

ACADEMY FOR GLOBAL CITIZENSHIP

LIVING BUILDING CHALLENGE BOOK

JUNE 3, 2026

cultivate collective

Cultivate Collective unites education, wellness, sustainability, and economic vitality to support holistic human development and drive meaningful, multi-generational impact.

Academy for Global Citizenship

An International Model in Innovative, Environmental Education in the Heart of Chicago

SMNG Architects, Ltd.

ARCHITECT OF RECORD

FARR ASSOCIATES

COLLABORATING ARCHITECT

URBAN RESOLVE

OWNER'S REPRESENTATIVE

POWER CONSTRUCTION

GENERAL CONTRACTOR

db HMS

MEPFP ENGINEER

Stearn-Joglekar

STRUCTURAL ENGINEER

CIVIL ENGINEER

site

LANDSCAPE ARCHITECT

REITANO DESIGN GROUP

KITCHEN CONSULTANT

SM&W

ACOUSTICAL CONSULTANT

wsp

MATERIALS CONSULTANT

LIVING BUILDING CHALLENGE

phius

GREEN BUILDING CERTIFICATIONS



ACADEMY FOR GLOBAL CITIZENSHIP

LIVING BUILDING CHALLENGE BOOK



INTRODUCTION

PROJECT BACKGROUND

The Living Building Challenge® (LBC) is a certification program, advocacy tool, and philosophy defining a high measure of sustainability in the built environment today.

As a certification program, it provides milestones and criteria. As an advocacy tool, it provides a path for people and organizations involved in the creation of the built environment to have a common message. And as a philosophy, it guides the operation and future use of the built environment.

The Academy for Global Citizenship (AGC) project is one aspect of Cultivate Collective, a community organization whose mission is to unite education, wellness, sustainability, and economic vitality at the community level to drive meaningful, generational impact. The AGC building is an approximately 70,077 square foot building located on six acres of previously developed land in Chicago. The building houses five tenants, with Cultivate Collective being the anchor tenant of the school. AGC is an accredited International Baccalaureate school with a curriculum focused on developing mindful leaders who can take action now and into the future to positively impact their communities and the world beyond.

It is embedded in the school's DNA to lead by example, as such pursuing the Living Building Challenge provided a robust and challenging framework.

AGC is pursuing full Living Building Certification 4.0, which will be described on the following pages. This book is organized by Living Building Petals (7), which are then broken down into Imperatives (20), which are further broken down into Requirements (101).

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INTRODUCTION

INTRODUCTION

The Place Petal has four imperatives that advance three main tenets: 1. Respecting the Ecosystem, 2. Providing areas for Urban Agriculture, and 3. Providing for the Community.

SITE HISTORY AND NATURAL CONTEXT

AGC occupies approximately six acres of pre-developed land in an urban context in Chicago, IL. This part of the City of Chicago was initially farmed which was replaced with low-density private housing. The housing was later demolished under urban renewal practices and replaced with mid-density, public housing. The land sat fallow since the public housing was removed and the residents were displaced in 2007.

The Climate is ASHRAE Climate Zone 5A which is a mixed climate with about 35 inches of rain a year and temperatures swings from a low of -10 deg F to 90 deg F. The pre-settlement ecology on the site is classified as Wet Glacial Drift, which served as inspiration for portions of the landscape design.

ECOLOGICAL RESTORATION

The AGC project provides ecological restoration both on its site and across the Chicago region. The landscape design for the school site restores the land to more closely reflect the original ecology. While at the same time AGC volunteers support invasive species removal and land maintenance in nature preserves, natural areas, and parks in the Chicago region. These volunteer efforts expand access to similar ecosystems in the region for residents of the AGC Neighborhood and across the City of Chicago.



FIGURE 1-02 Exterior Façade

URBAN AGRICULTURE

Urban farming is central to both the operations and curriculum of AGC. Roughly one-half acre (20,000 s.f.) of the site is dedicated to growing food, mostly in hoop-houses. The students are fed breakfast and lunch prepared fresh on-site in the school's commercial kitchen. The food storage areas have been sized to meet both daily and emergency needs. The AGC curriculum both expands and reinforces the student's daily routines, teaching agriculture as part of STEM.

COMMUNITY

Prior to starting the design of the school building, AGC and its parent organization Cultivate Collective met with neighborhood organizations, former public housing residents, and City officials. These meetings identified opportunities for AGC to expand its building program to address community needs. Beyond its core function as a K-8 school, the building contains a community health clinic, outdoor and indoor space for community meetings, and a food market supported by the Urban Farm, all community-serving.



FIGURE 1-01 South Building Elevation

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I01-1 SITE CONDITIONS

INTENT

Provide: 1) An overview narrative with 2) Photographs describing site conditions at the start of the project and, 3) A general history of the site. 4) Reference Habitat documentation. 5) Completed Recovery Wheel showing baseline ecological condition per SER Five Star Methodology. 6) A FEMA-issued flood map documenting the project's location relative to any nearby flood zones.

EXISTING SITE CONDITIONS

The Academy for Global Citizenship (AGC) is located within the city limits of Chicago in the LeClaire Courts Neighborhood in the 22nd Ward at the intersection of W 44th Street and S Laporte Avenue. The site is approximately 10 miles southwest of the Urban Core (The Loop), and is located within what LBC defines as the L5 Living Transect - Urban Center Zone. The site is bounded to the east and the south by city streets, Hearst Park (Chicago Park District park) to the west, and railroad tracks and Interstate 55 to the north. The total site area is 268,180 square feet, or 6.157 acres.

The existing topographical conditions consist of nearly level terrain with open lawn and trees. There were some hardscape remnants from previous development that have been removed. The north side of the site is more densely vegetated. The existing trees range in condition, size, and species. Several Hackberry, Honey locust, and Hawthorne trees are in fair to good condition and should be saved.

Two existing trees within the public right-of-way should be saved. There is an existing utility easement running East-West across the North of the site and North-South across the West of the site. The site is bound by chain link fencing. There is an existing sidewalk within the right-of-way within two street trees and light posts. The project site is not located on prime farmland.

ZONING HISTORY

The site is currently zoned as a Planned Development (PD-1476) a rezoning of the previous use as a Chicago Housing Authority public housing site.

PROPOSED SITE CONDITIONS

The proposed use of the site is the Academy for Global Citizenship school, a Chicago Public Charter School. The site will include entry plazas, native landscapes, natural play space, outdoor classrooms, outdoor dining areas, pervious parking, and rain gardens. A key feature of the site is the half-acre urban farm, refer to **Imperative 02** for more information.

The non-agricultural landscapes will be maintained as natural ecosystems providing habitat and ecological restoration value while working in conjunction with the school to provide interactive and educational opportunities for daily users and visitors.



FIGURE 1-03 Site at the Start of the Project



FIGURE 1-04 Site at the Start of the Project



FIGURE 1-05 Site at the Start of the Project



FIGURE 1-06 Site at the Start of the Project

REFERENCE HABITAT DOCUMENTATION

What is the ecosystem that would have existed on the site without human development?

The dominant vegetation on this site has undergone drastic changes over many thousands of years, evolving from tundra habitats at the end of the last glacial episode, to spruce, fir, and pine forests, to deciduous forests dominated by oak and hickory. As the climate shifted, prairies and savanna-like habitats began to develop.

The ecosystem that would have existed on this site prior to development (in the 19th C) is a Wet Glacial Drift Upland Prairie. Wet Glacial Drift Upland Prairies occur on uplands. Under these conditions, sites do not experience flooding because of groundwater recharge triggered by low hydraulic gradients (a flat water table).

The reference habitat (an extant ecosystem that closely resembles what would have been here) is Ottawa Trail Woods, located 5 miles west of the project site. Craig Billington, who covers Ottawa Trail Woods, is a Regional Ecologist from the Forest Preserves of Cook County. Billington noted that the basic natural communities at the site presently include Mesic Woodland, Floodplain Forest and Marsh. Some species identified at Ottawa Trail Woods include Helianthus divaricatus (Sunflower), Kuhnia eupatorioides corymbulosa (False Boneset), Quercus bicolor (Swamp White Oak), Rudbeckia laciniata (Cutleaf Coneflower), Solidago gigantea (Giant Goldenrod), and Symphyotrichum lateriflorum (White Woodland Aster). Some bird species included Sandhill Cranes, Tree Swallows, White-throated Sparrows, Brown-headed Cowbirds, and Mourning Doves.

FEMA FLOOD MAP

The site is located within an area of minimal flood hazard according to FEMA mapping service and requires no further action to protect the site from flooding.

RECOVERY WHEEL BASELINE CONDITION

Absence of threats: 1 star. Vegetation was minimally managed. Invasive plants exist on-site.
Physical conditions: 1 star. The site conditions are stabilized, but not supporting a natural range of biota.
Species composition: 1 star. There are some native tree species, but there are also invasive species due to the previous use of the site.
Community structure: 1 star. Low trophic complexity.
Ecosystem functionality: 1 star. Minimal habitat and existing resources remain for species.
External exchanges: 1 star. Adjacent to LeClaire Courts-Hearst Park, but no connections.

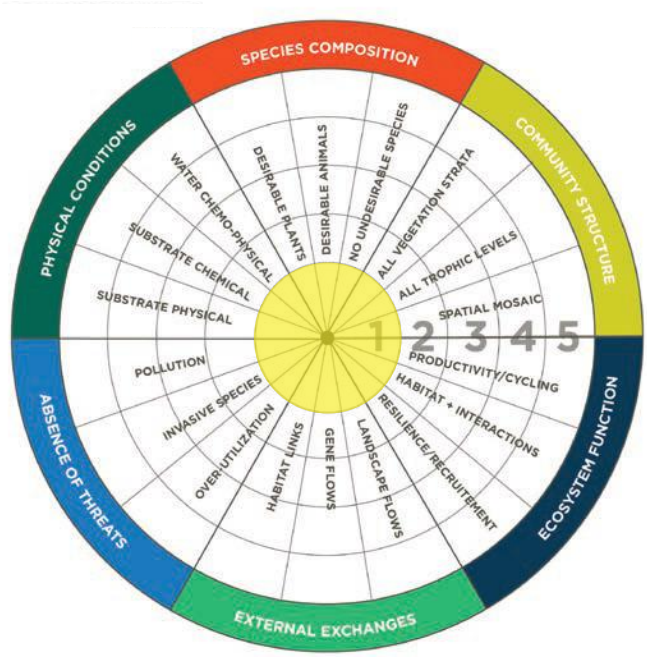

FIGURE 1-07 Recovery Wheel showing Baseline Ecological Condition

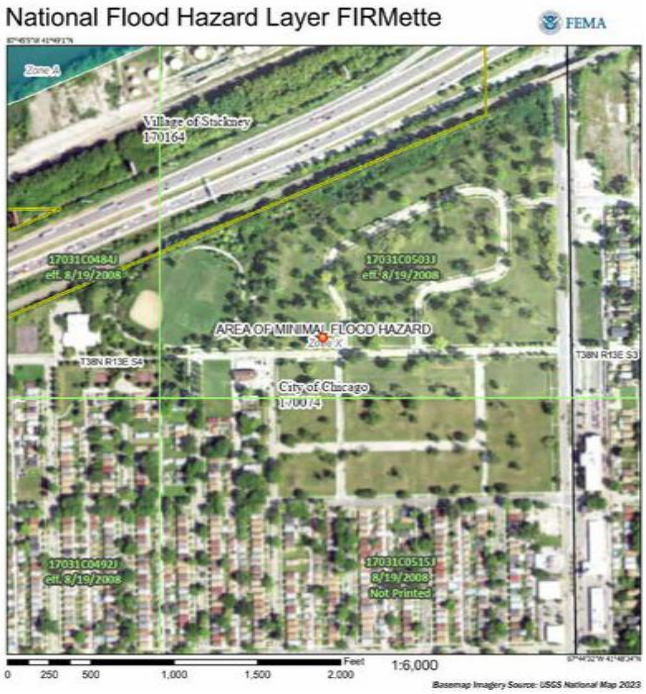

FIGURE 1-09 FEMA-issued Flood Map



FIGURE 1-08 Reference Habitat Documentation

I01-2 POSITIVE ECOLOGICAL CONTRIBUTION (READY AUDIT)

INTENT

Provide a comprehensive Adaptive Plan with illustrations that documents how the project meets the requirement to restore or enhance the ecological function of the site, including the vision, goals, objectives, measures, metrics, and monitoring and maintenance plan. Completed Recovery Wheel showing long term Adaptive Plan goals. Photographs documenting change over the performance period.

LONG TERM ADAPTIVE GOALS

As mentioned under **Imperative I01-1**, the site features consist of entry plazas, native landscapes, natural play space, outdoor classrooms, outdoor dining areas, pervious parking, and rain gardens. A key feature of the site is the half-acre urban farm, refer to **Imperative 02** for more information. The non-agricultural landscapes will be maintained as natural ecosystems providing habitat and ecological restoration value while working in conjunction with the school to provide interactive and educational opportunities for daily users and visitors. The site is in LBC Transect L5, thereby capping the estimated highest level of ecological function at 2-stars in all categories.

The following Long Term Adaptive Goals outlines how the goals will be achieved over time.

ELIMINATING THE ABSENCE OF THREATS

Removing on-site invasive species will require manual and mechanical removal. Removal may require physically removing invasive plants by hand, cutting and mowing invasive plants to prevent reproduction, or machine cutting to remove larger infestations of invasive species. Continuous monitoring of the landscape will be an important aspect of mitigation.

Removal of invasive species will be extremely important, especially during the first 5 years as new native plants are becoming established. Routine maintenance will be as follows:

Year 1: Maintenance shall be at minimum once every month.

Years 2-3: Maintenance shall be at minimum once every 2 months.

Years 4-5: Maintenance shall be at minimum once every 2-3 months, depending upon plant establishment.

Additional monitoring and maintenance shall be on an as-needed basis.

IMPROVE SOIL CONDITIONS

To recreate the environment and sustain species of the Reference Ecosystem, it is essential to improve the physical and chemical properties of the soil. Imported soils provide optimal conditions for growing healthy native species. Soil monitoring and necessary adjustments shall be undertaken periodically as needed pending on-site assessments and observations. Please refer to **Imperative 02** for more information on soil and growing conditions.

STRATEGIES FOR SPECIES COMPOSITION

Planting areas are integrated throughout the site: in parkway trees, entry gardens, rain gardens, and educational play gardens. The planting palette consists of native and adapted non-invasive species, similar to species found in the Reference Habitat. To ensure the protection of the native species on-site, it will be crucial to remove any invasive species, monitor and maintain the diverse range of native species, limit additional post-construction disturbances, and educate the maintenance personnel and users on native landscapes and species. Ideally, the species should be monitored annually to track ecological diversity.

IMPROVING THE PLANT COMMUNITY

Working to increase trophic complexity in a landscape can help promote ecosystem health, resilience, and biodiversity. As mentioned previously, the planting palette emphasizes native species, which provide habitat and food sources for native fauna. The proposed

planting includes a wide diversity of species to help establish a more layered ecosystem. In addition to the native landscape, the agricultural landscape is filled with food producing plants. The landscape team recommends that leaf litter is left on the landscape on an annual basis to provide habitat for smaller fauna. Additionally, project users shall install and monitor birdhouses for nesting birds and insect hotels.

EVIDENCE OF ECOSYSTEM FUNCTIONALITY

High species diversity indicates health in an ecosystem. On an annual basis, the school should monitor, and count, biodiversity seen on-site to provide evidence of the ecosystem's functionality. Healthy ecosystems are more resilient to disturbances. Counting species diversity will assist in tracking the diversity as it relates to the Reference Habitat.

EXTERNAL EXCHANGES

LeClaire Courts-Hearst Park is located west of the site and totals 12.53 acres. Programming includes a fieldhouse, basketball courts, baseball fields, athletic green, playground, tennis courts, and a community garden. During the school year, park goers can participate in recreational programs and after-school programs. Summer camps and special events are planned throughout the year. The master plan proposes a direct pathway from the western property line to the park allowing for ease of flow and connectivity. The site perimeter should undergo regular surveillance to monitor external exchanges of vegetation and the presence of invasive species. Surveying the site boundaries provides educational opportunities to students, families, community members, and park goers about the agricultural-forward native landscape.

MONITORING & MAINTENANCE PLAN

In addition to the system monitoring, maintenance practices, processes, goal and data collection plan outlined above, the following plant maintenance shall be followed: Plants shall be maintained by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing

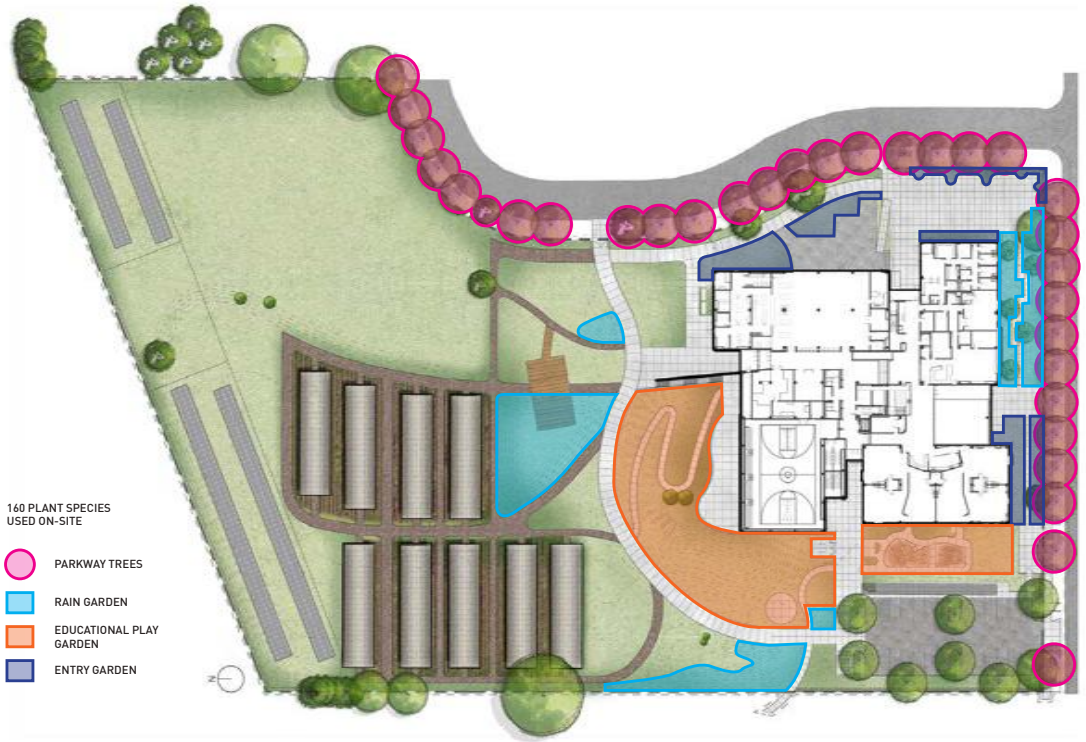

FIGURE 1-10 Illustration of the Adaptive Plan

tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Replace mulch materials damaged or lost in areas of subsidence. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices, when possible, to minimize use of pesticides and reduce hazards, refer to **Imperative 02.**

IDEAL RECOVERY WHEEL

Academy for Global Citizenship is in Transect L5 - Urban Center Zone. Per the Society for Ecological Restoration's (SER) Five Star Method, Transect L5, 2 stars are estimated to be the highest level of ecological function.

Absence of threats: 2 stars
Physical conditions: 2 stars
Species composition: 2 stars
Community structure: 2 stars
Ecosystem functionality: 2 stars
External exchanges: 2 stars

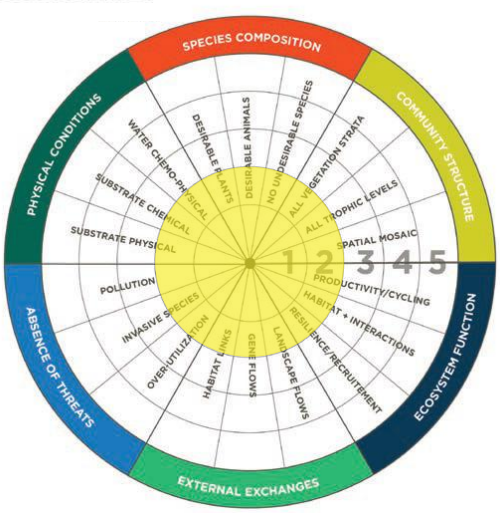

FIGURE 1-11 Ideal Recovery Wheel

I01-2 POSITIVE ECOLOGICAL CONTRIBUTION (FINAL AUDIT)

INTENT

Completed Recovery Wheel showing progress at the end of the 12-month performance period and a results narrative of how the site evolved over the 12-month performance period.

12-MONTH PROGRESS, RECOVERY WHEEL

This section provides information on how the project performed during performance period, which took place over the 12 months between October 2024 and October 2025. As the landscape site was planted in the spring of 2024, the performance period started at the end of the first growing season.

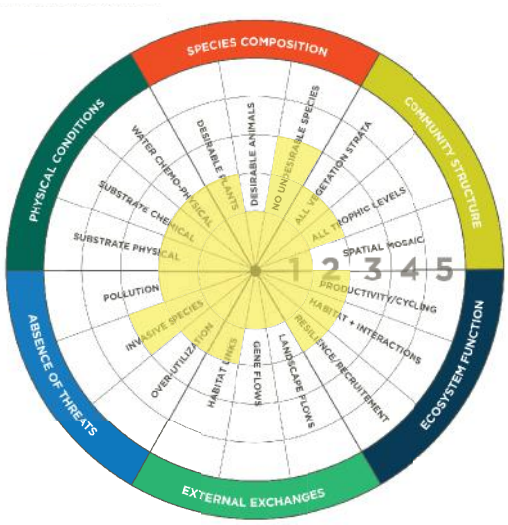

FIGURE 1-12 12-Month Recovery Wheel

The Ideal Recovery Wheel proposed that the project's design would elevate the performance in all six categories from 1 Star to 2 Stars. The 12-Month Performance differed from what was proposed in the Ideal Recovery Wheel, Figure 1-13,-sometimes falling short while other times exceeding projections. The text below discusses the achievements and challenges in achieving Recovery Wheel performance across the six categories.

ATTRIBUTE 1. Absence of threats

The best way to reduce ecological threats is by establishing a healthy ecosystem to start. The health of the new ecosystem at AGC was ensured through a one-year maintenance contact that nurtured and maintained the new plantings after they were installed in the spring. For the rest of the summer our internal staff and hired landscape contractor managed invasives in some of the more commonly used areas. Thanks to this maintenance, many of the grass areas and rain gardens thrived over the course of the performance period.

Going forward, the established landscape and ecology at AGC is subject to three (3) threats: invasive species, contamination, and over-utilization. The invasive species were physically removed during the site preparation phase of the construction process. Despite this, AGC's location on an urban site presents a continual threat of contamination from invasive species being blown in or carried by animals from the railway, highway, and canal easements to the north. This will be addressed through maintenance. The school is following through with its commitment to monitor and maintain the landscape every 2 to 3 months through Year 5.

Over-utilization has proven to be the greatest threat the new ecology. Despite being located immediately adjacent to a 12-acre public park, every square foot of the campus is used intensely by students throughout the school year. It is only through the use of physical barriers such as shrubbery and fences that foot traffic can be kept from sensitive landscapes. **See Figure 1-15.**

ATTRIBUTE 2. Soil conditions

After the regrading that occurred during the construction phase, the soil was amended in alignment with the three primary types of vegetation: the ornamental rain gardens, the crop cover, and the agricultural areas. (None of these will utilize chemical fertilizers.) The soils were amended to create optimal physical substrates, chemical substrates, and water-chemo-physical conditions. The

success of the amendments was confirmed to match that of the target habitat during the performance period through visual observation and hand texturing and a ribbon chart, with the results summarized in **Figure 1-13**. (The soil findings were incorporated into school curriculum.)

ATTRIBUTE 3. Species composition

The landscape contractor who provided the first year of maintenance achieved the following outcomes: 1. Through weeding and selective planting they were able to maintain the health and diversity of the ornamental rain garden plant mix, 2. Through the application of urban forestry practices the trees survived and thrived. 3. No undesirable species of plants or animals were observed. Additional species were attracted and retained on site through the introduction of butterfly gardens and bee houses.

ATTRIBUTE 4. Community Structure

The AGC site plan improved the biodiversity of the existing open lawn and scattered shrubbery by proposing a varied landscape of rain gardens, ornamental plantings, agricultural plants, and structured trees. The plans called for various microcosms representing landscapes as diverse as treescapes to wet tolerant rain gardens.

At the end of the performance period the landscape team observed the species strata, trophic levels and spatial mosaic to be generally as envisioned in the design documents. While they were nowhere near as diverse as a comparable mature landscape in nature would be, the representative species were present in sufficient numbers and distribution to have established several distinct ecosystems and habitats.

ATTRIBUTE 5. Ecosystem function

The substrates and hydrologies of the ecosystems are performing above a foundational stage of the reference habitat, Ottawa Woods. In ecological terms the AGC habitats are still very young and immature (under three years) yet they show longer-term potential for a wider range of nutrient cycling and species habitat. The habitats are on track to achieving higher performance during and after the next three years of monitoring and maintenance.

ATTRIBUTE 6. External Exchanges

At the site scale, AGC exchanges plants and animals with adjacent habitats through the quirky and limited ecological connections typical of urban areas. The campus is bounded on the west by a public park, separated from the school campus with a porous fence.

Ribbon Soil Test (farm class)			Analysis
Sample 1	Taken from the bottom of the rain garden.	Very crumbly and did not sustain physical consistency for more than 2 - 3 inches. It could barely form a ribbon, even when soaked with water. This indicates low clay content.	this is to be expected and shows the rain gardens have low clay content and are infiltrating as designed.
Sample 2	Taken just outside the newly constructed outdoor farm fields.	Was able to sustain a ribbon for about 6 inches before falling apart. Soil was very muddy already to did not need to apply water for test. From what we observed, the sample seemed to have decent clay content.	This is consistent with the soils required for agricultural production.
Sample 3	Taken in between the 2nd and 3rd hoop house.	This is soil with turf growing in it. Soil needed to be wetted prior to test but once it was wet, the soil was able to make the longest ribbon, probably around 6 - 8 inches although cracks formed pretty quickly. This sample had the highest amount of clay from what I observed.	This is consistent with the "spoils" from the construction that was spread around and with the increased clay content supports water retention and allows the turf grass to sustain periods of drought.

FIGURE 1-13 Ribbon Soil Test

The park's twelve acres of mowed lawns, naturalized groundcovers, and sporadic tree canopy provides habitats for numerous plant and animal species, extending the campus's biodiversity potential.

The AGC campus is bounded on the south and east by city streets, a significant physical barrier to species exchange. Despite the streets, airborne seeds and small organisms and animals do cross the street successfully.

The campus is bounded on the north by a miles-long infrastructure corridor which includes a highway, rail tracks, and a canal. The rail lines provide a somewhat continuous land path for animals to travel great distances without having to cross a street. The canal provides a water-born connection between Lake Michigan to the east with the Illinois-Mississippi River system to the west. Together this corridor has the potential to provide site access to large numbers of species, though it is too early in the project's history to have any record of the extent of that diversity.

At the scale of the city, AGC's farm and food operations exchange nutrients with institutions outside the community through food sales and compost. The food market continues to provide local produce to the community along with a "Love Fridge" providing fresh produce to those in the community in need. Additional external flows are leaf compost and food compost from the urban farm that makes its way back into soil on site and elsewhere.



FIGURE 1-14 Soil Amendment at agricultural areas (compost)



FIGURE 1-15 Evidence of severe foot traffic



FIGURE 1-16 South Parkway - Before



FIGURE 1-18 South Parkway - After



FIGURE 1-20 View of West - Before



FIGURE 1-21 View of West - After



FIGURE 1-17 View Looking North - Before



FIGURE 1-19 View looking North - After

I01-3 CULTURAL & SOCIAL EQUITY ASSESSMENT (READY AUDIT)

INTENT

Provide an equity narrative that describes the assessment of cultural and social equity factors and needs of the place.

A COMMUNITY EQUITY FOCUS

The six-acre site, which comprises a portion of the former Chicago Housing Authority (CHA) LeClaire Courts development, which was razed in 2011, was purchased from the CHA. Integral to the land purchase agreement was a commitment on the part of AGC leadership and the project development team to prioritize neighborhood engagement and hiring efforts. As a result, AGC hosted community meetings and job fairs and participated in over 100 community engagement efforts.

The result of deep collaboration with community leaders, volunteer organizations, neighborhood voices, and local constituents, the Academy for Global Citizenship at the Cultivate Collective Campus committed to bring to fruition a global vision of environmental and economic sustainability (designed to achieve full Living Building Challenge® certification) to serve and support this low-income community of color.

MEMORANDUM OF UNDERSTANDING

These equity commitments were memorialized in a Memorandum of Understanding (MOU) between the project and the LeClaire Courts Advisory Council, Hearst Park Community Organization, Hire360 and the Greater Southwest Development Corporation. The MOU provided the guideposts for all goal-setting and project procurement efforts.

INCLUSION GOALS

The inclusion initiative goals for the project, established in the MOU, were exceeded during project implementation in both professional services and direct costs as outlined in imperative 18. Inclusionary project development goals include business participation by minority and women owned businesses and Section 3 businesses as well as workforce participation goals associated with apprentices and Section 3 employees.

Community & Stakeholder Outreach	
Hearst Community Organization Leaders	18 October 2019
Hearst & Archer Heights Community Leaders Meeting	13 November 2019
Federation of Women Contractors	14 November 2019
Archer Heights Community Organization Meeting	11 December 2019
Hearst Community Organization Forum	11 December 2019
Hispanic American Construction Industry	8 January 2020
Black Contractors Owners & Executives	14 January 2020
Black Contractors United	15 January 2020



FIGURE 1-22 Ground Breaking Ceremony

QUESTIONS WE ASKED BEFORE THE PROJECT WAS FULLY DEVELOPED:

1. WHAT DEFINES THE NEIGHBORHOOD AND COMMUNITY SURROUNDING THE PROJECT SITE?

The neighborhood surrounding the Cultivate Collective site—formerly LeClaire Courts in the Garfield Ridge community on Chicago's southwest side—is defined not just by its geography, but by its historical memory, cultural identity, intergenerational ties, and systemic challenges that have shaped and continue to influence the community's lived experience.

A Community Rooted in History and Resilience

LeClaire Courts, built in 1950, was one of Chicago's earliest attempts at integrated, low-rise public housing. Over time, it became home to a vibrant, predominantly African American community, where generations of families lived, grew up, and forged deep social bonds. As described by community members, LeClaire wasn't just a housing complex—it was a tight-knit ecosystem of neighbors, traditions, and shared experiences. However, its demolition in 2011 under the Chicago Housing Authority's Plan for Transformation displaced hundreds of families, many of whom retain strong cultural and emotional ties to the land.

Residents often speak of a "blood memory" of the area—a visceral connection to the soil, to family legacies, and to community cohesion that once flourished there. This enduring sense of belonging forms the emotional core of the neighborhood's identity, persisting even in the absence of its original built environment.

A Dynamic and Evolving Cultural Landscape

Today, the demographic fabric of the area is shifting. Garfield Ridge and its adjacent neighborhoods—Archer Heights, West Lawn, Clearing—are now home to a rising population of Latino families, with significant numbers of immigrants and multi-generational households. This cultural transformation has enriched the neighborhood's character while also surfacing new opportunities and challenges related to equity, representation, and access to services.

The community is a multi-ethnic mosaic, characterized by:

- Longtime Black families who trace their lineage to the LeClaire Courts era.
- Newer Latino immigrants navigating both the American experience and systemic barriers.
- A strong tradition of civic engagement, particularly among women leaders and elders.
- Bilingual, multi-generational households that blend traditional values with a vision for inclusive progress.

Community leaders, such as those in the Hearst Community Organization and Southwest Collective, actively steward this cultural continuity while pushing for systems-level change that prioritizes community-led development, racial equity, and environmental justice.

Defined by Disinvestment—and Now, Reinvestment

Despite its cultural richness, the area surrounding the project site has been heavily shaped by historic disinvestment including redlining, lack of economic opportunity, and environmental neglect.

Residents have faced disproportionate challenges:

- Poor air quality and elevated asthma rates due to industrial zoning and nearby highways.

- Food insecurity and lack of healthcare access, with the site situated in a federally designated health and food desert.

- Economic exclusion, where only 5% of jobs in the local industrial corridor are held by community residents.

The Academy for Global Citizenship's campus seeks to reverse these patterns and transform the site into a beacon of equity, sustainability, and community ownership through a Living Building Challenge-certified development that is fossil-fuel-free, net-positive in energy and water, and guided by community governance.

An Intergenerational, Participatory Community

What further defines this community is the active participation and multi-generational stewardship of its people. Alongside it's partner, Cultivate Collective, AGC has engaged:

- Over 1,000 residents through 50+ community events and design charrettes.

- A 100% minority Strategic Advisory Council and 96% minority-led Board.

- Stakeholders from ages 5 to 95, including youth, seniors, parents, and educators whose collective input shapes the physical and philosophical design of the campus.

The result is a neighborhood defined by a living dialogue between past, present, and future — one where families seek to return, where young people envision thriving futures, and where elders pass down wisdom and memory that inform AGC's mission.

In Summary

The neighborhood surrounding the Academy for Global Citizenship is not simply a geographic location, but a legacy of resilience, cultural heritage, and re-emerging opportunity. It is defined by:

- Deep historical ties to LeClaire Courts.

- Multicultural and intergenerational identity.

- Systemic inequities counterbalanced by community assets and activism.

- A collective vision to co-create a just, thriving, and regenerative future.

2. WHAT ARE THE PRIMARY NEEDS AND ASSETS OF THE NEIGHBORHOOD OR COMMUNITY?

Primary Needs

The community surrounding the Academy for Global Citizenship is contending with deep, intersecting challenges, shaped by a legacy of disinvestment and structural inequity:

Healthcare Access: Over 31,000 residents in the area are uninsured, and 46% of the community has been medically under served. Prior to our campus opening, there was no Federally Qualified Health Center within walking distance, contributing to chronic health disparities.

Food Insecurity: The area is considered a food desert — residents must travel over a mile to access fresh groceries. This gap directly contributes to elevated diet-related illnesses and limits opportunities for healthy living.

Educational Gaps: Local schools have historically been under-resourced. The neighborhood has lacked cradle-to-career learning pathways, early childhood resources, and high-quality public school options.

Economic Exclusion: Despite being home to thousands of capable residents, only 5% of jobs in the local industrial corridor are held by community members, reflecting a mismatch between local workforce readiness and regional employment opportunities.

Environmental Injustice: Proximity to highways and industrial zones has led to poor air quality, exacerbating asthma and other respiratory issues in local children and elders.

Community Assets

In spite of these challenges, the neighborhood possesses profound strengths and resilient assets:

Civic Engagement and Cultural Pride: The community is highly engaged, with over 1,000 residents participating in charrettes, focus groups, surveys, and events.

Strategic Location: Adjacent to I-55 and just 1.5 miles from Midway International Airport, the area is poised for economic revitalization if investments align with community needs.

Strong Intergenerational Bonds: Many families have deep roots in the area, especially among former residents of LeClaire Courts. This provides continuity, lived experience, and social cohesion.

Organized Local Leadership: The presence of groups like the Hearst Community Organization and Southwest Collective ensures consistent advocacy for equity, access, and representation.

3. WHO ARE THE MOST VULNERABLE OR DISINVESTED POPULATIONS IN THE COMMUNITY? WHAT ARE THEIR NEEDS AND ASSETS?

Most Vulnerable Populations

Former LeClaire Courts Residents: Displaced in 2011, these families still feel a strong connection to the land and bear the trauma of forced relocation.

Low-Income Households and Single Mothers: Many face barriers to affordable childcare, housing, and employment.

Black and Latino Residents: These groups continue to experience racial disparities in income, education, and health outcomes.

Immigrant Communities: Often undocumented or under insured, many lack access to healthcare and live with heightened vulnerability.

Seniors and Elders: Many are socially isolated and in need of community programming, healthcare access, and transportation.

Their Needs

- Affordable, walkable healthcare and wellness services
- Access to workforce development and job training
- Childcare, after school, and intergenerational programs
- Cultural affirmation and inclusion
- Safe public spaces, green areas, and improved infrastructure

Their Assets

- Cultural heritage and storytelling
- Community loyalty and rootedness
- Experience with organizing and self-advocacy
- Bilingual capacity
- Multi-generational households

4. HOW CAN THE PROJECT AVOID NEGATIVE IMPACTS OF THE NEIGHBORHOOD OR COMMUNITY?

Along with our partner Cultivate Collective we have taken extensive steps to ensure the project is not extractive or exclusionary, but rather healing and generative:

Inclusionary Governance: A 100% minority Strategic Advisory Council and 96% minority Board ensures that decision-making is rooted in the lived experience of the community.

Right of Return: Collaborations with the Chicago Housing Authority ensure former LeClaire Courts residents are part of the neighborhood redevelopment.

Community Benefits Agreement (CBA): A formal CBA ensures local hiring, affordable services, equitable contracting, and continued engagement with stakeholders.

Environmental Stewardship: LBC certification goals (net-positive energy and net-positive water) ensure ecological protection and improved air quality.

Access over Exclusivity: Every amenity, from wellness facilities to the skills library, is designed to be publicly accessible and benefit those who live closest to the site.

5. HOW CAN THE PROJECT HELP MEET THE NEEDS AND/OR FURTHER THE ASSETS OF THE COMMUNITY, INCLUDING ITS MOST DISINVESTED?

The Academy for Global Citizenship's community hub is a purpose-built, equity-centered model of community development. It actively meets needs while amplifying assets by:

- **Providing cradle-to-career educational pathways** through a tuition-free, dual-language, nature-based public K-8 school operated by AGC, alongside early childhood and adult education programming.

- **Offering economic mobility** through the Green Business Institute, which provides job training, apprenticeships, and entrepreneurship support for BIPOC residents.

- **Distributing over 100,000 pounds of locally grown food** annually, addressing both food insecurity and economic opportunity.

- **Creating 1,000 construction jobs and 125 permanent jobs**, with a focus on living wages, workforce development, and community equity stakes.

- **Restoring cultural memory** and enabling returning residents to reestablish roots through thoughtful design and community-led planning.

6. HOW MIGHT THE PROJECT REFLECT AND ADVANCE THE HISTORY, CULTURE, AND ASPIRATIONS OF THE COMMUNITIES OF WHICH IT IS A PART?

The Academy for Global Citizenship is intentionally designed to reflect and uplift the histories, cultures, and aspirations of its surrounding communities. It is not merely a development—it is a cultural reawakening and a community-led response to decades of displacement, underinvestment, and erasure.

Rooted in collective memory, Cultivate advances a vision that is for the community, by the community, with each program, structure, and space built to embody local values, voices, and visions for the future.

Core Strategies & Cultural Reflections

Historic Legacy & Cultural Memory: The project honors the rich legacy of LeClaire Courts as a historically Black, working-class neighborhood deeply shaped by migration, resilience, and family bonds. Community elders and former residents have been actively involved in the shaping of the project, ensuring that the neighborhood's story is carried forward.

Aspirational Pathways: Cradle-to-career educational programs, green job training, and intergenerational gathering spaces reflect the aspirations of community members to build a future grounded in equity, opportunity, and collective empowerment.

Community Stories in Design: Feedback and themes from residents, including unity, respect, cultural pride, and generational legacy, have been intentionally integrated into the physical and programmatic fabric of the Hub. This includes culturally affirming artwork, shared design language, and storytelling elements throughout the campus.

Signature Cultural Design Elements

Land Acknowledgment & Indigenous Collaboration: A permanent land acknowledgment, created in partnership with students and local tribal representatives, greets all visitors at the entrance of the school. This not only honors the original stewards of the land, but also educates future generations about the power of place and responsibility.

Wall Graphic Installation Celebrating Community History: A large-scale mural and visual timeline installed within the Hub celebrates the layered cultural, racial, and economic histories of the LeClaire Courts and broader Southwest Chicago serving as a living reminder of where we've been and where we're going.

Nature-Based Gathering Spaces Co-Designed with the Community: Outdoor areas across the campus, including gardens, learning circles, and reflection spaces, were designed in collaboration with local artists, elders, children, and families. These areas elevate community rituals, values, and environmental heritage in both form and function.

Together, these elements ensure that the Cultivate Hub does not simply sit on historic land — it rises in response to it, shaped by those whose lives, dreams, and histories are rooted there. It is a space of reflection, regeneration, and radical hope.

7. HOW MIGHT THE PROJECT REFLECT THE LOCAL CULTURE?

The AGC Hub is a direct expression of the local culture, artistry, values, and lived experiences of the surrounding community. Every design element and programmatic feature is intentionally shaped to reflect the cultural mosaic of Southwest Chicago, which is rich with African American and Latino heritage, intergenerational wisdom, and creative expression. This is not a generic development — it is a cultural landscape cultivated through authentic dialogue, collaborative design, and an unwavering commitment to place-based identity.

Ways the Project Reflects Local Culture

Bilingual and Culturally Affirming Spaces: The Hub ensures full language access through bilingual signage, materials, and programming — a vital consideration in a predominantly Latino community. The inclusion of Spanish and Indigenous language expressions ensures cultural fluency and accessibility across generations.

Local Business and Art Partnerships: Initiatives such as the Cultivate Café, operated by Back of the Yards Coffee Co., reflect the entrepreneurial spirit of the neighborhood. Programming in the Culinary Teaching Kitchen honors cultural food traditions and empowers local food producers.

Resident-Driven Aesthetic and Programming: The AGC site design incorporates visual storytelling, student art, and local craftsmanship, elevating community narratives across indoor and outdoor environments. Residents were not simply consulted; they are co-creators of the campus identity.

Spotlight: The Medicine Wheel Project

One of the most vibrant examples of cultural integration is the Medicine Wheel, an outdoor gathering and reflection space co-designed with the community:

Community-Rooted Artistic Process: The project began with an RFP inviting local artists to submit design ideas for a gathering space that would celebrate heritage, healing, and environmental justice. Selected artists worked in partnership with educators, students, families, and neighbors, whose visions directly shaped the final design.

Recycled Materials with Story: True to AGC's sustainability values, the space integrates reclaimed wood from Chicago Park District trees, which are currently being repurposed into custom seating. This commitment to reuse honors the land and supports circular economy practices.

Ceramics and Mosaic Art by the Community: Handmade ceramic faces and mosaic tiles crafted by students and community members are being installed on custom planters once the spring weather allows for safe application. These planters will soon be home to African and Latin American heritage crops, adding a living, edible dimension to cultural storytelling.

Blessing Ceremony and Cultural Celebration: The project was launched with a community blessing led by a curandera and music composer from Mexico, who traveled to Chicago to guide the ceremonial honoring of the space. It was a day of music, story, and ancestral reverence, and a powerful moment of collective pride.

The Medicine Wheel is more than an installation: it is a manifestation of collective memory, creativity, and environmental stewardship, crafted by and for the people it serves.



FIGURE 1-23 Grand Opening Ceremony



FIGURE 1-24 Ribbing Cutting Event.

I01-3 CULTURAL & SOCIAL EQUITY ASSESSMENT (FINAL AUDIT)

FINAL AUDIT

Evidence of the community's response to the project, such as photos from an event, survey responses, or publications about the project.

A COMMUNITY EMBEDDED IN THE COMMUNITY

AGC started with the community, and continues to be embedded through hosting community events, a Love Fridge, and block news. Below are links to community articles and events.



FIGURE 1-25 Community Food Fridge

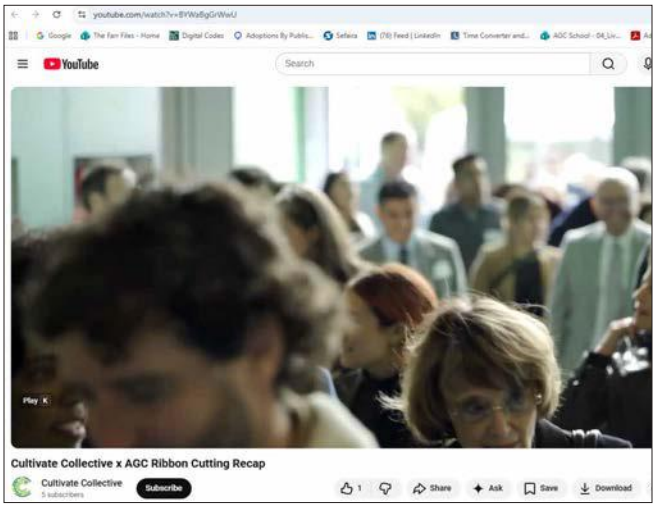

FIGURE 1-27 Ribbon Cutting Re-cap
https://www.youtube.com/watch?v=BYWaBgGrWwU



FIGURE 1-26 Medicine Wheel

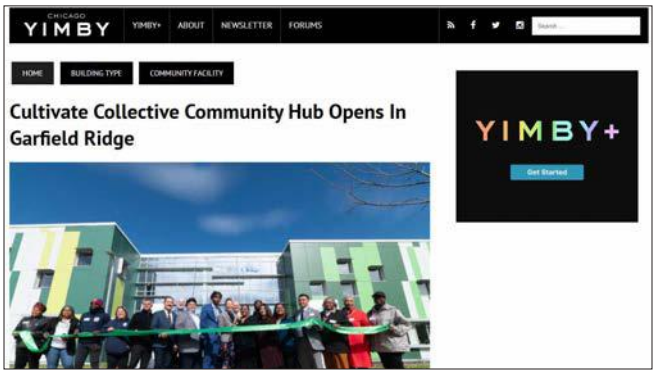

FIGURE 1-28 YIMBY Article
https://chicagoyimby.com/2023/10/cultivate-collective-community-hub-opens-in.html

I01-4 FERTILIZERS & PESTICIDES

INTENT

Provide a list of chemicals used and planned for use in the maintenance and operation of the on-site landscape and agriculture showing that they do not contain petrochemicals or that they meet the requirements of an applicable organic program.

ORGANIC CHEMICALS

High-quality compost, row cover, sticky traps, and the release of beneficial insects are the primary means to combat insect pressure. Organic chemicals are the secondary means to combat insects.

- Pyganic®: Made from botanically derived active ingredients Pyganic® Specialty is a certified organic pesticide that kills a broad spectrum of pests from aphids to white-flies. It can be used on ornamental plants, vegetables, fruit and nut trees. With the active ingredient pyrethrin, extracted from chrysanthemums Pyganic® Specialty is an effective solution for killing your garden pests.

- DiPel is a biological insecticide containing Bacillus thuringiensis subsp. Kurstaki (Btk) strain ABTS-351 that offers reliable, broad-spectrum caterpillar control on more than 200 crops. DiPel contains a unique balance of multiple insecticidal proteins and Bt spores that maximize efficacy against lepidopteran pests.

None of the selected chemicals and pesticides chosen for landscaping and agriculture contain petrochemicals. No petrochemical fertilizers or pesticides will be used for the operation and maintenance of the on-site landscape.

I02-1 AGRICULTURAL NARRATIVE

INTENT

Provide a narrative written by the landscape architect or other appropriate project team member describing the methods of agriculture used, and a long-term support and harvest plan.

STRATEGIES & IMPLEMENTATION

Urban Growers Collective (UGC) is a non-profit organization that builds urban farms. UGC shall be responsible for overseeing farming operations. The team works to dismantle inequities and structural racism through community food system development, which has historically prevented communities of color from living healthy, vibrant lives.

UGC actively operates (8) production-oriented farms on over eighteen acres. The organization offers opportunities for staff-led education, training, leadership development, and food distribution. Each farm utilizes organic growing methods, intensive growing practices, and year-round production strategies to best maximize growing space. The products of these farms enable UGC to increase community access to affordable, nutritionally dense food.

UGC is not a certified organic farmer, however, the organization has followed organic standards for the past 20 years. We employ a range of innovative and eco-conscious growing methods that prioritize the long-term health agricultural and environmental systems. These methods reduce the ecological footprint of farming while ensuring the production of healthy and nutritious crops.

Methodologies are as follows:
- Crop Rotation
- Cover Cropping
- Drip Irrigation
- Reduced Reliance on Fertilizers and Pesticides
- Composting
- Integrated Pest Management
- Natural Pest and Weed Control
- Minimization of Soil Degradation

Embracing sustainable growing methods and prioritizing ecosystem health has significantly reduced the environmental impact associated with importing food to the campus. These methodologies aim to conserve water and energy and reduce greenhouse gas emissions.

The farm will impose composting techniques and utilize manure generated by chickens to enrich the soil. Compost will be used within the hoop houses and across the landscaping. UGC has established a partnership with Ken Dunn of City Farm to manage any surplus organic matter that cannot be processed on-site. Additionally, UGC maintains a relationship with Dr. Abete at the Niles Animal Hospital, who actively cares for the chickens living on the campus. These comprehensive measures underscore our commitment to sustainable and responsible agricultural practices.

NON-EDIBLE PLANTS

The urban farmers will not be growing non-edible plants. All non-edible plants selected by the Landscape Architect are native species. Reference **Imperative 01** for more information on non-edible plants.

CLIMATE & PROPOSED SPECIES

The urban farm campus plan incorporates (10) hoop houses which are fundamental to extending the growing season. They are constructed of arched frames and polyethylene sheets which shield plants from Chicago's harsh winter weather conditions. These structures maintain the ability to trap and store heat results in micro-climate conditions, extending the growing season beyond the typical outdoor limit. The extra warmth protects crops from frost during late fall and early spring. Fruits, vegetables, herbs, and edible flowers will be grown on site. During the winter months, fresh greens such as kale, spinach, and collards will be grown in the hoop houses.

Hoop houses allow for a wider variety of crops often resulting in multiple harvests in a single season. This methodology bolsters agricultural productivity, guarantees food security and stability, and reduces

reliance on imported produce. The proposed agricultural approach will maximize potential crop yield and promote a deep connection between the students and the food they consume. UGC's philosophy invites students, faculty, and visitors to explore the myriad of culinary possibilities that an edible landscape offers.

OCCUPANTS ACCESS TO AGRICULTURE

Through inquiry and place-based curriculum, students will participate in every facet of the food cycle, from planting seeds and caring for chickens to harvesting vegetables and eggs, and planning menus. Students will begin to identify as an integral part of the ecosystem as their connection with nature deepens from following their meals from farm to table.

Over the past three years, AGC and UGC devised the school's crop plan by thoroughly analyzing menu requirements and extensively discussing the incorporation of cultural staples tailored to the student body. The selected crops serve as the cornerstone of AGC's menu.

COMMITMENT TO AGRICULTURE

As part of the Chicago Planned Development agreement, this site was zoned for agricultural use. Please refer to **Appendix P-A** and **Appendix P-H** for the Planned Development agreement, and the commitment letter from Cultivate Collective. This agreement requires this location to remain a farm indefinitely therefore supersedes a 15-year commitment.

I02-3 RESILIENCE NARRATIVE & CALCULATIONS

INTENT

Document the following: 1) Provisions made to ensure access to the required quantity of emergency food. 2) Maintenance plans addressing how food quality will be maintained and how periodic resupplying will be managed without waste. 3) Calculations showing compliance with Imperative requirements.

FOOD ACCESS PROVISIONS

As a public school, Academy for Global Citizenship (AGC) holds aspirations to set the benchmark for delivering the highest quality, nutrient-dense menu. The school will provide over 360,000 meals annually to its student body.

Urban Growers Collective (UGC) will harvest five days a week to ensure an ample supply for the daily breakfast and lunch required to sustain AGC's student population. Quantities will depend on the crops harvested on a given day, i.e., days when squash is harvested weigh more than days when lettuce is harvested. There are no permanent residents residing on the premises. All crops cultivated on-site will be used exclusively for student and faculty meals from Monday through Friday. However, there are procedures in place to ensure adequate food storage for the student body. The total foods storage space equates to roughly 980 ft^2 or 1,136 ft.

Example Menu

Meal	Food	Ingredient(s)	Volume	kcals
Breakfast	Vegetable Omelet	Egg	0.1	213
		Garlic	0.125	25.25
		Onion	0.2	13.4
		Tomato	0.2	6.4
		Spinach	0.2	1.4
		Butter	0.05	81.3
	Seasoned Potato	Potato	2	230
		Oregano	1	17
		Shallot	5	35
		Butter	0.05	81.3
		Breakfast Total (kcal)		**704.05**
Lunch	Chickpea Salad	Chickpeas	2.5	675
		Snow Peas	0.5	13
		Cabbage	2	40
		Tomato	0.5	16
		Cucumber	1	16
		Onion	0.5	33.5
		Garlic	0.125	25.25
		Lunch Total (kcal)		**818.75**
Dinner	Vegitarian Korean Taco	Lettuce, Romaine	1	8
		Black Beans	0.5	113.5
		Kidney Beans	1.5	337.5
		Garlic	0.1	20.2
		Shallots	5	35
		Cabbage	1	20
		Cheese	0.1	53.1
		Carrots	0.2	10.4
		Ginger	0.05	3.85
	Boiled Mixed Greens	Collard Greens	0.5	24.5
		Spinach	0.5	3.5
		Kale	0.5	24.5
		Lunch Total (kcal)		**654.05**
		Total Daily Calories		**2176.85**

FIGURE 1-29 Sample Menu using on-site grown produce

FOOD MAINTENANCE

The Academy for Global Citizenship's Culinary team has devised a comprehensive strategy to maximize the yield from the harvests. Serving fresh produce and healthy meals to students and faculty is the primary objective of the school, but the culinary team is also dedicated to preserving abundant harvests. The team intends to can, freeze, and dry harvests to ensure that the seasonal bounty is enjoyed well beyond its initial harvest period. This commitment not only minimizes food waste but also guarantees a sustainable and nutritious food source throughout the year. Produce cultivated will primarily serve as ingredients for school meals. Any surplus harvest will be available for purchase at the school store, with proceeds directed towards enhancing food accessibility for the local community.

Additionally, UGC has established a meaningful collaboration with Esperanza Health Center to develop Veggie Rx Food Boxes. The boxes are designed to promote improved health and support families facing food insecurity. This multi-faceted approach underscores the commitment to sustainable agriculture and holistic community well-being.

Harvested Food and Calories

Food Type	Food	Calories (kcals)	Volume	Volume/Cubic Foot Conversion	Total (kcals) per 1 Cubic Foot
Vegetables	Potato	115	1 cup	0.001	115,000
	Cucumber	16	1 cup	0.001	16,000
	Tomato	32	1 cup	0.001	32,000
	Carrots	52	1 cup	0.001	52,000
Leafy Greens	Kale	33	1 cup	0.001	33,000
	Spinach	7	1 cup	0.001	7,000
	Collard Greens, Boiled	49	1 cup	0.001	49,000
	Cabbage	20	1 cup	0.001	20,000
	Lettuce, Romaine	8	1 cup	0.001	8,000
Onions	Onions	67	1 cup	0.001	67,000
	Shallots	7	1 Tablespoons	0.0000625	112,000
	Leeks	54	1 cup	0.001	54,000
	Chives	1	1 Tablespoons	0.0000625	16,000
	Garlic	202	1 cup	0.001	202,000
Herbs and Spices	Sage	6	1 Tablespoons	0.0000625	96,000
	Thyme	12	1 Tablespoons	0.0000625	192,000
	Oregano	17	1 Tablespoons	0.0000625	272,000
	Cilantro	4	1 cup	0.001	4,000
	Ginger	77	1 cup	0.001	77,000
	Parsley	22	1 cup	0.001	22,000
Animal Products	Butter	1626	1 cup	0.001	1,626,000
	Eggs, 30 Cell egg crate	2130	4"x12"x12" Crate	0.3333	6,391
	Honey	1030	1 cup	0.001	1,030,000
	Cheese, Cheddar	531	1 cup	0.001	531,000
	Milk, Whole	146	1 cup	0.001	146,000
Legumes	Snow Peas, Raw	26	1 cup	0.001	26,000
	Kidney Beans	225	1 cup	0.001	225,000
	Black Beans	227	1 cup	0.001	227,000
	Soy Beans	240	1 cup	0.001	240,000
	Chickpeas	270	1 cup	0.001	270,000
	Lentil	229	1 cup	0.001	229,000
				Average Calories (kcal) Per Cubic Foot	193,626
				Total Storage Capacity (Cubic Foot)	1,136
				Total Possible Calories Stored (kcal)	**220,036,023**

FIGURE 1-30 Harvested Food Calculations

Calories per Occupant

Occupant	Count (#)	kcal per day (#)	Total Calories (kCal)
Early Childhood Development	102	2,100	214,200
Kindergarden through 1st Grade	120	2,100	252,000
2nd through 3rd Grade	120	2,100	252,000
4th through 5th Grade	108	2,100	226,800
Middle School	150	2,100	315,000
Faculty	83	2,100	174,300
Total per Day	**683**		**1,434,300**
		Total for 3-Day Crisis	**4,302,900**

FIGURE 1-31 Calories per Occupant

Conversions
3 Teaspoons = 1 Table Spoon
16 Tablespoons = 1 Cup
16,000 Tablespoons = 1 Cubic Foot
1000 Cups = 1 Cubic Foot

FIGURE 1-32 Conversion Chart

Food Storage Required (Volume)			
Measurement	**Count**	**Volume/Cubic Foot Conversion**	**Total (kcals) per 1 Cubic Foot**
Total Tablespoons	6	0.0000625	0.000375
Total Cups	21	0.001	0.021
Volume Cubic Foot (eggs only)	0.1	0.3333	0.03333
Total Volume of Food Per Person (Cubic Foot)			**0.054705**
Total Occupants		675	
Total Volume for Full Occupancy (1-Day)			36.93
Total Volume for Full Occupancy (3-Days)			**110.78**

FIGURE 1-33 Food Storage Required

Food Volume (Storage) (Provided)								
Storage Item	**Width (in)**	**Depth (in)**	**Area (in)**	**Count**	**Sq.in to sq.ft Conversion**	**Area (sf)**	**Height (ft)**	**Volume (Cubic Foot)**
Cooler Shelf	42	21	882	4	0.007	6.2	1	24.7
	48	21	1008	24	0.007	7.1	1	169.3
	60	21	1260	8	0.007	8.8	1	70.6
	48	21	1008	8	0.007	7.1	1	56.4
	30	21	630	8	0.007	4.4	1	35.3
	48	21	1008	16	0.007	7.1	1	112.9
	52	21	1092	4	0.007	7.6	1	30.6
Dry Storage Shelf	48	21	1008	16	0.007	7.1	1	112.9
	42	21	882	8	0.007	6.2	1	49.4
	54	21	1134	16	0.007	7.9	1	127.0
	60	21	1260	4	0.007	8.8	1	35.3
Storage Item	**Width (ft)**	**Depth (ft)**	**Useable Floor Area (sf)**	**Useable Height (ft)**				
Walk-in Cooler	14'-11"	8'-2"	70.3	2				140.7
Walk-in Freezer	15'-10"	11'-1"	85.7	2				171.3
							Total Storage Cubic Feet (Actual)	1136.4
							Total Storage Cubic Feet Required for 3-Day Food Emergency	**111**
							3-Day Food Requirement as a Percentage of Total Storage	**10%**

FIGURE 1-34 Food Volume Storage Provided

I02-4 PHOTOGRAPHS & GRAPHIC DEPICTION

INTENT

Provide 1. Representative photographs and/or diagrams showing the agriculture area and use patterns throughout the year. 2. If the agriculture area has not yet been used across all seasons, provide diagrams or drawings of predicted use patterns.



FIGURE 1-35 Agriculture area in the Winter



FIGURE 1-36 Agriculture area in the Spring



FIGURE 1-37 Agriculture area in the Summer



FIGURE 1-38 Agriculture area in the Fall

I02-5 ANNOTATED SITE PLAN & AGRICULTURE AREA CALCULATION

INTENT

Provide 1. Annotated and dimensioned site plan, keyed to I02-1 2. Narrative, showing agricultural locations and calculations demonstrating that the proper amount of required urban agriculture has been provided.



FIGURE 1-39 Annotated Plan

Percentage of Total Project Area for Agriculture				
Hoop House Area Calculations				
Width (ft)	Length (ft)	Area (sf)	Count	Total Area (sf)
24	94	2,256	9	20,304

Requirements for Living Transect 5			
Site Area (sf)	Required by Transect 5 (%)		Total Area Required (sf)
268,180		5%	13,409.00
Site Area (sf)	**Total Agricultural Area Provided (sf)**		**Total (%) Provided**
268,180	**20,304.00**		**7.57%**

FIGURE 1-40 Percentage of Total Project Area for Agriculture

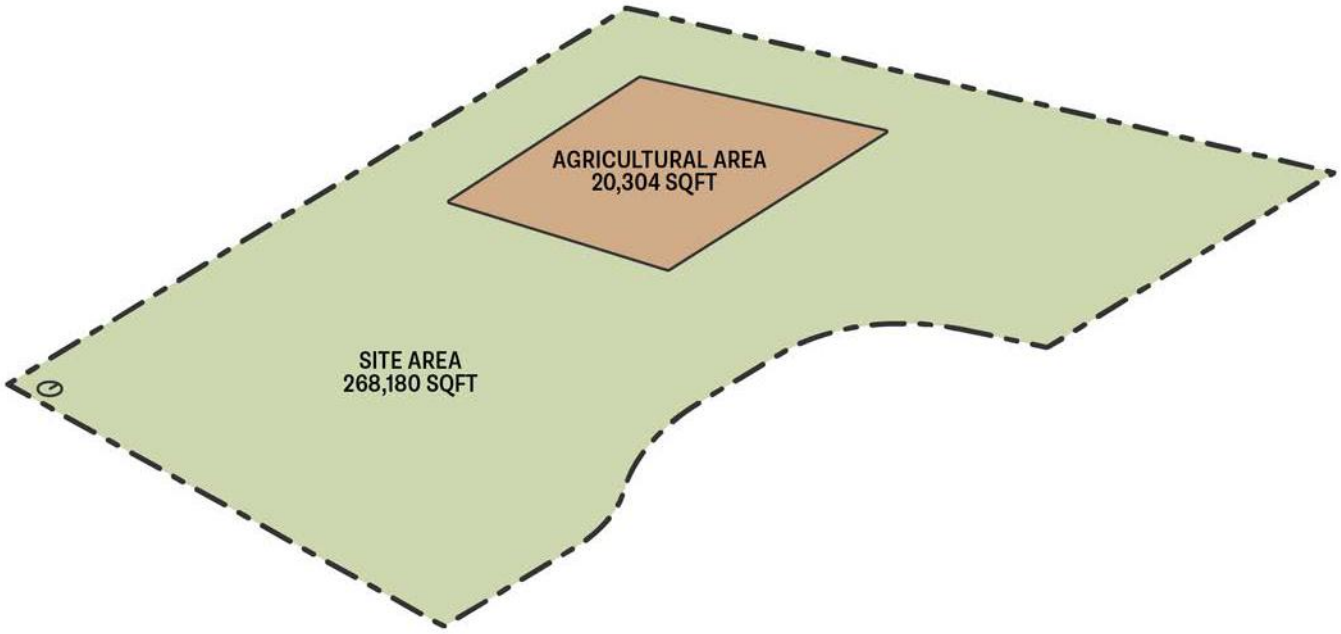

FIGURE 1-41 Diagram of Total Project Area for Agriculture

I03-1 RECEIPTS

INTENT

Receipt for the Habitat Exchange contribution from the approved land trust reflecting the required habitat offset area.

RECEIPT

Please see **Exception PL-012**.

I03-2 LEGAL DOCUMENTS

INTENT

An official letter or document from the approved land trust stating the terms of the habitat offset and confirming that the selected land trust meets pathway requirements.

LEGAL DOCUMENT

Please see **Exception PL-012**.

I04-1 DENSITY DOCUMENTATION

INTENT

Calculations that show Project Area FAR before and after the project, or images that clearly show that the project has increased the density from the original condition.

AREA FAR BEFORE PROJECT

Gross Square Footage	0.00
Net Site FAR	268,180.00
Total FAR	0.00

AREA FAR AFTER PROJECT

Gross Square Footage	70,077.00
Net Site FAR	268,180.00
Total FAR	0.26

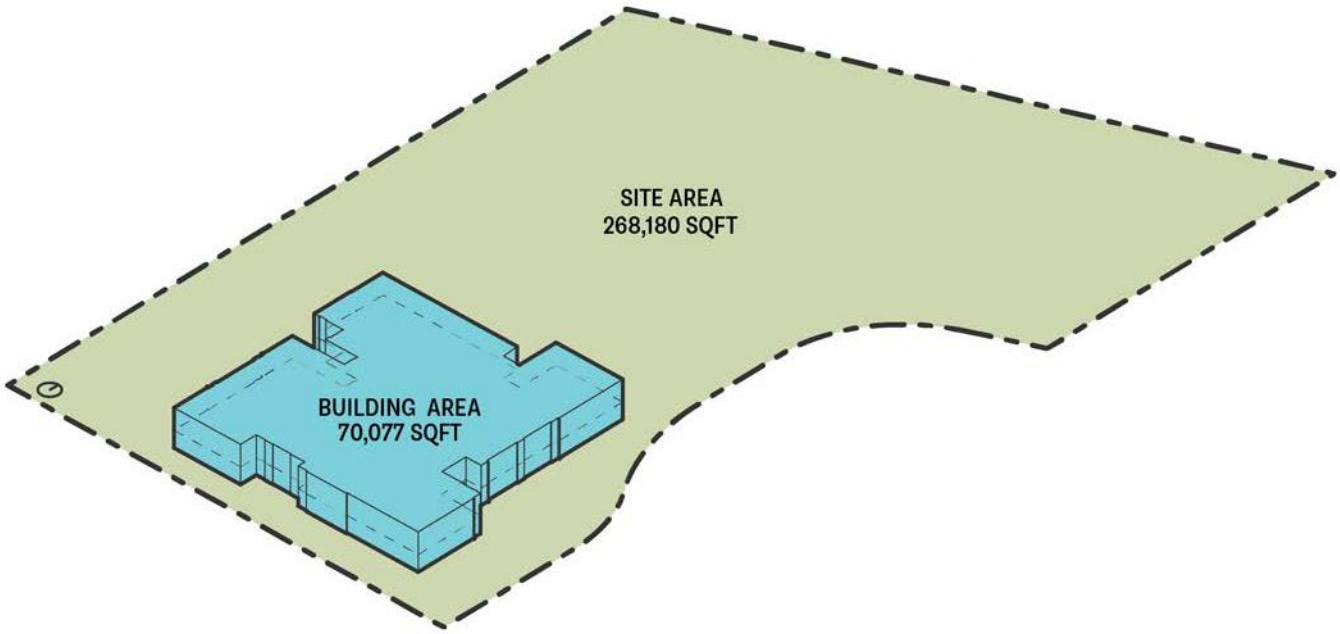

FIGURE 1-42 Project Floor Area Ratio (FAR) Diagram

I04-2 HUMAN SCALE & HUMAN POWERED DOCUMENTATION

INTENT

Provide 1. A narrative describing how the project has addressed Imperative requirements and promotes pedestrian- oriented communities that reduce the use of fossil fuel vehicles. 2. A Plan indicating location and dimension of spaces available for community gathering. 3. Calculations showing the amount of compliant storage for human- powered vehicles. 4. Photographs illustrating narrative contents.

A PEDESTRIAN CENTERED DEVELOPMENT

The Academy for Global Citizenship (AGC) promotes a pedestrian centric development by requesting Improvements upon 44th street and a Divvy Station at Hearst Park, in addition to on-site bicycle storage and showers. See **Appendix P-B** for letters documenting these requests and **Appendix P-F** for an enlarged plan of the human powered storage, parking areas, planting areas, and showers. Calculations are documented in **I04-4** (**Figure 1-40**).

AGC has an expected student population of 600, of which we assume only a portion are able to ride a bicycle to school. Please see **I04-4**, (**Figure 1-40**) for calculations.

AGC has provided for 2 EV Charging stations within the 25 space parking lot.

AGC was designed as a low rise building in keeping with the expected future development to the east. Additionally, the berm breaks down the mass of the building. All of the exterior spaces are open to the community every day all year, except for some areas that are secured during the school day and the early childhood play area which needs to be secured per state regulations. Please see **I04-4** (**Figure 1-40**) for calculations and **Appendix P-G** for an enlarged plan.

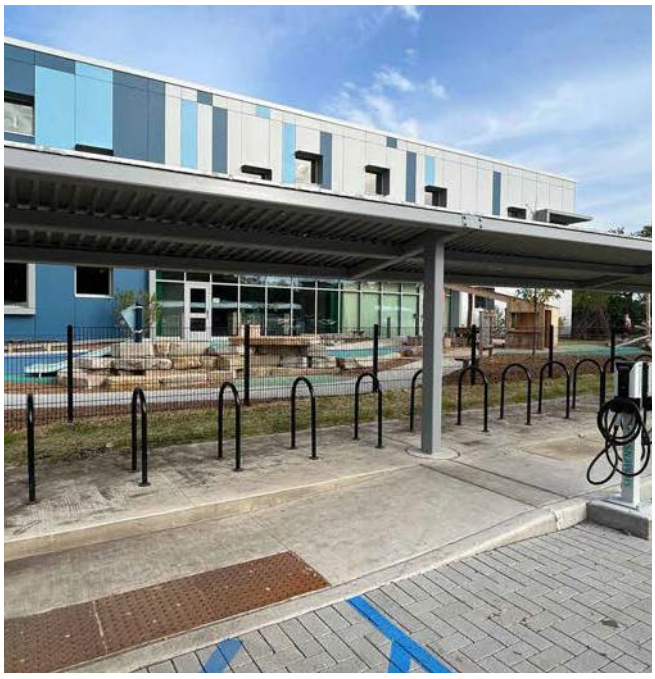

FIGURE 1-43 Bike Storage

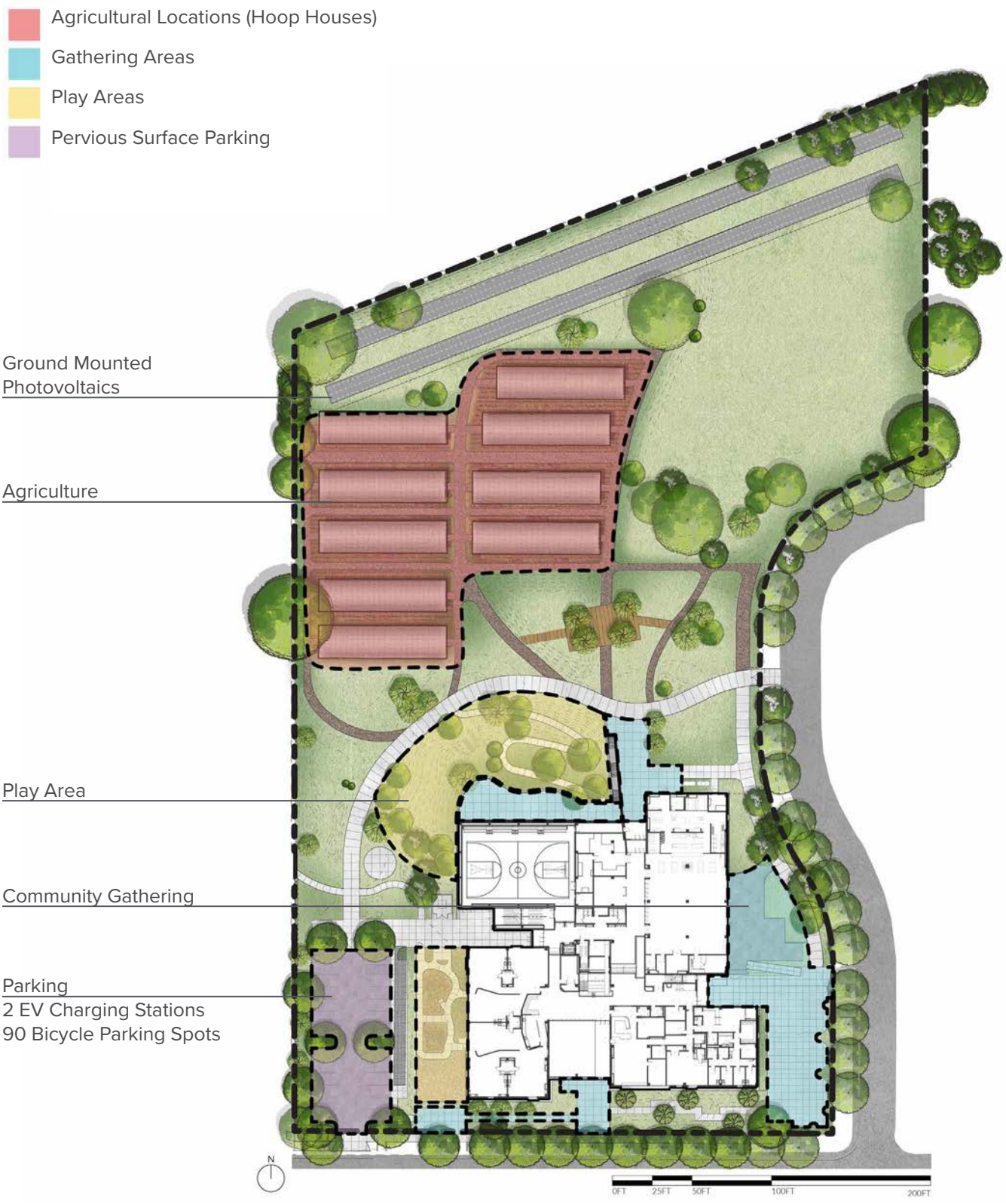

FIGURE 1-44 Plan indicating Location and Dimension of Spaces available for Community Gathering

I04-3 SOV REDUCTION BEST PRACTICES DOCUMENTATION

INTENT

Provide 1. A narrative and graphics describing the best practices employed to encourage human-powered travel or shared transit and reduce fossil fuel-based SOV trips. 2. Evidence of advocacy to promote a human-powered community, such as testimony to elected officials or a letter to the appropriate local jurisdictional authority.

SOV REDUCTION

AGC reduces Single Occupancy Vehicle (SOV) in 4 ways. First, we have advocated for improved pedestrian access along 44th street to the Cicero bus and enhanced the sidewalk directly in front of the campus (see **Appendix P-E** and **Figures 1-37** and **1-38**). Second, we advocated for the installation of a Divvy (Chicago's bike sharing program) (see **Appendix P-B**). Third, AGC has a carpool policy that coordinates ride sharing among families, that it facilitates each academic year (see **Appendix P-C**). Fourth, in keeping with the curriculum of environmental stewardship, AGC surveys the class each year on how they get to and from school.



FIGURE 1-45 Installed DIVY Station



FIGURE 1-46 Installed DIVY Station

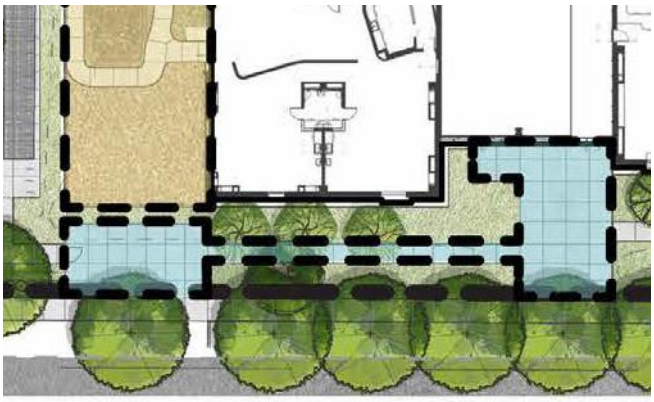

FIGURE 1-47 Enhanced Sidewalk - Plan



FIGURE 1-48 Enhanced Sidewalk

I04-4 PARKING DOCUMENTATION

INTENT

Provide: 1. Dimensioned drawings and calculations showing the location and area of the total impervious and pervious surface parking area, expanses of surface parking before interruption by plantings, gathering areas, human-powered-vehicle storage, and EV Parking spots. 2. Photos supporting the above drawings.

CALCULATIONS

See **Figure 1-40** for calculations and **Appendix P-F & P-G** for dimensioned Plans.



FIGURE 1-49 Dimensioned Plan showing the Location and Area of the Pervious Surface Parking, Gathering Areas, Bike Storage, and EV Parking Spots

Parking Requirements for Living Transect 5		
Site Area (sf)	Maximum Allowed by Transcet 5 (%)	Total Area Allowed (sf)
268,180	5%	13,409
Site Area (sf)	Total Parking Area Provided (sf)	Total (%) Provided
268,180	2.67%	7,167.5

Gathering Space Calculations		
Key Tag	Space	Area (sf)
1	Northern Gathering Space 1	1,578
2	Northern Gathering Space 2	2,609
3	Northern Playground	13,188
4	Eastern Market Area	9,685
5	Western Playground	4,158
6	Southern Gathering Space	2,155
	Total Area	**33,373**

Bicycle Parking Requirements	
FTE	Count
Grades 6-8 (age 11-14)	150
Faculty and Staff	83
Total FTE for bicycles	233
15%	
Spaces Required	35
Spaces Provided	90

Parking Separation (Plantings)				
Actual Parking Area Before Separation				
Width (m)	Length (m)	Meters to Feet Conversion	Width (ft)	Length (ft)
20	30	3.28	65.6	98.4
Actual Parking Area After Separation				
Width (m)	Length (m)	Meters to Feet Conversion	Width (ft)	Length (ft)
17.7	19.2	3.28	58	63
17.7	16.5	3.28	58	54

FIGURE 1-50 Calculations



FIGURE 1-51 EV Parking Charger



FIGURE 1-52 Pervious Surface Parking

PL-012 SMALL NONPROFIT ORGANIZATIONS

INTENT

In lieu of a financial contribution, projects owned by small nonprofit organizations may volunteer a minimum of 200 hours or 5 hours per full-time-equivalent employee during the duration of project design, construction, and performance periods with an approved land trust that is actively responsible for the purchase and/or permanent easement, as well as ongoing stewardship, of conservation tracts of land in excess of 100 acres. Alternatively, volunteer hours may occur with a nonprofit conservation organization with similar goals of an approved land trust.

For **Imperative 03**, Habitat Exchange, the Academy for Global Citizenship is utilizing volunteer hours at local parks, forest preserves, and beaches in lieu of a financial contribution (PL-012).

HABITAT EXCHANGE MET BY VOLUNTEERS

The Academy for Global Citizenship (AGC), a K-8 school in South-West Chicago, is on track for full Living Building Challenge Certification. Within the Place Petal, we request to utilize volunteer stewardship of natural areas of 5 hours per full FTE in lieu of a financial contribution (see Appendix P-D for Approved Request for Ruling).

For our project, for Imperative 03, the school as part of its curriculum volunteers at various to do habitat restoration at various ecosystem around Chicago Metro Area and Puerto Rico. The types of activities range from removing invasive species, reintroducing native aquatic and riparian plants, and enhancing water quality through green infrastructure.

With an FTE of 83, per PL-012, AGC should provide at least 200 hours of ecosystem maintenance.

See Figure 1-41 for a list of activities performed during the 2023-2024 academic year, totaling approximately 500 volunteer hours across all grades and adult leaders.

For information on the various organizations, see:

Caras con Causas in Cataño, Puerto Rico*
https://www.causapr.org

Dunes Learning Center
https://duneslearningcenter.org

Urban Rivers
https://urbanrivers.org

Cultivate Collective
https://cultivate-collective.org

*Our partnership with Caras Con Causas provides students with hands-on ecological education, focusing on reforestation, native species, and flood mitigation through immersive work in mangrove restoration alongside Puerto Rican environmentalists. This collaboration also offers rich cultural immersion experiences, empowering students to deepen their bilingual skills and build cross-cultural understanding through shared community activities and historical learning.

Event	Location	Date	Number of students	Hours of Service per Student	Total Hours
Caras con Causas in Cataño, Puerto Rico					
Mangrove restoration	Catano, Puerto Rico	4/22/2024	12	15	180
Mangrove restoration	Catano, Puerto Rico	2/3/2025	15	15	225
Dunes Learning Center, Chesterton, Indiana					
Invasives species removal	Indiana Dunes National Park	4/22/2024	5	3	15
Urban Rivers, Chicago, Illinois					
Wild Mile floating river habitat rebuilding	905 W Eastman St, Chicago, IL 60642	Fall 2024	108	1	108
Cultivate Collective, Chicago, Illinois					
Native species planting	4942 W. 44th St. Chicago, IL 60638	5/23/25	56	1	56
Total					**584**

FIGURE 1-53 Table of Volunteer Hours



WATER

INTRODUCTION

05 - RESPONSIBLE WATER USE

I05-1 Potable Water Use Reduction Documentation
I05-2 Irrigation Documentation
I05-3 Storm Water Documentation
I05-4 Treatment Documentation
I05-5 Combined Sewer System Documentation

06 - NET POSITIVE WATER

I06-1 Water Narrative
I06-2 Annual Water Balance Diagram
I06-3 Metered Data Table
I06-4 Biosolids + Leachate Disposal Documentation
I06-5 Resilience
I06-6 Photographs

EXCEPTIONS

WT-002 Potable Water Use for Farm Operations
WT-003 Municipal Water Supply for Potable Sources
WT-004 Municipal Water Supply for Fire Protections

APPENDICES

W-A Planting Plans
W-B Stormwater and Rainwater Narrative
W-C Water Treatment Plant Data
W-D Farm Water Irrigation Future Cross Connect
W-E Advocacy for Rainwater for Potable Uses
W-F Plumbing Fixtures Schedule
W-G CSO Area Map



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INTRODUCTION

THE WATER PETAL

The Academy For Global Citizenship (AGC) addresses the two main tenets of the two water imperatives of reducing potable water intake and reducing sanitary and storm outflows resulting in a net zero water balance. AGC achieves this through two integrated strategies, first the project reduces water usage with low flow fixtures supplemented with a rainwater harvesting system, and second, the site incorporates a stormwater management system that reduces the post development combined potable and storm water leaving the site to less than a baseline pre-human settlement site.

MUNICIPAL WATER INFRASTRUCTURE

AGC, as described in Appendix W-B, is located on an urbanized site at the portage of the great lakes and Mississippi watersheds. Due to current regulations requiring the use of municipally supplied potable water for most school uses, there is a connection to the Chicago Department of Water Management (DWM) water distribution system. Similarly, current regulations require AGC to connect its wastewater flows to the Chicago Combined Sanitary-Storm (CS) system. All stormwater and wastewater discharge from AGC flows to the Stickney Water Treatment Plant via the CS. Effluent from the Stickney plant enters the Chicago Ship and Sanitary Canal after physical and biological treatment, eventually draining to the Mississippi River. Refer to **Appendix W-X** for a cut sheet describing the treatment process and nutrient recovery techniques employed by the Stickney Plant.

THE STORMWATER SYSTEM

The stormwater system as described in **Appendix W-B** consists of three main elements, Localized storage, infiltration, and rainwater harvesting. Localized storage is provided by depressions created within rain gardens and bioretention areas strategically located around the campus. Infiltration is provided by the implementation of native plantings and penetration through the subsurface clay into a sand seam. Over 70% of the site is landscape with 9% planted with native Illinois prairie plants which have deep roots and break up the soil to increase its infiltration over turf grass. Additional volumetric removal is provided by evapotranspiration provided by the native plantings and shallow storage provided within the rain gardens and bioretention areas. The project site soil profile consists of a clay layer fairly close to the surface that prevents deep and generous infiltration. However, at the rain gardens, we have installed vertical gravel shafts to allow the surface water to 'infiltrate' into this sand seam and further into the local aquifer. The third major strategy, is the installation of the rainwater harvesting system which is sized to accommodate 100% of the roof stormwater during a 25 year-24 hour event. (See more below on the rainwater harvesting system).

THE RAINWATER HARVESTING SYSTEM

In addition to reducing potable water demand through low flow fixtures, AGC has built a rainwater harvesting system to accommodate 100% of the potable daily water demand, however, due to municipal objections it will currently only be used for toilet flushing. Space on the campus and space within the building's water room has been set aside for the future addition of a blackwater treatment, reuse, and disposal system should future regulations allow its use. The design of the system starts with the roof, which is pitched in a 'V' shape toward several central drains to minimize piping and optimize the structural frame. From those storm drains the storm water is run through a pre-flush, then pumped into the 60,000 gallon cistern. From there the water is drawn and filtered on a daily basis to the day tank upon which it is sent to the end use, in our case, to flush toilets. It is important to note that we advocated successfully for non-chlorine disinfectant and we have added 'T's and valves in the system to allow for future connection to the farm irrigation system and the main potable water system if and when the municipality will allow such a connection. In addition to harvesting rainwater to offset potable water usage, the rainwater is collected, treated, and stored in such a way that provides emergency water should it ever be needed. At full operating times, the cistern can supply approximately 20 days of emergency water to the school.

NET ZERO WATER

Net Zero Water is achieved through the strategies described as the total amount of water (stormwater and wastewater) is significantly less than that of a baseline pre-human settlement condition. Though there is water supplied by Chicago DWM, the project offsets that usage with a significant decrease in stormwater discharge.

The AGC provides a 52% reduction in potable water use when compared to a baseline condition. Refer to I05.1 tables for reference.

Additionally, we are pursuing exceptions for:
WT-002 - Potable Water Use For Farm Operations
WT-003 - Municipal Water Supply for Potable Sources
WT-004 - Municipal Water Supply for Fire Protection

I05-1 POTABLE WATER USE REDUCTION DOCUMENTATION (READY AUDIT)

INTENT

Show calculations to achieve 50% baseline water use reduction.

DOCUMENTATION

See **Figures 2-01, -02, & -03** below and **Appendix W-F** for fixture schedule with flow rates.

BASELINE WATER USE REDUCTION

Occupant	Count	gal/day	Days Per Year	Total	Remarks
Students	600	8.5	185	943,500.00	Per Table 5-1
Faculty/Staff	78	47.3	185	682,539.00	To be conservative, assumed included in Table 5-1 average per student. This also includes additional usage associcated with the cafeteria.
Vistors	20	34.8	185	128,760.00	Assumes same usage as proposed but using typical flow rates per EPA estimates. Toilet flushing is included here. This calculation assumes all-day visitors which is conservative since school visitors are typically all-day but clinic visitors are limited.
Clinic	5	36.1	365	65,882.50	Assumes same usage as proposed but using typical flow rates per EPA estimates. Toilet flushing is included here.
Events	600	1.8	5	5,520.00	LBC baseline usage for public assembly
Total Gal. Per Year				**1,826,201.50**	

PROPOSED WATER USE REDUCTION

(before rainwater harvesting)

Occupancy	Count	Gal/Day	Day/Year	Annual	Remarks
Students	600	2.63	185	291,375.00	Typical days in a school year
Faculty/Staff	78	20.07	185	289,610.10	Typical days in a school year. This also includes additional usage associcated with the cafeteria
Visitors	20	1.50	185	5,550.00	Visitors include all day visitors and assumed high as a method to anticipate high clinic visitor use. This number is estimated high to allow for fluctuation and use of dishwashers and other cafeteria kitchen uses.
Clinic	5	14.00	365	25,550.00	Clinic Employees; Open year round
Events	600	1.84	5	5,520.00	Estimated high to be conservative
Total				**617,605.10**	
Percentage Reduction				**66%**	

FIGURE 2-01 Water End Use Totals (summary)

DETAILED ASSUMPTIONS (Proposed Water Use)

Flow Demands	People Per Day	Daily Use (#)	Flow Rate (gpm)	Time (min)	Usage (gal)/day	Total (gal)/day	Remarks
Students				per student	per day		
Bathroom Sink	600	2.50	0.50	0.50	0.63	*375.00*	
Toilet	600	-	-	-	-	-	Water usage eliminated by rainwater harvesting supply only
Kitchen Sink	600	1.00	1.00	1.00	1.00	*600.00*	
Consumption	600	2.00	0.50	1.00	1.00	*600.00*	
				Total	**2.63**	***1,575.00***	
Faculty/Staff				per Faculty-Staff	per day		
Bathroom Sink	78	4.00	0.50	1.00	2.00	*156.00*	
Toilet	78	-	-	-	-	-	Water usage eliminated by rainwater harvesting supply only
Dishwasher	1	4.00		240.00	0.65	*156.00*	39 gal/minute at max capacity, assumes 4 hours of use each day
Cafeteria Kitchen Sinks	5	3.00	1.07	2.00	6.42	*32.10*	Assumes three uses per day of all five cafeteria kitchen sinks
Kitchen Sink	78	1.00	1.00	1.00	1.00	*78.00*	
Shower	4	1.00	1.60	5.00	8.00	*32.00*	5% Staff per day
Consumption	78	2.00	0.50	1.00	1.00	*78.00*	Bottle fillers, etc.
Cleaning/Misc. Use	78				1.00	*78.00*	Assumption for daily cleaning
				Total	**20.07**	***610.10***	
Visitors				per Visitor	per day		
Bathroom Sink	20	2.00	0.50	1.00	1.00	*20.00*	
Toilet	20	-	-	-	-	-	Water usage eliminated by rainwater harvesting supply only
Shower	20	-	1.60	5.00	-	-	
Consumption	20	1.00	0.50	1.00	0.50	*10.00*	Bottle fillers, etc.
				Total	**1.50**	***30.00***	
Clinic				per Clinic	per day		
Bathroom Sink	5	5.00	0.50	1.00	2.50	*12.50*	
Toilet	5	-	-	-	-	-	Water usage eliminated by rainwater harvesting supply only
Kitchen Sink	5	1.00	2.50	1.00	2.50	*12.50*	
Shower	1	1.00	1.60	5.00	8.00	*8.00*	Assumes 1 use per day
Consumption	5	2.00	0.50	1.00	1.00	*5.00*	Bottle fillers, etc.
				Total	**14.00**	***38.00***	
Events				per Events	per day		

FIGURE 2-02 Detailed Water End Use (proposed)

DETAILED ASSUMPTIONS (Baseline Water Use)

Flow Demands	People Per Day	Daily Use (#)	Flow Rate (gpm)	Time (min)	Usage (gal)/use	Total (gal)/day	Remarks
Students				per student	per day		
Table 5-1 Baseline	600				8.50	*5,100.00*	
				Total	**8.50**	***5,100.00***	
Faculty/Staff				per Faculty-Staff	per day		
Bathroom Sink	78	4.00	2.20	1.00	8.80	*686.40*	
Toilet	78	2.00			3.20	*249.60*	EPA baseline of 1.6 gal per flush
Dishwasher	1	4.00		240.00	2.00	*480.00*	Low end of standard commercial dishwasher uses 2 gal/min. Time usage matches proposed use.
Cafeteria Kitchen Sinks	5	3.00	2.20	2.00	13.20	*66.00*	Assumes three uses per day of all five cafeteria kitchen sinks
Kitchen Sink	78	1.00	2.20	1.00	2.20	*171.60*	
Shower	4	1.00	2.50	5.00	12.50	*50.00*	Assumes 5% of staff per day
Consumption	78	2.00	2.20	1.00	4.40	*343.20*	Potable water for consumption
Cleaning/Misc. Use	78				1.00	*78.00*	Assumption for daily cleaning
				Total	**47.30**	***2124.80***	
Visitors				per Visitor	per day		
Bathroom Sink	20	2.00	2.20	1.00	4.40	*88.00*	
Toilet	20	2.00			3.20	*64.00*	EPA baseline of 1.6 gal per flush
Shower	20	2.00	2.50	5.00	25.00	*500.00*	
Consumption	20	1.00	2.20	1.00	2.20	*44.00*	Potable water for consumption
				Total	**34.80**	***696.00***	
Clinic				per Clinic	per day		
Bathroom Sink	5	7.00	2.20	1.00	15.40	*77.00*	
Toilet	5	1.00			1.60	*8.00*	EPA baseline of 1.6 gal per flush
Kitchen Sink	5	1.00	2.20	1.00	2.20	*11.00*	
Shower	1	1.00	2.50	5.00	12.50	*12.50*	Assumes 1 use per day
Consumption	5	2.00	2.20	1.00	4.40	*22.00*	Potable water for consumption
				Total	**36.10**	***130.50***	
Events				per Events	per day		
Public Assembly	600				1.84	*1104.00*	LBC Baseline daily usage
				Total	**1.84**	***1104.00***	

FIGURE 2-03 Detailed Water End Use (baseline)

I05-1 POTABLE WATER USE REDUCTION DOCUMENTATION (FINAL AUDIT)

INTENT

Show calculations to achieve 50% baseline water use reduction.

DOCUMENTATION

See **Figures 2-04** below and **I06-3** for the monthly calculations and totals. See **I05-1** for baseline**.**

		modeled	actual	potable water use
	Source	gallons	gallons	
Pre-Development	Rain	5,300,000		
	City Water	--		
	Total water in	**5,300,000**		
	infiltration	175,000		Baseline Usage from (I05-1)
	CSO outfall (Total water out)	**5,125,000**	**5,125,000**	1,826,201 Gallons
Post-Development	Rain	5,300,000	5,137,348	Actual Usage
	City Water	617,605	849,196	849,196 Gallons
	Total water in	**5,917,605**	**5,986,544**	54% water use reduction from baseline
	infiltration	1,571,500	1,571,500	
	CSO outfall (Total water out)	**4,346,105**	**4,415,044**	
	Net	***(778,895)***	***(709,956)***	

FIGURE 2-04 Data after 12-Month Period

I05-2 IRRIGATION DOCUMENTATION

INTENT

All projects must not use potable water for irrigation.

LANDSCAPING STRATEGY

The project does not include permanent irrigation systems; landscape beds consist of drought-tolerant soil upon establishment of species. Agricultural beds are manually watered and maintained via exception **WT-002**.

Refer to **Appendix W-A** for the Detailed Planting Plans.



FIGURE 2-05 Site Plan (planted areas)

I05-3 STORM WATER DOCUMENTATION

INTENT

Provide a narrative of the stormwater control strategies, control and treatment methods used, and Calculations from applicable model showing that site is matching pre-development hydrology patterns.

THE STORMWATER SYSTEM

The Stormwater system as described in Sections 3.0 & 4.0 in **Appendix W-B** consists of three main elements, Localized storage, infiltration, and rainwater harvesting. The localized storage is a result of the grading designed to create rain gardens around each side of the building. The infiltration has two parts, native plantings and penetration through the sub-surface clay into the sand seam. Over 30% of the site is planted with native Illinois prairie plants which have deep roots and break up the soil to increase its infiltration over turf grass. Additionally, the project site soil profile consists of a clay layer fairly close to the surface that prevents deep and generous infiltration. However, at the rain gardens, we have installed vertical gravel shafts to allow the surface water to 'infiltrate' into this sand seam and further into the local aquifer. The third major strategy, is the installation of the rainwater harvesting system which is sized to accommodate 100% of the roof stormwater during a 25 year-24 hour event.

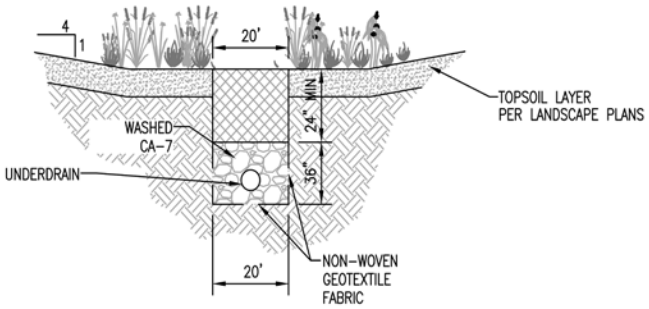

FIGURE 2-06 Bioretention Detail

PROJECT New School Campus, NWC LaPorte Avenue & 44th Street, Chicago, IL

CLIENT Academy for Global Citizenship, Chicago, Illinois

BORING 7 DATE STARTED 6-18-20 DATE COMPLETED 6-18-20 JOB L-91,266

ELEVATIONS

GROUND SURFACE 13.5 CCD

END OF BORING 3.5

WATER LEVEL OBSERVATIONS

WHILE DRILLING 5.5'

AT END OF BORING 4.0'

24 HOURS

SAMPLE NO.	SAMPLE TYPE	N	WC	Qp	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0.0	13.5	FILL - Black clayey TOPSOIL (OL)
1	SS	7	18.2			3.0	10.5	FILL - Brown and dark brown silty SAND, little gravel, trace organic, trace clay pockets, moist (SM)
2	SS	2	36.0	0.25*	83	5.5	8.0	FILL - Dark gray little black silty CLAY, trace sand and gravel, trace cinders, little Organic, very moist (CL/OL)
3	SS	2				8.0	5.5	Very loose brown and gray SAND, little gravel, little silt, wet (SP-SM)
4	SS	8	22.1	1.25*				Stiff gray silty CLAY, little sand, trace gravel, very moist (CL)

FIGURE 2-07 Geotechnical Report

I05-4 TREATMENT DOCUMENTATION

INTENT

Provide documents demonstrating compliance with treatment requirements.

STORM WATER TREATMENT

Refer to Section 5.0 of **Appendix W-B** for the storm water treatment specifications.

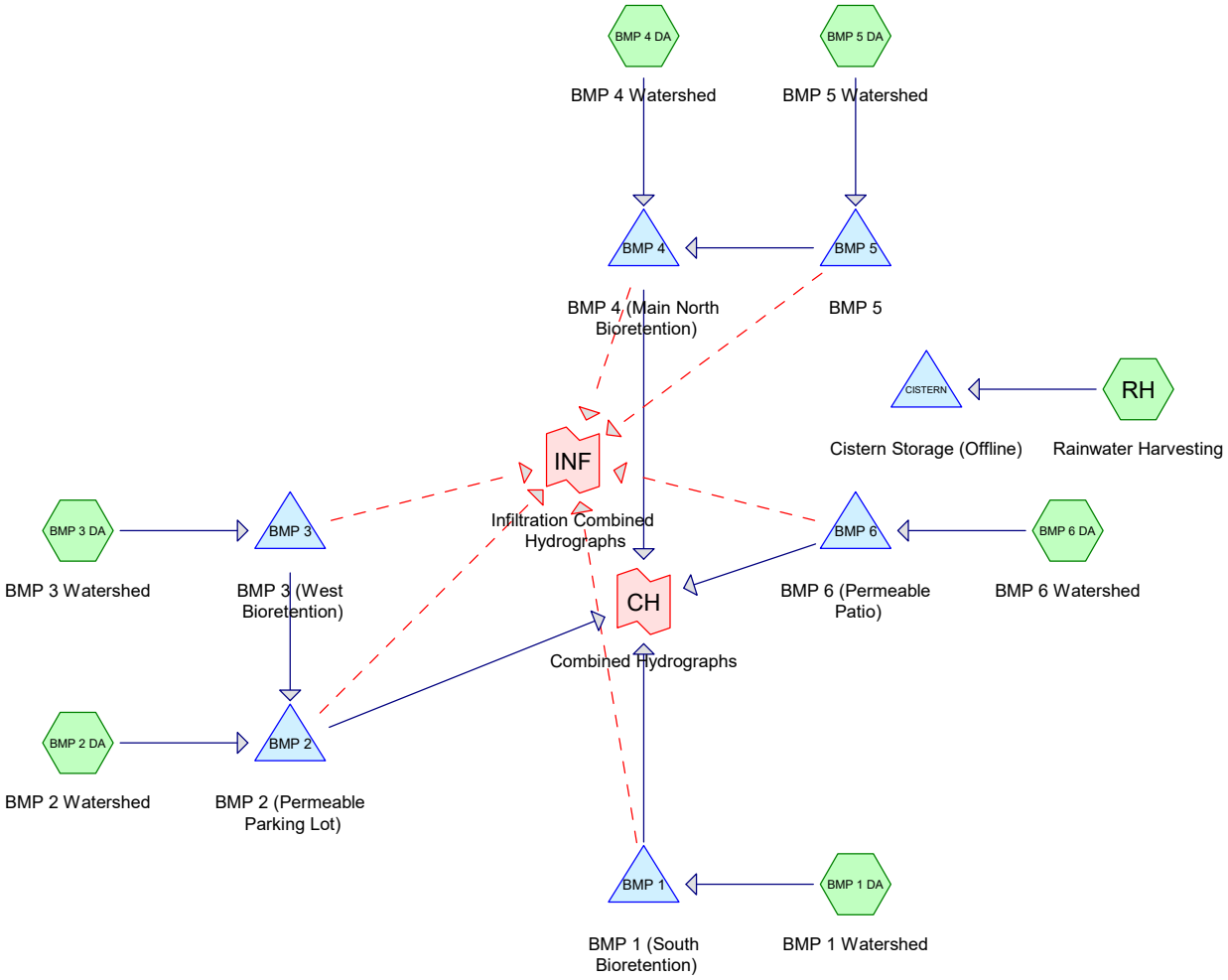

FIGURE 2-08 Water and Storm Water System

I05-5 COMBINED SEWER SYSTEM DOCUMENTATION

INTENT

Provide official documents showing or stating whether the utility uses a combined or separated sewer system.

A COMBINED SEWER SYSTEM

Refer to Sections 3.0 & 4.0 of **Appendix W-B** for municipal storm water infrastructure. Refer to **Appendix W-C** for documentation from the Stickney Wastewater Treatment Plant on it's physical and biological treatment methods as well as nutrient recovery imperatives. See **Appendix W-G** and **Figure 2-09** for the location of the Stickney Plant in relationship to the project site (same watershed).



FIGURE 2-09 Water Treatment Reclamation

I06-1 WATER NARRATIVE

INTENT

Provide official documents showing or stating whether the utility uses a combined or separated sewer system.

THE WATER SYSTEM

Refer to the water introduction and sections 06 & 07 of **Appendix W-B** for the full Water Narrative.

ENERGY COST OF TREATING SEWAGE

Cost for treatment based on the calculated total wastewater load (617,605 gallons annually) is $132.74. Conservatively, we assume that this translates to an energy load of 1,374 kWh, at the national $0.10 per kWh average. Note this energy cost is conservative as some of that cost AGC pays supports, non energy uses such as payroll, bond debt, and capital improvements.

Refer to the letter in **Appendix W-C** for information on the Stickney Treatment Plant.

	Source	annual gallons
Pre-Development	Rain	5,300,000
	City Water	--
	Total water in	**5,300,000**
	infiltration	175,000
	CSO outfall (Total water out)	**5,125,000**
Post-Development	Rain	5,300,000
	City Water	617,605
	Total water in	**5,917,605**
	infiltration	1,571,500
	CSO outfall (Total water out)	**4,346,105**
	Net	***(778,895)***

FIGURE 2-11 Pre-Developed Allowable Release Rates

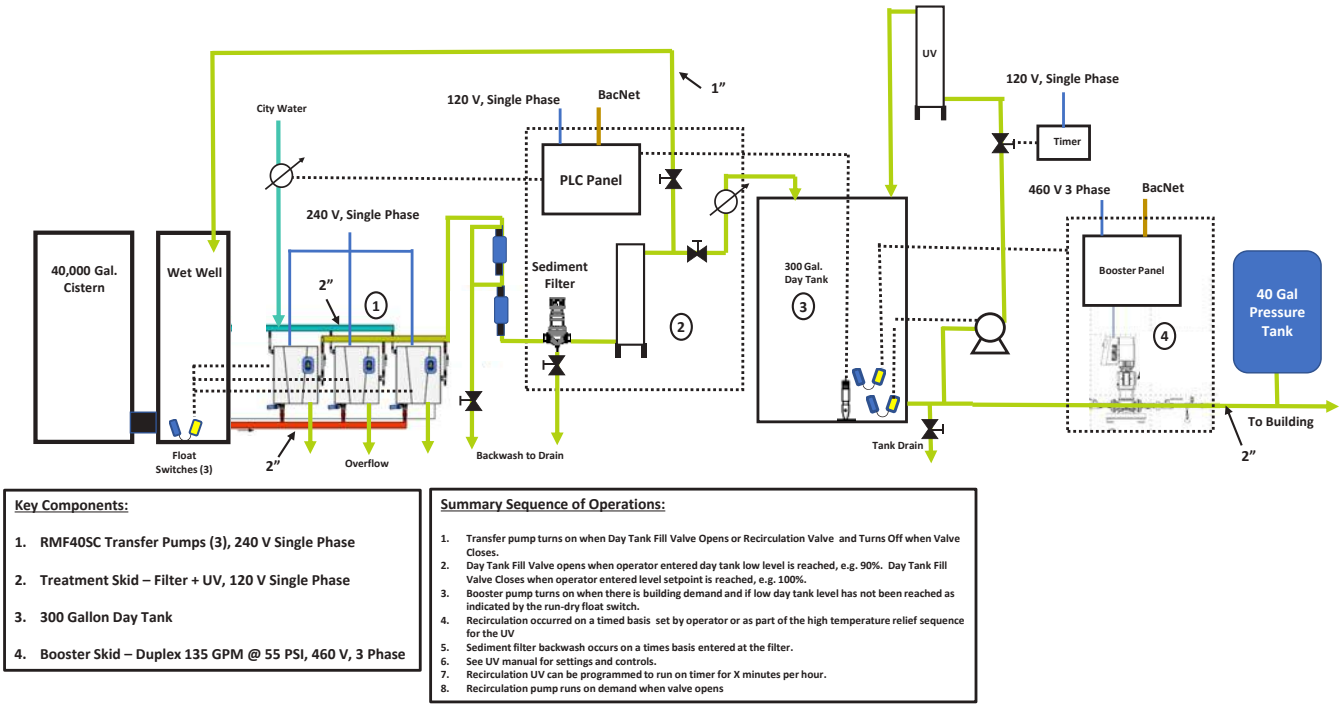

FIGURE 2-10 Water System Diagram

I06-2 ANNUAL WATER BALANCE DIAGRAM

INTENT

Provide a enumerated diagram showing general water flow and balance of project and site.

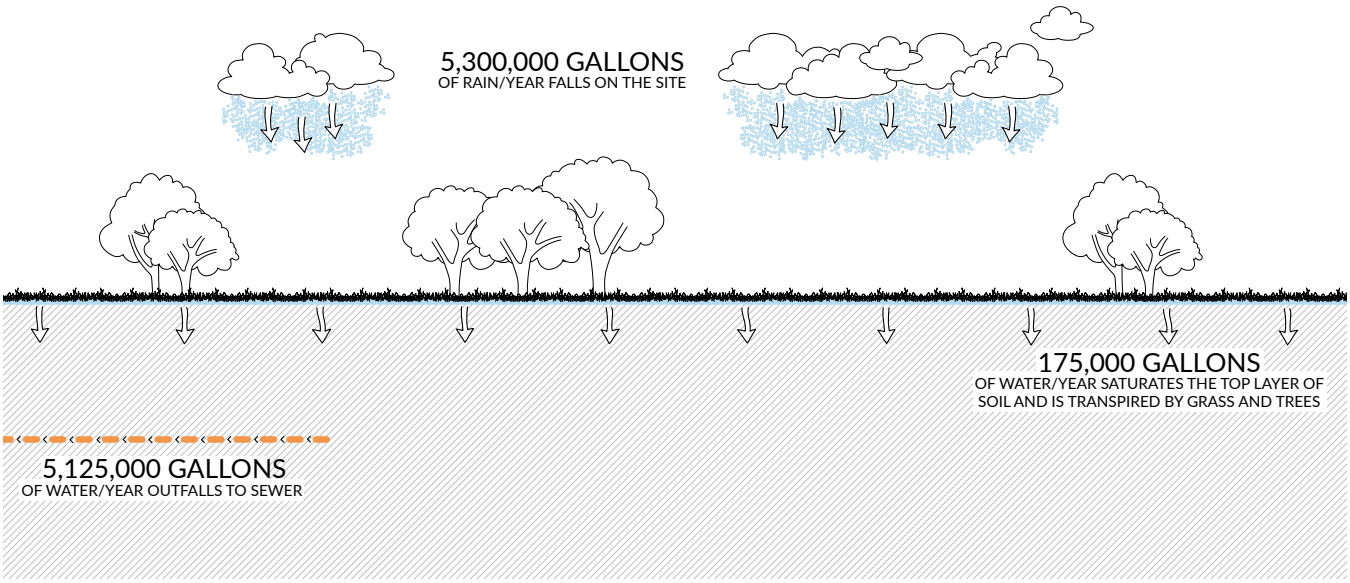

FIGURE 2-12 Annual Water Balance Diagram (pre-development)

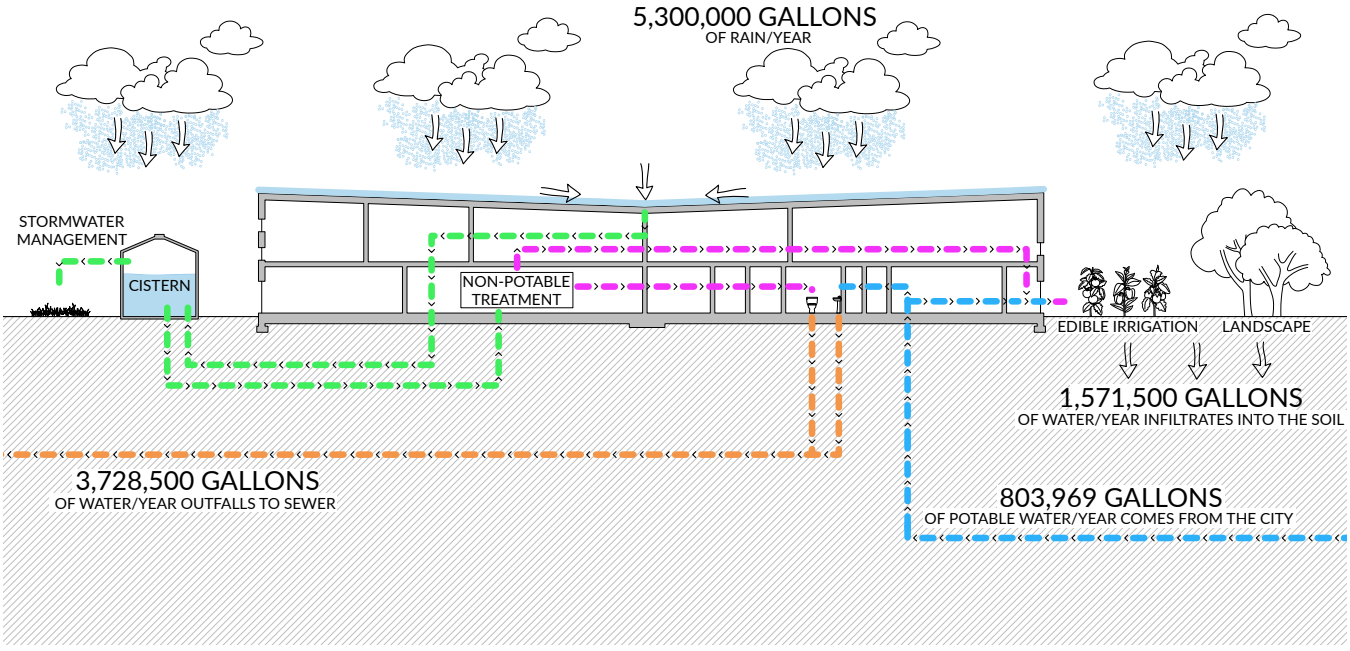

FIGURE 2-13 Annual Water Balance Diagram (post-development)

I06-3 METERED DATA TABLE

INTENT

Provide a completed Water Supply and Use Table showing total actual water use from monthly readings throughout the 12-month performance period from meter(s) or other on-site tracking systems that clearly record the amount of water used from each supply source.

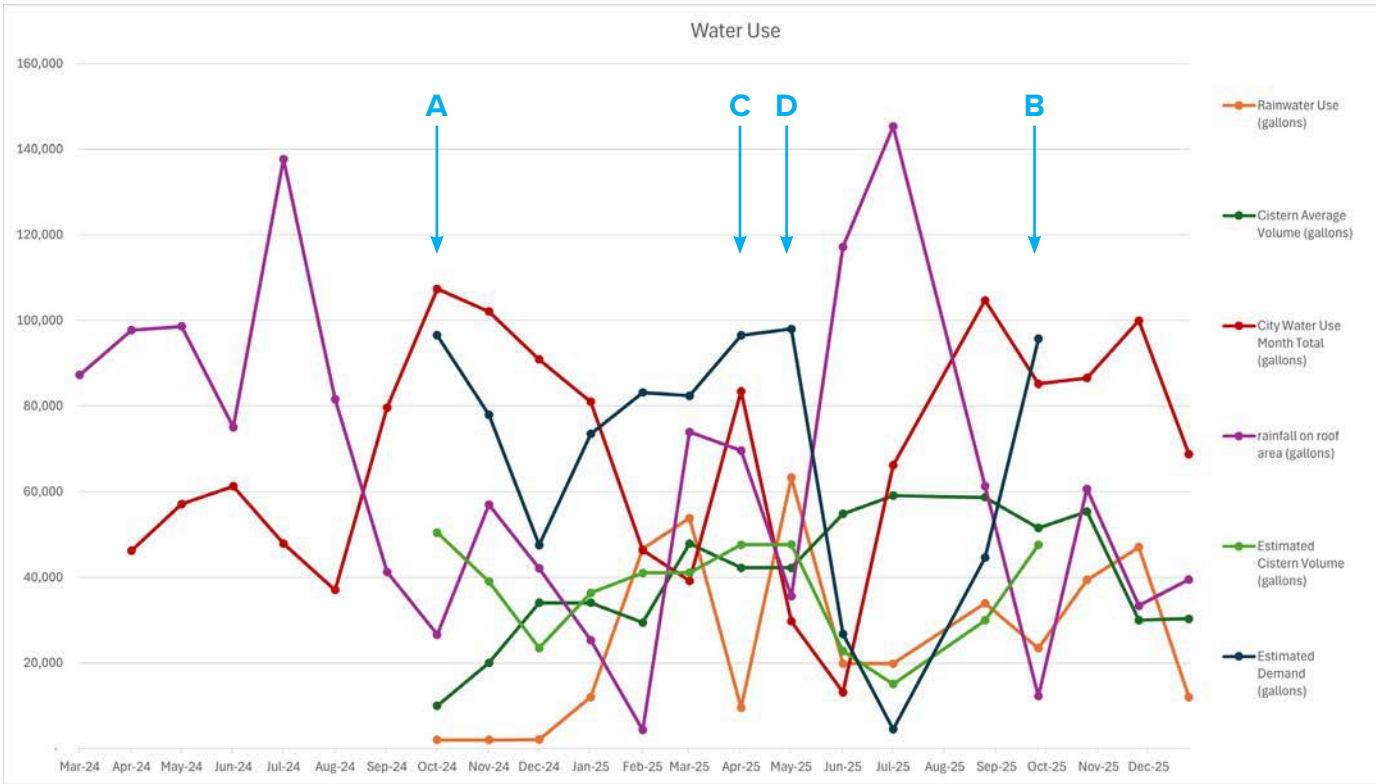

FIGURE 2-14 Table

Figure 2-14, shows the 12 months of water use (points A and B on the graph). It is important to note that we had a leak in the Cistern in April (point C) and a pump controller failure in May (point D) that went unnoticed for a few weeks and so was continually pumping filtered rainwater that was more than the day tank could hold so overflowed directly into the sewer. We have also expanded the timeline to beyond the 12 month performance period so one can see the seasonal variations in rainfall (summer versus winter) in the Midwest.

Figure 2-15 shows the total volume for the performance period of October to October. One can see the actual water used was under the assumed, and per our modeling, overall runoff from the site is under the pre-development volume.

	Source	annual gallons	actual
Pre-Development	Rain	5,300,000	
	City Water	--	
	Total water in	**5,300,000**	
	infiltration	175,000	
	CSO outfall (Total water out)	**5,125,000**	**5,125,000**
Post-Development	Rain	5,300,000	5,137,348
	City Water	617,605	849,196
	Total water in	**5,917,605**	**5,986,544**
	infiltration	1,571,500	1,571,500
	CSO outfall (Total water out)	**4,346,105**	**4,415,044**
	Net	***(778,895)***	***(709,956)***

FIGURE 2-15 Data after 12-Month Period

Timestamp	City Water Use Month Total (gallons)	Rainwater Use (gallons)	Cistern Average Volume (gallons)
01-Oct-24 12:00:00 AM CDT	107,362	2,000	10,000
01-Nov-24 12:00:00 AM CDT	102,063	2,000	20,000
01-Dec-24 12:00:00 AM CST	90,898	2,102	34,062
01-Jan-25 12:00:00 AM CST	80,992	12,008	34,062
01-Feb-25 12:00:00 AM CST	46,333	46,667	29,413
01-Mar-25 12:00:00 AM CST	39,165	53,835	47,866
01-Apr-25 12:00:00 AM CDT	83,453	9,547	42,236
01-May-25 12:00:00 AM CDT	29,705	63,295	42,236
01-Jun-25 12:00:00 AM CDT	13,142	19,821	54,820
01-Jul-25 12:00:00 AM CDT	66,175	19,821	59,092
01-Aug-25 12:00:00 AM CDT	104,715	33,950	58,688
01-Sep-25 12:00:00 AM CDT	85,193	23,420	51,514
Total October to October	849,196	288,467	

FIGURE 2-16 Data after 12-Month Period

I06-4 BIOSOLIDS & LEACHATE DISPOSAL DOCUMENTATION

INTENT

Provide documentation on the disposition of off site Sewage.

THE COMBINED SEWER SYSTEM

Via the combined sewer overflow system mentioned previously in **I05-5**, all sewage is treated at the Stickney Treatment Plant which treats sewage to tertiary levels and recovers nutrients. See attached **Appendix W-C** for the treatment plant data.

If you flush a toilet in Northlake, it takes about 8 hours to get to Stickney WRP (in dry weather) and 8–12 hours to go through the treatment process before it is released as clean water to the Chicago Sanitary and Ship Canal.

Coarse screens catch large objects and debris in water as it enters a wastewater treatment plant. Some of the things that have turned up in the coarse screens of our plants over the years include:

- ✓ A 14" diameter snapping turtle
- ✓ Car wheels and tires
- ✓ 2x4 studs
- ✓ Super balls
- ✓ Parking blocks
- ✓ Money
- ✓ A huge ball of rope
- ✓ A 50 foot extension cord
- ✓ Mop heads
- ✓ Tree branches
- ✓ Two opossums
- ✓ ID card of a man from Argentina
- ✓ A bowling ball (with no pins)
- ✓ Fish
- ✓ A prosthetic leg







The average WRP in the state of Illinois treats one million gallons per day. At maximum capacity, the Stickney WRP can treat that volume in one minute.

FIGURE 2-17 Biosolids and Leachate Treatment and Disposal

I06-5 RESILIENCE

INTENT

Provide a narrative describing how the project team is meeting the resiliency requirements.

RESILIENCY

Refer to **I08-4** for resiliency related to space conditioning, and **I02-3** for resiliency related to food. We assume we will be treating rainwater capture for irrigation and toilet flushing and that treated rainwater will be acceptable* as drinking/washing water for one week (7 days):

*City of Chicago will not allow treated rainwater for potable uses.

Resilience Metrics - Water					
Occupancy	**# persons**	**Gal/ person**	**Gal/Day**	**Day/Year**	**Required for week**
Students	600	2.63	1578.00	7	11,046.00
Faculty/Staff	78	16	1248.00	7	8,736.00
Clinic/Staff	5	6	30.00	7	210.00
Visitors	20	1.5	30.00	7	210.00
				Total	**20,202.00**
Cistern Size					**60,000.00**
*see I08-4 for power requirements					

FIGURE 2-18 Water volume required for 7 days

I06-6 PHOTOGRAPHS

INTENT

Provide photographs of the water systems.



FIGURE 2-19 Day Tank



FIGURE 2-21 Cistern



FIGURE 2-20 Mechanical Room

WT-002 POTABLE WATER USE FOR FARM OPERATIONS

INTENT

Project teams located in jurisdictions that either prohibit non-potable water for irrigation or require higher levels of treatment for irrigation than interior non-potable demands may use potable water for irrigation and instead use non-potable water to offset potable interior demands, provided that they show interior non-potable demands (e.g., process water, toilet flushing, or laundry) equal or exceed that of irrigation demands.

FARM IRRIGATION

We were unable to use our site rainwater for farm operations as the City of Chicago will not allow harvested rainwater for edible crop irrigation.

Once the farm operator is fully on board, we plan to appeal to the State of Illinois to disconnect the farm irrigation from the city water and we have designed the piping with “T”’s to easily change the farm irrigation from City water to Rainwater.

Refer to **Appendix W-D** for water reduction design and performance calculations and drawings with the installed site rainwater pipe route to farm operations pipe outflow.

Refer to **I05-1** for the water balance calculations.

*In Illinois, farm operators (outside the City of Chicago) are required to follow the Generally Accepted Practice (GAP) standards for crop irrigation. The GAP standards allow site harvested rainwater with testing.

WT-003 MUNICIPAL WATER SUPPLY FOR POTABLE SOURCES

INTENT

If health or utility regulations require a project to use municipal potable sources, it is allowed, but only for potable uses including sinks, faucets, janitorial uses, and showers.

POTABLE USES

The City Chicago Department of Water Management would not allow AGC to utilize treated harvested rainwater for potable uses. After numerous calls from the plumbing inspector to the water commissioner, we were unable to persuade the city to bend on this rule Municipal Code of Chicago 11-12-060. Please note these conversations were happening during the pandemic so in person meetings were impossible to schedule.

TIMELINE

August 2020 - Letter sent to the Commissioner
October 2020 - Meeting with City (Virtual)
May 2021 - Design Development Starts
July 2022 - No Response, Received after Various Emails
(See **Appendix W-E** for the emails)

Excerpt from Municipal Code of Chicago:

11-12-060 Private persons supplying water.

No person, whether owner or occupant, or in possession, charge or control of any building, structure or premises into which water service is introduced or to which water is supplied through the Chicago Waterworks System, shall be allowed to supply other persons or families, or to supply any water from such building or premises to a building, structure or premises other than the one for which such water service is introduced, unless a permit from the Commissioner shall first have been secured.

If any person, either as owner or occupant, or in possession, charge or control of any such building, structure or premises, violates any of the provisions of this section, the supply of water to the building, structure or premises of such person shall be shut off and stopped forthwith, and any amount which shall have been paid for water service shall be forfeited to the City. Where the water service shall be cut off for a violation of the provisions of this section, it shall not be turned on again until either: (1) there shall have been paid to the City such sum of money as the Commissioner shall deem properly due for the amount of water furnished or used in violation of the provisions of this section, and until the expense for cutting off the water service on account of such violation shall have been paid; or (2) the owner or occupant enters into an approved payment plan with the Department of Finance for said amounts.

(Prior code § 185-6; Amend Coun. J. 12-4-02, p. 99026, § 1.12; Amend Coun. J. 7-20-22, p. 50569, § 4)

WT-004 MUNICIPAL WATER SUPPLY FOR FIRE PROTECTION

INTENT

A dedicated connection to a municipal water supply is allowed for fire protection systems.

FIRE PROTECTION

The Chicago Fire Department requires City provided water for Fire Protection. The service is piped directly off the main water service before the meter as is typical for installations of this type in Chicago.

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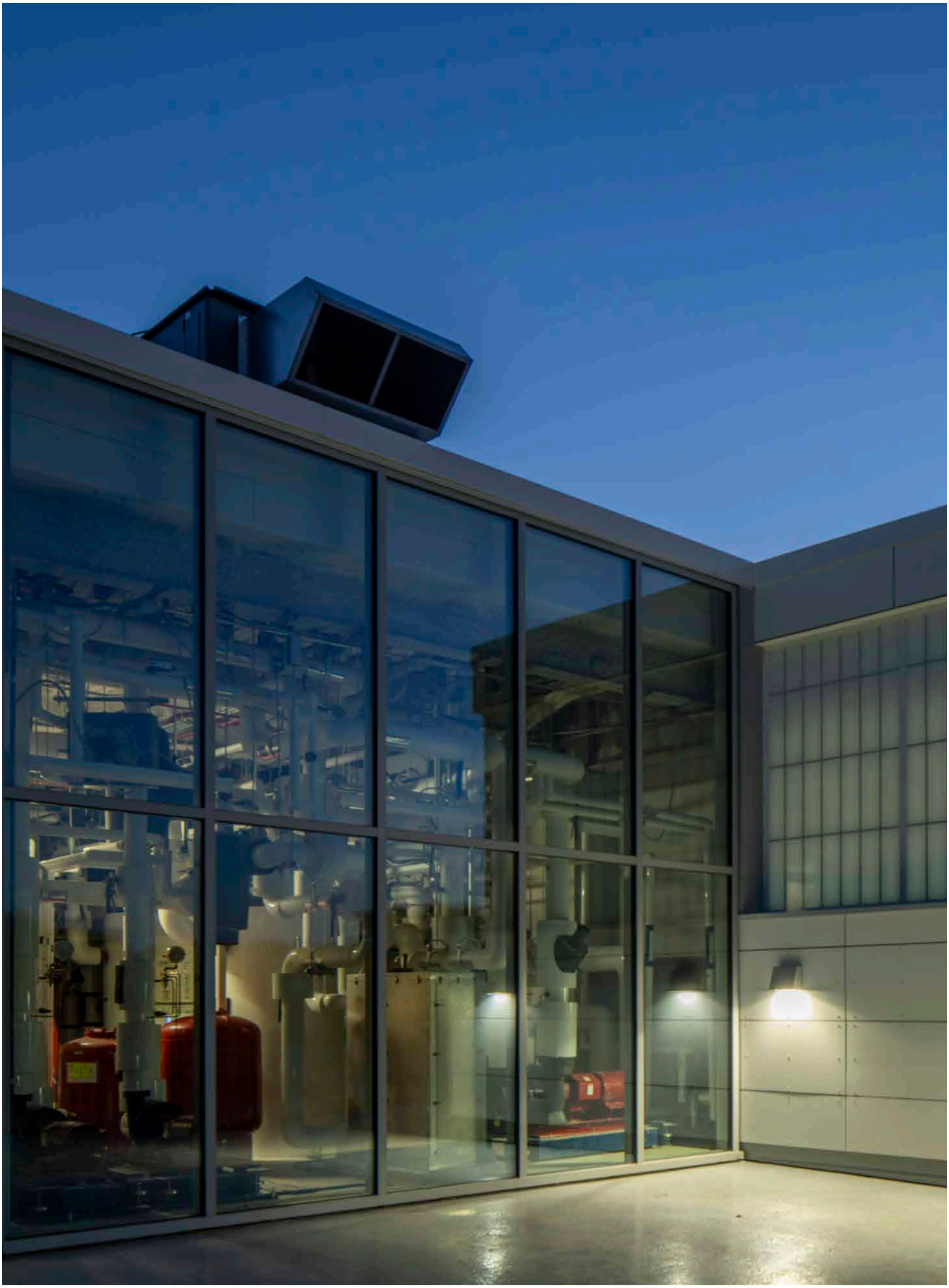


ENERGY

INTRODUCTION

07 - ENERGY & CARBON REDUCTION

- I07-1 Energy Narrative & Schematic Drawing
- I07-2 Energy Use Data
- I07-3 Energy Tracking Tables
- I07-4 Embodied Carbon Reduction Documentation
- I07-5 Embodied Carbon Data
- I07-7 Photographs

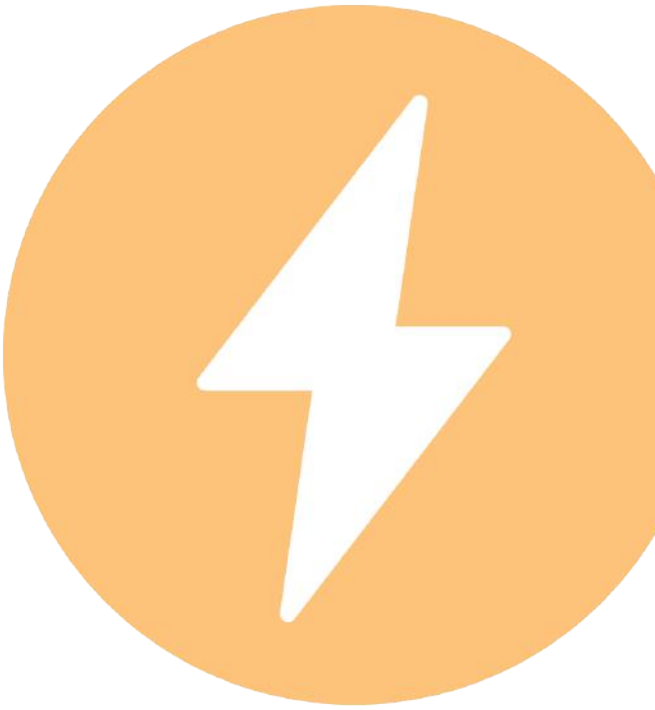
08 - NET POSITIVE CARBON

- I08-1 Energy Performance Documentation
- I08-2 Sub-metering Documentation
- I08-3 Carbon Offset Documentation
- I08-4 Resilience Strategy Documentation

APPENDICES

- E-A Electrical Riser and Sub-Meter Diagrams
- E-B Embodied Carbon Data- Primary Structure
- E-C Embodied Carbon Data - Interior Materials
- E-D Carbon Offsets
- E-E AGC Resiliency Analysis
- E-F Solar Radiation Studies
- E-G Baseline and Proposed Energy Use Reports

* I07-6 is superseded by I08-1



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INTRODUCTION

THE ENERGY PETAL

The Academy For Global Citizenship (AGC) addresses the 2 main tenets of the Energy Petal by achieving Net Zero Site Energy and reducing carbon emissions related to construction.

BACKGROUND

AGC is located in Climate Zone 5A with a design temperature of 5 Deg F for heating and 86 Deg F for cooling. The average annual precipitation is 35 inches, and annual solar radiation average of 1200 Btu/h/ft^2.

CARBON REDUCTION

As it relates specifically to energy, some of the key drivers were, what is the total incident solar radiation available to establish an energy "target", what is the optimum envelope configuration both from a performance (R-value) and configuration (Area), and what is the most efficient space conditioning system. The two story design, embedded in a constructed berm, for this occupancy, in this climate zone a good balance between envelope losses due to reduced façade area and usable interior floor space. The façade, especially the glazing is tuned to its orientation to reduce "hot spots" on the interior. The envelope also was constructed to reduce air leakage as well as all major thermal bridges were "broken" utilizing low conduction materials. The low temperature radiant space conditioning system was de-coupled from the ventilation loads. This allowed the radiant system to utilize all very efficient liquid to liquid energy transfer. Additionally, on mild days the system can still run the radiant system while the mechanical ventilation is off and ventilation is provided naturally. See **I07-1** for more details.

COMMERCIAL KITCHEN CHALLENGES

It is important to note, that AGC has a full commercial kitchen which with its high energy loads, both for food preparation and ventilation, added to the challenge of meeting Net Zero Energy.

RENEWABLE ENERGY GENERATION

Net Zero site energy is achieved with a combination of roof and ground mounted photovolatics panels. This array is complimented by a site mounted battery that can be utilized to both load shift and provide back up power.

EMBODIED CARBON

Embodied carbon was reduced through specification of low carbon alternatives to typical assemblies or standard construction. Products such as low carbon concrete, 40% reduction, rigid insulation 80%, and gypsum board 20% were used. The remainder of carbon utilized in the design was offset with Carbon Offsets.

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I07-1 ENERGY NARRATIVE & SCHEMATIC DRAWING

INTENT

Describe the space conditioning system.

INTRODUCTION

The Academy for Global Citizenship aims to foster systematic change and holistic learning through the development of a new, replicable model for 21st century learning on a net-positive energy campus. Community engagement, earth stewardship, connection to nature, nutrition, and agriculture are central to the educational mission of AGC, to empower all students to positively impact the community and world.

To achieve these ambitious goals for sustainability and energy efficiency, the team first established a baseline based on similar buildings EUI's, expected operational occupancy and hours, and available solar radiation. See **Appendix E-F** and **Appendix E-G**, for the Zero Report, Initial Solar radiation analysis, and current Energy Modeling Report. The result is a building with an estimated EUI of 28.99.

OPTIMIZED BUILDING ENVELOPE

The project team focused first on passive design strategies, with building massing studies during conceptual design and optimization of the building envelope to ensure minimal thermal losses. The final envelope includes state-of-the-art thermal performance for windows (ranging from U-0.33 to U-0.17), a reasonable 25% window-to-wall ratio which maximizes the natural light in the desirable occupied areas, well insulated and thermally broken wall types (R-35 and R-49), and an R-68 roof. This high-performance building envelope reduces the HVAC loads, even during extreme weather conditions, is critical to achieving passive survivability goals.

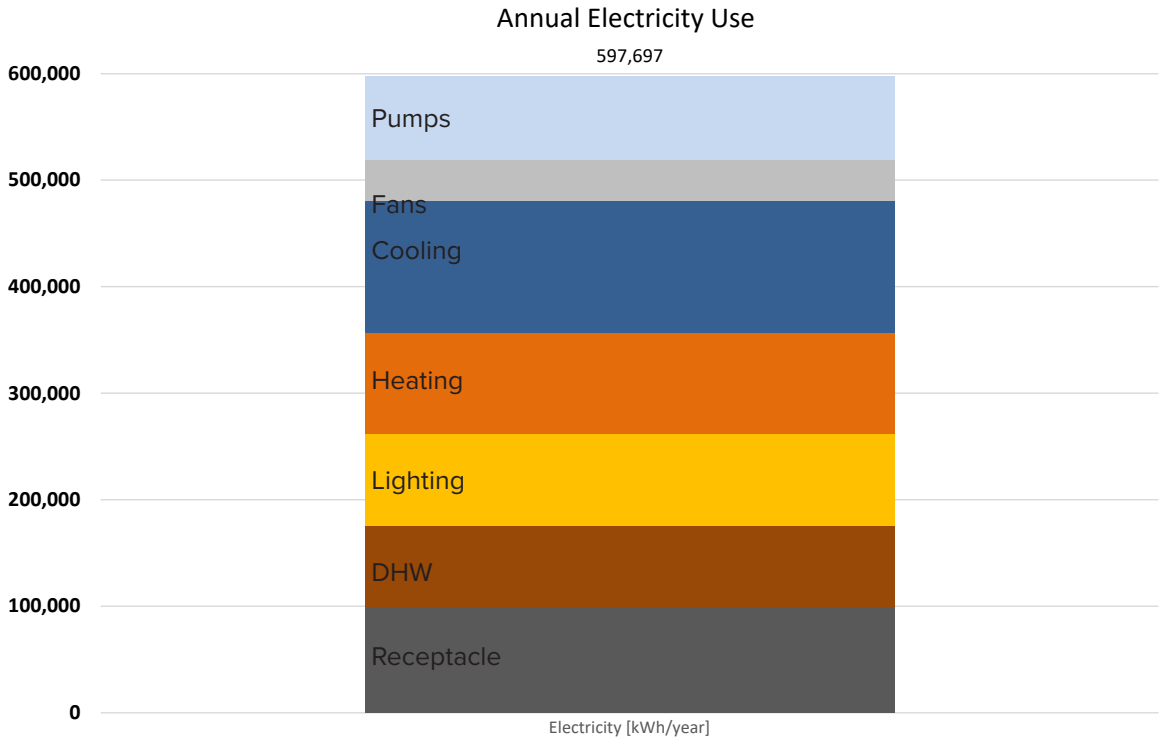

FIGURE 3-01 Annual Electricity Use Graph

MECHANICAL SYSTEM

The next step in reducing energy consumption included HVAC system comparisons and parametric energy modeling to determine the most efficient overall design strategies. The mechanical system focuses on heat recovery strategies. First, the space conditioning and ventilation are decoupled. The dedicated outdoor air units are equipped with premium exhaust air energy recovery for fresh air and dehumidification. Space conditioning is provided via a radiant floor slab for heating and cooling, provided by a ground-source heat recovery chiller. This chiller recovers otherwise 'waste' heat from the chilled water process and utilizes it directly in spaces which need heating – allowing efficient heat transfer between spaces – while the geo-exchange loop allows for seasonal heat storage. The building relies entirely on 50 geo-exchange wells for its heat source and does not require a backup boiler. A supplemental heat recovery loop in the parking lot surface helps to balance the heating and cooling loads throughout the year.

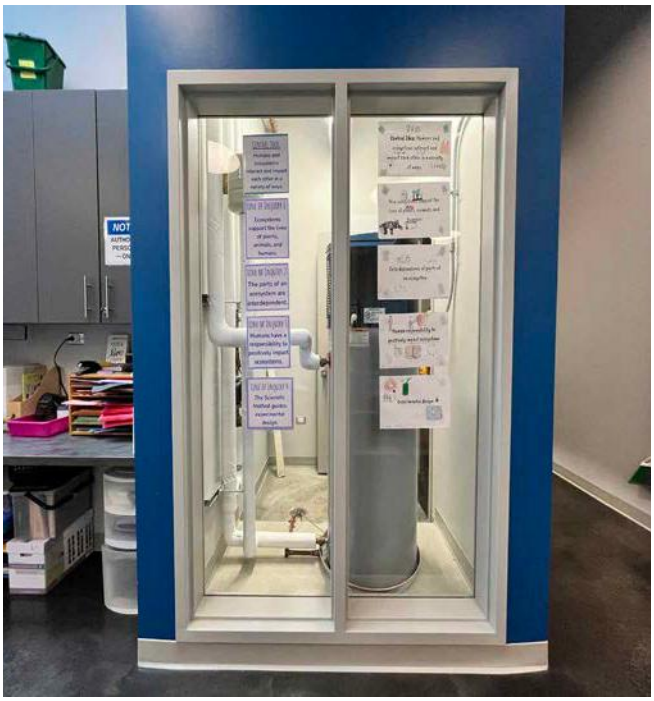

FIGURE 3-02 Heat Pump Hot Water Heater

SUB-METERING

Although the building is designed to achieve a 70% energy reduction from similar building types and a net-positive energy usage, a critical component to realizing these goals are energy metering and calibration. Behind the single utility meter, the lighting, receptacle, mechanical and plumbing equipment is fed from dedicated panel boards provided with digital meters. This provides sub-metering for the building's major systems. Refer to the included electrical metering riser for details.

BUILDING AUTOMATION SYSTEM (BAS)

The building automation system monitors and tracks each of the digital sub-meters, the electric utility meter, and the electricity produced by the solar photovoltaic array. The BAS also monitors each piece of HVAC equipment, including the heating and cooling energy used.

This information is trended and calibrated with an alarming system so that any issues with the HVAC equipment will be quickly identified, mitigating inefficient operation. The BAS feeds real-time data to the energy signage, monitors and interactive dashboards in the building so that staff, students, and the visiting public can understand how much energy is being produced or used at a given time.

NET ZERO

The building has large roof-mounted and ground-mounted solar photovoltaic arrays, sized to produce more electricity than the building uses throughout the year. The solar arrays have a combined capacity of 521.1 kW, and are designed to produce 691,089 kWh annually.

Additionally, the photovoltaics are coupled with a Battery Energy Storage System (BESS) to optimize energy consumption from renewable resources and to provide standby power in the event of a power outage with limited functions for up to one week. This system is also capable of shifting the load profile of the building's electrical consumption and minimizes peak demand. Please see **I08-04** for information on the battery.

FOOD SERVICE/KITCHEN

One key operational area which traditionally challenges the project's sustainability goals are the food service areas, including the main kitchen for the cafeteria, teaching kitchens for each village (set of classrooms), and the café which is intended to serve takeaway coffee and snacks to the public. The design team worked closely with the owner and kitchen consultants

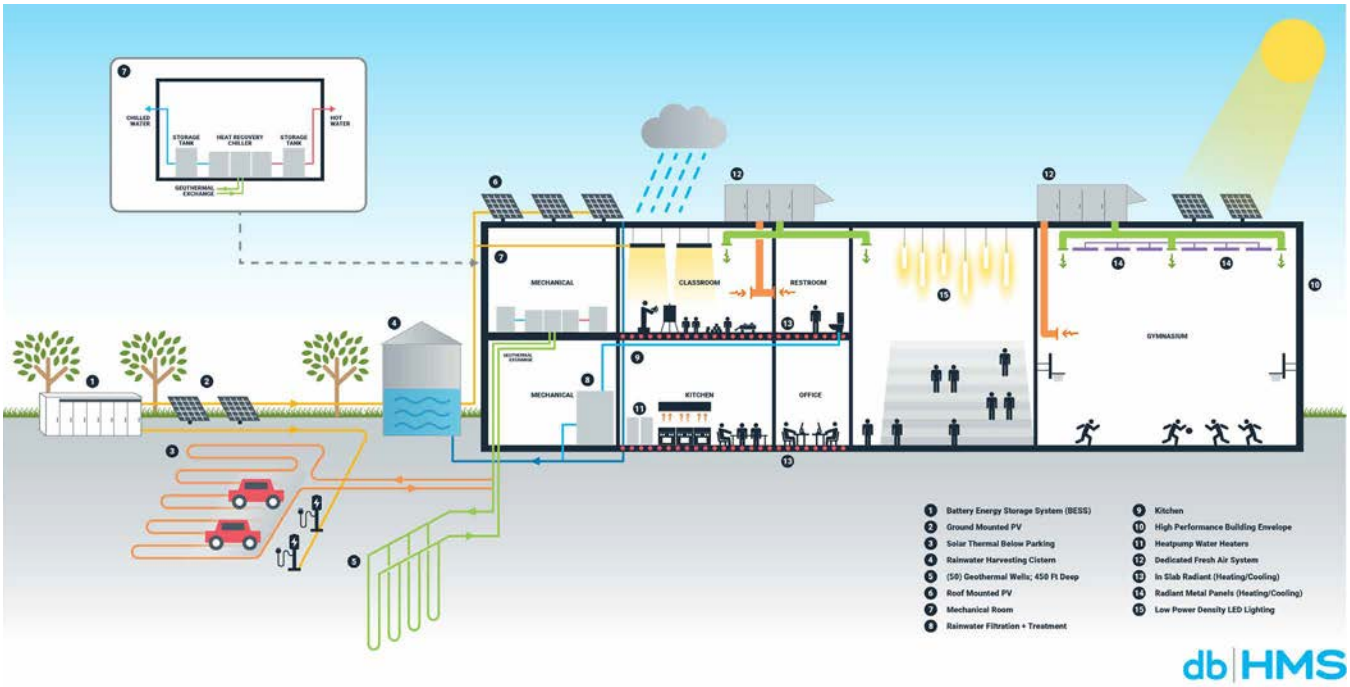

FIGURE 3-03 Energy Systems Schematic

to establish the design operation assumptions and select energy efficient kitchen equipment. Contrary to typical practice, all of the kitchen equipment is electric. There is no natural gas on the project and no natural gas connection provided to the building. The exhaust hoods for the kitchen are variable volume to reduce energy use, and waste heat from the cooking process is recovered by the domestic heat pump water heaters to make hot water.

DOMESTIC HOT WATER

All the domestic hot water is generated via heat pump hot water heaters that are located directly in the kitchen. This has the benefit of providing both space cooling and additional dehumidification, which is critical for a radiant system in the humid summer months to prevent condensation on the cool surfaces.

ANTICIPATED NEEDS & OPERATIONAL ISSUES

Achieving net zero energy requires testing and verification. The building systems are commissioned ensuring these are operating as designed. An additional level of verification is conducted over an extended period to validate assumptions including energy use for various end uses. Electrical metering provides measured data and is analyzed to ensure each end use is within an estimated range. This requires adjustments to building operations where necessary if these exceed in certain areas. Examples of these include cooking activities, periodic events, and space temperature adjustments that improve overall building energy use.

LESSONS LEARNED

Some lessons learned on the Academy for Global Citizenship relate to the building systems. The rainwater harvesting system requires substantial storage outside of the building. There is an insulated cistern located outside of the building footprint that requires an immersion heater in the local climate. Additional energy production was provided to compensate for the electrical consumption of the heater. The geothermal well field has a total of 50 wells placed in a 10 x 5 grid. Each grouping of 10 wells required valves onsite to allow these to be individually isolated for air removal. Removal of air in geothermal systems require running the system at high pressure to assist with air removal. Isolating multiple circuits facilitate this.

CONCLUSION

If the building is constructed and operated in accordance with the design documents and design operation assumptions, the building will meet net positive energy performance. Operations are key to net positive energy

success. To assist with tuning the building operations, the MEP design engineers will review the BAS data and identify corrective actions for 18 months after substantial completion. This is in addition to the Monitoring Based Commissioning services provided by the Commissioning Agent during the performance period.



FIGURE 3-04 Battery Energy Storage System

I07-2 ENERGY USE DATA

INTENT

Provide twelve months of performance data.

Net Energy - Actual vs Modeled

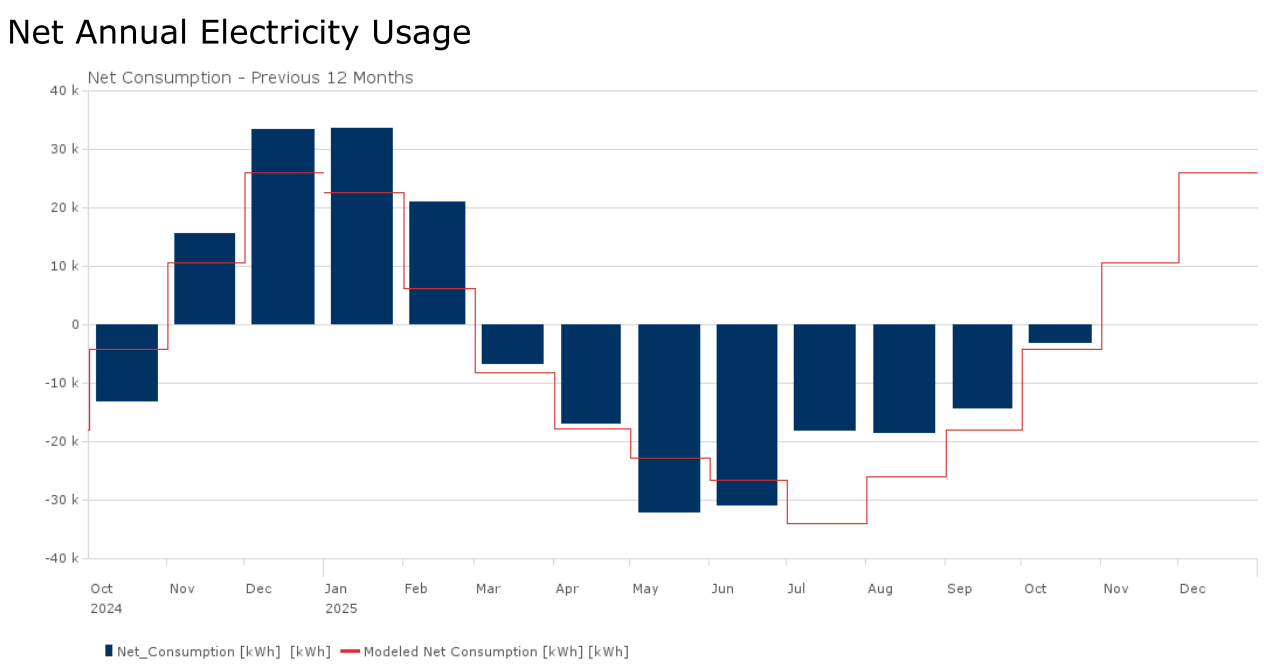

FIGURE 3-05 12-Months Energy Performance Data (graph)

Month	Consumption - Actual (kWh)	Generation - Actual (kWh)	Net - Actual (kWh)
24-Oct	38,612	-51,799	-13,187
24-Nov	40,134	-24,471	15,663
24-Dec	53,622	-20,261	33,361
25-Jan	63,469	-29,789	33,680
25-Feb	53,319	-32,284	21,035
25-Mar	46,687	-53,453	-6,766
25-Apr	41,305	-58,389	-17,084
25-May	31,973	-64,081	-32,108
25-Jun	40,930	-71,841	-30,911
25-Jul	47,753	-65,945	-18,192
25-Aug	56,214	-68,193	-11,979
25-Sep	53,601	-67,984	-14,383
Total	567,619	-608,490	-40,871

FIGURE 3-06 12-Months Energy Performance Data (table)

These charts show the overall Net Metering Results. See **Appendix E-H** for the Demand and Production Tables as well as the Utility Bills **Appendix E-I** and Net Generation Certification.

I07-3 ENERGY TRACKING TABLES

INTENT

Provide twelve months of performance data.

01/04/22

Instructions:

Fill out the green and white cells as they pertain to the project. Customize production and demand sources as needed.

Net Positive Energy and Consumption Table — Energy Production — Project Name: **Academy for Global Citizenship**

Performance Period	Performance Month	1	2	3	4	5	6	7	8	9	10	11	12	
	Monthly period (should match raw billing or meter data)	10/01/24-10/31/24	11/01/24-11/30/24	12/01/24-12/31/24	01/01/25-01/31/25	02/01/25-02/28/25	03/01/25-03/30/25	04/01/25-04/30/25	05/01/25-05/31/25	06/01/25-06/30/25	07/01/25-07/31/25	08/01/25-08/31/25	09/01/25-09/30/25	Total
Energy Performance	Electricity received from grid, kwh	19,432	30,110	42,193	46,816	41,019	22,719	19,358	16,706	18,058	18,957	25,428	21,790	322586
	Electricity provided to grid, kwh													0
	Net usage or generation (negative # = net positive)	-13,187	15,663	33,361	33,680	21,035	-6,766	-17,084	-32,108	-30,911	-18,192	-11,979	-14,383	-40871
Total generation	Total renewable generation, kwh	50117.66	22575.29	18941.63	28976.85	30652.87	52900.1	57250.46	44591.06	18586.79	61870.14	79366.77	53913.5	519743.12
EUI	Total Energy Use	69549.66	52685.29	61134.63	75792.85	71671.87	75619.1	76608.46	61297.06	36644.79	80827.14	104794.77	75703.5	842329.12
	Gross square footage	73,100												
	kwh to kbtu conversion rate	3.412	3.412	3.412	3.412	3.412	3.412	3.412	3.412	3.412	3.412	3.412	3.412	
	EUI (kbtu/square foot/year)	3.25	2.46	2.85	3.54	3.35	3.53	3.58	2.86	1.71	3.77	4.89	3.53	

FIGURE 3-07 Energy Sub-metering Tracking Table

Instructions:

Fill out green and white cells as they pertain to the project. Customize production and demand sources as needed.

Living Building Challenge 3.0/ 3.1 Sub-metering Table — Project Name: **Academy for Global Citizenship**

	Performance Month	1	2	3	4	5	6	7	8	9	10	11	12	
Performance Period	Actual Month & Year	10/01/24-10/31/24	11/01/24-11/30/24	12/01/24-12/31/24	01/01/25-01/31/25	02/01/25-02/28/25	03/01/25-03/30/25	04/01/25-04/30/25	05/01/25-05/31/25	06/01/25-06/30/25	07/01/25-07/31/25	08/01/25-08/31/25	09/01/25-09/30/25	Annual Total
	Energy units	kWH												
Energy Production	Photovoltaics (location 1)	50117.66	22575.29	18941.63	28976.85	30652.87	52900.1	57250.46	44591.06	18586.79	61870.14	79366.77	53913.5	519743.12
	Photovoltaics (location 2)													0
	Micro-hydro-turbines													0
	Wind power													0
	Municipal Power (if grid tied)													0
	Other (describe)													0
	Total Energy Production	50117.66	22575.29	18941.63	28976.85	30652.87	52900.1	57250.46	44591.06	18586.79	61870.14	79366.77	53913.5	**519743.12**
Energy Demand	Heating		6142.52	13193.26	18121.12	12629.62	7096.01	6476.42						63658.95
	Cooling	5494.46							3085.07	4742.38	13554.33	13376.4	8673.76	48926.4
	Hot Water	4952.51	5235.23	6043.18	6845.86	5560.98	5026.31	4611.86	4249.82	4676.29	3521.14	4211.06	4917.22	59851.46
	Lighting	5069.91	4944.62	5552.68	5563.2	4454.06	4241.19	4272.69	3827.54	4070.05	3229.24	3721.59	4160.17	53106.94
	Ventilation	2370.99	2880.34	4896.34	5417.19	5109.16	4112.11	3819.7	2624.91	4026.31	3405.21	4079.35	3606.81	46348.42
	Computer Services													0
	Pumps	2546.23	2768.09	3623.42	4014.24	3278.43	3082.05	2670.81	2407.11	528.32	2146.1	2381.85	2498.94	31945.59
	Vertical Transportation	163.6	153.15	155.13	173.89	151.88	162.18	187.46	163.13	168.43	104.61	156.63	160.67	1900.76
	Plug Loads/ Equipment	8548.85	8112.04	8625.75	9304.01	6368.89	6231.2	9295.37	9597.71	9251.81	6490.2	9190.4	11213.7	102229.93
	Other (list)													0
	Total Energy Demand	29146.55	30235.99	42089.76	49439.51	37553.02	29951.05	31334.31	25955.29	27463.59	32450.83	37117.28	35231.27	**407968.45**
EUI	**Project Energy Use Intensity (EUI)**													
Modelled (optional)	Modelled energy production (kWh)	53,277	42,905	37,489	43,596	49,640	59,771	64,180	72,447	69,557	79,323	71,412	67,227	710824
	Modelled energy demand (kWh)	43,116	46,395	54,686	57,570	47,677	45,374	42,245	45,673	42,740	39,109	42,752	43,447	550784
	Predicted delta	10161	-3490	-17197	-13974	1963	14397	21935	26774	26817	40214	28660	23780	160040

FIGURE 3-08 Energy Production and Demand Table

I07-4 EMBODIED CARBON REDUCTION DOCUMENTATION

INTENT

Describe the strategies used to reduce embodied carbon.

EMBODIED CARBON

The Academy for Global Citizenship (AGC) project reduced embodied carbon in both the primary structure and the interior elements in the following ways:

PRIMARY STRUCTURE.

Although AGC is a charter school, we compared it to a baseline construction typical of a Chicago Public School (CPS), which generally includes a concrete foundation, brick cavity walls with load bearing concrete block backup for the exterior wall, a steel frame structure with concrete floors on metal deck, and a single ply roof membrane on rigid insulation. By optimizing our steel framing (**See Figure 3-09**), using low-carbon concrete, and a high-performance, low-carbon fiber cement wall system, we were able to reduce the Global Warming Potential (GWP) of the primary structure by about 36%, measured in Carbon Dioxide Equivalent (CO_2e).

CALCULATIONS

To determine the embodied carbon for the baseline, we used Environmental Product Declarations (EPDs), which report the amount of embodied carbon per functional unit of a material. By applying these values to the quantities of materials typically used to actually construct this building typology, we calculated the total embodied carbon of a typical Chicago Public School. When EPD data was unavailable—most commonly for A4–A5 stages—we used the Athena Impact Estimator for Buildings to fill in the gaps. To find the embodied carbon for AGC, we relied on the Athena tool to provide us with the A1-A5 data that represents the impact of the materials, and the quantities used to build AGC from cradle to grave, including waste. Comparing the results, we found that our design achieved a 36% reduction in Carbon Dioxide Equivalent (CO_2e). For a summary calculation, see **Figure 3-10**, and refer to **Appendix E-B** for supporting data, including EPDs and life cycle assessment (LCA) summaries from Athena.



FIGURE 3-09 Recycled sub-base (crushed concrete)

INTERIOR MATERIALS

The interior materials used were typical of commercial construction, but we reduced embodied carbon by selecting low-carbon products within each category. Key contributors to the interior's embodied carbon included acoustic ceiling tiles (ACT), wood doors, and gypsum board assemblies. However, as this type of data is still relatively new, we struggled to find embodied carbon on some materials including the metal hanging system for the ceiling tiles so these items are not included in our report. In addition, the floor finishes (except the Gym floor and tiled bathrooms) consisted of polished concrete and the same low-carbon concrete used in the foundation was also used for the slabs; therefore, the associated carbon reduction was accounted for in the foundation calculations. To calculate the embodied carbon here, we used the same methodology as for the primary structure, relying on Environmental Product Declarations (EPDs) and the Athena Impact Estimator for Buildings. For summary results, see **Figure 3-11**, and refer to **Appendix E-C** for supporting data, including EPDs and life cycle assessment (LCA) summaries from Athena.

Please note, that all the embodied carbon calculations include transportation of materials to the site (Scope A4) and the on-site construction and installation processes (Scope A5).

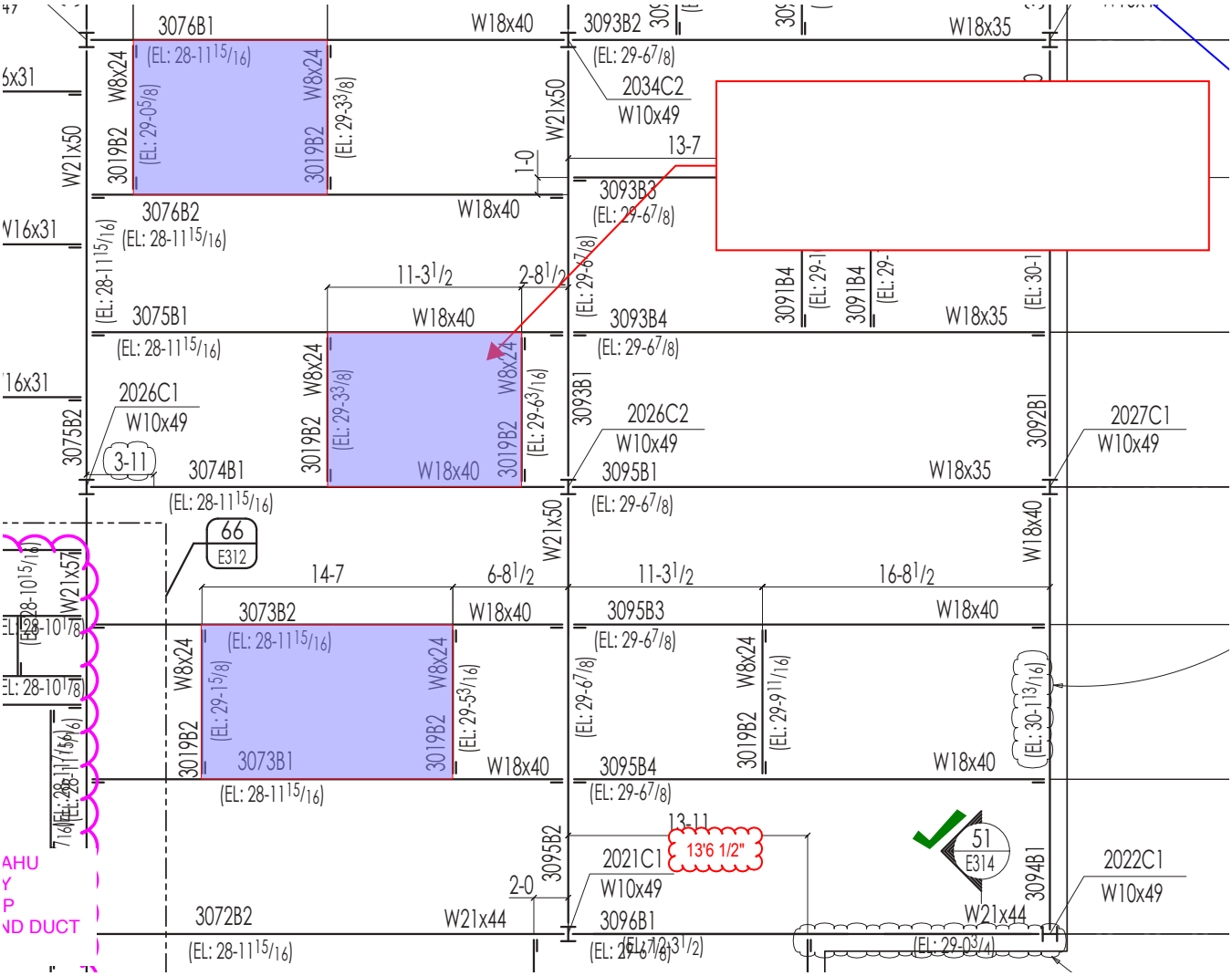

FIGURE 3-10 Example of Framing Optimization

I07-5 EMBODIED CARBON REDUCTION DATA

INTENT

Provide calculations and back up data for embodied Primary Structure and Interior materials carbon calculations. Calculate through A1 through A5 scopes.

Primary Structural Frame Embodied Carbon Calculations

	Baseline							Proposed						
					GWP							Actual GWP		
Assembly	Baseline Material	Functional Unit	Quantity	Units	A1-A3 (Kg)	A4-A5 (Kg)	Total (MT)	Actual Material	Functional Unit	Quantity	Units	A1-A3 (Kg)	A4-A5 (Kg)	Total (MT)
Substructure														
Foundations & Slab on Grade	Concrete - 4000 psi	YD3	1,533	YD3	336000	52100	194.050	Concrete - 4000 psi *	YD3	1,533	YD3	134400	20840	77.620
	Insulation - XPS	SF @ 1"	153,352	SF @ 1"	73700	3,920	38.810	Insulation - XPS	SF @ 1"	153,352	SF @ 1"	73700	3920	38.810
	Coarse Aggregate (virgin)	Tons	57.6	Tons	362	638	0.500	Coarse Aggregate (salvaged)	Tons	57.6	Tons	357	638	0.498
Wider Foundations for Masonry	Concrete - 4000 psi	YD3	126	YD3	27600	4280	15.940	n/a						
Structure														
Columns & Framing	Wide Flange Steel	Tons	374	Tons	327000	50800	188.900	Wide Flange Steel	Tons	374	Tons	327000	50800	188.900
								Weight Reduction from full-bay Skylights	Tons	(11)	Tons	9630	1500	-5.565
Second Floor	Concrete - 4000 psi	YD3	812	YD3	178000	27600	102.800	Concrete - 4000 psi	YD3	812	YD3	71200	11040.00	41.120
	Metal Decking	Tons	35	Tons	71400	3960	37.680	Metal Decking	Tons	35	Tons	71400	3960	37.680
	Insulation - XPS	SF @ 1"	1,956	SF @ 1"	940	52.5	0.496	Insulation - XPS	SF @ 1"	1,956	SF @ 1"	940	52.5	0.496
Roof Structure	Metal Decking	Tons	46	Tons	93800	5200	49.500	Metal Decking	Tons	46	Tons	93800	5200	49.500
Envelope														
Exterior Walls	Brick Cladding	SF	23,400	SF	50300	8240	29.270	Fiber Cement Panel	SF	23,400	SF	19300	3180	11.240
	Insulation - XPS	SF @ 1"	187,200	SF @ 1"	89900	4790	47.345	Insulation - Mineral Wool	SF	187,200	SF	15600	2650	9.125
	Gyp Bd - 5/8" - Exterior Sheathing System	SF	23,400	SF	11800	2830	7.315	Gyp Bd - 5/8" - Exterior Sheathing System	SF	23,400	SF	11800	2830	7.315
	Metal Stud Framing - 6" Studs @ 16" Spacing	SF	23,400	SF	71000	5780	38.390	Metal Stud Framing - 6" Studs @ 24" Spacing	SF	23,400	SF	71000	5780	38.390
	Insulation - Closed Cell Spray Applied	SF @ 1"	70,661	SF @ 1"	26900	2000	14.450	Insulation - Open Cell Spray Applied	SF @ 1"	70,200	SF @ 1"	6700	538	3.619
	Gyp Bd - 5/8"	SF	23,400	SF	11800	2830	7.315	Gyp Bd - 5/8"	SF	23,400	SF	11800	2830	7.315
Translucent Façade	Translucent Façade - Kingspan Uniquad	SF	1,718	SF	32288	2704	17.496	Translucent Façade - Kingspan Uniquad	SF	1,718	SF	32288	2704	17.496
Curtainwall	Curtain Wall - Aluminum - Triple Glazed	SF	3,856	SF	45600	804	23.202	Curtain Wall - Aluminum - Triple Glazed	SF	3,856	SF	45600	804	23.202
Roof	TPO roofing membrane, 60 mils, white	SF	38,691	SF	14000	906	7.453	TPO roofing membrane, 60 mils, white	SF	38,691	SF	14000	906	7.453
	Insulation - XPS	SF @ 1"	425,601	SF @ 1"	258000	13700	135.850	Insulation - Polyiso (Non-Halogenated)	SF @ 1"	425,601	SF @ 1"	84700	5950	45.325
	Gyp Bd - 5/8"	SF	116,073	SF	58500	14000	36.250	Gyp Bd - 5/8"	SF	116,073	SF	58500	14000	36.250
						Total GWP (Metric Tons of CO2e)	993.012						Total GWP (Metric Tons of CO2e)	635.789
													% Reduction	35.97%

FIGURE 3-11 Embodied Carbon Primary Materials Reduction Calculations

Interior Materials Embodied Carbon Calculations											
				Industry Standard				Proposed			
Material	Functional Unit	Quantity Used in Project	Unit	Report #	A1-A3 (kg)	A4-A5 (kg)	Total (Metric Tons)	Report #	A1-A3 (kg)	A4-A5 (kg)	Total (Metric Tons)
TYPE 1 - 2' x 2' ACT Tiles	1 sf	18111.0	sf	Int-1B	6302.63	671.92	3.49	Int-1S	4310.42	1079.42	2.69
TYPE 4 - 2' x 2' ACT Tiles	1 sf	231.0	sf	Int-2B	97.94	12.50	0.06	Int-2S	51.74	14.28	0.03
Gypsum Board 5/8"	1 sf	175853.0	sf	Int-3B	48712.47	14507.87	31.61	Int-3S	34115.48	14507.87	24.31
Gym - Wood Flooring	1 sf	4884.0	sf	Int-4S	4443.42	2087.18	3.27	Int-4S	4443.42	2087.18	3.27
Gym - Plywood SubFloor	1 sf	4884.0	sf	Int-9B	99513.09	28600.00	64.06	Int-9S	680.60	28600.00	14.64
Bathroom - Ceramic Tile (Salvaged)	1sf	200.0	sf	Int-8B	17001.11	59.46	8.53	Int-8B	0	59.46	0.03
Interior Curtain Wall	1 sf	9975	sf	Int-5S	162172.52	2080.00	82.13	Int-5S	126031.22	2080.00	64.06
Hollow Metal Doors	1 Ea.	24	Ea.	Int-6B	10128.00	157.44	5.14	Int-6S	3360.00	157.44	1.76
Wood Doors	1 Ea.	84	Ea.	Int-7B	30030.00	551.04	15.29	Int-7S	6594.00	551.04	3.57
						Total GWP (Metric Tons CO2e)	213.56			Total GWP (Metric Tons CO2e)	114.36

FIGURE 3-12 Embodied Carbon Interior Materials Reduction Calculations

I07-7 PHOTOGRAPHS

INTENT

Provide photographs of the energy systems, and any critical and hidden materials for embodied carbon reductions.

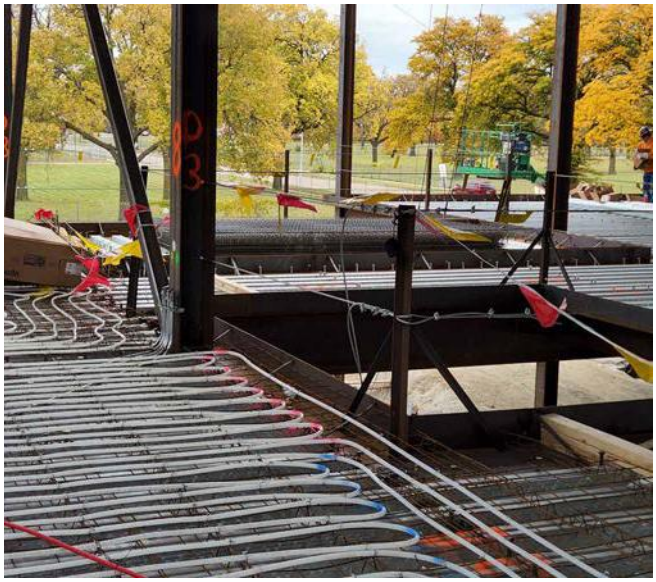

FIGURE 3-13 Radiant Tubing before Concrete Floor



FIGURE 3-15 Radiant Tubing Manifold



FIGURE 3-14 Our Direct Outdoor Air System



FIGURE 3-16 Geothermal well field install



FIGURE 3-17 Thermally broken steel detail

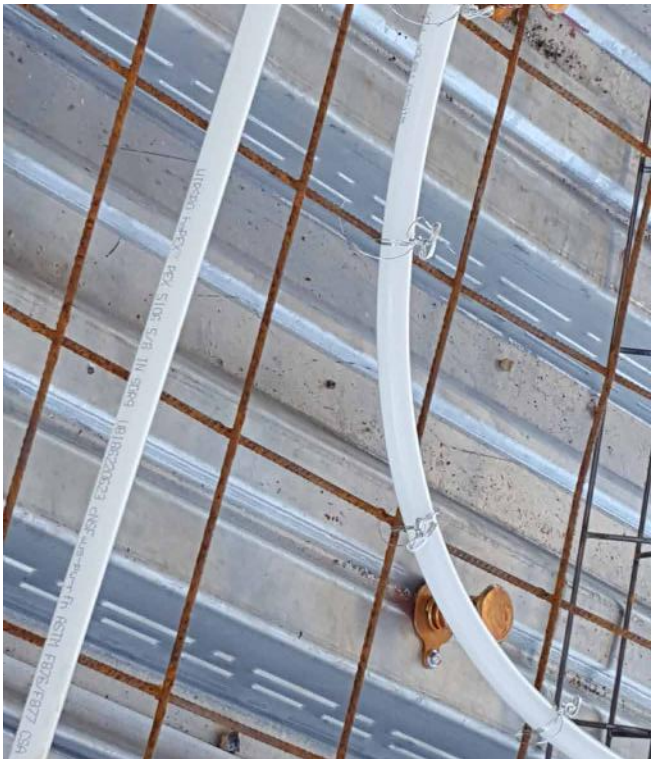

FIGURE 3-18 Detail of Radiant Tubing

I08-1 ENERGY PERFORMANCE DOCUMENTATION

INTENT

Describe how the project achieves Net Zero Energy.

NET ZERO ENERGY

Reference the narrative for **I07-1** above for information on the measures and systems employed in getting the Academy for Global Citizenship to net-positive.

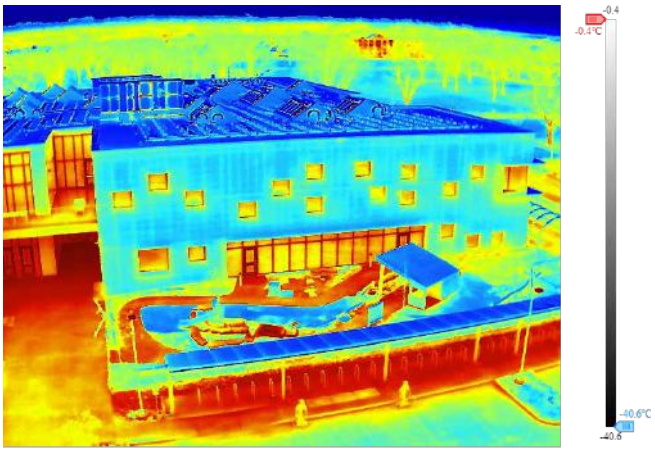

FIGURE 3-19 Geo Thermal Image



FIGURE 3-20 PV Array

I08-2 SUB-METERING DOCUMENTATION

INTENT

Describe the project sub-metering.

SUB-METERING STRATEGIES

Please reference the narrative for **I07-1** above for information on our sub-metering strategies, **Figure 3-22** for the tracking table, and **Appendix E-A** for the Sub-Meter Riser.



FIGURE 3-21 PV system Tie-In Panel

Instructions:
Fill out green and white cells as they pertain to the project. Customize production and demand sources as needed.

Living Building Challenge 3.0/ 3.1
Sub-metering Table

Project Name: Academy for Global Citizenship

	Performance Month	1	2	3	4	5	6	7	8	9	10	11	12	
Performance Period	Actual Month & Year	*10/01/24-10/31/24*	*11/01/24-11/30/24*	*12/01/24-12/31/24*	*01/01/25-01/31/25*	*02/01/25-02/28/25*	*03/01/25-03/30/25*	*04/01/25-04/30/25*	*05/01/25-05/31/25*	*06/01/25-06/30/25*	*07/01/25-07/31/25*	*08/01/25-08/31/25*	*09/01/25-09/30/25*	Annual Total
	Energy units	*kWH*												
Energy Production	Photovoltaics (location 1)	50117.66	22575.29	18941.63	28976.85	30652.87	52900.1	57250.46	44591.06	18586.79	61870.14	79366.77	53913.5	519743.12
	Photovoltaics (location 2)													0
	Micro-hydro-turbines													0
	Wind power													0
	Municipal Power (if grid tied)													0
	Other (describe)													0
	Total Energy Production	50117.66	22575.29	18941.63	28976.85	30652.87	52900.1	57250.46	44591.06	18586.79	61870.14	79366.77	53913.5	**519743.12**
Energy Demand	Heating		6142.52	13193.26	18121.12	12629.62	7096.01	6476.42						63658.95
	Cooling	5494.46							3085.07	4742.38	13554.33	13376.4	8673.76	48926.4
	Hot Water	4952.51	5235.23	6043.18	6845.86	5560.98	5026.31	4611.86	4249.82	4676.29	3521.14	4211.06	4917.22	59851.46
	Lighting	5069.91	4944.62	5552.68	5563.2	4454.06	4241.19	4272.69	3827.54	4070.05	3229.24	3721.59	4160.17	53106.94
	Ventilation	2370.99	2880.34	4896.34	5417.19	5109.16	4112.11	3819.7	2624.91	4026.31	3405.21	4079.35	3606.81	46348.42
	Computer Services													0
	Pumps	2546.23	2768.09	3623.42	4014.24	3278.43	3082.05	2670.81	2407.11	528.32	2146.1	2381.85	2498.94	31945.59
	Vertical Transportation	163.6	153.15	155.13	173.89	151.88	162.18	187.46	163.13	168.43	104.61	156.63	160.67	1900.76
	Plug Loads/ Equipment	8548.85	8112.04	8625.75	9304.01	6368.89	6231.2	9295.37	9597.71	9251.81	6490.2	9190.4	11213.7	102229.93
	Other (list)													0
	Total Energy Demand	29146.55	30235.99	42089.76	49439.51	37553.02	29951.05	31334.31	25955.29	27463.59	32450.83	37117.28	35231.27	**407968.45**
EUI	**Project Energy Use Intensity (EUI)**													
Modelled (optional)	Modelled energy production (kWh)	53,277	42,905	37,489	43,596	49,640	59,771	64,180	72,447	69,557	79,323	71,412	67,227	710824
	Modelled energy demand (kWh)	43,116	46,395	54,686	57,570	47,677	45,374	42,245	45,673	42,740	39,109	42,752	43,447	550784
	Predicted delta	10161	-3490	-17197	-13974	1963	14397	21935	26774	26817	40214	28660	23780	160040

FIGURE 3-22 Energy Sub-Metering Tracking Table

I08-3 CARBON OFFSET DOCUMENTATION

INTENT

Provide the calculations and data for the procurement of Carbon Offsets

EMBODIED CARBON OFFSETS

Based on the embodied carbon calculated in **I07-4 & I07-5**, the project needs to purchase Carbon Offsets in the following amounts:

Primary Structure	635.78 MT CO2e
Interior Materials	114.36 MT CO2e
Total Required	750.25 MT CO2e
Total Purchased	*752.00 MT CO2e*

These totals include the impacts from construction (Scopes A4 & A5) as detailed in **I07-4** and **I07-5**.

Please see receipt in **Appendix E-D.**



FIGURE 3-23 Receipt or Calculations

I08-4 RESILIENCE STRATEGY DOCUMENTATION

INTENT

Describe the resilience strategy.

RESILIENCY

The Academy for Global Citizenship has a full resilience program. See the **I02-3** and **I06-5** narratives around food and water.

SCENARIOS

The Academy For Global Citizenship (AGC) looked at two likely disaster scenarios for the Chicago area a winter week (7 days) with no power or a summer week (7 days) with no power.* See **Appendix E-E** for the full report.

*Please note, these are hypothetical situations, as if there was no power, the City of Chicago would not allow the school to be open for students, as the fire pump would not be functional, and the building could not be occupied.

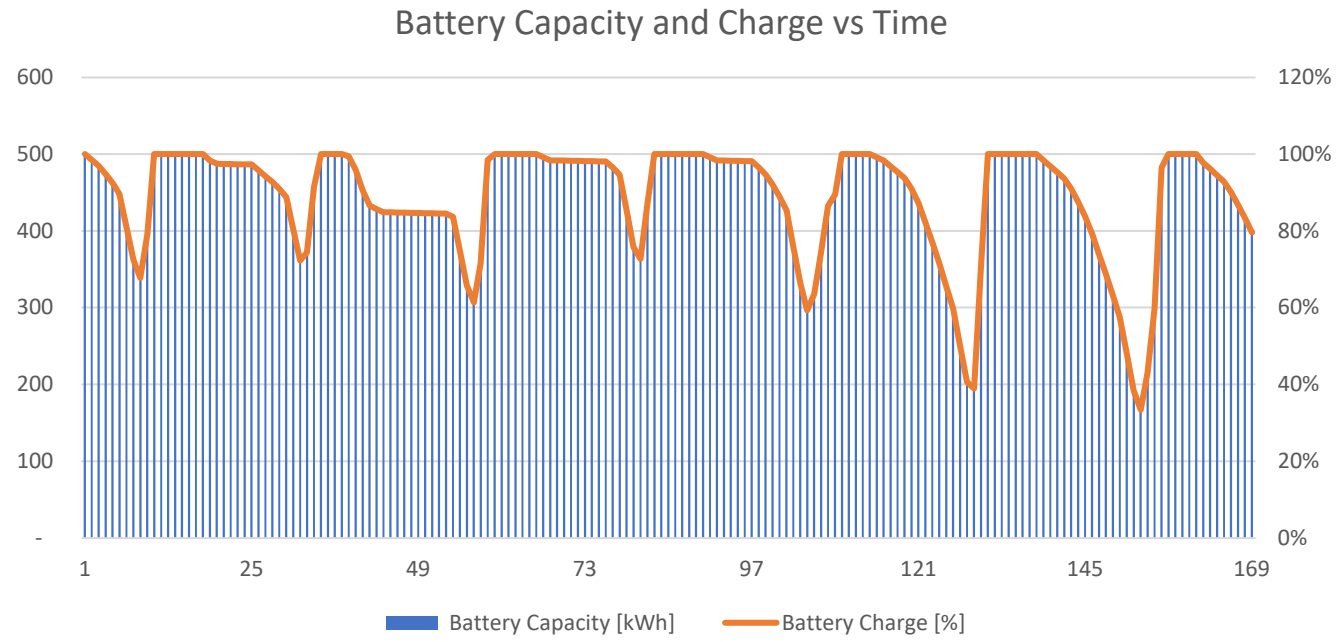

FIGURE 3-24 AGC Battery Capacity & Charge vs Time

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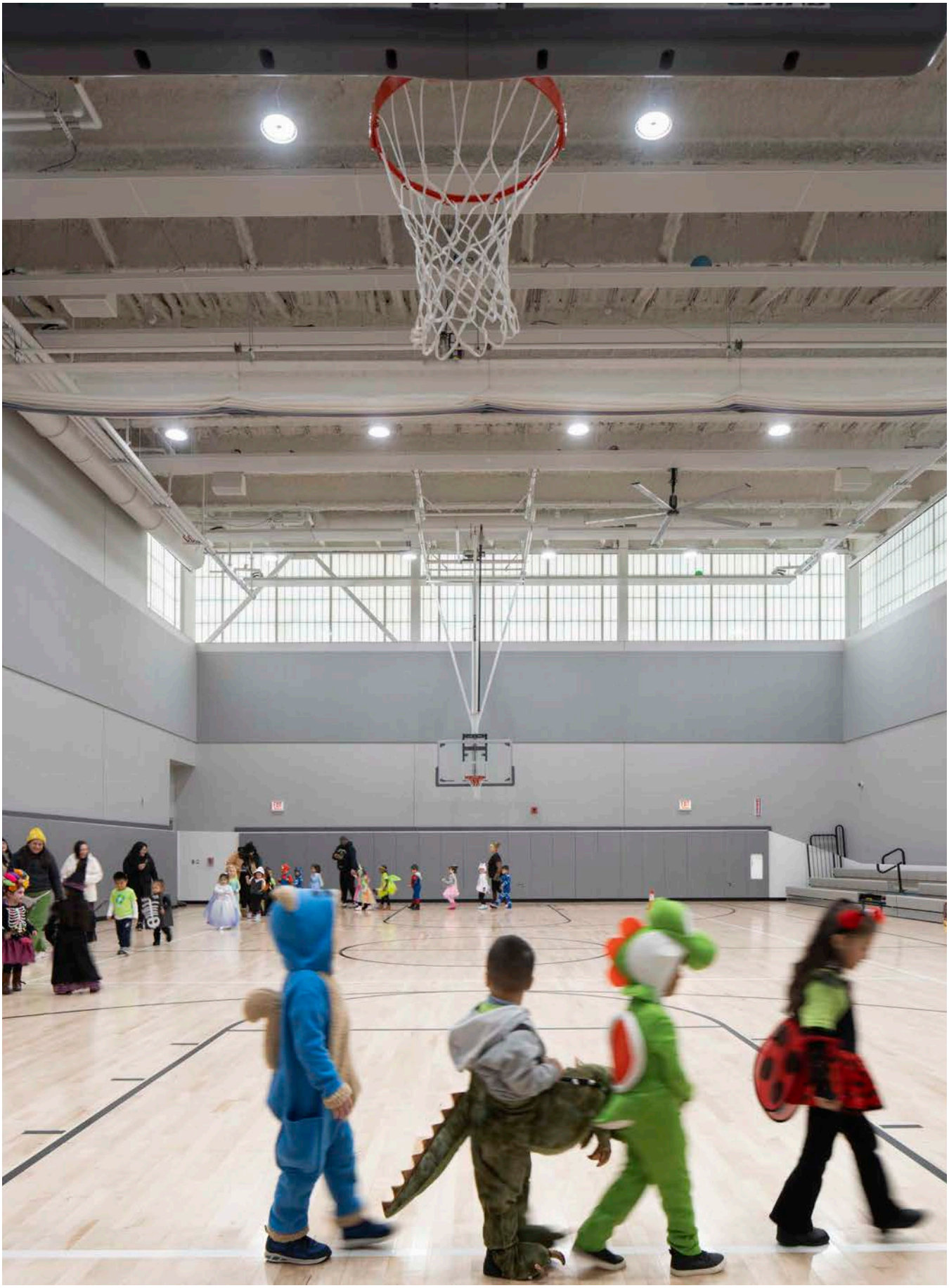

HEALTH & HAPPINESS

INTRODUCTION

09 - HEALTHY INTERIOR ENVIRONMENT

I09-1 HVAC Documentation
I09-2 No-Smoking Documentation
I09-3 Healthy Indoor Environment Plan (HIEP)

10 - HEALTHY INTERIOR PERFORMANCE

I10-1 IAQ Testing Results
I10-2 Photographs
I10-3 CDPH Compliance Documentation
I10-4 EPA Safer Choice-Labeled Product
I10-5 Access to Daylight Documentation
I10-6 Occupant Control Strategy

11 - ACCESS TO NATURE

I11-1 Narrative
I11-2 Plans & Diagrams
I11-3 Calculations
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APPENDICES

H-A Mechanical Ductwork Plans
H-B Healthy Indoor Environment Plan
H-C Request for Ruling: Access to Daylight
H-D Daylighting Exhibits
H-E Mechanical Filters

* I09-4 is superseded by I10-5

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INTRODUCTION

INTRODUCTION

The Health and Happiness Petal has three imperatives and is further broken down into fifteen requirements, summarized in two principal tenets: 1. Provide a healthy interior and 2. Provide access to nature throughout the design.

Research has shown that a connection to nature has a direct effect on people's productivity, creativity and ability to counter stress. Ensuring healthy environments does not rely just on the moment that the building is open, it requires continuous monitoring and diligence to ensure that alterations to systems over time do not diminish people's health.

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I09-1 HVAC DOCUMENTATION

INTENT

Provide a statement from the Design Engineer that 1. The project complies with ASHRAE 62 and 2. Show exhaust at all kitchens, bathrooms, and janitorial closets.

DOCUMENTATION

See **Appendix H-A** for the statement from the Design Engineer and an annotated plan showing the mechanical ductwork.

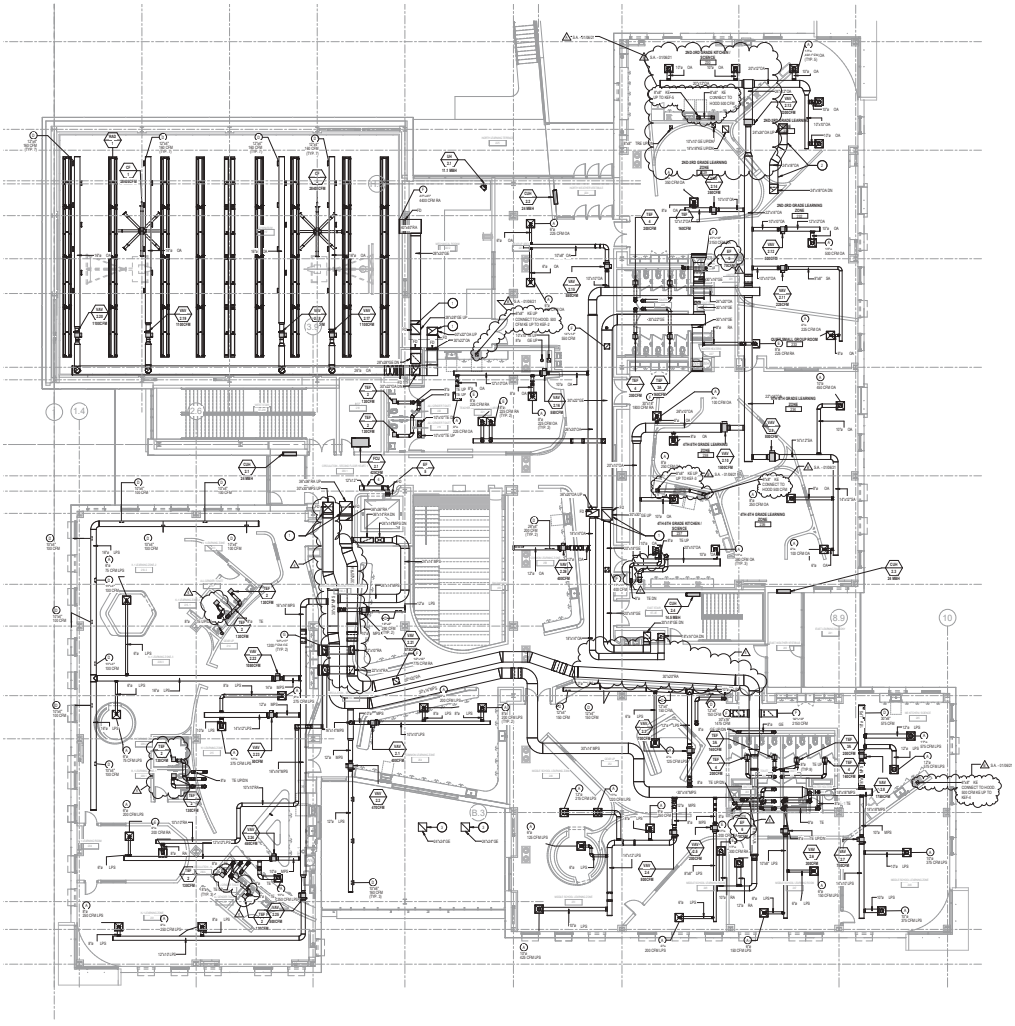


FIGURE 4-01 Duct Work Documentation

I09-2 NO-SMOKING DOCUMENTATION

INTENT

Prohibit smoking within and around any buildings.

THE POLICY

Being both a school and a health clinic, the building has a no smoking policy indoors and on the grounds. The no smoking policy is conveyed to the building occupants in several ways. For the students and staff it is part of the school orientation and policy, for visitors it is wall mounted signs and general familiarity with State and City law banning smoking indoors.

See the page at right extracted from the Academy for Global Citizenship Staff Handbook, dated 01/2024 and Figures **4-03** and **4-04** for the signage.

The following behaviors will not be tolerated and will be grounds for immediate discipline, up to and including immediate termination.

- Using any non-prescribed controlled substance or using prescribed medication inappropriately.
- Using, possessing, distributing or transmitting illegal chemical substances and/or unauthorized alcoholic beverages.
- Using glue, aerosol or other chemical substance for inhalation.
- Using any intoxicant or mood-changing, mind-altering or behavior-altering drugs.

Drug and Alcohol Free Workplace
Alert and rational behavior is required for the safe and adequate performance of job duties at the Academy for Global Citizenship. Therefore, working after the apparent use of alcohol, a controlled substance and abuse of any other substance is prohibited.

Tobacco Free Workplace
In order to promote the general health, welfare, and wellbeing of students and staff, smoking chewing, or other use of tobacco product by students, staff, and members of the public shall be banned from all school property.

15

FIGURE 4-02 Excerpt from the AGC Staff Handbook



FIGURE 4-03 No Smoking signs at South door

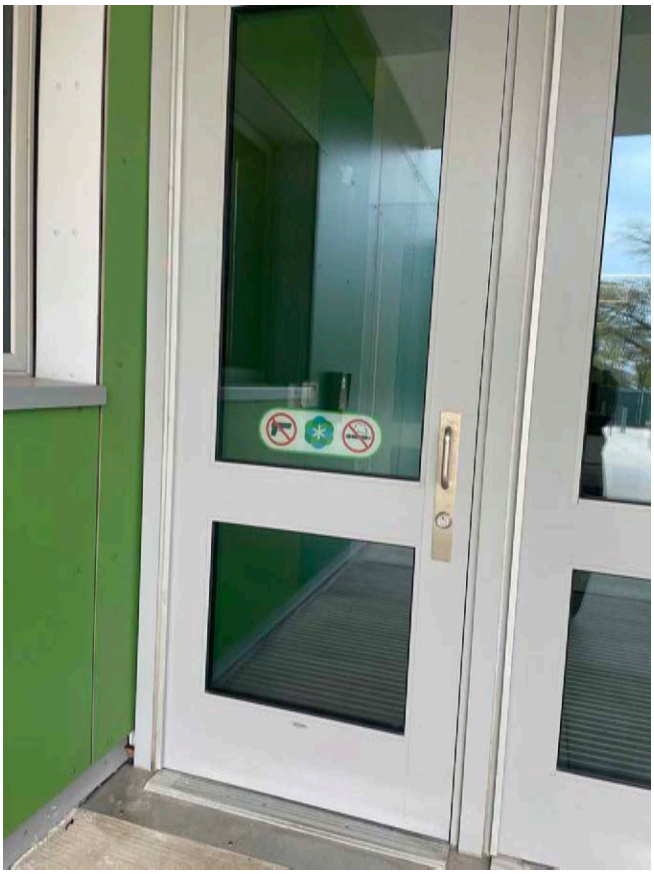


FIGURE 4-04 No Smoking signs at East door

I09-3 HEALTHY INDOOR ENVIRONMENT PLAN (HIEP)

INTENT

Develop a Healthy Indoor Environment Plan. The plan must address cleaning protocols, the prevention of particulates and toxins through an entry approach and implementation of at least one strategy to improve air quality.

PLAN & IMPLEMENTATION

The Healthy Building Plan has two main parts: built strategies and operational strategies.

The built strategies include walk off mats (see **Figures 4-05** & **4-06**), Merv 13 filters (see **Sheet M.500**)

WALK-OFF MAT DIMENSIONS				
FLOOR	TAG	DEPTH	WIDTH	AREA
1	1.1	41' - 8"	10' - 7"	441 SF
	1.2	8' - 4"	11' - 11"	90 SF
	1.3	9' - 4"	13' - 9"	128 SF
	1.4	8' - 4"	22' - 8"	189 SF
	1.5	8' - 6"	8' - 6"	72 SF
2	2.1	8' - 4"	11' - 11"	90 SF
	2.2	9' - 4"	13' - 9"	128 SF
	2.3	8' - 4"	10' - 4"	86 SF

LEGEND

- PRIMARY ENTRANCE
- SECONDARY ENTRANCE
- TERTIARY ENTRANCE
- EXIT



FIGURE 4-05 Healthy Indoor Environment - First Floor Plan

Appendix H-E, and direct exhaust of storage rooms and restrooms (sheets M.100, M.101, and M.102) see **Appendix H-A**.

For operational strategies, the Academy has implemented a Healthy Indoor Environment Plan (**Appendix H-B**), a no smoking policy (see Figures **4-03** & **4-04**), and CO2 sensors (CO2 being the signature molecule for stale air) along with a RESET IAQ monitoring system, see **I10-2**. The HIEP also specifies EPA Safer Choice, UL Ecologo, or Green Seal products, outlines procedures and protocols, and provides for record keeping and responsibilities for cleaning.

WALK-OFF MAT DIMENSIONS				
FLOOR	TAG	DEPTH	WIDTH	AREA
1	1.1	41' - 8"	10' - 7"	441 SF
	1.2	8' - 4"	11' - 11"	90 SF
	1.3	9' - 4"	13' - 9"	128 SF
	1.4	8' - 4"	22' - 8"	189 SF
	1.5	8' - 6"	8' - 6"	72 SF
2	2.1	8' - 4"	11' - 11"	90 SF
	2.2	9' - 4"	13' - 9"	128 SF
	2.3	8' - 4"	10' - 4"	86 SF

LEGEND	
	PRIMARY ENTRANCE
	SECONDARY ENTRANCE
	TERTIARY ENTRANCE
	EXIT

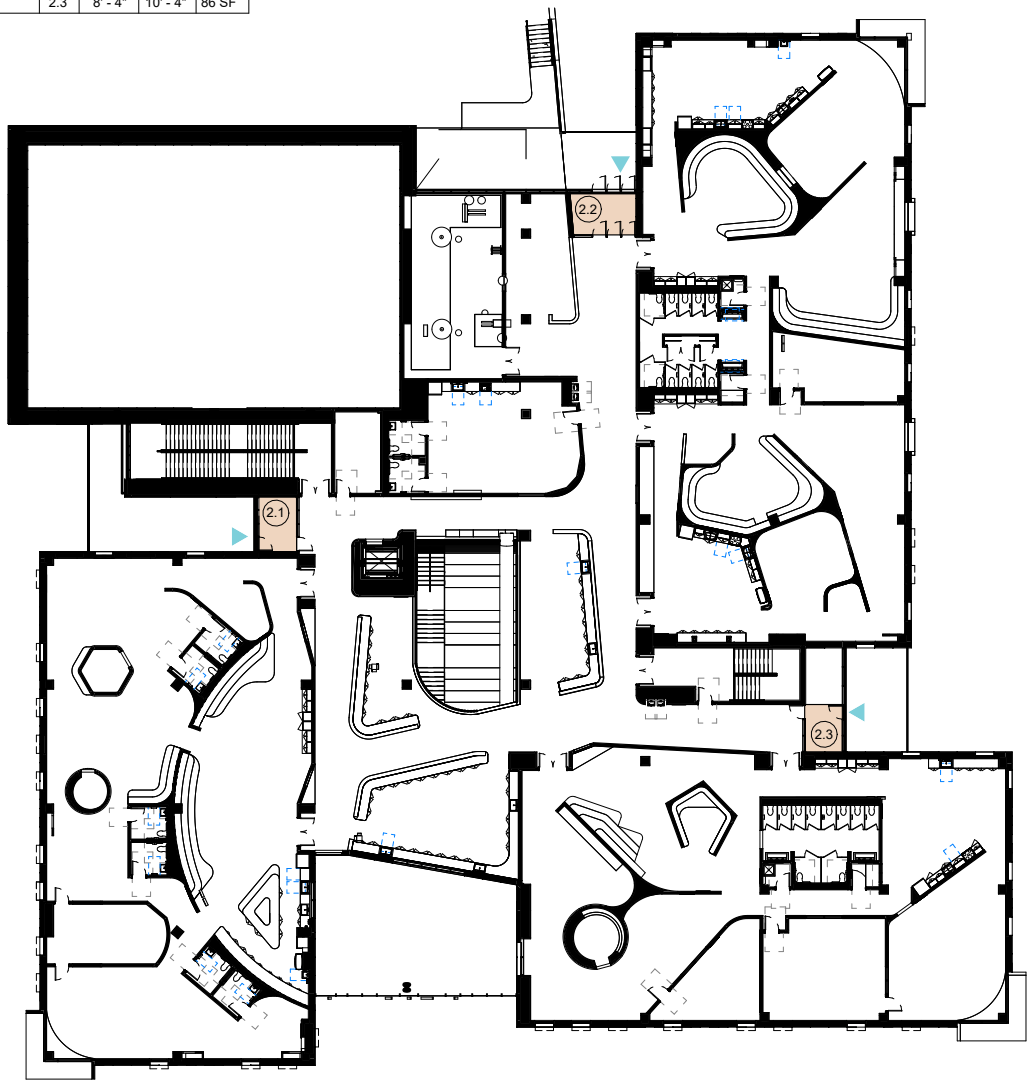


FIGURE 4-06 Healthy Indoor Environment - Second Floor Plan

I10-1 IAQ TESTING RESULTS

INTENT

Provide the results from an Indoor Air Quality test one to six months after occupancy, or provide readings from an ILFI-approved continuously monitored indoor air quality system.

COMPLIANCE

We opted to perform on site testing to show compliance with the intent. Please see the Indoor Air Quality Report prepared by WSP building systems in **Appendix H-G**. Please note our IAQ testing was aligned with our Performance Period which was October 2024 to October 2025. Our on site testing was delayed, as our original RESET system became untenable-tenable, so we pivoted and opted for the on site testing, which we performed as quick as we could, in September of 2025 and into the winter.

2. Results Summary

2.1.1 Particulate Matter and Inorganic Gases

Table 3: Particulate Matter and Inorganic Gases summarizes the results from the on-site tests for Particulate Matter and Inorganic Gases required for LBC – IAQ Testing. Tests were conducted on 09/18, 10/16, 10/28 and 12/05 of 2025, and 1/23 of 2026. None of the samples were found to exceed the concentration limits listed in Table 10-1 Maximum Pollutant Concentrations under the LBC IAQ Testing Clarifications.

Table 3: Particulate Matter and Inorganic Gases

IAQ Pollutant	Concentration Limit	A1	A2	A3	A4	A5	A6	A7	A8
PM 2.5	12 µg/m³	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
PM 10	30 µg/m³	1.00	2.00	4.00	4.00	6.00	7.00	8.50	15.50
Carbon Monoxide	6 ppm	0.00	0.00	0.00	0.41	0.00	0.34	0.00	0.00
Carbon Dioxide	600 ppm	585.00	546.00	530.00	530.00	522.00	522.00	580	560
Nitrogen Dioxide	21 ppb	0.00	0.00	0.00	1.00	1.00	0.00	0.00	7.00
Ozone	25 ppb	0.00	22.00	0.00	17.00	22.00	0.00	0.00	0.00

2.1.2 Volatile Organic Compounds

Table 4: Volatile Organic Compounds summarize the results from the lab-based tests for Volatile Organic Compounds required for required for LBC – IAQ Testing. Tests were conducted on 10/16/2025. None of the samples were found to exceed the concentration limits listed in Table 10-2 Maximum VOC Concentrations under the LBC IAQ Testing Clarifications.

Table 4: Volatile Organic Compounds

IAQ Pollutant	Concentration Limit (µg/m³)	A1	A2	A3	A4	A5	A6	A7	A8
Formaldehyde	13.5	6.7	8.0	6.1	4.8	11	10	9.6	12
Acetaldehyde	140	9.7	6.3	15	14	10	18	12	9.8
TVOC	400	25	<10	<10	<10	21	90	44	38
Benzene	3	<2	<2	<2	<2	<2	<2	<2	<2

A5	A6	A7	A8
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
5.8	6.7	6.9	6.2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
250	1100	73.2	24.5
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2
<2	<2	<2	<2

A6	A7	A8
<2	2.6	2.4
<2	<2	<2
<2	<2	<2
<2	<2	<2
<2	<2	<2

FIGURE 4-07 Test Results

I10-2 PHOTOGRAPHS

INTENT

Provide photographs that document the installation of any monitoring equipment that may not be easily visible at the time of the audit site visit.



FIGURE 4-09 IAQ Sensor at the Academy for Global Citizenship

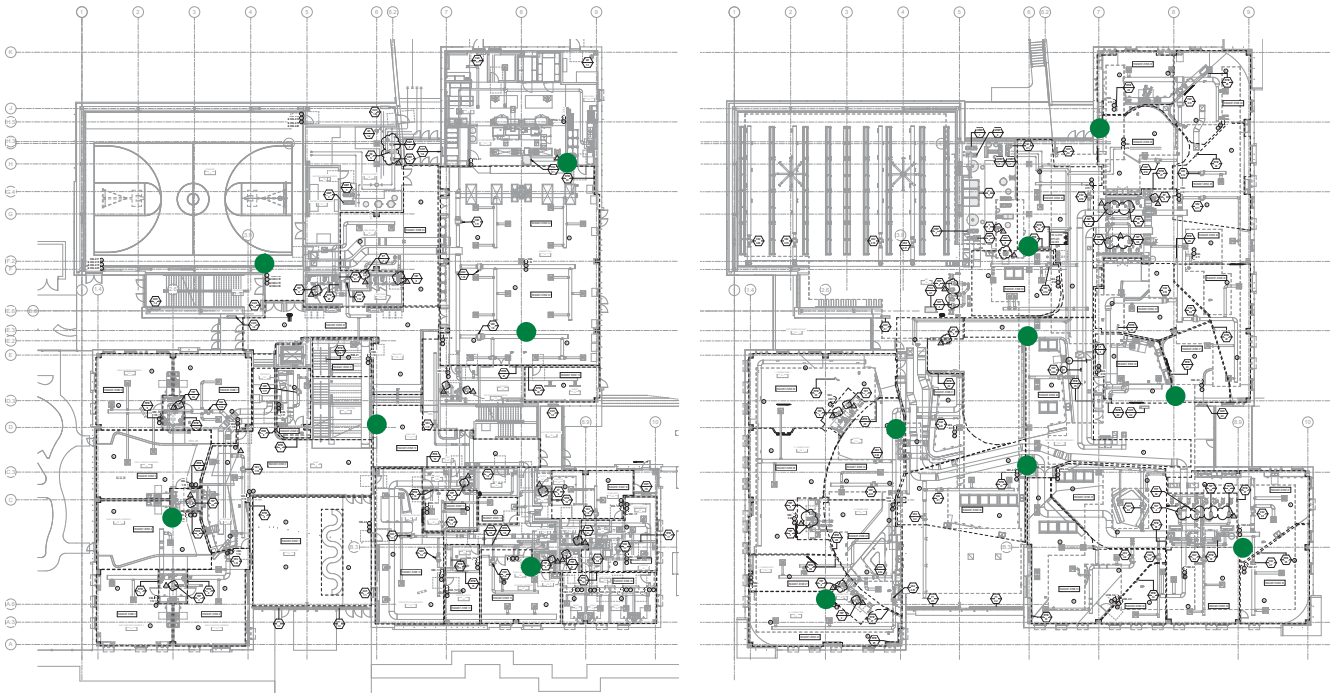


FIGURE 4-08 IAQ Sensor Locations, First Floor (Left) & Second Floor (Right)

I10-3 CDPH COMPLIANCE DOCUMENTATION

INTENT

Comply with the CDPH Standard Method v1.1-2010 for 90% of interior building products that have the potential to emit volatile organic compounds (VOCs).

EXCEPTIONS

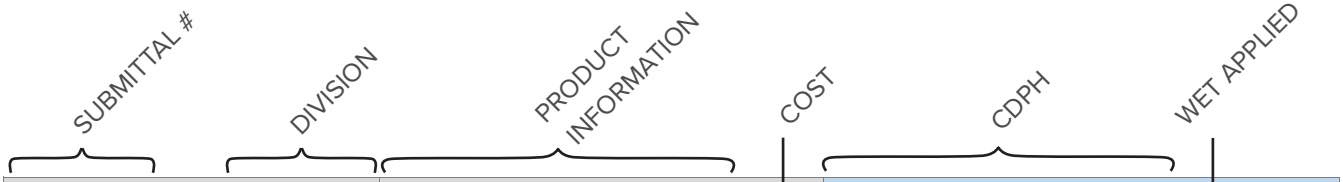
We have documented six exceptions to the CDPH emissions criteria. These are accounted for in Figure 4-08.

COMPLIANCE

Here is an excerpt from Division 03 - Concrete. Please see the MTT Product Tracker for the complete list of items.

CDPH Calculations			
total dollar value of rpoducts applicable to CDPH	$1,773,327.63		
Allowable Dollar Value to be non-compliant 10%		$177,332.76	10%
Dollar Value of Non-Compliant Products		***$140,867.99***	***8%***

FIGURE 4-10 CDPH at the Academy for Global Citizenship



CSI Division											I-10 Healthy Interior Performance CDPH VOC Emissions Testing				
Submittal	**Number**			Hide						Materials Cost					
No.	Secondary	Rev	Item	Uploaded	Alt #	Division Name	Product Type	Manufacturer	Model Name	*If natural material (e.g.*	applicable to I-10	CDPH Conformant Certification	CDPH Status	Wet-Applied Product?	Exception No.
11 66 23.11	702	02	B	Yes		Gymnasium Equipment	gymnasium equipment	Gared Performance Sports Systems	Gynmasium Curtain	$ 12,405.00	Yes	Exception	Complete	No	HH-003
11 66 23.11	703	01		Yes		Gymnasium Equipment	gymnasium equipment	Champion MVP 14	Wall Pads	$ 9,500.00	Yes	Exception	Complete	No	HH-003
22 00 00	701	01	D	Yes		General Plumbing	Gaskets	Southeastern Rubber Company	Multi-Tite And Dual-Tite Gaskets	$ 6,614.00	Yes	Custom Testing	Complete	No	HH-003
22 00 00	702	02	B	Yes		General Plumbing	Lead Ingot	Jones Stephens	L40-002	$ 5,222.00	Yes	Custom Testing	Complete	No	HH-003
22 00 00	703	01	G	Yes		General Plumbing	Solder	Harris	Bridgit Lead Free Solder	$ 2,249.00	Yes	Exception	Complete	No	HH-003
23 31 13	705	01	D	Yes		Metal Ducts	Gasket	Elgen	Butyl Gasket Tape	$ 8,000.00	Yes	Custom Testing	Complete	No	HH-003

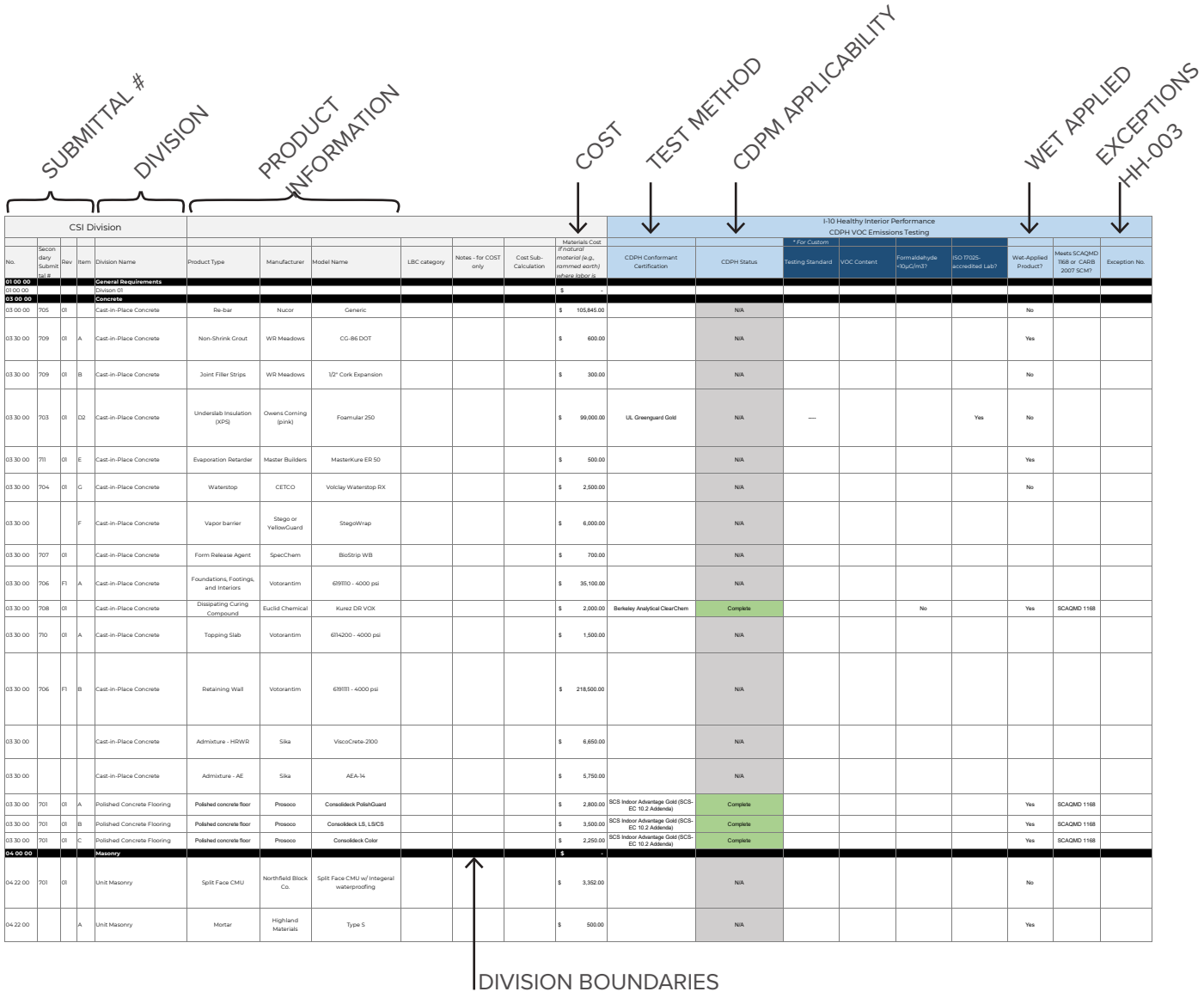
FIGURE 4-11 HH-003 Exception at the Academy for Global Citizenship

INTENT

Comply with the CDPH Standard Method v1.1-2010 for 90% of interior building products that have the potential to emit volatile organic compounds (VOCs).

COMPLIANCE

Here is an excerpt from Division 03 - Concrete. Please see the MTT Product Tracker for the complete list of items.



CSI Division													I-10 Healthy Interior Performance CDPH VOC Emissions Testing								
															* For Custom						
No.	Secondary Submittal #	Rev	Item	Division Name	Product Type	Manufacturer	Model Name	LBC category	Notes - for COST only	Cost Sub-Calculation	Materials Cost (if natural material (e.g., rammed earth) where labor is	CDPH Conformant Certification	CDPH Status	Testing Standard	VOC Content	Formaldehyde <10µG/m3?	ISO 17025-accredited Lab?	Wet-Applied Product?	Meets SCAQMD 1168 or CARB 2007 SCM?	Exception No.
01 00 00				**General Requirements**																	
01 00 00				Division 01							$ -										
03 00 00				**Concrete**																	
03 00 00	705	01		Cast-in-Place Concrete	Re-bar	Nucor	Generic				$ 105,845.00		N/A					No			
03 30 00	709	01	A	Cast-in-Place Concrete	Non-Shrink Grout	WR Meadows	CG-86 DOT				$ 600.00		N/A					Yes			
03 30 00	709	01	B	Cast-in-Place Concrete	Joint Filler Strips	WR Meadows	1/2" Cork Expansion				$ 300.00		N/A					No			
03 30 00	703	01	D2	Cast-in-Place Concrete	Underslab Insulation (XPS)	Owens Corning (pink)	Foamular 250				$ 99,000.00	UL Greenguard Gold	N/A	---			Yes	No			
03 30 00	711	01	E	Cast-in-Place Concrete	Evaporation Retarder	Master Builders	MasterKure ER 50				$ 500.00		N/A					Yes			
03 30 00	704	01	G	Cast-in-Place Concrete	Waterstop	CETCO	Volclay Waterstop RX				$ 2,500.00		N/A					No			
03 30 00			F	Cast-in-Place Concrete	Vapor barrier	Stego or YellowGuard	StegoWrap				$ 6,000.00		N/A								
03 30 00	707	01		Cast-in-Place Concrete	Form Release Agent	SpecChem	BioStrip WB				$ 700.00		N/A								
03 30 00	706	F1	A	Cast-in-Place Concrete	Foundations, Footings, and Interiors	Votorantim	619110 - 4000 psi				$ 35,100.00		N/A								
03 30 00	708	01		Cast-in-Place Concrete	Dissipating Curing Compound	Euclid Chemical	Kurez DR VOX				$ 2,000.00	Berkeley Analytical ClearChem	Complete			No		Yes	SCAQMD 1168		
03 30 00	710	01	A	Cast-in-Place Concrete	Topping Slab	Votorantim	614200 - 4000 psi				$ 1,500.00		N/A								
03 30 00	706	F1	B	Cast-in-Place Concrete	Retaining Wall	Votorantim	619111 - 4000 psi				$ 218,500.00		N/A								
03 30 00				Cast-in-Place Concrete	Admixture - HRWR	Sika	ViscoCrete-2100				$ 6,650.00		N/A								
03 30 00				Cast-in-Place Concrete	Admixture - AE	Sika	AEA-14				$ 5,750.00		N/A								
03 30 00	701	01	A	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck PolishGuard				$ 2,800.00	SCS Indoor Advantage Gold (SCS-EC 10.2 Addenda)	Complete					Yes	SCAQMD 1168		
03 30 00	701	01	B	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck LS, LS/CS				$ 3,500.00	SCS Indoor Advantage Gold (SCS-EC 10.2 Addenda)	Complete					Yes	SCAQMD 1168		
03 30 00	701	01	C	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck Color				$ 2,250.00	SCS Indoor Advantage Gold (SCS-EC 10.2 Addenda)	Complete					Yes	SCAQMD 1168		
04 00 00				**Masonry**							$ -										
04 22 00	701	01		Unit Masonry	Split Face CMU	Northfield Block Co.	Split Face CMU w/ Integeral waterproofing				$ 3,352.00		N/A					No			
04 22 00			A	Unit Masonry	Mortar	Highland Materials	Type S				$ 500.00		N/A					Yes			

FIGURE 4-12 IAQ Sensor at the Academy for Global Citizenship

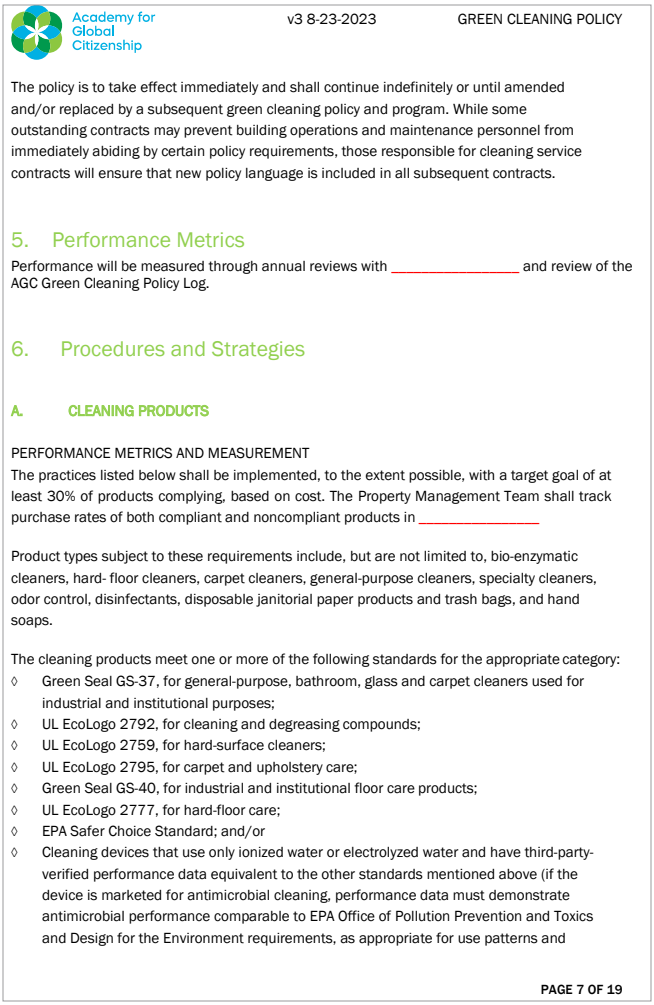
I10-4 EPA SAFER CHOICE-LABELED PRODUCT

INTENT

Implement a cleaning protocol that uses cleaning products that comply with the EPA Safer Choice Label.

COMPLIANCE

Excerpts from AGC operations manual.



Academy for Global Citizenship v3 8-23-2023 GREEN CLEANING POLICY

The policy is to take effect immediately and shall continue indefinitely or until amended and/or replaced by a subsequent green cleaning policy and program. While some outstanding contracts may prevent building operations and maintenance personnel from immediately abiding by certain policy requirements, those responsible for cleaning service contracts will ensure that new policy language is included in all subsequent contracts.

5. Performance Metrics

Performance will be measured through annual reviews with _____ and review of the AGC Green Cleaning Policy Log.

6. Procedures and Strategies

A. CLEANING PRODUCTS

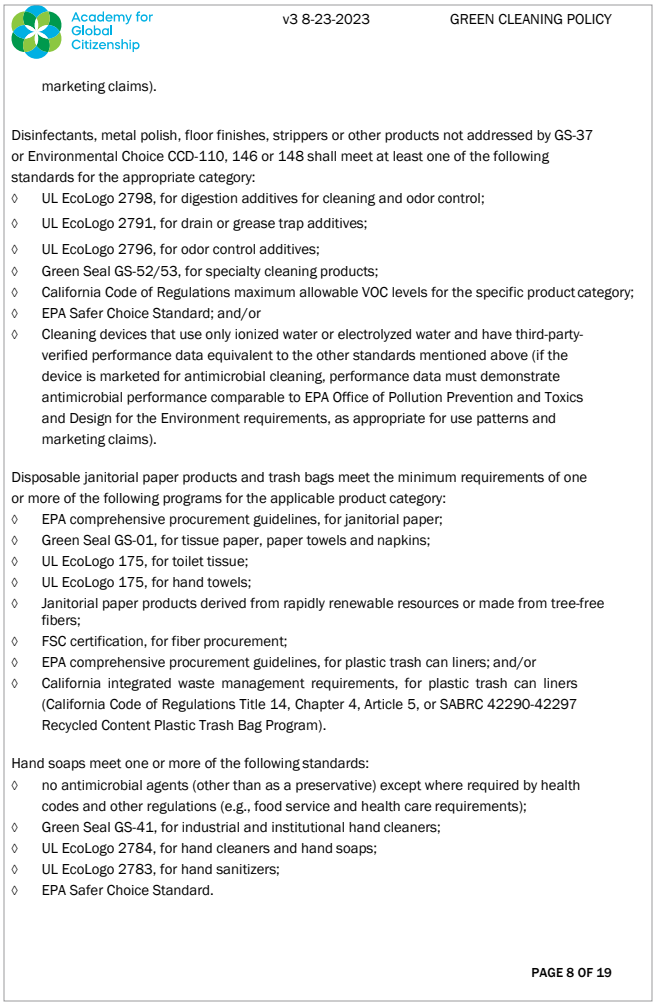
PERFORMANCE METRICS AND MEASUREMENT
The practices listed below shall be implemented, to the extent possible, with a target goal of at least 30% of products complying, based on cost. The Property Management Team shall track purchase rates of both compliant and noncompliant products in _____

Product types subject to these requirements include, but are not limited to, bio-enzymatic cleaners, hard- floor cleaners, carpet cleaners, general-purpose cleaners, specialty cleaners, odor control, disinfectants, disposable janitorial paper products and trash bags, and hand soaps.

The cleaning products meet one or more of the following standards for the appropriate category:

- ◊ Green Seal GS-37, for general-purpose, bathroom, glass and carpet cleaners used for industrial and institutional purposes;
- ◊ UL EcoLogo 2792, for cleaning and degreasing compounds;
- ◊ UL EcoLogo 2759, for hard-surface cleaners;
- ◊ UL EcoLogo 2795, for carpet and upholstery care;
- ◊ Green Seal GS-40, for industrial and institutional floor care products;
- ◊ UL EcoLogo 2777, for hard-floor care;
- ◊ EPA Safer Choice Standard; and/or
- ◊ Cleaning devices that use only ionized water or electrolyzed water and have third-party-verified performance data equivalent to the other standards mentioned above (if the device is marketed for antimicrobial cleaning, performance data must demonstrate antimicrobial performance comparable to EPA Office of Pollution Prevention and Toxics and Design for the Environment requirements, as appropriate for use patterns and

PAGE 7 OF 19



Academy for Global Citizenship v3 8-23-2023 GREEN CLEANING POLICY

marketing claims).

Disinfectants, metal polish, floor finishes, strippers or other products not addressed by GS-37 or Environmental Choice CCD-110, 146 or 148 shall meet at least one of the following standards for the appropriate category:

- ◊ UL EcoLogo 2798, for digestion additives for cleaning and odor control;
- ◊ UL EcoLogo 2791, for drain or grease trap additives;
- ◊ UL EcoLogo 2796, for odor control additives;
- ◊ Green Seal GS-52/53, for specialty cleaning products;
- ◊ California Code of Regulations maximum allowable VOC levels for the specific product category;
- ◊ EPA Safer Choice Standard; and/or
- ◊ Cleaning devices that use only ionized water or electrolyzed water and have third-party-verified performance data equivalent to the other standards mentioned above (if the device is marketed for antimicrobial cleaning, performance data must demonstrate antimicrobial performance comparable to EPA Office of Pollution Prevention and Toxics and Design for the Environment requirements, as appropriate for use patterns and marketing claims).

Disposable janitorial paper products and trash bags meet the minimum requirements of one or more of the following programs for the applicable product category:

- ◊ EPA comprehensive procurement guidelines, for janitorial paper;
- ◊ Green Seal GS-01, for tissue paper, paper towels and napkins;
- ◊ UL EcoLogo 175, for toilet tissue;
- ◊ UL EcoLogo 175, for hand towels;
- ◊ Janitorial paper products derived from rapidly renewable resources or made from tree-free fibers;
- ◊ FSC certification, for fiber procurement;
- ◊ EPA comprehensive procurement guidelines, for plastic trash can liners; and/or
- ◊ California integrated waste management requirements, for plastic trash can liners (California Code of Regulations Title 14, Chapter 4, Article 5, or SABRC 42290-42297 Recycled Content Plastic Trash Bag Program).

Hand soaps meet one or more of the following standards:

- ◊ no antimicrobial agents (other than as a preservative) except where required by health codes and other regulations (e.g., food service and health care requirements);
- ◊ Green Seal GS-41, for industrial and institutional hand cleaners;
- ◊ UL EcoLogo 2784, for hand cleaners and hand soaps;
- ◊ UL EcoLogo 2783, for hand sanitizers;
- ◊ EPA Safer Choice Standard.

PAGE 8 OF 19

FIGURE 4-13 Excerpt from the Healthy Indoor Environment Plan describing the cleaning products used

I10-5 ACCESS TO DAYLIGHT DOCUMENTATION

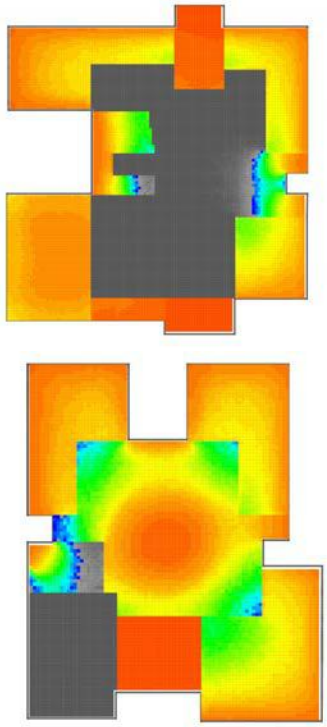
INTENT

Provide plans, diagrams, and calculations showing access to views and daylight for 95% of regularly occupied spaces, as well as a narrative with photos describing how regular occupants of the remaining 5% have the opportunity to move to spaces providing compliant daylight for a portion of their day.

WELL-PLACED WINDOWS & SKYLIGHTS

Through thoughtful window placement and skylights, The Academy for Global Citizenship achieves 95% access to daylight and views as indicated in the attached drawings. Early in the design process when the scheme went to two floors we performed a daylight analysis to ensure that we would still be able to achieve the 95% threshold. See **Appendix H-F**.

We then refined the design utilizing strategies such as skylights, view corridors, and selective area of internal glazing (to external wall glazing) along with window placement. Please see calculations (**Figure 4-14**), photographs, **Appendix H-D**, and Request for Ruling in **Appendix H-C**.



LEVEL 1
Spatial Daylight Autonomy

LEVEL 2
Spatial Daylight Autonomy

FIGURE 4-15 Daylighting Diagrams

	all values in SF		basic without execptions	w/exam rooms (Ask 2)	w/greenhouse (Ask 3A)	w/ kitchen (Ask 3B)	w/ pre-K (Ask 3C)	w/skylights (Ask 1)
USF	65,853							
Regularly Occupied								
Lower Level	1,516							
Level 1	9,254							
	10,770							
Level 2	11,270							
	3,264							
	14,534							
Total Regularly Occupied Space		25,304	25,304	25,304	25,304	25,304	25,304	25,304
Total with Daylight and Views			20,287	20,832	21,231	21,458	21,592	24,311
			80.17%	**82.33%**	**83.90%**	**84.80%**	**85.33%**	**96.08%**

FIGURE 4-14 Interior condition with natural daylight and views of outside



FIGURE 4-16 Skylights bring in natural light to interior areas



FIGURE 4-17 Interior condition with natural daylighting and views of nature

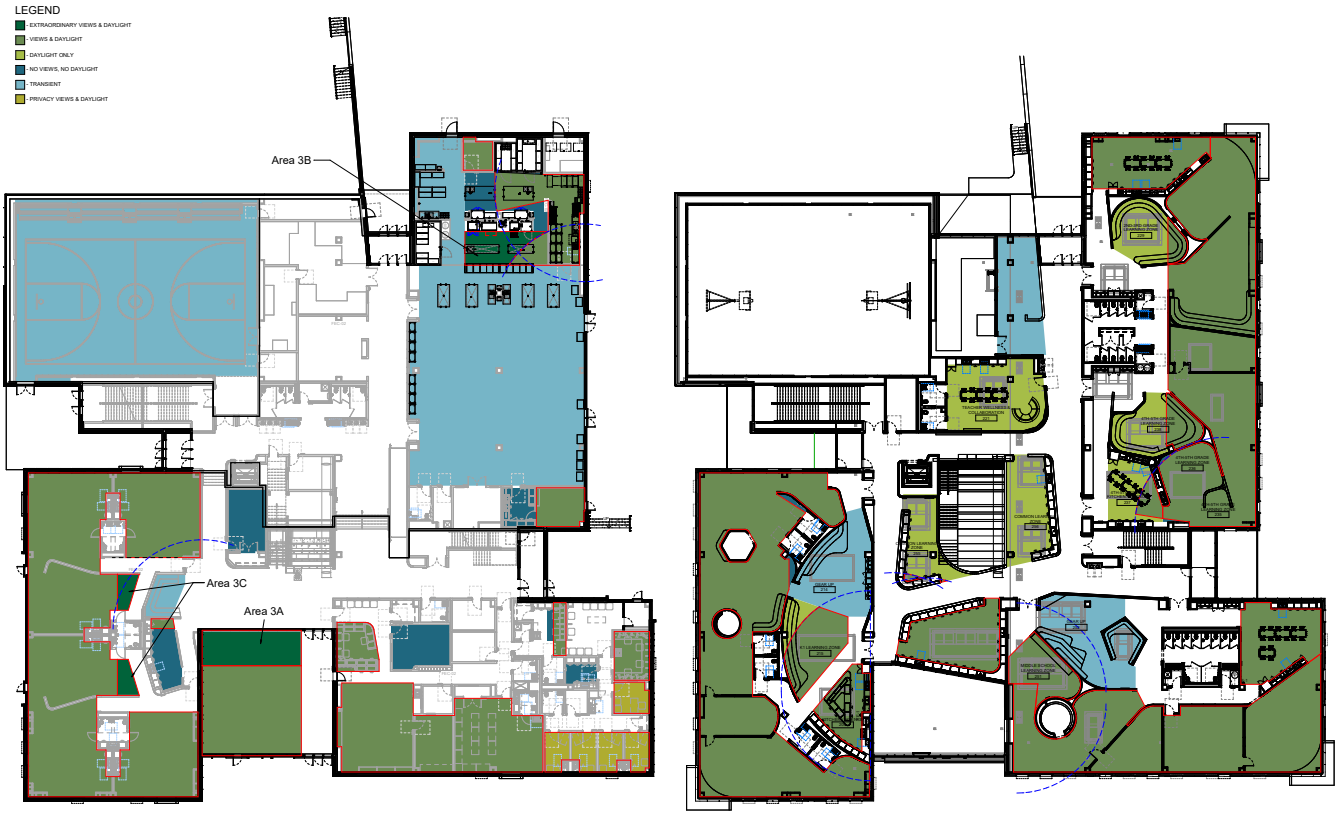


FIGURE 4-18 Daylighting Diagram

I10-6 OCCUPANT CONTROL STRATEGY DOCUMENTATION

INTENT

Provide a narrative, plans, photos, and diagrams demonstrating that at least two of the following strategies have been implemented for occupant control.

1. OPERABLE WINDOWS

Awning windows have been installed throughout the building at appropriate reach ranges giving occupants control to open and close windows. Visual cues via an automatic light fixture associated with the building's mechanical system will indicate when it is an appropriate time to open or close a window. See **Figure 4-19** for an operable window, temperature control, and flexible workspace diagram.

2. LOCAL AIRFLOW & TEMPERATURE CONTROLS

Occupants can control all awning windows within the appropriate reach ranges. In addition, occupants are granted control over thermostats. The thermostats control heating and cooling functions of the radiant floor slab which is further outlined under the Energy Petal.

3. FLEXIBLE OPTIONS FOR WORKING & LEARNING

A keystone in the Academy for Global Citizenship curriculum is active learning. No space is singular in its function creating fluidity in the programmatic functions. This programmatic flexibility encourages faculty and students to adapt and modify classroom functions to meet diverse teaching and learning styles.

Some flexible work options include the following:
- Open classroom plan
- Movable furniture in classrooms
- Movable furniture in faculty office space
- Tiered seating
- Accessible storage
- Multiple, age appropriate, kitchens
- Multiple, age appropriate, outdoor play spaces

Adaptable lunchroom/community meeting space



FIGURE 4-19 Active Staircase



FIGURE 4-20 Flexible Classroom Space



FIGURE 4-21 Adaptable Lunchroom/Community Meeting Space



FIGURE 4-22 Tiered Seating

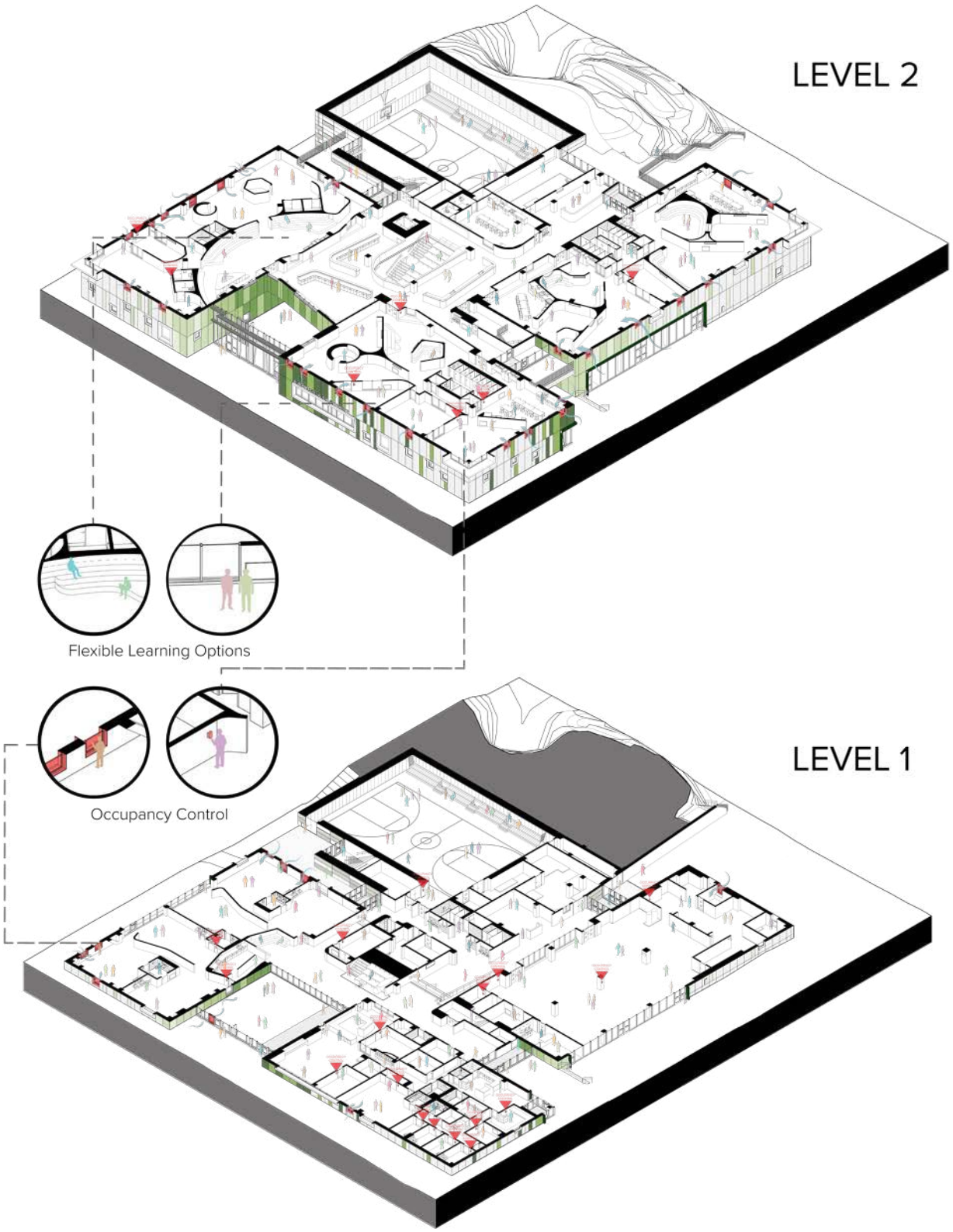


FIGURE 4-23 Axonometric Diagram showing Operable Windows, Thermostats, and Adaptable Classroom Spaces

I11-1 NARRATIVE

INTENT

Provide: 1. A narrative describing the design intent for human nature interactions and how these are accomplished and distributed in both the interior and exterior of the project. 2. Frequency and duration of interactions as occupants move throughout the day should be anticipated and described in relation to the plans and/or diagrams in **I11-2**.

HUMAN/NATURE INTERACTION @ AGC

The school is open Monday through Friday from 8am-3pm, equal to 7 hours or 420 minutes per day. AGC has set a goal of having their students spend 30% of their time outdoors through daily or weekly outdoor programming.

AGC Daily Outdoor Programming: All students have a recess outdoors every day. (Recess is held year-round except when lightning threatens.)

AGC Weekly Outdoor Programming: All grade levels will spend between 60 and 105 minutes per week outdoors as follows. Students in K-5th grade have a 60-minute outdoor sustainability class (12 minutes per day) that includes garden work, nature play, and activities focused on natural sciences. Middle school students (grades 6-8) have a weekly 80-minute (16 minutes per day) outdoor session in a Sustainability design class that integrates similar themes and experiential learning for their learning level. Students in grades 2-5 will have 45 minutes (8 minutes per day) of nature play and nature engagement as part of an extended learning opportunity.

COMMON SPACES WITH VIEWS TO NATURE

In accordance with the Living Building Challenge requirements, all commonly occupied spaces meet the required views to the outside, therefore occupants will have a view to the outside at nearly every moment of the day, refer to **I10-5** for more information. Additionally, hallways, which are not considered a commonly occupied space, also maintain views to the outside. For the purposes of keeping the calculations conservative and comparative to a baseline, interior views to the outside were not included in the calculations, otherwise occupants would enjoy nearly 100% of their day 'interacting with nature'.

HUMAN/NATURE INTERACTION @ CPS

The data in Figure 4-21 outlines the time students will spend 'interacting with nature' at the Academy for Global Citizenship and draws comparison to the amount of time students would spend 'interacting with nature' if AGC followed the standard Chicago Public Schools Curriculum. Calculations use time spent on a "typical day".

Effective as of 2021, the Illinois State Board of Education requires children up to grade 5 to receive 30 minutes of unstructured play time (recess) each day. After grade 5 schools are no longer required to provide students with recess.

The average occupant at a typical Chicago Public School spends roughly 25 minutes of their day outside, while at AGC the average occupant conservatively spends 100 minutes of their day outside. It can be concluded that the average occupant at AGC spends roughly 400% more time outdoors compared to a typical Public School in Chicago, IL.

I11-2 PLANS & DIAGRAMS

INTENT

Provide plans and/or diagrams showing all opportunities for human nature interactions and showing how representative occupant groups experience these interactions throughout a typical day.

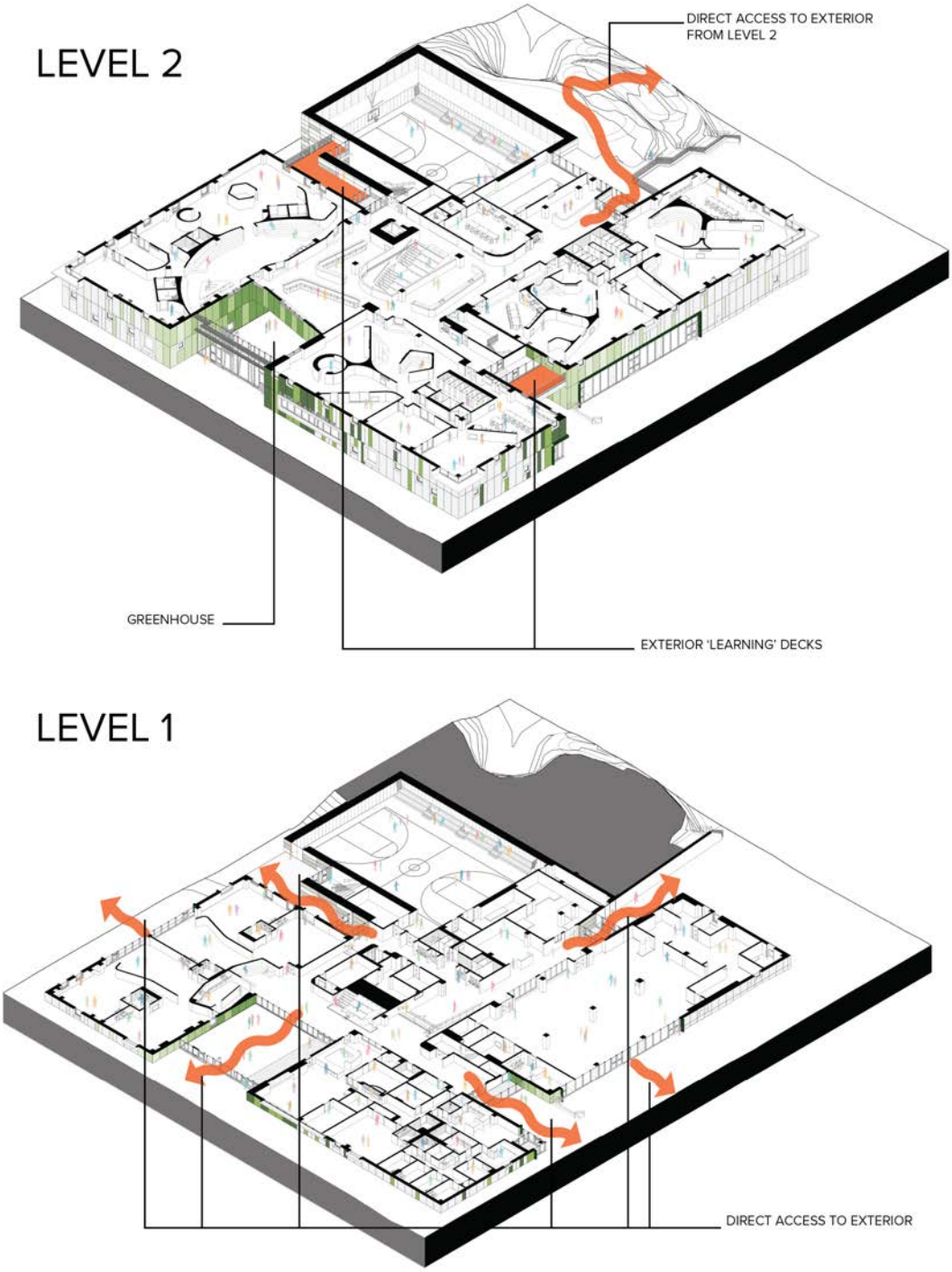


FIGURE 4-24 Opportunities for Human Interaction with Nature

I11-3 CALCULATIONS

INTENT

Provide calculations showing that 75% of all regular occupants benefit from sufficient and frequent human nature interactions, based on the plans / diagrams generated in **I11-2**.

Academy for Global Citizenship - Occupancy		
Occupant	**Count (#)**	**Percent of Population**
Early Childhood Development	102	15%
Kindergarden through 1st Grade	120	18%
2nd through 3rd Grade	120	18%
4th through 5th Grade	108	16%
Middle School	150	22%
Faculty	75	11%
Total	**675**	**100%**

Chicago Public School - Occupancy		
Occupant	**Count (#)**	**Percent of Population**
Early Childhood Development	102	15%
Kindergarden through 1st Grade	120	18%
2nd through 3rd Grade	120	18%
4th through 5th Grade	108	16%
Middle School	150	22%
Faculty	75	11%
Total	**675**	**100%**

Academy for Global Citizenship - Outdoor Time (measured in minutes)							
Occupant Type	**Recess**	**Sustainability Design Class**	**Break**	**Nature Play**	**Gym**	**Lunch**	**Outdoor Time Per Day**
Early Childhood Development	90	-	-	-	10	30	130
Kindergarden through 1st Grade	45	12	-	-	10	30	97
2nd through 3rd Grade	45	12	-	8	10	30	105
4th through 5th Grade	45	12	-	8	10	30	105
Middle School	45	16	-	-	10	30	101
Faculty	5	10	30	-	-	30	75

Chicago Public School - Outdoor Time (measured in minutes)							
Occupant Type	**Recess**	**Sustainability Design Class**	**Break**	**Nature Play**	**Gym**	**Lunch**	**Outdoor Time Per Day**
Early Childhood Development	30	-	-	-	-	-	30
Kindergarden through 1st Grade	30	-	-	-	-	-	30
2nd through 3rd Grade	30	-	-	-	-	-	30
4th through 5th Grade	30	-	-	-	-	-	30
Middle School	-	-	-	-	-	-	-
Faculty	5	-	30	-	-	-	35

Academy for Global Citizenship - Total Time Spent In Nature by Occupant Type			
Occupant Type	**Time on Site per Day**	**Time Outside Per Day**	**Percentage (%)**
Early Childhood Development	420	130	31%
Kindergarden through 1st Grade	420	97	23%
2nd through 3rd Grade	420	105	25%
4th through 5th Grade	420	105	25%
Middle School	420	101	24%
Faculty	420	75	18%

Chicago Public School - Total Time Spent In Nature by Occupant Type			
Occupant Type	**Time on Site per Day**	**Time Outside Per Day**	**Percentage (%)**
Early Childhood Development	420	30	7%
Kindergarden through 1st Grade	420	30	7%
2nd through 3rd Grade	420	30	7%
4th through 5th Grade	420	30	7%
Middle School	420	-	0%
Faculty	420	35	8%

Academy for Global Citizenship - Average Time Spent Outside			
Occupant	**Percent of Population**	**Time Outside Per Day**	**Share of Total**
Early Childhood Development	15%	130	19.5
Kindergarden through 1st Grade	18%	97	17.5
2nd through 3rd Grade	18%	105	18.9
4th through 5th Grade	16%	105	16.8
Middle School	22%	101	22.2
Faculty	11%	75	8.3
		Average Time Spent Outside	**103.1**
		Percent of Day	**24.6%**

Chicago Public School - Average Time Spent Outside			
Occupant	**Percent of Population**	**Time Outside Per Day**	**Share of Total**
Early Childhood Development	15%	30	4.5
Kindergarden through 1st Grade	18%	30	5.4
2nd through 3rd Grade	18%	30	5.4
4th through 5th Grade	16%	30	4.8
Middle School	22%	-	0.0
Faculty	11%	35	3.9
		Average Time Spent Outside	**24.0**
		Percent of Day	**5.7%**

FIGURE 4-25 Calculations Comparing the Experience of a Student at AGC to a Student in a typical Chicago, IL Public School

I11-4 PHOTOGRAPHS

INTENT

Provide photographs of strategies used to create human nature interaction.

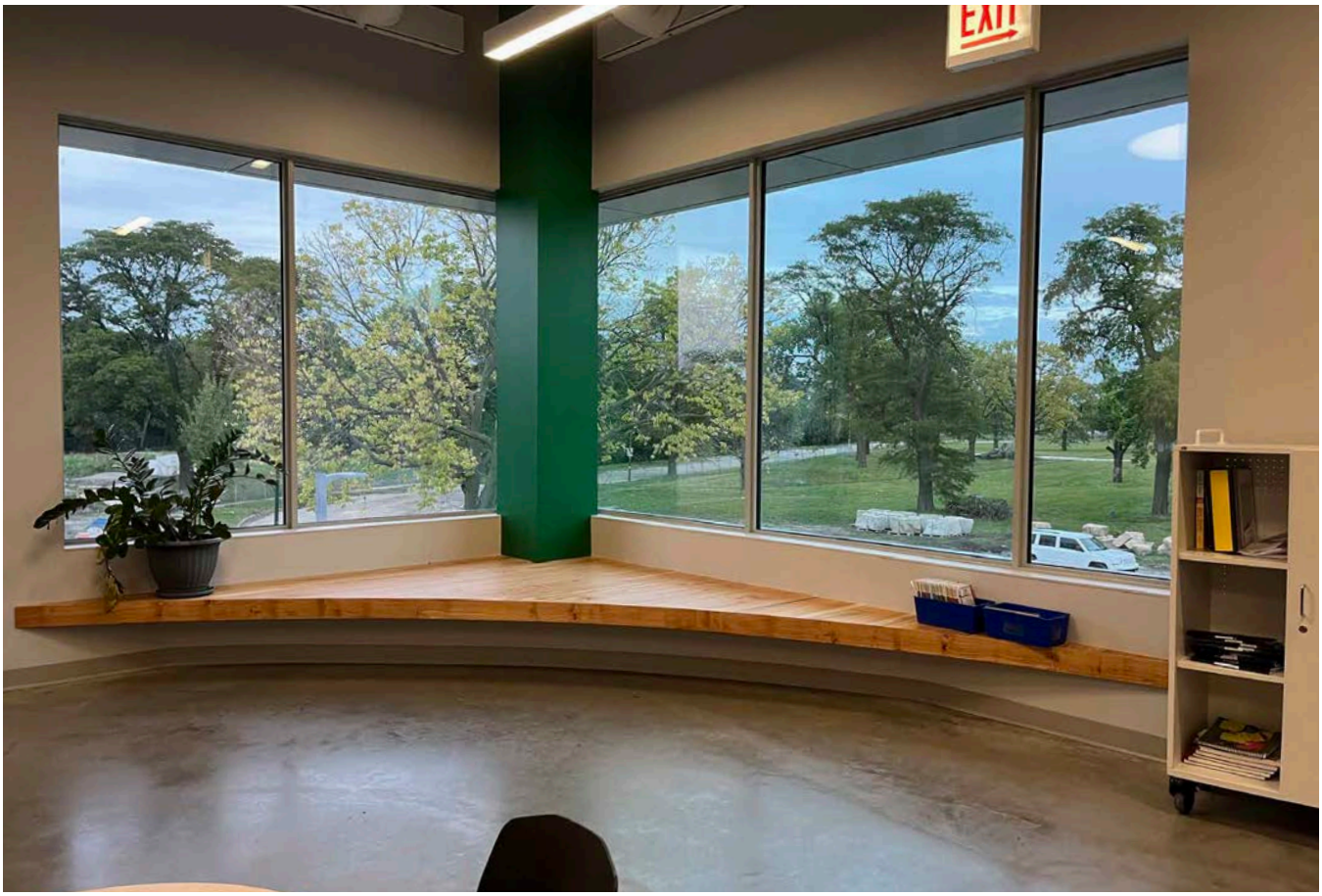


FIGURE 4-26 Views of Nature



FIGURE 4-27 Views of Nature



FIGURE 4-28 Interior Greenhouse

I11-5 POST OCCUPANCY EVALUATION

INTENT

Provide a completed 2-part Post Occupancy Evaluation, including a summary in narrative form with graphs or charts as needed of the quantitative and qualitative findings.

POST OCCUPANCY EVALUATION SURVEY

We performed a survey of the 2nd and 3rd grade classes, the 4th, 5th, 6th, 7th, and 8th grade classes, and the staff, including some of the health center (a separate entity from the school). The results are in the three following charts and indicate that the students "like" the building, can see nature, and feel healthy. Clearly the 4th – 8th grade groups were somewhat more critical.

We think some of the feedback around smell may be due to awkward phrasing of the question (there's a double negative when you consider the question and the response..."I do not notice bad smells..." and the response options are never, not much, sometimes, often and always. Some students may have been saying I "never" notice the smell which in this case would mean they always notice bad smells."

The survey has given the School management some interesting feedback that they plan to investigate further.

POST OCCUPANCY EVALUATION IMPROVEMENT

We could not access test scores, but were able to the average sick days per employee and did notice a decrease from the previous academic year.

Average sick days used per employee
2022-23: 5.11
2024-25: 4.69

Within the survey we asked open ended questions, which are included in A**ppendix H-I**.

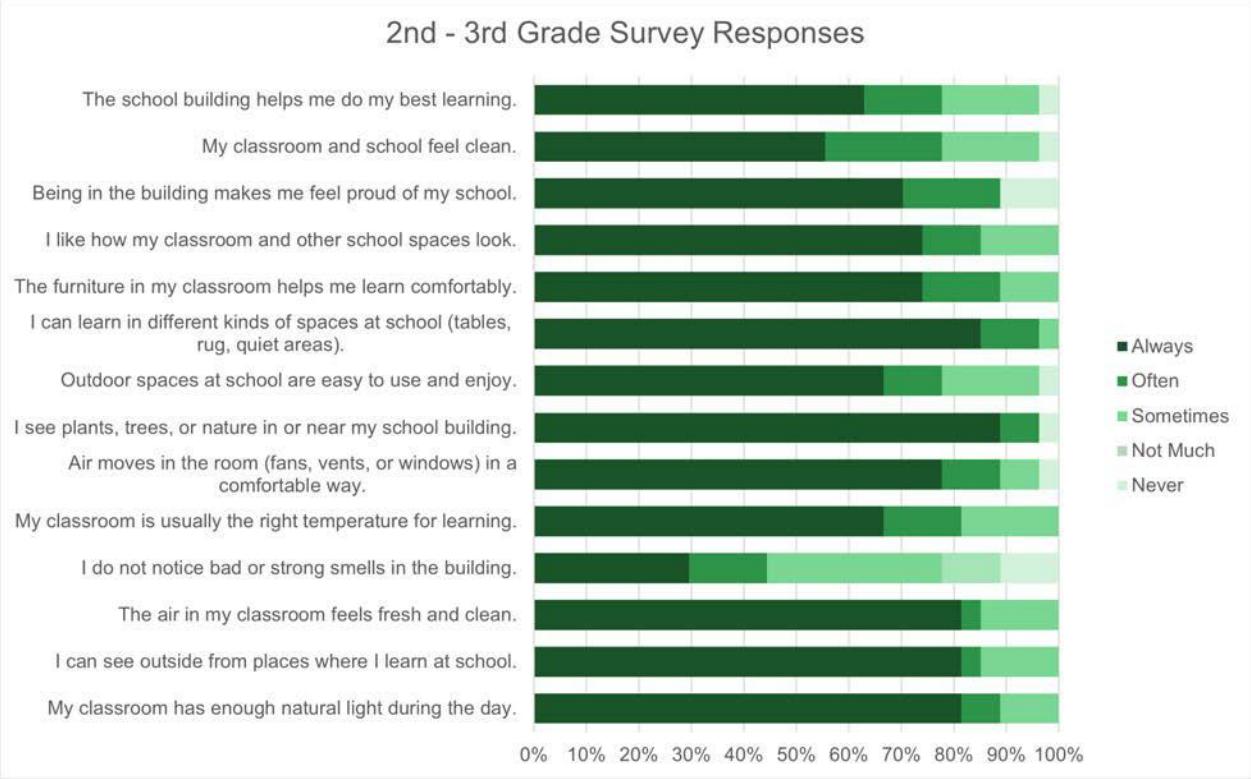


FIGURE 4-29 Post Occupancy Evaluation (Grades 2/3)

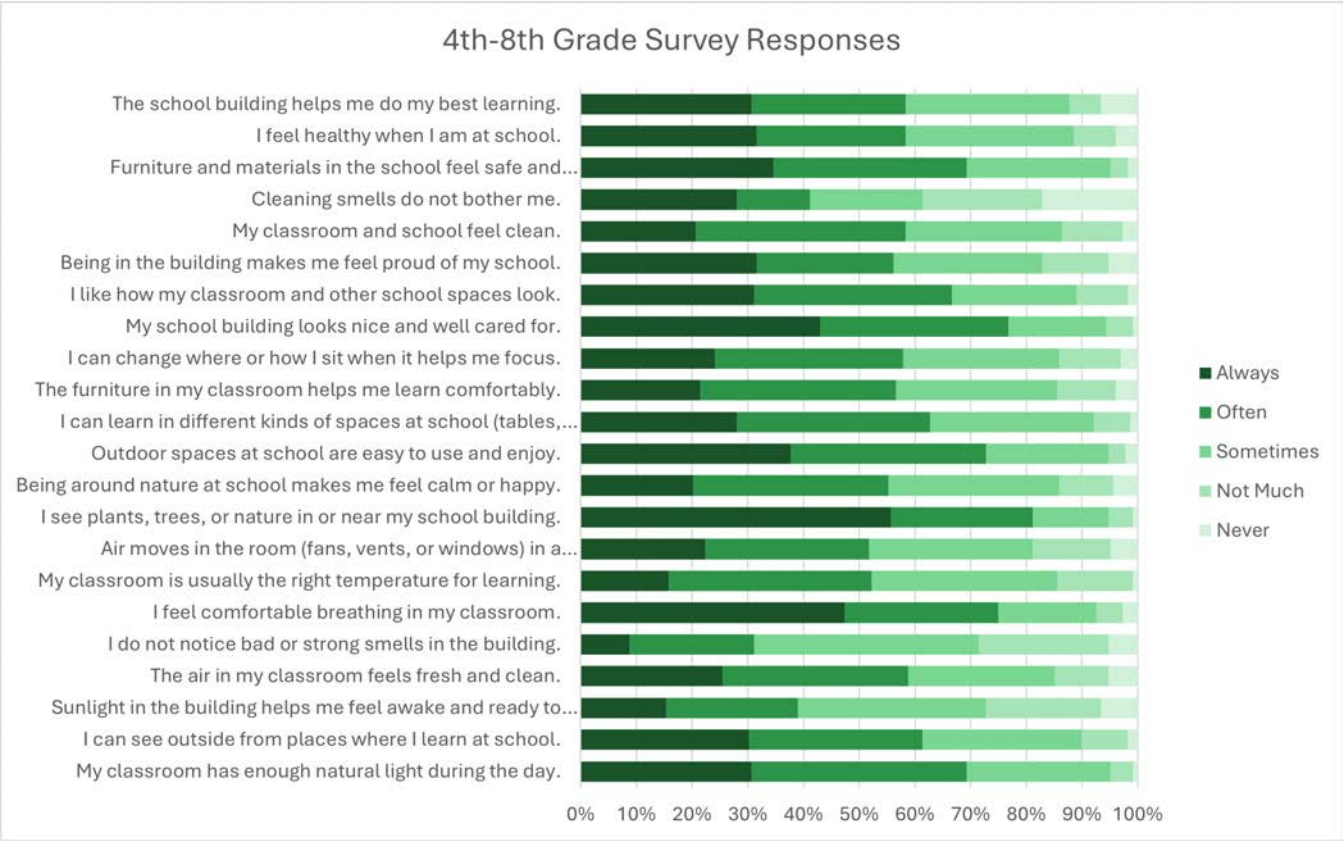


FIGURE 4-30 Post Occupancy Evaluation (Grades 4-5-6-7-8)

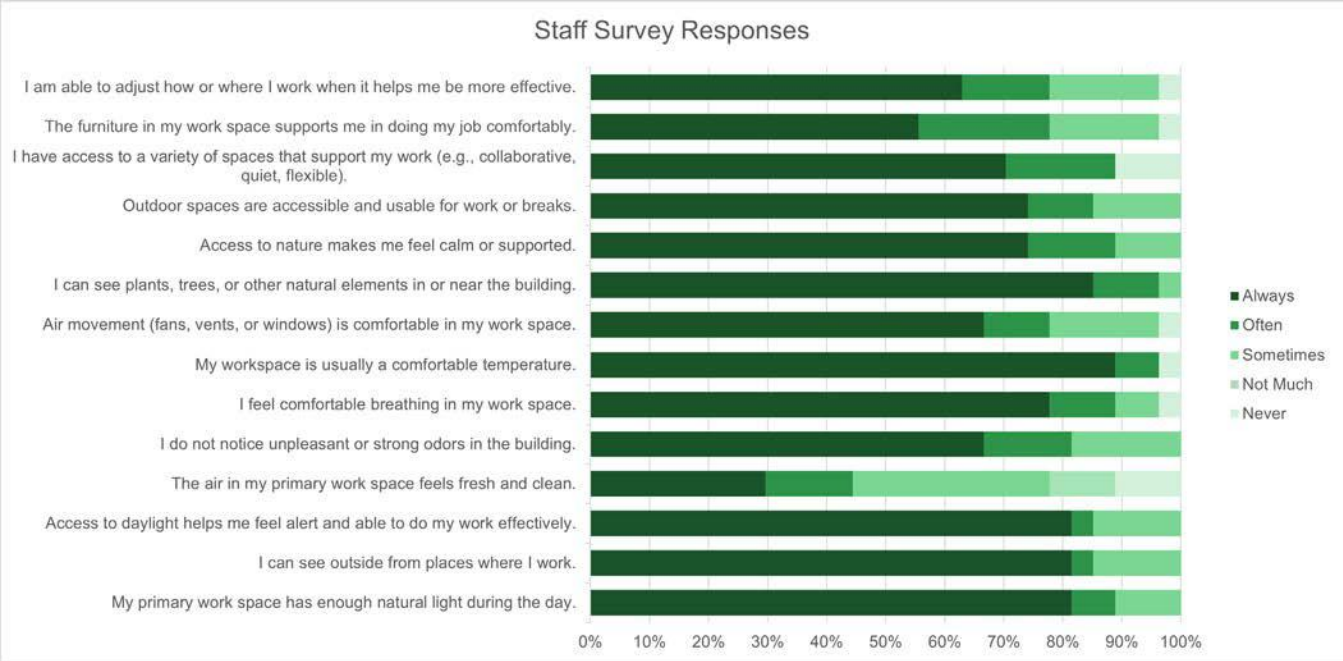


FIGURE 4-31 Post Occupancy Evaluation. (Staff)

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MATERIALS

INTRODUCTION

13 - RED LIST

- I13-1 Materials Tracking Table (MTT)
- I13-2 Materials Vetting Process Narrative
- I13-3 Ingredients List Documentation
- I13-4 VOC Content Documentation

14 - RESPONSIBLE SOURCING

- I14-1 Advocacy Letters
- I14-2 FSC-Certified, Salvaged, and Intentionally Harvested Wood Documentation
- I14-3 Low Risk Wood Documentation
- I14-5 Wood Calculations
- I14-6 Declare Documentation
- I14-7 Living Product Challenge (LPC) Documentation

15 - LIVING ECONOMY SOURCING

- I15-1 Materials Tracking Table (MTT)
- I15-2 Distance Map
- I15-3 Supporting Documentation

16 - NET POSITIVE WASTE

- I16-2 Materials Conservation Management Plan (MCMP)
- I16-3 Waste Diversion Documentation
- I16-4 Salvaged Materials Documentation
- I16-5 Operations Documentation

APPENDICES

- M-A AGC Sustainability Plan
- M-B MT-002 Exception
- M-C SD Materials Status Report
- M-D Construction Waste Management Plan
- M-E Low Risk Wood Clarification
- M-F Sample Declare Advocacy Letter
- M-G Construction Waste Receipts

* Imperative 12, I14-4 and I16-1 are not applicable



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INTRODUCTION

THE MATERIALS PETAL

Building materials are responsible for many adverse environmental issues, including personal illness, habitat and species loss, pollution, and resource depletion. The intent of the LBC Materials Petal is to mitigate these harms by promoting a materials economy that is non-toxic, ecologically restorative, and transparent.

To accomplish this transformation the Materials Petal addresses four main tenets of responsible building material specification and usage: non-toxic, local, transparent materials, and robust construction waste diversion. The Petal consists of 4 Imperatives and 19 Requirements.

REFORMING AN INDUSTRY

Over the past decade, LBC's focus on eliminating Red List chemicals from building products has transformed the building industry from one where ingredients were held in secret to one where transparency is becoming the new normal. This transparency has also resulted in the building industry incrementally reducing the toxic content of its products.

THEORY OF CHANGE

The Materials Petal compels design teams to approach each project in these two steps:

1. Build projects using only Red List Free products. If the product you plan to use is not available with Red List ingredients, then redesign the project to avoid the toxic product.

2. If it is not possible to design the project completely Red List free, then advocate for manufacturers to enroll their products in the DECLARE protocol.

DECLARE

THE DECLARE LABEL is a materials transparency initiative administered by the International Living Futures Institute. Product manufacturers elect to participate by filling out sorts of products into three descending categories of compliance:

Red List Free: Products in this category contain no Red List chemicals down to a resolution of 100 ppm with full disclosure.

Red List Approved: Products in this category may contain a Red List chemical but is has been allowed via an exception.

Red List Transparent: Products in this category may contain a Red List chemical, but have listed all their ingredients to 100 ppm.

The Imperative of this Petal is to remove the worst known offending materials and practices and to drive business toward a truly responsible materials economy. When toxic ingredients can be reduced but not eliminated, the Materials Petal requires design teams to offset the damage by advocating for transparency and toxics reduction across the industry.

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I13-1 MATERIALS TRACKING TABLE

INTENT

Provide a spreadsheet of all the Material Costs.

TABLE

The MTT is organized by row and columns. Each row is a unique building item organized by submittal number. Submittal numbers are by Division, then specification section, then item number. In some cases, there are multiple items per line item, and they have further been broken down by letters. Criteria are arranged by column.

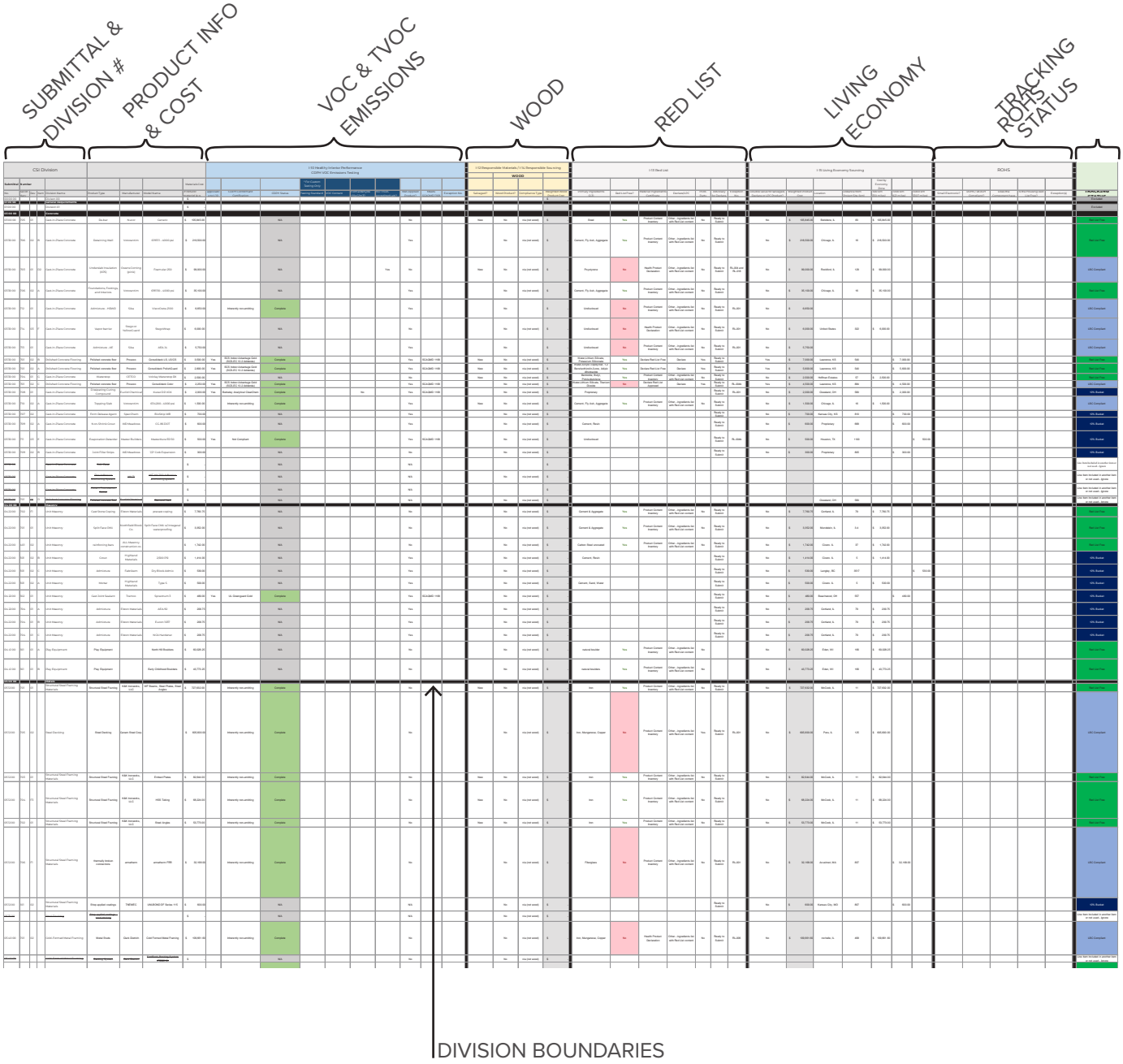

FIGURE 5-01 Materials Tracking Table

I13-2 MATERIALS VETTING PROCESS NARRATIVE

INTENT

Provide a narrative of the materials research and vetting process.

PRODUCT SELECTION

When the Academy for Global Citizenship (AGC) committed to achieving the full Living Building Challenge Certification, the design team knew, based on prior experience, how challenging the Materials Petal would be to achieve. To satisfy the Imperatives and Requirements with the least drama and effort, the design team committed to a rigorous, iterative, and ongoing process of material selection and vetting, focused on health, transparency, and sourcing.

Materials Sub-consultants and Roles

To provide robust materials review, vetting, and advocacy, Farr Associates (Associate Architect) engaged WSP as a sub consultant to provide advocacy support. At the project's onset, both FARR and WSP established material selection criteria and targeted specific products within each product line.

Material Requirements Summary

Farr prepared a summary of the LBC material requirements to guide the team's campaign to achieve the Materials Petal, This document provided guidance to the design and construction team throughout the project.

LBC Material Status @ 100% DD/GMP

WSP prepared a 24-page report on the progress-to-date of more than 500 individual product categories.



FIGURE 5-03 Salvaged Logs



FIGURE 5-02 Exterior Wall under Construction.

LBC Materials Status Update @ 10% Construction

WSP prepared a 1-page update including a pie chart that classified the materials tracking into buckets of success: Red List Free, Assumed Red List Free, Compliant with Exceptions, etc. See **Appendix M-C**.

Specifications

In addition, we included a material inventory form within the project specifications, provided training to the GC and had numerous conversations with the major trade project managers.

Major Challenges: Public Bidding and Pandemic

As a publicly funded project, the bidding process for the AGC required three materials per category to assure competitive pricing. In many cases three products that met the criteria did not exist. To overcome this we created a performance specification with the criteria required.

The pandemic posed other unique challenges. Many products were not available within traditional lead times and/or costs were significantly more than the team



FIGURE 5-04 Insulated CFMF headers on site.



FIGURE 5-05 Non PVC below grade conduit.

had budgeted. This forced the GC and design team to collaborate on quick turn-around decision-making on which product needed to be Red List free versus merely compliant.

As the project continued to procure more products, where the contractor or manufacturer could not provide a material inventory to the resolution required, we would then seek out alternative manufacturers. In many cases, we asked the project manager for a contact at the actual manufacturer and would talk to a technical support person at a specific manufacturer. It is important to note that the flow of information on a commercial project is from the General Contractor to a subcontractor to a supply house, and then to an actual manufacturer. This is a long supply line where we are trying to convey a complicated information request. In selecting products for inclusion, we utilized the HPD repository, the Declare Database, Sustainable Minds, Mindful Materials, Ecomedes, as well as our own internal knowledge.

PRODUCT MAJOR WINS

In terms of what we would consider major wins were:

Non-PVC pipe (for below grade main feeder raceways). This required emails and discussions with the City of Chicago Electrical Inspector.

LBC Cat 6 cable. The minimum order for this LPC cable was 90,000 linear feet. We contacted the supplier and explained the project's commitment to achieve LBC, and they were able to pull some stock from the warehouse and ship it to a local distributor.

Steel Decking tracking down the coils. After discovering the steel decking was unnecessarily washed in Cr6, we tracked down the actual coils and worked with the steel decking manufacturer on how they can offer non Cr6 washed coil.

Site-harvested trees. We worked with a local urban forester to site harvest, mill, dry and deliver raw boards to the mill worker for fabrication into benches.

Recycled sub-base. We communicated the importance of salvaged materials to the general contractor, and they suggested the use of crushed concrete as a sub-base, tested of course to TACO standards as appropriate for a school.

Acoustical Ceiling Tile Grid. We work relentlessly with the supplier of the acoustical ceiling grid on what they need to do to comply with the intent of the standard and after many emails were able to test their paint (the remaining undisclosed material) to ensure it did not have any Red List Ingredients.

Swegon DOAS units. We worked with Swegon to develop their Declare Label (2022).

Low Carbon Concrete. We were able to procure low carbon concrete via a performance specification.

PVC free wall covering. After discussions with the installer, they suggested a PVC free wall covering (that incidentally has a Declare label).

PRODUCTS NEEDING EXCEPTIONS

In general, the types of products that require some types of exception were:

- Any products made with coil coated metal as coils typically are washed with Cr6 after galvanizing.
- Adhesives and waterproofing products tended to have a Red List Ingredient.
- Many of the smaller suppliers of unique items had difficulty completing the Material Inventory Form, products such as gym bleachers, sports flooring, play structures, clocks, etc.

Please see the complete Materials Tracking Table from **I13-1** for all the products.



FIGURE 5-07 Swegon DOAS units

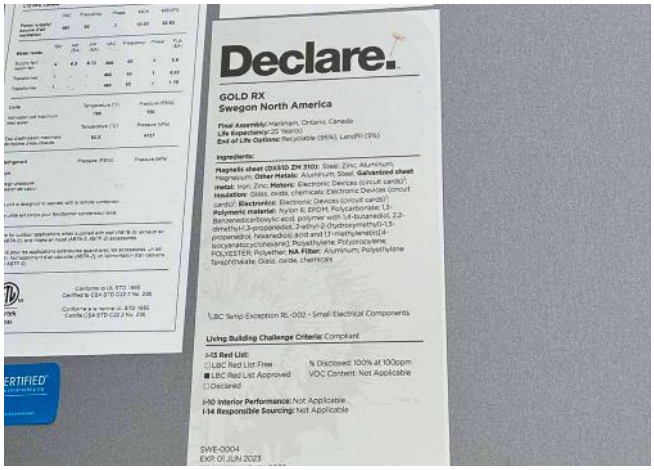

FIGURE 5-06 Swegon DOAS unit's Declare Label

I-13 Red List				
Category	**Count**			**Cost By Category**
Red List Free	205			$ 6,248,198.72
Red List Exists	0			$ -
LBC Compliant	401			$ 10,008,479.21
10% Bucket	436			$ 691,008.02
In Progress	0			$ -
	sub-total		Value of the Job	**$ 16,947,685.95**
Excluded (Misc Hardware)	75			$ 124,173.11
Excluded (Not Permenantly Installed)	16			$ 367,022.04
	Sub-total			$ 491,195.15
			Value of the Job Plus Excluded	**$ 17,438,881.10**

FIGURE 5-08 Red List Summary

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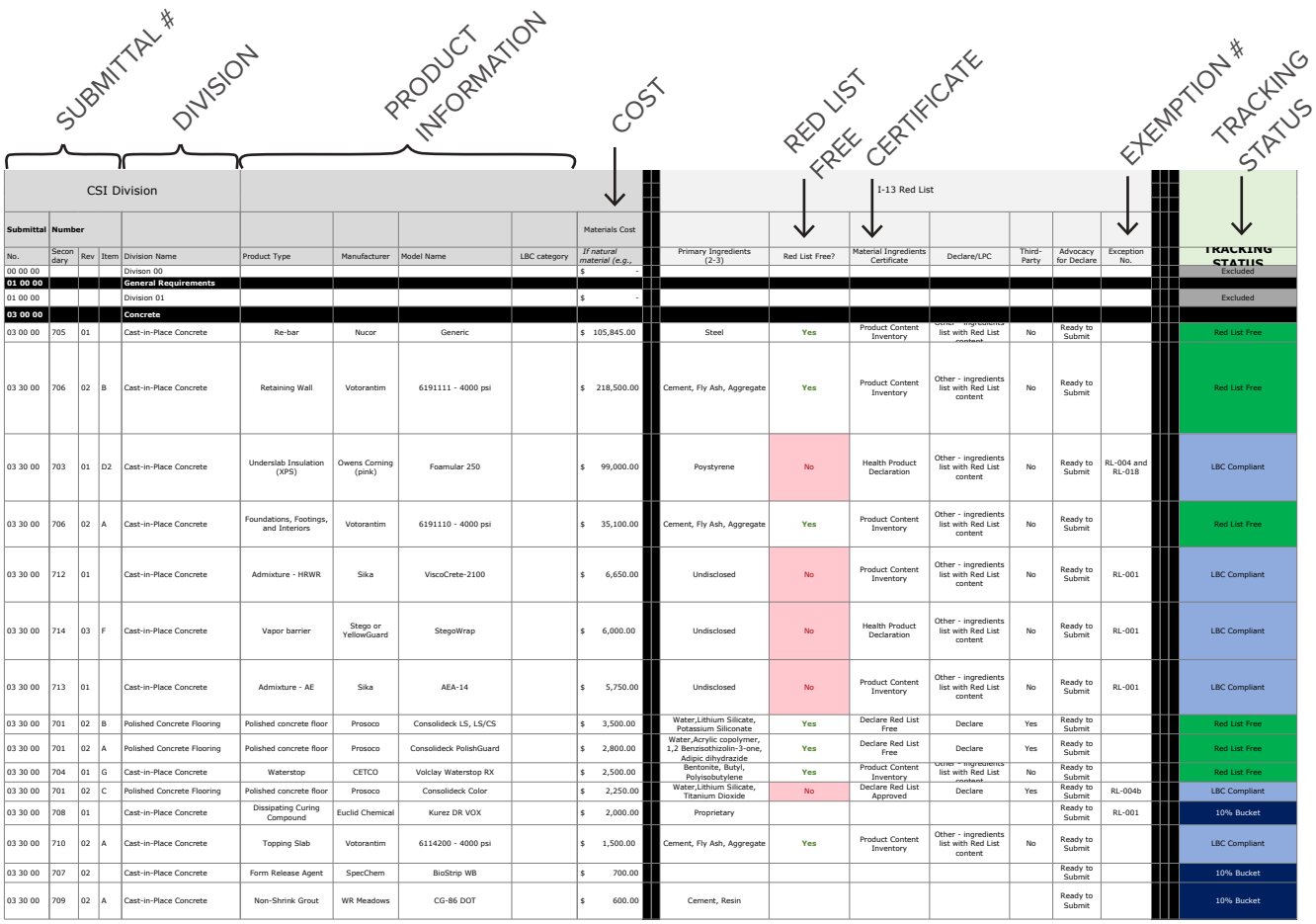
I13-3 INGREDIENTS LIST (PRODUCT CONTENT INVENTORY) DOCUMENTATION

INTENT

Provide product content inventory documentation is required for each product.

DOCUMENTATION

See the MTT and associated SharePoint site.



CSI Division											I-13 Red List							
Submittal	**Number**																	
No.	Secondary	Rev	Item	Division Name	Product Type	Manufacturer	Model Name	LBC category	*If natural material (e.g.,*	Primary Ingredients (2-3)	Red List Free?	Material Ingredients Certificate	Declare/LPC	Third-Party	Advocacy for Declare	Exception No.	TRACKING STATUS
00 00 00				Divison 00					$ -								Excluded
01 00 00				**General Requirements**													
01 00 00				Division 01					$ -								Excluded
03 00 00				**Concrete**													
03 00 00	705	01		Cast-in-Place Concrete	Re-bar	Nucor	Generic		$ 105,845.00	Steel	Yes	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit		Red List Free
03 30 00	706	02	B	Cast-in-Place Concrete	Retaining Wall	Votorantim	6191111 - 4000 psi		$ 218,500.00	Cement, Fly Ash, Aggregate	Yes	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit		Red List Free
03 30 00	703	01	D2	Cast-in-Place Concrete	Underslab Insulation (XPS)	Owens Corning (pink)	Foamular 250		$ 99,000.00	Poystyrene	No	Health Product Declaration	Other - ingredients list with Red List content	No	Ready to Submit	RL-004 and RL-018	LBC Compliant
03 30 00	706	02	A	Cast-in-Place Concrete	Foundations, Footings, and Interiors	Votorantim	6191110 - 4000 psi		$ 35,100.00	Cement, Fly Ash, Aggregate	Yes	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit		Red List Free
03 30 00	712	01		Cast-in-Place Concrete	Admixture - HRWR	Sika	ViscoCrete-2100		$ 6,650.00	Undisclosed	No	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit	RL-001	LBC Compliant
03 30 00	714	03	F	Cast-in-Place Concrete	Vapor barrier	Stego or YellowGuard	StegoWrap		$ 6,000.00	Undisclosed	No	Health Product Declaration	Other - ingredients list with Red List content	No	Ready to Submit	RL-001	LBC Compliant
03 30 00	713	01		Cast-in-Place Concrete	Admixture - AE	Sika	AEA-14		$ 5,750.00	Undisclosed	No	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit	RL-001	LBC Compliant
03 30 00	701	02	B	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck LS, LS/CS		$ 3,500.00	Water,Lithium Silicate, Potassium Siliconate	Yes	Declare Red List Free	Declare	Yes	Ready to Submit		Red List Free
03 30 00	701	02	A	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck PolishGuard		$ 2,800.00	Water,Acrylic copolymer, 1,2 Benzisothizolin- 3-one, Adipic dihydrazide	Yes	Declare Red List Free	Declare	Yes	Ready to Submit		Red List Free
03 30 00	704	01	G	Cast-in-Place Concrete	Waterstop	CETCO	Volclay Waterstop RX		$ 2,500.00	Bentonite, Butyl, Polyisobutylene	Yes	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit		Red List Free
03 30 00	701	02	C	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck Color		$ 2,250.00	Water,Lithium Silicate, Titanium Dioxide	No	Declare Red List Approved	Declare	Yes	Ready to Submit	RL-004b	LBC Compliant
03 30 00	708	01		Cast-in-Place Concrete	Dissipating Curing Compound	Euclid Chemical	Kurez DR VOX		$ 2,000.00	Proprietary					Ready to Submit	RL-001	10% Bucket
03 30 00	710	02	A	Cast-in-Place Concrete	Topping Slab	Votorantim	6114200 - 4000 psi		$ 1,500.00	Cement, Fly Ash, Aggregate	Yes	Product Content Inventory	Other - ingredients list with Red List content	No	Ready to Submit		LBC Compliant
03 30 00	707	02		Cast-in-Place Concrete	Form Release Agent	SpecChem	BioStrip WB		$ 700.00						Ready to Submit		10% Bucket
03 30 00	709	02	A	Cast-in-Place Concrete	Non-Shrink Grout	WR Meadows	CG-86 DOT		$ 600.00	Cement, Resin					Ready to Submit		10% Bucket

FIGURE 5-09 Documentation

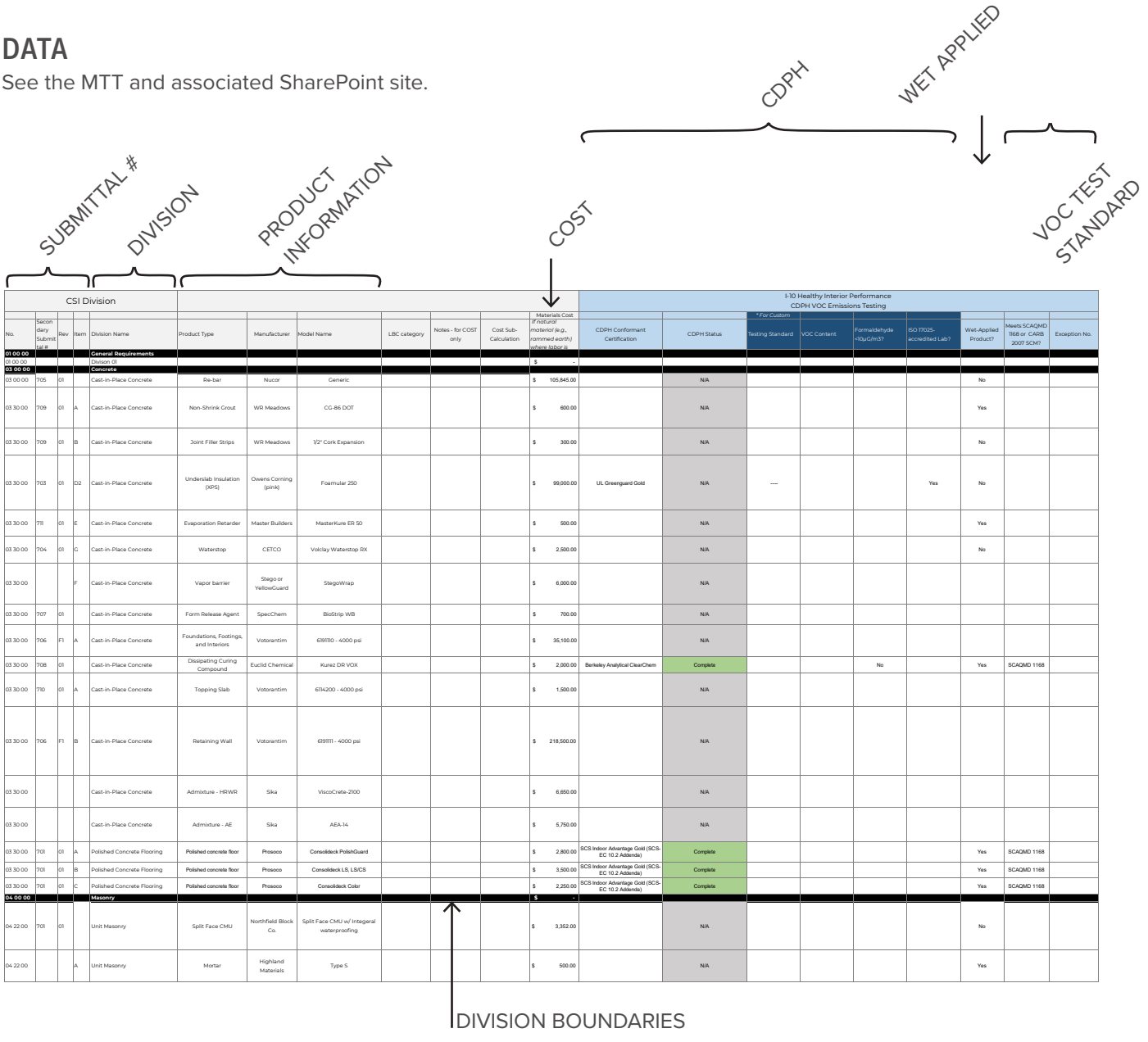
I13-4 VOC CONTENT DOCUMENTATION

INTENT

Provide product VOC documentation for all wet applied products.

DATA

See the MTT and associated SharePoint site.



CSI Division												I-10 Healthy Interior Performance CDPH VOC Emissions Testing								
														* For Custom						
No.	Secondary Submittal #	Rev	Item	Division Name	Product Type	Manufacturer	Model Name	LBC category	Notes - for COST only	Cost Sub-Calculation	Materials Cost (if natural material (e.g., rammed earth) where labor is	CDPH Conformant Certification	CDPH Status	Testing Standard	VOC Content	Formaldehyde <10µG/m3?	ISO 17025-accredited Lab?	Wet-Applied Product?	Meets SCAQMD 1168 or CARB 2007 SCM?	Exception No.
01 00 00				**General Requirements**																
01 00 00				Division 01							$ -									
03 00 00				**Concrete**																
03 00 00	705	01		Cast-in-Place Concrete	Re-bar	Nucor	Generic				$ 105,845.00		N/A					No		
03 30 00	709	01	A	Cast-in-Place Concrete	Non-Shrink Grout	WR Meadows	CG-86 DOT				$ 600.00		N/A					Yes		
03 30 00	709	01	B	Cast-in-Place Concrete	Joint Filler Strips	WR Meadows	1/2" Cork Expansion				$ 300.00		N/A					No		
03 30 00	703	01	D2	Cast-in-Place Concrete	Underslab Insulation (XPS)	Owens Corning (pink)	Foamular 250				$ 99,000.00	UL Greenguard Gold	N/A	---			Yes	No		
03 30 00	711	01	E	Cast-in-Place Concrete	Evaporation Retarder	Master Builders	MasterKure ER 50				$ 500.00		N/A					Yes		
03 30 00	704	01	G	Cast-in-Place Concrete	Waterstop	CETCO	Volclay Waterstop RX				$ 2,500.00		N/A					No		
03 30 00			F	Cast-in-Place Concrete	Vapor barrier	Stego or YellowGuard	StegoWrap				$ 6,000.00		N/A							
03 30 00	707	01		Cast-in-Place Concrete	Form Release Agent	SpecChem	BioStrip WB				$ 700.00		N/A							
03 30 00	706	F1	A	Cast-in-Place Concrete	Foundations, Footings, and Interiors	Votorantim	619110 - 4000 psi				$ 35,100.00		N/A							
03 30 00	708	01		Cast-in-Place Concrete	Dissipating Curing Compound	Euclid Chemical	Kurez DR VOX				$ 2,000.00	Berkeley Analytical ClearChem	Complete			No		Yes	SCAQMD 1168	
03 30 00	710	01	A	Cast-in-Place Concrete	Topping Slab	Votorantim	614200 - 4000 psi				$ 1,500.00		N/A							
03 30 00	706	F1	B	Cast-in-Place Concrete	Retaining Wall	Votorantim	619111 - 4000 psi				$ 218,500.00		N/A							
03 30 00				Cast-in-Place Concrete	Admixture - HRWR	Sika	ViscoCrete-2100				$ 6,650.00		N/A							
03 30 00				Cast-in-Place Concrete	Admixture - AE	Sika	AEA-14				$ 5,750.00		N/A							
03 30 00	701	01	A	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck PolishGuard				$ 2,800.00	SCS Indoor Advantage Gold (SCS-EC 10.2 Addenda)	Complete					Yes	SCAQMD 1168	
03 30 00	701	01	B	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck LS, LS/CS				$ 3,500.00	SCS Indoor Advantage Gold (SCS-EC 10.2 Addenda)	Complete					Yes	SCAQMD 1168	
03 30 00	701	01	C	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck Color				$ 2,250.00	SCS Indoor Advantage Gold (SCS-EC 10.2 Addenda)	Complete					Yes	SCAQMD 1168	
04 00 00				**Masonry**							$ -									
04 22 00	701	01		Unit Masonry	Split Face CMU	Northfield Block Co.	Split Face CMU w/ Integeral waterproofing				$ 3,352.00		N/A					No		
04 22 00			A	Unit Masonry	Mortar	Highland Materials	Type S				$ 500.00		N/A					Yes		

FIGURE 5-10 Data

I14-1 ADVOCACY LETTERS

INTENT

Provide copies of advocacy letters for products that did not have full transparent material inventories.

DATA

See the MTT, the associated SharePoint site, and **Appendix M-F** for sample letters.

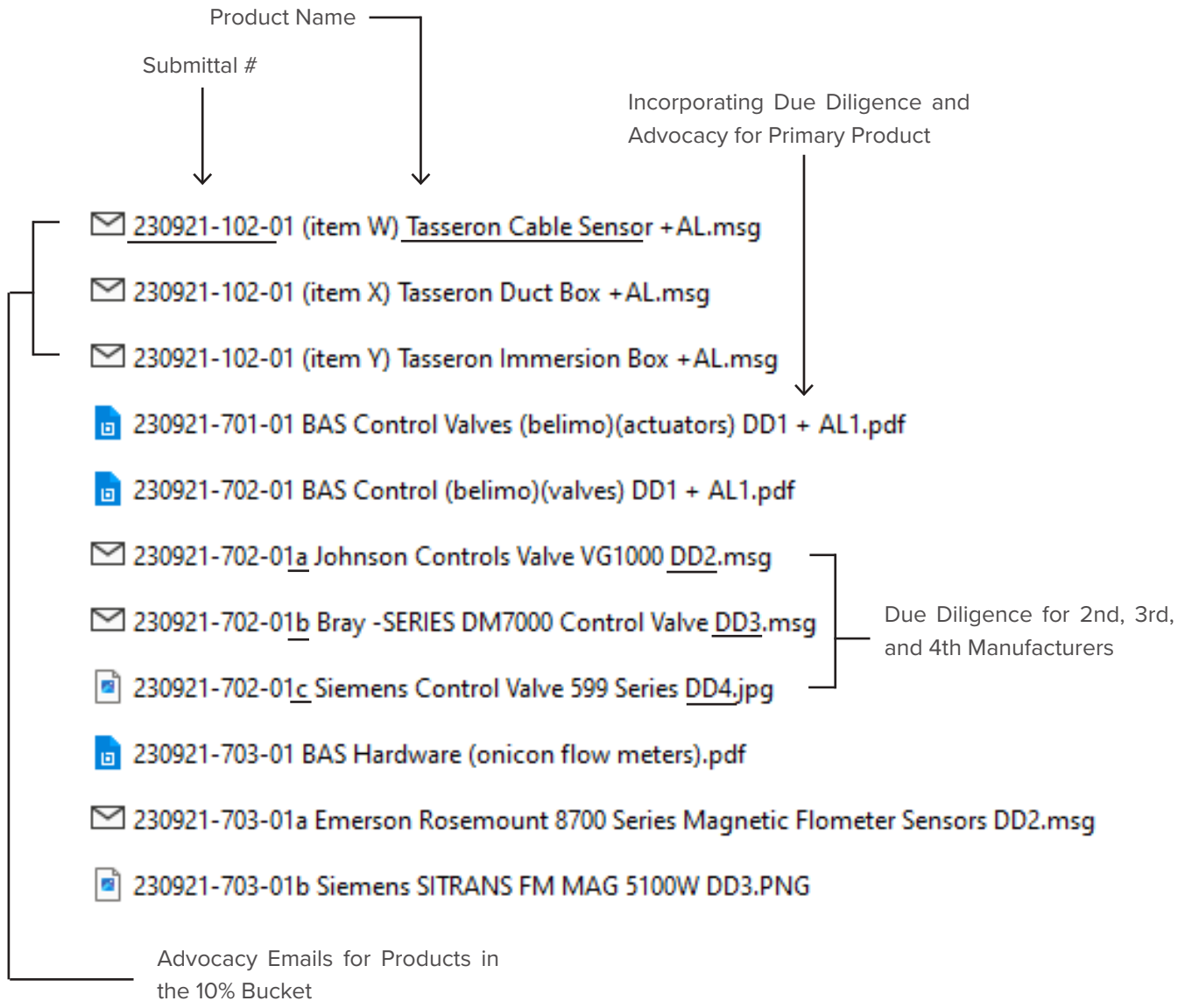


FIGURE 5-11 SharePoint

I14-2 FSC-CERTIFIED, SALVAGED, & INTENTIONALLY HARVESTED WOOD

INTENT

All projects must either source 80% or more of all wood, by cost or volume, as Forest Stewardship Council (FSC) certified, or as salvaged, or from the intentional harvest of on-site timber for the purpose of clearing the area for construction or restoring/maintaining the continued ecological function of the on-site bio-network, and the remaining 20% of wood must be from low-risk sources. Alternatively, the project may achieve FSC Project Certification.

DOCUMENTATION

Being a commercial building, wood was limited to blocking (dimension lumber), miscellaneous sheathing, mill work, door leaves, play structures, and furniture. Of all the wood, the dimension lumber, plywood, door leaves, and mill work were FSC certified. Some mill work, however, was from site-harvested lumber and the play structures were regionally harvested invasive species. See Request for Ruling outlined in **Appendix M-B**.



FIGURE 5-13 Lumber



FIGURE 5-14 Lumber

For the non-FSC wood, which mostly was the furniture, the wood was sourced from Europe under the PEFC (Programme for the Endorsement of Forest Certification) label and has been deemed to be low risk. See email documented in **Appendix M-E**. There also was a small amount of North American wood that was also deemed to be low risk.

I-12 Responsible Materials / I-14 Responsible Sourcing			
Category	Value		LBC Target (100%)
Total Wood	$ 481,489.77		
FSC Wood	$ 259,875.57		
Site Harvested Wood (Considered FSC)	$ 14,975.00		
Invasive Species (MT-002) (Considered FSC)	$ 158,643.00		
	Sub-Total	$ 433,493.57	90%
Low Risk	$ 47,996.20		
		$ 47,996.20	10%
Total Percentage Compliant Wood			***100%***

FIGURE 5-12 Documentation

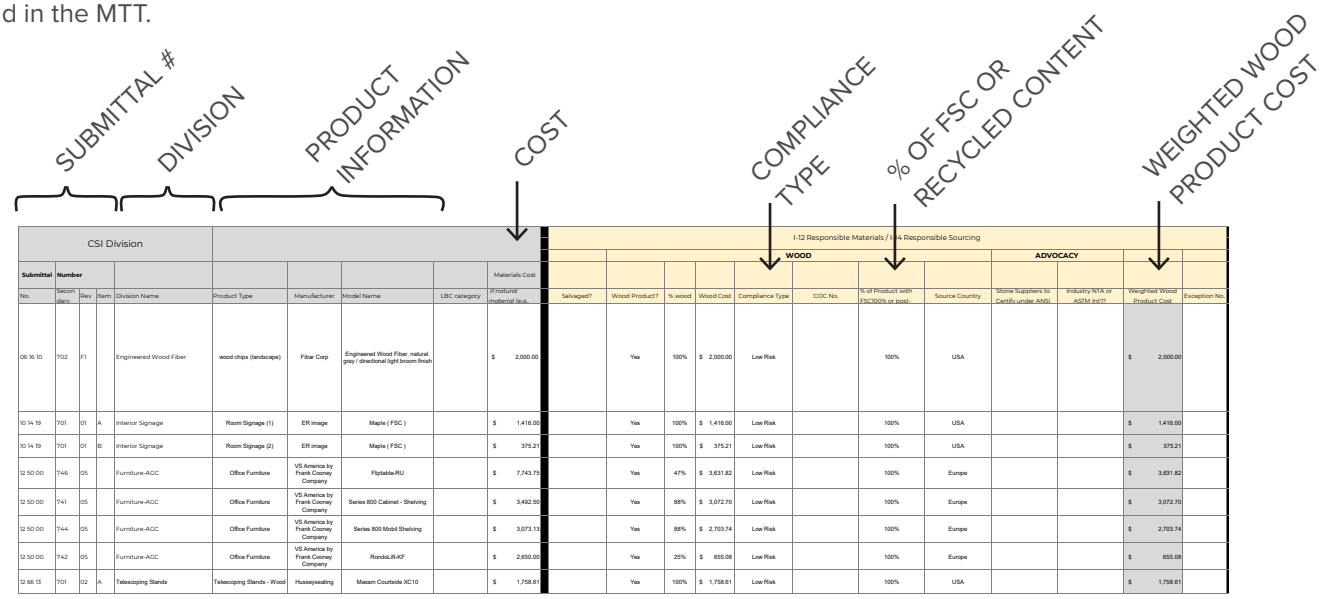
I14-3 LOW RISK WOOD DOCUMENTATION

INTENT

Provide documents confirming country of origin of the wood that meets the definition of low risk wood.

DOCUMENTATION

Low Risk wood was from 2 sources, North American Forests and PEFC certified wood. See **Appendix M-E** for documentation of PEFC wood. The total wood cost is outlined in **I14-2** with the low risk wood summarized below, and in the MTT.



CSI Division										I-12 Responsible Materials / I-14 Responsible Sourcing											
											WOOD							ADVOCACY			
Submittal Number									Materials Cost												
No.	Secondary	Rev	Item	Division Name	Product Type	Manufacturer	Model Name	LBC category	If natural material (e.g.	Salvaged?	Wood Product?	% wood	Wood Cost	Compliance Type	COC No.	% of Product with FSC100% or post-	Source Country	Stone Suppliers to Certify under ANSI	Industry NTA or ASTM Int'l?	Weighted Wood Product Cost	Exception No.
06 16 10	702	F1		Engineered Wood Fiber	wood chips (landscape)	Fiber Corp	Engineered Wood Fiber, natural gray / directional light broom finish		$ 2,000.00		Yes	100%	$ 2,000.00	Low Risk		100%	USA			$ 2,000.00	
10 14 19	701	01	A	Interior Signage	Room Signage (1)	ER image	Maple (FSC)		$ 1,416.00		Yes	100%	$ 1,416.00	Low Risk		100%	USA			$ 1,416.00	
10 14 19	701	01	B	Interior Signage	Room Signage (2)	ER image	Maple (FSC)		$ 375.21		Yes	100%	$ 375.21	Low Risk		100%	USA			$ 375.21	
12 50 00	746	05		Furniture-AGC	Office Furniture	VS America by Frank Cooney Company	Fliptable-RU		$ 7,743.75		Yes	47%	$ 3,631.82	Low Risk		100%	Europe			$ 3,631.82	
12 50 00	741	05		Furniture-AGC	Office Furniture	VS America by Frank Cooney Company	Series 800 Cabinet - Shelving		$ 3,492.50		Yes	88%	$ 3,072.70	Low Risk		100%	Europe			$ 3,072.70	
12 50 00	744	05		Furniture-AGC	Office Furniture	VS America by Frank Cooney Company	Series 800 Mobil Shelving		$ 3,073.13		Yes	88%	$ 2,703.74	Low Risk		100%	Europe			$ 2,703.74	
12 50 00	742	05		Furniture-AGC	Office Furniture	VS America by Frank Cooney Company	RondoLift-KF		$ 2,650.00		Yes	25%	$ 655.08	Low Risk		100%	Europe			$ 655.08	
12 66 13	701	02	A	Telescoping Stands	Telescoping Stands - Wood	Huseyseating	Maxam Courtside XC10		$ 1,758.61		Yes	100%	$ 1,758.61	Low Risk		100%	USA			$ 1,758.61	

FIGURE 5-15 Documentation

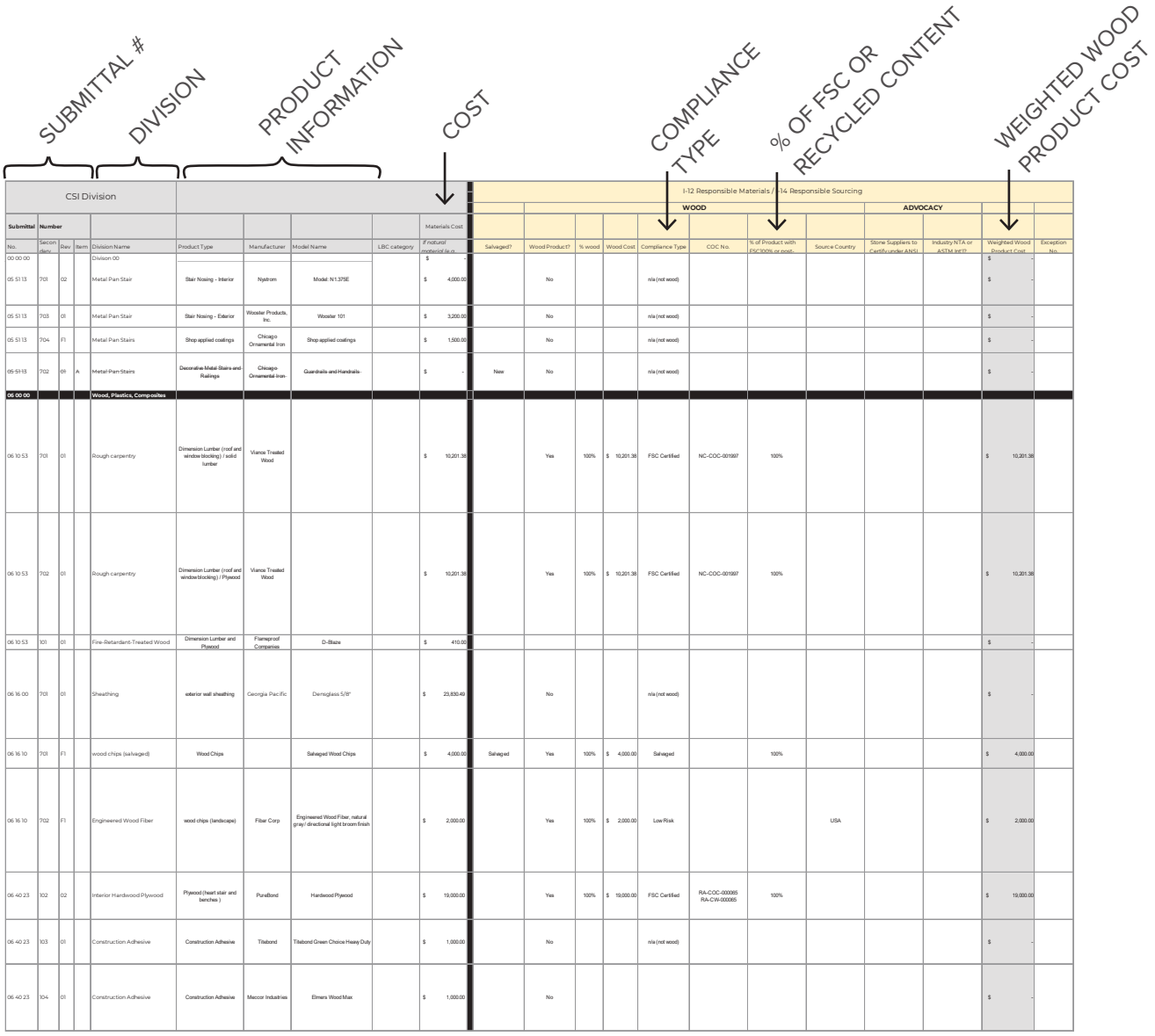
I14-5 WOOD CALCULATIONS

INTENT

Provide calculations, correlated with the inputs in Materials Tracking Table (MTT), showing the percentage of each type of compliant wood, by cost.

DOCUMENTATION

See the MTT



CSI Division										I-12 Responsible Materials / I-14 Responsible Sourcing											
											WOOD							ADVOCACY			
Submittal Number									Materials Cost												
No.	Secondary	Rev	Item	Division Name	Product Type	Manufacturer	Model Name	LBC category	If natural material (e.g.	Salvaged?	Wood Product?	% wood	Wood Cost	Compliance Type	COC No.	% of Product with FSC 100% or post...	Source Country	Stone Suppliers to Certify under ANSI...	Industry NTA or ASTM int'l?	Weighted Wood Product Cost	Exception No.
00 00 00				Division 00					$ -											$ -	
05 51 13	701	02		Metal Pan Stair	Stair Nosing - Interior	Nystrom	Model: N1.375E		$ 4,000.00		No			n/a (not wood)						$ -	
05 51 13	703	01		Metal Pan Stair	Stair Nosing - Exterior	Wooster Products, Inc.	Wooster 101		$ 3,200.00		No			n/a (not wood)						$ -	
05 51 13	704	F1		Metal Pan Stairs	Shop applied coatings	Chicago Ornamental Iron	Shop applied coatings		$ 1,500.00		No			n/a (not wood)						$ -	
05 51 13	702	01	A	Metal Pan Stairs	Decorative Metal Stairs and Railings	Chicago Ornamental Iron	Guardrails and Handrails		$ -	New	No			n/a (not wood)						$ -	
06 00 00				Wood, Plastics, Composites																	
06 10 53	701	01		Rough carpentry	Dimension Lumber (roof and window blocking) / solid lumber	Vianco Treated Wood			$ 10,201.38		Yes	100%	$ 10,201.38	FSC Certified	NC-COC-001997	100%				$ 10,201.38	
06 10 53	702	01		Rough carpentry	Dimension Lumber (roof and window blocking) / Plywood	Vianco Treated Wood			$ 10,201.38		Yes	100%	$ 10,201.38	FSC Certified	NC-COC-001997	100%				$ 10,201.38	
06 10 53	101	01		Fire-Retardant-Treated Wood	Dimension Lumber and Plywood	Flameproof Companies	D-Blaze		$ 410.00											$ -	
06 16 00	701	01		Sheathing	exterior wall sheathing	Georgia Pacific	Densglass 5/8"		$ 23,830.49		No			n/a (not wood)						$ -	
06 16 10	701	F1		wood chips (salvaged)	Wood Chips		Salvaged Wood Chips		$ 4,000.00	Salvaged	Yes	100%	$ 4,000.00	Salvaged		100%				$ 4,000.00	
06 16 10	702	F1		Engineered Wood Fiber	wood chips (landscape)	Fiber Corp	Engineered Wood Fiber, natural gray/ directional light broom finish		$ 2,000.00		Yes	100%	$ 2,000.00	Low Risk			USA			$ 2,000.00	
06 40 23	102	02		Interior Hardwood Plywood	Plywood (heart stair and benches)	PureBond	Hardwood Plywood		$ 19,000.00		Yes	100%	$ 19,000.00	FSC Certified	RA-COC-000085 RA-CW-000085	100%				$ 19,000.00	
06 40 23	103	01		Construction Adhesive	Construction Adhesive	Titebond	Titebond Green Choice Heavy Duty		$ 1,000.00		No			n/a (not wood)						$ -	
06 40 23	104	01		Construction Adhesive	Construction Adhesive	Mecoor Industries	Elmers Wood Max		$ 1,000.00		No									$ -	

FIGURE 5-16 Calculations

I14-6 DECLARE DOCUMENTATION

INTENT

All projects must contain one Declare products per 100sm of gross building area, or project area, whichever is smaller, up to forty products, and advocate to all manufacturers that are not in Declare that they register their products in the Declare database.

DOCUMENTATION

See the calculations that show the number of labels required. See the excerpt from the MTT below for the Declare Product Information.

Additionally, an email was sent to every non-compliant manufacturer and manufacturer without a Declare label. The PDF attachment “LBC Declare Advocacy Letter” served to advocate for the adoption of a Declare label. Column AQ in the MTT identifies all products without a Declare label that underwent Declare label advocacy. This covers 1,085 line items in the tracker that do not have an individual Declare label. Please see email in **Appendix M-F**.

DECLARE CALCULATIONS	
Square Feet	70,077
Square Meters	6,510
Declare Label Requirement	1 per 100 sm
Total Declares Required	40
Total Declares Provided	**65**
Total Manufacturers Required	10
Total Manufacturers Provided	**26**

FIGURE 5-17 Declare Calculations


Declare.

STANDARD ELEVATOR CABIN
KONE

Final Assembly: Matamoros, Coahuila, Mexico
Life Expectancy: 25 Year(s)
End of Life Options: Recyclable (90 %), Landfill (10 %)

Ingredients:

Standard Elevator Cabin: Steel; Stainless steel; Plywood; Aluminum alloy 6063; Zinc; Undisclosed (< 0.5%)[1]; RoHS compliant small electrical components[2]; Calcium carbonate; Aluminum alloy 6061; Aluminum alloy 1100; Brass; Carbonic dichloride, polymer with 4,4'-(1-methylethylidene)bis[phenol], 4-(1-methyl-1-phenylethyl)phenyl ester; Nylon 6; POLYCARBONATES; Polyethylene

[1]LBC Temp Exception RL-004b - Proprietary Ingredients in Declare
[2]LBC Temp Exception RL-002 - Small Electrical Components

Living Building Challenge Criteria:

I-13 Red List:
☐ LBC Red List Free
■ LBC Red List Approved
☐ Declared

% Disclosed: 99.5% at 100ppm
VOC Content: Not Applicable

I-10 Interior Performance: Not Applicable
I-14 Responsible Sourcing: Not Compliant

KNE-0001
EXP. 01 JUN 2024
Original Issue Date: 2023

MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL LIVING FUTURE INSTITUTE℠ living-future.org/declare

FIGURE 5-18 Declare Label for Kone Standard Elevator Cabin

DECLARED PRODUCTS							
Document Number			Product Information			Declare Information	
No.	Sustainability Submittal #	Rev	Product Type	Manufacturer	Model Name	Red List Conformant Certificate	Third-Party Verified?
03 30 00	701	02	Polished concrete floor	Prosoco	Consolideck LS, LS/CS	Declare Red List Free	Yes
03 30 00	701	02	Polished concrete floor	Prosoco	Consolideck PolishGuard	Declare Red List Free	Yes
03 30 00	701	02	Polished concrete floor	Prosoco	Consolideck Color	Declare Red List Approved	Yes
06 40 23	102	02	Plywood (heart stair and benches)	PureBond	Hardwood Plywood	Declare Red List Free	No
06 41 16	704	F1	Plastic Lamiate	formica	White, Storm	Declare Red List Approved	No
06 41 16	101	02	MDF - regular	Roseburg	Arreis	Declare Red List Free	No
07 21 00	702	01	exterior wall (exterior insulation)	Rockwool	cavityrock/mono density / no facer / RXL-0017RXL-0002RL-009 and RL-004b	Declare Red List Approved	Yes
07 21 00	701	01	Sprayed Insulation (metal stud cavity and misc joints)	Knauf	Jet Spray Thermal	Declare Red List Free	No
07 27 15	701	01	Self Adhering Air and Vapor Barrier	GCP Applied Technology	PERM-A-BARRIER NPS Wall Membrane	Declare Red List Free	No
07 27 15	701	01	Self Adhering Air and Vapor Barrier - transition strips	GCP Applied Technology	PERM-A-BARRIER NPS Detail Membrane	Declare Red List Free	No
07 27 15	701	01	Self Adhering Air and Vapor Barrier - flashing	GCP Applied Technology	PERM-A-BARRIER Aluminum Flashing	Declare Red List Free	No
07 46 46	701	01	GREENGirt sFRP Adjustable Base Bracket System with dual grip retention	GreenGirt	GreenGirt	Declare Red List Free	No
07 54 23	701	01	Membrane Roofing	Carlisle	Sure-Weld TPO Membrane-Fleeceback	Declare Red List Free	No
07 54 23	701	01	Flashing	Carlisle	Sure-Weld TPO Membrane Reinforced Flashing	Declare Red List Free	No
07 54 23	701	01	Flashing	Carlisle	Sure-Weld TPO Non-Reinforced Flashing	Declare Red List Free	No
07 54 23	701	01	Flashing	Carlisle	Sure-Weld TPO Inside Corners	Declare Red List Free	No
07 54 23	701	01	Flashing	Carlisle	Sure-Weld TPO Outside Corners	Declare Red List Free	No
07 54 23	701	01	Flashing	Carlisle	Sure-Weld TPO Pipe Seals	Declare Red List Free	No
07 54 23	701	01	Flashing	Carlisle	Sure-Weld TPO T-Joint Covers	Declare Red List Free	No
07 62 00	701	02	Fascia Board - At Curtain Wall, Kalwall fascia and window surrounds	ReynoBond	160FR	Declare Red List Approved	Yes
07 81 00	701	01	Applied Fireproofing (Concealed)	gcp applied technologies	Monokote MK-6 HY	Declare Red List Free	No
07 81 00	701	01	Applied Fireproofing (Exposed)	gcp applied technologies	Monokote Z-106/HY	Declare Red List Free	Yes
07 81 23	701	02	Intumescent Fire-Resistive Paint	Carboline Co, Fireproofing	A/DFirefilm III C	Declare Red List Approved	Yes
08 11 13	701	02	Interior HM Frames	Ceco Doors	semi-custom HM frames and doors	Declare Red List Free	No
08 11 13	703	F1	Jamb Weatherstripping	Pemko	303CPK / 319 CN	Declare Red List Free	Yes
08 11 13	705	01	Fire/Smoke Gasket	ASSA ABLOY	S88BL	Declare Red List Free	No
08 14 16	701	03	Flush Wood Doors	OregonDoor	SCL Core Door	Declare Red List Approved	No
08 14 16	702	02	Flush Wood Doors	OregonDoor	Mineral Core Door	Declare Red List Approved	N/A
08 44 13	701	01	Aluminum Extrusions	Kawneer	1600 UT	Declare Red List Free	No
08 44 13	702	01	Exterior DoorLeaves	Kawneer	500T insulpour	Declare Red List Free	Yes
08 54 13	701	01	Fiberglass windows	Alpen	Zenith Series - all	Declare Red List Approved	Yes
08 88 13	701	02	Glazing Material	Technical Glass Products	fire resistant glazing	Declare Red List Approved	No
09 29 00	701	02	Gypsum Board: Type X	USG	USG Sheetrock Brand EcoSmart Panels Firecode X	Declare Red List Free	No
09 29 00	703	03	Batt Insulation	USG	Owens Corning Pink Next Gen Fiberglas Insulation	Declare Red List Approved	No
09 29 00	702	03	Gypsum Board: Type Xregular boards	USG	USG Sheetrock Brand EcoSmart Panels Mold Tough	Health Product Declaration	No
09 29 00	706	02	Insulation	Rockwool	Fire Safing Insulation	Health Product Declaration	No
09 30 00	701	03	Porcelain/Glazed Ceramic Tile/Cove/Base [CT1.1]	DalTile	Color Wheel CollectionArtic White	Declare Red List Free	Yes
09 30 00	701	03	Quarry Tile [QT]	Daltile	6x6 Floor Tile (ARID Grey) (QT)	Declare Red List Free	Yes
09 30 00	701	03	Porcelain/Glazed Ceramic Tile [CT-1.2]	DalTile	Ash Grey PF05 (12x24)	Declare Red List Free	Yes
09 51 00	701	01	Acoustic Ceiling Tile	Armstrong	APC-1 School Zones Fine Fissured	Declare Red List Free	No
09 51 00	703	02	Acoustic Ceilings: Drywall Suspension System	USG	DGLW and DGW	Declare Red List Free	No
09 51 00	702	01	Acoustic Ceiling Tile	Armstrong	AC-3 Kitchen Zone	Declare Red List Approved	No
09 84 30	701	02	Acoustical Board (Core)(AP-1)	Knauf Insulation	Black Acoustic Board	Declare Red List Approved	No
09 84 30	701	02	Acoustical Board (Core)(AP-2)	Knauf Insulation	Black Acoustic Board	Declare Red List Approved	No
09 84 30	102	01	Wall Panel Track (AP-2) [Curved Walls]	Whisper Walls	Stretching System	Declare Red List Free	No
09 91 23	701	02	Paint	Benjamin Moore	Ultra Spec 500 Int. Eggshell Fin. T538	Declare Red List Free	No
09 91 23	701	02	Paint	Benjamin Moore	Ultra Spec 500 Interior Latex Primer N534	Declare Red List Free	No
10 14 19	703	01	Biome Graphics	Roysons Corporation	DreamScape-Terralon	Declare Red List Free	No
10 14 19	703	01	Heart Graphic	Roysons Corporation	DreamScape-Terralon	Declare Red List Free	No
10 14 19	702	01	Classroom Whiteboards	Formica	Formica Magnetic Markerboard	Declare Red List Approved	No
10 14 19	702	01	Wall Graphics Back up - Formica	Formica	Formica Magnetic Markerboard	Declare Red List Approved	No
10 14 19	703	01	Classroom Magnetic Map Walls	Roysons Corporation	DreamScape-Terralon	Declare Red List Free	No
10 14 19	704	01	Permanent Donor Wall	Richelite		Declare Red List Approved	No
10 14 19	704	01	Wonder Path Signage Package Tier One	Richelite		Declare Red List Approved	No
10 14 19	703	01	Biome Supergraphcs	Roysons Corporation	DreamScape-Terralon	Declare Red List Free	No
10 14 19	703	01	Compass & World Map Wallcovering Graphics	Roysons Corporation	DreamScape-Terralon	Declare Red List Free	No
10 14 19	703	01	Map Legend	Roysons Corporation	DreamScape-Terralon	Declare Red List Free	No
12 24 00	704	02	Shade Cloth	Mermet/Draper	GreenScreen Revive	Declare Red List Free	No
12 24 00	705	02	Shade Cloth	Mermet/Draper	Verona Daylight	Declare Red List Free	No
12 36 61.16	701	01	Solid Surface Countertops	Corian	Carbon Aggregate	Declare Red List Free	No
12 36 61.16	701	01	Solid Surface Countertops	Corian	Deep Mink	Declare Red List Free	No
14 24 00	701	01	Conveying Equipement	Kone	Monospace 300	Declare Red List Approved	No
23 74 14	701	02	DOAS Units	Swegon	Gold Model RXF060	Declare Red List Free	No
23 74 14	701	02	DOAS Units	Swegon	Gold Model RXF070	Declare Red List Free	No
23 74 14	701	02	DOAS Units	Swegon	Gold Model RXF050	Declare Red List Free	No

FIGURE 5-19 Declared Products

I14-7 LIVING PRODUCT CHALLENGE DOCUMENTATION

INTENT

All projects must incorporate one product certified under the Living Product Challenge per 1,000sm of gross building area or project area, whichever is smaller, up to three products.

DOCUMENTATION

See the calculations that show the number of labels required. See the excerpt from the MTT below for the LPC Product Information.

LIVING PRODUCT CALCULATIONS	
Square Feet	70,077
Square Meters	6,510
LPC Requirement	1 per 1,000 sm
Total LPC's Required	3
Total LPC's Provided	**3**

FIGURE 5-21 Living Product Calculations

LPC PRODUCTS

TOTAL LPC PRODUCTS: 3

Document Number				Product Information			LPC Information		
No.	Secondary Submittal #	Rev	Item	Product Type	Manufacturer	Model Name	Red List Conformant Certificate	LPC #	Third-Party Verified?
09 30 00	705	01	A	Tile	Crossville	Retro Active 2.0	LBC Red List Free	CSV-0001	Yes
12 50 00	754	01	A	Chair	Humanscale	Ballo	LBC Red List Approved	HSC-0057	Yes
48 14 00	759	01		CAT6 cable	Superior Essex		LBC Red List Free	SPX-LP0001	Yes

FIGURE 5-20 Living Product Challenge Products

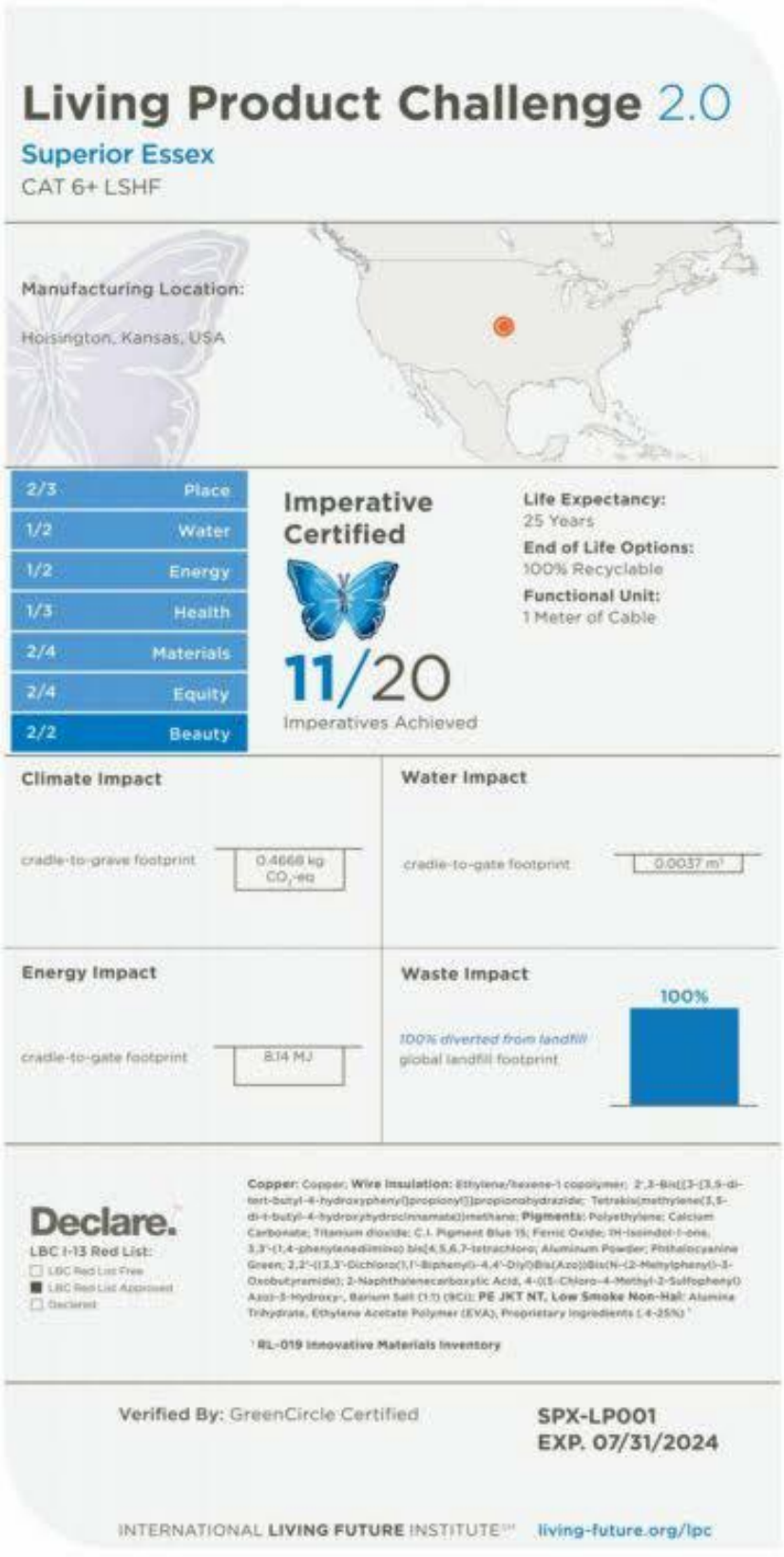


FIGURE 5-22 LPC Label for CAT 6+

I15-1 MATERIALS TRACKING TABLE

INTENT

All projects must incorporate place-based solutions and contribute to the expansion of a regional economy rooted in sustainable practices, products, and services. Manufacturer locations shall adhere to the following restrictions:

- 20% or more of the materials construction budget must come from within 500 kilometers (km) of the construction site.
- 30% of the total materials construction budget must come from within 1000 km of the construction site or closer.
- An additional 25% of the materials construction budget must come from within 5000 km of the construction site.
- The remaining 25% of materials may be sourced from any location.

DOCUMENTATION

See the MTT

DOCUMENTATION

See the excerpt from the MTT below (Figure 5-19)

I-12 Responsible Materials / I-15 Living Economy Sourcing							
Category	Value	%	%	%		%	%
			excess	applied excess	carry forward	LBC proposed	LBC Target
<500 km	$ 6,931,912.20	41%	16%	3%	13%	**25%**	20%
<1000 km	$ 4,307,730.38	25%	-10%	9%	4%	**35%**	30%
<5000 km	$ 3,507,677.14	21%	-4%	8%		**27%**	25%
Total percentage of compliant materials		87%				***87%***	*75%*
>5001 km	$ 2,197,926.23	13%					
Total percentage of Materials		100%					

FIGURE 5-23 Materials Tracking Table

I15-2DISTANCE MAP

INTENT

Provide a map showing 500 km, 1,000 km, and 5,000 km radii from the site.

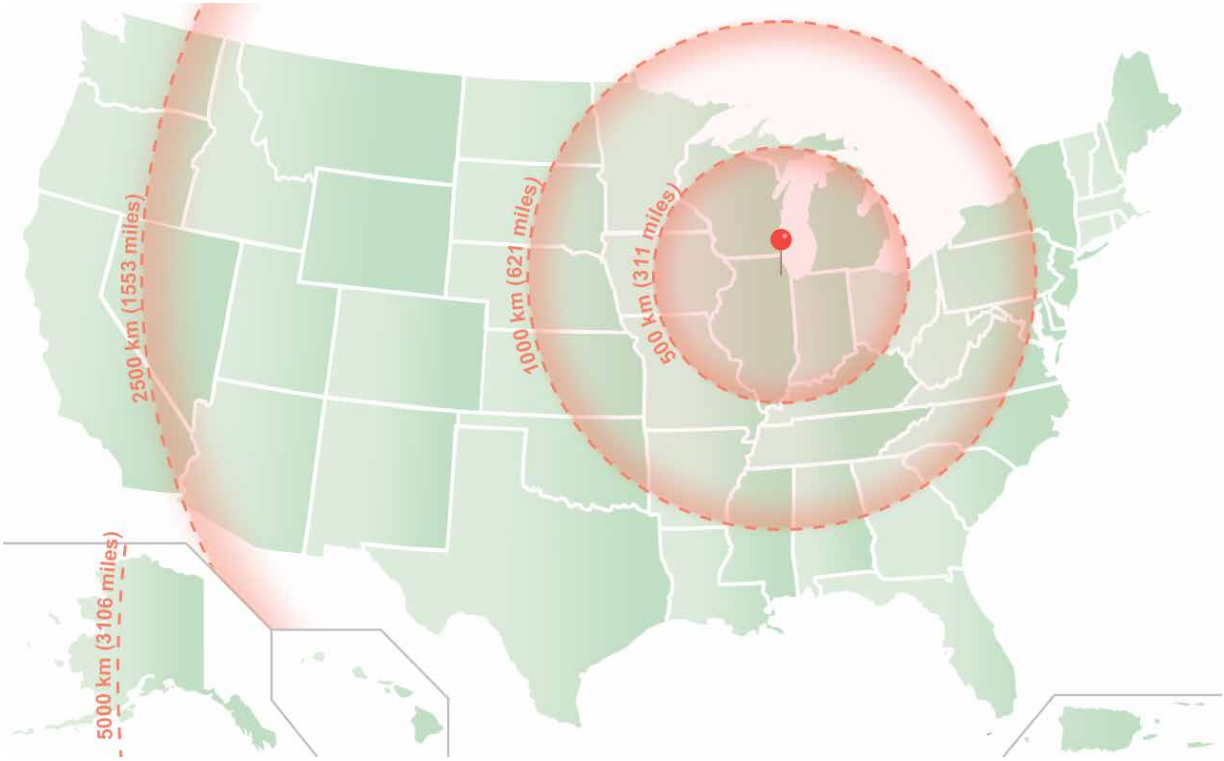


FIGURE 5-24 Map

I15-3 SUPPORTING DOCUMENTATION

INTENT

Provide documents stating manufacturer location information for each tracked product.

DOCUMENTATION

See the MTT and Associated Files



CSI Division										I-15 Living Economy Sourcing						
Submittal	Number								Materials Cost					Cost by Economy Zone		
No.	Secondary	Rev	Item	Division Name	Product Type	Manufacturer	Model Name	LBC category	*If natural material (e.g.*	Double value for salvaged, Declare or LPC Product?	Weighted Product Cost	Location	Distance from Project Site (km)	500 km (310 miles)	1000 km (621 miles)	5000 km (3107 miles)
00 00 00				Divison 00					$ -							
01 00 00				**General Requirements**												
01 00 00				Division 01					$ -							
03 00 00				**Concrete**												
03 00 00	705	01		Cast-in-Place Concrete	Re-bar	Nucor	Generic		$ 105,845.00	No	$ 105,845.00	Belvidere, IL	83	$ 105,845.00		
03 30 00	706	02	B	Cast-in-Place Concrete	Retaining Wall	Votorantim	6191111 - 4000 psi		$ 218,500.00	No	$ 218,500.00	Chicago, IL	16	$ 218,500.00		
03 30 00	703	01	D2	Cast-in-Place Concrete	Underslab Insulation (XPS)	Owens Corning (pink)	Foamular 250		$ 99,000.00	No	$ 99,000.00	Rockford, IL	129	$ 99,000.00		
03 30 00	706	02	A	Cast-in-Place Concrete	Foundations, Footings, and Interiors	Votorantim	6191110 - 4000 psi		$ 35,100.00	No	$ 35,100.00	Chicago, IL	16	$ 35,100.00		
03 30 00	712	01		Cast-in-Place Concrete	Admixture - HRWR	Sika	ViscoCrete-2100		$ 6,650.00	No	$ 6,650.00					
03 30 00	714	03	F	Cast-in-Place Concrete	Vapor barrier	Stego or YellowGuard	StegoWrap		$ 6,000.00	No	$ 6,000.00	United States	322	$ 6,000.00		
03 30 00	713	01		Cast-in-Place Concrete	Admixture - AE	Sika	AEA-14		$ 5,750.00	No	$ 5,750.00					
03 30 00	701	02	B	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck LS, LS/CS		$ 3,500.00	Yes	$ 7,000.00	Lawrence, KS	540		$ 7,000.00	
03 30 00	701	02	A	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck PolishGuard		$ 2,800.00	Yes	$ 5,600.00	Lawrence, KS	540		$ 5,600.00	
03 30 00	704	01	G	Cast-in-Place Concrete	Waterstop	CETCO	Volclay Waterstop RX		$ 2,500.00	No	$ 2,500.00	Hoffman Estates	57	$ 2,500.00		
03 30 00	701	02	C	Polished Concrete Flooring	Polished concrete floor	Prosoco	Consolideck Color		$ 2,250.00	Yes	$ 4,500.00	Lawrence, KS	884		$ 4,500.00	
03 30 00	708	01		Cast-in-Place Concrete	Dissipating Curing Compound	Euclid Chemical	Kurez DR VOX		$ 2,000.00	No	$ 2,000.00	Cleveland, OH	580		$ 2,000.00	
03 30 00	710	02	A	Cast-in-Place Concrete	Topping Slab	Votorantim	6114200 - 4000 psi		$ 1,500.00	No	$ 1,500.00	Chicago, IL	16	$ 1,500.00		
03 30 00	707	02		Cast-in-Place Concrete	Form Release Agent	SpecChem	BioStrip WB		$ 700.00	No	$ 700.00	Kansas City, KS	810		$ 700.00	
03 30 00	709	02	A	Cast-in-Place Concrete	Non-Shrink Grout	WR Meadows	CC-86 DOT		$ 600.00	No	$ 600.00	Proprietary	668		$ 600.00	
03 30 00	711	03	E	Cast-in-Place Concrete	Evaporation Retarder	Master Builders	MasterKure ER 50		$ 500.00	No	$ 500.00	Houston, TX	1100			$ 500.00
03 30 00	709	02	B	Cast-in-Place Concrete	Joint Filler Strips	WR Meadows	1/2" Cork Expansion		$ 300.00	No	$ 300.00	Proprietary	805		$ 300.00	

FIGURE 5-25 Documentation

I16-2 MATERIALS CONSERVATION MANAGEMENT PLAN (MCMP)

INTENT

Create and Implement a Materials Conservation Management Plan explaining how the project team optimized materials and reduced waste in the design, construction, and operations phases, and how they planned for reduced waste at the project's end of life.

OUR CONSERVATION EFFORTS

Pre-Design

Since our site was a field, our two major materials conservation efforts were to harvest the trees and create conservation efforts were to harvest the trees and create mill work from the logs and use all the remaining brush and small caliper trees for wood chips that we used for paths through the farming operations.

Design Phase

In terms of optimizing the design to minimize waste, all the windows were on the module of the fiber cement panels. Additionally, by designing a high performance wall, and the Air-Water Barrier is well protected, we expect the façade to last for more than 50 years.

Construction Phase

During construction, we had a complete Construction Waste Management plan as described in **Appendix M-D** and summarized in **I16-3**. Additionally we had composting for food scraps. A first for this Contractor.

Operations Phase

See **Appendix M-A** for the ongoing operations and sustainability plan, including the student and staff onboarding document.

End of Life

Since the building is primarily steel, we anticipate, that the majority of the structural frame and interior partitions will be recycled and the concrete crushed into gravel. The fiber cement sun shades, and aluminum sills are secured with exposed fasteners, so they will be salvaged as complete panels or sheets. As for interior elements, within the Chicago area, there are ceiling tile take back programs, wood doors can be re-used and hollow metal frames can be recycled. Additionally, copper pipe was use for all the water supply pipe, so that along with the schedule 40 sprinkler and mechanical pipe can all be recycled. Additionally, with the limited use of PVC and other plastics, there are in general, less plastics to go to a landfill.

I16-3 WASTE DIVERSION DOCUMENTATION

INTENT

Complete a Construction Waste Diversion Table, showing percentages of waste diverted (by weight) in each category (metals; paper + cardboard; soil + biomass; rigid foam; carpet + insulation; and all others).

DOCUMENTATION

See the Summary Table in **Figure 5-26** and receipts in **Appendix M-G**, that show approximately a 95% diversion rate.

There were no Hazardous materials on site prior to construction and there were no surplus materials post construction. Per the CWM plan described in **I16-2**, see the photographs of the process during construction.

AGC Monthly Recycle Report

	2022									2023								
Project Summary	April Tons	May Tons	June Tons	July Tons	Aug Tons	Sept Tons	Oct Tons	Nov Tons	Dec Tons	Jan Tons	Feb Tons	March Tons	April Tons	May Tons	June Tons	July Tons	Aug Tons	Sept Tons
Metal (Rep)		3.05		0.99	1			0.4	0.98	0.48	0.2	0.46	1.04	1.14		0.24	0.43	
Metal (United)			15.07							9.92				7.64				
Wood (Rep)		7.46	3.13	8.11	2.67	2.64	2.51	2.27	8.36	11.3	4.84	13.34	9.52	17.2	27.11	17	10.30	4.54
Corrugated (Rep)							0.5	4.19	0.75	5.89	7.75	12.3	13.84	20.39	9.61	6.37	6.77	6.12
Drywall (Rep)						1.58	2.1	2.28		1.26	2.56	16.41	8.2	10.16	3.45	2.59	2.38	1.11
Concrete (Rep)		4.69	2.24		2.33					0.28					2.17	1.36		
Concrete (Keno)			126												167			
Concrete (Con)			42	14														
Concrete (Cerami)				8.59	9.51			7.82			4.52							
Brick (Rep)														0.23				
Ceiling Tiles (Rep)																		
Fines (Rep)		5.92	2.24	0.33											14.37	0.42		
Glass (Rep)		0.19	0.45	0.66	0.33	0.53	0.037	1.59	0.3									
Paper (Rep)		0.79	0.45		0.33		0.57		0.81	0.18	0.69	1	0.4	0.75				
Plastic (Rep)		0.38	0.45		0.33	1.06	0.37	2.15	0.38	0.13	0.3	0.82	0.27	0.72				
Asphalt (Keno)			198															
Other (Rep)																		
Residual (landfill)		3.04	1.34	2.19	0.067	1.06	0.57	1.3	1.45	2.36	2.21	4.03	4.13	6.42	9.94	3.31		
Monthly Total Weight		25.52	391.37	34.87	16.567	6.87	6.657	22	13.03	31.8	23.07	48.36	37.4	64.65	233.65	31.29	19.88	11.77
Monthly Diverted Weight		22.48	390.03	32.68	16.5	5.81	6.087	20.7	11.58	29.44	20.86	44.33	33.27	58.23	223.71	27.98	19.88	11.77
Monthly Recycle %		88.09%	99.66%	93.72%	99.60%	84.57%	91.44%	94.09%	88.87%	92.58%	90.42%	91.67%	88.96%	90.07%	95.75%	89.42%	100.00%	100.00%

Total Weight	1018.75
Total Diverted	975.337
Total Recycled	95.74%

Metal Recycled	
Tons	Percent
43.04	100%

Paper/Corrugated	
Tons	Percent
100.45	100%

Soil/Biomass	
Tons	Percent
N/A	N/A

Carpet/Insulation	
Tons	Percent
N/A	N/A

All Other Recycled	
Tons	Percent
831.85	94%

FIGURE 5-26 Final Diversion Report by Month



FIGURE 5-27 Composting at the Construction Trailer



FIGURE 5-28 Source Separation



FIGURE 5-29 Large Scale Source Separation



FIGURE 5-30 Small Scale Source Separation



FIGURE 5-31 Large Dumpster Source Separation



FIGURE 5-32 Large Dumpster Source Separation

I16-4 SALVAGED MATERIALS DOCUMENTATION

INTENT

Provide one salvaged material per 500 square meters (sm) of gross building area.

DOCUMENTATION

See the calculations, annotated floor plans, and an excerpt from the MTT below.

SALVAGED MATERIALS CALCULATIONS	
Square Feet	70,077
Square Meters	6,510
LBC Requirement	1 per 500 sm
Total Salvaged Materials Required	14
Total Salvaged Materials Provided	**43**

FIGURE 5-34 Salvaged Materials Calculations

SALVAGED PRODUCTS

TOTAL SALVAGED PRODUCTS: 10

TOTAL UNIQUE LOCATIONS: 43

Document Number				Product Information			Salvaged Information		
Division No.	Submittal #	Rev	Item	Product Type	Manufacturer	Model Name	# Of Unique Locations	Qty.	Units
06 41 16	701	F1		Millwork Benches	Site Harvested	WD-2	9	2138	BF
31 20 00	701	02	B	Sub-base	Hanson Aggregates Midwest	CA-06, CS-01	3	2300	CY
09 30 00	102	03		Salvaged Tile (floor)		CT1_S1	11	3450	SF
09 30 00	102	03		Salvaged Tile (wall)		CT2_S1	10	184	SF
12 50 00	733	01	C	Salvaged Furniture	Office Furniture Center	FSKNLLBFM4 Reupholstered Knoll Mobile Box/File Pedestal w/ Cushion Top	1	1	EA
12 50 00	734	01	D	Salvaged Furniture	Office Furniture Center	STASAMIA-RN-P-IG Refurbished Steelcase Amia task chair	1	1	EA
12 50 00	735	01	E	Salvaged Furniture	Office Furniture Center	D AO2HYBRID-IG Refurb Reception Station	1	1	EA
12 50 00	735	01	F	Salvaged Furniture	Office Furniture Center	MISCASMWB7 Pre-owned Steelcase Exponents Mobile Whiteboard Display	1	1	EA
12 50 00	736	01	G	Salvaged Furniture	Office Furniture Center	MISCASMWB2 Pre-owned Steelcase Exponents Mobile Mediaboard Display	1	1	EA
12 50 00	737	01	H	Salvaged Furniture	Office Furniture Center	MISCPHNBTH Pre-owned ROOM phone booth	2	1	EA

FIGURE 5-33 Salvaged Product Information



FIGURE 5-35 Annotated Floor Plans

I16-5 OPERATIONS DOCUMENTATION

INTENT

Provide a narrative of how the project will manage future waste streams.

SUSTAINABILITY PLAN

See **Appendix M-A** for the ongoing sustainability plan and **Figures 5-36** and **5-37** for photographs of the operations plan in action.

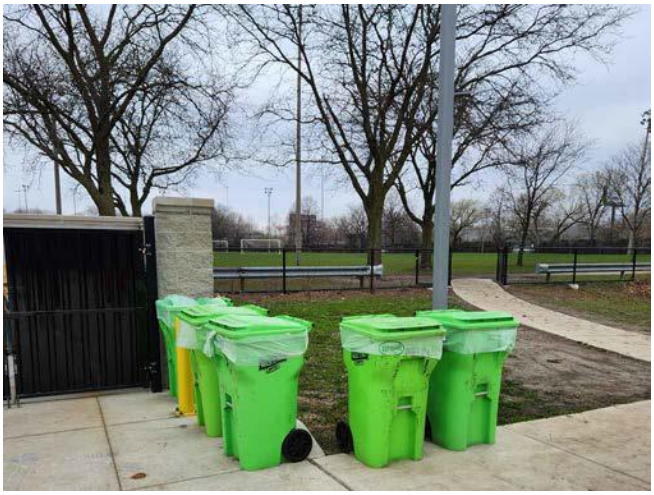


FIGURE 5-36 Large Dumpster Source Separation



FIGURE 5-37 Large Dumpster Source Separation

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EQUITY

INTRODUCTION

17 - UNIVERSAL ACCESS

- I17-1 Universal Access Narrative
- I17-2 Universal Access Statement
- I17-3 Solar Shading Narrative and Calculations

18 – INCLUSION

- I18-1 JUST Label
- I18-2 JUST Self-Assessment
- I18-3 Diverse Stakeholder Contracts Backup Calculations
- I18-4 Diverse Stakeholder Contracts Backup Documentation
- I18-6 Workforce Development Training Calculations
- I18-7 Workforce Development Training Backup Documentation

APPENDICES

- Q-A JUST Self Assessments
- Q-B Diverse Stakeholder Documents

* I17-4 & I18-5 are not applicable



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INTRODUCTION

INTRODUCTION

The intent of the Equity Petal is to elevate equity as a project goal and to transform developments to foster a just and inclusive community that enables all people to participate, prosper, and reach their full potential. It is grounded in the belief that a society that embraces and engages all sectors of humanity and allows the dignity of equal access and fair treatment is a civilization in the best position to make decisions that protect and restore the natural environment that sustains all of us.

The Living Building Challenge envisions a built environment that is welcoming and accessible, and that enables all people to participate, prosper, and reach their full potential. It is a built environment created by equitable organizations, who lead inclusive design and construction processes.

The Equity Petal has two imperatives, and 9 requirements representing two main tenets: 1. Designing for universal access and 2. Engaging and supporting traditionally disadvantaged communities.

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I17-1 UNIVERSAL ACCESS NARRATIVE

INTENT

Provide a narrative with images outlining the approach to each of the principles and guidelines of Universal Design, and outlining measures taken to provide benefit to all and to enhance the public realm.

UNIVERSAL DESIGN

The Academy for Global Citizenship incorporates Universal Design Principles that support equitable learning strategies for students, and offers choices and equity to all other occupants, visitors, and users. The intent of Universal Design is to maximize the accessibility and usability in buildings, products, or environments to the greatest extent possible for people, regardless of age, ability, or other factors without the need for personal adaptation.

Universal Design features of the Academy for Global Citizenship include:

- Smooth, Ground-level, entrances without stairs.
- Minimally sloped surfaces (less than 1:20), resulting in the elimination of handrails wherever feasible.
- Textured outdoor walking surfaces that promote ease of use and slip-resistance.
- Ample and functional clearances at doorways, passageways, and circulation zones, with higher volume spaces receiving greater clearances for queuing, passage, and arrival.
- Gender-neutral toileting for students, staff, and building occupants.
- Graphics and multi-lingual signage (including braille).
- Curated view corridors from interior to exterior to connect occupants to nature.
- Multiple glazing portals in high-use doors to allow visibility from each side for all users.
- Age-appropriate work-surface design to maximize usability for all students and adults.
- Age-appropriate teaching kitchens to support health and nutrition education objectives.
- Accessible visual displays to teach occupants about energy efficient features and energy usage data.
- Expansion of health center to serve students and the public.



FIGURE 6-01 Ample connections to nature



FIGURE 6-02 Multiple glazing portals in high-use doors

- Provision of publicly accessible community gardens to promote social connection to the local community through educational opportunities, health, and well-being.
- Lighting controls with automated scenes to maximize usability.
- An airtight building envelope supplemented by radiant heating and cooling resulting in the elimination of drafts and noise.
- Prioritization of thermal comfort and acoustics.
- Provision of exterior windows and north-facing skylights with shading devices that provide natural light to all regularly occupied spaces while managing glare.
- A variety of teaching environments provide support for diverse teaching techniques and self-directed learning.



FIGURE 6-03 Water fountains at multiple heights for diverse building occupants



FIGURE 6-07 Accessibility Ramps



FIGURE 6-04 Gender-neutral Restrooms



FIGURE 6-08 Multilingual Signage



FIGURE 6-05 Curated view corridors



FIGURE 6-09 Accessible Restrooms



FIGURE 6-06 Minimally sloped surface



FIGURE 6-10 Age-appropriate teaching spaces

I17-2 UNIVERSAL ACCESS STATEMENT

INTENT

Provide a signed statement by the Architect, affirming: 1. That the project complies with ADA and ABA requirements and Universal Design principles, 2. That noxious emissions are not present, 3. That there are no unresolved noise complaints from the community, and 4. That all waterways have public access.

International Living Future Institute
P.O. Box 5874
Portland, OR 97228-5874

October 4, 2023

Re: The Academy For Global Citizenship
4942 W. 44th Street
Chicago, IL 60638

To Whom It May Concern,

I am the Architect of Record for the construction of the new Academy For Global Citizenship. This letter is to confirm that, to the best of my knowledge, information and belief the design incorporates "The 7 Principles of Universal Design" as outlined in the LBC handbook (as developed by a group led by Ronald Mace in 1997).

Sincerely,

Todd Niemiec
Principal
SMNG A Architects, Ltd.

FIGURE 6-11 Signed Statement by SMNG-A

I17-3 SOLAR SHADING NARRATIVE & CALCULATIONS

INTENT

Provide: 1. A narrative describing if any neighboring buildings are shaded, what the impacts are, and how they are being addressed. 2. Diagrams demonstrating maximum shading of adjacent properties, measured on the winter solstice (December 21) between 10:00 a.m. and 2:00 p.m.

SOLAR ADJACENCIES

The Academy for Global Citizenship is located at 4942 West 44th Street, Chicago, IL with a Longitude and Latitude as follows:

Longitude: 31.813
Latitude: -87.748

The Academy for Global Citizenship has no Eastern, Western, or Northern properties adjacent to it, eliminating the threat of shading. The closest existing adjacency is the LeClair M.B Church located southwest of the site.

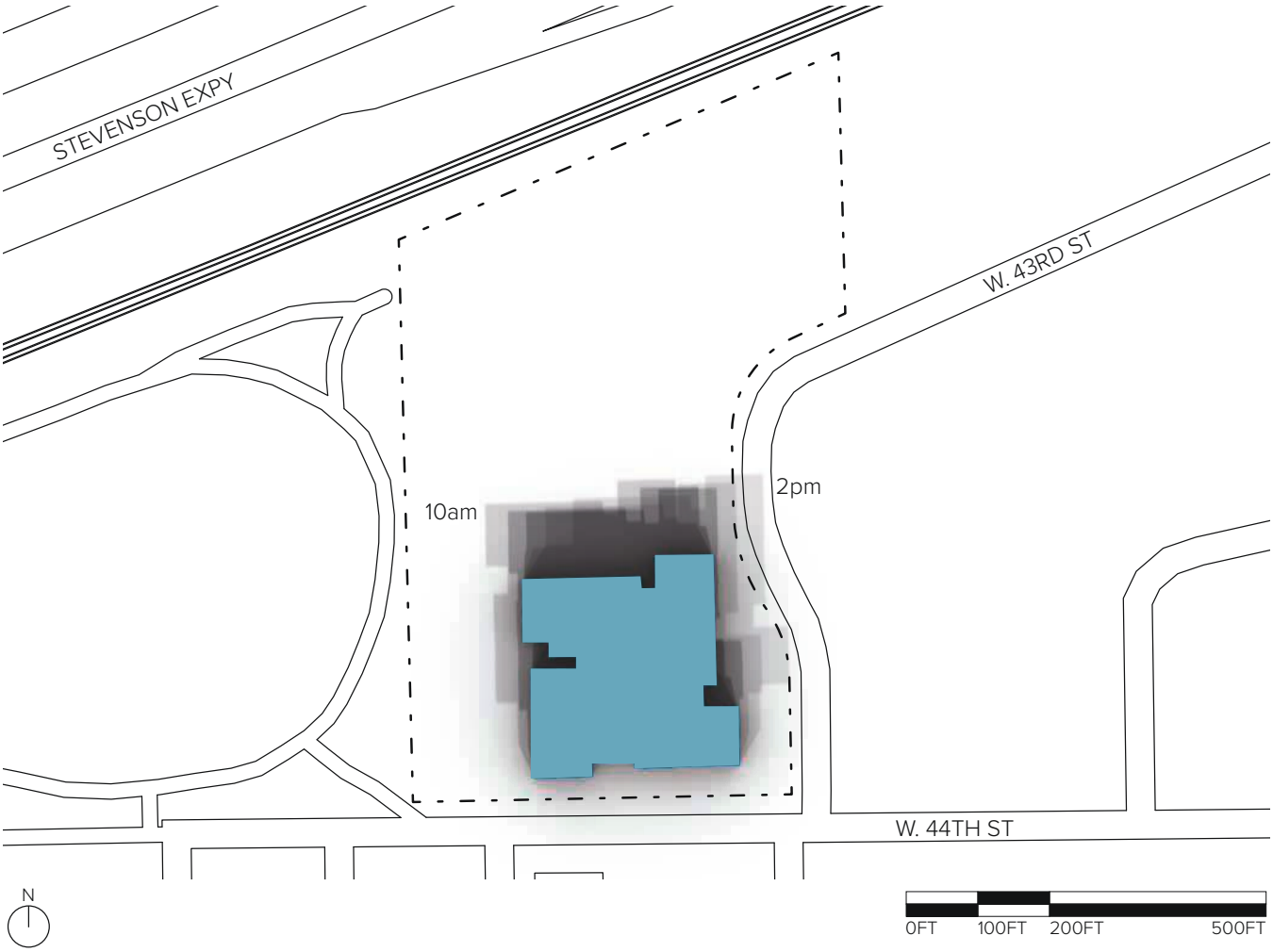

FIGURE 6-12 Solar Adjacencies Diagram

I18-1 JUST LABEL

INTENT

Provide a current Just label for qualified project team organizations.

Requirement: two team members



FIGURE 6-13 Farr Associates JUST Label



FIGURE 6-14 SMNG-A JUST Label

I18-2 JUST SELF-ASSESSMENT

INTENT

Provide Just. self-assessments for the required number of project team members.
Requirement: five team members

ASSESSMENTS

The following project team members performed a Just. assessment:

- dbHMS (MEP Engineer)
- WSP (Red List Consultant)
- Baumann Consulting (Commissioning Authority)
- Site Design Group (Landscape Architect)
- The Academy for Global Citizenship (Owner)

Please see **Appendix Q-A** for the assessments.

I18-3 DIVERSE STAKEHOLDER INVOLVEMENT CALCULATIONS

INTENT

Provide calculations demonstrating that percentage compliance has been met.

Requirement: 20% of design contract and/or construction contracts, and 10% of maintenance contracts must be with Just organizations that meet required levels for Diversity category, or are registered Minority, Women, or Disadvantaged Business Enterprises (MWDBE) organizations, or international equivalent. We chose option 2 and Workforce development/training/community benefits agreements, registered apprentice programs, and similar programs are employed for 10% of the General Contractor's project contracts and/or maintenance contracts.

ENGAGEMENT

For Diverse stakeholder engagement, please see **Appendix Q-B and I18-4.**

The overall calculations are:

Construction Contracts	$40,478,372.00
MBW/WBE	$13,114,992.00
	32%
Maintenance Contracts*	$584,469.00
MBW/WBE	$228,482.00
	39%

* Estimates are based on 2023

Additionally, three community businesses were hired and apprenticeship programs were engaged, representing 16% of the construction contract as outlined in **Appendix Q-B, I18-6, and I18-7**.

I18-4 DIVERSE STAKEHOLDER CONTRACTS BACKUP DOCUMENTATION

INTENT

Provide documents that list all organizations working on the project by phase, including contracted dollar values as relevant.

DOCUMENTATION

For the back up calculations, please see **Appendix Q-B.**

I18-6 WORKFORCE DEVELOPMENT / TRAINING BACKUP CALCULATIONS

INTENT

Provide calculations demonstrating that percentage compliance has been met.

WORK FORCE DEVELOPMENT

For workforce development, please see **Appendix Q-B**.
The overall calculations are:

Construction Hours	104,565
Workforce Development Hours	16,436
	16%

Additionally, ten Section 3 Candidates were hired as outlined in **Appendix Q-B**.

I18-7 WORKFORCE DEVELOPMENT / TRAINING BACKUP DOCUMENTATION

INTENT

Provide name and job classification of individuals working on the project, total hours worked on the project, and information about the apprenticeship or training program the individual is enrolled in. Back-up information describing the Registered Apprenticeship Program, CBA, CWA, PLA, or Workforce Training and Development programs involved, as applicable. A signed statement attesting to accuracy from the General Contractor.

DOCUMENTATION

For the back up calculations, please see **Appendix Q-B.**

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BEAUTY

INTRODUCTION

19 - BEAUTY & BIOPHILIA

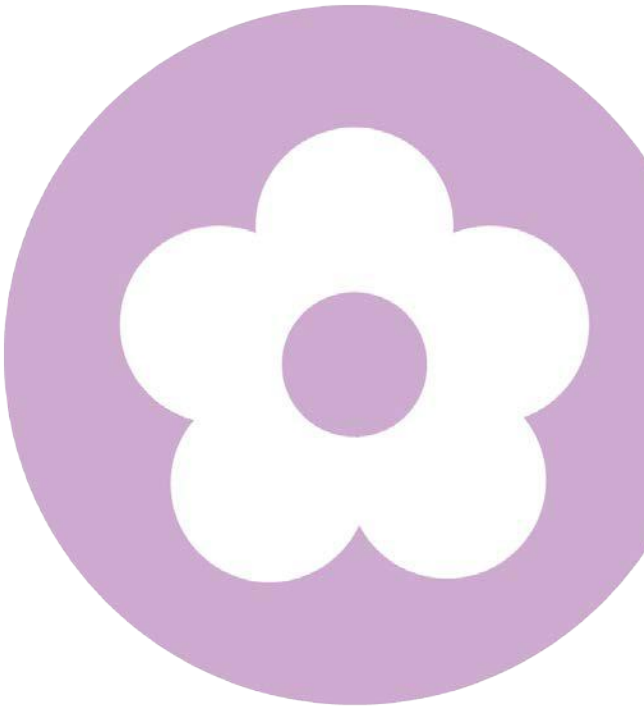
I19-1 Biophilic Design Exploration Document
I19-2 Biophilic Framework
I19-3 Biophilic Plan
I19-4 Biophilic Results

20 - EDUCATION & INSPIRATION

I20-1 Case Study Content
I20-2 Proof of Open Day
I20-3 Operations and Maintenance Manual
I20-4 Living Future Accreditation (LFA) Certificate
I20-6 Website
I20-7 Brochure
I20-8 Signage

APPENDICES

B-A Biophilic Workshops
B-B Open Day Invitation
B-C Tour Brochure



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INTRODUCTION

INTRODUCTION

The Beauty Petal has two imperatives and 11 requirements representing two main tenets: 1. Designing with biophilic principles in mind as well as 2. Generous sharing of information.

BIOPHILIC DESIGN

The Academy for Global Citizenship (AGC) project was influenced by the local ecosystem and geography. As the design progressed, each space was vetted against the 14 principles of biophilia through multiple meetings and design iterations.

GENEROUS SHARING

With AGC being a community hub and school, sharing is part of the daily activity. Multiple tours, signage, and collateral have been prepared and shared. More importantly, AGC is working to integrate the building systems and data streams into the school curriculum.

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I19-1 BIOPHILIC DESIGN EXPLORATION

INTENT

Provide an agenda with times, an attendee list, and examples of tools and instruments used in the exploration of biophilic design.

THE BIOPHILIC WORKSHOPS

Over the course of the 3-year design process (that occurred during the pandemic) we had multiple design meetings addressing all aspects of the design and how to integrate the Beauty Petal concepts. See **Appendix B-A** for the Agenda of the meeting titled "Biophilic Meeting" and an example of the slide deck used to lead that meeting. Please note in addition to specific Biophilic meetings, Biophilia was incorporated into the Integrated Design Workshops and Concept Presentations.

SCHEDULED MEETINGS

1st Board Presentation	January 2020
2nd Integrated Design Workshop	March 2020
Biophilic Workshop #1	August 2021
Biophilic Workshop #2	August 2022



FIGURE 7-01 The Biophilic Design Workshop

I19-2 BIOPHILIC FRAMEWORK

INTENT

Provide: 1. The final Biophilic Framework with a short narrative describing how the Framework evolved over the course of the project from the initial draft following the Biophilic Design Exploration to the final version. 2. Include any relevant cultural, ecological, and climatic studies.

OUR INSPIRATION & PROCESS

For the biophilic framework we utilized the Terrapin Green 14 patterns. In Figure 7-03, we matrixed the individual spaces across the 14 patterns to see where we could improve. Additionally during the course of the design we referenced the biome and watershed that helped inform the design. See the included images from the design process.



FIGURE 7-02 Chicago Watershed Diagram

	Site	Greenhouse	The Heart L1	The Heart L2	Community Hall	Admin	Pre-K Village	K-1st Village	2/3rd Village	4th/5th Village	6th-8th Village	Façade
1. Visual Connection with Nature	10	10	10	8	8	7	8	7	7	7	7	7
2. Non-Visual Connection with Nature	10	9	8	2	4	1	2	2	2	2	2	2
3. Non-Rhythmic Sensory Stimuli	10	8	8	2	3	2	2	2	2	2	2	2
4. Thermal & Airflow Variability	10	9	8	8	4	2	5	5	5	5	5	5
5. Presence of Water	7	4	2	2	2	1	1	1	1	1	1	1
6. Dynamic & Diffuse Light	9	9	9	9	6	8	8	8	8	8	8	8
7. Connection with Natural Systems	10	10	8	6	7	3	3	3	3	3	3	3
8. Biomorphic Forms & Patterns	10	8	6	6	8	2	1	2	3	3	3	5
9. Material Connection with Nature	9	6	3	3	2	2	1	2	2	2	2	5
10. Complexity & Order	10	5	8	8	10	2	1	4	7	7	7	5
11. Prospect	10	10	8	8	10	2	5	7	8	6	6	2
12. Refuge	10	8	5	7	2	8	5	8	8	8	8	2
13. Mystery	10	8	8	7	3	5	1	8	7	7	7	2
14. Risk/Peril	10	10	9	8	8	5	1	7	7	6	6	2

FIGURE 7-03 Patterns Matrix

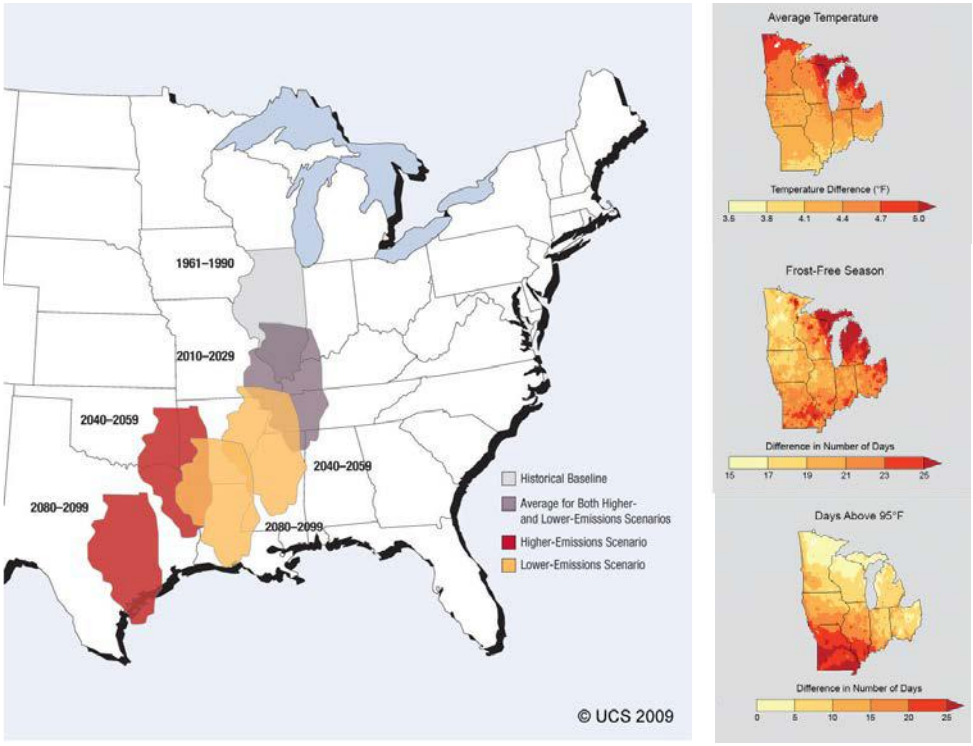

FIGURE 7-04 Climate Change Analysis

What are the measures of resilient design can we incorporate into the project to best prepare for the future?

AVERAGE AND MAXIMUM TEMPERATURES CONTINUE TO INCREASE DUE TO CLIMATE CHANGE

Over the next 100 years, Illinois's climate is predicted to have a climate similar to present day Texas and Louisiana



FIGURE 7-05 Site Analysis

I19-3 BIOPHILIC PLAN

INTENT

Provide: the Biophilic Plan, including communication and decision-making strategies as well as the means to, and schedule for, tracking the implementation of biophilic design strategies over the course of the project.

THE BIOPHILIC PLAN

Implementation of the Biophilic plan was integrated into the design and construction process. The two processes ran in parallel allowing Biophilic elements to be incorporated into the design on an ongoing basis. Three aspects of the built project demonstrate how the Biophilic Plan resulted in a biophilic experience: 1. The pinwheel plan, 2. The Non-Rhythmic and natural color palette of the Façade, and 3. A comprehensive map of all interior sustainable/biophilic elements.

PINWHEEL PLAN

The building's floor plan is that of a pinwheel. It was chosen to maximize direct access to the outdoors and to orient building occupants to the suns daily movements by providing views to nature in the four cardinal directions.

NON-RHYTHMIC, NATURE-COLORED FAÇADE

The façade embodies two core aspects of Terrapin's Biophilic criteria: non-rhythmic composition, and a nature-inspired color palette.

MAP OF SUSTAINABLE & BIOPHILIC ELEMENTS

These plans locate approximately thirty education elements located throughout the building that are the result of the Biophilic Plan.

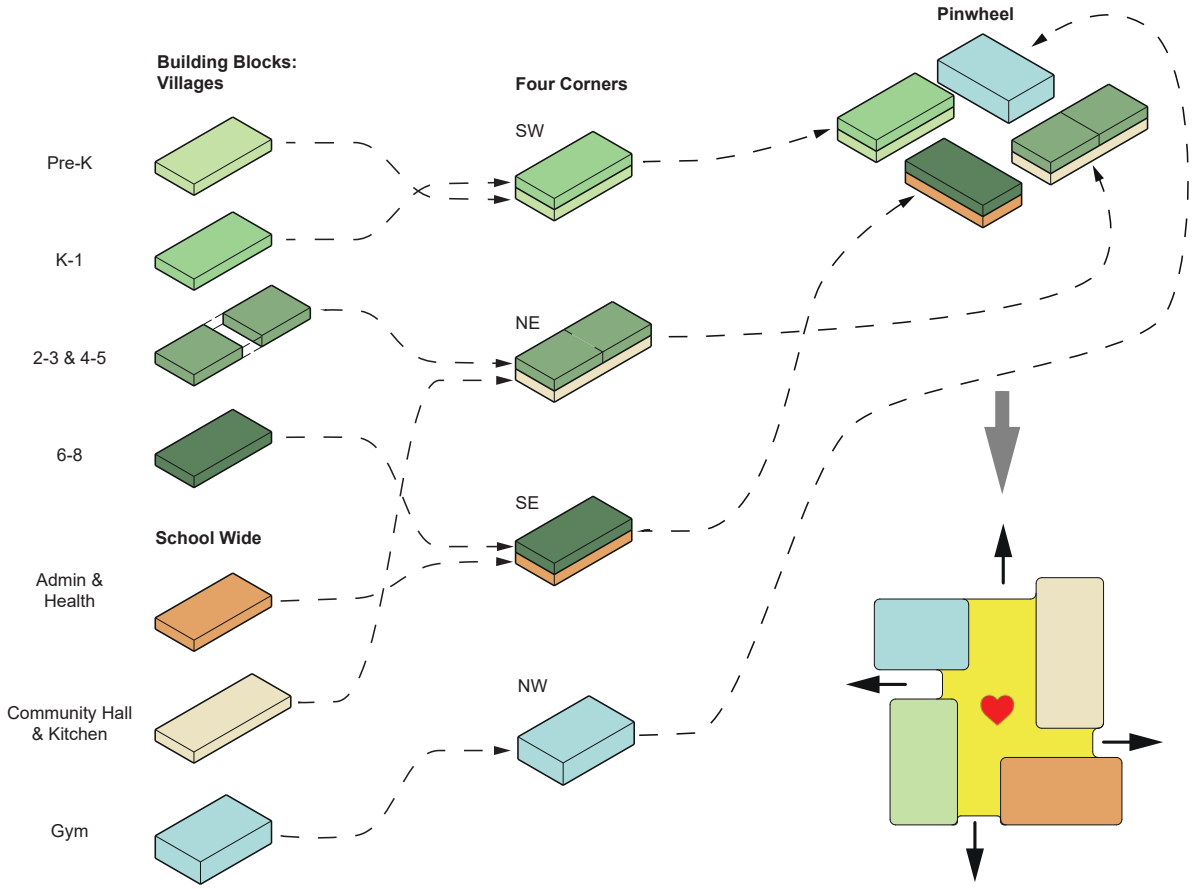

FIGURE 7-06 Pinwheel Configuration Diagram

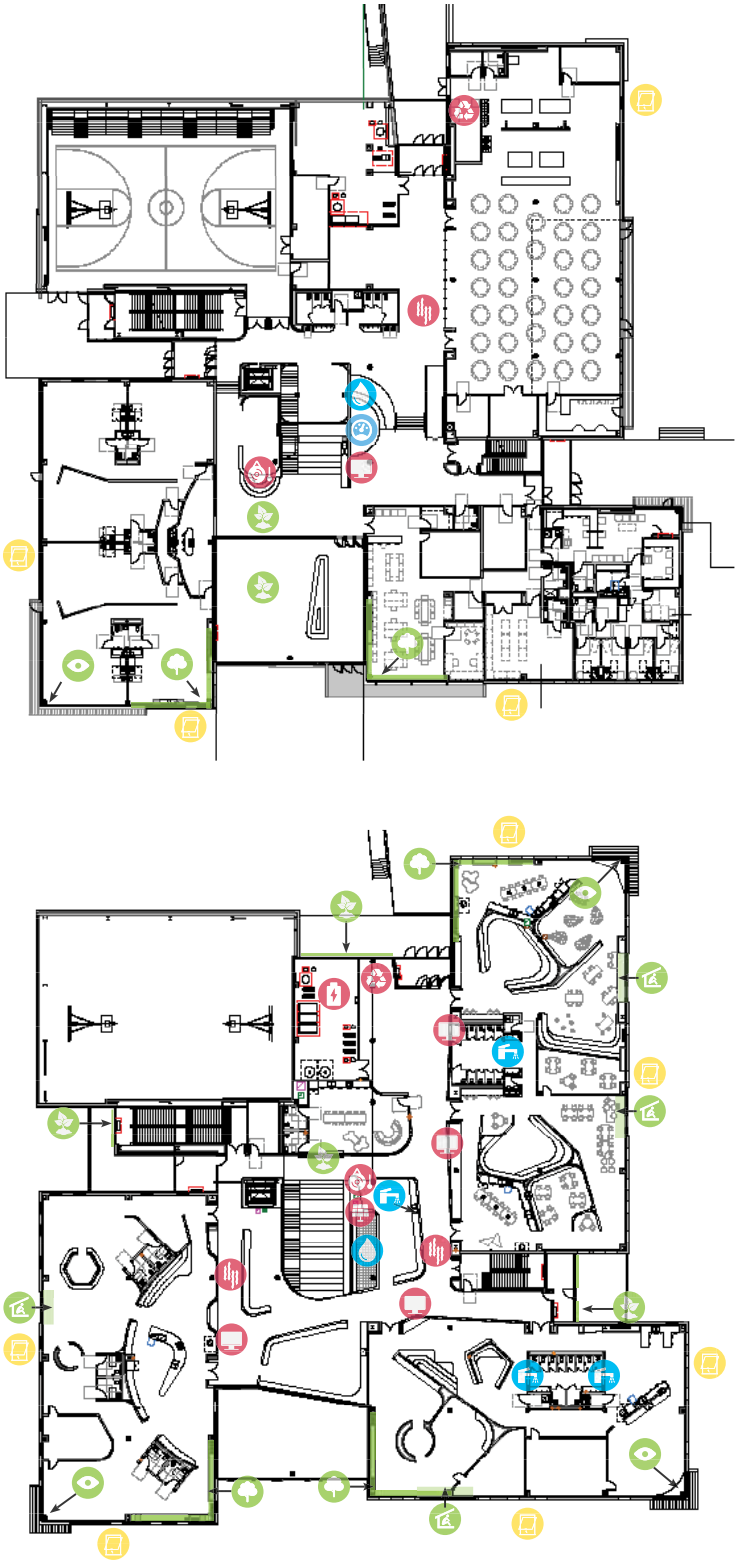

FIGURE 7-07 Sustainable Features Diagrams

I19-4 BIOPHILIC RESULTS

INTENT

Provide 1. A narrative that explains how biophilic design was incorporated, reflects stakeholder priorities, and meets the requirements outlined in the requirements. 2. Photographs of the completed project highlighting the biophilic elements and attributes in the project.

A REFLECTION OF NATURAL PATTERNS

The results of the design process is a project that incorporates all 14 aspects of natural patterns. See the following images describing the patterns.



FIGURE 7-08 Visual Connection with Nature



FIGURE 7-11 Thermal & Airflow Variability



FIGURE 7-09 Non-Visual Connection with Nature



FIGURE 7-12 Presence of Water



FIGURE 7-10 Non-Rhythmic Sensory Stimuli



FIGURE 7-13 Dynamic & Diffuse Light



FIGURE 7-14 Connection with Natural Systems



FIGURE 7-18 Prospect



FIGURE 7-15 Biomorphic Forms & Patterns



FIGURE 7-19 Refuge



FIGURE 7-16 Material Connection with Nature



FIGURE 7-20 Mystery



FIGURE 7-17 Complexity & Order



FIGURE 7-21 Risk/Peril

I20-1 CASE STUDY CONTENT

INTENT

Provide a brief narrative for each targeted Imperative.

NARRATIVE

We selected three prompts from the Case Study Prompt selections.

Early Design Process
- Advocacy to Local Jurisdictions
- Budgeting for Certification
- Product Selection/Material Reuse

Construction
- Advocacy to Manufacturers/Suppliers
- Occupancy

Advice
- Lessons Learned
- Community Engagement
- Other

EARLY DESIGN PROCESS

How was the team assembled? When was ILFI's certification first discussed? Who was the first team member to bring up the possibility of certification? How did the team arrive at the decision to pursue certification? How was the decision communicated to all team members? Were there any specific misgivings or misconceptions that needed to be overcome in order for the team to adopt and achieve its certification goal?

During a period of ten plus years, the client hired three different architect-led teams to design the building to a conceptual level so that the plans and renderings could be used for fundraising. Inspired by the school's aspirational focus, each of the architects proposed to pursue LEED Certification at varying levels. Farr Associates was initially brought in by the Owner's Representative to serve as a consultant to elevate the team's sustainability capacities. The project had set a goal of achieving LEED Silver certification.

During the kickoff workshop our principal pulled the client into a sidebar meeting to ask "why was the sustainability target LEED Silver?" I am not sure, what should it be?" "Living Building Challenge." "Can we achieve that?" "Absolutely!" This quick exchange led to a series of sidebar meetings with the client and Owner's Rep. (Urban ReSolve) and General Contractor (Power Construction) to discuss the viability, pros, and cons of pursuing LBC Certification.

It was decided that LBC Certification was consistent with the school's global aspirations and that being sustainably ambitious could help with fundraising. (The school had yet to identify core funding.) Before committing to LBC two barriers had to be overcome: 1. Understanding and managing the cost premiums and 2. The team's inexperience with LBC.

The soft and hard cost premiums associated with achieving LBC certification were discussed extensively and resulted in the following: 1. The A/E fees were increased to somewhat above the cost of LEED Platinum Certification. 2. Specialty consultants were added to support the extensive vetting and advocacy associated with attaining the Materials Petal. 3. The hard cost premiums associated with attaining the Energy Petal (solar panels and batteries) were taken out of the GC budget and made an Owner's responsibility. 4. A specialty consultant was added to design an on-site wastewater treatment system and to advocate for its approval. 5. The General Contractor allocated cost premiums to many budget line items and contingencies.

Since the current architecture team did not have sustainability expertise, the decision was made to assemble a new LBC-optimized design team, nearly from scratch. The team was led by an architectural partnership between AOR SMNGA Architects (school specialists) and Collaborating Architect Farr Associates (LBC experience as AOR on the LBC-Petal Certified Keller Center). Firms with previous integrated design experience included dbHMS (MEP, Energy Modeling), Site Design Group (Landscape), V3 (Civil), and Stearn Joglekar (structural) rounded out the core team.

The Owner secured project funding from the State of Illinois, unrelated to the LBC commitment. The LBC

commitment did help raise money for the renewable energy systems. The project was designed, bid, and started construction during Covid and experienced real-time cost increases due to supply chain issues.

CONSTRUCTION

Construction: How did the project team ensure ILFI requirements were met during construction? At what phase did the team begin to involve the general contractor and/or subcontractors? What resources did the team create and maintain to disseminate the major requirements? Did the project team hold regular meetings or other events to answer questions? Were there any issues that arose during construction that would impact certification? How did the team work through these issues?

Through the end of design AGC was on track to show how a tight Owner, Designer, and Contractor collaboration made it possible to efficiently achieve LBC certification, especially through the submittal and construction process. The team's prior experience taught them that smaller subcontractors and suppliers can be particularly hard to track down after submittals are approved, and payment is made in full. To address this concern, the team started with the "end in mind", integrating the Materials Petal documentation (Declare, etc.) into the routine submittal process.

Unfortunately, the Coronavirus pandemic happened early in the project. The design team led a full day Integrated Design Workshop (50% Schematic Design) on Friday March 13th, the last workday before Covid shut the world down. The resulting chaos placed unforeseen stresses on the project in the form of design and entitlement delays, supply chain disruptions, and volatile material pricing. Covid forced this orderly system to be abandoned.

The project had an inviolable delivery date: that the school be ready to receive students in mid-summer 2023. Against this challenging context, the contractor was struggling to deliver the project on time and on budget. Providing LBC-related documentation, alongside routine submittals, was slowing the project down to the point of missing the project's "drop dead" date. To keep the project on schedule, the Owner's Representative directed the architect to edit the submittal requirements to omit the required LBC documentation.

This one "tough call" both saved the project and cast a pall on it. The school opened on time to enthusiastic students and rave reviews, based on the assumption that AGC was on the path to LBC certification. However, this outcome was uncertain because the documentation related to the LBC Materials Petal had not been submitted. The design team and GC was forced to scramble to exert pressure on every contractor and supplier to submit their documentation after the fact. Final proof that the Materials Petal could be achieved occurred early in 2025 more than a year after the school was occupied. The stress of not knowing if the building would certify was an unavoidable consequence of the pandemic.

The other unanticipated construction item was miscellaneous thermal bridges that were part of a sub assembly. Particularly the roof supports had more steel than anticipated, and quick mitigations had to be developed in the field. All to a successful conclusion.

ADVICE

Advice: What advice would you give other teams considering pursuing certification?

I recommend that Owner-Designer-Builder teams pursue LBC certification only under the most optimal conditions. The LBC certification is far more rigorous and harder to achieve than LEED Platinum 4.X. Specifically there is a steep learning curve for any individual who has not previously gone through the LBC process, the documentation is far more demanding and time consuming, the pressure on design fees is immense (best to go in thinking of the project as an investment in R and D), there is no comparison to a conventional construction budget, and finally the performance period for net zero energy and water can be nerve wracking. (AGC's net zero energy performance period was eerily smooth. The project passed on the first try with a slight cushion—107% supplied versus 105% required—with no behavioral interventions required whatsoever.)

Reasons Why LBC Certification Should Be Undertaken Only Under Optimal Conditions:

LBC is a different ball game than LEED Platinum 4.X. Consider the following:

- Design and certification expenses can be higher by 20-50%.
- Hard construction costs can be 10 – 20% higher.
- The Materials Credit/Red List specification process demands 2X time.
- Securing multiple competitive bids for Declare Label and other acceptable products can be challenging and time consuming.
- The performance period extends the contract duration by a year or longer.
- While LBC documentation is more flexible than LEED, LEED is a known quantity with a relatively small learning curve.

Optimal Conditions for Undertaking LBC Certification:

Despite the fact that the AGC Team met most all of the conditions listed below, the LBC Certification process was still highly demanding. Not everything has to be perfect, but the team needs enough of the right mix of experience and expertise. Specifically it is highly recommended to include specialty team members with prior LBC-experience on the Water and Materials Petals. (The AGC Water Petal consultant came from the West Coast)

A project should pursue LBC certification only if a critical mass of items on this list are met:

1. Every member of the team—Owner, Designer, and Contractor—is mission-driven.
2. Every member of the team—Owner, Designer, and Contractor—is bought into the vision and is collaborative, flexible, and pulling for the project's successful certification.
3. The design team has experience leading a sophisticated Integrated Design Process that leads to cost savings and performance synergies.
4. The team has experience with high-level green building certification (ideally LBC) but may include LEED Platinum or LEED Zero.
5. The team understands exactly what is required to meet the big three Petals—Energy, Water and Materials—both in terms of staffing/consultants and hard cost premiums.
6. The design fees and preliminary construction budget reflect LBC realities.
7. The team has "gamed out" behavioral adjustments in case the performance period does not go as planned.
8. The firms on the team are otherwise stable and profitable..

I20-2 PROOF OF OPEN DAY

INTENT

Provide: 1. The advertisement and agenda of the open day. 2. A list or total number of attendees at open day

THE RIBBON CUTTING

The Academy for Global Citizenship officially opened to the public on Wednesday, October 18th 2023. See **Appendix B-B** for the email invitation.



FIGURE 7-23 Ribbing Cutting Event



FIGURE 7-22 Open Day Event



FIGURE 7-24 Open Day Event

I20-3 OPERATIONS & MAINTENANCE MANUAL

INTENT

Provide a copy of the Operations and Maintenance (O&M) Manual.

BAUMANN CONSULTING

November 15, 2024

SYSTEMS MANUAL SUMMARY

To Academy of Global Citizenship
From Brandon Pieczynski – Baumann Consulting
Subject P.0737.U AGC Academy for Global Citizenship

The construction team is responsible for supplying the systems manual, with additions by the commissioning authority. The following documentation is included:

Item	Status	File
Executive summary	Submitted	P.0737.U AGC - Cx Report Summary.pdf
Owner's project requirements	Submitted	P.0737.U AGC - Owner's Project Requirements.pdf
Basis of design	Submitted	P.0737.U AGC - Basis of Design.pdf
System single-line diagrams	Submitted	P.0737.U AGC - As-Builts.zip
Construction record documents and specifications	Submitted	P.0737.U AGC - IFC Set.zip
Approved submittals	Submitted	P.0737.U AGC - Submittals.zip
As-built drawings	Submitted	P.0737.U AGC - As-Builts.zip
Original setpoints for all systems commissioned	Submitted	P.0737.U AGC - System Setpoints.pdf
Recommended schedule for recommissioning	Submitted	P.0737.U AGC - Ongoing Cx.pdf
Recommended schedule for sensor recalibration	Submitted	P.0737.U AGC - Recalibration and RCx Frequency and Procedures.pdf
Equipment O&M manuals	Submitted	P.0737.U AGC - O&M Manuals.zip
Equipment preventative maintenance schedules		See O&M Manuals
Confirmation of completed training for owner and occupants	Submitted	P.0737.U AGC - Owner Training.pdf
Ongoing system optimization procedures	Submitted	See Ongoing Cx and RCx Frequency documents
Final Cx report	Submitted	P.0737.U AGC - Final Cx Report.pdf

FIGURE 7-25 Systems Manual Summary

I20-4 LIVING FUTURE ACCREDITATION (LFA) CERTIFICATE

INTENT

Provide an International Living Future Institute-issued LFA certificate for a minimum of one project team member.



FIGURE 7-26 Certificate

I20-6 WEBSITE

INTENT

Provide an Educational website URL.

WEBSITE URL

Main Page: https://agcchicago.org/

Sustainability Page: https://agcchicago.org/our-model/sustainability

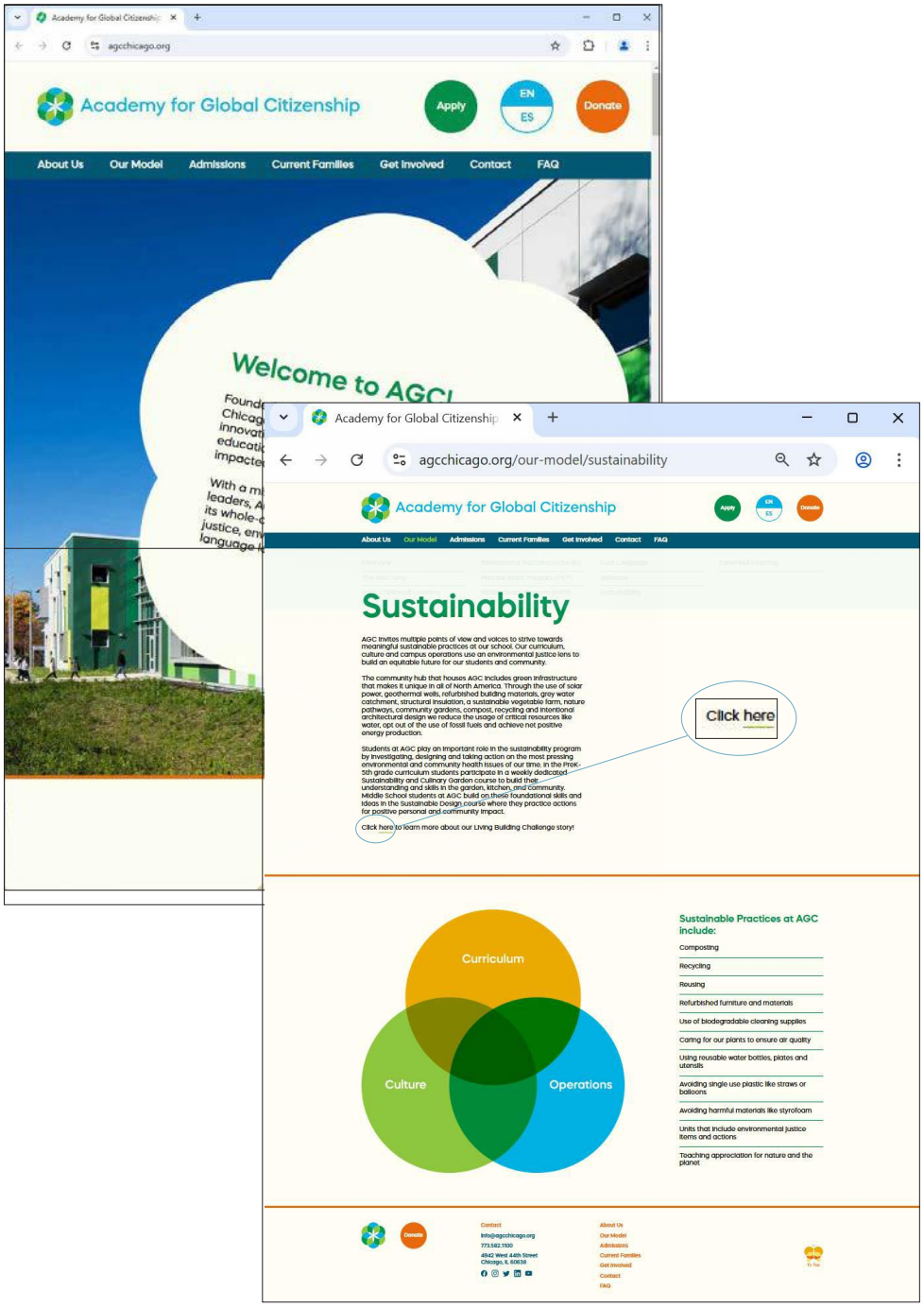

FIGURE 7-27 AGC Website

I20-7 BROCHURE

INTENT

Provide a copy or PDF of the Brochure.

WANT TO TAKE A TOUR?

The Academy for Global Citizenship has been features on multiple AIA tours and open for public tours upon request. See **Appendix B-C** for a tour brochure.

cultivate collective

Sustainability & Facilities Tour



OVERVIEW

Cultivate Collective is a six-acre regenerative and self-sustaining community hub located in the LeClaire Courts neighborhood on the southwest side of Chicago.

It is on track to become the first project in the Midwest to meet the most ambitious environmental standards in the world—the Living Building Challenge—by producing its own food, achieving energy and water net-positivity, and establishing a comprehensive model for community revitalization. The sustainability hub also serves as a solar energy educational lab and experiential STEM immersion site, that will enable hands-on learning avenues for cultivating the next generation of socially responsible leaders, innovators, and entrepreneurs.

Our hub includes unique facilities, resources and programming, including a health center, fresh foods store and café, teaching kitchens, community gardens, wellness facilities, neighborhood walking trails and green spaces, a three-acre urban farm and opportunities for social enterprise development. A Head Start early childhood center and K-8 public school is also housed on-site, enabling a cradle-to-college pipeline.

Join us at our site for a 1 hour tour to take an in-depth look at our facility and learn more about our model!

MISSION

Our mission is to unite education, wellness, sustainability and economic vitality at the community level to drive meaningful, generational impact.

SCHEDULE A TOUR

+773.744.8729

community@cultivatehere.org

WHERE

4942 W. 44TH STREET
CHICAGO, IL 60638

FIGURE 7-28 Brochure

I20-8 SIGNAGE

INTENT

Provide photos of all interpretive signage and maps showing the location of each sign.

SIGNAGE

Attached is an excerpt from the signage package. See **Appendix B-D** for the full document.

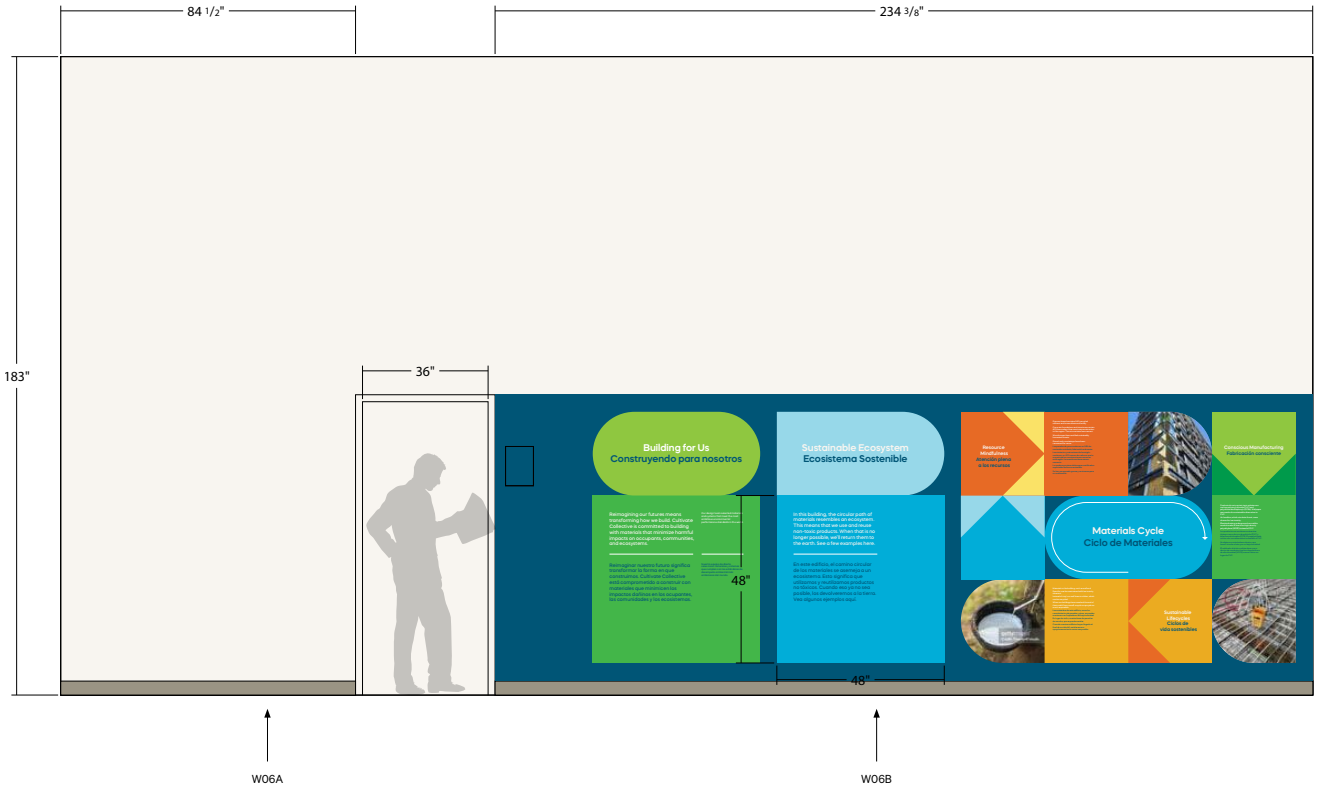

FIGURE 7-30 Biophilic Signage Mock Up

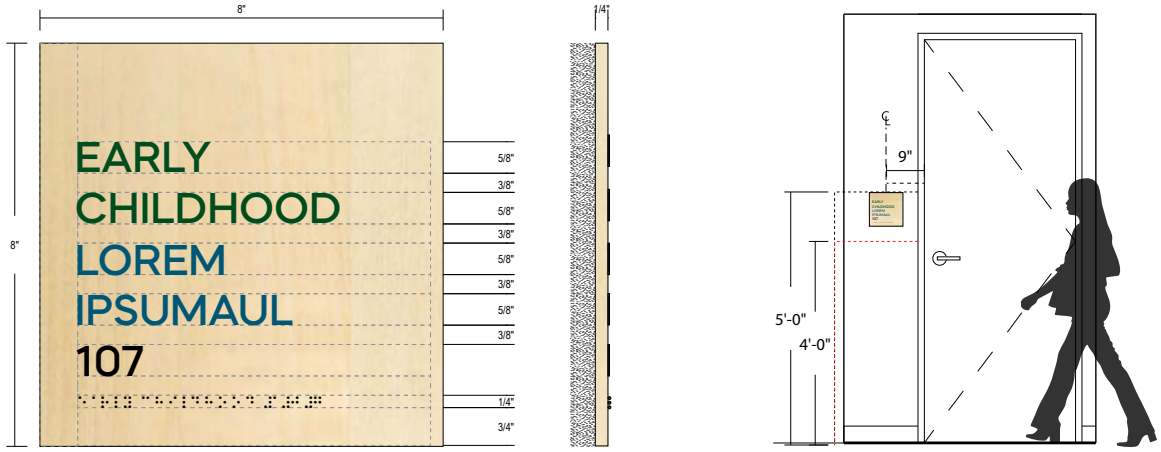

FIGURE 7-29 Room Signage Detail

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FARR ASSOCIATES