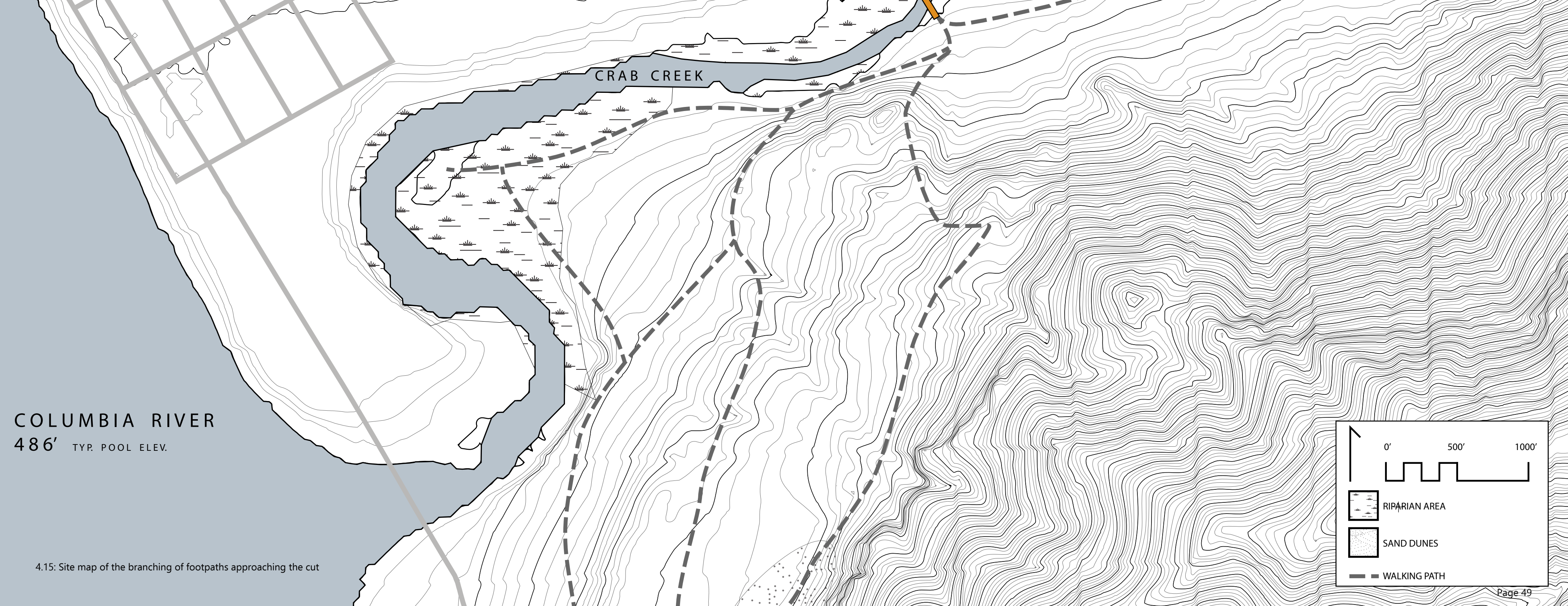
SOJOURN: SAGE AND SAND

Stepping off the Southern end of the walkway across Crab Creek, a network of paths presents itself (4.15). These paths are not fixed, but are made of varying layers. The first layer is a series of gravel access roads installed for the maintenance of high-voltage lines that run from the Wanapum Dam South to power the vitrification plant and other facilities at the Hanford Superfund Site. The access roads travel Eastward along the North slope of the Saddle Mountains as well as meandering Southwards towards the cut. Intersecting these gravel roads are a number of sand tracks worn in by off-road vehicles from the adjacent off-road vehicle area. Lastly there are various criss-crossing animal trails from elk and deer that contour around the base of the Saddle Mountains.

No additional path is defined to reach the cut. Instead, visitors are invited to meander across the landscape. Over time desire-lines and a social trail network would be established on the site. These paths would be dynamic, responding to objects or areas of interest. To aid in way-finding, a pair of basalt monoliths bracket the Western end of the walkway that extends into the cut. Rising 25' above the surrounding sage desert these would be visible before cresting the gentle hill on which the cut is situated (4.14).

The sojourn across the landscape releases visitors from a prescribed path. Once again, this release of orientation is accompanied by a visceral register from stepping off of the basalt walkway. Similarly, there is no Cartesian imposition of the human hand made into this landscape. No accommodations are made to facilitate the approach or maintain any of the vectors already present. Through this intermediary area humanity is asked to

interact with the surroundings and the traces of past human intervention that are found within it. Presenting this landscape as such, and dispelling the illusion of these mountains as untouched, reveals to visitors the extent to which the human hand has shaped the landscape.



CRAB CREEK

COLUMBIA RIVER
486' TYP. POOL ELEV.

0' 500' 1000'

RIPARIAN AREA

SAND DUNES

WALKING PATH

4.15: Site map of the branching of footpaths approaching the cut

APPROACH: CARTESIAN RE-ORIENTATION

The approach to the cut begins on a small bluff above WA-243 which provides visual separation from the roadway except at the Westernmost terminus of the walkway. The cut is oriented on a due East / West axis which cuts across the slope of the hill clearly defining the intervention as human-made. This axis is dictated by solar orientations. Between the spring and fall equinoxes the cut receives direct sunlight for a brief portion of each day. Corresponding with the daily cycles of activity at the site, visitors would arrive in the morning, temporally distributed around optimal solar viewing times, to experience the sun emerging through the cut.

Moving from the sage desert onto the cut walkway cut re-oriens visitors to the Cartesian alignment of the cut (4.17). The walkway uses the same details and materiality of the walkway bridge over Crab Creek - basalt slabs resting on stainless steel T-sections. In the case of the cut walkway, the T-sections provide a register on which the basalt slabs sit on the ground, providing an initially level surface for the path to rest upon.

Occupying the Western end of this walkway is a pair of Basalt monoliths and a 90' plinth that extends over the landscape (4.16 & 4.18). The monoliths are L-shape in plan, with the longer side measuring 20' and the shorter 14' - 6", comprised of two slabs of basalt 35' tall and embedded 10' into the earth. Nestled inside of the slabs of basalt is a deep wooden bench. Sheltered from the winds and offering a place to rest, this place offers a moment of refuge and rest. Facing the cut, visitors would find themselves directly in from of their object of curiosity. The pair of monoliths define an opening 6' wide that frames the Western Bank

of the Columbia and the central axis of the cut.

Carrying over the same detailing as the bridge, the walkway sits 4" above the surrounding desert floor and once again provides a visceral marker of the re-orientation to a human intervention. Sloping gently Eastwards for 520', the 5' width of the basalt pavers provides a scale to the distance.

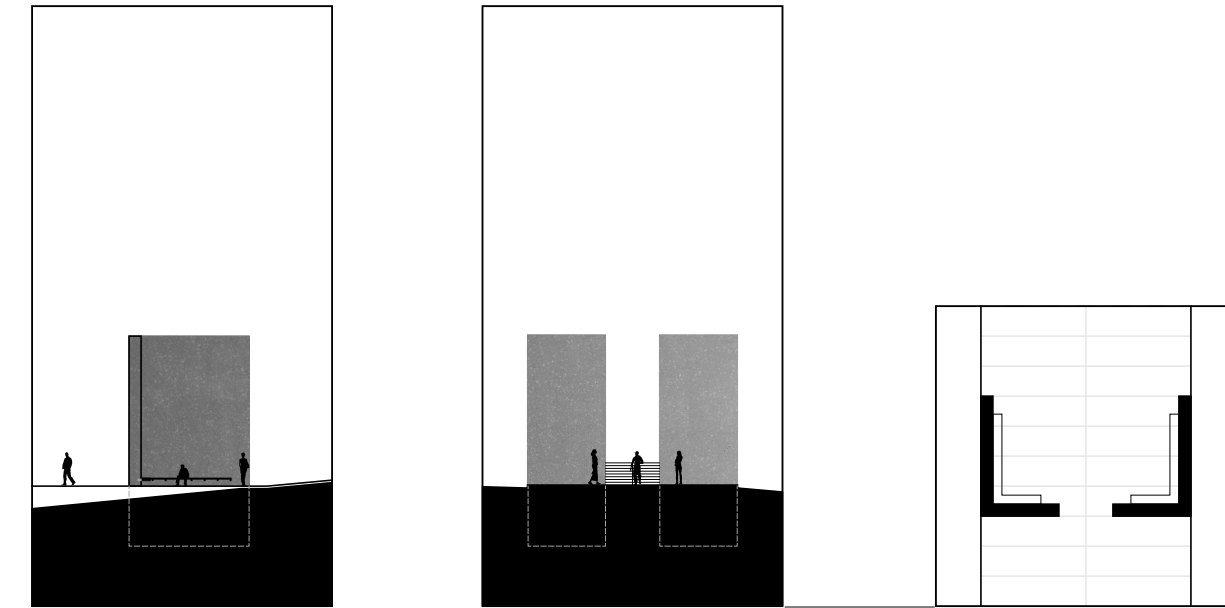
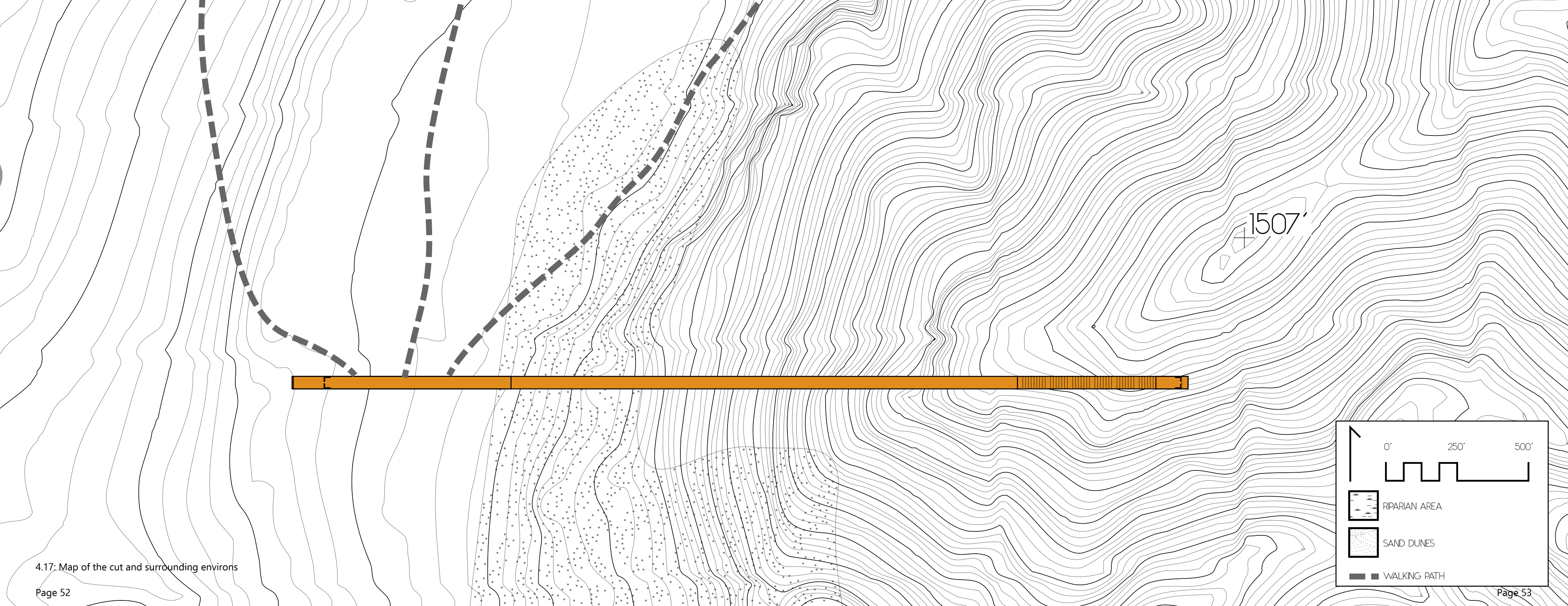


Figure 4.16: Details of the Basalt Monolith at the Western end of the Cut Axis. Benches are nested inside of the monoliths to provide an area for rest and pause. The 6' space between the monoliths responds to the proportions of the cut and provides a frame for the Saddle Mountains on the Western Bank of the Columbia River.



4.17: Map of the cut and surrounding environs

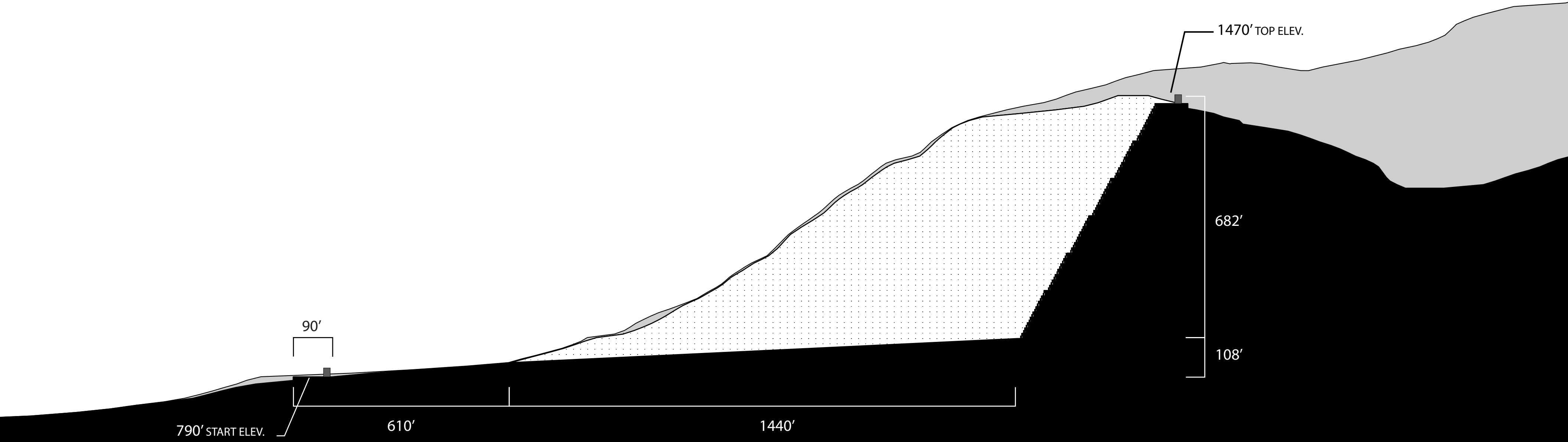


Figure 4.18: Site section through the cut



Figure 4.19: Perspective of inversion

INVERSION and REALIZATION

The cut into the earth comprises of three portions; the Inversion, Hall of Basalts, and Ascension. Moving Eastwards and upwards along the walkway towards the cut, visitors arrive at the point of inversion, the entry into the Hall of Basalts that comprises the majority of the cut. At this threshold the walls of the cut rise alongside the path, rapidly severing sight lines to the horizon and re-framing the perspective of the landscape into a vertical slit.

The methodology and technology necessary to realize the cut are based on techniques centuries old and are in continued widespread use in the quarrying and mining industries worldwide. These techniques rely on relatively simple tools; a loop of wire with diamond cutting teeth and, a series of pulleys, and an engine or device to spin the diamond wire through the rock (figure 4.20).

Using this technology benches measuring 20' tall, 35' wide, and 15' deep will be extracted, working downhill and Westward from the high point, to form the cut. As with any method of making, there will be traces of the tools left on both the quarried basalt blocks and the walls defining the cut. In the case of quarrying, the diamond wire is looped through horizontal and vertical bore holes to start the cuts (Figure 4.21). Intersections of these boreholes correspond to the dimensions of the benches and will occur at 20' vertical spacing and 15' horizontal spacing. At these junctures 2" diameter stainless steel rods will be inserted 12" into the basalt walls, leaving 8" exposed. The Cartesian arrangement of these rods defines a secondary plane within the vertical basalt walls of the cut. Initially, the basalt walls would bear the marks of the tools used to create the cut - shallow etched marks from the diamond wire, deeper intersecting cuts

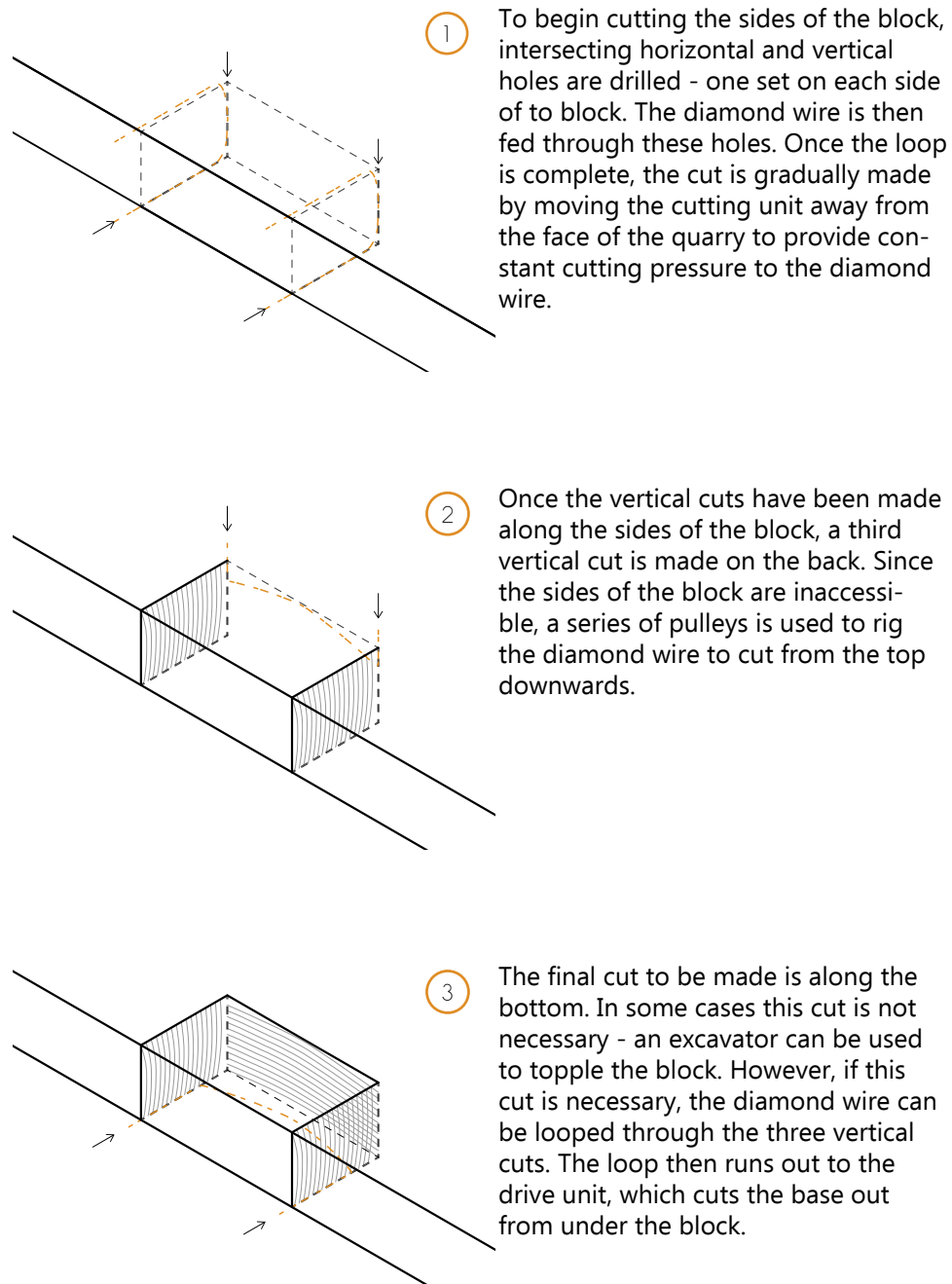


Figure 4.20: Diagram of basalt quarrying process

from the bore holes, and the stainless steel rods that register the size of each bench removed from the cut. As the basalt walls erode gradually over time, whether from mass wasting events due to melt / freeze cycles or chemical erosion from exposure to the atmosphere, the last remaining trace of the excavation of the cut are the stainless steel rods. The secondary geometry would remain defined as the rock walls erode behind them. Simultaneously the stainless rods would present a scaled marker that aids in giving scale to the magnitude of the cut.

Using these quarrying techniques the cut would be excavated to a depth of 612' and a length of 1440' (Figure 4.22). These dimensions do not provide a scale of a period of time or markers of past events. Instead, by cutting into the earth at Sentinel Gap to create the Hall of Basalts, various layers of flood basalts that make up the landscape would be exposed. Visualizing the layers in such a manner would give physical scale and testament to geological events that are frequently observed in small expanses and invite visitors to the Hall of Basalts to interact with geology in a unique way. The continuous 35' width of the walkway and cut provides a consistent scale to which the surroundings, whether the vertical walls of the Hall of Basalts or the open desert sage-lands, can be considered.

By cutting vertically through the layers of flood basalt a variety of textures will be exposed that visually delineate individual flows. The flows that are uncovered do not account for all the flows that have formed the region. The two flood basalt events that are visible at Sentinel Gap are the Wanapum and Saddle Mountain flood basalts. The Wanapum flood basalts are the most recent flood basalt outpouring event (13 million years ago to 6 million years ago), and define the landscape



Figure 4.21: Axon of cut, showing scale against hillside.

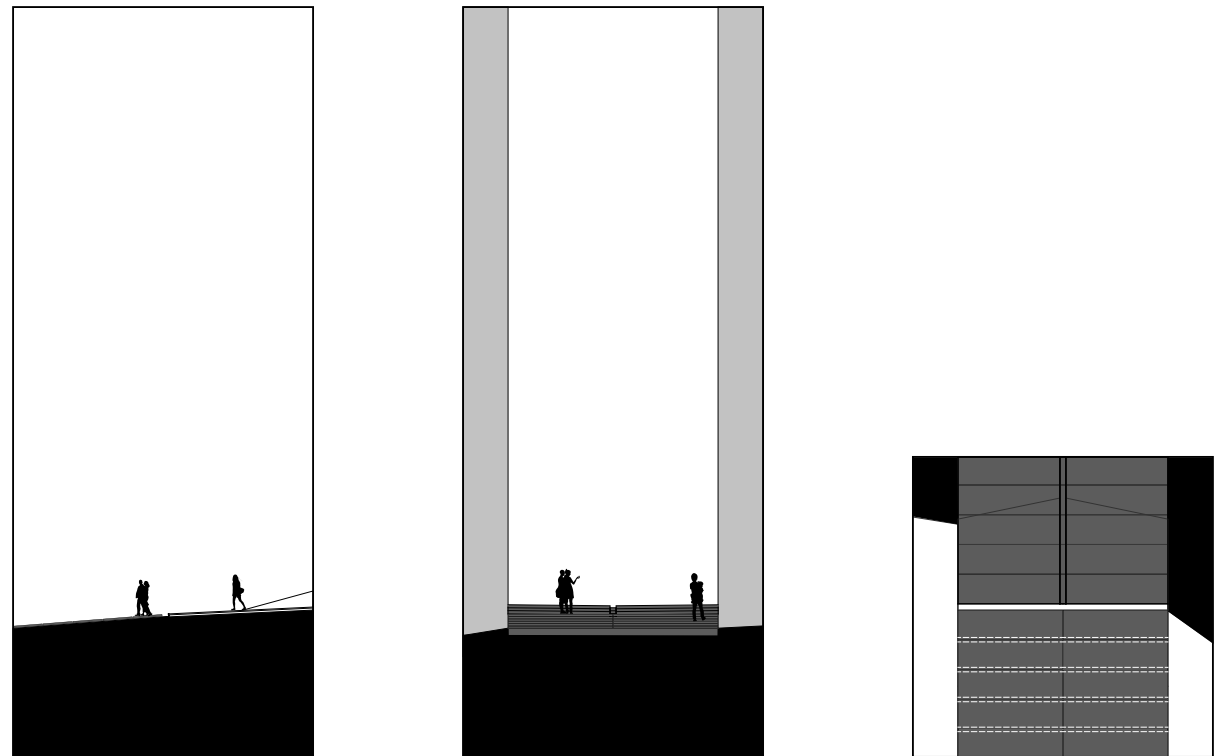


Figure 4.22: Detailed plans and sections at the inversion point. From this point, the detailing of the path changes slightly. Inside of the cut, the basalt slabs slope gently towards a central channel that collects rainwater

or any other water that enters the cut. Control and direction of the water is released at the Inversion point where it runs over the surface of the site

of Sentinel Gap. The vertical orientation of the cut provides a reminder of the age of the natural world upon and from which human interventions are constructed. Placing the human figure at the bottom of the cut surrounded by the Hall of Basalts contextualizes the scale of the human in a visceral way. The humidity, temperature, materiality, and quality of light within the Hall of Basalts is drastically different from the surface environment. Likewise, the lichens, mosses, plants, invertebrates, and vertebrates that colonize the walls and floor of the cut present a concentration that differs from those found in the surface environs and provide additional cues to the differences from the surface.

The Hall of Basalts is not intended to be a welcoming and warm environment. In addressing the scale and ramifications of humanity's impact on the planet an attitude of celebration and comfort is not desired. Indeed, the breadth and scale may appear overwhelming or unrelatable especially when communicated via quantitative methods. Registering viscerally on the human as a biological species, the cut seeks to communicate on an emotional level. By registering emotionally the intention is for visitors to carry that message with them into their daily lives, perhaps considering aspects of culture or encounters with the built environment in a new light.



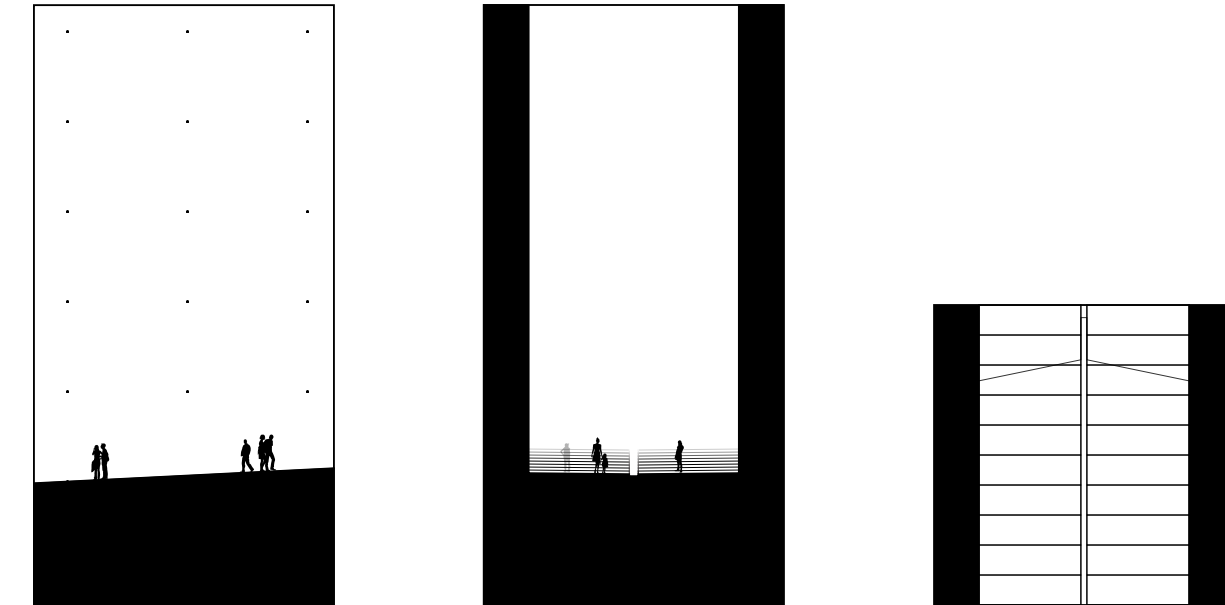
Figure 4.23: Perspective looking from the Hall of Basalts towards the Inversion

The creation of the cut is intentionally self-conscious and it is self-critical. The utilization of industrial mining and quarrying tools, associated with ecological and environmental disruption are used to a different end at Sentinel Gap. Instead of carving away at the landscape for profit, efficiency of transportation, or to safeguard at-risk human constructs these same techniques and tools are used to bring awareness to the disconnect between humanity and the natural world. No longer can the two be considered separate. With the scales of human infrastructure the continuation of the environment that humanity exploits is dependent on the actions of humanity. Through this intervention at Sentinel Gap, these tools are used to raise questions and awareness to the scale of human intervention on the natural world.

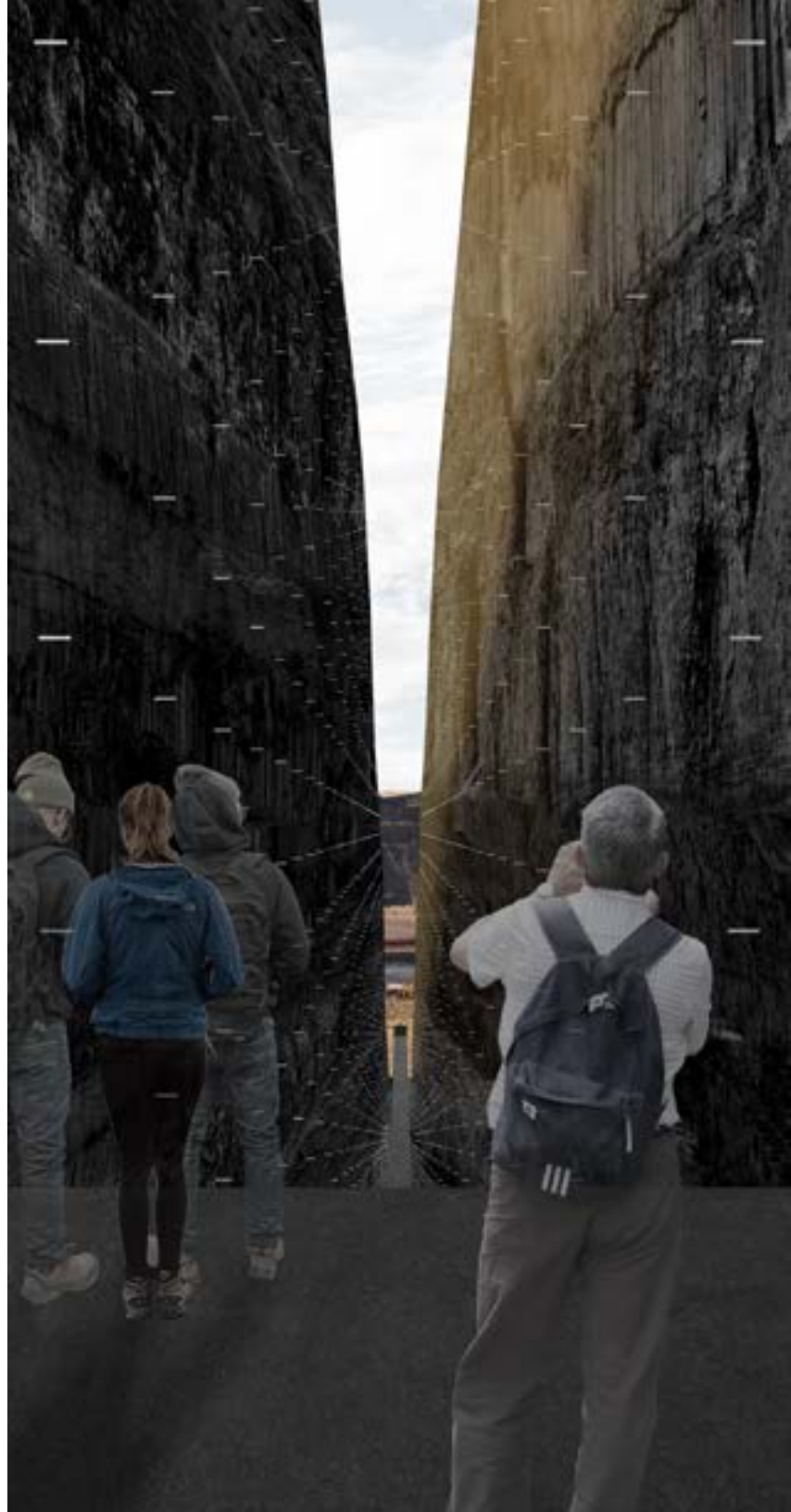
Similar to the walkway that comprises the bridge over Crab Creek and the approach to the cut, the walkway is made of 5' wide basalt slabs that rest on stainless steel T-channels. The detailing of the interior of the cut varies slightly from that outside of the cut. This is due to the possibility of water collecting along the walkway. Eastern Washington is prone to torrential downpours during thunderstorms. However, beyond these events, the cut will catch any overland flow or groundwater infiltration that originates upslope (generally to the North / North East), a large area that can could turn small amounts of rain into a decent flow along the walkway. Accordingly, the walkway is gently sloped to a central channel (Figure 4.24) that collects any water that enters the cut.

At the inversion, where the detailing on the path reverts to a completely level path, the central channel reaches a perpendicular channel that diverts the water into the surrounding sage desert on either side of the walkway. Over time the rectilinear proportions of this channel would erode, both softening the

edges and increasing the depth of the channel. Within the broader surroundings, the water released would scour new channels into the earth. Responding to the redirection of water adjacent to the walkway new plant species that have higher water requirements will take root. The transformation would not create a new riparian area, but instead the difference may be more similar to the variation in vegetation between a hillside and a ravine, where the latter has slightly improved access to water.



(Above) Figure 4.24: Detailed drawings of the interior of the hall of basalts. The hall runs 1440' laterally into the earth and reaches a depth of 612'



ASCENSION

Continuing into the Hall of Basalts, visitors would encounter a set of stairs that ascend to the surface. When entering the Hall of Basalts these stairs would not be readily visible. Due to the difference in light levels between the surface and the cut, the cut would read as a featureless void within the landscape. However, the intention is not to continually obscure the stairs, but for the stairs to be discovered by visitors as their eyes adjust to the lower light levels.

Ascending the 612' to the surface, the stairs are installed into the 20' tall x 15' deep benches leftover by the extraction of materials (Axon 4.26). The double-switchback form of the stairs reduces the horizontal distance occupied by the stairs. Additionally, the double-switchback allows access to each bench hewn into the basalt. Accessing these benches transforms the experience of climbing the stairs. Instead of being committed to one path, areas of rest, exploration, or contemplation present themselves every 20' climb. These 20' benches are punctuated by 60' benches every 120' that provide a larger platform for groups to pause and look back out through the Hall of Basalts (4.26). The orientation of the direction of travel on the stairs also connects those climbing and those in the cut. For those at the base of the stairs in the Hall of Basalts the connection to those on the stairs provides another scale for the size of the cut.

Following the logic of the integration of steel detailing into the walkways, as an intervention that is made of engineered materials arranged according to Cartesian dimensions, the stairs are fabricated from stainless steel. 1/2" thick stainless plate is bent 90° to create one riser and one tread. These individual units

(Left) Figure 4.25: Perspective from the Ascension

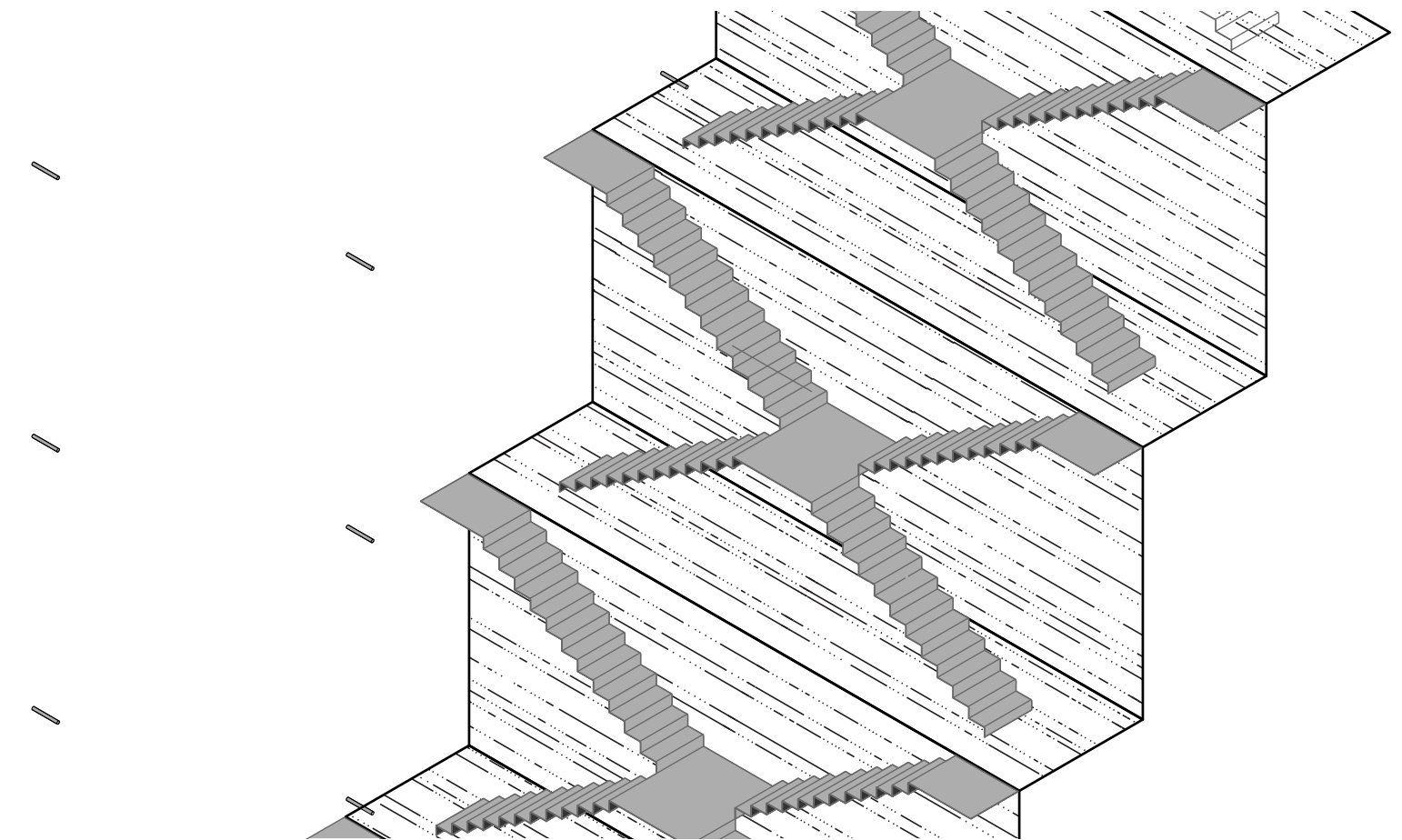


Figure 4.26 : Axon of stair construction. The bent stainless plate stair assemblies would be constructed off-site and installed on the rock

benches

are then welded to a steel backbone. The entire stair assembly is then suspended from steel C-Channel that is embedded into the rock walls. The stainless steel plate used to define the stairs does not rest against the wall, but is instead installed 1" away from the basalt walls (Figure 4.27 & 4.28). This separation reinforces the difference in material usage here. While basalt is used in a precise manner as the walkway surface, the walls of the cut are not

machined to the same tolerances and precisions.

Instead of meandering up a gradual sloping path that would make for easier meandering the staircase responds to the intervention at Sentinel Gap. Ascending the staircase, visitors experience the change in vertical elevation in one brief segment, highlighting the scale of the human intervention on the landscape. Through the exertion of climbing, change in elevation and vantage

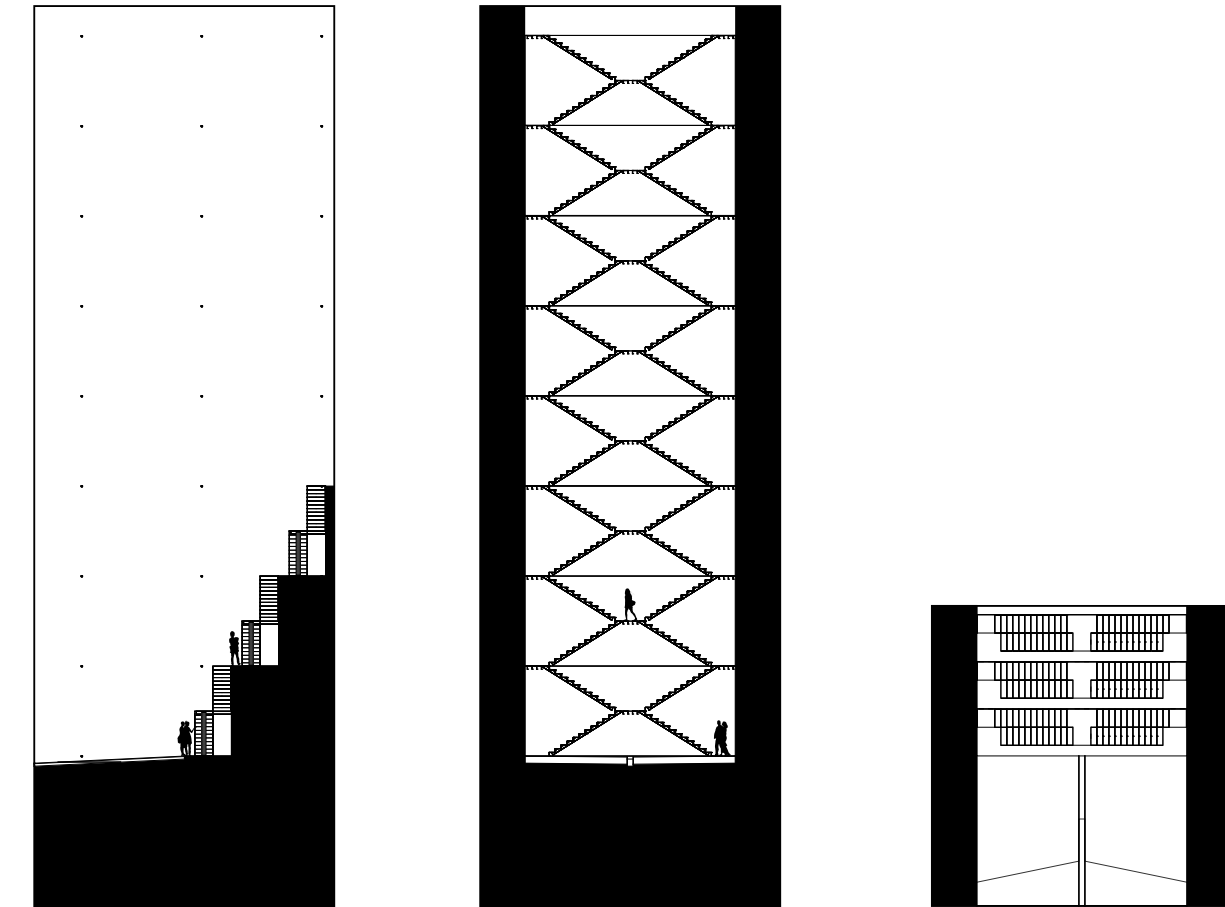


Figure 4.28: Details of stairs within the hall of basalts. The quarry benches are used to define the geometry of the stairs. Detailing of the stairs

separates them from the walls and allows freedom of exploration of the quarry benches.

point, and gradually increasing light levels the ascent out of the cut is registered with the senses of the body. With elevation and proximity to the surface the light levels would gradually increase, bringing more attention and definition to the surroundings of the visitors as the ascend out of the darkness and to a more familiar interaction with their surroundings.

This experience continues the narrative of the interventions

by highlight both the scale and discrepancy between the Hall of Basalts and its surroundings. Through the sojourn through the cut the aim is to raise awareness to the relationship between human interactions and the natural environments.

(Left) Figure 4.27: Perspective of the stairs in the Hall of Basalts



EMERGENCE

"The machine stencils the pattern of the mind onto the world, allowing humans to make nature an extension of their will."

-David Nye

Returning to the surface after ascending the stairs bombards the senses. The cut does not emerge at the high-point on the ridge line (4.18). A lower, yet still physically prominent, ridge was identified instead. This relationship is key to the moment of emergence. If the emergence occurred at the high-point of the ridge, the narrative and investigation into the relationship between humanity and the natural world would come to the conclusion that in the end humanity is literally atop nature. That the entirety of the natural world is beneath and subservient to humanity. Instead by emerging atop a prominent ridge two perspectives are gained. A point of physical vantage is gained and the crest of the hillside continues to recede beyond the point of emergence; these two experiences work in tandem.

The first, the point of emergence and relationship to the ridgeline presents a duality. The point of emergence occurs on the far side of the ridge from the entrance to the cut. At the top of the stairs, a 90' walkway, detailed in the same manner as the Crab Creek and approach walkways, proceeds due East. 30' From the end of the walkway, a second pair of basalt monoliths frame the landscape. The benches nestles in these monuments again provide an opportunity for pause and rest during the visit to Sentinel Gap.

Emerging from the stairs and facing due East, a view of the cut and hillside just climbed are deprived; instead facing

visitors with a view of the Saddle Mountains. Despite the scale and violence of the cut on the landscape, it is part of a larger more systemic attitude towards the world. High-voltage lines, dirt bike ruts, and old road slice the landscape, re-stating the scale and diversity of human impact on the natural world.

By turning around to face due West (4.29) visitors who have ascended the cut are rewarded with a vantage point that overlooks Sentinel Gap, the Cut, and the manifestations of human alteration of the broader site. From this vantage point the surroundings are put into a new perspective. Upstream, the Wanapum dam emerges as a Cartesian interruption of the sinuous path of the Columbia River. High Voltage lines and roads manifest as straight vectors across the site, manifesting the intention of humanity.

The surrounding hillsides are accessible from the point of emergence. Again, no paths were dictated across these hills, offering a visceral change in substrate to the sandy desert soils and sagebrush. The close proximity to the high point on the ridge is activated by human curiosity. By walking a few hundred additional feet up a broad gently sloping ridge a truly panoramic view is gained. Rising above and off the axis of the cut, the prominence of the broader site, and the interaction of human desire and natural forces, is showcased.

From the point of emergence the scale of both the landscape and human alterations of the landscape. Interventions and infrastructure that otherwise might receive little attention or thought are presented in a unique way - both physically and from the experiential framing of the procession of interventions at Sentinel Gap.

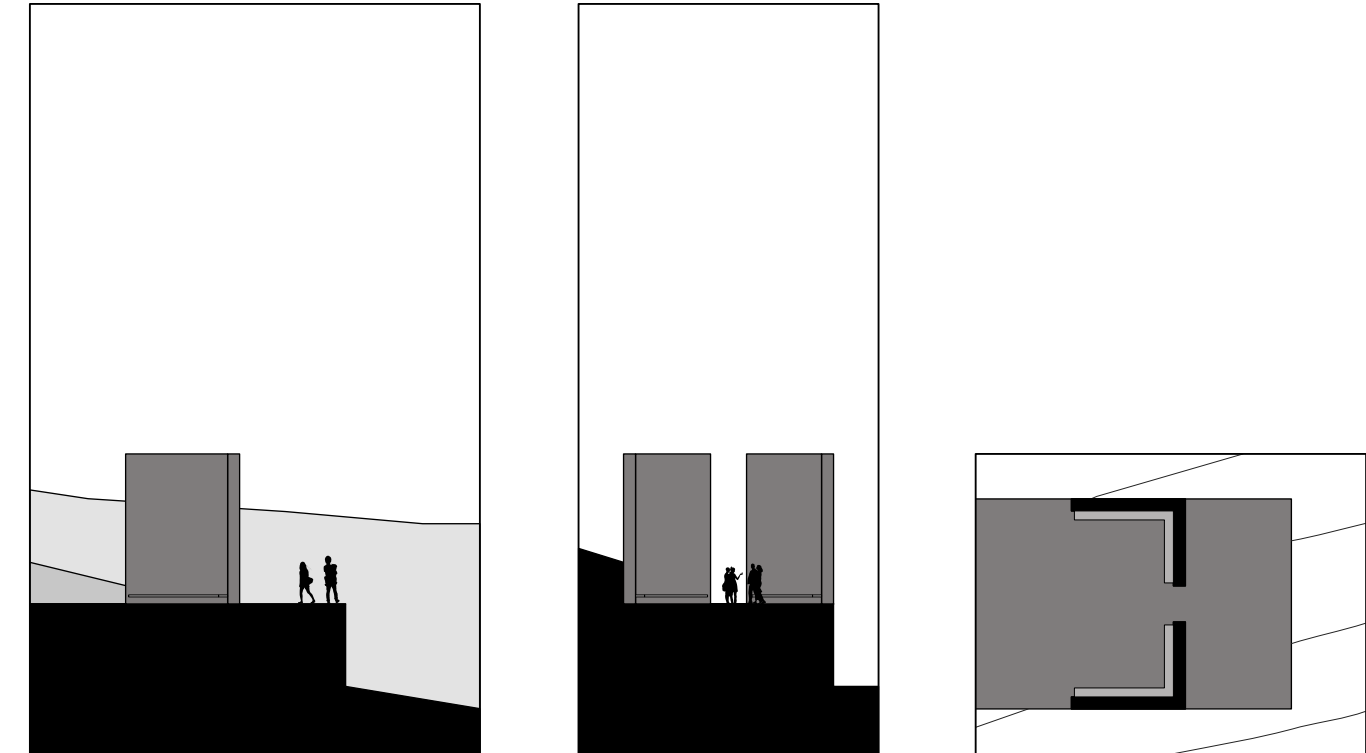


Figure 4.29: Details of Emergence and monolith pair at the top of the Hall of Basalts

(Previous Spread) Figure 4.28: Point of emergence from the Hall of Basalts

V. Conclusion

“Starting anew with a clean slate has been one of the most harmful ideas in history. It treats previous knowledge as an impediment and imagines that only present knowledge deployed in theoretical parity can make real the wondrous new vision.”

- Stewart Brand

Underlying all aspects of culture and contemporary activity are continuous interactions between the natural world and the human hand. Some instances these interactions manifest in a polarizing and emotionally resonant way whereas other instances draw less scrutiny and attention. With the dawn of the Anthropocene comes an acknowledgment of the net scale of the human impact on the planet. By proposing to define a geological era based on human impacts there is a simultaneous desire for recognition - humanity is no longer a blink in the 4.5 billion-year history of the planet, but a significant force. The argument is not to revert to a point of non-interaction with the natural world, but rather to raise awareness to the current relationship between these two forces. Just as they have occurred since the beginning of humanity, consumption and extraction of resources from the natural world will continue to occur indefinitely.

The effects of human intervention and alteration of the natural world have been studied and quantified. However, there is a disconnect between quantifying the impacts and connecting the impact on an individual level. The impacts, for example, of driving a car to run errands on a daily basis on broader environmental degradation are not readily connected. Instead, by appealing to a visceral response the magnitude of humanity's impact on the planet can be registered in memory. By connecting to memory, the information is then strongly imprinted and carried into everyday life.

The site of Sentinel Gap does not represent an extreme of human / natural world interaction; it is not a listed superfund site, in which the focus would be solidified on the legacy of human intervention, but a very diverse site. Similarly, the site was not chosen for the absence of human interaction, as such a site would

focus exclusively on any inserted human intervention. Sentinel Gap reveals its history in layers; present at the site are testaments to both the geological history and human modification of the natural world.

The presence of the intervention at Sentinel Gap was not intended to remediate, ecologically restore, or act in a net beneficial way with regard to the landscape. Instead, the two portions of the intervention, the bridge and the cut, exist as conscious interventions on the landscape to acknowledge and reflect the relationship between humanity and the natural world. By cutting into and bridging across the landscape, this intervention at Sentinel Gap acts with the same tools used to conform the landscape to human hands. In doing so, it lays bare and undeniable the rapid alterations that humanity makes to the landscape.

With the Anthropocene, the perceived distinction between humanity and the natural world has become de-ontologized, and the continuation of the current period of climactic and ecologically stability is dependent upon humanity. Humanity holds the tools to affect the natural world on geological magnitudes yet is simultaneously dependent on the natural world. Through a deeper visceral understanding of humanity's impact on the planet individuals can come to reflect on their behaviors and material use.

The intervention at Sentinel Gap takes the form of a 35' wide bridge over Crab Creek and a 35' wide cut 1480' into the side of the Saddle Mountains. The scale of the cut responds to the scale of the surrounding landscape and provides an unmistakable marker of human intervention. Incising the hillside in a Cartesian manner clearly indicates that the intervention is created by humanity. Working with the site, the axis of the cut

is determined by solar orientation, providing highly dynamic lighting changes throughout a single day. There is no singular path defined to access the cut; instead the cut is accessed from the North via the bridge over Crab Creek. This experience of the crossing is inverse to that of the cut. The horizon line is completely unobscured, inviting visitors to take in the full encompassing view of the landscape. Within the cut, the connection to the horizon is severed bringing the focus to the vertical axis and depth of the cut. From within the cut the layers consecutive layers of flood basalts reinforce the dichotomy between humanity and the natural world; carving of solid rock that occurs over millenia on via geological processes can be done within a fraction of a human lifetime. Climbing the stairs to emerge at the top of the cut registers the scale of the cut to the human body with every step. Emerging at the top, the cut is presented in contrast to the surroundings; the Columbia River, Saddle Mountains, as well as human interventions along and spanning between both shores of the Columbia.

The culmination of this intervention and experience serves as a threshold from which to enter the Anthropocene. We will continue to extract resources from and interact with the natural world, but there is a need to bring attention to the ways and scales in which this is undertaken to support our contemporary cultural values and lifestyles. By highlighting both the natural world and the scales at which the human hand alters it, the discrepancy cannot be denied. Experiencing this viscerally ensures that the impact will be carried with individuals, bringing additional awareness to all scales of human interaction with the natural world.



Sentinel Gap from the Saddle Mountains

Bibliography

Scranton, Roy, "Learning to Die in the Anthropocene: Reflections on the End of a Civilization". City Lights Books, San Francisco, CA. 2015.

All other works, graphics, figures, and maps are created by the author in support of this thesis

Thacker, Eugene, "In the Dust of This Planet: Horror of Philosophy Vol. 1". Zero Books, Alresford, UK, 2011.

Turpin, Etienne, "Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy". Open Humanities Press, 2013

Ellis, Erle, "Ecologies of the Anthropocene" from "Grounding Metabolism". Harvard University GSD, 2014

Heringman, Noah, "Deep Time at the Dawn of the Anthropocene" Representations, February 2015, Vol. 129, p. 56-85.

Nye, David, "American Technological Sublime". The MIT Press, Cambridge, Massachusetts, February 1996.

Rockstrom, Johan, TED Talk

"Svalbard "Doomsday" Seed Vault to Receive Multi-Million Dollar Upgrade After Flooding". Archdaily.com, June 13, 2017. Accessed June 16, 2017. <<http://www.archdaily.com/873597/svalbard-doomsday-seed-vault-to-receive-multi-million-dollar-upgrade-after-flooding>>

"Monumento ai Martiri delle Fosse Ardeatine." ArchiDiAP. 13 October, 2014. Accessed June 16, 2017. <<http://www.archidiap.com/opera/monumento-ai-martiri-delle-fosse-ardeatine/>>

Young, James, "The Counter Monument: Memory Against Itself in Germany Today". Critical Inquiry, Vol. 18, No. 2 (Winter 1992), p. 267-269

Smithson, Robert, "The Writings of Robert Smithson", University of California Press, Berkley, CA, April 1996.

"Spiral Jetty and Great Salt Lake" Universities Space Research Association. July 4, 2010. Accessed June 16, 2017 <<http://epod.usra.edu/blog/2010/07/spiral-jetty-and-great-salt-lake.html>>