Design Within Reach: Interpreting for Disability in the Human and Natural Disaster Museum

by

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Abstract

Cultural institutions like museums preserve, interpret, and present aspects of the natural and cultural importance of humanity. As resources for the public, their mission is to collect artifacts, stories, and media; to share knowledge and allow for research, and to inform public audiences. As a facility for public use, museums should consider all audiences of all abilities in the design of the museum, creating public spaces suitable for visitation by the blind and people with low vision, the deaf and hard of hearing, and people with mobility issues.

A public space that considers all users has the potential to create a better visitor experience for all. By interpreting standards and guidelines to see beyond what is mandated or suggested, good design is achievable. By focusing on what is within reach—at arms length, narrow or short field of distance—better design is attainable by any designer for a broader audiences.

Culture, society, and heritage play an important role in design. Nova Scotia, the Province where this practicum project is located, has a strong connection to disasters maritime and man-made. The Human and Natural Disaster Museum, a fictitious museum, will thus provide a space for the interpretation of disasters related to the region. Both architecture and interpretation, however, will be grounded in an understanding the cultural and heritage of place.

A museum exhibition is a particular type of storytelling involving the curation of objects and the sequencing of experiences, and guided by interpretive intentions. This practicum project borrows from the narrative qualities of a typical exhibition as a means to guide the design of the public spaces of the museum outside the exhibition halls. Through the examination of the cultural context of the museum's theme and location, established design guidelines, the pedigree of the adaptive structure to be reused, and examples of museum design, this practicum project provides a better understanding of the function of museums, and a better visitor experience for all.

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1. Introduction

Museums have long been a part of my life. As a middle grader I visited castles, abbeys, museums, and historic homes was an every weekend experience for three years of my life, thanks to my parents. As an adult travelling through Europe, travel was much of the same with the addition of museums of fine art. Having lived in New York, Washington, and Budapest, I have had broad exposure to museums. I worked in a museum for close to half a decade, and witnessed the Human Rights Museum move from vision to reality as I spent my graduate education years in Winnipeg. Museums have been of interest of mine for sometime, originally from a design and communication perspective, but as a result of my graduate studies, they are now of interest from a built environment perspective.

There are numerous museum typologies. At one end of the spectrum there are science centers and learning environments that routinely connect with audiences, often utilizing very interactive modes of engagement. At the other end there are contemplative spaces, like museums of fine art, that maintain a 'hands-off' policy when it comes to the display of objects of cultural importance. And there are, of course, various types in between the two ends of the spectrum including living museums, homes and estates, and historic parks to name a few. It has been my observation that museums that deal with the display of precious cultural artifacts—museums of fine and decorative art for example, or collections of historic artifacts—are most in need of confronting the issues of presentation and experiential design for persons with disabilities.

The museum world is experiencing change as global influences shift to demonstrate a stronger stance on human rights, among many influences. As public institutions, most have legal obligations to provide and maintain accessibility for visitors with disabilities. While some museums embrace this obligation, others meet the minimum standard required, and some evade the issue entirely. Private institutions also have obligations, both from a building code and ethical perspective. The issues, however, are the same:

discrimination based on a characteristic of disability. The imperative of inclusion is a human rights issue. The museum has a mission related to the preservation and sharing of knowledge with public audiences, but the public cannot be segregated to include only some of the public. While it would be impossible solve all issues related to accessibility and museums in this practicum, it is intended to suggest improvements to yield a more inclusive environment. At the minimum, the project is to be more acutely aware of the issues related to disability and in the museum setting.

Cultural institutions are bound by stringent laws and standards applicable to their functions, from collection acquisition to deaccession, from public display to storage. While funding for these type of institutions is competitive, the need for increased accountability and accessibility is becoming more important in the scope of federal agencies', boards of trustees', and benefactors' oversight and input.

There are issues inherently associated with the preservation and presentation of artifacts, not the least of which is the safekeeping of the object. For disability groups, measures taken to protect precious and sensitive objects on display are often obstacles for engaging with them. Objects—particularly works of fine and decorative art—by their very nature, are visual artifacts that alienate specific disability groups such as those with limited vision. Furthermore, there are conflicting approaches to the display of objects and communication strategies depending upon the specific disability-constituent. Clearly, one approach does not satisfy all.

A museum visit is often a lengthy commitment of time, and considering the needs of people with physical disabilities is important. Like the inclusion of rest-stop areas, for example. Zones of viewing—the placement of artifact displays and didactic elements—for a person in a wheelchair are physically lower than that of a visually impaired visitor (who expects to read text at a certain height), and deaf visitors who wish to view artifacts and read panels also want to be aware of their surroundings thus clear lines of site are important. The phrase "in the round" refers to art visible from all sides—as in sculpture

in the round—and is a concept related to the dialogue of the deaf. Providing non-linear paths to address in the round while appropriate the deaf, possess challenges for the blind and partially sighted people. I expect that tactics for one group will be at odds with another. I also suspect, perhaps hope, that strategies for a more inclusive museum experience will also create a better experience for all.

Addressing the needs of the persons with disabilities in the museum setting is an important issue worth exploring but perhaps impossible to resolve entirely. The intent of my practicum project was to develop a museum design that confronts issues associated with the presentation of artifacts and the museum experience as identified by disability-constituencies (disability groups, community and advocacy groups, scholars and researcher organizations). I have designed a museum that includes permanent exhibition halls, a temporary gallery for travelling exhibitions, various visitor related and public function spaces, and administrative and back-of-house facilities. Using elements from the exhibition itself and the interior of the public and private spaces as a means to conduct a formal study, I demonstrate not only design best practices for disability but I will also propose approaches to museum programming and design for people with disabilities.

Exhibition design as an extension interior design

Early in my career as a graphic designer, I was the exhibition designer for *Halifax Wrecked*, a permanent exhibition about the Halifax Explosion located in the Maritime Museum of the Atlantic in Halifax, Nova Scotia, Canada. It was at this point in my career that I was introduced to exhibition design, and the role graphic design has in the built environment.

The exhibition recounts the devastating effects of the 1917 explosion in the city's harbour—the most destructive man-made explosion before the Atomic Age. The exhibition, still on display today, provides some of the content for one of case studies. The exhibition is approximately 2–3,000 square feet and displays various artifacts and communicates the story of devastation and human tragedy from a calamitous series of events in December

of 1917. The artifacts on display are few, consisting of items including: articles of clothing, personal belongings, and jewelry; a time-piece from at the moment of detonation; ceramics; and a large piece of steel from the hull of one of the boats involved in the disaster. Additional artifacts exist in the museum's storage facilities, and there are many sources of period photographs. The current exhibition recounts the event by describing the day before, and the six days afterward. As an interpretive device, stories of and quotes from individuals who survived the explosion are used throughout the exhibition. The exhibition also includes a short video of 10–15 minutes.

For an emerging designer the exhibition design experience was important, as it provided a chance to connect with guests and museum visitors post-installation. Some of the guests invited to the opening were explosion survivors; most all were children at the time of the event, and; many were blinded as a result of the tragedy. Today, upon reflection I realize that I became aware that exhibits are more than a collection of artifacts and, instead, can tell stories of the human condition. While one audience was grateful we were telling the story, it was the group of people who witnessed and were injured by the event who were under-served by the exhibit because they could not experience it in the same way the non-disabled could. This experience left an indelible impression on me.

The subject matter of the exhibition is of particular relevance to human rights issues due to the relationship of the explosion to the creation of The Canadian National Institute for the Blind (CNIB). This organization was formally incorporated on March 30, 1918 to help support and rehabilitate Canadians with vision loss. Historically, vision loss was prevalent at the time due in part to veterans returning from World War I and the thousands of individuals—particularly school aged children—who developed vision loss and impairments resulting from the 1917 explosion.

Disaster as a subject

For me, the Halifax Explosion presents an ideal case study to explore issues related to

inclusiveness for persons with disabilities, and to explore my interest in exhibit design. The *Halifax Wrecked* exhibition has sensitive artifacts that need to be displayed; it has an audio-visual component that directly confronts issues related to disability groups; and the content, particularly descriptions related to the force of impact and areas of devastation, lend themselves well to complex information displays.

The subject matter is serious in tone and content. My intent was to choose both a museum typology and a subject matter that does not rely heavily on entertainment—or edutainment—as a device to inform. I wanted my design exploration to be appropriate to the nature of the content. To inform rather than entertain, was both the guiding principle, and for a decade or more has been my mantra. By choosing a weighty subject matter, I intended to develop solutions that were thoughtful to the content and respectful of the needs of various disability-constituencies.

A component of my practicum also includes a space for temporary exhibitions, often the livelihood of many museums. The permanent and temporary exhibitions for my museum focus on disaster related topics. For example, a display of temporary architectural structures used for disaster relief; a health pandemic topic; or a collection of historical artifacts related to cataclysmic human tragedy could easily be imagined as being on display in this museum. Although this component of the practicum is fictitious, the goal was to showcase a temporary exhibit that explores issues related the display of artifacts and concepts that allows for an exploration more temporal experience, and more contemporary with regards to current and future thinking about museums as agents of social change.

In addition to designing spaces to house exhibition, the scope of this project addresses additional aspects of the visitor experience to including a museum shop, café, lecture space, student workshop, administrative offices, exhibition preparatory facilities, and other back of house facilities. Whether designed in this practicum or simply space allocated for, all of these are areas that would typically be in the domain of interior designer. That said, the experience of space is not solely limited to the built environment, and services, programs,

and the exterior environment was also addressed in my work.

Ecology, society, and economics

Sustainability is a subject that should, in my opinion, be a part of every design discussion. It is mentioned here in the introduction, because a personal stance on sustainability guided my research, and touches upon many decisions. While sustainability will always remain an undercurrent, never the focus of this practicum, it impacted much of this practicum project.

Over the past three years, I have had the opportunity to work with colleagues on enhancing my understanding of and refining a personal stance on sustainable design. I believe, as does the firm I currently manage, that all design should be viewed through three lenses: *ecological*, *cultural/social*, and *economic*. I believe designers should strive to promote environmental sustainability as an essential part of every design discussion: to create built work with the lightest ecological footprint. For this practicum project, I will outline why I believe the site to be appropriate from an environmentally sustainable approach to design, not the least of which is an adaptive reuse of an underutilized structure of a mammoth scale ripe for, and deserving of change. For a project to be truly sustainable however, design decisions must go beyond just the *ecological* perspective.

Social/cultural sustainability considers how we can shape the built environment to improve human interactions. An emphasis on universal design plays a role in this way of thinking, and should be core to all designers approach to design at all times. Where I have strong opinions on sustainability—beyond ecology, and beyond advocacy for people with disability—is that of culture. I firmly believe that design solutions should strive to foster the culture of place. *Cultural* sustainability, in the case of this practicum project, looks to the historical cultural landscape of place to inform design. This focus on culture gave me license to pursue research into history as a critical component of design. As will be noted later in this practicum project document, research into the history of a place informed my review of precedent, my understanding of the subject matter of my museum, and informed the

direction for the adaptive reuse of my site.

Program, system, and service

As a designer, I see system, program, story, service, and experience as integral to any design solution. I strive to find solutions to problems, regardless of discipline and seek out subject matter experts to collaborate with to find better informed solutions. With this experience comes a less intradisciplinary perspective, and a more interdisplinary approach that has been informed by many disciplines. In short, I look beyond graphic and interior design to identify design solutions.

Disability and the museum

At another point in my career, I worked as the Head of Design for the Corcoran Gallery of Art in Washington, D.C., United States. Issues related to the needs of persons with disabilities were rarely discussed; the topic provoked heated debate and emphasized an issues not being addressed. In the case of my own museum experience, ignoring the issue did not mean it was inconsequential; to the contrary, the issue was far from trivial. As an institution, the Corcoran did not have the resources—perhaps an institutional will—to satisfactorily address the problem beyond the base line. From this experience, I was well aware that meeting the standard did not make for a better experience anyone.

To pursue the subject matter of persons with disabilities in the museum setting was in part due to that experience. While attending the University of Manitoba, I spoke to my instructors about my areas of interest, and as a result was invited to observe a meeting for a project well underway. The Canadian Museum for Human Rights was under construction in the City of Winnipeg, Manitoba, Canada. The museum was in the process of developing a permanent exhibition dedicated to human rights for the new museum. The concept of human rights is vast in scope, and the needs of disability groups clearly fall within this purview. This was my first introduction to the museum exhibition design team—

Ralph Applebaum Associates of New York—and to many disability advocates from the city and region. The meeting included constituents from the seeing- and hearing-impaired population to discuss the progress of the exhibition design. What struck me most was the lack of input from persons with disabilities while designing of the building. For interior designers, it is important to witness all groups give input. I recognized both the conflicting needs of each group, and the importance to involve all users as part of any design discussion. While detailed exhibition design had not begun at that point, I have come to understand that the Museum of Human Rights is recognized as a standard with respect to design for persons with disabilities.

University of Manitoba Professor Kelley Beaverford worked with our class for a semester on a singe project. We worked with CNIB (Canadian National Institute for the Blind) staff and members of the blind and low-vision community to propose a redesign for their offices on Portage Avenue in Winnipeg, Manitoba, Canada. Through numerous stakeholder engagement workshops, we worked with community members to review and critique our designs. Outcomes from this experienced informed this practicum project, in ways too numerous to be specific.

Theoretical framework

The foundation for this practicum project is in the notion that the exhibition is a sequence of experiences, in curated environment that relies heavily on didactic elements. The notion of sequential spatial experiences with undertones of communication led me to investigate the theories of narrative as a means to further expand upon my future role as an interior designer and to enhance my role as an exhibition design.

Many narrative theoreticians—Mieke Bal, Seymour Chatman, Roland Barthes, John Fiske—suggest that narrative focuses on how stories help people make sense of the world and how people make sense of stories. Narrative theories explore ideas related to narrative plots, more specifically, concepts related to the sequencing of events, a story, and the text

that describe them. In the case of an exhibition, it is images, language, artifacts, display cases, and sound that may be considered as text.

My exploration was as much practical as theoretical. From this perspective, the works of Barry Lord and Gail Dexter-Lord heavily influenced my understanding how museums function. Furthermore, it is their stance on museums as learning environments and their approach to putting the public first that also greatly influenced my understanding of museums.

Museums continue to be relevant and important to society because the exhibition experience helps frame our understanding of the world. The design of exhibitions is the craft of telling stories about artists, about eras and epochs past, and about ourselves. A personal interest of mine is the exhibition and the narratives associated with the presentation of sensitive cultural artifacts. I am intrigued by the numerous narratives that exist. For example "the life of an artist" and our connection to the work, work associated with other works, the curators influence on selection and presentation, and collections as a reflection of the scholarship of the exhibiting institution.

Narrative theory, as it relates to the design of museums and exhibitions and to the design of better exhibits for persons with disabilities, may NOT in fact be mutually exclusive. However, my ambition to engage in this project was to see where and how theory and design may crossover.

Questions of inquiry

My area of investigation aimed to yield information that would inform my design solution. The following research questions were developed to help acquire the knowledge necessary to enter the design phase:

- What aspects of a typical exhibition experience (from fine art through science center) are barriers for people with physical or cognitive disabilities?
- Using narratology as a theoretical framework, what are the relationships between narrative and exhibition design, and how can this inform museum interior design?
- What key elements need be present in the design of an interior environment to improve the museum experience for persons with disabilities?

2. Museology

In the world of typical building typologies—commercial and workplace, healthcare and clinic, library, museum, performance space and theatre, residence and residential complex, sacred space, school and university to name a few—museums and galleries are a classification of a general type of architecture and program. Schools, libraries, and museums are places where people have learning experiences. The building typologies share similarities of intent and lineage, however the three are distinct classifications for specific reasons.

Museums, unlike libraries and schools, serve a distinct purpose to society. Museums are dedicated to preserving cultural resources, and interpreting the material aspects of human activity and the environment. Cultural resources may be artifact-based, or stories and media that describe human history, traditions, and the creative spirit. Other museums are concerned with scientific ideas, and may focus on solely concepts, or the instruments used for the collection of data. In fact, some museums may be less about artifacts, and more about a collection ideas, statics, and data that support a case for the impact of human activity. Regardless of collection or scholarship, museums remain an integral part of our society—museums collect and protect cultural resources, and interpret the world around us.

With respect to learning, interpretation separates the museum from other institutions—like school and library. A visit to a museum or library might be considered to be a leisure activity, whereas attendance at a school is mandatory for children, and highly encouraged for the remaining years of peoples' lives. Libraries build collections to appeal to a very broad audience, but it is the individual who selects the work to engage with. Schools share knowledge through a pedagogical approach. A school may have a secular approach to education; the scholarship of the school—arguably the disciplinary focusing the school—is still quite broad and the impact of a specific instructor-student relationships may influence the individual, rarely however does the instructor influence the institution as a whole. Learning in this environment is generally based on the decisions of the student—from

choice of discipline to individual course selection. Learning in the school environment is considered long-term, in comparison to the relatively brief visit to a museum or brief but perhaps regular visit to a library.

The museum experience is quite different because it has a defined scholarship. Individual museums are secular: a science centre is very different from a gallery of fine art. The visitor decides to attend the museum, and thus generally understands the type of collection to be presented and expects a certain type of experience depending upon the museum typology.

Within each institution are curators, some generalist and some specialists. Curators, along with other team members, are responsible for the creation of the exhibit. Selection of artifact, ordering of the collection, and didactic elements are just a few of the communication tools at their disposal. Most institutions veil the identity of the curator in the exhibit (voice, point of view), and collections are organized as exhibits to support a theme, a perspective, or a stance: the scholarship of the institution. The visitor is in an environment where the content—from artifact to text—has been selected to support a coherent premise. This is interpretation. A library allows the visitor to choose the subject matter of their study, and a student over the course of their education chooses subjects of interest, although individual instructors often direct the content to be studied; a visit to a museum is an experience where the same content is delivered and interpreted for the life of each exhibit within the museum.

Learning environments

To understand the museum, it is worthwhile to start with a look at similar typologies, starting with the university. Author and *The Architectural Review* (AR) History Editor Tom Wilkinson states that "the university is one of the oldest surviving institutions in the western world. It has colonised the globe, its architecture reflecting the prevailing ideology—of which it is the reproductive machinery" (Wilkinson, 2015). While museums and libraries

are about preserving and sharing of information writ large, where they differ from schools is in their function. To Wilkinson's point, schools and universities are institutions that represent a collection of environments, meant to facilitate instructor/pupil relations. Somewhat falsely considered a building typology, schools and universities are more an amalgam of a variety of building types—from chapel to library, from office to lecture hall, from laboratory to gymnasium—thus not a true typology (Wilkinson, 2015).

For this designer, program and function distinguish typology more so than the architecture: the form of the structure is a result of the program. Universities and schools—like museums—are places of learning. As institutions, they are largely meant to pass down information from generation to generation, and to prepare the next generation of thinkers. Schools—a term I will now use for universities, colleges, schools, and other learning institutes—are for the most part mandatory and meritocratic. Early education is often optional, whereas elementary education through middle school is mandatory. High school is also mandatory to a certain age, and tertiary education—college, university, graduate, and post-graduate—is meritocratic. Schools are both public and private. Some are sectarian, for example Christian, Yeshivas, Islamic schools. Others are secular: there are public schools, charter schools or private; meant serve specific publics like schools for the deaf or students with learning disabilities and behavioral issues; that focus on aptitudes, like athletics, military academics, business, sciences, general arts, performing arts, and applied arts; meant to address trade and vocation, and; are for specialized learning like language, distance learning, and learning network schools.

It is worth comparing these two typologies for a few reasons. Firstly, secular and sectarian schools have a point of view or a belief or value system: the pupils experience will be shaped by the perspective of the institution. Museums also shape our experiences. While the term secular is rarely used when discussing museums (except in the religious sense), museums can be categorized using similar sectarian and secular distinctions: fine and decorative arts, history, military, and science centres to name a few. Each museum

typology has artifacts, attitudes, and activities that support the institution's scholarship. Schools generally have large collections—books and artifacts—available to most students with a few small "private" collections for rare objects—a book or an artifact for example. Generally, the collection is put together to support learning; it is generally understood the collection is to be respected, though it is not necessarily so precious that it cannot be shared with the student body. Museums have large archived collections and typically only exhibit a small portion of the archive. The museum collection has been carefully accessioned to support the museum's scholarship, and because the individual artifacts have been deemed valuable for preserving. Both school and museum aim to allow users of all abilities, however both have shortcomings when dealing with people with disabilities. Finally, schools have a very structured means of delivering information—levels or grades, curriculum, course plan, etc—museums on the other hand have a very static approach information delivery, that is to say the same content is presented for weeks, months, or years at a time, and sometimes supported with programming such as a lecture series. Unlike a scholastic program, the individual can access the information in any order, not determined by the museum.

Lineage

Both building typologies—libraries and museums—share a similar past. They house collections of artifacts: in the case of the library it is books and manuscripts. The unearthing of structures from the Roman era revealed cabinets and closet-sized rooms for document collection. During the middle ages, the collection and protection of precious objects was typically relegated to the church—arguably the most powerful of institutions until the end of the Early Modern Period. The medieval church collected large volumes of manuscripts, typically for prayer and study. Given the laborious nature of document creation, books and manuscripts of the medieval times were few and precious. Architecturally, a bookcase, a cupboard, or the recess of a cloister were all that was needed for most libraries.

Oriel Prizeman states "With few exceptions, the history of the public library is relatively

short—160 years or so" referring to public, rather than academic or private libraries (Prizeman 2011). Similarly, the museum shares a modern era lineage of collections of artifacts—from the Industrial Revolution era onward—whereas both typologies generally came into being in the Victorian era.

The origin of the word museum can be traced to the name of a building to house a library, a collection of works of art, and technical and scientific artifacts found in Alexandria in the third century BC (Marotta, 2012). However, it was "during the Renaissance, with its newly awakened interest in a golden past, the desire to remember intensified… [when] … the museum became a repository of miscellaneous knowledge and relics as well as a place of study open to small groups of scholars" (Marotta, 2012). The museum, like the library, has deep roots as a place to study: a learning environment. However, many sources cite the modern museum as coming from the German "cabinets of curiosities".

Marotta suggests the conception of the museum dates to "the Renaissance, with its newly awakened interest in a golden past, the desire to remember intensified" (Marotta, 2012). While this rings true for the museum, the same can be said for 'houses of knowledge' in general. Three types of learning environments—school, library, and museum—share similar genes and purposes. All are about the collection, preservation, sharing, and advancement of knowledge. They are primarily public institutions, although specialized private institutions exist within each typology. According to Wilkson, the design of the university is borrowed from buildings of worship where "the cloister became the quad, monastic cells became student rooms, and both facilitated the control of unruly youths" as a result of the prelates that administered them (Wilkinson, 2015). Whereas the design of the traditional "public library design is rooted in the era of Victorian philanthropists, who strove to maintain collective order while facilitating individual exploration" (Prizeman, 2011).

For a designer who sees system, program, story, service, and experience as integral to the design solution, looking at these three typologies may reveal alternate means to convey information in ways other than the traditional. The program for my proposed museum was

influenced by other typologies of learning environments. Furthermore, the authors cited above and my research into the museum typology was generally derived from a purpose-built perspective. That is, builds from the ground up, from planning through design.

This brings up two points. First, while there is much writing on purpose-built learning environments; there is less research available on adaptive re-use buildings with the exception of exhibitions which are typically are integrated into a related historic structure or site. A review of precedent will address this later in chapter five. On a related point, much architectural writing assesses purpose-built structures. Interior design as a whole is responsive. Like architecture, interior design responds to program, and both disciplines are concerned with the relation of space to site. In addition to site (the exterior environment), the interior design must also respond to an existing condition. It is the existing environment—from structural elements to finishes, even a previous usage—which presents the opportunity to address or ignore the previous building intent and lineage.

Second, in my review of typology I found there is often an "architectural-centric" approach to discussing building typology. While it is not the intent of this paper to delve into this too deeply, my observation is that architectural critique focuses on the outcome—the building—which is a formal response to program requirements, site, historic precedent, and other perspectives. With respect to traditional building typology discussions, the form is informed by the function. However, from my perspective, the critique of building typology for an interior designer differs, particularly for adaptive re-use projects. A design is a product of strategy and function. Like architects, interior designers consider program requirements, historic precedent, and other perspectives, however their interpretation of site not only includes considerations beyond the building envelope, but within the confines of an existing structure. The interior design of an adaptive re-use building can be evaluated under the same merits as a purpose-built building. Building typology critiques in my opinion should be that of *institution* typology, of which site, context, and program are still relevant discussions, but with less emphasis on the form and thus to be inclusive of the

response to function. For this practicum project, the research revealed that the history of place—from the site to the interior of an existing structure—are important parts of the discussion. Specifically, instead of ignoring a previous tenant or function, this project aimed to incorporate the history of place into the design.

Museum and exhibition typologies

There are numerous ways to categorize the various museum and exhibition typologies. A basic division could be commercial and cultural where commercial represent exhibitions related to commerce (branded experiences, theme parks, leisure environments, etc), and cultural relate to cultural historic material of society (Locker 2010, 36). The categorization is too broad, however to be very helpful. Another distinction could be based on funding, however Encyclopædia Britannica suggests limiting classification to the source of their funding it fails to indicate the true character of the collection (Lewis 1998).

The term exhibitions covers too many categories, including theme parks, commercial and showroom displays, as well as museum exhibitions. Furthermore, the word lends itself to describe temporary displays as well as permanent exhibitions,blurring the line between commercial and cultural. Museum is also too broad a term. Geoffrey D. Lewis suggests museum categorizations include: general museums; natural history and natural science museums; science and technology museums; history museums, and; art museums (Lewis 1998). Expert museologists all having varying categorizations for museum typologies. In the introduction to Museum Experience, Falk and Dierking use the term "…'museums' to refer to a wide range of informal educational institutions, including art, history, and natural history museums; zoos; arboretums; botanical gardens; science centers; historic homes; and a variety of other exhibits and collections" (Falk and Dierking 1992).

For the purpose of this paper, I refer to museologist George Jacob's museum categorization. Jacob suggests museums can be categorized as science and technology museums, art and history museums, living culture museums, heritage sites, and industry

intersect museums (Jacob 2009). The museum I have designed could be categorized as a museum of living culture, though aspects of the exhibitions in my program address science and technology, and history.

Museum categorization distinctions are important from the perspective of the interpretation and display of culture, and visitor expectations. Science and technology museums, in addition to displaying artifacts, tend to communicate concept based issues. For example: how gravity works, the distance between planets, and an explanation scientific theories such as the theory of relativity. The subject matter is often less based on artifacts and more often on conveying concepts. There is generally a greater latitude for 'hands-on' interactive solutions to explain subject matter. In science centers, the collection is heavily interpreted, and the curatorial voice is often apparent. Furthermore, science and technology museums tend to have a broad appeal, from children to adults.

At the opposite end of the spectrum are museums and galleries of fine art. In these institutions, the works are meant to stand on their own and are presented as individual pieces. While presented amongst other objects, the individual pieces often have very little didactic content. Great care and effort may be put in arranging the pieces to support a theme or point of view. The collection as a whole may be acquired through gifts and purchases, however loaned artifacts are sometimes utilized to bolster a collection. Few museums have the resources to put together a collection that entirely fits the museums scholarship. Thus the body of work presented and the themes the work supports are as strong or as weak as the permanent collection.

Where museums are institutions meant to collect and preserve artifacts, collections are often stored in archives and rarely seen; when displayed, the object requires protection, thus great lengths are taken to mitigate light, stabilize humidity, and other measures to protect the artifact. Paper—rare documents,photography, etc—have shorter display time spans than a painting or piece of sculpture. Natural light is one of the main dangers to a collection, thus creating environments that mitigate direct natural light on objects and

controlled lighting is essential to a museum.

Finally, the visitor has a preconceived notion of how they will learn when visiting a museum. Falk and Dierking suggest that "each person arrives at the museum with a personal agenda—a set of expectations and anticipated outcomes for the visit" (Falk Dierking 1992, 2). Developing a program that acknowledges that—whether to work with or against those expectations—is also part of the museum visit experience.

Experience and learning

While I have used the descriptive learning environment to encompass three building typologies, it is neither regularly used nor an industry term. In their book *The Museum Experience*, John H. Falk and Lynn D. Dierking define learning in the museums context. According to the authors, learning in the museum context is understandably complex, and is governed by many factors. Falk and Dierking suggest that personal, social, and physical contexts are key factors in the museum learning experience. (Falk Dierking 1992, 2).

Falk and Dierking believe that perception, regardless of the novice and expert visitors understanding of the collection, impacts the learning experience. They also suggest that an engrossing experience, or extended visit, also yields better learning results (Falk & Dierking 1992, 107–108). From the standpoint of this project, it is important to recognize that many factors impact learning experiences. These factors are mentioned here to indicate acknowledgment of their existence, and their potential to influence the design.

Falk and Dierking's learning model discusses factors that may impact the design of a museum including social and physical context. Falk and Dierking state that social groups—families in particular—are the "primary learning environments for humans" suggesting that collaborative learning—families, schools groups, and multi-generational units—enhance the learning experience. (Falk & Dierking 1992, 109–110). From a curatorial perspective, this would suggest ensuring interpretation aimed at multiple age groups. From a design perspective, this suggests multiple concerns focused on designing a facility that supports

young and old, quiet and private spaces to open public space, and appropriate food services, to name a just few.

Within the social context, they suggest not only is there a "collaborative learner" as just mentioned, but also "independent learners". This later group, suggest Falk and Dierking, are more likely to interact little, splitting up and checking back accordingly (Falk & Dierking 1992, 111). From a design perspective, this addresses issues of safety and comfort—in particular being able to keep track of party members. This is an example of good design for all, however the notion of clear lines of site is particularly useful for the for the deaf and hard of hearing. From the perspective of an exhibit designer, it was important to consider view planes within exhibits and within the museum, and efforts were made to consider how people not only view artifacts, but also keep an eye on the groups they are travelling with.

Contemporary learning environments

Like museums, libraries have a collection; a volume of volumes. Some private libraries such as the Library of Congress in the United States hold public documents, and valuable historic documents not available for public distribution. The library of congress has the largest collection according to the American Library Association (ALA) website, with Boston Public Library and the New York Public Library as second and third on the ALA list. The remainder of the websites' listed top 100 collections are held for the most part by Universities (American Library Association 2014). With the exception perhaps of the Library of Congress, and rare book collections of Universities, the collections are generally available upon request. Learning in these environments requires self-motivation. University libraries cater to both independent and group learners having spaces that work for both. The "history of public library design is entirely related to this challenging dual requirement: to maintain collective order while ostensibly encouraging individual exploration" (Prizeman 2011).

Unlike schools, attendance at a library or museum is neither mandatory nor meritocratic, rather voluntary. Visitors consciously choose to spend their leisure time

within these institutions. “The decision to visit a museum [or library] involves matching personal and social interests and desired with anticipated physical context and the associated activities of a museum” (Falk & Dierking 1992, 13).

The public library is currently undergoing a major change in the 21st century. For example, The Halifax Public Library is a new building—opened in 2014—that in addition to housing a collection includes a “300-seat performance space, two cafés, gaming stations, music studios, dedicated space for adult literacy classes, a First Nations reading circle, and boardrooms for local entrepreneurs” as described by partner Chris Hardie from Schmidt Hammer Lassen architects. He continues “The new Halifax Central Library is a modern, hybrid library. It combines the best of a traditional library with new and innovative programmes and facilities” (Schmidt Hammer Lassen 2014). The Halifax Public Library is an excellent example how the library typology is changing.

If institutions like the library and the museum are competing for the same leisure-time audience, then the museum too must assess its function and its offering. Partner Chris Hardie from Schmidt Hammer Lassen Architects says of the Halifax Public Library “By designing a library that is adaptable we embrace multiple functions to ensure that the library will meet the needs of the Halifax community into the future. People should see this building not only as a library but as a free public space in the heart of the city” (Schmidt Hammer Lassen 2014). By many accounts, the Halifax Public Library is the most important piece architecture in the region in many years. Not only has the building been attributed to a shift in the appreciation of architecture, but visitation more than doubled first year projections. There were 1.9 million visits during the first year of operation, which doubled the libraries projections of 900,000 (Zaccagna 2016), and the numbers continues to hold strong three years later. The museum in this project considered the changing role of public institutions when its design program was developed.

On the topic of modern libraries, Morten Schmidt adds: “Modern libraries are one of the most important platforms for exchanging knowledge. As opposed to information found

on the Internet, the knowledge that arises through collaboration and exchange between people in a library is of particular significance" (Schmidt Hammer Lassen 2014). Schmidt suggests modern libraries create spaces for collaboration, and thus the exchange of knowledge. How can a museum visit, another leisure-time experience, through design and program compete with this similar typology?

Learning versus communication

I started this chapter with the broad description of learning environments to categorize three similar typologies—museums, schools, and libraries. Museums have the potential to provide a learning experience. For both school and library, it is not simply the collection, but also the environment that encourages learning—Schmidt Hammer Lassen do a good job at explaining this in their example of the Halifax Public Library. This led to thinking of the museum in my practicum as more than a series of exhibition spaces, and I introduced programming elements to address making the space more flexible to attract regular visitation to the space, though not necessarily to the exhibitions alone.

There are many disciplines that come together to design a museum, and to mount an exhibition. Architecture, interior design, interpretive planning, graphic design, lighting design, research, and copy-writing to name a few. This is where museums differ drastically from libraries and schools. Authors Jan Lorenc, Lee Skolnick, and Craig Berger suggest exhibitions have the power "for imparting and interpreting information, involving audiences, and influencing understanding" (Lorenc, Skolnick, & Berger 2007). Further, they suggest that it is through the design of environments and experience that we "facilitate multi-layered communication" (Lorenc, Skolnick, & Berger 2007). I would add that is also through museum programming—lecture halls, museum education spaces, lectures, continuing education, and areas for study—that museum environments have the potential to impart in less didactic methods, and may provide spaces for both pedagogic approaches to learning as well as environments for more self-directed study.

Lorenc, Skolnick, and Berger suggest that at the confluence of communication design and the built environment are *communication environments*, a term they coin (Lorenc, Skolnick, & Berger 2007). This term not only has given me clarity to defining the field, but also license. Interior design for me was associated with two things: function and safety; and coherently aesthetic spaces. Program, function, code, performance, colour, material, acoustics, and lighting to name but a few are the domain of an interior designer. Prior to this practicum project, I saw my graphic design background and the use of content—text and image—as outside the scope of an interior designer. When it comes to the finesse of these elements, it certainly is beyond the domain of interior design and should be left to experts trained in graphic design. Thinking of the museum as a communication environment, and understanding the design of a museum as interior design exercise, it gave me license to incorporate my previous career into this new one. I now feel I have the license to use both disciplines to solve design problems.

Curatorial voice and story

Many contemporary museum and exhibition designers use the word story when describing communication environments. There is indeed a structure to a exhibition experience, typically a linear experience with a start and an end. As exhibit designers, we use image and text to convey facts, perspectives, points of view, and to give context. As previously mentioned, it is generally not a assemblage of related work, rather a well orchestrated and curated experience, based on themes and sub-themes, and sometimes learning objectives.

However the notion of story is own fraught with meaning and misunderstanding. Leslie Bedford suggests that the word story and narrative are used interchangeably, yet scholars distinguish the two suggesting two parts to narrative: the story is “what happened to at some time to someone in some place” and the narrative discourse “is how the story or event is represented by a particular medium.” According to Bedford, story actually doesn’t exist without an interpretive, a narrative discourse about it (Bedford 2014).

Bedford cites the work of Lisa Roberts numerous times in her book *The Art of Museum Exhibitions* stating "learning in the museum, [Roberts] writes, has changed from signifying the transmission of knowledge from the curator to the public to sharing of the narrative between educator and visitor." Bedford continues to suggest that a narrative stimulates personal interpretation and that the visitor engages in their own dialogue with the experience (Bedford 2014).

Before the next chapter, I must go back to a point made in the introduction. This project was an exercise in interior design, not exhibition design. The notion of narrative discourse is an important one. Prior to my research theories of the narrative seemed to be a perfect fit for communication environments, and the more I researched it, the more apt a theory to be applied to a museum. The challenge in this project was to look to use the narrative to help inform decisions about the design of the space as a whole.

This sub-section of the chapter started with a note on interpretation and the role of curator. From the perspective of scope, this project is not about the design of individual exhibitions, however case studies in the form of specific design solutions will be provided. Each will be a means to point out aspects of an exhibit that support the design intent. Design intent here is loosely described as a design solution to support theories of the narrative used in a museum. An exhibit is a linear experience, and could be thought of as a narrative discourse. Knowing there is a curatorial voice, I have attempted to explore how curatorial voice relates to narrative discourse.

3. Narrative

When investigating various theories to help guide the exploration of this project, theories of the narrative came up often and seemed appropriate on many levels. The primary reason for adopting theories of the narrative for this practicum was the seemingly close relationship to aspects of the museological experience.

A exhibit experience is a usually a linear one—an exhibition often has a start and an end—typically arranged as a sequence of experiences. Exhibitions often relate to time, for example the lifetime or a person, a history of an invention, the oeuvre of a master, a period of stylistic movement, an era, and the course of change from epoch to epoch to name a few. However the sequencing may occur—chronological, thematic, or other—the museum exhibition experience from beginning to end is similar to the construct of a story. Aristotle suggests the most basic form of the narrative is plot, suggesting plot is the description of a transformation of change with a beginning, a middle, and an end (Culler, 2011, 82–83). Arguably there are similarities, but is an exhibition a narrative?

Most exhibits—even displays of fine and decorative arts—are organized based on a premise. The collection on display is used to evidence to the presupposition however overt or subtle, weak or strong, interpreted or not. I suggest the notion of supporting a premise through decisions of what to display, the arrangement the collection, describing the collection, and the ordering of artifacts is akin to telling a story. In Narrative theory, where plot is the material presented and ordered from a point of view by a discourse (different versions of the same story) (Culler 2014, 84), then exhibitions seemingly have the potential to be narrative environments. In an overview of narrative theory, David Herman refers to Seymour Chatman's references to the Russian Formalists term *fabula* suggesting the fabula is the 'story'—a chronological sequencing of events reconstructed as a narrative text; the fabula, according to Chatman, is the 'story' level of the narrative whereas the variety of ways of presenting the narrative is the discourse (Herman 2010).

Delving into the history of narrative theory is the notion of a fable; the purpose of the fable is intended to reveal something about humanity, or to teach a lesson. David Herman (the Department of English at Ohio State University) has developed a comprehensive reference guide to help clarify terms related to the narrative in order to build a common understanding among those who teach and critique about the narrative. According to Herman, "fable is a brief narrative told in order to provide moral instruction or to transmit an ethical point of view" (Herman 2010).

If museums are learning environments that provide the opportunity to learn, the visitor to a museum may leave with a new understanding of a subject matter influenced by the exhibition experience. To reveal something about humanity rings particularly strong when thinking if human and natural disasters. So to does relating the learning experience to a fable. To teach, is inherent in what interpretive planners do when organizing exhibits, however 'a lesson' may not be entirely true in some exhibits. That said, 'to teach a lesson' or in Herman's words "to transmit an ethical point of view" when thinking about human and natural disasters is an appropriate theme for any of the exhibits for this museum, thus suggesting some exhibit experiences have the potential to be thought of as a narrative environments.

Finally, in one form or another, there is some aspect of narration found in an exhibition: be that sparse didactic elements provided in an exhibit of fine arts, or the use of multiple voices (narrators) in an exhibition of history, science, or other. Narration is a complex subject in narrative theory, and one to complex to address in this practicum. However, narration in non-verbal media is of interest for this practicum study, particularly when considering the role of the curator, the curatorial voice, how narrators contribute to the presentation certain didactic content, and the built environment itself. Suffice to say, while the role of the narrator was not explored in depth, narration does contribute to the museum experience.

The exhibition shares similar elements to that of a story, but is an exhibition a story? Does the design of a museum or exhibition have the potential to be a narrative environment? These were questions posed when I began my research into theories of the narrative.

At first glance, the correlation between storytelling and exhibition seemed to be clear and worthy of further exploration. Is the experience a narrative discourse? If so—the design of a museum can be thought of as a narrative discourse—or if not—the design is not a narrative discourse—then the strategy was: how can I use this research as a premise to inform design?

Storytelling. It's a word that comes up often when researching exhibit design, so too does narrative. But are exhibitions stories or narratives? Are museums a narrative space?

What is narrative theory?

Project Narrative is the Ohio State University's initiative designed to capitalize on the Department of English's strength as a major center of narrative research. The Project Narrative website succinctly defines Narrative theory as:

> "Narrative theory starts from the assumption that narrative is a basic human strategy for coming to terms with fundamental elements of our experience, such as time, process, and change, and it proceeds from this assumption to study the distinctive nature of narrative and its various structures, elements, uses, and effects." (Project Narrative, 2014)

Narrative theory is distinctive from other forms of communication. Narrative is more than a conversation, a news article, analysis, descriptions, and other forms of discourse, the website suggests. According to Project Narrative—and most all other overviews of the Narrative I have read—the narrative is commons to all individuals, as the "…accounts of what happened to particular people in particular circumstances with particular consequences can be at once so common and so powerful." Theories of the narrative suggest that our ability to tell stories makes us unique—from other species—and is

fundamental to the human experience. (Project Narrative 2014) Key to this designer's understanding if the Narrative is the department's assertion: "Narrative theorists, in short, study how stories help people make sense of the world, while also studying how people make sense of stories." To tie this back to the practicum at hand, narrative theory was explored as a means to help the visitor to a museum makes sense of the world—human and natural disasters in the case of this practicum. Theories of the narrative also helped in the inform decisions on how to tell communicate the history of a building that houses a collection and exhibits.

The faculty at Ohio State University's Project Narrative represents a wide range of narrative and narrative theory scholars from across the humanities and social sciences. Core faculty include: Frederick Aldama, Katra Byram, Angus Fletcher, Jared Gardner, Brian McHale, Sean O'Sullivan, James Phelan, Amy Shuman, Robyn Warhol, Julia Watson. They beleive that narrative is not limited to folklore, fables, and traditional narrative texts, rather "Narratives of all kinds are relevant to the field: literary fictions and nonfictions, film narratives, comics and graphic novels, hypertexts and other computer-mediated narratives, oral narratives occurring during the give and take of everyday conversation, as well as narratives told in courtrooms, doctors' offices, business conference rooms—indeed, anywhere" (Project Narrative 2014). Thus, it felt applicable to explore the narrative as it relates to interior design. Whether the outcome can truly be analysed and considered a narrative is for others to decide. Whether one can use theories of the narrative as a means to direct a design is, and has become, an important foundation for the guidance of this practicum project.

Early narrative theory

Aristotle, Tzvetan Todorov, Vladimir Propp, Joseph Campbell, Claude Levi-Strauss, Mieke Bal, Chris Volger, Noam Chomsky, and Roland Barthes are just a small representation of theorists and practitioners who have contributed to theories of the Narrative. All, in one

way or another, have suggested that narrative is a distinct part of the human condition.

In Jonathan Culler's overview of the literary theory, he suggests Aristotle described plot as the most basic form of narrative, that a story starts with a beginning, and middle, and an end (Culler 2014, 82-83). According to Culler's summarization of Aristotle's perspective, a sequence of events does not necessarily constitute a narrative. According to Culler, Aristotle's perspective was that plot requires an initial situation, followed by a change and an outcome that marks the change as significant (Culler 2014, 82-83). Relating this statement to exhibit design seemed clear enough; an exhibition has a premise, and often there is a notion of change related to the subject matter (for example change resulting from an event, or the progression of a style). As for the building that houses the collection, well that is a different story altogether.

Some museums are purpose built for a collection of a singular theme, others house many collections. Some museum designs respond to the collection, some to the environment, some to prevailing architectural vernacular of the time. However, in the case of an adaptive reuse, there are possibilities for considering plot as a starting point for developing a design. In the case of this museum about human and natural disasters, I wanted to consider how the building plays a role in this theme. In the case of this practicum it does, if you consider the environment—climate change—as a natural disaster, and the role the building—a former fossil fuel power station—played in contributing to our ecology.

Culler explains one fundamental element of Narrative Theory is the concept of plot, and that this structural element can be understood from one language to another, or one medium to another. (Culler, 2014 84). Culler suggests that plot is both: the shaping of events to make a story, and; what is shaped by narratives. To summarize Culler's perspective, events are ordered into a plot; the plot is presented in a narrative. In other words, the plot (the story) is the given, and discourse represents different presentations of the same story. (Culler, 2014 92).

To tie this back to the museum in this practicum, the plot is essentially a building

constructed to generate electricity from fossil fuels, the decline of these types of power generation stations, and a new life for this building as a museum intended to educate. As for the last part of the previous sentence, while the exhibits are meant to educate, it is the intent of this design to, when possible, consider this plot when representing the story of the building through form, material, lighting, etc.

There are many approaches to narrative theory, too numerous to mention here. But to name a few are Tzvetan Todorov, Gustav Freytag, and Joseph Campbell, and Christopher Volger. Tzvetan Todorov's approach to narrative suggests four basic elements to the narrative—equilibrium, disruption, resolution, and new equilibrium—where equilibrium is the state of normalcy (good, bad, or neither), the initial situation; a character, event, or action disrupts the initial equilibrium; all leading to the end of the narrative where a transformation has occurred (resolution) leading from the original equilibrium to a new equilibrium defined by both the disruption and resolution.

Gustav Freytag suggests narrative structure has five stages: the exposition stage where the scene and characters are introduced; development stage where a situation develops and more characters are introduced; a later stage introduces a complication where something happens to complicate the lives of the characters; a climax occurs when a decisive moment is reached and matters come to a head, followed by; a resolution stage, when matters are resolved, and a satisfactory end is reached. Joseph Campbell's Monomyth outlines the "12 Stages of the Hero's Journey" and Christopher Volger's adaptation, the "Twelve Stage Hero's Journey" both elaborate upon Freytag's approach and describe in detail the structure of a story based on a hero and a challenge.

There are many other theories about the structural elements of a narrative, however it is Todorov's *equilibrium* / *disruption* / *resolution* / *new equilibrium* that resounded most appropriately for this designer's approach to a museum dedicated to human and natural disasters. In a Chapter 7—Design, this narrative structure will be used to discuss the visitor experience to the museum, as a rationale for the design of elements within the museum,

and to develop the generic organization of a typical exhibition for this museum.

Is the museum a narrative environment?

Does the sequencing of experiences create a narrative experience? Should the designers of museums and exhibits use words like story and narrative to describe what they do? My interest in connecting the museological experience to the narrative is not new, as theories of the narrative have moved far from literary theory to a wide range of disciplinary fields interested in exploring humanities strategies for coming to terms with time, process, and change as they relate to recounting specific circumstances and with specific consequences (Herman 2010). Therefore, part of this practicum exercise was to look at how—experiential graphic design—employs terms that are used in narrative theory. The goal was to better understand these terms and theories so that, as a designer, I would be better equipped to speak accurately when relating exhibition design to that of the narrative. In turn I hope to support or debunk the use of these terms when relating theories of the narrative to the museological experience and experiential graphic design, whether in this practicum or as practitioner.

To start, I investigated nomenclature and terminology. In particular in my research of museums and exhibitions, there is much use of terms like storytelling, narrative, and narrative space. While for the general public, no one should take issue with these words. An exhibition shares many aspects the general public may associated with storytelling, and it is the primary reason I choose to look to researching narrative discourse.

In my research, I found imprecise use of terms associated with narrative, more specifically story and narrative. More often than not, I suggest, strictly from a narrative stance my industry's use of the words associated with narrative theory are not grounded in the commonly defined or definitions used for narrative research. I found imprecise use of terms associated with narrative.

Leslie Bedford, a museoligist and scholar, has an understanding of storytelling in the

museum environment that is well aligned with narrative theory. In a chapter dedicated to new models for exhibition design from her book, *The Art of Museum Exhibitions—How Story and Imagination Create Aesthetic Experiences*, Bedford begins by suggesting that while story and narrative are used interchangeably, scholars of the narrative in fact distinguish the two (Bedford 2014). Not dissimilar from texts I explored, but perhaps quite succinctly from the perspective of this budding exhibition designer, Bedford explains:

"…there are two parts to the narrative: The story itself, fiction or nonfiction, is what happened at some time to someone in some place. The narrative, sometimes called the narrative discourse, is how the story is told or represented by a particular medium, whether a book, film, video game or other interactive technology, newspaper article, painting, ballet, comic book, or exhibition. Story doesn't exist without an interpretive, a narrative discourse about it." (Bedford 2014, 57)

Pointing to references from cognitive psychologist Jerome Bruner and curator/educator Lisa Roberts, Bedford explains Roberts perspective suggesting "learning in the museum…has changed from signifying the transmission of knowledge from curator to the public to sharing the narrative between educator and visitor. Narrative creates a conversation; it leads to an opening up, rather than a shutting down—of the listener's mind." Bedford continues, "…storytelling, or the narrative mode of thought, is about both the storyteller and the listener (or viewer or visitor). Bedford continues that exhibition design is about engaging the visitor in an internal dialogue with the story through an experience, and in the visitor's process of making meaning of the story that creates their own story (Bedford 2014, 59).

4. Method

For this chapter, I use two primary sources to help develop an approach for designing a space to help people with no or low vision, and peoples who are deaf or hard of hearing. While the chapter concludes with a section of considerations for the persons with disabilities of this practicum—sight, hearing, and mobility—the chapter begins with an overview of the research into the design of space for the deaf and hard of hearing, and for the blind and those with low vision. The first section is based on work conducted by Gallaudet University called Deaf Space, followed by a section based on the work of the National Institute of Building Sciences from the United States.

Deaf Space

Located in Washington D.C. and established in 1864, Gallaudet University is self-identified as the world's only liberal arts institution with programs and services specifically designed to accommodate deaf, hard of hearing, and hearing students. This bilingual institution (American Sign Language (ASL) and English) offers undergraduate, graduate, and doctoral degrees to over 2,000 students with over 21,000 alumni worldwide. The university prides itself on research and scholarship related to deaf and hard of hearing people and engages students in scholarship through the Gallaudet Research Institute (Fast Facts 2013). Todd Byrd introduces the Deaf Space project, a student-centered exercise target on analyzing aspects of the existing campus that "are not conducive to deaf sensibilities" with the aim to work towards developing strategies that address the needs of deaf people in architectural environments (Byrd 2013). The SLCS adopted the term deaf space to describe the built environment for deaf people.

Haruna Matsumoto, a deaf author, suggests that "the idea of "Deaf Space" goes back over 100 years ago to Olof Hansen, one of the first Deaf architects, who "designed the Dawes House at Gallaudet University, Deaf clubhouses and state buildings across the country"

(Haruna 2013). The Gallaudet University website suggests that "our built environment, largely constructed by and for hearing individuals, presents a variety of surprising challenges to which deaf people have responded with a particular way of altering their surroundings to fit their unique ways-of-being" (What is DeafSpace? 2013). It is from this concept that the term DeafSpace is used in reference to spaces that are unsympathetic to the deaf and hard of hearing.

In Byrd's online articles he introduces two key terms derived from anthropology, *Maluma* and *Takete* used primarily by linguists to describe sound, but are not limited to that area of study and have made their way into everything from architecture to advertising as a means to discuss language (visual, verbal, spatial, and so on.) Byrd implies that the SLCC uses these terms as part of it's academic exploration of deaf space. Byrd suggests that "space that comprises free flowing, circular movements" is associated with the term 'maluma,' which strongly relates to the essence of deaf language and culture. He continues "the opposite of maluma is 'takete,' [which] implies a rigid, sharp, [and] angular aesthetic" (Byrd 2013).

For deaf people, these two terms have connotations when thinking about the built environment. Byrd points out that these two terms have direct translations when thinking about the built environment. On one hand, Byrd cites a design example that suggests that when designing architects "…are conscious of the desire to create walls that enclose space—takete—which translates into a feeling of security." For a deaf person, whose needs are quite different: 'implied enclosures' or maluma, are the desired outcome (Byrd 2013).

This perspective on design influenced my approach to the design for this practicum. Byrd suggests that designers consider walls: that have more openings at the top and bottom; use materials that are translucent; or designing to allow for opportunities to see and anticipate movement, such as side lights at doors (Byrd 2013). In particular, this concept was used when designing the auditorium space, primary circulation, and when considering view planes. Responses to this approach are discussed in detail in Chapter 7—Design.

Byrd suggests that these elements improve the aesthetic affect, creating privacy and preserving a sense of opening at the same time—qualities embraced by this constituency group (Byrd 2013).

As I have learned throughout this practicum project, approaches to address design related to disability, like the DeafSpace approaches, not only influences aesthetics, but perhaps improves functionality for all, a goal of this practicum.

Deaf Space Concepts

Starting in 2005, the DeafSpace Project (DSP) by Hansel Bauman (HBHM Architects) and ASL Deaf Studies Department at Gallaudet University "developed the DeafSpace Guidelines, a catalogue of over one hundred and fifty distinct DeafSpace architectural design elements that address the five major touch points between deaf experiences and the built environment: space and proximity, sensory reach, mobility and proximity, light and color, and finally acoustics" (What is DeafSpace? 2013).

They are summarized as follows (What is DeafSpace? 2013):

1. Sensory Reach

The design of space to allow for awareness of one's surroundings "through an acute sensitivity of visual and tactile cues such as the movement of shadows, vibrations, or even the reading of subtle shifts in the expression/position of others around them."

2. Space + Proximity

The design of space to accommodate clear visual communication with those in close proximity as well as those viewed from afar. Lighting, view planes, furnishings, all impact one's ability to have private public conversations for the deaf and hard of hearing.

3. Mobility and Proximity

The design of space focuses on safety and comfort, and allows for an uninterrupted travel conversation between signers by accommodating for increased path widths and minimal physical hazards along the path.

4. Light and Color

For the deaf and hard of hearing seeing is a significant part of signing, therefore design must accommodate for proper lighting to allow for soft and diffused conditions, and material selection to allow for good skin-tone contrast.

5. Acoustics

Many individuals use assistive devices to enhance sound, however sound can also be a distraction, thus reducing reverberation and sources of background noise is important for this disability group.

Design for the blind and persons with low vision

The National Institute of Building Science's Low Vision Design Committee released a revised version of *Design Guidelines for the Visual Environment* in May 2015. The document, informed by the public and professionals was developed to inform architects, interior designers, and other design professionals on how to better built environments that account for the needs of people with no vision or low vision.

The National Institute of Building Science contends that the effects of lighting and design—colour and materiality—are key to our understanding of the visual environment, in particular, "Glare, improper low contrast, and low illuminance levels are three of the most common visual impediments in the built environment" (National Institute of Building Sciences 2015, 5). For this practicum project, light levels not only impacted the visitor experience, but were also a key consideration when designing spaces to house artifacts.

In the United States, the Architectural Barriers Act of 1968 (ABA) and the Americans with disabilities Act of 1900 (ADA), established a basic set of guidelines intended to help those with disabilities. These statues have been translated into guidelines, and have not only impacted design in the US, but also influenced Canada in such legislation as Accessibility for Ontarians with Disabilities Act. However, all fall short on many levels. ABA and ADA focus on mobility issues (particularly for those in wheelchairs), and somewhat for the blind

(through the consistent placement items and a mandated use of braille, among others.) It is generally understood however that the guidelines fall short when helping designers accommodate for people with low vision, and those who are deaf or hard of hearing.

The National Institute of Building Science developed the *Design Guidelines for the Visual Environment* with the intent to help regulatory and design community better understand the needs of, and accommodate for those with low vision and other visual impairments (National Institute of Building Sciences 2015, 6). This is important as the institute believes a successful design is achieved if "users through all of [their] senses feel safe and taken care of" (National Institute of Building Sciences 2015, 12). The institute proposes that it is the designers responsibility to develop safe, functional, durable, and aesthetically pleasing environments, and failing to do so for people with low vision means their safety and independence is compromised, thus not an inclusive environment. The Institute also contends that an environment designed for people with low vision should also make for a better experience for all users.

While the *Design Guidelines for the Visual Environment* is based in quantitative research (illuminance and luminance) they suggest (National Institute of Building Sciences 2015, 12):

A visual environment as comprised of interrelated components:

- Sources of light (intensity, distribution, brightness, color)
- Materials and surfaces that reflect light from the sources (reflectance and specularity)
- Luminance balance throughout the visual scene.

For this practicum, light is perhaps one of the most important concerns when designing space. Providing sufficient and even lighting for people is not only a concern for people with low vision, but also well serves the deaf and hard of hearing and those with mobility issues. Further, mitigating the negative impacts of light is critical for the safekeeping of precious artifacts.

FROM SITE TO INTERIOR

The following subsections are informed by The National Institute of Building Science's *Design Guidelines for the Visual Environment*. While section titles follow the The National Institute of Building Science's organization. The intent of this review was to identify aspects of design for the built environment that were informed the design outcome of this practicum as it relates to those individuals who are blind or with low vision, deaf or hard of hearing, and those with issues related to mobility.

APPROACH

Exterior ground surfaces that are paved, should be of medium-dark colour value and should minimize glare (National Institute of Building Sciences 2015, 17). For the blind and people with low vision, it is important to distinguish the preferred path of travel from other surfaces to avoid trip hazards. A consistent surface will help those use a cane, as will the use of delineating paths with limited deviations. Similar to interiors, the use of tactile devices in the flooring to indicate change is helpful for those with limited sight. While the sound of a cane or footwear on a surface is useful for those with low or no vision, minimizing overwhelming reverberation is important to those using assisted hearing devices. "Curbs, wheelstops, and other changes to the level of paving should be of contrasting color and value" (National Institute of Building Sciences 2015, 17) and are important for those with low vision and people with mobility issues, not to mention for the safety of those signing while walking.

Solid colour surfaces are preferable for people with low vision. For visitors who use canes and/or footwear (acoustics) to navigate, the use of a tactile surface is useful to indicate direction or change. From a design perspective, tactile cues must be consistent.

Paths and other site circulation must be easily identified, and the use of architectural and landscape elements may aid in 'directing' all visitors such that they do not obstruct views of the path and entrances. This is particularly important for the deaf and hard of hearing as safety is expressed in the need to visualize their surroundings.

ENTRANCES AND TRANSITION ZONES

Transitional spaces, such as plazas, courtyards, and vestibules are moments to indicate change. Lower levels of background noise, and reduced natural lighting will aid in the transition from exterior to interior for both the deaf and hard of hearing and people with low vision.

By design, entrances should be easily identified from afar. While building lighting and signage will help some visitors, others will be best served by indicating clear paths of travel to an entrance. This can be accomplished by architectural devices (lighting, canopies, etc.) as well as landscape architecture.

Vestibules are the threshold between exterior and interior, and pose challenges for a variety of persons with disabilities. For visitors with mobility issues and the blind, the location of door hardware and door swings and must carefully considered. For those with low vision, these spaces pose challenges as these visitor require a longer time to adjust to new lighting situations—from exterior to interior. Glass doors, sidelights, and glazing are preferable for the deaf and hearing impaired, however this poses issues for users with low vision. In this case, mullions perform the function of aiding in identifying doors and sidelights, however other measures should be explored to aid people with low vision while providing a safe environment for the deaf and hard of hearing.

Lobbies are also a form of transitional space, connecting the exterior to the interior, often connecting much of the buildings' interior circulation (National Institute of Building Sciences 2015, 27). These are perhaps the most difficult to design when trying to accommodate all users. Atriums by their very nature have the potential to be to be loud spaces. This can be used as a navigation aid for circulation of the atrium is well understood, as visitors can orient themselves based on their location with respect to the atrium.
For the deaf and hard of hearing, the design should mitigate ambient background noise whenever possible. For the blind and people with low vision, the volume of the atrium aids as a navigation tool for elsewhere in the building. However, efforts to mitigate high levels

of background noise may hamper sound based navigation techniques employed by some sight impaired visitors. In atriums, effort should be made to allow for a variety of surfaces, particularly when using the floor surface as a navigation device.

Earlier in this document, I mentioned program and service as a design tool. For atriums and lobbies in particular, where fee payment and orientation is required, there may be a need for staff who are able to work directly with individuals wishing or requiring specialised service. It should never be assumed however that persons with disabilities of require this assistance, and it should only be provided for those who wish the comfort of dealing with someone well versed in their needs.

CIRCULATION

Interior circulation is important for all persons with disabilities. Generally, paths should be wider than standard circulation paths to serve most persons with disabilities. For those with mobility issues—wheelchair or crutches—it is important for circulation paths to allow for two way travel in opposite direction. For the deaf and hard of hearing, the ability to walk and sign, and be aware of surroundings is critical, which also implies a wider circulation path. For this group, it is also good to anticipate right angles, thus wider paths help, as does lighting, to help visually sense someone rounding a corner. For the blind and people with low vision, surface and lighting are important. Consistent and even lighting in hallways helps visitors. Flooring is also important: changes in flooring types can be used to indicate a change in direction or a door for the blind, and the use of 'rails' are helpful for those with canes. Changes in flooring surfaces can be an issue for wheelchair users, so particular attention must be paid as not to favour one group over the other. Handrails, depending upon the situation, are helpful not only for the blind and those with low vision, but also for those with mobility issues.

VERTICAL CIRCULATION

Stairs, elevators, escalators, and ramps all pose challenges in one way or another, and must be considered. For stairs, it is important for many users to distinguish between riser and

tread, and between tread and landing. In these instances, the use of contrasting colour and material should be considered. For the blind and people with low vision, this will aid in detecting steps, and distinguishing between the step and landing. For the deaf and hard of hearing, safety is a concern and the ability to "see" a stair while concentrating on conversation or environment is important. Finishes again are important, and avoiding glare is critical for people with low vision. Escalators are similar, and distinguishing between tread and rise is critical.

Elevators are important for persons with disabilities. While there is much in terms of best practices, particularly people with low vision and those with mobility issues, additional consideration should be given to ensure audio cues (up for down, current floor, next floor, etc), and visual cues (floor number and direction of travel) are well indicated.

Design within reach

From ABA to ADA, from the National Institute for Building Science' *Design Guidelines for the Visual Environment* to Gallaudet University's critique of design through DeafSpace and the design considerations they propose, much exists to create better spaces for all. However there is neither a single solution for all situations nor a guidelines for one disability group that is not in conflict with another disability group. What exists are best practices, and it is up to the designer to consider all best practices. What all of these documents and guidelines tell us is that when there is a design solution that aims to accommodate visitors with specific needs, then we all benefit from a better design.

The title of this practicum, *design within reach* has a many meanings. First, it suggests that better design is achievable for all when considering the needs of all users: we are capable of better *design*, it is *within reach*. From another perspective, *design within reach* was an apt title given the three disability groups mentioned focus on needs related to proximity. Generally the space immediately around us, the elements of the built environment that are within grasp are important for persons with disabilities. From tactile signage to space to

allow for two way American Sign Language, when the space within reach is scrutinized through the lens of design, then the outcomes can benefit all users.

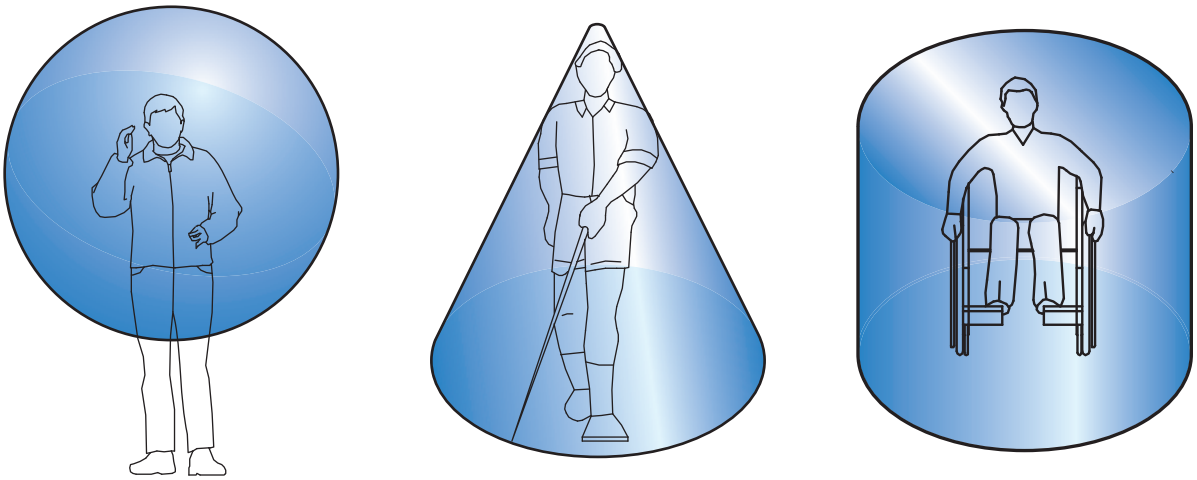

Figure 4.01 Design within reach.

Figure 5.01 Main entrance, Military History Museum of the Bundeswehr, Dresden by Studio Daniel Libeskind.

5. Military Heritage Museum of the Bundeswehr

Responsive architecture

The aim of this review of precedent was to gain an understanding of an existing spatial design in order to interpret how design relates to the notion of 'context'. My intention

was to determine what could be garnered from the approach of a professional in order to improve my own process, whether specific to this practicum project or for my future career.

This investigation considered Daniel Libeskind's bold juxtaposition of an interior and exterior renovation to the Military History Museum of the Bundeswehr, located outside the historic center of Dresden, Germany. My review will introduce the architect followed by an investigation of the concept of 'responsive interiors'.

I believe that the design of most interiors either work with an architects' envelope and volume, in the case of new construction, or must respond to an existing condition. This review primarily addressed the latter. Authors Graeme Brooker and Sally Stone suggest the existing structure and form of a building, prior to redesign, exhibit characteristics that inform the basis for the of alteration decision making; in their words "the form of the existing informs the form of the new" (Brooker & Stone 2007). They suggest designers consider, as a tactic to renovation, the concept of "responsive interiors" and go on to describe three different approaches as "intervened, inserted, and installed" (Brooker & Stone 2007). Of their three categorizations, it is the classification described as "…interiors [that] make use of the placement of an independent object, the nature of which is governed by the original building" (Brooker & Stone 2007) that partially informed this evaluation of Studio Daniel Libeskind's Dresden museum addition. While Brooker and Stone suggest that an element—an inserted interior—is typically a single formal gesture, the form itself may service any number of programmatic requirements and whose function is not limited to a single activity. They further suggest that the design itself is "particularly effective when the language of the new is at odds with the existing building." (Brooker & Stone 2007, 102) Their definition could not be more appropriate when considering the juxtaposition created by Libeskind for the his studio's renovation of Military History Museum of the Bundeswehr (figure 5.01), a conspicuous architectural element that slices through a historic structure. That said, architecture does not solely respond to the physical, and may also be sympathetic to other factors. Cultural context is an area of practice particularly well suited to Daniel

Libeskind's approach to the built environment, and will primarily inform this investigation more so than other factors.

Daniel Libeskind

Polish born, international architect and designer Daniel Libeskind is the principal of Studio Daniel Libeskind. The studio was formed in Berlin upon winning the competition to design the Jewish Museum, and as of 2003 moved its head office to New York. Studio Daniel Libeskind currently maintains offices in New York and Zürich. Projects of note include: the Jewish Museum in Berlin, the Denver Art Museum, the Royal Ontario Museum in Toronto, the Military History Museum in Dresden, and the masterplan for Ground Zero ("Studio Daniel Libeskind" 2013).

Figure 5.02 Dresden's renovated Military History Museum of the Bundeswehr (day) from main quadrangle by Studio Daniel Libeskind.

Spatial Qualities

The Militärhistorische Museum der Bundeswehr—the Military History Museum of the Bundeswehr—consists of an historic arsenal, built from 1873–1876, that operated as an armoury and museum since 1897. Prior to the twenty-first century renovation, the museum

has been described as "a morass of small buildings surrounding the 135-year-old arsenal, and a thoroughly kitsch GDR-era curatorial strategy which barely compensated for the previous Nazi history of the museum" (Murphy 2012).

The Military History Museum of the Bundeswehr is located in the Albertstodt district of Dresden, Germany, on north side of the Elbe river, North-North East of what would be considered Dresden's city center. The site sits on a parcel of land between Königsbrücker Straße and the Prießnitz tributary, and North of Stauffenbergallee Allee the primary entry point to the site. The site is accessible by public transport via tram or bus.

Upon review of the site, I observed that guests walk along Olbrichtplatz, a path that runs through a park on a diagonal to the intersection of Königsbrücker Straße and Stauffenbergallee Allee. Vehicular users enter the site off Stauffenbergallee Allee via Hans-Oster-Straße, a tree-lined road through the center of the park that approaches the grounds. Street side parking is located along Hans-Oster-Straße. As the visitor proceeds, on foot and in vehicle, towards two small buildings marking the entrance to the first historic quad, they encounter a series of larger multi-storey municipal buildings to the right and left. These two large U-Shaped buildings delineate the southern boundary of the quadrangle. Past the two smaller buildings—the formal entrance to the site—the visitor may find parking in the open quad, both to the left and right (East and West respectively).

Upon entering the quadrangle, vehicular and pedestrian visitors encounter a cobblestoned path, followed by a grand north–south staircase leading up to the renovated museum (figures 5.04 and 5.03) at the northern end of the quad. At this point in the visitor experience most guests—except the blind and partially sighted—are wholly made aware of Libeskind's purposeful architectural insertion into the historic arsenal: a decidedly contemporary juxtaposition of a metal wedge appearing to slice through the former the neoclassical arsenal of Kaiser Wilhelm, I (figure 5.04). Flanking either side of the main building are smaller buildings which make up the museum complex. At the top of the stairs, and approaching the main building visitors walk over (figure 5.05) "damaged paving stones

from the Polish town of Wielun, where German Stuka dive bombers fired the first shots of World War II" ("English: Facts" 2013).

Figure 5.03 Dresden's renovated Military History Museum of the Bundeswehr (night) from main quadrangle by Studio Daniel Libeskind.

Figure 5.04 Studio Daniel Libeskind primary bold juxtaposition at the Military History Museum of the Bundeswehr (night).

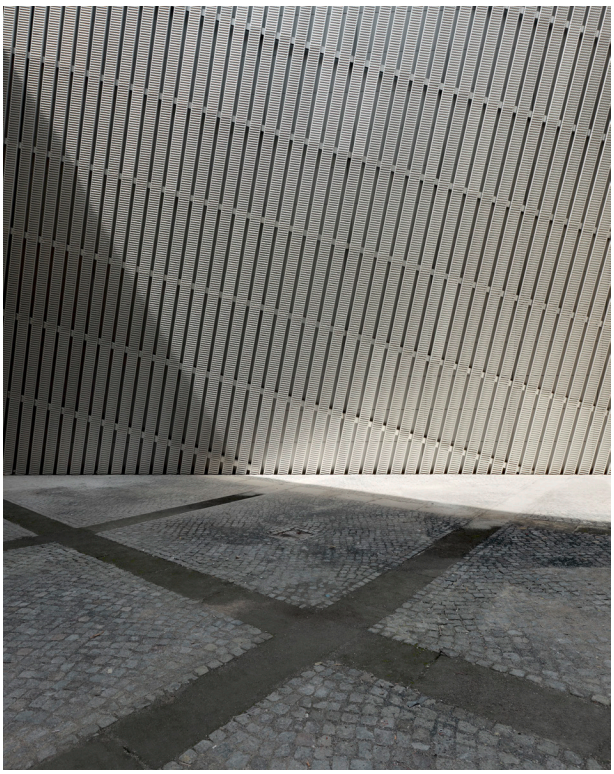

Figure 5.05 Paving stones from the Town of Wielun, Poland.

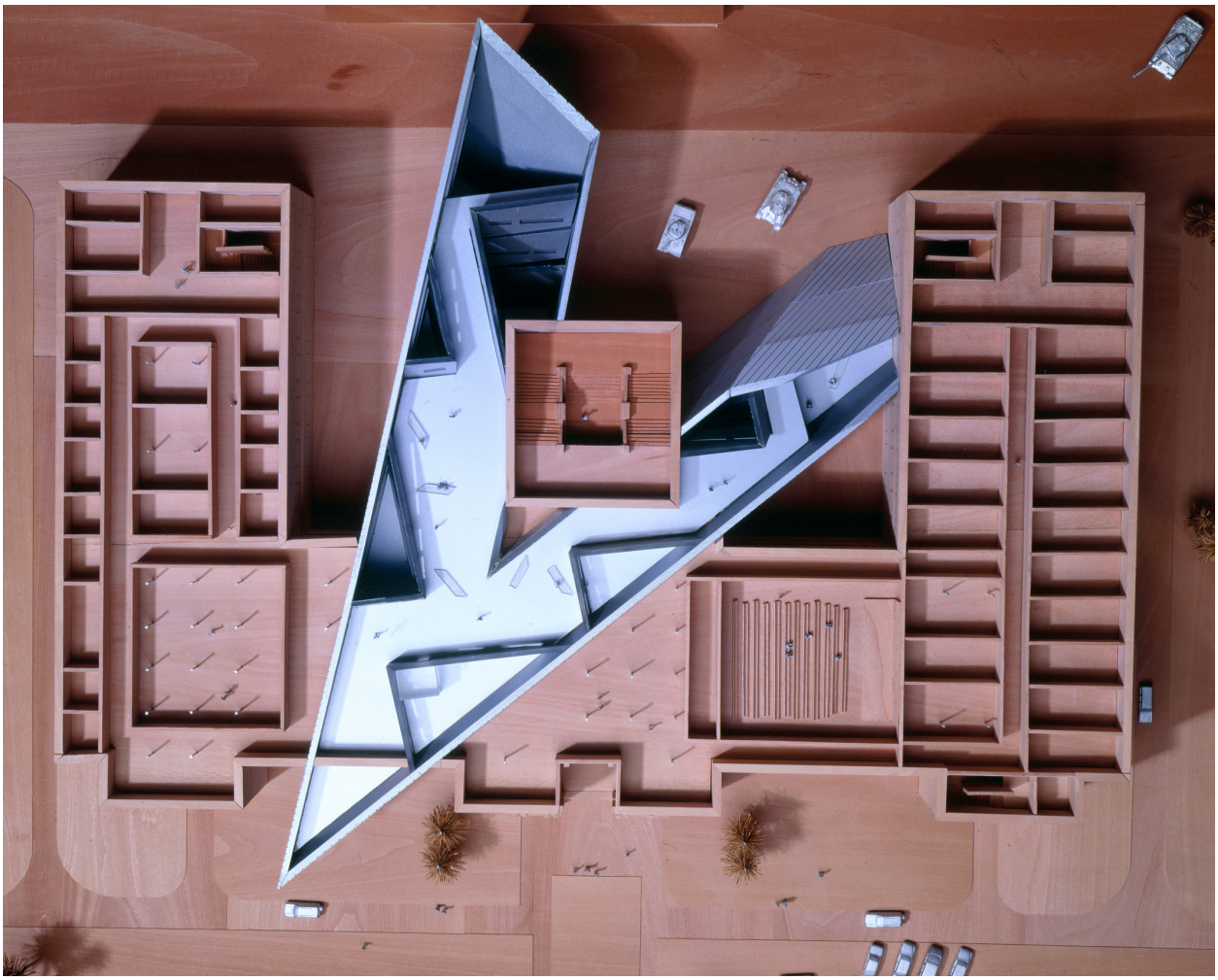

Figure 5.06 Model of the Military History Museum of the Bundeswehr, Dresden, by Studio Daniel Libeskind.

The pre-renovation arsenal is a low and wide three-story structure symmetrical (until the renovation) around a central axis (figures 5.02 and 5.03) that runs North–South. The building (the dark wood in model, figure 5.06) has two dependencies, East and West wings, bracketing the central core by two hyphens. The building has regular groupings of fenestration punctuating the dense opacity of the stone structure along the primary facade, the long south-facing wall fronting the quadrangle. Openings are in vertical groupings of one per floor—the largest on the lower level to smallest on the uppermost—along the front façade: three sets for each dependency, five sets at each hyphen (figure 5.03), and generally five sets for the central core. During the day, the historic building is generally uniform in colour and texture (figure 5.02), so too is the translucent contemporary addition.

At night however, the dramatic exterior lighting of the façade coupled with internal illumination from within the extension (figure 5.07) further contrasts the rigidity of the arsenal with the semi-transparent structure (figure 5.03). Critic Douglas Murphy describes Libeskind's glass, perforated steel, and concrete insertion as "dramatically bursting forward over one [hyphen] of the building" (Murphy 2012) (figures 5.03 and 5.07). Breaking the formal structural order of the neoclassical building achieves a purposeful sense of tension for this five-story 14,500-ton wedge (figure 5.07) that reaches approximately 30 meters at its highest point ("English: Facts" 2013).

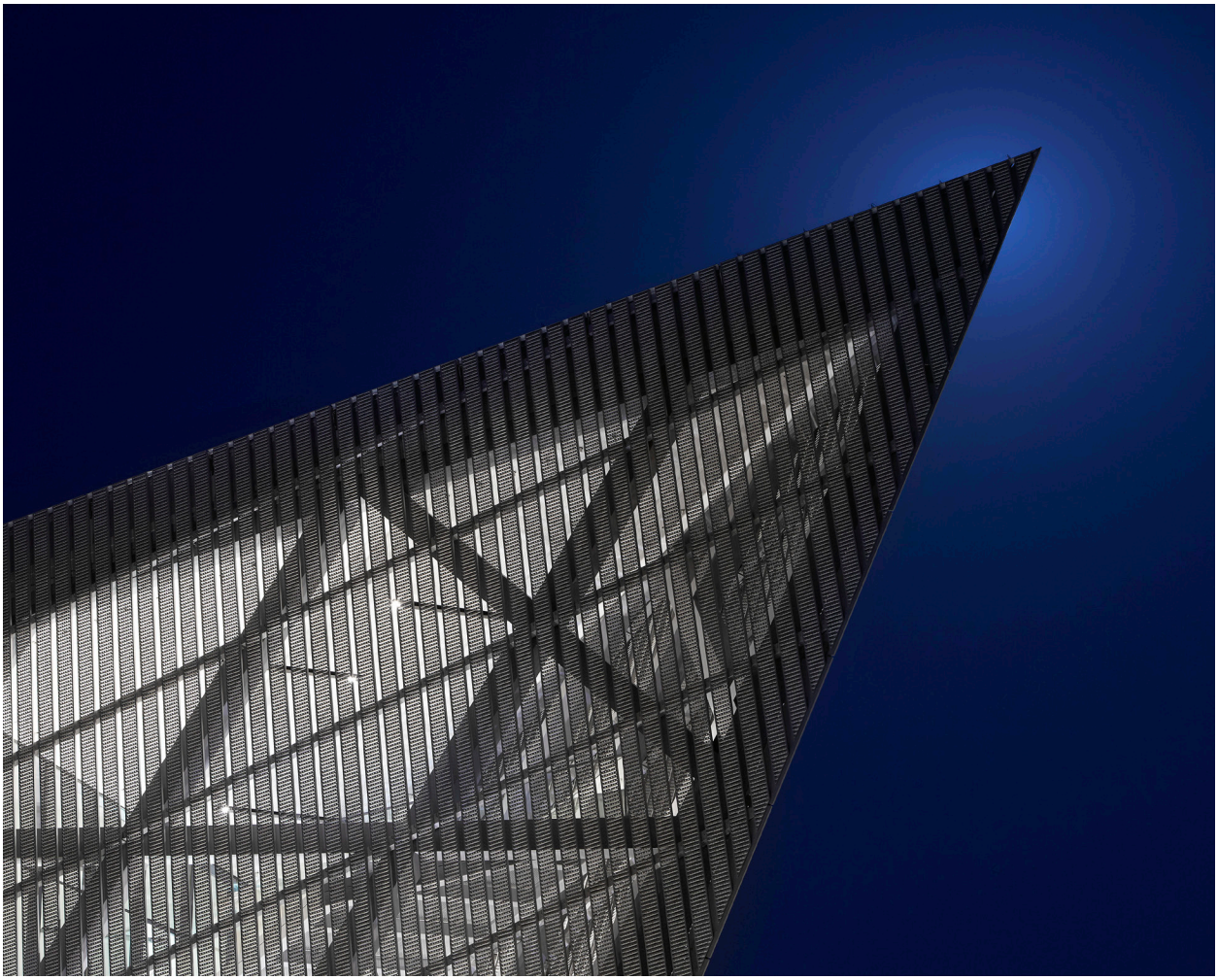

Figure 5.07 Studio Daniel Libeskind 'wedge' is internally illuminated at night"

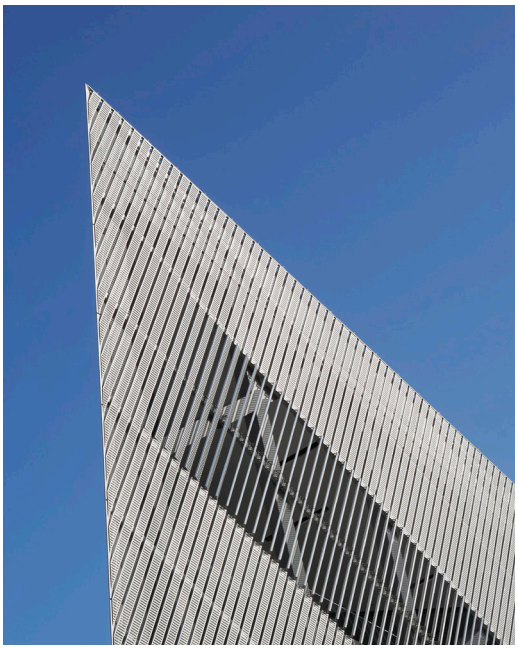

Figure 5.08 Studio Daniel Libeskind perforated steel platform tower (exterior).

Figure 5.09 The viewing platform (exterior) at the Military History Museum of the Bundeswehr, Dresden, by Studio Daniel Libeskind.

The museum houses roughly 20,000 square meters of exhibition area—Germany's largest museum at time of construction according to Studio Daniel Libeskind—and 14,000 square meters of public and administrative areas, on a 50,400 square meter site ("Military History Museum Project Information" 2013). The €62.5 million (2013)—$91.6 million CAD (2013)—renovation started in 2004 and opened in 2011 ("News: Dresden Military Museum Redesigned" 2013).

Context

EQUILIBRIUM

The story of the Military History Museum of the Bundeswehr is deeply rooted in both the history of the city of Dresden and the outcome associated with Germany's military and political aspirations of the 20th century. Dresden originated as a Slav village, however it wasn't until 1216 when Dresden is first mentioned, noting it as a German colony to later become became the capital of Margrave Henry the Illustrious in 1270 and chartered in 1403. Two fires destroyed the city in 1491 and 1685, and another two-thirds of the city was

destroyed in the Seven Years' War (1756–63) ("Dresden" 2014). Dresden has had a long history of birth, destruction, and rebirth. The establishment of the city as a prosperous industrial center, which is a prelude to the stark contrast of its latter tragic times: "it was above all during the 18th century a magnificent centre of European politics, culture and economic development, only to become a synonym for apocalyptic destruction just two centuries later" ("History of the City of Dresden" 2010). For close to eight centuries, the city of Dresden witnessed building and rebuilding, however neither words nor images nor statistics alone or combined are adequate in recounting the immensity of the catastrophic events of the mid-twentieth-century that led to a defeated Germany in 1944.

For this practicum study, the research of history is an important point to consider. Except for the obvious—a 21st century museum that illustrates Germany global ambitions and it's history of war—the notion of a cultural heritage context is important. Design in this case, not simply a response to a formal set of architectural constraints, but also a response to cultural heritage landscape. For this designer, for this project and many current projects, sufficiently researching the culture and heritage of place informs design. As will be noted later in this chapter, this also plays a key role in how Studio Daniel Libeskind approaches many projects.

DISRUPTION

February 13th 1945 marked the first day of an allied forces bombing regime that leveled Dresden; a series of campaigns that many historians describe as an overzealous act destruction. Following the unconditional German surrender, allied victors began stabilization and reconstruction efforts. However postwar war tensions reemerged and confrontations among global superpowers escalated, resulting in a division of two European blocs, eventually leading to the creation of the German Democratic Republic (GDR) for which Dresden became a regional capital in 1951 ("History of the City of Dresden" 2010).

RESOLUTION

The armory was founded as the Dresden Museum of Military History a museum in 1897, acting as both a working arsenal as well as a museum; originally exhibiting artifacts from Saxony, and later housing military relics from the Nazi, Soviet, and East German militaries. The location of the museum outside the city-center factored in the building escaping much of the damage inflicted upon Dresden in 1945 air-raids ("News: Dresden Military Museum Redesigned" 2013).

As time progressed however, so too did attitudes towards war, the museum, and Germany's past and future. Studio Daniel Libeskind chronicles that by 1989, "unsure how the museum would fit into a newly unified German state, the government decided to shut it down" ("News: Dresden Military Museum Redesigned" 2013).

NEW EQUILIBRIUM

Post 1989, with the unification of the Germany to Federal Republic of Germany, 16 states emerged to include the refounded Free State of Saxony with Dresden as the capital. With renewal came extensive country-wide transformation, and Dresden once again emerged as one of Germany's most important cities ("History of the City of Dresden" 2010). When describing the Military History Museum of the Bundeswehr redevelopment, Studio Daniel Libeskind surmised that German and Dresden attitudes towards war shifted, allowing for an architectural competition in 2001 that focused on the renovation of the facility stimulated by the concept of "a reconsideration of the way we think about war." ("News: Dresden Military Museum Redesigned" 2013)

Critical response

Brooker and Stone suggest that an architectural "insertion can act as a symbolic and forceful statement" (Brooker & Stone 2007). Few responsive additions may better support this point of view than Libeskind's renovation to the Military History Museum of the Bundeswehr. As part of this research, I have come to realize that "Fundamental to Libeskind's philosophy

is the notion that building are [sic] crafted with the perceptible human energy, and that they address the greater cultural context in which they are built" ("Dresden's Military History Museum" 2011). The principles that guided Libeskind's intent for the Military History Museum of the Bundeswehr are as a well informed as any other Studio Daniel Libeskind project. For this practicum project, the importance Studio Daniel Libeskind places on the culture and history of place gave me license to delve into history for my work, both in this study of precedent, and more importantly to understand the cultural heritage landscape related to the site and the content of the Human and Natural Disasters Museum.

Libeskind's insertion from the exterior is bold and jarring, but is also respectful. During the day, the insertion looks purposefully overwhelming as it envelops the South-West hyphen. Purely from a structural standpoint, seemingly very little of the original arsenal has been disturbed to allow for the insertion to protrude from and envelop the original structure. The two angled walls of the wedge-shaped viewing platform that envelope the West hyphen interface with existing fenestrations in such a way as to allow for the visitor to enter Libeskind's blade from the second floor through an existing opening in the façade. While visually jarring and juxtaposed, the new structure limits it's the impact on the existing in a very calculated and subtle way. Visually obtrusive, it is structurally delicate, I suspect as not to damage the existing arsenal while serving to make an conceptually impactful impression.

The idea of using the existing form is important. Making the most of existing grid lines, material, volumes, and viewing planes all play an important role in the design of new interiors. The same constraints of existing conditions, in particular grid lines and existing columns were considered when developing the Museum of Human and Natural Disasters. The materiality of the wedge too is purposeful. For those most part the new element is open and transparent, comprised mainly of beams, glass, perforated skins, and concrete (figure 5.10). The wedge is better presented as 'light in nature' when internally illuminated at night (figures 5.03 and 5.07). With a single element so purposeful in its' form, one would only assume that all material decisions were determined with the same resolve. Libeskind

suggests materiality of the new reflects "the openness democratic society in which it has been reimagined" while the strict order of the arsenal "represents the severity of the authoritarian past" ("Dresden's Military History Museum" 2011). I do acknowledge the use of material and form as a device to reflect a change in perspective in the public conscious: equilibrium, resolution, and new equilibrium. While not a narrative, certainly the wedge form is a rhetorical device. I do not take issue with his use of metaphor, I would however add that materiality in this case also serves another more functional design purpose: to view out from within (figure 5.10).

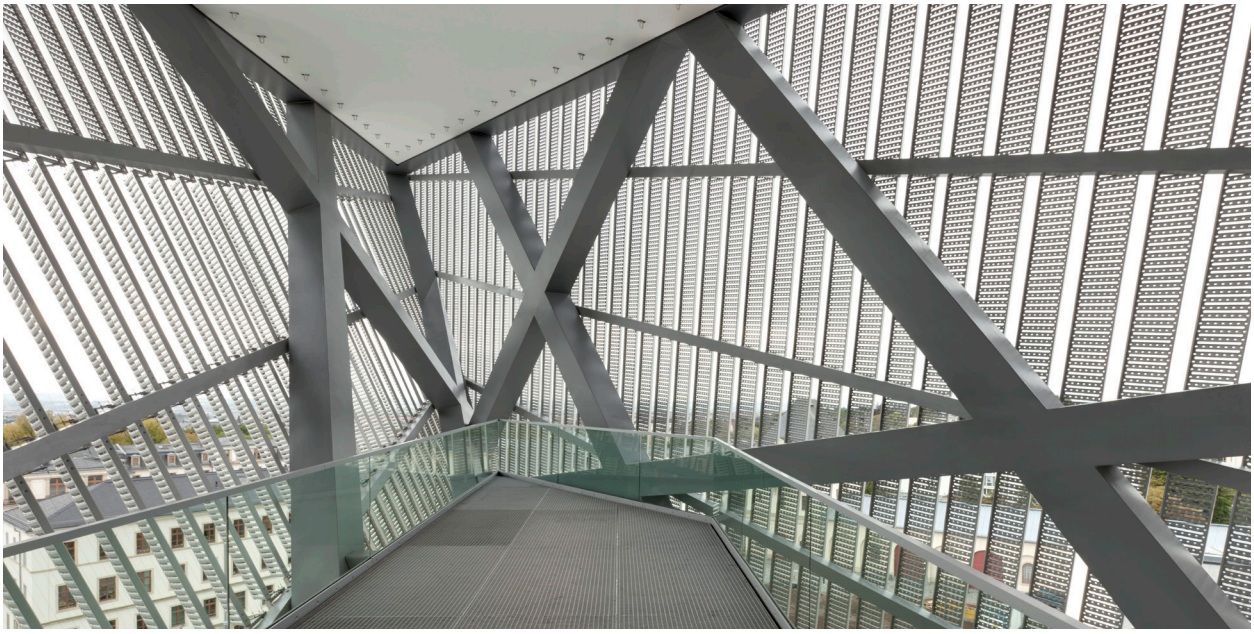

Figure 5.10 The viewing platform at the Military History Museum of the Bundeswehr points to the once decimated core of Dresden.

From schematic design to the final construction, the wedge grew substantially in scale to a final imposing 30m at the highest point. It almost entirely envelopes the western hyphen, is well over twice the height of the dependencies, and just over twice the scale of the massive entrance. The height of the new structure serves to provide a view plane to the once decimated city of Dresden. I propose that the choice of a perforated , almost 'light,' cladding and support structure also allowed the architect to make the most of the massing: pushing the boundaries of scale without visually overwhelming from the historic building over which it straddles.

Libeskind's interior spaces both respect the existing rectilinear qualities of the interior grid, and are very much at odds with the existing conditions, more so the latter than the former. On the top floor of the original museum (figure 5.06), the renovated space presents exhibition halls that are at right angles generally, and not far off the original grid of the building. That said, many if not most interior volumes grossly express the harsh wedge geometry of the interior, particularly atriums, walkways, circulation routes, and galleries of the lower levels. A signature element of Libeskind—sharp angles, irregular shapes, and lines at odds with geometry—these fractured compositions are not above criticism. In plan, the wedge fits well with existing fenestrations, appearing as if whole but in fact is more like three parts: external on the quadrangle, interior taking advantage of existing fenestrations, then, exterior to the North. In plan it works to contrast the existing, but it is in elevation and perhaps experience when the juxtaposition is most obviously at odds with the building and to some degree the visitor experience. The sever angles of the wedge lead to harsh angles, walls in particular. While supporting the concept and experience for some, these conditions pose numerous challenges for others, from the blind and partially sighted to those with mobility issues.

For an architect with such sensitivity to conveying aspects of tragedy and loss when working with subject matter of genocide and destruction, his work is surprisingly unsympathetic on other levels. Libeskind states "I'm always surprised that people think that architecture should be comforting, should be nice, should appeal to your domesticity. Because the space and the world is different" Libeskind continues "Architecture is a field of repression" suggesting architects need to be more confrontational with their buildings" (Mairs 2016). While his work certainly uses the built environment to evoke emotion, Studio Daniel Libeskind's design of space may also have unintended consequences: perhaps the architect places the needs of some audiences over those of others.

Libeskind is known for making bold architectural statements—from the Toronto's ROM to the Berlins' Holocaust Museum—his fragmented architectural language of trapezium-

like shapes creates spaces comprised of harsh geometrical forms that challenge the general public's comfort with rectilinear, parallel, and perpendicular environments. Persons with disabilities often rely on redundancy and predictability, like vertical walls and walls at right angles, as a means to understand and navigate space. Furthermore, accessible design guidelines are often written assuming certain baselines, like vertical walls for example. I mention this not suggesting that everything should be parallel and/or perpendicular. To the contrary, however I must note that straying from this norm is an added challenge for numerous disability groups.

The Museum in Dresden is similar to most of Libeskind's oeuvre. His bold monumental spatial gestures come at an expense: the sometimes harsh angularity of form at the human scale. To someone with disabilities (mobility and sighted namely) this comes at an expense (figures 5.13 and 5.14). The Museum at Dresden is not immune to this attitude towards design, nor criticism by peoples with disability.

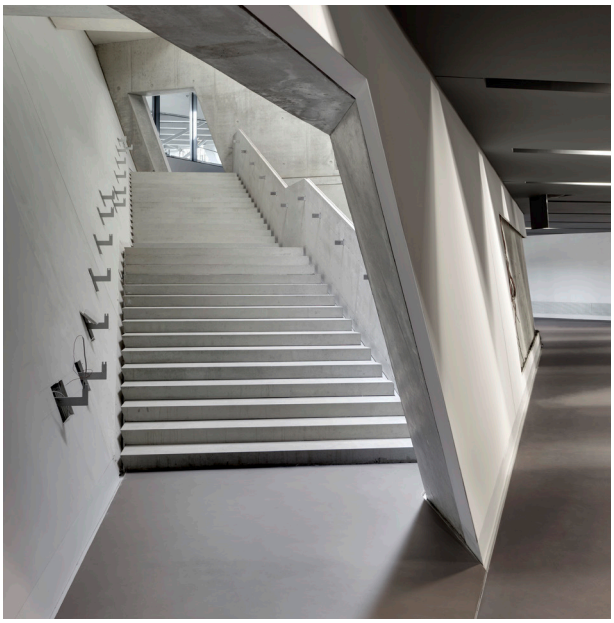

Figure 5.11 Studio Daniel Libeskind's wedge produces angular spaces throughout the building.

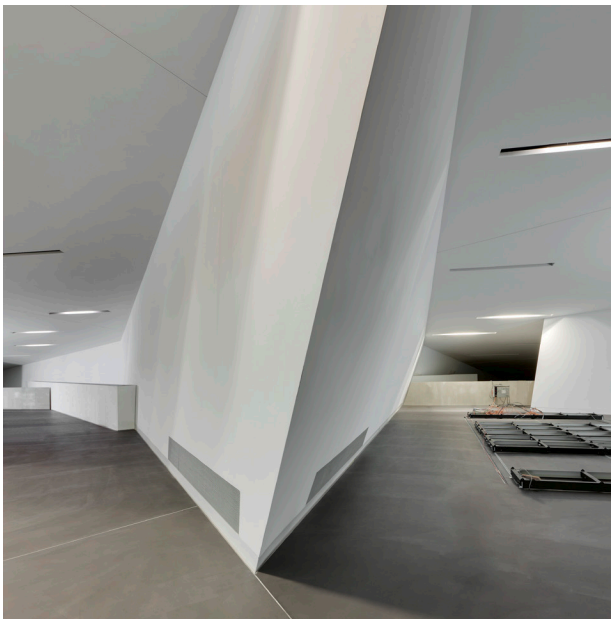

Figure 5.12 Sloped walls in particular, are a result of Studio Daniel Libeskind's primary form used at the Military History Museum.

The design team's approach to the interior is wholly contemporary. It uses the structure—the new and the old—as a simple backdrop to allow the collection to be the primary character. Simple white and concrete walls are generally used throughout the

museum to display artifacts.

Figure 5.13 Typical interior, Military History Museum.

Figure 5.14 Typical interior, Military History Museum.

Lighting is generally even with little direct exterior daylight allowed. Daylighting however is employed at times, usually to add light to larger volumes (figure 5.16). Daylighting for most audiences serves not only to light, but also helps with circadian rhythms and our understanding of time of day. Rarely is direct sunlight able to reach artifacts in the museum's design. Exhibit lighting is mixed. While walls are often flooded to some degree, the design employs direct spot lights. The result, at times, produces a scenario where lighting: walls are cast with 'pools of light' (scalloped) which poses issues for those with low vision (figure 5.13), and exposed fixtures (as seen in figure 5.14) also pose issues for people with low vision.

Exhibition design

When discussing Studio Daniel Libeskind's work for the museum, Libeskind believes "Not only does this breaking its symmetry and opening up a tense spatial dialogue in which to create a new curatorial narrative." But does it? His website continues by suggesting "Inside, in the original, columned part of the building, German's military history is presented in chronological order. But now it is complemented, in the new wide-open spaces of the

five-story wedge, by new exhibition areas with a new focus on thematic consideration of the societal forces and human impulses that create a culture of violence" ("Dresden's Military History Museum" 2011).

Certainly, a different narrative may be achieved through a new order. Using narrative theory as a lens, the text is the same: the artifacts, the people, the regimes, and the sequence of events that make up Germany's military history have not changed. If the narrative discourse is how the story is presented through an interpretive experience then, according to Bedford, the story actually doesn't exist without an interpretive, a narrative discourse about it (Bedford 2014). Using strictly the lens of theory, to quote Libeskind "a new curatorial narrative" does exist when considering this newly renovated museum. A new order allows for a different narrative through curation—the selection, sequencing, and interpretation of the collection changed thus a new narrative exists. The experience is 'new' in the sense that the narrative discourse has changed, not necessarily that the curatorial approach is new.

Libeskind suggested the design allowed for a "new curatorial narrative." The notion "new" in this case really means the museum has been redeveloped, not solely to present the collection in a strict chronological order as it was in the past, but also to introduce themes to deal with weightier topics. I must note that Libeskind's decision to breaking away from a chronological to a thematic presentation is neither novel nor ground-breaking in any way. The thematic organization of a collection is a museological topic that has been introduced and discussed for multiple decades: one might say that chronological presentations have long been dismissed as ineffectual.

"Curatorial narrative" from my perspective is a loaded pairing of words, and perhaps also not entirely correct, particularly when associated with the latter part of Libeskind's previous pair of statements. On his website, Libeskind suggests that the wedge is a new complement to the Arsenal, and introduces new programming areas for "…a new focus on thematic consideration of the societal forces and human impulses that create a culture of

violence" ("Dresden's Military History Museum" 2011). Having investigated the Military History Museum of the Bundeswehr, I have come to realise that it is perhaps Libeskind's *parti* that is both an organizing principle and a grand architectural metaphor. My research revealed little evidence to indicate that the architecture, aside from the macro gestural qualities of the wedge, was employed at the micro curatorial scale to support interpretation.

This raises an interesting point about where one discipline starts and others end, a topic addressed at numerous times throughout my design process and within this document. The architecture, exhibition design, and graphic design firm Holzer Kobler Architekturen (HKA) worked with Studio Daniel Libeskind and was responsible for the interpretive planning and exhibition design, noting "The architecture, exhibition design and content of the new Military History Museum were all developed and realised hand in hand. The symbiosis between the space, the exhibition and the items on display appears entirely natural and constitutes a unique portrayal of the history of the military as part of our culture" ("Military History Museum" 2016). From this statement, one must assume the two teams were driven to design based on the same core principles: primarily based on the culture of Germany's unique military history.

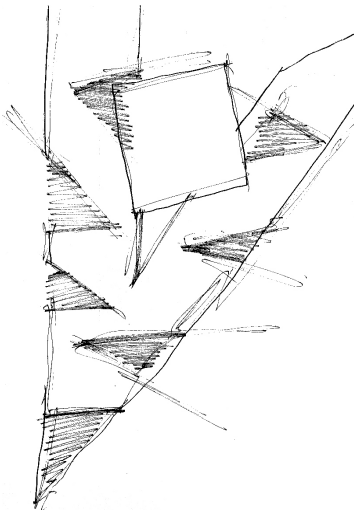

Figure 5.15 Studio Daniel Libeskind *parti* diagram for the Military History Museum of the Bundeswehr.

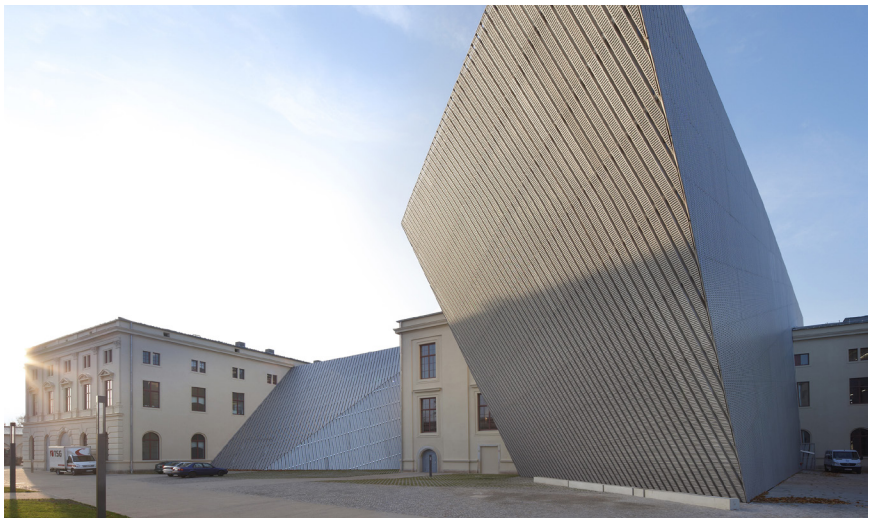

Figure 5.16 Studio Daniel Libeskind wedge, sometimes referred to as an arrowhead, as seen from the Northern facade of the Military History Museum of the Bundeswehr.

The two firms responded to the problem in different ways. Libeskind choose to develop

a grand architectural statement—however strong or weak, overt or subtle. The wedge, from within, directs the visitor to gaze upon the rebuilt city of Dresden, and it's formal relationship to the historic arsenal is intended to be a metaphor for contemplating Germany's past, present, and future from a military perspective. As a guiding principle, it is fine. Whether the general public connects the intervention to the country's past and a societal transformation is another topic entirely.

Holzer Kobler Architekturen reorganized and designed many aspects of the museum. The historic wing of the museum, the Arsenal, houses exhibition halls that present a chronology of three periods starting with the Late Middle Ages to 1914, through the Age of World Wars, and concludes with a exhibits that portray 1945 to the Present. The museum's website describes 'cabinets' that branch off from the main exhibition narrative to "address the military history of particular eras in greater detail" by including 'knowledge chambers' that shed light on "subjects such as the economy of war, the military and society, and injury and death" and "marked by ten main showcases that highlight critical turning points in German history: the Thirty Years' War, the beginning and end of World War II, and the division and reunification of Germany." ("English: About" 2013)

Some suggest the collaboration was a successful one. Critic Douglas Murphy commenting on the final outcome suggests "Unlike the Jewish Museum Berlin, with its notoriously disjunctive curating, Libeskind was involved in the curatorial strategy from the beginning, and the results have been typically popular with the public. Libeskind is at his best when creating a charged reinterpretation of an existing structure, where the weight of the cultural subject that the building embodies is expressed through its juxtapositions, tensions and fragments, and in this sense the Dresden Military Museum is vintage Libeskind" (Murphy 2012).

While this practicum project is not intended to focus on exhibition design, it is the display of the permanent collection that occupies most of the interior space. I therefore assessed aspects of the exhibition design not through the lens of an exhibition designer

and interior designer, rather the lens of disability.

Figure 5.18 Typical artifact display by Holzer Kobler Architekturen.

Figure 5.19 Typical artifact display by Holzer Kobler Architekturen.

Figure 5.20 Typical artifact display by Holzer Kobler Architekturen.

Previously noted, Libeskind's designs are difficult for persons with disabilities, particularly the blind and people with low vision. Sloped walls are often an issue, unless cues are provided to avoid collision. Vertical clearance of approximately 2m/80" is generally noted as a minimum clearance before fixed barriers, such as guardrails, benches, and other fixed elements are employed to help avoid collision. Of the photographs provided by Studio Daniel Libeskind, there are may instances where collisions with sloped walls pose potential hazards (figures 5.13, 5.14, 5.15, and 5.16). While some of the photo documentation illustrates a building under construction, potential head collision (figures 5.13, and 5.14) or falling onto a sloped wall (figures 5.15, and 5.16) all are potential hazards for some audiences.

Another issues is poor contrast. While the use of whites and concrete for wall treatments allows for high contrast of the artwork (figure 5.18), there is often poor floor to wall definition (figure 5.19) making it difficult for low vision visitors.

Figure 5.21 Display case (interior) by Holzer Kobler Architekturen.

Figure 5.22 Display case by Holzer Kobler Architekturen.

Figure 5.23 Open display by Holzer Kobler Architekturen.

Display cases, particularly those will full-glass fronts (taller than a human figure) pose difficulty for those with low-vision, and can be mistaken for wall openings. The Military History Museum uses large-scale case-work as design feature throughout much of the exhibit. The cases allows for a good display collection when mounted against solid-coloured walls (typically white). In instances where front and back are glass, the large voluminous exhibition halls are not comprised with the intrusion of visual obstructions. The Smithsonian Institute suggests "clearly defined case edges, and floors of a and floors of a different material and color than the floor outside the case limit this problem" (Smithsonian Accessibility Program 2000). While the black frames (figure 5.20) do a good job at floor-to-case contrast, singular colour of the inside of the cases makes discerning the difference between wall, ceiling and floor difficult for those with low vision.

Visitors with low vision need particular help with identifying borders. In the example of animals employed for military use (figure 5.21) being able to perceive the edge of the display platform is critical. Given the openness visitors with low vision may perceive it as a circulation. According to the Smithsonian Institute , poor floor to case color contrast and poor lighting are particularly dangerous to people with low vision, and the " problem is heightened if the cases have sharp angles, corners, or edges" (Smithsonian Accessibility Program 2000). This example from the Military History Museums poses difficulties at many levels.

Contrast for labels is critical in museum settings for people with low vision. Based on visual analysis of the photo documentation of the Military History Museum, the labels seem to be black or dark text on white backgrounds, which passes most 70% figure-ground contrast recommendations (ADA, Smithsonian Institute , etc.). It is however it is the placement that seems to be an issue. From labels lying flat on the bottom of cases (figures 5.18 and 5.21) to mounted at low heights (figure 5.22 and 5.23), to inconsistent placement (figure 5.15), all go against many well established guidelines. The Smithsonian Institute for example, suggests for people with low vision that labels: be within 75 mm (3 in.) of a label to read it; mounted at 45 degree angles for cases, and mounted close to the front

when possible, and; mounted to the back wall are near impossible for many people to read (Smithsonian Accessibility Program 2000). Most if not all these recommendations are not followed at Military History Museum.

As mentioned previously, the notion of redundancy and predictability is key, not just for disability groups but for all. From directional and identification signage to labels, from the location of a door handle to soap dispensary, consistent location of objects and devices is key. Exhibition labels fall into the same category. "Labels that appear in a different location at each work of art or within each case are difficult to find for people with low vision and people with cognitive disabilities" (Smithsonian Accessibility Program 2000).

Signage falls into the same category. This is another case of failure, in my opinion, at the Military History Museum. Not only is the placement of didactic information inconsistent, from wall mounted to floor mounted (figure 5.20), so too is the wayfinding signage which is often presented as a floor graphic (figure 5.23). It perhaps goes without saying the difficulty this poses not only for people with low vision but for those with mobility issues, and the deaf and hard of hearing who must avert their gaze to find their way.

Sustainable design

From an entirely different perspective, one can look at the sustainability of the design. The following critique is both a departure from the traditional critique and a departure from traditional stances on sustainability. It is worth addressing nevertheless. I believe sustainability should be viewed through three lenses— ecology, economics, and culture are—one of which will be discussed for this review of precedent.

I believe strongly that the culture and history of place is the third element in the triad of a lenses to sustainable design. It is here that the design of the Military History Museum of the Bundeswehr excels: in honestly addressing a country's markedly dark impact on the history of war, and it's transparent outlook to the future. Studio Daniel Libeskind's approach to incorporate culture into most every project is ingrained in their approach to

design. An outcome of this review, aside from a critique of design, is that the culture heritage landscape of place indeed plays a role in any design. Studio Daniel Libeskind's rationale of recognizing Germany's military history gave license to me to study the history of place for this review, more important, it reinforced my belief that culture plays a role in sustainable design.

Summary

In brief, there are numerous positive learning outcomes from this review of precedent. From a design perspective, the notion of a single strong concept—a core idea, a *parti*, a set of guiding principles—is important for a design, and all disciplines should be able to use the concept for all work. Studio Daniel Libeskind's architectural gesture supports that notion: a single metaphor. Design should be informed by a history of place. A building has a history, a site has a history, and these should be understood prior to starting design. Finally, using the lens of disability, sound design decisions for all user groups will create a better design for all.

6. Context

Halifax, the provincial capital of Nova Scotia, is located on Canada's eastern seaboard. Historically a prosperous and important port city, it serves as an inbound and outbound gateway for many cross-Atlantic North America to Europe trade. The port is known to be the deepest non-dredged harbour in the world, to have minimal tides, and remains ice-free year-round. According to the Port of Halifax, "two full days closer to Europe and Asia by sea than any other ultra vessel port on the Atlantic Coast" and one of just a few eastern seaboard ports "able to accommodate and service fully laden post-Panamax container ships using the latest technology." The Port of Halifax website also notes that the port handles over 1,500 vessels, generates more than 11,190 jobs and contributes $1.5 billion to the economy ("Small Change. Big Impact." 2017).

Historically, the port city has played an important role as a stronghold, as a stop on trade routes, and as a port of entry for immigration—Pier 21 processed tens of thousands of immigrants to Canada in the early- and mid-20th century. It's deep-wide sound is ideal for nautical traffic, and a protected basin provides safe harbour for on- and off-loading cargo ships, a sanctuary to wait-out storms for vessels of all sizes from jetty's to rigs. The city is an important port of call for cruise ships during the tourist seasons. During World War I and World War II, military and merchant ships would muster in Halifax's Bedford Basin prior to dangerous cross-Atlantic convoys to the European theatre of war.

From an indigenous perspective, the decisive vicissitudes of the British' entry into the harbour on June 21, 1749 violated earlier treaties with the Mi'kmaq initiating countless injustices overseen by Edward Cornwallis. To this day, the actions of Cornwallis with respect to the Mi'qmaw have a resounding and unsettling impact on relations with people of indigenous descent in Nova Scotia. For Cornwallis and the British, the harbour was an ideal place for settlement: from a strategic perspective, the proximity to Annapolis Royal, Louisburg, the North-eastern seaboard, and Europe would prove it to be well situated; from

a geographic point of view, the protected bay and drumlin landforms made for an ideal place to set up fortifications.

Today Halifax is known for its Vauban-style fortification (Citadel Hill in the city's center), prolific examples of Victorian era residential architecture, and recently for the internationally acclaimed Halifax Central Library by Danish firm Schmidt Hammer Lassen and Fowler Bauld & Mitchell of Halifax. The provincial capital and business centre is particularly known for its' maritime history: from the days' of privateers to the 6th of December 1917 when the collision of two ships left an indelible mark on the city and Canadian history.

According to Statistics Canada, the Halifax Regional Municipality (HRM) had a population (Halifax census metropolitan area, 2016) of 403,131 with 316,701 in the urban area centred on Halifax Harbour. From the same data, there were 173,459 private dwellings spread over 5,496.31 square kilometres, and Statistics Canada records indicates a population density of 73.4 people per square kilometre (Statistics Canada 2017).

Human and man-made disaster

This maritime port, the province of Nova Scotia, and the North Atlantic have witnessed numerous peace- and war-time disasters, both nautical and land-based, man-made and natural. Maritime calamities are a way of life for many living in coastal communities, from destruction and loss of life due to disaster, to the all-too common tragedies related to mining the land and fishing the ocean for resources, a theme well understood by many Maritimers. Maritime disasters include:

The Halifax Explosion On December 6 of 1917, the collision of two ships in Halifax harbour generated the largest non-nuclear explosion of the twentieth-century: the French Mont-Blanc laden with the raw goods for the production of explosives bound for Europe, and; the Norwegian merchant vessel headed to the United states to load supplies for Belgian relief. For a population of over 50,000 at the time plus an additional 5,000 military personnel:

one in twenty-five succumbed to the disaster; one in five suffered injury, many with lifelong afflictions, and; one in ten were left homeless. The community of Richmond was wiped from the face of the city never to return in name nor function, "What de-industrialization began, the 1917 explosion completed. It removed much physical evidence that industry had ever existed in Richmond" (Morton 1990). The disaster sparked numerous nautical reforms, particularly regarding navigation, communication, and record keeping.

The RMS Titanic Considered one of the gravest marine disasters in history—perhaps the greatest known—the RMS *Titanic* is also associated with Halifax. On her maiden voyage from London to New York, the RMS *Titanic*, the largest and most prestigious ocean liner of the day, struck an Iceberg off the coast of Newfoundland on the evening of 14 April 1912. About two thirds of the 2,224 passengers perished in the icy-cold waters of the North Atlantic. Survivors went to New York. Of the 323 recovered dead brought to Halifax for identification, 150 were unclaimed and interred in Halifax cemetery dedicated to the titanic tragedy. Like the Halifax Explosion, this maritime disaster was also a catalyst for nautical reform, particularly concerning safety. (Government of Nova Scotia 2012)

The Ocean Ranger After two-and-a-half months of drilling on the North Atlantic's Hibernia Oil Field, crew of the Ocean Ranger received reports of an oncoming major Atlantic cyclone. On February 14, 1982 a strike from a rogue wave initiated a series of events that lead to numerous physical, mechanical, and system failures; a Mayday call ensued sent on 15 February. The rig listed severely for many hours before toppling to the ocean's floor killing all 84 crew members before rescue could arrive. Ships in the area recovered the dead in the severe storm. The following day, distressed by the same weather conditions, the nearby Soviet container ship Mekhanik Tarasov, struggled before sinking. 32 of 37 crew were lost to the sea. Years later, two died transporting the rig for salvage. As a result of the Ocean Ranger disaster, federal funds are invested annually since for research with a particular focus on lifesaving equipment (Collier 2016).

Peacetime disasters On 9 October 1913 the SS *Volturno*, a Canadian Northern

Steamships Ltd ocean liner, caught fire and sank in the North Atlantic. While 520 were rescued by over ten rescue ships in the area, heavy seas and gale winds prevented the rescue of the remaining 136 people, mostly women and children in unsuccessfully launched lifeboats. On 29 May 1914 the passenger liner RMS *Empress of Ireland*—another infamous Canadian maritime disaster—sank in the Saint Lawrence River after a collision that killed 1,012 people, with 465 survivors.

Swissair 111 On 2 September 1998, enroute to Switzerland from New York, a fire broke out onboard Swissair Flight 111 which quickly spread beyond the control of the flight crew. Unable to reach Halifax safely the plane crashed 8 kilometres from shore near the entrance to St. Margarets Bay, Nova Scotia. Upon analysis of over four million pieces of debris, it was determined the force was such that all 229 passengers and crew were killed immediately upon impact with the Atlantic Ocean. Lost too were diamonds and jewels (an insured value of $300 million), gold bars, and a Picasso painting (CNN 1998). Canada's Transportation Safety Board investigation identified the in-flight entertainment system's wiring as the source of the ignition, and flammable material in the aircraft's structure as a catalyst for its spread. Changes in FAA standards regarding improvements to fire-detection, fire-fighting equipment, and training resulted from the TSA post-disaster investigation.

Sable Island One of Canada's most remote islands, Sable Island is a crescent shaped sandbar, 40km long and less than 1.5km wide, sitting in the North Atlantic Ocean 300km off the coast of Nova Scotia. Parks Canada describes the National Park Preserve as sanctuary for the world's biggest breeding colony of grey seals, a unique breed of wild horse, and species of plants, birds, and insects, some of which are found nowhere else on earth (Parks Canada Agency, 2017). The Island however has a darker history. Known for centuries as the "Graveyard of the Atlantic", the rough seas, fog, and the submerged sandbar that is the island is the final resting place for some 350 known vessels since 1583 (Nova Scotia Museum "Sable Island" 2013). The museum's website also notes The Humane Establishment of 1801 established lighthouses (1873), houses of refuge, and life-saving stations (1801) for the

protection of cross-Atlantic voyagers.

Industrial accidents

Over three centuries of resource extraction in Nova Scotia have led to disasters large and small, disability, death, and destruction resulting in distressed communities and economies. Mining for salt, coal, copper, and gold mining are dangerous endeavours, particularly so in the province given many seams stretch deep below the Atlantic Ocean. Over the last 130 years, at least 2500 individuals have been identified as lost to mining accidents or disasters. Here are a few of the major incidents:

The Westray Mine Opened to supply coal for electric power utilities, the Westray Mine in Plymouth Nova Scotia operated for a mere eight months prior to an underground methane explosion on May 9, 1992. An inquiry immediately after the disaster indicated that mismanagement, little-to-no safety controls on behalf of the mining company, and poor government oversight led to the disaster. The twenty-six miners working underground were killed; there were no survivors, and 117 miners lost their employment immediately after the event. Thirteen years later after numerous failed attempts, the federal government enacted Bill C-45 (often referred to as the "Westray Bill") in direct response to the Westray Mine disaster in 2003. The bill amended the Criminal Code of Canada to hold managers and directors of corporations criminally liable for their action and/or inaction with respect to the health and safety of employees.

The Spring Hill Mine Over a century, Spring Hill, Nova Scotia witnessed three major tragedies related to coal mining. The first a coal dust explosion in two mines occurred on the 21st February 1891, killing 125 and leaving dozens injured. At the time, the death toll was unprecedented for the Nova Scotian and Canadian mining industry and garnered attention from across the Commonwealth (Nova Scotia Archives 2005). In the 1950s, two of the worst mining disasters in Canadian history took place: in 1956 an explosion killed 39 miners, and 74 died in 1958 from an underground seismic event. (Canadian Broadcasting Corporation

2017). While some outcomes of tragedy lead to change, legislative or otherwise, the long-term outcome of these tragedies was lost economic vitality and the slow death of a town.

Natural and environmental disaster

Natural disaster is a term used to describe events beyond our control, from earthquakes to avalanches, from hurricanes to floods, these disasters can come with little warning and have a devastating impact on human settlement and life. They are also considered part of the ecosystem's nature, even though the human race generally views cataclysms as a tragedy. In contrast, human activity has impacted nature on small and large scales. Ecological disaster is the outcome of our alteration of the ecosystem leading to widespread and/or long-lasting consequences often of immeasurable proportion.

Hurricane Juan On September 24, 2003 began nature's recipe for a hurricane: starting as tropical storm off the coast of Bermuda, the weather system tracked north on a collision course with Nova Scotia building in intensity on it's way. Hurricane Juan made landfall in the Halifax Regional Municipality early on September 29 as a Category Two hurricane with sustained winds of 160 km/h. "Scientists have called it a once-in-a-50-year storm and the most 'damaging storm in modern history of Halifax,' with approximately 100-million trees being uprooted, broken or tossed around," the clean-up resulted in eight fatalities and over CAD $300 million in damage (Quon 2017). Fires, floods, hurricanes, thunderstorms, and winter storms are part of nature's renewal process. Once clear-cut by Edward Cornwallis for the resources associated with a new settlement in 1749, the 2003 levelling of three-quarters of the trees in Point Pleasant Park—the park was ground zero for the storm in the city center—gave the city the opportunity to rethink this public resource and 100,000 seedlings were planted over three years in an attempt to diversify the species in the park bringing it closer to its Acadian Forest roots. (CTV New Atlantic 2013).

Sydney Tar Ponds Over a hundred years ago, Sydney, Nova Scotia and surrounding area had access to the resources necessary to produce steel: iron ore and limestone,

coal for generating heat and an ocean for cooling, and a harbour to ship the finished goods. At the height of production, Sydney was the largest steel producer in North America. Finally shutdown in 1996, the coke ovens by that point had polluted the environment for close to a century, dumping coal-based contaminants and sludge turning the estuary into tar ponds. Today, post-cleanup and remediation, the site is home to Open Hearth Park, which opened to the public in 2013.

Destruction is a prelude to change

Natural and man-made disasters, while tragic and destructive, can have a positive environmental and societal impact. From relief to reconstruction, from regrowth to rebirth the short-term consequence of disasters can support and promote long-term change, hopefully for the better. In essence an outcome of disaster is resolution followed by a new equilibrium informed by the previous state. For this practicum project, this is of significance.

On one hand, the topic of disaster provides a context for the building typology requirement for this practicum. This is primarily important for the site, chosen because of its scale, is a former coal-powered electricity generation station. The decision to use this site forced me to consider the origins of the building and site. The question: to ignore the building's former function or to acknowledge the dual heritage in my proposed new design? As mentioned in a previous chapter, I attempt to view the design process through three lenses: ecologic, economic and cultural. The answer therefore was clear: from a cultural heritage perspective, it would be remiss of me not to address the ecological repercussions of coal mining.

From the perspective of the narrative on the other hand, according to Todorov, a story is structured as: *equilibrium*, *disruption*, *resolution*, and *new equilibrium*. Choosing disasters as a topic was deliberate and purposeful. Disasters, man-made and natural, are based on a disruption; an unforeseen event with tragic and/or costly consequences. However, it is

the notion of a new equilibrium, the after-state, which is also of interest. From a design perspective, it will be important to consider all four narrative stages as informing the final design outcome from spatial organization to material considerations. While the intent of this practicum is stay clearly on the side of interior design and not exhibition design, from an interpretive planning perspective notions of resolution and new equilibrium should not be overlooked. In the accounts of regional disasters summarized previously in this chapter, the notion of legacy was important. How did the event change industry, economy, and ecology? What was the new equilibrium? Without developing the exhibition design, I wish the programming of the building to be such that resolution and new equilibrium can be spatially represented.

The Canadian National Institute for the Blind (CNIB)

The CNIB was formally founded in 1916, a national body starting as an outgrowth of various schools and organizations. It wasn't until 1918 when two defining moments in Canada's history led to the CNIB's incorporation: the Halifax Explosion and World War I, both of which caused widespread vision loss among many Canadians, "[that] served to underscore the growing need for an organization that could offer a better way forward" (CNIB/INCA 2016). The Halifax Explosion "sparked an outpouring of community support for survivors who were blind or partially sighted and served as a catalyst for the formation of one of Canada's oldest charities, CNIB." (CNIB/INCA 2012). For a period of twenty-four minutes around that start of the work day the two ships burned in the harbour encouraging hundreds of citizens to gather, while others—old and young alike—watched from their windows (CNIB/INCA 2012). As stated earlier in this chapter, the severity of the accident was enormous, often cited as one of the largest accidental non-nuclear explosions to date. From an ophthalmological perspective, the CNIB press release states:

> Two thousand people were killed, and a further 9,000 injured—more than 1,000 of whom sustained serious eye injuries from flying glass and debris, which left them blind

> or with significant vision loss. A staggering 250 eye removals were performed over a period of two weeks following the explosion, an additional 206 survivors had lost one eye and required monitoring to ensure they retained their vision in the other, and 260 more people had glass embedded in their eyes. (CNIB/INCA 2012)

The "onslaught of veterans returning home blind after World War I, [and] the explosion meant there were suddenly more Nova Scotians living with blindness or partial sight than ever before"(CNIB/INCA 2016). Volunteers and relief workers, set about to help those in need, by providing assistance, training, and equipment, which eventually brought about change in how people dealt with—in the case of the injured—and how the public viewed the blind and people living with loss of sight: "people started to think differently about what it means to be blind" (CNIB/INCA 2012). "Following the disaster, various local women's groups realized the great need for social inclusion by arranging outings, including picnics, boat rides and musical evenings for individuals in the community who were recently blinded, and their families" (CNIB/INCA 2012). Between the end of the war, and the Halifax Explosion, the CNIB together with community volunteers groups began to seriously address the needs of the blind and vision loss communities.

Although interpretive planning and exhibition design are not part of this practicum exercise, I believe it important to recognize the relationship between the CNIB and the Halifax Explosion. As a result of the interior design focus of the practicum, the previous paragraphs may be the only mention of the CNIB, yet it is an important part of the history of disability-constituencies in Canada, thus deserving of mention. That said, involvement from disability constituents like CNIB on any project related to delivering services broad audiences is important. As a designer, I would suggest the CNIB to be a stakeholder in the Human and Natural Disaster museum, and participate in the development of the project.

Early in my career as a graphic designer, I had the honor of designing *Halifax Wrecked: The Story of the Halifax Explosion*, my first exhibition design. At the time, I met numerous survivors, many of whom had vision loss as a result of the explosion. I wish therefore to

recognize that this event was a catalyst for choosing the topic of this practicum project and that the exhibition for the Maritime Museum of the Atlantic had a profound affect on the type of work I pursue and the publics I wish to serve. Since starting this practicum project, I have also had the distinct pleasure of recounting the story of the Halifax Explosion in the form of experiential graphic design elements in a new commemorative park set to open December 6, 2017. Both projects are reminders of the impact this event had on Halifax and Canada, and the importance the event has played in my development as a design practitioner.

The Nova Scotia Museum

The Nova Scotia Museum department consists of 28 museum sites, and one of the oldest provincial museums in the country. It is responsible a collection of over one million artifacts and specimens, maintains more than 210 buildings, four floating vessels and nine locomotives. Within the Halifax Regional Municipality the department has three museums, including the Museum of Natural History, the Maritime Museum of the Atlantic, and Uniacke Estate Museum Park (Nova Scotia Museum 2013).

The Maritime Museum of the Atlantic is the oldest and largest maritime museum in Canada. The collection consists Nova Scotia's marine history through programming, and permanent and temporary exhibits. In this space, "visitors are introduced to the age of steamships, local small craft, the Royal Canadian and Merchant Navies, World War II convoys and The Battle of the Atlantic, the Halifax Explosion of 1917, and Nova Scotia's role in the aftermath of the Titanic disaster" (Nova Scotia Museum 2013). Maritime disasters and tragedy play a large role in themes presented at the museum, and the museum has been identified here primarily for its collections serves as the basis for the fictitious museum of this practicum.

Figure 6.01 Map of North and South America.

Figure 6.02 Map of Canada.

Physical and cultural context

The site for this practicum project is the former Nova Scotia Power plant located on Lower Water Street close to the base of Morris Street. Barrington Street (a few streets to the West of Lower Water St.), from the Angus L MacDonald Bridge to it's southern termination, is a major vehicular thoroughfare for the city of Halifax. From the bridge southward, and North of Inglis Street, Barrington Street is the primary vehicular entrance to the area traditionally defined as the downtown core, and acts as a feeder street within the core. Major intersections within include the overpass area through to Duke Street, the t-junction of Spring Garden Road and Barrington Street, and the intersection of South and Barrington. The arm of South Street leading east to the harbour is one of the primary routes to get to the proposed museum site (hereon in to be referred to as the proposed museum), as is the arm of Morris Street east of Barrington Street. For vehicular traffic, the east west traffic routes of both Morris Street and South Street should be considered when alerting visitors to their proximity to the proposed museum—marketing banners attached to existing light standards, for example—particularly along South Street and Terminal Road. The most convenient way to enter the downtown core from the North is via South Street. Hollis Street—one-way from North to South—is a heavy vehicular route for commercial traffic headed to the southern end of the city, particularly for empty semi-trailer trucks and heavy haulers (both regional and long haul trucks) headed to the South End Container Terminal (Halterm) via the Terminal Road and Marginal Road entrances. Hollis Street terminates at Barrington near South Street. Departing Halterm, predominantly load laden traffic heads North via Lower Water Street directly passing the proposed museum site located on Lower Water between Terminal Road and the foot of Morris Street.

Figure 6.03 Map of Halifax.

Public Transit

The site is easily accessed by public transit, directly (along bus routes), or indirectly (bus routes followed by pedestrian access.) Of Halifax's 61 bus routes (48 local and 13 express), 26 routes pass by or located nearby, including: two bus routes (8, 90) stop at or nearby on the site's west site; four routes (7, 9, 35, and 41) run along Barrington Street (two blocks away); and twenty routes (1, 3, 10, 14, 80, 81, 20, 21, 23, 31, 32, 33, 34, 53, 58, 59, 68, 84, 85, and 86) travel the Barrington Spring Garden corridor (4–5 blocks away.) Of these, the 8, and 90 are Accessible Low Floor Bus Service, eleven routes are not. Public access to the is critical from the perspective of access for all. Anecdotally, transit also has a historic connection to the site.

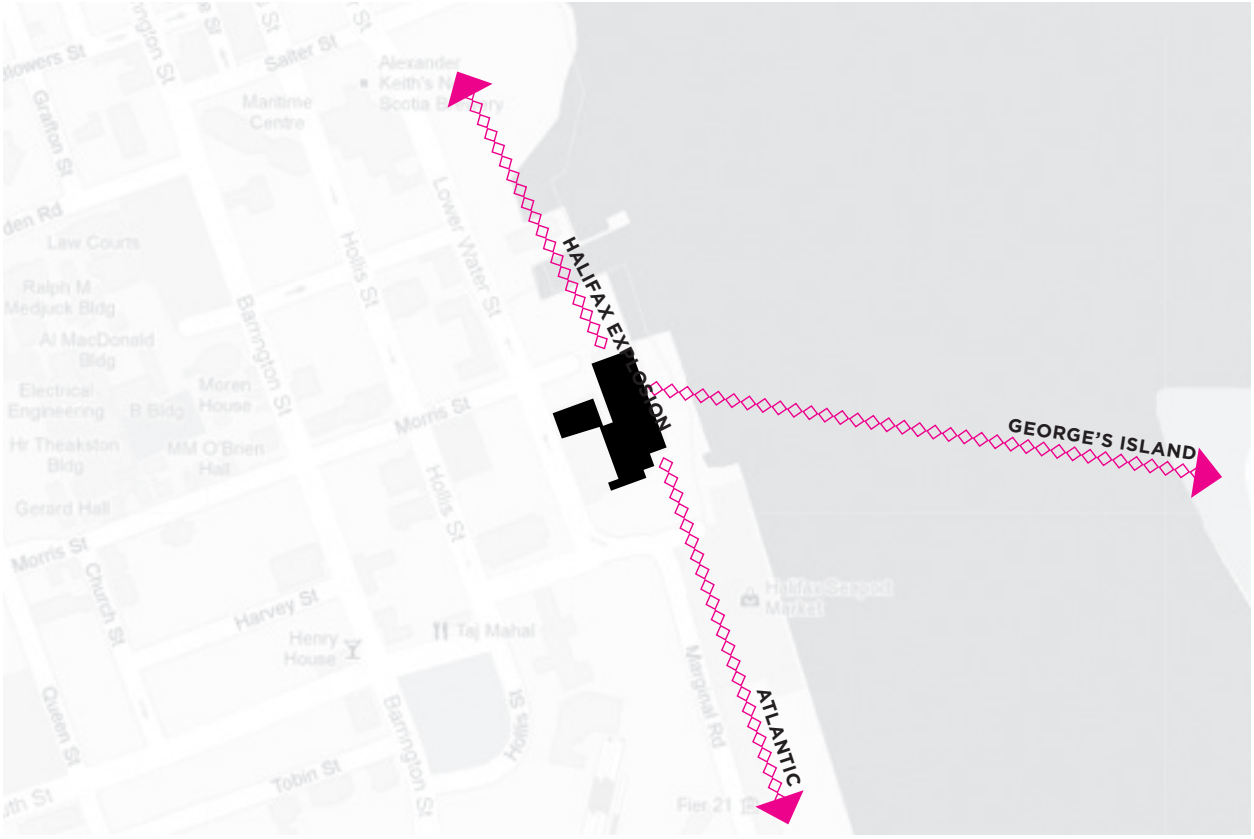

Figure 6.04 Site and surrounding area, Halifax, Nova Scotia.

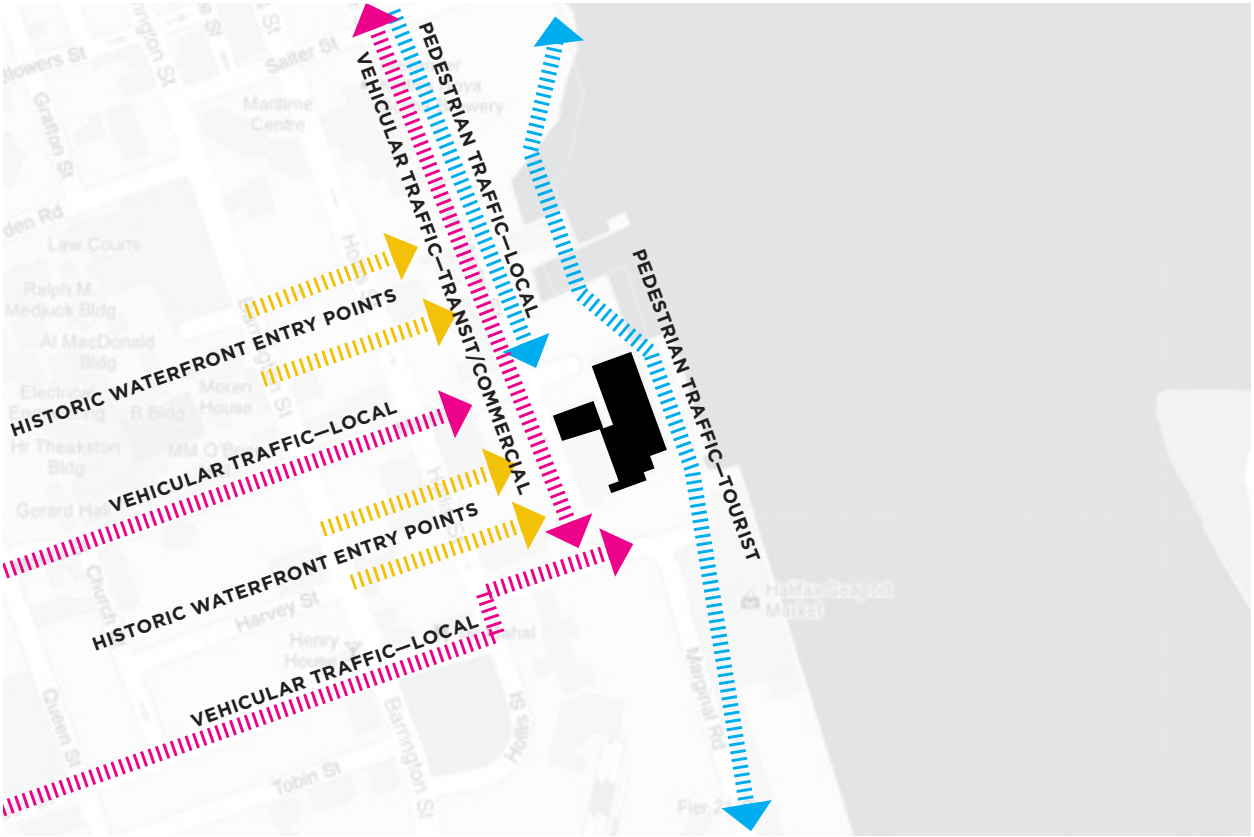

Figure 6.05 Site and circulation, Halifax, Nova Scotia.

Figure 6.06 Nova Scotia Light and Power Company, Halifax, Nova Scotia.

Figure 6.07 Halifax Electric Tramway Company Limited, Halifax, Nova Scotia.

Figure 6.08 Nova Scotia Light and Power Company, Halifax, Nova Scotia.

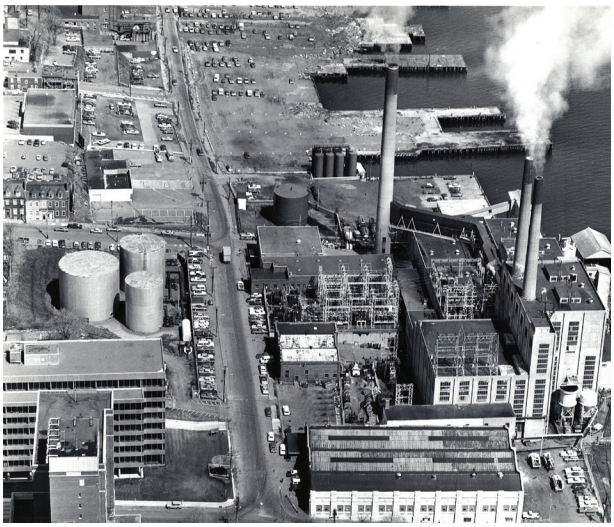

Figure 6.09 Nova Scotia Light and Power Company, Halifax, Nova Scotia.

Figure 6.10 Nova Scotia Light and Power Company, Halifax, Nova Scotia.

Figure 6.11 Nova Scotia Light and Power Company, Halifax, Nova Scotia.

Nova Scotia Power

The following section—primarily summarized from the Nova Scotia Power website—suggests "The roots of electricity development in Nova Scotia stretch back to coal, gas and light companies, and mass transit operators—horse-drawn rail and, later, electric trams—of the mid- to late-1800s. Electric companies began appearing in the 1880s, first in Halifax with the 1881 incorporation of the Halifax Electric Light Co., then in municipalities throughout

the province" (Nova Scotia Power 2017). In 1902, the Halifax Electric Tramway company built the first power generating facility on the Water Street site, home to this practicums proposed museum. While the railroad was key for running supplies (coal and oil) directly to the building for the generation of heat, the adjacent Halifax Harbour provided millions of gallons of water per hour, to help with the thermal generating needs of the plant. When it was first built, the generating station housed two 500 kilowatt engine-driven generators, soon followed by two more generators, and additional turbo generators were added in 1911 and 1916, increasing the total capacity of the station to 6,500 kilowatts.

The Nova Scotia Power website continues by noting in the years following the war, the "Light and Power Company upgraded Halifax's electric public transit system and rolled out electric trolley coaches to replace the trams which had serviced the downtown for decades. The coaches were able to transport more people, farther, and seen as better able to meet the growing demand on the city's transit system" (Nova Scotia Power 2017).

In the years of the First Word War, December 6, 1917 was an infamous for Halifax. The power company, although far from the epicentre of the Halifax Explosion, was not immune to the devastation: nine employees of the utility company were killed and many were injured by flying glass and debris. Like many other war-time efforts, women at the time were employed to carry out a number of activities, including conducting the tram-cars in the years after the start of the war; their efforts to return the much of the city back to service by then end of the day on December 6; and the months that followed leading to the end of the Great War (Nova Scotia Power 2017).

By 1944 a new 12,500 kilowatt generator was operational at the Water Street plant. To meet the demand of a growing post war port, another generator with a capacity of 20,000 kilowatts was added to the plant in 1951. As the years and city progressed, other larger turbines were added in 1953, 1955 and 1957. In 1954, the gas works was demolished and the landmark 180-foot stack was dismantled, to be replaced with a new 240-foot stack, followed by yet another generator was added, a mate to the one from 1957 (Nova Scotia

Power 2017). According to NS Power, "for a time, the plant was a scientific marvel, a wonder of efficiency" (Nova Scotia Power 2013). Around the late 1970s, the site was decommissioned, and sat dormant until 1997, when Electropolis Studios began operating from the premises as sound stage for Eastern Canada's largest film production centre.

According to the Nova Scotia Power website, the environment has had an impact on how the province and Nova Scotia Power serves it's consumer: stronger and more frequent storms—like Hurricane Juan of 2003—led to significant improvements in transmission and distribution infrastructure as well as storm response plans (Nova Scotia Power 2017). In 1984, Nova Scotia Power and the Province introduced the first and still only tidal power generating station of its kind in North America; two wind farms were built in 2010, and; the provinces first biomass power plant opened in 2013 (Nova Scotia Power 2017).

Although the former power generation site of this practicum was not built with the environment in mind, it would be remiss of this project not to address the legacy of power generation past and future in one way or another. Also from the perspective of design, features and processes should be investigated and considered as part of the design solution, from the old railroad and coal-cars to the nomenclature used to identify space. Finally, ecological disaster, due to the site being a former coal burning operation, must be at least considered. While design is often limited to material, form, and function I view system, program, story, service, and experience as integral to my interdisciplinary approach to, what is traditionally considered design. Design solutions proposed later in this practicum may address some of these considerations through program (in the interpretive sense), and through designs (in the traditional sense of the word.)

Tourism and cruise ships

According to Nova Scotia Tourism statistics, Nova Scotia welcomed 2.2 million visitors in 2016 who generated an estimated $2.6 billion in revenue, representing a staggering 28 per cent increase from the year 2010 (MacDonald 2017). Given struggling and failing industries

like natural gas, fishing, and mining the growth in tourism—up 14 per cent for visitors from the United States, up eight per cent for Canadians, and up 11 per cent for overseas visitors—is a welcome sign of some prosperity for a province take pride in its culture and history, scenic routes and natural adventure, and culinary and budding wine and industries.

The Tourism Nova Scotia site quotes the Minister responsible for Tourism Nova Scotia, Mark Furey, "The tourism sector is extremely important to Nova Scotia's economy, employing people in rural and urban communities across our province" and his acknowledgment of the accomplishments of tourism operators in 2016 (MacDonald 2017). Not to be disregarded, statistics like this and support from government is important. Tourism, for many regions and communities—in Nova Scotia and across the Maritime provinces—is all that is left to grasp onto when traditional industries wither, and competition for jobs across the country is fierce. Thankfully, the region seemingly has a something to offer and a vision for sustainable growth.

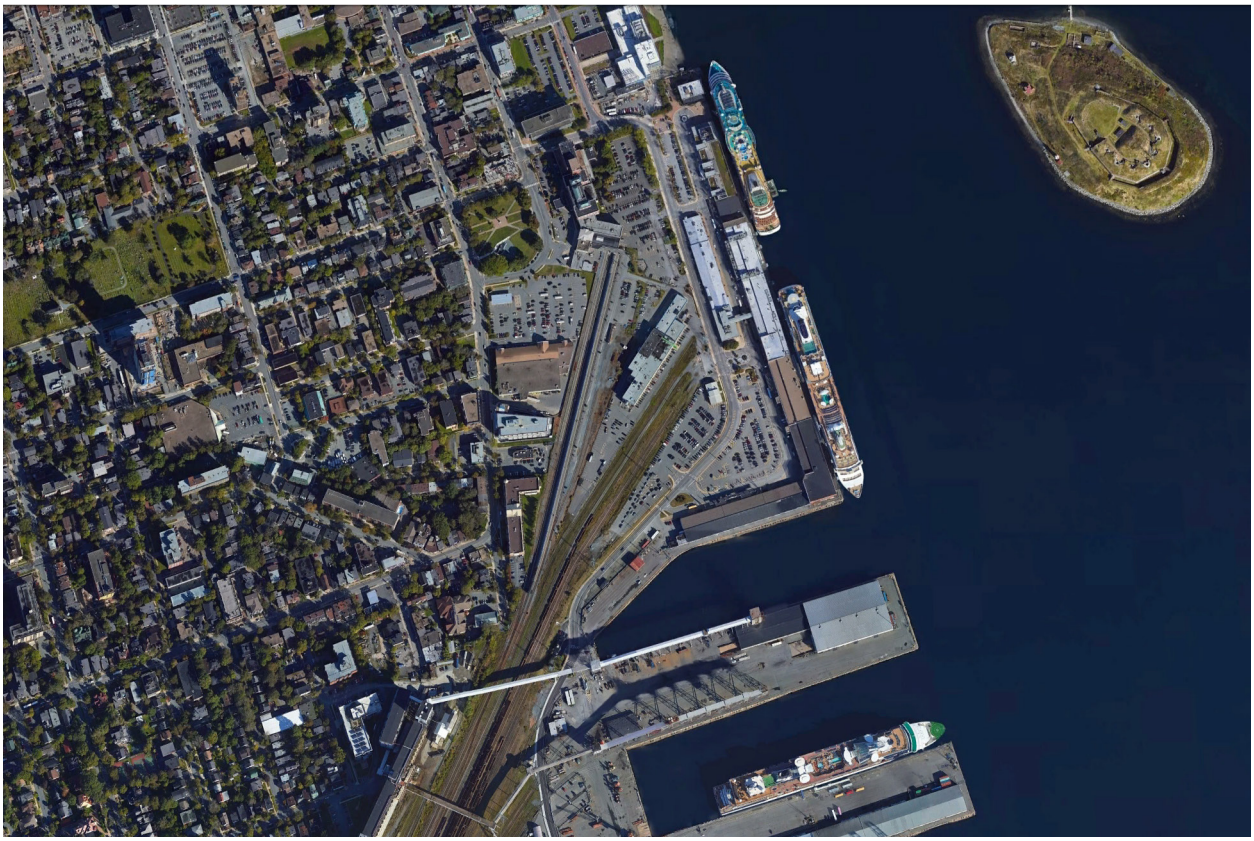

Figure 6.13 Site in relation to cruise ship piers, Halifax, Nova Scotia.

In 2012 the province of Nova Scotia put together a Commission tasked with developing a report to identify "ambitious but achievable goals" to help advance the province on many levels, including the economy, ecology, education, cultural, and immigration to name but a few areas for future prosperity. Known informally as the "Ivany Report", the 2015 One Nova Scotia findings outlined 60 actions in 7 areas aimed at profound change, organized under 19 goals that "are visionary, ambitious, and difficult to achieve" (One Nova Scotia 2015). Goal 14—Tourism Expansion aims to almost double the tourism industry to $4 billion by 2024 by "aligning with the strategy, driving innovation and delivering unique and memorable experiences for visitors"(MacDonald 2017).

Cruise ship traffic makes up for a small portion of visitation to Nova Scotia, but an important one for this practicum project. The port of Halifax operates for three seasons from May until the end of October. Cruise ships berth and debark at dedicated cruise passenger terminals located at Piers 20, 22 and 23. Able to accommodate 4 ships in continuous docking at any given time, the port of Halifax can accommodate the world's largest cruise ships—The Queen Mary II, and all of the Holland America Line, Royal Caribbean International, Norwegian Cruise Line, and Disney lines to name a few. Located at the Piers 20–23 are Pavilion 20 and Pavilion 22 for debarking, shopping, tourist information, and a muster area with access to buses, taxis and limousines, and pedestrian routes along the waterfront (Cruise Halifax & Port of Halifax 2017). Cruise ships make up for an annual visitation of between 217,000 and 252,000 visitor per year for the last five years, arriving via approximately 130–135 cruise vessels per year (Cruise Halifax & Port of Halifax 2017).

Located between the dedicated cruise ship pavilions is one of Canada's national museums, The Canadian Museum of Immigration at Pier 21, where it occupies part of "the former ocean liner terminal and immigration shed from 1928 to 1971" (Canadian Museum of Immigration at Pier 21). The museum of immigration located at Pier 21 is approximately 200 metres from Pavilion 20. The museum proposed in this practicum is located 250 meters from the same pavilion, and is in close proximity to other attractions, including the Maritime

Museum of The Atlantic (650 meters), the entrance to Parks Canada's Citadel Hill (1,100 meters), and the Museum of Natural History (1,450 meters). The proposed museum is also a distance of 3,950 meters from the epicentre of the Halifax Explosion. All museums and attractions mentioned here have the potential to not only draw visitors from cruise ships, but also provide memorable experiences for residents, visitors from other provinces, and guests from overseas.

Anecdotally, in the time since this practicum was initiated Halifax' Discovery Centre, a not-for-profit charitable organization, announced in late 2010, a plan to revamp and move their interpretive centre (science, technology, engineering, arts and math), and later chose an unused wing of the renovated headquarters for Nova Scotia Power at Halifax Seaport as a new home. While coincidental, this is mentioned in support of the location as a viable place for the proposed museum.

Summary of weather conditions

Based on the temperatures (the average low being within 5°c of freezing for 11/12 months) one could consider using passive solar power as a heating strategy. The quantity of degree days play a key role in this determining this as a possibility. Similarly to how the Halifax Electric Tramway Company used the harbour as a coolant, the proximity of the proposed museum to the water, opens the possibility of exploiting the oceans' thermal properties. The notion of passive solar heating and thermal cooling was floated to an engineer while I was studying in Winnipeg. My design was shared with an engineering company, and the design deemed plausible for supporting natural heat recovery and cooling given environmental conditions, design, and site.

7. Program

In the world of design for museums and cultural resources, there are many firms that operate internationally, and are known for their exceptional work. A few of note include: Gallagher & Associates (Washington, DC), VAVE (Offenbach am Main, Germany), Atelier Brückner Atelier (Stuttgart, Germany), Holzer Kobler Architekturen (Zurich), Casson Mann (London) among countless others. Within the industry, it is generally understood that there are two leaders, both at different ends of the spectrum with respect to the services they provide. On one hand, Ralph Appelbaum Associates (New York, NY), designer of Winnipeg's Museum of Human Rights, is known as perhaps the top of the field when it comes to exhibition; on the other hand there is Lord Cultural Resources (Toronto), known primarily as strategists, who provide everything from interpretive plans to business strategies for cultural heritage institutions.

Barry Lord and Gail Dexter were thrust to eminence when they "published Planning Our Museums, a ground-breaking work on the subject [putting] the public first was a new idea at the time and has been the hallmark of Lord Cultural Resources ever since." (Knelman 2017). Recognized globally, Lord Cultural Resources is "…currently working on 70 projects in 44 cities in 12 countries. (Knelman 2017). The Lord Cultural Resources global consultancy has offices in New York, San Francisco, Paris, Mumbai, Beijing. Started by the late Barry Lord and headed by Gail Dexter the firm prides itself as having a strong reputation for leadership, innovation, and excellence in the museum, and cultural heritage sectors (Lord Cultural Resources "About: Profile" 2013). As consultants, it is perhaps their influence in the broader context through the publication of numerous manuals dedicated to management, administration, and strategy that have had the greatest impact in the industry.

Although museums have a mandate to preserve, protect, conduct research and display work, the public views museums as places to see exhibitions. Lord and Dexter suggest that in the same way plays are to theatres, exhibitions are the what the general public considers

the "main attraction or principle benefit" of museums (Dexter & Lord 2002, 12). In general, exhibition typologies can be categorized into two types: permanent collections, and travelling exhibitions.

To better understand the suggested exhibition programming for the museum proposed for this practicum, an overview of the two types must be provided.

Permanent collection

The permanent collection consists of the museums' holdings, a collection of and including but not limited to: artwork (painting, photography, sculpture, installations, etc.), artifacts (artifacts, relics, etc.), fictional and non-fictional work (in various formats including written correspondence text, video, audio, etc), natural history (stones both geological and precious, bones, fossils, etc.), and the list goes on. Collections are active: anything of current or future importance may also be collected by museums and galleries of fine art.

Given the mandate of a museum to preserve and to protect, a display of the entire collection is neither feasible nor appropriate. The sensitive nature of many artifacts involves storing them for periods of time is paramount for preservation purposes (paper, canvas, etc). At other times items are loaned on a temporary basis to other institutions in support of a themed collection or traveling exhibition, therefore removed from display at the originating institution. Upon return of items of a loan, the object may need of storing prior to remounting depending upon the nature of the object. The list for reasons why an entire permanent collection is not entirely on display at all times is to numerous to mention, suffice to say, the collection behind the scenes is often greater than that displayed. According to Lord and Dexter, on average most galleries of art display between five and fifteen percent of a collection at any given time; history museums have slightly better percentages of work on view; while museums of natural history, particularly if they are working museums engaged in active research, tend to have the lowest percentage of work on display (Dexter & Lord 2002, 262). From a design perspective, this identifies the need for storage. A significant part

of a museum's collection is stored. For the public—front-of-house—proper space for the viewing of artifacts in an exhibit is important; for the institution—back-of-house—the collection must stored such that it is accessible, protected, conserved, and there is room for the study of artifacts.

According to Lord and Dexter, collections can be grouped into three basic categories: display collections, study collections, and reserve collections (Dexter & Lord 2002, 263).

In the case of the museum proposed for this practicum, human tragedy and environmental disaster are an inevitable part of our existence, and it is conceivable that the collection may contain objects of all three categories: objects for display, study, and/or reserve.

While the future of any museum is unknown, contingency plans should be put in place to account for the addition of future permanent exhibitions. This is particularly relevant in the case of the proposed museum. There are numerous approaches to this as far as exhibition programming is concerned. The Tate Modern annually remounts aspects of their permanent exhibition (Dexter & Lord 2002, 267). Editing or reinterpretation can play a key role in keeping the exhibition current and relevant. Rotating the collection is another strategy. From a business perspective, it is critical that a museum have long term goals with respect to acquisition plans related their mandate and vision. This is particularly important for the proposed museum, what criteria renders a disaster relevant for collection and eventual display?

Temporary exhibitions

Lord and Dexter state that "temporary exhibitions are indispensable if a museum is to attract adequate numbers of repeat visitors" (Dexter & Lord 2002, 264). It is the idea of continued museum visitations through new acquisitions, updated content, and new exhibitions that is critical to their survival.

Temporary exhibitions—sometimes referred to as travelling exhibitions—vary in

duration of show dependent upon the organizing institution's contractual agreement, the cost associated with borrowing the exhibition and revenue projections for the host institution, and other institutions scheduling with respect to the previous and next showing. It is critical to most institutions to have an ongoing program of temporary exhibitions, and to limit the time that galleries are down due time related to installation and de-installation.

For this practicum project, it is important the program include a temporary exhibition space with ample room to allow for the installation of new displays. The space should be large enough to handle sizable travelling exhibitions; to allow for multiple smaller travelling exhibitions, and to be organized such that there is little to no disruption for multiple smaller on-view temporary exhibitions, when installation/de-installation occurs. These are issues of design.

The proposed museum could also consider an area for current issues and news related to the institution. A space for new acquisitions; a mission/vision statement, or; a goals and results display for information like fundraising. For the proposed museum, a news from around the world area might be of importance, given.

The proposed museum should also consider future expansion. Short-term, the location of temporary exhibition space may be converted into permanent exhibition halls, if required; a long-term plan for larger expansion however should be considered. The nature of disasters is such that they are neither limited to time nor location. An aspect of sustainability, in this case, considers a long term strategic for expansion to ensure resources expended for the development of the museum are not moot if the museum outgrows the space.

The exhibition program

The design of individual exhibitions is out of scope for this practicum project. From a programming perspective however, the identification of the type of exhibits and their location within the building should be considered in scope. Furthermore, the identification of permanent and temporary collection exhibition space is also considered in scope.

The proposed museum shall also consider areas designated to have standalone artifacts, interpretive media, and other interpretive media in support of the museum's mandate.

The permanent collection

Work from the permanent collection shall be centered around the following proposed exhibitions:

- *A Story of Survival: Sable Island, Graveyard of the Atlantic*
- *Halifax Wrecked: The Halifax Explosion of 1917*
- *The Unsinkable: the Titanic and Halifax*
- *On the Rocks: the Shipwrecks of Nova Scotia*
- *Men in the Mines: Mining in Nova Scotia, 1720–2000*
- *Lost at Sea: The Ocean Ranger story*
- *Swissair 111: Tragedy, Loss, and Change*
- *A Toxic Past: The Sydney Tar Ponds and Coke Ovens*
- *Climate Change: The Legacy of Coal Burning Generators*

The titles above mostly are fictitious, and developed solely for this practicum project exercise, however they are based on much of the permanent collection of the Maritime Museum of the Atlantic of which the whole title or aspects of the titles are the same (Nova Scotia Museum "What to See & Do" 2017). The exhibitions may have permanent places of display within the museum programmed as to supported a specific view plane, based on current or proposed building infrastructure, or to exploit a physical attribute of the building, the site, and the new design. As previously mentioned, the entire permanent exhibition may not be displayed, and instead a collection awaiting display as part of exhibition rotation.

The Temporary Exhibitions

In addition to a permanent collection, the proposed museum shall include space to house temporary exhibitions. Ideally, one or more—depending on size of the exhibition—temporary exhibitions can be on display at any given time. The design of these is out of scope, however, for the purposes of this practicum project, I have identified three potential temporary exhibitions as examples:

- *Moving Forward: Life After the Great East Japan Earthquake (current travelling exhibition)*
- *Disaster Relief Architecture (proposed travelling exhibition)*
- *A Day in Pompeii (current travelling exhibition)*

Travelling exhibitions

Public programming related to exhibitions is important to any museum, and often associated with touring exhibitions. Although the A Day in Pompeii exhibition is now closed, the Oregon Museum of Science and Industry (OMSI) presents two examples of how to leverage an exhibition to reach different audiences. *Science Pub Portland: Volcanoes* is a evening of presentations from international volcano scientists. Meant to be light-hearted and educational at the same time, the series of *Science Pub Portland:...* events take place on site at the museum or at a local bar and are open to the public free of cover fee. *OMSI After Dark: Explosions* is an event associated with the Pompeii the exhibition and part of the *OMSI After Dark* series aimed at the 21-and-over crowd (drinking age in Oregon) with a focus on interpretation and on member acquisition and retention. Young members today are future patrons of the arts. Both these are excellent examples of public programming and events associated with temporary and permanent exhibitions. From a design perspective, classroom spaces, lectures halls, meeting and convention facilities, study areas, dedicated and rotating libraries, and function spaces
are all spatial programming considerations when designing the proposed museum, as are their spatial relationships to the temporary and permanent exhibitions they may support.

Unlike permanent exhibitions, temporary exhibitions often have opening events for members and elite members, sponsors, members of government, special guests, curators, subject matter experts, and other VIPs. The events may be composed of a lecture, opening remarks, or both. Openings typically involve speeches, food, and/or drinks. Opening events are an important part of programing for museums. As such, the design of the proposed museum should consider how the space accommodates for functions after hours when the permanent collection is closed; how catering is accommodated for; areas for temporary furniture; the location of restrooms; as well hoarding for off-limit areas.

For travelling exhibitions, museum infrastructure requirements are complicated. Legal requirements of the loan around security, light, and environmental controls are only one of many issues related to the display of borrowed collections. Not only is the host museum responsible for overseeing the installation of artifacts and items for display, the host must also store all of the packaging—containers and crates, for example—in a safe and controlled environment. This places a burden on some institutions: some have storage facilities off-site either owned (dedicated), leased (term), or rented (temporary). Others institutions accommodate for temporary storage on-site. Depending upon the locale of the museum, the real-estate for the storage of shipping crates is a cost for items that will never be displayed. In addition to security of the collection on display and the shipping containers in temporary storage, the museum is also responsible for the collection when it reaches its premises, therefore security on-and off-loading is critical. For the proposed museum in this practicum, loading bays, security desks, and the space for onsite storage will must be considered.

Museums have different revenue models: some museums have a single entrance fee that includes temporary exhibitions, others have a two tier system to where permanent collections and temporary exhibition have different prices. Another model suggests a flexible stance that depends on the nature of the temporary exhibition: some travelling exhibitions are considered “blockbusters” that are costly to mount but have the potential to

draw the volumes necessary to justify an additional fee to cover the cost of the loan; while the same museum may mount a lower cost travelling exhibit to keep the museum program active without an additional entrance fee. As stated in previous chapters, business strategies are not part of this practicum, flexibility however is. Where this has implications on design is ticketing and the entrances to each exhibition.

There should be a clear distinctions—physical and otherwise—between the permanent collection and travelling exhibitions, given the potential need of two tiered entrance fees. If a travelling exhibition necessitates an additional fee, and a ticket can be purchased for one or both of the exhibitions—the temporary exhibition and/or the permanent collection—then there is a programming need to separate the temporary from the permanent such that it is not disruptive to the user. Given this practicum project also focuses on persons with disabilities, notions of redundancy is important: it is key as not to unduly disrupt known navigation routes and patterns for the returning disability constituent visitor.

Museum of Human and Natural Disasters organizational structure

The following concludes the Program chapter, and focuses on the human resources required to run an institution. Lord and Dexter are considered as the top of their field when it comes to advising institutions on administration and management. While impossible to predict the exact staffing required for the propose museum, I include the following as a general outline for front- and back-of-house resource requirements.

1. GOVERNANCE

Board of Trustees. The Board of Trustees is group of appointed (not elected) individuals—from business, government, the public, and otherwise—charged with directing the directing the policies of the institution as defined by the institution's bi-laws. Their oversight includes and appointing (at times discharge) senior management personnel, the financial activities, and consequences arising from the institution and its staff. The board

as a whole and as individuals are liable for the financial and other consequences of the institution's activities. (WebFinance 2013). A typical museum board of trustees may have:

- 8–12 trustees
- Executive Assistant, Board of Trustees

While no spatial requirements are required of the board, meeting rooms are to be considered.

2. EXECUTIVE OFFICERS

Director and Chief Executive Officer.

The Director and Chief Executive Officer (CEO), together with other chief officers and directors are responsible for determining and implementing the institution's policies and fulfilling its' mandate. The Director and CEO (one or multiple individuals) leads, manages, and supervises the organization (Lord and Dexter). A typical museum includes:

- Director
- Chief Executive Officer (CEO)
- Executive Assistant, Director and Chief Executive Officer
-

Executive Committee

The Executive Committee comprises of high level managing directors within the organization who are responsible for a major business unit and report to a chief executive officer (Lord and Dexter). Positions include: The Executive Committee assists the Director/ CEO in defining the strategic direction for the institution, and includes:

Chief Operating Office

- Chief Operating Officer (COO)
- Executive Assistant, Chief Operating Officer

Chief Financial Office

- Chief Financial Officer (CFO)

- Executive Assistant, Chief Financial Officer

Chief Curatorial Office

- Chief Curator (CCO)
- Executive Assistant, Chief Curator

Chief Brand Office

- Chief Brand Officer (CBO)
- Executive Assistant, Chief Brand Officer

Human Resources

Reporting directly to the Director/CEO, Human Resources are responsible for the recruitment, management, and development staff. Responsibilities include advertising and recruiting, training, pay, contracts of service, pensions, and welfare. (Lord and Dexter).

Positions include:

- Managing Director, Human Resources
- Manager, Human Resources
- Human Resources Advisor
- Payroll and benefits Specialist

3. OFFICE OF OPERATIONS

The Office of Operations manages the daily operations of the organization. The Managing Director reports to the COO and supervises various departments related to building performance and the maintenance of the facility/infrastructure including: information technology, security, and various visitor related services. (Lord and Dexter).

Positions include:

- Managing Director of Operations
- Executive Assistant, Managing Director of Operations

4. BUILDING AND FACILITIES

The Building and Facilities unit maintains the building and grounds, responsible for, but not limited to, cleaning, heating and cooling, indoor environmental conditions, recycling, and lighting in non-gallery areas. The department is responsible for managing all aspects of the facility with respect to ongoing maintenance, daily refurbishment, as well as devising and managing long term improvement strategies (Lord and Dexter). Positions include:

- Manager, Building and Facilities
- Grounds and front-of-house services
- Environmental and mechanical services controls mechanic
- Carpenter, front of house/non-gallery
- Electrician, front of house/non-gallery
- Day supervisor and manager, custodial services
- Evening/Night supervisor, custodial services
- Custodians (4)

Security and Safety

Security and Safety manages all aspects related to surveillance of the building and safeguarding the collection in addition to providing visitor services in the galleries (Lord and Dexter). Positions include:

- Manager, Security
- Day supervisor
- Evening/Night supervisor
- Security Officer (30)

Information Technology

The Information Technology (IT) unit performs four main functions: it ensures smooth operation of all computing facilities from photocopiers to communication equipment; ensures the security of information assets; develops/procures new Information Systems as

required; and leads development of the Gallery Information Strategy (Lord and Dexter). Positions include:

- Managing Director, Information Technology
- Director, Facilities & Security
- Director, Architecture and Infrastructure
- Manager, Information Security
- Manager, Information Technology Services
- Officer, Information Technology Services

Shipping and Receiving

Shipping and Receiving staff work on the main Gallery switchboard to direct incoming inquiries (move to VI), and collect and distribute all incoming- and out-going deliveries. Staff are also responsible for managing the deliveries through the shipping and receiving bays(Lord and Dexter). Positions include:

- Shipping and Receiving Officer
- Telecommunications Officer
- Porterage

Special Event Services

Special Event Services organize functions for in-house clients as well as manage facility rentals for corporate and private events such as meetings and small conferences, receptions, special tours (front- and back-of-house), private events, and lectures and presentations. The special Event Services plan, organize and manage all aspects of the event including staffing, full-service event planning, catering, audiovisual staffing and equipment, electrical and lighting support, vendors for music, lighting design, floral needs, and valet parking. In addition to guests services, Special Event Services manages the booking of lecture halls and meeting spaces for in-house staff use (Lord and Dexter).

Positions include:

- Director of Special Events
- Manager of Special Events
- Meetings & Special Events Coordinator
- Special Events Coordinator
- Special Events Coordinator

5. OFFICE OF FINANCE

The Office of Finance is responsible for all financial operations of the organization including the policy and procedures, accounting of funds, budgetary systems, payroll, banking arrangements and payments (Lord and Dexter). Positions include:.

- Controller and Managing Director, Finance
- Executive Assistant, Managing Director of Finance

6. FINANCE

- Finance Officer
- Accounting Clerk
- Purchasing Officer

7. OFFICE OF BRAND EXPERIENCE

The Office of Brand is responsibility for determining and implementing policies that portray the museum's mandate, image, experience, and promise. This office oversees marketing, advertising, design, public relations and customer service departments (Lord and Dexter). Positions include:

- Managing Director of Brand Experience
- Executive Assistant, Managing Director of Brand Experience

Brand & Business Development

- Director, Brand & Business Development
- Administrative Assistant, Brand & Business Development
- Manager, Marketing & Sales
- Manager, Earned Revenue
- Manager, Retail/Branding & Licensing
- Promotions Assistant

Design + New Media & Collections

- Director, Design + New Media & Collections
- Manager, Web Presence
- Manager, Design & Production
- Web Programmer
- Production Artist
- New Media Content Specialist
- Head of collections
- Library Specialist
- Digital Collections Technician
- New Media Project Coordinator
- Image & Copyright Coordinator

Visitor Experience

This Visitor Experience unit is responsible for providing a welcoming, safe and secure environment for visitors. Visitor Experience are responsible for the provision of information to visitors, ticketing for events and exhibitions. In addition to face-to-face functions, Visitor Experience staff are responsible for managing all museum collateral related to the visitor experience, including visitor brochures, maps, guides, and hand held computer devices and other disability-directed communication tools (Lord and Dexter).

Positions include:

- Telecommunications
- Manager, Visitor Experience
- Reception staff (4–6)

Volunteer Services

Volunteers account for a large portion of the visitor experience, and the unit is responsible for providing a in gallery information, guided tours, and assisted guidance for visitors. Volunteer Services are responsible accurate and informed information delivery to guests. Regular training is a responsibility of this department. Positions include:

- Volunteer Services Coordinator
- Docents (50)

Museum Practice Division

- Exhibition Project Coordinator
- Exhibition Project Coordinator
- Exhibition Project Coordinator

Learning & Programming

- Director, Learning & Programming
- Manager, Education Programs
- Manager, Public Programming
- Interpretive Planner

Research & Curation

- Acting Director, Research & Curation
- Director, Research & Curation
- Curators (4)
- Research

8. Design

The core concept

The *parti* developed for this practicum is based on Tzvetan Todorov's theory of narrative structure summarised as: *equilibrium*, *disruption*, *resolution*, and *new equilibrium*. Graphically, the sketch is represented by a horizontal bar, sliced by a line which interrupts but does not sever the flow left to right. The bar in *parti* diagram is indicative of a scenario interrupted, with a start and end: a story, an exhibition, an experience. To describe the concept for this practicum project, I propose three words: *environment*, *event*, and *legacy*. *Equilibrium* in reference to the state before, is the *context* for any exhibition, the *environment* prior to an unforeseen event. *Disruption*, while perhaps obvious is in reference to an *event*: a disaster. Not mentioned in my choice of three words, is a word for *resolution*; no less important, it is perhaps implied as the immediate aftermath of a disaster. Finally, *new equilibrium* is represented as *legacy*.

Figure 8.01 The *parti* developed for this exercise was based on Tzvetan Todorov's theory narrative structure that can be described as: *equilibrium*, *disruption*, *resolution*, and *new equilibrium*.

Figure 8.02 Todorov suggests that stories begin with an equilibrium, are disrupted by an event, restored by a resolution, and returned to a new equilibrium. For the purpose of this practicum, I use the guiding principles: *environment*, *event*, and *legacy*.

Figure 8.03 The Virgule (/), a punctuation mark used to separate related items of information, has gained prominence as a typographic device as a result of the digital age. While not solely identifiable with URLs (//:), it is commonly used to relate like ideas.

The notion of a *parti* also translates well to interpretive planning. Most every exhibition process starts with an interpretive plan, where the question is asked: what do we wish the visitor to come away with understanding after experiencing the exhibition?

In the world of interpretive planning, this translates to something called the *core concept* or the *big idea*. The interpretive key idea is as a premise and a tool for making choices about

primary content, interpretive emphasis and design approaches, to help inform programming and design, and to give the exhibits cohesiveness and impact. The key idea is the lens to use when making decisions about spatial organization, narrative themes and threads, content, and design. It is an internal tool, expressing the core approach, and decisions are evaluated against this core idea. For this practicum project, I used the following summary statement as the core idea:

> *Man-made and natural disasters, while disruptive and destructive, have the potential to initiate positive change.*

The *parti* was used to inform the development the logotype for the proposed museum. For this aspect of the project, it was important to develop a name and mark that was informed by the parti: *equilibrium*, *disruption*, *resolution*, and *new equilibrium*. I also wanted the name of the museum to be support the core idea: *Man-made and natural disasters, while disruptive and destructive, have the potential to initiate positive change.*

Brand

There are countless museums in the world. Many of the greatest are not only known by their full name, but also their acronym: Museum of Modern Art (MoMA), Museum of Art and Design (MAD), Victoria and Albert Museum (V&A), Museum of Fine Arts Boston (MFA), and Museum of Contemporary Art (MoCA) to name a few. The an acronym is a "shorthand" form of the full name, and used interchangeably. For many reasons, I wanted to exploit this approach. The more descriptive a museum name (figure 8.05), the longer they become: an acronym would help solve this. I also wanted to mitigate negative associates inherent in words like disaster, not to dismiss the word disaster, but to make relate it more to the human condition.

Human and Natural Disaster Museum

Figure 8.04 The signature

An abbreviation of initial letters pronounced as a word had the potential to support the notion of a *new equilibrium*. Numerous names were explored for this exercise, and a museum name chosen in support of the content (disasters) and the core concept (legacy). The *Human and Natural Disaster Museum* translated very well to *HAND* (figure 8.06).

Figure 8.05 The logo

The *signature* and the *logo* in combination (figure 8.07) further supported the *parti* suggesting something good (hand) can be an outcome of a disruptive event.

Figure 8.06 Signature/logotype lock-up.

It was important that a bilingual lock-up was designed to include both French (figure 8.07) and English dominant (figure 8.08) versions. Both reference the implied *virgule*.

Musée de catastrophe
naturelle et humaine
musée MCNH

Human and Natural
Disaster Museum
HaND museum

Figure 8.07 Bilingual lock-up, French dominant.

Human and Natural
Disaster Museum
HaND museum

Musée de catastrophe
naturelle et humaine
musée MCNH

Figure 8.08 Bilingual lock-up, English dominant.

Figure 8.09 Logo Construction

Figure 8.10 Lecture series poster.

From brand and public programming perspective, the acronym has much potential (figure 8.10). The acronym also resonated when considering the notion of "design within reach", specifically the haptic nature of perception and the concept of keeping things within reach for persons with disabilities including persons with mobility issues, low or no vision, and deaf and hard of hearing. This suggests the use of close-cropped images of hands, or the employing phrases that refer to hands.

firsthand "all hands on deck" lend a hand "...work for idle hands" force someone's hand
a free hand the upper hand hand-me-down get ones' hands dirty give a hand a guiding hand
hand in hand in good hands hand in something hand in glove hand-off hand something on
hand out hand over hand over fist hands down hands-off hands-on a helping hand
have your hands full heavy-handed "like the back of one's hand" hand to mouth an old hand
"on the other hand" raise one's hand play into someone's hands out of hand take by the hand
show of hands "when one hand washes the other"

Figure 8.11 Phrases using 'hand" for use with marketing collateral.

Figure 8.12 Typical exhibition posters.

Figure 8.13 Typical public program posters.

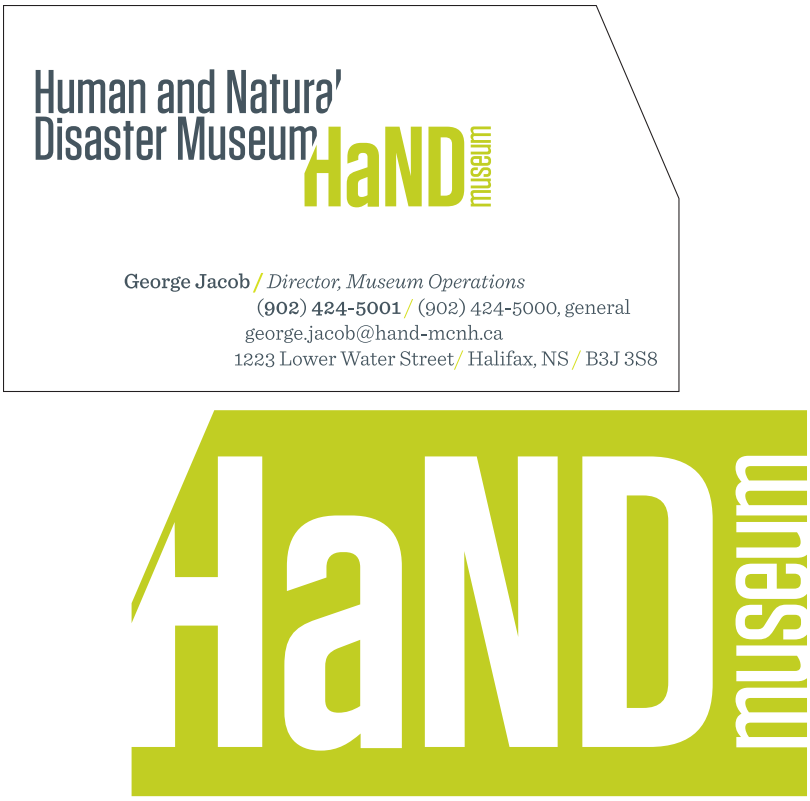

Figure 8.14 Business Card (from and Back)

Figure 8.15 Stationery.

Figure 8.16 Service marks

The process

This practicum project was not an inclusive design process, rather one based on a literature review. In the beginning of the practicum, my advisor and I ruled out an inclusive design process due to various considerations including time, having a facility to test, and other variables.

If the Human and Natural Disasters Museum was a real project, I would propose an inclusive design process as part of the development. Cambridge University suggests "Inclusive design emphasizes the contribution that understanding user diversity makes to informing these decisions, and thus to including as many people as possible" (Cambridge University 2017). My direct experience observing this process with disability groups for the design of the Human Rights Museum, along with a course assignment working with the subject matter experts from the CNIB and members of the blind and low vision community only confirms my belief in the importance of inclusive design.

Given the relevance of the Halifax Explosion to the formation of the CNIB, the Human and Natural Disaster Museum would be remiss not to work with this group on the development of the museum. However, the process would also need to include several perspectives and engage representatives of the deaf community, the Accessibility Directorate of Nova Scotia, and groups that represent cognitive impairments, to name just a few. Furthermore, if "user diversity covers variation in capabilities, needs and aspirations " (Cambridge University 2017), then there may be other groups to involve, not the least of which are the survivors of disaster.

The building

The proposed museum consists of eight floors, each floor is divided into quadrants, remnants of renovation and expansion over decades. Prior to my design, some zones—boiler-houses, turbine halls, and interior street—were as low as three floors, and others ranged in height up to eight at the maximum (figure 8.09). The four quadrants are

identified as Boiler House North (North-East corner); Boiler House South (South-East corner); Turbine Hall North (North-East corner); and Turbine Hall South (South-East corner). The naming is purposeful. From a visitor experience and interpretive perspective, the names are referential to the building's original intent as a power generation station.

From a communication perspective, the names will be used in signage, guidebooks, even verbal descriptions, and all exhibition halls are located within the former turbines halls. From navigation perspective, the use of cardinal directions is useful for both the disabled and non-disabled visitor. The following summarizes the programming:

	Boiler House North (NE)	Boiler house South (SE)	Turbine Hall North (NW)	Turbine Hall South (SW)
Boardwalk (harbourside)	Water front: retail preparators	Water front: dining security	Exhibiton storage preparators conservation	Exhibition storage preparators registrar shipping receiving
Level 1 (street side)	travelling exhibition	coffee shop museum education *Climate Change: The Legacy of Coal Burning Generator*	auditorium	museum administration
Level 2	*A Toxic Past: The Sydney Tar Ponds and Coke Ovens*	*The Unsinkable: The Titanic and Halifax*	docents/volunteers	museum administration
Level 3	*Halifax Wrecked: The Halifax Explosion of 1917*	*Lost at Sea: The Ocean Ranger story*	—	museum administration
Level 4	*Men in the Mines: Mining in Nova Scotia, 1720–present*	*A Story of Survival: Sable Island, Graveyard of the Atlantic*	n/a	museum administration
Level 5	*Swissair 111: Tragedy, Loss, and Change*	*On the Rocks: the Shipwrecks of Nova Scotia*	n/a	museum administration
Level 6	n/a	permament collection t.b.d.	n/a	n/a
Level 7	n/a	Function facility rental	n/a	n/a
Level 8	n/a	Dining	n/a	n/a

NOTE: between the Boiler House and turbine Hall, on the Boardwalk and first floor (is the Avenue, a volume situated between the two wings.

Table 8.01 Programming summary.

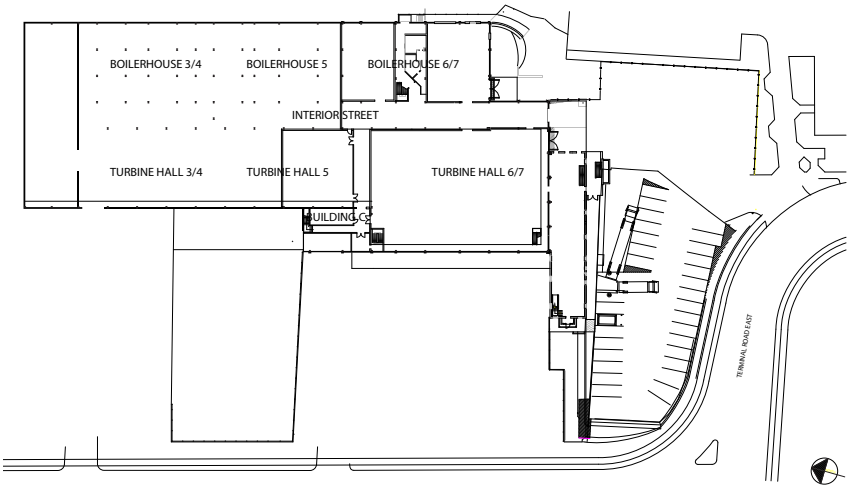

Figure 8.17 As-built plan, prior to renovation, showing the boiler houses and turbine halls.

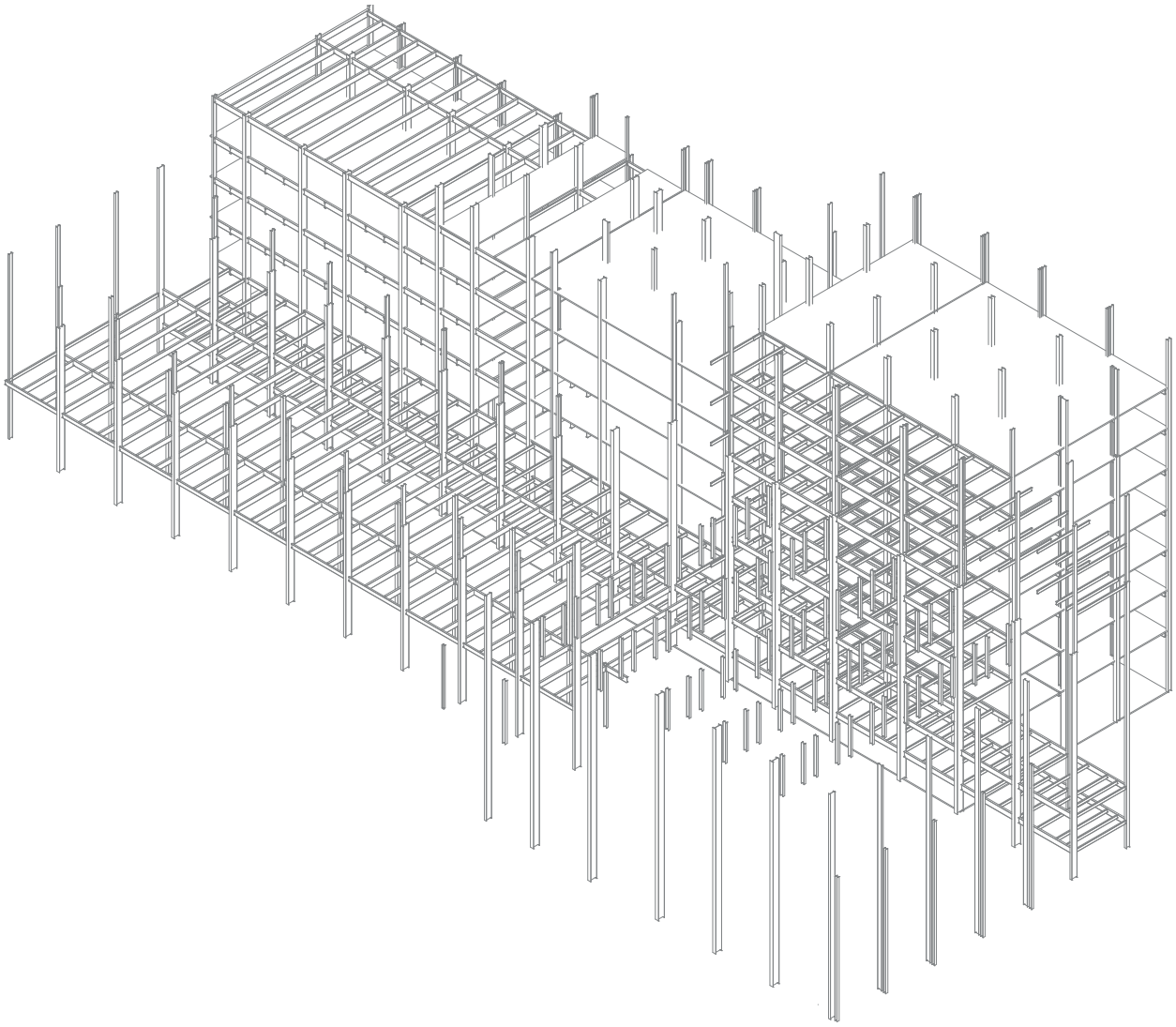

Figure 8.18 The existing structure, which grew in size over many decades, had a total of 43 different column and beam types and a grid indicative of years of incremental growth.

THE EXTERIOR

From Lower Water Street to the harbour (East to West respectively), the building has is clad in different was. From the Lower Water Street side (West facades), excluding the entrance, the building generally appears as it was prior to renovation: exposed weathered concrete, with existing fenestrations. The intent is to repair and clean the concrete when required, but leave the building as intact as possible as a reference to it's previous life as a power generation station (West side of the building, and North-West and South-West corners). In support of this concept the existing bus support transmission infrastructure on top of Turbine Hall South will remain. Some of the fenestrations have been opened up to allow daylighting the interior of the administrative wing (Turbine Hall South), others are co-opted for mechanical. In general, the streetside (West side of the building) is considered the primary entrance. From the perspective of the core idea, the West side (the Turbine Halls) represents the *equilibrium* state of the building.

Between the two Turbine Halls and the two Boiler Houses is a long volume that runs North-South separating the two wings (between the former turbine and boiler halls). I have renamed this space *the avenue*. From the exterior, it is seen as a blackened vertical volume, generally separating the east-side of the building from the west-side. Both interior and exterior it serve a purpose. In support of the concept, this visual element reinforces the idea of *disruption*, serving as a contrast to the two wings in presentation. From the interior—to be described in detail later in this chapter—the avenue serves as to separate the administrative wing and from the more public wing (the exhibition halls). The avenue also serves to house the permanent exhibition on the main floor: *Climate Change: The Legacy of Coal Burning Generator*. At the boardwalk level, the avenue acts as circulation from one end of the building to the other for transporting goods, moving shipping crates to and from storage, and giving access to the two service elevators.

From a functional perspective, the avenue serves another purpose. Although the volume runs from SSE to NNW, the west façade will receive some sun. The volume itself is meant to

act as a heat chimney, capturing warm air in the winter, for circulation in the administrative wing, and to pull cool air from the harbour during the summer. This is achieved through a closed-off volume, from the fourth floor to roof. The interior volume of this space utilizes dark coloured, sand-filled pipes that generate passive solar heat.

From the exterior, the avenue visually separates the two wings. To the east of the avenue on the harbour-side are the two Turbine Halls, North and South, that collectively form the east wing. While this wing consists of two discrete volumes (North and South), it is clad such as to visually united the two. The cladding is purposeful in it's materiality. Glazing wraps three sides (North-East, East, and South-East) of the two buildings. The glazing is mounted off from the existing building such that the original structure is visible behind the glass curtain walls creating a narrow envelope. From a concept perspective, this long east wing acts to support the concept of *new equilibrium*. From a functional perspective, the cladding serves to trap air between the curtain wall and the existing concrete wall. The goal is for this to help with a proposed natural ventilation system. At irregular intervals along the façade are new fenestrations, generally placed where existing openings were at one time. These openings serve the function of providing rest stops for visitors traversing the exhibition halls, allowing the visitors to leave the exhibition hall to have a view to the harbour and ocean.

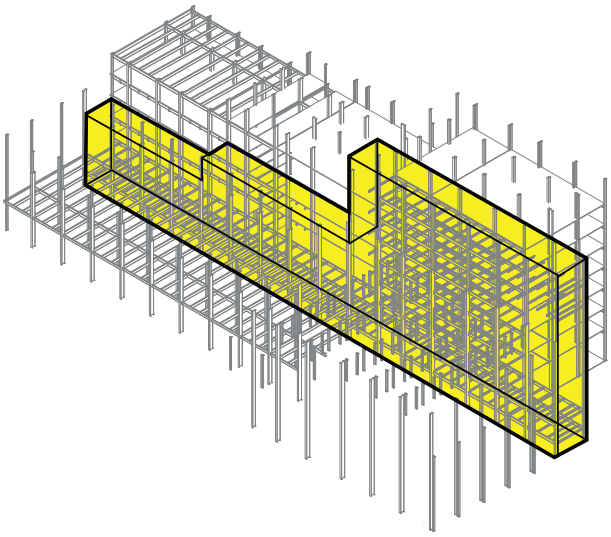

Figure 8.19 The avenue separates the boiler houses and turbine halls.

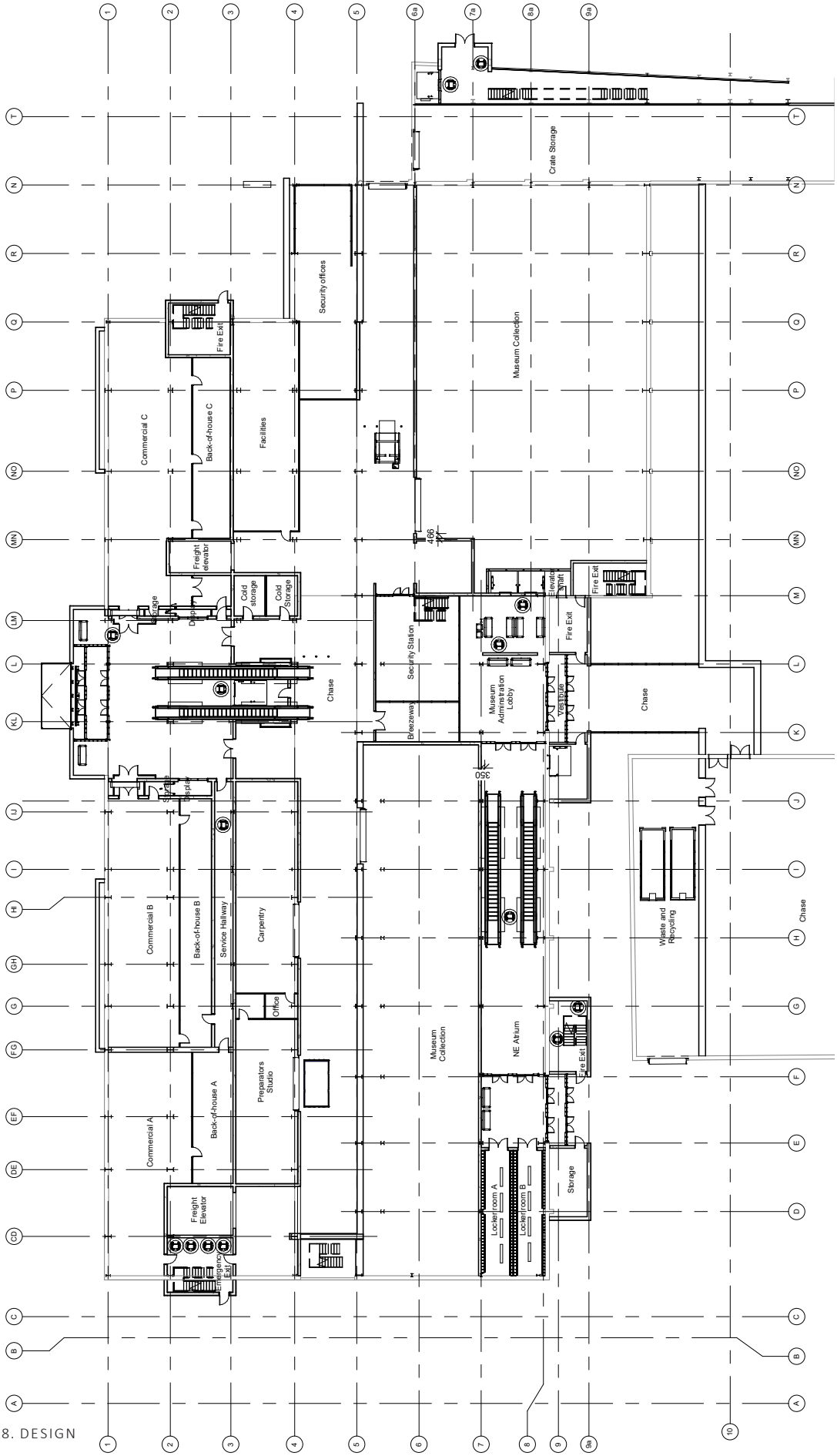

Figure 8.20 Boardwalk level

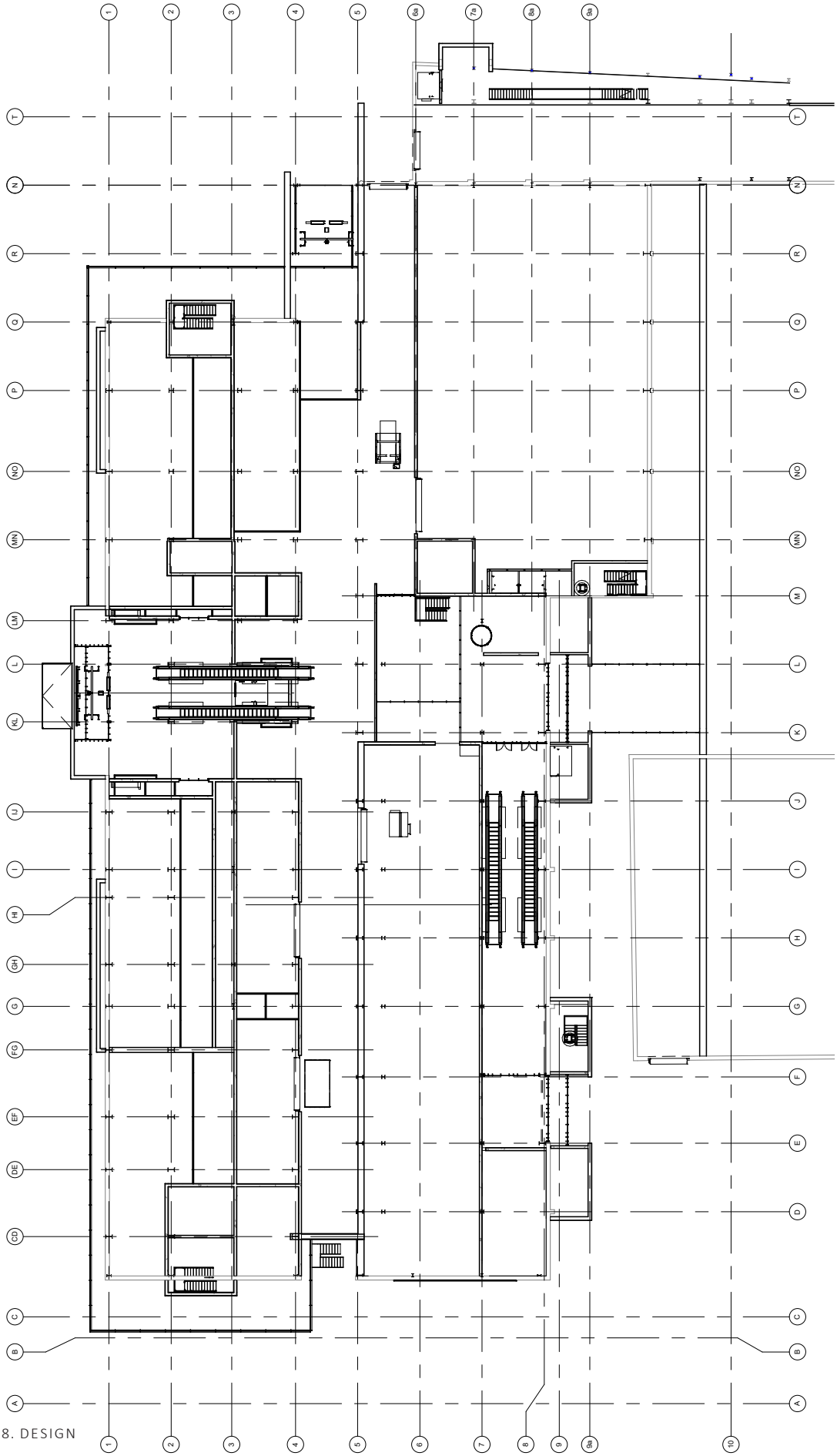

Figure 8.21 Level 0

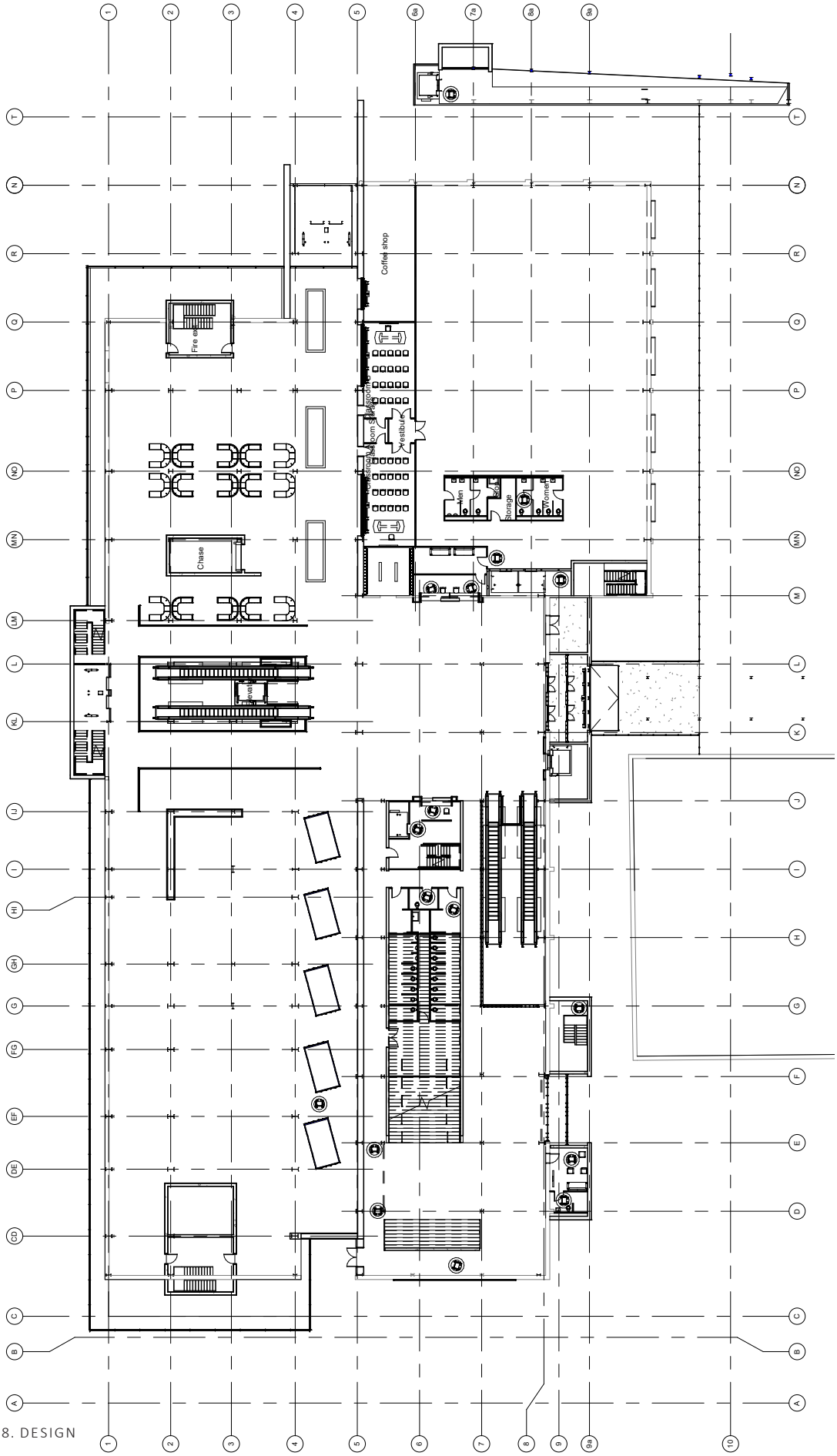

Figure 8.22 Level 1

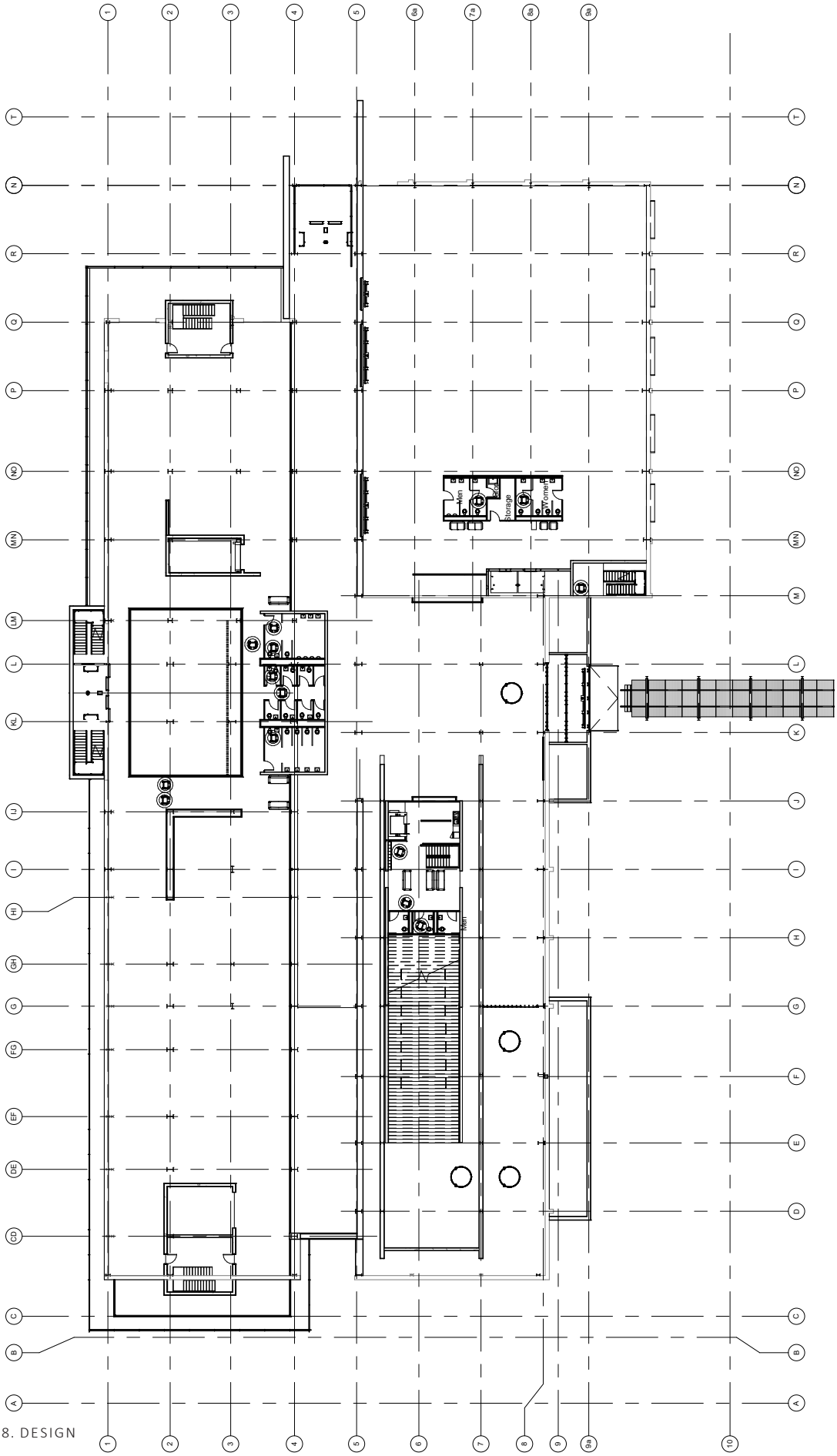

Figure 8.23 Level 2

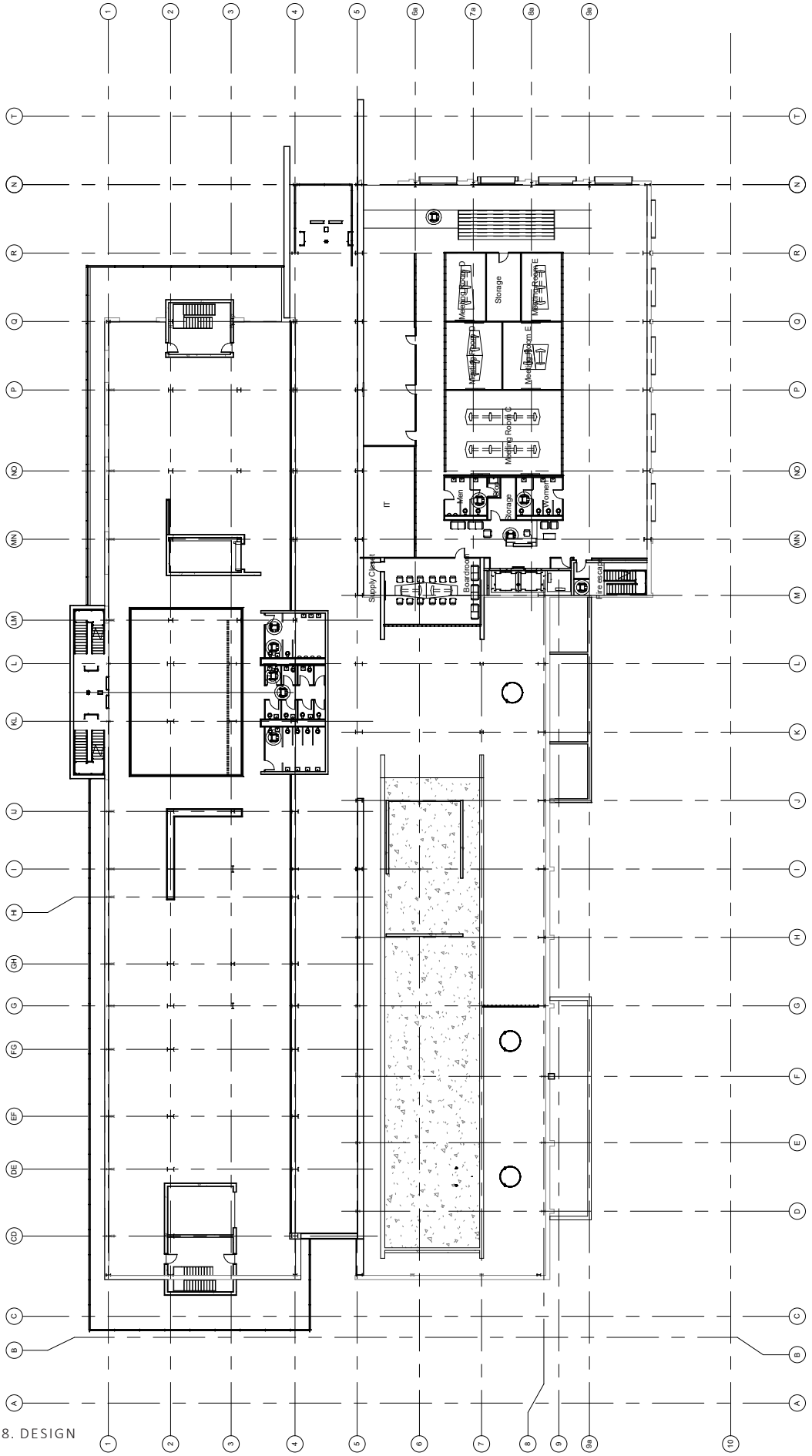

Figure 8.24 Level 3

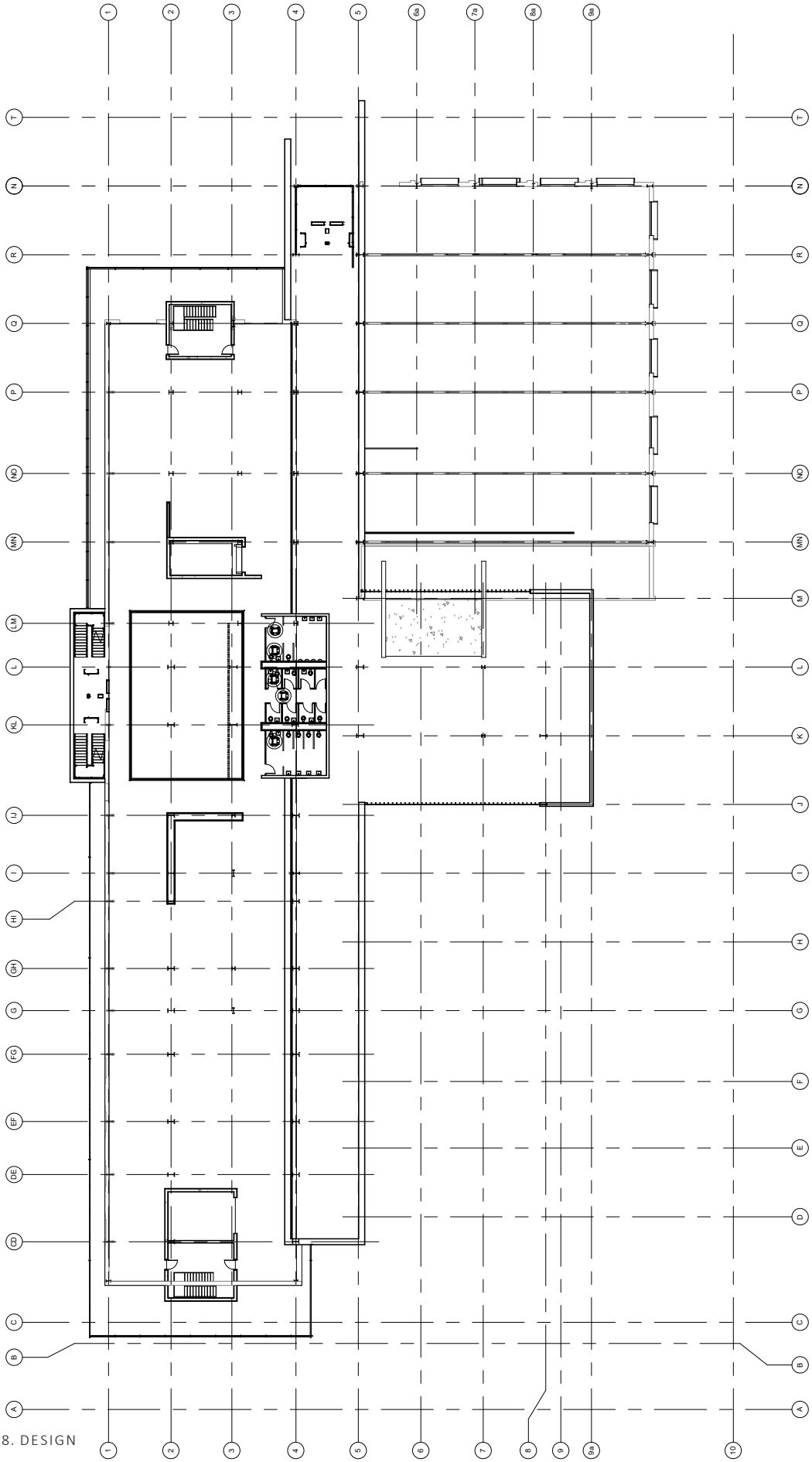

Figure 8.25 Level 4

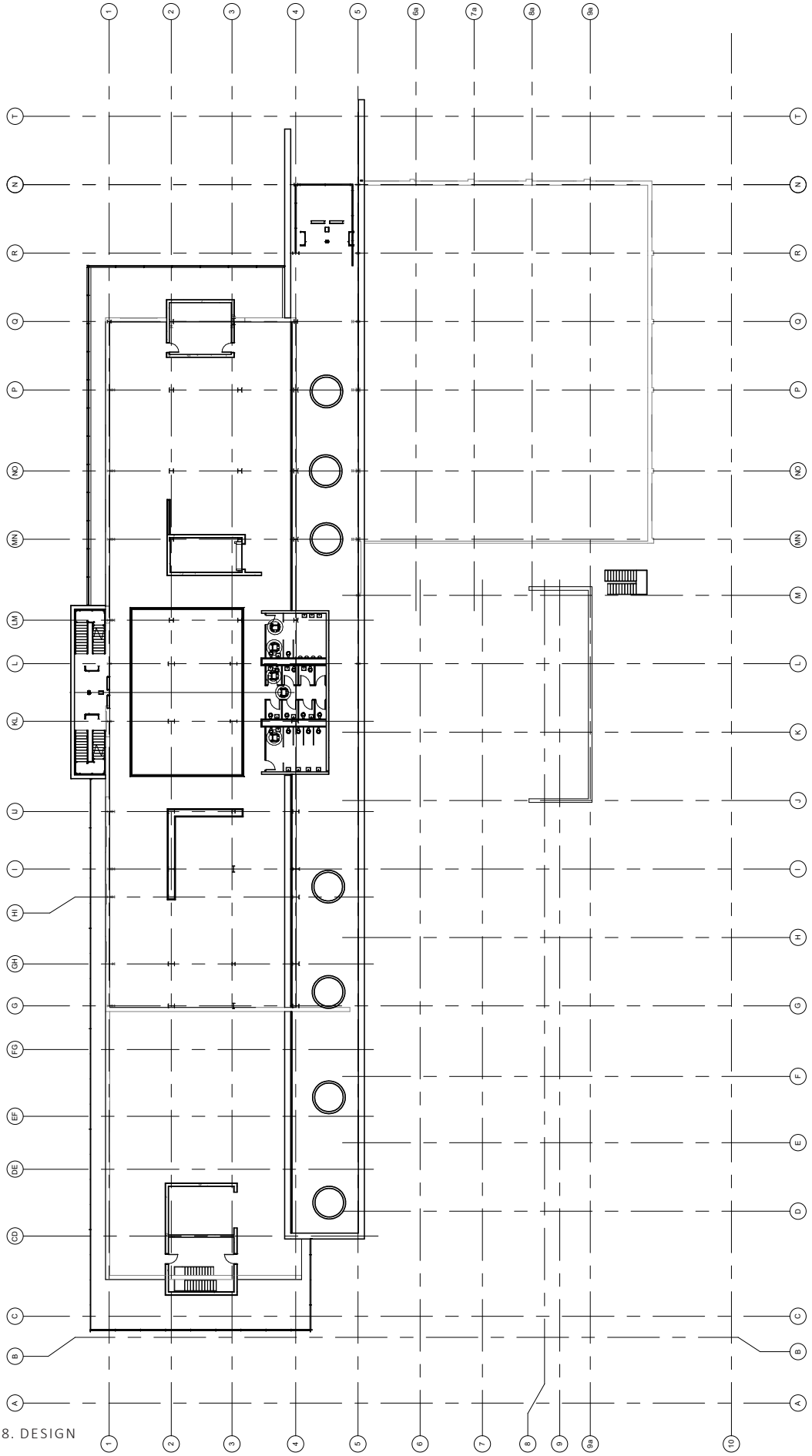

Figure 8.26 Level 5

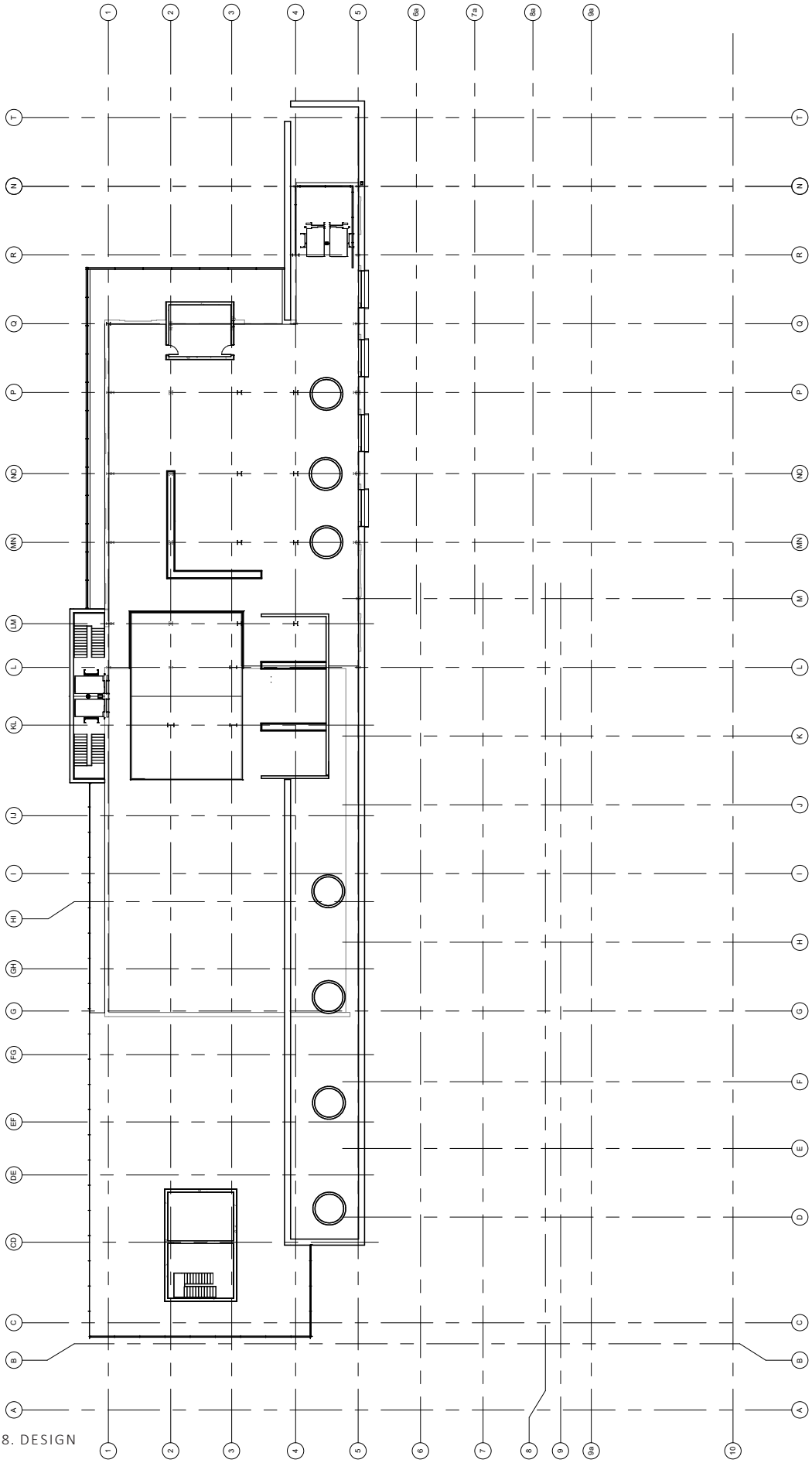

Figure 8.27 Level 6

ENTRANCES

Generally, there are three entrances to the museum: two from the boardwalk level (figure 8.26), and one on the first floor (figure 8.27). From Lower Water Street (East) and the harbour (West) the entrances are visually similar. Generally centered North-South on the longer facades (one East-facing and one West-facing), these multi-story tall vertical elements are clad in large scale ceramic tiles, branded with the museums' signature/logo lock-up (figure 8.28). At ground the plane (boardwalk for the East side, and level one for the West Side), there are two folding doors, open during the day, and closed at night. The East Entrance on the boardwalk serves to welcome guests—entrance to the building, parking, cruise ship and pedestrians—walking along the boardwalk (figure 8.29). The West entrance is the primary entrance, accessible from Lower Water Street. Here, vehicles may park (with accessible tags) in designated spots; and a spot for visitor drop-off. While being the primary curbs, materiality, and lighting is informed by accessible guidelines.

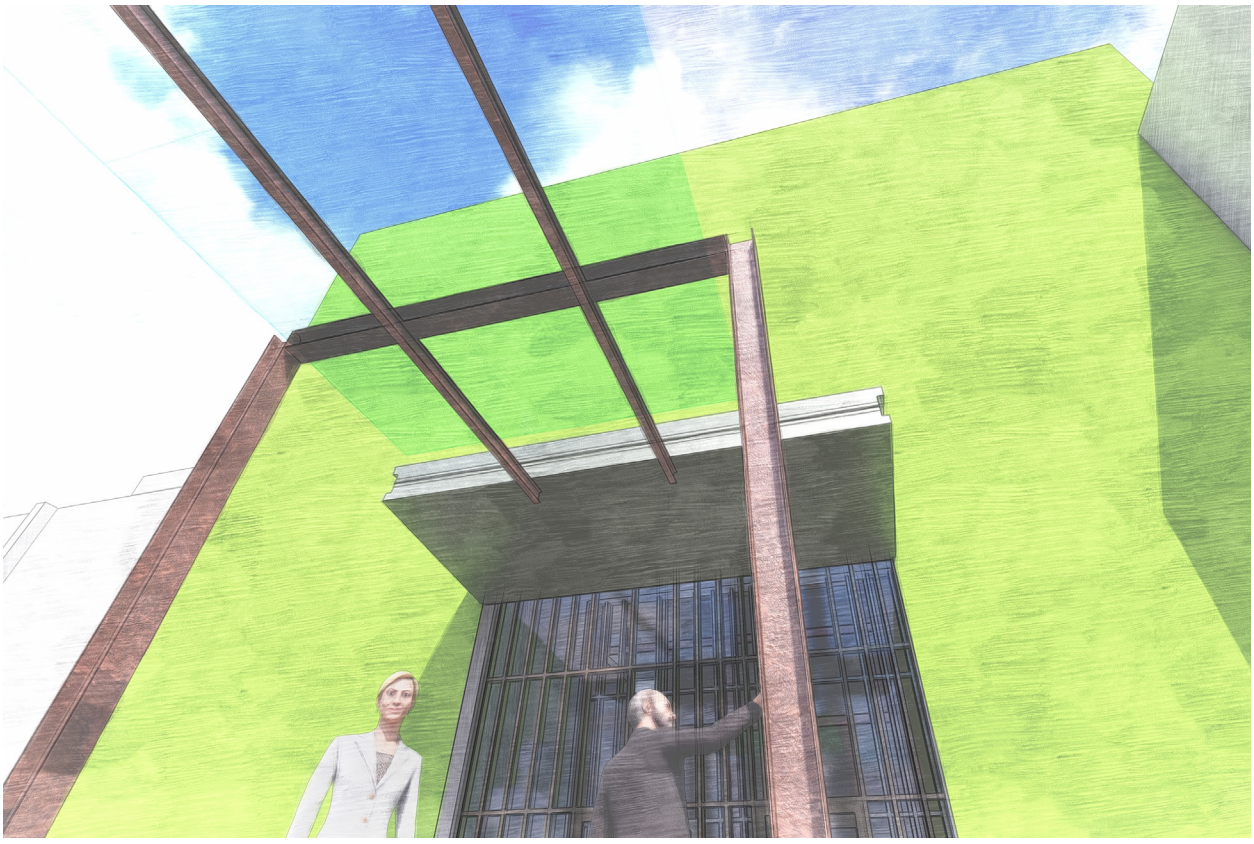

Figure 8.28 Primary entrance.

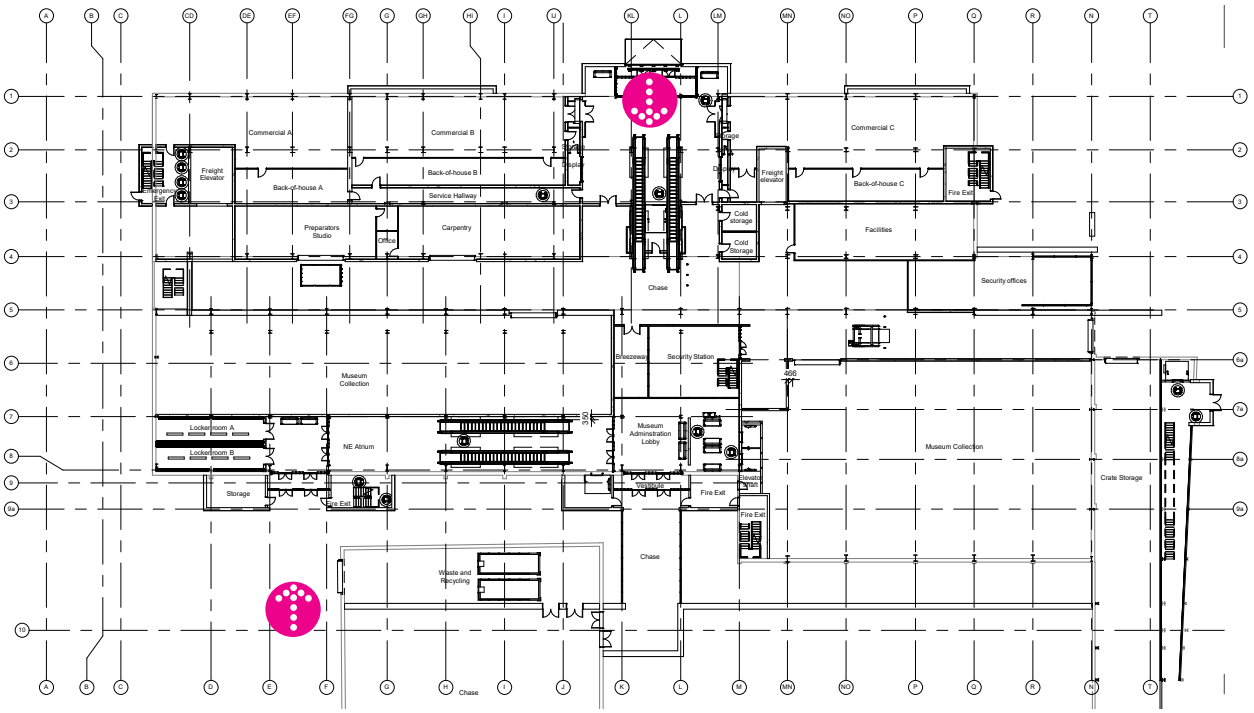

Figure 8.29 Two entrances from the Boardwalk level: public (harbourside), and school/group entrance.

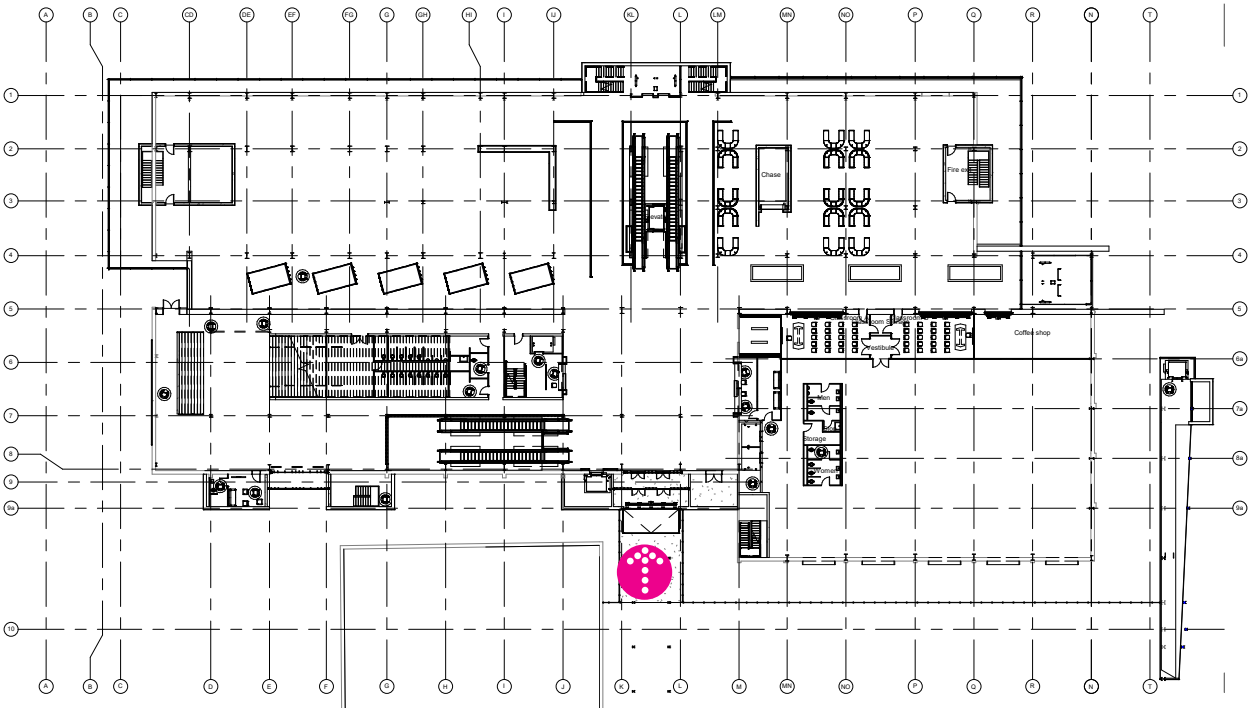

Figure 8.30 One entrance from the Lower Water Street side.

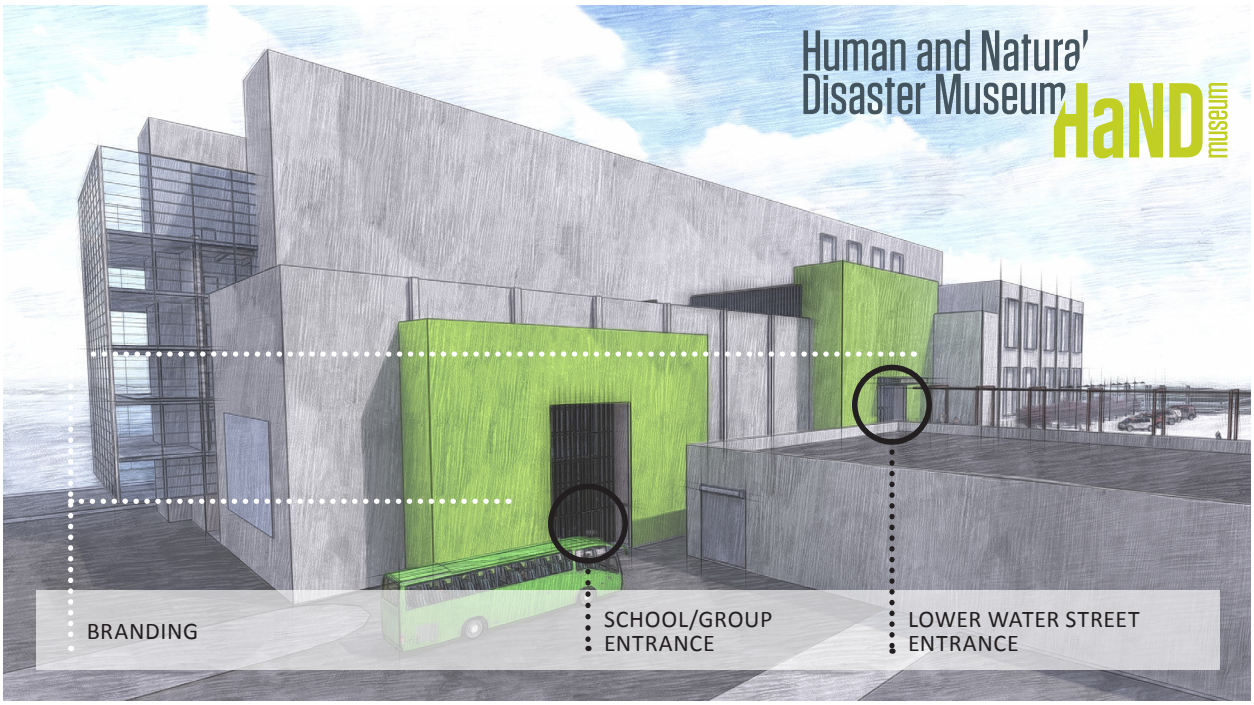

Figure 8.31 Entrances from the Lower Water Street: public, and school/group entrance.

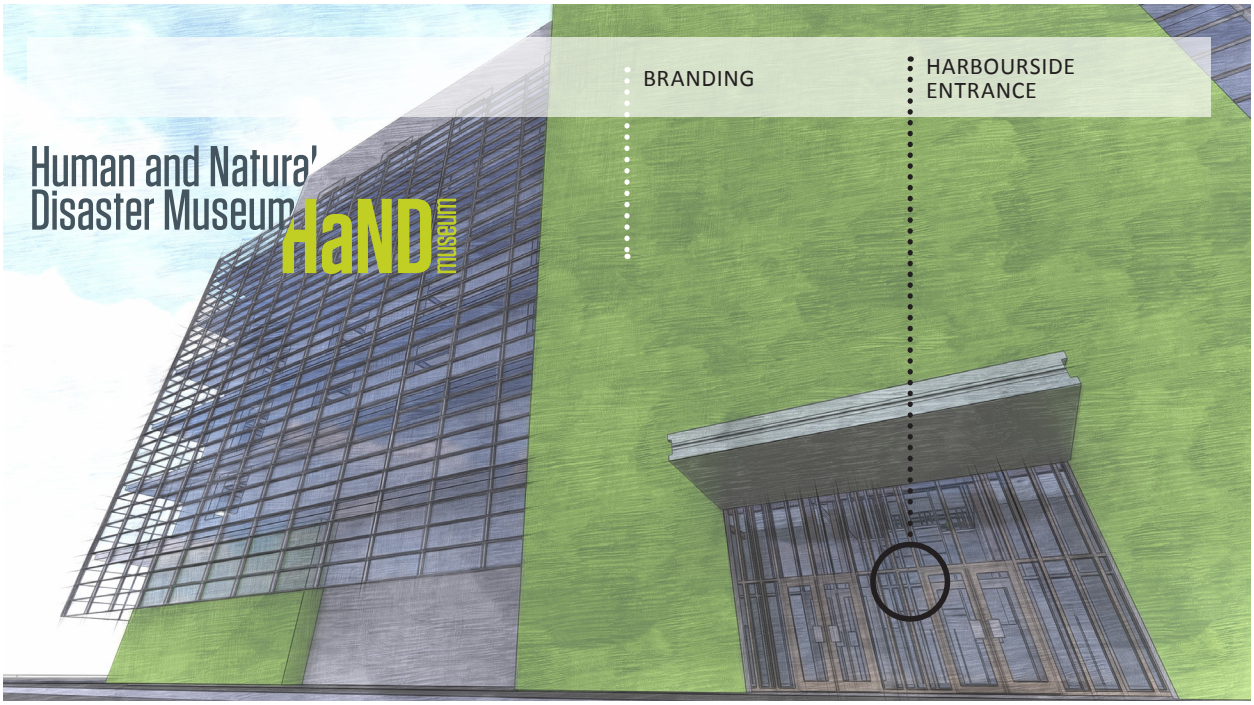

Figure 8.32 Boardwalk level entrance.

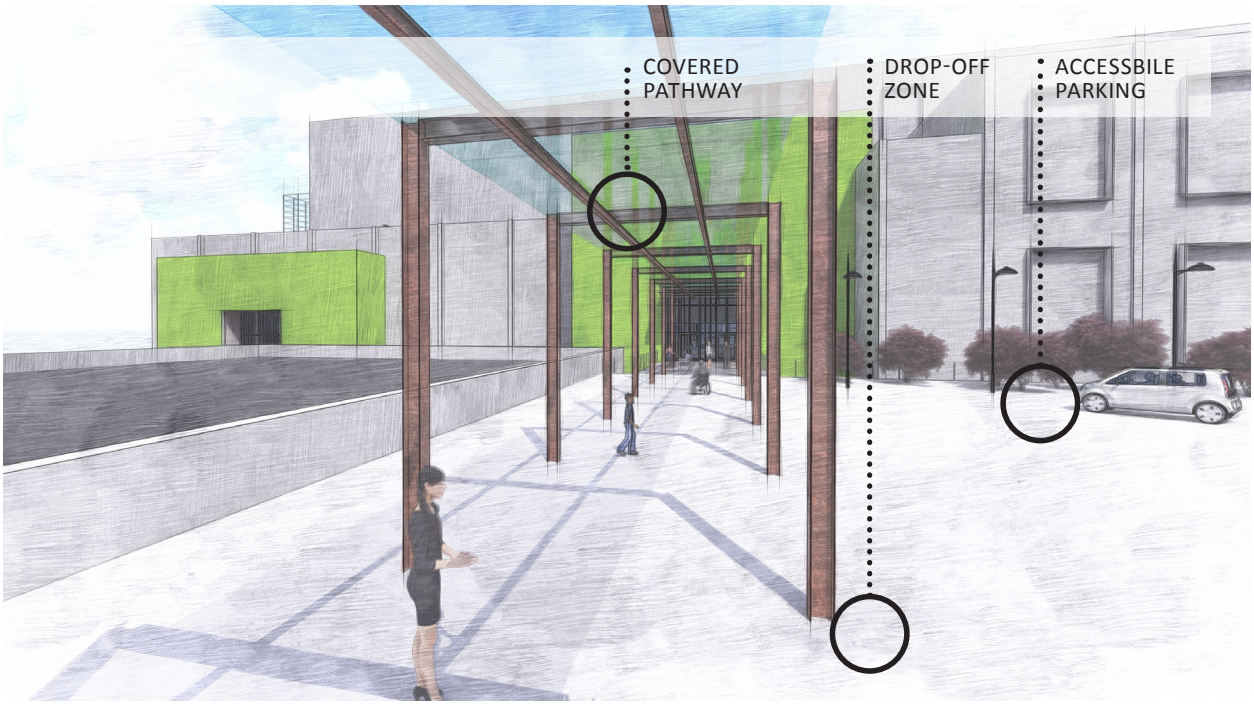

Figure 8.33 Lower Water Street entrance. The canopy can accommodate a for transport trailer if a delivery through the front is required.

For guests arriving via public transit, there is a direct line of travel from the street at the sidewalk to the entrance. From sidewalk to the entrance is an overhead canopy that gives protection from the weather. It also serves to protect visitors by providing a drop-off area for passenger-side drop off.(figure 30). The canopy also acts as a beacon for visitors, and the canopy helps by creating a volume for some sound reverberation, helpful for those who use auditory cues.

The third entrance is at the north-east corner of the building, designed so that buses can drop of tour or school groups (figure 8.31). This is also the guest entrance. Like the other two entrances, it employs the same tile as a visual cue to suggest an entrance. Inside the entrance groups have access to lockers, and there is a muster area for groups prior to going to the ticketing area, or for gathering after a visit. Upon entry, lockers are located to the right, and a pathway to ticketing at right through a set of doors.

At every entrance are two sets of doors. From the boardwalk level, the visitor must go to the first floor for entry to the museum. While any door can be used for entry an exit. For the boardwalk and primary entrance, the right hand door is followed by a linear path

that leads the visitor to an escalator that leads to the first floor. Conversely, when exiting, escalators from the first to boardwalk level also follow a linear path to the other set of doors (the exit doors). Text reads “entrance” for one set, and “exit” (in reverse) for the other.

Figure 8.34 School and tour group entrance.

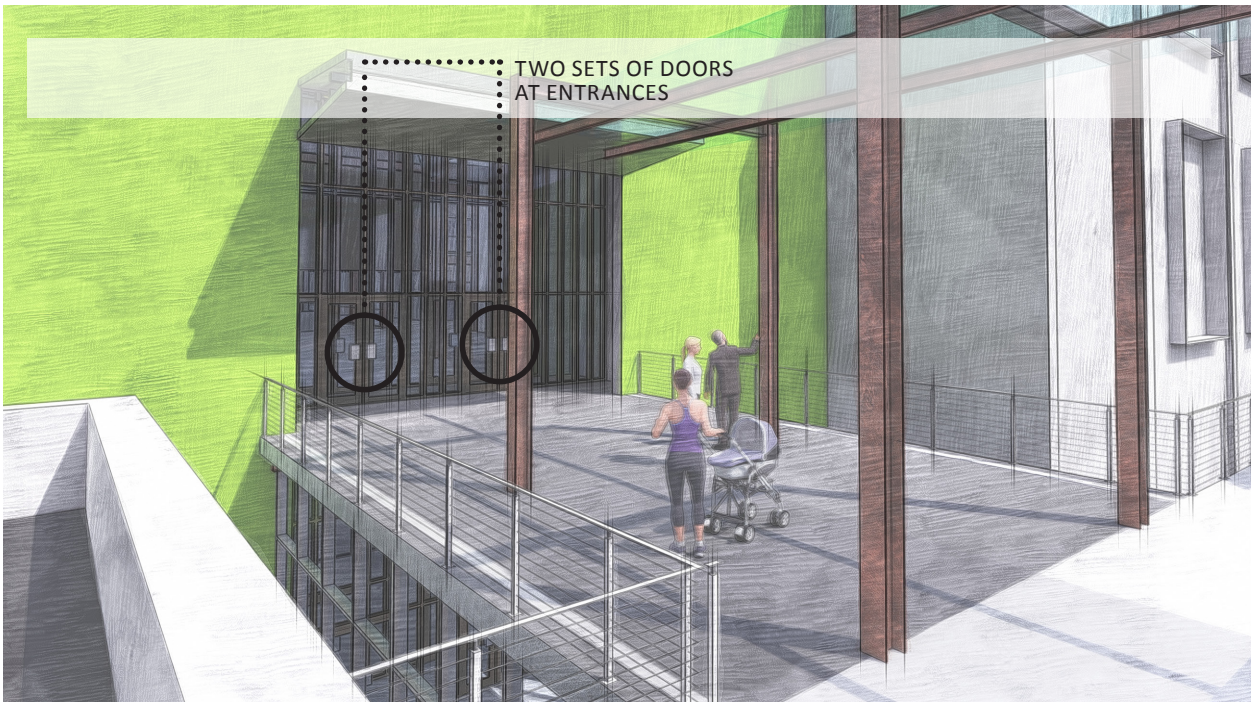

Figure 8.35 Primary entrance.

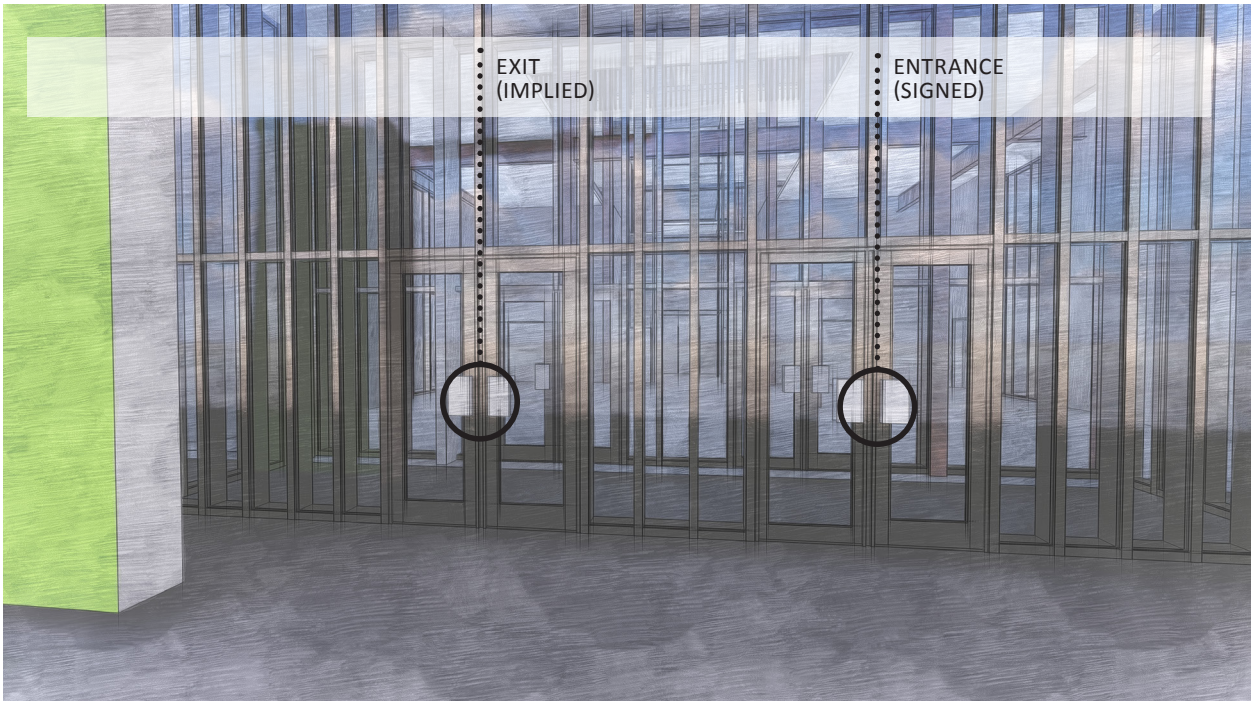

Figure 8.36 Harbourside entrance

VESTIBULES

Passing through any of the doors from exterior to interior leads to a vestibule. Vestibules are between 2,400–3,000 mm in depth. The width can accommodate a visitor in a wheelchair or any other visitor needing to take a pause by moving to the left or to the right. Once in the second set of doors, each entrance also has seating areas, to provide rest stops. Both the vestibule and seating area in the lobbies are important for people needing to pause to adjust to the change in light levels. Furthermore, all doors are built into curtain walls. The goal was to create a transition zone from exterior to interior, to allow for ease of adjustment—night or day—from exterior to interior. Large curtain walls allow for this transition.

The design of the door and curtain grid is purposeful. While the large glazed areas help with the transition from exterior to interior, they also pose problems like glare. Glazed doors are also an issue for persons with low vision, particular if a reflection looks like someone travelling in the opposite direction; for the def and hard of hearing, the visibility

is a benefit. This is an example of best practices at odds. To address the issue, the doors have a heavier frame for distinction, and oversized handles for visibility, and the vertical curtain grid is narrower than a door to help distinguish the door from the curtain wall.

LOBBY

As previously mentioned, the path of travel once through a door is important. The sequencing of interior doors and paths of travel, leading to vertical circulation (escalators) was purposeful. From both boardwalk entrances—the harbourside and group entrance—a linear path leads to the main lobby. The goal was to allow users to self-navigate without an aid or companion. From within the lobby space, personnel at the ticket booth (or on the floor in times of high volume) have unobstructed site lines to any visitor in need of assistance. Having arrived at the lobby, large symbols (supergraphics) above the ticketing, elevator, and escalator help guide visitors.

From a programming perspective, all entrances provide a clear path to the ticketing area, located in the lobby. Visitors *must* be able to purchase tickets prior to visiting the exhibition halls. Except for emergency egress, exhibits have separate vertical circulation.

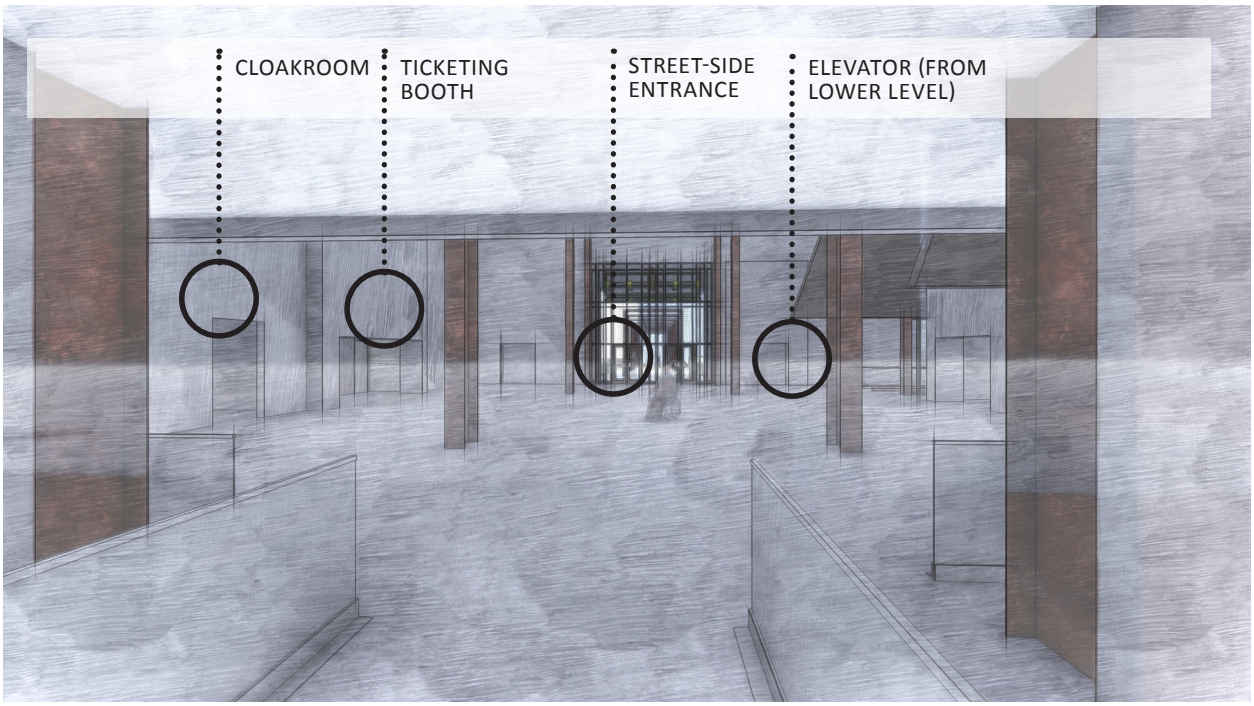

Figure 8.37 Lobby from harbourside entrance, top of escalator.

Figure 8.38 Lobby

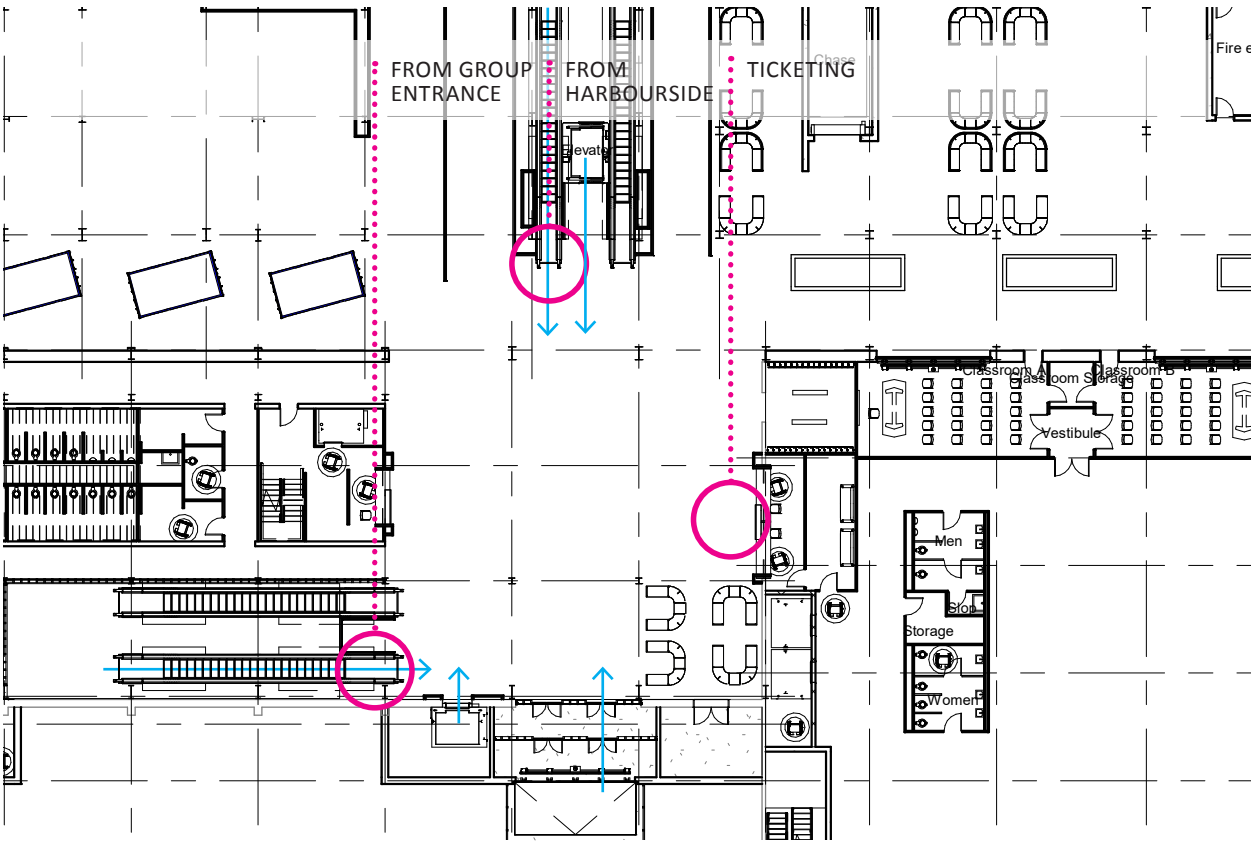

Figure 8.39 Circulation to lobby (ticketing) from entrances.

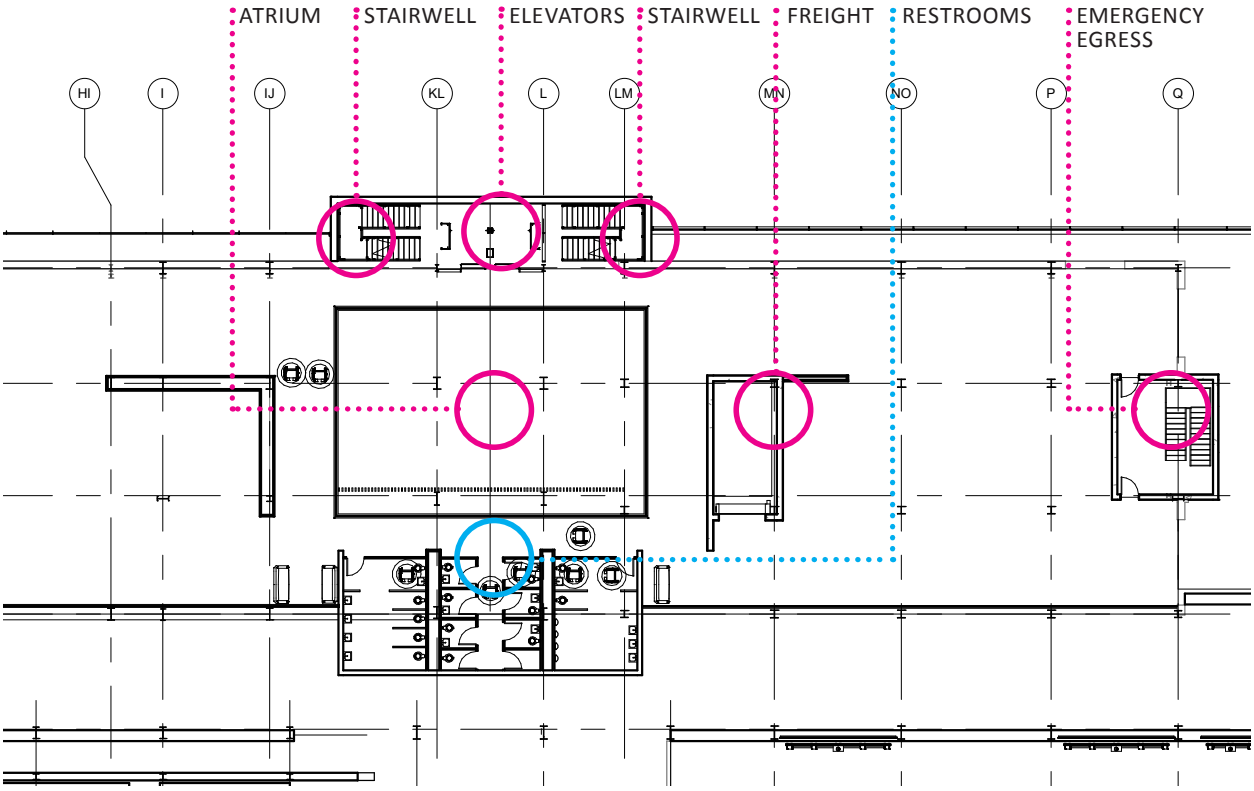

Figure 8.40 Circling the atrium is the vertical circulation (two stairwells, and two elevator bays) and restrooms (male, female, gender neutral, and family changing rooms.)

VERTICAL CIRCULATION

All vertical circulation to the exhibition halls is located along the west of the building, and includes two elevators, and two stairwells (figure 8.37). Emergency egress is located at the end of each exhibit hall. The atrium has daylighting from above, and the stairwells and elevators are not closed off, rather visually open. The goal was to limit the number of transition zones for persons with low vision, as well as keep spaces open for the deaf and hard of hearing. The atrium—a brighter and louder space—also acts as a navigation aid. All exhibits start and finish at the atrium, hence for persons who are blind or have low vision, the atrium becomes a landmark to navigate from and to return to.

Emergency egress is located at the ends of the building (one on the North end, and one on the South end.) Each exhibit has an emergency egress stairwell located half-way through each exhibition. In each emergency exit stairwell, one per floor, is located an area of refuge sized to accommodate up to three wheelchairs. The refuge area would include instructions

to help visitors and two-way communication devices in case of emergency.

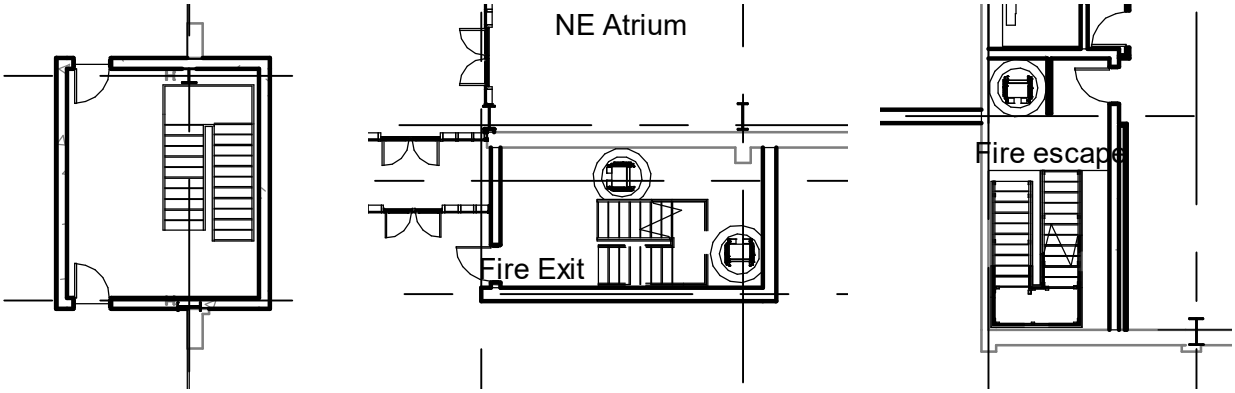

Figure 8.41 In exhibition halls and public areas emergency exit stairwells have areas of refuge for up to three wheelchairs; for the administrative well, there is an area of refuge for one wheelchair.

THE AVENUE

Running North South through the center of the building is the *avenue*, a space originally located between two types of buildings—turbine halls and boiler houses. For the Human and Natural Disasters Museum, the avenue serves to divide the building into three precincts: North-East and South-East are multiple floors of exhibition halls; North-West is a lecture hall, and South-West is the administrative wing. On the first floor, the avenue houses

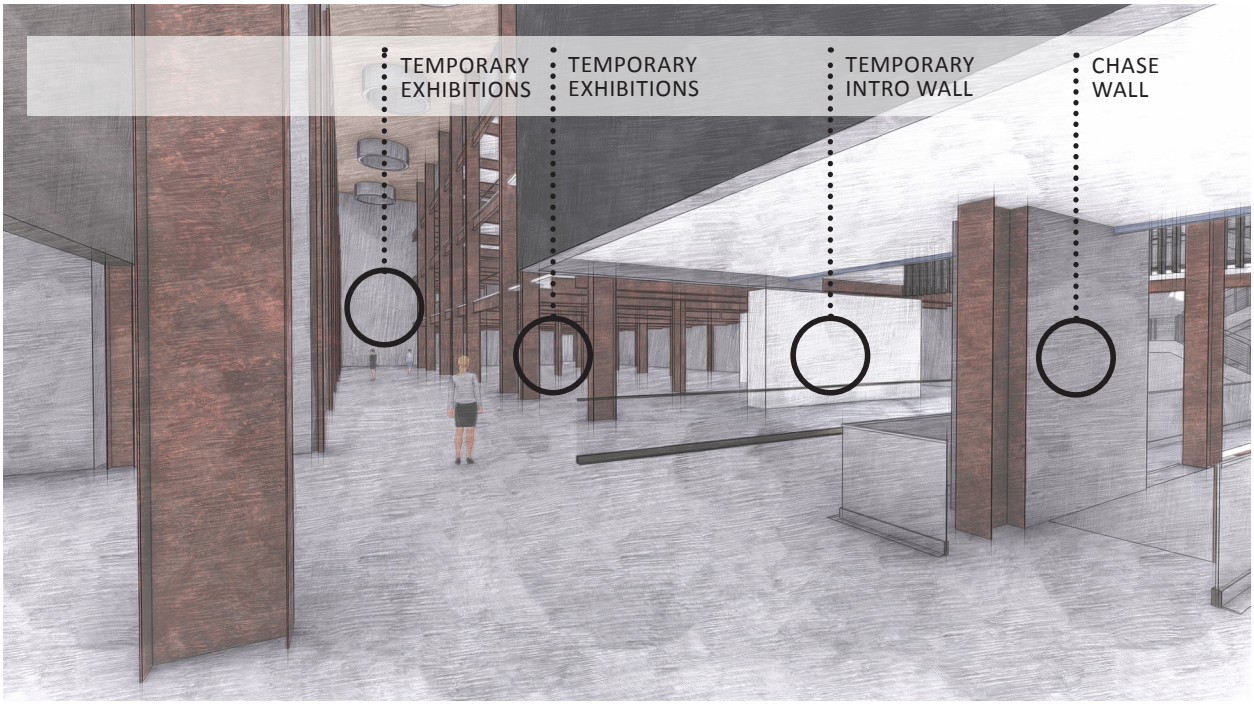

Figure 8.42 The Avenue looking North. The lobby is located to the right, and the atrium to the right.

temporary exhibitions (figure 8.39), and provides access the library zone, seating classrooms, and coffee shop (figure 8.40).

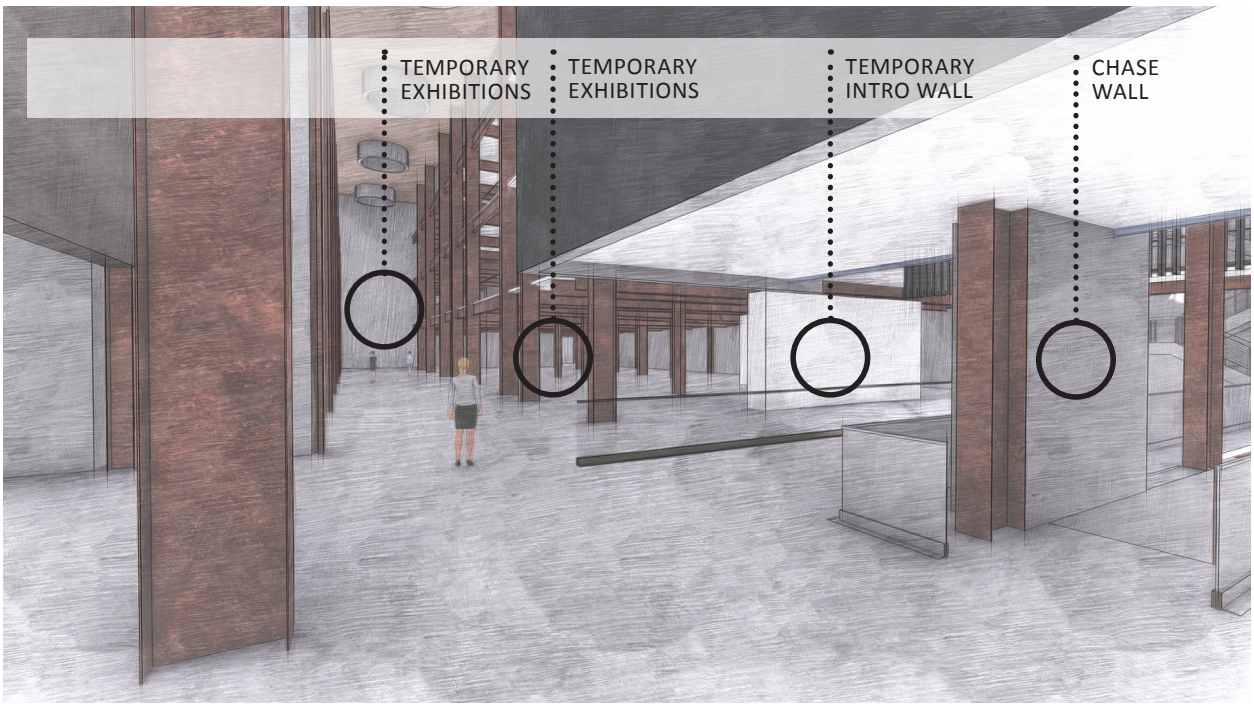

Figure 8.43 The Avenue looking North. The lobby is located to the left, and the atrium to the right.

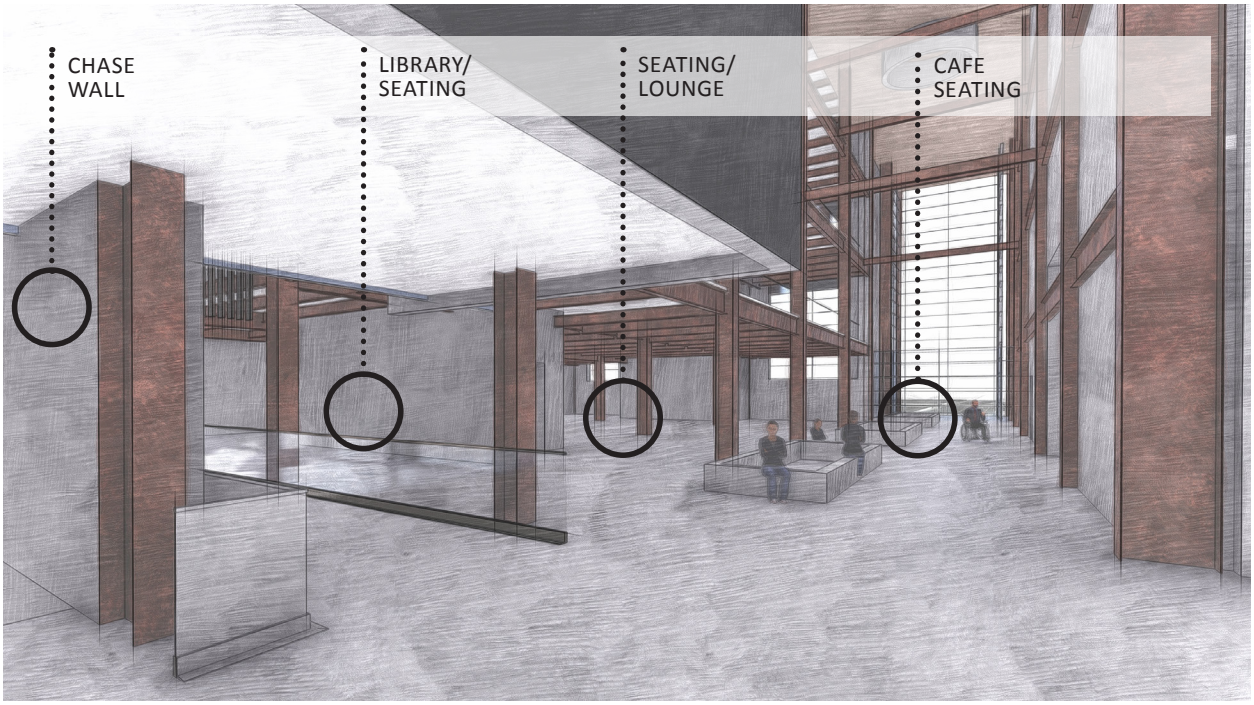

Figure 8.44 The Avenue looking South. The lobby is located to the right, the atrium to the left, and seating and lounge area ahead.

From the fourth floor to the roof is a cavity used as a solar chimney to heat and cool the building. Puncturing the ceiling in above the avenue are multiple cylindrical "chimneys" that reference the towers that once stood on the site. When WHMZ architects renovated the same building to the current Emera Head office, they introduced a similar light-well as nod to the former chimney stacks. In the design for the Human and Natural Museum, the towers also provide the *new-equilibrium* state of the building by presenting a view to the sky (figure 8.42).

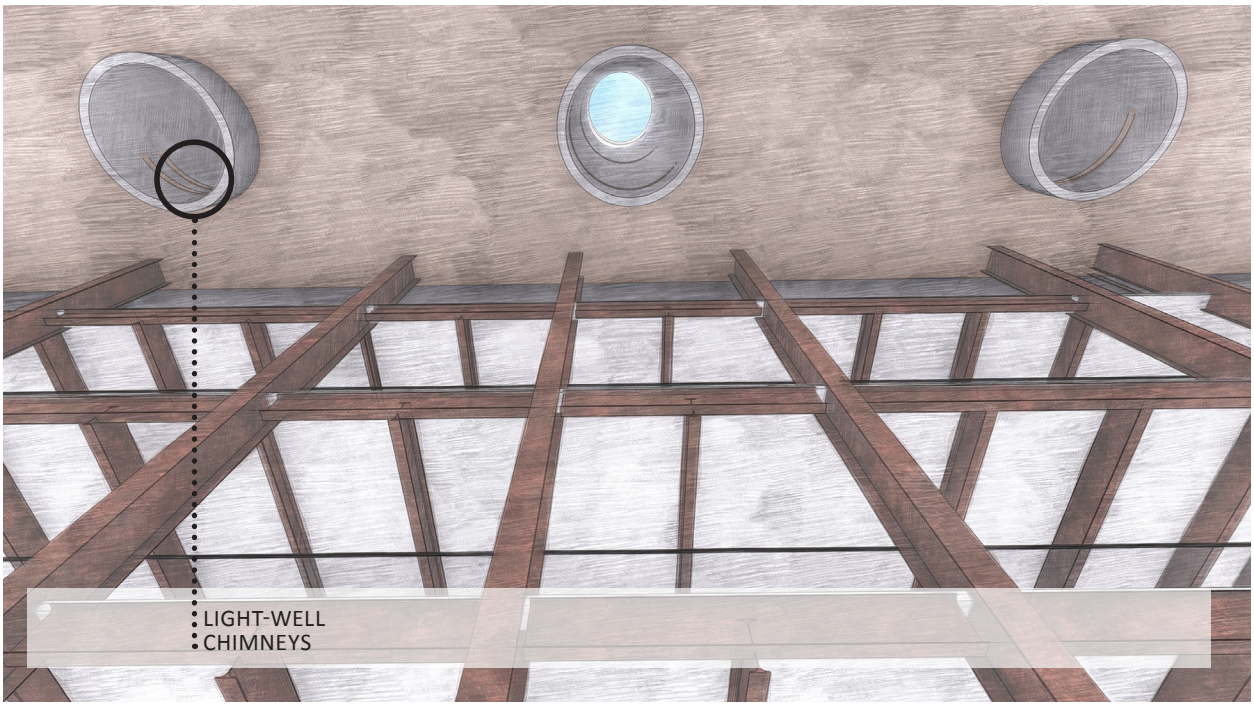

Figure 8.45 Lightwells serve to introduce daylighting, and acts as a metaphor for chimneys and interpret the adaptive re-use of a former coal-powered electricity generation station.

On the boardwalk level, the avenue serves as the primary corridor, connecting the loading bay to crate storage and artifact storage (figure 8.43). At the center of the corridor on this level is the security office. All deliveries—museum or food services—as well as staff entrances pass by the security desk. By design, this allows anyone working at or visiting the museum—administrative offices, or preparators studios—to check in and out with museum security.

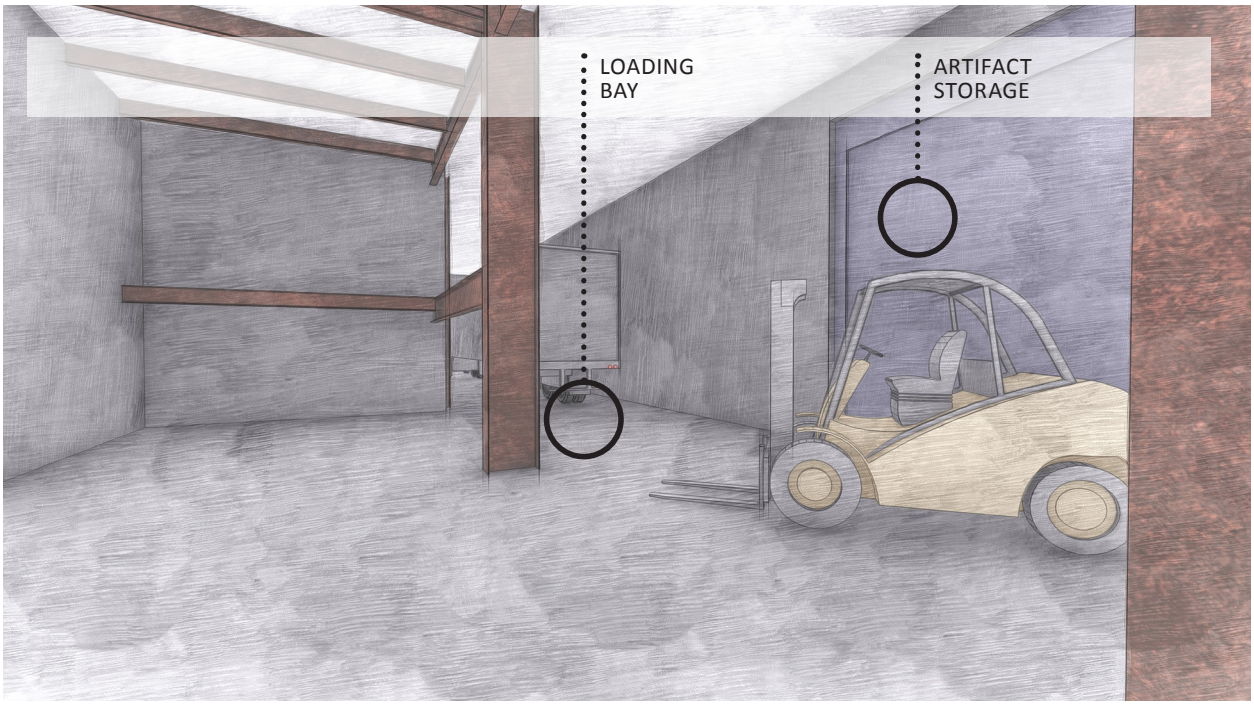

Figure 8.46 The avenue on the boardwalk can accommodate a semi-trailer for loading and unloading exhibits.

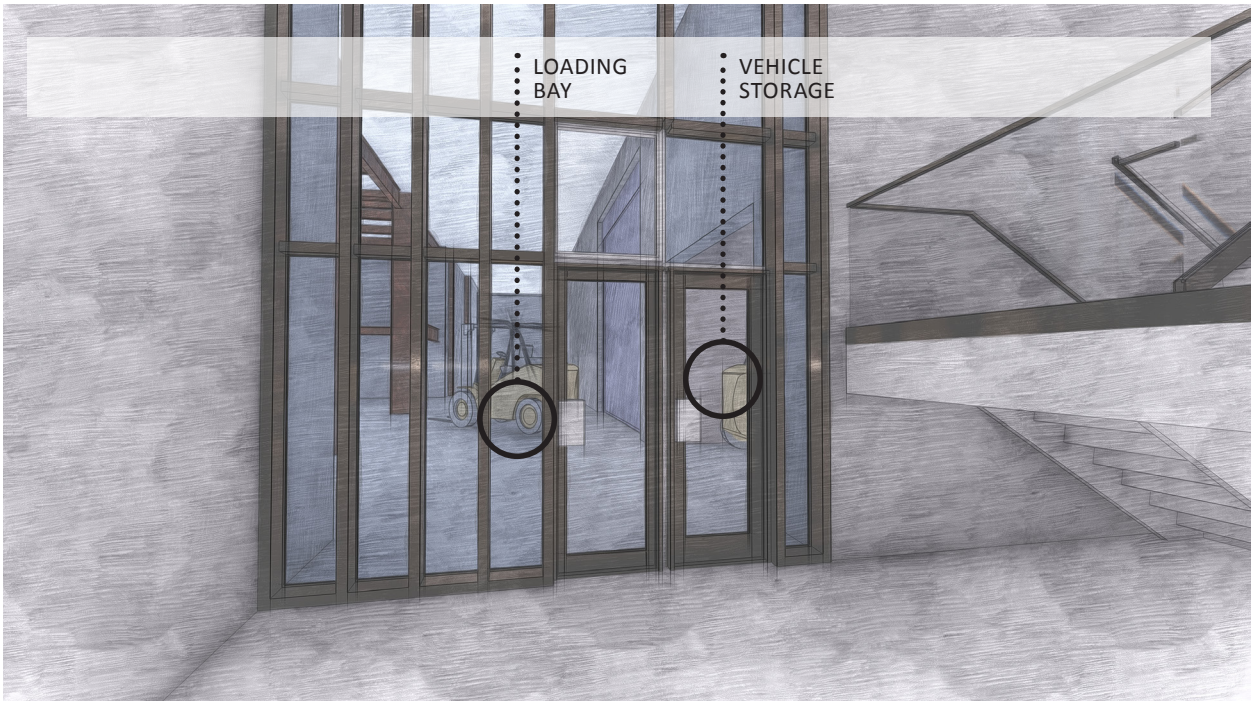

Figure 8.47 The security operations center has views to entrances and exits, both visually and via closed-circuit surveillance.

SIGNAGE AND WAYFIDNING

Signage plays a prominent role in the museum, and wayfinding is presented in two ways. In the lobby, signage is in the form of "super-graphics". Oversized white symbols on a dark surface serve to identify major destinations, including ticketing, coat check, and the elevator. Elsewhere in the lobby and throughout the building, signage wraps existing columns. The intent is purposeful, primarily to protect the blind and people with low vision from accidental collisions with existing columns. The sign height varies, the lower edge is a placed at a consistent 27" above the ground to allow for cane detection. All are at least 2500mm to ensure visibility from afar, a beacon. Text and symbols are white on a dark non-glare background to achieve maximum contrast. As many of walls the throughout the building are a pale in colour, the dark background serves to contrast vertical surfaces. Under-lighting of the sign also serves to draw attention to the objects in the environments.

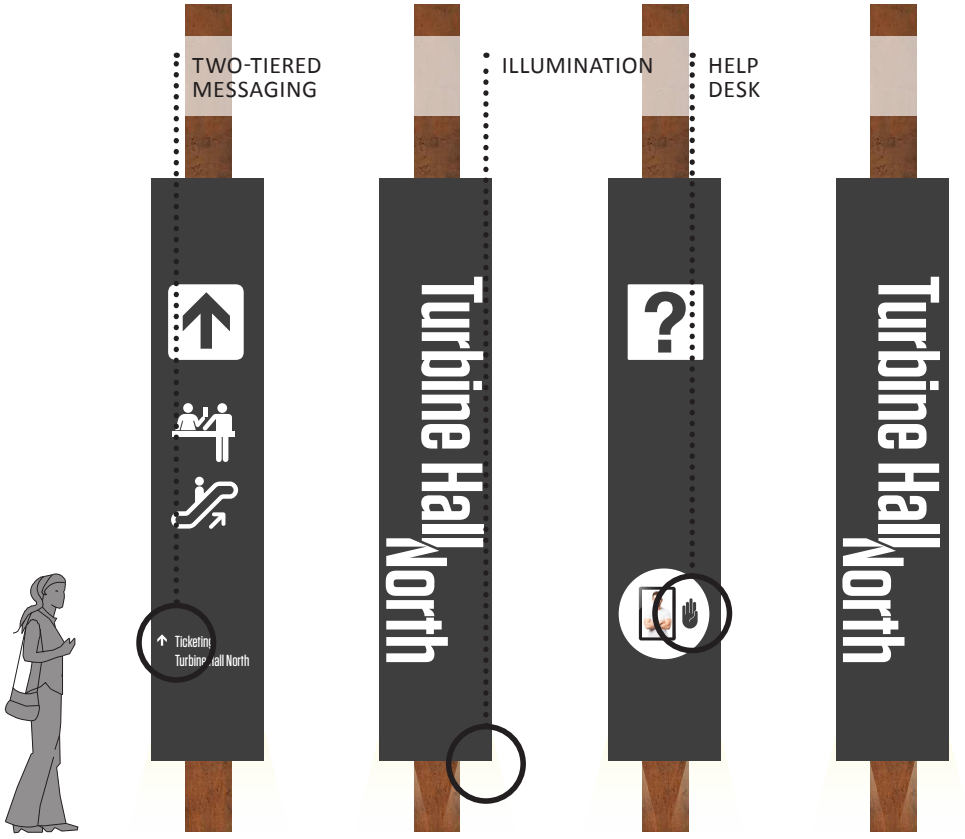

Figure 8.48 Typical building signage

The column signage has a maximum of four surfaces. Each surface can be used for a variety of forms of content and messaging. Directional elements are presented as large symbols used to help visitors navigate to major designations, including ticketing and vertical circulation. The symbols are also accompanied by messaging to other destinations, presented as braille and raised white letters on a dark surface. One sign face should, include the floor name when possible: for example, Turbine Hall—North, or Boiler House—South. Another sign face option is an interactive screen. In this case, the visitor may ask for assistance from a remote docent. All docents for this service are multilingual: English, French, and American Sign Language. The docents are located alongside front desk staff at the ticketing booth, and have a well lit backdrop for communicating with the visitor via a live link. Any docent fluent in American Sign Language wears a hand symbol on their t-shirt for easy identification.

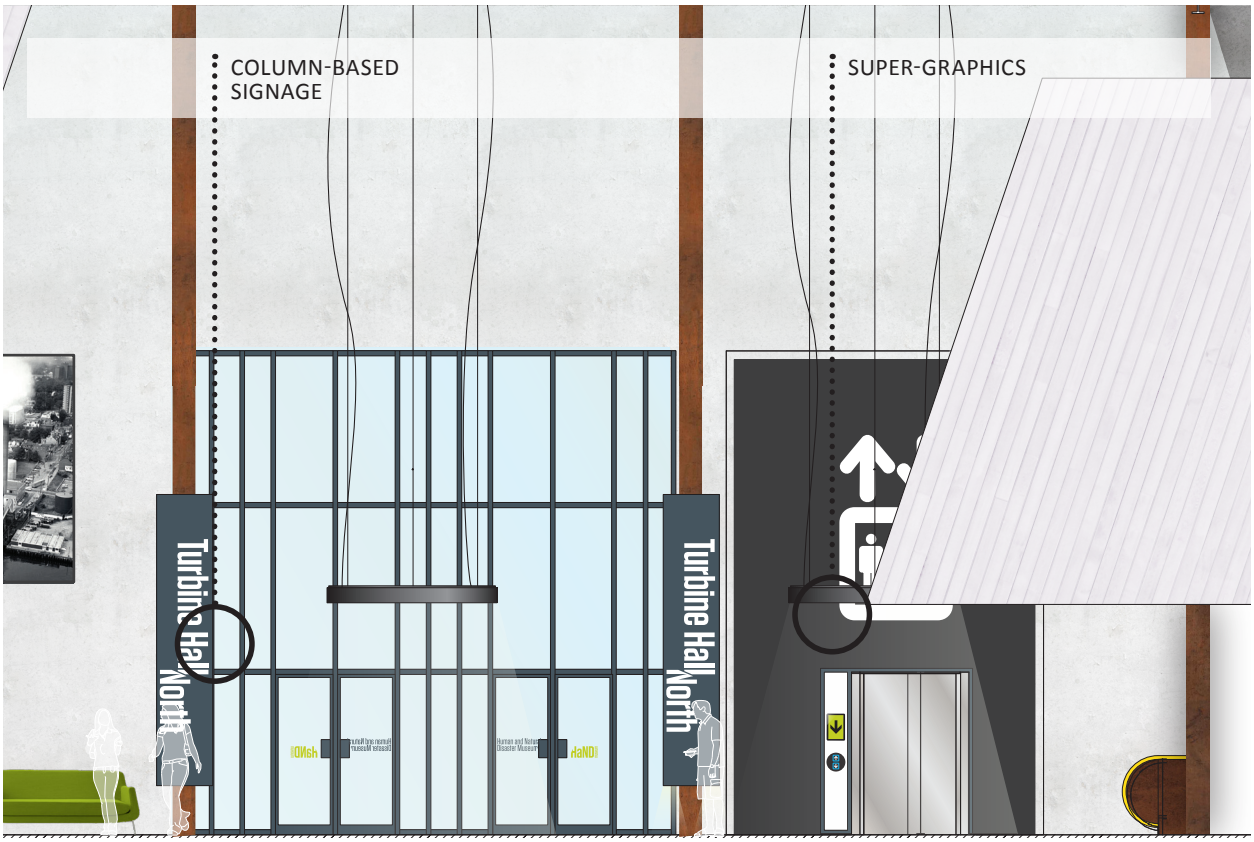

Figure 8.49 Typical interior signage

NAVIGATIONAL AIDS

In addition to signage, numerous other devices are employed. The first is lighting. Overhead lighting comes in two forms: ceiling mounted and pendant. Lighting fixtures mounted to the ceiling are typically used to illuminate the space. Pendant lighting, in addition to providing illumination, is used to help people navigate. Located above circulation paths, the linear pendants are a visual aid to help those with low-vision. Pendants are consistently placed at regular intervals of 750mm throughout the museum, and generally a consistent height from the floor. At intersections and decision points, a large radial pendant is used to indicate a change in direction.

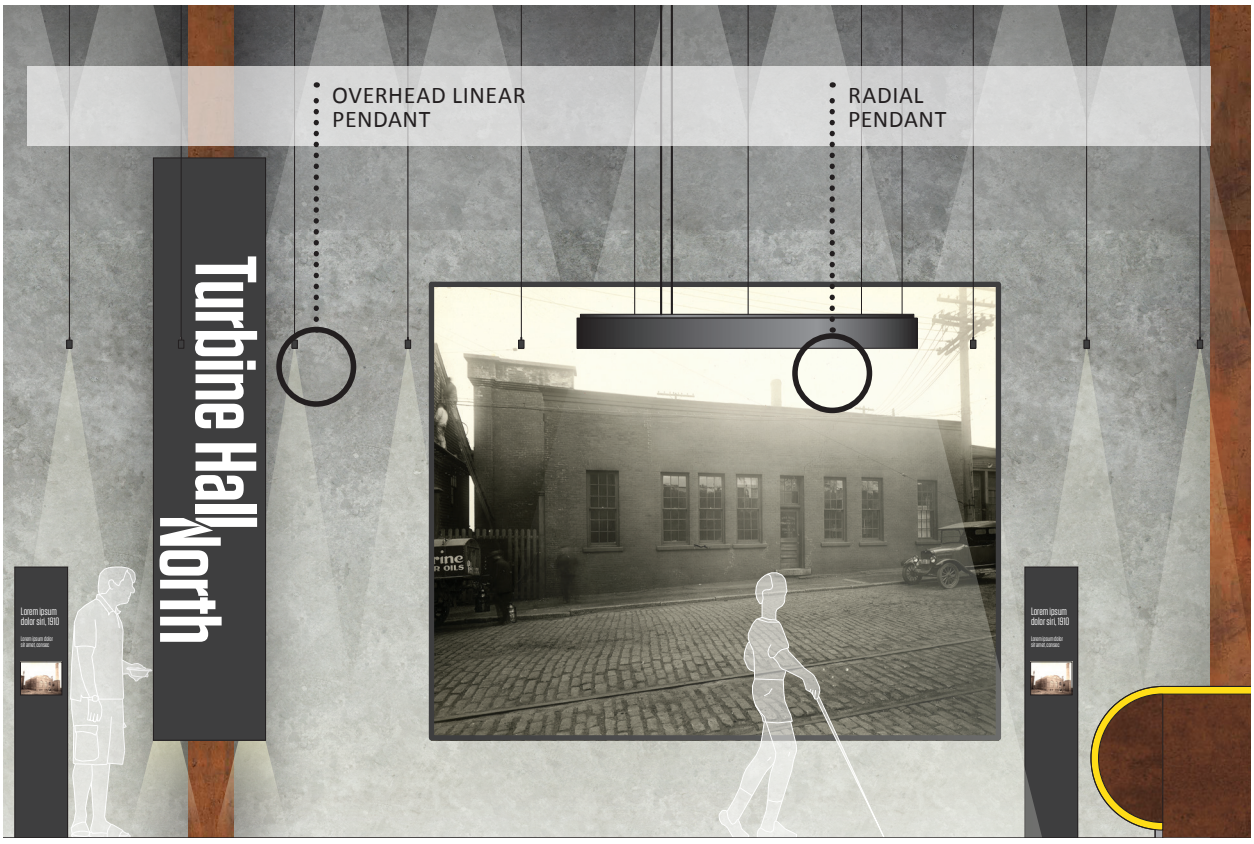

Figure 8.50 Overhead lights as a means to aid in navigation.

The treatment of floors also plays an role in navigation. Flooring for most spaces is pale, and typically floor carpet is used for sound absorption, which helps those who are hard of hearing in particular. Objects like display cases are dark, for contrast against the floor. For navigation, paths are also darker colours. Floor carpet tiles or ceramic tiles are

employed. Ceramic is better for the blind and visually impaired as sound can be used as a tool to help navigate space. The contrasting colour is beneficial for all users. The floor path is lit by corresponding overhead linear pendant light fixtures. While a path on the floor is important, the exactness of straightness is not critical. For primary circulation routes, the path shall remain consistent in design and colour (figure 8.51), while the floor design for individual exhibitions will be designed to support the content. The floor itself may support notions of the narrative, in particular that of *equilibrium*, *disruption*, *resolution*, and *new equilibrium* as seen in the examples provided here (figure 8.52).

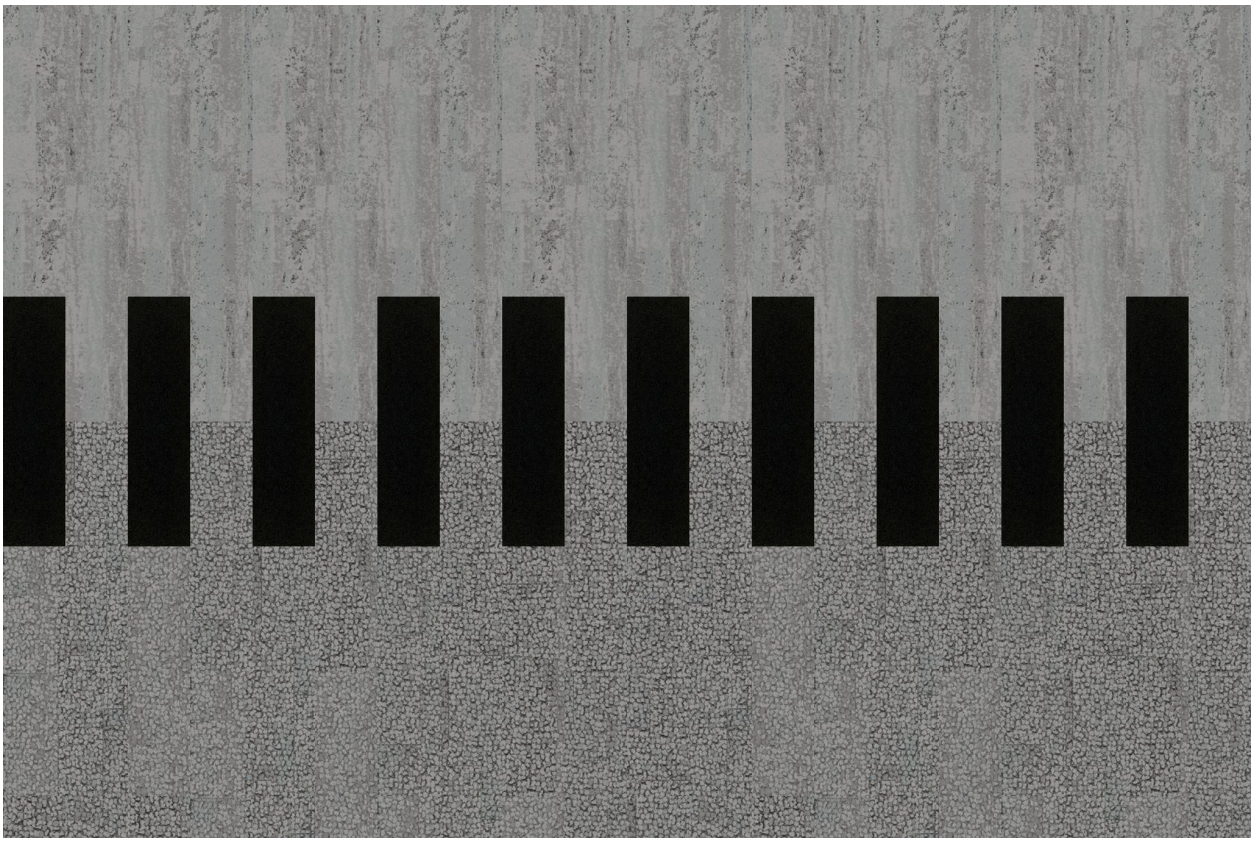

Figure 8.51 Primary path of travel for non-exhibition spaces.

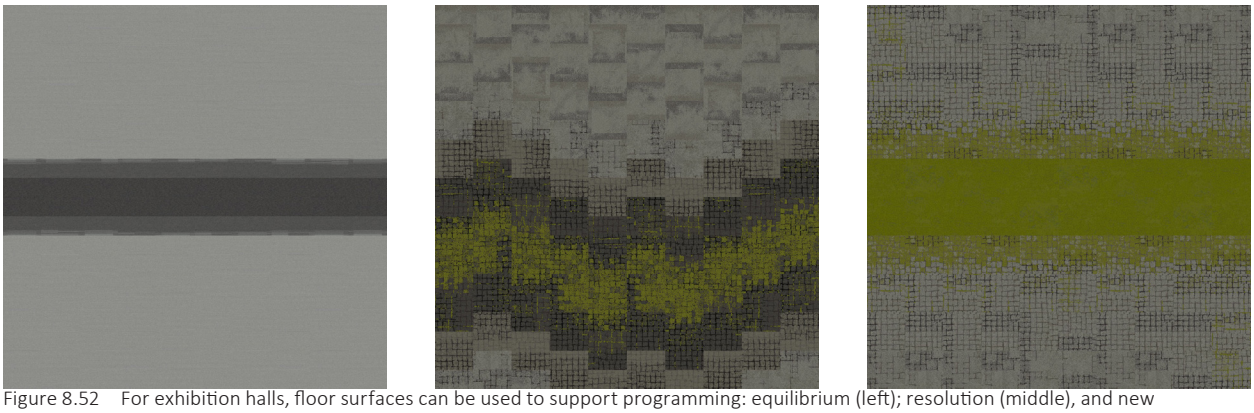

Figure 8.52 For exhibition halls, floor surfaces can be used to support programming: equilibrium (left); resolution (middle), and new equilibrium (right).

While neither navigational aid nor signage, other graphic devices are employed to help visitors with low vision. Restrooms are equipped with a black stripe, one for each stall. A 12-inch wide dark ceramic tile, contrasts the surrounding tiles. The stripe leads from the stall door to the wall, and up the wall to the height of the partitions. White ceramic porcelain fixtures and motion sensitive stainless-steel flush panels contrast the black tile for ease of navigation within each stall.

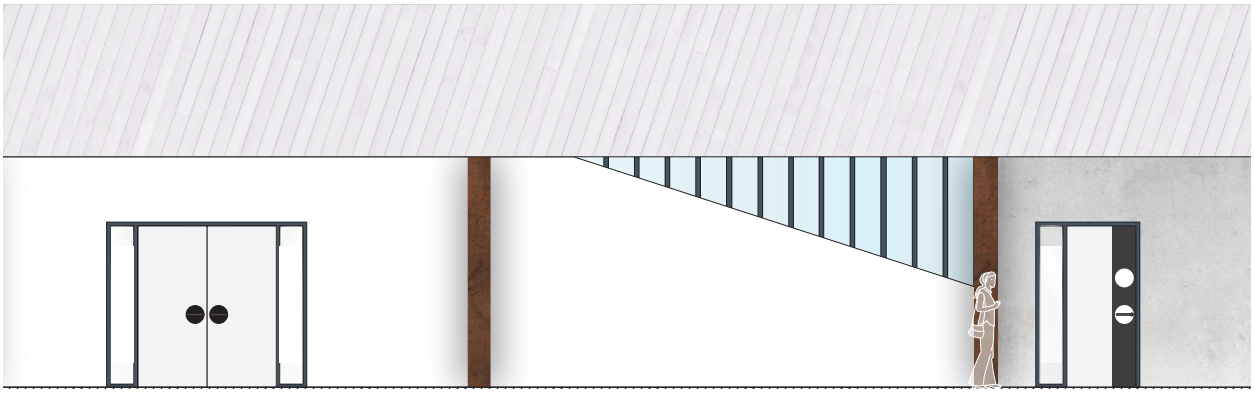

Figure 8.53 Door handles are highlighted using graphic devices.

Rooms throughout the museum use mandatory room identification signage, located to the right of the door handle in locations specified by building code. Door handles are highlighted by means of a large round shape in a contrasting colour (figure 8.53. The shape helps visitors with low vision locate the door handle. Non-public spaces use simply a contrasting circle, spaces meant for the public use a vertical black strip with a large symbol. As a communication tool, the stripe and symbol are more visible than signage alone.
On the hinge side of each door is a sidelight, either slightly frosted or clear depending upon

the privacy requirements of the space beyond the door. Shadows and movement from within the room will be visible due to the side light, improving the visitor experience for the deaf and hard of hearing.

TACTILITY

Those who are blind and with low vision have difficulty in exhibition spaces. As much as possible, tactile elements will be included as part of the design. In general, artwork—from objects to images—will be reproduced using tactile technology or as a facsimile. The reproduction will appear consistent, on a black background with accompanying tactile typography and braille. Didactic content, along with the facsimile appears on a band in front of a display case (figure 8.55) or a vertical band to the right of the artifact(s) (figure 8.54).

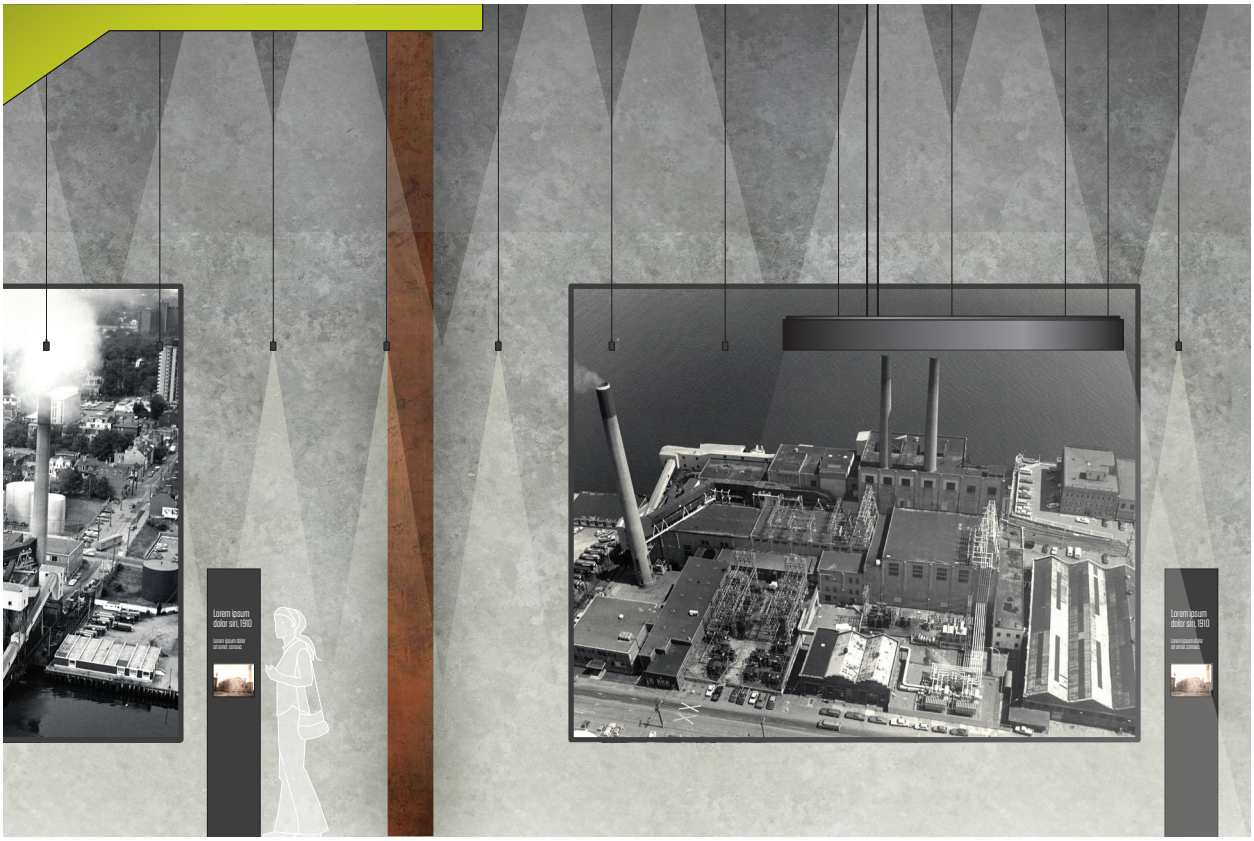

Figure 8.54 Didactic information includes tactile facsimiles of artifacts.

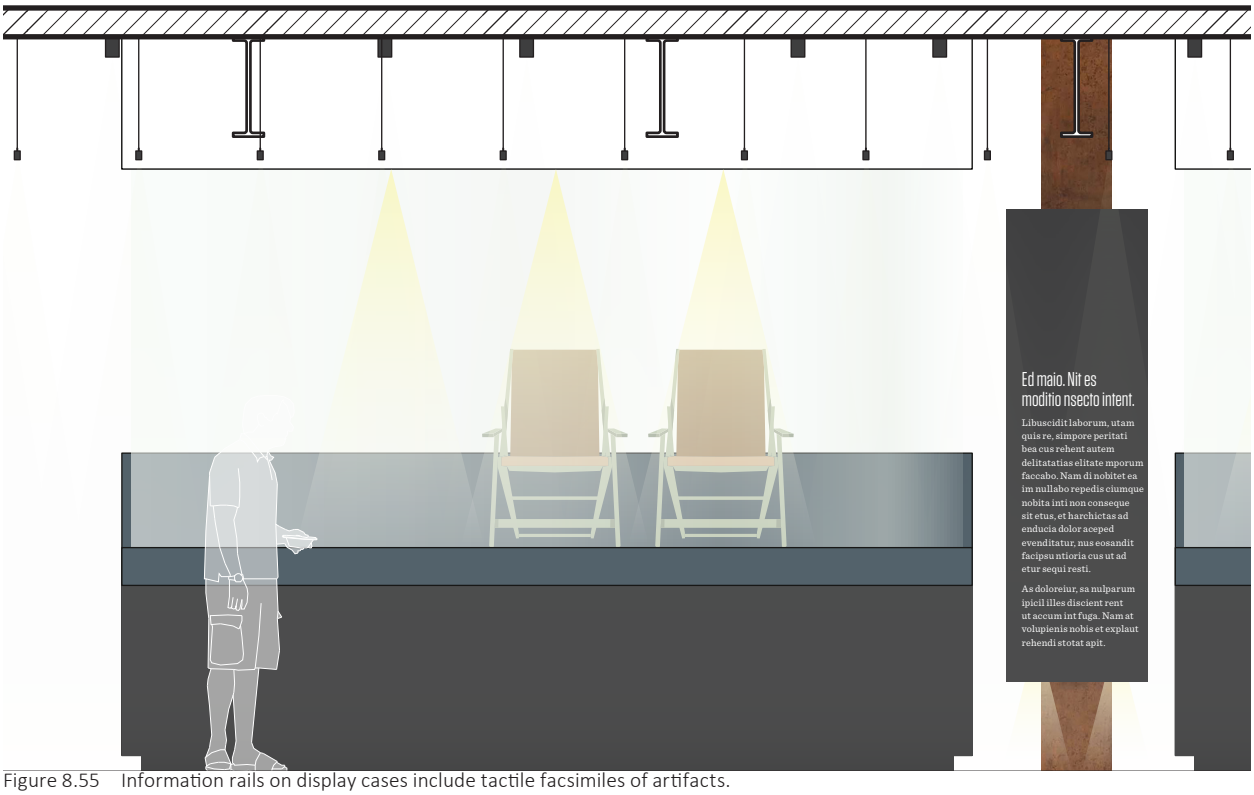

Figure 8.55 Information rails on display cases include tactile facsimiles of artifacts.

DISPLAY CASES

The *parti* sketch informed many aspects of the design, from the logo to the design of objects in the space. Byrd's term *Maluma* means that "space that comprises free flowing, circular movements" (Byrd 2013). The theatre is an example of a space that employees this concept to create an open space with many view planes to the spaces beyond. Sidelights on doors are another example that supports the need for the deaf and hard of hearing community.

Artifact display cases are informed both by the *parti*, as well as the term *Maluma*. A flexible system of display cases can be used to display artifacts, and as a means to delineate space, like a pathway or passageway. These passageways can be used to buffer sound or to dampen an audio element. The height of the case allows for unimpeded view planes for the deaf and hard of hearing, and the color of the case contrasts the floor and walls to help visitors with low vision (figures 8.56–8.62).

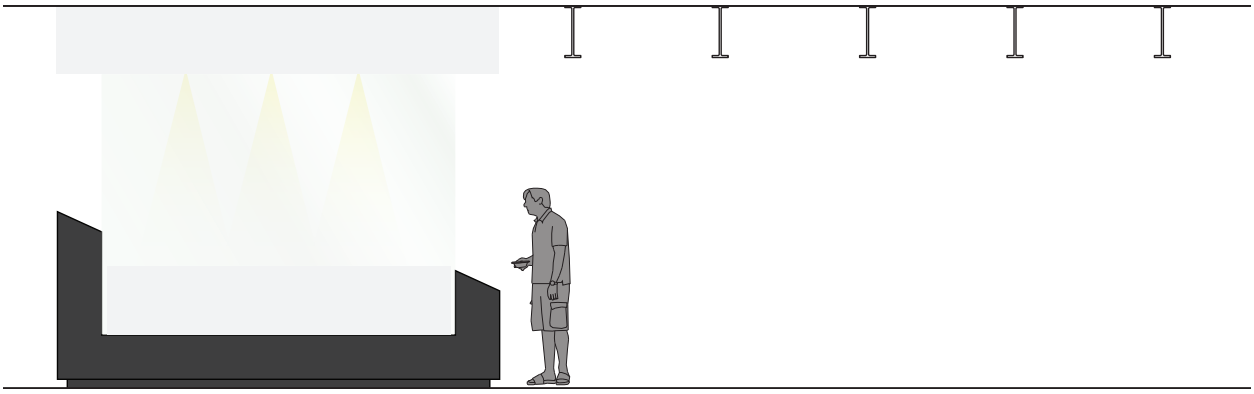

Figure 8.56 Artifacts display with glass case, with information rail.

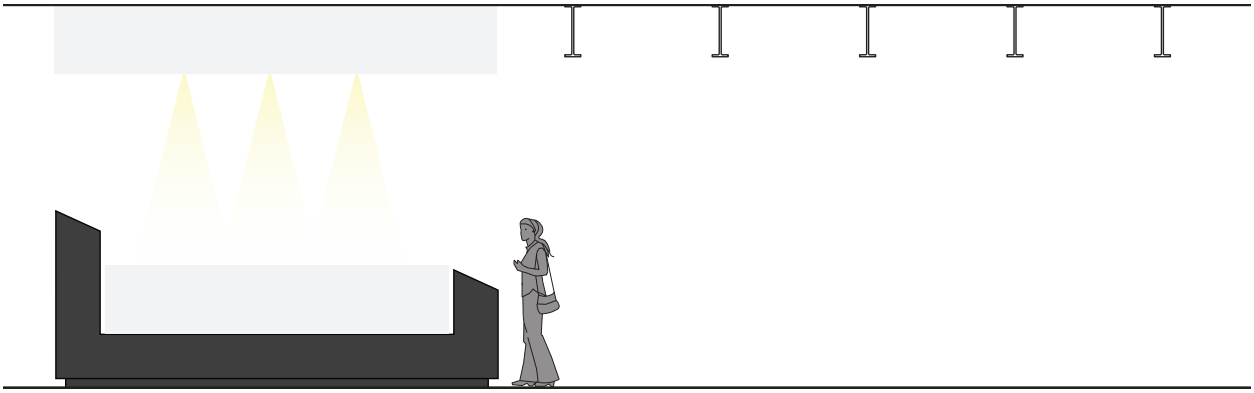

Figure 8.57 Artifacts display, open case, with information rail.

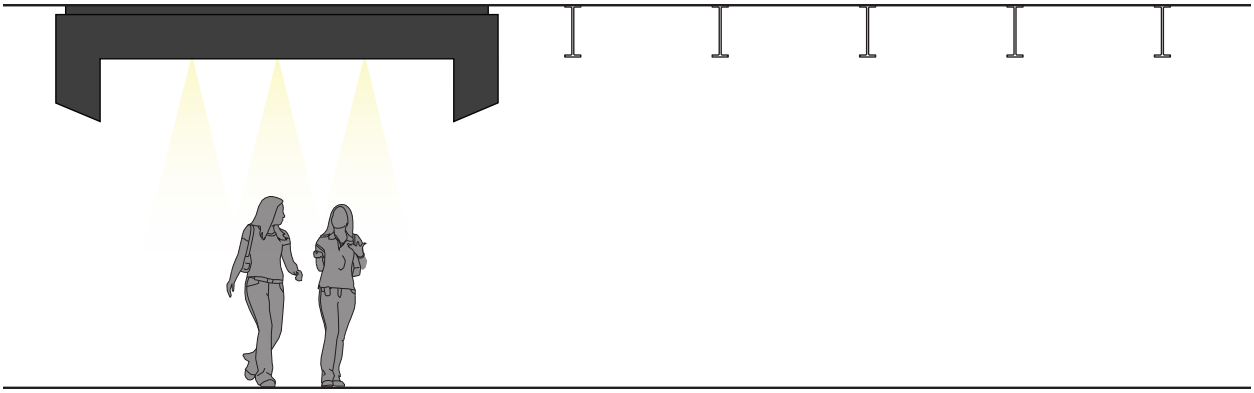

Figure 8.58 Passageway.

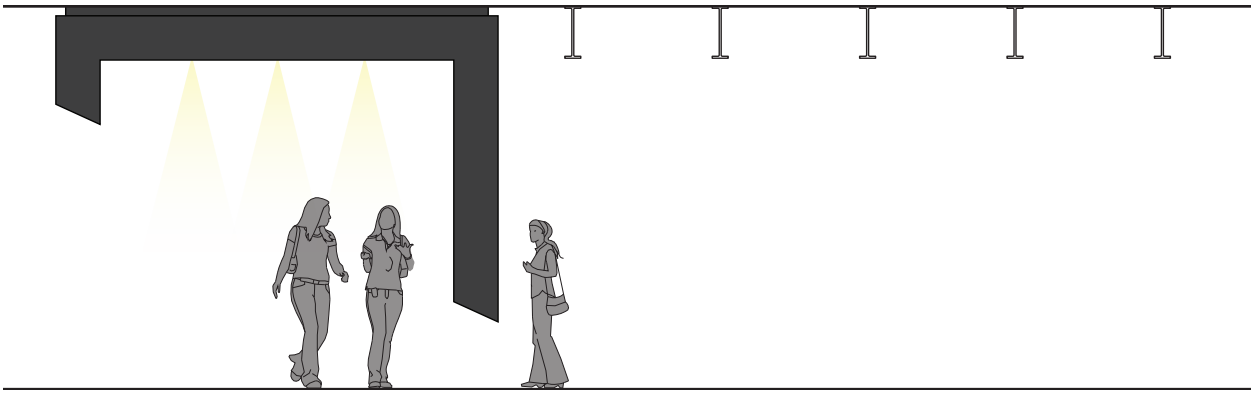

Figure 8.59 Passageway and display wall.

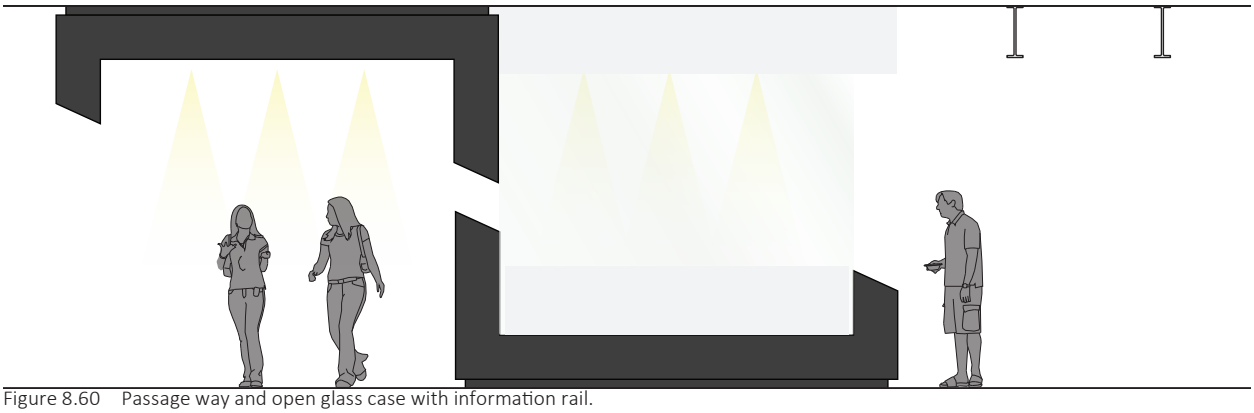

Figure 8.60 Passage way and open glass case with information rail.

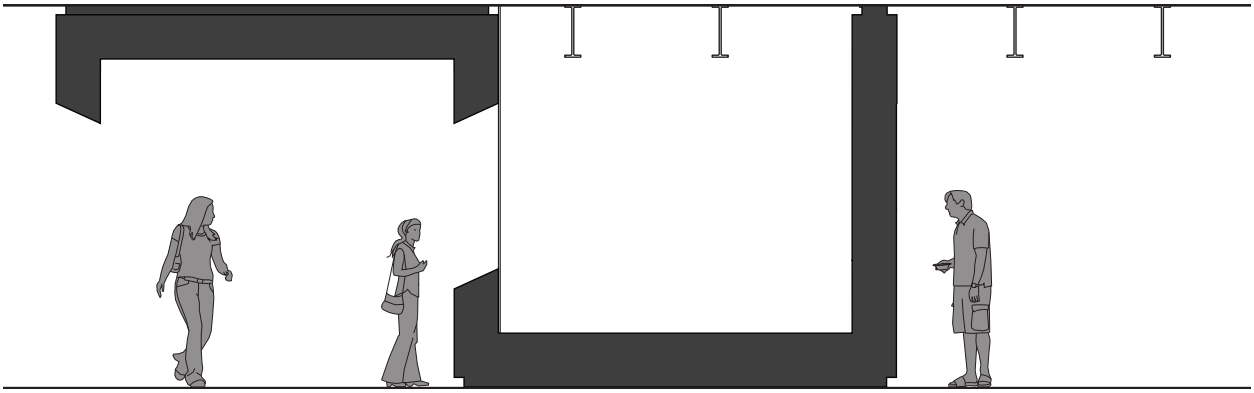

Figure 8.61 Passage way with information rail and protected display area.

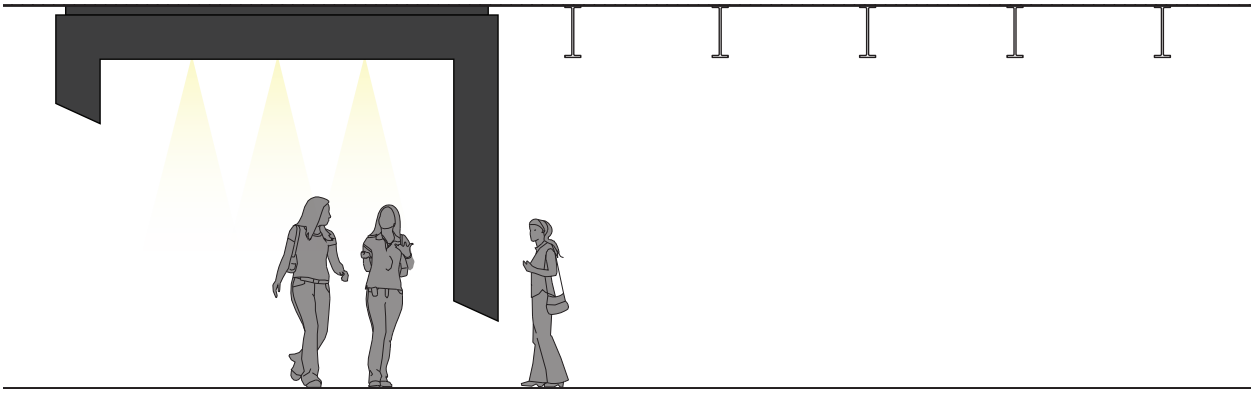

Figure 8.62 Passage way and display wall.

EXHIBITION SPACES

The design of the exhibition entry sequence includes large typographic titles, visible from afar. Large scale tactile introductory messages are presented alongside the title. Each exhibit may also includes and audio/video narrator who speaks alternately between English and American Sign Language, and French and American Sign Language. Each narration includes closed captioning (figure 8.63).

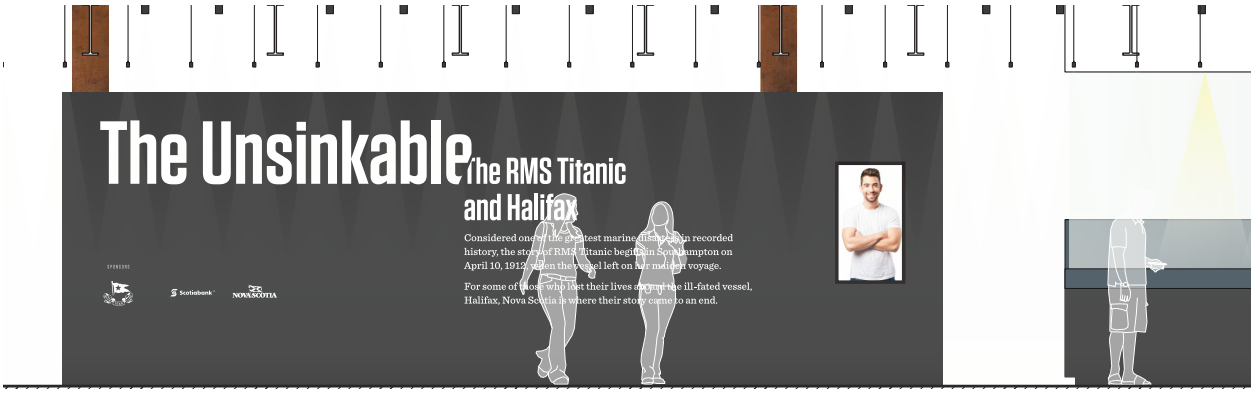

Figure 8.63 Exhibition entry sequence.

CONCLUSION

Throughout the design process, the intent was informed by two primary factors: the narrative, and disability. High contrast colours, large shapes, graphics and text, good lighting conditions, acoustics and site lines all played a role in designing this narrative environment.

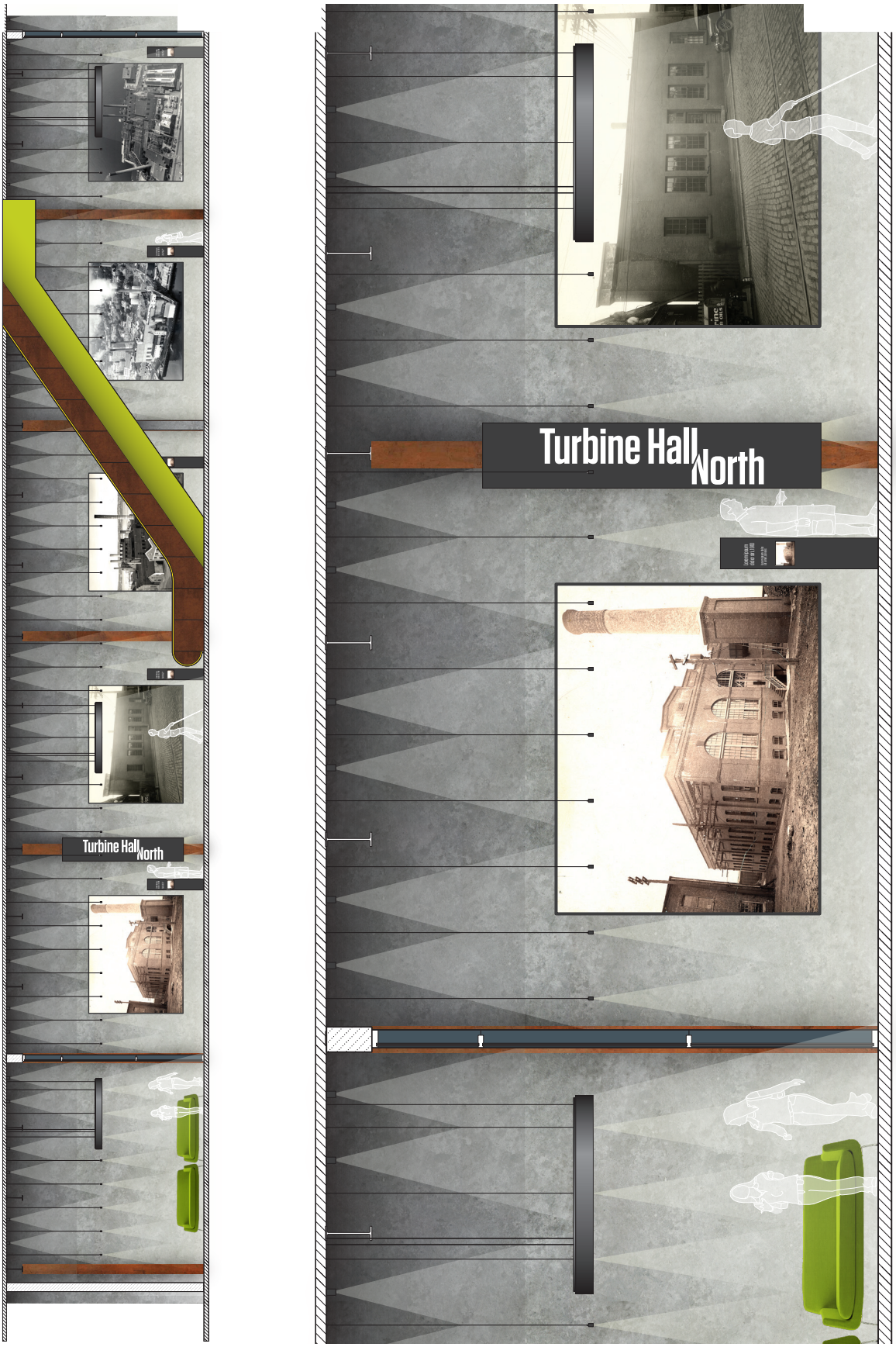

Figure 8.64 Group entrance

Figure 8.65 Turbine Hall North

Figure 8.66 Lobby

Figure 8.67 Lobby

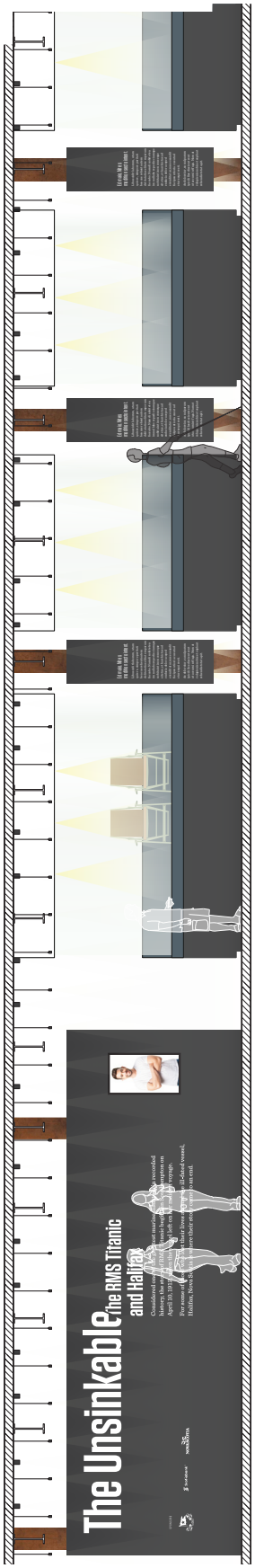

Figure 8.68 Typical Gallery

9. Conclusion

Conclusion

My understanding of design came first from professor Hanno Ehses at the Nova Scotia College of Art and Design. Ehses taught me that design is based on a rhetorical foundation. He instilled in me that we can use schemes and tropes are not solely a means of ideation, but also how they can be used to dissect and critique a design using a common language. He also taught me that good design is based on a strong concept *and* it must be well crafted: both go hand-in-hand.

The formative years for my graduate education as Interior Design candidate came from the tutelage of Christy Schlesinger and Brien Watson. I often credit them for laying the foundation for the this next phase of my career. As a graduate student at the Corcoran College of Art and Design at the time, instructors Christy and Brien—architects by training—introduced me to the notion of a *parti* diagram. In the architectural primer *101 Things I Learned in Architecture School* Matthew Frederick refers to the *parti* as "the central idea or concept of a building" typically a thumbnail size sketch, typically a representation of the building, and "by implication, its experiential and aesthetic sensibility" (Frederick 2007).

Whether it was rhetorician Ehses' focus on schemes and tropes, Brien Watson's introduction to the *parti*, Kelley Beaverford's employment of sketch models, or Christy Schlesinger's insistence to describe design concepts using a single word, all instructors instilled in me the need for clearly defining a concept. Since my time at the Corcoran College of Art and Design (2007–2010), I have been honing my process to better fit with my new area of study. Since that time, as an instructor at the University of Manitoba's School of Art, a student of Interior Design ant the University of Manitoba, and as a design practitioner, I have relied on this training to inform every project I work on.

This practicum project is no exception. Currently, I strive to reach a point in the discovery process of every project when I can describe the core concept using a single

sketch, in a word or series of words, and a sentence. This new way of working I credit to my graduate education. This practicum project also provided the means to think of the design solution as more than interior design, and to see how my training as in interior design could influence my graphic design practice, and vice versa.

The core concept, the *parti* developed for this practicum was based on Tzvetan Todorov's theory of narrative structure summarised as: *equilibrium*, *disruption*, *resolution*, and *new equilibrium*. The parti not only informed how I organized space within the building, and how I structured the flow of the exhibitions, but also informed the name of the museum and how it was to be represented graphically. If the practicum exercise was about honing one's design skills, then there is a positive measurable outcome.

Some lessons are learned through success and others are learned through varying degrees of difficulty: aspects of this project belong to the latter.

The foundation for this practicum project was the notion that the exhibition is a sequence of experiences, in a heavily narrated and curated environment. The notion of sequential spatial experiences with undertones of communication led me to investigate theories of narrative as a means to further expand upon my future role as an potential interior designer and to enhance my role as an exhibition design.

I started this project with a premise: the museum experience has similarities to that of a story. However, as my research progressed, I realized that a mere sequencing of experiences may not be enough to conclude that exhibitions are narratives, in the strictest theoretical sense. I was also in the position of requiring the exercise to be one of interior design—spatial design, visitor flow, function, etc.—and *not* exhibition design. In summary, my research of narrative theory provided a guiding principle for a cohesive design, but the design I produced may or may not be considered a narrative experience from the perspective of practitioners of theories of the narrative.

Theories of the narrative clearly informed the design, a space for all users. But did it inform design for disability? Indirectly, it did. My organization of space, in particular the

East-West and North-South axis we informed both by responding to the *parti*, and as a means help users navigate. The exhibition halls employ the use of an atrium midway in the experience—a pause for a moment of reflection, or as a device to use light, volume, and sound as a metaphor for disruption. Indeed, my theoretical research impacted an approach to disability, but perhaps not as directly as I had thought when I started this process.

There are countless national and international guidelines, reports, and US and Canadian laws that help designers develop spaces for persons with disabilities. While individuals with mobility issues are clearly an important part of the discussion and this practicum, there are several well articulated guidelines associated with helping people with mobility issues. While in no way intending to overlook this group, much is outlined with respect to quantifiable data to help design spaces to better accommodate people with mobility issues.

People with low or no vision, and those who are deaf and hard of hearing—like people with mobility issues—are a groups who are under served in society. The Smithsonian Accessibility Program, the National Institute for Building Sciences, Gallaudet University's DeafSpace Program, and countless other organizations all suggest methods for making space more usable for *all* disability groups. With respect to the deaf and hard of hearing, and the blind and persons with low vision, what is best for one group may be at odds with the other. Open spaces, for example are ideal for the deaf to help locate people, however the open "loud" spaces are an issue for the blind. Rectilinear environments are well suited to the blind, and round space to the deaf. My research affirmed my hunch going into this project: that no one solution is a good fit for all. This process did however reaffirm that design with disability in mind is better design for all.

Some lessons are learned through success and others are learned through varying degrees of difficulty. Having a premise is important, having no preconceived notions is critical. A design is the result of research, discovery, exploration, and refinement. Allowing your process to guide your design was something I knew going in, and reaffirmed throughput this project.

At the onset of this project, I believed that three areas of research could work together to inform each other: narrative, disability, and the museum experience. As a result of my research and the direction this project took, I realised that the museum experience could be informed by narrative theory, and that designing for persons with disability could create a better museum experience for all. Where the work was weakest was how narrative theory informed design outcomes for disability. When viewed through the individual lenses of disability, narrative, and museum experience, then some areas of this practicum are more successful than others. When viewed as a whole, the design presented here was wholly informed by disability, narrative, and museum experience.

The experience can be assessed as a work of research, writing, and design. Clarity of thought and writing has always been a issue for me. I started this process with an interest in rhetoric, with an graphic design education rooted in semiotics and a love of schemes and tropes. As I delved more into theory of the narrative, I became more interested in writing. While this practicum was academic in nature, and required an academic approach to writing, I could not help but be influenced by the storytelling nature of my research. At times, I found my writing—as did my supervisors—to be less academic. While trying to stay within the confines of an academic paper, I found myself toeing the line: exploring the edge between academia and other forms of writing.

I believe that all design should be viewed through three lenses: ecological, cultural/social, and economic. For this practicum project, I have outlined why I believe the site to be appropriate from an environmentally sustainable approach to design, not the least of which is an adaptive reuse of an underutilized structure.

Social cultural sustainability considers how we can shape the built environment to improve human interactions. An emphasis on universal design plays a role in this way of thinking, and should be core to all designers approach to design at all times. That said, the concept of sustainability for a better society is also far from new. Perhaps profit driven, the Light and Power Company's transit upgrades provided a better service for the city;

at the time however, I suspect they were unaware of the long-term cost to the environment. Emera, when renovating the Nova Scotia Power facility to house their new corporate headquarters, strove for and achieved a LEED Platinum equivalent ranking for the building. Ethically or brand driven is irrelevant, the new building is better for society, and one less building was sent to a landfill.

Cultural sustainability, in the case of this practicum, I hope, is self evident by this point. In fact, the process of developing this practicum project has been an exercise in honing a personal stance on sustainable practice. As an academic exercise I had the opportunity to orchestrate many moving parts to support this investigation.

Projects in any region should consider in one way or another the culture and history of place. The harbour and the drumlins, the people who lived here before colonization and after, and the weather and the ocean one way or another can all be considered in any design of any element of the built environment in this region. Whether it is looking to the ocean for thermal cooling and heating or wind for power generation; researching the region for influence and understanding of the vernacular; utilizing the climate for heating and cooling; creating views planes to the ocean for interior spaces as a reminder of our connection to the sea; researching who we are and where we came from, and; the adaptation of old commercial spaces—piers and/or warehouses for example—for new uses. ALL of these can be tied to our cultural heritage past.

As a designer of the built environment, what happened before has the opportunity to play a role in *any* adaptive reuse (often the realm of interior design) and in any new design (where site plays a role) given most every site in the province may have some indigenous or colonial histories to interpret through design. In the days of post-truth understanding and reconciliation initiatives, I believe cultural sustainability to have a particular resonance in Canada. From a storytelling perspective a museum of disasters supports our past through the interpretation of events. As for my own growth as a designer, I believe it is the word *interpret* that has plays an important role in who I am as a designer, past and future. As a

graphic designer and designer of interior environments, I do not view design as a product of my own interests, likes and dislikes, rather design is a response to considerations beyond the project brief, and interpreting the cultural context of the design problem informs the design solution. As a designer, I believe we have a responsibility to assess the context of each and every design, and provide some level of cultural interpretation however subtle or overt. It perhaps goes without saying, but the design of a former coal-powered generation station has an obligation to reconcile its past.

Finally, economic sustainability is often excluded from this conversation until too late in the process, but it is as critical a component as the others. The design firm I work for writes about this often when we are writing proposals to get work or submitting reports once we have the work. My firm and I believe finding a compromise between wishes, needs, and economic reality while still maintaining the highest criteria in intent, user experience, functionality, and project legacy are all the utmost importance. Time expended, and sustainable approaches and resources employed are rendered a moot expenditure if a client can neither afford maintenance and implementation nor has a long-term commitment. It must therefore be an assumption moving forward that the fictitious client for the proposed museum has a commitment for the project long-term. While an economic analysis is not a requirement of this practicum, tertiary research and precedent suggests a museum in this location, while in no way presented as economically viable, certainly can be supported as a reasonable endeavour.

Post-practicum reflection

As a former graphic designer, I understood how colour, form, language, text, and image impact communication, and my work was not entirely based in print, but also broadcast, interaction design, and wayfinding. I understood how graphic design interacts with the built environment. As a designer interested in exhibition design, I also understood the role environment, collection, and interpretation play in engaging audiences.

As this project progressed, the intradisciplinary focus—interior design alone—ran counter my approach to design. As a practicing designer trained in a graphic design, my 25+ years multi-disciplinary experience combined with the experience studying a Masters in Interior Design forced me to define my own position on design. To many, design is considered a product-driven activity: interior designers focus on form and function to transform the built environment; graphics designers look to language, colour, and image to communicate. Design however is not merely physical and aesthetic, but also human factor oriented. Rather than a product-driven activity, I have come to realize that design is a solution-based activity, and that system, program, story, service, and experience are integral to my interdisciplinary approach to what is traditionally considered design. As such, it was difficult to view this project solely through the lens of interior design. In addition to graphic design, I believe program and service, and experience inevitably inform my design solutions. While this practicum is intended to fulfill the academic requirements of a Masters of Interior Design—identifying a need to be addressed and a theoretical framework to work within to propose an interior design solution—I did not limit my exploration to decisions typically in the realm of an interior design professional. In addition to using the practicum to become a better interior designer I believe this academic exercise was also an opportunity to elaborate on an area of interest which is exhibition design. I was also able to enhance my ability to explore design not solely as a graphic designer, but as a design strategist able to employ program, service, and other aspects related to the services of a museum.

In an increasingly designed world, the traditional boundaries between professions blur, and the role of the designer must evolve to be aware of, and influenced by the other disciplines within the many practices of design. Exhibition design stands at the crossroad of numerous disciplines including but not limited to interior design, graphic design, art history, and architecture.

For the exhibition designer, the communication devices employed, the work exhibited,

and the sequencing of the work allow for the shaping of an exhibit experience: typically linear, and; often with overt or subtle expression of the curatorial voice. The interior designer also sequences events, and employs devices and techniques at their disposal to shape the experience. In summary, exhibition design and interior design share a commonality—both compose of experiences in the built environment. As a designer who wishes to be more heavily involved in exhibition design, this practicum experience surely forged elements of my design skills.

My undergraduate experience was rooted in production and interpretation of meaning. As a graphic designer, I believe that design is built on a rhetorical footing, and theories related to semiotics and visual communication continue to inform my graphic and interior design processes. As an extension of my undergraduate semiotic training, and a result of this practicum I began to explore new areas of critical thinking and identified with theory related to literature. Whereas as rhetorical devices are the atoms of communication, it is the story—the narrative is part of the human condition—that is often the reason why we employ rhetoric as a communication device.

Ehses writing on visual rhetoric had a profound impact on my work. An investigation of rhetorical schemes and tropes was the typical start of any design exploration, and continues to be so to this day. Ehses was responsible for introducing me to Roland Barthes, John Fiske, Seymour Chattman, and Terence Hawkes. While at the time I could not appreciate their insight, I am now grateful for their impact. At the University of Manitoba, it was Dr. Susan Close who reintroduced me to design theory, in particular theories of the narrative, Mieke Bal, and Seymour Chatman. It was my research into museums that led be to Leslie Bedford, and Barry Lord and Gail Dextor Lord.

Since starting this project, I have had the opportunity to work on a number of built works, including a multi-disciplinary project to better portray Métis culture in Batoche National Historic Site in Saskatchewan, and most recently Fort Needham Memorial Park to commemorate the 100th anniversary of the Halifax Explosion. These projects, and

countless others were informed by work for this project, in particular my investigation into theory of the narrative.

At one time, I was fearful of writing. I rarely enjoyed the outcome, and found the promise daunting, intimidating, and exhausting. This exercise practicum project has started an interest in writing.

The biggest learning outcome from this practicum project was that of context. Working in an office, we have had time to refine our stance on sustainable design. While sustainability and the environment must remain a cornerstone of every project, I have come to realise the cultural sustainability is also key. In days of post- truth and reconciliation and post-colonization, reckoning with our past and acknowledging our history is important. I firmly believe that cultural and heritage of place must be investigated as part of any design assignment, and history of space should not be overlooked when consider the design of place.

As a designer, I have found an understanding of the cultural heritage environment for any new project to be empowering. Knowing the history of place gives me the confidence to experience, put into practice in my current job.

I am a better designer as a result of this practicum, and the subject matter and exercise has and will open doors in the future.

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