# #2 C&D Debris | Subcommittee Meeting #2 Summary – Construction & Demolition Debris July 29, 2021 2PM-4PM

Subcommittee meeting #2 of the Construction & Demolition Debris Subcommittee (#2-C&D) was convened virtually via Zoom on July 29, 2021 from 2 PM-4 PM, CST. Attendance for #2-C&D is provided in Table 1 below.

Table 1. #2 C&D Subcommittee Membership and Attendance

| Name | Company | Attended 7/29/21 |
|---|---|---|
| Becky Soglin | Johnson County Planning, Development and Sustainability | Present |
| Tim Ruth | Home Builders Association of Iowa and Iowa City | Present |
| Brian Seals | Waste Commission of Scott County | Present |
| Hal Morton | Des Moines County Regional Solid Waste Commission | Present |
| Seth Shannon | SCHEMMER | Present |
| Richard Graves | NA | Present |
| Damion Sadd | Continental Cement Co. | Present |
| Kerry Dixon | Engie North America | Present |
| Les Stohs | Greater Des Moines Habitat for Humanity/Re-Store | Absent |
| GC/CM | TBD | |
| Nick Wylie | J Pettiecord | Present |
| Cindy Kuhn | Habitat for Humanity Restore in QCA | Absent |
| Reid Bermel | DNR Internal SMM Team | Present |
| Laurie Rasmus | DNR Internal SMM Team | Present |
| Jeff Fiagle | DNR Internal SMM Team | Present |
| Tom Anderson | DNR Internal SMM Team | Present |
| Jennifer Wright | DNR Internal SMM Team | Present |
| Michelle Leonard | Consultant – SCS Engineers | Present |
| Christine Collier | Consultant – SCS Engineers | Present |
| Jeff Phillips | Consultant – SCS Engineers | Present |
| Karen Luken | Sub-Consultant – EESI* | Present |
| Richard Ludt (Guest Speaker) | IRS Demo | Present |
| William Turley (Guest Speaker) | Construction and Demolition Recycling Association | Present |

* Economic Environmental Solutions International

## A. Subcommittee #2 - C&D Summary

The meeting began with the project consulting team reviewing the agenda for this meeting (see Attachment A), the overall objectives of the Sustainable Materials Management (SMM) – Vision for Iowa project, the process and goals of this and the next Subcommittee Meeting, and the materials that were selected for further review during the Subcommittee #1 meeting held June 10, 2021. The identified materials and presented material summaries are listed below:

- Interior Building Components
    - Drywall, carpet, manufactured lumber, ceiling tiles, and metals.
- Roofing Materials
    - Composite asphalt shingles, clay or concrete tiles, wood shingles, slate, metal, and ESPM rubber.
- Drywall, Plaster, and Gypsum Board
    - Flat panel of gypsum (hydrous calcium sulphate) plaster between paper.
- Treated and Untreated Wood
    - Treated wood is infused with chemicals to resist deterioration and untreated wood is all natural wood.

The project consulting team presented a summary of existing C&D diversion efforts occurring in Iowa. These activities include wood chipping, asphalt shingle recycling, US Gypsum and Sperry Mine recycling some gypsum, Iowa State University (ISU) established C&D waste diversion goals of 75%, and salvage and deconstruction activities.

The project consulting team then presented several summaries of life cycle analysis (LCA) reports that have been done related to the C&D materials identified during Subcommittee Meeting #1. Presented LCAs covered the following primary materials:

- Construction and Use of Buildings;
- Wood, Concrete, and Steel; and
- Waste Prevention in Residential Construction.

The LCA summary slides that were presented are located in Attachment B.

Richard Ludt with IRS Demo then presented on information pertaining to the end of life management for interior building components. Richard stated that California has mandated a C&D recycling rate of 50% to be achieved by 2020. The cities are responsible for implementing these mandates. Some cities require demolition contractors to pay a deposit that the contractor then receives back if the project has meet the diversion percentage goal. Verifying that C&D contractors have achieved diversion goals has been problematic. Cities are moving towards the C&D diversion rate of a project to be certified by a third party. It is hoped that this verification process will encourage C&D contractors to comply with the diversion mandates.

Richard spoke about the Carpet America Recovery Efforts (CARE), which administers the California Carpet Stewardship Program. The program's goal is to increase the diversion and recycling of carpet in California. Richard indicated that recycling carpet is difficult primarily due to the deconstruction processes in that carpet is typically the first material removed and needs to be kept separate from the rest of the debris in order to avoid contamination. Richard also stated that commercial carpets are more difficult to recycle due to the more robust manufacturing processes to increase durability as compared to residential carpets. Richard stated that some companies are testing cradle to cradle carpet squares

that are manufactured in such a way that they can more easily be re-processed back into the components to make new carpet squares.

Richard then spoke about a program his organization was involved with to divert durable items (i.e., office furniture, fixtures, etc.) from disposal. This program removes abandoned furniture from previous tenants and warehouses them for non-profits to use. Prior to 2020, this program was diverting approximately 30-60 tons per month of durable items.

William Turley, Executive Director of the Construction and Demolition Recycling Association presented on C&D management programs and strategies across the United States (US). William indicated that one of the hardest materials to manage was drywall due to manufacturers being unable or unwilling to manage various types of drywall products in the re-processing system. Manufacturers are concerned that their end product may not consistently meet customer specifications and/or are concerned of litigation from customers. William stated that while there is some gypsum recycling occurring in Iowa, due to the large mining industry presence in Iowa it was unlikely that a significant increase in recycling or reuse programs would receive industry support.

William presented that Massachusetts has passed regulations that established a recycling goal of 15% for C&D and bulky materials. The regulations also state that if the current processor is unable to meet this goal then they must send the material to a processor that is meeting this goal. William also stated that California is trying to pass a law that requires all wallboard to contain a minimum 10% recycled content. Florida has established a 75% C&D diversion goal. This program measures diversion by weight and includes concrete which is why the diversion rate is higher compared to other programs. These regulations and proposed regulations may serve as a model for other states including Iowa.

William discussed asphalt shingle diversion efforts in Iowa that include using ground materials for dust control on gravel roads. William indicated that Chris William with ISU is a national expert in this field and could be a good resource for those considering strategies to divert asphalt shingles.

William presented current diversion efforts concerning untreated and treated wood C&D materials. William stated that untreated wood could be burned in a kiln to capture Btu values “as a last resort”. However, untreated wood may have a high moisture content which decreases the energy efficiencies. There are little options for diverting treated woods due to the chemicals they contain. However, there is a company currently researching organic methods for removing the chemicals from the wood.

William stated the most important effort to support waste diversion efforts for C&D is to establish markets for the materials. Without sustainable markets for these materials that are more cost effective than disposing of the waste, manufacturers will not invest in recycling practices. Markets can be established and supported by increasing disposal costs, promoting and/or requiring the materials be used in large contracts (i.e., state departments, state contracts, etc.), and providing incentives for manufacturers producing reusable materials.

A question was asked pertaining to the use of synthetic felt paper and how the use of this material will impact asphalt shingle recycling. William stated that this material will certainly cause challenges for recycling programs. Currently there isn’t a solution, but companies are evaluating strategies to reduce this material’s impact on the recycling of asphalt shingles.

**STRATEGIES**

The project consulting team presented example strategies that could be considered to encourage reduction of C&D waste generation and to divert the material from being landfilled. Presented example strategies are summarized below.

Education and Outreach:

Educating consumers that there are alternative product options for their projects that may have a better impact on the environment than traditional products can help encourage their use. Education concerning the prevention of waste generation strategies (i.e., deconstruction, donating durable goods, sustainable design/materials, etc.) can also be effective in reducing C&D waste.

Diversion Specifications and Requirements:

Government agency projects can help develop markets for products with recycled content by mandating its use in their internal or external projects. Government agencies can also establish regulations which specify that products sold within their state must contain certain percentages of recycled content.

Market Development:

Requiring use of products that contain minimum recycled contents can help present viable markets for these materials which would support manufacturers of these products.

Government agencies can establish recycling market development zones which provide incentives (i.e., low interest loans, technical assistance, permitting and zoning assistance, etc.) for manufacturers that process materials to locate and operate in their jurisdiction.

Facility Development and Certification:

Supporting the development of C&D processing facilities and establishing a third party certification institute to verify compliance can help support this market and give credibility to the work that contractors are doing to divert C&D from disposal.

**CHALLENGES**

Subcommittee participants were then asked what challenges they see as needing to overcome in order to improve how the following materials identified during the Subcommittee Meeting #1 are managed in Iowa:

- Interior Building Components
- Roofing Materials
- Drywall, Plaster, and Gypsum Board
- Treated and Untreated Wood

The following are summaries of discussions or statements that were made by Subcommittee members:

C&D Waste Prevention:

- The greenest buildings are the ones that already exist. How do we incentivize reuse of structures so they don't enter the waste stream at least in total. This would require updating interiors and updating exterior materials as well. Targeted low interest loans could help building owners

and/or project developers in preserving existing building infrastructure versus demolition strategies.

- The cost to demolish a building versus improve an existing building is likely to be cheaper as building codes have changed over time. Financial and legal assistance in navigating building codes could help preserve existing buildings and therefore prevent generation of C&D waste.
- Barriers that deconstruction and demolition contractors face is the up-front specifications requiring a set waste diversion goal be met for a project. These contracts do not have substantial enforcement mechanisms for contractors that fail to meet these goals. Therefore, there is no incentive for contractors to be held accountable or even develop their project bids to properly perform the project to meet the diversion goals.
- The problem with tax incentive programs is that an organization has to be considered a for profit entity in order to participate. For example, school districts projects would not directly benefit from a tax incentive program to help divert C&D waste.
- The idea of municipalities collecting a deposit from the contractor ahead of the project and give the deposit back if they meet diversion goals is a good idea.
- The Iowa Department of Transportation does not permit the use of recycled concrete in their projects.
- It is difficult when each county makes their own regulations and this confuses builders. Perhaps we could consolidate and be consistent. Perhaps even by regions and use the COG territories as boundaries.
- We have issue of scale for the processing facilities. Therefore, if we have a variety of regulations that do not work together, we're not generating the volumes needed to help make end markets.
- Cement kilns are accepting certain waste streams for their operations. Some materials are certainly better than others.
- Everything is market driven. If there isn't a viable market for the product, manufactures aren't going to make the product.

## B. Research Request List

Through the discussions and in follow up discussions, various topics have been identified for further research. These are provided below.

- What methods did the City of Des Moines establish to incentivize developers to refurbish existing buildings into retail spaces and residential lofts? This method significantly changed the community and landscape in downtown Des Moines – and helped preserve significant building infrastructure.
- What programs in Iowa are available to help with historic preservation of buildings? What services and/or funding do they provide? Is there an existing program that just needs more support to have a larger impact?

- How many LEED projects are there in Iowa and how are they meeting the reuse requirement to obtain LEED points?

## C. Other Notes

Other items of note from the #2-C&D meeting are as follows:

- Next Construction & Demolition Debris subcommittee meeting dates and times are:
  - September 2, 2021, 2 PM – 4 PM CST
- Second Stakeholder Meeting will be held on September 30, 2021. Subcommittee members in addition to other interested parties are invited and encouraged to attend.

**Attachments:**

Attachment A: Agenda

Attachment B: PowerPoint Presentation

Attachment C: Subcommittee Information Provided by Members

# Attachment A
# Agenda

# Subcommittee Meeting #2 – Construction and Demolition Debris

**July 29, 2021**

**2:00PM – 4:00PM (CST)**

**Virtual Meeting**

1. Subcommittee Meeting Purpose and Goals
2. Material Types Discussion
    a. Interior Building Components
    b. Roofing Materials (non-shingle) and Roof Shingles
    c. Drywall, Plaster, and Gypsum Board
    d. Treated and Untreated Wood
3. Existing Activities in Iowa
4. LCAs, WARM Model, Other Research
5. Strategies From Around the US and Elsewhere
6. Next Steps
    a. Begin Strategy Prioritization
    b. Future Meetings Dates and Logistics

# Attachment B
# PowerPoint Presentation


IOWA DNR | PHASE II SMM VISION FOR IOWA
SCS ENGINEERS
Construction and Demolition Debris Subcommittee
Meeting #2
July 29, 2021


WELCOME
IOWA DNR | PHASE II SMM VISION FOR IOWA
SCS ENGINEERS

# Agenda

- **Subcommittee Meeting Purpose and Goals**
- **Material Types Discussion**
  - **Interior Building Components**
  - **Roofing materials**
  - **Drywall, gypsum**
  - **Treated and untreated wood**
- Existing Activities in Iowa
- LCAs, other research
- Strategies from around the US and elsewhere
- **Next Steps**
  - Begin to prioritize strategies
  - Future meetings dates and logistics



# Goal

Establish a clear direction for implementing an SMM system with immediate, medium and long-term strategies

# Process

Select specific material types within each category

Define specific strategies
- Legislation
- Policies
- Programs
- Infrastructure
- Funding mechanism

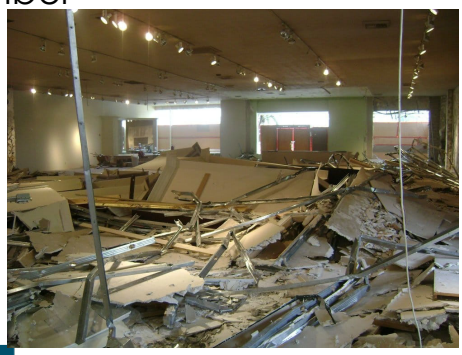
Identify implementation timeline, responsible party, and performance metrics



# Material Types Selected

# Interior Building Components

- Drywall
- Carpet
- Manufactured Lumber
- Ceiling Tiles
- Metals





# Roofing Materials

- Composite asphalt shingles
- Clay or concrete tile
- Wood shingles
- Slate
- Metal
- EDPM rubber

# Drywall, Plaster and Gypsum Board

- Flat panel made of gypsum plaster sandwiched in between two sheets of thick paper.
- Gypsum is a mined mineral made up of hydrous calcium sulphate.
- Also known as sheetrock or wallboard



# Treated and Untreated Wood

- Treated lumber is infused with chemicals to resist deterioration
- Untreated wood is all natural
- Primary difference s are durability and health concern

# Existing Activities in Iowa

- Some wood chipping
- Scott County Landfill roofing shingle recycling
- US Gypsum, Sperry Mine
  - Mining
  - Some recycling
- State University 75% C&D recycling goal
- Limited sorting facilities
- Salvage and deconstruction




Research

# LCA of Buildings-Stages

- Material Manufacturing
- Construction
- Use and Maintenance
- End of Life

- Buildings account for 39% of global GHG emissions
  - 28% from operations
  - 11% from building materials and construction
- Structural systems comprise up to 80% of a building's carbon emissions



# LCA: Wood, Concrete, Steel

- Wood had least air impacts, but greatest land and water impacts
- Concrete has greatest GWP due to chemical processes releasing $CO^2$ during manufacturing
- Concrete and steel have similar impacts for abiotic depletion, human toxicity potential, and eutrophication
- Greatest impacts during manufacturing due to energy use and emissions

# LCA: Waste Prevention in Residential Construction

- Home size is most important determinant
- M-F homes capable of realizing 10-15% reduction in impact compared to S-F homes
- Carpeting, **asphalt shingles**, fiberglass insulation, **drywall, wood**, and appliances are chief contributors to environmental impacts
- Metal, plastic, fiberglass insulation, and wood have high potential for benefit from reuse



# End of Life Management

- Richard Ludt-Interior Removal Specialists
- William Turley-CDRA

# BREAK (10 Minutes)




# Strategies

# Education and Outreach

- Options for waste reduction and recovery
- Deconstruction
- Sustainable building
- Alternative building materials



# Diversion Specifications and Requirements

- Diversion specifications for government projects
- Green Building Code
  - 65% Diversion of all C&D materials
  - Waste Management Plan
  - Proof of compliance

# Market Development

- Require use of recycled materials in projects
  - mulch made from recycled wood
  - shingles used for dust control on gravel roads or in state highway mixes.
- California Recycling Commission to recommend that all drywall sold in the state must have 10% recycled content in short term, up from 4%



# Market Development

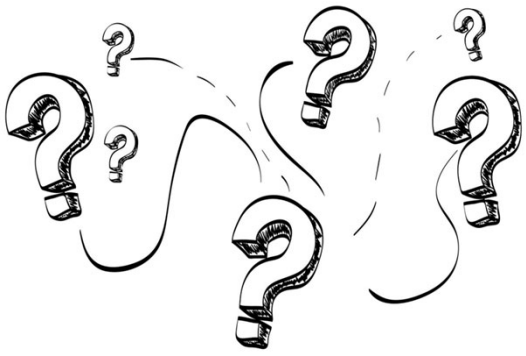
- Recycling Market Development Zone
  - Incentives to attract businesses that process C&D debris
  - Incentives for businesses that manufacture products using recycled C&D debris
  - Low interest loans, technical assistance, product marketing assistance
  - Streamlined permitting
  - Reduced taxes and licensing
  - Reduced code and zoning requirements

# Facility Development and Certification

- Support development of C&D processing facilities
- Recycling Certification Institute



# Infrastructure/Policy/Funding Gaps in Iowa



# Key Questions

- What are the barriers to reducing C&D waste?
- What are the barriers to recovering C&D waste?
- What are the barriers to developing C&D processing facilities in Iowa?
- Should Iowa implement disposal bans for certain materials?
- What incentives can be developed to reduce C&D waste?



# BREAK (10 Minutes)

# Attachment C
# Subcommittee Information Provided by Members

**Subcommittee Information Provided by Members:**

The following is a summary of additional information and/or comments received from Subcommittee members after the Subcommittee Meeting #2 held July 29, 2021.

Thoughts on Reducing C&D Material at the Source:

Iowa has among the oldest average age of existing infrastructure, as well as mostly smaller scale urban areas. Solutions for reducing C&D material in Iowa may need different approaches than are active in larger metropolitan areas.

Financial Assistance:

- Tax breaks may be effective for the private sector, but may be cumbersome or even ineffective for public sector, institutional and non-profits. Low interest loans may be a more effective solution for these entities.
- Financial assistance to help building refurbishment projects update the building infrastructure (i.e., utilities, mechanicals, insulation, windows, etc.), challenge unique to older buildings (i.e., asbestos, mold, electrical, safety, ADA compliance, etc.) would help make these projects more financially feasible. This financial support may help incentive refurbishment projects instead of new construction projects. This in turn may reduce
- The American Rescue Plan provides for 1 to 1 match for upgrading infrastructure – cities may need assistance in how to appropriately apply the American Rescue Plan program to building refurbishment projects.

Technical Assistance:

- Cities may need assistance in rectifying newer zoning restrictions and building codes superimposed retroactively on older architecture and development. Cities often lack the staff and/or time needed to evaluate zoning and codes for potential modifications.
- Form-based zoning and/or point matrix systems may help cities establish evaluation systems that are strict when necessary (i.e., life and safety concerns) and flexible in other considerations.