

Construction Briefings

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Material Price Escalation: Allocating The Risks

By John Gallagher and Frank Riggs

The unprecedented escalation of material prices in the construction industry over the last three years has caused significant financial hardships for unprepared suppliers, subcontractors, contractors, and owners. We find no statistical summary of the contract losses suffered, projects delayed, or serious disputes resulting from the efforts of construction industry players to mitigate, shift or recoup the financial consequences of this sudden and dramatic material escalation. Yet, it is certain that profits have been lost, relationships have been damaged, projects have been impacted, and construction lawyers have been called upon to look for ways to soften or shift the impact of material escalation on their unprepared construction clients. In this article, we review some of the traditional legal mechanisms and rules of law affecting the allocation of material price escalation risks. In addition, we set out some of the additional tools being utilized in the industry in order to mitigate material price escalation risks. Finally, we share some thoughts on material price escalation clauses in construction contracts—what is being done in the public and private sectors, some differences in escalation clause structure, and some suggestions for how owners, contractors, subcontractors, and suppliers might approach escalation clauses.¹

I. Rampant Construction Material Price Spikes

A number of construction products have seen dramatic price increases in each of the last few years.² The price of steel soared 50% to 60% in the first half of 2004 alone, after years of either flat or falling prices. Although the steel prices leveled off in 2005, steel material prices were on the rise again earlier this year. During the period from March of 2004 to March of 2005, the Producer Price Index for highway and street construction rose 12.7%. Asphalt and brick, which went up in price roughly 4% per year from 2003 through 2005, suddenly spiked by 38% between August of 2005

and August 2006. The PPI index for brick and structural clay tile climbed from a 3% increase in 2004 to an increase of 9.5% in 2005. Gypsum product prices rose roughly 20% per year in 2004, then by a like amount in 2005, and then again in the 12 months through August 2006. Also, diesel fuel, an important product in the construction industry, rose in price by 54% in 2002, 13% in 2003, 38% in 2004, 46% in 2005, and 26.6% from August 2005 to August 2006.³ The statistics are frightening, and the price increases have been "sudden, extreme and unexpected."⁴

A. Primary Causes of Recent Material Escalation

There are many causes of the recent material price spiking in the construction industry. They involve both domestic and international market forces, as well as aspects of the construction industry that make it particularly susceptible to above-average cost increases.⁵

The recent, dramatic escalation of construction materials probably began in late 2003 and in the first quarter of 2004 with dramatic changes in the steel marketplace. Prior to late 2003, steel

prices had been the subject of only modest inflation over the last 20 years. In the aftermath of the 2001 recession in this country, the construction industry, and particularly the material price component of that industry, experienced little if any inflation. In the calendar year from December of 2000 through December of 2001, the Producer Price Index (PPI) for construction materials and components, as published by the U.S. Bureau of Labor Statistics, showed no change, and the overall PPI for finished goods actually fell 1.6%, while the Consumer Price Index (CPI) rose at only 1.6%. During 2002 and 2003, the inflation picture remained nearly the same.⁶ By early 2004, the steel marketplace changed radically, and the impact reverberated through the construction industry.⁷

Causes of Steel Price Escalation

The causes of the skyrocketing steel prices in early 2004 included the following:

Growing World Demand for Steel

The last decade has seen dramatic economic and construction booms in other parts of the world, particularly in Asia, and especially in China, India, South Korea, and Japan. China is spending billions of dollars each year on construction projects in building new cities, becoming more industrialized, and improving its infrastructure. China is spending approximately \$25 billion to prepare for the 2008 Summer Olympics alone. Construction of the Three Gorges Dam, which will be the largest volume concrete dam in the world, is expected to cost \$25 billion, and when complete will contain 14.86 million cubic meters of concrete. Cannals being built to carry water from four of China's largest rivers to relieve water shortages in northern China regions are expected to cost \$58 billion. This South-to-North Water Diversion Project is the largest water diversion project of all time.⁸ During 2005, China consumed approximately 25% of the world's steel supply.

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China also consumed, in 2005, approximately 40% of the world's cement supply.⁹ The list of significant construction projects underway in Asia goes on and on.

In a very short period, China went from being a large exporter of ore and other raw materials to being the world's largest importer of ore.¹⁰ Three years ago, and in less than two months, scrap iron prices increased 300% in the international marketplace, as China and other countries appeared to be willing to pay whatever price the market would bear in order to fuel Asia's construction project needs. The price of steel beams and column steel rose dramatically as U.S. mills had to pay more and more for the less and less available steel scrap.

Consolidation of Production Facilities

A second factor that contributed to the unprecedented escalation of steel prices and to other material price spikes was the fact that the production capacity of domestic producers had, over time, adjusted to stay even with, but not ahead of, market demands.¹¹ In the steel plate market, the U.S. had seen a consolidation of non-scrap-based production facilities in the prior decades. Significant expansion of that capacity, in the face of overnight material price spikes, was largely impossible.

Reduced Coke Availability

The reduced availability of mined coke, used with steel scrap in the production of steel plate also impacted the steel price spikes and shortages. A long-lasting subterranean fire in the only domestic metallurgical coke mine was ill-timed and added to the steel price pressure.¹²

Diversion of Material Orders for Federal Emergencies

The federal government's diversion of domestic steel orders for use in security applications in Iraq and other locations also played a role in price escalation, especially steel price escalation.

These exercises of emergency authority by the U.S. Department of Defense caused some further delay in domestic steel production.¹³

B. Other Factors in Material Price Escalation

Some of the market forces identified above also played havoc with the prices of other construction materials. In addition to these factors, however, the following circumstances affected, and may continue to affect, the prices of domestic construction materials.

High Energy and Transportation Costs

For four consecutive years, diesel fuel prices have increased dramatically. For example, between May of 2005 and May 2006, diesel fuel prices rose approximately 40%. Such price increases put great and direct pressure on the cost of running equipment and delivering construction materials. In addition, increased crude oil prices translate into higher costs for most petroleum-based products. For example, between May of 2005 and May of 2006, petroleum-based plastic construction products increased in price by 18%, and asphalt paving prices increased 30%. In addition, as many domestic refineries have been switching over to lighter crude and the production of low-sulfur diesel fuels, the quantities of available asphalt—a by-product in the refinery process—has decreased.¹⁴

Residential Construction Demands

The hot residential construction market in the United States has added to the pressure on the supply side of construction materials.¹⁵ Some of the most dramatic price increases have occurred with lumber and plywood, materials impacted by the demands of the housing market. Lumber prices increased an average of 25.8% in 2004, while plywood prices rose an average of 21.5%.¹⁶

Natural Disaster Impacts

Hurricanes Katrina, Ivan, Rita, and other natural disasters over the last few years contributed,

at least in the short term, to both the supply side and demand side pressures.¹⁷ Polyvinylchloride prices have risen dramatically for three consecutive years, and increased 20% between August of 2005 and 2006.¹⁸ Spot shortages followed the hurricane related shutdowns in 2005, as resins produced from oil were temporarily unavailable for the manufacturer of PVC and other vinyl products. Damage from hurricanes also impacted the transportation routes for construction materials.¹⁹

II. The Impact of Price Escalation

The impact on the construction industry of the recent, unprecedented price escalation has been multi-fold. Certainly, cries have come from the contractor and subcontractor community of eroded—or eliminated—profit margins, as well as significant project losses. On one large project, two prominent structural steel fabricating companies lost the battle with steel price escalation and declared bankruptcy.²⁰ In addition to lost fees, and damaged or destroyed construction businesses, the ripple effect of this dramatic price escalation has included numerous other impacts.

A. Delayed or Cancelled Projects

In the world of private development, material price escalation has been significant enough to cause many developers to rethink the “numbers” necessary to make a private development worthwhile. Delayed projects, reduced-in-scope projects, or cancelled projects have been the result. The same impact is being felt in the public construction sector.

For public projects that must be funded by bond issues, significant project price increases present special problems. In a number of projects, between the time a bond was approved by the voters and the time bids were received for construction projects, material prices increased significantly and bids came in at prices much

beyond the approved contract amounts. Public bodies are then faced with the alternatives of putting projects on hold while supplemental funding is sought, canceling the project if additional money is not available, or attempting to scale-down the project scope.²¹

For example, in October 2006, officials at the Blue Plains Advanced Wastewater Treatment Plant in Washington, D.C., were forced to shelve plans to build the world’s largest installation of egg-shaped digesters in light of dramatic price increases. The D.C. Water and Sewer Authority received only a single bid for the project, and that \$306.7 million dollar bid was almost 64% over the owner’s budget estimate. The total project has escalated in cost from an original budget of \$148 million in 2000, to a revised budget of \$350 million in 2006, and now to an estimated \$600 million budget in 2007.²² The Florida Department of Transportation has deferred as least \$1 billion of highway construction over the next three years due to high costs for asphalt, concrete, steel, and earthwork.²³

B. Lack of Firm Price Quotes

In the past, general contractors were able to hold subcontractors and suppliers to their quotes for 60, or 90, or perhaps 120 days. Today, with those subcontractors and suppliers whose work is particularly sensitive to material price escalation, it is increasingly difficult to get a firm quote for any significant period of time. Speaking about the volatility in the copper product marketplace, Mark Shortino, Vice President of Raydec Corp., an industrial and commercial electrical contractor in Rochester, New York, commented: “Our vendors are quoting prices that are good for only a matter of hours.”²⁴ In response to the Construction Financial Management Association’s 2006 construction industry annual financial survey, more than 80% of the responding general contractors and subcontractors reported decreases in the durations of bid price guarantees.²⁵

C. Reduced Numbers of Bidders

In part because of the current level of activity in the construction industry, but also in part because of escalation fears, owners are finding fewer bidders for their projects. States where asphalt supplies have been impacted are seeing fewer bidders for highway and paving projects.²⁶ Owners are seeing more “one bidder” projects and an overall reduction in the number of bidders for projects.²⁷

D. Higher Project Costs

Those projects that have not been scrapped or significantly delayed as a result of price escalation difficulties have frequently experienced higher project costs. Contractor and supplier fears regarding potential, future price escalation, and the absence of price escalation clauses in most construction contracts, often leads to higher contract prices and larger project costs.

E. Stolen Construction Materials

In June of 2006, a Brooklyn, New York fire consumed a historic warehouse. The fire was caused by a vagrant who was stripping copper wire to sell as scrap.²⁸ Copper has become so valuable that contractors are reluctant to store copper materials on a job site for fear that it will be stolen. With copper prices at historic highs, the cost of buying replacement copper products at the end of the project can be expensive. Mechanical and electrical systems are particularly impacted by rising copper prices.²⁹

III. Historical Allocation of Escalation Risks

Although the consequences and dangers of rampant material price escalation are many and complicated, construction industry members are not without tools and options in mitigating or sharing the cost and schedule impacts of material price escalation. Initially, we will consider

below the extent, if any, to which traditional construction contracts and long-established legal principles may be of assistance to contractors, subcontractors, suppliers, and owners facing material price escalation dangers.

Early contractual risk allocation was controlled by unyielding principles that began with strict observance of the “sanctity of contracts” tempered only by “impossibility” in the absolute sense of the word. Impossibility as an excuse for performance is an ancient legal concept, traditionally limited in application solely to those instances where performance had been rendered actually impossible due to supervening causes. Thus, “the mere possibility of performance, no matter how slight, has ruled out impossibility as an excuse unless caused by Acts of God, acts of government, or the fault of the other party.”³⁰ The “force majeure” clause, conceived centuries ago and commonly found in today’s typical construction contract, is the contractual expression of this impossibility concept.

The historical approach to risk allocation due to increased *cost* of performance has emphasized strict enforcement of the benefit of the bargain. Founded in the Roman legal maxim of *pacta sunt servanda*,³¹ parties from ancient times have been bound to the express terms of their bargain. This approach found its expression in such early English decisions as *Pardine v. Jane*.³² Adopting the stance of absolute liability for unconditional promises made by parties to a contract, the court reasoned “when the party by his own contract creates a duty or charge upon himself, he is bound to make it good, if he may, notwithstanding any accident by inevitable necessity, because he might have provided against it by his contract.”³³

Our own Supreme Court in an early case endorsed these competing concepts of actual impossibility and sanctity of contract in the construction arena.³⁴ In refusing to provide relief to a contractor whose performance was rendered more difficult as a result of settlement due to “latent defect in the soil,” citing *Paradine* the

Court ruled:

That covenant [completion of the building] it was his duty to fulfill, and he was bound to do whatever was necessary to its performance. Against the hardship of the case he might have guarded by a provision to the contract. Not having done so, it is not in the power of this court to relieve him. He did not make that part of the building "fit for use and occupation." It could not be occupied with the safety to the lives of the inmates. It is a well-settled rule of law that if a party by his contract charge himself with an obligation possible to be performed, he must make it good, unless its performance is rendered impossible by the act of God, the law or the other party. Unforeseen difficulties, however great, will not excuse him.³⁵

A. Evolution of "Commercial Impracticability"

Modern American jurisprudence, tempered by commercial realities, has moved beyond the requirement of absolute impossibility and has recognized that relief may be available under certain circumstances where prohibitive cost has rendered an undertaking "commercially impracticable."³⁶ It should be noted that in many, if not most of the supply and construction cases in which a party seeks relief due to commercial impracticability, the party also sought relief under the closely related doctrines of frustration of purpose³⁷ and mutual mistake³⁸ of fact, as well as force majeure.³⁹ Based upon its explicit emphasis on increase of the cost of performance, the authors limit their review to consideration of commercial impracticability applications. The concept of commercial impracticability has been codified in the Uniform Commercial Code § 2-615. While construction contracts are primarily service contracts (as opposed to merely material supply contracts) and not generally considered to be within the ambit of the U.C.C.,⁴⁰ in deciding U.C.C. cases dealing with commercial impracticability, the courts in most cases expressly consider both U.C.C. § 2-615 and Restatement of Contracts (Second) § 261. Their holdings are therefore applicable to construction cases, generally. Section

261 of the Restatement of Contracts (Second) entitled "Discharge by Supervening Impracticability," sets forth the common law application.⁴¹ That section states that

[w]here after a contract is made, a party's performance is made impracticable without his fault by the occurrence of an event the non-occurrence of which was a basic assumption on which the contract was made, his duty to render that performance is discharged, unless the language or the circumstances indicate the contrary.

The impracticability concept is not a precise or static one, but rather "represents the ever-shifting line, drawn by courts hopefully responsive to commercial practices and mores, in which the community's interest in having contracts enforced according to their terms is outweighed by the commercial senselessness of requiring performance."⁴² Whether performance of particular contract would be commercially impracticable is a question of fact.⁴³

For contractors seeking relief due to devastating material price increases, comment d to Restatement Section 261, considered in isolation, provides encouragement. It reads:

Performance may be impracticable because extreme and unreasonable difficulty, expense, injury, or loss to one of the parties will be involved. A severe shortage of raw materials or of supplies due to war, embargo, local crop failure, unforeseen shutdown of major sources of supply, or the like, which either causes a marked increase in cost or prevents performance altogether may bring the case within the rule stated in this Section.... A mere change in the degree of difficulty or expense due to such causes as increased wages, prices of raw materials, or costs of construction, unless well beyond the normal range, does not amount to impracticability since it is this sort of risk that a fixed-price contract is intended to cover.⁴⁴

Comment 4 the U.C.C. § 2-615 similarly states:

...a severe shortage of raw materials or of supplies due to a contingency such as war, embargo, local crop failure, unforeseen shutdown of major sources of supply or the like, which either causes a marked increase in cost or altogether prevents the seller

from securing supplies necessary to his performance is within the contemplation of this section.

A review of the application by the courts of the principal of commercial impracticability in the area of supply and construction contracts where the contractor was faced with significant price increases due to market volatility is, however, sobering.⁴⁵

B. Requirements of the Defense

"To prevail on a defense of commercial impracticability, a party must show (i) a supervening event, either an 'act of God' or an act of a third party, made performance impracticable, (ii) the non-occurrence of the event was a basic assumption upon which the contract was based; (iii) the occurrence of the event was not the party's fault; and (iv) the party did not assume the risk of the event's occurrence."⁴⁶ The "no-fault" requirement is merely an equitable threshold and, in the case of price increases caused by market volatility, should pose no hurdle to the contractor seeking relief unless the contractor can be shown to have been negligent in the scheduling of his material purchases, delayed the job, or otherwise have contributed to the price impact experienced. Most cases are decided on the basis of the other three requirements.

Impracticability of Performance

The first prong of the impracticability defense requires both a "supervening" event (one that occurs after execution of the contract) and "impracticability" of performance. Impracticability has two main foci—"legal" impossibility and extreme cost.⁴⁷ Courts uniformly require a showing of *objective*, rather than mere *subjective* impossibility. For instance, in cases in which the contractor is unable to perform due to the failure of its supplier or his own inability to obtain materials, it must further prove that no other contractor could provide performance because the required materials were absolutely unavailable

within the boundaries of a reasonable area of performance.⁴⁸ Both natural disasters⁴⁹ and market events⁵⁰ may create such objective impossibility as will justify relief. Generally, however, courts have been more lenient in granting relief in cases involving natural disaster than those caused by market or governmental impacts.⁵¹

Increased cost, as indicated by Restatement § 261, comment d, must be a cost which is "well beyond the normal range." One leading British case arising out of the 1967 Suez crisis and the increased costs to shipping it created stated that performance "must be more than merely onerous or expensive. It must be positively unjust to hold the parties bound."⁵²

An instructive (but lonely) case in which the contractor successfully obtained relief due to substantial increase in material costs was the ALCOA case borne out of the oil crisis of the 1970s.⁵³ ALCOA entered into a long-term contract with Essex for Essex to supply ALCOA with alumina which ALCOA would then smelt into molten aluminum to return to Essex for further processing. The contract contained a complicated escalation formula that was tied to the Wholesale Price Index-Industrial Commodities (WPI) and to average hourly labor rates paid by ALCOA at its plant. Development of the escalation formula was the product of much research, including participation by Alan Greenspan. ALCOA's goal was to achieve a stable net income of about 4 cents per pound of aluminum converted. Essex sought a long-term supply at a favorable price. The escalation formula was tested extensively using past data to ensure that it would yield the correct result.

For a number of years the formula worked as planned. Unfortunately, beginning in 1973, the spike in energy costs triggered by OPEC's actions, in concert with unanticipated pollution control costs, greatly increased ALCOA's energy costs. Energy was the principal non-labor cost factor in aluminum production. High energy costs greatly distorted the formula's impact, thereby yielding price increases well below

ALCOA's increased costs. ALCOA claimed that it would lose in excess of \$75 million over the remaining term of the contract. It sought relief arguing, among other things, mutual mistake of fact and commercial impracticability. The court agreed on both counts. It determined that "the non-occurrence of an extreme deviation of the WPI-IC and ALCOA's non-labor production costs was a basic [mutual] assumption on which the contract was made" and that ALCOA "neither assumed nor bore the risk of the deviation beyond the foreseeable limits of risk."⁵⁴ It also found the absolute amount and proportion of loss ALCOA would suffer under the remaining term of the contract to be "severe enough to warrant relief," distinguishing the case on those grounds from earlier cases denying relief for increased costs due to market forces.⁵⁵ In light of its findings on the intent of the parties, the court reformed the contract by implementing a new pricing formula that would yield results more in line with the parties' expectations for the remaining term of the contract.

Unfortunately for subsequent contractors seeking to rely upon *ALCOA*, the court did not provide any measurable grounds of distinction between the losses caused by market price volatility which will be deemed sufficient to merit relief from those not "well beyond the normal range." Both pre- and post-*ALCOA* cases suggest that the party seeking relief is required to prove extreme loss.⁵⁶ "The incurrence of simply steep or substantial increases does not render the contract commercially senseless."⁵⁷ For example, in *Jalaprathan Cement Company, Ltd.*,⁵⁸ a cement company was awarded a supply contract for a total fixed-price. The contract contained no price escalation clause. Due in large part to substantial, unexpected increases in certain material costs and steep oil crisis related fuel increases, the contractor stood to incur a total loss approaching a third of the original contract price. The contractor refused to continue supplying cement under the contract. The government terminated the contract for cause and obtained

the required quantities from another source at a substantially increased cost. The board affirmed the termination and granted the government its increased re-procurement costs, determining such a price variance to be within the range in which previous courts had denied relief.⁵⁹ Even extreme increases of as high as 400% in discrete cost components of the contract, in the absence of a price escalation clause, have been found to be insufficient to merit relief.⁶⁰

Lack of Foreseeability/Assumption of Risk

It is the showing of lack of foreseeability mandated by the requirements above that may pose the greatest hurdle for contractors seeking relief due to the impact of market volatility on their material costs. The courts have overwhelmingly rejected claims for relief due to price escalations on the basis of foreseeability and assumption of the risk. The oft-cited reasoning of Judge Posner in the *NIPSCO* case is typical of the conflation of these two concepts in the case of fixed-price contracts.⁶¹ In *NIPSCO*, the utility sought relief based upon its force majeure clause, commercial impracticability, and frustration, arguing that an unexpected government ruling had rendered its long-term purchase contract for coal unprofitable due to increases in coal costs. The court rejected each of the claims based in large part upon the dual grounds of foreseeability and assumption of the risk, and concluded that "the normal [hence foreseeable] risk of a fixed-price contract is that the market price will change" and "a fixed price contract is an explicit assignment of the risk of market price increases to the seller and the risk of market price decreases to the buyer..."⁶²

The general inclination of the courts to find that the very nature of a fixed price contract constitutes an implied assumption of the "normal" risks of market volatility alone poses a significant impediment to relief. Even when dramatic market increases are the result of world-wide "crisis," the very notoriety of such events may render them "foreseeable" in the eyes of the court. In

the Eastern Airlines case of the 1970s, the court determined that the record was “replete with evidence as to the volatility of the Middle East situation” and its clear impact on the oil markets at the time the contract was executed.⁶³ The court went further, stating that even in the absence of such evidence in the record, it would be justified in taking judicial notice of the causes of such volatility, finding them therefore foreseeable and to constitute risks assumed by Gulf.⁶⁴

Given the highly publicized nature of today’s volatile construction materials markets, successfully arguing that the “non-occurrence” of even extreme, rapid increases in the price of one or more materials is a “basic assumption upon which the contract was based” poses a challenge for both material suppliers and contractors. A case involving the recent “steel crisis” proves this point.⁶⁵ In *Chainworks*, Webco accepted a purchase order to supply Chainworks its calendar year steel tubing requirements based upon fixed unit pricing. Due to the dramatic rise in the market price for steel in early 2004, Webco unilaterally imposed its material price increases upon Chainworks. Chainworks was forced to pay the increased price through the end of the year as a condition of Webco honoring its supply commitments. It later reduced its last payment to Webco by the aggregate of the extra charges. Webco sued for the balance, claiming, among other things, that it was entitled to pass on the price increases because unforeseen market conditions rendered its performance impracticable under the original contract.⁶⁶ The court, based upon press releases from steel suppliers issued beginning in December 2003 (the same month the purchase order issued) describing “recent volatility” in the steel market, a “perfect storm in the market,” the imposition of surcharges, etc., found that the parties “knew that the steel market was volatile and that an increase in raw material costs was foreseeable.”⁶⁷

As recounted in the previous sections of this Article, the causes and magnitude of the current across the board increases in basic construction

materials are well known via contractor experience and industry publication. While the prices of certain materials may moderate over time, as a whole they are not likely to abate anytime soon. Proof that the nonoccurrence of significant price escalation was a basic assumption of the contract under these circumstances will be challenging. Additionally, given the fact that in building construction contracts as opposed to supply contracts, individual material components represent only one discrete aspect of a broader contract, even the extreme price increases referenced earlier are unlikely to produce financial consequences so severe as to satisfy the requirement that they render the contract “commercially senseless.” The authors suggest that all parties in the construction industry would be better served to proactively address these risks and how they should be shared rather than rely upon a court’s after the fact determination of where the “ever-shifting line” will fall.

IV. Tools for Mitigating and Sharing Escalation Risks

Even if traditional contract clauses and equitable principles of law are not likely to provide relief to contractors, subcontractors, and suppliers faced with fixed-price contracts and significant material price escalation, the contractor community is not without other options in dealing with material price escalation risks. In appropriate cases, one or more of the following may be useful tools for owners, contractors, subcontractors, and suppliers.

A. Bid Contingencies and Contract Allowances

Traditionally, contractors, subcontractors, and suppliers have employed contingencies in their bids as a hedge against many construction project risks. Absent a price escalation clause in the contract, or some other method for sharing escalation risks with the owner or others in the

chain of contract privity, hidden bid contingencies may continue to be employed. The risk, of course, from such bid contingencies is twofold:

1. In view of the dramatic price spikes over the last three years, will the bid contingency be adequate?
2. If the bid contingency is significant enough to provide adequate protection, will it result in a bid price too high to be accepted by the owner?

Another, perhaps better, approach may be the establishment of an escalation allowance line item in the contract. Such an allowance clause designates the material price increases for which the allowance can be used, and provides safeguards for identifying the original bid prices and actual prices paid for materials. There are many variations on the structure and operation of such a contingency clause. The allowance amount might serve as an upper limit to the contractor's ability to recoup unanticipated price escalation costs, or the contract might entitle the contractor to request and receive a change order enlarging an allowance item. The advantage of such an allowance clause, for the owner, and if the clause is established as the maximum cost increase available to the contractor, is the ability of the owner to budget for price escalation and the certainty that the escalation will not exceed an established amount.

B. Value Engineering for Substitute Materials

The high cost of copper has forced some owners and contractors to search for alternative materials. Although stainless steel piping and PEX (cross-linked polyethylene) are possible copper product substitutes, these materials also are petroleum-based products and subject to escalation pressures of their own. There is talk in the industry of aluminum wire making a comeback as a copper substitute, but many material substitutes present issues of their own, including the risk

that the contractor or subcontractor will not have significant experience with a substitute material and the "learning curve" for new materials also may add to the cost.⁶⁸

C. Early Material Purchases

Whenever possible, escalation risks can be minimized by the early purchase of materials subject to significant escalation. Of course, such early purchasing practices require early scope definitions in the design documents. In addition, costs of storage and insurance (and perhaps, double handling) must be factored into any cost-benefit analysis.

D. Early Material Supply Commitments

EMCOR Group, Inc. of Norwalk, Connecticut, the nation's largest electrical and mechanical contractor, has approached price escalation risks with an innovative tool: on large projects, EMCOR will offer to buy the copper before the owner selects a contractor; if EMCOR is not selected as a subcontractor, they will simply supply the copper for the project.⁶⁹ In order for most contractors to lock in a material supply price, they must have an early contract commitment from the owner. From the owner's perspective, this means shorter bid evaluation periods and quicker trigger-pulling with respect to the final contract award.

E. Early Involvement of Specialty Contractors

In order to accomplish the value engineering or early supply price lock-in objectives mentioned above, owners must get specialty contractors (e.g., steel, concrete, mechanical, and electrical) subcontractors involved early in the project. Having specialty contractors participate in the evolution of the project design will allow them to provide input on price-saving measures, get an earlier grasp on the scope of the work, and involve key suppliers early in the price-setting discussions. For example, steel fabricators monitor steel pricing regularly, and the early

involvement of a steel fabricator with the design and construction team can lead to helpful recommendations regarding the pricing of certain steel members, steel member availability, and other cost-saving strategies.⁷⁰

F. The Use of Surcharges

Contract provisions providing for surcharges for fuel costs already are in use in some material supply contracts and in construction contracts. Although typically limited to fuel-only escalation, provisions for such charges in construction contracts do attempt to address one aspect of material price escalation affecting the industry.

G. Favorable Force Majeure Clauses

Although most force majeure clauses are not sufficiently liberal to accommodate the impact of material price escalation, the broadening of a force majeure clause may be easier to negotiate than the inclusion of a new price escalation clause. Liberalized force majeure clauses may, at a minimum, provide a contractor or subcontractor with a time extension in the face of material shortages or purchasing delays caused by radical price increases. A more favorable force majeure clause might also provide a contractor or subcontractor with entitlement to an equitable contract adjustment (e.g., time and money) on account of the consequences of price escalation. As pointed out earlier in this article, however, most force majeure clauses contemplate contractor relief only for “unanticipated” or “unforeseeable” circumstances.⁷¹ In today’s construction world, and absent some modification to the standard force majeure clause, it may be difficult to demonstrate that material price escalation was “unforeseeable.”

H. Delay the Construction Project

Although oftentimes impractical, and always risky, another possible tactic for dealing with unprecedented material price escalation is the decision to delay the project and hope for a

more favorable material price environment down the road.

I. Flow Down the Risks

Traditionally, general contractors have dealt with many construction risks by flowing them down to—or not allowing them to be passed up from—subcontractors and suppliers. Carefully crafted fixed-price subcontracts and purchase orders that prohibit subcontractors and suppliers from “sharing” escalation risks with the contractor or owner still are commonplace. However, unlike many risks that subcontractors and suppliers traditionally have accepted as part of their plight, material escalation risks seem to have spawned renewed subcontractor and supplier courage during contract negotiations, although statistical evidence of this is sparse. The 2006 Construction Industry Annual Financial Survey sponsored by the Construction Financial Manager’s Association produced these results, based admittedly on a limited sampling of contractors, subcontractors and suppliers:

- Fifty-six percent of the responding subcontractors indicated that they now include escalation clauses in their contracts. Sixty-three percent of the responding general contractors also stated that they included escalation clauses in their contracts.
- Twenty-five percent of the responding subcontractors indicated that escalation costs now are being treated as an allowance item in their subcontracts.
- Twenty-two percent of the responding subcontractors indicated that they add fuel surcharges to their pricing arrangements.
- Nineteen percent of the responding subcontractors indicated that their subcontracts are unchanged as a result of escalation risks.

One of the dangers of attempting to force suppliers and subcontractors to bear all of the risks of material escalation is the possible default of a subcontractor or supplier facing an enormous material price increase. Thus, if this is the approach to material escalation taken by an owner or general contractor, pre-qualification of the subcontractors and suppliers for financial strength, or the use of performance bonds, or both, become more significant considerations.

J. Bulk Material Purchases and Supplier Partnerships

Although not appropriate in all circumstances, whenever possible, a hedge against material price escalation may be achieved by buying materials in bulk, especially if the materials can be utilized on more than one project. Such bulk purchases may result in better material prices, although storage, handling, and insurance costs also must be taken into account. Bulk purchases may be part of a process by which a contractor or subcontractor seeks to establish a closer working relationship with preferred suppliers. If a supplier knows that a contractor or subcontractor can guarantee repeat business with the supplier, and a sufficient volume of business, then better pricing terms are possible.

K. Material Escalation Clauses

With increasing frequency, the construction industry is employing material price escalation clauses in the effort to control, and share the risk of, volatile material prices. The structure and operation of these material escalation clauses vary greatly. Some escalation clauses attempt to track the actual movement of material prices from the bid amounts to the as-delivered prices. Some are designed to reflect theoretical price movement based on various industry cost indexes. Others reflect variations of these two approaches to measuring price volatility.

In the paragraphs that follow, some of the more common, and uncommon, price adjust-

ment clauses are described. To assist the reader in devising an escalation clause, we have included comments on the central features of some of the more popular price adjustment provisions. In addition, we offer suggestions on issues that should be considered in employing any price adjustment clause.

The AGC Approach

In the face of the dramatic steel price escalations in late 2003 and early 2004, the Board of Directors of the Associated General Contractors of America (AGC) adopted a resolution in March of 2004 that called for the inclusion of equitable adjustment clauses for material price increases in fixed-price contracts being let by public and private owners. In May of 2004, the AGC Contract Documents Committee moved quickly to develop a proposed, standardized amendment to the AGC fixed-price owner/contractor agreement. This proposed contract amendment (AGC Document No. 200.1, Amendment No. 1, "Potentially Time and Price-Impacted Materials.") was designed to establish "Baseline Prices" for materials identified by the parties as potentially "time and price-impacted," and to provide a method for adjusting the contract price as a result of fluctuations in those baseline prices. The key features of the AGC price adjustment provision are worth noting:

- Price Increases and Decreases. The clause allows for upward and downward price adjustments.
- Specified Materials Only. The clause requires that the parties specifically identify the materials which may be subject to adjustment.
- Baseline Prices. The clause mandates the parties' agreement on a "baseline price" for each material designation, as well as a pricing adjustment method for each material category.

- No Default Escalation Measure. The clause contemplates that the parties may agree on a material price cost index approach to escalation, but the adjustment method is left to the parties, with no default method provided.
- Contract Addendum. The amendment is intended to be executed contemporaneously with the execution of the original construction contract.
- Notice. The clause entitles either party to notify the other of a basis for a price adjustment, and provides that the notice should be provided within 30 days from the date the basis for a price adjustment arises.
- Supporting Documentation. The requesting party must provide "appropriate documentation substantiating" each price adjustment requested.
- No Mark-Up. Price adjustments cannot include any overhead or profit mark-up.
- No Retroactive Adjustments. No upward or downward price adjustment is appropriate with respect to materials delivered before the date of the required notification.
- Maximum Limit. The clause makes provision for agreement on a maximum limit (by percentage of the original contract price) on the aggregate of increases or decreases in baseline prices.
- Time Extension. The clause also provides for the possibility of a time extension due to delivery delays, or material unavailability, if beyond the control of, and without the fault of, the contractor, its subcontractors or material suppliers.

It is difficult to determine the extent to which the AGC Document No. 200.1 is actually in use in construction contracts. Certainly, the clause reflects a logical approach to material escala-

tion, and it seems likely that the AGC approach has been instructive in the creation of other price escalation provisions in public and private contracts. Other popular standardized industry contracts (i.e., the contract forms published by the AIA and DBIA) have not included escalation provisions in their standard agreements or published forms. Similarly, although new editions of the standardized industry forms published by the American Institute of Architects (AIA) and the Engineer's Joint Contract Documents Committee (EJCDC) are due to be published in 2007, preliminary drafts of the AIA documents do not contain a material escalation clause.

The Federal Government's Approach

The Federal government has a longer history than the private sector with price escalation provisions. Such clauses have been common in many public works contracts for petroleum-related products, including asphalt, for some period of time. Price escalation provisions now are permitted by the Federal Acquisition Regulations (the "F.A.R.") in all fixed-price agreements, when the government's Contracting Officer determines, during the pre-solicitation stage, that the use of an escalation clause is appropriate.⁷²

The F.A.R. establishes the Contracting Officer's right to provide, in fixed-price contracts, price adjustment clauses of three general types.⁷³ In order to include price adjustment clauses in fixed-price contracts, the Contracting Officer, in the pre-solicitation phase, must determine that:

- (i) There is serious doubt concerning the stability of market or labor conditions that will exist during an extended period of contract performance, and
- (ii) Contingencies that would otherwise be included in the contract price can be identified and covered separately in the contract.⁷⁴

Normally, price adjustments allowed by the F.A.R. are restricted to those which are a

consequence of “industry-wide contingencies” and to contingencies “beyond the Contractor’s control.”⁷⁵ The F.A.R. provides standard Economic Price Adjustment clauses for use with “adjustments based on actual costs”⁷⁶ and for “adjustments based on established prices.”⁷⁷ The statutory clauses may be modified by increasing the aggregate 10% limit on increases, but otherwise the required clauses must be “substantially the same as” the statutory clauses.⁷⁸ The F.A.R. allows, but does not provide a required or suggested clause for, price adjustments based on cost indexes.

The essential features of the F.A.R. Economic Price Adjustment—Labor and Material clause based on fluctuations in the actual costs of labor and materials are as follows:

- Price Increase and Decreases. The clause provides for both labor and material increases or decreases.
 - Notice Requirement. The contractor must notify the government within 60 days after any such increase or decrease, and not later than the date of final payment.
 - Supporting Data. The notice must include the proposed price adjustment as well as supporting data explaining the cause, effective date, and amount of the increase or decrease.
 - Unit Price Materials Only. With respect to material escalation, the clause is limited to those materials for which there are unit prices established in the contract.
 - Exemption For Delayed Deliveries. No upward adjustment is allowed for materials or services required to be delivered or performed before the effective date of the adjustment, unless the contractor’s failure to deliver or perform according to the contract schedule is an excusable delay.⁷⁹
- Minimum Escalation Threshold. No adjustment is allowed if the net change would be less than 3% of the then-current total contract price.⁸⁰
 - Maximum Limit. The aggregate of all increases cannot exceed 10% of the original material unit price, unless the 10% limitation has been modified in the contract.
 - Limitless Price Decreases. There is no percentage limitation on the amount of decreases that can be made under the price adjustment clause.
 - Audit Right. The government retains the right to examine the books and records of the contractor for three years after the date of final payment.⁸¹

The Defense Federal Acquisition Regulation Supplement (DFARS) also includes standard clauses for use in addressing price adjustments for steel, aluminum, brass, bronze, or copper mill products (DFARS § 252.216-7000) and non-standard steel items (DFARS § 252.216-7001).

Public Contract Clauses

Other public bodies, including state and municipal owners, have been less prone to adopt price adjustment clauses in their construction contracts. In addition to the long-held notion that contractors are in the best position to anticipate, and assume the risk of, material price escalation in their public contract bids, public owners also have difficulty marrying price adjustment clauses with pre-determined budget limits. However, there is precedent for, and some history with, price escalation clauses in public contracts.

For example, highway contractors have been one of the industry segments hit hard by escalating material prices. The cost of liquid asphalt paving, cement, fuel, steel, and other materials vital to highway construction projects have skyrocketed in the last three years. In addition

to higher energy costs, price escalation in the transportation industry also has been fueled by consolidations in the highway industry (e.g., a reduction in the number of prime contractors, quarry ownership consolidations, etc.), by larger transportation construction programs, by the downsizing of the construction workforce as a result of the instability of transportation funding prior to August of 2005, and by localized material shortages⁸² for some construction products.⁸³

In the State of Washington, for example, the Washington State Department of Transportation's construction cost index increased 31% in the first two quarters of 2006 as compared to the annual average for 2005. Hot mix asphalt costs alone rose 33% in the first two quarters of 2006, according to the Washington DOT's cost records.⁸⁴ To put this in perspective, consider that the average annual growth rate of the Washington DOT's construction cost index from 1990 through 2001 was approximately 1.5% per year; since 2001, the average growth rate has been 12% per year. Similarly, the price of steel rebar used in Washington DOT transportation projects increased by more than 100% between January 2002 and October of 2004.⁸⁵ The construction cost index maintained by the Federal Highway Administration (FHWA), although composed of slightly different materials and different sources, shows a similar spiking of highway-related material prices in recent years. The American Road & Transportation Builders Association reports that, since 1998 and through 2005, the cost of materials for highway and street contractors increased 35.1%, as compared to a 19.8% increase in the consumer price index.

As a result, the U.S. Department of Transportation Federal Highway Administration, and state DOTs across the country, have undertaken a number of measures to help alleviate the problems caused by this unprecedented escalation, including the creation of various price adjustment mechanisms for highway contracts. The Federal Highway Administration of the U.S. Department of Transportation issued a technical advisory suggesting procedures for the development and

use of price adjustment clauses in highway contracts.⁸⁶ Many state DOTs have implemented price escalation measures, although the approaches taken by the state DOTs vary in interesting ways. Because these approaches may be of use to contractors, suppliers, owners, and their counsel in the creation of price escalation clauses, we will describe some of the components of two of these price escalation approaches.

The Virginia DOT

In late 2004, the Virginia Department of Transportation implemented a special monthly price adjustment mechanism for steel used on specific items of identified work. The VDOT provision spells out, in great detail, the formula to be applied in determining contractor eligibility for a steel price increase or decrease.⁸⁷ Interesting aspects of this steel escalation provision include:

- Early Steel Orders. To be eligible for a price adjustment, the contractor, subcontractor and/or supplier are required to place a purchase order for eligible steel items within 30 days after execution of the VDOT contract.
- Specific Identification of Eligible Materials. Once shipped to the fabricator, the steel items are required to be specifically stored, labeled, or tagged, recognizable by color marking and identifiable by project for inspection and audit verification.
- Proof of Bid Prices. Within 15 days after the contract award, the contractor is required to submit material price quotes, bid papers, or other documentation satisfactory to VDOT for the bid items for which a steel price adjustment may be requested.
- "Average Price" Documentation. The post-award documentation submitted by the contractor must be adequate to

complete a VDOT form establishing the average price per pound for the eligible steel bid item.

- Certification of Bid Information. The contractor must certify that all supporting documentation is original and was actually used in computing the bid amount for eligible steel items.
- Material Price Escalation Only. No escalation is allowed for steel fabrication, shipping, storage, handling, or erection.
- Minimum and Maximum Escalation Limits. An eligible steel price increase or decrease must be in excess of 10%, up to a maximum of 60%, from the established base price, when compared with the latest published price index in effect when the material is shipped to the fabricator.
- Definition of Controlling Price Indexes. The price escalation provision specifies the Bureau of Labor Statistics Producers Price Index to be used for each category of steel material, requiring an average of two indexes with respect to certain steel materials.
- Excluded Delay Damages. Although delays due to steel shortages may justify a contract time extension, they will not be grounds for claims for standby equipment, extended office overhead, or other costs associated with such delays.
- Minimum Contract Timeframe. Escalation rights attach only to contracts having an original contract timeframe of more than one year, or more than 5,000 tons of asphalt concrete.
- Price Increases or Decreases. The escalation provision takes into account both increases and decreases in prices.
- Index-Based Price Adjustments. The price adjustments are based on variations from the Asphalt Price Index (API) of bituminous material. The Florida DOT determines the API for each month by averaging quotations in effect on the first day of the month at all terminals that could reasonably be expected to furnish bituminous material to projects in the state of Florida.
- Monthly Adjustment Determination. The Florida DOT compares, on a monthly basis, the current API with the API prevailing in the month when bids were received, and allows price adjustments where the current API varies by more than 5% of the API for the month when bids were received.
- Mandatory Adjustment. The API-based price adjustment is mandatory—the contractor is not given the option of accepting or rejecting the adjustment, and no contractor notice is required to initiate the price adjustment.⁸⁸

The Florida DOT

The Florida DOT takes a somewhat different approach to material price escalation. The Florida highway specifications provide for possible price escalation with respect to fuel and bituminous material used in highway construction projects. Using the bituminous material escalation provision in the Florida highway specifications as an example, consider the following interesting features of this price escalation mechanism:

For suppliers, contractors, and owners in search of innovative approaches to material price escalation provisions, the various escalation provisions employed by the state departments of transportation are worthy of consideration. The U.S. Department of Transportation Federal Highway Administration website⁸⁹ provides good information on material price escalation affecting highway construction, as well as some very useful links to the treatment of material price escalation by various state DOT's.

L. Index-Based Escalation Clauses

Many of the escalation clauses being encountered in the marketplace are premised on measurable changes in construction costs indexes for various construction products. The reliance on construction indexes is deemed preferable by many owners concerned about their ability to determine and to verify actual price increases for which an owner should share some responsibility. Not only do cost-based indexes impose additional administrative and audit functions on construction owners, but there remains a healthy level of skepticism among owners with respect to the potential manipulation of construction costs by contractors, subcontractors, and suppliers.

National Construction Price Indexes

Contractors, subcontractors, and suppliers frequently propose contract escalation provisions based upon various national price indexes. For example, the United States Department of Labor, Bureau of Labor monthly publication entitled "Wholesale Prices and Prices Indexes," provides monthly price information for virtually all construction materials and supplies.

Since 1986, the Bureau of Labor Statistics (BLS) has been publishing indexes that measure changes in the prices of material inputs to the construction industry. Within the Producer Price Index ("PPI") family of indexes, there are several major classification systems, each with its own history, uses, and structure.⁹⁰ The PPI index will not include any costs the buyer incurs beyond the producer's loading dock or other point of sale—for example, it will not include insurance, freight, storage, fabrication, or installation costs. There is no PPI for construction labor, and the PPI's for trucking and insurance are not specific enough to indicate the specialized services and products used in construction. All of the PPI indexes are based upon prices at a national level. As a result, they may account for regional or local price differences.⁹¹

Since 1995, the BLS has posted PPI time series data, news releases, and technical materials at its website (www.bls.gov/ppi). The PPI website permits users to download nearly all current and discontinued PPI time series data.⁹² The PPI releases are issued typically in the second or third week of each month. Some PPI data is "seasonably adjusted" to eliminate the effect of changes that normally occur at about the same time and in about the same magnitude each year. However, it is the unadjusted versions of PPI data that are the primary components of price escalation clauses. And, the unadjusted PPI data is routinely subject to revision only once, four months after its original publication, to reflect late reports and corrections by company respondents.⁹³

The AGC's Chief Economist, Ken Simonson, authored an AGC's Construction Inflation Alert in September of 2006, and this publication provides a wealth of information regarding the history, nature, and use of cost indexes affecting the construction industry. Mr. Simonson also includes in this Alert a listing of the Producer Price Indexes which are believed to be the closest approximation to items actually used or bought for construction. As Mr. Simonson points out, some of the PPI's published by the BLS and others contain a wider range of materials than those specifically used in construction projects. For example, the PPI for "steel mill products" (designated as WPU1017) also includes steel used in motor vehicles, appliances, equipment and elsewhere, in addition to steel used in construction. On the other hand, the BLS PPI for "concrete products" (designated as WPU133) includes materials used solely in the construction industry. The lesson to be learned here: before employing a material price escalation clause based on a published price index, make certain that you understand the products, and the pricing information, included in a particular PPI, and that the chosen index is the most appropriate for measuring the escalation which is the focus of your contract clause.

ENR Cost Indexes

Another frequently-used source of pricing information for escalation clauses is the family of indexes published by Engineering News-Record ("ENR"), a construction industry publication of the McGraw-Hill Companies. ENR publishes both a Construction Cost Index (CCI), as well as a Building Cost Index (BCI), and both are used widely throughout the construction industry. The ENR price indexes are based on information gathered by "price reporters" covering 20 designated U.S. cities.⁹⁴ Both the CCI and the BCI indexes have a labor component. In the second weekly issue for each month, ENR publishes the CCI, BCI, materials index, skilled labor index and a common labor index for the 20 selected cities, as well as a national average based on the 20-city pricing information. The first ENR issue during each month contains an index review of the national indexes for the latest 14-month period. During each of the weekly issues of ENR for each month, more detailed index information is provided for the various categories of construction materials.⁹⁵

The ENR prices are based on price quotes from designated suppliers in each city, as well as from local union wage rates. The indexes do not measure cost differentials between cities; they measure only the trend in an individual city and in the U.S. as a whole. The indexes are not seasonably adjusted and, ENR publishes 20-city averages in an index which it recommends as a more appropriate measure of cost escalation.⁹⁶

There are other publishers of construction-related cost indexes, and, as previously mentioned, some private and public owners (e.g., various state DOT's) have created, and rely exclusively on, their own material cost indexes. Key to the successful application of an index-based escalation clause is the parties' full appreciation for the appropriateness of the particular index for a particular construction commodity, a full understanding of the manner in which the index-based provision operates, and careful drafting in

order to clearly implement the parties' escalation expectations.

The parties' failure to successfully achieve these three goals is evident in many cases. For example, in *John T. Oxley, et al. v. Oklahoma Gas and Electric Co., et al.*,⁹⁷ the Oklahoma Court of Appeals, was faced with a contract escalation provision which was premised on the "area price" for natural gas as established, from time to time, by the Federal Power Commission. Unfortunately, during the term of the parties' contract, Congress created the Department of Energy and the Federal Energy Regulatory Commission, and the Federal Power Commission ceased to exist. The court rejected the buyers' argument that, when the entity establishing the price index ceased to exist, the seller's right to escalation also ceased. Instead, the court construed the contract to give effect to the mutual intention of the parties, and then found that this mutual intention was for the periodic escalation of natural gas sales prices based on the going area market rate, even if the Federal Power Commission was no longer available to establish that rate. In other cases, courts have struggled with fuzzy contract definitions of the exact formulaic operation of index-based escalation clauses.⁹⁸ In our experience, parties are sometimes very sloppy in their approach to material price escalation clauses, especially those based on price indexes. Relying on a court to define the parties' "intention" with respect to the operation of an escalation provision is not a desirable result.⁹⁹

M. Cost-Based Escalation Provisions

Because an index-based escalation clause may result in a theoretical material price increase or decrease that bears no relationship to the actual cost experience of the suppliers, subcontractors, and contractors on a particular project, contracting parties sometimes opt for a "cost-based" escalation arrangement. Some cost-based clauses are simply stated¹⁰⁰ and little more than liberalized force majeure clauses, leaving significant details of the implementation of the clauses to be

worked out by the parties or defined by a court or arbitration panel. Others are detailed, leaving little unsaid, but sometimes alarming in their length and complexity. The use of a cost-based escalation clause also is sometimes the product of unfamiliarity with, or distrust of, the various material cost indexes proposed by one or more of the contracting parties. In any event, and although a cost-based escalation provision also has disadvantages,¹⁰¹ some discussion of cost-based escalation arrangements is appropriate.

If an owner intends to utilize an actual cost-based escalation provision, it is suggested that the arrangement include at least the following essential pieces:

- Adequate documentation (e.g., supplier quotes and detailed bid breakdowns) establishing the base price for the application of the escalation provision.
- Documentation (e.g., additional supplier quotes) establishing that the “base price” is, in fact, a reasonable price.
- A contractual obligation that the contractor and subcontractors immediately (within a specified timeframe after contract award) place orders for any material items subject to escalation.
- Contract language excluding from the escalation clause operation any price escalation associated with lack of diligence by the contractor, subcontractor, or supplier, or with the delivery of the material after the scheduled delivery date.
- Sworn certification by the contractor of the accuracy of, and actual reliance on, the material price in the bid, and of the accuracy of contractor’s representations regarding the actual material cost.
- Prompt notice requirements.
- Exclusion of overhead and profit mark-up on the price escalation.

- Adequate assurance that the contractor’s price does not include a hidden escalation contingency.
- A system for identifying, and tracking through the fabrication or delivery phases, the specific materials subject to escalation terms.

Certainly, an owner could employ a number of other options in structuring a cost-based escalation provision (e.g., a maximum escalation limit, a “two-way” clause operation, etc.), but the components identified above are fundamental features, from the owner’s perspective, of any actual cost-based escalation provision.

The extent to which public and private owners will employ material price escalation clauses in construction contracts is uncertain. Certainly, it cannot be expected that price escalation clauses will be adopted as a standard long-term policy for all construction projects. Most public agencies employing escalation provisions continue to periodically monitor the utility of such clauses, as well as the impact of those clauses on the public pocketbook. Still, faced with declining numbers of bidders on some projects and higher bid prices, with the resulting threat of postponed or cancelled public improvements, price escalation clauses continue to be employed by many public agencies and to be considered for use by others.

V. Checklist of Practice Pointers

During the last six months, the construction industry has seen some easing of material price escalation with certain construction materials. The recent slowdown in the residential housing market, as well as increased imports and larger domestic capacity, may ease some escalation pressures. Concrete prices have leveled out, and lumber and plywood prices have experienced a gradual decline during 2006. Still, fuel prices remain high and will likely continue to do so. As a result, asphalt prices are likely to remain high.

Copper also is likely to remain at an elevated price level. Steel and concrete costs are harder to predict.

To assist the construction industry executive or the legal practitioner in dealing with the consequences of material price escalation in this uncertain future, we offer the following checklist of practical tips. We have subdivided the checklist in order to offer suggestions from the perspectives of the owner, contractor/CM, subcontractor and supplier.

A. Practical Tips—The Owner's Perspective

- If you employ a material price escalation clause, provide that the clause will trigger both upward and downward adjustments.
- Consider an escalation clause which provides a minimum level of escalation, below which the contractor will assume all risks, as well as a maximum limit on allowable escalation.
- Another variation to the employment of limits on escalation and escalation clauses is the use of "risk sharing" provisions—i.e., the contractor and owner each share a certain percentage of any eligible escalation, perhaps on a sliding scale.
- If using an escalation clause based on actual price increases over bid amounts, insure that the contractor is required to furnish adequate proof of the prices relied on in the bid, and proof (e.g., multiple quotes) that the prices in the bid are reasonable and consistent with market prices.
- Consider the potential advantages of a design-build contract arrangement, where designers and builders collaborate early on decisions which may affect material choices and delivery schedules.
- Involve specialty contractors (e.g., steel, electrical, mechanical, and concrete subcontractors and suppliers) in the early stages of the project development, so that you can benefit from their guidance regarding material prices and shortages.
- If you intend to have the contractor and subcontractors assume all of the risks of material price escalation, pre-qualify contractors and subcontractors for the financial strength necessary to withstand material price spikes while continuing to perform.
- If you intend to have the contractor and subcontractors assume all of the risks of material price escalation, consider the possible utilization of performance bonds.
- As you contemplate requiring contractors and subcontractors to assume all material price escalation risks, consider the possibility that your project costs will be higher, as a function of hidden contingencies, bond premiums, and potential project delays or disputes.
- If you utilize a material cost escalation clause, and it is index-based, make certain that you fully understand the nature and relevance of the specified index, as well as the mechanics of the manner in which the index will be employed.
- If your price escalation mechanism involves a comparison of bid prices to actual prices, include adequate audit rights in your contracts.
- If you employ a price escalation clause, limit its operation so as to exclude the impact of escalation relating to any

delayed contractor ordering of materials or delayed performance of work.

- Consider eliminating material price escalation clauses in contracts of short duration, where there is a greater likelihood that the contractor, subcontractors, and suppliers can lock-in or anticipate material prices.
- An escalation clause might consider the use of an “escalation dead zone”—i.e., the first few months of the project period are “escalation free,” since the contractor should have been able to price the work and anticipate escalation for at least the first few months of the project.
- If you provide for the possibility for a time extension as a result of material shortages or extraordinary price hikes, exclude the right to any contractor or subcontractor recovery for other delay damages (e.g., stand-by equipment, extended home office overhead, etc.)
- If you are unable to include a formal material price escalation clause in your contract with the owner, attempt to modify the force majeure clause to allow for time (at least) and money associated with material price escalation.
- Educate the owner on the cost advantages of separately identifying, and providing for the possibility of escalation payments for, materials which have been extremely volatile in price. (This is particularly important on a federal government project, where a contracting officer pre-bid decision to use an escalation clause is necessary; but it also should be an important aspect of your early contract negotiations with private owners.)
- Work with the owner to value engineer to achieve project cost savings, by looking for substitute materials which are not as volatile in price, or by searching for other economies which will offset possible material price escalation and help protect the owner’s budget.
- Consider the possibility of bulk material purchases, for more than one project, and establishing supplier partnerships which may lead to better pricing and stronger supplier commitments to your projects.
- Consider the utility of employing contract allowances for material price escalation, so that the owner can plug a fixed escalation number into the original project budget.
- If you use a price escalation clause with your subcontractors and the owner, or an allowance item for material price escalation, insure that the method specified for demonstrating the price escalation are identical up and down the chain of contract privity. If possible,

B. Practical Tips—The General Contractor’s or Construction Manager’s Perspective

- If your subcontractors or suppliers insist on material cost escalation clauses in their contracts, insure that you have pass-through rights to the owner—and that the price escalation mechanisms in your subcontracts and in your contract with the owner are identical.
- Pre-qualify your subcontractors and suppliers for their financial ability to withstand likely material price spikes during the course of a project.
- Attempt to get the owner’s agreement to allow you to pre-purchase, and get paid for, materials which can be ordered early and which may be particularly susceptible to escalation.

structure the subcontracts and your contract with the owner to provide for a single determination of any entitlement to price escalation, and to have that determination binding on the owner and your subcontractors.

- If you anticipate an agreement with the owner regarding material price escalation, require that your subcontractors and suppliers separately price those materials which will be subject to the escalation clause.
- Be wary of owner requirements that you provide a GMP early in the design development process, unless that GMP commitment also includes measures for material price escalation.

C. Practical Tips—The Subcontractor's and Supplier's Perspective

- Educate the contractor and owner on the advantages of material price escalation provisions—do it early.
- Qualify your proposals to insist on a mutually-agreeable material price escalation clause.
- Attempt to convince the contractor and owner of the value of having you involved in the design development stage and in any value engineering efforts.
- Be wary of bid requirements that you hold open prices for lengthy periods of time.
- Be wary of subcontract clauses (e.g., pay-if-paid clauses) that limit your recovery for material price escalation to only the amount, if any, which the contractor can obtain from the owner.
- Understand the various price indexes available for measuring material price

escalation, and insure that you chose the proper index for your material.

- Examine the force majeure clause proposed for your subcontract and attempt to negotiate the right to time (at least) and money as a consequence of material shortages or extraordinary material price hikes.
- If you are allowed to make early orders for materials, insure that your subcontract or purchase order covers the cost of storage, double handling, and insurance.

VI. References

1. Much has been written in recent years on the subject of material shortages and material price escalation. We draw liberally on the efforts of those who have spoken before us. The materials cited in this article should provide a valuable resource for those who look for better ways to deal with the ongoing risks posed by material price escalation.
2. Consider the following construction material price spikes, as measured by the United States Bureau of Labor Statistics, from June of 2005 through June of 2006: asphalt (71.4% increase), gypsum products (23.3% increase), copper and brass mill shapes (81.5% increase), aluminum mill shapes (17.1% increase), crude petroleum (25.7% increase), cement (14.4% increase), iron ore (17.4% increase), iron and steel scrap (73.7% increase), copper base scrap (86.1% increase), plastic construction products (19.2% increase), pre-stress concrete products (18% increase), ready-mixed concrete (13% increase), and diesel fuel (33% increase). These construction material price increases, which began to spike in early 2004, far exceed the broad measures of price inflation reflected in the Bureau of Labor Statistics Consumer Price Index for all urban consumers (CPI-U) or the Producer Price Index (PPI) for finished goods.
3. AGC's Construction Inflation Alert dated September 2006, reported by AGC Chief Economist Ken Simonson.
4. Id.
5. Id. Ken Simonson, the AGC's Chief Economist, offers the following two characteristics of the construction industry as contributing to the severity of the escalation impacts: (a) Construction contractors typically are contractually locked into contracts requiring fixed quantities of materials. When supplies become scarce, or more expensive as a result of domestic and international market forces, a contractor cannot simply build a smaller building or use less material to build a roadway. In other industries, the impact of material shortages are dramatic price increases will be softened by, for example, reductions in product output; (b) Construction project costs also are particularly affected by transportation costs and transportation difficulties. On a construction project, large quantities of materials must be delivered to a specific site, frequently from great distances. Also, as oil prices rise, and fuel costs increase, the construction industry feels a significant impact. For example, in 2004, the market demand worldwide for dry

- bulk ocean carriers used to carry scrap iron, copper ore and other commodities tripled the cost of the ship charters bringing cement into the United States, and port and rail yard congestion added to the increased costs and resulting delays.
6. Ken Simonson, "Sticker Shock Will Stick Around," in the AGC's *Georgia Construction Today*, Third Quarter 2006.
 7. In their article published for the American Bar Association Construction Forum at its Winter 2006 program, Brad Gordon and David Ratterman offer an excellent recap of the lead-up to the steel shortages and price spikes in 2004. Prior to 2004, the domestic producers of steel in the United States were, for the most part, meeting the demands of the domestic marketplace. With the advent of electric arc furnace technology in the 1970's and 1980's, domestic steel producers were turning the large inventory of steel scrap available in the U.S. into "new" steel for construction. Steel was being sold to the construction industry on the basis of "cost based" pricing (i.e., as opposed to having the market demand set the price, the steel mills were basing steel prices on the actual cost of production and a fixed mark-up). Thus, prices for milled steel products were set, not at the time the order was placed, but as the steel completed, or neared the completion of, the milling process. This pricing policy left bidding subcontractors and contractors at some risk as they prepared their estimates and made contract commitments for steel prices in advance of having fixed prices from the steel mills. Still, the long history of stable steel prices from the mills allowed contractors to successfully negotiate this pricing risk. At least, that was the case prior to late 2003 and early 2004.
 8. S. Lewis, "Biggest In The World," 2005 *Engineering News-Record Sourcebook*, p. 42, 43-45, December 2005.
 9. P. van der Schans, "Increasing Material Prices Gouge Construction Industry," *Construction Executive*, January 2005.
 10. "Steel Price Set To Carry On Climbing," *The Financial Times* (London), p. 28, January 27, 2004.
 11. B. Gordon and D. Ratterman, "Price Escalation, Defaults, Potential Defaults, and Remedies," American Bar Association Construction Forum Winter 2006 Program.
 12. See, e.g., "Steel Maker's Biggest Worry—China," *The Deal*, December 10, 2003; "This Is Not Your Father's Steel Bubble," *Fortune*, p. 53, January 26, 2004; B. Gordon and D. Ratterman, "Price Escalation, Defaults, Potential Defaults, and Remedies," American Bar Association Construction Forum Winter 2006 Program.
 13. B. Gordon and D. Ratterman, "Price Escalation, Defaults, Potential Defaults, and Remedies," American Bar Association Construction Forum Winter 2006 Program.
 14. "Inflation Maintains Strong Momentum," *Engineering News-Record*, p. 66, June 26, 2006.
 15. Although the housing market seems to have cooled recently, many economists have been predicting a decline in housing construction for the last four years; and in each year, the housing industry set new high water marks. Some economists still doubt any significant, long-term decline in residential construction. See "Will Construction In The U.S. and Georgia Thrive or Dive In The Rest of 2005?," Presentation of Ken Simonson, Chief Economist for the Associated General Contractors of America, April 19, 2005.
 16. P. van der Schans, "Increasing Material Prices Gouge Construction Industry," *Construction Executive*, p. 26-29 (January 2005).
 17. Damage caused by hurricanes in the Gulf of Mexico disrupted supplies of ethylene and natural gas during the second half of 2005. In the aftermath of Hurricane Katrina, repair efforts along the Gulf Coast quickly consumed many building materials, creating at least short-term shortages and further price hikes. "Big Home Centers' Influence Sways The Broader Materials Market," *Engineering News-Record*, p. 29, March 20, 2006.
 18. U.S. Department of Labor Bureau of Labor Statistics, Producer Price Index.
 19. "Third Year Of Price Hikes Fueled By Hurricane-Related Disruptions," *Engineering News-Record*, p. 31, September 25, 2006.
 20. "Big Steel Fabricator Is Latest To Bet On Chapter 11: Financially Troubled Havens Steel Seeks Relief, But Stockholders Could Still Loss Out," *Engineering News-Record*, May 24, 2004; "For Fabricator, Steel Price Hike Helped Turn Out The Lights: Interstate Iron Works' Liquidation Puts Big New York Job In Limbo," *Engineering News-Record*, p. 26, March 21, 2005.
 21. P. van der Schans, "Increasing Material Prices Gouge Construction Industry," *Construction Executive*, p. 26-29 January 2005.
 22. "Extreme Price Hikes Shelve D.C. Wastewater Digester Project," *Engineering News-Record*, p. 7, October 16, 2006.
 23. "Will High Paving Costs Put Recycled Roads Back In The Fast Lane," *Engineering News-Record*, p. 70, June 26, 2006.
 24. "Prices Jump Forty Percent Over A Year Ago," *Engineering News-Record*, p. 31, March 20, 2006.
 25. "CFMA's Financial Survey Hot Topic: Material Shortages & Price Escalations," *CFMA's Building Profits*, p. 52-55, September-October 2006.
 26. "Price Escalation Is Stuck In High Gear," *Engineering News-Record*, p. 69, June 26, 2006.
 27. "Cross-Cutting Management Issues," published by the Washington State Department of Transportation Construction Office, December 31, 2005.
 28. "Speculation Sparks Huge Price Surge Hitting Electrical And Mechanical Costs," *Engineering News-Record*, p. 64, June 26, 2006.
 29. For example, a transformer that costs \$65,000 a year ago may now cost nearly \$100,000, "Speculation Sparks Huge Price Surge Hitting Electrical And Mechanical Costs," *Engineering News-Record*, p. 64, June 26, 2006 (comment by Ben Capland, Vice President of Logistics for Turner Construction Co., New York City).
 30. P. Bruner, "Force Majeure: World-Wide Excuse for Contractual Non-Performance," 2002; see also Burner & O'Connor On Construction Law (2002).
 31. Translates as "contracts must be honored."
 32. 82 Eng. Rep. 897 (1647).
 33. Id.
 34. *Dermott v. Jones*, 69 U.S. 1, 2, 17 L. Ed. 762, 1864 WL 6582 (1864).
 35. Id. At 7.
 36. Possibly the earliest case in this regard is *Mineral Park Land Co. v. Howard*, 172 Cal. 289, 156 P. 458 (1916) wherein the court provided a contractor relief from his obligation to supply gravel reasoning that where a great unanticipated cost renders performance impracticable, it is for purposes of the law impossible.

37. Restatement (Second) of Contracts § 265 (1981).
38. Restatement (Second) of Contracts § 294 (1981).
39. For a scholarly comparison of the nature of force majeure and commercial impracticability, see P.J.M. Declercq, *Modern Analysis of the Legal Effect of Force Majeure Clauses in Situations of Commercial Impracticability*, 15 J.L. & Com. 213 (Fall 1995).
40. Compare *Bonebrake v. Cox*, 499 F.2d 951, 960, 14 U.C.C. Rep. Serv. 1318 (8th Cir. 1974) and *Schenectady Steel Co., Inc. v. Bruno Trimpoli General Const. Co., Inc.*, 43 A.D.2d 234, 350 N.Y.S.2d 920, 13 U.C.C. Rep. Serv. 993 (3d Dep't 1974), order aff'd, 34 N.Y.2d 939, 359 N.Y.S.2d 560, 316 N.E.2d 875 (1974) with U.S. ex rel. *Bartec Industries, Inc. v. United Pacific Co.*, 976 F.2d 1274, 41 Cont. Cas. Fed. (CCH) ¶ 77066, 24 Fed. R. Serv. 3d 584, 18 U.C.C. Rep. Serv. 2d 696 (9th Cir. 1992), opinion amended on denial of reh'g, 15 F.3d 855 (9th Cir. 1994) and *Belmont Industries, Inc. v. Bechtel Corp.*, 425 F. Supp. 524, 20 U.C.C. Rep. Serv. 1196 (E.D. Pa. 1976).
41. Restatement (Second) Contracts, § 261 (1981).
42. *Transatlantic Financing Corp. v. U.S.*, 363 F.2d 312, 3 U.C.C. Rep. Serv. 401 (D.C. Cir. 1966).
43. *Raytheon Co. v. White*, 305 F.3d 1354 (Fed. Cir. 2002).
44. Restatement (Second) Contracts § 261 at comment d.
45. A typical concern is the reservation expressed by the *Jennie-O Foods, Inc. v. U. S.*, 217 Ct. Cl. 314, 580 F.2d 400, 409, 24 Cont. Cas. Fed. (CCH) P 81814 (1978) ("[t]he commercial impracticability standard can be easily abused; thus this court has not applied it with frequency or enthusiasm. It is not invoked merely because costs have become more expensive than originally contemplated.")
46. *L.W. Matteson, Inc. v. U.S.*, 61 Fed. Cl. 296, 320 (2004) citing *Seaboard Lumber Co. v. U.S.*, 308 F.3d 1283, 1295 (Fed. Cir. 2002) which in turn relied upon *U.S. v. Winstar Corp.*, 518 U.S. 839, 904-910, 116 S. Ct. 2432, 135 L. Ed. 2d 964, 42 Cont. Cas. Fed. (CCH) P 77358 (1996).
47. Impracticability is a "coat of many colors," and extends beyond actual impossibility to include performance excused because it would entail excessive and unreasonable costs. *Natus Corp. v. U. S.*, 178 Ct. Cl. 1, 371 F.2d 450, 455 (1967).
48. See, e.g., *Jennie-O*, supra Note 45, at 409.
49. *Mitchell Canneries v. U.S.*, 111 Ct. Cl. 228, 77 F. Supp. 498 (1948) (performance excused after bad weather destroyed the blackberry crop, preventing plaintiff from completing contract deliveries); *Dillon v. U.S.*, 140 Ct. Cl. 508, 156 F. Supp. 719 (1957) (contractor recovered increased costs of supplying hay to government where severe drought caused a marked increase in the cost of supplies).
50. *J. D. Hedin Const. Co. v. U. S.*, 187 Ct. Cl. 45, 408 F.2d 424 (1969) (default termination improper where contractor made "heroic efforts" to obtain cement elsewhere where his supplier could not deliver due to severe cement shortage of 1955).
51. See, e.g., *Tony Downs Foods Co. v. U. S.*, 209 Ct. Cl. 31, 530 F.2d 367 (1976) ("[t]here can be no comparison between contract losses caused by an unanticipated natural disaster and additional contract performance costs occasioned by price controls").
52. *Ocean Tramp Tankers v. VO Sovfracht [The Eugenia]*, 2 Q. B. 226, 239 (1964). This formulation of "beyond normal" price increase has been cited approvingly in such cases as *Eastern Air Lines, Inc. v. Gulf Oil Corp.*, 415 F. Supp. 429, 19 U.C.C. Rep. Serv. 721 (S.D. Fla. 1975) and *Appeal of Jalapraphan Cement Co., Ltd.*, 79-2 B.C.A. (CCH) P 13927, 1979 WL 2356 (Armed Serv. B.C.A. 1979).
53. *Aluminum Co. of America v. Essex Group, Inc.*, 499 F. Supp. 53, 29 U.C.C. Rep. Serv. 1 (W.D. Pa. 1980).
54. *Id.* at 58.
55. *Id.* at 64-74.
56. It is the claimant's burden to prove the amount of loss that will be incurred through performance. See, e.g. *Eastern Air Lines, Inc. v. Gulf Oil Corp.*, 415 F. Supp. 429, 440, 19 U.C.C. Rep. Serv. 721 (S.D. Fla. 1975) (the party undertaking the burden of establishing 'commercial impracticability by reason of allegedly increased raw material costs undertakes the obligation of showing the extent to which he has suffered, or will suffer, losses in performing his contract).
57. *Appeal of Bermite Div. of Whittaker Corp.*, 77-2 B.C.A. (CCH) P 12675, 1977 WL 2490 (Armed Serv. B.C.A. 1977).
58. *Appeal of Jalapraphan Cement Co., Ltd.*, 79-2 B.C.A. (CCH) P 13927, 1979 WL 2356 (Armed Serv. B.C.A. 1979).
59. *Id.*
60. See, e.g., *Geronimo Service Company*, ASBCA No. 30003, (1985) (in the absence of an escalation clause, contractor assumed risk of increased costs caused by 400 percent increase in dumping fees); *Appeal of Ace Service Corp.*, 86-3 B.C.A. (CCH) P 19031, 1986 WL 20042 (Armed Serv. B.C.A. 1986) (increase in unit cost from \$3.13 to \$10 due to unexpected closure of proximate dump site did not render contract unconscionable or commercially senseless).
61. *Northern Indiana Public Service Co. v. Carbon County Coal Co.*, 799 F.2d 265, 1 U.C.C. Rep. Serv. 2d 1505 (7th Cir. 1986) (holding that a government order denying a request from a utility to pass increased coal prices along to its customers did not excuse utility from a long-term contract to buy coal even though contract was unprofitable).
62. *Id.* at 275 and 278 respectively.
63. *Eastern Airlines, Inc.*, supra Note 56, at 441.
64. *Id.* at 442. See also, *Appeal of Southern Dredging Co., Inc.*, 92-2 B.C.A. (CCH) P 24886, 1992 WL 47920 (Corps Eng'rs B.C.A. 1992) (contractor not entitled to price increase for fuel due to Gulf War because volatility in Middle East is normal and increase in price of oil "was entirely foreseeable").
65. *Chainworks, Inc. v. Webco Industries, Inc.*, 2006 WL 461251 (W.D. Mich. 2006), reconsideration denied, 2006 WL 1521946 (W.D. Mich. 2006).
66. *Webco* did not argue that performance was impossible due to shortage or that it was unable to deliver the required quantities.
67. *Id.* at *9.
68. "Speculation Sparks Huge Price Surge Hitting Electrical and Mechanical Costs," *Engineering News-Record*, June 26, 2006.
69. *Id.* (commentary from Tony Guzzi, EMCOR's President).
70. "Steel Market Trends," *Modern Steel Construction*, March 2005.
71. See *Fru-Con Const. Corp. v. U.S.*, 44 Fed. Cl. 298, 314 (1999); *J. Cibinic & R. Nash, Administration Of Government Contracts*, 546 (3d. Ed. 1995).
72. F.A.R. § 16.203-2.
73. The three types of F.A.R. project adjustment clauses are: (1) Adjustments Based On Established Prices. These price adjustments are

- based on increases or decreases from an agreed-upon level in published or otherwise established prices of specific items or the contract end items; (2) Adjustments Based On Actual Costs of Labor or Material. These price adjustments are based on increases or decreases in specified costs of labor or material that the Contractor actually experiences during contract performance; and (3) Adjustments Based On Cost Indexes of Labor or Material. These price adjustments are based on increases or decreases in labor or material cost standards or indexes that are specifically identified in the contract.
74. F.A.R. § 16.203-2.
 75. F.A.R. § 16.203-2.
 76. F.A.R. § 16.203-1(a)(ii).
 77. F.A.R. § 16.203-1(a)(i).
 78. F.A.R. § 52.216-4.
 79. The F.A.R. requirement seems to be premised on the notion that the contractor should not receive any benefit for escalated material or labor costs if the contractor is late in providing those materials or labor, since the contractor's delay may be responsible, in whole or in part, for the cost escalation.
 80. The F.A.R. Price Adjustment Clause is designed to protect the contractor from only significant price escalations, but with a maximum cap.
 81. Although the F.A.R. allows for some modification of, or exception to, some of the standard components of the Economic Price Adjustment clauses, these are the essential terms set out in F.A.R. § 52.216-4.
 82. During the latter half of 2005, and during the hurricane reconstruction efforts, Portland cement availability became a major concern for the transportation industry.
 83. "Highway Construction Cost Increases and Completion Issues," United States Department of Transportation, Federal Highway Administration (<http://www.fhwa.dot.gov/programadmin/contracts/price.cfm>).
 84. Hot mix asphalt is estimated to be 36% dependent on petroleum products, and so the hot mix asphalt prices typically follow a similar pattern to the price of crude oil and diesel fuel. Liquid asphalt, the binder used for hot mix asphalt, is refined from crude oil. In addition, mixing, hauling, placing and compacting hot mix asphalt requires petroleum products.
 85. During this same January 2002 through the end of September of 2004 period, the rebar price index maintained by the Engineering News-Record rose by 36%.
 86. Technical Advisory T5080.3, Development and Use of Price Adjustment Contract Provisions, U.S. Department of Transportation, Federal Highway Administration. This Technical Advisory contains many useful suggestions regarding material escalation clauses in contracts, and many of the recommendations are applicable to all types of construction contracts.
 87. Virginia Department of Transportation Specification Section 5109DIC-0105, Special Provision for Price Adjustment for Steel, dated November 29, 2004.
 88. Section 9, Measurement and Payment, Florida standard Department of Transportation Specifications.
 89. <http://www.fhwa.dot.gov/programadmin/contracts/price.cfm>.
 90. U.S. Department of Labor Bureau of Labor Statistics, BLS Handbook of Methods, Chapter 14, at http://www.bls.gov/opub/hom/homch14_b.htm. The three most important classification structures are (1) industry, (2) commodity, and (3) stage of processing (SOP). Commodity-based SOP price indexes regroup commodities at the sub-product class (six-digit) level, according to the class of buyer and the amount of physical processing or assembling the products have undergone.
 91. Although most PPIs, whether commodity oriented or industry oriented, are national in scope, regional price indexes are published for a few selected items, such as sand and gravel, scrap metals, and cement—items which tend to be more affected by regional markets.
 92. In addition, and for users who prefer printed publications, a summary of the PPI news releases is available through the mail and without charge from the BLS. This document provides the most recent data for all SOP indexes and for selected major commodity groupings that make up the bulk of these indexes. A monthly PPI Detailed Report is published in print several weeks after the news release date and is available to the public from the U.S. Government Printing Office on a paid subscription basis.
 93. The revisions to unadjusted Producer Price Indexes are normally very minor, especially at the more highly aggregated grouping levels. Very detailed information regarding the BLS Producer Price Indexes (www.bls.gov/ppi) and the BLS Consumer Price Indexes (www.bls.gov/cpi) is set out at the U.S. Department of Labor, Bureau of Labor Statistics website.
 94. ENR also publishes indexes for two Canadian cities, Montreal and Toronto, on a monthly basis.
 95. During each month, the weekly editions of ENR report on the price movements for the various categories of construction materials, as follows: The first monthly edition—prices for 21 products covering asphalt, cement, aggregates, concrete, brick, concrete block, and mason's lime. The second monthly edition—prices for 20 pipe products covering reinforced concrete pipe, corrugated steel pipe, vitrified clay pipe, PE underdrain, PVC sewer and water pipe, ductile iron pipe, and copper water tubing. The third weekly edition—prices for 18 products covering lumber, plywood, plyform, particle board, gypsum wall board, and insulation. The fourth weekly edition—prices for 16 products covering structural steel, reinforcing bar, steel plate, metal lath, aluminum sheet, stainless steel sheet, and plate and H-piles.
 96. T. Grogan, "How To Use ENR's Cost Indexes," *Engineering News-Record*, March 20, 2006.
 97. John T. Oxley, et al. v. Oklahoma Gas and Electric Co., et al., 1982 Okla. Civ. App. LEXIS 114 (May 4, 1982).
 98. *Paragon Oil Co. v. City of New York*, 138 N.Y.S.2d 905 (Sup 1955).
 99. See also, *Glopak Corp. v. U.S.*, 851 F.2d 334, 34 Cont. Cas. Fed. (CCH) P 75509, 6 U.C.C. Rep. Serv. 2d 1402 (Fed. Cir. 1988) (Recovery of dramatic price reduction pursuant to a "two-way" escalation clause was not unconscionable or oppressive at the time of contracting); *Firestone Tire & Rubber Co. v. U. S.*, 195 Ct. Cl. 21, 444 F.2d 547 (1971) (Court rejected the defendant's argument that the price escalation clause covered price increases for steel commodities such as barbed wire, nails and staples, which had no relationship to the manufacture and delivery of the objection of the contract, tract shoe assemblies for tanks); and *Bethlehem Steel Co. v. Turner Const. Co.*, 283 A.D. 69, 126 N.Y.S.2d 147 (1st Dep't 1953), judgment aff'd, 2 N.Y.2d 456, 161 N.Y.S.2d 90, 141 N.E.2d 590, 63 A.L.R.2d 1331 (1957) (Court determines the definition of "component materials" included in an escalation clause in a steel purchase contract). These cases, and sample material price escalation clauses, are discussed in the Summer 2006 edition of the American Bar Association Construction Forum's Construct!, in an

article by Khanah Josephson and Nicole Liguori Micklich, entitled "Material Price Escalation Clauses."

100. K. Josephson and N. Micklich, "Material Price Escalation Clauses," *Construct!*, Summer 2006. The authors offered a number of sample clauses, including this: "In the event that, during construction of the improvement described herein, contractor's costs for materials used or to be used herein are increased by more than ____ % (110%, if blank) over the contractor's costs for same at the time this agreement was signed, for any cause(s) beyond the control of contractor, then, and in such event(s), contractor shall have the right to pass the entire

amount of materials costs increase(s) along to Owner by adding the total amount(s) thereof to the Contract Price."

101. As earlier mentioned, a cost-based escalation scheme requires good and reliable data for the prices relied upon in the contractor and sub-contractor bids, as well as reliable cost support for the actual materials utilized in the project. The use of such provisions adds to the owner's administrative costs and presents possible audit-related expenses. Moreover, in order to utilize a cost-based escalation provision, the owner must overcome any tendency to suspect that the reliability of the cost information produced always will be less than desired.

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