Reading the Cosmic Landscape:
An Observatory in the Nevada Desert

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To my husband for his humor and support that helped me through this experience.
To my family for their belief in me.
To my friends for making me a better designer, and for the memories we made along the way.
To Brian and Brad for helping to bring this project to life.

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I. INTRODUCTION

The desert is an iconic landscape that is firmly embedded in the American identity. Long perceived as the "final frontier," the desert embodies the potential for endless expansion and possibilities, ideally suited to the expansionist vision of the American spirit. This image is greatly derived from the phenomenological experience of the desert as a landscape embodying expanse and permanence. While the desert is still equated with this romatic image, the actual landscape has been greatly altered by a complicated past defined by man's struggle to dominate the environment. Vast expanses of space are connected by endless highways, abandoned mine pits, non-descript rest stops, and casino-centric towns stripped of all authenticity. As it exists today, there are few opportunities for a person to genuinely experience the desert in terms of the phenomenological characteristics that define it.

While many people today either travel to the desert to reach the comfort of an air-conditioned casino or simply pass through it on the way to another destination, there are many who venture into the desert to study astronomy, taking advantage of the clear skies and clean air offered by the remote landscape. For these users, the desert remains as a landscape that inspires exploration and questioning of mankind's position within the universe.

This thesis aims to restore the phenomenological value of the desert through architecture, exploring the desert as a physical, cultural and experiential landscape that ideally lends itself to the study of astronomy and to a greater understanding of a cosmic order. This project will create a recreational observatory allowing amateur astronomers to study the skies. The observatory will be located on the desert peak of Mount Washington, located in Great Basin National Park in Nevada. It will provide a venue for the astronomy-focused activities which already exist within the park, and will serve as a destination highlighting the cosmic properties of the desert. This thesis proposes that architecture can play a role in realizing the essential qualities of this unique landscape and can enhance the study of astronomy as an endeavor that goes beyond science to access a greater understanding of the human condition.

FIGURE 2 | Late afternoon in the desert

II. THE DESERT

THE PHYSICAL LANDSCAPE

The American Desert is defined roughly as the 900,000 square-mile arid region of the United States stretching from the northwest region of Texas to the western edge of the Sierra Nevada mountain range in California. While this geographic region accounts for over thirty percent of the land area of the contiguous United States, large portions still remain uncultivated and uninhabited, and as a result it is one of the last and largest untouched landscapes in the country. This lack of cultivation is a result of the extreme climatic conditions which define this part of the country, including extreme aridity, low annual rainfall, high temperatures during the day, low temperatures at night, high winds, and sparse and scattered plant and animal life. Although defined as one region, the desert varies in its physical terrain; geographically it divides into three bands running north-south - an easternmost section characterized by high plains, a central mountainous region, and an "intermountain" area furthest west, otherwise known as the Great Basin. The flora and fauna also vary in species across the desert regions, but they all share the common characteristic of resilience. Threatened by a lack of water, excessive heat, and drastic temperature changes, there are few species that can fully thrive in such an unforgiving environment. Many of the plants that can delicately adjust to the demands of the desert climate – such as sage, soap weed, bristlecone pines and cactus – have endured these conditions for millennia, and are among the oldest living organisms on the planet.

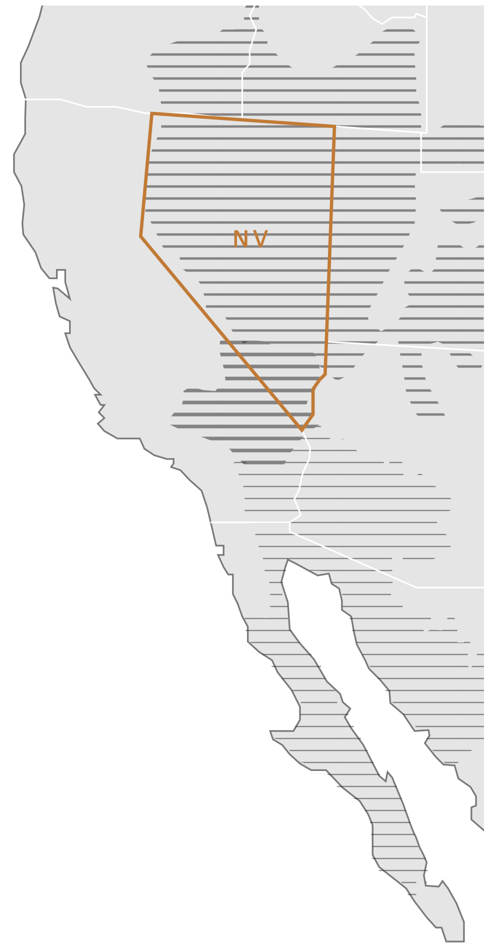

FIGURE 3 | Map of the American Desert Region

FIGURE 4 | Existential space: the boundary between earth and sky

THE COSMIC LANDSCAPE

While the desert, according to many sources, is defined by its unique physical and climatic characteristics, it is also defined (perhaps more comprehensively) by intangible phenomena. According to architectural-theorist Christian Norberg-Schulz, re-establishing the fundamental connection between man and his environment requires an understanding of the environment's distinct character - its "essence of place."[1] This phenomenological perception of a landscape requires a person's understanding of their relationship to the two primary elements of place – earth and sky.[2] According to Norberg-Schulz, in the desert, where the horizon seems infinite, the boundaries of both earth and sky are clear and extensive; "the cloudless blue sky gives emphasis to the infinite extension of the land and we experience the landscape as embodying an eternal order, centered on ourselves."[3] Because these primary elements of place are so expansive in the desert, a person can establish a firm understanding and connectedness to the environment in this unique landscape.

THE CULTURAL LANDSCAPE

The intangible expansive qualities of the desert have long been the source of intrigue and inspiration for generations and is securely embedded in American culture. The expansionist vision which inspired our nation's founding in 1776 laid the foundation for the geographic and cultural exploration of the desert that would follow. Perhaps the most significant developments in the physical exploration and aesthetic appreciation of the desert landscape occurred in mid-nineteenth century America. This was a time when the government sponsored large-scale explorations into the desert, and culturally "when landscape was in vogue."[4] The Romantic Movement in the United States became popular in art, literature and politics in the early nineteenth century. American writers like Ralph Waldo Emerson and John Muir, and artists like Thomas Cole and Thomas Moran frequently focused on landscape and nature as a the subjects of their work. The belief in the inevitability of westward expansion coupled with the aesthetic preoccupation witha sublime nature made the desert a prime landscape for the embodiment of nineteenth-century American cultural ideals.

The nineteenth century also marked a time of increased technological innovation, most noteworthy being the expansion of railroads and widespread access to electricity. The advancements in transportation and communication made the desert accessible to explorers and to industry for the first time in history. Yet the average traveler, who was compelled by ideas of westward expansion, did not have the means to travel by railroad. The conditions of the desert remained so hostile to early travelers, that "the hardship went past adventure into ordeal"[5] , proving that the reality of the desert was more harsh than its romanticized ideal. As a result, "the American desert… found its initial significance as a place to cross," [6] a brutal obstacle to overcome on the journey from coast to coast.

The desert region only became a true destination for explorers as a result of the discovery of mineral wealth in the 1840s. This discovery led to nearly six decades of American frontiersmen pillaging the landscape for gold, silver, and copper. This shift towards "pragmatic idealism" led to the development of desert boom towns from Texas to California, all based on the notion that there may be something of


FIGURE 5 | *Lure of the Desert,* Thomas Moran 1819


FIGURE 6 | 19th c. prospector in Utah


FIGURE 7 | Las Vegas in the desert

monetary value in the desert. The desert landscape, formerly perceived as barren, was at once given value and at the same time marred by the American capitalistic agenda.

The conflicting perceptions that were cultivated throughout the nineteenth century remain influential in contemporary culture. According to environmental historian Terre Ryan, our culture still perpetuates "Manifest Destiny-era ideas of the desert as commodity, scenery, and cultural trashland, and it romanticizes or conceals acts of environmental violence." [7] The desert now serves as a backdrop for countless ad campaigns promoting products such as Ford trucks and Pepsi, which are distinctly American brands. The landscape continues to resonate with the romantic desires of the American spirit, but the world of marketing has capitalized on these desires and has seized the image of the desert as a vehicle of commercialization. Las Vegas epitomizes more than any other American city the limitless potential of commercialization and capitalism. There is no better landscape for such a city to grow out of than the desert, although this exploitation of the landscape violates the aesthetic value of the desert as an unadulterated setting.

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1 Norberg-Schulz, 1971, 6.
2 Ibid.
3 Ibid., 40.
4 Ryan, 2011, 12.
5 Beck, 2011, 65.
6 Ibid., 65.
7 Ryan, 2011, 65.

FIGURE 8 | Desert sunset

III. THE COSMOS

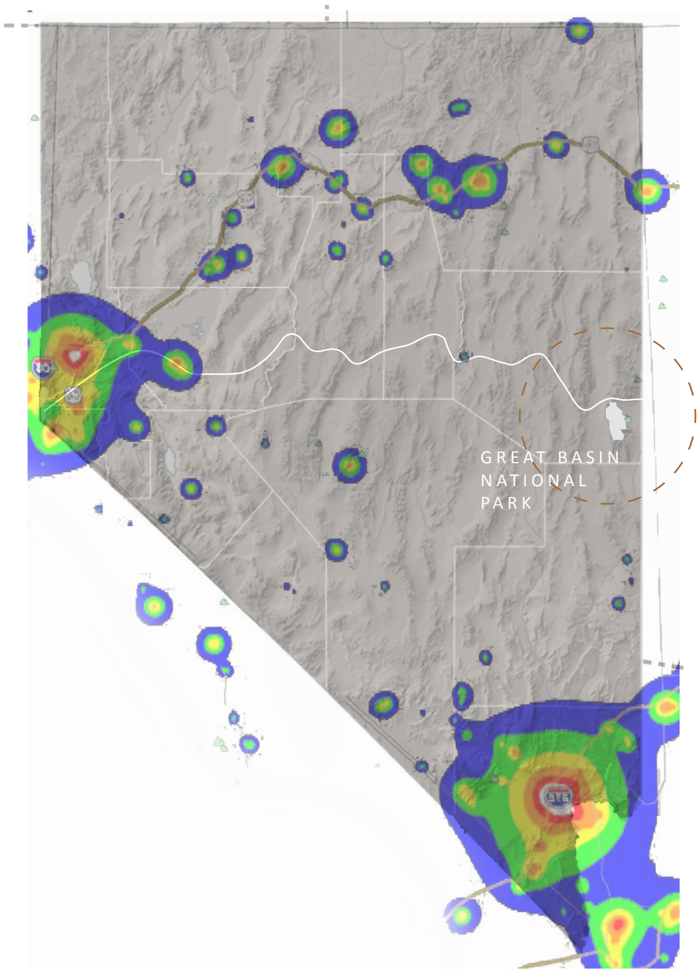

FIGURE 9 | Light polution map of Nevada

For those not drawn to the glittering lights of Las Vegas, the desert offers a different value, boasting the clearest night skies in all of the United States. According to the International Dark Sky Association, only California, Nevada, Utah, New Mexico and Texas – all desert states – offer skies with less than one percent of brightness coming from artificial sources.[1] For this reason many amateur astronomers and astro-photographers are attracted to the desert as a prime location for viewing the sky at night. This project will focus on providing for this user-group – those who, for the purposes of their star-gazing, value the desert because of its inherently vast and remote setting. This thesis will aim to enhance the star-gazing experience through architecture that can bring to light the phenomenological characteristics of the desert landscape.

FIGURE 10 | 17th c. map showing early helio-centric threory of the organization of the solar system

A SPIRITUAL SCIENCE

Today the study of astronomy is practiced as a secular science; for most professional astronomers, their intent is simply to gain an understanding of the celestial bodies in orbit. However, for many ancient cultures dating back to prehistoric times, “astronomy was intimately related to religion, and the the study of the mechanism of the universe became a search for the creator and ruler of it.”[2] Across all regions of the globe, cultures defined many of their traditions, rituals, and religious beliefs in accordance with their astronomical findings. In ancient civilizations of Central America, Egypt, and India, priests and religious figure-heads carried out all observations of the stars under the presumption that divine mysteries were encoded with the order of the celestial bodies. Ancient Greeks so closely associated astronomy to religion, that the pantheon of gods and goddesses shared names with celestial bodies. These early attempts to shape a rational image of the heavens went beyond spiritual intentions to have practical applications for agriculture and the ordering of time. Initial studies in the field facilitated celestial navigation for explorers, and perhaps most importantly enabled the development of calendars. In these ancient cultures, astronomy was used as a vehicle for both practical living and religious understanding.

ARCHITECTURE AS AN INSTRUMENT OF SCIENCE

In many prehistoric and ancient civilizations, the interest in astronomy manifested in well-known architectural and landscape interventions. For example, there are theories which indicate that the megaliths at Stonehenge were arranged to either frame or mark the midsummer sunrise. The Egyptian pyramids were built so that the four corners aligned exactly with the four cardinal directions, and they were oriented to align their passageways with the stars of Orion's belt. These sites are just a few of the early architectural interventions that were intimately connected with the sun, shadow, moonlight and star cycles, and whose forms directly correlated to their astronomical relationships.

FIGURE 11 | Bighorn Medicine Wheel, Buffalo, WY

FIGURE 12 | Stonehenge

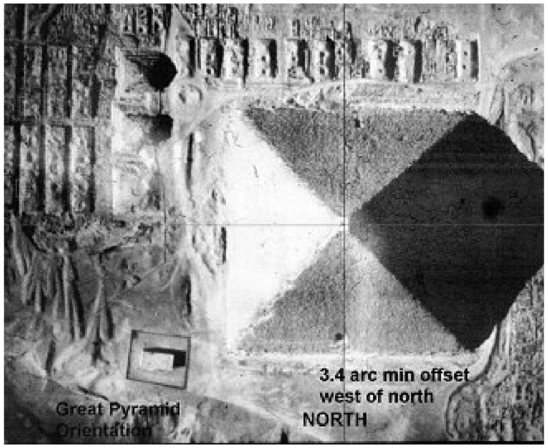

FIGURE 13 | Great Pyramid of Giza

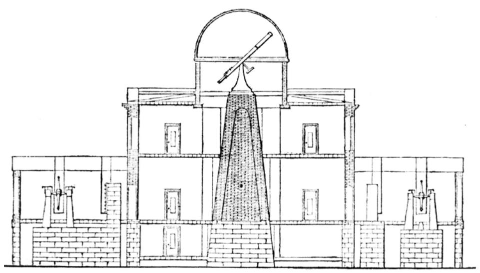

FIGURE 14 | U.S. Naval Observatory, 1844

FIGURE 15 | Cerro Tololo Observatory, Chile

The invention of the telescope in the seventeenth century impacted the study of astronomy more than any other technological development. Likewise, this intenvtion drastically changed the form of astronomy-related architecture and observatories. Prior to the invention of the telescope, most European observatories took the form of free-standing towers. This gave astronomers access to sightlines unobstructed by objects of the city. However, with the advent of the telescope, the free-standing tower typology no longer sufficed because it lacked the structural stability required to support the equipment. Observatories of the second half of the eighteenth century took a more squat form which offered more stability to the tremor-sensitive telescopes. The U.S. naval Observatory, built in Washington, D.C. in 1844, provides an example of a typical central-dome observatory, which also featured a central masonry pier specifically designed to support the telescope.

Since its invention, the telescope has evolved toward improved precision and focal distance. These changes in the design and function of telescopes have greatly influenced observatory design. The modern telescopes which make possible the photographing of images seen through the lens, require especially clear and steady atmospheric conditions. For this reason, observatories which house these telescopes are most often located in high-altitude or mountainous sites. Additionally, the increased size and specialization of optical instruments has brought about the separate-building model, where the primary telescope dome is housed separately from the offices and labs. Most scientific observatories of present day follow this model, such as the Cerro Tololo Inter-American Observatory in La Serena, Chile, and the Mauna Kea Observatories in Hawaii.

There is however a noteworthy "observatory" that deviates drastically from the predominant twentieth-century observatory model. Artist James Turrell is currently constructing an architectural intevention in Arizona's Painted Desert which is reminiscent of ancient astronomical monuments. Its orientation and form directly connect to its astronomical relationships, and it is intended to present astronomical truths as both scientific and spiritual phenomena. The project will be a naked-eye observatory in a 400,000 year old 600 foot tall extinct volcanic cinder cone known as Roden Crater. Visitors to the monument can only access the site on foot, scaling the steep slope of the volcano. The steep climb is followed by a long descent into the interior spaces in the heart of the volcano.

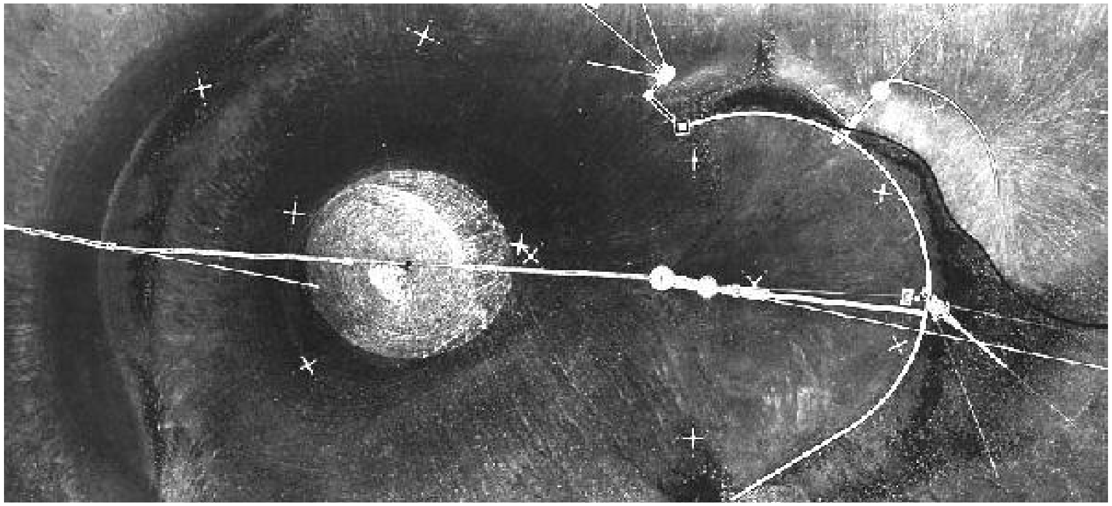

FIGURE 16 | Plan diagram of Roden Crater

FIGURE 17 | Interior of Roden Crater

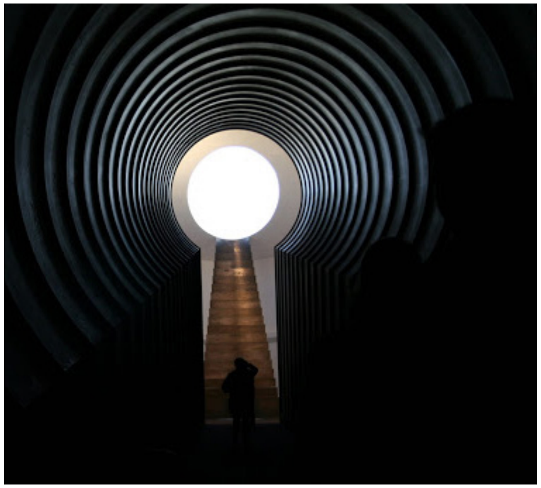

FIGURE 18 | Interior of Roden Crater

The interior of the volcano will house twenty chambers that offer the visitor different experiences with natural and artificial light. Some of these experiences come from Skyspaces offering views of the desert sky. The project is intended as an exploration of light and space which will "put the visitor in to a direct relationship with our universe that can be obtained in no other way and in no other place."[3] The Roden Crater Project aims to be "enfolded in nature" rather than a "mark upon nature" and therefore is embedded in the experience of the natural landscape. The experience of the monument derives from the condition of the sky and landscape, from which a "universe of opportunities" is communicated. Through conscious engagement with light and space in Roden Crater, Turrell intends to "compound the sublimity"[4] of the desert experience.

1 www.cleardarksky.com
2 Whitfield, ix.
3 Addock, 1987, 10.
4 Ibid., 10.

FIGURE 19 | Nevada desert at nightfall

IV. EARTH AND SKY

FIGURE 20 | Map of Nevada with Great Basin National Park

GREAT BASIN NATIONAL PARK

Like Turrell's Roden Crater Observatory, this project will aim to reveal the contingent relationship between a person and the natural desert landscape through an architectural intervention. In a landscape such as the American desert region, which carries a long history of the human struggle to dominate the natural environment, there are few specific locations that support a sustainable and balanced relationship between man and nature. One of these few locations is Great Basin National Park. Since the early twentieth-century the United States Park Service has made efforts to preserve the natural state of the lands within the park, protecting them from privatization and commercialization. Additionally, the park is already a destination for many amateur astronomers, making it a prime location for an observatory.

FIGURE 21 | Wildlife in Great Basin National Park

FIGURE 22 | Bristlrcone pine in Great Basin National Park

FIGURE 23 | Snake Range seen from desert plains

Located along Highway 50 at the easternmost edge of Nevada, Great Basin National Park derives its name from the dry and mountainous topographic region located between the Sierra Nevada and the Wasatch Mountains. The 227 square mile region embodies the varied nature of the desert landscape - it is home to over 660 species of flora and fauna, and represents a diverse landscape of topographic and geologic conditions, with hot desert valleys meeting mountain peaks which exceed 13,000 feet. One of the most popular sites ,which attracts tens of thousands of visitors to the park each year, is the geologic site of the Lehman Caves - a marble cave ornately decorated with stalactites, stalagmites and over 300 rare geologic formations dating back to the Paleozoic Age. This unique site presents a rare opportunity for visitors to see how the passage of time manifests at a geologic scale.

In addition to representing the evolution of the region's natural history, the park also contains a variety of cultural resources associated with the history of human activity in the Great Basin. Such resources include scattered remains from prehistoric times, structures and sites related to mining, western surveys, ranching, and grazing. These themes are among the most significant in terms of illustrating the socioeconomic development of the park area and the wider Great Basin.

Great Basin National Park was established in 1986 “to preserve for the benefit of the people a representative segment of the Great Basin of the United States possessing outstanding resources and significant geologic and scenic values… in such a manner as to perpetuate these qualities for future generations.”[1] With these as goals, the current efforts of the Park are focused on preservation and education. Patrons may stay in one of six designated campgrounds and explore over sixty miles of developed hiking trails. Located at the northeast entrance of the park, the visitor center offers an information desk, exhibit space and theater located at the northeast entrance to the park. Additionally, there is a visitor center located at the site of Lehman Caves which features a small café and gift shop. These are the only two sheltered gathering places in the entire park, and thus the entirety of the park experience is based on the premise of exposure and immersion in the natural setting. This immersion can take place through a variety of outdoor activities such as biking, bird-watching, caving, or rock-climbing.

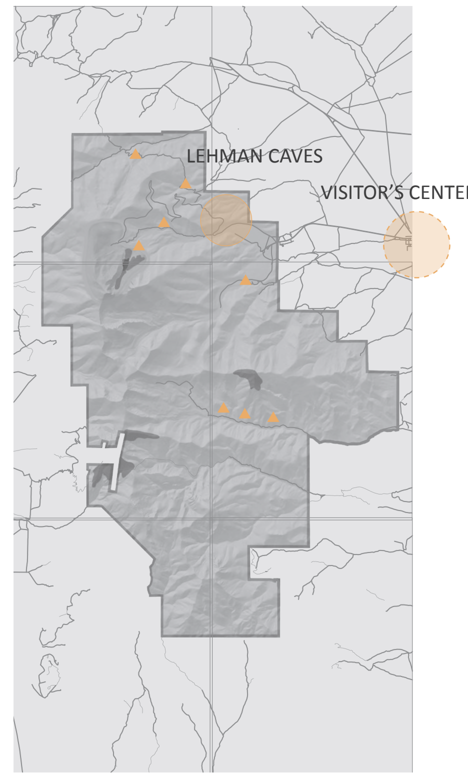

FIGURE 24 | Map of Great Basin National Park

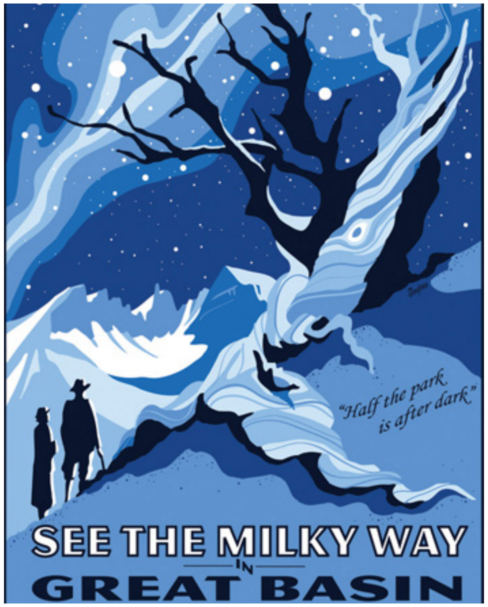

FIGURE 25 | Retro advertisement for GBNP astronomy

FIGURE 26 | Astronomy in the park

ASTRONOMY IN THE PARK

One such activity that is especially promoted in Great Basin National Park is astronomy. The park boasts having "one of the last true dark skies in America." [2] The park employs designated "Dark Rangers" who conduct weekly astronomy talks advising visitors and amateur astronomers on the best techniques and times for observing the Great Basin sky. These talks most often take place in the Great Basin Visitor Center auditorium. Perhaps the most anticipated astronomy-related event that takes place in the park is the Annual Astronomy Festival in the summer. Each year, the parking lot of the Great Basin Visitor Center becomes a sea of telescopes, when amateur star-gazers congregate for a weekend of observing the skies.

Because the Astronomy Festival only takes place annually, participants can only collectively witness the conditions of the desert sky on a few specific nights of the year. The other astronomy events and activities largely take place outside, leaving participants subject to the extreme heat or cold. They are also very much dependent on the availability of the Dark Rangers to provide information and observational equipment. This thesis proposes that a facility be built in Great Basin National Park to support amateur celestial observation year-round. Additionally, the observatory's architecture will aim to enhance the experience of the desert as a cosmic landscape, highlighting the phenomenology of the desert. An observatory is ideally suited to a site within the park because of the clear dark skies, the spirit of exploring that greatly shaped the region's history, and Great Basin National Park's commitment to preserving the dark skies and the untouched nature of this unique landscape.

MOUNT WASHINGTON

The proposed site for the observatory is Mount Washington, located on the westernmost edge of Great Basin National Park. Identified as a "timeless landscape,"[3] the peak of the mountain provides sweeping views of the desert plains to the north and west and provides an unparalleled view of Mount Wheeler (the highest peak in Great Basin National Park) to the east. The 11,658-foot peak is extremely remote and difficult to reach and is less travelled than other mountain peaks within the park. Currently people may access the mountain via an unpaved road on the southwestern slope which takes visitors within 600 feet of the highest peak, from which they must ascend the mountain by foot.

The mountain is essentially a solid limestone rock that emerges from a grove of bristlecone pines which are the oldest living single organism on the planet. In fact, located within the Mount Washington grove is a 4,000 year-old bristlecone pine named "Prometheus" that is believed to be the oldest living thing on earth.

When approaching the site from the south, the landscape changes drastically from a lush carpet of sagebrush, to a scraggly bristlecone forest, to a rocky, treacherous landscape above the tree-line. As one proceeds to the peak to access the sweeping view to the north, the terrain is almost moon-like – barren and rocky, with nothing visible between earth and sky.

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1 Unrau, 1990, xiii.
2 http://www.nps.gov/grba/htm
3 http://longnow.org/clock/nevada/

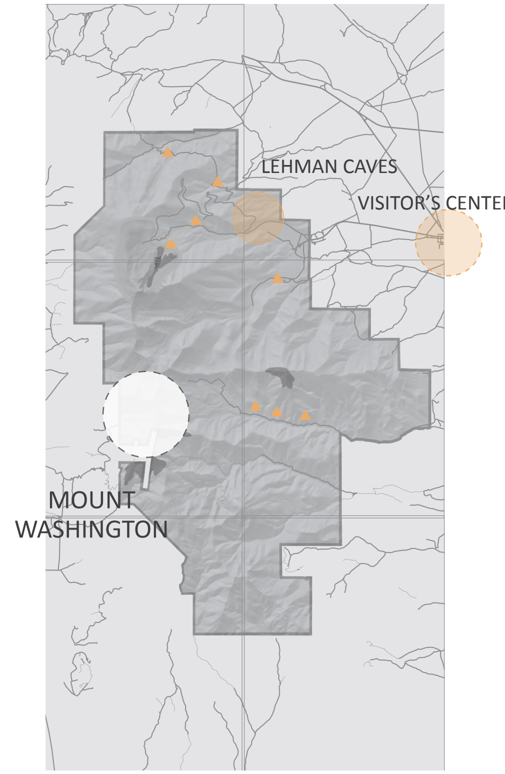

FIGURE 27 | Map of Great Basin National Park

FIGURE 28 | Mount Washington from the northwest

FIGURE 29 | Approach to the peak of Mount Washington

FIGURE 30 | Mount Washington from the southwest

FIGURE 31 | Approach to the peak of Mount Washington

FIGURE 32 | Approach to the peak of Mount Washington

FIGURE 33 | View from peak; desert plains to the north

V. THE OBSERVATORY

THE APPROACH

The mile-and-a-half hike from the existing parking lot to the northernmost cliff serves as to transition visitors from the experience of the greater park, to the specific experience that the observatory provides at the peak of Mount Washington. The design of the approach refers to clues within the landscape and sky that provide a meaningful experience, directly shaped by the conditions of the site. The specific navigational clues within the site are a topographic gulley that carves into the terrain all the way from the southern parking lot to the northernmost cliff, and a path of snow that collects in the gulley. The snow would reflect brightly in the moonlight, being particularly helpful to patrons visiting the observatory at night. Additionally, this design identifies celestial navigational clues of the North Star - which remains constant in its position every night of the year - and the path of the sun at equinox, which rises and sets cardinal east and west respectively. These celestial clues are traditional navigational signs that have guided travelers for centuries.

The design response to these clues is a subtle gravel path that carves into the limestone landscape along the gulley. As it nears the peak, the path divides, allowing for visitors to either continue on to the highest point of the mountain, or to turn directly north in alignment with the North Star. This branch of the path leads directly to the observatory, continuing to carve into the landscape to access the sweeping views to the north.

Located along the path are small terraces carved into the landscape. These terraces offer moments of pause and give indication of the architectural intervention that lies ahead.

FIGURE 34 | Aerial photograph of Mount Washington

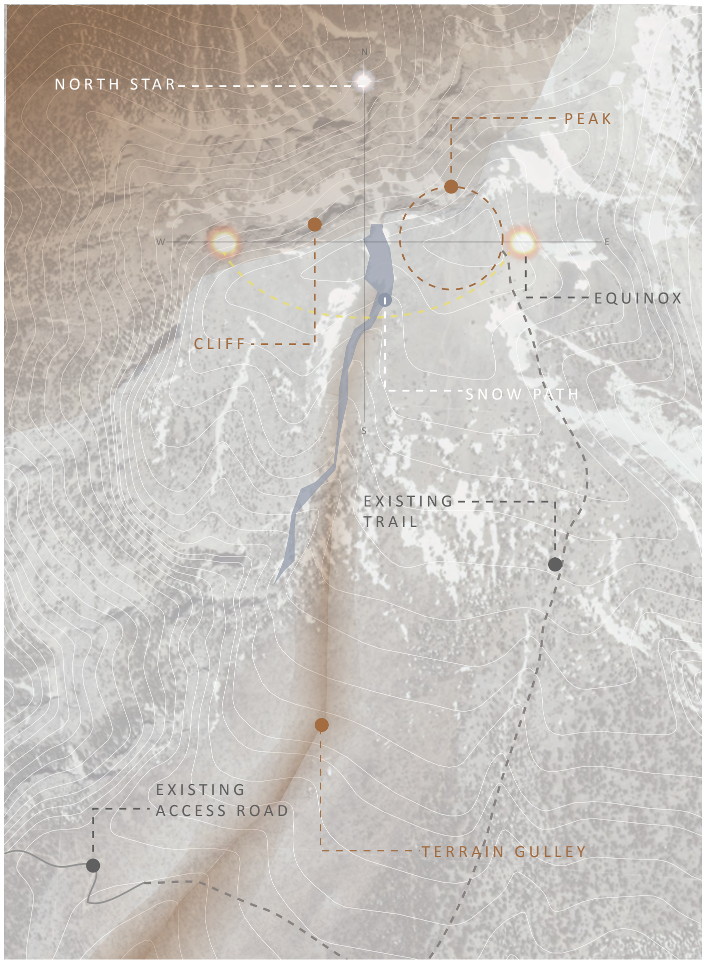

FIGURE 35 | Diagram of existing site navigational clues

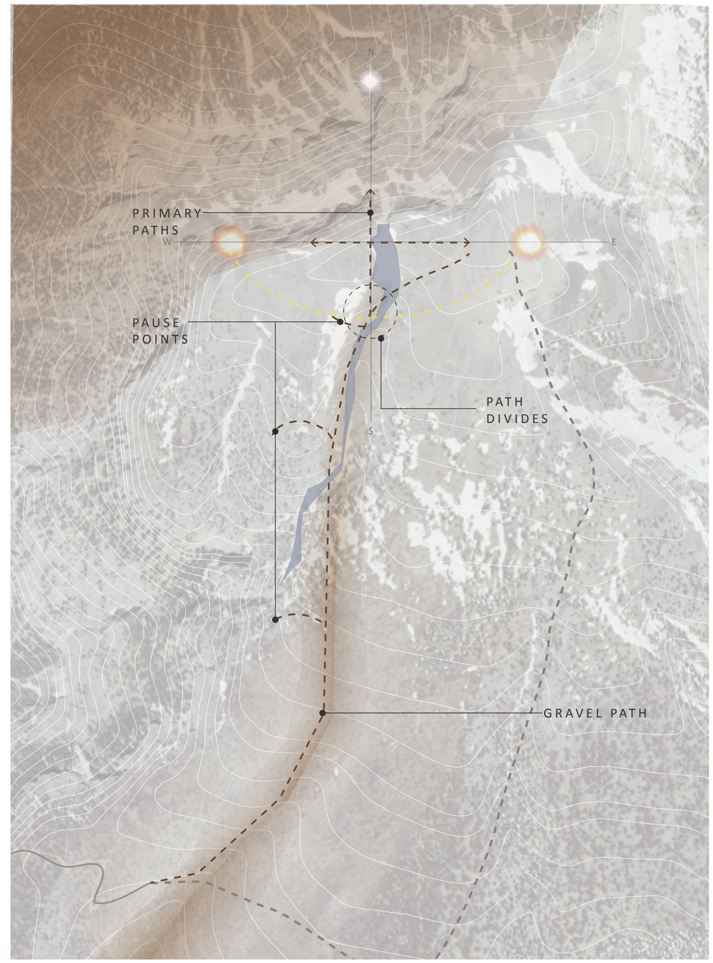

FIGURE 36 | Diagram showing intervention of gravel path

FIGURE 37 | Moment of pause along gravel path

FIGURE 38 | View along gravel path approaching the observatory

FIGURE 39 | Moment of arrival at the observatory; path continues to carve through the site

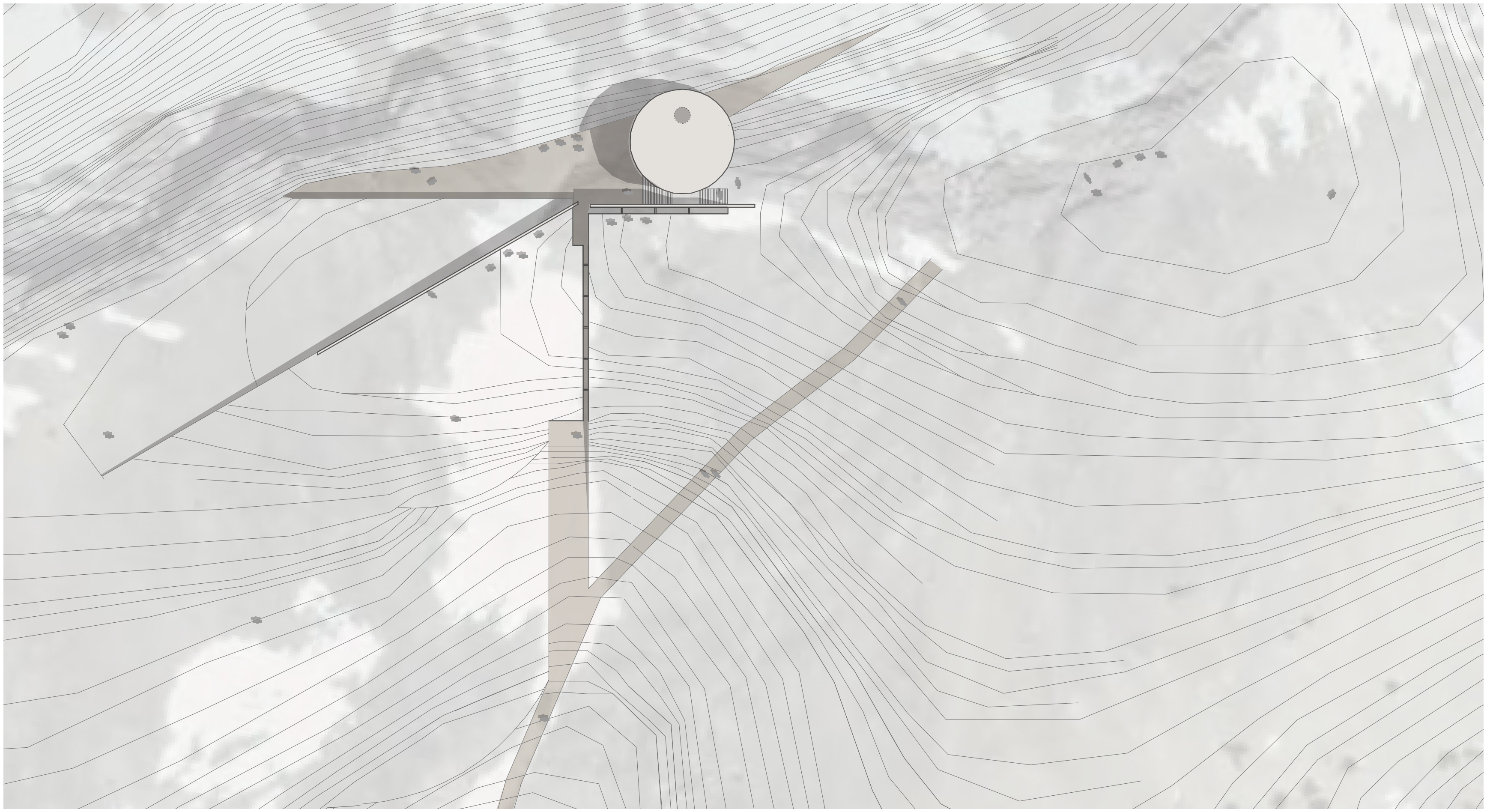

FIGURE 40 | Site plan showing exterior experience of the landscape and observatory

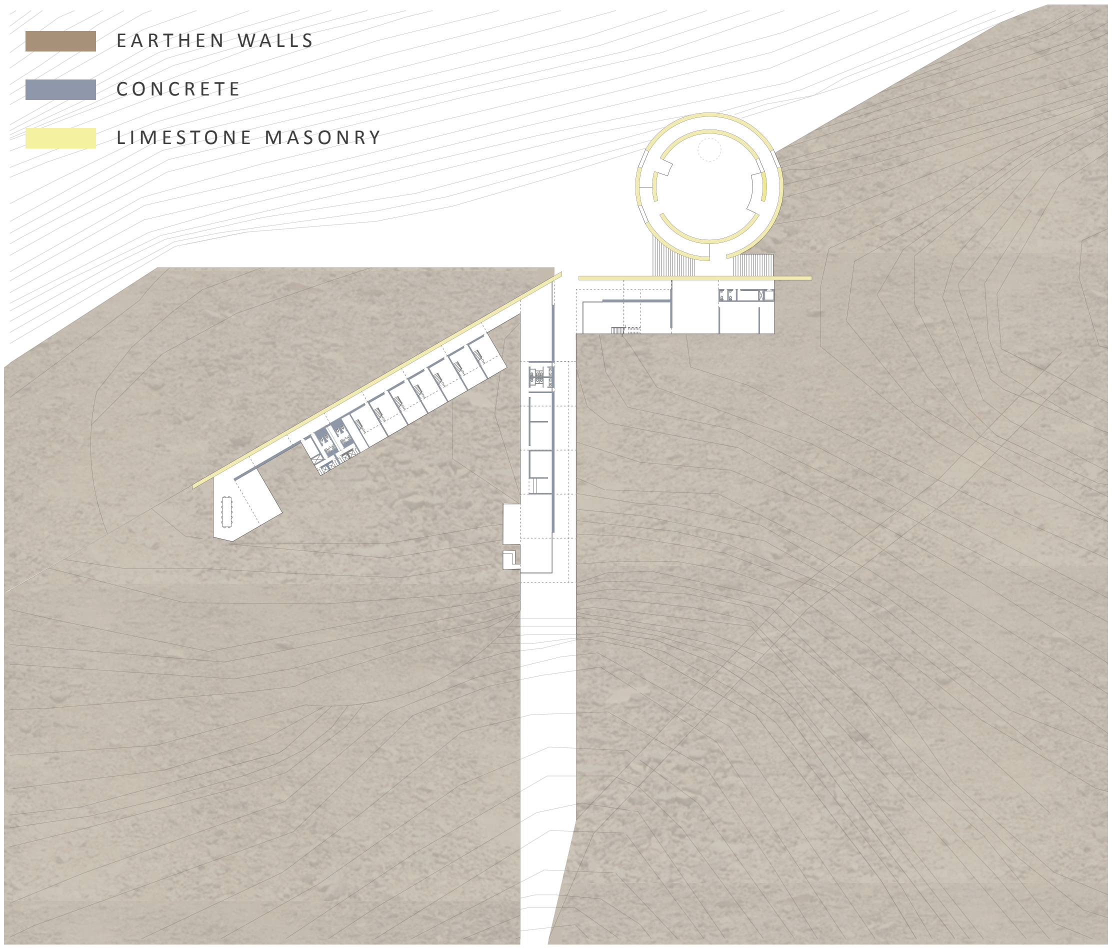

FIGURE 41 | Plan diagram showing materiality of the architecture

MATERIAL SEQUENCE

Just as celestial clues inform the sequence of the primary paths through the observatory, the materiality of the architecture also is significant to the procession through the observatory as a negotiation between landscape and architecture. The three primary materials being used are earthen walls - carved directly from the limestone terrain, pre-cast concrete - which conveys a solid, bunker-like character to the architecture, and limestone masonry - which is not only a material indigenous to the site, but is a material traditionally used in architecture to convey permanence and gravitas. In proceding through the spaces, a visitor initially moves between only earthen walls, then circulates between earth and concrete, oand finally between limestone surfaces at the most architecturally constructed point of the observatory at the north cliff.

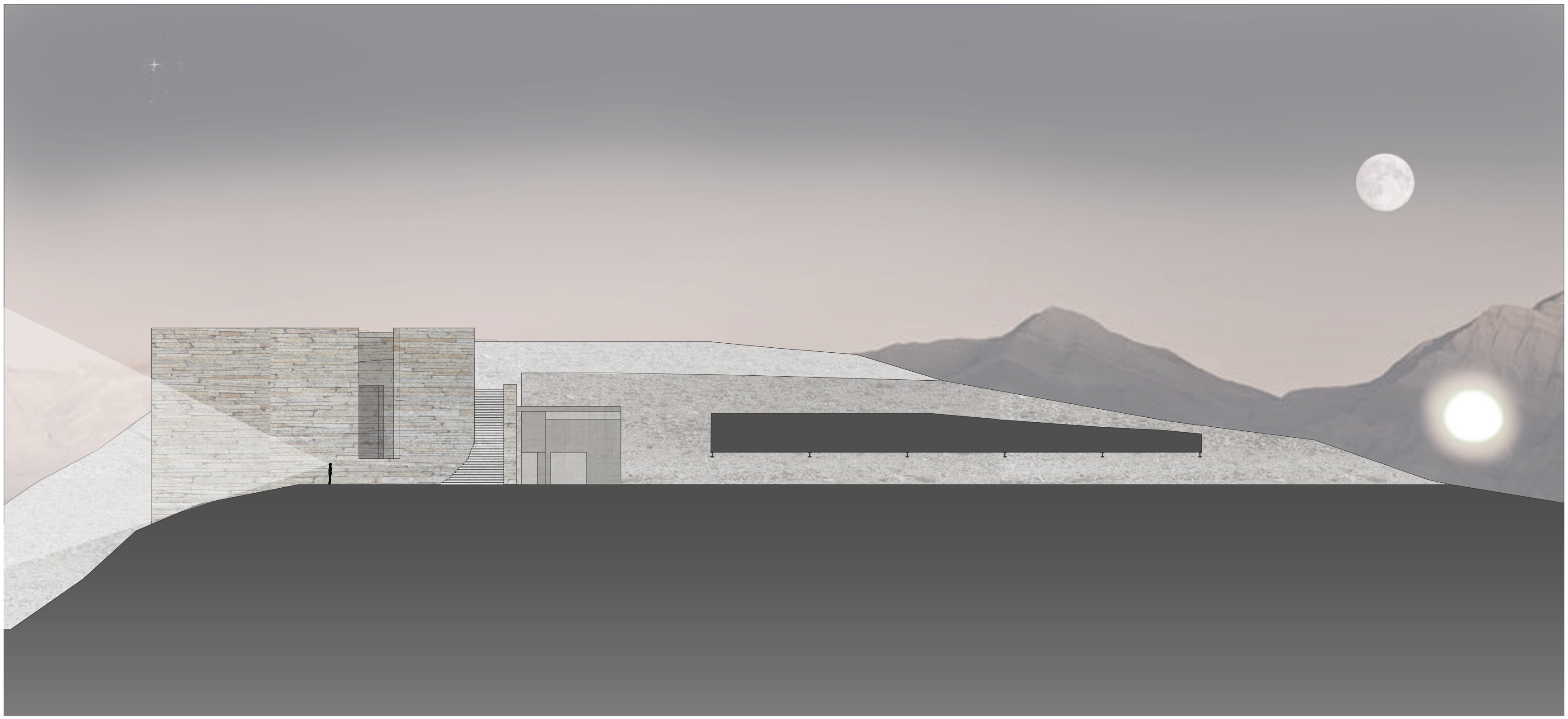

FIGURE 42 | Section facing east showing path carving through the landscape to access primary views to the north

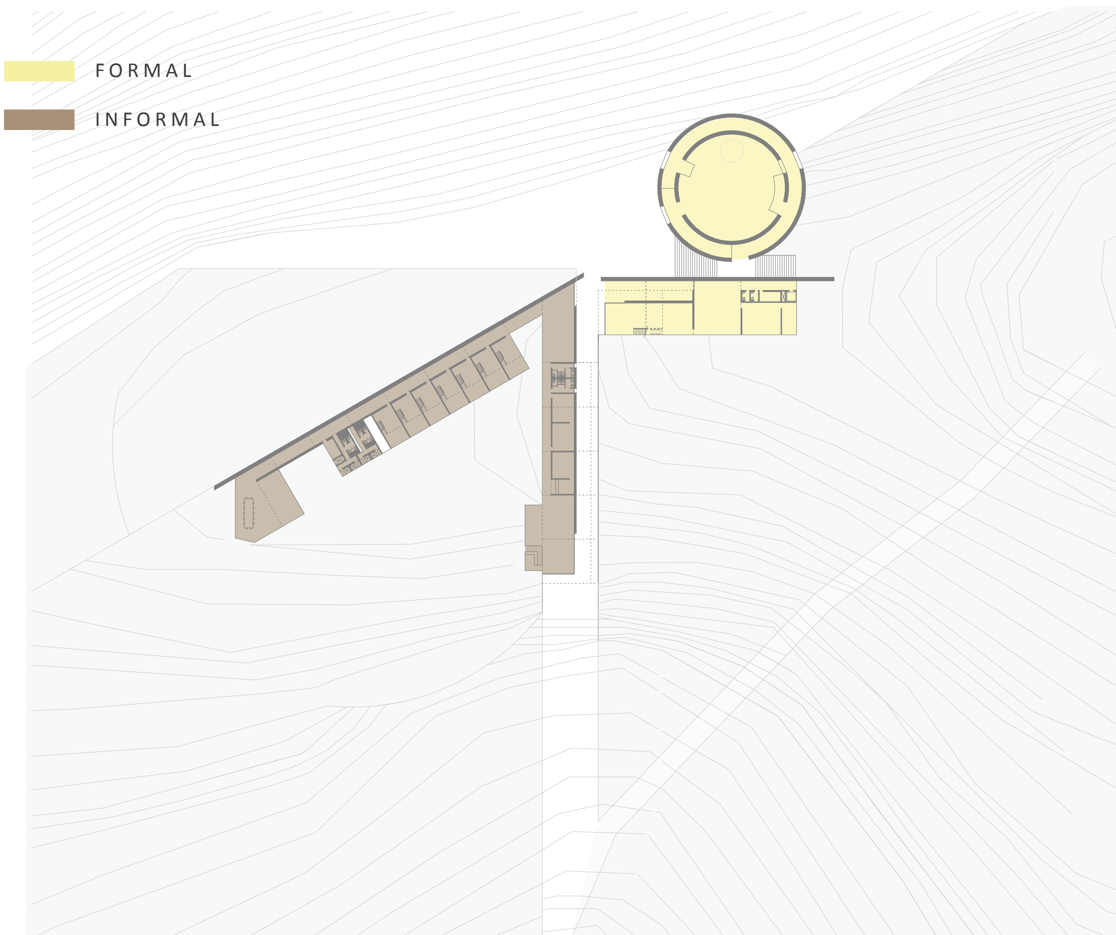

FIGURE 43 | Diagram showing program division

PROGRAM

In addition to allowing direct access to the views to the north, the path also serves to divide the observatory programmatically, with the informal elements to the west, and the more formal elements to the east.

The informal program spaces consist of an informational center and a dormitory wing. These informal spaces allow visitors to experience the site and skies for multiple days at a time year-round, with access to equipment rental and storage.

The formal program spaces consist of a library - which promotes the continuation of astronomy as a search for knowledge - and the solstice room. The solstice room serves as the primary assembly space for the Annual Astronomy Festival, and also serves as a large space for individual contemplation at other times.

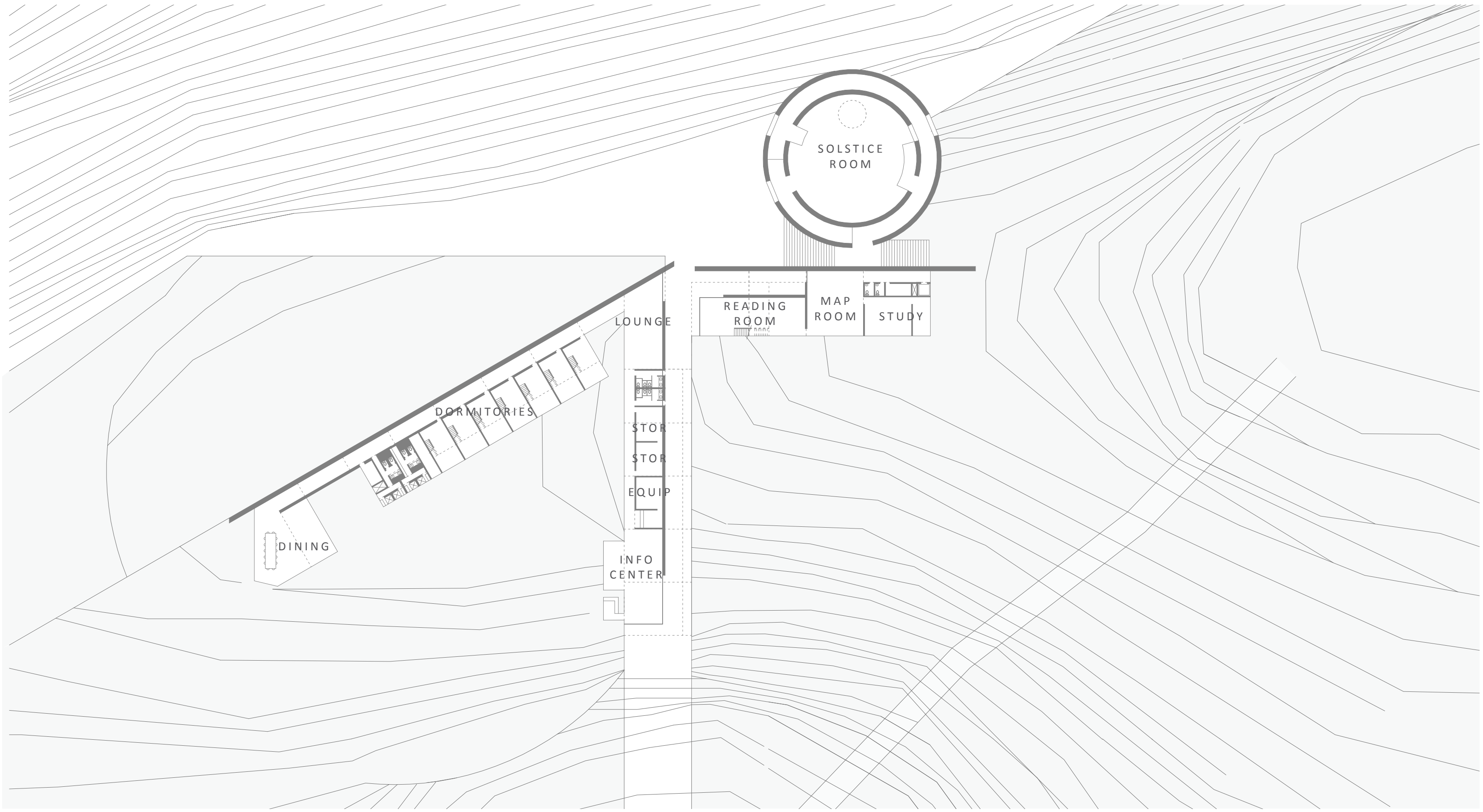

FIGURE 44 | Plan of the observatory

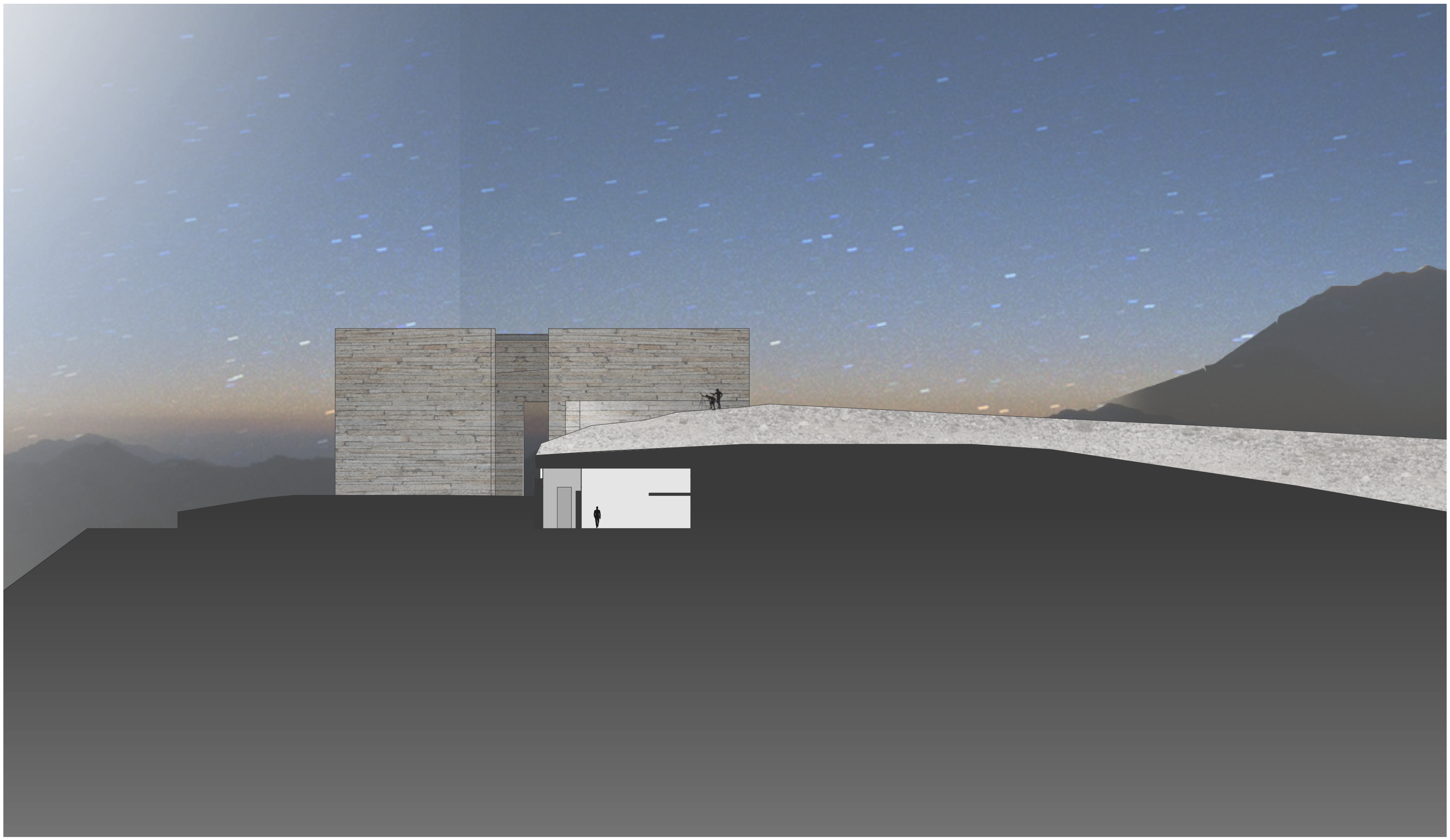

FIGURE 45 | Section through dormitory facing east

Many of the spaces are carved into and buried within the terrain. This strategy aims to prevent any artificial light from interfering with the observational activities taking place outside. Additionally, this allows for the roofs of the buried spaces to remain as occupiable terrain for observing the landscape and sky.

DORMITORY

The dormitory consists of seven lofted rooms for sleeping and observing, bathing facilities, and a small dining/kitchen to be shared by patrons visiting the observatory. All of these spaces are carved into the landscape, with selective openings to the sky and a strong presence of the earth overhead. These spaces are intended to offer a feeling of refuge and containment as a counterpoint to the expanse and exposure experienced outside in the vast landscape.

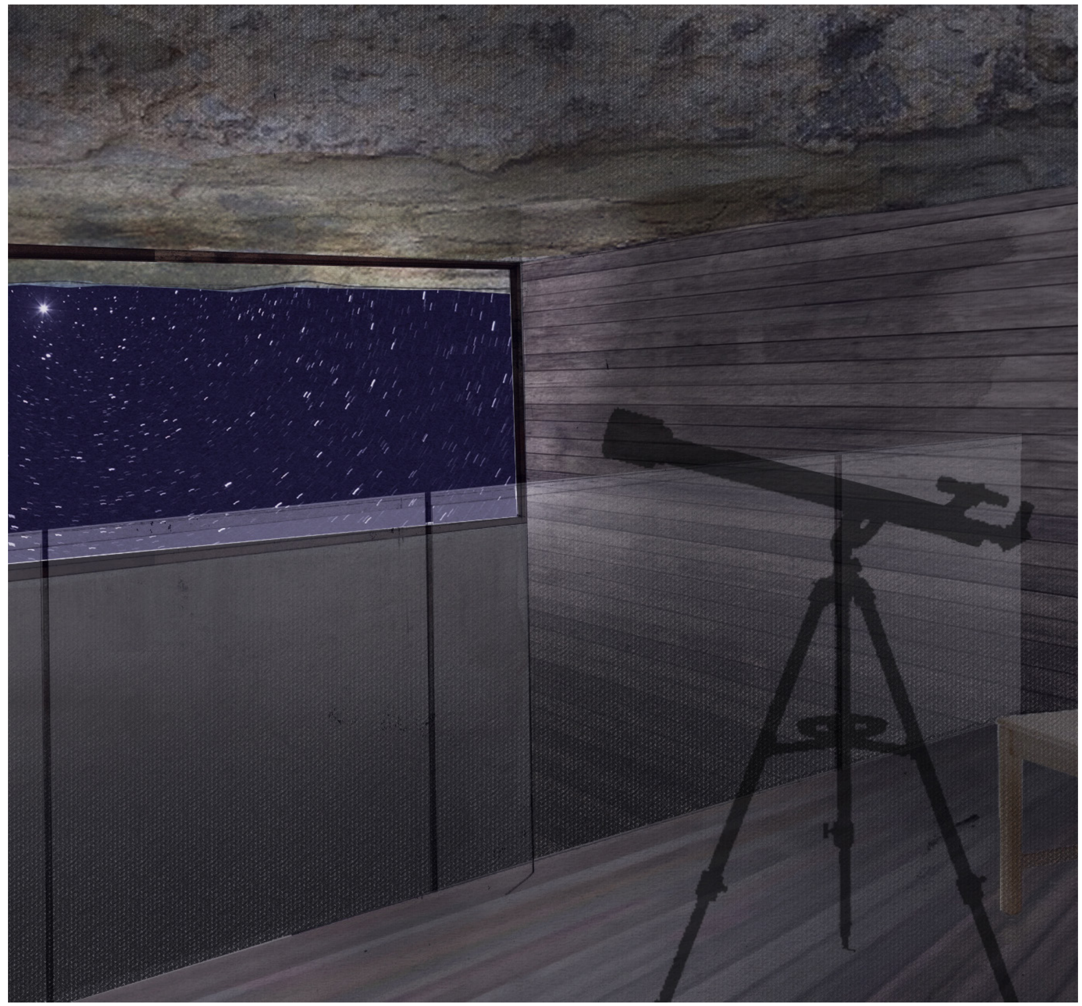

FIGURE 46 | View from inside a lofted dorm at night

FIGURE 47 | View inside the dining room during a full-moon

LIBRARY

The library is also buried within the earth, shielded from the expansive northern views by a massive limestone wall. The library consists of two levels of program, offering spaces of different heights and scales for varying degrees of collective and individual study. Some of the rooms that are located in the library are a large double-height reading room, a room devoted entirely to maps and navigation, small conference rooms, and individual studies.

SOLSTICE ROOM

The culminating interior experience of the observatory occurs in the solstice room. Unlike the experiences of the other interior spaces, the experience of the solstice room is just as much about expanse as it is about containment.

The sectional relationship between

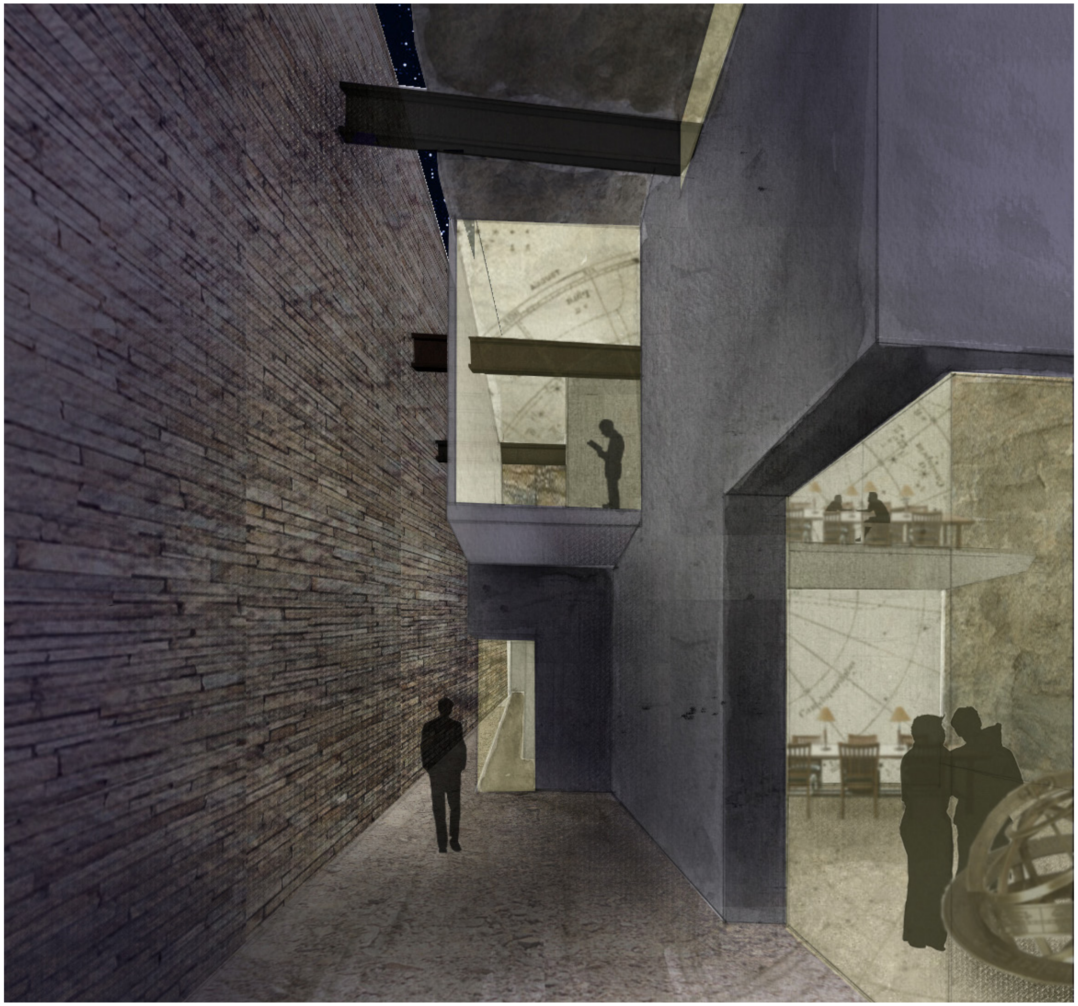

FIGURE 48 | View from the entrance into the library

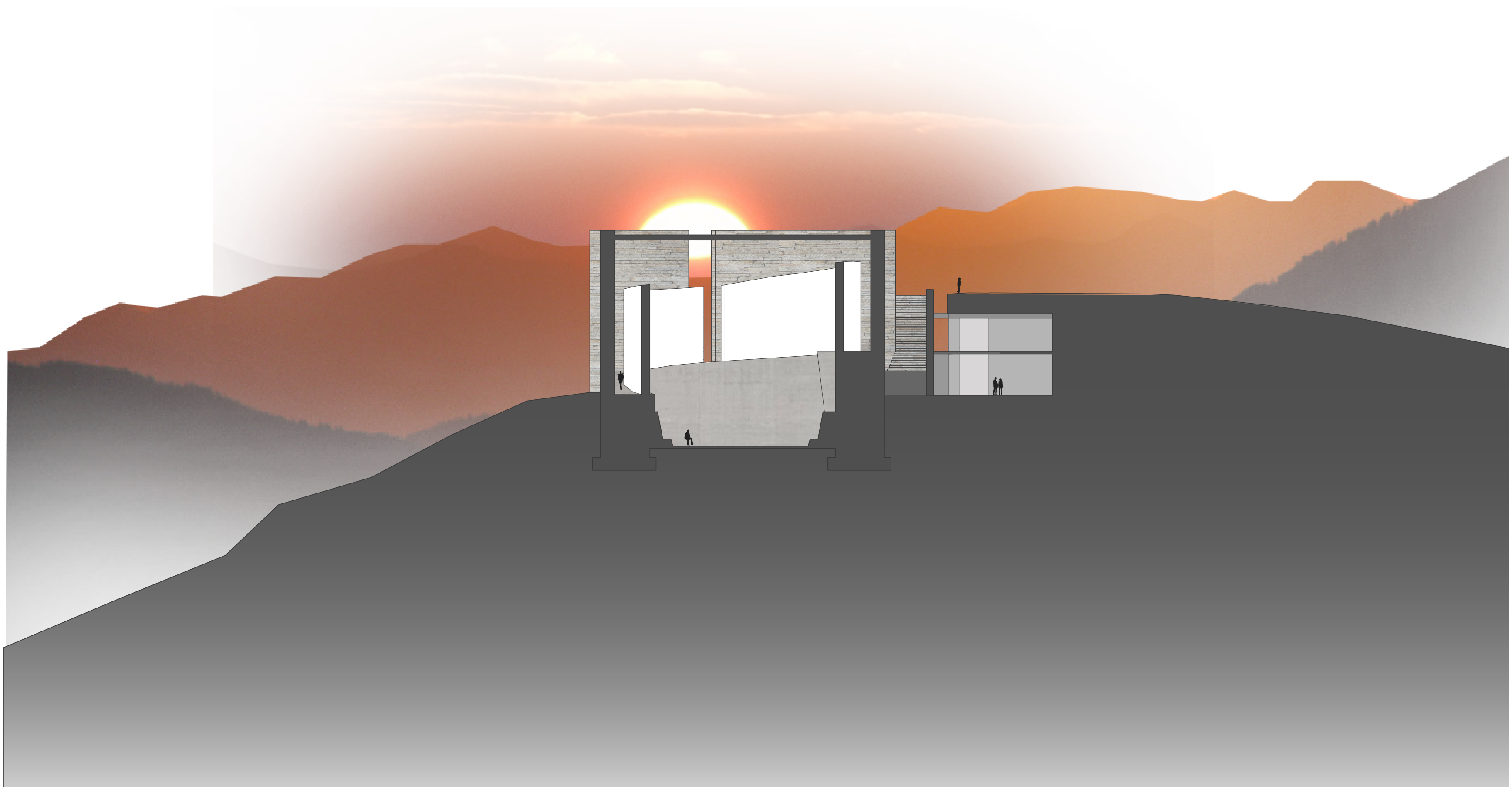

FIGURE 49 | Section through library and solstice room facing east

the solstice room and the library shows the large cylinder as a prominent object placed on the landscape, rather than buried within.

The solstice room consists of two limestone cylinders, between which visitors circulate along a downward spiraling ramp before entering into the large assembly room. The openings in the walls of both cylinders are cut to align with the rising of the sun at summer solstice, and the setting of the sun at winter solstice.

The composition of the large interior space references the design of James Turrell's skyspaces. The room consists of a large oculus overhead to let in light and snow, and a singular concrete bench on which visitors may sit to watch the sun trace its path around the room. At night, the room glows in the moonlight, offering a single window to the stars.

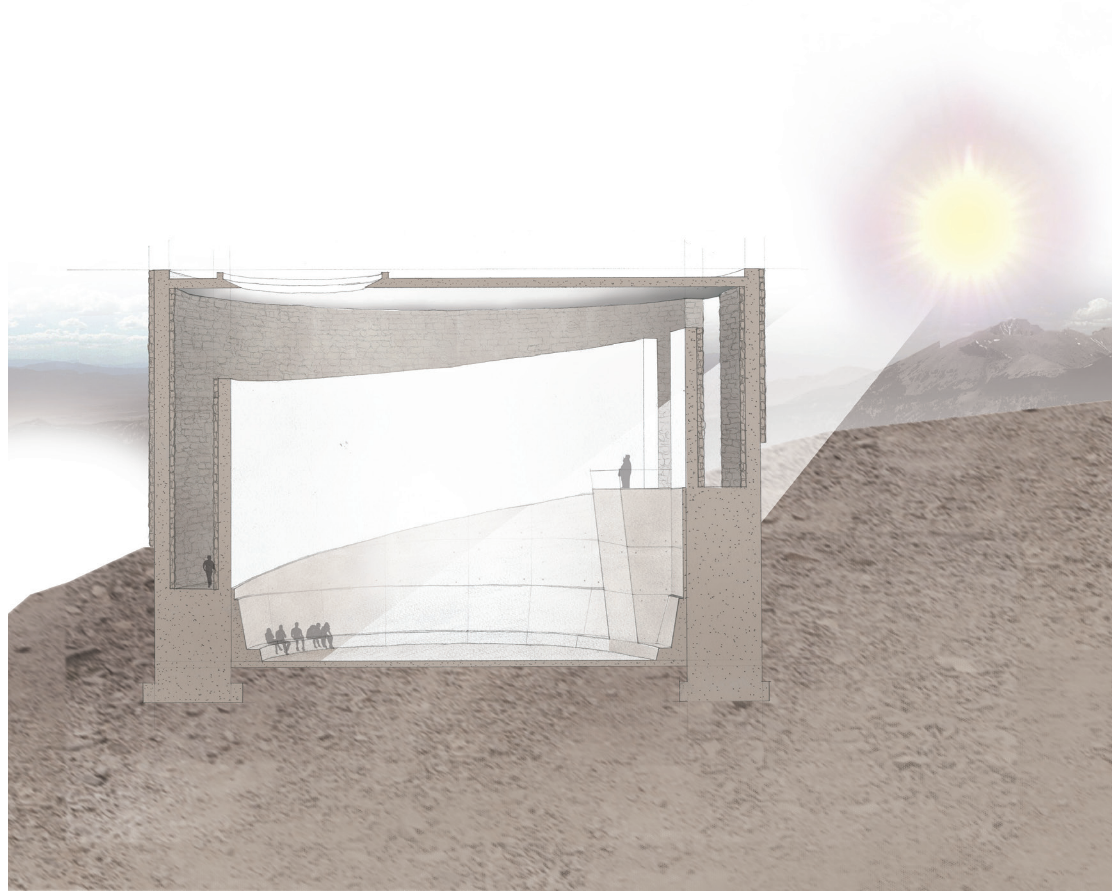

FIGURE 50 | Section perspective of solstice room

FIGURE 51 | Solstice room at night

FIGURE 52 | Solstice room at winter solstice

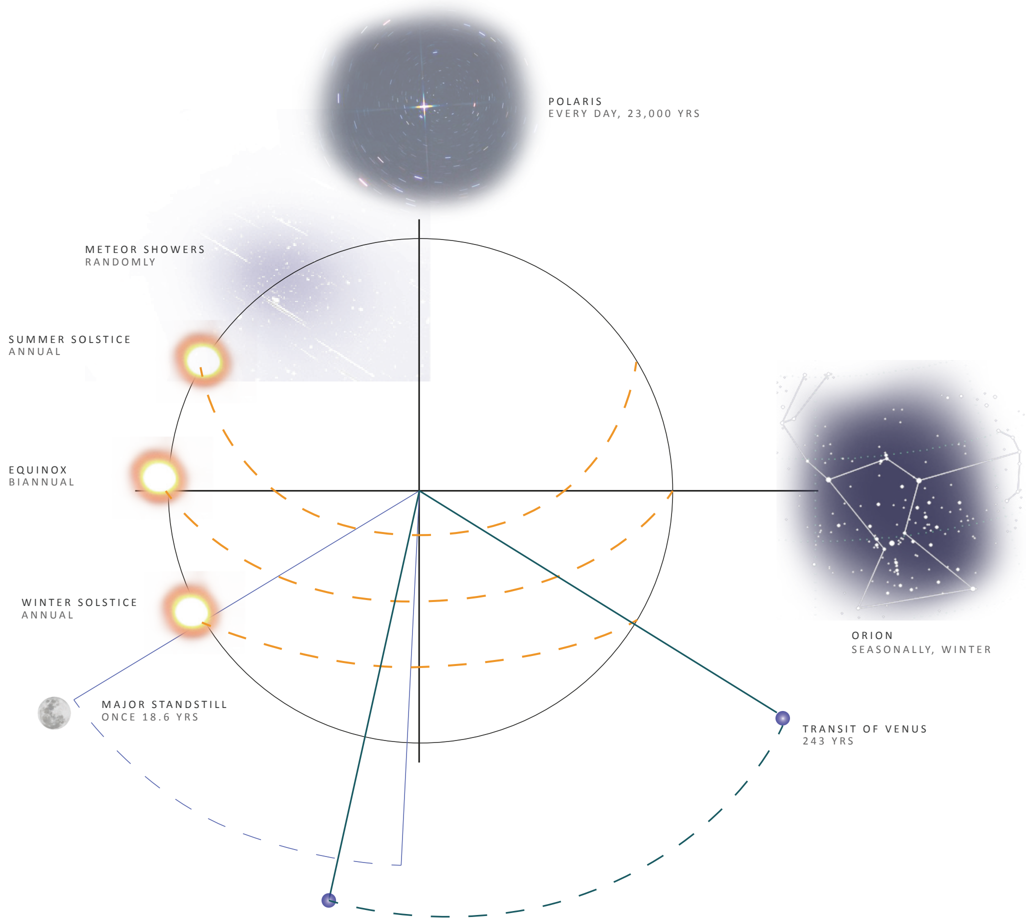

FIGURE 53 | Diagram of celestial alignments

CELESTIAL ALIGNMENTS

In addition to dictating the positioning of openings in the solstice room, celestial events play a role the placement of openings, paths, and generation of forms throughout the entire observatory. The celestial bodies which are consequential to the design of the observatory are each significant at different intervals of time; for instance, the position of Polaris, which has remained constant every night for 23,000 years, will align with the primary circulation path every night, versus the transit of Venus across the sun, which will align with the southern viewing terrace once every 243 years. With these events occurring at varying intervals of time, a person's experience of the observatory in relation to the sky and landscape takes on different significance depending on the time of year - or time of millennia - that they chose to visit the site.

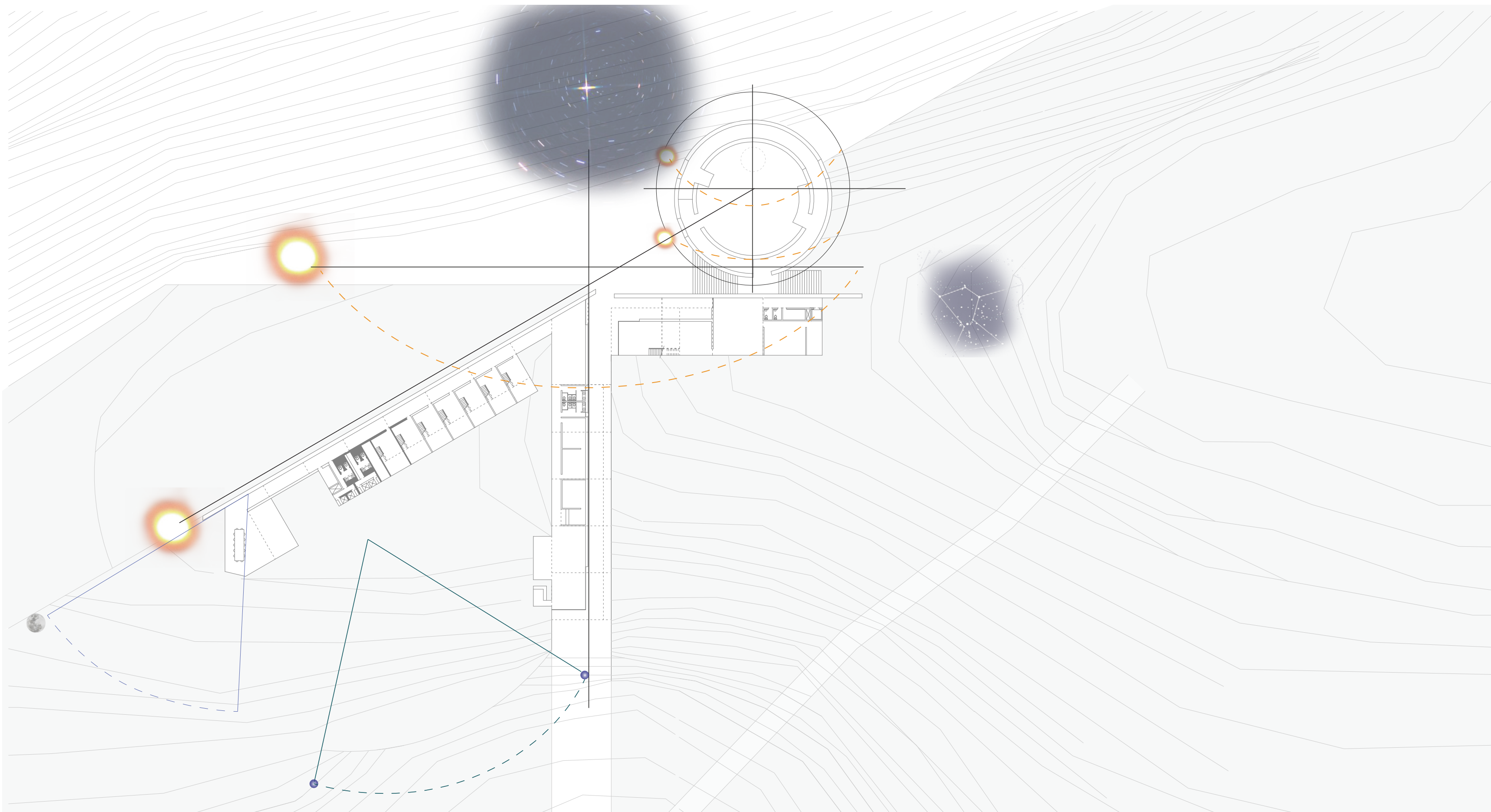

FIGURE 54 | Diagram showing celestial events aligning with the architecture

FIGURE 55 | At the entrace to the visitor's center

EXTERIOR EXPERIENCE

Perhaps as important to the interior experience of the observatory is the experience of moving through the exterior landscape as directed by the architecture. It is the intent of this design that a visitor may come to the observatory, walk around and experience the landscape and architecture in a meaningful way without ever going inside.

The illustrated procession shows what this exterior experience would be like for a person visiting the site in late afternoon on the equinox. This procession begins with confronting the architecture at the top of the mountain, before continuing north along the gravel path, compressed by the earth overhead, with light and shadow tracing the earthen walls. The experience becomes expansive at the northern terrace, offering views of the desert plains beyond, only to be compressed when circulating westward between the monumental limestone cylinder and wall en route to the highest point of the mountain. The exterior experience compounds when a visitor reaches the peak of the mountain, looking back on from where they came to see the architecture and landscape carved in direct alignment with the setting sun.

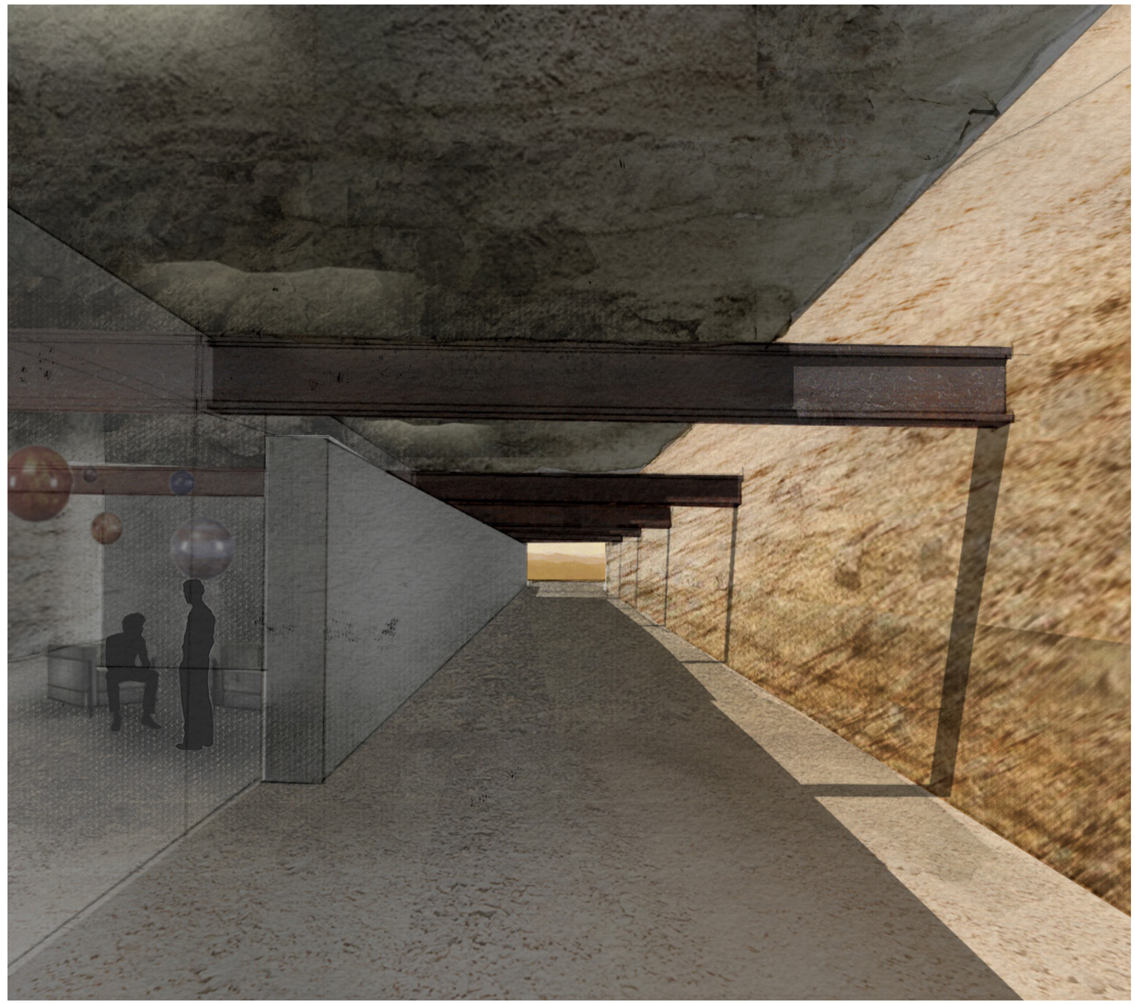

FIGURE 56 | Along the primary circulation path looking through to the north

FIGURE 57 | At the threshold of the northern viewing terrace

FIGURE 58 | From the northern cliff facing east to the mountain peak

FIGURE 59 | Facing west at sunset on equinox

IV. CONCLUSIONS

This thesis began as an exploration of the desert as a physical, cultural and phenomenological landscape. It was the hope of this project to bring awareness to the spiritual potential of the desert experience through architecture which engages both the earth and sky. This fundamental intention raised general questions concerning the appropriateness of architecturally intervening in the desert: Is any attempt to mark the landscape with architecture a violation of the purity of the desert? Is there a place and purpose for people to engage with the desert in a way that aligns with its inherent properties? Can any form of architecture effectively convey the power of the desert landscape without diminishing it?

This exploration played out in the design studio as a continual effort to achieve balance between architecture and landscape. In such a powerful setting as the Mount Washington desert, the resulting architecture was equally powerful - heavy and monumental in its presence. Architecture does not need cede its strength to the power of the landscape; rather, it can enhance it through its own gravitas. Hopefully the architecture which has resulted from this thesis conveys how architecture, the landscape, and the sky can all come together to enhance the experience of each, and as a result, to provide a more meaningful desert experience.

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