

an **A+**
in Thin Brick

Case Study In Thin Brick:
Fred Hill & Dorothy Martinez
Elementary Schools
Little Elm, Texas



King Klinker's King Crimson & Black Beauty Thin Brick



Front entrance, Fred Hill Elementary School



Front entrance, Dorothy Martinez Elementary School

As two of the newest additions to the Denton Independent School District (Denton ISD), the Dorothy Martinez and Fred Hill elementary schools were designed by Pfluger Architects to usher in a new era of next—generational education and reimagine the ideal learning environment. Rather than secluded classroom wings or disconnected destinations, the schools are centered around flexible cores where cafeteria, library, and courtyard all come together, facilitating movement, connection, and — most importantly — learning, unobstructed by grade level or classroom.

Martinez Elementary was named in honor of Dorothy Martinez, a longtime Denton ISD teacher and former member of the Denton ISD Board of Trustees. While Hill Elementary commemorates Fred Hill, the first African American male to serve on the Denton school board. Both schools are now open, with the capacity to serve 750 students within their respective communities.

Pfluger began designing the projects in summer 2022, but construction did not — and could not — start until after Denton ISD voters approved a \$1.4 billion bond referendum to secure the necessary funding. The measure eventually passed in May 2023, leaving roughly 12 months of build time, as Martinez had to be completed before the start of the 2024 school year.

Meeting Construction Goals With Prefab Panels

The tight schedule imposed by the bond’s approval required that a construction manager be brought on early in the planning and design stages, with Denton ISD selecting international construction company Balfour Beatty for the projects. Balfour quickly identified a prefabricated exterior wall system as the most logical solution, citing the quick turnaround time, high degree of quality control, and rapid installation as the main selling points compared to traditional stick — and brick — built construction.



BakerTriangle employees prepare a prefab wall panel for Fred Hill Elementary School. Thinset mortar is applied to the panel in preparation for the laying of thin brick slips.

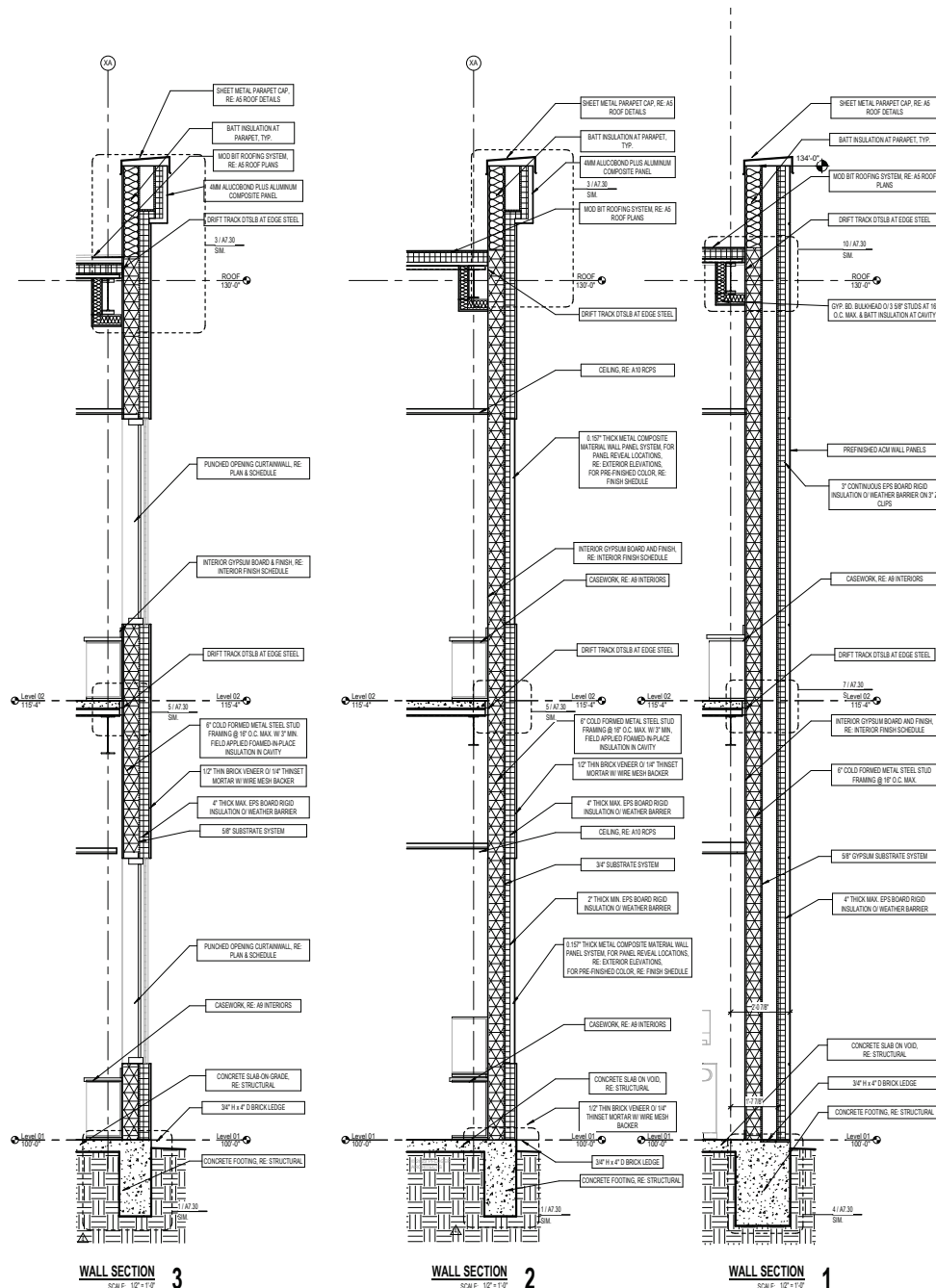
"[With conventional construction] you have manned equipment running around the perimeter building and slowly putting everything on in an elevated position. You run the studs all the way around, put sheathing on, then you're putting your window frames in. You've got to protect all that, then your mason has to slowly build a scaffold system and then you build that all the way around. It's just a slow process working all the way around when it's traditional, because you just have to put one layer and then the next layer, then the next layer....

Building like this takes probably about four months to complete from the start of the process until the end, depending on the weather, too. We probably did that in a six week timeframe with prefab, because they come out literally with a crane, and that panel is done and it's just flown in place, and then the next one, and the next one, and the next one."

— **Damon Maldonado, MBA, LEED AP, Vice President & Business Unit Leader, Balfour Beatty**

Dorothy Martinez
Elementary School,
Denton ISD

Cross sections of
three wall panel
configurations
designed by Pfluger



pfluger

In addition to reducing construction times, the use of prefabricated wall panels also aligned with Denton ISD's rigorous energy efficiency goals, as an airtight envelope is crucial to preventing energy

waste. Prefab panels help deliver that airtightness thanks to their being manufactured off-site in a highly controlled environment with strict quality and precision standards.

With prefabrication identified as a necessity for both staying on schedule and reducing energy consumption, the project team reached out to BakerTriangle Prefab, a local manufacturing company known for their highly customizable prefabricated wall panels that integrate cladding solutions into the finished product.

"There's a lot of expanding use of prefabrication in construction and BakerTriangle believes we continue to push the envelope in prefabrication, especially in prefabricated exterior wall panels, by including the finished facade as part of the panel solution. That not only is giving you the baseline value of the envelope, but it is giving you the enhanced value of eliminating the need to field install your exterior cladding system — it keeps a mason off the site, it keeps a waterproofer off the site, it keeps a metal panel installer off the site, and so on. It is a full turn — key envelope approach through a single system, single fabricator, single prefabrication trade partner.

The panels allow for very quick installation and, because they are an envelope panel, once they're installed you have dry — in of your exterior wall — all there's left to do is put the roof on and you have the entire building envelope in place."

— Samuel Balunda, Executive Vice President, BakerTriangle Prefab

Thin Brick Is King

Because BakerTriangle's prefab wall panels are shipped out with exterior finishes installed, it was crucial that all cladding be sourced before prefabrication began. Acme Brick was instrumental in this regard, working with the project team to identify product lines that not only meshed with Pfluger's designs but which were also readily available in the necessary quantities.

"Baker Prefab and Acme have quite the healthy relationship, and part of that partnership is helping the two parties that we're both serving, one, the ultimate owner, and two, the end user, in selection of materials. Because these two schools were built with an adhered masonry system, we needed to utilize a thin brick versus a modular or full-depth brick.



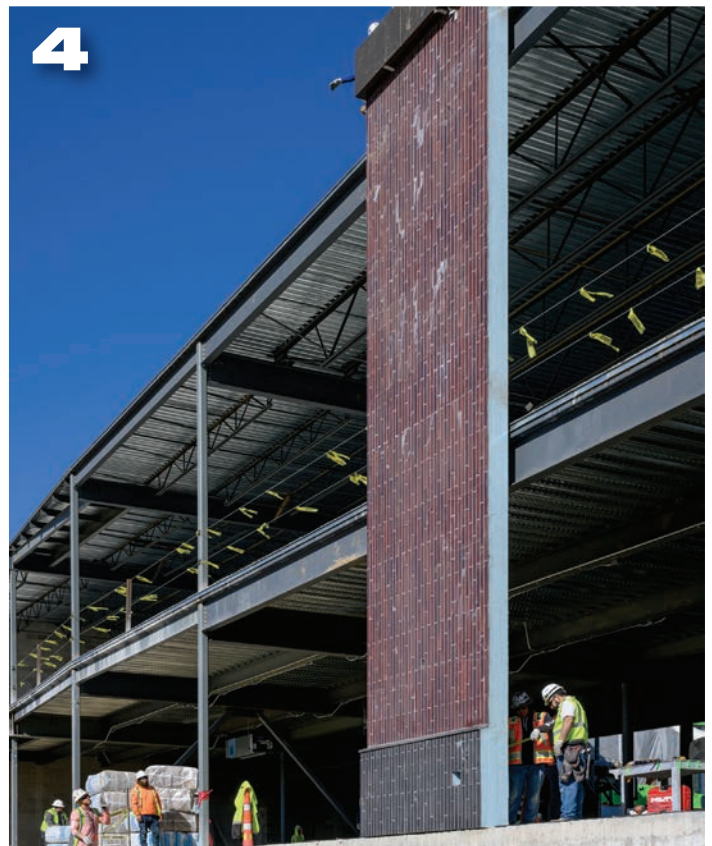
Thin brick slips are installed by BakerTriangle on prefab panels destined for Fred Hill Elementary School.

It's critical to have a partnership that allows for the procurement in a timely manner, and Acme worked very closely with us, Denton ISD, and Pfluger to present product lines that were available for use to meet this expedited schedule; because in simple terms, when initial building construction begins, that is roughly the same time that prefabrication panel fabrication begins. So it has to be understood in great detail or thought about differently on procurement so when the general contractor starts the proverbial "digging in the ground," Baker needs to have brick here for use in fabrication. Acme presented those readily available solutions to the project team, to us, to meet that atypical delivery/ procurement scenario."

— Samuel Balunda

BakerTriangle manufactured a total of 134 prefab panels per school and installed them in just 20 working days, amounting to approximately 70% time savings compared

to conventional stick—built construction. The schools made history in that they were the first K—12 projects in the United States to utilize a prefabricated exterior wall system.



Installation of prefab panels at Fred Hill Elementary

As both projects are based on Pfluger's new elementary school prototype, Hill and Martinez are functionally identical in form and layout. Their main differences are purely cosmetic: A combination of metal wall panels and thin brick veneers unique to each school visually sets the two apart from one another.

All the thin brick was sourced from King Klinker — a Polish company that specializes in the production of high quality ceramics based on the traditional clinker — making method — upon recommendation from Acme Brick, the southern United States' primary distributor of King Klinker America products.

"Acme brought King Klinker to us. Every time we start a project, we will request samples based on our design intent, and one day our representative at the time came in and was like 'Hey, check out this unique brick.'

After looking at the sample and the brochure, we decided it works perfectly with the direction of the design and it will provide something much more interesting and unique."

— Casey Mirau, AIA, NCARB, Senior Associate & Project Designer, Pfluger Architects

*View of Hill Elementary from parking lot (above);
thin brick and metal panel detail at Hill Elementary (below)*



“Acme and the school building type have been hand—in—hand for many decades, so it was a natural fit to start the conversation with them. Acme also has a historic relationship to Denton, as one of its oldest and largest brick plants is located in the city, so there was already an impetus from the district to consider them.

Interestingly, King Klinker is not manufactured in the U.S., and so working with Acme to make sure that they had the capacity and the warehousing in the U.S. to be sure the projects could be built on schedule was very important to us. King Klinker was already set up that way, with enough stock in the U.S. that we weren’t limited during construction.”

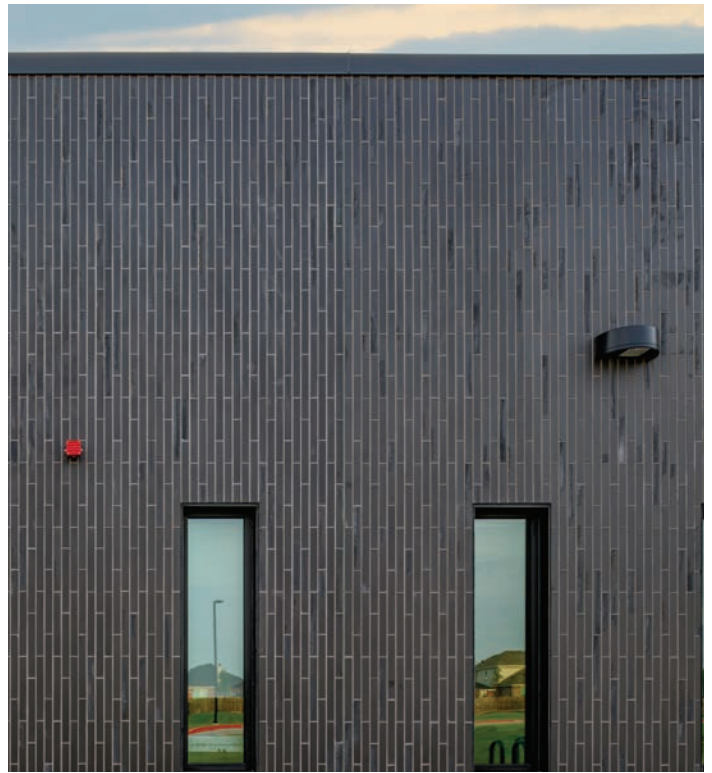
**— Chad Martin, AIA, LEED AP, Principal,
Pfluger Architects**

Dorothy Martinez Elementary School employs King Klinker’s Black Beauty thin brick slips, while Fred Hill Elementary School is clad primarily in King Crimson — a redder, rustier color closer to conventional brick colors — with Black Beauty along its base. All slips are of the American Imperial size configuration (2 1/4 x 19 5/8 inches).

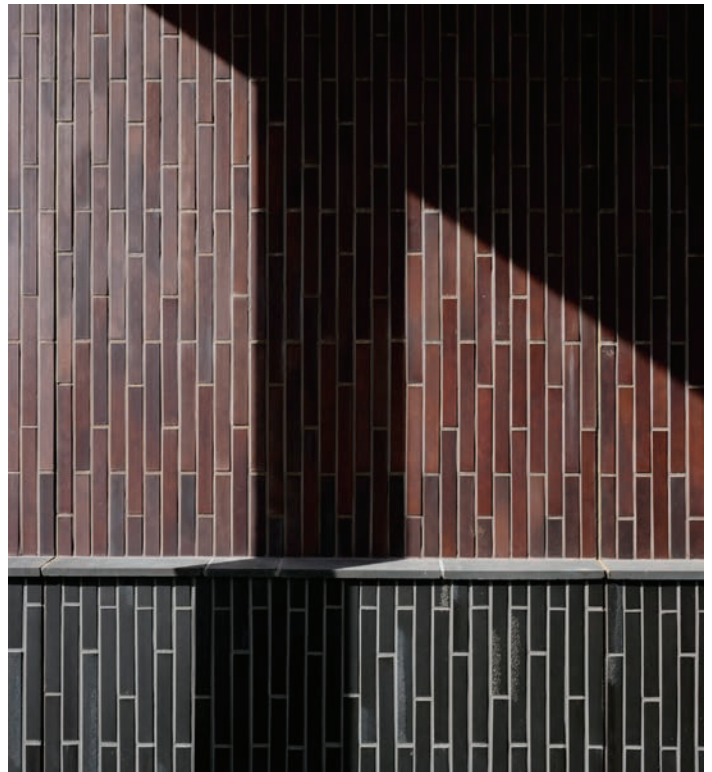
The slips were laid on a vertical one — third running bond greatly exaggerated by the length of the thin brick, creating an interesting and eye-catching effect you’d never get with standard sized modular bricks. This verticality was integral to Pfluger’s vision for the schools, serving to help break up the facades and imbue them with a sense of movement.

“There was need to keep the modular panel articulation to a minimum and reduce the building footprint to control costs. That, coupled with flat landscapes, which most of our North Texas sites are, initially led to long facades without much movement or excitement. Those facades can become mundane quickly unless you add verticality and start breaking down the scale.

Early on, before the introduction of King Klinker, we had vertical elements that ran from the bottom of the building to the top to help with that. Those became cost prohibitive which is why we mimicked those elements with the vertical brick design to bring some life to the



Black Beauty thin brick clads the exterior of Martinez Elementary



King Crimson and Black Beauty thin brick adorns Hill Elementary

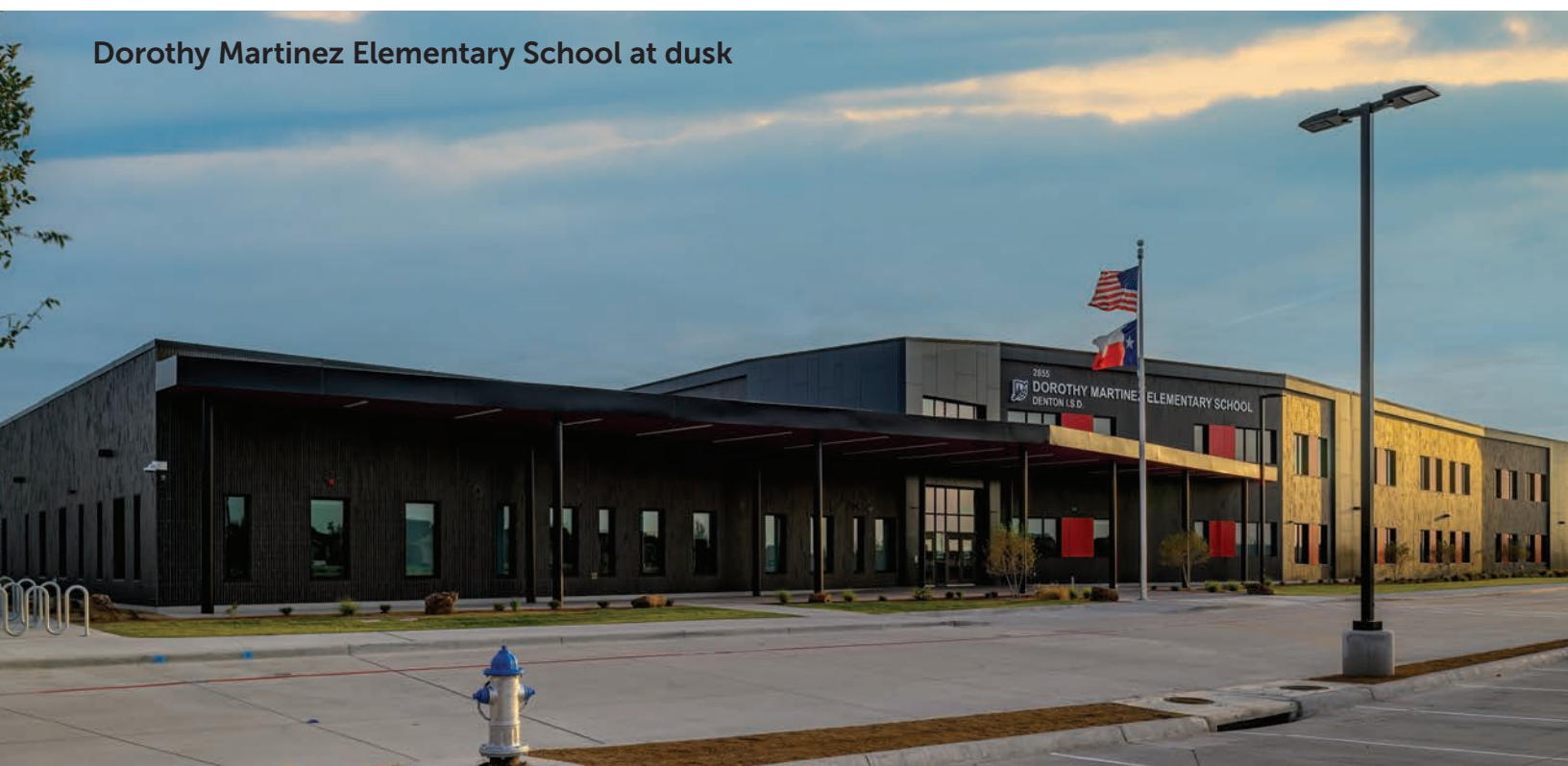
exterior. It’s also something that you don’t see often, so it provided an opportunity to do something unique to the exterior that reflected the energy of the interior and the district’s new approach to elementary education.”

— Casey Mirau

Fred Hill Elementary School at dusk



Dorothy Martinez Elementary School at dusk



Denton Independent School District, Little Elm, Texas
architect: Pfluger Architects | Dallas, Texas
construction manager: Balfour Beatty | Dallas, Texas
prefab manufacturer: BakerTriangle Prefab | Richardson, Texas
photography: Louis Curtis

