THIS IS SACKVILLE CALLING: A MEDIA ARTS CENTRE ON THE FORMER SITE OF THE RADIO CANADA INTERNATIONAL SHORTWAVE TRANSMISSION STATION, SACKVILLE, NB

by

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CONTENTS

ABSTRACT

This thesis explores how the loss of the Radio Canada International Shortwave Radio Transmission Station may inform a new architecture that builds upon the collective memory of a place while introducing program that will vitalize and connect the site back to the town of Sackville, New Brunswick, once more.

The program of a media arts school and residency will test the varying technologies and activities associated with broadcast and creative campus design. This study also investigates how the inclusion of a media arts school may create public engagement and strengthen the connection between the people of Sackville and the surrounding landscape, reconnecting this charged site to the traditions and fabric of the town of Sackville.

ACKNOWLEDGEMENTS

Thank you to my thesis supervisor, Niall Savage, for your unwavering passion and belief in this project. Thank you to my thesis advisor, Jonathan Mandeville, for the countless hours of conversation that saw this project materialize.

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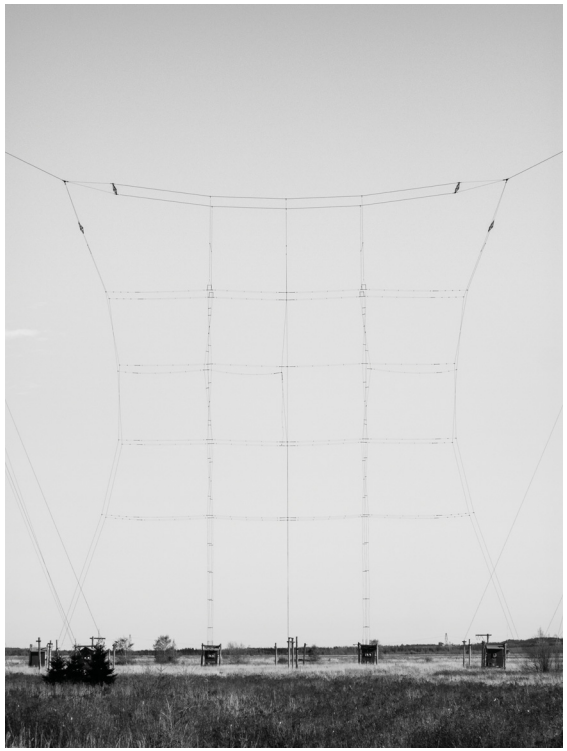
CHAPTER 1: INTRODUCTION

> [The Radio Canada International Shortwave Radio Transmission Station, Sackville, New Brunswick] will serve both a national and an international purpose. It will bring the voice of Canada to our own sons and daughters in other lands. It will also bring Canada into closer contact with other countries. - Prime Minister Mackenzie King (CBC Radio Special Program 2014)

The relentless charge of technological change has rendered a once functioning industrial icon of the town of Sackville obsolete. The RCI Shortwave Transmission Station once projected the voice of Canada around the globe and in doing so linked the world back to the small maritime town. The station's contribution to allied initiatives in World War II later shifted to the exportation of Canadian identity and ideas, as well as the relaying of content from countries around the world via shortwave transmission. By 1968 RCI Sackville was broadcasting to the world in eleven languages; English, French, Czech, Slovak, German, Hungarian, Polish, Portuguese, Spanish, Russian and Ukrainian, for approximately 90 hours per week.

The site of the RCI is part of Sackville's cultural and physical identity, providing the town with both industry and landmark for over 70 years. Stretching 1.2 km wide and standing over 130m tall, 13 towers with their sprawling antennas have found a place in this comparatively tiny town and have become part of the collective memory of Sackville.

Each tower seems impossibly perched on a concrete pad barely visible through the thick marsh grass. The towers vary in height but are more or less similar in form and structure. Triangulated or square truss components are demarcated in alternating colours of red and white,



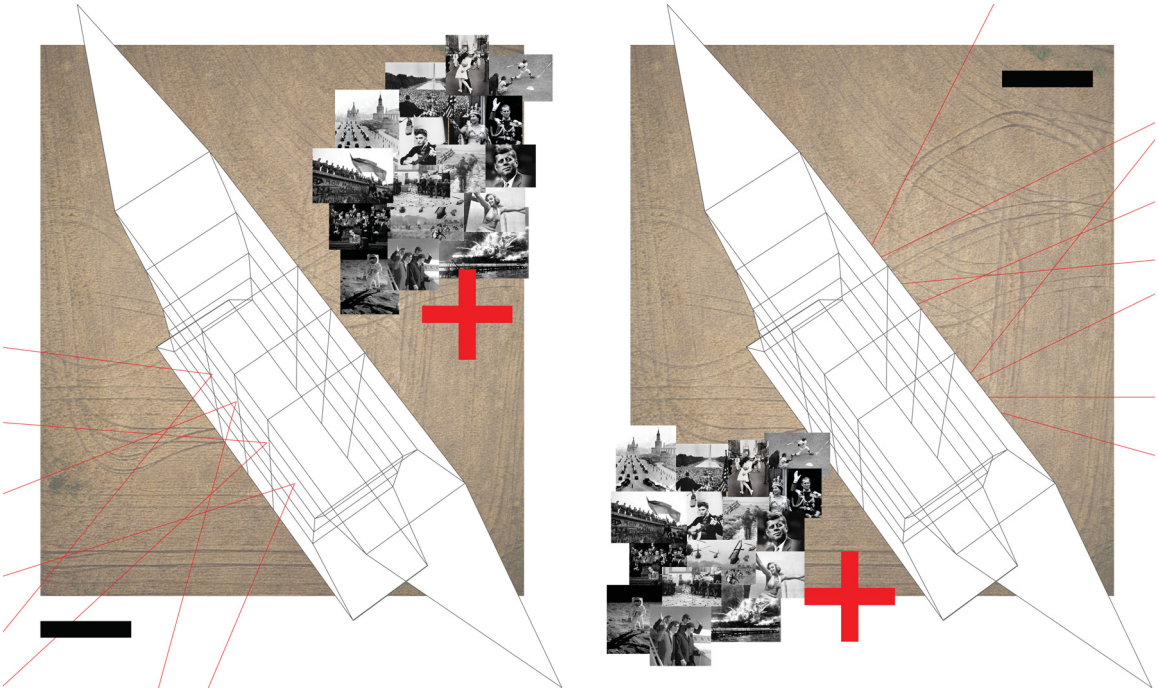
Photos taken mere months before the station’s demolition emphasize the sharp contrast of the tall towers in relationship to the expansive landscape. Towers, secured by a sea of guy wires, suspend massive bidirectional antennas. Spacers between each antenna create a tall and slender three dimensional space. Small huts containing the antennas polarity switch boxes scatter the landscape and act as scaling devices for the vast network above.

approximately every 24 feet. Miniature ladders when visible present a rare opportunity to read their scale from afar. Guy wires tangle through the site anchoring to small overgrown concrete pads. At their peak a horizontal truss producing socks on either end receives cables suspending the antenna from the neighbouring tower.

Each antenna is finely engineered in shape and size, often resembling that of a suspended honeycomb. Large steel spacers give the antennas their dimension, creating a thinly outlined structure. Each side of the antenna structure has a function while broadcasting; each side represents a positive or negative polarity. A positive polarity propagates electromagnetic waves while the negative blocks potential interference. One can imagine the antenna interior being a neutral space, undoubtedly quite and calm.

The enormous man made spider web, with its endless array of flashing red lights, evokes a thrilling sense of power and mystery for those passing on the TransCanada Highway. The site's alien presence and scale in the landscape confronts travellers as they commit to crossing the invisible threshold produced by the massive arc of antennas. Fog and mist rises daily from the marsh and consumes the towers, constantly masking and revealing their structure and footings in a playful performance. If one dares to stop and observe the towers the fresh dampness of the salt filled air is overpowering. The sound of the wind resonating the sea of cables and guy wires produces a symphony of dissonant frequencies barely audible, convincing visitors that they are somehow hearing the emission of the signals themselves.

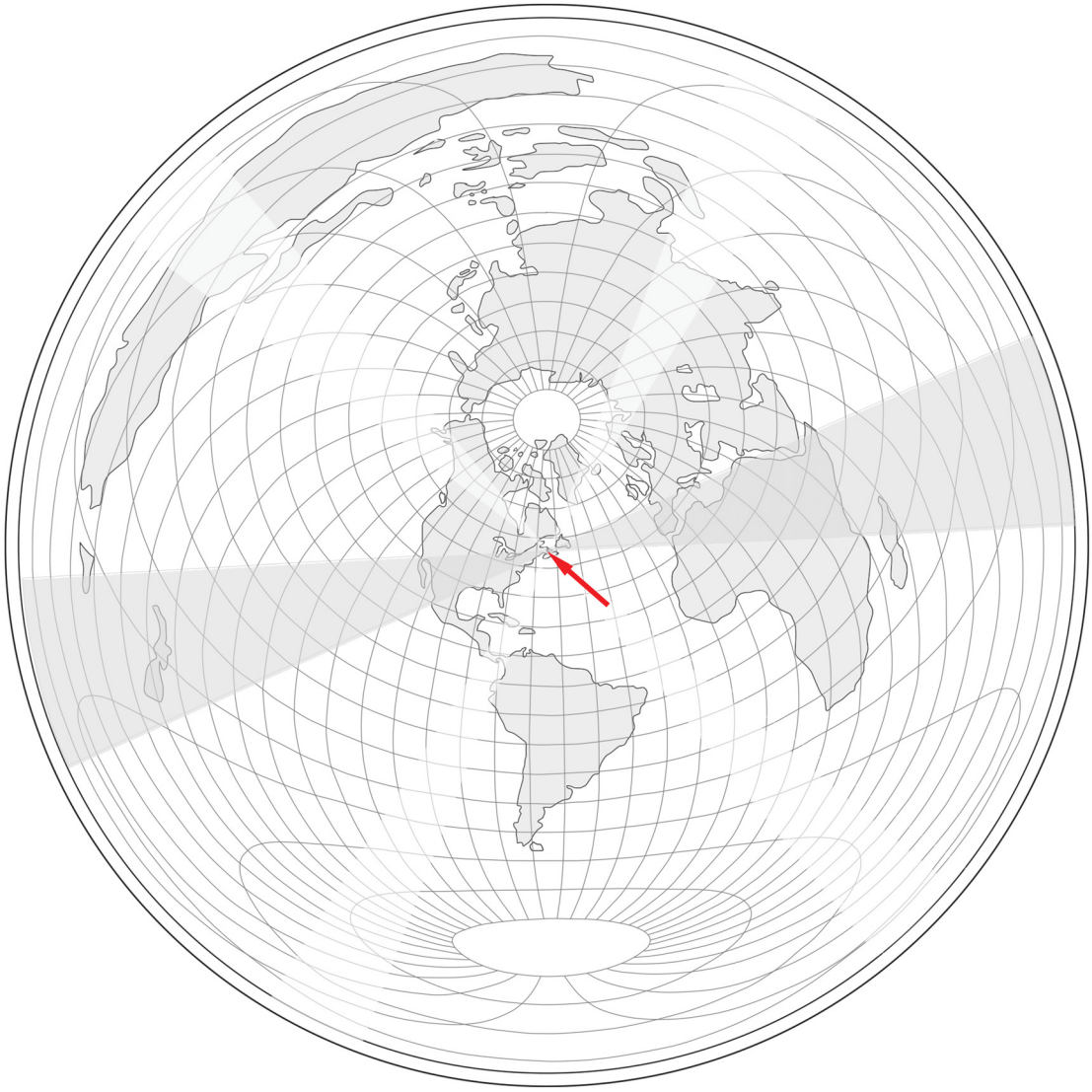
Over the past few decades broadcast has found new and arguably more efficient means of reaching its audience making shortwave radio outmoded. The site acted as Canada's sole short wave long-range radio transmission station until June of 2012 when RCI emitted its final broadcast and closed its doors. As a result the iconic monument is being dismantled and with that change, Sackville is losing a valuable part of its identity. The coming down of the towers and antennas is felt both as a physical loss and the loss of an industry.



Each bidirectional antenna consists of two faces separate by large metal spacers. The interior space created is neutral while either face is charged positively or negatively by polarity switches. The negative works to deflect potential interference while the positive projects electromagnetic waves. Each antenna is grounded by a maze of copper buried deep in the moist soil.

Throughout much of the twentieth century RCI relayed international news and events to listeners around the world. The above image juxtaposes the magnitude of worldly events to the seemingly uneventful and isolated landscape of the Tantramar marsh.

SACKVILLE
Radio Center of the World



The above is an Azimuthal Equidistant Projection of the world originally prepared by C. S. Hammond Company of New York with shadings showing the short wave broadcast areas covered from the C.B.C. Transmitter at Sackville, New Brunswick.

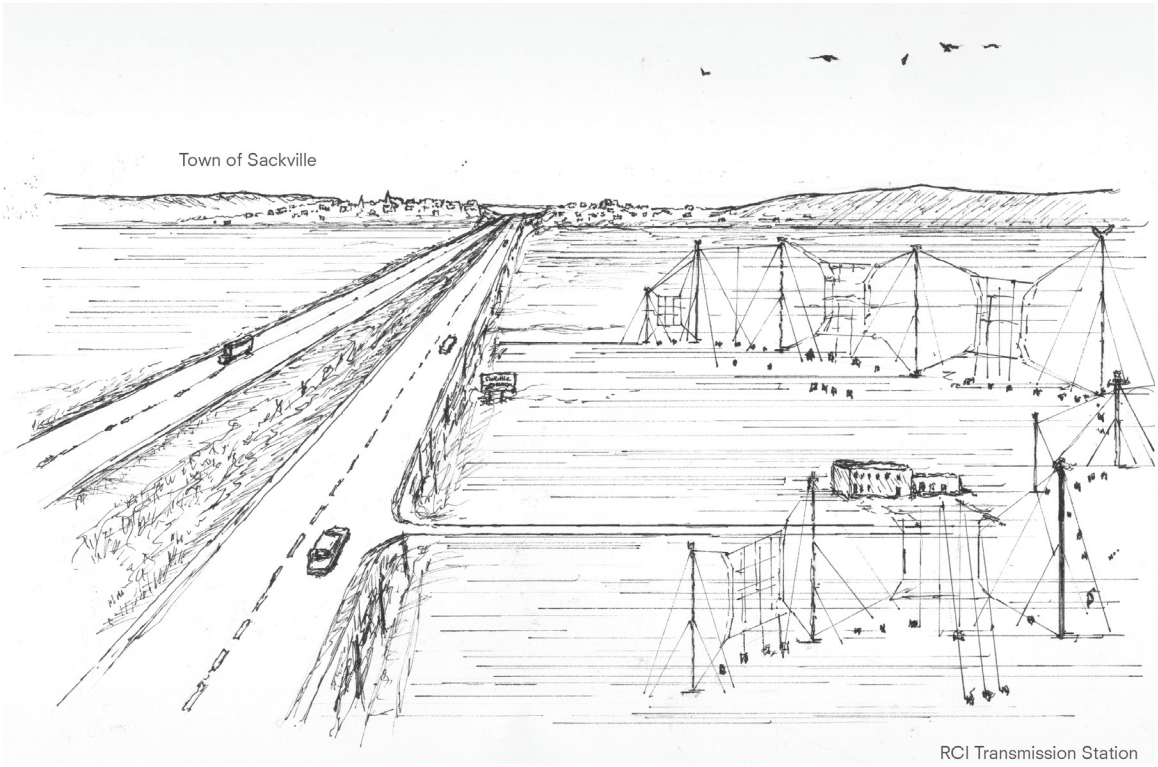
International Short
Wave Station
Sackville, N.B.

Forwards Direction	Reverse Direction
Beam Center Europe 60 degrees + 10 degrees Africa 97 degrees + 13 degrees South America 97 degrees + 13 degree	Beam Center Mexico & N. Zealand 240 degrees + 10 degrees Australia 277 degrees + 13 degrees Asia 351 degrees + 13 degrees

This reproduction of a diagram originally produced by C.S. Hammond Company, New York, shows areas shaded in grey that represent areas serviced by RCI, Sackville, around the world. The orginal image was produced for a publication called *Introducing Sackville* aimed at attracting new residents and potential business to the small town. Sackville Radio Center of the World (data from Sears and McKay 1968)

CHAPTER 2: SITE

Radio Canada International Shortwave Transmission Station



The Western edge of the Tantramar Marsh is demarcated by a ridge that contains the small town of Sackville, NB. The TransCanada Highway grazes the site of the RCI. The threshold produced by the web of towers and antennas intensifies travelling across the marsh.

The site of the decommissioned RCI Station is located within the Tantramar Marsh, an area known for its higher concentration of land within Chignetco Isthmus, a sub-basin of the Bay of Fundy that connects the provinces of Nova Scotia and New Brunswick, Canada. The Isthmus is a complex landscape of tidal rivers, mud flats, inland freshwater marshes, coastal saltwater marshes, and islands. Tantramar neighbors the town of Sackville and with it falls under the county of Westmorland, New Brunswick, which also encompass the towns of Aulac, Memramcock, Shediac, and the city of Moncton.

The RCI station was founded on an island of firm soil in the centre of the Tantramar Marsh between the towns of Aulac and Sackville. The TransCanada highway also takes advantage of this land, using its edge to bridge the highway across the isthmus.

> Work was undertaken in the early summer of 1943 and the old station replaced by a much larger building. Towers and poles appeared on the marsh supporting the great cables and network of wires forming the highly directional beam antennas. These serve to transmit the signals from the station in the specific directions desired so that they may be carried to any part of the world. This is entirely different from broadcasting where signals are transmitted in all directions from the radio station. The beam antennas serve to increase the power of the station 100 times in the direction of the transmission, which gives the 50,000 watt transmitter and effective power of 5,000,000 watts. (Sears and Mackay 1968, 49)

Sackville's association with the industry of radio broadcast precedes RCI. Located at the epicentre of the Maritime Provinces, Sackville proved an ideal location for radio transmission to the surrounding provinces. An engineer, H. M. (Mo) Smith from the Montreal office of the CBC arrived here in Sackville in 1935 and selected the Coles Island site for the location of the CBA (Canadian Broadcasting Association) Maritimes AM transmitter. CBA began broadcasting *This is CBA Maritimes* to the maritime provinces in April of 1939 on 1070 AM dial from what was to become the site of RCI. The location takes advantage of its proximity to the sea and the excellent transmission qualities of seawater to reach the various coastal areas of New Brunswick, Nova Scotia, and Prince Edward Island. The presence of radio broadcast in Sackville gave rise to the popularity of amateur radio enthusiasts, it wasn't long before groups and clubs emerged, exchanging tips, lessons, and revelling in the latest technologies available.

Shortwave radio technology occupies the low meter bandwidth of the electromagnetic spectrum, using the upper MF (medium frequency) and all of the HF (high frequency) portion of the radio spectrum, between the 3m to 200m bandwidth (1,800–30,000 kHz), which allows the radio waves to travel great distances. Compressed electromagnetic waves of this variety bounce back and forth between the earth and the ionosphere in order to reach their destination, often navigating the curvature of the earth in the process. Therefore, issues of ground, as well as issues of the ionosphere, at their point of origin are of great importance. The ideal ground condition for the propagation of shortwave radio waves just so happens to be moist marsh soil. A high moisture and salt content in the ground increases what is known as ground conductivity, allowing radio waves to project stronger clearer signals from their origin.

The ionosphere can be affected by a number of factors, including weather, solar flares, and interference from the earth's north magnetic pole. Obviously, neither solar flares nor weather can be controlled. However, by geographically locating the point of origin as far removed as possible from the north magnetic pole disruption and interference of radio waves may be significantly lessened.

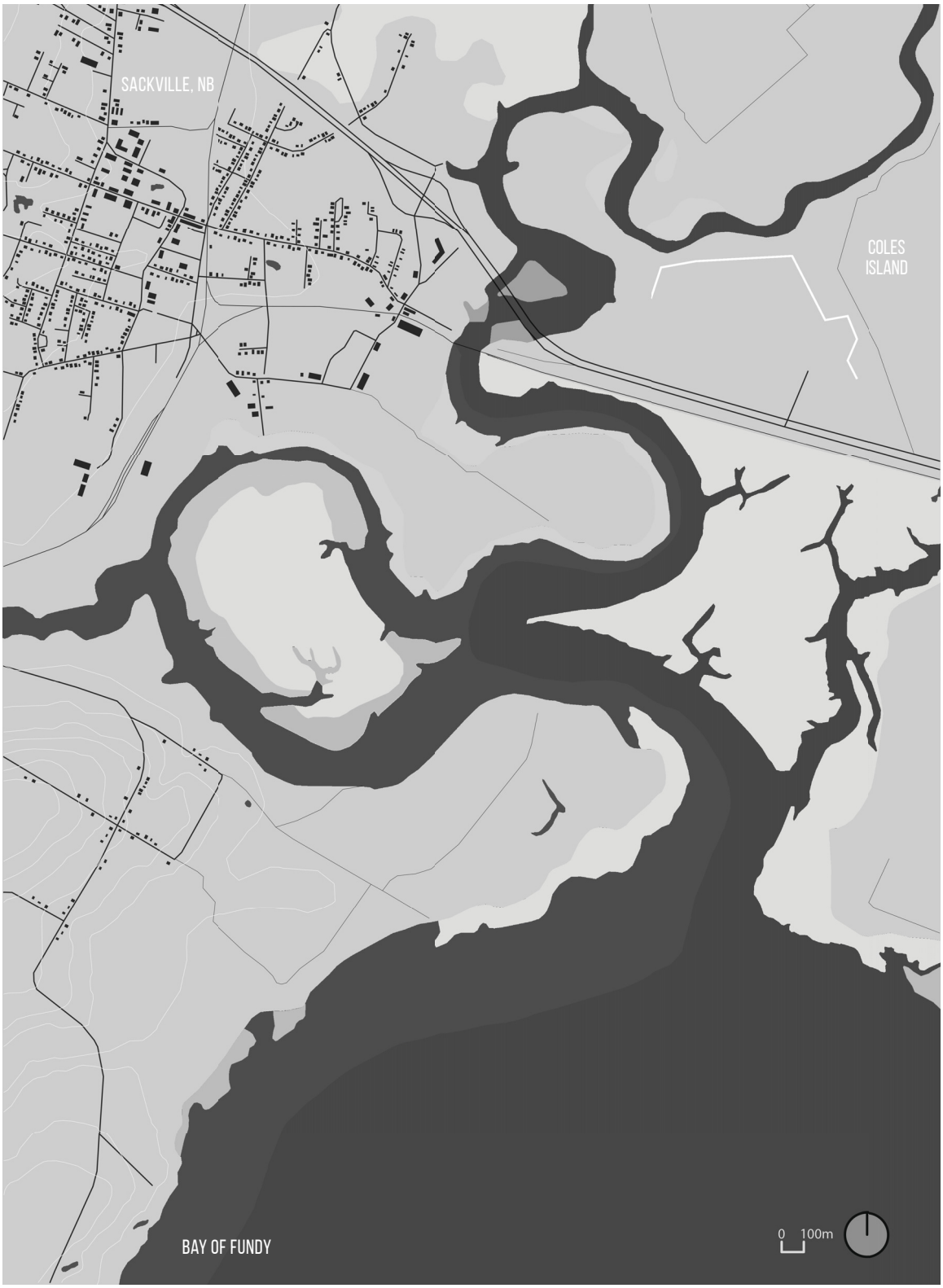
So why then was Tantramar ideal for RCI shortwave transmission? The availability of trained staff and facilities already existing in Sackville, the ideal ground conductivity for radio wave propagation, and the sites southward distance from the north magnetic pole; the sites proximity to the TransCanada highway and national railway for increased serviceability is an added bonus. As far as

Canadian Department of National Defence was concerned in the early 1940's there was no better place to act as Canada's centre for the broadcasting of shortwave long-range radio transmission.

SACKVILLE
Radio Center of the Maritimes

CBA 1050 AM 1939-1941

Geographically Sackville, NB is the most centrally located town in the Maritime Provinces, ideal for the transmitting of radio waves on the AM dial to coastal towns and communities in neighbouring provinces. The centrality of Sackville has played a huge role it becoming *The Cultrual Crossroads of the Maritimes*, as denoted in the towns provincial slogan. Sackville Radio Center of the Maritimes (data from Google Earth 2014)

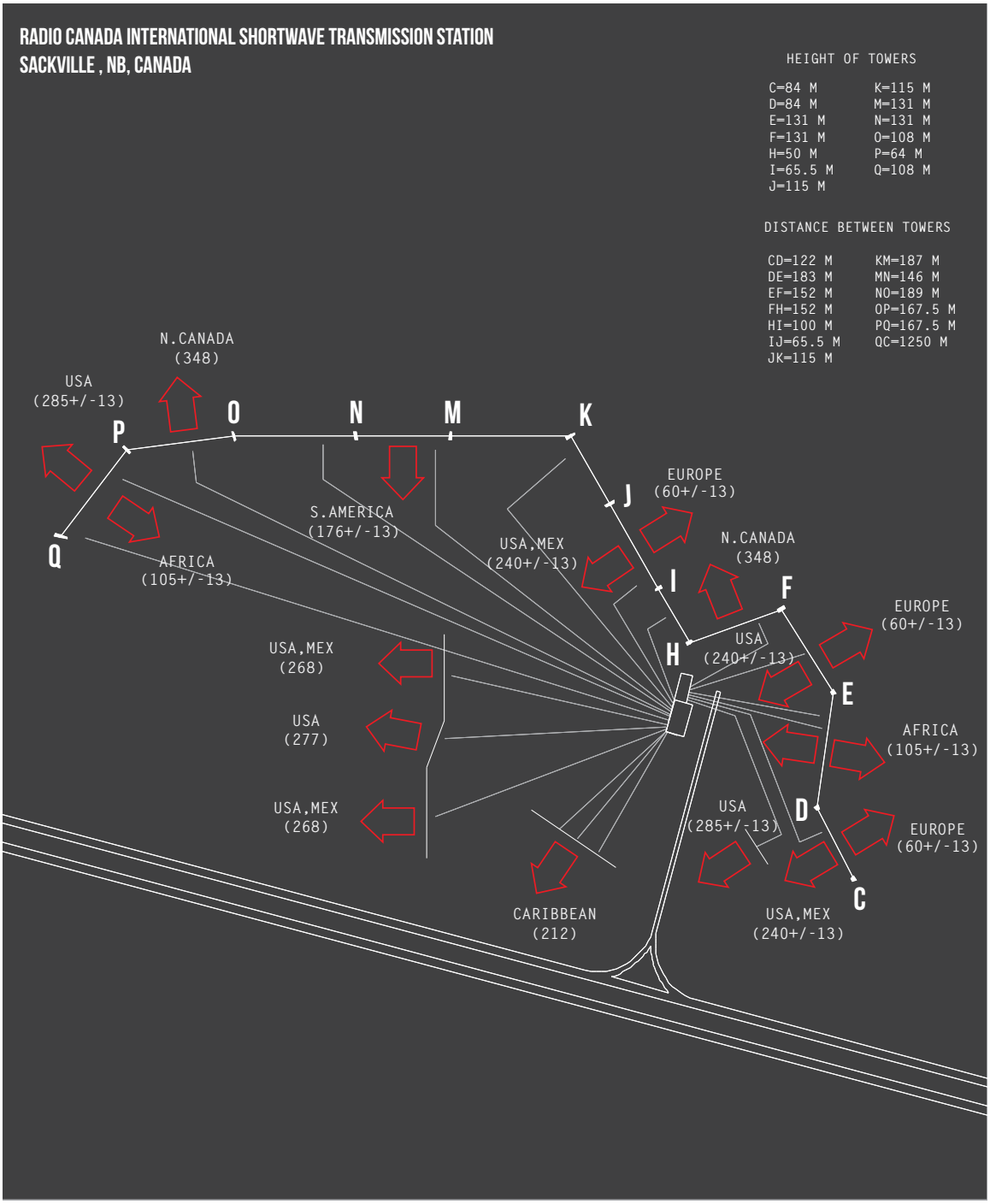


Water and tidal surges from the Bay of Fundy infiltrate the Chignecto Isthmus and circumnavigate the town of Sackville and the site of RCI, gifting Cole's Island and the surrounding landscape the ideal ground conditions and moisture content for the propogation of electromagnetic radio waves. Site Plan (data from GeoNB 2013)

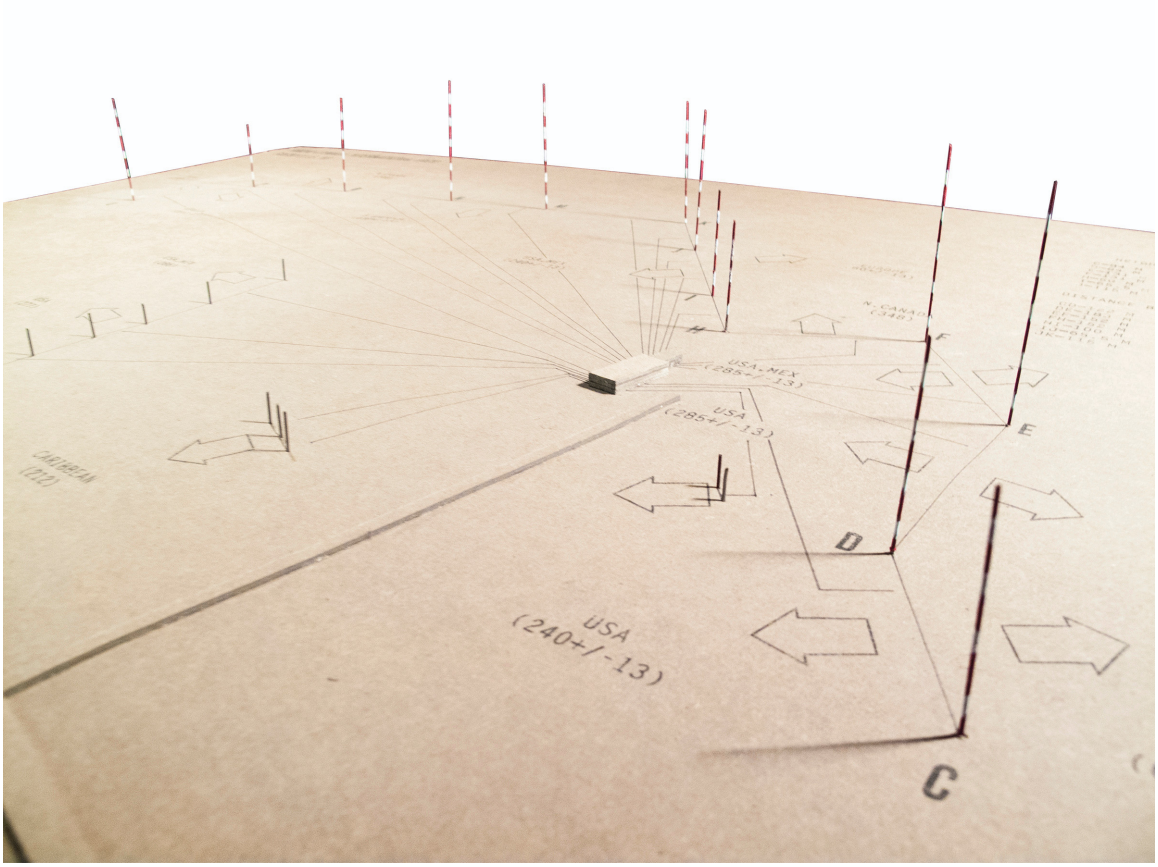
View from Tantramar Marsh looking south.

View from Bridge Street Highway Exit 506.

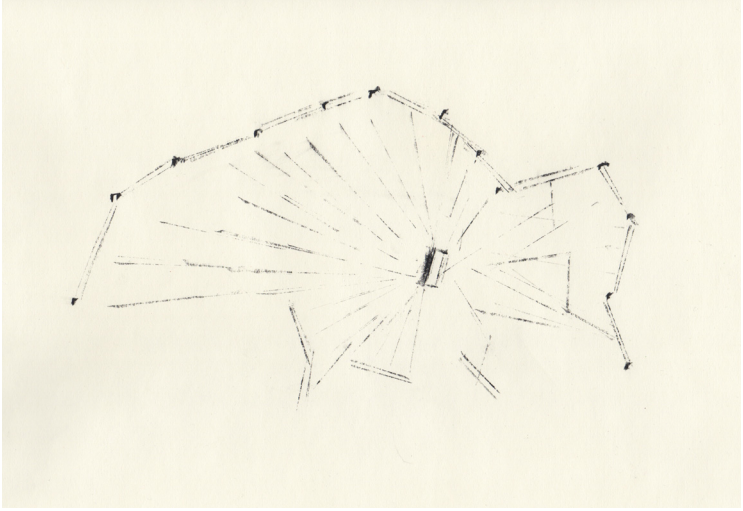
View from an unpaved service road used by the agricultural community to access surrounding fields.

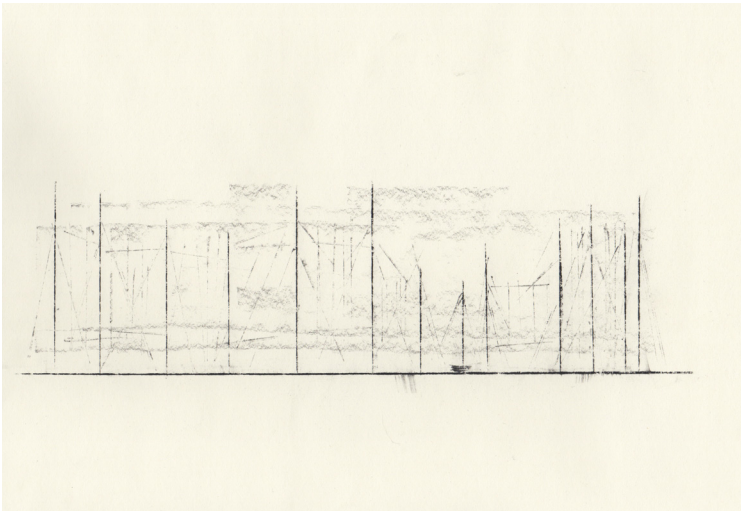


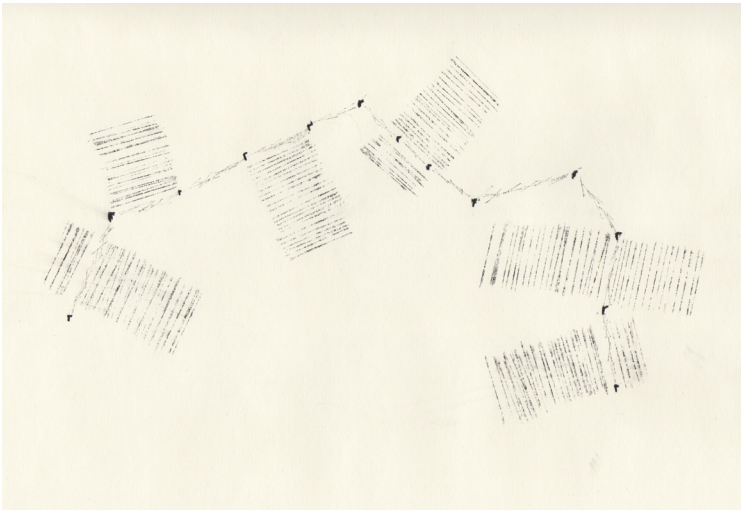
The above diagram of the RCI Shortwave transmission Station outlines the direction and destination of each signal path, as well as tower names, heights, and distances between towers. (data from Radio Canada International 2013)



The above model of the former RCI Shortwave Transmission Station, Sackville, New Brunswick, shows the direction and destination of each signal path, as well as tower names, heights, and distances between towers. (data from Radio Canada International 2013)

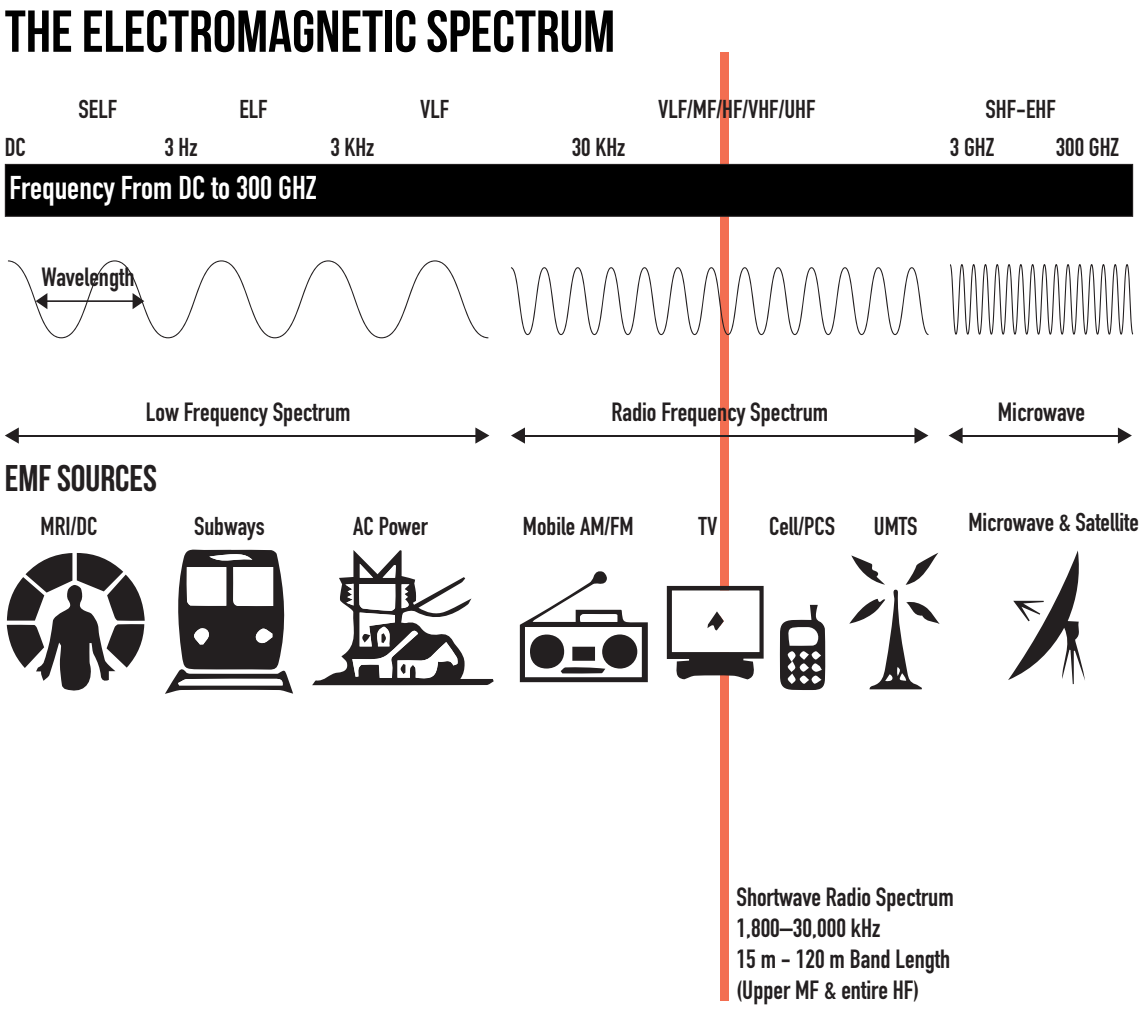






Conte drawings represent the site as a functioning whole, looking at the site an instrument for broadcast.

Early collages play with forms in the landscape as foreign objects. The distant towers and pure forms of the hay storage barns scattered throughout the landscape read in sharp contrast to the flat expansiveness of the marsh. Both the towers and the forms evoke an alien-like presence.



Electromagnetic waves are disseminated at varying frequencies and serve a wide range of technologies. Visually frequencies can be understood by their wavelengths. When a radio receiver is dialled to receive a specific wavelength it may be picked up and translated. (data from Sedov 1973)

The Town of Sackville, New Brunswick

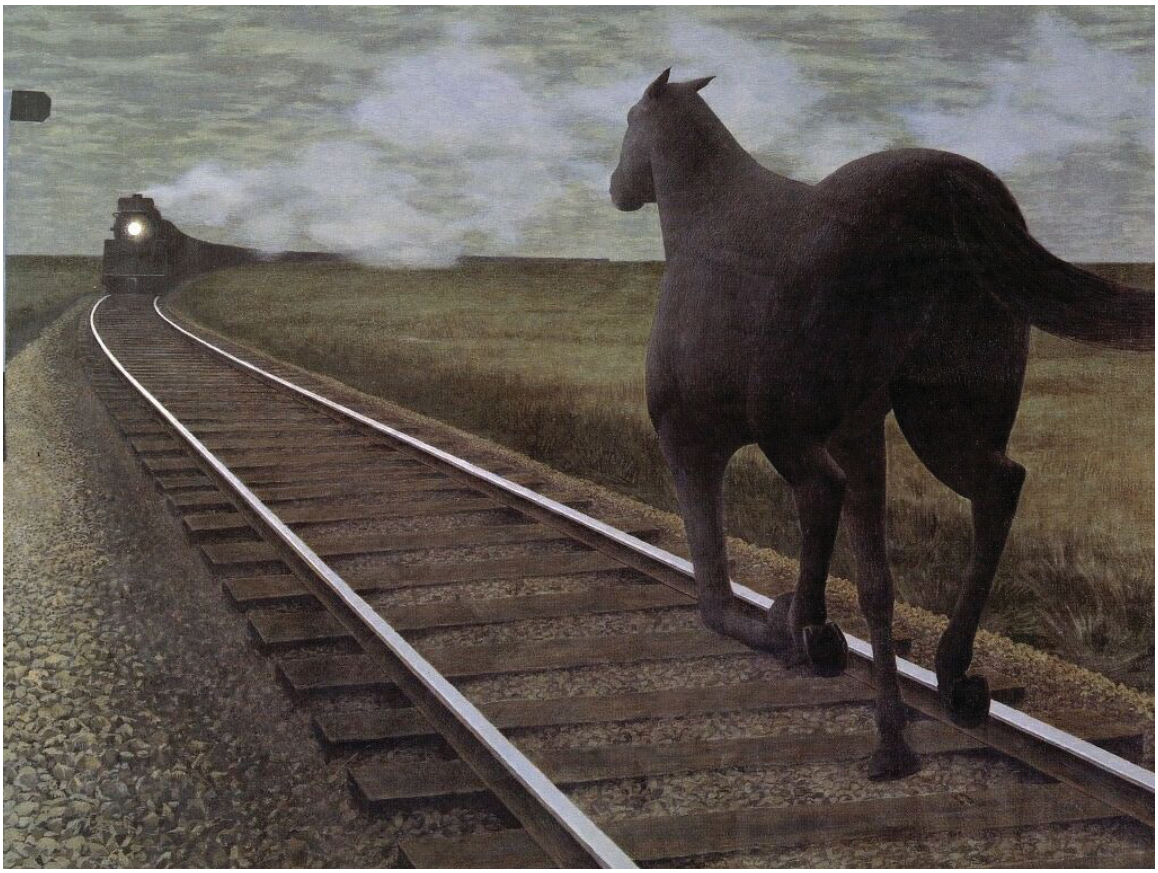
> In the country where I live you get the universals more than you do almost anywhere else. You don't have to wander all over the world and explore every nook and cranny to find out how people behave…In a small community like this you have a representation of every kind of psychological mode. The whole macrocosm is here in microcosm. - Ernest Buckler (Hamilton 1985,14)

The history of Sackville is not unlike many small Maritime towns. Boat building and the servicing of sea based trade routes was a dominant force in its coming of age. The agricultural industry goes back to those early French settlers who first inhabited, worked, and transformed the land to suite their needs. The horse trade was an important part of Sackville's early history; grass produced in the isthmus was largely sought after and exported as horse feed.

The late 19th century saw the arrival of the Intercolonial Railway, which ushered Sackville into the industrial age. Two separate metal foundries took advantage of the newly founded trade route and thus Sackville began an age of commercial prosperity. Artist and former student/ professor/resident of Sackville Alex Colville laments the transition from an agrarian to industrialized society within his painting, "Horse and Train," set just outside of Sackville and influenced by a passage from the Roy Campbell poem "A Dedication to Mary Campbell."

> Against a regiment I oppose a brain, and a dark horse against an armoured train.(Campbell 1957,16)

Besides the industries of broadcast, agricultural, and the production of steel goods, Sackville has long tradition of education. Mount Allison University was established in 1839 and is home to Canada's oldest university run



This tension filled scene of a black horse gallantly charging toward its inevitable fate is believed to be depicted in the Tantramar Marsh and was painted while Colville lived and taught in Sackville. Comparisons can be made to that of the RCI towers, an instrument that has become outmoded yet stoically moves toward its certain end. charging toward its inevitable fate occurs in the same landscape on which the RCI station is located. Comparisons can be made to that of the RCI towers, a service that has become outmoded yet stoically charges toward its certain end. Alex Colville, *Horse and Train*, 1954 (Colville 1970)

art gallery. The university, along with 2500 students that descend on the town each academic year, currently provide Sackville with its largest industry and primary source of income. Like many small university towns Sackville celebrates a vibrant and diverse artistic community, with such alumni as painters Alex Colville, Lawren P. Harris, and Christopher and Mary Pratt.

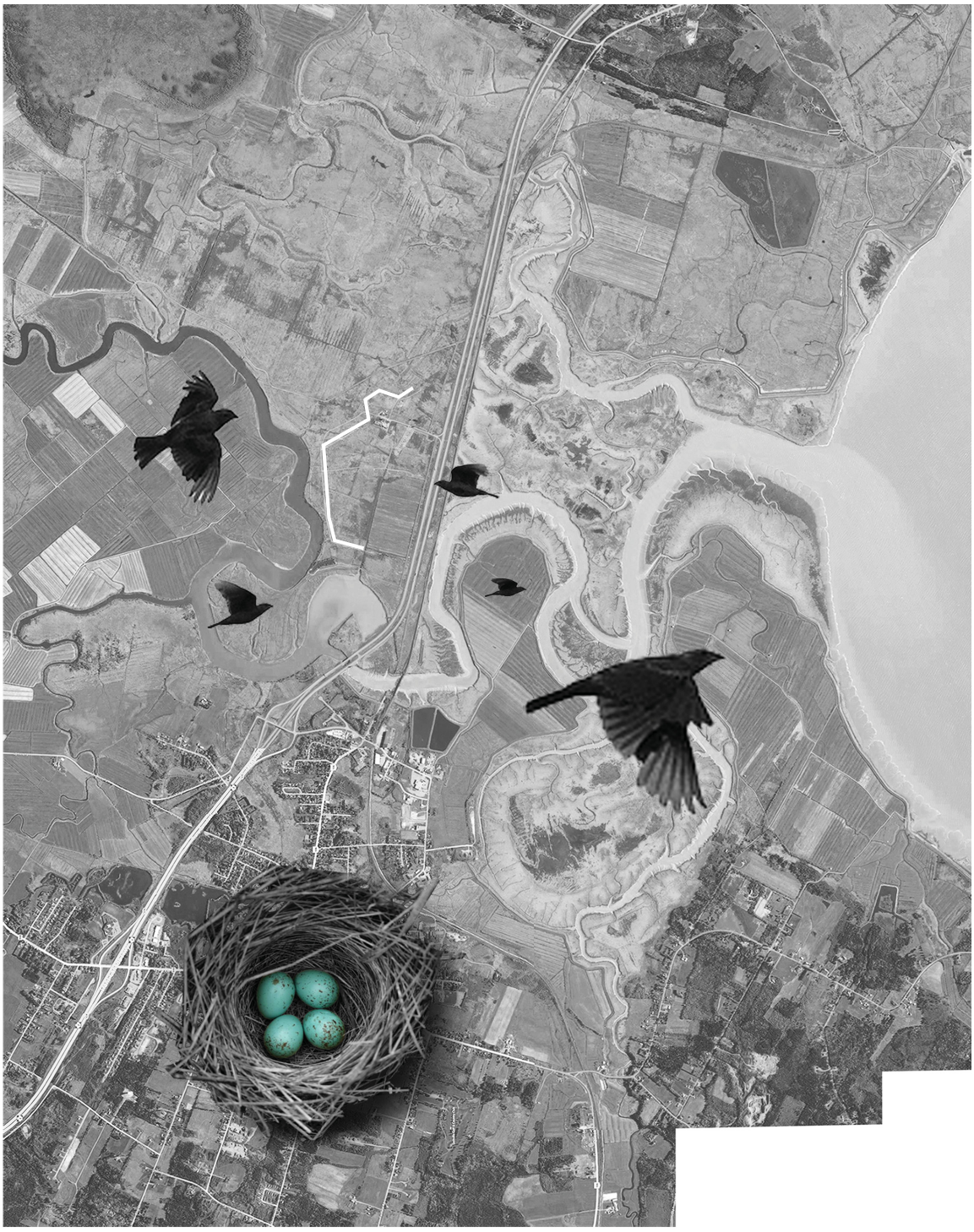
Despite Sackville's cultural effervescence it does however suffer a common condition found in university towns. Given the yearly influx and proud presence of this academic

community, what becomes of the relationship between the university and the towns people, who live and work outside the privy of the university and academia? The term *Town and Gown* has its origins in the university communities of Oxford, Cambridge, and Edinburgh, and refers to this very dilemma. Engaging all members and demographics of the community is an issue continually faced by academic and artistic initiatives within the town.

There is however common ground to be found in Sackville's treasured Waterfowl Park, a maze of boardwalks and trails located in the heart of the town that celebrates flora and fauna indigenes to the area. The emergence of local famers markets brings students and local farmers face to face. Many permanent residents and business owners have embraced the success of SappyFest, a summer music festival and conference created by the proprietors Sackville's own record label Sappy Records. The festival brings an eclectic mix of people from across the country and beyond to share in the splendour of Sackville.

> The [SappyFest] site is located in the heart of downtown Sackville, on Bridge Street, closing down the main commercial thoroughfare while creating a vibrant, high profile epicentre for the festival. Side stages are all within walking distance and include a free outdoor bandstand, art deco movie house, turn of the century church, and a Royal Canadian Legion. (Sappyfest 2014)

While in the town of Sackville there is a closeness to the rest of the world felt greater here than in any other Canadian town. There is underlying sense that this is the vantage point for which one can experience the microcosm of small town life and yet feel the pulse of the world passing with such intimacy and clarity. Anyone who has called Sackville home, whether student or farmer, finds common ground on this feeling and view of the town. Its almost impossible

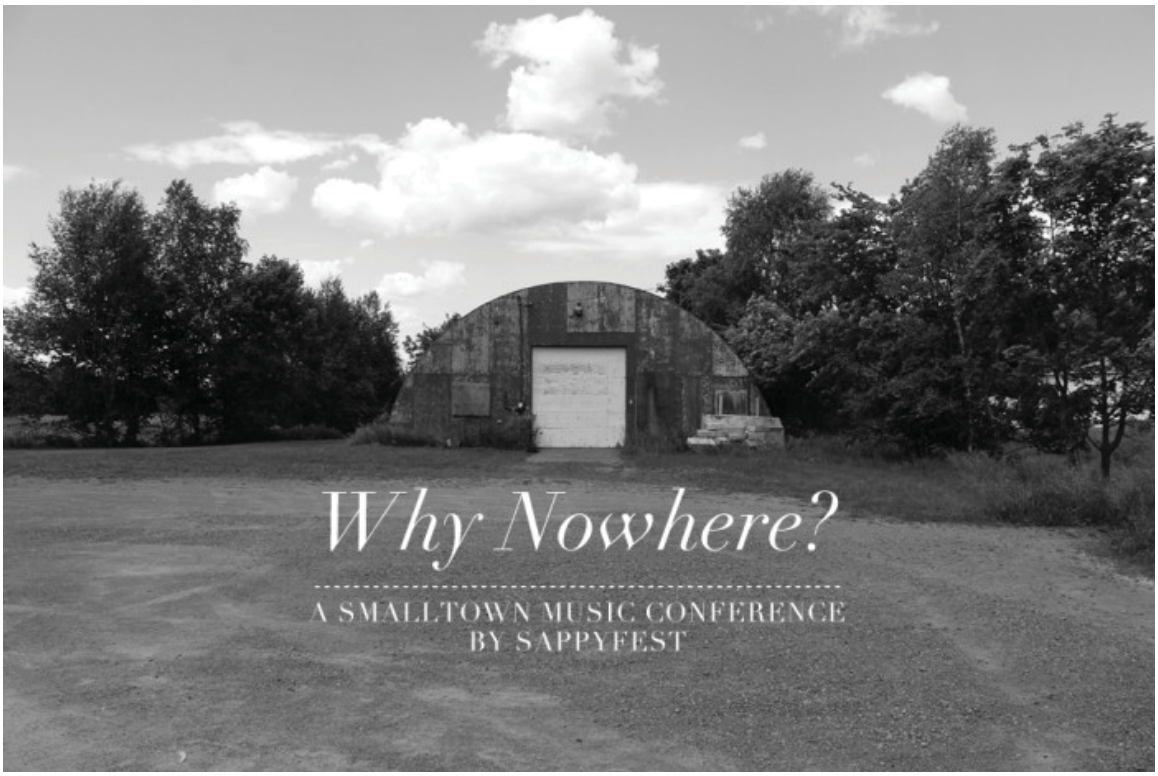


Sackville has long been associated with the tradition of education. Students at Mount Allison University use the microcosm of Sackville a testing ground to discover themselves and try new things without straying too far from the nest. The school provides an infrastructure where students may try, fail, and succeed.

to ignore RCI's contribution in creating this juxtaposition of propect and refuge, of retreat and connectedness.

In an online advertisement released by Sappyfest a photo of a commonly found arched barn includes the text *Why Nowhere: A Small Town Music Conference by Sappyfest*.The question *Why Nowhere?* in the context of the conference is meant to refer to its objective to support and develop other small town music festivals that attract internationally recognized talent. But knowing Sackville, or by having experienced driving through Sackville along the TransCanada Highway, one could find themselves commenting "But this isn't your average nowhere." This particular 'nowhere' is connected to everywhere.

Colin Medley cleverly captures a member of the Sackville community, who is perhaps part of the 'town' demographic, proudly pointing the way to the site of iconic music festival Sappyfest. Colin Medley, Sappyfest 8, 2012 (Medley 2014)



Colin Medley's "Why Nowhere?" advertises the addition of a rural music festival conference hosted in Sackville, NB, by Sappyfest in 2008. Colin Medley, Why Nowhere?, 2008 (Medley 2014)

CHAPTER 3: PROGRAM

A New Era of Broadcast

> In his 1966 article, “Life Conditioning (which accompanied the first publication of his plans for the Potteries Thinkbelt), Price challenged architects to recognize that their true objective should not be the creation of monuments symbolizing the “image of a city” but simply the provision of the means of “improvement of the quality of life.” Architects, he concluded, are more concerned with creating monuments for some distant and improbable “posterity” than with improving people’s lives in the here and now, and perhaps for a while into the future. Price’s critiques of education and architecture set the stage for his plans for the Potteries Thinkbelt in Straffordshire. (Mathews 2007, 200)
>
> To Price, advanced education needed to be knitted into the social and economic fabric of the community and the region, not to remain aloof and cloistered from it. (Mathews 2007, 207)

Within his Potteries Thinkbelt project, Cedric Price was concerned with the question of how a former infrastructural site could influence a new architecture. Many infrastructural and industrial sites become obsolete due to technological changes and advancements. Often these sites have formed a powerful iconic presence in the city or town they occupy. Their former industry has usually had dramatic effects on the population’s economy, culture and identity. Now stripped of their former use most remain as dormant relics of the past. Recent history has seen a trend of reutilizing these once publicly uninhabitable spaces. New programs are often inserted in these relics and sites bringing new positive opportunities to the public and revitalizing an important historic site into something now stitched to the urban fabric rather than a border against it.

A unique aspect of this particular site is the fact that the iconic physical aspects, the network of towers and

antennas, laid dormant for several years and have now been removed. What is left is a relatively flat site adjacent to the town by a main highway. Only concrete pads now stand as memories to the former towers, like dots in a constellation with implied lines revealing the former geometry of the infrastructural web of signal transmitters. Despite this fact, the site remains important to the collective memory that has shaped the town over 70 years. Its location to the town is too far to walk yet represents an edge known by all and acts as a gateway to the town by vehicle. This is particularly important in terms of Sackville, as it is a transient town, a place between places.

What sets RCI Sackville apart from most former industrial sites is the fact that it retains those exemplary characteristics that first brought industry to it. Shortwave has become outmoded but the sites geographical location and ground conditions are no less ideal for the propagation of more prevalent and widely consumed electromagnetic radio waves, similar to those first emitted by CBA Maritimes in 1939. Currently in Sackville unemployed programmers, engineers, and technicians, whom have grown with changes in the industry, remain idle and jobless despite their proficiency with the technologies and processes associated with modern broadcast.

The departure of Radio Canada International is felt as a huge loss, but what remains are the same intrinsic factors that initially tied Sackville to broadcast, its people and its landscape. Programmatically this thesis responds to the loss of industry and proposes a next phase in the natural evolution of broadcast and public programming in Sackville and the Tantramar Marsh. By combining Sackville's

long-standing tradition of education with the industry of broadcast this project hopes to activate the former site of RCI and provide new industry and social engagement. As Sackville evolves so too must its relationship to the industry of broadcast.

The Need/The Opportunity

Currently in New Brunswick there is a need to facilitate the growing interest in the media arts, which includes, but is not limited too, programs in broadcast journalism, radio arts, music, audio engineering, information technology, theatre production and design, graphic and print production, digital film and new media, and photography.

In the province's capital city of Fredericton The University of New Brunswick has recently responded to this demand with integration of a Media Arts and Culture program. While dedicated and important to the university's diverse curriculum the program itself encompasses a limited range of study. Sackville's Mount Allison University is a liberal arts and sciences undergraduate university and does not subsequently have a mandate to offer courses related to the media arts. Nevertheless Mount Allison students rely on the limited availability and resources offered by Struts Gallery and Faucet Media Arts Centre, a small local initiative and artist-in-residence program, to test the boundaries of their curriculum and complete new and exciting work. Struts and Faucet understand the growing interest in the media arts in New Brunswick and have done well to provide workshops and equipment rentals to their community, and visiting artists, but do not have the resources or facilities required too meet the growing local demand, let alone that of the provincial.

There is no single model or typology for a school/media arts centre/artist-in-residence program of this proposed scope. There are, however, inspiring precedents of likened projects to be found right here in Canada. The success of the Banff Centre, located on the edge of the scenic town of Banff, Alberta, perhaps best exemplifies how such an educational institution may provide a diverse range of cultural industries while creating a place synonymous with the production and dissemination of ideas. The Banff Centre is ingrained in the social and economic fabric of the small town, hosting visiting artists to take part in both short-term conferences and longer-term educational programs. The term *art incubator* meaning a place for the harbouring and nurturing of creative and artistic investigation, is becoming more commonly used, and perhaps does well to convey the intent of a project such as this.

Radio, in its consumption, has long remained the most democratic and accessible form of media. With the dawn of the Internet radio programming in Canada has diversified and evolved to reach new audiences. Websites now combine and make available on demand radio and television programming. Despite these inventive and hard-won successes, recent cuts to Radio Canada International and The Canadian Broadcast Corporation subversively demotes the societal role of public programming and ignores its impact on articulating Canadian identity. In sharp contrast, many private radio conglomerates owned and operated by foreign investors continue to crowd the airwaves with content that in no way supports the social or cultural betterment of its listeners, but is instead engineered to yield the highest financial return.

A media arts school in Sackville would build on the town's cultural infrastructure; strengthen the industry of education and present new opportunities for the growth of existing artist-in-residence initiatives. The goal of such a school would be to produce new professionals trained to perform in a variety of media related industries. The production of media content created by students, the community, and visiting artists offers a rare opportunity to bring broadcast back to Sackville and the Tantramar Marsh. A local and regional audience could enjoy a diverse array of public programming unique to the Maritimes. The inclusion of a radio station, broadcasting on the fm dial to surrounding provinces, could see former employs of RCI returning to work and instructing and assisting students, ushering in a new era of broadcast. An online presence could see both radio and television programming broadcasted to international listeners and viewers, once again connecting the site of RCI to the world.

Education and Industry

> As well as the studios for different types of programme, there were the concert hall, the basement restaurant, the control room, general offices, executive offices, dressing-rooms, the post room, the battery room, listening-rooms, echo rooms, music control rooms, dramatic control rooms, the photographic room, the music library, the gramophone room library, the library, rehearsal rooms and waiting rooms. The rooms squeezed into the building seemed endless. (Hines and Crocker 2008, 44)

The above description of Broadcasting House, home of the British Broadcasting Corporation in London, England, touches on the "*endless*" number of specialized rooms commonly found in media houses. The term media house, used by Staffan Ericson and Kristina Riegert, authors of Media Houses: architecture, media, and the production of centrality, identifies a typology of building that is

explicitly tied to broadcast, often a kind of headquarters housing an entire broadcasting corporation under one roof. Despite the obvious differences between the scale and general use of Broadcasting House and that of this proposed project, there is much to gain in examining the specialized programmatic elements, their relationship to each other and their arrangement. Like Cedric Price's Potteries Thinkbelt this project aims to blur the line between education and industry. To do so, contemporary precedents of media houses and creative campus design must be examined.

Media houses, such as BBC's Broadcasting House, NBC's Rockefeller Centre, and CCTV Headquarters, were examined in this study not only to gain an understanding of the programmatic requirements associated with modern broadcast, but also to understand they're role as places of social engagement and gathering. People are drawn to these buildings for they contain majesty and mystery. Those who visit hope the catch a glimpse behind the curtain, reveal the mystery and give context to the programming they have grown with and has most often acted as a means to frame their own lives. These buildings, by virtue of their program, are synchronized to world events, bestowing them with the sense that they are perpetually current, perhaps even existing in the near future. Most often media houses are located in city centres, both contributing to and taking advantage of the wonderment and excitement of the city.

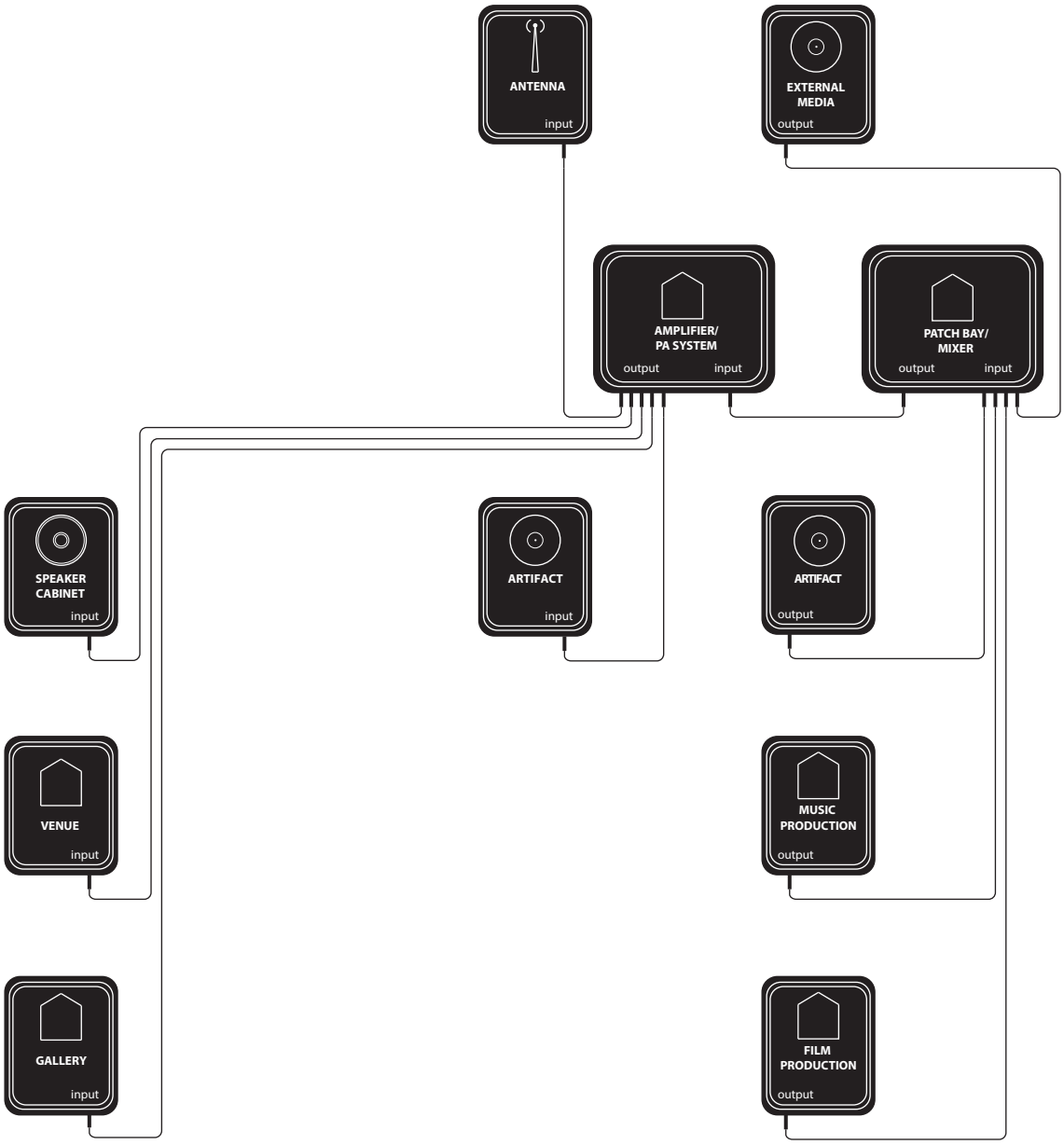
Although RCI Sackville primarily acted as a transmission station and was not open to the public, the site strongly evoked this sense of connectivity, beckoned and enticed,

This wraparound sectional drawing was included in a Broadcasting House souvenir guide published in 1932. It shows the relationship between the endless rooms squeezed into the horseshoe shaped building. The western side is to the left while the eastern side is to the right. Wraparound Section (Hines and Crocker 2008)

even dared, travellers on the highway to stop and explore. As the site is located on the edge of a small town its lure is based on the expansiveness of the surrounding landscape and the suggested power of the towers and antennas. In this proposed next phase a great deal of program will be dedicated to attracting and entertaining audiences from the community, the surrounding provinces, and further. As social engagement lies at the core of this project mediating the intensely private from the overtly public elements of both an educational institution and a media house is paramount.

Input/ Output/ Artefact

The programmatic requirements of a media arts centre presents an opportunity to express those technologies formally employed by RCI Sackville. Latent traces found on the site act as drivers to reorganize the media arts school campus. Within this study a series of program studies were performed to gain a better understanding of how the basic technologies and processes associated with broadcast might inform program. The basic principles of input and output, found in the seemingly endless chain of technologies needed for broadcast, were expanded on to represent the production of content and the broadcasting of said content. Input and Output were explored and expanded upon to discover and categorize programmatic possibilities. When interjecting these processes with social engagement a third category reveals itself. Artefact is about celebrating the tangible and considers the physical manifestation and production of content produced for broadcast, the printing of music, film, and printed media in various mediums. Artefact expands to encompass the live performance and the event.



By mapping out components commonly found in the chain of a PA System (Public Address System) technologies emerge that are analogous to those found in the production, reproduction, and distribution of media content. The elemental concept of input, output, and artefact becomes apparent.

Antenna: The Antenna receives content from an amplifier and disburses said content over the surrounding landscape, to be picked up by receivers throughout the land. The antenna allows a wide audience to receive content and play it through their own speaker(s). Part of the proposed program would see the repurposing of a select radio tower to broadcast over the FM dial, a minimum of 350 km radius to service the Maritime region.

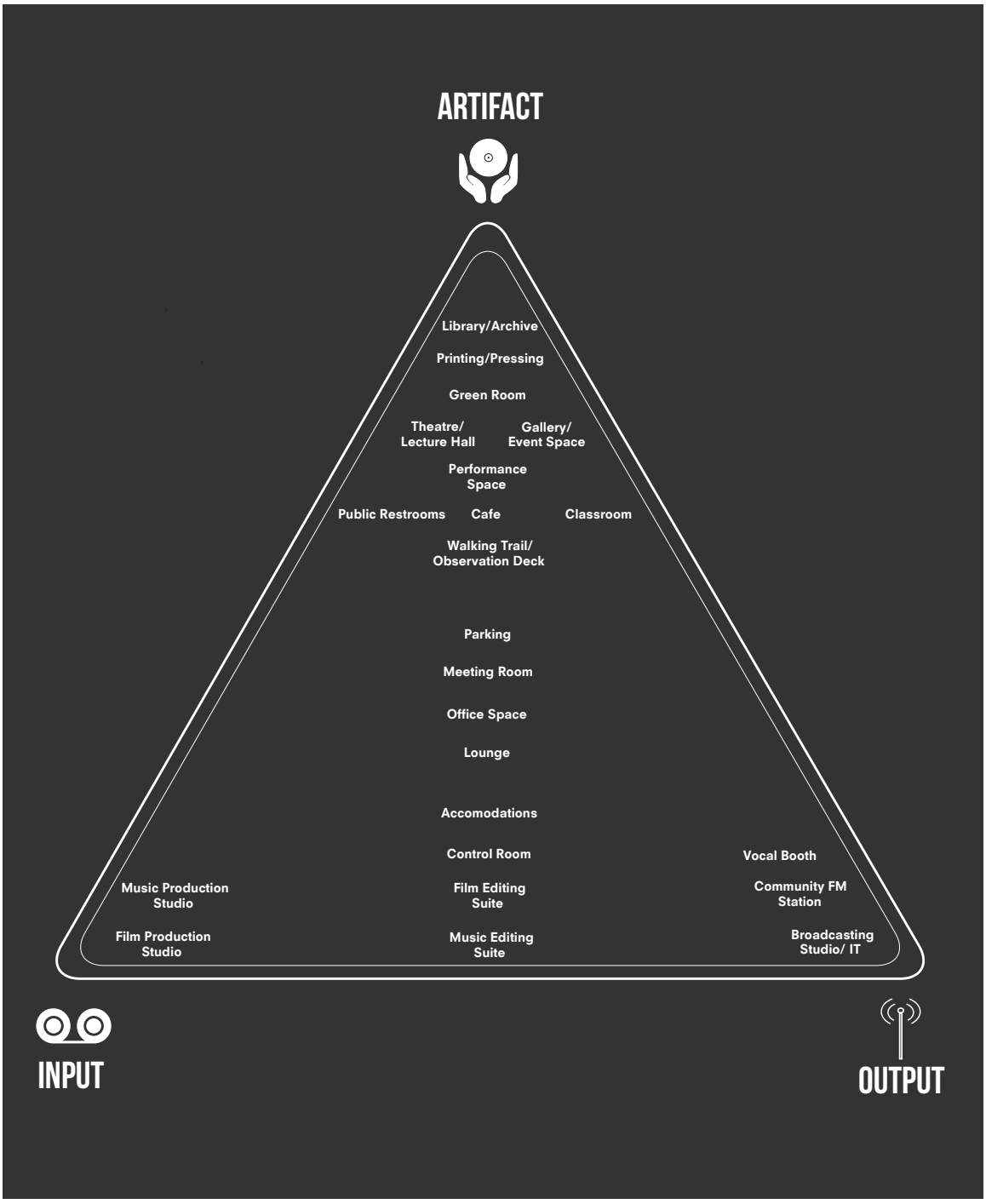
Amplifier/ PA System: Amplification refers to the charging of electrical signals. Amplifiers and PA Systems receive a consolidated mix of signals from a mixer and works to focus and give power a final product so that it may be delivered to an audience. The re-appropriation of one of the decommissioned radio towers and the creation of an FM radio station sees part of this program literally involving amplification, a programmatic element that has existed on this site since 1941. On a perhaps more interpretive and metaphoric level, giving power and context to signals, to media, points to the inclusion of a centre where in the network of the larger site and program is focused, presented, and interpreted.

Patch Bay / Mixer: A Patch Bay or Mixer is used to collect signals and instruments from a wide array of sources and mediums. Each signal is assigned a Channel EQ or effect where in it can be processed and given its place in the overall mix before its amplification and communication to an audience. This is perhaps an opportunity to express the processing of signals and media within a program that is about production. The mixer feeds the amplifier so that it may send out and broadcast. Therefore a program of printmaking, vinyl cutting, and bookbinding could feed into a gallery and retail space.

Speaker Cabinet: Speaker cabinets blast out the fruit of all efforts; they are the final destination. From the speaker cabinet ideas are interpreted and born by an audience. The amplifier and the speaker are rarely apart, each validating the others existence. Therefore part of the overall program may then be a place for events and the displaying and performing of all efforts, a gallery and performance space. The range of the entire network could then extend to include the cultural infrastructure existing in the town of Sackville, NB.

Music Production: Since the dawn of rock and roll groups of musicians have produced records in the very space they collectively inhabit. Mansions and depression era kitchens have seen the creation of seminal recordings. A small habitable music production facility could provide content for the entire network.

An allegorical approach expands on the concept of input, output, and artefact.



Programmatic elements often associated with media arts centres/schools are identified and gravitate toward input, output, or artefact, based on their relationship to the production or reproduction of media, or to the conversion media into a tangible item and/or collective experience.

The Campus

By categorizing potential programmatic elements a campus model emerges, where in singular buildings facilitate a specific field of study or activity. The production of media lies at the heart of this project and therefore sees the creation of individual facilities dedicated to the porduction of TV/film, music, and mixed media, i.e. sculpture, photography, printmaking. The inclusion of broadcast studios and a transmission station ensures the dissemination of media produced on campus; while the addition of a gallery/rest stop, theatre, and amphitheatre bring people to the site, encouraging visitors to explore and interact with the campus. Residences provide students, visiting artists, guest lectures, and practitioners a place to retreat and reside on campus.

Cross-pollination between faculties and areas of study is an essential part of creative campus design and therefore the relationship between these focused programmatic elements is crucial. Looking back at the input/output/artefact programmatic investigation, artefact is innately public while input is inherently private in nature, geared toward public glimpsing rather than public viewing. This level of privacy affords artists an envvironment where they may feel free to try, fail, and succeed. By organizing the proposed program in a linear fashion each element may then be arranged by its relationship to either public or private. A progression of program emerges along a path where in each programmatic element may occupy a given side depending on its internal program, relationship to neighbouring program, and environmental conditions.

OUTPUT

TRANSMISSION STATION

BROADCAST STUDIO

RECORDING STUDIO

FILM/TV STUDIO

INPUT

BROADCAST STUDIO

ARTIST STUDIO

ARTEFACT

THEATRE

GALLERY

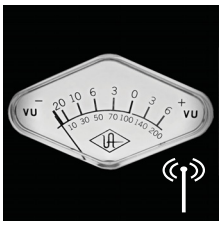
LIBRARY/ ARCHIVE

AMPHITHEATRE

Further categorization and grouping of core programmatic elements that may comprise a larger campus.

RESIDENCE

AMPHITHEATRE



TRANSMISSION STATION

FILM/TV STUDIO

RECORDING STUDIO

ARTIST STUDIO

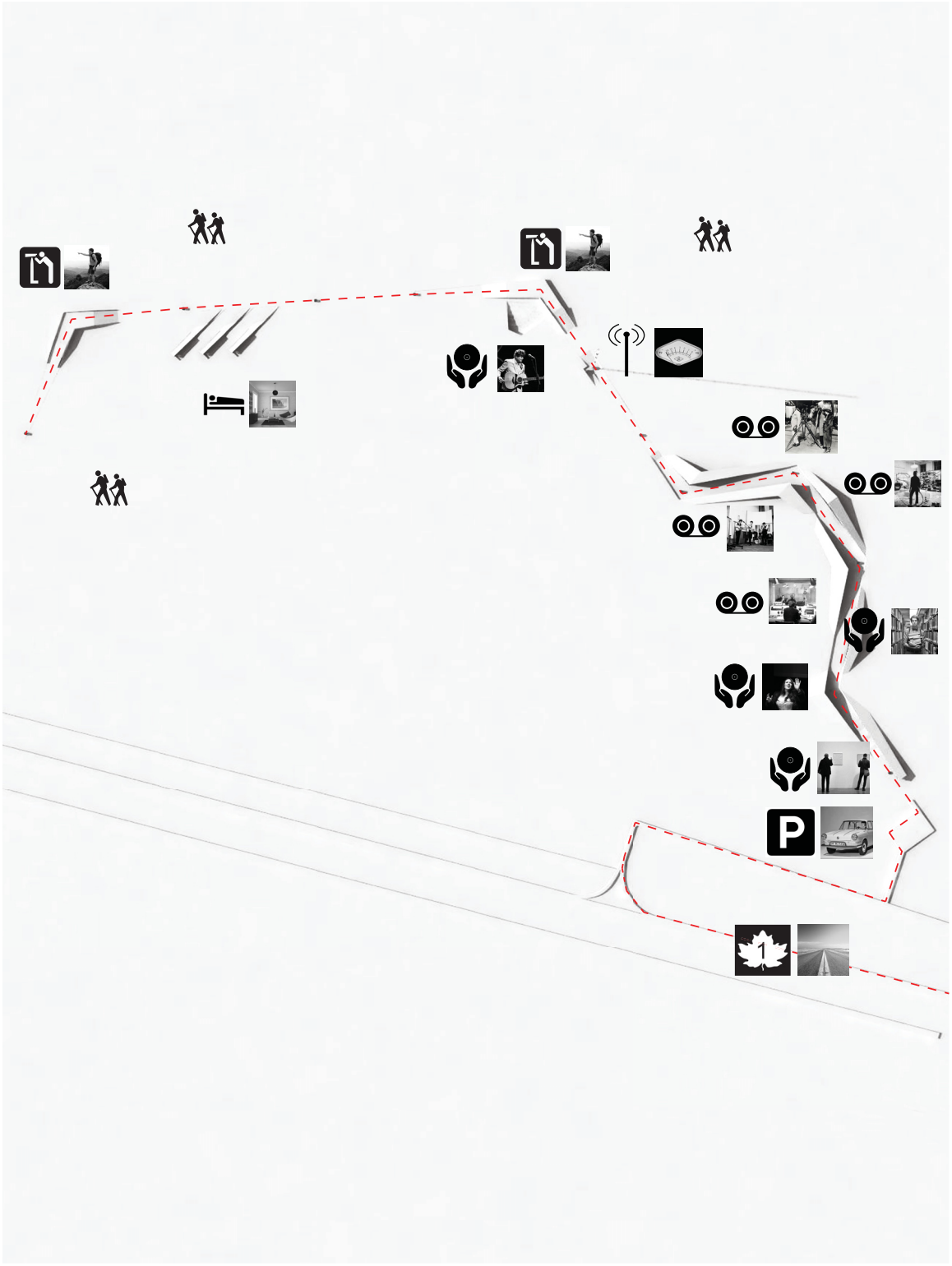
BROADCAST STUDIO

LIBRARY/ ARCHIVE

THEATRE

GALLERY

An arrangement of program moving from public to private.



An arrangement of program along the path.

CHAPTER 4: DESIGN

The Path

> Each of my works originates from a simple desire to make people aware of their surroundings, not just the physical world but also the psychological world we live in…But whether socially or aesthetically based, in these works I seek to create an intimate dialogue with the viewer, to allow a place of contemplation, sometimes an incorporation of history, always a reliance on time, memory, a passage or journey. A direct empathy exists between the artwork and the viewer. These works rely on a physical or empathetic response rather than on a learned one from the viewer in order to be understood- or, more accurately, felt…I like to think of my work as creating a private conversation with each person, no matter how public each work is and no matter how many people are present. (Lin 2000, 2:03)

An analytical reading of site drives the design methodology behind this project. Identifying the significance of the site as a former and now fallen monument marks the beginning of this investigation.

Providing both industry and landmark, the site of RCI is deeply in twined in the collective memory of Sackville and acted as a gateway to the small maritime town. The last two years of its existence the network of towers and antennas stood as a monument, a dormant relic acting as a tribute to its former service. Access to the site was only granted in unique circumstances and under close supervision, leaving the people of Sackville and those who travelled the Trans Canada Highway to experience the site from a distance. Encouraging people to now occupy, explore, and inhabit the site lies at the heart of this project.

By reconnecting the constellation of remnant concrete tower footings a line is drawn in the landscape, one that reinstates the geometry and scale of the former infrastructure. From this geometry the location of the

sprawling antennas that once dominated this site is revealed and the directionality of the former signals suggested.

Each concrete pad defines place in the landscape and presents an opportunity to occupy those areas from which the electromagnetic radio waves were once emitted. The concrete pads are all that's left of the former infrastructure, each pad representing a change of direction of the antennas they once suspended. The pads are therefore special and activate the space around them, transforming each pad into a place of gathering and assembly, similar to a fountain in a public square, like Bernini's Fontana dei Quattro Fiumi in the Piazza Navona in Rome.

The path changes in elevation at key moments throughout the site as it relates to program; occupying the landscape at grade, sinking below grade up to a full storey, and rising above grade at two key locations, each creating look outs and places of prospect while creating shelters from strong north winds on their southerly sides.

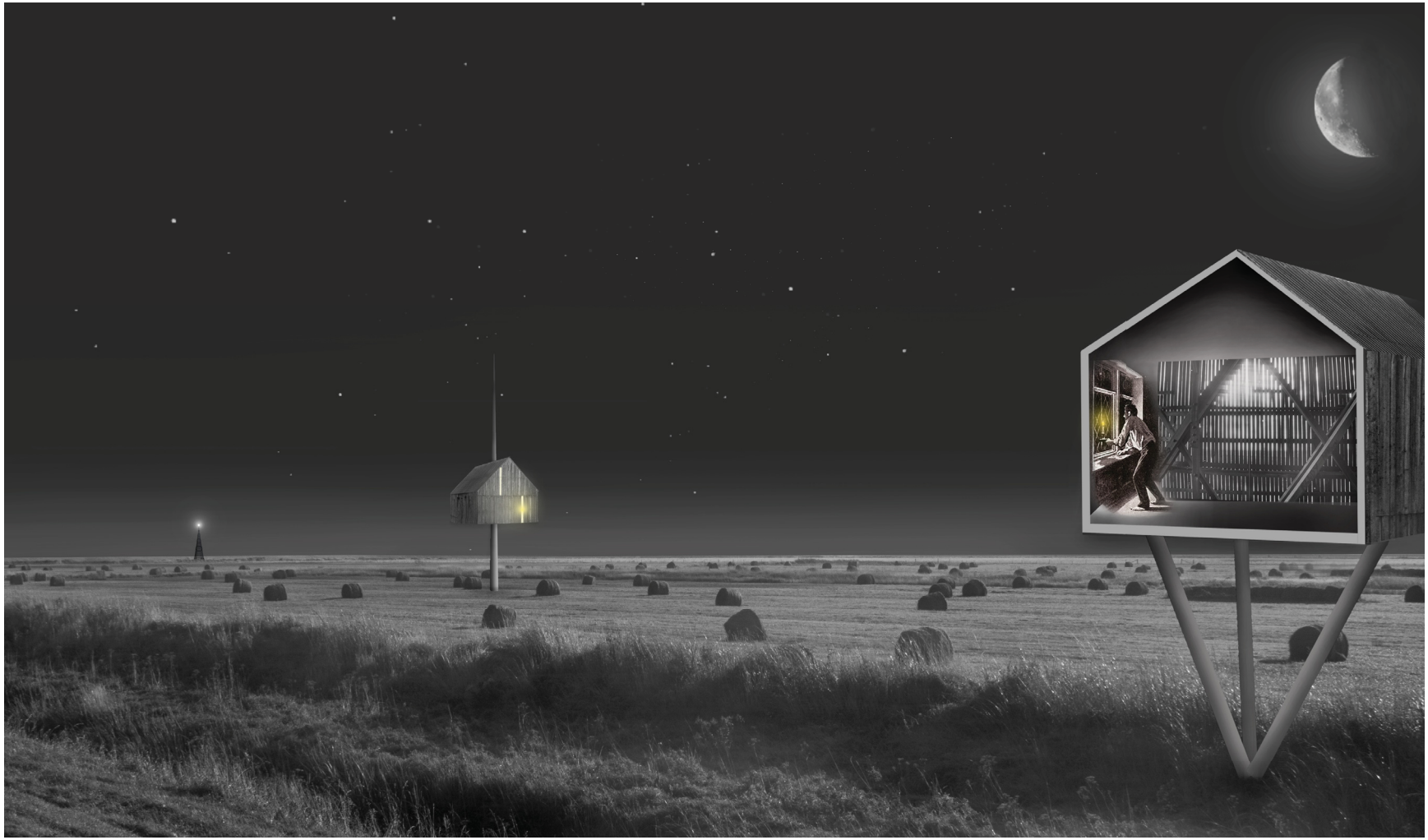
Changes in elevation along the path also bring further attention to the concrete tower footings, exposing their deep roots and extenuating their presence. At their base each pad is framed by white light. At night the pads are further accented, illuminating each anchor point and allowing the path to be read from a distance. The former towers teamed with pulsating red lights that revealed the sites geometry from the air. Within this next phase that relationship is reinstated.

At various moments along the path inscriptions monumentalizing the direction and destination of the

former signals provide visitors with a moment of intimacy, discovery, and reflection.

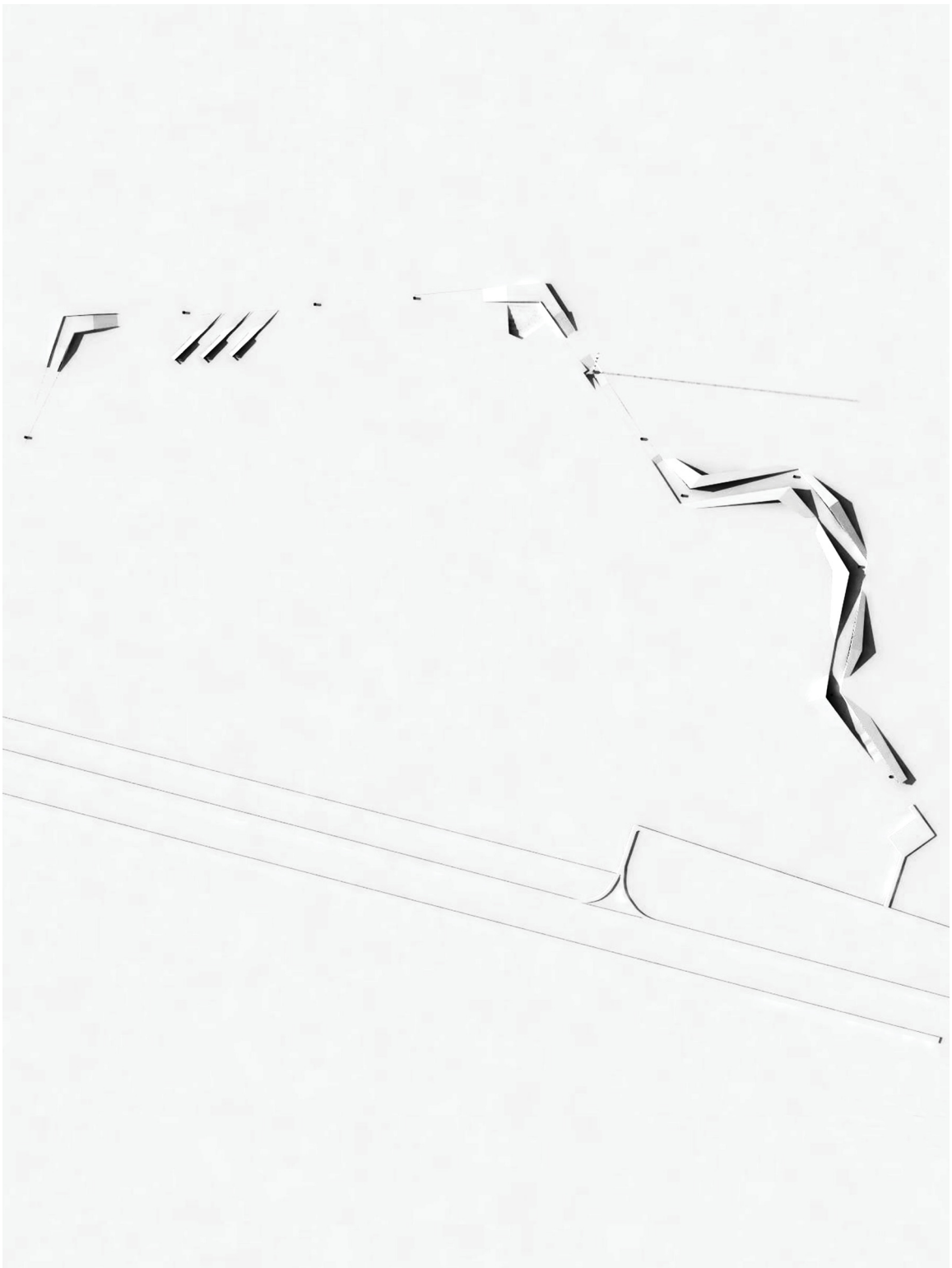
Organizing program along a path this extensive creates a place that is informed by the vast distance and infrastructure of the site. Each building organizes its program uniquely to create a diverse experience as one travels from building to building.

Programmatically each building has its own identity but through proximity there is an opportunity to produce interesting interaction and programmatic responses.

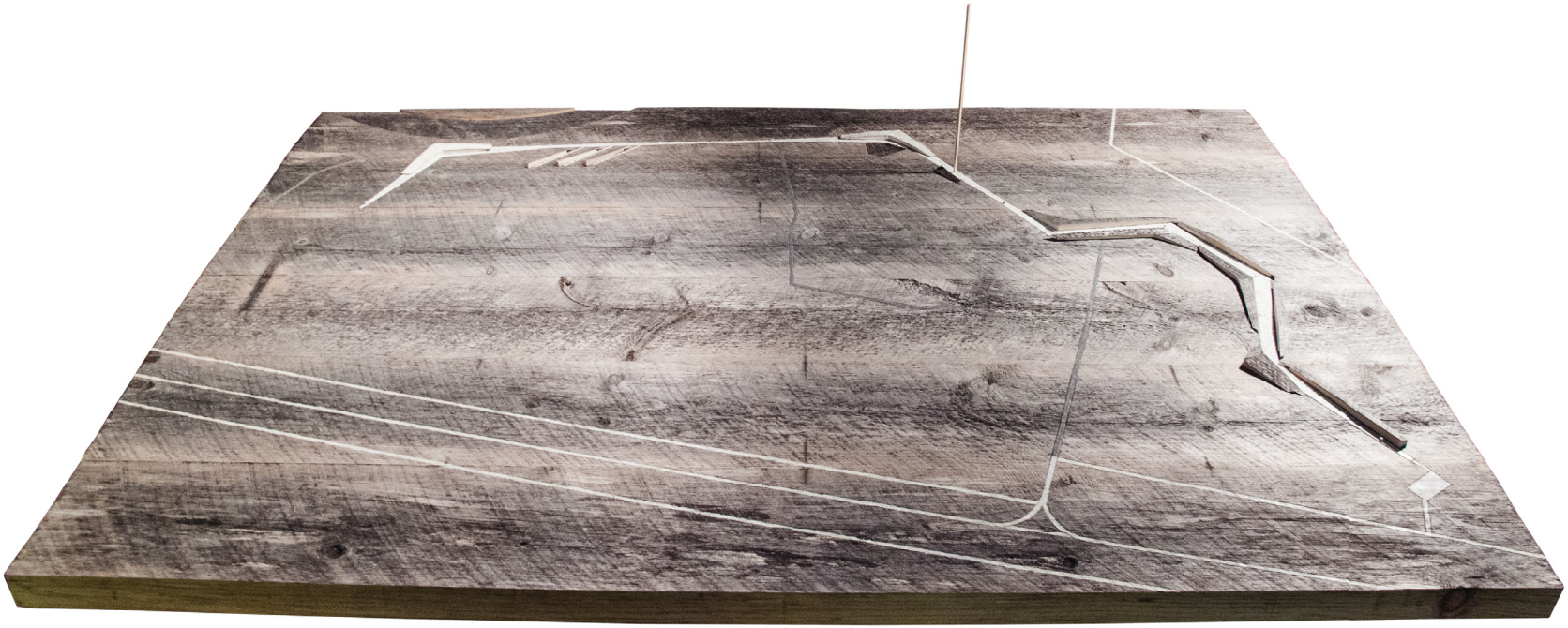


Responding to the towers and network they created, early renderings playfully lift built forms found in the landscpae up off the marsh creating a new network. The above rendering is inspired by Sir Arthur Conan Doyle's *Hound of The Baskervilles*. One form signals to another through the fog. Through these renderings the mystery and intrigue of the site is explored.

The towers produced a network and path not accessible to the public. The idea of confronting or discovering the site for the first time evokes a sense of curiosity and excitement that stimulates the imagination. It is this sense of intrigue and anticipation of discovery that is present in each phase of this projects design development. The characters of fog, light, and hidden infrastructure are present throughout. Reconnecting the town's people to the landscape via media stations scattered in the landscape was explored early on as means to produce points of destination within a network of walking paths.



Rendered site plan. Shadows reveal the constellation of tower footings that give the path its shape.



Presentation site model looking north.

Presentation site model looking northwest at path entrance.

Render of tower pad *D* located in front of the Theatre building.

The powerful electromagnetic waves linked Sackville to cultures and communities around the world. Contemplating the site's simultaneous connection to these countries and continents impresses the scale of the signal's reach.

Render of path inscriptions, each monumentalizing the destination and direction of electromagnetic radio waves formerly emmitted from the path.

Building Concept

> I think the location plays a big part in what you do. One good thing about choosing an unusual place to record a record is that there is a commitment that is felt in the artist if you're setting up something special for them. And that commitment is contagious. (Lanois, 2013)

While the path reinstates the geometry of the sites former infrastructure the buildings give back direction to the electromagnetic signals the site once emitted. The powerful non-physical radio waves are memorialized by a physical architectural response. The form of each building is generated from a lifting of ground, a springing from the path. The angles created frame and reference the critical angle and trajectory of the former shortwave radio signals.

The sites connection to the unique ground conditions is accentuated by partially sinking both the buildings and the path. By occupying the land the viewer is made constantly aware of the importance of ground.

By lifting and exposing the ground, green roofs are created and become places of prospect and exploration, providing a vantage point in the vast and other wise flat landscape. The pitched rooflines of the various buildings rise and fall through the site closely resembling the form and oscillation of electromagnetic waves.

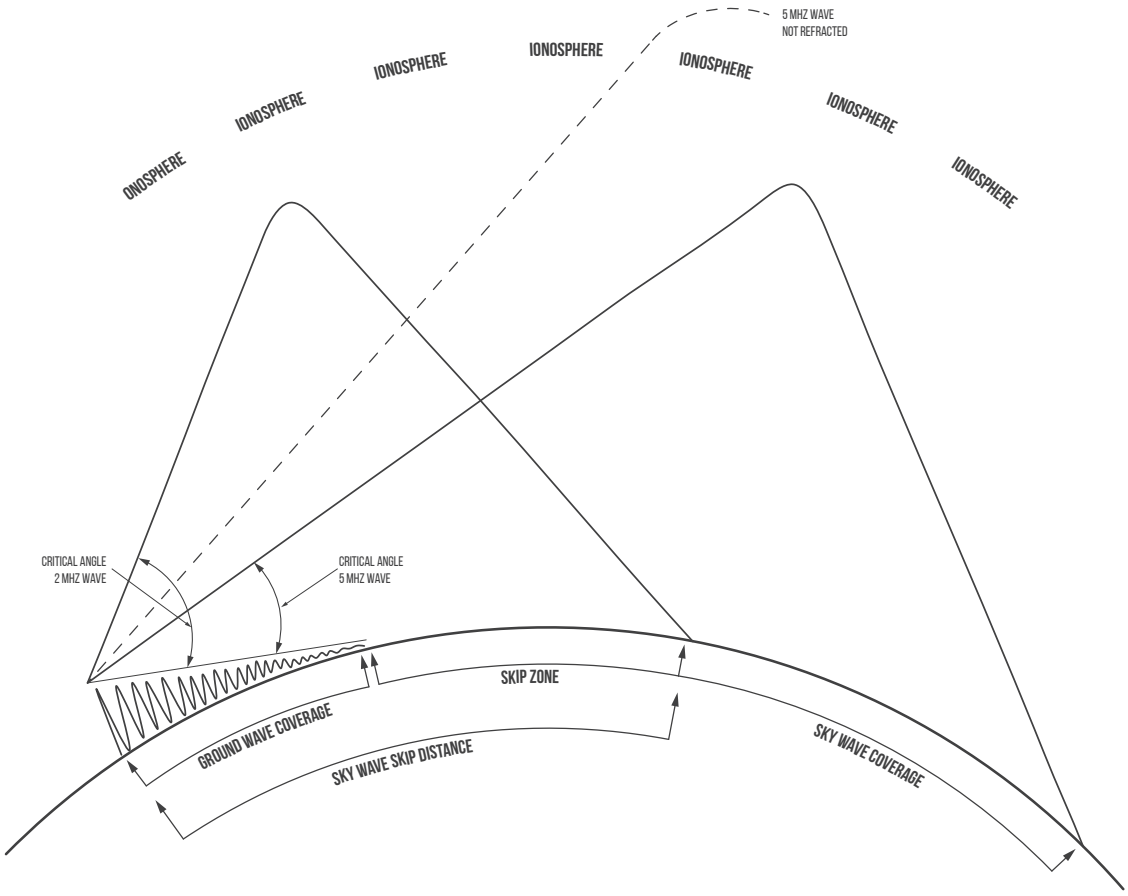
The behaviour of electromagnetic waves as they encounter inference acts as a driver for the organization and placement of buildings along the path. Each building works to both absorb and reflect visitors and students as they travel throughout the campus.

The expressed horizontality of each building works to replace the scale and verticality of the sites former

infrastructure. Single loaded corridors stretch the length of each building and run parallel to the path, blurring the line between path and building.

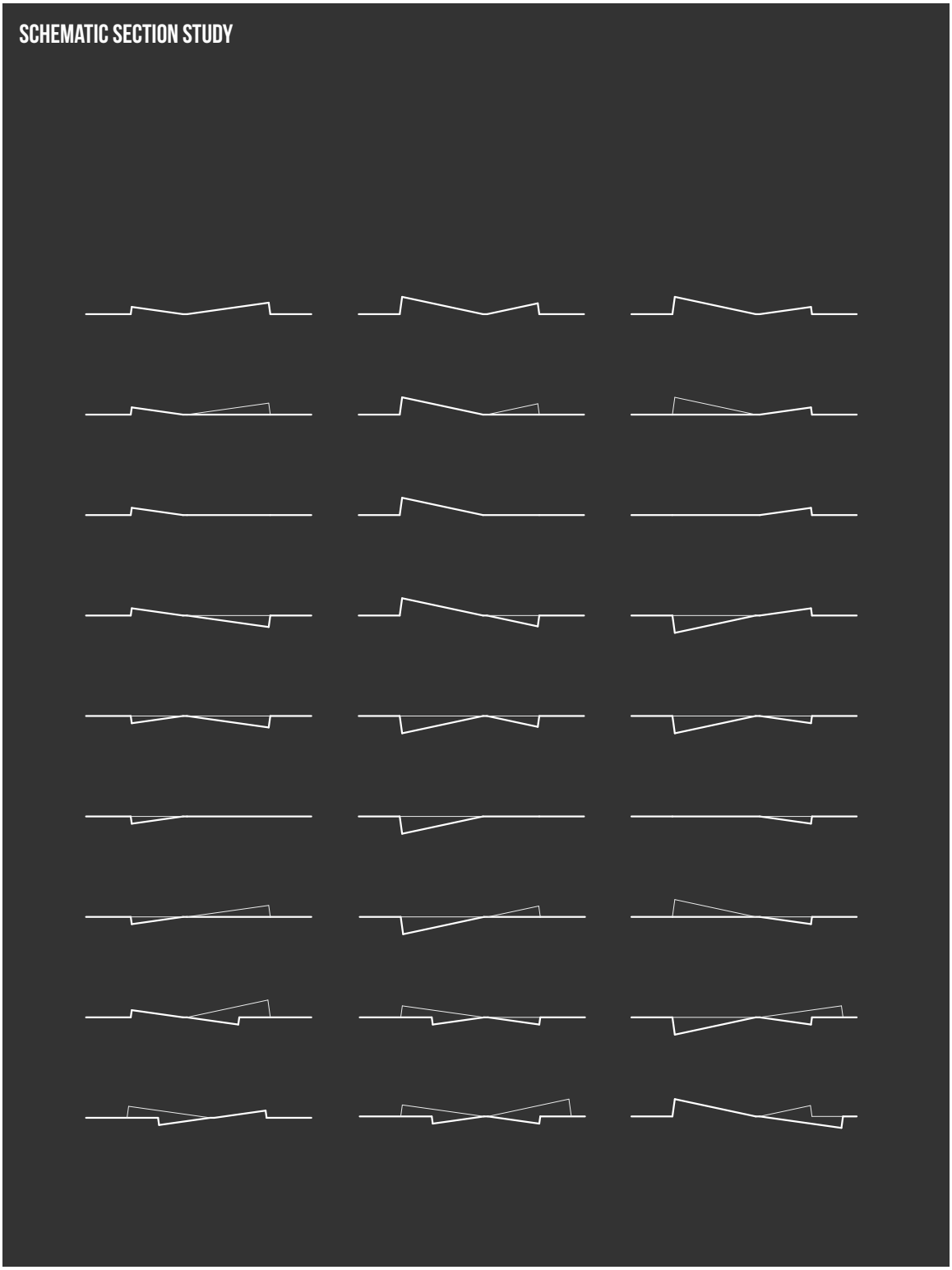
Each building emphasizes its dedication to a specific programmatic function in a unique way. Within the Music/ Audio Production Building a series of studios are built independent of each other and the rest of the structure to achieve maximum acoustical isolation. The studios are however on display and celebrated in a highly public part of the building. It is moments like these throughout the campus that engage visitors in the inner workings of each building without interfering with their programmatic focus.

SPACE



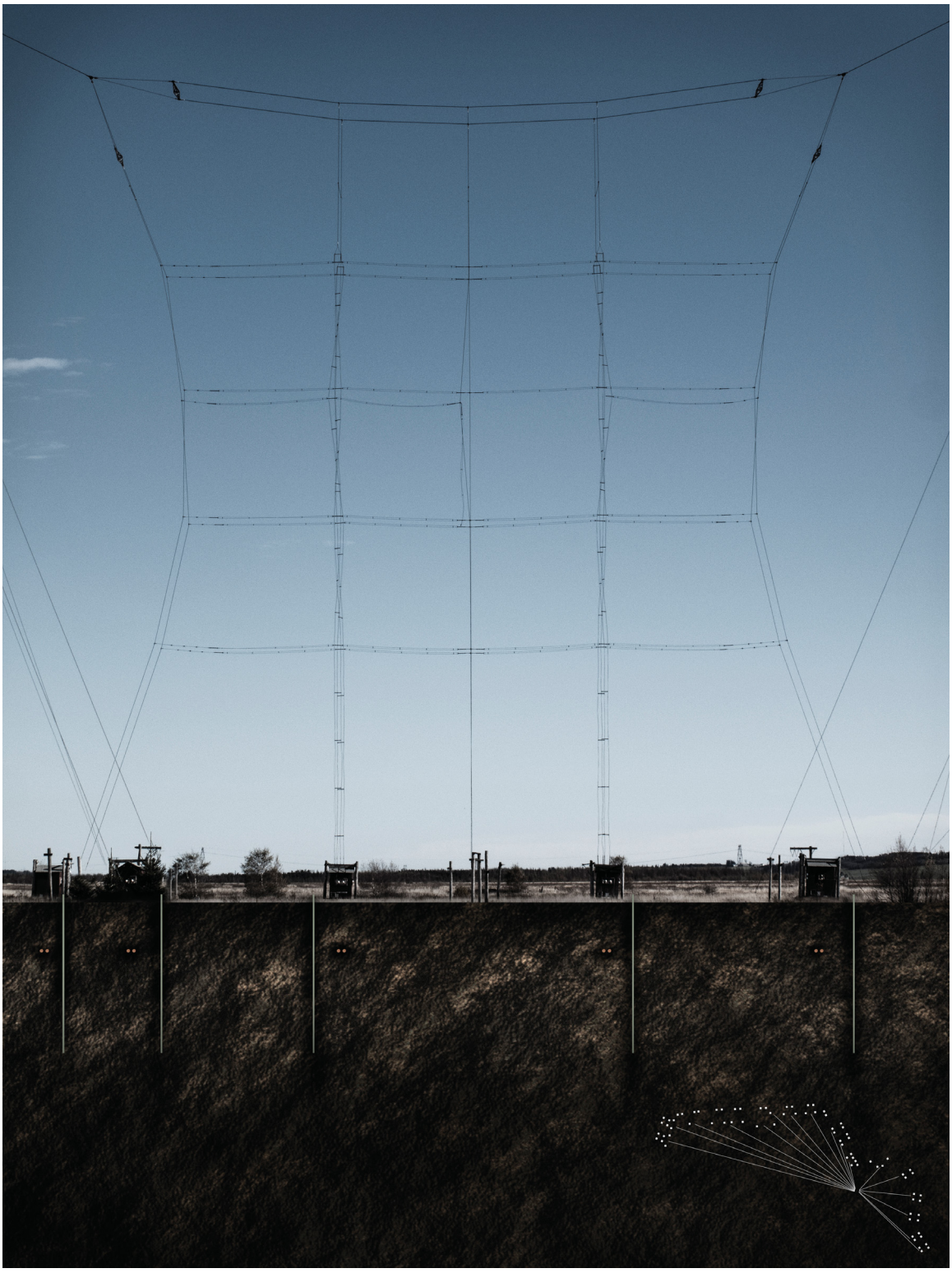
EARTH

Shortwave and ground wave radio waves are differentiated in the above diagram. These waves operate at different frequencies and demand vastly different amounts of power in their propagation. The critical angle, the angle of which a shortwave radio wave must meet and reflect off the ionosphere is of particular interest to this study. (data from Sedov 1973)

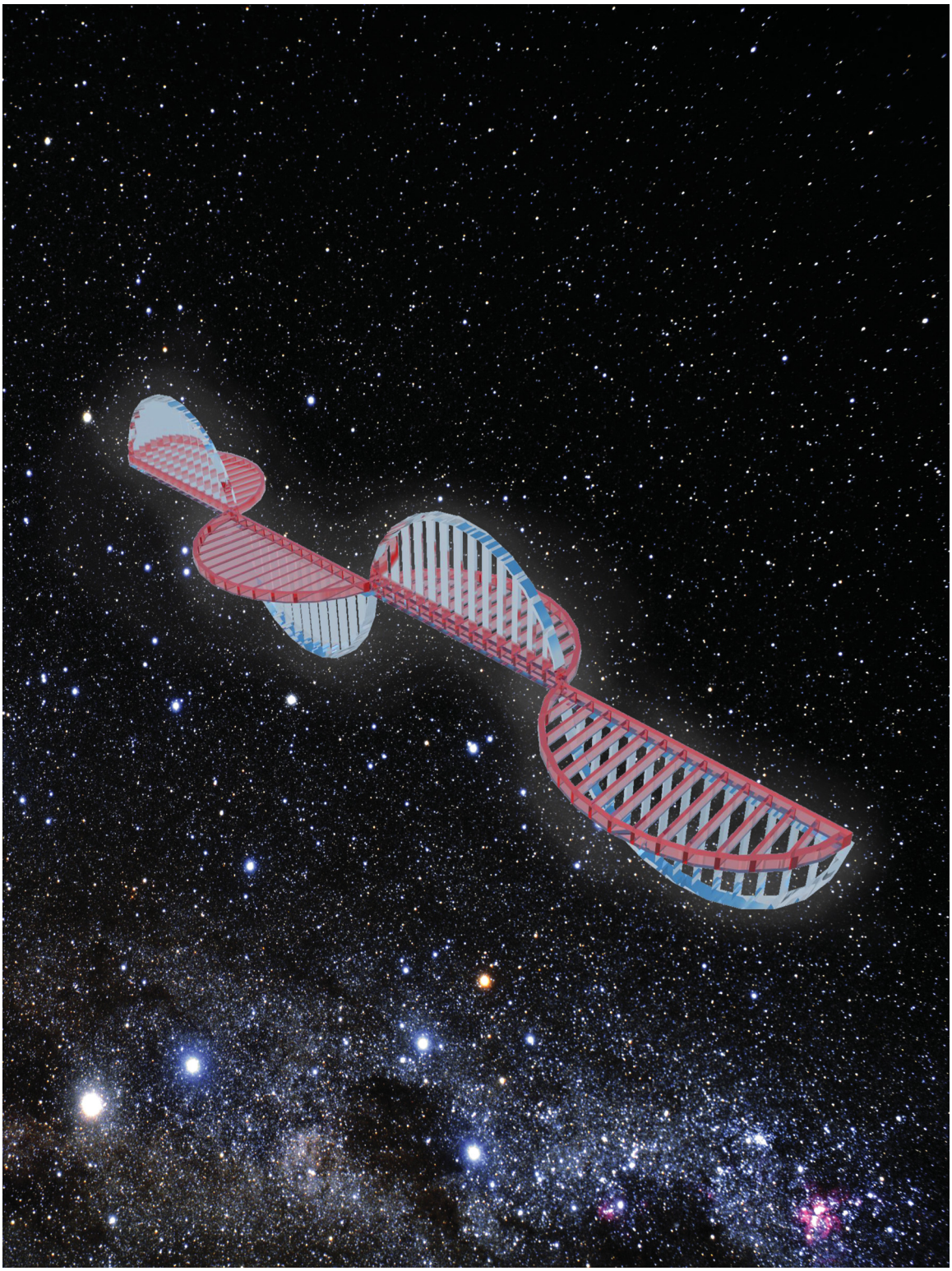


A schematic section study investigated the varying ways in which the former signals may be expressed as ephemeral incrustations or protrusions emanating from the path.

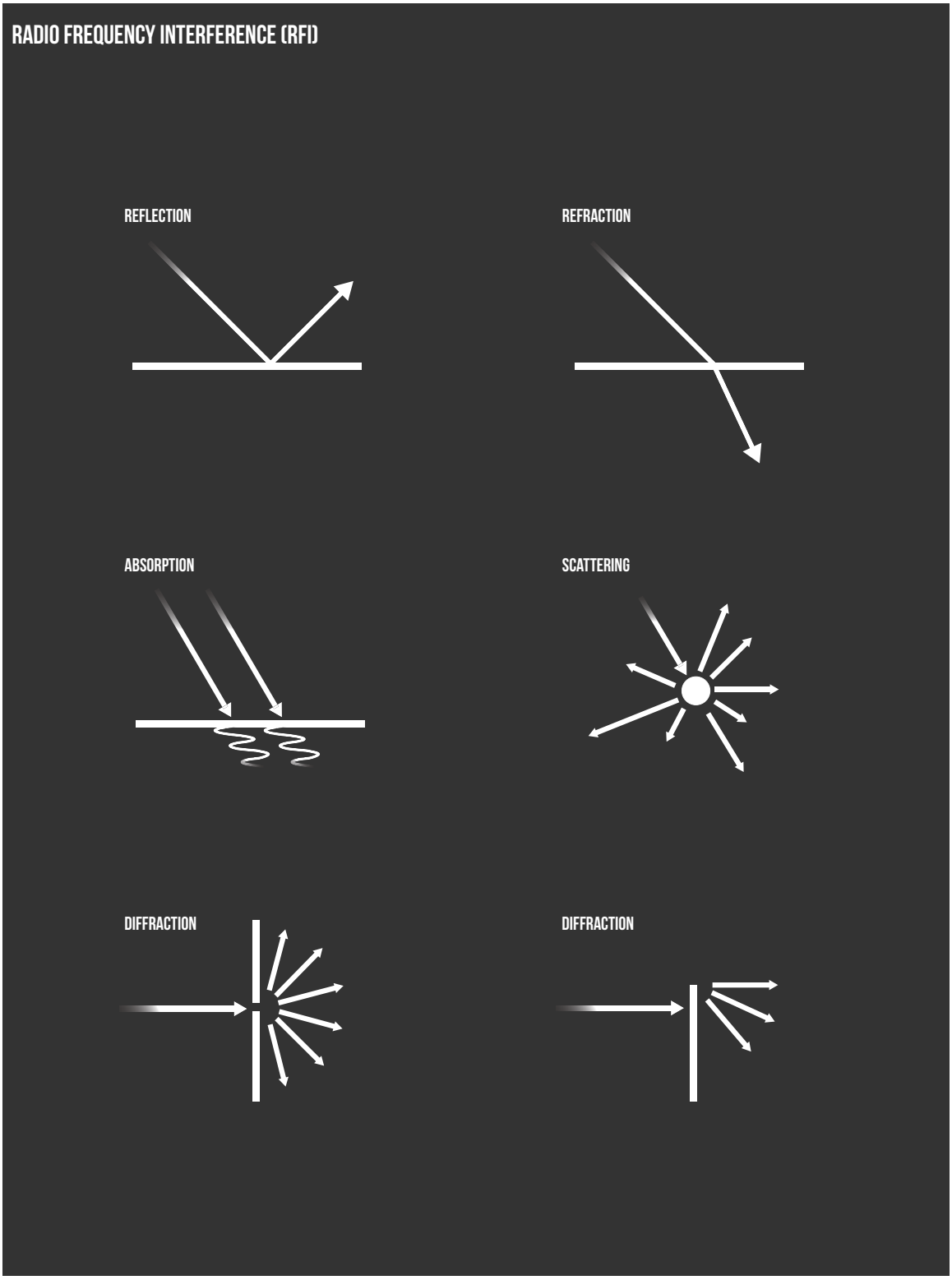
The creation of this ghostly form in the landscape marks an important point in the design process where in lifting up and occupying the ground became apparent.



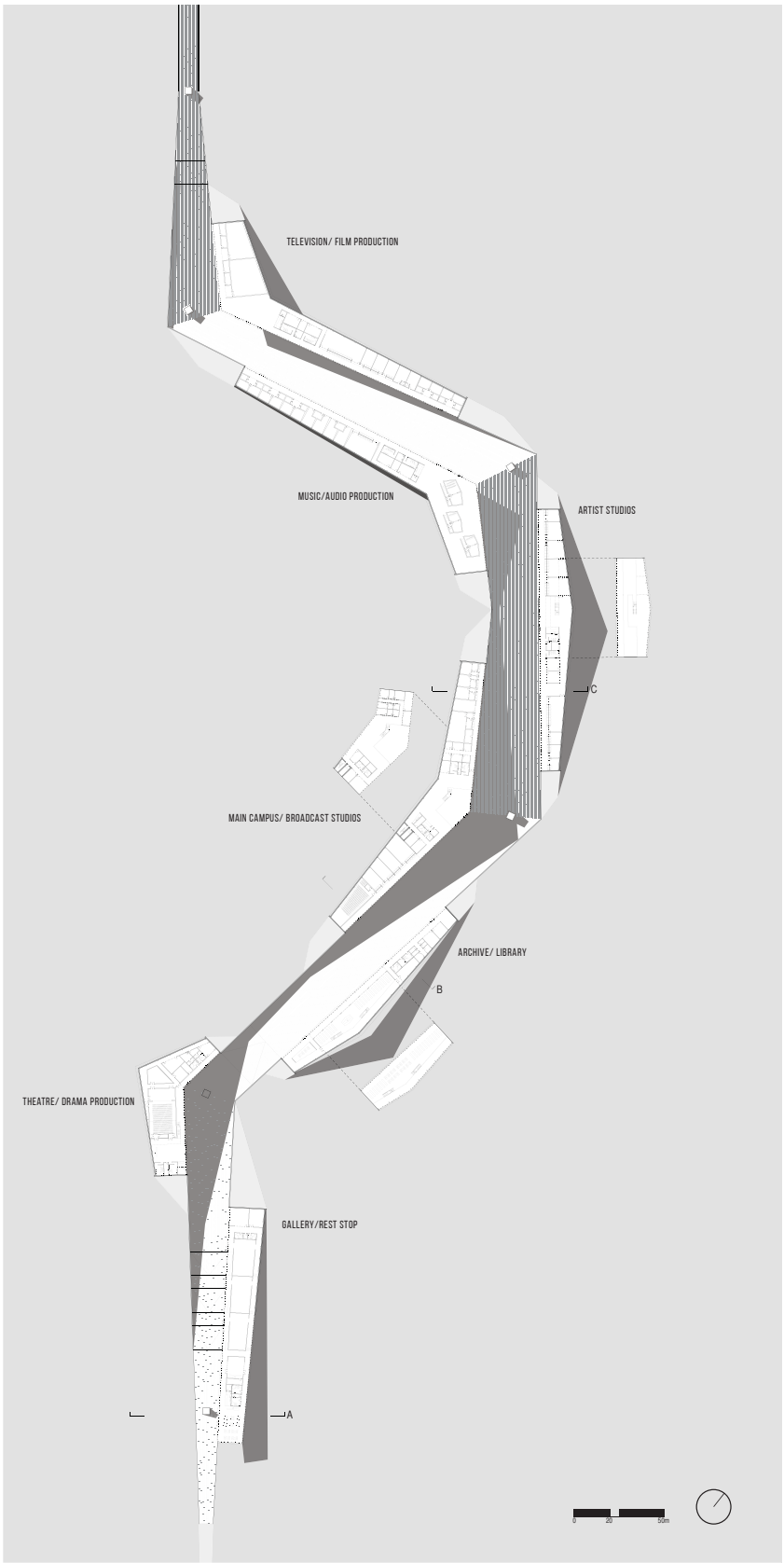
Enormous ground pins were once submerged deep in the soil providing an optimal ground for the massive antennas above. A sea of copper cables splintered throughout the site creating a massive underground web of copper. The conductivity of these wires is optimized by the ground's moisture content and salinity.



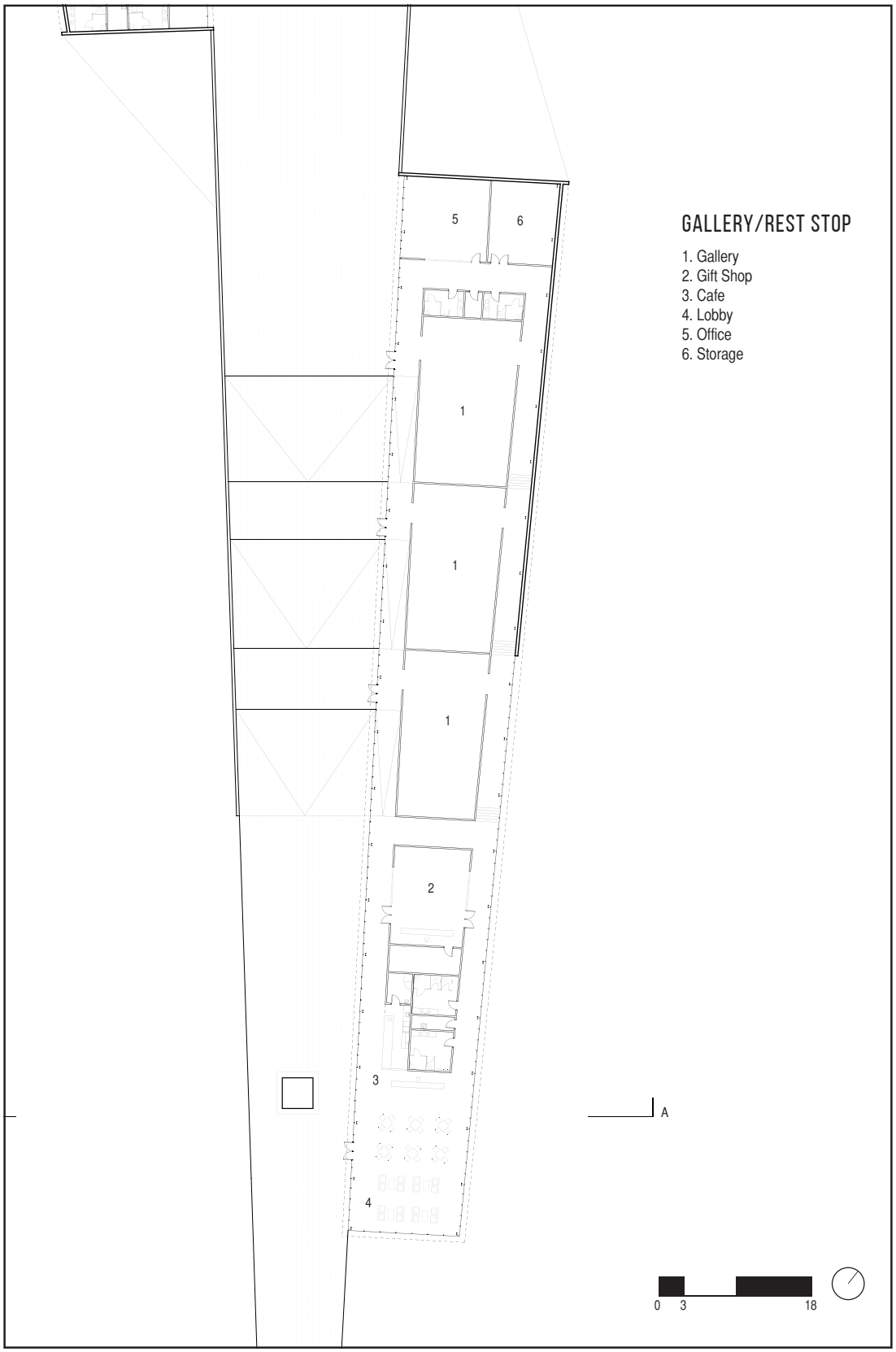
The electromagnetic wave is often represented as an oscillating wave comprised of an electric field, represented in the above as red plane, and a magnetic field, represented in blue. Unlike sound waves electromagnetic waves can travel through space.



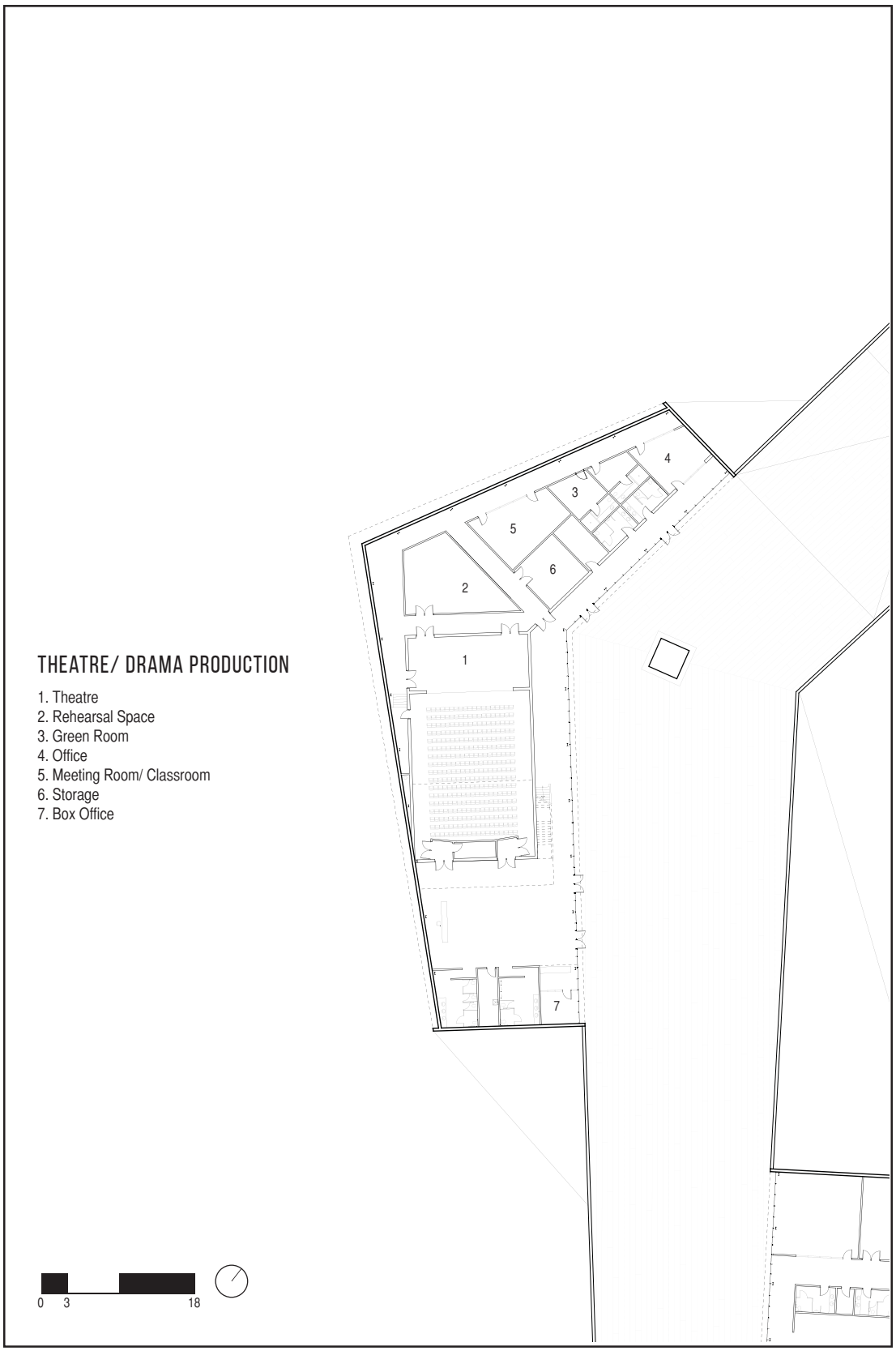
Radio Frequency Interference (RFI) may limit, degrade, or otherwise alter the direction, quality, or effectiveness of an electromagnetic wave. The life of an electromagnetic wave is subject to the above forms of interference. The ways in which electromagnetic waves travel and navigate interference was investigated as a potential drivers of circulation. (data from Sedov 1973)



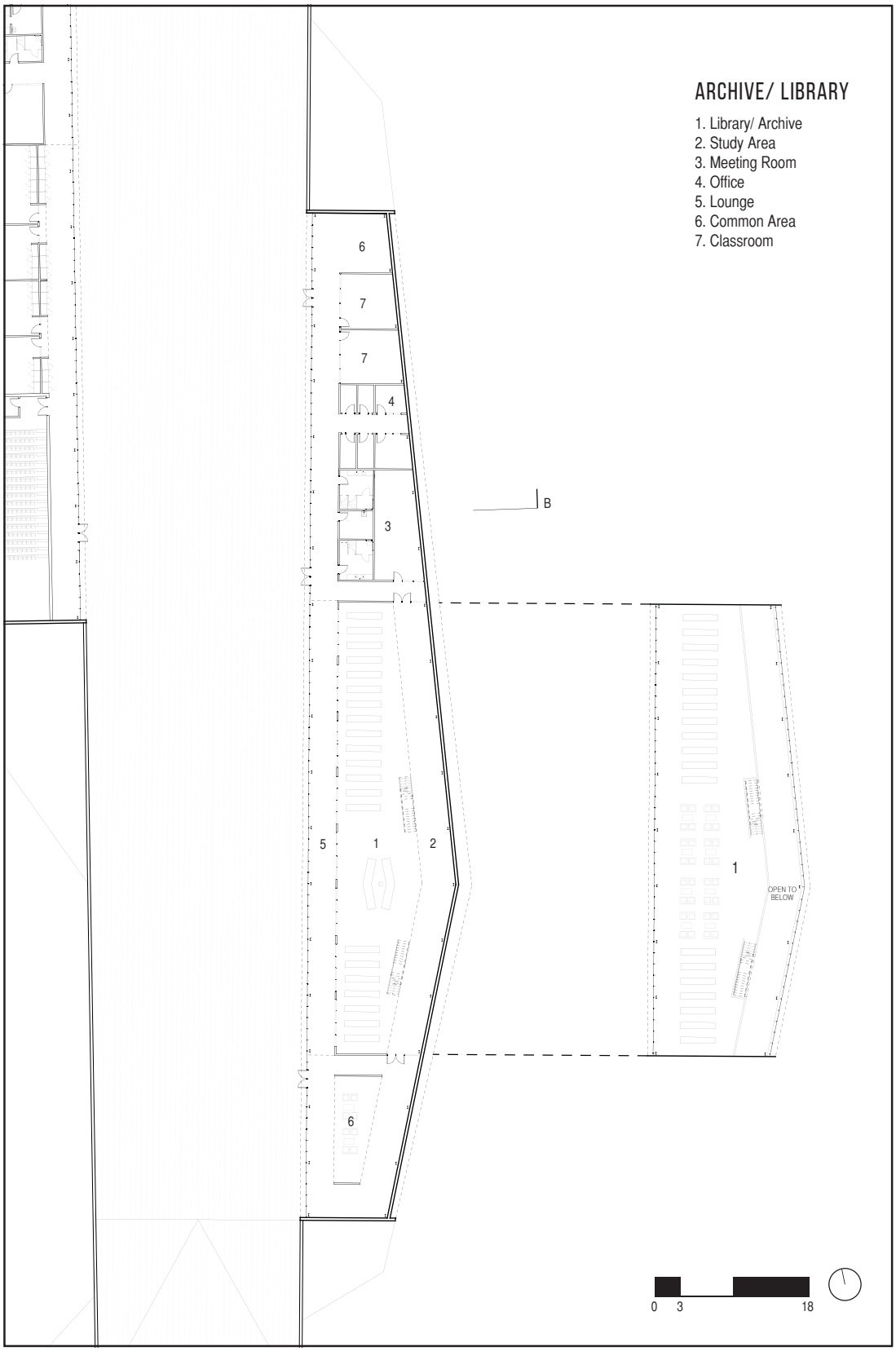
Core campus site plan/ ground floor plan



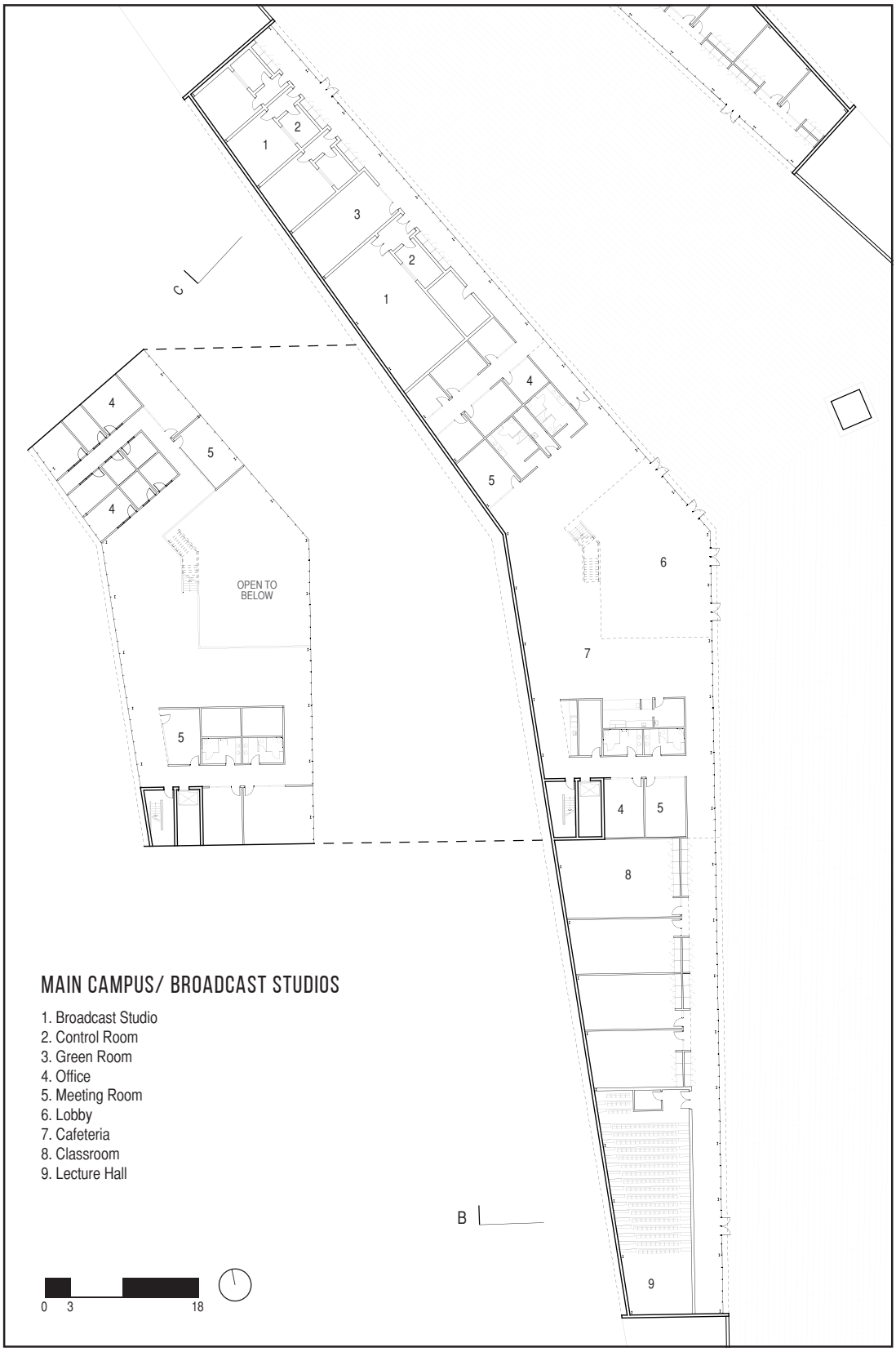
Gallery/ Rest Stop Building floor plan



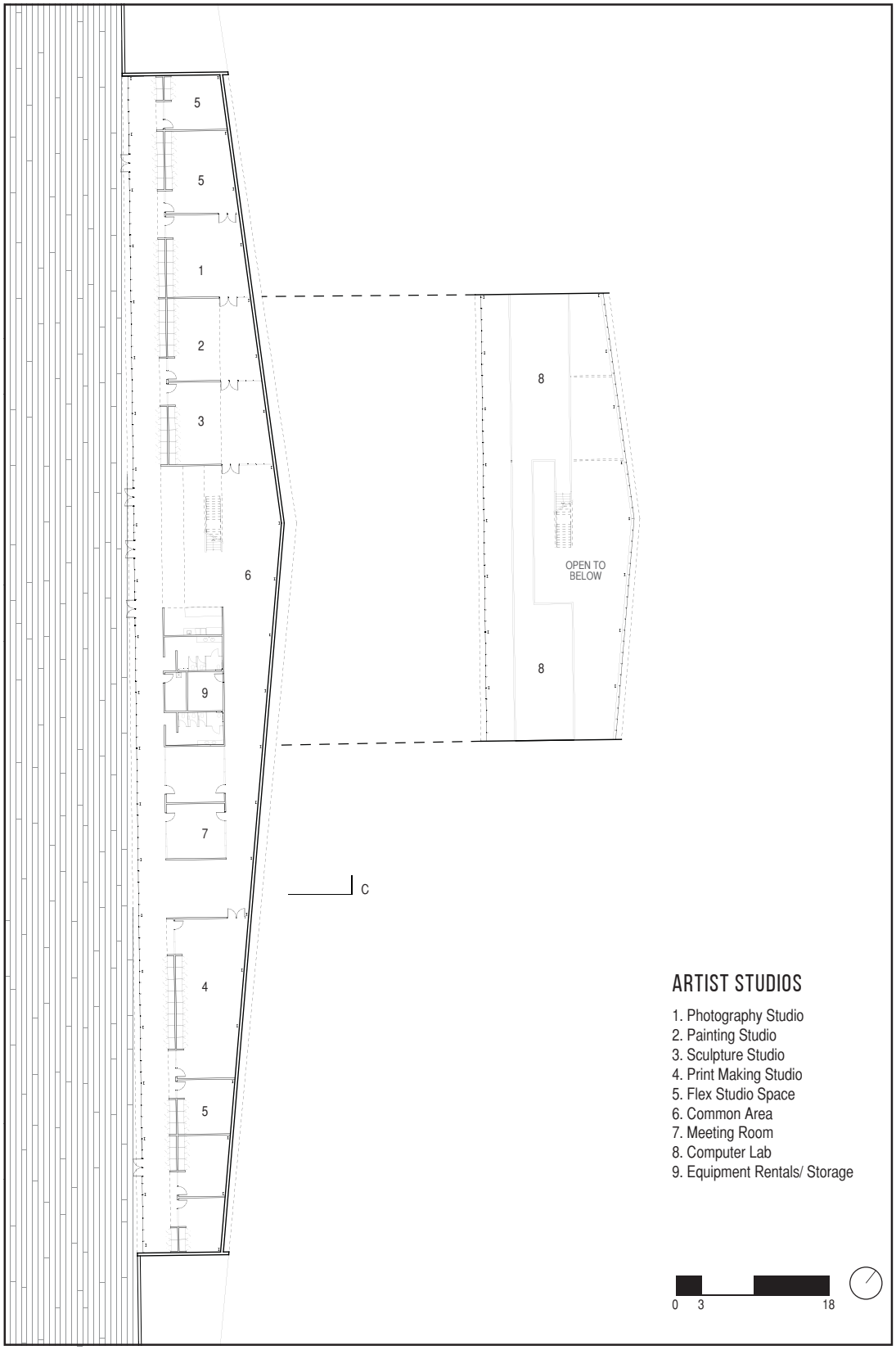
Theatre Drama Production Building floor plan



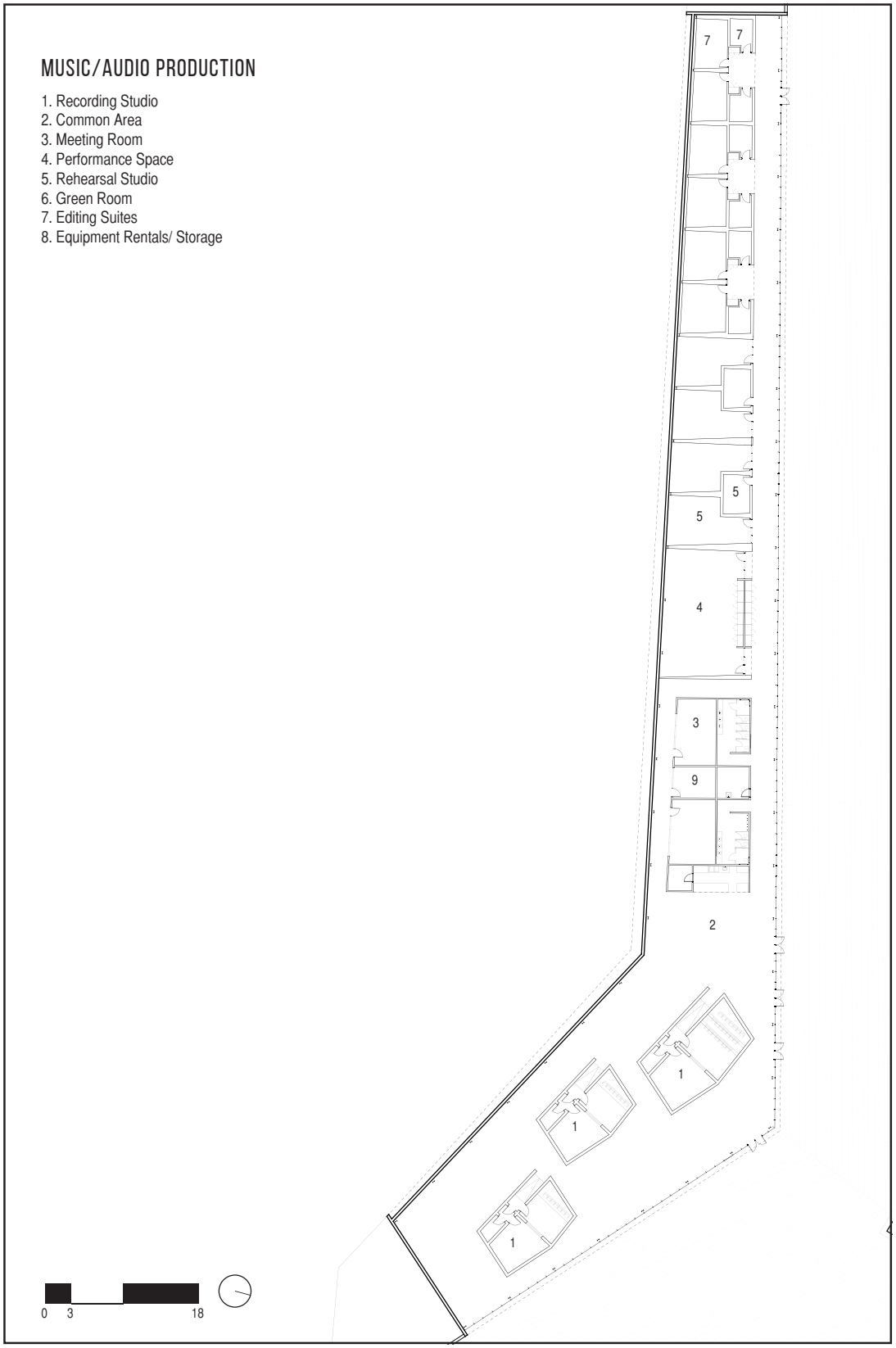
Archive/ Library Building floor plan



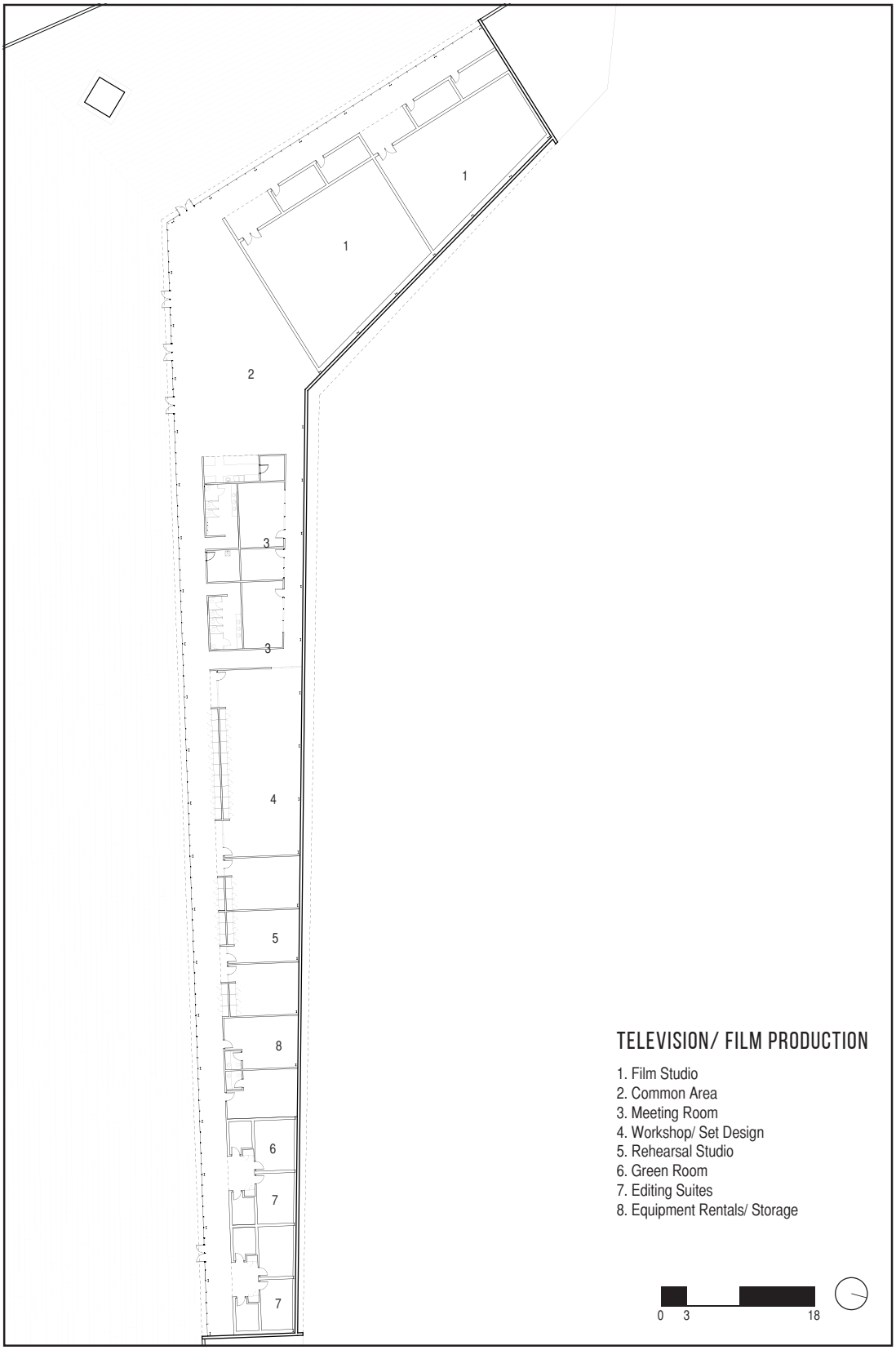
Main Campus/ Broadcast Studio Building floor plan



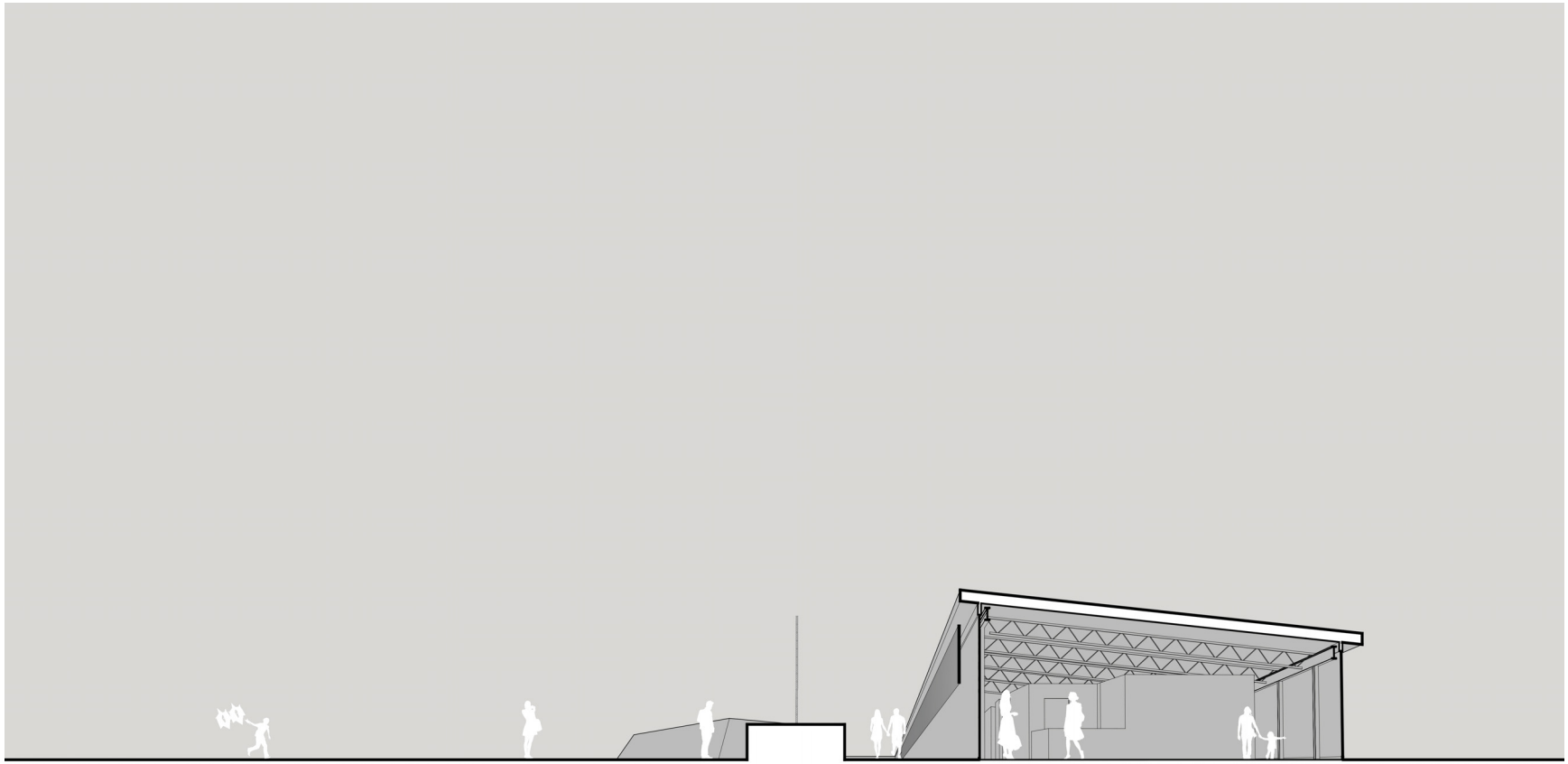
Artist Studio Building floor plan



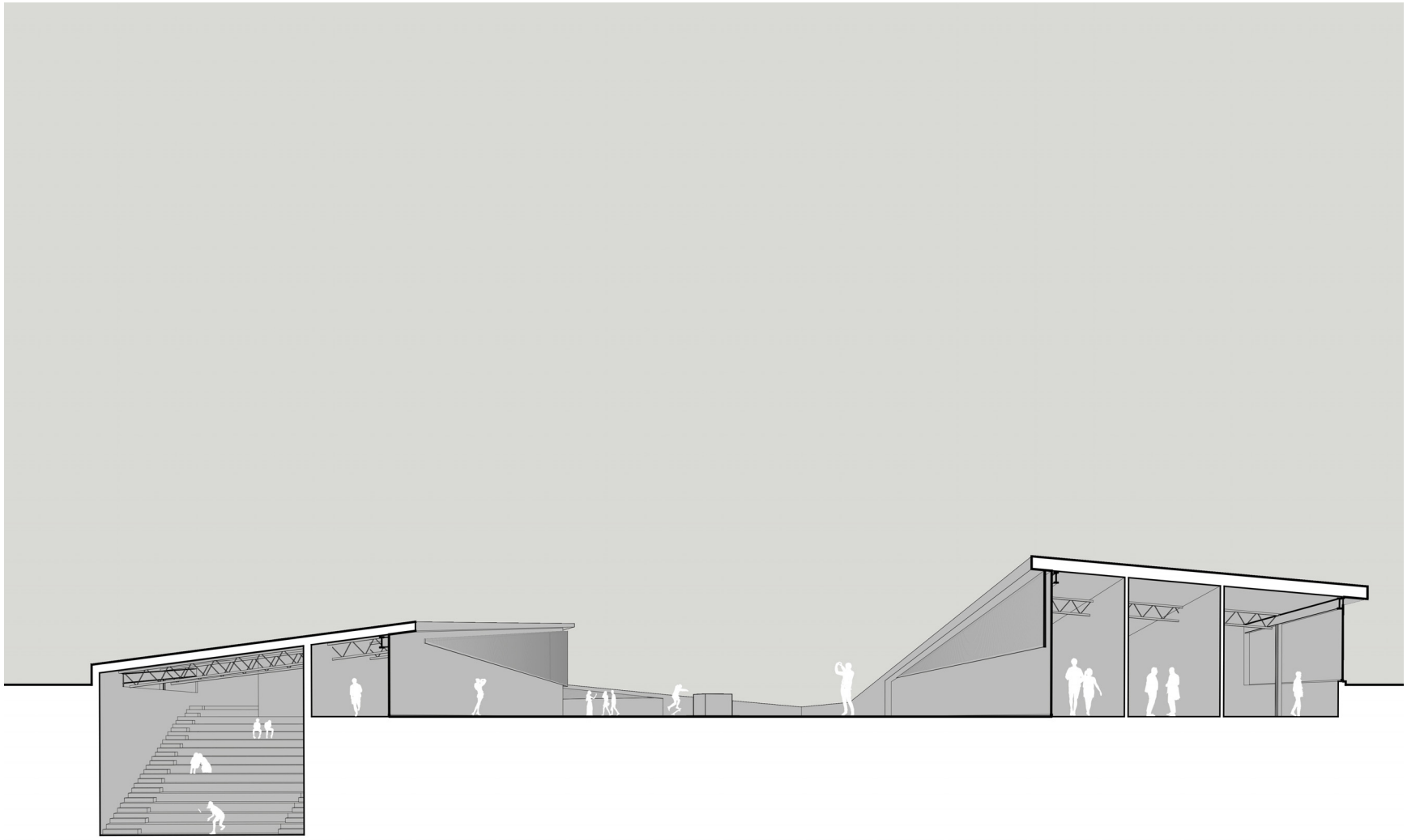
Music/ Audio Production Building floor plan



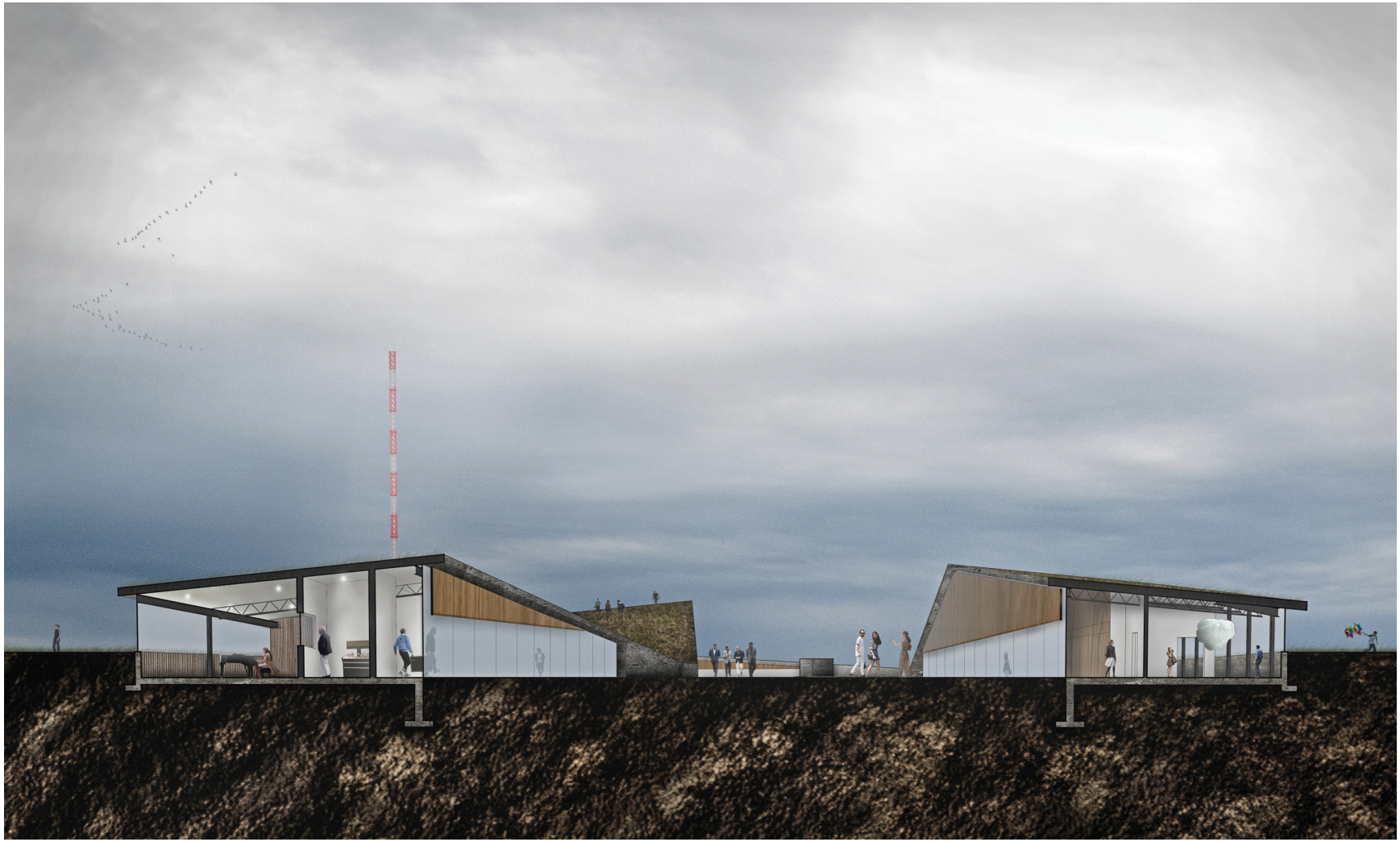
Television/ Film Production Building floor plan



Section Perspective A



Section Perspective B



Rendered Section Perspective C

Presentation model looking northwest

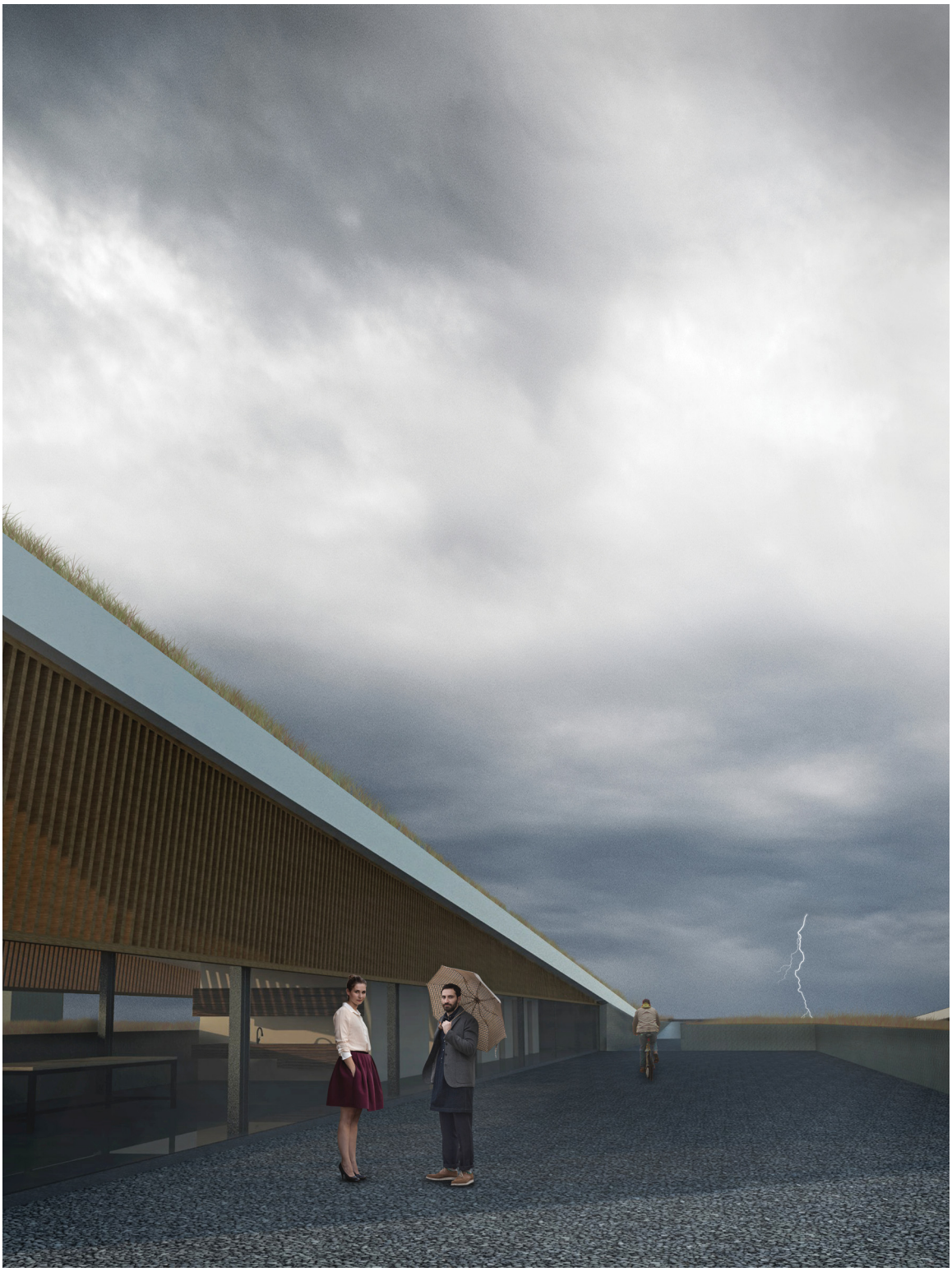
Presentation model looking northwest

Presentation model looking southeast

Radio picnic

Amphitheatre

Green roof exploration



Residence entry

Tectonics/ Materiality

Steel bridges have long facilitated movement through the Tantramar Marsh. The versatility and durability of these structures resist environmental forces and assist trains and automobiles in navigating the dynamic and ever changing terrain. In the presence of these bridges the RCI towers were, if only in their materiality and construction, seemingly natural or perhaps even at home in this unique landscape.

Radio towers of this typology are often similarly constructed, elongated square or triangular light gauge steel trusses are arranged one on top of the other. The repetition of these uniform steel components allows each tower to reach its required height with a relative speed of construction. The use of steel allows the overall structure to be easily modified, maintained, and repaired.

Structures and materials that once made up the former infrastructure now lend themselves to new applications on the site. The tectonics of the proposed media arts centre is analogous to that of the former RCI towers. The vertical scale and orientation of the former towers is now expressed horizontally. The rhythm and repetition of steel columns enhances movement along the path while accentuating the buildings horizontality. Like the RCI towers the consistency of structural elements give scale to both the buildings and the surrounding landscape.

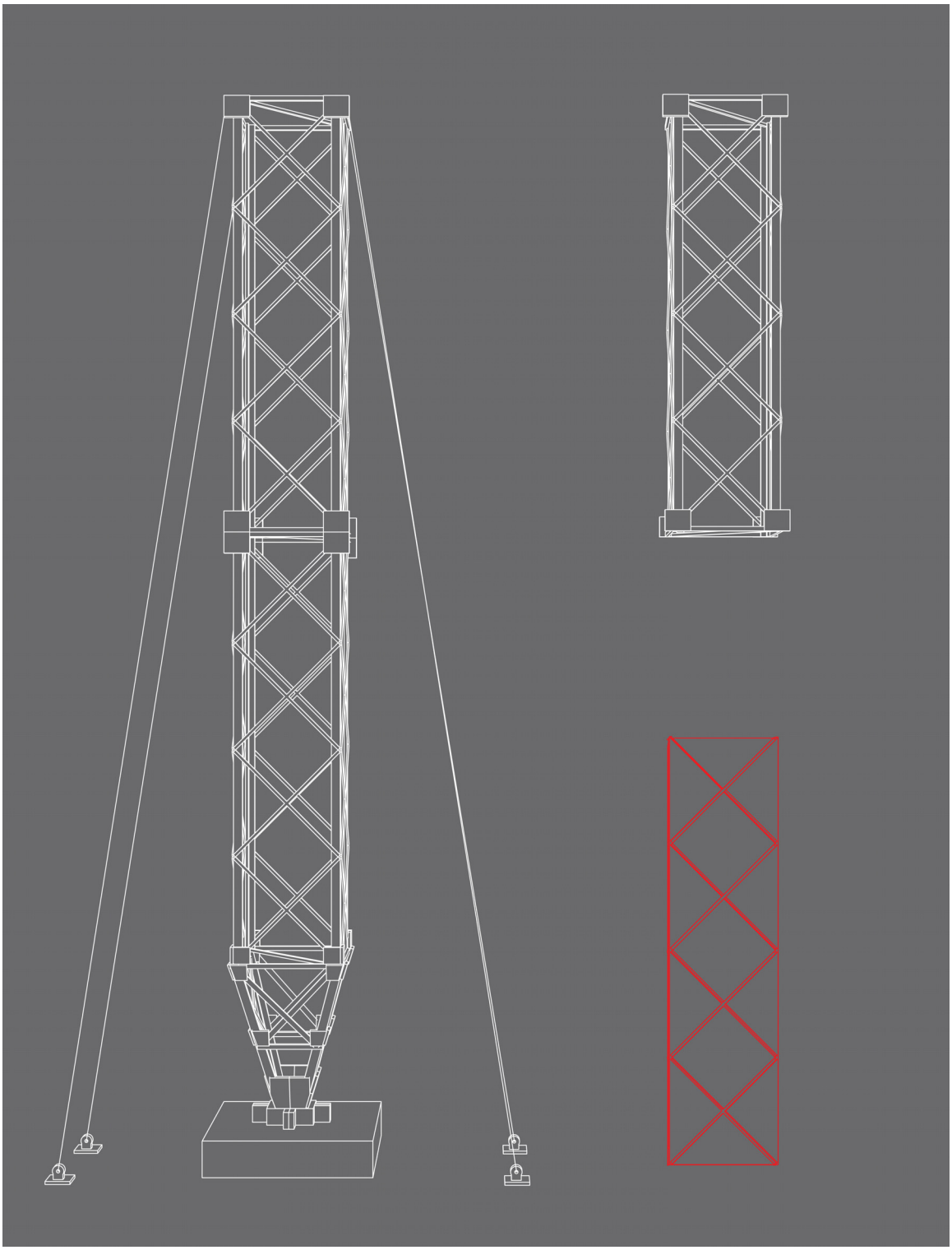
Large spans afforded by the strength of steel construction allow each building to achieve a thinness and lightness characteristic of steel structures. It is these attributes of steel construction that make the expression of the design

concept of lifting ground possible. By stretching the top cord of each truss a thin edge profile is created that can be read on the building's exterior. The thinness of the roofline pushes the design concept further.

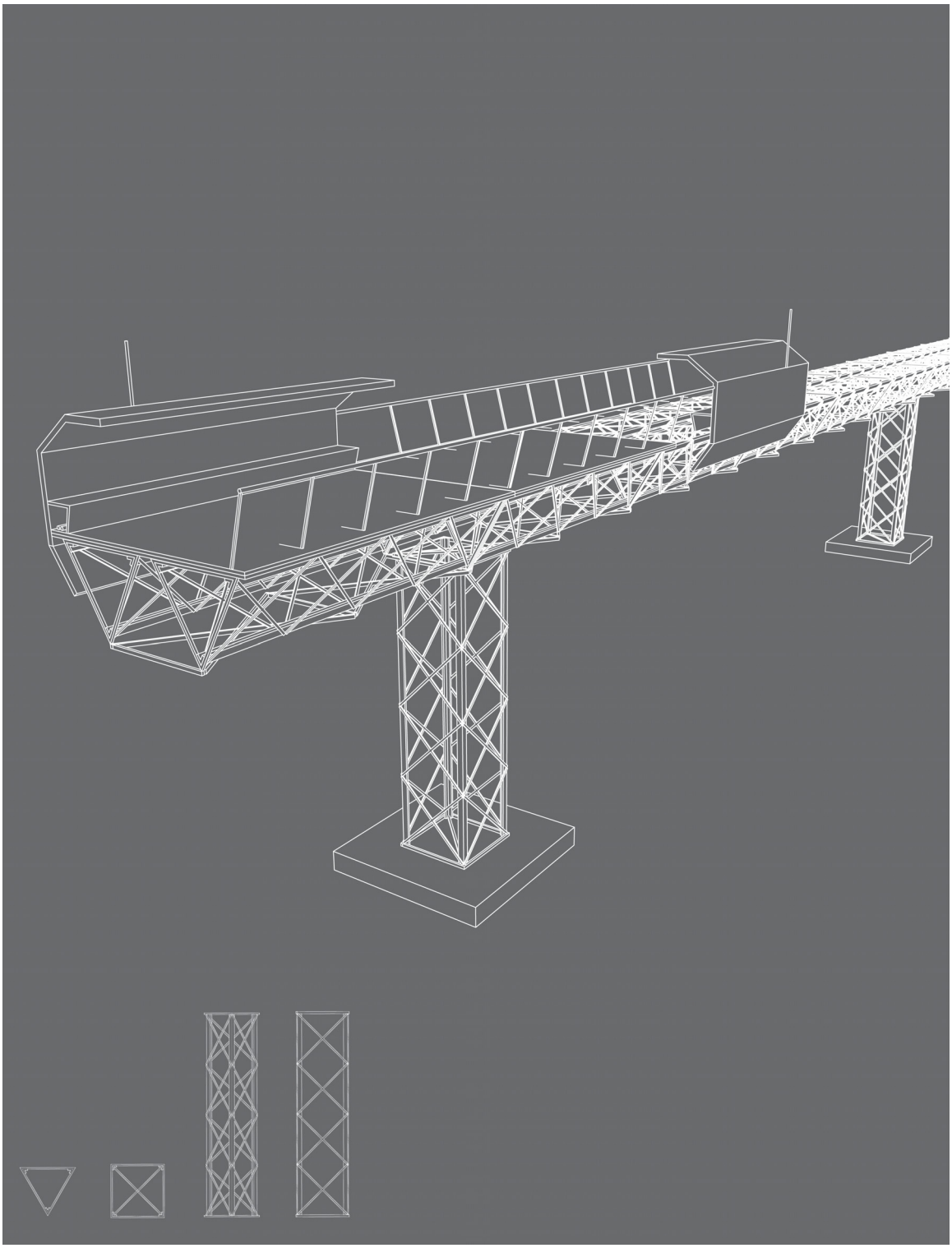
The dynamic and fluid nature of electromagnetic waves and oscillations can be read in the shifting and undulating nature of exposed steel trusses within the buildings interior. Steel trusses shift while steel columns increase in height as they approach the building's peak or apex. These moments within each building become places of importance and are subsequently bestowed with special programmatic elements unique to each building.

Wood screens suspended off the facades provide much needed solar shading to the building's interiors. The hay storage barns unique to the Tantramar Marsh inform the design and materiality of the wood screens. These barns are loosely clad with vertical boards that work to filter light and provide ventilation to the hay stored inside. The bottom of each screen creates a datum line ten feet above the path. The datum line introduces a human scale to the path and accentuates a threshold between that which is interior and exterior.

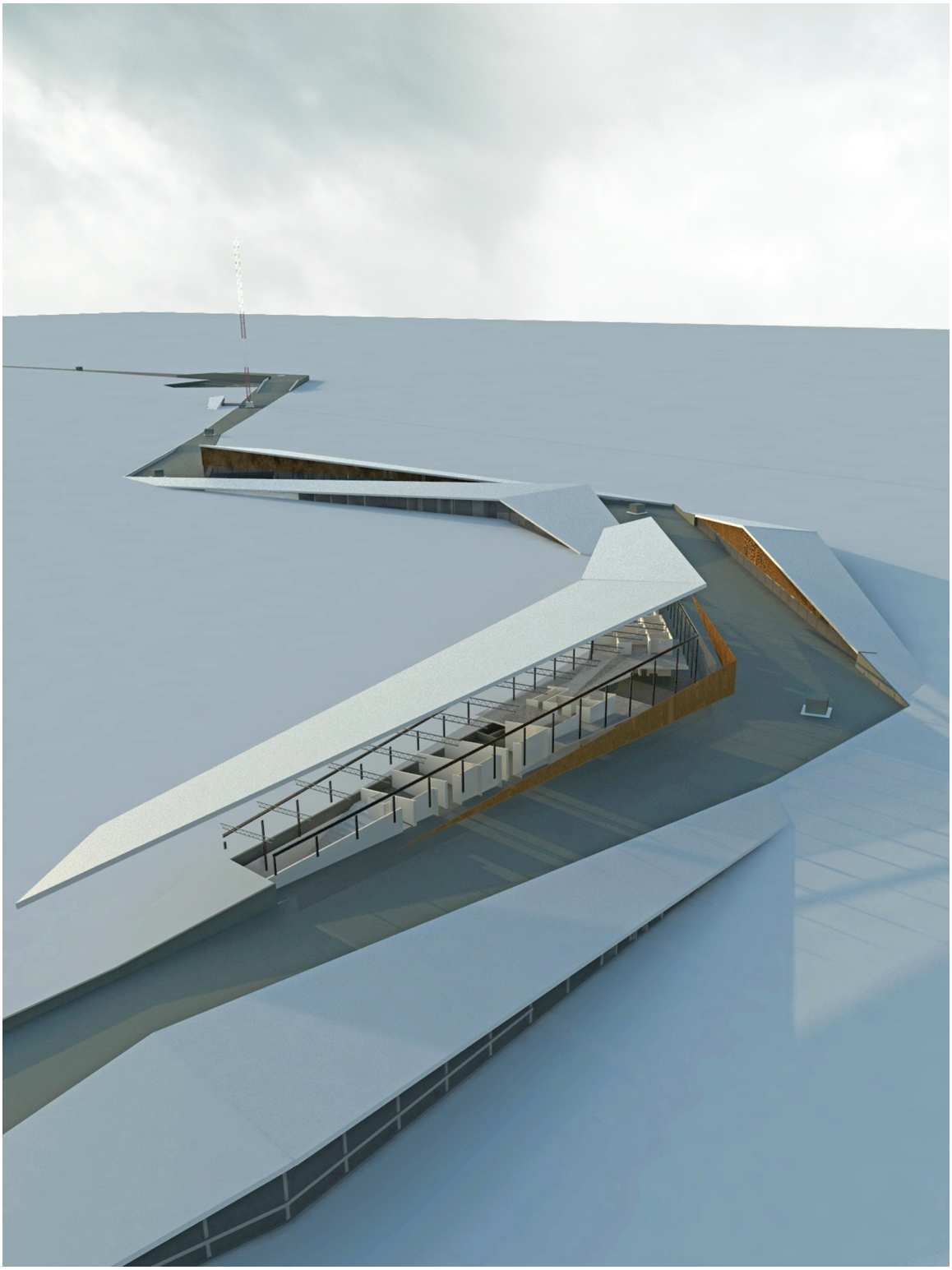
Peter Beens, Railroad Bridge near Bridge St., Sackville, NB, 2011 (Flickr 2014) (top)
Alexander Henderson, Intercolonial Railway bridge at Sackville, NB, 1875 (McCord Museum 2014) (bottom)



From limited photos and resources the construction of the towers and their components is explored and a 3D model created.



Deconstructing the towers into their rudimentary parts presents potential opportunities for their reuse on the site.



An exploded 3D model of the Main Campus/ Broadcast Studio Building reveals steel structure.

Hay storage barns scattered thoughout the Tantramar Marsh act as scaling devices in the landscape. Veritcal boards clad these simple stuctures, providing both light and ventilation.

CHAPTER 5: CONCLUSION

The decommissioning and subsequent demolition of the RCI Shortwave Radio Transmission Station is felt as a huge loss by the people of Sackville and by those who often travel through the Tantramar Marsh. The impressive network of towers and antennas linked Sackville to the world and in doing so the world back to the small Maritime town. By investigating latent traces left behind by RCI a new network may be established, one that presents a next phase in the natural evolution of this site and its connection to the industry of broadcast. The direction, quality, shape, and behaviour of the electromagnetic radio waves once produced on the site now act as drivers of form and spatial organization. The rare and optimal ground conditions found in this unique landscape present opportunities for an architectural response that both engages and captivates first time visitors. The inclusion of a media arts centre on the former site of RCI connects this important cultural and industrial site back into the traditions and fabric of Sackville once more.

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