

POLESTAR VILLAGE



Community Design Guidelines 2023



"You must not let your life run in the ordinary way; do something that nobody else has done, something that will dazzle the world. "

-Paramhansa Yogananda

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Prologue

It has been said, "If you don't know where you are going, any road will get you there." When people act intentionally, the results can express beauty, harmony, and meaning. Polestar Gardens is an educational non-profit whose mission is to perpetuate the principles of Spirit, Community, and Lifelong Learning. These principles are guided by the timeless teachings of Yoga, as expressed by the teachings of Paramhansa Yogananda. Fostering these principles is a conscious act, but their exercise brings increasing beauty and harmony into the world and meaning into life.

While perfection is rarely found, excellence should be the hallmark of personal and community life. And because excellence is relative, there should be an ongoing commitment to honor and celebrate efforts toward excellence. Building a community includes physical building; it must also embrace building connections with each other, our environment, and life itself.

Introduction

Design Guidelines

This comprehensive set of design and construction guidelines seeks to help Polestar achieve and maintain a built environment that supports the vision of an inspired, joyful community, invokes the presence of Spirit, and supports growth throughout life. Cohesiveness and healthy, sustainable, regenerative living are fruits of successful Polestar practices.

These guidelines are central to the ongoing expression of Polestar Village and are, by intent, both inspirational and aspirational. Inspiration is needed to bring meaning to life - the effort to attune to and express high values and subtle refinements to our activities and efforts. Aspiration is also needed - the effort to go beyond current understanding and expression to reach beyond our current abilities.

These guidelines are to be used for Builders - as a checklist

- Homeowners - for self-improvement of homes
- Architects and designers working with homeowners and/or Polestar Future administration of community
- Facility managers - maintenance of site and buildings
- LEED for Homes/Energy Star managers
- Act as a new model for others to follow
- Shared with Fort Collins Planning & Zoning + building department
- Training and Education

Purpose of the Design Guidelines

The guidelines aim to provide benchmarks for community development, including each new and remodeled building and landscape project. As each home and nonresidential building and surrounding landscape is conceived, designed, and executed, these guidelines should be used as a starting point. While each building will conform to the current local codes, these guidelines should continue to be updated to propel each Polestar project team and homeowner to soar beyond "code" to achieve healthy, sustainable, and even regenerative "living building" strategies and solutions.

As the Polestar community expresses a higher standard of living, these design guidelines serve as the roadmap to ensure that Polestar's ardent vision is grounded and upheld in all present and future endeavors.

Updating the Guidelines:

While the guidelines should be considered a living document to be added to and edited at will, a "Design Circle," a subcommittee of the Polestar's HOA, should be tasked with reviewing and updating the guidelines. The updates should occur in line with the local building code updates (currently every three years, with no more than six years).

Imperatives

Polestar will always benefit from considering the following high-level concepts as a special place and community.

- Spirit - The "soul" of Polestar is the awakened presence of Spirit, the overarching

reality from which all things come. That presence is dynamic, alive, and radiates a common, growing spirit of abundance, love, and life.

- Community -Polestar's expression of community is based on the recognition that all individuals are equally expressions of that one Spirit. Consequently, Polestar is a welcoming, loving place with a collective sense of belonging, support, care, and nourishment.
- Lifelong Learning - Ongoing growth and education that serves the entire Polestar community, generates new life, new ideas, and new understandings that allow Polestar always to be dynamic, vital, and alive and its residents to continue to grow physically, mentally, emotionally, and spiritually.
- Regeneration - Adapting together with nature. Just as nature cycles through the seasons, Polestar operates as a living system; the place and its inhabitants generate, evolve, and regenerate spiritually, socially, environmentally, and economically. Regeneration embraces new understandings as well as renewing existing values.

Guiding Principles

The following principles should be considered as a whole for both large and small design and construction decisions.

Consider the Concept of "Polestar"

Always refer to Polestar as the guiding light as each act of design and construction is about to occur; keep in mind the essence of Polestar.

Culture

- Land acknowledgment - assure that all residents and visitors respect and bless the land that Polestar sits upon as a place that native tribes, (Happy Heart) farmers, and countless forms of life have inhabited.

Inclusivity

- Polestar recognizes the presence of Spirit in all individuals - regardless of gender, age, race, ethnicity, spiritual inclination, and/or orientation.

Connectivity

- Polestar fosters positive connections between members and the larger community and world.

Healthy Place - includes both human and environmental health

- Healthy food Clean air and water
- Accessible for all

Elevated Living

- Spirituality-Spirituality at Polestar is seen as the personal and individual experience of the presence of Spirit and the recognition of all of life as an expression of Spirit. Meditation is offered and encouraged as a vehicle to that experience of Spirit, along

with service, uplifting music and arts, shared meals, and engaging play,

- Active lifestyle - Polestar supports an active pattern of life, as exercise supports a healthy body, mind, and emotional experience, as well as freeing the attention to appreciate more subtle realities
- Play and enjoyment - Play has been shown to nurture growth and learning, provide a sense of connection, and open the heart. Appreciation of all aspects of life is a quality of maturity and helps foster a sense of enjoyment.
- Simple living and high thinking - Prosperity and a sense of abundance are natural states fostered at Polestar. These are often primarily a function of our mental state rather than the quantity of resources. Simple living and high thinking provide a foundation for a fulfilling life.

Prosperity

- Polestar strives to work within its means, to be cost-effective, replicable, and measurable.
- Provide for future beneficial improvements and design, infrastructure, and regulatory mechanism changes.
- Polestar is committed to prudent and creative uses of its resources, to balancing quality and value with accessibility and affordability - to help make its pattern of life available to as many people as possible and to have a careful footprint on the planet. To this end, Polestar supports resource sharing, along with meaningful stewardship.
- Be cost-effective, replicable, and measurable, with an ongoing commitment to a sense of abundance. Provide for future beneficial change in design, infrastructure, and regulatory mechanisms.
- Attainable Ownership
- Sharing resources within the community contributes to a prosperous community.

Governance

- Respond to the local and global environment.
- Integrative process - Polestar is by nature collaborative and works to integrate the contributions of its members and vested parties, as well as the values noted above
- Not just of the people but of the place
- The decision-making process is aligned with Sociocracy
- Community engagement or participation- Residents are encouraged to be dynamically involved in the life of the community - in governance, in service, in mutual support, in play, in creative endeavors

Stewardship

- Caring for the resources at hand is an enriching aspect of life. Polestar Community places a high value on the careful stewardship of the resources, lands, buildings, equipment, tools, and friendships that have been cultivated.

Living Built Environment

- Be a model of regenerative sustainability spiritually, socially, economically, and

ecologically (always searching to lower Polestar's ecological footprint).

- Everyone who lives at or visits Polestar will realize that this is not only a sustainable community but a healthy, thriving place.
- Polestar's built environment should support and blend with our near and proximate natural environment.

Green Buildings

Polestar's built structures, including individually owned residences and collectively owned and cared for community buildings, will be designed, constructed, and operated as high-performing green buildings. All residences are slated to be LEED certified at the Silver level as the minimum standard for single-family homes. All nonresidential buildings will attain Energy Star.

Inspiring and uplifting designs that employ the concepts of living buildings that teach.

Resiliency

- Climate, community, and individual
- Durability of construction
- Prepared for unforeseen weather and other harmful events.

Design and Construction Processes

Integrative Design and Construction

Use a collaborative and integrated process to plan, design, construct, and commission each newly renovated building.

Consider all stages of the building's life cycle when designing for all elements related to the Guiding Principles criteria. For existing buildings, apply integrated management principles to assess current and planned operating conditions to identify areas for optimization.

Ongoing communication between all project stakeholders is essential to ensure common understanding, collaborative decision-making, and education of all involved parties.

Governance

A Design Circle should be created and maintained to ensure that Polestar upholds these design guidelines' important principles and strategies.

Sustainable Site & Landscapes

Follow an integrated site development process to conduct a site assessment that considers environmental, economic, and mission impacts and works to inform decisions on on-site design, construction, operations, and maintenance.

Electric Vehicle Infrastructure

- Electric vehicles supply equipment at least 10% of all parking spaces.
- Provide a Level 2 charging capacity (208 – 240 volts) or greater for each required space.

- Comply with the relevant regional or local electrical connector standards, such as SAE Surface Vehicle Recommended Practice J1772 SAE Electric Vehicle Conductive Charge Coupler.
- Meet the connected functionality criteria for ENERGY STAR-certified Electric Vehicle supply equipment (EVSE) and be capable of responding to time-of-use market signals (e.g., price)
- OR
- Make 10% of all parking spaces or at least six spaces EV Ready, whichever is greater. To be EV-ready, include a dedicated electrical circuit with sufficient capacity for each required space. Each circuit shall have conduit and enough wire to provide Level 2 charging or greater and end at an electrical box or enclosure near each required space.

Vehicle Sharing - consider these sustainable transportation options

- Carsharing is a service that allows you to rent a car for hours or days.
- Micro-mobility is a category of transportation modes smaller than cars, such as bikes and electric scooters.
- Bike-sharing is a short-term rental service, typically for periods of an hour or less.
- Ride-sourcing (a.k.a. ride-hailing) is one of the most common types of shared mobility. You request a ride through an online platform, typically a phone app, which then pairs you with a driver; payments and feedback also occur through the online platform.

Parking

- Reduce Parking - Reduce parking footprint below the City of Fort Collins standard.
- Do not exceed the minimum Ft Collins requirements for parking capacity.
- Provide excess parking areas that use grass or gravel grids to support rainwater absorption.
- Demonstrate baseline and reduced parking capacity using calculations for the most appropriate land use found in the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th Edition, or a comparable and current resource applied by a qualified transportation engineer or planner.
- Car Share spaces - provide dedicated parking for carshare vehicles. Provide carshare vehicle parking space(s) for at least 2% of total parking spaces, rounded up.

Bike Facilities & Infrastructure

Intent - To promote bicycling and transportation efficiency and reduce vehicle distance traveled. To improve public health by encouraging utilitarian and recreational physical activity.

Bicycle Storage

Provide short-term bicycle storage for at least 2.5% of all peak visitors but no fewer than four storage spaces per building. Provide long-term bicycle storage for at least 15% of all regular building occupants but at least one storage space per three

residential units.

- Short term
 - Bicycle storage must be within 200 feet (60 meters) walking distance of any main entrance.
- Long term
 - Storage must be within 300 feet (90 meters) of walking distance of any functional entry.

Orientation

- Fort Collins requires that 65% of residential lots in a development should be oriented to allow solar access. Polestar will surpass that threshold by ensuring that a higher percentage of residential and non-residential buildings have roof orientations ideal for solar access.
- In addition to a high percentage of south-facing roof slopes, Polestar will ensure that all buildings have window openings that encourage good winter sun penetration and protect windows from the summer sun (especially west-facing windows) and the August and early September sun (predominantly south-facing windows).
- All Polestar buildings should be designed to avoid shading a neighbor's rooftop solar panels.

Exterior Lighting

- Careful, thoughtful exterior lighting design must consider safety, energy, and dark skies. Refrain from "uplighting" that can provide "light pollution" to the night sky. Good site lighting and exterior building lighting should provide enough light so that night-time site users can safely walk, bike, and drive. At the same time, using efficient light fixtures and bulbs is critical for long-term energy savings.
- Consider solar light fixtures and employ site-generated solar energy for all lighting. Must comply with ENERGY STAR Multifamily New Construction exterior lighting requirements (see Rater Field Checklist).

Hardscapes

- Sidewalks, patios, streets, and parking areas should each be designed with the following principles and goals:
- Light-colored exterior hard surfaces provide more comfort and significantly reduce the absorption of the sun's heat.
- Drainage and water run-off from storms and melting snow must consider the rate and amounts of run-off and find beneficial ways to direct water to gardens, grass areas, and other absorptive softscapes.
- Porous materials, including stones, "grass-crete," gravel in grids, porous pavers, and similar permeable materials, work well to slow run-off in parking areas, seldom-used streets, and planned site-mobility areas.
 - Hardscape selection - The choice of building materials for the landscape is extensive. Explore options for utilizing reused materials in your landscape.

Site Accessibility

Providing ease of movement for all abilities should be a goal for all site areas designated for human use. Hardscape materials should provide smooth mobility for walking, wheelchairs, persons using a walking stick, etc. In addition, minimal sloping sidewalks, ramps with handrails, steps with handrails, and site lighting that is sufficient even for persons with limited vision are all critical elements to achieve comfortable site use for all.

Storm Water Management

Meet statutory requirements for new construction, modernizations, and renovations, and employ strategies that reduce rainwater runoff and discharges of polluted water offsite to protect the natural hydrology and watershed health. Use low-impact development (LID) strategies to maintain or restore the site's natural, pre-developed ability to manage rainfall where feasible:

- Detention and retention ponds
- Divert runoff from hard surfaces into landscapes
- Porous paving and porous pavers
- Landscape berming infrastructure

Landscape

Soil, Composting, and Fertilizers

- Much of Colorado has heavy, clay soils. Clay texture can lead to poor water and oxygen penetration. In addition, Colorado soils often lack organic material. Soil amendments are often necessary to improve plant health. The choice of a soil amendment greatly depends on what is being planted. Native plants may be adapted to local soil conditions and might not necessarily benefit from soil amendments. Many non-native plants establish more quickly and develop a healthier root system by adding organic soil amendments.
- Recommend using organic solid amendment and avoiding the use of pesticides.

Plant and Turf Selection

- Select the right plant for the right place. Plants not adapted to the local environment require more resources. Plants placed in inappropriate growing conditions (lighting, moisture, temperature, etc.) become stressed and are more prone to pest problems. Plants suited to Colorado, whether native or exotic, are more sustainable. Always consider the mature size of the plant prior to placement in the landscape.
- A principle of sustainable landscape is to limit the amount of irrigated turf to areas of high use by the homeowner. Select turf species adapted for your location and use.
- Design landscapes to limit the amount of combustible material near buildings.
- Plants are recommended to be planted a minimum of 18" away from any structure, which makes maintenance easier and protects the building from pests.
- Select plants that avoid the shading of solar panels.

Irrigation -see water conservation.

Shade

- Use deciduous plants to create shade in the summer to help cool the home while allowing light penetration in the winter as solar heating.
- South and west-facing parts of the house receive the most intense sunlight; north and east exposures are generally cooler. Therefore, shading the south and west sides will contribute to summer cooling.

Wind Protection

- Cold winds can penetrate a building in the winter and are responsible for some heat loss during windy days. In Colorado, prevailing winds blow from the northwest. Therefore, landscaping for wind protection should be concentrated on the north and northwest sides of the building at a distance of one to three times the mature height of the trees.

Slopes

- An appropriately graded site should provide drainage away from permanent structures. Steep slopes should be terraced with raised beds or planters to reduce erosion potential.

Auxiliary Structures

- Sheds
- Fences
- Outdoor play equipment
- Clotheslines

Landscape Lighting

- Municipalities and other government agencies are moving toward decreasing light pollution. For these reasons, incorporate appropriate light schemes into the landscape, including down-lighting. A sustainable solution is to use low-level solar garden lighting.
- Site lighting near multifamily units must comply with Energy Star exterior lighting requirements (see Rater Field Checklist)

Gardening

- Permaculture is a sustainable design system focused on forming a harmonious, mutually beneficial relationship between people, plants, animals, and soil.
- Permaculture gardening is based on designing your garden around your local environment.
 - For more information, see https://dug.org/an-intro-to-permaculture/?gclid=Cj0KCQjwmICoBhDxARIsABXkXIJLxWHnzO2JlksHlvTahALGG0H6GefqC-PwbGjluOLcQU3W0rgKdvAaAt08EALw_wcB

Water Conservation

- Sustainable landscaping means using water appropriately and avoiding waste
- Prevent water loss through evaporation by using organic mulches. Add 3 to 4 inches around flower beds and under trees, but avoid mounding mulch against tree trunks,

as this practice can encourage disease and insects. Also, avoid placing combustible mulch close to buildings.

- Group plants that have similar water requirements together. Designate parts of your landscape for higher or lower water use.
- Using irrigation technology to reduce water use is an important rule of sustainable landscaping.

Heat Island Reduction

- Avoid creating a heat "bubble" around buildings and the entire Polestar property. Heat islands result from the sun's heat absorbing into hard, darker surfaces such as asphalt roads and parking lots, dark roofs, etc.

Nonroof and Roof

- Use the existing plant material or install plants that provide shade over paving areas (including playgrounds) on the site within ten years of planting. Install vegetated planters.
- Provide shade with structures covered by energy generation systems, such as solar thermal collectors, photovoltaics, and wind turbines.
- Provide shade with architectural devices or structures. If the device or structure is a roof, it shall have an aged solar reflectance (SR) value of at least 0.28 as measured by ANSI/CRRRC S100. If the device or structure is not a roof or aged solar reflectance information is unavailable, installing an initial SR (Solar Reflectance) of at least 0.33 as measured per ANSI/CRRRC S100 is recommended.
- Provide shade with vegetated structures.
- Use paving materials with an initial solar reflectance (SR) value of at least 0.33.
- Use an open-grid pavement system (at least 50% unbound).

High Reflectance Roofs

- For nonresidential buildings, strive to install roofing material with an initial SRI (solar reflective index) equal to or greater than 82 for low-slopes and 39 for steep slopes (greater than 2:12). Designers and builders of residential buildings should consider installing lighter-colored and/or reflective roofs to lower each home's, and the community's, energy loads and heat island contributions.

Parking Undercover

- Consider providing many parking spaces with cover. Any roof used to shade or cover parking should (1) have an SRI above 39 and/or an aged SRI of at least 32, (2) be a vegetated roof, or (3) be covered by energy generation systems, such as solar thermal collectors, photovoltaics, and wind turbines.

Landscaping to address climate change vulnerabilities:

- Leverage a combination of pervious areas, open space, and soft scaping to reduce the existing site condition from 83% impervious area to 65%.
- Use soil replacement for better infiltration of stormwater during rain events.
- Plant native and adaptive vegetation to reduce irrigation water demand
- Collect runoff from impervious areas (such as the roof) into a 15,000-gallon cistern to meet 100% of the site's irrigation demand.
- Incorporate green roofs into the 3rd and 6th-level outdoor terrace areas. Landscapes that allow for stormwater absorption.

- Keep combustible materials at least 5-10' from building walls for fire safety.
- Trim and select trees that avoid shading solar panels.

Green Building

Intent: Each building within Polestar shall be designed and constructed with principles of healthy, sustainable buildings. A green building incorporates low water and energy use, healthy indoor materials, low embodied carbon materials, abundant natural light, and natural ventilation opportunities, comfortable thermal, lighting, and acoustic environments, low construction waste, and ease of operational recycling and composting.

All homes are envisioned to be designed and built to achieve at least LEED Gold Certification, Energy Star, and DOE ZERH Certified.

All nonresidential buildings will be designed to achieve ENERGY STAR certification and should incorporate healthy, sustainable design and construction principles. Consider pursuing a LEED certification for non-residential buildings which could help to assure a comprehensively sustainable building and community.

Energy

Intent Statement: Care for our planet includes efficiently using the earth's free energy flows and clean energy sources and decreasing or eliminating fossil fuels and carbon-intensive materials and energy sources. In addition, technologies and strategies allow a building and a community to create more energy than they use. Employing the integrative design process that includes experts in energy innovations, using the Passive House standard and other high-performance guides can assist each project team in reaching aspirational building energy goals.

Building Orientation

- Encourage longer east/west orientations
- Consideration must be given to west and north-facing walls, including limiting window size and maximizing R-value's

Architectural Features

- Roofs - insulation, reflectivity, solar access, overhangs, "cool" roof materials each contribute to a high performance building.
- Awnings and shading - consider retractable devices for summer use (east, south and west sides)
- Consider vertical or horizontal louvers for west-facing windows.
- Roof venting that considers ember flow and wildfires.

Building Envelope

- Wall and floor assemblies employ high insulative values, thermal barriers and bridging, vapor barriers (reference Energy Star checklist - field rater)

- Design wall assembly with a low possibility for interstitial condensation

Window Placement and Performance

- Windows on two sides of each room when possible to maximize natural light and ventilation
- West-facing glazing - lower SHGC to minimize overheating Window frames - fiberglass or similar non-conductive materials Use of vinyl for window frames is discouraged

Renewable Energy

- Consider ground source heat pumps for single-family and multifamily residential homes as well as nonresidential buildings
- Wind energy - Polestar should consider supporting the City of Fort Collins' renewable energy program which benefits the community and contributes to our city's clean energy goals. Homeowners are encouraged to also join the City's Green Energy Program.
- Solar energy opportunities should continue to be a significant consideration in Polestar's planning.
 - Solar placement and solar operations refer to DOE ZERH solar ready checklist for minimum
 - All-electric community
- Consider electric alternatives to outdoor grills.

Lighting

- Install LED or more efficient light fixtures and bulbs
- Compact Fluorescent Lamps (CFLs) use less energy than incandescent lamps (light bulbs) and have a longer life span; however, CFLs contain mercury, a highly toxic substance that can have negative environmental impacts.
- Lighting controls such as Photocells, dimmers, motion, and occupancy sensors should be employed for energy savings as well as security.

Daylighting

- Solar tubes are encouraged
- Skylights are discouraged - skylights invite unintended heat in summer
- Maximize beneficial opportunities for daylighting in regularly occupied spaces to introduce natural light and views into the spaces, and reduce the use of electric lighting.

Energy Efficiency

- Refer to LEED and Energy Star guidance for multiple design, construction, and operational efficiency strategies.
- HVAC - Heating, Ventilation, Air Conditioning systems - The baseline is DOE ZERH; consider ground-source heat pumps, mini-splits for AC, and designing for selective natural ventilation.

- Appliances - EnergyStar or higher performing appliances required.
 - Water heating/clothes drying - consider heat pump or heat pump ready.
- Plug loads - encourage all residents to use no- and low-power products
- Encourage the use of EnergyStar and similar performing products throughout all Polestar buildings.
- Encouraging low-consumption products and behaviors (e.g., electric vs. manual can opener)

Thermal Comfort

- Encourage residential thermostat set points of 68 for winter heating and 76 degrees for summer air conditioning. Nonresidential energy-saving thermostat set points are required.

Energy Metering

- Install building level meters for electricity and steam in order to track and continuously optimize energy performance.
- Submeter each residential unit and nonresidential building.

Materials

Intent: Reduce toxic, hazardous building materials and promote safe, healthy, and environmentally friendly materials.

AIA directives on healthy materials:

- Support human health by preferring products that support and foster life throughout their life cycles and seek to eliminate the use of hazardous substances.
- Support social health & equity by preferring products from manufacturers that secure human rights in their operations and their supply chains, positively impacting their workers and the communities where they operate.
- Support ecosystem health by preferring products that support and regenerate the natural air, water, and biological cycles of life through thoughtful supply chain management and restorative company practices.
- Support climate health by preferring products that reduce carbon emissions and sequester more carbon than emitted.
- Support a circular economy by reusing and improving buildings and designing for resiliency, adaptability, disassembly, and reuse, aspiring to a zero-waste goal for global construction activities.
- For more information: <https://www.aia.org/resource-center/healthier-materials-protocol>

Healthy Sustainable Material Considerations

- Consider sourcing transparency, closed-loop programs, and downcycling.
- Companies that actively participate in the "Circular Economy" movement consider all ingredients' upstream and downstream flow. Strongly consider selecting

product from companies that can supply the inputs or receive the outputs and any waste from their production processes.

- Regionally Produced Materials - to reduce cost and waste from long-distance transportation.
- Durability - to reduce the need for product replacements and to lower long-term costs through extended product lifetimes.
- Recycled Content - to encourage reuse of materials and divert waste from landfills.
- Low Embodied Carbon - to reduce carbon emissions in the manufacture of building materials
- Material Efficient Construction - to minimize construction waste by considering standard material sizing during the design phase
- Rapidly Renewable (e.g., bamboo, wool, mycelium) - select renewable materials to lower natural resource impacts.
- Specify products with certifications that require environmental stewardship. These may include Declare label, Living Product Challenge, Cradle to Cradle, FSC, NSC 337 Stone certification, GreenGuard, Green Seal, and others.
- Request transparency in ingredients and health impacts from manufacturers. Transparency and disclosure documentation include Health Product Declarations, Declare Label, Living Products, Cradle2Cradle, BIFMA LEVEL, OEKO-TEX, and others.
- Consider only installing materials that are not listed on The International Living Future Institute's Red List
- Integrate VOC limits and emissions test requirement thresholds into your standard specifications. Be sure to address both VOC limits and emission tests for a more holistic assessment of health impacts.

Low-Emitting Materials and Products

- Purchase, acquire, and ensure the use or application of low-emitting materials and products during the planning, construction, modification, maintenance, and operations.

Interior Finish Considerations

- Require low VOC finishes (LEED compliant) and encourage zero VOC finishes.
- Other chemicals to avoid include PFAs, Antimicrobials, Bisphenols & Phthalates, Solvents, Heavy Metals: <https://greensciencepolicy.org/harmful-chemicals/>

Furniture Considerations

- Consider secondhand furniture for health and sustainability, closed loop, or take-back program.
- Discourage the purchasing of furniture with flame retardants.

Construction Waste

The ultimate goal for each construction project would be to eliminate waste. Short of this aspirational goal:

- Each project should work to surpass the City of Fort Collins standard of 50% diversion of construction waste by employing strategies such as:
- Right-sizing walls, floors, etc. (so that standard-sized materials such as drywall and plywood) are designed and installed at increments that eliminate waste (4', 8', 12', etc.), identifying sources for any unused materials, stockpiling excess materials that could be used on subsequent Polestar buildings, recycling, donating, etc.

Indoor Environmental Quality

Better indoor environmental quality can enhance building occupants' lives, increase the building's resale value, and reduce liability for building owners. Thoughtful integration of an IEQ strategy can lead to healthier comfort factors, increase performance satisfaction, reduce occupants, and positively impact vision, mood, absenteeism, and healthcare costs.

Intent: To promote healthier occupant comfort, well-being, and productivity by always considering indoor air quality, lighting quality, thermal comfort conditions, acoustics, and ergonomics. Indoor air quality, thermal comfort, and prevention of mold and condensation are critical elements of the Passive House standard, which Polestar recommends using to guide the construction of buildings at Polestar Village.

Air Quality

- Air Filtration: install superior filtration systems and clean the filters regularly.
- See the EPA Indoor AirPlus checklist.
 - https://www.epa.gov/sites/default/files/2018-03/documents/indoor_airplus_fillable_verification_checklist.pdf

Mildew/ Mold Prevention

- Construction materials, particularly porous materials, drywall, and wood, need to be protected and stored in a dry location.
- Mold grows where water penetrates into cavities where fibrous materials such as wood are present and don't have proper ventilation.
- Roofing, exterior siding, windows, doors, and other gaps should be sealed tight so water cannot penetrate the cavities.
- It's vital to allow building materials to dry out during construction before closing walls, roofs, and floors.
- Consider condensation management and mold inspections; refer to the Air feature in WELL and IAQ portion of LEED for further information.
 - <https://v2.wellcertified.com/en/wellv2/air>

Ventilation

- Supply fresh outdoor air to keep indoor air clean and odor-free.
- Residential buildings will follow LEED for home requirements for ventilation in ASHRAE62.2-2010. (<https://shop.iccsafe.org/media/wysiwyg/material/8950P222-sample.pdf>)

- Residential buildings will strictly adhere to the state and local codes for radon management and prevention.
- A balanced system utilizes natural and mechanical ventilation.
- Natural - design for cross-ventilation opportunities on all floors of all buildings.
- Mechanical - install ventilation systems that provide good filtration, exhaust, and abundant opportunities for air changes.
- Install independent exhaust systems in bathrooms, kitchens, and other places that generate heat, humidity, dust, and/or harmful particulates.
- Install Operable Windows - wherever feasible providing outdoor air access.

Acoustic Comfort

Sound Isolation

- Design nonresidential buildings with sound isolation to achieve speech privacy, acoustic comfort, and minimal annoyance from noise-producing sources. Consider sound levels at both the source and receiver locations, the background sound at the receiver locations, and the occupant's acoustical privacy and acoustic comfort needs.

Room noise

- Consider background sound levels generated by all building mechanical-electrical-plumbing systems, air distribution systems, and other facility noise sources under the purview of the project building design-construction team.

Site Exterior Noise

- Minimize the effect on building occupants of site exterior noise produced by road traffic, aircraft flyovers, emergency power generators during maintenance testing, outdoor facility MEP, building services equipment, etc.

Maximum Noise Levels

- Establish background noise level criteria for enclosed spaces to promote best-practice HVAC and façade design techniques and bolster acoustical comfort. See WELL Noise Level recommendations :
 - <https://v2.wellcertified.com/en/wellv2/sound/feature/2>

Sound Mapping

- Incorporate strategic planning and mitigation required to prevent general issues of acoustical disturbance from externally and internally generated noise.

Materials

- Adequate wall construction and door specifications will bolster acoustical privacy between rooms.

Sound absorption

- In large common spaces, design spaces in accordance with comfortable reverberation times that support speech intelligibility and are conducive to focus, and address acoustical comfort by assigning requirements for surface finishes and reverberation time depending on the room's functionality.

Indoor Water

Intent: To encourage water conservation through efficient fixtures. Indoor water use - all applicable plumbing fixtures must be WaterSense labeled or performance equivalent. Install water metering and smart sensors (leak detection) throughout Polestar.

Ergonomics

Consider ergonomics applications throughout, especially in nonresidential settings, to improve workers' and users' health, safety, comfort, and performance.

ARCHITECTURAL AESTHETICS

Not part of current scope - yet Polestar should have this vital topic added to the design guidelines

- include items such as color, material consistency, roof lines, overhangs, window treatments, massing,