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CONSTRUCTION INFLATION ALERT

Two years after the coronavirus pandemic struck, the U.S. construction industry is still experiencing multiple impacts. Unprecedented increases in materials costs, supply-chain disruptions, and an increasingly tight labor market have made life difficult for contractors and project owners alike.

Beginning in March 2021, the Associated General Contractors of America (AGC) has posted several editions of the *Construction Inflation Alert*, a document to inform project owners, government officials, and the public about these impacts on construction. The current version is the fifth update of that Alert—an indication that the situation is far from “normal.”

Although the overall economy posted exceptionally strong growth in 2021 and appears to be headed for further expansion, the construction industry has experienced a much more uneven recovery. Until recently, lagging demand for numerous types of nonresidential construction prevented many contractors from fully passing on their added costs. Successive outbreaks of Covid-19 have disrupted production and delivery of goods, labor availability, and the mix of projects. This combination of supply chain bottlenecks, unpredictable costs and delivery times, and smaller bid price increases threatens to push some firms out of business.

This report is intended to provide all parties with better understanding of the current situation, the impact on construction firms and projects, its likely course in the next several months, and possible steps to mitigate the damage. The document will be revised to keep it timely as conditions change; download it at [AGC Construction Inflation Alert | Associated General Contractors of America](#).

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

www.agc.org

Record cost increases

Contractors experienced record increases for materials costs in 2021. While some costs have subsided in recent months, others have continued to rise or have become volatile in both directions—a threat in its own way.

Around the middle of each month, the Bureau of Labor Statistics (BLS) posts producer price indexes (PPI) for thousands of products and services at www.bls.gov/ppi. Most of these 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.

BLS aggregates these prices into index numbers that cover an entire category of products, such as a weighted average of all concrete products, as well as indexes for the mix of goods and services purchased by industries such as construction. The index readings themselves do not translate into a price found in the market, but the percentage change in an index number from one period to another indicates the amount of price increase or decrease that has occurred.

The PPI for inputs to new nonresidential construction is a weighted average of the goods and services purchased for every type of new construction other than housing. It does not include a contractor's own labor costs, equipment purchases, or direct imports but does cover an importer's or distributor's markup on imported goods.

This index rose by a record amount in 2021. As shown in Figure 1, the index soared 24.1% from June 2020 to June 2021 before moderating slightly. From December 2020 to December 2021, the increase still totaled 19.6%—a huge jump from the 4.4% rise posted in 2020 and the 1.8% gain in 2019.

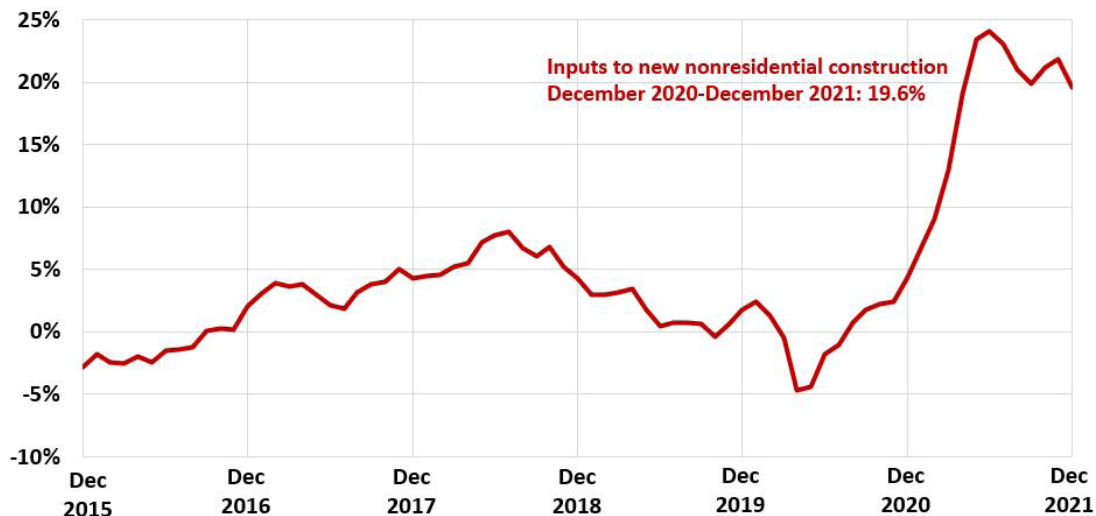
24.1%

The producer price index soared 24.1% from June 2020 to June 2021. By December, the increases had moderated slightly but still totaled 19.6% for the year.

Figure 1

Change in prices for inputs to construction

Year-over-year change in PPI, 2015 - 2021, not seasonally adjusted



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

No category of construction has escaped the extreme cost escalation. BLS posts PPIs for inputs to highways and streets; commercial, healthcare, industrial, power and communications, education and vocational, and other miscellaneous nonresidential structures; and for single- and multifamily construction. From December 2020 to December 2021, the increases in these input cost indexes ranged from 14.6% for new multifamily construction to 20.7% for commercial structures.

Contributors to runaway costs

What has contributed to these extreme cost increases? In brief: nearly everything, as shown in Table 1. From December 2020 to December 2021, the PPI for steel mill products more than doubled, rocketing up 127.2%. There were double-digit increases in the PPIs for plastic construction products, 34.0%; aluminum mill shapes, 29.8%; copper and brass mill shapes, 23.4%; gypsum products, 20.7%; lumber and plywood, 17.6%; architectural coatings (paint), 13.9%; and asphalt felts and coatings, 11.8%.

Even items that did not end the year with double-digit gains had unusually large increases. The PPI for concrete products jumped 8.5% from December 2020 to December 2021, the largest rise in 15 years. The index for flat glass also posted an 8.5% gain (from November 2020 to November 2021), a 40-year high, before finishing the year with an increase of 7.3%.

In addition to materials that go into structures, prices for items and services used by contractors soared. For instance, contractors pay for huge amounts of diesel fuel—purchased directly to run contractors’ own trucks and offroad equipment, as well as indirectly in the freight charges or explicit fuel surcharges for myriad deliveries of goods and equipment, and the hauling away of dirt, debris, and equipment. The PPI for diesel fuel leaped 54.9% from December 2020 to December 2021, while the index for truck transportation of freight climbed 17.7%.

Contractors also paid much more for equipment and parts. The PPI for construction machinery and equipment jumped 10.1% in 2021, and the index for truck and bus (including off-the-highway) pneumatic tires rose 11.2%.

As shown in Table 1, all of these increases far exceeded the changes a year earlier.

\$3.95

The retail price of diesel fuel reached a nearly 8-year high of \$3.95 per gallon on February 7, an increase of \$1.15 or 41% from one year earlier.

Table 1

Price increases for construction inputs
Year-over-year change in December PPI

Construction materials	2020	2021
Steel mill products	5.2%	127%
Plastic construction products	5.4%	34%
Aluminum mill shapes	-1.7%	30%
Copper and brass mill shapes	24%	23%
Gypsum products	3.6%	21%
Lumber and plywood	37%	18%
Architectural coatings	1.9%	14%
Asphalt felts and coatings	2.1%	12%
Used by contractors		
Diesel fuel	-2.8%	55%
Truck transport of freight	2.2%	18%
Construction machinery and equipment	1.1%	10%
Truck and offroad tires	0.3%	11%

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

What happened to 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. Eighty-four percent of the contractors in the 2022 AGC/Sage Construction Hiring and Business Outlook Survey reported their firms had incurred unanticipated costs in 2021.

BLS posts several PPIs for new nonresidential construction and for subcontractors' pricing. 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 as to 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. 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. There are also indexes for maintenance and repair and for all types of nonresidential work performed by concrete, electrical, roofing, and plumbing contractors.

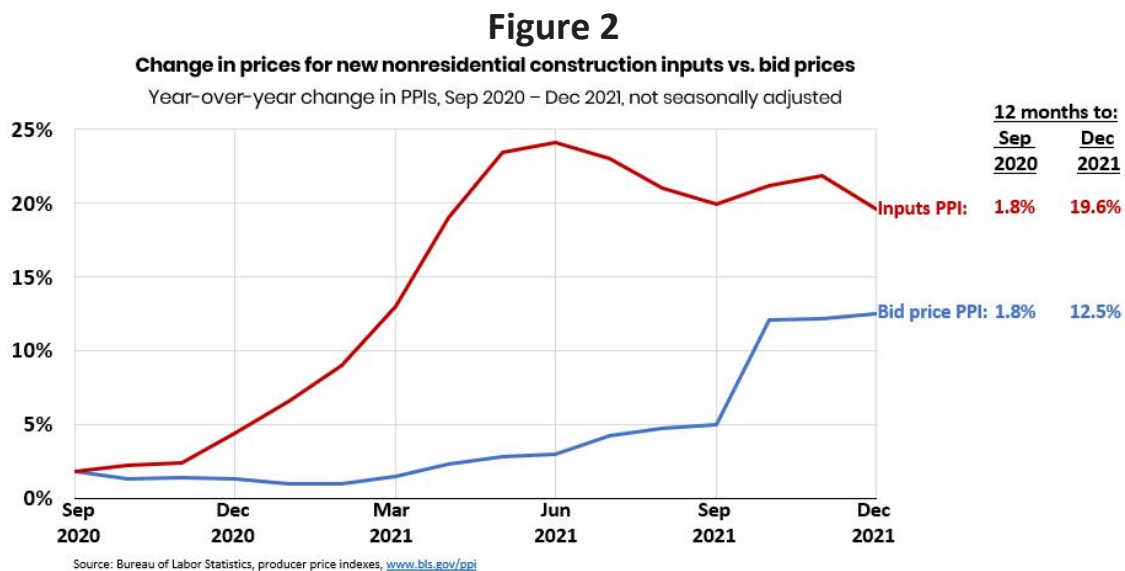


Figure 2 shows how the gap between input costs and bid prices widened dramatically beginning in September 2020. In that month, both price indexes increased 1.8% from the year-earlier level. Then, through mid-2021, the year-over-year increase in input costs outran the rise in bid prices by larger amounts each month. As noted above, input prices moderated in the second half of 2021, while bid prices rose more than in past years. But the 12.5% annual increase through December in the bid price PPI was far short of the 19.6% input-price increase. As a result, contractors were absorbing more and more of the cost increases.

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.

Tariffs have also driven up some prices. In November, the Commerce Department doubled the tariff on Canadian softwood lumber from 9% to 18%. The 25% tariff on steel and 10% tariff on aluminum imposed by President Trump have largely been left in place so far by President Biden. In addition, President Trump imposed tariffs on thousands of products from China but created an exclusion process that enabled some items not produced in the U.S. to be imported without the tariff. The Biden administration largely suspended the exclusions, adding to the number of items with tariff-induced price increases.

Volatility vs. continuous cost increases

Despite the steep increase in most input prices last year, several of them slowed or reversed course during 2021. Price indexes for diesel fuel and lumber each more than doubled from mid-2020 to mid-2021 before ending the year higher by “only” 55% and 18%, respectively. The PPI for copper and brass mill shapes had a year-over-year gain of 65% earlier in 2021 but wound up “only” 23% higher than in December 2020.

Prices for each of these items have recently turned higher again. The futures price for lumber, as traded on the CME commodities exchange, tripled from a low in October to early January before partially retreating later in the month. The futures price for copper moved higher in January. The retail price of diesel fuel, as reported each Monday by the Energy Information Administration, reached a nearly eight-year high of \$3.95 per gallon on February 7, an increase of \$1.15 per gallon or 41% from one year earlier. These changes are likely to show up in PPIs in early 2022, and the fuel price increase will likely spread to higher prices for trucking, especially for deliveries of heavy items such as ready-mix concrete and rebar.

As of early February, it does not appear likely that input prices will set new records in 2022. But wide swings in both directions may continue. Such volatility can be as risky to contractors’ solvency as a steady change. Firms may submit bids based on the assumption that current prices will hold or slip further, only to be caught by a new upswing. And owners may pressure contractors to pass along recent price declines, not recognizing that current prices may not reflect the price a contractor already committed to pay for materials or the price it will pay months later when it places an order. There have also been recent cases of suppliers refusing to quote firm prices until time of shipment, at which point prices may greatly exceed the current price.

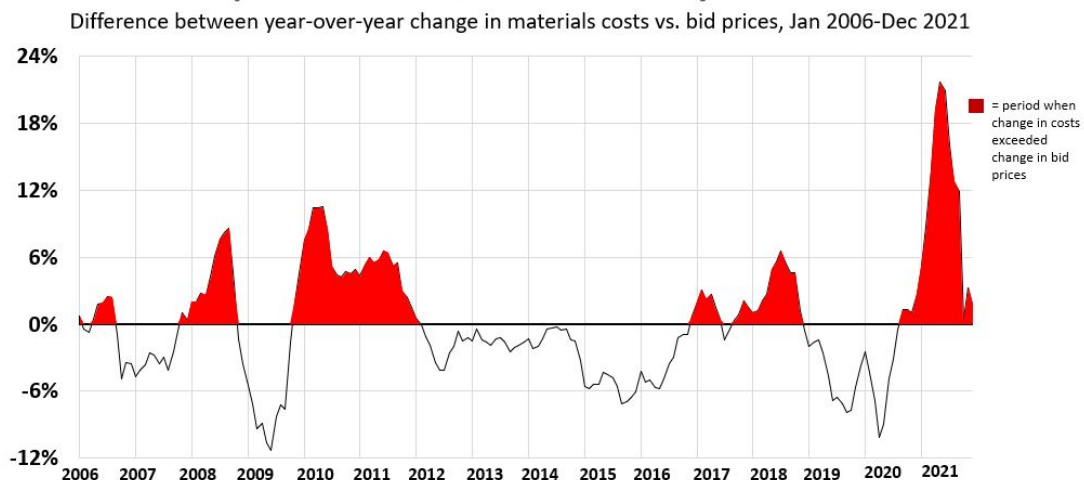
When will bid prices catch up?

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 3 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 warehouses (the longest time series available).

Figure 3

Cost squeeze on contractors can last two years or more



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

The areas in red indicate periods in which the year-over-year change in the PPI for inputs to construction exceeded the PPI for new nonresidential building construction—specifically, warehouses. (Similar patterns exist for the other new-construction “bid price” indexes: the PPIs for new school, office, industrial and healthcare buildings.)

Materials costs outrun bid prices for as long as 27 months from late 2009 to early 2012 and for nearly 24 months from late 2016 to late 2018. The current gap hasn’t lasted as long—yet—but the peak was twice as high as in previous episodes, indicating the pain for contractors was that much more intense.

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.

The following month, as the U.S. economy went into a steep dive, construction firms canceled orders and suppliers lost workers to Covid-19 or shut to comply with governors’ edicts. When orders rebounded, there were not enough workers, ships, port berths, containers, chassis, or trucking, rail, and warehouse workers to produce and move goods.

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 deep 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 summer 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 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.

With so many factors contributing to delays, it is not surprising that 72% of the respondents to AGC’s outlook survey reported that projects took longer than anticipated last year. As a result, 44% report that their firms are putting longer completion times into bids or contracts.

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.

273,000
Construction job openings at the end of 2021 totaled 273,000, a jump of nearly 30% from the end of 2020.

Worker availability

The construction industry lost 1.1 million employees from February to April 2020—a 15% decline in just two months and nearly half as many as in the industry’s five-year downturn from 2006 to 2011. While both residential and nonresidential construction employment rebounded somewhat in May 2020, employment stalled for more than a year after that among nonresidential firms—general 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.

Nonresidential employment grew strongly in the last four months of 2021. But job openings increased even faster. Openings at the end of 2021 totaled 273,000, a jump of nearly 30% from the end of 2020, according to BLS’s Job Openings and Labor Turnover Survey. The total exceeded the 220,000 employees hired in December, implying that construction firms would have added twice as many workers as they were able to, if there had been enough qualified applicants.

In order to attract, retain, and bring back workers, construction firms are raising pay. Average hourly earnings in construction rose 5.8% from February 2021 to January 2022 for “production and nonsupervisory employees”—mainly hourly craft workers. But the average for such workers in the overall private sector climbed 6.9%. The implication is that construction companies will have to raise pay even more in the coming months to remain competitive.

What can contractors and owners do?

While contractors cannot unplug ports or rescind tariffs, they 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 build in a smaller contingency to 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 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 a shortage of available 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.

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 significant adjustments are probably appropriate regarding the price or delivery date of projects that were awarded or commenced early in the pandemic or before, when conditions at suppliers were far different. For new and planned projects, owners should expect quite different pricing and 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 <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 https://store.agc.org/Store/Store/StoreLayouts/Item_Detail.aspx?iProductCode=4401 or email chief economist Ken Simonson at ken.simonson@agc.org.

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