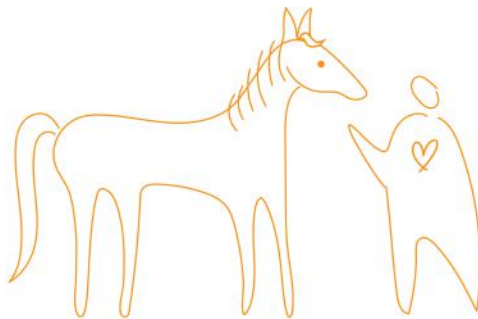


Symbiotic Spaces for Individuals with Autism and Horses

A Sensory-Informed Architectural Guidebook for
Shared Human-Equine Environments



Alex Yarovaya

Portland State University

Master of Architecture: Independent Study

Advisor: Margarette Leite

Table of Contents

Introduction.....	1
Sensory Experiences of People with Autism and Horses	2
Symbiotic Space: Arena as the Relational Interface	8
• The Scale of the Horse	8
• The Functions of the Arena	9
• Architectural Mediation Diagrams	10
Shared Sensory Conditions	13
• Tactile Surfaces and Materials	13
• Visual Conditions	15
○ <i>Color</i>	15
○ <i>Light, Glare, and Shadow</i>	20
○ <i>Material Reflectance and Surfaces</i>	22
○ <i>Visual Noise</i>	24
○ <i>Environmental Legibility and Predictability</i>	26
• Acoustic Conditions	28
• Ventilation	30
• Shared Spatial and Social Conditions	31
Specification Samples	32
• Human Spaces	32
• Horse Spaces	38
• Human-Horse Spaces	40
Architectural Application	42
• Autism-Informed Design Principles	42
• Diagrammatic Applications to Human Sensory Rooms	44
• Diagrammatic Applications to Horse Stalls	47
Symbiotic Large-Scale Building Application	49
Conclusion	55

INTRODUCTION

Have you ever noticed the way a shirt collar rests against your neck just slightly wrong, pulling your attention back to it again and again? Or the hum of a fluorescent light that, once noticed, becomes impossible to stop hearing? How about when a pattern is so strong it starts to distort your perception? A sound, a texture, or a rhythm in the built environment that most people filter out can suddenly become overwhelming when it refuses to fade into the background.

For some, sensory input is not easily muted. It can be a constant that accumulates, intensifies, and shapes how space is understood, navigated, and tolerated. This sensitivity to sound, light, movement, and spatial clarity is not uniquely a human-only experience, either. Between both people and animals, it's a shared way of understanding the environment. For example, horses, as prey animals, are similarly attuned to shifts in sound, movement, and environment. What might seem minor to humans can actually trigger stress responses that affect behavior, trust, safety, and overall wellbeing in a horse.

If these conditions shape the environment, then it is also architectural. Architecture shapes how activity is felt, anticipated, understood, and also how it connects us symbiotically with animals. Therefore, architecture can also mediate coexistence through shared sensory design.

One of the most commonly researched forms of sensory design comes from autism-informed design, shaped around the understanding that individuals with autism are highly attuned to their environment.¹ While design for autism has become more present in architecture, design for horses is still often approached through function, safety, or performance rather than sensory experience. Because of this, these two ways of designing are usually separated. But both autistic individuals and horses experience the environment through heightened awareness of sound, movement, light, rhythm, and unpredictability. Both depend on spaces that feel clear, calm, and easy to understand in order to build comfort and trust. And both can benefit from one another in each other's company.

Sometimes, the most meaningful architectural question is not how a building looks, but how it allows different forms of life to exist together. This architectural guide explores sensory perception as something shared between people and animals, with a focus on individuals with autism and horses. Rather than treating accommodation as separate needs, this guide looks at how architecture can support coexistence through sensory-aware design. Both people and horses experience the world differently from one another, but what connects them is a reliance on environments that feel predictable, responsive, and supportive to move through.

¹ Mostafa, Magda. The Autism ASPECTSS™ Design Index: Architecture for Autism. Cairo: Progressive Architects, 2013.

SENSORY NEEDS OF HORSES AND PEOPLE WITH AUTISM

To begin this is to step into the perspectives of others. Before understanding where the two worlds of people with autism and horses can meet architecturally, they first have to be understood separately. This collection of collage artifacts explores both autistic and horse perception, emotion, and behavioral tendencies through sensory experience and environmental response. As Maria Rørvang, Birte Nielsen, and Andrew McLean state,

“The sensory abilities of horses are closely linked with their perception and therefore their behavior. Horses and humans share the five most common sensory modalities, but their range and acuity differ between the two species, so that horses are unlikely to perceive their surroundings in the same way as we do.”²

The work below is not to compare the two, but to understand how other species also communicate through nonverbal behavior, awareness, and sensitivity to their surroundings.

Autism Sensory Experience

People with autism can experience a range of emotions, sensitivities, and behavioral responses that are directly shaped by the environment around them. Research and lived-experience accounts describe autism not as a fixed set of deficits, but as a different way of sensing, processing, and responding to the world.^{3,4} Sensory information that may go unnoticed by others can become amplified, fragmented, overwhelming, or also, insufficient for regulation and engagement.⁵ Light, sound, texture, movement, spatial complexity, and unpredictability can all influence comfort, attention, emotional regulation, and behavior.^{6,7}

Many individuals with autism experience heightened auditory, tactile, visual, proprioceptive, vestibular, and interoceptive sensitivities, while also relying on routine, predictability, and clear environmental cues to navigate daily life.⁸ When environments become overstimulating or

² Rørvang, Maria Vilain, Birte L. Nielsen, and Andrew N. McLean. “Sensory Abilities of Horses and Their Importance for Equitation Science.” *Frontiers in Veterinary Science* 7 (2020): 633. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7509108/>.

³ Moriah, Chanelle. *I Am Autistic: A Workbook: Sensory Tools, Practical Advice, and Interactive Journaling for Understanding Life with Autism (By Someone Diagnosed with It)*. New York: Ulysses Press, 2025

⁴ Heffernan, Diarmuid. *Sensory Issues for Adults with Autism Spectrum Disorder*. London: Jessica Kingsley Publishers, 2016

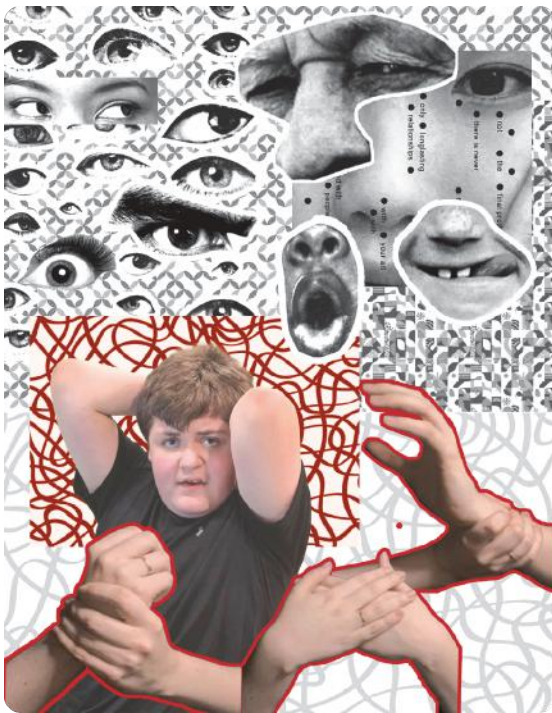
⁵ Ibid.

⁶ Steele, Kim, Sandra Ahrentzen, and Sherry Ahrentzen. *At Home with Autism: Designing Housing for the Spectrum*. Bristol: Policy Press, 2015

⁷ Heffernan, Diarmuid. *Sensory Issues for Adults with Autism Spectrum Disorder*. London: Jessica Kingsley Publishers, 2016

⁸ Moriah, Chanelle. *I Am Autistic: A Workbook: Sensory Tools, Practical Advice, and Interactive Journaling for Understanding Life with Autism (By Someone Diagnosed with It)*.

difficult to interpret, responses may include withdrawal, anxiety, motor avoidance, meltdowns, shutdowns, or long-term burnout.⁹ On the other hand, environments that provide sensory regulation and balance are known to support comfort, autonomy, and well-being.¹⁰ The following collages explore several of these sensory and environmental conditions as a means of understanding how they might later be translated into architectural form. These include understimulation, overstimulation, auditory and tactile sensitivity, proprioceptive input, meltdown, burnout, motor-related avoidance, and the need for routine and predictability.



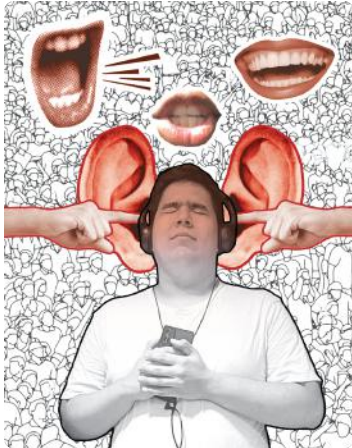
Overstimulation



Understimulation

⁹ Dawes, Viv. *The Young Person's Guide to Autistic Burnout*. London: John Murray Press, 2025

¹⁰ Steele, Kim, Sandra Ahrentzen, and Sherry Ahrentzen. *At Home with Autism: Designing Housing for the Spectrum*. Bristol: Policy Press, 2015



Auditory Sensitivity



Meltdown



Burnout



Tactile Sensitivity



Proprioceptive Input



Clumsiness & Motor-Related Avoidance



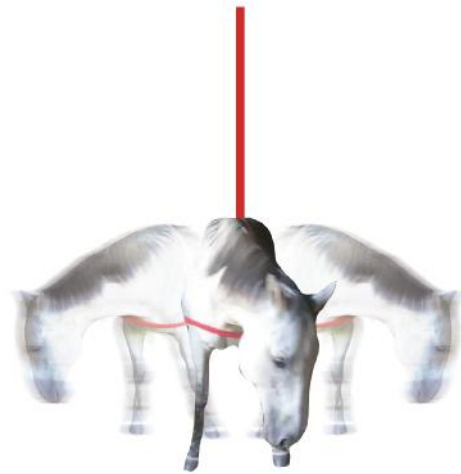
Routine

Horse Sensory Experience

Interestingly enough, horses can also experience a range of sensory sensitivities and behavioral responses. As prey animals, horses continuously interpret their surroundings through sight, sound, movement, social relationships, and environmental predictability, often communicating comfort or distress through behavior rather than direct expression.^{11, 12} Environmental conditions such as confinement, abrupt stimuli, limited movement, and a lack of social contact can significantly influence equine stress levels and overall well-being.¹³ Research and design literature strongly argue that horses rely on visual reassurance, predictable circulation, social sightlines, and opportunities for movement to feel safe and regulated within the built environment.^{14, 15} When these needs are unmet, horses may show stress-related behaviors such as weaving, pacing, cribbing, pawing, or other repetitive actions associated with boredom, frustration, and sensory deprivation.¹⁶ On the other hand, a horse's access to turnout and movement, social interaction, and any environmental enrichment contributes to a calmer behavior and improved wellbeing.¹⁷ The following collages explore several of these conditions as a means of understanding how they can later be translated into architecture.



Anxiety and Sensitivity to Sudden Sounds



Understimulation (Weaving)

¹¹ Animal Arts. "Designing from the Patient's Perspective – Horses." 2022. <https://www.animalarts.com/designing-from-the-patients-perspective-horses/>.

¹² American Stalls. "Creature Comforts – Horsekeeping from the Horse's Perspective." May 1, 2023.

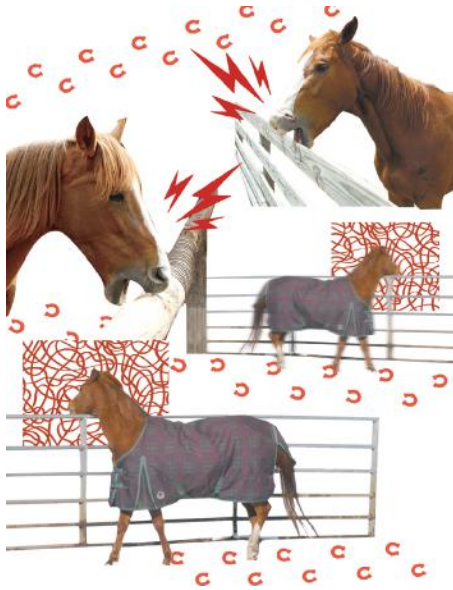
¹³ Ibid.

¹⁴ Animal Arts. "Designing from the Patient's Perspective – Horses." 2022. <https://www.animalarts.com/designing-from-the-patients-perspective-horses/>.

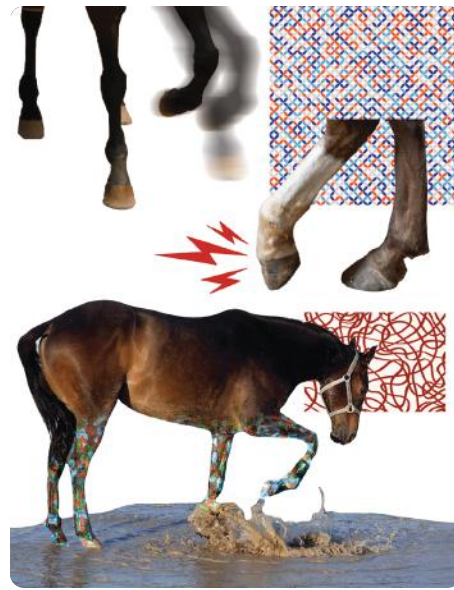
¹⁵ Carrasco, Moises. "Designing for Horses: 8 Projects Shaping Space for Equine Life." November 5, 2025.

¹⁶ American Stalls. "Creature Comforts – Horsekeeping from the Horse's Perspective." May 1, 2023.

¹⁷ Carrasco, Moises. "Designing for Horses: 8 Projects Shaping Space for Equine Life." November 5, 2025.



Cribbing & Locomotive Behavior



Pawing



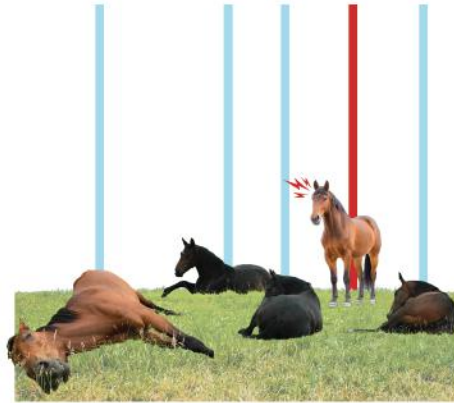
Boredom



Proprioceptive Input (Allogrooming)



Visual Safety



Turnout & Social Interaction

SYMBIOTIC SPACE: ARENA AS THE RELATIONAL INTERFACE

Scale of the Horse

To further understand the human-horse relationship, scale is the first condition that matters. Horses are measured in “hands,” where one hand (1 hh) is equal to four inches. A standard horse stands roughly 14–15.2 hh at the withers, which is the ridge between the shoulder blades.¹⁸ At this scale, the horse is not aligned with human proportion; it consistently occupies a higher visual and spatial field. This difference is not just physical, but also perceptual. It determines what’s seen first, what feels close, what feels distant, and what becomes threatening or calm.

Measuring a Horse

Rather than measuring to the head, a horse’s height is determined from the top of the **withers** (the ridge between the shoulder blades).

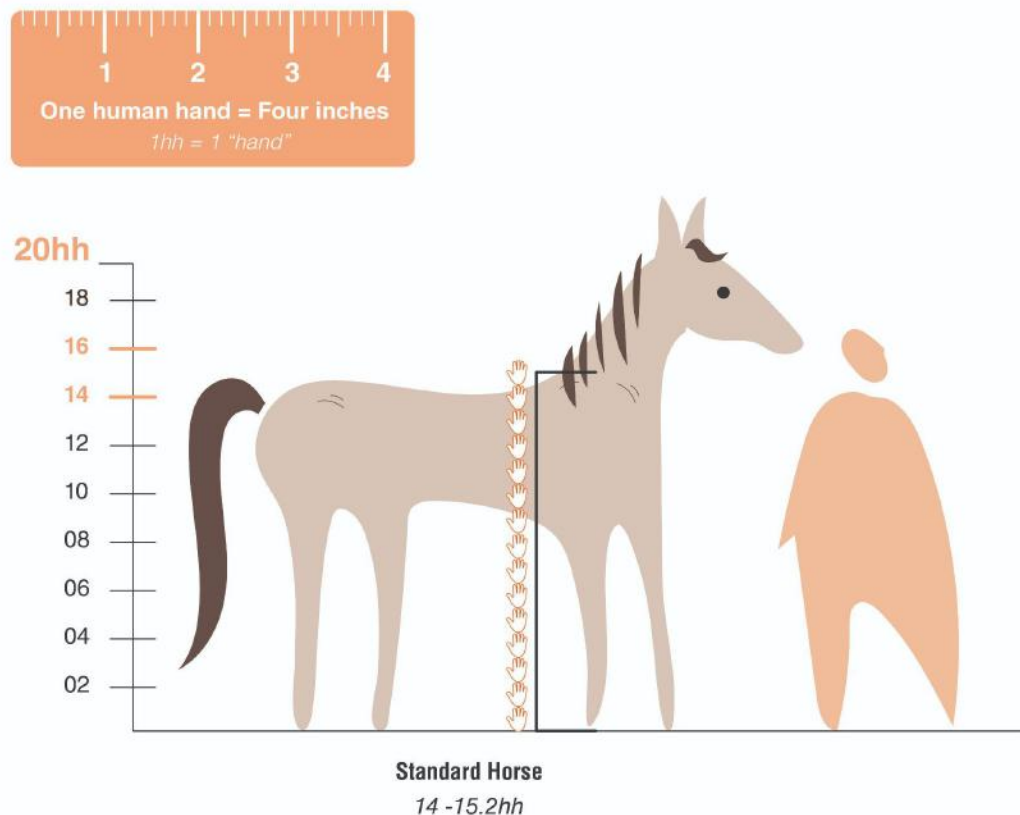


Fig. 1: The Scale of the Horse

¹⁸ Riemer, Amanda. “Pony vs. Horse: What’s the Difference?” Chewy Education, May 5, 2025. <https://www.chewy.com/education/horse/general/pony-vs-horse>.

The Functions of the Arena

The primary architectural interface between human and horse is the arena. The arena is a field where scale, movement, and sensory input are constantly negotiated. Simultaneously, the arena can also operate as:

- a performative space
- an observational interface
- a social space
- a therapeutic environment
- a sensory environment

Therefore, within a single architectural system, the arena contains multiple levels of stimulation at once. It supports close interaction, active movement, retreat, distant observation, and sensory regulation simultaneously. With additional layers of spatial organization and environmental control, architecture can make the arena regulate:

- proximity
- visibility
- sound
- circulation
- retreat
- interaction

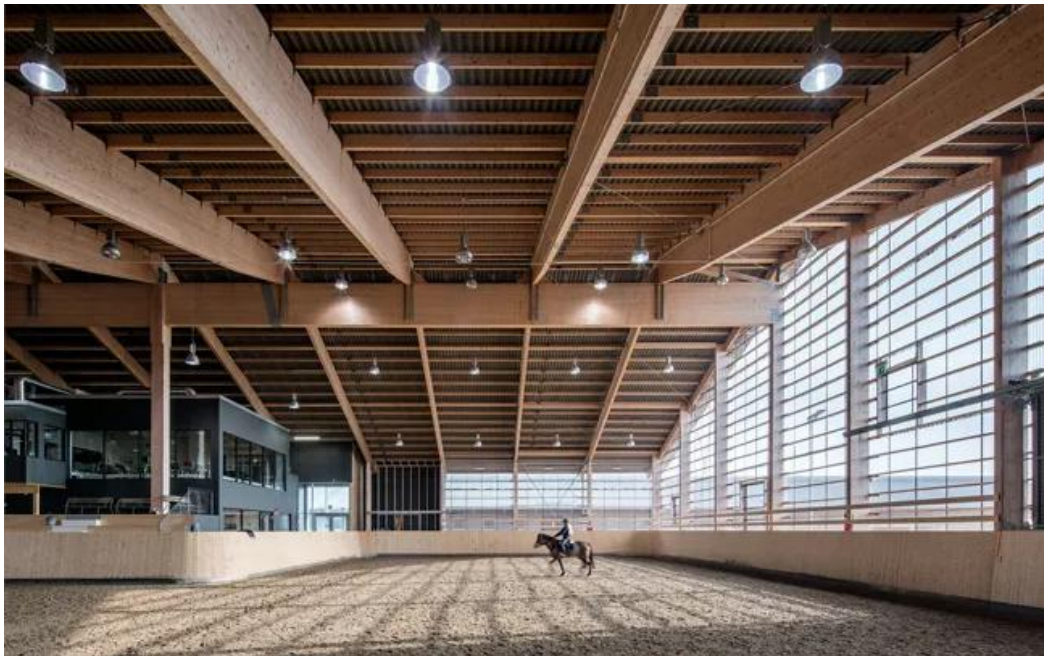


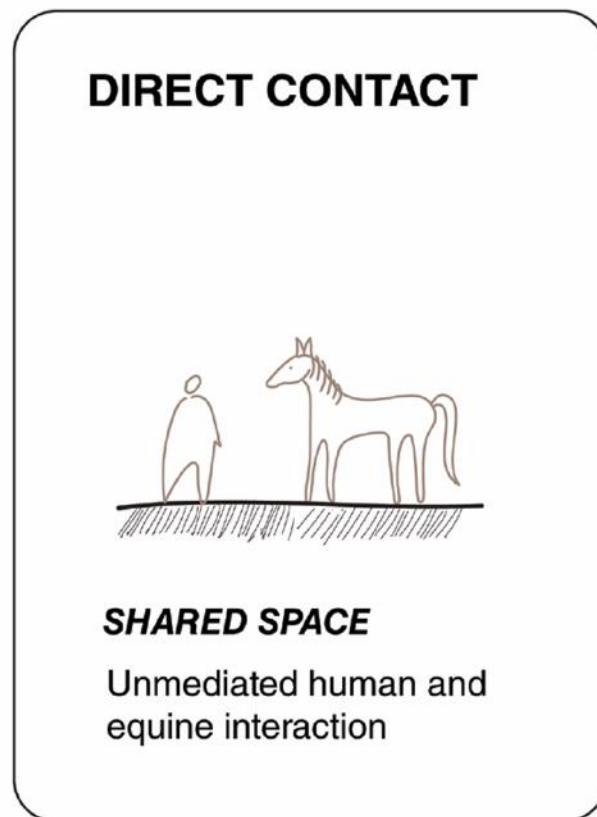
Fig. 2: Klagshamns Ridanläggning, Equestrian Center. Klagshamn, Sweden. FOJAB Arkitekter, 2015.

Architectural Mediation Diagrams

With the typology of an arena, architecture can then begin to layer and build upon the typology through a spectrum of interaction between human and horse. Interaction ranges from direct physical contact to just a distant sensory awareness. Spaces may allow direct contact, filtered observational points, elevated viewing, acoustic proximity, or simply the awareness that a horse is nearby. In this way, interaction between the horse and human is not just “fixed”, but mediated through architecture.

1. Direct Contact

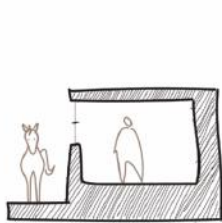
Architecture can first bring a horse and a human together by giving them the opportunity to share the same ground, without any kinds of solid filters between them. The unmediated presence of humans and horses occupying the same space becomes the primary form of interaction, while architecture simply creates the open conditions for the encounter to happen.



2. Mediated Contact

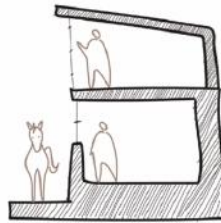
Architecture can then mediate the contact between horses and humans by introducing solid and transparent layers between them. Rather than the two sharing the same air and occupying the same space, visual interaction can happen through architectural elements such as windows, walls, changes in elevation, and shared thresholds. Across a shared threshold, these elements maintain a connection between horse and human while allowing different levels of proximity, observation, and engagement.

MEDIATED CONTACT



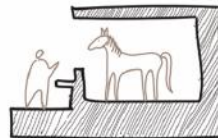
ADJACENT ROOMS

Physical separation with controlled proximity



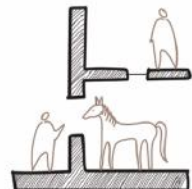
LAYERED VISUAL ACCESS

Ground-level separation with elevated observation



SHARED THRESHOLDS

Circulation and rest as site of encounter alongside a stall



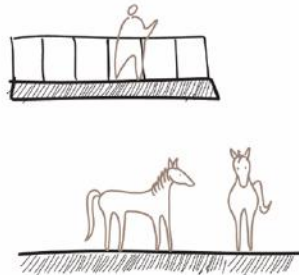
VERTICAL OVERLOOK

Stall observed from circulation and above

3. Indirect Contact

Lastly, architecture can provide indirect contact between horse and human through elevated observations. The direct, physical access to the horse may be removed, but visual connection and awareness still remain. Though separated, both continue to occupy the same air space, allowing the presence of the horse to still be experienced.

INDIRECT CONTACT



MEZZANINE OVERLOOK

Elevated observation without physical access

The Arena as the Primary Interface

Understanding the spectrum of interaction between horse and human raises a simple question: where can all of this actually happen? In answer to that, is that these conditions do not have to exist separately. Direct contact, mediated contact, and indirect contact can all happen at the same time, within the same place. The arena, as a strong example, already brings horses and people together. Rather than treating it as only a place for horseback riding and training, this guide reimagines it as a sensory interface where different forms of interaction can overlap. The arena can become a space that supports coexistence between autistic individuals and horses through the regulation of solids and voids, light, sound, materiality, circulation, and visibility.

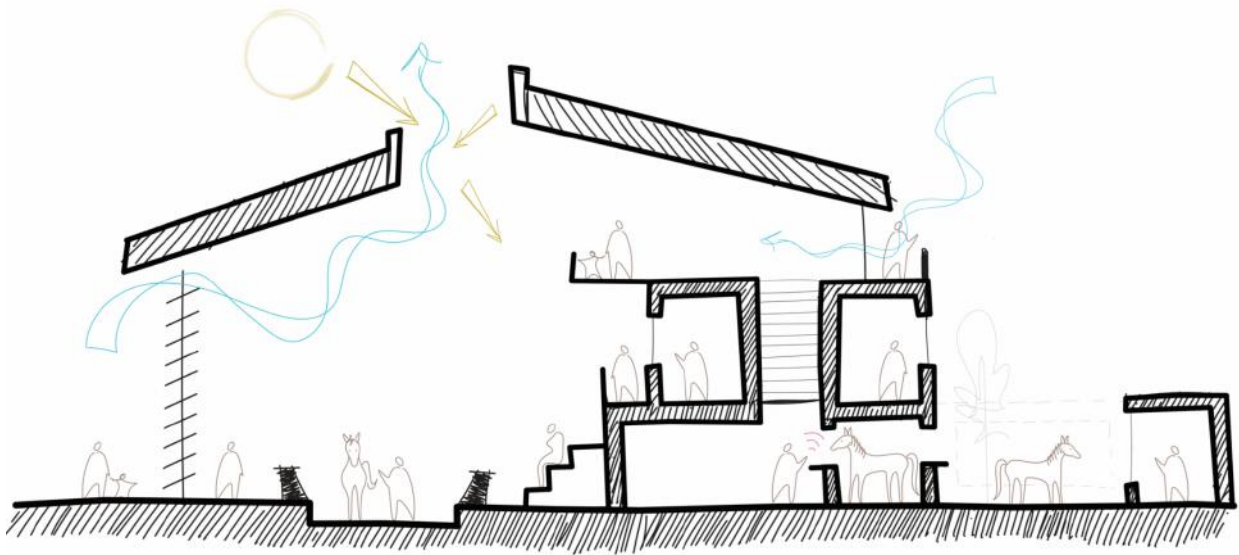


Fig. 3: The Scale of the Horse

At its simplest, an arena begins with a boundary: a separation between the working horse and those outside the space. Along this edge, circulation takes place outside a protective arena kick wall that lifts people slightly above the arena floor, creating both safety and visibility. This outer threshold can then become a social space with bleachers, ledges, and circulation paths allowing people to sit, pause, observe, and slowly take part in what is happening inside.

From there, more solid architectural spaces can be carved into the arena itself, inserting enclosed rooms that shape different relationships between horse and human. Some spaces overlook the arena from above, where elevation creates distance and a wider view. Others sit closer without direct visual exposure, where the horse is no longer seen but still heard or felt nearby. What starts to emerge is a new arena system where interaction is not permanently fixed. In the same arena, someone might be watching from above, standing along the edge, looking through a window, or stepping directly into the arena floor. The arena holds all of these conditions at once, and architecture simply shifts how close or open each one feels.

SHARED SENSORY CONDITIONS

Within this newer typology of a human-horse arena, shared sensory conditions are what really hold the space together. Co-presence for sensitive individuals depends on understanding how to shape how the space is experienced by both horse and human. The following sections describe architectural strategies and specifications as a guide for how to design for this.

A. TACTILE SURFACES AND MATERIALS

Materials and Tactiles*

**Refer to the [Specifications](#) section (p. 32) for examples of materials.*

Materials and tactile conditions shape how a space is understood through the body, long before it is fully understood through the mind. They influence comfort, safety, and the quiet sense of whether a place can actually be trusted. In this way, materials shape whether a space feels supportive or not. As Magda Mostafa, an architectural designer and autism design consultant, notes, “In general, natural materials are the preferred choice whenever possible”.¹⁹ There is something about material honesty that the body responds to; natural sisal, cork boarding, pine, cedar, and rosewood are all great examples of materials to consider as they activate the innate biological connection to nature, and are also tactilely friendly.

When it comes to the tactile conditions for autistic individuals, certain textures, temperatures, and finishes can feel overwhelming or uncomfortable. Rough, sticky, overly smooth, or unpredictably changing surfaces can increase sensory strain and make it harder to settle into a space. Even something as simple as what is felt underfoot can affect balance, confidence, and the willingness to move through a space without hesitation.²⁰ For horses, tactile experience happens through their hooves, skin, and orally. Floor texture, bedding, and surface consistency all shape how they move, rest, and behave within an environment. When surfaces feel unstable or harsh, a horse’s movement becomes more guarded and rest becomes less likely, as the body stays alert to what it is contacting at every step. For a space that supports both humans and horses at the same time, for example, it's important to use materials that are texturally simple, soft to the underfoot, sound absorbing, impact resistant, emit low VOC’s, and closer to mimicking the natural environment.

¹⁹ Mostafa, Magda. *The Autism Friendly University Design Guide*. Dublin: Progressive Architects, 2021. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.

²⁰ British Standards Institution, PAS 6463:2022 Design for the Mind – Neurodiversity and the Built Environment – Guide (London: BSI Standards Limited, 2022), ISBN 978-0-539-12822-2. First published October 2022.

Architectural Strategies

- **Choose materials based on how spaces are used, not just how they look.**
- All primary surfaces should prioritize the consideration of natural materials and materials that have low sensory abrasion, consistency, and softness on impact
- Use soft-impact flooring systems in both human and equine areas
- Let high-touch surfaces use materials that respond to pressure softly and gently
- Avoid surfaces that are overly slick, rough, or unpredictable underfoot
- Soften hard edges and reduce sharp tactile changes in key areas
- Keep material transitions consistent and gradual across circulation paths; and when defining zones, use subtle materialistic shifts instead of strong visual contrasts

Specification Considerations

1. Flooring

- Equine circulation zones: high-density rubber flooring with shock absorption
- Human circulation zones: low-VOC rubber, cork, or sealed woods with a matte finish
- Stall areas: cushioned rubber mat systems with drainage
- Arena surfaces: engineered sand/fiber blends designed to hold hoof impact
- Human-Horse zones: rubber flooring with shock absorption

2. Surface Finishes

- Walls: matte plaster, limewash, or low-VOC painted gypsum board
- Avoid glossy, sticky, or highly textured wall finishes in primary sensory areas
- Ceilings: acoustic felt, mineral fiber, or wood slat systems with softened edges

3. Edge + Detail Conditions

- Soften edges at structural connections and wall edges
- Recess floor edges where possible to avoid hard floor-to-wall breaks
- Keep base conditions continuous so transitions feel less abrupt

4. Material Safety & Health

- Avoid heavy petrochemical-based adhesives, sealants, and coatings
- Use low-VOC, breathable material systems that are safe for long-term exposure of close-up human and equine breathing conditions
- Prioritize durability under biting, scratching, hoof impact, and frequent cleaning

5. Equine Bedding

- Use an engineered bedding system that stays soft and absorbent of pressure
- Design bedding as replaceable zones for hygiene and comfort
- Specify depth to support REM resting and natural sleep behavior, > 6"

B. VISUAL CONDITIONS

Color

Color is an extremely important condition for both horses and people. It directly affects comfort, attention, stress levels, and how space is understood and trusted (proxemics).²¹ Human eyes are trichromatic, meaning they read color through three types of cone pigments. Horses are dichromatic, with only two, seeing a more limited range. They perceive blues and yellows most clearly, while reds and red-based tones are reduced into muted or gray-like shifts. Beyond color itself, horses' overall vision is shaped by survival, and have a slower time adapting between bright and dark spaces. What feels visually clear or neutral to humans may register very differently for horses.²²

The right use of color is vital for material specifications. For humans, muted oranges can lift mood without creating visual pressure or overstimulation. Lilacs function as retreat tones, supporting calm, low-engagement states.²³ Grays and tans form the neutral field, and reduce visual noise, stabilize perception, and keep the environment from feeling visually “busy.”²⁴ Green-blue tones sit in a shorter wavelength range and help reduce fatigue over time. They echo natural environments and support longer, calmer occupation of space.²⁵



Fig. X: Regulating color palette for individuals with autism.

²¹ “Proxemics: Spatial Dynamics in Human Interaction.” *Psychology Town*. Accessed May 28, 2026.

<https://psychology.town/environmental/proxemics-spatial-dynamics-human-interaction/>.

²² Young, Amy. “Equine Vision and Performance,” *Horse Report / UC Davis School of Veterinary Medicine*, April 23, 2024, *Horse Report / UC Davis School of Veterinary Medicine*. April 23, 2024.

<https://horsereport.vetmed.ucdavis.edu/news/equine-vision-and-performance>.

²³ Neuroinclusive Education Network. “Autism Design Principles for Schools.” Accessed May 25, 2026.

Neuroinclusive Education Network.

²⁴ Ibid.

²⁵ Ibid.

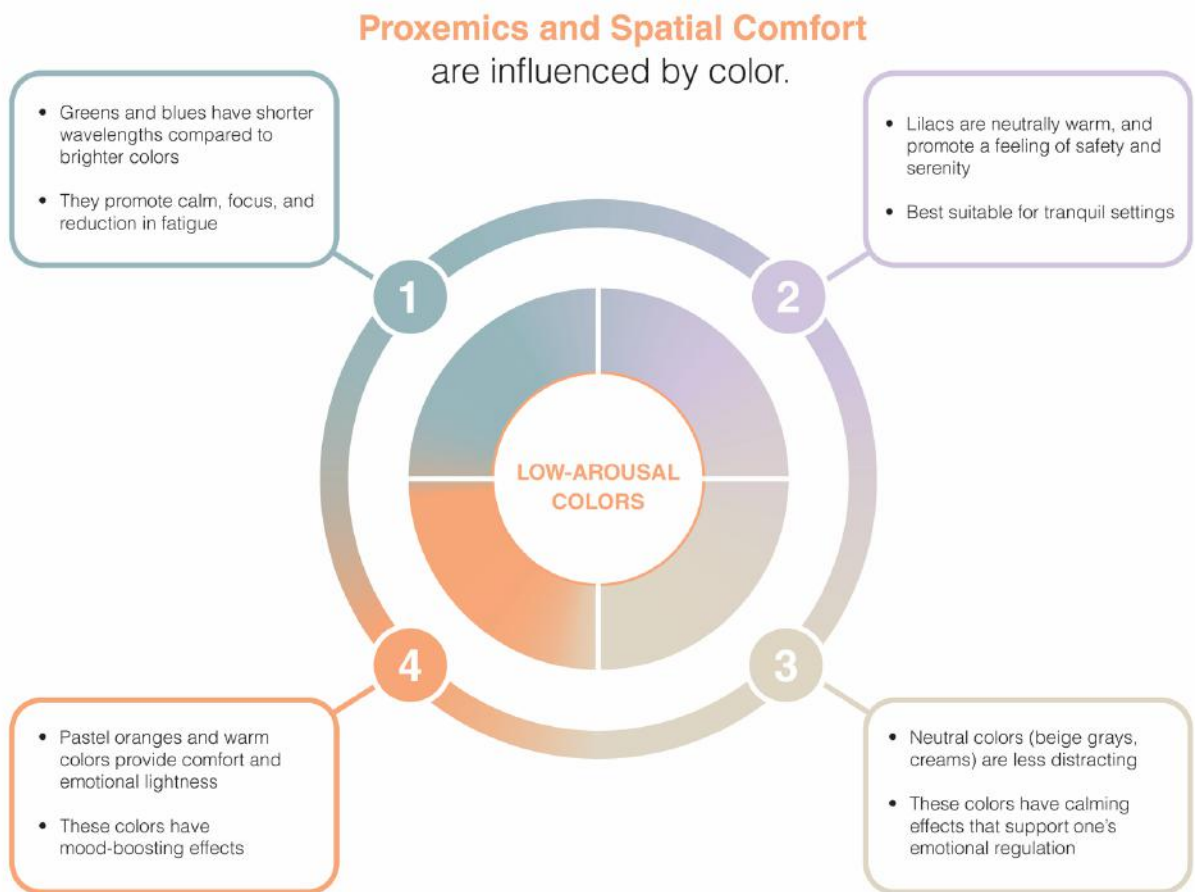


Fig. 4: Proxemics and spatial comfort color diagram, inspired by research from the Neuroinclusive Education Network: "Autism Design Principles for Schools."



Fig. 5: Autism-friendly color study by GA Architects, utilizing soft, calm, gray-undertoned colors.
<https://www.autism-architects.com/>.

Colors to Avoid

Certain colors must be avoided when specifying materials and paints, as they can be triggering to the visual stimuli. Bright and neon colors can come off intense and stark to the human eye, which stimulates fight or flight responses, and an increase in tension, anxiety, and overwhelm. Colors such as stark whites also make environments feel sterile, cold, and isolating.

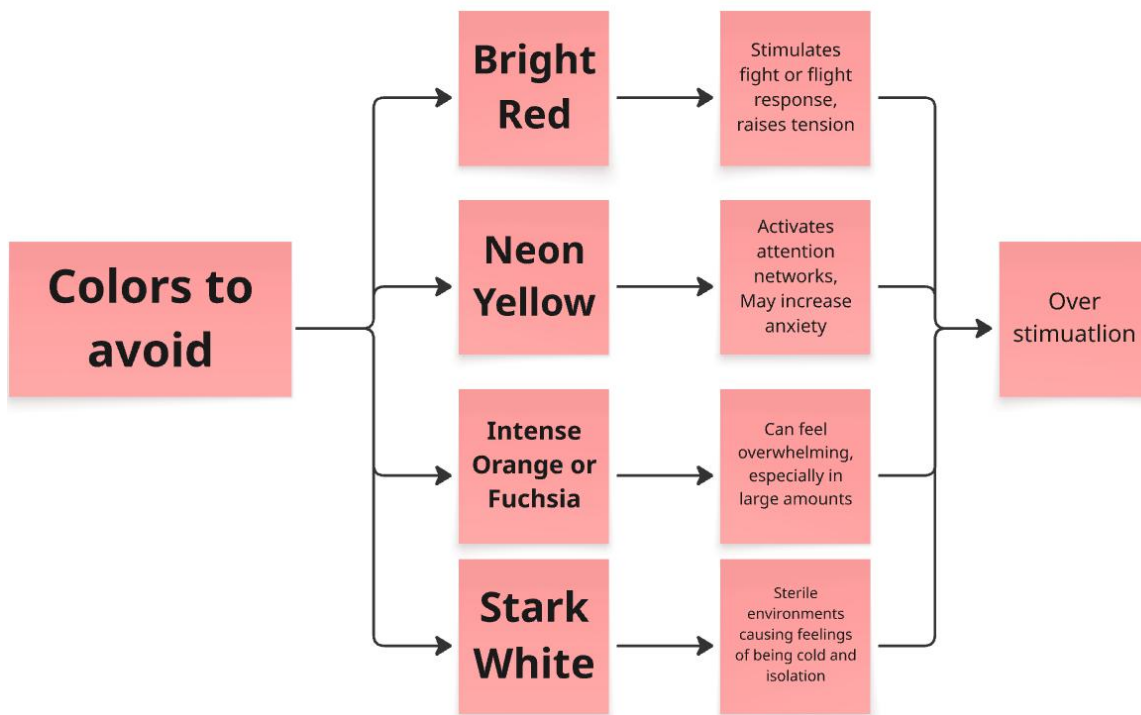
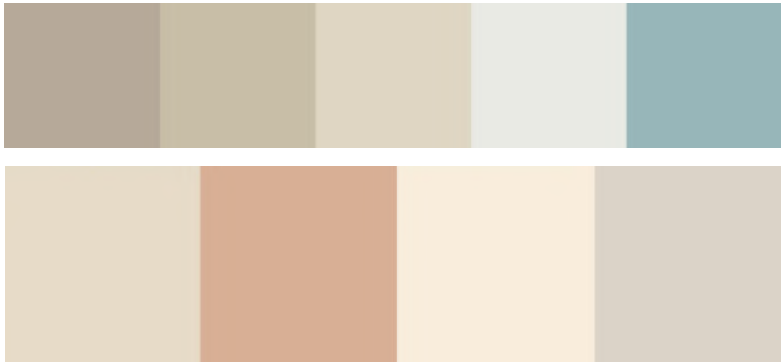
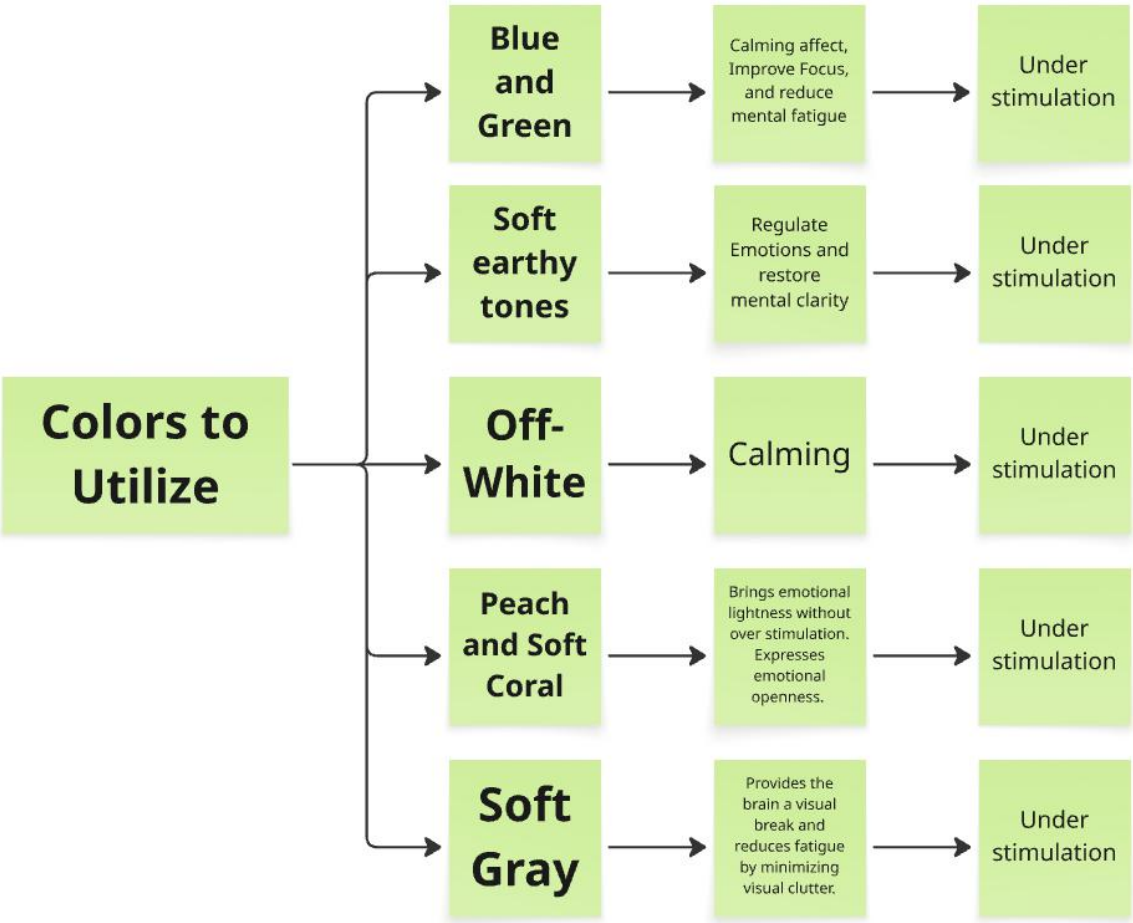


Fig. 6: Color palettes sourced from *schemecolor.com*.

Colors to Utilize

The use of the right colors with earthy and neutral undertones can have beneficial effects on the mind and the body, such as lifting mood without visual pressure, supporting calm and low-engagement states, stabilizing perception, and keeping the environment from feeling visually “busy.”



The Human Eye and the Horse Eye

Colors in the green-blue tones become the most significant overlap condition to use for spaces that both humans and horses occupy at the same time. For autistic individuals, green-blue tones are calming and reduce sensory strain, helping their emotions and sensory needs be maintained, or even more so, more calming than before. For horses, green-blue tones read with higher contrast and clarity within their visual system (appearing closer to yellow-green tones) making anything in that color range legible and reassuring. Therefore, applying the tones of greens, teals, and green-blues is a symbiotically beneficial design decision when specifying materials for the architecture.

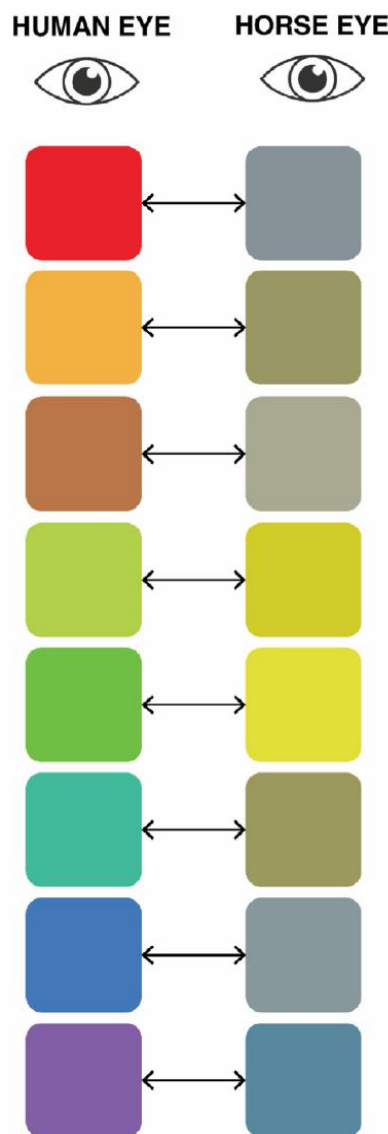


Fig. 7: Comparing the human eye's to the horse eye's color processing

Light, Glare, and Shadow

While the reasons may differ, both autistic individuals and horses benefit from environments where light is a supportive element. Light is important to humans and horses as it is responsible for the wellbeing of all living things. Natural light is the most significant, as it is the primary cue in the environment to dictate biological rhythms and regulate serotonin and melatonin.²⁶ However, it's important to understand that light needs to be utilized in moderation. Both autistic individuals and horses are sensitive to changes in lighting, such as its quality, intensity, and direction. Glare, sharp shadows, and high contrast lighting conditions can reduce visual comfort and disrupt their understanding of space.²⁷

Buildings may not always have the perfect access to natural daylighting, and utilize artificial sources instead. However, artificial light sources on their own don't represent the full spectrum of the sun. As a result, careful attention must be given not only to the quantity of light provided, but also to how that light is perceived and experienced within a space. For individuals with autism, glare and flickering light can contribute to sensory overload, fatigue, and disorientation. The buzzing or imperceptible flicker of artificial lighting may become a persistent source of distraction, discomfort, and stress, reducing their ability to feel comfortable and confident within an environment.

For horses, the same conditions are amplified by the way their vision works. As prey animals, they rely heavily on wide peripheral vision and motion detection, but have reduced depth perception and slower visual adaptation between bright and dark spaces, taking significantly longer to adjust than humans.²⁸ Any sudden transitions, deep shadows, or high contrast shifts can therefore be misread as barriers, holes, or potential threats, which directly affect their movement, confidence, and willingness to pass through space, which is likewise for people with autism.^{29, 30}

²⁶ Azevedo, Cristiano Schetini de, Vinícius Donisete Lima Rodrigues Goulart, Cristiane Schilbach Pizzutto, Cynthia Fernandes Cipreste, Camila Palhares Teixeira, and Robert John Young. 2025. "The Effects of Light on Vertebrate Welfare: A Review." *Animals* 15 (22): 3329. <https://doi.org/10.3390/ani15223329>.

²⁷ British Standards Institution, PAS 6463:2022 Design for the Mind – Neurodiversity and the Built Environment – Guide (London: BSI Standards Limited, 2022), ISBN 978-0-539-12822-2. First published October 2022.

²⁸ Young, Amy. "Equine Vision and Performance," *Horse Report* / UC Davis School of Veterinary Medicine, April 23, 2024, *Horse Report* / UC Davis School of Veterinary Medicine. April 23, 2024. <https://horsereport.vetmed.ucdavis.edu/news/equine-vision-and-performance>.

²⁹ Fravil, Chris. "Designing from the Patient's Perspective – Horses." *Animal Arts*. November 16, 2022. <https://www.animalarts.com/designing-from-the-patients-perspective-horses/>.

³⁰ Lundgren, Rachel. "Horse Barn Design Influences Horse Behavior and Health." *Equimade*. July 16, 2025. <https://www.equimade.com/horse-barn-design-influences-horse-wellbeing/>.

Architectural Strategies

- Let daylight spread softly through the space instead of coming from harsh points
 - Avoid strong shadow lines cutting across floors, walls, or thresholds
- Reduce direct sun exposure in main circulation and resting areas, where heavy contrasts may become too strong on the eye to tolerate for long periods of time
- Bounce or filter light so it doesn't create concentrated bright spots or intense glare
- Keep lighting consistent as one moves through space, without sudden changes

Specification Considerations

- Color temperature: 3000–3500K (warm-neutral range)
- Full dimming range (0–100%)
- Color Rendering Index (CRI): ≥ 80 (≥ 90 preferred in key occupied spaces)
- LED systems with flicker-free drivers (low ripple current, ≥ 4000 Hz recommended)
- Micro-prismatic diffusers or indirect luminaires
- Exterior shading systems: brise-soleil (sun breakers), deep overhangs, vertical fins
- Glazing: low-e, diffuse transmission glass
- Matte interior finishes with low reflectance (<0.3 recommended in occupied zones)



Fig. 8: Pacific Autism Family Centre. Richmond, British Columbia, Canada.
<https://www.lineaceilings.com/pacific-autism-family-centre/>

Material Reflectance and Surfaces

How a surface reflects light changes how stable a space feels. Shiny or glossy materials can scatter light in ways that make space feel visually unstable or harder to read (refer to Fig. 9).³¹ What seems subtle in most environments can turn sensitive spaces into something visually unstable, where the eye is constantly asked to adjust and reprocess what it is seeing.³²

For autistic individuals, glossy or reflective materials can create visual noise that makes it harder for the body to fully rest within a space. Light bouncing across floors, walls, or ceilings can quietly increase fatigue and discomfort over time.^{33, 34} For horses, reflective surfaces can feel uncertain underfoot or visually difficult to read, often leading to hesitation, cautious movement, or avoidance.³⁵ Because of this, material reflectance becomes less about appearance and more about trust. When designing, prioritize surfaces that soften and absorb light rather than scatter it; spaces will feel calmer, steadier, and easier to understand (refer to Fig. 10).

Architectural Strategies

- Favor matte or low-sheen surfaces so light doesn't bounce around too much
- Avoid polished floors in areas where people and horses are moving through
- Keep materials visually consistent so surfaces don't shift too much from one to another
- Reduce shiny or reflective moments on walls and ceilings
- Make sure surfaces don't slowly become glossier over time with wear or maintenance

Specification Considerations

- Flooring reflectance: woods treated with matte sealants, low-gloss rubber, sealed concrete with matte finish
- Wall systems: matte paint, mineral-based plaster, limewash, natural fiber composites, cork, and/or any panels that have a low reflectance coefficients
- Ceiling systems: acoustic panels with low reflectance coefficients
- Maintenance: materials preserve matte finish despite multiple cleanings
- Avoid: polished epoxy floors, high-gloss tiles, mirror-like metals

³¹ British Standards Institution, PAS 6463:2022 Design for the Mind – Neurodiversity and the Built Environment – Guide (London: BSI Standards Limited, 2022), ISBN 978-0-539-12822-2. First published October 2022.

³² Wilson, Lee. "How Surface Glare in Public Spaces Affects People: Ophthalmology & Optometry Information Guide." LumiLab. January 16, 2025. <https://lumilab.com.au/2025/01/16/how-surface-glare-in-public-spaces-affects-people-ophthalmology-optometry-information-guide/>.

³³ British Standards Institution, PAS 6463:2022 Design for the Mind – Neurodiversity and the Built Environment – Guide (London: BSI Standards Limited, 2022), ISBN 978-0-539-12822-2. First published October 2022.

³⁴ Joslyn, Pierce, and Sahar Abdelwahab. 2025. "Reflective Facades' Impacts on Visual Perception and Psychological Responses" *Architecture* 5, no. 3: 66. <https://doi.org/10.3390/architecture5030066>.

³⁵ Fravil, Chris. "Designing from the Patient's Perspective – Horses." *Animal Arts*. November 16, 2022. <https://www.animalarts.com/designing-from-the-patients-perspective-horses/>.



Fig. 9: Though the wayfinding design is successful in this hallway, the shiny flooring is highly distracting and overstimulating, exacerbating bright lights and unnecessary shadows.

<https://www.parkin.ca/insight/designing-for-clarity-why-wayfinding-matters-in-healthcare-design/>.



Fig. 10: The matte material finishes within this hallway are calming on the eye and nervous system.
Children's Hospital of Orange County – Thompson Autism Center.

(<https://healthcaresnapshots.com/projects/7598/childrens-hospital-of-orange-county-thompson-autism-center/>)

Visual Noise

Both autistic individuals and horses depend on space being easy to visually “digest” and read. When too many things in the environment compete for attention at once, space can stop feeling grounding and instead start feeling overwhelming (refer to Fig. 11).³⁶

For autistic users, visually dense spaces can pull the body into a constant state of processing. The eye keeps searching, filtering, adjusting, and it becomes harder to focus, harder to settle, and sometimes even harder to understand where to look or move next.³⁷ Horses experience this differently, but with similar consequences. Equine perception is highly dependent on contrast, spatial consistency, and object legibility; therefore, strong contrasts, abrupt changes in pattern, or visually cluttered surfaces can affect how confidently they read depth and movement, often leading to hesitation or caution within space.^{38, 39} Reducing unnecessary visual noise allows space for both humans and horses to become easier to trust (refer to Fig. 12).

Architectural Strategies

- Keep primary surfaces visually calm and simple so space is easy to read
- Avoid strong repetitive patterns on floors and walls where movement happens
- Reduce visual fragmentation in circulation and shared areas
- Let space be organized clearly, without relying on decorative noise
- Favor continuity in materials instead of frequent visual changes

Specification Considerations

- Flooring: homogeneous rubber or linoleum systems
- Wall finishes: matte plaster, low-VOC painted gypsum board
- Furniture: simplified geometries with minimal visual articulation
- Signage: low-contrast, minimal typographic systems (no high-saturation color coding)
- Patterns: no repetitive striping in flooring or glazing
- Avoid optical vibration materials (high contrast stripes, grids)

³⁶ British Standards Institution, PAS 6463:2022 Design for the Mind – Neurodiversity and the Built Environment – Guide (London: BSI Standards Limited, 2022), ISBN 978-0-539-12822-2. First published October 2022.

³⁷ Mostafa, Magda. *The Autism Friendly University Design Guide*. Dublin: Progressive Architects, 2021. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.

³⁸ Evelyn B. Hanggi, Jerry F. Ingersoll, and Terrace L. Waggoner, “Color Vision in Horses (*Equus caballus*): Deficiencies Identified Using a Pseudoisochromatic Plate Test,” *Journal of Comparative Psychology* 121, no. 1 (2007): 65–72, <https://doi.org/10.1037/0735-7036.121.1.65>.

³⁹ Janne W. Christensen, Tatjana Zharkikh, and Jan Ladewig, “Do Horses Generalise Between Objects During Habituation?,” *Applied Animal Behaviour Science* 114, nos. 3–4 (2008): 509–520, <https://doi.org/10.1016/j.applanim.2008.03.007>.



Fig. 11: Initial interior design of Stride Treglown: The Deaf Academy in Exmouth, featuring a dark reflective flooring and multiple competing patterns along the staircase and wall treatment, creating a visually busy environment. The transparent second-floor railing reveals activity behind it, adding to the overall visual complexity of the space.

(<https://spacezero.co.uk/projects/royal-academy-of-the-deaf-exeter/>.)



Fig. 12: Final interior design of The Deaf Academy, featuring lighter-colored matte flooring and simplified natural materials along the staircase and wall treatment, creating a calm yet visually interesting environment. The second-floor railing is more opaque, concealing the activity behind it to simplify the visual stimuli in the overall space. (<https://stridetreglown.com/projects/the-deaf-academy/>)

Environmental Legibility and Predictability

Environmental legibility is about how quickly a space makes sense to the body. Both autistic individuals and horses rely on spaces that feel easy to understand in order to move through them safely and comfortably. In order to reduce anxiety and support orientation, there needs to be clear circulation, readable thresholds, and a consistent spatial logic throughout the architectural environment (refer to Fig. 13).⁴⁰

For autistic users, predictability can be what allows a space to feel usable at all.⁴¹ When changes happen gradually and relationships between rooms are legible, the body doesn't have to stay on high alert, constantly recalculating what comes next. For horses, that same clarity shows up in a more immediate way with open sightlines, visible routes, and uninterrupted paths, which all help them move forward without hesitation, because they can understand where the space is leading them (refer to Fig. 14).⁴²

Architectural Strategies

- Keep circulation clear and continuous where possible, without unnecessary dead ends⁴³
- Use key elements like the arena or courtyards as points of orientation
- Let transitions between spaces happen more gradually instead of suddenly
- Maintain clear sightlines through important spatial sequences
- Avoid unclear or confusing intersections

Specification Considerations

- Circulation widths sized for dual occupancy of horses and people
 - Typically 16' wide ⁴⁴
- Impact-rated transparent or semi-transparent partitions at key visual points
- Rounded or chamfered corners in high-traffic zones
- Flush or beveled floor transitions between material changes
- Structural rhythm consistency (regular column/grid to reinforce spatial predictability)

⁴⁰ Mostafa, Magda. *The Autism Friendly University Design Guide*. Dublin: Progressive Architects, 2021. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.

⁴¹ Tola, G., V. Talu, T. Congiu, P. Bain, and J. Lindert. "Built Environment Design and People with Autism Spectrum Disorder (ASD): A Scoping Review." *International Journal of Environmental Research and Public Health* 18, no. 6 (2021): 3203. <https://doi.org/10.3390/ijerph18063203>.

⁴² Boissy, Alain, Gerhard Manteuffel, Margit Bak Jensen, Randi Oppermann Moe, Berry Spruijt, Linda J. Keeling, Christoph Winckler, Björn Forkman, Ivan Dimitrov, Jan Langbein, Morten Bakken, Isabelle Veissier, and Arnaud Aubert. "Assessment of Positive Emotions in Animals to Improve Their Welfare." *Physiology & Behavior* 92, no. 3 (2007): 375–397. <https://doi.org/10.1016/j.physbeh.2007.02.003>.

⁴³ Valentine, John. "The Architecture of Fear: How Design Influences Our Perception of Safety." *Medium*. January 4, 2025. <https://medium.com/@johnvalentinemedia/the-architecture-of-fear-how-design-influences-our-perception-of-safety-153c31bb4e19>.

⁴⁴ "How Wide Should Your Barn Aisle Be?" *American Stalls*. Accessed May 28, 2026. <https://americanstalls.com/blogs/blog/how-wide-should-your-barn-aisle-be/>.



*Fig. 13: Spatial zoning with colorful wayfinding elements.
Connecticut Children's Medical Psychiatric Integrated Care Unit.*

(<https://slamcoll.com/portfolio/connecticut-childrens-medical-psychiatric-integrated-care-unit/>).



Fig. 14: A horse barn hallway, designed with clear and simple sitelines, repeating structural patterns, a mirrored hallway, and evenly distributed daylight to make the space legible and predictable.

(Photo: Jana Bannan Photography).

C. ACOUSTIC CONDITIONS

Sound

Sound shapes a space before anything else is fully understood. It moves through walls, corners, and bodies, lingering in ways the eye can't always account for. Sound is one of the most important environmental conditions shaping how both autistic individuals and horses experience space; it is something the body is constantly reading to decide whether a place feels safe or not. Both are sensitive to volume, frequency, unpredictability, and the way sound moves and lingers in a space. Unstable acoustics reduce trust in the environment.

For autistic individuals, sound can quickly shift from background to overload;⁴⁵ it can become overwhelming when there are sudden spikes, overlapping, or strong echoing. It becomes harder to focus, harder to communicate, and sometimes even harder to stay present in the room, leading to sensory overload, fatigue, anxiety, and difficulty focusing or communicating.⁴⁶

For horses, sound is tied to alertness, safety, and survival. Unfamiliar, unclear, or sudden noises can trigger immediate caution or flight responses, especially in large or reflective environments where sound bounces and its source is difficult to locate.⁴⁷ When acoustics are unstable, the space itself feels harder to trust.

Architectural Strategies

- Treat sound as a core part of spatial design, not something added later
- Shape arenas and large spaces to control how sound moves and reflects
- Separate loud and quiet areas using distance, layers, or buffer zones
- Soften sudden changes in sound so acoustics shift gradually through space
- Avoid large hard surfaces facing each other where sound can bounce strongly
- Build absorption into ceilings and upper wall areas where possible
- Design circulation so sound doesn't constantly echo or build up
- Reduce impact noise from hooves through floor systems that absorb and soften contact

⁴⁵ Mostafa, Magda. *The Autism Friendly University Design Guide*. Dublin: Progressive Architects, 2021. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.

⁴⁶ Ibid.

⁴⁷ Hole, Clare, Rachel Murray, David Marlin, and Paul Freeman. "Equine Behavioural and Physiological Responses to Auditory Stimuli in the Presence and Absence of Noise-Damping Ear Covers." *Animals* 13, no. 9 (2023): 1574. <https://doi.org/10.3390/ani13091574>.

Specification Considerations

1. Reverberation Control

- Keep sound from lingering too long in occupied spaces
- Use absorptive ceiling systems in large-span arenas
- Add acoustic baffles or hanging absorption elements in tall or open areas
- Avoid long, uninterrupted hard surfaces facing each other

2. Material Absorption

- Walls: acoustic panels (Rockwool, Autex, or other similar PET felt systems)
- Ceiling: perforated wood with acoustic backing or mineral fiber panels
- Flooring: dense rubber or shock-absorbing equine-safe flooring systems

3. Impact Noise Reduction

- Rubberized flooring in stalls and circulation areas
- Layered subfloor systems to soften hoof impact

4. Sound Containment + Separation

- Spatial buffering between louder and quieter areas
- Seal joints and connections so sound doesn't move through gaps in the structure⁴⁸
- Detail doors and thresholds to reduce sound leakage

5. Mechanical Noise Control

- Use low-noise HVAC systems with isolated ducting
- Reduce vibration in mechanical equipment
- Avoid constant hums or sharp mechanical noise in occupied spaces

⁴⁸ British Standards Institution, PAS 6463:2022 Design for the Mind – Neurodiversity and the Built Environment – Guide (London: BSI Standards Limited, 2022), ISBN 978-0-539-12822-2. First published October 2022.

D. VENTILATION

Ventilation

Air quality and smell are a major part of how both autistic individuals and horses experience comfort in space. Smell is often one of the most sensitive senses for autistic users, and strong or unfamiliar odors can feel overwhelming or create a sense of avoidance.⁴⁹ For horses, clean air and consistent airflow also matter, especially in enclosed environments where smell can build up quickly and affect behavior.⁵⁰

In shared environments, ventilation becomes less about systems and more about keeping the space breathable and calm. Horses and humans both benefit when air is constantly moving and not trapped. Natural ventilation becomes the main strategy in the arena. Air is allowed to move freely through the space when using operable windows, perforated metal panels, and open curtain wall systems. The more enclosed human spaces, however, should be kept controlled and sealed tightly, to allow for a clear separation of air conditions without disconnecting from the larger symbiotic environment.

Architectural Strategies

- Prioritize natural ventilation in the arena
- Use operable windows and perforated wall systems to allow airflow through the building
- Keep human-only spaces more tightly sealed and controlled where needed
- Design so air can move through the building instead of getting trapped
- Avoid stagnant zones where smell and heat can build up
- Support continuous air movement across human and equine areas where they overlap

Specification Considerations

- Curtain wall systems with operable sections for airflow control
- Perforated metal or screen systems to allow ventilation
- High-level openings to encourage stack ventilation in tall spaces like arenas
- Cross-ventilation paths aligned with circulation and spatial organization
- Separation of HVAC zones between enclosed human spaces and open equine areas
- Materials and finishes selected for low odor emission and long-term air quality stability (ex. High-Density Polyethylene Panels)

⁴⁹ Mostafa, Magda. *The Autism Friendly University Design Guide*. Dublin: Progressive Architects, 2021. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.

⁵⁰ Elfman, Lena, Robert Wålinder, Miia Riihimäki, and John Pringle. "Air Quality in Horse Stables." Department of Medical Sciences, Occupational and Environmental Medicine, Uppsala University; Department of Clinical Sciences, Equine Internal Medicine, Swedish University of Agricultural Sciences. Accessed May 28, 2026. https://www.researchgate.net/publication/221913706_Air_Quality_in_Horse_Stables.

E. SHARED SPATIAL & SOCIAL CONDITIONS

Shared Spaces

Both autistic individuals and horses feel more at ease when space is predictable and when proximity is something they can understand and control. Interaction doesn't need to be constant or direct. It can happen at a distance, through sightlines, through movement, and through the simple ability to step away when something feels like too much. In both cases, comfort is tied to choice.⁵¹ The ability to approach slowly, pause, observe first, and to decide when and how to engage often makes the difference between tension and ease in a space.

For autistic individuals, environments that are busy or unpredictable can make it harder to stay regulated or oriented. Being able to take in a space without immediate demands for interaction often becomes the first step toward feeling comfortable within it.⁵² For horses, awareness of others is constant. They read movement, distance, and presence at all times, and can become stressed when space feels tight, forced, or unpredictable.

Architectural and Specification Considerations

- Design the arena space with multiple layers of presence, supporting observation, retreat, and engagement without a single required mode of use
- Organize circulation around the arena to support a gradual yet continuous movement between quiet and active areas, with minimum 16' wide key gathering zones and no dead ends where possible
- Separate human and equine circulation where needed, with controlled overlap points and clear visual anchors for orientation
- Place active and quiet zones in direct adjacency, using transition spaces, distributed pause points, and low-stimulus rooms off circulation for gradual regulation
- Use thresholds, level changes, partitions, glazing, screens, and partial enclosures to control proximity, exposure, and visibility without full separation
- Maintain partial-height equine partitions and kick walls at arena edges to support awareness, safety, and controlled interaction
- Provide elevated walkways, galleries, and framed sightlines for secondary observation, reducing sensory intensity while maintaining connection

⁵¹ "Choice Architecture." *The Decision Lab*. Accessed May 28, 2026.

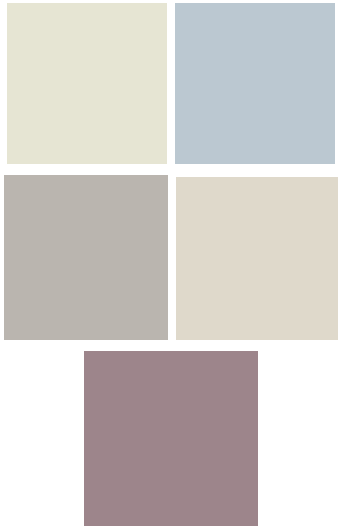
<https://thedecisionlab.com/reference-guide/psychology/choice-architecture>.

⁵² Mottron, Laurent, Michelle Dawson, Isabelle Soulières, et al. "Enhanced Perceptual Functioning in Autism: An Update, and Eight Principles of Autistic Perception." *Journal of Autism and Developmental Disorders* 36 (2006): 27–43. <https://doi.org/10.1007/s10803-005-0040-7>.

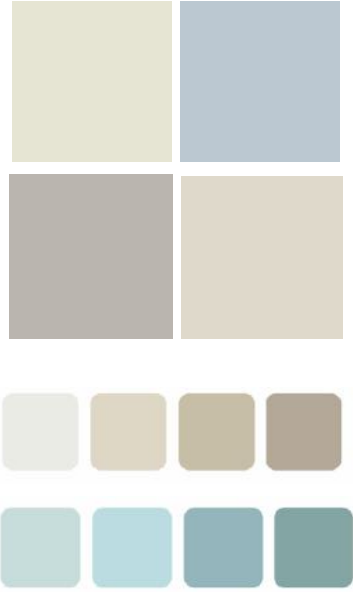
SPECIFICATION SAMPLES

Human Spaces

The following specifications provide examples of human space considerations.

Design Feature	Product Image	Example Specification Information
Floor Treatment		
Acoustic Flooring Vinyl		• Tarkett Acoustic Flooring Vinyl - Tapiflex Platinum 100 • Excellent acoustic to indentation ratio with 17dB / 0,07mm indentation resistance
Acoustic Flooring Vinyl		• Tarkett Acoustic Flooring Vinyl - iQ Eminent Acoustic - Eminent • Foam interlayer • 16 dB impact sound reduction • Underfoot comfort
Rubber Flooring		• Roppe Rubber Tiles in colors: aged fern, peaceful blue, somber, parchment, sorbet, respectively. • Provides reduced noise from foot traffic • Underfoot comfort • Slip resistance

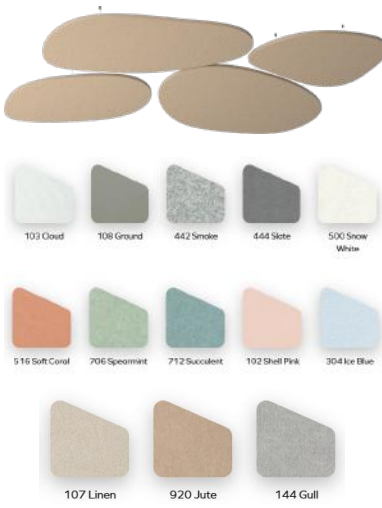
Acoustic Flooring Vinyl		• Tarkett Acoustic Heterogeneous poly(vinyl chloride) floor coverings - iD Comfort Acoustic - English Oak GREY BEIGE • 19dB impact sound reduction
Low-Pile Carpet		• Edge Carpets A/S - REFORM - Flux, tufted loop pile carpet • Surface pile thickness 3,0 mm. • 26 dB impact sound reduction • 0,25 aW acoustical absorption • Permanently antistatic • Suitable for intensive chair use

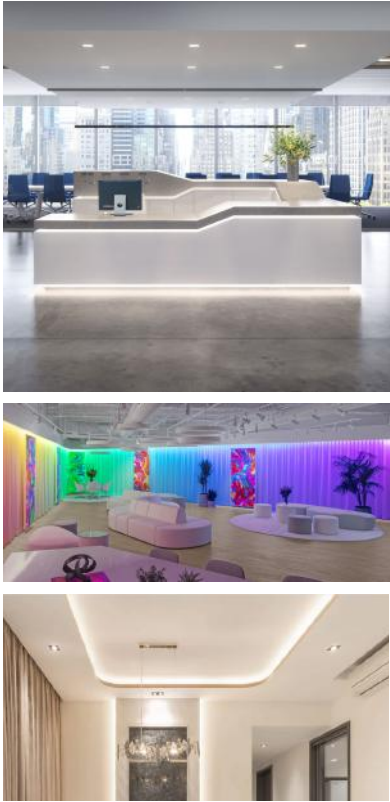
Wall Treatment		
Gypsum Wallboard, Matte		• Matte Paint Coating, low VOC's • Example Products: ○ AFM SafeCoat, Ecolacq, Matte ○ AFM Safecoat® Zero VOC Flat Paint ○ Regal® Select Waterborne Interior Paint - Matte Gallon

High-Impact Acoustic Panels	 104 Lynx 095 Kenai 193 Glacier Sky 187 Beluga 103 Seal	• JUNO Acoustical Fabric - KINETICS® High Impact HardSide • Radius edge option • 6-7 PCF density core with a 1/8" thick, high density impact resistant skin laminated on the core face • 100% Post Consumer Recycled Polyester (PFAS Free)
High-Impact Acoustic Panels	 103 Cloud 108 Ground 442 Smoke 444 Slate 500 Snow White 916 Soft Coral 706 Spearmint 712 Succulent 102 Shell Pink 304 Ice Blue 107 Linen 920 Jute 144 Gull	• Impact Acoustic - PALLADIO Volumetric Wall Covering, 12mm (0.47") – 24mm (0.94") • Acoustic ASTM: NRC=0.6 ISO: α_w=0.65; ASTM: NRC=0.9 ISO: α_w=0.95 • 100% PET (min. 60% post-consumer) • High-performance sustainable acoustic absorber made from up-cycled plastic bottles which is Cradle to Cradle certified and LEED accredited

High-Impact Acoustic Panels	   	● Impact Acoustic - ARCHISONIC® Felt, 12mm (0.47") – 24mm (0.94") ● Acoustic ASTM: NRC=0.6 ISO: $\alpha_w=0.65$; ASTM: NRC=0.9 ISO: $\alpha_w=0.95$ ● 100% PET (min. 60% post-consumer) ● Declare label, Cradle to Cradle, UL Environmental Product Declaration, Member of US Green Building Council, Ecobau 1st Priority, Climate-KIC, VOC emissions in LEED EQ credit (low-emitting products), SCS Recycled Content
------------------------------------	---	---

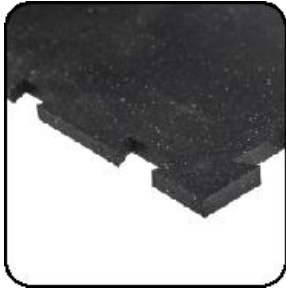
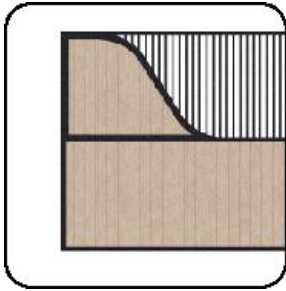
Ceiling Treatment		
Acoustic Panels	  	● Impact Acoustic - Bespoke Baffle Systems, 12mm (0.47") – 24mm (0.94") ● Acoustic ASTM: NRC=0.6 ISO: $\alpha_w=0.65$; ASTM: NRC=0.9 ISO: $\alpha_w=0.95$ ● 100% PET (60% post-consumer) ● Declare label, Cradle to Cradle, UL Environmental Product Declaration, Member of US Green Building Council, Ecobau 1st Priority, Climate-KIC, VOC emissions in LEED EQ credit (low-emitting products), SCS Recycled Content

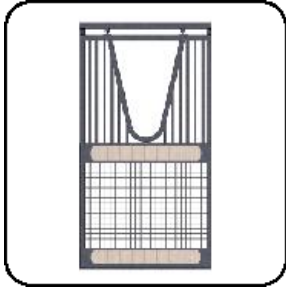
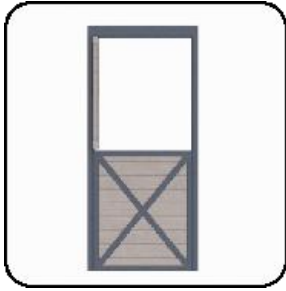
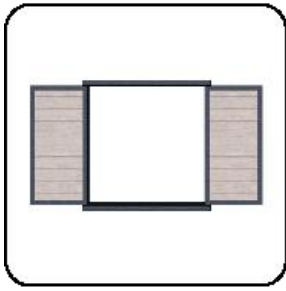
Dropped Acoustic Panels		● Impact Acoustic - Stone Ceiling Systems, 12mm (0.47") – 24mm (0.94") ● Acoustic ASTM: NRC=0.6 ISO: α_w=0.65; ASTM: NRC=0.9 ISO: α_w=0.95 ● 100% PET (60% post-consumer) ● Cradle to Cradle Certified™ ● Product qualifies for LEED v4 specifications on VOC emissions in LEED EQ credit (Low-emitting products)
Ceiling Panel Track		● Impact Acoustic -Track Ceiling Panels, 12mm (0.47") ● Acoustic ASTM: NRC=0.9 ISO: α_w=0.95 ● 100% PET (60% post-consumer) ● Cradle to Cradle Certified™ ● Product qualifies for LEED v4 specifications on VOC emissions in LEED EQ credit (Low-emitting products) ● LINK TO PRODUCT

Lighting		
Linear Lighting + Cove Lighting		● Lutron Electronics - Ketra G2 Linear Lighting ● Graze, narrow flood, flood, or wide flood ● RGB color tuning ● Individual / manual controls ● Color temperature: 3000–3500K (warm-neutral range) ● Full dimming range (0–100%) ● Color Rendering Index (CRI): ≥ 80 (≥ 90 preferred in key occupied spaces) ● LED systems with flicker-free drivers (low ripple current, ≥ 4000 Hz recommended)
Suspended Lights, Round		● Louis Poulsen - LP Grand Suspended, Champagne, 5741939011 ● Color temperature: 3000–3500K (warm-neutral range)

Horse Spaces

The following specifications provide examples of human space considerations.

Design Feature	Product Image	Specification	Equine Benefit
Main Circulation Flooring		Rubber Paving Bricks ECORE - PaveSafe Vulcanized Recycled Rubber Paver, 1.75"/44.5 mm Consider gray paver color for less over stimulation	Hoof traction, slip resistance, shock absorption, and comfort
Main Circulation Hallway Runner		100% Recycled Vulcanized Rubber Mats Red Barn - Tru-Lock Interlocking Stall Mat Kits, ¾" Thick	Hoof traction, slip resistance, shock absorption, and comfort
Stall Partition	 	Higher Stimulus Stall: 8'-10' Tall High Density Polyethylene (HDPE) paneled stall partition w/ partial privacy panel* Lower Stimulus Stall: 8'-10' Tall High Density Polyethylene (HDPE) paneled stall partition w/ complete privacy panel*	Durable and resistant to horse cribbing, moisture, and corrosion Provides privacy during feed Ample ventilation and socialization

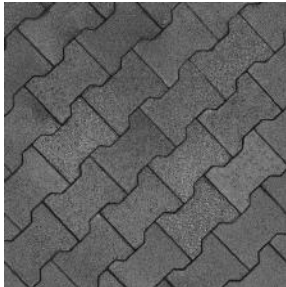
Partition Padding		3" Thick Kick Pads	Provides soft padding alongside stall partition to prevent major injuries
Stall Door		Sliding Stall Door w/ Open V-Shaped Yoke and Vented Mesh Bottom*	Door-swing safety Comfortable socialization Odor Control and ventilation
Stall Mattress System		American Stalls - StableComfort Horse Stall Mattress Multi-celled foam mattress stall system w/ rubber coated waterproof top cover as flooring	Comfort on joints Flooring softness mimics the natural pasture Odor control Quick clean up time Equal to 4-6" of wood shavings
Exterior Dutch Door Paddock Access		Dutch Doors*	Ventilation Socialization Reduces boredom Leads horses directly into turnout
Exterior Shutter Window		Shutter Window*	An alternative to the dutch door, the shutter window provides ventilation, socialization, and reduces boredom

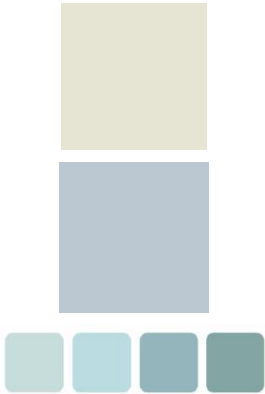
Feeder		Any slow feeders of choice	Provide stimulation when indoors and reduces boredom and stress
Lighting		LED Strip Lights <100 LUX to Mimic Natural Daylight, 16 hours a day runtime maximum	Reduces boredom and stress Provide natural stimulation and connection to more natural daylighting, healthy on the mental state

**Stalls and doors are designed with reference to products from [American Stalls LLC](https://www.americanstalls.com/).*

Human-Horse Spaces

The following specifications provide examples of human and horse space considerations. Naturally, these spaces default towards horses and their needs, but as horses share similar sensory needs with people, one can apply the principles towards the symbiotic space.

Design Feature	Product Image	Specification	Benefits
Main Circulation Flooring		ECORE - PavSafe Vulcanized Recycled Rubber Paver, 1.75"/44.5 mm, Gray	Traction and slip resistance, bounce and give, and overall comfort for both people and horses

Wall Padding		SMI Soft Stall - SoftWall Equine Wall Panel System	Provides soft padding alongside walls and partitions to prevent major injuries for both humans and horses
Lighting		LED Strip Lights with LEDWIDE micro prismatic glare reduction diffusers, <100 LUX to Mimic Natural Daylight, 16 hours a day runtime maximum.	Reduces boredom and stress, minimizes light sensitivity, and provides natural stimulation and connection to more natural daylighting, which is healthy on the mental state
Acoustic Panels		Timberwool™ Wall-Mounted Wood Fiber Acoustic Panels (24" x 96"), 2" thick	Fungal and mold resistant; absorbs airborne sound to aid overstimulation for both people and horses, manufactured from natural products
Gypsum Wallboard, Matte Sealed		High-Impact Matte Sealed Paint Coating with low VOC's, using Green-Blue tones Example Products: • AFM SafeCoat, Ecolacq, Matte • AFM Safecoat® Zero VOC Flat Paint • Regal® Select Waterborne Interior Paint - Matte Gallon	

ARCHITECTURAL APPLICATION

Autism-Informed Design Principles

Magda Mostafa's ASPECTSS and broader autism-aware design principles are significant to understand when designing an overall architecture for people with autism. ASPECTSS emphasizes acoustics, spatial sequencing, transitions, sensory zoning, compartmentalization, escape spaces, and safety, while autism-aware design principles extend this through wayfinding, flexibility, and a balance of prospect and refuge.⁵³

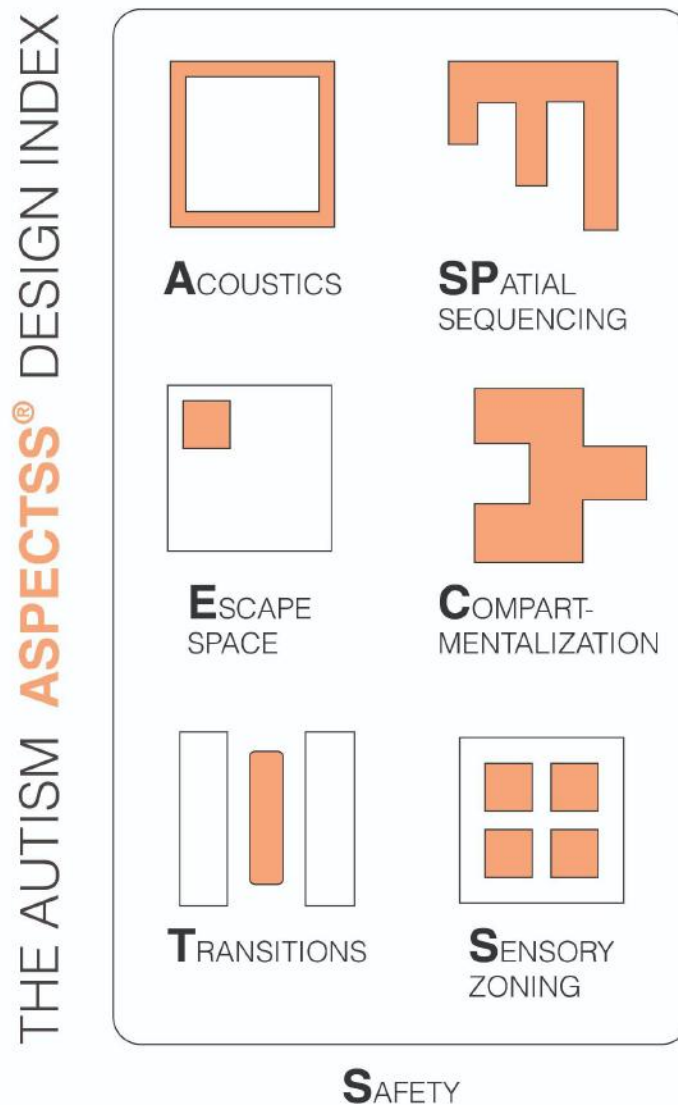


Fig. 15: Custom ASPECTSS Diagram. Originally by Magda Mostafa, in *ASPECTSS: Architecture for Autism – The ASPECTSS Design Index* (2013).

⁵³ Mostafa, Magda. *The Autism ASPECTSS™ Design Index: Architecture for Autism*. Cairo: Progressive Architects, 2013.

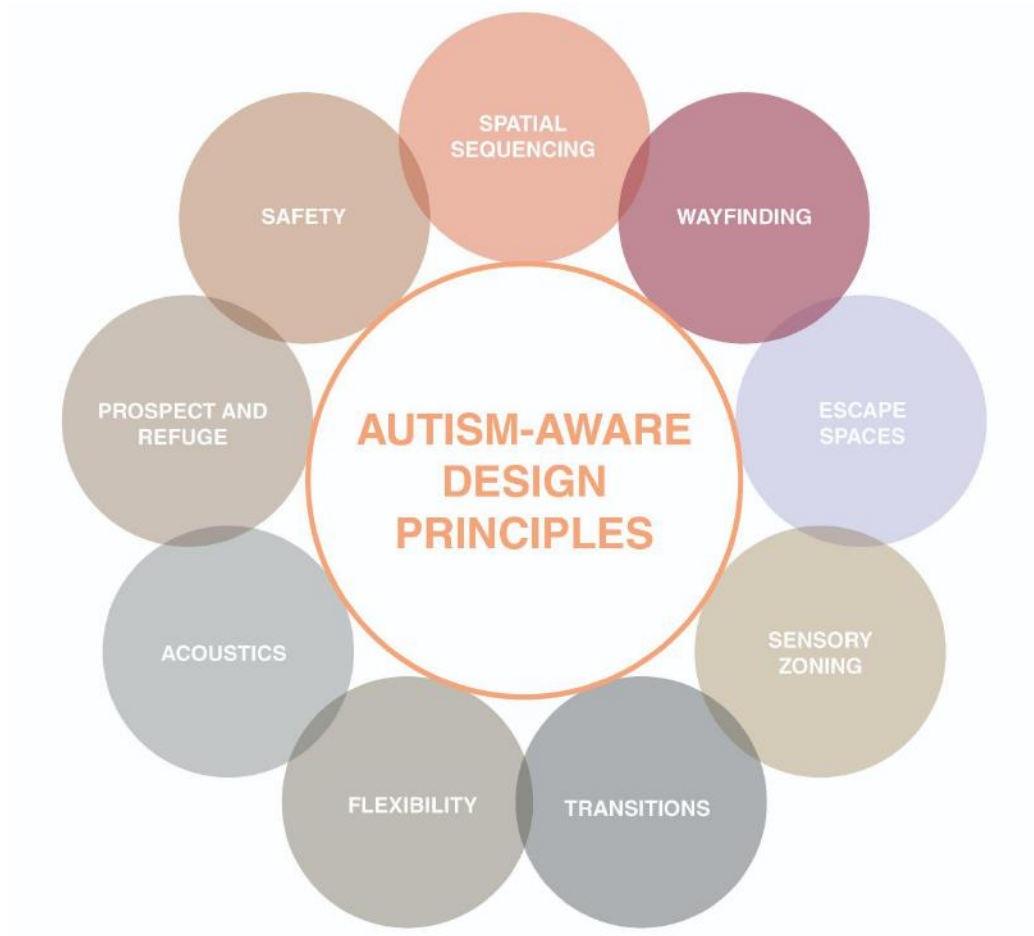


Fig. 16: Autism-Aware Design Principles.
Guidelines developed by Magda Mostafa and Kristi Gaines.

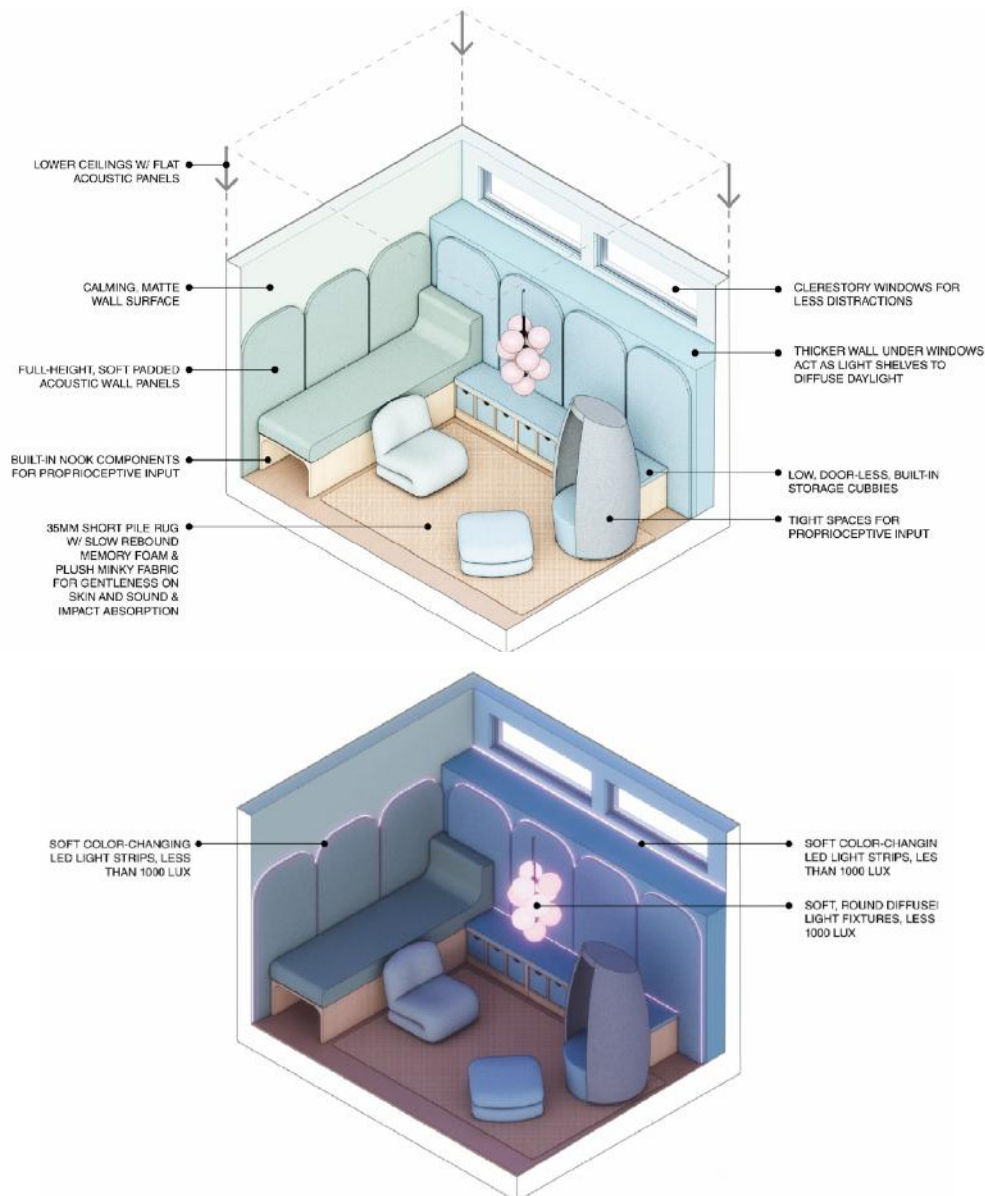
Diagrammatic Applications

The following diagrams in this section apply both the spatial specifications and sensory conditions explored into architectural design examples, meant to demonstrate environments designed specifically for individuals with autism and for horses. These studies were influenced by Magda Mostafa's 2021 design guidelines in *The Autism Friendly University Design Guide*, as well as the British Standards Institution's 2022 Design Guide PAS 6463:2022 *Design for the Mind – Neurodiversity and the Built Environment*, and provide a foundational starting point through human sensory rooms and equine stalls, outlining dimensions, material choices, lighting conditions, acoustics, enclosure, and levels of stimulation to consider when designing for sensory comfort, regulation, and retreat.

Human Sensory Rooms

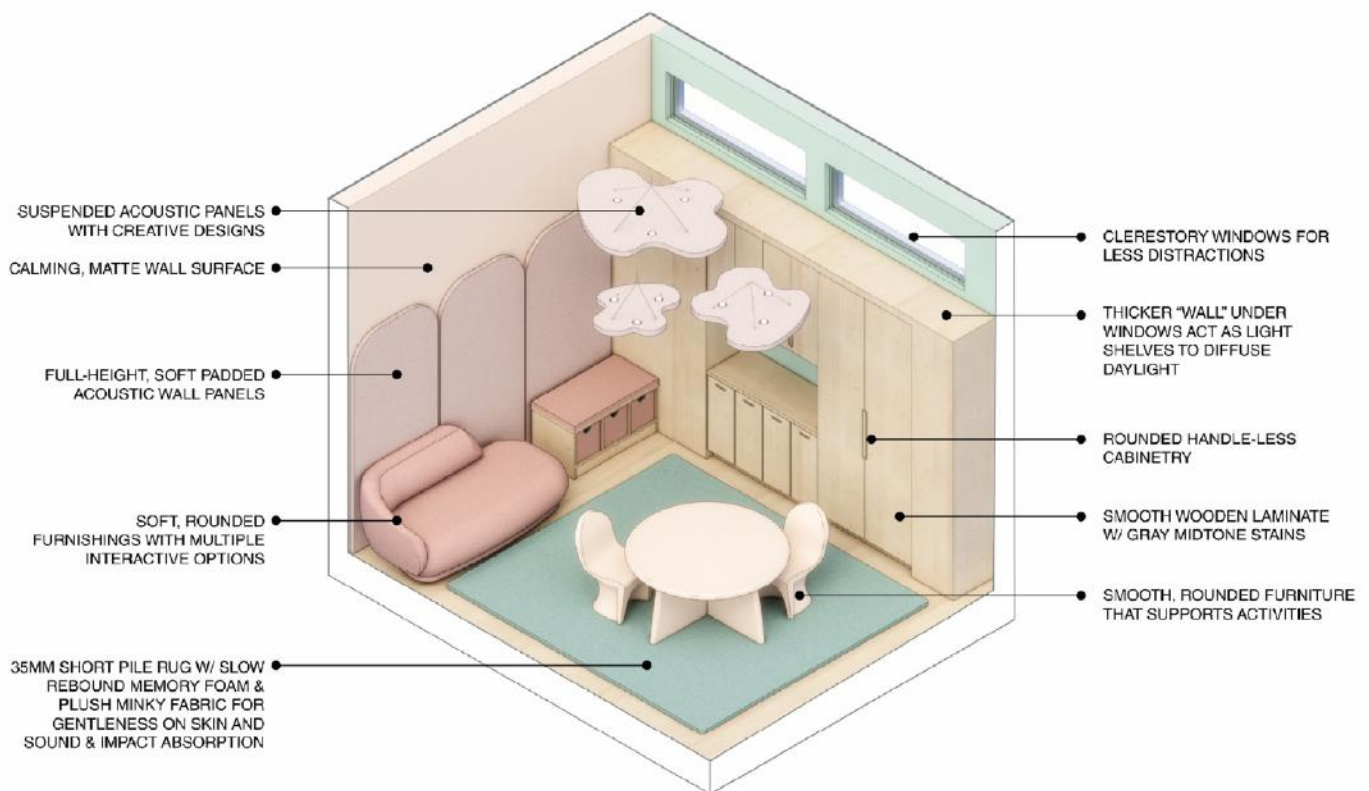
Low-Stimulus Room

The goal of a low-stimulus space is not only isolation, but relief: a place where someone can decompress, regulate, and slowly reconnect with themselves and their surroundings at their own pace. These rooms are meant to support the highest moments of overwhelm, burnout, shutdown, or emotional exhaustion by creating an environment that asks very little from the body and mind through highly reduced sensory inputs. As demonstrated in the diagram to the right, a low-stimulus room should be understood as a “cocoon”, reducing visual clutter and utilizing: rounded, soft edges; soft fabrics; simplified palette of materials; contained and highly isolating acoustics; and glare control. A limited design palette supports this calm, especially when tones sit within a close range, such as soft blue-greens or natural hues. Rather than strong contrast, the space relies on subtle variation to help the nervous system settle.



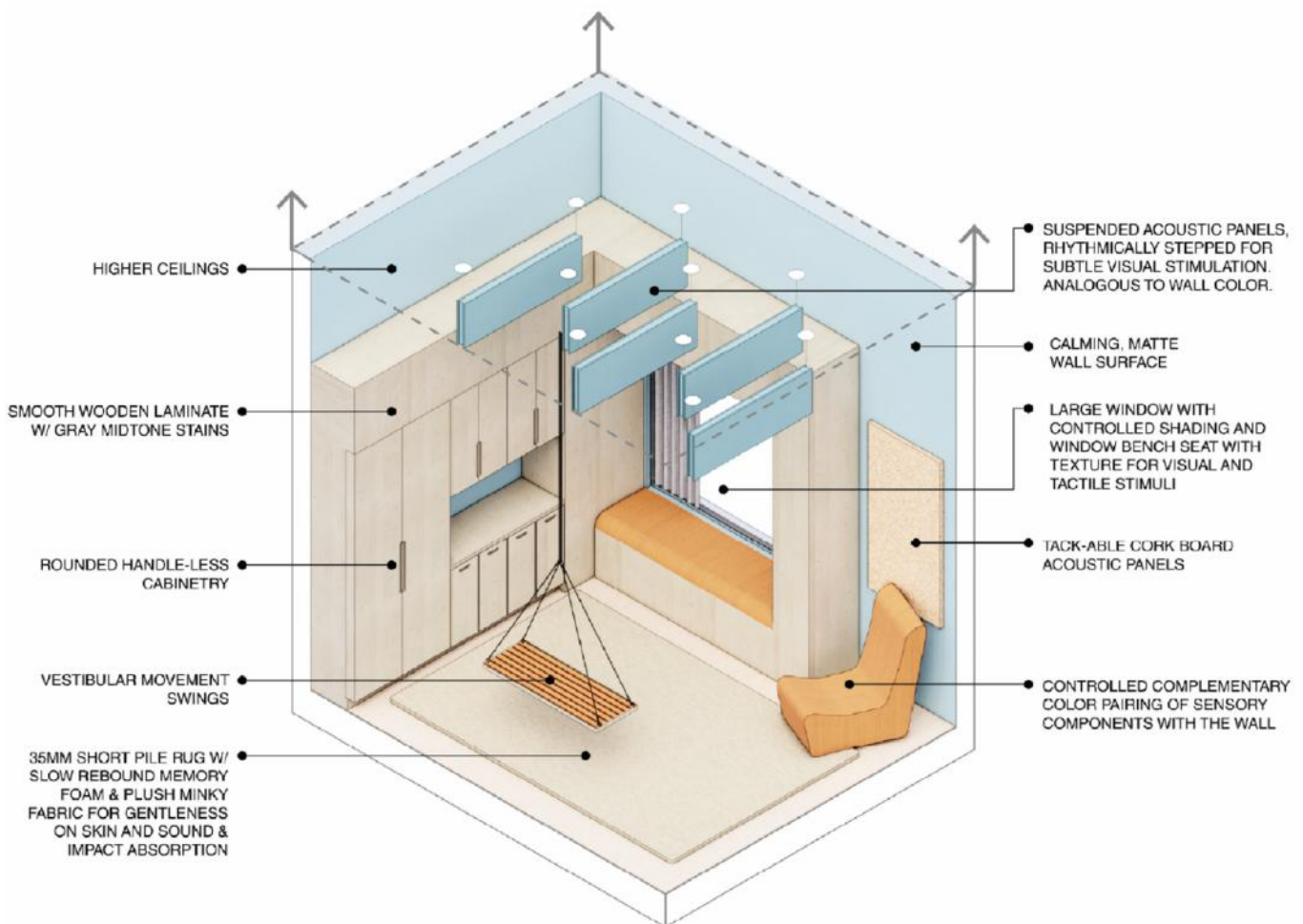
Medium-Stimulus Room

A medium-stimulus environment sits in the middle ground. It should make up most of the overall architectural condition, supporting gradual participation, observation, and movement between retreat spaces and more active areas. At the scale of a single room, it's not fully quiet, but not fully active either. It's a space where people can stay regulated, especially in groups, while still maintaining an ongoing sense of awareness of the greater environment. If someone is alone, the space doesn't create a fully withdrawn condition. Instead, it maintains a softened high-energy connection to oneself. Visual, acoustic, and social cues are still present, but they're filtered so they don't overwhelm. This can be supported through elements represented in the diagram, such as: colors that sit next to each other rather than strongly contrasting; controlled daylight, ideally through clerestory openings; and vestibular movement opportunities through furniture. The goal of a medium-stimulus space is to keep someone subtly, almost subconsciously, aware of their surroundings without ever fully enclosing them from it.



High-Stimulus Room

High-stimulus rooms are designed for more active sensory engagement with the environment. The diagram to the right studied how different sensory conditions can be held together without becoming overwhelming. A high-stimulus environment should allow for more light, more movement, and a stronger connection to what's happening outside the room. Larger windows with controlled shading bring in daylight and views, but they should be carefully managed so glare and intensity don't take over the space. South-facing openings in particular should be avoided, but if unavoidable, they require stronger control so the light stays usable rather than harsh. In addition to views, movement is also part of the spatial experience. Vestibular shifts, changes in level, and more dynamic spatial conditions help activate the room without making it chaotic. Even with this increase in sensory input, the space still needs to feel grounded. Clarity comes through structure, color, and a consistent spatial logic that keeps it easy to read.



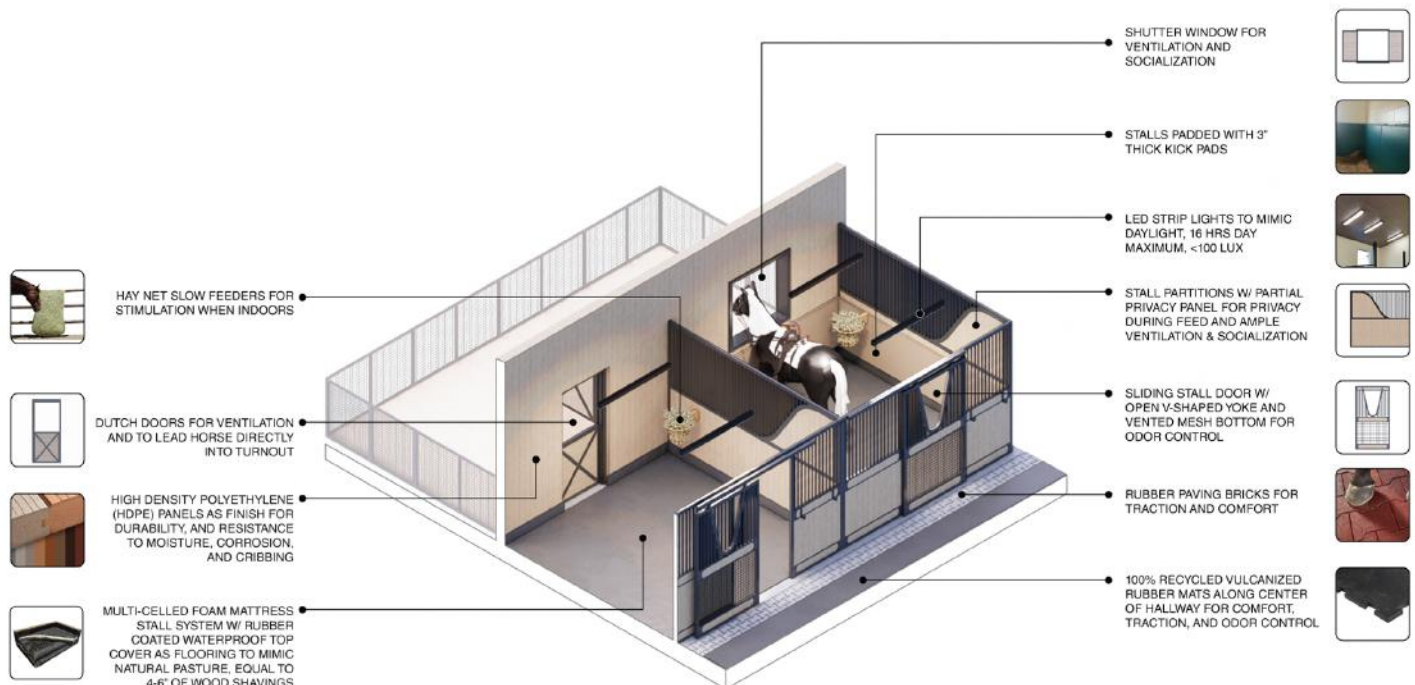
Horse Sensory Stalls

High-Stimulus Stall

Designed to support social interaction, environmental awareness, and increased activity, the higher stimulus stall allows horses to maintain visual connection with one another across the stable environment while still providing moments of privacy and regulation.

More open stall conditions encourage socialization, visibility, airflow, and passive engagement throughout the barn. Horses are able to see neighboring horses and surrounding activity, supporting herd awareness and reducing isolation within enclosed stable systems.

Rather than fully open partitions, the stall incorporates partial privacy panels that provide separation during feeding, resting, or moments of overstimulation while still maintaining overall visual connection. Increased ventilation and openness create a healthier respiratory environment and support more natural environmental conditions within the stable.

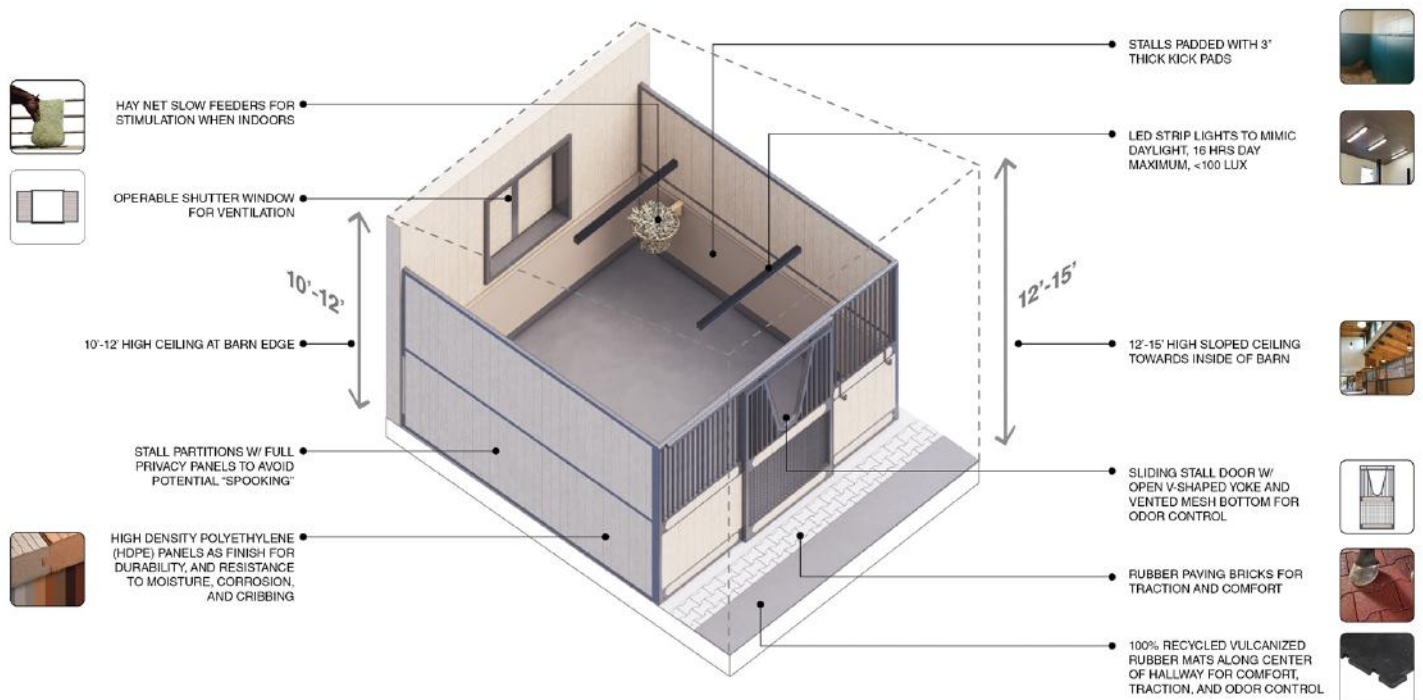


Low-Stimulus Stall

The goal of a low-stimulus horse stall is to provide a place where a horse can feel safe enough to settle, rest, and recover without constant environmental demand. The low stimulus stall provides a calmer and more controlled sensory environment for the horse.

The stall partition incorporates a full privacy panel rather than an open divider condition. This limits sudden visual exposure and reduces the potential for reactive or startle responses caused by neighboring horse movement. While social awareness is still maintained within the larger stable environment, direct visual stimulation at the stall edge is intentionally minimized.

Diffused lighting conditions will help reduce glare, harsh shadow transitions, and sudden contrast changes within the stall. This increased light filtering creates a softer visual environment that supports calmer occupation and reduces environmental vigilance.



SYMBIOTIC LARGE-SCALE BUILDING APPLICATION

Symbiotic Spaces for Co-Existence

While sensory rooms and stalls address regulation at the scale of individual spaces, these principles can also inform the organization of the building as a whole. A shared logic between human and horse spaces came to be: both types of spaces rely on regulation, exposure, and sensory control. Humans and horses are both highly sensitive to their environments, and need a sense of stability through choice in how they engage with what surrounds them, opening up the possibility for a symbiotic relationship through architecture. From this overlap, architecture can be understood as a sensory-informed mediator of coexistence between humans and horses, where both can share an environment while still maintaining their own sensory and spatial needs. Architecture can provide physical space to control the spectrum of connection, and also use design, specifications, and materials to control the experience within those spaces.

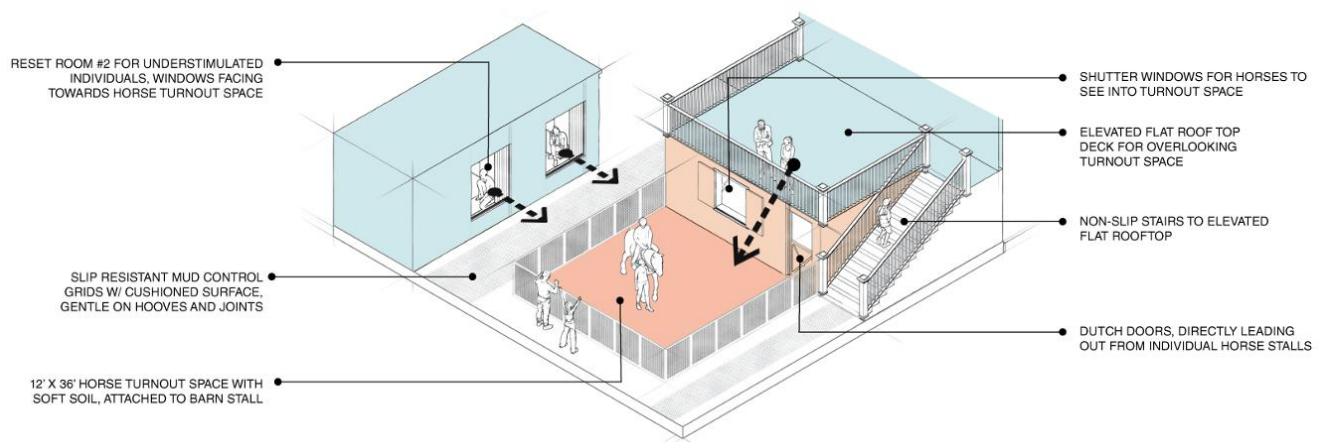


Fig. 17: Spatial Relationship Diagram for Sensory Rooms and Horses

When it comes down to the building as a whole, wayfinding and spatial sequencing should become central to the design logic, aligning with ASPECTSS principles. Instead of a landscaped courtyard, the horse arena may be positioned as the primary organizing element. Acting as the most consistent spatial anchor, it supports orientation and sequencing while maintaining visual connection to the horses. Human program spaces wrap around the arena, with larger program elements anchoring each corner to reinforce structure, compartmentalization, and spatial readability. This arrangement allows the horses to remain present within the experience of the building without imposing interaction. Visual and acoustic

connections allow a human's awareness of their presence at all times, and thresholds and the moments of retreat allow them to regulate proximity and engagement according to their own comfort levels. In this way, the architecture starts to go beyond accommodation and becomes a living mediator between the two species, creating opportunities for connection while preserving autonomy, predictability, and sensory choice.

The following images demonstrate how the research presented in the guide is translated into architectural form. Drawing from the sensory design principles, equine welfare research, and the ASPECTSS framework, the conceptual building proposal personally designed applies these findings at the scale of the building to create a shared environment for humans and horses. The architecture seeks to support a symbiotic relationship between species while respecting their distinct sensory needs.



Fig. 18: Lobby entry, prioritizing analogous colors with low-contrast “pops” of color achieved by using wood, rubber vinyl flooring, acoustical ceiling baffles, diffused daylighting, and linear cove lighting.



Fig. 19: Indoor horse arena, prioritizing analogous colors with low-contrast “pops” of color achieved with wood, gray rubber paving bricks, light ceilings with gentle structural patterns, and diffused daylighting.



Fig. 20: Human-horse interaction stall, using blue-green tones for calming effects for humans, and spatial reassurance effects for horses.



Fig. 21: Indirect contact using elevated overlooks for observation.



Fig. 22: Elevated classroom overlooks into the arena for protected observation.

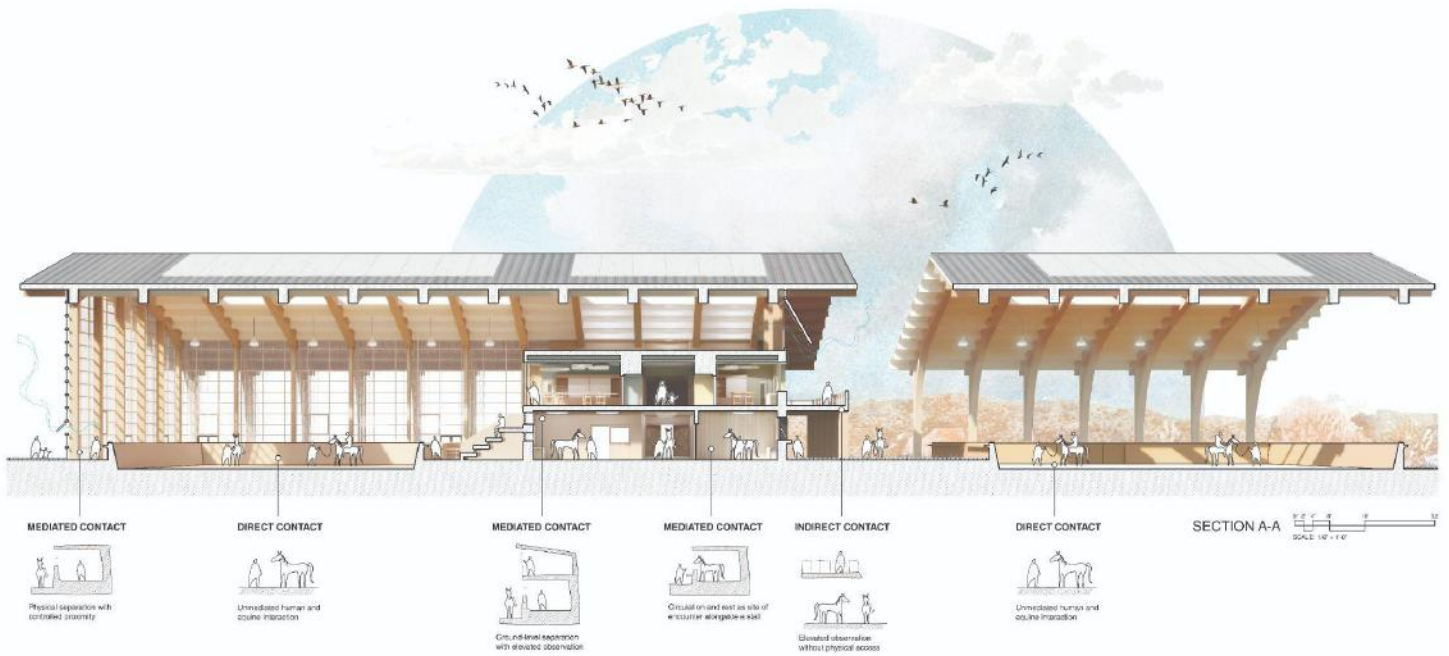


Fig. 23: Section perspective of the spectrum of human-horse interaction through an indoor arena and outdoor arena.

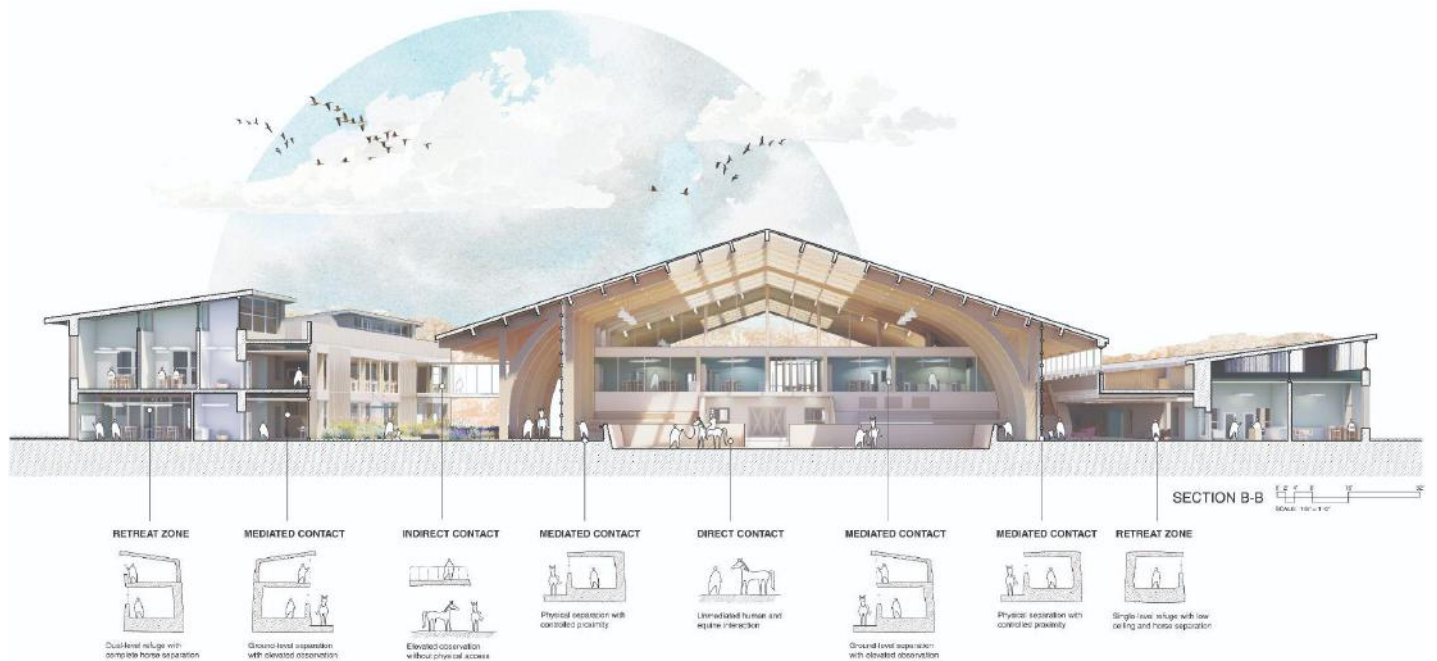


Fig. 24: Section perspective of the spectrum of human-horse interaction through the indoor arena and the human spaces programmed outside of it.

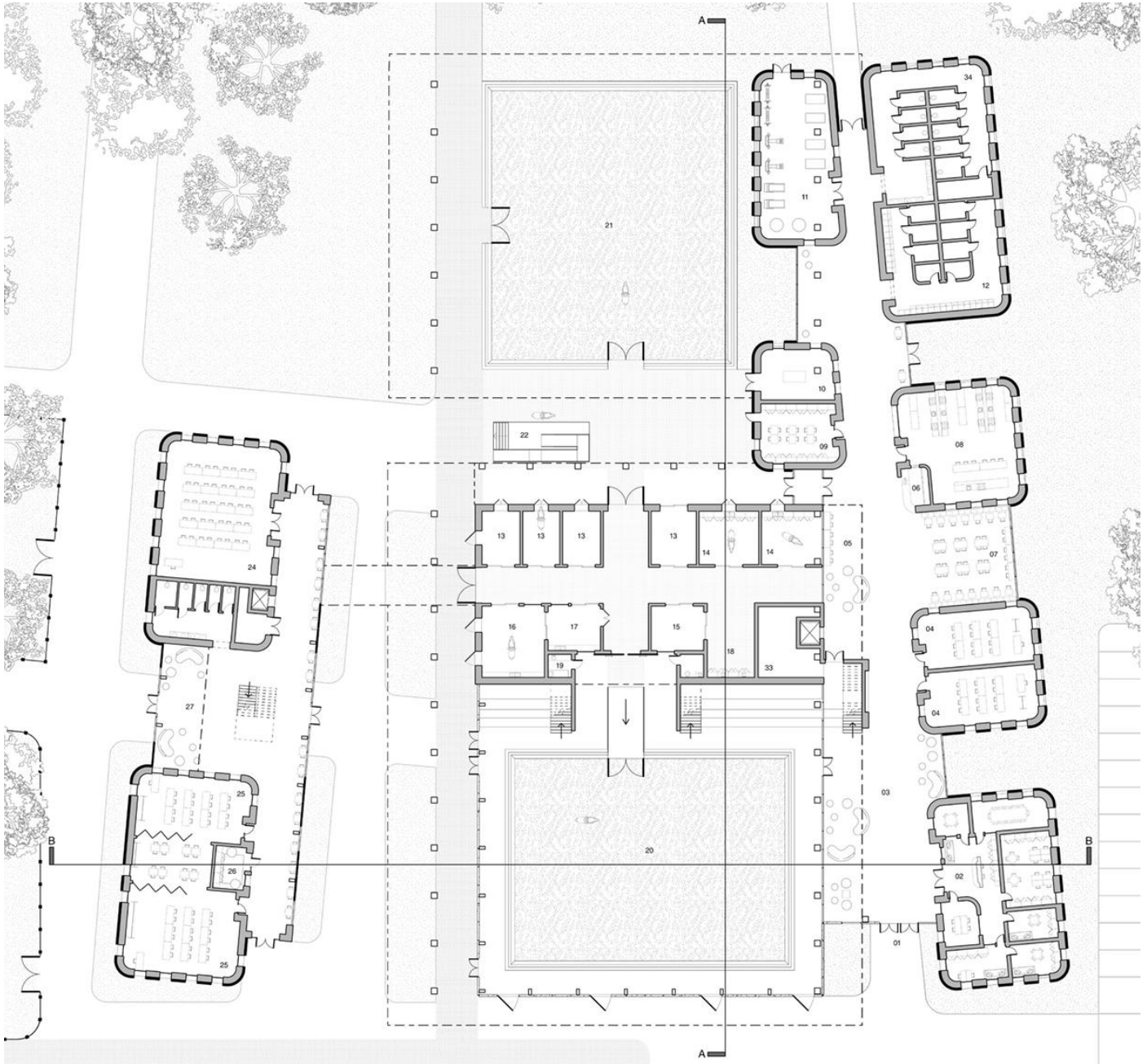


Fig. 25: Conceptual floor plan integrating human-horse zones throughout the building. The primary horse spaces (stalls and arena) are clustered within the central zone of the building, acting as a wayfinding landmark. Human spaces revolve around its perimeter as well as above the stall boarding areas.

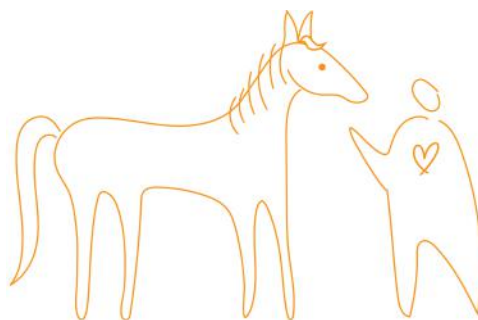
CONCLUSION

Humans have always looked to animals for companionship, labor, guidance, and healing. Yet they rarely allow their experiences to influence the environments they create. If architecture has the ability to shape relationships, then perhaps it can also help us build stronger relationships with the living world around us.

The value of this research is not that it provides a perfect set of answers, but that it encourages a different way of paying attention. The same way an uncomfortable fluorescent light can suddenly become impossible to ignore once it is noticed, the sensory experiences of others become difficult to overlook once we begin to understand them. The challenge for architects is not simply to design spaces that accommodate difference, but to become more aware of the many ways space is perceived in the first place.

What initially appears to be two separate design problems revealed a shared way of experiencing space. Many of the underlying needs are similar for humans and horses, and both rely on environments that feel understandable. Throughout this guide, architecture was proven as a method that can respond to those needs. Technical decisions are also sensory decisions; they shape the willingness to engage with the world around us.

What is most interesting, however, is realizing how much architecture still centers a very narrow understanding of who space is for. Buildings are experienced differently by everyone who enters them, whether human or animal. Despite these differences, all of these experiences are real and valid, and all of them are shaped by architecture. In a time when people are increasingly disconnected from nature, from animals, and often from one another, there may be value in designing spaces that remind us that we were never meant to exist separately from those relationships. Sometimes, the most meaningful architectural question is not how a building looks, but how it allows different forms of life to exist together.



BIBLIOGRAPHY

1. Advanced Autism Services. "Autism Unemployment Rate." June 4, 2025.
<https://www.advancedautism.com/post/autism-unemployment-rate>.
2. Ahrentzen, Sandra, et al. "Advancing Full Spectrum Housing: Designing for Adults with Autism Spectrum Disorders." Edited by J. Russ. Arizona Board of Regents, 2009.
<https://d3dqsm2futmewz.cloudfront.net/docs/stardust/advancing-full-spectrum-housing/full-report.pdf>.
3. Al-Hmouz, Hanan, and Ahmed Arabiat. "Therapeutic Horseback Riding and Children with Autism Spectrum Disorders." *The Journal of the International Association of Special Education* 16, no. 1 (2015): 42.
4. American Stalls. "Creature Comforts – Horsekeeping from the Horse's Perspective." May 1, 2023.
<https://americanstalls.com/blogs/blog/creature-comforts-horsekeeping-from-the-horses-perspective?srltid=AfmBOoq0KL4xmUhtTPjC269Tz3uXHchSVcJN9zoiKn7C8ZAub5btMDTo>.
5. American Stalls. "How Wide Should Your Barn Aisle Be?" Accessed May 28, 2026.
<https://americanstalls.com/blogs/blog/how-wide-should-your-barn-aisle-be/>.
6. Anderson, Andrea. *This Is Who I Am: The Autistic Woman's Creative Guide to Belonging*. Philadelphia, PA: Jessica Kingsley Publishers, 2024.
7. Animal Arts. "Designing from the Patient's Perspective – Horses." 2022.
<https://www.animalarts.com/designing-from-the-patients-perspective-horses/>.
8. Boissy, Alain, et al. "Assessment of Positive Emotions in Animals to Improve Their Welfare." *Physiology & Behavior* 92, no. 3 (2007): 375–397.
<https://doi.org/10.1016/j.physbeh.2007.02.003>.
9. British Standards Institution. *PAS 6463:2022 Design for the Mind: Neurodiversity and the Built Environment – Guide*. London: BSI Standards Limited, 2022.
10. Burgon, Hannah Louise. "'Queen of the World': Experiences of 'At-Risk' Young People Participating in Equine-Assisted Learning/Therapy." *Journal of Social Work Practice* 25, no. 2 (2011). <https://doi.org/10.1080/02650533.2011.561304>.

11. Burgon, Hannah, Di Gammage, and Jenny Hebden. "Hoofbeats and Heartbeats: Equine-Assisted Therapy and Learning with Young People with Psychosocial Issues – Theory and Practice." *Journal of Social Work Practice* 32, no. 1 (2018): 5–15.
<https://doi.org/10.1080/02650533.2017.1300878>.
12. Campanaro, Alexandra M., Jason C. Vladescu, Christopher J. Manente, Meghan A. Deshais, and Ruth M. DeBar. "A Review of the Literature on Vocational Training Interventions with Individuals with Autism Spectrum Disorder." *Behavioral Interventions* 36, no. 3 (2021): 675–696. <https://doi.org/10.1002/bin.1795>.
13. Carrasco, Moises. "Designing for Horses: 8 Projects Shaping Space for Equine Life." November 5, 2025. <https://www.archdaily.com/1035643/designing-for-horses-8-projects-shaping-space-for-equine-life>.
14. Chen, J. L., G. Leader, C. Sung, and M. Leahy. "Trends in Employment for Individuals with Autism Spectrum Disorder: A Review of the Research Literature." *Review Journal of Autism and Developmental Disorders* 2, no. 2 (2015): 115–127.
<https://doi.org/10.1007/s40489-014-0041-6>.
15. Christensen, Janne W., Tatjana Zharkikh, and Jan Ladewig. "Do Horses Generalise Between Objects During Habituation?" *Applied Animal Behaviour Science* 114, nos. 3–4 (2008): 509–520. <https://doi.org/10.1016/j.applanim.2008.03.007>.
16. Cordell, Alexandria T. "Creating a Vocational Training Site for Individuals with Autism Spectrum Disorder." *Intervention in School and Clinic* 59, no. 4 (2024): 274–280.
<https://doi.org/10.1177/10534512231156882>.
17. Dawes, Viv. *The Young Person's Guide to Autistic Burnout*. London: John Murray Press, 2025. ISBN: 1805017322
18. Dawson, Shay, Bryan McCormick, Daniela Tamas, Cedomir Stanojevic, Lori Eldridge, Jordan McIntire, Ashley Bowen, and H. Blair McKissock. "Equine-Assisted Therapy with Autism Spectrum Disorder in Serbia and the United States: A Pilot Intervention." *Therapeutic Recreation Journal* 56, no. 1 (2022): 17. <https://doi.org/10.18666/TRJ-2022-V56-I1-10387-w>.
19. Dietz, Patrick M., et al. "National and State Estimates of Adults with Autism Spectrum Disorder." *Journal of Autism and Developmental Disorders* 50, no. 12 (2020): 4258–4266.
<https://doi.org/10.1007/s10803-020-04494-4>.
20. Elfman, Lena, et al. "Air Quality in Horse Stables." Uppsala University / Swedish University of Agricultural Sciences. Accessed May 28, 2026.
https://www.researchgate.net/publication/221913706_Air_Quality_in_Horse_Stables.

21. Fravil, Chris. "Designing from the Patient's Perspective – Horses." *Animal Arts*, November 16, 2022. <https://www.animalarts.com/designing-from-the-patients-perspective-horses/>.
22. Gaines, Kristi, Angela Bourne, Michelle Pearson, and Mesha Kleibrink. *Designing for Autism Spectrum Disorders*. New York: Routledge, 2016. ISBN: 0415725275.
23. Hanggi, Evelyn B., Jerry F. Ingersoll, and Terrace L. Waggoner. "Color Vision in Horses (*Equus caballus*): Deficiencies Identified Using a Pseudoisochromatic Plate Test." *Journal of Comparative Psychology* 121, no. 1 (2007): 65–72. <https://doi.org/10.1037/0735-7036.121.1.65>.
24. Hart, Lynette A. "Positive Effects of Animals for Psychosocially Vulnerable People." *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice*, 3rd ed. Amsterdam: Academic Press, 2010.
25. Hausberger, Martine, et al. "Interplay Between Environment and Behaviour in Horses." *Behavioural Processes* 140 (2017): 1–9.
26. Haussmann, Amber Holly Abolins, and Crystal Victoria Olin. "Designing Beyond Walls: An Exploration of How Architecture Can Contribute to Semi-Independent Living for Autistic Adults." *Architecture (Basel)* 5, no. 3 (2025): 48. <https://doi.org/10.3390/architecture5030048>.
27. Heffernan, Diarmuid. *Sensory Issues for Adults with Autism Spectrum Disorder*. London: Jessica Kingsley Publishers, 2016. ISBN: 9781849056618
28. Hole, Clare, et al. "Equine Behavioural and Physiological Responses to Auditory Stimuli in the Presence and Absence of Noise-Damping Ear Covers." *Animals* 13, no. 9 (2023): 1574. <https://doi.org/10.3390/ani13091574>.
29. Holm, M. B., et al. "Therapeutic Horseback Riding Outcomes of Parent-Identified Goals for Children with Autism Spectrum Disorder." *Journal of Autism and Developmental Disorders* 44, no. 4 (2014): 937–947. <https://doi.org/10.1007/s10803-013-1949-x>.
30. Joslyn, Pierce, and Sahar Abdelwahab. "Reflective Facades' Impacts on Visual Perception and Psychological Responses." *Architecture* 5, no. 3 (2025): 66. <https://doi.org/10.3390/architecture5030066>.
31. Kreuzer, L., et al. "Horses' Cardiovascular and Glucocorticoid Responses to Equine-Assisted Therapy with Women with Intellectual Disability: An Exploratory Study." *Journal of Applied Animal Welfare Science* (2024).

32. Lockwood Estrin, G., et al. "Homelessness in Autistic Women: Defining the Research Agenda." *Women's Health (London)* 18 (2022): 17455057221141291. <https://doi.org/10.1177/17455057221141291>.
33. Lundgren, Rachel. "Horse Barn Design Influences Horse Behavior and Health." *Equimade*, July 16, 2025. <https://www.equimade.com/horse-barn-design-influences-horse-wellbeing/>.
34. Mostafa, Magda. *The Autism ASPECTSS™ Design Index: Architecture for Autism*. Cairo: Progressive Architects, 2013. <https://www.autism.archi/aspectss>
35. Mostafa, Magda. *The Autism Friendly University Design Guide*. Dublin: Progressive Architects, 2021. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.
36. Moriah, Chanelle. *I Am Autistic: A Workbook: Sensory Tools, Practical Advice, and Interactive Journaling for Understanding Life with Autism (By Someone Diagnosed with It)*. New York: Ulysses Press, 2025. ISBN: 9781646044245
37. Mottron, Laurent, et al. "Enhanced Perceptual Functioning in Autism: An Update, and Eight Principles of Autistic Perception." *Journal of Autism and Developmental Disorders* 36 (2006): 27–43. <https://doi.org/10.1007/s10803-005-0040-7>.
38. Neuroinclusive Education Network. "Autism Design Principles for Schools." Accessed May 25, 2026. <https://www.nen.org.uk/resources/autism-design-principles-schools>
39. Psychology Town. "Proxemics: Spatial Dynamics in Human Interaction." Accessed May 28, 2026. <https://psychology.town/environmental/proxemics-spatial-dynamics-human-interaction/>.
40. Riemer, Amanda. "Pony vs. Horse: What's the Difference?" *Chewy Education*, May 5, 2025. <https://www.chewy.com/education/horse/general/pony-vs-horse>.
41. Rørvang, Maria Vilain, Birte L. Nielsen, and Andrew N. McLean. "Sensory Abilities of Horses and Their Importance for Equitation Science." *Frontiers in Veterinary Science* 7 (2020): 633.
42. Solomon, Calvin. "Autism and Employment: Implications for Employers and Adults with ASD." *Journal of Autism and Developmental Disorders* 50, no. 11 (2020): 4209–4217. <https://doi.org/10.1007/s10803-020-04537-w>.
43. Steele, Kim, and Sherry Ahrentzen. *At Home with Autism: Designing Housing for the Spectrum*. Bristol: Policy Press, 2015. ISBN: 978-1447307976

44. Tola, G., et al. "Built Environment Design and People with Autism Spectrum Disorder (ASD): A Scoping Review." *International Journal of Environmental Research and Public Health* 18, no. 6 (2021): 3203. <https://doi.org/10.3390/ijerph18063203>.
45. Valentine, John. "The Architecture of Fear: How Design Influences Our Perception of Safety." Medium, January 4, 2025. <https://medium.com/@johnvalentinemedia/the-architecture-of-fear-how-design-influences-our-perception-of-safety-153c31bb4e19>.
46. Wilson, Lee. "How Surface Glare in Public Spaces Affects People." LumiLab, January 16, 2025. <https://lumilab.com.au/2025/01/16/how-surface-glare-in-public-spaces-affects-people-ophthalmology-optometry-information-guide/>.
47. Young, Amy. "Equine Vision and Performance." Horse Report / UC Davis School of Veterinary Medicine, April 23, 2024. <https://horsereport.vetmed.ucdavis.edu/news/equine-vision-and-performance>.
48. Zeitler-Feicht, M. H., and V. Prantner. "Recumbence Resting Behaviour of Horses in Loose Housing Systems with Open Yards." *Archiv für Tierzucht* 43 (2000): 327–335.
49. Advanced Autism Services. "Autism Unemployment Rate." June 4, 2025. <https://www.advancedautism.com/post/autism-unemployment-rate>.
50. National Autism Data Center. "How Often Do Autistic Individuals Become Employed After Receiving Vocational Rehabilitation Services?" Accessed May 26, 2026. <https://nationalautismdatacenter.org/employment-after-receiving-vr-services/>.
51. National Autism Data Center. "How Often Do High School Students Receive Vocational Rehabilitation Services?" Accessed May 26, 2026. <https://nationalautismdatacenter.org/vr-services/>.