VANCOUVER CHILDREN'S MUSEUM

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Comprehensive Design Project Proposal

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Statement of Intent

Vancouver Children's Museum
1770 Burrard St
Vancouver, BC V6J 3G7, Canada

As a dedicated student team, our mission is to focus on the creation of an engaging and educational children's museum. Our statement of intent highlights our commitment to this project, emphasizing key areas of significance.

We recognize the unique challenges involved in designing a children's museum, where the interior environment plays an important role in promoting learning, creativity, and fun for young visitors. Understanding the complexity of this task, we recognize the importance of ensuring the health, safety, and well-being of the children who will interact with the museum's interior spaces. Our team is dedicated to assessing the relationships between various interior elements and making recommendations that enhance the educational and recreational experiences of young visitors.

Our approach involves a deep understanding of children's needs, behaviors, and developmental stages, allowing us to design in a way that caters to their unique requirements. We recognize the significance of addressing specific issues relating to child development, inclusivity, and cultural diversity, ensuring our museum design is both enriching young minds, and universally accessible. We will evaluate technological options in the form of lighting and audio/visual elements and integrate them into the museum experience while sticking to performance criteria and ensuring age-appropriate interaction. We want to create new and original solutions that encourage children to love learning and exploration by incorporating different design theories and bodies of knowledge. Our dedication extends to exploring various design options by drawing from different fields of knowledge to make sure the museum provides a well-rounded educational experience.

As a group, we will follow a thoughtful research approach to guide our design decisions for a children's museum. This involves conducting in-depth research and analysis, including thorough literature reviews, interviews with professionals in the interior design industry and the museum industry, and touring noteworthy museums to stay updated on the latest trends in education and design for kids. We will then organize this information in a child-friendly way, setting clear project goals that emphasize both education and fun. Our commitment to research supports our goal of creating spaces that both entertain and educate. Our design process is structured and based on a framework that combines elements of play, learning, and creativity, ensuring a well-rounded experience for young visitors. We will also create clear program requirements that are geared toward the diverse needs of children of different ages. Acknowledging the complexity of designing for children, we carefully consider both the big picture and the small details, instilling creativity into every aspect of our design.

We will support our design choices with critical and strategic thinking, focusing on how they positively impact children's development. We're dedicated to clearly identifying and explaining the outcomes and benefits of our children's museum design, ensuring it makes sense both educationally and economically. We also aim to think about how our design will impact the community in terms of its social and cultural aspects. We understand that the museum will be important for engaging and educating the community. We understand the connection between the children's museum, the physical environment, and the community, all of which aim to enhance the lives of local children and families.

In summary, our team is excited to start designing a children's museum that entertains, educates, and inspires. We believe that our experience in the interior design program has prepared us for this project through our previous work with pediatrics, codes, ADA, and space planning. In addition, our comprehensive approach, rooted in a deep understanding of children's needs and a commitment to creativity and education, will result in a museum that becomes a hub of learning and enjoyment for generations to come.

Mission Statement

Our mission is to provide an interactive play and hands-on learning museum where we provide a child-centered environment to inspire children's creativity, curiosity, imagination and a love for life-long learning (Lykens Valley Children's Museum, 2023).

Vision

Our vision is to...

- Create a community where children have access to resources that they need to become creative, curious, inventive and healthy children who will be ready for the ever changing world
- Create a joy and passion for lifelong learning
- Emphasize early childhood education and school readiness
- Promote the learning and development of the most pivotal and formative years of life

Values

- **Play Time**: We believe that play time is essential for a healthy child development and creates a love for lifelong learning.
- **Learning:** We believe that interactive learning and play will allow children to use their creativity, apply critical thinking skills, learn to solve problems and grow.
- **Curiosity**: We encourage children to explore, invent, play, dream and to ask questions.
- **Value**: We want to add value to our community and serve as the gateway to community programs.
- **Respect**: We respect children and the adults who support them, and we believe in respect in return.

Source for Vision and Values: Lykens Valley Children's Museum, 2023

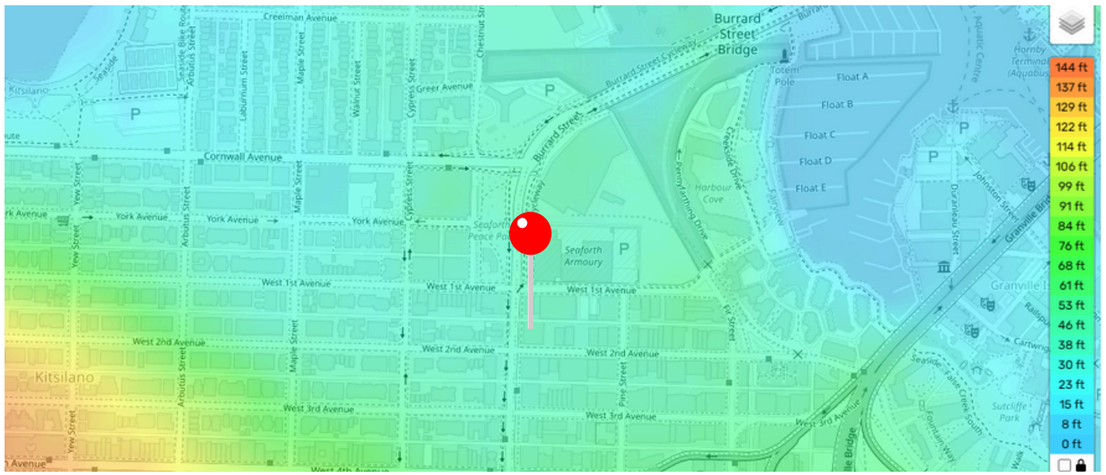
Existing Conditions Analysis

Site

Vancouver is a large, walkable city located North of Seattle right over the Canadian border in the Province of British Colombia. Vancouver Children's Museum will be located at 1770 Burrard St, slightly southwest of Granville Island. Granville Island is home to numerous restaurants, markets, and activities, for both adults and children to enjoy. The estimated population of Vancouver in 2023 is 672,857 people, and the city is approximately 114.97 square kilometers (World Population Review, 2023). Our building is located on two corners, with pedestrian sidewalks on three sides. The building is oriented so that the main entrance sits on the West side, allowing for easy visibility off the main road. The lookout is adjacent to the main entrance, allowing 360-degree views of Vancouver's cityscape and waterfront. This location is amongst an abundance of multifamily housing along with a mix of commercial businesses. Adjacent buildings include Livingspace Interiors, Seaforth Armory, Bentley Vancouver, and West Coast Rugs. In addition, there are four public transit stations within relative proximity that visitors can use if they don't want to worry about parking (Trans Link, 2023). Vancouver, on average, has 131 days of rainfall per year, totaling an annual average of 58 inches (Weather Spark, 2023). The average wind speed sits at 4.7 mph (Weather Spark, 2023). Due to the volume of rainy days, Vancouver proposes the perfect place for an indoor attraction, such as a children's museum.

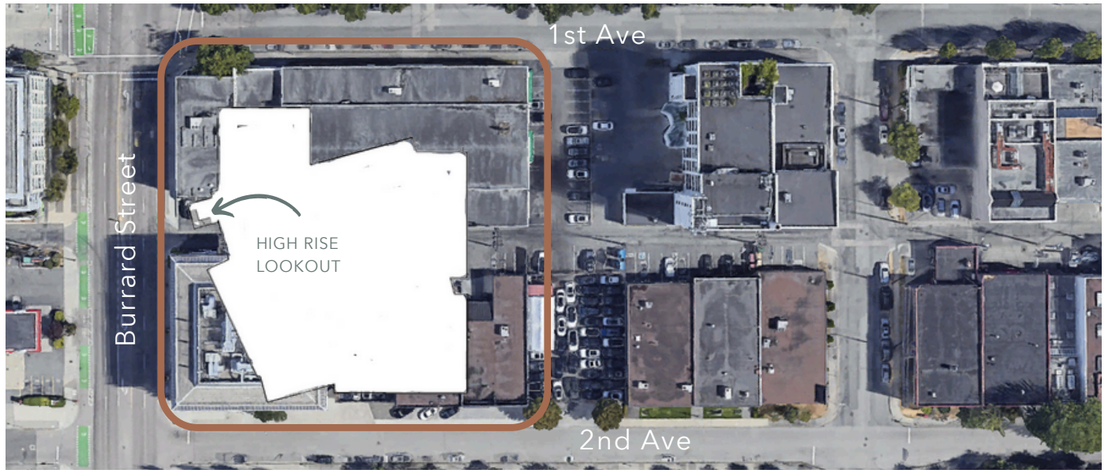
Vancouver World Map Location (Google Maps, 2023).

Vancouver Global Location (Maphill, 2011).



Topographic Map (Topographic-Map.com, 2023).

Perspective View (LoopNet, 2023).



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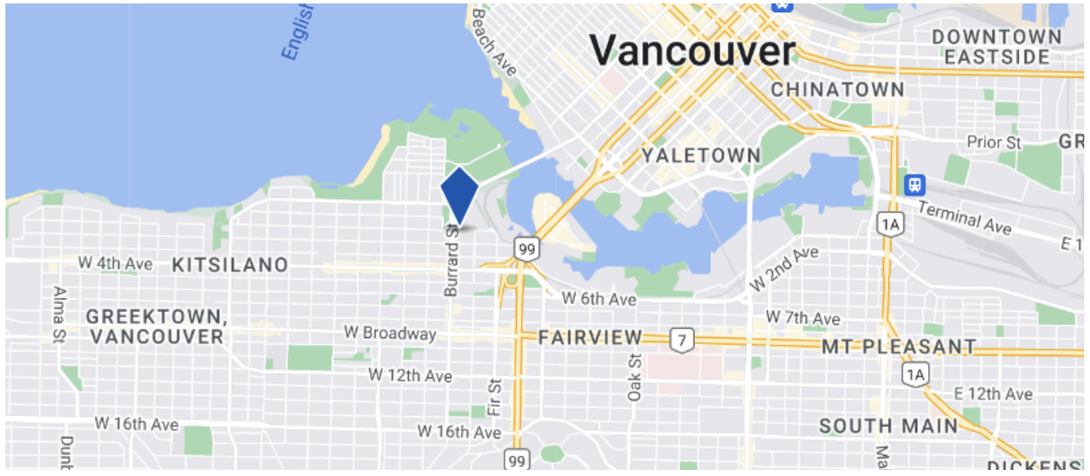
Birdseye View (Google Earth, 2023).



Map Location (Google Maps, 2023).

N

The Museum is to be built in place of MCL Motor Cars and Bentley + Aston Martin Vancouver. Located on the corners of Burrard Street and 1st Ave and Burrard St and 2nd Ave.

Building

Concept: ICON Architectural Group, 2021

Concept: ICON Architectural Group, 2021

The building structure being utilized for this project is different from others in the fact that it has never been built. This building was proposed to be a children's museum located in Grand Forks, North Dakota. This structure is a 2 story multi-height building with a 4 story high-rise lookout. The overall square footage of this building sits at 58,785 sq ft. When broken down into floors the square footage is as follows; first floor is 31,923 sq ft, second floor is 25,602 sq ft, and the high rise lookout is 315 sq ft per floor. The exterior structure has varying glass features, with standard windows and floor-to-ceiling grids. The exterior finishes include primary colors: red, blue, and yellow. The remaining exterior is a dark gray facade. The abundance of natural light allows for a naturally bright interior with great views. The considerable square footage will allow for the opportunity for a variety of exhibits and the ability to include larger-scale interior structures.

Building Square Footage

Floor 1 = 31,923 sq ft

Floor 2 = 25,602 sq ft

High Rise Lookout = 315 sq ft per floor

Floor to Ceiling Deck Heights

Floor	Height
1	12′-0″ AFF
2	12′-0″ AFF

Concept: ICON Architectural Group, 2021

Interior

The interior of this building was proposed to be broken into a variety of exhibit spaces. Some of these exhibit spaces include aerospace, wind energy, farming, construction, STEM, story land, and a wall installation. Throughout the building there were also dedicated spaces for restrooms, family restrooms, storage spaces, office support, and a coat/stroller room. The building frame can be seen on the interior by its steel structural columns, along with painted gypsum walls to separate the spaces. The two floors of this building each have a ceiling height of 12′-0″ AFF, making the total structure approximately 25′-0″ high. Since this building was not entirely designed, light fixtures are not shown but we can assume that LED's and natural lighting would be used to luminate the space.

For the Vancouver Children's Museum, we plan to utilize the entire first floor for our exhibit and public spaces. The second floor will be allocated for staff use but not included in the scope of work. Spaces on this floor will include conference rooms, office support, restrooms, a break area, and a workshop. From this existing building we plan to keep the high-rise lookout as well as all structural elements. We also designed the exhibits around the existing windows to maximize natural daylight into our museum.

Existing Elements to Retain

- Existing Windows
- High-Rise Lookout/Stairwell
- Structural Elements
- Mechanical Systems

Design Concept Statement

Located in the heart of Vancouver, the Vancouver Children's Museum is founded using principles of a vibrant, inclusive, and educational environment that caters to the unique needs, behaviors, and developmental stages of young visitors. T Our design values prioritize health, safety, well-being, and inclusivity, ensuring that all children can fully engage with the exhibits and feel a sense of welcomeness. The first floor will feature a diverse range of exhibit space such as sports, a turf space, township, toddler space, and a grocery store. There will also be spaces for essential amenities such as: reception, restrooms, comfort rooms, and a space for eating. While not part of the scope of work, second floor spaces will be allocated with important aspects in running a children's museum including administrative spaces as well as the separate behind the scene spaces such as a large workshop and storage space. Backed by extensive research and a well-structured design process, our vision is to create a dynamic, modern, and inviting space that stimulates imagination and growth while also serving as a place where children can learn and explore. The choice of materials and our color palette reflects our knowledge of children's messiness, and how children may be stimulated by different colors and textures, and how they allow children to be creative, curious, and passionate about learning. These materials include gray-toned earthy colors, natural and soft textures, as well as subtle patterns to not overstimulate but still create a sense of warmth, excitement and playfulness. Through this all-inclusive approach, we are excited to bring our vision to life and create an exceptional educational space for the children of Vancouver.

Goals and Objectives

Goal: Create a space fit for kids with neurosensitivities.

Integrate elements fit for children with neurosensitivities into main exhibits and features (Coffey, 2018).

Consider color and how it can affect the psychological and physiological well-being of children (Khalili, 2010).

Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).

Use strategic wayfinding throughout the entirety of the museum so children of all abilities are able to feel independent (Sakya et al., 2017).

Goal: Incorporate a color palette that encourages playfulness and excitement.

Use neutral colors to leave the excitement to the activities within the museum (R. Barrett, personal communication, October 5, 2023).

When using color, it is crucial to use color contrasts and harmonies to create an effective space (Khalili, 2010).

Balance colors in order to bridge the gap between overstimulation and understimulation (Filova & Rollova, 2019).

Goal: Implement various exhibit types to satisfy the needs of a broad range of children.

Include exhibits where roles are clear and well-defined, and parents can feel comfortable playing with their children (Shine & Acosta, 2008).

Include a variety of different exhibits including large and fine motor skills that will appeal to all children (Puchner et al., 2001).

Have multiple exhibits in the museum be tactile and/or kinesthetic in order for children to have a higher chance of retaining what they did and learned (Anderson et al., 2002).

Design exhibits that warrant more open-ended play and exploration so that children can set their own goals and feel successful in their choice of play (Sobel et al., 2022).

Goal: Design the interior environment in a way that makes visitors feel welcome and eager to return.

Interior elements such as temperature, air quality, lighting, and aesthetics should be considered as they affect a visitors experience (Han et al., 2019).

Incorporate layers of lighting throughout the museum to provide a unique and comfortable experience for all visitors (Filova & Rollova, 2019).

Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).

Incorporate kid-friendly illustrations and wording in signage to encourage independence (Puchner et al., 2001).

Goal: Create a space that is accessible beyond-ADA.

Simple changes such as a shift from generic general lighting to dimmable ambient lighting can completely alter the overall experience of a child with sensory sensitivities (Habbak & Khodeir, 2023).

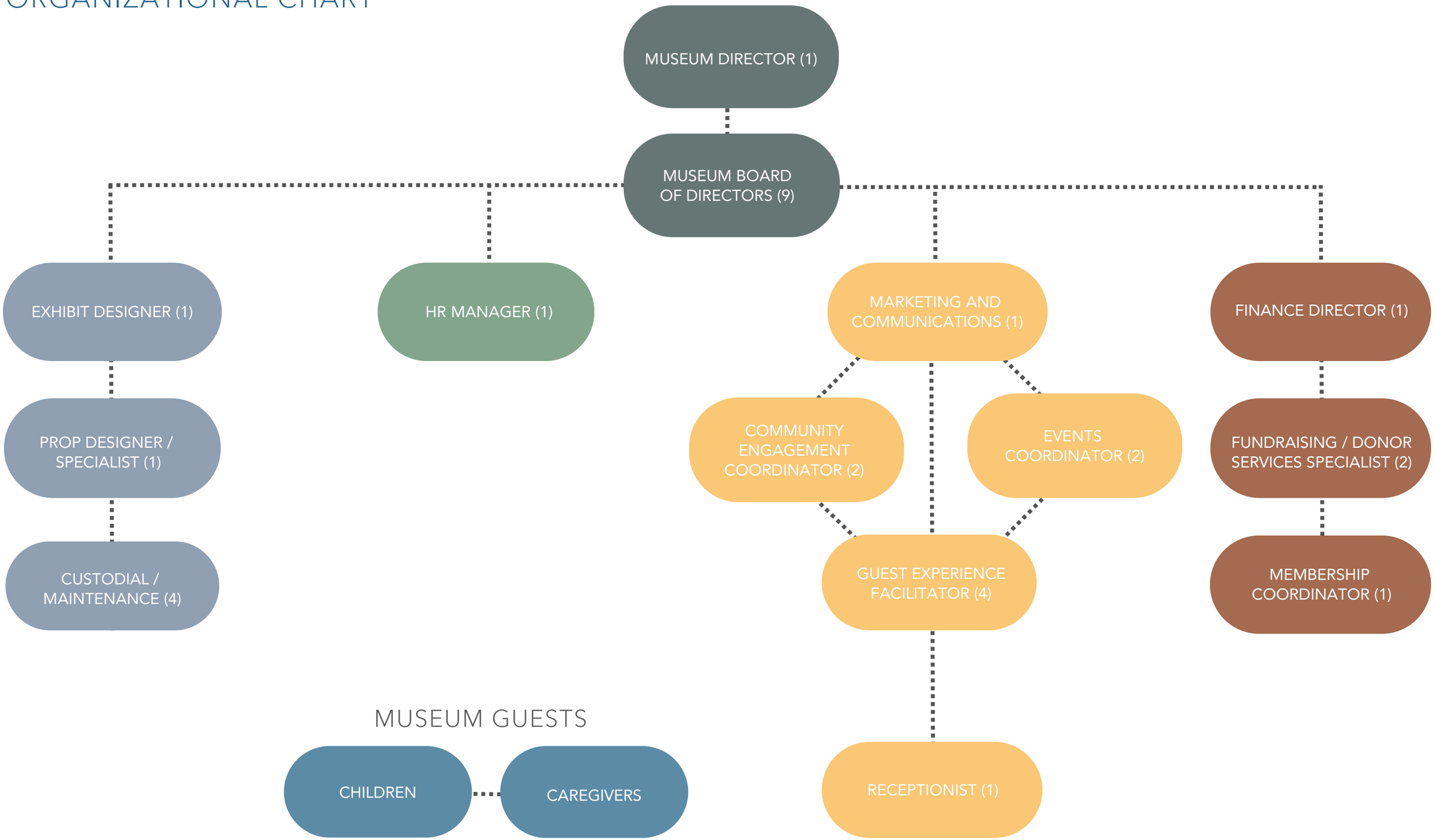
Pare down exhibit and overall signage to three or four main points and include photo representation for children that may have trouble reading (Knowles & Schwartzman, 2022).

Designing the museum around accessibility goes into every element: flooring, space, lighting, colors, and scent (Habbak & Khodeir, 2023).

Reach beyond the physical design and consider the cognitive design to accommodate for children with neurodivergence (R. Barrett, personal communication, October 5, 2023).

Make adequate spatial arrangements of exhibits, improve the layout, incorporate signs and descriptions, and provide adequate spaces for programs to make visitors feel like the space is user-friendly and leads to visitor satisfaction (Han et al., 2019).

ORGANIZATIONAL CHART



User/Client Description

Museum Director (1): Responsible for the daily operations of the museum, for long-term planning, policies, and any research conducted within the museum (Vault, 2023).

Museum Board of Directors (9): Determine, monitor, and strengthen the museum's programs and services (The Mill Museum, 2022).

HR Manager (1): Oversee recruiting, interviewing, and hiring of new staff. They also serve as the direct link between the organization's leadership and management and its employees (U.S Bureau of Labor Statistics, 2023).

Finance Director (1): Oversee all financial activities, reporting on revenue, training accounting staff, budgeting, and disbursing funds to departments (Betterteam, 2021).

Marketing and Communications (1): Responsible for creating, implementing, and measuring a comprehensive marketing plan to promote the mission of the museum (WOW Children's Museum, n.d.).

Membership Coordinator (1): Processing new applications for member services, volunteering information to prospective members, and providing information to prospective members.

Community Engagement Coordinator (2): Responsible for engagement with the Community, partners, members and other interested parties to ensure the museum's mission and services are represented (Family Solutions Collaborative, 2021).

Fundraising / Donor Services Specialist (2): Organize activities to raise funds and gather donations to be put back into the organization to keep it running, financially.

Events Coordinator (2): Propose, plan and execute concepts and details of museum, educational, and community events (Peoria Riverfront Museum, 2023).

Exhibit Designer (1): Responsible for the overall design and planning of the museum exhibits as well as coordinating with contractors and architects.

Prop Designer / Specialist (1): Responsible for the design and planning of the museum props and toys as well as their upkeep and turnover.

Guest Experience Facilitator (4): To maintain a positive learning environment and ensure the smooth operation and safety of exhibit spaces by monitoring guests and helping with guidance when needed.

Custodial / Maintenance (4): Performs museum custodial duties such as sweeping, mopping, waxing, vacuuming, laundry, and repairs.

Receptionist (1): Provide customer service and admission to visitors, answer email and telephone inquiries, and monitor entrance to ensure safety.

Museum Guests

Caregivers (Varies): Responsible for watching after the child(ren) and providing assistance, care, and enthusiasm when interacting with exhibits.

Children (Varies): Main user of the space. Responsible for playing, interacting, and experimenting with exhibits, props, and spaces, to learn and develop new skills.

Scope of Work

As the interior designers for Vancouver Children's Museum, we will be responsible for creating an inclusive space that encourages and excited learning and play. We will be designing almost all of the space to be dedicated for exhibits, but there are a few more spaces essential to a successful children's museum. Those spaces include: reception area, restrooms, comfort rooms, storage, and staff spaces. The development of our design is broken down into several phases.

*Due to the nature of exhibit and museum design, the team will be designing the museum spaces collectively to ensure the best function and design possible. However, later in the project, certain elements of each exhibit will be designated to a member of the team to be designed solely by them.

Phase I of the project is the information gathering phase. In this phase, information will be gained from professionals surrounding children and informal learning in a museum setting. Specific parts of this phase include:

- Review of Literature
- Interviews
- Site Visits
- Website Reviews

Floor I	
Space Designed	**Designer**
Reception/Lobby	Sophie + Erin + Jenna
Storage	Sophie + Erin + Jenna
Custodial (2)	Sophie + Erin + Jenna
Comfort Room (4)	Sophie + Erin + Jenna
Public Restroom (2)	Sophie + Erin + Jenna
Family Restroom (3)	Sophie + Erin + Jenna
Café	Sophie + Erin + Jenna
Library	Sophie + Erin + Jenna
Infant/Toddler	Sophie + Erin + Jenna
Township	Sophie + Erin + Jenna
Dining	Sophie + Erin + Jenna
Grocery	Sophie + Erin + Jenna
Sports	Sophie + Erin + Jenna
Tactile	Sophie + Erin + Jenna
Turf	Sophie + Erin + Jenna
Back of House	Allocated Space

Phase II of the project is the programming phase. Specific parts of this phase include:

- Statement of Intent
- Mission Statements
- Existing Conditions Analysis
- User / Client Description
- Goals and Objectives
- Scope of Work
- Room Data Sheets
- Adjacency Matrices
- Bubble Diagrams
- Blocking Diagrams
- Codes Analysis

Floor II	
Space Allocated but Not Designed	
Public Restroom	Allocated Space
Family Restroom	Allocated Space
Comfort Room	Allocated Space
Offices	Allocated Space
Conference Room (2)	Allocated Space
Break Room	Allocated Space
Storage	Allocated Space
Workshop	Allocated Space

Phase III will be the research phase of the project. Specific parts of this phase include:

- Research Poster
- Research Report

Construction Documents for this project will include:

- Floor Plan
- Floor Finish Plan
- FF&E Plan
- Reflected Ceiling Plan
- Interior Elevations
- Section Detail Drawings
- Large Scale Drawings
- Life Safety Plan
- Power and Communication Plan

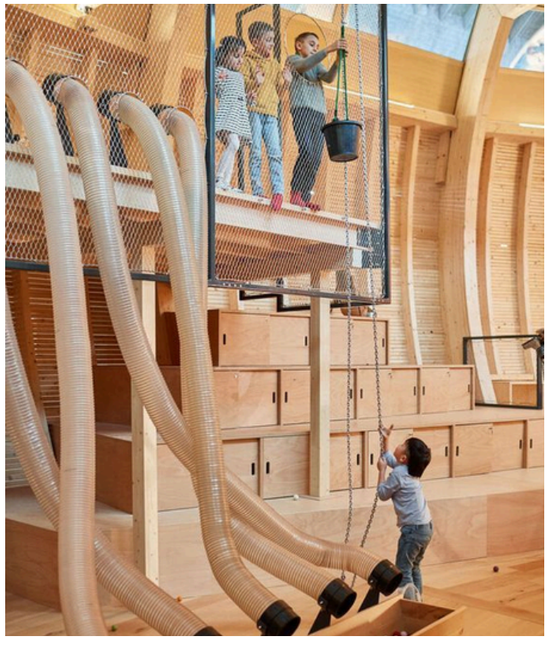
Final Deliverables will Include:

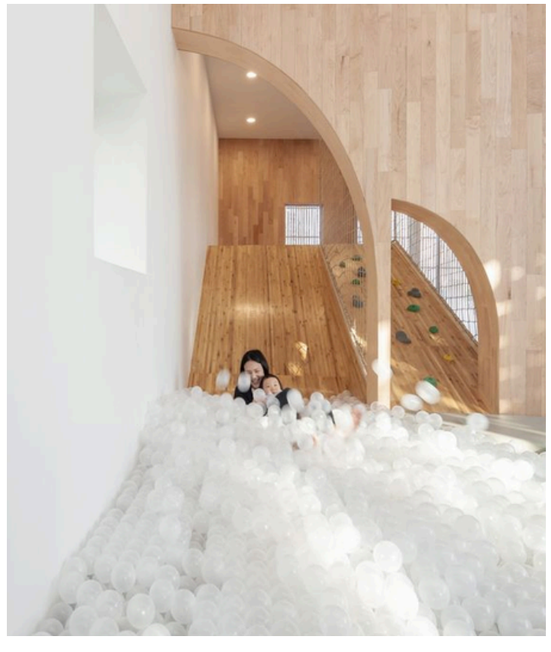
- Presentation Folio
- Programming Binder
- Research Binder
- Specification Binder
- Codes Analysis
- Presentation Boards
- PowerPoint Presentation
- Rendered Drawings
- Construction Documents
- Public Presentation
- Video Recording

Programming Images










VANCOUVER CHILDREN'S MUSEUM

FLOOR I PROGRAMMING

Adjacency Matrix

KEY:

Primary/Mandatory	
Secondary/Desirable	
Undesirable	
Neutral	

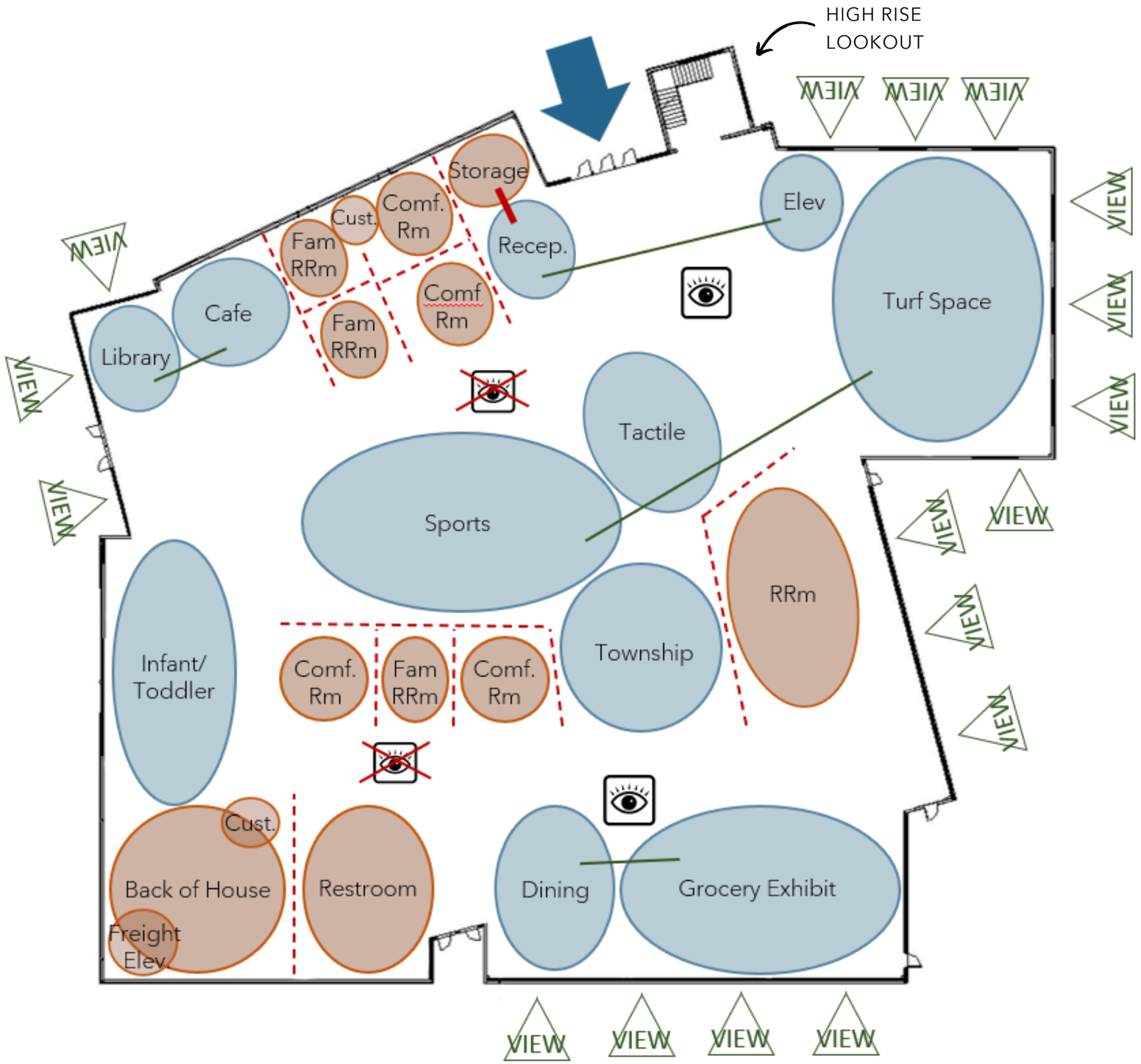
* indicates allocated spaces that will not be designed.

	Reception/Lobby	Storage	Custodial (2)	Comfort Room (4)	Public Restroom (2)	Family Restroom (3)	Cafe	Library	Infant/Toddler	Township	Dining	Grocery	Sports	Tactile	Turf	Back of House*
Reception/Lobby																
Storage																
Custodial (2)																
Comfort Room (4)																
Public Restroom (2)																
Family Restroom (3)																
Cafe																
Library																
Infant/Toddler																
Township																
Dining																
Grocery																
Sports																
Tactile																
Turf																
Back of House*																

Bubble Diagram

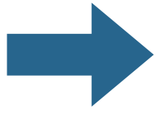
KEY:

	Primary/Mandatory Adjacency
	Secondary/Desirable Adjacency
	Interior View Consideration
	Visual Separation
VIEW	Exterior View Consideration
	Acoustical Separation
	Main Entrance
	Private Area
	Public Area



Blocking Diagram

KEY:

———	Wall
----------	Space allocated but not defined by a wall or built-in divider
	Main Entrance
	Private Area
	Public Area

Room Data Sheets

Room Name: Reception/Lobby
Room Location: First Floor
Room Number: 103
Users: Receptionist, Staff, Caregivers, & Children
Activities: Checking-in, purchase of membership and tickets, security

Furniture/ Equipment	**Furniture**
	• Task chair (2)
	• Reception desk (1)
	• Modular seating (12)
	• Bench (1)
		Equipment
		• Computer
		• Telephone
		• Secure entry points
		• Locker system
			Hours of Operation
			• 8:00am - 5:00pm Daily
			• 5:00pm - 7:00pm Wednesday night hours
				Special Provisions
				• Video surveillance
				• ADA/ACA requirements
				  ○ Accessible approach at reception
				  ○ 5 foot turn-around to be provided
					Occupancy
					• Assembly space with non-fixed seats
					• 238 persons

Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • Water fountain	**Communications** • WiFi • Telephone/Data outlet	**Electrical** • One outlet minimum every 12' (18" AFF) • Three floor outlets • Suspended LED pendant lighting above Reception • Standard room switch controls • Smoke detectors per code	**Room Size** • 179 sq meters • 1914 sq feet
Architectural	**Floors** • Commercial carpet tile	**Wall Partitions** • Painted gypsum board • Wallcovering • Wall tile • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • Existing main doors	**Natural Lighting** • Glass main doors

Additional Information:
- Incorporate layers of lighting throughout the museum to provide a unique and comfortable experience for all visitors (Filova & Rollova, 2019).
- Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).

Room Name: Storage
Room Location: First Floor
Room Number: 104
Users: Staff and Receptionist
Activities: Storing and organizing office supplies and other receptionist materials.

Furniture/ Equipment	**Furniture** • Wire shelving	**Equipment** • N/A	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5 foot turn-around to be provided	**Occupancy** • Other storage • 1 person
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • N/A	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 15 sq meters • 161 sq feet
Architectural	**Floors** • Commercial carpet tile	**Wall Partitions** • Painted gypsum board • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Gypsum board • 9'-0" ceiling height	**Doors / Windows** • New 36" x 96" interior door	**Natural Lighting** • N/A

Additional Information:

Room Name: Comfort Room (4)
Room Location: First Floor
Room Number: 105, 106, 115, 117
Users: Staff, Caregivers, Children
Activities: Multi-purpose: breastfeeding, religious practices, quiet space, adult changing table, phone calls.

Furniture/ Equipment	**Furniture**
	• Lounge chair (1)
	• Ottoman (1)
	• Side table (1)
	• Adult changing table (1)
	• Vanity mirror (1)
		Equipment
		• Wall mounted paper towel dispenser
		• Wall mounted trash receptacle
			Hours of Operation
			• 8:00am - 5:00pm Daily
			• 5:00pm - 7:00pm Wednesday night hours
				Special Provisions
				• ADA/ACA requirements
				  ○ 5 foot turn-around to be provided
				  ○ ADA/ACA vanity
					Occupancy
					• Care, treatment, and sleeping room areas
					• 1 person

Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • Sink • Touchless faucet • Touchless soap dispenser	**Communications** • WiFi	**Electrical** • One GFCI outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 9-13 sq meters per room • 93-144 sq feet per room
Architectural	**Floors** • Luxury vinyl tile	**Wall Partitions** • Painted gypsum board • Vinyl wall base • Wall tile • 1-hour min. wall rating • Plumbing wall	**Ceilings** • Acoustical ceiling tile • 9'-0" ceiling height	**Doors / Windows** • New 36" x 96" interior door	**Natural Lighting** • N/A

Additional Information:
- Balance colors in order to bridge the gap between overstimulation and understimulation (Filova & Rollova, 2019).
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).
- Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).

Room Name: Family Restroom (3)
Room Location: First Floor
Room Number: 108, 109, 116
Users: Staff, Caregivers, Children
Activities: Using the restroom, washing hands, drying hands.

Furniture/ Equipment	**Furniture**
	• Mirror (1)
	• Baby changing table (1)
		Equipment
		• Toilet paper dispenser
		• Wall mounted paper towel dispenser/trash receptacle
		• Grab bars
			Hours of Operation
			• 8:00am - 5:00pm Daily
			• 5:00pm - 7:00pm Wednesday night hours
				Special Provisions
				• ADA/ACA requirements
				  ○ 5 foot turn-around to be provided
				  ○ ADA/ACA vanity
					Occupancy
					• N/A

Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system • Ceiling fan/vent	**Plumbing / Fixtures** • Toilet • Sink • Touchless faucet • Touchless soap dispenser • Automatic flushometer	**Communications** • WiFi	**Electrical** • GFCI outlet above sink • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 8-9 sq meters per room • 89-97 sq ft per room
Architectural	**Floors** • Terrazzo	**Wall Partitions** • Painted gypsum board • Wall tile • 1-hour min. wall rating • Plumbing wall	**Ceilings** • Gypsum board • 9'-0" ceiling height	**Doors / Windows** • New 36" x 96" interior door	**Natural Lighting** • N/A

Additional Information:

Room Name: Restrooms (2)
Room Location: First Floor
Room Number: 119, 123
Users: Staff, Caregivers, Children
Activities: Using the restroom, washing hands, drying hands.

Furniture/ Equipment	**Furniture**
	• Mirror (12-18)
	• Baby changing table (1-2)
		Equipment
		• Toilet paper dispenser
		• Wall mounted paper towel dispenser/trash receptacle
		• Grab bars
		• Toilet partitions
			Hours of Operation
			• 8:00am - 5:00pm Daily
			• 5:00pm - 7:00pm Wednesday night hours
				Special Provisions
				• ADA/ACA requirements
				  ○ 5 foot turn-around to be provided
				  ○ ADA/ACA vanities
					Occupancy
					• N/A

Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system • Ceiling fan/vent	**Plumbing / Fixtures** • Toilet • Sink • Touchless faucet • Touchless soap dispenser • Automatic flushometer	**Communications** • WiFi	**Electrical** • GFCI outlet above sink • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 90-94 sq meters per room • 970-1008 sq ft per room
Architectural	**Floors** • Terrazzo	**Wall Partitions** • Painted gypsum board • Wall tile • 1-hour min. wall rating • Plumbing wall	**Ceilings** • Gypsum board • 10'-0" ceiling height	**Doors / Windows** • N/A	**Natural Lighting** • N/A

Additional Information:

Room Name: Cafe
Room Location: First Floor
Room Number: 110
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Eating, resting, and socialization.

Furniture/ Equipment	**Furniture** • Bar stool (5) • High chair (4) • Sofa (2) • Lounce chair (2) • Side table (6) • Booth (6) • Table (6) • Dining chair (6)	**Equipment** • Water fountain • Planter/Divider	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Dining, beverage, and cafeteria space • 79 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • Sink • Faucet • Water fountain	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 95 sq meters • 1,022 sq feet
Architectural	**Floors** • Luxury vinyl tile	**Wall Partitions** • Painted gypsum board • Wallcovering • Vinyl wall base • Wall tile • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • N/A	**Natural Lighting** • N/A

Additional Information:

Room Name: Library
Room Location: First Floor
Room Number: 111
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Reading, resting, and socialization.

Furniture/ Equipment	**Furniture** • Block seating (24) • Bean bag (6)	**Equipment** • Bookshelves	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Classroom • 18 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • N/A	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 34 sq meters • 369 sq feet
Architectural	**Floors** • Commercial carpet tile	**Wall Partitions** • Painted gypsum board • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • N/A	**Natural Lighting** • N/A

Additional Information:

Room Name: Sports Exhibit
Room Location: First Floor
Room Number: 112
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Playing, socialization, and experimentation.

Furniture/ Equipment	**Furniture** • Ottoman (3) • Basketball Hoop (3) • Ball return tubing (3) • Ball pit (4) • Magnet table (2)	**Equipment** • Monkey bars • Rock climbing wall	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Classroom • 154 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • N/A	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 285 sq meters • 3,073 sq feet
Architectural	**Floors** • Commercial carpet tile	**Wall Partitions** • Painted gypsum board • Wallcovering • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • N/A	**Natural Lighting** • N/A

Additional Information:
- Integrate elements fit for children with neurosensitivities into main exhibits and features (Coffey, 2018).
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).
- Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).

Room Name: Infant/Toddler Area
Room Location: First Floor
Room Number: 113
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Playing, socialization, and experimentation.

Furniture/ Equipment	**Furniture** • Swing (3) • Slide (2) • Ball pit (2) • Climbing blocks (6)	**Equipment** • Tactile wall	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Classroom • 63 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • N/A	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 117 sq meters • 1,262 sq feet
Architectural	**Floors** • Commercial carpet tile	**Wall Partitions** • Painted gypsum board • Wallcovering • Vinyl wall base • 1-hour min. wall rating • Half wall	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • New interior half door	**Natural Lighting** • N/A

Additional Information:
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).
- Consider color and how it can affect the psychological and physiological well-being of children (Khalili, 2010).
- Design exhibits that warrant more open-ended play and exploration so that children can set their own goals and feel successful in their choice of play (Sobel et al., 2022).

Room Name: Dining
Room Location: First Floor
Room Number: 120
Users: Staff, Caregivers, Children
Activities: Eating, resting, and socialization.

Furniture/ Equipment	**Furniture** • 54" round table (3) • Dining Chair (23) • Booth (8) • Bistro table (8)	**Equipment** • Self-serve vending machine • Coffee maker	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Dining, beverage, and cafeteria space • 77 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • Sink • Touchless faucet	**Communications** • WiFi	**Electrical** • One GFCI outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 93 sq meters • 1,002 sq feet
Architectural	**Floors** • Luxury vinyl tile	**Wall Partitions** • Painted gypsum board • Vinyl wall base • 1-hour min. wall rating • Half wall	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • Existing windows	**Natural Lighting** • Existing windows will be utilized as much as possible

Additional Information:
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).
- Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).

Room Name: Grocery Exhibit
Room Location: First Floor
Room Number: TBD
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Playing, socialization, and experimentation.

Furniture/ Equipment	**Furniture** • Conveyer belt (4) • Shelving (16) • Produce Shelving (4) • Table (1) • Shopping cart/basket (10)	**Equipment** • N/A	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Classroom • 97 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • Water fountain	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 181 sq meters • 1,947 sq feet
Architectural	**Floors** • Luxury vinyl tile	**Wall Partitions** • Painted gypsum board • Vinyl wall base • 1-hour min. wall rating • Half wall	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • Existing windows	**Natural Lighting** • Existing windows will be utilized as much as possible

Additional Information:
- Integrate elements fit for children with neurosensitivities into main exhibits and features (Coffey, 2018).
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).
- Consider color and how it can affect the psychological and physiological well-being of children (Khalili, 2010).

Room Name: Township Exhibit
Room Location: First Floor
Room Number: 121
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Playing, socialization, and experimentation.

Furniture/ Equipment	**Furniture** • Township house (5)	**Equipment** • N/A	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Classroom • 98 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • N/A	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 183 sq meters • 1,966 sq feet
Architectural	**Floors** • Commercial carpet tile • Rubber tile	**Wall Partitions** • Wallcovering • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • N/A	**Natural Lighting** • N/A

Additional Information:
- Integrate elements fit for children with neurosensitivities into main exhibits and features (Coffey, 2018).
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).

Room Name: Tactile Exhibit
Room Location: First Floor
Room Number: 124
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Playing, socialization, and experimentation.

Furniture/ Equipment	**Furniture** • Game piece storage (3) • Sensory tables (4)	**Equipment** • Magnetic gears (large scale) • Lite brite (large scale) • Ball wall • TacTiles	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided	**Occupancy** • Classroom • 78 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • N/A	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 146 sq meters • 1,575 sq feet
Architectural	**Floors** • Commercial carpet tile	**Wall Partitions** • Painted gypsum board • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • N/A	**Natural Lighting** • N/A

Additional Information:
- Have multiple exhibits in the museum be tactile and/or kinesthetic in order for children to have a higher chance of retaining what they did and learned (Anderson et al., 2002).
- Integrate elements fit for children with neurosensitivities into main exhibits and features (Coffey, 2018).
- Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).
- Design exhibits that warrant more open-ended play and exploration so that children can set their own goals and feel successful in their choice of play (Sobel et al., 2022).

Room Name: Turf Area
Room Location: First Floor
Room Number: 125
Users: Staff (Exhibit Designer, Prop Designer/Specialist), Caregivers, Children
Activities: Playing, socialization, and experimentation.

Furniture/ Equipment	**Furniture** • Water table (6) • Hockey net (2) • Picnic table (4) • Ottoman (24)	**Equipment** • Sub-base underlayment	**Hours of Operation** • 8:00am - 5:00pm Daily • 5:00pm - 7:00pm Wednesday night hours	**Special Provisions** • ADA/ACA requirements ○ 5-foot turn-around to be provided • Drainage system	**Occupancy** • Classroom • 157 persons
Mechanical/ Electrical	**Heating / Vent / AC** • Temperature controlled by individual thermostat; central HVAC system	**Plumbing / Fixtures** • Exit drain • Water fountain	**Communications** • WiFi	**Electrical** • One outlet minimum every 12' (18" AFF) • Standard room switch controls • Smoke detectors per code	**Room Size** • 291 sq meters • 3,136 sq feet
Architectural	**Floors** • Synthetic turf • Rubber tile	**Wall Partitions** • Painted gypsum board • Wallcovering • Vinyl wall base • 1-hour min. wall rating	**Ceilings** • Exposed concrete • 12'-0" ceiling height	**Doors / Windows** • Glass garage door • Existing windows	**Natural Lighting** • Existing windows will be utilized as much as possible

Additional Information:
- Consider color and how it can affect the psychological and physiological well-being of children (Khalili, 2010).
- Design exhibits that warrant more open-ended play and exploration so that children can set their own goals and feel successful in their choice of play (Sobel et al., 2022).
- Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).

Room Name: Back of House/Loading Dock
Room Location: First Floor
Room Number: TBD
Users: Staff
Activities: Transporting, storing museum/custodial equipment, maintenance.

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Industrial storage garage • 5 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 161 sq meters • 1,654 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

VANCOUVER CHILDREN'S MUSEUM

FLOOR II PROGRAMMING

- SPACES ALLOCATED BUT NOT DESIGNED -

Adjacency Matrix

KEY:

Primary/Mandatory	
Secondary/Desirable	
Undesirable	
Neutral	

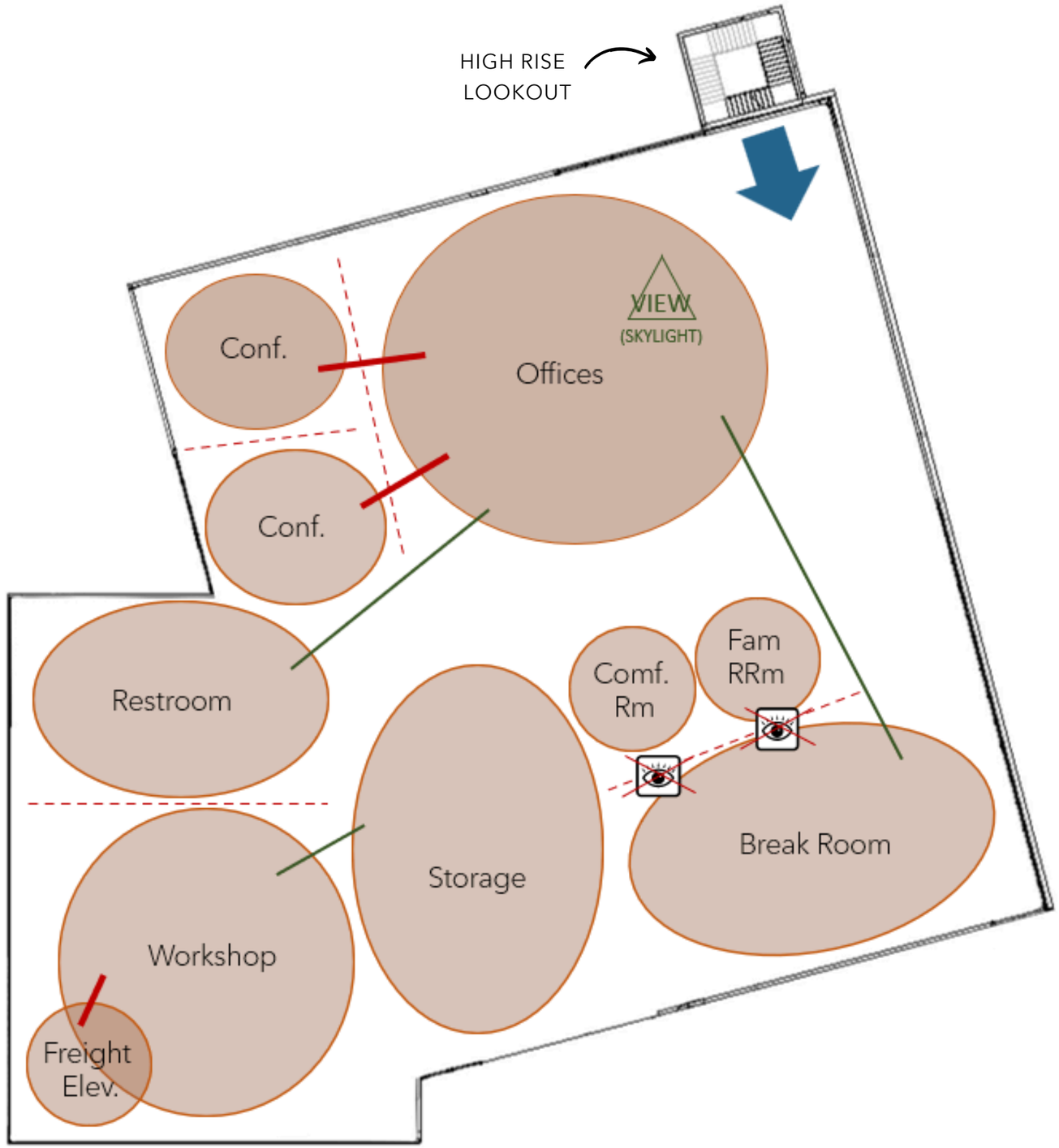
* indicates allocated spaces that will not be designed.

	Elevator*	Public Restroom*	Family Restroom*	Comfort Room*	Offices*	Conference Room* (2)	Break Room	Storage	Workshop	Freight Elevator
Elevator*										
Public Restroom*										
Family Restroom*										
Comfort Room*										
Offices*										
Conference Room* (2)										
Break Room										
Storage										
Workshop										
Freight Elevator										

Bubble Diagram

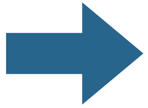
KEY:

	Primary/Mandatory Adjacency
	Secondary/Desirable Adjacency
	Interior View Consideration
	Visual Separation
VIEW	Exterior View Consideration
	Acoustical Separation
	Main Entrance
	Private Area
	Public Area



Blocking Diagram

KEY:

————	Wall
----------	Space allocated but not defined by a wall or built-in divider
	Main Entrance
	Private Area
	Public Area

Room Data Sheets

Room Name: Offices
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Management, filing, computer work (phone calls/emailing).

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Offices • 44 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 415 sq meters • 4,467 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Conference Room (2)
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Meetings, co-working, ideation

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Assembly space with non-fixed seats and tables • 72 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 69 sq meters • 742 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Restroom
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Using the restroom, washing hands, drying hands.

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • N/A
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 78 sq meters • 839 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Family Restroom
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Using the restroom, washing hands, drying hands.

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • N/A
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 28 sq meters • 301 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Workshop
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Construction and maintenance

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Manufacturing or process rooms • 116 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 534 sq meters • 5747 sq meters
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Storage
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Storing exhibit props and custodial equipment

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Other storage • 5 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 240 sq meters • 2584 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Comfort Room
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Multi-purpose: breastfeeding, religious practices, quiet space, adult changing table, phone calls.

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Care, treatment, and sleeping room areas • 2 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 28 sq meters • 301 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Room Name: Break Room
Room Location: Second Floor
Room Number: TBD
Users: Staff
Activities: Eating, taking a break, and socializing.

Furniture/ Equipment	**Furniture** •	**Equipment** •	**Hours of Operation** •	**Special Provisions** •	**Occupancy** • Dining, beverage, and cafeteria space • 263 persons
Mechanical/ Electrical	**Heating / Vent / AC** •	**Plumbing / Fixtures** •	**Communications** •	**Electrical** •	**Room Size** • 316 sq meters • 3401 sq feet
Architectural	**Floors** •	**Wall Partitions** •	**Ceilings** •	**Doors / Windows** •	**Natural Lighting** •

Additional Information:

Codes Analysis

PROJECT INFORMATION		
Project Address/Location	**1737 W 2nd Ave Vancouver, BC V6J 1H7, Canada**	
Project Description	**Children's Museum**	
Project Type	☐ New Building ☒ Existing Building	
Square Footage	Building: 58, 785 Floor I: 31,923 Floor II: 25,602 High Rise Lookout: 1,260	
Building Construction	Foundation: Pre-Cast Concrete Building Frame: Structural Steel, Steel Frame Construction, Wood Frame Construction Exterior Walls: Metal Stud w/ Composite Metal Panel Roof: Basic Roof – Standing Seam on ¾" APA Rated Sheathing Other: Exterior Curtain Walls	
CODE PUBLICATIONS REQUIRED for PROJECT – Codes & Regulations		**YEAR OF PUBLICATION**
Building Code	☐ IBC ☐ NFPA 5000 ☒ Other: NBC	2020
Performance Code	☒ ICCPC ☐ NFPA ☐ Other:	2021
Fire Code	☐ IFC ☐ UFC ☒ Other: NFC	2020
Life Safety Code	Life Safety Code (NFPA 101)	
Plumbing Code	☐ IPC ☐ UPC ☒ Other: NPC	2020
Mechanical Code	☒ IMC ☐ UMC ☐ Other:	2021
Electrical Code	☒ ICCEC ☒ NEC ☐ Other:	2021
Energy Code	☐ ICCEC ☐ NFPA 9000 ☒ Other: NECB	2020
Accessibility Regulations & Standards	☒ ADA Guidelines ☐ Fair Housing Act *(residential)* ☒ ICC/ANSI A117.1: Accessible and Usable Buildings and Facilities ☒ Other: ACA	2010 2019
Additional Codes for Jurisdiction	*- 2018 International Existing Building Code* *- 2018 Fuel Gas code w/ WAC 51-52-21000* *- ASCE/SEI 7-16 Minimum Design Loads for Buildings and Other Structures*	

1.0 SCOPE AND ADMINSTRATION

Chapter/Section	Description
1.1.1.1 Application of This Code	This code applies to the design, construction and occupancy of all new buildings, and the alteration, reconstruction, demolition, removal, relocation and occupancy of all existing buildings.
1.2.2.1 Characteristics of Materials, Appliances, Systems, and Equipment	All materials, appliances, systems and equipment installed to meet the requirements of this code shall possess the necessary characteristics to perform their intended functions when installed in a building.
1.2.2.2 Storage on the Building Set	All building materials, appliances and equipment on the building site shall be stored in such a way as to prevent the deterioration or impairment of their essential properties.

2.0 DEFINITIONS

Chapter/Section	Description
1.4.1.1 Non-Defined Terms	Words and phrases used in the Code that are not included in the list of definitions in 1.4.1.2 shall have the meanings that are commonly assigned to them in the context in which they are used, taking into account the specialized use of terms by the various trades and professions to which the terminology applies.
1.4.1.2 Defined Terms	The words and terms in italics in this code shall have the following meanings.
	Access to *exit* means that part of a *means of egress* within a *floor* area that provides access to an *exit* serving the *floor* area.
	Alarm signal means an audible signal transmitted throughout a zone or zones or throughout a *building* to advise occupants that a fire emergency exists.
	Alert signal means an audible signal to advise designated persons of a fire emergency.
	Assembly occupancy (Group A) means the *occupancy* or the use of a *building* or part thereof by a gathering of persons for civic, political, travel, religious, social, educational, recreational or like purposes, or for the consumption of food or drink.
	Barrier-free means that a *building* and its facilities can be approached, entered, and used by persons with physical or sensory disabilities.
	Building means any structure used or intended for supporting or sheltering any use or *occupancy*.
	Building area means the greatest horizontal area of a *building* above *grade* within the outside surface of exterior walls or within the outside surface of exterior walls and the centre line of *firewalls*.
	Building height (in *storeys)* means the number of *storeys* contained between the roof and the floor of the *first storey*.
	Business and personal services occupancy (Group D) means the *occupancy* or use of a *building* or part thereof for the transaction of business or the rendering or receiving of professional or personal services.
	Dead load means the weight of all permanent structural and non-structural components of a *building*.
	Exhaust duct means a duct through which air is conveyed from a room or space to the outdoors.
	Exit means that part of a *means of egress*, including doorways, that leads from the *floor area* it serves to a separate *building*, an open public thoroughfare, or an exterior open space protected from fire exposure from the *building* and having access to an open public thoroughfare.
	Exit level means the level of an *exit* stairway at which an exterior *exit* door or *exit* passageway leads to the exterior.
	Fire block means a material, component or system that restricts the spread of fire within a concealed space or from a concealed space to an adjacent space.
	Fire damper means a *closure* consisting of a damper that is installed in an air distribution system or a wall or floor assembly and that is normally held open but designed to close automatically in the event of a fire in order to maintain the integrity of the *fire separation*.
	Fire detector means a device that detects a fire condition and automatically initiates an electrical signal to actuate an *alert signal* or *alarm signal* and includes *heat detectors* and *smoke detectors*.
	Fire-protection rating means the time in minutes or hours that a *closure* will withstand the passage of flame when exposed to fire under specified conditions of test and performance criteria, or as otherwise prescribed in this Code.
	Fire-resistance rating means the time in minutes or hours that a material or assembly of materials will withstand the passage of flame and the transmission of heat when exposed to fire under specified conditions of test and performance criteria, or as determined by extension or interpretation of information derived therefrom as prescribed in this Code.
	Fire separation means a construction assembly that acts as a barrier against the spread of fire.
	Firestop means a system consisting of a material, component and means of support used to fill gaps between *fire separations* or between *fire separations* and other assemblies, or used around items that wholly or partially penetrate a *fire separation*.
	Firewall means a type of *fire separation* of *noncombustible construction* that subdivides a *building* or separates adjoining *buildings* to resist the spread of fire and that has a *fire-resistance rating* as prescribed in this Code and has structural stability to remain intact under fire conditions for the required fire-rated time.
	Flame-spread rating means an index or classification indicating the extent of spread-of-flame on the surface of a material or an assembly of materials as determined in a standard fire test as prescribed in this Code.

	Flight means a series of steps between landings.
	Floor area means the space on any *storey* of a *building* between exterior walls and required *firewalls*, including the space occupied by interior walls and *partitions*, but not including *exits, vertical service spaces*, and their enclosing assemblies.
	Foundation means a system or arrangement of *foundation units* through which the loads from a *building* are transferred to supporting *soil* or *rock*.
	Guard means a protective barrier around openings in floors or at the open sides of stairs, landings, balconies, *mezzanines*, galleries, raised *walkways* or other locations to prevent accidental falls from one level to another. Such a barrier may or may not have openings through it.
	Industrial occupancy (Group F) means the *occupancy* or use of a *building* or part thereof for the assembling, fabricating, manufacturing, processing, repairing or storing of goods and materials.
	Live load means a variable load due to the intended use and *occupancy* that is to be assumed in the design of the structural members of a *building*. It includes loads due to cranes and the pressure of liquids in containers.
	Loadbearing (as applying to a *building* element) means subjected to or designed to carry loads in addition to its own *dead load*, excepting a wall element subjected only to wind or earthquake loads in addition to its own *dead load*.
	Low-hazard industrial occupancy (Group F, Division 3) means an *industrial occupancy* in which the *combustible* content is not more than 50 kg/m² or 1 200 MJ/m² of *floor area*.
	Means of egress means a continuous path of travel provided for the escape of persons from any point in a *building* or contained open space to a separate *building*, an open public thoroughfare, or an exterior open space protected from fire exposure from the *building* and having access to an open public thoroughfare. *Means of egress* includes *exits* and *access to exits*.
	Occupancy means the use or intended use of a *building* or part thereof for the shelter or support of persons, animals or property.
	Occupant load means the number of persons for which a *building* or part thereof is designed.
	Partition means an interior wall 1 *storey* or part-storey in height that is not *loadbearing*.
	Party wall means a wall jointly owned and jointly used by 2 parties under easement agreement or by right in law, and erected at or upon a line separating 2 parcels of land each of which is, or is capable of being, a separate real-estate entity.
	Plenum means a chamber forming part of an air duct system.
	Plumbing system means a drainage system, a venting system and a water system or parts thereof.
	Return duct means a duct for conveying air from a space being heated, ventilated or air-conditioned back to the heating, ventilating or air-conditioning *appliance*.
	Smoke alarm means a combined *smoke detector* and audible alarm device designed to sound an alarm within the room or *suite* in which it is located upon the detection of smoke within that room or *suite*.
	Smoke detector means a *fire detector* designed to operate when the concentration of airborne combustion products exceeds a predetermined level.
	Sprinklered (as applying to a *building* or part thereof) means that the *building* or part thereof is equipped with a system of automatic sprinklers.
	Storey means that portion of a *building* that is situated between the top of any floor and the top of the floor next above it, and if there is no floor above it, that portion between the top of such floor and the ceiling above it.
	Supply duct means a duct for conveying air from a heating, ventilating or air-conditioning *appliance* to a space to be heated, ventilated or air-conditioned.

3.0 USE AND OCCUPANCY CLASSIFICATION

Chapter/Section	Description
3.1.2.1 Classification of Buildings	*Assembly Group A Division 2* – Assembly occupancies not elsewhere classified in Group A
	Group F Division 3 – Low-hazard industrial occupancies

4.0 SPECIAL DETAILED REQUIREMENTS BASED ON USED AND OCCUPANCY

Chapter/Section	Description
3.2.3.19 Walkway Between Buildings	1. If buildings are connected by a walkway, each building shall be separated from the walkway by a fire separation with a fire-resistance rating not less than 45 minutes.
	2. A walkway connected to a building required to be of non-combustible construction shall also be of non-combustible construction.
	6. A walkway between buildings shall not be more than 9 meters wide.

Calculating Occupant Load – Floor I				
Room Name & Number	**Function (Use) of Space** (NBC 2020 Table [3.1.17.1])	**Load Factor** (square meters/person)	**Approx. Area** square meters	**Occupant Load**
Reception 103	Assembly space with non-fixed seats	0.75	179	238
Storage 104	Other storage	46.00	15	1
Comfort Room 105	Care, treatment, and sleeping room areas	10.00	11	1
Comfort Room 106	Care, treatment, and sleeping room areas	10.00	13	1
Custodial 107	Other storage	46.00	4	1
Family Restroom 108	-	-	8	-
Family Restroom 109	-	-	8	-
Café 110	Dining, beverage, and cafeteria space	1.20	95	79
Library 111	Classrooms	1.85	34	18
Sports Exhibit 112	Classrooms	1.85	285	154
Infant/Toddler Area 113	Classrooms	1.85	117	63
Back of House 114	Industrial storage garage	28.00	161	5
Comfort Room 115	Care, treatment, and sleeping room areas	10.00	9	1
Custodial 116	Other storage	46.00	6	1
Family Restroom 117	-	-	9	-
Comfort Room 118	Care, treatment, and sleeping room areas	10.00	10	1
Restroom 119	-	-	90	-
Dining 120	Dining, beverage, and cafeteria space	1.20	93	77
Township 121		1.85	183	98
Grocery Exhibit 122	Classrooms	1.85	181	97
Restroom 123	-	-	93	-
Tactile Exhibit 124	Classrooms	1.85	146	78
Turf Space 125	Classrooms	1.85	291	157
			Total Occupant Load	**1,071**
NOTES: 1. Use only whole numbers for areas; do not use decimal places. 2. Occupant load numbers are always rounded down to the nearest whole number.				

Calculating Occupant Load – Floor II				
Room Name & Number	**Function (Use) of Space** (NBC 2020 Table [3.1.17.1])	**Load Factor** (square meters/person)	**Approx. Area** square meters	**Occupant Load**
Office 201	Offices	9.30	415	44
Conference 202	Assembly space with non-fixed seats and tables	0.95	69	72
Conference 203	Assembly space with non-fixed seats and tables	0.95	69	72
Public Restroom 204	-	-	-	-
Workshop 205	Manufacturing or process rooms	4.60	534	116
Storage 206	Other storage	46.00	240	5
Comfort Room 207	Care, treatment, and sleeping room areas	10.00	28	2
Family Restroom 208	-	-	-	-
Break Room 209	Dining, beverage, and cafeteria space	1.20	316	263
			Total Occupant Load	**574**
NOTES: 1. Use only whole numbers for areas; do not use decimal places. 2. Occupant load numbers are always rounded down to the nearest whole number.				

5.0 GENERAL BUILDING HEIGHTS AND AREAS

Chapter/Section	Description
3.2.1.1 Exceptions in Determining Building Height	1. A rooftop enclosure provided for elevator machinery, a stairway or a *service room* used for no purpose other than for service to the *building* shall not be considered as a *storey* in calculating the *building height*.
3.2.2.5 Applicable Building Height and Area	1.In determining the fire safety requirements of a *building* in relation to each of the *major occupancies* contained therein, the *building height* and *building area* of the entire *building* shall be used.

6.0 TYPES OF CONSTRUCTION

Chapter/Section	Description
3.1.7.5 Rating of Supporting Construction	1. For mixed types of construction, all *loadbearing* walls, columns and arches in the *storey* immediately below a floor or roof assembly required to have a *fire-resistance rating* shall have a *fire-resistance rating* not less than that required for the supported floor or roof assembly.
3.2.2.1 Application	a *building* shall be constructed in conformance with this Subsection to prevent fire spread and collapse caused by the effects of fire.
3.2.2.23.Group A, Division 2, Any Height, Any Area, Sprinklered	2. The *building* shall be of *noncombustible construction*, and a) the *building* shall be *sprinklered* throughout, b) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 2 h, d) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly
3.2.3.4 Party Wall	1. A *party wall* shall be constructed as a *firewall.*

7.0 FIRE AND SMOKE PROTECTION FEATURES

Chapter/Section	Description
3.2.4.1 Determination of Requirement for a Fire Alarm System	A fire alarm system shall be installed in buildings in which an automatic sprinkler system is installed.
3.2.4.2 Continuity of Fire Alarm System	If a fire alarm system is required in any portion of a building, it shall be installed throughout the building.
3.2.4.4 Description of Fire Alarm Systems	A single stage fire alarm system shall, upon the operation of any manual station, waterflow detecting device, or *fire detector*, cause an *alarm signal* to sound on all audible signal devices in the system.
3.2.4.5 Installation and Verification of Fire Alarm Systems	1. Fire alarm systems, including the voice communication capability where provided, shall be installed in conformance with CAN/ULC-S524, "Standard for Installation of Fire Alarm Systems."
	2. Fire alarm systems shall be verified in conformance with CAN/ULC-S537, "Standard for Verification of Fire Alarm Systems," to ensure they are operating satisfactorily.
3.2.4.10 Fire Detectors	*Fire detectors* required by this Code shall be connected to the fire alarm system
3.2.4.11 Smoke Detectors	1. If a fire alarm system is installed, *smoke detectors* shall be installed in b) each room in a *contained use area* and corridors serving those rooms c) each corridor in portions of a *building* classified as a Group A, Division 1 *major occupancy*
3.2.4.12 Flame-Spread Rating and smoke Developed Classification	1) If a fire alarm system is installed, an air-handling system shall be designed to prevent the circulation of smoke upon a signal from a duct-type *smoke detector* if the air-handling system a) serves more than one *storey*

3.2.4.13 Vacuum Cleaning System Shutdown	1. A central vacuum cleaning system in a *building* equipped with a fire alarm system shall be designed to shut down upon actuation of the fire alarm system.
3.2.4.14 Elevator Emergency Return	1. In a *building* having elevators that serve *storeys* above the *first storey* and that are equipped with an automatic emergency recall feature, *smoke detectors* shall be installed in the elevator lobbies on the recall level so that when these *smoke detectors* are actuated, the elevators will automatically return directly to an alternate floor level.
3.2.4.15 System Monitoring	2. Waterflow-detecting devices shall be connected to the fire alarm system so that, upon its actuation, an *alert signal* or an *alarm signal* is initiated.
3.2.4.16 Manual Stations	1. Where a fire alarm system is installed, a manual station shall be installed in every *floor area* near a) every principal entrance to the *building*, and b) every *exit*.
3.2.4.17 Alert and Alarm Signals	3. Audible signal devices forming part of a fire alarm or voice communication system shall not be used for playing music or background noise.
3.2.4.18 Audibility of Alarm Systems	1. Audible signal devices forming part of a fire alarm system shall be installed in a building so that b) alert signals are clearly audible continuously staffed locations, and where there are no continuously staffed location, throughout the floor area.
	4.The fire *alarm signal* sound pressure level shall be not more than 110 dBA in any normally occupied area.
	11. Audible signal devices shall be installed in a *service space* and shall be connected to the fire alarm system

8.0 INTERIOR FINISHES

Chapter/Section	Description
2.3.1.1 Interior Finish	The interior finish material that forms part of the interior surface of a floor, wall, *partition* or ceiling shall conform to the NBC.
2.3.1.3 Decorative Materials	Decorative materials on walls or ceilings shall have a *flame-spread rating* not greater than that required for the interior finish of the space in which they are located.
2.3.2.1. Drapes, Curtains and Decorative Materials	1. Drapes, curtains and other decorative materials, including textiles and films, used in *buildings* shall conform to CAN/ULC-S109, "Standard Method for Flame Tests of Flame-Resistant Fabrics and Films," when such drapes, curtains and other decorative materials are used in a) any *assembly occupancy* or Group B, Division 1 *detention occupancy*, b) any lobby or *exit*
3.1.13.1 Interior Finishes, Furnishings, and Decorative Materials	1. Except as otherwise provided by this Subsection, interior finishes, furnishings and decorative materials shall conform to the NFC.
	2. Interior finish material shall include any material that forms part of the interior surface of a floor, wall, partition or ceiling, including a) interior cladding of plaster, wood or tile, b) surfacing of fabric, paint, plastic, veneer or wallpaper, c) doors, windows and trim, d) lighting elements such as light diffusers and lenses forming part of the finished surface of the ceiling, and e) carpet material that overlies a floor that is not intended as the finished floor.

9.0 FIRE PROTECTION SYSTEMS	
Chapter/Section	**Description**
2.2.1.1 Fire Separations	3. Rooms, corridors, shafts and other spaces shall be separated where practicable by *fire separations* conforming to the NBC.
2.2.1.2 Damage to Fire Separations and Fire Protection Materials	1. Where *fire separations* are damaged so as to affect their integrity, they shall be repaired so that the integrity of the *fire separation* is maintained.
	2. Where materials used to provide fire protection are damaged or removed, they shall be repaired or replaced so that the integrity of the fire protection is maintained.
2.2.2.1 Openings in Fire Separations	1. Openings in *fire separations* shall be protected with *closures* in conformance with the NBC.
	2. Where *closures* in *fire separations* are replaced, the replacements shall be in conformance with the NBC
2.2.2.2 Damage to Closures	Where *closures* are damaged so as to affect the integrity of their *fire-protection rating*, they shall be repaired so that their integrity is maintained
2.2.2.3 Protective Guarding Devices	1. Protective guarding devices shall be a) provided where necessary to prevent damage to the mechanical components of doors in *fire separations*, and b) installed so as not to interfere with the proper operation of the doors.

10.0 MEANS OF EGRESS

Chapter/Section		Description
	Administration	
	3.3.1.3 *Means of Egress*	Access to exit within floor areas shall conform to Subsections 3.3.2. to 3.3.5.
	General Means of Egress	
	3.4.3.4 *Headroom Clearance*	every exit shall have a clear height over the clear width of the exit of not less than 2 050 mm.
	Number of Exits and Exit Access Doorways	
	3.3.1.5 *Egress Doorways*	a minimum of 2 egress doorways located so that one doorway could provide egress from the room or suite as required by Article 3.3.1.3. if the other doorway becomes inaccessible to the occupants due to a fire which originates in the room or suite, shall be provided for every room and every suite a)that is used for a high-hazard industrial occupancy and whose area is more than 15 m2, b)intended for an occupant load more than 60, c)in a floor area that is not sprinklered throughout, and the area of a room or suite is more than the value in Table 3.3.1.5.-A, or the travel distance within the room or suite to the nearest egress doorway is more than the value in Table 3.3.1.5.-A, or d)in a floor area that is sprinklered throughout and does not contain a high-hazard industrial occupancy and the travel distance to an egress doorway is more than 25 m, or the area of the room or suite is more than the value in Table 3.3.1.5.-B.
		Where 2 egress doorways are required by Sentence (1), they shall be placed at a distance from one another equal to or greater than one third of the maximum overall diagonal dimension of the area to be served, measured as the shortest distance that smoke would have to travel between the nearest required egress doors
	Exit and Exit Access Doorway Configurations	
	3.3.1.11 *Door Swing*	a door that opens into a corridor or other facility providing access to exit from a suite or room not located within a suite shall swing on a vertical axis
		a door that opens into a corridor or other facility providing access to exit from a room or suite that is used or intended for an occupant load more than 60 or for a high-hazard industrial occupancy shall swing in the direction of travel to the exit.
		Every door that divides a corridor that is not wholly contained within a suite shall swing on a vertical axis in the direction of travel to the exit
		If a pair of doors is installed in a corridor that provides access to exit in both directions, the doors shall swing in opposite directions, with the door on the right hand side swinging in the direction of travel to the exit.
	Exit Signs	
	3.4.5.1 *Exit Signs*	Every exit door shall have an exit sign providing visual information placed over or adjacent to it if the exit serves

		a)a building more than 2 storeys in building height, b)a building having an occupant load of more than 150, or c)a room or floor area that has a fire escape as part of a required means of egress.
		Every exit sign providing visual information shall a)be visible on approach to the exit, b)consist of a green and white or lightly tinted graphical symbol meeting the colour specifications referred to in ISO 3864-1, "Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings," and c)conform to ISO 7010, "Graphical symbols - Safety colours and safety signs - Registered safety signs," for the following symbols (see Note A-3.4.5.1.(2)(c)): E001 emergency exit left, E002 emergency exit right, E005 90-degree directional arrow, and E006 45-degree directional arrow.
	3.4.5.3 *Signs for Stairs and Ramps at Exit Level*	In a building more than 2 storeys in building height, any part of an exit ramp or stairway that continues up or down past the lowest exit level shall have a posted sign clearly indicating that it does not lead to an exit.
	Handrails	
	3.4.6.5 *Handrails*	One handrail shall be provided on stairs that are less than 1 100 mm in width.
		One handrail shall be provided on each side of a)stairs that are 1 100 mm or more in width, b)curved flights of any width, and c)ramps.
		Where a stair or ramp is wider than its required exit width, handrails shall be located along the most direct path of travel.
	Guards	
	3.4.6.6 *Guards*	Every exit shall have a wall or a well-secured guard on each side, where a)there is a difference in elevation of more than 600 mm between the walking surface and the adjacent surface, or b)the adjacent surface within 1.2 m of the walking surface has a slope of more than 1 in 2.
		the height of guards for exit stairs and exit ramps as well as their landings shall be not less than 1 070 mm.
		guards in exits shall not have any openings that permit the passage of a spherical object whose diameter is more than 100 mm.
	Exit Access Travel Distance	
	3.3.1.6 *Travel Distance*	If more than one egress doorway is required from a room or suite referred to in Article 3.3.1.5., the travel distance within the room or suite to the nearest egress doorway shall not exceed the maximum travel distances specified in Clauses 3.4.2.5.(1)(a), (b), (c) and (f) for exits.
	Aisles	
	3.3.1.10 *Aisles*	aisles shall be provided in conformance with the NFC.

	Exit Access Stairways and Ramps	
	3.3.1.14 *Ramps and Stairways*	ramps and stairways that do not serve as exits shall conform to the requirements for exit ramps and stairways stated
	Corridors	
	3.3.1.4 *Public Corridor Separations*	a public corridor shall be separated from the remainder of the storey by a fire separation.
		the fire separation between a public corridor and the remainder of the storey shall have a fire-resistance rating not less than 45 min.
		If a storey is sprinklered throughout, no fire-resistance rating is required for a fire separation between a public corridor and the remainder of the storey, provided the corridor does not serve a care, treatment or detention occupancy or a residential occupancy.
	3.3.1.9 *Corridors*	The minimum width of a public corridor shall be 1 100 mm
		the minimum unobstructed width of a corridor used by the public or a corridor serving classrooms or patients' sleeping rooms shall be 1 100 mm
	Horizontal Exits	
	3.4.6.10 *Horizontal Exits*	The floor area on each side of a horizontal exit shall be sufficient to accommodate the occupants of both floor areas, allowing not less than 0.5 m2 of clear floor space per person, except that 1.5 m2 shall be provided for each person in a wheelchair
		No stairs or steps shall be used in a horizontal exit.

11.0 ACCESSIBILITY

	Chapter/Section	Description
	3.8.2.2 *Entrances.*	All pedestrian entrances to a barrier-free storey of a building referred to in Sentence 3.8.2.1.(1) shall be barrier-free and shall connect to a barrier-free exterior path of travel complying with Sentence 3.8.2.5.(1).
	3.8.2.3 *Areas Requiring a Barrier-Free Path of Travel.*	As barrier-free path of travel from the entrances required by Sentence 3.8.2.2.(1) to be barrier-free shall be provided throughout the entrance storey and within all other normally occupied floor areas.
	3.8.2.6 *Controls.*	Controls for the operation of building services or safety devices, including electrical switches, thermostats, faucets, door hardware and intercom switches, that are intended to be operated by the occupant shall comply with Subsection 3.8.3.
	3.8.2.7 *Power Door Operators.*	Doors equipped with a self-closing device shall be equipped with power door operators complying with Subsection 3.8.3. that allow persons to activate the opening of the doors in the intended direction of travel, where the doors are located a) in an entrance referred to in Article 3.8.2.2., including the interior doors of a vestibule where provided, b) in a barrier-free path of travel, between the entrance referred to in Clause (a) and the entrance doors to suites or rooms served by a public corridor or a corridor used by the public (see Note A-3.8.2.7.(1)(b)), and c) in an entrance to a washroom with a barrier-free water closet.
	3.8.2.8 *Plumbing Facilities.*	At each location where washrooms are provided in a storey to which a barrier-free path of travel is required in accordance with Article 3.8.2.3., at least one universal washroom complying with Subsection 3.8.3. shall be provided.
		Where more than two water closets or a combination of more than one water closet and one urinal are provided in a washroom located in a storey to which a barrier-free path of travel is required in accordance with Article 3.8.2.3., at least one water-closet stall shall be barrier-free in accordance with Subsection 3.8.3.
		Where water-closet stalls are provided in a barrier-free washroom, at least one stall for persons with limited mobility conforming to Subsection 3.8.3. shall be provided for every 10 stalls.
		Where mirrors are provided in a barrier-free washroom, at least one mirror shall comply with Subsection 3.8.3.
		At each location where one or more drinking fountains are provided, at least one of them shall comply with Subsection 3.8.3.
		At each location where one or more water-bottle filling stations are provided, at least one of them shall comply with Subsection 3.8.3.
	3.8.2.9 *Assistive Listening Systems*	In each location where information, goods or services are provided to the public at service counters in buildings of assembly occupancy, at least one of the service counters shall be equipped with a)an assistive listening system or adaptive technology conforming to Subsection 3.8.3., and b)an amplification system, where there is a barrier to communication, such as a glass screen.
	3.8.2.10 *Signs and Indicators*	Signs providing visual information in accordance with Subsection 3.8.3. shall be installed to indicate the location of a)barrier-free entrances, b)barrier-free washrooms,

		c)barrier-free showers, d)barrier-free elevators, e)barrier-free parking spaces, and f)assistive listening systems or adaptive technologies.
		Directional signs shall provide visual information in accordance with Subsection 3.8.3.
	3.8.2.11 *Counters*	Where a service counter is provided, at least one section of it shall comply with Subsection 3.8.3.
	3.8.3.1 *Design Standards*	Buildings or parts thereof and facilities that are required to be barrier-free shall be designed in accordance with a)this Subsection, or b)the provisions of CSA B651, "Accessible design for the built environment," listed in Table 3.8.3.1., in their entirety
	3.8.3.2 *Barrier-Free Path of Travel*	Pertaining to doorways, the clear width of a barrier-free path of travel shall be not less than 1 000 mm.
		The clear width of a barrier-free path of travel is permitted to be reduced to not less than 850 mm for a length of not more than 600 mm, provided the clear floor space at either end of the reduced-clear width section is level within a rectangular area a)whose dimension parallel to each end of the reduced-clear width section is not less than 1 000 mm, and b)whose dimension perpendicular to each end of the reduced-clear width section is not less than 1 500 mm.
		Interior and exterior walking surfaces that are within a barrier-free path of travel shall a)have no opening that will permit the passage of a sphere more than 13 mm in diameter, b)have any elongated openings oriented approximately perpendicular to the direction of travel, c)be stable, firm and slip-resistant, d)have a cross slope no steeper than 1 in 50, e)be beveled at a maximum slope of 1 in 2 at changes in level between 6 mm and 13 mm, and f)be provided with sloped floors or ramps at changes in level more than 13 mm.
		A barrier-free path of travel is permitted to include ramps, passenger elevators or other platform-equipped passenger-elevating devices to overcome a difference in level.
		The width of a barrier-free path of travel that is more than 24 m long shall be increased to not less than 1 700 mm for a length of 1 700 mm at intervals not exceeding 24 m.
		Where a section of a barrier-free path of travel is less than 1 500 mm wide for a distance of more than 12 m, it shall end in a clear floor space that is a)not less than 1 700 mm in diameter, b)not less than 1 700 mm by 1 500 mm, or c)T-shaped with overall dimensions measuring 1 700 mm wide by 1 500 mm long, where the two arms of the "T" are not less than 1 000 mm wide and extend not less than 300 mm from each side of the base of the "T" and the base is not less than 1 000 mm wide and extends not less than 500 mm from each arm.
	3.8.3.5 *Ramps*	A ramp located in a barrier-free path of travel shall

		a)have a clear width not less than 1 000 mm (see Note A-3.4.3.4.), b)have a uniform slope along its length not more than 1 in 12 (see Note A-3.8.3.5.(1)(b)), c)have a level area not less than 1 700 mm by 1 700 mm at the top and bottom and at intermediate levels of a ramp leading to a door, so that on the latch side the level area extends not less than 600 mm beyond the edge of the door opening where the door opens towards the ramp, or 300 mm beyond the edge of the door opening where the door opens away from the ramp,(see Note A-3.8.3.5.(1)(c)), d)have a level area not less than 1 350 mm long and at least the same width as the ramp at intervals not more than 9 m along its length, and where there is an abrupt change in the direction of the ramp, and e)be equipped with handrails conforming to Article 3.4.6.5., except that they shall be not less than 865 mm and not more than 965 mm high, and f)be equipped with guards conforming to Article 3.4.6.6.
	3.8.3.6 *Doorways and Doors*	Every doorway that is located in a barrier-free path of travel shall have a clear width not less than 850 mm when the door is in the open position.
		Door-operating devices shall a)comply with Clause 3.8.3.8.(1)(b), and b)be operable at a height between 900 mm and 1 100 mm above the floor
		A threshold for a doorway referred to in Sentences (2) and (3) shall be not more than 13 mm higher than the finished floor surface and shall be beveled to facilitate the passage of wheelchairs.
		Power door operators required by Sentence 3.8.2.7.(1) shall a)activate automatically or through the use of controls that are located in a barrier-free path of travel, are marked with the International Symbol of Access, are located clear of the door swing and no more than 1 500 mm from that door swing, comply with Subclause 3.8.3.8.(1)(a)(iii), are operable from a height between 150 mm and 300 mm as well as between 900 mm and 1 100 mm above the floor, and are operable by touching or approaching any part of their surface with a fist, arm or foot, and b)unless equipped with safety sensors, fully open the door in not less than 3 s, and require a force not more than 65 N to stop movement of the door.
		A cane-detectable guard shall be installed on the hinged side of power-assisted doors that swing open into the path of travel.
		Except as provided in Sentence (9) and except for a door with a power door operator complying with Sentence (6), when unlatched, a door in a barrier-free path of travel shall open when the force applied to the handle, push plate or latch-releasing device is not more than a)38 N in the case of an exterior swinging door, b)22 N in the case of an interior swinging door, or c)22 N in the case of a sliding door.
		Except for a door at the entrance to a dwelling unit, a closer for an interior door in a barrier-free path of travel shall have a closing period of not less than 3 s measured from when the door is in an open position of 70° to the doorway, to when the door reaches a point 75 mm from the closed position, measured from the leading edge of the latch side of the door.
		Unless equipped with a power door operator complying with Sentence (6), a swinging door in a barrier-free path of travel shall have a clear space on the latch side extending the height of the doorway and not less than a)600 mm beyond the edge of the door opening if the door swings toward the approach side, and b)300 mm beyond the edge of the door opening if the door swings away from the approach side.
		A vestibule located in a barrier-free path of travel shall be arranged to allow the movement of wheelchairs between doors and shall provide a distance between 2 doors in series of not less than 1 350 mm plus the width of any door that swings into the space in the path of travel from one door to another.
		Except as provided in Clause 3.8.3.5.(1)(c) and Sentence (16), the clear floor space on the pull side of a swinging door in a barrier-free path of travel shall be level within a rectangular area of not less than 1 700 mm by 1 500 mm measured from the hinged side of the door

		Except as provided in Clause 3.8.3.5.(1)(c) and Sentence (16), the clear floor space on the push side of a swinging door and on each side of a sliding door in a barrier-free path of travel shall be level within a rectangular area a)whose dimension parallel to the closed door is not less than 1 200 mm, and b)whose dimension perpendicular to the closed door is not less than 1 500 mm
		Where a door referred to in Sentences (14) and (15) is equipped with a power door operator complying with Sentence (6), the width of the clear floor space parallel to the closed door is permitted to be reduced to not less than 1 000 mm.
	3.8.3.8 *Controls*	Controls described in this Section shall a)where located in a storey where a barrier-free path of travel is required and unless otherwise stated, be in or adjacent to the barrier-free path of travel, be mounted 400 mm to 1 200 mm above the floor, and be adjacent to and centred on either the length or the width of a clear floor space of 1 350 mm by 800 mm, b)be operable with one hand in a closed fist position, without requiring tight grasping, pinching with fingers, or twisting of the wrist, and unless otherwise stated, with a force not more than 22 N, and c)where controls provide a feedback signal to the user, it shall be both audible and visible
	3.8.3.9 *Accessible Signs*	Visual information signs required by Subsections 3.4.5. and 3.4.6. and Article 3.8.2.10. shall comply with Clauses 4.5.2, 4.5.3 and 4.5.4 of CSA B651, "Accessible design for the built environment."
		Tactile information signs required by Subsections 3.4.5. and 3.4.6. and Article 3.8.2.10. shall a)have Braille and tactile characters in accordance with Clauses 4.5.6.2 and 4.5.6.3 of CSA B651, "Accessible design for the built environment," b)be installed on the wall closest to the latch side of the door or on the nearest wall on the right side of the door, where there is no wall at the latch side, and c)be centred 1 500 mm above the finished floor with the edge of the sign located not more than 300 mm from the door.
		Signs required by Article 3.8.2.10. shall incorporate the International Symbol of Access or the International Symbol of Access for Hearing Loss and appropriate graphical or textual information that clearly indicates the type of facilities available.
	3.8.3.10 *Drinking Fountains*	Drinking fountains required by Sentence 3.8.2.8.(10) shall be equipped with controls that a)activate automatically, or b)comply with Clause 3.8.3.8.(1)(b) and are located on the front or on both sides of the fountain.
		Where drinking fountains referred to in Sentence (1) are located in a storey where a barrier-free path of travel is required, they shall a)be located along the barrier-free path of travel, b)have a minimum clear floor space of 800 mm by 1 350 mm in front of them, c)where they have frontal access, provide a knee clearance in accordance with Clause 3.8.3.16.(1)(e), and d)have a spout that is located near the front of the unit, at a height between 750 mm and 915 mm above the floor, and directs water flow in a trajectory that is nearly parallel to the front of the unit, at a height not less than 100 mm.
	3.8.3.12 *Accessible Water-Closet Stalls*	Water-closet stalls and enclosures required by Sentence 3.8.2.8.(5) shall a)be not less than 1 500 mm wide by 1 500 mm deep, b)have a clear lateral transfer space adjacent to the water closet that is at least 1 500 mm long, measured from the wall behind the water closet, and is at least 900 mm wide, measured from the closest edge of the water closet seat,

		c)have a clear floor space of 1 700 mm by 1 700 mm in front of the accessible stall, d)be equipped with a door that can be latched from the inside with a mechanism located 900 mm to 1 100 mm above the floor that conforms to Clause 3.8.3.8.(1)(b), is aligned with either the transfer space adjacent to the water closet or with a clear floor space not less than 1 700 mm by 1 700 mm within the stall, provides a clear opening not less than 850 mm wide when it is open, is self-closing so that, when at rest, the door is ajar by not more than 50 mm beyond the jamb, swings outward, unless there is sufficient floor space within the stall for the door to swing inward in addition to a clear floor space of at least 800 mm by 1 350 mm (see Note A-3.8.3.12.(1)(d)(v)), where the door swings outward, is provided with a horizontal, D-shaped, visually contrasting door pull not less than 140 mm long located on the inside such that its midpoint is 200 mm to 300 mm from the hinged side of the door and 800 mm to 1 000 mm above the floor (see Note A-3.8.3.12.(1)(d)(vi)), and is provided with a horizontal, D-shaped, visually contrasting door pull not less than 140 mm long located on the outside such that its midpoint is 120 mm to 220 mm from the latch side and 800 mm to 1 000 mm above the floor, e)have a water closet located so that the distance between the centre line of the fixture and the wall on one side is 460 mm to 480 mm, f)be equipped with an L-shaped grab bar that is mounted on the side wall closest to the water closet, has horizontal and vertical components not less than 760 mm long mounted with the horizontal component 750 mm to 850 mm above the floor and the vertical component 150 mm in front of the water closet (see Note A-3.8.3.12.(1)(f)(ii)), and complies with Article 3.7.2.7., g)be equipped with either one grab bar at least 600 mm long and centred over the water closet, or two grab bars at least 300 mm long and located either side of the flush valve, that conform to Article 3.7.2.7., are mounted on the rear wall, and are mounted at the same height as the grab bar on the side wall or 100 mm above the top of the attached water tank, if applicable, h)be equipped with a coat hook mounted not more than 1 200 mm above the floor on a side wall and projecting not more than 50 mm from the wall, and i)be equipped with a toilet paper dispenser mounted on the side wall closest to the water closet such that the bottom of the dispenser is 600 mm to 800 mm above the floor, and the closest edge of the dispenser is 300 mm from the front of the water closet.
	3.8.3.14 *Water Closets*	A water closet for a person with physical disabilities shall a)be equipped with a seat located 430 mm to 460 mm above the floor, b)flush automatically or be equipped with a flushing control that is located 500 mm to 900 mm above the floor, is located no more than 350 mm from the transfer side, and complies with Clause 3.8.3.8.(1)(b), c)be equipped with a seat lid or other back support, and d)where it has a tank, have a securely attached tank top.
	3.8.3.16 *Lavatories and Mirrors*	Lavatories required by Sentence 3.8.2.8.(8) shall a)be equipped with faucets complying with Sentence 3.7.2.3.(4), b)be located so that the distance between the centre line of the lavatory and any side wall is not less than 460 mm, c)have a clear floor space in front of the lavatory that is at least 800 mm wide, centred on the lavatory, and 1 350 mm long, of which no more than 430 mm is beneath the lavatory, d)have a rim height not more than 865 mm above the floor, e)have a clearance beneath the lavatory not less than 800 mm wide, centred on the lavatory, 735 mm high at the front edge, 685 mm high at a point 200 mm back from the front edge, and 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge, f)have insulated water supply and drain pipes where these pipes are exposed (see Note A-3.8.3.16.(1)(f)), g)have a soap dispenser that is automatic, or complies with Clause 3.8.3.8.(1)(b) and is located not more than 1 100 mm above the floor, within 500 mm from the front of the lavatory (see Note A-3.8.3.16.(1)(g)), and h)have a towel dispenser or other hand-drying equipment located close to the lavatory, not more than 1 200 mm above the floor in an area that is accessible to persons in wheelchairs.
		Mirrors required by Sentence 3.8.2.8.(9) shall be a)mounted with their bottom edge not more than 1 000 mm above the floor, or b)fixed in an inclined position so as to be usable by a person in a wheelchair.

	3.8.3.20 *Counters*	A section of a service counter required to be barrier-free in accordance with Sentence 3.8.2.11.(1) shall a)be not less than 800 mm long centred over a knee space conforming to Clause (c), b)have a surface not more than 865 mm above the floor, and c)where forward-facing interaction with a person or a device is required, have a knee space underneath it that is (see Note A-3.8.3.20.(1)(c)) not less than 800 mm wide, not less than 685 mm high, and not less than 485 mm deep.
	3.8.3.22 *Spaces in Seating Area*	Spaces designated for wheelchair use in assembly occupancies as required by Sentence 3.8.2.3.(3) shall conform to the following: a)at least one designated space shall be clear and level for each increment of 200 seats and the remaining designated spaces shall be level and have removable seats, b)they shall be not less than 900 mm wide and 1 700 mm long to permit a wheelchair to enter from a side approach and 1 350 mm long where the wheelchair enters from the front or rear of the space, c)they shall be arranged so that at least two designated spaces are located side by side, and at least one fixed seat is located beside each designated space, d)they shall be located adjoining a barrier-free path of travel without infringing on egress from any row of seating or any aisle requirements, and e)they shall be situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.

29.0 PLUMBING

Chapter/Section		Description
	2.2.2.1 *Surface Requirements*	Every fixture shall have a smooth, hard, corrosion-resistant surface free of flaws and blemishes that may interfere with cleaning.
	2.2.2.5 *Water Closets in Public Washrooms*	Where a water closet is installed in a washroom for public use, it shall be of the elongated type and provided with a seat of the open front type.
	2.2.10.9 *Drinking Fountain Bubblers*	The orifice of drinking fountain bubblers shall a)be of the shielded type, and b)direct the water upward at an angle of approximately 45°.

CALCULATING PLUMBING FIXTURES – Floor I

Fixture Type	Fixture Ratio		Fixtures Required				Total Fixtures Required	
			Standard Fixtures		Accessible Fixtures			
	Male	Female	Male	Female	Male	Female	Male	Female
☒ Water Closet	1 per 125	1 per 65	7	14	1	2	8	16
☐ Urinal	-	-	-	-	-	-	-	-
☐ Lavatory	-	-	-	-	-	-	-	-
☐ Bathtub	-	-	-	-	-	-	-	-
☐ Shower	-	-	-	-	-	-	-	-
☒ Service Sink	1		1		-		1	
☒ Drinking Fountain	1 per 500		2		2		4	
☐ Other:	-	-	-	-	-	-	-	-

CALCULATING PLUMBING FIXTURES – Floor II

Fixture Type	Fixture Ratio		Fixtures Required				Total Fixtures Required	
			Standard Fixtures		Accessible Fixtures			
	Male	Female	Male	Female	Male	Female	Male	Female
☒ Water Closet	1 per 125	1 per 65	5	9	1	1	6	10
☐ Urinal	-	-	-	-	-	-	-	-
☐ Lavatory	-	-	-	-	-	-	-	-
☐ Bathtub	-	-	-	-	-	-	-	-
☐ Shower	-	-	-	-	-	-	-	-
☒ Service Sink	1		1		-		1	
☒ Drinking Fountain	1 per 500		2		2		4	
☐ Other:	-	-	-	-	-	-	-	-

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Appendix A - Research Application Chart

Current Issues Research Applications Chart		
Reference (APA format)	Research Discovery/Findings	Design Applications
Anderson, D., Piscitelli, B., Weier, K., Everett, M., & Tayler, C. (2002). Children's museum experiences: Identifying powerful mediators of learning. *Curator: The Museum Journal*, *45* (3), 213–231. DOI: https://doi.org/10.1111/j.2151-6952.2002.tb00057	"Further examination of the children's transcripts showed that in many instances, but not exclusively, their recollections were associated with kinesthetic and/or tactile experiences with exhibits" (p. 220).	Have a majority of exhibits in the museum be tactile and/or kinesthetic in order for children to have a higher chance of retaining what they did and learned (Anderson et al., 2002).
	"It is evident that kinesthetic experiences with large-scale sculptures were enjoyable, recalled in great detail, and had a strong educational impact for children in keeping with our epistemology of learning" (p. 222).	Create memorable landmarks in the museum such as large animal sculptures, a memorable local figure, or a statue that enhances childhood learning and curiosity (Anderson et al., 2002).
Andre, L., Durksen, T., & Volman, M. L. (2016). Museums as avenues of learning for children: A decade of research. *Learning Environments Research*, *20*(1), 47–76. DOI: https://doi.org/10.1007/s10984-016-9222-9	"Generally, learning in museums and other non-school-based environments is referred to as informal or free-choice learning and is qualitatively different learning from that in schools" (Andre et al., 2016, p. 48).	Find learning gaps in the community and implement exhibits within the museum that fill those gaps. This could be math, science, reading, history, etc. (Andre et al., 2016).
	"Hands on activities were the leading effective activities for facilitating children's learning in most children's museums and a representation of child-environment-adults/peers interactivity" (Andre et al., 2016, p. 59).	Implement several hands-on exhibits such as: sand, water, physics and building, light walls, etc. (Andre et al., 2016).
Coffey, C. S. (2018). Creating inclusive experiences in children's museums for children with autism spectrum disorder. [Master Thesis, The University of Wisconsin-Milwaukee]. The University of Wisconsin- Milwaukee ProQuest Dissertations.DOI: https://dc.uwm.edu/etd/1981	"To support children with ASD, museums currently recognize that these visitors have diverse learning needs that necessitate the implementation of a broad variety of educational strategies, resources, and environmental modifications" (Coffey, 2018, p. 1).	Implement design elements (light and sound) that can be adjusted and controlled whenever needed for children who may be sensitive (Coffey, 2018). Provide quiet rooms, sensory toys, and headphones for kids that may need more or less stimulation (Coffey, 2018).
	"Instead of creating separate experiences or objectives for children with disabilities; the goal should be finding ways to integrate practices that benefit all children and improve the program quality for every child" (Coffey, 2018, p. 18).	Design exhibits with many different experiences and objectives so that all individuals feel welcome (Coffey, 2018). Design spaces and exhibits throughout the museum that are both interactive and educational so that all individuals are able to learn and grow from their experience (Coffey, 2018).

Filova, N.B., & Rollova, L. (2019). Human centered design of a children's museum. SWS *Journal of Social Sciences and Art, 2*(6), 67-80. DOI:10.35603/ssa2019/issue2.06	"Children's museum's buildings and exhibition areas should be accessible and user friendly, as well as interactive, hands-on, attractive, safe and stimulating places" (Filova & Rollova, 2019, p. 68).	Incorporate universal design principles throughout the museum and in exhibits (Filova & Rollova, 2019).
	"Almost all exhibits are visually perceived, and it is important to use suitable lighting, colors and scale of the exhibits, surrounding labels and pictograms, so that they are easily noticeable and readable" (Filova & Rollova, 2019, p. 70).	Use layers of lighting throughout the museum to provide a unique and comfortable experience for visitors (Filova & Rollova, 2019).
	"It is necessary to balance color applications in educational spaces, as over-stimulation through color creates sensory overload. On the other hand, colorless interior spaces can be stressful and nonproductive" (Filova & Rollova, 2019, p. 71).	Balance color and textures throughout the exhibits so people are less likely to be overstimulated (Filova & Rollova, 2019).
	"Interactive exhibitions aim to saturate all three areas of learning defined in Bloom's taxonomy: the cognitive aspect (e.g. learning, understanding), affective area (e.g. motivation, values, attitudes) and psychomotor learning (e.g. physical skills, coordination)" (Filova & Rollova, 2019, p. 73).	Create multisensory spaces and exhibits that engage touch, sound, and sight (Filova & Rollova, 2019).
	"It is necessary to suppose that every single exhibit case must be designed for use by a child in a wheelchair, labeled with large-print and easy-to-read text, offered with tactile alternatives, and an audio-description tour must be included" (Filova & Rollova, 2019, p. 78).	Design using ADA guidelines and consider children of all abilities (Filova & Rollova, 2019).
Golden, T., & Walsh, L. (2013). Play for all at Chicago Children's museum: A history and overview. *Curator: The Museum Journal*, *56*(3), 337–347. DOI: https://doi.org/10.1111/cura.12032	"CCM also learned that being ADA compliant was not enough; being accessible and inclusive meant going above and beyond the ADA" (p. 337).	Have features within most exhibits that are friendly for kids who are blind, neurodivergent, in a wheelchair, and who are hard of hearing (Golden, & Walsh, 2013,).
	"A bubble column and cuddle swing, as well as weighted blankets, lap pads, and a variety of vibrating stuffed animals, welcome visitors who may need to relax" (p. 346).	Implement a multi-sensory room to aid in relaxation and satisfaction for neurodivergent kids (Golden, & Walsh, 2013). Include a minimum of one quiet room for kids and families to decompress while at the museum (Golden, & Walsh, 2013).
Golinkoff, R., Mahajan, N., Hirsh-Pasek, K., Resnick, I., Song, L., Stuehling, A., & Thompson, N. (2017). Parents' and experts' awareness of learning opportunities in children's museum exhibits. Journal of Applied Developmental Psychology, 49(1), 39-45. DOI: https://doi.org/10.1016/j.appdev.2017.01.006	"When children engaged in behaviors such as making observations and asking and answering questions, they learned more than when they did not engage in these behaviors" (Golinkoff et al., 2017, p. 39).	When designing exhibits be sure to include elements that create observations and questions for visitors to discuss (Golinkoff et al., 2017).
	"We found that signs did in fact increase awareness of the learning opportunities in these exhibits. In particular, providing information on the specific ways in which an exhibit might provide learning opportunities in language, history, science, or math led parents to give higher academic ratings to exhibits where those opportunities had previously been less readily apparent to them" (Golinkoff et al., 2017, p. 43).	Include an element within the signage or explanation of each exhibit that incorporates what areas of academics the exhibit targets (Golinkoff et al., 2017). Keep similar academic topics within a confined area so that exhibits within one space are easier to understand (Golinkoff et al., 2017).

Gong, X., Zhang, X., & Tsang, M.C., (2020). Creativity development in preschoolers: The effects of children's museum visits and other educational environment factors. *Studies in Educational Evaluation, 67*, 1-11. DOI: https://doi.org/10.1016/j.stueduc.2020.100932	"Here, our study takes the lead to investigate the importance of children's museum visitation on children's creativity empirically to provide a comprehensive understanding of the effects of children's museum visits on creativity, and serve as a reference to investing in pedagogical methods that expand children's creativity" (Gong et al., 2020, p. 3).	Design a museum that encourages creativity (Gong et al., 2020).
	"In the age where creative thinking and innovations are boosters of the development of science and technology, it is essential that we cultivate young learners' creativity to better prepare them for study, work, and personal life" (Gong et al., 2020, p. 9).	Incorporate elements that prepare children for school, and work in the future (Gong et al., 2020).
	"To nurture creativity in children, it is necessary to reduce the inhibiting external factors, such as an authoritarian family environment" (Gong et al., 2020, p. 10).	Design an environment where children can be themselves without pressure from external factors (Gong et al., 2020).
Habbak, A.L.Z., & Khodeir, L. (2023). Multi-Sensory Interactive Interior Design for Enhancing Skills in Children with Autism. *Ain Shams Engineering Journal*, *14*(8), 1-13. DOI: https://doi.org/10.1016/j.asej.2022.102039.	"Colors, lighting, and the form of interior space elements are the main elements of visual stimuli. Stimuli such as flickering, high illuminance, and glare, are disturbing for people on the autism spectrum" (p. 4).	Consider light temperature and intensity both within each exhibit and with general museum lighting (Habbak & Khodeir, 2023).
	"Interaction with nature, and the use of natural resources make the interior space more attractive for the autistic child. Which leads to direct the attention of the child with autism to the surrounding environment rather than focusing on one thing" (p. 3).	Have multiple exhibits that include items found in nature such as: animals, plants, and weather (Habbak & Khodeir, 2023).
Han, H., Lee, S., & Hyun, S. S. (2019). Role of internal and external museum environment in increasing visitors' cognitive/affective/healthy experiences and loyalty. International Journal of Environmental Research and Public Health, 16(22), 1-15. DOI: https://doi.org/10.3390/ijerph16224537	"In recent decades, museums have evolved from classical assets centered (e.g., conservation, research, exhibition) to visitor centered (e.g., enjoyment, well-being recreation, mental health, knowledge gaining, social gaining/interaction, pleasurable experiences) and from product-centered to service-centered" (Han et al., 2019, p. 1).	Design exhibits that are interactive, knowledge gaining, social, and create positive experiences for the children (Han et al., 2019).
	"For instance, providing comfortable temperatures, improving the indoor air quality, offering comfortable natural and artificial lighting, improving the layout, making adequate spatial arrangement of the exhibits, improving the decor, signs and descriptions, and providing adequate spaces for programs, gathering areas, catering, and gift shops would not only make a visitor regard a museum as a user-friendly place but also ultimately lead to an increase in visitor loyalty in the museum industry" (Han et al., 2019, pp. 10-11).	Use both natural and artificial lighting in a way that provides a comfortable atmosphere for visitors (Han et al., 2019). Design a layout that flows smoothly so visitors can easily navigate their way throughout the museum (Han et al., 2019). Places signs and descriptions at a height that is readable for all individuals along with visually appealing (Han et al., 2019).

Kaup, M., Kim, H. C., & Dudek, M. (2011). Planning to learn: The role of interior design in educational settings. *International Journal of Designs for Learning*, *4*(2), 41-55. DOI: https://www.learntechlib.org/p/209657/	"These spaces focused on strategic use of light, color, and spatial composition allowing for both visual and physical control of the front door while avoiding an overly institutional impression" (Kaup et al., 2013, p. 49).	Use thoughtful design at the entrance to create an inviting space for children and parents (Kaup et al., 2011). Allow for many sightlines at the front door to aid in security (Kaup et al., 2011).
	"Within the classroom designs, much attention was given to providing flexible work surfaces, seating, and storage to accommodate a wide range of users" (Kaup et al., 2013, p. 50).	Incorporate flexibility throughout the museum to allow for every visitor to have an enjoyable experience (Kaup et al., 2011).
	"Young children can have a heightened sensitivity to sounds, and they are particularly vulnerable to vibration, reverberations and noise" (Kaup et al., 2013, p. 51).	-Be mindful of acoustics and include sound-absorbing elements where necessary (Kaup et al., 2011).
Khalili, N. (2010). Colour communication in children's play environments. [Master Thesis, Carleton University]. Carleton University Institution Repository. DOI: https://doi.org/10.22215/etd/2010-08680	"Studies show that most children reach the height of colour recognition by the age of about four-and-a half, but around ten percent of this age group still recognize form more than colour" (Khalili, 2010, pp. 10-11).	When designing areas that are for younger kids (under age 4), think about form more than color (Khalili, 2010).
	"When combining colours, it is efficient to use different colour contrasts or harmonies" (Khalili, 2010, p. 33).	When selecting colors for each exhibit space be sure to pick colors that either blend well or contrast each other so that it is not overstimulating for the children (Khalili, 2010).
	"Colour design is separated into three functional areas: Dominant colours (with the largest amount of surface in a space that sets the mood), subdominant colours (which should introduce at all times the complementary colour temperature)....and accents [which] can be stronger in colour chromaticity - these would be the smallest areas in an architectural space" (Khalili, 2010, p. 96)	Use something more neutral for the dominant area with subtle pops of pastel or dull toned colors as the subdominant color and accents in exhibit areas (Khalili, 2010). Pick colors that will complement the color temperature of each specific area throughout the space (Khalili, 2010).
Knowles, C. & Schwartzman, R. (2022). Expanding accessibility: Sensory sensitive programming for museums. Curator: The Museum Journal, 65(1), 95-116. DOI: https://doi.org/10.1111/cura.12452	"Planning for the SSP expanded these considerations to also include conditions such as noise levels, the need for coping tools/spaces for sensory avoiders (i.e., noise-reducing headphones, sunglasses, sensory toys, calm rooms.), and natural ebb and flow of crowds that may impair the experience of an individual with a sensory sensitivity" (Knowles & Schwartzman, 2022, p. 99).	Incorporate design elements that are able to be adjusted such as lighting and noise levels of certain exhibits (Knowles & Schwartzman, 2022). Include design elements such as calm rooms, exit signage, and easy wayfinding to allow for a positive experience (Knowles & Schwartzman, 2022).
	"For the ESC's SSP, the team created new signage for some activities that pared down exhibit instructions to three or four main points and included photo representations for each direction" (Knowles & Schwartzman, 2022, p. 103).	Design signage throughout the museum with multiple levels of reading ability (pictures and words) (Knowles & Schwartzman, 2022).
	"Research demonstrates animal-assisted activities may benefit children with and without disabilities" (Knowles & Schwartzman, 2022, p. 103).	Designate an area within the museum that includes a green space where therapy/service animals can roam and be played with (Knowles & Schwartzman, 2022).

Letourneau, S. M., Meisner, R., Neuwirth, J. L., & Sobel, D. M. (2017). What do caregivers notice and value about how children learn through play in a children's museum? *Journal of Museum Education*, *42*(1), 87-98. DOI: https://doi.org/10.1080/10598650.2016.1260436	"27.27% emphasized that the museum provided unique experiences that they could not find elsewhere and said that children benefitted by "being exposed to different things" (p. 91).	Find learning gaps in the Vancouver area and implement exhibit elements and structures that families cannot find elsewhere (Letourneau et al., 2017)
	"Labels hung next to exhibit components gave examples of play behaviors that caregivers might see at specific components and described their relevance for learning" (p. 95).	Implement signage that describes goals and learning outcomes for each exhibit (Letourneau et al., 2017)
McInnes, K., & Elpidoforou, M.-E. (2016). Investigating and learning from toddler play in a children's museum. *Early Child Development and Care*, *188*(3), 399-409. DOI: https://doi.org/10.1080/03004430.2016.1223073	"Research on play generally focuses on the needs of four-year-old children and older with minimal research on the needs of the under-threes" (p. 399).	Have exhibits be accessible for children under three, but in addition have exhibits and areas solely for children under three (McInnes & Elpidoforou, 2016).
	"Toddlers used all their senses to explore exhibits; they touched, shook, examined, observed and mouthed objects. They physically interacted with the environment by sitting, walking, running and climbing. They also laughed, talked, shouted and engaged in role play" (p. 402).	Have a variety of exhibit types that can draw interest to children who like different things (McInnes & Elpidoforou, 2016, p. 402).
Puchner, L., Rapoport, R., & Gaskins, S. (2001). Learning in children's museums: Is it really happening? *The Museum Journal, 44*(3), 221-320. DOI:10.1111/j.2151-6952.2001.tb01164.x	"…altering the appearance, legibility, wording and other aspects of exhibit labels in science museums has been shown to increase the comprehension of exhibit-related information in children, teenagers, and adults" (Puchner et al., 2001, p. 238).	Incorporate kid-friendly illustrations and wording in signage to encourage independence (Puchner et al., 2001).
	"The most common form of learning observed was what the study called simple cause and effect, involving learning of a physical relationship between two things" (Puchner et al., 2001, p. 253).	Design exhibits that involve cause and effect, for example, flipping switches to turn on lights or pushing buttons to make noises (Puchner et al., 2001).
	"The differences in quality of different kinds of learning is important in assessing the learning potential of different exhibits" (Puchner et al., 2001, p. 254).	Include a variety of different exhibits including large and fine motor skills that will appeal to all children (Puchner et al., 2001).

Sakya, K.A., Santosa, I., & Bagus, A. (2017). Sensitivity of children with autism towards to interior design elements in Bandung City, Indonesia. *International Journal of Social Sciences, 49*(1), 73-82. DOI:	"Interior designers play an important role in creating spaces that can help individuals with autism to better understand where they are in an environment with a spatial design that is sensitive to their needs" (Sakya et al., 2017, p. 73).	Use strategic wayfinding throughout the entirety of the museum so even children with disabilities are able to feel independent (Sakya et al., 2017).
	"From the results of the questionnaire, produced a conclusion that autistic children in Bandung are most sensitive to visual stimuli element (74.4 %) and noise (70.7 %), and the need for privacy (81.7 %) and social interaction (81.7 %)" (Sakya et al., 2017, p. 80).	Be extra mindful of how lighting and acoustics will be perceived by all users (Sakya et al., 2017). Include comfort rooms that allow for privacy and relaxation when a child becomes overstimulated (Sakya et al., 2017).
Shine, S., & Acosta, T. Y. (2008). Parent-child social play in a children's museum. *Family Relations, 49*(1), 45-52. DOI: https://doi.org/10.1111/j.1741-3729.2000.00045.x	"While children initiated play and parents encouraged children to take roles, neither maintained play by responding to the other's cues" (Shine & Acosta, 2008, p. 47).	Incorporate spaces for parents to be while their children are playing independently in an exhibit (Sakya et al., 2017).
	"Finally, parental attempts to teach concepts or guide children inevitably signaled the end of pretend play" (Shine & Acosta, 2008, p. 48).	Include exhibits where roles are clear and well-defined, and parents can feel comfortable playing with their children (Sakya et al., 2017).
	"Our suggestions for encouraging parent involvement in pretend play include the following recommendations. (1) To allow parents to feel comfortable playing with their children, small, enclosed pretend settings should be designed. (2) To make it easier for parents to engage in role-play, clear, unambiguous sites in which roles are well-defined should be designed. (3) To allow parents to join in the play scenario, adult sized props and clothes should be provided. (4) To encourage players to go beyond a prescribed play script, open-ended materials, such as paper and pencil, should be provided. (5) To remind parents to enter into pretend play and to offer suggestions signage should be posted" (Shine & Acosta, 2008, p. 51).	Have a variety of closed and open exhibits (Sakya et al., 2017). Have props and activities that are designed for parental involvement (Sakya et al., 2017). Include signage at every exhibit (Sakya et al., 2017).
Sobel, D. M., Stricker, L. W., & Weisberg, D. S. (2022). Relations between children's exploration in a children's museum and their reflections about their exploration. Society for Research in Child Development, 93(6), 1804-1818. DOI: https://doi.org/10.1111/cdev.13821	"These studies imply that children's museums, as environments designed specifically to prompt children's exploration, can support children's natural tendencies to learn" (Sobel et al., 2022, p. 1804).	Design exhibits so that children of all ages are able to interact with the environment and prompt their exploration to learn and grow (Sobel et al., 2022).
	"Perhaps most important, however, is that while children played longer at certain exhibits–particularly those that warranted more open ended exploration and play–they also played longer if they set their own goals for their play as opposed to simply using the exhibit as the museum intended." (Sobel et al., 2022, pp. 1812-1813).	Design exhibits to be more open ended for children's exploration (Sobel et al., 2022). Set some general goals and guidelines using signage at each exhibit but keep the instructions as open-ended as possible (Sobel et al., 2022).
	"This result suggests that collaborative play may provide a particularly supportive environment for behavioral flexibility in children" (Sobel et al., 2022, p. 1815).	Design certain exhibits in a way that individuals may need to collaborate with one another (Sobel et al., 2022).

Appendix B - Outside Reviewer

Becky Muller (NCIDQ) - Interior Designer at ICON Architectural Group

Phone - 701.772.4266

Email - beckym@iconarchitects.com

Becky Muller is the head interior designer at ICON Architectural Group. We were very lucky to be able to use a museum project model that ICON never completed but had conceptual designs for. Because of using their model, we figured one of the designers at ICON would work perfectly since they know the model and how it was intended to be used. Becky is a highly intelligent interior designer who has many years in this business making her the perfect person for our project outside reviewer.

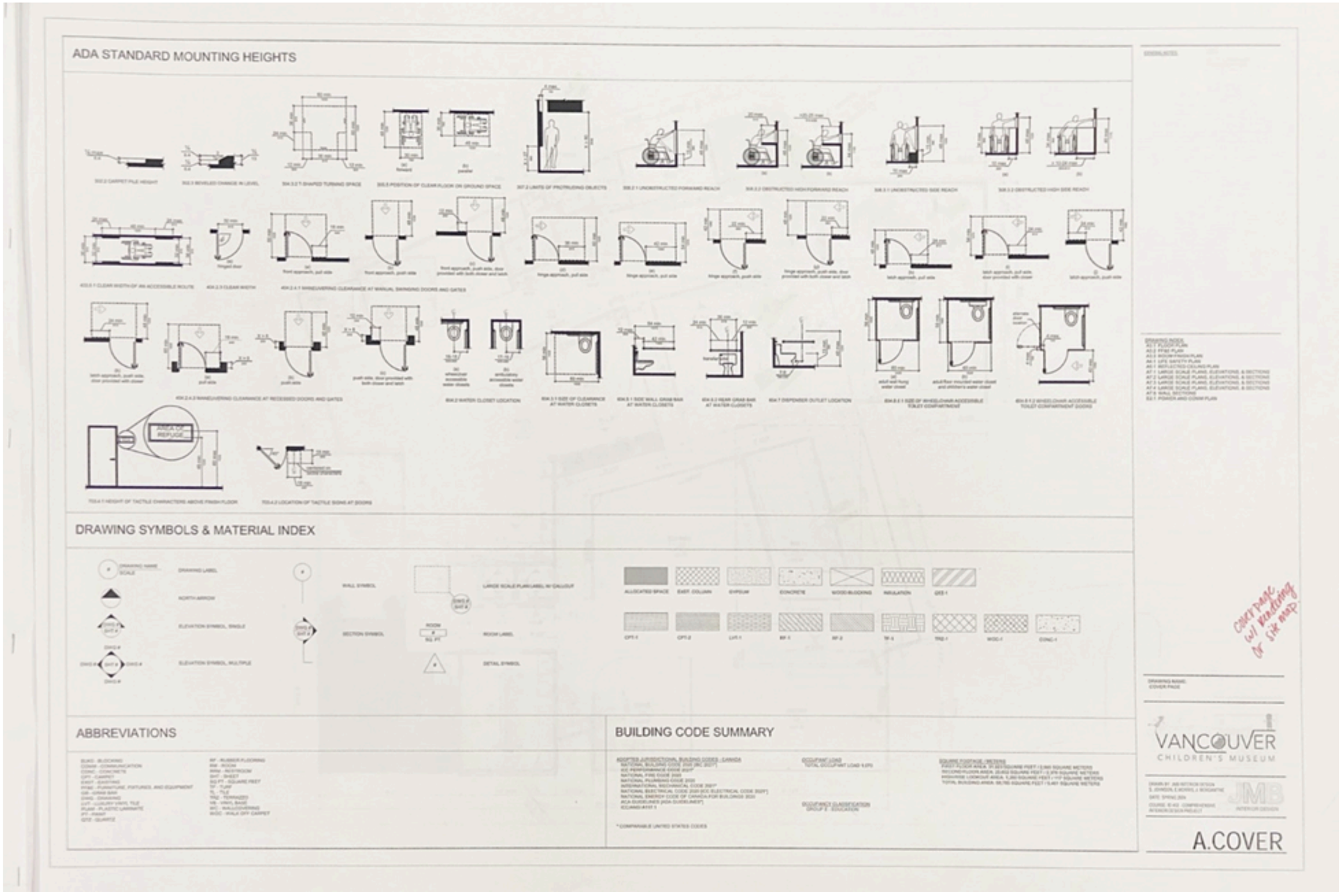
Review 1

Date: Friday March 15th, 2024
Reviewer: Becky Muller
Attendees: Sophie Johnson, Erin Morris, Jenna Bergantine, & Becky Muller
Discussion Items:

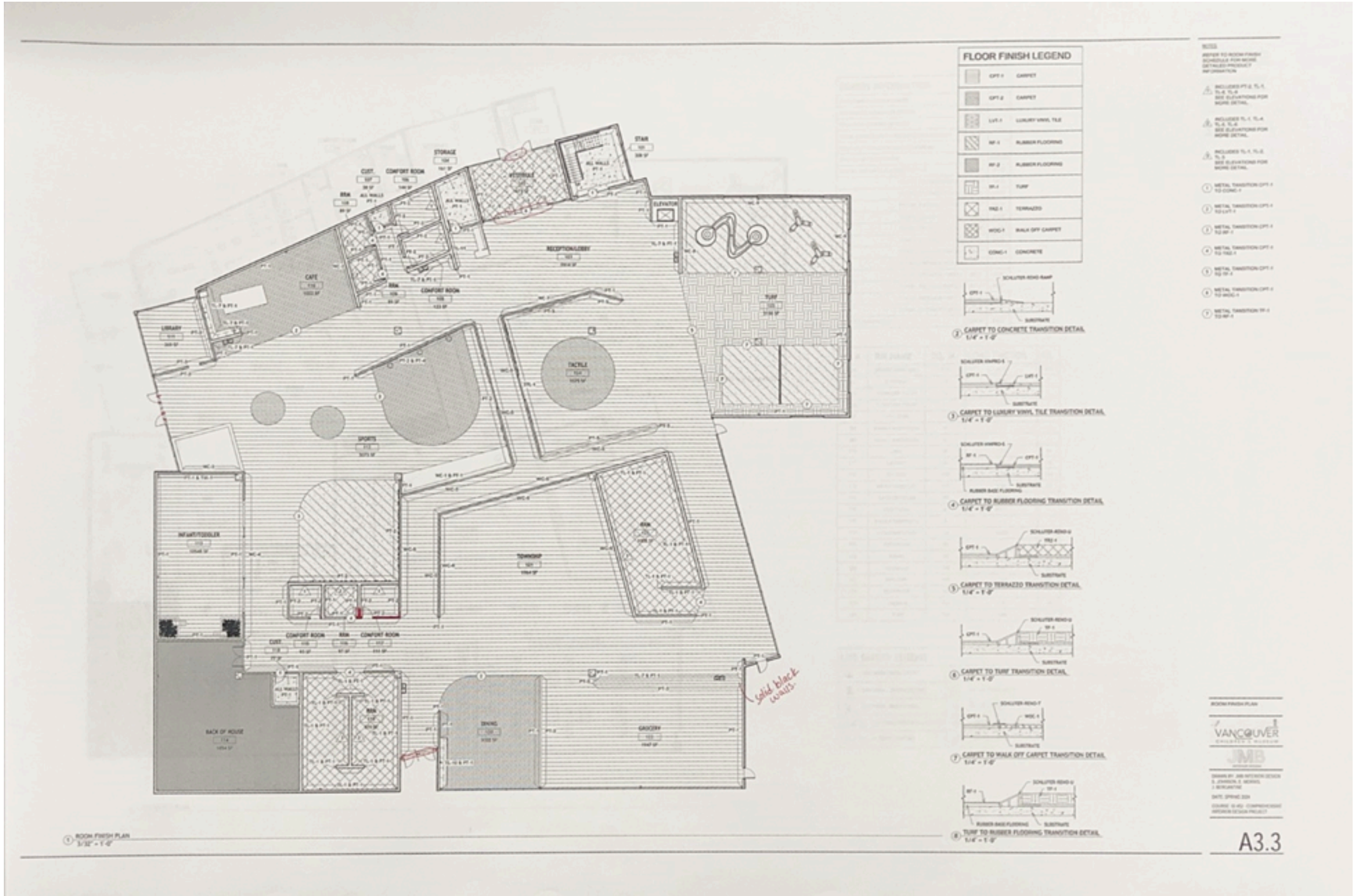
- Cover Page:
  - Add an additional cover page on top of the previous with rendering and site map of building/location.
- Floor Plan:
  - Hide all ff&e elements besides reception desk.
  - Add ambulatory stalls to large all gender restrooms.
  - Adjust dimensions so that they round to whole numbers.
  - Add in angular dimensions.
  - Add a filled region to show where the opening is to the stairs.
  - Hide floor lines.
  - Add a window in the township area to match the tactile and sports exhibits.
- Room Finish Plan:
  - Update transitions.
  - Lighten up floor lines or make walls solid black.
  - Fix doors if able.
- Reflected Ceiling Plan:
  - Add couple additional lights in hallway areas.

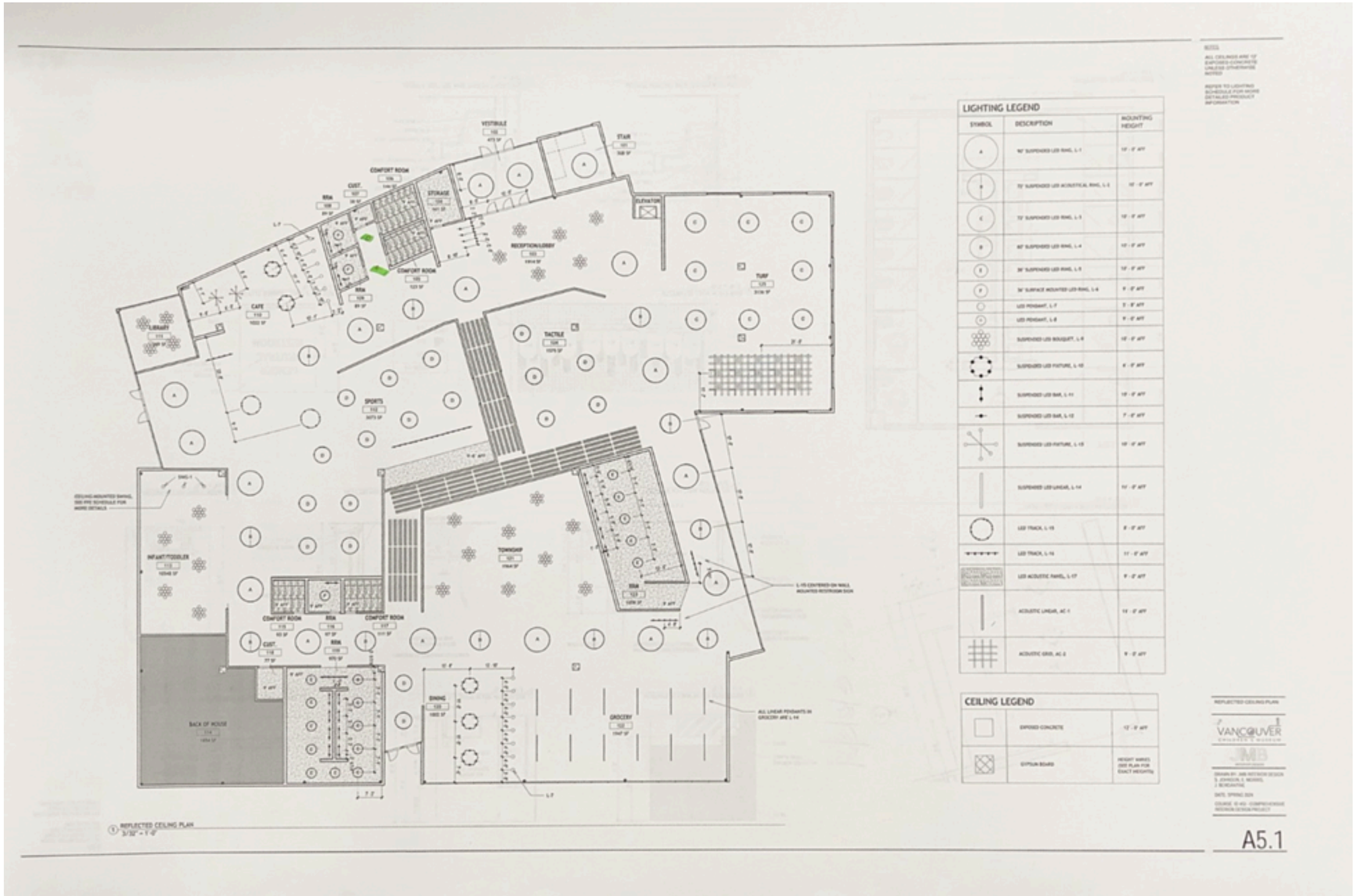
- Large Scale Plans, Elevations, and Sections:
  - Hide floor lines in large scale plans.
  - Add signage behind the reception desk.
  - Fix sinks in gender neutral restrooms.
  - Add/fix dimensions where appropriate.
  - Fix island to have support on seating side.
  - Add in elevation symbols that are missing.
  - Add detail line to edge of elevation to fix missing wall issue.
- Wall Sections:
  - Add label for floor line.

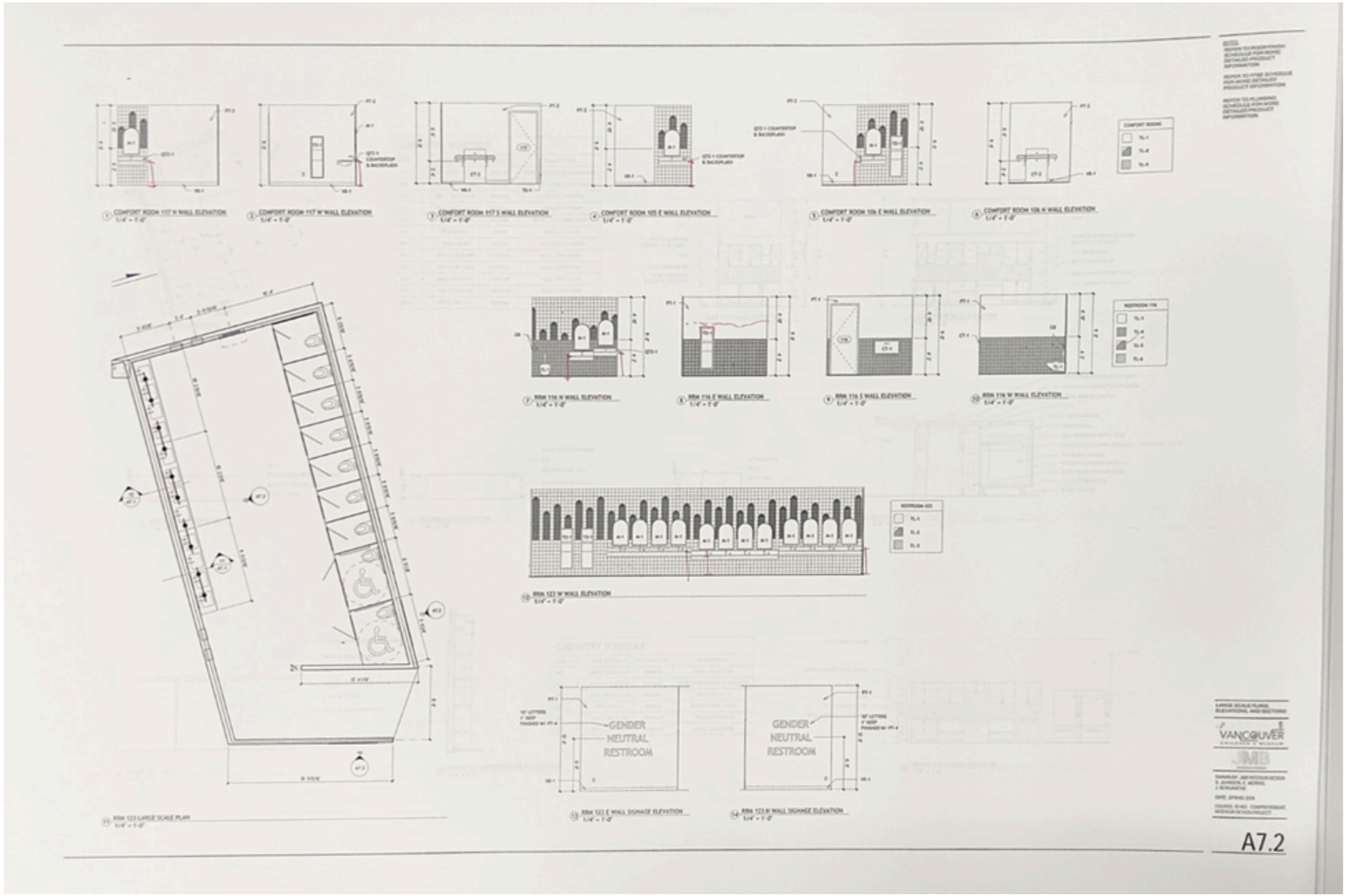
Meeting Images:

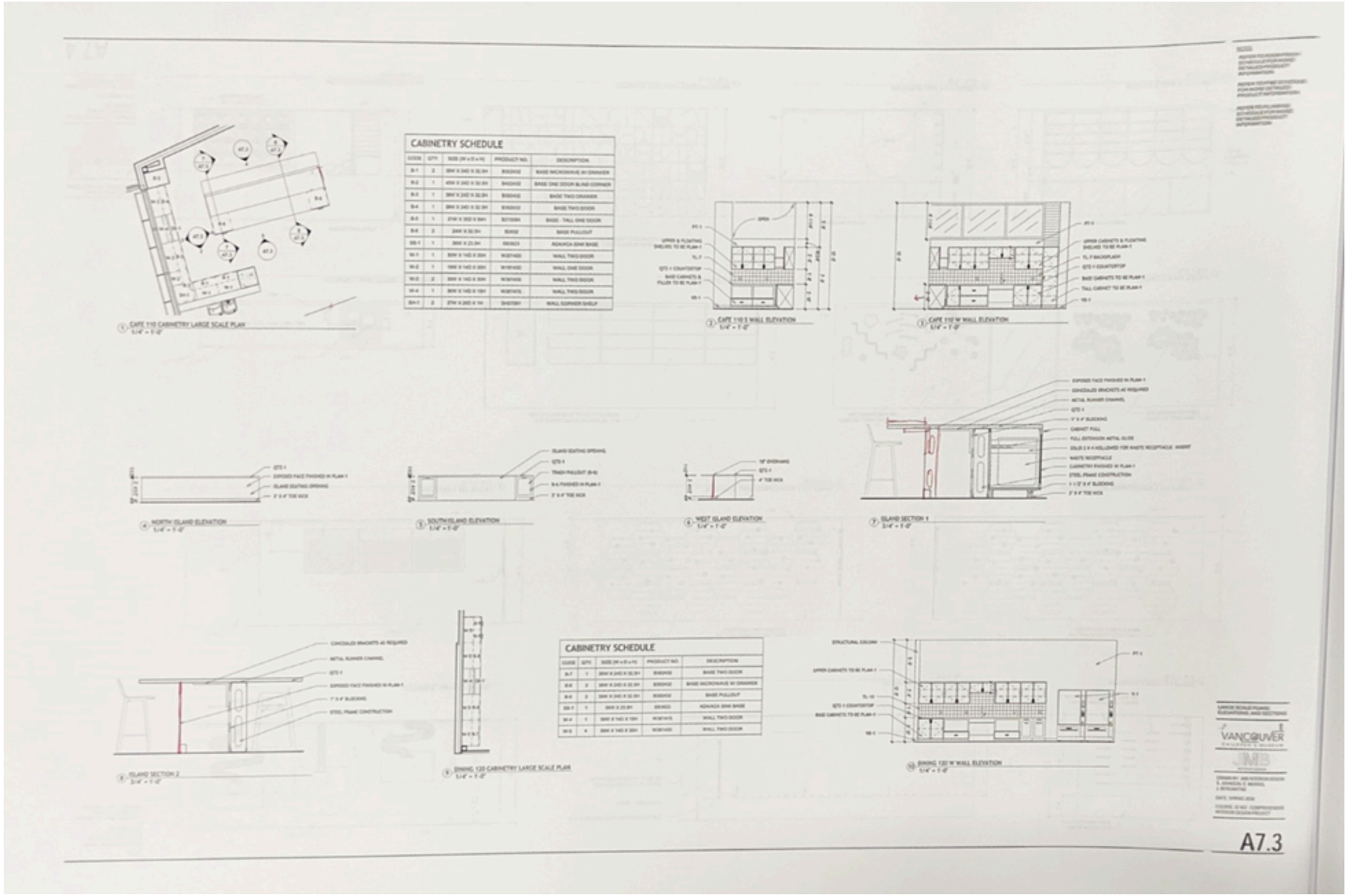


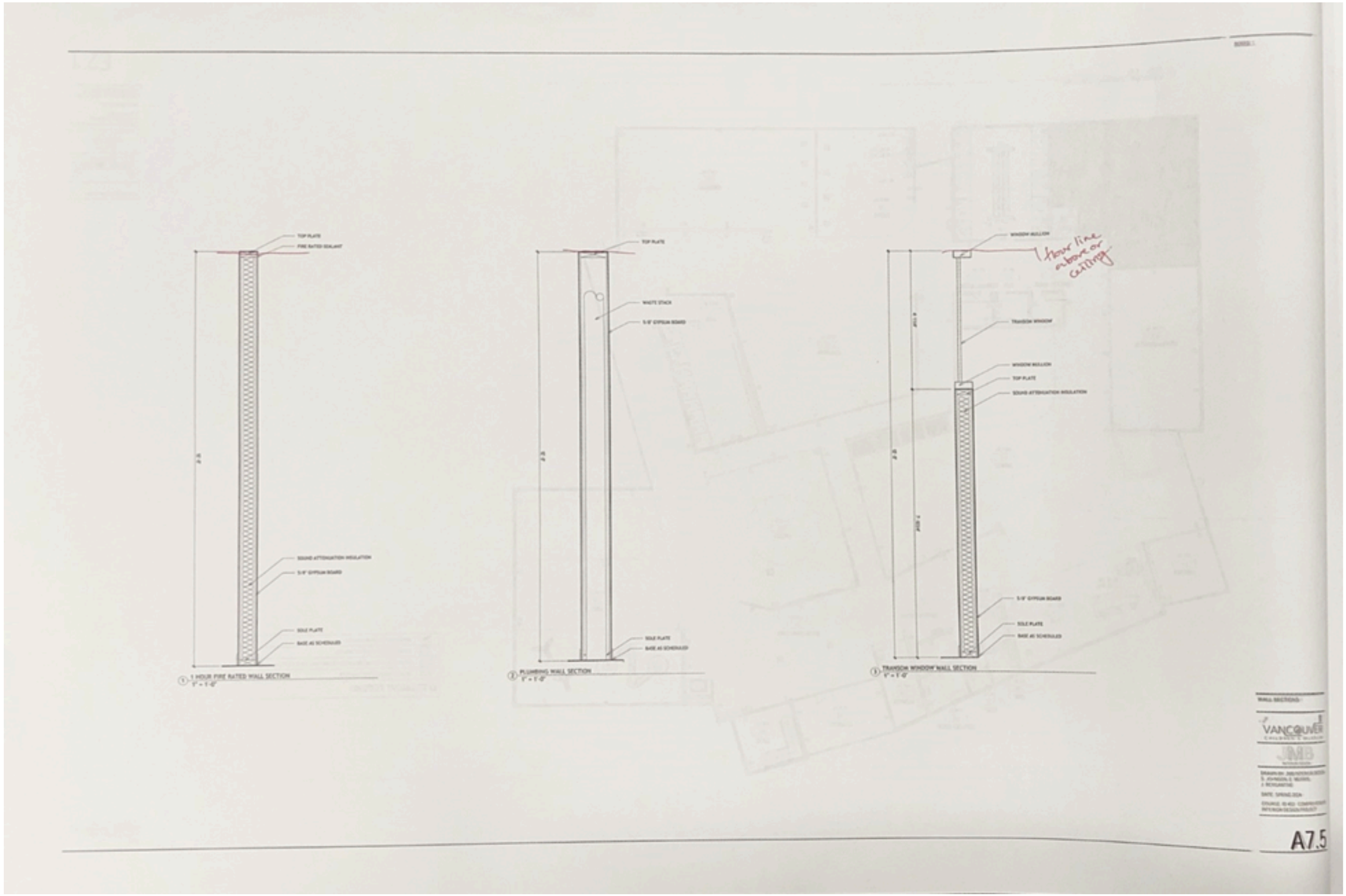

COMFORT ROOM
VESTIBULE
STAIR
ELEVATOR
STORAGE
RECEPTION/LOBBY
CAFE
LIBRARY
TUBE
TACTILE
SPORTS
INFANT/TODDLER
TOWNSHIP
BANK
COMFORT ROOM
BANK
COMFORT ROOM
CUST.
BACK OF HOUSE
DINING
GROCERY
FLOOR PLAN
3/32" = 1'-0"
FLOOR PLAN
VANCOUVER
JMB
A3.1


FLOOR FINISH LEGEND
CPT-1 CARPET
CPT-2 CARPET
LVT-1 LUXURY VINYL TILE
RF-1 RUBBER FLOORING
RF-2 RUBBER FLOORING
SN-1 TURF
TRZ-1 TERRAZZO
WOD-1 WALK OFF CARPET
CONC-1 CONCRETE
2 CARPET TO CONCRETE TRANSITION DETAIL 1/4" = 1'-0"
3 CARPET TO LUXURY VINYL TILE TRANSITION DETAIL 1/4" = 1'-0"
4 CARPET TO RUBBER FLOORING TRANSITION DETAIL 1/4" = 1'-0"
5 CARPET TO TERRAZZO TRANSITION DETAIL 1/4" = 1'-0"
6 CARPET TO TURF TRANSITION DETAIL 1/4" = 1'-0"
7 CARPET TO WALK OFF CARPET TRANSITION DETAIL 1/4" = 1'-0"
8 TURF TO RUBBER FLOORING TRANSITION DETAIL 1/4" = 1'-0"
1 ROOM FINISH PLAN 1/32" = 1'-0"
STORAGE
CUST.
COMFORT ROOM
RISER
VESTIBULE
STAIR
ELEVATOR
RECEPTION/LOBBY
CAFE
LIBRARY
TACTILE
TURF
SPORTS
INFANT/TODDLER
TEPANYAKI
BACK OF HOUSE
DINING
GROCERY
Solid black walls
VANCOUVER
A3.3


LIGHTING LEGEND
SYMBOL
DESCRIPTION
MOUNTING HEIGHT
CEILING LEGEND
EXPOSED CONCRETE
GYPSUM BOARD
REFLECTED CEILING PLAN
VANCOUVER
A5.1


GENDER
NEUTRAL
RESTROOM
GENDER
NEUTRAL
RESTROOM
A7.2


CABINETRY SCHEDULE
CABINETRY SCHEDULE
A7.3


TOP PLATE
FIRE RATED SEALANT
SOUND ATTENUATION INSULATION
5/8" GYPSUM BOARD
SOLE PLATE
BASE AS SCHEDULED
1 HOUR FIRE RATED WALL SECTION
1" = 1'-0"
TOP PLATE
WHITE STACK
5/8" GYPSUM BOARD
SOLE PLATE
BASE AS SCHEDULED
PLUMBING WALL SECTION
1" = 1'-0"
WINDOW MULLION
1 hour line above ceiling
TRANSOM WINDOW
WINDOW MULLION
TOP PLATE
SOUND ATTENUATION INSULATION
5/8" GYPSUM BOARD
SOLE PLATE
BASE AS SCHEDULED
TRANSOM WINDOW WALL SECTION
1" = 1'-0"
WALL SECTIONS
VANCOUVER
JMB
A7.5

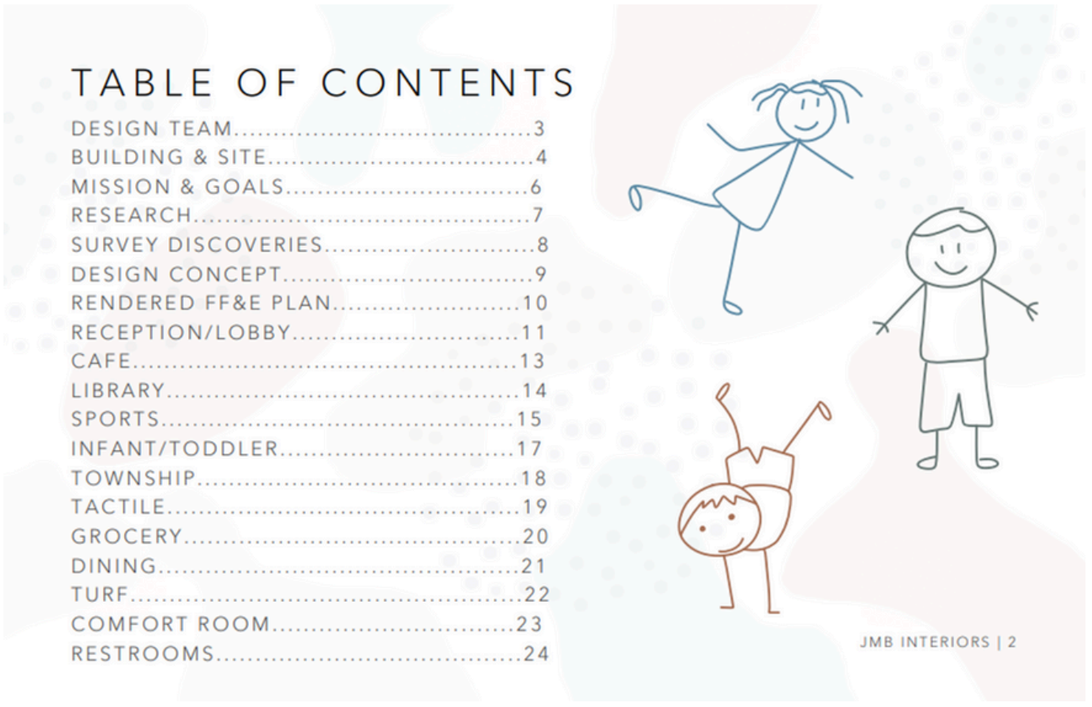
Review 2

Date: Wednesday April 10th, 2024
Reviewer: Becky Muller
Attendees: Sent to Becky via email therefore no attendees.
Discussion Items:

- Table of contents:
  - Right justify your page numbers so they are all aligned.
- Page 5:
  - Revise to spell it "ICON" vs. "Icon".
- Page 11:
  - Just be prepared to answer questions about the concrete ceilings and how noise levels might be too high without ACT, acoustic panels, or something to help with that reverberation.
- Page 11/12:
  - Wood wall- I'm not sure if the scale needs to be "up'd" or how you make this look more slatted. From a distance, it just looks like a solid beige wall.
- Page 12:
  - Love that you are using HDPE lockers, I think it's a good point to bring up in your presentation that this material is better than metal for acoustics and hygienic reasons!
- Page 13:
  - Dropped lights look low. I think if any of the people were to stand up in the lounge chairs they would hit their head; same comment about acoustics in here, especially without carpet and ceiling treatment it would get pretty loud in the café (same with dining space).

- Page 15:
  - Loud bouncing balls off rims…I'd probably do something different on the ceiling material and maybe it is just the scale of the rendering, but I think those lights would definitely get hit with a basketball. Maybe it needs to be something more surface mount?
- Page 21/22:
  - Maybe just add more information around images like you have on the other slides.
- Page 23:
  - Might just be my OCD but I would pull the sink edge to align with your light-colored tile (which turned out amazing by the way!).

Meeting Images:



DESIGN TEAM

JMB INTERIORS

SOPHIE JOHNSON
ERIN MORRIS
JENNA BERGANTINE

THE SITE

1770 BURRARD ST. VANCOUVER, CANADA

- Large Population
- Moderate Climate
- Yearly Heavy Rainfall
- Proximity to Seattle, WA

- 1 Mile West of Granville Island
- Family Friendly Area
- 4 Public Transportation Stations Nearby

THE BUILDING

- Floor I - 31,923 square feet / 2,965 meters
- Floor II - 25,602 square feet / 2,378 meters
- Both Floors: 12'-0" AFF ceiling height

NOTABLE FEATURES

- A Concept from Icon Architectural Group
- Large Windows
- High Rise Lookout
- Ample Overall Square Footage
- Modern Architecture

Back of House, High Rise Lookout and Floor II are allocated spaces outside of our team's scope of work.

MISSION, VISION, & VALUES

THE MISSION

Interactive Play | Hands-On Learning | Child-Centered Environment

Creativity | Curiosity | Imagination | Life-Long Learning

THE VISION

Community | Passion | Readiness | Development

THE VALUES

Play Time | Learning | Curiosity | Value | Respect

RESEARCH

INFORMATION GATHERING

- Review of Literature
- Field Survey

METHODOLOGY

- Survey
  - Research Report

SURVEY FOCUSES

- Cultivating children's learning and development
- Creating an inclusive environment

SURVEY DISCOVERIES

Survey results showed that children were **least** sensitive to **smell** and **socialization**

35 participants voted that an **informal learning environment** was important or very important to a child's development

Children have the **highest** sensitivity to **crowds** and **sound**

Cause and effect play and **water play** are tied for most popular with **veterinary play** having very few votes

Nine of 48 total responses, or 19% of participants considered one or more of their children to be **neurodivergent**

Fig. 1 Interest in Interactive Exhibit Types

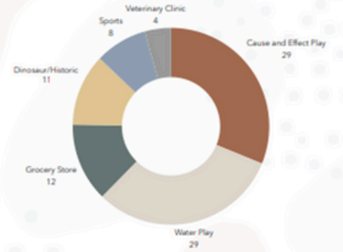
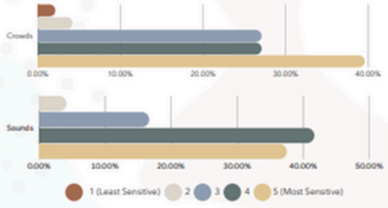


Fig. 2 Sensory Sensitivities



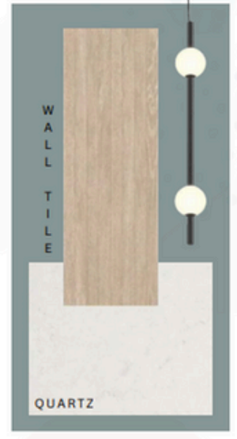
RENDERED FF&E PLAN

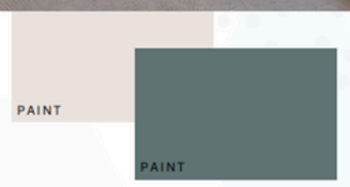
RECEPTION/LOBBY

Be conscious of lighting choices to help lower visual stimuli for children on the spectrum (Habbak & Khodeir, 2023).

JMB INTERIORS | 11

RECEPTION/LOBBY





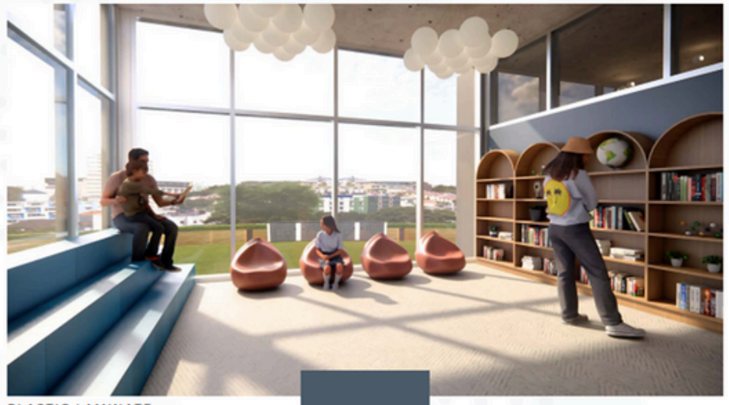
JMB INTERIORS | 12

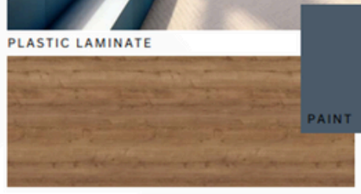
CAFE

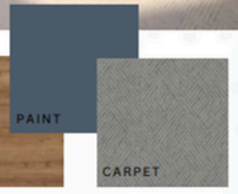
Balance colors in order to bridge the gap between overstimulation and understimulation (Filova & Rollova, 2019).

JMB INTERIORS | 13

LIBRARY



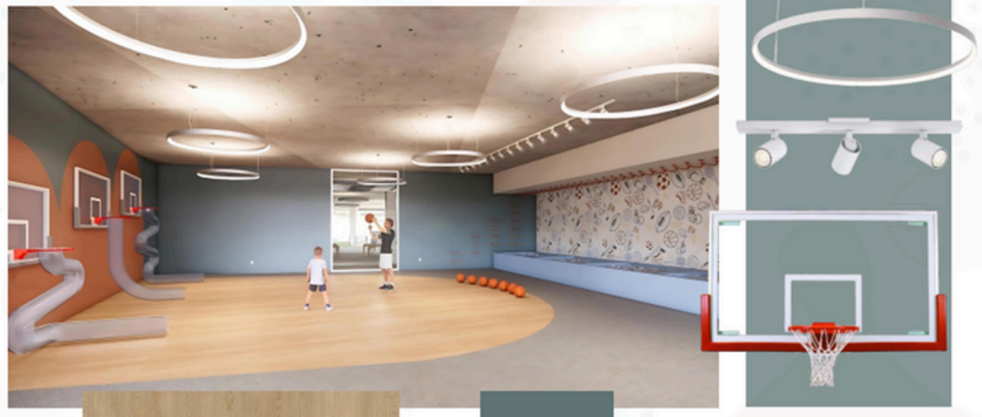


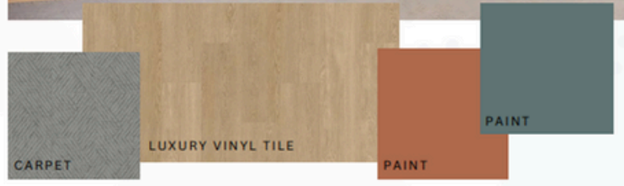


Incorporate flexibility throughout the museum to allow every visitor to have an enjoyable experience (Kaup et al., 2013).

JMB INTERIORS | 14

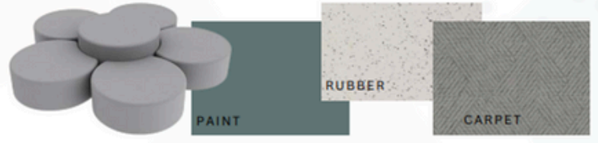
SPORTS





Custom exhibit including a climbing wall, monkey bars, rope swing, and foam block pits.

SPORTS



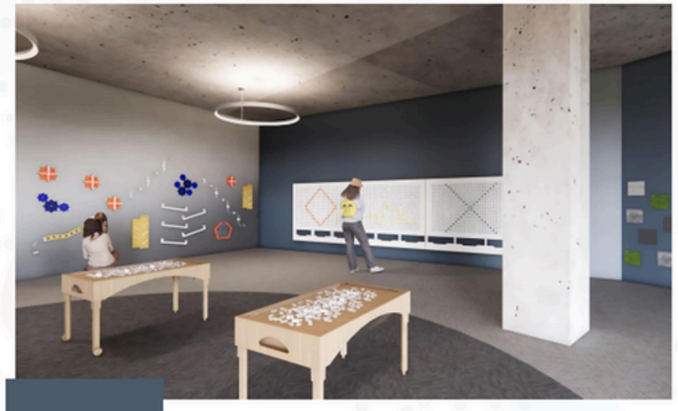
Designate space for parents to watch while their children are playing independently at an exhibit (Shine & Acosta, 2008).

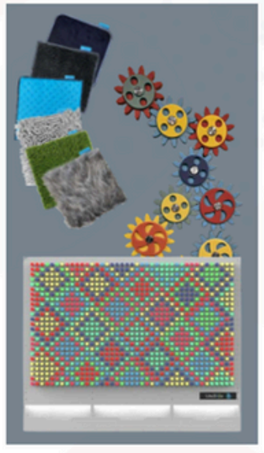
INFANT/TODDLER

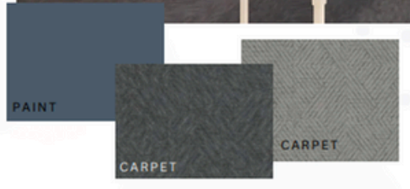
TOWNSHIP

Design exhibits that warrant more open-ended play and exploration so that children can set their own goals and feel successful in their choice of play (Sobel et al., 2022).

TACTILE







Have multiple exhibits within the museum be tactile and/or kinesthetic in order for children to have a higher chance of retaining what they did and learned (Anderson et al., 2002).

GROCERY

DINING

TURF

COMFORT ROOM

Implement comfort rooms to aid in relaxation and satisfaction for neurodivergent children, as well as families that may want to decompress (Golden & Walsh, 2013).

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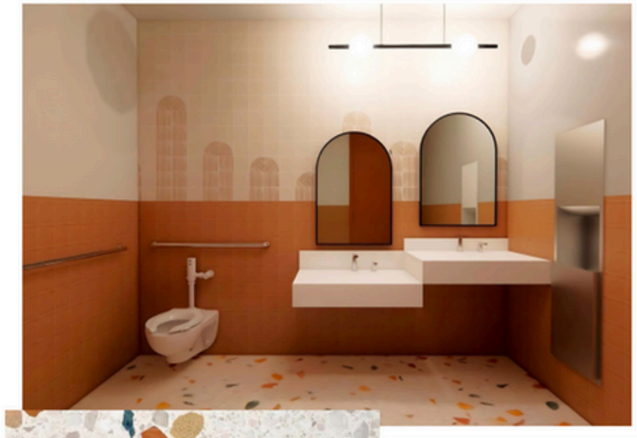
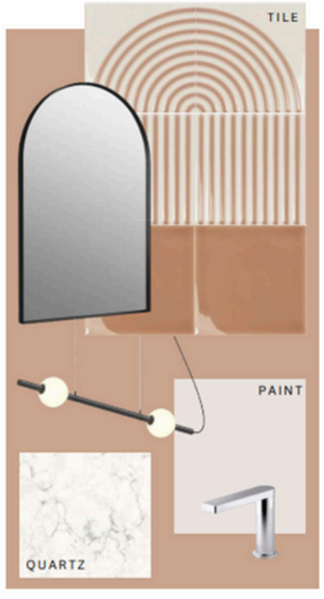
FAMILY RESTROOMS





TERRAZZO

Consider color and how it can affect the psychological and physiological well-being of children (Khalili, 2010).

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RESTROOMS

Full-height partitions for increased privacy.

TERRAZZO

Design a space centered around ADA/ACA guidelines to make all children feel welcome (Filova & Rollova, 2019).

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THANK YOU

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