U.S. Building and Construction Industry: Overview Midstream

Upstream

STRUCTURAL STEEL

AND OTHER METAL

FABRICATION

LUMBER AND

TIMBER

FABRICATION

purchasing undeveloped land that will be developed into finished lots for residential and commercial building construction, obtaining permits, subdividing land into parcels, and grading and clearing the land.

construction industry, such as metal, trees, stone, crude oil, and sand that will ultimately be fabricated or refined into building materials (e.g., aggregates, bricks, forming systems, cement, plastics, ceramic facing and floor tiles, composites, glass, metal, asphalt, precast concrete, sealants.

Metal

METAL

PRODUCTION

WOOD

PRODUCTION

STONE, CLAY

AND ROCK

PRODUCTION

CRUDE OIL AND

NATURAL GAS

PRODUCTION

AND

REFINEMENT

SAND

PRODUCTION

ELECTRICAL AND

OTHER

COMPOENNTS

PRODUCTION

MATERIALS ANSPORTATION

꼰

acquiring, financing, transporting, and warehousing the raw materials and finished building materials, heavy

Schnitker Steel, Commercial Metals

Materials fabricators: Novelis, Norsk Hydro

Kev Plavers

HOMEBUILDING MARKET

Leading players in key Midstream segn
• Residential Construction: D.R.
PulteGroup, NVR, Taylor Morrison, To K. Horton, Lennar Toll Brother tel, Turner, JE Dunr Residential PulleGroup, NVR, Taylor Monison, PulleGroup, NVR, Taylor Monison, PulleGroup, NVR, Taylor Monison, Bechtel, Turner, June Commercial Construction.

Construction. Construction Lenders: Bank OZK, Goldman Sach

HOMEBUILDING General. The homebuilding market in the U.S. consists of the construction and sale of residential

nomes across the country Geographic Markets. The U.S. homebuilding market is subdivided into multiple regions Northwest, West, Southwest, Midwest, South

Markets

The building and construct

Entry-level or First-time Homebuyers on a tig Enury-level or rist-time Homebuyers on a tight budget. Because buyers are focused on affordability, these homes are typically smaller is size and have basic finishes and features.

Move-up Buyers, who are looking to upgrad from their first home to a larger, more luxurious.

Move-up Buyers, who are looking to upgradifrom their first home to a larger, more luxuriou-residence. This category of buyer accounts for the majority of home sales. These homes ofter Active Adult focuses on older homebuvers wh

are looking for homes that cater to their uniquilifestyle needs. These homes may be smalle than traditional homes, but often feature one level living, low-maintenance exteriors, an amenities such as community centers, swimmin pools, and fitness centers.

pools, and titness centers.

Luxury appeals to buyers in the search of higher-end move-up and luxury homes. These homes often have larger square footage, unique architectural details, premium materials and finishes, and advanced technology and advanced technology. **COMMERCIAL REAL ESTATE**

General: Collinierical real estate (CLV) is least estate (Te., land or buildings) intended to generate a profit, either from capital gains or rental income Also known as commercial property, investmen property or income property, CRE includes office buildings, medical centers, hotels, shopping malls retail stores, multifamily housing buildings Commercial Real Estate Categories. CRE

Industrial: includes manufacturing plants warehouses, large R&D facilities, cold storage distribution centers, and data centers.

Healthcare: includes medical centers, hospita nursing homes, and dispensaries. **Education**: includes schools, colleges, ar

conomy, including transport systems such a bads and highways, and telecommunication ervices, such as telephone and broadban

Airports (hangars, terminals, control towers runways, and parking garages)

Prisons (correctional facilities and detention centers) Street lighting

Pre-construction

Construction

Home Sales

INDIVIDUALS

Downstream

Multifamily: includes apartment complexes of high-rise apartment buildings. Generally, anything larger than a fourplex is considered commercial real estate.

Office buildings: includes single-tenan properties, small professional office buildings downtown skyscrapers, and everything in between

Retail Snops/Restaurants: includes pad sites or highway frontages, single-tenant retail buildings inline multi-tenant retail, small neighborhood shopping centers, larger community centers with grocery store anchor tenants, lifestyle centers that blend both indoor and outdoor shopping, "power centers" with large anchor stores such as Best Buy, PetSmart, OfficeMax, and shopping malls that usually house many indoor stores.
 Industrial includes manufacturing plants

Hospitality: includes hotels, public houses restaurants, cafes, stadiums, sports venues nightclubs, amusement parks, and movie

Railways and Subways (structures, buildings land, and equipment to support the rail lines)
Roads (e.g., highways, public roads, including tol roads, tunnels, and bridges)
Electricity and Power (coal-, nuclear- and gas fired electrical generation facilities, solar and winches and the reason of the resulting and the reason of the resulting and the reason of the resulting and the resulting

LAND OWNERSHIP

LOT DEVELOPMENT

CONCRETE, BRICK AND STONE FABRICATION

PETROCHEMICAL PRODUCTS MANUFACTURING

GLASS AND WINDOW MAKING

ELECTRICAL GOODS. TOOLS, HEAVY MACHINERY **AND WORK VEHICLE ASSEMBLY**

DISTRIBUTION AND TRANSPORTATION

Key Players

COMMERCIAL REAL ESTATE DEVELOPMENT MARKET

COMMERCIAL ENTERPRISES

GOVERNMENT AGENCIES AND UTILITY OWNERS

INFRASTRUCTURE BUILDING MARKET

action and Civil Engineering

U.S. Building and Construction Industry: Simplified Upstream Downstream

and, Materials and Equipment. The upstream sector of the building and onstruction industry focuses on land, materials and equipment used to uild homes, buildings and infrastructure.

Land Acquisition and Lot Development. This sector involves

raw materials. Various raw materials are used in the building and construction industry, such as metal, trees, stone, crude oil, and sand that will ultimately be fabricated or refined into building materials (e.g., aggregates, bricks, forming systems, cement, plastics, ceramic facing and floor tiles, composites, glass, metal, asphalt, precast concrete, sealants, paint and coatings, adhesives, and waterproofing compounds and wood).

PRODUCTION

Stone, Clay and Rock

Crude Oil and Natural Gas

Electrical and Other Components

Land Ownership

approprie

Materials Fabrication, Heavy Equipment, Tools, Work Vehicles, and Appliances. The upstream sector also encompasses the procurement of heavy construction equipment (e.g., bullozers, exavators, and cranes), tools such as drills, hammers, and jackhammers, work trucks and other vehicles, and household appliances.

Transportation and Distribution. The building and construction industry relies heavily on the transportation and distribution/dealer sector, which are vital in acquiring, financing, transporting, and warehousing the raw materials and finished building materials, heavy equipment, tools, and vehicles and moving them to Distributors. Wesco International, Grainger, Fastenal, ThyssenKrupp, United Construction

FABRICATION AND ASSEMBLY

Structural Steel and Other Metal Materials

Lumber and Timber

Concrete, Brick and Stone

Petrochemical Products

Glass and Windows

<u></u>

®≡

Lot Development

DISTRIBUTION

000

The Midstream sector encompasses the construction is of residential homes, commercial real estate buildings and facilities, and infrastructure. The construction industry is a vital part of the U.S. economy, accounting for 4.3% of U.S. Gross Domestic Product (GPP) by itself, ranking twelfth amongst all industries. As of January 2023, the U.S. construction market was valued at \$1.96 trillion. Approximately 7.8 million people are employed by the construction industry (2.9% of the U.S. workforce), including employees and workers of general contractors, subcontractors, government agencies, architectural and engineering firms, and lenders and title insurance companies.

Entry-level

Active Adult

Leading players in key Midstream segments are:

**Residential Construction: D.R. Horton, Lennar,

**PulteGroup, NVR, Taylor Morrison, Toll Brother

**Commercial Construction: Bechtel, Turner, JE Dunn

Gilbane, Whiting-Tumer, Fluor, DPR, Skanska

**Infrastructure Construction: Bechtel, Fluor,

CintralFerrovial

The largest industry in the U.S. is the real estate, renting and leasing industry, which contributes to 13% of the GDP. This Downstream sector encompasses the process of taking a completed home, commercial building, or infrastructure commercial building, or infrastructure discillity and putting it in the hands of an individual nomebuyer, commercial enterprise, government agency (private government-sponsored contractor), or utility owner. In other words, this sector focuses on the sale, renting and leasing of homes and commercial real estate and the maintenance and furnishing of these properties and infrastructure projects.

Home Insurance **Home Consumption**

HOMEBUILDING

Markets

Three Markets. The building and construction of three consumer markets: (1) comebuilding for single-family residences, (2) commercial real estate for business enterprises such as retail stores, office buildings, multifamily confidential to the confidence of the co

sidential developments, hospitals, and industri

residential developments, hospitals, and industrial facilities, and (3) infrastructure, which entails the construction of large-scale public works of a government or business enterprise, such as roads, bridges, airports, and utility systems. The industry consists of three sectors: upstream (land, materials and equipment), midstream (construction), and downstream (sales and financing).

General. The homebuilding market in the U.S. consists of the construction and sale of residentia homes across the country

Geographic Markets. The U.S. homebuilding market is subdivided into multiple regions. Northwest, West, Southwest, Midwest, South Central, Northeast, East, and Southeast.

Homebuyer Categories. Homebuilders market and sell a broad range of homes to discrete categories of homebuyers, including:

- Entry-level or First-time Homebuyers on a tight budget. Because buyers are focused on affordability, these homes are typically smaller in size and have basic finishes and features.
 Move-up Buyers, who are looking to upgrade from their first home to a larger, more luxurious residence. This category of buyer accounts for the majority of home sales. These homes often have more square footage higher-culent. have more square footage, higher-quality finishes, and more amenities than entry-level
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Commercial Real Estate Categories. CRE commonly divided into seven categories:

- Multifamily: includes apartment complexes or high-rise apartment buildings. Generally, anything larger than a fourplex is considered commercial real estate.

 Office buildings: includes single-tenant properties, small professional office buildings, downtown skyscrapers, and everything in between.

 Retail Shops/Restaurants: includes pad sites on highway frontages, single-tenant retail buildings.
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- Industrial: includes manufacturing plants warehouses, large R&D facilities, cold storage distribution centers, and data centers.
- distribution certains, and data certains.

 Hospitality: includes hotels, public houses restaurants, cafes, stadiums, sports venues nightclubs, amusement parks, and movie
- Healthcare: includes medical centers, hospital nursing homes, and dispensaries. **Education**: includes schools, colleges, an

INFRASTRUCTURE

Hard infrastructure encompasses physical system that are critical to running a modern, industrialize economy, including transport systems such a roads and highways, and telecommunication services, such as telephone and broadban

The key sectors in the hard infrastructur construction market are:

- Railways and Subways (structures, buildings, land, and equipment to support the rail lines)
 Roads (e.g., lighways, public roads, including toll roads, tunnels, and bridges)
 Electricity and Power (coal-, nuclear- and gasfired electrical generation facilities, solar and wind energy farms, hydroelectric facilities, and distribution networks)

 Water many assurance (course, water tractage).
- distribution networks)

 Water and sewerage (sewers, water treatment plants, pumping stations, reservoirs, and distribution systems)

 Airports (hangars, terminals, control towers, runways, and parking garages)

 Prisons (correctional facilities and detention control) centers)
 Street lighting



TRANSPORTATION

∰Ⅲ

REAL PROPERTY

Construction Lenders: Bank OZK, Goldman Sachs Wells Fargo Bank, UMB, Starwood Property Trust

Construction



Home Sales









COMMERCIAL ENTERPRISES

Property Leasing/Management Commercial Insurance **CRE Consumption**

















Fees and Royalties

COMMERCIAL REAL ESTATE BIM <u>&§</u> Industrial Health Education University HH I HH **INFRASTRUCTURE**

HOMEBUILDING

Move-up

Luxury









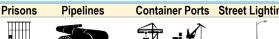












Container Ports Street Lighting

GOVERNMENT CONCESSIONAIRES, FRANCHISEES, AND LICENSEES

U.S. Building and Construction Industry: Key Players **Markets** Downstream The building and construct **HOMEBUILDING PRODUCTION** TRANSPORTATION DISTRIBUTION eral. The homebuilding market in the U.S. ists of the construction and sale of residential Structural Steel and Other Metal Materials Finished Materials Home Sales Home Insurance **Home Consumption** MUCOR **Realty Agencies & StateFarm** •• Toll Brothers Meritage LENNAR ALSCO. RF/MAX Western Forms **Tenaris** (🍇) Allstate arket is subdivided into multiple regions orthwest, West, Southwest, Midwest, Sout Michaels HomeGoods **全 Zillow OACM** ශූ GĐ BNS meva HOMESERVICES OF AMERICA' Reynolds **NVR** (USS) RYERSON COLDWELL BANKER **GERDAU** CSX Steel Dynamics® USAA Alro Steel Metals • Industrial Supplies • Plastics Chicago Title RYERSON Schnitzer⊕s Hydro Entry-level or First-time Homebuyers on a tigl Hvdro CLIFFS NUCOR[®] ULINE

RYERSON

Metalwest

Electrical Products

GRAINGER

wesco

GraybaR.

Electrical Components

N

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IN RAM

TD SYNNEX

Heavy Machinery and

Nork Vehicle Dealers

/// WAGNER PAT

United Rentals

SUNSTATE

RITCHIE BROS.

UNITED

CANFOR

Georgia-Pacific

Stone and Quartz

Lehigh Hanso

CEMEX

AkzoNobel 💃

□ · BASF

JELDWEN Andersen W

Tools Firms

Milwank

SAOBI

Vulcan Martir Mariet

CRH

Lumber and Timber

Concrete, Brick and Stone

Petrochemical Products

ExonMobil

Chevron
ODEC Phillips
Annual Congany IP

D-BASE

Glass and Windows

Electrical Goods, Tools, Heavy Machinery, Vehicles

(LG

Whirlpool

Haier

SIEMENS CATERPILLAR" SAMSUNG

KOMATSU

JOHN DEERE

VOLVO

Truck Makers

Ford H

BOREALIS

MOHAWK NOVA Chemicals

CORNING **mi**

FAT•N

PHILIPS

IDAHO FOREST

Weyerhaeuser

PETERSON

LASTI CHEMIE

GRH

Truck Lines

J.B. HUNT

XPOLogistics

FedEx

KNIGHT **

SWIFT

YRC

Ship Lines & Barge:

TIDEWATER

Cooper/T.Smith

PARKER

Air Freight Carriers

Expeditors

REAL PROPERTY

FORESTAR 🖊 📗

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▲ Weyerhaeuser 🔎

GPA Georgia-Pacific

Lehigh Hanson

ConocoPhillips

Shell

OXY

57

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Exynos Auto

RENESAS

INVIDIA

Bill Gates Family Stan Kroenke

SAMSUNG

CANFOR

Oldcastle

Shell ConocoPhillip

Crude Oil Refiners

Mobil MOTIVA

≰K40CER∂

KENIET

press

KINDERMORGAN

Williams. E ENERGY TRANS

ONEOK Enterprise Products

Ex/onMobil

COVIA

BADGER MINING CORPORATION

🍣 ITT

Amphenol

► ANALOG DEVICES

BOURNS

公TDK

nexperia

Land Ownership

Reed Family Singleton Family

Ted Turner Irving Family

DIODES VISHAY

Electrical and Other Components

Stone, Clay and Rock

Crude Oil and Natural Gas

INTERFOR

living low-maintenance exteriors

Dubys, and itness centers.

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INFRASTRUCTURE

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Airports (hangars, terminals, control towers runways, and parking garages)

Prisons (correctional facilities and detention



SIMON®

GREYSTAR

Office

Hospitality

Education

scion

LANDMARK

Kiewit

FLUOR_®

HARRISON STREET GREYSTAR

Real Estate

Income Trust

Ascension



COMMERCIAL REAL ESTATE

Multifamily

Brookfield

Properties

PROLOGIS

Lifepoint Health

HCA

INFRASTRUCTURE

≥ KIMCO"



General Contractors

FLUOR

AECOM

HOTELS & RESORTS

REMANN
FINAL REMAINS PROPERTY THAT

SKANSKA

AECOM

Balfour Beatty

** ALLIANCE Toll Brothers WOOD PARTNERS

CHASE 🗅

BERKADIA

CUSHMAN & WAKEFIELD

NEWMARK

G MERO



Property Brokerage

TRANSWESTERN®

N/**I**Global

MATTHEWS

STREAM

**** DHI TITLE AGENCY Fidelity
OLD REPUBLIC TITLE
National
Title





Property Management

sodexo









Marriott

Hilton















DTE

Southern Company



DUKEENERGY

GOVERNMENT CONCESSIONAIRES, FRANCHISEES, AND LICENSES



TRANSCORE











CoreCivic

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Nucor

Cleveland-Clift

US Steel

PRODUCTION

Metal

Metals are commonly used in construction due to their durability and strength to form structural components, pipework, cladding materials, and other components. The most widely used material in construction is steel, which is an alloy made using iron, followed by aluminum, lead, iron, and copper including brass). Metals are Top U.S. Players

Hardwoods are commonly used in the construction of walls, ceilings, beams, and floors. Oak is the most popular because it is extremely durable and insect-resistant. Wood is energy efficient. Its ability to conduct heat makes it a better insulator than steel (400 times) and concrete (15 times), Outside of making houses, wood is used to make furniture, packaging, tools, and artwork.

Stone, Clay and Rock

A quarry is an open-pit Quarried Materials mine used to extract adurated stone to produce building stone or dimension Salt Silica Sand Coal

continuity storie of differential stories of the st

oux, nprap, sand, sonstruction aggregate, pravel, and/or sadde successful for the same successful for

order to use them to duce material for astruction or other uses.

Materials/Oldcastle Materials/Oldcastle

Crude Oil and Natural Gas

Exploration/Production

Refiners and Processors, Refiners companies in this acquire millions of barriels of crude sector focus on oil and natural gas from exploration exploration for and and production companies. The producting (by drilling incoming oil and gas are then or hydracilic fracking), transported by pipelines to large crude oil and natural storage tanks rear the refineries, gas from wells (i.e., before being sent to refineries, poings) on land and (crude oil) and processing plants offshore in resource- (natural gas). There are 138 U.S. inch regions of the refineries, many of which are world. The crude oil located along the Guif of Mexico. and natural gas are Refineries change crude oil, and then transported to oil processing plants separate natural refineries that the well gas, into lusable products for end or to nearby oil consumption such as (a) dry gas refineries and gas for heating and generating electricity. (b) motor fuels for Producers: Exoron

refineries and yes belectricity, (b) motur rucus electricity, (b) motur rucus yes producers: Exxon Mobil, Chevron, bp, Conoco, Shell rucus and (c) feedstocks (i.e., the conoco, Shell rucus and (c) feedstocks (i.e., the conoco, Shell rucus and pentane) for some produce the conoco shell rucus and pentane) for some produce the conoco shell rucus and pentane) for some produce the conoco shell rucus and pentane) for some produce the conoco shell rucus and pentane) for some produce the conoco shell rucus and pentane for some produce the c

Refiners: Valero, Energy Transfer, Phillips 66, Marathon Petroleum products, and pharmaceuticals.

Sand

Silica sand is a major ingredient (75%) in the Top Sand production of flid glass, ranging from Producers windows to beer bottles. The purity of the silica sand used plays a role in determining the color, strength and clarify of the final U.S. Silical product. Other primary materials in glass are soda, limestone, clarifying agents, coloning, and glistening glass. The production process consists of melting raw materials in a furnace, cooling the river of glass which will often be nearly 300 meters in length, cutting the cooled glass into large sheets.

Electrical and Other Components

Other

Produced by Electrical

Componen Makers:

Electronic

Instruments and Control

Electric and Wiring Equipment

Computer Networking Equipment

communication Equipment

Computer

Semiconductor Makers

fineon Technologies TSMC Qualcomn

Computers on Wheels. Modern vehicles and heavy machinery are loaded with over 1,400

vehicles and neavy machinery are loaded with over 1,400 semiconductors (or integrated circuits or chips) that partially conduct electricity and power things such as connectivity and control systems, tire pressure monitoring systems, infotainment systems, and vehicle-to-

Infotainment systems, and vehicle-to-everything systems to power cameras, telematics and battery electrification systems, to name a few. As a result, they are often referred to as computers on wheels. TSMO, with its 54% market share, produces 10,000-products for some of the biggest automotive semiconductor fabricators who have their own fabrication facilities, like Infineon, Qualcomm, NXP, STMicroelectronics, and Texas instruments but choose to outsource

Instruments, but choose to outsource some of their production to TSMC.

nesas Electronics STMicroelectronics

including brass). Metals are produced in their crude or primary form before being processed by fabrication companies (or divisions

of the primary producer) into usable components and materials.

TRANSPORTATION

LLS Freight Transport by Mode

Railroads

Top Railroads

BNSF Railway

Union Pacific Railroad

CSX Transportation

Norfolk Southern Railway

Canadian National Railwa

Canadian Pacific/Kansas

City Southern Railway

other construction panels such as wood particle which is used to make furniture. Each year, U.S

railroads haul approximately

latcars, which can carry

umber or other construction naterial, such as wallboard

One center beam can carry enough framing lumber for five and one-half new

steel scrap, and coke that are used to make steel, which is used to manufacture products like

vehicles and appliances Railroads also move stee

Railroads also inverse social slabs, concrete reinforcing bars, and various kinds of pipe used for construction projects. To meet the growing needs of manufacturing according industries

manufacturing and construction industries railroads have engineered lighter weight flatcars that can carry more steel per carload. In 2021, railroads hauled more than 560,000

nauled more than 560,000 carloads of steel, aluminum, and other primary metal products, 700,000 carloads of iron ore, and 250,000

10 Other Transport

Top Trucklines

XPO Logistics

Knight-Swift Transport Services

ypes of goods, ranging from premium products (vehicles

high-value commoditi

(electronics and mixed freight such as grocery and convenience store goods, office supplies, hardware, and plumbing items, and bulk commodities (gravel, grains, and gasoline). Other than clothing and produce the top six freights shipped by trucklines are paper products, building materials (tsteal beams, concrete

steel beams, concrete slabs, pipes, and logs)

Barges. Barges are used for

naterials due to its high

naterials by cargo plane.

items because the hauling goods be

and hazardous and materials

Trucks carry

YRC Worldwide

carloads of scrap metal.

industries

Vehicles, and Appliances The unstream sector also verices, and appliances. The upstream sector also encompasses the procurement of heavy construction equipment (e.g., bulldozers, excavators, and cranes), tools such as drills, hammers, and jackhammers, work trucks and other vehicles, and household appliances.

Transportation and Distribution. The building and construction industry relies heavily on the transportation and distribution/dealer sector, which are vital in the construction of the cons acquiring, financing, transporting, and warehousing the raw materials and finished building materials, heavy equipment, tools, and vehicles and moving

Steel is a critical material for construction due to its strength, durability, and versatility. Steel is Mayville

illized for framing extensor Alumin adding and ducts due to its Meva alatively light weight and organism resistance. In addition, poper is used in piping and Richardson Metals.

umber (interchangeable with Key Players

used for structural framing, einforcing bars within concrete tructures, piping

nterior doors,

Concrete (often confused with

other materials like rebar concrete provides long-lasting structural support to the home, commercial building, or infrastructure project.

thane, naphtha and propane

e then melted and cooled into block. The resin block is

chopped into tiny pellets (or nurdles) for distribution to

Top Petrochemical

lyondellbassell Chemical

tiple construction applications commonly used in windows ades, modern glass walls, and

ructure while excluding the ements. Glass floors and aircases can add an aesthetic such. Glass is the core element of many fibor postic systems.

lectrical Goods Heavy Machine

controi, wiring, switches, fixtures, loes, bulle' mers, circuit, and control mers, circuit and circuit and

ounding systems Utrucks

Caterpillar

Volvo Kubota

John Deere

Komatsu

Different types

INEOS

Siemens

Eaton Hubbell

Phillips

Structural Steel and Other Metal Materials

BTD Mfg.

Tenaris

Aluminum

Timken

Lumber

West Fraser

Canfor

Interfor

support for forming Georgia-Pacific that sandwich a gypsum

Concrete, Brick and Stone

Key Players

R.W. Sidley

Plasti-Chemie NA

Easi Set

Bunker Sand Filter Media

Building Supplies

Petrochemical Products

Petrochemical

Finished Products

and Cable Insulation

urfactants, Heat Trans Fluids, Dispersants,

Glass and Windows

Andersen

Pella

16 Electrical Goods, Tools, Heavy Machinery, Vehicles

Appliance Makers

Samsung

LG Haier

Whirlpool

Electrolux Although the cas.

(| always the cas.
(e.g., with entry) homes for buye

active adult and luxury homes will come equipped with appliances such as an oven and stove, washer, dryer, dishwasher, microwave, and refringerator.

nd dump microwave, refrigerator.

Elevator Makers To move people and freight expediently, multi-story buildings will include lifts, escalators, and moving OTIS II Kone

Processors

3ASF Chevron Phillips
Chemical Shell Chemical
Shell Chemical
Shell Chemical
Chemical Shell Chemical
Shell Chemical

Exxon Mobil

lass is a versatile material with Key Players

Facades, Plates

Pipes, Air Ducts

Aluminum Forms

Product Categories

Cabinetry, Flooring, Furnit

Product Categories

Precast Concrete Structure

Industrial Minerals

Key Paint Players

Sherwin-Williams

PPG

AkzoNobel

Nippon Paint

Benjamin Moore

BASF

Paint is used construction as protective coating

allows walls to withstan wear and tear from th sun, wind, and outdoo elements. It also serve the purposes of visua appeal, pest protection

Product Categories

Walls

Facades

Floors

Fiber Optic Cables

Fiberglass

Tools Firms

ITW T

Makita

Emerson

Bosch

Stanley Black &

Drywall (aka wallboard or pla

Upstream

Schnitker Steel, Commercial Metals

Materials fabricators: Novelis, Norsk Hydro

Materials rainteators. Caterpillar, John Deere

Tool Companies: Illinois Tool Works, Stanley, Black & Decker, Makita, TTi (Milwaukee)

Transportation Companies: Union Pacific, BNSF, CSX, Norfolk Southern

Statistical Weece International, Grainger,

DISTRIBUTION

gencies, architectural and engineering Finished Materials

mebuilding involves land acquisition, development, and ign activities in steps that occur concurrently or juentially. Major pre-construction phase steps include: Materials distributors provide rolled steel, organic coated stri and sheet, stainless steel electrical steel, precision stee trip, metal processing services ogistic services, all forms of

Land Purchase
(A typical strategy for the homebuilder is to pay earnest money eleposits to obtain the rights, on a non-recourse basis, but not the bligation, to buy land or lots at a set price on a defined schedule ide warehousing ar ices, including e ntory management s Kev Plavers

ThyssenKrupp, MSC Industrial Direct, Uline, Revnolds Consume

Key Players Urvi Enterprise Atlantic Equipment

Concrete Material

GCP Applied Technologies W&P vide a wide range of product luding cement, concrete mixed process substrates, injecti

aggregates may also also ncrete pavers, _____

9 Electrical Products Kev Plavers

> Grainger Wesco Terex

e leading electrical distribut d services companies prov **Product Categories** Lighting & Electrical

Cleaning & Janitorial Plumbing & Pumps

Metalworking & Fabrication Motors & Power Transmission Pneumatics & Hydraulics

Material Handling Packaging & Shipping

uilding & Ground Maintenance Tapes, Adhesives, Lubricants Safety & Security

ab. Office & Hospitality Suppli

Heavy Machinery 8

Work Vehicle Dealers HEAVY MACHINERY AND

nere are 950+ companies in the S. heavy construction achinery, equipment and work whicles manufacturing industry nough the original equipment nufacturer (OEM) may engage provide r will enter into together (e.g., nai guns, hammers screwdrivers) or to take them apar (e.g., jackhammers and saws). icense to sell or lease OEM-pranded equipment in a given erritory. For example, John beere and Caterpillar sell and

Key Players

Leading players in key Midstream segments are • Residential Construction: D.R. Horton, residential homes, commercial real estate buildings d facilities, and infrastructure. The construction

Skanska Construction: nfrastructure Bechtel.

Construction Lenders: Bank OZK, Goldman Sach

HOMEBUILDING

Construction

The homebuilding construction phase encompasses activities breaking ground to the substantial completion of the home, and steps to obtain subcontractor support, labor and financing: Kev Homebuild

D.R. Horton obtaining and managing laborers, construction equipment, and may be required to furnish the building materials) Lennar PulteGroup NVR

Construction Financing

Trammell Crow (by CBRE) Brownstone/Rowhouse

Simon Property Group Strip Malls/Shopping Centers

Westfield Corporation Outparcel Power Center

Blackstone Group

Class A, B and C Office
Buildings

Multifamily

"Multifamily" refers to residential nousing where multiple separate housing units are contained within one building or several buildings within one complex Several buildings within one complex Units can be side-by-side or stacked on top of each other (top and bottom units) types are common multifamily when are several buildings within one complex Alliance Residential Condominium Townhouse Units can be side-by-side or stacked on top of each other (top and bottom units) types are common multifamily when are common multifamily with the common multifamily when are common to the common multifamily with the common multifamily when are common multifamily with the common multifamily when are common multifamily with the common multifamily when the common multifamily with the common multifamily when the common multifamily with the common multifamily with the common multifamily when the common multifamily with the common multifamily with the common multifamily with the common multifamily with the common multifamily when the common multifamily with the common mu

Retail

Brookfield Pro

Top Mall Owners

ITE Centers Kimco Realty

Jones Lang LaSalle

CBRE Investors, Clarion Partners, Tishman Speyer, Blackstone REIT, Liberty

Industrial

ndustrial properties are favored **Top Industrial Owners Industrial Categories**nyestments because they provide stable
assh flow, low vacancy rates, minimal
iffort, and industrial tenants who cover

Determine the cover of the c

Hospitality spitality consists of a wide range of coduct types, such as hotels, casinos, staurants, anusement parks. Two tours drive the hospitality sector. Hotels Group Park Hotels unism and business travelers. When the Properties Trust, Ryman Properties Tr

U.S. Healthcare facilities are owned Top Health Systems
and run by the public and private HCA Healthcare, Veteran's Sector (58% are private nonprofit, 21% Administration, Catholic are government-gwned, and 21% are Church (Common Spirit Health). The Catholic Church Ascension Health, Tingly House of Ground Sector (1978) are world's largest non-leastly, LifePoint Health (1979), Radiation/Oncology Therapy, Urgent Can Radiation/Oncology Therapy, Ur

Education

Top Dormitory Owners

Infrastructure Construction and Civil Engineering

Top Infrastructure

Construction

Companies

Bechtel

Pre-construction

Multifamily" refers to residential housing Key Developers where multiple separate housing units Country In Tail Built

fice buildings define the skyline of a y because of their size, unique obdern or traditional architecture, and an concentration in the downtown eas. Office buildings are broken down three classifications based on class 6 (fully Class B fully Class B full

top of each other (top and bottom units).

Common multifamily types are apartment buildings and condominiums.

Ithough commercial retail property overs a broad territory, the most well-nown category is the shopping mall, here real estate investment companies REITs) dominate the landscape. Simon property Group, Brookfield Properties, and SITE Centers Corp. manage over 100 million gauge feat of tasable area.

10 million square feet of leasable area

axes, insurance and maintenance.

Educational facilities are owned

primarily by public institutions. Overall, 54 million students are

public schools, with 91% public schools. Construction ills into two categories: K-12 chools and higher education.

frastructure construction projects are

COMMERCIAL REAL ESTATE

Product Categories

Office Categories

assisted living facilities

Education Categories

Categories of Infrastructure

Telecommunications

Networks

Rail Networks

Building Renovation, Parking, Studen Housing, Academic Facility, Library, Performing Arts Center, Recreational, Research Laboratory

Taylor Morrison Key Construction inancing Lender Wells Fargo Bank

Ultimate Ownership: In nomebuilding, the home is built by a developer with the intent to sell it to an

ndividual buver, who v

be the ultimate owner. In commercial real estate, the

lownership and will lease

the completed property to (a) individuals in the case of multifamily housing or

(b) commercial enterprise

state in the future, but th

Top Construction Firms

Skanska Gilbane

Fluor AECOM

JE Dunn Whiting-Turner

Turner Bechtel

DPR Construction

Construction Process:

with homebuilding commercial real esta

development entails land

acquisition, developmer

selection ŏf a genera contractor (which will selec

contractors), construction financing, and the actual construction.

Building Informa Modeling (BIM): BIM

needed su ors), construction

design

buyer will be a commerci real investment firm

other enterprise.

developer will hire

construction firm construct the facility.

developer

Bank of America Citibank Chase Bank

Turner, JE Dun

América

American Title, Old Republic National Title, Chicago Title, Fidelity National Title, Stewart Title Guaranty, DHI Title Agency

ome, commercial building, or infrastructure icility and putting it in the hands of an individual

mebuyer, commercial enterprise, government ency (private government-sponsored ntractor), or utility owner. In other words, this

Home Sales

Selling a home involves four essential steps:

1. Finding a real estate agent to list the home on an online service (e.g., Multiple Listing Service or MLS), stage the home to look its best, and facilitate negotiations for the sale of the home at the highest price in exchange for a commission of up to 6%.

2. Review and negotiate offers from several business.

puyers.

3. Accept an offer and work through any

3. Accept an offer and work through any contingencies (buyer may insist on a home inspection, appraisal and financing contingencies). 4. Close the home sale, where the following activities occur contemporaneously: (a) the buyer's bank provides home loan financing and takes a mortgage as security. (b) the buyer receives title insurance, (c) ownership of the home is transferred to the buyer by a deed, which is filed in a state or local county recorder of deeds office, and (d) the purchase price is delivered to the seller.

Key Home Lenders Chase Bank, Wells Fargo Bank, Bank of America, Truist Bank, Rocket Mortgage, United Shore, US Bank

United Services Automobile Association (USAA) Liberty Mutual Holding, Inc. COMMERCIAL ENTERPRISES

The largest industry in the U.S. is the real estate, Leading players of key Downstream segments are: enting and leasing industry, which contributes to: Residential Real Estate Brokers/Leasing 13% of the CRID This Downstream sector Coldwell Banker Real Estate Century 21 RFIM. ting and leasing industry, which contributes to

Downstream

Coldwell Banker Real Estate, Century 21, RE/Max, Kelle Williams Real Estate

Commercial Real Estate Brokers/Leasing Agents and Salle (III) Property Managers: CBRE, Jones Lang L Cushman & Wakefield, Sodexo, Walker & Dunl Infrastructure Operation and Ferrovial/Cintra, Kiewil, Plenary Infrastructure

sector focuses on the sale, renting and leasing of Mortgage Lenders: Freedom Mortgage, Rocket Mortgage lomes and commercial real estate and the loan Depot, United Shore, PennyMac, Caliber Home Loans naintenance and furnishing of these properties: Insurance Companies: Nationwide, USAA, Allstate, State

indimeowher's insurance (also known as inazard insurance") pays for losses and damage to the owner's property if something unexpected happens, like a fire or a burglary. Standard homeowner's insurance does not cover damage from earthquake or floods, but it may be possible to add this coverage.

Top Home Insurers

Allstate Corporation

INDIVIDUALS

Homeowners Insurance Consumption Homeowner's insurance (also known as hazard insurance") pays for losses and primary residence, most own

expenditure per person on was \$716 in 2021. The

household appliances (microwa

Commercial Real Estate

Top Commercial Insure

Liberty Mutual

Nationwide Travelers

CNA AIG

The Hartford

Hotel Management

on a home lender in exchange for a mortgage, the ntingencies). protected by home insurance and will require proof that the owner has homeowner's insurance. In many instances, homeowners will pay for their homeowner's insurance through an escrow account as part of their monthly

Appliances. To assist with disasks like cooking, washing dish nortgage payment. Payments are holds the part of the payment that is for insurance in escrow. Then, when the bill for insurance is due, the lender pays it from the escrow account. State Farm Insurance Company

Key Appliance Retailers Best Buy, Home Depot, Mena Lowe's, Sears, Costco Whole

Property Brokerage Property Management Commercial Insurance

Unless the commercial property owner (typically a manager in the commercial property owner (typically a real estate investment trust or other investment and an investment trust or other investment and property in maintained and managed protects an owners' physical property in the commercial real estate broker with expertise in the cold market to find tenants and lease the property leasing a commercial property involves 6 essential estate income by oftening a suite of integrated, contractually based outstanding property investment of the property in maintained and managed protects and owners. In which is managed protects and owners in the property in maintained and managed protects and owners in the property in maintained and managed protects and owners. In which is managed protects and owners in the property in maintained and managed protects and owners. In which is managed protects and owners in the property in maintained and managed protects and owners. In which is managed protects and owners in the property in maintained and managed protects and owners in the property in th steps:

1. Determine the market value of the property and set the rental rate.

2. Advertise the property through various channels, manager provides day-to-day

set the rental rate.

2. Advertise the property through various channels, such as commercial real estate websites, brokerages, and personal networks.

3. Conduct property viewings and provide interested parties with necessary information and documentation.

4. Once a potential tenant expresses interest, provide them with a commercial lease agreement to

1. Ortice a policilial teriain; explisses minerest, provide them with a commercial lease agreement to review and negotiate the terms of the lease. **Gross Leases** are most common for commercial properties such as offices and retail space. The lenant pays a single, flat amount that includes rent, taxes, utilities, and insurance. The landford is responsible for paying taxes, utilities, and insurance from the rent lease. Besential, the most common where the tenant agrees to have not only fee for rent and utilities but also all of the industrial property's oneration arreness. property's operating expenses, such as maintenance fees, building insurance, and property

axes.

Once both parties agree to the terms, finalize the lease agreement and sign it.

6. Provide the tenant with access to the property and any necessary information or support during Top Commercial Real Estate Brokerages

oll Road Concessions. In the case of toll bads, a government agency may enter into concession agreement with a private-ector developer of highways under which to the developer is granted the rights to

esign, build, finance, operate, and naintain a toll road for a fixed period of

olliers International Savills Walker & Dunlop digital representation of physical and functiona characteristics of a building or physical infrastructure. BIM has become present in nearly every stage of the CRE construction process and is as a shared resource for information about a CBRE JLL Newmark Berkadia Transwestern Lee & Assoc. NAI Global Cushman & Wakefield SVN International Matthew's RE Investment Serv. Marcus & Millichap Avison Young TCN Worldwide Stream Realty Partners Coldwell Banker Comm.

Commercial real estate companies and brokerage rms provide services for investors, owners, and enants by combining local market insights, pecialized expertise, and premier tools and esources. The larger firms will also offer additional provinces are the province such as proposed to the province such as provinces. op Construction Lende resources. The larger limins will also other acculoidal services such as property, project and portfolio management, property appraisal and development, and business consulfing. They assist clients with their purchasing, selling and leasing requirements. There are hundreds of commercial real estate brokerages worldwide; CBRE Group is the largest. Bank OZK UMB Bank Wells Fargo Bank Starwood Property Trust

manager provides day-to-day from perils is not enough for remanagement services for client occupied facilities (headquarters buildings, regional and administrative offices and facilities serving specialized industries).

Facilities Management Services Day-to-Day (Collecting Rent, Tenants' Requests for Service, New Lease Negotiations, Cleaning Maintenance and Repairs Supervision) Fransformative Workplace Solutions nergy & Sustainability Certifications Computerized Maintenance Managemer

Supply Chain Programs Management L

and project- and asset-type expertise rovide on-time, on-budget project languagement services.

Project Management Services

Design and Furniture, Fixtures & Equipment (FF&E) Management

Business Move Management Design, Engineering and Sustainability Consulting

Top Firms Marcus & Millichap Walker & Dunlop

Operation and Maintenance

Top Toll Road

ASTM North America

TransCore

Marriott and Fillion) will nandle hotel management, branding and marketing, and franchise licensing of the hotel, while hotel real estate investment trusts (RETs) and other investors will own the hotel property and focus on Jacquisition, ownership, and operation aspects Top Hotel Managers

GOVERNMENT CONCESSIONAIRES. FRANCHISEES. AND LICENSEES

Public Utilities Public Private Prison Operators Utilities supply services The federal government and considered essential to a 26 states use private modern living, such as corporations to operat

nstruction market are: Railways and Subways (structures, buildings land, and equipment to support the rail lines)

Roads (e.g., highways, public roads, including to

roads, tunnels, and bridges).

Electricity and Power (coal-, nuclear- and gasfired electrical generation facilities, solar and wind Water and sewerage (sewers, water treatment

runways, and parking g Prisons (correctional centers).
Street lighting.

Land Ownership Land-use in the U.S. falls within six main categories: agricultural, residentia recreational, commercial, industrial, and transportation. Approximately 529 of the U.S. land base is used for agriculture. About 6% of Iand in America i

REAL PROPERTY

Lot Development pment entails the purchasing of land, obtaining any necessary entitlements, pern provals, subdividing the land into parcels, clearing and grading the land, inster are necessary to connect to utilities, building roads, and ultimately selling the finish

Finning (CAT) United Construction & Forestry (Deere)

Fluor JE Dunn iver people and goods across the ion. Infrastructure construction and

engineering companies are nsible for building these and other isponsible for bullium grands pipelines, rojects, such as dams, pipelines, ailways, and aqueducts. There are 1.5 operations to multi-billion corporations with global footprints. However, only the largest construction companies are capable of managing an infrastructure project from end to end. Although one or more infrastructure contractors may develop a reputation as being particularly strong in a given category of infrastructure, consist of handling and

Airports Bridges Whiting-Turner Tunnels

INFRASTRUCTURE

Power Generation Facilities ncluding Hydroelectric Dams Solar and Wind Farms) Uranium Processing Facilities

Pipelines such projects using a non-recourse or limited recourse financial structure, where (1) the debt and equity used to finance the project are paid back from the cash flow

regional economies.
However, because of tight access to private capital, and an ever-expanding regulatory environment can make it difficult to get these projects off the ground. Project finance is the funding vehicle typically used for long-term infrastructure and industrial projects. Project finance is the private sector funding of such projects using a pon-

maintain a toil road for a hixed period of time (e.g., 30 years) and (2) the developer agrees to pay the government agency (called the grantor) concession fees (e.g., rent for the location, a percentage of the developer's sales revenue, or a combination of the two) during the life of the concession.

Example: Ferrovial and Cintra. Austin, Texas-based Cintra is an example of a toll road developer. Cintra is one of the world's largest private-sector developers of transportation intrastructure, with business activities concentrated in toll highways and car park concessions in Canada, the U.S. Europe (Spain, Portugal, the U.K., and Ireland). Australia, and Colombia. Cintra manages over 1.880 kilometers of toll roads in 20+ countries. Cintra is owned by Madrid, Spain-based Ferrovial S.A., which engages in the investment and development of transportation infrastructures. The company operates through four segments: (1): Construction (public infrastructure). [2. Toll Roads. (3) Airports, and (4) the Other-Energy Infrastructure and Mobility sectors infrastructure

Verra Mobility Transurban Atlantia Plenary Group

operaté utility networks Top Telcos: AT&T. Verizo

gas, and electricity. Local

Utilities: PG&E, Southerr Company, Exelon, Duke Energy, American Electric Power, SoCalGas, NextEra nergy, DTE Energy, Eddisc

CoreCivic The GEO Group

Prisons has contracts wi

private operators together operate 1 al prisons across th

Management & Trainin