Terra breathes life into the home and workplace as an environment that sustain **relationships**, **livelihoods**, and **traditions**. The design draws inspiration from **Antelope Canyon** and **hogan homes**, both of which share cultural ties with the Navajo tribe. A U-shaped configuration creates circulation paths that support personal and communal pursuits. Modular furniture and slide-out technologies transform the space to support various tasks and users. Natural materials, earth tones, and links to the outdoors foster a welcoming atmosphere and reflect the natural landscape of Navajo land in Arizona. Terra is a transformable dwelling that nurtures kinship, vitalizes entrepreneurship, and honors heritage

























involvement and

activities and users

3. Employ ergonomic



configuration reflects the Horsehoe

Bend located in Antelope Canyon. weaving.

**Environmental Responsibility** 

Location: Amangsett, New York Project type: Private Art Studio Size: 840 SF

material selections

Navajo-Churro Sheep's soft wool plays

3. Minimize water waste

and consumption

socialization

sense of privacy

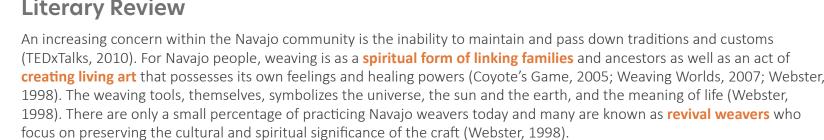
and peace of

The containers themselves heat up quickly with solar radiation and cool down rapidly during the nighttime. They are also not naturally ventilated and susceptible to rust and water damage (Lakot Alemdağ & Aydın, 2015). To solve these issues, containers must have proper insulation and use natural cross ventilation with large windows and operable curtain wall systems, which increases daylighting and natural views as well. Modular and multipurpose furniture also maximizes the available floor and storage space.

private areas.







Covid-19. Room occupancy limits, contactless technologies, UVGI systems, hygiene stations, and sensors to monitor body temperatures can be adopted to adjust environments to the pandemic (Mudditt, 2020). Natural ventilation minimizes the recirculation of contaminated air particles (Javier Salas, 2020), so operable windows and access to outdoor spaces reduces

The use of **antimicrobial materials and finishes**, specifically on high-touch surfaces, aids in reducing the impact of

Greywater recycling systems (Green Building Manual, 2016), passive thermal design (Elrayies, 2017), and photovoltaic energy systems are effective green building strategies frequently used in renovated shipping containers. In the interior, utilizing recycled/recyclable materials decreases waste and carbon footprint (Lakot Alemdağ & Aydın, 2015).

The information collected and understanding gained from these resources and methods were critically applied to the design

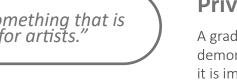
An **ergonomic weaving set-up** allows Based on an interview with Rowland artists to alleviate stress on their Ricketts, a textile artist, diffused, even is often a challenge for artists (R. body and ample storage space is **lighting** with a CRI of 90+ prevents Ricketts, personal communication, shadows and ensures color accuracy. June 11, 2021).

during development, ensuring that the project's design solutions were founded on evidence.



s and historical processes. With over 15 years of

'Work-life balance is something that is really challenging for artists.'





# demonstrated in the design. In a work-home environment, the space plan creates clear "zones" that are dedicated it is important to establish clear **boundaries** between one's **professional and personal life**. (R. Ricketts, personal residents with a sense of **security**. (R. Ricketts, personal

# A gradual transition from **public space to private spaces** is Utilizing a linear, public-to-private circulation organization, to **certain users and/or activities.** This provides the

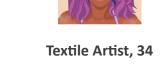
# The business name and branding is inspired by the Navajotechnology; intended to be



Phoenix, AZ 85003 LEED Neighborhood Assets located within 1/2 mile walking distance Restaurant A Public Park Navajo land is located in the Four Corners region of the United States, including Arizona. This geographical space holds importance in Navajo spirituality, history, and Bus Stop IHI Gym

Phoenix's sunshine, warm temperatures, and minimal rainfall allows for ample opportunities for outdoor Primary Bus ••• Primary activities.

> New Urbanism Phoenix is one of most diverse cities in Arizona and demonstrates several qualities of New Urbanism, including walkability, public transport, and mixed-use development, supporting **LEED ND Smart Location and Linkage**.



alleviate some of the physical exertion of textile making."









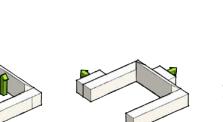
Friend/Guest, 40

(Wheelchair user)

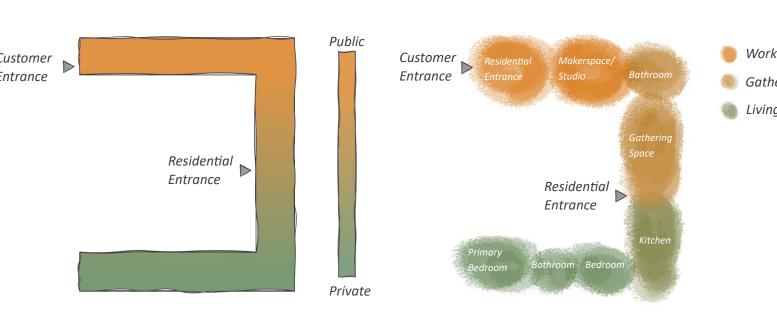




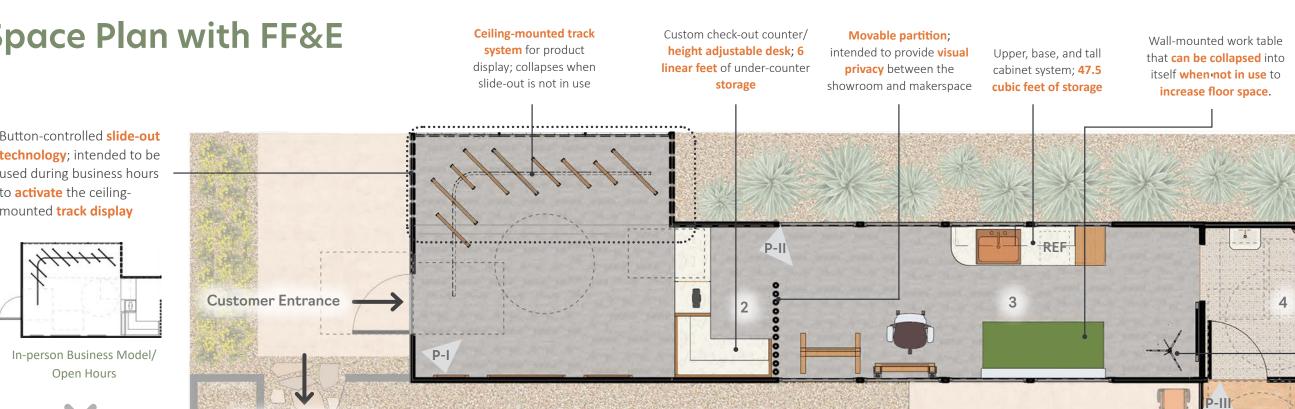








communication, June 11, 2021)



Online Business Model/ Closed Hours

Steel fence to support

security.

1 Showroom

4 Half Bathroom

5 Gathering Space

(109 SF; 226 SF)

(59 SF)

6 Kitchen

(140 SF)

**7** Bedroom (47 SF)

8 Bathroom

(100 SF; 195 SF)

Cash/Wrap and Office

owners' **privacy** and \_\_\_\_

Open Hours

Store Patron, 60

spacious enough for me

to move comfortably

(Cane user)



Photojournalist, 32

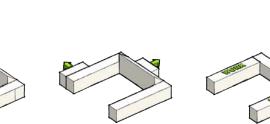
















space for unused dining chairs



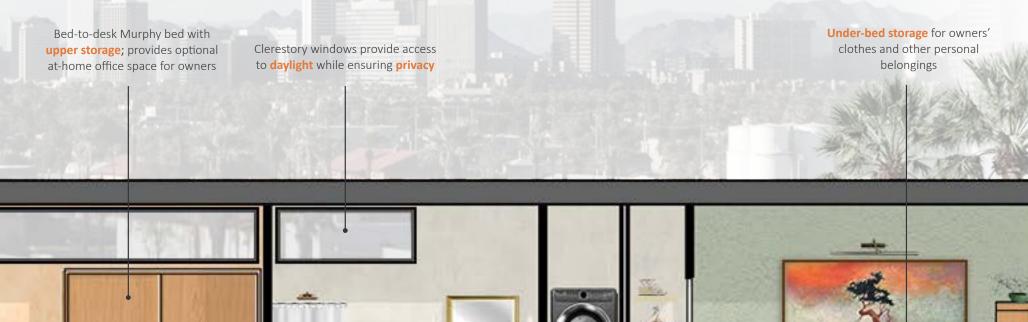
Stacked, front-load washer



Outdoor Patio

Residential Entrance







recycling system (Green

Building Manual, 2016)

copper (Mudditt, 2020)

Camera and tripod; stored

in-person business model

here when not in use during

Grab bars finished with antimicrobial

Button-controlled slide-out

technology; intended to be used

while **hosting guests** to provide a

formal dining space

No Guests/Living Space

# **Product Selection Rationale**

The CDC has found 99% reduction in the Covid-19

virus on non-porous surfaces can occur within 3

concrete flooring once sealed is **non-porous** and

easily cleanable as it will not trap dust and dirt

like carpet flooring. The walls and ceilings are both

made from materials with low to no VOC emission,

synthetic additives, formaldehydes, and nontoxic

adhesives and finishes. Antimicrobial metals such

as copper and brass are used on high-touch surfaces

to continuously kill bacteria. The upholstery in the

countertop in the kitchen and bathrooms were

chosen for their durability and cleanability.

**Key Design Features** 

A Loft storage allows completed works to be

Index prevents any glares and provides

communication, June 11, 2021).

**high color accuracy** (R. Ricketts, personal

B Diffused lighting with high Color Rendering D Wall-mounted table provides large work surface

for finishing textile pieces and other tasks. Can

more floor space.

be collapsed into wall when not in use to provide

stored when not being displayed.

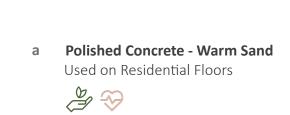
gathering spaces as well as the non-porous quartz

with routine cleaning (CDC, 2021). Polished

days, and risks of infection can be further reduced

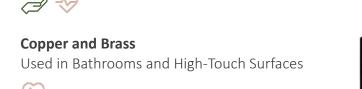
**Environmental Responsibility** 

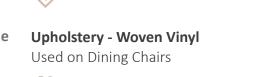
### The materials throughout prioritize sustainability as respecting and honoring the earth is fundamental to Navajo culture. Polished concrete flooring is durable as it **lasts a lifetime** without being replaced, and once sealed, it will not stain or discolor. The oak chosen for the exterior and interior ceilings is plaster is made from readily available, abundant natural materials that require no processing with little energy or water required and zero waste.



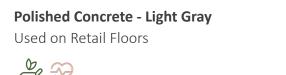
Oak Hardwood Planks









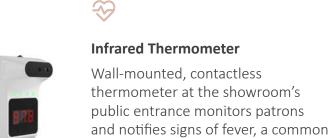


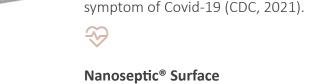
# Health and Safety

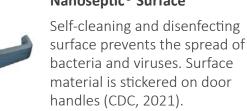
Since Covid-19, advanced technologies and materials to promote health and safety have become essential in design. Our team incorporated **HEPA filters** throughout the building to minimize the spread of airborne particles. In the retail section, specifically, there is an upper-room **UVGI system** to reduce the incidence of viruses and bacteria as well as utilizing touch-free systems for patron check-out (Mudditt, 2020). All measures reduce exposure to respiratory droplets carrying infectious virus (CDC, 2021).







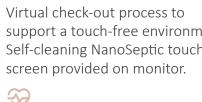




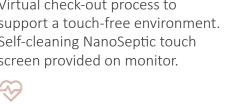


June 11, 2021).











Exterior Elevation of Facade

Branding represented on

the facade next to the retail



C Adjustable task lighting provides the artist with E Wall-mounted bracket provides option for A Company branding featured behind the check-out area, directly across from the public height adjustable loom. Loom frames are removed from stand and placed between bracket holder. This prevents potential injury and discomfort for the user during long weaving

> sessions, especially when used with **ergonomic** B Remote controlled, **adjustable studio lights** task chair (R. Ricketts, personal communication,

provide high quality lighting for textile display, offering Color Rendering Index of 90.

## Suspended display frames **protect textiles**E Outside of business hours and/or when the **from stretching.** Frames can be moved along the ceiling-mounted track system, as well as

Flip-top counter lift. Provides separation between **public and private spaces**, while demonstrating transparency to patrons.



business model is completely **online**, the

photography area.

this wall becomes the **display wall for the** 

A Adjustable NanaWall curtain wall allows leads to an outdoor entertainment space when weather allows.

**B** Operable clerestory windows and slanted ceiling allow for **natural stack ventilation** (Javier Salas, 2020; Walker, 2016).

**D** Collapsible chairs can be stored in the kitchen pantry when not in use.

C Low-E glazing is utilized in the curtain wall and E Extendable dining table; intended to be

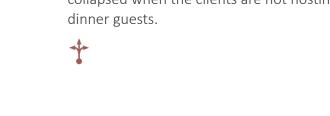
# providing good interior insulation (Bojić & Yik, dinner guests.

**Solar panels** utilize Arizona's sunny

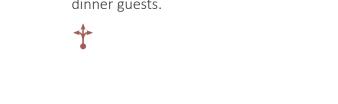
climate to provide environmentall

roofing provide high Solar

Reflectance Index value,











# Concept

Terra breathes life into the home and workplace as an environment that sustain relationships, livelihoods, and traditions. The design draws inspiration from **Antelope Canyon** and **hogan homes**, both of which share cultural ties with the Navajo tribe. A U-shaped configuration creates circulation paths that support personal and communal pursuits. Modular furniture and slide-out technologies transform the space to support various tasks and users. Natural materials, earth tones, and links to the outdoors foster a welcoming atmosphere and reflect the natural landscape of Navajo land in Arizona. Terra is a transformable dwelling that nurtures kinship, vitalizes entrepreneurship, and honors heritage.

### Inspiration Images



inspiration from desert landscape in the southwestern United States.



Clay plaster walls and wood ceilings mimic the traditional materials used in Navajo hogan dwellings.

1. Honor Navajo history

and heritage

2. Support traditiona

Encourage community

involvement and

craftwork

kinship





configuration reflects the Horsehoe Bend located in Antelope Canyon



Navajo-Churro Sheep's soft wool plays a significant role in traditional Navajo

. Reduce energy

2. Upcycle and reuse

Minimize water waste

and consumption

materials

# Goals & Objectives

**Cultural Consciousness** 



Flexibility

Research

1 UNIQLO Pop-Ups

Project type: Retail

Size: 160 SF

**Precedent Studies** 

Location: varies; relocated globally

available floor and storage space.



















history, culture and weaving, and sustainability; as well as an interview with a textile artist.





The design research utilized three precedent analyses of shipping container dwellings and retailers; articles focusing on Navajo

2 Grillagh Water House

Size: 1,440 SF

private areas.

Location: Drumlamph, Ireland

The containers themselves heat up quickly with solar radiation and cool down rapidly during the nighttime. They are also

not naturally ventilated and susceptible to rust and water damage (Lakot Alemdağ & Aydın, 2015). To solve these issues,

containers must have proper insulation and use natural cross ventilation with large windows and operable curtain wall

systems, which increases daylighting and natural views as well. Modular and multipurpose furniture also maximizes the

Project type: Residential



Health & Safety





**Environmental Responsibility** 





2. Promote safe

socialization

**3** Cargo Container Studio

Size: 840 SF

The project site influences building

material selections

orientation, spatial organization, and

Location: Amangsett, New York

Project type: Private Art Studio

Ensure users' sense of privacy and peace of

1. Develop good

Textile Artist, 34

"Work-life balance is something that is really I would enjoy a **private** with **diffused**, **natural** light and allows me to be **comfortable** while weaving to alleviate some of

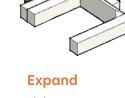
# challenging for artists, so **studio space** that is filled

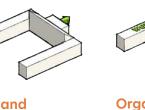
the physical exertion of textile making."

# Photojournalist, 32

"Having a home with our friends and family."

### I love spending time at their home because I always feel comfortable, **relaxed**, and **secure**. It is also a huge plus that their home is close to **public** transit so I can easily get around town in my wheelchair!









Working

Gathering

Living

# **Literary Review**

spatial flow.

A radial circulation path is utilized in a

small retail space, allowing for efficient

An increasing concern within the Navajo community is the inability to maintain and pass down traditions and customs (TEDxTalks, 2010). For Navajo people, weaving is as a **spiritual form of linking families** and ancestors as well as an act of creating living art that possesses its own feelings and healing powers (Coyote's Game, 2005; Weaving Worlds, 2007; Webster, 1998). The weaving tools, themselves, symbolizes the universe, the sun and the earth, and the meaning of life (Webster, 1998). There are only a small percentage of practicing Navajo weavers today and many are known as revival weavers who focus on preserving the cultural and spiritual significance of the craft (Webster, 1998).

Compact storage features provides subtle,

but distinct, separation between public and

The use of **antimicrobial materials and finishes**, specifically on high-touch surfaces, aids in reducing the impact of Covid-19. Room occupancy limits, contactless technologies, UVGI systems, hygiene stations, and sensors to monitor body temperatures can be adopted to adjust environments to the pandemic (Mudditt, 2020). Natural ventilation minimizes the recirculation of contaminated air particles (Javier Salas, 2020), so operable windows and access to outdoor spaces reduces health risks.

Greywater recycling systems (Green Building Manual, 2016), passive thermal design (Elrayies, 2017), and photovoltaic energy systems are effective green building strategies frequently used in renovated shipping containers. In the interior, utilizing recycled/recyclable materials decreases waste and carbon footprint (Lakot Alemdağ & Aydın, 2015).

### **Interview Results**

An **ergonomic weaving set-up** allows artists to alleviate stress on their body and ample storage space is critical.

Based on an interview with Rowland Ricketts, a textile artist, diffused, even lighting with a CRI of 90+ prevents shadows and ensures color accuracy.



naterials and historical processes. With over 15 years of xperience, Rowland specializes in Japanese textile aristry d creates both exhibition and utilitarian pieces, alongside

"Work-life balance is something that is really challenging for artists.'

June 11, 2021).

Promotes work-life balance, which

is often a challenge for artists (R.

Ricketts, personal communication,

The information collected and understanding gained from these resources and methods were critically applied to the design during development, ensuring that the project's design solutions were founded on evidence.

# Branding **Preliminary Logo Designs**



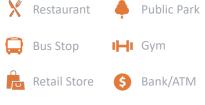


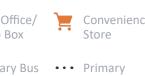
The business name and branding is inspired by the Navajo-**Churro Sheep**. These animals play an important role in Navajo textile making, as their soft, multicolored hair is traditionally use for wool thread. Two logos of a sheep's head were developed: **head-on** and **side-on**. A third logo was developed abstracting a woven textile design.

# Location & Site Selection Rationale

# Site Map

**LEED Neighborhood Assets** located within 1/2 mile walking distance Navajo Nation





Post Office/ Convenience

Routes

Primary Bus ••• Primary Route Walking

649 N. 5th Avenue, Phoenix, AZ 85003

### Navajo land is located in the **Four Corners region** of the United States, including Arizona. This geographical space holds importance in Navajo spirituality, history, and tradition.

**Arid Climate** Phoenix's **sunshine**, **warm temperatures**, and **minimal** rainfall allows for ample opportunities for outdoor

supporting LEED ND Smart Location and Linkage.

### New Urbanism Phoenix is one of most diverse cities in Arizona and demonstrates several qualities of New Urbanism, including walkability, public transport, and mixed-use development,

# **User Personas**





that honors the to share our home

# planet and **prioritizes** is very important to me and my partner, as well as having **plenty of space**

# Friend/Guest, 40 (Wheelchair user)

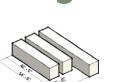
activities.

"I visit at least once a month, if not more, and

# Store Patron, 60 (Cane user)

### "I enjoy that the store is spacious enough for me to move comfortably with my cane and there is **accurate lighting** to allow me to see the beautiful details of the textiles."

# Diagramming



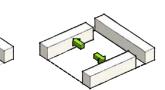
Three shipping

two lengths are

the basis of the

building form.

containers of



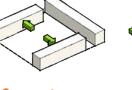
Containers are

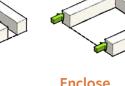
separated to

create an open

as a courtyard.

space that will act





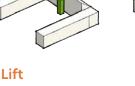


All three containers

Horseshoe U-shape.

are joined together

and this creates a



Middle container is lifted to bring in

more daylight.

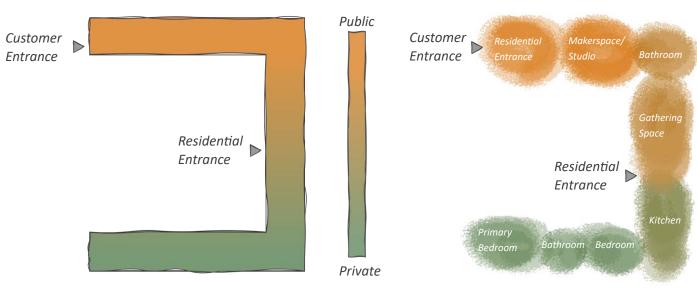






# Building is split into areas based

# **Process Work**



# **Privacy Diagram**

A gradual transition from **public space to private spaces** is demonstrated in the design. In a work-home environment. it is important to establish clear **boundaries** between one's **professional and personal life**. (R. Ricketts, personal communication, June 11, 2021)

# **Bubble Diagram**

Utilizing a linear, public-to-private circulation organization, the space plan creates clear "zones" that are dedicated to **certain users and/or activities.** This provides the residents with a sense of **security**. (R. Ricketts, personal communication, June 11, 2021)

### Green Building Manual. (2016). On-Site Greywater Treatment. PDF. file:///C:/Users/piers/Downloads/graywater%20(2).pdf Javier Salas, M. (2020, June 18). An analysis of three Covid-19 outbreaks: How they happened and how they can be avoided. Retrieved from https://english.elpais.com/spanish\_news/2020-06-17/an-analysis-of-three-covid-19-outbreaks-howlemdağ, E. & Aydın, Ö. (2015). A study of Shipping Containers as a Living Space in Context of Sustainability. Atrium, 3(1), 17–29

fartinez-Garcia, Mary. "Alternative housing: The shipping container home." Center for Realtor Technology (2014): 1-22.; MB Architecture, (2010). Container Studio.

# used during business hours to activate the ceilingmounted track display 1111/14 In-person Business Model/ Open Hours Online Business Model/ Closed Hours Steel fence to support owners' **privacy** and security 1 Showroom (100 SF; 195 SF) Cash/Wrap and Office (35 SF) (210 SF) 4 Half Bathroom

(59 SF)

6 Kitchen

(140 SF)

Bedroom (47 SF)

Bathroom (41 SF)

(92 SF)

**Primary Bedroom** 

**5** Gathering Space

(109 SF; 226 SF)

Space Plan with FF&E

Customer Entrance

Residential Entrance

Button-controlled slide-out

technology; intended to be

**Ceiling-mounted track** 

**system** for product

display; collapses when

slide-out is not in use

Custom check-out counter/

linear feet of under-counter

height adjustable desk; 6

Movable partition;

**privacy** between the

intended to provide **visual** Upper, base, and tall

showroom and makerspace cubic feet of storage

cabinet system; 47.5

**Outdoor Patio** 

Residential Entrance

Bed-to-desk Murphy bed

optional at-home office

space for owners

with upper storage; provides

Wall-mounted work table

that can be collapsed into

itself when not in use to

increase floor space.

Sink-toilet greywater

recycling system (Green

Building Manual, 2016)

copper (Mudditt, 2020)

Camera and tripod; stored

here when not in use during

in-person business model

--------

Grab bars finished with antimicrobial

Button-controlled slide-out technology; intended to be used

while hosting guests to provide a

formal dining space

Hosting Guests/Gathering Space

No Guests/Living Space

# **Interior Section**

N Scale: 1/4" = 1'-0"



Stacked, front-load washer

and dryer set

Wing, C. (2018). How Your House Works: A Visual Guide to Understanding and Maintaining Your Home. 3rd Edition. [IVitalSource Bookshelf version]. Retrieved from vbk://9781119473527

Bar-height dining;

intended to be used for

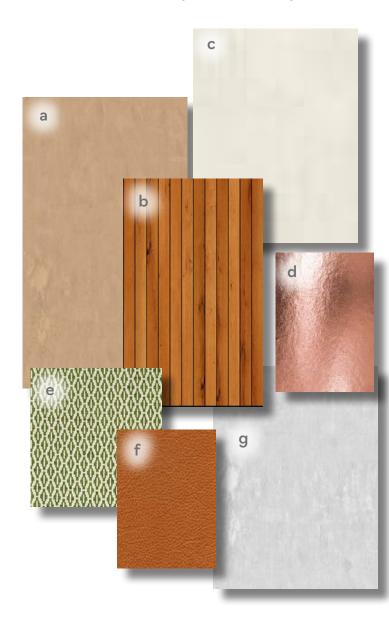
casual dining for owners

# **Product Selection Rationale**

### Materials

### **Health and Safety**

The CDC has found 99% reduction in the Covid-19 virus on non-porous surfaces can occur within 3 days, and risks of infection can be further reduced with routine cleaning (CDC, 2021). Polished concrete flooring once sealed is **non-porous** and easily cleanable as it will not trap dust and dirt like carpet flooring. The walls and ceilings are both made from materials with low to no VOC emission, synthetic additives, formaldehydes, and nontoxic adhesives and finishes. Antimicrobial metals such as copper and brass are used on high-touch surfaces to continuously kill bacteria. The upholstery in the gathering spaces as well as the non-porous quartz countertop in the kitchen and bathrooms were chosen for their **durability** and **cleanability**.



### **Environmental Responsibility**

The materials throughout prioritize sustainability as respecting and honoring the earth is fundamental to Navajo culture. Polished concrete flooring is durable as it lasts a lifetime without being replaced, and once sealed, it will not stain or discolor. The oak chosen for the exterior and interior ceilings is **FSC-certified sustainably harvested**. Venetian clay plaster is made from readily available, abundant natural materials that require no processing with little energy or water required and zero waste.

a Polished Concrete - Warm Sand Used on Residential Floors



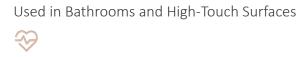
Oak Hardwood Planks Used on Residential and Retail Ceiling



Venetian Plaster - White Used on Residential and Retail Walls



**Copper and Brass** 



Upholstery - Woven Vinyl Used on Dining Chairs



**Upholstery - Mushroom Faux Leather** Used on Bar Seating



g Polished Concrete - Light Gray Used on Retail Floors



### Technology

### **Health and Safety**

Since Covid-19, advanced technologies and materials to promote health and safety have become essential in design. Our team incorporated **HEPA filters** throughout the building to minimize the spread of airborne particles. In the retail section, specifically, there is an upper-room **UVGI system** to reduce the incidence of viruses and bacteria as well as utilizing touch-free systems for patron check-out (Mudditt, 2020). All measures reduce exposure to respiratory droplets carrying infectious virus (CDC, 2021).



### **HEPA Filter**

HEPA air filters are installed in the building's ductless airconditioning units to provide high-quality air filtration.

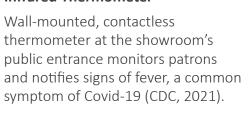


**Upper-room UVGI System** 

Upper-room UVGI Systems are installed near air-conditioning units to further sanitize circulated air.



### **Infrared Thermometer**



# Nanoseptic® Surface

Self-cleaning and disenfecting surface prevents the spread of bacteria and viruses. Surface material is stickered on door handles (CDC, 2021).





Virtual check-out process to support a touch-free environment. Self-cleaning NanoSeptic touch screen provided on monitor.

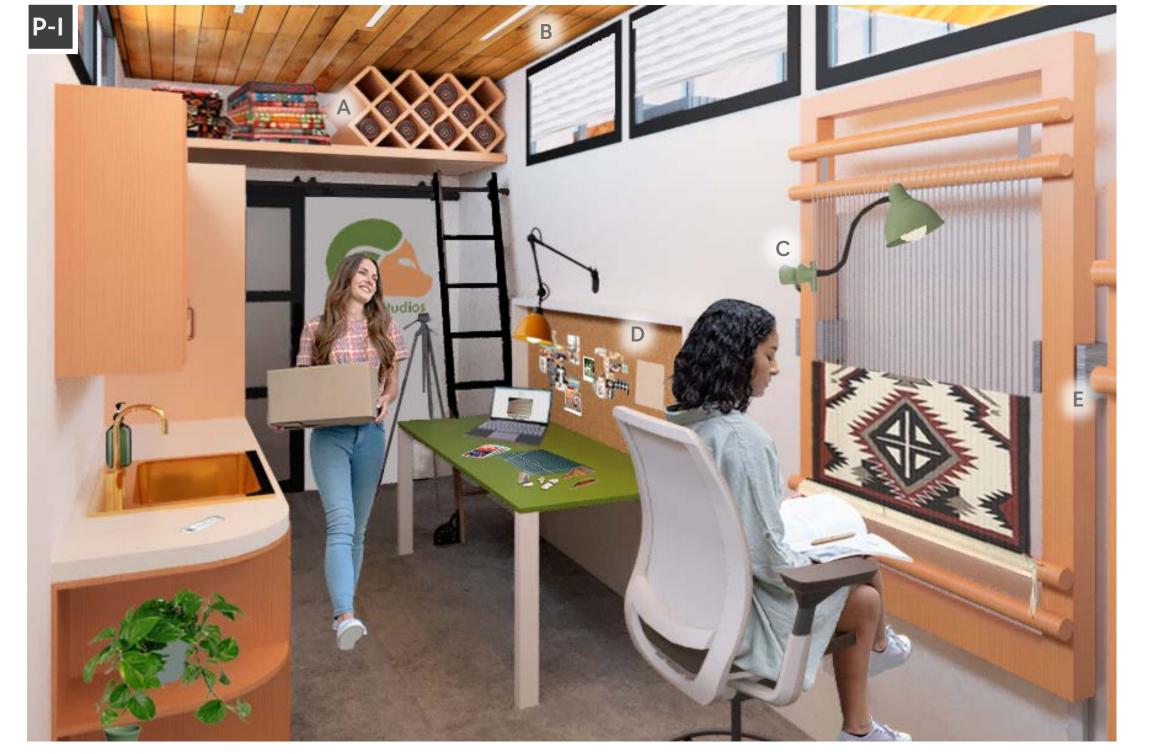
**Touch-free Check-out System** 



# **Exterior Elevation of Facade**



# Makerspace



## **Key Design Features**

- A Loft storage allows completed works to be stored when not being displayed.
- B Diffused lighting with high Color Rendering Index prevents any glares and provides **high color accuracy** (R. Ricketts, personal communication, June 11, 2021).
- Puddledduck Farm. (n.d.) Churro Sheep. Puddleduck Farm. (Digital Image) Retrived from https://www.puddleduckfarm.net/navajochurrosheep.html (n.d.) Horseshoe Bend. Grand Canyon. (Digital Image) Retrived from https://grandcanyon.com
- C Adjustable task lighting provides the artist with focused lighting while working.
- **D** Wall-mounted table provides large work surface for finishing textile pieces and other tasks. Can be collapsed into wall when not in use to provide more floor space.
- (n.d.) Copper and Brass. Pinterest. (Digital Image) Retrieved from pinterest.com (n.d.) HEPA Air Filter. Walmart. (Digital Image) Retrieved from walmart.com
- **E** Wall-mounted bracket provides option for height adjustable loom. Loom frames are removed from stand and placed between bracket holder. This prevents potential injury and discomfort for the user during long weaving sessions, especially when used with **ergonomic**
- June 11, 2021).
- Philips Lighting. (n.d.) UVGI System. Philips Lighting. (Digital Image) Retrieved from https://www.lighting.philips.com

task chair (R. Ricketts, personal communication,

Showroom



## **Key Design Features**

- A Company branding featured behind the check-out area, directly across from the public entrance.
- B Remote controlled, adjustable studio lights provide high quality lighting for textile display, offering Color Rendering Index of 90.
- C Suspended display frames protect textiles from stretching. Frames can be moved along the ceiling-mounted track system, as well as pivoted.
- **D** Flip-top counter lift. Provides separation between **public and private spaces**, while demonstrating transparency to patrons.
- **E** Outside of business hours and/or when the business model is completely **online**, the this wall becomes the **display wall for the** photography area.

# **Gathering Space**



## **Key Design Features**

- A Adjustable NanaWall curtain wall allows leads to an outdoor entertainment space when weather allows.
- **B** Operable clerestory windows and slanted ceiling allow for **natural stack ventilation** (Javier Salas, 2020; Walker, 2016).
- C Low-E glazing is utilized in the curtain wall and clerestory windows to provide ample light while providing good interior insulation (Bojić & Yik,
- **D** Collapsible chairs can be stored in the kitchen pantry when not in use.

**E** Extendable dining table; intended to be collapsed when the clients are not hosting dinner guests.





