

Las Vegas Commercial Contractors' Mitigation Techniques for Inflationary Impacts

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Recent rises in inflation have impacted global business. The construction industry in particular has experienced a decrease in already slim margins due to a plethora of factors. Employers have had difficulty affording increased labor rates to accommodate higher costs of living, ultimately leading to a labor shortage in many areas. Supply chain issues are a product of this labor shortage, but also a myriad of other inflation related issues like the price of gas and global trade agreements. This has led to dramatically increased lead times and has posed major supply chain management issues for project management teams. Construction professionals, whether they are general or subcontractors, must address these issues if their company is to remain profitable. In this study, three commercial general contractors and three commercial subcontractors from Las Vegas have been interviewed to examine how their target markets have been impacted by inflation and their implemented techniques to mitigate those challenges. Each interview was conducted in semi-structured fashion with each question addressed throughout the session. The results (degree of depth in technique) from each interview demonstrate an overall objective success as each company has maintained profitable margins and balanced employee retainment.

Key Words: construction inflation, mitigation techniques, labor shortage, lead times, supply chain management

Introduction

Inflation is an economic phenomenon that increases the price of goods and services. It can indicate economic growth or decline and measures the value of a currency. The world's most influential currency, the US Dollar, is no exception. As the world's reserve currency, it is the most held currency among businesses in the world. Firms are constantly adapting to its fluctuations in value and effects it places on the marketplace. Because of this, companies must adapt and implement strategies to remain profitable. Different techniques may or may not work for every company, as varying size, scope and volume may determine what ideal strategies optimize productivity. For construction companies, the answer to inflation is not as easy as just restricting spending and holding capital. Construction companies must find ways to make their operations more efficient to stay ahead of the negative inflationary trend. The research in this paper aims to educate the reader on what effects of inflation Las Vegas commercial contractors are faced with and what they are doing to mitigate these problems.

Literature Review

As the world's largest insurance agency, Marsh McLennan specializes in assessing risk. Richard Gurney (Global Head of Specialty Construction), Kelly Outram (Head of Global Contractor Development), and Gaurav Kapoor (Global Construction Strategy and Operations Leader) discuss their observations regarding the impacts of inflation on their clients (design professionals and contractors) and offer advice on how their clients can mitigate risks associated with escalating costs. They begin by discussing the major inflationary issues plaguing contractors like rising costs of essential materials and skilled labor, as well as supply chain pressure (Gurney, 2022). They see contractors are struggling to manage these risks and as a result are finding themselves in more contract disputes (Gurney, 2022). To manage these associated risks, the group advises clients to adjust contract language that opens possibilities for sharing risk with owners as well as price adjustment clauses to accommodate rising costs (Outram, 2022).

Associated General Contractors of America reports hourly earnings in the construction industry have risen 6% from Dec 2021 to Dec 2022 (Lawrence, 2023). From 1,000 participants, survey data taken from an AGC survey showed that 80% of companies had difficulty filling positions and 72% reported to have increased employee benefits and wages (Lawrence, 2023). Last year, nearly 5% of all construction jobs went unfilled and over 3% of construction workers quit their jobs the likes of Amazon distribution centers or remote work options like ecommerce (Lawrence, 2023). Construction companies have historically paid premiums to attract workers (over 20% higher than average U.S. wages), but due to inflationary constraints, companies are finding it more difficult to offer competitive pay (Lawrence, 2023). With these trends seemingly on a continuous rise, Deloitte's managing director, Misha Nikulin, explains that construction companies are always looking for new ways to retain workers with today's economic climate (Lawrence, 2023). These solutions include increased PTO, focus on mental health, leadership training, and career development seminars (Lawrence, 2023). Nikulin finally mentions that more and more construction companies are creating employee-owned business models to allow all employees to benefit from profit distribution (Lawrence, 2023).

In addition to price escalations, supply chain management issues are generating many problems for contractors. In addition to driving up inflation related costs, supply chain delays are directly impacting project schedules and coordination, as contractors can rarely predict when materials will exactly arrive on site (Kapoor, 2022). Michael Tobias, founding principal of NY Engineers, currently oversees over 1,000 projects in the U.S. and leads a team of over 50 MEP engineers (Tobias, 2022). He and his team have implemented focused strategies into their business model to mitigate supply chain issues. To start, Tobias purchases equipment and materials early (Tobias, 2022). He advises contractors to proceed with critical purchases first and utilize equipment schedules and the bill of materials as a reference (Tobias, 2022). NY engineers attribute their 50% faster-than-industry-average turn-around rate and 80% first time approval rate to this practice (Tobias, 2022). Some additional offered strategies to mitigate procurement issues include bundling separate purchases for volume based discounts and reduced shipping tracking, as well as developing "should-cost models" to help evaluate the suppliers underlying costs which in turn reduce negotiated prices (Basar, et al, 2021).

CRB Group is a leading designer and consultant for sustainable development. Though their specialty lies within healthcare, their Senior Director of Construction Operations, Marc Hanson, believes the strategies he lays out can benefit any construction company. Along with CRB Group's Director of Estimating, Greg Casper, Hansen breaks down his strategies into two groups. The first set of

techniques involve team-based strategies that integrate trades early in the design process (Helmsing, 2021). This key principle allows project management teams to improve the accuracy and transparency of their estimating process which reduces risk of costly surprises (Helmsing, 2021). This process also helps contractors mitigate supply chain issues and allows owners to entertain modularization and prefabrication options that save time and money down the road (Helmsing, 2021). Hanson also provides “tool-based strategies” which incorporate ideas like commodity tracking logs and leveraging warehouse storage (Helmsing, 2021). Tracking logs provide a platform for assessment of current marketplace dynamics which may impact the manufacturing and delivery of materials (Helmsing, 2021). By tracking prices and material fabrication times, companies can save time on delivery.

Methodology

Phase one of data collection involved identifying an adequate number and variety of participants to include in this study. The participants in this project were predetermined and surveys were not utilized to canvas potential candidates. It was determined that three subcontractor representatives and three general contractor representatives would provide an adequate amount of content, while also providing an adequate variety of perspective. Each representative also had ten or more years of experience in the industry from which they could provide a frame of reference to a less inflated economic period.

Participants - General Contractors

Edward Lawson, Project Manager. The Korte Company

Ashley Carreon, Project Manager. Burke Construction Group, Inc.

Tony Cornell, Vice President. The PENTA Building Group

Participants - Subcontractors

Howard Bieber, President. Iron Cross Steel and Welding

Dan Smerz, Project Manager. Vergith Contracting

Adan Carrillo, Project Manager. GSL Electric

The set of questions asked to each participant needed to accurately reflect the economic issues that informed this project. An eight-question set was determined to adequately encompass these topics. It was necessary for each participant to receive the same questions for control. The intent of the questions was to evaluate contractors’ experiences with respect to the literature, as well as the mitigation techniques taken by each contractor with respect to the others. Each participant was notified of this project through email or in person. The interviews were conducted by phone. Each interview addressed all of the questions in the set but did so in a semi-structured style. Interviews ranged from 15-35 minutes.

Interview Results

Question 1. How has inflation impacted your business?

GC Korte: "Where we run into problems is with procurement. Inflation is an issue, but everyone is aware that inflation is an issue. For us the main problem is procurement. Supply chain is basically what drives projects."

GC Burke: "There are two key things. One of the largest things inflations has started to affect is the amount of skilled labor. Inflation is a thing and things are more expensive, however, because the cost of skilled labor has gone up, our material procurement has gone down. We're currently seeing normal lead times for electrical equipment and other items across the board increased from ten weeks to sixty weeks. These procurement and lead time issues are definitely affecting our projects. Accelerating purchasing early in the project elevates issues in the end."

GC PENTA: "Inflation and increasing interest rates have stalled a few projects. It's also put us in a position where we could potentially face unsustainable wage increases from 2023 union negotiations. On the bright side, 90% of our work is negotiated and many of our clients are cash heavy, so we haven't seen a huge impact to our business plan."

SC Iron Cross: "It's incredibly risen the cost of our goods, not so much our workload. In 2019 we paid about \$6 for a piece of square tubing. By the end of 2021, we were paying about \$22 for the same stick. Cost of material has skyrocketed. Customers don't want to pay more but they're willing to."

SC Vergith: "Inflation impacts every part of our business."

SC GSL: "Honestly in several places. It's taken a toll on our labor and price of materials. We have to pay more to our employees to retain them."

Question 2. Has inflation influenced how your company bids for projects?

GC Korte: "Fortunately, a lot of our clients are repeat customers. We've built a report with them, so we haven't had to adjust our bid process. It's not as difficult because our clients are aware of increased costs. We go through our bid and precon process, but then we have a conversation with the owner about schedules and procurement."

GC Burke: "Absolutely. From the time we submit a bid to the time it gets approved; chances are the total cost has gone up. We find we need to get things fully executed a lot quicker so we can get equipment and material ordered quicker. We include more in construction contingencies to account for things like expedited shipping or price increases."

GC PENTA: "It has. If a private project needs a loan for construction and are not self-financing then we may choose to pass on the project, unless it's for a core client."

SC Iron Cross: "No, we pass a lot of the cost down to the customer, but they're willing to pay it. We aren't making any more on it by selling it at a higher cost. We include a seven to ten day clause for how long we will hold our number for, depending on the contractor. It's subject to the increase in cost of goods. In the past we would honor a contract for six months or more."

SC Vergith: "From the time I put a bid in the GC's hands to the time they award us the contract, the prices have gone up 3-9%. So we have to decide as a subcontractor whether or not we want to charge the GC for this increase. Typically, we don't do this which hurts our margins but instead, we ask our supplier to honor their pricing from the time we submitted the bid. Typically, the supplier says yes,

but over the past year and a half it's been more common for them to say no. Because of this we typically don't chase after big jobs- we may only do one or two of those kinds of jobs a year. We go after smaller jobs mostly."

SC GSL: "Yeah, so, so it does. Sometimes since we're buying product that hasn't been fully designed yet, we're going off of assumptions based on past history. Drawings are usually not fully designed right. So when we do that we let them know hey, this is with this assumption- we're going to leave this contingency for any changes that will have to be made. Keep in mind, if changes are made, It's going to put us in the back of the queue again. So, keep those changes to a limit. Most of our clients are revolving clients which allows us to be upfront."

Question 3. Has your company implemented any lean principles to mitigate supply chain issues?

GC Korte: "Usually, you build a project for an owner according to their schedule. But now, they're almost having to conform to the longest lead item and build the schedule off of that. Communicating this to the owner and coordinating with them on lead times is how we drive our schedules. We'll shift start dates so we can catch up with these long lead items."

GC Burke: "Yes, we have been asked to include a lot more VE options, especially when budgets come back, and prices are too high due to inflation or what not- whether it be equipment or material. We have also started to practice accelerating schedules by procuring material and equipment at the time of bid. Those are some things we do to mitigate any price increases."

GC PENTA: "We haven't implemented anything due to the current inflation situation that we didn't already have as a process. We try to practice lean principles in all departments as a standard practice."

SC Iron Cross: "Something we started implementing was carrying large amounts of inventory in stock, that way we didn't have to rely on steel demands. It helped us quite a bit."

SC Vergith: "With lead times, we're handcuffed. Some subs delay projects 6+ months due to delay issues. If we aren't smart about lead times and have to pay more to get something in on time, that really eats into our profitability."

SC GSL: "We're trying to find new ways to loosen the blow from a lack of labor. We have a prefabrication department that works out constructability issues so anyone can go to a project and perform the work. Prefabricating CAD work helps come up with prefabrication ideas to accelerate schedules."

Question 4. Has inflation impacted your procurement sources?

GC Korte: "Procurement of material usually comes down to subcontractors. We base sub selection on a number of things. Material procurement is something we look at when evaluating subcontractors." (Lawson).

GC Burke: "Since the cost of inflation and cost of living have gone up, a lot of skilled laborers and warehouse workers are asking for more money. Vendors and suppliers typically don't want to pay that extra 3% to account for inflation so less workers are available to fabricate material. This causes a delay of materials and directly affects project schedules."

GC PENTA: "Lead times have been more of a driver when choosing procurement sources. Inflation has not really had an impact on vendor selection."

SC Iron Cross: "I only do business with three companies, really. They're okay, they are slowing down but doing okay. Steel is a commodity that can sit for 50 years and is still the same commodity. They aren't desperate to slash their prices which slows their turnover."

SC Vergith: "Suppliers are raising prices due to inflation, but then raise their price again due to demand. Sometimes the low supply will also drive the price up."

SC GSL: "Big time. The material that manufacturers need to build products are limited and people haven't gone back to work. Manufacturers aren't taking advantage of it like car manufacturers have. Volume is a guarantee for them because people are ordering ahead of time."

Question 5. Does your company pay more, less, or the same amount of attention to fluctuating projected material costs?

GC Korte: "No, not really. Again, inflation is something that everybody is aware of."

GC Burke: "Our estimating department has started to forecast future costs so bids and expenses in coming months can still be covered. This helps us avoid losing money in the long run."

GC PENTA: "Although the cost of materials is something that we pay close attention to, we focus much more on lead times."

SC Iron Cross: "Cost of materials is something we adapt to. Unfortunately, there isn't much we can do to fight the cost of materials."

SC Vergith: "It hasn't changed much. For us, however high the water is, is where we're going to be. The day we are offered a job, I get pricing that day. Back in the day, I used to be able to pull a 6 month old number- now you need up-to-date pricing."

SC GSL: "We have a program that we use for estimating that can go back years past and be able to see what the pricing was for 1000 feet of wire for example and with that we are able to track and determine how much escalation that's been going on."

Question 6. Where do you feel like inflation can potentially expose risks or constraints for your company?

GC Korte: "Other than procurement, manpower is an issue. The major problem with labor is just available manpower and having enough workers to complete the work in a timely manner the way the owner wants. When choosing a subcontractor, we have started to look at their manpower and if they have the capacity to perform the work."

GC Burke: "Besides material procurement and things like that, the labor shortage is the second thing. If our tradesmen don't have enough guys on site because their guys are constantly jumping around looking for more money- that creates a delay for our turnover."

GC PENTA: “There are two main risks, the first is more projects could cancel if costs of labor and material continue to go up. The second is that we have done larger than normal wage increases due to inflation’s increase in cost of living. If those aren’t sustainable, if inflation goes the other way, we may be forced to decrease wages or not give increases that ultimately affect employee retainage.”

SC Iron Cross: “What’s affecting us in business the most is how inflation is affecting everyone. It takes people three times as long to save ten dollars as it did a few years ago.”

SC Vergith: “We like to maintain good relationships with general contractors and owners so if they need us to take- on what we feel like is extra work, we’ll eat that cost to maintain that relationship. Higher costs make it harder to eat that extra work so it's harder to make those decisions.”

SC GSL: “The big problem right now is that the product that we're ordering isn’t what we need. And we obviously put language in in our contracts to protect us stating the work done was what was shown on drawings by these dates and any may changes could create a cost impact.”

Question 7. Have increased prices in labor impacted your business at all?

Korte: No, I don’t think so. That all kind of falls into inflation. People know inflation is there so it's not a surprise that certain costs are going up. A lot of owners don’t really have a problem spending more money if it means they can get things built quicker.” (Lawson).

Burke: “Something I do in particular as a PM when I’m issuing subcontracts- I confirm timelines on the schedule with subcontractors before I issue an executed contract. This allows me to pivot to another contractor or have the subcontractor pivot to some temporary labor, so they are adequate enough to start the project. Normally this is something I feel like we shouldn’t have to do, but due to the circumstances it has become something we are regularly dealing with.”

PENTA: “Not yet, but per my previous answers, it’s a future risk.”

SC Iron Cross: “Not really, we give our guys yearly raises, and we don’t have a cap on their wages. We pay them at or over industry average.”

SC Vergith: “We factor cost into the bid so that really hasn’t affected us. Labor shortages for sure has put a strain to juggle manpower, but we’re not having to take less work as a result of that.”

SC GSL: “Labor is a big factor, we’re having to pay quality guys more to keep them around.”

Question 8. How does your company maintain quality performance with increasing economic pressure?

GC Korte: “Our focus for all of our projects lies with how well we build and if that takes more time or costs more money to do it then so be it. We’ve done a pretty good job of maintaining our workloads, and crews.”

GC Burke: “We do a lot more QAA. The less rework we do, the more money save. Talking closely with all of the vendors to make sure everything is coordinated and the scope is understood. Mitigating confusion at the front end helps us save time down the line.”

GC PENTA: "Safety and quality are always going to rank above schedule and make money. We are more focused on communication to owners than ever before, written and verbal, to make sure we are reducing risk."

SC Iron Cross: "Since we're non-union, I have a commitment to my guys where if you come into work, I pay you- even if there's nothing to do. I guaranteed my guys 40 hours a week. When we make good money, it sits in the company so when it's slow I can afford to keep their wage consistent. I give my guys bonuses; I take care of them."

SC Vergith: "For us- our secret to success is that we keep 120 guys busy all the time, no matter what. Everybody is getting 40 hours a week. Every property on the Strip needs maintenance whether it be health care/hospitals, or resorts. These jobs keep our guys sharp and our revenue steady."

SC GSL: "Here at GSL were a 100% employee-owned company. We offer full benefits packages and retirement. We tell our guys- anything you put in you get rewarded in the future. Employee engagement is another big thing."

Discussion Review

General Contractors

Korte has not had to adjust its bid and estimation process as cost is not necessarily a driving factor for their clients. These clients want their projects built as fast as possible. To accommodate this, Korte shifts focus onto maximizing project flow and eliminating supply chain blockages. This process involves direct owner-contractor collaboration. The contractor is responsible for identifying longest supply chain lead times and maximizes productivity by building the schedule around it, unlike typical jobs where the owner wants a project completed by a certain date. This schedule-adjustment process allows the owner to determine where to "invest" in expedited shipping or overtime production rates, if they so please and minimizes stoppages from occurring. The only downside may require shifting start dates and milestones to allow the project to catch up to its longest lead items. An additional issue Korte faces is labor shortage. Korte does not self-perform any work, so they do not contract directly with suppliers. Because of this, Korte not only evaluates subcontractors based on price, but also their capability to get material in on time. If Korte cannot hire enough available workers to meet required output, they risk delaying projects. Since this cost is an internal project management issue and not associated with inflationary price increases- Korte bares the exposure of losing money on premium overtime rates. However, as long as these rates are factored into the bid, Korte can remain on budget. Generally, Korte will integrate trades early to avoid these problems.

Inflation's impact on available labor and procurement has greatly impacted Burke Construction. Burke is experiencing longer than normal lead times on their projects. These delays can be devastating to project progress and turnover. Burke has noticed many procurement delays are due to lack of available work in manufacturing plants. The lack of workers means materials take longer to fabricate and in turn- take longer to get on site. To mitigate these issues, Burke includes more money in their contingency to account for potential increases in price or expedited shipping costs. This helps avoid using profit to cover these costs. Burke also practices schedule acceleration to avoid material price escalation and supply chain bottlenecks. This means they order equipment and material at the time of bid to ensure it arrives as early as possible. Subcontractors are also having difficulty retaining workers which affects their ability to meet deadlines. To mitigate projects from stalling due to lack of

available labor, Burke has begun coordinating with subcontractors well before key deadlines to ensure they have the available manpower to successfully deliver. If not, this gives Burke flexibility to find alternative options while they still have time. Burke has taken proactive measures to save additional implied dollars. First, their estimating department tracks projected costs of materials to make sure they are still within budget on future projects. They also value communication with subcontractors to ensure expectations are concrete and coordinated between all trades. This helps avoid schedule delays and the need to spend on overtime or expedited shipping for rework.

Inflationary impacts like wage increases and increasing interest rates have posed challenges to PENTA. PENTA avoids jobs financed through loans from banks because they are inherently riskier. PENTA prefers working with clientele that are typically paying out of pocket (“cash heavy”). Because of this, they have not had to make major adjustments to their overall business plan. Costs of labor and materials continue to increase which PENTA worries will stall projects as contract pricing will be inflated. To reduce this risk, PENTA has placed an emphasis on owner/contractor communication. By choosing vendors based on lead times and dealing with mainly cash heavy clients, PENTA can keep jobs on schedule and within budget without having to adjust practices.

Subcontractors

Iron Cross Welding has experienced a slowing down of work due to increased costs. Clients are more inclined to pay for work when it's cheaper to do it. However, Bieber reports that the increase in the price of steel has not dramatically affected their business because their client base is simply willing to pay the inflated costs. Even though owners are cash heavy, Iron Cross has still implemented ways to avoid inflationary impacts. To start, Iron Cross has decreased their window from bid submission to acceptance to 10 days. This helps Iron Cross avoid the possibility of substantial losses if locked into an unadjustable contract while the price of steel substantially increases. Iron Cross has been able to bypass unpredictable lead times due to high demand by stockpiling large quantities of inventory at a time. This allows them to schedule with accuracy and mitigate supply chain bottlenecks. Steel suppliers of Iron Cross have been more inclined to keep their prices high, unlike lumber, because their product is a non-perishable commodity and COVID-19 stimulus has generated such high demand for new infrastructure. However, they seem to believe an impending recessive economy may decrease this demand, and ultimately slow down sales. Since welding is a highly skilled trade, there is a very low amount of available labor for Bieber to hire. Seasonal workers are few and far between, so Bieber keeps money within the company to guarantee full time employment during slower months. This commitment to employees fosters empowered, and motivated work. This system may limit company growth, but is optimal for its current size and volume.

Vergith Contracting, like so many other businesses, has been impacted by inflation across the board. Vergith's suppliers have risen the price of materials due to inflation but have raised the price again due to high demand. Because Vergith operates on a “float however high the water is” basis, they typically do not go after big jobs, as they pose a potential risk if suppliers cannot honor their pricing at the time of bid submission. This explains why Vergith typically goes for smaller jobs. If prices do drastically climb and suppliers cannot honor pricing, Vergith has positioned themselves in a market that allows for maneuverability. Vergith tracks up to date prices so they aren't under bidding job. Vergith not only wants to finish the job well, but in a manner that builds good relationships between all working parties. Part of that means performing what they feel like as extra work to keep the customer happy. With already shrinking margins from material price escalation, Vergith risks contributing profit to this extra work. At their current size, Vergith can afford a manageable, high standard of quality assurance and control by keeping their employees busy. This keeps Vergith's employee retainage stable, allowing them to support a steady line of jobs to keep cash flowing in.

GSL is experiencing issues with finding quality workers. To incentivize more skilled laborers to apply, they are 100% employee owned and offer a suite of benefits. GSL has incorporated a program that assists with product price estimation and identifies cheaper options if needed. GSL reports that their procurement sources haven't yet adopted an automated manufacturing system even with a shortage of labor. Carrillo attributes this to the fact that orders are still being placed and volume isn't taking a hit. An automated system could decrease lead times, however the materials needed to manufacture electrical products still take time to procure. GSL typically relies on owner-contractor communication to arrive at contract costs. Since GSL practices early procurement, they are usually basing quotes on past projects while providing contingency for potential expedited shipping if changes are made to power plans. GSL leverages CAD to generate prefabrication options for general superintendents. This helps both sides find leaner schedules.

Conclusion

The general contractors in Las Vegas typically deal with clients that are cash heavy. This means monetary impacts, like increased prices, are generally factored into the bid and do not require many workarounds. However, the general contractors in this study all provide more value engineering options to owners than before as they observe owners' desire for more cost-efficient options. The real challenges for general contractor's stem from the supply chain and available labor. Las Vegas commercial contractors have implemented early schedule acceleration and early procurement to mitigate unpredictable lead times. These practices are reportedly effective and coincide with the literature. They have also adjusted practices in preconstruction, bidding, and job selection criteria to avoid high risk endeavors. To address the labor shortage in Las Vegas, the participants reported that their respective companies emphasize due diligence when selecting subcontractors to ensure they have the available manpower and equipment to complete given scope. Lastly, Las Vegas contractors are investing back into their employees to retain a strong and motivated workforce. This advancement of company culture has improved employee retainage. Overall, the success of these measures taken by Las Vegas general contractors can simply be measured by employee retainage. If these techniques were unsuccessful, these companies would not be able to withstand the economic pressure of inflation and would have to lay off employees in order to avoid bankruptcy. All companies have reported strong employment and are even looking to hire.

Future Research

With a growing population with an appetite for entertainment, deep-pocketed owners in Nevada have no shortage of work for contractors. With that said, there are many economies in the U.S. alone that are experiencing the opposite effect. Declining populations and less urban investment are deteriorating cities like Detroit, Cleveland, and Chicago. Investigating how inflation has affected these markets could help contractors identify new business opportunities once this period of inflation has passed.

References

Basar, Joe, et al. "Responding to Inflation and Volatility: Time for Procurement to Lead." *McKinsey & Company*, McKinsey & Company, 19 July 2021, <https://www.mckinsey.com/capabilities/operations/our-insights/responding-to-inflation-and-volatility-time-for-procurement-to-lead>.

“Construction Inflation 2022.” *Construction Analytics*, 9 Feb. 2023, <https://edzarenski.com/2022/02/11/construction-inflation-2022/>.

Helmsing, Katie. “Worried about Construction Cost Inflation? These 7 Strategies Will Put You Back in Control.” *CRB*, 6 June 2022, <https://www.crbgroup.com/insights/construction-cost-inflation>.

Lawrence, Robyn Griggs. “Inflation Is Pushing Wages Higher.” *Construction Dive*, 1 Feb. 2023, <https://www.constructiondive.com/news/inflation-is-pushing-wages-higher/641566/>.

O’Neill, Robert, et al. “What Is Inflation?” *SpringerLink*, Springer International Publishing, 1 Jan. 1970, https://link.springer.com/chapter/10.1007/978-3-319-64125-6_2.

Richard Gurney. “How Inflation Is Impacting Construction Projects.” *BRINK*, 9 Aug. 2022, <https://www.brinknews.com/how-inflation-is-impacting-construction-projects/>.

Tobias, Michael. “How to Mitigate Inflation Effects in Construction Projects.” *MEP Engineering & Design Consulting Firm*, New York Engineers, 20 Apr. 2022, <https://www.ny-engineers.com/blog/how-to-mitigate-inflation-effects-in-construction-projects>.