



Connecticut Department of Energy and Environmental Protection



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**



Deconstruction

July 11, 2012

USEPA Brownfield Grantees Meeting

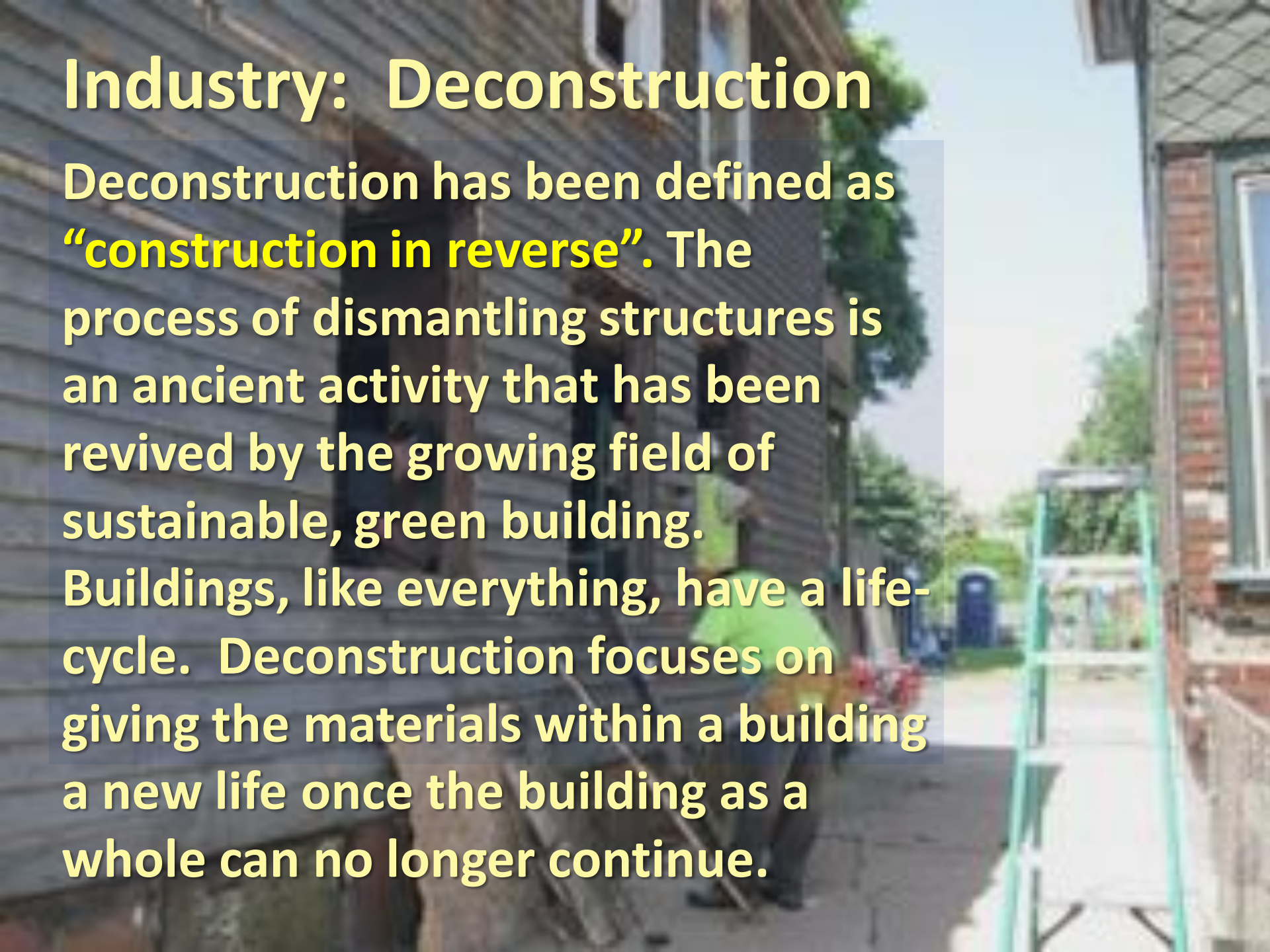
Sherill Baldwin, Source Reduction and Recycling, CT DEEP



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Industry: Deconstruction

Deconstruction has been defined as “**construction in reverse**”. The process of dismantling structures is an ancient activity that has been revived by the growing field of sustainable, green building. Buildings, like everything, have a life-cycle. Deconstruction focuses on giving the materials within a building a new life once the building as a whole can no longer continue.



Industry: Deconstruction vs. Demolition

- ✱ **Deconstruction:** The process of carefully dismantling a building in order to salvage components for reuse and/or recycling. Results in products for sale, trained labor force, improved environmental quality.
- ✱ **Demolition:** The act of destroying a building (or portion), often with heavy machinery, employing very few and resulting in only garbage for the landfill.

Source: David G. Hampton, Jr. Chicago, 2008



What Can Be
Recovered at
the Renovation
or Demolition
Job Site?





Fixtures

Roofing Shingles

Cardboard

Gypsum Scrap

Mixed Plastic

Cabinets

Concrete

Carpet/Pads

Office paper

Wood

Architectural Salvage

Scrap Metal

Pallets

Windows

Asphalt

Bottles and Cans

Steel

Flooring

Ceiling Tile

Brick

Why Reuse or Recycle?

- Protects the environment and public health.
- Reduces the amount of waste disposed – which means less waste to incinerate or landfill.
- Prevents or reduces air and water pollution.
- Conserves water and precious natural resources – since less raw materials need to be extracted and processed.
- Saves energy – In 2003, EPA reported the energy savings from recycling in the US accounted for roughly 1,486 trillion Btu in energy savings - an amount equivalent to the consumption of 11.9 billion gallons of gasoline or 256 million barrels of crude oil!
- Makes us more sustainable because we are borrowing less materials and energy from our children's future.
- Reduces greenhouse gas emissions.
- The CT Climate Change Action Plan includes source reduction and recycling as a key strategy to reduce greenhouse gas emissions. In fact, of the 55 strategies in the plan, recycling 40% of our municipal solid waste falls within the top ten actions in terms of quantity of projected greenhouse gas reductions. The revision of the source reduction/recycling goal to 58% will result in even greater greenhouse gas reductions.
- It's the Law!

Recycling...It's the Law!



Did you know that recycling is mandatory in Connecticut? **Everyone must recycle.** That includes residents whether living in a single or multifamily building, every business including non-profits, and all public and private agencies and institutions, e.g., colleges, hospitals, local and state government agencies. **It's the Law!**

Recycling.... It's the Law!

- Glass & Metal Food and Beverage Containers
- Plastic Containers (PET, #1), 3 gallons or less - **NEW!**
- Plastic Containers (HDPE, #2), 3 gallons or less – **NEW!**
- Corrugated Cardboard
- Boxboard – **NEW!**
- Newspaper
- Magazines – **NEW!**
- White & Colored Office Paper – *for residents* – **NEW!**
- Scrap Metal
- Ni-Cd Rechargeable Batteries (from consumer products)
- Waste Oil
- Storage Batteries (from motor vehicles)
- Leaves (must be composted)
- Grass Clippings (banned from disposal)
- Household electronics (Covered Electronic Devices banned from disposal) www.ct.gov/dep/e-waste



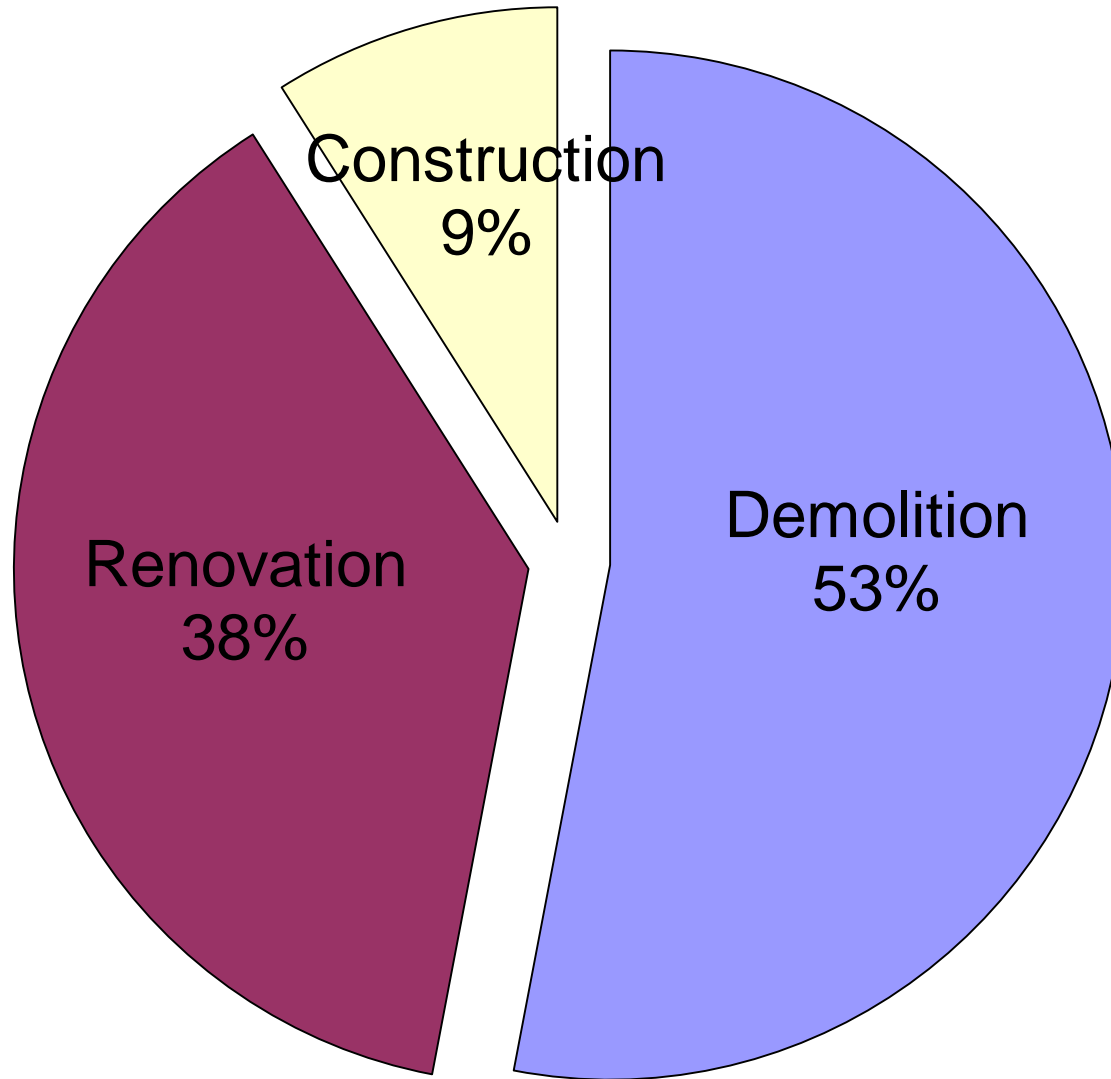
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C & D debris – Generation Rates

- 170 million tons building related C & D debris generated annually in U.S. (EPA)
 - 2.8 lbs per person per day (EPA)
- Translates – 1.79 million tons of C & D debris generated annually in CT (2007)



Where is Waste Generated?



CT Solid Waste Management Plan

Objective 4 – Management of Special Wastes Priorities for Managing C & D

- Maximize source reduction & reuse
- Maximize recycling
- Beneficial use of special waste

Type of Waste	Legal Classification in Connecticut	Examples
Landclearing debris	Bulky waste	Tree stumps, tree tops
Demolition waste (from buildings)	Bulky waste	Concrete, wood, brick, plaster, roofing materials, wallboard, metals, carpeting, insulation
Construction waste (from buildings)	Municipal solid waste	Pallets, wood scraps, wallboard, siding and roofing scraps, packaging, carpeting. Foam padding, insulation
Highway construction and demolition waste	Bulky waste, municipal solid waste	Asphalt, concrete, steel, related construction and demolition wastes, utility poles, railroad ties, brick, block, rock
Oversized municipal solid waste	Municipal solid waste	Furniture, furnishings, carpeting, rugs



Daniel C. Esty
Commissioner

Reduce/Reuse/Recycle

[Recycling...It's the Law!](#)

[Recycling At Home](#)

[Business Recycling Assistance](#)

[Recycling at Schools and Institutions](#)

[Special Event and Venue Recycling](#)

[Municipal Recycling Resource Center](#)

[State Agency Recycling Resources](#)

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Construction & Demolition Waste Management Plans



Waste Management Plans for construction, renovation and demolition projects are part of a growing movement to better manage materials and create sustainable communities. Building and demolition activities are integrating "sustainability" or "green" management techniques designed to protect the environment, save resources (including financial resources), and conserve energy to ensure the well being of current and future generations.

Successful Waste Management Plans

A construction or demolition waste management plan does not need to be lengthy or complicated to be effective. Preparing a plan consists of identifying the types of debris that will be generated by the project and identifying how all waste streams will be handled. A successful waste management plan will contain the following information:

- Waste recycling, salvage or reuse goals
- Estimated types and quantities of materials or waste generated from the project site
- Proposed and intended disposal methods for these materials
- Intended procedures for handling the materials or waste
- Detailed instructions for the subcontractors and laborers on how to separate or collect the materials at the job site

The industry average for waste generated at new construction sites is six pounds per square foot. Most of this waste can be put towards another use, or better yet, be recycled if proper planning is done within the design phase. The primary objective of these plans are to initially reduce the amount of generated construction waste on projects by requiring all subcontractors and material suppliers to limit quantities of materials and packaging to only those necessary for the project itself.

Successful and profitable job-site recycling begins with a Waste Management Plan that diverts materials by recycling, salvaging and reusing.

Where Do I Start?

There are numerous examples of construction and demolition waste management plans as well as guidelines for creating them. The following examples vary in content, design, form and layout to help you create one that best suits the needs of your particular job. The first group of plans focuses on construction in general, while the second set focuses heavily on construction and demolition and gives special attention on recycling, salvage, and the reuse of materials. While each of these plans is provided as examples there are no limitations as to the design of your plan or the information included within it.

10 Steps to Successful Reuse & Recycling

1. **Commit**
2. **Identify Target Materials**
3. **Select Markets and Haulers**
4. **Develop a Waste Management Plan**
5. **Signs and Site Logistics**
6. **Monitor**
7. **Education and Training**
8. **Document**
9. **Adjust**
10. **Celebrate Success**

Source: Waste Cap Resource Solutions www.wastecap.org



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4. Waste Management Plans

- Pre-demolition and pre-bid meetings
- Waste management goals
 - Reduce, reuse, recycle
- Submit Waste Management Plan
 - Waste Progress Reports
 - Final documentation
- Implementation
 - Instruction, separating, sorting, hazardous waste



Creating Incentives to reuse & recycle C&D in your Municipality

- Require a Construction or Demolition Waste Management Plan - - how will contractor reuse/recycle materials
 - Request for Proposal
 - Ordinance - Require or Mandate
 - Tied to building permit or demolition permit
 - Tied to funding – for all projects with state and/or local funds
 - Tied to scale – size of project
 - Combination and/or phase-in approach

Creating Incentives to reuse & recycle C&D in your Municipality

- Recycling or recovery (reuse) of specific items (e.g. asphalt roofing shingles, scrap metal, cardboard, ceiling tiles)
 - Connected to strong markets
- Any program should provide listings of waste haulers and end-markets for materials to provide assistance
- Require demolition projects to include deconstruction portion
 - reach out to deconstruction contractors

Creating Incentives to reuse & recycle C&D in your Municipality

- Could increase fee or add a 'environmental' fee onto building and/or demolition permit
 - Recycling or recovery (reuse) rate – 50% or 60% or 75% of waste generated at the construction or demo site reused or recycled
 - Success of recovery could be tied to a return of part or all of the fee – some kept to cover program costs
 - 50% recovery; return 25% of fee
 - 60% recovery; return of 50% of fee
 - 75% recovery; return of 75% of the fee

Sample Ordinances and Regulation of C&D Waste by Municipalities



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Local Management of Construction & Demolition Waste

Local ordinances create incentives and encourage recycling of construction and demolition (C&D) waste, which can improve a community's overall recycling rate. C&D recycling ordinances include 'green', 'sustainable' and 'LEED' building techniques and may apply to construction, renovation and/or demolition projects. Several states have passed laws requiring ordinances and other cities are passing ordinances taking the lead in their state.

Most C&D reuse and recycling ordinances or policies that are implemented include the following:

- Recycling of C&D debris
- Reusing building materials on the project site
- Deconstruction to maximize reuse
- Specifying types and quantities of materials recovered for reuse and recycling
- Reporting requirement
- Compliance tools including fees and penalties for non-compliance



Sample Ordinances and Regulation of C&D Waste

[Ordinance for Managing Construction and Demolition Waste Created by Deconstruction of a Building](#) (Iowa DNR) A model template.

[Local Government Sample Ordinances](#) (CalRecycle) A list of California C & D ordinances, policies and resolutions.

[C&D Site Waste Recycling](#) (City of Chicago, IL) Ordinance/Regulation

[Green Building Ordinance](#) (City of Newark, CA)

[Recycling and Reuse of Construction and Demolition Debris Ordinance](#) (City of Madison, WI)

[Local C&D Recycling Regulations](#) (Central Contra Costa Solid Waste Authority, CA)

Examples of Programs Implemented as a Result of Passing C & D Recycling Ordinances

[Lee County Government](#) (Florida)

[City of San Jose](#) (California)

Who Else is Doing It?

- Stamford
 - Attempted Ordinance
- New Haven
 - Green Building focus
- Bridgeport
 - On long list of green initiatives
- Norwalk, Hamden
 - Included deconstruction as option in RFP

Resources for Contractors



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Regulating Waste

Compliance Assistance

Hazardous Waste

Remediation Waste

Solid Waste

Used Oil

Wastewater

Waste Transporters &
Facilities

Information for
Municipalities

Waste Disposal
Information for
Individuals/Homeowners

Regulating Waste Main
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Information Resources for Contractors in the Construction Trades

Listed below are a number of links to web with environmental information for firms and individuals engaged in the construction trades, including architects, engineers, general contractors, new home construction contractors, renovation and demolition contractors, roofers, plumbers, electricians, painting and siding contractors, flooring and drywall contractors, masons, and others. If you have a question on any of the following subjects, please call the contact telephone number listed in the web page for that subject. If no contact phone number is listed, call (860) 424-3000, or [send us an email](#).

[Aggregate Recycling Facilities](#)

[Aquifer Protection](#)

[Asbestos Abatement/Removal](#) (CT Department of Health)

[Asbestos Disposal](#)

[Asbestos in Schools](#) (US EPA)

[Asphalt Shingle Recycling](#)

[Brush and Stump Management](#)

[Buy Recycled Products](#)

[Composting and Organics Recycling](#)

[Construction and Demolition Material Processing Facilities](#)

[Construction and Demolition Waste Management and Disposal](#)

www.ct.gov/deep/C&DManagement



Also, DEEP
C & D Reuse and Recycling listserv

Questions?

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www.ct.gov/deep/recycle

www.ct.gov/deep/C&DManagement



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