



407-629-2185
165 Lincoln Avenue
Winter Park, FL 32789

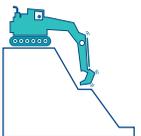
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FISCAL YEAR 23/24 3RD QUARTERLY REPORT

STRATEGIC RESOURCE EVALUATION STUDY
HIGHWAY CONSTRUCTION MATERIALS
CONTRACT BEC18

OVERVIEW: FLORIDA'S HIGHWAY CONSTRUCTION MATERIALS

Construction Material	Status
 ASPHALT	Asphalt bids remained high compared to historical pricing, but fell 1.2% in the third quarter of Fiscal Year 2023-24 (FY 2024). Industry is optimistic about the impact of global conflicts on crude oil futures; U.S. exports exceed 2019 levels and continue to grow. Best estimates expect current pricing to hold next quarter, ending the fiscal year about 6.5% higher than FY 2023 prices (with weighted average prices at about \$178/ton). The current forecast is within 3% of the year-to-date price. However, if market conditions shift to the upper bound as they did late in FY 2023, year-end prices would be 12% higher.
 CONCRETE	Year-to-date structural concrete prices are tracking with current forecasts, remaining over \$1,400 a cubic yard through the third quarter of FY 2024. Raw material costs for aggregate and cement, along with ongoing labor and trucking constraints, are keeping bids high. Compared to fiscal year-end 2023, FY 2024 prices are forecast to rise 12.6%. Domestic production volumes slowed at the end of calendar-year 2023 according to the latest industry reports. Recently approved expansions at the Port of Tampa will improve import capacity on the Gulf Coast.
 STEEL	Benchmark steel prices appear to be moderating after geopolitical concerns during the last quarter did not meaningfully impact global steel markets. However, with the potential deal between U.S. Steel and Nippon Steel, it is unclear if domestic steel production may be impacted later this year. Interviewed FDOT steelmakers report prices are stabilizing or declining. Structural steel price forecasts predict an 8.1% increase in FY 2024 compared to fiscal year-end 2023. Reinforcing steel prices plateaued this quarter, with forecasts expecting only a 1% rise by fiscal year-end.
 AGGREGATE	Accounting for outliers, the FY 2024 FDOT weighted average aggregate base price remained on the upper bound of price forecasts at \$37 per square yard. Given third quarter bids and continued high infrastructure demand, aggregate base costs are unlikely to moderate to historical norms. Current pricing is about \$8 higher than the best estimate forecast for FY 2024 and tracking closer to the upper bound, which is counter to what updated industry data and expected market conditions would show. As such, estimates will need to continue adapting to changes in the market.
 EARTHWORK	As with aggregate, very high-cost, high-quantity bids continue to affect the Earthwork weighted average price through the third quarter of FY 2024. Excluding outliers, the FY 2024 weighted average earthwork price is currently \$15 per square yard. Forecasts updated with the most recent economic data estimate prices should be closer to \$12 per square yard, but current pricing is tracking closer to the upper bound. While diesel fuel and equipment costs have moderated, high demand for labor and trucking availability continue to impact costs.

Primary Market Risks, Q3 FY 2024



Competition for Resources

Continued high levels of infrastructure funding are supporting strong competition for resources, including labor, materials, and trucking capacity across the board: highway construction, airports, seaports, space center, and civic buildings. The softening of the Florida housing market has not freed up sufficient resources to lower market pressure. High levels of demand are expected to continue for another two years.



Asphalt Costs

Unlike in past periods when asphalt prices were very high, current pricing is not driven by material shortages or input costs, but simply by high levels of demand. Some suppliers report continued issues with shipping and rail, particularly around aggregate supply, which is increasingly imported into the state. Some aggregate suppliers cite rail cost increases and availability issues as the reason prices are going up.



Geopolitical Impacts

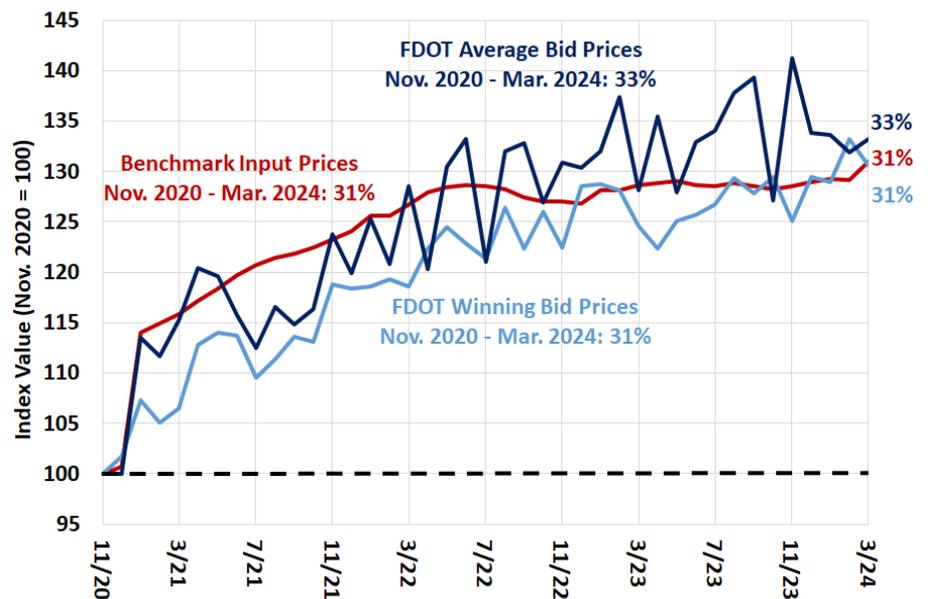
87% of chief economists across the globe expect trade fragmentation to accelerate this year, stoking volatility across markets. Concerns include the potential for prolonged shipping disruptions in the Middle East, escalation of regional conflicts, and rising climate volatility – including more rapid spread of pandemic-type viruses. Any of these situations could disrupt commodity prices and supply chains with little warning.

FDOT Cost Index

The **Florida Department of Transportation (FDOT) Cost Index** is calculated by assessing awarded and average bids. The share of aggregate, asphalt, concrete, and steel dollars spent on FDOT projects is compared to a baseline index that is calculated from regional industry prices; see **Figure 1** for data from November 2020 forward.

Winning contractor bids and benchmark input prices converged in March 2024 after exceeding the benchmark the previous month with revised bid and industry data. The industry benchmark has increased, after plateauing most of FY 2023. Winning bids and benchmark input prices were 31% higher than November 2020 in March 2024. Average bid prices remained elevated in March 2024 at 33% higher than pre-pandemic levels. The gap between *average* bid prices (calculated from all bids) and *winning*(awarded) bid prices remains narrowed over the last quarter, indicating less competitive bidding activity.

Figure 1. Florida Benchmark Input Prices vs FDOT Bid Prices



Source: TBG calculated from data provided by FDOT Office of the Work Program and Budget

Disclaimer

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the State of Florida Department of Transportation

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Prepared by



The Balmoral Group
Web - www.balmoralgroup.us

Prepared for



Florida Department of Transportation

Head Office
165 Lincoln Avenue
Winter Park
Florida, 32789, USA
Phone 1 407 629 2185

Tallahassee Office
113 S Monroe Street
Tallahassee
Florida, 32301, USA
Phone 1 850 201 7165

Office of Program Management
605 Suwannee Street
Tallahassee
Florida, 32399, MS 31 to 75, USA
Phone 850 414 4110

Sydney Office
Suite 1, Level 2
210 George St
Sydney, 2000, Australia
Phone +61 2 9247 9670

Report Authors – Valerie Seidel, Alicia Barker, David Osorio, Elizabeth Mandell

Contact
Valerie Seidel
President
407 629 2185
vseidel@balmoralgroup.us

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INTRODUCTION

The Florida Department of Transportation (FDOT) commissioned The Balmoral Group (TBG) to evaluate the availability and costs of critical highway construction materials in Florida. The evaluation includes an analysis of existing and planned supply of these materials, and an estimate of future costs and quantity requirements FDOT will face in fulfilling its five-year work program. Materials in the analysis include the bituminous, cement, steel, aggregate and earthwork markets. An annual assessment of the materials markets and significant trends affecting FDOT's supply availability and costs is included in this report.

The report is organized as follows:

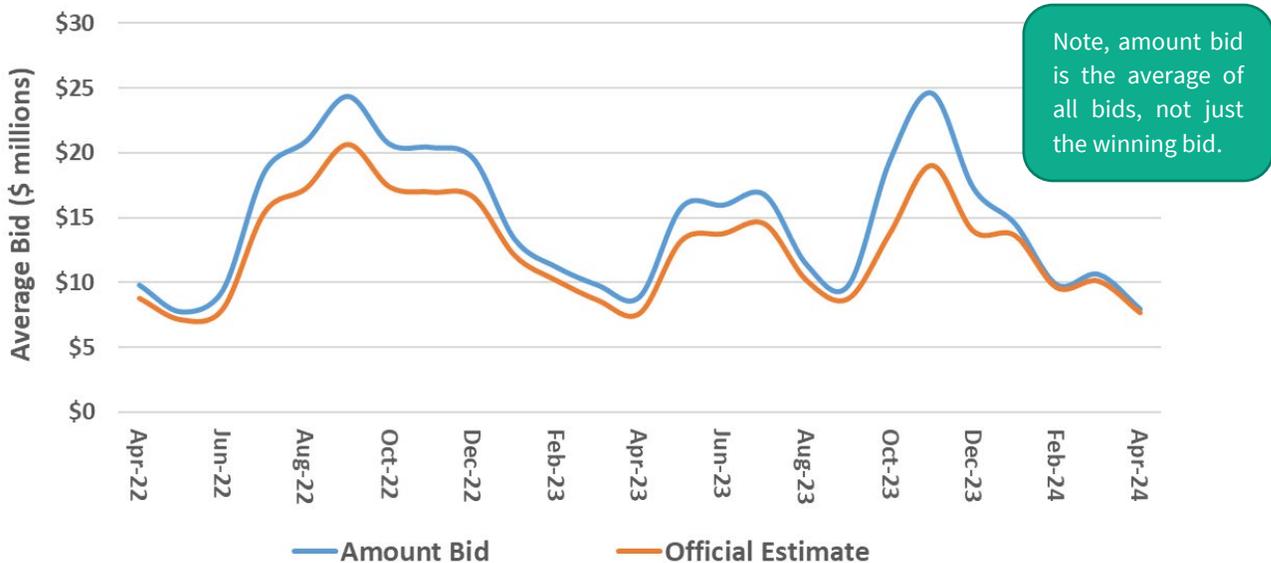
- **General Economic Landscape** for highway construction materials,
- **Work Program Work Mix** allocation and materials quantities estimates,
- **Material-specific findings** for supply chain variables, including
 - raw material sources,
 - existing and likely future transport and distribution methods,
 - potential impact of external forces including global markets, technological change, foreign materials, and environmental regulatory or permitting issues, as relevant,
 - forecasts of likely Florida supply and FDOT costs for the five-year work plan, and
 - GIS maps of existing supplier locations.

GENERAL OUTLOOK: HIGHWAY CONSTRUCTION MATERIALS

Bid Data

Average bids provide insight to market trends; in economic terms, the expected value of a contract or project is the average of all bids. In this analysis, the average of all bids, or the mean, is compared to the official preliminary estimate. Using a 3-month rolling average, in the third quarter of Fiscal Year 2023-24 (FY 2024), the average monthly deviation of all bids was 4% higher than official preliminary estimates (**Figure 2**). Excluding contracts exceeding an official estimate of \$100 million from the analysis, the average monthly deviation of all bids would be slightly lower than official preliminary estimates, but by less than 1%.

Figure 2. Average Bid vs. Official Estimate, 3-month Rolling Average



Source: FDOT; TBG Work Product.

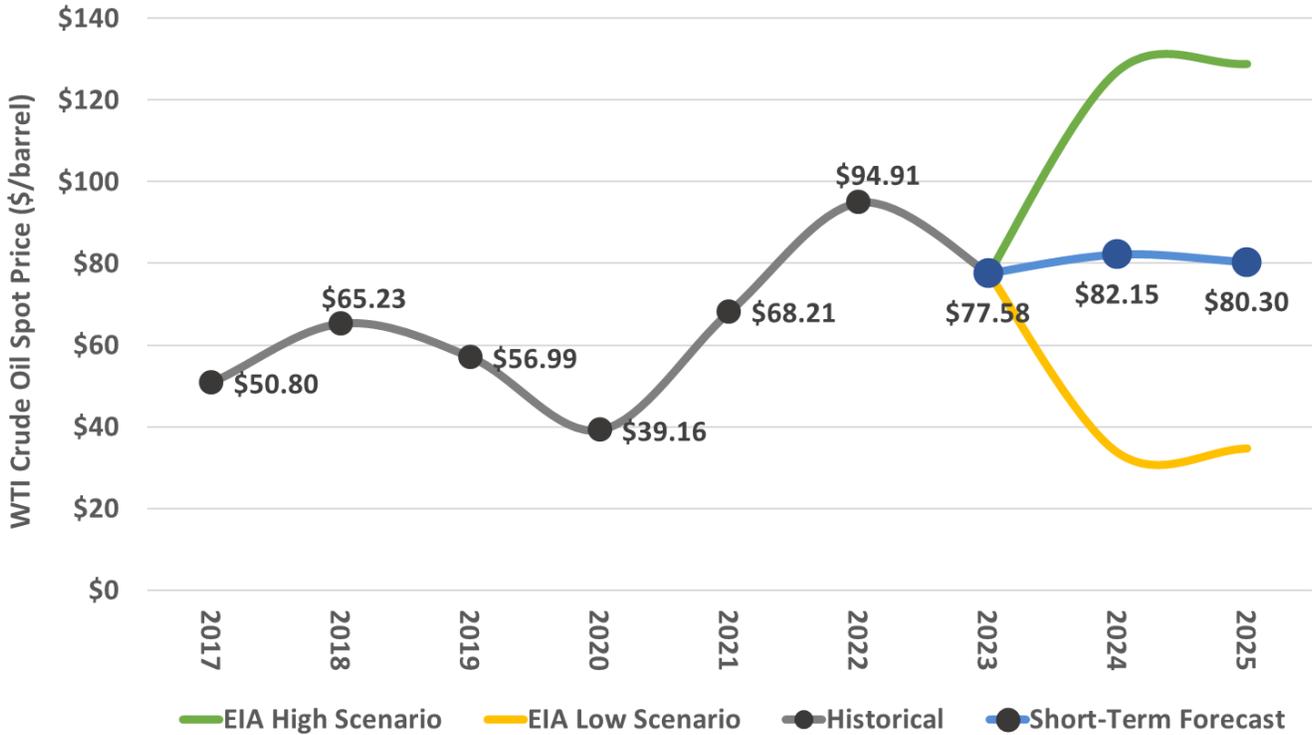
Energy Prices

The U.S. Energy Information Administration (EIA) April 2024 Short-term Outlook forecast the 2024 crude oil spot price average to rise to \$82.15 per barrel, which is a bit higher than January reports. For 2025, EIA forecast crude oil prices to drop to \$80.30 per barrel. Crude oil prices declined 5% in April 2024 compared to the previous month. Year-over-year, crude oil prices were down 11% in April 2024. Ongoing geopolitical risks, as well as strong global oil inventory draws, still have the prospect of disrupting global oil prices that could lead to a worst case/high range scenario (upper bound in **Figure 3**).

Diesel price quotes from suppliers at terminals around the state averaged \$2.82 per gallon in April 2024, which is a 2% decline year-over-year (**Figure 4**). Prices in all districts declined steadily and with similar extents after the significant increase seen between August-October 2023. Statewide, the Fuel

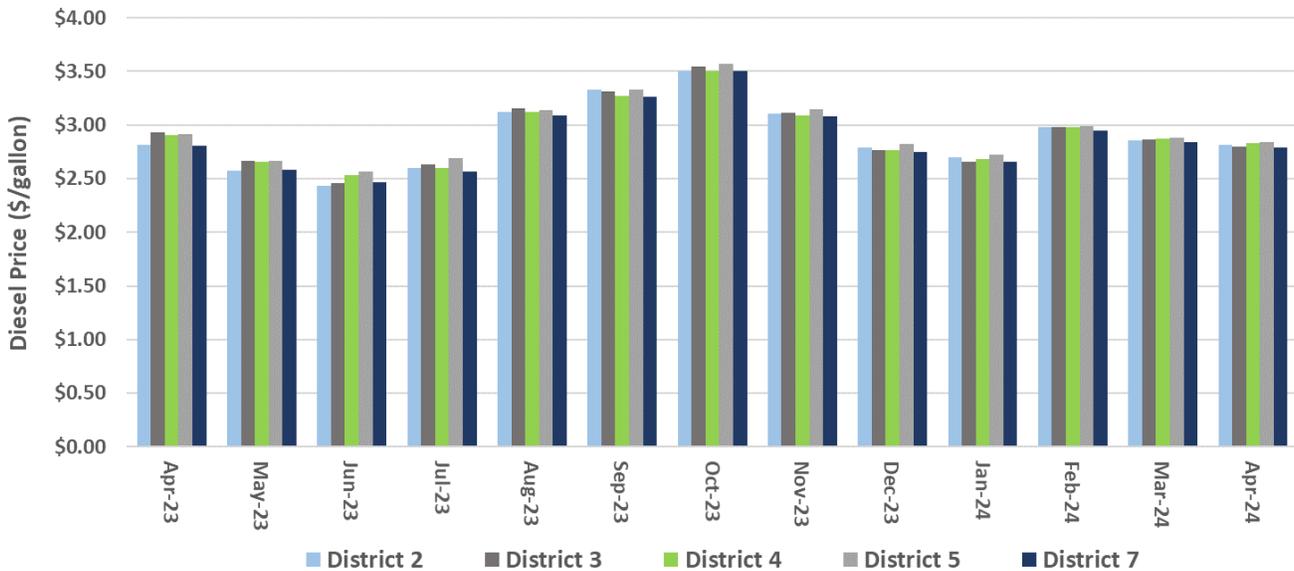
and Bituminous Average Price Index for diesel decreased 2% in April 2024 compared to the previous month and prices were down 2% year-over-year.

Figure 3. Monthly Crude Oil Price, 2017 to 2025



Source: EIA Annual Energy Outlook and Short-term Forecast.

Figure 4. Average Diesel Price by District



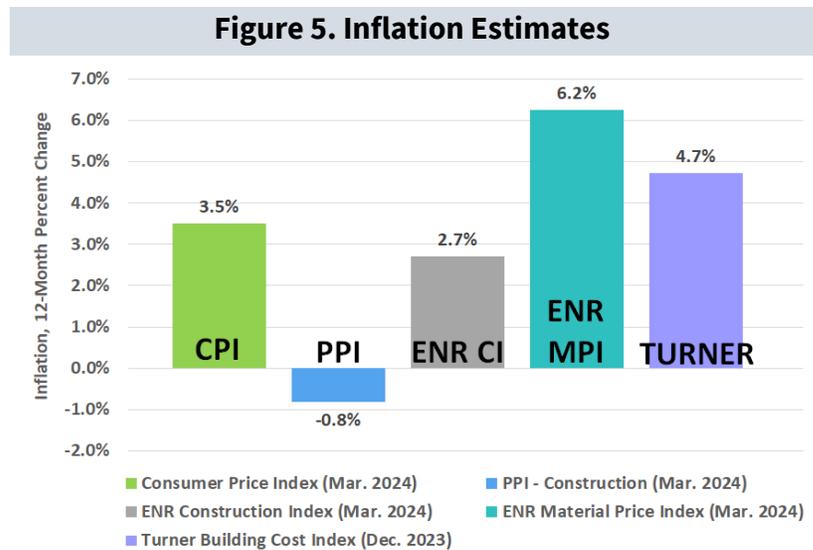
Source: FDOT, TBG Work Product (D1 and D6 terminals did not report data).

Inflation

U.S. inflation was relatively stable in March 2024, with the overall Consumer Price Index (CPI) hovering at 3.5%. Core CPI, which excludes food and energy price volatility, declined to 3.8% in March 2024, down from 5.6% during the same month in 2023. The Federal Reserve indicated in March 2024 that the federal funds rate target range will be maintained at 5.25% to 5.50% percent at this time due to lower than expected GDP results over the last quarter. Industry does not expect interest rates to change within the next quarter.

The Federal Open Market Committee (FOMC) released revised economic projections in March 2024, increasing calendar year-end 2024 Gross Domestic Product (GDP) estimates from 1.4% growth (reported in December) to 2.1%. March 2024 inflation estimates rose to 3.5%, up from 3.2% last quarter. Inflation estimates for 2025 and 2026 were 2.2% and 2.0%, respectively. Other construction-relevant inflation indices ranged between -0.8% to 6.2% last quarter (**Figure 5**). It is important to note that the Engineering News Record (ENR) indices shown include housing-related materials such as lumber, and as a result are not fully reflective of highway construction materials price trends.

According to Freddie Mac, 30-year fixed mortgage rates rose to 7.17% in April 2024 from the 6.6% reported in January 2024. Current 2024 housing forecasts predict mortgage rates may end up between 6.1% to 6.5% at calendar year-end. The University of Central Florida Institute for Economic Forecasting (IEF) continues to forecast declines in statewide housing starts through 2028.



Source: BLS, U.S. Census, ENR.

Funding and Regulation

State and federal funding and regulatory changes are expected to increase demand for, or otherwise impact, highway construction materials resources:



JAXPORT RAIL GRANT AGREEMENT

In March 2024, Jacksonville Port Authority's (JAXPORT) Board approved a rail grant agreement presented by FDOT. Funds will be used by

the port to design and construct a new rail siding at Talleyrand marine terminal to expand capacity for non-containerized cargo.

FHWA ROLLBACK OF BUY AMERICA WAIVERS

In March 2024, the Federal Highway Administration (FHWA) published a notice of proposed rulemaking to discontinue the waiver for manufactured products. Changes are aimed towards

uniformity and consistency with those in the Buy America, Build America (BABA) Act. The proposed changes won't change the iron and steel requirements or the rules within BABA that apply to construction materials. The agency is also requesting information for the domestic availability of manufactured products used in highway projects that could be impacted if the waiver is rescinded. Organizations like the American Road & Transportation Association and the Florida Transportation Builders' Association oppose this change.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

In April 2024, the U.S. DOT published the final rule for changes to the DBE program. Among other things, the rule will require primes to submit a performance plan with details on the type of work and timeline DBEs will perform in design-build projects. The rule adds distributors as a subset of DBE material suppliers and increases the Personal Net Worth threshold. The final rule will take effect May 2024.

FLORIDA STEEL REQUIREMENT LEGISLATION

FL SB 674 intends that government entities require iron or steel products be

produced in the U.S. for public works projects. Similar to the Federal Buy American and Build America, Buy America Acts (BABA), this legislation would have certain exceptions in relation to availability and costs. Currently, projects without federal funding can use imported steel. The law will go into effect July 1, 2024.

EDUCATION LEGISLATION

Among other things, FL SB 460 would allow 16- and 17-year olds to work in construction as long as the minor has an Occupational Safety and Health Administration 10 certification, is supervised by an individual over 21 with that certification, and has at least 2 years of relevant experience. Bill is currently on Appropriations Committee on Education.

MINING LEGISLATION

FL SB 198 aims to set a ground vibration limit of 0.15 inches per second for construction materials mining activities within one mile of residential zones. This bill did not pass.

CONCRETE AND ASPHALT INNOVATION ACT

The Concrete and Asphalt Innovation Act of 2023 was introduced to the Senate in December 2023; no action was taken. The bill aimed to strengthen and reduce emissions from these products through research programs.

CONTINUING CONTRACTS

FL HB 149 would increase the maximum amount of construction cost projects for which government entities can enter into continuing contracts. Additionally, for geotechnical and materials testing continuing contracts, it requires FDOT to use at least three (no more than five) firms and assign testing on a rotational and equitable basis. The law will go into effect July 1, 2024.

CDL TESTING EXEMPTION

In April 2024 the Federal Motor Carrier Safety Administration (FMCSA) denied the Florida Department of Highway Safety and Motor Vehicles (FLHSMV) requested exemption to the rule that requires the three parts of the commercial driver license (CDL) skills test to be completed consecutively.

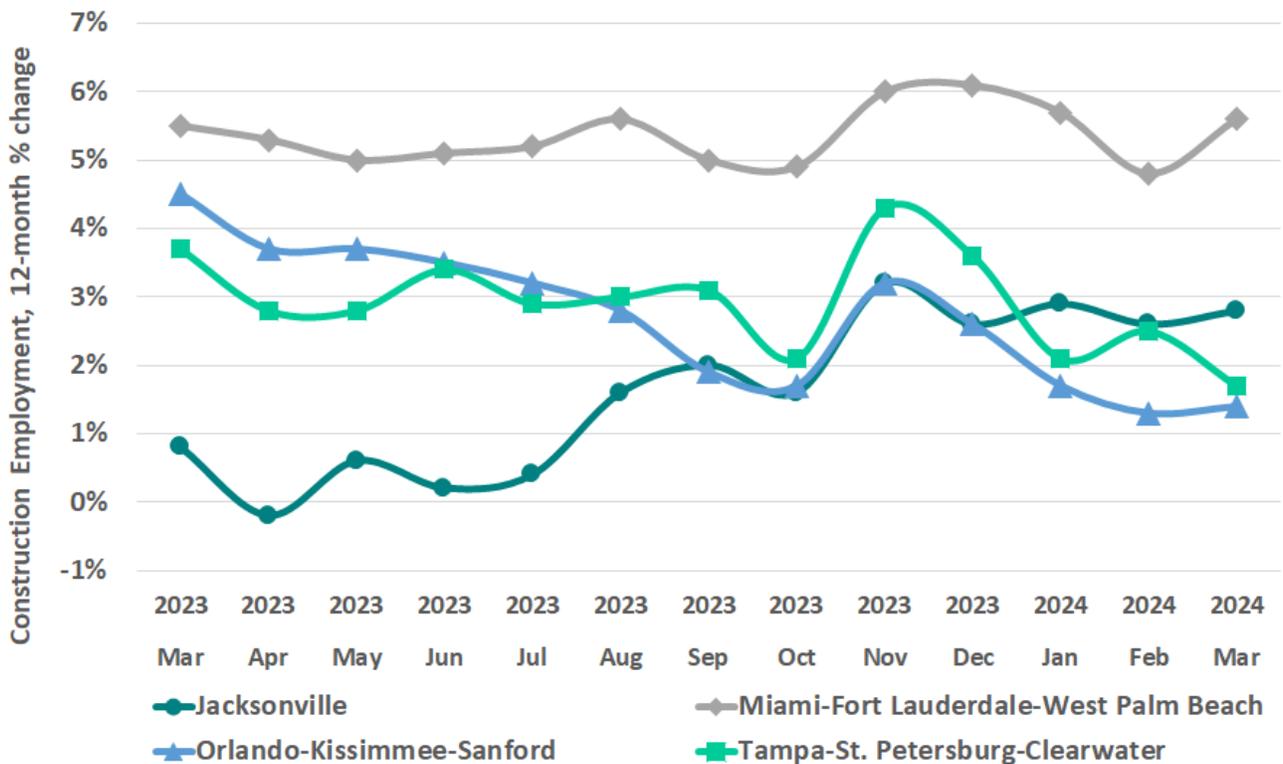
FLORIDA'S 404 PROGRAM

In February 2024, a federal judge revoked Florida's authority to oversee dredge and fill materials permitting in the waters of the State. In April 2024, a judge also denied a partial exemption requested by The Florida Department of Environmental Protection (FDEP), which has also appealed the judge's ruling. The authority to review permits has transferred to the U.S. Army Corps of Engineers (USACE).

Construction Employment

Statewide construction employment growth was 3.7% in March 2024 compared to the same month last year (**Figure 6**). The trend in metro area construction employment activity was relatively constant over the last few months. Growth in the Orlando and Tampa areas followed the same trajectory during year-end 2023, but diverged in February 2024. Jacksonville experienced heavy growth until December 2023 and has fluctuated near 3% since then. Miami construction employment growth remains between 5-6%. Nationally, average hourly wages of production and nonsupervisory employees for construction and highway, street, and bridge construction, were 5% higher year-over-year. Statewide average hourly earnings in the construction industry were 1.5% higher year-over-year.

Figure 6. Changes in Construction Employment in Major Florida Markets, Mar. 2023 – Mar. 2024

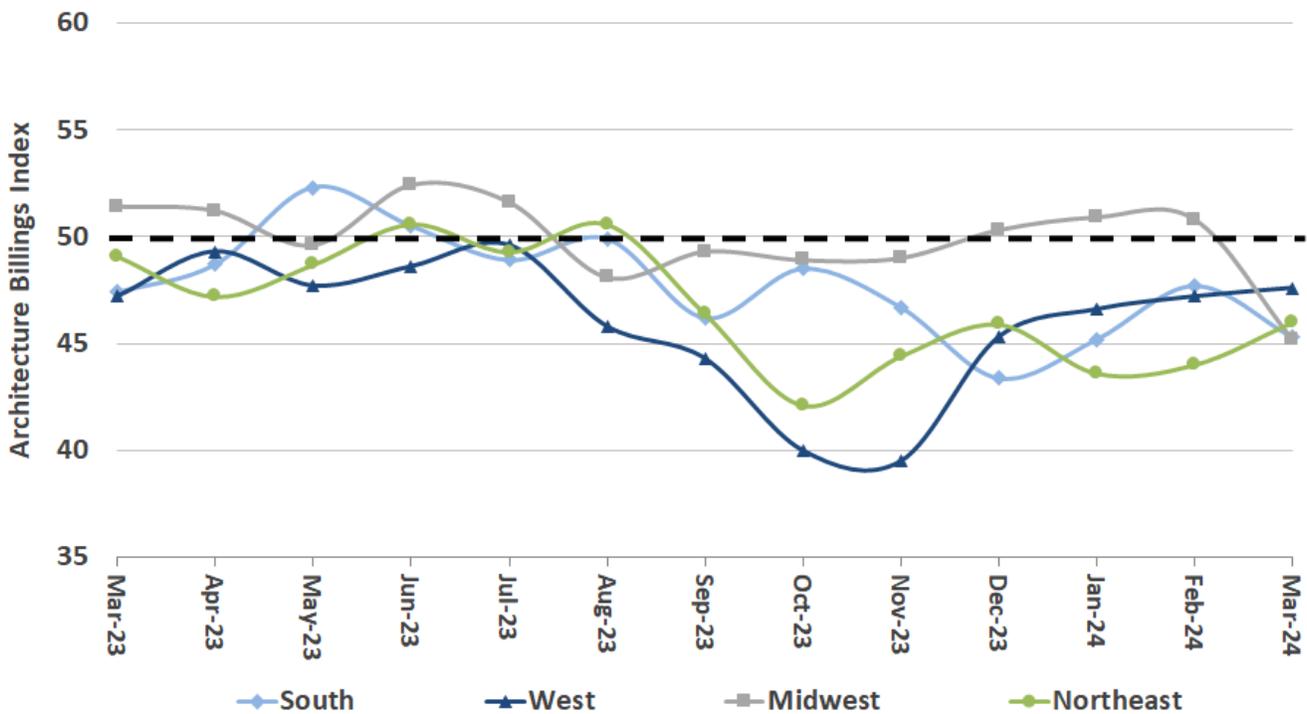


Source: Bureau of Labor Statistics.

Billings

The Architecture Billings Index (ABI) is a leading indicator for nonresidential construction activity.¹ Nationally, the index was 43.6 in March, indicating that a majority of architecture firms saw decreased billings at their firms (**Figure 7**). All regions saw decreased billings in March 2024 and most have multiple months of decreased billings, highlighting how some sectors have continued weakening.

Figure 7. ABI Billings Index, Mar. 2023 – Mar. 2024



Source: American Institute of Architects, Architecture Billings Index

Rail

CSX's train and engine employee counts continue increasing with close to 8,000 employees, a 5% year-over-year increase. In regards to operating performance, average terminal dwell time (between January and April 2024) in Jacksonville increased 15% year-over-year to 22 hours and 5% year-over-year in Waycross, GA to 26 hours.² The overall system dwell time during the same timeframe rose 8% to 21 hours. So, while dwell times have worsened overall, Jacksonville has experienced the greatest increases in dwell times comparatively. Delays in Waycross continue being consistently higher. Higher dwell times means that it takes more time to get material out of the station, which could lead to project delays. The data is consistent with anecdotal feedback from suppliers interviewed for this report.

¹ ABI Billings are considered a leading indicator, meaning that construction activity 9-12 months from now generally follows the current ABI billings activity. A score below 50 indicates declining firm billings.

² Average amount of time in hours between car arrival to and departure from the yard

On September 7th, the Surface Transportation Board (STB) issued a notice of proposed rulemaking in reciprocal switching for inadequate service issues. The comment period ended in December 2023 and no final rule has been published as of this writing. In February 2024, it was reported that Seminole Gulf Railway completed the repairs from hurricane Ian and that freight service to Fort Myers would resume in March. The railroad announced that in 2023 they handled 3,700 carloads. With the closure of the segment, they had been diverting cargo to Sarasota and then to trucks. The railroad transports different types of building materials such as aggregate, pipe, metals and fly ash. In other news, Norfolk Southern and Florida East Coast Railway announced a new service line that will connect south Florida with Charlotte.

TD Cowen's shipper survey during the first quarter of calendar year 2024, indicated that shippers expect a moderation in rail price increases. They expect rates to rise by 3.1% over the next 6-12 months. 25% of respondents indicated that trucking is cheaper than rail; 28% of bulk shippers reported moving product by rail (up by 5%). The survey also highlighted that quality of service has improved. However, this survey comprises respondents from multiple industries across the country; interviews of FDOT suppliers highlighted that some producers continue having issues, which are discussed in the respective material section.

ASPHALT

Summary

- April 2024 PG 76 binder prices were unchanged compared to the same month last year while PG 67 binder prices were down 3% year-over-year.
- High infrastructure demand continues to drive asphalt market; lower pricing unlikely next quarter.
- Labor availability and aggregate costs also key factors impacting asphalt producers.

FDOT Impacts

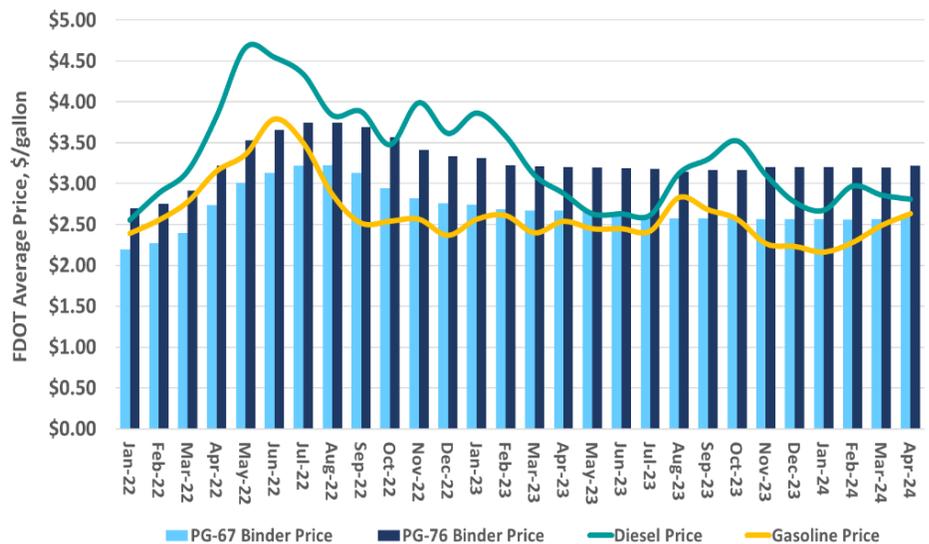
- According to FDOT Hot Mix Asphalt (HMA) bid data, the year-to-date FY 2024 weighted average price was down 1.2% through March compared to last quarter.
- The fiscal year-end 2024 price forecast rose 0.2% from the previous quarter based on updated economic variables.
- Compared to fiscal year-end 2023, FY 2024 prices are forecast to rise 6.5%.

General Trends

In April 2024, FDOT diesel fuel prices were down 2% year-over-year (**Figure 8**). On the other hand, gasoline prices have steadily increased since December. In April 2024, gas prices were up 22% compared to January 2024 and up 4% year-over-year; typically, asphalt binder production declines when gas prices increase materially. Asphalt binder prices on the other hand, continued with marginal changes over the last quarter.

While binder prices have moderated in recent months, current pricing is still more than 50% higher than 2019 levels. In calendar year 2023, U.S. refinery net production of asphalt and product supplied (a proxy for consumption) of asphalt and road oil declined 4% and 3%, respectively. However, product supplied in the east coast was up 1%. IBISWorld forecasts annual revenue and employment growth of 2.2% and 1.8%, respectively, in the asphalt manufacturing industry for the next five years. High demand will continue supporting prices.

Figure 8. FDOT Fuel and Binder Prices, Jan. 2022 – Apr. 2024



Source: FDOT Fuel & Bits Index.

	Exerting negative influence on FDOT's costs; monitor.
	Currently stable; not influencing FDOT's costs.
	Exerting positive influence on FDOT's costs.

SUPPLY CHAIN VARIABLES: ASPHALT PAVEMENT MATERIALS

Table 1 provides the current status of selected variables of interest.

Table 1. Supply Chain Summary: Asphalt Materials		
	The U.S. Geological Survey (USGS) reported that Florida's crushed stone production increased 7.9% in the fourth quarter of calendar year 2023. Nationally, production increased 1.6% in the same period. Prices have continued with double digit increases, but industry expects moderation in price increases for the year. Rail availability and price increases are continuing issues highlighted during interviews.	
	Refinery utilization in the Gulf Coast was estimated to be between 86% and 95% in the fourth quarter of 2023. There were disruptions in refinery utilization in the third week of January 2024 through the last week of February 2024. The sharp decline in refinery utilization was attributed to a major power outage that affected the Midwest's biggest refinery for over a month, reduced plant operations and intensified seasonal patterns, all of which affected inventory. Refinery utilization peaked in the first week of March, and since then, the rate has been between 85% and 90%. Costs and prices will continue to be impacted by geopolitical factors.	
	Unmodified (PG 67 & lower) asphalt binder prices had been relatively constant since September 2023. In 2024, prices declined 2%, year-over-year. Rack binder prices in Jacksonville, Miami and Tampa declined 1.2%, 0.4% and 8.3% year-over-year, respectively; despite the declines, binder prices are still very high compared to historic averages.	
	According to the American Chemistry Council (ACC), U.S. production of resins rose 4% in February 2024 vs. January 2024. Year-over-year production increased 11.5%. ACC's quarterly Chemical Manufacturing Economic Sentiment Index showed that US chemical production levels had decreased over the fourth quarter of 2023. Also, new orders for chemicals, the volume for order backlogs index and inventory levels decreased. The supplier delivery index was negative indicating supply chain pressures steadily eased over 2023. American Polymer Company's plant in Broward County no longer shows up as 'under construction' and has an active air permit in FDEP's air permitted facilities list. Interviews indicated no issues with availability and prices have increased.	
	Import costs rose at the beginning of 2024, with January recording the highest increase since March 2022. Data from the U.S. International Trade Commission shows that there were no imports of bitumen products to ports in Florida since November 2023. However, after the Francis Scott Key Bridge collapsed in March, the Army Corps of Engineers re-opened a limited channel in April and aims to fully re-open to the port in May. It was anticipated that this could have a ripple effect as ships get diverted across east ports. Florida's ports could be temporarily affected as they see an influx of ships. As expected, the U.S. reinstated sanctions to Venezuela after the six-month waiver expired.	
	In Q4 of calendar year 2023, tons of asphalt products shipped by CSX increased by 11% year-over-year, and revenues of asphalt products shipped increased by 16% year-over-year, which is in line with the previous report. Anecdotally, interviews highlighted issues with confirming delivery dates with rail transportation.	
	Asphalt suppliers continue facing issues with trucking. In April 2024, diesel prices were at \$2.81 per gallon, down 2% year-over-year. Year-to-date, they were 9% lower. In April 2024, the FMCSA denied the FLHSMV's CDL exemption request from December 2023. The number of drivers has increased over 2023, but not kept pace with demand.	
	The U.S. Chemical Production Regional Index increased 2.6% in December 2023, year-over-year. Shipments of coatings and adhesives rose as well. The overall demand for plastics has increased, as prices keep rising. Supply chain issues for pavement markings and other plastics-based/petroleum-based ancillary products have improved. During interviews, it was mentioned that there were no current problems with availability and prices.	
	The quest for skilled labor is an ongoing concern for asphalt plant operators. Statewide construction employment increased 4% with some regional variation. Construction firms in Florida are expected to continue experiencing issues with finding labor in 2024. Interviews indicated that the labor market has continued to worsen, and that producers with open positions are experiencing difficulties finding skilled candidates.	
	There have been no new reported acquisitions in Florida or new plants added to FDOT's approved producer list. However, acquisitions have continued in other parts of the country. No new asphalt plants have been added to FDEP's air permitted facilities that are under construction.	

Asphalt Forecast

Asphalt prices are projected in **Table 2** for the five-year construction work program. Regression modeling was performed using pay item data, supply chain variables, and other macroeconomic indicators to identify models that best predicted FDOT’s materials costs and quantities.

The impact of global conflicts on crude oil futures remains moderate. Binder prices remain 15% higher than 2019 levels through March 2024, but appear to have stabilized. With updated housing starts, employment data, economic expectations, and binder prices, the current best estimate expects asphalt prices to remain elevated through the end of the five-year work program. FY 2024 asphalt costs increased 0.2% from the previous forecast. Compared to FY 2023, prices are forecast to end FY 2024 6.5% higher. Record high levels of FDOT work program funding, continued statewide economic growth, and high input costs are expected to keep bids elevated through FY 2028.

The upper bound is supported by higher crude prices, statewide economic growth, and high infrastructure demand. The lower bound reflects recessionary crude prices and further constraints on construction employment. According to a recent industry survey, 76% of economists currently predict a soft landing for the U.S. economy in 2024, with the Federal Reserve achieving its goal of bringing down inflation without pushing the economy into a recession.³ **Figure 9** shows the potential range of estimates over the five-year work program.

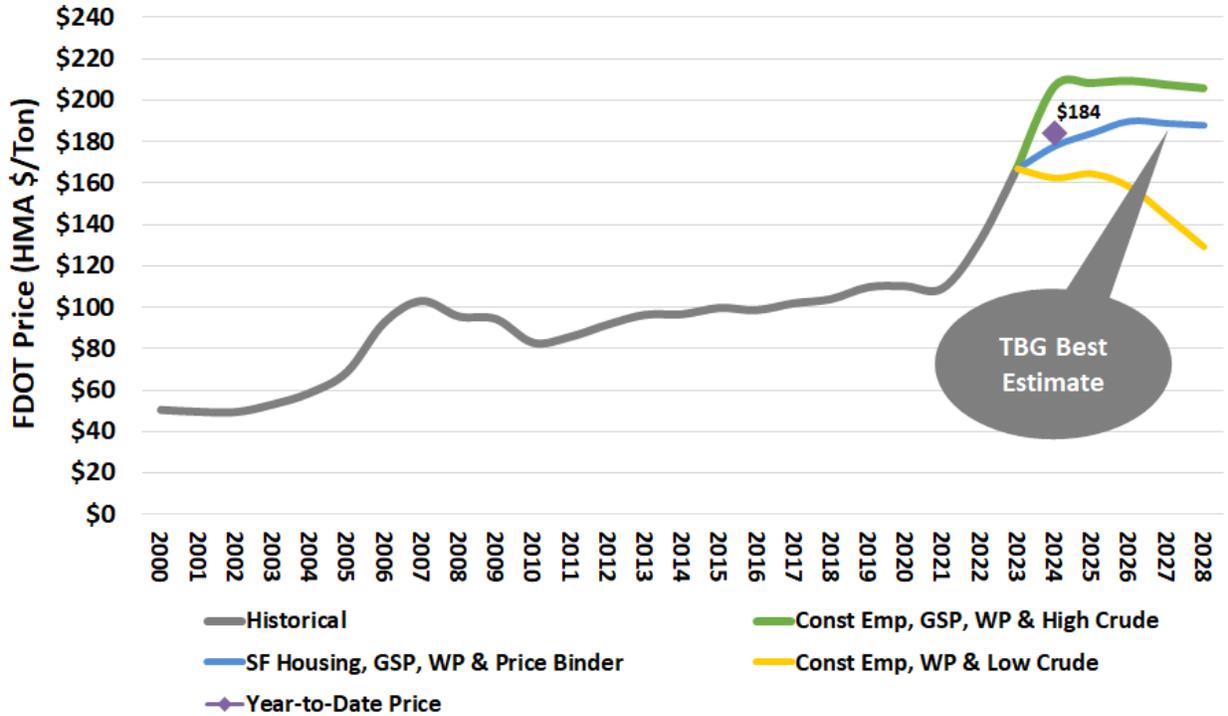
Fiscal Year	2023	2024	2025	2026	2027	2028
Price HMA, \$/Tons	\$167.07	\$177.91	\$184.02	\$189.76	\$188.70	\$187.77
Annual Percent Change, %	26.6%	6.5%	3.4%	3.1%	-0.6%	-0.5%

Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

For Florida HMA consumption, **Figure 10** shows a best estimate with stable production growth through FY 2028 with moderate employment and housing start increases and medium crude oil price projections. The upper bound is based on a positive labor outlook and significantly lower fuel costs that would allow for additional production. The lower bound requires recessionary conditions and much higher crude oil prices, which are unlikely at this writing.

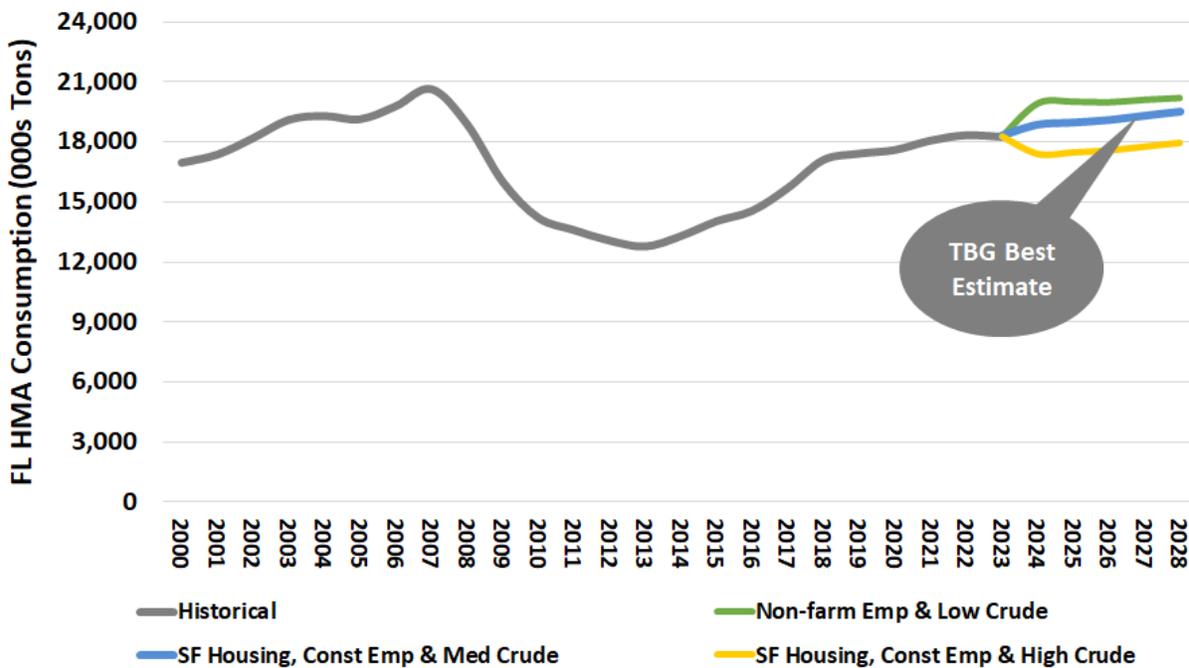
³ NABE April 2024 Business Conditions Survey.

Figure 9. FDOT HMA Price, FY 2024 Q3 Forecast



Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.
(Variable descriptions available in the **Appendix**.)

Figure 10. Florida HMA Consumption, FY 2024 Q3 Forecast



Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

CONCRETE

Summary

- Cement price increases continue to be supported by high levels of infrastructure spending. Production volumes are reportedly down, however.
- Additional import capacity was approved at the Port of Tampa in February 2024.
- Labor and trucking availability and aggregate cost impacts continue to be highlighted by producers.

FDOT Impacts

- According to FDOT concrete bid data, the year-to-date FY 2024 weighted average price was up 2.7% through March compared to last quarter.
- The fiscal year-end 2024 price forecast rose 1.3% from the previous quarter.
- Compared to fiscal year-end 2023, FY 2024 prices are forecast to rise 12.6%.
- Raw material costs (aggregate, cement, fly ash) continue to impact bid prices; FDOT producers continue to pass off cost increases to customers according to interviews.

General Trends

Price increases continued around similar levels as previous quarters as expected. Public infrastructure is still expected to be the main driver of demand, with the industrial sector being an important component (distribution warehouses, data centers) and residential stabilizing with the expectation that interest rates decline later in the year. Aligned with the previous forecast, IBISWorld expects revenues in the U.S. cement manufacturing industry to grow at an annual rate of 2.2% for the next five years. During the same timeframe, IBISWorld expect employment and wages to grow 1.3% and 1.5%, respectively.

A recent study commissioned by the American Concrete Pavement Association (ACPA) and conducted by the Massachusetts Institute of Technology's Concrete Sustainability Hub, analyzed bid data on asphalt and concrete pavement from DOTs across the country between 2005 and 2018. The results showed that the two most influential factors in asphalt and concrete paving costs are project size and inter- industry competition. The study stated that "States with high industry competition pay 8% and 29% less for asphalt and concrete pavements respectively vs. states with less competition" (ACPA, 2024). Securing fly ash in a reliable manner continues being an issue for producers, but new projects to re-use fly ash have been announced in current and previous quarters that can benefit the Florida market. Imports increased in January and February of 2024. Finding skilled labor and good drivers is a continuous issue for producers. One producer indicated that FDOT's revisions to materials manuals increased costs. They indicated that going from standard industry specs to FDOT specs prompts about an overall 20-25% increase.

	Exerting negative influence on FDOT's costs; monitor.
	Currently stable; not influencing FDOT's costs.
	Exerting positive influence on FDOT's costs.

SUPPLY CHAIN VARIABLES: CONCRETE MATERIALS

Table 3 provides an overview of supply chain variables and a summary of their current status; items with current issues are further detailed in the subsequent text.

Table 3. Structural Concrete Supply Chain Variables & Current Status		
 <p>Cement</p>	<p>During Q4 of calendar year 2023, publicly traded companies continued reporting a slowdown in volumes, but not pricing. Year-over-year, prices increased between 9% and 17%, while volumes declined between 8% and 13%. Interviews indicated price increases ranging between 3%-25%. Similar to other materials, moderation in price increases are expected through calendar year 2024. As long as producers are not locked in an existing contract, they report passing most of the costs to customers. Additionally, in February 2024, the Port of Tampa approved a site improvement permit for auger cast piles and a mat slab foundation for concrete silos for Sesco Cement.</p>	
 <p>Aggregate</p>	<p>Interviews indicated that issues with aggregate availability, increased pricing, and transportation continue. In April 2024 Cemex submitted a site improvement permit application to the Port of Tampa for the development of a construction aggregates terminal. More in depth issues are covered in the Aggregate section.</p>	
 <p>Fly Ash</p>	<p>Eco Material Technologies announced an agreement with a power plant in Alabama to harvest up to 700,000 tons of fly ash. The re-used fly ash will be used for projects in Mississippi, Florida and Louisiana. This follows the previously reported agreements in Georgia that is also expected to be used for projects in Florida. Import data from United States International Trade Commission (ITC) shows that imports of fly ash were significantly higher in January and February of 2024 (96,234 tons) over a year ago (39,904 tons). Most arrived in Tampa from Japan followed by Turkey. Interviews indicated the usual issues with sometimes securing fly ash and having to change sources. A plant is under construction in Pensacola, which will process fly ash for use in concrete mixes.</p>	
 <p>Rail</p>	<p>In Q4 of calendar year 2023, overall tons and revenues of concrete products shipped by CSX increased by 14% and 19% year-over-year, respectively. These are slightly higher to what was reported in the previous quarter; rail rates continue to increase. Rail availability issues and cost increases are still being reported in interviews with FDOT producers.</p>	
 <p>Trucking</p>	<p>Except for a significant increase in February 2024, diesel prices continued decreasing. Interviews continue indicating difficulties finding and retaining drivers. In April 2024, the FMCSA denied the FLHSMV's CDL exemption request from December 2023. Increased costs have been highlighted by interviews.</p>	
 <p>Labor</p>	<p>Producers continue reporting issues with finding and retaining skilled labor, mostly they indicated that it has worsened. As mentioned elsewhere, statewide construction employment growth picked up and it's close to 4%. Increases in hourly wages seemed to have moderated. Interviews have indicated continued struggles with labor.</p>	
 <p>Competition</p>	<p>While not in Florida, the Breedon Group (a construction materials firm in Great Britain and Ireland) announced in March that they entered the U.S. construction materials market with the acquisition of BMC Enterprises in Missouri, with possible additional acquisitions to gain market share. Additionally, a drainage structures operator (Alcrete LLC) that has plants in Alabama and North Carolina, acquired American Concrete Industries (Ft. Pierce) to enter the Florida Market. This continues the industry consolidation reported in previous reports, which can impact FDOT prices. No new plants have been added to FDEP's air permitted facilities that are 'under construction' from what's been reported in previous reports. On the other hand, four non-structural concrete plants (in Districts 1, 4 and 6) were approved in FDOT's producer list during the quarter.</p>	

Concrete Forecast

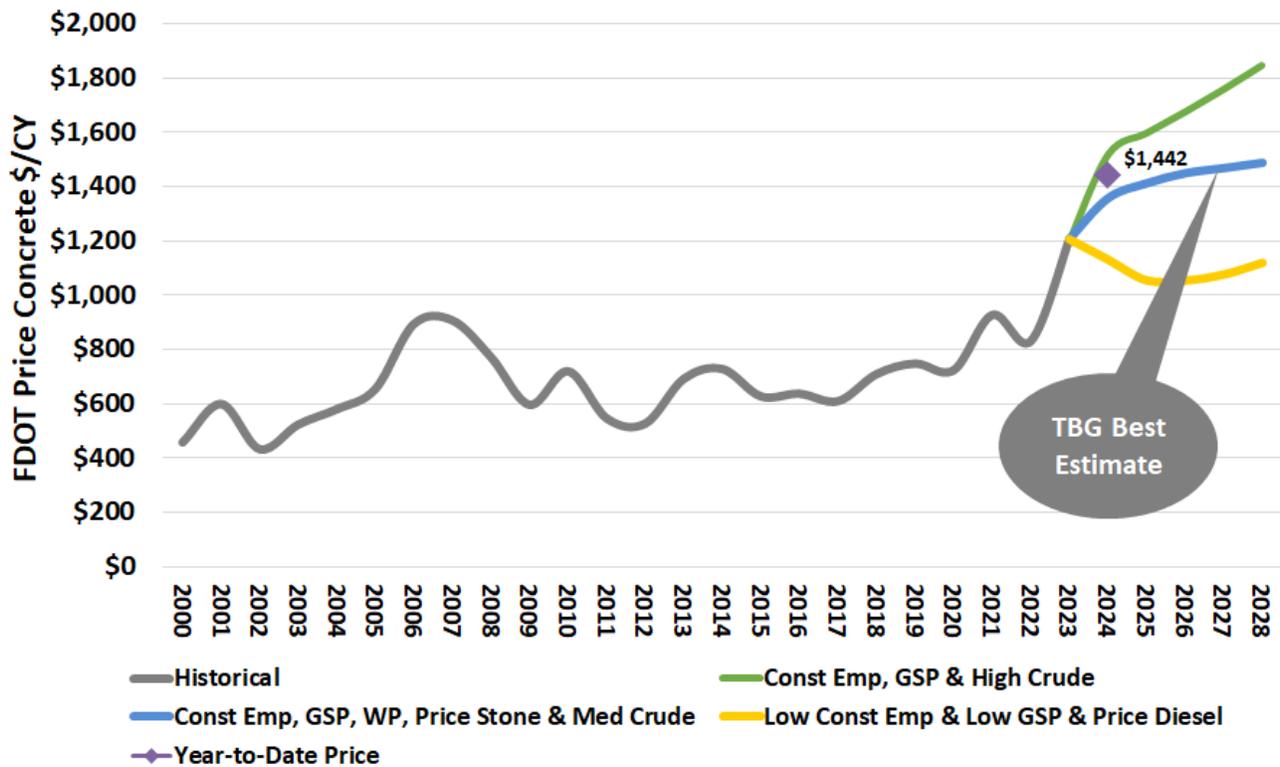
Regression modeling was performed using pay item data, supply chain variables, and other macroeconomic indicators to identify models that best predicted FDOT’s materials costs and quantities. **Table 4** provides the updated forecast average price for concrete. The current forecast is within 1.3% of previous estimates and continues to track just under year-to-date bid results. The best estimate of concrete prices reflects the impact of ongoing skilled labor constraints, economic growth, work program demand, aggregate costs, and crude oil prices (**Figure 11**). The upper bound reflects construction employment growth, improving economic conditions, and higher crude prices; this trajectory would add an additional \$300 to current pricing by FY 2028. The lower bound would drop slightly below FY 2023 levels with declines in construction labor, lower Florida macroeconomic activity, and diesel prices. Pre-pandemic conditions are no longer projected in this scenario.

Table 4. FDOT Concrete Price Forecast Results

Fiscal Year	2023	2024	2025	2026	2027	2028
Price Concrete, \$/CY	\$1,206	\$1,358	\$1,414	\$1,451	\$1,470	\$1,489
Annual Percent Change, %	45.3%	12.6%	4.1%	2.7%	1.3%	1.3%

Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

Figure 11. FDOT Concrete Price, FY 2024 Q3 Forecast

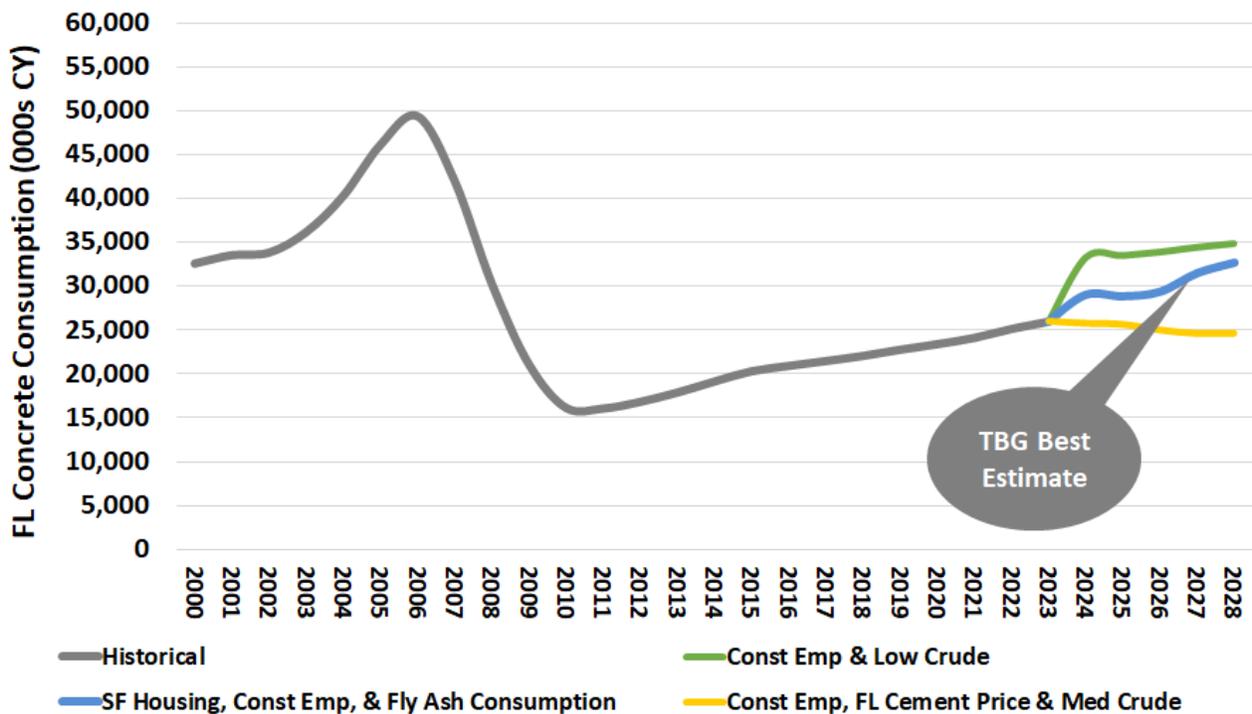


Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

(Variable descriptions available in the **Appendix**.)

Figure 12 shows the output of several quantity models forecasting statewide consumption of concrete and the scenario identified as the best estimate. The best estimate tracks housing, construction employment, and fly ash consumption. The upper bound would require drastic drops in crude oil costs and construction employment growth. Flat to declining production conditions are shown in the lower bound.

Figure 12. Florida Concrete Consumption, FY 2024 Q3 Forecast



Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.
 (Variable descriptions available in the **Appendix**.)

STEEL

Summary

- U.S. steel prices have started falling again after increasing late in calendar year 2023.
- Geopolitical uncertainty remains, however, as persistent blockades in the Red Sea have led to congestion at Mediterranean ports.
- Nippon Steel is pushing to acquire U.S. Steel by September 2024, which could have major repercussions on the U.S. steel industry.

FDOT Impacts

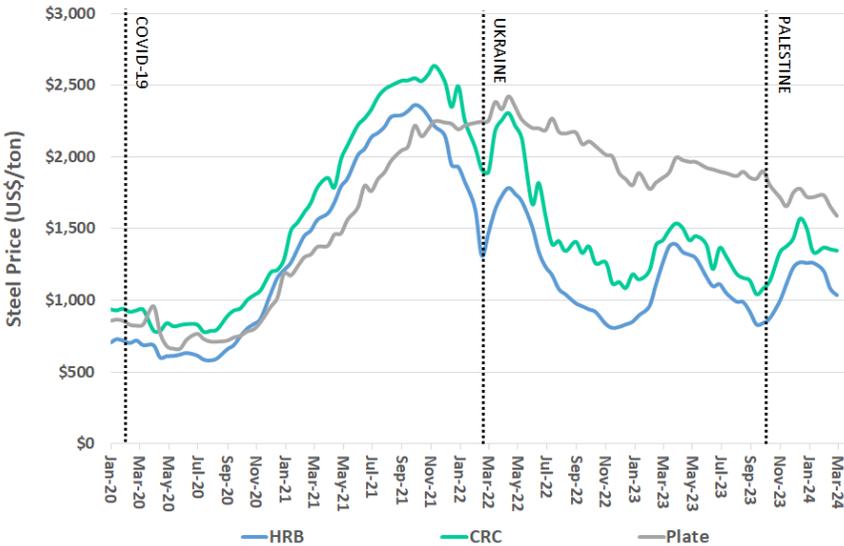
- Structural steel bids are up 5.6% through the third quarter of FY 2024 compared to FY 2023 (based on limited data). Forecasts still predict moderation by fiscal year-end, but uncertainty continues to push bidders to include costly escalation factors.
- Reinforcing steel bids rose 4.0% in the third quarter of FY 2024 compared to FY 2023. Forecasts currently expect a decline by fiscal year-end.
- Producers expect little change in price depending on material through the next quarter ending in June 2024.

General Trends

U.S. steel prices declined 16% on average in March 2024, year-over-year, despite ongoing geopolitical conflicts around the world (Figure 13). Compared to November 2020, U.S. hot-rolled band prices were still up 19%, cold-rolled coil prices were up 24%, and steel plate prices remain the most inflated at 95% over the benchmark period.

U.S. Steel’s shareholders approved Nippon Steel’s merger proposal on April 12, 2024. Nippon Steel will reportedly honor all agreements currently in place between U.S. Steel and United Steelworkers, keeping all jobs, facilities, and production in the U.S. The Japanese firm, which is the fourth largest steelmaker in the world, plans to close the deal by month-end September 2024. Other disruptions to the supply chain include impacts from Red Sea blockades that have caused congestion at Mediterranean ports, stalling goods from being shipped across the globe.

Figure 13. U.S. Steel Pricing, Jan. 2020 – Mar. 2024



Source: AISI Weekly Raw Steel Production.

SUPPLY CHAIN VARIABLES: STEEL

-  Exerting negative influence on FDOT’s costs; monitor.
-  Currently stable; not influencing FDOT’s costs.
-  Exerting positive influence on FDOT’s costs.

Table 5 shows a summary of select variables that impact the steel supply chain and their current status.

Table 5. Supply Chain Variables for Structural Steel

 <p>Raw Materials</p>	<p>According to the latest data, prices for hot-rolled steel decreased 23% in March 2024, year-over-year, but are still up 20% compared to the same period in 2019. Prices have mostly been declining since the beginning of this year after surging in the fall of 2023. Geopolitical uncertainty continues to drive price volatility. Iron ore prices have declined 20% since December 2023, but remain high comparatively. Interviews indicated that producers have seen declines in prices as well. Producers report that they are able to obtain the material they need in a reasonable amount of time and that lead times are improved.</p>	
 <p>Scrap Steel</p>	<p>U.S. scrap steel prices are still 22% higher than pre-pandemic levels, but declined 37% in March 2024 compared to the same month in 2023. Prices have steadily declined since the beginning of this year. Geopolitical conflicts should continue to be monitored as supply chain disruptions could impact steel and other metals costs. Additional domestic capacity is still expected to come online in 2024. Port Manatee and Logistec Gulf Coast LLC executed a lease agreement effective October 1, 2024, for the construction of a cargo pad that will hold up to 120,000 tons of scrap steel. The company had an existing lease for dry bulk storage.</p>	
 <p>Galvanizing</p>	<p>Global zinc prices decreased 17% in March 2024 compared to the same month in 2022. Globally, price forecasts are contradictory, with some showing increases and others declines. Global demand is sometimes gauged by surveys of manufacturing purchasing managers around the world, which have been showing declining activity.</p>	
 <p>China</p>	<p>As of January 2024, Chinese steel prices declined 17% year-over-year to an average of \$524 per ton. Prices have been declining since February of 2024. However, prices are up from their low in July of 2023 of \$475 per ton and tariff increases are possible. Concerns around excess global capacity and China’s role remain. Chinese steel companies are expanding capacity in other Association of Southeast Asian Nations as well. However, there is concern within the industry that the quality of some older furnaces being installed may not be up to environmental and other standards.</p>	
 <p>Transportation</p>	<p>Except for a significant increase in February 2024, diesel prices continued decreasing. In April 2024 diesel prices are at \$2.81, down 2% year-over-year. Year-to-date, they were on average 9% lower. Producers continue to report that trucking costs are rising. In April 2024, the FMCSA denied the FLHSMV’s CDL exemption request from December 2023. Interviews have indicated a continued increase in trucking costs with fuel prices and other surcharges constantly fluctuating.</p>	
 <p>Rail</p>	<p>Trucking is the preferred method for transportation of finished product, but raw materials are delivered by rail to some fabricators. Rail updates are explained in more detail elsewhere in the report.</p>	
 <p>Milling Capacity</p>	<p>Production through April 20th, 2024 was 26,939,000 net tons, down 2.5% from the same period last year. Capacity utilization remains in the mid-70s. As of the April 20th, 2024, it measured 77.3%.</p>	
 <p>Labor</p>	<p>Fabricators report a small increase in less experienced workers looking for positions, but are still having issues finding and retaining skilled labor. As mentioned elsewhere in the report, statewide construction employment growth picked up and is close to 4%. Increases in hourly wages seemed to have moderated. While some interviews have indicated an improvement in labor supply compared to the last three years, others have expressed that the quality is declining, and getting skilled work is difficult.</p>	
 <p>Competition</p>	<p>U.S. steel shareholders have approved the deal for U.S. Steel to be bought by Nippon Steel. The agreement still faces some opposition from the United Steelworkers Union and politicians.</p>	

Steel Quotes

The most recent request for steel price and production quotes sent to FDOT steel fabricators finds that price changes trended downwards in March 2024 for most materials (**Table 6**). Prices appear to have moderated as expectations for price changes over the next month and through the next quarter are for only slight increases or decreases. Interviewed FDOT fabricators are reporting stabilizing or declining prices. Production of structural steel, guardrail, and steel plate are all expected to increase over the next month and through the end of the quarter. Interviews indicated that a price increase from mills expected this quarter did not materialize due to the perception that the U.S. economy is showing signs of slowing down.

Table 6. Steel Fabricator Quotes and Industry Prices

April 2024 Quotes	Structural Steel	Guardrail	Steel Plate	Square Tubing/ Railing	Steel Strand/ Wire Rod
Price Change, March 2024	-2.5%	2.5%	-2.5%	-2.5%	-2.5%
Expected Price Change, April 2024	-2.5%	2.5%	2.5%	N/A	N/A
Expected Price Change by End of Next Quarter	-2.5%	2.5%	-2.5%	N/A	N/A
Bid Price Change, March 2024	-2.5%	2.5%	-2.5%	N/A	N/A
Production Change, March 2024	2.5%	2.5%	2.5%	N/A	N/A
Expected Production Change, April 2024	2.5%	8.0%	2.5%	N/A	N/A
Expected Production Change by End of Next Quarter	8.0%	2.5%	8.0%	N/A	N/A

April 2024 Engineering News-Record Prices	Structural Steel	Reinforcing Bar	Plate	Pilings
20-City Average Price Change, March 2024	0.2%	2.2%	0.45%	3.70%
Atlanta Price Change, March 2024	0%	0%	0%	0%
New Orleans Price Change, March 2024	2.2%	2.0%	0%	0%

Source: TBG Work Project, Engineering News-Record

Steel Forecasts

Steel prices were forecasted over the five-year work program. Regression modeling was performed using pay item data, supply chain variables, and other macroeconomic indicators to identify models that best predicted FDOT’s materials costs. **Table 7** provides the forecast average price for structural and reinforcing steel.

With updated, substantially higher predicted iron and zinc prices and macroeconomic conditions, the best estimate of structural steel costs rose 7% compared to the previous report. Year-to-date prices, based on limited bids (n= 25) have rebounded to FY 2022 levels through the last quarter, falling between the best estimate and the upper bound. The forecasted value of Florida construction put-in-place and higher crude oil costs support price increases. A flatter commodity price scenario is shown in the lower bound.

Table 7. FDOT Structural Steel Price Forecast Results

Fiscal Year	2023	2024	2025	2026	2027	2028
Price Structural Steel, \$/lb.	\$3.51	\$3.80	\$4.02	\$4.25	\$4.49	\$4.75
Annual Percent Change, %	-21.4%	8.1%	5.9%	5.6%	5.8%	5.8%

Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

Weighted average reinforcing steel price forecasts are about 1.8% higher than previous estimates with updated bid data (**Table 8**). The best estimate currently predicts a slight increase in pricing for FY 2024 year-end according to updated construction employment measures and medium crude oil pricing. Reinforcing steel prices currently hover slightly above FY 2023 levels, sitting between the best estimate and the upper bound. The upper bound takes Florida economic growth, construction employment, and medium crude oil prices into consideration. The less likely lower bound is supported by lower crude prices.

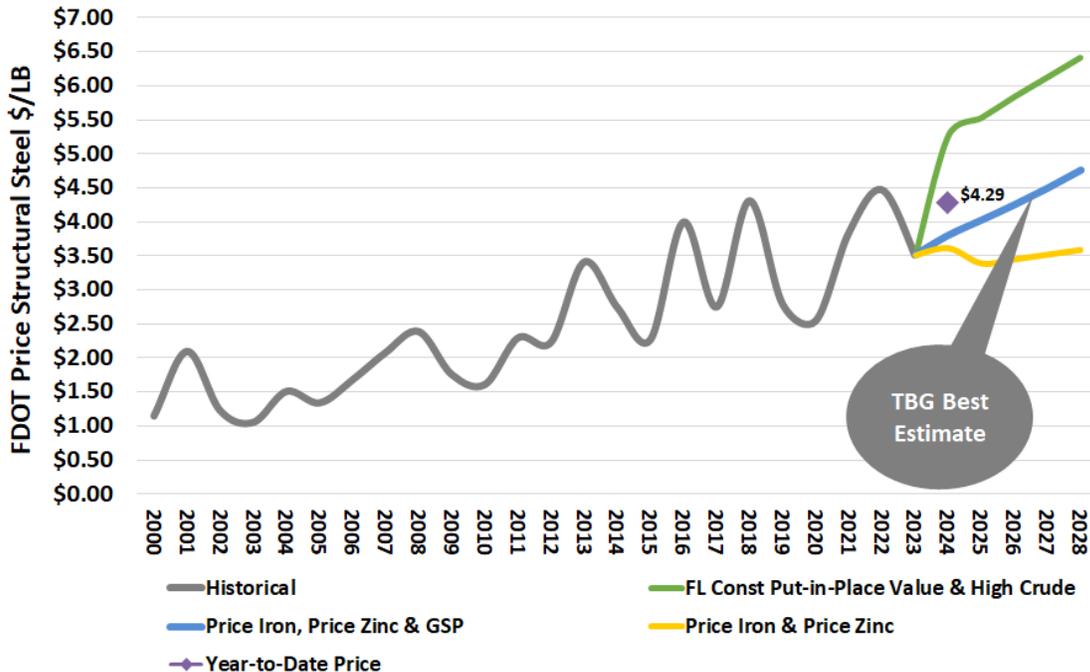
Table 8. FDOT Reinforcing Steel Price Forecast Results

Fiscal Year	2023	2024	2025	2026	2027	2028
Price Reinforcing Steel, \$/lb.	\$1.52	\$1.54	\$1.61	\$1.57	\$1.62	\$1.68
Annual Percent Change, %	2.2%	1.0%	4.3%	-2.0%	3.0%	3.4%

Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

Figure 14 and **Figure 15** show the output of several price models and the scenario identified as best estimate for structural steel and reinforcing steel, respectively.

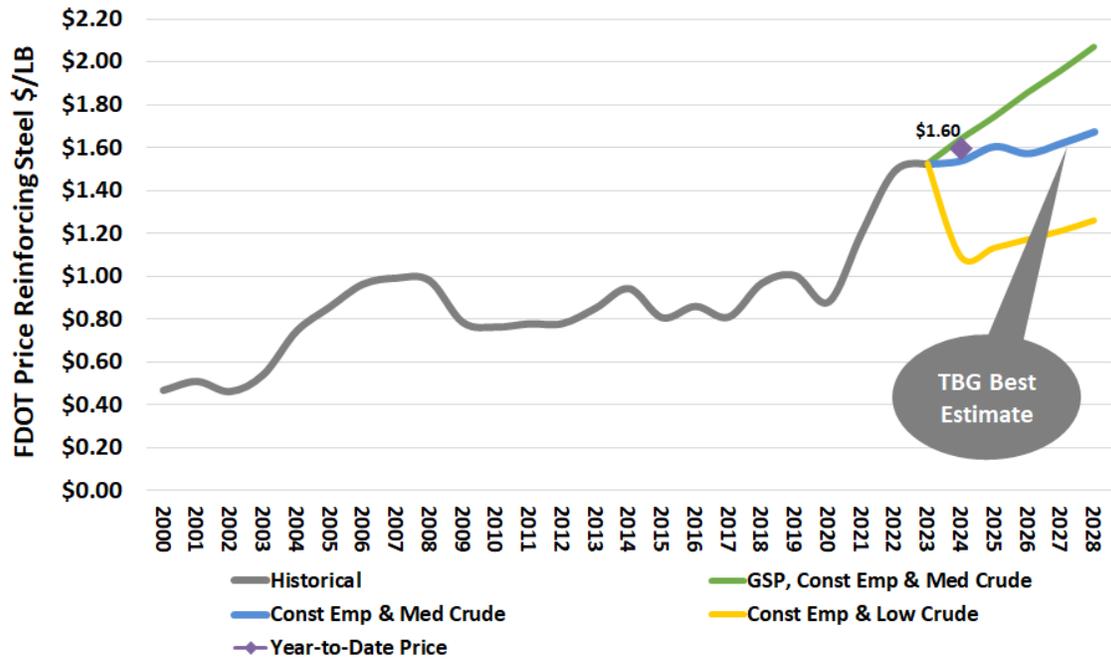
Figure 14. FDOT Structural Steel Price, FY 2024 Q3 Forecast



Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

(Variable descriptions available in the **Appendix**.)

Figure 15. FDOT Reinforcing Steel Price, FY 2024 Q3 Forecast



Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.
 (Variable descriptions available in the **Appendix**)

AGGREGATE

Summary

- Calendar year-end 2023 Florida crushed stone production was up 1.5% year-over-year according to the USGS. Quarterly industry reports covering the last three months of 2023 showed production was down 2%.
- Industry reports prices were up 16% in the last three months of calendar year 2023 compared to the same period in 2022. Through the first three months of 2024, interviews indicate prices are up between 10% to 16% year-over-year.
- Labor and trucking availability continue to be uneven across the industry. While stabilizing diesel costs have provided some cost relief, wage increases and turnover continue to impact producer costs.

FDOT Impacts

- According to FDOT aggregate base bid data, the year-to-date FY 2024 weighted average price was up 4.1% through March compared to last quarter.
- The fiscal year-end 2024 price forecast rose 4.8% from the previous quarter based on updated economic variables.
- Including one high unit-cost project from September 2023 would raise the year-to-date weighted average price by a whopping 24%.

General Trends

According to quarterly data released by the USGS, crushed stone production in Florida for calendar year 2023 was up 1.5% year-over-year. Production was at 102.6 million tons with a value of \$1.7 billion, which would represent a price of \$18.5 per ton. Nationally, production was down 0.5% at a value of \$24 billion, representing \$15.6 per ton. Florida was the second largest producer of crushed stone behind Texas. Fourth quarter of calendar year 2023 results from publicly traded companies showed some slight variations. Year-over-year shipments fluctuated between -2% to 11%, while prices were flat to 16% higher.

For 2024, the outlook is that public infrastructure will drive demand and expected price increases as high as 12%. In 2023, public infrastructure projects represented 36-40% (a 1-2% increase) of the aggregate shipments for the companies that reported the information. However, this does not necessarily mean more shipments towards highway projects. For example, in 2023 Vulcan's aggregate shipments for highway projects were 20%, down from 22% in 2022.

	Exerting negative influence on FDOT's costs; monitor.
	Currently stable; not influencing FDOT's costs.
	Exerting positive influence on FDOT's costs.

SUPPLY CHAIN VARIABLES: AGGREGATE

Table 9 provides current status of selected supply chain variables.

Table 9. Aggregate Supply Chain Variables		
	<p>The USGS reported that Florida's crushed stone production rose 1.5% in calendar year 2023. Nationally, production declined 0.6%. Prices from publicly traded companies showed similar trends from previous reports with year-over-year increases up to 16% in the last three months of 2023; volumes were slightly down by as much as 2%. Interviews indicated similar price increases (10-16%) and when possible, they attempt to pass off some of the costs. For calendar year 2024, expectations continue having a moderation in price increases. As mentioned in the concrete supply chain table, Cemex is applying to develop an aggregates terminal at the Port of Tampa.</p>	
	<p>Access to land with suitable deposits is key to cost-effective material extraction for FDOT Aggregate. Environmental Resource Permits issued in 2024 by DEP have been for modifications of existing permits/mines, not for new mines. A report from Bloomberg in March 2024 indicated that the Mexican government is expected to take over Vulcan's quarry in Mexico. The industry expects minimal changes in 2024 as it is an election year. However, a recent ruling on Florida's 404 permitting program is expected to cause more delays. As a result, uncertainty will continue.</p>	
	<p>Rail is the primary transportation for aggregates from Georgia, and from Lake Belt to Central and Northeast Florida. In Q4 of calendar year 2023, tons and revenues of aggregate products shipped by CSX increased by 3% and 13% year-over-year, respectively. This indicates a larger price increase compared to the previous quarter. However, these statistics are for CSX's whole system as location specific data is not available. Interviews indicated issues with rail service. Anecdotally, one producer highlighted that "they are down to one turn a month from their quarries to terminals; when a few years ago they we could easily get twice a month". These issues have sometimes caused project bottlenecks. As mentioned elsewhere in the report, the reopening of Seminole Gulf Railway's line to Fort Myers will allow aggregate products to be shipped again, which reduces costs for producers in the area.</p>	
	<p>Except for a significant increase in February 2024, diesel prices continued decreasing. In April 2024, diesel prices are at \$2.81, down 2% year-over-year. Year-to-date, they were on average 9% lower. While interviews highlighted trucking as an issue, they didn't indicate that they have worsened.</p>	
	<p>Producers continue reporting issues with finding and retaining skilled labor, although some think it is about the same, while others think it has worsened. While many publicly traded companies lost workers in 2023, a few annual reports showed a 6-10% increase. As mentioned elsewhere in the report, statewide construction employment growth rose in March 2024 and increases in hourly wages seemed to have moderated.</p>	
	<p>Two new mines (one in Florida, the other in Kentucky) were approved in FDOT's approved producer list. Additionally, one in Tampa was inactivated and three are under review (two in Florida and one in Spain). In February 2024, Martin Marietta announced the acquisition of 20 aggregate operations in the U.S. from Blue Water Industries. Only one of those is in Florida (Miami).</p>	
	<p>While federal interest rates are still expected to be cut in 2024, industry now expects this to happen later in the year and it could be less than the three cuts forecasted in March's meeting. Producers indicated issues with getting equipment parts on time.</p>	

Aggregate Base-Course Forecast

Regression modeling was performed to estimate aggregate base costs using pay item data, Work Program funding, and supply chain variables and other macroeconomic indicators. **Table 10** provides the forecast average price for aggregate base.

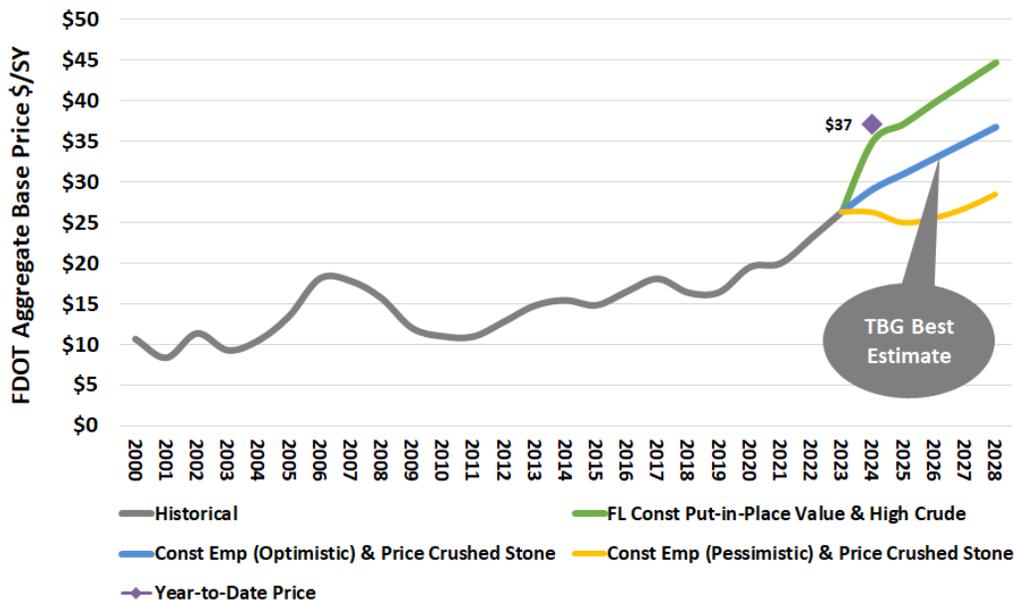
Fiscal Year	2023	2024	2025	2026	2027	2028
Price Aggregate Base, \$/SY	\$26.32	\$29.14	\$31.04	\$32.97	\$34.91	\$36.84
Annual Percent Change, %	13.9%	10.7%	6.5%	6.2%	5.9%	5.6%

Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

Updating the forecast model with current input cost projections results in a 4.8% adjustment to previous forecasts. Through the third quarter of FY 2024, the weighted average price of aggregate base continues to exceed modeled forecasts at \$46 per square yard due to one extremely high-cost, high-quantity bid from September 2023. Excluding this bid, the FY 2024 year-to-date weighted average price falls to \$37 per square yard, still about \$8 higher than the best estimate forecast for FY 2024. Prices may moderate during the final quarter of FY 2024, but estimates will need to continue adapting to much higher costs.

The best estimate model considers construction employment growth and statewide stone pricing, supporting a steep increase in prices through FY 2028 (**Figure 16**). The upper bound includes the value of Florida construction put-in-place and high energy costs, resulting in prices topping \$40 per square yard in the latter half of the five-year work program. The lower bound would yield lower aggregate base prices, but they would remain at or above FY 2023 levels; pre-pandemic levels are not expected to be achieved going forward.

Figure 16. FDOT Aggregate Base Price, FY 2024 Q3 Forecast



Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.
(Variable descriptions available in the **Appendix**.)

EARTHWORK

Summary

- Truck driver availability and retention issues continued to impact producers during the quarter. Florida trucking employment declined compared to last quarter, which was boosted by holiday shipping demand.
- Statewide diesel prices decreased 2% in April 2024 compared to the previous month; prices were down 2% year-over-year.
- Earthmoving equipment and truck costs continue to decline across markets. However, driver retention and wage increases have not abated.

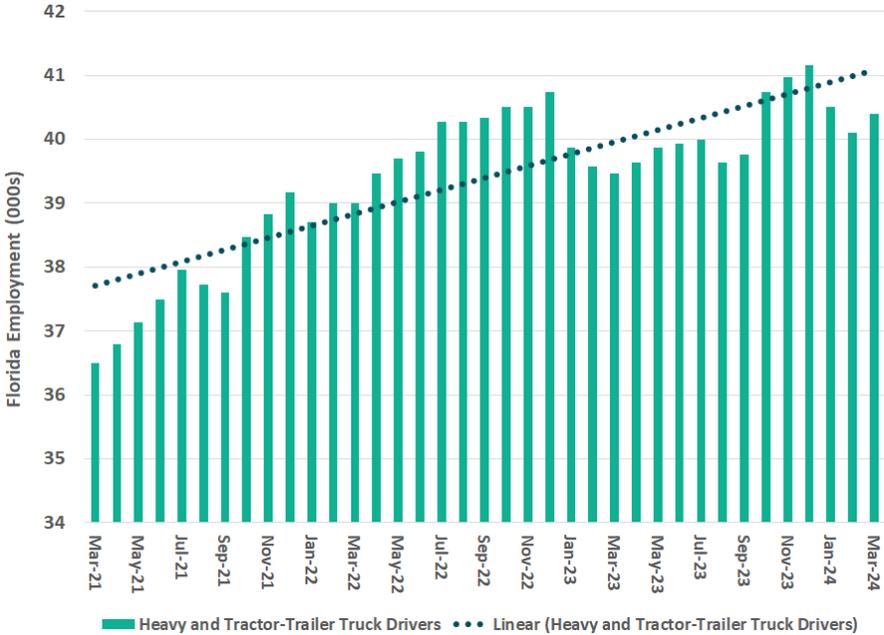
FDOT Impacts

- According to FDOT earthwork bid data, the year-to-date FY 2024 weighted average price was up 7.2% through March compared to last quarter.
- The fiscal year-end 2024 price forecast is essentially flat with the previous quarter.
- Including one high unit-cost project from September 2023 would raise the year-to-date weighted average price by a staggering 56%.

General Trends

Overall truck transportation employment declined in the third quarter of FY 2024 compared to the previous quarter. Compared to the same month last year, however, employment was still up 2% in March 2024 (Figure 17). Diesel fuel prices remained relatively stable this quarter. According to Freight Transportation Research (FTR), specialized trailer volumes for Florida have been anywhere from 20% to 100% above normal since February. Rates have reportedly been normal.

Figure 17. Florida Truck Transportation and Driver Employment, 2021 – 2024



Source: TBG work product, BLS.

Equipment and Trucking

The April 2024 Equipment Report released by Rouse analyzes price trends of different construction equipment in the U.S. The report includes a Fair Market Value (FMV) Index and Forced Liquidation Value (FLV) Index (equipment sold at auctions) for heavy and light & medium Earthmoving equipment. Prices for heavy equipment have declined, but are more stable in both FMV and at auction than light & medium, which have had constant declines in recent months, presumably reflecting a slower housing market. For truck tractors, both FMV and FLV indexes continued declining. While articulated trucks have been relatively stable at fair market, there were significant price declines at auction with a slight recovery in March.

Earthwork Forecast

Regression modeling was performed to estimate Earthwork costs using pay item data, supply chain variables and other macroeconomic indicators. **Table 11** provides the forecast average price for earthwork. **Figure 18** shows the output of potential price models and the scenario identified as best estimate for earthwork.

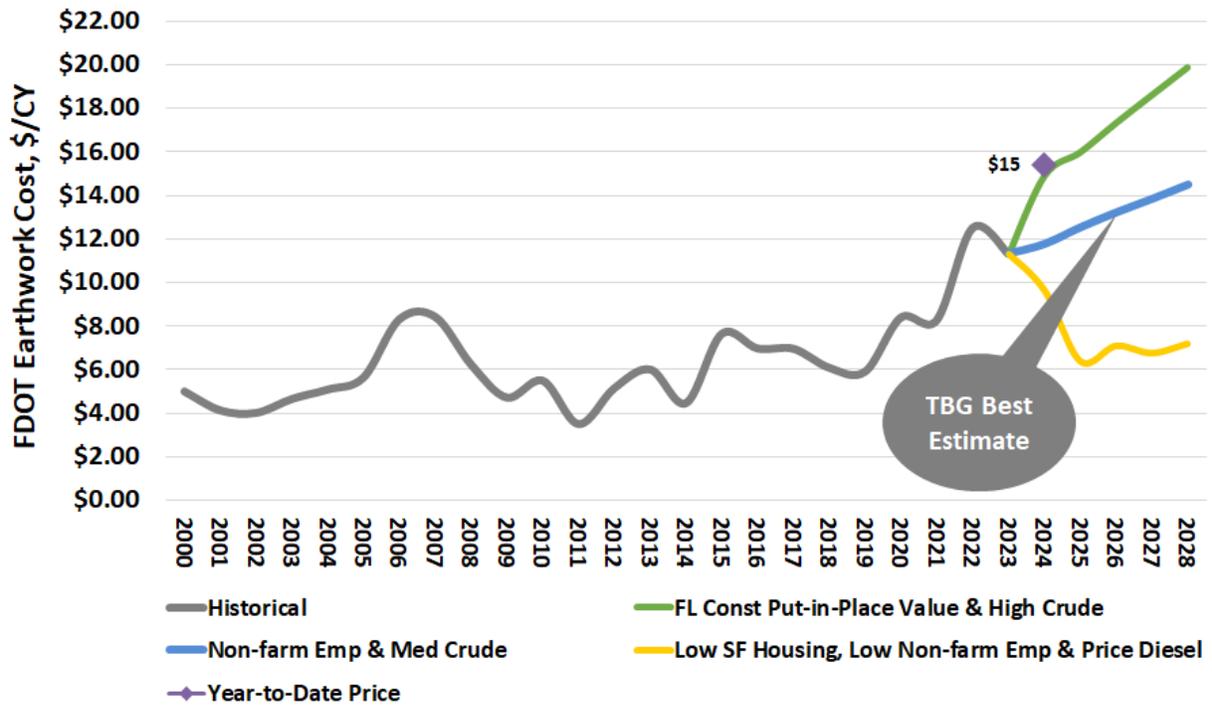
Current earthwork forecasts were relatively unchanged compared to previous estimates, with updated FDOT bid and industry data. The same situation as described in the aggregate base forecast applies to earthwork, with one extremely high-cost, high-quantity bid from September 2023 heavily influencing the year-to-date weighted average price. Excluding this bid, the FY 2024 weighted average earthwork price declines from \$24 per square yard to \$15.

Revised employment and fuel forecasts show the best estimate rising close to year-to-date prices within the five-year work program. However, the upper bound forecast most closely follows the path of current pricing, given forecasted Florida construction put-in-place values and higher energy costs. In the lower bound, recessionary conditions would be necessary to drive down costs back to pre-pandemic levels.

Fiscal Year	2023	2024	2025	2026	2027	2028
Price Earthwork, \$/CY	\$11.31	\$11.75	\$12.52	\$13.20	\$13.83	\$14.48
Annual Percent Change, %	-9.5%	3.9%	6.5%	5.5%	4.7%	4.7%

Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.

Figure 18. FDOT Earthwork Price Estimates, FY 2024 Q3 Forecast



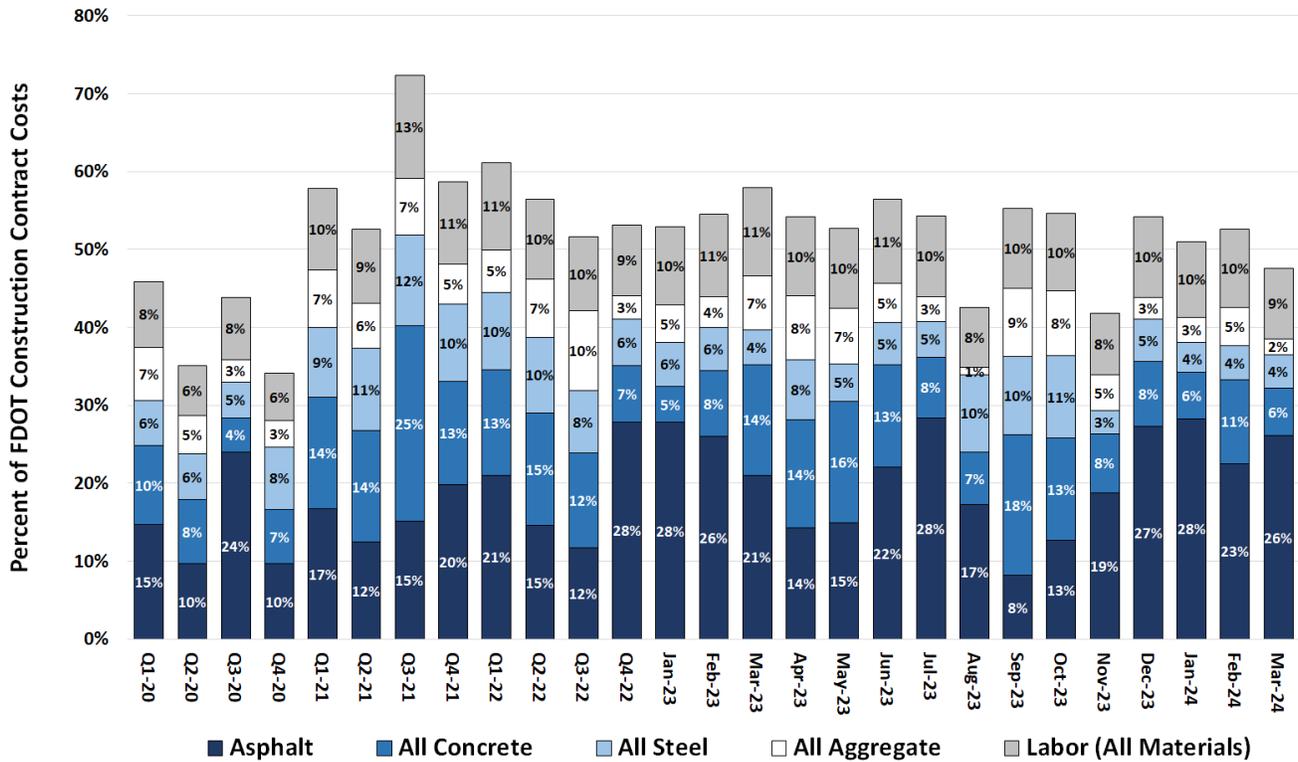
Source: TBG calculated from data provided by FDOT Estimates Office, various industry sources.
 (Variable descriptions available in the **Appendix**.)

APPENDIX A: UNDERLYING ECONOMIC CONDITIONS

FDOT Cost Composition

Tracking FDOT’s costs by month shows how the cost composition may shift depending on project type, scheduling, and material costs (**Figure A- 1**). Asphalt costs were the largest share of total costs over the last few months according to preliminary data, similar to the pattern seen at this time last year. Concrete and steel costs as a share of total costs also mirrored historical norms over the same period. Aggregate costs as a share of total costs were low in March compared to previous periods according to the latest bid data. Labor costs remain stable, having reached a new normal post-pandemic.

Figure A- 1. Monthly Cost Composition

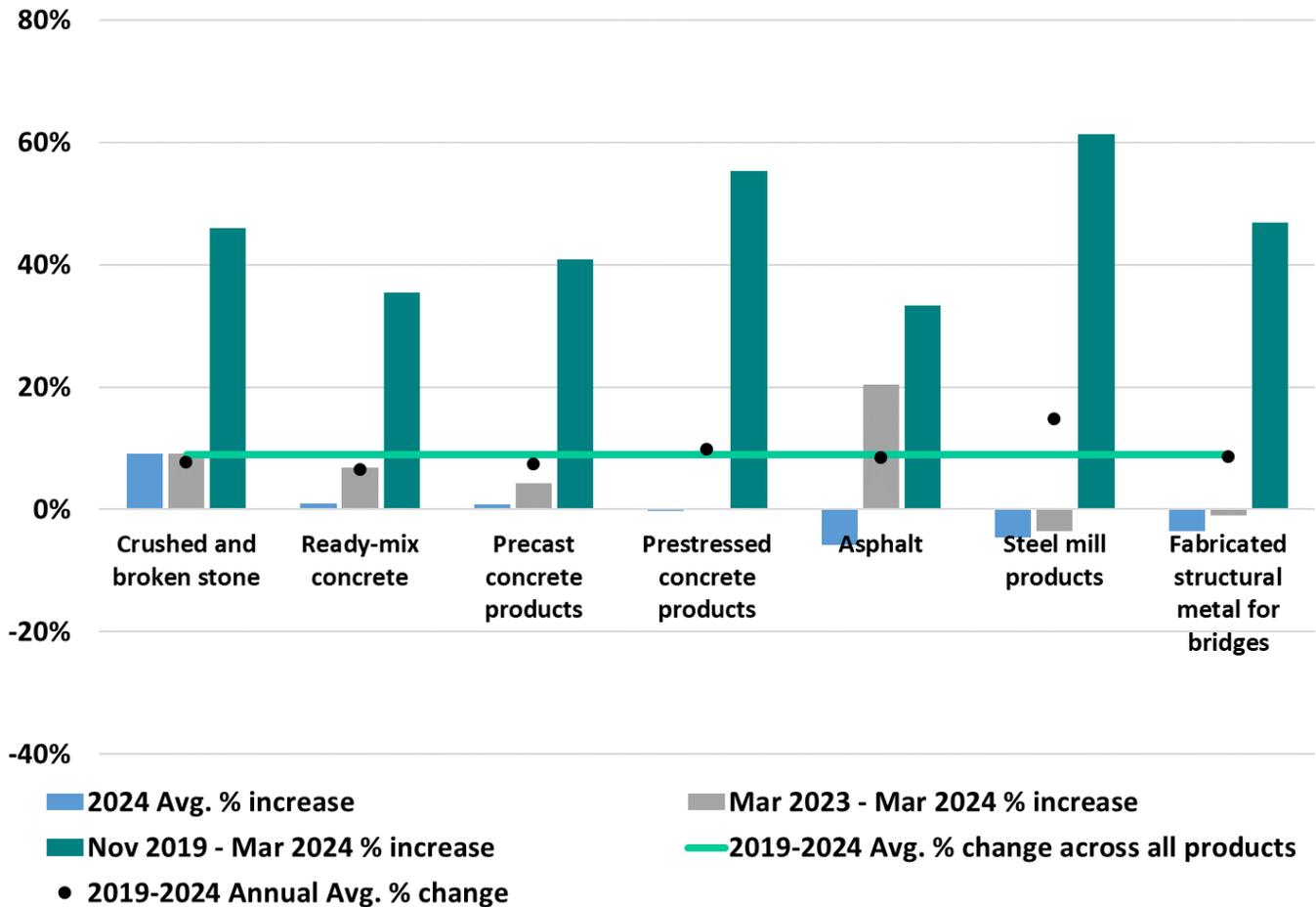


Source: TBG calculated from data provided by FDOT Estimates Office.

U.S. Inflation

Another measure of inflation for the construction industry is the Bureau of Labor Statistics (BLS) Producer Price Index (PPI) by commodity type. **Figure A- 2** illustrates select PPI measures in the U.S. for relevant commodity types. Nationally, a 2.7% average increase was seen across most commodities in calendar year 2024 (blue commodity bars in the graph), with crushed and broken stone seeing the largest change (9.1%). Structural metal for bridges declined 5.9% over the same period. Year-over-year changes are indicated by the grey commodity bars in the graph, with asphalt (refinery production), crushed stone, ready-mix, and precast prices increasing by 20.3%, 9.1%, 6.8%, 4.3%, and 0.3% in the U.S. with prestressed concrete seeing no change, while steel mill products and structural metal for bridges declined by 3.6% and 1%, respectively. ⁴

Figure A- 2. Producer Price Index Percent Change by Commodity



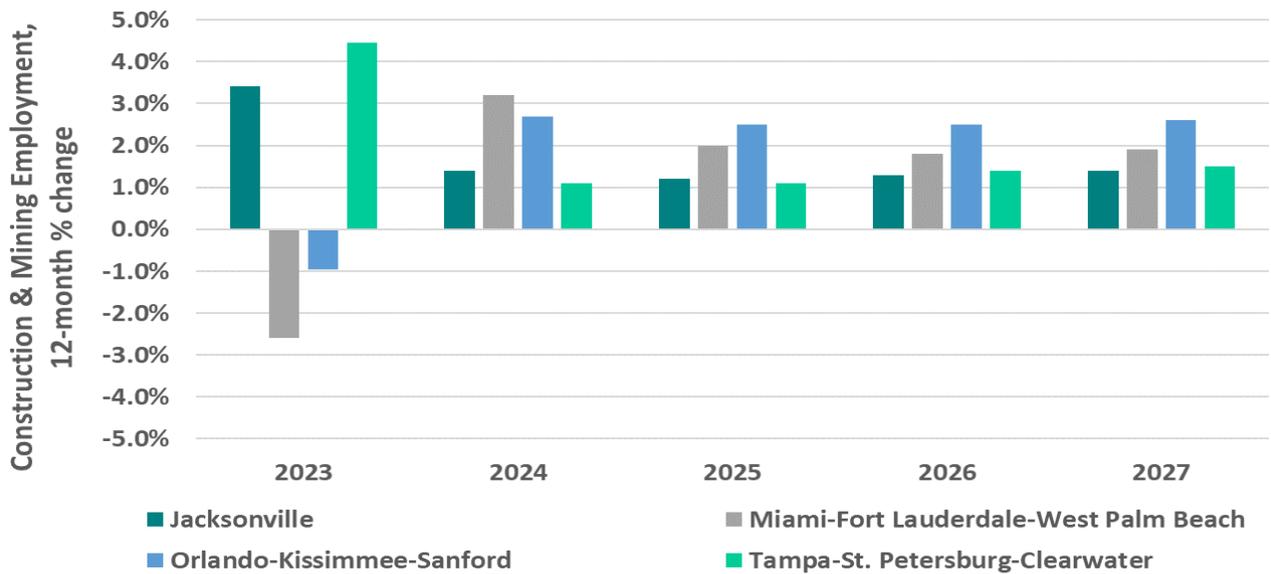
Source: BLS (Producer Price Index, not seasonally adjusted); TBG Work Product.

⁴ As a processed good for intermediate demand; i.e. asphalt used at refineries as an input by producers and not the final prices seen by FDOT.

Construction Employment Forecast

According to the Institute for Economic Forecasting’s (IEF) most recent Florida & Metro Forecast, statewide construction employment grew by 1.8% in 2023, even with significant declines in two major markets. IEF expects construction employment growth to improve over the next four years: 2024 by 3.1%, 2025 by 1.3%, 2026 by 1.1% and 1.2% in 2027. At the metro level, IEF projects construction employment growth in most major markets through 2027 (**Figure A- 3**).

Figure A- 3. Historical and Forecasted Changes in Employment in Major Florida Markets, 2023 - 2027

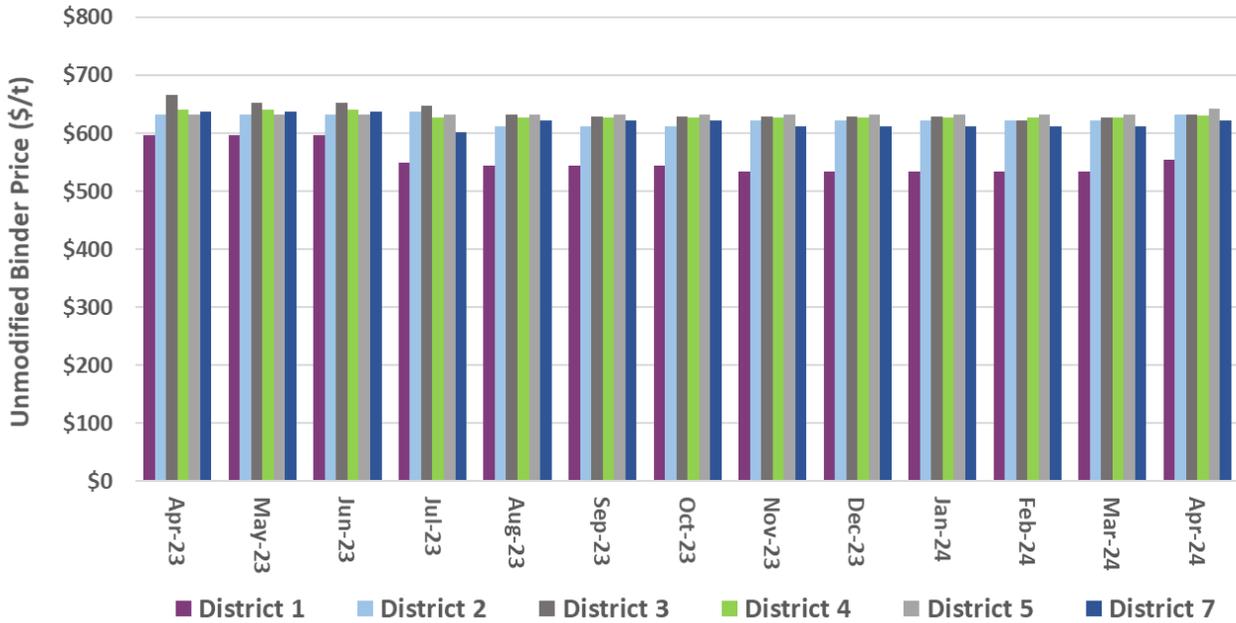


Source: UCF Institute for Economic Forecasting Winter 2024 Florida & Metro Forecast.

Binder Prices by District

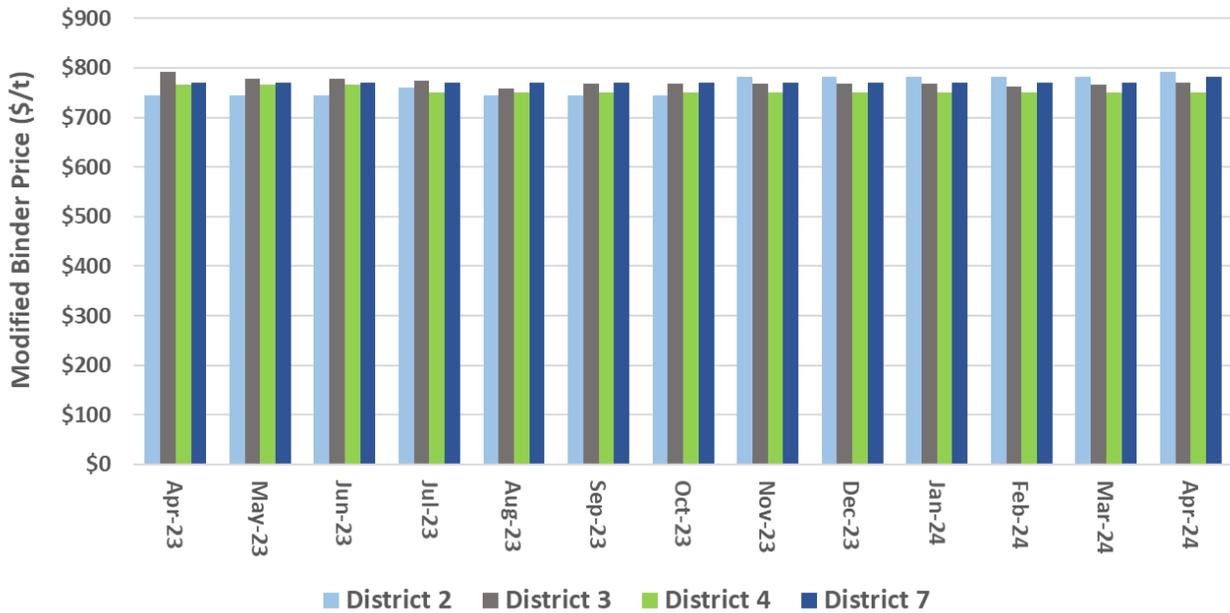
Where available, the average prices for unmodified (**Figure A- 4**) and modified (**Figure A- 5**) binder were calculated from monthly terminal price quotes at the district level. Unmodified binder is the average of PG 52-28 and PG 58-22 prices, while modified binder is a quote for the price of PG 76-22 (PMA) in the dataset. Year-over-year, unmodified binder prices rose 2% in District 5, had no change in District 2, and fell in the other districts between 2% and 7%. For the most part, prices have been flat or showed little changes since August 2023. Modified binder prices showed District 7 and 2 rising 1% and 6%, with prices decreasing in Districts 3 and 4 by 2% and 3%, respectively. Of note, since September 2023 modified binder has been imported from Alabama to District 3.

Figure A- 4. Unmodified Binder Price by District



Source: FDOT, TBG Work Product (D6 terminals did not report data).

Figure A- 5. Modified Binder Price by District



Source: FDOT, TBG Work Product (D1, D5, and D6 terminals did not report data).

APPENDIX B: FORECAST DETAILS

A description of the variables used in forecasting are provided in **Table B- 1**.

Table B- 1. Forecast Variable Descriptions	
Variable Reference	Description
Const Emp	Baseline FL construction employment forecast.
Constrained Emp	Lower (less optimistic) FL construction employment forecast.
Constrained SF Housing	Lower (less optimistic) FL Single-Family housing starts forecast.
FL Cement Price	Average price of cement in Florida.
FL Const Put-in-Place Value	Forecasted value of private Florida construction put-in-place.
GSP	FL Gross State Product.
Historical	Historical pricing or quantity.
Housing Starts	FL housing starts.
Indicator WP>\$4B	Indicator variable (0,1) for Work Program years with more than \$4 billion in planned work.
Low/Med/High Crude	Average crude price (low, medium, or high forecast).
Major Event	Major geo-political, health, or weather-related events that strongly affect market forces; i.e. 9/11, the Great Recession, Hurricane Katrina, the COVID-19 pandemic, and the war in Ukraine.
Non-farm Emp	FL Non-Farm employment.
Price Binder	Average price of HMA binder (PG-76 & higher).
Price Coal	Average price of coal.
Price Diesel	Average diesel price.
Price Iron Ore	Average price of iron ore.
Price Stone	Average price of crushed stone.
Price Zinc	Average price of crushed stone.
SF Housing	FL Single-Family housing starts.
US Cement Price	Average price of cement in the U.S.
WP	FDOT Five-Year Work Program.
YTD	Year-to-Date.

Pay items that are partially or wholly used in the analysis are listed in **Appendix B** of the FDOT SRES [FY 2022-23 Final Report](#)⁵, starting on page 91. It should be noted that the lists may include some pay items that are no longer in use by FDOT, or are not represented in the lettings data every year, but are retained for historical record.

⁵ Main page: <https://www.fdot.gov/programmanagement/estimates/documents/sresreports>

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