



**AGC**  
THE CONSTRUCTION  
ASSOCIATION

**DEC**

2022

# CONSTRUCTION INFLATION ALERT

For nearly three years the U.S. construction industry has been buffeted by unprecedented volatility 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.

New challenges keep emerging, even as some conditions improve. Overall inflation rates and economic growth have cooled, while congestion at West Coast ports has eased. These changes have led some owners to assume that construction costs and completion times must also have improved. Unfortunately, this is not the case for a large number of projects, materials, and contractors.

Demand for infrastructure, manufacturing, and power construction appears to be strong and likely to strengthen further, perhaps for several years to come. In any case, the cost of construction materials and labor does not generally move in sync with the overall economy. In short, owners should not assume that delaying projects will enable them to avoid volatility and disruptions in construction costs, delivery times, and labor supply, even if the economy slows significantly.

Meanwhile, Russia's ongoing attack on Ukraine and Western sanctions against Russia have disrupted production and transport of dozens of commodities. China's prolonged lockdown of Shanghai and other areas in an attempt to control the spread of covid has also affected production and shipping. New variants of covid, as well as a growing number of people with lingering or recurrent symptoms ("long-haul covid"), add to uncertainty about labor supply.

This version of the Alert is the eighth 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 affecting demand for construction, labor supply, and materials costs and availability change. Each new version is posted here: <https://www.agc.org/learn/construction-data/agc-construction-inflation-alert>.

Readers are invited to send comments and feedback, along with "Dear Valued Customer" letters or other information about materials costs and supply-chain issues, to AGC of America's chief economist, Ken Simonson, [ken.simonson@agc.org](mailto:ken.simonson@agc.org).

**[www.agc.org](http://www.agc.org)**

# Recent changes in input costs

Earlier editions of this guide highlighted the extreme runup in materials costs that began in early 2020. More recently, prices have moved in divergent directions for different materials. But, on balance, they continue to climb at a much higher rate than the consumer price index (CPI), the most commonly cited measure of inflation.

The extent of these increases is documented 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](http://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.

The index declined at the beginning of the pandemic but began climbing on a year-over-year basis in August 2020. As prices rose at unprecedented rates for a wide range of construction inputs, the index accelerated steeply, rising at a record-high annual rate of 24% in June 2021. Year-over-year increases remained at or above 20% from May 2021 through April 2022.

Since the spring of 2022, prices have tumbled for lumber and most metals products, and the PPI for nonresidential construction inputs moderated to an 11.2% rate of increase from October 2021 to October 2022. But that is still far higher than the 7.7% annual rate of increase in the CPI over the same interval. In fact, as Figure 1 shows, the yearly increase in the PPI for nonresidential construction inputs has exceeded consumer price inflation every month since August 2020.

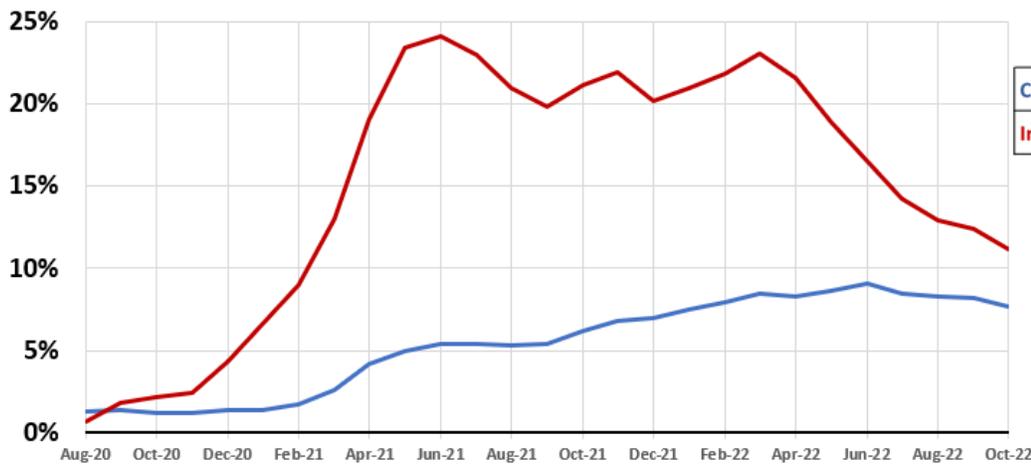
**11.2%**

The PPI for nonresidential construction inputs rose 11.2% in 12 months

**Figure 1**

## Costs for new nonresidential construction vs. consumer prices

Year-over-year change in PPI for construction inputs and CPI  
August 2020 - October 2022, not seasonally adjusted



	12 months to:	
	Aug-20	Oct-22
CPI	1.3%	7.7%
Inputs PPI	0.7%	11.2%

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

The actual increase in costs varies a lot by type of material. Figure 2 shows the change in PPIs for four material inputs and four types of subcontractors in October 2022 from one month earlier (September 2022) and one year earlier (October 2021). The monthly change in materials costs ranged from a decrease of 0.7% for asphalt paving mixtures and blocks to 9.8% for #2 diesel fuel, while year-over-year changes varied from 14.1% for concrete products to 61.5% for diesel fuel. (Contractors use diesel fuel for their own trucks and offroad equipment. The price of fuel is also reflected in the cost of the thousands of truckloads needed to deliver equipment and materials to jobsites and haul away dirt, debris, and equipment. In addition, many materials require large quantities of diesel fuel or other petroleum-based energy to mine, mix, or manufacture.)

Subcontractors’ prices reflect their own materials costs, labor costs, and the degree of tightness in the market for their services. Notably, the PPI for all four types of subcontractors rose far more than the 7.7% increase in the CPI from October 2021 to October 2022: 21.5% for roofing contractors, 18.8% for electrical contractors, 15.7% for plumbing contractors, and 10.9% for concrete contractors.

Prices for many inputs have been extremely volatile, making it difficult for contractors to predict even near-term prices reliably. For instance, the PPI for diesel fuel, which jumped 9.8% from September to October, had declined 12.8% just two months earlier. Conversely, the PPI for steel mill products fell 6.6% from September to October but increased 10.5% from April to May.

Several factors are likely to keep some costs high in 2023, with the possibility of further price spikes. Russia’s cutoff of natural gas to central and western Europe has led to a surge in natural-gas prices as the United States exports more liquefied gas to Europe. That affects the cost of construction plastics, glass, and other products that use natural gas as a feedstock or fuel source. Similarly, European demand for diesel fuel, sanctions against Russian oil, and attempts by the “OPEC+” group of oil producers to limit supplies have kept diesel and asphalt prices elevated and subject to large swings.

**61.5%**

**The PPI for diesel fuel increased 61.5% from October 2021**

**Figure 2**

**Wide variation in construction input cost trends**  
Change in producer price indexes (not seasonally adjusted)

	<u>Oct 2022 change from:</u>	
	<u>Sep 2022</u>	<u>Oct 2021</u>
#2 diesel fuel	9.8%	61.5%
Architectural coatings (paint, etc.)	1.1%	27.5%
Asphalt paving mixtures and blocks	-0.7%	20.7%
Concrete products	0.1%	14.1%
<u>Subcontractor price indexes, nonresidential building work</u>		
Roofing contractors	1.9%	21.5%
Electrical contractors	2.1%	18.8%
Plumbing contractors	3.7%	15.7%
Concrete contractors	1.1%	10.9%

Source: BLS, producer price indexes, [www.bls.gov/ppi](http://www.bls.gov/ppi)

Given such volatility, owners should not expect contractors’ bid prices to mirror a short-term decline in prices for certain inputs or in the overall index for nonresidential inputs, let alone changes in the CPI. The CPI measures the cost of a “basket” of consumer goods and services, which has very little relation to the items driving construction costs.

# Input costs and bid prices

Some owners may be under the misimpression that contractors' bid prices are closely linked to changes in input costs. In fact, the two often diverge, as has occurred over the past three years.

The pandemic drastically disrupted production and distribution of many construction materials and caused sharp changes in demand for numerous goods and structure types. Unanticipated price spikes occurred for many inputs—to record levels for lumber, steel, and copper products.

Contractors did not immediately pass along these increases in bid prices. Demand for some project types and in some regions remained weak; as a result, firms refrained from passing through a portion of costs in order to win contracts. In other cases, contractors may have assumed prices would fall by the time they had to purchase the materials.

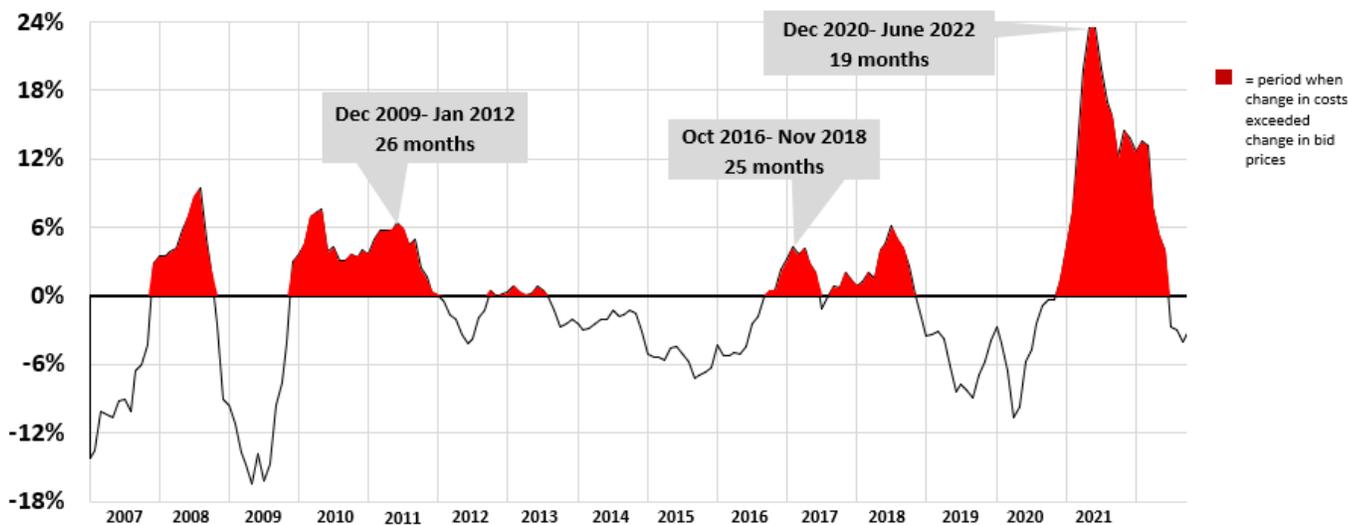
As demand for construction heated up in 2021 and inflation became established throughout much of the economy, contractors did raise prices to a greater extent. But bid price increases did not “catch up” with increases in input costs until the summer of 2022.

Figure 3 shows the difference in the year-over-year change in input prices (specifically, the PPI for goods inputs to nonresidential construction) minus the change in bid prices (in this case, for new school construction building construction; other comparisons are similar). Periods in red show months when cost increases exceeded bid price increases, while periods below the 0% line show the reverse.

**Figure 3**

## Cost squeeze on contractors can last two years or more

Difference between year-over-year change in materials costs vs. bid prices, Jan 2007-Oct 2022



Source: Source: Bureau of Labor Statistics, [www.bls.gov/ppi](http://www.bls.gov/ppi), producer price indexes for goods inputs to nonresidential construction (material costs) and new school building construction (bid prices)

Over the 16-year history of the series, the number of months and total areas of the two differentials are similar. This is to be expected: If contractors consistently experienced cost increases that exceeded the increases in their bids, they would go out of business. Conversely, if bid-price increases consistently outran costs, other firms would enter the business, driving down profitability.

From December 2020 to June 2022, a period of 19 months, the year-over-year change in materials costs exceeded the year-over-year change in bid prices. Although there were two such intervals that lasted even longer, the gap was three times as great (in the summer of 2021) as in previous episodes, meaning the profit squeeze was much more intense.

As Figure 3 shows, the duration and amplitude of these differences vary greatly and unpredictably. The implication for owners in the current environment is they should not assume a moderation in materials cost increases will be associated with an immediate or proportionate change in bid prices.

## Supply chain issues

From the first days of the pandemic, availability and delivery times for materials have been never-ending headaches for construction firms. Recently, shortages and extended lead times have moderated or disappeared for some items but have worsened for others.

On the positive side, port congestion on the West Coast has lessened. Waiting times for lumber and steel products have returned to pre-pandemic levels. There have not been any recent events with supply impacts as severe as the February 2021 freeze in Texas that decimated the production of resins for construction plastics.

Not all bottlenecks have cleared up, however. Contractors continue to be affected by the much-publicized shortage of computer chips. Not only is the construction 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.

Lead times remain unusually long for electrical transformers. In fact, some utilities are reportedly refusing to hook up new construction because they are saving their remaining supply for emergencies. The sole U.S. producer of electrical steel used in transformers has been unable to keep up with demand.

Perhaps the most consequential and long-lasting supply chain issue involves cement and concrete products. Shortages of cement had spread from a few states early in 2021 to 43 states by October, according to the Portland Cement Association. No cement capacity has been added in the United States since 2009. At the same time, the supply of two other “cementitious materials” that are added to some concrete mixes—fly ash and slag—has diminished with the shutdown of coal-fired power plants that supplied those materials as a byproduct of burning coal. (Those closures have also reduced the supply of artificial gypsum for making wallboard.) Exceptionally low water levels in the Mississippi River have limited barge movements of cement in the middle of the country.

# 43 states

Cement shortage appeared in 43 states by October 2022

Meanwhile, demand for ready-mixed and precast concrete has increased. As a result, many suppliers have placed contractors on allocation, meaning they receive a percentage of previous years’ orders (or possibly none if they are new customers). When contractors can’t pour as much concrete as needed at one time, project completions are delayed, with attendant cost increases. The Portland Cement Association has indicated that additional cement production capacity will come online in the spring of 2023. Some states may receive more cement from Mexico. But availability is likely to remain tight in many areas, particularly as demand increases once projects funded by the Infrastructure Investment and Jobs Act of 2021 and other recent laws and bond issues get underway.

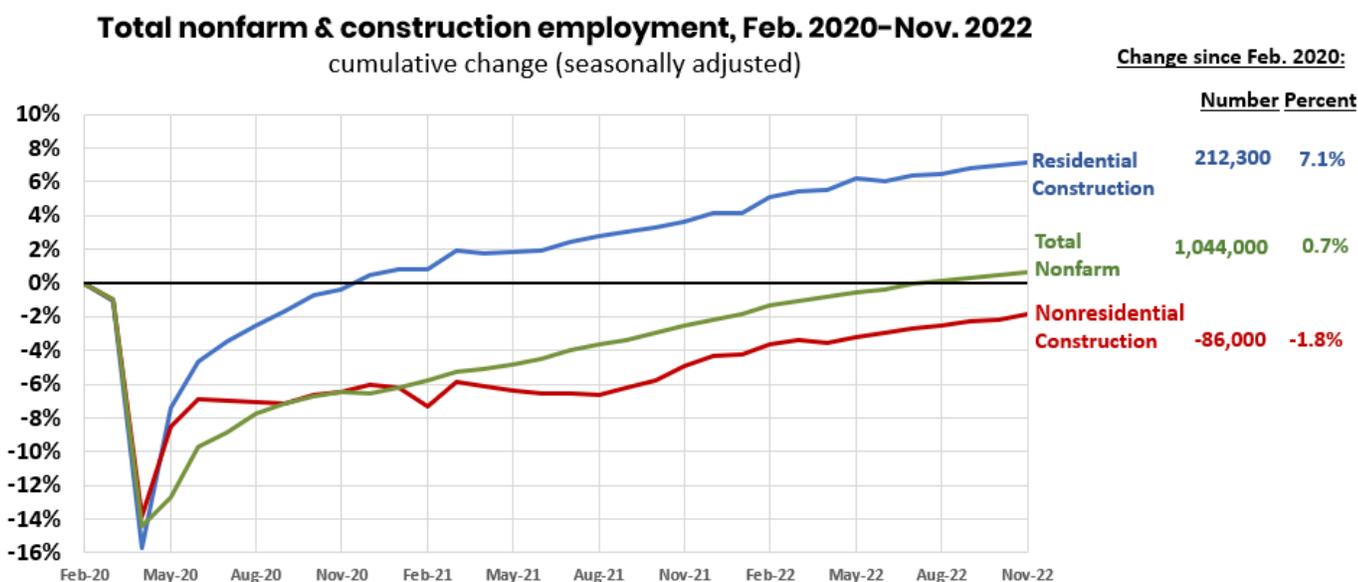
Furthermore, the last three years have shown that the supply chain for many items remains fragile and can easily be disrupted by governmental interventions such as covid-induced shutdowns in China, natural disasters such as hurricanes and freezes, or “one-off” events such as strikes or lockouts of rail or port workers.

# Labor supply and costs

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.

As shown in Figure 4, construction industry employment declined by 15% from February to April 2020—a loss of 1.1 million employees in just two months. While both residential and nonresidential construction employment rebounded somewhat in May 2020, for more than a year after that date employment stalled 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.

**Figure 4**



Source: BLS current employment statistics, <https://www.bls.gov/ces/>

By November 2022, seasonally adjusted construction employment totaled 7,750,000, or 126,000 more than in February 2020. But there was a large shift between residential and nonresidential subsectors. Compared to February 2020 levels, residential construction firms had added more than 210,000 workers, while employment in nonresidential construction was still down 86,000 employees or 1.8%, as shown in Figure 4.

There is strong evidence that the construction industry would have added many more workers if they had been available. As shown in Figure 5, job openings in construction at the end of October totaled 377,000 (not seasonally adjusted), exceeding the 341,000 workers hired during the month. This gap never occurred before 2021 but has occurred in most months of 2022, implying that construction firms are having increasing difficulty filling positions and would have hired twice as many workers each month as they were able to, if there had been enough qualified applicants.

**Figure 5**



Source: Source: Bureau of Labor Statistics, [www.bls.gov/jlt](http://www.bls.gov/jlt), JOLTS

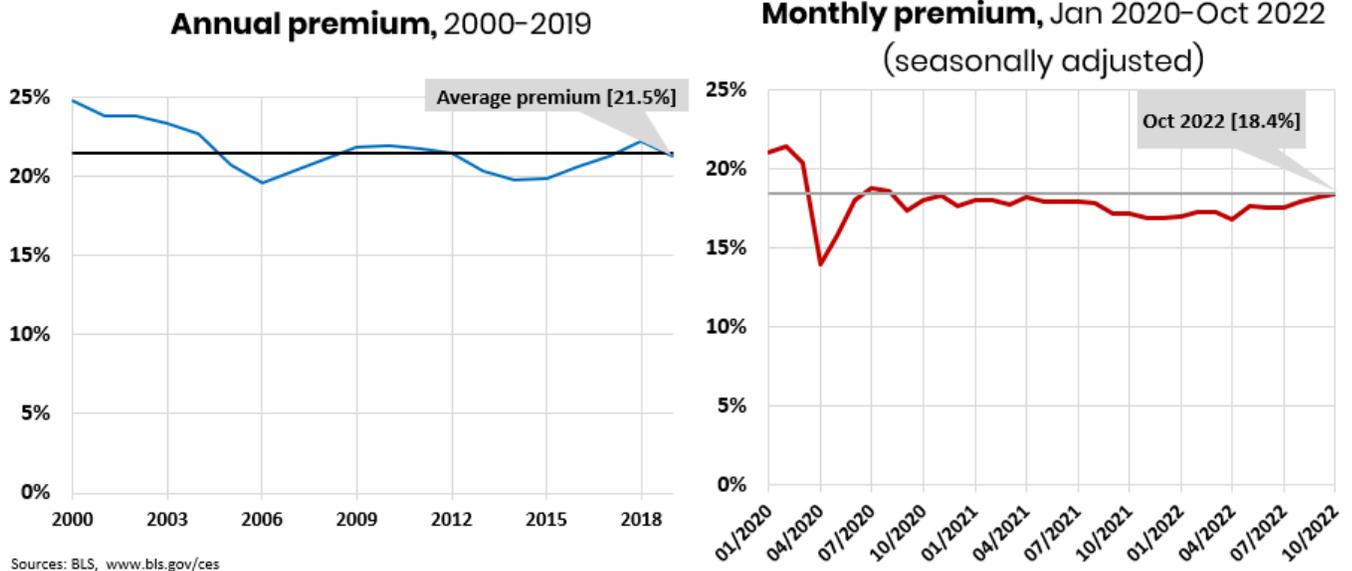
In order to attract, retain, and bring back workers, construction firms are raising pay. Average hourly earnings in construction for “production and nonsupervisory employees”—mainly hourly craft workers—rose 6.1% from November 2021 to November 2022. That was roughly three times as large as the 2.0% increase that occurred three years earlier, in the 12 months ending in November 2019.

Despite the acceleration in wages, until recently construction pay has not risen as fast since the beginning of the pandemic as in other industries. Historically, as shown in Figure 6, contractors paid a “premium” to attract workers willing to work in the conditions, locations, and hours required for construction. Specifically, average hourly earnings for production workers in construction were 20-23% higher than for than the average for all private sector employees, until the onset of the pandemic. This premium shrank to 15% at the start of the pandemic as restaurants, warehouses, delivery services, and other industries drastically increased pay, and the premium has remained around 17% or less for the past 2-1/2 years. Other industries now offer greater flexibility regarding hours and worksites, including work from home, working conditions that are not possible for construction.

Figure 6

### Construction wage “premium” vs. total private sector

Excess of average hourly earnings for production/ nonsupervisory employees in construction vs. private sector



These differences imply that construction wages will have to rise even more steeply to restore (and perhaps expand) the pay premium. In addition, it is likely that contractors will pay more overtime to make up for the workers they don't have. They may also turn more to offsite production and onsite drones, robotics, 3-D printers, and other ways of reducing the number or skill level of the workers they employ.

## 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 (as has occurred at various times in recent months with lumber, diesel fuel, and metals prices). The ConsensusDocs set of contract documents ([www.consensusdocs.org](http://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 continues to be in the midst of a period of exceptionally volatile and sometimes 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.