DHARAM
CONSULTING

CONSTRUCTION COST NOTE

AUSTIN, TX

September 2021

This note assesses the Austin construction market, including economic and sector activity, as well as input cost trends impacting construction prices. We provide Dharam Consulting's view on the outlook for local contractor bid submission price inflation.

CONTENTS

DHARAM CONSULTING VIEW

Austin's construction sector continued to expand in 2020, performing better than other regional markets, benefiting from strong residential demand and the continuation of large-scale projects. However, as elsewhere, investor and client caution caused by the Covid-19 pandemic, political changes and a surge in construction inflation led to a drop in new starts on site in 2020 and the first half of 2021. This is slowing work on site into 2022. The large number of local projects in the planning and design phase is expected to start feeding through from late 2021, so that activity on site should rebound over the course of 2022.

After a moderation in bid submission price inflation last year, we expect a return of price escalation in 2021, as contractors will be unable to absorb the extent of material prices and to a lesser extent labor cost seen in the market over the past year. As activity accelerates in 2022, contractors will become more confident and bid submission price escalation is anticipated to remain elevated.

Our outlook for construction activity, pipeline work and bid submission prices in Austin is based on the following general assumptions:

- Construction activity was relatively firm in 2020 and contractor revenue increased in the local market as large projects progressed. Project planning and design slowed however, impacting architects' billings.
- Lower project starts in 2020 and the first half of 2021 have reduced contractor backlog and increased competition, which has led to a significant rise in bid price variation.
- Projects meant to commence in 2020/21 are now in the pipe-line for a late 2021/22 start, but the surge in material prices weighs on project budgets and risk appetites, with some project owners continue to wait-and-see, leaving their projects on the drawing board for the time being.
- Pent-up demand and a strong pipeline of pre-construction planning + design work is nevertheless expected to start feeding through towards the end of the year resulting in increased project starts from 2022.
- Price volatility for key building materials remains extremely high, together with persisting supply issues and long lead times impacting project budgets and schedules across the board.
- Sharply higher material costs and increasing labor cost, coupled with rising bid submission price inflation could prompt some project owners to review their budget and schedules, delaying projects and slowing activity.
- The Biden Infrastructure investment Plan passed its first political hurdle, but any project implementation schedule is yet to be announced. As such, the potential impact on the construction industry is not yet included in our forecast. If implemented, a significant ramp up in industry capacity would be necessary to deliver the program. Any additional capacity constraints, coupled with skilled labor shortages and higher cost of key materials would have a significant additional inflationary impact on construction projects over the next years.

CONSTRUCTION COST

DRIVERS

Economic Backdrop

Economic Backdrop

The US economy continues to sustain robust growth despite headwinds from the spread of the Delta variant of Covid-19 and elevated inflation. Current expectations are that a relatively high vaccination rate make another strict lockdown that directly impacts a wide range of economic activity unlikely.

Leading forecasters, e.g. IHS, expect the US economy to expand by around 6% in 2021, led by consumer spending, business and residential investments, as well as fiscal and monetary support. This growth forecast is lower than expected only a few months ago, owing to supply bottlenecks and rising prices, which impede stronger activity levels in key sectors, such as manufacturing and construction. Inflation remains a major concern. The main reason for the inflationary pressure are persisting supply chain disruptions, shipping issues and the rate of labor force participation, which remains below pre-pandemic levels, leading to capacity constraints and putting pressure on prices and wages.

The pace of economic growth and inflation are expected to slow from next year, as pent-up demand stabilizes, labor participation and supply increase, and monetary stimuli are removed.

The pandemic-drop in economic activity was shorter-lived in Texas than other regions, propped up by lighter lockdown measures, a strong residential housing market and firm business investments. Within Texas, Austin proved relatively resilient throughout last year. Business cycle indicators have turned positive since late 2020 and point to solid growth this year.

In percentage terms, Austin recovered all jobs lost between February and April 2020 (12%) by mid-2021. In comparison, job levels in Texas and the U.S. remain 2% and 4%, respectively lower in July 2021 compared to the beginning of 2020 (chart 1).

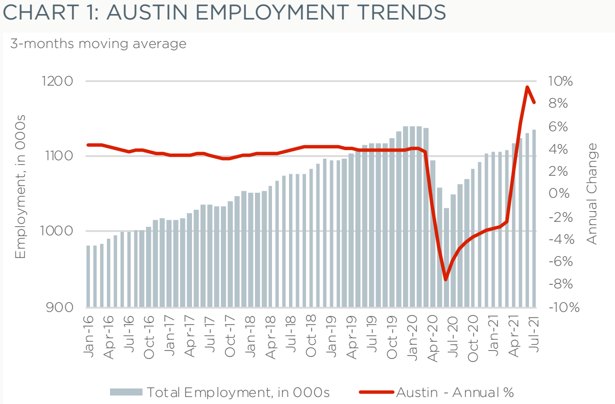
Austin has expanded rapidly over the past decade, a trend that accelerated over the past 18 months. The area has become attractive as a corporate location and businesses are increasingly seeking to relocate and invest in this strong growth area, attracted by business-friendly policies and lower cost of living. High-growth companies, such as Amazon, Tesla, Samsung or BAE Systems are making significant investments, resulting in increased employment opportunities and a surge in population. This in turn has spurred significant developments in the commercial, industrial and residential real estate, making Austin one of the most active construction markets in the country.

At the same time, significant population growth has put pressure on the demand for transport, housing and social infrastructure, including healthcare, education and civil facilities. Already local authorities and private providers are responding. Several major transport infrastructure projects are underway, including the $7.1bn “Project Connect”, which was approved in the November 2020, and which includes new rail system, MetroRapid routes, expanded bus services, a transit tunnel and new park-and-ride spaces throughout the region. Austin has also some of the fastest expanding school districts in the country, and local healthcare providers have embarked on or are planning significant capital expansion and modernization programs.

Further population growth is expected to keep demand up for housing and facilities. The Texas Demographic Center Population Projections forecasts a population increase of 60% over the next two decades in the Austin metropolitan area, increasing the population from 2.25 million today to 3.62 million in 2040. Within the metropolitan area, Hays County and Williamson County are expected to see the strongest increase, with local populations forecast to more than double (chart 2).

Against this background, the local economy is expected to continue to outperform the national and Texan average over the next few years. Further direct investments in the area could add to indirect and induced activity. Together with investments through the American Jobs Plan (AJP), the national infrastructure investment package that has passed the first political hurdles, this could push growth rates well above those currently expected over the next three years, both nationally, regionally and in Austin, if potential capacity constraints, in particular in the construction supply chain can be dealt with.

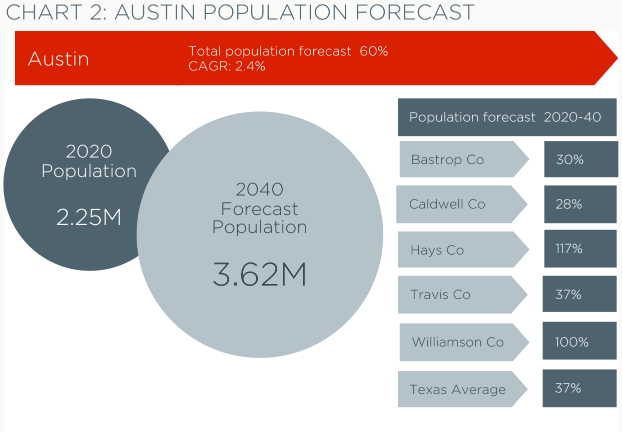
CHART 1: AUSTIN EMPLOYMENT TRENDS



Job Level July 2021 compared to Pre-Pandemic Level (February 2020)

Austin	100%
Texas	98%
US Average	96%

CHART 2: AUSTIN POPULATION FORECAST



Source; BLS, Austin Chamber of Commerce, Texas Demographic Center, 2018 Texas Population Projections Program

National construction sector activity

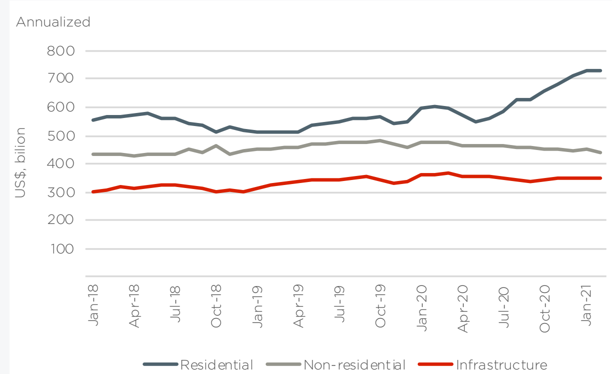
Construction spending and new starts data paint a mixed picture of industry activity. Total construction spending stood at an annual $1,552.2 billion in June 2021, up 8.2% year-on-year when the industry was in the middle of a number of regional lock-downs. Overall growth masks a sharp divergence in sub-sector fortunes. Residential construction rose by nearly 30% to $772.4 billion, by far outperforming the other industry sectors. In contrast, non-residential construction, at an annualized $779.9 billion in June 2021 was lower than last year. Hospitality and amusement + recreation related construction remain weak, but other sub-sectors including commercial offices, educational and public safety related construction are also displaying subdued activity levels. Infrastructure spending, at $337 billion in June 2021, was down 4% year-on-year.

Positively, architects' performance continues to improve, with new project activity (design contracts) and their billings increasing since the start of 2021 (chart 4). Reflecting an improvement in industry activity, contractors' work backlog has increased in 2021, according to the Associated Builders and Contractors. Nationally, the backlog averaged 8.5 months in the first seven months of 2021. The South recorded an average backlog of 8.6 months over the same period.

New construction starts in July 2021 totalled $854.8 billion on an annualized basis, up by more than a third compared to a year ago. At $519 billion, starts in the first seven months of this year were 15% higher compared to a year earlier and compare to $493.1 billion during the same period in the pre-pandemic 2019. Residential construction continues to outperform, with $248.2 billion worth of construction starts in the year to July 2021, up 30% year-on-year. Non-residential starts totalled $158.7 billion during this period, somewhat higher than last year, but still significantly lower compared to 2019 levels. A similar trend is being observed in the infrastructure sector, where starts in the first seven months totalled $112 billion, 2% up compared to last year, but lower than the $123.1 billion seen in 2019.

Dodge expects the value of construction starts, which dropped 7% to $797 billion in 2020, to increase by 7% to $855bn in 2021, somewhat below pre-pandemic levels, as a rise in residential (+9%) and infrastructure (+5%) work unable to lift a mixed performance within the non-residential market. Commercial starts are expected to increase, led by warehousing and data center related construction. Retail, hospitality and leisure construction starts, which had dropped by more than 20% in 2020, are expected to remain subdued this year and possibly next, as project owners and clients will wait for a return in customers and revenues. A further expansion in construction starts is expected in 2022, with the industry readying itself to any boost to the sector under Joe Biden's infrastructure package, which, if implemented, could start having an impact from 2022.

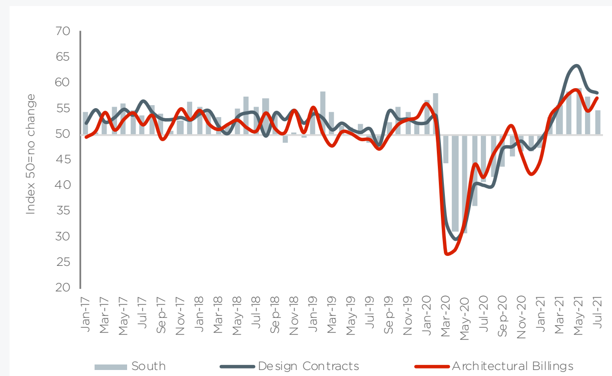
CHART 3: US CONSTRUCTION SPENDING



Source: US Census Bureau

CHART 4: ARCHITECTS' BILLINGS

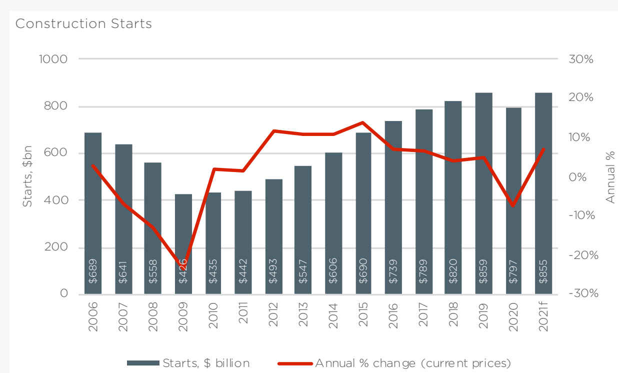
Billings in the Southern region, which includes Texas, are increasing largely in line with the national average.



Source: AIA

CHART 5: US CONSTRUCTION STARTS

Starts are forecast to increase to **$855** bn in 2021, a similar level to 2019



Source: Dodge Data & Analytics

Our View: The $1.2-trillion Infrastructure and Jobs plan passed its first political hurdle gaining approval by the U.S. Senate. Whilst this is just a first step, the measures could be a substantial boost to available funding and construction spending over the next decade. To meet the challenge of delivering a wide range of public works, the U.S. construction supply chain would have to ramp up capacity significantly. Given the skilled labor shortages seen in the pre-pandemic years and the more recent sharp increases in the price of key materials, such as lumber and steel, any additional capacity constraints could 1) have a significant inflationary impact on construction projects, and 2) limit the speed at which projects can be executed, especially in sector with a large requirements for specialist labor.

Austin Construction Trends

Whilst the Austin construction market remained fairly buoyant throughout the Covid-19 pandemic as far as work-on-site was concerned, the wider health crisis did not leave the market unscathed and slowed the flow of new project starts throughout 2020.

Construction starts are estimated to have totalled $11.2bn in 2020, down from $14.3bn in 2019 (chart 6). Nevertheless, a number of major projects progressed to site last year, most notably the $1.1bn Tesla Giga Factory and the UT Innovation District tower (Dell Medical School Block 164), which helped to provide confidence to the local market.

Construction starts stabilized in 2021, but are expected to remain below their 2019 peak levels. Apart from the pandemic hangover, the shortage and high prices of key building materials such as steel and lumber are impacting construction budgets, with the risk that some owners will delay projects to re-evaluate their project financials and schedules.

As a sign that construction progressed largely throughout the pandemic, employment levels only saw a moderate dip in spring 2020, before rebounding firmly in the latter half of last year.

More recently, construction job growth slowed somewhat due to the slower pace of construction starts over the past 18 months.

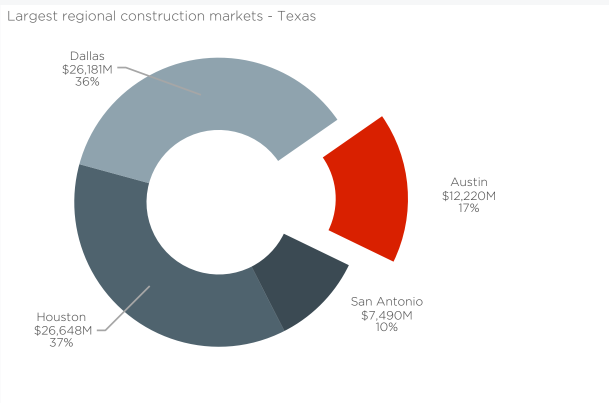
Despite the drop in 2020 construction starts, activity on site appears solid, as a number of projects that commenced earlier are being rolled out. Whilst construction activity currently under-way is focused on the commercial, single and multi-residential projects, other sectors, most notably industrial, warehousing, healthcare and education are also seeing an increase in demand.

There are a large number of large-scale projects in the design and planning phase and we are confident over the outlook for the local sector in the near to medium term. Consequently, we see the decline in 2020/ 2021 project starts as a temporary lull and anticipate construction activity in Austin to regain its strength and maintain a high level, as large-scale mixed-use projects are being rolled-out to meet the demand of a rising population for housing, healthcare, education, commercial facilities and transport infrastructure.

CHART 6: AUSTIN CONSTRUCTION STARTS

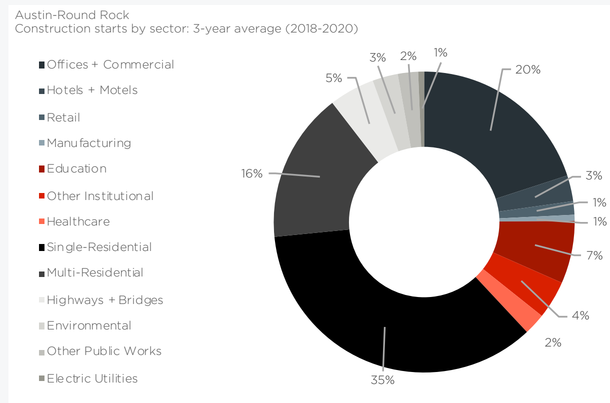
SECTOR SIZE

Austin is the 3rd largest construction market in Texas, behind the much bigger Houston and Dallas markets. Most national architects, designers, engineers and contractors operate in the market. In addition there is a significant number of local and regional players in the supply chain.



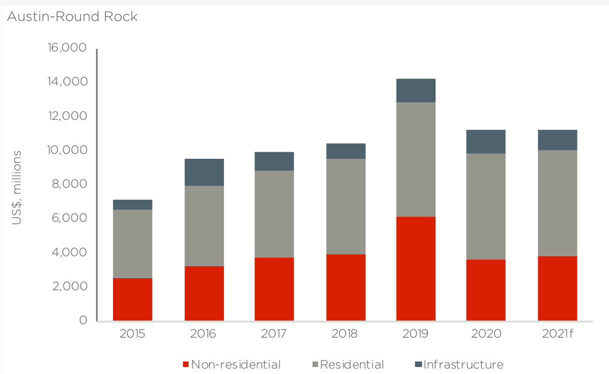
SECTOR BREAKDOWN

Single Residential construction is the largest sector, followed by offices + commercial and multi-residential projects.



TOTAL CONSTRUCTION STARTS

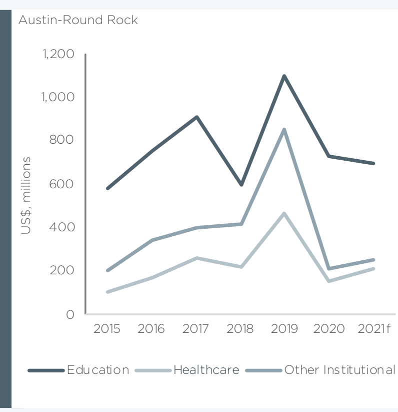
2021 Construction starts are forecast to stagnate at 2020 levels, but a large number of significant projects are in the planning + design phase and could be awarded in the near to medium term.



Source: ENR, Dodge Data

TOTAL INSTITUTIONAL CONSTRUCTION STARTS

An average of **$815 million** worth of education projects were awarded per annum in Austin between 2016-20



Current construction pipeline

includes projects currently on site and does not include large-scale projects in planning for which a construction schedule is not yet defined.

TABLE 1: AUSTIN - LARGE PROJECTS PIPELINE

LARGE-SCALE PROJECTS UNDERWAY	Sector	Construction Cost, $M	Start	Completion	Developer/ Owner
Project Connect	Transportation	7,100	2022	2033	Austin Transit Partnership
I-35 Capital Express Program	Transportation	4,900	2025		Texas Department of Transportation
Broadmoor Campus	Mixed-use	2,000	2021	2030	Brandywine Realty Trust
Tesla Giga Austin	Industrial	1,100	Q3 2020	Q3 2021	Tesla
EastVillage	Mixed-use	1,000	Q1 2021	2028	Reger Holdings LLC
Apple Campus	Commercial	1,000	2019	2022	Apple Inc.
Leander Springs	Mixed-use	1,000	2021	2032	City of Leander, iLand Development Group
The District (Round Rock town center)	Mixed-use	N/A	2021	2039	Pearlstone Partners
6 x Guadalupe	Residential MU	N/A	Q4 2019	2022	Kairoi Residential, Lincoln Property Co.
Texas State Capitol Complex	Offices	895	2018	2025	State of Texas
Northline	Mixed-use	800	Q1 2020	2030	Tynberg LLC
44 East	Residential	550	Q4 2020	Q4 2022	Intracorp Projects Ltd
Indeed Tower	Commercial	500	Q2 2018	Q2 2021	Trammell Crow Co.
Texas Children's Hospital	Healthcare	485	2021	Q1 2024	Texas Children's Hospital
183 North Mobility project	Transportation	477	Q2 2021	2026	Central Texas Regional Mobility Authority
Hanover Brazos Street tower	Residential MU	N/A	2021	2023	Hanover Co.
Hanover Republic Square	Residential MU	N/A	Q1 2021	Q3 2022	Hanover Co.
Bell District (Phase 1)	Mixed-use	350	2021	2024	City of Cedar Park, with RedLeaf Properties LLC of Austin
Vesper	Residential MU	350	Q3 2021	2023	Pearlstone Partners, ATCO Properties & Management
Travis County Courthouse	Public/Civic	344	Q4 2019	Q4 2022	Hunt Development Group LLC
Moody Center	Multipurpose Arena	338	Q4 2019	Q2 2022	Oak View Group, University of Texas
Dell Children's Medical Center North	Healthcare	326	Q2 2021	2023	
Austin State Hospital Rebuild	Healthcare	305	Q3 2019	Q2 2023	Texas Health and Human Services
Road 183A Phase III	Transportation	277	Q2 2021	2025	Central Texas Regional Mobility Authority
Block 185 (Google Tower)	Commercial Offices	N/A	Q1 2020	Q2 2022/ 2023 fit out	Trammell Crow Co.
Austin FC stadium	Leisure+Entertainment	260	2019	Q2 2021	Precourt Sports Ventures
Driftwood Golf and Ranch Club	Leisure+Entertainment	250	2019	Q4 2021	Discovery Land Company LLC
Waterloo Park, incl. Moody Amphitheater	Leisure+Entertainment	250	2019	Q3 2021	Waterloo Greenway Conservancy
Amazon	Industrial	237	2020	Q3 2021	Seefried Industrial Properties Inc.
The District	Mixed-use	200	Q3 2021	2023	Mark IV Capital
The Holdsworth Center	Public/Civic	200	2019	Q2 2021	Paid for in part by $100 million donation from Charles Butt.
Dell Children's Medical Center - Specialty Pavilion	Healthcare	191	2019	Q2 2021	Ascension Seton hospital network
300 Colorado	Commercial Offices	180	2018	Q1 2021	Cousin Properties
Natiivo Austin	Residential	180	2019	Q4 2021	Pearlstone Partners, Newgard
The Thompson	Resid./Hospitality	180	Q3 2018	Q3 2021	Magellan Development Group, Ryan Companies
UT Innovation District tower (Dell Medical School Block 164)	Commercial Offices	160	2020	Q2 2022	2033 Higher Education Development Foundation
Highland redevelopment Phase 2	Education	153	2019	2021	Austin Community College, RedLeaf Prop.
New Austin Energy HQ	Commercial Offices	150	2019	2021	Austin Energy
UT Graduate Housing Complex	Student Acc	78	Q4 2020	2021	University of Texas at Austin
Austin Marriott Downtown	Hospitality	N/A	Q1 2018	Q1 2021	White Lodging Services Corp.
Alexan Springdale	Residential	N/A	2020	Q2 2022	Trammell Crow
Alexan Waterloo	Residential	N/A	2020	Q2 2022	Trammell Crow
Alexan D2	Residential	N/A	2021	Q2 2023	Trammell Crow
Alexan Capitol Towers	Residential MU	N/A	Q4 2018	Q3 2021	Trammell Crow
405 Colorado	Commercial Offices	N/A	Q1 2019	Q4 2021	Brandywine Realty Trust
Arena Tower	Commercial Offices	N/A	2020	2022	Capella Capital Partners
Aloft Hotel	Hospitality	N/A	Q4 2018	2021	Pathfinder Development
Alta Austin Avenue	Residential	N/A	Q1 2021	Q2 2022	Wood Partners
Hyatt Centric Congress Avenue	Hospitality	N/A	Q1 2020	Q1 2022	McWhinney
The Travis	Residential MU	N/A	Q2 2021	2023	Genesis Real Estate Group
Symphony Square (The Waller)	Mixed-use	N/A	Q2 2021	Q3 2023	Greystar Real Estate Partners LLC
The Quincy	Resid./Commercial	N/A	Q1 2019	Q3 2021	Endeavor Real Estate Group
Urban East	Residential	N/A	Q1 2021	2025	River City Capital Partners LLC
LARGE-SCALE PROJECTS PROPOSED					
River Park	Mixed-use	4,000	Proposed		Partners Group and Presidium
District 2243	Mixed-use	2,000	Proposed		JNK Properties
Sixth and Guadalupe	Residential MU	N/A	Q4 2021 (Proposed)		Ryan Companies
Indigo Ridge at Cedar Park	Mixed-use	1,500	Proposed		Indigo Ridge Development Partners
Austin Convention Center Expansion	Convention	1,300	2024		City of Austin
3m Campus redevelopment	Commercial MU	1,000	Proposed		Trammell Crow, Karlin Real Estate LLC
Modern Austin Residences (55-storeys)	Residential MU	N/A	Q2 2022	2025	Urbanspace Real Estate + Interiors
5th & Colorado (415 Colorado, 50-storeys)	Mixed-use	N/A	Q1 2022	Q1 2025	Stonelake Capital Partners LLC
Block 16 (47-storeys)	Commercial Offices	N/A	Proposed		Manifold Real Estate
29 Gateway	Mixed-use	N/A	Q1 2022	2023	Hamilton Investment
7700 Parmer expansion	Mixed-use	N/A	Q1 2022	2024	Accesso Partners LLC
Austin American-Statesman site	Mixed-use	N/A	Proposed		The Cox family
14th and Guadalupe	Mixed-use	N/A	Proposed		Cypress Real Estate Advisors
NorthPointe	Mixed-use	N/A	Proposed		Verdot Capital
River Street Residences (48-storieys)	Residential	N/A	Proposed		River Street Partners, High Street Residential
The Republic (46-soreys)	Commercial Offices	N/A	Proposed		Lincoln Property Co., Phoenix Property Co.
Velocity	Mixed-use	N/A	Proposed		Marketplace Real Estate Group and Presidium
Waller Park Place	Mixed-use	N/A	Proposed		Sutton Company
HealthSouth redevelopment	Resid./Commercial	N/A	Proposed		Aspen Heights Partners
The Linden (28-storeys)	Residential	N/A	Q4 2021 (Proposed)		DEN Property Group, Reger Holdings LLC

Source; BizJournal Austin, Dharam Consulting

The current pipeline is dominated by a number of large-scale transportation projects, mega industrial and mixed-use schemes, which are being rolled out over a number of years. Among the largest building projects underway are the $1 billion Tesla Giga Austin, the $1 billion Apple Campus, or the $895 million Texas State Capitol Complex, with phase 1 and phase 2 expected to be completed in 2022 and 2025, respectively.

A significant number of projects are due for completion this year. Apart from the Tesla factory, other noticeable completions are the Austin FC stadium, Waterloo Park, incl. Moody Amphitheatre, Dell Children's Medical Center - Specialty Pavilion, the 32-story Marriott hotel, the 36-story Indeed Tower, Austin Marriott Downtown and 300 Colorado.

Phase 1 of Brandywine Realty Trust's Broadmoor Campus is expected to commence this year, together with phase 1 of the East Village and Leander Springs mixed-use developments. These are just some of the large-scale projects in the planned projects pipeline.

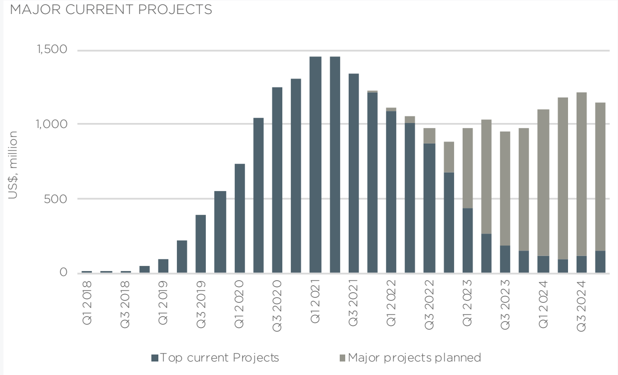
Furthermore, Austin has a strong development pipeline for downtown high-rises (residential and commercial) and mixed-use communities on the drawing board and/ or planned to commence in the near future. In large parts these have not yet entered our active pipeline, as schedules remain undefined as yet. Amongst the largest building projects proposed are the $4 billion River Park and the Velocity mixed-use developments, the $2 billion District 2243, the Sixth and Guadalupe residential tower, and the $1.3 billion Austin Convention Center Expansion, which is planned to commence in 2024.

Our estimation of construction cash flows based on major projects pipeline of known projects in Austin is shown in chart 7. This only includes projects in the current active pipeline and excludes completed projects. Lower starts in 2020 are expected to result in lower 2022 project cash-flows. However, from 2023, the expected commencement of a number of large developments is expected to accelerate activity, keep the supply chain busy and maintain cash flows at a relatively high level over the next few years.

Our analysis of the flow of trade resources within the current pipeline for the top 35 projects by value is summarized in chart 8 and table 2.

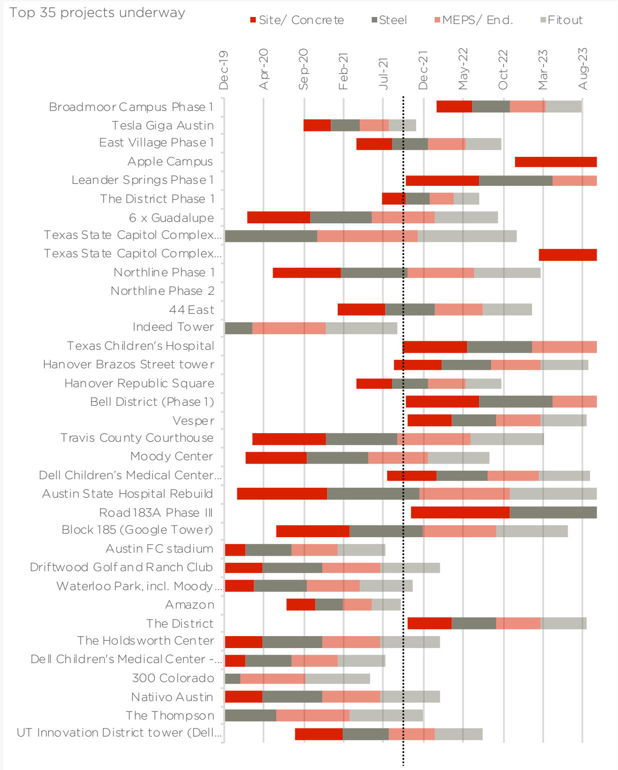
The high-level analysis indicates a relative balanced demand profile across key trades, with a number of large projects in MEPS and fit out stages, while others are commencing work demanding site/ concrete trades. Based on current projects on site, steel demand locally is expected to rise significantly in the final quarter of this year, which in addition to MEP material prices are under significant upward pressure contributing to a marked rise in construction prices. There are significant schemes in the longer-term pipeline, which, if all proceed as planned will draw up significant resources over the next years.

CHART 7: PROJECT CASHFLOW ESTIMATION + FORECAST



Source: Dharam Consulting Estimation

CHART 8: TRADE RESOURCE OUTLOOK - TOP 35 PROJECTS



Source: Dharam Consulting Estimation

* Excludes Transport infrastructure projects and projects proposed/ in planning

TABLE 2: ESTIMATION OF PEAK TRADE RESOURCE DEMAND

Trade	Peak Demand Major Current Projects Pipeline
Peak Site Concrete	Q1 2021
Peak Steel	Q4 2021
Peak MEPS/Enclosure	Q2 2022
Peak FITOUT	Q1 2023
Source: Dharam Consulting	

Key Construction Market Players in the Austin market

The largest commercial and residential contractors in the Austin market are shown in chart 9. BizJournal Austin estimates that revenues from the Top 30 contractors' Austin Offices totaled $6.21 billion in 2020, up 5% year-on-year, with the increase in billings bucking the national trend, which generally showed a decline in contractor revenue last year. Billings of contractors' Austin offices for local projects only totalled $4.9 billion, a 7% increase on 2019 billings. The top 10 commercial and residential contractors accounted for 30% of the market in 2020 and saw their billings increase by 7% last year, somewhat outperforming the wider market.

Local architects' billings declined to $260.1 million in 2020, down 6% year-on-year, reflecting slower design and planning work, which also led to fewer project starts last year. In 2020, architects' billings of the top 5 architects, together accounting for nearly 60% of the market, fell by 12% to $148.4 million, indicating that larger architects were hit harder by the downturn.

Total local engineering consultants' billings stood at $758.6 million, according to BizJournal Austin, of which the top 10 took 55% of the market (chart 11).

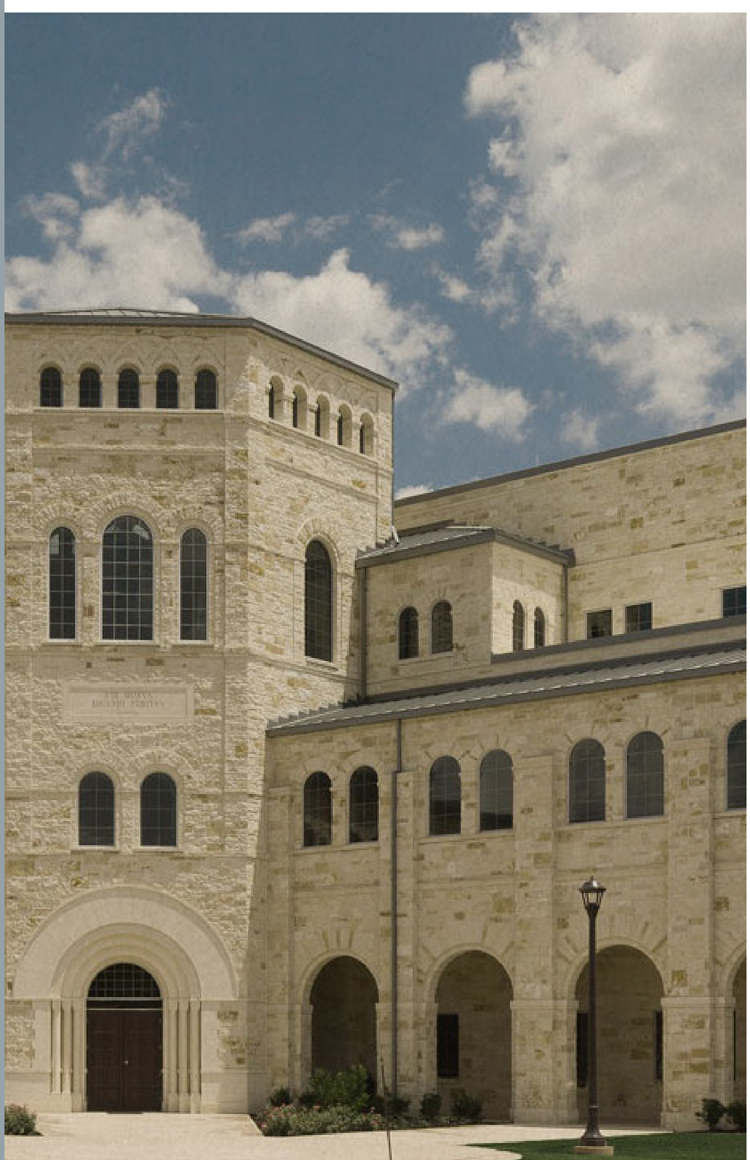
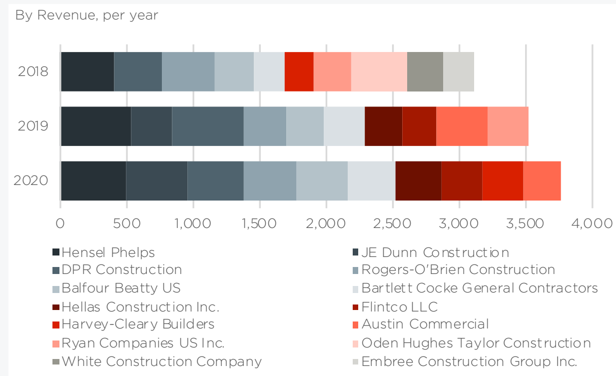


CHART 9: LARGEST AUSTIN CONTRACTORS

Top 30 commercial and residential contractors' billings

2020: $6,211.6 million I 2019: $5,936.0 million I 2018: $5,072.6 million

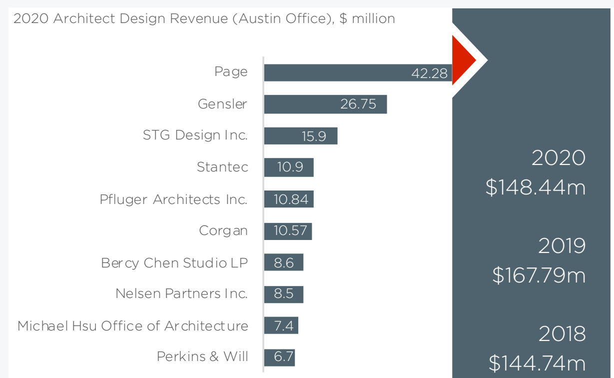
Top 10 contractors



Source: Bizjournal Austin

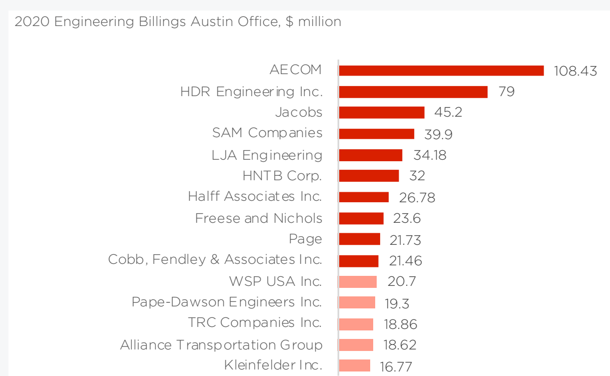
CHART 10: LARGEST AUSTIN ARCHITECTS

Reported Austin Office: Architect Design Revenue



Source: BizJournal Austin

CHART 11: LARGEST AUSTIN DESIGN CONSULTANTS



Source: BizJournal Austin

BUILDING COST +
SUPPLY CHAIN CAPACITY

Building Cost + Supply Chain Capacity

Building costs + Bid submission prices

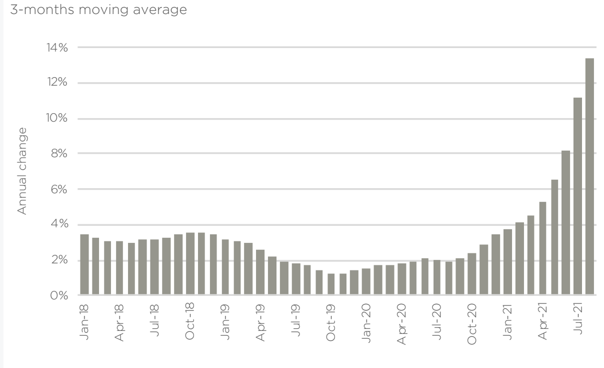
Due to sharply higher building material prices, national building input cost inflation (BCI) continues to escalate. In the first eight months of the year, building costs are nearly 8% higher than average 2020 costs. Between December 2020 and August 2021 alone, building input costs are on average 12% higher. (chart 12).

The rise in input costs is only slowly feeding through the supply chain, according to the Turner Construction Index, which shows stagnating contractor prices between Q3 2020 and Q1 2021. Only in the second quarter of 2021, contractors started to push through higher prices, with the index showing a 1.3% increase quarter-on-quarter. On average, contractor prices in the first half of this year are 0.2% higher than in 2020.

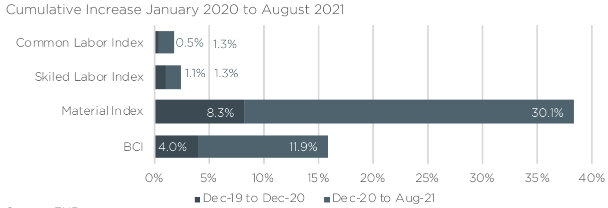
The sharp rise in the pace of building cost inflation is expected to increasingly feed through to contractor pricing, as stronger building activity will allow contractors to pass-through the material price increases.

Our View: Sharply higher material prices, labor shortages and persisting supply chain/ logistics issues are creating a challenging environment for the industry, impacting new project starts and delaying work on site.

CHART 12: US BUILDING COST INDEX

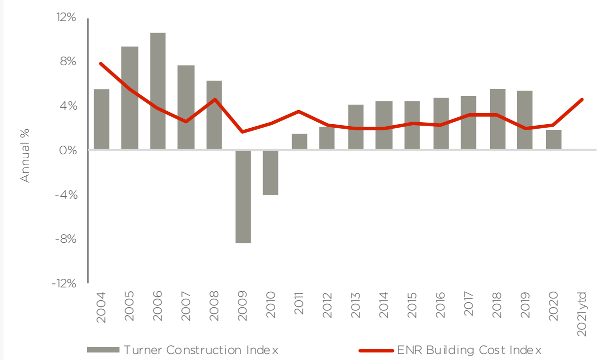


Source: ENR



Source: ENR

CHART 13: CONTRACTOR PRICE INDEX



Source; Turner, ENR

Austin Building + Labor Cost

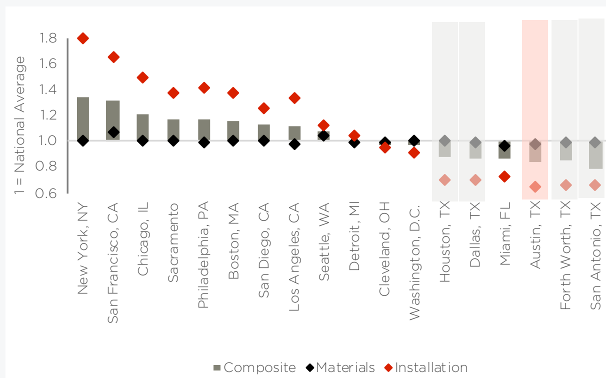
Austin Building + Labor cost

Local construction costs in Texas and Austin are on average significantly lower than the national average, due to lower labor cost (chart 14). Building costs in Austin are around 15% lower than the national average.

ENR figures suggest that Austin construction labor cost are 35% lower than the national average, while the Bureau of Labor Statistics data show a smaller difference of 15%.

The local construction job market continued to expand throughout 2020 and 2021, largely as construction activity was allowed to continue during the pandemic lockdown. Local construction employment growth outpaced the national and Texas average over the past three years, and competition for trades / sub-contractor resources is strong. Average local construction wages increased by 2.5-3% in 2020, largely in line with national averages, but we estimated that labor cost inflation, at around 3-4% in 2021 is higher than the national average.

CHART 14: LOCATION COMPARISON



RS Means, Dharam Consulting

The Austin construction labor pool is relatively deep and strong construction activity over the past years has drawn in additional resources. Nevertheless, the volume of construction projects that have been and are ongoing in the region and Texas are maintaining high demand for skilled labor and contractors experienced to work on large-scale construction projects (as well as for materials and equipment), so that some capacity constraints are being reported in particular for specialist trades which is impacting costs and schedules.

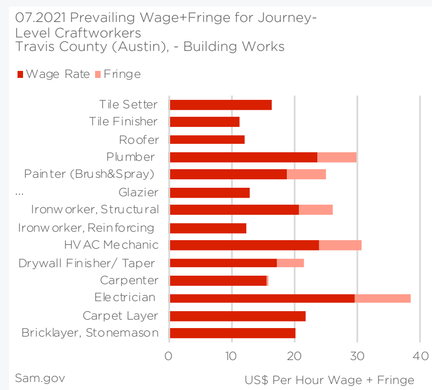
Occupation (market) wages for key construction trades are shown in table 3. Prevailing wages are required for municipal construction contracts for all publicly funded construction projects and all City of Austin construction projects receiving Federal funds. Current reported prevailing wages in Travis County (Austin) are shown in chart 14).

Building materials have experienced the same supply chain bottlenecks seen elsewhere across the nation, impacting prices and lead times.

TABLE 3: AVERAGE OCCUPATIONAL WAGES

Occupational Wages - Mean Wages ($ per hour)	Austin		Comparison to National	National Average	
Occupation	2019	2020	Ratio	2019	2020
First-Line Supervisors of Construction Trades and Extraction	$ 32.09	$ 32.02	0.91	$ 34.35	$ 35.09
Brickmasons and Blockmasons	$ 22.93	$ 20.00	0.71	$ 27.15	$ 28.09
Carpenters	$ 18.96	$ 19.25	0.74	$ 25.41	$ 26.06
Tile and Stone Setter	$ 17.83	$ 17.83	0.68	$ 25.41	$ 26.06
Cement Masons and Concrete Finishers	$ 18.95	$ 18.80	0.79	$ 23.24	$ 23.74
Construction Laborers	$ 15.71	$ 15.85	0.77	$ 20.06	$ 20.67
Paving, Surfacing, and Tamping Equipment Operators	$ 19.07	$ 19.93	0.89	$ 21.46	$ 22.31
Pile Driver Operators	$ 24.34	$ 24.94	0.72	$ 33.76	$ 34.56
Drywall and Ceiling Tile Installers	$ 20.05	$ 20.03	0.80	$ 24.31	$ 24.97
Electricians	$ 25.61	$ 25.85	0.87	$ 29.02	$ 29.59
Glaziers	$ 17.84	$ 18.22	0.74	$ 23.95	$ 24.50
Insulation Workers, Mechanical	$ 22.46	$ 25.38	0.95	$ 26.02	$ 26.67
Painters, Construction and Maintenance	$ 17.67	$ 17.92	0.80	$ 21.46	$ 22.33
Pipelayers	$ 18.19	$ 19.82	0.92	$ 20.96	$ 21.66
Plumbers, Pipefitters, and Steamfitters	$ 24.66	$ 25.23	0.86	$ 28.75	$ 29.37
Roofers	$ 16.87	$ 17.62	0.78	$ 22.03	$ 22.60
Sheet Metal Workers	$ 23.09	$ 23.99	0.90	$ 26.19	$ 26.60
Structural Iron and Steel Workers	$ 23.92	$ 26.97	0.96	$ 28.45	$ 28.20
Helpers, Construction Trades, All Other	$ 14.96	$ 15.98	0.95	$ 16.06	$ 16.89
Construction and Building Inspectors	$ 29.86	$ 31.02	0.97	$ 30.96	$ 31.96
Source: BLS, Dharam Consulting					

CHART 15: PREVAILING WAGES



Building Materials

The spike in building material prices, witnessed since Summer 2020 continued into the summer of 2021, together with long lead times for key items impacting project costs, schedules and cash flows of the supply chain and challenging the financial viability of construction projects. Volatility in global commodity markets remains high and whilst some commodity prices, including oil, copper and lumber have retreated from their recent pikes, prices remain high and the decline is not widespread.

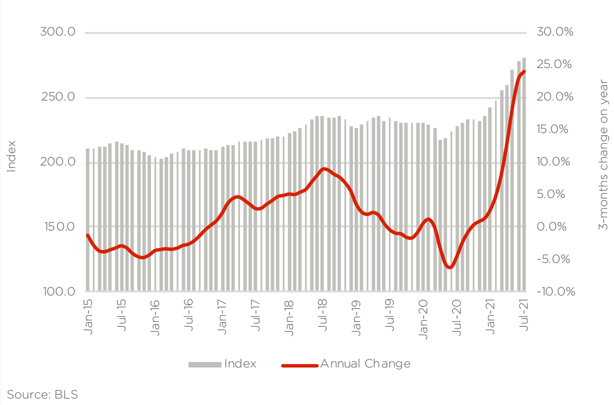
Oil slipped to $67.5/bbl in August, down $5 on July but still 60% higher year-on-year. Similarly, global copper prices fell to $9,357/ ton in August, down from above $10,000/ ton mark in May, but still nearly 50% higher than last year. Current copper price levels, coupled with long lead times are unlike to put downward pressure on MEP material prices for the time being.

Whether the recent declines in commodity prices will alleviate some of the cost pressures in the supply chains remains to be seen. Supply-side constraints and long lead times remain a challenge for the industry and we expect that cost inflation will be maintained until well into the final months of 2021.

Overall construction input prices increased 24.1% in the three months to July compared to a year ago, driven in particular by steel prices. Steel prices continue to rise significantly in the US, in contrast to China and Europe, where steel prices have levelled in recent weeks. In contrast, softwood lumber prices have tumbled in recent months from their all-time highs. CME Random Length Lumber Futures fell back to $513 at the end of August 2021 from $1,686 in May 2021.

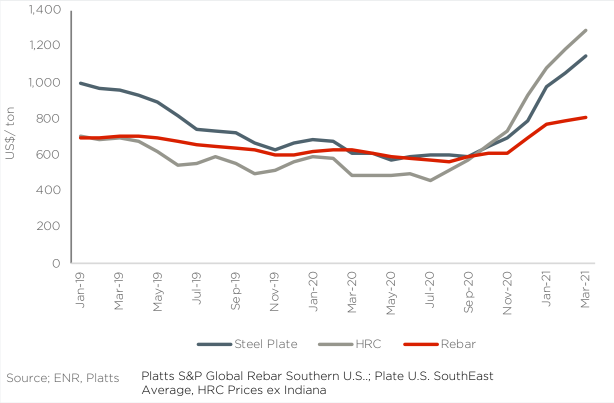
Building price volatility looks set to remain a key feature for the current construction market, impacting procurement decisions and project cost estimation.

CHART 16: US INPUTS TO CONSTRUCTION INDEX



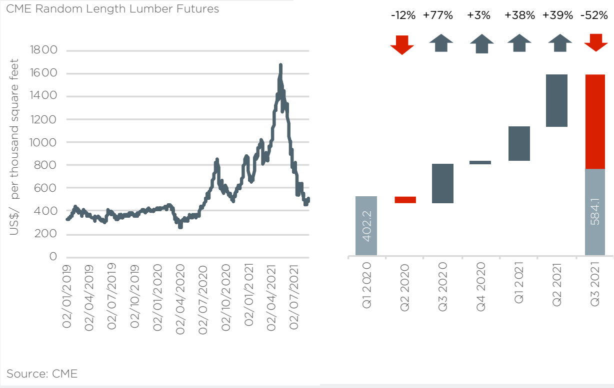
Source: BLS

CHART 17: STEEL PRICES



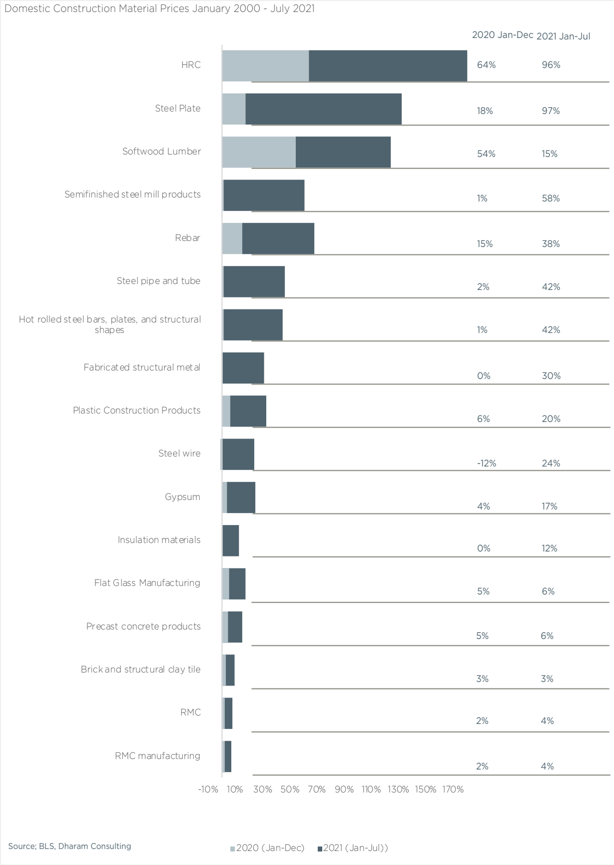
Source; ENR, Platts
Platts S&P Global Rebar Southern U.S.; Plate U.S. SouthEast Average, HRC Prices ex Indiana

CHART 18: LUMBER PRICES



Source: CME

CHART 19: US BUILDING MATERIALS INFLATION



Source; BLS, Dharam Consulting

BID SUBMISSION

PRICES

Whilst we are yet to see a significant uplift in new construction starts both nationally and in the Austin region, especially compared to pre-pandemic levels, demand is recovering most visibly in the rise in projects in the later stages of planning + design. At the same time, sharply higher building material prices and supply constraints causing long lead times remain challenging issues to a broader recovery in the sector.

Construction input costs in Austin, Texas are estimated to have risen in line with national averages over the past year, though a more buoyant construction labor market has put higher pressure on labor costs than elsewhere.

Nationally, we expect the current trend to continue in which inflationary pressures outweigh factors putting downward pressure on bid submission prices. Throughout the summer, we have seen contractors starting to push through sharply higher input costs to the supply chain.

This is particularly true for concrete/rebar, steel and MEP trades, where we are seeing significantly higher bid submission prices. Consequently, project owners are likely to be exposed to much higher project cost than they may had planned for earlier.

In 2021 these price increases are entirely driven by material costs, but in 2022 we expect that labor constraints and wage growth will become the dominant factor driving price increases, as material prices stabilize (or even fall back). There will, of course, be differences between sectors and locations.

Austin remains a very active market and the pipeline of planned projects is strong. Even if not all of these projects start in the immediate future, we expect the local supply chain to remain busy and bid price volatility to remain high. The situation is very dynamic and should capacity constraints become a persistent feature over the next years, we will have to further adjust our inflation forecast. Annual bid submission price escalation in Texas was in line with the national average in 2020. We estimate that contractor bid submission prices increased by 2.5%-3% in 2020, despite the slowdown in construction starts.

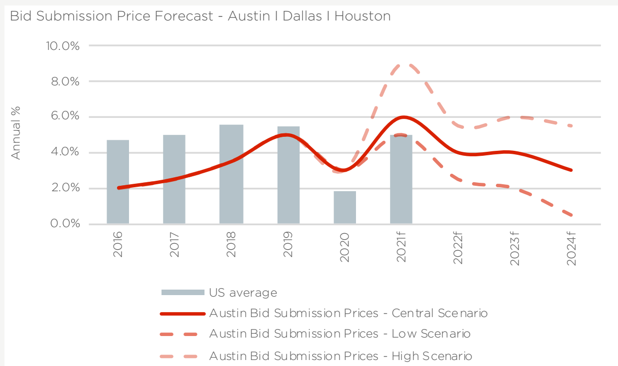
Our central scenario now foresees bid submission prices to increase by 7% in 2021, with a further escalation to 4% per annum in 2022 (chart 20). We see the pricing risk in 2021 clearly on the upside. Next year, prices could moderate more than we currently anticipate in our central scenario, if material prices trend down stronger than expected.

CHART 20: PRICING RISKS AND BID SUBMISSION PRICE FORECAST

CURRENT RISK

Upward Pressure on Bid Submission Prices
Building material price inflation
Supply chain crunch + longer lead times for key materials, e.g. MEP, Lumber
Pressure on wage inflation and labor capacity
Increased number of projects in pre-construction phase
Increase in construction activity and demand, increases contractors' ability to pass on price increases, recover lost margins.

Downward Pressure on Bid Submission Prices
Current strength reflects pandemic bounce, full economic recovery yet to be established.
Contractor market is still competitive market in key sectors
Recovery in demand yet to extent to non-residential and infrastructure sectors
Increased number of projects in design + planning yet to translate into a significant increase in project starts.
Potential impact of post-Covid-19 productivity increase from increase in digitalization across industry.



Source: Dharam Consulting, Turner Construction

Dharam Consulting is an Independent Construction Consultancy specializing in providing proactive and value adding Cost and Risk Services that contribute towards successful outcomes for our clients and their projects. (A registered MBE company)

DHARAM
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ABOUT US

We are a certified Minority Business Enterprise.

We are an experienced independent construction consultancy and we concentrate on doing what we do best – providing an intelligent, objective perspective which goes beyond measuring and pricing – delivering the highest quality pre-construction services, cost and budget management, risk, schedule, logistics, and procurement advice to clients. Project benchmarking, market intelligence and data analytics support our services.

We have a deep understanding of the critical cost drivers and the administrative realities of working on projects across all sectors. One of our most valued contributions is our ability to bring a balanced and independent viewpoint.

Our services are based upon strong relationships and trust, and our professional advice is grounded in a fundamental understanding of what matters to the project owner, architect and other stakeholders on a high-quality public or privately funded project, enabling our clients to deliver their vision.

CONTACT

Harpy Lally
Managing Director
hlally@dharamconsulting.com
+1 718 913 9420

Andrew Smith
Managing Director
asmith@dharamconsulting.com
+1 862 208 8206

Simon Hough
Director
shough@dharamconsulting.com
+1 610 554 6560

David Pearson
Director
dpearson@dharamconsulting.com
+1 267 455 4244

Owain Jones
Director
ojones@dharamconsulting.com
+1 617-913-4345

Raj Sayal
Director
rsayal@dharamconsulting.com
+1 516-965-3025

Mike Montague
Director
mmontague@dharamconsulting.com
+1 949-304-3099