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# BENTLEY'S PARADISE

THESIS PROJECT | 2020-2021

KAI ERICKSON | MASTER'S OF ARCHITECTURE PROGRAM  
NORTH DAKOTA STATE UNIVERSITY

# BENTLEY'S PARADISE

A DESIGN THESIS SUBMITTED TO THE  
SCHOOL OF DESIGN, ARCHITECTURE AND  
ART

NORTH DAKOTA STATE UNIVERSITY

COMPLETED BY:  
KAI K. ERICKSON

IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF  
MASTER'S OF ARCHITECTURE

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FARGO, ND





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# THE PROPOSAL



OUR SENSES CAN BE SOME OF THE MOST POWERFUL TOOLS WE HAVE. SIGHT, SOUND, SMELL, TOUCH, AND TASTE ARE FIVE SIMPLE THINGS THAT CAN HELP MAKE A PERSON'S FICTIONAL WORLD COME TO LIFE. NOT ONLY DO THEY HELP US NARRATE THE ENVIRONMENTS WE USE, BUT THEY ALSO CAN PLAY A BIG ROLE IN THE DEVELOPMENT OF CHILDREN. ARCHITECTURE CAN BE UTILIZED IN SUCH A WAY THAT BY UNIFYING IT WITH THE CONTINUOUS THOUGHT OF SENSORY ADAPTATION, THEY TOGETHER CAN CREATE AN INCREDIBLE EXPERIENCE FOR GUESTS. THIS MIXED-USE RECREATIONAL AND WELLNESS CENTER WILL BE DESIGNED SPECIFICALLY FOR INDIVIDUALS WHO HAVE CEREBRAL PALSY AND SENSORY SPECIFIC NEEDS SUCH AS HYPERSENSITIVITY. THIS PROCESS WILL BE CONDUCTED USING RESEARCH, UTILIZING SPECIFICALLY THE QUALITATIVE STRATEGY. THIS INCLUDES INTERVIEWS, OBSERVATION, CASE STUDIES AND FACTUAL INFORMATION. THE RESEARCH WILL BE FOCUSED ON HOW INDIVIDUALS WITH CERTAIN DISABILITIES PERCEIVE AND REACT TO THEIR SURROUNDINGS VERSUS INDIVIDUALS WITHOUT. USING THIS INFORMATION, THE PROCESS OF IDENTIFYING HOW TO DESIGN A SPACE SUITABLE FOR THESE INDIVIDUALS WITH DISABILITIES WILL RESULT IN AN EXAMPLE PROJECT AND MANUAL INTENDED FOR DESIGNING FACILITIES FOR CEREBRAL PALSY AND HYPERSENSITIVITY. IN THE FUTURE, ARCHITECTS CAN USE THIS ALONG WITH THE ADA HANDBOOK TO DESIGN THEIR OWN PROJECTS TO FURTHER BETTER THE FIELD.

THE FARGO/MOORHEAD AREA HAS ALWAYS BEEN A VERY WELCOMING AND ACCEPTING COMMUNITY TO ALL WHO LIVE IN OR VISIT THE AREA. DESPITE THIS POSITIVE OUTLOOK ON THE CITY, THE CURRENT STATE OF ADA REQUIREMENTS BEING IMPLEMENTED IN MANY PLACES WITHIN THE FARGO/MOORHEAD AREA FAIL TO ACCOMMODATE SPECIAL PROVISIONS FOR SOMEONE WITH MEDICALLY COMPLEX NEEDS, SPECIFICALLY CEREBRAL PALSY AND HYPERSENSITIVITY. THINKING ABOUT HOW MUCH OF OUR WORLD THOSE INDIVIDUALS ARE NOT ABLE TO ACCESS OR CONTROL BECAUSE OF THEIR SPECIFIC NEEDS, MAKES A SOLUTION TO THE PROBLEM AN ESSENTIAL. THE TASK IN THE FIELD WOULD HAVE TO FOCUS ON CREATING PLACES WHERE THESE INDIVIDUALS DON'T HAVE TO ADAPT TO THE SURROUNDING ENVIRONMENT, BUT HAVE AN ENVIRONMENT ALREADY SUITABLE FOR THEM, THUS CREATING A SORT OF UNIVERSALLY ACCESSIBLE PARADISE FOR THEM.

THE TOPIC OF ADDRESSING INDIVIDUALS WITH DISABILITIES IS ONE THAT DOESN'T LIKE TO BE DISCUSSED, ESPECIALLY WHEN IT COMES TO WHAT'S RIGHT AND WRONG. IN TODAY'S SOCIETY, THE INCLUSION OF INDIVIDUALS WITH DISABILITIES HAS BECOME CONSIDERABLY BETTER THAN IN THE PAST BUT STILL NOT TO THE STANDARDS OF WHERE IT SHOULD BE AND THAT IS INCLUDING IN THE FIELD OF ARCHITECTURE. ARCHITECTS ARE STILL FINDING IT HARD TO DESIGN TO ADA STANDARDS. YES, MANY WILL MEET THE REQUIREMENTS, AT A BARE MINIMUM, BUT NOT MANY WILL GO ABOVE AND BEYOND TO ACCOMMODATE INDIVIDUALS WITH SPECIFIC NEEDS. THUS, THE PURPOSE OF THIS RESEARCH AND THESIS PROJECT IS TO TAKE A LOOK AT ONE SPECIFIC DIAGNOSIS, CEREBRAL PALSY, AND CHALLENGES THAT COME WITH IT, RATHER THAN THE ENTIRE SPECTRUM OF DISABILITIES. THE PROJECT WILL FOCUS ON A SPECIFIC INDIVIDUAL, BENTLEY SCHMEETS, WHO HAS BOTH CEREBRAL PALSY AND HYPERSENSITIVITY, TO GUIDE THE DESIGN TOWARDS AN INDIVIDUAL'S REAL-LIFE NEEDS. BY DOING THIS, IT MAY LAY GROUNDWORK IN THE FIELD OF ARCHITECTURE OF HOW TO RESEARCH AND DESIGN FOR OTHER TYPES OF INDIVIDUALS AND DISABILITIES.

TO FULLY ACCOMPLISH THE TASK AT HAND, THERE NEEDS TO BE AN UNDERSTANDING OF WHAT THE OVERALL ISSUE IS AND HOW IT CAN BE SOLVED THROUGH THE DESIGN PROCESS. THE GOAL IS TO FOCUS ON HUMAN EXPERIENCE AND HOW INDIVIDUALS MIGHT PERCEIVE A SPACE AND INTERACT WITH IT. FOCUSING ON A DEEPER ASPECT OF THIS, THE EXPLORATION INTO THE TOPIC WILL FOCUS ON HOW INDIVIDUALS WITH A CERTAIN DISABILITY, LIKE BENTLEY, PERCEIVE AND REACT TO THEIR SURROUNDINGS VERSUS INDIVIDUALS WITHOUT. THIS INFORMATION WILL BE USED TO IDENTIFY HOW TO DESIGN A SPACE SUITABLE FOR THESE INDIVIDUALS WITH DISABILITIES BOTH IN TERMS OF SENSORY AND MOBILITY.



RESEARCH WOULD FIRST HAVE TO BE DONE TO SUPPORT A DESIGN PROPOSAL THAT SETS A PRECEDENT TO WHAT KIND OF ENVIRONMENT WOULD BE ACCEPTABLE AND TOLERABLE FOR PEOPLE WITH CEREBRAL PALSY AND HYPERSENSITIVITY. THEREFORE, A RESEARCH DESIGN PROJECT FOCUSED SPECIFICALLY ON THE DIAGNOSES OF CEREBRAL PALSY AND HYPERSENSITIVITY, WHICH ARE OFTEN RELATED, WILL BE DONE. THE PROBLEM OR CONCEPT BEING SOLVED WILL RESULT IN AN EXAMPLE PROJECT AND MANUAL INTENDED FOR DESIGNING FACILITIES FOR CEREBRAL PALSY AND HYPERSENSITIVITY THAT ARCHITECTS CAN USE ALONG WITH THE ADA HANDBOOK TO DESIGN THEIR OWN PROJECTS.

TO SUCCESSFULLY DESIGN A FULLY FUNCTIONAL BUILDING THAT WILL ADAPT TO AN INDIVIDUAL WITH CEREBRAL PALSY AND HYPERSENSITIVITY, A DEEP DIVE INTO THE RESEARCH OF THE DIAGNOSES NEEDS TO HAPPEN. THIS WILL PROVIDE THE KNOWLEDGE TO START UNDERSTANDING WHAT KIND OF ENVIRONMENTS THEY CAN TOLERATE AND WHAT TYPES OF DESIGN STRATEGIES ARE ACCEPTABLE. THE VISUAL AND ACOUSTIC ENVIRONMENT, TEMPERATURE AND HUMIDITY, MATERIALS AND TEXTURES, COLOR PALATES, CIRCULATION PATTERNS, ETC. ARE ALL THINGS THAT MUST BE EXPLORED AND APPLIED SPECIFICALLY TO THE SPACE BEING OCCUPIED BY THESE INDIVIDUALS.

LOOKING AT WHAT INFORMATION NEEDS TO BE COLLECTED IN ORDER TO COMPLETE THE PROJECT, THE BEST RESEARCH STRATEGY TO IMPLEMENT IS A QUALITATIVE RESEARCH STRATEGY. THIS GIVES A BROAD SPECTRUM OF OPTIONS ALLOWING FOR A CHANCE TO UNDERSTAND UNDERLYING OPINIONS AND REASONS OF THE PROBLEM. IT ALLOWS INSIGHTS INTO THE RESEARCH PROBLEMS AND HELPS ACHIEVE GOALS WITHIN THAT RESEARCH.

THE PROPOSED PROJECT WILL BE A MIXED-USE, ADAPTIVE, RECREATIONAL, AND PERSONAL WELLNESS CENTER. COMBINING MULTIPLE SPACES WITH A GOAL OF PROVIDING A LEISURE SPACE FOR SPECIFIC AND CONTROLLED ACTIVITIES, CAN HELP TO PROMOTE MENTAL, PHYSICAL AND PSYCHOLOGICAL WELL-BEING. THE SPECIFIC CLIENTELE GROUPS THE PROJECT IS BEING DESIGNED FOR, WILL HAVE A CHANGE TO EMBRACE THEMSELVES IN THE SURROUNDING ENVIRONMENT OF THE BUILDING, FEELING A SENSE OF EASE AND RELIEF. THEY WILL BE ABLE TO INTERACT WITH AND CONTROL THE ENVIRONMENT TO THEIR FULL CAPACITY WITHOUT ANY WORRIES ABOUT MAKING SPECIAL ACCOMMODATIONS.

## SENSORY

### SENSORY GYM

AN AREA OR ROOM FOR ACTIVE SENSORY PLAY. THE GYM USUALLY INCLUDES EQUIPMENT DESIGNED TO PROVIDE PROPRIOCEPTIVE AND VESTIBULAR SENSORY INPUT. THIS TYPE OF EQUIPMENT INCLUDES SWINGS, THERAPY BALLS, TRAMPOLINES, MATS, BALL PITS, CLIMBING WALLS, ETC.

### TACTILE WALL

TACTILE WALLS AND PANELS HAVE A NUMBER OF AREAS ON THEM WITH A RANGE OF SHAPES, TEXTURES AND OBJECTS THAT CAN BE STATIC OR DYNAMIC. THE GOAL IS TO PROVIDE THE USER WITH STIMULATION AND DIFFERENT SENSORY EXPERIENCES WHEN TOUCHED. EXAMPLE SURFACES INCLUDE SMOOTH, FABRIC, RIGID, ETC.

### SPECIALIZED LIGHTING

THE WAY AN INDIVIDUAL VIEWS THEIR WORLD IS COLORED BY THE EFFECTS OF THE LIGHT SOURCE IN THE ENVIRONMENT. NATURAL, FLUORESCENT, LAMP LIGHTING AND SECONDARY GLARE OFFER DIFFERENT LEVELS OF VISUAL STIMULATION, EFFECTING THEIR PERCEPTIONS OF THEIR IMMEDIATE ENVIRONMENT AND MOOD.

### MUSIC ROOM

MUSIC AND SOUND CAN HAVE A HUGE EFFECT ON HOW HUMANS CAN FEEL AND HOW THEY RESPOND TO THEIR ENVIRONMENT. IF USED IN THE RIGHT WAY, IT CAN PROVIDE A PERFECT SENSORY PROCESSING AID AS WELL AS PROMOTE POSITIVE BEHAVIOR CHANGES. A MUSIC ROOM WILL ALLOW FOR AN ADEQUATE SPACE FOR INDIVIDUALS TO EXPRESS THEMSELVES.

### THERAPUTIC SCENTS

AROMATHERAPY AWAKENS AND INTEGRATES OUR SENSE OF SMELL. IT HAS MOOD ENHANCING QUALITIES, EASILY BEING ABLE TO CALM DOWN OR RELAX A WOUND-UP INDIVIDUAL. EVEN JUST WITH IT IN THE AIR, IT CAN INFLUENCE THE ENVIRONMENT AND THE EMOTIONS OF THE INDIVIDUALS IN IT. DIFFUSERS ARE A GOOD USE TO PUT THERAPEUTIC SMELLS LIKE ESSENTIAL OILS IN THE AIR.

### TEMPERATURE CONTROL

TEMPERATURE CONTROL PLAYS A HUGE ROLE IN THE FEELING AND EMOTIONS OF INDIVIDUALS. IT CAN CHANGE THE EXPERIENCE WITHIN A SPACE. PAIRED WITH OTHER SENSORY TACTICS, THE USE OF HOT AND COLD SENSES CAN BE USED IN MANY POSITIVE THERAPEUTIC WAYS.

### DEEP PRESSURE AREA

THIS AREA WILL GIVE INDIVIDUALS A PRIVATE TIME FOR RELAXATION. THE AREA IS FILLED WITH PILLOWS, BLANKETS, STUFFED ANIMALS, ETC. THE INDIVIDUAL CAN SNUGGLE UP AND BURROW THEMSELVES INTO A PILE THAT IS SOFT, WARM, AND TIGHT TO RELAX AND CALM DOWN. THIS AREA CAN BE COMBINED WITH OTHER SENSORY ENVIRONMENTS.

### VIBRATION INPUT

VIBRATION IS LIKE TOUCH ON HIGH SPEED. FOR INDIVIDUALS WHO ARE MORE INTENSELY STRESSED, WITHDRAWN, DISTRACTED, OR OVERWHELMED, VIBRATIONS CAN BE USED TO CALM AND RELAX. THINGS LIKE A VIBRATING PILLOW FOR HUGGING OR SQUEEZING IS A PERFECT EXAMPLE OF SENSORY INPUT. A VIBRATING MASSAGER GIVEN TO AN INDIVIDUAL CAN HELP TO CALM THEM AS WELL.

### ORAL STIMULATION

THE MOUTH IS THE MOST ORGANIZED SPOT IN OUR BODY AND CAN PLAY A MAJOR PART IN REGULATING EMOTIONS SUCH AS STRESS. A PLACE WILL BE PROVIDED FOR INDIVIDUALS TO GET SNACKS THAT WILL HELP CONTRIBUTE TO THEIR FEELINGS OR HELP POSITIVELY CHANGE THEM.

PHYSICAL

INDOOR REC AREA

A UNIVERSALLY ACCESSIBLE AREA WITH MULTIPLE SPACES FOR INDOOR SPORTS, ACTIVITIES, AND RECREATION. ALL THINGS ASSOCIATED WITH SPORTS AND ACTIVITIES ARE TO BE EASILY ACCESSIBLE AND USEABLE BY AN INDIVIDUAL WITH MOBILITY AND SENSORY ISSUES.

WALKING TRACK

A LARGE WALKING TRACK, WIDE ENOUGH TO FIT BOTH WALKING INDIVIDUALS AND WHEELCHAIRS. THE TRACK WILL HAVE SENSORY ELEMENTS INTEGRATED ALONG THE WAY TO KEEP INDIVIDUALS WHO NEED ENGAGED. IT WILL ALSO INCLUDE A FULLY SUPPORTED WALKING HARNESS TO ALLOW FOR LIMITED MOBILITY INDIVIDUALS TO PARTAKE IN THE EXPERIENCE.

ADVENTURE AREA

AN OUTDOOR ADVENTURE AREA THAT ALLOWS FOR INDIVIDUALS WITH LIMITED MOBILITY TO PARTICIPATE IN EXCITING AND THRILLING ADVENTUROUS ACTIVITIES. EXAMPLES COULD BE OFF ROAD WHEELCHAIRS, FULLY SUPPORTED ZIP LINE, ROCK CLIMBING AND TRAMPOLINE.

GYM

AN OPEN SET OF COURTS UNIVERSALLY ACCESSIBLE TO ALL. THE LARGE OPEN SPACE ALLOWS FOR INDIVIDUALS TO MOVE, RUN, AND PLAY WITHOUT WORRYING ABOUT SPACE REQUIREMENTS AROUND THEM. THE GYM WILL HAVE ACOUSTIC BARRIERS/SOUNDPROOFING TO LIMIT NOISE WHEN GYM IS BUSY. THIS WILL QUIRE TO INDIVIDUALS WITH SENSORY DISORDERS

SWIMMING POOL

A UNIVERSALLY ACCESSIBLE SWIMMING AND THERAPY POOL AREA. POOL WILL HAVE DRIVE-IN ACCESS FOR WATER-PROOF WHEELCHAIRS, WHICH WILL BE PROVIDED. THERE WILL ALSO BE AN ELECTRIC CHAIR LIFT TO ASSIST WITH GETTING LIMITED MOBILITY INDIVIDUALS IN AND OUT. A MULTIPLE SENSORY ENVIRONMENT CAN BE CREATED WITHIN THIS SPACE.

COMMUNAL SPACE

A COMMUNITY SPACE ACCESSIBLE TO ALL, ALLOWING FOR INTERACTION BETWEEN GUESTS. AREA WILL HAVE SENSORY EQUIPMENT AND ELEMENTS TO ENHANCE THE EXPERIENCE AND ENVIRONMENT OF THE INDIVIDUALS USING THE SPACE.

WEIGHT LIFTING AREA

A WORKOUT AREA THAT IS UNIVERSALLY ACCESSIBLE INDIVIDUALS WITH LIMITED MOBILITY. EQUIPMENT FOR WHEELCHAIRS WILL BE PROVIDED. THE ENVIRONMENT WILL ALSO BE IMPROVED TO HANDLE HYPERSENSITIVE INDIVIDUALS.

OUTDOOR PARK

AN AREA OUTSIDE THE BUILDING THAT ALLOWS FOR FACILITY AND GUESTS TO GET FRESH AIR AND NATURAL LIGHT. THERE WILL BE WALKING PATH AND PLACES TO SIT AND RELAX. ALL WILL BE UNIVERSALLY ACCESSIBLE FOR WHEELCHAIRS.

CIRCULATION SPACE

ALL CIRCULATION SPACE THROUGHOUT THE BUILDING WILL BE UNIVERSALLY ACCESSIBLE, ALLOWING INDIVIDUALS WITH WHEELCHAIRS TO GET TO EVERY POSSIBLE PART OF THE BUILDING. USERS SHOULD HAVE NO WORRY ABOUT THE AREAS AROUND THEM.

## **1. UNIVERSALLY ACCESSIBLE**

UNIVERSAL DESIGN IS THE MOST IMPORTANT ASPECT OF THIS PROJECT. IT IS BASED AROUND CREATING AN ADEQUATE AND INCLUSIVE SPACE FOR INDIVIDUALS WITH CEREBRAL PALSY AND HYPERSENSITIVITY. UNIVERSALLY ACCESSIBLE SPACE IS DESIGNED BY DEVELOPING SOLUTIONS TO MEET ALL USER NEEDS.

### **L MOBILITY**

PHYSICAL MOBILITY AND BEING ABLE TO MOVE FREELY FROM ONE SPACE TO THE NEXT WITHOUT ANY OBSTACLES IS KEY IN UNIVERSAL DESIGN.

## **2. PERCEPTION OF ENVIRONMENT**

BEING ABLE TO UNDERSTAND THE DIFFERENCES ON HOW CERTAIN INDIVIDUALS PERCEIVE THEIR ENVIRONMENTS CAN INFLUENCE DESIGN. KNOWING HOW AN INDIVIDUAL WITH CEREBRAL PALSY AND HYPERSENSITIVITY PERCEIVE A SPACE VERSUS SOMEONE WITH FULL COGNITIVE FUNCTION ALLOWS FOR A DEEPER LOOK INTO WHAT TYPE OF DESIGN STRATEGIES WOULD BE BEST UTILIZED THROUGHOUT THE PROJECT.

### **L INTERACTIONS WITHIN A SPACE**

HOW A PERSON INTERACTS WITH A SPACE CAN ALSO INFLUENCE HOW THEY PERCEIVE THAT SPACE.

## **3. SENSORY INCLUSION**

THE INCLUSION OF SENSORY ELEMENTS INTO A SPACE CAN CHANGE IT IN SO MANY WAYS, ESPECIALLY IF IT IS INTENDED FOR SOMEONE WITH SENSORY ISSUES, LIKE THIS PROJECT. PAYING ATTENTION TO WHAT, HOW, AND WHERE THESE SENSORY ELEMENTS ARE INTEGRATED IS KEY IN THE DESIGN PROCESS. IF USED IN THE RIGHT WAY, THEY CAN MAKE A HUGE IMPACT ON HOW ONE MIGHT PERCEIVE AND REACT IN A SPACE.

## 1. UNIVERSALLY ACCESSIBLE

DESIGN A UNIVERSALLY ACCESSIBLE SPACE FOR PEOPLE WITH CEREBRAL PALSY AND HYPERSENSITIVITY.

## 2. PERCEPTION OF SPACE

FOCUS ON HOW INDIVIDUALS WITH CEREBRAL PALSY AND HYPERSENSITIVITY PERCEIVE THEIR SURROUNDINGS VERSUS INDIVIDUALS WITHOUT AND HOW THEY MIGHT INTERACT WITH THEM.

## 3. HUMAN EXPERIENCE

FOCUS ON THE COMFORT AND WELLBEING OF POSSIBLE CLIENTS AND USERS OF THE PROJECT.

## 4. FUTURE DESIGN

SET A PRECEDENT FOR FUTURE DESIGN PROJECTS BY CREATING A MANUAL OR GUIDE FOR DESIGNING FOR INDIVIDUALS WITH CEREBRAL PALSY AND HYPERSENSITIVITY SO THAT ARCHITECTS CAN FOLLOW AND DO THE SAME FOR OTHER DIAGNOSES.

## 5. DESIGN BENTLEY'S PARADISE

BEING THAT THIS PROJECT IS BASED ON BENTLEY AND HIS SPECIFIC NEEDS DEALING WITH CEREBRAL PALSY AND HYPERSENSITIVITY, THE GOAL IS TO DESIGN EXACTLY WHAT HE WOULD DREAM OF IN A PLACE HE COULD GO TO THAT WOULD BE 100% ACCESSIBLE AND INCLUSIVE.

## THE PROFESSIONAL

## 6. IMPROVE MY SKILLS AS A DESIGNER

AS A STUDENT, I WANT TO TAKE THIS OPPORTUNITY TO IMPROVE IN ANY ASPECT OF DESIGN I CAN AND GET FEEDBACK AND CRITICISM THAT WILL HOPEFULLY ONE DAY HELP ME IN MY CAREER.

## 7. DESIGN A GREAT PROJECT

I WANT TO DESIGN A PROJECT THAT I AM PROUD OF AND WHAT TO SHOW OFF TO TEACHERS, FRIENDS, FAMILY AND ESPECIALLY FIRMS WHEN I AM IN THE PROCESS OF JOB HUNTING.

## THE PERSONAL

## 8. EDUCATE

I WANT TO EDUCATE PEOPLE ON NOT ONLY ON CEREBRAL PALSY AND HYPERSENSITIVITY, BUT ALSO THE IMPORTANCE OF UNIVERSAL DESIGN AND INCLUSION OF OTHERS.

## 9. LEARN

I WANT TO LEARN FROM MY FIFTH-YEAR THESIS PROJECT. IT IS THE FIRST TIME WE HAVE BEEN ABLE TO PICK AND DESIGN SOMETHING ALL ON OUR OWN. I WANT TO USE THIS TIME TO THINK ABOUT WHAT IT MIGHT BE LIKE IN THE REAL WORLD.

## 10. HAVE FUN

OVERALL, I JUST WANT TO HAVE FUN AND DO WHAT I LOVE, ARCHITECTURE. I PICKED THIS PROJECT TOPIC BECAUSE IT IS SOMETHING THAT IS CLOSE TO MY HEART.

INDIVIDUALS WITH SPECIFIC NEEDS REQUIRE SPACE TO CARE FOR THEIR HEALTH AND WELL-BEING, ALL WHILE CONTINUING TO REMAIN PART OF THE COMMUNITY. INDIVIDUALS WITH CEREBRAL PALSY AND HYPERSENSITIVITY ARE A GREAT EXAMPLE OF PEOPLE WHO MAY NEED A SPECIFIC ENVIRONMENT TO NURTURE THOSE NEEDS BUT WITH A LITTLE HELP, THEY WILL BE ABLE TO LIVE FULL AND ACTIVE LIVES. THE DESIGN IS MEANT TO ACCOMMODATE THESE TYPES OF INDIVIDUALS, WITH NO DISCRIMINATION AGAINST AGE, GENDER, OR DIAGNOSIS. THE FACILITY IS DESIGNED TO ADAPT AND ASSIST WITH THOSE SENSORY AND MOBILITY NEEDS THAT THE USERS MAY REQUIRE ON A DAILY BASIS.

**BENTLEY SCHMEETS | FARGO, ND | AGE: 11**

BENTLEY HAD HIS FIRST SEIZURE AT TWO WEEKS OLD AFTER SUFFERING FROM BACTERIAL MENINGITIS IN THE BRAIN STEM. IT WASN'T UNTIL A YEAR LATER THAT THE DOCTORS DIAGNOSED HIM WITH CEREBRAL PALSY. SINCE THEN, BENTLEY HAS BEEN DIAGNOSED WITH A NUMBER OF CONDITIONS AND CHALLENGES. DESPITE ALL OF THAT, BENTLEY DOESN'T LET ANYTHING IN LIFE GET HIM DOWN. WITH HIS INFECTIOUS LAUGH AND CARING HEART, BENTLEY MAKES A DIFFERENCE IN EVERYONE'S LIFE THAT HE MEETS.



FIGURE 1

## RESEARCH DIRECTION

### 1. THEORETICAL PREMISE/UNIFYING IDEA

THE OVERALL PREMISE OR UNIFYING IDEA OF MY THESIS PROJECT IS “HOW DO INDIVIDUALS WITH CEREBRAL PALSY AND HYPERSENSITIVITY PERCEIVE AND INTERACT WITH SPACES VERSUS INDIVIDUALS WITHOUT AND HOW CAN THAT INFORMATION BE USED IN ARCHITECTURE TO DESIGN A UNIVERSALLY ACCESSIBLE FACILITY?”. TO RESEARCH THIS PREMISE, PERSONAL, FIRST PERSON DATA WILL HAVE TO BE COLLECTED IN THE FORM OF INTERVIEWS OR SURVEYS. ARTICLES CAN ALSO BE READ ON PAST EXPERIENCES FROM INDIVIDUALS AND THAT INFORMATION CAN BE TAKEN AND USED TO INFLUENCE IDEAS IN THE PROJECT.

### 2. PROJECT TYPOLOGY

TO RESEARCH PROJECT TYPOLOGY, CASE STUDIES WERE CONDUCTED. THIS PROJECT DESIGN FALLS UNDER MULTIPLE BUILDING TYPOLOGIES, SO A VARIETY OF CASE STUDIES WERE DONE. THE BUILDING TYPOLOGIES BEING RESEARCHED INCLUDED MIXED-USE, WELLNESS AND RECREATIONAL CENTERS AND UNIVERSALLY ACCESSIBLE BUILDINGS. WHEN LOOKING AT THESE CASE STUDIES, CERTAIN PROJECT COMMONALITIES WERE TAKEN INTO CONSIDERATION. TYPOLOGY, CONTEXT, IMPACT, AND INNOVATION WERE ALSO ALL LOOKED FOR IN EACH CASE STUDY.

### 3. HISTORICAL CONTEXT

TO RESEARCH HISTORICAL CONTEXT, QUALITATIVE DATA WILL BE STUDIED. WHEN DESIGNING FOR A SPECIFIC PROBLEM, IT IS ALWAYS GOOD TO LEARN AND RESEARCH WHAT HAS WORKED AND NOT WORKED IN THE PAST. READING AND SEARCHING THROUGH ARTICLES AND ARCHIVAL DATA WILL GIVE A LOOK INTO HOW DESIGNING FOR SPECIFIC DISABILITIES WAS IMPLEMENTED. IN THIS PROJECT, THIS TYPE OF RESEARCH CAN ALSO BE USED TO LEARN ABOUT THE HISTORY OF CEREBRAL PALSY AND HYPERSENSITIVITY.

### 4. SITE ANALYSIS

TO RESEARCH SITE ANALYSIS, QUALITATIVE DATA WILL BE USED. METHODS SUCH AS DIRECT OBSERVATION AND ARCHIVAL SEARCH WILL BE IMPLEMENTED. A FULL SITE ANALYSIS WORK-UP WILL BE CONDUCTED STUDYING, WIND, SUN, TRAFFIC, WEATHER, CIRCULATION, WATER FLOW PATTERNS, ETC. A MAP WILL BE CREATED SHOWING ALL OF THIS DATA, WHICH WILL HELP WHEN ORIENTATING THE BUILDING, POSITIONING WINDOWS AND DEVELOPING AN HVAC SYSTEM.



## DESIGN METHODOLOGY

THE MOST USED RESEARCH METHOD THAT WILL BE CONDUCTED TO UNDERSTAND AND SOLVE THE THEORETICAL PREMISE OR UNIFYING IDEA OF THE PROJECT WILL BE THE COMPLETION OF INTERVIEWS. UNDERSTANDING FROM A FIRST-PERSON POINT OF VIEW HOW ONE INTERACTS WITH CERTAIN ENVIRONMENTS IS KEY. INTERVIEWING BENTLEY AND HIS FAMILY TO UNDERSTAND THE INSIDE AND OUT OF WHAT IT IS LIKE TO LIVE IN A LIFE WITH DIAGNOSED BOTH WITH CEREBRAL PALSY AND HYPERSENSITIVITY WILL PROVIDE ADEQUATE DATA TO COMPLETE THE RESEARCH. TALKING TO PROFESSIONALS, LIKE OT THERAPISTS, ABOUT IMPORTANT INFORMATION ON CEREBRAL PALSY AND HYPERSENSITIVITY WILL ALSO BE VERY HANDY.

THE QUALITATIVE RESEARCH METHOD WILL BE IMPLEMENTED INTO THE DESIGN APPROACH. STUDYING AND ANALYZING DATA BOTH USING ONLINE AND BOOK ARCHIVES WILL HELP TO FULLY UNDERSTAND THE UNDERLYING IDEA BEING SEARCHING FOR IN THIS THESIS. THIS METHOD WILL MOST LIKELY BE USED TO DETERMINE HISTORICAL DATA AND FIND MEDICALLY ACCURATE INFORMATION ABOUT CEREBRAL PALSY AND HYPERSENSITIVITY. THE FINDINGS WILL BE REPORTED AND DOCUMENTED THROUGHOUT THE RESEARCH PROCESS.

LASTLY, CASE STUDIES WILL BE A HUGE PART OF THE RESEARCH CONDUCTED ON THIS PROJECT. THESE CAN GIVE INSIGHT INTO WHAT KINDS OF DESIGN IMPLEMENTATIONS HAVE WORKED AND NOT WORKED. THEY SET EXAMPLES OF WHAT COULD BE POSSIBLE AND GIVE STANDARD AS A DESIGNER ON TO WHAT GOAL NEED TO BE ACHIEVED. THE GOAL IS TO DESIGN SOMETHING THAT IS BETTER IMPLEMENTED AND SUPPORTS THE PREMISE AS MUCH AS POSSIBLE.

# DOCUMENTATION OF DESIGN PROCESS

## 1. COMPLETION OF DOCUMENTATION

ALL DOCUMENTATION WILL BE KEPT AND ORGANIZED ACCORDINGLY. HAND SKETCHING AND BRAINSTORMING IDEAS WILL BE IMPLEMENTED THROUGHOUT THE DESIGN PROCESS. MODELS, BOTH PROCESS AND FINAL, WILL BE PHOTOGRAPHED AND SHOWN IN FINAL PRESENTATION TO EXPLAIN THE DESIGN PROCESS. COMPUTER MODELING WILL BE DONE USING SOFTWARE SUCH AS REVIT, SKETCHUP AND AUTOCAD. THESE WILL BE PRESENTED THROUGH RENDERINGS EDITED IN DESIGN SOFTWARE SUCH AS INDESIGN, PHOTOSHOP, ILLUSTRATOR.

## 2. PROJECT PRESERVATION

ALL HAND SKETCHES, IDEAS, NOTE AND MODELS WILL BE PHOTOGRAPHED AND SAVED TO USE DURING THE DESIGN PROCESS. RESEARCH INFORMATION WILL BE CATEGORIZED, AND SOURCES WILL BE DOCUMENTED FOR LATER REFERENCE. COMPUTER DOCUMENTS AND MODELS WILL BE SAVED TO TWO PLACES IN CASE OF A COMPUTER CRASH OR TECHNICAL ISSUE. ALL WORK WILL BE LABELED AND DATED. LASTLY, ALWAYS KEEPING IN TOUCH WITH CURRENT THESIS ADVISOR IS IMPORTANT AND TAKING FEEDBACK TO USE IN THE DESIGN PROCESS.

## 3. PROJECT AVAILABILITY

ALL RESEARCH INFORMATION WILL BE DOCUMENTED AND CREDITED IN A FINAL THESIS PROJECT BOOK. THE FINAL PROJECT AS A WHOLE WILL BE AVAILABLE TO VIEW DURING PRESENTATIONS THROUGHOUT FINALS WEEK. AFTER THAT, AN ONLINE VERSION OF THE- SIS PROJECT BOOK AND BOARDS CAN BE VIEWED THROUGH THE NDSU LIBRARY OR AT REQUEST. PHYSICAL HARD COPIES CAN ALSO BE VIEWED AT REQUEST.

## 4. PRESENTATION OF PROJECT

FINAL PRESENTATIONS WILL HAVE A COMPLETED PROJECT BOOK OUTLINING ALL OF THE RESEARCH AND DOCUMENTATION SURROUNDING THE PROJECT. THERE WILL BE A SET OF BOARDS WITH THE MAJOR INFORMATION ON IT AND THERE WILL ALSO BE SOME SORT OF PRESENTATION SLIDE SHOW TO DISPLAY WHEN PRESENTING THE FINAL PROJECT.

# PROJECT SCHEDULE

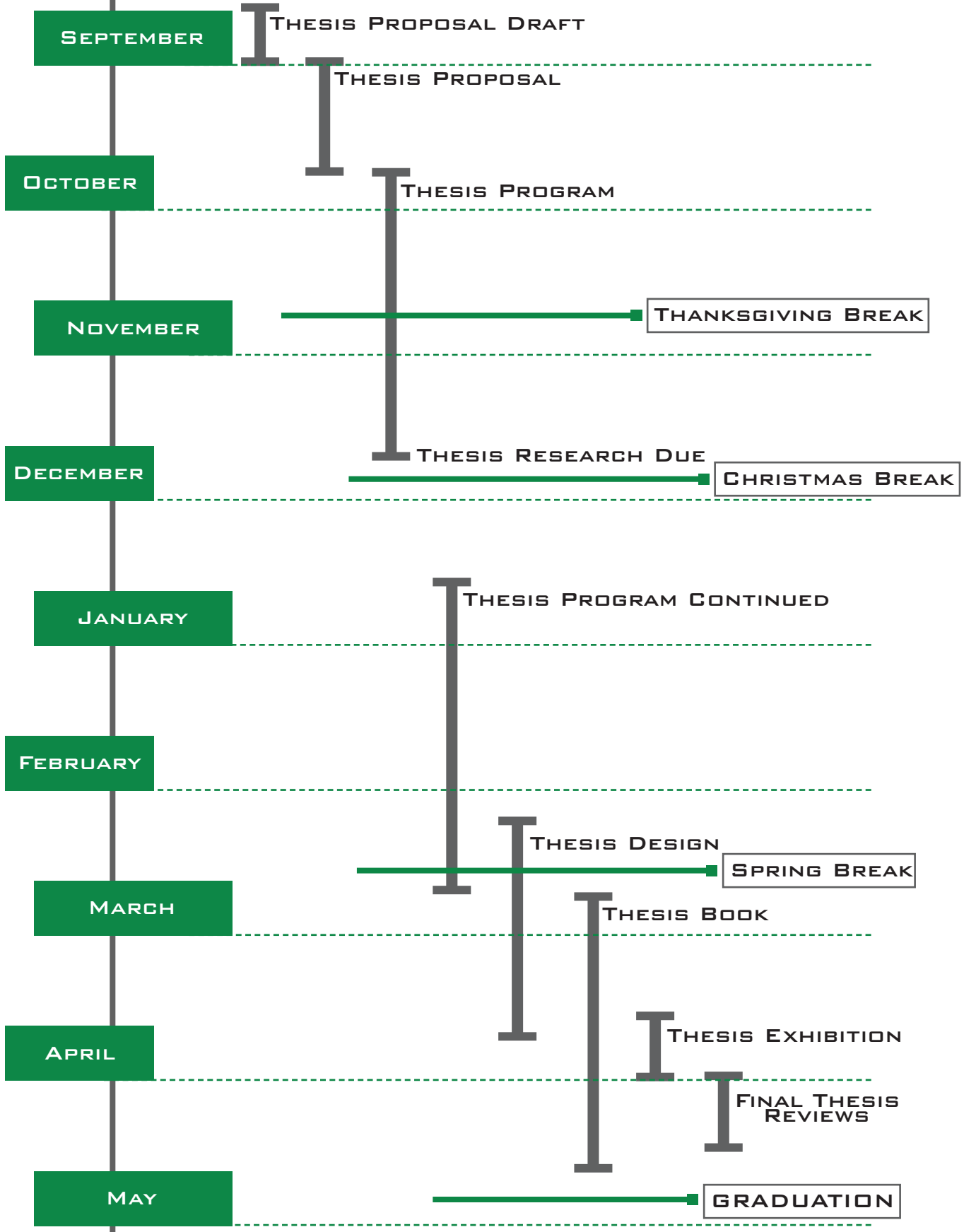


FIGURE 2



# RESEARCH



## FACTORS CONSIDERED

WHEN SEARCHING FOR CASE STUDIES, THERE NEEDS TO BE SPECIFIC CRITERIA THAT IS RESEARCHED. THIS CRITERIA IS TO BE SIMILAR IN WAYS TO THE DESIGN PROJECT CURRENTLY BEING WORKED ON. CASE STUDIES OF SIMILAR BUILDING TYPOLOGIES, SITE CONTEXT, PROJECT IMPACT, NEW INNOVATIONS AND EXISTING ELEMENTS ARE ALL FACTORS TO BE CONSIDERED AND USED IN THE DESIGN PROCESS. THEY CAN HELP DETERMINE POSITIVE OUTCOMES AND NEGATIVE OUTCOMES OF DESIGN. THEY WILL HELP GUIDE THE PROJECT IN THE CORRECT DIRECTION AND INFLUENCE THE PATH IT MAY TAKE.

### 1. TYPOLOGY

MIXED-USE, RECREATIONAL/ WELLNESS CENTER,  
SENSORY AND MOBILITY ADAPTED SPACES

### 2. CONTEXT

URBAN CITY, HIGHLY POPULATED

### 3. IMPACT

PROJECT SETS EXAMPLE FOR FUTURE PROJECTS OF  
SAME IDEOLOGIES

### 4. ICON/INNOVATION

PROJECT USES NEW AND IMPROVED TECHNIQUES AND  
TECHNOLOGIES TO ACCOMPLISH IT STANDING GOAL

### 5. EXISTING PROGRAM ELEMENTS

PROJECT WILL SHARE SIMILAR PROGRAM ELEMENTS IN  
TERMS OF HOW THE STRUCTURE IS BUILT AND RUN

ONE | MUSHOLM MULTI-PURPOSE HALL  
KORSOR, DENMARK

TWO | SPOFIT CENTER FOR PERSONS WITH DISABILITIES  
PHOENIX, ARIZONA

THREE | XYLOPHONE BUILDING  
LONDON, ENGLAND



ONE | MUSHOLM MULTI-PURPOSE HALL



FIGURES 3-4





# ONE | MUSHOLM MULTI-PURPOSE HALL



FIGURES 5-6





ARCHITECT	LOCATION	YEAR	TYOLOGY	SQURE FOOTAGE
AART ARCHITECTS	KORSOR, DENMARK	2015	MIXED-USE, RECREATION, WELLNESS	34,444 SQ. FEET

## PROJECT SUMMARY

THE MUSHOLM MULTI-PURPOSE HALL IS AN EXTENSION OF A HOLIDAY RESORT LOCATED ON THE PERIMETER OF THE HALL. THE UNIQUE CIRCULAR DESIGN ALLOWS FOR MAXIMUM CIRCULATION THROUGHOUT THE HALL AND HOLIDAY FLATS. THIS EXTENSION IS A SOCIALLY INCLUSIVE BUILDING THAT HAS MADE A BREAKTHROUGH IN ACCESSIBLE ARCHITECTURE.

### PROGRAM ELEMENTS

1. MULTI-PURPOSE SPACE
2. EXPERIENCE RAMP
3. ACTIVITY ROOM
4. ACCESSBILE RAMPS
5. FITNESS AREA

### SITE RESPONSES

#### L ENVIRONMENTALLY

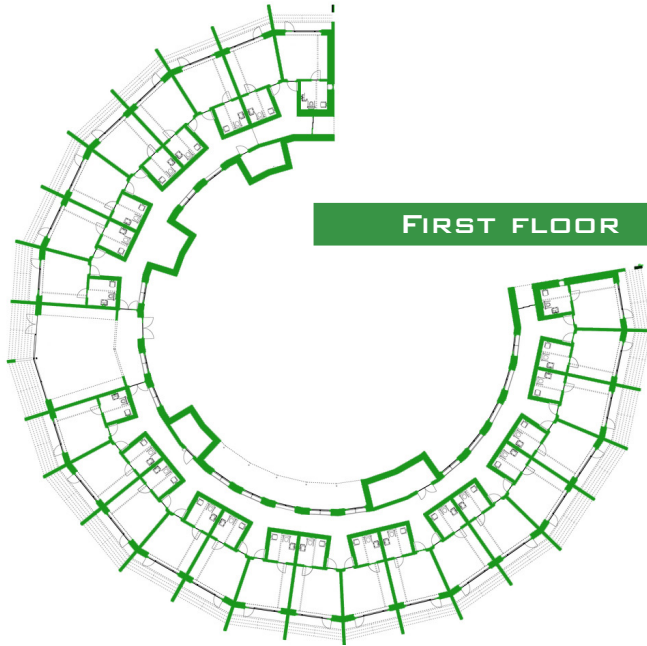
MUSHOLM HALL IS LOCATED BY THE COASTLINE AND THE FORM IT TAKES MIMICS THE SURROUNDING AREA AND LANDSCAPES. THE CIRCULAR SHAPE PROVIDES OPTIMUM VIEWS OF THE BAY AND SCENIC SURROUNDINGS AS WELL AS GIVES A SENSE OF COMMUNITY IN THE OPEN LANDSCAPE. NATURAL MATERIALS ARE ALSO IMPLEMENTED TO CONTINUE THE INTERACTIONS BETWEEN BUILDING AND EXISTING ENVIRONMENT.

#### L SOCIALLY

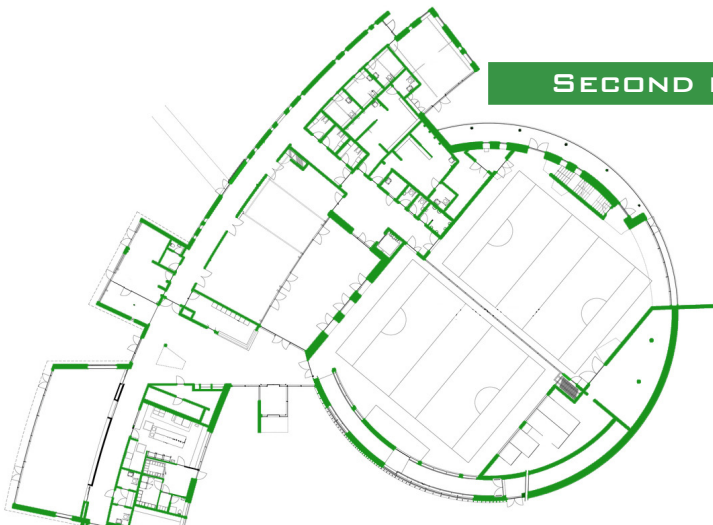
THE WHOLE CONCEPT OF THIS PROJECT IS TO CREATE A SOCIALLY INCLUSIVE FACILITY FOR INDIVIDUALS WITH DISABILITIES. THE GOAL IS TO ENHANCE THE QUALITY OF LIFE FOR THESE PEOPLE AND GIVE THEM NEW AND POSITIVES EXPERIENCES. THE DESIGN WAS INTENDED NOT TO ERASE DIFFERENCES BUT TO GIVE PEOPLE A SPACE FOR A WIDE RANGE OF EXPERIENCES, REGARDLESS OF THEIR DIAGNOSIS.

#### L CULTURALLY

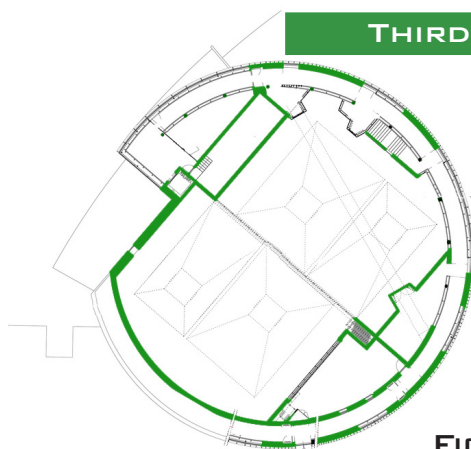
THE IDEOLOGIES CHALLENGED IN DESIGNING THIS PROJECT WERE TO BRING NEW KINDS OF EXPERIENCES INTO PLAY. THE DESIGNERS WANTED TO CHALLENGE THE TRADITIONAL APPROACH TO ACCESSIBLE ARCHITECTURE AND CREATE NEW ADAPTABLE BOUNDARIES.



FIRST FLOOR



SECOND FLOOR

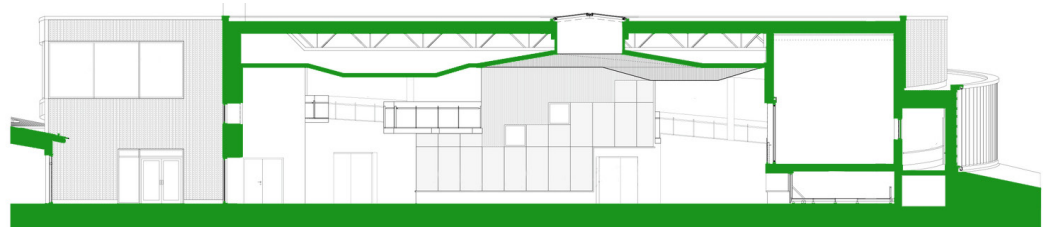


THIRD FLOOR

## STRUCTURE

STRUCTURE IS A WOODEN STRUCTURE LAID OUT IN A CIRCULAR DESIGN. SUPPORTS ARE PLACED BETWEEN ROOMS AND LARGE COLUMNS ARE USED TO SUPPORT LARGE GYM SPACE.

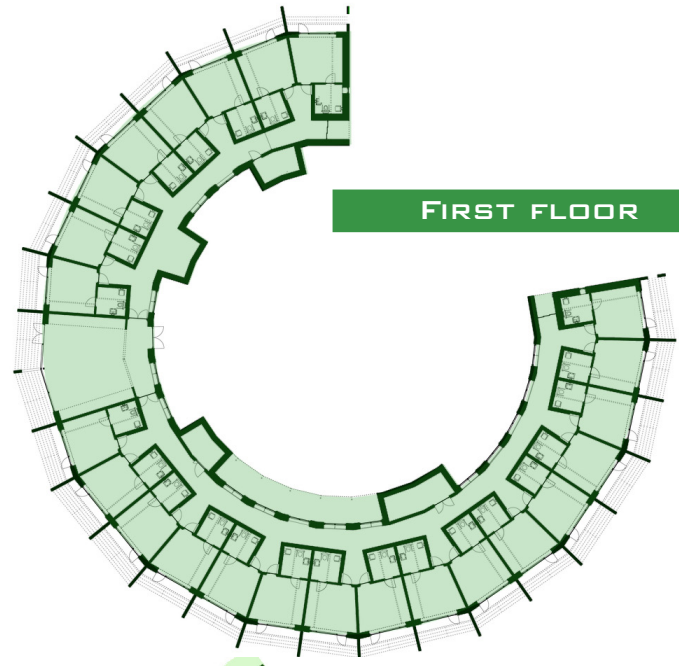
FIGURES 7-10



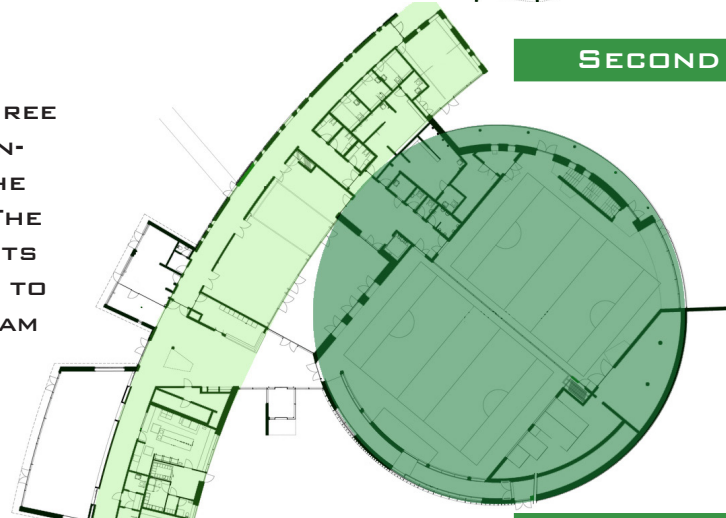
SECTION CUT

**MASSING**

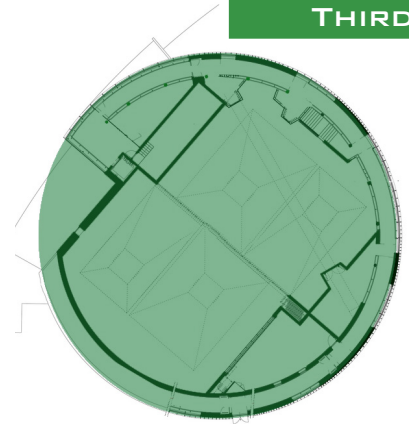
THE BUILDING IS DIVIDED INTO THREE MAIN MASS STRUCTURES. THE CENTER RING, WHICH CONSISTS OF THE OPEN GYMS AND ATRIUM SPACE. THE OUTER RING OF THE HOUSING UNITS AND THEN THE MASS CONNECTED TO THE GYMS. THIS THE MAIN PROGRAM SPACE FOR THE BUILDING.



FIRST FLOOR

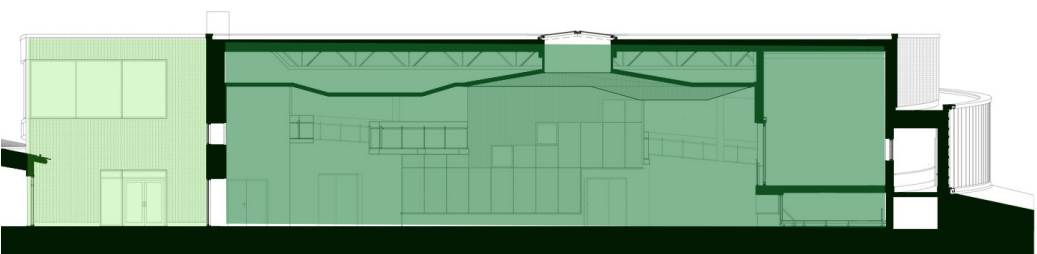


SECOND FLOOR

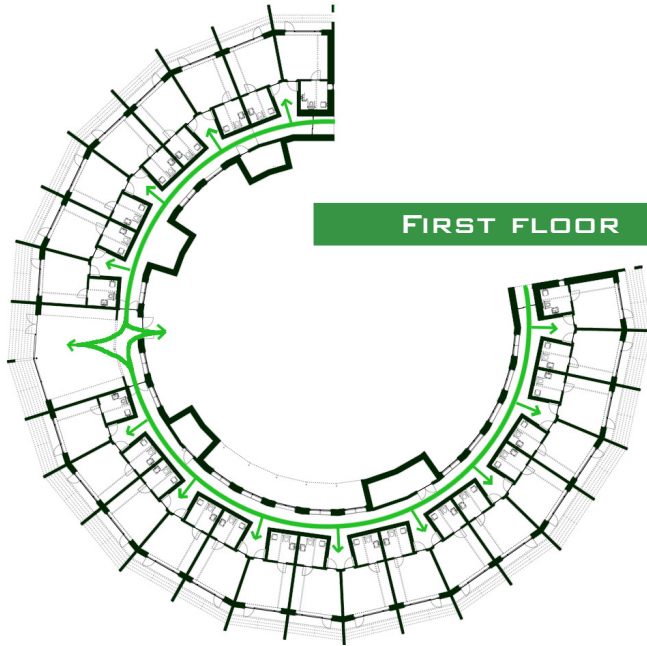


THIRD FLOOR

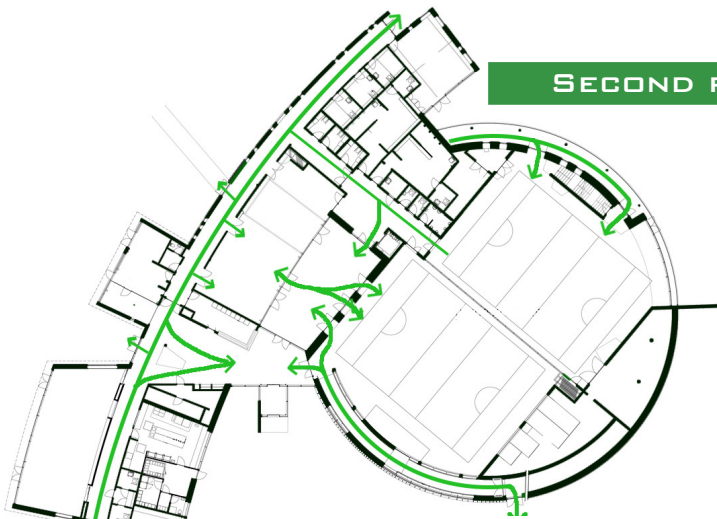
FIGURES 11-14



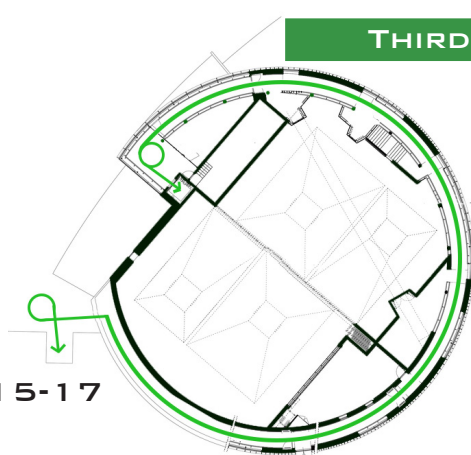
SECTION CUT



FIRST FLOOR



SECOND FLOOR



THIRD FLOOR

FIGURES 15-17

### CIRCULATION

THE BUILDING IS POSITIONED IN A CIRCULAR FORM WITH RAMPS FOLLOWING THE PERIMETER. THESE ARE THE BEST CIRCULATION PATHS AND CAN BE USED TO ACCESS ALL PARTS OF THE BUILDING. THE HOUSING UNITS IS THE OPPOSITE WITH THE RING ON THE INSIDE LOOP WITH ACCESS FROM AN ENTRY WAY.

## **COMPARISON TO THESIS PROJECT**

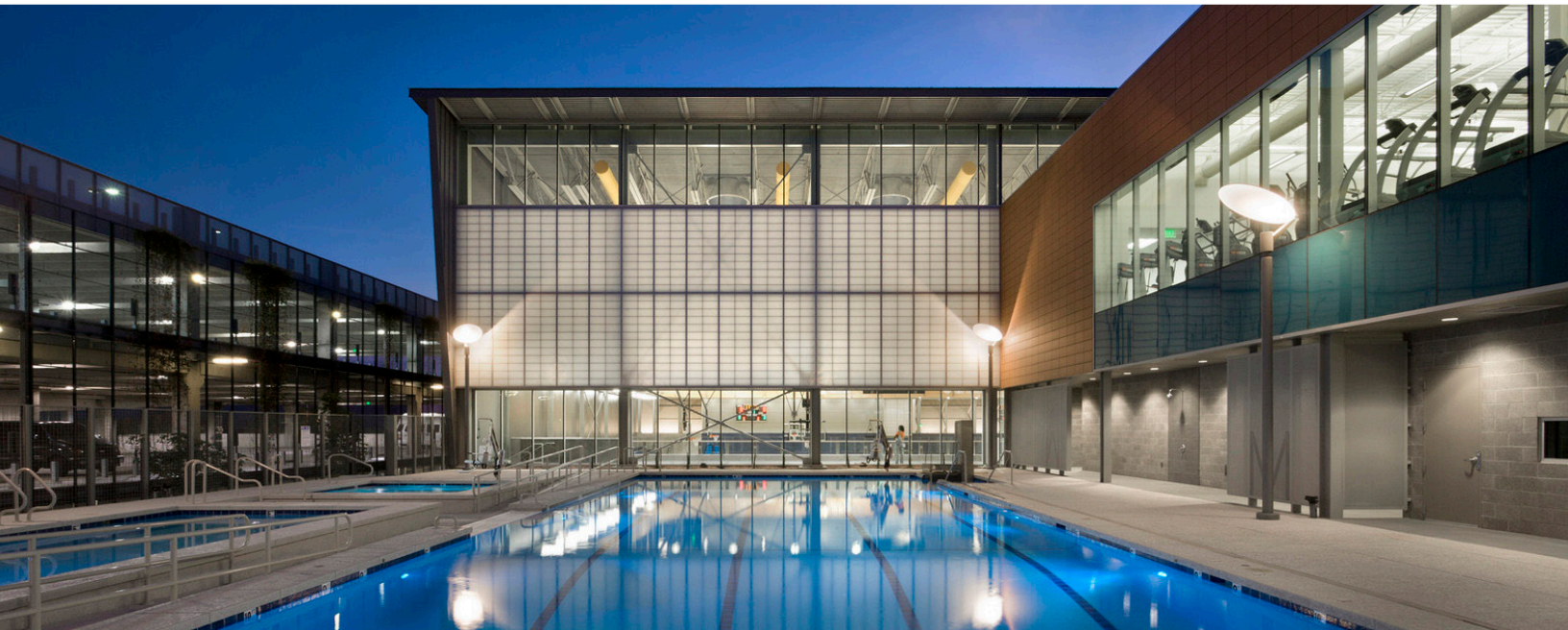
EVEN THOUGH THIS BUILDING IS LOCATED IN A MORE RURAL AREA THAN WHERE THE PROPOSED PROJECT WILL BE, THE IDEOLOGIES AND BASIC PRINCIPLES ARE VERY SIMILAR. THEIR GOAL OF UNIVERSAL DESIGN AND HOW A SPACE NEEDS TO BE DESIGNED FOR CERTAIN INDIVIDUALS CONNECTS DIRECTLY WITH MY THESIS PREMISE.

## **CONCLUSION**

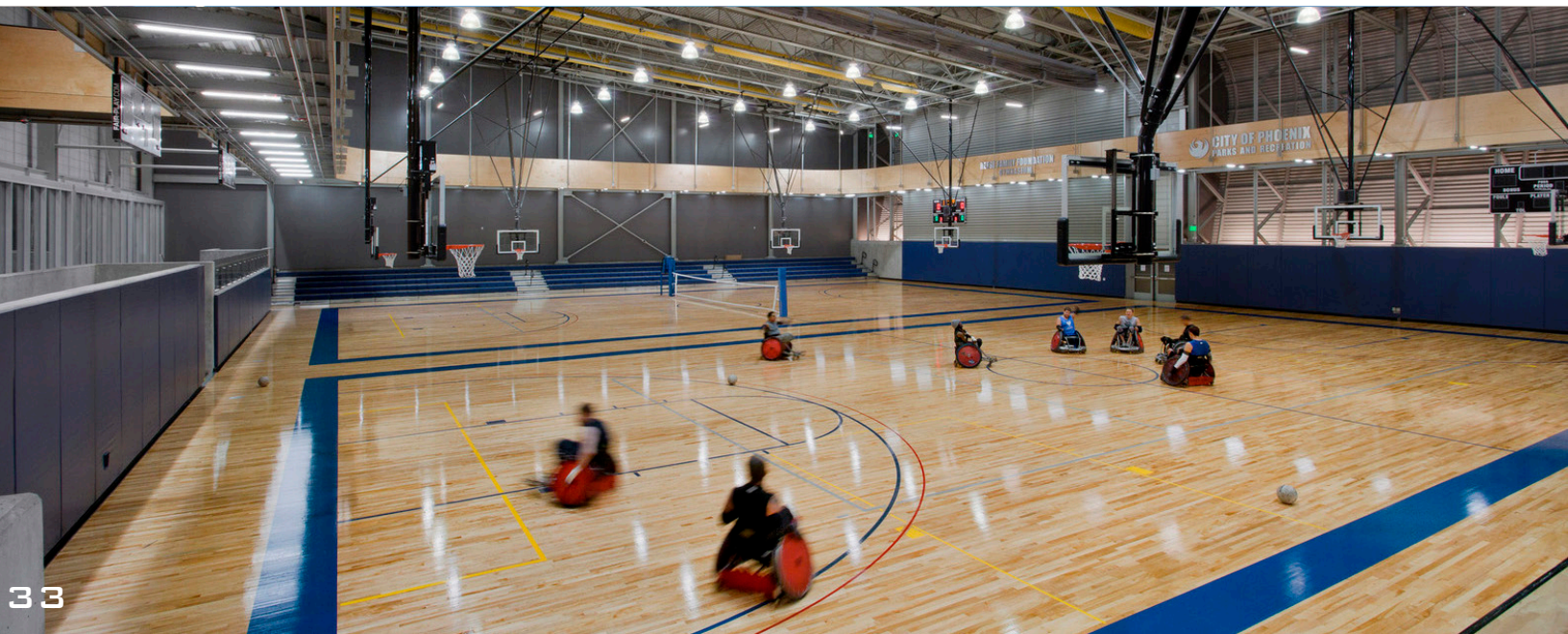
THIS BUILDING IS AN EXAMPLE OF SOMETHING THAT DISPLAYS MODERN AND UNIQUE TECHNIQUES. THE HAVE GONE ABOVE AND BEYOND WHAT IS REQUIRED AND IMPLEMENTED UNIVERSAL DESIGN. THIS WAS A GREAT BUILDING TO STUDY BECAUSE OF THE MAIN IDEAS ARE SO SIMILAR TO THE THESIS PREMISE.



# TWO | SPORT CENTER FOR PERSONS WITH DISABILITIES



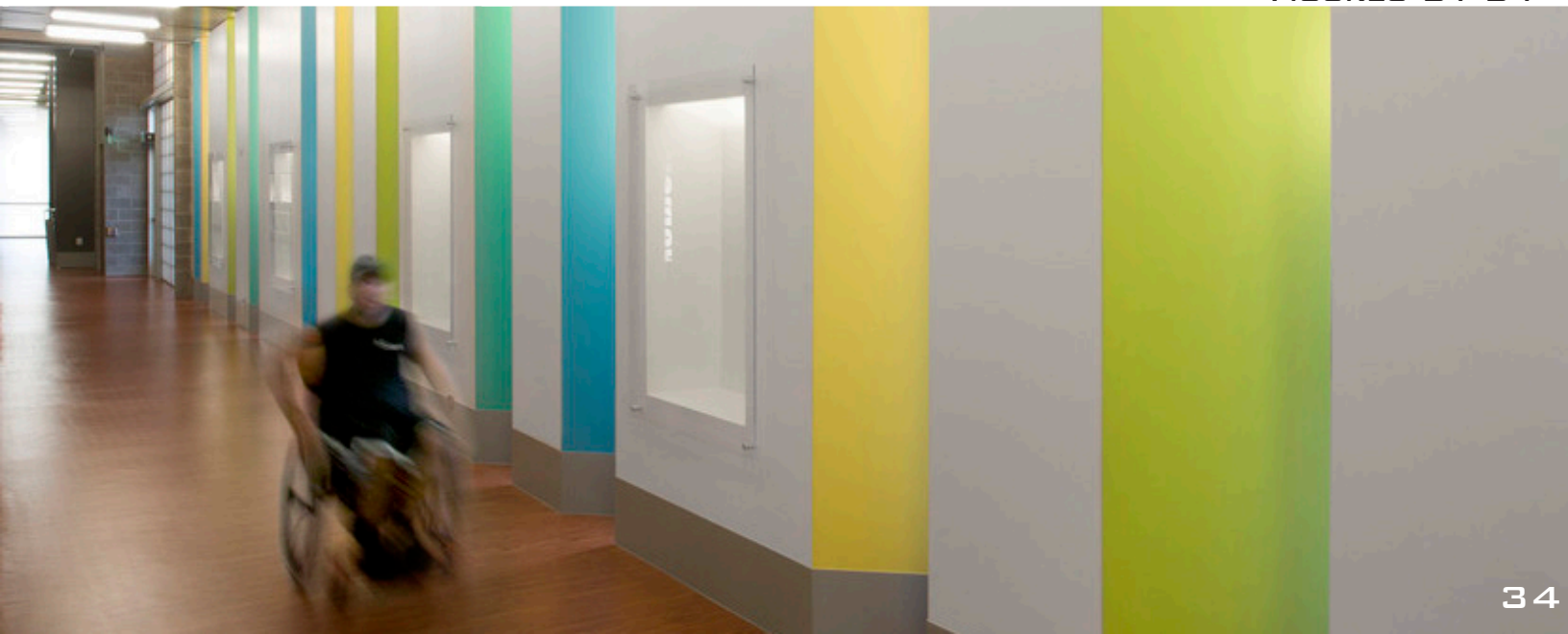
FIGURES 18-20







FIGURES 21-24



ARCHITECT	LOCATION	YEAR	TYPOLGY	SQUARE FOOTAGE
BALDINGER ARCHITECTURE STUDIO	PHOENIX, ARIZONA	2012	HOSPITALITY, RECREATION, WELLNESS	45,000 SQ. FEET

## PROJECT SUMMARY

THE VIRGINIA G. PIPER SPORT AND FITNESS CENTER FOR PERSON WITH DISABILITIES (SPOFIT) WAS THE LAST PHASE OF THE DISABILITY EMPOWERMENT CAMPUS IN PHOENIX, AZ. THE GOAL WAS TO USE KNOWLEDGE GAINED FROM THE FIRST PHASE OF THE PROJECT TO CONSTRUCT A SEAMLESSLY HIGH FUNCTIONING BUILDING THAT HAD NO BARRIERS CREATING A TOTAL ENVIRONMENT FOR USERS.

### PROGRAM ELEMENTS

- 1. MULTI-PURPOSE SPACE
- 2. GYM COURTS
- 3. OUTDOOR POOL
- 4. ACCESSIBLE RAMPS
- 5. WEIGHT LIFTING AREA
- 6. ROCK WALL
- 7. COMMONS AREA
- 8. SENSORY AESTHETICS
- 9. WALKING TRACK
- 10. UNIVERSALLY ACCESSIBLE

### SITE RESPONSES

#### ENVIRONMENTALLY

THE SURROUNDING DESERT LANDSCAPE WAS THE INFLUENCE FOR THE COLOR PALATE, WITH BEIGE AND TERRA-COTTA BEING THE PRIMARY COLORS. THE INTERIOR ENVIRONMENT WAS CREATED BY USING RELAXING TONES. CERTAIN MATERIALS WERE CHOSEN DUE TO THE NATURE OF THE CLIENTELE AND THEIR NEEDS. THE TYPES OF FLOORING THAT WERE INCORPORATED WERE PICKED DUE TO THE SAFETY AND SENSORY NEEDS OF THE USERS.

#### SOCIALLY

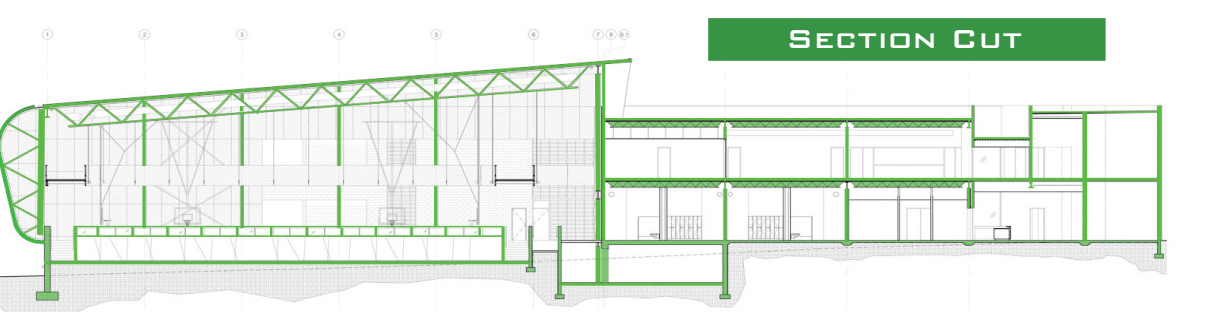
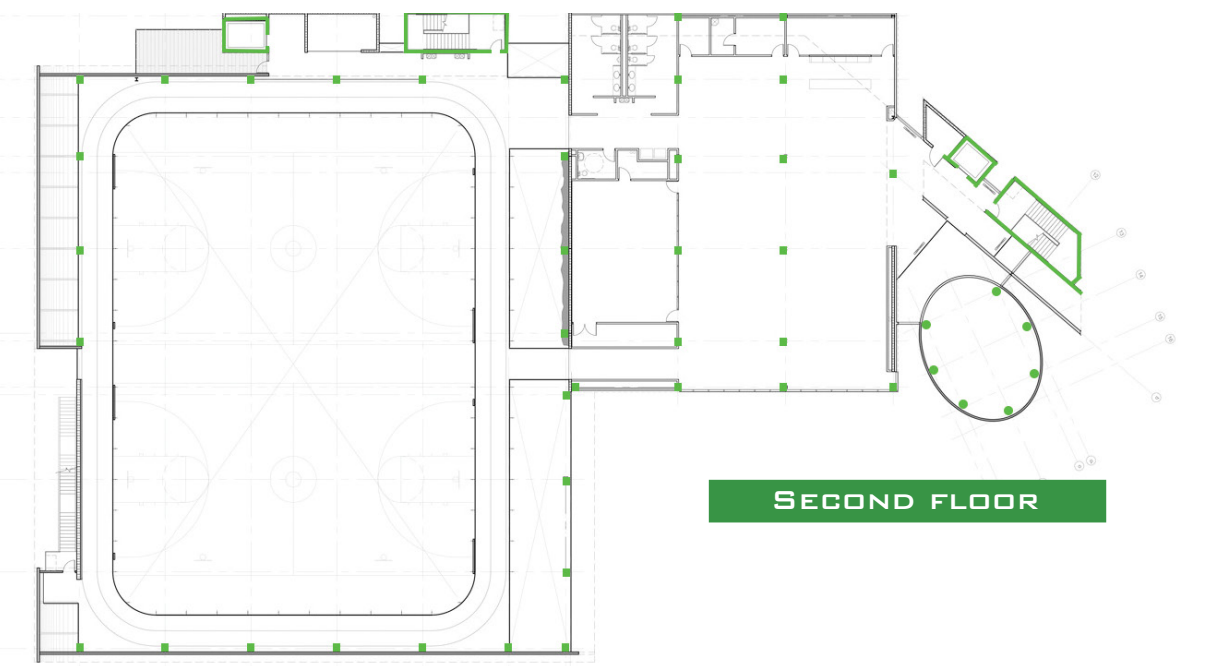
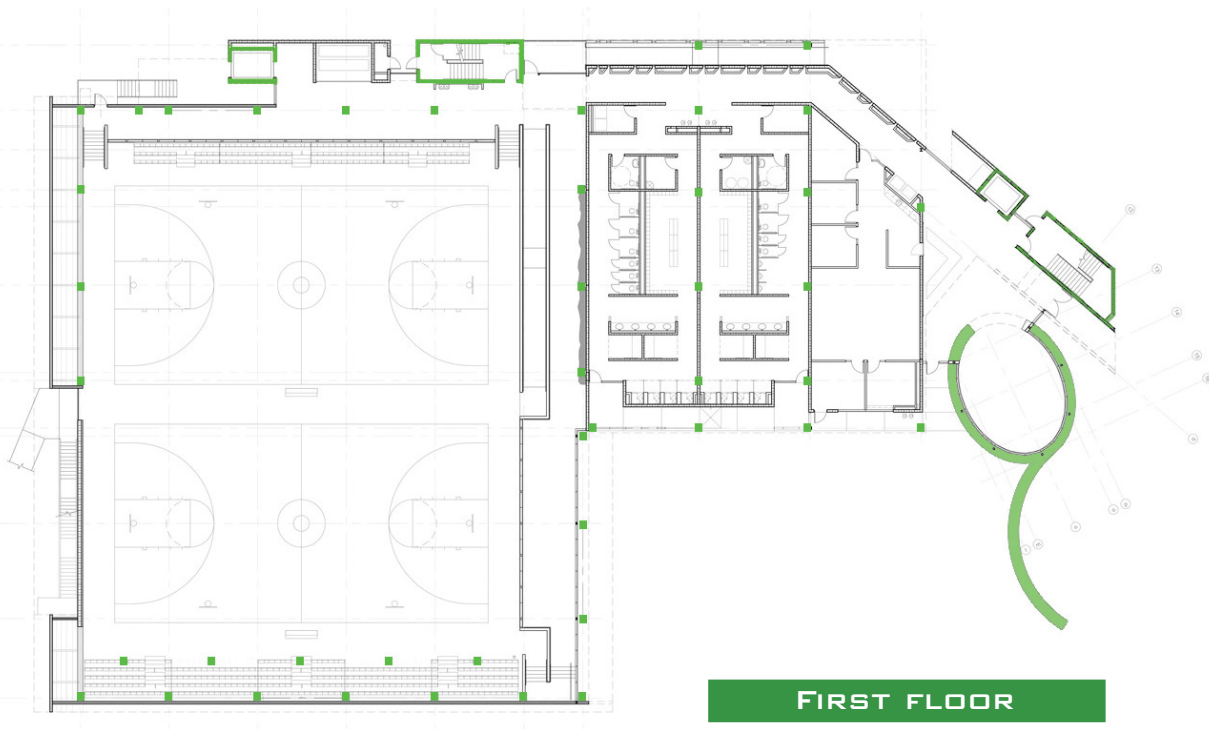
ONE OF THE OVERALL GOALS FOR THE PROJECT WAS TO CREATE A PLACE WHERE FACILITY MEMBERS COULD DEVELOP AND MAINTAIN HEALTHY LIFESTYLES. IT WAS ALSO DESIGNED AS A PLACE FOR LIKE-MINDED PEOPLE, WHO SUPPORT AND ENCOURAGE ONE ANOTHER.

#### CULTURALLY

THE DESIGNERS CAREFULLY DESIGNED EVERY ASPECT OF THIS PROJECT. THEY USED THEIR EXPERIENCES FROM THE FIRST PHASE OF THE DESIGN AND IMPROVED UPON THOSE IDEAS TO CREATE A BETTER ATMOSPHERE FOR USERS. THEY WERE SURE NOTHING WAS AN AFTER THOUGHT AND THAT EVERYTHING WAS ACCOUNTED FOR.



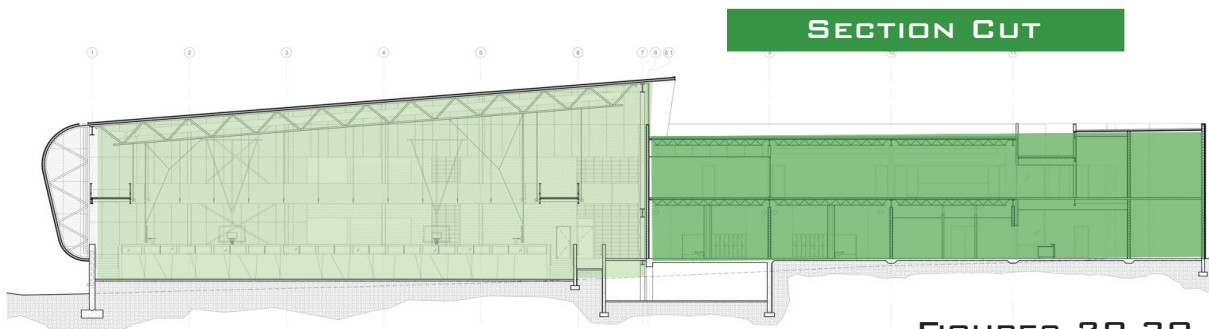
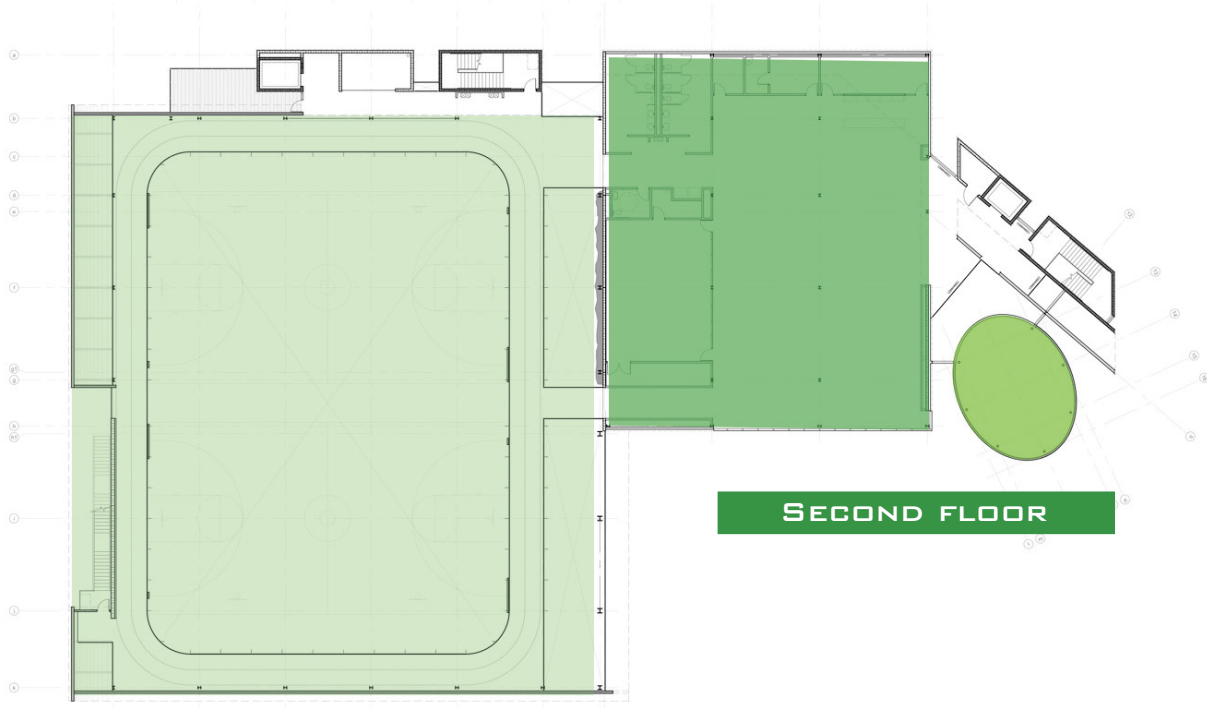
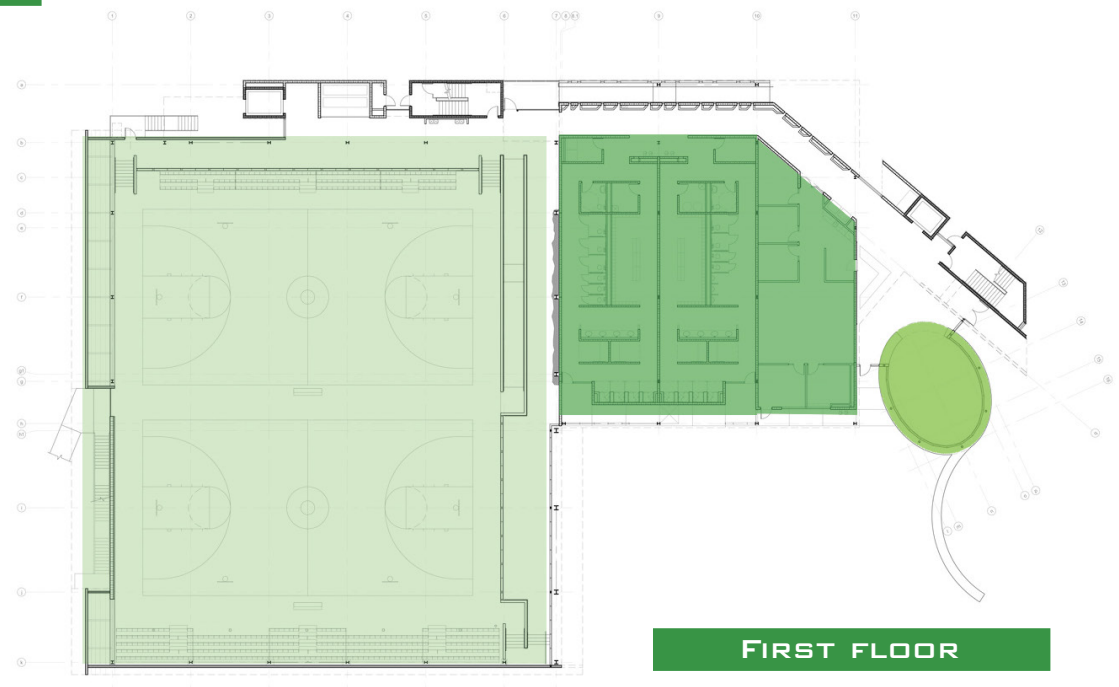
# STRUCTURE



FIGURES 25-27

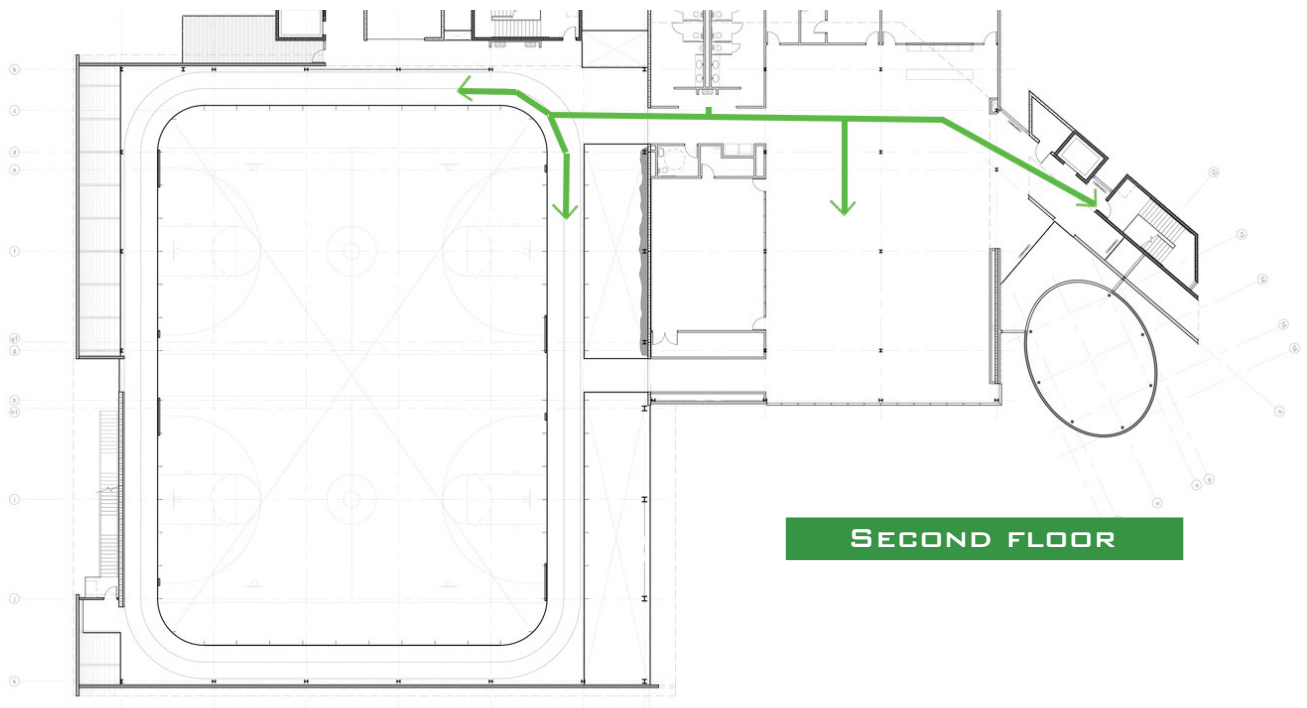
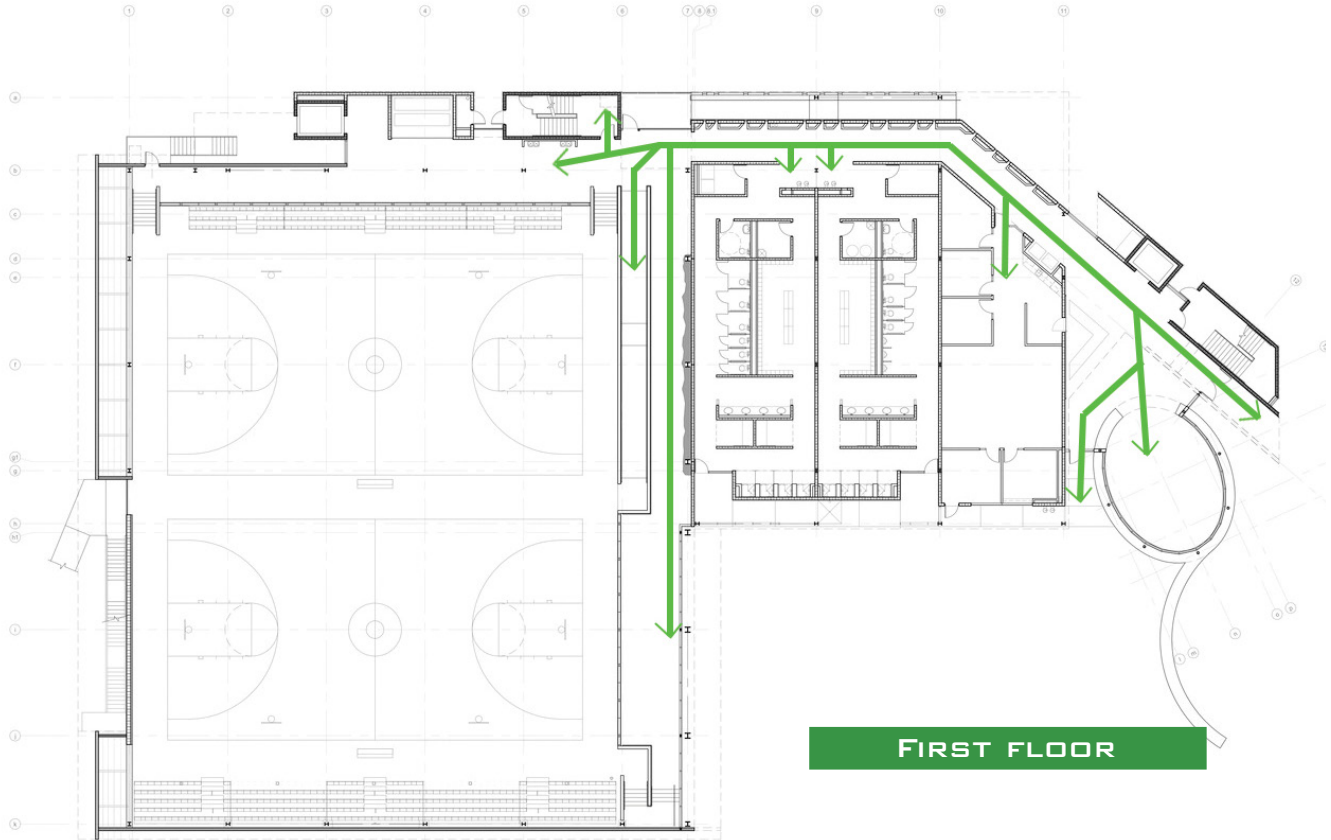
MASSING

TYPOLGICAL RESEARCH



FIGURES 28-30

# CIRCULATION



FIGURES 31-32

## STRUCTURE

THIS PROJECT WAS DESIGNED USING A STEEL CONSTRUCTION WITH LARGE I-BEAM COLUMNS USED THROUGHOUT THE BUILDING. MASONRY CONSTRUCTION WAS ALSO IMPLEMENTED, MAKING FOR A VERY STABLE STRUCTURE.

## MASSING

THERE ARE THREE MAIN MASSES TO THIS PROJECT. THE MAIN MASS, WHICH CONSISTS OF THE GYM AND ATRIUM SPACE, AS WELL AS THE WALKING TRACK. THE SECONDARY MASSING, WHICH CONSISTS OF THE GYM AMENITIES IS LOCATED DIRECTLY TO THE RIGHT OF THE FIRST MASS. THE LAST MASS IS AN OVAL MASS TO THE RIGHT OF BOTH OTHER MASSES. THIS IS THE ENTRYWAY TO THE FACILITY.

## CIRCULATION

CIRCULATION THROUGHOUT THIS BUILDING IS LAID OUT BY LARGE WALKING PATHS MADE FOR EASY ACCESS. THEY ARE IMPLEMENTED USING UNIVERSAL DESIGN AND CAN ALLOW FOR ANY USER TO ACCESS ANY PART OF THE BUILDING.

## **COMPARISON TO THESIS PROJECT**

---

THIS PROJECT HAS A VERY SIMILAR TYPOLOGY, SURROUNDING CONTEXT AND PROGRAM ELEMENTS. THE USE OF UNIVERSAL DESIGN NOT ONLY PHYSICALLY BUT IN A SENSORY WAY GAVE A GREAT RESEARCH EXAMPLE TO USE IN CURRENT THESIS STUDIES. THE STRUCTURE AND CONSTRUCTION OF THE BUILDING IS ALSO SOMETHING TO TAKE INTO CONSIDERATION, THINKING ABOUT THE SITE CONTEXT IN FARGO.

## **CONCLUSION**

---

THIS BUILDING ADDED A GOOD BACKING TO THE PREMISE AND GAVE A GOOD STARTING POINT FOR THE DEVELOPMENT OF THE THESIS PROJECT. IT DIDN'T GIVE EVERYTHING, BUT IT DEFINITELY GOT IDEAS FLOWING.



THREE | XYLOPHONE BUILDING







FIGURES 35-36





# THREE | XYLOPHONE BUILDING

ARCHITECT	LOCATION	YEAR	TYPOLGY	SQUARE FOOTAGE
PH+ ARCHITECTS	LONDON, ENGLAND	UNBUILT	MIXED-USE, HEALTH, WELLNESS	UNKNOWN

## PROJECT SUMMARY

THE XYLOPHONE BUILDING IS A PROPOSED PROJECT BEING DESIGNED FOR THE LONDON CENTRE FOR CHILDREN WITH CEREBRAL PALSY. IT WILL ALLOW FOR CHILDREN TO EXPLORE THE COMMUNITY IN A NEW AND UNIQUE WAY, HAVING ACCESS TO FACILITY SERVICES.

## PROGRAM ELEMENTS

1. FLEXIBLE-USE THERAPY
2. HYDROTHERAPY POOL
3. MEETING ROOMS
4. WALKWAY RAMPS
5. ACCESSIBLE PLAY AREA
6. COMMUNITY HALL
7. SENSORY GARDENS
8. OUTDOOR STAGE
9. CLASSROOMS
10. XYLOPHONE

## SITE RESPONSES

### ENVIRONMENTALLY

THE MAIN EMPHASIS OF THIS PROPOSED PROJECT IS AN INCLUSIVE DESIGN FOR CHILDREN WITH CEREBRAL PALSY. THE GOAL IS TO CREATE DIFFERENT EXPERIENCES FOR THEM BY DESIGNING DIFFERENT ENVIRONMENTS THAT WILL STIMULATE THEIR SENSES THROUGH SOUNDS, SMELLS, LIGHT, AND SURFACES. THE BIGGEST ELEMENT IS AN OUTDOOR WALKING PATH AROUND THE BUILDING, ENCLOSED BY WOODEN LOGS. THIS ELEMENT BECOMES A XYLOPHONE ITSELF.

### SOCIALLY

THIS PROJECT IS NOT JUST BEING CREATED FOR THE CHILDREN BUT THE PARENTS AS WELL. IT IS PLANNED TO BE A HUB FOR THE LOCAL COMMUNITY MEMBERS. PARENTS CAN ACCESS VITAL INFORMATION, GATHER FOR SUPPORT, RECEIVE TRAINING, AND EDUCATE THEMSELVES ON CURRENT ISSUES WITHIN THIS TOPIC.

### CULTURALLY

THE PREVIOUS FACILITY USED FOR CHILDREN WITH CEREBRAL PALSY WAS BUILT IN THE 1950S AND BECAME UNABLE TO ACCOMMODATE THE RISING NUMBER OF INDIVIDUALS WITH THIS DIAGNOSIS. THE DEVELOPMENT OF THIS NEW PROJECT WILL BE ABLE TO ACCOMMODATE ALL THE CHILDREN AND MORE.



FIGURES 37-40

## STRUCTURE

THIS PROJECT IS DESIGNED USING A WOOD STRUCTURE. IT IS MADE USING NATURAL MATERIALS LIKE WOOD.

## MASSING

THERE ARE TWO MAIN MASSES. THE BIGGER MASS WHICH THE COMMUNITY AND ACTIVITY SECTION. THEN THERE IS THE SMALLER MASS WHICH IS THE LEARNING AND EDUCATIONAL SIDE.

## CIRCULATION

THE CIRCULATION THROUGHOUT THIS PROJECT WILL BE DESIGNED CONSIDERING UNIVERSAL DESIGN AND HOW IT MIGHT AFFECT CHILDREN WITH CEREBRAL PALSY.

## COMPARISON TO THESIS PROJECT

THOUGH THIS PROJECT IS NOT YET COMPLETE, THERE ARE STILL MANY GOOD TAKEAWAYS FROM IT. THE TYPOLOGY OF THIS BUILDING DIFFERS FROM THE PROPOSED BUILDING BEING DESIGNED BUT THE WAY THAT THE BUILDING IS BEING USED ARE THE KEY FOCAL POINTS. THE CONCEPT BEHIND THIS PROJECT IS TO DESIGN A SENSORY AND UNIVERSAL ADAPTABLE SPACE FOR CHILDREN WITH CEREBRAL PALSY. THIS MIXES DIRECTLY IN WITH THE THESIS PROJECT CONCEPTS.

## CONCLUSION

THE OVERALL IDEAS BEING CONSIDERED IN THIS PROJECT ARE THE TAKEAWAYS FROM THIS CASE STUDY. THIS CASE STUDY OUT OF ALL THREE HAD THE MOST IN-DEPTH IDEAS ON SENSORY AND THAT IS A BIG PART OF WHAT THIS THESIS PROJECT WILL BE BASED ON DURING DEVELOPMENT.

# RESULTS FROM THEORETICAL PREMISE/ UNIFYING IDEA RESEARCH

## PHILOSOPHICAL FRAMEWORK

THROUGH THE PROCESS OF RESEARCH, USING A NUMBER OF QUALITATIVE METHODS, SUCH AS CASE STUDY RESEARCH, ONE-ON-ONE PERSONAL INTERVIEWS AND THE PROCESS OF DIRECT OBSERVATION, CONCLUSIONS COULD BE MADE ABOUT THE UNIFYING IDEA FOR THE PROJECT. A PROCESS FOR DESIGNING AN ACCOMMODABLE, ADAPTIVE AND RECREATIONAL SPACE FOR INDIVIDUALS WITH HYPERSENSITIVITY AND MOBILITY ISSUES HAS BEEN CREATED. THIS PROCESS WILL ALLOW INDIVIDUALS WITH HYPERSENSITIVITY AND MOBILITY ISSUES TO FULLY EXPERIENCE A SPACE AND INTERACT WITH IT ON THEIR TERMS. THE RESEARCH FINDING WILL ALLOW FOR THE USERS TO HAVE FULL CONTROL OVER THEIR EXPERIENCE IN THE SPACE, WHICH IS SOMETHING THESE INDIVIDUALS RARELY GET TO DO.

## THEORETICAL FRAMEWORK

UNDERSTANDING HOW AN INDIVIDUAL WITH SPECIFIC NEEDS LIKE CEREBRAL PALSY AND HYPERSENSITIVITY PERCEIVE A SPACE VERSUS SOMEONE WITHOUT THOSE NEEDS IS A KEY CONCEPT WHEN DESIGN A UNIVERSALLY ADAPTABLE BUILDING. AS THE DESIGNER, THERE NEED TO BE MANY FACTORS CONSIDERED SUCH AS THE VIEWERS PERCEPTION OF A SPACE, EXPERIENCE IN THAT SPACE AND THE FEELING AND EMOTIONS THEY MAY HAVE THERE. THESE CAN ALL BE AFFECTED BY THE SURROUNDING ENVIRONMENT IN WHICH THEY OCCUPY. ELEMENTS LIKE OUR SENSES SUCH AS SOUND, SMELL, TASTE, TOUCH, AND SIGHT CAN ALL PLAY A HUGE ROLE IN DETERMINING THE EXACT UNDERSTANDING AND PERCEPTION THAT AN INDIVIDUAL MAY HAVE OF A SPACE. USING THIS INFORMATION, A SPACE CAN BE DESIGN SPECIFICALLY TO CATER TO ONE DISABILITY OR EVEN ON PERSON SUCH AS BENTLEY, WHO HAS CEREBRAL PALSY AND HYPERSENSITIVITY. DESIGNING IN SUCH A WAY CAN SET AN EXAMPLE OF HOW ARCHITECTS MAY BE ABLE TO DESIGN FOR OTHER DISABILITIES IN THE FUTURE.

## STRATEGIES

TO DESIGN FOR A SPACE THAT IS ADEQUATELY ADAPTABLE FOR INDIVIDUALS LIKE BENTLEY, RESEARCH MUST BE CONDUCTED IN A STRATEGIC WAY TO GUIDE THE DESIGN PROCESS. QUALITATIVE RESEARCH IS THE BEST RESEARCH STRATEGY TO USE FOR THIS PROJECT. THE INFORMATION NEEDED TO BE GATHERED CAN BE DONE THROUGH CASE STUDY RESEARCH, ONE-ON-ONE PERSONAL INTERVIEWS, AND THE PROCESS OF DIRECT OBSERVATION. CASE STUDY RESEARCH WILL GIVE A GREAT LOOK INTO EXAMPLE DESIGNS THAT ARE SIMILAR TO THE PROJECT TYPOLOGY AND PROGRAMS. THIS TYPE OF RESEARCH CAN SHOW WHAT HAS BEEN DONE IN THE PAST THAT WORK OR DIDN'T WORK. THEY CAN GIVE A DEEP LOOK INTO A BUILDINGS DESIGN PROGRAM, WHICH CAN BE VERY HELPFUL IN ONE'S OWN DESIGN PROCESS.

PERSONAL INTERVIEWS ARE A KEY COMPONENT IN A RESEARCH, DESIGN PROJECT SUCH AS THIS ONE. THEY GIVE DIRECT INFORMATION ON FIRSTHAND EXPERIENCE THAT COULD HELP GUIDE THE DESIGN. HOW THEY RESPOND WILL IMPACT THE WAY THE RECREATION AND WELLNESS CENTER IS GOING TO BE DESIGNED. HOW THE SPATIAL LAYOUT WILL COINCIDE WITH THE SENSORY ADAPTING ELEMENTS IS A MAJOR TASK, AND THE PERSONAL INTERVIEWS WILL STEER THE PROJECT TOWARD CREATING THE PERFECT SPACES FOR BENTLEY, GIVING HIM HIS PARADISE.

DIRECT OBSERVATION IS ANOTHER IMPORTANT RESEARCH METHOD THAT CAN INFLUENCE THE DESIGN OF THE PROJECT. THE DESIGNER CAN SEE FIRSTHAND THE THINGS THEY ARE LOOKING FOR. THEY CAN IMPLEMENT DESIGN IDEAS BASED OFF OF WHAT THEY DIRECTLY OBSERVE IN THE REAL WORLD. FOR EXAMPLE, THINGS THAT WILL WORK FOR THE DESIGN AND THINGS THAT MAY NOT WORK FOR THE DESIGN.

## TACTICS

AS A STARTING POINT, THREE CASE STUDIES WERE CONDUCTED BASED ON THE CRITERIA OF TYPOLOGY, CONTEXT, IMPACT, ICON/ INNOVATION, AND EXISTING PROGRAM ELEMENTS. FROM THERE, THREE INTERVIEWS WERE CONDUCTED WITH BENTLEY, BENTLEY'S MOM AND BENTLEY'S OT THERAPIST. THE QUESTIONS WERE BASED AROUND SUPPORTING THE THEORETICAL PREMISE OF THE PROJECT. LASTLY, INFORMATION GATHERED FROM DIRECT OBSERVATION BY THE DESIGNER FROM YEARS OF WORKING WITH BENTLEY WILL BE OF GREAT HELP DURING THE DESIGNING PROCESS.

# PERSONAL INTERVIEW # 1

PERSON	BENTLEY SCHMEETS
DATE	DECEMBER 6, 2020
TIME	3:30PM CT
LOCATION	BENTLEY'S HOUSE
FORMAT	IN PERSON, ONE-ON-ONE

## PERSONNEL BACKGROUND

BENTLEY SCHMEETS IS AN 11-YEAR-OLD WITH CEREBRAL PALSY AND HYPERSENSITIVITY. HE IS THE FOCUS SUBJECT OF THIS THESIS RESEARCH.

## GOALS

WHEN INTERVIEWING BENTLEY, THE MAIN GOAL WAS TO FIND OUT WHAT HIS FIRSTHAND, PERSONAL EXPERIENCES WERE WHEN PERCEIVING SPACES, BOTH GOOD AND BAD. KNOWING WHAT KINDS OF SPACES MADE HIS HYPERSENSITIVITY HEIGHTEN MORE THAN OTHERS WOULD HELP TO UNDERSTAND WHAT HIS FEELINGS AND EMOTIONS WERE DURING HIS MOMENTS OF GOOD AND BAD EXPERIENCES WITHIN SPACES. WHEN HE HAD A BAD EXPERIENCE, THE AIM WAS TO KNOW WHAT TYPES OF THINGS COULD HAVE BEEN DONE TO PREVENT A BREAKDOWN. WHAT SENSES WERE BEING TARGETED THE MOST AND IN WHAT WAYS. ON THE OTHER HAND, THE OBJECTIVE WAS TO KNOW WHAT KINDS OF SPACES BENTLEY FELT MOST COMFORTABLE IN AND HOW SENSORY INTEGRATION COULD ADD TO THOSE EXPERIENCES IN THE SPACE. LASTLY, KNOWING WHAT ELEMENTS, SENSORY AND MOBILITY WISE DID BENTLEY WANT IN HIS PARADISE TO MAKE IT 100% ADAPTABLE TO HIM! THESE QUESTIONS AND IDEAS WERE THE CENTER FOCUS OF THE INTERVIEW WITH BENTLEY.

## FINDINGS + CONCLUSION

WHEN INTERVIEWING BENTLEY, HE DID A GREAT JOB ANSWERING QUESTIONS, BUT HE HAD A HARD TIME UNDERSTANDING AND COMPREHENDING SOME OF THE IDEAS. HE DID HIS VERY BEST AND THE INFORMATION HE DID PROVIDED WILL BE USED AND IMPLEMENTED WHEN DESIGNING MY FINAL PROJECT. THE FINDINGS ARE AS FOLLOWS. BENTLEY SAID THAT WHEN HE GETS INTO A SITUATION WHERE THE SURROUNDING SPACE IS TOO OVERSTIMULATING, HE WILL OFTEN GET UPSET OR OVERWHELMED. THESE MOMENTS ARE LIKELY TO OCCUR WHEN HE IS IN LOUD, NOISY, OR BUSY PLACES, OR PLACES WITH LOTS OF BRIGHT FLASHING LIGHTS. HIS FEELINGS IN THESE MOMENTS TELL HIM THAT HE WANTS TO "GET OUT OF THERE AND GO HOME" (B. SCHMEETS, PERSONAL COMMUNICATION, DECEMBER 6, 2020). HE DESIRES TO BE IN A QUIET CALM PLACE, AND HE SAYS, "THAT IT IS ONE OF THE BEST WAYS I CAN CALM DOWN" (B. SCHMEETS, PERSONAL COMMUNICATION, DECEMBER 6, 2020). WHEN ASKED IF THERE ARE OTHER APPROACHES THAT MIGHT BE ABLE TO HELP SOOTHE HIS STIMULATED MIND AND BODY, HE DESCRIBED THINGS LIKE TIGHT HUGS WHEN HE IS CRYING,



GOLD THINGS WHEN HE IS HOT, AND A MASSAGE, MUSIC, TV OR IPAD TIME IF HE IS MAJORLY WORKED UP. CONCLUSIONS WERE DRAWN, THAT DEPENDING ON THE SITUATION AND HOW HIS REACTIONS AND EMOTIONS AFFECT HIS MIND AND BODY, THERE ARE DIFFERENT WAYS OF CORRECTLY ASSISTING AND GUIDING BENTLEY THROUGH THOSE INTENSE MOMENTS OF UNCERTAINTY.

AT THE END OF THE INTERVIEW, BENTLEY WAS ASKED ABOUT WHAT SPACES OR ELEMENTS HE WOULD LIKE TO SEE IMPLEMENTED HIS PERSONAL PARADISE, TO MAKE IT 100% ADAPTABLE. AT THIS POINT, HE STARTED TO HAVE FUN WITH IT AND THREW OUT MANY GREAT IDEAS. SOME WERE ONES THAT HE HAS TRIED AT THERAPY BEFORE AND OTHERS WERE FROM HIS HEART. HE MENTIONED HE WOULD LOVE TO SEE ELEMENTS LIKE A HEATED POOL, A HOT TUB, A GYM, ARM WEIGHTS, VIBRATING TOYS, INTERACTIVE TOYS, DIMMABLE LIGHTS, TEXTURE WALLS AND MUSIC. THE LAST QUESTION BENTLEY WAS ASKED IF HE THOUGHT THAT HE EXPERIENCED SPACES DIFFERENTLY THAN OTHERS. THE QUESTION HAD TO BE EXPLAINED A BIT, BUT ONE HE UNDERSTOOD, HE GAVE AN ANSWER WITH FULL CONFIDENCE. HE SAID "YES, YOU COULDN'T DO 24 HOURS IN MY SHOES" (B. SCHMEETS, PERSONAL COMMUNICATION, DECEMBER 6, 2020).

BENTLEY HAS SAID THIS BEFORE, BUT IT WAS NOT UNTIL THIS MOMENT THAT THE GRAVE IMPACT BEHIND HIS STATEMENT WAS REALIZED. BENTLEY STRUGGLES WITH SO MUCH ON A DAILY BASIS, HAVING CHALLENGES WITH HYPERSENSITIVITY, LACK OF MOBILITY AND MORE. DESPITE THIS, HE CONTINUES TO LIVE EACH DAY TO THE FULLEST AND IT IS INCREDIBLE TO SEE HOW MUCH BENTLEY HAS ALREADY ACHIEVED IN LIFE. HE IS SO STRONG THAT IS WHY THIS PROJECT WAS BASED AROUND HIM AND HIS NEEDS. THE SPACE BEING DESIGNED ALLOWS HIM TO NOT WORRY ABOUT ACCOMMODATING TO THE OUTSIDE WORLD, THERE WILL ALREADY BE A PLACE MADE FOR HIM. THE SPACE BEING DESIGNED FOR BENTLEY WILL ALLOW FOR HIM TO HAVE TOTAL CONTROL OVER HOW HE EXPERIENCES A SPACE AND WHAT HE DOES IN THAT SPACE. IT WILL ALSO GIVE HIM A CHANGE TO ACHIEVE SO MUCH MORE AND DO MANY THINGS HE HAS NEVER BEEN ABLE TO DO. THE DESIGN WILL ACCOMMODATE HIS HYPERSENSITIVE AND MOBILITY NEEDS, BY USING THE INFORMATION HE PROVIDED IN THE INTERVIEW. THE GOAL IS TO IMPLEMENT AS MUCH AS POSSIBLE TO GIVE BENTLEY THE PARADISE HE DESERVES.

# PERSONAL INTERVIEW #2

PERSON	HEATHER SCHMEETS
DATE	DECEMBER 6, 2020
TIME	9:30PM CT
LOCATION	HEATHER'S HOUSE
FORMAT	IN PERSON, ONE-ON-ONE

## PERSONNEL BACKGROUND

HEATHER SCHMEETS IS BENTLEY'S MOTHER AND WILL DO JUST ABOUT ANYTHING FOR HIM. SHE WILL GO ABOVE AND BEYOND TO MAKE SURE HE HAS THE BEST CARE AND TREATMENTS.

## GOALS

THE GOAL WHEN INTERVIEWING HEATHER WAS TO EXPAND ON THE INFORMATION GATHERED FROM BENTLEY'S INTERVIEW. HEATHER HAS KNOWN BENTLEY SINCE THE DAY HE WAS BORN AND KNOWS EVERY LAST DETAIL ABOUT HIM AND HIS NEEDS. SHE KNOWS WHAT MAKES BENTLEY TICK, HOW HE REACTS IN CERTAIN SITUATIONS, AND HOW TO ADEQUATELY DEAL WITH THAT. THE MAIN OBJECTIVE WAS TO GET HER INSIGHT ON WHAT IT WAS LIKE TO BE A MOTHER OF A CHILD WITH CEREBRAL PALSY AND HYPERSENSITIVITY. TO KNOW WHAT HER FEELINGS AND EMOTIONS WERE DURING TOUGH EXPERIENCES WITH BENTLEY AND HOW SHE WAS ABLE TO COPE WITH THEM. THE QUESTIONS ASKED WERE SET UP IN A WAY TO FOCUS ON BOTH BENTLEY AND HEATHER'S SENSORY EXPERIENCES WITH SPACE AND HOW A DESIGN MIGHT INFLUENCE POSITIVE OR NEGATIVE EMOTIONS.

## FINDINGS + CONCLUSION

DURING THE INTERVIEW WITH HEATHER, SHE PROVIDED A MORE PERSONAL INTERVIEW, WITH INSIGHT INTO BENTLEY'S LIFE AND HER EXPERIENCES AS HIS MOTHER. HEATHER SAID THAT HAVING A SON WITH HYPERSENSITIVITY AND MOBILITY SPECIFIC NEEDS GIVES HER A DIFFERENT EXPERIENCE THAN MOST PARENTS. HEATHER WILL OFTEN HAVE TO GOOGLE PLACES OR PLAN AHEAD TO MAKE SURE THEY ARE ADAPTABLE TO BENTLEY AND ACTIVITIES OFTEN HAVE TO BE ARRANGED AHEAD OF TIME. SHE STRESSES THAT YOU MUST "PUT YOURSELF IN HIS SHOES" (H. SCHMEETS, PERSONAL COMMUNICATION, DECEMBER 6, 2020). YOU HAVE TO BE ABLE TO UNDERSTAND WHAT HE CAN AND CANNOT HANDLE. TAKING HIM PLACES TAKES MORE TIME AND IS A COMPLETELY DIFFERENCE EXPERIENCE THAN GOING WITHOUT HIM. BENTLEY CANNOT DO THINGS LIKE REGULATE BODY TEMPERATURE, DEAL WITH CROWDED SPACES AND HE GETS ANXIOUS OR OVERWHELMED WHEN THERE IS TOO MUCH SOUND OR LIGHT. HEATHER SAYS, "I CAN WALK AWAY AND FOCUS ON SOMETHING ELSE, HE CANNOT" (H. SCHMEETS, PERSONAL COMMUNICATION, DECEMBER 6, 2020).

HEATHER EXPLAINS THAT BENTLEY OFTEN HAS BREAKDOWNS WHEN DEALING WITH OVER STIMULATING SENSORY SITUATIONS, OR HE GETS DENIED THE OPPORTUNITY TO DO SOMETHING BECAUSE OF HIS SENSORY OR MOBILITY SPECIFIC NEEDS. AT TIMES LIKE THESE, HEATHER FEELS HELPLESS THAT HER SON IS BEING TOLD NO BECAUSE OF THINGS HE CANNOT CONTROL. SHE EXPRESSES THAT THESE TYPES OF SITUATIONS GIVE HER DRIVE TO FIGURE OUT A SOLUTION. SHE IS CONTINUOUSLY RESEARCHING WAYS ON HOW TO MAKE LIFE BETTER AND EASIER FOR BENTLEY. CONCLUSIONS WERE DRAWN THAT THE EXPERIENCES HEATHER SHARED ARE CONCLUSIVE ENOUGH TO SHOW THAT A FACILITY, LIKE THE PROPOSED PROJECT, NEEDS TO BE DESIGNED FOR 100% SENSORY AND MOBILITY ADAPTABLE PURPOSES.

WHEN ASKED ABOUT WHAT HEATHER WOULD LIKE TO SEE BENTLEY BE ABLE TO DO, RELATING TO THE PROJECT, SHE HAD A LIST ABOUT A MILE LONG. SHE MENTIONED THREE MAJOR IDEAS, MOVEMENT, RECREATION AND THERAPEUTIC. THE FIRST MAJOR POINT SHE MADE WAS THAT BENTLEY NEEDED A PLACE TO BE MOBILE, BUT NOT IN HIS CHAIR. THINGS LIKE AN AQUATIC TREADMILL, A TRACK WITH AN ASSISTED WALKING HARNESS, ASSISTED ROCK CLIMBING, FULLY SUPPORTED ZIP LINE, SUPPORTED TRAMPOLINE, ETC. ALL THESE ACTIVITIES WILL BE SAFE, SUPPORTED, AND ACCESSIBLE FOR INDIVIDUALS LIKE BENTLEY ALLOWING FOR MOVEMENT IN THAT THEY DO NOT NEED TO BE SITTING IN THEIR WHEELCHAIRS. HEATHER MENTIONED THAT THERE IS NO PLACE IN FARGO WHERE BENTLEY CAN PARTICIPATE IN RECREATIONAL ACTIVITIES OR SPORTS. SHE SAID THINGS LIKE HANDICAP AN ACCESSIBLE POOL, GYM, WEIGHT EQUIPMENT, PARKS CAN ALL HELP EXPAND BENTLEY'S EXPERIENCES IN THE RECREATIONAL WORLD. LASTLY, HEATHER TALKED ABOUT A PLACE THAT INCLUDES MULTIPLE TYPES OF THERAPY. THINGS LIKE MUSIC, A SPA, VIBRATION ROOMS, TUNNEL ROOM, ANIMAL THERAPY, FLOAT SPA, MOVEMENT THERAPY, ETC. SHE WOULD LIKE TO SEE THESE BE COMPLETED AS GROUP ACTIVITIES OR AS ONE-ON-ONE ACTIVITIES FOR THOSE INDIVIDUALS WITH A MORE SENSITIVE PERSONALITY.

# PERSONAL INTERVIEW #2

PERSON	ANDREA HENSRUD
DATE	DECEMBER 8, 2020
TIME	12:05PM CT
LOCATION	N/A
FORMAT	ZOOM VIDEO CHAT

## PERSONNEL BACKGROUND

ANDREA HENSRUD HAS BEEN BENTLEY'S OCCUPATIONAL THERAPIST FOR MANY YEARS AND SHE ALSO SPECIALIZES IN SENSORY THERAPY AND ADAPTATION FOR CHILDREN.

## GOALS

THE GOAL WHEN INTERVIEWING ANDREA WAS TO GATHER AND UNDERSTAND THE MORE TECHNICAL AND SCIENTIFIC SIDE BEHIND CHILDREN WITH HYPERSENSITIVE NEEDS. A SEARCH FOR GOOD WAYS TO IMPLEMENT SENSORY COMPONENTS INTO A DESIGN TO ENHANCE A SPACE FOR POSITIVE REACTIONS AND EXPERIENCES WAS PUT FORTH. QUESTIONS WERE ASKED ABOUT WHAT INDIVIDUALS WITH HYPERSENSITIVITY STRUGGLE WITH MOST AND WHAT WAY ARE BEST TO DEAL WITH THAT STRUGGLE. HOW SIGHT, TACTILE, AUDITORY, OLFATORY, AND GUSTATORY SENSES COULD EACH BE USED INDIVIDUALLY AND TOGETHER TO CREATE A 100% ADAPTABLE SPACE. THE QUESTIONS WERE FORMATTED TO UNCOVER WHAT COMPONENTS RELATED TO THESE SENSES COULD MAKE A SPACE MORE POSITIVELY PERCEIVED BY INDIVIDUALS LIKE BENTLEY, WITH SENSORY SPECIFIC NEEDS.

## FINDINGS + CONCLUSION

ANDREA PROVIDED A PROFESSIONAL INTERVIEW THAT LAID OUT FACTUAL INFORMATION RELATING TO THE DEVELOPMENT OF THE PROJECT. SHE FIRST STARTED BY EXPLAINING HOW THE THRESHOLD OF SENSITIVITY WORKED. SHE EXPLAINED THAT THERE ARE INDIVIDUALS THAT ARE HYPERSENSITIVE, MEANING THEY ARE BELOW THE THRESHOLD AND ARE MORE SENSITIVE TO SENSORY INPUT. THEN THERE IS HYPOSENSITIVE, MEANING INDIVIDUALS ARE ABOVE THE THRESHOLD AND ARE LESS SENSITIVE TO THEIR SURROUNDINGS RESULTING IN THE NEED FOR MORE SENSORY INPUT. BENTLEY FALLS UNDER THE HYPERSENSITIVE CATEGORY, BEING THAT HE IS MUCH MORE VULNERABLE TO SENSORY INPUT THAN THE AVERAGE PERSON. ANDREA DESCRIBED HOW AS AN OT THERAPIST, SHE HELPS KIDS DEAL WITH HYPERSENSITIVITY AND HOW IT IS POSSIBLE TO EDUCATE SOCIETY TO DO THE SAME. SHE STATED, "PREDICTABILITY, AS A WHOLE IS THE MOST IMPORTANT ASPECT OF UNDERSTANDING SOMEONE WITH HYPERSENSITIVITY" (A. HENSRUD, PERSONAL COMMUNICATION, DECEMBER 8, 2020). YOU NEED TO BE ABLE TO PREDICT WHAT MIGHT HAPPEN AROUND YOU OR WHAT A SITUATION MIGHT PLAY OUT AS. SHE SAID EXPLAINING TO EDUCATING

PEOPLE AROUND ARE ALWAYS A GOOD PRACTICE. CONTROL, LIKE SKILLS INTERVENTION OR A SENSORY DIET CAN ALSO HELP TO DEAL WITH SPECIFIC SITUATIONS.

ANDREA THEN PROCEEDED TO DESCRIBE HOW EACH SENSE COULD AFFECT AN INDIVIDUAL LIKE BENTLEY, WHO HAS HYPERSENSITIVITY. SHE SAID SOUND CAN BE EITHER TOO LOUD OR TOO QUIET. INDIVIDUALS ARE OFTEN SENSITIVE TO TOUCH SUCH AS CLOTHING OR EQUIPMENT. SMELLS CAN INSTANTLY CHANGE A PERSON'S EMOTIONS. TASTE IS A STRESS MANAGING OR CALMING TACTIC AND SIGHT CAN INFLUENCE HOW SOMEONE PERCEIVES A SPACE, WHETHER THAT IS THROUGH LIGHT OR VISUAL BEAUTY.

AS AN OT THERAPIST, ANDREA HAD MANY GREAT IDEAS WHEN ASKED ABOUT ELEMENTS TO IMPLEMENT IN THE DESIGN PROCESS. SHE AGAIN ATTRIBUTED THEM WITH THE FIVE SENSES. SHE RECOMMENDED SOUND-PROOF WALLS AND FLOORS TO ANY MAJOR NOISE WITHIN THE BUILDING. SHE SAID SOUND MACHINES CAN BE VERY SOOTHING AND OFTEN WORK WELL WITH THE IMPLEMENTATION OF OTHER SENSORY ELEMENTS. TEMPERATURE CONTROL AND TACTILE WALLS CAN PLAY A ROLE IN THE TACTILE SENSORY EXPERIENCE. LIGHTS AND INTERACTIVE WALLS CATER TO THE VISUAL SENSE. CHANGING ESSENTIAL OILS AND PAIRING THEM WITH OTHER SENSORY EXPERIENCES RELATES TO THE OLFACTORY SENSE. THE GUSTATORY SENSE IS ONE OF THE MOST IMPORTANT, BECAUSE IT IS OFTEN OUR GO TO WHEN WE ARE STRESSED OR UPSET. WE CAN ASSOCIATE FOODS WITH JUST ABOUT ANY FEELING. SOFT, CHEWY FOOD CAN BE SOOTHING OR CALMING. CRUNCHY, SOUR FOOD CAN BE ALARMING OR STIMULATING. GUM AND PROTEIN ARE ALSO GOOD ELEMENTS TO USE, THEY HELP US TO FOCUS. ANDREA PROVIDED A GREAT AMOUNT OF PROFESSIONAL INFORMATION THAT WILL BE IMPLEMENTED IN THE DESIGN PROCESS FOR THIS THESIS PROJECT.

# LITERATURE REVIEW

TITLE: NEUTRAL FOUNDATION OF AYRES SENSORY INTEGRATION

AUTHOR: JANE SHELLY

NEUTRAL FOUNDATION OF AYRES SENSORY INTEGRATION BY JANE SHELLY IS A JOURNAL ARTICLE PUBLISHED IN VOLUME 9 OF BRAIN SCIENCES. THIS ARTICLE DIVES INTO SENSORY INTEGRATION, A THEORY AND PRACTICE DEVELOPED BY JE AYRES AN OCCUPATIONAL THERAPIST AND NEUROPSYCHOLOGIST. TRADEMARKED AS AYRES SENSORY INTEGRATION OR ASI, THIS THEORY LAYS THE GROUNDWORK FOR UNDERSTANDING HOW TO HELP AND TREAT CHILDREN WITH LEARNING AND BEHAVIORAL CHALLENGES. AYRES FOUND THROUGH HER RESEARCH AND CLINICAL EXPERIENCES, THAT THE NERVOUS SYSTEM TRANSLATES SENSORY INFORMATION INTO ACTION AND ASSUMES THAT CORRECTLY INPUTTING SENSORY INTEGRATION WILL LAY THE FOUNDATION FOR ADAPTIVE BEHAVIOR. THE THEORY EMPHASIZES THAT WHEN THE ACTIVE, DYNAMIC-SENSORY PROCESSES THAT SUPPORT MOVEMENT INTERACT WITH SOCIAL AND PHYSICAL ENVIRONMENTS THEY CAN CREATE A PATHWAY FOR DEVELOPMENT. THOUGH ASI IS JUST A THEORY, MUCH OF AYRES WORK REMAINS SUPPORTED BY CURRENT LITERATURE AND IS COMMONLY USED AS A THERAPY TECHNIQUE. IN ORDER TO UNDERSTAND THE FULL EXTENT OF ASI, THE ARTICLE TAKES A LOOK INTO AREAS OF SENSORY PERCEPTION SUCH AS VESTIBULAR, PROPRIOCEPTIVE AND TACTILE SYSTEMS.

## EFFECTIVE VESTIBULAR FUNCTIONING

RESEARCH TODAY SUPPORTS AYRES EARLY ON THEORY THAT THE BRAIN AND MANY OF ITS IMPORTANT FUNCTIONS ARE EFFECTED BY THE VESTIBULAR SYSTEM. IT SHOWS THAT AROUSAL REGULATION, STATIC AND DYNAMIC POSTURAL CONTROL, BALANCE AND EQUILIBRIUM RESPONSES, BILATERAL COORDINATION, AND SPATIAL PERCEPTION FOR ADEQUATELY NAVIGATING THROUGH SPACE, ALL ARE CRITICAL BRAIN FUNCTIONS THAT RECEIVE INFORMATION FROM THE VESTIBULAR FUNCTION. FOR EXAMPLE, AN ACCELERATION OF THE BODY THROUGH SPACE, SUCH AS SWINGING OR A SLIDE, WILL INCREASE ALERTNESS. THE OPPOSITE HAPPENS WHEN SLOW, RHYTHMIC MOVEMENTS OCCUR SUCH AS ROCKING OR SWAYING. THE WILL BODY EXPERIENCES A DECREASE IN AROUSAL CAUSING IT TO FEEL CALM OR DROWSY. THESE TYPES OF MOVEMENTS ARE AFFECTED BY THE VESTIBULAR FUNCTION, WHICH TOGETHER PLAY A LARGE ROLE IN EFFECTIVE POSTURE AND HEAD CONTROL CONTRIBUTING TO THE DEVELOPMENT OF MOTOR SKILLS.

POSTURAL AND HEAD CONTROL CAN BE DEVELOPED THROUGH VESTIBULAR INFORMATION TRAVELING FROM THE BRAINSTEM TO THE CEREBELLUM. THIS CAN OCCUR BOTH WHEN THE PERSON IS MOVING OR STABLE. COMPLEX MOTOR SKILLS CAN BE DEVELOPED THROUGH POSTURAL CONTROL IF THE CRUCIAL CONNECTIONS WITHIN THE BODY CAN EFFECTIVELY BE MADE, VESTIBULAR INFORMATION ALSO SUPPORTS COORDINATED EYE MOVEMENT AND HEAD MOVEMENTS, ALLOWING FOR THE EYE MUSCLES TO ADJUST

RAPIDLY AND PRECISELY WHILE THE HEAD IS MOVING. THIS PROVIDES THE MOVING PERSON WITH A PERFECTLY STABLE PERCEPTION. THE STRONG CONNECTION THE VESTIBULAR SYSTEM HAS WITH VISION ALLOWS FOR ANTICIPATORY MOTOR ACTIONS AND PLAN, EFFECTIVE MUSCLE ACTIVATION AND CONTRIBUTES TO BILATERAL MOTOR COORDINATION.

## TOUCH, MOVEMENT AND SPACE

SOMATOSENSATIONS ARE A COMBINATION OF TOUCH AND PROPRIOCEPTION (AWARENESS OF POSITION AND MOVEMENT OF THE BODY). RESEARCH HAS FOUND THAT TACTILE SENSATIONS ARE DIRECTLY LINKED TO CERTAIN AREAS OF THE BRAIN. AYRES HYPOTHEZED THAT THE CONNECTION BETWEEN SOMATOSENSORY AND OTHER SENSORY SYSTEMS IS STRONG. "TACTILE SENSATIONS PROJECT TO THE POSTERIOR PARIETAL CORTEX WHERE THEY ARE INTEGRATED WITH VISUAL INFORMATION AND MOTOR SIGNALS" (LANE, 2019). IT WAS REALIZED THAT TOUCH OPERATES WITH MULTIPLE BODY FUNCTIONS, RANGING FROM SIMPLE (PAIN REFLEX) TO COMPLEX (REGULATING STRESS REDUCTION). THIS RESPONSE LED AYRES TO SUGGEST THAT THE CENTRAL NERVOUS SYSTEM PROCESSES ARE HEAVILY INFLUENCED BY TACTILE INPUTS, WHICH IN TURN LED HER TO BELIEVE THAT THE INTEGRATION OF SENSORY AND TOUCH WAS IMPORTANT AT A VERY YOUNG AGE. THERE IS RECENT RESEARCH THAT SUPPORTS THIS THEORY INDICATING THAT NEWBORNS ARE PROMPT TO SHIFT THEIR GAZE TOWARD TOUCH WHEN IT COMES FROM A PERSON RATHER THAN FROM AN OBJECT.

AYRES IDEAS FURTHER SHOWED THAT THE SOMATOSENSORY SYSTEM PLAYED A ROLE IN PRAXIS. THESE WERE GROUNDED THROUGH STUDIES IN RECENT RESEARCH THAT SHOWED CLEAR RELATIONSHIPS BETWEEN TACTILE PERCEPTION, PRAXIS AND SOMATOSENSATION ALLOWING FOR ANTICIPATORY PROCESSING AND PREDICTION OF MOVEMENT. AYRES DEFINED PRAXIS AS "THE BASIS FOR DEALING WITH THE PHYSICAL ENVIRONMENT IN AN ADAPTIVE WAY DRESSING, EATING WITH UTENSILS, PLAYING, WRITING, BUILDING, DRIVING AN AUTOMOBILE, CHANGING THE PHYSICAL ENVIRONMENT TO MEET A PURPOSEFUL GOAL, AND MAKING A LIVING" (LANE, 2019). THIS IDEA HAS BECOME ONE OF THE CORE IDEAS OF ASI.

## THE RESPONSE TO STIMULUS

SENSORY MODULATION DISORDERS COMPRISE EXAGGERATED RESPONSES TO SENSATION, ON EITHER SIDE OF THE THRESHOLD, WHICH INCLUDE HYPERREACTIVE AND HYPOREACTIVE. HYPERREACTIVE IS WHEN REACTIONS TO STIMULI ARE EXTREME AND OVERWHELMING. HYPOREACTIVE IS WHEN REACTIONS TO STIMULI ARE MILD AND INEXISTENT. THESE REACTIONS

INTERFERE WITH DAILY ACTIVITIES SUCH AS EATING, HYGIENE AND SOCIALIZING. AYRES DEVELOPED HER THEORY ON UNDERSTANDING HOW THE SENSORY SYSTEMS FUNCTIONED BOTH IN AN INDEPENDENT WAY AND AN INTEGRATED WAY. INITIALLY, AYRES GROUPED EACH SENSORY SYSTEM IN A UNIFIED WAY (TACTILE FUNCTION OR VESTIBULAR FUNCTION), BUT SOON FOUND THE NEED TO DISTINGUISH SENSORY PERCEPTION AND SENSORY MODULATION FROM EACH OTHER. SENSORY PERCEPTION IN ANY SYSTEM DRIVES PLANNED ACTIONS AND COGNITION, WHILE SENSORY REGULATION ALLOWS FOR MORE REGULATORY FUNCTIONS. AS SHOWN IN AYRES WORK, SOMATOSENSORY PERCEPTUAL FUNCTIONS WERE LINKED TO PERCEPTUAL FUNCTIONS WITH PRAXIS ABILITIES, BUT SENSORY MODULATION WAS ASSOCIATED WITH AROUSAL, ACTIVITY LEVEL, AND EMOTION REGULATION.

PREVALENCE IN HYPERSENSITIVE CHILDREN INCREASED THROUGHOUT AYRES CAREER. SHE OBSERVED THAT SENSITIVITY TO AUDITORY, VISUAL, OLFATORY, AND GUSTATORY SENSATIONS IN THIS POPULATION COMMONLY APPEARS AS DISTRESS AND LACK OF HABITUATION TO AUDITORY AND TACTILE STIMULI. THESE CHILDREN LACKED THE ABILITY TO NOTICE OR REGISTER STIMULI THAT WOULD BE PROMINENT TO MOST OTHER CHILDREN. CHILDREN WHO HAVE POOR REGISTRATION OFTEN FAIL TO ADJUST OR ADAPT TO VISUAL OR AUDITORY STIMULI THAT MOST CHILDREN WOULD REACT AS THOUGH A STIMULUS NEVER OCCURRED. AYRES LAID THE GROUNDWORK WITH HER SUGGESTIONS OF POOR SENSORY MODULATION FOR OTHER RESEARCHERS WHO COULD EXAMINE MORE POTENTIAL NEUROPHYSIOLOGICAL KEYSTONES. RESEARCHERS FOUND THAT INDIVIDUALS WITH SENSORY HYPERREACTIVITY DISPLAY AN UNUSUALLY STRONG FIGHT OR FLIGHT RESPONSE IN THE EVENT OF UNPLEASANT SENSORY EXPERIENCES. IT HAS ALSO BEEN HYPOTHESIZED THAT THE ABILITY TO FILTER OUT ANY UNNECESSARY STIMULI IS A LARGE DEFICIT OF CHILDREN WITH POOR SENSORY MODULATION. MULTISENSORY EXPERIENCES ARE A PART OF EVERYDAY LIFE AND PLAY AN IMPORTANT ROLE IN DEVELOPMENT. MULTISENSORY INPUTS ENHANCE PROCESSING AND INTERPRETS SENSORY EVENTS IN TYPICAL DEVELOPING INDIVIDUALS, BUT WEAKER RELATED POTENTIALS ARE SHOWN IN INDIVIDUALS WITH POOR MODULATION. THEY STRUGGLE TO PROCESS AUDITORY AND SOMATOSENSORY STIMULI CAUSING THEM TO BECOME OVERWHELMED IN THE PRESENCES OF MULTIPLE MODALITY SENSATION SITUATIONS.

MANY ADVANCEMENTS HAVE BEEN MADE IN THE FIELD OF NEUROSCIENCE THAT DEVELOPED FROM AYRES' ASI THEORY. THE DEDICATED RESEARCH AYRES COMPLETED ALLOWS FOR AN EFFECTIVE UNDERSTANDING OF CHILDREN WITH LEARNING AND BEHAVIORAL DIFFICULTIES. TODAY'S SCIENTISTS CONTINUE TO CONFIRM AND CLARIFY AYRES WORK AND ARE ABLE TO ADD TO HER EFFORTS TO UNDERSTAND HUMAN CONDITION IN A MEANINGFUL WAY.



# LIERATURE REVIEW

TITLE: EYES OF THE SKIN: ARCHITECTURE AND THE SENSES

AUTHOR: JUHANI PALLASMAA

## INTRODUCTION

THE EYES OF THE SKIN BY JUHANI PALLASMAA IS A BOOK SHOWING THE CONNECTION BETWEEN OUR SENSES AND ARCHITECTURE. PALLASMAA DIRECTLY NOTES THAT OUR TACTILE SENSE IS ONE OF THE MOST PROMINENT AND THAT ALL THE SENSES, EVEN VISION, ARE AN EXTENSION OF THE TACTILE SENSE, OF SKIN TISSUE, MEANING ALL SENSORY EXPERIENCE ARE A MEANS OF FEELING, RELATING IT BACK TO THE SENSE OF TACTILITY. TOUCH LETS US EXPERIENCE THE WORLD THROUGH OUR OWN BODIES AND PALLASMAA BELIEVES THAT ARCHITECTURE IS ONE WAY TO DO THIS. THE ESSENCE OF DESIGNING ARCHITECTURE FOR THE SENSES DIRECTS OUR CONSCIOUSNESS BACK TO THE WORLD ALLOWING US TO FEEL A SENSE OF SELF AND BEING. ARCHITECTURE CAN ADDRESS ALL THE SENSES AND AS A DESIGNER, THE MENTAL TASK WHEN PLANNING A SPACE IS ACCOMMODATION AND INTEGRATION. AN ARCHITECTURAL WORK CAN OFFER PLEASURABLE SHAPES AND SURFACES CREATED FOR THE TOUCH OF THE EYE TO PLAY WITH THE OTHER SENSES. IT ALSO INCORPORATES PHYSICAL AND MENTAL STRUCTURES ALLOWING FOR OUR EXPERIENCE IN THE SPACE TO BE A STRONG COHERENT AND SIGNIFICANT ONE.

## SENSORY SYSTEMS

EVERY TOUCHING EXPERIENCE IN ARCHITECTURE IS MULTI-SENSORY. THE QUALITIES OF SPACE, MATTER AND SCALE ARE MEASURED EQUALLY BY THE EYE, EAR, NOSE, SKIN, TONGUE, SKELETON, AND MUSCLE. THEY ALL ARE STRENGTHENED BY THE EXISTENTIAL EXPERIENCE. INSTEAD OF THE FIVE CLASSICAL SENSES, ARCHITECTURE INCLUDES SEVERAL CATEGORIES OF SENSORY EXPERIENCE, THAT ALL INTERACT AND CONNECT WITH EACH OTHER. THE FIVE SENSES ARE NOT LOOKED AT AS THE TYPICAL FIVE DETACHED SENSES BUT AS FIVE SENSORY SYSTEMS: VISUAL SYSTEM, AUDITORY SYSTEM, TASTE-SMELL SYSTEM, BASIC-ORIENTING SYSTEM, AND HAPTIC SYSTEM. THIS IDEA SUGGESTS THAT WE USE NO LESS THAN ON AVERAGE TWELVE SENSES WHEN EXPERIENCING A SPACE. THE EYES WANT TO COLLABORATE WITH THE OTHER SENSES AND ALL THE SENSES INCLUDING VISION CAN BE AN EXTENSION OF TOUCH THUS DEFINING THE LINE BETWEEN THE SKIN AND THE ENVIRONMENT. RENE SPITZ, A PSYCHOANALYST, SAID "ALL PERCEPTION BEGINS IN THE ORAL CAVITY, WHICH PROVIDES A PATHWAY FROM INNER RECEPTION TO EXTERNAL PERCEPTION" (PALLASMAA, 2012). THUS, WHY A BEAUTIFULLY PREPARED BREAKFAST LOOKS MORE APPETIZING THAN A BOWL OF OATMEAL. THE SENSE OF TOUCH COULD BE THE UNCONSCIOUS SIDE OF VISION BECAUSE VISION REVEALS WHAT TOUCH ALREADY KNOWS.

## ACOUSTIC INTIMACY

THE SENSE OF SIGHT IMPLIES A STATE OF EXTERIOR EXPERIENCES, BUT SOUND CREATES AN EXTRAORDINARY INTERIOR EXPERIENCE. THE SOUND WITHIN AN ARCHITECTURAL STRUCTURE ARTICULATES THE EXPERIENCE AND UNDERSTANDING OF A SPACE. AUDITORY EXPERIENCES PROVIDE A TEMPORAL CONTINUUM IN WHICH VISUAL IMPRESSIONS ARE CREATED. EVERY ARCHITECTURAL BUILDING AND SPACE HAVE SPECIFIC CHARACTERISTICS THAT ADD OR TAKE AWAY FROM THE ACOUSTICAL SIGNIFICANCE. THE SOUND OF INTIMACY OR MONUMENTALITY, INVITATION OR REJECTION, HOSPITALITY, OR HOSTILITY. AN ECHO IN A SPACE IS AS MUCH UNDERSTOOD AND APPRECIATED AS IT IS THROUGH VISUAL SPACE, BUT ACOUSTIC PERCEPTION OFTEN REMAINS AS AN UNCONSCIOUS BACKGROUND EXPERIENCE.

## VISION, TOUCH AND CONCLUSION

THE HANDS ARE A COMPLICATED ORGANISM, THEY HAVE HISTORY, THEIR OWN CULTURE AND PARTICULAR BEAUTY, THEY ARE A SCULPTOR'S EYES, BUT THEY ARE ALSO ORGANS FOR THOUGHT. PALLASMAA CITES 18TH CENTURY IRISH PHILOSOPHER GEORGE BERKELEY WHO SAYS TOUCH IS DIRECTLY RELATED TO VISION AND THAT VISUAL APPREHENSION OF MATERIALS, DISTANCE AND SPATIAL DEPTH WOULD NOT BE POSSIBLE WITHOUT THE HAPTIC MEMORY. BERKLEY VIEWS THAT VISION NEEDS THE HELP OF TOUCH TO PROVIDE A SENSE OF STRENGTH AND RESISTANCE. THE LINE OF SIGHT ISOLATED FROM TOUCH HAS NOTHING TO DO WITH DISTANCE, AND THEREFORE HAS NOTHING TO DO WITH SPACE OR BODY. THE ONLY SENSE THAT IS ABLE TO ALLOW FOR THE SENSATION OF SPATIAL DEPTH IS TOUCH. OUR SKIN TRACES THE TEMPERATURE OF A SPACE WITH ABSOLUTE PRECISION. FOR EXAMPLE, THE WARMTH OF A SUNSPOT SHOWING THROUGH THE WINDOW OR THE COOL SHADE OF A TREE CAN ENHANCE THE EXPERIENCES OF SPACES AND PLACES.

SIGHT IS OUR DOMINANT SENSE. WE CONSTANTLY RELY ON IT AS WE STUDY AND CATEGORIZE OUR SURROUNDINGS. BY EXPERIENCING THE WORLD MAINLY THROUGH OUR EYES LEAVES US A DISTANT OBSERVER BETWEEN OURSELVES AND THE OBJECT BEING VIEWED. BY TOUCHING IT WE CONNECT WITH IT. OUR EYES GIVE US CONTROL, ALLOWING US TO KEEP THEM FROM VIEWING WHAT WE DO NOT WANT TO LOOK AT. THE EFFORTS TO DISTANCE OURSELVES FROM SOUND OR ODOR IS MORE DIFFICULT. AS HUMANS, WE SEEK SENSATIONS AND IF THERE ARE NONE, OUR MINDS, AND BODIES CREATE THEIR OWN TO FILL THE VOID, SOMETIMES WITH MEANINGLESS THOUGHTS. SCENTS, ACOUSTICS, TACTILE MATERIALS, FORMS, LIGHT, SHADOW, THE WEIGHT, AND PROPORTION OF THINGS, AS WELL AS THE OVERALL SPIRIT OF THE SPACE, OVERRULES PURE AESTHETICS.

# LIERATURE REVIEW

TITLE: SENSE OF PLACE; ARCHITECTURAL DESIGN FOR THE MULTISENSORY MIND  
AUTHOR: CHARLES SPENCE

## INTRODUCTION

THROUGH HISTORY, DESIGN IN ARCHITECTURE HAS BEEN CONTROLLED BY THE EYE AND THE SENSE OF SIGHT. THAT IS UNTIL RECENT YEARS WHEN ARCHITECTS HAVE STARTED DESIGNING WITH THE INCLUSION OF OTHER SENSES. THESE INCLUDE SOUND AND TOUCH WHICH RELATE TO THE PROPRIOCEPTION AND VESTIBULAR SYSTEMS, AS WELL AS SMELL AND EVEN TASTE. DESPITE THIS, THERE IS STILL VERY LITTLE KNOW ABOUT HOW A MULTISENSORY ENVIRONMENT EFFECTS THE HUMAN MIND. THIS ARTICLE, SENSE OF PLACE: ARCHITECTURAL DESIGN FOR THE MULTISENSORY MIND WRITTEN BY CHARLES SPENCE TAKES A DEEP LOOK INTO WHAT ROLE HUMAN SENSES PLAY IN THE PRACTICE OF ARCHITECTURAL DESIGN. THIS CAN BE DONE THROUGH THE PROCESS OF STUDYING ONE SENSE INDIVIDUALLY OR STUDYING ALL OF THEM AS A COLLECTIVE GROUP. THE GOAL OF UNDERSTANDING THESE CONCEPTS IS TO HOPEFULLY INCORPORATE THESE DESIGN STRATEGIES, INFLUENCED BY HUMAN SENSES, TO CREATE BUILDINGS AND SPACES THAT PROMOTE SOCIAL, COGNITIVE, AND EMOTIONAL DEVELOPMENT.

## MULTISENSORY IN SOCIETY

SPENCE EMPHASIZES THAT THE HUMAN POPULATION SPENDS AROUND 95% OF THEIR TIME INDOORS AND ARCHITECTURE HAS NOT HAD A GREAT TRACK RECORD OF SUPPORTING POSITIVE OUTLOOKS WITHIN THE SPACE. THE VAST MAJORITY OF ARCHITECTURE IS DESIGNED FOR THE EYE AND VISUAL BEAUTY BUT TENDS TO NEGLECT OTHER NON-VISUAL SENSES SUCH AS HEARING, SMELL, TOUCH AND TASTE. SCIENCE SHOWS THAT SOCIETY IS BEING HINDERED BY THIS WITH THINGS LIKE SICK-BUILDING SYNDROME (SBS) OR SEASONAL AFFECTIVE DISORDER (SAD). IF SOCIETY WANTS TO MOVE AWAY FROM THESE EFFECTS, THE PROCESS OF HOW A BUILDING AND ITS SPACES ARE DESIGNED WILL HAVE TO CHANGED. THE HEALTH AND WELL-BEING OF OCCUPANTS NEEDS TO BE TAKEN INTO CONSIDERATION AND HOW A MULTISENSORY ENVIRONMENT AND ATMOSPHERE AFFECT THEM. THERE ALSO NEEDS TO BE AN UNDERSTANDING ABOUT WE COGNITIVELY INTERPRET OR ATTRIBUTE OUR EXPERIENCES TO THE SOURCE THEY CAME FROM.

## SOUND IN A SPACE

THE SOUND OF A SPACE IS UNDOUBTEDLY IMPORTANT ACCORDING TO SPENCE. SOUND CAN PROVIDE CLUES AND HINTS TO THE IDENTITY OF A SPACE; IT PROPORTIONS AND EVEN ITS FUNCTION. SPENCE INDICATES THAT ARCHITECTS ARE FOCUSING MORE ON HOW TO AVOID OR MINIMIZE UNWANTED SOUNDS IN ARCHITECTURAL DESIGN RATHER THAN FINDING SOLUTIONS TO BENEFIT THE SPACE THROUGH POSITIVE SENSORY DESIGN. THE USE OF NATURAL SOUNDS SUCH AS RUNNING WATER, HAS BEEN RESEARCHED AND PROVEN TO HELP MASK DISTRACTING SOUNDS. SPENCE POINTS OUT THE INTERESTING FACT THAT, “IT TURNS OUT THAT PEOPLE’S BELIEF ABOUT THE SOURCE OF MASKING SOUNDS, ESPECIALLY IN THE CASE OF AMBIGUOUS NOISE, CAN SOMETIMES INFLUENCE HOW MUCH RELIEF THEY PROVIDE” (SPENCE, 2020). INDIVIDUALS SHOW GREATER CONCENTRATION AND FOCUS WHEN LISTENING TO NATURE’S SOUNDS VERSUS SOMETHING LIKE INDUSTRIAL SOUNDS. RESEARCH EXPERIMENTS HAVE BEEN CONDUCTED TO BACK UP THIS INFORMATION.

## TACTILE MATERIALS

DESPITE THE FACT THAT THE FIRST POINT OF PHYSICAL CONTACT WITH A BUILDING IS WHEN WE ENTER, THE TACTILE ENVIRONMENT IS OFTEN IGNORED BY ARCHITECTS. SPENCE REMINDS US THAT WHEN WE ENTER A BUILDING, WE MAKE CONTACT WITH FLOORING, HANDRAILS, ELEVATOR BUTTONS, FURNITURE, ETC. THE TACTILE EXPERIENCE IS PALPABLE: TOUCHING THE GRAINS OF WOOD OR TEXTURED PATTERN OF BRICK. FEELING THE VEINED MARBLE OR THE COLD SURFACES OF STEEL INTEGRATE BOTH TEXTURE AND TEMPERATURE, TWO KEY COMPONENTS OF TACTILE SENSATION. THE OCCUPANT’S IMAGINATION AND MENTAL STATE CAN BE STIMULATED IF MATERIAL AND TACTILE SENSATIONS ARE USED IN A CAREFUL AND EFFECTIVE WAY. SPENCE ASKS THE QUESTION, “WHAT WOULD IT FEEL LIKE TO REACH OUT AND TOUCH OR CARESS AN INTRIGUING SURFACE” (SPENCE, 2020)? TOUCH IS RELATED TO VISION AND THE WAY VIEW THINGS CAN CHANGE THE WAY WE READ OUR TACTILE TOUCH OF THEM. MATERIALS SUCH AS STONE, BRICK AND WOOD ALLOW FOR AN UNDERSTANDING OF THE MATERIALS ESSENCE AND FEEL, BUT IN RECENT YEARS WITH THE DEVELOPMENT OF MATERIALS LIKE GLASS, ENAMELED METAL AND SYNTHETIC MATERIALS, THAT UNDERSTANDING IS LOST, AND THE MATERIALS HAVE NOTHING IMPORTANT TO CONVEY. WHETHER A MATERIAL IS TOUCHED DIRECTLY OR NOT, THE TACTILE ELEMENTS WITHIN AN ARCHITECTURAL DESIGN CAN FUNDAMENTALLY CHANGE THE OVERALL MULTISENSORY EXPERIENCE.

## OLFACTORY SENSE

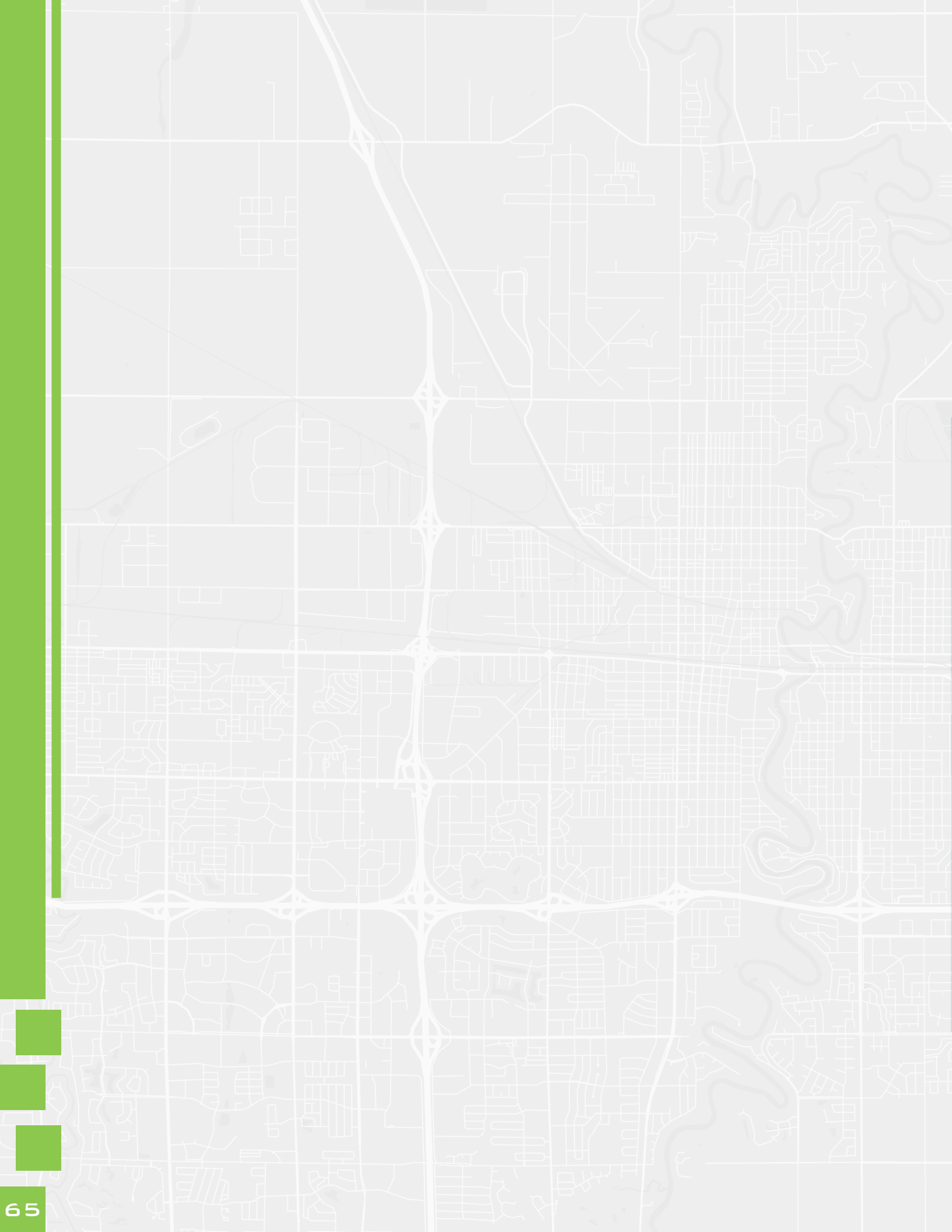
CHEMICAL SENSES IN ARCHITECTURE SEEM ODD BUT CAN BE VERY PREVALENT. SCENT AND TASTE CAN PLAY A BIG ROLE IN THE DEVELOPMENT OF A MULTISENSORY BUILDING. DESIGNING WITH CONSIDERATIONS FOR THE OLFACTORY SENSE IN MIND, ARCHITECTS ARE OFTEN FOCUSED IN ELIMINATING THE NEGATIVE ODORS SUCH AS DUST, MOLD, CLEANING PRODUCTS AND WOOD TO NAME A FEW. THIS IS PERHAPS NO COINCIDENCE, GIVEN THAT IT TENDS TO BE THE BAD ODORS, RATHER THAN THE NEUTRAL OR POSITIVE ONES, THAT HAVE GENERALLY PROVED MOST EFFECTIVE IN IMMERSING US IN AN EXPERIENCE. THE PROCESS OF ELIMINATING NEGATIVE EXISTING ORDERS IS OFTEN THE IDEA RATHER THAN THE INTRODUCTION OF A POSITIVE. IT IS MUCH EASIER TO GET RID OF A SMELL IF THE SMELL IS NOT BAD TO START OFF WITH.

## CONCLUSION

ONLY A VERY SMALL FRAGMENT OF RESEARCH HAS BEEN DONE ON THE TOPICS DIRECTLY RELATED TO MULTISENSORY EXPERIENCES IN ARCHITECTURE. DESPITE THIS, THIS RESEARCH HAS SHOWN THAT THE SENSES OF THE HUMAN BODY CAN BE STIMULATED AND MANIPULATED WITH THE PRESENCE OF ARCHITECTURAL ELEMENTS TO ENHANCE A OCCUPANT'S MULTISENSORY EXPERIENCE WITHIN AN SPACE.



# THE PROGRAM





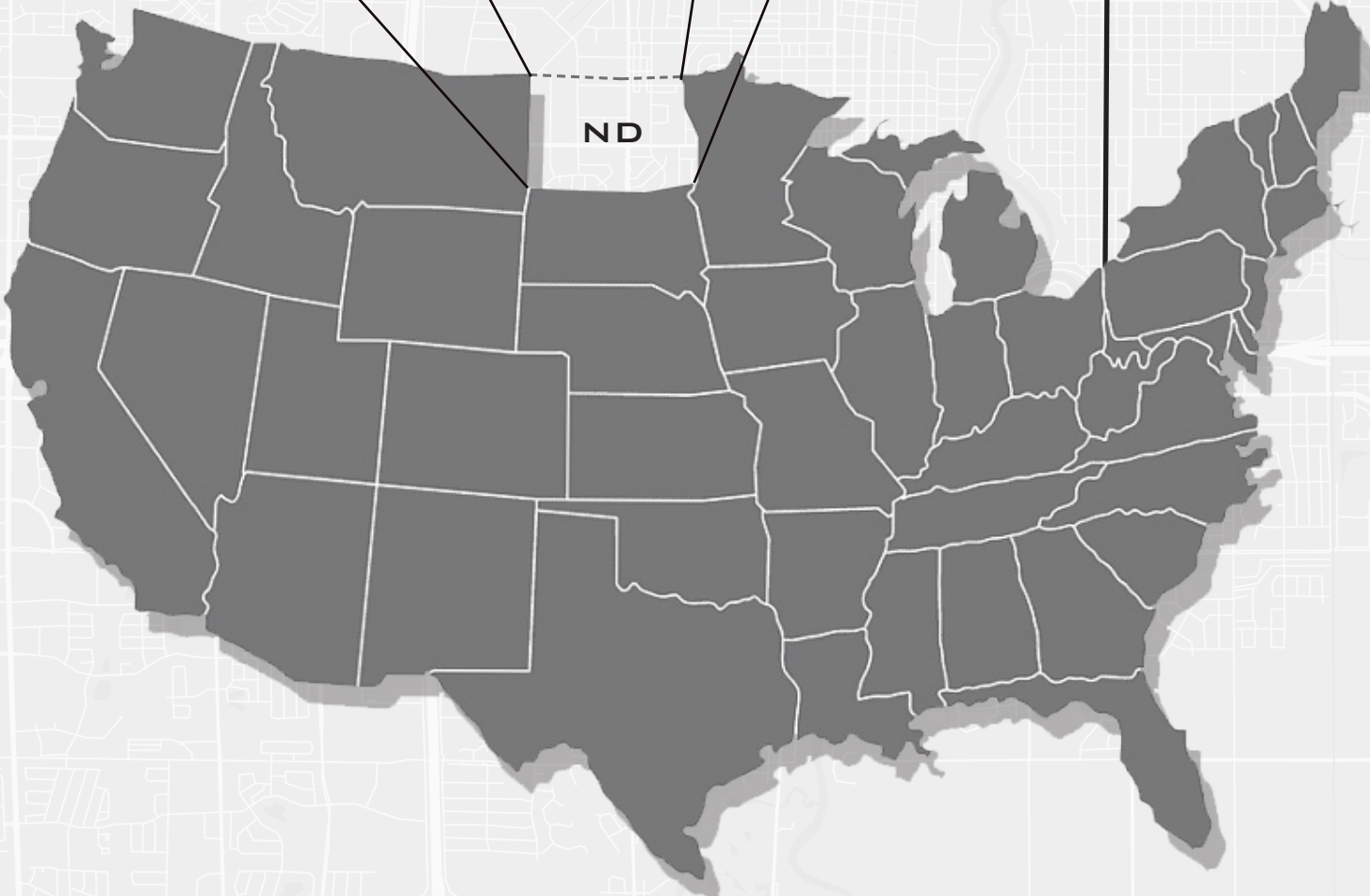
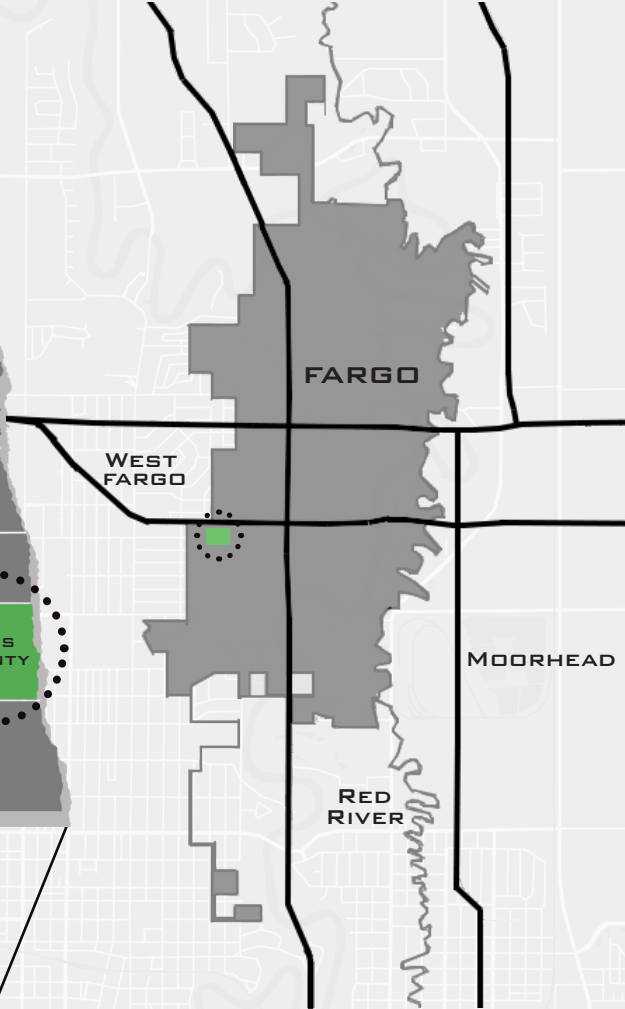
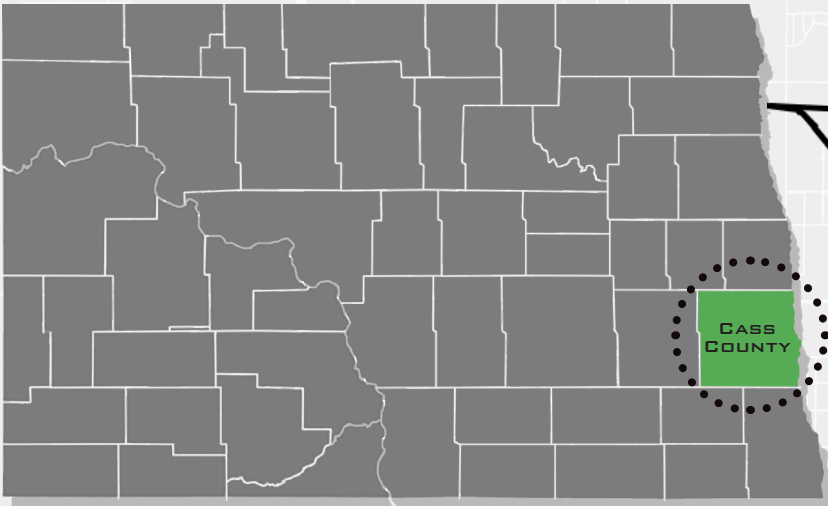
# SITE ANALYSIS



FIGURE 4.1

FARGO, ND

CITY INFORMATION



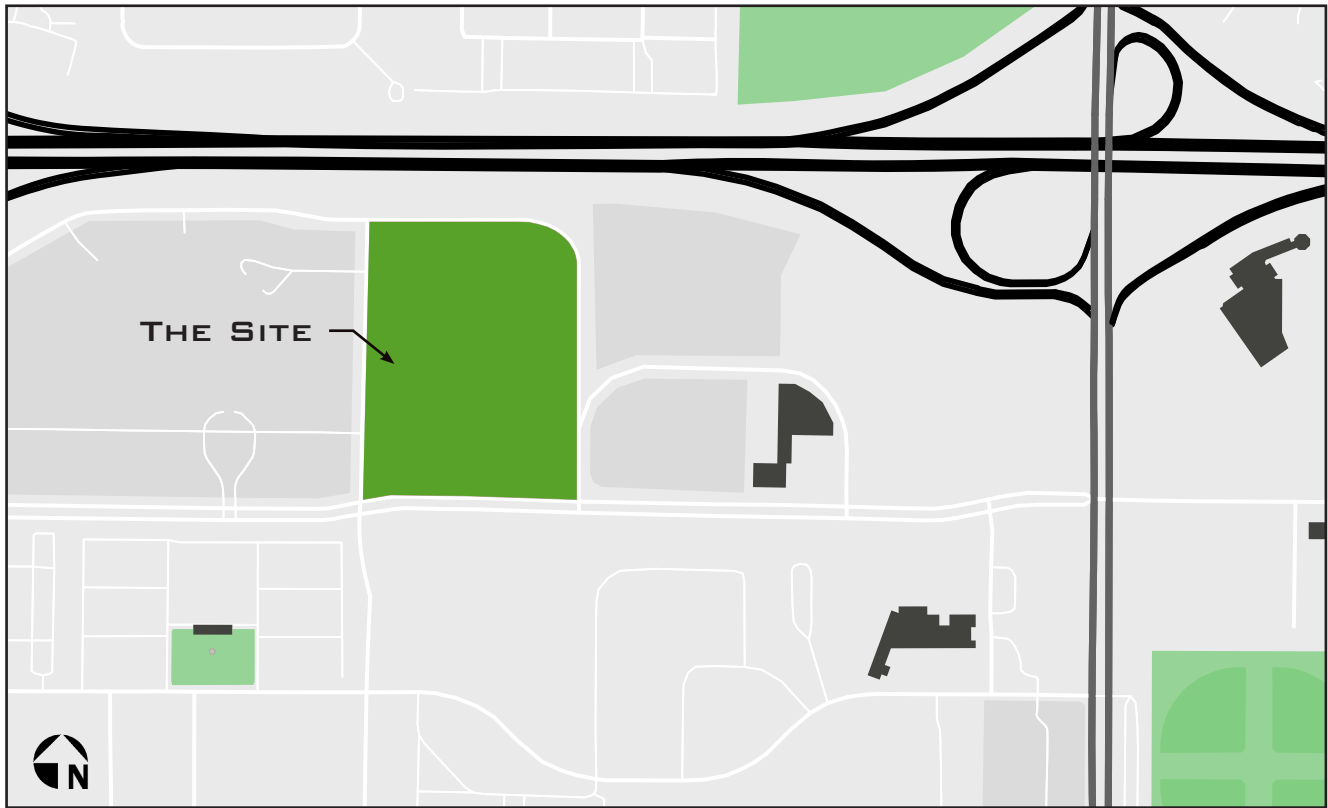


FIGURE 45

## DEMOGRAPHICS

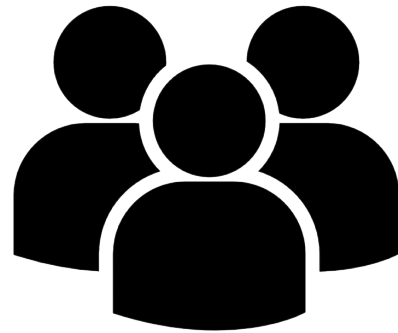
POPULATION | 762,062

MALE | 51.2%

FEMALE | 48.8%

AVERAGE AGE | 35.5

POPULATION DENSITY PER SQ. MI | 11



AVERAGE HOUSEHOLD INCOME | \$64,577

AVERAGE PER CAPITA INCOME | \$36,611

AVERAGE HOUSE VALUE | \$205,400

# SITE INFORMATION

2251 49TH ST SOUTH FARGO, ND 58104

OWNER | SANFORD NORTH

LAND USE | COMMERCIAL

PROPERTY TYPE | VACANT LAND

PARCEL ID | 01-8483-00100-000

LAND ASSESSMENT VALUE | \$6,740,000

LAND AREA | 68,994.8 SQ. MI

ELEVATION | 906 FT

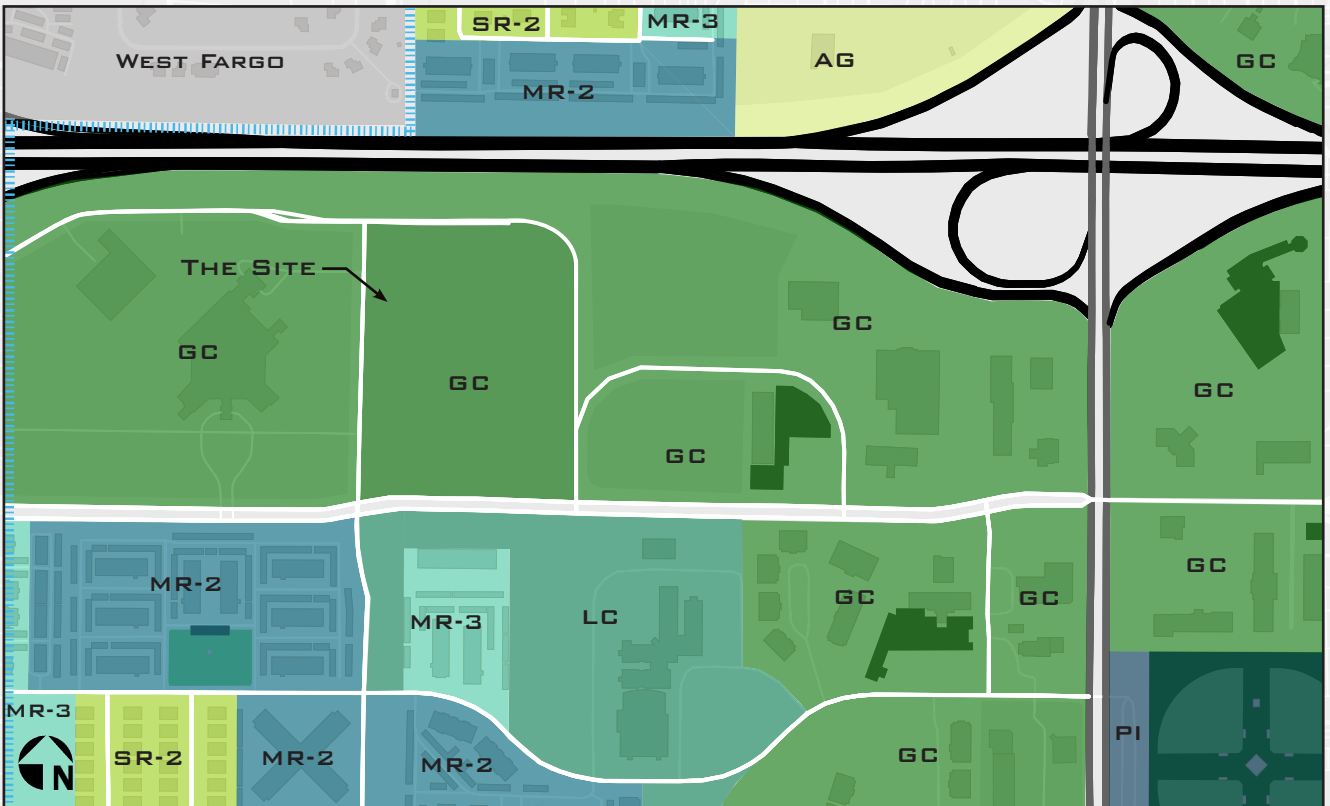


FIGURE 46

- GC-GENERAL COMMERCIAL
- MR-2 - MULTIPLE DWELLING
- SR-2 - SINGLE DWELLING
- AG-AGRICULTURE
- LC- LIMITED COMMERCIAL
- MR-3 - MULTIPLE DWELLING
- PI- PUBLIC INSTITUTIONAL
- WEST FARGO

**GC OR GENERAL COMMERCIAL DISTRICT IS THE MAIN ZONING DEVELOPMENT TYPE IN THE AREA SURROUNDING THE SITE. GC IS PRIMARILY INTENDED TO ACCOMMODATE COMMERCIAL USES SUCH AS RETAIL, SERVICE, OFFICE, AND COMMERCIAL USES. THE SITE LANDS IN THE GC DISTRICT, ALLOWING FOR THE TYPE OF STRUCTURE BEING DESIGNED TO ADEQUATELY FIT WITHIN CODE LIMITS. THE MULTI-USE, RECREATION AND WELLNESS CENTER WILL FIT IN PERFECTLY WITH THE SURROUNDING STRUCTURES AND DEVELOPING AREA. ACCORDING TO THE CITY OF FARGO'S MUNICIPAL CODE OF ORDINANCES, THE GC DISTRICT HAS CERTAIN CODES AND STANDARDS THAT HAVE TO BE FOLLOWED.**

**USE REGULATIONS INDICATE HOW THE SITE MIGHT BE USED AND WHAT CATEGORY TYPE MAY BE DESIGNED ON THE SITE. IT ALSO INDICATES WHETHER A CATEGORY CAN BE USED IN THAT ZONING DISTRICT IF IT HAS TO FOLLOW SPECIFIC CONDITIONS OR IF IT CANNOT BE USED AT ALL. ACCORDING TO FARGO'S MUNICIPAL CODE, THE SELECTED SITE FOR THIS PROJECT FALLS UNDER GENERAL COMMERCIAL (GC) AS THE ZONING DISTRICT AND RECREATION AND ENTERTAINMENT, OUTDOOR FOR THE USE CATEGORY. WHEN CROSS REFERENCED, THE LETTER "P" IS INDICATED. THIS MEANS USES PERMITTED BY-RIGHT.**

## DIMENSIONAL STANDARDS

Dimensional Standard					
	GO	LC	DMU	GC	
Minimum Lot Size					
Minimum Setbacks(Ft.)					
Front	20	10	0	20	2
Interior Side	5	5	0	5 [1]	1
Street Side	20	10	0	20	2
Rear	15	15	0	15	2
Watercourse Setback	[3]	[3]	[3]	[3]	0
Maximum Building Coverage (Pct. of Lot)	65	55	100	85	8
Maximum Height (Ft.)	60	35/60 [2]	None	None	7

**FIGURE 47**

## CONTEXT

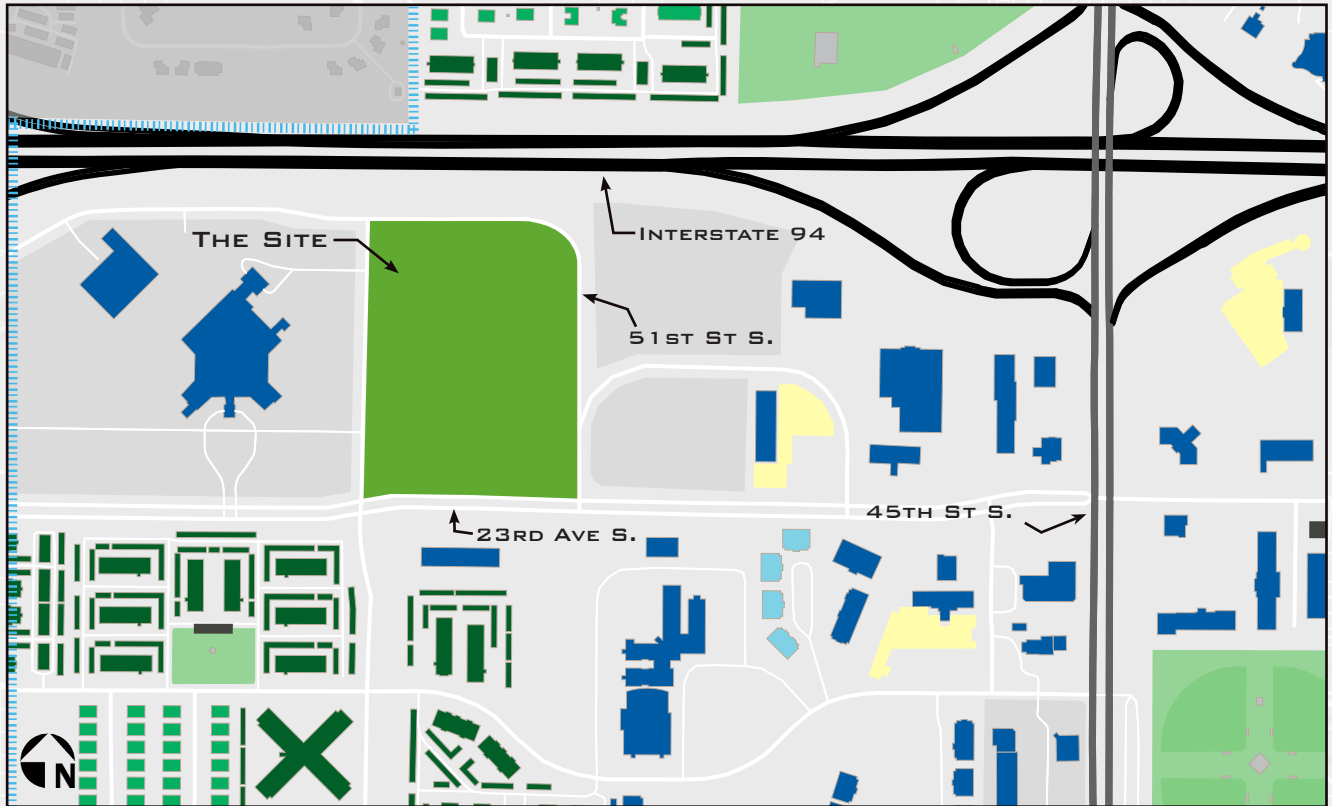


FIGURE 48



SURROUNDING THE SITE IS MOSTLY COMMERCIAL AND RESIDENTIAL CONTEXT. MOST OF THE COMMERCIAL IS TO THE EAST OF THE SITE, CONSISTING OF MULTIPLE HOTELS, RESTAURANTS, AND RETAIL STORES. TO THE NORTH AND SOUTH OF THE SITE IS WHERE THE MAJORITY OF THE RESIDENTIAL BUILDING ARE. THERE ARE A MULTIPLE NUMBER OF LARGE APARTMENT BUILDING BUT ALSO SOME SINGLE HOME RESIDENTS. THE SITE IS INCASED IN A WAY BY THREE MAJOR ROADWAYS, I-94, 45TH ST. AND VETERANS BLVD. (NOT SHOWN ABOVE). THE AREA IS ALWAYS BUSY WITH PEOPLE TO IT HIGH DENSITY OF COMMERCIAL AND RESIDENTIAL PROPERTIES.





TO THE DIRECT WEST OF THE SITE IS SANFORD MEDICAL CENTER. THIS IS NORTH DAKOTA'S NEWEST AND LARGEST MEDICAL CENTER. IT SERVES AS THE HUB FOR REGIONAL HEALTH WITH 60% OF PATIENTS COMING FROM OUTSIDE THE METRO AREA. IT WAS COMPLETED IN 2017.



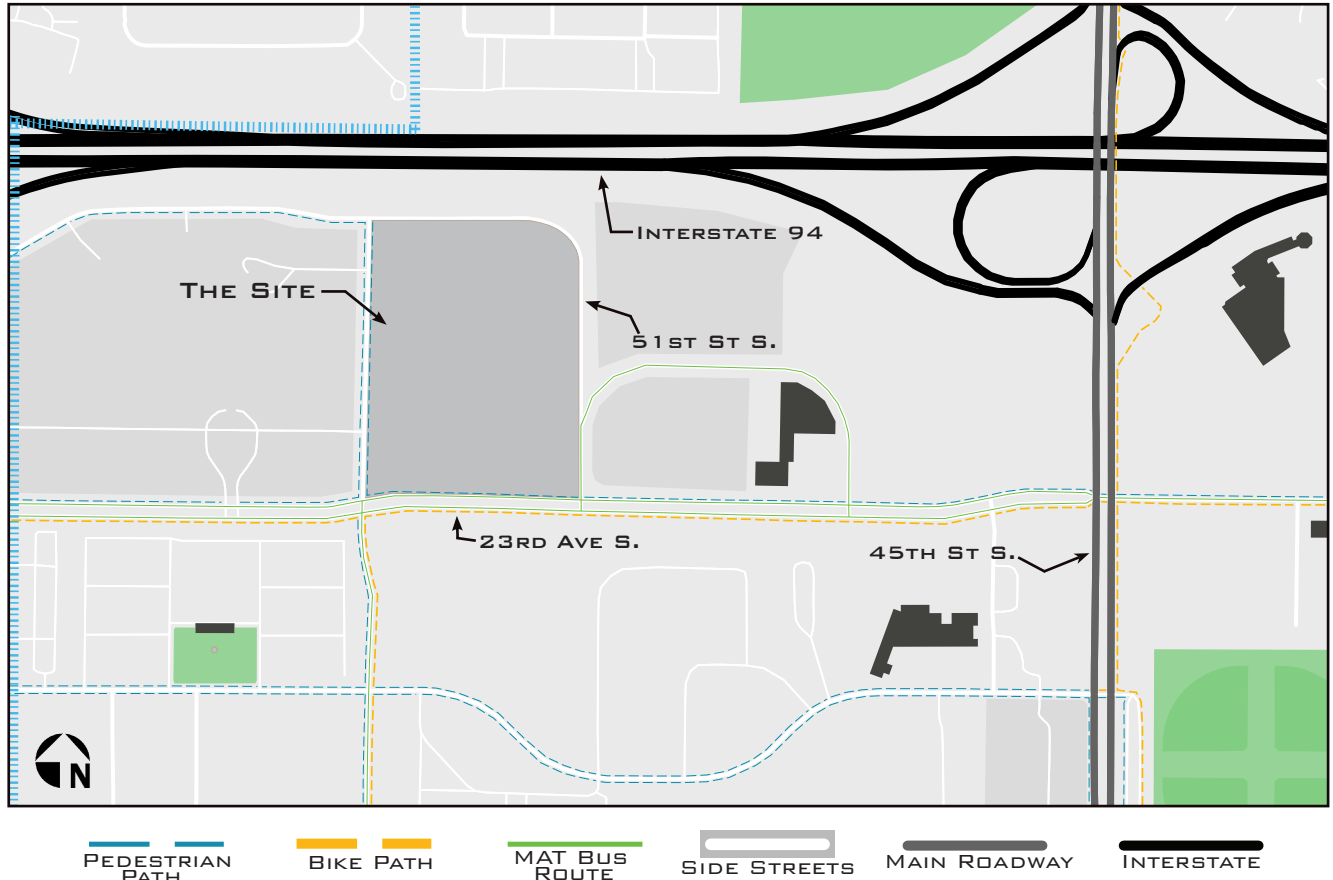
THE SURROUNDING AREA IS MOSTLY COMMERCIAL WITH HOTELS, RESTAURANTS, AND BUSINESSES. THE PHOTO SHOWS FOUR POINTS HOTEL, WHICH IS THE MAIN HOTEL FOR THE NEARBY SANFORD MEDICAL CENTER. THE HOTEL IS LOCATED ACROSS THE ROAD ON THE SOUTH SIDE OF THE SITE.



TO THE EAST OF THE SITE, THERE IS ANOTHER EMPTY LOT FOLLOWED BY MORE COMMERCIAL BUILDINGS. SHOWN IN THE PHOTO IS THE RONALD McDONALD HOUSE, NORTHERN TOOL + EQUIPMENT AND HAMPTON INN AND SUITS.

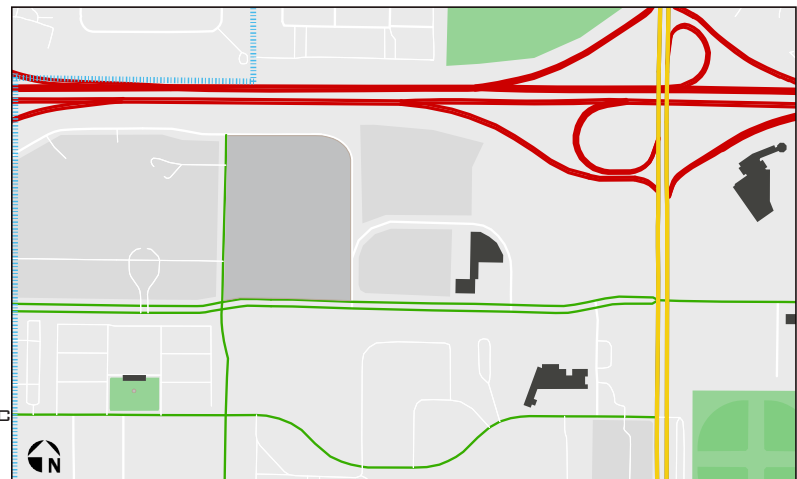
FIGURES 49-51

# TRAFFIC CIRCULATION



THERE ARE MANY WAYS TO ACCESS THE SITE, WITH THE MAIN BEING BY MOTORIZED VEHICLE. THE MAIN ENTRANCE WILL ALLOW ACCESS TO CARS BY USING 23RD AVE S. A SECOND, EASY WAY, IS TO USE MATBUS TRANSPORTATION SYSTEM. THIS IS ONE OF FARGO'S PUBLIC TRANSPORTATION SYSTEMS AND TICKETING INFORMATION CAN BE FOUND ON THE MATBUS WEBSITE. THERE ARE A FEW ROUTS THAT STOP VERY CLOSE TO THE SITE. LASTLY, THERE ARE MULTIPLE BIKING AND WALKING PATHS AROUND THE SITE, MAKING FOR EASY ACCESS MY FOOT OR BIKE.

I-94 CARRIES THE HEAVIEST TRAFFIC FLOW ON A DAILY BASIS. WITH 45TH BEING A MAJOR ROADWAY CONNECTING NORTH AND SOUTH FARGO, THE TRAFFIC FLOW IS AVERAGE. THE ROADS SURROUNDING THE SITE HAVE LIGHT TRAFFIC.



FIGURES 52-53





THE STREET TO THE WEST OF THE SITE, SEPARATES THE HOSPITAL AND THE SITE. ITS 51ST ST S. AND THE MAJORITY OF THE TRAFFIC THAT USES THIS ROAD ARE VEHICLES GOING TO AND FROM THE HOSPITAL. IT IS ALSO THE MAIN ROADWAY FOR AMBULANCES TO GET TO THE EMERGENCY BAY.



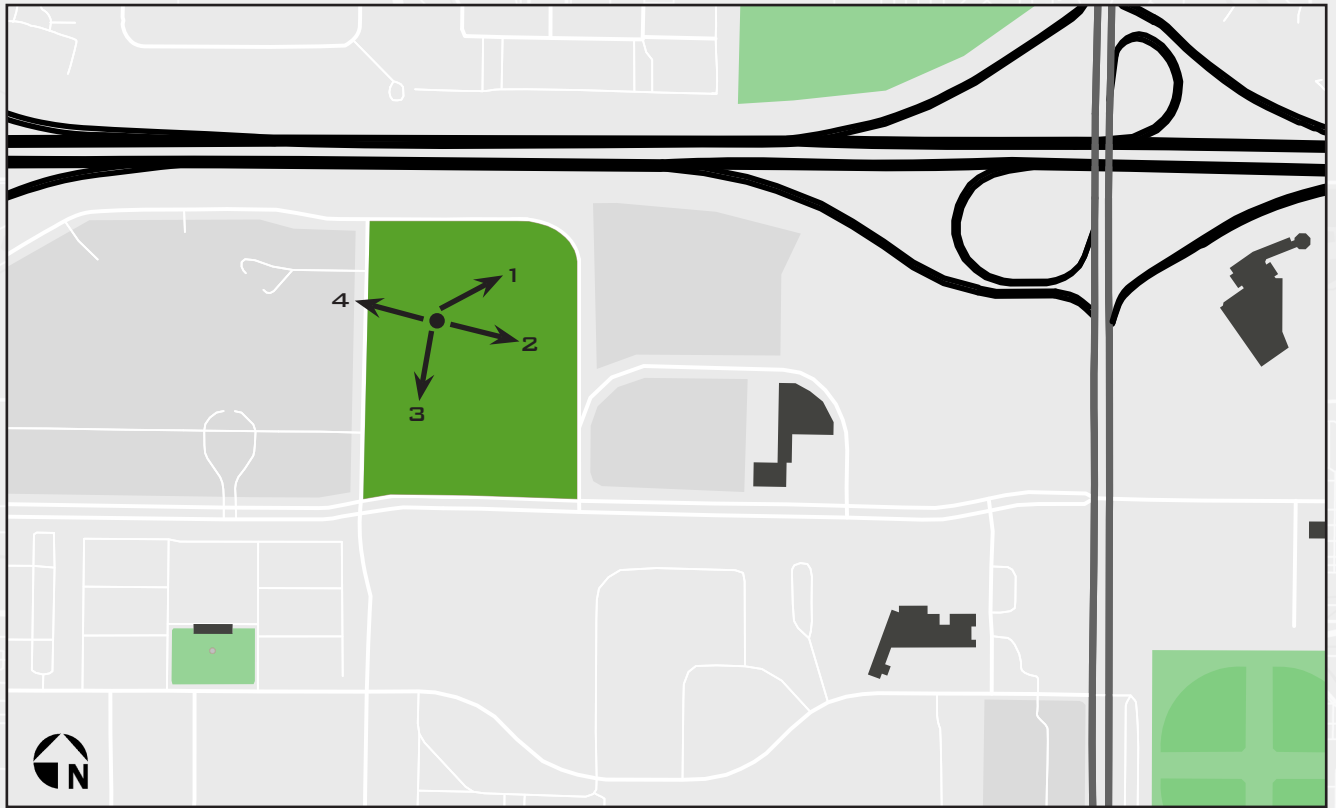
MODERATE TO HEAVY TRAFFIC OCCURS ON 23RD AVE S. LOCATED TO THE SOUTH OF THE SITE. IT IS A MAJOR ROADWAY THAT CONNECT 45TH ST AND VETERANS BLVD. PEOPLE OFTEN USE IT AS A SHORTCUT INSTEAD OF USING THE INTERSTATE. THERE IS NO STOPLIGHT ALONG IT, SO IT PROVIDES A FAST AND EFFICIENT ROUTE.



THE I-94 INTERSTATE IS LOCATED TO THE NORTH OF THE SITE. RUNNING NORTH TO SOUTH, IT CONNECTS WEST FARGO AND MOORHEAD, MN. THE INTERSTATE IS MANY PEOPLE'S MAIN TRANSPORTATION ROUTE TO WORK. IT IS ALSO A MAIN ROUTE FOR A GREAT NUMBER OF TRUCKERS DRIVING ACROSS THE STATE.

FIGURES 54-56

## VIEWS



THIS PHOTO TAKEN FROM THE NORTHWEST CORNER OF THE SITE SHOWS THE VIEW TO THE NORTH-EAST TOWARDS THE I-94 INTER-STATE. THE VIEW SHOWS APARTMENT BUILDINGS ACROSS THE BUSY ROAD AND SOME ELEVATION INCREASES WITH SMALL HILLS AT THE BACK OF THE SITE.



FIGURES 57-58





THIS PHOTO TAKEN FROM THE NORTHWEST CORNER OF THE SITE SHOWS THE VIEW TO THE SOUTHEAST TOWARDS 45TH ST. THERE IS NOT MUCH ELEVATION CHANGE AND THE MAJORITY OF THE SITE IS OPEN GRASS LAND MAKING FOR EASY BUILDING.



THIS PHOTO TAKEN FROM THE NORTHWEST CORNER OF THE SITE SHOWS THE VIEW TO THE SOUTH TOWARDS 23RD AVE S. THE VIEW SHOWS THE LOWEST ELEVATION POINT OF THE SITE AND A POWERLINE OBSTRUCTION THAT WILL NEED TO BE TAKEN INTO CONSIDERATION WHEN BUILDING.



THIS PHOTO TAKEN FROM THE NORTHWEST CORNER OF THE SITE SHOWS THE VIEW TO THE WEST TOWARDS VETERANS BLVD. AND THE SANFORD HOSPITAL. THIS ALSO SHOWS THE LOW ELEVATION POINT OF THE SITE, A CULVERT, AS WELL AS THE POWER LINE, BOTH OF WHICH ARE TO BE PROPERLY ADDRESSED BEFORE THE BUILDING PROCESS STARTS.

FIGURES 59-61

# ANALYSIS MAP



SUN PATH

SUMMER WINDS

WINTER WINDS

TREES

NOISE LOCATION

FARGO CITY LIMITS

FIGURE 62





FIGURE 63

**CLIMATE**

**WIND PATTERNS**

**SHADE + SHADOW**

**SUN PATH**

**NOISE**

**TOPOGRAPHY + SOIL**

**VEGETATION**

**WILDLIFE**

# CLIMATE

## AVERAGE ANNUAL WEATHER

### JANUARY

HIGH | 19 DEGREES  
LOW | 3 DEGREES

### JULY

HIGH | 83 DEGREES  
LOW | 61 DEGREES

AVERAGE ANNUAL RAINFALL | 24 INCHES

AVERAGE ANNUAL SNOWFALL | 49 INCHES

AVERAGE ANNUAL PRECIPITATION | 99 DAYS

AVERAGE ANNUAL DAYS OF SUNSHINE | 200 DAYS

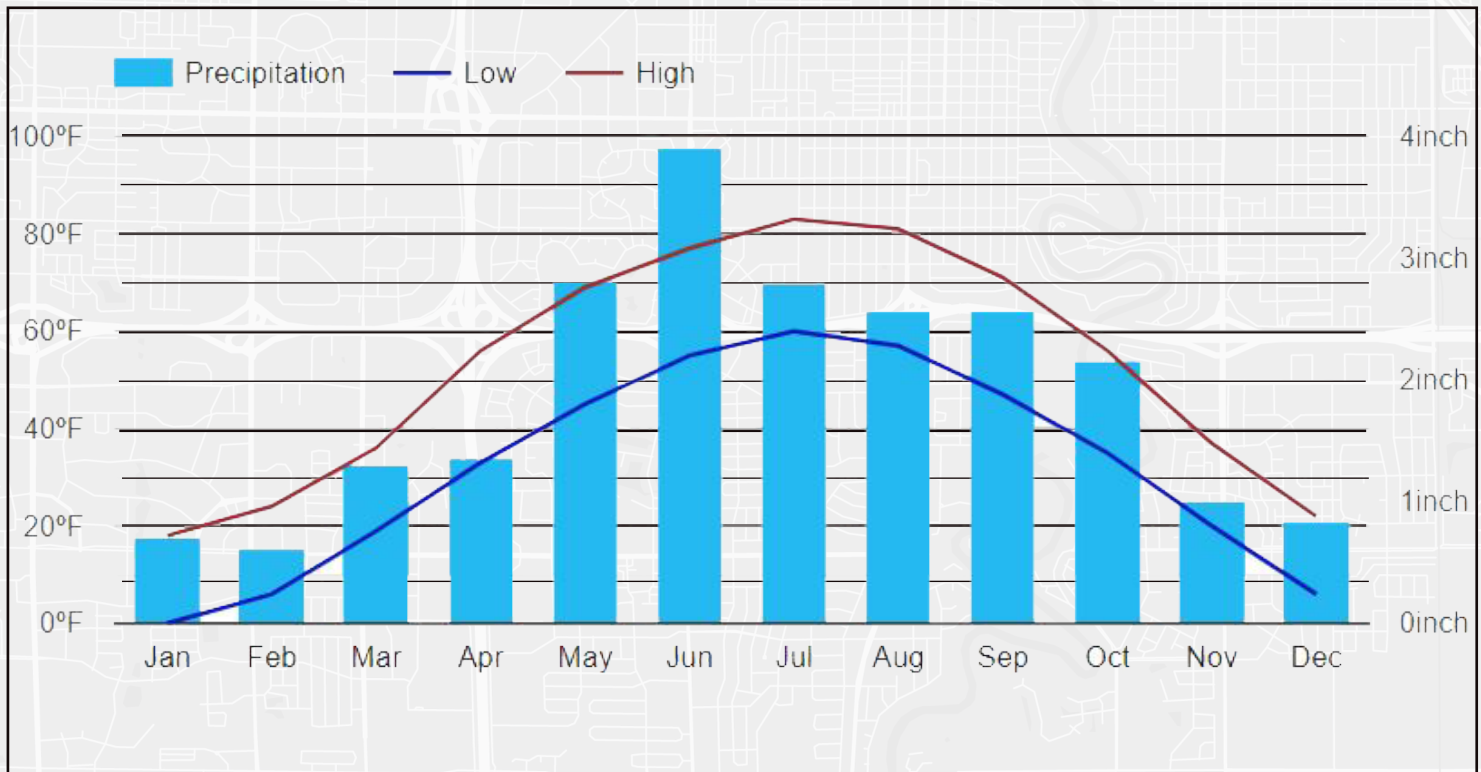
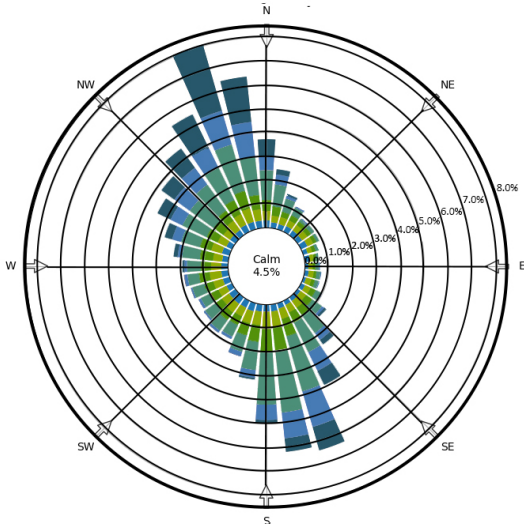


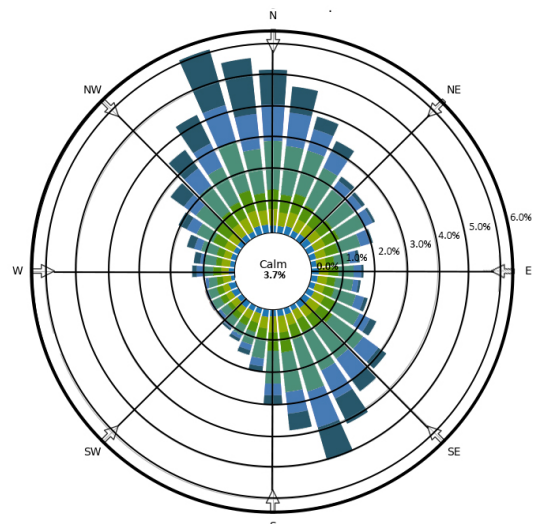
FIGURE 64

# WIND PATTERNS

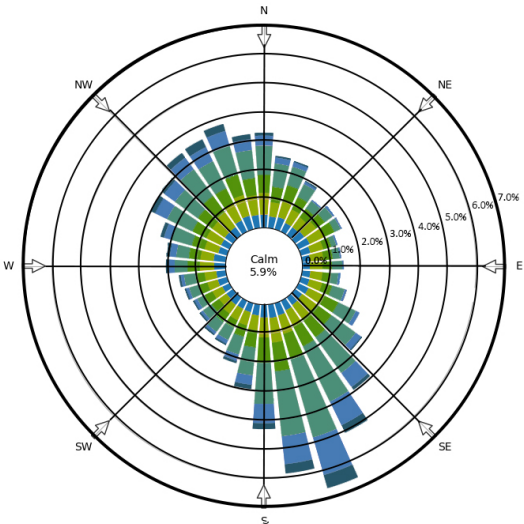
WINTER WINDS | JANUARY



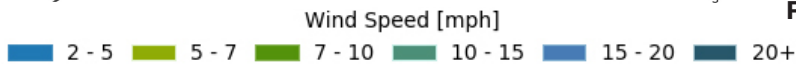
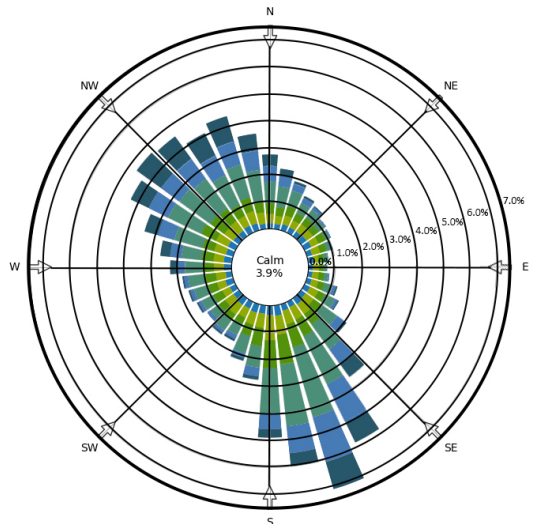
SPRING WINDS | APRIL



SUMMER WINDS | JULY



FALL WINDS | OCTOBER



FIGURES 65-68

IN FARGO, LIKE MOST OTHER CLIMATE DATA, THE AVERAGE HOURLY WIND SPEED EXPERIENCES SIGNIFICANT SEASONAL VARIATION DEPENDING ON THE SEASONAL TIME OF YEAR. THE WINDIEST TIME OF YEAR, SEPTEMBER TO MAY, LASTS ABOUT 8.5 MONTHS WITH AVERAGE WIND SPEEDS OVER 11 MILES PER HOUR. THE CALMER TIME OF YEAR, MAY TO SEPTEMBER, LASTS ABOUT 3.5 MONTHS WITH AVERAGE WINDSPEEDS 9 MILES PER HOUR OF LOWER. FROM MAY TO NOVEMBER, WINDS GENERALLY COME FROM THE SOUTH. FROM NOVEMBER TO MAY, WINDS GENERALLY COME FROM THE NORTH. IN FARGO'S WINTER SEASON, THE WIND ALSO HAS A MAJOR EFFECT ON THE WIND CHILL. OFTEN THE WIND CHILL REACHES BELOW ZERO, SINCE TEMPERATURES GET SO LOW IN THE AREA. THIS BECOMES A VERY DANGEROUS SITUATIONS FOR LOCAL RESIDENCE.

# SHADE + SHADOW

SPRING EQUINOX | MARCH 20



SUMMER SOLSTICE | JUNE 20

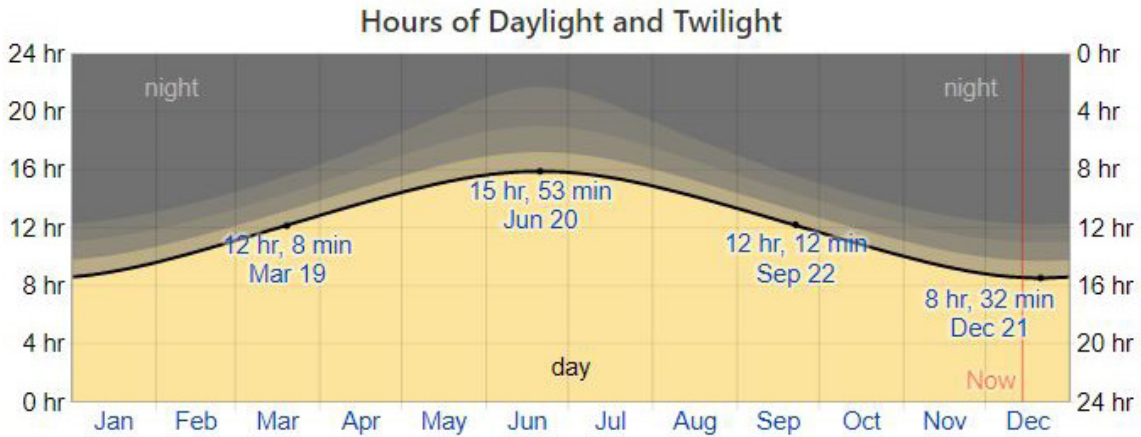




FALL EQUINOX | SEPTEMBER 22

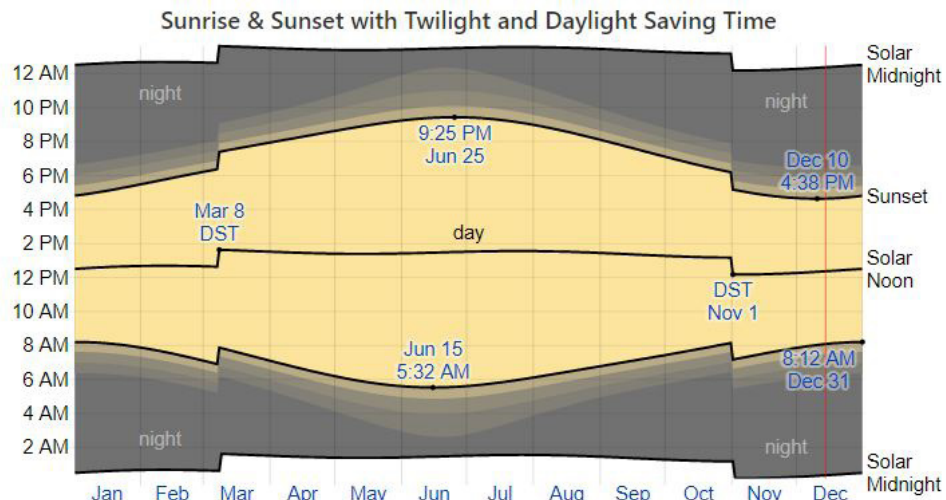
WINTER SOLSTICE | DECEMBER 21





The number of hours during which the Sun is visible (black line). From bottom (most yellow) to top (most gray), the color bands indicate: full daylight, twilight (civil, nautical, and astronomical), and full night.

IN FARGO, THE NUMBER OF DAYLIGHT HOURS VARIES SIGNIFICANTLY DEPENDING ON THE TIME OF YEAR. THE SHORTEST DAY OF THE YEAR IS ALMOST ALWAYS DECEMBER 21ST WITH AN AVERAGE OF 8 HOURS, 20 MINUTES OF DAYLIGHT. THE LONGEST DAY OF THE YEAR IS USUALLY JUNE 20TH WITH AN AVERAGE OF 15 HOURS, 50 MINUTES OF DAYLIGHT. SINCE THERE IS SUCH A DRASTIC CHANGE IN DAYLIGHT HOURS BETWEEN THE SEASONS, DAYLIGHT SAVINGS IS USED IN FARGO TO PROVIDE MORE ACCURATE DAYLIGHT DURING THE WINTER AND SUMMER TIMES. DURING 2020 DAYLIGHT SAVING WAS OBSERVED IN FARGO STARTING MARCH 8TH AND ENDED NOVEMBER 1ST, LASTING A LITTLE LESS THAN 8 MONTHS. THIS MEANS THAT DURING THE WINTER MONTHS (NOVEMBER-FEBRUARY), IT STAYS DARKER LONGER IN THE MORNINGS AND IT STAYS LIGHTER OUT LONGER IN THE EVENINGS. THE GRAPHICS ABOVE AND BELOW DEMONSTRATE THIS CONCEPT.



The solar day over the course of the year 2020. From bottom to top, the black lines are the previous solar midnight, sunrise, solar noon, sunset, and the next solar midnight. The day, twilights (civil, nautical, and astronomical), and night are indicated by the color bands from yellow to gray. The transitions to and from daylight saving time are indicated by the 'DST' labels.





THE SITE IS LOCATED NEXT TO ONE OF THE BIGGEST EMERGENCY HOSPITALS IN THE MIDWEST. THE ROADWAYS DIRECTLY TO THE SOUTH AND WEST OF THE SITE WILL GET A LOT OF NOISE NOT ONLY FROM HEAVY TRAFFIC FLOW BUT ALSO FROM FREQUENT AMBULANCES ARRIVING AND LEAVING FROM THE HOSPITAL. THE SIRENS WILL BE THE MAIN NOISE FACTOR.



SINCE THE HOSPITAL IS BUILT FOR LARGE EMERGENCY'S AND TRAUMAS, THEY HAVE A HELICOPTER LANDING PAD FOR EASY PATIENT DELIVERY IF NEEDED. THE LANDING AND TAKING OFF OF THE HELICOPTER WILL BE A MAJOR NOISE DISTURBANCE.



ANOTHER NOISE FACTOR IS THE INTERSTATE LOCATED TO THE NORTH OF THE SITE. THERE IS OFTEN HEAVY TRAFFIC FLOW DURING THE DAY AND INCREASES DURING RUSH HOURS. IT IS A MAIN ROADWAY FOR MANY GOING TO WORK AS WELL AS MANY TRUCKERS, SO THE SOUND OF TRAFFIC CAN INCREASE TO HIGH LEVELS.

FIGURES 83-85

## TOPOGRAPHY + SOIL

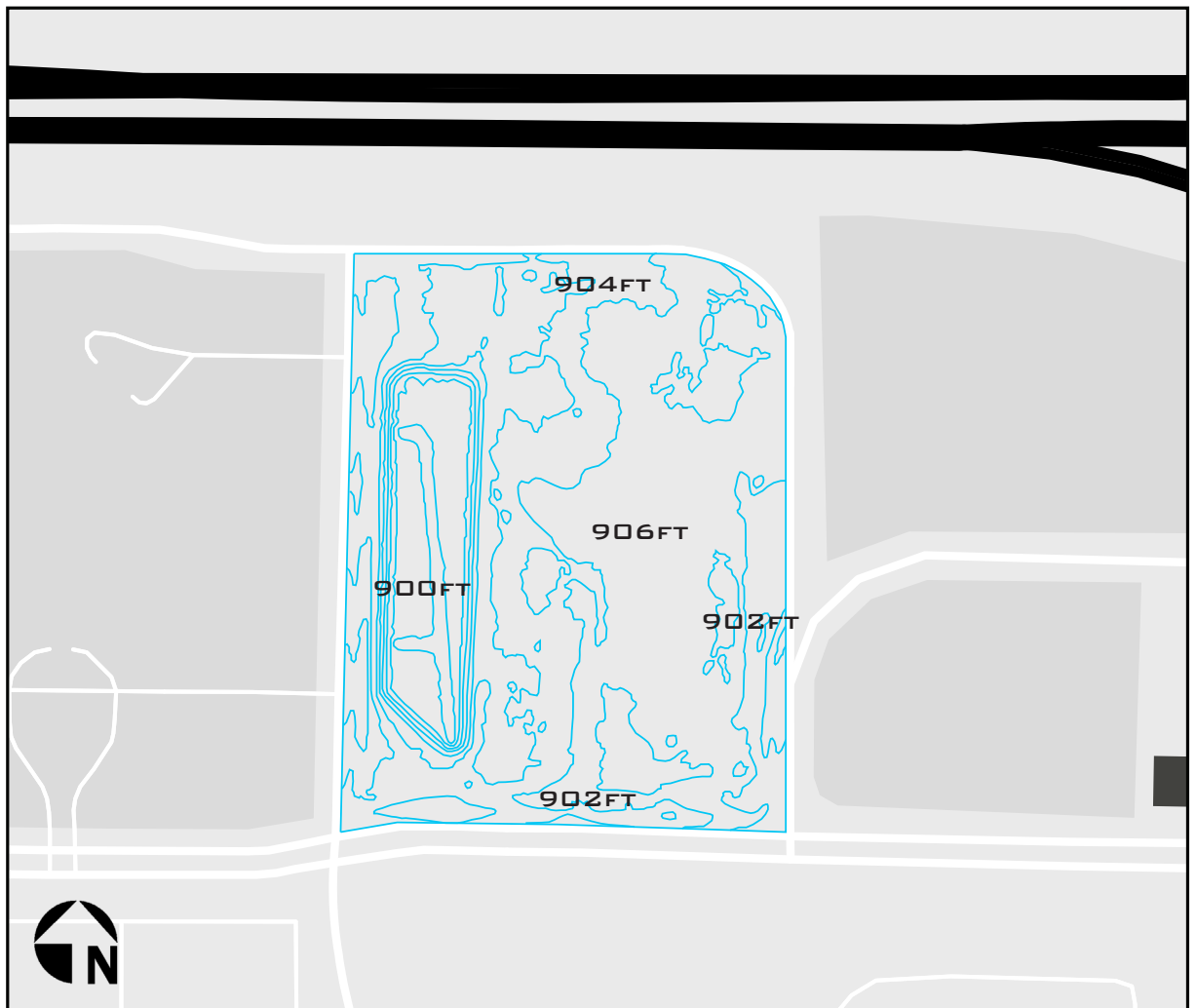


FIGURE 86

TOPOGRAHY LINES

THE RED RIVER VALLEY IS LOCATED ON GLACIAL LAKE PLAINS, FLOOD-PLAINS, AND GENTLY SLOPING SIDE SLOPES OF STREAMS WITHIN THE GLACIAL LAKE PLAINS. DUE TO THAT, THE LAND IS RELATIVELY FLAT, RESULTING IN A SLOPE THAT RANGES FROM 0-2% ACROSS THE VALLEY. AS FOR THE SITE, THE HIGHEST POINT OF ELEVATION IS DIRECTLY IN THE MIDDLE OF THE SITE AT 906 FT. FROM THERE, THE SITE GRADUALLY SLOPES DOWN IN ALL DIRECTIONS REACHING ITS LOWEST POINT ON THE WEST EDGE AT 900FT. THE CALCULATION OF THE SLOPES ARE AS FOLLOWS. HIGHEST ELEVATION SLOPED TO THE SOUTH: .85%, HIGHEST ELEVATION SLOPED TO THE EAST: .85%, HIGHEST ELEVATION SLOPED TO THE NORTH: .43%, HIGHEST ELEVATION SLOPED TO THE WEST: 1.3%

# FARGO SERIES SOIL

SOILS IN FARGO ARE CHARACTERISTICALLY VERY WEAK. CONSISTING OF MOSTLY POORLY DRAINED SOILS THAT DERIVED FROM FINE-GRAINED SEDIMENTS DEPOSITED INTO GLACIAL LAKE AGASSIZ. THE SURFACE SOIL IS A THIN LAYER OF ORGANIC SILTY SEDIMENT GREAT FOR AGRICULTURAL PURPOSES. THE TOPSOIL SOIL, BLACK ALKALINE SILT LOAM IS CRUMBLY AND HAS A GRANULAR STRUCTURE. IT IS FRIABLE WHEN MOIST AND SLIGHTLY STICKY WHEN WET. THE SUBSOIL, OLIVE-GRAY ALKALINE CLAY, IS SLIGHTLY CALCAREOUS, HAS A STRONG, HARD BLOCKY STRUCTURE WHEN DRY, IS VERY FIRM WHEN MOIST AND VERY STICKY AND PLASTIC WHEN WET. THE SUBSTRATUM, OLIVE-GRAY CALCAREOUS, SALINE ALKALINE CLAY, CONTAINS SEGREGATED GYPSUM CRYSTALS AND CHARACTERISTICALLY, MOTTLED WITH DARK YELLOW BROWN TOWARD THE BOTTOM. THESE SOILS ALL EXPAND WHEN WET AND SHRINK WHEN DRY. THIS CAUSES 1-3-INCH CRACKS WIDE AT THE SURFACE, EXTENDING DOWNWARD TO 36 INCHES AT TIMES.

FARGO SILT LOAM	7%
FARGO CLAY	19%
FARGO SILTY CLAY LOAM	43%
SALINE	
FARGO SILTY LOAM CLAY	31%

## FLOOD PLANE

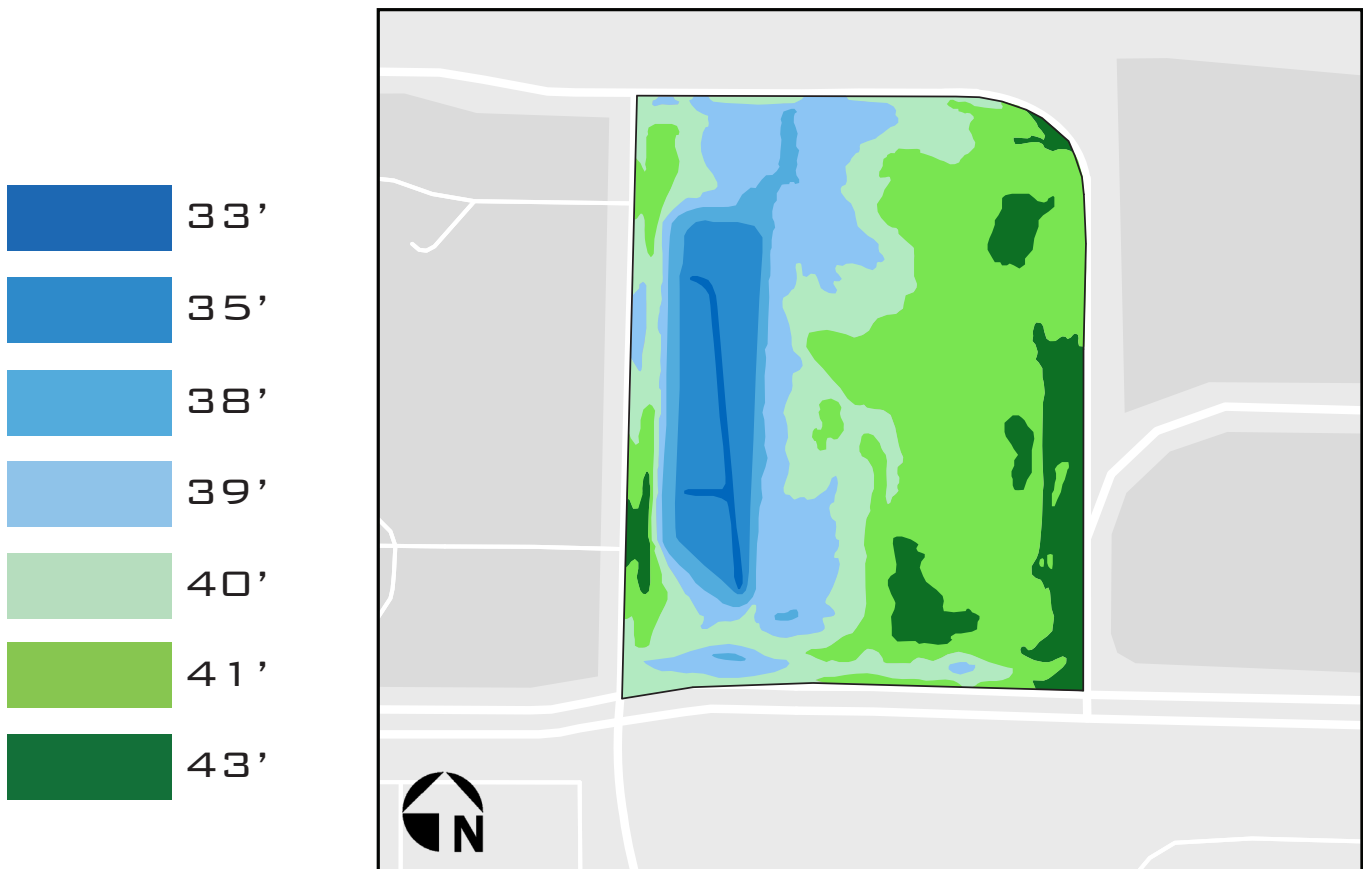


FIGURE 87



## VEGETATION



THE SURROUNDING AREA IS FILLED WITH BOULEVARD TREES RANGING FROM 3FT TO 20FT IN HEIGHT. THEY ARE POSITIONED IN NO PARTICULAR ORDER OR GROUPINGS. THERE ARE AREAS WHERE THERE ARE TIGHT GROUPINGS OF TREES AND OTHERS WHERE SINGLE TREES STAND ALONE. PHOTO TAKEN ON THE SOUTH SIDE OF THE SITE.

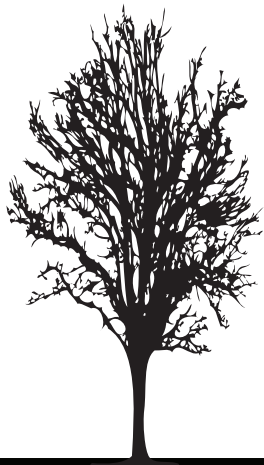


LARGER TREES HAVE BEEN PLACED IN THE ROAD MEDIAN, BREAKING UP THE VASTNESS OF THE URBAN FEEL TO THE AREA. THE TREES IN THE PHOTO ARE LOCATED ON THE SOUTH SIDE OF THE SITE AND ON 23RD AVE, WHICH IS A FAIRLY BUSY ROAD CONNECTING 45TH ST. AND VETERANS BLVD.



THERE ARE BOTH DECIDUOUS AND CONIFEROUS TREES LOCATED NEAR THE SITE, BUT DECIDUOUS ARE MORE PROMINENT, ESPECIALLY SURROUNDING THE SITE DIRECTORY. THE SITE ITSELF IS BARREN OF TREES, LEAVING A LARGE OPEN GRASS AREA PERFECT FOR DESIGNING A STRUCTURE AND ADDING LANDSCAPING AT A LATER TIME.

FIGURES 88-90



NORTHERN  
ACCLAIMED  
HONEYLOCUS



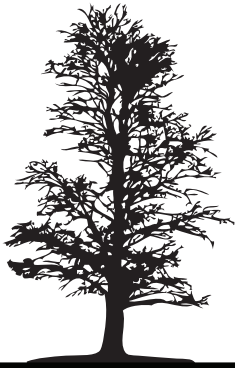
BUR OAK



GREEN ASH



HARVEST GOLD  
LINDEN



AMERICAN LINDEN



AUTUM BLAZE  
MAPLE



OHIO BUKEYE



HACKBERRY



DISCOVERY ELM



EMERALD LUSTRE  
MAPLE



LITTLE LEAF  
LINDEN



NORWAY MAPLE



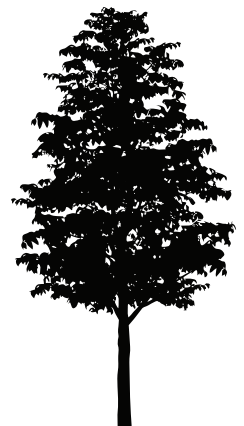
AMUR CHOKECHERRY



CATHEDRAL ELM



THUNDERCHILD  
CRAB



BOULEVARD LINDEN



## WILDLIFE

LOOKING AT AN OVERALL AREA CALLED THE TALLGRASS PRAIRIE (RED RIVER VALLEY), THAT EXTENDS THE EASTERN ONE FOURTH OF NORTH DAKOTA. THE FLAT TOPOGRAPHY AND RICH SOIL PROVIDE FOR EXCELLENT AGRICULTURAL PRODUCTION. THE PREDOMINANT NATURAL VEGETATION (EXCLUDING TREES) IN THE AREA ARE GRASSES AND FORBS. A FEW INCLUDE BIG BLUESTEM, PRAIRIE DROPSEED, SLENDER WHEATGRASS, PORCUPINE GRASS, MEADOW SEDGE, BLUE-EYED GRASS, WESTERN PRAIRIE-FRINGED ORCHID, TALL GOLDENROD, AND WHITE SAGE. THIS VEGETATION, NOW INCLUDING THE TREES LISTED ON THE PAGE ABOVE, PROVIDE THE PERFECT HABITATS FOR SMALL LOCAL WILDLIFE. THIS WILDLIFE INCLUDES BIRDS. MAMMALS, REPTILES/AMPHIBIANS, AND INSECTS.

**BIRDS:** NORTHERN-HARRIER, VESPER SPARROW, KILL-DEER, EASTERN KINGBIRD, WESTERN MEADOWLARK, SHORT-EARED OWL, SHARP-TAILED GROUSE, ETC.

**MAMMALS:** PLAINS POCKET MOUSE, WHITE-TAILED JACK-RABBIT, DEER MOUSE, MEADOW VOLE, THIRTEEN-LINED GROUND SQUIRREL, PLAINS POCKET GOPHER, COYOTE, RED FOX, RACCOON, BADGER, STRIPED SKUNK, WHITE-TAILED DEER, ETC.

**REPTILES/AMPHIBIANS:** AMERICAN TOAD, NORTHERN LEOPARD FROG, PLAINS GARTER SNAKE, NORTHERN PRAIRIE SKINK, ETC.

**INSECTS:** DAKOTA SKIPPER, MONARCH BUTTERFLY, BUMBLEBEE, MOSQUITOE, HOUSE FLY, ETC.





**VESPER SPARROW**



**WESTERN MEADOWLARK**



**WHITE-TAILED JACKRABBIT**



**THIRTEEN-LINED SQUIRREL**



**AMERICAN TOAD**



**PLAINS GARTER SNAKE**



**MONARCH BUTTERFLY**



**BUMBLEBEE**

**FIGURES 91-98**



# PROJECT JUSTIFICATION

BESIDES ARCHITECTURE, HELPING PEOPLE AND KIDS WITH SPECIAL NEEDS HAS ALWAYS HELD A SPECIAL PLACE IN MY HEART. MY YOUNGER BROTHER WAS BORN WITH SPECIAL NEEDS, SO IT IS SOMETHING THAT HAS BEEN A PART OF MY LIFE FOR A LONG TIME. OVER THE YEARS I HAVE VOLUNTEERED FOR MANY ORGANIZATIONS THAT ARE FOR SPECIAL NEEDS PEOPLE. I ALSO HAVE WORKED WITH BENTLEY FOR ALMOST FOUR YEARS. I HAVE SEEN THE STRUGGLES FIRSTHAND THAT HE HAS TO DEAL WITH ON A DAILY BASIS GOING OUT INTO PUBLIC WHERE THINGS AREN'T ACCOMMODATED FOR HIM. THAT WAS MY DRIVING MOTIVATION BEHIND THIS PROJECT. I WANT TO INFORM PEOPLE ABOUT NOT ONLY CEREBRAL PALSY AND THE HYPERSENSITIVITY THAT COMES WITH THAT, BUT ALSO ABOUT THE LACK OF ADEQUATE HANDICAP ACCESSIBILITY IN OUR WORLD TODAY. TO ME, THE LAST FOUR YEAR HAVE BEEN ALL ABOUT LEARNING. WE HAVE BEEN GIVEN PROJECTS TO DO AND GUIDELINES TO FOLLOW, BUT THIS PROJECT IS DICTATED MAINLY BY ME. IT IS GIVING ME A CHANCE TO DESIGN SOMETHING I AM VERY PASSIONATE ABOUT AND ALONG WITH GIVING ME A LOOK INTO WHAT A CAREER IN ARCHITECTURE MIGHT BE LIKE.

AT THIS STAGE OF MY PROFESSIONAL DEVELOPMENT, THIS PROJECT HAS BECOME A SORT OF STEPPINGSTONE BETWEEN SCHOOL AND THE REAL WORLD. IT IS GIVING ME A LOOK INTO WHAT A REAL-LIFE DESIGN PROJECT MIGHT BE LIKE BUT ALSO KEEPS MY EDUCATION THERE, ALLOWING ME TO KEEP LEARNING AND PROGRESSING IN MY CHOSEN PROFESSION. THIS THESIS PROJECT IS ALSO AN OPPORTUNITY TO A JOB AFTER GRADUATION. IT IS THE BIGGEST PROJECT OF MY SCHOOLING AND SHOWS THE KNOWLEDGE AND SKILLSET I HAVE LEARNED OVER THE LAST FOUR YEARS. THE AMOUNT OF LONG, TEDIOUS PROCESS AND THINKING THAT HAS GONE INTO THIS PROJECT HAS REALLY OPENED UP MY EYES. I HAD TO USE A LOT OF DIFFERENT SOURCES, PROGRAMS, AND TECHNIQUES TO COMPLETE EACH STEP. DOING THIS PROJECT IMPROVED MY SKILLSET IN EACH ASPECT OF DESIGN. SCHOOL TAUGHT ME THE BASICS, BUT THIS PROJECT TOOK IT A WHOLE STEP FURTHER, GIVING ME A CHANCE TO EXPLORE DESIGNING A PROJECT START TO FINISH, BASED SOLELY UPON MY CRITERIA. BY DOING THIS PROJECT, I WAS ABLE TO EXPAND MY KNOWLEDGE IN THE FIELD AND HOPEFULLY CAN USE IT IN FUTURE EXPERIENCES. OVERALL, THIS PROJECT HAS HELPED ME TO IMPROVE MY SET OF DESIGN SKILLS MOVING FORWARD.

THIS PROPOSED PROJECT IS A MUCH-NEEDED FACILITY IN THE FARGO-MOORHEAD AREA, AND I BELIEVE THAT IT WILL GET A LOT OF USE. THERE IS NOT REALLY A PLACE THAT PEOPLE LIKE BENTLEY CAN GO AND DO WHAT THIS FACILITY IS ALLOWING HIM TO DO. IT WOULD BE A GREAT INVESTMENT AND WOULD BE BENEFICIAL TO MANY INDIVIDUALS IN THE AREA. IN MY MIND, A PROJECT LIKE THIS WOULD BE VERY MUCH SUPPORTED BY CITY LEADERS AND CITIZENS. FUNDS FOR

THE PROJECT COULD BE ACQUIRED MANY WAYS. FUNDRAISING, DONATIONS, OR AN EXTENSION OF A MEDICAL OR THERAPY FACILITY THAT WOULD BE WILLING TO CONTRIBUTE FUNDS TO BUILD ARE ALL POSSIBLE SOURCES OF FUNDING. A PROPOSITION POINT COULD BE THE ADAPTIVE TECHNOLOGICAL GOALS OF THE PROJECT. THIS IS TO CREATE AN AREA THAT IS ADAPTABLE TO PEOPLE WITH CEREBRAL PALSY AND HYPERSENSITIVITY. TO DO THAT, THE ENVIRONMENT WILL BE ADAPTABLE TO THE USER'S SENSES: SIGHT, TOUCH, SOUND, SMELL, AND TASTE. THE TECHNOLOGY WILL MAKE IT EASY AND USER FRIENDLY TO QUICKLY CHANGE THE ENVIRONMENT. TECHNOLOGY WILL ALSO MAKE THE ADAPTION OF EQUIPMENT SAFER AND MORE EFFICIENT.

THE SITE FOR THIS PROJECT WAS CHOSEN FOR A FEW REASONS. ONE, IT WAS CHOSEN TO BE PLACED IN FARGO, SINCE THAT IS WHERE BENTLEY LIVES. HE HAS EASY ACCESS TO IT AND WILL BE ABLE TO USE THE FACILITY OFTEN. A SECOND REASON IS THAT THERE IS A NEED FOR A PLACE LIKE THIS IN THE FARGO-MOORHEAD AREA. THIRD, IT IS PLACED NEXT TO THE NEW SANFORD MEDICAL CENTER, ONE OF THE BIGGEST HOSPITALS IN NORTH DAKOTA PROVIDING EASY ACCESS TO PEOPLE IN HOSPITAL CARE WHO MAY NEED OR WANT TO USE THE FACILITY.

IN THE PROFESSIONAL ARCHITECTURE FIELD, BECAUSE THERE IS A NEED FOR MORE ARCHITECTS WITH THE KNOWLEDGE ON HOW TO DESIGN CORRECTLY USING ADA ACCESSIBILITY STANDARDS, THIS PROJECT COULD BE VASTLY IMPORTANT. IT COULD SET AN EXAMPLE OF HOW THIS CAN BE DONE CORRECTLY AND CAN ENCOURAGE OTHER ARCHITECTS TO FOLLOW THE SAME DESIGN PROCESS. THERE IS A NEED FOR MORE ADA ADAPTABLE FACILITIES NOT ONLY IN FARGO, BUT IN THE FIELD OF ARCHITECTURE PERIOD. MANY ARCHITECTS WILL DESIGN TO ADA STANDARDS, BUT ONLY TO THE BARE MINIMUM. THIS FACILITY CAN BE A EXAMPLE OF HOW TO USE A DISABILITY TO ADEQUATELY DESIGN A ADAPTABLE PLACE FOR THOSE WHO NEED EXTRA ACCOMMODATIONS. PEOPLE COULD ARGUE THAT THE TOPIC OF MY PROJECT IS JUST AN OPINION, BUT I THINK THAT IF YOU WERE TO TAKE HARD EVIDENCE AND FACTS ABOUT THE NUMBER OF PLACES THAT WERE ADEQUATELY ADA AND SENSORY ACCESSIBLE TO THOSE WITH EXTRA NEEDS, YOU WILL FIND THAT THERE ARE MORE PLACES THAT DO NOT MEET THE REQUIREMENTS THAT PLACES THAT DO. I HAVE ALSO EXPERIENCED FIRSTHAND A NUMBER OF PLACES THAT BENTLEY WAS NOT ABLE TO GET INTO OR BARELY FIT WITH HIS WHEELCHAIR AND IT IS DEVASTATING TO HAVE TO TELL HIM HE CAN'T DO SOMETHING OR GO SOMEWHERE BECAUSE ITS NOT ACCESSIBLE. SO, TO ME, I THINK IT IS A VERY IMPERATIVE PROJECT AND CAN BE AN EXAMPLE FOR OTHER ARCHITECTS TO FOLLOW. OVERALL, THIS PROJECT CAN CERTAINLY BE LEFT FOR SOMEONE ELSE TO TAKE OVER AND TRY TO SOLVE BUT I DON'T SEE THE POINT IN THAT WHEN I AM THE ONE WHO STARTED IT. MY SPECIFIC ANALYSIS AND TOPICS ARE MINE TO SOLVE, BUT THERE IS SUCH A DIVERSE WORLD TO RESEARCH AND DESIGN FOR UNDER THIS TOPIC THAT I THINK THAT ANY PROFESSIONAL COULD RESEARCH AND DESIGN SOMETHING FOR ANYONE WITH A CERTAIN OR SPECIFIC DISABILITY OTHER THAN CEREBRAL PALSY AND HYPERSENSITIVITY.

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# HISTORICAL, SOCIAL + CULTURAL CONTEXT

## CULTURAL CONTEXT

THROUGHOUT HISTORY, INDIVIDUALS WITH DISABILITIES OR SPECIAL NEEDS HAVE BEEN LOOKED AT DIFFERENTLY AND TREATED AS SUCH. IT HAS NOT BEEN UNTIL RECENT YEARS THAT THE INCLUSION OF THESE INDIVIDUALS HAS MADE A RISE IN SOCIETY DUE TO A DEMAND BY PEOPLE WITH DISABILITIES WHO HAVE WANTED TO SEE CHANGE. FOR MANY YEARS, INDIVIDUALS WITH DISABILITIES WERE MARGINALIZED, HIDDEN AWAY, INSTITUTIONALIZED, DENIED EDUCATION, AND WERE OFTEN DISCRIMINATED AGAINST IN EMPLOYMENT, HOUSING, AND TRANSPORTATION ALONG WITH MANY OTHER ASPECTS OF DAILY LIFE.

## HISTORICAL CONTEXT

DATING BACK TO THE GREEK EMPIRE, THERE WAS AN OBSESSION WITH HUMAN PERFECTION, AND THIS MAY HAVE LAID GROUNDWORK FOR FUTURE BELIEFS. DURING THE ROMAN EMPIRE, THE DISABLED WERE CONSIDERED PROPERTY OF THE STATE. THEY WERE ABANDONED, EXPOSED, AND MUTILATED. THIS SAME IDEOLOGY CONTINUES THROUGH THE MIDDLE AGES WITH SIMILAR TREATMENTS. AROUND THE TIME OF THE RENAISSANCE, AN INCREASE IN RELIGION CHANGED THE TREATMENT OF DISABLED PEOPLE. THEY WERE OFTEN CARED FOR BY MONKS AND RECEIVED MINIMAL MEDICAL CARE. BETWEEN THE 1700'S AND 1800'S, DISABLED INDIVIDUALS WERE INSTITUTIONALIZED, AND SEEN AS OUTCASTS BY SOCIETY. STILL IN THE EARLY 20TH CENTURY, CITIES WERE PASSING WHAT WERE KNOWN AS "UGLY LAWS". THESE MADE IT ILLEGAL FOR ANY PERSON WHO WAS DISABLED, MUTILATED, OR DISFIGURED TO BE SEEN IN PUBLIC. THE LAST REPEAL OF THIS LAW WAS IN 1974 IN CHICAGO. TOWARDS THE MID-20TH CENTURY, THE PASSING OF ACTS STARTED TO GENERATE A POSITIVE OUTLOOK ON INDIVIDUALS WITH DISABILITIES. DESPITE THIS, THE INCLUSION OF THESE INDIVIDUALS WAS STILL FAR FROM JUST OKAY.

FROM THIS POINT, IT WAS A CONSTANT BATTLE TO GAIN EQUALITY AND ACCESSIBILITY THROUGHOUT SOCIETY. DURING THE 1970'S, THE ACTS THAT WERE PASSED CREATED A STEPPINGSTONE TO WHERE EVERYTHING LIES TODAY. DISABLED CHILDREN WERE INTEGRATED INTO PUBLIC SCHOOLS, CLOSED CAPTIONED PROGRAMMING WAS PROVIDED FOR DEAF PEOPLE AND MASS TRANSIT VEHICLES NOW REQUIRED A WHEELCHAIR LIFT.

IT WASN'T UNTIL THE 1980'S THAT A CHANGE WAS BEING MADE REGARDING THE INCLUSION OF INDIVIDUALS REGARDING ARCHITECTURAL DESIGN. LAWS AND ACTS WERE PASSED STATING THAT INDIVIDUALS MUST HAVE THE SAME OPPORTUNITIES AS OTHERS AND THAT MODIFICATIONS NEED TO BE MADE TO STRUCTURES IF THAT IS NOT THE CASE. THE REHABILITATION ACT OF THE DISABILITY RIGHTS LAW WAS A MAJOR MOVEMENT. THE FAIR HOUSING AMENDMENTS ACT ALSO WAS A MOMENTOUS STEP FOR INDIVIDUALS LOOKING TO BE INDEPENDENT. IN 1989, THE FIRST COPY OF THE AMERICANS WITH DISABILITIES ACT (ADA) WAS DRAFTED AND IN 1990 IT WAS SIGNED INTO LAW REGARDING THE FOLLOWING:

IT PROHIBITS DISCRIMINATION AND GUARANTEES THAT PEOPLE WITH DISABILITIES HAVE THE SAME OPPORTUNITIES AS EVERYONE ELSE TO PARTICIPATE IN THE MAINSTREAM OF AMERICAN LIFE—TO ENJOY EMPLOYMENT OPPORTUNITIES, TO PURCHASE GOODS AND SERVICES, AND TO PARTICIPATE IN STATE AND LOCAL PROGRAMS AND SERVICES (A BRIEF TIMELINE OF THE HISTORY OF DISABILITIES, 2020).

THIS LAW HAS REMAINED IN ACTION SINCE THAT DAY, BUT HAS BEEN CONSTANTLY UPDATED, REVISED, AND RENEWED TO MEET THE STANDARDS OF INDIVIDUALS WITH DISABILITIES TODAY. ON MARCH 15, 2011, THE NEW AMERICAN WITH DISABILITIES ACT RULES CAME INTO EFFECT. THE RULES EXPANDED ON THE FOLLOWING:

ACCESSIBILITY REQUIREMENTS FOR RECREATIONAL FACILITIES SUCH AS SWIMMING POOLS, GOLF COURSES, EXERCISE CLUBS, AND BOATING FACILITIES. THEY ALSO SET STANDARDS FOR THE USE OF WHEELCHAIRS AND OTHER MOBILITY DEVICES LIKE SEGWAYS IN PUBLIC SPACES, AND CHANGED THE STANDARDS

FOR THINGS SUCH AS SELLING TICKETS TO EVENTS AND RESERVING ACCESSIBLE HOTEL ROOMS. THE NEW RULES ALSO CLEARLY DEFINED “SERVICE ANIMAL” AS “...ANY DOG THAT IS INDIVIDUALLY TRAINED TO DO WORK OR PERFORM TASKS FOR THE BENEFIT OF AN INDIVIDUAL WITH A DISABILITY, INCLUDING A PHYSICAL, SENSORY, PSYCHIATRIC, INTELLECTUAL, OR OTHER MENTAL DISABILITY.” THIS PORTION OF THE LAW ALSO STATES THAT THE SERVICES THE SERVICE ANIMAL PROVIDES MUST BE “DIRECTLY RELATED TO THE HANDLER’S DISABILITY” AND DOGS THAT PROVIDE ONLY EMOTIONAL SUPPORT OR CRIME DETERRENCE CANNOT BE DEFINED AS SERVICE ANIMALS (A BRIEF TIMELINE OF THE HISTORY OF DISABILITIES, 2020).

THE PASSING OF THESE ACTS CHANGED THE WAY BUILDINGS WERE DESIGNED. ACCESSIBILITY, ACCOMMODATION, AND UNIVERSAL DESIGN ALL HAD TO BE TAKEN INTO CONSIDERATION WHEN DEVELOPING A PROJECT. ARCHITECTS NOW HAD CHALLENGE, NOT ONLY TO DESIGN NEW STRUCTURES, BUT TO REDESIGN OLD ONES TO FIT THE REQUIREMENTS OF THE ADA HANDBOOK. DESPITE THIS, MANY PLACES AROUND THE COUNTY STILL DO NOT MEET ADA STANDARD OR IF THEY DO IT IS AT A BARE MINIMUM. LUCKY, THE DEVELOPMENT OF MORE UNIVERSAL DESIGNS AND TECHNIQUES BY YOUNG DESIGNERS AND ARCHITECTS UP AND COMING IN THE FIELD AND MAKING TREMENDOUS STRIDES ON HOW UNIVERSAL DESIGN CAN BE USED.

## SOCIAL CONTEXT

ACCESSIBILITY IN DESIGN HAS BEEN A SLOW DEVELOPING BUT RELEVANT TOPIC IN TODAY’S SOCIETY. IT IS A MUCH-NEEDED ASPECT OF MANY INDIVIDUAL’S EVERYDAY LIFE, ESPECIALLY IN THE FARGO-MOORHEAD AREA. THERE ARE MANY PLACES THAT ARE UNIVERSALLY ACCESSIBLE, BUT MANY THAT ARE NOT. THROUGHOUT TIME, BUILDINGS AROUND THE AREA HAVE MADE THE EFFORT TO BECOME UNIVERSALLY ACCESSIBLE, BUT OFTEN ONLY TO A BARE MINIMUM. THE DEVELOPMENT OF AN ALL ACCESSIBLE AND ACCOMMODABLE SPACE WILL PROVIDE THAT EXAMPLE OF HOW OTHERS IN THE AREA NEED TO UPDATE STANDARDS TO. THIS WILL CREATE A BETTER SOCIAL ATMOSPHERE FOR THE INCLUSION OF ALL INDIVIDUALS, DISABLED OR NOT.



## TIMELINE

THIS TIMELINE SHOWS THE GRADUAL DEVELOPMENT OF LAWS AND ACTS PASSED RELATING TO THE INCLUSION OF INDIVIDUALS WITH DISABILITIES INTO SOCIETY. THEY ALSO HAVE PROVIDED STANDARDS FOR UNIVERSAL DESIGN, LEADING TO THE DEVELOPMENTS OF ACCOMMODABLE AND ACCESSIBLE HANDICAP FACILITIES.

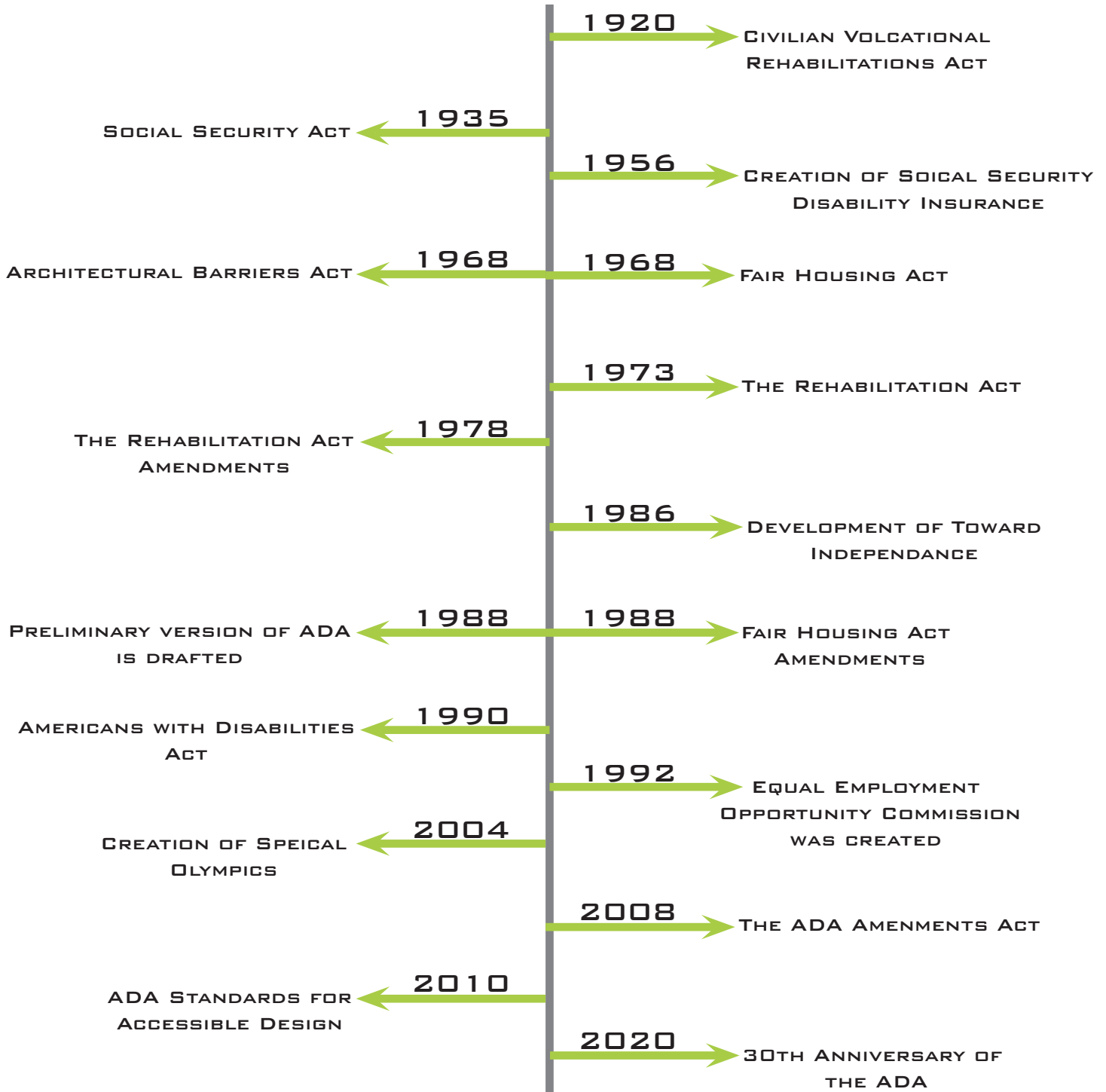


FIGURE 99

# PERFORMANCE CRITERIA

## SPACE ALLOCATION

**PERFORMANCE MEASURE:** THE REQUIRED SPACES AND LAYOUT OF THESE SPACES ARE A VERY IMPORTANT ASPECT OF THIS FACILITY. THESE SPACES MUST BE EFFECTIVE AND EFFICIENT TO ALLOW FOR OPTIMUM USAGE BY THE OCCUPANTS. THEY WILL EACH HAVE A FUNCTION THAT REQUIRES A CERTAIN AMOUNT OF SPACE, MEASURED IN SQUARE FEET, THAT CONTRIBUTE TO THE FUNCTION OF THE BUILDINGS PROGRAM.

**PERFORMANCE MEASURE SOURCE:** REVIT, SPACE INTERACTION MATRIX, IBC, ADA HANDBOOK, CASE STUDY RESEARCH

**PERFORMANCE ANALYSIS:** ANALYSIS WILL BE DONE THROUGH SCALE DRAWING AND COMPUTER MODELS, JUDGING HOW THE SPACES FIT TOGETHER AND THE RELATIONSHIP OF SIZE BY PLACING SCALED FIGURES IN THE SPACES. BASED ON THIS, A GOOD JUDGMENT CAN BE MADE ABOUT IF A SPACE IS SCALED CORRECTLY IN COMPARISON TO THE SPACES AROUND IT. A SPACE INTERACTION MATRIX CAN ALSO BE CONDUCTED TO HELP ORGANIZE THE PLACEMENT OF RELEVANT SPACES. GUIDELINES FROM THE IBC, ADA HANDBOOK AND CASE STUDY RESEARCH CAN BE REFERENCED.

**PERFORMANCE JUDGEMENT:** THE INFORMATION ANALYZED WILL BE USED TO COMPLETE COMPUTER MODELS AND FINAL CONSTRUCTION DOCUMENTS. IF THESE SUPPORTS AND ACCURATELY FOLLOW MY NARRATIVE AND THEORETICAL PREMISE, THEN MY JUDGEMENT WAS CORRECT.

## PSYCHOLOGICAL IMPACT

**PERFORMANCE MEASURE:** THE PSYCHOLOGICAL IMPACT IS MEAN TO MEASURE HOW PEOPLE EXPERIENCE THE SPACE THEY ARE IN AND HOW THEY REACT TO IT. THE DESIGN OF THIS PROJECT IS BASED ON THE FIVE SENSES. TO DO THIS, HOW OCCUPANT EXPERIENCE THE ACOUSTICAL, VISUAL, AND OLFATORY ATMOSPHERES ALONG WITH THE TACTILE AND GUSTATORY ENVIRONMENTS WILL NEED TO BE ANALYZED.

**PERFORMANCE MEASURE SOURCE:** REVIT, OT THERAPISTS, TEST MODELS, CASE STUDY RESEARCH. ADA HANDBOOK, IBC

**PERFORMANCE ANALYSIS:** 3-D MODELS WILL BE CREATED IN REVIT TO GIVE ACCURATE REPRESENTATIONS OF THESE SENSORY SITUATIONS IN DIFFERENT SPACES AND CONDITIONS. USING REAL LIFE TEST MODELS TO EXPERIENCE WHAT THINGS ENGAGE YOUR SENSES WILL BE ANOTHER GOOD TYPE OF ANALYSIS.

**PERFORMANCE JUDGEMENT:** FOLLOWING THE CRITERIA AND RESEARCH GATHERED, I WILL CREATE A REPRESENTATIVE MODEL IN REVIT. IF THIS MODEL ACCURATELY SUPPORTS MY NARRATIVE AND THEORETICAL PREMISE, THEN THE JUDGMENT WAS SUCCESSFUL.

## CODE COMPLIANCE

**PERFORMANCE MEASURE:** ONE OF THE LARGE GOALS OF THIS PROJECT IS TO CREATE A SPACE THAT GOES ABOVE AND BEYOND ADA REQUIREMENTS. THE FACILITY IS TO SET AN EXAMPLE FOR ARCHITECTS IN THE FIELD ABOUT THE POSSIBILITY OF DESIGNING WITH MORE THAN THE BARE MINIMUM ADA REQUIREMENTS. THE RELATIONSHIP OF SPACES AND HOW THEY CORRELATE WITH ONE ANOTHER WILL NEED TO BE TAKEN INTO CONSIDERATION. CODES WILL NEED TO BE REFERENCED IN BOTH THE INTERNATIONAL BUILDING CODE (IBC) AND THE AMERICANS WITH DISABILITIES ACT HANDBOOK (ADA).

**PERFORMANCE MEASURE SOURCE:** IBC, ADA HANDBOOK, SPACE INTERACTION MATRIX, REVIT

**PERFORMANCE ANALYSIS:** THE ADA HANDBOOK AND IBC CAN BE REFERENCED TO ADEQUATELY DESIGN FOR ADA ACCOMMODATIONS. THIS CAN BE USED TO DESIGN AN ACCURATE MODEL IN REVIT. THE MODEL COMPOSED IN REVIT CAN BE USED TO CREATE CONSTRUCTION DOCUMENTS USING MEASUREMENTS THAT SHOW IF THE DESIGN MEETS ADA AND IBC GUIDELINES.

**PERFORMANCE JUDGEMENT:** THE PROJECT MUST FULLY BE ABLE TO ACCOMMODATE WHEELCHAIR ACCESS FROM AND IN ALL POINT OF THE DESIGN. COMPARING CONSTRUCTION DOCUMENTS TO ADA AND IBC GUIDELINES WILL SHOW IF THE JUDGMENT SUCCESSFUL.

## SUMMARY

THE CONDUCTION OF A PERFORMANCE EVALUATION IS A CRITICAL STEP IN JUDGING THE SUCCESS OF THE PROJECT. SPACE ALLOCATION, PSYCHOLOGICAL PERFORMANCE AND CODE COMPLIANCE ARE JUST A FEW PERFORMANCE CATEGORIES THE DESIGN IS BEING TESTED ON. THE DESIGN WILL BE EVALUATED UNDER THESE CATEGORIES USING A WIDE RANGE OF TOPICS FROM HOW THE BUILDING IS SET UP AND THE PROGRAMS BEING RUN TO HOW THE USERS AND OCCUPANTS INTERACT WITHIN THE SPACES. IT IS A GOAL THROUGHOUT THE DESIGN PROCESS TO THE MEET THESE CRITERIA. IT WILL ENSURE THAT THE DESIGN IS AS EFFICIENT AND EFFECTIVE AS POSSIBLE.

## SPACE ALLOCATION TABLE

Space	Square Footage (SF)	Percentage (%)
Entry/Lobby	1,200	1%
Staff Offices	1,000	0.50%
Communal Space	2,000	2%
Circulation	15,000	7%
Bathrooms	6,000	3%
Therapy Rooms (400 SF x 6)	2,400	2%
Vibration Rooms (150 SF x 4)	600	0.25%
Temperature Rooms (150 SF x 4)	600	0.25%
Music Therapy Rooms (150 SF x 4)	600	0.25%
Deep Pressure Area (150 SF x 4)	600	0.25%
Sensory Gym	40,000	20%
Indoor Park/ Playground	45,000	22%
Recreational Area	50,000	25%
Gym (Courts)	20,000	10%
Indoor Walking Track	3,500	2%
Weights	6,500	3%
Swimming Pool	5,000	2%
<b>Total</b>	<b>200,000 SF</b>	<b>100.00%</b>

FIGURE 100

# SPACE INTERACTION MATRIX

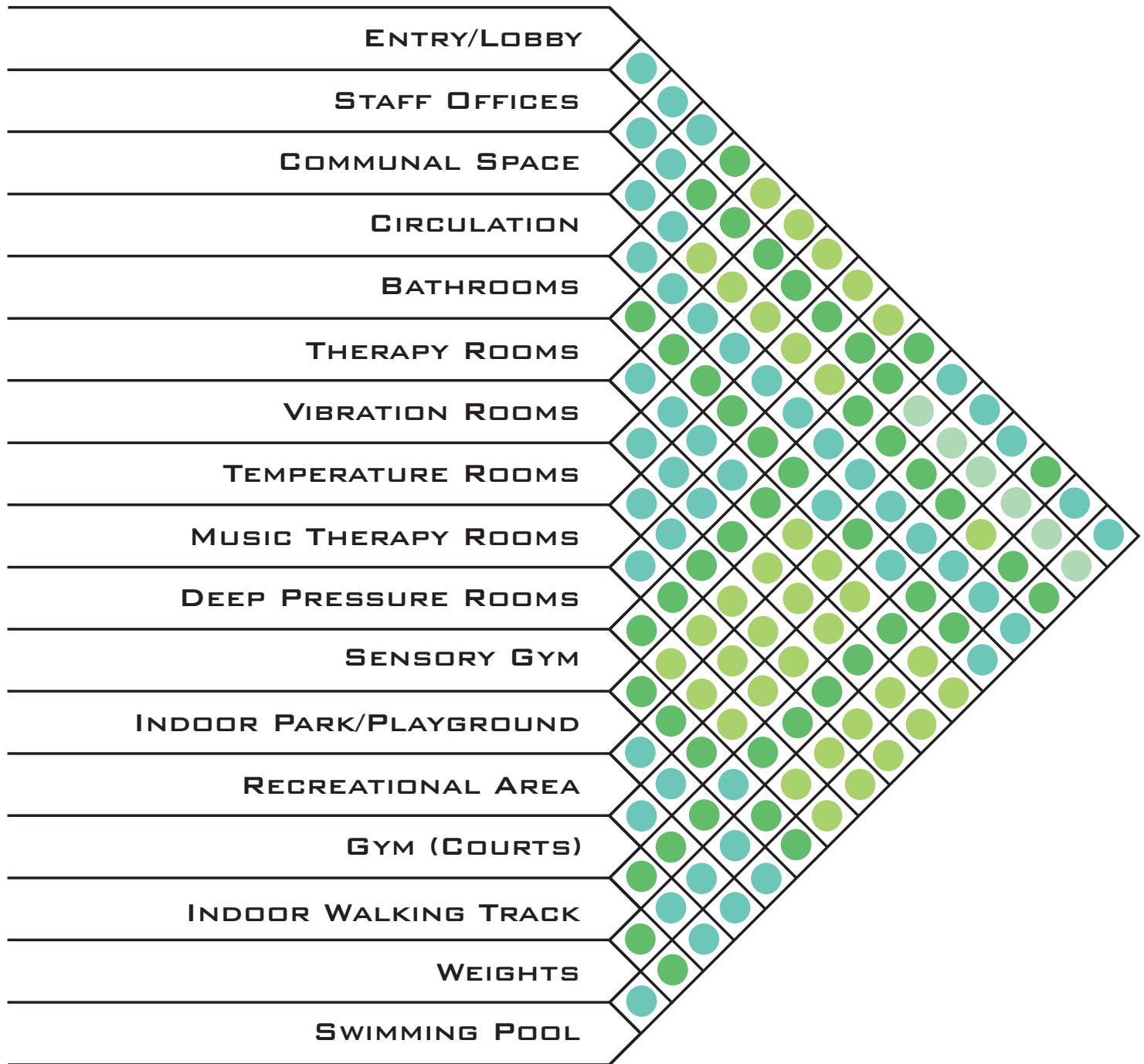


FIGURE 101

- ADJACENT
- NEARBY
- NOT ADJACENT
- NOT RELATED



# SPACE INTERACTION NET

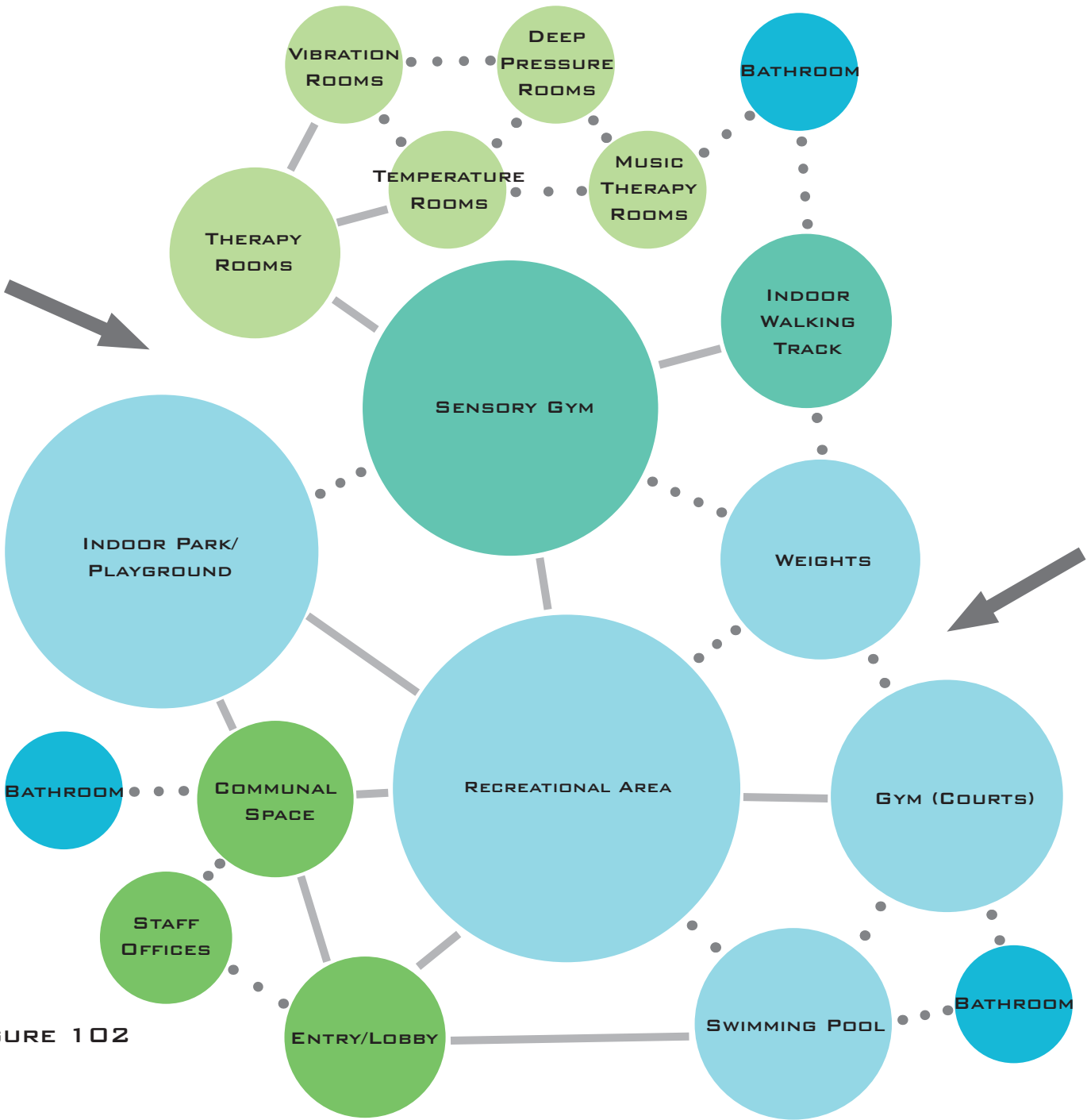
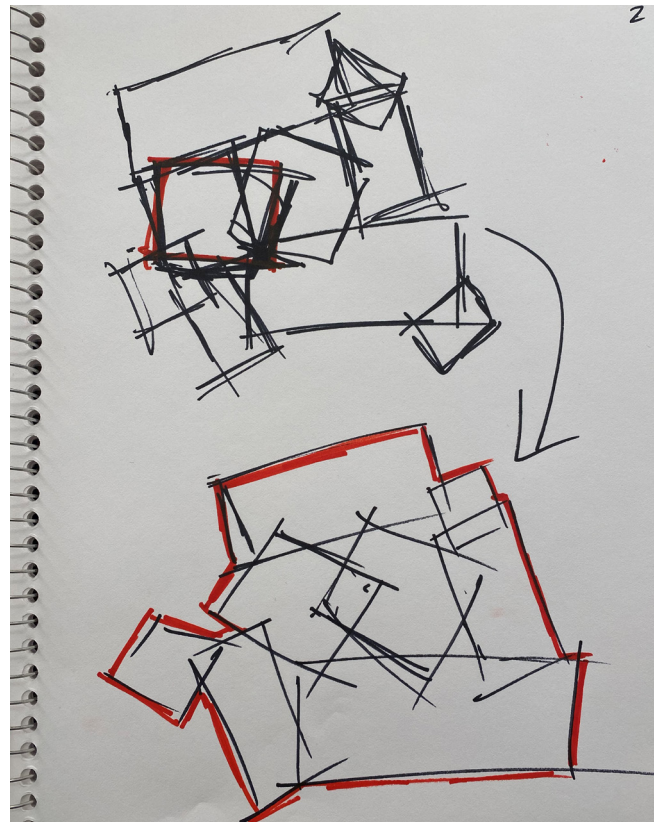
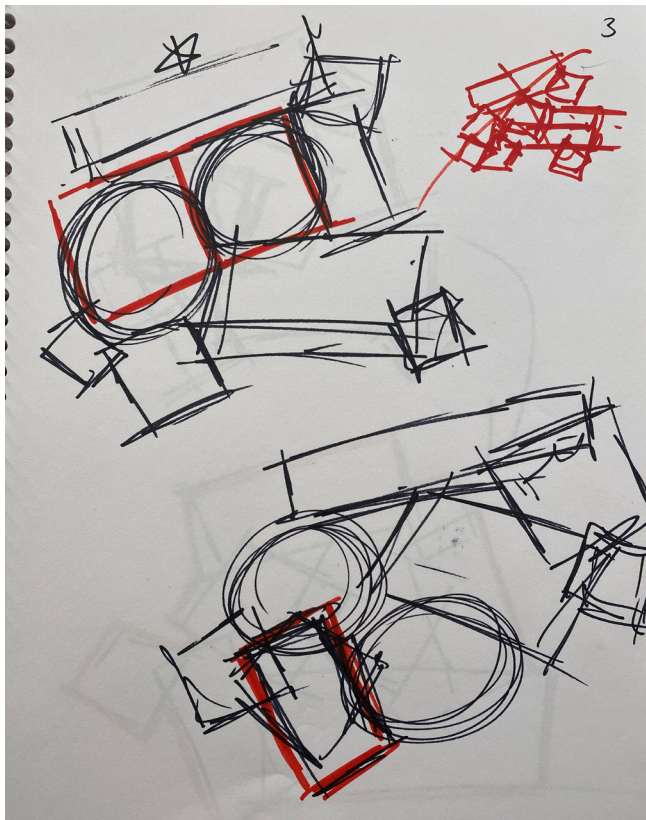
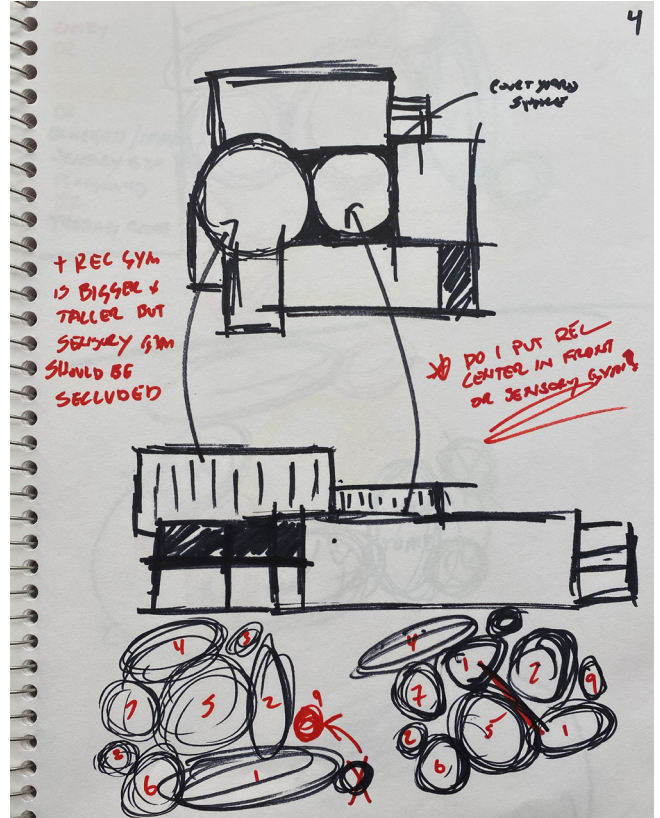
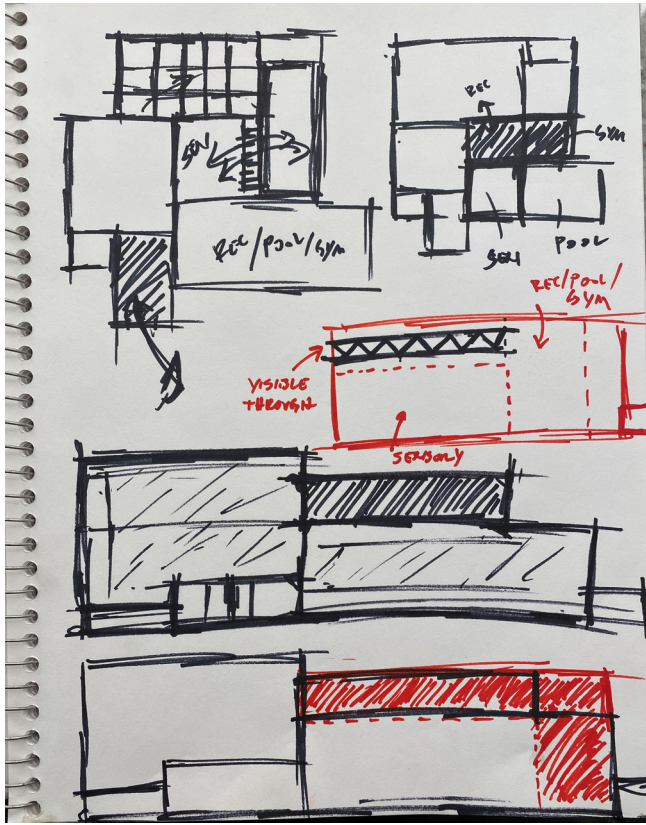


FIGURE 102

-  MAJOR ADJACENCY
-  MINOR ADJACENCY
-  ENTRANCE



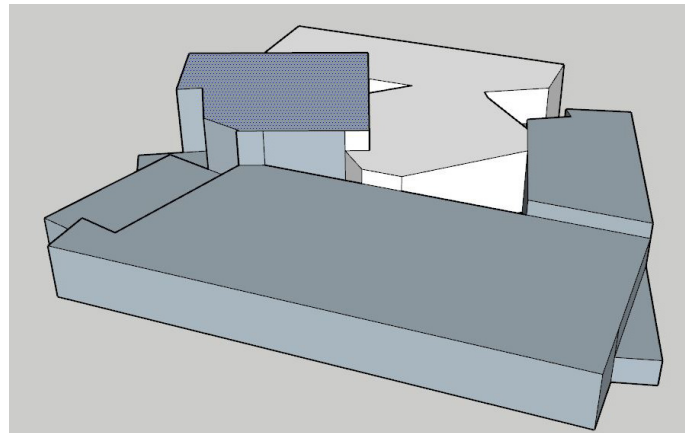
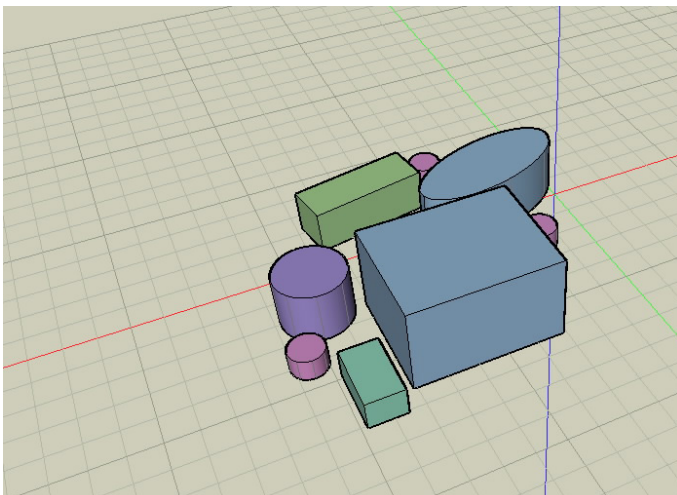
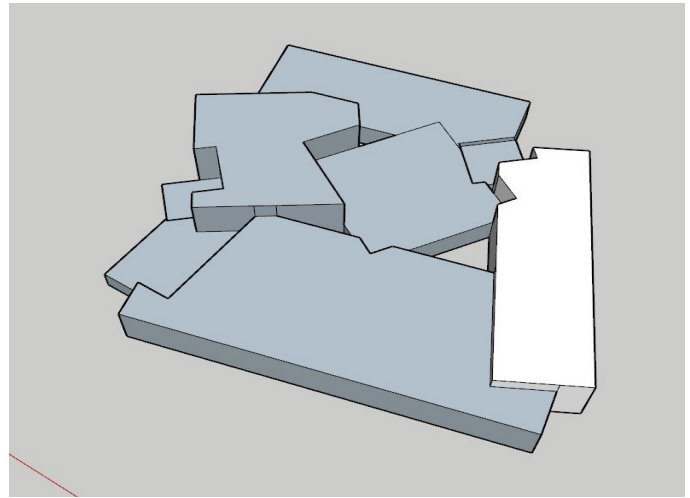
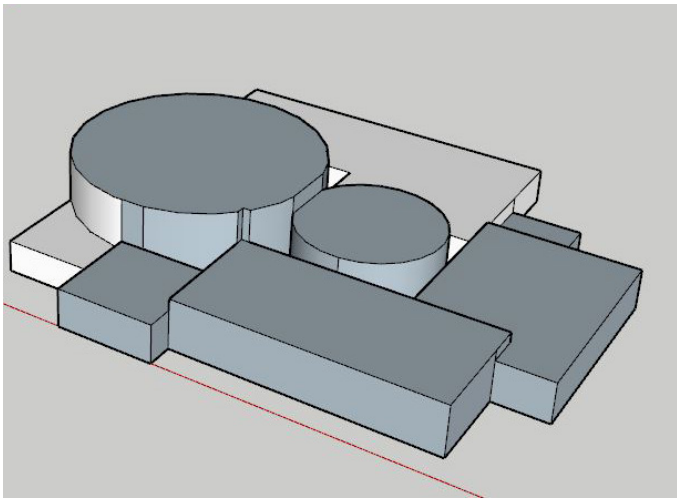
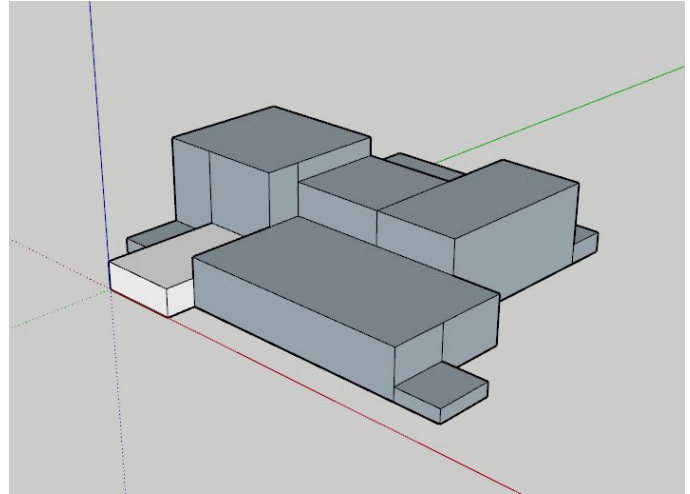
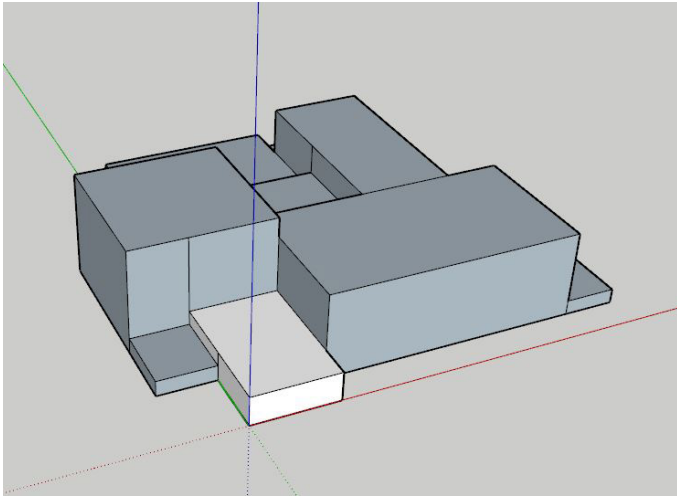
# DESIGN SOLUTION



FIGURES 103-106



# PROCESS WORK | MODELING



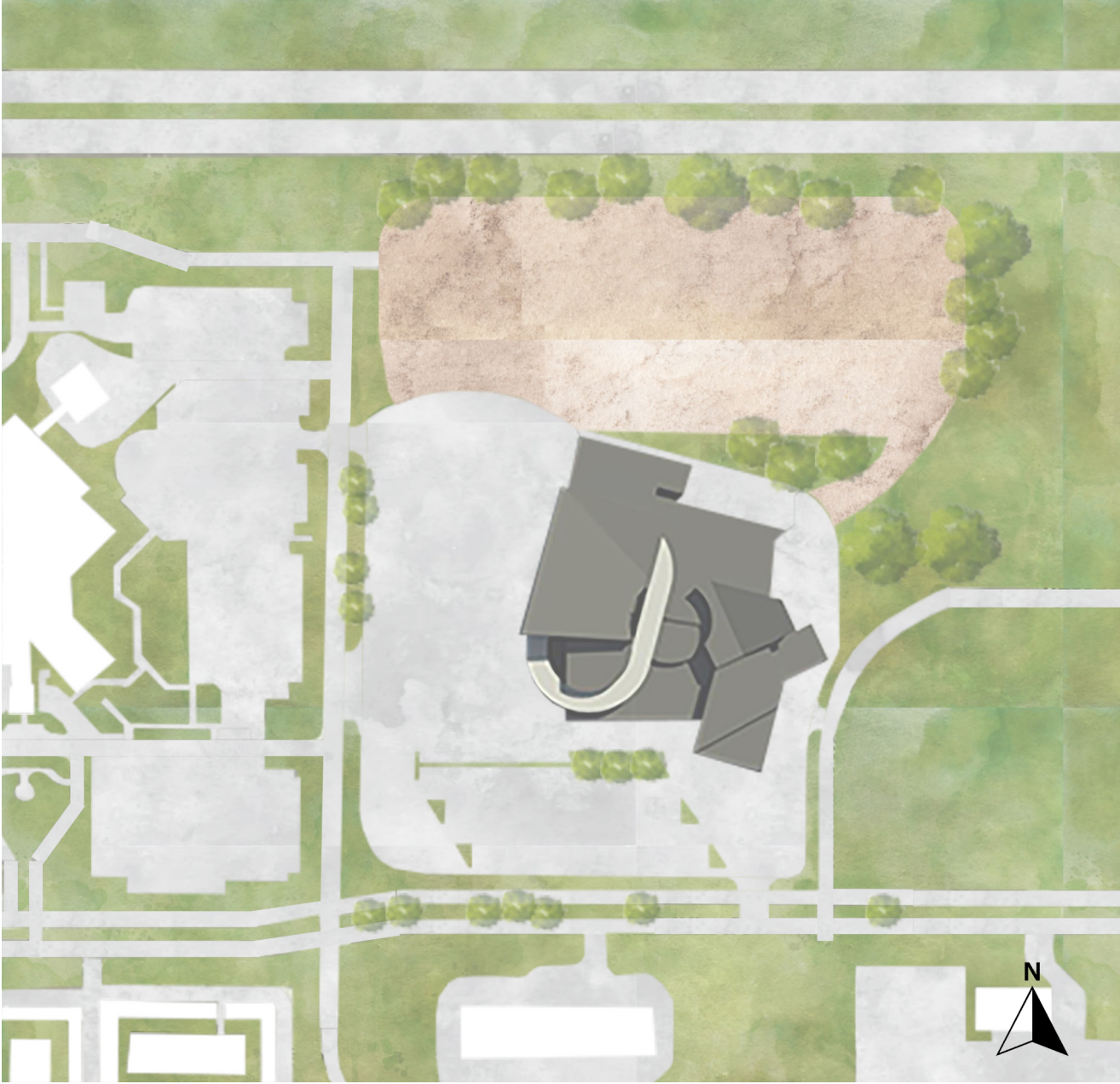
FIGURES 107-112





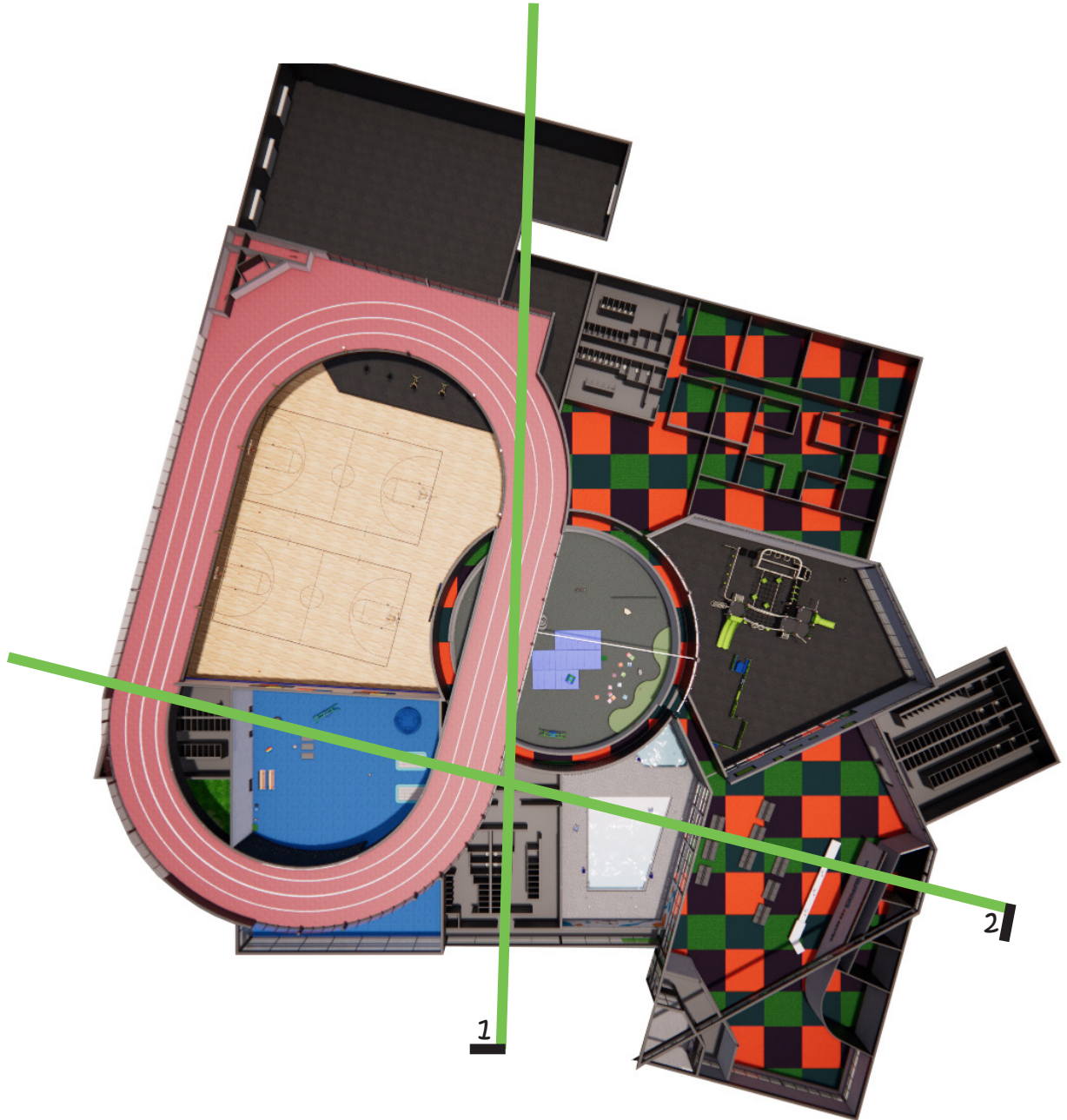
FIGURE 1 13

**UNIFYING THE CONTINUOUS THOUGHT OF SENSORY ADAPTATION AND ARCHITECTURAL DESIGN, A SPACE CAN BE CREATED AND ACCOMMODATED SPECIFICALLY FOR INDIVIDUALS WITH DISTINCT SENSORY REQUIREMENTS.**



SITE PLAN

FIGURE 1 1 4



FLOOR PLAN

FIGURE 1 1 5



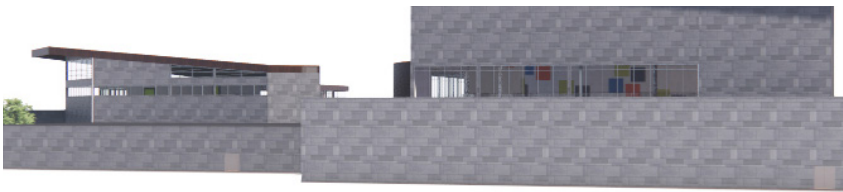
# FINAL DESIGN | ARCHITECTURAL DRAWINGS



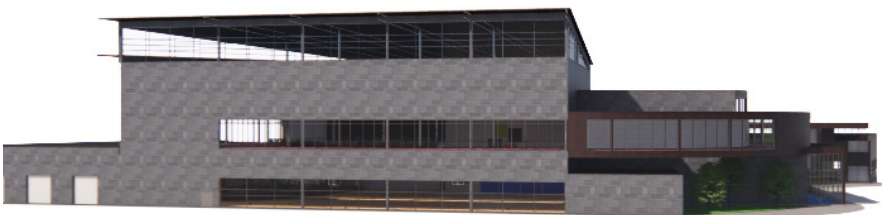
**SOUTH ELEVATION**



**EAST ELEVATION**



**NORTH ELEVATION**

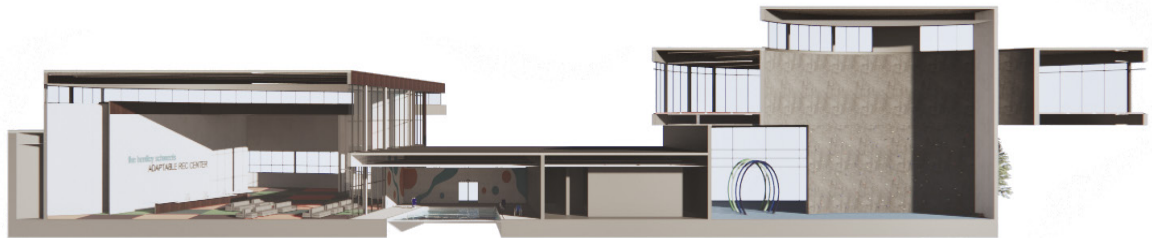


**WEST ELEVATION**

**FIGURES 116-119**



**SECTION 1**

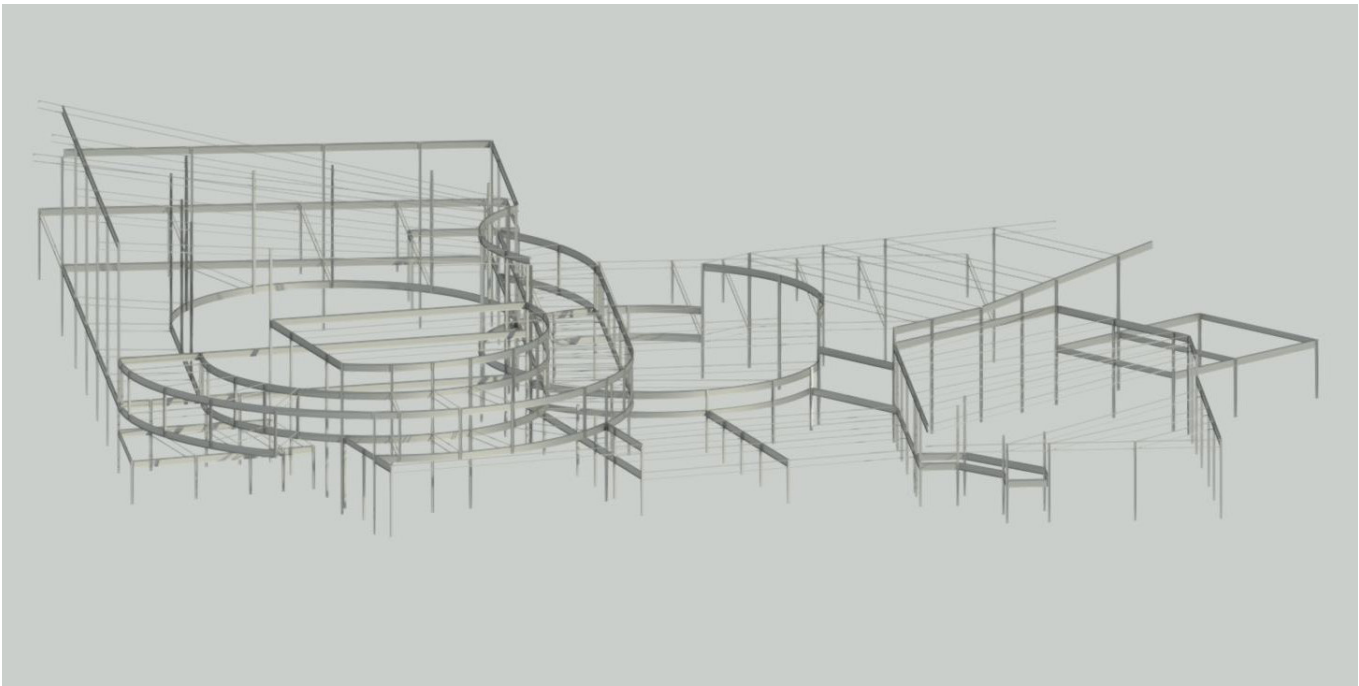


**SECTION 2**

**FIGURES 120-121**



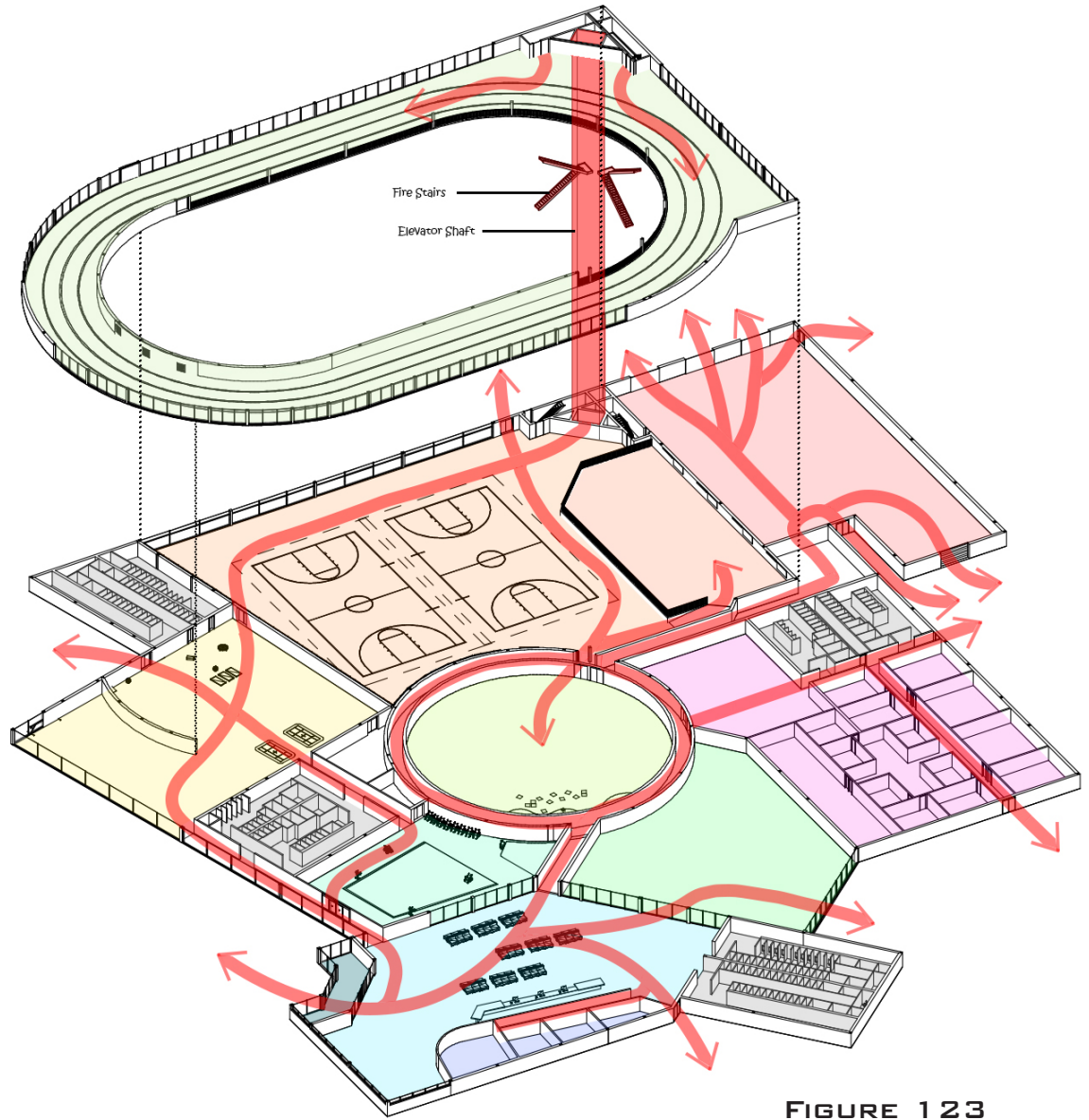
# FINAL DESIGN | SCHEMATIC DIAGRAMS



**STRUCTURE SYSTEM**

**FIGURE 1 2 2**

# FINAL DESIGN | SCHEMATIC DIGRAMS



- Staff Offices
- Entrance
- Lobby/Commons Area
- Swimming Pool
- Indoor Playground
- Sensory Room
- Walking Track
- Recreational Area
- Gymnasium
- Adapted Exercise Area
- Therapy Center
- Mechanical Room
- Bathrooms
- Circulation Paths

FIGURE 123

## CIRCULATION DIAGRAM

# FINAL DESIGN | SCHEMATIC DIGRAMS

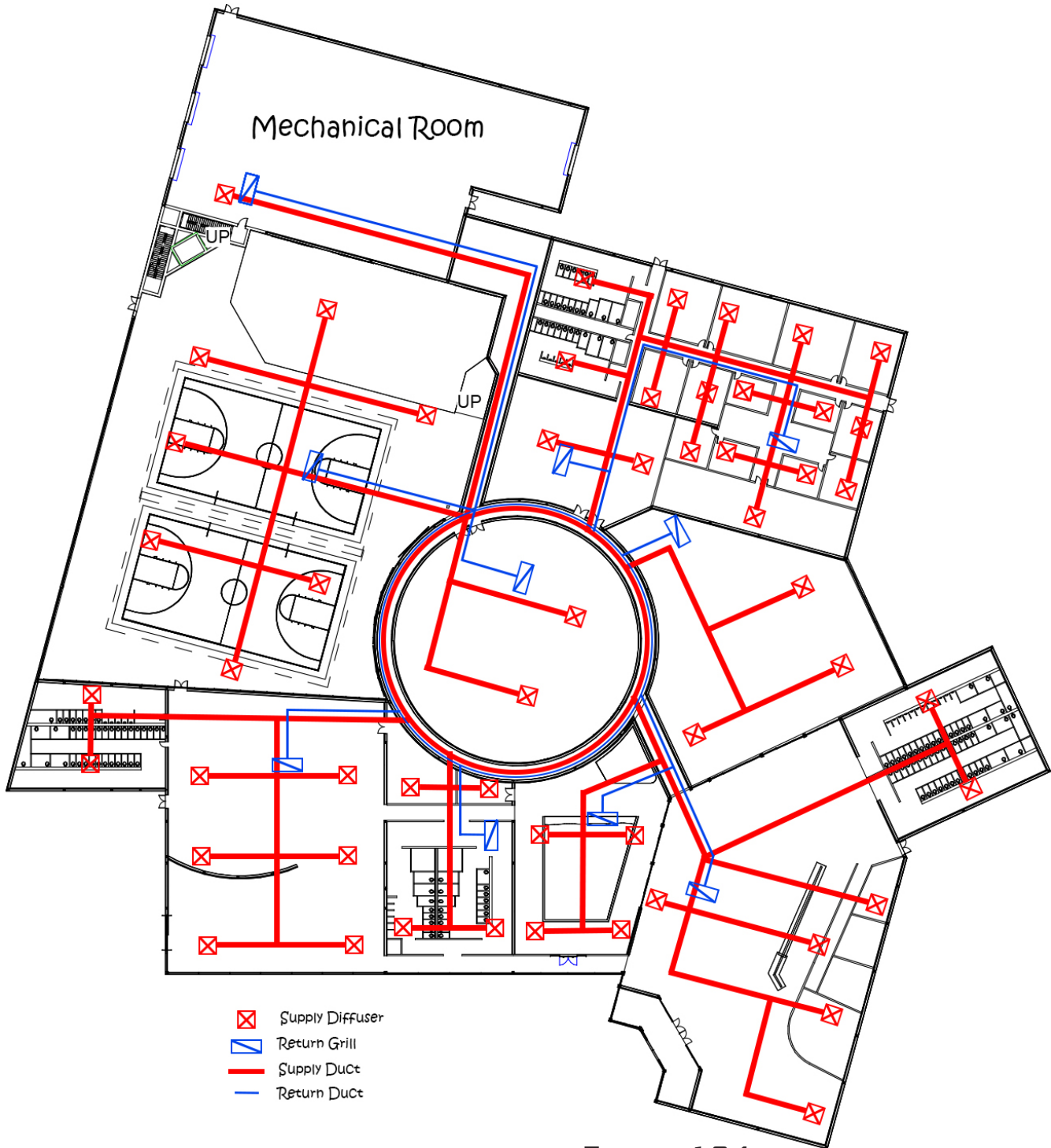


FIGURE 124

HVAC SYSTEM

# FINAL DESIGN | TECHNICAL DETAILS

## Wall and Floor Section

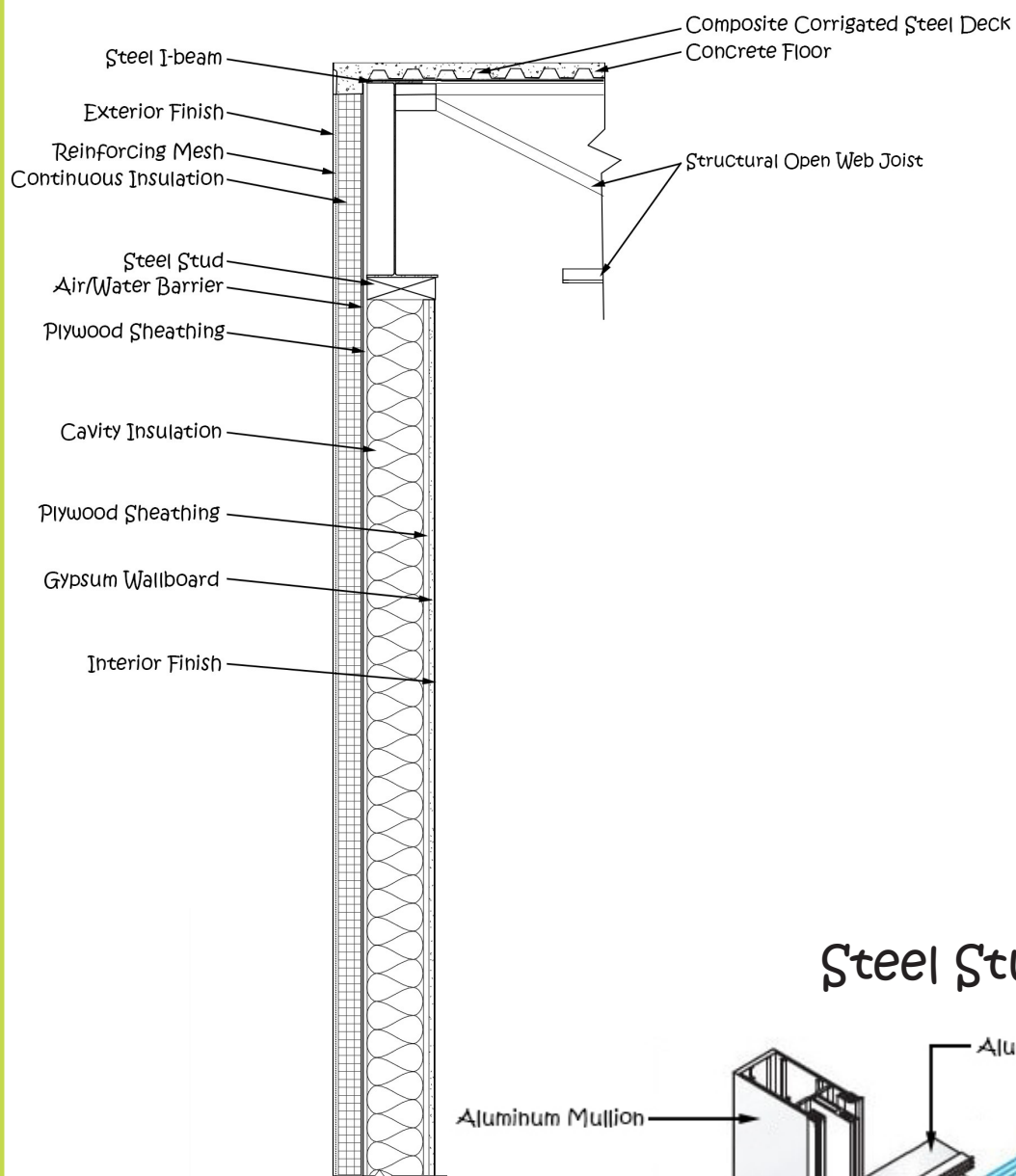


FIGURE 125

## Steel Stud

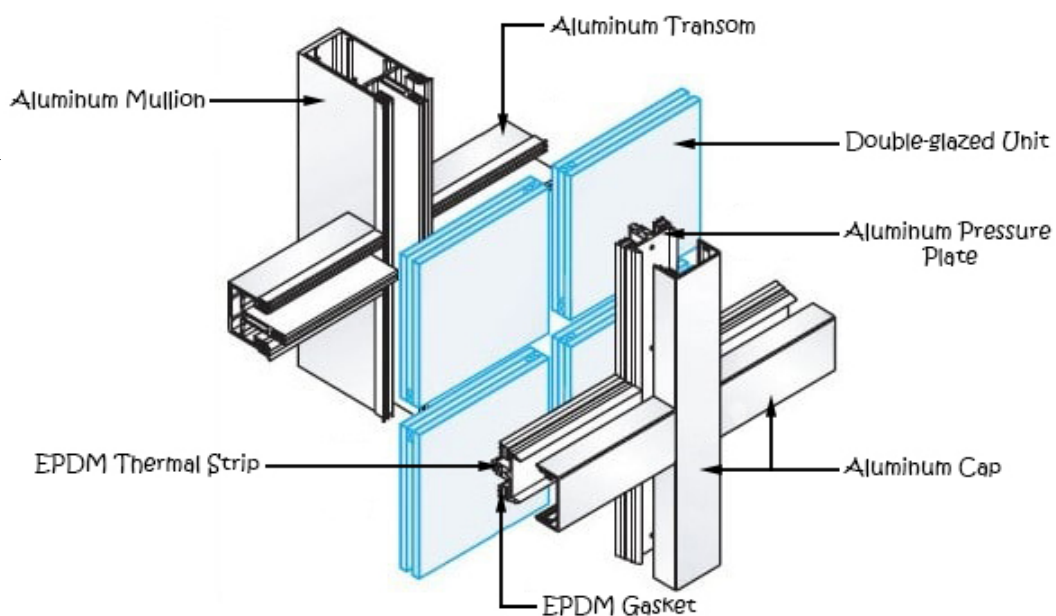
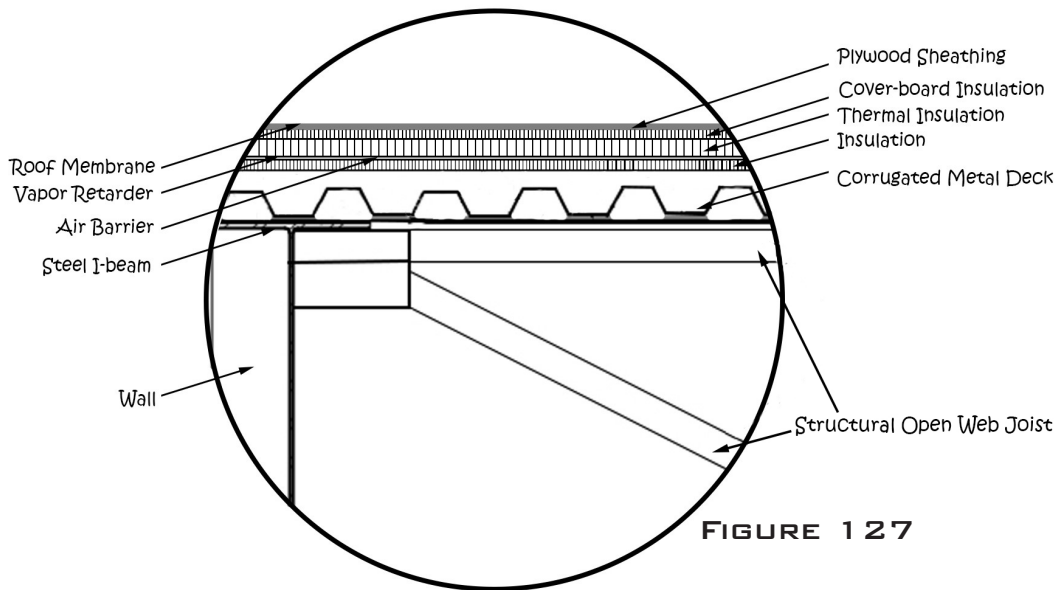
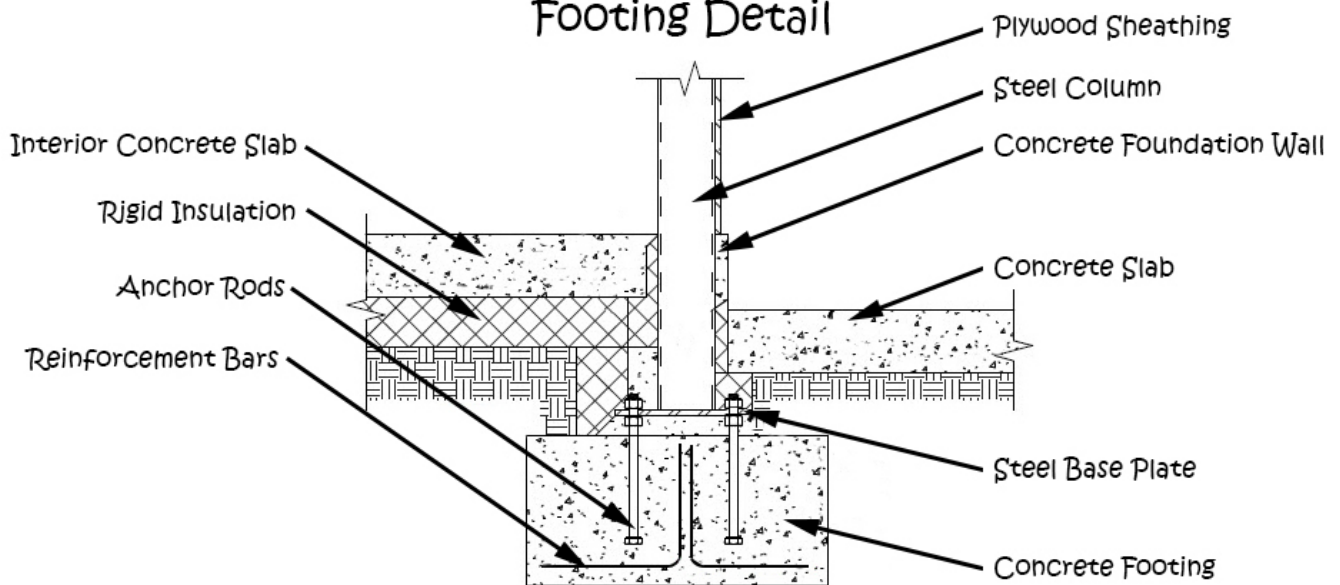


FIGURE 126

## Roof Detail



## Footing Detail





# FINAL DESIGN | RENDERINGS



EXTERIOR PERSPECTIVE | ENTRANCE

FUN, BRIGHT COLORS AND PATTERNS WERE USED AS FLOORING, WHILE KEEPING THE WALLS A SIMPLE WHITE TO NOT OVER STIMULATE. WINDOWS WERE PLACED SPECIFICALLY FOR LIGHT CONTROL. FLOOR LAYOUT IS VERY OPEN AND SPACIOUS TO ALLOW EASY MOBILITY.



EXTERIOR PERSPECTIVE | ELEVATED TRACK VIEW

FUN, BRIGHT COLORS AND PATTERNS WERE USED AS FLOORING, WHILE KEEPING THE WALLS A SIMPLE WHITE TO NOT OVER STIMULATE. WINDOWS WERE PLACED SPECIFICALLY FOR LIGHT CONTROL. FLOOR LAYOUT IS VERY OPEN AND SPACIOUS TO ALLOW EASY MOBILITY.



# FINAL DESIGN | RENDERINGS



**INTERIOR PERSPECTIVE | LOBBY/COMMONS AREA**

FUN, BRIGHT COLORS AND PATTERNS WERE USED AS FLOORING, WHILE KEEPING THE WALLS A SIMPLE WHITE TO NOT OVER STIMULATE. WINDOWS WERE PLACED SPECIFICALLY FOR LIGHT CONTROL. FLOOR LAYOUT IS VERY OPEN AND SPACIOUS TO ALLOW EASY MOBILITY.



**INTERIOR PERSPECTIVE | SWIMMING POOL**

LOW CEILING FOR SMALL COMFORTING SPACE, LIGHTING AND TEMPERATURE CAN EASILY BE CHANGED BASED ON USER'S NEEDS. LIGHT COLORED WALLS WITH BRIGHT COLORED PATTERNS TO STIMULATE SENSES. A HANDICAP ACCESSIBLE POOL AND HOT TUB FOR EASY ACCESS.



# FINAL DESIGN | RENDERINGS



**INTERIOR PERSPECTIVE | GYMNASIUM**

LARGE OPEN SPACE FOR FREE MOVEMENT. COLORFUL SOUND DAMPERS ON THE WALLS FOR VISUAL STIMULATION AND NOISE CONTROL. LIGHTING AND TEMPERATURE CAN BE CONTROLLED THROUGH WINDOWS AND MECHANICAL SYSTEMS.

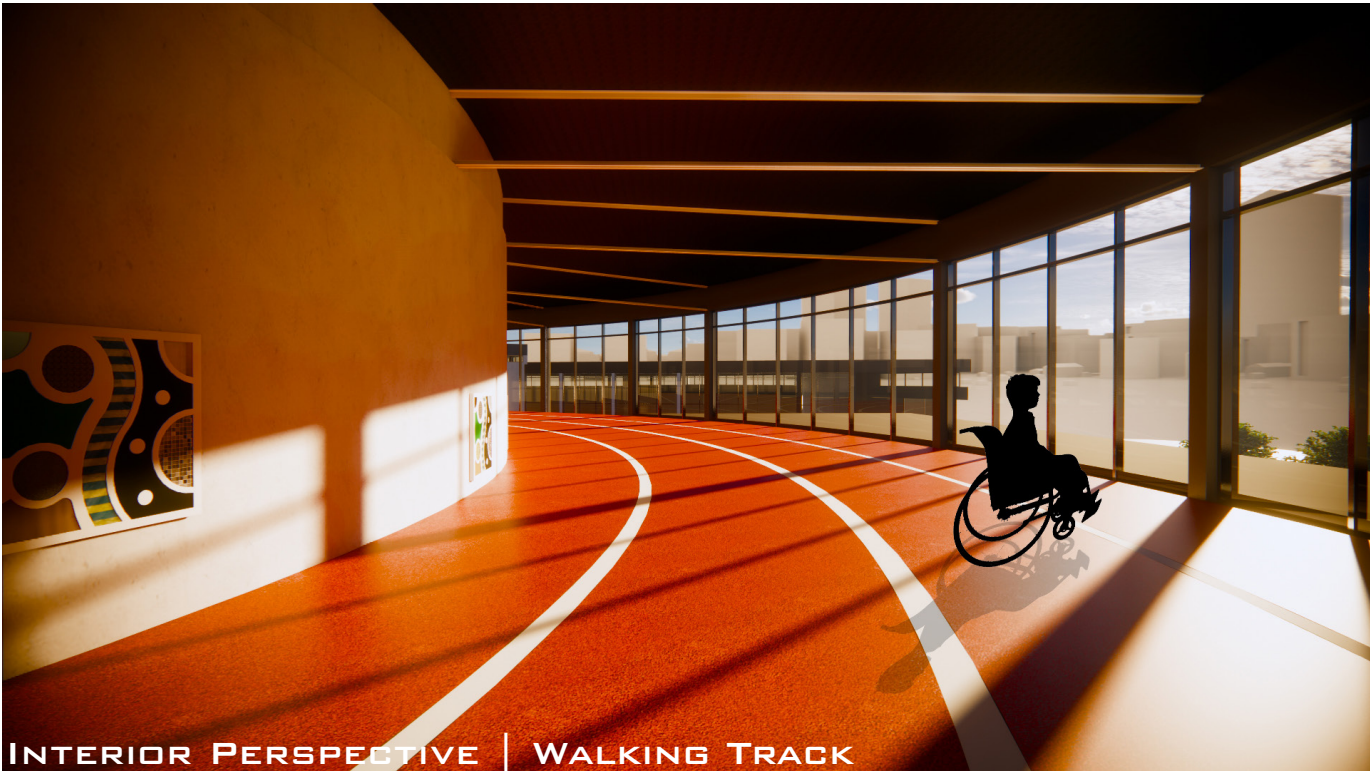


**INTERIOR PERSPECTIVE | ADAPTED EXERCISE AREA**

HANDICAP ACCESSIBLE WORKOUT EQUIPMENT. COLORFUL SOUND DAMPERS TO HELP WITH NOISE CONTROL AND PROVIDE VISUAL STIMULATION. FLOOR IS HARD RUBBER MATERIAL ALLOWING FOR WHEELCHAIR ACCESS.

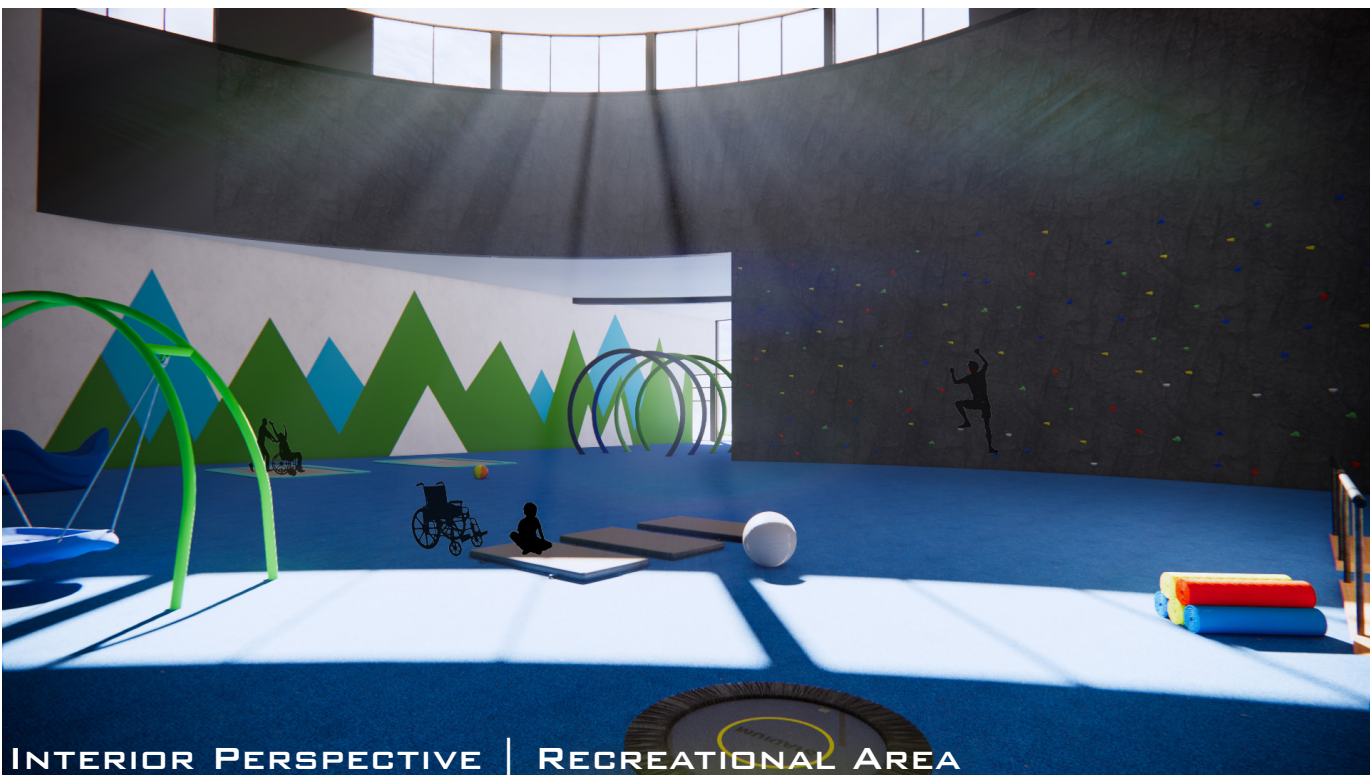


# FINAL DESIGN | RENDERINGS



## INTERIOR PERSPECTIVE | WALKING TRACK

GIVES VIEW OF SURROUNDING AREA WITH ACCESS TO LARGE WINDOWS. ALLOWS FOR FREE WALKING OR EXPLORING SPACE AND HAS TACTILE BOARDS ALONG THE WALLS FOR INTERACTIONS WHILE USERS WALK THE TRACK.



## INTERIOR PERSPECTIVE | RECREATIONAL AREA

A PLACE TO LET LOOSE AND HAVE SOME FUN, ALL WHILE STAYING SAFE AND IN A CONTROLLED ENVIRONMENT. LIGHTING AND TEMPERATURE CAN BE EASILY ADAPTED. ESSENTIAL OILS CAN BE USED TO STIMULATE THE OLFACTORY SENSES. HAS COLORFUL, PATTERNED WALLS.



# FINAL DESIGN | RENDERINGS



## INTERIOR PERSPECTIVE | SENSORY ROOM

ALLOWS FOR QUITE RELAXATION IN A DARK, TEMPERATURE CONTROL ROOM. MANY OPTIONS FOR TACTILE, AUDITORY, OLFACTORY AND VISUAL STIMULUS THROUGH THE USE OF COLORS, SHAPES, TOYS, MUSIC AND ESSENTIAL OILS.



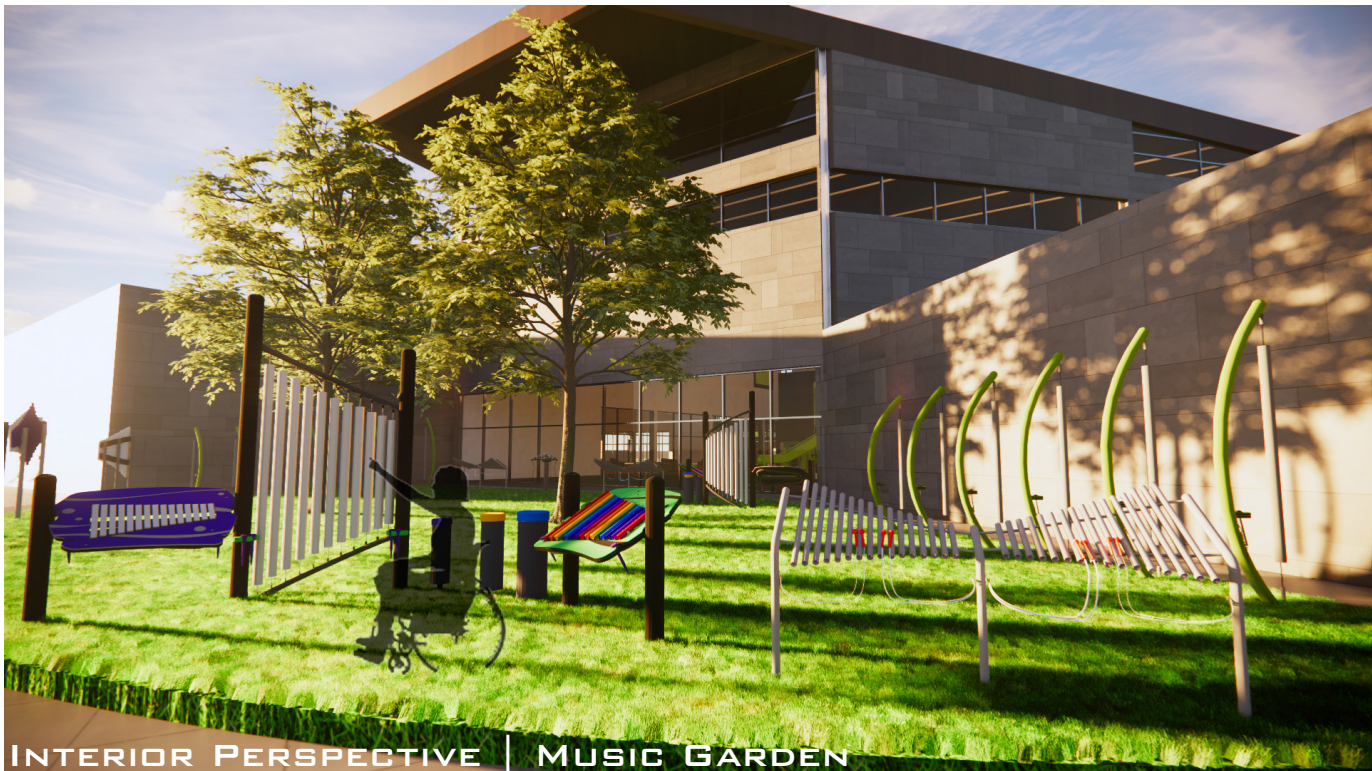
## INTERIOR PERSPECTIVE | INDOOR PLAYGROUND

OPEN SPACE ALLOWING FOR FREE MOVEMENT WITH CONTROLLED TEMPERATURE AND LIGHTING. TACTILE WALLS ARE AVAILABLE TO PLAY TO STIMULATE THE TACTILE SENSE. HANDICAP PLAYGROUND ALLOW FOR USERS TO ADVENTURE AND HAVE NEW EXPERIENCES. HAS COLORFUL PATTERNED WALLS.

FIGURE 137-138



# FINAL DESIGN | RENDERINGS



**INTERIOR PERSPECTIVE | MUSIC GARDEN**

ALLOWS FOR THE EXPRESSION OF PERSONALITY THROUGH MUSIC AND SOUND. FUN, BRIGHT COLORS AND A NUMBER OF DIFFERENT TEXTURES PROVIDE FOR VISUAL AND TACTILE STIMULATION. THE PLACEMENT OF IT OUTDOORS ALLOWS FOR THE ABILITY TO GET FRESH AIR.



**EXTERIOR PERSPECTIVE | ADVENTURE AREA**

LARGE, OPEN AREA THAT PROVIDES FUN, ADVENTUROUS EXPERIENCES FOR THE USERS. WITH EQUIPMENT THAT STIMULATES JUST ABOUT EVERY SENSE, THERE IS SOMETHING IN THE ADVENTURE AREA FOR NEARLY EVERYONE.



# THE APPENDIX

# INTERVIEW SCRIPT + NOTES

BENTLEY SCHMEETS | DECEMBER 6, 2020 | 3:30PM | IN PERSON

1. WHAT DO YOU FEEL WHEN YOU GET OVERWHELMED IN THESE SITUATIONS?
  - OVERWHELMED, UPSET, WORKED UP
  - LOUD SOUNDS MAKE ME WANT TO BE IN QUIET PLACES (MAKES ME FREAK OUT AND SCARE ME)
  - I WANT TO GET OUT OF THERE AND GO HOME
  - EAR MUFFS ON IN LOUD SPACES
2. WHAT ARE TYPES OF WAYS THAT YOU THINK WOULD HELP YOU STAY CALM OR CALM DOWN?
  - MASSAGING, TIGHT HUGS WHEN CRYING, HOT LIKE GOLD THINGS, MUSIC, IPAD OR TV
3. THINKING ABOUT YOUR 5 SENSES, DO ANY OF THEM MAKE YOU FEEL CALMER THAN OTHERS
  - ALL FEEL THE SAME
4. IF A BUILDING WERE CREATED JUST FOR YOU, WHAT KINDS OF THINGS WOULD YOU LIKE TO SEE IN IT? IN TERMS OF MEETING YOUR EVERYDAY NEEDS.
  - HEATED POOL, HOT TUB, GYM, ARM WEIGHTS, VIBRATING TOYS, DIMMABLE LIGHTS, TEXTURE WALL, MUSIC
5. DO YOU FEEL LIKE YOU FEEL LIKE YOU EXPERIENCE SPACES DIFFERENTLY THAN OTHER PEOPLE? LIKE LOUD PLACES? MALL? ARCADE? ETC.
  - YES, HE WOULD SAY HE EXPERIENCES IT DIFFERENTLY THAN ME
  - YOU COULDN'T DO 24 HOURS IN MY SHOES

HEATHER SCHMEETS | DECEMBER 6, 2020 | 9:30PM | IN PERSON

1. DO YOU FEEL YOU EXPERIENCE SPACES DIFFERENTLY THAN BENTLEY IN TERMS OF SENSORY?
  - ABSOLUTELY! I CAN HANDLE TEMPS; BODY CAN REGULATE TEMPERATURE HIS CANNOT.
  - CROWDED SPACES, BEN GETS ANXIOUS, OVERWHELMED IF THERE IS SOUND AND LIGHT.
  - I CAN WALK AWAY AND TUNE INTO SOMETHING ELSE
2. OR DO YOU FEEL YOU HAVE A DIFFERENCE EXPERIENCE THAN OTHERS HAVING A SON WITH HYPERSENSITIVITY?
  - GOOGLING PLACES BEFORE GOING TO THEM.
  - MAKING SURE THEY ARE ADAPTABLE.
  - ARRANGING THINGS AHEAD OF TIME, ONE ON ONE.
  - FULLY AWARE. PUT YOURSELF IN HIS SHOES.

**3. IS IT THE SAME WHEN YOU ARE WITH BENTLEY THAN WITHOUT BENTLEY?**

- TAKES MORE TIME WITH BENTLEY, EXPLAIN THINGS.
- YES, IF WE BROUGHT BEN, THEN WE WOULD HAVE TO WORRY ABOUT CERTAIN THINGS. COMPLETELY DIFFERENT.

**4. WHAT HAVE SOME OF YOUR EXPERIENCE BEEN WITH BENTLEY IN NON-HANDICAP AND NON-HYPERSENSITIVITY ADAPTABLE SPACES?**

- THE SCHOOL FUNDRAISER/ CARNIVAL. THE CHAOS. BOWLING.
- EVERY POOL IN TOWN/SLIDE.
- THE RACES HE HAD TO LEAVE.
- HE JUST SHUTS DOWN.
- WANTS TO BE THERE BUT PHYSICALLY CANNOT.
- BLEACHERS AT A GAME. FARGO DOME, NO GOOD SEATING (MORE PEOPLE)
- CANNOT BE ALONE, PEOPLE IN SAME ROOMS AT THERAPY.

**5. HOW DOES THAT MAKE YOU FEEL WHEN BENTLEY HAS MOMENTS LIKE THAT?**

- HELPLESS, GIVES ME DRIVE TO FIGURE OUT A SOLUTION
- RESEARCH, HOW CAN I MAKE THIS BETTER FOR HIM.

**6. THINKING ABOUT EVERYTHING THAT BENTLEY CAN DO, WHAT KINDS OF SPACES AND THINGS DO YOU WISH WERE AVAILABLE AS HANDICAP ACCESSIBLE AND HYPERSENSITIVITY ADAPTABLE SPACES?**

- ADAPTABLE GYM, AQUATIC THERAPY HANDICAP ACCESSIBLE, TREADMILL/ UNDERWATER.
- LIFTS TO GET INTO PLACES (THUNDER ROAD GO KARTS)
- THINGS WHERE HE DOES NOT HAVE TO BE IN HIS CHAIR TO BE INCLUDED.
- PARKS, THERAPEUTIC ROOMS OR SERVICES, SPA, MUSIC THERAPY, SPORTS, VIBRATING ROOM, TUNNEL ROOM, THERAPY DOGS, ANIMAL-BASED THERAPY, YOGA
- VOLUNTEER WORK (WHERE HE CAN FEEL HE IS PART OF THE COMMUNITY, GAIN INDEPENDENCE)

**8. I AM DESIGNING A FACILITY THAT IS 100% HANDICAP ACCESSIBLE AND WILL BE ADAPTABLE TO HYPERSENSITIVE PEOPLE, AS A PARENT OF A CHILD WITH THESE ISSUES, WHAT KINDS OF THINGS, WOULD YOU WANT TO SEE IN THE SPACES BEING DESIGNED? MOBILITY? TASTE? SMELL? HEAR? SEE? FEEL?**

- ICE CREAM, POP ROCKS.
- GLOVED PLAY BOX
- NO BARRIER WALKING TRACK SYSTEM, IN POOL, ROCK CLIMBING, FULLY SUPPORTED ZIP LINE,
- TRAMPOLINES (FULLY SUPPORTED)
- QUIET RELAXING ROOM/ STUFF ON CEILING/ VIBRATING FLOOR
- ASSISTIVE GAMING COUNCILS
- SOCIAL HOUR (MEET AND GREET- KIDS THAT SUFFER FROM THE SAME ISSUES)
- UNDERWATER SWIMMING (BREATHING)
- FLOAT SPAS
- STEAM ROOM (HUMIDIFIER) (ESSENTIAL OILS) CONCLUDED
- CIRCULATION (BIKES THAT MAKE YOUR LEGS MOVE)
- ELEVATION (LEGS UP AND COMFORTABLE POSITION)
- MOVEMENT LESSON THERAPIST
- PLAYING IN THE SNOW



# INTERVIEW SCRIPT + NOTES

ANDREA HENSRUD | DECEMBER 8, 2020 | 12:05PM | ZOOM CHAT

1. **WHAT DO PEOPLE/KIDS STRUGGLE WITH MOST WHEN DEALING WITH HYPER SENSITIVITY?**
  - ACTIVE MORROW REFLEX – STARTLE REFLEX- AUDITORY- UNPREDICTABLE
  - SENSORY INPUT- TOUCH, SMELL, TASTE, MOVEMENT, VISION
  - TOO LOUD, NOT TOO LOUD
  - KIDS ARE SENSITIVE TO TOUCH, CLOTHES, EQUIPMENT
  - SMELL- NOT THE BIGGEST
  - FEET TO STAY ON THE GROUND, STABLE GROUND WILL GUIDE
  - LOWER THRESHOLD – MEET THEIR THRESHOLD WAY FASTER
  
2. **AS AN OT THERAPIST, WHAT DO YOU FIND HELPS KIDS MOST IN TERMS OF DEALING WITH HYPERSENSITIVITY?**
  - PREDICTABILITY – WHOLE
  - EDUCATING PEOPLE AROUND THEM
  - SKILLED INTERVENTION – TO WORK THROUGH
  - SENSORY DIET
  - EXPLAINING
  
3. **WHAT ARE GOOD ELEMENTS TO IMPLEMENT WHEN DESIGNING? SIGHT? TACTILE? AUDITORY? OLFACTORY? GUSTATORY?**
  - WHEELCHAIRS FOR A SLIDE, SWING, JUMPING (MOVEMENT AND ENGAGEMENT)
  - BALL PIT
  - MORE ABILITY AND ACCESS TO MOVEMENT WOULD INCREASE MOTIVATION
  - INTERACTIVE WALL- BUBBLE WALL- TOUCH WALL AND ALL THE LIGHT COME HERE – FUN AND FUNCTION.COM (CUDDLING) (CALMING AND STIMULATING)
  - CHANGING UP ESSENTIAL OILS
  - CUPBOARD OF SNACKS (CRUNCHY SNACKS, CHEWY SNACKS, SPICY SNACKS, SOUR SNACKS)
  - GUMMY BEARS – SOOTHING
  - SOUR PATCH KIDS-PRETZELS – ALERT
  - MOUTH IS MOST ORGANIZED SPOT IN OUR BODY – GUM
  - PROTEIN HELPS FOCUS
  
4. **DO YOU FEEL YOU EXPERIENCE SPACES DIFFERENTLY BECAUSE OF YOUR PROFESSION? SENSORY WISE?**
  - YES, I DO, I AM A LITTLE MORE JUDGMENTAL. DON'T NOTICE EVERYTHING BUT PICK UP ON SOMETHINGS
  - IF THERE IS A HANDICAP BUTTONS – DOORS OPEN IN OR OUT TO THE HALLWAY.
  - I AM A LITTLE SENSITIVE – MIGRAINE
  - HAVE A BETTER EXPERIENCE WHEN I KNOW THINGS ARE SENSORY ADAPT-ABLE

5. THINKING ABOUT THE FACILITY I AM DESIGNING, WHAT WOULD BE YOUR BIGGEST SUGGESTION TO MAKE IT 100% SENSORY ACCOMMODABLE?

- NEED CONTROL
- PADDED WALL – SOUNDPROOF WALLS
- SOFT FLOORING-
- SOUND MACHINES
- CONTROL THE UNEXPECTED INPUT – DAMPEN THE UNEXPECTED
- TEMPERATURE CONTROL
- CAN'T ONLY TAPER TO HYPERSENSITIVITY BUT ALSO HYPOSENSITIVITY – PLAYGROUND ONE-PART CAN BE SAME ONE CAN BE DIFFERENT.
- CALMING IS SLOW PREDICTABLE QUIET
- NOT CALMING FAST UNPREDICTABLE CRUNCHY SOUR
- DROPDOWN CURTAINS IN GYM AREA

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SECOND YEAR

FALL 2017 | DARRYL BOOKER | STUDIO

TEA HOUSE | FARGO, ND

BOAT HOUSE | MINNEAPOLIS, MN

SPRING 2018 | CHARLOTT GREUB | STUDIO

DWELLING PROJECT | MARFA, TX

MIXED-USE APARTMENTS | FARGO, ND

THIRD YEAR

FALL 2018 | PAUL GLEYE | STUDIO

VISITORS CENTER | FARGO, ND

MIXED-USE STUDENT CENTER | FARGO, ND

SPRING 2019 | EMILY GUO | STUDIO

NATIVE AMERICAN HERITAGE MUSEUM | MOORHEAD, MN

ASSISTED LIVING | CHINA

FOURTH YEAR

FALL 2019 | MARK BARNHOUSE | STUDIO

HIGH-RISE CAPSTONE PROJECT | MIAMI, FL

SPRING 2020 | PAUL GLEYE | STUDIO ABROAD

URBAN RENEWAL | BRUSSELS, BELGIUM



## CONTACT INFORMATION

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MY NAME IS KAI ERICKSON AND I WAS BORN AND RAISED IN FARGO, ND. I AM A GRADUATE STUDENT PERUSING A MASTER'S DEGREE IN THE ARCHITECTURE PROGRAM AT NORTH DAKOTA STATE UNIVERSITY. I HAVE ALWAYS HAD A PASSION FOR ART AND SCULPTURE AS WELL AS FINDING AN INTEREST IN HOW THINGS ARE DESIGNED AND CONSTRUCTED. CHOOSING A PROFESSION LIKE ARCHITECTURE LETS ME EXPLORE THE BEST OF BOTH THOSE WORLDS. AS I CONTINUE TO LEARN AND MY KNOWLEDGE EXPANDS, MY PASSION FOR ARCHITECTURE GROWS. I ASPIRE TO ONE DAY MAKE AN IMPACT ON THE WORLD WITH THE USE OF ARCHITECTURAL DESIGN. AFTER GRADUATING, I PLAN ON PURSUING EXPERIENCE IN RESIDENTIAL DESIGN.



FIGURE 141

