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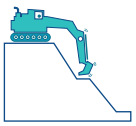
FDOT

FISCAL YEAR 23/24 FINAL REPORT

STRATEGIC RESOURCE EVALUATION STUDY HIGHWAY CONSTRUCTION MATERIALS

CONTRACT BEC18

OVERVIEW: **FLORIDA'S HIGHWAY CONSTRUCTION MATERIALS**

Construction Material	Status
 **ASPHALT**	**Asphalt bids increased another 9% in Fiscal Year 2023-24 (FY 2024), continuing another year of record prices.** Despite lower and more stable crude, binder and polymer prices, factors including a difficult workforce and high infrastructure funding continue to support high prices. The outlook is for up to two years of additional increases, before flattening somewhat; reports of cancelled City and County-funded projects due to high prices are increasing.
 **CONCRETE**	**Structural concrete prices increased another 16% this year after increasing 46% last year.** Barring a significant macroeconomic downturn, high prices are here to stay, driven by higher cement costs despite new kiln capacity and fly ash alternatives production. Publicly traded companies expect continued double-digit growth and comfortable – for them – price increases. Continued demand for infrastructure and resiliency projects has offset losses in the housing and commercial sectors.
 **STEEL**	**Structural steel continued to show volatility this year, while reinforcing steel declined but not to pre-pandemic levels.** Large projects front-loaded in the early years of the work program are likely to support higher structural steel prices in the first year or two but flattening thereafter, while reinforcing steel suppliers are not expected to enjoy the same pricing power due to declines in other (non-infrastructure) sectors. Producers report that the Ukraine War continues to affect supply chains and adjusting material sources. Declining mill production has continued to exacerbate fabricator workflows and scheduling.
 **AGGREGATE**	**FDOT has experienced double digit price increases, but suppliers report some moderation in pricing this year.** Suppliers report better, but continued, logistics issues with rail transport. Industry expects continued high demand, supporting higher prices in the early years of the work program before plateauing. Macroeconomic conditions could dampen this cycle, but industry has been successful so far in maintaining very high prices.
 **EARTHWORK**	**Earthwork bids were double the historical average in FY 2024, supported by increased demand, skilled labor constraints, and other input costs.** Record high infrastructure spending continues to support high prices, despite slowdowns in housing and fuel cost declines that traditionally would have lowered earthwork bids. Recruiting and retaining skilled labor has been difficult; wages are expected to remain high.

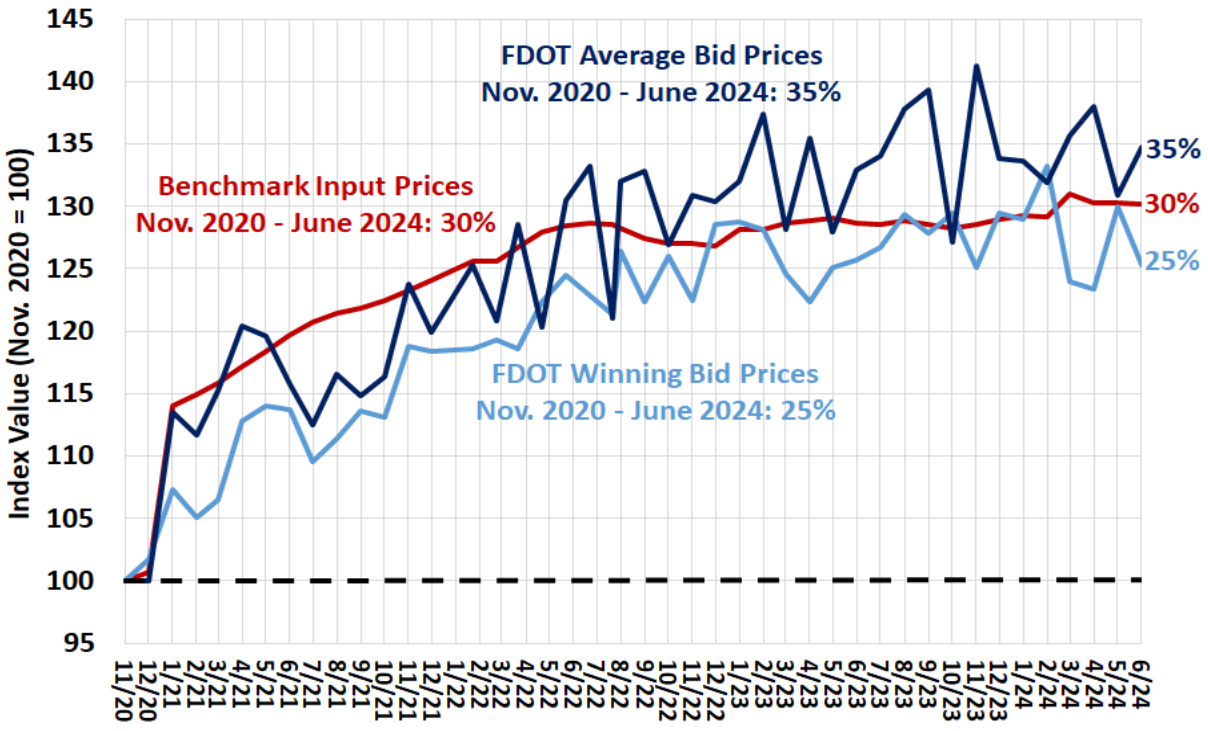
FDOT Cost Index

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.

FDOT winning and average contractor bids and industry benchmark input prices converged in May 2024[1]. The industry benchmark remained 30% higher than November 2020 levels through June 2024. According to preliminary data, FDOT winning bids were 25% higher than November 2020 in June 2024 in comparison. Preliminary average bid prices remained elevated in June 2024 at 35% higher than pre-pandemic levels. The gap between *average* bid prices (calculated from all bids received) and *winning* (awarded) bid prices narrowed significantly in May 2024, indicating less competitive bidding activity. The average gap between all bids and awarded bids over the last year was between 5-9% each quarter.

Monthly cost composition by material is provided in **Appendix A**, along with an update on the Bureau of Labor Statistics (BLS) Producer Price Index (PPI).

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, TBG Work Product.

[1] with revised month-end data

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

Prepared in cooperation with the State of Florida Department of Transportation.

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INTRODUCTION

The Florida Department of Transportation 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:

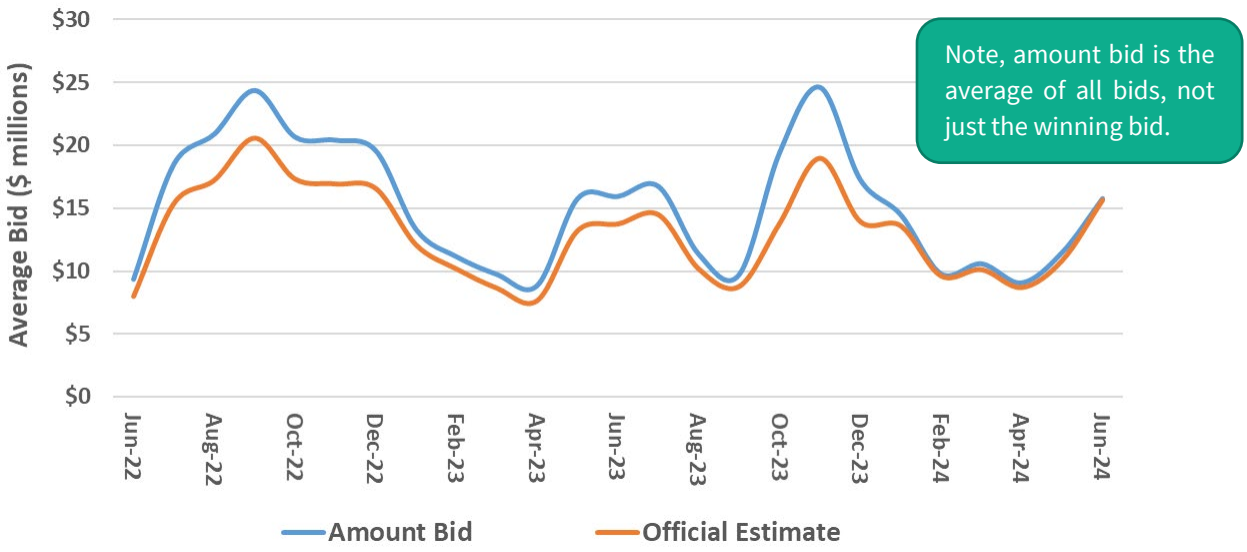
- **General Economic Landscape** for highway construction materials,
- **Work Program Work Mix** allocation and materials quantities estimates,
- **Material-specific findings** for supply chain variables, including
    - raw material sources,
    - existing and likely future transport and distribution 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 fourth quarter of Fiscal Year 2023-24 (FY 2024), the average deviation of all bids from the mean of all official preliminary estimates was 3%; slightly lower than the previous quarter (**Figure 2**). The gap between the bids and the official estimates narrowed throughout the fiscal year. Excluding contracts exceeding an official estimate of $100 million from the analysis finds similar results, with bids being 5% higher than the official estimate. **Table 1** illustrates the averages by District. Differences in district-level percentages compared to overall statewide averages are driven by the total amount of dollars for both the official estimate and bids, as well as the total number of bids.

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



Source: FDOT; TBG Work Product.

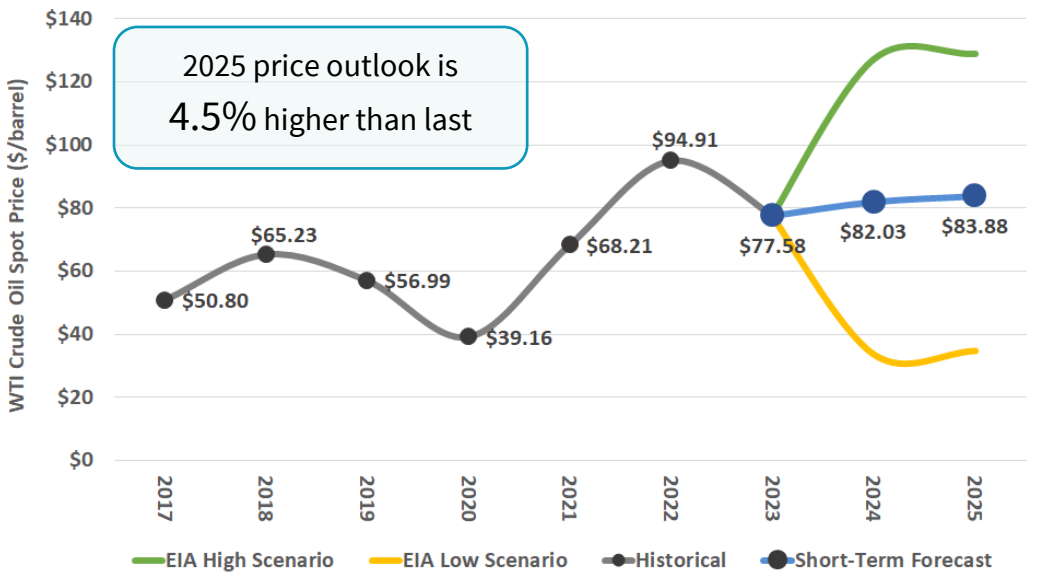
Table 1. Average Bid vs. Official Estimate, 3-month Rolling Average by District

FY	District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8
1Q 2023	18%	0%	12%	7%	5%	24%	24%	33%
2Q 2023	1%	43%	-8%	5%	9%	6%	24%	-1%
3Q 2023	11%	23%	4%	13%	1%	5%	6%	17%
4Q 2023	24%	28%	-1%	20%	11%	8%	14%	5%
1Q 2024	20%	5%	7%	16%	15%	13%	18%	-
2Q 2024	2%	-4%	4%	10%	0%	77%	6%	7%
3Q 2024	0%	-3%	-1%	3%	0%	10%	6%	10%
4Q 2024	7%	15%	-3%	4%	4%	18%	0%	-1%

Source: FDOT; TBG Work Product

Energy Prices

Figure 3. Monthly Crude Oil Price, 2017 to 2025

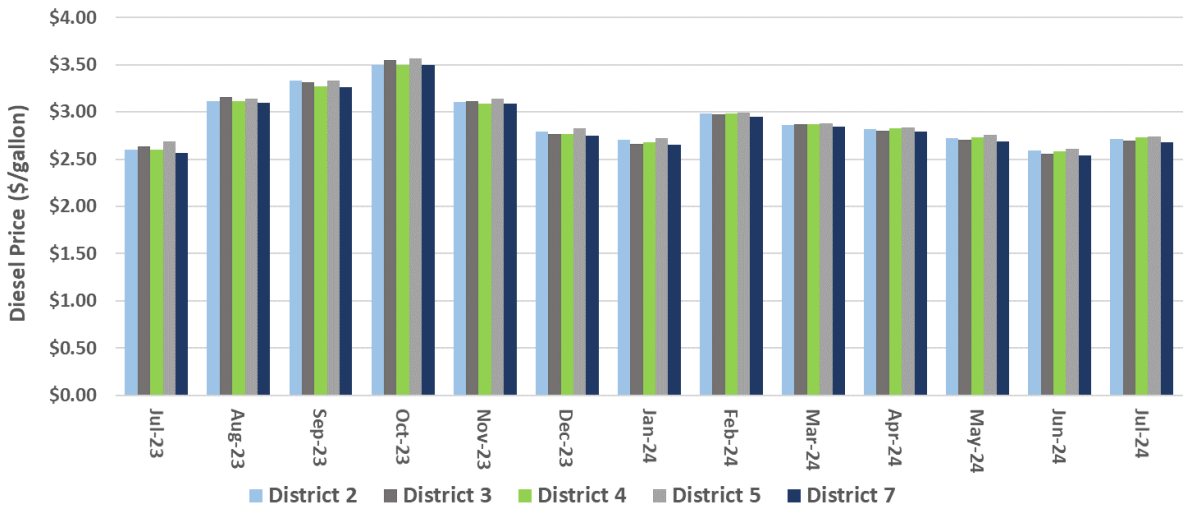


Source: EIA Annual Energy Outlook and Short-term Forecast.

The U.S. Energy Information Administration (EIA) July 2024 Short-term Outlook forecast of calendar year-end 2024 crude oil prices fell to $82.03 per barrel, which is little changed from the April report. Currently, crude oil prices are up 12% in July 2024, year-over-year. For 2025, EIA now forecasts crude oil prices at $83.88 per barrel (up 4.5%). However, ongoing geopolitical conflicts could disrupt global oil prices at any time, which may lead to a worst case/high range scenario (upper bound in **Figure 3**).

Diesel price quotes from suppliers at terminals around the state picked up throughout the year. On average, prices in July 2024 were $2.71 per gallon, which is a 4% increase year-over-year and a 5% increase month-over-month (**Figure 4**). In July 2024, prices in all districts ranged between $2.68 and $2.74 per gallon. Statewide, the Fuel and Bituminous Average Price Index for diesel increased 1% in 2024 through July and 3% year-over-year.

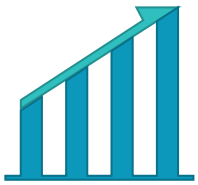
Figure 4. Average Diesel Price by District



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

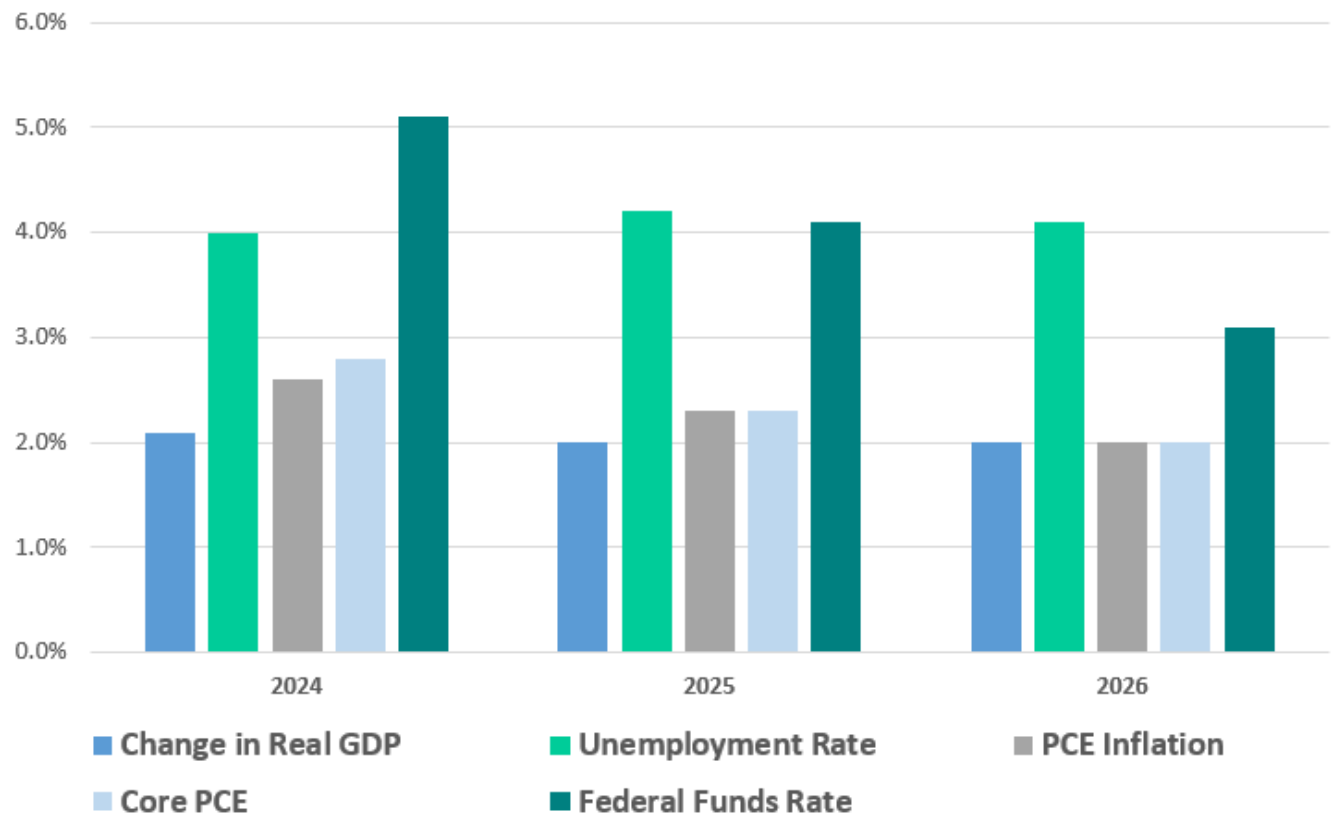
Late in 2023, Belvedere Terminals announced that they began planning the construction of three fuel terminals in Jacksonville, Ormond Beach, and Ft. Pierce, plus seven more around the state in the next five years. News reports indicate that the company is looking for a new site in Jacksonville and Florida Department of Environmental Protection (FDEP) records show facilities in Fort Pierce and Ormond Beach currently being built. The additional supply could potentially increase competition and lower prices in the long run.

Inflation



The Federal Open Market Committee (FOMC) released revised economic projections in June 2024, leaving Gross Domestic Product (GDP) estimates unchanged from March. Unemployment was also unchanged for 2024, with marginal increases for 2025 and 2026. Similarly, inflation estimates are now estimated to be slightly higher at 2.6%, up from 2.4% in March (**Figure 5**).

Figure 5. FOMC Economic Projections, June 2024



Source: Economic Projections were provided by Federal Reserve Board members and Federal Reserve Bank Presidents.

Legislation and Regulations

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

DAVIS-BACON ACT

In June 2024, a Federal judge temporarily blocked three provisions issued by the Department of Labor in October 2023 that expanded the coverage of the Davis-Bacon Act. The provisions challenged by the Associated General Contractors of America (AGC) are in relation to the expansion of coverage to truck drivers, material suppliers, and operations of law provisions – which relate to when the requirements are applicable to construction contracts. This will continue until the case is settled.

CHEVRON RULING

In June 2024, the Supreme Court overruled the Chevron doctrine in the Loper Bright Enterprises v. Raimondo case. This limits powers of Federal agencies as previously courts followed agency interpretation of laws if they were reasonable. Industry expects that agencies will now be required to provide more detailed justifications for specific applications of laws. Legal experts expect more legal challenges or agencies trying to rule via memos and guidance rather than rulemakings. In the short term, some uncertainty is expected in environmental impact assessments, but more impact is expected over the next twenty-four months, as potential challenges make their way through the courts.

REPEAL 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. For manufactured products, documentation will need to show proof that the total cost of components is at least 55% domestic to be considered "produced in the United States." The proposed changes won't affect existing iron and steel requirements and as such are expected to have little impact on pricing for those items.

DEFENDING AMERICAN PROPERTY ACT

In May 2024, the Defending American Property Abroad Act was introduced in congress. This bill would impose sanctions to western countries that seize properties owned by American entities. The bill's press release highlights Vulcan's operations in Mexico as an example. No further actions have occurred since its introduction and it's unclear whether it will pass.

MINING SCHOOLS ACT OF 2023

In July 2024 this bill passed in the Senate. The bill would

require the establishment of a grant program to support domestic mining education at four-year public institutions.

DEA PROPOSES TO RECLASSIFY MARIJUANA

In May 2024, the US Drug Enforcement Administration (DEA) proposed to reclassify marijuana from a Schedule I controlled substance to a Schedule III. While it's uncertain what impacts this change would have, it would allow marijuana to be prescribed for medical use at the federal level. Transportation organizations don't support this rule as it could make it more complicated for workers to pass drug tests, as noted in previous reports.

WATER RESOURCES DEVELOPMENT ACT

In July 2024, the House passed the reauthorization of the Water Resources Development Act, which allows the U.S. Army Corps of Engineers (USACE) to complete water infrastructure improvement studies and construction projects across the U.S. The Senate still has to pass the legislation and is expected to do so before year end. These projects indirectly increase competition for resources.

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 FDEP, which has also appealed the judge's ruling. The authority to review permits has transferred to the USACE.

OTHER NEWS

FL SB 674, which requires that government entities require iron or steel products be produced in the U.S. for public works projects went into effect July 1st. The following bills also became law July 1st: FL HB 917 (career and technical education) and FL HB 149 (continuing contracts).

In November 2023, the U.S. Environmental Protection Agency (EPA) proposed a new rule that would require all lead service lines to be replaced with 10 years. This is relevant as it is expected the demand for PVC pipes will increase as a result.

In December 2023 the Department of Defense, General Services Administration, and National Aeronautics and Space Administration issued the final rule that enforces the Biden's Administration 2022 Executive order on Project Labor Agreements (PLA). The final rule requires PLAs for federal construction projects that cost more than $35 million and it went into effect in January 2024.

In April 2024, the U.S. Department of Transportation (DOT) published the final rule for changes to the Disadvantaged Business Enterprise (DBE) program that raises the thresholds and links thresholds to a cost-of-living adjustment annually. The impact is expected to re-qualify a number of firms that had graduated from DBE status.

Production Capacity

Table 2 provides a count of both in-state and out-of-state FDOT Approved Producers for the four primary material types tracked by this analysis. The current inventory of producers was similar to FY 2023 levels or slightly higher for all materials. For context, 2012 counts are shown.

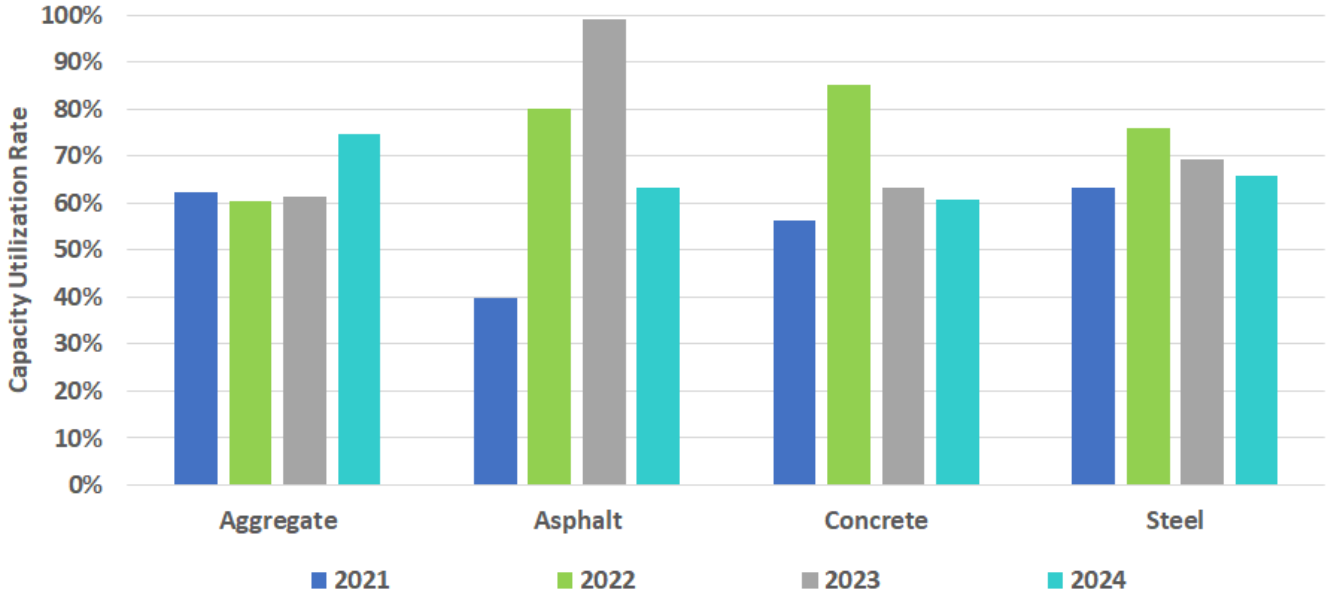
Table 2. Number of Producers by Material

Material Type	2012	2020	2021	2022	2023	2024
Aggregate	188	236	238	243	252	262
Asphalt	109	115	116	120	123	121
Concrete (Ready-mix Plants)	327	486	494	496	519	535
Steel	135	112	113	121	126	133

Source: FDOT Approved Producer List; 2024 as of July.

In the 2024 TBG survey, respondents reported that FDOT-related projects made up about 19% of all aggregate work, 23% of asphalt work, 30% of concrete work, and 19% of steel work. **Figure 6** illustrates the changes in producers' capacity utilization rates. Aggregate utilization rates rose above 70% in 2024, while steel and concrete remained stable between 60-70%. Asphalt capacity utilization was similarly over 60%, consistent with the other material industries (limited responses last year put average capacity utilization close to 100%). Material suppliers expect capacity utilization to ramp up over the next five years by as much as 30%, putting rates close to 100%, or full capacity utilization.

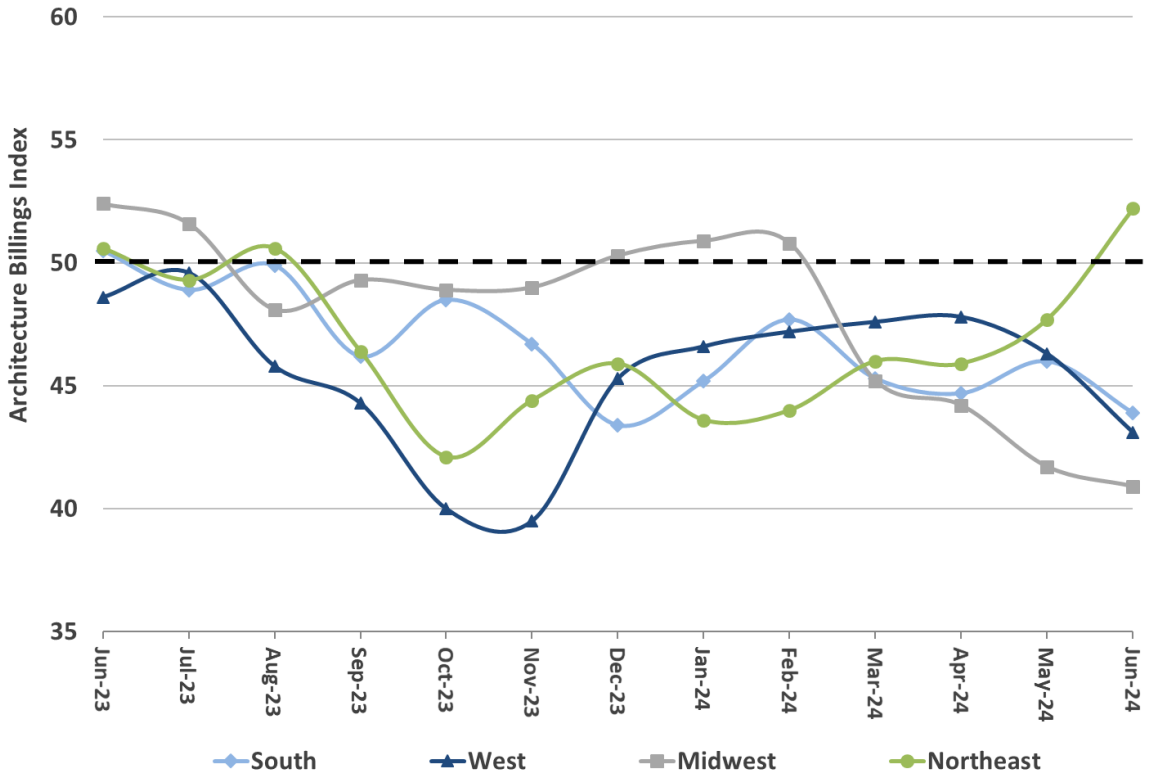
Figure 6. Capacity Utilization Rates



Source: TBG Survey

The Architecture Billings Index (ABI) is a leading indicator for nonresidential construction activity. [2] Nationally, the index was 46.4 in June, indicating that a majority of architecture firms saw decreasing billings at their firms (**Figure 7**). Since June 2023, the ABI has stayed below 50 in most months for all regions.

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



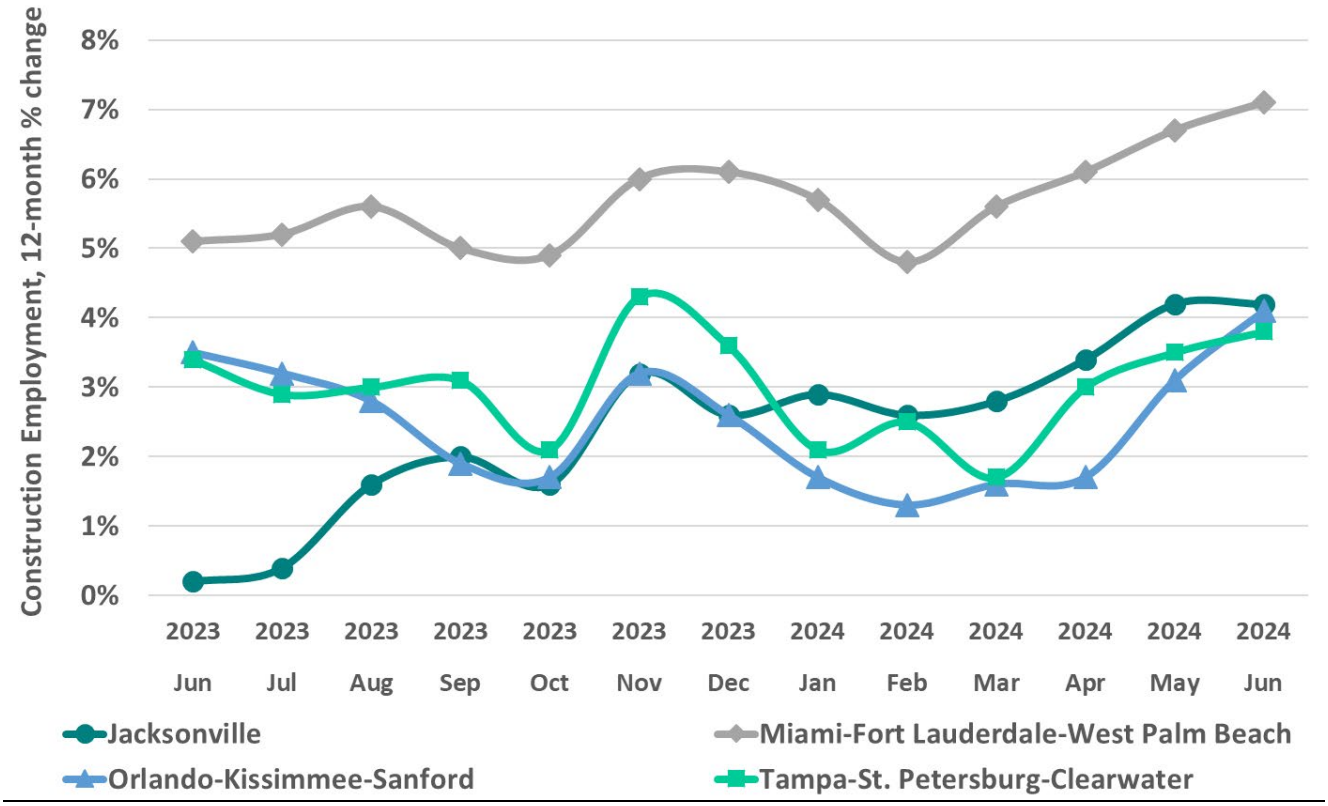
Source: American Institute of Architects, Architecture Billings Index

Construction Employment

Statewide construction employment soared in June 2024 to 4.8% higher than the same month last year (**Figure 8**). However, some metro areas had different growth patterns. Activity in the Miami and Jacksonville metro areas remained high, seeing a respective 4.2% and 7.1% increase compared to 12 months ago. Construction employment in the Tampa and Orlando metro areas also saw an increase from this month last year, but only at a 1.6% and 1.7% rise, respectively. Many industry members report a struggle in finding reliable skilled labor especially as better prospects become available in markets in the north. Several also report the level of competition for labor to be high, leading to low retention of skilled labor and companies being forced to pay higher wages for the same work.

[2] 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.

Figure 8. Changes in Construction Employment in Major Florida Markets, June 2023 – June 2024



Source: Bureau of Labor Statistics.

Additional information on economic conditions is provided in **Appendix A**.

Rail

In June 2024, CSX's train and engine employee counts increased 5% year-over-year with counts fluctuating around 7,900 since January 2024. In regards to operating performance, average terminal dwell time (between May and July 2024) in Jacksonville decreased 8% year-over-year to 18.7 hours and was flat in Waycross, GA to 22.8 hours[3]. The overall system dwell time during the same timeframe rose 6% to 21 hours. Even though dwell times worsened earlier in calendar year 2024, they have improved year-over-year in Jacksonville and Waycross even as 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 feedback from interviews throughout the year, which reported improved year-over-year service, but issues arise occasionally for some.

On September 7th, 2023, the National Surface Transportation Board (NSTB) issued a notice of proposed rulemaking in reciprocal switching for inadequate service issues. The final rule was published in May 2024 and will go into effect on September 4, 2024. The rule allows customers to request a reciprocal

[3] Average amount of time in hours between car arrival to and departure from the yard

switching agreement if a rail carrier service fails to meet the performance standards in three areas: service reliability, service consistency and inadequate local service.

In March 2024, Jacksonville Port Authority's 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. In June 2024, Seaport Manatee approved a grant with FDOT for the phase 1 of the port's mainline rail yard development initiative. Additionally, the port also approved a grant with FDOT for the construction of a rail spur and a loading track by December 2024 as well as expanding rail capacity after that part is completed.

Other news that affected rail in this fiscal year include: Seminole Gulf Railway completed the repairs from hurricane Ian and freight service to Fort Myers resumed earlier in 2024. 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. Additionally, Norfolk Southern and Florida East Coast Railway announced a new service line that will connect South Florida with Charlotte, North Carolina.

WORK PROGRAM: **HIGHWAY CONSTRUCTION**

A summary of FDOT's Five-year Work Program (including P3 projects) by Work Mix Type is shown in **Table 3**. The Work Program totals in fiscal years 2028 and 2029 reflect approximately $1.5 billion (each year) in allocations for Resurfacing and Bridge Repair projects that are not yet programmed at the project level. Estimated Resurfacing and Bridge Repair allocations provided by the FDOT Office of the Work Program and Budget were supplemented to avoid understating 2028 and 2029 total dollars.

Add Lanes construction funding is expected to far exceed $1 billion for each of the next five years of FDOT's work program. Similarly, Resurfacing projects also continue to lead projected allocations from FY 2025 to 2029. Other Work Mix Types follow typical allocations, with Interchange work and New Bridge/Bridge Replace project expenditures round out the top categories of FDOT infrastructure work.

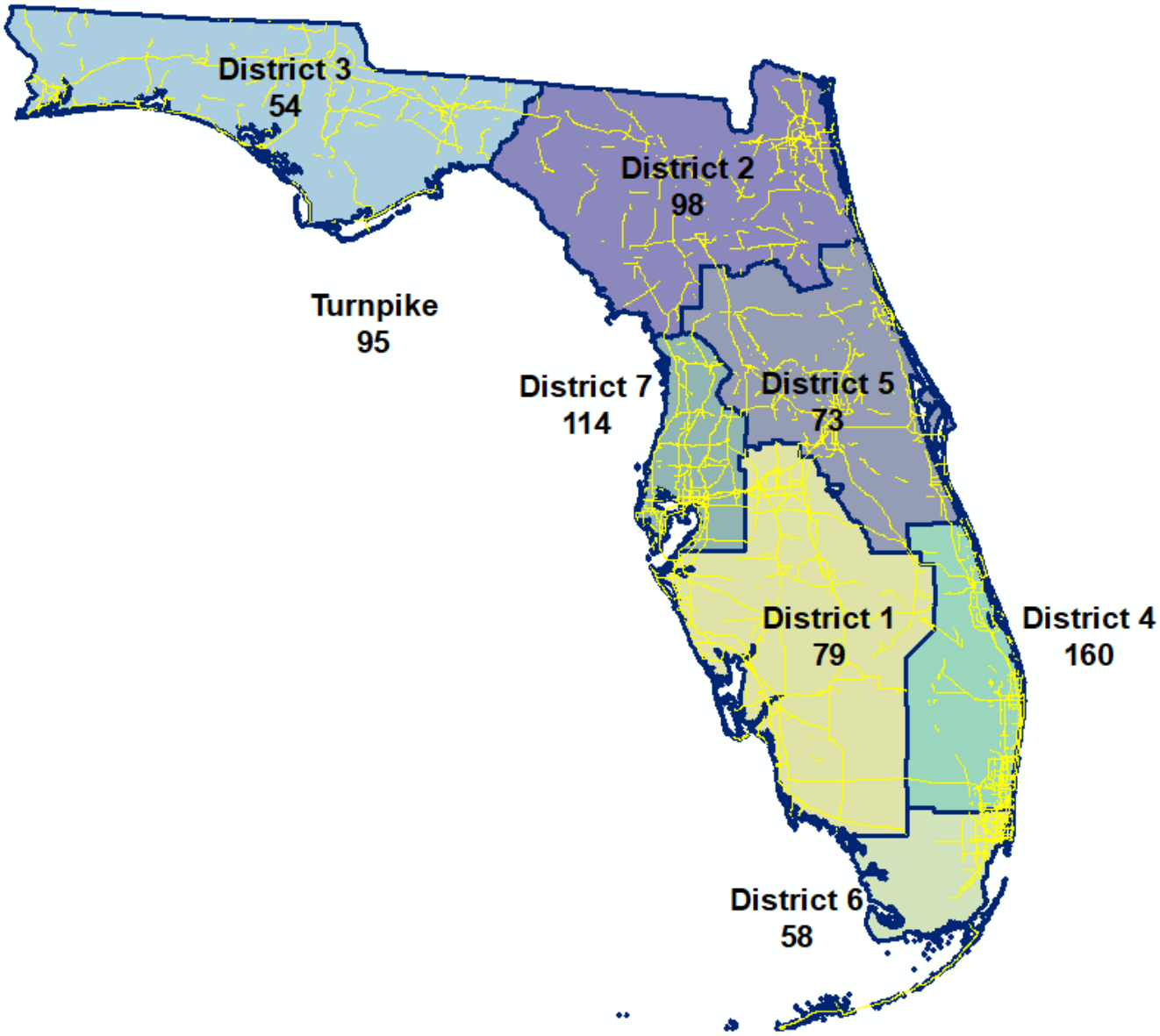
Table 3. Work Program Dollar Allocation by Work Mix Type (in thousands)

Work Mix Type	2025	2026	2027	2028	2029
Add Lanes	$1,692,407	$3,192,479	$1,957,496	$1,912,099	$1,872,992
Bikepath	$109,833	$46,431	$61,053	$66,559	$48,718
Bridge Replace/New	$391,895	$676,207	$669,331	$415,936	$545,499
Drainage	$66,237	$43,090	$78,933	$32,416	$108,545
Guardrail	$31,260	$15,528	$17,143	$14,453	$10,197
Interchange	$352,942	$97,882	$956,983	$314,546	$235,025
Intersection	$132,534	$14,246	$12,568	$112,794	$5,316
ITS	$49,416	$24,512	$32,690	$25,907	$2,335
Landscaping	$91,252	$80,234	$37,963	$41,170	$6,094
Miscellaneous	$144,108	$66,041	$43,235	$25,512	$8,854
New Road	$745,261	$699,310	$95,361	$33,205	$203,464
Resurfacing	$1,818,501	$1,514,685	$1,434,564	$1,197,936	$1,231,832
Rigidpave	$48,041	$45,309	$42,171	$45,996	$25,139
Signing/Pavement Markings	$5,884	$6,977	$1,000	$3,128	$1,000
Toll Plaza	$26,520	$63,666	$38,328	$14,280	$26,650
Traff Ops	$77,304	$53,686	$24,446	$35,065	$11,787
Widen/Resurface	$2,576	$0	$5,764	$1,252	$0
Total Work Program	**$5,785,972**	**$6,640,282**	**$5,509,028**	**$4,292,255**	**$4,343,447**

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

Figure 9 shows projects identified by the FDOT Five-year Work Program and bridge counts derived from Work Program data by district.

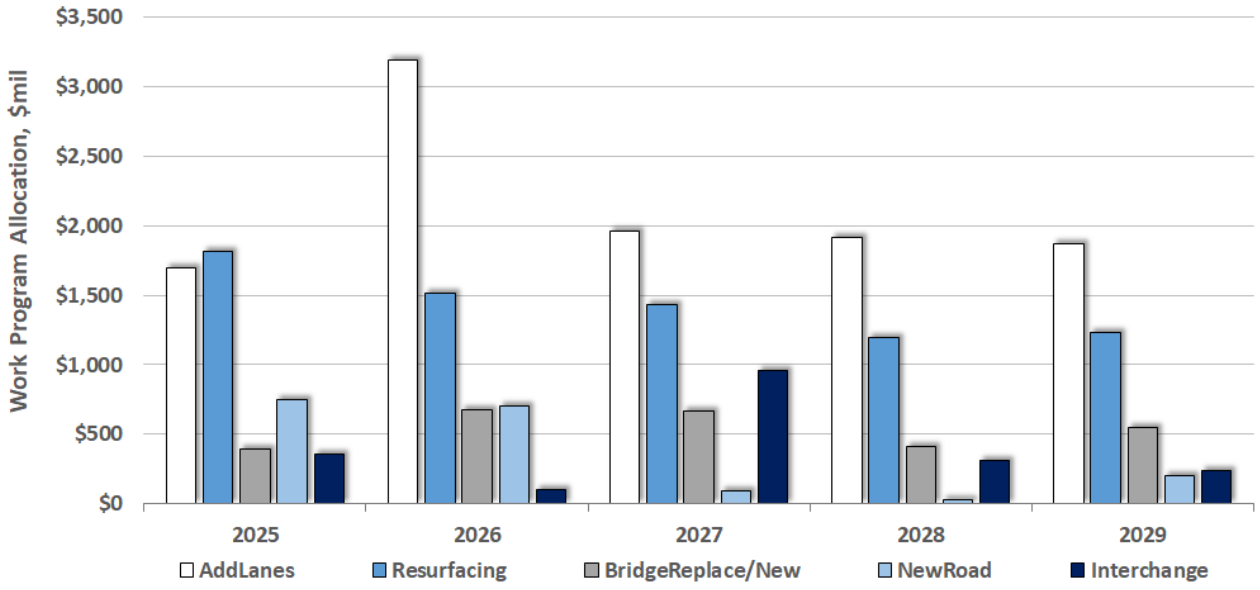
Figure 9. Work Program Bridges Count Estimates by District



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Figure 10 provides a comparison by Work Mix type of allocated work program funds for major projects over the five-year work program, with Resurfacing and Add Lanes projects leading total allocations. About $3.4 billion in Moving Florida Forward funding is currently allocated over the first three years of the work program.

Figure 10. Work Program Allocation by Work Mix Type, Average Allocation > $250 million



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

Estimates of Future Quantities

Materials quantity estimates are provided in **Table 4**. Work Program funding for four large Add Lanes projects (greater than $250 million) were spread evenly between FY 2025 to FY 2029 to avoid potential overestimation of quantities in FY 2025 and underestimation in later years. Without separating the funds, FY 2025 would have been front-loaded at about $6.8 billion.

Table 4. FDOT Future Material Requirements						
Material	**Units**	**2025**	**2026**	**2027**	**2028**	**2029**
FDOT Work Program[4]	$ millions	$5,695	$6,560	$5,471	$4,251	$4,337
Asphalt						
Total Asphalt	000s TN	6,461	6,509	5,446	5,617	4,992
Concrete						
Structural Concrete	000s CY	1,061	1,787	1,749	1,253	1,572
Ancillary Concrete		769	897	814	640	451
Total Concrete		1,830	2,684	2,562	1,893	2,023
Steel						
Reinforcing Steel	TNs	16,661	18,455	14,799	11,057	10,847
Structural Steel		21,718	24,055	19,291	14,413	14,139
Other Steel		88,237	97,735	78,376	58,557	57,447
Total Steel		126,616	140,245	112,466	84,026	82,434
Aggregate						
Base Material/Other Aggregate	000s TN	2,358	3,174	2,384	2,230	2,288
Aggregate for Asphalt[5]		4,826	4,898	4,130	4,275	3,814
Aggregate for Concrete		2,508	3,678	3,511	2,593	2,771
Total Aggregate		9,692	11,750	10,024	9,099	8,873

Source: Calculated by TBG, from FDOT Work Program & Estimates data.

Based on data from current year lab volumes received for testing by FDOT and producer interviews, estimates of likely scenarios for binder demand were prepared. **Table 5** provides a breakdown by type of binder demand for the five-year work program.

Table 5. FDOT Future Requirements of Asphalt Binder					
Asphalt Binder (Tons)	**2025**	**2026**	**2027**	**2028**	**2029**
PG 52-28	36,870	38,573	32,872	31,438	26,298
PG 58-22	36,171	37,868	32,282	30,830	25,757
PG 67-22	4,125	4,155	3,477	3,586	3,187
PG 76-22 (PMA)	192,674	188,385	155,232	163,809	147,785
High Polymer	13,496	16,453	14,962	16,666	15,908

Source: Calculated by TBG, from FDOT Work Program & Estimates and SMO data.

[4] Excluding landscaping. Refer to **Table 3** for landscaping allocations.

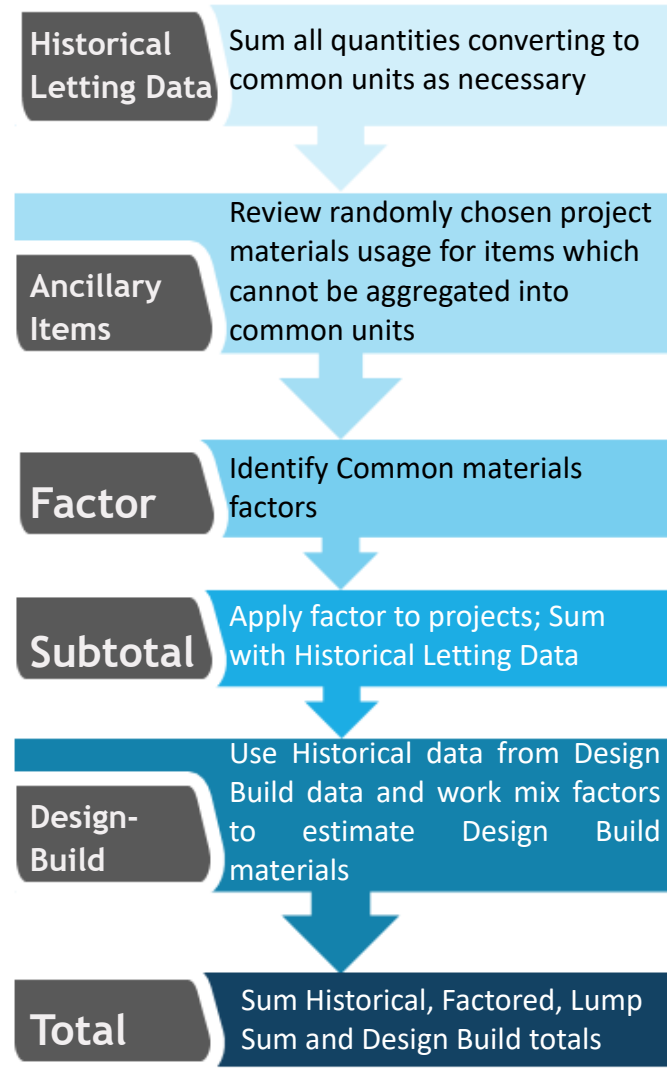
[5] The latest FDOT data shows that reclaimed asphalt pavement (RAP) usage has increased to about 22% of total asphalt as of fiscal year 2024. Based on updated data, the estimated share of aggregate in asphalt is 74% and binder is about 4%.

FDOT Data

Future quantities are estimated for the five-year work program (**Figure 11**). Historical Lettings and Long Range Estimates (LRE) data are received from the FDOT Offices of Work Program and Budget and Forecasting and Project Cost. Historical Lettings data contains pay item level lettings data from July 2009 through June 2024 (FDOT fiscal years 2010 – 2024) and LRE pay-item level data from July 2024 through June 2029 (fiscal years 2025 – 2029). FDOT Work Program and P3 data was received from the Office of Work Program and includes 1,826 unique projects.

Quantities are estimated using a factor approach. The factors were calculated by Balmoral economists and roadway engineers after evaluating several statistical relationships, including historical share of dollars spent for different project types, length of project and other variables depending on work mix type. The factors were originally created in 2007 from pay item data and most recently updated using pay item data through the end of 2024 for the current study.

Figure 11. Basis of Calculations



Raw Five-year Work Program data includes work mix level dollars for Fiscal Years 2025 – 2029. LRE data provided to Balmoral contains 1,400 unique projects. LRE price estimates for 2025 through 2029 were based on project types and used in conjunction with Work Program dollars to estimate future material quantities.

ASPHALT

Summary

- Current pricing appears to be the "new normal," according to FDOT asphalt producers and contractors. However, increased project deferrals and cancellations by public entities and private investors have already been reported due to unaffordable prices, which may serve as a brake on rising prices.
- Binder prices remained stable in FY 2024. Ongoing geopolitical conflicts are a constant threat to crude oil pricing in FY 2025.
- Labor availability has improved, but skilled labor is a challenge, and retention is an issue driven by highly competitive wages, according to producers.
- Producers indicated no issues securing polymer, but the limited number of suppliers remains an issue. In previous years, weather-related shortages at a few sites drove up costs.

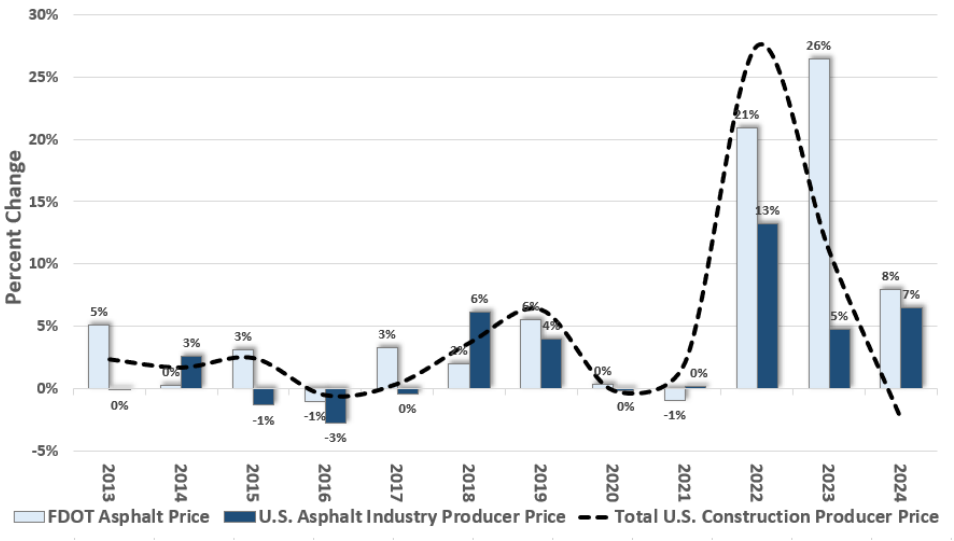
FDOT Impacts

- Year-end Weighted Average Prices for FY 2024 show a 9.4% increase in FDOT Hot Mix Asphalt (HMA) bid price estimates, projecting a slight 1% increase in FY 2025 and a 5% increase in FY 2026, following changes in infrastructure demand.
- Consumption is expected to range from 18-20 million tons, reflecting the downturn in housing and land development but uptick in infrastructure and resilience spending around the state.
- Continued high demand is expected to keep asphalt bids high.
- Work program requirements average 5-6 million tons per year given the current snapshot of project types and funding levels.

General Trends

While national construction producer prices fluctuated between -3% and 6% in most years, they increased drastically in calendar year 2022 before falling over the last two years. FDOT's asphalt prices also increased dramatically in 2022 as well as in 2023. A comparison of changes in producer prices since 2013 as well as FDOT's asphalt price is provided in **Figure 12,** which shows that

Figure 12. Change in Producer Prices, Asphalt Industry

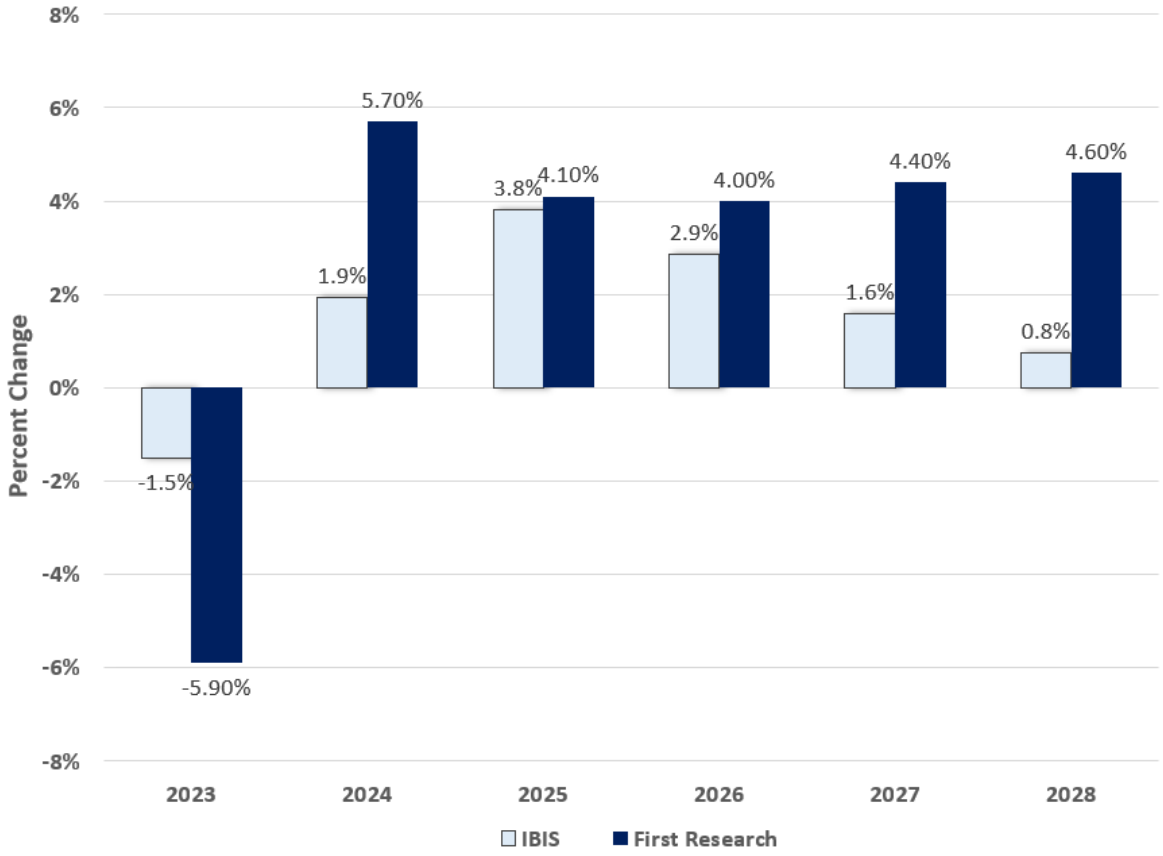


Source: FDOT, U.S. Federal Reserve.

prior to COVID-19, FDOT prices tended to lag but exaggerate national trends, a pattern that appears to still be holding.

Recent revenue projections through calendar year 2028 differ in the growth rate for the asphalt industry. While some expect growth to increase to about 4% and steadily decrease to about 1%, others show growth to be steady, hovering at 4-5% in the next few years (**Figure 13**).

Figure 13. Asphalt Manufacturing Industry Revenue Outlook

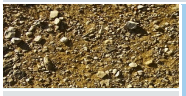
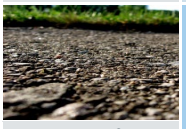
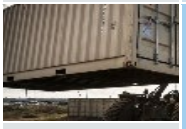


Source: IBISWorld (IBIS) May 2024 Asphalt Manufacturing Report; First Research Industry Report June 2024.

SUPPLY CHAIN VARIABLES: **ASPHALT PAVEMENT MATERIALS**

Table 6 provides the current status of selected variables of interest. **Table 7** provides a summary of relevant variables that have been found in the past to influence FDOT's costs at a statistically significant level from 2015 - 2024.

Table 6. Supply Chain Summary: Asphalt Materials

 Aggregate	The U.S. Geological Survey (USGS) reported that Florida's crushed stone production increased 2% overall in calendar year 2023, year-over-year, but decreased about 5% during the first quarter of calendar year 2024. Aggregate prices have continued increasing, but the industry expects some moderation in price increases later in the year. Securing raw materials in a reliable manner is still a regional issue, but FDOT has approved new sources to be imported from Canada. Increased imports are also expected from Georgia, the Bahamas and Honduras. Producers indicated issues with aggregate availability.	↑
 Refinery Capacity	Refinery Utilization in the Gulf Coast was between 85% and 95% in calendar year 2023. There were some disruptions in refinery utilization, caused by a major power outage that affected the Midwest's biggest refinery in the first quarter of calendar year 2024. Costs and prices will continue to be affected by geopolitical factors, such as Organization of the Petroleum Exporting Countries (OPEC+) production quotas announcements. According to the Oil & Gas Journal, refinery capacity in the U.S. for asphalt production decreased 2% in 2023 while according to EIA's annual capacity report U.S. refinery capacity grew 2% in 2024. In April 2024, the U.S. imposed oil sanctions on Venezuela once again, since the government fell short on their commitments.	↑
 Asphalt Binder	Unmodified (PG 67 & lower) asphalt binder price changes remain moderate. In calendar year 2024, they have increased by 1% and since June 2023 they declined 2%. Rack binder prices in Jacksonville, Miami, and Tampa declined 1%, 2%, and 13%, year-over-year, respectively. The Russian-Ukraine crisis has had implications for the global oil markets. As mentioned in previous reports the EIA estimated that asphalt supplied to the East Coast rose 1% in 2023, indicating slower demand for resources than in the previous year. Through April 2024, asphalt production in the Gulf Coast increased 6% year-over-year.	↑
 Polymers	With very few suppliers, polymers are a source of vulnerability. U.S. production of resins increased 13.3% in May 2024 vs. May 2023. Year-to-date production increased 6.2% year-over-year. The U.S. Chemical Regional Production Index dropped 0.2% in May 2024 from last month and declined 0.9% year-over-year, showing a negative trend in chemicals production. Nonetheless, there is uncertainty in the industry for the second half of 2024. Reference prices and volumes from Q1 of calendar year 2024 earnings of a publicly traded polymer producer continued seeing double digit declines (up to 20% year-over-year). The average cost per ton of ethylene production also declined 10% quarter-over-quarter and declined 2% since Q2 of calendar year 2023. Producers have not indicated issues finding polymers.	↑
 Imports	Data from the U.S. International Trade Commission shows that imports of bitumen products to ports that service the Florida market decreased 15% in calendar year 2023. Through March 2024, imports are on par with the previous quarter. The Francis Scott Key Bridge collapse in March has been cleared by the Army Corps of Engineers; the channel is once again at full operational	↓

	capacity in June 2024, including access to the port of Baltimore. The incident had a ripple effect as ships were diverted across eastern ports, with Florida's ports receiving an influx of activity during this period.	
 Rail	In Q1 of calendar year 2024, tons and revenues of asphalt products shipped by CSX, regardless of the destination, increased by 6% and 10% year-over-year, respectively. Compared to Q4 of calendar year 2023, tons and revenues increased by 11% and 16%, showing some moderation in price increases. In July this year, CSX joined forces with RailPulse to steer innovation and transformation in the rail sector by making rail more competitive with other freight modes.	↑
 Trucking	Asphalt suppliers continue facing issues with trucking. Fuel costs are one major factor. Diesel prices gradually declined through the fiscal year and in June 2024, they were down 2% year-over-year. The number of CDL drivers increased in calendar year 2023 and truckload demand has declined, which can increase availability. In April 2024, the Federal Motor Carrier Safety Administration (FMCSA) denied the FLHSMV's CDL exemption request from December 2023. FDOT received a $180 million grant to build new semi-truck parking lots along Interstate 4 in metro Orlando through U.S. DOT's Infrastructure for Rebuilding America program. Four sites are expected to be constructed with a total of 917 parking spaces in Volusia, Seminole, and Osceola counties.	↑
 Pavement Markings	As mentioned in the polymers section, the Chemical Regional Production Index fell in May 2024, but production of coatings, adhesives and other specialty chemicals went up. However, for the remainder of 2024, demand and production of chemicals is expected to have a modest gain before rising in 2025 (including products such as basic chemicals and agricultural chemicals). Specialty products such as coatings are expected to rise in 2024, though at a modest rate. Overall, pavement markings and other plastics-based/petroleum-based ancillary products still remain susceptible to movements in the crude oil markets and supply chain issues.	↑
 Labor	The search for skilled labor is an ongoing concern for asphalt plant operators. Statewide construction employment continued increasing year-over-year, and growth has picked up in calendar year 2024. Interviews had mixed responses on whether skilled labor has improved or worsened. Some producers have concerns finding skilled candidates to fill open positions. Wages have also gone up as a result.	↑
 Competition	The number of asphalt producers in FDOT's approved list decreased by 2 plants in FY 2024 to 121. As demand is high, this is not expected to help bring down costs in the near term. Although the industry has not significantly lost suppliers since 2020, only 17% of companies accounted for 58% of active plants in FY 2024.	↑

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

Table 7. Historical Asphalt Data, 2015 –2024

*(Maximum values indicated with *)*

Asphalt	Units	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Crude Oil (WTI Spot Price)[1]	$/Barrel	$48.66	$43.29	$50.80	$65.23	$56.99	$39.16	$68.13	$94.90*	$77.58	$79.69
Total Chinese Imports[2]	$/Billions	$1,680	$1,588	$1,844	$2,136	$2,078	$2,066	$2,679	$2,707*	$2,557	$624
Refinery Capacity for U.S. Refineries[3]	000s Tons/Year	31,933	37,803	44,316*	41,811	39,405	38,555	38,969	38,969	37,995	37,286
Florida Diesel Prices[4]	$/Gallon	$1.84	$1.44	$1.78	$2.22	$2.04	$1.78	$2.15	$3.73*	$3.10	$2.77
Estimated FDOT HMA Requirements[5]	000s of Tons	3,862	4,337	2,979	4,115	6,033*	3,982	3,731	4,831	3,996	5,008
Estimated Statewide HMA Produced[6]	000s of Tons	14,442	14,727	16,710	17,546	17,339	17,907	18,282	18,440*	18,125	18,440
FDOT's Estimated Consumption of HMA Production[7]	%	26.74%	29.45%	17.83%	23.45%	34.79%*	22.23%	20.41%	26.20%	22.05%	27.16%
FL Heavy & Civil Engineering Employees/ All FL Construction Employees[8]	%	12.25%	12.41%	12.86%	12.50%	12.72%	13.03%*	12.88%	12.85%	12.63%	12.06%
FL Construction Employees/All FL Non-Farm Employees[8]	%	5.33%	5.67%	5.89%	6.18%	6.30%	6.62%*	6.47%	6.38%	6.45%	6.49%
Annual FDOT Work Program Allocation[9]	Billions of $	$3.18	$3.51	$4.00	$3.82	$3.83	$3.72	$2.66	$4.17	$5.42	$7.15*
Asphalt Binder Imports into Ports Serving Florida[10]	Tons	312,817*	169,918	227,656	204,525	183,255	226,507	86,109	75,486	64,020	72,549
Average Asphalt Binder Price[11]	$/Ton	$602.30	$450.45	$460.74	$610.86	$641.94	$566.62	$600.52	$804.13*	$767.00	$770.11
FDOT HMA Cost[12]	$/Ton	$99.66	$98.66	$101.90	$103.91	$109.68	$110.10	$109.11	$131.97	$167.07	$182.70*

Sources: 1. EIA – Annual Average Spot Price. 2. WTO's World Trade Statistical Review; 2024 through May. 3. EIA, Oil & Gas Journal. 4. FDOT Construction Office, 2024 average through June. 5. Calculated, from data provided by FDOT Office of Forecasting and Project Cost. 6. Historical FDEP and EIA forecast. 7. Calculated from 5 & 6. 8. Bureau of Labor Statistics - State and Local Employment. Workers in the agriculture sector are excluded from government and industry estimates due to conflicting seasonality and difficulty in measuring self-employment, hobby farms, and undocumented workers.[6] 9. FDOT Office of Work Program. 10. U.S. International Trade Commission (I.T.C), 2024 through April 11. FDOT Office of Construction, Fuel and Bituminous Price Index; Modified Binders 76 & Higher. 12. Calculated weighted average, from data provided by FDOT Office of Forecasting and Project Cost.

[6] https://www.stlouisfed.org/open-vault/2019/july/nonfarm-payrolls-why-farmers-not-included

Aggregate

Statewide crushed stone production increased in calendar year 2023 by 2% to about 103 million tons. Imports of crushed stone into ports serving Florida were down 5% in calendar year 2023. Through the first quarter of calendar year 2024, imports are up 7% compared to the previous 3 months. Asphalt producers in the 2024 survey indicated trucking availability as the main reason they anticipate issues with industry meeting demand. A minority of asphalt producers also cited ongoing concerns with aggregate availability and material costs. However, most surveyed producers believe shortages of material have eased and will not impact production this coming year. FDOT asphalt producer use of fine versus coarse aggregates was close to a 50-50 share. Further information may be found in the Aggregate section.

Polymers

U.S. ethane consumption (the main feedstock used for petrochemical production) rose 5% in calendar year 2023 to 2.1 million barrels per day. U.S. ethylene production grew 121% in 2023. EIA expects consumption to reach 2.2 million barrels per day in 2024 and 2.3 million barrels per day in 2025. Two new ethylene crackers, added in 2022 in Port Arthur, Texas and Monica, Pennsylvania, expanded operations in 2023, which should improve supply. However, some analysts believe ethane consumption may outpace supply by 2026 under current production trends.

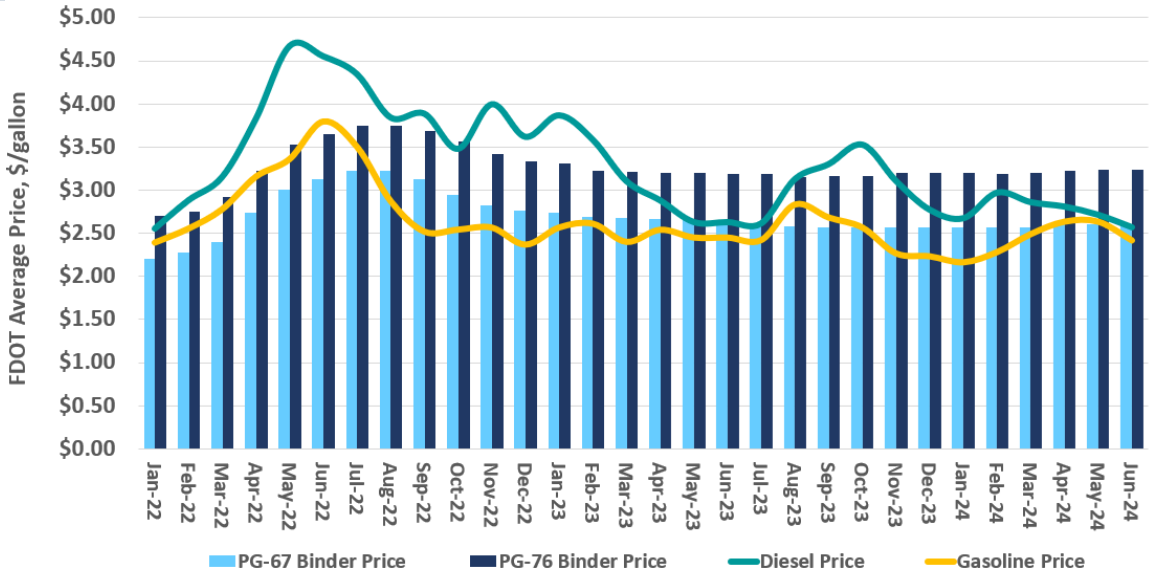
Ethylene is part of the process used to make different types of polymers, so changes in market costs will affect polymer prices. As mentioned in the supply chain table, prices for polymers continued seeing double-digit declines early in 2024. Argus reported that U.S. PVC prices have been strong in the first and second quarter of 2024, moved by escalating domestic demand and high domestic prices. Higher PVC prices are known to indirectly affect costs, but they do not directly benefit asphalt producers. Whether prices continue rising or fall later for the rest of 2024 will depend on demand.

Asphalt Binder

FDOT fuel prices have increased slightly in calendar year 2024, compared to the summer of 2023 (**Figure 14**). However, the rate at which they have increased has plateaued since April 2024. Demand for asphalt paving will remain high over the next few years due to significant increases in infrastructure funding at the Federal and State level, supporting higher prices. In April 2024, rack binder prices declined 1% in Jacksonville to $598 per ton, declined 2% in Miami to $593 per ton and 13% in Tampa to $553 per ton. [7]

[7] Argus' asphalt rack prices reflect trades of different grades of asphalt within a defined region, which include where the seller commits to deliver to the buyer's truck, typically at a truck-loading rack.

Figure 14. FDOT Fuel and Asphalt Binder Prices, Jan. 2022 – Jun. 2024



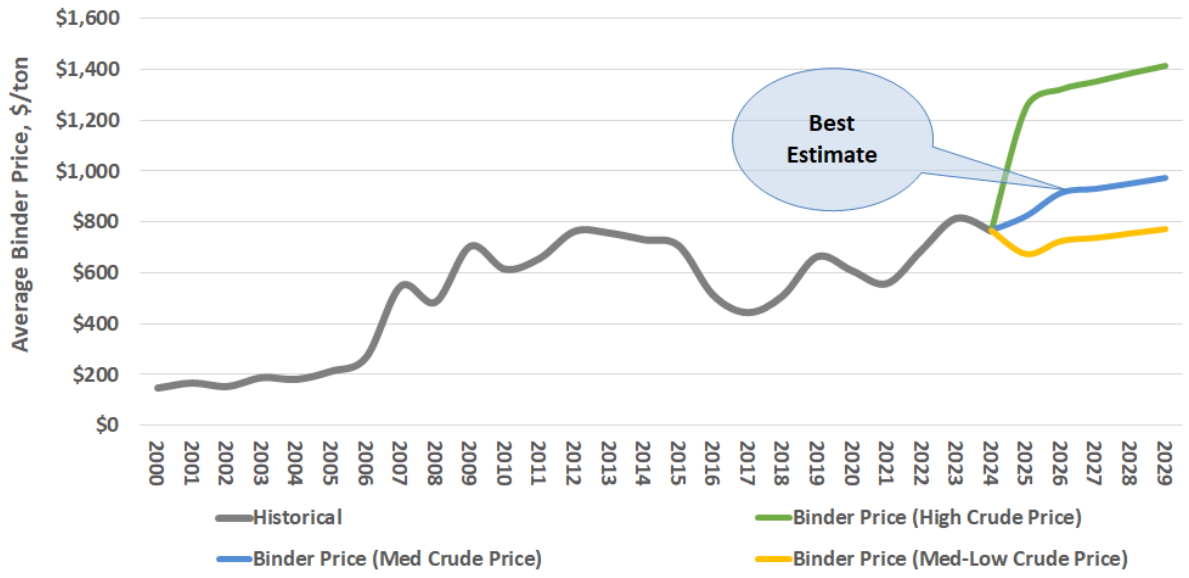
Source: Source: TBG Work Product, FDOT Fuel & Bits Index.

Producers indicated that they have not seen any binder price increase from suppliers since January 2024. However, producers do expect bid prices to rise for the remaining of 2024 by 10-20% due to the rising cost of aggregate, residential and commercial demand, and constraints from crew and equipment capacity.

In March 2024, several OPEC+ countries announced extensions of additional voluntary cuts of 2.2 million barrels per day for the second quarter of 2024. In June 2024, OPEC+ announced that they will extend a cut of production by 1.65 million barrels per day announced in April 2023 through the end of 2025.

Using a variety of models for fit, average historical FDOT binder prices were forecasted to 2029 under medium-low, medium, and high crude oil price scenarios (**Figure 15)**. As statewide asphalt binder prices continue to lag behind decreases in crude oil costs, the middle scenario is the current best estimate given global risks and uncertainty. A low crude price scenario where binder costs decline to pre-pandemic levels (not pictured) is considered unlikely at this time, barring a major recession.

Figure 15. FDOT Average Binder Cost Forecast



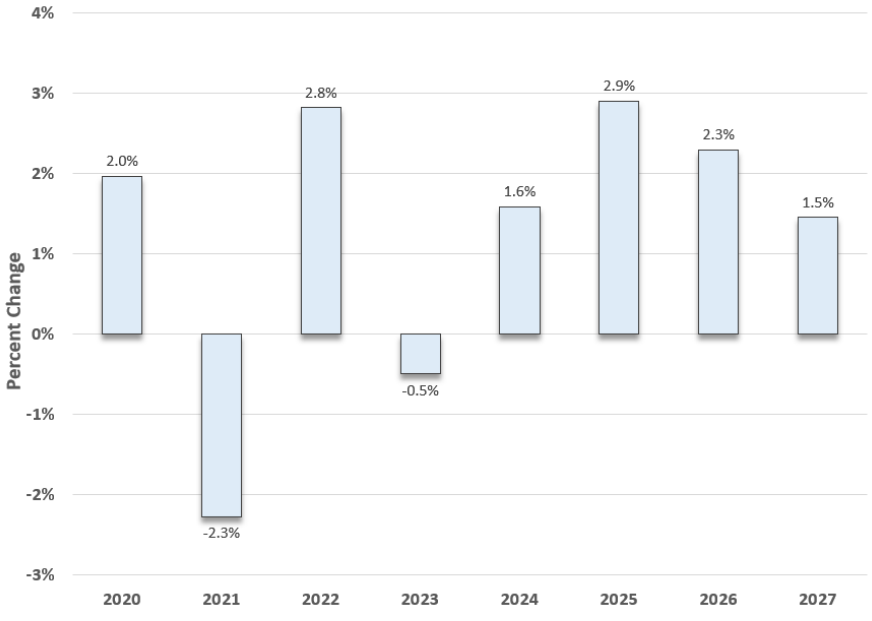
Source: TBG calculated from FDOT Fuel & Bits Index.

Although demand is high, asphalt binder imports were down 15% in calendar year 2023 and remain low in the first quarter of calendar year 2024. Countries of origin included Canada, Colombia, Spain, and Turkey. After easing sanctions in November 2022, the U.S. imposed oil sanctions on Venezuela once again in April 2024 due to the government's failure to hold free and fair elections, removing a source for imports. Regardless, producers did not indicate issues with binder availability over the last fiscal year.

Labor

Figure 16 shows national trends in employment growth. Employment for the asphalt sector as a whole grew 2.8% in calendar year 2022 and contracted to 0.5% in 2023. Nonetheless, it increased to 1.6% in 2024 and is expected to grow further to 2.9% in 2025 before decreasing to an average rate of more than 1% in 2027. Wages are expected to show a similar pattern.

Figure 16. Asphalt Industry Employment Growth



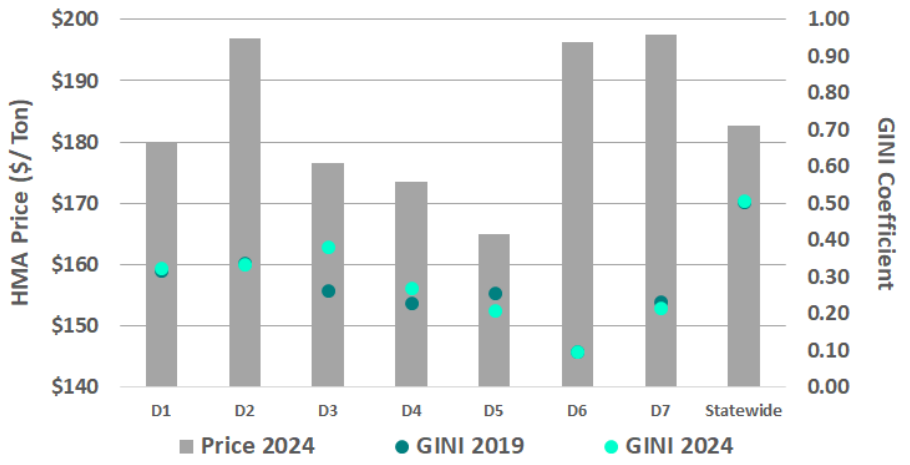
Source: IBIS Industry Reports, Asphalt Manufacturing, May 2024.

Availability of skilled labor has been a challenge for the asphalt industry in recent years. While some producers have seen improvements in the supply of labor, many are still struggling to recruit and retain skilled workers; increased wages and benefits are only going so far. In TBG's 2024 survey, producers anticipate rising bid prices through the end of 2024 partially due to constrained availability of their crews. Some producers are proactively working to recruit and train the next generation of workers to compensate for current issues, but the situation is unlikely to materially change in the short-term.

Competition

FDOT's Hot Mix Asphalt (HMA) costs vary by District across Florida, which reflects varying levels of work program funding as well as competition. **Figure 17** compares the current level of competition in each District currently and in 2019 (pre-pandemic), including the price and market share across Florida.[8] Most districts experienced small or no major changes between FY 2019 and FY 2024, with the exception of District 3, which became slightly less competitive in FY 2024 due to changes in ownership (a few firms own a plurality of plants).

Figure 17. HMA Price and Market Share by District



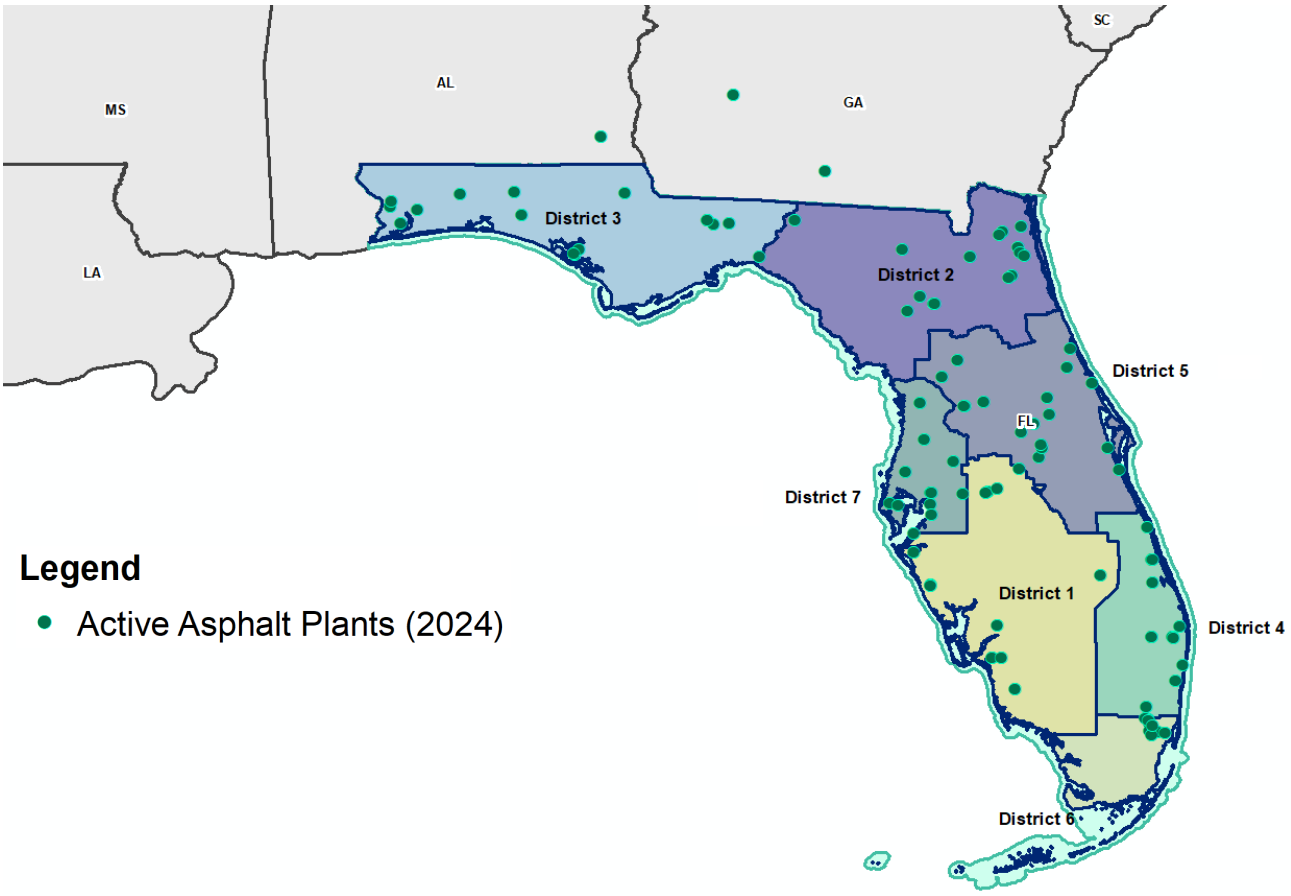
Source: FDOT, TBG Work Product.

The statewide Gini coefficient estimates asphalt market competition for all plant activity in Florida, aggregated to the company level. When added up statewide, 17% of the companies account for 58% of active plants in FY 2024. This consolidation of owners leads to a higher statewide Gini coefficient than seen in the Districts, since the entire list of companies is considered instead of being divided relatively more evenly over the Districts.

Figure 18 shows the dispersion of active asphalt plants across the State, based on permit activity and/or survey updates, with the majority of plants situated in Central to Northeast Florida.

[8] A measure of competition is the Gini coefficient; if market share is perfectly distributed, the Gini coefficient would be 0 (perfect equality), and if monopoly conditions exist, the Gini would be 1 (perfect inequality) – the higher the Gini, the less competitive the industry.

Figure 18. Active FDOT- Approved Asphalt Producer Facilities



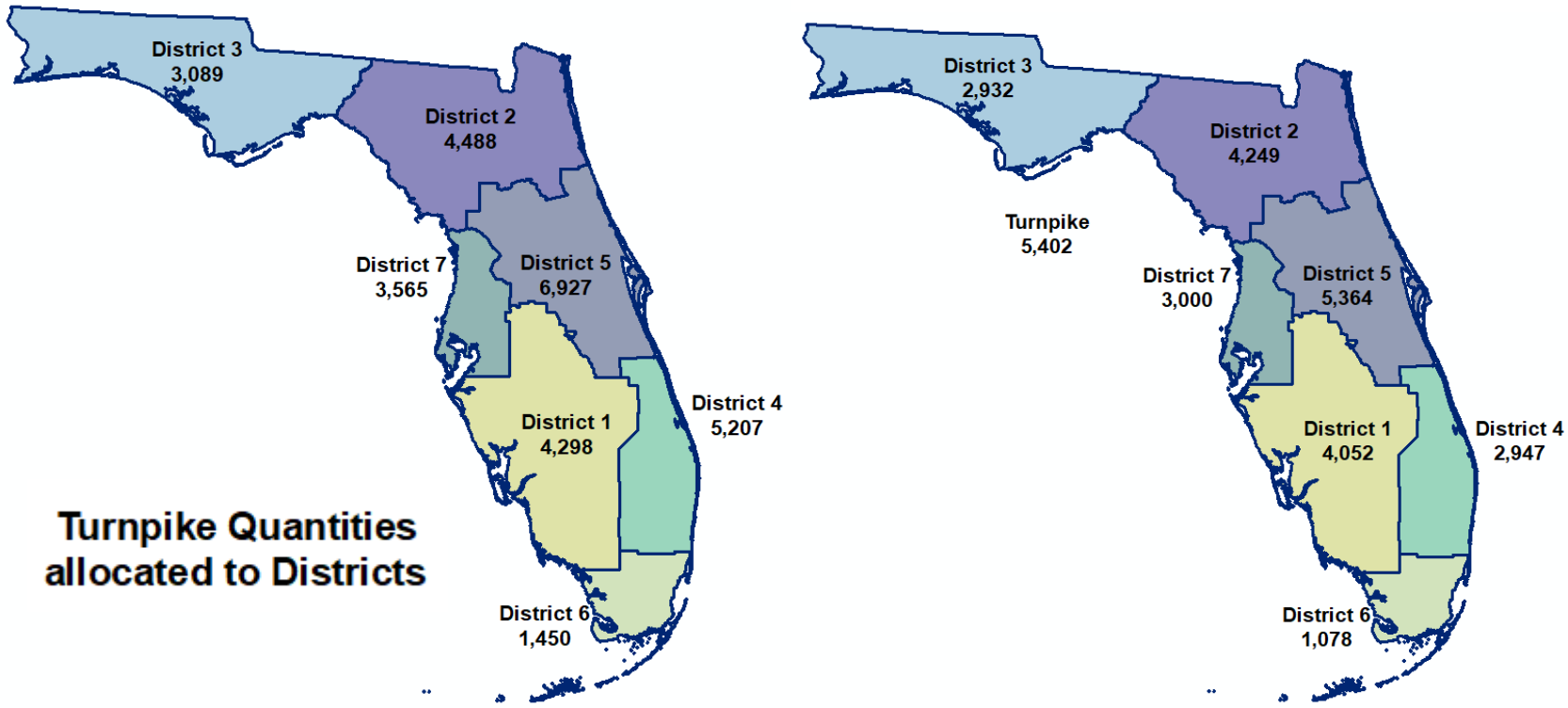
Source: TBG, prepared from data provided by FDOT Office of Forecasting and Project Cost.

Material Quantities

FDOT's HMA Future Requirements were forecasted based on current LRE and Work Program data. HMA Projections are shown in **Table 8**.

Total asphalt requirements for the Five-year Work Program are shown in **Figure 19** by District, with and without Turnpike allocation. Quantities are estimated using a factor approach as discussed in the FDOT Data section. The factors were calculated by Balmoral economists and roadway engineers after evaluating several statistical relationships, including historical share of dollars spent on HMA for different project types.

Figure 19. Total Asphalt Quantities for Five-year Work Program (000s of Tons)



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

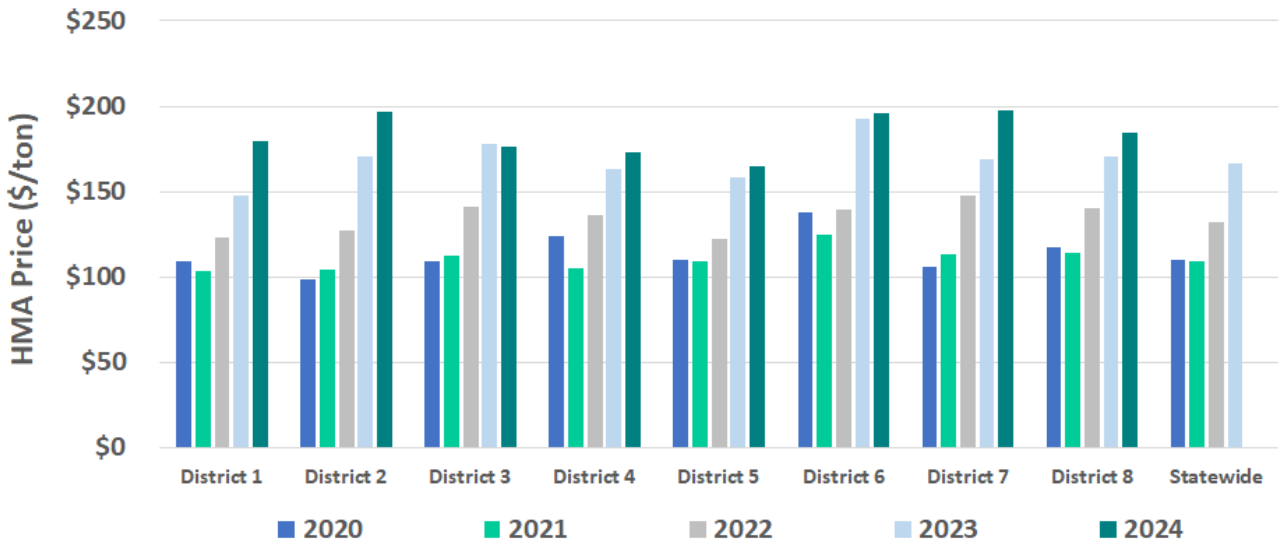
Table 8. FDOT Future Requirements of Hot Mix Asphalt (in thousands)					
District	2025	2026	2027	2028	2029
D1	858	654	1,374	602	564
D2	797	823	742	889	998
D3	690	678	448	570	546
D4	697	397	771	719	363
D5	1,587	1,825	848	513	591
D6	118	379	218	246	117
D7	690	653	545	710	401
D8	1,023	1,100	499	1,366	1,412
Total Tons	**6,461**	**6,509**	**5,446**	**5,617**	**4,992**

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

Current Pricing

FDOT's HMA costs reflect a unique combination of asphalt binder costs, FDOT-specific requirements regarding manufacturing and installation, and non-FDOT competition for contractors and materials. Asphalt prices ended FY 2024 at new record highs, rising 9% to $183 per ton according to year-end bid data. Since 2019, weighted average HMA prices have risen between 33% to 83% in all districts. In FY 2024, all districts were above $160 per ton. Districts 2, 6, and 7 have the highest prices, surpassing $190 per ton (**Figure 20**).

Figure 20. HMA Price by District, Dollars per Ton



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Asphalt Forecast

Asphalt prices are projected in **Table 9** 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.

Table 9. FDOT HMA Price Forecast Results

Year	2024	2025	2026	2027	2028	2029
Price HMA, $/Tons	$183	$185	$194	$196	$198	$198
Percent Change, %	9.4%	1.1%	5.0%	0.9%	1.0%	0.2%

Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

For the moment, the impact of global conflicts on crude oil futures remains moderate. Likewise, asphalt binder prices were stable through the end of FY 2024. Interviews with FDOT contractors and producers highlighted concerns about industry capacity meeting infrastructure demand as FDOT funding for Add Lanes and Resurfacing projects together tops $3 billion in each year of the work program.

Fiscal year-end pricing was 9% higher than FY 2023 and within 3% of last quarter's forecast. The current FY 2025 forecast is for an additional 1% increase in weighted average price by fiscal year end (and within 0.5% of previous estimates). With the most current forecast for projected employment, fuel price scenarios and macroeconomic conditions, the current best estimate expects asphalt prices to remain elevated through the end of the five-year work program. Interviews indicate that current pricing is the "new normal." Continued high infrastructure funding is expected to support current high prices, offsetting recent declines in construction starts across all sectors. Year-over-year, construction employment in Florida has continued to show growth, supporting increased demand, but the poor performance of the ABI bodes ill for increased upward price movement.

The upper bound scenario is supported by construction employment, higher crude oil prices, a moderate statewide economic growth trajectory, and high infrastructure demand. Infrastructure funding is expected to continue to be high, from many sources – federal spending from the Infrastructure Investment and Jobs Act (IIJA) and the Bipartisan Infrastructure Law (BIL), resiliency projects to address outdated local infrastructure, and private sector resiliency upgrades – but at some point, prices are likely to reach a point where owners defer or delay projects, reining in increases.

The lower bound reflects a recessionary scenario, with lower crude prices, construction employment, and reduced demand. This scenario would follow a pattern similar to the previous recession, and would likely follow a significant pull-back in housing prices, which some experts

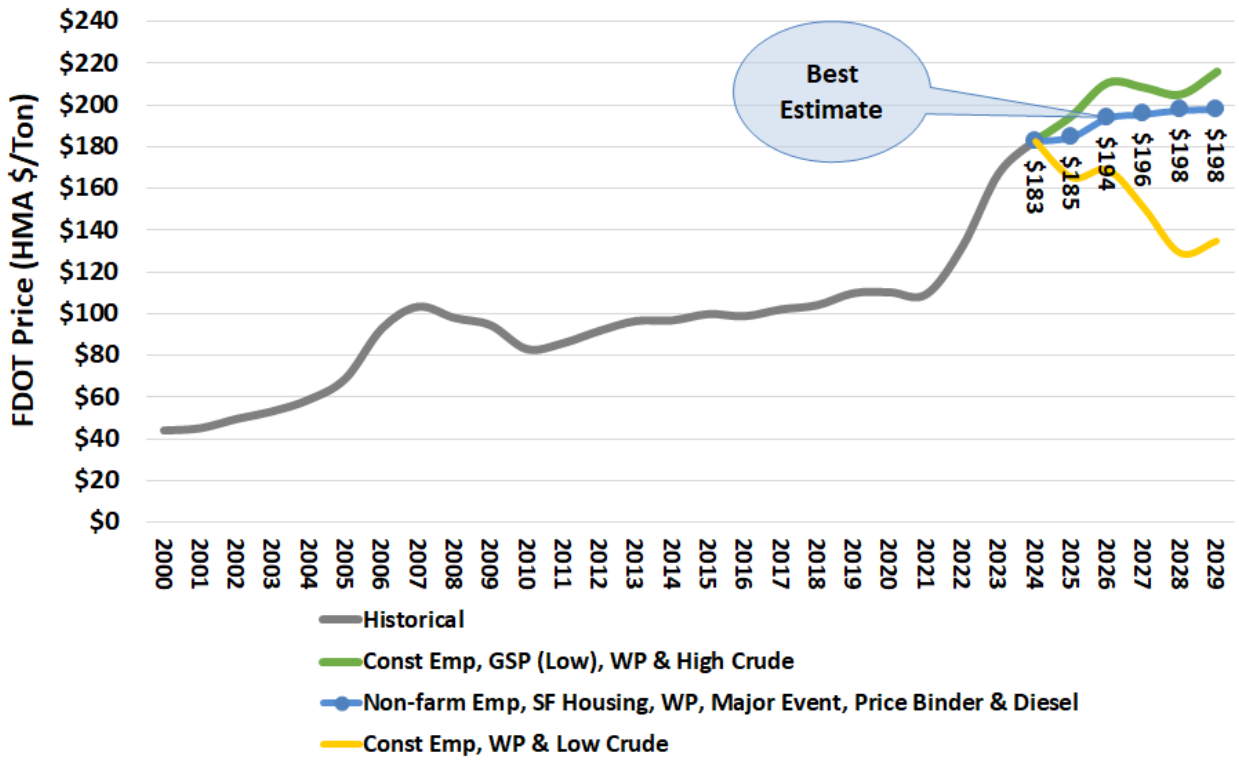
predict could be triggered by insurance woes, coastal hazard risks and increasing costs of living in Florida.

According to a recent industry survey, 47% of economists estimate the probability of the U.S. entering a recession within the next 12 months is less than 25%, while another 50% believe the likelihood is between 26% and 50%.[9] With inflation stabilizing and the Federal Reserve considering easing interest rates, only 2% of economists believe the likelihood of U.S. recession to be over 50%.

Figure 21 shows the potential range of estimates over the five-year work program.

For Florida HMA consumption, **Figure 22** shows a best estimate of gradual production growth through FY 2029 based on construction employment growth, housing starts, 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.

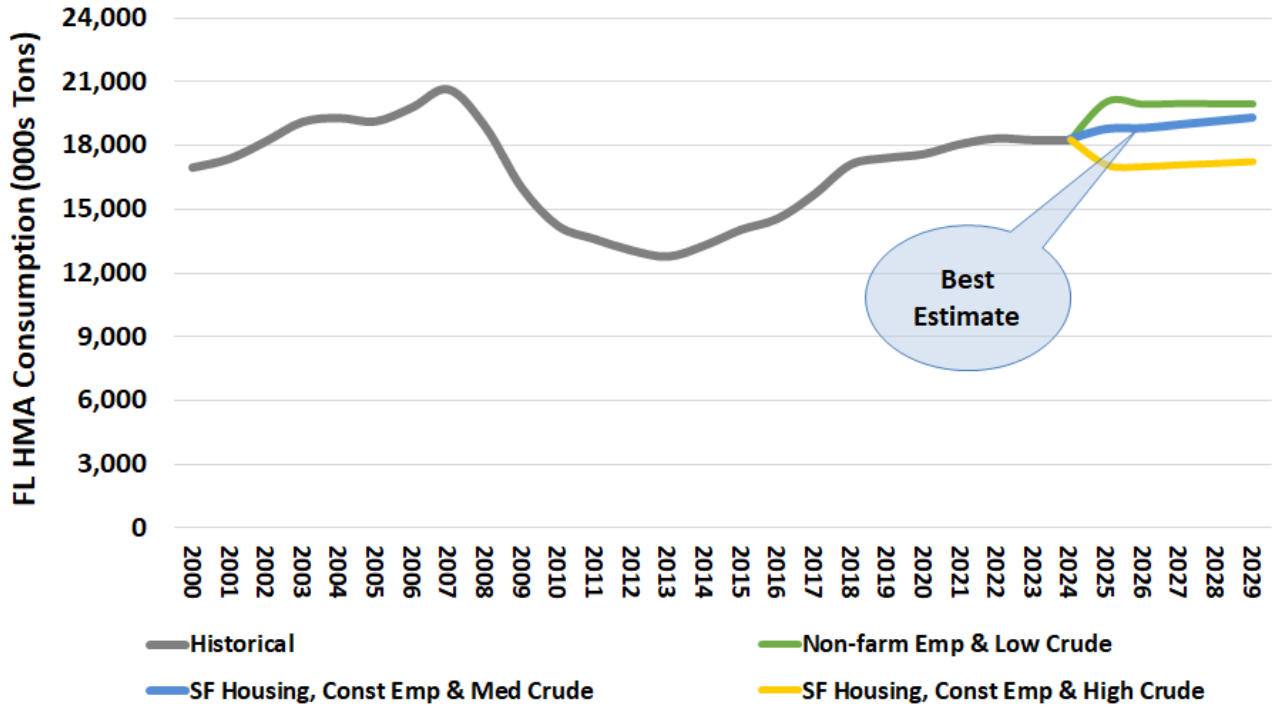
Figure 21. FDOT HMA Price Forecast



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

[9] NABE July 2024 Business Conditions Survey.

Figure 22. Florida HMA Consumption Forecast



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

CONCRETE

Summary

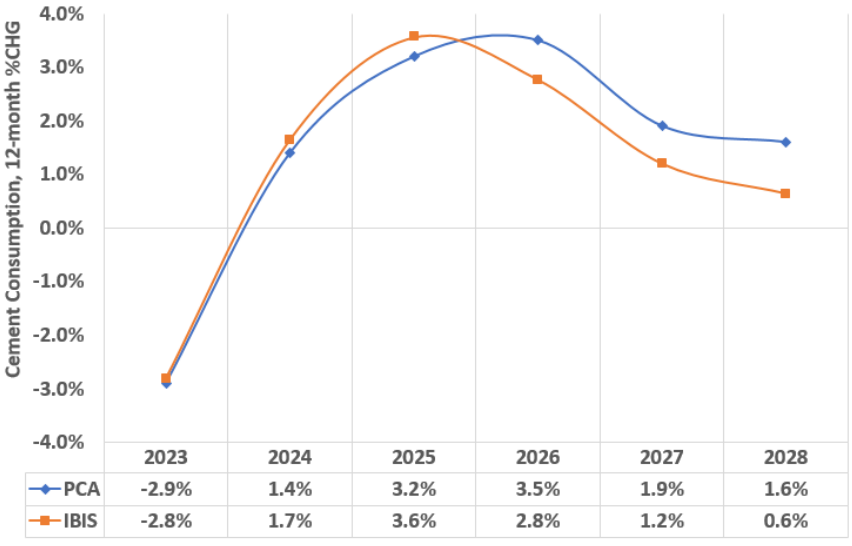
- Astronomical prices for structural concrete appear to be holding; forecasts currently show increases abating, but prices remain high, barring a significant macroeconomic downturn.
- Cement prices remained high, along with aggregate and labor costs, although some cement producers reported not having increased prices in 2024. More than half of survey respondents cited high cement prices as a driver of higher bid prices.
- Cement volumes declined due to weather-related issue at the start of calendar year 2024.
- Concrete producers continue facing fly ash supply constraints. Recent strides in fly ash harvesting could improve supply, but the process has been costly historically. More sources for alternatives, like ground glass, may be coming to Florida markets in the near-term.

FDOT Impacts

- Prices for FY 2024 reflected increases of 16% year-over-year as a result of continued strong demand, price increases for aggregate and other inputs, and ongoing labor constraints.
- FDOT Work Program concrete requirements are estimated to average around 2 million cubic yards per year, with the largest requirements in FY 2026 and FY 2027.
- Producers expect bid prices to increase, on average, 14% by end of the calendar year.

General Trends

Figure 23. U.S. Cement Consumption Forecasts



	2023	2024	2025	2026	2027	2028
PCA	-2.9%	1.4%	3.2%	3.5%	1.9%	1.6%
IBIS	-2.8%	1.7%	3.6%	2.8%	1.2%	0.6%

Source: PCA Fall 2023 Forecast; IBIS U.S. Cement Manufacturing Forecast Feb.

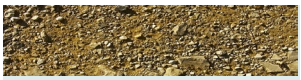
Figure 23 shows the U.S. cement consumption forecasts from the Portland Cement Association (PCA) and IBIS through calendar year 2028. The PCA Fall 2023 forecast lowered expectations for 2024 down to 1.4% growth compared to their previous expectation of 4.3%. PCA expects consumption to increase by over 3% in 2025 and 2026 and then a lower growth rate for the final two years of the period. The IBIS February 2024 forecasts are based off domestic demand.[10] The PCA and IBIS forecasts are very similar. The IBIS forecast also projects higher growth rates in 2025 and 2026 and then a tapering off in 2027and 2028.

[10] Estimated by adding industry revenues with imports and subtracting exports.

SUPPLY CHAIN VARIABLES: **CONCRETE MATERIALS**

Table 10 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. Current and historical data has been prepared for selected variables that have historically influenced FDOT's costs for concrete products, including ready-mix and precast products. **Table 11** provides selected data for the period 2015 - 2024.

Table 10. Structural Concrete Supply Chain Variables & Current Status

 Cement	During Q1 of calendar year 2024, publicly traded companies continued reporting a slowdown in volumes, primarily due to weather, and slightly increasing prices. Interviews and survey data confirm moderate price increases and some cite increases as one reason for increasing bid prices. Producers report they are able to pass off 50% of costs and mentioned longer FDOT contracts locking in prices causes them to lose money. Additionally, in Feb. 2024, the Port of Tampa approved a site improvement permit for auger cast piles and mat slab foundation for concrete silos for Sesco Cement.	↑
 Aggregate	Aggregate availability, increased pricing, and transportation has been an issue throughout the year. These are expected to continue. General issues are covered in the Aggregate section.	↑
 Fly Ash	Eco Material Technologies announced an agreement with a power plant in Alabama to harvest up to 700,000 tons of fly ash and another agreement with a second power plant in Georgia to harvest an estimated 600,000 tons of fly ash annually. The re-used fly ash will be used for projects in Mississippi, Florida, and Louisiana. Another new plant in Pensacola will process fly ash for concrete mixes. The American Coal Ash Association production and use survey reports growing harvested material inputs as well. Imports were down 3% in calendar year 2023, year-over-year. Most arrived in Tampa from Japan followed by Turkey. Producers still report that sourcing fly ash is challenging.	↑
 Rail	In Q1 of calendar year 2024, overall tons and revenues of concrete products shipped by CSX increased by 4% and 3% year-over-year, respectively. These are significantly lower than last quarter when increases were 14% and 19%, respectively; rail rates continue to increase. Rail availability issues and cost increases have been reported in previous interviews with FDOT producers, but were not mentioned in the most recent round of interviews.	↑
 Truck	Diesel prices gradually declined through the fiscal year and are down 2% year-over-year. The number of CDL drivers increased in calendar year 2023 and truckload demand has declined, which can increase availability. In April 2024, the FMCSA denied the FLHSMV's CDL exemption request submitted in December 2023, which proponents argue would have reduced "barriers to individuals	↑

	attaining the proper credentials for operating commercial vehicles[11]" and positively impacted the current driver shortage. Interviews continue indicating difficulties finding and retaining drivers, the cost of which is outweighing decreases in fuel costs, which remain above historical levels.	
 Labor	Interviews have indicated continued struggles with labor. However, some producers report that securing skilled labor is not as difficult, but it is expensive. Industry reports confirm that labor costs account for a higher revenue share and are lowering profit margins. Statewide construction employment continued increasing year-over-year, and growth has picked up in calendar year 2024	↑
 Competition	The number FDOT-approved concrete producers increased to 535 in FY 2024. New sources of cement and fly ash imports have also been approved or are being reviewed to ensure stable supply of concrete statewide. The top concrete producers in Florida continue to hold the majority of locations, while some smaller outfits are struggling to secure consistent supply of raw materials.	↑

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

[11] https://www.regulations.gov/comment/FMCSA-2023-0236-0029

Table 11. Historical Concrete Data, 2015 – 2024

*(Maximum values indicated with *)*

Concrete	Units	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total Chinese Imports[1]	Billions of $	$1,680	$1,588	$1,844	$2,136	$2,078	$2,066	$2,679	$2,707*	$2,557	$624
Florida Diesel Prices[2]	$/Gallon	$1.84	$1.44	$1.78	$2.22	$2.04	$1.78	$2.15	$3.73*	$3.10	$2.77
Florida Portland Cement Year End Stocks[3]	000s of Tons	338	322	307	493*	390	275	241	241	241	241
U.S. Portland Cement Capacity[3]	000s of Tons	121,000	118,967	121,000	121,000	123,000*	123,000	123,000	123,000	123,000	123,000
Average Price of Portland Cement, U.S.[3]	$/Ton	$95.07	$99.88	$104.70	$105.65	$102.10	$112.52	$115.25	$127.04*	$120.82	$118.52
Average Price of Portland Cement, Florida[3]	$/Ton	$91.00	$92.96	$97.71	$99.13	$103.34	$103.09	$107.21	$116.64*	$110.93	$108.82
Florida Cement Production[3]	000s of Tons	6,060	6,455	6,548	7,035	7,053	6,951	7,557	7,589*	7,053	7,307
Florida Cement Capacity[3]	000s of Tons	11,130*	8,447	8,447	8,447	8,527	8,527	9,622	9,622	9,622	9,622
Florida Ready-Mix Production[4]	000s of Cubic Yards	13,858	14,829	15,081	15,714	15,305	14,571	16,072	18,306	19,532	20,235*
Annual FDOT Work Program Allocation[5]	Billions of $	$3.18	$3.51	$4.00	$3.82	$3.83	$3.72	$2.66	$4.17	$5.42	$7.15*
Cement Imports Serving Florida[9]	000s of Tons	799	1,385	1,319	1,635	1,962	2,155	3,402	4,572	5,295*	1,813
Estimated FDOT Concrete Consumption[6]	000s of Cubic Yards	1,405	1,626	1,832*	1,614	1,256	1,079	619	1,028	1,114	1,203
Estimated Statewide Concrete Consumption[7]	000s of Cubic Yards	20,642	21,199	21,750	22,359	23,164	23,628	24,596	25,654	26,270*	25,508
FDOT Structural Concrete Cost[8]	$/Cubic Yard	$625.70	$635.70	$608.14	$708.11	$746.88	$722.69	$926.47	$829.82	$1,206.11	$1,400.51*

Sources: 1. WTO's World Trade Statistical Review, 2024 through May. 2. FDOT Construction Office, 2024 through June. 3. USGS; reported U.S. price change was 0% in 2022. 4. PCA, First Research. 5. FDOT Office of Work Program. 6. Calculated, from data provided by FDOT Office of Forecasting and Project Cost. 7. PCA and USGS. 8. Calculated weighted average, from data provided by FDOT Office of Forecasting and Project Cost. 9. US ITC, 2024 through April.

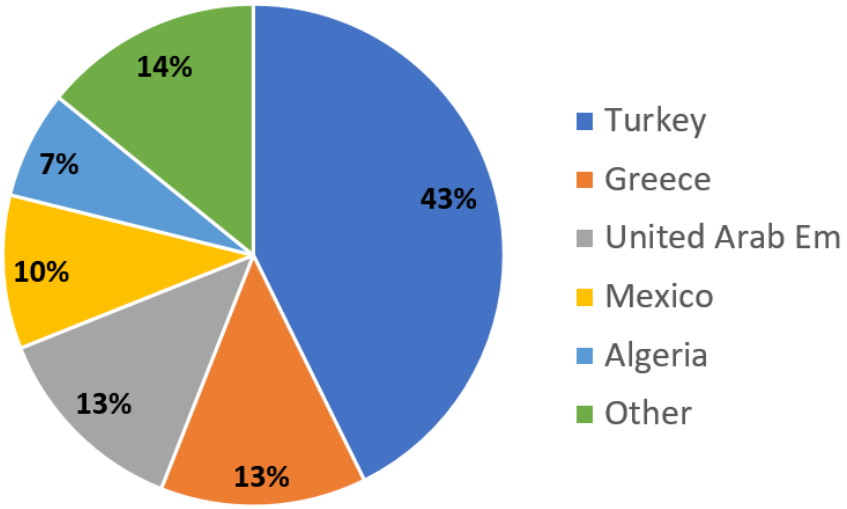
Cement

Florida cement production declined by 7% in calendar year 2023, year-over-year, according to the U.S. Geological Survey (USGS), which is in line with what publicly traded companies are reporting. In the first quarter of calendar year 2024 through March, production increased 4% compared to the previous quarter. Some producers currently report difficultly securing cement. FDOT has taken steps to improve the situation by approving several new sources of imports into the state.

In addition, in June 2024, SeaPort Manatee approved Medcem Madencilik (a Turkish cement company) for a 4-acre sub-lease for manufacturing and distribution of cement products. The expansion of Titan Materials cement terminal in Tampa was completed this past year as well, which should help boost supply for Florida markets.

Reviewing data from the U.S. International Trade Commission between 2022 and 2024, 43% of the imports to districts that service the Florida market were from Turkey. In 2022, the share was even higher, as 57% originated from Turkey, then 35% in 2023 and 31% for 2024 through May. Greece and the United Arab Emirates followed Turkey. These three locations comprised almost 70% of the imports between the review period. **Figure 24** illustrates imports by country of origin between 2022 and 2024.

Figure 24. Cement Imports by Country of Origin, 2022-2024 Average



Source: TBG Work Product, U.S. International Trade Commission.

Clinker Capacity

An analysis of FDEP Air Permits was conducted to identify changes to statewide clinker capacity through July 2024 (**Table 12**). In fiscal year 2024, permits for two inactive kilns at CEMEX Brooksville North were renewed and added an additional 1.56 million tons to annual capacity. The USGS estimated clinker production in Florida for 2023 at 5.66 million tons, which represents a utilization rate of 51%.

Table 12. Active Cement Kilns in Florida (Reported Capacity)			
Plant Name		**Current Clinker Capacity**	
		tons/hour	**tons/year**
Suwannee American Cement Sumterville Plant		135	1,186,250
American Cement Suwannee Plant		120	965,425
Argos Newberry Cement Plant	**Kiln #1**	125	880,000
	Kiln #2	125	1,095,000
CEMEX Brooksville North	**Kiln #1**	100	780,000
	Kiln #2	100	780,000
CEMEX Brooksville South	**Kiln #1**	83	727,800
	Kiln #2	156	1,277,500
CEMEX Miami Cement Plant		169	1,300,000
Titan Florida Pennsuco Cement Plant		250	2,190,000
Total Producing in 2023		**1,363**	**11,181,975**

Source: FDEP, TBG Work Product

Fly Ash

Sourcing fly ash continues to be an issue for producers as coal-powered plants close or convert their power generating units to natural gas. A new EPA rule requires coal-powered plants to cut their greenhouse emissions by 90%. Depending on how long they are scheduled to be operating for they may not be subject to this regulation or have a lower percent of reduction. This regulation moved up the previous timeline for reduction and may cause some plants to retire early. Over the past year Seminole Electric has shut down one of their units in Florida, which was scheduled to be one of the largest retirements of 2024.

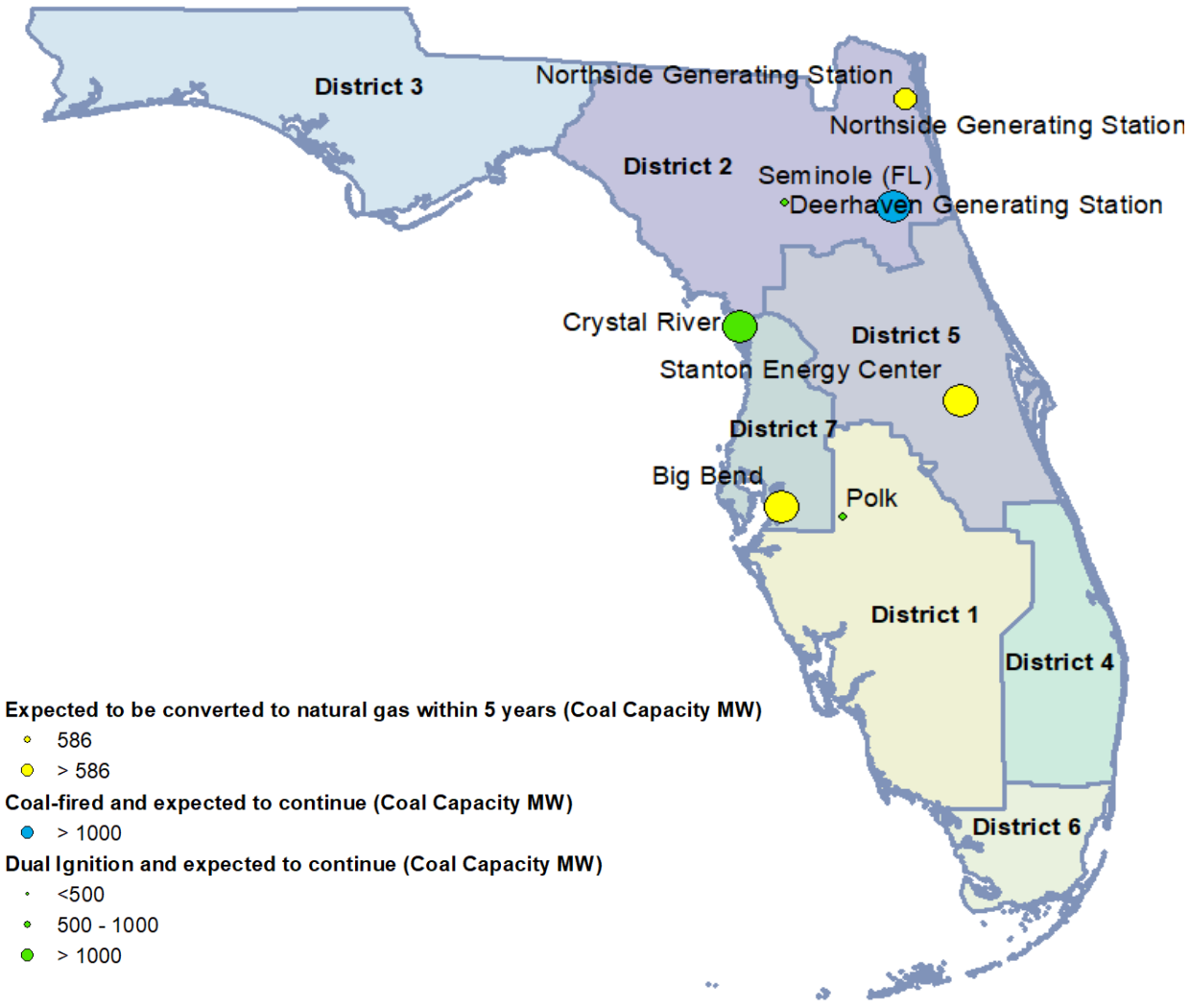
However, many companies have partnered to open plants to harvest fly ash for beneficial reuse that should benefit Florida construction projects. The American Coal Ash Production and Use survey reports an upward trend in harvested material inputs. Producers are supplementing fly ash sources with imports.

Table 13 provides a synopsis of likely impacts by FDOT district. Districts with access to the remaining coal-fired power plants in Florida are less impacted by in-state fly ash shortages. As such, Districts 3, 4 and 6 are more highly impacted from shortages due to a lack of local coal capacity (**Figure 25**). Further, with Seminole Electric shutting down their plant in Putnam County in January 2024 and the next scheduled coal-fired unit closure being in Orange County, concrete producers in Districts 2 and 5 will be more impacted. Many producers have already created partnerships with out-of-state or international suppliers of fly ash to offset shortages.

Table 13. Projected Impact from Potential Fly Ash Sources by District		
District	**All Concrete Plants***	**Impact from Fly Ash Shortages**
1	90	Medium
2	65	Medium
3	72	High
4	62	High
5	104	Medium
6	61	High
7	53	Low
Total	**507**	

Source: Estimated, TBG 2024. *Includes both active and idle plants.

Figure 25. Coal-Fired Power Plant Capacity



Source: FDEP, TBG Work Product.

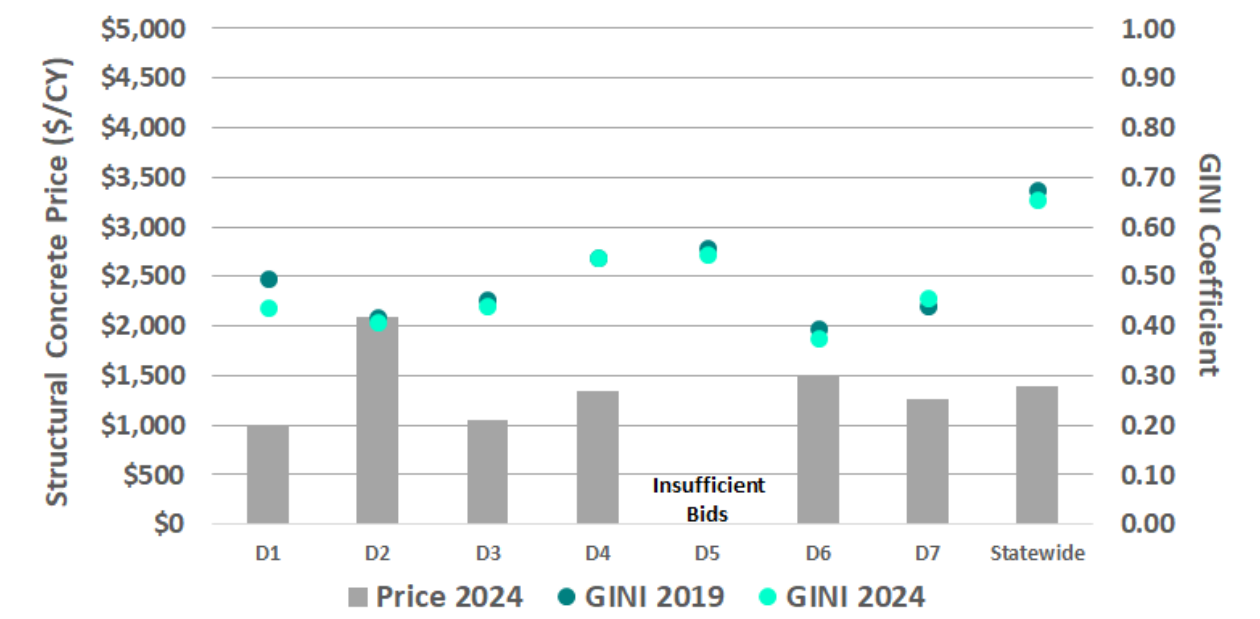
Alternatives to Fly Ash

Producers report that alternative cement mixes are becoming more popular and FDOT is evaluating some for use. Compared to typical mixes using Type 1 Portland Cement, limestone blended cements are cheaper to make and appear to have the same or very similar reactivity. Limestone blended cement is usually a blend of limestone, cement, and one other cementitious material like ground glass. Expanded sources of ground glass may soon be available as well.

Competition

In FY 2024, there were over 500 FDOT-approved ready-mix plants in Florida, providing substantial competition at the plant level. Statewide, 10% of the companies account for 65% of active plants. The Gini coefficient, a metric of diffuse versus concentrated market power based on ownership shares, is shown for FDOT-approved concrete suppliers by district in **Figure 26**. Most districts show minimal changes between FY 2019 and FY 2024, with a slight increase in competition in District 1. FDOT concrete producers noted increased competition for materials from non-DOT resiliency projects, airport and seaport expansions, and commercial data centers.

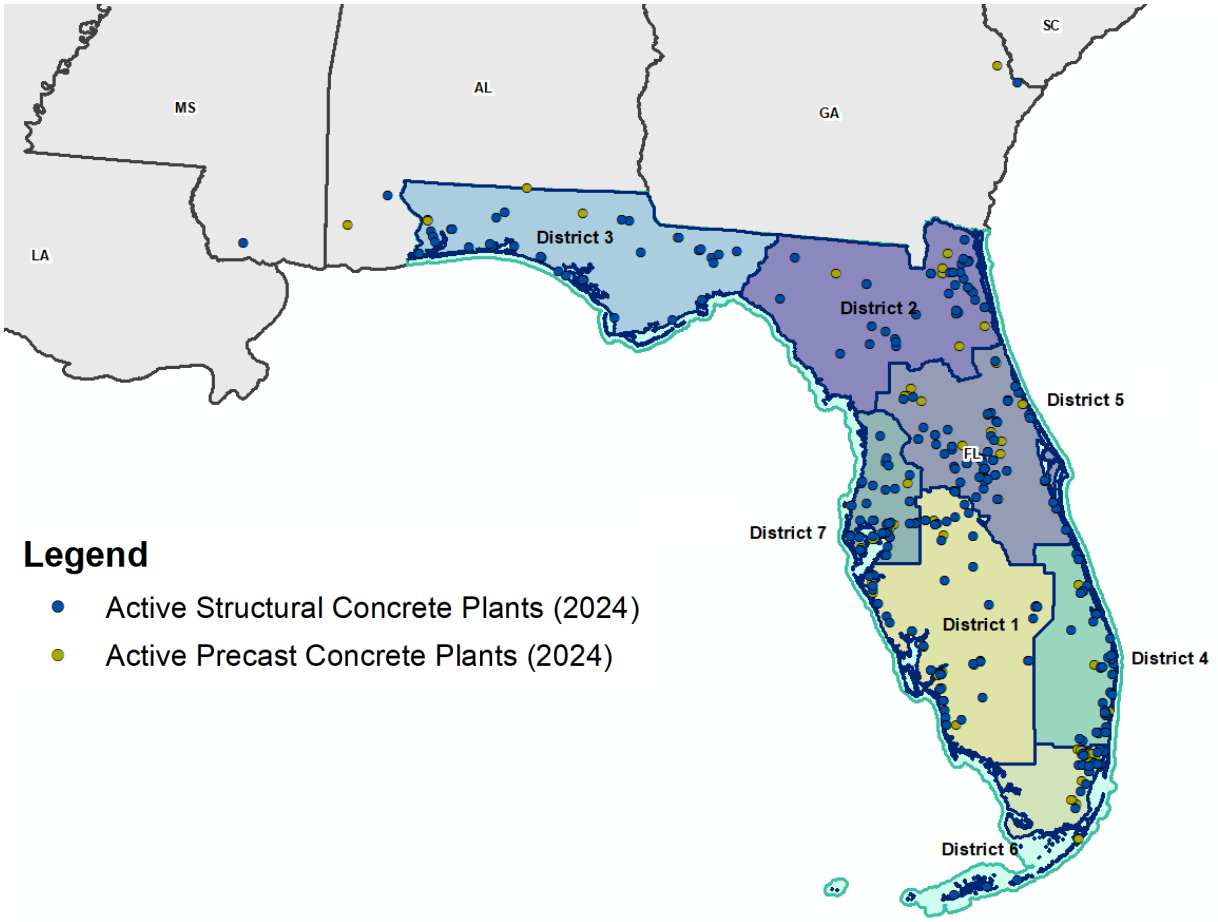
Figure 26. Concrete Competition Gini by District



Source: FDOT, TBG Work Product; limited bids for District 5 in 2024 (n = 2).

Figure 27 provides a location map of active approved concrete plants in Florida and adjacent states. Cemex is still by far the largest firm, controlling about 80 active plants in 2024. Argos Ready Mix owns the second most active plants at 43 locations, while Titan America has 36 active plants.

Figure 27. Concrete Plants 2024



Source: FDOT, TBG Work Product.

Material Quantities

Estimates of materials quantities for the FDOT work program were prepared using a factor approach. The factors were calculated by Balmoral economists and roadway engineers after evaluating several statistical relationships, including historical share of dollars spent on concrete for different project types.

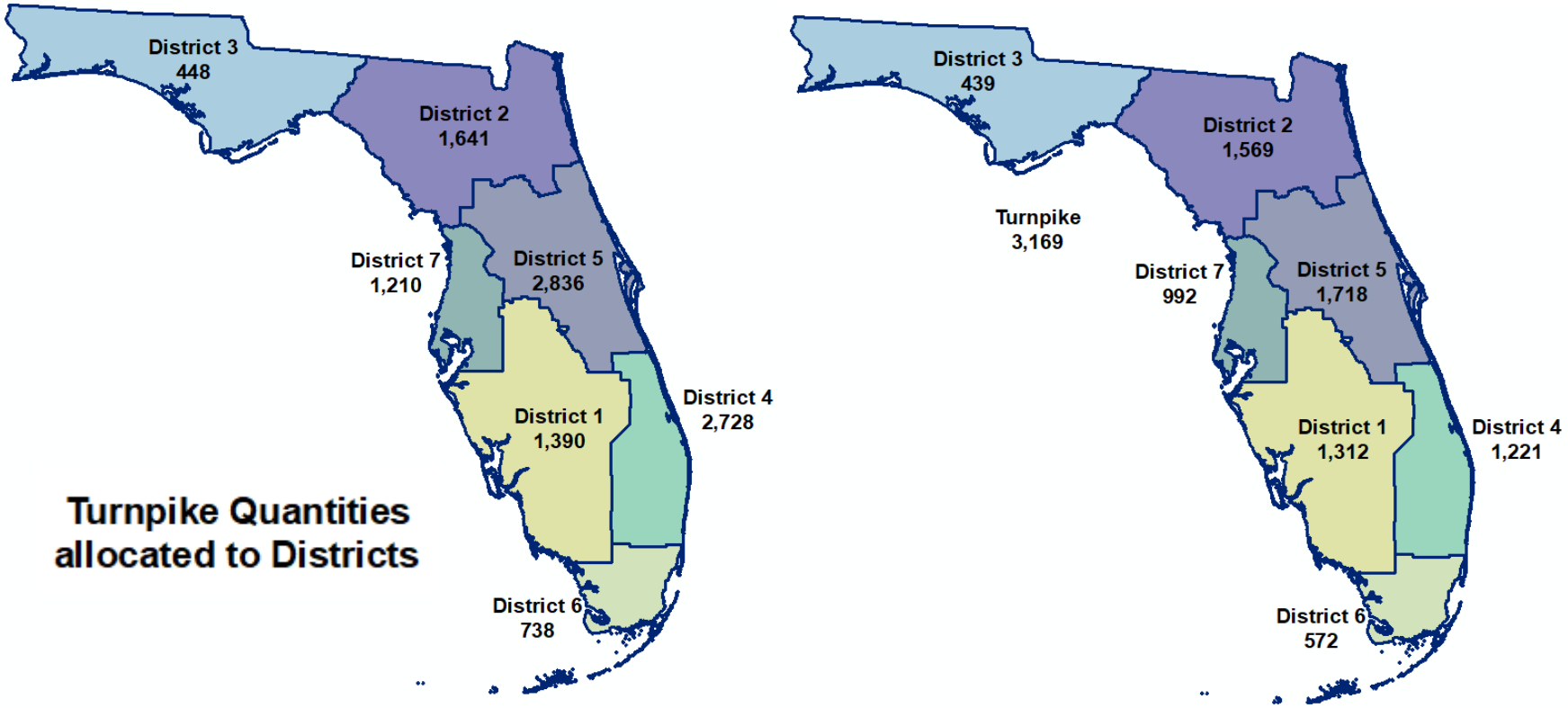
FDOT Work Program requirements are estimated to average around 2 million cubic yards throughout the Five-Year Work Program (**Table 14**). A large uptick in concrete requirements are projected for FY 2026 and 2027 when several large add lanes and bridge projects begin construction. **Figure 28** shows the distribution of materials requirements for the entire Five-year Work Program by District.

Table 14. FDOT Future Concrete Requirements (in thousands)

Year	2025	2026	2027	2028	2029
Structural Concrete	1,061	1,787	1,749	1,253	1,572
Ancillary Concrete	769	897	814	640	451
Total Cubic Yards	**1,830**	**2,684**	**2,562**	**1,893**	**2,023**

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

Figure 28. Total Concrete Quantities for Five-year Work Program (000s Cubic Yards)



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Table 15 shows future FDOT concrete requirements by District. Differences in demand by District are reflected in pricing.

Table 15. FDOT Future Concrete Requirements by District (in thousands)

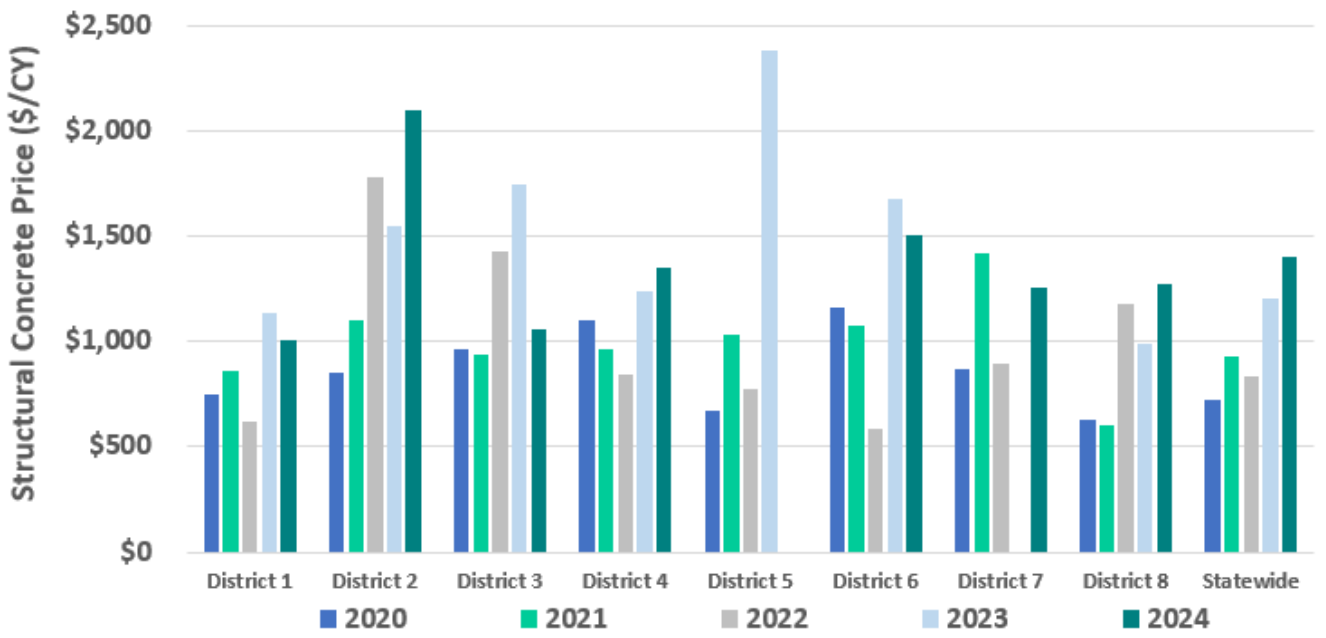
District	2025	2026	2027	2028	2029
D1	93	173	781	92	174
D2	161	430	237	361	380
D3	99	163	113	35	30
D4	215	162	461	126	257
D5	377	714	296	132	198
D6	50	223	202	64	33
D7	204	219	148	343	79
D8	631	601	324	740	872
Total Cubic Yards	**1,830**	**2,684**	**2,562**	**1,893**	**2,023**

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

Current Pricing

According to FDOT lettings data, concrete prices reached record levels in FY 2024 (**Figure 30**). In FY 2023 to FY 2024, Districts 2, 4, and 8 all increased in price, while Districts 1, 3, and 6 all declined. High aggregate, fly ash, and cement costs are expected to persist into FY 2025. Reinforcing steel costs declined significantly in FY 2024 and are expected to be stable in FY 2025, benefiting precast suppliers. Competition from other sectors, like resiliency work, may impact concrete costs in FY 2025.

Figure 29. Structural Concrete Prices by District



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.
Note: Limited bids for District 7 in 2023 (n = 3) and for District 5 in 2024 (n=2) were not plotted.

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 16** provides the updated forecast average price for concrete.

Table 16. FDOT Concrete Price Forecast Results

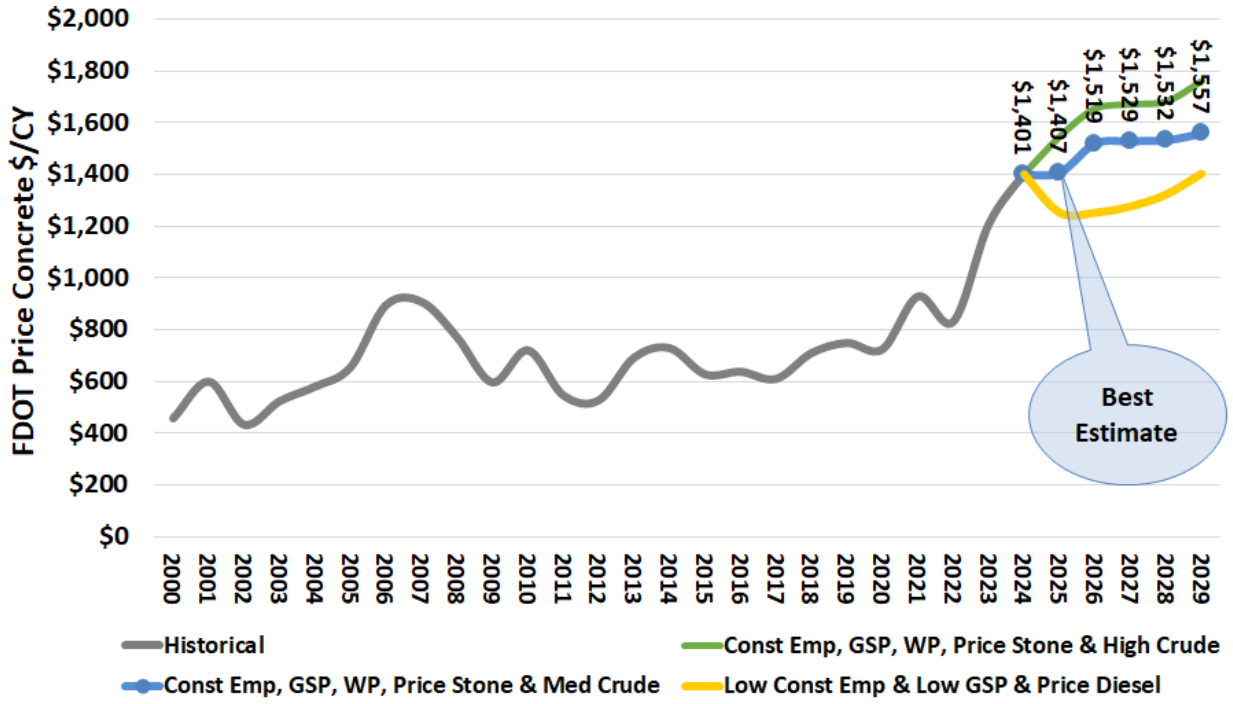
Year	2024	2025	2026	2027	2028	2029
Price Concrete, $/CY	$1,401	$1,407	$1,519	$1,529	$1,532	$1,557
Percent Change, %	16.1%	0.4%	8.0%	0.6%	0.3%	1.6%

Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

Fiscal year-end pricing was 16% higher in 2024 than in FY 2023 and within 3% of the forecast from last quarter. The current FY 2025 forecast is relatively unchanged and within 0.5% of previous estimates; concrete costs are expected to remain high due to the increased cost of cement and aggregates and the always looming concern of fly ash availability. Imports from nearby states delving into fly ash pond material recovery, as well as imports from overseas, and additional capacity for alternatives like ground glass could lessen the impact of fly ash shortages in the long-run, however, and moderate costs increases.

The best estimate of concrete prices reflects ongoing labor constraints, Florida economic growth projections, FDOT work program demand, aggregate costs, and crude oil prices (**Figure 30**).

Figure 30. FDOT Concrete Price Forecast

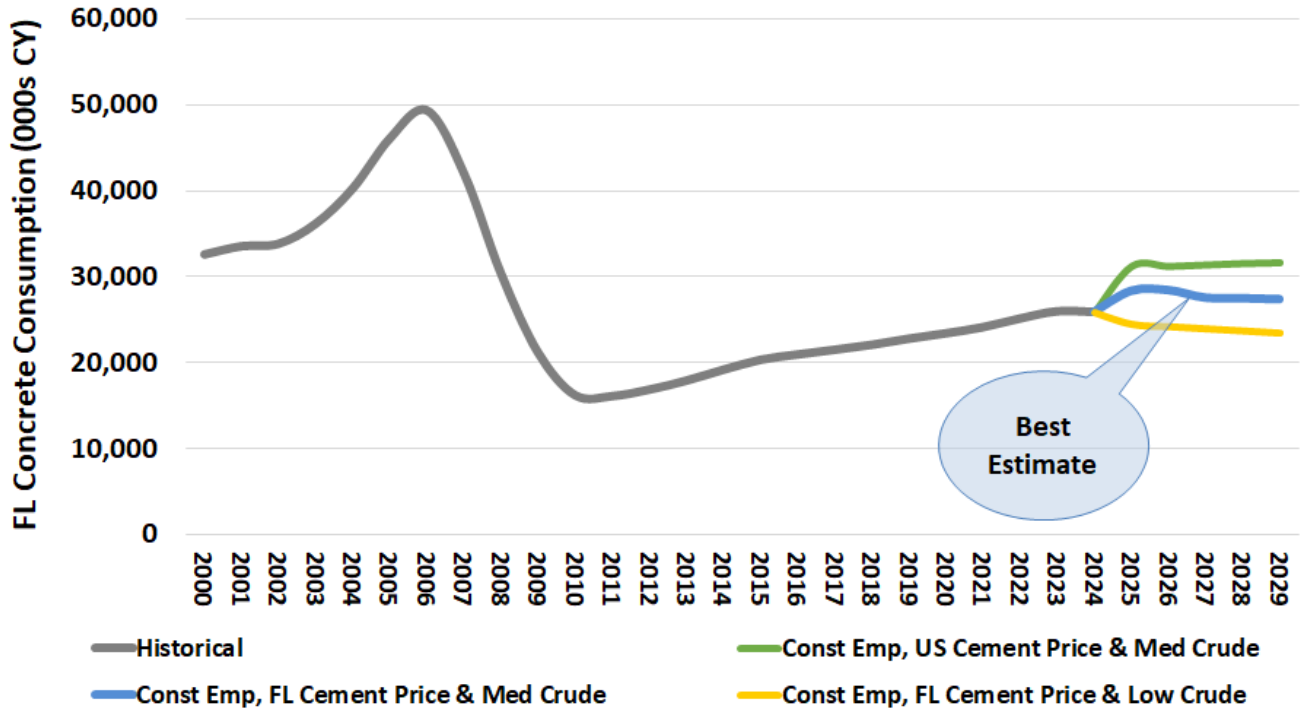


Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry source.

The upper bound reflects construction employment and economic growth and higher crude oil prices; this trajectory increases concrete costs to double pre-pandemic levels by FY 2029. Competition from non-DOT, concrete-heavy sectors could also contribute to price hikes. The lower bound scenario incorporates declines in construction labor, lower Florida macroeconomic activity, and diesel price projections. However, due to current high demand, pre-pandemic conditions are unlikely to return.

Figure 31 shows the output of several quantity models forecasting statewide consumption of concrete and the scenario identified as the best estimate. The best estimate tracks construction employment, Florida cement prices, and medium crude oil prices. The upper bound would require even higher cement prices, stable construction employment, and medium crude oil costs. Declining production is shown in the lower bound where a drop in demand or recessionary conditions would need to occur to reverse decades of growth.

Figure 31. Florida Concrete Consumption Forecast



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry source.

STEEL

Summary

- Structural steel product pricing saw continued volatility in during FY 2024, ending at FY 2022 levels. Generally, the cost of other types of steel declined in FY 2024, matching fabricator expectations.
- Nationally, steel production and utilization rates are down year-over-year. Mills have been adjusting production over demand concerns, which has negatively affected producers' production capabilities.
- Product delivery and lead times have improved, but retaining skilled labor is an ongoing issue.
- In general, global demand is weakening, pushing down input prices. Producers aren't sure when the bottom will be reached; some expect a turnaround while some SRES survey respondents fear double digit increases. Election uncertainties were repeatedly raised in surveys and interviews.
- Ukraine War impacts continue to create global instability in metals markets with some producers changing where they source materials from or which materials they use. Overall, global volatility will continue affecting prices.

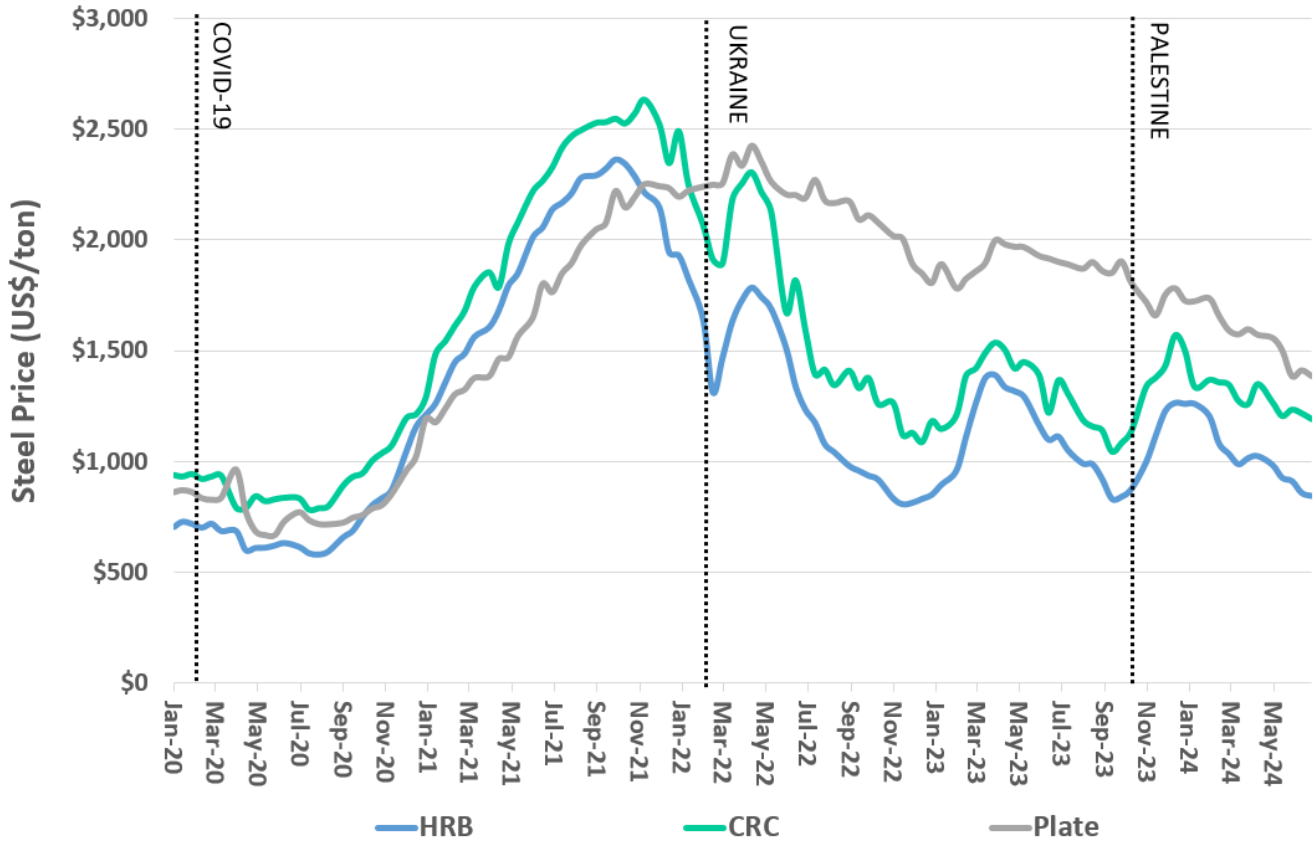
FDOT Impacts

- Structural steel prices rose to FY 2022 levels in FY 2024 after falling in FY 2023.
- Reinforcing steel prices declined in FY 2024 by 11%, but are not currently expected to return to pre-pandemic levels.
- Fabricators continue to pass on the majority of cost increases to clients.
- Work program quantities are projected to be front loaded in the first three years due to several major project starts.

General Trends

Generally speaking, steel prices declined through June 2024 after peaking in December 2023 (**Figure 32**). Price changes have varied by product, however. U.S. hot-rolled band prices fell 21% in July 2024, year-over-year, and are down 33% since January 2024. Since January 2024, cold-rolled coil and steel plate prices fell 11% and 27%, respectively. In its April 2024 Outlook, the World Steel Association (WSA) expects worldwide steel demand to increase 1.7% in 2024 and 1.2% in 2025. For the U.S., they expect growth of 1.4% in calendar year 2024, highlighting the impact from tightening monetary policy, high costs and high geopolitical uncertainties that will limit construction activity and growth. For 2025, they expect a 2% increase.

Figure 32. U.S. Steel Pricing, Jan. 2020 – July 2024

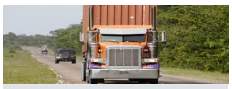


Source: AISI Weekly Raw Steel Production.

SUPPLY CHAIN VARIABLES: **STEEL**

Table 17 shows a summary of select variables that impact the steel supply chain and their current status, followed by historical variables in **Table 18**.

Table 17. Supply Chain Variables for Structural Steel

 Raw Materials	Prices for hot-rolled steel decreased 29% in February 2024 year-over-year. Prices declined most of 2023, but began increasing in November. However, prices appear to be declining again in 2024. Rebar prices have followed a similar trend, but at a smaller scale. Prices decreased 27% year-over-year. Iron ore prices saw an increased 12% in 2023 and have declined 5% year-over-year as of June 2024. Prices are still relatively high compared to 2019. Producers are able to get materials and lead times have are almost back to normal.	↓
 Scrap Steel	Scrap steel prices declined 20% in calendar year 2024 and 11% year-over-year, but are still 13% higher than pre-pandemic prices.	↑
 Galvanizing Steel	Global zinc prices have increased over the past year. In calendar year 2024 through June they increased 12% and year-over-year they increased 18%. Zinc prices are down to $1.27 per pound in June 2024 from their peak of $1.98 in April 2022, but are still 39% higher than June 2020. Surveys indicate that producers believe bids prices may increase in part due to the cost of galvanizing materials.	↑
 China	As of July 2024, prices have declined 12% to an average of $488 per ton, a 2% decline year-over-year. 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.	=
 Transportation	Diesel prices gradually declined through the fiscal year were down 2% year-over-year. The number of CDL drivers increased in calendar year 2023 and truckload demand has declined, which can increase availability. Producers report that trucking costs are rising. In April 2024, the FMCSA denied the FLHSMV's CDL exemption request from December 2023.	↑
 Rail	Trucking is the preferred method for transportation of finished product, but raw materials are delivered by rail to some fabricators. Other sectors continue having reliability issues with rail, however, this does not appear to be a problem for steel.	=
 Milling Capacity	Nationally, capacity utilization rates in calendar year 2024 averaged 76%, a slight increase from the 75% in 2023. Year-to-date production is down 2.7% to 45.6 million net ton and capacity utilization averaged 76%.	=

 Labor	Producers perceptions on the labor market are mixed. Some believe the market has improved and have seen increased numbers of people looking for work, both skilled and unskilled, while others believe the labor market has worsened. Wages have increased as a result.	↑
 Competition	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.	=

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

Table 18. Historical Steel Data, 2015 – 2024

*(Maximum values indicated with *, No data available indicated with **)*

Steel	Units	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
U.S. Price of Iron Ore[1]	$/Ton	$73.65	$66.32	$71.25	$84.37	$84.31	$82.80	$128.62	$141.90	$154.22*	$140.67
U.S. Price of Coal[2]	$/Ton	$153.65	$118.31	$130.89	$149.42	$118.19	$114.34	$112.44	$154.30	$161.20	$173.05*
Total Chinese Imports[3]	Billions of $	$1,680	$1,588	$1,844	$2,136	$2,078	$2,066	$2,679	$2,707*	$2,557	$624
Domestic Milling Capacity[4]	Million Tons	124.0	122.7	121.6	122.2	120.8	119.6	124.06*	120.5	121.8	117.6
World Steel Production[5]	Million Tons	1,750	1,773	1,858	1,973	2,031	2,021	2,099*	2,011	2,024	2,035
Steel Production Used in Construction[11]	%	17%	20%	20%	43%	44%	46%	47%*	46%	30%	41%
Florida Diesel Prices[6]	$/Gallon	$1.84	$1.44	$1.78	$2.22	$2.04	$1.78	$2.15	$3.73*	$3.10	$2.77
FL Construction Employees/All FL Non-Farm Employees[7]	%	5.3%	5.7%	5.9%	6.18%	6.30%	6.62%*	6.47%	6.38%	6.45%	6.49%
U.S. Price of Zinc[8]	Cents/lb.	$95.54	$101.37	$139.28	$141.05	$124.13	$110.79	$145.85	$190.19*	$151.26	$142.54
World Price of Zinc[8]	Cents/lb.	$87.64	$94.82	$131.25	$132.66	$115.60	$102.71	$136.29	$158.05*	$120.13	$113.20
Annual FDOT Work Program Allocation[9]	Billions of $	$3.18	$3.51	$4.00	$3.82	$3.83	$3.72	$2.66	$4.17	$5.42	$7.15*
Estimated FDOT Reinforcing Steel Consumption[10]	Tons	12,617	16,322	15,313	17,266	16,059	11,504	9,426	19,519	8,295	21,537*
FDOT Reinforcing Steel Cost[10]	$/lb.	$0.81	$0.86	$0.81	$0.97	$1.00	$0.88	$1.20	$1.49	$1.52*	$1.35
Estimated FDOT Structural Steel Consumption[10]	Tons	18,292	10,105	28,654	10,993	17,808	14,743	14,077	12,518	21,060	35,952*
FDOT Structural Steel Cost[10]	$/lb.	$2.27	$3.99	$2.75	$4.31	$2.79	$2.55	$3.84	$4.47	$3.51	$4.52*

Sources: 1. USGS, World Bank. 2. EIA. 3. WTO's World Trade Statistical Review, 2024 through April. 4. Standard & Poor's Metals Industry Survey. 5. World Steel Association. 6. FDOT State Construction Office. 7. Bureau of Labor Statistics. Workers in the agriculture sector are excluded from government and industry estimates due to conflicting seasonality and difficulty in measuring self-employment, hobby farms, and undocumented workers.[12] 8. USGS. 9. FDOT Office of Work Program. 10. Calculated, from data provided by FDOT Office of Forecasting and Project Cost. 11. USGS, 2024 estimated.

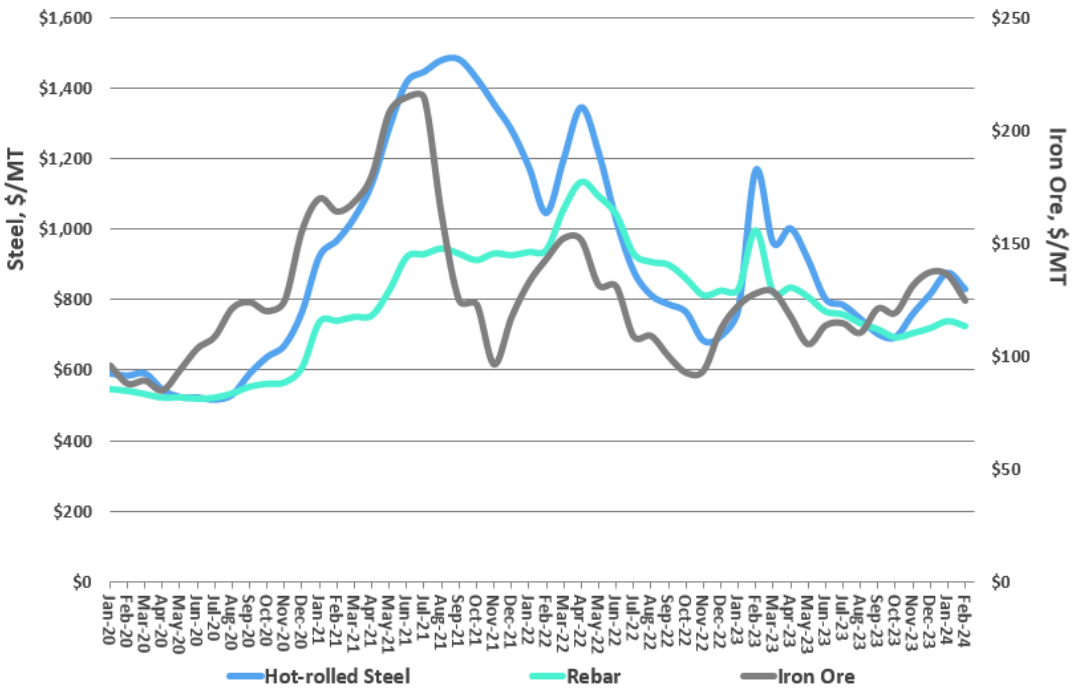
[12] https://www.stlouisfed.org/open-vault/2019/july/nonfarm-payrolls-why-farmers-not-included

Raw Materials & Scrap Steel

Producers report that some materials are readily available, while others are harder to get depending on thickness, grade, and width of plate materials. Lead times are returning to normal. In TBG's 2024 survey, fabricators expectations for 2025 were a mixed bag, with the reported range of bid price changes anywhere from a slight decline to up to 50%. Fabricators cited pressures from competition, costs of transportation, raw materials, and galvanizing materials, as well as pressure from residential and commercial demand. Some producers also experienced cost increases in 2024 anywhere from 3% to 25% related to 'Buy America' requirements.

In February 2024, hot-rolled steel prices declined 5% month-over-month and 29% year-over-year, and 54% higher compared to November 2019. Similarly, rebar prices were 27% higher year-over-year and 35% from pre-pandemic levels. On the other hand, iron ore prices decreased 5% through June 2024 compared to one year earlier (**Figure 33**).

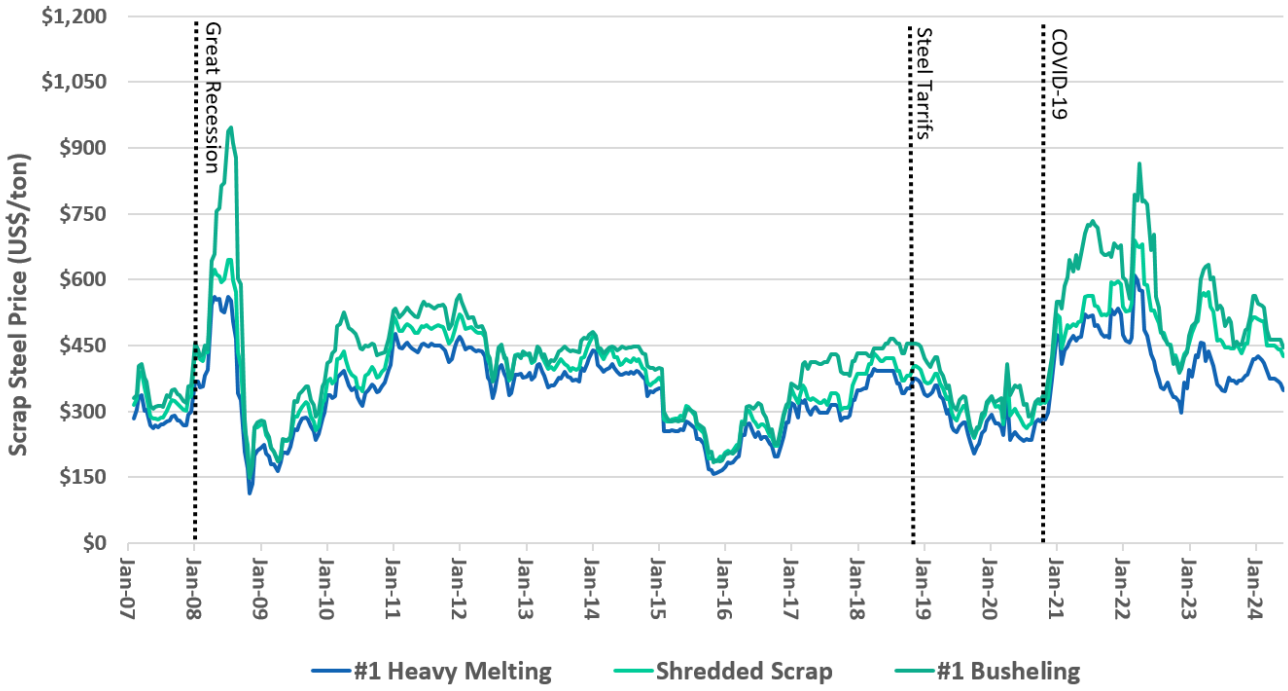
Figure 33. Historical Hot-rolled Steel and Iron Ore Prices



Source: World Bank, MEPS.

Prices rose and fell in FY 2024 similarly to FY 2023 and even with fluctuating have remained below the high levels in 2021 and 2022 (**Figure 34**). However, June 2024 prices are still elevated compared to pre-pandemic levels for Heavy Melting Scrap (39%), Shredded Scrap (50%), and #1 Busheling Shredded Scrap (51%). Compared to June of 2022, prices are down 3%, 8%, and 16% for Heavy Melting Scrap, Shredded Scrap, and #1 Busheling Shredded Scrap, respectively.

Figure 34. Scrap Steel Prices, January 2007 – July 2024

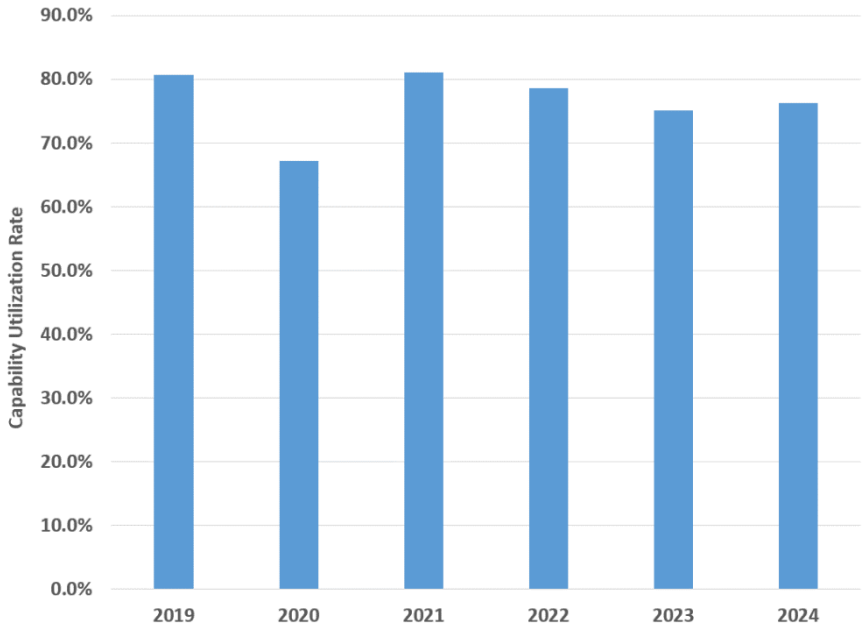


Source: Steelbenchmarker.

Capacity Utilization

U.S. steel capacity utilization fluctuated between 76% and 79% in calendar year 2024 based on data through July, continuing to be lower than the peak in 2021. Utilization rates have declined 10% since August of 2021 (**Figure 35**). As prices decline amid higher interest rates and weakening steel demand, producers try to avoid excess inventory.

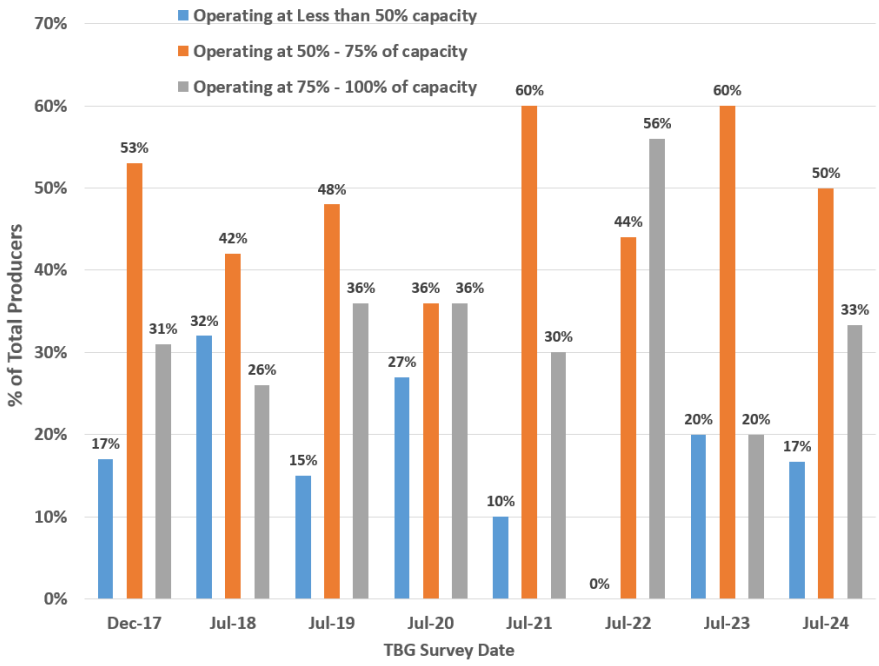
Figure 35. U.S. Steel Production Capacity



Source: American Iron and Steel Institute Weekly Steel Production. 2024 through July 6th.

Based on a limited number of responses, Florida steel fabricators were operating at about the same capacity as last year. This year's survey operating capacity was at 66% compared to last year's 67% and the average operating capacity from TBG's 2022 survey was 76% (**Figure 36**). This is consistent with the slowdown reported in the overall steel sector industry.

Figure 36. Survey Respondents' Operating Capacity: Florida Steel Fabricators

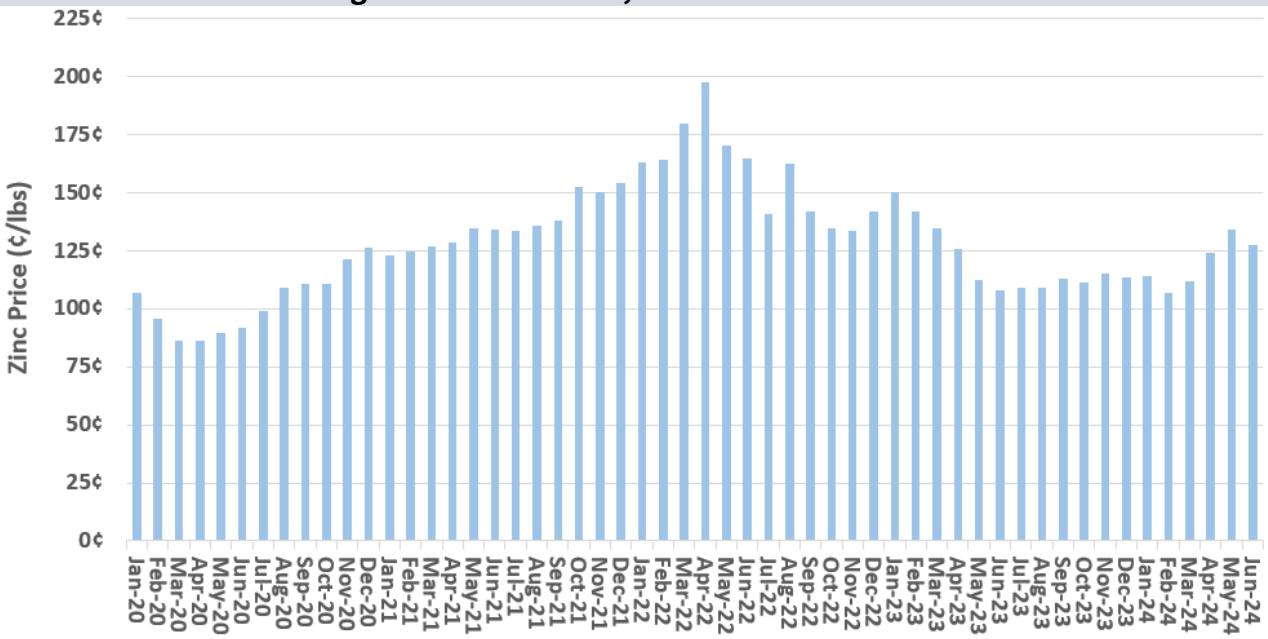


Source: TBG Survey; updated July 2024.

Galvanizing Materials

Global zinc prices peaked in April 2022 at $1.98 cents per pound, but have since declined to $1.07 cents per pound in February 2024 and then risen to $1.27 cents per pound in June 2024 (**Figure 37).** Year-over-year, zinc prices are 18% higher than June 2023. Compared to June 2020, zinc prices are up 39%. Some producers indicated that costs for galvanized materials may cause bid prices to increase.

Figure 37. Zinc Prices, Jan. 2020 – June 2024



Source: World Bank.

Trade

U.S. exports continued increasing in calendar year 2023 by 7% according to the most recent data from the International Trade Administration (**Table 19**). Imports after increasing 48% in calendar year 2021, had a slight decline of 5% in 2022 and a further decline of 9% in 2023. Notably, semi-finished products increased significantly in 2023; exports increased by 168% and imports increased 16%. This comes after semi-finished products had the largest decline for exports and imports in 2022.

Table 19. U.S. Exports and Imports of Steel Mill Products, By Group

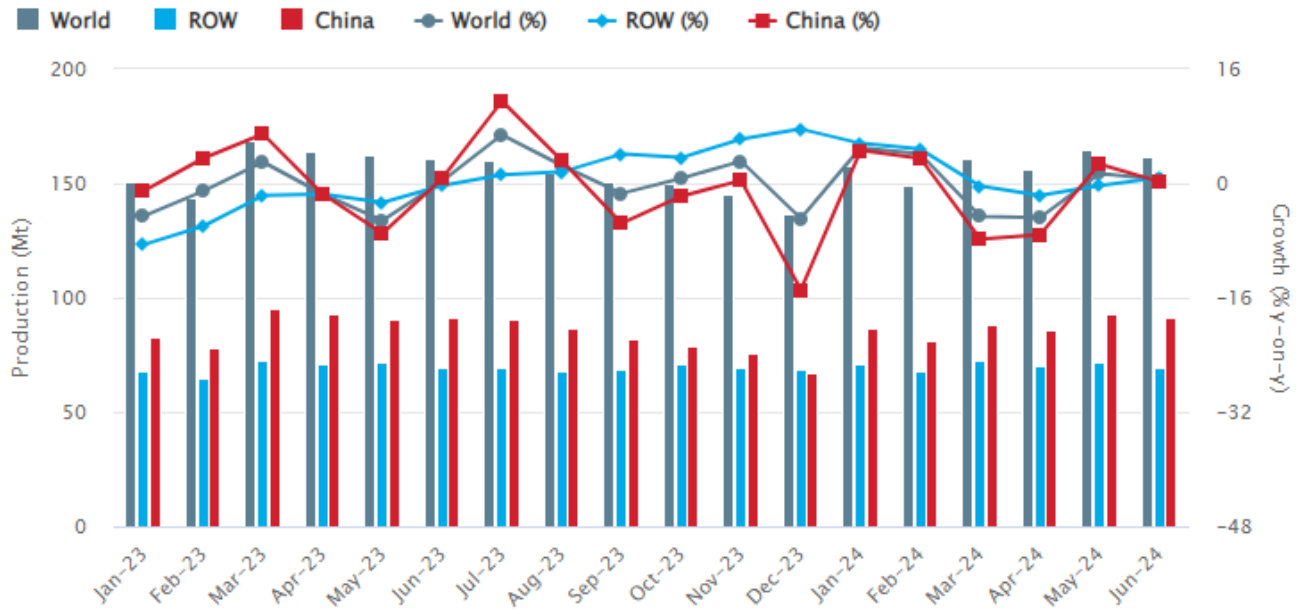
Products (000s of metric tons)	2018	2019	2020	2021	2022	2023	2024*
Exports							
Flat	4,741	4,383	4,034	5,069	5,097	5,549	2,390
Semi-Finished	68	60	119	146	107	288	76
Pipe and Tube	993	756	608	675	795	776	282
Long	1,866	1,332	1,304	1,633	1,661	1,623	662
Stainless	705	468	342	384	387	362	230
Other	68	50	22	47	61	83	16
Total Exports	**8,441**	**7,049**	**6,429**	**7,954**	**8,107**	**8,680**	**3,657**
Imports							
Flat	11,057	8,793	7,501	11,171	11,080	9,101	4,633
Semi-Finished	7,127	6,126	5,146	7,509	4,900	5,700	2,831
Pipe and Tube	6,422	5,371	3,046	3,957	5,374	5,061	1,929
Long	5,023	4,285	3,588	4,774	5,503	4,770	2,157
Stainless	979	777	705	1,154	1,140	934	422
Other	23	48	47	20	17	17	6
Total Imports	**30,632**	**25,401**	**20,032**	**28,577**	**28,015**	**25,583**	**11,978**

Source: U.S. Census, International Trade Administration; United States Department of Commerce, Enforcement and Compliance; * Data through May for Exports and Imports.

China

According to the WSA, global crude steel production was 165.1 million metric tons in May 2024, a 1.5% increase compared to May 2023 (**Figure 38**). Of the total, China produced 92.9 million metric tons, or 56% of global steel in May 2024, up 2.7%, year-over-year. Steel demand in China is expected to decline 3.3% in 2023, flatten in 2024, and decline 1% in 2025. The WSA also expects China's steel demand will remain at the 2023 level in 2024 as real estate investments decline but are offset by growth in infrastructure investments and manufacturing sectors. The projected decline in 2025 may occur as a result of the expected shift away from economic development that has been in real estate and infrastructure investment. The Biden Administration has recently announced stricter tariff enforcement on steel and aluminum products imported from other countries that are melted and poured in a country other than Mexico or Canada. This is to combat moves by countries like China to evade U.S. tariffs.

Figure 38. Crude Steel Production, China versus the Rest of the World

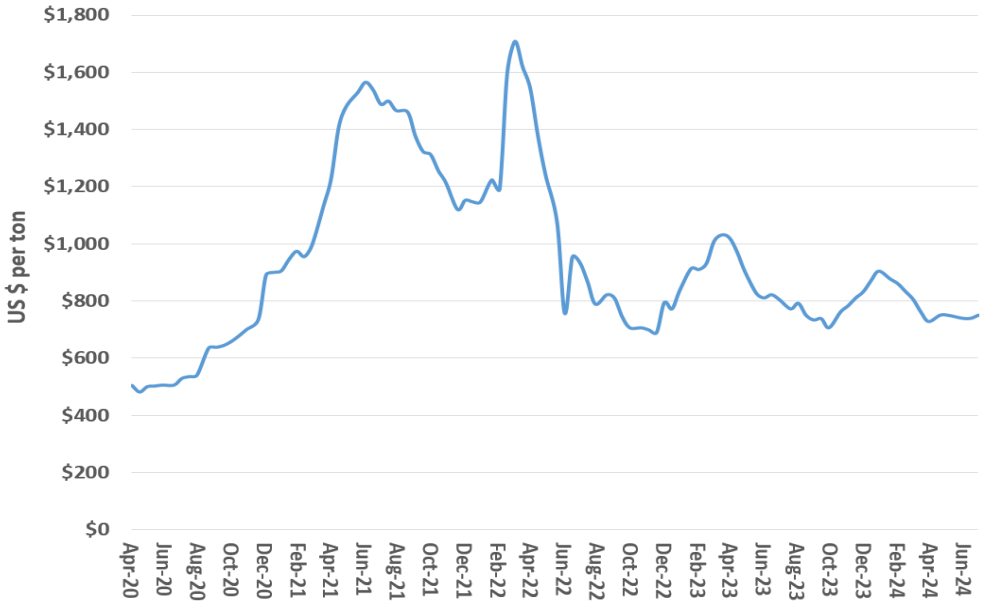


Source: World Steel Association.

Europe

Crude steel production was up 5.1% for European Union member nations in June 2024 compared to the same month last year and was down 0.4% year-to-date. By comparison, North America production was down 1.5% in June of 2024 compared to June of 2023 and down 2.4% year-to-date. European steel prices have followed the same pattern as U.S. steel and have declined since the beginning of 2024. In July 2024, Hot-Rolled Band (HRB) prices were 8% lower over a year ago. Prices have been falling due to weakening steel demand (**Figure 39**).

Figure 39. HRB Steel Prices in Western Europe, Apr. 2020 to July 2024



Source: TBG Work Product, SteelBenchmarker.

Competition

Despite some volatility in the number of approved facilities over the last few years, the pool of fabricators was 133 in FY 2024, close to number of fabricators available in 2012 (**Table 20**). **Table 21** summarizes FDOT approved steel facility concentration by location. Steel fabricators serving FDOT can be found in nearly every state, but are largely concentrated in the eastern half of the country due to transportation costs.

Table 20. FDOT Approved Steel Facilities by Type

Location and Type	2012	2024
Florida		
Bridge	5	5
Guardrail	0	0
Miscellaneous Metal	16	16
Sign Structures	6	6
Out of State		
Bridge	32	40
Guardrail	11	15
Miscellaneous Metal	44	33
Sign Structures	21	18
Total	**135**	**133**

Source: FDOT Approved Producer List, 2024 as of June 3rd. Note: *Excludes Florida plants.

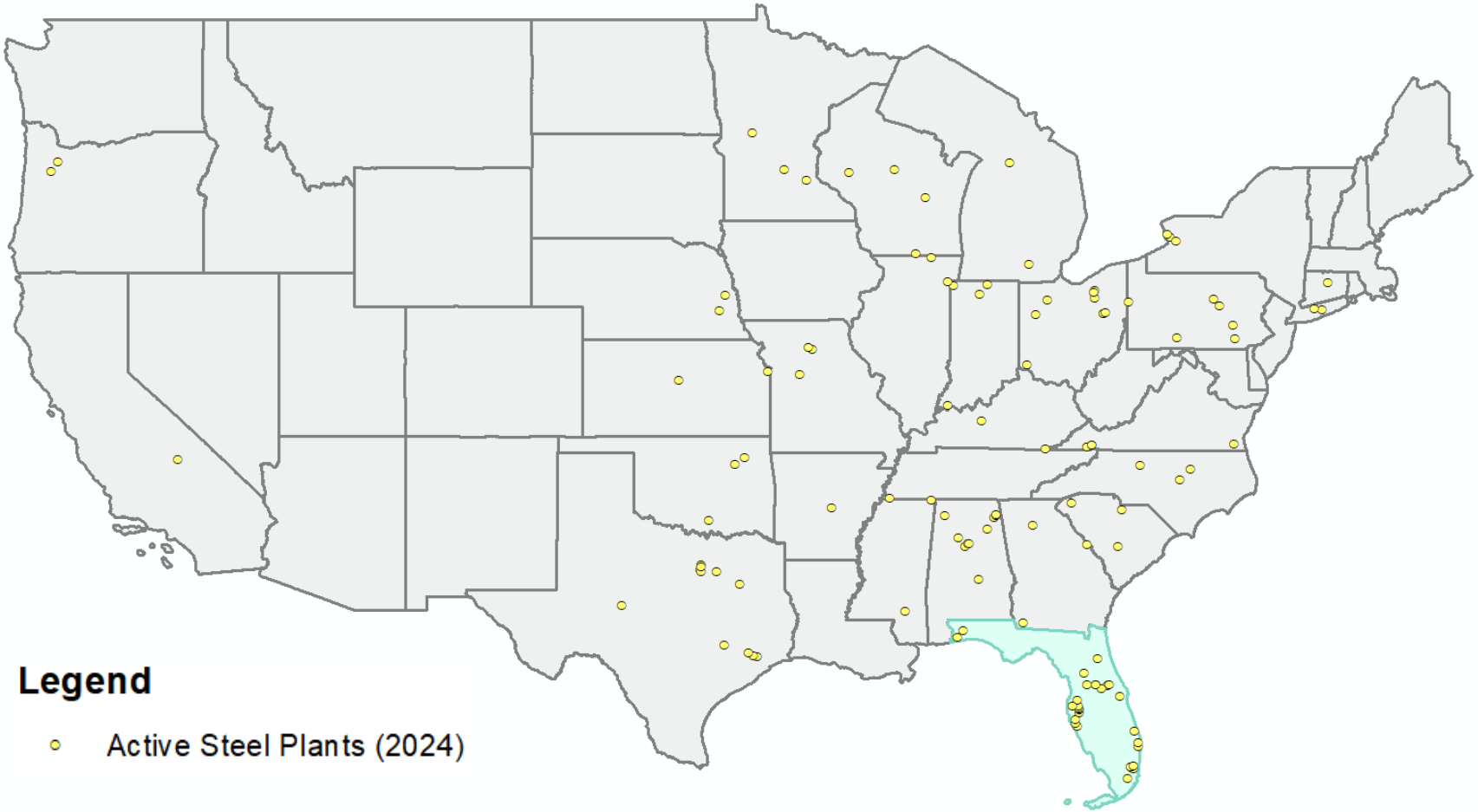
Table 21. FDOT Approved Steel Facilities by Location

Location	2012	2024
Local		
Florida	27	27
National		
East Coast*	29	32
Midwest	41	40
Gulf Coast	30	27
Rocky Mountains	3	2
West Coast	3	5
Outside U.S.		
Canada	2	0
Total	**135**	**133**

Source: FDOT Approved Producer List, 2024 as of June 3rd. Note: *Excludes Florida plants.

Figure 40 maps prequalified FDOT steel plant locations as of July 2024.

Figure 40. FDOT Approved Steel Producer Facilities



Source: FDOT, TBG Work Product

Material Quantities

Materials quantities estimates have been prepared for Reinforcing and Structural Steel. However, there is potential for substantially higher quantities of steel and metal products to be considered, and an additional line item labelled "Other Steel" is included in the Future Quantities tables herein. The "Other Steel" category is estimated from all pay items that have a steel or metal product component, that are outside reinforcing and structural steel pay items. Reinforcing and Structural Steel quantities are estimated using historical ratios. **Table 22** shows statewide results, while District-level results are provided in **Table 23**.

Table 22. FDOT Future Steel Material Requirements

FY	2025	2026	2027	2028	2029
Reinforcing Steel	16,661	18,455	14,799	11,057	10,847
Structural Steel	21,718	24,055	19,291	14,413	14,139
Other Steel	88,237	97,735	78,376	58,557	57,447
Total Tons	**126,616**	**140,245**	**112,466**	**84,026**	**82,434**

Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

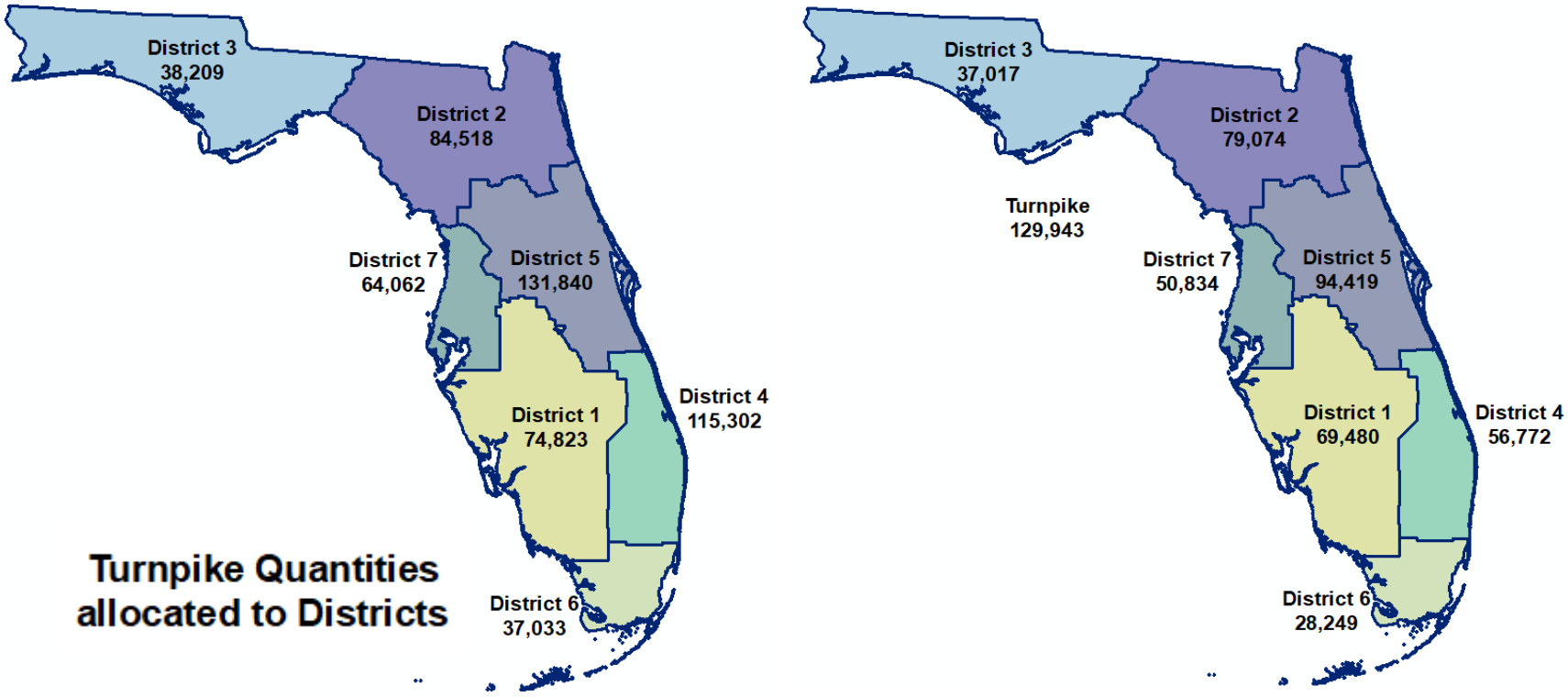
Table 23. FDOT Future Steel Material Requirements by District

District	2025	2026	2027	2028	2029
D1	9,253	9,930	31,595	6,411	12,290
D2	12,948	23,212	12,039	16,289	14,585
D3	10,113	9,986	6,292	5,105	5,520
D4	16,339	9,121	18,080	5,338	7,895
D5	28,835	36,928	13,734	6,743	8,178
D6	4,259	9,770	9,023	3,464	1,733
D7	13,134	11,744	7,533	13,363	5,060
D8	31,734	29,554	14,170	27,313	27,172
Total Tons	**126,616**	**140,245**	**112,466**	**84,026**	**82,434**

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

Figure 41 shows total FDOT steel requirements over the Five-year Work Program.

Figure 41. Total Steel Quantities for Five-year Work Program (Tons)

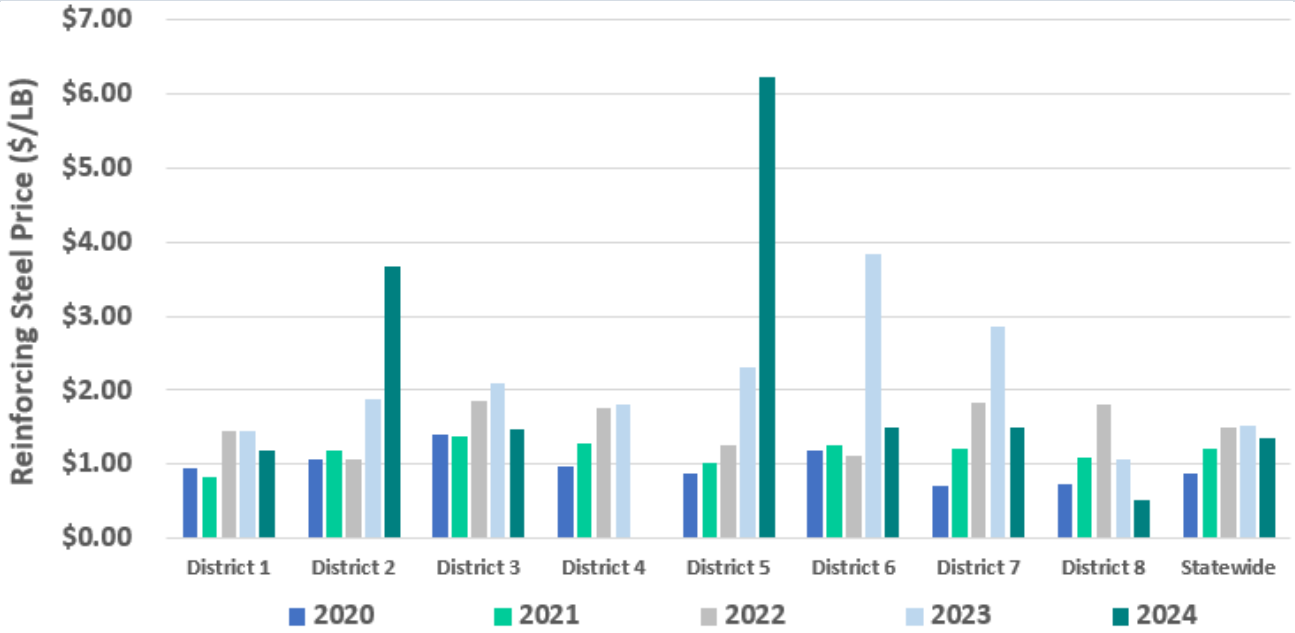


Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Current Pricing

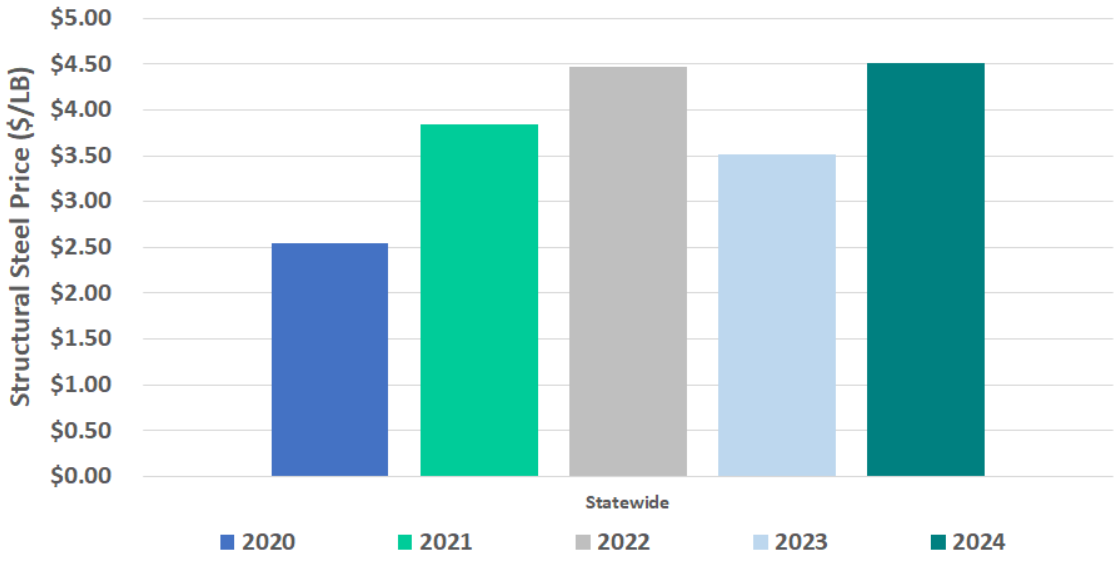
Figure 42 shows price variation in the last 5 years by district for reinforcing steel. Districts 2 and 5 saw the highest prices in FY 2024. Based on FDOT bid prices, statewide reinforcing steel prices were down 11% in FY 2024 compared to FY 2023. **Figure 43** shows structural steel price variation over the last 5 years. Statewide structural steel prices increased 29% in FY 2024 compared to the previous year. Insufficient bid data exists to break structural steel costs down by district.

Figure 42. Reinforcing Steel Prices by District



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Figure 43. Statewide Structural Steel Prices



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Steel Forecast

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 24** provides the forecast average price for structural and reinforcing steel.

Table 24. FDOT Steel Price Forecast Results

Year	2024	2025	2026	2027	2028	2029
Price Structural Steel, $/lb.	$4.52	$4.34	$4.39	$4.46	$4.52	$4.59
Percent Change, %	28.6%	-3.9%	1.2%	1.4%	1.4%	1.5%
Price Reinforcing Steel, $/lb.	$1.35	$1.32	$1.33	$1.39	$1.47	$1.54
Percent Change, %	-11.2%	-2.2%	0.6%	4.7%	5.2%	5.0%

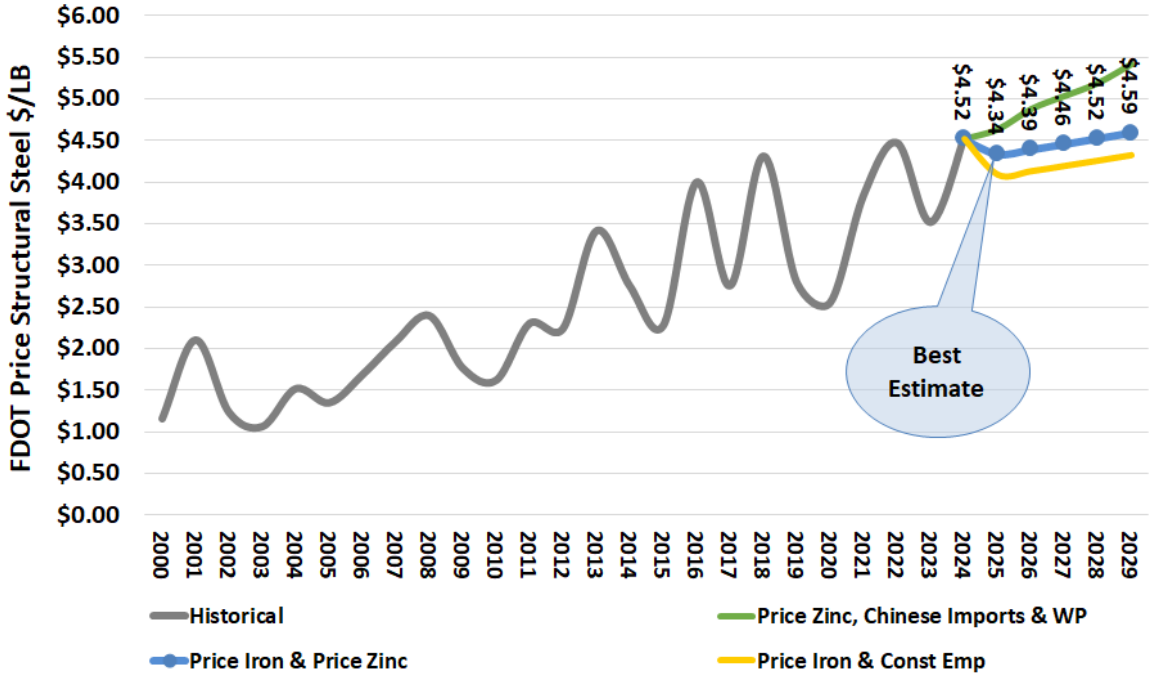
Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

Steel costs generally decline through the last quarter of FY 2024, though at different rates depending on product type. Still, with limited bid data and updated industry forecasts, the best estimate of FY 2025 structural steel costs rose 8% compared to the previous report. However, price declines are still expected to occur over the next fiscal year as contractors report better pricing, quote duration, and lead times. The forecasted price of inputs like iron ore and zinc support price increases from FY 2026 forward of about 1.4% annually. On the upper bound, high demand and imports for competing sectors could lift structural steel prices over $5 per pound. A flatter commodity price and employment scenario is shown in the lower bound.

Weighted average reinforcing steel prices moderated in FY 2024, falling 11% compared to FY 2023. The FY 2025 forecast was revised to reflect the improved market, with a further decline of about 2% expected. The best estimate currently predicts a slight increase in reinforcing steel costs for FY 2026 and then a 5% annual increase for the remaining years of the work program based on updated construction employment and crude oil price forecasts. The upper bound takes Florida economic growth, construction employment, and medium crude oil prices into consideration. The lower bound, measuring iron ore and lower crude prices, shows a much steeper, and unlikely, decline in FY 2025 to pre-pandemic levels.

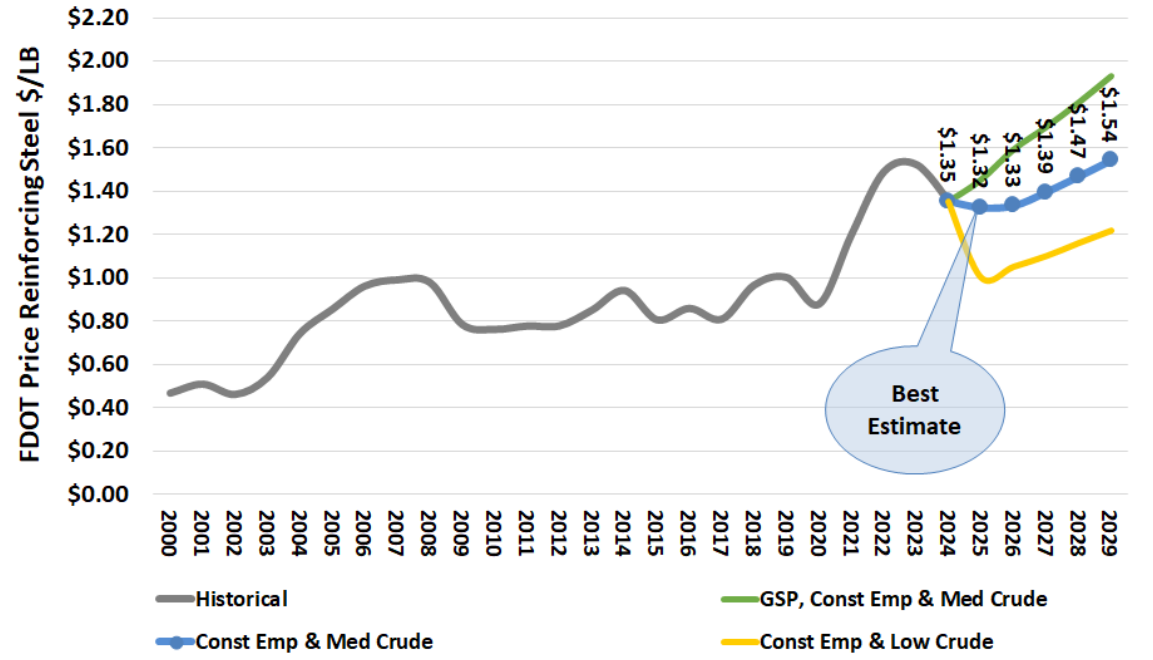
Figure 44 and **Figure 45** show the output of several price models and the scenario identified as best estimate for structural steel and reinforcing steel, respectively.

Figure 44. FDOT Structural Steel Price Forecast



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

Figure 45. FDOT Reinforcing Steel Price Forecast



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

AGGREGATE

Summary

- Demand for aggregate material continues to be high. Crushed stone production in Florida rose 2% in calendar year 2023 and producers reported a higher capacity utilization. Mergers and acquisitions have picked up as companies try to expand their resources.
- Prices increases moderated through the fiscal year; increases are expected to continue through calendar year 2024, but not all producers report significant increases this year.
- Public infrastructure and industrial/warehouse construction are currently major drivers of demand statewide.

FDOT Impacts

- FDOT's aggregate base prices increased 30% in FY 2024, with further increases forecast in FY 2025 and FY 2026 due to high demand.
- According to interviews, supply issues have improved but are not totally abated, with some producers still having issues with availability. Additional out-of-state supply from Georgia and overseas supply from Canada and the Caribbean continue coming into Florida.
- Port expansions and improvements in rail availability and reliability were also reported in FY 2024. Labor, rail, trucking and permitting issues remain, but don't appear to be getting worse.

General Trends

According to quarterly data released by the USGS, crushed stone production in Florida for calendar year 2023 was up 1.5%, but during the first three months of 2024, production declined 5.4%. Quarterly reports from most publicly traded companies showed a decline in shipments during the first quarter of calendar year 2024. However, the main reason cited was adverse weather conditions, not a change in market conditions. Prices increases moderated compared to last year, with single digit to low double digit increases. For the rest of 2024, the outlook is that public infrastructure will drive demand and expected price increases as high as 12%. Producers in the survey indicated a higher increase of 17% in bid prices, with the majority citing aggregate costs and competition as the two main factors.

Respondents in the 2024 survey expected a smaller share of FDOT work than they did for 2023. On average, the share of FDOT work in 2024 is expected to be 27% (down from 32%). The share for non-roadway is 55% (up from 34%). Multiple producers indicated a share higher than 90% for non-roadway work. In 2024, the share of producers (47%) who anticipate the industry having issues to meet demand was smaller than last year's 60%, but it is still high. The reasons are widespread over aggregate availability as well as labor, trucking and permitting issues. Overall, the percent of capacity used increased from 61% last year to 74% this year. In 2024, about the same number of producers (64%) indicated intentions to expand capacity in the next 5 years compared to 2023 (60%).

SUPPLY CHAIN VARIABLES: **AGGREGATE**

Table 25 provides current status of selected supply chain variables, and **Table 26** provides historical data for variables impacting FDOT's aggregate costs.

Table 25. Aggregate Supply Chain Variables

 Raw Materials	The USGS reported that Florida's crushed stone production rose 1.5% in calendar year 2023 and declined 5.4% during Q1 of calendar year 2024. Nationally, production was flat in 2023 and down 4.6% in Q1 of calendar year 2024. Prices from publicly traded companies showed some moderation and divergence from what happened throughout the year. In the first three months of 2024, prices were between -2% and 12% year-over-year. Volumes also fluctuated between -12% and 9%, with weather cited as the main cause. New sources of aggregate are covered in the respective section in the report.	↑
 Access to Land	Access to land with suitable deposits is key to cost-effective material extraction for FDOT Aggregate. As mentioned elsewhere in the report, a recent ruling on Florida's 404 permitting program, can cause more delays and it has been reported that the Mexican government intends to buy Vulcan's quarry in Mexico. Most environmental resource permits issued throughout the year were for modifications of existing permits/mines, which include expansions. For those who were issued permits, applications for formal determinations averaged 16 months (ranged between 8 and 39 months), while applications for modifications took on average over 4 months (ranged between one and 21 months). This year's survey showed fewer producers (55%) having environmental regulations or land use rules affecting production. The likelihood of these affecting production over the next five years averaged 37% (similar to last year's 40%).	=
 Rail	Rail is the primary transportation for aggregates from Georgia, and from Lake Belt to Central and Northeast Florida. Rail prices have also shown moderation. In Q1 of calendar year 2024, tons and revenues of aggregate products shipped by CSX declined by 8% and 7% year-over-year, respectively. In FY 2024 through march, tons were flat, while revenues were up 3%. However, these statistics are for CSX's whole system as location specific data is not available. Some interviews indicated that while service has improved, some issues persisted throughout the year. As mentioned elsewhere in the report, the reopening of Seminole Gulf Railway's line to Fort Myers in February 2024 will allow aggregate products to be shipped again, which reduces costs for producers in the area.	↑

 Trucking	Diesel prices gradually declined throughout FY 2024, ending up down 2% year-over-year. The number of CDL drivers increased in calendar year 2023. On average, producers shipped materials 57 miles from the aggregate source to projects. But this is influenced by a response that indicated 300 miles. Without this response, the average goes down to 40 miles. Some producers indicated issues with trucking availability.	↑
 Labor	Throughout the year producers continued reporting issues with finding and retaining skilled labor. Perceptions on whether the labor market has improved or not were mixed. Some believe it is about the same, while others think it has worsened. Statewide construction employment continued increasing year-over-year, and growth has picked up in calendar year 2024. Nationally, stone mining and quarrying employment was flat in 2024 and wages were up, aligning with interview feedback.	↑
 Competition	In FY 2024, aggregate producers in FDOT's producer approved list rose by 2.8%. Throughout the year, new locations and acquisitions were announced such as an aggregate materials provider announcing the opening of a new location in Daytona Beach and Martin Marietta's acquisition of Miami's aggregate operations from Blue Water Industries. BABA restrictions do not apply to aggregates, so any changes to waivers don't affect imported material	=
 Capital Costs	Higher interest rates increase acquisitions costs. Reports indicated improvements in the overall equipment supply chain in both availability and prices. Producers indicated in this year's survey that production in 2025 could be affected between -10% and 10% due to changes in interest rates. In July 2024, Cemex announced a joint venture with Couch Aggregates and Premier Holdings. Couch Aggregates has operations in Alabama and northwest Florida, while Premier Holdings operates marine terminals in the Gulf Coast.	↑

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

Table 26. Historical Aggregate Data, 2015 – 2024

*(Maximum values indicated with *)*

Aggregate	Units	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Crude Oil (WTI Spot Price)[1]	$/Barrel	$48.66	$43.29	$50.80	$65.23	$56.99	$39.16	$68.13	$94.90*	$77.58	$79.69
Total Chinese Imports[2]	Billions of $	$1,680	$1,588	$1,844	$2,136	$2,078	$2,066	$2,679	$2,707*	$2,557	$624
Florida Diesel Prices[3]	$/Gallon	$1.84	$1.44	$1.78	$2.22	$2.04	$1.78	$2.15	$3.73*	$3.10	$2.77
USGS Estimated Florida Statewide Crushed Stone Produced or Used[4]	000s of Tons	74,275	81,438	82,540	85,736	95,764	101,384	93,560	101,053	102,596	105,387*
USGS Average Florida Crushed Stone Price[4]	$/Ton	$10.80	$11.38	$11.44	$11.66	$12.01	$12.43	$14.43	$15.24	$15.01	$15.47*
FL Heavy & Civil Engineering Employees/ All FL Construction Employees[5]	%	12.25%	12.41%	12.86%	12.50%	12.72%	13.03%*	12.88%	12.85%	12.63%	12.06%
FL Construction Employees/All FL Non-Farm Employees[5]	%	5.33%	5.67%	5.89%	6.18%	6.30%	6.62%*	6.47%	6.38%	6.45%	6.49%
Average Hourly Earnings Stone Mining and Quarrying[5]	$/Hour	$20.65	$21.41	$22.14	$23.44	$26.53	$26.33	$26.21	$27.07	$27.85	$28.53*
Annual FDOT Work Program Allocation[6]	Billions of $	$3.18	$3.51	$4.00	$3.82	$3.83	$3.72	$2.66	$4.17	$5.42	$7.15*
Crushed Stone Imports into Ports Serving Florida[7]	000s of Tons	6,604	6,311	7,387	8,185	8,484*	8,483	8,346	8,361	7,924	2,587
FDOT Aggregate Base Weighted Average Price[8]	$/Square Yard	$14.86	$16.55	$18.11	$16.39	$16.45	$19.53	$20.01	$23.11	$26.32	$34.29*
FDOT Earthwork Weighted Average Price[8]	$/Cubic Yard	$7.64	$6.97	$6.95	$6.08	$5.90	$8.39	$8.26	$12.50	$11.31	$18.70*

Sources: 1. EIA – Annual Average Spot Price; for 2024, YTD average through May. 2. WTO's World Trade Statistical Review; 2024 through May. 3. FDOT Construction Office; 2024 through June. 4. US Geological Survey; 2024 estimated. 5. U.S. Bureau of Labor Statistics. Workers in the agriculture sector are excluded from government and industry estimates due to conflicting seasonality and difficulty in measuring self-employment, hobby farms, and undocumented workers.[13] 6. FDOT Office of Work Program. 7. U.S. I.T.C.; calendar year 2024 through April. 8. Calculated from FDOT Office of Forecasting and Project Cost data.

[13] https://www.stlouisfed.org/open-vault/2019/july/nonfarm-payrolls-why-farmers-not-included

Raw Materials

Aggregate sources for FDOT are pre-approved mining locations throughout Florida, Georgia, Alabama and a few offshore sites, including Mexico, Nova Scotia, Newfoundland, New Brunswick, the Caribbean, and Central America. In FY 2024, Canada was by far the main source of imports, followed by the Bahamas and Honduras. Spain was fourth, but interviews indicated that they have to remain 2-3 months at the port for testing. In calendar year 2024, there are reported imports from Panama and it was the fifth largest source of imported material. Rock suitable for FDOT specs shipped by US companies through Canadian ports could expand aggregate supply without violating the Jones Act, which prohibits foreign built or flagged ships from coastwise trading within the US.

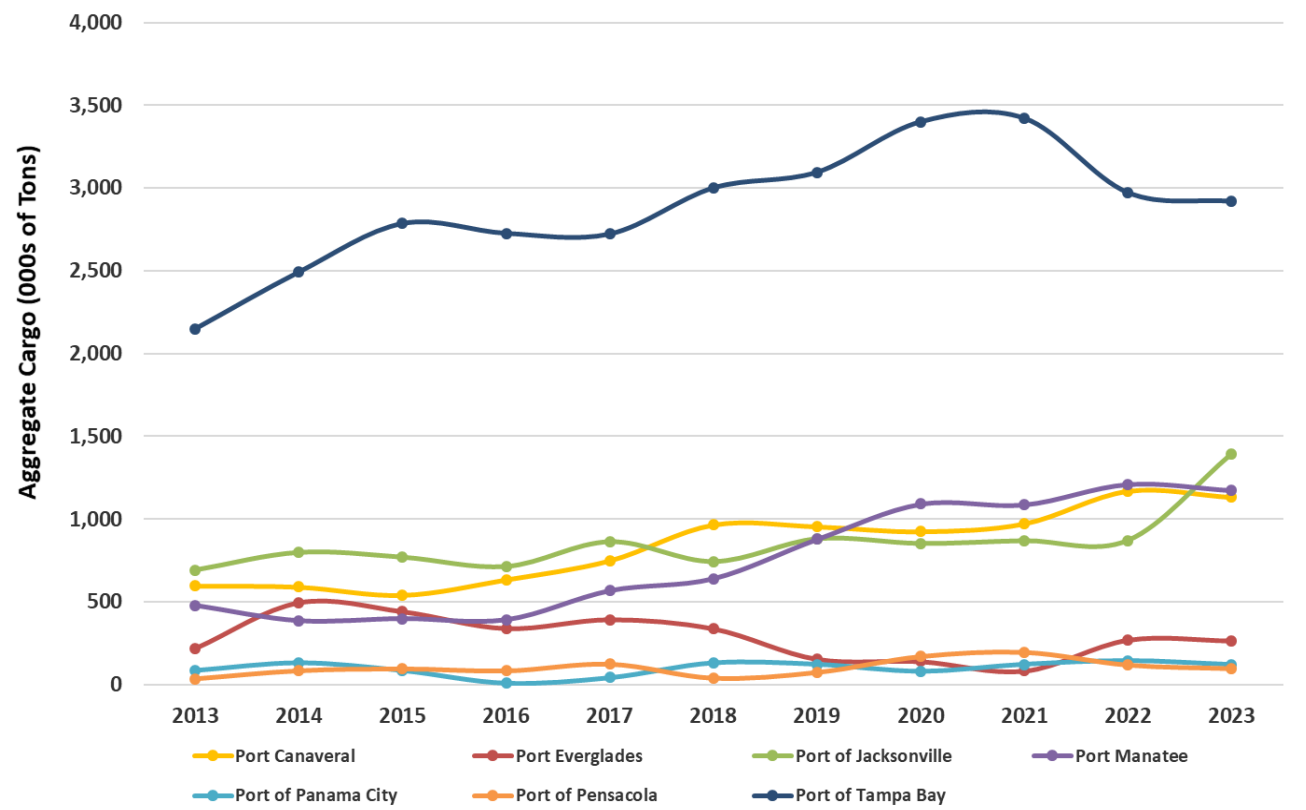
Some publicly traded companies report their aggregates reserves in their annual reports. For 2023, the average percent change in the total measured and indicated resources, total inferred resources and total proven and probable reserves of rock were -16%, 13% and 12%, respectively. In terms of production, these companies averaged a 1% decline in 2023. However, companies report the data differently, some report national data while others have different regions. None of the companies reported a decline in the expected remaining life of their aggregate reserves. The lowest of the companies researched was 30 years and the highest 75 years[14].

This year, new potential sources for aggregate material included applications by Cemex to develop an aggregates terminal at the Port of Tampa. Additionally, the Port approved extensions to Ajax Paving and Redwing Materials to import and process aggregates. Recently, the Port of Jacksonville also approved a 20-year extension to Martin Marietta's lease at the port. Martin Marietta also purchased Blue Water Industries aggregate plants in Miami and Summit Material's merger with Argos will increase the company's aggregate operations in Florida.

Aggregate related cargo data has been compiled from each Port's annual report **Figure 46**. Overall, aggregate imports rose by 5% in FY 2023. This increase is explained by the significant increase seen at the Port of Jacksonville. Tons were almost 1.4 million, a 60% increase. Cargo in all of the other ports declined, but none in a significant matter.

[14] These are based on 2023 production levels

Figure 46. Aggregate Cargo through Florida Ports



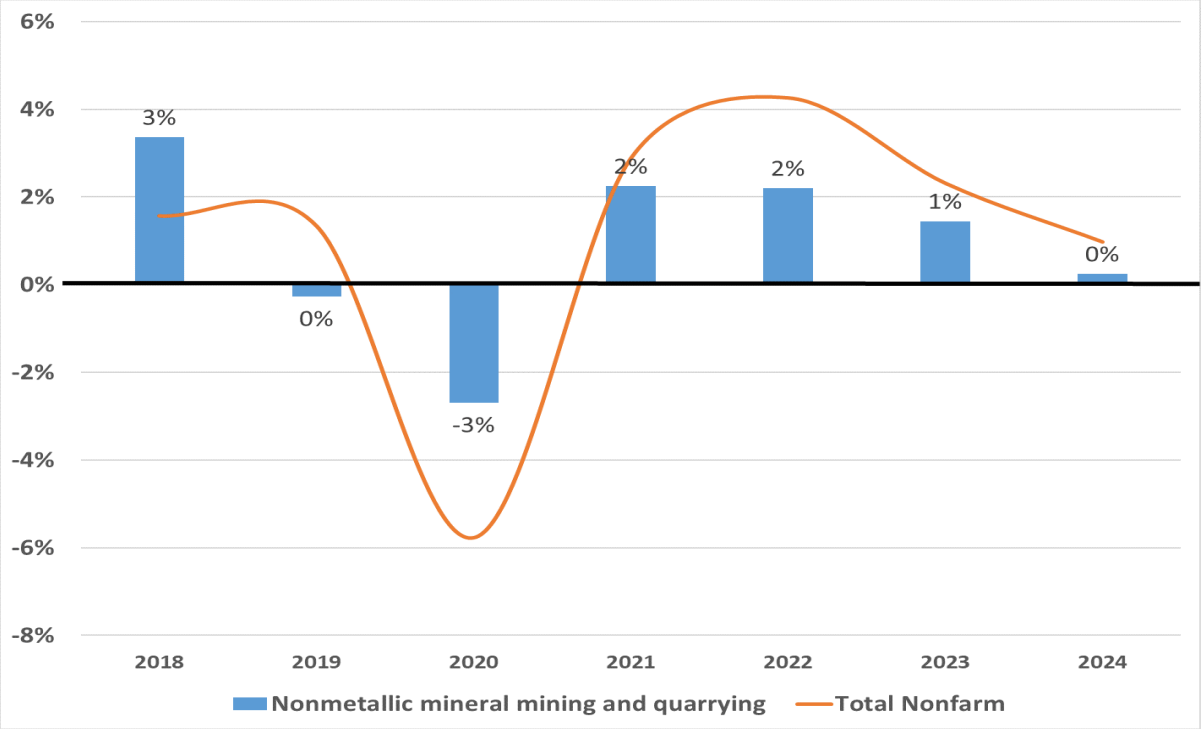
Sources: 1. Canaveral Port Authority Comprehensive Financial Annual Report. 2. Port Everglades Annual Commerce Report, USACE Annual Waterborne Commerce of the United States. 3. Jacksonville Port Authority Historical Bulk Information. 4. Manatee Port Authority Annual Financial Report. 5. USACE Annual Waterborne Commerce of the United States. 6. Port Tampa Bay Comprehensive Annual Financial Report.

Labor

The recovery in demand for aggregate has increased demand for labor over the last few years. However, it slowed down in 2023 and 2024 in line with what has happened in the economy. Nationally, employment in the non-metallic mineral mining grew 1% in calendar year 2023 and it has been flat in calendar year 2024. Both slightly lower than the overall growth of total nonfarm employment (**Figure 47**). Similar to last year, skilled labor is seen as a primary reason by producers to have difficulty meeting demand.

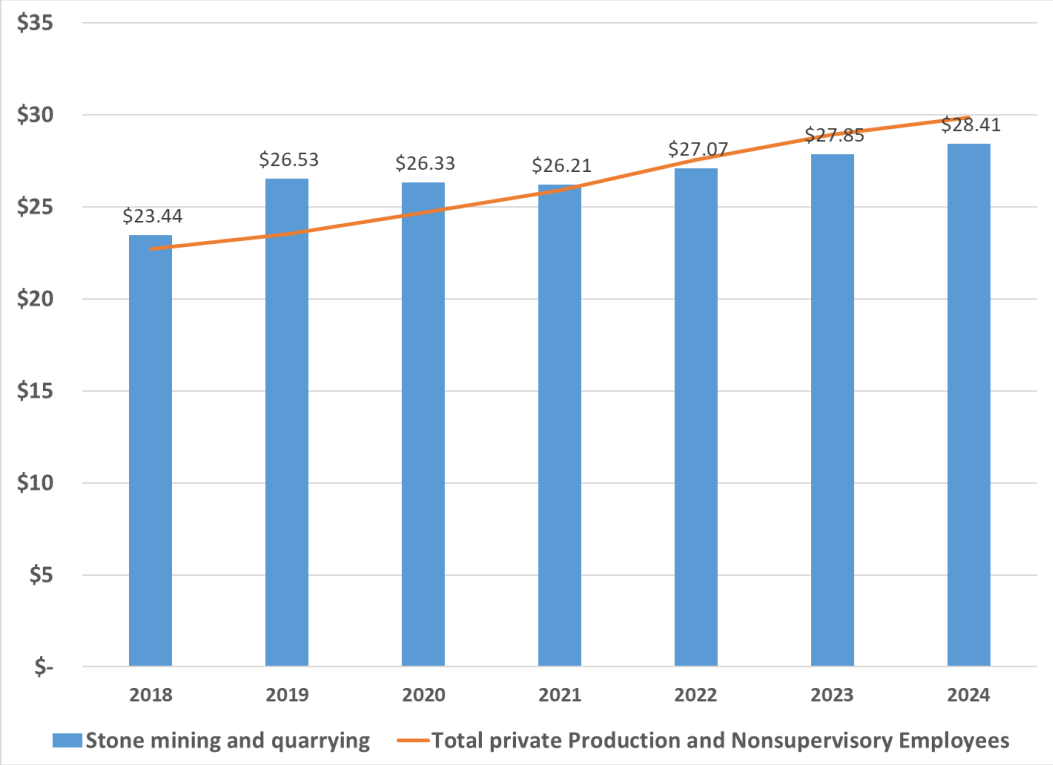
With new data revisions from the Bureau of Labor Statistics, national stone & quarrying average hourly wages increased 2-3% annually since 2022 (**Figure 48**). Producers continued indicating labor shortages, which will prevent wages from going down. Interviews and the survey highlight that finding experienced and skilled labor is an ongoing issue.

Figure 47. Aggregate Industry Employment Growth



Source: Bureau of Labor Statistics.

Figure 48. Aggregate Industry Average Hourly Wages



Source: Bureau of Labor Statistics.

Lake Belt

The Lake Belt region of South Florida is an important source of aggregate for FDOT. Aggregate production in Lake Belt rose in FY 2023 by 7%, negating the decrease seen in FY 2021. The per ton mitigation fee rate that mines must pay in the Miami-Dade County Lake Belt Area to extract limerock and sand have been unchanged at $0.05 since FY 2018 (**Table 27)**. Interviews indicated a lifespan of 15 years for the Lake Belt region.

Table 27. Lake Belt Fee Rates, 2013 – 2022

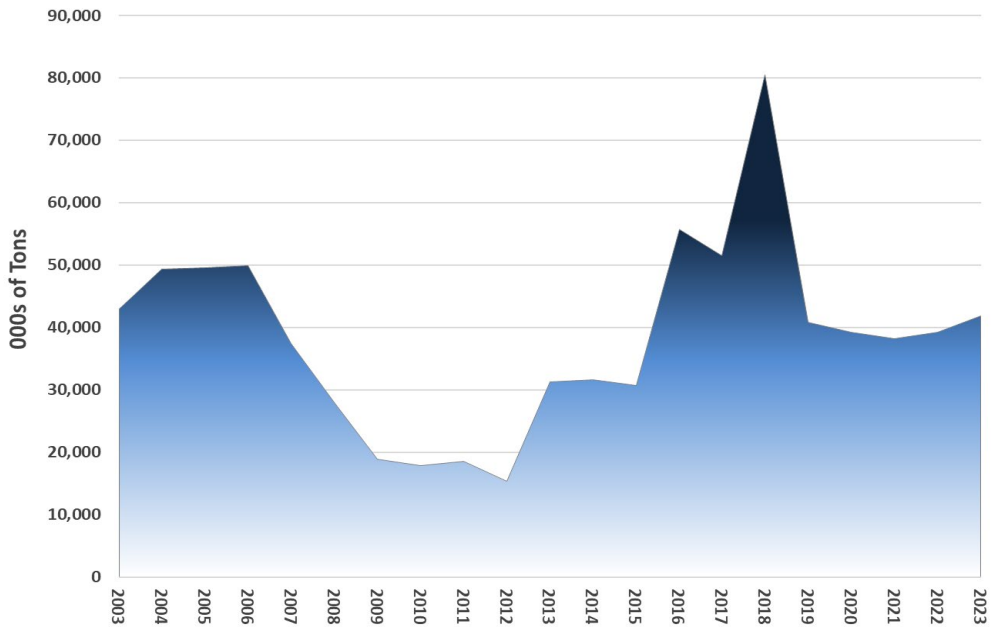
Fiscal Year	Per-Ton Fee Rate	Total Collections	Percent Change	Total Tons Extracted	Percent Change
2013-14	0.45	$14,237,681	1%	31,639,292	1%
2014-15	0.45	$13,811,791	-3%	30,692,868	-3%
2015-16	0.25	$13,937,265	1%	55,749,058	82%
2016-17	0.15	$7,724,044	-45%	51,493,627	-8%
2017-18	0.05	$4,027,804	-48%	80,556,081	56%
2018-19	0.05	$2,042,183	-49%	40,843,667	-49%
2019-20	0.05	$1,962,442	-4%	39,248,843	-4%
2020-21	0.05	$1,911,975	-3%	38,239,490	-3%
2021-22	0.05	$1,963,552	3%	39,271,040	3%
2022-23	0.05	$2,094,485	7%	41,889,700	7%

Source: FL DOR.

Figure 49 provides a snapshot of production over the past 20 years, followed by **Figure 50**, which shows production on a monthly basis for the same timeframe.

Production in the Lake Belt Region has continued rising since FY 2021. Production in FY 2023 was 41.9 million tons, a 7% increase compared to FY 2021.

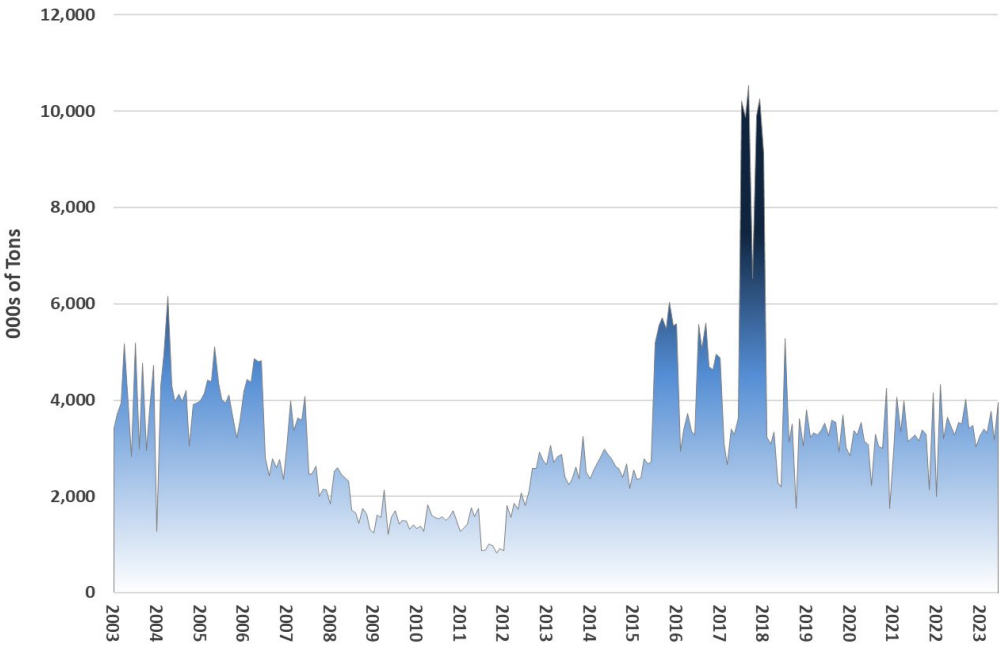
Figure 49. Annual Lake Belt Production, 2003 – 2023



Source: FL DOR.

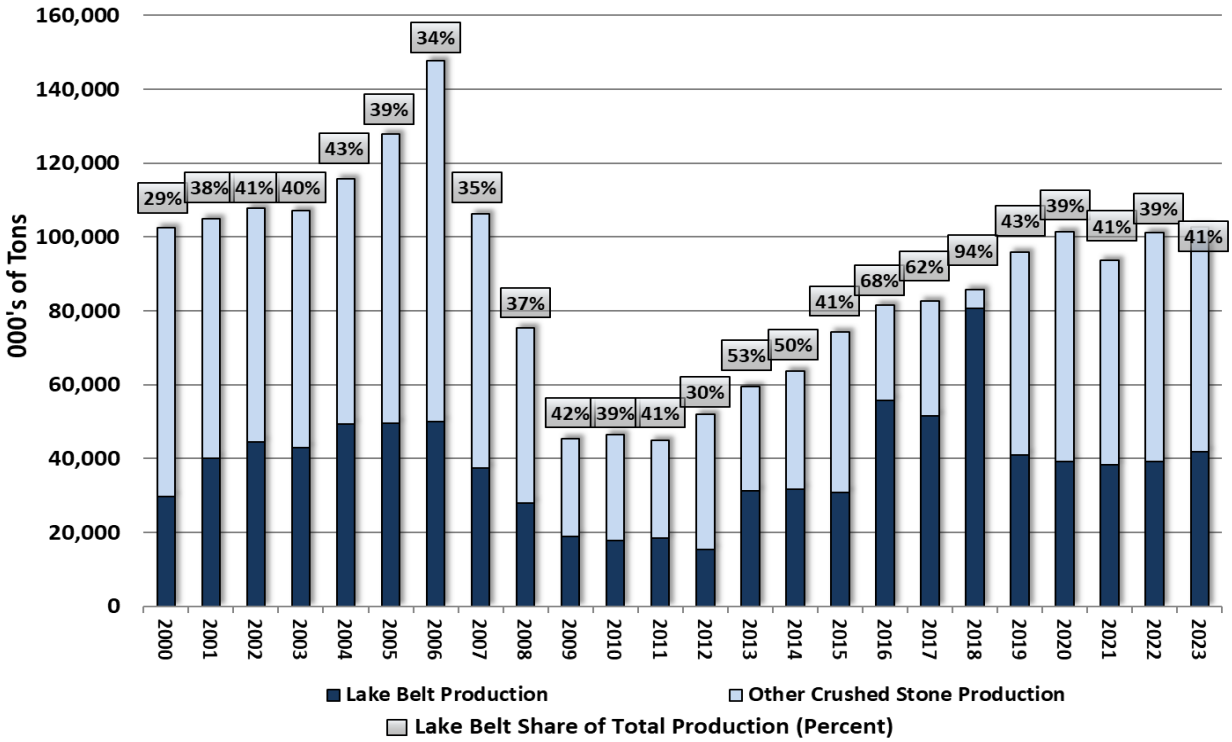
Figure 51 provides a comparison of Lake Belt production to other Florida production of crushed stone. Similarly, to previous years, total crushed stone production has been fluctuating around 100 million tons, while the Lake Belt share of production has fluctuated are 40%.

Figure 50. Monthly Lake Belt Production, January 2003 - June 2023



Source: FL DOR.

Figure 51. Crushed Stone Produced or Consumed in Florida, by Region (1,000 Tons)

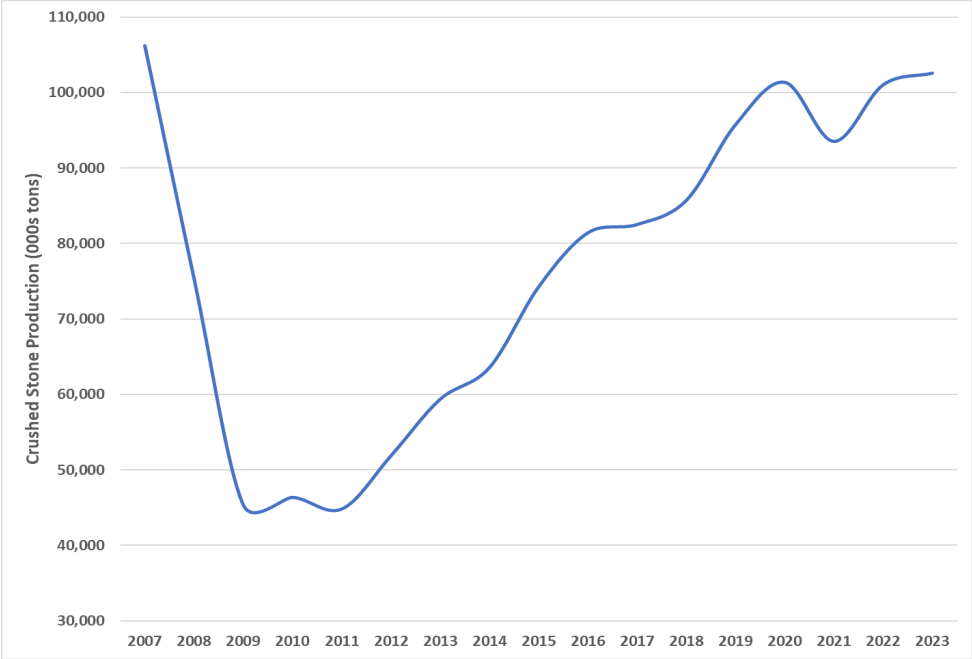


Source: USGS and FDOR.

Crushed Stone Production Trends

Even though it was reported in the Raw materials section that production of publicly traded companies in some regions declined in 2023, Florida's crushed stone production reached 102.6 million tons in calendar year 2023, a 1.5% year-over-year increase (**Figure 52**). Production surpassed 100 million tons for the second consecutive year and the growth rate was higher than the national average. Initial estimates showed that Florida's crushed stone production declined 5.4% in the first quarter of calendar year 2024. Aggregate availability was highlighted as a primary reason for industry having difficulty meeting demand.

Figure 52. Florida Crushed Stone Production



Sources: USGS.

In calendar year 2023, public infrastructure projects represented 36-40% (a 1-2% increase from 2022) of aggregate shipments for the publicly traded 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. Producer responses in this year's survey also indicated a smaller share of 27% for FDOT work, which is an indication of the higher competition seen for resources.

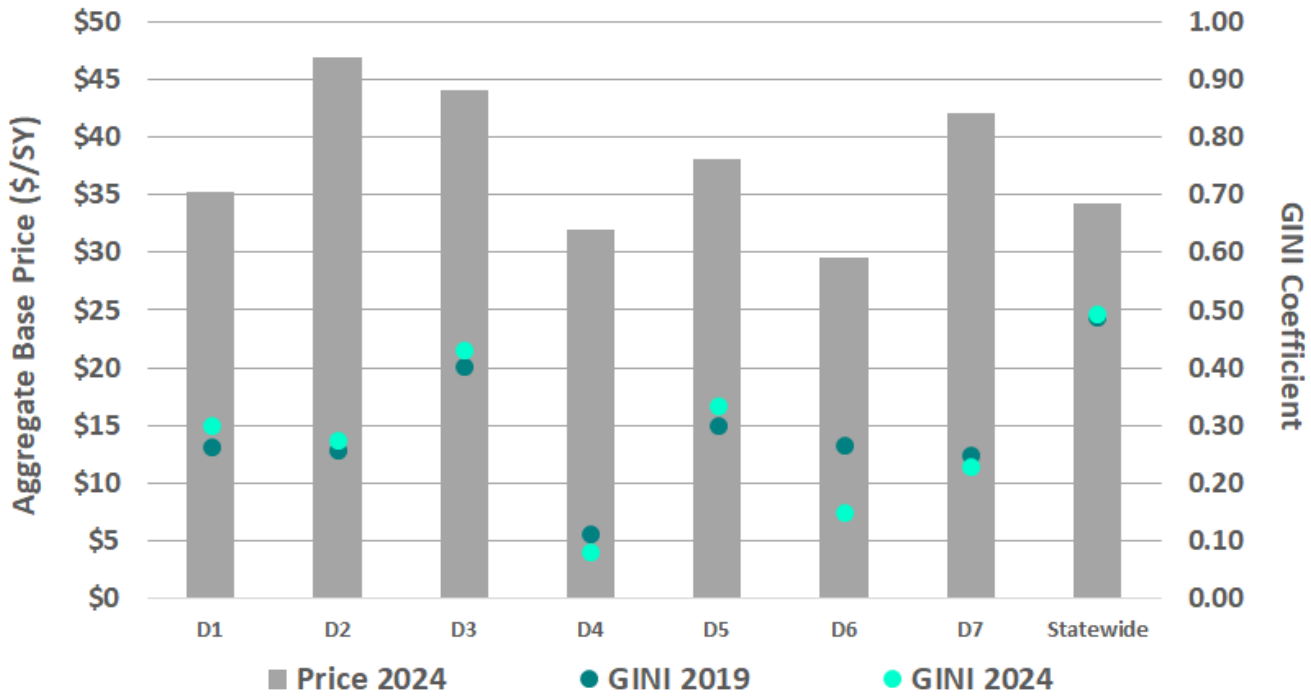
Extrapolating to calendar year 2030 using different construction forecasts, the average aggregate demand in Florida would be around 121 million tons.[15] By 2029, the average would be 118 million tons. If Vulcan's share of shipments is used as a lower bound estimate, this would represent 23.5 million tons for roadway projects. The estimated quantities of aggregate material in FDOT's Work Program would represent 38% of this total (higher than the 33% reported last year), which is another indication of the high competition for resources.

[15] Dodge & Analytics U.S. Construction Aggregate Demand, EDR's July 2024 long run construction forecasts, and UCF's Spring 2024 Florida forecast.

Competition

In FY 2024, 8% of concrete producers control 47% of the plants. Producers did not report significant changes in competition within this past year. **Figure 53** shows that competition between FDOT aggregate suppliers is relatively unchanged since 2019, with the exception of District 6, which experienced some industry consolidation that reduced the number of active plants. Differences in demand are also reflected in pricing, with the statewide average being influenced by overall competition.

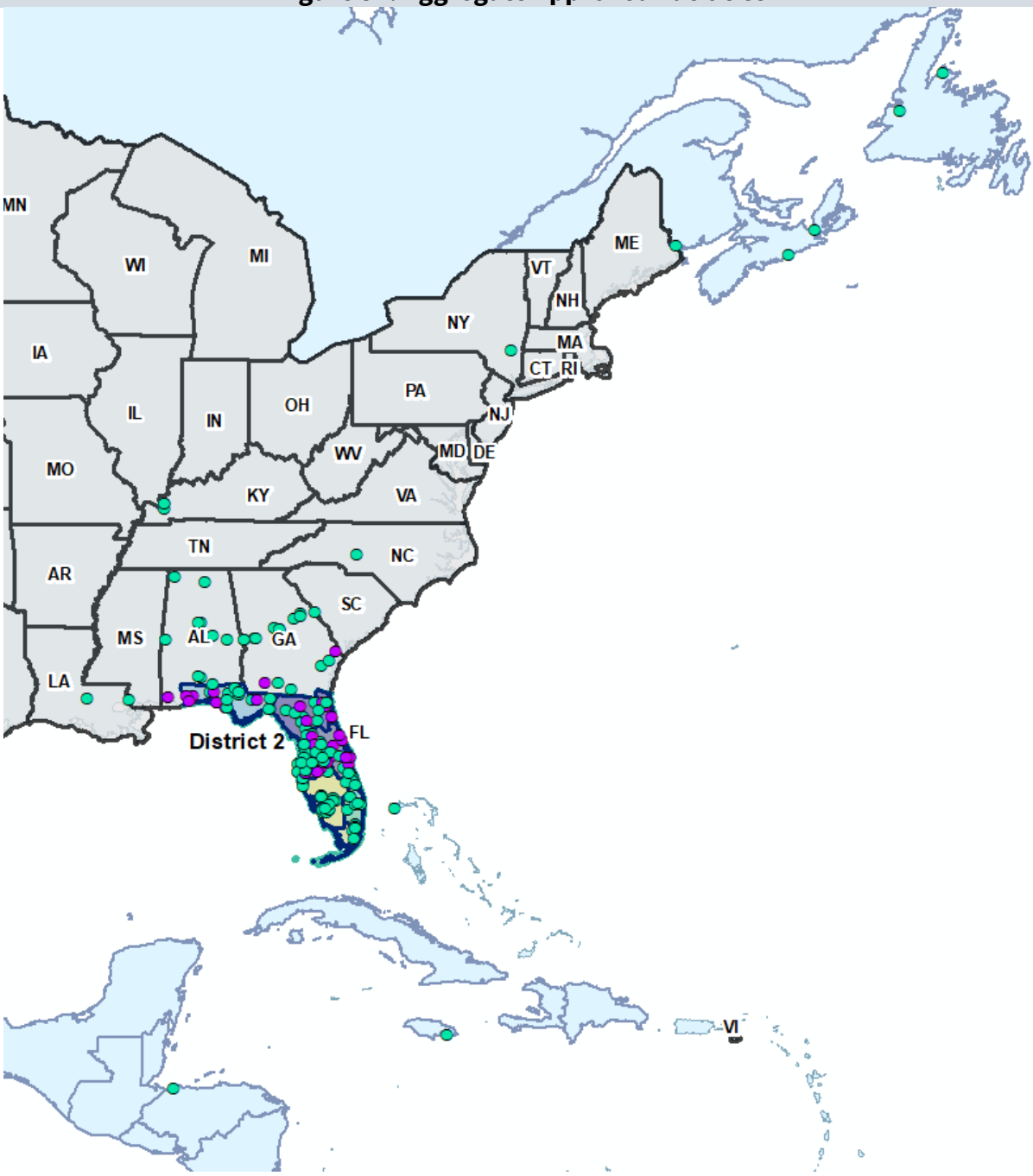
Figure 53. Aggregate Competition Gini by District



Source: FDOT, TBG Work Product. Price is a composite of optional base and earth works.

Figure 54 maps FDOT approved aggregate mines and terminals in Florida, other states, and sources from outside the U.S. Shipments from other states are most often sent to terminals by rail, while overseas supply is shipped to seaport terminals around Florida.

Figure 54. Aggregate Approved Facilities



Source: FDOT; TBG Work Product.

Material Quantities

Aggregate material requirements have been estimated for the five-year work program. Pay item data from 1994 forward was evaluated to calculate the share of project expenditures attributable to aggregate within asphalt and concrete quantities, as well as pure base requirements. **Table 28** provides the results statewide. Future FDOT aggregate requirements by District are shown in **Table 29**.

FDOT demand for aggregate for Base, Asphalt, and Concrete is expected to average 9.9 million tons annually over the five-year work program. Total demand of FDOT's Five-year Work Program for aggregate is about 50 million tons. Total FDOT aggregate requirements for the Five-year Work Program by District are shown in **Figure 55**.

Table 28. FDOT Future Aggregate Material Requirements (in thousands)

Year	2025	2026	2027	2028	2029
Base Material and Other Aggregate	2,358	3,174	2,384	2,230	2,288
Aggregate for Asphalt	4,826	4,898	4,130	4,275	3,814
Aggregate for Concrete	2,508	3,678	3,511	2,593	2,771
Total Tons	**9,692**	**11,750**	**10,024**	**9,099**	**8,873**

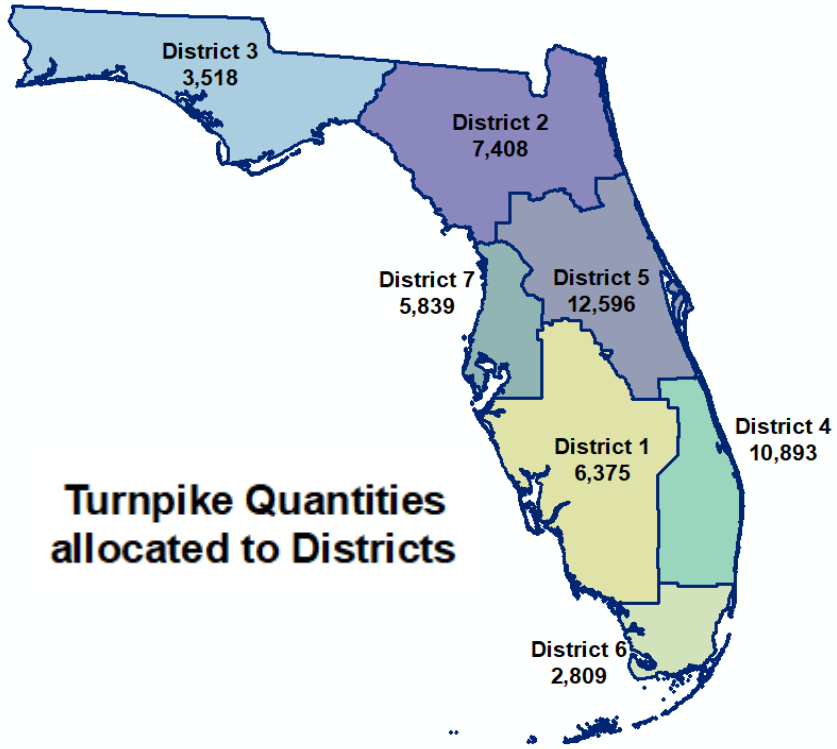
Source: TBG calculated from data provided by FDOT Office of Work Program and Budget.

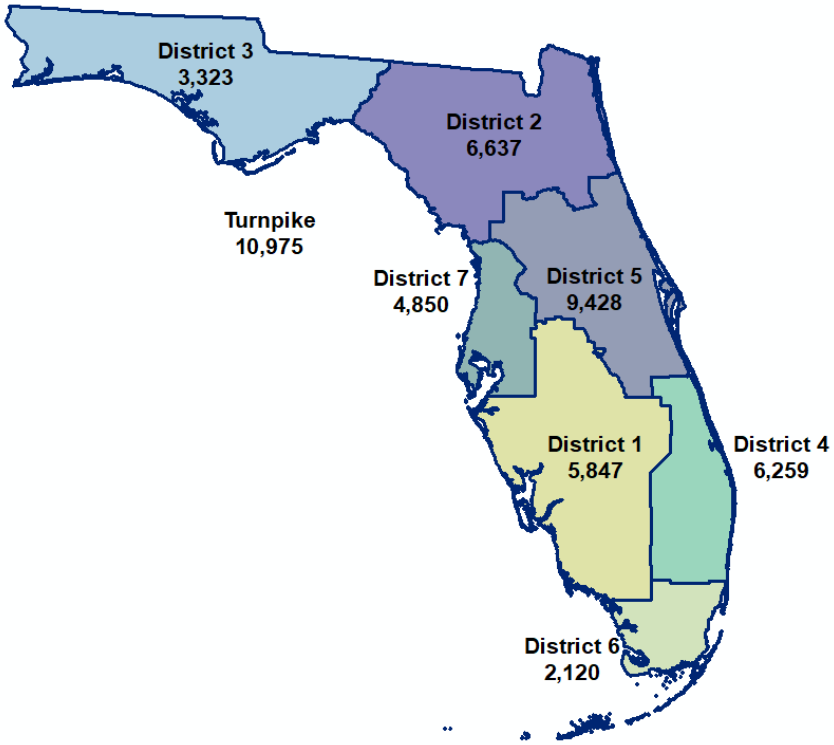
Table 29. FDOT Future Aggregate Material Requirements by District (in thousands)

District	2025	2026	2027	2028	2029
D1	960	880	2,690	602	715
D2	1,060	1,464	1,132	1,393	1,587
D3	873	921	614	471	443
D4	1,169	1,065	1,618	1,156	1,251
D5	2,399	3,276	1,335	1,173	1,245
D6	239	753	662	330	136
D7	1,032	1,175	801	1,347	495
D8	1,959	2,217	1,171	2,628	3,000
Total Tons	**9,692**	**11,750**	**10,024**	**9,099**	**8,873**

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

Figure 55. Total Aggregates Quantities for Five-year Work Program (000s Tons)



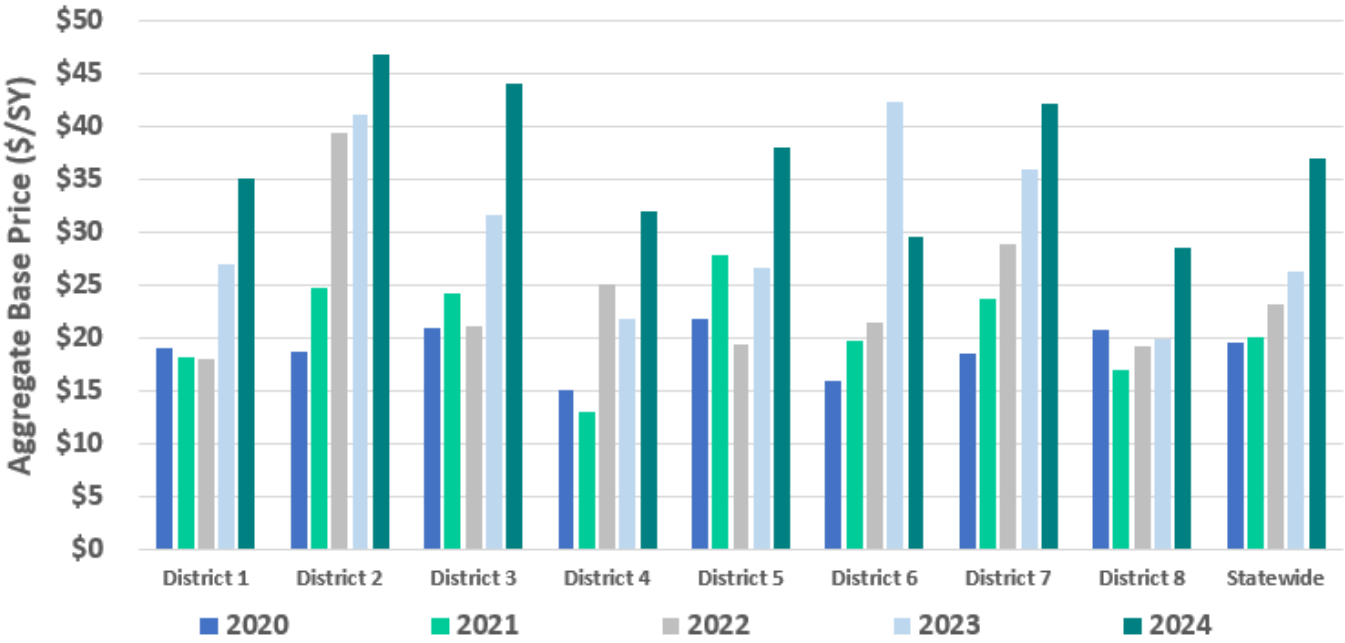


Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

Current Pricing

Based on FDOT bid data, aggregate base prices are up 41% in FY 2024. High prices are being experienced in some districts because of high demand and skilled labor and driver shortages (**Figure 56**). Producer interviews indicate current pricing to remain in place FY 2025, but further price increases are not expected to be as extreme.

Figure 56. Aggregate Base Price by District, 2020 – 2024



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

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 30** provides the forecast average price for aggregate base.

Table 30. FDOT Aggregate Base Price Forecast Results

Year	2024	2025	2026	2027	2028	2029
Price Aggregate Base, $/SY	$34*	$37	$39	$39	$40	$40
Percent Change, %	30.2%	8.2%	4.5%	1.2%	1.0%	0.9%

Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.
Note: *One extremely high-cost, high-quantity bid from September 2023 was excluded, adjusting the FY 2024 weighted average earthwork price from $38 per cubic yard to $34 per cubic yard.

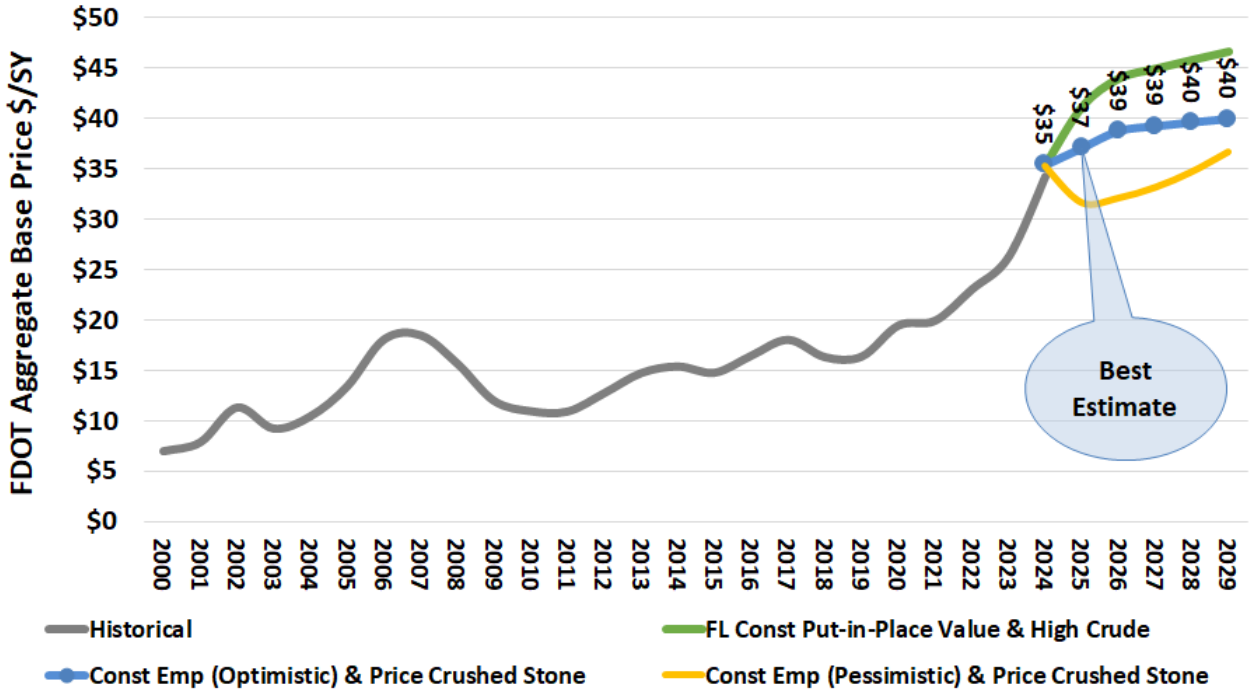
Updating the forecast model with current bid data showed that aggregate base costs rose a staggering 30% in FY 2024 compared to FY 2023. Fourth quarter data moderated the weighted average price from $46 per square yard in Q3 FY 2024 (including one extremely high-cost, high-quantity bid from September 2023) to $38 per square yard at fiscal year-end. Excluding the outlier bid producers a FY

2024 weighted average price of $34 per square yard. Current pricing includes pre-planned industry price hikes, labor shortages, and the impact of high demand as producers strain production capacity.

According to interviews, aggregate supply is expected to improve by 2027 due to new and expanding sources of imports from mines in Georgia, Canada, the Bahamas. Rail lead times and reliability are reportedly improving, with FDOT issuing grant funds to assist rail companies and seaports with logistical and capacity improvements. While it's unlikely that prices will revert to pre-pandemic levels, cost increases are expected to be milder over the five-year work program.

The best estimate model (which rose to the upper bound as predicted last quarter) considers construction employment growth and statewide stone pricing (including the cost of stone used in other markets), supporting prices increase more similar to historical trends through FY 2029 (**Figure 57**). The adjusted upper bound includes the value of Florida construction put-in-place and high energy costs, topping out at over $45 per square yard in the latter half of the five-year work program. Unsustainable pricing could lead to project cancelations or deferment. The lower bound takes poor construction employment growth and statewide stone pricing into account and would yield lower aggregate base prices; pre-pandemic levels are not expected to be achieved going forward, however.

Figure 57. FDOT Aggregate Base Price Forecast



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

EARTHWORK

Summary

- It is estimated that CDL licenses in Florida rose in FY 2024 after a decline in FY 2023. Truck driver employment and hourly wages rose as well.
- Diesel prices gradually declined through FY 2024 and housing starts slowed. Lower housing development and lower fuel costs would historically drive earthwork costs down, but intensive infrastructure demand and labor constraints are supporting higher prices.
- In general, new and used truck costs declined as availability increased. Some contractors have reported increased cost for large equipment and some availability issues. Lead times for parts has improved for some contractors, but not others.

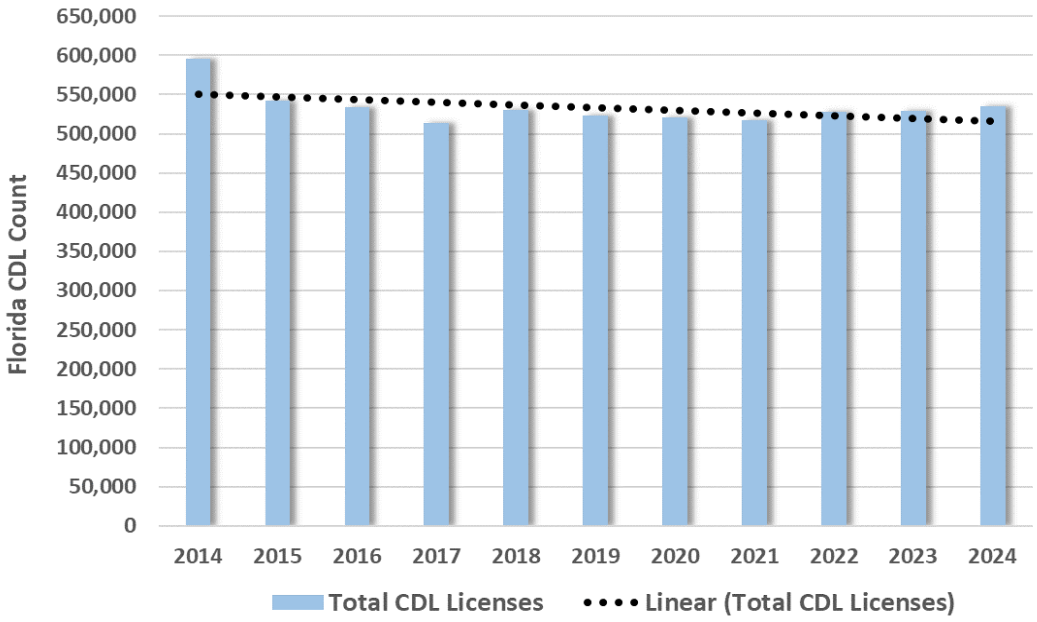
FDOT Impacts

- FY 2024 prices surged to nearly $19 per cubic yard, almost double the historical average. Prices are expected to remain elevated in FY 2025 and beyond as contractor costs remain high.
- Continued high levels of infrastructure funding will likely prevent bid prices from falling back to pre-COVID levels. In addition, some contractors report issues accessing borrow pits.

General Trends

Trucking and labor costs are the main factors in this sector. As mentioned throughout the report, the labor market has improved, but that doesn't mean that producers are not facing issues with availability or higher wages. While in 2023, the total number of licenses issued decreased (1%) for the first time since 2012, in 2024 they increased 2% year-over-year. The FLHSMV didn't release the number of CDLs in Florida for 2023 and 2024. However, the share of CDLs remained at 3% between

Figure 58. Florida CDL Counts

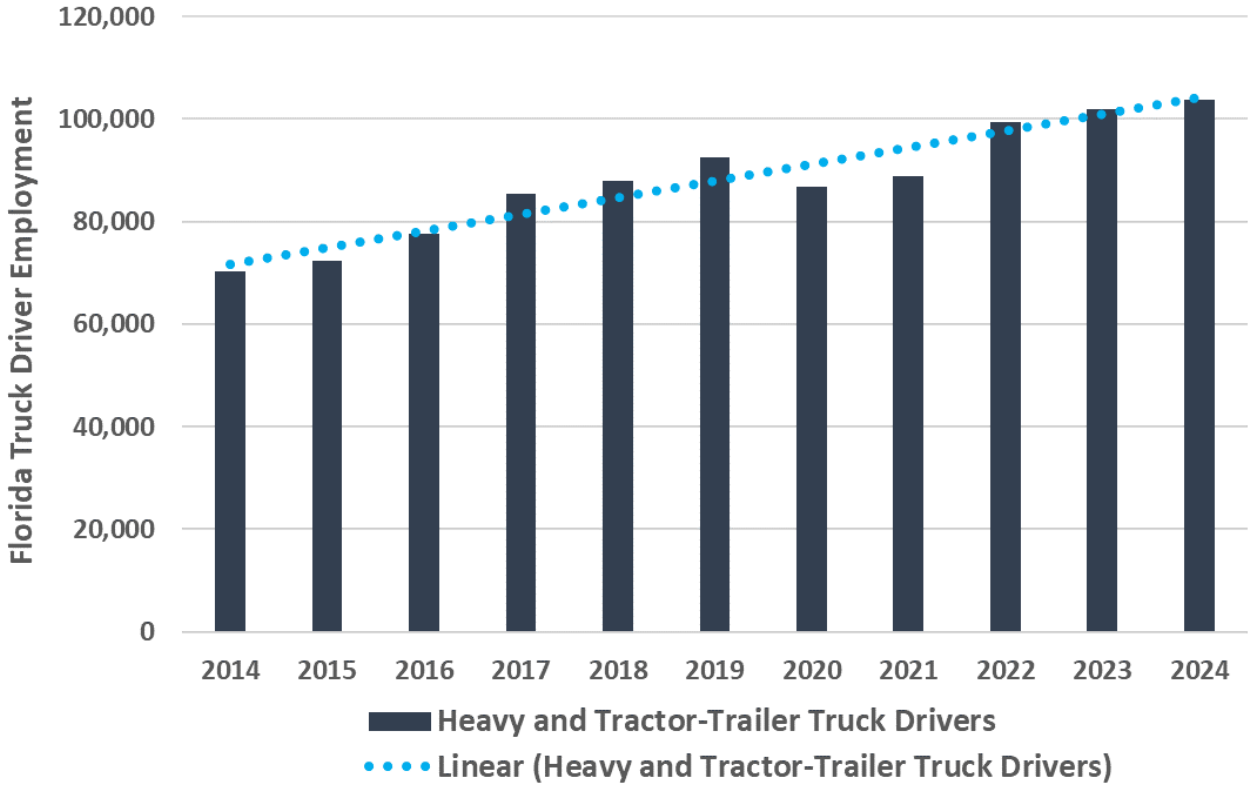


Source: FLHSMV.

2019 and 2022, regardless of changes in total licenses. Therefore, the estimated number of CDLs for 2024 would be near 540,000 (**Figure 58**).

The BLS recently released the May 2023 Occupational Employment and Wage Statistics (OEWS) estimates. Heavy and tractor-trailer truck driver employment accounted for a slightly larger share (58.12% vs. 57.6% last year) of truck transportation according to BLS. After a significant increase in 2022, overall employment in Florida grew 2.4% in 2023 and an estimated rate of 1.9% for 2024 (**Figure 59**). In relation to diesel prices, they declined through the year. In June 2024, they were down 2% year-over-year. On average prices are 11% lower than last year. Prices for used trucks also declined and while these two things lower contractor's costs, availability and wages can offset these.

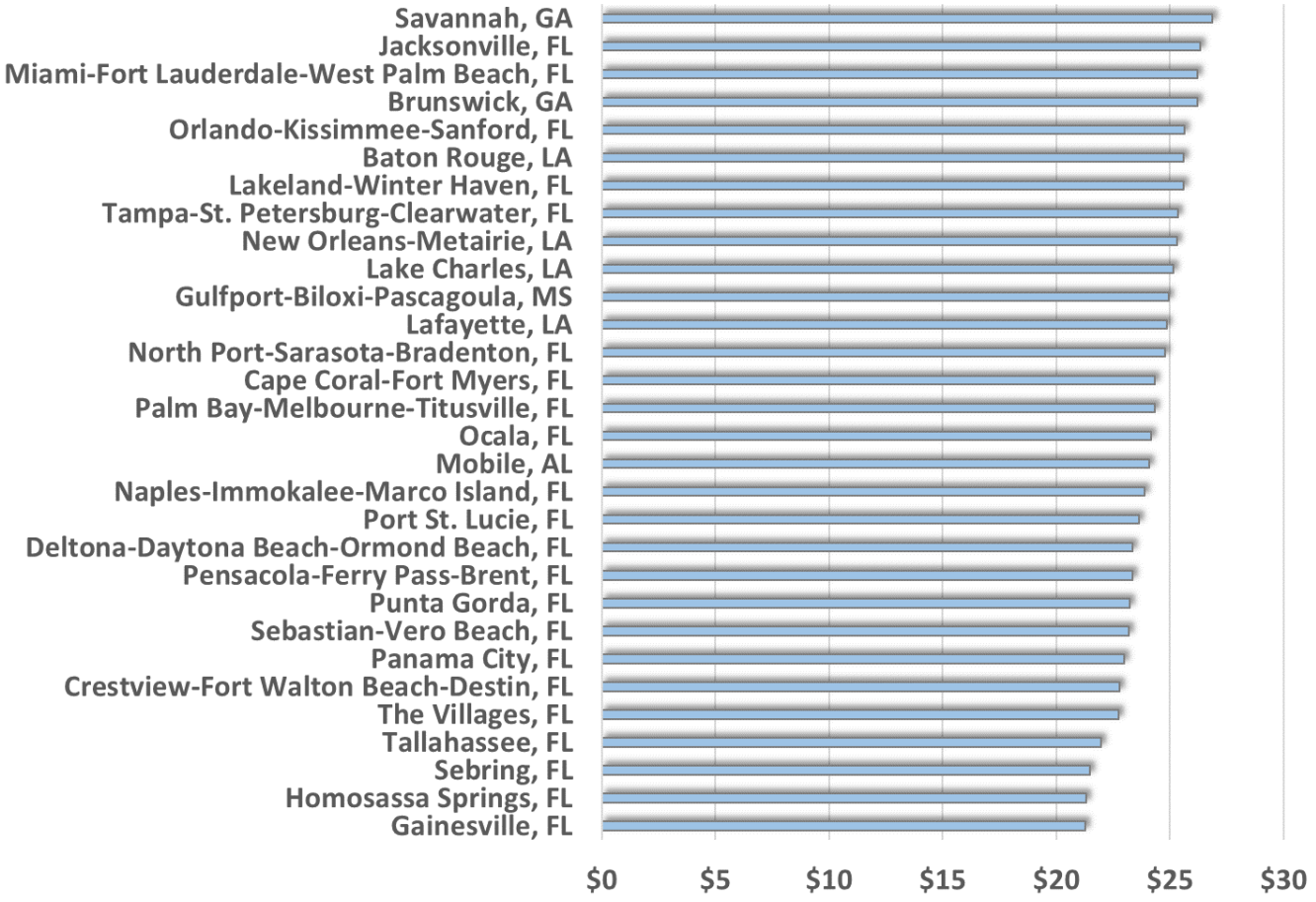
Figure 59. Florida Truck Transportation and Driver Employment, 2014 – 2023



Source: TBG work product, BLS OEWS May 2022.

While in last year's report, the average hourly wage for heavy truck drivers in Florida Metropolitan Areas with port cities and high trucking activity was slightly behind to similar locations in other states, this year it was higher. Metro areas in other states averaged $22.2 per hour, while metro areas in Florida averaged $23.7 per hour. In 2023, year-over-year growth rates in Florida averaged 6%, with growth rates ranging between 3% and 12%. **Figure 60** illustrates the mean hourly wages for heavy truck drivers by metro area.

Figure 60. Hourly Average Wage for Heavy Truck Drivers by Metropolitan Area, 2023



Source: BLS Occupational Employment Statistics May 2023.

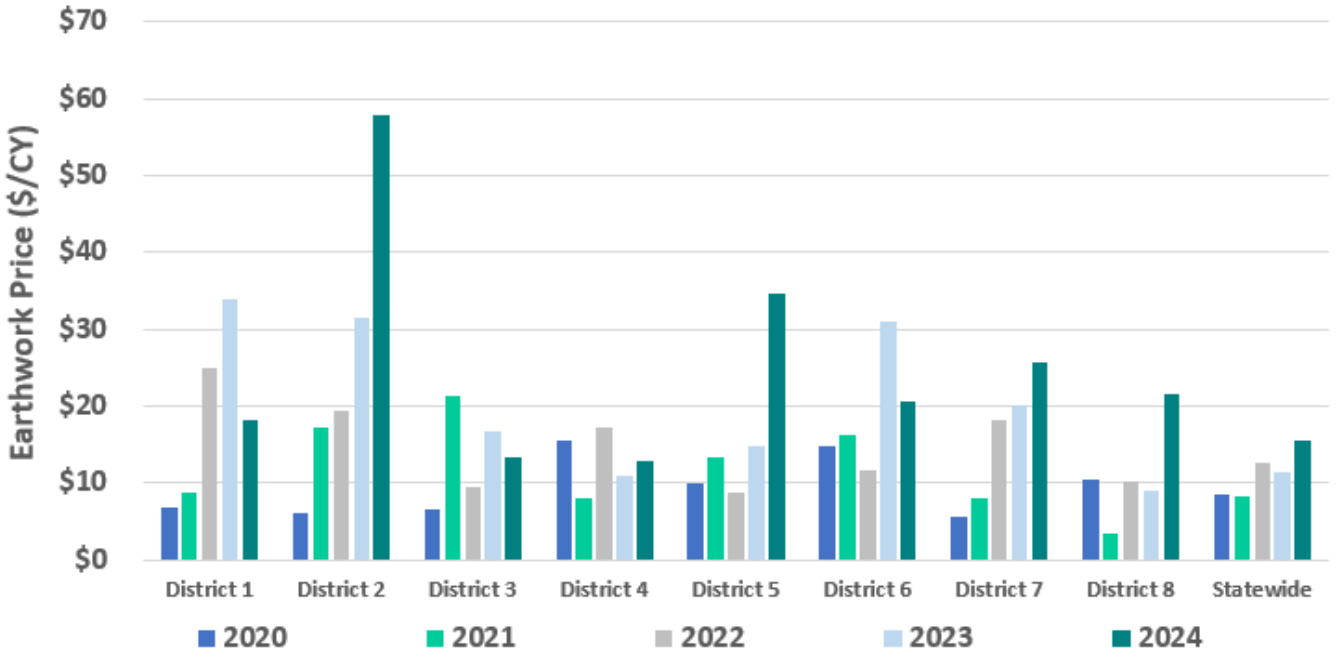
Earthmoving Equipment and Trucking

Last year, inflationary pressures as well as availability of construction equipment was a constraint many producers faced. This year, prices have declined and as reported elsewhere in the report, some producers indicated improved conditions and lower lead times to obtain parts and equipment. Others continue having issues obtaining new equipment. The July 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 both as well as truck tractors, had continued declines through the year. Volumes were reported to be down year-over-year, but higher compared to historical averages. For articulated trucks, they have been relatively stable at fair market, but with significant price declines at auction.

Current Pricing

Similar to FY 2022, prices have significantly increased in FY 2024. Earthwork prices are up 36% for fiscal year-end 2024. Shortages in labor availability continues to be an issue, but declines in fuel prices have relieved some pricing pressure. Some contractors report equipment costs are creeping up again, however. Based on district-level data, earthwork prices are ranging higher in districts with increased transportation costs and construction demand (**Figure 61**).

Figure 61. Earthwork Price by District, 2020 – 2024



Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.

Earthwork Forecast

Regression modeling was performed to estimate Earthwork costs using pay item data, supply chain variables and other macroeconomic indicators. **Table 31** provides the forecast average price for earthwork.

Table 31. Earthwork Price Forecast Results

Year	2024	2025	2026	2027	2028	2029
Price Earthwork, $/CY	$18.70*	$18.94	$19.64	$19.62	$19.59	$19.54
Percent Change, %	65.3%	1.3%	3.7%	-0.1%	-0.1%	-0.3%

Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources.
Note: *One extremely high-cost, high-quantity bid from September 2023 was excluded, adjusting the FY 2024 weighted average earthwork price from $24 per cubic yard to $19 per cubic yard.

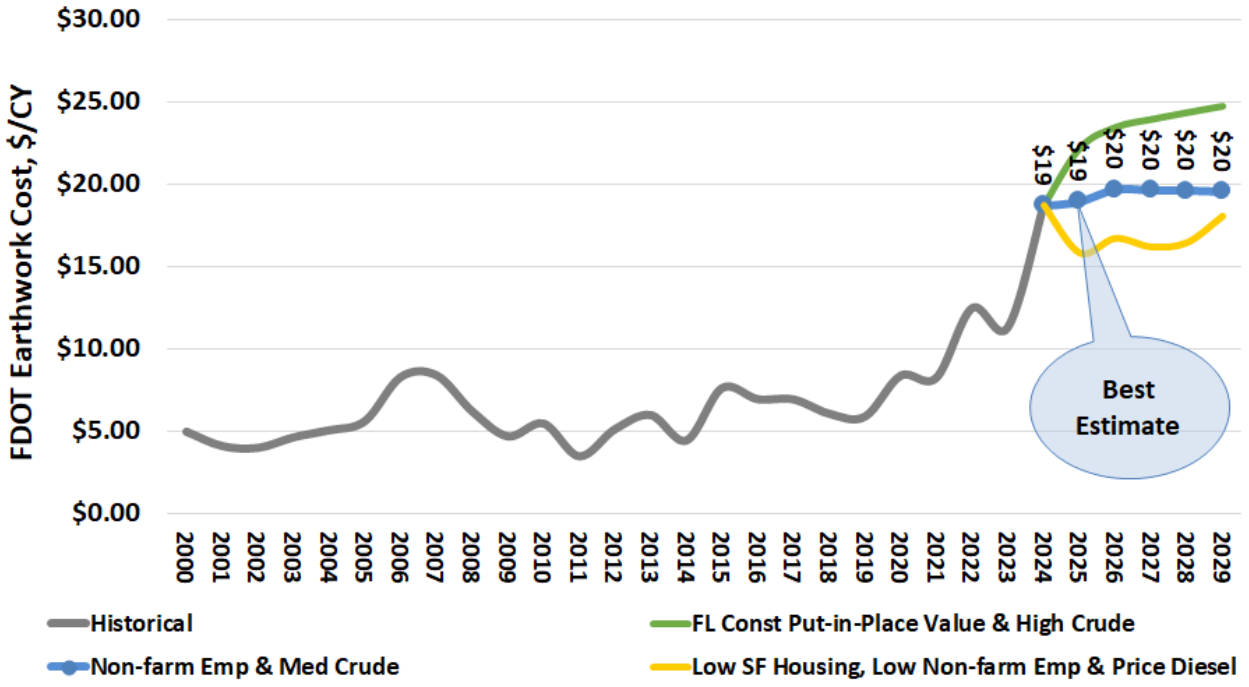
With updated FDOT bid and industry data, fiscal year-end earthwork forecasts were revised up to meet current pricing, which is nearly double historical levels. Interviews with FDOT contractors revealed that while the cost of material has not increased, rising labor and equipment costs, as well as fuel costs

for material transportation, are pushing up earthwork bids. It's expected that earthwork bids will continue to grow at a steady rate close to general inflation.

Revised employment and fuel forecasts show the best estimate rising in FY 2025 and FY 2026 before moderating over the last three years of the work program. As expected in the last quarterly report, the best estimate has moved to the upper bound. The updated upper bound, which takes expected Florida construction put-in-place value and higher energy costs into account, may not be out of the question as contractors remain concerned about workforce retention. However, project cancelation or deferment may occur if prices move higher than the market can sustain. In the lower bound scenario, recessionary conditions would be necessary to drive down costs, but even then, it's not expected that pre-pandemic bid levels would return.

Figure 62 shows the output of potential price models and the scenario identified as best estimate for earthwork.

Figure 62. Earthwork Price Forecast



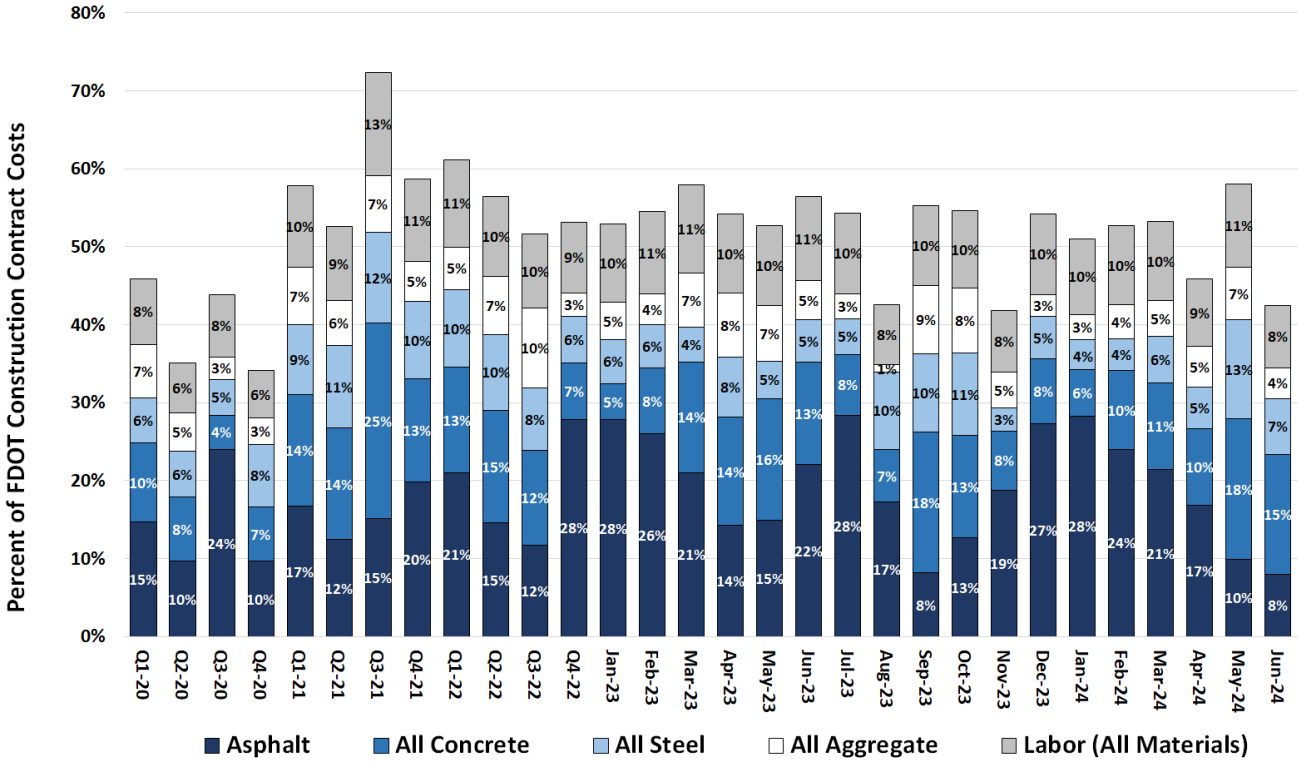
Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost, various industry sources. (Variable descriptions available in the Appendix.)

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**). Concrete costs were the largest share of total costs over the two months according to revised May and preliminary June data. Asphalt and steel costs as a share of total costs were more on par than is typical over the same period. Aggregate costs as a share of total costs were similar to previous periods according to the latest bid data. Labor costs fluctuated over the past few months to between 8% to 11% of total costs.

Figure A- 1. Monthly Cost Composition

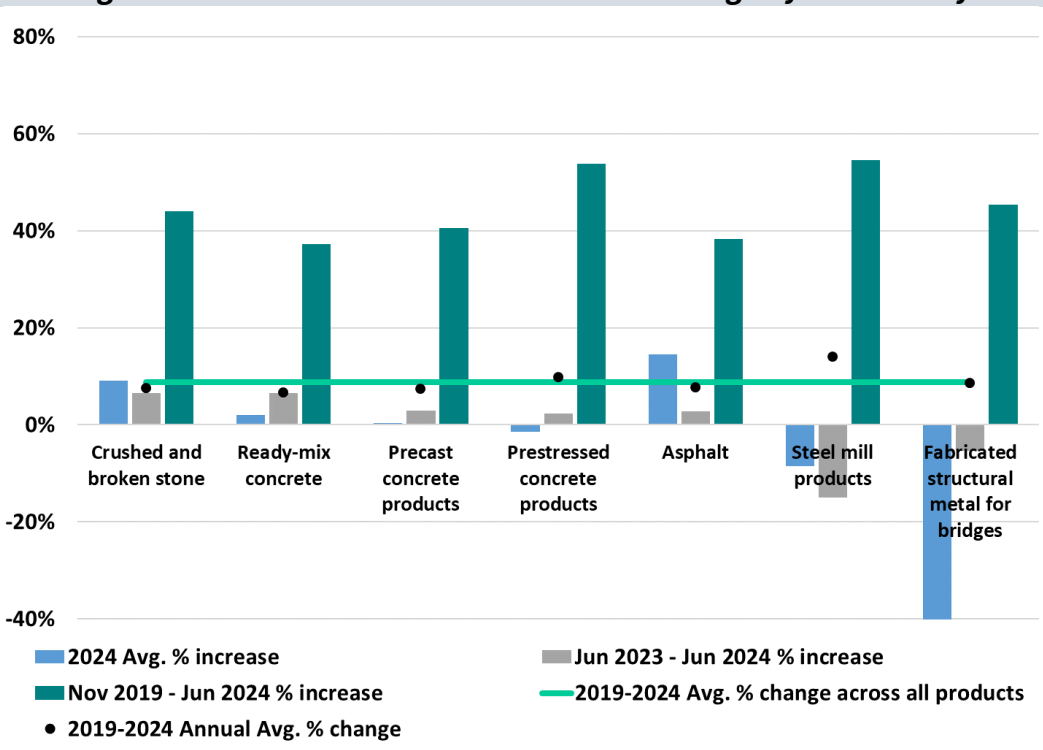


Source: TBG calculated from data provided by FDOT Office of Forecasting and Project Cost.

U.S. Inflation

Another measure of inflation for the construction industry is the BLS PPI by commodity type. Nationally, a 2% average increase has been seen across all commodities in calendar year 2024, with asphalt having the largest (7%). Structural metal for bridges has declined 4% (blue bars in the graph). Year-over-year, crushed stone, ready-mix, precast, prestressed, and asphalt(refinery production) have increased by 7%, 5%, 3%, 2%, and 3% respectively in the U.S.; while, steel mill products and structural metal for bridges have all declined by 4% and 2%, respectively. [16] **Figure A-2** illustrates select PPI in the U.S. for relevant commodity types.

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



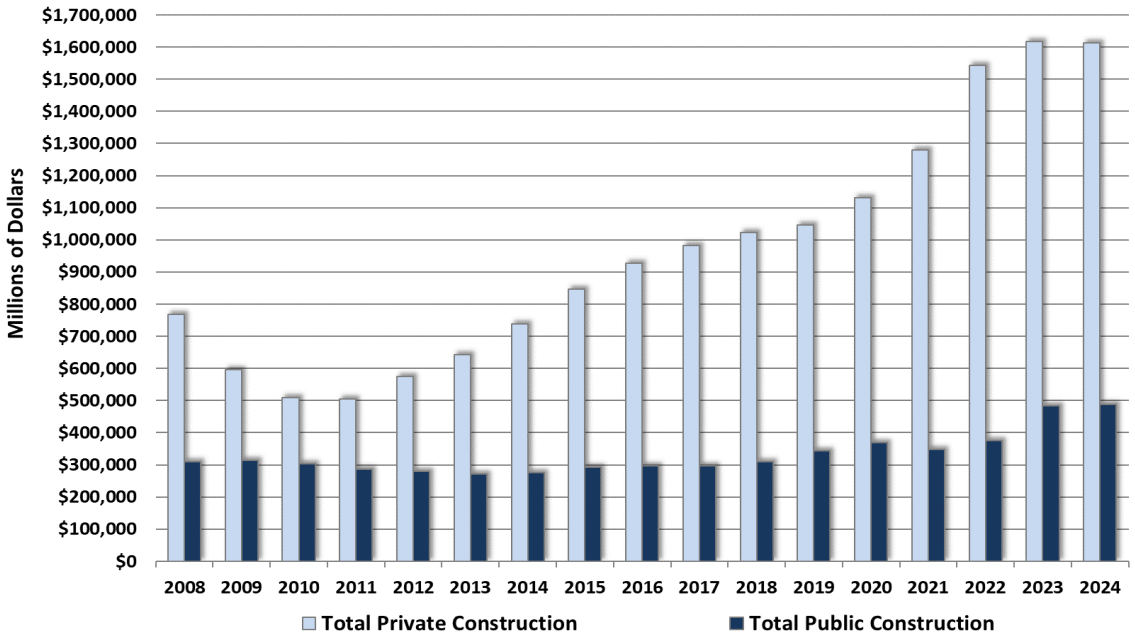
Source: BLS (Producer Price Index, not seasonally adjusted); TBG Work Product.

[16] 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.

U.S. Construction Market

Nationally, private construction expenditures increased 6% in 2023, followed by a marginal drop of 0.3% in 2024. Public construction had a larger 20% increase in 2023, and in 2024 it continued at a similar level (0.8% increase) (**Figure A-3**). Residential construction saw an increase in 2023 of 4% and a drop of 0.3% in 2024; while non-residential construction similarly rose 10% in 2023 and dropped 0.4% in 2024 (**Figure A-4**).

Figure A- 3. U.S. Construction Put in Place, 2008 – 2024



Source: U.S. Census Bureau.

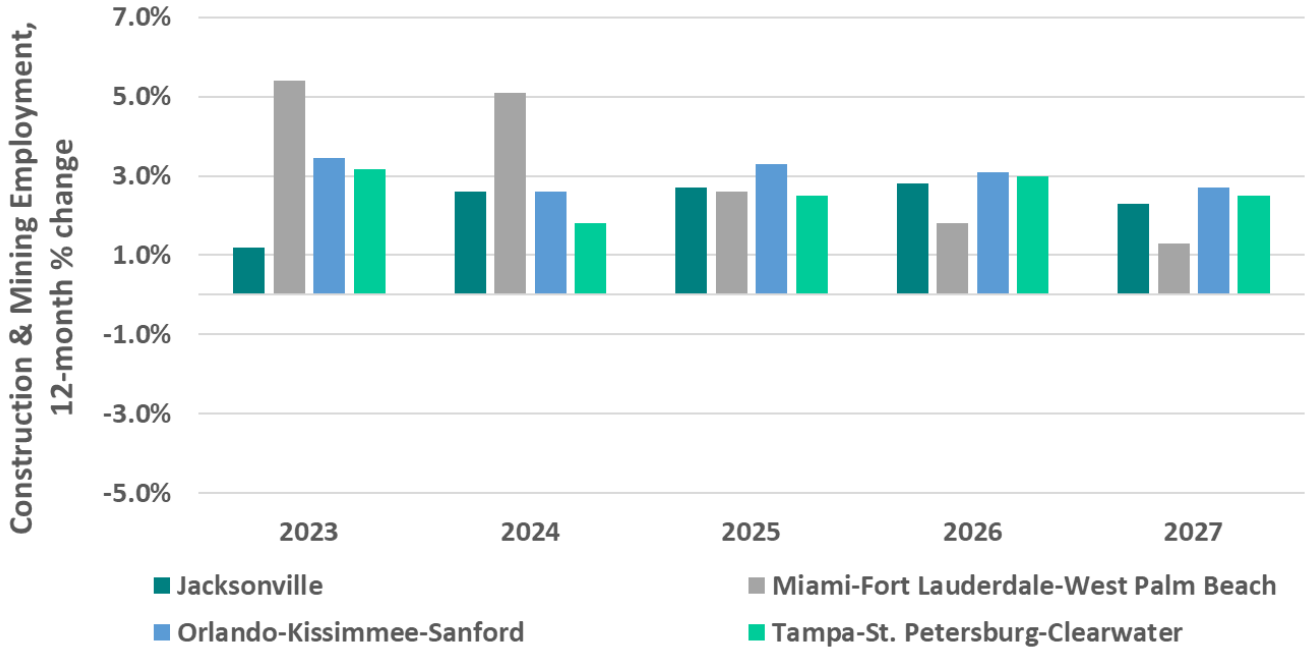
Figure A- 4. Residential Construction Put in Place, 2008 – 2024

Source: U.S. Census Bureau.

Construction Employment Forecast

According to the Institute for Economic Forecasting's (IEF) most recent Florida & Metro Forecast, statewide construction employment grew by 4.5% in 2023, revised upward from the previously reported 1.8%. IEF expects construction employment growth to grow further over the next three years, with 2024 estimated to rise by 3.6%, 2025 by 2.6% and 2026 by 2.2%. At the metro level, IEF projects construction employment to grow in most major markets throughout the forecast period, with the largest overall gains seen in 2023 and 2024 (**Figure A-5**).

Figure A- 5. Historical and Forecasted Changes in Employment in Major Florida Markets, 2023 - 2027

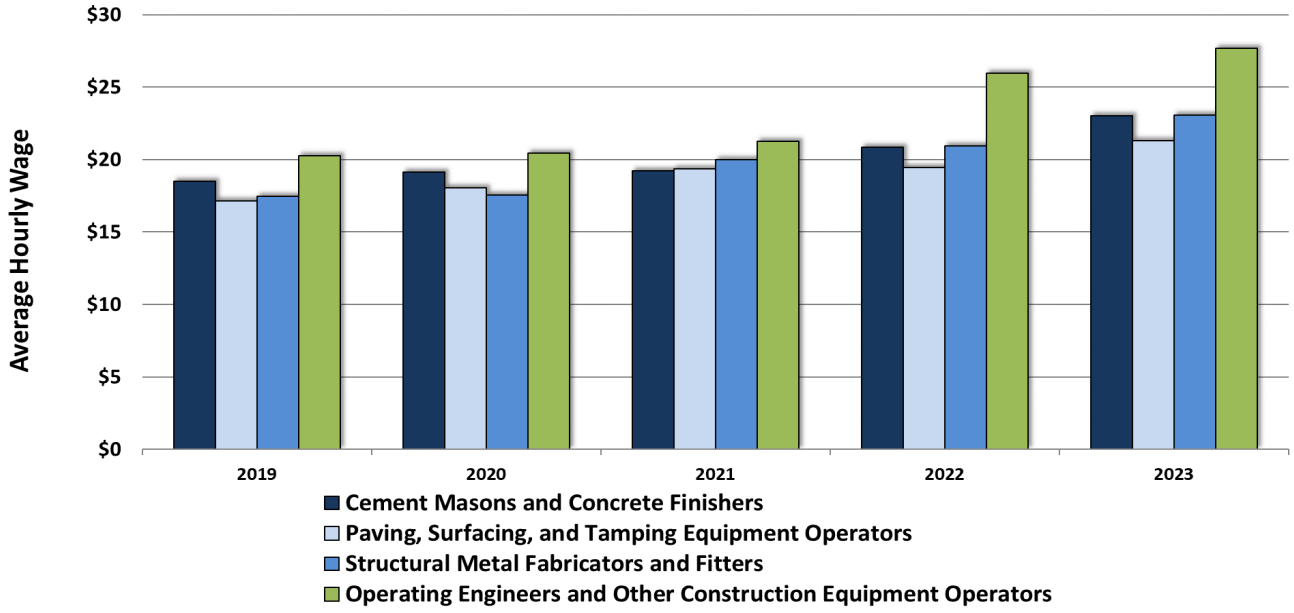


Source: UCF Institute for Economic Forecasting Spring 2024 Florida & Metro Forecast.

Relative Wages by Sector

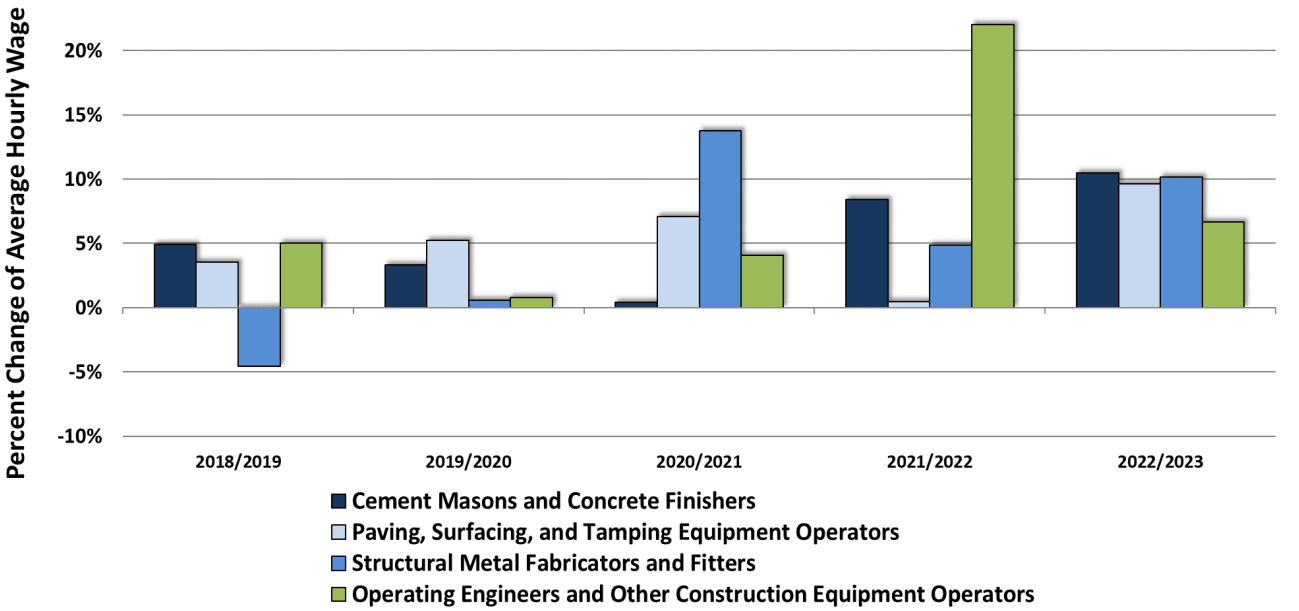
Florida average hourly wages are shown by material sector for primary labor types in **Figure A-6**, along with the annual change in wages in **Figure A-7**. In 2023, cement masons and concrete finishers grew the most (10%). Workers in other industries also saw an increase in wages at a smaller but similar rate. Wages for operating engineers and other construction equipment operators grew 7%, structural metal fabricators grew 10% and workers in the asphalt industry grew 10%. This is consistent with producer's reports that wages have increased as a result of labor shortages. Note, this data was just released for May 2023, which is the most recent available at this level of detail.

Figure A- 7. Hourly Wage Rates for Key Workers in Florida, 2018 – 2023



Source: U.S. Bureau of Labor Statistics.

Figure A-6. Change in Hourly Wage Rates for Key Workers in Florida, 2018 – 2023

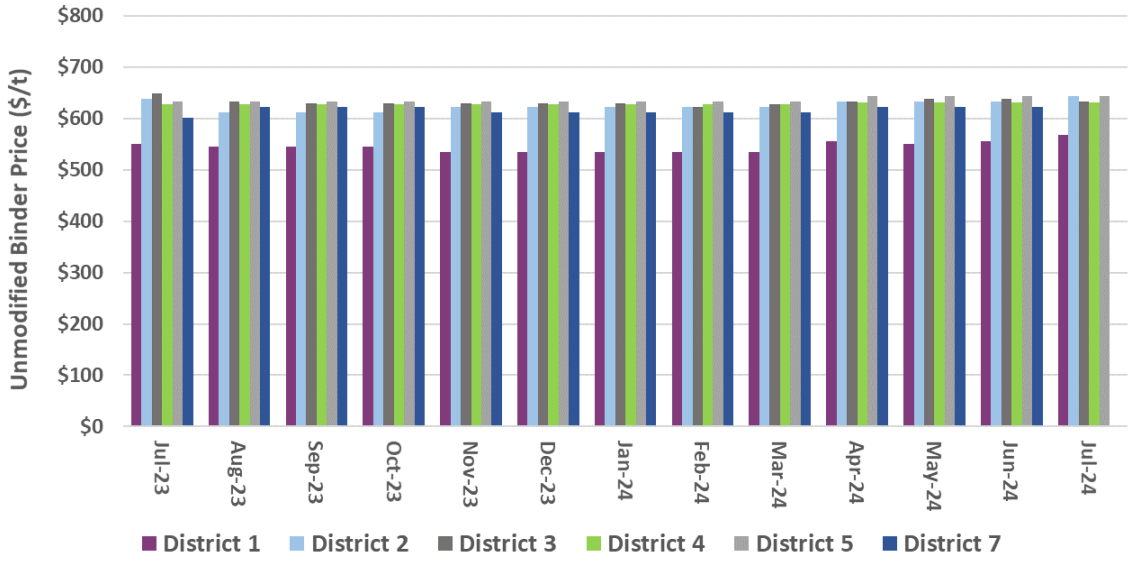


Source: U.S. Bureau of Labor Statistics.

Binder Prices by District

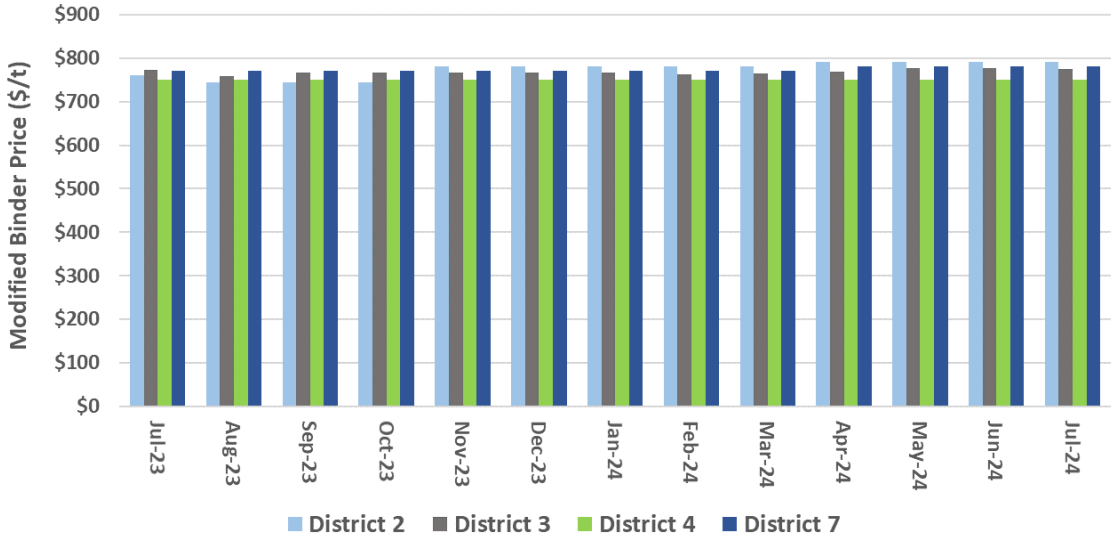
Where available, the average prices for unmodified (**Figure A-8**) and modified (**Figure A-9**) binder were calculated from monthly terminal price quotes at the district level. Unmodified binder is the average of PG 52-28 and PG 58-22 prices, while modified binder is a quote for the price of PG 76-22 (PMA) in the dataset. Unmodified binder prices increased in Districts 1, 2, 3, 4, and 5, year-over-year, between 1% and 3%. Modified binder prices showed similar patterns, with prices increasing in Districts 2 and 7 while remaining flat for all other reporting Districts year-over-year. Prices in all Districts were relatively stable through the year.

Figure A- 8. Unmodified Binder Price by District



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

Figure A- 9. 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.
Const Emp (Low)	Lower (less optimistic) FL construction employment forecast.
Chinese Imports	The value of imports to global partners originating from China.
FL Cement Price	Average price of cement in Florida.
Fly Ash Consumption	U.S. consumption of fly ash as a share of total production.
GSP	FL Gross State Product.
GSP (Low)	Lower (less optimistic) FL gross state product forecast.
Historical	Historical pricing or quantity.
Housing Starts	FL housing starts forecast.
Housing Starts (Low)	Lower (less optimistic) FL housing starts forecast.
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[17]	FL Non-Farm employment forecast.
Non-farm Emp (Low)	Lower (less optimistic) FL total non-farm employment forecast.
Price Binder	Average price of HMA binder (PG-76 & higher).
Price Coal	Average price of coal.
Price Diesel	Average diesel price.
Price Iron	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 forecast.
SF Housing (Low)	Lower (less optimistic) FL Single-Family housing starts forecast.
US Cement Price	Average price of cement in the U.S.
WP	FDOT Five-Year Work Program.

Pay items that are partially or wholly used in the analysis are listed in the next five tables by material type. 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.

[17] Workers in the agriculture sector are excluded from government and industry estimates due to conflicting seasonality and difficulty in measuring self-employment, hobby farms, and undocumented workers. https://www.stlouisfed.org/open-vault/2019/july/nonfarm-payrolls-why-farmers-not-included

Table B- 2. Asphalt Pay Items

Asphalt Pay Item Number				
0102 2200	0334 1 52	0337 7 22	0337 7 48	0337 7 93
0286 2	0334 1 53	0337 7 23	0337 7 54	0337 7 94
0287 1	0334 1 54	0337 7 24	0337 7 55	0339 1
0305 1	0334 1 55	0337 7 25	0337 7 58	0341 70
0315 1	0334 1 56	0337 7 26	0337 7 71	0525 1
0334 1 11	0334 1 57	0337 7 29	0337 7 72	0908333 1
0334 1 12	0334 1 58	0337 7 30	0337 7 73	0909335 1
0334 1 13	0334 1100	0337 7 31	0337 7 74	0909335 2
0334 1 14	0334 1101	0337 7 32	0337 7 80	0911325 1
0334 1 15	0334 1102	0337 7 33	0337 7 81	0914337 2
0334 1 22	0334 1103	0337 7 35	0337 7 82	0914337 4
0334 1 23	0334 1104	0337 7 40	0337 7 83	0914337 5
0334 1 24	0334 1105	0337 7 41	0337 7 85	
0334 1 25	0334 1106	0337 7 42	0337 7 88	
0334 1 33	0334 1107	0337 7 43	0337 7 90	
0334 1 34	0337 7 5	0337 7 45	0337 7 91	

Table B- 3. Concrete Pay Items

Concrete Pay Item Number				
0173 79 1	0425 1584	0430721504	0521 8 1	0700 10122
0350 1 1	0425 1585	0430830	0521 8 2	0700 10123
0350 1 3	0425 1587	0430982120	0521 8 3	0700 10124
0350 1 4	0425 1589	0430982121	0521 8 4	0700 21 11
0350 1 5	0425 1601	0430982123	0521 8 5	0700 21 12
0350 1 8	0425 1602	0430982125	0521 8 6	0700 21 13
0350 1 10	0425 1603	0430982129	0521 8 20	0700 21 14
0350 1 11	0425 1604	0430982133	0521 72 2	0700 21 15
0350 1 12	0425 1605	0430982138	0521 72 3	0700 21 16
0350 1 13	0425 1609	0430982140	0521 72 4	0700 21 17
0350 1 14	0425 1611	0430982141	0521 72 5	0700 21 31
0350 1 20	0425 1619	0430982142	0521 72 6	0700 21 32
0350 2 3	0425 1701	0430982143	0521 72 7	0700 21 33
0350 2 10	0425 1702	0430982144	0521 72 10	0700 21 34
0350 3 1	0425 1703	0430982145	0521 72 11	0700 21 35
0350 3 2	0425 1704	0430982501	0521 72 20	0700 21 36
0350 3 3	0425 1705	0430982502	0521 72 21	0700 22121
0350 3 5	0425 1711	0430982505	0521 72 22	0700 22122
0350 3 7	0425 1712	0430982506	0521 72 23	0700 22123
0350 3 8	0425 1713	0430982510	0522 1	0700 22124
0350 3 9	0425 1714	0430982519	0522 2	0700 22131

Concrete Pay Item Number				
0350 3 10	0425 1715	0430982623	0522 3	0700 22132
0350 3 11	0425 1719	0430982625	0522 4	0700 22133
0350 3 12	0425 1725	0430982629	0524 1 1	0700 22134
0350 3 13	0425 1801	0430982633	0524 1 2	0700 22141
0350 3 14	0425 1802	0430982638	0524 1 3	0700 22142
0350 3 17	0425 1803	0430982640	0524 1 4	0700 22143
0350 4 1	0425 1804	0430982641	0524 1 19	0700 22144
0350 4 5	0425 1805	0430982642	0524 1 29	0700 22154
0350 4 11	0425 1811	0430982643	0524 1 49	0700 22220
0350 4 13	0425 1812	0430982645	0524 2 1	0700 22250
0350 30 5	0425 1813	0430984120	0524 2 2	0700 23111
0350 30 13	0425 1814	0430984121	0524 2 4	0700 23112
0353 70	0425 1815	0430984123	0524 2 29	0700 23113
0400 0 11	0425 1841	0430984125	0524 2 49	0700 23114
0400 0 13	0425 1842	0430984129	0524 3	0700 23121
0400 1 1	0425 1843	0430984133	0526 1 1	0700 23122
0400 1 2	0425 1844	0430984138	0526 1 2	0700 23123
0400 1 11	0425 1845	0430984140	0530 4 4	0700 23131
0400 1 15	0425 1851	0430984141	0530 4 9	0700 23132
0400 1 25	0425 1852	0430984142	0530 78	0700 23133
0400 2 1	0425 1853	0430984143	0534 72101	0700 23142
0400 2 2	0425 1855	0430984144	0534 73	0700 23143
0400 2 4	0425 1861	0430984147	0536 7 3	0700 23144
0400 2 5	0425 1863	0430984504	0542 70	0700 23210
0400 2 8	0425 1865	0430984623	0547 70 1	0700 23220
0400 2 10	0425 1881	0430984625	0547 70 2	0700 38045
0400 2 11	0425 1882	0430984629	0548 12	0700 38056
0400 2 12	0425 1883	0430984633	0548 14	0700 38057
0400 2 24	0425 1884	0430984638	0548 20	0700 38063
0400 2 25	0425 1885	0430984640	0641 1	0700 38064
0400 2 41	0425 1887	0430984641	0641 2 11	0700 38065
0400 2 46	0425 1891	0430984642	0641 2 12	0700 38066
0400 2 47	0425 1892	0430984645	0641 2 13	0700 38068
0400 3 1	0425 1893	0430990	0641 2 14	0700 38086
0400 3 8	0425 1894	0430991	0641 2 15	0700 38097
0400 3 20	0425 1895	0450 1 1	0641 2 16	0700 39 23
0400 4 1	0425 1899	0450 1 2	0641 2 17	0700 39 26
0400 4 2	0425 1901	0450 1 3	0641 2 18	0700 39 27
0400 4 4	0425 1902	0450 1 5	0641 2 19	0700 39 36
0400 4 5	0425 1903	0450 1 7	0641 3163	0700 39 37
0400 4 6	0425 1904	0450 1 78	0641 3169	0700 39 43

Concrete Pay Item Number				
0400 4 8	0425 1905	0450 1124	0641 3175	0700 39 46
0400 4 11	0425 1909	0450 1130	0641 3180	0700 41 10
0400 4 22	0425 1910	0450 1201	0641 3186	0700 41 11
0400 4 24	0425 2 41	0450 1202	0641 3263	0700 43055
0400 4 25	0425 2 42	0450 1203	0641 3269	0700 44066
0400 4 40	0425 2 43	0450 1250	0641 3275	0700 45 32
0400 4 41	0425 2 61	0450 1251	0641 3286	0714 1123
0400 4 47	0425 2 62	0450 2 36	0641 14150	0715 4 11
0400 6	0425 2 63	0450 2 45	0641 14152	0715 4 12
0400 8 5	0425 2 71	0450 2 54	0641 14154	0715 4 13
0400 8 25	0425 2 72	0450 2 63	0641 14156	0715 4 14
0400 8 39	0425 2 73	0450 2 72	0641 14158	0715 4 15
0400 8106	0425 2 91	0450 2 78	0641 15150	0715 4 21
0400 8107	0425 2 92	0450 2 84	0641 15152	0715 4 23
0400 10	0425 2 93	0450 2 96	0641 15154	0715 4 24
0400 32	0425 2101	0450 3 11	0641 15156	0715 4 25
0400 72	0425 2102	0450 3 15	0641 15158	0715 4 31
0400153	0425 2103	0450 3 21	0641 17150	0715 4 32
0404 1	0425 2110	0450 3 25	0641 17152	0715 4 33
0404 5 11	0425 3 41	0450 3 26	0641 17154	0715 4 42
0404 5 12	0425 3 42	0450 3 66	0641 17156	0715 4 50
0404 5 22	0425 3 43	0450 3 76	0641 17158	0715 4011
0404 5 25	0425 3 61	0450 3 91	0641 45150	0715 4012
0405 70 1	0425 3 62	0450 3 95	0641 45152	0715 4013
0405 70 2	0425 3 63	0450 4 4	0646 1 11	0715 4019
0405 71	0425 3 81	0450 5	0646 2115	0715 4021
0407 1 11	0425 3 82	0450 6	0649 1 10	0715 4022
0407 1 21	0425 3 83	0450 6 25	0649 1 11	0715 4023
0407 1 52	0425 3 91	0450 8 12	0649 1 12	0715 4029
0425 1201	0425 3 92	0450 8 13	0649 1 13	0715 4031
0425 1202	0425 11	0450 8 21	0649 1 14	0715 4032
0425 1203	0425 78	0450 8 22	0649 1 15	0715 4033
0425 1204	0430141504	0450 8 23	0649 1 16	0715 4111
0425 1205	0430171103	0450 8 24	0649 1 17	0715 4112
0425 1209	0430171104	0450 8 33	0649 2150	0715 4113
0425 1211	0430171125	0450 82	0649 2170	0715 4119
0425 1212	0430171140	0450 83 1	0649 2250	0715 4121
0425 1213	0430171141	0450 88 15	0649 2255	0715 4122
0425 1214	0430171142	0450 88 18	0649 21 1	0715 4123
0425 1215	0430172102	0450 88 20	0649 21 3	0715 4129
0425 1311	0430172125	0455 3 1	0649 21 4	0715 4131

Concrete Pay Item Number				
0425 1312	0430172138	0455 3 2	0649 21 6	0715 4132
0425 1315	0430173112	0455 3 3	0649 21 7	0715 4133
0425 1319	0430173115	0455 3 4	0649 21 8	0715 4139
0425 1321	0430173118	0455 3 5	0649 21 9	0715 4300
0425 1322	0430173124	0455 3 6	0649 21 10	0715 10 2
0425 1325	0430173130	0455 3 8	0649 21 12	0715 19 13
0425 1329	0430173136	0455 4 1	0649 21 13	0715 19111
0425 1331	0430173218	0455 4 2	0649 21 14	0715 19112
0425 1332	0430174112	0455 4 3	0649 21 15	0715 19113
0425 1335	0430174115	0455 4 4	0649 21 17	0715 19119
0425 1341	0430174118	0455 4 5	0649 21 18	0715 19121
0425 1342	0430174124	0455 4 6	0649 21 19	0715 19122
0425 1345	0430174129	0455 14 2	0649 21 20	0715 19123
0425 1349	0430174130	0455 14 3	0649 21 21	0715 19131
0425 1351	0430174136	0455 14 4	0649 21 24	0715 19132
0425 1352	0430174142	0455 14 5	0649 21 26	0715 19133
0425 1355	0430174148	0455 14 23	0649 21 27	0715 19300
0425 1359	0430174154	0455 14 24	0649 31101	0715511315
0425 1361	0430174160	0455 34 2	0649 31102	0715511320
0425 1362	0430174172	0455 34 3	0649 31103	0715511325
0425 1365	0430174215	0455 34 4	0649 31104	0715511330
0425 1369	0430174218	0455 34 5	0649 31105	0715511335
0425 1411	0430174224	0455 34 6	0649 31106	0715511340
0425 1412	0430174230	0455 34 8	0649 31107	0715511345
0425 1415	0430174236	0455 34 23	0649 31108	0715511350
0425 1419	0430174242	0455 34 25	0649 31109	0715512315
0425 1421	0430174248	0455 34203	0649 31110	0715512325
0425 1422	0430175101	0455 34205	0649 31111	0715512330
0425 1425	0430175102	0455 34301	0649 31112	0715512340
0425 1431	0430175103	0455 88 1	0649 31113	0715512350
0425 1432	0430175104	0455 88 2	0649 31114	0715516315
0425 1435	0430175105	0455 88 3	0649 31115	0715516320
0425 1441	0430175112	0455 88 4	0649 31116	0715516325
0425 1442	0430175115	0455 88 5	0649 31117	0715516330
0425 1445	0430175118	0455 88 6	0649 31118	0715516345
0425 1451	0430175124	0455 88 7	0649 31119	0715517325
0425 1452	0430175130	0455 88 8	0649 31201	0715518315
0425 1455	0430175136	0455 88 12	0649 31202	0715518330
0425 1459	0430175142	0455 88 15	0649 31203	0751 32 11
0425 1461	0430175148	0455 88 19	0649 31204	0751 32 12
0425 1462	0430175154	0455 88 20	0649 31205	0751 32 13

Concrete Pay Item Number				
0425 1465	0430175160	0455 88 21	0649 31206	0751 32 14
0425 1469	0430175166	0455112 1	0649 31207	0751 32 15
0425 1471	0430175172	0455112 3	0649 31208	0785 1 11
0425 1472	0430175184	0455112 4	0649 31209	0785 1 13
0425 1473	0430175201	0455112 5	0649 31210	0905455343
0425 1474	0430175202	0455112 6	0649 31211	0905455345
0425 1475	0430175203	0455143 3	0649 31212	0908350 1
0425 1479	0430175215	0455143 4	0649 31213	0908350 2
0425 1481	0430175218	0455143 5	0649 31214	0908350 3
0425 1483	0430175224	0455143 6	0649 31215	0913548 1
0425 1484	0430175230	0455143 23	0649 31216	2425 1415
0425 1485	0430175236	0455143 25	0649 31217	2425 1435
0425 1489	0430175242	0455143203	0649 31218	2425 1455
0425 1501	0430175248	0455143205	0649 31219	2425 1465
0425 1502	0430175254	0455143301	0649 31299	2425 1515
0425 1503	0430175260	0519 78	0649 31301	2425 1715
0425 1504	0430175266	0520 1 7	0649 31302	2430984504
0425 1505	0430175272	0520 1 8	0649 31303	2455 3 1
0425 1511	0430200 23	0520 1 10	0649 31304	2455 3 2
0425 1512	0430200 25	0520 1 11	0649 31305	2455 3 3
0425 1513	0430200 29	0520 1 12	0649 31306	2455 3 4
0425 1514	0430200 33	0520 2 1	0649 31307	2455 3 5
0425 1515	0430200 38	0520 2 2	0649 31308	2455 3 8
0425 1519	0430200 40	0520 2 4	0649 31309	2455 4 6
0425 1521	0430200 41	0520 2 5	0649 31310	2455 4 8
0425 1522	0430200 42	0520 2 8	0649 31311	2455 14 3
0425 1523	0430200 43	0520 2 9	0649 31312	2455 14 5
0425 1524	0430600125	0520 3	0649 31313	2455 14 11
0425 1525	0430602123	0520 5 11	0649 31314	2455 14 12
0425 1529	0430602125	0520 5 12	0649 31315	2455 34 2
0425 1531	0430602129	0520 5 16	0649 31316	2455 34 3
0425 1532	0430610123	0520 5 21	0649 31317	2455 34 4
0425 1533	0430610125	0520 5 22	0649 31318	2455 34 5
0425 1534	0430610129	0520 5 26	0649 31319	2455 34 6
0425 1535	0430610133	0520 5 41	0649 31999	2455 36 1
0425 1541	0430610225	0520 5 42	0649 33000	2455 88 2
0425 1542	0430610325	0520 5 46	0649415003	2455 88 3
0425 1543	0430610329	0520 5 51	0649417006	2455 88 4
0425 1544	0430611023	0520 6	0659109	2455 88 5
0425 1545	0430611025	0520 70	0659309	2455 88 6
0425 1547	0430611029	0521 1	0700 2 11	2455 88 7

Concrete Pay Item Number				
0425 1549	0430611123	0521 1 1	0700 2 12	2455 88 8
0425 1551	0430611125	0521 5 1	0700 2 13	2455 88 9
0425 1552	0430611129	0521 5 2	0700 2 14	2455 88 20
0425 1553	0430611133	0521 5 3	0700 2 15	2455140 11
0425 1554	0430611223	0521 5 4	0700 2 16	2455140 12
0425 1555	0430611225	0521 5 5	0700 2 17	2455140 13
0425 1557	0430611229	0521 5 6	0700 2 18	2455140 14
0425 1559	0430611233	0521 5 7	0700 2 50	2455140 15
0425 1561	0430611323	0521 5 8	0700 4111	2455140 43
0425 1562	0430611325	0521 5 9	0700 4112	2455140 44
0425 1563	0430611329	0521 5 10	0700 4113	2455140 56
0425 1564	0430611333	0521 5 11	0700 4114	2455143 2
0425 1565	0430612025	0521 5 13	0700 4122	2455143 3
0425 1569	0430612029	0521 5 20	0700 4123	2455143 4
0425 1571	0430612033	0521 6 1	0700 4124	2455143 5
0425 1572	0430613025	0521 6 2	0700 4125	2455143 6
0425 1573	0430613029	0521 6 3	0700 4126	2455145 1
0425 1574	0430613033	0521 6 11	0700 4127	2659109
0425 1575	0430613125	0521 6 12	0700 4128	2659309
0425 1579	0430613129	0521 6 31	0700 4132	
0425 1581	0430613225	0521 6 32	0700 10115	
0425 1582	0430613229	0521 6 34	0700 10116	
0425 1583	0430613325	0521 7 1	0700 10121	

Table B- 4. Steel Pay Items

Steel Pay Item Number				
0415 1 1	0649 31108	0700 38056	0715516240	2649121202
0415 1 10	0649 31109	0700 38057	0715516315	2649122102
0415 1 11	0649 31110	0700 38058	0715516320	2649122203
0415 1 12	0649 31111	0700 38063	0715516330	2649122212
0415 1 13	0649 31112	0700 38064	0715516340	2649122304
0415 1 2	0649 31113	0700 38065	0715516435	2649122512
0415 1 3	0649 31114	0700 38066	0715516615	2649123103
0415 1 4	0649 31115	0700 38068	0715517125	2649123105
0415 1 5	0649 31116	0700 38075	0715517135	2649123204
0415 1 6	0649 31117	0700 38086	0715517150	2649123205
0415 1 7	0649 31118	0700 38097	0715517325	2649123305
0415 1 8	0649 31119	0700 39 23	0715518120	2649124105
0415 1 9	0649 31199	0700 39 24	0715518130	2649124205
0415 2 4	0649 31201	0700 39 25	0715518140	2649124306
0415 2 5	0649 31202	0700 39 26	0715518145	2649124312

Steel Pay Item Number				
0415 2 6	0649 31203	0700 39 27	0715518150	2649124407
0415 2 9	0649 31204	0700 39 36	0715518315	2649125512
0435 22250	0649 31205	0700 39 37	0715521135	2649131008
0435 22359	0649 31206	0700 39 43	0715521140	2649132009
0435 22369	0649 31207	0700 39 44	0715521145	2649133010
0435 22445	0649 31208	0700 39 46	0715521150	2649134011
0435 22484	0649 31209	0700 39 47	0715521340	2649135012
0435 32856	0649 31210	0700 39 57	0715522140	2649135512
0435 52 1	0649 31211	0700 39 74	0715526120	2649141101
0435 52 2	0649 31212	0700 41 10	0715530100	2649143102
0435413537	0649 31213	0700 41 11	0715530101	2649145012
0435422439	0649 31214	0700 43055	0715530102	2649145512
0435522224	0649 31215	0700 44066	0715530103	2649311001
0435725675	0649 31216	0700 45 32	0715530104	2649313003
0451 70	0649 31217	0700 48 12	0715536115	2649314004
0455 3 1	0649 31218	0700 48 13	0715536340	2649345012
0455 3 2	0649 31219	0700 48 14	0715540000	2649345512
0455 3 3	0649 31299	0700 48 15	0715550000	2649411001
0455 3 4	0649 31301	0700 48 17	0715560000	2649412002
0455 3 5	0649 31302	0700 48 18	0715561140	2649413002
0455 3 6	0649 31303	0700 48 19	0715571145	2649415003
0455 3 8	0649 31304	0700 48 22	0715571150	2649416004
0455 4 1	0649 31305	0700 48 28	0715572145	2649417006
0455 4 2	0649 31306	0700 48 32	0715572150	2649422203
0455 4 3	0649 31307	0700 48 33	0715573135	2649425203
0455 4 4	0649 31308	0700 48 34	0715573140	2649425504
0455 4 5	0649 31309	0700 48 35	0715573145	2649426504
0455 4 6	0649 31310	0700 48 38	0715573150	2649440
0455 7 2	0649 31311	0700 48 39	0715574140	2649515003
0455 7 4	0649 31312	0700 48 52	0715574145	2649516004
0455 7 5	0649 31313	0700 48 53	0715574150	2649517006
0455 7 6	0649 31314	0700 48 54	0715575115	2649540
0455 7 9	0649 31315	0700 48 55	0715575125	2649711001
0455 7 34	0649 31316	0700 48 56	0715575130	2649713002
0455 8 2	0649 31317	0700 48 57	0715575135	2649715003
0455 8 4	0649 31318	0700 48 58	0715575140	2649716004
0455 8 5	0649 31319	0700 48 59	0715575145	2649717006
0455 8 6	0649 31399	0700 70	0715575150	2649721101
0455 8 9	0649 31999	0700 82	0715575210	2649723102
0455 8 34	0649 32000	0700 83	0715576135	2649724403
0455 14 2	0649 33000	0700 89 2	0715576140	2649725504

Steel Pay Item Number				
0455 14 3	0649 34000	0700 89111	0715576145	2649726504
0455 14 4	0649 36100	0700 89113	0715576150	2649731007
0455 14 5	0649 36300	0700 89121	0715577115	2649733008
0455 14 24	0649 36500	0700 89123	0715577130	2649735009
0455 17 1	0649 36700	0700 89131	0715577145	2649736010
0455 17 2	0649 38 3	0700 89141	0715577150	2649737006
0455 17 3	0649 38000	0700 89143	0715578150	2649740
0455 17 4	0649 40101	0700 90 11	0715611201	2650 51511
0455 17 5	0649111001	0700 90 12	0715611401	2650 51512
0455 17 13	0649111008	0700 90 13	0715612102	2650 51513
0455 17 14	0649112002	0700 90 14	0715612202	2650 51521
0455 17 16	0649112009	0714 1123	0715612302	2659101
0455 17 34	0649112012	0715 1 11	0715612402	2659103
0455 17 40	0649113003	0715 1 12	0715614404	2659106
0455 34 2	0649113010	0715 1 13	0715615402	2659107
0455 34 3	0649114004	0715 1 14	0715616306	2659108
0455 34 4	0649114011	0715 1 15	0715616406	2659109
0455 34 5	0649114012	0715 1 16	0715619309	2659110
0455 34 6	0649115012	0715 1 19	0715619409	2659112
0455 34 8	0649121202	0715 1 40	0715621403	2659118
0455 34 23	0649121212	0715 1 50	0715622104	2659119
0455 34 25	0649121303	0715 1 60	0715622204	2659120
0455 34203	0649121412	0715 1 70	0715622304	2659307
0455 34205	0649122102	0715 1 80	0715622404	2659308
0455 34301	0649122203	0715 1110	0715623405	2659309
0455 35 4	0649123103	0715 1111	0715624204	2676110501
0455 35 5	0649123203	0715 1112	0715624304	2715 2123
0455 35 6	0649123204	0715 1113	0715624404	2715 2131
0455 35 7	0649123303	0715 1114	0715624406	2715 2132
0455 35 8	0649123305	0715 1115	0715625107	2715 2133
0455 35 9	0649123312	0715 1116	0715625307	2715 2222
0455 35 20	0649124105	0715 1117	0715625407	2715 2231
0455 35 21	0649124205	0715 1118	0715626408	2715 2232
0455 35 22	0649124306	0715 1119	0715627409	2715 2233
0455 35 23	0649125212	0715 1121	0715628410	2715 2321
0455 39	0649125412	0715 1122	0715631305	2715 2322
0455 81	0649125512	0715 1123	0715631401	2715 2331
0455 81101	0649131001	0715 1124	0715631405	2715 2332
0455 81102	0649131008	0715 1125	0715632406	2715 2333
0455 81104	0649132009	0715 1128	0715636406	2715 2431
0455 81105	0649133010	0715 1129	0715637411	2715 2432

Steel Pay Item Number				
0455 81106	0649133011	0715 1131	0715712402	2715 2433
0455 87	0649134011	0715 1132	0730 76101	2715 2522
0455107 1	0649135012	0715 1135	0730 76102	2715 2532
0455107 2	0649141012	0715 1137	0730 76103	2715 5 11
0455107 3	0649142012	0715 1138	0730 76104	2715 5 12
0455107 4	0649145012	0715 1148	0730 76105	2715 7 11
0455107 5	0649145512	0715 2 11	0730 76106	2715 7 12
0455107 6	0649211008	0715 2 12	0730 76107	2715 11111
0455107 7	0649212009	0715 2 13	0730 76108	2715 11112
0455107 8	0649213010	0715 2121	0730 76109	2715 11113
0455107 18	0649214011	0715 2125	0730 76110	2715 11115
0455107 20	0649222102	0715 2131	0730 76111	2715 11116
0455107 21	0649222203	0715 2132	0730 76112	2715 11118
0455108	0649223103	0715 2133	0730 76113	2715 11119
0455112 1	0649223204	0715 2134	0730 76114	2715 11123
0455112 3	0649335012	0715 2135	0730 76116	2715 11124
0455112 4	0649411001	0715 2136	0730 76117	2715 11125
0455112 5	0649411003	0715 2221	0730 76119	2715 11126
0455120 3	0649411011	0715 2225	0730 76122	2715 11128
0455120 5	0649412002	0715 2231	0730 76123	2715 11129
0455120 6	0649413002	0715 2232	0730 76124	2715 11137
0455120 7	0649413003	0715 2233	0730 76125	2715 11138
0455120 8	0649413011	0715 2234	0730 76126	2715 11139
0455127 1	0649414002	0715 2235	0730 76130	2715 11212
0455133	0649415003	0715 2236	0730 76131	2715 11218
0455133 1	0649415011	0715 2237	0730 76201	2715 11219
0455133 2	0649416004	0715 2238	0730 76203	2715 11228
0455133 3	0649416011	0715 2321	0730 76204	2715 34 1
0455134	0649416604	0715 2322	0730 76205	2715 35 1
0455140 11	0649417006	0715 2325	0730 76206	2715 91 24
0455140 12	0649421101	0715 2331	0730 76207	2715 91 25
0455140 13	0649423102	0715 2332	0730 76208	2715 91 30
0455140 14	0649423103	0715 2333	0730 76209	2715 91 36
0455140 15	0649423305	0715 2334	0730 76210	2715 91 37
0455140 25	0649424403	0715 2335	0730 76211	2715 96 24
0455140 54	0649425203	0715 2336	0730 76212	2715 96 36
0455140 56	0649425211	0715 2337	0730 76213	2715 96 37
0455140 61	0649425404	0715 2425	0730 76214	2715111101
0455140 90	0649425504	0715 2433	0730 76216	2715111102
0455144 4	0649426204	0715 2434	0730 76217	2715111103
0455144 5	0649426404	0715 2435	0730 76219	2715111104

Steel Pay Item Number				
0455144 6	0649426504	0715 2436	0730 76221	2715111105
0455144 8	0649426605	0715 2437	0730 76222	2715111106
0455144 9	0649427211	0715 2438	0730 76223	2715111107
0455144 20	0649427405	0715 2535	0730 76224	2715111108
0455144 21	0649427411	0715 4 11	0730 76225	2715111109
0455144 22	0649427511	0715 4 12	0730 76226	2715111110
0455144 23	0649427604	0715 4 13	0730 76227	2715111111
0460 1 1	0649427611	0715 4 14	0730 76229	2715111112
0460 1 2	0649431007	0715 4 15	0730 76230	2715111114
0460 1 3	0649433008	0715 4 21	0730 76232	2715111203
0460 1 4	0649435009	0715 4 22	0730 76303	2715111204
0460 1 5	0649436010	0715 4 23	0730 76304	2715111205
0460 1 6	0649440	0715 4 24	0730 76305	2715111209
0460 1 7	0649611001	0715 4 25	0730 76306	2715111212
0460 1 9	0649613002	0715 4 31	0730 76503	2715111604
0460 1 11	0649615003	0715 4 32	0730 76504	2715111610
0460 1 12	0649616004	0715 4 33	0730 76505	2715111615
0460 1 13	0649617006	0715 4 35	0730 76506	2715191 20
0460 1 15	0649633011	0715 4 41	0730 76507	2715191 24
0460 1 17	0649640	0715 4 42	0730 77 01	2715191 25
0460 2 1	0649711001	0715 4 60	0730 77 03	2715191 30
0460 2 2	0649711007	0715 4 70	0730 77 04	2715191 31
0460 2 3	0649712001	0715 4 71	0730 77 05	2715191 32
0460 2 4	0649713002	0715 4011	0730 77 06	2715191 34
0460 2 5	0649713003	0715 4012	0730 77 07	2715191 36
0460 2 6	0649713011	0715 4013	0730 77 09	2715191 37
0460 2 7	0649714002	0715 4019	0730 77 10	2715191 40
0460 2 12	0649715003	0715 4021	0730 77 11	2715191 42
0460 2 13	0649715008	0715 4022	0730 77 13	2715191 43
0460 2 15	0649715009	0715 4023	0730 77 16	2715191 46
0460 2 17	0649716004	0715 4029	0730 77 19	2715411104
0460 2 18	0649717006	0715 4031	0730 77 23	2715411109
0460 2 19	0649721101	0715 4032	0730 77 25	2715411112
0460 2 20	0649723102	0715 4033	0730 82	2715411113
0460 3101	0649724403	0715 4111	0730 83 4	2715411114
0460 3103	0649725203	0715 4112	0730 83 6	2715411115
0460 3104	0649725404	0715 4113	0730 84 4	2715411212
0460 3105	0649725504	0715 4119	0730 88	2715411214
0460 3106	0649726204	0715 4121	0825132210	2715411309
0460 3107	0649726404	0715 4122	0905455343	2715411312
0460 3108	0649726504	0715 4123	0905455345	2715411314

Steel Pay Item Number				
0460 3109	0649726605	0715 4129	1634151409	2715411315
0460 3301	0649731007	0715 4131	1634151605	2715411316
0460 3306	0649733008	0715 4132	1635134415	2715412106
0460 3401	0649735009	0715 4133	1635141415	2715412112
0460 3402	0649736010	0715 4139	1635141507	2715412114
0460 3405	0649740	0715 4300	1635148455	2715412209
0460 3406	0649745011	0715 4400	1644536 91	2715413112
0460 3408	0649915003	0715 4600	1645150109	2715413114
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0460 3606	0649924403	0715 5 12	1645150139	2715415112
0460 3704	0649926605	0715 5 21	1649110107	2715415209
0460 3801	0650 4152	0715 5 30	1649150106	2715416103
0460 3802	0650 51511	0715 5 31	1649150135	2715416105
0460 3803	0650 51512	0715 5 32	1694715	2715416106
0460 3804	0650 51513	0715 5 40	1715132 2	2715416112
0460 3805	0650 51521	0715 5 50	2415 1 1	2715416114
0460 3806	0650 51522	0715 5 51	2415 1 2	2715416115
0460 3808	0659101	0715 7 11	2415 1 3	2715416304
0460 3811	0659102	0715 7 12	2415 1 4	2715416604
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0460 5 1	0659104	0715 7 31	2415 1 6	2715475109
0460 6	0659106	0715 7 41	2415 1 8	2715475112
0460 6 1	0659107	0715 7 42	2415 1 9	2715475114
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0460 70 1	0659303	0715 19119	2455 3 8	2715511112
0460 70 2	0659306	0715 19121	2455 4 6	2715511113
0460 70 3	0659307	0715 19122	2455 4 8	2715511114
0460 71 1	0659310	0715 19123	2455 7 3	2715511115
0460 71 2	0659312	0715 19129	2455 7 6	2715511206
0460 71 4	0659313	0715 19131	2455 7 7	2715511208
0460 73	0659318	0715 19132	2455 7 9	2715511212
0460 81	0659407	0715 19133	2455 7 22	2715511213
0460 81 1	0670114151	0715 19300	2455 7 35	2715511217

Steel Pay Item Number				
0460 88	0676110503	0715 19600	2455 8 3	2715511303
0460 95	0676130504	0715 20 4	2455 8 6	2715511305
0460 98 1	0676140504	0715 21 1	2455 8 7	2715511309
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0460101	0685156	0715 26 1	2455 8 22	2715511314
0460101111	0685157	0715 26 2	2455 8 35	2715511315
0460101114	0685158	0715 34 1	2455 14 3	2715511316
0460101121	0685360	0715 35 1	2455 14 5	2715511512
0460101122	0700 1 11	0715 36 12	2455 14 11	2715511608
0460101123	0700 1 12	0715 36 13	2455 14 12	2715511609
0460101124	0700 1 13	0715 36 62	2455 17 1	2715512105
0460101221	0700 1 14	0715 36100	2455 17 2	2715512106
0460101321	0700 1 18	0715 36101	2455 17 4	2715512109
0460101411	0700 1 21	0715 36102	2455 17 5	2715512111
0460101421	0700 1 22	0715 36103	2455 17 16	2715512112
0460104	0700 1 23	0715 37 1	2455 17 33	2715512113
0460106	0700 1 25	0715 37 5	2455 17 35	2715512114
0460108 1	0700 1 31	0715 50	2455 17 40	2715512115
0460108 2	0700 1 32	0715 51	2455 34 2	2715512223
0460110 1	0700 1 33	0715 52 1	2455 34 3	2715512309
0460111 3	0700 1 40	0715 52 2	2455 34 4	2715512315
0460111 11	0700 1 74	0715 91 80	2455 34 5	2715512316
0460111 12	0700 2 11	0715 91 85	2455 34 6	2715512609
0460111 13	0700 2 12	0715 91100	2455 35 4	2715513106
0460111 14	0700 2 13	0715 91110	2455 35 5	2715513107
0460112	0700 2 14	0715 91120	2455 35 6	2715513108
0460113 12	0700 2 15	0715 91130	2455 35 9	2715513109
0460113 13	0700 2 16	0715 91140	2455 35 22	2715513110
0460113 14	0700 2 17	0715 91150	2455 35 23	2715513111
0460113 15	0700 2 18	0715 91160	2455 36 1	2715513112
0460113 16	0700 2 40	0715 93100	2455 87	2715513113
0460113 17	0700 2 50	0715 93120	2455107 1	2715513114
0460113 19	0700 2 60	0715 95100	2455107 3	2715513115
0460114 11	0700 2 80	0715 95120	2455107 4	2715513205
0460114 12	0700 3101	0715 96100	2455107 5	2715513609
0460114 13	0700 3102	0715191 60	2455107 6	2715514107
0460114 14	0700 3103	0715191 65	2455107 7	2715514109
0460114 15	0700 3104	0715191 70	2455120 1	2715514112
0460114 16	0700 3105	0715191 80	2455121 1	2715514114
0460114 17	0700 3106	0715191100	2455121 3	2715514115
0460114 19	0700 3107	0715191120	2455121 4	2715515107

Steel Pay Item Number				
0460115 1	0700 3108	0715191125	2455121 5	2715515109
0460116	0700 3109	0715191130	2455133	2715515112
0460119101	0700 3201	0715191140	2455133 1	2715515114
0460120101	0700 3202	0715191150	2455133 2	2715515115
0460120103	0700 3203	0715193100	2455140 11	2715515202
0460121 11	0700 3204	0715193120	2455140 12	2715515205
0460121 12	0700 3205	0715195 80	2455140 13	2715515207
0460121 13	0700 3206	0715195100	2455140 14	2715515212
0460121 14	0700 3207	0715195120	2455140 15	2715515405
0460121 43	0700 3208	0715196 80	2455140 43	2715515609
0460121 50	0700 3209	0715196100	2455140 44	2715516103
0504 1 1	0700 3210	0715196120	2455140 56	2715516104
0504 1 2	0700 3211	0715411115	2455143 2	2715516105
0504 1 5	0700 3224	0715411120	2455143 3	2715516106
0504 1 10	0700 3225	0715411125	2455143 4	2715516109
0504 2	0700 3226	0715411130	2455143 5	2715516110
0515 1 1	0700 3227	0715411135	2455143 6	2715516112
0515 1 2	0700 3228	0715411140	2455144 4	2715516114
0515 1 3	0700 3229	0715411145	2455144 5	2715516115
0515 1 4	0700 3231	0715411150	2455144 9	2715516203
0515 1 5	0700 3236	0715411230	2455144 22	2715516204
0515 2101	0700 3237	0715411235	2455144 23	2715516305
0515 2102	0700 3238	0715411240	2455145 1	2715516403
0515 2111	0700 3239	0715411320	2460 1 1	2715516603
0515 2201	0700 3240	0715411335	2460 1 4	2715516604
0515 2202	0700 3241	0715411340	2460 1 5	2715517104
0515 2203	0700 3242	0715411345	2460 1 7	2715517106
0515 2211	0700 3245	0715411350	2460 1 12	2715517208
0515 2212	0700 3248	0715411415	2460 1 13	2715517405
0515 2213	0700 3301	0715411545	2460 1 15	2715521105
0515 2221	0700 3302	0715412120	2460 1 18	2715521107
0515 2231	0700 3303	0715412130	2460 2 1	2715521109
0515 2301	0700 3304	0715412135	2460 2 2	2715521111
0515 2302	0700 3401	0715412140	2460 2 3	2715521112
0515 2303	0700 3402	0715412145	2460 2 4	2715521212
0515 2311	0700 3403	0715412150	2460 2 5	2715521309
0515 2313	0700 3404	0715412230	2460 2 6	2715521315
0515 2321	0700 3405	0715412240	2460 2 7	2715522109
0515 2351	0700 3406	0715412350	2460 2 9	2715522112
0515 2403	0700 3407	0715412545	2460 2 11	2715522315
0515 2419	0700 3408	0715413125	2460 2 12	2715523109

Steel Pay Item Number				
0515 3 1	0700 4111	0715413130	2460 2 13	2715523112
0515 3 2	0700 4112	0715413135	2460 2 15	2715523115
0515 4 1	0700 4113	0715413140	2460 2 16	2715525109
0515 4 2	0700 4114	0715413145	2460 2 17	2715525112
0536 1 0	0700 4121	0715413150	2460 3101	2715525405
0536 1 1	0700 4122	0715414135	2460 3103	2715526104
0536 1 2	0700 4123	0715414140	2460 3104	2715526115
0536 1 3	0700 4124	0715414145	2460 3105	2715526305
0536 1 4	0700 4125	0715414150	2460 3106	2715526603
0536 1 5	0700 4126	0715415140	2460 3108	2715527405
0536 1 6	0700 4127	0715415145	2460 3304	2715531112
0536 1 8	0700 4128	0715415150	2460 3307	2715535107
0536 1 9	0700 4132	0715416110	2460 3401	2715536104
0536 1 10	0700 4140	0715416115	2460 3402	2715536305
0536 1 11	0700 4512	0715416120	2460 5	2715536306
0536 1 12	0700 5 11	0715416135	2460 6	2715571109
0536 2	0700 5 21	0715416140	2460 70 1	2715573109
0536 6	0700 5 22	0715416145	2460 70 2	2715573114
0536 7	0700 6 21	0715416150	2460 70 3	2715573115
0536 7 1	0700 6 22	0715416315	2460 71 2	2715574112
0536 7 2	0700 7131	0715416320	2460 73	2715575104
0536 7 3	0700 7132	0715416545	2460 81	2715575107
0536 7 4	0700 7500	0715416610	2460 81 1	2715575109
0536 8	0700 7600	0715416615	2460101121	2715575111
0536 8 1	0700 8115	0715421320	2460101122	2715575112
0536 8 3	0700 8132	0715422145	2460101124	2715575114
0536 8 4	0700 8134	0715426315	2460101211	2715575115
0536 8 5	0700 8135	0715426320	2460101311	2715575206
0536 8 6	0700 8136	0715431145	2460108 2	2715575208
0536 9	0700 8216	0715436315	2460111 11	2715576104
0536 75	0700 8221	0715436320	2460111 12	2715577112
0536 76	0700 8400	0715440000	2460111 13	2715577114
0536 82	0700 9117	0715450000	2460111 14	2715577115
0536 83 1	0700 9137	0715461145	2460112	2715612302
0536 83 4	0700 9400	0715461545	2460113 11	2715612402
0536 84	0700 9500	0715471130	2460113 12	2715614404
0536 85	0700 9600	0715472140	2460113 13	2715616406
0536 85 22	0700 10115	0715473145	2460113 14	2715622404
0536 85 24	0700 10116	0715474135	2460113 15	2715624206
0536 85 25	0700 10121	0715474140	2460113 16	2715625107
0536 85 26	0700 10122	0715474145	2460113 17	2715631405

Steel Pay Item Number				
0536 85 27	0700 10123	0715475125	2460113 18	2715632406
0536 86	0700 10124	0715475130	2460113 19	2715636406
0536 88	0700 10130	0715475135	2460114 11	2715712302
0536 90	0700 10140	0715475140	2460114 12	2715732406
0536 91	0700 11111	0715475145	2460114 13	2730 76101
0649 1 10	0700 11112	0715475150	2460114 14	2730 76102
0649 1 11	0700 11121	0715476135	2460114 15	2730 76103
0649 1 12	0700 11131	0715476615	2460114 16	2730 76104
0649 1 13	0700 11132	0715500 1	2460114 17	2730 76105
0649 1 14	0700 11141	0715500 2	2460114 18	2730 76106
0649 1 15	0700 11142	0715500 3	2460114 19	2730 76107
0649 1 16	0700 11151	0715500 30	2460120103	2730 76108
0649 1 17	0700 11152	0715500100	2504 1 1	2730 76109
0649 1 61	0700 11161	0715511115	2504 1 2	2730 76110
0649 1 62	0700 11162	0715511120	2504 1 4	2730 76111
0649 1 63	0700 11222	0715511125	2504 1 5	2730 76113
0649 1 65	0700 11231	0715511130	2504 1 10	2730 76114
0649 1040	0700 11241	0715511135	2504 2	2730 76116
0649 1046	0700 11251	0715511140	2515 1 1	2730 76119
0649 1101	0700 11261	0715511145	2515 1 2	2730 76122
0649 1102	0700 11262	0715511150	2515 1 3	2730 76123
0649 1146	0700 11263	0715511220	2515 1 4	2730 76124
0649 1230	0700 11321	0715511225	2515 2 22	2730 76125
0649 1232	0700 11391	0715511230	2515 2201	2730 76201
0649 1234	0700 12 11	0715511240	2515 2202	2730 76202
0649 1236	0700 12 12	0715511315	2515 2301	2730 76203
0649 1332	0700 12 21	0715511320	2515 2302	2730 76204
0649 1336	0700 12 22	0715511325	2515 2303	2730 76205
0649 1338	0700 12 31	0715511330	2536 1 1	2730 76206
0649 1340	0700 12 32	0715511335	2536 1 2	2730 76207
0649 1436	0700 20 11	0715511340	2536 1 3	2730 76208
0649 1438	0700 20 12	0715511345	2536 1 5	2730 76210
0649 1440	0700 20 13	0715511350	2536 1 6	2730 76211
0649 1536	0700 20 14	0715511435	2536 1 8	2730 76213
0649 1540	0700 20 15	0715511535	2536 1 9	2730 76214
0649 1640	0700 20 18	0715511540	2536 2	2730 76215
0649 1646	0700 20 19	0715511550	2536 6	2730 76216
0649 1734	0700 20 21	0715511610	2536 7	2730 76217
0649 1738	0700 20 22	0715511615	2536 8	2730 76218
0649 2150	0700 20 31	0715511735	2536 8 1	2730 76219
0649 2170	0700 20 32	0715511740	2536 8 5	2730 76220

Steel Pay Item Number				
0649 2250	0700 20 51	0715512120	2536 8 6	2730 76221
0649 2255	0700 20 52	0715512125	2536 9	2730 76222
0649 2605	0700 21 11	0715512130	2536 75	2730 76223
0649 11 1	0700 21 12	0715512140	2536 76	2730 76224
0649 11001	0700 21 13	0715512145	2536 82	2730 76225
0649 11160	0700 21 14	0715512150	2536 83 1	2730 76226
0649 20	0700 21 15	0715512155	2536 85 1	2730 76228
0649 21 1	0700 21 16	0715512160	2536 85 2	2730 76229
0649 21 3	0700 21 17	0715512220	2536 85 4	2730 76230
0649 21 4	0700 21 31	0715512315	2536 85 5	2730 76307
0649 21 5	0700 21 32	0715512325	2536 85 6	2730 76503
0649 21 6	0700 21 33	0715512330	2536 85 7	2730 76507
0649 21 7	0700 21 34	0715512340	2536 85 8	2730 77 01
0649 21 8	0700 21 35	0715512350	2536 85 9	2730 77 02
0649 21 9	0700 21 36	0715512610	2536 85 10	2730 77 03
0649 21 10	0700 22121	0715512615	2536 85 12	2730 77 04
0649 21 11	0700 22122	0715513125	2536 85 13	2730 77 05
0649 21 12	0700 22123	0715513130	2536 85 22	2730 77 06
0649 21 13	0700 22124	0715513135	2536 85 24	2730 77 09
0649 21 14	0700 22131	0715513140	2536 85 25	2730 77 11
0649 21 15	0700 22132	0715513145	2536 85 26	2730 77 12
0649 21 16	0700 22133	0715513150	2550 75041	2730 77 13
0649 21 17	0700 22134	0715513435	2550 75042	2730 77 14
0649 21 18	0700 22141	0715514120	2649 1024	2730 77 16
0649 21 19	0700 22142	0715514125	2649 1044	2730 77 19
0649 21 20	0700 22143	0715514130	2649 1046	2730 77 22
0649 21 21	0700 22144	0715514135	2649 1050	2730 77 23
0649 21 22	0700 22154	0715514140	2649 1438	2730 77 25
0649 21 23	0700 22220	0715514145	2649 1440	2825132110
0649 21 24	0700 22250	0715514150	2649 1442	2825132210
0649 21 25	0700 23111	0715514325	2649 1536	2825136120
0649 21 26	0700 23112	0715515115	2649 1538	2825136210
0649 21 27	0700 23113	0715515120	2649 1636	2825136220
0649 21101	0700 23114	0715515125	2649 1638	2825141210
0649 21102	0700 23121	0715515130	2649 1644	2825142210
0649 21103	0700 23122	0715515135	2649 1646	2825151210
0649 21104	0700 23123	0715515140	2649 11001	3050120415
0649 21105	0700 23124	0715515145	2649111001	3050130415
0649 21106	0700 23131	0715515150	2649111002	3050150411
0649 21108	0700 23132	0715515225	2649111003	3050150419
0649 22 3	0700 23133	0715515250	2649111004	3622536301

Steel Pay Item Number				
0649 26 1	0700 23134	0715516110	2649111012	3633131415
0649 26 3	0700 23142	0715516115	2649112002	3633145505
0649 26 5	0700 23143	0715516120	2649112012	3634141415
0649 26 7	0700 23144	0715516125	2649113003	3635122415
0649 31101	0700 23210	0715516130	2649113004	3637151606
0649 31102	0700 23220	0715516135	2649114004	3637151615
0649 31103	0700 38033	0715516140	2649115004	3637700
0649 31104	0700 38036	0715516145	2649115005	3644600
0649 31105	0700 38044	0715516150	2649115012	3694715
0649 31106	0700 38045	0715516155	2649115512	E460111900
0649 31107	0700 38048	0715516210	2649121101	

Table B- 5. Aggregate Pay Items

Aggregate Pay Item Number				
0121 70	0285701007	0285707994	0285714527	0547 70 3
0125 3	0285701031	0285708283	0285714538	0443 71 1
0210 1 1	0285701032	0285708287	0285715567	0443 72 10
0210 1 8	0285701701	0285708295	0285715982	0443 72 11
0210 1 9	0285702047	0285708991	0285716606	0443 72 12
0210 2	0285702055	0285709327	0285716610	0443 72 13
0285701	0285702999	0285709335	0285716615	0443 72 14
0285702	0285703087	0285709338	0285716631	0443 72 20
0285703	0285703095	0285709352	0285716632	0142 70
0285704	0285703703	0285709709	0285716716	0160 4
0285705	0285703984	0285709989	0285716980	0102 3
0285706	0285703998	0285709990	0285716981	0162 1 11
0285707	0285704123	0285710363	0530 1	0162 1 12
0285708	0285704127	0285710367	0530 1 1	0162 1 21
0285709	0285704152	0285710392	0530 1 2	0162 1 33
0285710	0285704704	0285710983	0530 3 3	0173 77 1
0285711	0285704985	0285711407	0530 3 4	0173 77 2
0285712	0285705166	0285711711	0530 3 5	0173 77 3
0285713	0285705167	0285711986	0530 3 8	0286 1
0285714	0285705170	0285711987	0530 3 9	0288001
0285715	0285705997	0285712441	0530 5 2	0520 7 1
0285716	0285706201	0285712443	0530 74	0530 5 1
0285720	0285706203	0285712447	0530 76 2	0530 5 12
0285721	0285706207	0285712458	0530 76 3	0549 3
0285722	0285706208	0285712472	0530 76 4	0823 11 6
0285724	0285706216	0285712712	0530 76 5	0823 11 8
0285726	0285707247	0285713481	0530 77 2	0823 11 12

Aggregate Pay Item Number				
0285729	0285707250	0285713487	0530 77 3	0520 7 2
0285730	0285707255	0285713498	0530 77 4	
0285701001	0285707272	0285714521	0547 70 1	
0285701003	0285707993	0285714523	0547 70 2	

Table B- 6. Earthwork Pay Items

Earthwork Pay Item Number				
0120 71	0120 6	0120 1900	0120 5	0120 6900
0120 72	0120 2 2	0120 3	0120 6101	0120 11
0120 73	0102 2300	0120 4	0120 6102	
0120 74	0120 1	0120 4900	0120 6103	

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