



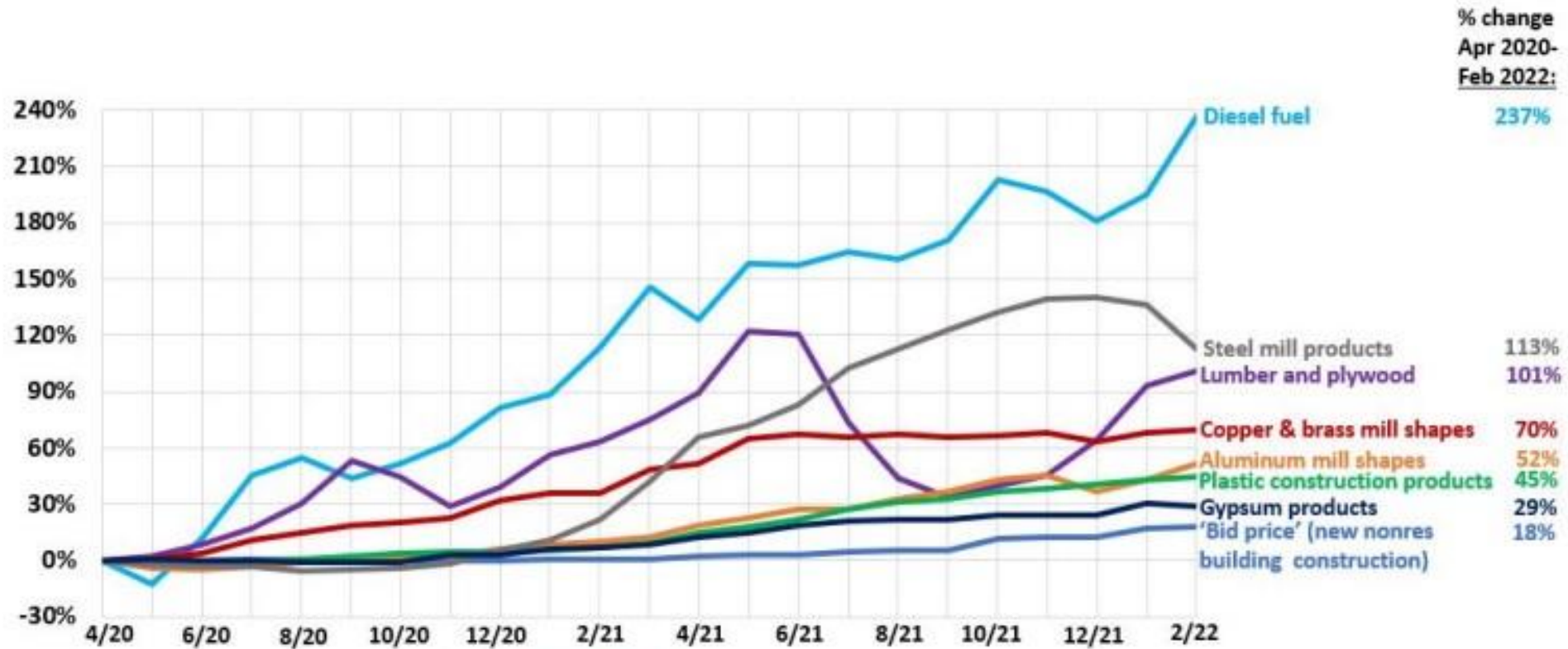
# Construction Debris

Presentation to the Joint Standing Committee on Environment and Natural Resources

# Figure 1

## PPIs for construction bid prices and selected inputs

cumulative change in PPIs, April 2020–February 2022, not seasonally adjusted



Source: Bureau of Labor Statistics, producer price indexes, [www.bls.gov/ppi](http://www.bls.gov/ppi)

# Different Types of Construction

- Vertical (Building)
- Horizontal (Bridge & Highway)
- Industrial (Manufacturing)
- Energy
- Residential





# Various Challenges

- Site Location
  - Space to sort (moved multiple times)
  - Rural vs Urban (trucking costs)
  - Other site considerations
- Cost
  - Equipment
  - Staff
- Timeline
- Regulations (Product/Client Specifications)
- Storage of Waste Before Recycling (trucking, site)





## Interstate 295

Construction kicked off with a subcontractor removing the old concrete by milling the top 3 inches (7.6 centimeters) off the concrete slabs. The material was then either placed on the shoulder or delivered to an onsite staging area. At the staging area, a portable crusher processed the material for reuse as shoulder aggregate. The millings from the surface of the existing concrete pavement served not only to provide shoulder aggregate but also reduced the extent of inslope regrading needed.

**Rather than trucking waste concrete from the existing pavement offsite, crews recycled the material onsite, as shown here, to rehabilitate the paved shoulders.**





# Interstate 295

According to the general contractor, the I-295 southbound project generated 55,000 tons (49,895 metric tons) of waste concrete that typically would have been hauled offsite to a fill site. Instead, 100 percent of that concrete waste was recycled onsite to rehabilitate the paved shoulders, and 30,000 tons (27,216 metric tons) of old asphalt pavement from the shoulders was recycled.

\*According to the Federal Highway Administration survey, 80% of the asphalt pavement removed each year is reused during widening and resurfacing projects.









# Vertical Construction

- Hand work
  - Employee risks
  - Time
- Equipment availability
- Trucking
  - Hired truck shortages
  - Cost of fuel
  - Equipment allocation
- Cost of bins, trucks, staff
- Site location or add'l site



# Three basic types

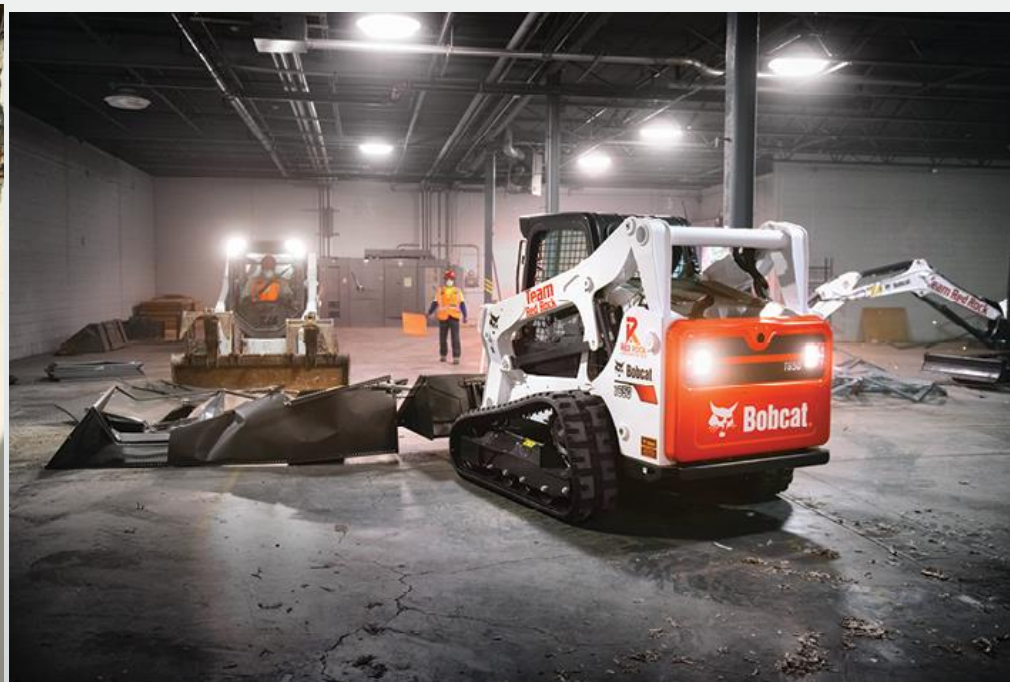
- Construction by explosion or implosion
  - Efficient
  - Fast
  - Limits employee exposure
- Demolition by hand
  - Floor by floor
  - Increased safety exposure
- Demolition by Machine
  - Most common















## Leed

**LEED guidelines state that construction sites must divert a minimum of fifty percent of their construction or demolition materials to recycling facilities**

# Deconstruction Added Safety Risks

- falls from elevated work surfaces.
- exposure to hazardous air contaminants.
- being struck by falling or collapsing structures.
- electrical shock.





# Building conditions (OSHA)

- Changes from the structure's design introduced during construction;
- Approved or unapproved modifications that altered the original design;
- Materials hidden within structural members, such as lead, asbestos, silica, and other chemicals or heavy metals requiring special material handling;
- Unknown strengths or weaknesses of construction materials, such as post-tensioned concrete;
- Hazards created by the demolition methods used.



# Hazard Planning

- An engineering survey completed by a competent person before any demolition work takes place. This should include the condition of the structure and the possibility of an unplanned collapse.
- Locating, securing, and/or relocating any nearby utilities. For help, call 811 before you dig.
- Fire prevention and evacuation plan.
- First Aid and Emergency Medical Services.
- An assessment of health hazards completed before any demolition work takes place.





# Added PPE/Safety

- Eye, face, head, hand, and foot protection
- Respiratory protection (Dust control)
- Hearing protection
- Personal Fall Arrest Systems (PFAS)
- Other protective clothing (for example, cutting or welding operations)









# Final Points and Questions

- Increased cost to remove nuisance buildings
  - Extended timeline from planning to demo to sorting
  - Reduction of interest in the property
  - Cost for housing projects
  - Community hazards, fires, injuries
- Increased impacts from extended time, trucking, machinery
- Specialty equipment including attachments (interior and exterior work)
- Reuse challenges (regulatory, specifications)
- Workforce Challenges
- Safety (Risk-reduction in firms in Australia Study)
- National Demolition Association states that 90% of the material on a project site is reused or recycled, almost the same for deconstruction vs demolition
- Incentive vs mandate