

March-April 2024 \$20.00

DESIGN COST DATA

digital edition

Designing for Today

Biophilic Design in 2024

**Five Commercial Real Estate
Design Trends for 2024**

**How Universal Design
Supports Sustainability
and Inclusiveness**

TD Residence
Plymouth, Michigan
Architect: D. J. Maltese Construction Corporation

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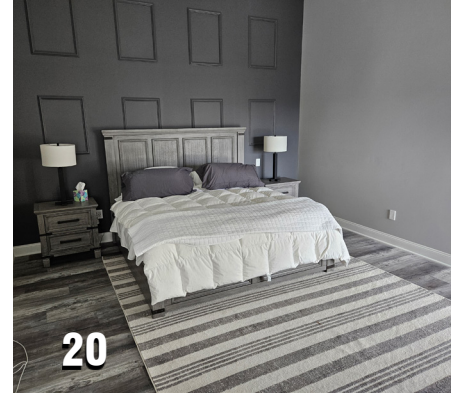
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From the Editor

This issue of *Design Cost Data* — featuring *Designing for Today* — addresses the hot topics of sustainability, energy efficiency, and eco sensitivity. Articles include *Biophilic Design in 2024* (page 23), which stresses the importance of the core principles of biophilic design as an impactful design element; *How Universal Design Supports Sustainability*, on page 18, that follows one family's renovation journey embracing "visitability" (how to design residences accessible to people with limited mobility or in a wheelchair); and *Decarbonizing the U.S. Economy by 2050*, page 24, wherein the U.S. Department of Energy's blueprint lays out a strategy for aggressively reducing greenhouse gas emissions.

Our featured project, *TD Residence* (on page 11) tells the journey of a young couple who wanted to design and build a new 4,000+-square-foot ranch on a heavily wooded, hilly, four-acre site. Despite having to clear over 100 large trees and reroute an artesian well, D. J. Maltese provided the owners with just what they wanted.



TD Residence Plymouth, Michigan

We're also including our tried-and-true square-foot cost studies of new buildings and renovation projects submitted by your peers.

Some other projects covered include:

- *Washington County Courthouse Restoration* – built in 1884, the courthouse underwent its first major renovation and addition in 1965. The latest renovation, featured here, preserved the historical architecture of the courthouse while upgrading to current standards and compliance (see page 25).
- *St. Pius X High School New Science Building* (page 31) – Set in an urban background and serving a diverse population, the third phase in the development of a campus master plan for St. Pius X High School called for the addition of a structure that would strengthen the curricular "STEM" offering.
- *Oklahoma City Police Headquarters* – This new headquarters is built of durable materials and finishes that will enable it to serve the city well into the future. Even though the new police headquarters is only 11% larger than the old headquarters, the new design created much more efficient work areas (page 48).

Thank you for choosing this issue of *Design Cost Data*. Please give us a call or email us if you have any questions, comments, or suggestions. We'd love to hear from you!



Sincerely,
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Design Cost Data™ is published bimonthly by DC&D Technologies, a div. of BNI Publications, 990 Park Center Dr. Ste E, Vista CA, 92081, Phone: 800-533-5680. • Subscription rates: \$177.95 one year, \$240.95 two years; Microfilm copies are available from: Department F.A., University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106. • ©2023, a div. of BNI Publications. This publication may not be reproduced, photocopied, stored in any electronic retrieval device, or transmitted by facsimile without the written permission of the publisher. All rights under USA and International Copyright Laws are reserved. • Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by BNI, only when a royalty of U.S. \$1.00 per page, plus U.S. 10¢ per impression is paid directly to: Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, USA. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Service is

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COVER

Photo Courtesy: D. J. Maltese Construction Corporation

Construction Quantity Takeoff Services – Observations and Conclusions

By Daniel G. Frondorf, CPE, CDT

I'm sure many readers of this magazine have noticed in recent months a slew of emailed solicitations for construction quantity takeoff service providers. I've been paying attention to these, as this is a service my firm has been offering for almost 25 years. Apart from the sheer number of these solicitation emails I receive, I'm amazed at the lack of credentialing information – items that any prudent construction business owner would want to consider before farming out such an important task. Estimating and bidding are critical to the success of contracting firms in particular.

The concept of email marketing is amazingly prevalent these days. Everyday my inbox and spam folder are inundated with emails offering website search engine optimization, business funding and lending, outsourced HR services, telephone answering services, and many other administrative types of services – none of which interest me. It's easy to block email addresses or simply delete the unwanted solicitations, but because these outsourced estimating and takeoff service emails pertain to my line of work, I started keeping an eye on them, even cataloging them, and sometimes engaging them.

I had several thoughts in mind when I started keeping an eye on these solicitations. I wanted to know if others within my profession, and in the wider AEC community, were also receiving these emails; I wondered about what perceptions others who do receive them have about these service providers; and – perhaps most importantly – in the interest of protecting my business by knowing and understanding my competition, I wanted to determine if these service providers are “legitimate”. Could they really have an impact on my own business? Could they have an impact on other firms that belong to the same trade associations I belong to (CERT, ASPE, CSI, AACE)? If they are legitimate, could they be potential members of these trade associations?

Here is some information from my own research:

- For a one-year period, September 20, 2022 to September 20, 2023, I received over 200 such emailed solicitations from over 50 companies or individuals, who I came to refer to as “takeoff hustlers”. I readily admit that may be an unfair nickname, but as time went on and nothing about them made me feel better about them, I found myself using this moniker.

- From multiple companies, I have received the same or similar emails from different people at that same company. A good many of the names on the emails had job titles such as “marketing manager” or “business development executive”, or a similar official-sounding job title.
- Most provided no other way to follow through except by reply email (no website, phone number, mailing address, or social media info).
- NONE had any information about the credentials or qualifications of the company or individuals proving that they are proficient in quantity takeoff or cost estimating work.

Since these emails were ostensibly legitimate offers to transact business, I decided after a while to engage, so to some of these emails I responded with a series of questions, including:

- What is the full legal name of your company?
- What is your business structure: sole proprietorship, S corp, or LLC?
- How long have you been in business?
- Do you have any former business names?
- Where is your business office?
- Who will be performing the work: you, or a staff person?
- Are your staff in-house employees or outside resourced?
- What are your (or your staff's) credentials as a construction estimator? Do you have any certifications from nationally-recognized professional trade associations for construction estimators or project control? In particular, I would expect to see anybody working on my projects having one or more of the following certifications: CPE (from ASPE), CDT (from CSI), CEP (from AACE). What education or experience do you or your staffers have?
- Can you provide resumes of you and your staffers? Can I research you or your staffers on LinkedIn?
- Do you have a website I can review?
- What is your fee structure? How do you invoice? What are your payment terms? Can I pay electronically? Can I pay by credit card? Do you require any payment up front before you start working on my project?
- What software tools do you use in your work?

What kind of answers did I get? Nothing useful – no references to certifications, ASPE, CERT, CSI, or AACE; I was offered samples and even received copies of takeoffs (I requested none and did not click on, save, or open any unsolicited samples I received). A common theme seemed to be, “Send us your plans and we’ll quote a fee”, but only a few replied with information about payment terms, which for the most part were pay half the fee up front, by credit card, and the rest before the takeoff was delivered. I never received any names of any estimators who would be performing the work.

My receipt of these emails and my limited interaction left me suspicious, primarily because of the lack of information provided. No website was the most glaring omission, and the opaqueness (the lack of transparency) left me wondering how I could even research these companies. Many of the solicitations included poor email etiquette (such as bad grammar, lack of subject-verb agreement, and misspelled words). Receiving emails from multiple people at the same company was also a turn off, as was the pushiness of some of them. Many of these emails were from names so generic they struck me as false, such as “Tony Hawk”, “Peter Scott”, “Jimmy Forrest”, “Bob Miller”, “Michael Storm”. Again, there were no references to any trade associations.

My big question was and still is: Why are they contacting me? I’m their competitor. How did I get on their list? Even though I suspect that most of my colleagues ignore or delete these emails, I was curious if these emails would have an impact on several aspects, including:

My Business

Most likely it won’t – my clients are long term, repeat customers who have grown accustomed to the level of service I provide.

My Trade Associations

Are these service providers potential members, sponsors, or advertisers?

My Profession

Do these service providers paint us all with a broad brush? Does their collective lack of transparency, zealous email solicitation methods, or otherwise unseemly tactics make us all look bad? Should we be concerned enough to take any action? Most importantly, are they any good at what they do – are they competent and consistent?

My Colleagues

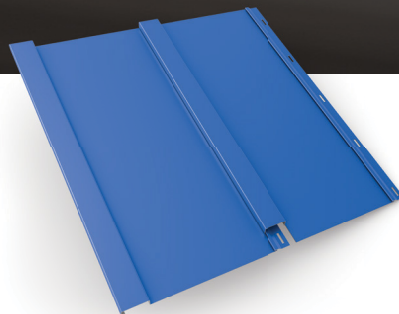
How widespread is this issue? Have any of my clients spent as much time thinking about this as I have? Have any of them engaged to the point of transacting business with these service providers?

My Conclusions

In an unregulated profession like construction estimating, our work has to set us apart. I’ve always relied on doing a good job every time, and that has provided me the sustainability to keep going, doing the job that I love and enjoy. Consistency and competency are drivers of repeat business, and my reliance on advertising has never been great. If cheap hourly rates are a selling point for these service providers, I can’t afford to compete with them anyway. I would be more concerned if it became obvious

that these service providers routinely engaged in unethical estimating or business practices, but there is no evidence out there to suggest that. Yes, their marketing practices may seem odd or even disconcerting to the mainstream estimating community, but there is nothing necessarily unethical about them; I do think this kind of thing should be monitored by the trade associations, particularly CERT and ASPE, but not just for negative impacts to our profession. It’s very likely that some of these service providers are the real deal, legitimate enterprises, worthy of our respect, who would benefit from trade association membership, and whose membership we would all benefit from in return. The bottom line for me is this: anybody engaged in an estimating practice should want to join CERT and/or ASPE if they want to be perceived as a top-quality service provider.

About the Author: Daniel Frondorf, CPE, CDT is a Cincinnati based civil construction cost estimator; he operates DG Frondorf and Associates, a civil cost estimating consulting firm, and is a member of ASPE, CERT, CSI, and AACE. Contact Mr. Frondorf at www.dgfrondorf.com or dan@dgfrondorf.com.



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When Specifications Create Litigation

By Bruce Wingfield

Since 1936, the American Architectural Manufacturers Association has been the most successful third-party organization for the certification of fenestrations and quality control. Most architects specify AAMA-certified fenestrations, and have specifications for field testing windows, sliding glass doors, and curtainwalls in order to improve and validate quality control — especially as it pertains to water and air infiltration. (Owners are not fond of new windows leaking after a rainstorm.) Field testing using water and air are normal procedures for new construction in order to improve fenestration quality.

Following are two cases where the AAMA specifications and certifications were not followed and developed into construction nightmares.

True Story #1

The architect's specification called out AAMA 502 for field pressure testing of AW windows using Procedure A. This was correct; it was only afterwards that the wheels came off, as the specification was out-of-date by 12 years! AAMA 502-12 had been replaced with AAMA 502-21, with more robust requirements, however the Architect was still referring to the old protocol and testing standards.

The first mistake was the specification requirement that field testing was to be performed by "an independent third party" when, in reality, even AAMA 502-12 required an AAMA Accredited Lab/test agency. Just being a third party does not



A window installation (not wrapped) resting on bare bucks will fail pressure testing 99% of the time.

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PROJECT: Schweiss Doors designed and built the glass bifold door for Fermilab National Particle Physics Lab, IL



The spray nozzle is too close; AAMA 501.2 states the distance must be 305 plus or minus 25 mm (1 foot).

meet the standard and quality control procedures established by AAMA.

The second mistake was installing all the windows prior to field pressure testing a 5% sampling, as required by AAMA. Testing at 5% prior to drywall provides an opportunity to check for installation problems and/or window issues. Much better to find a few windows failing and diagnose the problem than to install 180 windows and test after drywall only to learn that the vast majority are leaking.

The third mistake was made by the Architect for approving submittals indicating a non-accredited AAMA Lab/test agency was going to be conducting the field pressure testing. Thus when all the windows were installed, the non-accredited AAMA testing third party decided to use what is referred to as AAMA 101 in lieu of AAMA 502.

AAMA 101 is not a field test. AAMA Labs test at the lab and use AAMA 101 in order to certify a window to a certain pressure. The pressure the window manufacturer sets the test of water and pressure in a chamber is tested for that length of time. For AAMA the tests lasts all of 10 seconds, for Miami-Dade 30 seconds. Again pressures are set by the manufacturer as high as possible with the goal of the window not failing in 10 or 30 seconds. As soon as the time expires, the test is stopped.

AAMA 502 field tests are applies to AAMA 101's oranges. First, the AAMA 502 test is at 1/3rd reduction of pressure from what the window was tested at the lab. Second, the procedure "A" test lasts 15 minutes. Unfortunately, the non-accredited testing company failed all the windows blasting them with AAMA LAB pressure for way longer than even 30 seconds would allow. Plus, after failing window after window, they were not even offering up diagnostics as AAMA 502 required of them.

True Story #2

At another project, I received a call from a concerned Architect. The developer hired a non-accredited AAMA testing company who tested five windows and one entry door, failing four of the specimens. The window manufacturer claimed that they tested and every specimen passed. I set up a meeting with the Architect on-site. All the windows had been installed and drywall was underway but not finished. The picture shown on page 9 represents a window installation (not wrapped) resting on bare bucks. Pressure testing bare buck windows will cause failure 99% of the time. An AAMA Accredited company has trained technicians that know this, and would have never performed a pressure test on bare buck wood.

AAMA 501.2 protocol clearly states, "The nozzle shall be held normal to the plane of the wall and at a distance of 305 plus or minus 25 mm (1 foot). This non-accredited testing agency is not following the specification and may be failing the test because the spray nozzle is too close.

AAMA has recently changed their name to Fenestration & Glazing Industry Alliance, or FGIA. All the AAMA protocols remain and are under constant revision and scrutiny in order to ensure quality fenestrations. However, four window manufacturers now routinely reject field testing by non-accredited companies due to the many errors in the field during water and air testing.

How can these examples of poor field testing be avoided? It is mandatory when specifying field testing of fenestrations using AAMA 502 or AAMA 503 that testing will be by an AAMA Accredited Lab or testing agency. A specification that only describes "a third party" is not in compliance with these protocols. AAMA 501.2 requires an AAMA Lab; but is not enforced in the field.

Compliance with AAMA LAP-3 is required per AAMA 502 or AAMA 503. To comply with AAMA LAP-3, the Architect must verify that the lab or test agency is currently operating in compliance with the audit requirements of ISO/IEC 17025 internationally recognized quality control standards. Without this quality control being met, the protocol is not being followed.

In conclusion, Architects must follow the protocols of the specifications they specify. When the protocols are not followed, windows are not tested correctly and legal finger pointing contests ensue.

About the Author: Mr. Wingfield is currently employed by a nationwide Building Envelope Consultant and FGIA Accredited Laboratory certified to field test for all AAMA protocols. Please contact Mr. Wingfield for additional information at Bruce.Wingfield@SalasOBrien.com.



TD Residence

Northville, Michigan

Architect

D. J. Maltese Construction Corporation



Photo Courtesy: D. J. Maltese Construction Corporation

The single-family, 4,400-square-foot home designed by D. J. Maltese Construction.

In 2021, D. J. Maltese Construction Corporation met with a young couple that wanted to design and build a new 4,000+-square-foot ranch on a heavily wooded, hilly, four-acre site in Northville, Michigan. With their input, D. J. Maltese prepared a conceptual design and, after a few updates, the couple approved the basic design. Maltese prepared a detailed cost estimate and proposal for them, they approved it, and Maltese started the design-build process.

After several months, the final design included a 4,400-square-foot home, walk-out basement, four-car garage, a second stairway to the basement from the garage, large covered rear porch, swimming pool, and landscaping. (The base build-out is now underway as a second phase.)

Construction started with site clearing of over one hundred large trees and some re-balancing of the site. Moving on, soil borings were done to confirm foundation details, and excavation began. As had happened before on other projects, Maltese hit an underground artesian well and had to stop the project to try and



A custom fireplace with natural stone.



Insulated garage doors with side-mount wi-fi controls.



A view of the swimming pool.



The kitchen has custom-built cabinets with quartz counters.

reroute the water. They were able to reroute most of it; however, there was concern with future issues. To avoid the water, Maltese re-designed the basement by changing about a quarter of it to a shortened crawl space.

Construction continued with framing, roofing, windows, brick veneer and natural stone, beam board soffits and porch ceilings, custom exterior doors and windows, insulated garage doors with side-mount wi-fi controls, dimensional shingles with copper valleys, exterior paint, and aluminum gutters. Other site work included a major septic system and deep well, partial walk-out basement with retaining walls, swimming pool, and landscaping.

The interior included a custom fireplace with natural stone; custom-built cabinets with quartz counters; custom millwork for the mudroom, laundry room, closets, and bathrooms; custom tile work for bathrooms and backsplashes; 4¼" field finished hardwood flooring; custom interior doors and trim; heated master bathroom floor; and custom shower doors.

Maltese is now completing phase 2, which includes the basement build-out with curved cove ceilings, wet bar, wine room, game room, full bathroom, video room, and other amenities.



The exterior has both brick veneer and natural stone.

Product Information

Windows: Andersen Windows

Architect

D. J. Maltese Construction Corporation
 960 North Point Parkway, Plymouth, MI 48170
www.djmaltese.com

Project Team

Structural/Mechanical/Electrical Engineer

D. J. Maltese Construction Corporation
 960 North Point Parkway, Plymouth, MI 48170

Civil Engineer

Mason Brown Associates LLC
 2708 Bridle Road, Bloomfield, MI 48304

General Contractor & Cost Estimator

D. J. Maltese Construction Corporation
 960 North Point Parkway, Plymouth, MI 48170

Landscape Architect

Lucas Irrigation Specialists
 46430 Strathmore Road, Plymouth, MI 48170

Project General Description

Location: Northville, Michigan

Date Bid: Feb 2022

Construction Period: Apr 2022 to Jul 2023

Site: 4 acres.

Total Square Feet: 8,930*.

Building Sizes: Garage, 1,248; basement, 3,210; first floor, 4,472; total, 8,930 square feet*.

Building Height: Garage, 23'11"; basement, 11'; first floor, 27'; floor to floor, 10'10"; total, 27'.

Number of Buildings: One.

Basic Construction Type: New.

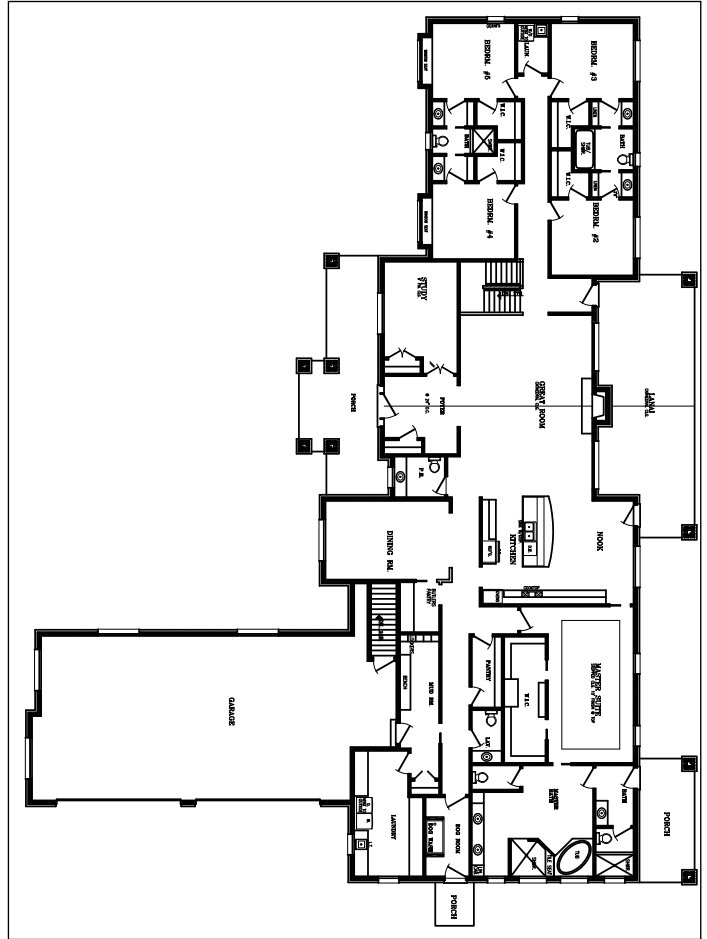
Foundation: Cast-in-place, slab-on-grade.

Exterior Walls: Brick.

Roof: Membrane, metal.

Floors: Concrete.

Interior Walls: CMU, metal stud drywall.



DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	294,000	13.40	43.87	—
GENERAL REQUIREMENTS	87,600	3.99	13.07	—
CONCRETE	207,466	9.46	30.96	Forming & accessories, reinforcing, cast-in-place.
MASONRY	46,512	2.12	6.94	Unit.
METALS	16,331	0.74	2.44	Fabrications.
WOOD, PLASTICS & COMPOSITES	410,743	18.73	61.30	Rough carpentry, finish carpentry, architectural woodwork.
THERMAL & MOISTURE PROTECTION	79,489	3.62	11.86	Damp proofing & waterproofing, thermal protection, weather barriers, steep slope roofing, roofing & siding panels, flashing & sheet metal, roof & wall specialties & accessories.
OPENINGS	82,131	3.74	12.26	Doors & frames, windows, hardware.
FINISHES	263,758	12.03	39.36	Plaster & gypsum board, tiling, flooring, wall finishes, painting & coating.
SPECIALTIES	16,940	0.77	2.53	Interior, fireplaces & stoves.
EQUIPMENT	21,422	0.98	3.20	Other.
SPECIAL CONSTRUCTION	84,000	3.83	12.54	Retaining wall.
PLUMBING	356,318	16.25	53.17	Piping & pumps, equipment, fixtures, pool & fountain plumbing systems.
HVAC	164,120	7.49	24.49	Air distribution, central HVAC equipment.
ELECTRICAL	62,400	2.85	9.31	Medium-voltage distribution, lighting.
TOTAL BUILDING COSTS	2,193,230	100%	\$327.30	
EXISTING CONDITIONS	94,663			Subsurface investigation, site clearing & tree removal.
EARTHWORK	96,200			Earth moving, methods, excavation support & protection.
EXTERIOR IMPROVEMENTS	61,880			Irrigation, planting.
UTILITIES	68,203			Wells, septic system.
TOTAL PROJECT COST	2,514,176			

UPDATED ESTIMATE TO APRIL 2024: \$381.28 PER SQUARE FOOT

*These calculations are based on covered walkways divided in half (garage and basement), giving the total square footage from which to calculate as 6,701, according to AIA document D-101.

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta, GA	\$340.72	\$2,283,165	Dallas, TX	\$340.72	\$2,283,165	Los Angeles, CA	\$486.74	\$3,261,665
Pittsburgh, PA	\$413.73	\$2,772,415	Kansas City, KS	\$421.84	\$2,826,776	Las Vegas, NV	\$466.46	\$3,125,762
New York, NY	\$559.75	\$3,750,914	Chicago, IL	\$482.69	\$3,234,484	Seattle, WA	\$466.46	\$3,125,762

For more information on this project and similar projects visit www.dcd.com



Aero Country East offers high-quality country club-type amenities and a maintenance-free aviation lifestyle community.

Aero Country East

Hydraulic Doors are a Must in New Gated Aviation Community

The concept of airparks isn't anything new. They are all over the world. But Aero Country East in the North Dallas Metroplex has taken the concept to another level — offering high-quality country club-type amenities and a maintenance-free aviation lifestyle community.

According to Aero Country East developer and pilot, Mike Shell, Texas may be an exception. It has very few aviation lifestyle communities and probably none offer the first-class appeal of Aero Country East, which was designed for pilots by pilots.

Located just 15 nautical miles northeast of the growing north Dallas area within the city limits of McKinney, Texas, Aero Country East not only provides the convenience of airport access to a large population of pilots who commute in and out of Dallas, it also gives them a comfortable home. A total of 39 customized first-class townhomes are on the site, offering buyers the option to design the interior of their townhomes exactly to their liking.

After a hard day at the office, residents and their families can relax in a beautiful pool boasting an Aero Country East logo that can be seen from the air. Other amenities include three in-pool tables with umbrellas providing shade, a large 14-person hot tub, a firepit, two barbeque grills, and full ADA access for those with disabilities. Aero Country East currently has nine residents — with room for many more.

Aero Country East doesn't take the community for granted. They help boy scouts get their aviation badge and encourage them to become future pilots. Two annual fly-ins bring pilots in from all points of the compass. Shell says their purpose is to get more and more young people into aviation.

"Municipal airports are supported by tax revenue," says Shell. They don't want Stearmans or Pipers; they're looking for corporate jets. We don't compete with these airports; we fill a need for people coming out to enjoy aviation. We get along nicely with the municipal airports around here."

A new lighted and paved 3,000-foot by 60-foot runway and a 1,104-foot grass runway and LED windsocks can accommodate most piston and turbine aircraft. Seventy-nine first-grade hangars, three deep along the runway, await

owners of a single aircraft or multiple aircraft. The hangars all have Schweiss Doors hydraulic doors. Aero Country East hangars currently house 40 aircraft, and the nearby westside airport has an additional 120 aircraft. Visitors can expect to see a variety of aircraft at Aero Country East, including T-6 "Texans," Stearmans, and Pipers.

"We have the best Rolls Royce engine mechanic in the world here," Shell says. "You also don't see very many airports with swimming pools, barbeque grills, and two 18-hole golf courses to which residents can drive their golf carts. Every airport has a mission and purpose that fits the needs of the pilot. Aero Country East has a concierge service, and if you want your plane fueled or floor cleaned, we will do that for you. We fit the aviation lifestyle."

Shell first became aware of Schweiss hydraulic and bifold door products through a friend. He is very pleased with the Schweiss product and service.

"I've gotten calls from Schweiss Doors; they pay attention to detail," Shell says. "I've made mistakes when it comes to certain windows or measurements, etc., which guys at the Schweiss factory have caught because they know what we are building now. They'll call me and say, 'Hey Mike, did you mean that, or do you really want to do this?' They have been a true joy to work with."

Architectural requirements for uniformity only allow hydraulic doors on Aero Country East hangars. You won't see a hodgepodge of this and that. It's set off to protect residents' investments, Shell says.

The first floor of each two- or three-story townhome comes with an all-steel 60-foot by 60-foot pre-plumbed hangar, fitted with a hydraulic door. Only steps away is an elevator serving the residence on the second and/or third floor. If the resident isn't ready to install an elevator, each unit is constructed with an elevator shaft, so it can be done at a later time. Others are putting in beautiful granite floors, bars, and other amenities for entertaining. The hangars are set up electrically to add quarters. One of the residents recently added a first-class kitchen and theater in the hangar.



Architectural requirements for uniformity only allow hydraulic doors on Aero Country East hangars.

Although this is a privately owned airport, as a hangar or townhome owner, it can be publicly accessed, enabling pilots to land there when they need to. Unlike other aviation communities, residents own their land and hangar, eliminating the fear of the city taking it from them sometime down the road. Corner lots offer 160,000 square feet, while interior lots are a comfortable 135,000 square feet.

Quite a bit of thought and planning went into Aero Country East. The developers were aware that many small airports had been closing or shrinking for various reasons. Having Aero Country East just below Class B airspace in a metroplex like this is very beneficial.

Since the initial groundbreaking and ribbon cutting ceremony in 2010, Aero Country East has come a long way.



Residents and their families can relax in a beautiful pool boasting an Aero Country East logo that can be seen from the air.

However, this is just a start. A six-phase long-range plan will add an additional 40,888 acres to the current 17,305 acres. There will be further landscape and stormwater improvements and plans for retail and restaurant additions in the future.

About Schweiss Doors: Schweiss Doors is the premier manufacturer of hydraulic and bifold liftstrap doors. Doors are custom made to any size for any type of new or existing building for architects and builders determined to do amazing things with their buildings, including the doors. Schweiss also offers a cable to liftstrap conversion package. For more information, visit www.bifold.com.

About Aero Country East: For more information on Aero Country East, visit www.aerocountryeast.com.



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Clear Springs Baptist Worship Center

Corryton, Tennessee

Architect

Falconnier Design Company

For many years, Clear Springs Baptist Church of Corryton, Tennessee, was “the small church where lots of people go.” Located in a hollow off of Thompson School Road in north Knox County, Tennessee, Clear Springs Church made the most of its “country” location.

However, with the suburban sprawl of nearby Knoxville growing ever closer, it was time for the “small country church” to think larger. The church’s site was both completely built out and hard to find, so Clear Springs decided that relocation was the best path forward.

A 30-acre plot was purchased just down the road on a hilltop at the busy corner of Emory Road and Tazewell Pike, in the heart of the rapidly growing Gibbs community.

With new service stations, shopping centers, houses, and apartments being built nearby in ever increasing numbers, the new Clear Springs church positioned itself to be a bright light on the hill beaconing to many potential new members.

In 2008, the Clear Springs Building Committee, chaired by Johnny Arnwine and Pastor Jerry Vitatoe, selected Falconnier Design Company as the architect for their new facility.

Falconnier’s experience with churches and the firm’s history of creative, cost-effective design were major factors in the selection. The church’s guiding scripture came from Nehemiah 2:18, “Let us rise up and build!” Like the ancient Israelites rebuilding the ruined wall of Jerusalem, Clear Springs Church decided to think big and beyond themselves – trusting that God would provide what was needed.

The church needed a facility that was much larger than the original structure. This new facility needed to be bold and attractive yet cost effective, and able to grow with the church.

Falconnier’s design team put together a three-phase master plan for the new site. Phase 1 is now complete: a three-story, seventy-thousand-square-foot building with a soaring, two-story heavy timber roofed main entry which doubles as a 300-seat fellowship hall, a 1,300-seat auditorium with a 150 voice choir and full orchestra, and state-of-the-art video, lighting and sound systems.

The second floor has 18 classrooms for Sunday school, nine of which are built into a balcony which can be easily converted into an additional 500 auditorium seats.

Space was also provided for a future commercial kitchen, and an unfinished basement will house a choir practice facility, youth ministry area, and the



Clear Springs Church positioned itself to be a bright spot on the hill beaconing to many potential new members.



A soaring two-story heavy timber roofed main entry doubles as a 300-seat fellowship hall.

church offices.

Phases 2 and 3 will include expanded education, pre-school and daycare, and a family life center.

With a spire rising over 150 feet above the nearby intersection, Clear Springs’ new building is anything but “hard to find.” The new worship and education facility is now the center of its community. From its humble beginnings in the hollow, Clear Springs is now poised to be the large church where lots of people go to worship.

Product Information

Building Envelope: Boral Brick, Senergy

Roofing: Firestone

Windows, Entrances, Storefronts

& Curtain Wall: Tubelite

Interior: National Gypsum

Flooring: Bigelow, Patcraft, EXPANKO

Lighting: Pinnacle, Visa, Winona, Noral, ABL,

Elite, Mule, Acuity Brands, Original Cast

Elevator: Vertical Express

Lift: Garaventa

Architect

Falconnier Design Company
4622 Chambliss Avenue, Knoxville, TN 37919
www.falconnier.net

Project Team

Structural Engineer

Chad Stewart & Associates, Inc.
800 Gay Street, #1625, Knoxville, TN 37929

Mechanical Engineer

Albert F.G. Bedinger Consulting Engineers
500 Clyde Street, Knoxville, TN 37921

Electrical Engineer

Vreeland Engineers
P.O. Box 10658, Knoxville, TN 37939

General Contractor

George W. Reagan Company
1700 Grainger Avenue, Knoxville, TN 37917

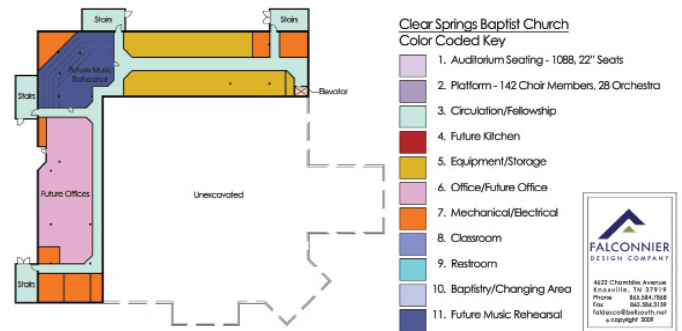
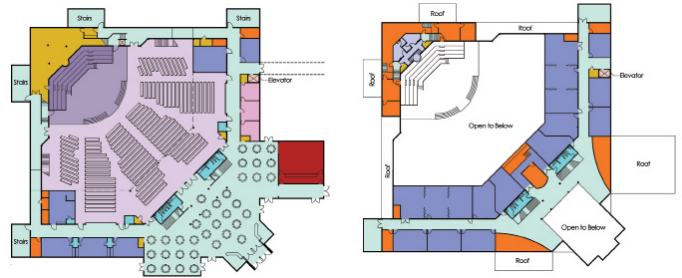
Foundation: Reinforced concrete, slab-on-grade.

Exterior Walls: CMU, brick, curtain wall.

Roof: Membrane, asphalt shingles.

Floors: Concrete, precast.

Interior Walls: CMU, metal stud drywall.



Project General Description

Location: Corryton, Tennessee

Date Bid: Jun 2014

Construction Period: Jul 2014 to Jun 2016

Total Square Feet: 55,858 **Site:** 30 acres.

Number of Buildings: One; seating capacity 1,300.

Building Sizes: First floor, 37,594; second floor, 18,264; total, 55,858 square feet. (Basement unfinished) 15,537.

Building Height: First floor, 14'; second floor, 14'; floor to floor, 14'; total, 73'.

Basic Construction Type: New/II B.

DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	14,000	0.20	0.25	—
GENERAL REQUIREMENTS	95,030	1.33	1.70	—
CONCRETE	1,171,000	16.40	20.96	Forming & accessories, reinforcing, cast-in-place, precast, cast decks & underlayment, grouting, cutting & boring.
MASONRY	120,000	1.68	2.15	Unit, manufactured.
METALS	1,580,000	22.13	28.29	Structural metal framing, joists, decking, cold-formed framing, fabrications, decorative.
WOOD, PLASTICS & COMPOSITES	170,000	2.38	3.04	Rough carpentry, finish carpentry, architectural woodwork.
THERMAL & MOISTURE PROTECTION	542,000	7.59	9.70	Dampproofing & waterproofing, thermal protection, weather barriers, membrane roofing, flashing & sheet metal, roof & and wall specialties & accessories, fire & smoke protection, joint protection.
OPENINGS	300,000	4.20	5.37	Doors & frames, specialty doors & frames, entrances, storefronts & curtain wall, windows, hardware, glazing, louvers & vents.
FINISHES	1,242,000	17.39	22.23	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, acoustic treatment, painting & coating.
SPECIALTIES	74,000	1.04	1.32	Aluminum canopy, accordion partition, steeple & baptistry.
CONVEYING SYSTEMS	70,000	0.98	1.25	Elevator (1 passenger), lift.
FIRE SUPPRESSION	130,000	1.82	2.33	Water-based fire-suppression systems.
PLUMBING	241,000	3.36	4.31	Piping & pumps, equipment, fixtures.
HVAC	581,000	8.14	10.41	Piping & pumps, air distribution, central heating equipment, central cooking equipment, central HVAC equipment.
ELECTRICAL	811,000	11.36	14.53	Medium-voltage distribution, facility electrical power generating & storing equipment, electrical & cathodic protection, lighting, fire alarm.
TOTAL BUILDING COSTS	** 7,141,030	100%	\$131.94	
EARTHWORK	123,000			Earthwork methods, shoring & underpinning, excavation support & protection.
EXTERIOR IMPROVEMENTS	348,000			Bases, bollards & paving.
TOTAL PROJECT COST	7,612,030			

UPDATED ESTIMATE TO APRIL 2024: \$234.04 PER SQUARE FOOT

** Note - the church purchased all of the materials to build the building and received a credit for the materials (\$2,830,777) off the contract amount. This amount has not been deducted off the cost reflected in this project case study.

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta, GA	\$229.36	\$12,811,761	Dallas, TX	\$229.36	\$12,811,761	Los Angeles, CA	\$327.66	\$18,302,515
Pittsburgh, PA	\$278.51	\$15,557,138	Kansas City, KS	\$283.97	\$15,862,180	Las Vegas, NV	\$314.01	\$17,539,910
New York, NY	\$376.81	\$21,047,892	Chicago, IL	\$324.93	\$18,149,994	Seattle, WA	\$314.01	\$17,539,910

For more information on this project and similar projects visit www.dcd.com

How Universal Design Supports Sustainability and Inclusiveness



Photos courtesy of Teass \ Warren Architects

Keeping a house close to grade helps when retrofitting a ramp in the future.

Many people want the same things as they get older: to stay in their own homes, to maintain independence for as long as possible, and to turn to family and friends for help when needed. But many older adults and their families have concerns about safety, getting around, or other daily activities. All of this requires special planning.

Incorporating the principles of universal design when building or renovating a home lead to a better quality of life now and also provides insurance against any future mobility issues people may face.

But the benefits of universal design extend beyond households by supporting sustainability and inclusiveness. The environment and the larger community reap the rewards too.

Parallel Goals: Sustainability and Universal Design

A well-designed and constructed home can last over 100 years. Universal design plays an important role. When elements of universal design are embraced, from wide circulation paths to curbless showers, future needs are anticipated, but also lengthen the useful life of the structure.

While current owners may not need to address aging, its future owners could have more urgent accessibility needs. Having the thoughtful features already in place will eliminate the environmental costs of redoing what's already been done to retrofit them. In this sense universal design directly supports sustainability.

Universal Design Helps Build Community

Teass \ Warren, a residential architect in Washington, DC, designed a duplex project currently under construction in Arlington, Virginia. The site plan approval hinged, in part, on accessibility. The county's rigorous process shined a light on the concept of "visitability" — how to design the residences so that they could be visited by people with limited mobility or in a wheelchair. "In the past, most residential accessibility measures focused on the inhabitants' needs. Visitability guidelines, on the other hand, encourage us to consider our wider community," said Will Teass, AIA of Teass \ Warren Architects.

"The trend is gaining traction. A visitable home welcomes friends, colleagues, and family members, regardless of their mobility. A zero-step entry is a key requirement; doorways with 32-inch clearances and a main-level bathroom are other requisites. During this review, we increased the size of the powder room and included blocking for grab bars and plans for a future ramp to access the first level".

For a recent project in North Chevy Chase, Teass \ Warren specified wide doors, and kept the first floor close to grade so a ramp could be retrofitted from the front door if needed in the future.

Embracing universal design and planning for aging in place are smart strategies when building or renovating a house, whatever your current circumstances may be. Visitors to the home, its future owners, and the environment all stand to benefit from a forward-thinking approach.

What Is Universal Design?

To get the definition of universal design, Teass \ Warren turned to Erin Loftin Serventi of E. L. Designs. Serventi is a Certified Interior Designer with a degree in Construction Management who is certified in universal design.

"Universal design," Serventi said, "looks at all inhabitants — from toddlers to aging parents." The main focus is serving all occupants of a home and managing both current and future circumstances. (This differs from aging in place, which focuses on future circumstances, rather than current ones.) "An easy way to remember universal design," said Serventi, "is to ask how a toddler and a grandparent can both use the same space."

(Continued on page 34)

Global Market for Building Digital Twins

Guidehouse Insights Estimates the Market will Grow to Nearly \$3 Billion by 2032

A new report from Guidehouse Insights explores the global market for building digital twins, which can help secure better efficiencies across the building construction and operations value chain.

A digital twin is a digital replication of a real-world asset that offers a real-time reflection of the asset's status. For buildings, this is a three-dimensional model of all building systems and architectural features. According to a new report from Guidehouse Insights, the annual building digital twins market is set to grow globally from annual revenues of \$848.4 million in 2023 to \$2.99 billion by 2032 — a compound annual growth rate (CAGR) of 15.0%.

“As buildings are designed, constructed, and occupied, they generate large amounts of data that can increase efficiency and reduce liability,” says Grant Samms, research analyst with Guidehouse Insights. “Digital twins are proving effective in utilizing this data by helping designers communicate better with customers, construction teams communicate better with each other, and building operators better anticipate how changing conditions will have an impact on their assets.”

Building digital twins are just beginning to find their niche in building design, construction, and operations. Of the emerging use cases, perhaps the most notable is digital twins' advanced design, planning, and simulation. Whether measuring a crew's efficiency during construction or the HVAC system's efficiency during a retrofit, the digital twin's data and

simulation abilities are invaluable for avoiding mistakes and duplication of efforts, and making the best choices for the building's future. As a younger market, building digital twins face several barriers to growth. Chief among them are the lack of a clear use case in which digital twins are invaluable, poor data, and incompatibilities between a building's hardware and software systems, according to the report.

The report, *Building Digital Twins*, analyzes the global market for building digital twins. It provides an analysis of market issues, including emerging trends, drivers, and barriers. Global market analyses, which extend from 2023-2032, are segmented by eight building types and five world regions. An executive summary of the report is available for free download on the [Guidehouse Insights](#) website.

About Guidehouse Insights: *Guidehouse Insights, the dedicated market intelligence arm of Guidehouse, provides research, data, and benchmarking services for today's rapidly changing and highly regulated industries. Additional information about Guidehouse Insights can be found at [www.guidehouseinsights.com](#).*

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Top Ten Growth Opportunities in Building Construction for 2024

Drones and robotics to advance construction site safety and security

The “[Top 10 Growth Opportunities in Building Construction, 2024](#)” report has been added to ResearchAndMarkets.com's offering. This study examines the top growth opportunities for the building construction market in 2024. Material shortages, price inflation, logistics issues, and labor deficiencies are top challenges in the building construction market. These challenges resulted in the market's sluggish growth in 2023, which will only show a modest recovery of above 5% growth from 2024 onward. Building construction will be increasingly technology-enabled.

Digital technologies and software will continue to make inroads in building construction and support internal processes and sustainability efforts. Investments in platforms and as-a-service business models will become increasingly relevant in this market.

Improving sustainability performance will become the focus of the building construction industry, which includes green buildings, buildings with low carbon footprints, and green construction practices. Sustainability will become part of market participants' business resilience and key performance indicators (KPIs). Therefore, market participants will need to invest in technologies, including digital applications, to support sustainable construction processes and partner with relevant industry leaders or experts in sustainability solutions. Additionally, participants will need to establish close partnerships with digital technology providers to develop sustainability solutions that improve the efficiency of resources

used in buildings and thus reduce carbon emissions and waste generation.

Top Growth Opportunities for 2024

1. Residential Construction to Remain as Key Priority
2. Electrification to Propel Energy-Efficient Buildings
3. Digital Tools to Facilitate Building Construction Projects
4. Prefabrication Technology to Gain Preference
5. Adoption of Sustainable Building Construction Materials to Expand
6. New Business Models to Revolutionize Buildings' Life Cycle Management
7. Smart Lighting and HVAC to Support Buildings' Decarbonization
8. Drones and Robotics to Advance Construction Site Safety and Security
9. Construction Waste Management to Advance Industry Circularity
10. Sustainability and Future of Workforce to Transform Property Development

For more information about this report, visit [www.researchandmarkets.com](#)

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Cincinnati Residence

Cincinnati, Ohio

Construction Manager

DG Frondorf and Associates, LLC



Photo Courtesy: DG Frondorf and Associates, LLC

Sustainability is important to the owners, and the decision was made to pursue LEED® certification for the new home.

What do you do when you own two houses on the same street — working out of one and living in the other? ... and then, COVID comes along, changing everything.

Consolidation was the solution for a couple in Cincinnati. Over the years, they had thought about consolidating the houses into one home, but it was never the right time.

“COVID had just put the whole world, it seemed, on hold, and my wife was assigned to work at home, so we were spending more time together. I was working in the house that previously occupied the lot where the new house is now, but it’s close (135 feet to be precise) to the house we lived in and just moved out of, so I was spending a lot of time at both houses. That led us to revive the conversation about consolidating into a single house, so words led to action,” recalled Dan Frondorf, the homeowner.

“We first acquired the house and property where our new house is now in 2006. The decision to buy that property was a bit of an impulse, and we weren’t sure what to do with it. I ended up using it as my office for the next 16 years, but at



The new TV room is spacious, modern and comfortable.



The kitchen features an island, with seating and a sink.



The bridge connects the rear decks, allowing access from the kitchen / dining room / great room to the rear yard / hillside and kitchen garden.



The Cincinnati skyline view from the third floor balcony.



There is plenty of natural and artificial light.

the time, the possibility of building something new and different was in play.

The house we lived in down the street was built in 1895, and is a narrow (only 16' wide) 3-story townhouse style that is prevalent in this neighborhood. Even though it was just the two of us living there, along with several cats, the space was at times too close for comfort. That house had no off-street parking, a small yard, and very little space to entertain or have overnight guests; and stair climbing was a part of the one of the most important activities — lugging groceries up to the 2nd floor kitchen!"

The decision to make the new home sustainable was important, and the couple decided to pursue LEED® certification for the new home. A LEED consultant was hired to work with the design team. The LEED consultant is compiling and submitting the LEED certification application to the USGBC.

The home design is based on LEED Platinum and the initial review of the design included points in every category (Integrative Process: 1, Location and Transportation: 12, Sustainable Sites: 4, Water Efficiency: 9, Energy and Atmosphere: 25, Materials and Resources: 10, Indoor Environmental Quality: 12, Innovation: 1, and Regional Priority: 4). The homeowners are hoping to receive some additional points for the Innovation category based on their re-use of lumber harvested from trees cleared from the site to make the 80 points for Platinum, but are confident the home will qualify for LEED Gold when finished.

The home also features a 1500 GAL rainwater tank for yard irrigation and 11KW of rooftop solar power.

The new home will be the couple's home for many years, and addresses future circumstances: The design has no steps

to negotiate at any of the entry/exit points, an elevator, barrier-free showers, and abundant natural and artificial light.

The new home takes advantage of the city's skyline off in the distance, with balconies that are roomy, covered by a roof, and have ceiling fans, along with water and electric connections.

The couple took occupancy of the home in January, 2024. Thinking of their favorite features of the home, they have a few that stand out. Dan's are the walk-in pantry because of its size (7' x 7') and because it features shelving from their harvested maple trees, and the rear decks and the bridge that connects them — this allows access from the kitchen/dining room/great room to the rear yard/hillside and kitchen garden; Becky, Dan's wife, loves the kitchen and master bath, as both are spacious and full of decorating possibilities.

Looking back, Dan added, "The entire process involved both of us to a great degree — the collaboration we received from the design and construction teams was substantial, beneficial, and noteworthy, and was indeed a team effort; this entire experience was fun at times, a learning process for sure, and even stressful at times, but anything worth doing will include all those, so we know we did it the right way."

LEED® Pending

Product Information

Exterior: James Hardie
Entrances & Storefronts, Windows: Pella
Elevator: Inclinator

Architect

Construction Manager

DG Frondorf & Associates, LLC
 2639 Maryland Avenue, Cincinnati, OH 45204
www.dgfrondorf.com

Architect

Tony Ravagnani, NCARB, AIA, LEED AP BD&C
 36 East 7th Street, #2430, Cincinnati, OH 45202

Structural Engineer

Schaefer
 537 East Pete Rose Way, #400, Cincinnati, OH 45202

MEP Engineer

Marque Engineering
 4850 Smith Road, #101, Cincinnati, OH 45212

Civil Engineer

Abercrombie & Associates
 8111 Cheviot Road, #200, Cincinnati, OH 45247

Geotechnical Engineer

CTL Engineering, Inc.
 2105 Schappelle Lane, Cincinnati, OH 45240

LEED Consultant

SOL Design & Consulting
 501 East 13th Street, Cincinnati, OH 4520

General Contractor

Grauel Contracting
Grauelcontracting.com

Cost Estimator

Blundall Associates, Inc.
 7223 Engle Road, #215, Fort Wayne, IN 46804

Landscape Architect

Place Workshop
 250 East 5th Street, 15th Floor, Cincinnati, OH 45204

Project General Description

Location: Cincinnati, Ohio

Date Bid: May 2022

Construction Period: Jul 2022 to Nov 2023

Site: 0.35 acres.

Total Square Feet: 4,588*.

Building Sizes: Garage, 720; first floor, 844; second floor, 1,512; total, 4,588 square feet*.

Building Height: First floor, 10'4¼"; second floor, 11'4"; third floor, 13'1¼"; total, 34'10".

Number of Buildings: One.

Basic Construction Type: New/Wood frame.

Foundation: Cast-in-place.

Exterior Walls: Fiber cement lap siding.

Roof: Asphalt shingles.

Floors: Sealed concrete and vinyl plank.

Interior Walls: Wood stud drywall.

DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	7,000	0.66	1.66	—
GENERAL REQUIREMENTS	68,000	6.37	16.08	—
CONCRETE	85,000	7.97	20.10	Forming & accessories, reinforcing, cast-in-place.
MASONRY	45,000	4.22	10.64	Manufactured.
METALS	5,000	0.47	1.18	Structural metal framing.
WOOD, PLASTICS & COMPOSITES	190,000	17.81	44.94	Rough carpentry, finish carpentry.
THERMAL & MOISTURE PROTECTION	52,500	4.92	12.42	Dampproofing & waterproofing, thermal protection, weather barriers, roofing & siding panels, flashing & sheet metal, roof & wall specialties & accessories.
OPENINGS	90,000	8.44	21.29	Doors & frames, specialty doors & frames, windows.
FINISHES	131,500	12.33	31.10	Plaster & gypsum board, tiling, ceilings, flooring, painting & coating.
SPECIALTIES	6,750	0.63	1.60	Fireplaces & stoves.
EQUIPMENT	27,500	2.58	6.50	Appliances.
FURNISHINGS	88,500	8.30	20.93	Casework, furnishings & accessories, furniture.
SPECIAL CONSTRUCTION	7,500	0.70	1.77	Central vacuum cleaner.
CONVEYING SYSTEMS	37,500	3.52	8.87	Elevator (1).
PLUMBING	42,500	3.98	10.05	Equipment, fixtures.
HVAC	97,500	9.14	23.06	Air distribution, central heating equipment, central cooling equipment.
ELECTRICAL	37,500	3.52	8.87	Medium-voltage distribution, lighting.
COMMUNICATIONS	5,000	0.47	1.18	Data.
ELECTRICAL POWER GENERATION	42,500	3.98	10.05	—
TOTAL BUILDING COSTS	1,066,750	100%	\$252.31	
EXISTING CONDITIONS	25,000			Assessment, subsurface investigation, demolition & structure moving.
EARTHWORK	22,500			Earth moving, methods, excavation support & protection.
EXTERIOR IMPROVEMENTS	100,000			Irrigation, planting, pavements and retaining walls.
UTILITIES	35,000			Municipal water, sewer, gas, electric, and telecom services.
TOTAL PROJECT COST	1,249,250			

* These calculations are based on covered walkways divided in half (garage), giving the total square footage to calculate from of 4,228, according to AIA document D-101.

UPDATED ESTIMATE TO APRIL 2024: \$282.90 PER SQUARE FOOT

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.			CENTRAL U.S.			WESTERN U.S.		
Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost	
Atlanta, GA	\$252.80	\$1,068,849	Dallas, TX	\$252.80	\$1,068,849	Los Angeles, CA	\$361.15	\$1,526,928
Pittsburgh, PA	\$306.97	\$1,297,889	Kansas City, KS	\$312.99	\$1,323,337	Las Vegas, NV	\$346.10	\$1,463,306
New York, NY	\$415.32	\$1,755,967	Chicago, IL	\$358.14	\$1,514,203	Seattle, WA	\$346.10	\$1,463,306

For more information on this project and similar projects visit www.dcd.com

Biophilic Design in 2024

By Jessica Pulsipher

As we enter 2024, it's time to explore the exciting and ever-evolving world of design. As leaders of design, it is crucial to stay current and draw fresh inspiration from the styles expected to dominate the upcoming year. One trend that will surely steal the spotlight again this year is biophilic design. But to call it just a trend would be an understatement. We don't see this emerging pattern of design going anywhere anytime soon. Biophilic design taps into our intrinsic connection with nature, a bond deeply ingrained within our DNA that transcends fleeting aesthetic preferences.

Over the past year, we have witnessed a surge of interest in health-centric, experiential design philosophy, making the core principles of biophilic design the most impactful design elements in projects worldwide. As we move further into 2024, this momentum is expected to increase, with designers placing a greater emphasis on our primal affinity for nature and adopting eco-conscious and earth-fostering practices.

To inspire your design journey, here are seven innovative biophilic design elements essential for this upcoming year. From vibrant living walls to ingenious integration of circadian lighting, these elements will revolutionize your design process, cultivating a synergistic relationship with nature and enhancing overall well-being.

1. The Rise of Outdoor Spaces

With the growing awareness of the importance of spending time in nature, outdoor spaces are set to become a key feature in biophilic design trends in 2024. Architects draw inspiration from the natural world to create functional and beautiful environments like rooftop gardens, green spaces, and integrated courtyards. These spaces will be aesthetically pleasing, and promote relaxation and mindfulness. Expect to see more meditation spaces, yoga studios, and workplaces with a focus on wellness.



Photo courtesy Chloe DuBois Cityscapes Inc.

This outdoor space reenergizes its occupants and enhances their well-being.

2. Multi-Sensory Spaces

Biophilic design is all about creating spaces that connect us with nature, and that includes stimulating all of our senses. In 2024, we can expect to see more spaces that incorporate elements that look natural, feel, smell, and even sound like nature. These multi-sensory spaces can include elements like water features, natural materials like wood and stone, and plants that provide sensory experiences like texture and fragrance.



Photo courtesy Plant Solutions

Biophilic design advances a multi-sensory connection with nature at the ASU School of Design, Tempe, Arizona.

3. Vertical Gardens and Green Walls

Living walls and vertical gardens have been popular for some time now, and for good reason. These structures provide a visual connection to nature, enhance air quality, absorb noise, and even help regulate temperature. In 2024, we can expect to see more creative ways of incorporating plant walls into various spaces, such as office buildings, hotels, and even homes.



Photo courtesy Plant Solutions

The Leo Kent Hotel, Tucson, Arizona.

4. Biophilic Lighting

Just as natural lighting is vital for our mental and physical health, biophilic lighting is set to become one of the hottest trends in 2024. Designers and architects will focus on maximizing natural light in indoor spaces with large windows, skylights, and light wells. But it doesn't stop there. Mirrors and reflective surfaces will also be enlisted to help spread the glorious natural light around every corner. We will also see the use of circadian lighting that mimics natural sunlight and lighting fixtures that incorporate living plants. Biophilic lighting is proving to be a powerful tool in creating spaces that inspire and promote wellness.

(Continued on page 46)

Decarbonizing the U.S. Economy by 2050

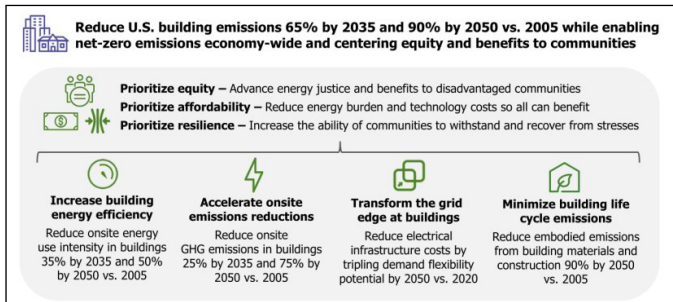
The U.S. Department of Energy's upcoming blueprint for decarbonizing U.S. buildings by 2050 lays out a national strategy for aggressively reducing building greenhouse gas (GHG) emissions. The vision includes action the federal government can take to meet specific targets for increasing building energy efficiency, accelerating onsite emissions reductions.

The decarbonization strategy reflects the central role that buildings play in achieving economy-wide climate goals while delivering cost savings, healthier environments, and high-quality jobs. Federal agency coordination and support for state and local actions is essential.

The building decarbonization blueprint was announced by U.S. Deputy Secretary of Energy David Turk at COP28 on December 5, 2023. The full blueprint is expected to publish in early 2024 and key takeaways from it are previewed below.

The building decarbonization blueprint targets aggressive but achievable reductions in U.S. building GHG emissions by 2050 to meet climate goals.

Federal leadership and targeted support for state, local, and tribal actions to decarbonize the built environment can reduce total U.S. building greenhouse gas emissions 65% by 2035 and 90% by 2050 relative to 2005 levels. The approach requires significantly increasing building energy efficiency, reducing onsite building emissions, transforming the grid edge at buildings, and reducing embodied emissions.



Achieving deep decarbonization of buildings is critical for reaching net-zero emissions economy-wide.

Buildings contribute nearly a third of total U.S. greenhouse gas emissions. Decarbonizing the building sector has additional broad benefits, including saving people money, improving the quality of homes and businesses, reducing the size of new power grid infrastructure, and enabling fast, secure, and interactive distributed energy resources like onsite solar panels, battery storage, and EV charging.

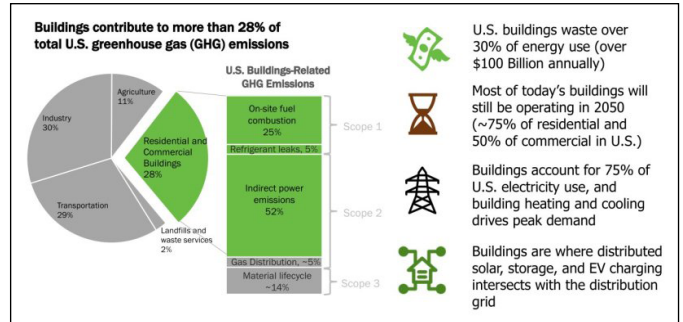
Meeting the goals set in the blueprint for building sector decarbonization will have far-reaching impacts.

The blueprint reduces building greenhouse gas emissions to within reach of net zero while also reducing building energy use by one third, unlocking billions of dollars in energy and health cost savings, and investing in new clean energy jobs.

Coordinated cross-agency implementation of R&D support, market development, direct funding and financing, and regulatory actions will maximize their impact in accelerating building decarbonization.

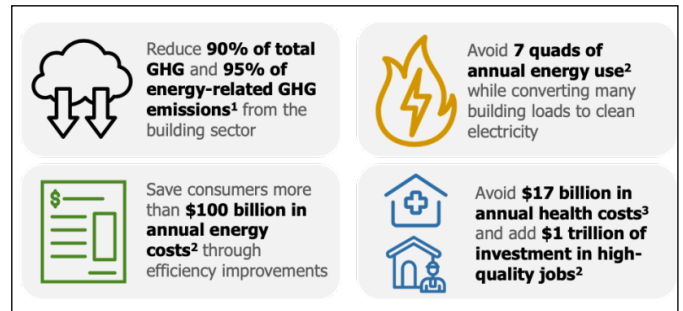
Low-carbon building technology RD&D establishes focal points for deployment programs that increase product availability and consumer awareness while reducing barriers to installation. In turn, this enables more aggressive codes and standards to lock-in cost-effective performance gains.

Federal actions to decarbonize the building sector will support and complement similar efforts at the state, local, and tribal levels.



Source, U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2021. Uses 100-year CO₂ equivalencies.

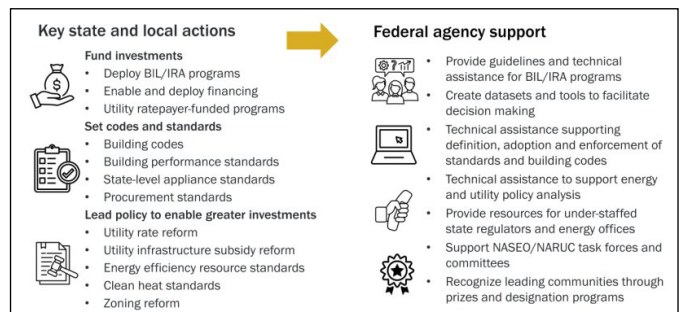
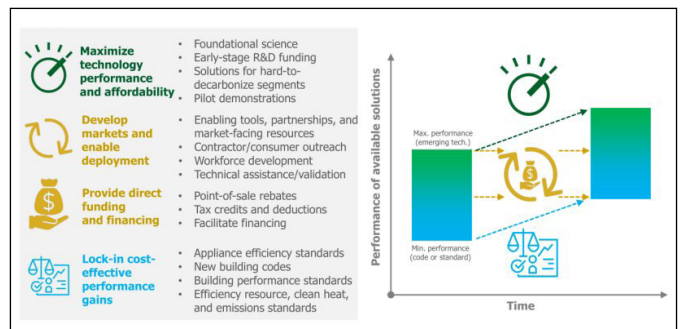
Federal agencies can support state, local, and tribal action by providing technical assistance, data sharing and decision tools, capacity building resources, peer information sharing, and recognition programs.



¹ Based on a 100% power sector for decarbonization consistent with the Biden-Harris Administration goal.

² Based on Langevin et al. "aggressive" decarbonization benchmark, which maps most closely to the targeted pathway.

³ Based on EPA COBRA assessment of avoided health costs from a 75% reduction in residential and commercial fossil combustion in the contiguous United States (range: \$10-\$23B).



Abbreviations: BIL = Bipartisan Infrastructure Law; IRA= Inflation Reduction Act; NASEO = National Association of State Energy Officials; NARUC = National Association of Regulatory Utility Commissioners.

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Washington County Courthouse Restoration

Nashville, Illinois

General Contractor & Cost Estimator

Korte & Luitjohan Contractors, Inc.

Korte & Luitjohan Contractors, Inc. proudly served as General Contractor for the Washington County Courthouse renovation.

Built in 1884, the courthouse underwent its first major renovation and addition in 1965. The latest renovation, featured here, aimed to preserve the historical architecture of the courthouse while upgrading to current standards and compliance. All three building levels plus sitework required significant demolition and renovation.

The building's interior underwent a major transformation, including the removal of walls, enlarging and updating of rooms, relocation of restrooms, new interior and exterior doors, new hardwood flooring, beaded tongue-and-groove wainscoting, crown molding, coffered drywall ceilings, and new doors and frames to maintain historical design and integrity.

Additionally, an interior brick wall was removed to make space for handicap accessible restrooms, and a noncompliant fire code staircase was demolished, relocated, and made compliant.

The prominent, curved wooden staircase was restored to its original beauty, and the new first floor terrazzo hallway incorporated an embedded water-cut logo featuring the original county seal.

The building also boasts new engineered slate tile and membrane roofs and gutters. A new emergency generator provides peace of mind and stands ready to back up the new electrical system, energy efficient lighting, and HVAC mechanical system. A new fire sprinkler system offers protection to the entire newly-renovated courthouse.

The sitework improvements include a new grand entrance on the south side of the courthouse, with handicap-accessible ramps, wider sidewalks around



The sitework improvements include a new grand entrance on the south side of the courthouse.



The building's interior underwent a major transformation, including new interior and exterior doors, beaded tongue-and-groove wainscoting, crown molding, coffered drywall ceilings to maintain historical design and integrity.

Product Information

Roofing: Versico Roofing Systems
Engineered Slate Tile: DaVinci Roofscapes
Flooring: American Olean
Terrazzo: Terroxy® Resin System
Wall Tile: Daltile, American Olean
Lighting: SPJ Lighting, Barron Lighting Group, Texas Fluorescents, Lumenton, Exitronix by Barron Lighting Group, Liton, Sunpark Electronics Corp., National Lighting, Camman Lighting

the building, new light poles, and a new brick monument sign on both the north and south sides of the building. Underground improvements include a new dedicated ductile-iron fire protection water line and a new 2-inch water line.

Korte & Luitjohan Contractors, Inc.,

located in Highland, Illinois, was honored to team with county officials to ensure that this major renovation preserved the integrity of the building's historical features while upgrading the building to current building standards, code compliance, and energy efficiencies.

General Contractor & Cost Estimator

Korte & Luitjohan Contractors, Inc.
12052 Highland Road, Highland, IL 62249
www.korteluitjohan.com

Project Team

Architect

Image Architects, Inc.
104 Airway Drive, #4, Marion, IL 62959
Eggemeyer Architects
3029 South Park Avenue, Herrin, IL 62948

Structural, Mechanical & Electrical Engineer

McDonough Whitlow, P.C.
9025 Illinois Route 127, Taylor Springs, IL 62089

Project General Description

Location: Nashville, Illinois

Date Bid: Dec. 2014

Construction Period: Mar 2015 to Mar 2016

Total Square Feet: 24,680 **Site:** 1.06 acres.

Number of Buildings: One.

Building Sizes: Basement, 5,363; first floor, 7,318; second floor, 5,978; attic, 6,021; total, 24,680 square feet.

Building Height: Basement, 8'10"; first floor, 16'10"; second floor, 17'; attic, 21'2"; total, 57'.

Basic Construction Type: Remodel/Restoration.

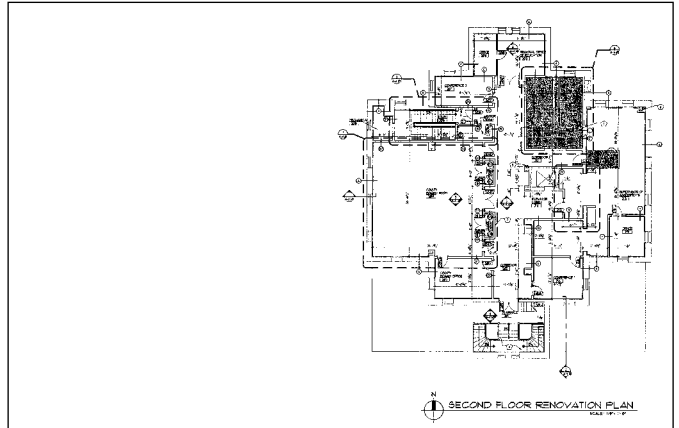
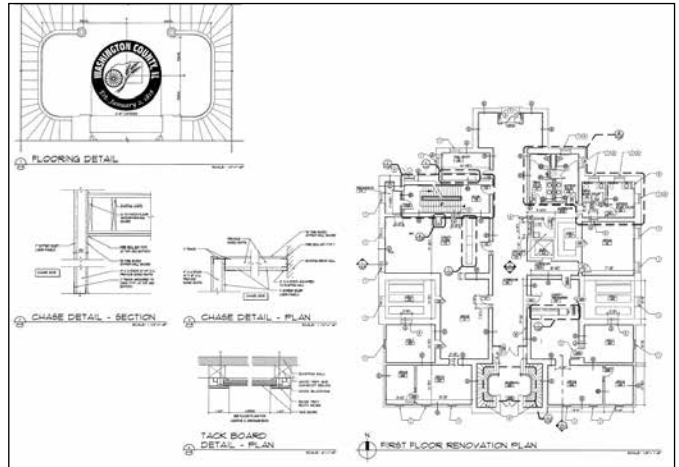
Foundation: Cast-in-place, pier & grade beam, reinforced concrete, slab-on-grade.

Exterior Walls: CMU, brick.

Roof: Membrane, engineered slate tile.

Floors: Concrete, wood.

Interior Walls: CMU, wood stud drywall, metal stud drywall.



DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	28,230	0.89	1.14	—
GENERAL REQUIREMENTS	312,690	9.86	12.67	—
CONCRETE	157,566	4.97	6.38	Forming & accessories, reinforcing, cast-in-place, grouting, mass (concrete breakdown: cubic yards footings & foundation, 22; cubic yards walls, 8; cubic yards deck & pans, 1; cubic yards sidewalks, 119).
MASONRY	73,671	2.32	2.99	Unit, stone assemblies, corrosion resistant, manufactured.
METALS	139,856	4.41	5.67	Structural metal framing, fabrications.
WOOD, PLASTICS & COMPOSITES	416,224	13.13	16.86	Rough carpentry, finish carpentry, architectural woodwork, structural composites.
THERMAL & MOISTURE PROTECTION	258,352	8.15	10.47	Thermal protection, roofing & siding panels, membrane roofing, roof & wall specialties & accessories, joint protection.
OPENINGS	291,439	9.19	11.81	Doors & frames, entrances, storefronts & curtain walls, windows, hardware.
FINISHES	325,384	10.26	13.18	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, acoustic treatment, painting & coating.
SPECIALTIES	69,182	2.18	2.80	Information, interior, safety, storage, exterior, other.
FURNISHINGS	3,638	.12	.15	Casework.
FIRE SUPPRESSION	91,100	2.87	3.69	Fire-extinguishing systems.
PLUMBING	65,680	2.08	2.66	Piping & pumps, equipment, fixtures.
HVAC	410,570	12.96	16.64	Piping & pumps, air distribution, air cleaning devices, central heating equipment, central cooling equipment, central HVAC equipment.
ELECTRICAL	526,292	16.61	21.33	Medium-voltage distribution, low-voltage transmission, electrical & cathodic protection, lighting, generator.
TOTAL BUILDING COSTS	3,169,874	100%	\$128.44	
EXISTING CONDITIONS	228,381			Demolition, structure moving.
EARTHWORK	13,820			Earth moving.
UTILITIES	48,927			Sanitary sewerage, storm drainage.
TOTAL PROJECT COST	3,461,002			

UPDATED ESTIMATE TO APRIL 2024 \$224.58 PER SQUARE FOOT

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.			CENTRAL U.S.			WESTERN U.S.		
Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost	
Atlanta, GA	\$179.66	\$4,434,116	Dallas, TX	\$179.66	\$4,434,116	Los Angeles, CA	\$256.66	\$6,334,452
Pittsburgh, PA	\$218.16	\$5,384,284	Kansas City, KS	\$222.44	\$5,489,858	Las Vegas, NV	\$245.97	\$6,070,516
New York, NY	\$295.16	\$7,284,619	Chicago, IL	\$254.52	\$6,281,665	Seattle, WA	\$245.97	\$6,070,516

For more information on this project and similar projects visit www.dcd.com

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Barton Marlow



Paul Peters
Vice President of
Preconstruction
MMC Contractors



Mel Barrett
Chief of Conceptual
Estimating
Helix Electric



Mark Alguard
President & Director of
Client Strategy
Momentum Builds



Darrell Torres
Senior Director of
Preconstruction
Skanska

www.advancing-preconstruction.com

South Prairie School District 70

Minot, North Dakota

Architect & Mechanical Engineer

EAPC Architects Engineers

South Prairie School District #70 was seeing a consistent increase in student numbers over recent years and those numbers nearly doubled over the last decade.

In December 2013, community voters passed a bond measure to transition from a K-8 school to grades K-12, which set a new precedent in the state of North Dakota.

Located just south of Minot, North Dakota, South Prairie School District #70 was paying tuition to send students to other high schools before the school board decided that it would be more cost effective to build a high school addition. Continued growth in student numbers is projected in the years to come.

The project required an addition to the existing building to support a new high school curriculum, along with athletic fields to facilitate an expanding athletic department.

A groundbreaking ceremony was held in May 2014 for the two-story addition with a spacious commons area linking the old to the new. The commons area is also adjacent to a new gymnasium that was included in the design due to the school's intention to compete at the varsity level in sports.

Precast concrete panels were used for a majority of the building shell to maintain a cohesive appearance between the existing school and the new addition, with the new gymnasium panels matching the existing gymnasium exterior.

Precast panels also helped to ensure a timely shell construction needed to meet the strict completion deadline before the start of the 2015 school year. Masonry and metal panel construction was used in a few strategic areas to accommodate future building growth. The interior walls consist of masonry load bearing and metal studs.

The array of spaces in the project includes an administrative suite and teacher work room, library, weight room, athletic support spaces, and core curriculum classrooms.

More specialized classrooms in the addition include family and consumer science, business and ITV, special education, vocational agriculture, and a science lab.

The addition and renovation design consisted of a base bid plan, with four design alternates for the district to consider if costs came in low during bidding. The alternates were:

1. four additional classrooms on the north end of the high school addition,
2. a vocational agriculture lab,



Precast concrete panels were used for a majority of the building shell to maintain a cohesive appearance between the existing school and the new addition.



A spacious commons area links the old to the new.

3. two new kindergarten/pre-K classrooms, or
4. four new kindergarten/pre-K classrooms.

The alternates were not constructed as part of the final project. However, they will

help the school to plan where their future growth will be focused. These alternates remain a part of the master plan that EAPC Architects Engineers designed for South Prairie School as the student enrollment increases.

Product Information

Building Envelope: DiversiFoam Products, Firestone

Roofing: New Millennium, DiversiFoam, Firestone

Windows, Entrances & Storefronts: Fargo Glass & Paint Co., Oldcastle BuildingEnvelope®

Interior: MarinoWARE® ViperStud®, Armstrong, Knauf Insulation, USG, ROCKFON Ceiling Suspension System, Sherwin Williams

Flooring: Robbins Sports Flooring, Mannington, Patcraft, Tandus, van Gelder Commercial

Flooring: Armstrong, Olympia

Lighting: Philips, Prudential

Elevator: Otis

Architect & Mechanical Engineer

EAPC Architects Engineers
 112 N. Roberts Street, #300, Fargo, ND 58102
www.eapc.net

Project Team

Structural Engineer

EAPC Architects Engineers
 3100 DeMers Avenue, Grand Forks, ND 58201

Electrical Engineer

Vareberg Engineering, Ltd.
 1331 32nd Avenue, S., Fargo, ND 58103

Construction Manager at Risk & Cost Estimator

Graham Construction Services, Inc.
 2819 S. Broadway Street, #B, Minot, ND 58701

Civil Engineer

EAPC Architects Engineers
 300 3rd Avenue, S.W. #A
 Minot, ND 58701

Project General Description

Location: Minot, North Dakota

Date Bid: Apr 2014

Construction Period: May 2014 to Aug 2015

Total Square Feet: 49,204 **Site:** 36 acres.

Number of Buildings: One; 13 classrooms, gymnasium seating for 1,024.

Building Sizes: Subterranean, 389; first floor, 32,448; second floor, 16,367; total, 49,204 square feet.

Building Height: Subterranean (fire tank room), 7'8"; first floor, varies 9' to 29'6"; second floor, varies 9' to 17'8"; total, 35'.

Basic Construction Type: Addition/Renovation/II B.

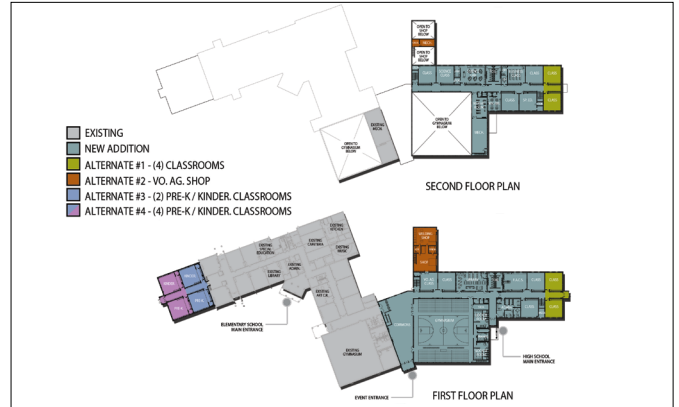
Foundation: Cast-in-place, reinforced concrete, slab-on-grade.

Exterior Walls: CMU, brick, curtain wall, precast.

Roof: Membrane, metal.

Floors: Concrete, precast.

Interior Walls: CMU, metal stud drywall.



DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	883,300	8.28	17.95	—
GENERAL REQUIREMENTS	1,542,398	14.47	31.35	—
CONCRETE	1,854,100	17.39	37.68	Forming & accessories, reinforcing, cast-in-place, precast, grouting (concrete breakdown: cubic yards foundation, 567; cubic yards floors, 406). Unit.
MASONRY	557,200	5.23	11.32	Structural metal framing, joists, decking, cold-formed metal framing, fabrications, decorative.
METALS	594,240	5.57	12.08	Rough carpentry, finish carpentry, architectural woodwork.
WOOD, PLASTICS & COMPOSITES	416,926	3.91	8.47	Dampproofing & waterproofing, thermal protection, weather barriers, roofing & siding panels, membrane roofing, flashing & sheet metal, roof & wall specialties & accessories, fire & smoke protection, joint protection.
THERMAL & MOISTURE PROTECTION	520,630	4.88	10.58	Doors & frames, entrances, storefronts & curtain walls, windows, hardware, glazing, louvers & vents.
OPENINGS	299,064	2.80	6.08	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, painting & coating.
FINISHES	666,466	6.25	13.54	Toilet compartments & accessories, metal lockers, fire extinguishers & cabinets, signage, display cases.
SPECIALTIES	189,652	1.78	3.85	Commercial, educational & scientific, athletic & recreational.
EQUIPMENT	140,675	1.32	2.86	Casework, multiple seating.
FURNISHINGS	81,759	0.77	1.66	Elevator (1 passenger).
CONVEYING SYSTEMS	60,000	0.56	1.22	Water-based fire-suppression systems, fire pumps, fire-suppression water storage.
FIRE SUPPRESSION	103,970	0.98	2.11	Piping & pumps, equipment, fixtures, gas & vacuum systems for laboratory & healthcare.
PLUMBING	376,000	3.53	7.64	Piping & pumps, air distribution, air cleaning devices, central heating equipment, central cooling equipment, central HVAC equipment, hydronic piping & equipment.
HVAC	1,504,180	14.11	30.56	Low-voltage transmission, facility electrical power generating & storing equipment, electrical & cathodic protection, lighting.
ELECTRICAL	871,900	8.17	17.71	Site clearing, earth moving.
TOTAL BUILDING COSTS	10,662,460	100%	\$216.70	Bases, bollards & paving, sidewalks.
EARTHWORK	503,830			Water, sanitary sewerage, storm drainage.
EXTERIOR IMPROVEMENTS	18,490			
UTILITIES	665,290			
TOTAL PROJECT COST	11,850,070			

UPDATED ESTIMATE TO APRIL 2024: \$387.21 PER SQUARE FOOT

Regional Cost Trends

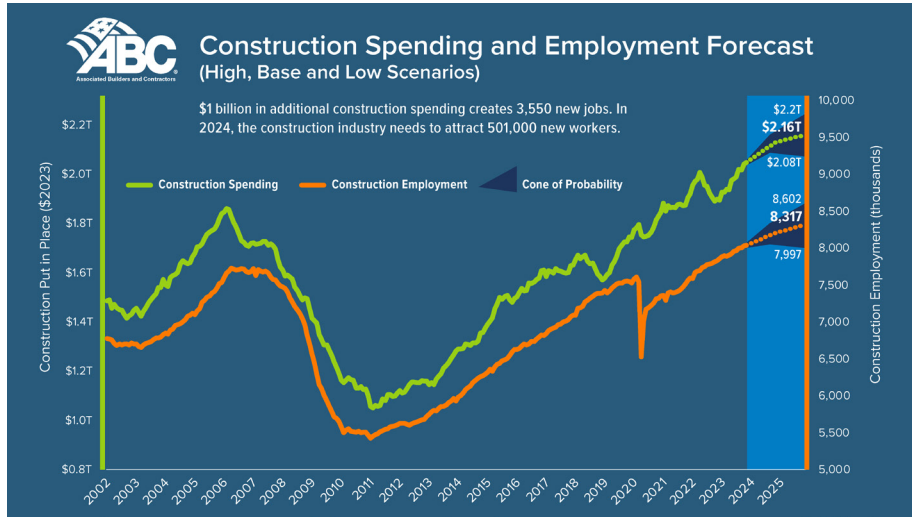
This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.			CENTRAL U.S.			WESTERN U.S.		
Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost	
Atlanta, GA	\$357.42	\$17,586,687	Dallas, TX	\$357.42	\$17,586,687	Los Angeles, CA	\$510.61	\$25,123,839
Pittsburgh, PA	\$434.01	\$21,355,263	Kansas City, KS	\$442.52	\$21,773,993	Las Vegas, NV	\$489.33	\$24,077,012
New York, NY	\$587.20	\$28,892,414	Chicago, IL	\$506.35	\$24,914,473	Seattle, WA	\$489.33	\$24,077,012

For more information on this project and similar projects visit www.dcd.com

2024 Construction Workforce Shortage Tops Half a Million

The construction industry will need to attract an estimated 501,000 additional workers on top of the normal pace of hiring in 2024 to meet the demand for labor, according to a proprietary model developed by Associated Builders and Contractors. In 2025, the industry will need to bring in nearly 454,000 new workers on top of normal hiring to meet industry demand, and that's presuming that construction spending growth slows significantly next year.



“ABC estimates that the U.S. construction industry needs to attract about a half million new workers in 2024 to balance supply and demand,” said Michael Bellaman, ABC president and CEO. “Not addressing the shortage through an all-of-the-above approach to workforce development will slow improvements to our shared built environment, worker productivity, living standards, and the places where we heal, learn, play, work, and gather.”

ABC’s model uses the historical relationship between inflation-adjusted construction spending growth, sourced from the U.S. Census Bureau’s Value of Construction Put in Place Survey, and payroll construction employment, sourced from the U.S. Bureau of Labor Statistics, to convert anticipated increases in construction outlays into demand for construction labor at a rate of approximately 3,550 jobs per billion dollars of additional spending. This increased demand is added to the current level of above-average job openings. Projected industry retirements, shifts to other industries and other forms of anticipated separation are also embodied within the computations.

Based on historical Census Bureau Job-to-Job Flows data, an estimated 1.9 million construction workers will leave their jobs to work in other industries in 2024. This should be offset by an anticipated 2.1 million workers who will leave other industries to work in construction. These frictional interindustry transfers are estimated exogenously and serve as inputs to the model.

The U.S. construction industry unemployment rate averaged 4.6% for the second straight year, matching the second lowest level on record, while job openings remained historically elevated at an average of 377,000 per month through the first 11 months of 2023. As a result of labor shortages, contractors laid off workers at a slower rate than in any year between the start of the data series in 2000 and 2020.

“Broadly, there are two factors shaping the interaction between construction worker supply and demand,” explained ABC Chief Economist Anirban Basu. “There are structural factors, including outsized retirement levels, megaprojects in several private and public construction segments, and cultural factors that encourage too few young people to enter the skilled construction trades. There are also structural factors, including those related to interest rates, consumer sentiment and general economic performance.”

“Over the past two years, cyclical influences have helped diminish the gap between construction worker supply and demand,” added Basu. “Though nonresidential construction spending has continued to surge, homebuilding segments have felt the impact of higher borrowing costs more intensely. With interest rates set to decline in 2024 and 2025, the expectation is that construction worker shortfalls will remain elevated. Among other things, that would delay the rebuilding of American infrastructure and the creation of new domestic supply chains. It would also tend to drive up the cost of construction service delivery, impacting American enterprise and taxpayers alike.”

“Meanwhile, structural influences persist,” said Basu. “More than 1 in 5 construction workers are 55 or older, meaning that retirement will continue

to contract the industry’s workforce. These are the most experienced workers, and their departures are especially concerning.”

“While construction employment is growing, it is not growing fast enough to meet the demand to complete the work on the books for 2024,” said Bellaman. “To address this shortage and grow the construction talent pool, ABC has a network of more than 800 apprenticeship, craft, health and safety, and management education programs — including more than 450 government-registered apprenticeship programs across 20 different occupations. ABC chapters also have 323 entry point programs in place nationally to welcome all to begin a career in construction. To address workforce demand that drives the U.S. economy, Congress must also look toward much-needed reforms to our legal immigration system and provide high-demand industries, like construction, with access to new or expanded visa programs.”

“Exclusionary policies and programs that do not welcome all to compete to build our public works projects, such as project labor agreement mandates, will further exacerbate this shortage and undermine significant investments made by taxpayers in infrastructure, clean energy and manufacturing projects,” said Bellaman. “Taxpayers and workers are best served by inclusive, win-win policies that create a level playing field for all contractors to compete to build public works projects.”

View the [methodology of ABC’s 2024 construction workforce shortage model](#).

About ABC: Associated Builders and Contractors is a national construction industry trade association representing more than 23,000 members. Founded on the merit shop philosophy, ABC and its 68 chapters help members develop people, win work, and deliver that work safely, ethically, and profitably for the betterment of the communities in which ABC and its members work. For more information, visit www.abc.org.

St. Pius X High School New Science Building

Houston, Texas

Architect

Turner Duran Architects, LP



Photos Courtesy of Geoffrey Lyon

The modern design, clad in stone and brick, embraces the school's mission by providing a framework for study and reflection.

Set in an urban background and serving a diverse population, the third phase in the development of a campus master plan for St. Pius X High School called for the addition of a structure that would strengthen the curricular "STEM" offering at this Catholic secondary school.

Standing as a benchmark for future campus development, the client challenged the architect to create a unique state-of-the-art learning environment for teaching the sciences that would attract high-caliber students and educators into a singular building that respects the existing campus aesthetic.

The new two-story complex embraces the school's mission of prayer, study, community, and preaching by providing a framework for both collaborative and individual academic study and reflection.

Anchoring the east end of the campus, the building incorporates labs, classrooms, a media center/library, and offices. The modern design, clad in stone and brick, anticipates trends in science lab design, featuring flexible and adaptable spaces that can evolve to meet future needs, all within a highly efficient building envelope and supporting systems infrastructure.

Providing much-needed classroom



The building incorporates labs, classrooms, a media center/library, and offices.



The new two-story complex provides a unique state-of-the-art learning environment for teaching the sciences.

space, the new sciences and media building sets the stage for future growth. This new outdoor learning space will serve the larger campus community through the enhancement of integrated sciences.

The design professionals provided a modern, healthy learning environment by creating education spaces that take advantage of natural daylight, and, at the same time, promote collaboration and increased interaction.

Classroom layouts and neutral interior colors focus the eye to the outside, making the campus exterior a prominent “live picture” to the observer. The building façades respond to their solar orientations, with deep louver shaded windows on the east and west, and more extensive glazing on the north. A distinctive composition of angled projections highlights the shared social spaces and stairways on the north and south elevations.

By linking the project to adjacent buildings via covered walkways, service access to all buildings was improved, while facilitating secure student, faculty, and staff movement.

As the design of science lab buildings undergoes continual evolution, the designers learned through research and experience what works and why, responding to the emerging technologies and variations found in an academic culture.

Throughout the course of the project, the design team continually refined the concepts, meeting with the owner on a regular basis to review progress. In order to address constructability issues and value engineering opportunities, they collaborated with general contractors and product representatives.

Ultimately, the project was bid competitively to a select list of general contractors. After a thorough review of the bids and qualifications, the owner negotiated with the selected general contractor for management and construction of the project.



A distinctive composition of angled projections highlights the shared social spaces and stairways on the north and south elevations.



By linking the project to adjacent buildings via covered walkways, service access to all buildings was improved.



Classroom layouts and neutral interior colors focus the eye to the outside, making the campus exterior a prominent “live picture” to the observer.

Product Information

Building Envelope: Carolina Ceramics, Arriscraft
Roofing: Berridge, Carlisle
Aluminum Composite Materials: ALPOLIC®
Windows, Entrances, Storefronts & Curtain Wall: Kawneer
Interior: Panelfold, Mechosystems, Viva Railings, Art Metal Products
Flooring: Forbo, Daltile, Laticrete, Tandus, American Biltrite
Skylights: Wasco
Lighting: Corelite, Portfolio, Nulite, Luminus, Ligman, Delray
Elevator: Kone

Architect

Turner Duran Architects, LP
 333 Cypress Run, #350, Houston, TX 77094
www.turnerduran.com

Project Team

Structural Engineer

CJG Engineers
 3200 Wilcrest Drive, #305, Houston, TX 77042

Mechanical & Electrical Engineer

Holste Associates
 6671 Southwest Freeway, #850, Houston, TX 77074

General Contractor

Stewart Builders
 16575 Village Drive, Jersey Village, TX 77040

Project General Description

Location: Houston, Texas

Date Bid: May 2015

Construction Period: Sep 2015 to Sep 2016

Total Square Feet: 25,662 **Site:** 24.725 acres.

Number of Buildings: One; 7 classrooms, 212 seating capacity.

Building Sizes: First floor, 13,571; second floor, 12,091; total, 25,662 square feet.

Building Height: First floor, 15'4"; second floor, 14'6"; total, 45'.

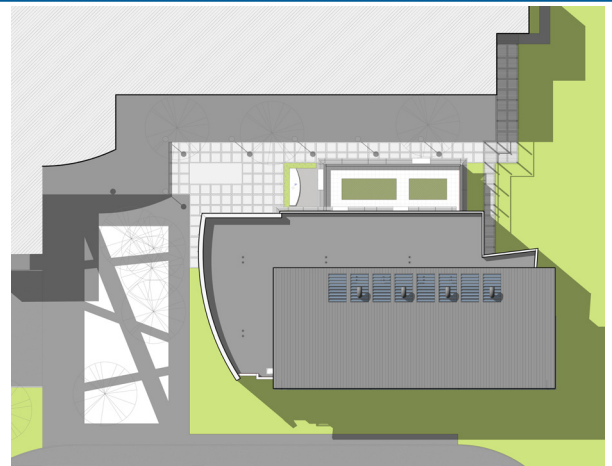
Basic Construction Type: New/II B.

Foundation: Cast-in-place, pier & grade beam, reinforced concrete, slab-on-grade.

Exterior Walls: Brick, curtain wall, aluminum composite material, cast stone.

Roof: Membrane, metal. **Floors:** Concrete, metal decks.

Interior Walls: Metal stud drywall.



DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
GENERAL REQUIREMENTS	308,400	4.41	12.02	— Forming & accessories, reinforcing, cast-in-place, cast decks & underlayment (concrete breakdown: cubic yards foundation, 350 ; cubic yards floors, 200). Unit, manufactured. Structural metal framing, joists, decking, cold-formed metal framing fabrications. Rough carpentry, architectural woodwork, plastic fabrications. Dampproofing & waterproofing, thermal protection, roofing & siding panels, membrane roofing, flashing & sheet metal, joint protection. Doors & frames, entrances, storefronts & curtain walls, windows, skylights, hardware, glazing. Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, acoustic treatment, painting & coating. Knox box, marker boards, toilet partitions, toilet accessories, fire extinguishers, projection screens, lockers, walkway covers. Casework, shades. Elevator (1 passenger). Water-based fire-suppression systems. Piping & pumps, equipment, fixtures, gas & vacuum systems for laboratory & healthcare. Piping & pumps, air distribution, decentralized HVAC equipment. Medium-voltage distribution, lighting. Fire alarm. Demolition & structure moving. Site clearing, earth moving, earthwork methods. Bases, bollards & paving, site. Water, sanitary sewerage, storm drainage, communications.
CONCRETE	177,300	2.54	6.91	
MASONRY	509,100	7.28	19.84	
METALS	886,600	12.69	34.55	
WOOD, PLASTICS & COMPOSITES	115,900	1.66	4.52	
THERMAL & MOISTURE PROTECTION	627,900	8.98	24.47	
OPENINGS	576,500	8.25	22.47	
FINISHES	800,600	11.45	31.20	
SPECIALTIES	146,100	2.09	5.69	
FURNISHINGS	336,900	4.82	13.13	
CONVEYING SYSTEMS	74,900	1.07	2.92	
FIRE SUPPRESSION	65,000	0.93	2.53	
PLUMBING	660,300	9.45	25.73	
HVAC	975,900	13.96	38.03	
ELECTRICAL	677,900	9.70	26.41	
ELECTRONIC SAFETY & SECURITY	49,900	0.72	1.94	
TOTAL BUILDING COSTS	6,989,200	100%	\$272.36	
EXISTING CONDITIONS	24,900			
EARTHWORK	238,700			
EXTERIOR IMPROVEMENTS	85,000			
UTILITIES	84,000			
TOTAL PROJECT COST	7,421,800			

UPDATED ESTIMATE TO APRIL 2024: \$468.91 PER SQUARE FOOT

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta, GA	\$458.01	\$11,753,387	Dallas, TX	\$458.01	\$11,753,387	Los Angeles, CA	\$654.30	\$16,790,552
Pittsburgh, PA	\$556.15	\$14,271,969	Kansas City, KS	\$567.06	\$14,551,812	Las Vegas, NV	\$627.03	\$16,090,946
New York, NY	\$752.44	\$19,309,135	Chicago, IL	\$648.84	\$16,650,631	Seattle, WA	\$627.03	\$16,090,946

For more information on this project and similar projects visit www.dcd.com

Remodeling With Universal Design in Mind

“In Northern California, where I live, starter homes are \$900,000, which is really tough for young families,” said Serventi. Families are solving that problem through multigenerational living. “We see retired Baby Boomers living with their kids and grandkids under one roof,” said Serventi. “The kids will say, ‘We have my parents living with us, so we want the bathroom to be safe for them.’”

Some Basic Ideas to Remember When Designing an Accessible Home

Wide Open Spaces: Make it easier for people with wheelchairs, canes, walkers and strollers to move around the house by widening doorways and aisles.

Lighting: Putting lighting on dimmers gives the occupants control over light levels. Everyone has a different sensitivity to light, and studies show our productivity increases when we can control our own lighting.

Room Transitions: Transition from hard flooring to carpet to let people know they’re moving between rooms. Use carpet in bedrooms with at least a quarter-inch pad beneath — if someone falls, there’s less of an impact. Speaking of carpeting, area rugs can be unsafe with a walker, cane or wheelchair. Instead, use wall-to-wall carpet or stick-down carpet squares.

Bathroom Safety: Create a bathroom the whole family will love using. Instead of using a standard vanity, install a wall-mounted (floating) vanity with room for a stepstool or wheelchair underneath.

Barrier-free showers are good options for users of wheelchairs, canes, and walkers. And everyone loves a big tub, so build one in with a tub deck and surround. Design it without steps at comfort-toilet-seat height (17-19 inches), and it’s easy to climb into or transfer from a wheelchair.

Add extra framing or plywood in the walls around tubs, showers and toilets. This allows the flexibility to install grab bars now or in the future.

Kitchen Features: One of the biggest universal design features in the kitchen is not a hands-free faucet or under-cabinet appliance (though those are great). It’s an induction range. “Induction ranges only heat up and cook when there’s a pan on the surface,” said Serventi. “So, you can turn on the cooktop, but until you put on a pot, you don’t have a hot surface. It’s a nice safety feature.”

Try the one-finger test: If you can’t open a door or drawer by using just one finger, change to handles or levers. If that still doesn’t work, look for tap-open options that let you bump into the cabinet and the door or drawer pops open.



A universally designed kitchen supports sustainability.



Artist’s rendering of a duplex project whose site plan approval hinged, in part, on accessibility.

A standard countertop is 36 inches. A lowered countertop is typically 30 inches. Integrate those two heights throughout the kitchen — a main sink at 36 inches and a prep sink at 30, for example — and this lets everyone participate in cooking or working.

For families with a wheelchair user, lower the cooktops and appliances to make them accessible. Put a microwave/convection oven in a base cabinet and install dishwasher drawers. Speaking of drawers, install refrigerator or freezer drawers in a bar. They’re great for kids, too.

The Seven Principles of Universal Design and Why They are Important

1. **Equitable Use:** The design does not disadvantage or stigmatize any group of users and is marketable to people with diverse abilities.
2. **Flexibility in Use:** The design accommodates a wide range of individual preferences (i.e. left or right-handed) and abilities, and provides choice in methods of use.
3. **Simple and Intuitive Use:** Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level; eliminates unnecessary complexity.
4. **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities; uses pictures, audible, or tactical methods.
5. **Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintended fatigue; elements most used should be most accessible or have fail-safe features included.
6. **Low Physical Effort:** The design can be used efficiently and comfortably and with a minimum level of fatigue.
7. **Appropriate Size and Space:** The appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user’s body size, posture, or mobility.

If multiple generations are living under one roof, consider applying these principles when renovating any room in the home, from the kitchen to the bathroom.

Remodels should last through the ages and function well for many types of people. It should accommodate the homeowner’s need and also appeal to future buyers. Universal design can be used to attain these important goals.

About Teass | Warren: Teass | Warren Architects is a Washington, DC-based architecture and interior design practice which focuses on empathetic, well-detailed buildings that enhance and complement the built environment. The studio approaches a wide variety of project types, including single-family, multi-family, mixed use, commercial, and institutional buildings with a rigorous design process that incorporates program, site, organization, wellness, sustainability, and form. The firm is a DC Certified Business Enterprise. To learn more about Teass | Warren Architects, visit www.teass-warren.com.

Doug Justus Auto Center

Alcoa, Tennessee

Architect

Studio Four Design, Inc.

Doug Justus Auto Center, Inc., a Knoxville-based automotive dealership with a focus on providing quality pre-owned vehicles at a fair price, has officially completed an all-new 4,680-square-foot automotive center.

Doug Justus Auto Center specializes in Japanese imports and Volvos. Built on the belief that purchasing pre-owned vehicles should be simple, Doug Justus Auto Center employs non-commissioned sales staff to ensure the customer experience is pleasant and without pressure. With more than 200 vehicles in stock, the auto center offers a large selection to match customer needs with the appropriately priced and equipped automobile.

In partnership with Jenkins & Stiles, LLC, one of Knoxville's top leading full-service construction companies, and Studio Four Design, a top architecture and design firm, the new automotive dealership center is now open to the public.

The automotive facility began construction in August 2015. It is conveniently located on Alcoa Highway at 872 Mimosa Heights Dr., in Alcoa, Tennessee.

The modern layout and design elements were created with a focus on the automotive customer. The new facility differs from traditional pre-owned automotive dealers by providing a contemporary interior and exterior design – similar to the approach embraced by new auto dealerships.

The center provides a state-of-the-art showroom, a comfortable and inviting lounge space for customers that offers stations for web browsing the auto inventory, and brand new staff offices.

"The process of collaborating with Studio Four Design and Jenkins & Stiles on the building design and construction was flawless," said Doug Justus, President & CEO of Doug Justus Auto Center. "Their commitment and dedication to our project demonstrates why they are so reputable in their industries."

"We had two clear messages for Doug – attract customers and reflect the Doug Justus brand," said Stacy Cox, President of Studio Four Design. "Adapting this vision to trends in the automotive industry helped us to better translate the design to Doug's target audience."

Cox went on to state that, "Modern, simple designs resonate with customers at automotive centers, so we incorporated that style into the floor plan design and interior space. We truly worked as partners to bring to life the vision Doug had for the new space."

Studio Four Design and Jenkins &



The illuminated red letters against the bright yellow custom canopy at the front of the building fit the sleek design of the space, and reflect the Doug Justus brand.



The center provides a state-of-the-art showroom, a comfortable and inviting lounge space for customers, and brand new staff offices.

Stiles delivered a space with intuitive design that is furnished in a modern and functional fashion. The illuminated red letters against the bright yellow custom canopy at the front of the building fit the sleek design of the space, and reflect the established Doug Justus brand.

In addition to its eye-catching exterior, the automotive center features an ultra-modern interior that makes use of natural light and contemporary design.

"We stand by our primary value – that the customer comes first," said Bart Jenkins, President of Jenkins & Stiles, LLC. "Working collaboratively with Doug and the Studio Four team in this partnership

helped us construct a building that not only met Doug's expectations for design and quality, but was also delivered within his requirements for budget and schedule."

Product Information

Pre-Engineered Building: Nucor Building Systems

Windows, Entrances & Storefronts: Trulite Glass & Aluminum

Interior: Sherwin Williams, Armstrong, Wilsonart, Pionite, Octopus Products

Flooring: Mohawk Carpet Tile, Johnsonite Rubber Base

Lighting: Eaton, SESCO

Architect

Studio Four Design, Inc.
414 Clinch Avenue, Knoxville, TN 37902
www.studiofourdesign.com

Project Team

Structural Engineer

Prosim Engineering, LLC
2102 Forest Drive, #2, Gray, TN 37615

Mechanical & Electrical Engineer

West, Welch, Reed Engineers, Inc.
5417 Ball Camp Pike, Knoxville, TN 37921

Civil Engineer

Sterling Engineering, Inc.
1020 William Blount Drive, Maryville, TN 37801

General Contractor & Cost Estimator

Jenkins & Stiles, LLC
10617 Deerbrook Drive, Knoxville, TN 37922

Project General Description

Location: Alcoa, Tennessee

Date Bid: Jul 2015

Construction Period: Aug 2015 to Jan 2016

Total Square Feet: 4,680

Site: 8.767 acres.

Number of Buildings: One; pre-engineered building.

Building Sizes: First floor, 4,680; total, 4,680 square feet.

Building Height: First floor, 23'; total, 23'.

Basic Construction Type: New/II B.

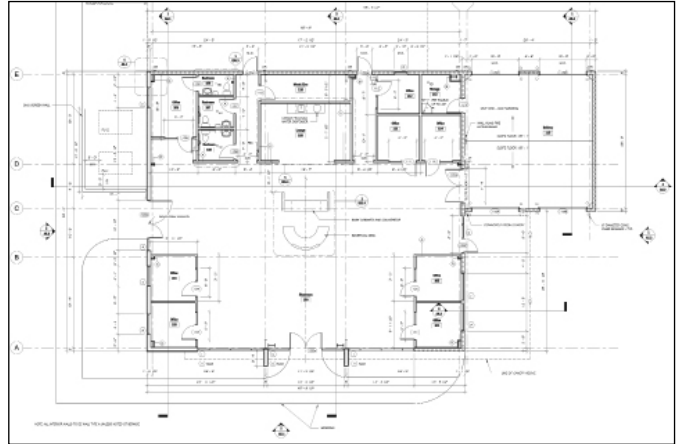
Foundation: Slab-on-grade.

Exterior Walls: CMU, brick.

Roof: Raised seam metal.

Floors: Concrete.

Interior Walls: Metal stud drywall.



Studio Four Design delivered a space with intuitive design that is furnished in a modern and functional fashion.

DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
GENERAL REQUIREMENTS	125,073	16.91	26.73	—
CONCRETE	173,996	23.52	37.18	Forming & accessories, reinforcing, cast-in-place.
MASONRY	13,000	1.76	2.78	Manufactured.
METALS	14,257	1.93	3.05	Structural metal framing, joists, decking, fabrications, decorative.
WOOD, PLASTICS & COMPOSITES	8,345	1.13	1.78	Architectural woodwork.
THERMAL & MOISTURE PROTECTION	39,842	5.39	8.51	Membrane roofing, flashing & sheet metal, joint sealer, caulking, EIFS, insulation.
OPENINGS	52,811	7.14	11.28	Doors & frames, specialty doors, windows, hardware, glazing, storefront.
FINISHES	72,821	9.84	15.56	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, acoustic treatment, painting & coating.
SPECIALTIES	37,556	5.08	8.02	Signage, toilet & bath accessories, fire extinguishers.
SPECIAL CONSTRUCTION	60,183	8.14	12.86	Metal building.
PLUMBING	35,796	4.83	7.65	Piping & pumps, equipment, fixtures.
HVAC	47,350	6.40	10.12	Piping & pumps, air distribution, central HVAC equipment.
ELECTRICAL	58,697	7.93	12.54	Lighting, data, voice.
TOTAL BUILDING COSTS	739,727	100%	\$158.06	
EXTERIOR IMPROVEMENTS	37,207			Asphalt paving & striping, curbs, landscaping, irrigation.
TOTAL PROJECT COST	776,934			
UPDATED ESTIMATE TO APRIL 2024: \$270.57 PER SQUARE FOOT				

Regional Cost Trends								
<i>This project, updated to April 2024 in the selected cities of the United States.</i>								
EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta, GA	\$264.28	\$1,236,840	Dallas, TX	\$264.28	\$1,236,840	Los Angeles, CA	\$377.55	\$1,766,914
Pittsburgh, PA	\$320.91	\$1,501,877	Kansas City, KS	\$327.21	\$1,531,326	Las Vegas, NV	\$361.81	\$1,693,293
New York, NY	\$434.81	\$2,031,951	Chicago, IL	\$374.40	\$1,752,190	Seattle, WA	\$361.81	\$1,693,293

For more information on this project and similar projects visit www.dcd.com



Gramercy Senior Housing was built on the site of a block-length lot that was once owned by the city of Los Angeles, and served as a towing yard.

Gramercy Senior Housing

The award-winning design for aging of Gramercy Senior Housing in Los Angeles delivers 64 apartments to low-income residents in an expensive market, offering both privacy and engagement, with connections to the outdoors woven throughout.

Built on the site of a block-length lot that was once owned by the city of Los Angeles and served as a towing yard, Gramercy Senior Housing is one of the first developments in the city to capitalize on supportive housing funds. The project, guided by extensive public outreach, delivers 64 sorely needed apartments to low-income and homeless seniors in one of the country's most expensive housing markets.

Across 70,000 square feet, Gramercy Senior Housing accommodates residents who make less than 50% of the area's median income, and includes a commercial cafe, ample community spaces, and a public plaza on the entry level. The team's design emerged as six discrete buildings that reflect the scale of the single-family homes that surround it. With bustling Washington Boulevard to the south and a swath of Craftsman homes to the north, the complex appears as an array of structures connected by an exterior walkway system finished with an organic trellis which contrasts with mirror steel hoods that protect windows from southern exposure.

Along the boulevard, the buildings' massing is taller to shield those on the other side, granting residents an extra measure of privacy and maximizing the light available to the surrounding parcels. The project was optimized for modular construction, and its highly efficient floor plans draw in natural light and ventilation from either end. Courtyard spaces just outside the apartments function as shared living rooms, while an edible garden on the roof provides additional community space.

The project offers residents a sense of place that is particular to the site, differentiating it from typical affordable

housing projects in Southern California. The team's focus on establishing connections to the outdoors across multiple levels ensures that residents can engage with their surroundings and neighbors without feeling crowded. Instead of relegating outdoor space to an unused corner of the roof only accessible by elevator or interior stairs, the team has woven connections to the outdoors through all levels to reach users regardless of their age or mobility.

“This is an original approach to housing, rethinking circulation patterns in apartment buildings and how a multi-unit building design can enhance community life. The team utilized funds judiciously and accomplished a lot with a very reasonable budget, and clearly sought to rethink the scale of housing to create more of an experience. This building reads like a community.”

~Jury Comment~

In addition to bolstering affordable housing in a city facing high levels of homelessness, the project also activates Washington Boulevard, originally built as Los Angeles' first avenue to the sea. It was once a thriving commercial corridor but has more recently been marked by a mix of small businesses and shuttered storefronts. Prior to construction, the brownfield site was leased to a towing company, which stored its fleet there. The complex's plaza has helped inject life into the once-abandoned block.

Project Highlights: Gramercy Senior Housing

- Architect: Kevin Daly Architects
- Owner: Hollywood Community Housing Corporation
- Location: Los Angeles
- Category: Merit



The view facing bustling Washington Boulevard.

Framework for Design Excellence Measures

Design for Integration – Was there a design charrette? Yes
 Design for Ecosystems – Site area that supports vegetation post-development: 35%. Site area covered by native plants supporting native or migratory species and pollinators: 35%. Strategies used to promote Design for Ecosystems: Biodiversity, Abatement of specific regional environmental concerns.

Design for Water – Is potable water used for irrigation? Yes. Is potable water used for cooling? Yes. Is grey/blackwater reused on-site? No. Is rainwater collected on-site? Yes. Stormwater managed on-site: 100%.

Design for Energy – 2030 Commitment baseline EUI: 90 kBtu/sf/yr. Predicted net EUI including on-site renewables: 40 kBtu/sf/yr. Reduction from the benchmark: 55%. Is the project all-electric? No



One of the community spaces.



An edible garden on the roof provides additional community space.



Courtyard areas just outside the apartments function as shared living rooms.

Design for Well-Being – Level of air filters installed: MERV 12-14. Was a “chemicals of concern” list used to inform material selection? Yes. Do greater than 90% of occupied spaces have a direct view to the outdoors? Yes.

Design for Resources – Were embodied carbon emissions estimated for this project? No.

Design for Change – Estimated service life: 50 years. Ability to survive without utility power: Not habitable without power.

Design for Discovery – Has a post-occupancy evaluation been conducted? Yes.

About AIA: The American Institute of Architects (AIA) is a professional organization for architects in the United States. It is headquartered in Washington, D.C. AIA offers education, government advocacy, community redevelopment, and public outreach programs, and collaborates with other stakeholders in the design and construction industries.

About the Design for Aging Review Award: The Design for Aging Review award recognizes architects who demonstrate innovative design solutions to improve the quality of life for older adults within specific project constraints. This article was reprinted with permission from The American Institute of Architects (AIA), www.aia.org.

Texas Home Renovation

Dallas, Texas

Designer

Ostendorf Design Build



Photo Courtesy: David Ostendorf & United Realty

The home is over 3,000 square feet and includes 3 bedrooms, with the master on the lower half level, and two living areas on the main level, plus office or 4th bedroom.

Ostendorf Design Build specializes in single family homes and light commercial new and renovation construction. When approached by the new owner of a split-level family home in need of renovation, Ostendorf couldn't turn down the challenge.

David Ostendorf is a member of the American Institute of Architects with more than 20 years of experience in remodeling and designing the built environment. "Our projects are partnered with the best professional builders, contractors, and tradespeople in the metroplex. We are committed to creating a warm, yet crisp and functional design."

The home was basically untouched since being built in the 1970s. The program posed by the owner was straightforward — update the home for today's busy families. The home is over 3,000 square feet and includes 3 bedrooms, with the master on the lower half level, and two living areas on the main level, plus office or 4th bedroom.

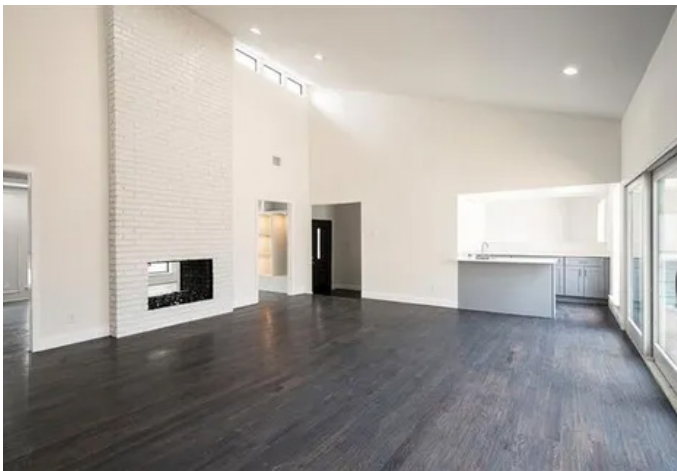
Ostendorf created an open and light filled home reflecting today's busy lifestyle. Built-ins in the main living area provide character, save space, and add



The renovated home has all modern amenities.



New exterior lighting boosts the home's curb appeal and heightens the home's security.



The designer created an open and light-filled home reflecting today's busy lifestyle.

value to the home. The see-thru gas fireplace, along with vaulted ceilings, give an open feeling to the home.

New luxury plank flooring in the living area and other high traffic areas is durable and easy-to clean and maintain for today's lifestyle.

The kitchen and baths were updated with new shaker cabinetry. The kitchen includes a farm sink, Whirlpool appliances, and island. New windows were installed throughout.

New exterior lighting boosts the home's curb appeal, and at the same time heightens the home's security. "The home's look is now transformed with the new lighting. The owners say when visitors arrive, they are in awe of the way the home looks at night. They feel their home is the best looking one in the neighborhood." stated Ostendorf.



New luxury plank flooring in the living area and other high traffic areas is durable, attractive, and easy to clean and maintain.



Double vanities provide more storage and countertop space.

Product Information

Windows: Ply-Gem

Finishes: Flooring: Pergo, American Originals, Daltile, Rust-Oleum, Sherwin Williams

Equipment: Whirlpool

Mechanical: Kohler, American Standard, Vanity Art

Electrical: Leviton, Square D

Designer

Ostendorf Design Build
 Carrollton, 75007 TX
davidostendorfdc.myportfolio.com

Project General Description

Location: Dallas, Texas
Date Bid: Mar 2021
Construction Period: Apr 2021 to Aug 2021

Total Square Feet: 3,076

Building Sizes: First floor, 3,076; total, 3,076 square feet.

Building Height: Total, first floor 8' to 16'.

Number of Buildings: One.

Basic Construction Type: Renovation.

Foundation: Slab-on-grade.

Floors: Concrete.

Interior Walls: Wood stud drywall.



New windows were installed throughout.



The fully-modernized bathroom.

DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
CONCRETE	175	0.13	0.06	Cutting & boring.
MASONRY	1,125	0.82	0.37	Stone assemblies.
METALS	7,465	5.46	2.43	Decorative.
WOOD, PLASTICS & COMPOSITES	15,540	11.37	5.05	Rough carpentry, finish carpentry.
THERMAL & MOISTURE PROTECTION	1,535	1.12	0.50	Dampproofing & waterproofing, weather barriers, flashing & sheet metal, fire & smoke protection, joint protection.
OPENINGS	14,975	10.96	4.87	Doors & frames, specialty doors & frames, windows.
FINISHES	38,680	28.30	12.58	Plaster & gypsum board, tiling, flooring, painting & coating.
SPECIALTIES	2,820	2.06	0.92	Fireplaces & stoves, storage.
EQUIPMENT	9,245	6.76	3.01	Residential, collection & disposal.
FURNISHINGS	22,945	16.79	7.46	Casework, furnishings & accessories, furniture.
SPECIAL CONSTRUCTION	1,200	0.88	0.39	Integrated construction.
CONVEYING SYSTEMS	250	0.18	0.08	Scaffolding.
PLUMBING	7,345	5.37	2.39	Piping & pumps, equipment, fixtures, pool & fountain systems.
HVAC	1,250	0.91	0.41	Piping & pumps, air distribution, central HVAC equipment.
ELECTRICAL	4,520	3.31	1.47	Medium-voltage distribution, low-voltage transmission, power generating & storage equipment, electrical & cathodic protection, lighting.
ELECTRONIC SAFETY & SECURITY	1,000	0.73	0.33	Electronic surveillance, detection & alarm.
MATERIAL PROCESS & HANDLING EQUIPMENT	4,850	3.55	1.58	Bulk material processing, container processing & packaging.
POLLUTION CONTROL EQUIPMENT	1,100	0.80	0.36	Solid waste control.
ELECTRICAL POWER GENERATION	675	0.49	0.22	Power generation equipment, power generation testing.
TOTAL BUILDING COSTS	136,695	100%	\$44.45	
EXISTING CONDITIONS	8,500			Assessment, demolition & structure moving.
EARTHWORK	5,600			Site clearing, earth moving, special foundations & load-bearing elements.
EXTERIOR IMPROVEMENTS	575			Irrigation, planting.
TOTAL PROJECT COST	151,370			

UPDATED ESTIMATE TO APRIL 2024: \$59.32 PER SQUARE FOOT

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.			CENTRAL U.S.			WESTERN U.S.		
Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost	
Atlanta, GA	\$59.32	\$182,396	Dallas, TX	\$59.32	\$182,396	Los Angeles, CA	\$84.74	\$260,566
Pittsburgh, PA	\$72.03	\$221,481	Kansas City, KS	\$73.44	\$225,824	Las Vegas, NV	\$81.21	\$249,709
New York, NY	\$97.45	\$299,651	Chicago, IL	\$84.03	\$258,394	Seattle, WA	\$81.21	\$249,709

For more information on this project and similar projects visit www.dcd.com

Five Commercial Real Estate Design Trends for 2024

By: Melissa Dittmann Tracey

Wellness, adaptable space, and innovation are at the top of the list of one architecture firm's predictions for popular commercial features in the new year. SGA, an architecture, design and planning firm in the Northeast, offers its predictions for hot design trends in commercial real estate in 2024.

Wellness-Focused Workspace

With recent studies showing that healthier indoor environments help attract and retain employees, more companies are prioritizing wellness retrofits and even earning certifications. SGA points to an example from Revolution Labs, which is slated to earn a WELL Certification for its space.



Artist's rendering of Revolution Labs.

The designation shows that organizations have demonstrated their commitment to adding wellness amenities in their buildings. Revolution Labs has added wellness hubs throughout its new office space in Lexington, Massachusetts.

Gable Clarke, partner and president of interior design at SGA, says the features gaining prominence include easy access to outdoor areas, onsite food services, fitness facilities and staffed IT and tech bars. For example, Cambridge Consultants' offices mimic hospitality and residential environments, SGA says.

Turnkey Labs

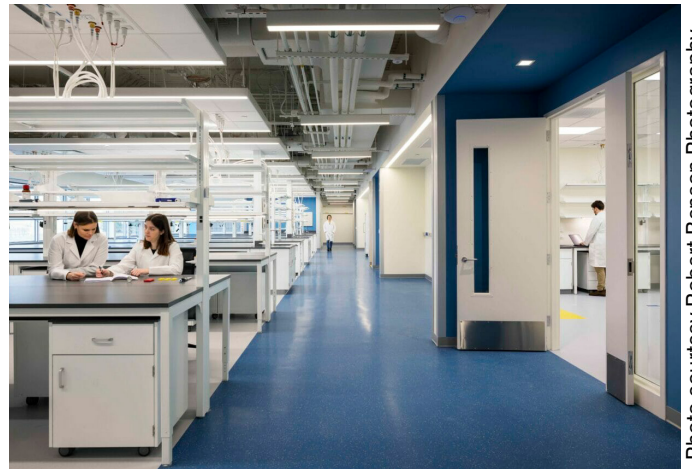
A growing number of life science companies are expanding their commercial footprints as they look to advance research and development. They're seeking greater flexibility within their spaces. Adam Spagnolo, partner and CEO at SGA, predicts the CRE market will see an increase in move-in ready, international lab facilities in 2024.

SGA points to wellness technology firm SOSV's lab build-out at 7 Penn Plaza in New York as an example. The space is easily adaptable to make room for startups in supporting SOSV's growth and innovation.

Vacant Offices Get Retrofitted

WeWork's recent bankruptcy is another reflection of the ailments facing the office sector, as more companies find themselves in need of less space. While most of the attention

has centered on converting empty office space into residential, SGA Vice President Maren Reepmeyer predicts greater needs to reuse and adapt that space in the commercial market. She forecasts an uptick in office-to-lab conversions, pointing to SGA's new project with PMV Pharmaceuticals as one example. SGA converted an old office building into a cancer research lab for PMV in Princeton, New Jersey.



PMV Pharmaceuticals' cancer research lab in Princeton, New Jersey.

Reepmeyer also foresees an increase in office-to-storage space conversions. Hybrid uses for space will rise as a new trend in urban cores that seek to combine residential, commercial, entertainment, retail, culture, and academic interests under one roof, Reepmeyer says in a recent study with Colliers, "Do Office Conversions Work?"

Sustainable Life Sciences Heads to the City

As the life sciences sector grows rapidly in CRE, more companies are targeting sustainable spaces in dense urban environments. A recent SGA study illustrates 11th Avenue BioTech, a concept for creating the world's tallest laboratory building in New York. SGA shows how you can use new typologies to create research and development campuses in metro hubs.

Also, expect more nontraditional building methods to help fulfill demand within the life sciences sector. John Sullivan, partner and president of architecture at SGA, predicts mass timber will emerge as a viable, sustainable construction method for research and lab developments nationwide.

Master Plans Aim to Preserve History

SGA predicts a rise in culture-rich developments that pay homage to an area's history and seek to preserve its green spaces. For example, the company points to The Arsenal on the Charles, a former military site in Watertown, Massachusetts, where three new builds on the historic campus pay tribute to its industrial background. "The Arsenal on the Charles is designed to celebrate the site's rich history," SGA says.

Also, SGA looks to neighborhood projects that seek to blend historic charm with modern elements, such as the



The Arsenal on the Charles in Watertown, Massachusetts.

Russell Street project in New Hampshire. “Designers and developers will collaborate more closely with historic districts and planning boards, aiming to create cohesive master plans that work seamlessly with the surrounding built and social environment,” SGA says.

The looks of offices and buildings are changing in a post-pandemic world. Wellness has become a buzzword in the commercial space as more companies plan to prioritize amenities geared toward health and convenience in the workplace. The hope is that this trend will help bring more employees back to the office.

About SGA: SGA is an architecture, interior design, planning, Virtual Design and Construction, and branded environments practice founded in 1991. With over 100 people in Boston and New York City, SGA pioneers tech-forward design that redefines how projects are visualized and delivered. For more information, visit www.sga-arch.com.

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DIGroup Architecture Healthcare Studio Marks Opening

DIGroup Architecture’s (DIG) Healthcare Studio team recently joined New York Medical College to officially open the doors of its newly renovated 18,755-square-foot Basic Sciences Building (BSB), a space that is not only innovative, but collaborative by design. DIG Principal Bob Ryan spearheaded the assignment for which the firm served as Architect of Record.

The \$6.2M in enhancements to the BSB at New York Medical College, which is a member of Touro University, involved the modernization of an existing research facility with the introduction of flexible shared research cores. This is DIG’s seventh project undertaken with Touro University.

In addition to construction of multidisciplinary research space to accommodate up to 12 teams, the new lab features shared instrumentation space and installation of flexible casework systems. Best-in-class equipment includes biosafety cabinets, autoclaves, and fume hoods as well as major energy reductions associated with high-efficiency mechanical equipment.

“Like many existing academic and life sciences buildings targeted for renovation, the BSB is a highly active facility, so phasing—or the generation of swing space and close coordination of supply and labor procurement—needed to be addressed, tested, and verified to assure a ‘near-zero-interruption’ level within the lab itself during this multi-year renovation,” explained Ryan, who has more than 30 years’ experience in the healthcare architecture and life sciences field.

“In addition to ensuring the seamless work of the laboratory professionals, this approach minimizes the need for costly energy consumption and supply redundancies in the name of delivering the newest best practices for lab design, including modular benches and open layouts,” he added.

The renovation of the BSB was launched in 2019 and interrupted by the COVID-19 pandemic, but is now a source of inspiration for new and seasoned users alike.

“These professionals are doing vital research in a shared

Now Open

18,000 SF of Next-Gen Laboratory Space at NY Medical College Basic Sciences Building



DIG Principal Bob Ryan spearheaded the modernization of the Basic Sciences Building for which the firm served as Architect of Record.

physical space that fosters creativity, communication, and a cooperative approach to research – both within and beyond these walls,” said Ryan. “The activities and studies being conducted in this facility produce vital data that informs the entire medical research community and, therefore, the physical and mental well-being of a worldwide population.”

Furthermore, the BSB’s next-generation design is attracting pharmaceutical and biomedical researchers across the region seeking to pursue their research in the college’s updated space. This objective aligns with New York Medical College’s paradigm for merging the academic and commercial spheres under the same roof. “In addition to building a sustainable research pipeline, the BSB enhances the focus on community outreach – which mirrors DIG’s ‘Architecture for Change’ axiom,” said Ryan.

About DIGroup Architecture: Formed in 2006 and headquartered in New Brunswick, N.J., with offices in Philadelphia, DIGroup Architecture (DIG) is an award-winning architecture, interior, and graphic design firm serving clients and communities in education, civic, healthcare, and senior living spaces. Please visit DIGroup Architecture for more information.

Loganville High School Baseball Complex

Loganville, Georgia

Architect

Sy Richards, Architect Inc.



The baseball field, dugouts, concession building, fieldhouse, and hitting facility are all components of the baseball complex.

Sy Richards, Architect Inc. was commissioned to design a new baseball complex for the Walton County School District's Loganville High School.

The Red Devil's baseball program, twice AAAA (2008 and 2012) and current AAAAA (2017) State Champions, has sent numerous players to play at the collegiate level – and some went on to play professionally. With such a successful program, a high level of input was sought from coaches, school officials, and parents during the design process.

Many meetings among all the “players” involved in the design process assured that the replacement baseball complex maintained the same level of support to the program as the original had achieved.

The baseball field, dugouts, concession building (1,119 square feet), field house (3,142 square feet), and hitting facility (4,941 square feet) are all components of the baseball complex.

The concession building was adapted from two earlier designs the architect completed in the same school district – Monroe High School and Walnut Grove High School. The brick and block structure houses the concession stand, restroom facilities, and a press box with stacking windows providing an unobstructed view of the baseball field. Concrete bleachers between the concession building and home plate completes the spectator area.

The field house contains the coaches' office, locker, and toilet room; two locker rooms (Varsity and 9th/JV) with athletes' restroom and showers; and an umpire dressing room.

The buildings and supporting elements were constructed of similar material and colors – brick and metal roofing – to accentuate the school team colors.

Product Information

Building Envelope: General Shale
Roofing: MBCI, Johns Manville
Windows: Kawneer
Flooring: Daltile
Lighting: Musgo, Newstar



The concession building houses the concession stand, restroom facilities, and a press box with windows providing an unobstructed view of the field.



View of the field from the press box in the concession building.

Photos Courtesy of Corina Lee & Ken Thrasher/Sy Richards, Architect Inc.

Architect

Sy Richards, Architect Inc.
301 E. Church Street, Monroe, GA 30655

Project Team

Structural Engineer

Willett Engineering Company
3528 Habersham At Northlake Road
Tucker, GA 30084

Mechanical Engineer

Singleton Engineers, Inc.
3794 Shawnee Run, S.W.
Lilburn, GA 30047

Electrical Engineer

Bolden Williams & Associates, Inc.
3066 Highway 29, S.
Lawrenceville, GA 30044

Civil Engineer

Clark Patterson Lee
3011 Sutton Gate Drive, #130
Suwanee, GA 30024

General Contractor

Bowen & Watson, Inc.
P.O. Box 877
Toccoa, GA 30577

Number of Buildings: Three; 1 concession, 1 field house, 1 hitting facility and 2 dugouts.

Building Sizes: Dugouts, 960 each; concession, 1,119; field house, 3,143; hitting facility, 4,800; total, 10,982 square feet.

Building Height: Dugouts, 12'; concession, varies 16'7" to 21'2"; field house, 13'1"; hitting facility, 16'; total varies, 12' to 21'2".

Basic Construction Type: New/V(B) Unsprinklered.

Foundation: Cast-in-place, slab-on-grade.

Exterior Walls: CMU, brick.

Roof: Membrane, metal.

Floors: Concrete.

Interior Walls: CMU.



Project General Description

Location: Loganville, Georgia

Date Bid: Oct 2014

Construction Period: Nov 2014 to Feb 2016

Total Square Feet: 10,982

Site: 63.75 acres.

DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	25,178	1.69	2.29	—
GENERAL REQUIREMENTS	240,866	16.17	21.93	—
CONCRETE	170,233	11.43	15.50	Reinforcing, cast-in-place, grouting (concrete breakdown: cubic yards foundation, 217.5; cubic yards floors, 248.5; cubic yards walls, 12.5; cubic yards stairs, 50.5). Unit.
MASONRY	163,449	10.97	14.88	Structural metal framing, decking, cold-formed metal framing, fabrications.
METALS	95,468	6.41	8.69	Rough carpentry, architectural woodwork.
WOOD, PLASTICS & COMPOSITES	16,227	1.09	1.48	Dampproofing & waterproofing, thermal protection, roofing & siding panels, membrane roofing, fire & smoke protection.
THERMAL & MOISTURE PROTECTION	94,321	6.33	8.59	Doors & frames, hardware, specialty doors & frames, entrances, glazing.
OPENINGS	39,983	2.68	3.64	Drywall, tiling, ceilings, flooring, acoustic treatment, painting.
FINISHES	36,615	2.46	3.33	Toilet compartments, toilet accessories, fire extinguishers & cabinets, signage.
SPECIALTIES	26,494	1.78	2.41	Synthetic grassing.
EQUIPMENT	15,241	1.02	1.39	Blinds.
FURNISHINGS	575	0.04	0.05	Pre-engineered metal building, erection.
SPECIAL CONSTRUCTION	37,575	2.52	3.42	Water-based fire-suppression system.
FIRE SUPPRESSION	12,500	0.84	1.15	Piping & pumps, equipment, fixtures.
PLUMBING	83,465	5.60	7.60	Air distribution, central HVAC equipment.
HVAC	43,700	2.93	3.98	Low-voltage transmission, lighting.
ELECTRICAL	388,085	26.04	35.34	Site clearing, earth moving, earthwork methods, erosion control, termite treatment.
TOTAL BUILDING COSTS	1,489,975	100%	\$135.67	Bases, bollards & paving, irrigation, planting, fencing.
EARTHWORK	506,681			Storm, irrigation water well.
EXTERIOR IMPROVEMENTS	456,921			
UTILITIES	9,928			
TOTAL PROJECT COST	2,463,505			

UPDATED ESTIMATE TO APRIL 2024: \$237.23 PER SQUARE FOOT

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.			CENTRAL U.S.			WESTERN U.S.		
Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost		Sq.Ft. Cost	Total Cost	
Atlanta, GA	\$237.23	\$2,605,278	Dallas, TX	\$237.23	\$2,605,278	Los Angeles, CA	\$338.90	\$3,721,826
Pittsburgh, PA	\$288.07	\$3,163,552	Kansas City, KS	\$293.72	\$3,225,582	Las Vegas, NV	\$324.78	\$3,566,750
New York, NY	\$389.74	\$4,280,099	Chicago, IL	\$336.08	\$3,690,810	Seattle, WA	\$324.78	\$3,566,750

For more information on this project and similar projects visit www.dcd.com

(Biophilic Design in 2024 continued from page 23)

Photo courtesy Plant Solutions



Cala at Senna House Hotel, Scottsdale, Arizona.

5. Urban Farming

As cities become more crowded and urbanization continues to rise, there is an increasing need to integrate nature into our urban environments. Urban farming is predicted to be a major trend in 2024. Designers and architects are incorporating vertical gardens, hydroponic farming, and green roofs into their biophilic designs, making urban farming one of the most significant biophilic design trends.

Photo courtesy Shutterstock



Designers and architects are incorporating vertical gardens and green roofs into their biophilic designs.

6. Natural Materials

In 2024, natural materials such as wood, stone, and water will play a key role in biophilic design trends. From the use of reclaimed wood and stone to create natural-looking surfaces to incorporating water features that mimic natural streams and waterfalls, natural materials are powerful tools when creating spaces that feel connected to the natural world. Using natural materials is another essential aspect of biophilic design. Designers and architects will continue to incorporate wood, stone, and other natural materials into various spaces to create a connection to nature. In 2024, we can expect to see an increased use of handcrafted items and materials with visible imperfections, providing a unique and authentic feel to our spaces.



Photo courtesy Plant Solutions

Using natural materials is another essential aspect of biophilic designs.

7. Seating Arrangements

With more people working from home and the rise of co-working spaces, seating arrangements are becoming increasingly crucial in biophilic design. In 2024, we can expect to see more spaces incorporating flexible and modular seating arrangements that allow for easy socialization and collaboration while providing opportunities for solitude and reflection.

2024 promises to be an exciting year for design, with a focus on biophilic design with multi-sensory spaces, vertical gardens, plant infused lighting, the use of natural materials, and biophilic technology. This movement is spearheaded by sustainability and well-being advocates in the design and architecture community. By immersing ourselves in biophilic design, we can create spaces that capture the beauty and tranquility of the natural world and also foster a deeper connection with nature. This connection, in turn, can inspire a sense of consciousness and responsibility, motivating individuals to take better care of our beloved planet. Now is the perfect time to explore these trends and incorporate them into your designs for the year ahead!



Photo courtesy Plant Solutions

Clayco Construction, Phoenix, Arizona.

About Plant Solutions: Founded in 1981, Plant Solutions work hand-in-hand with architects and interior designers to bring the magic of the outdoors inside. This interiorscape and biophilic design expert has grown into one of the most well-known, highest quality companies in the Phoenix area. For more information about Plant Solutions' use of biophilic design, visit www.plantsolutions.com.

Construction Trends for 2024

The dynamic landscape of the construction industry has always been a reflection of evolving societal needs, technological advancements, and economic factors. As we stand at the beginning of 2024, it's intriguing to look ahead and forecast the trends that will shape this vital sector.

Sustainable Urbanism

One of the most pressing issues of our time is sustainability. In the face of rapid urbanization, there's a growing need to develop cities that not only accommodate increasing populations but do so in an environmentally friendly manner. Sustainable urbanism seeks to merge urban planning and environmental stewardship, ensuring that our cities of the future are green, clean, and sustainable. Expect to see more green roofs, urban farms, and energy-efficient buildings.

Digital Integration

The digital revolution continues to make its mark on the construction industry. From advanced Building Information Modeling (BIM) systems to the use of drones for site surveys, the integration of digital tools and technologies is streamlining processes and enhancing precision. As we continue on into 2024, we can anticipate even deeper integration, with augmented reality (AR) and virtual reality (VR) playing significant roles in project visualization and planning.

Modular and Prefabricated Construction

Efficiency is the name of the game in modern construction. Modular and prefabricated construction methods offer the promise of quicker build times, reduced waste, and enhanced quality control. As transportation and assembly processes improve, expect to see a rise in projects adopting these innovative construction methods, leading to faster project completion and cost savings.

Resilient Infrastructure

In an era where climate change is a reality, building resilient infrastructure has never been more critical. From flood-resistant urban planning to earthquake-proof buildings, the construction industry is gearing up to face the challenges posed by extreme weather events and natural disasters. The emphasis will be on creating structures that can withstand, recover from, and adapt to these challenges.

Community-Centric Projects

At its heart, construction is about creating spaces for people. As we progress into 2024, there will be a marked shift towards projects that prioritize community needs and aspirations. Whether they're public parks, community centers, or affordable housing projects, the focus will be on fostering community ties and enhancing the quality of life for residents.

The construction industry stands at a pivotal juncture, ready to embrace the challenges and opportunities of the future. From prioritizing sustainability and community needs to harnessing the power of digital tools and resilient infrastructure, these trends underscore the industry's commitment to innovation, efficiency, and societal well-being. As these trends take shape, they will not only redefine the way we build but also the very essence of the spaces we inhabit, ensuring a brighter, more sustainable future for all.

About Construct a Lead: Accessing the latest and most precise information on construction leads is crucial in securing success in the bidding competition. Construct a Lead's Advanced Search provides access to CAL's database, enabling an efficient search and organization of pertinent project details presented in a clear, concise and user-friendly manner.

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Anticipated Trends for 2024

AS THE CONSTRUCTION INDUSTRY CONTINUES TO EVOLVE, THE TRENDS FOR 2024 ARE EXPECTED TO BUILD UPON THE FOUNDATIONS SET IN 2023, WITH A FEW NOTABLE SHIFTS:



Sustainable Urbanism: With the increasing urban population, there's a growing emphasis on creating sustainable urban spaces. This involves the integration of green spaces within urban areas, promoting walkability, and focusing on public transportation infrastructure. Projects in 2024 are likely to prioritize these elements, ensuring cities are not just built for the present but are sustainable for future generations.



Digital Integration: The integration of digital technology into construction processes and the final structures themselves will become even more pronounced. This includes the use of augmented reality in construction planning, IoT (Internet of Things) integration for smart buildings, and AI-driven facility management systems.



Modular and Prefabricated Construction: As the need for efficiency and sustainability grows, modular and prefabricated construction methods will gain more traction. These methods not only reduce construction time but also minimize waste, making them a preferred choice for environmentally-conscious projects.



Resilient Infrastructure: With the increasing challenges posed by climate change, projects in 2024 will place a significant emphasis on creating resilient structures. This includes buildings that can withstand natural disasters, infrastructure that can handle changing weather patterns, and coastal structures that account for rising sea levels.



Community-Centric Projects: There's a growing realization that construction projects should cater to the needs of the community. In 2024, we expect to see more projects that involve community input in the planning stages, ensuring that the final structures serve the local population's needs and aspirations.

FOR CONTRACTORS AND CONSTRUCTION FIRMS

Staying ahead of these trends will be crucial. It will require continuous learning, adaptation, and a willingness to embrace new technologies and methodologies. By doing so, they can position themselves at the forefront of the industry, leading the way in shaping the built environment of the future.

Oklahoma City Police Headquarters

Oklahoma City, Oklahoma

Architect

ADG, P.C.



The graceful architecture and adaptable design of the new police headquarters make it stand out as an efficient base of operations and welcoming nerve center for police services in the community.

The City of Oklahoma City engaged ADG architects to design a new police headquarters that would showcase state-of-the-art community policing.

The new headquarters is built to last. Durable materials and finishes will enable it to serve the city well into the future. And, even though the new police headquarters is only 11% larger than the old headquarters, the new design created much more efficient work areas.

The graceful architecture and adaptable design of the new police headquarters make it stand out as an efficient base of operations and welcoming nerve center for police services in the community. Visitors are greeted by the information desk and records units as they enter the first floor lobby, helping them access police services immediately and easily. The department's public information office and community room are located just off the lobby.

The second floor features the investigations bureau and the new,



The department's community room is spacious and has plenty of overhead lighting.

Photos Courtesy of Simon Hurst



Sitting atop the 88,625-square-foot headquarters is a sloped diamond-shaped metal atrium roof—or “hat”—that is an iconic identifier for the downtown area.

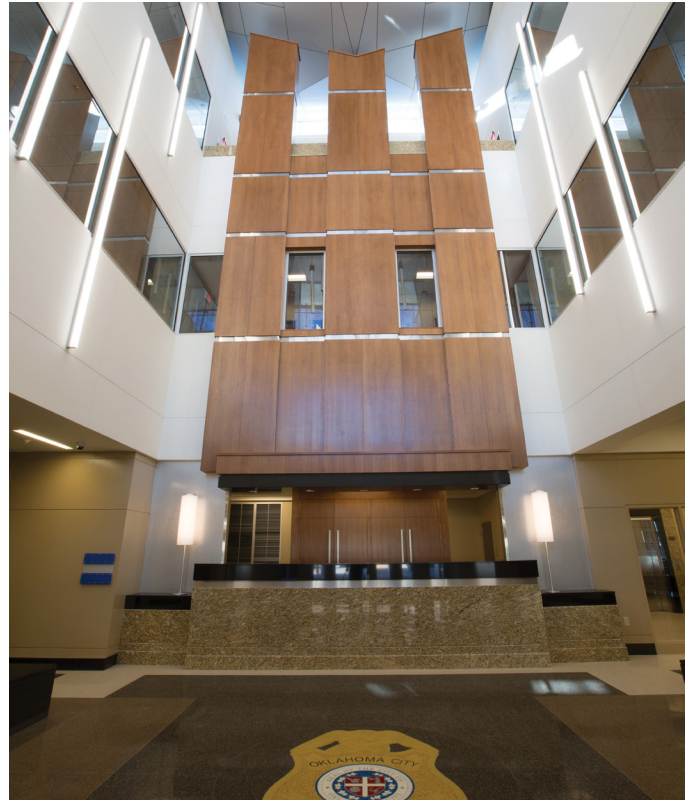
open-plan design fosters collaborative police work. The Police Chief’s office and the criminal intelligence unit are located on the third floor.

The headquarters’ built-in flexibility allows the police department to change the way it operates over time; departments can scale up or down as needed. The design also allows for expansion, and includes state-of-the-art security features.

The new headquarters was built on an existing police parking lot located on the western edge of downtown Oklahoma City’s Civic Center. A chilled-beam heating and cooling system was incorporated throughout the building to maximize energy efficiency. The system provides a healthy and comfortable environment because of good air-pattern distribution, quiet operations and improved air quality.

Sitting atop the 88,625-square-foot headquarters is a sloped metal atrium roof—or “hat”—that is an iconic identifier for the downtown area. Blonde, black and red brick, as well as tan calcium silicate masonry units resembling limestone, clad the four quadrants of the building. The stonework reflects the Art Deco design elements of surrounding WPA-era buildings constructed in the 1930s.

Artwork funded by the City’s 1% for Art ordinance graces the exterior plaza and enhances the lobby. The plaza is a memorial to fallen officers, and features large aluminum arches set on a round 19-foot-diameter concrete pedestal. The plaza incorporates low



Visitors are greeted by the information desk and records units as they enter the first-floor lobby, helping them access police services immediately and easily.



Illuminated interior of the atrium.

seating blocks as well as heritage memorial plaques. Dichroic art glass elements add color and sparkle to the black and gray concrete flagstones of the plaza.

The existing police headquarters and municipal courts complex had become obsolete and would have been too costly to renovate. The first step in the process was to create a master plan that evaluated the existing 1960s structure and prioritized department needs. The design team explored over 25 design scenarios before presenting three that maximized construction dollars while minimizing construction time and disruption to services.

“The new building turned out better than we anticipated. We have 30% more usable space, although the building is only 11% bigger than our old home. We couldn’t have asked for a better process.”

Chief Bill Citty
Police Chief, City of Oklahoma City

Architect

ADG, P.C.
920 W. Main, Oklahoma City, OK 73106
www.adgokc.com

Project Team

Associate Architect, Law Enforcement Design

Redstone Architects, Inc.
2709 S. Telegraph Road, Bloomfield Hills, MI 48302

Structural Engineer

KFC Engineering
205 N.W. 63rd Street, #390, Oklahoma City, OK 73116

Mechanical Engineer

Berhard TME
2224 N.W. 50th Street, #195, Oklahoma City, OK 73112

Civil Engineer

Smith Roberts Baldischwiler, LLC
104 S. 2nd Street, Oklahoma City, OK 73108

General Contractor

Wynn Construction Company
11901 N. Eastern Avenue, Oklahoma City, OK 73131

Cost Estimator

White & Associates
500 N. Walker, Suite 150, Oklahoma City, OK 73102

Justice Security Consultant

Guidepost Solutions, LLC
388 17th Street, #230, Oakland, CA 94612

Project General Description

Date Bid: Oct 2013

Construction Period: Nov 2013 to Sep 2015

Total Square Feet: 88,625

Site: 1.5 acres. **Number of Buildings:** One.

Building Sizes: First floor, 28,935; second floor, 29,826; third floor, 29,864; total, 88,625 square feet.

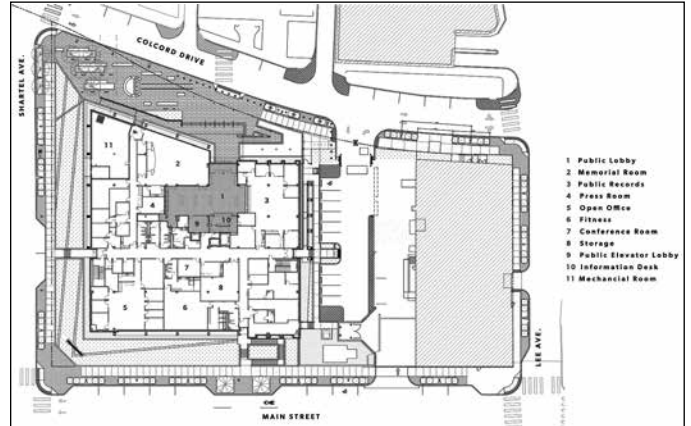
Building Height: First floor, 15'; second floor, 15'; each additional floor, 15'; total, 48'6".

Basic Construction Type: New/I-B.

Foundation: Reinforced concrete, slab-on-grade.

Exterior Walls: CMU, brick. **Roof:** Metal. **Floors:** Concrete.

Interior Walls: Metal stud drywall.



DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	320,397	1.63	3.62	—
GENERAL REQUIREMENTS	2,017,979	10.29	22.77	—
CONCRETE	1,237,462	6.31	13.96	Forming & accessories, reinforcing, cast-in-place, cast decks & underlayment, grouting.
MASONRY	947,150	4.83	10.69	Unit.
METALS	1,957,209	9.98	22.08	Structural metal framing, joists, decking, fabrications, decorative.
WOOD, PLASTICS & COMPOSITES	778,265	3.97	8.78	Rough carpentry, finish carpentry, architectural woodwork.
THERMAL & MOISTURE PROTECTION	641,347	3.27	7.24	Dampproofing & waterproofing, thermal protection, weather barriers, roofing & siding panels, flashing & sheet metal, roof & wall specialties & accessories, fire & smoke protection, joint protection.
OPENINGS	1,304,107	6.65	14.71	Doors & frames, entrances, storefronts & curtain walls, windows, roof windows & skylights, hardware, glazing, louvers & vents.
FINISHES	2,302,177	11.74	25.98	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, acoustic treatment, painting & coating.
SPECIALTIES	209,833	1.07	2.37	Toilet partitions, toilet accessories, corner guards, fire extinguishers & cabinets, flag poles, lockers, signage, wire mesh partitions.
EQUIPMENT	12,095	0.06	0.14	Loading dock, vehicle lift.
FURNISHINGS	5,413	0.03	0.06	Bike racks.
CONVEYING SYSTEMS	239,600	1.22	2.70	Elevators (3 passenger).
MECHANICAL	5,274,732	26.88	59.52	Plumbing: piping & pumps, equipment, fixtures. HVAC: Piping & pumps, air distribution, central heating equipment, central cooling equipment, central HVAC equipment.
ELECTRICAL	2,370,007	12.07	26.74	Medium-voltage distribution, low-voltage transmission, facility electrical power generating & storing equipment, electrical & cathodic protection, lighting, access control & intrusion detection, surveillance, detection & alarm, monitoring & control.
TOTAL BUILDING COSTS	19,617,773	100%	\$221.36	
EXISTING CONDITIONS	1,166,688			Demolition, site work, termite control, paving & sidewalks, landscaping & irrigation, fencing, water & electrical utilities.
TOTAL PROJECT COST	20,784,461			

UPDATED ESTIMATE TO APRIL 2024: \$397.91 PER SQUARE FOOT

Regional Cost Trends

This project, updated to April 2024 in the selected cities of the United States.

EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta, GA	\$384.19	\$34,048,786	Dallas, TX	\$384.19	\$34,048,786	Los Angeles, CA	\$548.84	\$48,641,123
Pittsburgh, PA	\$466.52	\$41,344,955	Kansas City, KS	\$475.66	\$42,155,640	Las Vegas, NV	\$525.97	\$46,614,410
New York, NY	\$631.17	\$55,937,292	Chicago, IL	\$544.27	\$48,235,781	Seattle, WA	\$525.97	\$46,614,410

For more information on this project and similar projects visit www.dcd.com

Construction Industry Adds 11,000 Jobs in January

The construction industry added 11,000 jobs in January despite bouts of exceptionally cold or stormy weather that delayed projects in numerous regions, according to an analysis of new government data the Associated General Contractors of America released last month. Association officials noted that firms are boosting wages and taking other steps to attract more workers as firms try to keep pace with relatively strong demand.

Construction earnings increased by 5.3 percent year-over-year to \$35.21 an hour as firms boost wages in an effort to attract more workers into the sector amid strong demand for certain types of projects.

"Although job gains were modest in January, other evidence suggests there is still a lot of demand for workers," said Ken Simonson, the association's chief economist. "Wages rose faster than in other sectors, job openings at the end of 2023 were at near-record levels for December, and construction spending jumped that month."

Construction employment in January totaled 8,137,000, seasonally adjusted – an increase of 11,000 or 0.1 percent from the upwardly revised December total. The sector has added 216,000 jobs during the past 12 months, a gain of 2.7 percent. Residential building and specialty trade contractors added 2,700 employees in January and 60,100 (1.8 percent) over 12 months. Employment at nonresidential construction firms — nonresidential building and specialty trade contractors along with heavy and civil engineering construction firms — climbed by 7,600 positions for the month and 155,100 (3.3 percent) since January 2023.

Average hourly earnings for production and nonsupervisory employees in construction – covering most onsite craft

workers as well as many office workers — climbed by 5.3 percent over the year to \$35.21 per hour. Construction firms in December provided a wage "premium" of nearly 19 percent compared to the average hourly earnings for all private-sector production employees.

Government reports on job openings and construction spending early in February show demand for construction workers and projects remains robust, the economist said. Job openings in construction at the end of December totaled 374,000, not seasonally adjusted, greatly exceeding the 227,000 workers hired, and implying that contractors want to hire far more workers than they are able to find, Simonson said. In addition, spending on projects under way that month totaled \$2.1 trillion at a seasonally adjusted annual rate, 0.9 percent higher than in November and 14 percent higher than a year earlier.

Association officials noted that too few workers are choosing to pursue careers in construction, despite the sector's high wages. One reason for that is the paucity of construction education and training programs, particularly at the high school level. They urged federal officials to boost funding for construction education and training programs. They also called for allowing more people to lawfully enter the country to work in construction.

"Considering most construction positions don't require a college degree, construction careers offer an almost certain path to economic security," said Stephen E. Sandherr, the association's chief executive officer. "Yet too few workers are ever exposed to the many career opportunities available to them in construction as policy makers continue to urge everyone to go to college instead."

View the construction employment [data](#).

Construction Spending Rises 0.9 Percent in December

Total construction spending increased by 0.9 percent in December and 13.9 percent year-over-year, as gains in residential and public segments offset mixed results among private nonresidential markets, according to an analysis of federal spending data the Associated General Contractors of America released in February. Association officials cautioned that higher interest rates, labor shortages, and regulatory delays could impact future construction spending levels despite overall strength in the market.

"Construction spending rose across the board in 2023 despite higher interest costs, shortages of workers, and delays in awarding federal money for infrastructure," said Ken Simonson, the association's chief economist. "These challenges remain in early 2024 but the industry is poised for further growth overall."

Construction spending, not adjusted for inflation, totaled \$2.096 trillion at a seasonally adjusted annual rate in December. That figure is 0.9 percent above the upwardly revised November rate and 13.9 percent above the December 2022 level.

Spending on private residential construction rose by 1.4 percent and 6.8 percent year-over-year. Single-family construction climbed for the eighth-straight month, by 1.6 percent. Spending on multifamily projects rose 0.3 percent.

Public construction spending increased 1.3 percent in December and 21.3 percent from a year earlier. Spending on the largest public category – highways and streets – jumped 4.1 percent for the month, while outlays for educational

structures slipped 0.1 percent. Spending on transportation facilities rose 1.1 percent. Other infrastructure segments were mixed: sewage and waste disposal declined 0.8 percent and water supply spending slumped 2.5 percent but conservation and development outlays rose 1.4 percent.

Spending on private nonresidential construction dipped 0.2 percent in December but increased by 19.1 percent from December 2022. The largest segments mostly declined for the month. Manufacturing construction edged down 0.1 percent. Commercial construction — comprising warehouse, retail, and farm projects — declined 0.5 percent. Investment in power, oil, and gas projects rose 0.3 percent. Spending on offices and data centers decreased by 0.2 percent and health care construction fell 0.8 percent.

Association officials noted that contractors remain worried that higher interest rates could stifle private-sector demand for construction. Construction firms also continue to struggle to find qualified workers to hire and report that regulatory delays appear to be impacting the start of construction on some infrastructure projects.

"Despite overall strong market conditions, there are a number of reasons to be cautious about how 2024 will play out for the construction industry," said Stephen E. Sandherr, the association's chief executive officer. "Federal officials can help by boosting investments in construction education and training and accelerating infrastructure permitting reviews."

For more information about these and additional construction-related topics, visit www.agc.org.

Remodeling Market Sentiment Improves

The National Association of Home Builders (NAHB) released its NAHB/Westlake Royal Remodeling Market Index (RMI) for the fourth quarter, posting a reading of 67 — an increase of two points compared to the previous quarter.

The NAHB/Westlake Royal RMI survey asks remodelers to rate five components of the remodeling market as “good,” “fair” or “poor.” Each question is measured on a scale from 0 to 100, where an index number above 50 indicates that a higher share view conditions as good than poor.

The Current Conditions Index is an average of three components in the current market:

1. Large remodeling projects
2. Moderately-sized projects
3. Small projects

The Future Indicators Index is an average of two components:

1. The current rate at which leads and inquiries are coming in
2. The current backlog of remodeling projects

The overall RMI is calculated by averaging the Current Conditions Index and the Future Indicators Index. Any number over 50 indicates that more remodelers view remodeling market conditions as good than poor.

The Current Conditions Index averaged 74, increasing two points compared to the previous quarter. All three components improved in the fourth quarter:

1. The component measuring large remodeling projects (\$50,000 or more) increased three points to 70
2. The component measuring moderate remodeling projects (at least \$20,000 but less than \$50,000) rose two points to 75

3. The component measuring small-sized remodeling projects (under \$20,000) increased two points to 78

The Future Indicators Index increased two points to 59 compared to the previous quarter. The component measuring the current rate at which leads and inquiries are coming in remained even at 56 and the component measuring the backlog of remodeling jobs rose three points to 62.

“Remodelers’ sentiment was quite positive at the end of 2023, when seasonally adjusted for the slowdown that invariably occurs during that part of the year,” stated NAHB Remodelers Chair Alan Archuleta, a remodeler from Morristown, New Jersey. “High costs remain an issue in some places, but in many markets customers seem to have adjusted to the unavoidable higher prices.”

“The seasonally adjusted RMI edged up on a quarterly basis at the end of 2023, although it was down slightly year-over-year,” explained NAHB Chief Economist Robert Dietz. “Nevertheless, the index remains solidly in positive territory as it has been ever since the second quarter of 2020. Looking forward, we expect market conditions to improve throughout 2024, as interest rates continue to decline.”

For the full RMI tables, please visit nabh.org/rmi.

About NAHB: The National Association of Home Builders is a Washington-based trade association representing more than 140,000 members involved in home building, remodeling, multifamily construction, property management, subcontracting, design, housing finance, building product manufacturing and other aspects of residential and light commercial construction. NAHB is affiliated with 700 state and local home builders associations around the country. NAHB’s builder members will construct about 80% of the new housing units projected for this year. For more information, visit www.nabh.org.

Poliark Launches New AI 3D Modeling Platform for Architects and Engineers

Poliark’s new AI platform for the built environment, Kend™, models 3D structures and calculates carbon emissions

Poliark, a research and technology company that is developing AI to redefine the way we design planet Earth and make it possible for every individual, team, and company to effortlessly use Artificial Intelligence as a way of building launched their new AI platform, Kend, in mid-January.

Kend makes 3D modeling an instant task for architects and engineers, enables the effortless construction of 3D models from scratch, and turns sketches into 3D models using simple text inputs, enhancing the creative process and saving invaluable time. It also introduces a built-in material catalog that not only automates bill of quantities calculations, but also includes embedded CO₂ emissions, enabling environmentally conscious decision-making.

The new platform will alleviate the manual aspects of technical drawing and craftsmanship in 3D modeling, leading to a significantly eased workload for architects and engineers. Redemption of the most important resource, time, will allow users of the platform to focus on the more creative aspects of their jobs, and remove tedium from their tasks. Kend also enables seamless collaboration among geographically dispersed team members and stakeholders, reducing delays and errors in project management.

“The 3D modeling process for architects and engineers has historically been very time intensive, limiting creativity in design,” explained Eda Erol, CEO of Poliark. “With Kend, not only are we fostering innovation and efficiency, but also

increasing potential profits through saving time and the environment.”

Approximately 40% of worldwide carbon emissions are attributed to the construction of buildings and the energy needed to run them. With Kend, users will be able to significantly cut these emissions at the pre-construction phase. The new platform allows users to calculate and forecast CO₂e based on location and material usage, aiding in environmentally responsible decision-making and compliance with EPD and net zero tax regulations.

“There is an immense opportunity to create a more efficient, less environmentally consuming world in the architecture and engineering sectors,” commented Esma Engür, COO of Poliark. “Poliark’s commitment to innovation and sustainability has already advanced the space more than we’ve seen in the last 30 years. We believe that Kend has the capacity to truly usher in the future of building and AI.” Poliark welcomes architects, engineers, and AI industry enthusiasts to explore the capabilities that Kend brings to the world of 3D modeling.

About Poliark: Poliark, an AI innovator in the built environment, transcends conventional approaches, aiming to redefine our built world with a focus on technology and ecology coexistence. Their AI technology enables simultaneous 2D and 3D model design while aiding NetZero targets in real-time. To learn more about Poliark and sign up for Kend, visit Poliark.com.



UL Solutions Expands Verified Healthy Building Program

Photo courtesy of elements.envato.com

UL Solutions, a global leader in applied safety science, announced its new UL Verified Healthy Building Mark for New Construction, which empowers building owners and industry professionals to differentiate their new construction projects and support the health and wellness of future occupants. The new verification service is available for various new construction, redevelopment, or tenant improvement projects, including commercial, industrial and multi-family residential buildings.

“People are becoming more aware of how indoor air, water, and other factors can affect their health – from potential tenants considering an apartment lease to global companies searching for office space. Demonstrating a commitment to better indoor environmental quality can add value for new and redeveloped buildings, helping to differentiate a project among future occupants and meet rising expectations for better health and wellness in the built environment,” explained Joel Ritschel, director of Enterprise Sustainability in the Healthy Buildings group at UL Solutions.

As part of the process toward verification, UL Solutions empowers developers to make key choices to optimize indoor environmental health and wellness from the early stages of a project, potentially avoiding more costly and time-consuming changes after completing construction or improvements. Through the UL Verified Healthy Building Mark for New Construction program, customers can achieve one of four verification options.

UL Verified Healthy Building for New Construction Core and Shell

- Designed for base building construction or redevelopment projects where less than 50% of the project’s gross square footage is fit out at the time of project completion.
- Confirms policies for optimizing indoor environmental quality during and after construction.
- On-site verification of indoor air quality conditions prior to build-out.

UL Verified Healthy Building for New Construction Indoor Air

- Designed for fully built-out buildings or tenant spaces where more than 50% of the project’s gross square footage is fit out at the time of project completion.
- Confirms policies for optimizing indoor environmental quality during and after construction.
- On-site verification of indoor air quality conditions prior to occupancy.

UL Verified Healthy Building for New Construction Indoor Air and Water

- Designed for fully built-out buildings or tenant spaces where more than 50% of the project’s gross square footage is fit out at the time of project completion.
- Confirms policies for optimizing indoor environmental quality during and after construction.
- On-site verification of indoor air and water quality conditions prior to occupancy.

UL Verified Healthy Building for New Construction Residential

- Designed for multi-family residential construction projects where more than 50% of the project’s gross square footage is fit out at the time of project completion.
- Confirms policies for optimizing indoor environmental quality during construction.
- On-site verification of indoor air and water quality conditions prior to occupancy.

UL Verification Marks are globally recognized, and the verification process incorporates on-site measurements and visual inspections with a science-driven, expert-led approach to indoor environmental quality (IEQ). With over 40 years of IEQ experience, UL Solutions collaborates proactively with customers’ project teams to help them accomplish their goals and achieve the optimal verification option for their built environment.

The UL Verified Healthy Building Mark for New Construction was designed to work in tandem with third-party certification programs for sustainable buildings, including the Building Research Establishment Environmental Assessment Methodology (BREEAM), ENERGY STAR®, Fitwel, Leadership in Energy and Environmental Design (LEED)®, the WELL Building Standard, and more.

[Learn more about the UL Verified Healthy Building Mark for New Construction.](#)

About UL Solutions: As a global safety science leader, UL Solutions helps companies to demonstrate safety, enhance sustainability, strengthen security, deliver quality, manage risk, and achieve regulatory compliance. Their principles include promoting safe, secure, and sustainable living and working environments for people by the application of science, hazard-based safety engineering, and data acumen; supporting the production and use of products which are physically and environmentally safe, and to apply their efforts to prevent or reduce loss of life and property; and to advance safety science through research and investigation. For more information, see www.ul.com.

LABOR RATES FOR MAJOR SOUTHEAST CITIES

MARCH 2024

MIAMI, FL



Trade	Wage	Fringe	Total	Trade	Wage	Fringe	Total
BRICKLAYER	18.01	0.00	18.01	PAINTER	16.00	3.48	19.48
CARPENTER	21.62	6.80	28.42	PLUMBER	35.01	17.52	52.53
ELECTRICIAN	29.60	9.38	38.98	RODMAN	24.41	10.18	34.59
LABORER	12.67	1.02	13.69	ROOFER	19.98	4.77	24.75
OPERATOR	29.35	6.75	36.10	SHEET METAL	29.10	14.68	43.78

ATLANTA, GA



Trade	Wage	Fringe	Total	Trade	Wage	Fringe	Total
BRICKLAYER	15.00	0.00	15.00	PAINTER	16.30	0.00	16.30
CARPENTER	17.75	0.00	17.75	PLUMBER	32.68	16.11	48.79
ELECTRICIAN	34.50	11.04	45.54	RODMAN	28.72	14.75	43.47
LABORER	20.24	0.00	20.24	SHEET METAL	34.63	15.86	50.49
OPERATOR	27.35	10.53	37.88				

CHARLOTTE, NC



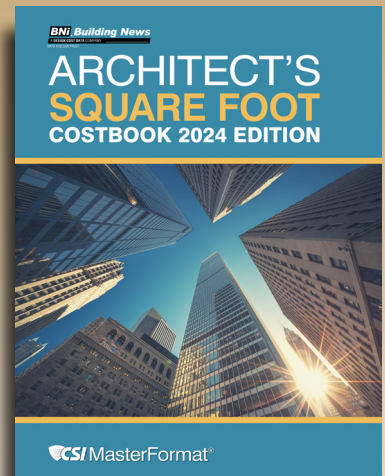
Trade	Wage	Fringe	Total	Trade	Wage	Fringe	Total
BRICKLAYER	18.90	0.00	18.90	PAINTER	15.55	1.05	16.60
CARPENTER	23.73	5.42	29.15	PLUMBER	27.12	8.58	35.70
ELECTRICIAN	31.36	13.41	44.77	RODMAN	28.00	17.10	45.10
LABORER	14.04	1.97	16.01	ROOFER	18.26	4.38	22.64
OPERATOR	17.76	1.49	19.25	SHEET METAL	25.21	14.89	40.10

How to Use This Labor Rate Table

Labor rates shown here are current Davis-Bacon labor rates for Southeast cities. These will help you determine wage rates for your estimates and bids, especially for publicly-funded projects where the payment of locally prevailing wages and fringe benefits are required by law.

Davis-Bacon wage rates are required for contractors or subcontractors performing on federally funded or assisted contracts in excess of \$2,000. These wage rates are based on up-to-date data from the Department of Labor.

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BNI Building News Construction Costs 2024

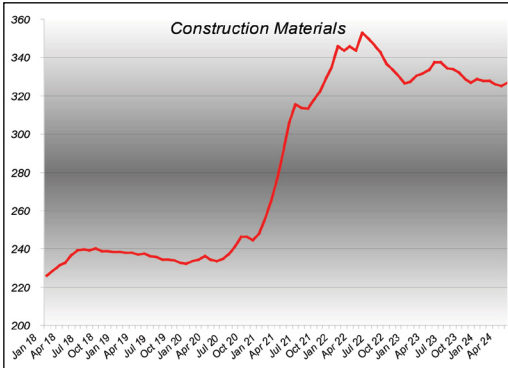
Source: US Department of Labor, Producer Price Index

The housing market is still down but is starting to show some signs of rebound. Persistent high interest rates are having an effect, and overall housing is down 6–8%. Commercial construction continues to be another story, with virtually all sectors up considerably. Hotels and manufacturing

are leading, with increases of 20% and 70%, respectively. Clearly, the infrastructure program is kicking in, with public construction up a whopping 15%. Contractors and designers are reporting healthy backlogs – it’s a good time to be in construction and nobody wants it to end.

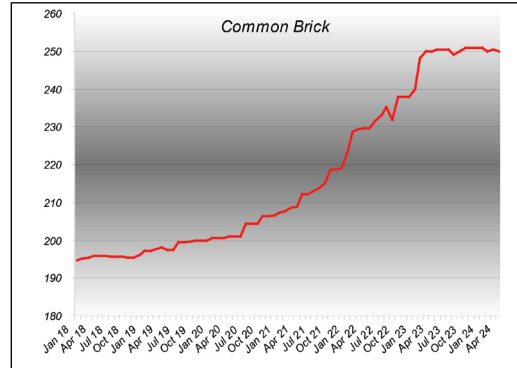
CONSTRUCTION MATERIALS

Material prices are both up and down, and inflation is ebbing. Even though we see price stabilization and not so much runaway inflation, we also notice that massive price increases seem to have “stuck” at levels much higher than three years ago. We don’t wish for deflation, but also see the need for price stabilization – which could end up as a double-edged sword. Oil was moving down, but now seems to have stabilized in the mid-\$70 range. As always, we must continue to watch material prices. The labor market is also a concern, with increases in the 4 to 5% range and benefits rising a hefty 11%, outpacing inflation.



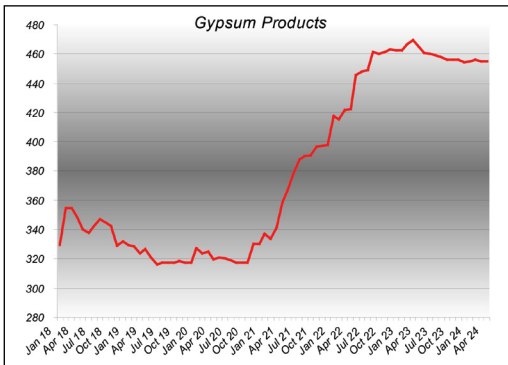
COMMON BRICK

Brick is flat over the last year. After 3 years of steep increases, brick has finally slowed down. Since 2021, it had increased 20%, but now seems to be following the market into a more moderate range.



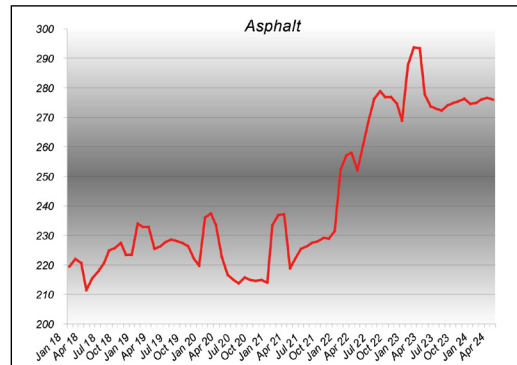
GYPSUM PRODUCTS

Very difficult to report or predict. The reports are confusing at best, some way up and some down. For the moment we suggest that you keep a close watch on gypsum products until the markets begin to settle down. Overall, gypsum is up 25% for the last 3 years, but is now moderating.



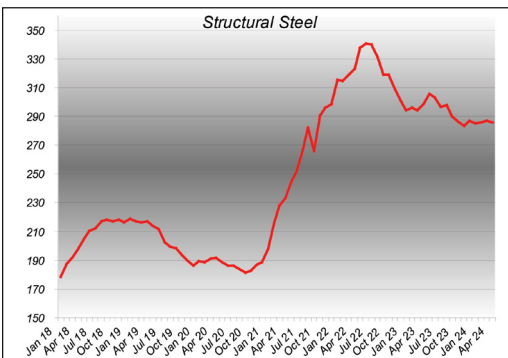
ASPHALT

Asphalt is flat for the last twelve months. It was slowing down, but keep watching for some new upward movement. Crude oil is stable for the moment, but geopolitical turmoil could trigger a spike at any time. And even though crude is not the only driver for the price of asphalt, it’s a major one.



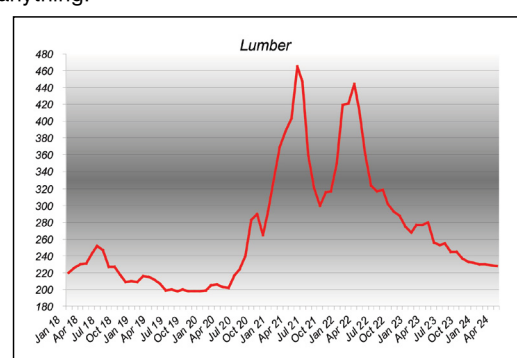
STRUCTURAL STEEL

Steel posted gains of over 25% for the last three years and, although it’s down 3–5% for the current year, prices remain very high. Despite the leveling off, we really don’t know what to expect, but sense low price increases.



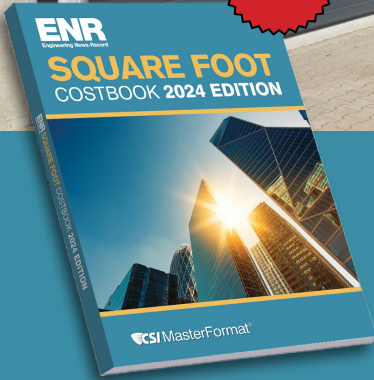
LUMBER

Lumber continues its wild ride. Lumber is down for the year by 18% and is approaching the pre-pandemic level. Currently, we see a disparity in price per board foot of 2 × 4s versus the larger dimensions. There were some natural disasters and we’ll have to see if that affects anything.



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Use this index table along with the regional modifiers to customize case study costs to a projected date and location.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	277	278	280	282	284	285	286	287	288	288	288	288
2001	289	290	292	294	296	297	298	299	299	300	300	300
2002	299	300	302	304	306	307	308	309	309	311	311	311
2003	311	312	314	316	320	320	321	320	322	324	325	325
2004	326	327	329	331	335	337	337	338	339	340	340	340
2005	356	357	357	358	360	361	360	365	368	370	371	376
2006	385	386	386	387	387	389	390	391	392	395	395	396
2007	400	401	402	401	402	405	410	415	415	420	421	422
2008	425	427	427	427	428	430	432	434	434	436	437	439
2009	440	442	442	443	444	446	447	449	449	450	451	453
2010	455	458	458	460	461	462	463	463	465	465	466	466
2011	467	467	467	471	472	473	473	475	476	476	476	477
2012	477	477	477	481	482	483	483	485	488	489	489	490
2013	490	490	490	494	495	496	496	498	498	499	499	499
2014	499	500	501	502	503	504	504	507	511	513	513	513
2015	515	517	518	519	521	522	524	525	527	528	528	528
2016	533	533	533	534	535	536	537	538	538	539	540	540
2017	540	540	541	541	542	543	543	544	545	545	546	546
2018	546	549	552	555	558	565	567	570	571	572	572	573
2019	573	575	578	582	586	586	587	590	592	593	595	595
2020	595	596	596	610	612	620	630	650	660	665	670	680
2021	680	680	670	670	690	700	710	715	720	730	740	750
2022	760	770	780	790	800	810	815	820	825	830	835	850
2023	850	850	850	855	860	865	865	870	880	870	875	880
2024	880	884	895	897	899	900	902	904	904	906	908	910
2025	910	912	914	917	919	922	924	926	926	928	930	932

Select a Design Cost Data case study file, which is similar to a project you have in mind, for a "base." Using the index table, find the "base" index number. Determine a target date for which your project will go out to bid (or the average month of the construction period, for a target date "if it is to be negotiated), and find the index number. Divide the "target" index number by the "base" index number to get a "multiplier." Multiply the cost per square foot by the multiplier to determine the updated cost for the project. Use the regional modifier guide on the reverse of this card to determine the cost variations due to area differences.)

Please note: Please contact us if you are in need of cost modes past December, 2024. One of our cost professionals will be happy to help. You can contact us at 800-533-5680.

DCD 2024 Cost Escalation Index Table

Use this regional modifier table along with the cost indices to customize case study costs to a projected date and location.

Eastern U.S.	Central U.S.	Western U.S.
Connecticut	Alabama	Alaska
Delaware	Arkansas	Arizona
Florida	Illinois	California
Georgia	Chicago	Los Angeles
Maine	Other	San Francisco
Maryland	Indiana	Other
Massachusetts	Iowa	Colorado
New Hampshire	Kansas	Hawaii
New Jersey	Kentucky	Idaho
New York	Louisiana	New Mexico
New York City	Michigan	Oregon
Other	Minnesota	Utah
North Carolina	Mississippi	Washington
Pennsylvania	Missouri	Other
Philadelphia	Nebraska	Seattle
Other	North Dakota	Wyoming
Rhode Island	Ohio	Other
South Carolina	Oklahoma	Other
Vermont	South Dakota	Other
Virginia	Tennessee	Other
West Virginia	Texas	Other
	Wisconsin	Other

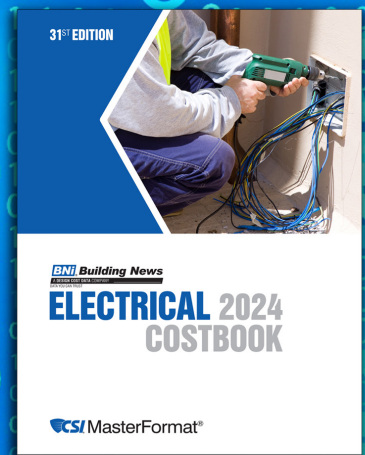
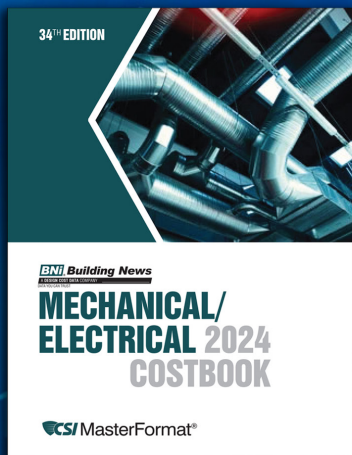
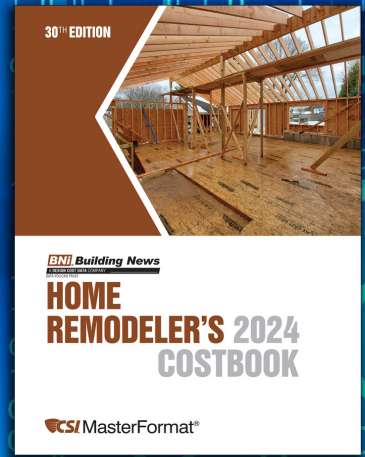
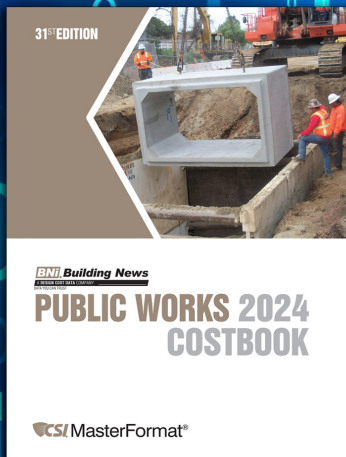
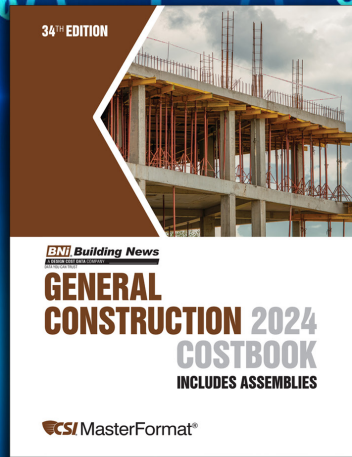
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To calculate regional modifiers, multiply the "base cost" by the "target" modifier and divide it by the "base" modifier. Example: To adjust the updated cost of a "base" building in Mobile, AL, of \$1,001,126 to Colorado Springs, CO, the calculation will be as follows: Select the regional modifier for each state or city (Colorado 0.99 and Alabama 0.80). \$1,001,126 x 0.99 ÷ 0.80 = \$1,262,266.75.

DCD 2024 Regional Modifiers

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