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THE CONSTRUCTION
ASSOCIATION

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CONSTRUCTION INFLATION ALERT

For more than two years the U.S. construction industry has been buffeted by unprecedented increases in materials costs, supply-chain bottlenecks, and a tight labor market. To help project owners, government officials, and the public understand how these conditions are affecting contractors and their workers, the Associated General Contractors of America (AGC) has posted frequent updates of the Construction Inflation Alert.

Russia's attack on Ukraine, swiftly countered by sanctions against Russian production and finances, have led to another round of even steeper and more sudden price increases and supply-chain disruptions. As of now, there is no sign of when costs and availability will improve.

This version of the Alert is the sixth update since the first edition was posted in March 2021—an indication that the situation remains far from “normal.” This document will continue to be revised to keep it timely as conditions change. Each new version is posted here:

<https://www.agc.org/learn/construction-data/agc-construction-inflation-alert>.

Please send comments and feedback to AGC of America's chief economist, Ken Simonson, ken.simonson@agc.org.

www.agc.org

Recent cost increases

Even before the Russian invasion of Ukraine, contractors had been experiencing record price increases for numerous materials. The variety of materials with extreme increases was also exceptional.

One measure of the extent of these increases is provided by the Bureau of Labor Statistics (BLS). BLS posts producer price indexes (PPIs) around the middle of each month for thousands of products and services (at www.bls.gov/ppi). Most PPIs are based on the prices that sellers say they charged for a specific item on the 11th day of the preceding month. Producers include manufacturers and fabricators, intermediaries such as steel service centers and distributors, and providers of services ranging from design to trucking.

Figure 1 shows the magnitude of the increases for seven widely used categories of construction inputs. From April 2020, the low point for prices of many goods during the early stage of the pandemic, to February 2022, the PPI for diesel fuel (at the refinery or terminal) more than tripled, soaring 237%. PPIs more than doubled for steel mill products (up 113% in 22 months) and lumber and plywood (up 101%). The index for copper and brass mill shapes climbed 70% and PPIs rose by roughly half for aluminum mill shapes (up 52%) and plastic construction products (up 45%). The index for gypsum products increased 29% and numerous other indexes rose 20% or more

Unfortunately, many producers have implemented or announced even steeper price increases since February 11. There have been multiple large and immediate price increases for steel structural shapes, rebar, mesh, strand, and tubing. Manufacturers of ductile iron pipe have instituted surcharges based on a hot-rolled coil price, and many firms are adding fuel surcharges to their delivery charges. Roofing materials suppliers have announced imminent increases of as much as 75% for certain products. The national average retail price of on-highway diesel fuel soared \$1.30 per gallon or 33% in just five weeks to an all-time high of \$5.25 on March 14.

Even items that typically change only gradually in price have had large increases. For instance, the North Carolina Department of Transportation's price index for asphalt cement (the liquid portion of asphalt paving material) jumped 15% from March 1 to April 1.

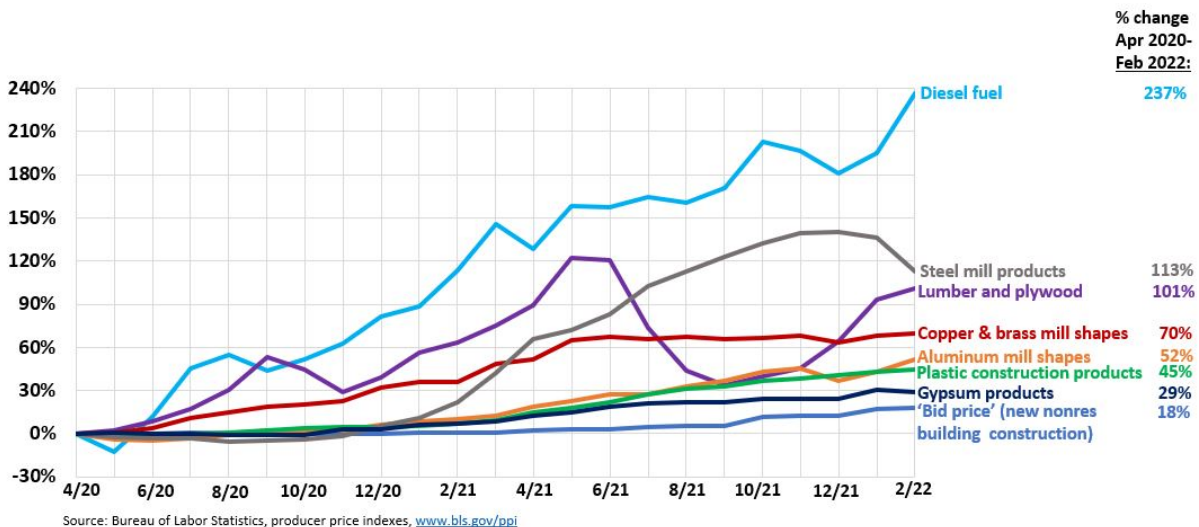
\$5.25

The retail price of diesel fuel jumped \$1.30 or 33% in just 5 weeks to an all-time high on March 14

Figure 1

PPIs for construction bid prices and selected inputs

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



Supply-chain issues

From the first days of the pandemic, availability and delivery times for materials have been never-ending headaches for construction firms. Problems began as early as February 2020, when factories in China and northern Italy were shut down, causing shortages of items as diverse as elevator parts, floor tiles, and kitchen appliances. Two years later, another round of covid-related restrictions in China is disrupting production and shipping from that country.

Adding to these pandemic-induced problems, a series of unusual mishaps interfered with output or delivery of numerous goods. The biggest impact for construction came from the severe freeze in Texas in February 2021 that damaged all of the petrochemical plants producing resins for a host of construction plastics. Damage to the electrical grid in Louisiana from Hurricane Ida last September further interfered with the production of some plastics inputs. Wildfires and mudslides in British Columbia and soggy conditions in the Southeast have affected lumber production. The blockage of the Suez Canal and the abrupt closure of an Interstate highway bridge across the Mississippi River in the spring of 2021 are further examples of “one-off” events that have disrupted the supply chain.

Construction has also been affected by the much-publicized shortage of computer chips. Not only is the industry a major buyer of pickup trucks that are in short supply, but deliveries of construction equipment also have been held up by a lack of semiconductors.

Now, the war in Ukraine, Western countermeasures against Russia, and diversions or blockages of cargo ships are impeding or cutting off supplies of items as diverse as pig iron used in steelmaking, neon for lasers used in semiconductor manufacturing and other applications, and Ukrainian clay used in producing ceramic tile exported to the U.S. from Italy and Spain.

Apart from the war, contractors have reported being quoted exceptionally long lead times for inputs as varied as electrical transformers and switchgear, traffic signal equipment, paint, insulation, windows, and roofing fasteners. Strong demand, plant outages, and truck driver shortages have meant long delays in completing ready-mix concrete pours in the Southeast and perhaps other states.

So far, there is little sign that the supply chain will consistently improve in 2022. While the lead time for some items has shortened, deliveries for many materials remain delayed or unpredictable. Dealers and contractors continue to report being informed shortly before an expected delivery that the item will not arrive for months or the quantity will be less than expected—and needed. Other items have shown up unexpectedly early, without warning, causing problems when they cannot be used, installed, or stored onsite.

364,000

The number of job openings at the end of February, a record for the month

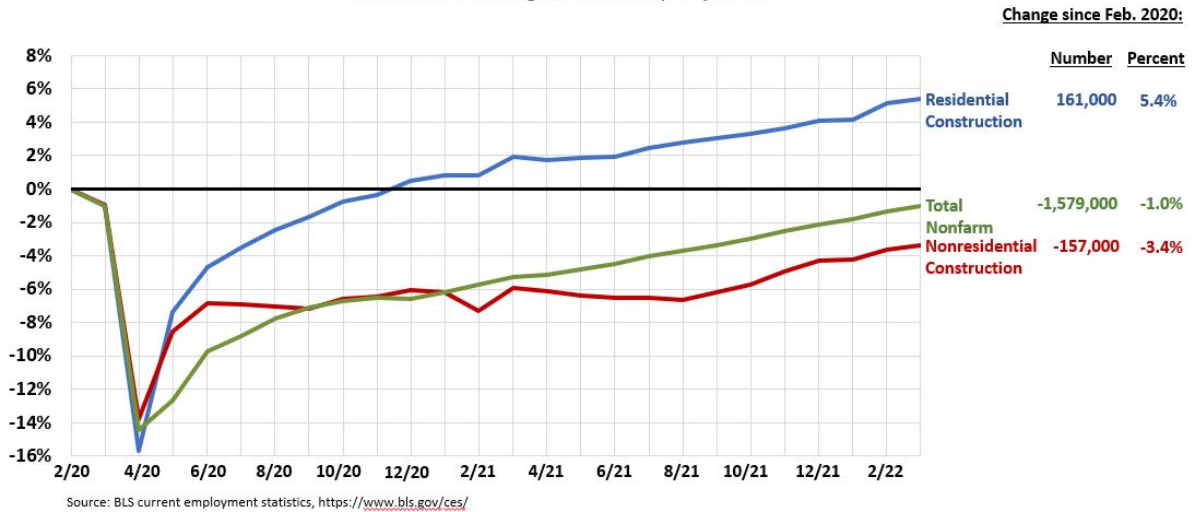
Labor supply and cost

Construction employment has bounced back well from the early months of the pandemic. However, construction firms are far short of the number of workers they have been seeking. They have partially closed the gap by getting more overtime from the workers they have, but this cannot continue indefinitely.

The construction industry lost 1.1 million employees from February to April 2020—a 15% decline in just two months. While both residential and nonresidential construction employment rebounded somewhat in May 2020, employment stalled for more than a year after that among nonresidential firms—nonresidential building and specialty trade contractors plus civil and heavy engineering construction firms. During that period, thousands of experienced workers moved into residential construction (homebuilding and remodeling), found jobs in other sectors, or left the workforce completely.

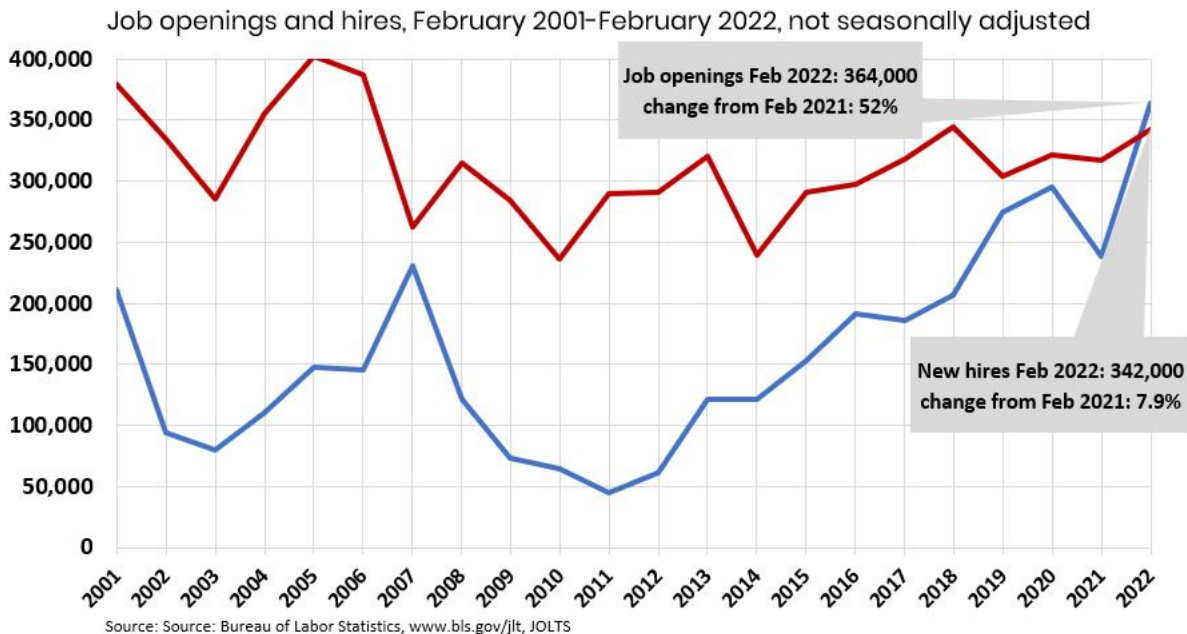
By March 2022, seasonally adjusted construction employment totaled 7,628,000—almost identical to the 7,624,000 employed in February 2020. But there was a large shift between residential and nonresidential subsectors. Compared to February 2020 levels, residential construction firms had added 161,000 workers, while employment in nonresidential construction was still down 157,000 employees or 3.4%, as shown in Figure 2.

Figure 2
Total Nonfarm & Construction Employment, Feb. 2020–March 2022
 cumulative change, seasonally adjusted



There is strong evidence that the construction industry would have added many more workers if they had been available. Job openings in construction at the end of February totaled 364,000, a jump of 125,000 or 52% from a year earlier and by far the largest February total in the 22-year history of the data, as shown in Figure 3. In fact, job openings exceeded the 342,000 workers hired in February, implying that the industry would have hired twice as many workers that month as they were able to, if there had been enough qualified applicants.

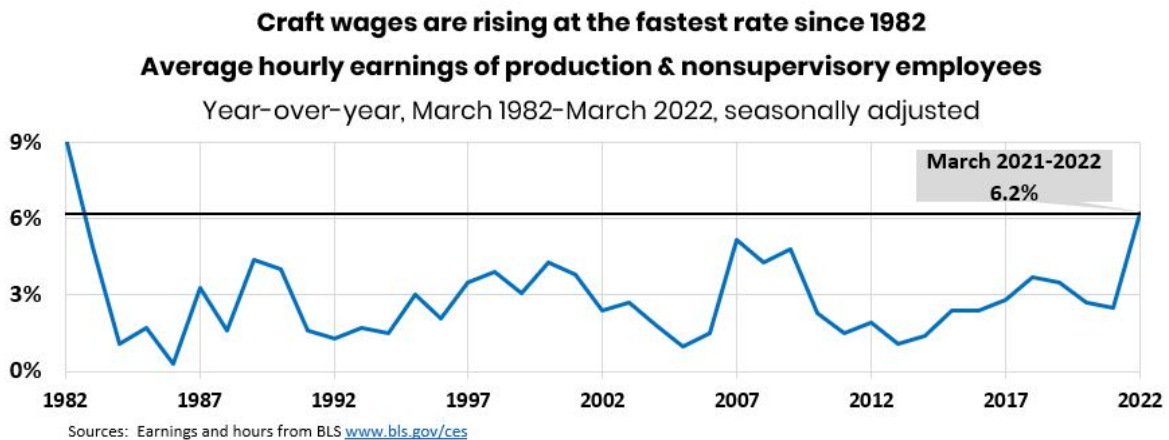
Figure 3
Construction job openings exceed hires, set record high for February



In order to attract, retain, and bring back workers, construction firms are raising pay. Average hourly earnings in construction for “production and nonsupervisory employees”—mainly hourly craft workers—rose 6.2% from March 2021. As shown in Figure 4, that was the steepest increase since 1982, and more than double the 2.5% increase a year earlier.

Production and nonsupervisory employees in construction worked an average of 40.6 hours, seasonally adjusted, in February—the most in the 76-year history of the series. Average weekly earnings jumped 10.6%, a record for the series. Average weekly hours tapered off to 39.3 hours per week in March, bringing down the year-over-year increase in average weekly earnings to 4.6%, but both numbers were still well above the typical figure for March.

Figure 4



In short, contractors are paying more to attract workers and paying much more to their current workforce. Yet average hourly earnings for production and nonsupervisory employees in the overall private sector increased still more sharply in the past 12 months, by 6.7%. The implication is that construction companies will have to raise pay even more in the coming months to remain competitive.

Changes in bid prices

The extreme runup in so many input costs caused financial hardship for many contractors and subcontractors, especially for those whose purchases are concentrated in materials with extra-steep increases.

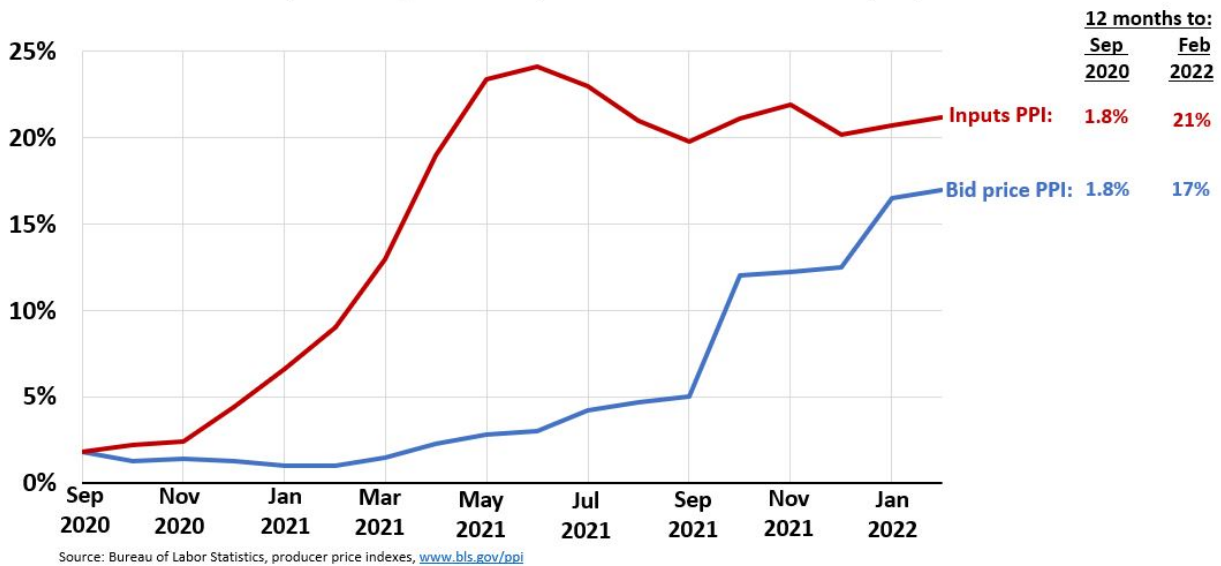
BLS posts several PPIs for new nonresidential construction. Since every construction project is unique, it is not possible to collect prices for identical construction “products” in the same way as for most goods and services. Instead, the agency creates “bid price” PPIs (BLS refers to them as output price indexes) through a two-step process. Each quarter it receives data from construction cost-estimating firms regarding the cost of a package of installed components or “assemblies” of a particular nonresidential building. Every month BLS asks a fixed group of contractors the amount of overhead and profit they would charge to erect that building—the same building that contractor was asked about previously. BLS combines the answers from a set of contractors to create PPIs for new warehouse, school, office, industrial, and healthcare building construction, along with a weighted average of these building types for an overall index for new nonresidential building construction.

BLS also creates PPIs for inputs to construction—weighted averages of the cost of materials and services purchased for every type of project.

As shown in Figure 5, the PPI for bid prices rose at the same rate as the PPI for inputs from September 2019 to September 2020, 1.8% year-over-year. The bid-price PPI continued rising at a modest rate through mid-2021, while the year-over-year change in input prices accelerated to nearly 25% by June 2021.

Since mid-2001, the bid-price PPI also has accelerated considerably, as contractors attempt to pass on their rising materials and labor costs. Nevertheless, there is still a gap between the latest year-over-year change in input prices, 21% as of February 2022, and bid prices, 17%.

Figure 5
Change in prices for inputs to new nonresidential construction
 Year-over-year change in PPIs, Sep 2020–Feb 2022, not seasonally adjusted



Source: Bureau of Labor Statistics, producer price indexes, www.bls.gov/ppi

Moreover, the bid-price index only indicates the price contractors propose for new starts. On projects for which they had already submitted a bid or begun work, contractors were stuck with paying elevated materials prices that they could not pass on.

When will bid prices catch up?

There is no fixed relationship between input costs and bid prices. For every firm and time period, the relationship depends on specific market conditions and expectations.

However, it is possible to look at past relationships. Figure 6 shows the difference between the year-over-year change in the PPI for materials costs for goods inputs to construction and the bid-price index for new school construction. The areas in red indicate periods in which the year-over-year change in the PPI far exceeded the bid-price PPI for schools. (Similar patterns exist for the bid-price indexes for new warehouse, office, industrial and healthcare buildings.)

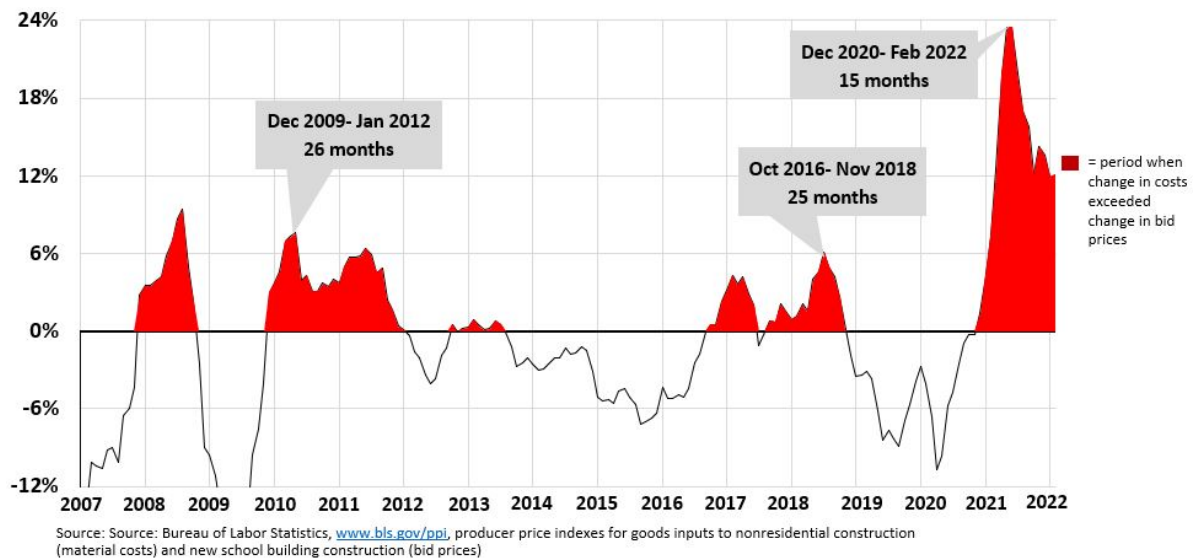
Materials costs outran bid prices for as long as 26 months from late 2009 to early 2012 and for 25 months from late 2016 to late 2018. The current gap hasn't lasted as long—yet—but the peak was more than twice as high as in previous episodes, indicating the pain for contractors has been that much more intense.

26 months
 The year-over-year change in materials costs may exceed the change in bid prices for 2 years or more

Figure 6

Cost squeeze on contractors can last two years or more

Difference between year-over-year change in materials costs vs. bid prices, Jan 2006–Feb 2022



What can contractors and owners do?

Contractors can provide project owners with timely and credible third-party information about changes in relevant material costs and supply-chain snarls that may impact the cost and completion time for a project that is underway or for which a bid has already been submitted.

Owners can authorize appropriate adjustments to design, completion date, and payments to accommodate or work around these impediments. Nobody welcomes a higher bill, but the alternative of having a contractor go out of business because of impossible costs or timing is likely to be worse for many owners.

For projects that have not been awarded or started, owners should start with realistic expectations about current costs and the likelihood of increases. They should provide potential bidders with accurate and complete design information to enable bidders to prepare bids that minimize the likelihood of unpleasant surprises for either party.

Owners and bidders may want to consider price-adjustment clauses that would protect both parties from unanticipated swings in materials prices. Such contract terms can enable the contractor to include a smaller contingency in its bid, while providing the owner an opportunity to share in any savings from downward price movements (which are likely at some point, particularly for long-duration projects). The ConsensusDocs set of contract documents (www.consensusdocs.org) is one source of industry-standard model language for such terms. The ConsensusDocs website includes a price escalation resource center: (<https://www.consensusdocs.org/price-escalation-clause/>).

The parties may also want to discuss the best timing for ordering materials and components. Buying items earlier than usual can provide protection against cost increases. But purchase before use entails paying sooner for the items; potentially paying for storage, security against theft and damage, and insurance; and the possibility of design changes that make early purchase unwise.

Conclusion

The construction industry is in the midst of a period of exceptionally steep and fast-rising costs for a variety of materials, compounded by major supply-chain disruptions and difficulty finding enough workers—a combination that threatens the financial health of many contractors. No single solution will resolve the situation, but there are steps that government officials, owners, and contractors can take to lessen the pain.

Federal trade policy officials can act immediately to end tariffs and quotas on imported products and materials. With many U.S. mills and factories already at capacity, bringing in more imports at competitive prices will cool the overheated price spiral and enable many users of products that are in short supply to avoid layoffs and shutdowns.

The federal government can improve the labor supply by allowing employers to sponsor more foreign-born workers to fill positions for which there are not enough qualified applicants. In addition, the federal government should fund and approve more apprenticeship and training programs to enable students and career-switchers to acquire the skills needed for construction trades. Officials at all levels of government should review all regulations, policies, and enforcement actions that may be unnecessarily driving up costs and slowing importation, domestic production, transport, and delivery of raw materials, components, and finished goods. Owners need to recognize that fast-changing materials costs and availability require a quick decision regarding bids and requests for changes. For new and planned projects, owners should expect quite different pricing from previous estimates. They may want to consider building in more flexibility regarding design, timing, or cost-sharing.

Contractors need, more than ever, to closely monitor costs and delivery schedules for materials and to communicate information with owners, both before submitting bids and throughout the construction process.

Materials prices do eventually reverse course. Owners and contractors alike will benefit when that happens. Until then, cooperation and communication can help reduce the damage.

AGC resources

This document will be updated if market conditions warrant. Check for the latest edition at:
<https://www.agc.org/learn/construction-data/agc-construction-inflation-alert> for the latest edition

The AGC website, www.agc.org, has a variety of resources available to contractors, owners, and others wanting to know more about the construction industry.

AGC posts tables showing changes in PPIs and national, state, and metro construction employment each month at:
<https://www.agc.org/learn/construction-data>

AGC's Data DIGest is a weekly one-page summary of economic news relevant to construction. Subscribe at:
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or email chief economist Ken Simonson at ken.simonson@agc.org.

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