



AMERICHANVRE
CAST-HEMP



Build Green

Hempcrete Installation • Hempcrete Materials • Hempcrete Training

Hempcrete for Construction and Green Buildings

Presented by



AMERICANVRE

CAST - H E M P

HIGH PERFORMANCE HEMPCRETE

EREASY®



What is Hempcrete?

- Non-structural (self supporting), bio composite insulation and walling material that replaces everything but structural frame in contemporary construction details
- Comprised of a mixture of the inner woody core of the fiber industrial hemp stalk, a lime-based binder and water
- In contemporary use since the late 1970's in France as a substitution for failing wattle and daub infill
- Fully approved for commercial and residential use in France, UK and now for residential use in the US as per 2024 IRC update



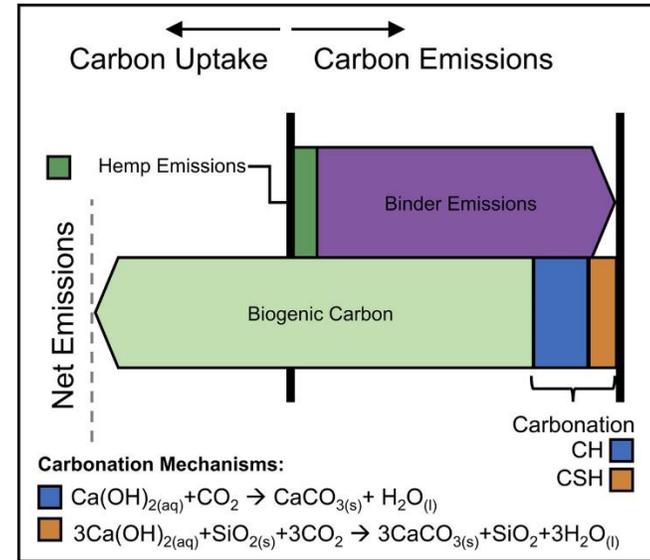
Material Properties

- Despite masonry-like qualities – Hempcrete is nothing like concrete!
- Density range of 15-22lbs/cuft versus concrete at 150lbs/cuft, no slump and low compressive strength
- Impressive thermal performance - trapped air in a matrix created by the hemp hurd/lime binder as well as thermal mass
- Healthy material – non-toxic components and alkaline environment
- Extreme fire resistance
- Carbon storage potential – carbon sequestering/net negative material

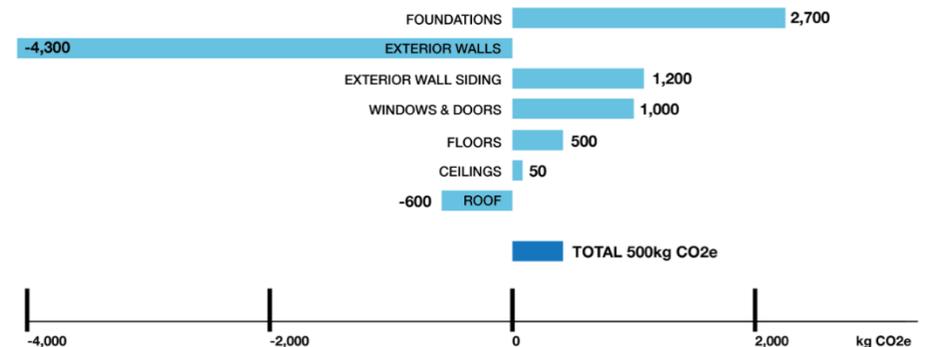


Carbon Storage Potential

- Majority of the carbon storage potential of hempcrete comes from the crop – 7-11 tons of CO2 removed from the atmosphere per acre
- LCA studies reveal potential for up to 11lbs/cubic foot of CO2e sequestered by finished hempcrete
- BEAM (Building Emissions Accounting for Materials) calculator now includes hempcrete – focuses on emissions associated with producing a material, which are responsible for 65-85% of the full life cycle emissions for most materials

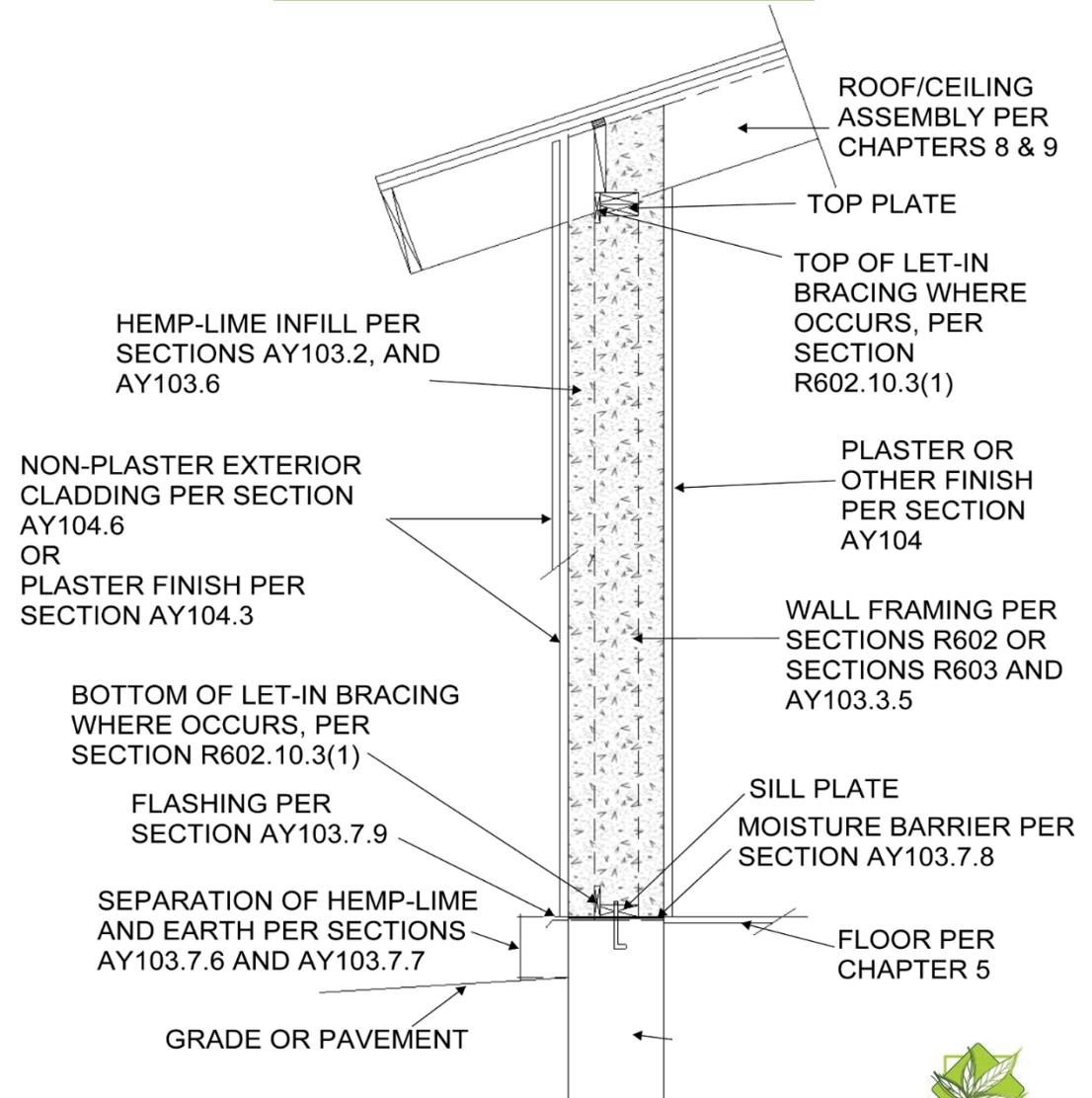


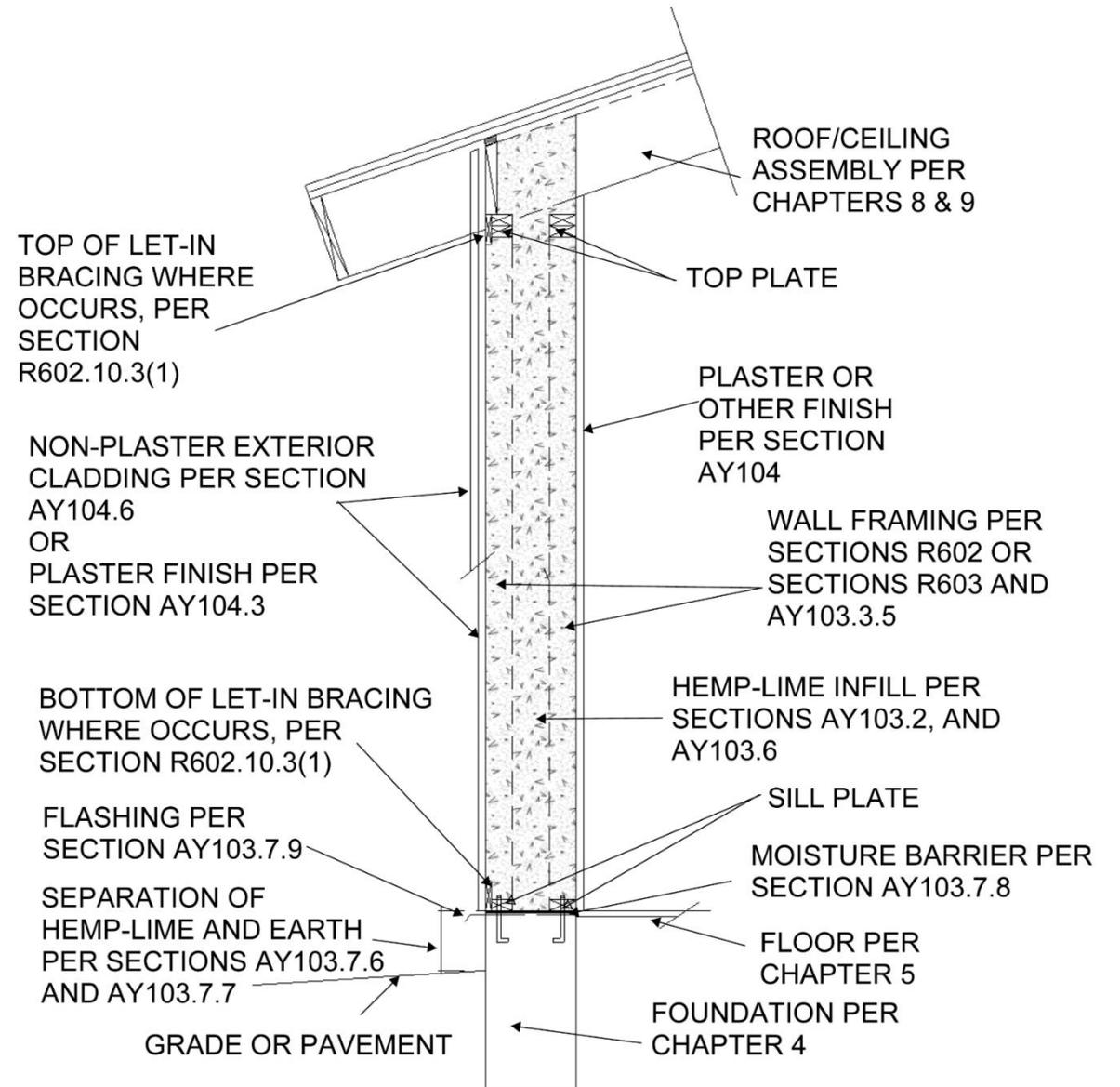
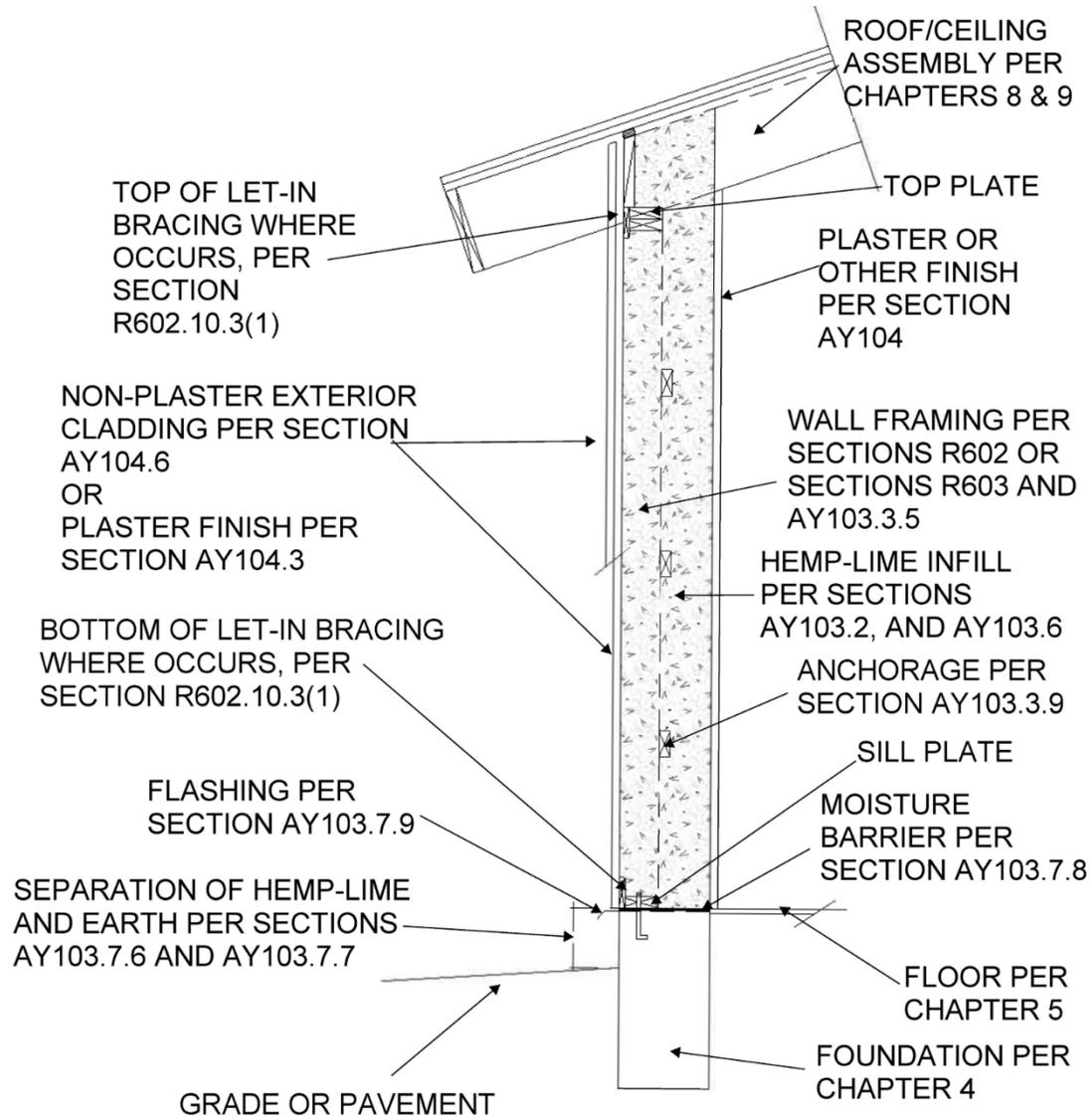
NET EMISSIONS BY BUILDING ELEMENT



Construction Details

- Available in the new Appendix AB in the IRC!
- No change to standard wall framing details as per existing ICC recommendations
- Drywall and plywood sheathing not responsible for shear load – hempcrete and let-in bracing as per existing method LIB
- Vapor-permeable wall finishes are a must – exterior wall finishes also dictate position of framing and window/door reveals





Ereasy Spray Applied Hempcrete

- Materials are mixed on site and introduced to the wall pneumatically with additional equipment
- Dramatic reduction in installation labor and overall costs compared to cast in-situ
- Only one side of the wall is formed – other side is sprayed and then “screeded” flat
- Increased consistency in placement density versus hand-placed methods
- Surface tension with framing members when sprayed
- Monolithic building insulation envelope for high-performance construction



EREASY Spray Applied Hempcrete System

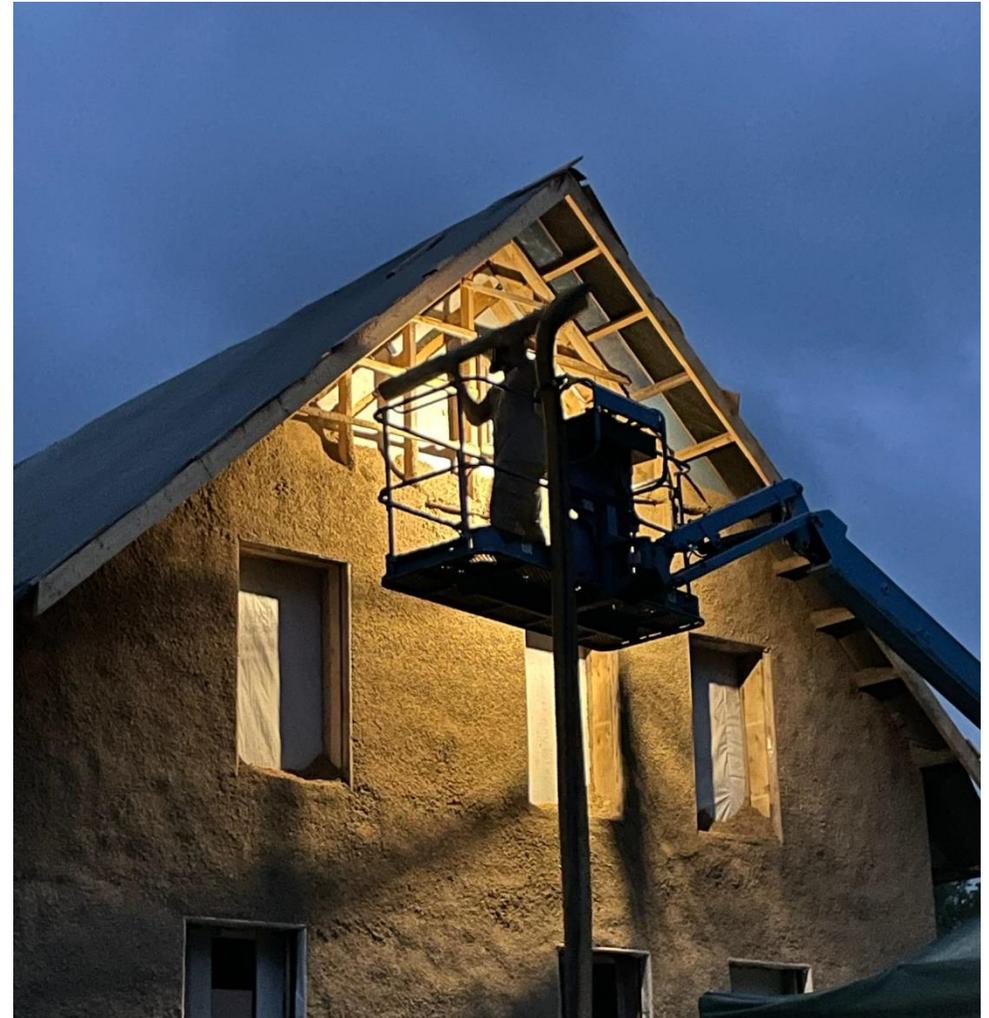
- Cuts labor by 60% or more in comparison with cast in-situ methodology, overall 20-30% reduction in hempcrete cost
- EREASY binder cures in 4-6 weeks as opposed to 10-12 or more with other binders
- Lighter hurd to binder ratio means higher R value and greater cost efficiency
- Driven by 375cfm air compressor
- Americhanvre is the exclusive licensee for the Baumer Eready Hempcrete System designed in France
- Eready hardware now domestically produced by Americhanvre in the United States
- Covered by full use United States Patent





Ereasy System Commercial Success under Americhanvre

- First hempcrete spray application system to be used in the United States successfully – projects in Idaho, Washington, British Columbia, Minnesota, Montana, Michigan, Missouri, West Virginia, Pennsylvania, Virginia, New York, Massachusetts, Vermont
- Eight unique, Americhanvre trained Ereasy owner-operators around the USA and well over one hundred trained Ereasy Technicians including first nations and workforce development programs
- Forty plus Ereasy Hempcrete insulated projects installed by Americhanvre – retrofit, new construction, affordable housing
- Single most utilized hempcrete installation methodology in the United States hemp building industry



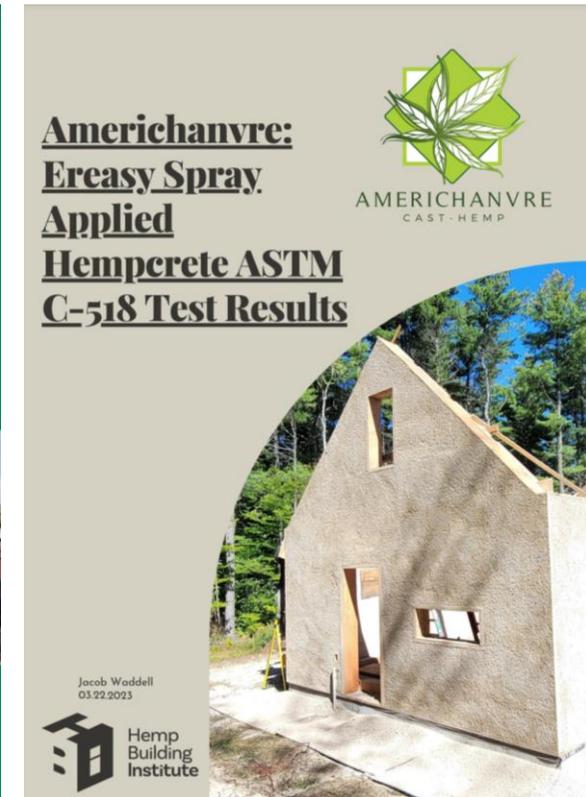
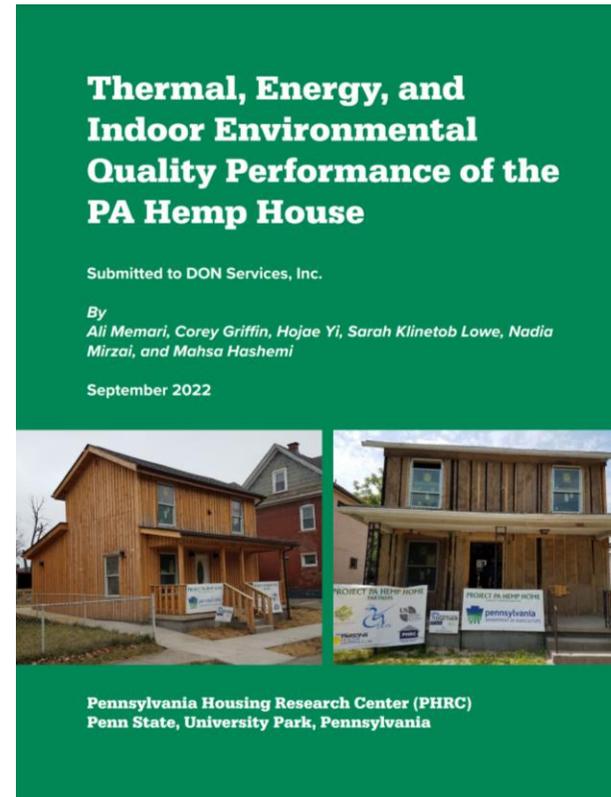
Americhanvre Grants/Awards

- 2021 – PA Dept. of Ag. – DON Services, New Castle, PA – “Project PA Hemp Home” – consortium under DON including Americhanvre, PA Housing Research Center (Penn State Univ.), Parson’s New School Healthy Materials Lab
- 2022 – PA Dept. of Ag. – PA Hemp Industry Council – “Invest in PA Hemp”
- 2022 – PA Dept. of Ag. – All Together Now PA – “Invest in PA Hemp”
- 2023 – National Science Foundation – PA Industrial Hemp Engine
- 2023 – U.S. Army SBIR/STTR – Direct to Phase II award, Sustainable Building Materials and Technologies – Spray Applied Hempcrete



Americhanvre Research/Documentation

- ASTM C-518 Thermal Resistance Testing – R2.2/in for Eready Spray Applied Hempcrete – Performed by Americhanvre
<https://americhanvre.com/wp-content/uploads/2023/03/Americhanvre-C518-Testing-Report-HBI-32223.pdf>
- Pennsylvania Housing Research Center (PHRC) – “Thermal, Energy, and Indoor Environmental Quality Performance of the PA Hemp House”
https://www.phrc.psu.edu/assets/docs/Publications/PHRC-Research-Report_Thermal-Energy.pdf
- Research to be performed through 2024-25 as part of U.S. Army SBIR D2P2 award – ASTM E-119 on four wall assemblies in IRC Document, re-creation of PHRC report on six more Americhanvre/Eready Insulated projects
- Americhanvre owner Cameron McIntosh co-writer/proponent for Appendix AY-Hemp Lime
https://ushba.org/wp-content/uploads/proposal_8646-Final.pdf



Americhanvre Team



Cameron McIntosh – Americhanvre President and Principal Owner

- BFA Barton College
- Founder Americhanvre Cast Hemp
- US Hemp Building Association – Director at Large
- All Together Now PA – Sustainable Building Materials Lead
- PA Hemp Industry Council – BOD – Treasurer
- Co-writer/proponent IRC Appendix AY Hemp Lime
- Writer/recipient/principal investigator U.S. Army SBIR Sustainable Building Materials Direct to Phase II

Melissa McIntosh – Americhanvre CFO and Principal Owner

- BS Accounting, Barton College
- MBA DeSales University – Accounting
- Founder Americhanvre Cast Hemp
- Twelve years corporate bookkeeping experience, specialty in state sales/use tax



Charlotte Tarr - Project Manager

- BA Political Science/Environmental Studies
- 17 years experience cost/software/data collection and analysis for Office of Secretary of Defense (OSD)
- Cost Assessment and Program Evaluation (CAPE)
- Program Manager – Cost Assessment Data Enterprise (CADE)
- Project Management Professional (PMP)
- Identity and Access Management (IAM) Security + certification
- Top Secret Clearance
- Managed \$68m+ in DoD contracts



Dr. Dick Thurston – Advisor

- Attorney with RLT Global Consulting LLC
- MA/PhD – University of Virginia
- Former VP of Corporate Staff/General Counsel for Texas Instruments
- Expertise in IP rights, technology licensing, corporate law, business planning, small-medium sized business development
- 40+ years of experience in assisting companies to create their IP value proposition
- Further expertise in semiconductors, carbon nanotubes, 3D printing, electronic sensors



Richard Steffens – Advisor

- Senior Advisor with TTSE Tech LLC
- Former US Dept. of Commerce Deputy Secretary for Asia
- Former Assistant Director for Venture Development for NJ Commission on Science and Technology
- Connected nearly \$50m in financing for early-stage firms to establish manufacturing and distribution operations



Americhanvre Case Study - Project PA Hemp Home

- Restoration of a blighted home in New Castle, PA with Ereasy Spray Applied hempcrete by Americhanvre the DON group of companies
- Funded in part by the Pennsylvania Department of Agriculture – opportunity for farmers and demonstration of applications for affordable housing
- Collaboration with Americhanvre, Parsons Healthy Material Lab, Pennsylvania Housing Research Center with support from UK Hempcrete
- Pennsylvania grown hemp wood flooring by HempWood in Kentucky
- PHRC report observed 30-70% overall reduction in heating and cooling costs
- Occupied by affordable housing recipient



PENNSYLVANIA HOUSING
RESEARCH CENTER

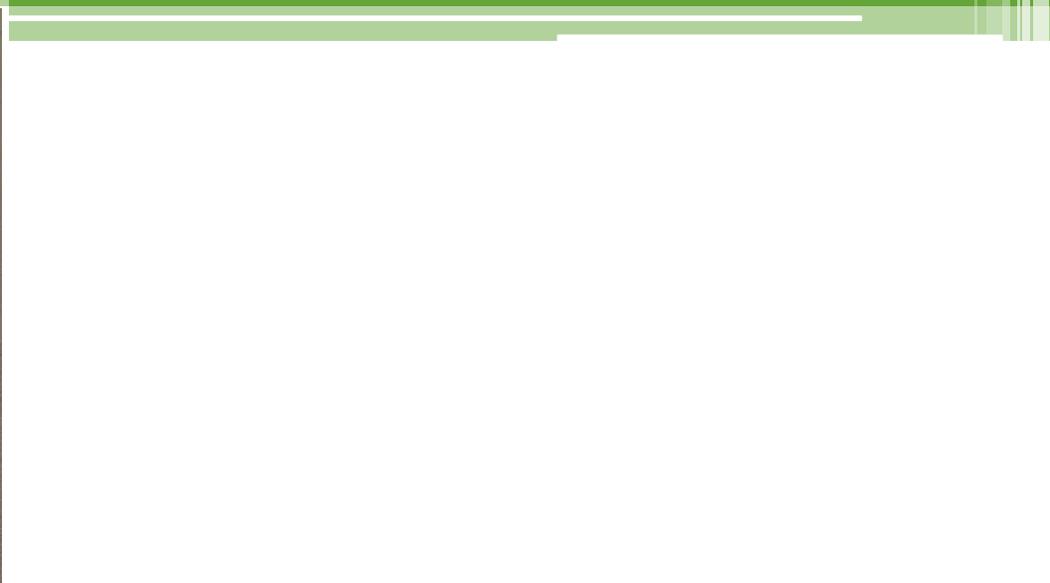





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Americhanvre Case Study – The Raft at Lower Sioux

- Emergency housing duplex built by Eready Owner/Operator Lower Sioux Tribe in Minnesota on Lower Sioux Reservation
- Insulated with Eready Spray Applied hempcrete system in only three days
- First hempcrete home in Minnesota and first hempcrete emergency housing duplex in the United States
- Entire 1600 sqft structure completed for <\$200,000.00
- “The Raft” will be owned and operated by Lower Sioux as emergency affordable housing for up to two families in crisis at a time
- Eight Lower Sioux Tribe members trained as Eready Spray Application Technicians – also engaged Lower Sioux Youth Program for project support/workforce development



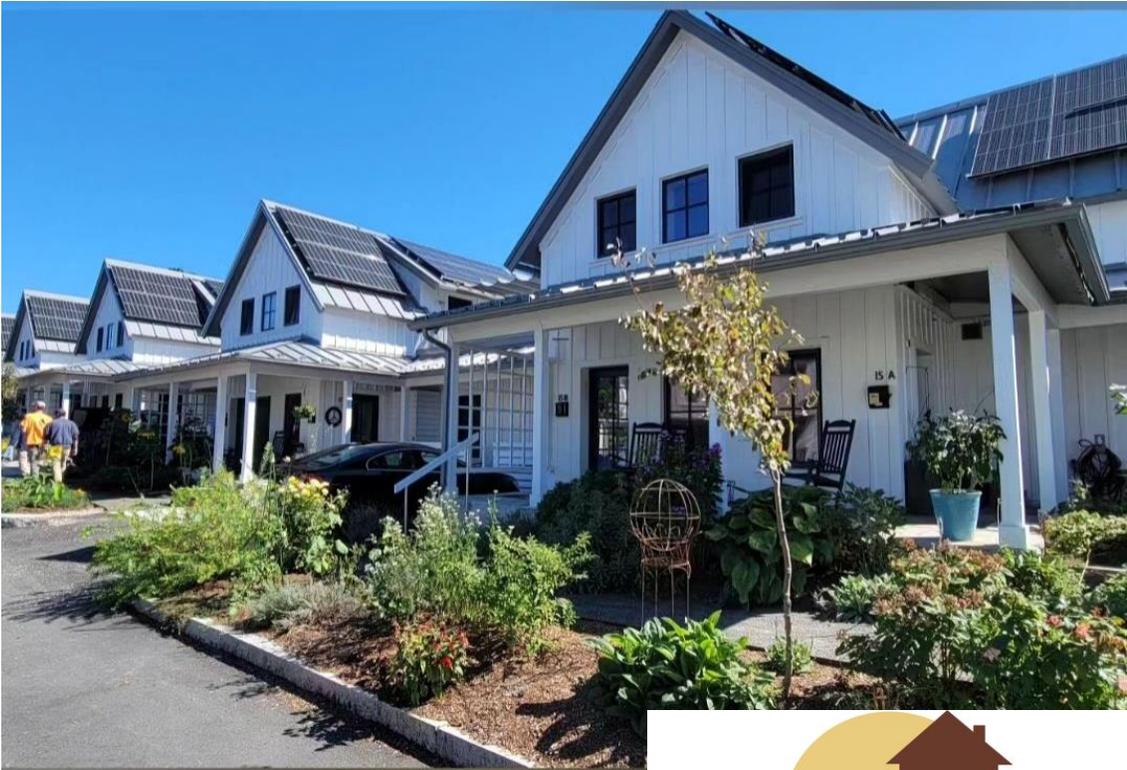


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Hillside Center for Sustainable Living – Newburyport, MA



- Fully sustainable low-rise multi-family community development by Eready system owner/operator Hall and Moskow in Newburyport, MA
- Solar, passive house, grey water system, permeable paving, native edible landscaping
- Existing units constructed from concrete and EPS foam
- Southrise building is 12 units and Eready spray applied hempcrete system to replace concrete and EPS foam detail
- First of its kind commercial hempcrete construction for the United States
- Full-section tilt-up panel design by Hall and Moskow – adapted to include Eready spray applied hempcrete with support from Americhanvre

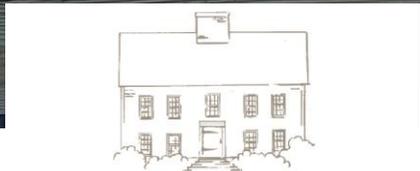




HILLSIDE
SUSTAINABLE LIVING







HALL AND MOSKOW
REAL ESTATE OWNERS, MANAGERS, DEVELOPERS



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