Brownfields Recycling:
Infrastructure and Buildings

- EPA ARC Grants:
  - **c. Environmental Benefits from Infrastructure Reuse/ Sustainable Reuse:** Describe any anticipated environmental benefits, beyond the assessment and remediation of contaminants, associated with the sustainable redevelopment of sites assessed under this grant, including the use of existing infrastructure, such as utilities and public transit, green buildings, energy efficiency, water management, green remediation, construction and demolition materials recycling, diesel emissions reductions, and renewable energy on brownfields.

  - "Consider ways of incorporating construction and demolition materials recycling into the assessment, cleanup, or redevelopment of your brownfield site. If your site has buildings that need to be demolished, plan to recover and sell, donate, or reuse the uncontaminated usable materials rather than disposing of them in a landfill."

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“If your site has buildings that need to be demolished …”

- How do you know?
- An Infrastructure Reuse Assessment (IRA) can provide answers.
  - Assists in preserving and raising capital for site cleanup and restoration
  - Secondarily can enhance marketability of the property
- An IRA combines …
  - Phase I Environmental Site Assessment
  - Asbestos and Lead-based Paint Surveys
  - Property Conditions Assessment
  - Salvage and Deconstruction Analysis
- The bulk of the effort is the Property Condition Assessment …

Former Wehadkee Yarn Mill
Talladega, AL

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Property Condition Assessments

- It is not always easy to predict how a piece of property will perform or what outside factors may affect a property's condition

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Property Condition Assessment Overview

- Property Condition Assessment (PCA): The assessment of the condition of a piece of commercial property
- Standard for conducting a PCA defined by ASTM 2018-08, “Property Condition Assessments: Baseline Property Condition Assessment Process”
- Client-driven scope
- Typically performed as part of Due Diligence on commercial real estate transactions
- Users can be buyers, sellers, lenders, municipal/county governments, universities

Property Condition Assessment

Purpose

- To identify immediate and probable future capital expenditures
- To identify problematic building materials and equipment
- To be used in facilities planning and budgeting
- To be used by lenders as a tool for determining the terms of a loan
- Provides information required to make an informed decision concerning the physical condition of the property and the cost associated with that condition.

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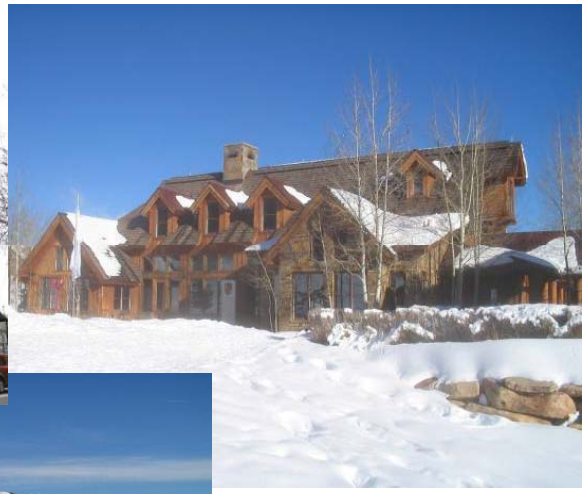
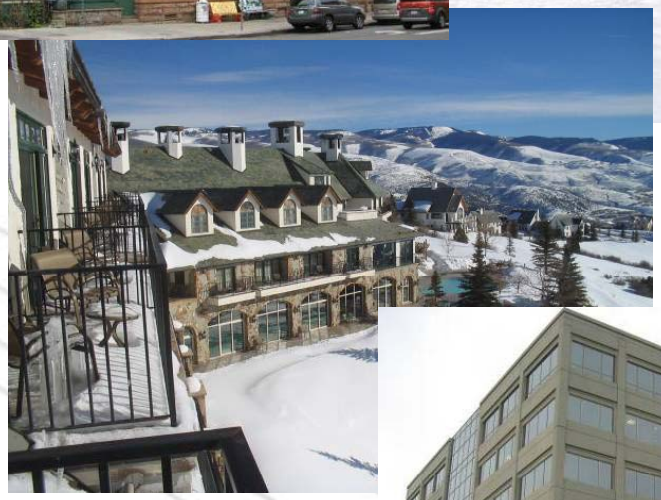
Property Types

- Retail
- Industrial
- Office
- Multi-family
- Recreational
- Hotels
- Storage Facilities
- Educational Facilities
- Places of Worship
- Parking Structures
- Hospitality Facilities





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Property Condition Report (PCR)

- Description of the property and building systems:
  - Site Improvements
  - Substructure & Superstructure
  - Building Envelope
  - Roofing
  - Interiors
  - Mechanical, Electrical, & Plumbing Systems (MEP)
  - Fire Protection & Life Safety Systems
  - Vertical Transportation Systems
  - Amenities
  - Compliance with Americans with Disabilities Act (ADA) and/or Federal Fair Housing Act Amendments of 1988 (FHAA)

Property Condition Report (PCR)

- Describes systems in place and current conditions of the building systems and equipment based on visual observations.
- Assessment typically does not involve destructive testing, diagnostics, measurements, or intrusive observations.
- Based upon Expected or Remaining Useful Life (EUL & RUL) of building systems and equipment
- Provides opinions of cost for replacement of building systems
- Provides photographic documentation

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EUL vs. RUL

- The Estimated Useful Life (EUL) is the estimated life expectancy of a building system, material, or piece of equipment.
- The Remaining Useful Life (RUL) is the remaining life of a building system, material, or piece of equipment relative to its current age and EUL.
- Example: If a 5-ton rooftop packaged unit has an EUL of 15-years and it is 10-years old, then it has an RUL of approximately 5-years.

Expected Useful Life Tables

- Various sources of EUL include:
- ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers
- Fannie Mae Expected Useful Life Table
- Marshall and Swift Valuation Service
- Professional's Experience

Note that many factors affect the service life of a building component

HVAC Equipment EULs

Equipment Item	Median Years
Air conditioners	
Window unit	10
Residential single or split package	15
Commercial through-the-wall	15
Water-cooled package	15
Heat pumps	
Residential air-to-air	15
Commercial air-to-air	15
Commercial water-to-air	19
Roof-top air conditioners	
Single-zone	15
Multizone	15
Boilers, hot water (steam)	
Steel water-tube	24
Steel fire-tube	25
Cast iron	35
Electric	15

Equipment Item	Median Years
Coils	
DX, water or steam	20
Electric	15
Heat Exchangers	
Shell-and-tube	24
Reciprocating compressors	20
Package chillers	
Reciprocating	20
Centrifugal	23
Absorption	23
Cooling towers	
Galvanized metal	20
Wood	20
Ceramic	34
Air-cooled condensers	20
Evaporative condensers	20

EXPECTED USEFUL LIFE TABLE

SITE SYSTEMS NOTE: 50+ "long-lived" systems: EUL based on location and use specific conditions	Family Development	Elderly Development	Action "Action" equals replace unless other wise noted
Basketball Courts	15	25	
Built Improvements (playgrounds/site furniture)	20	20	
Catch Basin	40	40	
Cold Water Lines	40	40	
Compactors	15	15	
DHW/Supply/Return	30	30	
Dumpsters	10	10	
Dumpster Enclosure	10	10	Fence Only
Earthwork	50+	50+	
Electrical Distribution Center	40	40	
Emergency Generator	15	15	
Fencing			
Chain Link	40	40	
Wrought Iron	50+	50+	
Stockade/Basinweave	12	12	
Post and Rail	25	25	
Gas Lines	40	40	
Heating Supply/Return	40	40	
Incinerators	50+	50+	
Irrigation System	30	30	
Lift Station	50	50	
Mail Facilities	10	10	
Landscaping	50+	50+	
Parking			
Asphalt	25	25	Resurface
Gravel	15	15	Resurface
Pedestrian Paving	15	15	Resurface
Bimminors	15	15	
Concrete	30	30	
Retaining Walls			
Concrete	20	20	Fill Cracks/Repoint
Masonry	15	15	Fill Cracks/Repoint
Wood	15	15	Replace
Stone	15	15	Fill Cracks/Repoint
Roadways			
Asphalt (Sealing)	5	5	Seal
Asphalt	25	25	Resurface
Gravel	15	15	Resurface (grade and gravel)
Sanitary Treatment	40	40	
Site Electrical Main	40	40	
Site Gas Main	40	40	
Site Lighting	25	25	
Site Power Distribution	40	40	
Site Sanitary Lines	50+	50+	
Site Sewer Main	50+	50+	
Site Water Main	40	40	
Storm Drain Lines	50+	50+	
Swimming Pool - Deck	15	15	Resurface Deck
Mechanical Equipment (filter/pump/etc.)	10	10	
Tennis Courts	15	15	Resurface
Transformer	30	30	
Water Tower	50+	50+	

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Estimated Costs

- **Immediate Needs**
- **Capital Reserve Costs**
- **Costs for ADA (American's with Disability Act)**

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Definitions of Cost

Immediate Repair Costs

- Analysis of estimated cost for immediate repair work defined as ‘one time’ costs
- Repairs or replacements needed immediately to bring the property to a sound, safe, and fully habitable condition. Includes:
  - Any items which pose potential danger to the health, safety, or well-being of building occupants,
  - Items affecting tenancy or marketability such as lack of running water, out of service units, extensive damage caused by storm, fire or earthquake
  - Significant deferred maintenance items or non-working building systems such as HVAC systems, parking area repairs, broken windows and/or doors, leaking roofs, pest or rodent infestations
  - Building systems or system components that have far exceeded their expected useful life and require replacement or upgrade.

Definitions of Cost

Replacement Reserve (Years 1 Through Assessed Term)

- An analysis of the estimated costs for normally anticipated replacement for the major components of the improvements during the evaluation period
- Reserve costs are typically defined as predictable and in some instances to be recurring within a specified future period. Items anticipated to be less than approximately $3,000 to repair or replace are generally considered to be part of routine maintenance and are omitted from the Replacement Reserve

ADA Costs

- The Americans with Disabilities Act, Public Law 101-336, enacted on July 26, 1990, provides comprehensive civil rights protections to individuals in the areas of employment, public accommodations, State and local government services, and telecommunications. Our estimates represent budgeted values for items identified as non-compliant.

Property Condition Report: Site Improvements

- Site Utilities
- Storm Water Drainage
- Site Topography
- Domestic Water Supply
- Sanitary Sewer Mains
- Paving/Curbing
- Parking Structures
- Sidewalks/Stairs
- Exterior Lighting
- Landscaping & Irrigation
- Fencing
- Property Identification Signage
- Loading Docks
- Dumpster Pickup Areas
- Retaining Walls

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Property Condition Report: Substructure & Superstructure




- Determine what general structural systems are used
- Opine on adequacy of foundations and structural elements for the continued future usage of the facility
- Note signs of structural distress or defects observed during the site visit
- Develop necessary repair recommendations or refer Client to Structural Consulting Specialist

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Property Condition Report: Building Envelope

- Visually review and assess the type and condition of materials used in construction of the exterior building envelope which includes:
  - Exterior Wall Assemblies
  - Windows
  - Doors
  - Joint Sealants
  - Trim

Property Condition Report: Roofing

- Report on in-place roofing systems
  - Low-slope (BUR, Modified Bitumen, PVC, EPDM, TPO, etc.)
  - Steep-slope (Asphalt composition shingles, concrete tile, standing seam metal, etc.)
- Visually assess general condition of roofing membranes, flashings, penetrations, expansion joint details, and drainage systems
- No roof cores or testing conducted unless specifically requested and arranged.

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Water Intrusion

- Limited interior areas of buildings, to which access is provided and where building elements are readily observable, are visually observed for the presence of excessive moisture and visible evidence of suspect microbial growth
- No observations are conducted within concealed locations or behind walls or ceilings
- No sampling or testing is performed
- Independent Mold Assessments are recommended if suspect growth is observed

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Mechanical, Electrical, & Plumbing (MEP)

Systems

- Heating, Ventilation, & Air Conditioning (HVAC) Systems
- Plumbing Systems & Fixtures
- Domestic Water Heaters
- Gas Services
- Electrical Services
- Emergency Power Supply

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Fire Protection/Life Safety

Systems

- Wet-pipe fire suppression systems
- Dry-pipe fire suppression systems
- Dry-chemical fire suppression systems
- Fire Pumps & Transfer Switch Equipment
- Central Fire Alarm Systems & Devices
- Fire Extinguishers
- Emergency Exits Signs & Lighting
- Firemen Controls in Elevators

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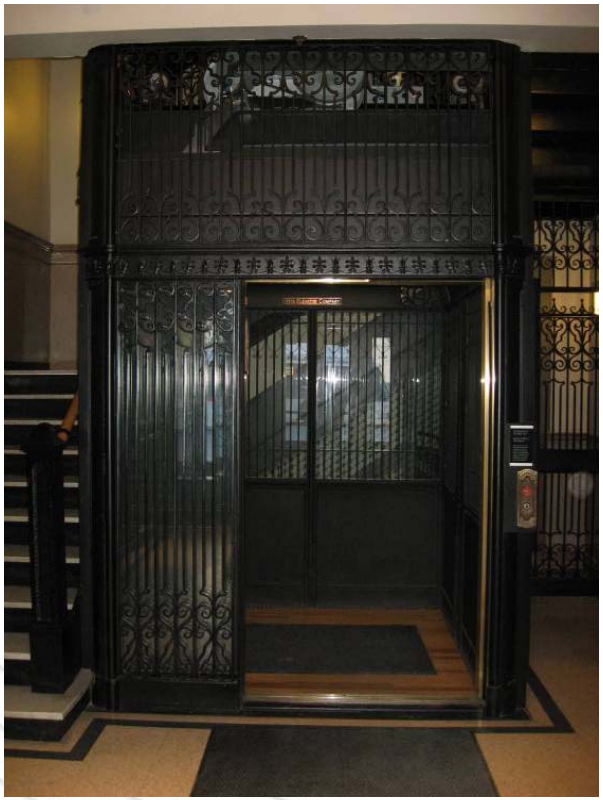
Vertical Transportation

Systems

- Hydraulic Elevators
- Traction Elevators
- Hydraulic Lifts
- Escalators
- Conveyors



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ADA

- Performed to confirm the accessibility of public areas of a site and buildings as defined by the American with Disabilities Act of 1990 (ADA).
- PCA Scope is typically limited to the determination of general compliance with physical attributes and is not considered to be a full survey.
- Full surveys involve testing of decibel levels of fire alarms, light level recording, extensive measurements and other disruptive tests and must be performed by a Licensed Accessibility Consultant.

Questions?

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