NO. 4 ST. JOE BRICK

The architectural iconography of Houston begins in a Louisiana clay pit

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including
guide to mortar

1 *St. Joe Brick Works outside Slidell.*

When Matthew Peter Schneider III recalls the old days at St. Joe Brick Works outside Slidell, Louisiana, where he is now president and part owner—along with his wife, brother, and mother—he has to get out of his chair. We are in his office, which was once the kitchen of an old wooden house where a plant manager lived with his family. Brick samples line the walls along the floor, and his son's puppy boxer Greta chases after shoelaces and pounces on any moving thing. Pete demonstrates the action of a "short-stop," one of a three-person crew that used to load, or "charge," the old-fashioned scove kilns that had been built at St. Joe back in the 1910s.

One man, the pitcher, would grab two "green" bricks at a time and pitch them together ten feet up to the short-stop—that was Pete as a young man—where they'd reach the weightless apex of their parabolic flight just at the level of his hips, as if to wait there together for him to reach over, pluck them out of the air, and pitch them again up to the setter. A simple and graceful momentum would cleave the two bricks together until the setter separated them once more and placed them on the 30-foot high stack, which had been built up this way from the ground. He'd space them so that the heat of the kiln would circulate around each brick as the heat rose up through the stacks. At the same time that it arranged the stack, the crew would build a series of improvised archways along the length of the kiln, caverns where the pine wood fuel would burn once the kiln was sealed, firing 600,000 bricks at a time.

To describe this process, Pete has to stand up with his knees bent like a running back ready for the snap, his line of sight alternating between the carpet and ceiling for each imaginary pitch, as if watching the other two men. Pete can't disguise his admiration and fondness for the longtime crew at St. Joe, men whom he knew growing up, who taught him their skills over years, who worked for him once he bought into the business, who were close family friends, and who retired and passed away to be followed by later generations. "They weren't afraid to work," he says. Pete himself is a fourth generation owner of St. Joe. His great-grandfather Pete William Schneider was a German brick maker who immigrated to the United States in 1850 and bought St. Joe Brick Works in 1895 just four years after its original founding. Pete's son, also Pete, is learning the business and takes calls from clients and distributors, having already put in some years at the plant.

Brick manufacturing and bricklaying reach back through many centuries, even millennia, of history. It is no wonder that so many involved in the industry today inherited their skills and trade through a family lineage. And no wonder, either, that the use of brick in residential and institutional buildings is tied to the deeply symbolic association of brick to tradition and history. It doesn't matter that widespread adoption of materials like reinforced concrete and techniques like steel framing has utterly transformed the role of fired clay brick—with changes felt in varying degrees by every stakeholder along the way, from the manufacturer to the builder, the bricklayer, the architect, and the property owner.

St. Joe Brick Works is an unusual company. When industrial innovation and corporate conglomeration pushed manufacturers into mass production, with a new and more factory-friendly extrusion process, St. Joe stubbornly stuck to its timeworn practice, relying on comparatively labor-intensive processes to manufacture a brick that is today recognized for its unique color and quality, sand-struck texture, and the dark flecks of iron pyrite by which St. Joe's brick is most readily identified in the field.

Rice University used brick from St. Joe before Pete was born in 1953 and has come to rely on St. Joe bricks for their varied, rich tones, and their handcrafted beauty, says university architect David Rodd. "We've found no comparable substitutes, and no other masonry products that come as close to the historical look of Rice's original buildings." Pete credits the relationship with Rice for sustaining and improving his business. Rice University hires architects from around the world, and several of them have visited St. Joe to review the selection and make inquiries. Most of St. Joe's bricks are sand-struck, which means the crew uses a fine layer of sand as a lubricant in the wooden molds so that the bricks can be turned out onto metal pallets like cakes from a greased pan. Sand striking contributes to the rich texture of the brick. But when an archi-

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ALL PHOTOGRAPHY THIS ARTICLE BY HANK HANCOCK

tect for Rice once sought deeper, more rustic colors, Pete came up with a "water-struck" brick, using a very fine powder instead of sand, effectively doubling the lines of bricks on offer. For several science buildings at Rice (George Pierce and Abel B. Pierce), St. Joe used custom molds to produce bas-relief images of iconographic symbols to represent each building's scientific field. For example, Keith-Wiess Geological Laboratories (1958) features nautiluses, trilobites, and seismic readings. These impressions are made by what are called "frogs," raised elements in the mold that typically spell out the name of the brick company.

The small size of St. Joe Brick Works allows for interventions all along the process. On Pete's desk recently were rough sketches for an unusual L-shaped brick. Unusual shapes require special molds, and St. Joe orders both its standard molds and special molds from Crowell & Sons (also a family-owned business), founded in 1872.

Most of the members of the crew at St. Joe—they number about 25 men—have their hands literally in the manufacture of the product. Piles of clay are trucked to the plant from several nearby pits, some of them still producing clay after 100 years. From discrete piles, sand and clay are loaded into a "dirt feeder," basically an open shed behind the plant that shelters an enormous buried screw that breaks up the clay and delivers it to a conveyer belt. The belt brings the raw clay mixture into a barnlike area of the plant, where it is dumped into separate piles depending on the ratio of sand to clay. A backhoe then scoops clays from the separate piles to blend them together before it delivers the mix to the pug mill. After more grinding, a conveyer belt carries the blend past a crewman who picks out impurities like tree roots. The blend is then mixed with water to temper the clay in an enormous tub, creating a dough-like substance. A skilled temperer watches over the process and adjusts the water to ensure the dough coheres and is pliant, but not too wet. The next conveyer belt delivers the dough to the final mixer, a tremendous vat with a screw that pushes the dough down into molds that have been prepared and fed into the machine.

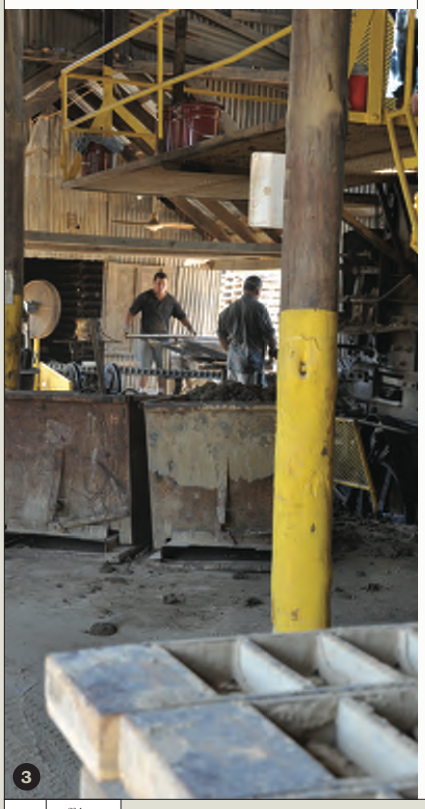
The molds hold the wet clay for just eight seconds, before the bricks are turned out onto a metal pallet. A number of the crew at this intersection are responsible for feeding the prepared molds and palettes into the machine, turning the bricks onto the pallets, and carrying off the used molds to prepare them again. Washing molds, Pete says, was his very first job at the plant, his introduction to the process.

An antiquated set of greasy cables carries the pallets off into the long dry shed. About 100 yards long, the shed can hold up to 60,000 bricks at a time, but is usually loaded and unloaded in two shifts. Steam pipes forming tight parallel shelves run the length of the shed. A couple of the crew can spend one full day to unload 30,000 bricks and allow them "set up"—ensuring they have dried enough on their own so they do not stick to the pallet—before sealing the shed and turning on the heat. The steam pipes deliver 240° F of heat directly to the bricks, forcing water out of them evenly, which reduces the risk of breaking and cracking that is more of a problem when using superheated air. The bricks will spend about a week in the dry shed before being taken down and delivered by cable out the far end of the shed to the setting line, where the "greenware" is stacked and prepared for firing. On the setting line, crewmembers build four-foot-tall cubes by hand, again carefully spacing the bricks to allow heat to circulate through them once they are brought into the kiln.

The beehive kilns—round brick structures 36 feet in diameter, able to hold 135,000 bricks at a time—were built in 1969–70 to replace the scove kilns that Pete recalls loading, or "charging," as a youngster. Pete says that when the scove kilns were still in operation, before St. Joe had forklifts, the crew would have to lay down rails and use a mule-drawn cart to move the brick into and out of

THE MIX

2 *Examples of various clays in the yard.*
3 *Wood molds are stacked in the foreground.*
4 *Water tempers the clay.*
5 *The external conveyor belt runs from the dirt feeder to the machine shop.*



THE KILN

6 *Green bricks in the dry-shed, steam pipes in the foreground.* **7** *The roof of the beehive kiln, also made with brick. The kiln is being loaded and unloaded at the same time.* **8** *Stacks of bricks in the beehive kiln.* **9, 10** *The door to a beehive kiln that is firing is sealed with wet clay, the same material that goes into the brick.*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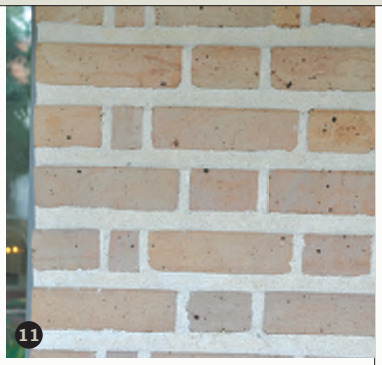
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LAYING BRICK

10 *A brick wall preserves an oak tree at the new servery at Rice.* **11** *A close-up of a "reverse weather-struck joint," a Rice standard.* **12** *True arches at Baker College.* **13** *Bricklayer at St. Michael's Catholic Church creates saddle joints for bricks not made by St. Joe Brick Works.*

the kiln. The beehive kilns, fueled by natural gas, have eliminated the need for building improvised archways for wood fuel. Once the cubes are assembled outside, they are carried in by forklift and stacked three high, in tight formation, to form 12-foot tall towers. The door to the kiln is drawn to and sealed with rough mud, using the same clay used to make the bricks. The scove kilns used to take two weeks each to charge, to "burn," to cool, and to unload—a two-month process each time. The beehive kilns by contrast can turn out a batch in eighteen days, including a 10- to 12-day period of firing around the clock and then carefully cooling with at least one crewman at a time monitoring and adjusting the temperature along the way.

Ricky Graves, whose father also worked at St. Joe Brick Works, started there himself in 1989 at 20 years old. He says he was not expected to last longer than a week. He started by setting bricks and washing molds, graduated after a number of years to tempering the clay, and moved up after five more years to burning the kilns and firing the brick. He spent many nights alone babysitting the kilns from an air-conditioned, closet-size shed about 20 yards from the kilns and their nearby chimneys. Ricky capitalized on all that time watching the kilns by reading books on computers through the lonely nights and training himself to be a valuable information technology specialist at St. Joe and a freelancer in Slidell.

The chimneys contain fans that draw heat from the kilns through underground pipes. The fans run at a constant speed, and airflow is checked by louvers that the crewman can shift to adjust the heat inside the kiln. Besides the composition of the clay, it is the temperature and duration of the firing that produces varieties in color. Bricks fired at 2255°F come out a light rose color, the kind that Rice most often uses. Bricks fired at 2585°F will be darker and more red. (Pete claims that St. Joe's is the hottest-firing face brick in the world.)

Within a single firing, the bricks will acquire variations in color, with those at the bottom of the kiln generally darker, having been exposed to the greatest heat. Crewmen unloading the kiln will sort the variants out and stack the colors separately until they are ready to be packaged for shipping. Then, according to the order specification, a blend of colors is assembled with 600 bricks to a wooden shipping pallet, the crewman being careful to draw colors together for the benefit of the bricklayer at the building site. St. Joe Brick Works does not typically produce a uniform color for its customers, but rather provides a blend of multiple shades that together create an attractive surface, one with character and warmth. When bricks are uniform in color, they tend to obscure their essential quality of having once been discrete objects, modular units, handled by laborers all along the way; their uniform color can make the wall seem too modern, too clean, and too blank, more like precast concrete.

To move St. Joe's brick to Rice, the masonry contractor W. W. Bartlett, Inc. works with distributor Architectural Masonry Products of Houston. Katie Bartlett, who works for her father "Bo" Bartlett Jr., explains that the distributor is the one who hires the trucks and oversees the shipping to the site.

Like Pete, Bo learned the trade from his father, who learned from his own father. If Bo's son, who's now in college, wishes to join the company, Bo has decided he will have to train a few years elsewhere before applying, as a way to strengthen the company's plan for succession.

W.W. Bartlett, Inc. has laid brick in many buildings at Rice, especially since about 1991. Bo keeps a close eye on his worksites, like the recently completed South Colleges renovation at Rice, which includes the new East Servery for Lovett and Will Rice Colleges.

Bricklayers take years to train, and Rice draws on the company's experience to handle the tricky techniques that produce the characteristic Rice look. Most brick buildings have 3/8-inch "joints," the mortared spaces between the bricks, but those at Rice are unusually large at one inch. Bartlett bricklayers have also mixed special mortar for some Rice projects, like the Recreation Center, to create a rosy tone and de-emphasize the gridlike quality that can be produced by starkly contrasting colors of brick and mortar.

When bricks are laid, excess mortar—the bricklayers call it "mud"—gets squeezed out of the bed joint between each row, or "course," of brick. A bricklayer uses a trowel to scrape this excess off and to shape the surface of the mortar between the bricks, forming different kinds of joints. A flush joint creates a single surface, a bucket joint creates a shallow trough between the brick faces, and a recessed joint exposes the edges of the bricks above and below, creating stark shadows and emphasizing the shape of the brick. A typical weather-struck joint exposes the edge of the brick above and shapes the mortar to slant down to meet the edge of the brick

STEEL-FRAME BUILDING, WHICH TOOK OVER THE LOAD-BEARING TASK FROM BRICK, UTTERLY *TRANSFORMED* THE WORK OF BRICKLAYERS.

below; this shape moves rainwater to the surface of a wall as it flows down its face, and on a clear day the mortar shines as it catches the sunlight. Rice buildings use reverse weather-struck joints, exposing the edge below and slanting up to meet the edge of the brick above. Rice's unusual brick joints can be traced back to its first buildings, Lovett Hall and Herzstein Hall. One-inch thick reverse weather-struck joints, says David Rodd, "contribute lightness and a distinctive, plastic texture to the walls," and are immediately identifiable as part of Rice's unique aesthetic. In sunlight, the unusually thick joints are somewhat obscured, highlighting the handcrafted characteristics of St. Joe bricks. There's no mistaking them for the hard lines of extruded brick from a typical large-scale manufacturer.

Bo emphasizes that "all brick leaks." Heavy rains will saturate a brick wall and emerge in the one- or two-inch cavity provided between the brick and the building itself. This rainwater then leaks down the cavity until it reaches what are called "weep holes" placed at the building's foundation, where the water can be dispersed out into the ground, away from the building.

The brick on most buildings now is thus really a curtain, a dressing for the building within, which has been thoroughly weather-proofed already with synthetic plastic materials like Tyvek, its windows and doorways wrapped in protective flashing.

Steel-frame building, which took over the load-bearing task from brick, utterly transformed the work of bricklayers, obviating many of their more arcane and deeply developed skills. The rich language of bricklaying reflects the onetime complexity of a craft that is gradually simplifying. It is possible to imagine bricklaying enjoying a sort of latter-day renaissance as an artisanal hobby for recreationists and preservationists, in the same way that people take up print-making, glass-blowing, ceramics, and cheese-making in an effort to sustain the craft and its lore in small-scale workshops, while the building industry is shaped by necessary constraints on efficiency, cost, and scale.

Special bricklaying forms like the "Flemish bond" once functioned to join the multiple layers, or "wythes," of a load-bearing brick wall together. Today, as in Sid Richardson College, most such bonds are simulated—formed by a "bat," or a cut brick—since there are no longer deeper layers behind the face to be joined. A skilled bricklayer can still create "true" arches, like those at Baker College, in which the bricks distribute the weight of the wall into intervening columns. However, few building engineers today utilize this skill, their training limited to erecting steel frames. The archway bricks become simulation or ornamentation. Indeed, many commercial brick manufacturers, recognizing that dressing the building's face is the only purpose of most brick today, have shrunk the other dimensions of their bricks—size standards sometimes seem notional, defended by some, shirked by others—in order to extend raw materials.

The look of brick has not enjoyed consistent popularity either. Before the eighteenth century, brick faces were commonly plastered over, considered unsightly. Pete at St. Joe Brick Works describes the history of Jackson Barracks, a military installation built in 1836 on the eastern edge of New Orleans' Lower Ninth Ward that was severely damaged in Hurricane Katrina. (Historic restorations routinely work with St. Joe to match color and quality of bricks from past ages.) Over the past two centuries a series of commanders had the fort's brick faces plastered over, exposed, and plastered over again, according to their tastes or the fashion of the day. In the twentieth century, modernist architecture eschewed ornament in favor of simplicity and functionalism, and had little room for brick, which it considered a nostalgic material at odds with modernism's forward-looking program.

General foreman Travis Causey, who has worked for W.W. Bartlett, Inc. for 19 years and who also learned his trade from his father, says he has seen fluctuations in the market in Houston over recent decades, especially in the 1980s when "everything went to glass and precast concrete." While brick is currently enjoying another revival, the collapse of the building industry nationwide has made everyone nervous. Yet Houston's construction market—especially apart from home building—has not suffered as much. And small, specialty brick manufacturers like St. Joe Brick Works have not seen much trouble at all.

Travis has two daughters and one grandson, but he won't be encouraging them to enter the trade. "It's a hard job, and it's hot. I hope for my grandson that he finds something better." Bo points out, however, that members of his crew, predominantly Hispanic now, are bringing their own children into the trade and passing down the traditional skills, including the advanced techniques and special bonds that predate the dominant practice of brick-facing today.

Pete's office at St. Joe Brick Works is also a family space. Pete's brother Chris, plant manager and part owner, sits on the floor to distract the excitable puppy. Everyone including Pete calls him "Uncle" Chris, because at one time there were four Chrises working at St. Joe. Pete's son Pete IV is sitting at a computer, taking calls, looking up bits of information, and occasionally getting up to take the puppy outside to do her business. The conversation is that of a family, full of reminiscences and cross talk. They fondly recall their Uncle Claude, a part owner decades ago and once a bridge for them to the old days. Uncle Claude eventually sold his stake and retired to Metairie, but he continued for the rest of his life to tell his wild stories. In his youth, Uncle Claude was something of a Gulf Coast playboy, boating off for jaunts to pre-revolutionary Havana. The conversation turns and the puppy lays down for a nap on her blanket. Suddenly, the backdoor swings open by itself and stops all conversation. "Is that Uncle Claude?" asks Chris, laughing.

MORTAR JOINTS

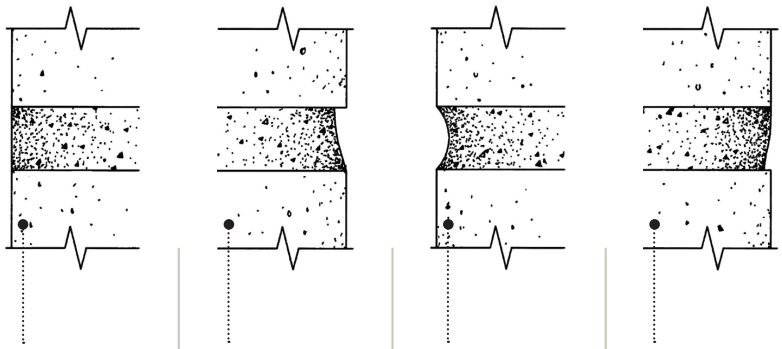

ILLUSTRATION BY MIKEY TEHRANI

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