



LiveWall[®] **Outdoor and Indoor**
BRAND

Vertical Greening Systems That Work

Patents and PATENTS PENDING: U.S., Canada, China, EU, and Other Countries



LiveWall®

LiveScreen™

Who We Are

We are horticultural product professionals who seek to positively change the world with the unique applications of plants.

What We Believe

We believe that to do planted walls right, planted walls must first and foremost grow healthy plants, and therefore must parallel nature.

What We Do

We strive to improve the world by restoring the balance between green spaces and hard spaces.

We do what we believe, and treat others how we would like to be treated.

Horticulturist and
Sales Specialist
Lori May, LiveWall, LLC

Why Living Walls?

Beauty: Colorful, Fragrant

Health: Clean Air, Peacefulness, Tranquility

Inspire: Creativity, Productivity, Energy

Produce: Vegetables, Herbs, Flowers

Save: Energy from Less Heating and Cooling

Why LiveWall® ?

Almost Effortless

Automatic Watering

Healthy Plants: Parallels Nature

Proven Performance

Happy Owners

Because it Truly Works



LiveWall® Benefits

Financial Benefits

Energy Conservation

The evapotranspirative effects of the plants and the growing medium can reduce indoor temperatures significantly during warm/hot weather, and can reduce air conditioning costs 35-50% when used on E, S, and W walls simultaneously. This not only allows for ongoing cost savings but an initial reduction in the size of the required air conditioning equipment. Likewise a covering of plants and soil offers insulative benefits during the heating season.

Branding / Marketing

There may be no better or more cost-effective way to visually demonstrate (and teach) environmental commitment than with a living wall. Walls are visible and act as a living testament to a person's or organization's commitment to environmental stewardship. **LiveWall can also contribute toward LEED certification and EPD (Environmental Product Declaration).**

Urban Farming

The potential to grow herbs and vegetables on the side of buildings, fences, and mobile screens expands their usefulness into the arena of urban farming. This can be applied on any scale, ranging from personal to commercial. When applied to enterprises such as restaurants, culinary schools, and institutions, such enterprises can use the produce to reduce costs and to provide nutritious herbs and vegetables from a surface that previously performed no such function. The amount of food that a given wall can produce is determined by square footage, climate, light exposure, and the particular plant material under cultivation. In any event, a vegetated wall epitomizes the opportunity for creative use of vertical urban space.

Productivity and Health

Research has proven repeatedly that when people work or live in environments with plants, they will be healthier and more productive. Humankind's innate response to nature is called biophilia, and when a workspace includes plants, such as in a LiveWall system, it will contribute to less stress, less absenteeism, greater efficiency, productivity and creativity, and even less staff turnover.

Profit

When plants are present in retail spaces where people shop or dine, people tend to slow their pace and be more relaxed, and not surprisingly, they spend more money — and are willing to pay more for what they purchase. This too, is well researched.

Educational Benefits

The LiveWall system can be used in the classroom (general science, botany, culinary arts, horticulture, nutrition and sociology) to teach children and adults the principles of plant growth, food production, and the relationship between food and culture. And because of the student's innate biophilia reaction to plants, they will likely be more focused, more effective at recall, and more adept at taking tests.

Beautification

Planted walls can be a unique and dynamic form of artistic expression – no different than a mural or painting – but in this case, plants are used as the paint.

Environmental

Urban Heat Island Mitigation

The urban heat island effect is the temperature difference between urban areas and their rural surroundings. The temperature differential causes air currents and dust, and even contributes to violent weather events within urban settings. Green wall vegetation helps by cooling the air, slowing air movement, and acting as a substrate for pollution to settle out and detoxify.

Noise Reduction

Plants, soil, and air trapped in the soil are acoustic insulators. Planted living walls can dampen and reduce noise, which is of great benefit to occupants of buildings affected by airports, industry, loud music, trains and traffic.

Habitat Restoration

Plants and soil help recreate habitat for butterflies, insects, and songbirds.

Mental Wellness

Mood and Perception

All plants, including LiveWall plants, have been proven to affect feelings. Colors such as red, orange, and yellow evoke feelings of warmth and energy. A palette of pastels creates a calming sense, and blue, purple and green are known to be both calming and refreshing. Conversely, sweeps of strongly contrasting colors stimulate energy and feelings of excitement.



For Customer Service, call (877) 554-4065 or email sales@LiveWall.com

LiveWall® Uniquely Empowering

We do not tie anyone to using us as the installer, plant provider or maintenance contractor.

Instead, we provide simple directions for installation, plant selection and pairing, and plant care. This empowers the owner to choose from local contractors and to control prices by competitive bid.

Empowerment and Freedom

From the beginning, our overriding goal was to develop a living wall system that is so effective at growing plants, that anyone with average plant-maintenance knowledge can install and care for it.



LiveWall grows healthy plants.

It's almost effortless!



Simple and Effective

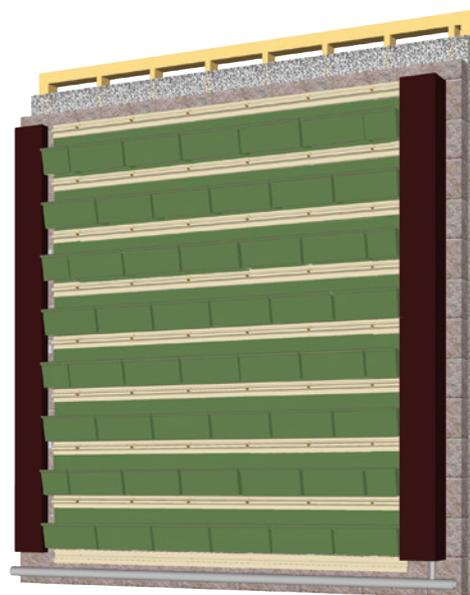
LiveWall is simple and effective; first you attach the aluminum VertiRails® (furring tracks) to the house or building. These allow for ventilation and provide a surface to attach the RainRails®.

The RainRails do two things; they hold the WallTer® wall planters, and because the RainRails are hollow, they convey the irrigation water to the mist nozzles which provide water in rainlike fashion to the plants and soil (like the misters in the produce section at the grocery store).

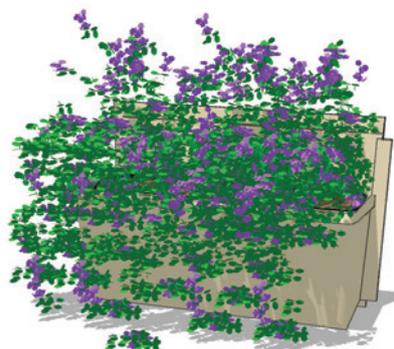
To make it even easier, we designed the WallTer inserts, which are the plant containers that go inside of the WallTer wall planters. This way, you can choose to have instant gratification with pregrown nursery plants, which can be dropped into the WallTers in mature condition.



VertiRail™ and RainRails™



Infrastructure Ready for **WallTer™** Wall Planter Modules



WallTer™ Wall Planters with plant-holding inserts



WallTer™ inserts are installed into **WallTer™** wall planters for an instantly green and functional LiveWall installation

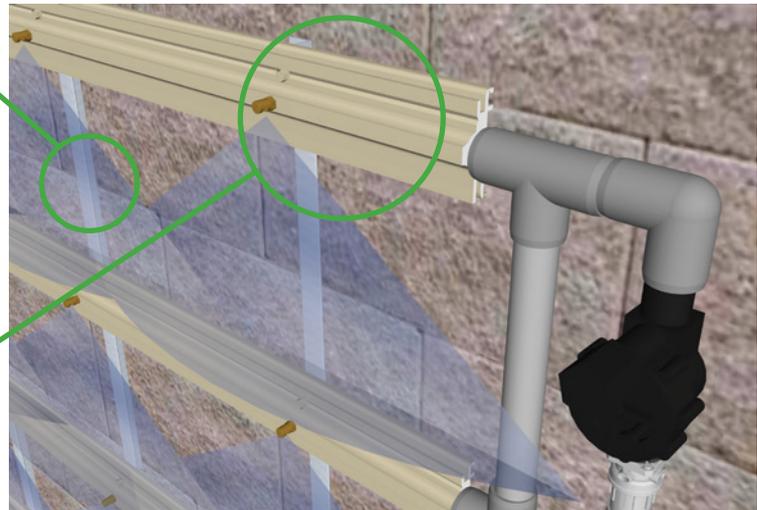


LiveWall® Components and Accessories

With our complete package of LiveWall® components and accessories, every LiveWall installation is simple and successful.

VertiRail Furring Tracks

The VertiRail™ Aluminum Furring Tracks are attached to the wall, on spacing of 16-24 inches, with appropriate anchors, as determined by the installer, architect or engineer, so as to be compatible with the building's structure, envelope, and any existing siding. VertiRails must be mounted in a vertical manner and, when needed, shimmed with appropriately sized nylon shims. Once the VertiRails are in place, they are ready to accept the bottom H-Rail and the RainRails.



RainRail Mounting System/Irrigation Conduit

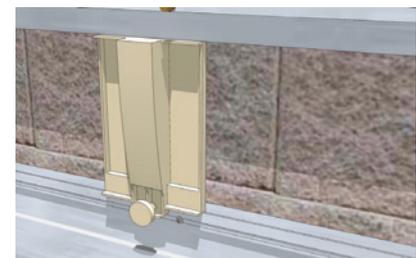
The aluminum RainRails™ are uniquely designed to be both the mounting rails and the irrigation conduit. These come in 8 foot lengths, and arrive pre-drilled and threaded for irrigation nozzles. RainRails may be cut on-site to custom lengths of 16" increments. They may be joined together with SlipFit connectors to create runs up to 64 feet per irrigation zone.

GapTool

Once the bottom H-Rail, is in place, the installer need not level or measure to accurately place the remainder of the RainRails. He simply plugs two GapTools™ into the slot of the bottom rail, sets the next rail on top of the GapTools, then attaches the RainRail to the VertiRail™ furring brackets. The process is repeated until all RainRails are in place. Not only do the GapTools set the correct gap between RainRails, they act as a carpenter's helper and hold the RainRails in place while they are being fastened.

SlipFit and LightBlock Fittings

For simple easy installation, LiveWall® utilizes double o-ring SlipFit couplers and connectors that slide in place and are retained with a simple set screw. Our Light-Block no-glue fittings and pipe make installation very fast.



GapTool Spacer Tool



SlipFit Fittings



Light-Block Fittings and Pipe

LiveWall® Components and Accessories

WallTer Wall Planters

The WallTers® (wall planters) hold the inserts (which hold the soil and plants). They are decorative, made of special automotive grade recycled plastic, and come in two sizes and regardless of size, the WallTers make planting and replanting easy. They slide right in and can be secured with a limiting screw, making them resistant to theft and wind.

Standard WallTer: Recommended for plantings of succulents, annuals, vegetables and herbs, and perennials. Traditional look, comes in full length (16") and half length (8") which allows for "brick-like" pattern. RainRail spacing of 12". Excess water drains downward. Comes in seven color options.

Large WallTer: Recommended for robust perennials and tropical indoor plants. One size 16" long. With or without water collection spout. Comes in five colors.



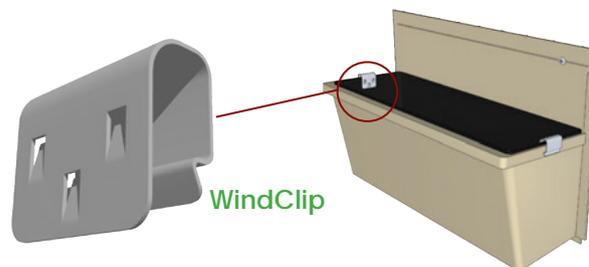
WallTer Inserts

WallTer inserts are filled with soil and plants, and drop into the WallTer modules. WallTer inserts uniquely allow for off-site growing at a nursery, if desired. That way, when they are installed, the wall becomes instantly mature.



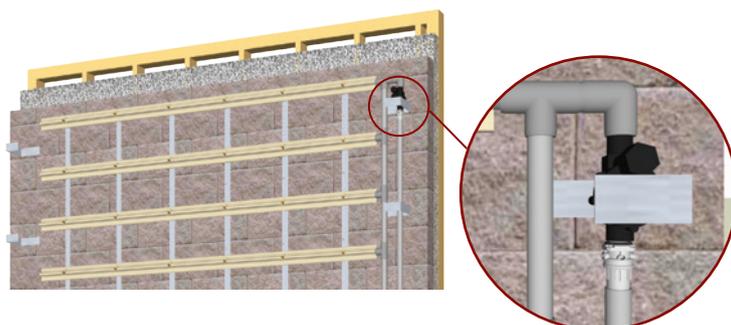
WindClip™

Designed for installations of higher than two stories, WindClip is a security measure against uplift forces that can be created when wind hits the side of a building.



HideAway™ Concealment Brackets

HideAway™ brackets are designed to allow the installer to conceal the irrigation chase with a flashing or siding material that is complementary to the building's architecture.





How Does LiveWall® Compare?

	LiveWall System	Other Systems
Grows Healthy Plants	Yes	Sometimes
Modular	Yes	Sometimes
Two Sizes	Yes	Seldom
Removable Module	Yes	No
Natural Root Orientation	Yes	Angled
Natural Stem Orientation	Yes	Bent
Natural Soil Orientation	Yes	Sometimes
Instantly Mature	Yes	Sometimes
Easy to Replant	Yes	No
Easy to Install	Yes	Variable to Difficult
Broad Plant Palette	Yes	Often Limited
Light Weight	Yes	Variable
Integrated Irrigation System	Yes	No
Air Flow Behind System	Yes	Variable
Maximum LEED Points	Yes	Variable
Support Staff	Yes	Variable
Reasonable Installed Cost	Yes	Variable
Predictable Maintenance Cost	Yes	Variable
High Overall Value	Yes	Variable
Looks Nice Out-of-Season	Yes	No
Available in Designer Colors	Yes	No
Can use Granular or Liquid Fertilizer	Yes	No

LiveWall System:

- Does not lose soil to erosion.
- Irrigated at every row (tier).
- Easy to water and fertilize.
- Allows for easy plant replacement.
- Optimal design and vegetative flexibility.

Other Systems:

- May lose soil to erosion.
- Require top to bottom water flow, posing plant health issues due to disease transfer.
- Require time consuming assembly.
- Require high maintenance irrigation systems, adding complexity, clutter, and cost.
- Do not allow for easy plant replacement.

LiveWall Works

Because LiveWall is designed to give plants what they need, it works exceptionally well. Many plants seem to grow better in LiveWall than in the ground, and with proper plant selection, one can even grow perennials in northern climates.





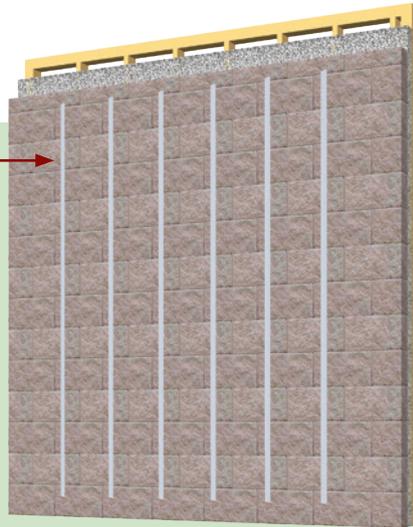
LiveWall® Outdoor

in 8 Easy Steps

STEP 1

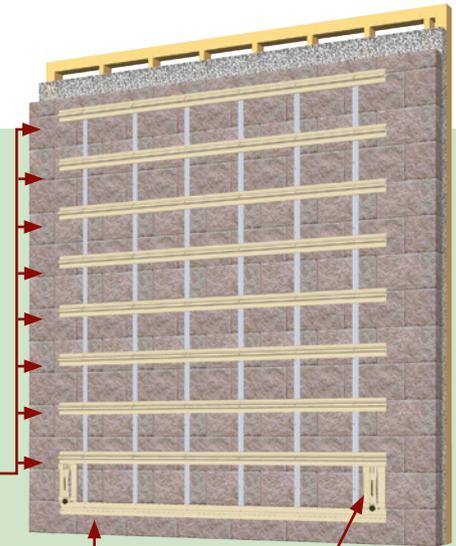
Fasten VertiRail Aluminum furring tracks to the building. Not needed for most fence applications.

NOTE: Installer chooses and sources proper anchors for attachment of VertiRail® Furring Tracks to building wall system.



STEP 2

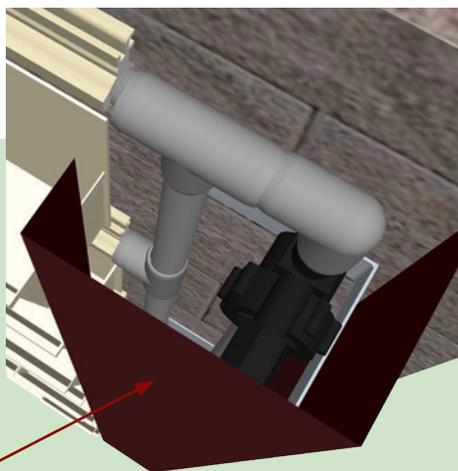
Attach bottom slot track (H-Rail). Then with the aid of GapTools, space and attach RainRails.



STEP 5

Attach facing material (supplied by contractor) to HideAway brackets.

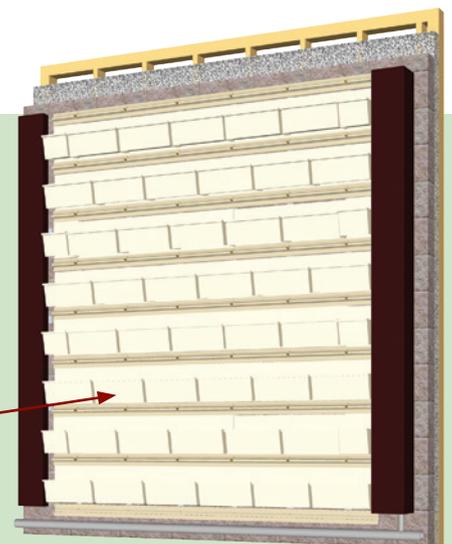
Wood or metal facing material



STEP 6

Insert WallTer wall planters into RainRails .

WallTer Wall Planters



Guide to Installing LiveWall furnished with each order

SIMPLE. EFFECTIVE. ATTRACTIVE. INSTANT.

STEP 3

Hook up the irrigation feed to the RainRails with LiveWall® SlipFit Light-Block fittings. Then, test irrigation.

Spray is recommended outdoors and drip indoors.



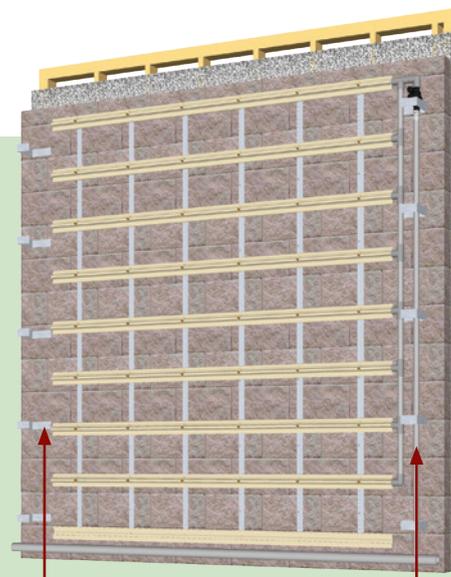
STEP 4

Attach HideAway irrigation chase concealment brackets.

Water Feed Line

HideAway Brackets

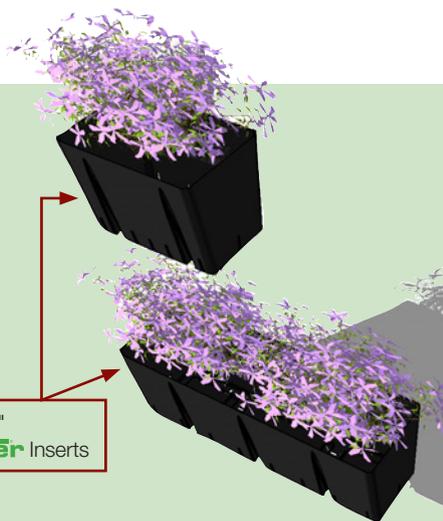
SlipFit Irrigation Fittings



STEP 7

Plant WallTer inserts and drop them in for instant visual and functional benefits.

8" and 16" WallTer Inserts



STEP 8

Water new plants thoroughly and begin to enjoy your new LiveWall System.

In most outdoor applications, 1 or 2 minutes of automatic irrigation per day is plenty.

Watered automatically!



and may be viewed and downloaded online at LiveWall.com

Natural Function

The patented LiveWall® system is the only living wall system that uses RainRails®, WallTer® planting modules, and WallTer Inserts. This allows for naturally oriented vertical plant growth. **LiveWall functions like nature, and this leads to long lived healthy plants.**

Natural Beauty

LiveWall WallTer wall planters are attractive in any season and are offered in seven colors. In concert with endless combinations of plant material, the LiveWall system will draw attention to your project for the right reasons; year-round architectural interest, seasonal beauty of healthy plant materials, and a unique interface with the building's own architecture.







Golden 1
Credit Union
CENTER



Golden 1 CENTER
Credit Union

LiveWall® brings the awesome beauty of nature into the built environment.



In northern climates, there is a small but excellent group of perennial plants that can persist through winter weather.



Annual plants offer a broad range of foliage and flowers.



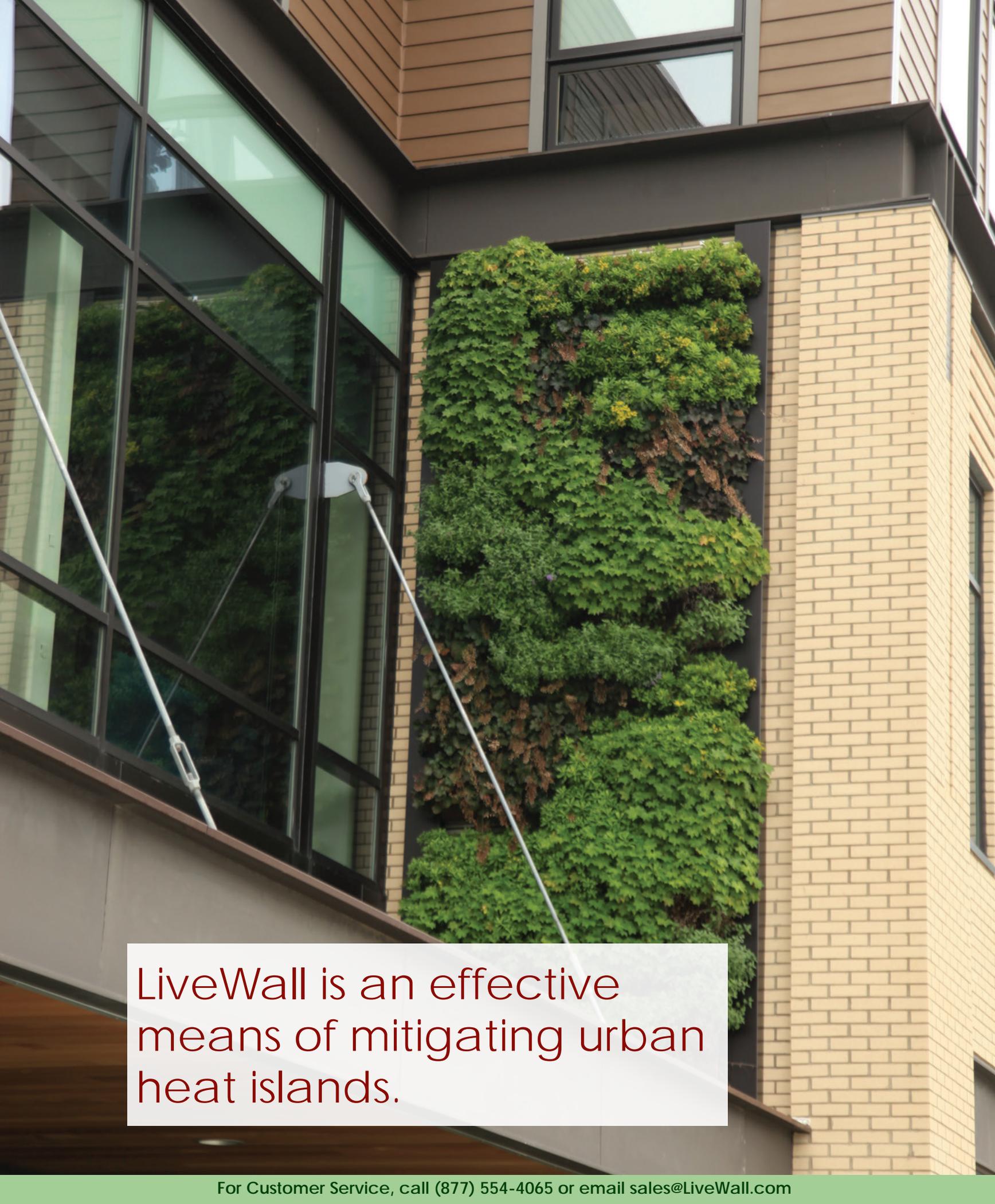




This Chicagoland Whole Foods store is wrapped in perennials. The lushness of the planting infuses greenspace into this urban community, and helps to support the values and brand of the organization.

Using LiveWall, Central Station
balanced concrete with
green space and enhanced
human habitat.





LiveWall is an effective means of mitigating urban heat islands.

Tropical perennials were selected for color and beauty at this Orlando library project.



LiveWall helps improve air quality and enhances this restaurant's outdoor dining space.



Message of Caring

This heart clinic uses bold living graphics to convey its message of hope and caring, to patients and staff.



LiveWall® on Fences

The LiveWall system can be applied to fences, and can make them so much more interesting and attractive. Typical applications involve planting with perennials or annuals for beauty, or with herbs and vegetables for harvest. Vegetated fences are wonderful for defining property borders and privacy and sound screening, and to create green space that is highly visible and easy to maintain.

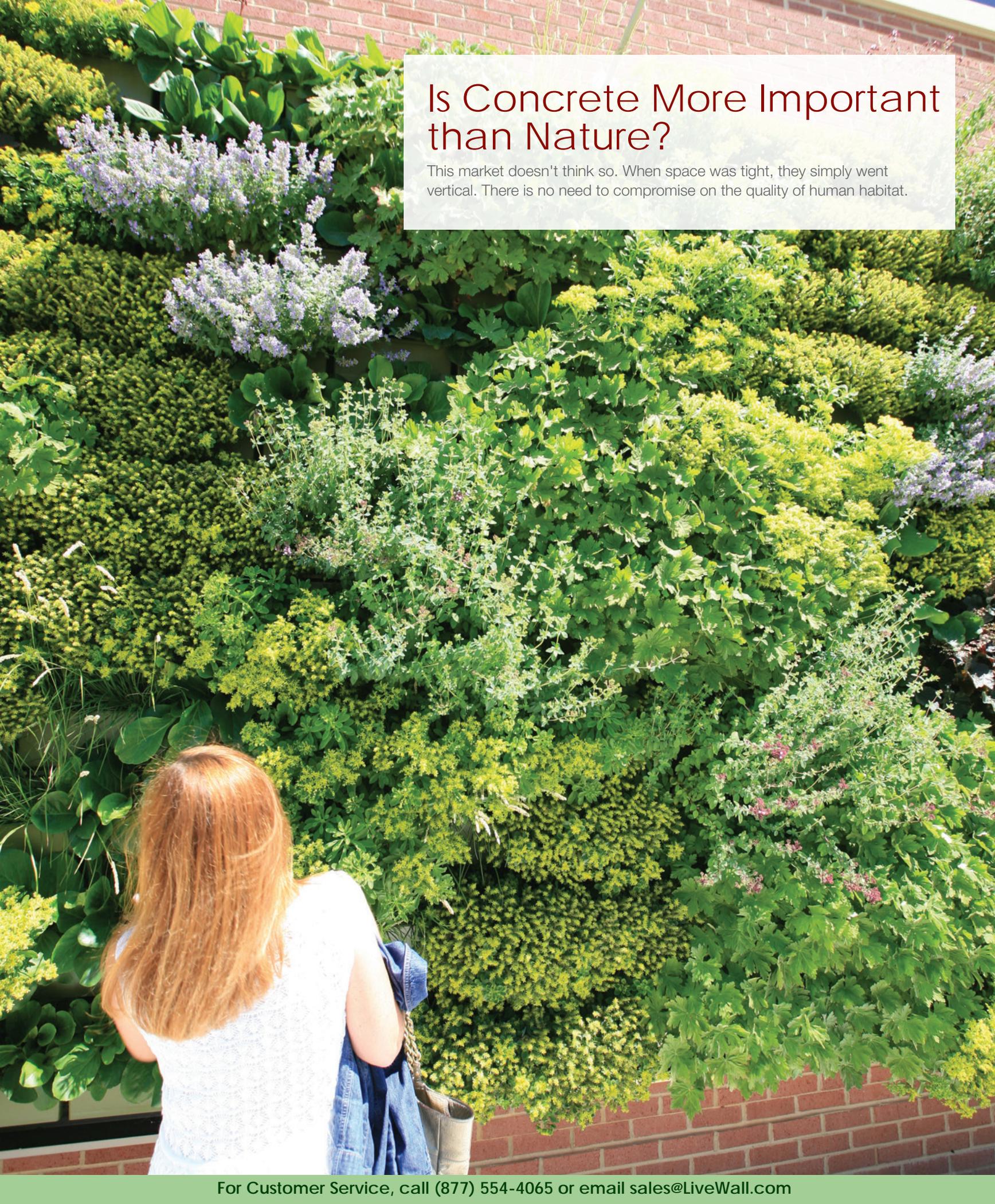
Uses:

- Privacy screening
- Border definition
- Seasonal/Perennial color
- Vertical vegetable gardening
- Glare reduction
- Sound dampening
- Cooling
- Marketing





Temperate perennials lend rich texture and seasonal color to this shady LiveWall.

A woman with long, straight red hair, wearing a white lace top and a blue denim jacket, stands with her back to the camera, looking at a vibrant vertical garden wall. The wall is densely packed with various green plants and flowers, including purple and yellow blooms. The garden is mounted on a red brick wall. The scene is brightly lit, suggesting a sunny day.

Is Concrete More Important than Nature?

This market doesn't think so. When space was tight, they simply went vertical. There is no need to compromise on the quality of human habitat.



With LiveWall, there are
No Limits to Creativity.





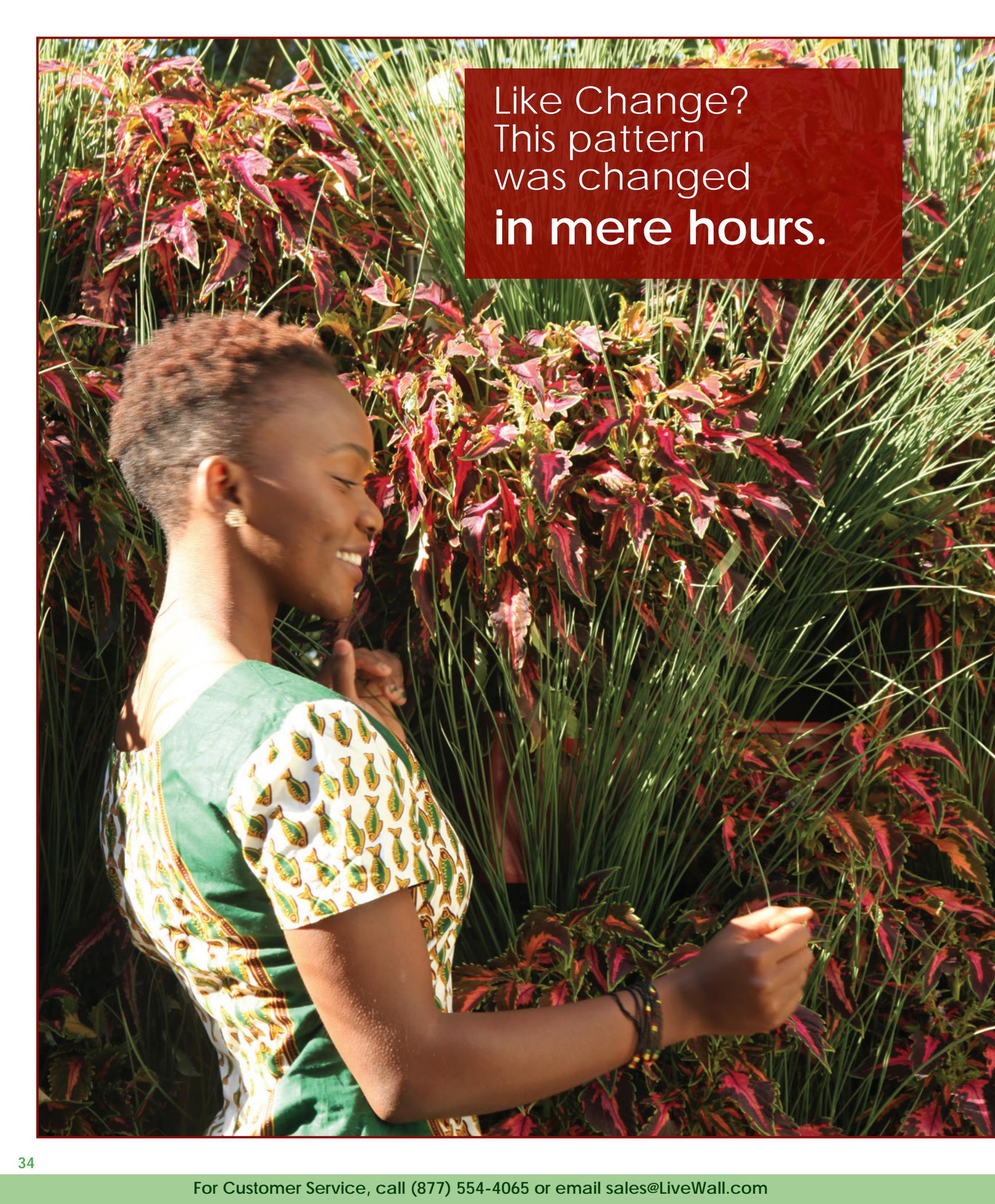
Patterns and combinations are endless.





LiveWall can make fun graphic statements – in a more appealing manner than conventional methods.



A woman with short dark hair, wearing a green and white patterned dress, is smiling and touching a wall of plants. The plants have vibrant red and green foliage. The scene is brightly lit, suggesting a sunny day. A dark red text box is overlaid on the upper right portion of the image.

Like Change?
This pattern
was changed
in mere hours.



And these Michigan grown perennials are three years old, with very little winter loss.

Combining annuals
and edibles provides
both color and flavor.





"This is a good problem to have, the herbs are growing faster than I can use them. I am exploring every possible way to utilize this more expansively on a day to day basis."

Chef, Aaron Shapiro





Farm to Plate; how
about Wall to Plate?

A 100 square foot
LiveWall can produce
\$7500 worth of fresh herbs
(retail value) per season.

A large indoor live wall of green plants, primarily pothos, is mounted on a light-colored wall. The wall is illuminated by track lighting above it. To the right, a glass display case contains a white swan figurine and other decorative items. The floor is made of dark wood planks. The overall scene is a modern, well-lit interior space.

As with the LiveWall Outdoor System,
LiveWall Indoor is the
perfect backdrop, for
public spaces.



LiveWall Indoor parallels the LiveWall Outdoor System.

Plant orientation is upright, yet water is completely contained, and Wallter wall-planters are double the soil volume to foster long-lived, healthy tropical plants.





For Healthy Indoor Air Quality
and Connecting with Nature

LiveWall supports this restaurant's message of quality and environmental stewardship.





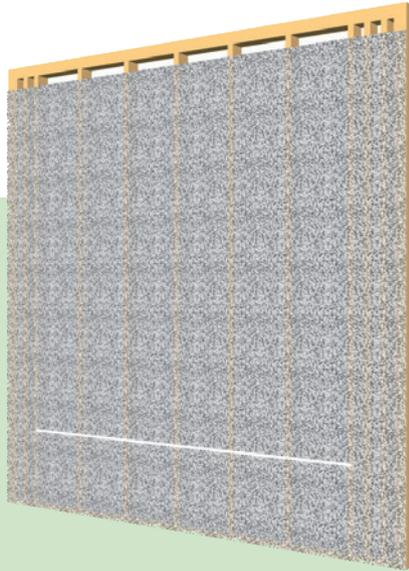


LiveWall® Indoor

in 8 Easy Steps

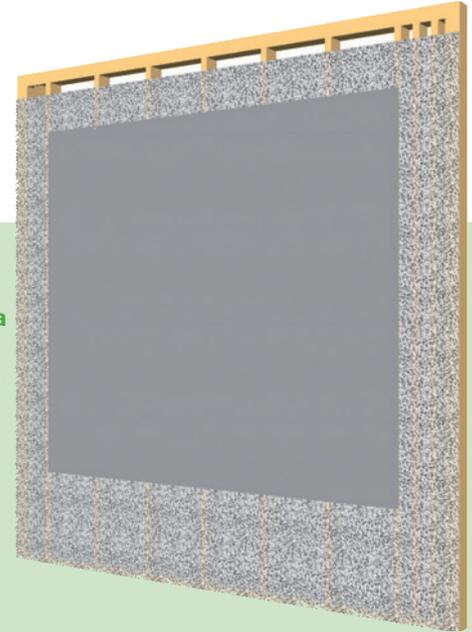
1

Locate bottom of installation, then snap chalkline level with bottom of wall location.



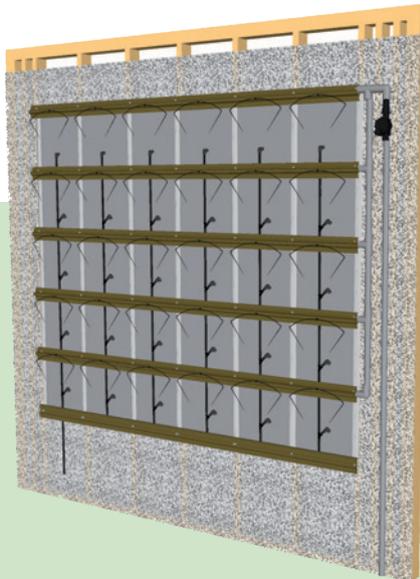
2

A. Cut to size, then attach waterproofing material over the area to be covered with the LiveWall® system.



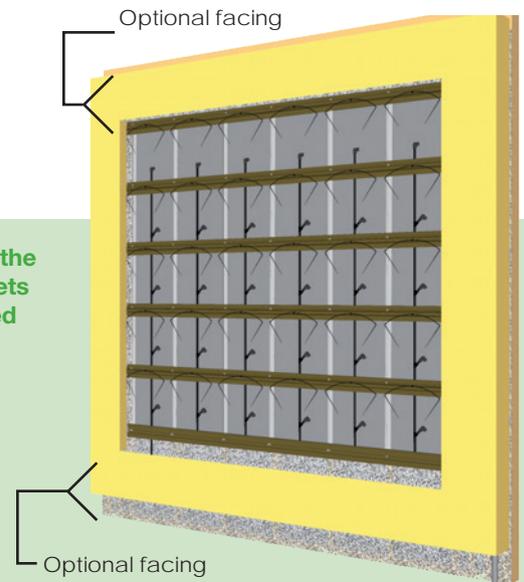
5

- A. Hook up the irrigation feed to the RainRails, then install drip emitters.
- B. Hook up rear drain tube assembly, and connect into drain line.



6

Optional: Attach the HideAway brackets and install desired facing materials.



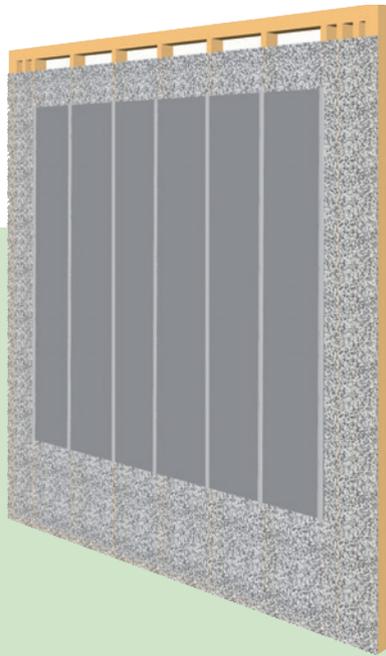
Guide to Installing LiveWall furnished with each order

SIMPLE. EFFECTIVE. ATTRACTIVE. INSTANT.

3

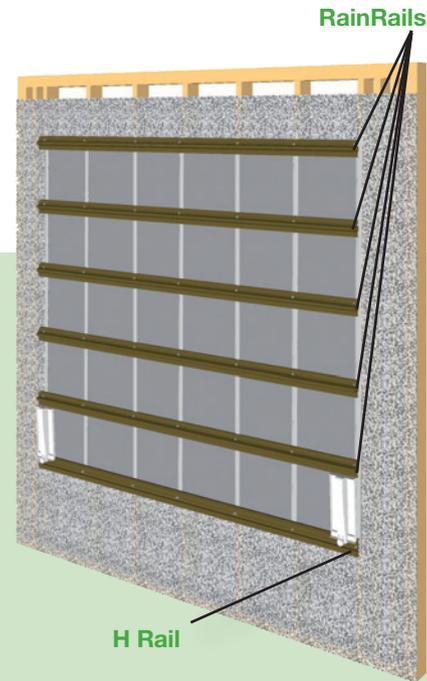
Install the VertiRail Aluminum furring tracks to the wall, over the waterproofing material on 16 to 32 inch centers.

NOTE: Installer chooses and sources proper anchors for attachment of VertiRail® furring tracks to wall or studs.



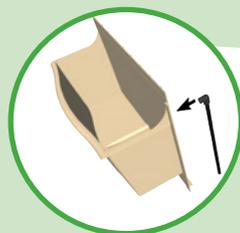
4

Using the 16" GapTools space and attach the RainRails (for automatically irrigated version), or H-Rails (for hand watered version).

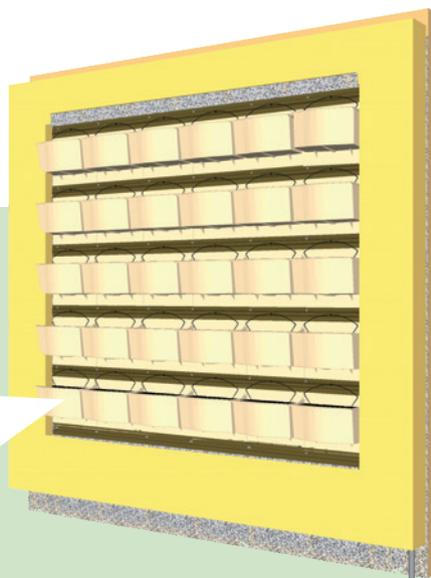


7

Install WallTer wall planters into RainRails.



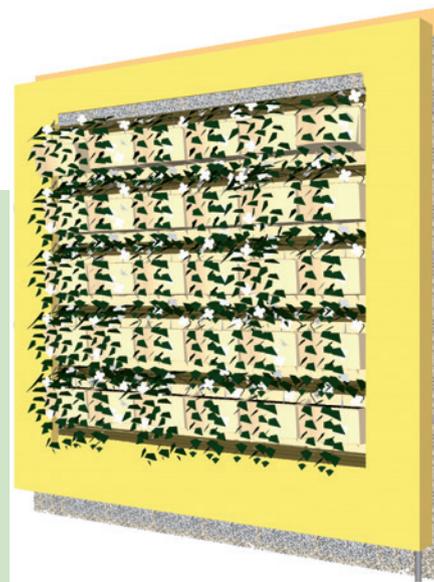
A. Connect drainage elbows to WallTers and connect tubing harness prior to installing WallTers.



B. Test irrigation system

8

Drop in pre-planted WallTer inserts from grower of your choice.



and may be viewed and downloaded online at LiveWall.com





These plants were "dropped in" in about 2 hours following installation of this indoor LiveWall system.

A woman with long dark hair, wearing a grey patterned cardigan and blue jeans, is smiling and holding a baby. She is standing in front of a dense, vertical wall of green plants, primarily Monstera leaves. The background is filled with lush greenery, and a small floral arrangement is visible at the top edge of the image.

Indoor LiveWalls improve air quality and help us to be calmer, more creative, and healthier.



And, they contribute to peace of mind,
and feelings of happiness.



LiveScreen[®] BRAND

What Are LiveScreens?

LiveScreens are mobile versions of the LiveWall[®] planted-wall system. They are beautiful, durable and almost effortless.

What Are They For?

They allow you to grow annuals, perennials, herbs and vegetables in freestanding applications.

LiveScreens are great for making patio gardening easy—no bending, no weeds, and out of the reach of critters.

They enhance lives with beauty, accessibility and ambiance.

What Else Can LiveScreens Do?

They can create lovely, fragrant private spaces between adjoining condos and apartments.

They can make gardening accessible to disabled individuals.

They can pay for themselves in a season or two with vegetables, herbs, greens and small fruits.

How Are They Made?

They are made very well, of high quality architectural grade anodized aluminum and specialty molded components, all of which are designed to last for decades.

They are made in North America by people who care about quality and your satisfaction.

LiveScreen[®] Users

- Homeowners
- Condominium owners
- Apartment dwellers
- Restaurant owners
- Senior living facilities
- Occupational therapists
- Disabled gardeners
- Schools



LiveScreen® XL™

Ideal for condominiums, apartments, restaurants, and home patios.

- Five Tiers of WallTer® Planter Boxes
- 6 feet tall by 4 feet wide
- Double-sided
- Automatic irrigation—just plug in hose and set controller

Available in Seven Beautiful Colors



Cool Gray

Forest Green



Sage

Cedar



Salsa

Sand



Bluestone





Whether for bountiful harvest, privacy screening, or living artwork, LiveScreen XL is a wonderful way to beautify outdoor spaces.

LiveScreen® Patio™

Ideal for condominiums, apartments, restaurants, and home patios.

- Three Tiers of WallTer® Planter Boxes
- 5½ feet tall by 32 inches wide, double-sided
- Automatic irrigation—just plug in hose and set controller

Perfect for Balconies
& Small Patios





Kale is both nutritious and beautiful.

LiveScreen® Access™

Ideal for assisted living centers, senior homes, hospitals and home patios

- Three Tiers of WallTer® Planter Boxes
- 5½ feet tall by 4 feet wide, double-sided
- Wheel Chair Accessible
- Automatic irrigation—just plug in hose and set controller

Makes Gardening
Accessible to
Everyone!



Using LiveScreen Products is Easy.

- Fully assembled and ready to enjoy.
- Plant your favorite plants in the WallTer inserts or have this done at your favorite garden center.
- Controller will turn the water on each day—normally only 1 minute of run time is required.



LiveScreen® Indoor™

Ideal for ambience and air quality.

- Three Tiers of Large size WallTer® Planter Boxes
- 5½ feet tall by 4 feet wide, double-sided
- Easily hand watered, about once per week
- 100% Water containment
- Available in four colors

Brings Nature
Indoors





Available in 5 Colors:



Black



Sand



Blue Stone



Sage



Forest Green



Plants for **LiveWall**®

LiveWall grows beautiful annuals, perennials, herbs and vegetables, tropicals (often used indoors) and succulents. The following pages detail the various planting options.



Perennials in LiveWall

Perennial plants are those that live indefinitely. This is true when they are planted in the ground, but in a planter growing in a wall, they tend to become root-bound after approximately 3 years. As perennials become root-bound, they will require more water and fertilizer as their roots gradually replace the soil in the WallTer® inserts. In time they will need to be removed, divided, and replanted or replaced (the exception being certain succulents, which typically have sparse root systems). How long a perennial lasts will be a factor of the particular plant, its root characteristics, and climate. In cold climates, winter conditions can take a toll on plant survival and the key to optimizing success and survival is proper attention to soil moisture (often involving a moisture retaining winter cover) and pruning (or not pruning) as recommended. LiveWall has developed a maintenance regimen designed to optimize results.

A modest palette of perennials can be used in the LiveWall system, and which plants perform best in a given area is a factor of climate and exposure (wind, sun, shade, etc.). In one location, e.g. southern California, the biggest challenge may be summer’s heat, while in Chicago it may be winter’s cold.

WallTer Size: The standard size (6 in. deep) WallTer is typically used with perennials. The large size WallTer can be used for very robust perennials or grasses, especially in warmer climates.

Recommended Soil: Because perennials, in a container, are expected to last approximately 3 years before they become root bound, you will want to use a soil that can last for a relatively long period of time before decomposing. And for this we recommend a good quality perennial mix—preferably formulated with composted pine bark, peat, and a long lasting porous mineral component such as perlite.

LiveWall Plant Design Guide

Successful Selection and Pairing of Plants in the LiveWall System.

Please call 877-554-4065 or email sales@LiveWall.com for current copy of this useful guide which contains a current listing of tested perennial plants and the “Four Golden Rules” for harmonious pairing of Perennials.





Annuals in LiveWall

Annuals germinate, grow, flower, seed, and die during the course of a single growing season. **They are superior for floral display and are highly attractive to butterflies and hummingbirds. Some are fragrant, but all are colorful and fast growing. They also tend to be inexpensive and almost maintenance free**—because they are removed and composted every year. The down side, of course, is that they die after one season.

With annuals in the LiveWall® system you can literally transform your building every year! You can choose pink wave petunias this year and purple the next, and you can do it with minimal effort and cost. Similarly, you can have colorful geometric patterns, sweeps of color, a montage of color combinations, logos, and the like. The sky is the limit when it comes to color creativity.

WallTer Size: The standard size (6 in. deep) WallTers are used with annuals

Recommended Soil: Annuals and vegetables require an organically rich lightweight potting soil, and there are many great products available locally. Such well known brands as Scotts, Miracle Grow, and SunGro all make outstanding mixes for annual plants. The key is to choose a lightweight mix formulated with peat or coconut coir and a light weight mineral aggregate such as perlite to ensure proper drainage. Many mixes come with a starter charge of fertilizer, but such fertilizer should be supplemented with a topdress of long lasting slow release fertilizer, such as Osmocote, or injection of a high quality liquid fertilizer such as Jacks or Miracle Gro.

LiveWall Plant Design Guide

Successful Selection and Pairing of Plants in the LiveWall System.

Please call 877-554-4065 or email sales@LiveWall.com for current copy of this useful guide which contains a current listing of annuals and the “Four Golden Rules” for harmonious pairing of Annuals in the LiveWall system.





Herbs in LiveWall

Herbs are culinary plants, mostly used for seasoning, and tend to be very easy to grow. Some of them are perennial and others annual, and some are quite cold resistant. Some herbs are used for medicinal purposes and many are highly fragrant.

The fabulous thing about growing herbs in a LiveWall® application is that their use is so convenient. They can be cultivated without the weed problems that exist in a traditional garden. And, their harvest is simple and convenient, without any back bending labor; simply trim them with a pair of scissors as they are needed. **It is even possible to use them on a home or commercial scale to economic benefit;** a homeowner can pay for his/her LiveWall or LiveScreen with cost savings in as little as one season and a restaurant can do so in less than two seasons.

WallTer Size: Typically the standard size (6" deep) WallTers are used for herbs.

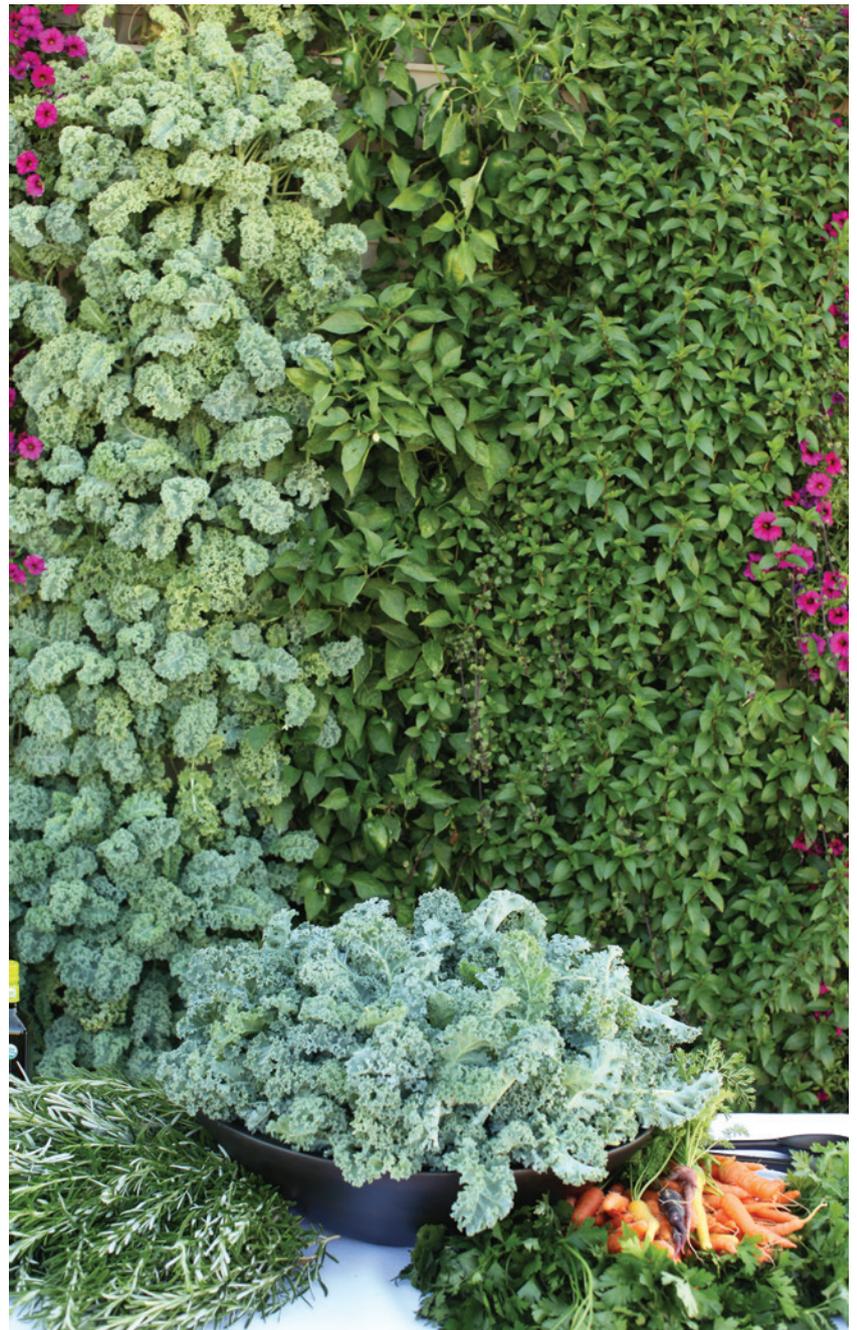
Recommended Soil: Herbs typically grow best in an organically rich, light weight potting soil. Such well known brands as Scotts, Miracle Grow, and SunGro all make outstanding bagged mixes that will do a great job of growing herbs. The key is to choose a lightweight mix formulated with peat or coconut coir and a mineral aggregate such as perlite to insure proper drainage. Many mixes come with a starter charge of fertilizer, but such fertilizer should be supplemented with a topdress of long lasting slow release fertilizer, such as Osmocote, or injection of a high quality liquid fertilizer such as Jacks or Miracle Gro.

Herbs for Sunny South or West Facing Walls

Aloe Vera	Dill	Parsley
Basil	Echinacea	Patchouli
Beebalm (Bergamot)	Goldenseal	Rosemary
Borage	Hyssop	Sage
Calendula	Lavender	Savory
Catmint	Lemon Balm	Scented
Chamomile	Lemon Grass	Geranium
Chervil	Marjoram	Stevia
Chives	Mint	Thyme
Cilantro	Nasturtium	Wheat Grass
Cumin	Oregano	Yarrow

Herbs for Partial Shade for East or North Facing Walls

Chervil	Mint
Cilantro	Oregano
Ginger	Parsley
Lemon Balm	Sweet Woodruff





Vegetables in LiveWall

Many vegetables can be raised in the LiveWall® system, and the benefits to doing so are: care and harvesting are easy, there is little or no bending over, and virtually no weeding. **In addition, vegetable-planted LiveWall applications turn sunny south, east or west facing walls into multiuse surfaces; essentially into vertical urban farms that produce valuable produce while simultaneously cooling the building and looking beautiful.** And, when such walls are applied to restaurants, delicatessens, and cooking schools they not only make a statement about environmental stewardship and sustainability, they can reduce the budget for purchased produce.

WallTer Size: The standard size (6 in. deep) WallTers are used for vegetables.

Recommended Soil: Vegetables grow well in an organically rich light weight potting soil, and there are many fine products to choose from. Such well known brands as Scotts, Miracle Grow, and SunGro all make outstanding bagged mixes that will do a great job of growing vegetables. The key is to choose a lightweight mix formulated with peat or coconut coir and a mineral aggregate such as perlite to insure proper porosity and drainage. Many mixes come with a starter charge of fertilizer, but such fertilizer should be supplemented with a topdress of long lasting slow release fertilizer, such as Osmocote, or injection of a high quality liquid fertilizer such as Jacks or Miracle Gro.

Vegetable Plants

- Beans
- Cabbage
- Carrots
- Chives
- Garlic
- Kale
- Leaf Lettuce
- Midget Muskmelon
- Miniature Cucumber
- Miniature Eggplant
- Miniature Onions
- Cascading/Patio Tomato
- Mustard
- Patio Peppers
- Peas
- Peppers (compact varieties)
- Romaine Lettuce
- Spinach
- Strawberry
- Swiss Chard
- Tomatoes



**No weeding, no rabbits,
no back strain.**



One side of this LiveScreen gave two harvests of peppers, totalling about 50 pounds.



Indoor Plants in LiveWall®

Interior applications bring the same aesthetic benefits as outdoor applications, but some of their benefits are enhanced.

For example, for office workers, there will be a noticeable improvement in air quality. Being surrounded by vegetation, as compared to a stark walls, can also bring important wellness benefits to office workers and building inhabitants, including reduced anxiety, lowered blood pressure, increased productivity, heightened creativity, and a greater sense of well being. These are all automatic biological responses that people have to plants; scientists call this the biophilia response.

Some of the keys to success with indoor plants, just as with other plants, are appropriate lighting (type of light and intensity), and to pair plants with similar growth habits and cultural needs. To aid you in selecting compatible indoor plants, LiveWall has developed an easy to use design guide available by contacting sales@livewall.com.

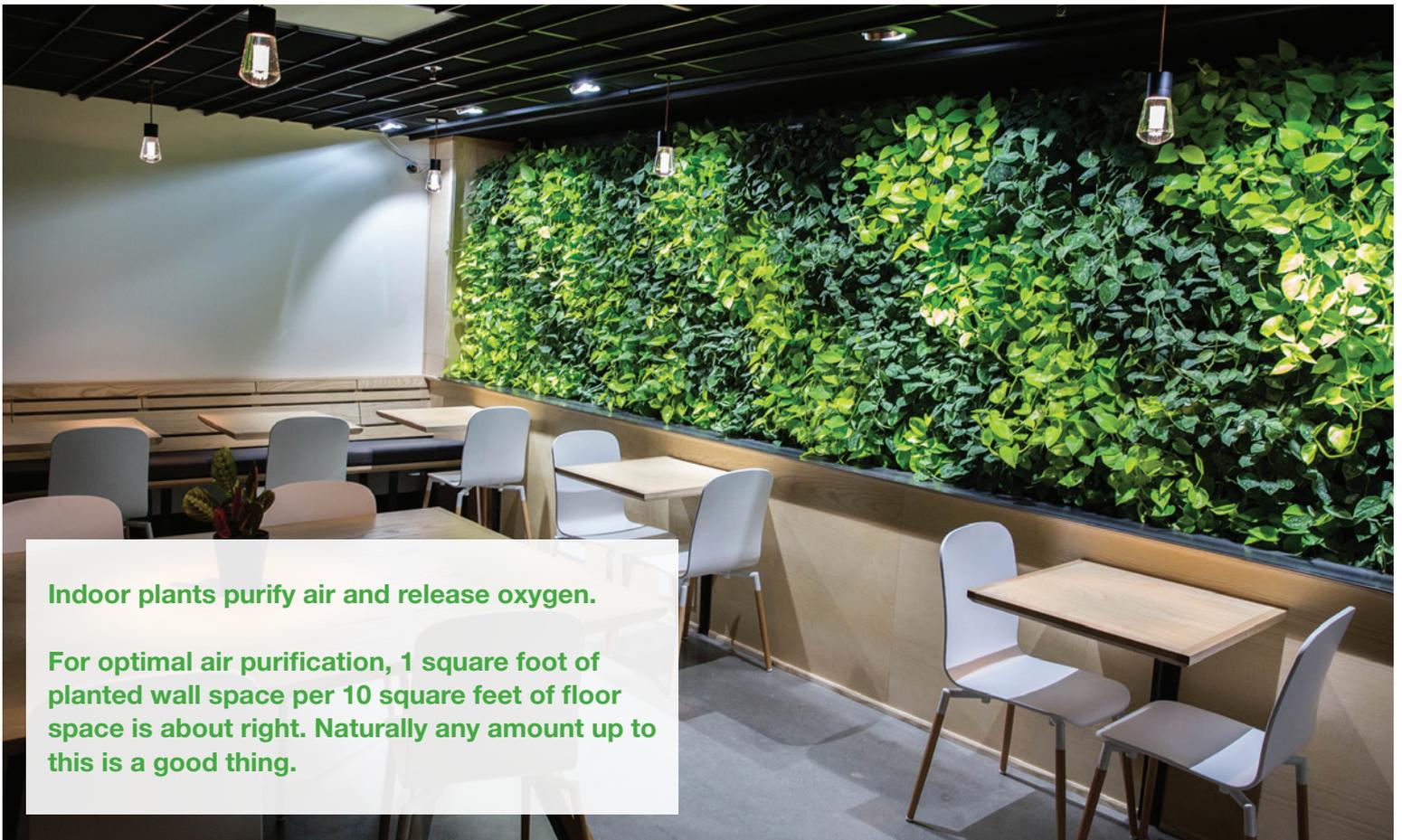
WallTer Size: The large size 8” deep WallTers are used for growing tropical plants.

Recommended Soil: Because perennials, in a container, are expected to last 3 to 5 years before they become root bound and in need of dividing, you will want to use a soil that can last for a relatively long period of time before decomposing. **LiveWall, LLC offers a perennial soil mix, which we can provide.** However, many people prefer to source their soil locally, and for those people, we recommend a good quality perennial mix—preferably formulated with composted pine bark, peat , and a long lasting porous mineral component such as perlite.

LiveWall Design Guide

Successful Selection and Pairing of Plants in the LiveWall System.

Please call 877-554-4065 or email sales@LiveWall.com for current copy of this useful guide contains a current listing of indoor plants and the “Five Golden Rules” for harmonious pairing of Indoor Plants.



Indoor plants purify air and release oxygen.

For optimal air purification, 1 square foot of planted wall space per 10 square feet of floor space is about right. Naturally any amount up to this is a good thing.



Common Questions About LiveWall®

What's so special about the LiveWall® system?

First and foremost, LiveWall is designed by career horticultural professionals to grow healthy plants. The plants grow upward from the top of the soil, as they do in nature. Likewise, the water is delivered in the same manner as it comes in nature, like rain. LiveWall is unique in its simplicity and utilizes the unique RainRail™ mounting rail/irrigation conduits, WallTer™ wall-planters and WallTer Inserts. The LiveWall system is typically pre-grown for instant maturity, instant benefits, and predictable maintenance and lifecycle costs. It is expected to be successful each and every time. Finally, it is absolutely beautiful, and is even attractive when the plants are dormant.

LiveWall can be used in both interior and exterior applications. It is effective for commercial, educational, governmental and residential projects. It is scalable and can be installed easily by first time installers.

With LiveWall, design flexibility is unlimited and ranges from the use of annual plants for colorful patterns and waves of flowers to long-lived succulents, perennials, herbs, and vegetables. Maintenance is easy and replacement of the plants is quick and economical.

What are the reasons to use LiveWall over other green wall options?

The LiveWall system is different in design and use than other planted living wall systems. LiveWall brings important benefits such as a better aesthetic presentation, instant functional and environmental benefits, substantially lower maintenance, elimination of soil erosion, standardized installation methods, durable indefinitely lasting components, and the pride and peace-of-mind in knowing that the project will be successful. With these advantages, LiveWall clearly represents the best value in green wall systems.

How does LiveWall differ from screen type supports?

The LiveWall system will grow vines, annuals, perennials, herbs, grasses, ferns and tropical plants. Screen type supports are for growing twining vines.

How long does it take to install LiveWall?

LiveWall is very easy to install, and the time needed to install a LiveWall will vary with the complexity and accessibility of the design. Simple walls, rectangular or square in

Simple, Effective,
Attractive, Instant, and
most of all, Great at
Growing Healthy Plants.

shape, take about 3/10 man hour per square foot to install. Complex walls can take double this. An average wall takes about 4/10 man hour per square foot based on case studies of actual projects.

How much does a LiveWall cost?

The costs that go into a LiveWall are infrastructure (WallTers, VertiRails, RainRails, irrigation components, fasteners, etc.), planted WallTer insert, taxes, labor, rental of scissers jack (if a ladder won't suffice), and a fair profit for the installer.

The cost will vary with the scale of the project – bigger costs less, smaller costs more (per square foot), ease of access, plant selections, and complexity of the design. When we add this all up, we project the Contractor Installed Cost will typically fall within the range of \$ 85.00-105.00/sf (U.S. currency). For those that take the do-it-yourself approach, the cost is typically around \$45 - 65 per square foot.

What about maintenance?

Everything requires maintenance, including LiveWall. But, it's far less than typical gardening (as there is essentially no weeding or mulching). Therefore maintenance is mostly a factor of plant selection; annual plants may not require much care at all, however, at the beginning of each year they will need to be replaced with new plants and soil. Success with perennial plants hinges, more than anything, upon proper irrigation and moisture management and monitoring and managing soil moisture anytime the soil is not frozen. This is not difficult, however it is critical to success. Other typical maintenance involves removal of spent flower stalks, fertilization, trimming stems and foliage, if they become overgrown, and if the plants are deciduous (drop their leaves in fall), they will need to be pruned back to the soil level each spring about 4 weeks after the plants break dormancy. LiveWall provides a complete maintenance guide with suggestions for each category of plant.



What is the difference between Side-fed and Back-fed irrigation?

Installations with side-fed irrigation receive their water supply from the side of the RainRails. LiveWalls of this type usually integrate a decorative metal or wooden chase to frame the wall and cover the pipes and valves. Rear-fed installations receive their water supply from the back side of the RainRails. And, because the pipes and valves are located behind the planters, a larger furring strip (VertiRail) is used, and this makes the installation sit about 4 inches farther out. Such systems do not require framing.

Can LiveWall® be cut to fit?

The standard size LiveWall system is designed to be spaced in rows that are 12" on centers vertically. The large size wall planter (typically used indoors with tropical plants) is spaced on 16" centers vertically. RainRails™ come in standard lengths of 8 feet, however, they can easily be cut to different dimensions provided the overall length is divisible by 16 inches, to match up with the spacing of the irrigation nozzles.

How much does a LiveWall System weigh?

The standard system weighs approximately 12 to 15 pounds per square foot when saturated and vegetated with upright growing plants. The large size WallTers weigh about 25 to 30 per square foot when planted with mature plants. Long trailing vines may increase the weight of the entire system.

Is LiveWall easy to install?

Yes. LiveWall is very easy to install. Everything is integrated, spelled out in our installation guide and website video, and very few tools are required.

How high can LiveWall be installed?

Functionally, LiveWall can be placed as high as your ability to access it (for maintenance) will allow. It is up to the discretion of the Owner/Architect/Engineer as to the appropriateness of the system at any given height, with all health, safety and environmental factors to be considered. Keep in mind that the taller the building, the more substantial the wind forces, particularly upward lifting wind forces. LiveWall specifies the use of its WallTer™ limiting screw and proprietary WindClip™ on installations above two stories.

Does the height of the system affect irrigation?

Yes, the higher up you go, the windier the conditions tend to be, and you will get more evaporative drying. One simply

compensates with a little more irrigation. In addition, you can expect to lose about 1/2 PSI of water pressure per each row of elevation. This corresponds to about 1/2 PSI for each row of the outdoor system and 3/4 PSI for each row of the indoor system. Therefore, plumbing should be sized and engineered accordingly.

Can LiveWall be installed in winter?

Yes, absolutely. You can install the LiveWall structure virtually anytime. Later, when the weather conditions warm up, you can activate the irrigation and add the plants.

Can I run my LiveWall off of my landscape irrigation Controller?

We advise against this as it leads to improper watering of the LiveWall. It is far more effective to use a dedicated LiveWall controller for the LiveWall. It eliminates confusion and makes irrigation simple and effective.

What happens if I have hard water?

For most applications, LiveWall recommends the use of a food-grade descaling cartridge, which we can provide, for areas with minerals in the water. And if the mineral content is relatively high, we recommend a low-cost, low-maintenance chemical treatment by CH₂O, Inc. for hard water sources (as calcium or iron, in untreated hard water, can potentially impair the flow of water through the irrigation nozzles). Properly treated hard water poses no health risks and actually provides beneficial nutrients to LiveWall plants.

For a **free** water test to determine what type of hardness (and how much) is in the water, a sample can be sent to:

Free Water Test

CH₂O

4141 Boston Harbor Rd. NE

Olympia WA, 98506

Attn. Bruce Kooi

Phone: 360-259-6493

With the test results, you will receive a cost-effective proposal to treat hard water (if in fact it is tested to be hard). It is quite inexpensive.

What type of irrigation feed does LiveWall need?

The LiveWall system requires an irrigation feed that is capable of providing sufficient water volume and pressure for each irrigation zone. This means 8-10 gpm per valve (zone) and regulated to 15 psi pressure, via pressure regulators that are placed upstream of each valve. The system also requires backflow prevention, and a simple irrigation controller, and a micron filter to keep any waterborne debris from plugging up the irrigation nozzles. These components are available as accessories when purchasing your LiveWall System.

Do I have to blow out the irrigation system in the fall?

Yes, if you live in a cold weather location where the water in the pipes, valves, or rainrails can freeze (and you will need to do this again if you use the system to irrigate during the winter warm ups or during early spring before the danger of freezing has passed). And no, if you live anywhere it does not freeze during the winter. Blowing out the system is easy and should be done with an air compressor anytime temperatures will reach the freezing point - spring, fall or winter. Air pressure should be regulated to blow it out at no more than 20 psi. For large installations we recommend that an air compressor be built into the system design for convenience.

May I climb upon my LiveWall system for maintenance?

No, it is not designed to be climbed on for maintenance or any other reason. Climbing on the system could lead to product failure and falling.

What happens in high winds?

We wanted to know this too, so in March 2016, we hired Underwriters Laboratory LLC to test the LiveWall system according to TAS-202 "Criteria for Testing Impact and Nonimpact Resistant Building Envelope Components using Uniform Static Air Pressure," Section 1619 of the Florida Building Code and the LiveWall system passed the Uniform Static Pressure Test at exterior (positive) and interior (negative) design pressures of **105 PSF**.

These findings provide designers, building owners and code officials with assurance that LiveWall systems are safe for use on tall buildings and in wind-prone regions. For example, a LiveWall system installed on a 500 foot tall building in Orlando, Florida would comply with building code requirements. The following calculated minimum design loads encompass inland (120 mph wind speed) and most coastal (150 mph wind speed) regions of North America.*

Building Height (feet)	Wind Speed 120 mph	Wind Speed 150 mph
30	33 PSF	52 PSF
80	41 PSF	64 PSF
160	52 PSF	82 PSF
300	58 PSF	91 PSF
500	65 PSF	102 PSF
LiveWall Design Pressure		105 PSF

**From the perspective of this test procedure the LiveWall system is akin to a sign attached to the wall of a building per section 29.4.2 of ASCE 7-10 "Minimum Design Loads for Building and Other Structures." Calculated loads using maximum values per equation 30.3.1 for velocity pressure in Exposure C as referenced in Chapter 30 "Wind Loads for Components and Cladding" of ASCE 7-10.*



Design - Making It Easy

Step 1: Either call and talk to us or email us your concept (photo, drawing or sketch) with dimensions to sales@livewall.com.

Please review the check list – below, to be aware of the nuances of system design.

Step 2: LiveWall sales specialist will respond to you with questions about any special considerations.

Step 3: LiveWall sales specialist will provide a quote for materials (structure and plants) and projected installation costs (if contracted out).

Step 4: Once a commitment is made, our sales specialist will provide a confirmation and design guide (for making plant selections), and will initiate development of shop drawings.

LiveWall^{BRAND} Designer's Checklist

System Specifications and Drawings

_____ Writing the Spec: The best, fastest, easiest way to develop specifications is to use the LiveWall spec. writer. It is found under Design, in the Technical section of LiveWall.com.

_____ Reference Details: Basic drawings of the LiveWall system can be provided by LiveWall, LLC.

_____ Irrigation Chase Concealments: Specifications and drawings should illustrate and describe materials for any irrigation chase concealments that are part of the system. This is for side fed (not rear-fed) installations.

_____ Overlay the LiveWall Design: With appropriate scale, to aid the installer in his quoting and planning for the installation. Double check the scale.

_____ Height Above the Floor: Locate the lowest portion of the LiveWall sufficiently above the floor or ground to insure adequate slope in the drain pipe. A slope of 1/4 in. per foot is considered minimum.

_____ Indoor or Outdoor System: Specify indoor or outdoor system.

_____ Wall Planter (WallTer) Color: Specify color.

_____ Wall Anchors: Specify that the installation contractor should choose appropriate anchor type for the wall type.

Plant Material Specs and Drawings

_____ **Plant Material Selection:** Is integral to the functional, visual and maintenance characteristics of the LiveWall.

***Outdoor Plants:** Choose and pair plants from the climate-specific LiveWall plant design guide. Plants must be compatible in respect to growth habit, hardiness, and light and water requirements.

***Indoor Plants:** Choose and pair plants from the LiveWall indoor plant design guide. Plants must be compatible in respect to growth habit, and light and water requirements.

_____ **Specify the Size and Grade of the Plants:** —and source of plants, if known. Plants to be pre-grown by a qualified nursery, in the LiveWall planter inserts.

_____ **Develop a Design Drawing:** showing the placement of the various plant types.

Maintenance of Plants and System

_____ **Specify Safe Maintenance Access:** Ladder, hoist, swing stage, scissors jack, cherry picker, etc.

_____ **Specify Maintenance:** to begin immediately upon installation, by a qualified landscape contractor (for outdoor plants) and by a qualified indoor plant care specialist for the indoor plants. In all cases, the written LiveWall maintenance protocol is to be followed.



Irrigation

- _____ **Develop a Design Drawing:** Show the source of the water supply and the point of interface with the LiveWall installation. 10 GPM minimum (at the valve) at 25 PSI required (not to exceed 80 PSI). Keep in mind that the water pressure will drop about 1/2 PSI per vertical foot of elevation.
- _____ **Backflow Preventer:** Specify type and location of backflow preventer, as required by code, typically 1" female x female reduced pressure backflow preventer with shut-offs (as supplied by LiveWall).
- _____ **Water Quality is Important:** Specify that water be suitable for plant growing (neutral or acidic pH with few dissolved minerals). Specify water source, city water, well water, treated water, or reclaimed rooftop water (in which case filtration and replenishment are critical).
- _____ **Specify Water Conditioning Method:** If water has high mineral content. See LiveWall.com for suggestions or call us for information.

Fertilization

- _____ **Specify Application Method of Fertilizer - Outdoor Systems:** Granular (by hand) or liquid with automatic injector. Typically, a water powered unit such as Dosatron® (as supplied by LiveWall). LiveWall recommends Nature Source® 10-4-3 plant food formulation.
- _____ **Indoor Systems:** Specify hand apply with watering can or water wagon—for small walls. Or, with injector for larger walls, in which case specify injector brand, model, and fertilizer type. Be sure to make plans for a small stock solution tank.

Drain

- _____ **Develop Design Drawing:** Showing the source of the drain pipe, for water outflow, and the point of interface with the LiveWall – for indoor installations. Insure a minimum slope of 1/4 in. per foot for the drain pipe.

Electrical

- _____ **Develop a Design Drawing:** Showing the source of the electrical supply, for the irrigation controller, and the point of interface with the irrigation controller. 110 V required.

Lighting

- _____ **For Outdoor Systems:** Be sure to describe the type of light conditions before selecting the plant material. Choose and pair plants according to the LiveWall Plant Design Guide, in accord with the light conditions of the site.
- _____ **For Indoor Systems:** The proper choice of light “type” (i.e. spectrum) and light intensity is imperative to success with indoor plant growing. Consult the LiveWall Indoor Plant Design Guide and LiveWall.com spec writer before specification of lights. This is critical.
- _____ **Plants need a dark period to rest and prevent metabolic fatigue.** The lights must be on a timer, and run from 12-15 hours maximum per day—typically from 7 AM to 8 PM to mimic light conditions in tropical regions. If security lighting is required in the area of the LiveWall, it should be very low intensity and not directed at the plants.

Installation Contractors

- _____ **Require adherence:** to LiveWall installation protocol.

System Protection and Worker Safety

- _____ **Specify and Follow:** All safety, code, structural loading and other important considerations.

Water-Tightness

- _____ **With Outdoor Walls:** If the wall is wood frame or other material that might be susceptible to water; install a breathable vapor barrier on the wall, between the supporting wall and the LiveWall structure.
- _____ **With Indoor Walls:** It is advisable to use a non breathable vapor barrier on the wall, between the supporting wall and the LiveWall structure.



LiveWall® Warranty and Disclaimer

LiveWall Disclaimer/Limitation of Remedies and Liability for LiveWall Modular Green Wall System

This disclaimer/limitation of remedies and liability applies to all LiveWall modular planted living wall products and LiveScreen products manufactured and sold by LiveWall, LLC under the name LiveWall or LiveScreen. No person representing or purporting to represent LiveWall, LLC shall be entitled to waive or vary the terms set forth herein, and any attempt to do so shall be void and of no effect.

Warranty

The LiveWall WallTer module is warranted against material defects and photo degradation for 15 years from the date of installation. The RainRail™ mounting bracket is warranted against material defects for 15 years from date of installation. Color of WallTer planters may lighten with exposure to U.V.

Suitability/Particular Applications

Because LiveWall, LLC does not have control over each particular application of its products, LiveWall **makes no warranties express or implied related to the fitness of LiveWall products for particular applications and or purposes.** It is the responsibility of the user to determine whether the product is suited to a particular purpose or application, and LiveWall, LLC recommends consultation with a competent builder to determine if the LiveWall system is suitable for particular conditions related to but not limited to wall design, sun/shade orientation, potential of wind damage, and mold or mildew. LiveWall does not assume any liability for damage or injury resulting from any system component, stationary or falling, or from soil, plant matter, snow, ice, etc., or components of the LiveWall system falling or dislodging from an installation, or from injury due to anyone climbing upon the LiveWall system. **Furthermore, LiveWall, LLC, assumes no liability for slippery or wet surfaces under or around its products.**

LiveWall, LLC makes **no warranty** that products installed by installers have been installed properly or in accordance with LiveWall standardized installation procedures. **Any warranties for product installation and related work, are available solely from the actual installer.**

Vegetated walls may keep wall membranes wetter than traditional walls. The choice of moisture barrier (breathable membrane or otherwise) and bonding method should be pre-approved with the manufacturer to ensure that it is suited

for use in conjunction with the LiveWall system. LiveWall accepts no liability for any issue related to construction components, moisture barrier systems or bonding methods. The waterproofing system manufacturer should always be consulted before applying any type of green wall system. LiveWall accepts no liability for moisture, mold, mildew, insects or animals.

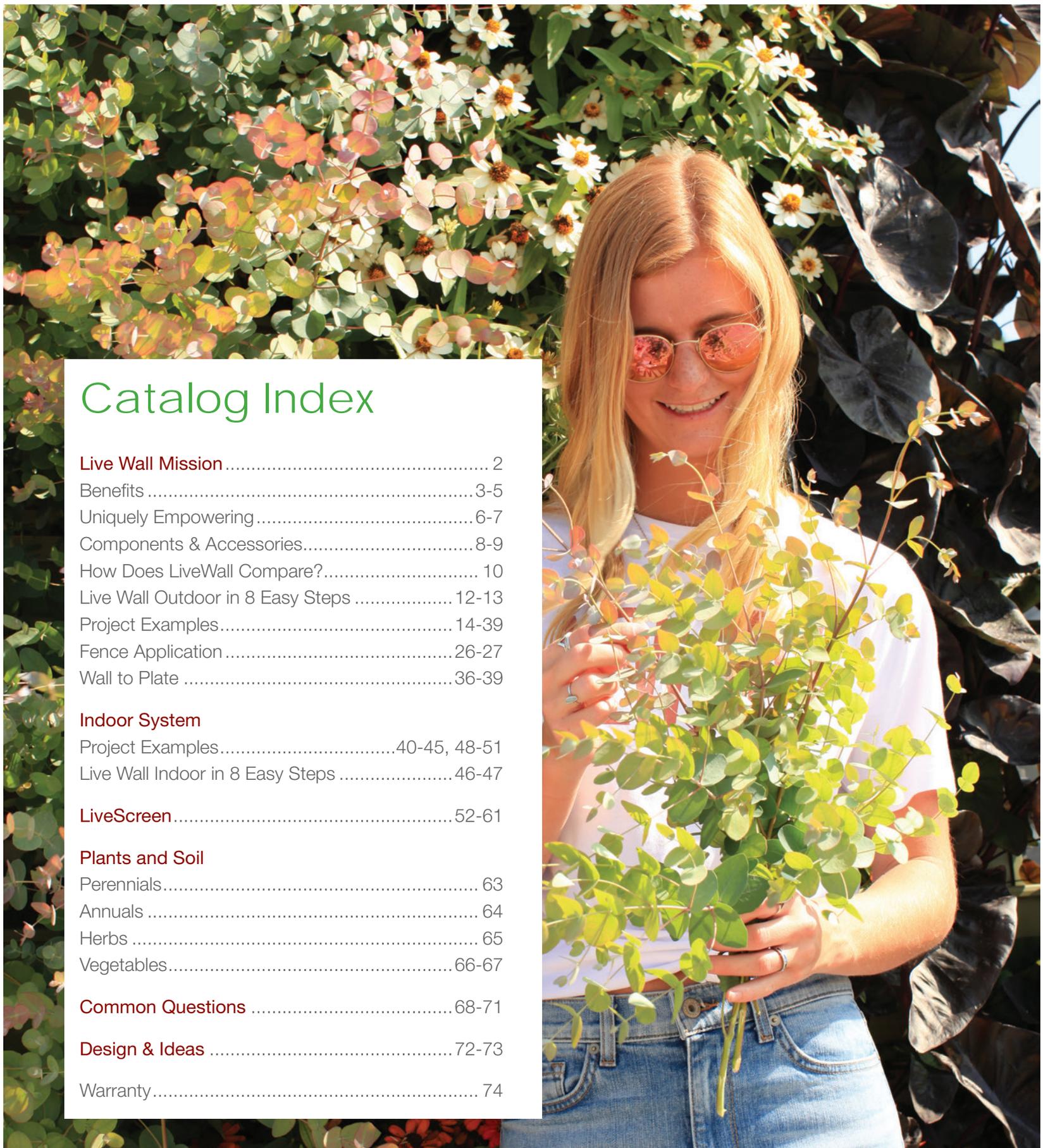
Limitation of Remedies and Liability

If the product is proved to be defective, the exclusive remedy, at LiveWall, LLC's option, shall be to refund the purchase price of the WallTer container (exclusive of soil and plant material) or to timely repair or supply of replacement containers (exclusive of soil and plants). LiveWall, LLC shall not otherwise be liable for any loss or damages, whether direct, indirect, special, incidental, punitive, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

If LiveWall, LLC shall elect to repair or replace the defective product, or refund the purchase price (exclusive of soil and plants), such election shall not be deemed an admission of liability. Any lawsuit or legal action against LiveWall, LLC with regard to product must be brought in Ottawa County, Michigan, and Michigan law shall apply to all proceedings.

Plant Grades and Standards

The LiveWall system is intended to be delivered in conjunction with empty or vegetated WallTer™ Inserts. The plants are to be an assortment of plants that is suitable for the intended purpose. They may be annuals, perennials, long lived succulents, herbs, vegetables, medicinals, or tropical plants. Any warranty for vegetation would typically come from the local maintenance provider as he has the ability to reduce risk through his diligence to moisture management, fertility, pruning and other aspects of proper plant care.



Catalog Index

Live Wall Mission	2
Benefits	3-5
Uniquely Empowering	6-7
Components & Accessories.....	8-9
How Does LiveWall Compare?.....	10
Live Wall Outdoor in 8 Easy Steps	12-13
Project Examples.....	14-39
Fence Application	26-27
Wall to Plate	36-39
Indoor System	
Project Examples.....	40-45, 48-51
Live Wall Indoor in 8 Easy Steps	46-47
LiveScreen	52-61
Plants and Soil	
Perennials.....	63
Annuals	64
Herbs	65
Vegetables.....	66-67
Common Questions	68-71
Design & Ideas	72-73
Warranty.....	74



LiveWall®

LiveScreen®

Outdoor and Indoor

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www.LiveWall.com

sales@livewall.com

LiveWall, LLC

A Subsidiary of Hortech, Inc.

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