



DECONSTRUCTION & BUILDING MATERIAL REUSE:

*A TOOL FOR LOCAL GOVERNMENTS
& ECONOMIC DEVELOPMENT
PRACTITIONERS*

MAY 2018

ABOUT DELTA INSTITUTE

Established in 1998, Delta Institute is a Chicago-based nonprofit organization that collaborates with communities to solve complex environmental challenges across the Midwest. Since our founding, we have managed deconstruction programs and projects in Gary, Indiana, Cook County, Illinois, Chicago, Illinois, and Detroit, Michigan for a variety of partners such as land banks, cities, and counties.

Visit online at www.delta-institute.org.

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This document and the tools provided aim to be action oriented and to provide the most current, correct, and clear information possible. We encourage practitioners to reach out to us with questions, corrections, or to discuss implementation challenges. Please contact Eve Pytel at epytel@delta-institute.org.

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DECONSTRUCTION 101

Deconstruction is the process of dismantling structures in a way that enables materials to be salvaged. For communities struggling with vacancy and unemployment, deconstruction can serve as a useful tool as they strive towards resilience. In a typical home deconstruction, up to 25% of materials can be reused and up to 70% of materials can be recycled (**Figure 1**). The harvesting of building materials affords the opportunity for communities to reclaim economic, social, and environmental benefits from their vacant structures.

Across the United States municipalities, counties, workforce development practitioners, entrepreneurs and artisans have teamed up to build the market for reclaimed materials. This document provides actionable guidance and tools for municipal managers, economic development officials and civic leaders to advance building material reuse in their community.

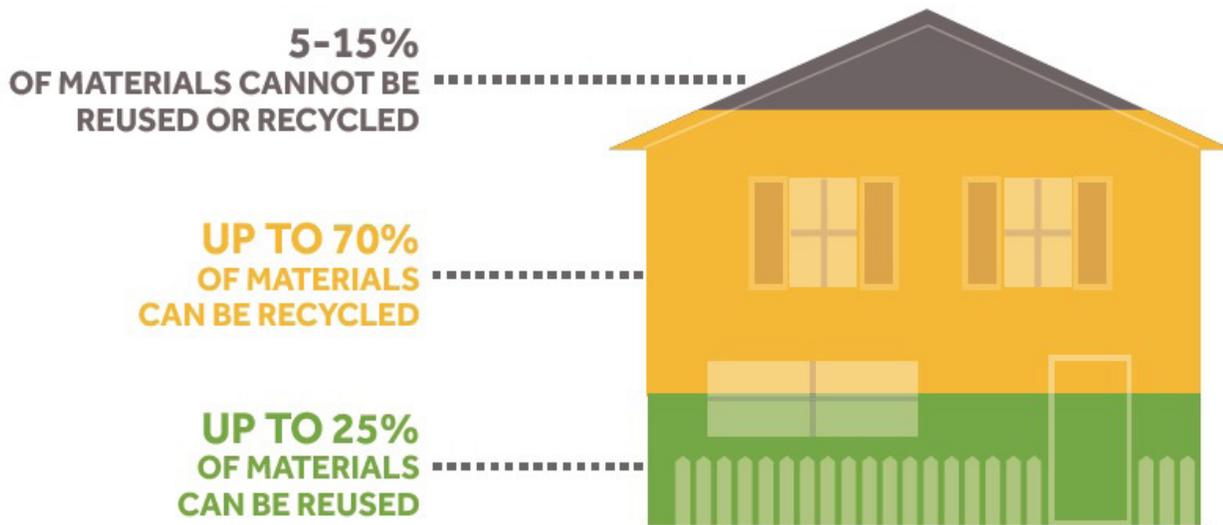


Figure 1: Many homes contain materials that have financial value in the reuse market.

Determining the deconstruction strategy

Sometimes referred to as “soft demolition,” the deconstruction process is the manual method used to recover materials, as opposed to traditional demolition, which uses heavy machinery to raze structures and landfills the debris. However, there is a spectrum of approaches that can be used, from full demolition, to “soft-stripping,” to full deconstruction, as shown in **Figure 2**.

Structures can either be fully deconstructed or “soft stripped,” a process that keeps labor costs lower while salvaging the easiest-to-capture and highest-value components. Deconstruction can take either form, or a hybridized approach that optimizes benefits and costs. Typically, easily-recoverable, high-value materials may include appliances, cabinetry and architectural salvage.

Harder to recover materials include flooring and lumber that maybe old growth.

Municipal managers may take a number of factors into consideration when deciding which approach is right for their deconstruction program, but it often comes down to a general cost-benefit analysis. Municipal managers can use procurement systems to assess costs for demolition and deconstruction. The procurement system may reflect a number of community goals in addition to cost, including keeping valuable materials out of landfills and use of local contractors and workers or workforce development organizations. When the entity determines the performance measure, the bidding contractors than select the strategy that accomplishes those goals with competitive pricing.

SPECTRUM OF DECONSTRUCTION



Figure 2: A variety of approaches can be used in accomplishing deconstruction and demolition tasks.

Building the market

Deconstruction is about giving building materials a second life. To do this materials must be salvaged from structures, collected, organized, and then reintroduced to the marketplace, as demonstrated in **Figure 3**. In some markets, reuse warehouses act as a hub, accepting and selling materials, and in other markets, deconstruction contractors sell materials from the site they are dismantling. For marketplace market to be successful, suppliers, sellers, and buyers must be present.

On the supply side, demolition contractors are often the most reliable source of reclaimed building materials, but materials can also be garnered

through renovation and construction work as well as from construction contractors and builders. Additionally, building materials can be supplied by homeowners, designers, building supply stores, and waste haulers.

There are several types of organizations that sell building materials back into the marketplace. Those can include contractors, reuse warehouses, non-facility brokers, value added processors, construction and demolition recycling center processors, and architectural salvage sellers. For precise definitions of these market actors, see the glossary.

RECLAIMED BUILDING MATERIALS MARKETPLACE



Figure 3: Many actors can participate in the reclaimed building materials marketplace.

A robust solution for communities

Deconstruction can offer several environmental, economic and community benefits for communities with high vacancy rates and unemployment. Those benefits include:

Environmental benefits

- Reduced toxic dust from job site
- Reduced heavy metal leaching into soil
- Reduced waste to landfills
- Reduced consumption of virgin material

Economic benefits

- Jobs from removing structures
- Jobs for hard-to-employ
- Resale of building materials
- Sale of value-added products

Social benefits

- Removal of blight
- Potential workforce development partnerships
- Potential for workforce training and contractor training
- Potential for local reclaimed materials to be used in restoration and preservation of historic structures.

Achieving the full array of co-benefits associated with deconstruction often involves the establishment of a local reclaimed building materials warehouse, which should be preceded by an assessment of market potential. Reuse warehouses can be community hubs providing a positive activity space where community members and those from outside the community come to shop for salvaged items, donate materials, learn about home repair and crafts, and socialize. These warehouses are a critical vehicle to develop the building material reuse industry, because they develop both supply and demand in tandem.

Community development practitioners also want to attract building material reuse warehouses, not only because of their positive impact on host communities, but because they support deconstruction – a job-rich alternative to demolition. Not only does deconstruction provide more jobs in the structure removal process, but it also supports transportation, warehousing, reuse, and production jobs.



DECONSTRUCTION

economic, community, and environmental benefits



Remove hazardous structure



Deconstruction jobs (up to 3 weeks)



Warehouse jobs



Retail jobs



Value-added manufacturing jobs



Job training & skill-building



Avoided landfill costs & emissions



DEMOLITION

economic, community, and environmental benefits



Remove hazardous structure



Demolition jobs (1 day)



Landfill jobs

From an environmental perspective, deconstruction reduces construction and demolition (C&D) waste, reduces air pollution created by demolition, reduces carbon dioxide emissions, abates the need for new landfills and incinerators, preserves resources and saves energy by decreasing the extraction and processing of raw materials, and supports sustainable building processes (ILSR, 2008).

With so many direct and co-benefits from deconstruction, municipal leaders and economic development practitioners often want to support the growth of deconstruction in their communities but don't know where to start. The modules and case studies that follow provide municipal leaders, including government agencies and economic development organizations, with guidance on how to jumpstart a deconstruction initiative and remove local barriers that might hinder progress.

THE TOOLKIT WILL LEAD USERS THROUGH THE FOLLOWING MODULES:

Module 1: Build the team - Indicate the stakeholder types that should be involved in a community deconstruction effort.

Module 2: Conduct deconstruction assessment - Help determine to what extent deconstruction is a good fit for any given community.

Module 3: Design pilot project - Provide guidance on how deconstruction pilot project design.

Module 4: Procure deconstruction services - Provide example procurement documents.

Module 5: Train local contractors - Provide guidance for hosting a training for contractors.

Module 6: Pass a building material reuse resolution - Provide example resolution text

Module 7: Create deconstruction policy support - Review and define the policy mechanisms, like ordinances, that supports deconstruction.

Module 8: Standardize a home assessment - Help to evaluate whether or not deconstruction is appropriate for the structure being reviewed.

MODULE 1: GLOSSARY OF DECONSTRUCTION TERMS

Architectural salvage – These entrepreneurs, including Chicago’s Salvage One and Architectural Artifacts, recycle unique and valuable design elements. Similar to the value-add producers, these operators cater to more affluent market segments.

Construction and Demolition Recycling Centers – These centers are processing sites for the temporary disposition of construction and demolition waste. C&D contains bulky, heavy materials, such as concrete, wood, metals, glass, and salvaged building components. By using C&D recycling centers, demolition contractors in Cook County can meet the 70% recycling goal in the Cook County demolition ordinance.

Contractors - Deconstruction contractors provide direct deconstruction and salvage services to homeowners and building industry intermediaries. Contractors have the opportunity to gain a competitive edge from reduced waste fees and obtain valuable materials for resale.

Land banks - Land banks are quasi-governmental entities created by counties or municipalities to effectively manage and repurpose an inventory of underused, abandoned, or foreclosed property. Because land banks typically perform a lot of demolition, they are well-positioned to support building material reuse through the demolitions and deconstructions they commission. Ingham County and South Suburban Land Bank Authority have managed deconstruction.

Non-facility recyclers – These operators trade in materials salvaged from home renovations or demolitions. They source materials from property owners and re-sell directly to clients or into secondary markets. These transactions may take a variety of forms, including through web-based sales (i.e. PlanetReuse), proprietary warehousing (i.e. Demolition

Municipalities and counties – Public policy, at any scale, can play an important role in creating the conditions for waste reuse and economic development opportunities. Cook County is a leader and early adopter in this area, having passed the Demolition Debris Diversion Ordinance in July 2012.



Promotions, Inc.), limited or public auctions (i.e. Murco Recycling), or through donations to existing reuse warehouses.

A subset of this category includes online marketplaces, such as Craigslist and eBay. Materials available on these platforms may be affiliated with formal entrepreneurs, such as those listed above, or they may be a one-off offering from a homeowner, landlord, or other entity. Regardless, the importance of these online marketplaces should not be overlooked, as they provide established enterprises and entrepreneurs with opportunities to reach new market segments.

Reuse warehouses – These operations rely on a wide variety of source materials and tend to serve the general public. They are often nonprofit organizations, and most of their materials are donated.

Value-add producers – This group of individuals and organizations transform salvaged materials into value-added products, such as furniture. They source materials very broadly and tend to sell into

higher-end, artisanal markets. Examples include Icon Modern and the Rebuilding Exchange's line, RX Made. In Chicago, both Icon Modern and RX Made design products with various available materials for in-house production, though larger orders may be outsourced. Regionally, Reclaim Detroit in Detroit, and Rust Belt Reclamation in Cleveland do artisanal woodwork using reclaimed lumber and have large warehouses to store product and accommodate replication.

Single Stream Material– Single Stream Material processors collect and sell materials as commodities. Those market actors may include collectors of scrap metal or bricks.



MODULE 2: CONDUCT DECONSTRUCTION ASSESSMENT

This assessment module provides high-level guidance to local government leaders and economic development professionals to determine if deconstruction is a good fit for their community by assessing the attributes critically important to viability for deconstruction.

Some communities are well-positioned for deconstruction. Typically, these communities have homes built before the 1950s, an ethos for reuse, and supportive leadership from the public and private sector. They may also have specific types of infrastructure that support deconstruction.

The following sections will help you assess whether or not your community might be a strong candidate for deconstruction. If you are able to identify several potential indicators in each section of the module, you can proceed to the next steps, which include designing a deconstruction pilot program, producing a market feasibility report, and supporting market facilitation. Communities that appear to be weak may consider bringing in a deconstruction expert to review their analysis or look for opportunities for reuse that do not require structural deconstruction.

Housing Stock and Activity

Homes built before 1950 are typically the best candidates for deconstruction. These homes contain higher-quality building materials and more distinctive architectural elements for salvage. Specifically, these homes were made from higher-quality lumber.

While it can be feasible for communities with many homes built after 1950 to pursue deconstruction, it's important to focus on the homes likely to be demolished by either the private or public sector. Sometimes public sector demolition activity centers around homes that have long been vacant, in which case the properties may have endured fire or water damage. This type of property damage may limit the amount of materials that can be salvaged.

It's also important to consider that building materials can be salvaged through both the demolition and renovation process. Typically, building permits are required for construction and demolition work and can therefore be used to determine the volume of potential material that could be brought to the marketplace. While The Reuse People found that full deconstruction of seven homes was sufficient to stock a 20,000 sq. ft. retail warehouse, it may be more likely to divert smaller amounts of materials from several smaller jobs. An indication of strong supply could be confirmation of at least 200-500 permits issued per year within 30 miles the market hub.

FACTORS TO LOOK FOR IN YOUR COMMUNITY

- Homes being demolished were often built before 1950.
- Homes being demolished often are structurally sound without fire or water damage.
- There is a stream of homes being demolished.

TIPS FOR DETERMINING THE AGE OF HOMES LIKELY TO BE DEMOLISHED OR RENOVATED:

- Refer to property tax and appraisal data, which contains the size of the home and the year it was built. This data is often maintained by counties.
- Consult with community development, redevelopment, or building permit office to find out more about the homes being demolished.
- Conduct neighborhood-level research. Determining when the majority of the neighborhood was first developed can provide insights into the potential materials in a building.

Building permits can be a helpful source of information about construction activity, including both new construction and renovation activity. These permits are an important indicator of demand, showing that people are investing in their properties, and each investment provides an opportunity to salvage or incorporate reclaimed materials. Additionally, an absence of permits may indicate that there is not enough material supply. If there is limited or inconsistent activity, there may not be enough building materials to constitute a marketplace.

Market infrastructure

Together many different actors serve to create a reclaimed building material marketplace (**Figure 4**). Identifying the market actors present in your community may help determine what level of investment might be needed to advance a building materials marketplace. The table below indicates specific market actors that support the marketplace.

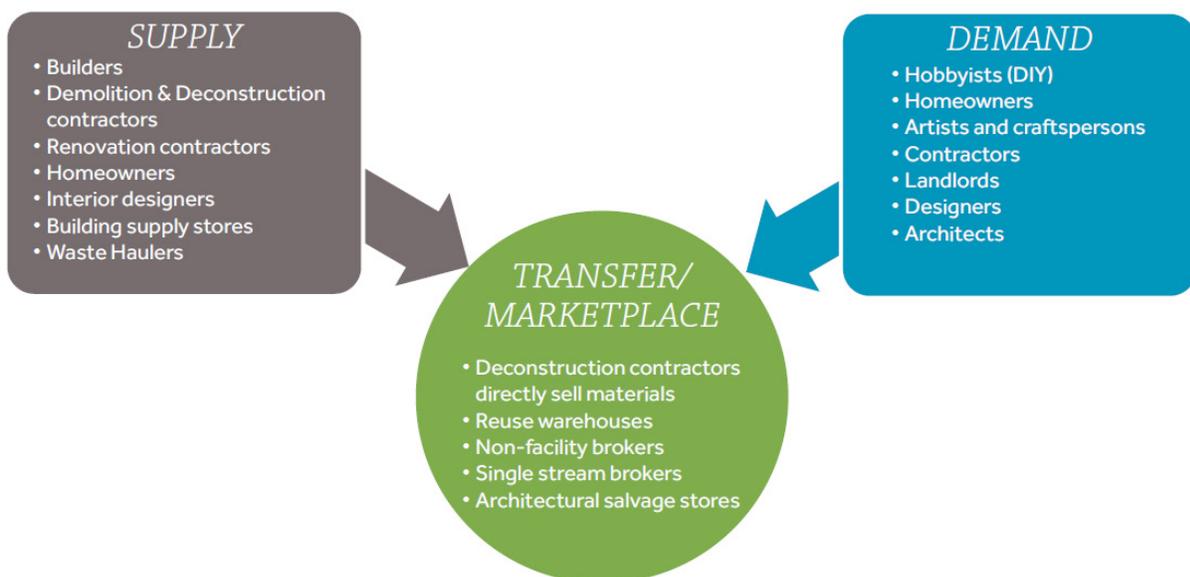


Figure 4: Reclaimed building Material Marketplace Actors

Local appetite for building material reuse

Local leadership:

Some communities have local leadership and a culture that values the environment or espouse the principles of reuse. The following list may provide an indication as to the leadership and culture of the city to support building material reuse. The following table indicates potential leaders on the write and the themes they may be concerned with which would make them effective gate openers for deconstruction.

Leader examples:

- Elected officials: mayor or village president, county officials, or sheriff
- Managers: city or village manager, public works director or community or redevelopment manager.
- Civic leadership: Chamber of commerce, green groups, economic development organizations or workforce development managers or CEO/ Executive Director.
- University/college faculty, staff or administration.

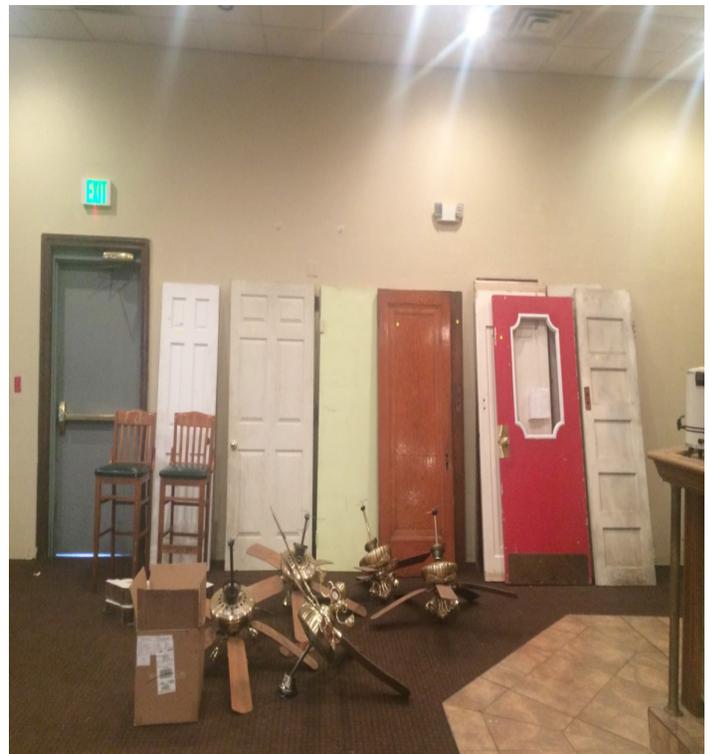
Themes local leaders might be concerned with:

- Blight and blight management,
- environmental issues,
- economic development,
- sustainability, or
- workforce development

Green initiatives:

How many green initiatives does the community actively pursue? The existence, recent activity, and membership of initiatives or programs similar to those below may be good indicators of public affinity with the reuse cause.

- Local affiliates of larger, national initiatives, such as Keep America Beautiful or Tree City USA.
- Community staff member in place to promote or manage sustainability, resilience or environmental programming.
- Environmental or green commission or working group involved in the community.



Arts organizations:

Your community may have a vibrant or growing arts, design, crafts, or DIY community. These communities can be a boon to building material reuse. The following may indicate such:

- Arts, crafts, or design professionals, organizations, businesses or events in your community.
- Active historic preservation community.

Demographic indicators:

Demographics can help clarify the potential supply and demand market for reclaimed building materials and target subgroups within a region. The following are potential indicators.

- Number of individuals with income between \$30,000 and \$50,000 per household. These people may want to buy lower-cost reclaimed items, such as appliances, lighting, cabinetry,

and materials for do-it-yourself projects.

- Number of individuals with income between \$50,000 and \$150,000 per household. This range indicates the income of likely customers, from those with little disposable income who seek lightly used appliances, to those more affluent customers interested in purchasing artisanal or value-added products.
- Population density. Greater density is favorable for deconstruction, because centering supply and demand within a 30 mile area has been found to be important to success. The greater number of homes in a space increases the opportunity.
- Percentage of owner-occupied household units in the municipality. This indicates a segment of customers more likely to remodel or buy in volume.



MODULE 3: DESIGN PILOT PROJECT

Before fully developing the infrastructure for a long-term commitment to deconstruction, many communities seek to stage pilot projects. Pilot projects provide a low-risk way to test viability and feasibility of deconstruction in a community, develop some of the infrastructure required for deconstruction, and inspire buy-in from those who are reticent to support deconstruction. While the primary goal of a pilot project is to test viability and preempt challenges that could undermine a larger deconstruction initiative, pilot projects can also achieve other community goals. Those goals may include raising awareness of reuse and recycling, providing opportunities for workforce development, offering trade skill or small business training for local contractors or fostering cross-sector collaboration.

This module provides guidance on staging a deconstruction pilot project (**Figure 5**).

7 STEPS TO DESIGN A PILOT PROJECT

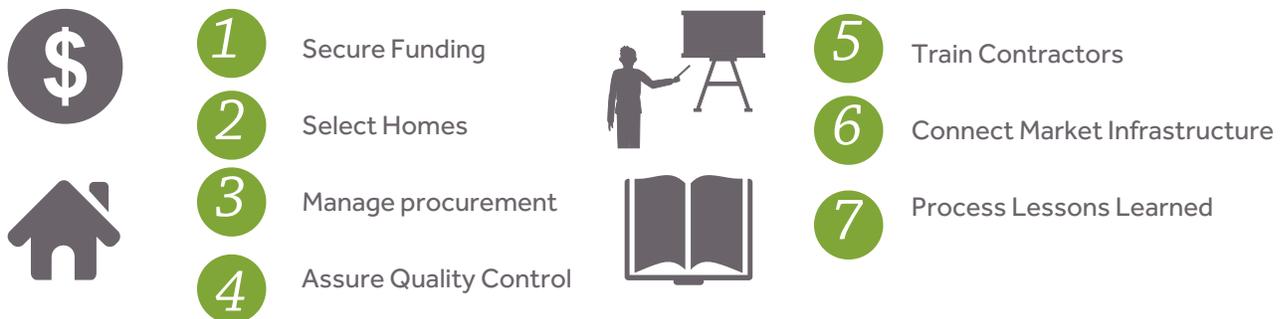


Figure 5: Pilot Project Design Steps

1. Securing funding

It's helpful to seek funding from multiple funders to support the broad range of activity required as part of the pilot phase. A complete pilot will include engaging multiple stakeholders, market research, contractor training, deconstruction, creating a network of partners to accept deconstructed materials, robust project management, and significant effort working with the organizations that are funding and bidding deconstruction work.

A review of deconstruction pilot programs conducted by Delta Institute, Erin Kelly, who had worked on deconstruction initiatives in Detroit, and Jeff Carroll, of Details Deconstruction in Baltimore, concluded that the presence of multiple funders was an indicator of strength for nascent deconstruction initiatives. When demolition funding is used for deconstruction, you still need to fund the training, project management, strategy, and market facilitation that might need to occur to have a successful program. While it would be optimal to have all funding in place at once, it is more likely that funding of different components of the pilot come together in a piecemeal approach. The most practical course is to first obtain resources for convening partners and conducting market study. The market study can be used to garner funds for subsequent stages of the effort.

In our review of deconstruction programs, those with funding from a variety of sources, such as local, state, and federal government as well as private foundations, were more robust.



2. Selecting homes

Deconstruction experts agree that pilot projects should include 20-50 homes if executed in smaller groups of houses or no less than 10 structures at a time if bid separately. When pilots are too small, it might reduce the risk of the project, but it certainly dooms the pilot project to failure. The pilot project size must be large enough for the managing organization to commit adequate resources to update procurement process and specifications. This organization must also commit to training staff to provide project management oversight to assure that high-quality work is done by contractors.

Houses in good structural condition that are rich with salvageable material create an ideal test case for deconstruction contractors, many of whom may be learning on the job. The following table indicates attributes of good and bad deconstruction candidates.

Poor candidate	Good candidate	Rationale
Built after 1950	Built before 1950	Older homes built before the 1950s typically contain better building materials, including higher-quality wood.
Fire damage Water damage	None/ little damage	Damaged materials may not be market-worthy and home may be unsafe for workers.
Extensive litter and/or household hazardous waste	Clean interior and exterior	Removing waste from home may use a lot of labor hours which may impact budget.
No surface space for staging	Level driveway, front yard or backyard	Work crews need stay organized to work quickly. They may need to have several stations for organizing materials. They will also need space for a dumpster, port-a-potty, and their equipment.
Not structurally sound	Structurally sound	Crews must be able to safely maneuver in the building.

3. Managing procurement

Procurement is an incredibly important aspect of any municipal program, because it is the mechanism by which cities purchase goods and services. Different procurement systems result in different outcomes and controls. It's important to revise procurement systems to include a scope of services that describes the deconstruction activities and creates clear mechanisms to articulate whether or not a structure is being deconstructed. Additional procurement guidance is provided in Module 4.

4. Assuring quality control

Solid project management oversight is paramount to quality assurance and quality control. It is important to create a clear process for contractors to follow that requires checks at each step of the process. This allows the project manager to identify when activities venture outside of scope and intervene accordingly. The below infographic identifies important project management milestones. The left side of **Figure 6** denotes the most effective time to intervene, while the right showcases the worst time to intervene when the only recourse is not paying the contractor until work is conducted according to scope. In some cases valuable materials may be ruined and there is very little potential for a mutually beneficial outcome or project close out.



Figure 6: Quality Assurance Intervention Points

5. Training contractors

Much of a pilot project's success relies upon the contractor's ability to execute deconstruction, so it is strongly urged that all communities seeking to advance deconstruction ensure that multiple local contractors receive the requisite training. For communities that struggle with unemployment and economic stagnation, this is an opportunity for local workforce development and training. See Module 5 for step-by-step detail.

6. Connecting market infrastructure

After identifying the existence of key market actors in Module 2, communities should work with stakeholders to ensure that they can work with these actors to get materials into the marketplace. These material actors may include those who take a specific type of material, as well as those who accept a broader range of building materials.

7. Processing lessons learned

You can learn a lot from a deconstruction pilot project, no matter the outcome. **Figure 7** below identifies potential project outcomes and traces them to recommended steps for program expansion.

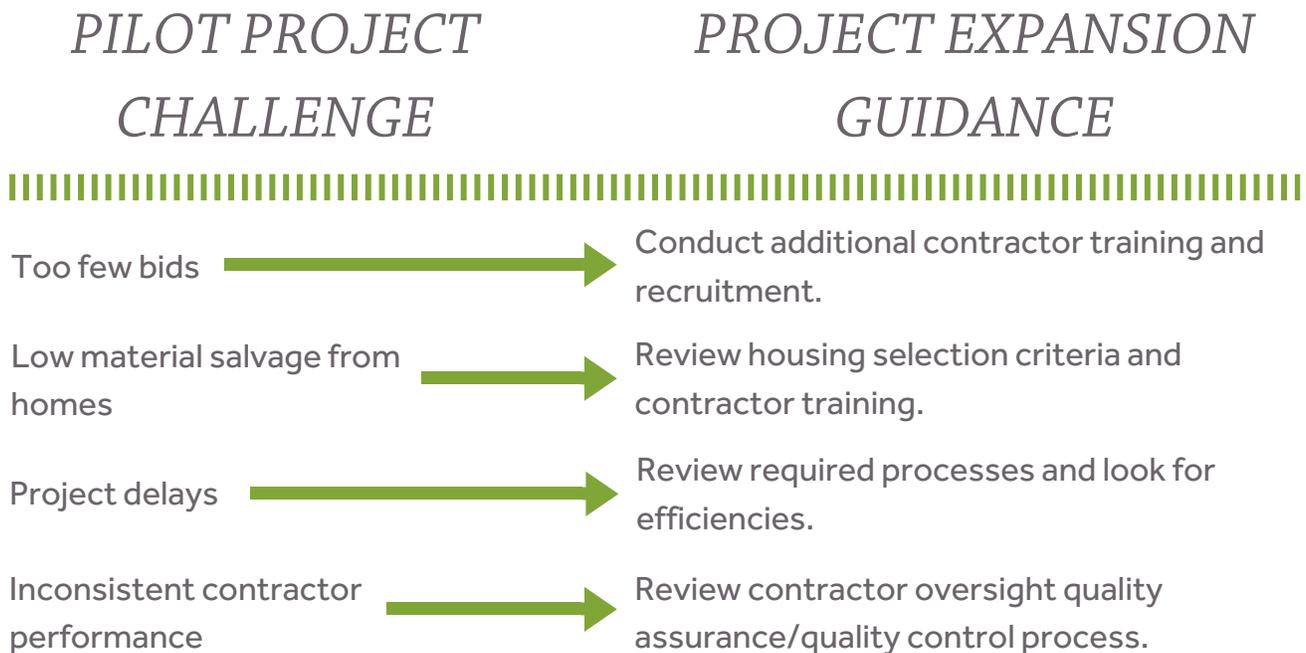


Figure 7: Guidance from pilot project challenges

MODULE 4: PROCURE DECONSTRUCTION SERVICES

Procurement, the practice of contracting to purchase goods and services, is a critically important aspect of a deconstruction project, as it defines contractor services and articulates metrics to assess the quality of work completed. Lack of specificity procurement can result in poor quality work or even failed projects. This section provides guidance on procurement and best practices for managing the work done by the successful bidder.

Typically, procurement packages include both the legal framework, which is used by the local government or other entity purchasing the services that covers all aspects of doing business with that entity, and a “scope of services” section wherein specificity is provided related to the good or service being contracted. The guidance in this module is specific to “scope of services” defining deconstruction work.

Procuring deconstruction is not just about describing how the bidder should approach deconstruction, but also about describing goals and impact sought by the project and articulating how the contractor will be held responsible for their work. This section describes procurement approaches, goals, metrics, and contract management oversight.

Procurement approaches

At the most basic level, deconstruction procurement should seek to maximize reuse while minimizing disruption to the land on which the property sits. Communities should consult the EPA document “On the Road to Reuse”¹ material reuse and recycling, while assuring that high-quality fill and beneficial approaches are used to ease future redevelopment of the land.

While many cities have improved their specifications to procure deconstruction services, there are a variety of approaches yielding different outcomes. The two major categories include process-based and outcome-based approaches.



1 <https://www.epa.gov/sites/production/files/2013-09/documents/road-to-reuse-residential-demolition-bid-specification-201309.pdf>

PROCESS-BASED APPROACH

VS

OUTCOME-BASED APPROACH

Focus is on how work should be accomplished, with no specified metrics.

Can result in higher priced estimates due to specifics of the work scope.

Can be helpful when specific environmental concerns exist.

Focus is on achieving specified metrics, regardless of how work is accomplished.

Can lead to lowest-cost services if contractor has flexibility in how they meet desired goals.

May not salvage as much as process-based approach.

Figure 8: Deconstruction approach comparison

The process-based approach defines how the work should be done; however, it does not attach metrics to that work. This approach elevates environmental outcomes and salvage and can sometimes yield higher priced work. The lack of performance metrics attached can result in higher prices, which is especially the case when firms with greater demolition than deconstruction background propose work. Process-based approaches can be beneficial when a community is particularly concerned about environmental health of an area, or when overcoming a stigma attached to low quality demolition work that has negatively impacted surrounding population. Process-based approaches might specify full deconstruction and bar the use of excavators and other heavy equipment, but they don't have to.

An outcome-based approach more broadly defines the approach sought; however, it attaches metrics to the work. Those metrics may include a salvage goal based on the value of materials salvaged or weight or it might specify the exact materials to be salvaged. This approach might yield a scenario where the onus is on the contractor to determine how best to provide low cost services while meeting goals. To do this a contractor might use a hybrid approach where they skim materials and only structurally deconstruction particularly material rich sections of the structure. Outcome based may be lower cost, but not salvage as many materials as process-based approach.

Potential pitfalls

When the public sector gets involved with deconstruction, there can be profound confusion about the value of the materials and to whom they should accrue. Safeguarding and harvesting of materials that would otherwise be disposed can create a number of concerns once the market recognizes those materials as having a cash value.

Questions can arise about whether the municipality can get money or funding from those materials, or there may be concerns about the optics of materials being bought or used by the private sector. The following are potential pitfalls and mechanisms to avoid them through procurement.

Municipality as material broker

Because deconstruction enables items to be resold, sometimes governments seek to reduce the cost of deconstruction or get paid for the value of materials. When the party bidding the deconstruction services seeks to be paid for materials, it can result in higher bids because the deconstruction contractor will not have those materials to offset the additional labor in deconstruction. While local governments can support market actors, local governments typically do not make good material brokers. Often this is because brokering materials is outside the scope of local government. Further, selling materials can create ethical challenges or suggest impropriety. Avoid this pitfall by specifying in procurement documentation that the demolition/deconstruction partner will act as a material broker or insist that a third party act as the material broker.

Salvaging the wrong things

When contractors salvage materials that are not marketable, they are creating extremely expensive waste. Those bidding deconstruction can avoid this pitfall by articulating the types of materials to be salvaged. Providing a tour of buildings and identifying materials that should be salvaged can direct contractors to harvest only the high-quality materials. Additionally, it can be helpful in project metrics to emphasize the value and quality of material over mass/quantity or weight.

Exorbitant bids

When demolition contractors, who do not have experience in deconstruction and reuse markets, bid projects, they can over-estimate costs. We recommend requiring contractors to receive training from qualified trainers who teach the best approaches to salvage. Requiring training and certification and setting clear performance goals around deconstruction can result in more aggressive pricing.

MODULE 5: TRAIN LOCAL CONTRACTORS

Training local contractors is instrumental to program success, as it sets clear expectations for the work required, supports efficiency in the salvage process, and provides trainees with useful job skills. The Building Material Reuse Association (BMRA) developed the deconstruction credential and a variety of programming, and they can provide training for a community with varying levels of assistance. However, there is a significant role for organizations outside of municipalities to play in preparing for and hosting the training. Such organizations might include community development corporations, workforce development organizations, environmental groups, neighborhood groups, etc. This document provides an overview of what to plan for in the six months leading up to a training.

The successful salvage of building materials for reuse hinges on the ability of contractors to do the work, which requires the following core competencies:

- Evaluating a building site;
- Assuring job site safety;
- Knowledge of and management of hazardous materials;
- Knowledge of and ability to use tools for building material salvage and deconstruction;
- Creating a site plan, schedule, and work plan; and
- Non-structural and structural deconstruction.

While demolition contractors often say they already salvage material, without training they cannot efficiently salvage structural lumber or other more unique items.

Additionally, contractor training should be targeted to foremen. Demolition foreman with construction experience require a different approach than laborers, and this module offers training advice specific to foremen.

BENEFITS OF DECONSTRUCTION TRAINING

Material reuse and waste management

Deconstruction contractors meet requirements and goals for C&D debris diversion from landfill.

Workforce development

Deconstruction is a specialized skill that can provide living wage jobs for local contractors. Certification from a deconstruction training can bolster workforce development opportunities.

Promoting local reuse

Locally salvaged building materials are ideally sold in the community from which they are salvaged to retain market value and encourage reuse in local projects.

6-12 Months before training

Deconstruction Sites

Select one site for deconstruction training and one site for post-training assessment where both sites have the following attributes:

- Ample staging space for a dumpster, portable restrooms, tools, and building materials
- Proximate on-street parking for trainees and trainers
- Structurally sound
- Construction predating 1950
- Frame and stucco or brick or stone exterior (not an impenetrable, concrete box)
- No more than 2 floors (if possible slab and not basement)
- Under 1,500 square feet
- With clear ownership
- Ability to develop an arrangement in which the structure can be completely deconstructed or demolished afterwards.

Verify property corners and lot lines for site planning and awareness.

Deconstruction Classroom Site

Arrange to have access to a classroom with seating, an LCD projector, WiFi (if possible), and tables or desks with ample parking for students and trainers.

Staffing

Hire the master trainer to lead the deconstruction training. Depending on the number of participants, multiple trainers may be required. An 8:1 ratio seems to work well.

Training Design

Establish the level of training provided (this outline is geared more to foreman-level training rather than laborer training).

Establish the speed and number of days for training. This will influence if the training will cover skimming, a full deconstruction, or hybrid model.

Consider requiring a set of pre-screenings:

- Physical exam
- Drug screen
- Background checks
- TABE (Test of Adult Basic Education) and/or Work Keys testing
- Industry Pre-Test / Post-Test

6-12 Months before training, continued

Consider including a set of prerequisites

- OSHA 10 Hour Construction
- First Aid, CPR, AED
- EPA Lead RRP
- Asbestos Awareness (Class IV)

Consider including additional certifications

- HAZWOPER
- Asbestos worker or supervisor
- Lead worker or supervisor
- Forklift operator
- Truck driver

Marketing

Begin to market the training to potential participants, which could include:

- Outreach to local workforce development entities
- Announcement through local government websites and social media
- Advertisements in local paper

Materials

Begin to develop reuse partnerships to accept salvaged building materials.



3 Months before training

Deconstruction Sites

Conduct asbestos and lead inspections; address any discovered hazards; and if necessary retain contractor for lead or asbestos abatement properly dispose of any found asbestos-containing materials.

Provide Asbestos Notification of Demolition to proper agencies.

Legal

Acquire insurance for the training program and participants.

Staffing

Hire an assistant trainer.

Training design

Begin enrollment and continue marketing and outreach.

Consider support services and skill support for training participants

- General case management
 - Food
 - Housing
 - Transportation
 - Dependent care
 - Adult basic education
 - Clothing
 - Reading glasses
- Contextualized math and math tutoring
- Communication and contextualized reading
- Financial literacy

1 Month before training

Deconstruction sites

Create a post-training plan for the training site (full demolition, etc.).

Determine who will demolish the remaining structure; schedule demolition.

Obtain verification from private exterminator.

Legal

Create contracts for partners and participants.

Staffing

Retain an Off-site Coordinator for day-of logistics and planning support.

Notification

Notify appropriate departments throughout municipality of the training and related deconstruction and demolition.

Training design

Outreach to participants weekly leading up to the training.

2 Weeks before training

Deconstruction Sites

Prep the training site, including cleaning up yard waste and debris.

Arrange for a dumpster and portable restrooms to be on-site.

Propose reuse, recycling, and dump site locations.

Notify all utilities and prep for the arranged shut-off.

Legal

Create and distribute waivers for all participants.

Notification

Notify local police and adjacent neighbors of deconstruction activity timeline.

Training design

Conduct a pre-salvage inventory.

1 Week before training

Legal

Obtain a commercial or residential demolition permit in accordance to the time constraints of the local government you are working in. Some organizations can do a permit on the same day and others may take more time. Additionally, permits typically cover a limited period of time.

Notification

Different localities require notification to different agencies. Work is locality to ensure that the correct agencies are notified.

Day of training

Deconstruction sites

Follow appropriate dust management practices.

Conduct final inspection.

Materials

Collect authorized waste tickets for all material transported off-site during demolition.

Record delivery of all materials to destination(s).

Post-training

Deconstruction sites

Arrange for demolition or full deconstruction of training site.

Training Design

Develop and administer written exam for participants or work with BMRA to have them administer their written exams and field exam, which involves displaying deconstruction skills.

In addition to the planning items above, the host organization should also ensure that the following tools are available during the training – either provided by BMRA, the host organization, or the trainees. Training communications should inform participants which tools will be provided and which should be brought to the training day.

Essential tools for deconstruction training		
Assorted crowbars	Claw hammers	Sledgehammers
Assorted tarps	Air compressor/hoses	Generator
Sawzalls (at least 2, 15amp)	Circular saw (2)	Hardhats
Screw gun / Impact drivers and bits	Extension cords and connectors	Electric or propane site heaters and fuel
Sawhorses (3 pair)	Rubber trash cans (4)	Strapping for lumber
6'-12' Step ladders (3-4)	Drinking water cooler	Hand washing water cooler
Portable restroom	Digital projector	Classroom seating
Safety harness	Screwdrivers	Safety fencing/caution tape
Pneumatic nailers	Cameras	Secure lockbox
Textbooks	Flatbars	Pliers
Gloves	Dust masks	Safety glasses

MODULE 6: PASS A BUILDING MATERIAL REUSE RESOLUTION

Elected boards create and pass non-binding resolutions to signify a position, approach, or beginning of a new policy direction. A resolution must be sponsored by an elected party to that board. Below is a draft language for a resolution that could be brought to the floor for passage.

RESOLUTION SUPPORTING DECONSTRUCTION & BUILDING MATERIALS

REUSE IN _____

WHEREAS, the deconstruction process is a manual method used to recover building materials, as opposed to traditional demolition, and

WHEREAS, the harvesting of reclaimed building materials affords the opportunity for environmental benefits such as reduced toxic dust from job site, reduced heavy metals leaching into soil, reduced waste to landfill, and reduced consumption of virgin materials, and

WHEREAS, the harvesting of reclaimed building materials affords the opportunity for economic and community benefits such as job creation, resale of building materials, and sale of value-added products, and

WHEREAS, local governments can support deconstruction and building materials reuse by encouraging building material reuse and recycling goals in demolition in public and private demolition and encourage the reuse of reclaimed materials and

NOW THEREFORE, BE IT RESOLVED that _____ supports building materials reuse as a...

PASSED BY THE CITY COUNCIL OF _____ ON THIS _____ DAY OF _____, 20__.

ATTEST: _____

MODULE 7: CREATE DECONSTRUCTION POLICY SUPPORT

Ordinances regulating construction and demolition (C&D) waste seek to reduce waste generation and achieve greater diversion from landfill. Below, 13 ordinances at the city and county level are summarized to include the ordinance title, location, effective year, ordinance details and mechanism, and enforcement structure. These ordinances can serve as models for other municipalities interested in improving C&D debris diversion through legislation.

To encourage C&D waste diversion, many cities are requiring waste management planning throughout the life of a project, helping to improve recycling and reuse rates and reduce contamination. Enforcement strategies include tying requirements to permit approval and increasing tiers of requirements depending on the square footage, price, or materials used for the project. Non-compliance enforcement typically includes permit rejections and/or fines.

San Jose, CA - Construction Demolition Diversion Deposit (CDDD) Program (CD) 2001

Method/Mechanism

Minimum of 75% of construction materials must be recovered from the site and diverted from landfill.

Receipts documenting diversion deposits are collected, to be refunded after verification of landfill diversion.

Non-Compliance

Certificate of final occupancy not awarded
Loss of deposit



San Mateo, CA - Recycling and Diversion of Debris from Construction and Demolition (CD)

2002

Method/Mechanism

For any demolition project over \$5,000, construction or renovation project over \$250,000, or any new structure over 2,000 sq.ft. - 100% of inert solids and minimum 50% of remaining debris must be diverted from landfill.

Waste management plan must be submitted with permit application and updated with receipts and totals within 30 days of project completion.

Non-Compliance

Fines up to \$1,000 and/or 60 days in jail

Orange County, NC - Regulated Recyclables Materials Ordinance (CD)

2002

Method/Mechanism

All regulated recyclable material generated must be recycled excluding health risks and inability to separate from non recyclable material.

Material must be recycled at a certified commingled recycling facility and may not be disposed of in any other manner.

Non-Compliance

Doubled tip fee for landfilled recyclables
Permit revocation
Fines up to \$500 or 30 days in jail

Los Angeles County, CA - Construction and Demolition Ordinance (CD & Reuse)

2005

Method/Mechanism

Minimum 50% of C&D materials generated, no more than two-thirds of which may be inert materials, must be reused or recycled. Minimum 50% of all inert materials must be reused or recycled.

Approved Recycling and Reuse Plan must accompany permit application. Regular progress reports and final report with waste facility receipts must be submitted to the county.

Non-Compliance

\$250 fine per ton not recycled/reused as required

Chicago, IL - C&D Recycling Ordinance (CD)

2006

Method/Mechanism

Minimum 50% of C&D waste from residential buildings over four units and nonresidential buildings over 4,000 sq.ft. must be diverted from landfill.

Contractor, in conjunction with waste/recycling provider, must submit form and affidavit within 30 days of completion.

Non-Compliance

\$500 fine for projects less than 10,000 sq. ft.
\$1,000 fine for larger projects

Concord, CA - C&D Materials Recycling Ordinance (CD & Reuse)

2007

Method/Mechanism

Minimum 65% of waste materials (and 75% of inert debris - waste that is neither biologically nor chemically reactive) generated from C&D projects must be diverted from landfill.

Initial performance agreement and final report must be submitted to city to track performance.

Non-Compliance

Fines up to \$10,000/day
Suspension of demolition, permit rejection
Civil action, misdemeanor prosecution

Boulder, CO - Boulder Green Points Building Program (CD)

2008

Method/Mechanism

Permit applications for new construction, remodels, additions, and demolitions must include sustainable building components, which is calculated through a point system where points are accrued through use and documentation of sustainable practices such as use of reclaimed material and waste diversion from landfills.

Non-Compliance

Permit rejection

Madison, WI - Construction and Recycling Ordinance (CD & Reuse)

2010

Method/Mechanism

Buildings projects with steel and concrete supports must recycle 70% of materials. Wood supported structures and remodeling projects exceeding \$20,000 must reuse or recycle all wood, non-toxic metals, scrap drywall, corrugated cardboard, and shingles.

Report with waste diversion details must be submitted within 60 days of project completion.

Non-Compliance

Fines ranging from \$25 to \$500 per percentage point under threshold

Evanston, IL - Green Building Ordinance (CD)

2011

Method/Mechanism

Buildings over 20,000 sq.ft (or 10,000 sq.ft. if owned or funded by the city) must achieve LEED Silver rating or higher. Non-city owned buildings between 10,000 and 20,000 sq.ft. can choose LEED Silver rating or to employ eight or more Evanston Sustainable Building Measures for New Construction. LEED requirements include waste management planning and diversion of recyclable or reusable material.

Proposal for meeting criteria must be submitted with permit application. USGBC LEED approval letter must be submitted after project completion.

Non-Compliance

Fine equal to 0.75% construction cost multiplied by number of credits short

Cook County, IL - Cook County Demolition Debris Diversion Ordinance (CD & Reuse)

2012

Method/Mechanism

Minimum 70% of C&D waste from all building projects must be diverted from landfill where 5% of waste from residential projects must be reused.

Waste management plan must be submitted with permit application before work begins, an actual materials tracking form must be submitted when work completes to close out permit.

Non-Compliance

Fines up to \$5,000

King County, WA - Green Building and Sustainable Development (CD)

2013

Method/Mechanism

Starting in 2013, all projects are required to take materials from construction sites to either single commodity recycling facilities, commingled processing facilities, or transfer stations reducing materials sent to the landfill.

Documentation may be used in conjunction with LEED or Built Green certification reporting.

Non-Compliance

Code citation

Up to 60 days of civil penalties followed by legal prosecution

Austin, TX - Construction & Demolition Recycling Ordinance (CD)

2016

Method/Mechanism

Minimum 50% of waste from C&D projects over 5,000 sq.ft. must be diverted for beneficial use (replacing or supplementing a raw material with industrial by-products) with no more than 2.5 lbs of materials per sq.ft. disposed of in landfills.¹

Building permit process triggers inspection of structure and waste plan.

Non-Compliance

Class C misdemeanor

Milwaukee, WI - Deconstruction Ordinance

2018

Method/Mechanism

Homes built before 1930 that are one to four residential units must be deconstructed.

Non-Compliance

Penalties include forfeitures of up to \$3,000 (up to \$20,000 for improper use of heavy machinery), issuance of citations, removal of a contractor from the list of certified deconstruction contractors, or revocation of a contractor's certification as a certified deconstruction contractor.

¹ City plans to expand scope of ordinance to apply to all building sizes in 2019 and increase percentage diverted in 2020 and 2030.



JOIN THE CONVERSATION

What are you doing to solve environmental challenges in the Midwest? How are you reducing, reusing, and recycling? What are your BIG ideas?

#TransformWaste

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DECONSTRUCTION & BUILDING MATERIAL REUSE: A TOOL FOR LOCAL GOVERNMENTS & ECONOMIC DEVELOPMENT PRACTITIONERS

Appendices

Appendix 1 - City of Gary Deconstruction Program Specifications

Appendix 2 - Breaking It Down: Demystifying Deconstruction

Appendix 3 - Building Materials Salvage Assessment Form

APPENDIX 1

CITY OF GARY DECONSTRUCTION PROGRAM SPECIFICATIONS

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Part I – Scope of Services

Article 1 – Deconstruction, Building Material Reuse, and Recycling

Deconstruction is the process of systematically dismantling a structure in an economically, environmentally, and socially responsible manner, aiming to maximize the amount of material that is diverted from landfills. For the purposes of this bid, deconstruction can be done through a complete deconstruction process or through a hybrid deconstruction that combines manual deconstruction to maximize reuse and recycling with traditional machine-operated demolition techniques. A site will be deemed “Deconstructed” if the CONTRACTOR produces receipts documenting that \$2,000 worth of building materials were recycled or reused of which at least \$500 worth of building materials must have been reused.

Material reuse is defined as keeping a material out of the waste stream without grinding, chipping, smelting, or melting, thereby lengthening the life of a building material. Examples include but are not limited to selling appliances for reinstallation, brick repurposing, or furniture making from reclaimed lumber.

Material recycling is defined as setting aside, handling, packaging or offering for collection waste material for reprocessing so they may enter the market as new raw material.

Article 2 – Description of Work

This project consists of deconstruction/demolition of buildings and basement/foundations including backfill of the excavation, securing all necessary permits (demolition, water/sewer cuts, soil erosion and any other required permits by Local, State or Federal government), disconnecting gas, water and sewer utilities or cap wells and abandonment of septic (if any), and identification, removal, and disposal of asbestos.

The CONTRACTOR shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment, and services, including utility and transportation services, and perform and complete all work required for the deconstruction and complete site preparation and clearance and supplemental work as required to meet the specifications herein of all structures listed in the contract documents. The REDEVELOPMENT COMMISSION reserves the right, without invalidating the agreement, to increase or decrease the work by adding and/or deleting any or all items from the Scope of Work. The contractor is SOLELY RESPONSIBLE for contacting [811] two working days prior to any excavation.

It is expressly understood and agreed that the legal description, common address, photographs and other information relating to each structure are located in the files of the City of Gary, REDEVELOPMENT COMMISSION (Local Public Agency). It is expressly understood that in the event that a question arises relative to the exact location of a structure to be demolished, the CONTRACTOR shall immediately, prior to commencement of the work, inform the REDEVELOPMENT COMMISSION of the discrepancy; and obtain from the REDEVELOPMENT COMMISSION a determination and description of the correct site.

A CONTRACTOR'S demolition of the "wrong structure", (i.e., a structure not enumerated above), in the

absence of negligence on the part of the REDEVELOPMENT COMMISSION and the CITY, shall constitute a violation or event of default under the herein AGREEMENT; and may be cause for termination of the AGREEMENT. The CONTRACTOR will be responsible for any and all damages arising from said demolition.

Award of the Bid is subject to approval of the bidding CONTRACTOR by the Indiana Housing and Community Development Authority. The Bidder agrees to furnish all records and reports required for compliance with Federal Regulations for this bid and contract.

Article 3 – Term of Performance

The work which the CONTRACTOR is required to perform under this Contract, shall commence at the time stipulated by the REDEVELOPMENT COMMISSION in the "Notice to Proceed" to the CONTRACTOR. The project shall be fully completed within 20 days of the date of issuance of "Notice to Proceed" by the REDEVELOPMENT COMMISSION.

All work must be completed in accordance with the schedule, approved by the REDEVELOPMENT COMMISSION. Updated schedules for each property must be provided a minimum of 48 hours in advance of deconstruction to provide adequate time to remove REDEVELOPMENT COMMISSION locks on property. If the contract is not completed within the contract time set out in the bid documents, \$50 of the Contract Bid will be assessed as liquidated damages, not as penalty, but as damages sustained for each calendar day that each structure remains un-cleared beyond the Completion Date required by the Contract Documents.

Article 4 – Changes in the Work

The REDEVELOPMENT COMMISSION, without invalidating this AGREEMENT, may order extra work or make changes by altering, adding to, or deducting from the work. The contract sum shall be adjusted accordingly. All such work shall be executed under the conditions of the original contract, except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

If during the course of its performance of the work, the CONTRACTOR encounters any unforeseen or unusual circumstance or condition which may warrant a Change Order or deviation in the work to be performed or the process or procedure to be undertaken, the CONTRACTOR shall immediately HALT the work; and notify the REDEVELOPMENT COMMISSION.

(Examples of such unforeseen or unusual circumstances shall include, but shall not be limited to: Additional trash or debris dumped on the site subsequent to date quotation was submitted; discovery of additional asbestos or assumed ACM (asbestos containing material), and any change in the condition of the structure to be demolished.)

Work shall not be resumed until written "Notice to Resume" is received by the CONTRACTOR from the REDEVELOPMENT COMMISSION. No payments will be made for unauthorized services performed in relation to the Contract. No claim for additional compensation shall be made in the absence of a prior written approval executed by all signatories on the Contract.

The value of any such extra work or changes shall be determined by the submission of an estimate of said work in lump sum by the CONTRACTOR to a representative of the REDEVELOPMENT COMMISSION. Said estimates shall be submitted for review and final decision by the REDEVELOPMENT COMMISSION, whose decision shall be final as to the value of the proposed changes.

Article 5 – Contract Documents

The Contract documents consist of this AGREEMENT, General Provisions of the Contract, supplementary conditions where applicable, Procedures for Demolition Contractors, and any written modification thereof incorporated into these documents before their execution. The contract documents are complementary, and what is called for by any one shall be as binding, as if called for by all. The intention of the documents is to include all labor and materials, equipment, and transportation necessary for the proper execution of the work. Materials or work described in words which when so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

Article 6 – Specifications

Section A. Obtaining a "Notice to Proceed"

The CONTRACTOR shall obtain a "Notice to Proceed" from the REDEVELOPMENT COMMISSION for each property itemized within the bid Appendix III, prior to the commencement of any work or services under the agreement.

A Compliance Verification Meeting will be held with the CONTRACTOR prior to review methods, procedures and requirements related to the deconstruction including, but not limited to, the following:

- Provide the date that the work is to start
- Provide deconstruction plan along with schedule
- Provide pre-deconstruction photographs or video
- Demolition permit and any other required permits
- Written verification from utilities that service is shut off

- Written verification from private exterminator
- Review of the Pre-demolition survey of potential environment hazards
- Asbestos Notification of Demolition to IDEM and any other agencies
- Erosion & Sediment Control Permit (if applicable)
- Proposed reuse, recycling, and dump site location(s)
- Pre-salvage inventory utilizing the Gary Modified Rapid Assessment Tool

The REDEVELOPMENT COMMISSION will not furnish a "Notice to Proceed" for deconstructing specific addresses to the CONTRACTOR until all aforementioned documentation is submitted.

CONTRACTOR shall provide at the Compliance Verification Meeting, a brief narrative description of how they plan to complete the project. The plan shall include a description of the techniques that will be used to deconstruct the building or buildings, as well as the equipment that will be used to deconstruct the buildings and haul salvaged building material and debris away. In addition, the CONTRACTOR shall provide the REDEVELOPMENT COMMISSION an anticipated deconstruction schedule for each parcel during the Compliance Verification Meeting. If the construction schedule changes, the CONTRACTOR shall be required to supply a revised schedule to the REDEVELOPMENT COMMISSION.

The CONTRACTOR shall provide Pre-Demolition Photographs or Videotapes showing existing conditions in sufficient detail of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective deconstruction operations. The CONTRACTOR shall provide the REDEVELOPMENT COMMISSION photographs or video during the Compliance Verification Meeting prior to the deconstruction operations.

Parties agree that the REDEVELOPMENT COMMISSION shall not be liable for payment to the CONTRACTOR for any work commenced on property itemized unless a "Notice to Proceed" has been obtained by the CONTRACTOR for the said property.

Section B. Permits

The CONTRACTOR shall be responsible for obtaining all permits necessary for deconstruction of each structure prior to commencing the work. Permit costs shall be included in the Deconstruction bid. Permits shall include but are not limited to:

- Obtaining a Demolition permit to be posted for the duration of demolition
- Completing, submitting, and obtaining an Erosion & Sediment Control Permit (if applicable)
- Completing & submitting an Asbestos Notification of Demolition to IDEM.
Must be submitted **10 working days** prior to the demolition of the structure(s).

Section C. Governmental Notifications

The CONTRACTOR shall give any necessary notification of the deconstructions to IDEM, EPA or any other required notifications by Local, State or Federal government. Any fees associated with such notifications shall be included in the bid price for Deconstruction.

Section D. IDEM Rules and Regulations

In addition to procedures required in this AGREEMENT, the CONTRACTOR shall comply with all rules and regulations of the Indiana Department of Environmental Management (IDEM). Violation of any IDEM rule shall constitute a violation and be in default under this AGREEMENT.

CONTRACTOR shall comply at all times with the following IDEM procedures:

(1) IDEM Rule 326 IAC 14-10-3-(7).

IN NO EVENT SHALL DEMOLITION ACTIVITIES BEGIN ON A DATE OTHER THAN THE DATE CONTAINED IN THE MOST RECENT NOTIFICATION TO IDEM:

To start or "commence" a demolition means to take out any "load-supporting structural member". Examples of a load-supporting structural member include the following: beam, load-supporting wall, rafter or a portion of the foundation.

In the event that the CONTRACTOR finds that he cannot begin the demolition on the start date, he must notify the IDEM IMMEDIATELY. The Department shall cancel the original notification and issue a "new original" notification.

(2) It is expressly agreed and acknowledged by the CONTRACTOR and the DEPARTMENT that a large number of abandoned buildings exist in the City of Gary, which have been abandoned for many years. A number of these buildings are structurally unsound and have been determined to be unsafe and inaccessible for thorough asbestos inspection and testing.

IN ALL CASES IN WHICH A PROPERTY HAS NOT BEEN THOROUGHLY INSPECTED FOR ASBESTOS PRIOR TO DEMOLITION. THE DEPARTMENT SHALL PROVIDE AN INDIANA ACCREDITED ASBESTOS INSPECTOR TO BE ON SITE THROUGHOUT DEMOLITION. NO DEMOLITION SHALL COMMENCE PRIOR TO THE INSPECTOR'S ARRIVAL.

DEMOLITION SHALL COMMENCE PRIOR TO THE INSPECTOR'S ARRIVAL.

(3) The CONTRACTOR will use all means necessary to control dust near the work and on or near all off-site areas if such dust is caused by CONTRACTOR'S operations during performance of the work or if it results from the condition in which the CONTRACTOR leaves the site. All surfaces shall be thoroughly moistened as required to prevent dust from being a nuisance to the public and adjacent properties. For guidance on how to determine if materials are adequately wet, refer to attached EPA brochure, entitled "Asbestos/ NESHAP Adequately Wet Guidance". A copy of Indiana Rule 326 IAC, entitled "Emission Standards for Asbestos; Demolition and Renovation Operations", is located at the Department and is available to each CONTRACTOR upon request.

Section E. IDEM & Other Violations

The CONTRACTOR expressly agrees to indemnify and hold the REDEVELOPMENT COMMISSION harmless from and against any and all penalties which the Commissioner of the Indiana Department of Environmental Management, or agency, may assess against the REDEVELOPMENT COMMISSION for any violation resulting from, arising out of, or in connection with the services to be provided by the CONTRACTOR under this AGREEMENT or for the acts or omissions of the CONTRACTOR in the performance of this AGREEMENT.

Section F. Pre-Salvage Inventory

The CONTRACTOR shall conduct and complete a thorough inspection and survey of sites by identifying and quantifying salvageable materials, non-hazardous wastes, recyclable waste materials and potential hazardous waste streams utilizing the "Gary Modified Rapid Assessment Tool" prior to beginning deconstruction. To be eligible for salvage or recycling, items must be free of hazardous or special waste streams.

The inventory shall be based upon the results of the pre-demolition survey and shall be provided to all site personnel, including subcontractors, to ensure that materials are not inadvertently damaged during adjacent work. The inventory must also be provided to the REDEVELOPMENT COMMISSION during the Compliance Verification Meeting.

Section G. Building Material Reuse, Recycling, and Waste Management Plan

The CONTRACTOR shall prepare a Waste Management Plan and supply the plan to the REDEVELOPMENT COMMISSION for approval. Approval must be obtained prior to commencing any mobilization activities. The Waste Management Plan must demonstrate the CONTRACTOR's methods and procedures for waste diversion emphasizing reuse and recycling. The CONTRACTOR shall identify anticipated waste streams.

The Waste Management Plan should:

- identify all waste streams
- explain how each waste stream will be dealt with safely and legally
- explain how deconstructed material will be secured
- provide a list of all records that will be generated under the plan and a plan for how those records will be saved
- detail how materials are to be salvaged or recycled when economically feasible; first prioritizing reuse and then recycling
- provide a waste disposal plan that clearly explains how waste will be transported and by whom with any special considerations included
- provide a map describing temporary staging of materials and a discussion of containment procedures for removal and decontamination.
- include completed pre-salvage inventory utilizing the attached “Gary Modified Rapid Assessment Tool” This should include but is not limited to items for salvage and resale (e.g. old-growth wood), items for salvage and donation (e.g. doors), items reused onsite (e.g. fencing), materials for recycling off-site(e.g. metal, brick), materials recycled on-site(e.g. trees for chips) and worker-generated recyclable waste and general refuse.
- estimate dollar value of all materials to be reused and recycled separated by end use.

Section H. Signage

The CONTRACTOR agrees to post a copy of the demolition permit at the deconstruction site for the duration of the deconstruction/demolition project.

Section I. Work Commencement

The CONTRACTOR acknowledges and agrees that commencement of work prior to receipt of a “Notice to Proceed” from the REDEVELOPMENT COMMISSION will result in an automatic forfeiture of one half (1/2) of the bid price and the CONTRACTOR is solely responsible for any and all fines imposed by Indiana Department of Environmental Management (IDEM) as a result.

Parties agree that the CONTRACTOR indemnifies and holds the REDEVELOPMENT COMMISSION and the CITY OF GARY harmless for any and all work commenced prior to obtaining a “Notice to Proceed” from the REDEVELOPMENT COMMISSION.

Parties agree that the CONTRACTOR indemnifies and holds the REDEVELOPMENT COMMISSION and the CITY OF GARY harmless for any and all work commenced prior to obtaining a "Notice to Proceed" from the REDEVELOPMENT COMMISSION.

Section J. Inspection and Removal of Asbestos Containing Materials

Prior to performing work, the CONTRACTOR will be responsible for verification that asbestos-containing materials (ACM) and other identified hazardous wastes or materials are removed from the structure in accordance with Federal, State and Local regulations. Non-regulated category 1 non-friable asbestos may remain in place during demolition activities if the criteria listed in the Demolition Survey recommendations are adhered to.

If additional ACM is encountered during deconstruction activities, the CONTRACTOR shall stop work immediately. The CONTRACTOR shall assign the removal of regulated asbestos containing materials to an asbestos removal CONTRACTOR licensed with the State of Indiana. The CONTRACTOR shall submit to the REDEVELOPMENT COMMISSION documentation certifying that regulated asbestos was removed from the properties and shall follow all rules and regulations regarding asbestos removal. The REDEVELOPMENT COMMISSION shall not be held liable for actions or damages caused by the CONTRACTOR or his subcontractors if asbestos is not properly removed and disposed of during demolition activities.

All abatement activities must be conducted in accordance with requirements set forth by Federal, State and Local Regulations. The CONTRACTOR shall indemnify and hold the CITY of GARY and REDEVELOPMENT COMMISSION harmless for any fine or fee assessed by a regulatory agency and/or if the CONTRACTOR fails to abide and comply with the permitting process, obtaining permits, and/or regulations.

The cost of testing, abating and monitoring required prior to and during deconstruction activities for compliance may warrant additional compensation in a form of a Change Order.

Section K. Utilities and Existing Infrastructure

The CONTRACTOR shall take all necessary precautions to prevent damage of pipes, conduits and other underground structures and public utilities, and shall carefully protect from damage all land monuments and property markers until an authorized agent has referenced their locations, as authorized by the REDEVELOPMENT COMMISSION.

The CONTRACTOR shall notify all corporations, companies, individuals, or local authorities owning conduits, wires, or pipes running to the property. The CONTRACTOR shall arrange for the removal of all wires running to and on the property. The CONTRACTOR shall cap all pipes and sewers that are to remain on the property with Class "A" concrete.

All storm and sanitary sump pumps, down spouts, floor drains and laterals shall be completely and properly abandoned at the property lines. Sanitary sewer lines shall be abandoned per the local utility requirements.

CONTRACTOR shall obtain all necessary permits prior to commencing the Work.

Water supply lines leading directly into the property supplied from the distribution main or private main shall be removed at the distribution main and shall be the responsibility of the CONTRACTOR. The removal shall be per the current standards of the local utility. No direct payment will be made for the removal of the existing water service(s), but the cost thereof shall be included in the costs of the other items of the Contract.

Section L. Fugitive Dust Control

The CONTRACTOR shall control dust at all times, including nonworking periods. All areas disturbed by deconstruction activities (structures, debris, soils,) should be sprayed and thoroughly wetted with water. All deconstruction activities shall be conducted using methods that minimize the generation of dust.

The CONTRACTOR must vent airborne dust from dispersing into the atmosphere and impacting surrounding property. The CONTRACTOR shall maintain adequate water supply. This may require a water tank truck if insufficient water is available on site. Equipment used to apply water shall, at a minimum, consist of a tank, a spray bar and a gauge-equipped pump.

Section M. Tree Protection

It shall be the responsibility of the CONTRACTOR to protect all trees of a diameter of 4" or greater that are located outside of five (5) feet from the structure being deconstructed. If such trees are damaged, the CONTRACTOR shall replace damaged tree if directed by the REDEVELOPMENT COMMISSION. If during the process of demolition, the CONTRACTOR uproots any tree, he/she shall be responsible for the removal and disposal of tree stumps. No tree stumps may be left on the site.

Section N. Deconstruction Activities

The CONTRACTOR shall conduct all deconstruction and removal actions in accordance with the provisions documented in the Work Plan and accounting for all items, materials, and equipment identified for removal.

All removal methods and procedures must adhere to the OSHA Construction Industry Regulations in 29 CFR Part 1926, in addition to any other applicable federal, state, or local requirements. This includes utilizing methods to protect workers from exposure to animal wastes or biohazards that may be present at sites.

Deconstruction shall proceed from upper levels to lower levels. Deconstruction must be complete on each level before any structural members may be removed from lower levels. Alternatively, if the contractor wishes to tip a building as a primary deconstruction technique, the Work Plan shall outline the procedures and any potential structural hazards must be identified prior to executing the work. In all cases, stairways shall be removed last from each level. The CONTRACTOR must maintain routes of egress for all site workers in the event of an emergency.

CONTRACTOR will remove deconstructed materials from the structure in a timely manner to apply water shall, at a minimum, consist of a tank, a spray bar and a gauge-equipped pump.

Section O. Recovery of Materials

CONTRACTOR shall remove and dispose of unsuitable materials in accordance with the Waste Management Plan. Unsuitable conditions include the presence of decay, infestation of termites or other vermin, or contamination with hazardous materials.

CONTRACTOR shall:

- Cut openings and holes plumb, square, and true to the required finished dimensions.
- Conduct all cutting and drilling from the exposed finished surface of the material to avoid damage to the existing finished surface.
- Remove and appropriately size structural members using methods to maintain the highest value.

Should any newly discovered unidentified or suspicious material be encountered during the performance of work at the site, the requirements for sampling and laboratory analysis must be followed, as discussed in the 'Hazardous Materials Guide' attached in the Appendices.

The CONTRACTOR will be responsible for removal and transport of all items, materials, and equipment in accordance with the Waste Management Plan. CONTRACTOR should obtain documentation confirming the final deposition of all items, materials, equipment, and waste that leaves the site.

Section P. Removal of Impervious Surfaces

Removal of subsurface impervious structures includes basement foundations and walls, foundation slabs, asphalt driveways or walkways, concrete driveways or walkways, garage slab foundations, underground pool linings, appurtenances, including utility service lines, gas tanks, storage and septic tanks, or any other structure located below grade that does not normally allow water to penetrate through the material and which may impede future development of the site. Removal of the subsurface impervious surface and structures identified in the previous paragraph shall be removed to one (1) foot below its current depth or as otherwise directed. Alternatively, the REDEVELOPMENT COMMISSION may elect to limit removal to extend only 4 feet below existing grades, in accordance with the state specific removal requirements for residential demolition work. Where an excavation is deeper than specified, the area shall be backfilled to the proper grade with subsoil fill and compacted in accordance with the bid specifications.

Concrete slabs atop basements (walls, floors), pits, wells or cisterns, shall be broken and removed. Basement walls and floors including those where buildings have been previously removed shall be removed to one foot below their current depth, unless otherwise specified or directed by the REDEVELOPMENT COMMISSION.

All cisterns in the area of deconstruction and tank removal areas shall be treated in the same manner as set out for backfilling. Open wells in the area of deconstruction shall be properly closed and sealed in accordance with all State and Local requirements.

For all excavations, CONTRACTOR should utilize equipment and methods to eliminate or minimize the amount of manual labor to be conducted within the excavation. All debris and unsuitable material in basement areas shall be completely removed and disposed of by the CONTRACTOR at his or her own expense.

CONTRACTOR shall:

- Slope, sheet, shore, or brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding soil.
- Design sheeting, shoring, or bracing to be removed at completion of excavation work.
- Repair damage caused by failure of the sheeting, shoring, or bracing and for the settlement of filled excavations or adjacent soil.
- Repair damage that results from settlement, water or earth pressure, or other causes resulting from inadequate sheeting, shoring, or bracing.
- If leaving open excavations at the end of the work day, protect the perimeter to prevent danger to others.
- Notify utility company to remove and relocate utilities, as needed.
- Notify utility company to remove and relocate utilities, as needed.
- Confirm that all identified hazardous wastes and substances, including ACM, have been removed from basement and other subgrade structures. Guidelines for ACM removal is included in the 'Inspection and Removal of Asbestos Containing Material' specification.
- Protect any utilities that will remain from damage. The contractor will be responsible for repairing any damage.
- Not perform excavation, grading, or compaction when weather conditions or the condition of the materials are such that work cannot be performed satisfactorily.
- Clean adjacent structures and surfaces of dust, dirt, and debris caused by demolition operations and return adjacent areas to pre-demolition conditions.

Upon removal of subsurface impervious structures, the CONTRACTOR shall conduct compaction of the exposed subgrade soils in accordance with the bid specification. The contractor is required to provide subsoil, compost, and topsoil fill as specified in Section R- Backfill and Fill.

Concrete walls that support another building, sidewalk, and/or an alley

The CONTRACTOR may not be required to remove a basement wall or foundation, if the concrete material is in proximity to a sidewalk, alley, or adjacent property AND the removal of same will cause the abutting sidewalk, alley or neighboring structure or property to collapse or cave in. Notwithstanding the foregoing, the final decision in regard to removal of concrete materials under the foregoing circumstances rests solely with the BUILDING COMMISSIONER.

The CONTRACTOR shall use all means necessary to protect adjacent property before, during and after demolition work. In the event of damage, the CONTRACTOR shall immediately make all repairs and replacement necessary to the approval of the REDEVELOPMENT COMMISSION and at no cost to the REDEVELOPMENT COMMISSION.

Section Q. Site Cleanliness

Each parcel shall be left clean and free of all debris, rubbish, refuse, trash or any other foreign materials. Each parcel shall be left in a condition satisfactory to the REDEVELOPMENT COMMISSION, and individual inspection and acceptance will be made for each site.

Section R. Backfill and Fill

CONTRACTOR shall be responsible for removal of all excavated materials not meeting requirements for subsoil materials and topsoil materials from site.

The CONTRACTOR agrees that no material from a deconstructed or demolished site shall be used as backfill material on any site within the CITY OF GARY, except as specifically indicated in this section. The CONTRACTOR shall provide backfill materials (including clean fill) at his/her own expense. For approved fill material, notify the REDEVELOPMENT COMMISSION in advance of the intention to import material, its location and the source's name, address, and telephone number. The CONTRACTOR must provide receipts and analytical data or certification from the source documenting that all off-site materials to be used as backfill or fill is uncontaminated, in accordance with the following specifications:

documenting that all off-site materials to be used as backfill or fill is uncontaminated, in accordance with the following specifications:

Laboratory analysis will be conducted on the general fill and topsoil to be used for the placement at residential sites. At a minimum, the source fill material should be sampled and analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), RCRA metals, and pH. Additional analysis such as asbestos or radiological testing may be required based on the prior use of the fill source or state specific testing requirements. The number of samples will depend on the volume of fill being used from each source location. The source location will be surveyed and sampled at a frequency of one sample per cubic yard. Laboratory analytical results and photographs of the sample locations will be included as an attachment to the source report discussed in Contractor Required Submittals.

CONTRACTOR will furnish subsoil, compost, and topsoil material from a single source per material throughout the work.

Contractor will perform work in accordance with federal, state, and local environmental regulations.

All imported soil and topsoil shall meet applicable state or local residential and ground water protection criteria.

CONTRACTOR shall:

- Remove debris, snow, ice, water, soft soils, organic materials, or frozen ground from areas to be backfilled.
- Provide effective dust control by sprinkling water, using calcium chloride or other dust suppressants, or using another approved method. Employ dust control sufficient to prevent visible emissions.
- Proof roll to identify soft spots in subgrade. Backfill with subsoil and compact to density equal to or greater than requirement for subsequent fill material.

Required Materials

The CONTRACTOR is required to provide the following types of materials as part of the project. All excavated materials not meeting requirements for subsoil materials and topsoil materials should be removed by the CONTRACTOR from the site. See 'Placement of Fill' for information on how each material is to be placed.

1. SUBSOIL MATERIALS (General Fill Sand)

- Sand shall be sourced from a virgin quarry or from a borrow source.

- Graded.
- Conforming to ASTM D2487 Group Symbol SP.
- Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris (including any construction or demolition rubble, or other man made items).
- Less than 5 percent silt, clay, or rock material by dry weight.

TOPSOIL MATERIALS

- Topsoil shall be sourced from a clean borrow source or supplier.
- Friable Sandy Loam that can be pulverized under normal hand pressure.
- Sandy Clay Loams with the lowest possible clay proportion may also be acceptable.
- Conforming to ASTM D2487 Group Symbol SM.
- Free of roots, rocks larger than 1/2-inch, subsoil, debris, large weeds and foreign matter (including any construction rubble, or other manmade items).
- Screening: Single screened.
- Acidity range (pH) of 5.5 to 7.5.
- Containing minimum of 4 percent and maximum of 2 percent organic matter.
- Conforming to ASTM D2487 Group Symbol SM.
- Free of roots, rocks larger than 1/2-inch, subsoil, debris, large weeds and foreign matter (including any construction rubble, or other manmade items).
- Screening: Single screened.
- Acidity range (pH) of 5.5 to 7.5.
- Containing minimum of 4 percent and maximum of 2 percent organic matter.

Contractor Required Submittals

CONTRACTOR shall submit the following in advance of backfilling site:

- Materials Source Report prepared by an Environmental Professional for imported general fill, compost, and topsoil materials: The report at a minimum must define the location, volume, and current and historic uses of the fill source material to determine if the potential for any soil contamination is present.

- A certified Environmental Testing Laboratory shall perform analysis of samples collected by an Environmental Professional and the data must be tabulated and compared to the applicable residential state cleanup standards. The results of this comparison shall be submitted in writing to the REDEVELOPMENT COMMISSION.
- General Fill material based on the prior use of the general fill and at a frequency of one sample per 20 cubic yards.
- Compost at a frequency of one per 20 cubic yards.
- Topsoil at a frequency of one per 20 cubic yards.
- Manufacturer's Certificate: Certify soils/fill/compost meet or exceed specified requirements.

Placement of Fill

A typical method for Basement Backfill is detailed below.

1. Excavate basement and other impervious surfaces.
2. Compact existing subgrade.
3. Backfill with subsoil to within 6 inches of existing top grades; compact each 12-inch lift.
4. Apply 1 inch of compost.
5. Conduct tilling using ripping tools to a depth of 4-6 inches.
6. Place topsoil
 - a. 6 inches over all backfilled areas
 - b. As needed over all the other areas to fill voids and to ensure plant growth
7. Immediately seed entire site.

CONTRACTOR shall:

- Cut out soft areas of subgrade not capable of compaction in place. Backfill with subsoil material and compact to density equal to or greater than requirements for subsequent fill material.
- Compact existing subgrade to 95 percent density to prevent subsequent backfill materials from settling.
- Scarify subgrade surface to a depth of 3 inches.
- Never compact, place fill, or perform deep tilling under the drip line of trees to be saved.
- Existing compacted urban fill areas shall be tilled to a minimum depth of 4 inches before the addition of compost and topsoil.

Compaction of Subsoil

CONTRACTOR shall:

- Apply uncontaminated water as necessary during compaction to obtain specified density. If material to be compacted is excessively moist, aerate with suitable equipment and methods until the moisture content is corrected. In areas not accessible to rolling equipment, compact material to specified density with mechanical tampers.
- Not direct jets of water at fill with such force that finer materials will be washed away or larger structures will be broken down.
- Use Compaction Equipment whose type, size, and efficiency of compaction shall be capable of achieving specified degree of compaction. When operating equipment adjacent to structures, the CONTRACTOR shall exercise care so as not to cause damage or displacement of the structure.
- Upon completion of backfilling, remove excess material and debris from work areas and travel routes.
- If subsoil lifts are subject to vehicular traffic, reshape and re-compact fills to ensure consistent compaction across the area.

Subsoil Backfilling

Contractor shall:

- Backfill areas to contours and elevations with unfrozen materials.
- Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- Place subsoil material in equal continuous layers not exceeding 6 inches of compacted depth.
- The surface of previously completed lifts shall be scarified and/or moistened by sprinkling, as required, to ensure that a proper bond is achieved with the subsequent lift of subsoil. Maintain optimum moisture content of subsoil materials in order to attain required compaction density and to ensure there is no visible dust and no visible water.
- Make gradual grade changes. Blend slope into level areas.
- Employ placement method that does not disturb or damage other work
- Slope grade away from nearby structures a minimum 2 inches per 10 feet, unless noted otherwise.
 - Make gradual grade changes. Blend slope into level areas.
 - Remove surplus subsoil materials from the site.

Placing Topsoil

Contractor shall:

- Place topsoil during dry weather and on dry unfrozen subgrade.
- Apply topsoil at an average settled depth of 6 inches over excavated areas following application of compost.
- For areas outside of the extents of excavation, apply sufficient topsoil as needed to fill voids and depressions and to ensure successful plant growth.
- Remove vegetative material and foreign non-organic material from topsoil while spreading.
- Grade topsoil to eliminate rough, low, or soft areas, and to ensure positive drainage.
- Use a RockHound, Harley, or similar landscape rake to make final topsoil surface smooth. The soil surface shall also be reasonably free of large clods, roots, stones greater than 2 inches, and other material which will interfere with planting and subsequent site maintenance. Do not compact surface prior to seeding. Minor surface irregularities, divots, and dents may remain in order to capture rainfall.
- During placement near plant material, buildings, and pavement, use manual methods to prevent damage.

Grading

In areas where no backfill is conducted and no green infrastructure features are to be installed, final grades shall be in accordance with the following requirements:

- Perform work in accordance with federal, state, and local environmental regulations
- Contractor shall place subsoil, compost and topsoil in accordance with the 'Placement of Fill' specifications.
- Ensure Top Surface of Topsoil Placement is plus or minus 1 inch from existing adjacent elevations.
- Perform laboratory material tests in accordance with the 'Soils for Earthwork' specifications.
- Contractor shall compact subgrade and subsoil in accordance with the 'Placement of Fill' specifications.
- Contractor's independent testing firm will perform in-place compaction tests in accordance with the 'Placement of Fill' specifications.
- Slope grade away from structures a minimum of 2 inches vertically per 10 feet horizontally.
- Make grade changes gradual. Blend slope into level areas. Grade to promote positive drainage
- Use fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- Prevent ponding of water in all active work areas.

- Repair or replace items indicated to remain that are damaged by excavation or filling.
- Protect plant life, lawns, and other features remaining as portion of final landscaping.
- Prohibit traffic over topsoil.
- Provide effective dust control that does not interfere with the establishment of a vegetative cover by sprinkling water or using other approved methods. Employ dust control sufficient to prevent fugitive dust emissions.
- When it is necessary to haul soft or wet soil material over roadways, use vehicles that can contain these materials without spillage. Immediately clear away spillage or tracking of materials on roadways caused by hauling.

Protection of Finished Work

Contractor shall:

- Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- Not re-compact the site while top dressing.
- If informed to do so by the REDEVELOPMENT COMMISSION, immediately seed and provide erosion control matting according to REDEVELOPMENT COMMISSION specifications.
- Prohibit traffic from landscaped areas, using temporary fencing as needed.
- Reshape and re compact fills subjected to vehicular traffic.

Restrictions

Contractor shall:

- Not perform excavation, grading, or compaction when weather conditions or the condition of the materials are such that work cannot be performed satisfactorily.
- After occurrence of heavy rains, not operate equipment in active earthwork areas until the material has dried sufficiently to prevent occurrence of excessive rutting.
- Keep excavations free of water and protect from freezing using tarpaulins, straw, or heating devices when necessary.
- Protect plant life, lawns, rock outcroppings and other features remaining as portion of final landscaping through the use of colored markings, temporary fencing, or other means as deemed appropriate by the contractor.
- Not disturb soil within the branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw. Seal cuts with approved tree wound dressing.

- Compact each layer before placing succeeding layers to the density specified in the Quality Assurance section or the alternate density specified by the REDEVELOPMENT COMMISSION.
- Employ placement method that does not disturb or damage other work. Do not dump directly against installations. The contractor shall be required to maintain site cleanliness during all backfill operations.

Section S. Interim Site Inspection

During the time of deconstruction as set out in the “Notice to Proceed” project schedule documentation, the REDEVELOPMENT COMMISSION will make inspections as it deems necessary of each deconstruction site and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the work is not meeting the preapproved documentation. The CONTRACTOR shall immediately take such measures as are necessary to remedy Work to the satisfaction of the REDEVELOPMENT COMMISSION. The CONTRACTOR shall notify the REDEVELOPMENT COMMISSION that these changes have been made in their final written notice.

Section T. Impervious Surface and Sewer Cap Inspection.

Before backfill may be placed on site, the CONTRACTOR shall notify the REDEVELOPMENT COMMISSION at which point, the REDEVELOPMENT COMMISSION will make an inspection of the demolition/deconstruction site, ensuring that all impervious structures have been removed and the sewers have been properly capped. This will be documented with photographs taken by the REDEVELOPMENT COMMISSION. If the REDEVELOPMENT COMMISSION deems that the site has not been thoroughly prepared for backfilling, the CONTRACTOR will take the necessary steps to complete the work to the satisfaction of the REDEVELOPMENT COMMISSION

Section U. Waste Report Close Out/Project Close Out

At the conclusion of the project, the CONTRACTOR shall submit documentation and/or waste manifests for all materials that were salvaged or recycled according to the Waste Management Plan and this section. Documentation must detail materials being salvaged/recycled and associated dollar value of material. Additionally, documentation must confirm the proper handling of hazardous materials. The close out report must include:

- Detailed invoices documenting all expenses equal to the total invoice amount with supporting documents.
- Certified payroll matching worker timesheets.
- Receipts documenting all expenses.
- Demolition debris dump tickets.

- Receipt of material sale for reuse and recycling.
- Record of delivery of all materials to destination(s).
- Full unconditional waiver of lien.

Section V. Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed upon portion thereof is complete including receipt documentation of material reuse and recycling, The REDEVELOPMENT COMMISSION will make a final inspection of each deconstructed parcel and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. The CONTRACTOR shall immediately take such measures as are necessary to complete and remedy such Work to the satisfaction of the REDEVELOPMENT COMMISSION within 5 business days. Upon written notice from CONTRACTOR that all Work which was incomplete or defective has been completed or remedied, the REDEVELOPMENT COMMISSION will make an additional inspection to verify the work performed. If it is determined that the Work is still incomplete or defective, the CONTRACTOR shall bear all direct, indirect and consequential costs of re-inspecting said Work (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) and the REDEVELOPMENT COMMISSION shall be entitled to an appropriate decrease in the Contract Price by written agreement.

Section W. Compensation

As compensation for satisfactory performance of the services set forth above, the REDEVELOPMENT COMMISSION agrees to pay CONTRACTOR, according to specifications detailed in Exhibit A. In no event shall compensation to CONTRACTOR exceed the sum of DOLLAR AMOUNT DOLLARS 00/100 (\$00,000.00). Payment as set forth is itemized in Exhibit A (attached hereto).

The REDEVELOPMENT COMMISSION agrees to pay the CONTRACTOR for the total quantities of work performed at the lump sum bid price provided Reuse and Recycling targets of \$2,000 are met, per above-mentioned Article One –Deconstruction, Building Material Reuse, and Recycling; and for all of the several respective items of work completed, subject to addition or deduction, as provided in Article Four – Changes in the Work. Compensation may be reduced, as outlined in Part II, General Provisions, Article One - Method of Payment and Article Five – Termination. If reuse and recycling targets are not met on a per site basis, the CONTRACTOR will be deducted \$2,000 per site.

Section X. Payment

The REDEVELOPMENT COMMISSION reserves the right to withhold payment in any instance in which the CONTRACTOR has failed to comply with Procedures for Demolition Contractors including, but not limited to, submitting dump receipts and obtaining all sign-offs or authorizations required by the REDEVELOPMENT COMMISSION and the BUILDING DEPARTMENT.

Part II – General Provisions

Article 1 – Method of Payment

Section A. Compensation

All requests for payment shall be submitted by the CONTRACTOR in a form of an invoice and paid through purchase orders or claimpar. In accordance with procedures, CONTRACTOR must submit receipts from all reuse and recycling facilities, as well as dump receipts or "tickets" from a licensed landfill with its invoice. All demolition debris that is disposed must be disposed of at a licensed landfill.

Section B. Acceptance of Payment Request

The CONTRACTOR'S invoice shall constitute an offer to sell the described services to the REDEVELOPMENT COMMISSION. The REDEVELOPMENT COMMISSION'S acceptance of said offer is contingent upon the offer's consistency with the claimed service.

Section C. Right to Reject

Upon receipt of the CONTRACTOR'S invoice, the REDEVELOPMENT COMMISSION retains the right to reject any and all provisions of the subject invoice which are non-conformity with the claimed services, as herein described, or actually performed for a period of sixty (60) days after receipt of same. If CONTRACTOR is not notified in writing within that period, it is agreed that the REDEVELOPMENT COMMISSION accepts the performance of the claimed service.

Section D. Reduction of the Service Compensation

In the event the CONTRACTOR fails to fulfill the terms and conditions of this AGREEMENT in a diligent and timely manner as determined by the REDEVELOPMENT COMMISSION, the REDEVELOPMENT COMMISSION reserves the right, after consultation with the CONTRACTOR, to reduce the compensation due hereunder in a manner which reflects such reduction or diminution in services.

Section E. Suspension and Debarment

CONTRACTOR certifies by entering into this AGREEMENT that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from entering into this AGREEMENT by any federal or state department agency. The term "principal" for purposes of this AGREEMENT is defined as an elected official, appointed official, officer, director, owner, partner, key employee or other person with primary management or supervisory responsibilities, or a person who has a critical influence on or substantive control over the operations of the AGREEMENT. Contractors or subcontractors wanting to do business with the CITY OF GARY, using federal funds, must have a DUNS number. This DUNS Number is then used to enter into <http://www.sam.gov> to verify their status. A print-out from sam.gov verifying that the contractors and their subcontractors are not debarred or suspended must be attached to each contract when going before the REDEVELOPMENT COMMISSION for approval. If CONTRACTOR does not have a DUNS Number, they are unable to enter into contract with the CITY OF GARY. If a contractor or subcontractor needs to obtain a DUNS Number, they can obtain one at <http://fedgov.dnb.com/webform>

Section F. E-Verify

As required by IC 22-5-1.7, the CONTRACTOR hereby swears or affirms under the penalties of perjury that: a) the CONTRACTOR has enrolled and is participating in the E-Verify program; b) the CONTRACTOR has provided documentation to the State that is enrolled and is participating in the E-Verify program; c) the CONTRACTOR does not knowingly employ an unauthorized alien; d) the CONTRACTOR shall require its subcontractors who perform work under this AGREEMENT to certify CONTRACTOR that the subcontractor does not knowingly employ or contract with an unauthorized alien and that the subcontractor has enrolled and is participating in the E-Verify program. The CONTRACTOR shall maintain this certification throughout the duration of the term of contract with the REDEVELOPMENT COMMISSION. If a contractor or subcontractor is not enrolled, they must enroll at this website: <http://www.uscis.gov/e-verify/federal-contractors>. For more information about E-verify, please read these links:

- <http://www.uscis.gov/e-verify/federal-contractors/e-verify-federal-contractors-questions-and-answers/faq/what-far-e-verify-clause>
- <http://www.uscis.gov/e-verify/federal-contractors/who-affected-e-verify-federal-contractor-rule>

Article 2 – Performance

The CONTRACTOR shall commence, carry on and complete the services as enumerated herein with all practicable dispatch in a sound, economical, and efficient manner, in accordance with the terms and conditions hereof and all applicable laws.

THE CONTRACTOR shall complete deconstruction/demolition and debris removal in accordance with a schedule. Time frame for deconstruction/demolition of Structures, including commercial buildings, shall

be completed as bid by Contractor, and as approved by the REDEVELOPMENT COMMISSION.

The CONTRACTOR must provide the REDEVELOPMENT COMMISSION with twenty-four (24) hours' notice that an inspection will be needed for backfill approval. Once backfill approval is given, the CONTRACTOR must backfill the site within twenty-four (24) hours after approval has been granted. Failure to comply with the herein stated time frames and other provisions within this section, shall constitute a violation or event of default under the herein agreement. The REDEVELOPMENT COMMISSION may, in its discretion, take into account any unforeseen or extenuating circumstances, which prevent the CONTRACTOR from reapplying with its deconstruction/demolition schedule.

CONTRACTOR must take adequate precautionary measures to safeguard the public and property; and to barricade the site in the interval between excavation and backfilling, and at all other times during demolition.

Strict performance of the terms of this AGREEMENT is expressly provided for. Such strict performance shall be deemed the essence of the AGREEMENT and shall be deemed expressly contracted by the parties. Time is of the essence of this AGREEMENT and if the CONTRACTOR shall fail to perform its agreements within the time stipulated for such performance, the REDEVELOPMENT COMMISSION, may at its election, terminate this AGREEMENT.

Article 3 – Relationship

The parties to this contract intend that the relationship between them, created by this AGREEMENT, is that of employer-independent contractor. No employee, servant, or subcontractor of the CONTRACTOR shall be deemed to be an employee, agent, or servant of the REDEVELOPMENT COMMISSION. The REDEVELOPMENT COMMISSION is interested only in the results obtained under this contract. The manner and means of conducting the work are under the sole control of the CONTRACTOR.

None of the benefits provided by the REDEVELOPMENT COMMISSION to its employees, such as unemployment and medical insurance, are available from the REDEVELOPMENT COMMISSION to the employees, agents, or servants of the CONTRACTOR.

Article 4 – Liability

The CONTRACTOR will be solely and entirely responsible and liable for its acts and for the acts of its agents, employees, and servants during the performance of this AGREEMENT. The work to be performed under this AGREEMENT, will be performed entirely at CONTRACTOR'S risk and CONTRACTOR assumes responsibility for the condition of tools and equipment used in the performance of this AGREEMENT. The REDEVELOPMENT COMMISSION, its officers, agents or employees, shall not in any manner be answerable, responsible or liable for any loss or damage of or to any tools, materials, buildings, equipment, or other property that may be used or employed in the performance of this AGREEMENT or placed on the work site during the progress of the work; for any injury done or damages or compensation required to be paid under any present or future law, contract or Agreement, to any person, whether an employee of CONTRACTOR or otherwise.

Article 5 – Termination

Section A. Right to Terminate

If the CONTRACTOR shall fail to fulfill in a timely and proper manner its obligation under this AGREEMENT, or if the CONTRACTOR shall commit a material breach of the covenants, terms, conditions, or stipulations of this AGREEMENT, the REDEVELOPMENT COMMISSION shall thereupon have the right to invoke one or all of the following remedies:

- REDUCE the Work or Delete Properties from the CONTRACT of the Defaulting CONTRACTOR and reduce the compensation due hereunder in a manner which reflects such reduction or diminution in services, as provided in Part II- Article 1, Section D.
- or TERMINATE this AGREEMENT by giving written notice to the CONTRACTOR of termination and specifying the effective date of such termination, and AWARD the remaining properties or work in the AGREEMENT to the next lowest bidder, or,
- REFUSE to award future bids to CONTRACTOR if the later refuses to complete the remaining herein demolition.

Section B. Cancellation for Convenience

Upon the giving of two (2) weeks written notice, the CONTRACTOR and the REDEVELOPMENT COMMISSION shall have the right to terminate this AGREEMENT without cause. It is definitely understood and agreed that the REDEVELOPMENT COMMISSION will be the sole judge of the competence and efficiency with which the CONTRACTOR carries on and renders the services to be supplied hereunder and the REDEVELOPMENT COMMISSION reserves the right, at any time, to remove the CONTRACTOR for cause or breach of this AGREEMENT and without the right to recovery of damages by such CONTRACTOR.

Section C. Turn Back

In the event that the CONTRACTOR submits a bid and is awarded a contract, the amount of which is later the "Turn Back" or withdrawal of the original CONTRACTOR'S bid found to be either under or over the actual cost to deconstruct/demolish, constitutes a breach and is subject to all remedies accorded under this agreement including, but not limited to the following:

1. First Turn Back: CONTRACTOR pays the difference;
2. Second Turn Back: balance of contract awards will be cancelled;
3. Third Turn Back: CONTRACTOR is barred from submitting future bids.

Section D. Compensation

If the CONTRACTOR shall so cancel or terminate this AGREEMENT, the CONTRACTOR shall be entitled to

receive compensation accrued to the effective date of termination or until the last date of actual rendering of services, whichever comes first, subject to Section E of this Article.

Section E. Legal Remedies

It is agreed that any breach or evasion of any terms of this AGREEMENT by the CONTRACTOR will result in irreparable and immediate harm and injury to the REDEVELOPMENT COMMISSION and will warrant recourse to injunction and for specific performance as well as to all other legal or equitable remedies to which the REDEVELOPMENT COMMISSION may be entitled. In case the REDEVELOPMENT COMMISSION shall bring suit to compel performance of or to recover for breach of any covenant or term of this AGREEMENT or condition herein written, the CONTRACTOR shall and will pay to the DEPARTMENT the costs of such action including depositions and reasonable attorney fees, in addition to the amount of the judgment.

Section F. Ownership of Documents

Upon the termination of this AGREEMENT, whether at the end of the contractual period or prior thereto and for whatever reason, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports prepared by the CONTRACTOR under this AGREEMENT shall be subject to disposition in accordance with the REDEVELOPMENT COMMISSION'S instructions, and shall become the REDEVELOPMENT COMMISSION'S property and the CONTRACTOR shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder, subject to the terms of Section C of this Article.

Section G. Liability for Damages

The CONTRACTOR shall be liable to the REDEVELOPMENT COMMISSION for damages sustained by the REDEVELOPMENT COMMISSION by virtue of any breach of this AGREEMENT by the CONTRACTOR and the REDEVELOPMENT COMMISSION may withhold any payments to the CONTRACTOR for the purpose of set-off until such time as the Exact amount of damages due from the CONTRACTOR is determined, without payment of interest on the amount withheld.

Section H. - Mitigation

The parties have a duty to mitigate damages in all instances of cancellation, termination, breach or fire.

Section I. Liquidated Damages

In addition to the normal remedies available at law for breach and the termination provisions provided in Part II - Article Five, the CONTRACTOR hereby expressly agrees to pay directly to the REDEVELOPMENT COMMISSION, and not as a set-off or deduction from the contract price, the sum of Fifty (\$50.00) Dollars

per day as liquidated damages for each and every day that the CONTRACTOR extends completion of work beyond the period for completion as provided herein. This liquidated damages clause is expressly agreed to by the parties after consideration and estimation of the damages to be incurred and the impossibility of determining actual itemized damages due to the nature of work. Notwithstanding, the foregoing, failure to perform the services in accordance with the conditions provided in Part I –Article 3 (Term of Performance) and/ or Part II - Article 2 (Performance) shall be grounds for termination of the Agreement.

In addition, the following liquidated damages are expressly agreed to by the parties for the following violations:

The REDEVELOPMENT COMMISSION may deduct damages from the amount due and owing to CONTRACTOR for work performed.

Description of Violation	Damages
1. Failure to wet during wrecking (any penalty imposed by IDEM)	\$500 plus
2. Failure to start on start date (any penalty imposed by IDEM)	\$500 plus
3. Failure to get Notice to Proceed prior to demolition	1/2 bid price + IDEM fine
4. Demolition of wrong structure	\$1,000 plus actual damages + termination of contract
5. Failure to properly safeguard site	\$200
6. Failure to backfill in timely manner	\$50 a day
7. Illegal dumping	\$1,000 plus termination

Section J. Cooperation with REDEVELOPMENT COMMISSION after Termination

Following any notice of termination or cancellation of this AGREEMENT, The CONTRACTOR shall fully cooperate with the REDEVELOPMENT COMMISSION in all matters relating to the winding up of its pending work on behalf of the REDEVELOPMENT COMMISSION and the orderly transfer of any such pending work to other parties as may be designated by the REDEVELOPMENT COMMISSION. The REDEVELOPMENT COMMISSION shall be entitled to such full time or part time services of the CONTRACTOR as the REDEVELOPMENT COMMISSION may reasonably require during all or any part of the period following the notice of termination of this AGREEMENT and prior to its effective date.

Article 6 – Indemnification

The CONTRACTOR expressly agrees to indemnify and hold the REDEVELOPMENT COMMISSION harmless from and against any and all claims, losses, damages, injury and/or liability however caused, resulting from, arising out of, or in any way connected with the work to be performed under this AGREEMENT. If the REDEVELOPMENT COMMISSION is named defendant in any action arising out of or in connection with the services to be provided by CONTRACTOR under this AGREEMENT or for the acts or omissions of the CONTRACTOR in the performance of this AGREEMENT, the CONTRACTOR agrees that it shall indemnify the REDEVELOPMENT COMMISSION for all costs, including deposition and attorney fees, in addition to any judgment against the REDEVELOPMENT COMMISSION.

Article 7 – Insurance

It is agreed that all liability insurance, workmen's compensation, public liability and all other usual forms of insurance coverage shall be carried by and at the expense of the CONTRACTOR. In order for the herein Contract to be executed, a CONTRACTOR must provide Proof of Insurance with minimum policy limit of One Hundred Thousand Dollars (\$100,000); and must post a Five Thousand Dollars (\$5,000) surety bond. CONTRACTOR must provide the REDEVELOPMENT COMMISSION with a copy of the insurance, which names the CITY OF GARY as a name insured, with notice to be provided directly to Department 10 days before lapse.

Article 8 – Equal Opportunity

CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. CONTRACTOR shall take affirmative action to ensure that applicants are employed and that employees are treated fairly during employment, without regard to their race, color, religion, sex, disability or national origin. Such action shall include, but not be limited to, the following: employment upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training, including apprenticeships.

Article 9 – Delegation

The work and services provided for herein shall be performed by the CONTRACTOR and no other person other than regular associates or employees of CONTRACTOR shall be engaged upon such work or services except upon written approval by the REDEVELOPMENT COMMISSION, provided that this provision shall not apply to secretarial, clerical, routine mechanical, and similar incidental services needed by the CONTRACTOR to assist in the performance of this AGREEMENT. The CONTRACTOR shall not hire REDEVELOPMENT COMMISSION employees to perform any portion of the work or services provided for herein, including secretarial, clerical, and similar incidental services, except upon written approval by the REDEVELOPMENT COMMISSION.

Article 10 – Waiver

The failure of the REDEVELOPMENT COMMISSION at any time to require performance by the CONTRACTOR of any provisions hereof shall in no way effect the right of the REDEVELOPMENT COMMISSION thereafter to enforce same. Nor shall the waiver by the REDEVELOPMENT COMMISSION of any breach hereof be taken or held to be a waiver of any succeeding breach of such provisions or as a waiver of the provision itself.

Article 11 – Access to Records

The REDEVELOPMENT COMMISSION, at all reasonable times, shall be granted access to all records applicable to this AGREEMENT in the custody and possession of the CONTRACTOR. The CONTRACTOR, at all times, shall adhere to all federal, state, and local statutes, rules and regulations as to the confidentiality of said records. The CONTRACTOR shall maintain full and accurate records and supporting documentation applicable to the AGREEMENT period with respect to all matters covered under this AGREEMENT, for a period of three (3) years after receipt of the final payment from the REDEVELOPMENT COMMISSION.

Article 12 – Miscellaneous

Section A. Governing Law

This AGREEMENT shall be interpreted, construed, and governed according to the laws of the State of Indiana.

Section B. Amendments

No amendments or variations of the terms and conditions of this AGREEMENT shall be valid unless in writing and signed by all parties.

Section C. Assignability

The CONTRACTOR'S rights and obligations under this AGREEMENT are personal and not assignable.

Section D. Entire Agreement: Binding Effect

This AGREEMENT and Contract Documents, enumerated in Part 1- Article Five, constitute the entire AGREEMENT between the parties and shall bind and inure to the benefit of both the REDEVELOPMENT COMMISSION and CONTRACTOR and their respective successors, heirs, and legal representatives. No other AGREEMENTS, oral, or otherwise, regarding the subject matter of this contract or any part thereof, shall have any validity or bind any of the parties hereto.

Section E. Invalidity of Provisions

Any provision of the contract which is ultimately determined by a proper court to be inoperative, non-binding or in contravention of state law shall be deemed not to be considered as a part of this contract and insofar as it may be in conflict herewith, this contract shall be deemed modified to conform with such rule of law. The remainder of this AGREEMENT shall not be affected thereby.

Section F. Contracts

The CONTRACTOR shall not have authority to bind the REDEVELOPMENT COMMISSION or otherwise contract with third persons on behalf of the REDEVELOPMENT COMMISSION for any purpose. The CONTRACTOR shall not encumber or cause encumbrances or liens to attach to REDEVELOPMENT COMMISSION property by reason of acts or omissions of the CONTRACTOR.

Section G. Access to Property

The CONTRACTOR shall have the right to free access to those areas of the REDEVELOPMENT COMMISSION property reasonable and necessary to the proper performance of its duties under this AGREEMENT.

Section H. Mandatory Meetings

In the event the CONTRACTOR fails to attend mandatory meetings, as required by the REDEVELOPMENT COMMISSION, the CONTRACTOR shall be deemed, or imputed, to have knowledge of all information provided and materials disseminated to Contractors in attendance at said meeting; shall be held accountable to comply with procedures contained in said information and materials; and shall not be able to deny receipt of said information and materials.

Section I. Notice

All notices required to be served under this AGREEMENT may be served on any of the parties personally, or by sending a letter duly addressed and postage prepaid by certified United States mail.

Notice to be served on the CONTRACTOR shall be served at or mailed to:

COMPANY NAME

COMPANY ADDRESS

COMPANY CITY, STATE ZIP

Unless otherwise instructed.



Breaking it Down: Demystifying Deconstruction

Details	Chicago	Gary	South Suburban/Joliet/Park Forest	Baltimore	Detroit	2014
Start Date	2007	2014	2012	2014	2014	2014
Market Maturity	Established market (5 total reuse warehouse stores), emergent business models (web based no store), part of larger ecosystem	Developing market	Developing market	Established Market	Developing market	
Housing Conditions and Material Sourcing	4,500 registered homes. No measure of home condition. Typical Chicago homes were built between 1900-1920. Material source from renovation is sometimes more than from deconstruction.	Over 6000 vacant structures. Biggest housing construction boom was in the 1920s-1930s. Homes being demolished are in poor condition. Most supply will come from deconstruction.	Park Forest was established immediately after WWII with the biggest boom in the late 40s. Park Forest has 370 registered homes and 201 in foreclosure. Joliet has 3,991 vacant units in 2014 up 2,000 units from 2000 Census. Material primarily comes from deconstruction.	40,000 vacant properties, 17,000 identified and boarded and 4,000 targeted for demolition or deconstruction.	53,000 empty or abandoned houses. Material is sourced through demolition.	Indicator of strength
Initial Pilot Program Size	Feasibility study on neighborhood scale as part of existing reuse infrastructure. Warehouse came before deconstructions and demolitions.	12 homes in Hardest Hit Program funded demolition 60 homes potential inclusion	(2 in Joliet, 2015, 2 in Joliet, 2017)	55 houses starting in July of 2014 Additional funding for the pilot expanded that number to 105 houses	20- Two RFPs for 10 houses each	Indicator of weakness
Pilot Fund Types, Amount and Diversity of Funds	Chicago Community Trust, Illinois Department of Commerce and Economic Opportunity, City of Chicago TIF Works, EPA, Bank of America	Knight Foundation, Legacy Foundation, Hardest Hit Funds	Bank of America, Blight Reduction Funds, Full Cost Accounting RENEW Future Savings	Baltimore City Housing and Community Development demolition budget. Deconstruction	Hardest Hit Treasury Funds	
City context, political and legislative support	Mayoral support at start, aldermanic support and 50% construction and demolition recycling requirement (no reuse requirements)	Support from Mayor, Council and departments. No reuse or recycling rules.	Support from staff in Park Forest, Cook County Demolition Debris Diversion Ordinance requires 65% recycling and 5% reuse. Joliet is not subject to rule because it is in Will County.	Support from Mayor and exceptional support from Planning/Office of Sustainability (Beth Strommen and Housing and Community Development Michael Braverman/Julie Day. Baltimore City Council and Mayoral support especially from Council President Jack Young. We also have been well supported by State Legislators and the Governor's office.	Facilitated by the City, yes...Jobs, yes. Adding cost or time to the goals of meeting demolition targets, no. No commitment to local or regional waste reduction; strong commitment to the benefits of a retailing HUB.	
Market Worthy Materials	Lumber, brick, architectural salvage, windows and doors	Lumber, brick, architectural salvage, windows and doors	Lumber, brick, architectural salvage, windows and doors	Lumber, brick, architectural elements some other building materials (ie. doors, mantles)	Lumber, bricks	
Local Demand (Intensity of demand)	Strong	Optimistic/Nascent	Strong in Chicago and unclear in Joliet	Strong in Baltimore and leverages other markets up and down the East Coast	Yes. Also other "predators" looking to extract materials from Detroit and sell them in other geographies. Colonization all over again.	
Customer Types	DIY, Yuppies, Artisans/Crafts People, Rental Landlords, Interior Design, Architects and Developers	DIY, Artisans/Crafts People, Rental Landlords, Interior Design, Low Income, Home Owners	Material exported to Chicago market	DIY, Yuppies, Artisans/Crafts People, Rental Landlords, Interior Design, commercial builders and architects, manufacturers	Etsy, Architects and Interior Design, Low Income Home Owners, Rental landlords, Heritage, Tourists	
Reuse ethos, volunteers, advisory and board	Very strong; significant volunteers, board managed nonprofit with auxiliary board	Advisory committee and volunteers	There are a lot second stores.	Humanim provides a strong board with committee oversight of all social enterprises of which we are one. Significant infrastructure support from Humanim, all paid staff, no volunteers	Plenty of programs and partnerships exist. Local tendency of Silver Bulleing of deconstruction as a job-making machine. Current limitation is modeling cost of services in this industry with the steep discount associated with trainees.	
Workforce Development	Warehouse training in the warehouse from CARA Program, Demolition/Decon training with OAI and Safer Foundation, and Cook County Renew program	Not yet - procurement system encourages use of Gary residents and those who did an EPA funded training	Cook County Sheriff has a post release program	Partner with several local re-entry programs to identify individuals ready for training and employment. We do get some training money from the Mayor's office. employment development to reduce the cost of training some of our employees.	Dynamic; partnerships through City's Retail HUB.	
Historic preservation	Very little attention. Preservationist work in reclaimed building materials marketplace.	NA	Supportive	Built a bridge to local historic preservation group. Preservation of material in historic buildings		
After the Honeymoon	Getting enough capital to expand Structure, dealing with the ever changing landscape of small demo contractors that get in and go out of business quickly and squaring larger mission of nonprofit with the business of running a store.	Honeymoon	Honeymoon	It was short.... Managing the work flow from the City, staying ahead of infrastructure and equipment needs, finding talent to provide the necessary leadership for productivity, training, and safety.	Creating tools and processes to manage the process at scale: learning to procure for multi-variable outcomes; also limiting sunk time in evaluating potential inventory.	
Barriers	Running a small business is hard, wage pressure on specific positions and contractor relationships with warehouses.	Too few trained contractors. City staff have many other pressing concerns and absence of diversion requirements	Lack of trained contractors and publicly bid decon projects are prohibitively expensive.	Fluctuation in wood and brick markets, the cost of employing wrap around support for our employees/trainees, tension between OSHA and EPA requirements affects the amount of work which will be given to deconstruction.	Human capital (leadership side): Speed and mandate of current process, which is evaluated by # of buildings removed; Workforce is in high demand on demolition and now new construction side.	
Notes	One market move launched at least 100 careers.	One of the most satisfying project in my career	Replication is challenging in the suburbs.	One of the most exciting and satisfying things I've been a part of.	The real pilot will be after the HUB is open.	

Prepared by: Eve Pytel,
Erin Kelly and Jeff Carroll
for Reclaiming Vacant
Properties Conference.
September 28, 2016

5 Cities Comparison



Indicator of strength



Indicator of weakness

BUILDING MATERIAL SALVAGE ASSESSMENT

Names of Inspectors	
Date of Inspection	
Address	

FINAL ASSESSMENT AND JUSTIFICATION

BUILDING AND SITE SPECIFIC DETAILS			
YEAR BUILT		# STORIES	
HOME SQUARE FOOT		# BEDROOMS	
GOOD STAGING AREA		# BATHROOMS	

SITE HAZARDS				
HAZARDS	NONE	SOME	LOTS	NOTE:
EXTERIOR TRASH				
TREES AND FOLIAGE				
OTHER:				

PERCEIVABLE BUILDING HAZARDS				
HAZARD	NONE	SOME	LOTS	Notes:
ROOF DAMAGE				
WATER DAMAGE				
FIRE DAMAGE				
ASBESTOS				
LEAD PAINT				
INTERIOR TRASH				
OTHER				

SALVAGEABLE MATERIALS					
WOOD USE	OLD GROWTH	MID CENTURY	RECLAIMED	PAINT GLUE	Other
FLOORING					
FRAMING [x]					
floor JOISTS [X]					
SUBFLOORING [x]					
Roof TRUSSES [x]					
Siding [x]					
OTHER?					

OTHER SALVAGEABLE FEATURES