

Michigan State University

Center for Community and Economic Development

Structural Material Reuse Business Case Study Series

Material Reuse and Innovation Hub Grant Project

Funded by the Michigan Department of Environment, Great Lakes and Energy (EGLE)

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July 2020

This project is supported in part pursuant to the receipt of financial assistance to the MSU Center for Community and Economic Development from the Michigan Department of Environment, Great Lakes and Energy (EGLE). The statements, findings, conclusions, and recommendations are solely those of the authors and do not necessarily reflect the views of any federal, state agency or Michigan State University.

| | |
|----------------------------------|---------------|
| Table of Contents | Page 2 |
| Introduction and Abstract | Page 3 |
| Methodology | Page 4 |
| Acknowledgements | Page 5 |

Case Study 1: Lifecycle Building Center:

| | |
|------------------------------------|--------------------|
| I. Background | |
| A. Atlanta | Pages 6-7 |
| B. Lifecycle Building Center | Pages 7-11 |
| II. Materials Process | Page 11 |
| 1. LBC Material Collection | Page 12 |
| 2. LBC Material Storage | Page 12 |
| 3. LBC Material Distribution | Pages 13-14 |
| 4. LBC Educates the Public | Pages 14-15 |
| III. Conclusion and Lessons | Pages 15-17 |

Case Study 2: Humanim Decon Social Enterprises

| | |
|---|--------------------|
| I. Background | |
| A. Baltimore Overview | Pages 18-19 |
| B. Humanim Overview | Pages 20-21 |
| C. Details Deconstruction | Pages 21-24 |
| D. Brick + Board | Pages 24-25 |
| II. Deconstruction and Materials Process | Pages 25-27 |
| III. Conclusions and lessons | Pages 27-29 |

| | |
|--|-------------|
| Learning Outcomes from Case Studies | Page |
| 30 | |

| | |
|---------------------|--------------------|
| Bibliography | Pages 31-33 |
|---------------------|--------------------|

Appendix I: Brick + Board Marketplace

| | |
|--|--------------------|
| 1. Section 1: Brick+Board Marketplace and Product Descriptions | Page |
| 34 | |
| 2. Section 2: Projects using Brick+Board Products | Pages 35-36 |

Introduction:

In 2019, the Michigan State University Center for Community and Economic Development (CCED) was awarded a research grant from the Michigan Department of Environment, Great Lakes & Energy (EGLE) to pursue a Structural Material Salvage and Reuse Innovation (MSRI) Hub for the state of Michigan. Integral to this project was the compilation of two case studies detailing successful businesses and organizations involved in structural material salvage and reuse from across the country.

Abstract:

In conducting two case studies of developed structural material salvage and reuse organizations, the MSRI team sought to identify practices and strategies that may facilitate the growth of similar businesses in the Great Lakes region. The first of these two case studies is of Atlanta’s *Lifecycle Building Center* (LBC), a non-profit that reveals key insights pertaining to 1) the reduction of construction and demolition (C&D) waste through its deconstruction and material salvage operations; 2) redirecting salvaged materials back to the community at steep discounts; and 3) raising public awareness regarding the necessity of a sustainable built environment. The second case study observes the Maryland-based not-for-profit, *Humanim*, and its social enterprises: *Details Deconstruction* and *Brick + Board*. Their work demonstrates the importance of 1) specialization, 2) employee services; 3) partnerships; and 4) marketing in deconstruction social

enterprises. The dominant lessons from both Humanim and LBC's business models are crystallized at the end of the document in the form of a list of key learning outcomes.

Methodology:

All information touched on in these case studies was extracted from online sources that were public-facing, with the types of sources ranging from multimedia material, to official reports published by both organizations, and journal articles. Upon engaged discussion within the authorship team, the final list of learning outcomes were identified and transcribed with each having corresponding sections that localize the conclusions being made within the case studies.

Acknowledgements:

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Lea Dyga - CCED Research Assistant, B.S. Environmental Plant Biology candidate

Nathaniel Hooper - MSRI Hub Project Coordinator, MSW

Rex LaMore - Director of the Center for Community and Economic Development

Heather Mahoney - B.A. Social Relations and Policy, BFA Theatre

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CASE STUDY 1: LIFECYCLE BUILDING CENTER - ATLANTA, GA

Authored by Ben Malian

I. Background

A. Atlanta:

Like other Sunbelt metros, Atlanta's growth over the past several decades has been characterized by two related development trends — unprecedented regional growth coupled with urban core stagnation and abandonment — resulting in a pattern of uneven sprawl spanning nearly ten counties.¹ According to the Brookings Institution's *Moving Beyond Sprawl: The Challenge for Metropolitan Atlanta*, a large disparity exists within metropolitan Atlanta between the northern and southern half of the region's urban core in terms of population growth, housing and transit development, job opportunities, and income distribution; meanwhile, the region's suburban ring outpaces the urban core as a whole in these same metrics.² Furthermore, spatial and economic disparities map onto longstanding patterns of racial discrimination within metropolitan Atlanta, with relatively poorer African American communities concentrated predominately in the southern

¹ Center on Urban and Metropolitan Policy. *Moving Beyond Sprawl: The Challenge for Metropolitan Atlanta*. Brookings Institution, 2000, <https://www.brookings.edu/wp-content/uploads/2016/06/atlanta.pdf>

² Center on Urban and Metropolitan Policy, *Moving Beyond Sprawl*.

half of the city, while a more racially diverse mix of middle class communities occupy the northern half (**Fig. 1**).³ These trends are expected to continue well into the future as evidenced by **Fig. 2**, which predicts high rates of population growth — an indicator of economic opportunity — to occur in Atlanta’s outlying suburbs, and slower growth in the urban core. The issue this pattern of development presents to the structural material industry is two-fold: in the urban core, depopulation coupled with economic stagnation results in structural abandonment; in the suburbs, expected population growth fuels speculative development, often with a tendency towards wasteful or otherwise short-term resource use. In other words, opportunities abound for prospective structural material salvage and reuse operations in urban regions exhibiting development patterns similar to Atlanta’s.

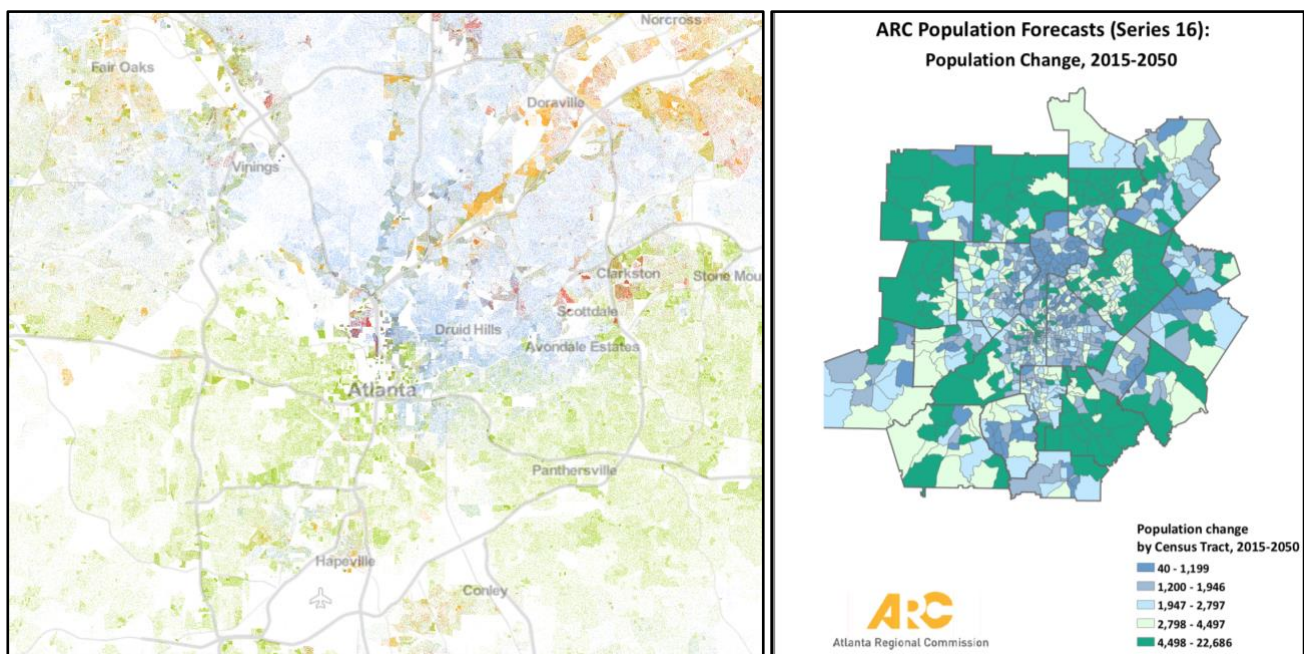


Figure 1 (Left): Racial Dot Map for Metropolitan Atlanta [Green = African American; Blue = White] (Weldon Cooper Center for Public Service, *University of Virginia*). **Figure 2 (Right):** Metropolitan Atlanta Population Change Forecast, 2015-2050 (*Atlanta Regional Commission*).

³ Ibid.

B. Lifecycle Building Center:

The concept for Lifecycle Building Center (LBC) originated from the shared interests of Adam Deck, a professional in the deconstruction industry with experience in material reuse retail, and Shannon Goodman, an architect at *Perkins+Will*. The pair met during the renovation of a thirty-year-old Midtown Atlanta structure set as the new site for *Perkins+Will*'s offices, shown in



Fig. 3.4 Working alongside a demolition contractor, Deck used his connections in the material reuse sector to distribute 62 tons of material salvaged from the renovation to 19 different groups at a retail value of \$384,000.⁵

Figure 3: Perkins+Will's studio at 1315 Peachtree before (left) and after (right) 2009 renovation. ("Our Atlanta Studio," *Perkins+Will*.)

⁴ "Our Atlanta Studio." *Perkins+Will*, 2020, <https://perkinswill.com/project/our-atlanta-studio/>

⁵ Seldman, Neil. "Lifecycle Building Center, Atlanta, GA, Established in December 2011." *Institute for Local Self-Reliance*, 1 Apr. 2014, <https://ilsr.org/lifecycle-building-center/>

Sensing the potential social, economic, and environmental impact of establishing a community-oriented material retail and distribution center in Southwest Atlanta, Deck and Goodman established LBC in 2011.⁶ LBC's Reuse Center is housed in a one-hundred-year-old, formerly-abandoned warehouse along Murphy Avenue's industrial corridor — a majority African American neighborhood “plagued by blight, [...] high unemployment, and the decline of local industry... not unlike similar blighted mixed industrial and residential neighborhoods in Chicago or Detroit.”⁷ The site was classified as a Brownfield — a property which “the expansion, redevelopment, or reuse of may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant”⁸ — by the *Environmental Protection Agency* (EPA) due to its historic use as a foundry and site of industrial manufacturing. LBC received \$83,000 in 2013 from the City of Atlanta and the EPA in order to conduct the necessary environmental assessments of the property, paving the way for LBC to officially acquire the site in 2016.⁹ That same year, LBC was accepted into the Georgia Environmental Protection Division's Brownfield Program, culminating in the LBC being awarded a \$200,000 Brownfield cleanup grant by the EPA in 2017.¹⁰ The site cleanup is currently underway and being conducted under the LBC's EPA Brownfields Cooperative Agreement Work Plan.¹¹ Brownfield developments like the LBC's can have a positive impact on local economies.¹²

⁶ Lifecycle Building Center of Greater Atlanta, <https://www.lifecyclebuildingcenter.org/>

⁷ Lifecycle Building Center. *Brownfields Cleanup Cooperative Agreement Work Plan*. 1 May 2018, https://402b9ae0-1699-4413-9a54-767ddf89a140.filesusr.com/ugd/7df8c4_e18dee8958fc4840871e71378b9278c6.pdf

⁸ “Overview of EPA's Brownfields Program.” *United States Environmental Protection Agency*, <https://www.epa.gov/brownfields/overview-epas-brownfields-program>

⁹ Lifecycle Building Center, *Brownfields Cleanup*.

¹⁰ Ibid.

¹¹ Ibid.

¹² “Brownfields Program Environmental and Economic Benefits.” *United States Environmental Protection Agency*, <https://www.epa.gov/brownfields/brownfields-program-environmental-and-economic-benefits>

Since beginning operation in 2011, LBC has -- through managing deconstruction and accepting salvage material donations from the community -- diverted 5.6 million lbs of structural material away from landfills, provided material donation grants to 194 local nonprofits, and saved the community approximately \$3 million in discounted and free material.¹³ However, this represents only one aspect of what LBC intends to accomplish through its work. Guided by values such as commitment, community empowerment, diversity, environmental and fiscal stewardship, innovation, leadership and responsibility, and safety, LBC's greater vision is to foster "Sustainable Communities Where the Built Environment Supports the Natural Environment."¹⁴ LBC's main operations consist of its Reuse Center — located at the Murphy

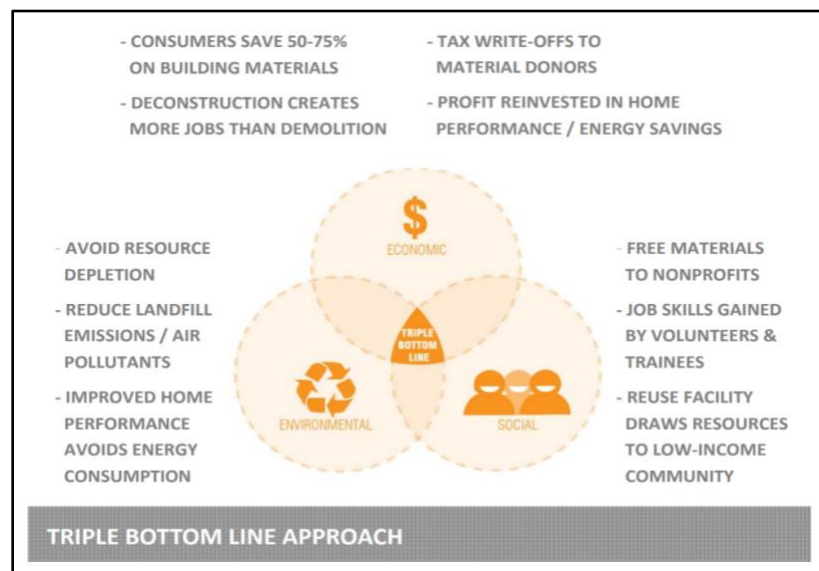


Figure 4: LBC's Triple Bottom Line approach ("Lifecycle Building Center--Repurposing Salvaged Building Materials." *International Facility Management Association*).

Avenue site — its deconstruction and salvage team, its non-profit Material MATCH Program, and its public education workshops. Through these efforts, LBC seeks to catalyze a revolution in the

¹³ Lifecycle Building Center of Greater Atlanta.

¹⁴ Lifecycle Building Center of Greater Atlanta

sustainable design, maintenance, and deconstruction of buildings while standardizing a Triple Bottom Line approach to community development (see **Fig. 4**) -- taking into consideration the social, economic, and environmental outcomes of their work. In the words of Goodman herself, “The idea is to reduce solid waste disposal, promote resource efficiency, and empower every citizen to improve their own built environment.”¹⁵

II. Materials Process:

In describing the flow of materials through LBC, our goal is to illuminate the organization’s circular model of structural material salvage and reuse, informed by both proactive and reactive strategies of Domicology (See appendix B).¹⁶ Additionally, we believe there is much to be learned from examining how such an approach could stimulate greater public appreciation for the life-cycle of the built environment. LBC is unique in that it not only salvages structural material and distributes it for reuse, but also disseminates knowledge to the public through its partnership with workforce training programs, publishing of Material Reuse Stories, Do-It-Yourself and Home Performance workshop series, and community outreach projects. Thus, LBC provides a comprehensive example of how stakeholders in the structural material salvage and reuse industry can involve themselves in all aspects of the circular economy.

¹⁵ Dyer, Candice. “Organizations: Lifecycle Building Center.” *GeorgiaTrend*, 3 Jul. 2017, <https://www.georgiatrend.com/2017/07/03/organizations-lifecycle-building-center/>

¹⁶ Domicology: Study of the policies, practices, and consequences of structural abandonment. As a theoretical framework, Domicology seeks to revolutionize human understanding of the life-cycles of structures in our built environment. The term was coined by faculty at Michigan State University’s Center for Community and Economic Development and described in detail in the following paper: Berghorn, George H., Syal, Matt M.G., LaMore, Rex, Brockman, Julie, and Durst, Noah J. “Domicology: An Emerging Research Agenda for Socioeconomic, Environmental, and Technological Aspects of Built Environment Life Cycles.” *Journal of Architectural Engineering*, vol. 25(3), Sep 2019.

1. LBC Material Collection:

LBC has several methods of obtaining materials for reuse. The most basic are on-site drop-offs of salvaged materials at The Reuse Center and off-site pick-ups of materials at their source. LBC also operates a deconstruction and salvage team which conducts free assessments of potential salvageable materials and removes them from donor properties for a nominal fee. Finally, LBC has identified a unique source of salvageable building materials in Georgia's burgeoning film industry, with donations consisting mainly of dismantled set pieces and spare props. LBC maintains a detailed list of items accepted for donation¹⁷ as well as a contact list for other disposal alternatives in partnership with the Center for Hard to Recycle Materials (ChaRM).¹⁸ LBC will not accept paints, chemicals, or any materials contaminated by paints or chemicals; however, dimensional lumber, cabinetry, doors, and architectural fixtures such as mantels and decorative columns are almost always needed. All material donors to LBC are furnished with a receipt and their donations can be considered tax-deductible charitable contributions.

2. LBC Material Storage:

At the Reuse Center, LBC processes, cleans, organizes, prices, and displays salvaged material for retail. This work is done by a small staff of associates and supplemented by a large pool of volunteers. LBC offers materials for sale at deep discounts to prospective customers — typically at 50-85% of market value.¹⁹

¹⁷Lifecycle Building Center of Greater Atlanta -- Material Donation Form https://402b9ae0-1699-4413-9a54-767ddf89a140.filesusr.com/ugd/7df8c4_66b2e4c93b9b4197bb3eebee499be16d.pdf

¹⁸Lifecycle Building Center of Greater Atlanta -- Disposal Alternatives Form https://402b9ae0-1699-4413-9a54-767ddf89a140.filesusr.com/ugd/7df8c4_295c2325af8341f78fce1b366ac464b7.pdf

¹⁹ Lifecycle Building Center of Greater Atlanta.

3. LBC Material Distribution:

Materials that arrive at the LBC are distributed to the community through two channels: commercial retail sales and material donation grants. As **Fig. 5** highlights, it is often the same individuals, organizations, and businesses that produce structural material for salvage who also consume it for reuse from LBC. While LBC's retail center services both the general public as well as the design and construction community, its Nonprofit Material MATCH Program specifically targets local nonprofits in need of building materials. LBC accepts applications monthly from qualifying nonprofits and awards material grants on the condition that the recipient organization compiles a progress report after six months detailing "how materials were used, description of the success of the project, outcomes or effectiveness, pictures, [and] testimonials from the population(s) your organization serves."²⁰

In 2017, St. John's Episcopal Church in College Park, Georgia, received a material match grant from LBC in order to expand their food outreach ministry. LBC provided "commercial-grade appliances such as warming ovens, refrigerators, stainless racking, [as well as] plumbing fixtures, granite countertops and doors" for installation in St. John's kitchen.²¹ The material donation allowed St. John's parishioners to improve and expand their food outreach ministry without having to source outside funding or cutback charitable operations to pay for it. In the words of Richard Pflieger, a vestry member at St. John's, "[w]e are fortunate to have acquired materials through LBC's Nonprofit Material MATCH Program that help us fulfill our mission. LBC meets the needs of nonprofits through the

²⁰ Lifecycle Building Center of Greater Atlanta.

²¹ "2017 Annual Report." *Lifecycle Building Center*, 2017, https://402b9ae0-1699-4413-9a54-767ddf89a140.filesusr.com/ugd/7df8c4_3940976a1f744cb9bedd00a763f85c19.pdf

giving of building materials, and more importantly, keeps these materials out of the landfills and into the hands of people who need them.”²² St. John’s plans to apply again in the near future for shelving and other building materials in order to establish a community food pantry.²³

Figure 5: LBC’s material supply and demand sources. (“Lifecycle Building Center --



Repurposing Salvaged Building Materials.” *International Facility Management Association*).

4. LBC Educates the Public:

A vital source of material donations to LBC is made possible through their public education efforts. This is exemplified by their publishing of Material Reuse Stories focusing on individual and organizational experiences of working alongside LBC and the impact that salvaged materials received from the center had on their projects. These short videos break down the process and demonstrate to potential home renovators, construction contractors,

²² “2017 Annual Report.” *Lifecycle Building Center*, 2017

²³ “LBC and St. John’s Episcopal Church.” *Youtube*, uploaded by Lifecycle Building Center, 18 Dec 2017, <https://youtu.be/j6cg18NRveA>

and other nonprofits the ease of incorporating reused material from LBC in their building projects.

LBC also conducts free education workshops for the public. Home Performance Workshops help homeowners “better understand and improve the conditions which impact their home’s efficiency, durability, safety and indoor air quality.”²⁴ Common problems affecting home performance are discussed and potential strategies for their amelioration are taught by staff members and skilled volunteers through hands-on exercises. Do-It-Yourself Workshops “teach individuals how to incorporate reclaimed materials into their home projects or further extend the life of materials already installed.”²⁵ Both of these programs are essential to disseminating knowledge to the public not only about the work done by LBC, but also the broader tenets of sustainability and life-cycle thinking fundamental to establishing a circular economy out of C&D waste.

IV. Conclusion and Lessons Learned:

The success of any organization or business involved in an emerging industry is their ability to effectively communicate to the public the underlying need for, and guiding purpose of, their work. Thus, any discussion regarding the functional operations of LBC is incomplete without also acknowledging the outflow of information they produce. Essential to their organization model is the notion that educating the public about material salvage and reuse opportunities can potentially expand the pool of possible material donors, customers, and recipients. In fact, the

²⁴ Lifecycle Building Center of Greater Atlanta.

²⁵ Ibid

organization's website includes a page entitled "Why Reuse?" describing the problems C&D waste poses to the economy and the environment. This includes a reminder to

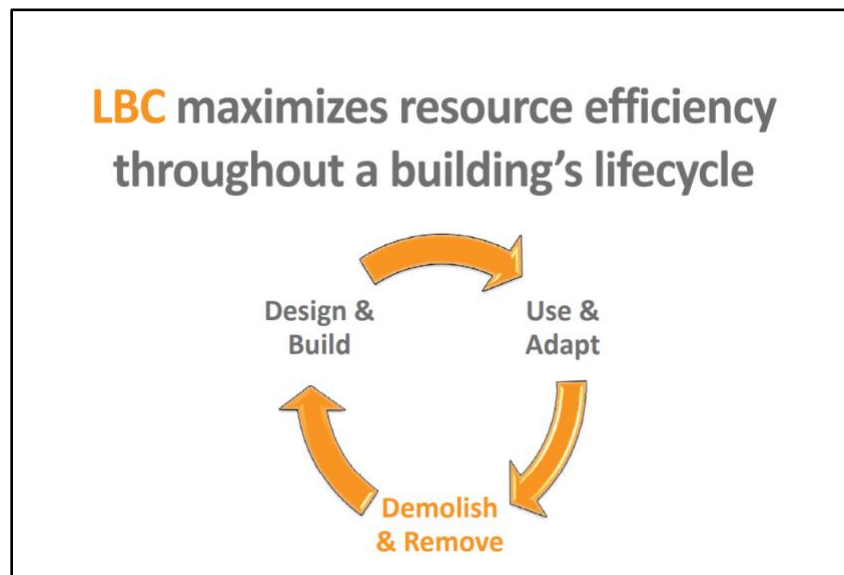


Figure 6: LBC facilitates individuals, businesses, and organizations in maximizing resource efficiency throughout a building's life cycle. ("Lifecycle Building Center--Repurposing Salvaged Building Materials." International Facility Management Association.)

"Remember the waste management hierarchy: 'Reduce > Reuse > Recycle.'" LBC emphasizes that preventative strategies of sustainable structural maintenance — incorporating reused materials into repairs and renovations, improving energy and resource efficiency, taking into consideration the lifespan of appliances and building materials, etc. — are among the most essential steps to consolidating and sustaining an effective structural material salvage and reuse industry. As **Fig. 6** shows, LBC inserts itself effectively into all aspects of a structure's life-cycle. Consequently, it also plays an integral role in the circular economy of structural material salvage and reuse.

In accordance with their Triple Bottom Line approach to operations, LBC also serves as a placement organization for individuals in the Georgia Works! non-profit job training program. Since 2016, over 50 individuals transitioning from chronic homelessness or incarceration have been

placed with LBC, and two graduates of the program have been hired by LBC.²⁶ Job training programs serve the dual purpose of providing unemployed and transitioning individuals with valuable skills for employment while simultaneously reducing overhead costs. This allows LBC to direct more resources towards charitable efforts that serve fellow nonprofits and organizations in need. At the industry level, developing a workforce with adequate knowledge and experience in deconstruction and material salvage is essential to sectoral expansion, and job training programs can be a cost-effective and socially beneficial approach to attaining this threshold.

Lifecycle Building Center fulfills several critical functions of an organization involved in the structural material salvage and reuse industry. First, it effectively services the entire deconstruction, salvage, and reuse process, displaying along the way both its ease and potential for growth. Second, it works alongside community and industry partners to reach mutually beneficial outcomes, building a network of organizations and businesses interested in addressing social, economic, and environmental problems through material reuse and waste reduction. Finally, and most crucially, LBC serves as a hub for disseminating knowledge regarding the imperative nature of revolutionizing the way we perceive our built environment, as well as the innovative ways in which stakeholders in the structural material salvage and reuse industry can participate in actualizing this change.

²⁶ Lifecycle Building Center of Greater Atlanta...

CASE STUDY 2: HUMANIM DECONSTRUCTION COLLECTIVE -

BALTIMORE, MD

Authored by Jacob Namovich

I. Background

A. Baltimore:

Once an industrial hub for prominent corporations such as the Glenn L. Martin Aircraft Company and Bethlehem Steel, the city now finds itself riddled with vacant, deteriorating rowhouses in low-income and minority communities. In part as a consequence of deindustrialization and racial segregation/“white flight,” Baltimore is challenged to remove blighted and abandoned residential, commercial and industrial structures (See **Figure 7**). For several decades the city has made a number of efforts to remove these structures from the communities they ultimately harm. Alongside the rest of the U.S., Baltimore’s traditional blight removal process involves the landfilling of enormous quantities of structural material waste generated during demolition. However, a shifting culture towards sustainability and resilience has influenced the policy landscape and encouraged businesses to engage in the practices of “domicology” (See Appendix II), or rather structural material salvage and reuse, as a means of contributing to the city’s blight management.²⁷ In creating a stage for this practice of blight

27.“Governor Hogan Celebrates Blight Elimination Progress in Baltimore City.” *Baltimore City Department of Housing & Community Development*, 13 June 2019, dhcd.baltimorecity.gov/news/news/2019-06-13-governor-hogan-announces-4000th-unit-blight-marked-elimination-baltimore-city.

removal, the city became a center for innovation in this sector that saw major progress as it began to engage communities and collaborators. One major partner of the city that has materialized out of this history has been Humanim, a not-for-profit operating out of Baltimore.

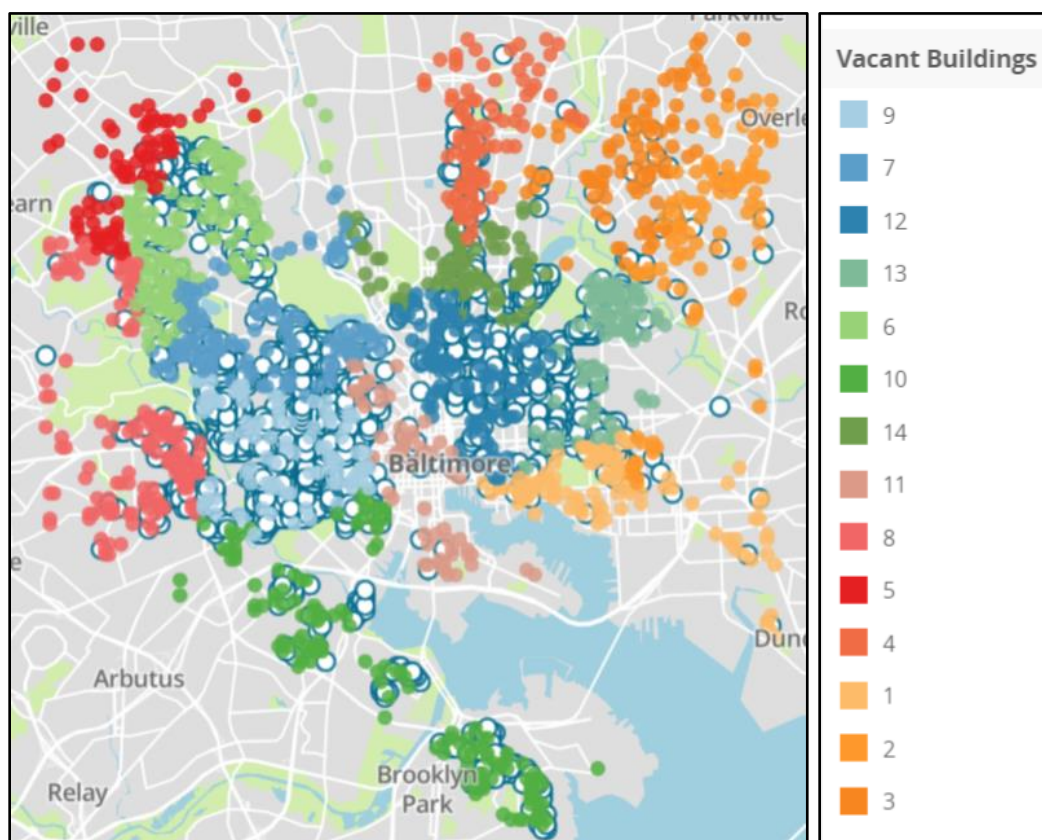


Figure 7: Map of Vacant Housing in Baltimore with key²⁸

B. Humanim:

Founded in 1971, Baltimore-based Humanim was initially oriented towards providing services to individuals with disabilities.²⁹ Since that time, this not-for-profit organization has

²⁸ "Map Based on Vacant Buildings." *Data.baltimorecity.gov*, Baltimore, 4 May 2020, data.baltimorecity.gov/Housing-Development/Map-Based-on-Vacant-Buildings/vewx-m9ji.

²⁹ Kelly, Jacques. "Retro Baltimore Takes Note of American Brewery." Humanim, *The Baltimore Sun*, 6 Mar. 2014, humanim.org/news/retro-baltimore-takes-note-of-american-brewery/. Accessed 6/16/20

broadened its scope to provide “human services, youth services, workforce development, and social enterprise throughout Maryland and Delaware.”³⁰ These various specializations allow Humanim to engage their clients in career training, employment, family support, youth job readiness, and mental and behavioral health services. By initiating work in deconstruction and material reuse, Humanim has demonstrated that this sector can create opportunities in social enterprise to initiate and bolster the empowerment of individuals with barriers to employment. Social Enterprise Alliance defines social enterprise as: “Organizations that address a basic unmet need or solve a social or environmental problem through a market-driven approach.”³¹ By undertaking social enterprise in deconstruction, Humanim has developed new funding streams that allows for their organization to continue redefining the services, partnerships, and economic development opportunities the organization has to offer.³² It is through these projects that Humanim has been able to foster important relationships with local and governmental groups to leverage meaningful capacity for change. Humanim has been able to provide professional development services such as “financial coaching, group financial education workshops, match savings, benefits screenings and referral services” for approximately 5,000 Baltimore residents in addition to creating 300+ jobs for community members.³³

C. Details Deconstruction:

³⁰ “We’re Humanim.” *Humanim*, humanim.org/who-we-are/. Accessed 4/3/20

³¹ “What Is a Social Enterprise?” *Social Enterprise Alliance*, 11 June 2019, socialenterprise.us/about/social-enterprise/. Accessed 7/14/20

³² “Humanim Annual Report 2018.” *Humanim*, 2019, humanim.org/wp-content/uploads/2019/08/Digital_Annual_Report_2019_lowres.pdf. Accessed 4/3/20

³³ Ibid

Details Deconstruction was founded as Humanim's first deconstruction enterprise in 2012 and has been one of few organizations in Baltimore working to sustainably address the blight that plagues its iconic rowhouses (See **Figure 8**) after aforementioned disinvestment fractured the economic structure of the city. Such a feat would have been less feasible if not for essential collaborations and contract work with the City of Baltimore. For example, the Deconstruction Pilot Project of 2014 demonstrated the potential for triple bottom line outcomes through innovative deconstruction practices and earned Details "the first Three Year Deconstruction Master Service contract from the City of Baltimore."³⁴ By exhibiting proficiency in this practice, Details has been able to acquire partnerships with organizations and local/state governments to undertake successful material recovery from the deconstruction of retired or blighted structures. In their self-published 'Social Enterprise Report 2019,' Humanim highlights that since their Baltimore Deconstruction contract in 2015, Details has "deconstructed 350 vacant rowhouses and salvaged over 425,000 bf of lumber and 1.2M bricks."³⁵

³⁴ "SOCIAL ENTERPRISE REPORT 2019." *Humanim*, 2019, humanim.org/wp-content/uploads/2019/08/Humanim_Social_Enterprise_Report_2019_lowres.pdf. Accessed 4/3/20

³⁵ Ibid



Figure 8: Example Blighted Baltimore Rowhouses (Washington Post³⁶)

A crucial dimension of Details is its basis in workforce development and vocational training. Since inception, Details has been able to provide 185 positions to community members as a result of deconstruction generating “6-8 times more jobs than traditional demolition.”³⁷ In referencing the values associated with Humanim, Details places high focus on employing community members with barriers to employment, and seeing 75% of their workforce having been previously incarcerated. Furthermore, with an average working wage of \$13.88/hr, benefits for full-time employees, and Humanim’s resources in financial coaching/support, Details reported seeing 0% recidivism rates in the 2.5 years leading up to the 2019 report.³⁸ With established work records, various Details employees have accomplished transitions to industry jobs and some have

³⁶ Voisard, Amanda. “Emily Painter, 7, Plays in Front of Vacant Rowhouses next to Her Home on Baltimore’s West Side on Sunday. .” *The Washington Post*, 12 May 2015, www.washingtonpost.com/local/baltimore-has-more-than-16000-vacant-houses-why-cant-the-homeless-move-in/2015/05/12/3fd6b068-f7ed-11e4-9030-b4732caefe81_story.html. Accessed 4/3/20

³⁷ Ibid

³⁸ Ibid

achieved home ownership. Details also voiced its interest in increasing “opportunities for small, minority owned businesses to grow and retain wealth within these communities,” with over \$700,000 in annual subcontracts already active -- many of which being long-term commitments.³⁹ (See **Figure 9** for more information pertaining to the onboarding and employment at Details)

In terms of commodifying recovered materials, Details solely focuses on the deconstruction of singular structures through the following workflow:

1. **Understanding The Job:** To begin a deconstruction project, Details works with “partners and developers to create a deconstruction and removal plan that will yield the highest social and financial benefits to the community.”⁴⁰ To address unique structural qualities, the team appropriately accounts for the deconstruction needs and develops a plan of action that describes a project timeline.
2. **Removing The Structure:** Projects are completed in approximately two weeks through two distinct stages: 1) week one is spent deconstructing and clearing out the interior of the building and 2) the Details team then begins work on the exterior and remainder of the structure.⁴¹
3. **Salvaging Materials:** As deconstruction is carefully completed, the “crew understands how to remove, salvage, and prepare these materials for further processing and resale, where they will go on to start new lives in other buildings.”⁴²

³⁹ Ibid

⁴⁰ “Our Process; Social Impact, From Start to Finish.” *Details*, details.org/our-process/. Accessed 4/3/20

⁴¹ Ibid

⁴² Ibid

This procedure is used to capture a structure's “constituent components” and direct them towards

D. Brick + Board:

Serving as the one-level processing and sales force within the Humanim deconstruction social enterprise collective, Brick + Board is the final destination of all recovered brick and lumber from Details Deconstruction projects. By localizing and processing products since 2016, Brick + Board works in concert with Details Deconstruction to maximize the reuse of structural materials and strengthen the reuse sector in Baltimore. Beyond Details, Brick + Board has also partnered with the USDA Forest Service and furniture retailer Room & Board to help develop a market for the materials recovered by Details Deconstruction. Brick + Board’s relationship with Room & Board has yielded “80-100 buyers across the country, including national retailers, to purchase Baltimore wood.”³³

Brick & Board’s warehouse facility houses materials and the sales floor while their website fields inquiries and outlines the product menu of recovered wood and brick. With a diverse catalogue of recovered materials consisting of over three types of brick and twenty-two variants of wood, potential customers have no shortage of options. Descriptors such as profile and character, board thickness, or width and length ranges are available for evaluation on this platform (See Appendix I, Section 1). Brick + Board has engaged in a diverse array of projects within Baltimore that work to demonstrate the value of these recovered materials as they seek a second life of use. Beyond the physical quality of these materials, there are also varying social, technical, and/or historic values behind their use. For example, Brick + Board products have been employed

in residential redesign, sustainability dimensions of LEED certification, and historical site preservation (See Appendix I, Section 2). It is in these diverse applications that Brick + Board demonstrates the valuable niche markets involved in historical or future management and design.

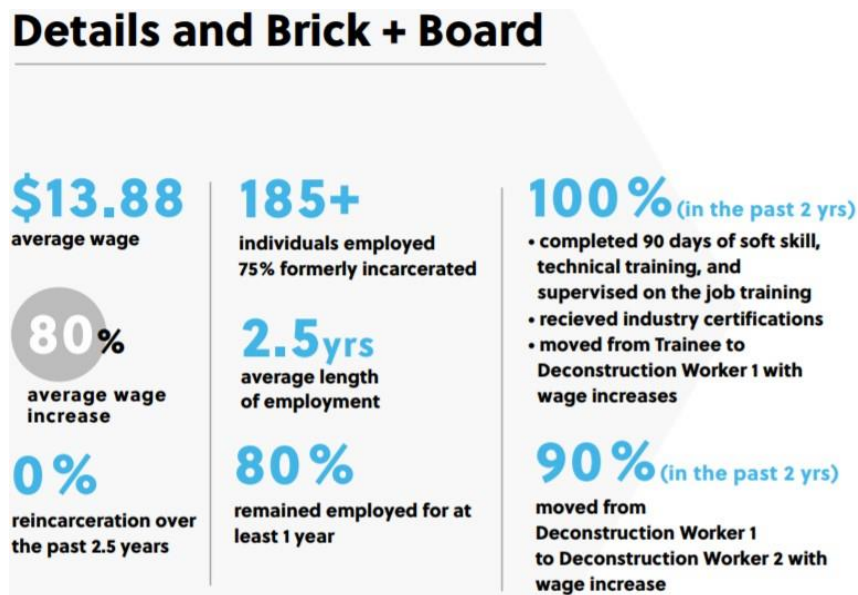


Figure 9: Humanim Social Enterprise Report of 2019 Impact Statistics³⁵

IV. Deconstruction and Materials Process:

A conceptual Humanim deconstruction recovery and sales process will now be followed to illustrate the work flow of these social enterprises. For the purpose of realistically representing this process, we will follow ‘Rowhouse X’, which was built in 1915, is owned by the city, and is located in a disinvested, blight community. The year is 2019, *Details* has long been established and Brick + Board is experiencing growing notoriety. In accordance with the Mayor’s *Blight*

Elimination Program, several rowhouses in this area have been successfully deconstructed and Rowhouse X is slated to be brought down in the next week by Details.

In preparation for this project, Details will begin by organizing a team consisting of past deconstruction employees, current staff, and new enrollees in technical assistance training. In this scenario, it is highly probable that new employees and past employees will be individuals with varying barriers to employment. Once the team is determined, Details will deploy their specialists to survey Rowhouse X and evaluate the optimal path of action to maximize social opportunities and financial outcomes. This stage will include auditing the house for valuable materials and identifying potential harms (i.e. lead paint, asbestos, etc) that should necessarily be attended to. With this information, the survey team will then spend time synthesizing a plan of action that the deconstruction team will use to execute the project. Upon finalizing the unique deconstruction plan for Rowhouse X, the Details Deconstruction employees will spend up to two weeks completing the project. During this stage of the process, employees will work to carefully ‘disassemble’ the property in such a way that the structural integrity of the recovered material will be maintained for secondary use. Throughout the deconstruction process (See **Figure 10**), Rowhouse X’s lumber and brick will be separated for transportation to the Brick + Board warehouse. There, the lumber will be refined, the bricks cleaned of mortar, and the lot will be appropriately processed until they are certifiable ‘commodities’ to Brick + Board. Rowhouse X was unusual because it contained an

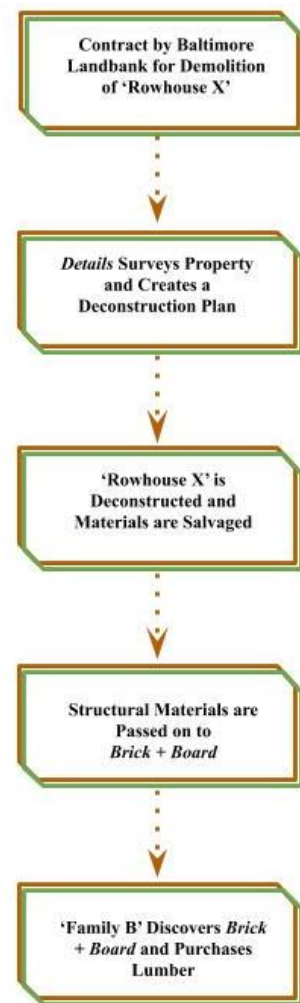


Figure 10: ‘Rowhouse X’ Deconstruction Process

abundance of well-preserved, but worn, maple factory flooring lumber -- a type of lumber conventionally used in industrial infrastructure. This strong maple makes for a favorable find considering recent demand after the ‘Canton Home’ was a featured project on the Brick + Board website. One such potential customer is ‘Family B’ who owns a local second-hand, brand-name clothing store and is looking to rework the flooring of their downtown facility. In the interest of closing the deal on this project, Max Pollock, director of Brick + Board, personally invites the owners to come to the warehouse and determine their interest in implementing these Rowhouse X boards in their store. Once having seen the lumber, they immediately agree to purchasing the necessary quantity and the Humanim deconstruction collective is able to deliver the triple-bottom-line impact outcomes they exemplify.

Conclusions and Lessons:

The Humanim social enterprise collective can teach us a lot about one strategy for achieving success in structural material salvage and reuse. Upon first glance,⁴³ it becomes evident that by segmenting each stage of the process — from workforce development, to deconstruction, and sales of the structural material — each unit can focus on maximizing their role. Without the responsibility of creating revenue from the recovered materials, Details then has the capacity to focus more heavily on creating opportunity for community members with barriers to employment, and maximizing the total amount of material captured from the structures they deconstruct. In

43

continuing this framework, Brick + Board has the sole directive of creating value for the materials recovered by Details as opposed to being involved in the deconstruction process. This has allowed for the creation of an exemplary user interface, meaningful anecdotal applications of their materials, and finally a narrative behind their products.

It is also interesting to observe the pace by which Humanim deconstruction has expanded over the years. With Details being established a whole four years before Brick + Board, it becomes clear that progress was appropriately calculated in order to maximize the success of each social enterprise installment. This could be attributed to the policy landscape, the long-term marketing efforts, or even the arrival of key figures that made Brick + Board a reality. This can all be summarized into a singular term: partnerships. Without legislative and governmental support, the long-term growth of Details, and key opportunities in the city such as the 2014 Pilot Project, it is difficult to determine whether such successes would have been equally possible. Through policy incentives and official governmental partnerships, the Humanim deconstruction social enterprise collective has been able to continuously elevate their potential to the next level. Their story demonstrates that opportunity is earned through strategic partnerships that alleviate economic barriers to opportunity, alongside vital marketing and communication of success. The truest objective of deconstruction for reuse -- besides market and job creation -- is creating impact through conducting the work. Humanim has repeatedly garnered clout for their efforts through the numbers, the jobs, and the collectivist vision.

In conclusion, the feats of the Humanim deconstruction social enterprise collective are an astounding step forward in the normalization of this recovery and reuse practice. If more companies around the country begin to take steps towards structural material recovery and reuse,

this model presents a compelling framework for operating in a way that is value-centered and economically viable.

Learning Outcomes from Case Studies:

1. **Understand** the historical and contemporary contexts of structural abandonment in your region
[Case Study 1: (1)(A) / Case Study 2: (1)(A)]
2. **Create** value from unique characteristics of the local built environment (ex, The ‘Red Bricks’ of Baltimore; Georgia’s burgeoning film industry)
[Case Study 1: (2)(A) / Case Study 2: (Appendix I)]
3. **Determine** a sustainable and equitable business model that seeks to incorporate triple-bottom-line principles
[Case Study 1: (1)(B) / Case Study 2: (1)(B-D)]
4. **Coordinate** your organization's mission and function with local development authorities and community service organizations
[Case Study 1: (1)(B), (2)(C) / Case Study 2: (1)(C)]
5. **Invest** in professional and personal development opportunities for your employees
[Case Study 1: (3) / Case Study 2: (1)(B-C)]
6. **Hire** local as a means of generating prosperity, opportunity, and revitalization to affected communities
[Case Study 1: (3) / Case Study 2: (1)(B-D)]
7. **Specialize** business function and types of material streams managed. Diversify over periods of success or connect with capable partners
[Case Study 2: (1)(B-D)]
8. **Identify** opportunities for demonstrating the capacity of your organization
[Case Study 2: (1)(C)]
9. **Provide** venues for community engagement, education, and discourse
[Case Study 1: (2)(D)]
10. **Develop** and maintain a mission impact narrative that creates a mythos for your organization
[Case Study 2: (1)(B-C)]
11. **Quantify** and effectively **communicate** impact through triple-bottom-line metrics and highlight success stories of material reuse and innovation
[Case Study 1: (1)(B) / Case Study 2: (1)(C-D)]

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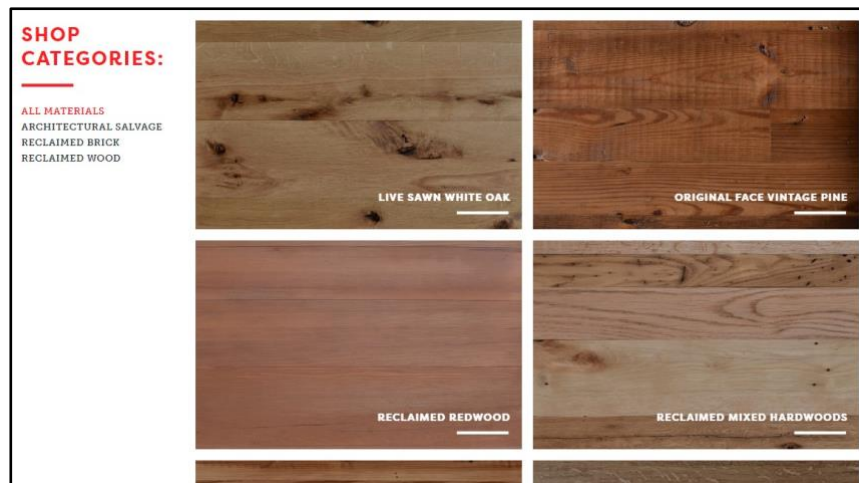
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Appendix I:

This section includes example snapshots of the Brick + Board website layout and product communication strategies.

Section 1: Brick+Board Marketplace and Product Descriptions



HIT AND MISS RECLAIMED YELLOW PINE

This material has a character you just can't fake. Saw marks, nail holes, and that beautiful amber color that only comes with time make this yellow pine flooring special. Our hit and miss yellow pine is warm, authentic, and tough enough to take another century of footfall.

Thickness: 3/4"
Widths: Available in uniform or variable widths from 3 - 8"
Lengths: Random lengths from 3 - 14'
Profile: Square edge or T&G
Character: Nail holes, saw marks, sound knots, rich amber color

REQUEST QUOTE OR CONSULTATION



RECLAIMED COMMON BRICK

Baltimore is home to some of the most beautiful bricks in the country, and we've been salvaging our latest batch from rowhouses built between 1880-1905. These bricks feature a nice blend of colors, ranging from deep purples to paler reds and oranges, with character that can only come from 100+ years of use. These bricks are ideal for patios, landscaping, preservation projects, and new construction.

Projects Featuring This Material:
Carter G. Woodson House
Towson Residence
Compton Bassett
Chapman Stables


REQUEST QUOTE OR CONSULTATION




Section 2: Projects using Brick + Board Products

PROJECTS


Salvaged materials lend warmth, character, and history to a space. Take a look at how our materials have been used in residential and commercial projects.






CANTON HOME



LOFTED YOGA STUDIO



THE DEN AT THE ACCELERATOR SPACE

GEORGETOWN

Example A: Lofted Yoga Studio Using Life Sawn Red Oak - Description With Images

LOFTED YOGA STUDIO

The owners of this yoga studio in a converted garage wanted to keep their space light and airy and take advantage of abundant natural light. Our live sawn red oak offers just the right amount of warmth, without overpowering the minimalist feel of the space. Yogis can breathe easy in a space filled with sunlight, plants, and beautiful, natural red oak.

Products Used:

Live Sawn Red Oak



Appendix I, Section 2 continued

Example B: (Historic Site) *Carter G. Woodson House Using Reclaimed Common and Face Bricks -*

Description with Images

CARTER G. WOODSON HOUSE

The Carter G. Woodson house is a National Historic Site that preserves the legacy of the eminent scholar, author, and founder of Black History Month. Dr. Woodson's home, a handsome three-story rowhouse in D.C.'s Shaw neighborhood, had fallen into disrepair over the years, and the National Park Service stepped in to make sure that such an important landmark did not deteriorate further. The NPS wanted to preserve the original feel of the home when Dr. Woodson lived there, so for repairs to the building's facade and rear, they were keen on choosing period-appropriate material. Enter our bricks; we sourced matching face bricks from the same era for the front of the building, and 30,000 common bricks for the rear of property. There's no discernible difference between the structure's original bricks and the ones we sourced, resulting in a building that looks like it's been perfectly preserved through the years, and one that will last for generations to come.

Products Used:

Reclaimed Common Brick
Reclaimed Face Brick



All Images in this appendix were retrieved from Brick + Board, www.brickandboard.com/. Last Accessed 7/7/20

Appendix II:

This section includes definition and framework of the term ‘Domicology’

Section 1: Domicology Description

“Domicology is the study of the economic, social, and environmental characteristics relating to the life cycle of the built environment.

Domicologists:

1. Recognize that manmade structures have a life cycle
2. Examine the life cycle continuum of the built environment and plan, design, construct, and deconstruct in order to maximize the reuse of materials and minimize the negative impacts of a structure's end of useful life
3. Identify innovative tools, models, policies, practices, and programs that can sustainably address a structural life cycle
4. Conduct research on the technical, economic, and policy challenges present in a structure's life cycle and seek to reduce the negative social, economic, and environmental impacts associated with structural abandonment”⁴⁴

All Information in this Section was Obtained from the MSU Domicology Website at domicology.msu.edu

⁴⁴ LaMore, Rex. “Domicology - Home.” *Center for Community and Economic Development: Domicology*, Michigan State University, domicology.msu.edu/.