

National Highway Construction Cost Index 2024 Q1

August 9, 2024

NHCCI Outlook

For the first quarter of calendar year 2024 (2024 Q1), the Office of Transportation Policy Studies at the Federal Highway Administration (FHWA) calculated a 2.4 percent increase in the National Highway Construction Cost Index (NHCCI) compared to 2023 Q4. There is a historically negative seasonal effect during Q4 and Q1, but a 2.4 percent increase is similar to what was seen in 2021Q1, 2022Q1, and 2023 Q1, which ranged between 2.1 and 4.7 percent. This continues the trend observed in 2023 Q4, which suggests the period of high inflation may not be over, but it may be slowing down compared to the rates observed in 2021 and 2022. When compared to indicators of general inflation such as the Consumer Price Index (CPI) and Producer Price Index (PPI), which respectively showed a 1.0 percent increase and 0.4 percent increase, the NHCCI is still exhibiting higher inflation. The PPIs for Asphalt and Crude petroleum (domestic) showed a 4.1 and 2.8 percent decrease during 2024 Q1, respectively, continuing the downward change since 2023 Q4. Some construction related PPI showed similar changes to the NHCCI this quarter, with paving mixtures and blocks showing an 8.0 percent increase, construction materials showing a 2.0 percent increase, concrete products showing a 2.4 percent increase, concrete pavers showing a 2.4 percent increase, while others largely differed, such as fabricated structural metal and fabricated structural metal for bridges which decreased 2.2 percent and 3.8 percent, respectively. Compared to other construction related PPI, paving mixtures and blocks appears to have a positive seasonal effect during Q1, which contrasts with the negative Q1 seasonal effect observed in the NHCCI. The wide range of changes in highway related cost indexes combined with the large decline in asphalt and crude petroleum, key drivers of highway costs, suggest that while some of the supply chain challenges introduced during covid persist and may result in structural changes to the industry, several may be easing, and inflation still appears to be higher than normal although less than its peak in 2022.

NHCCI Component Contributions

Analyzing the component contributions to the change in the NHCCI from the previous quarter reveals the increase in the NHCCI was mostly driven by concrete which contributed to a 0.99 percentage point increase, followed by traffic control, utilities, and electrical which contributed to a 0.39 percentage point increase (see Table 1). Asphalt, normally the primary driver of cost changes, only contributed to a 0.04 percentage points increase in the NHCCI. Grading/excavation contributed to a 0.27 percentage points decline. While a PPI for traffic control is not available for comparison, the related employment in construction cost index showed a 1.0 percent increase, continuing its relatively stable historic trend of between 0.5 and 1.5 percent quarterly inflation. However, it should be noted that all of the NHCCI components include not only the material input prices but also the cost of labor, shipping, overhead, and profit, so any changes in labor costs are partially reflected in each component.

Table 1. Component Contributions to Changes in NHCCI from Previous Quarter (2024 Q1)

NHCCI Component	Percentage Points Contribution
Asphalt	0.04%
Base stone	-0.01%
Bridge	0.18%
Concrete	0.99%
Drainage	0.03%
Electrical	0.25%
Grading/excavation	-0.27%
Traffic control	0.39%
Utilities, erosion control, clearing, painting, and equipment	0.39%

Source: FHWA, Office of Transportation Policy Studies, National Highway Construction Cost Index (NHCCI) 2024 Q1 Estimates.

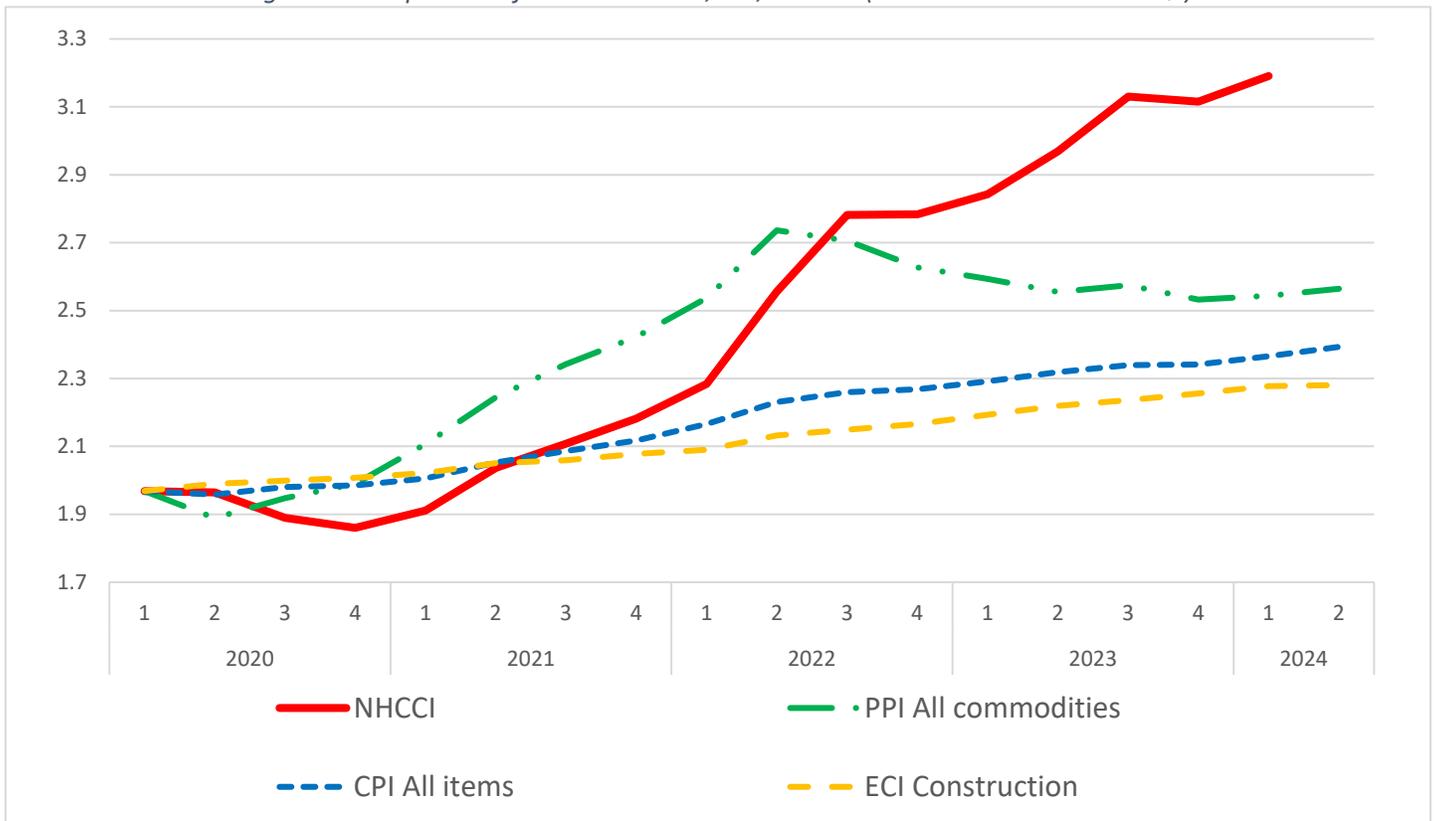
Note: The component contributions add up to the quarterly change in the NHCCI.

NHCCI Performance and Related Economic Indices

The 2024 Q1 increase in the NHCCI, in addition to changes in other construction-related indexes, provide context for understanding the potential impact on the purchasing power of highway investments. The NHCCI increase by 2.4 percent, while the PPI increase by only 0.4 percent, the CPI increased by 1.0 percent, and the Employment Cost Index (ECI) for construction increased by 1.0 percent. This decrease in purchasing power means that what a dollar would have purchased in highway construction industry in 2023 Q4, only purchases about 97.7 cents in 2024 Q1. In other words, it costs 2.4 cents more in Q1 2024 to purchase the same amount of highway construction goods and services that one dollar of investment would have purchased in Q4 2023.

As shown in Figure 1, the 2024 Q1 changes move the NHCCI further away from the other inflation indexes, and it remains to be seen if the trends in each index will converge or continue the divergence observed since mid-2022. Compared to 2023 Q1, the NHCCI saw a year-over-year increase of 12.2 percent, while during the same time the PPI decreased by 1.9 percent, the CPI increased by 3.2 percent, and the ECI for construction increased by 3.8 percent.

Figure 1. Comparison of NHCCI with PPI, CPI, and ECI (rebased to NHCCI 2020 Q1).



Sources: NHCCI: FHWA, Office of Transportation Policy Studies, National Highway Construction Cost Index (NHCCI) 2024 Q1 Estimates. CPI and PPI Indexes: BLS, Consumer Price Index, and Producer Price Indexes, available at <https://www.bls.gov>.

Adjusting to Post-Covid Expectations

Examining the year-over-year (YoY) growth trends in the NHCCI and related indices, as shown in Table 2, reveals that inflation appears to be declining although it is still higher than historical levels. The 12.2 percent YoY increase in the NHCCI for 2024 Q1 is slightly higher than what was observed in 2019 Q1, and this is still higher than the all-time average of 6.0 percent. Notably, the YoY for NHCCI appears to peak in 2022 Q3, while related indices peak at similar or slightly earlier times, with the PPI for all commodities peaking around 2022 Q1, CPI in 2022 Q2, PPI for Asphalt in 2021 Q4, PPI for Fabricated Structural Metal in 2022 Q1, and PPI for Paving Mixtures and Blocks in 2022 Q3. Notably, the YoY for PPI Asphalt is 10.7 percent higher than it was in 2023 Q1, as the deflation in the second half of 2023 did not offset the initial inflation. While the economy recalibrating itself after the Covid Health Emergency contributed to rising costs, inflation expectations can also contribute to persistent inflation across all sectors, so it remains to be seen what the new “normal inflation” will look like.

Table 2. Year-Over-Year Growth Rate in Percent

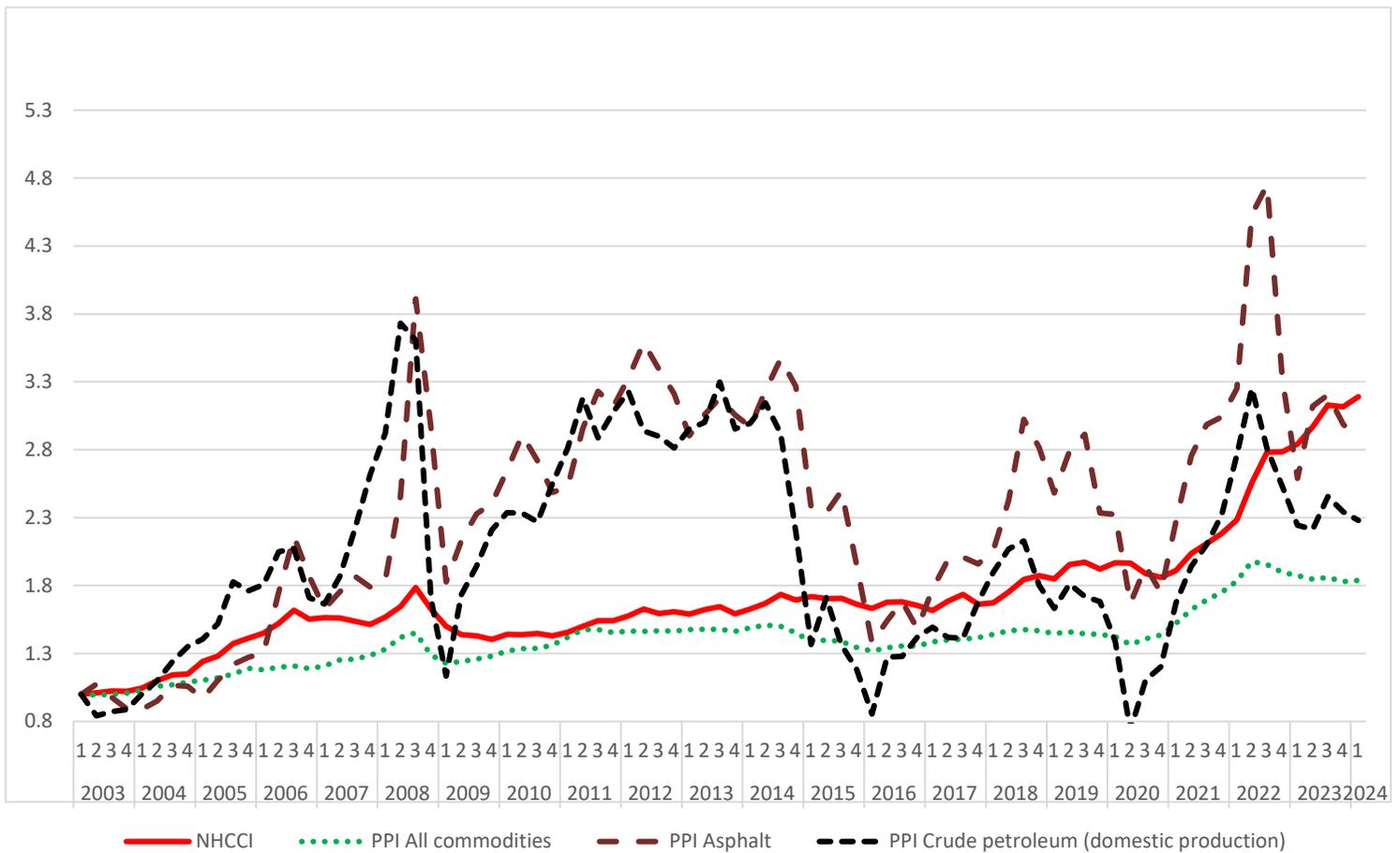
Year	Qtr	NHCCI	PPI All commodities	CPI All items	PPI Asphalt	PPI Fabricated structural metal	PPI Paving mixtures and blocks
2018	1	3.6%	4.0%	2.2%	16.3%	5.9%	3.5%
	2	4.0%	4.9%	2.7%	22.1%	11.0%	4.7%
	3	6.4%	5.0%	2.6%	50.4%	13.4%	8.7%
	4	12.7%	3.5%	2.2%	43.9%	13.0%	10.4%
2019	1	10.4%	0.4%	1.6%	20.3%	9.8%	5.7%
	2	11.6%	-0.6%	1.8%	14.9%	1.6%	5.4%
	3	6.9%	-2.1%	1.8%	-3.6%	1.1%	1.9%
	4	2.6%	-1.9%	2.0%	-17.1%	-2.3%	-1.1%
2020	1	6.5%	-1.7%	2.1%	-6.3%	-2.8%	1.0%
	2	0.5%	-6.4%	0.4%	-40.1%	-2.9%	-3.7%
	3	-4.2%	-2.6%	1.2%	-33.4%	-2.5%	-5.7%
	4	-3.3%	-0.2%	1.2%	-25.0%	-0.9%	-3.7%
2021	1	-2.9%	7.0%	1.9%	-2.2%	4.0%	0.1%
	2	3.6%	18.8%	4.8%	65.0%	20.5%	1.8%
	3	11.5%	20.3%	5.3%	53.7%	37.0%	5.7%
	4	17.3%	21.8%	6.7%	73.8%	45.4%	7.2%
2022	1	19.5%	20.4%	8.0%	42.9%	48.4%	8.5%
	2	25.5%	21.9%	8.6%	64.6%	38.9%	17.3%
	3	32.0%	15.5%	8.3%	59.2%	20.1%	22.3%
	4	27.6%	8.4%	7.1%	9.4%	10.8%	18.9%
2023	1	24.5%	2.2%	5.8%	-20.3%	3.5%	14.0%
	2	16.2%	-6.6%	4.0%	-31.2%	-3.5%	5.5%
	3	12.5%	-4.8%	3.5%	-32.5%	-2.6%	-1.5%
	4	11.9%	-3.6%	3.2%	-10.1%	1.0%	0.9%
2024	1	12.2%	-1.9%	3.2%	10.7%	-1.8%	2.1%

Sources: NHCCI: FHWA, Office of Transportation Policy Studies, National Highway Construction Cost Index (NHCCI) 2024 Q1 Estimates. CPI and PPI Indexes: BLS, Consumer Price Index, and Producer Price Indexes, available at <https://www.bls.gov>.

NHCCI, Asphalt, and Oil

While the timing of YoY increases and decreases of the PPI for Asphalt roughly align with the increases and decrease of the PPI for All Commodities, Figure 2 shows how the quarterly changes in the PPI for Asphalt show high volatility. The volatility in Asphalt prices reflect the volatility in petroleum prices as shown in Figure 2. This volatility, in addition to the actual increase in price, creates uncertainty which can heavily impact the price of long-term construction projects, and may partially explain some of the divergence in the NHCCI and PPI for All Commodities. Of note, the divergence in the NHCCI and PPI for All Commodities began around 2022 Q2, while the PPI for Asphalt was peaking during 2022 Q2 and Q3 amidst a period of extreme volatility. Also shown in Figure 2 is the PPI for Crude Petroleum (domestic production), which largely aligns with movements in the PPI for Asphalt going back to 2003.

Figure 2. Comparison of NHCCI, PPI, Asphalt, and Oil (rebased to NHCCI 2003 Q1)



Sources: NHCCI: FHWA, Office of Transportation Policy Studies, National Highway Construction Cost Index (NHCCI) 2024 Q1 Estimates. CPI and PPI Indexes: BLS, Consumer Price Index, and Producer Price Indexes, available at <https://www.bls.gov>.

Analysis of Construction-Related PPI

The PPI data in Table 3 reveal mixed trends across different materials. For instance, asphalt and crude petroleum experienced decreases of 4.1 and 2.8 percent, respectively, from 2023 Q4 to 2024 Q1. Prices of fabricated structural metal products also decreased during the same period. In contrast, related PPIs (paving mixtures and concrete products) generally exhibited positive growth ranging between 2 to 8 percent.

Table 3. Quarter to Quarter Growth Rate in Percent

Indexes	2021				2022				2023				2024
	1	2	3	4	1	2	3	4	1	2	3	4	1
NHCCI	2.7%	6.5%	3.5%	3.5%	4.7%	11.9%	8.9%	0.1%	2.1%	4.4%	5.8%	-0.5%	2.4%
PPI All Commodities	5.9%	6.6%	4.4%	3.4%	4.7%	7.9%	-1.1%	-2.9%	-1.3%	-1.5%	0.8%	-1.6%	0.4%
PPI Construction Materials	8.0%	14.5%	3.3%	4.5%	5.0%	1.1%	-2.0%	-3.4%	-0.1%	1.9%	-0.8%	-1.7%	2.0%
PPI Paving Mixtures and Blocks	9.9%	-5.8%	2.3%	1.1%	11.3%	1.8%	6.7%	-1.6%	6.7%	-5.8%	-0.4%	0.7%	8.0%
PPI Concrete Products	1.4%	2.3%	2.3%	1.7%	3.5%	3.8%	4.2%	2.3%	3.4%	1.8%	1.6%	1.1%	2.4%
PPI Fabricated Structural Metal	5.5%	14.8%	14.2%	5.1%	7.7%	7.4%	-1.2%	-3.1%	0.7%	0.1%	-0.3%	0.6%	-2.2%
PPI Asphalt	29.9%	21.1%	8.3%	1.9%	6.9%	39.5%	4.8%	-30.0%	-22.2%	20.5%	2.7%	-6.7%	-4.1%
PPI Concrete Pavers	1.0%	3.0%	0.7%	1.6%	6.0%	5.1%	2.0%	1.3%	4.7%	1.3%	0.0%	1.1%	2.4%
PPI Fabricated Structural Metal for Bridges	19.4%	8.6%	7.6%	3.2%	14.2%	3.1%	-2.9%	3.7%	-2.7%	0.4%	-3.1%	3.4%	-3.8%
PPI Crude petroleum (domestic)	39.3%	15.9%	8.1%	10.5%	19.1%	17.7%	-13.7%	-9.9%	-11.2%	-1.4%	10.9%	-4.6%	-2.8%

Sources: NHCCI: FHWA, Office of Transportation Policy Studies, National Highway Construction Cost Index (NHCCI) 2024 Q1 Estimates. CPI and PPI Indexes: BLS, Consumer Price Index, and Producer Price Indexes, available at <https://www.bls.gov>.

Future Exploratory Research and Welcome Reader Input

Given the sustained period of high inflation shown by the NHCCI, FHWA is interested in exploring research to better understand the sources of the cost increases and potential interactions with factors such as supply chain challenges, demand for highway construction, and interest rate increases. If you have any data points or anecdotes related to these topics or specific material cost changes, please reach out to nhcci@dot.gov to share and discuss.

NHCCI Point of Contact:

Dr. Thor Dodson, nhcci@dot.gov

Economist

Policy and Strategy Analysis Team

Office of Transportation Policy Studies

Federal Highway Administration