

BUILD WITH STRENGTH

A COALITION OF THE NATIONAL READY MIXED CONCRETE ASSOCIATION

EPDs: Market Drivers & Activity

James Bogdan, Sr. Director, Sustainability Initiatives

Agenda

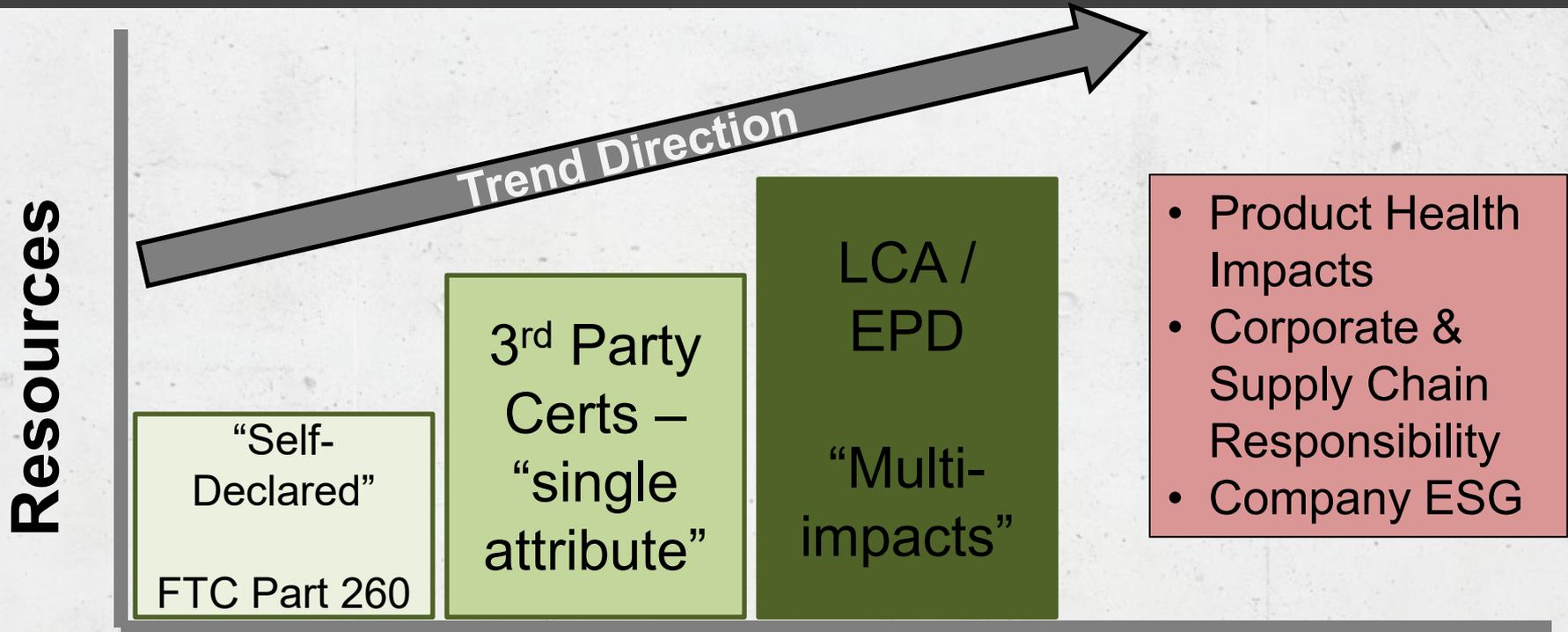
- Trends and specific drivers of transparency
- What are EPDs
- EPD Market Drivers
- EPD in LEED rating system
- Disclosure inquiries & response
 - examples of EPDs in specifications & AEC inquiries
- EPD market activity
- EPD Process
- Final thoughts and Q&A

Age of Transparency

- “Marketing in the age of transparency”
- Customers / influencers are investigating the risks from the products or companies
- Effort of making more informed and responsible decisions



Transparency Trends



Enterprise / Product Transparency over time

What are EPDs

Construction Market

BUILD WITH STRENGTH

ENVIRONMENTAL IMPACTS

Declared Product:

Mix 460N4200 • Morrisville Plant
 4500 FAE
 Compressive strength: 4500 PSI at 28 days

Declared Unit: 1 m³ of concrete

Global Warming Potential (kg CO ₂ -eq)	430
Ozone Depletion Potential (kg CFC-11-eq)	1.09E-5
Acidification Potential (kg SO ₂ -eq)	1.26
Eutrophication Potential (kg N-eq)	0.52
Photochemical Smog Creation Potential (kg O ₃ -eq)	25.3
Total Primary Energy Consumption (MJ)	2,886
Nonrenewable (MJ)	2,770
Renewable (MJ)	115
Total Concrete Water Consumption (m ³)	2.93
Batching Water (m ³)	0.18
Washing Water (m ³)	0.03
Nonrenewable Material Resource Consumption (kg)	2,319
Renewable Material Resource Consumption (kg)	2.90
Hazardous Waste Production (kg)	0.02
Nonhazardous Waste Production (kg)	4.02

Product Components: crushed aggregate (ASTM C33), natural aggregate (ASTM C33), Portland cement (ASTM C150), fly ash (ASTM C618), batch water (ASTM C1602), admixture (ASTM C494)

- List the env impacts when producing a product
- List many impacts
- Most focus on GWP – Proxy for embodied C

Transparency Drivers

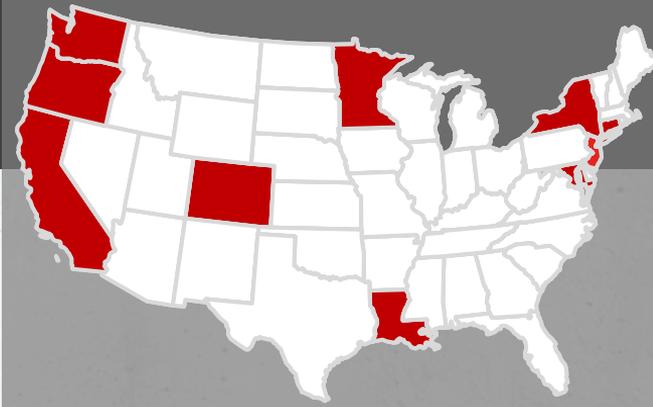
Construction Market

BUILD WITH STRENGTH

Disclosure in Green Building



State & Local Legislation



EPDs

Buy Clean Bills

CA, WA, MN, CO

Low C Concrete Rule

Portland, OR

Options

Low Embodied Carbon Concrete / Cement

CT, HI, NY, NJ, MD, LA

Low-C Concrete Codes

Marin, CA



Concrete's Contribution to LEED v4.x



LEED v4 BD&C: Points by Category

Credit Category	Credits	Pts. LEED v4.x	LEED 2009
IP – Integrative Process	1C	1	0
LT - Location & Transportation	8C	16	0
SS - Sustainable Sites	1P, 6C	10	26
WE - Water Efficiency	3P, 4C	11	10
EA - Energy & Atmosphere	4P, 7C	33	35
MR - Materials & Resources	2P, 5C	13	14
EQ - Indoor Environmental Quality	2P, 9C	16	15
IN - Innovation	2C	6	6
RP - Regional Priority	1C	4	4
TOTAL	--	110	110

C = credit

P = prerequisite



Summary: Concrete Contribution to LEED

Category	D - Design C - Construction M – Material	Direct or Indirect	Concrete Evidence
Integrative Process	D, C	Typically No	Influence project team
Location & Transportation	D	No	
Sustainable Sites	D, M	Direct / Indirect	SR values, Filtration #s, Ext lighting
Water Efficiency	D	Indirect	Water retention
Energy Efficiency	D	Indirect	Thermal mass
Materials & Resources	C, M	Direct	EPDs, HPDs, Sourcing, RC, RM
Indoor Env. Quality	D, C, M	Direct by default	Non-emitting material
Innovation	D	TBD	
Regional Priority	D	TBD	

LEED Changes: Concrete Contribution to MR

LEED v1.x, v2.x, v2009	LEED 4.0	LEED 4.1	LEED 4.x/5.0
Recycled Content Regional Material	WBLCA – 3 pts	WBLCA – 4 pts	TBD
	Env disclosure: IW-EPD = 0.5x PS-EPD = 1.0x	Env disclosure: IW-EPD = 1.0x PS-EPD = 1.5x	TBD
	Lower impact than IW	Lower impact than IW	
	Responsible Sourcing: RC & RM	Responsible Sourcing: RC & RM	? CSC Certification ?
	Health disclosure: Ingredient hazard report (HPD, C2C, etc.)	Health disclosure: Ingredient hazard report (HPD, C2C, etc.)	TBD

Product Disclosure

In Construction Documents

BUILD WITH STRENGTH

LEED Materials Submittal Form - Historical



MRc4 - MRc7

LEED MATERIALS SUBMITTAL FORM (LEED BD+C and ID+C v2009)

Project: 10J1968 Manufacturer (name, phone, address): Unistrut
 Contractor/Supplier: Unistrut Project Name and Zip Code: DMNS - ECF 80205
 Contact (name, phone): Dena Bell 303-745-7307 Specification Section: 055600

Material	Material Cost	Product Data Sheets Provided	Recycled Content MRc4 (by weight)		Location of Manufacturer and Origin (Salvage, Harvest, Extraction) MRc5 ** project must originate and be manufactured within 500 miles of project site					% Rapidly Renewable MRc6 (by weight)	FSC Certified Wood MRc7			
			% Pre-Consumer	% Post-Consumer	Manuf. Zip Code	Manuf. From Project Site	Origin Zip Code	Origin Miles From Project Site	% of Product originated and manufactured within 500 miles		FSC Pure/Mixed/MixedXX%/Recycled	Chain of Custody #	% wood (by weight)	% FSC (by weight)
Unistrut Channel & Fittings	199,509	Y	6.1	22.3										

Definitions:

Material Cost: The Materials cost includes all expenses to deliver the material to the project site. Materials costs should account for all taxes and transportation costs incurred by the contractor by exclude any cost for the labor and equipment once the material has been delivered to the site.

Pre consumer: Material diverted from the waste stream during the manufacturing process. Excludes the reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Post consumer: Waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.

FSC: Forest Stewardship Council is an organization of Sustainable Forestry defined as: the practice of managing forest resources to meet the long-term forest product needs of humans while maintain the biodiversity of forested landscapes. The primary goal is to restore, enhance, and sustain a full range of forest values - economic, social, and ecological.

Chain-of-Custody: A document that tracks the movement of a wood product from the forest to a vendor and is used to verify compliance with FSC guidelines. A vendor is defined as the company that supplies wood products to project contractors or subcontractors for on-site installation.

Rapidly Renewable: Material considered to be an agricultural product, both fiber and animal, that takes 10 years or less to grow and to harvest in an ongoing and sustainable fashion.

Div 01 18 13 – SUSTAINABLE DESIGN REQUIREMENTS

B. LEED Product Submittals:

1. Projects seeking LEED certification must track and record product, material, and cost information for LEED credit documentation. The contractor shall complete and submit the following forms included with product submittals:
2. Environmental Materials Reporting Form: for all permanently installed products and materials specified in CSI MasterFormat 2012 Edition Divisions 03-12, 31 (Sections relating to Foundations), and 32 (Sections relating to Pavings, Site Improvements, and Planting). The Contractor shall submit:

C. LEED Materials Tracking Submittals

1. The contractor shall complete a LEED v4 Building Product Disclosure + Optimization (BPDO) Calculator for products in CSI MasterFormat 2012 Edition Divisions 03-11, 31 (Sections relating to Foundations), and 32 (Sections relating to Pavings, Site Improvements, and Planting) according to the following schedule and requirements:

- Contractor “shall” complete:
 - Env Materials Reporting Form
 - BPDO Form
 - Sustainable Material Content Form
 - LEED Materials Documentation Sheet
 - BPDO Calculator

Div 03 30 00 – Cast in place concrete

1.4 SUBMITTALS

A. LEED Submittals: Submit product and material documentation to comply with and contribute to the Project's LEED requirements, as specified in Section 01 81 13 (Sustainable Design Requirements). For all installed products and materials of this Section, complete the following forms attached at the end of Section 018113 "Sustainable Design Requirements":

1. Environmental Materials Reporting Form.
2. Low-Emitting Materials Reporting Form.
3. PBT Materials Reporting Form.

B. Manufacturer's Data: Concrete Work - For information only, submit manufacturer's data with application and installation instructions for proprietary materials and items including

LEED v4 BPDO MATERIALS REPORTING FORM

Project Name	_____	Submittal Name	_____	Date	_____
Subcontractor	_____	Contact Person	_____	Submittal No.	_____
				Spec Section	_____

Please complete this form for ALL permanently-installed products in Divisions 03-12, 31, and 32 and insulation products specified in any section. For each product, please fill in ALL requested information and check boxes to indicate documentation included in this submittal. See page 2 for definitions and documentation requirements.

PRODUCT 1	PRODUCT 2	PRODUCT 3																																																																																										
<table border="1"> <tr> <td colspan="2">PRODUCT NAME / MODEL</td> <td colspan="2">MANUFACTURER</td> <td colspan="2">TOTAL MATERIAL COST (excluding site labor & equipment)</td> <td colspan="2">REGIONAL MATERIALS</td> </tr> <tr> <td colspan="2"> <table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table> </td> <td colspan="2"> <table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table> </td> <td colspan="2"> <table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table> </td> </tr> </table>	PRODUCT NAME / MODEL		MANUFACTURER		TOTAL MATERIAL COST (excluding site labor & equipment)		REGIONAL MATERIALS		<table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table>		EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS		Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %	<table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table>		EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS		Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %	<table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table>		EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS		Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %
PRODUCT NAME / MODEL		MANUFACTURER		TOTAL MATERIAL COST (excluding site labor & equipment)		REGIONAL MATERIALS																																																																																						
<table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table>		EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS		Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %	<table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table>		EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS		Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %	<table border="1"> <tr> <td colspan="2">EPD</td> <td colspan="4">SOURCING OF RAW MATERIALS</td> <td colspan="2">MATERIAL INGREDIENTS</td> </tr> <tr> <td>Product EPD</td> <td>Product LCA</td> <td>Mfr CSR</td> <td>Mfr Take Back</td> <td>FSC Wood</td> <td>Salvaged Material</td> <td>Bio-based Material</td> <td>Applicable Portion (by wgt) %</td> <td>Recycled Content</td> <td>Pre-Consumer %</td> <td>Post-Consumer %</td> <td>Mfr Ingrid Inventory</td> <td>HPD Certificate</td> <td>C2C Certificate</td> <td>Green-Screen</td> <td>Declare Label</td> <td>Regional Material? %</td> <td>Compliant Portion %</td> </tr> </table>		EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS		Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %									
EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS																																																																																						
Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %																																																																											
EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS																																																																																						
Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %																																																																											
EPD		SOURCING OF RAW MATERIALS				MATERIAL INGREDIENTS																																																																																						
Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt) %	Recycled Content	Pre-Consumer %	Post-Consumer %	Mfr Ingrid Inventory	HPD Certificate	C2C Certificate	Green-Screen	Declare Label	Regional Material? %	Compliant Portion %																																																																											

CONTRACTOR CERTIFICATION:

I, _____ a duly authorized representative of _____ hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by us, as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Construction Manager and Owner.

SIGNATURE OF AUTHORIZED REPRESENTATIVE: _____

DATE: _____

LEED Criteria Worksheet

Required Submittal Form: LEEDv4 BD+C

The LEED Criteria Worksheet lists Materials + Resources Building Product Declaration and Optimization (BPDO) Credits and Environmental Quality Low-Emitting Material Credit for LEEDv4 BD+C Rating. Please complete the form and provide required information. Gensler seeks to support the achievement of LEEDv4 requirements by utilizing the information provided on this form, to ensure project will meet LEED requirements. Be sure to fill out all fields and check Yes/No/NA for every question, unless otherwise indicated.

Date:		Submittal No.:	
Subcontractor:		Phone:	
Contact Name:		Model/Description:	
Product/Manufacturer:		Estimated Cost or	Actual Cost

LOCATION VALUATION FACTOR:

How many miles is this product extracted, manufactured, and purchased from the project site? miles

ENVIRONMENTAL PRODUCT DECLARATION (EPD):

Is one of the declarations below available for this product?

- Product specific, critically reviewed, with cradle-to-gate scope and in compliance with ISO 14044 Yes No
- Industry-wide generic EPD, Type III, with third party certification including external verification, and manufacturer explicitly recognized Yes No
- Product specific Type III declaration, in compliance with ISO 14025, 14040, 14044, and 21930 Yes No

MULTI-ATTRIBUTE OPTIMIZATION:

Does the manufacturer use a third party organization to certify their products? Yes No

If yes, indicate which of the following categories demonstrate impact reduction (below industry average):

- Global warming potential (greenhouse gases), in CO₂e Depletion of the stratospheric ozone layer, in kg CFC-11
- Acidification of land and water sources, in moles H⁺ or kg KO₂ Eutrophication, in kg nitrogen or kg phosphate
- Formation of tropospheric ozone, in kg NO_x or kg ethane Depletion of nonrenewable energy resources, in MJ

RAW MATERIAL SOURCE AND EXTRACTION REPORTING:

Does this product have a publicly released report from their raw material suppliers which includes extraction locations, commitment to long-term ecologically responsible land use, reducing environmental harms, and meeting standards that address responsible sourcing criteria? Yes No

If yes, indicate which of the following categories demonstrate impact reduction (below industry average):

- Self Declared Report Global Reporting Initiative (GRI) Sustainability Report
- U.N. Global Compact: Communication of Progress ISO 26000: 2010 Guidance on Social Responsibility
- Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises

LEADERSHIP EXTRACTION PRACTICES:

Does the product meet any of the attributes below?

- Extended Producer Responsibility** - manufacturer participates in take back program Yes No
- Bio-based materials** - that meet the Sustainable Agriculture Network's Sustainable Agriculture Standard tested using ASTM Test Method D 6866 %
- New wood** - certified by the Forest Stewardship Council (FSC) %
- Material reuse** - include salvaged, refurbished, or reused products %
- Recycled content** - post-consumer and pre-consumer % Post % Pre

MATERIAL INGREDIENT REPORTING:

Does the manufacturer use any of the following programs to demonstrate the chemical inventory of the product? Yes No

If yes, indicate which of the following:

- Chemical Abstract Service Registration Number (CASRN)** Yes No
- Health Product Declaration (HPD)** Yes No
- Cradle-to-Cradle certified at a minimum v2 Basic Level OR v3 Bronze Level** Yes No
- Declare Label** Yes No
- UL Product Lens** Yes No

MATERIAL INGREDIENT OPTIMIZATION:

Does the product meet any of the following documentation options? Yes No

- GreenScreen v1.2 Benchmark** - Fully inventoried chemical ingredients to 110 ppm and no ingredients have Benchmark 1 hazards as defined by the Green Screen Test Translator Products
 - If yes, have all ingredients have undergone a full **GreenScreen Assessment**? Yes No
- Cradle-to-Cradle certified v2 Gold or higher:** Yes No
 - v2 Gold Level v2 Platinum Level v3 Silver Level v3 Gold or Platinum Level

SUPPLY CHAIN OPTIMIZATION:

Are products sourced from manufacturers who engage in validated health, hazard, and risk programs which document at least 99% (by weight) of the ingredients used to make the building product? Yes No

Products sourced from manufacturers with independent third-party verification of their supply chain that verifies:

- Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure, and use information to those that require more detailed evaluation Yes No
- Processes are in place to identify, document, and communicate information on health, safety, and environmental characteristics of chemical ingredients Yes No
- Processes are in place to implement measures to manage the health, safety, and environmental hazard and risk of chemical ingredients Yes No
- Processes are in place to optimize health, safety, and environmental impacts when designing and improving chemical ingredients Yes No
- Processes are in place to communicate, receive, and evaluate chemical ingredient safety and stewardship information along the supply chain Yes No
- Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain Yes No

LOW-EMITTING MATERIALS:

The building interior is defined as everything within the weatherproofing membrane, and low-emitting requirements are applicable to interior paints and coatings, interior adhesives and sealants, flooring, composite wood, ceilings, walls, thermal and acoustical insulation, and furniture.

Is this product in compliance with the emissions and content requirements listed below?

- Inherently Non-Emitting Sources:** Products are inherently non-emitting sources of VOCs (stone, ceramic, powder coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished or untreated solid wood flooring). Yes No

If yes, STOP HERE.

INTERIOR PAINT OR COATING, wet-applied inside weather barrier. VOLUME: liters Not Applicable

- General Emissions Evaluation:** Compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010 using applicable exposure scenario. Yes No

LEED Submittal Cover Sheet

Contractor: Turner Construction

Project Name:

Subcontractor: _____	Contact: _____
Product: _____	Submittal #: _____
Manufacturer: _____	Material Cost: \$ _____

Materials in Div 3-10 and 12, Sect 31.60.00 Foundation, 32.10.00 Paving, 32.30.00 Site Improvement, 32.90.00 Planting

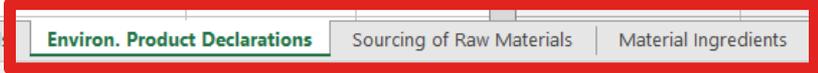
Post-Consumer Recycled Content: _____ % Pre-Consumer Recycled Content: _____ % <input type="checkbox"/> Manufacturer documentation provided.	Bio-Based (Non-Wood) Materials: _____ % <input type="checkbox"/> Tested per ASTM Method D6866, and legally harvested. <input type="checkbox"/> Meets Sustainable Agriculture Network's Standard.
New Wood Content: _____ % <input type="checkbox"/> Manufacturer documentation provided identifying wood products for use on project.* <input type="checkbox"/> FSC Certificate provided.	FSC Certified Content: _____ % of New Wood <input type="checkbox"/> Manufacturer documentation of FSC product provided.
*Note: Itemized invoice from final vendor must be provided after purchase. Invoice must show FSC % for each new wood product and must show vendor's Chain of Custody (COC) number.	
% of Material Manufactured and Sourced within 100 miles: _____ %	
Location of Manufacturer: _____ Distance to Project Site: _____ <input type="checkbox"/> Manufacturer documentation provided.	Location of Extraction/Harvest: _____ Distance to Project Site: _____ <input type="checkbox"/> Manufacturer documentation provided.
Extended Producer Responsibility Program Name: _____ <input type="checkbox"/> Manufacturer documentation of take-back program provided.	
Environmental Product Declaration (EPD): Documentation Type: <input type="checkbox"/> LCA ISO 14044 with LEED <input type="checkbox"/> Industry Type III EPD, with Manufacturer Listed <input type="checkbox"/> Product Specific Type III EPD, Internally Reviewed <input type="checkbox"/> Product Specific Type III EPD, 3 rd Party Certified	Ingredient Reporting (to 1000 ppm): Documentation Type: <input type="checkbox"/> CASRN Inventory <input type="checkbox"/> Living Product Challenge <input type="checkbox"/> ANSI/BIFMA e3 <input type="checkbox"/> GreenScreen List Translator or Benchmark <input type="checkbox"/> Declare: Red List Free or Declared <input type="checkbox"/> Cradle to Cradle <input type="checkbox"/> Product Lens <input type="checkbox"/> Facts NSF/ANSI 336

Low-Emitting Materials: Onsite Fluid Applied Materials

Product Use (describe application): _____	Volume to be used: _____ L
VOC Content: _____ g/L	Allowable Content: _____ g/L
<input type="checkbox"/> Manufacturer documentation of VOC content provided.	<input type="checkbox"/> VOC Emissions Evaluation also provided.

GC LEED Online - BPDO Calculator

Environmental Product Declarations									
Complete all columns with applicable material data for the attempted options. If the option is not attempted, leave the column blank.									
General Information (from Materials tab)						Option 1 Environmental Product Declaration			Option 2 Multi-Attribute Optimiz
Material Type or Category	CSI Div (optional)	Product Name	Description of the Product	Manufacturer Name	Material Cost (\$)	EPD Program Operator	EPD / LCA	EPD product value (#)	Type of f
	03 Concrete	footer	foundational	RMC Company	\$ 5,000.00	Company	Product-specific LCA	1.00	LCA impact reduction a
	03 Concrete	slab on grade	enclosure	RMC Company	\$ 10,000.00	NSF Certification, LLC	Industry-wide/generic EPD	1.00	Third party verified impa
	03 Concrete	column	structural	RMC Company	\$ 15,000.00	Company	Product-specific Type III Internal EPD	1.00	Third party verified impa minimum 10% reduction
	03 Concrete	wall	enclosure	RMC Company	\$ 20,000.00	NRMCA	Product Specific Type III External EPD	1.50	Third party impact reduc reduction in GWP & 5%



Flow of Information



Communication Risks & Liabilities

LEED v4 BPDO MATERIALS REPORTING FORM

Project Name: XXXXXXXXXXXX Submittal Name: Leeds for Exterior Concrete Date: 4/21/17
 Subcontractor: XXXXXXXXXXXX Contact Person: XXXXXXXXXX Submittal No.: _____
 Spec Section: 03, 32

Please complete this form for ALL permanently-installed products in Divisions 03-12, 31, and 32 and Insulation products specified in any section.
 For each product, please fill in ALL requested information and check boxes to indicate documentation included in this submittal. See page 2 for definitions and documentation requirements.

PRODUCT 1

Product Name / Model: 4000 psi Concrete / Cement Manufacturer: XXXXXXXXXX Total Material Cost: \$110.00 / sq

EPD		SOURCING OF RAW MATERIALS					MATERIAL INGREDIENTS					REGIONAL MATERIALS Raw materials extracted, manufactured AND purchased within 100 miles of Project site. Yes <u>100</u> % Regional Material? Compliant Portion		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt)	Recycled Content	Pre-Consumer	Post-Consumer	Mfr Ingrad Inventory	HFD Certificate	C2C Screen	Declare Label

PRODUCT 2

Product Name / Model: Pozzolan Manufacturer: XXXXXXXXXX Total Material Cost: \$110.00 / sq

EPD		SOURCING OF RAW MATERIALS					MATERIAL INGREDIENTS					REGIONAL MATERIALS Raw materials extracted, manufactured AND purchased within 100 miles of Project site. Yes <u>100</u> % Regional Material? Compliant Portion		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Product EPD	Product LCA	Mfr CSR	Mfr Take Back	FSC Wood	Salvaged Material	Bio-based Material	Applicable Portion (by wgt)	Recycled Content	Pre-Consumer	Post-Consumer	Mfr Ingrad Inventory	HFD Certificate	C2C Screen	Declare Label

LEED Communication Letter

January 6, 2020

GC / Arch / Eng
Address 1
Address 2
City, State, Zip Code

Re: LEED BPOD Environmental Materials Reporting Form
RMC Company
Project Name, Location (suggestion to identify project on LEED directory)

Dear Point of Contact,

Please find a summary of RMC Company's listed products and contribution to the referenced LEED project.

Ready-mixed concrete has a distinct advantage over other building materials due to its ease of use, durability, resilience, thermal mass, ability to any shape and proximity to project sites. Each attribute can contribute to sustainable design criteria and influence the project's environmental footprint throughout its service life.

The following is a summary table to demonstrate concrete products contribution to LEED criteria for this project.

Product (mix code)	MR: EPD	MR: Sourcing of Raw Materials	MR: Material Ingredients	MR: Regional Material w/in 100 miles	EQ: Low-emitting material - Volatile Organic Compounds (VOCs)	Cost \$		
	W/ (Wet Specific (PS))	Supply Chain Certification (Y/N)	RC Post (%) RC Pre (%)	Inventory to 1000 ppm (Y/N)	Extract & Mfg. (Y/N)			
#	W/PS	Y/N	%	%	Y/N	Y/N	USGBC deems concrete an inherently low emitting material and therefore no emission testing is required.	\$
#								
#								
#								
#								

Please see additional sections that provide details regarding LEED criteria and concrete products.

3.0 Environmental Product Declarations: Life-cycle information is available that discloses environmental, economic, and societal impacts from manufacturing and transporting concrete products.

Product (mix code)	Option 1: Environmental Product Declaration EPD Program Operator	Option 2: Multi-Attribute Optimization ERC/LCA Type Type of Reduction	Cost \$
#	NSF Certification, LLC	W/generic EPD * This section is only for those w/ PS EPD. Call to discuss criteria.	\$
#			
#			
#			

Details pertaining to environmental impacts per product/mix code are publicly available, whereas

OPTION A:

RMC Company participated in the National Ready-Mixed Concrete Association's IW-EPD/generic EPD. Below are links to the verified EPD, and a directory of industry plants with RMC Company as a participant:

- IW-EPD: <http://info.nsf.org/Certified/Sustain/ProdCert/EPD0294.pdf>
- Directory of participants: <https://www.nrmca.org/sustainability/EPDProgram/learn/>

OPTION B:

Appendix A specifically lists environmental impacts of proposed mix designs for this LEED project.

3.0 Responsible Sourcing: Identifying and managing environmental, social and governance practices of supply chain partners. This includes sustainable supply chain certifications and recycled content. Concrete utilizes waste products from other industries as an important ingredient, such as fly ash and slag. These byproducts are supplementary materials for cement and can reduce the environmental impact (see EPD).

Product (mix code)	Supply chain certification	Recycled Content (Pre, Post-Consumer %)		Cost \$
		RC Pre (%)	RC Post (%)	
#				
#				
#				
#				
#				

3.0 Material Ingredients: Selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances.

Product (mix code)	Option 1: Material Ingredient Reporting Type of Report (1000 ppm)	Option 2: Type of Optimization Report 3 rd Party Verified Certification Program	Cost \$
#	C2C, Declare, HPD, etc.	Y/N * This section is only for those w/ PS health hazard disclosures. Call to discuss criteria.	\$
#			
#			
#			

4.0 Low-Emitting Materials: USGBC deems concrete an inherently low-emitting material and therefore no emission testing is required. [Note: If sealers or coatings are used for protecting the concrete, these finishes must report their VOC content in accordance with LEED criteria.]

5.0 Regional Material: Concrete is truly the only local building material due to its raw materials being abundant, proximity to project sites and the need to deliver within a short period of time from batching at the plant.

Product / source distance to project site	Aggregate City, State	Aggregate City, State	Cement City, State	SCM (Fai) City, State	SCM (Slag) City, State	% by weight*
Mix code #	x miles	x miles	x miles	x miles	x miles	
Mix code #						
Mix code #						
Mix code #						
Mix code #						

* Note: LEED v4 requires 85% by weight to be considered "entire product."

If you need further clarification or additional assistance, please do not hesitate to contact me.

Best Regards
RMC Company Contact

Appendix A: Environmental Impacts of Concrete Products

RMC Company participated in the NRMCA IW-EPD, which was verified by NSF Certification, LLC. Below are applicable links that allow RMC Company to utilize the IW-EPD for this project. Also below is a table corresponding concrete mix codes with references to environmental impacts within the IW-EPD.

- Program Operator, NSF verified IW-EPD report: <http://info.nsf.org/Certified/Sustain/ProdCert/EPD0294.pdf>
- Directory of IW-EPD industry participants acknowledging RMC Company: <https://www.nrmca.org/sustainability/EPDProgram/learn/>

Product (mix code)	IW-EPD Product (mix code)	Environmental Impacts (IW-EPD referenced page)
#23249	x150-300-10FA	Page 18
#		
#		
#		

RMC Company was a participant as identified in a search query of the plant directory:

The screenshot shows the NRMCA Sustainability website interface. A search bar is visible with the text "SEARCH: Company, State, Plant Name, Plant Location". Below the search bar, there is a section titled "SUSTAINABILITY" with a green globe icon. To the right, there is a "MEMBERS ONLY" section with a "Log In" button. The main content area displays "NRMCA Industry Wide EPD" and a search form with fields for "Mix Name", "City/State", "Company", and "Plant Name". There are "Go" and "Reset" buttons at the bottom of the search form. The footer of the page includes the text "© 2019 NRMCA. All Rights Reserved."

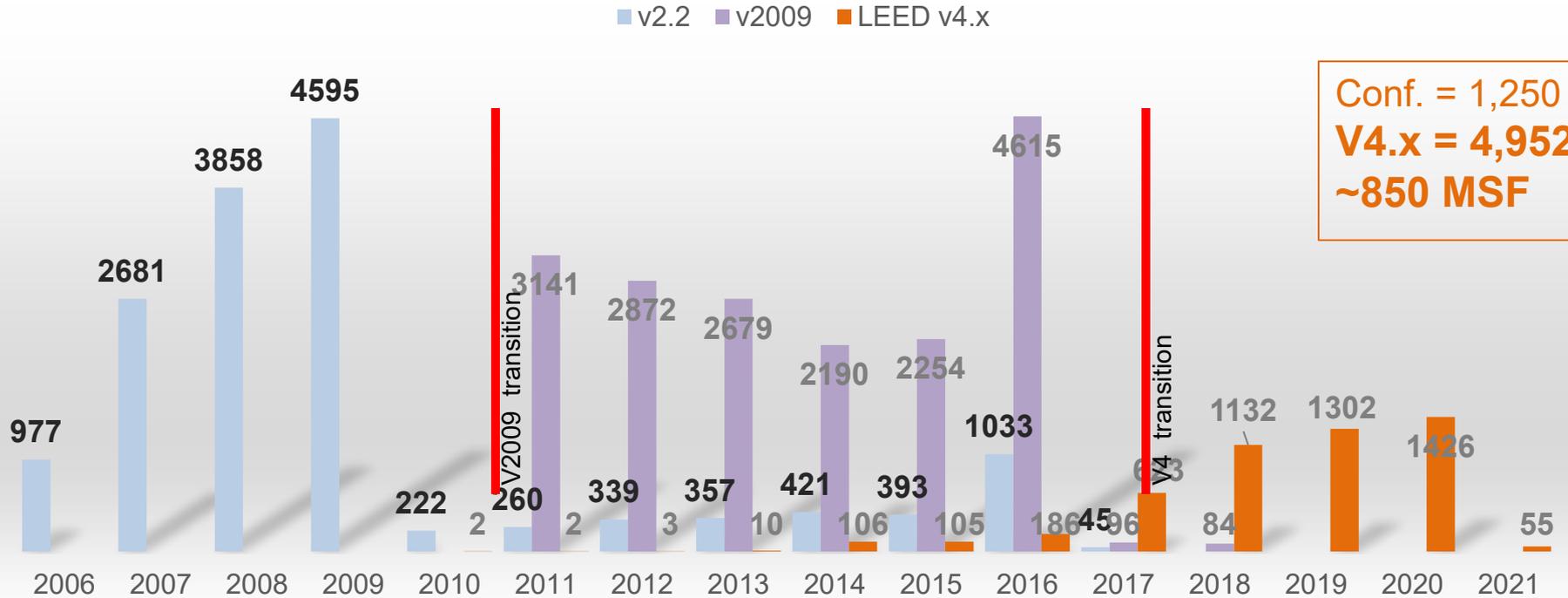
<https://www.nrmca.org/sustainability/EPDProgram/Index.asp>



Market Perspective

Why Does Transparency Matter?

LEED v 4 Registration Activity (target projects)





USGBC State Market Brief: Michigan

last updated on 11/3/2020 3:56:29 PM

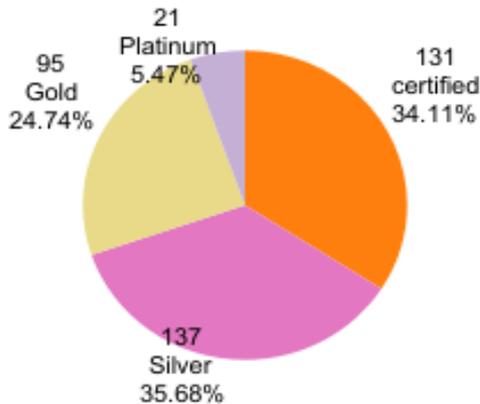
Number of Certifications

384

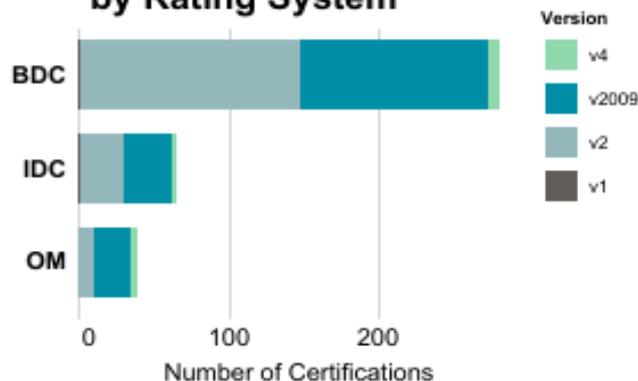
Gross Square Footage of Certifications

32,535,328

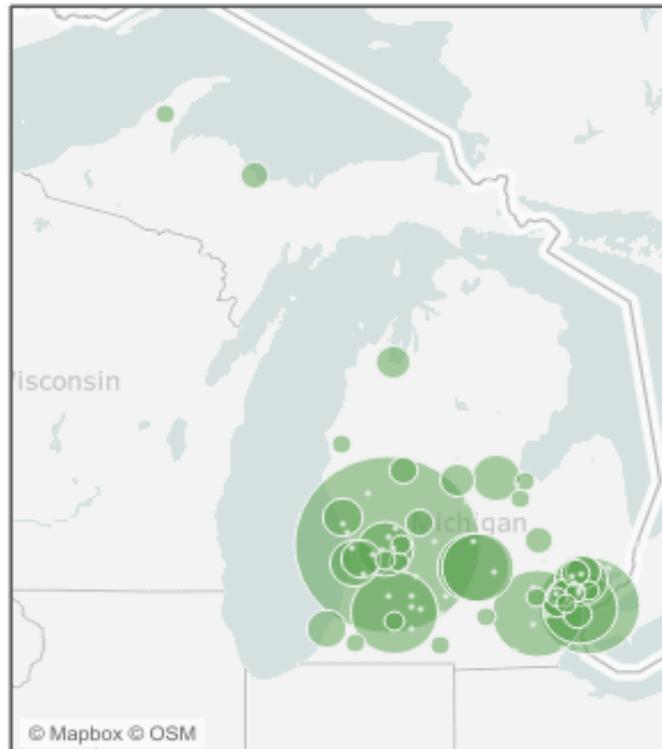
LEED Achievement



LEED Certifications by Rating System



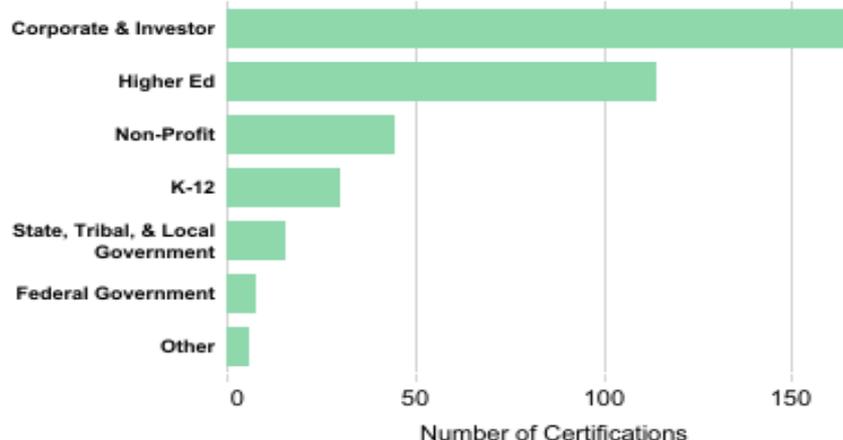
LEED Certifications by City



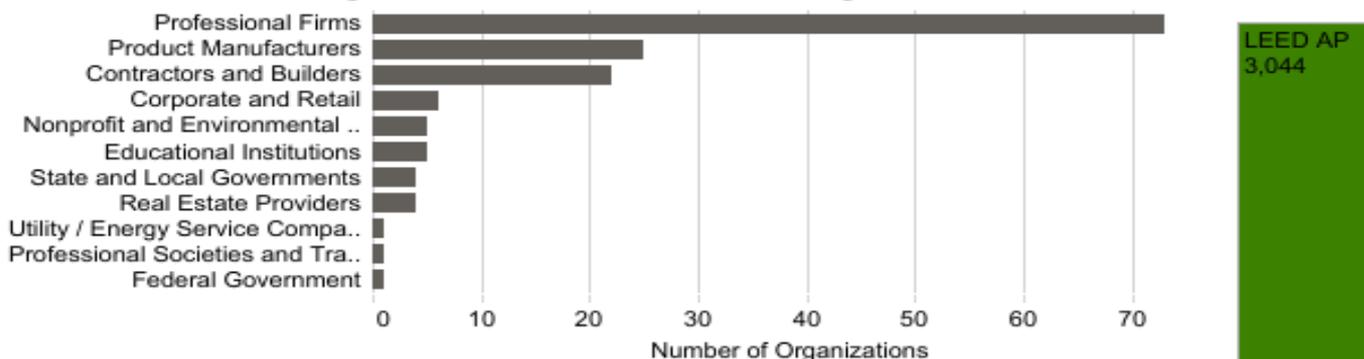
Top 10 Space Types for Certifications



Certifications by Owner Sector



USGBC Member Organizations Located In Michigan



Professionals with LEED Credentials



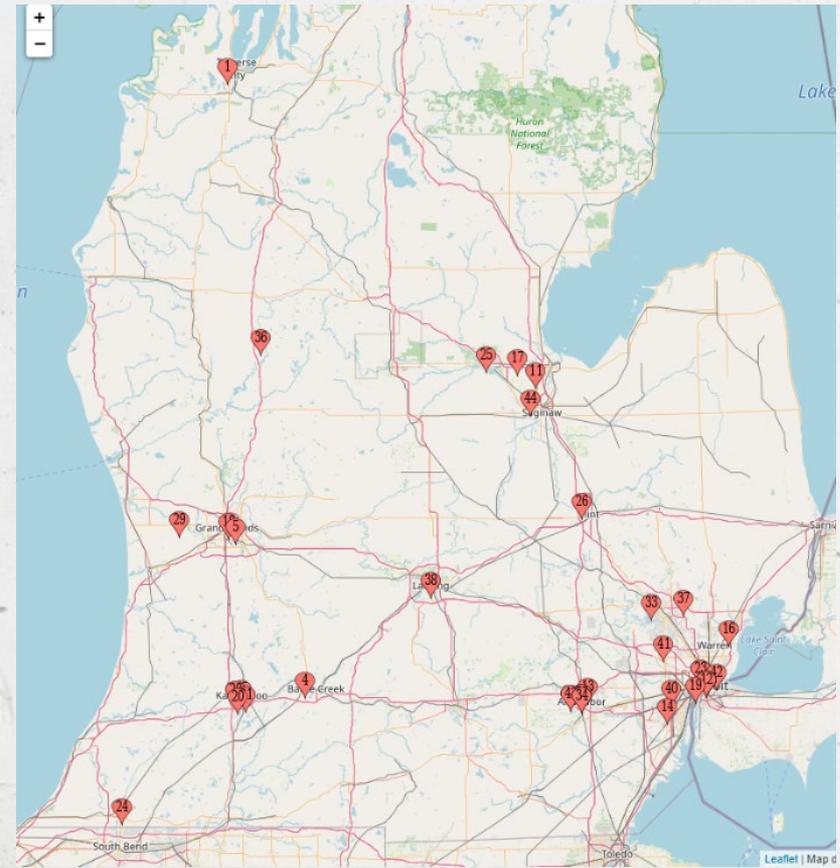
LEED project data only includes commercial rating systems. The underlying data does not include LEED ND or LEED for Homes projects.

LEED®, and its related logo, is a trademark owned by the U.S. Green Building Council®.

MI - LEED v4.x Projects

- 58 registered projects / 10 MSF

Owner type	Project type
EDU (Univ/college/CC)	Core learning space: Univ/college
Privately held	Laboratory
Publicly traded	Lodging
Government	Multifamily Apts.
	Mixed-use Office
	Public Assembly



Gensler – Decision Maker

If You Don't Spec It, You Won't Get It...

1.3 ACTION SUBMITTALS

A. Product Data: Submit product data for each type of product indicated.

B. Sustainable Design Submittals:

1. Sustainability Criteria Worksheet: Submit one worksheet for each component material of the product or assembly used in the installation of Work of this Section

2. Environmental Product Declaration: An EPD is required, submit in accordance with Section 01 81 13.14 "Sustainability Design Requirements," Article 1.6C.1 "ACTION SUBMITTALS; Sustainable Design Documentation Submittals; MRc2.1 – EPDs."

3. Reports from raw materials suppliers: If available, submit CSR reports from suppliers in accordance with Section 01 81 13.14 "Sustainability Design Requirements," Article 1.6C.2 "ACTION SUBMITTALS; Sustainable Design Documentation Submittals; MRc3.1 – CSR."

4. Leadership in Energy and Environmental Design (LEED) program: bio-based and/or recycled content Requirements, Documentation
5. Material Ingredient

O. Environmental Product Declaration: Submit in accordance with Section 01 81 13.14, part 1.6.C.1 LEED Submittals – BPDO – Environmental Product Declarations. All submitted material, of all framing types, must be accompanied by EPDs. Design-Build team will consider the Global Warming Potentials disclosed therein when selecting bids.

HPD, C2C certificate at Bronze level or above, C2C Material Health Certificate, Declare product label, or other acceptable material ingredient inventory in accordance with Section 01 81 13.14 "Sustainability Design Requirements," Article 1.6C.4 "ACTION

LCA Software Tools

- WBLCA
 - Athena
 - One Click
 - Tally
- Embodied Carbon Calculators
 - Embodied Carbon Construction Calculator (EC3)
 - Beacon (Thornton Tomasetti)
 - Concrete LCA Tool (ZGF Architects)



Athena
Sustainable Materials
Institute



One Click  LCA

Product of Bionova Ltd



BUILD WITH STRENGTH

Top Green Building Contractors

ENR
TOP 100

Current Top 100 Green Building Contractors Story:

[2019 Top 100 Green Building Contractors and Design Firms: Sustainability Intensifies](#)

Click below for earlier editions:

[2018](#) | [2017](#) | [2016](#) | [2015](#) | [2014](#) | [2013](#) | [2012](#) | [2011](#) | [2010](#) | [2009](#) | [2008](#) | [2007](#)

Companies are ranked according to revenue for construction or design services generated in 2018 from projects that have been registered with or certified by a third-party organization that sets standards for measuring a building's or facility's environmental impact, energy efficiency or carbon footprint. Such groups include the U.S. Green Building Council (USGBC) and the

Green Building Initiative. The volume of revenue is measured in (\$ millions. Some markets may not add up to 100% due to rounding. Revenue from construction management on a fee-only basis is not included.

ENR 2019 Top 100 Green Building Contractors

RANK 2019	RANK 2018	FIRM	GREEN ACCREDITED STAFF	GREEN DESIGN REVENUE (\$ MIL.)
1	1	TURNER CORP., New York, N.Y.	1047	6623.90
2	3	AECOM, Los Angeles, Calif.	NA	4678.38
3	2	CLARK GROUP, Bethesda, Md.	360	4161.50
4	4	SWINERTON, San Francisco, Calif.	225	3459.60
5	5	HENSEL PHELPS, Greeley, Colo.	216	2663.26
6	6	SKANSKA USA, New York, N.Y.	321	2638.90
7	7	LENDLEASE, New York, N.Y.	263	2298.70
8	11	GILBANE BUILDING CO., Providence, R.I.	323	2029.97
9	9	WEBCOR CONSTRUCTION LP DBA WEBCOR BUILDERS, San Francisco, Calif.	185	2011.80
10	13	THE WHITING-TURNER CONTRACTING CO., Baltimore, Md.	307	2001.91

- Pertaining to green building:
 - LEED submittal process
 - material knowledge

BUILD WITH STRENGTH

IW-EPD Participants

<https://www.nrmca.org/association-resources/sustainability/epd-program/testing-edpd-program-search/>

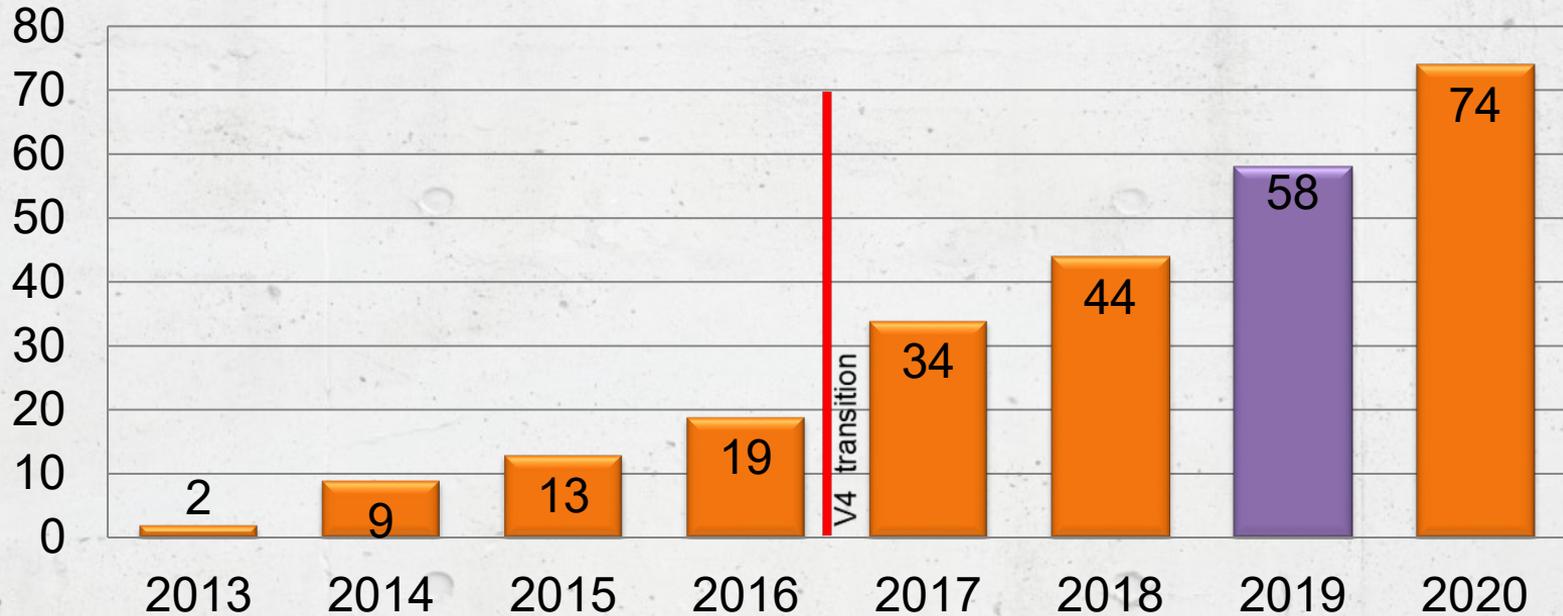
Company Name	Plant Name	Subsidiary	City	State/Province
Bichler Concrete & Gravel	Plant No. 2		Bark River	Michigan
Bichler Concrete & Gravel	Escanaba Plant No. 1		Escanaba	Michigan
Consumers Concrete Corporation	Battle Creek		Battle Creek	Michigan
Consumers Concrete Corporation	Benton Harbor		Benton Harbor	Michigan
Consumers Concrete Corporation	Byron Center		Byron Center	Michigan
Consumers Concrete Corporation	Charlotte		Charlotte	Michigan
Consumers Concrete Corporation	Freemont		Freemont	Michigan
Consumers Concrete Corporation	Grand Haven		Grand Haven	Michigan
Consumers Concrete Corporation	Holland		Holland	Michigan
Consumers Concrete Corporation	Ionia		Ionia	Michigan
Consumers Concrete Corporation	Kalamazoo		Kalamazoo	Michigan
Consumers Concrete Corporation	Lansing		Lansing	Michigan
Consumers Concrete Corporation	Muskegon		Muskegon	Michigan
Consumers Concrete Corporation	Niles		Niles	Michigan
Consumers Concrete Corporation	Paw Paw		Paw Paw	Michigan
Consumers Concrete Corporation	Quincy		Quincy	Michigan
Consumers Concrete Corporation	Rockford		Rockford	Michigan
Consumers Concrete Corporation	Sturgis		Sturgis	Michigan
Consumers Concrete Corporation	Three Rivers		Three Rivers	Michigan
Consumers Concrete Corporation	Whitehall		Whitehall	Michigan
Kuhlman Corporation	Kuhlman Yard 22		Monroe	Michigan
McCoig Materials	Primo Concrete		Brownstown	Michigan
McCoig Materials	Koenig Concrete		Detroit	Michigan
McCoig Materials	McCoig Concrete		Detroit	Michigan
McCoig Materials	Azteca Concrete		Redford	Michigan

Company Name	Plant Name	Subsidiary	City	State/Province
McCoig Materials	Eastside Concrete		Warren	Michigan
McCoig Materials	Progressive Concrete		Wayne	Michigan
Ozinga Ready Mix Concrete	New Buffalo - Yard 330	Indiana Division	New Buffalo	Michigan
Protocon RM	PORT HURON		PORT HURON	Michigan
Protocon RM	Sterling Heights		Sterling Height	Michigan
Protocon RM	Washington		Washington	Michigan
Superior Materials Holdings LLC.	Grand Ledge 16	Builders Redi-mix	Grand Ledge	Michigan
Superior Materials Holdings LLC.	LANSING 14	Builders Redi-mix	LANSING	Michigan
Superior Materials Holdings LLC.	ANN ARBOR 38		ANN ARBOR	Michigan
Superior Materials Holdings LLC.	AUBURN HILLS 36		AUBURN HILLS	Michigan
Superior Materials Holdings LLC.	BRIGHTON 103		BRIGHTON	Michigan
Superior Materials Holdings LLC.	HOOVER 02		DETROIT	Michigan
Superior Materials Holdings LLC.	JEFFERSON 32		DETROIT	Michigan
Superior Materials Holdings LLC.	FLINT 20		FLINT	Michigan
Superior Materials Holdings LLC.	LAPEER 23		LAPEER	Michigan
Superior Materials Holdings LLC.	MT. CLEMENS 101		MT. CLEMENS	Michigan
Superior Materials Holdings LLC.	NOVI 102		NOVI	Michigan
Superior Materials Holdings LLC.	ROMULUS 35		ROMULUS	Michigan
Superior Materials Holdings LLC.	STERLING HEIGHTS 39		STERLING HEIGHTS	Michigan
Van Horn Concrete	Van Horn Concrete - Main Plant Auburn Hills		Auburn Hills	Michigan
Van Horn Concrete	Van Horn Concrete - Waterford Location		Waterford	Michigan



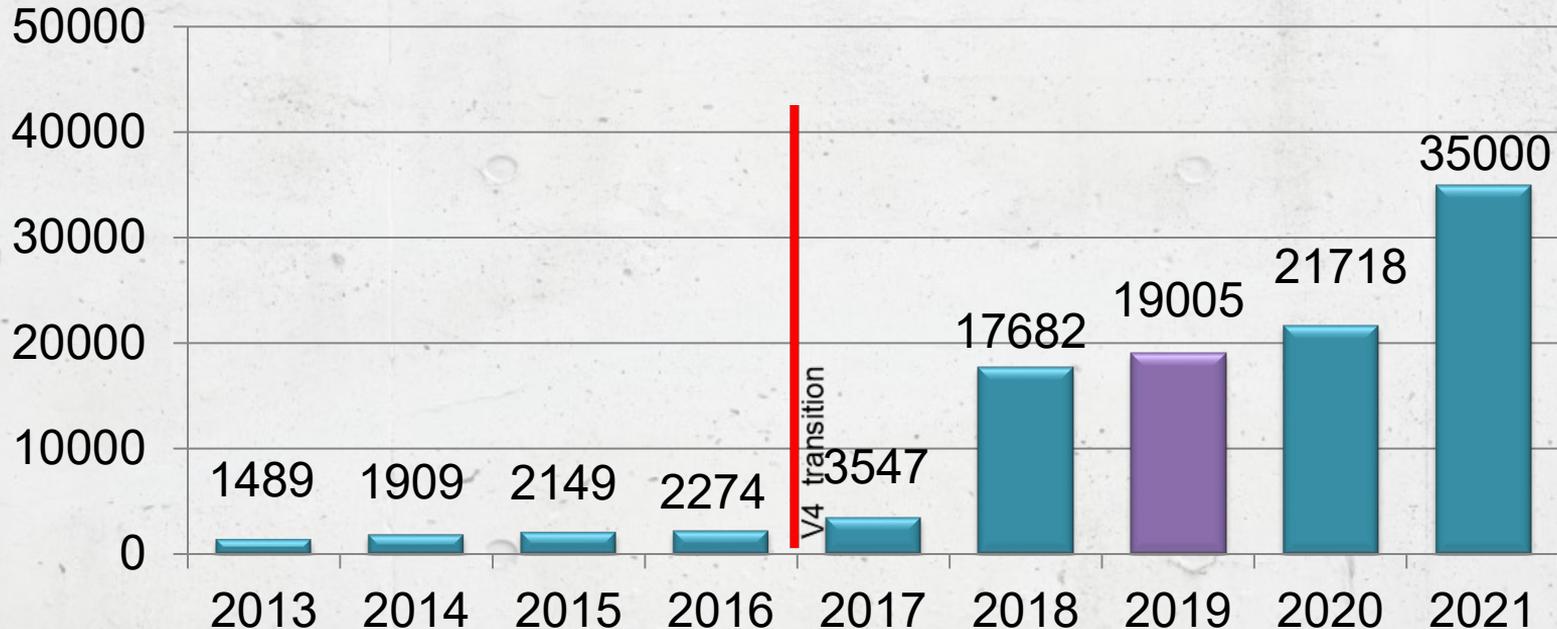
Tracking Industry EPDs (cumulative)

of EPDs

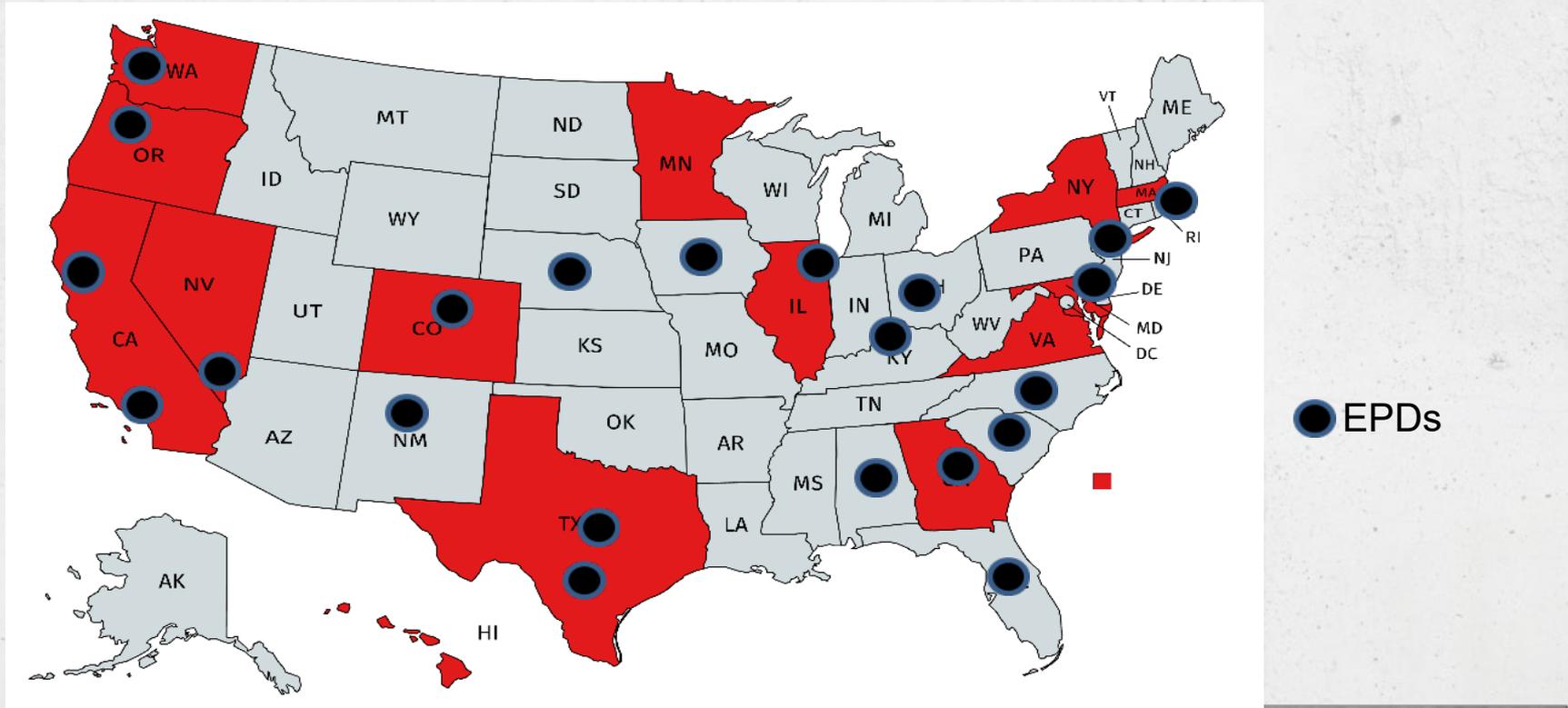


Tracking Mixes w/in EPDs (cumulative)

Products / Mixes



Top Markets for Green Building & RMC EPDs

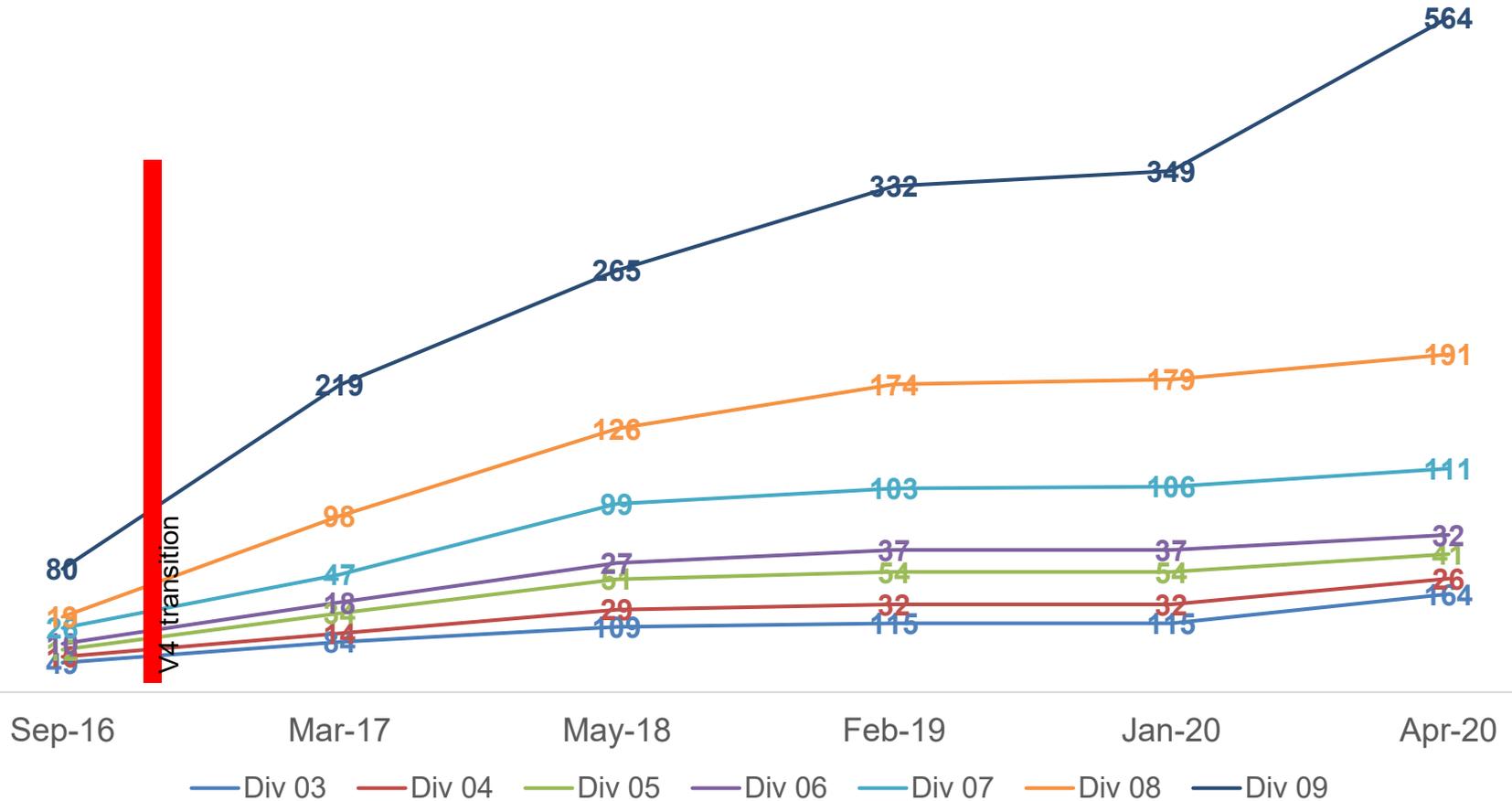


BUILD WITH STRENGTH

Disclosure – Product Categories

Div	Industry	EPDs
03	Concrete	164
04	Masonry	26
05	Metals	41
06	Wood / Plastic / Composite	32
07	Thermal & Moisture	111
08	Openings	191
09	Finishes	564

EPD ACTIVITY PER MASTERFORMAT DIVISION



Environmental Product Declaration



Intelligence In Wood

CROSSLAM CLT

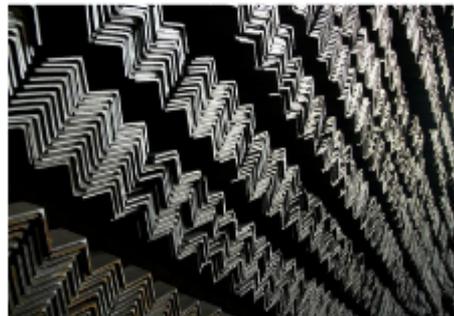
EPD for Cross Laminated Timber produced by Structurlam in Okanagan Falls, BC



Environmental Product Declaration

According to ISO 14025

Fabricated Steel Structural Sections



Steel Dynamics, Inc.[®]

Long Products Group
Structural and Rail Division

Issue Date: December 20, 2019

Valid Until: December 19, 2024

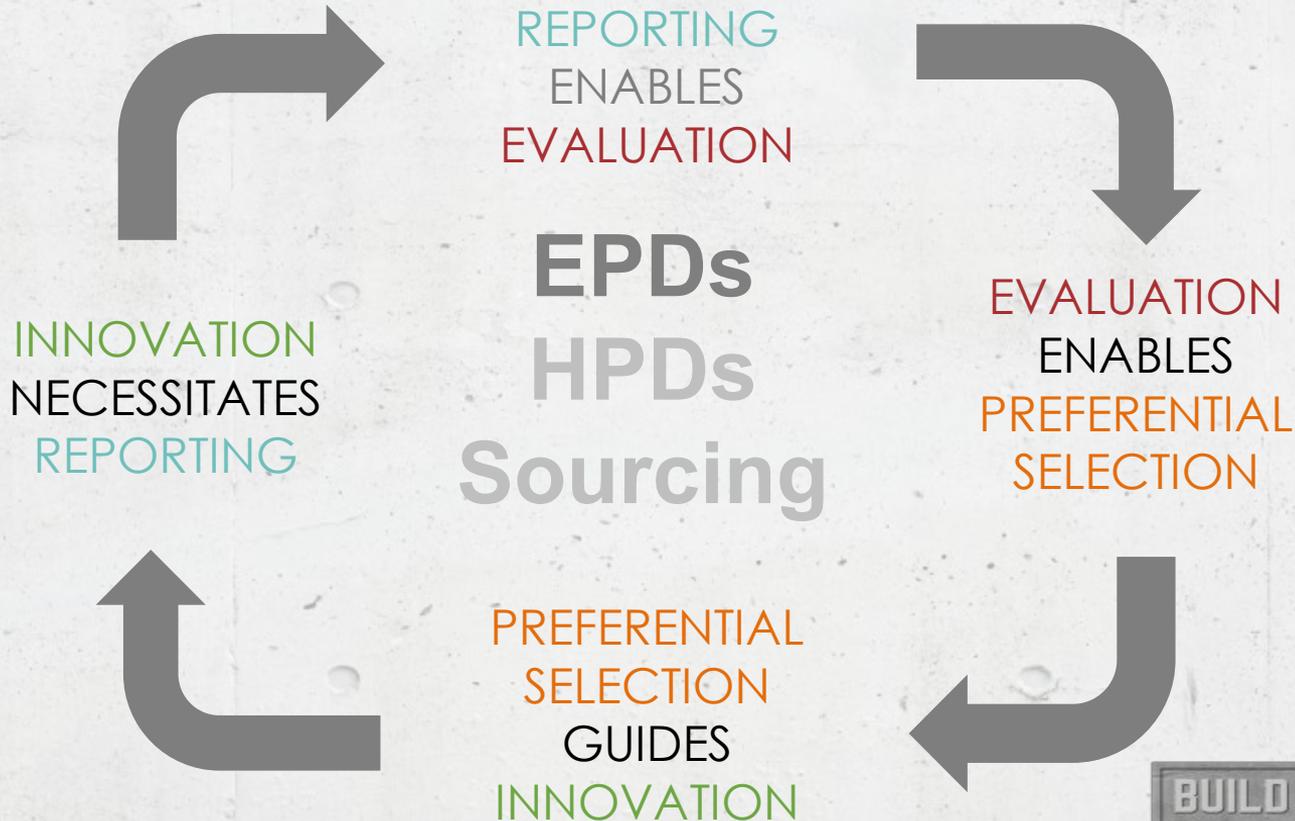
EPD Process

BUILD WITH STRENGTH

Process to Publish EPDs

- <https://www.nrmca.org/association-resources/sustainability/epd-program/>
- Collect 12 months of ops data
 - production, material use, energy use, air/water emissions, waste, supplier distances
- Consult with LCA/EPD practitioner
 - Athena, Climate Earth, MB Solutions, Quantis (PCA)
- EPD program operator for verification
 - NRMCA, ASTM, NSF

Transparency Loop

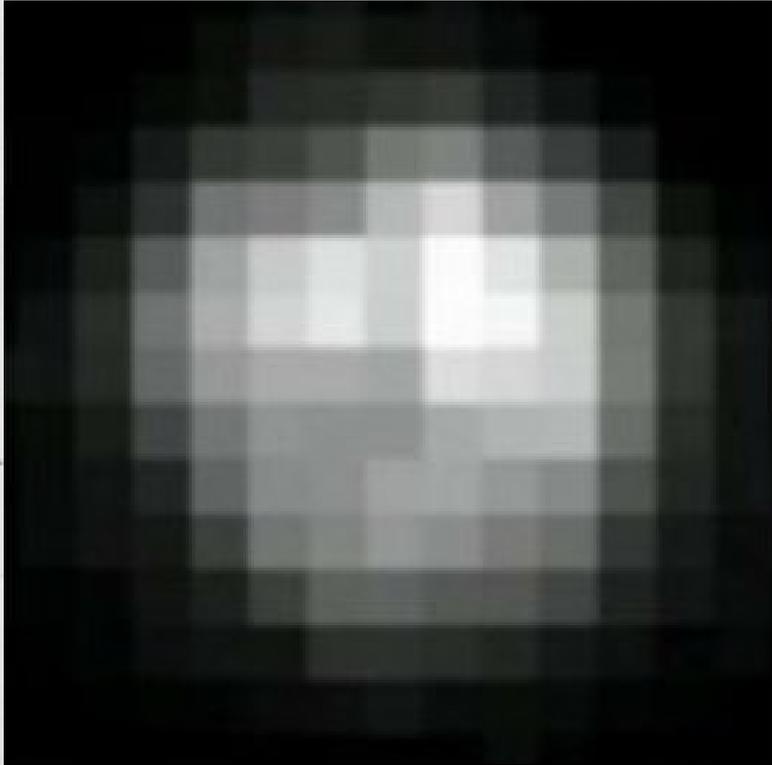


BUILD WITH STRENGTH

Take Away Notes & Summary

- Code/law and/or pressure from AE to be more transparent & GCs are the messengers
- LEED v4 being discovered in CDs and specs
- LEED letter template – modify it to meet your branding and communication strategy
- Concrete industry was one of the first to disclose environmental impacts and continue to be positioned to meet disclosure demands
- Growing disclosure from competing product categories
- <https://www.nrmca.org/association-resources/sustainability/epd-program/>
- Reach out for customized strategic discussions for business case to be more transparent

Pluto: 1984 vs 2018



Thank You

Questions

James Bogdan

jbogdan@nrmca.org

