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Piecing Together New Dearborn Rail Station with Brick and Block

2013 ANNUAL REPORT

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Next Stop: Baker Construction's Brick and Block at new Dearborn Rail Station

By Mary E. Kremposky, Associate Editor

High tech meets history at the new train station in Dearborn. Welcome aboard and enjoy the ride on new rail tracks capable of supporting 110 mph train service from Kalamazoo to Chicago. Ultimately, high speed rail will line the entire Detroit-to-Chicago Amtrak route, shortening transit time between the Motor City and the Windy City. A joint venture of Tooles Contracting Group, Detroit, and Clark Construction Company, Lansing, is busy bringing this $28.2 million train station in on time.

When the train actually glides into Dearborn's new Intermodal Passenger Rail Station, passengers will enter a soaring cathedral of brick and burnished block, courtesy of Baker Construction Co., Inc., Whitmore Lake. The brick arches, the decorative banding and the sheer height of this 48-foot-tall structure recall the grand train stations of yesteryear. In fact, passengers can enter yesteryear via a direct passenger bridge linking the station to Greenfield Village and The Henry Ford. The glass-enclosed bridge over the tracks connects the station proper to a companion tower that will serve as another entrance to this national historic landmark and prime tourist destination.

Neumann/Smith Architecture's design brings back the excitement of train travel and honors its historic neighbor to the south. The new station's clock tower aligns with the historic clock tower and dome of The Henry Ford, a museum building designed as a replica of Independence Hall in Philadelphia. In line with this grand American building, Baker Construction brought the same sense of craftsmanship to this federally-funded transportation hub that will serve as a new gateway to the entire Southeast Michigan region. As an intermodal facility, transportation links will include bus routes, airport and hotel shuttles, pedestrian and bike paths, and even a proposed Detroit to Ann Arbor commuter rail.

PURE MICHIGAN, PURE MASONRY

The mason's craft is clearly displayed in every unit of brick, block and stone blanketing a building that dominates seven acres of land along Michigan Avenue. Baker Construction hand-laid 133,500 modular bricks supplied by Belden Brick Sales Co., Fraser, said Baker Project Manager T.C. Baker. Twenty-one precast brick arches add to the character of this masonry showpiece. Both brick and arches are pure Michigan: Assemblers, Inc., Pinckney, installed the arches as a Baker subcontractor, and International Precast Solutions, LLC, River Rouge, served as supplier.

Add the glory of stone to the beauty of brick in this 16,000-square-foot building. Mesabi Black granite clads the base of several glass and stone sections; decorative limestone brackets dot the roofline; and Indiana limestone is also the material of choice for the clerestory window area and

RENDERING COURTESY OF CITY OF DEARBORN

for the large swath of stone covering the center of the clock/stair tower.

And that's just the exterior. Masonry's aesthetic power is on full display within the interior. A pattern of light burnished block with accent bands of split-face block ripples down the length of every interior public wall. Grand Blanc Cement Products, Inc., Grand Blanc, supplied 30,900 pieces of burnished block – an amazing number far above the amount typically used as an interior finish material, said Baker.

The interior is almost a masonry painting. The precast arches push through to the interior, adding colorful arcs of red to the overall neutral, light-grey interior. Door frames of stepped brick add another pop of color to the interior, which has its own centrally located curved portals formed of the same pre-assembled brick arches.

This pure Michigan and pure masonry structure is also a true load-bearing masonry building to the very core, the core or block backup wall being part of the 22,760 pieces of gray block also supplied by Grand Blanc Cement Products and installed by the skilled crew of Baker Construction.

SHOP VS. FIELD

Clearly, Baker delivered the Holy Grail of construction: Quality work produced on schedule and on budget. Baker arrived on site in early April 2013 and reached substantial completion in October 2013. To save time and money, Baker opted for precast brick arches. "They are essentially thin brick laid into concrete," said Baker. With the aid of a crane, "each arch was installed as one whole piece," he continued. "Each hangs from a large piece of steel installed directly above it."

Arch field construction would have been more expensive and would have taken longer to install. "In that system, the mason has to slide each individual brick onto a series of rods that form the shape of an arch," explained Baker. Post-installation, the arches now grace a long row of large, south-facing windows. These carefully assembled arches also frame wall expanses of pure brick, stamping the new facility with the motif of the grand, monumental train stations of an earlier era.

On the other side of the tracks, all six of the brick arches on the companion south tower are hand-laid. These arches are a veneer rather than a full-size arch with an underside. Baker explains the work: "We built a template out of wood, laid it in the wall, laid the brick around the template, and then in-filled the brick below."

GET MOBILE

Of course, every great work begins with a plan. Steve Gurney, Baker foreman, devised a scaffolding plan and layout to access the entire structure, including the highest reaches of the two towers. Basically, Gurney's plan called for hydro-mobile, self-climbing mast towers for access and two 30-ton cranes for material delivery to the Baker crew stationed on the scaffold.

The Baker team installed hydro-mobile around all four sides of each tower, as well as the center. "When we were at the top, we could walk through the arches from the inside of the tower to reach the outside scaffold," said Baker. "It was like a full platform all the way inside and out. We did use a bit of conventional scaffolding on the interior, but we tried to use as little conventional scaffolding as possible because it is more labor intensive to build."

Gurney also positioned a crane on each side of the tracks. For the companion south tower, "we parked the crane on the back side of the tower, because we only had a tiny little space to move and work in over in that area," Baker added.

PHOTO BY MATTHEW AUSTERMANN, CAM STAFF

Red brick arches throughout the interior add a dash of color to the beautiful flow of burnished block and split-face block bands.

At the end of this phase, Baker borrowed Assembler Inc.'s large cranes - already on site for handling the precast arches – to hoist and remove the scaffolding set in the tower interior. "We pulled the scaffolding out of the open tops of the two towers," said Baker. "The scaffold on the exterior was dropped back down to the bottom in the conventional manner."

STAYING ON TRACK

Like a well-run train pulling into the station on time, the block walls rose according to schedule, thanks to Gurney's scaffolding battle plan. "The block went very smoothly," said Baker. "For the most part, we were done with the exterior load-bearing block sometime in June."

For the veneer, a delay in dolomitic stone delivery caused a switch in suppliers. The new supplier, Capital Stone Works, rushed to the rescue. Their timely delivery, coupled with several Saturdays on the jobsite for the Baker crew, put the schedule back on the right track.

The dolomitic stone was pivotal to timely completion, because it is the first course of the entire building – a masonry structure beginning below grade and becoming a 50-foot-tall masonry citadel rising 48 feet above grade. As the first piece of the puzzle, the dolomitic stone's installation set the timing and tone for the installation of the brick and stone. "The first course everywhere on the building is dolomitic, so we couldn't start anything without it," said Baker.

Dolomitic limestone was chosen as the base course, because it is denser and more resistant to weathering and salt than Indiana limestone, explained Baker. Originally, dolomitic limestone was the stone of choice for the entire project, but as part of value engineering, Indiana Limestone was selected as a more cost-effective replacement. "Dolomitic limestone is four times more expensive than Indiana limestone," said Baker.

Application of the high volume of brick veneer was the next task. This phase of the project progressed smoothly with the Baker crew pouring on the heat to meet a tight schedule in the bridge area. "Once the steel for the bridge was in place, we would no longer have access to lay brick in that area," said Baker. "Because they couldn't put the steel in until the brick was installed in that area, we had to lay brick in this priority area as soon as possible." At peak, Baker Construction had a crew of 20 bricklayers and 11 laborers.

Baker brought its expertise and efficiency to bear on the south companion tower, as well. "The project had a very tight schedule on that south tower," said Baker. "I don't think they thought we could do it, but we were able to get it done."

For the south tower, the obvious "elephant in the room" is working in close proximity to an operating train. "Amtrak had a person on site every day," said Baker. "He notified us when a train was approaching. With scaffolding all the way around the structure, our crew just walked to the scaffolding on the other side to avoid being near the tracks while the train was going by. We didn't get off the scaffold, because it would take as long to get off the scaffold as it would for the train to pass."

TRAVELING FIRST-CLASS

The end result of almost seven months on the scaffold is a truly stunning masonry structure. The building is well-crafted below its beautiful cloak of brick and stone, as well. Baker details the composition of the masonry cavity wall: The station proper has three inches of spray foam insulation and two inches of cavity wall air space between the brick and block. "All the flashing is stainless steel, which is one special aspect of the wall's drainage system," said Baker.

Rigid insulation with fused seams was the insulation of choice for the south tower by the

PHOTO COURTESY OF CITY OF DEARBORN

With its landscaped plaza and almost 50-foot-tall clock tower, Dearborn's new Intermodal Passenger Rail Station will be a striking presence along Michigan Avenue.

tracks. "The fused seams create one solid piece of insulation on the wall," said Baker. One of the driving factors behind its selection was the need to avoid any potential spray foam overspray from damaging the historic fleet of Model T cars housed almost next door. "I didn't want to end up buying a Model T," quipped Baker.

The interior masonry also showcases the expertise of Baker Construction. This third-generation masonry company poured its energies into ensuring every piece of this beautiful masonry puzzle fit as perfectly as humanly possible. Again as the first piece, dolomitic stone clads the base of the central columns. "We spent a great deal of time on layout," said Baker, "and in making sure everything was laid out right at the face on the first course of stone, because there are many pieces up above that had to be just perfect." For example, the openings for the interior precast arches had very tight tolerances. "The arch openings had to be just perfect for the pre-assembled, precast arches to fit," said Baker.

At completion, visitors will be able to take the clock tower's three vertical access routes - the monumental stair, conventional stair or the elevator - to the glass-enclosed upper reaches of the building or to the sky bridge to view these arches up close and personal. "You can almost touch the arches in that area, and because they are like doorways, you can even walk right under them," said Baker.

Summer 2014 will mark the grand opening of this premier facility and the official return of style and class to train travel in Southeast Michigan. This landmark building is adding to the mass transit rebirth beginning in Metro Detroit. The building's arches and other architectural features harken back to the heyday of train travel. However, the arches also serve as a symbolic gateway to a more vibrant future, for economic vitality tends to develop along transit routes.

Dearborn's Intermodal Passenger Rail Station is far cry from the current Dearborn train station – a cramped little building only slightly bigger than a bus shelter. Built to last, this quality public building/monument is sure to become a part of Michigan's economic development story and Baker Construction's own history. "Because it is a building that will be seen, enjoyed and used by a great many people, we have a great deal of pride having been part of its construction," said Baker. Baker is the third generation in a long line of masons in the Baker clan. "When driving around town, I always heard my dad and my grandpa say, 'We did the masonry on that building in the '70s or we built that in the '80s,'" recalled Baker. "I just had my first child, so when we are driving around this area in the future, I can say with pride, 'Back in 2013 we did the masonry on that building.' We are excited to have been part of it." The entire region is excited about this new development rising on the edge of West Dearborn.

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The graceful brick arches recall the rail stations of yesteryear. A passenger bridge links the main station to this imposing masonry tower that offers direct access to Greenfield Village and The Henry Ford.

QUICK FACTS: A New Station and a High-Speed Track

Project Participants: Owner, City of Dearborn; Operator, Amtrak; Architect, Neumann/Smith Architecture designed the station along with consultant design firms of SmithGroupJJR (civil engineering and landscape architecture), Quandel Consultants (rail engineering), KMI (rail station consultant architects), Penhale & Yates (structural engineers), DiClemente Siegel Design (mechanical and electrical engineers) and Somat Engineering (geotechnical engineers); and Contractor, Tooles/Clark, a joint venture of Tooles Contracting Group and Clark Construction Company.

Funding: 100-percent funded with federal money. Project paid for with American Resource Recovery Funds via the Federal Railroad Administration High-Speed Intercity Passenger Rail Program. Funds directed to the Michigan Department of Transportation for the City of Dearborn's Intermodal Passenger Rail Station.

Intermodal Links: This pedestrian-friendly station will be stocked with bike racks and will offer connectivity to SMART, DDOT, and charter buses; corporate and hotel shuttles; and taxis and personal vehicles. The station will provide easy access to The Henry Ford, West Dearborn, and the Rouge River Gateway Trail, popular with pedestrians and bicyclists and providing an easy link to University of Michigan-Dearborn and Henry Ford Community College. The station hosts existing service on Amtrak's Wolverine Line from Pontiac to Detroit. Plans are for high speed service between Detroit and Chicago, and a proposed commuter rail line between Ann Arbor and Detroit. (Quick Facts are courtesy of the City of Dearborn's press releases)

New Track and More New Stations

Amtrak owns high-speed track in southwestern Michigan from Kalamazoo to Porter, Indiana. Michigan purchased the Kalamazoo-Dearborn line from Norfolk Southern in summer 2011, completing the purchase partially with $150 million from the federal High Speed Intercity Passenger Rail Program.

Amtrak, under contract to the State, took over maintenance functions of the Dearborn-Kalamazoo segment from Norfolk Southern on Feb. 16, 2013.

The State of Michigan received $196.5 million to upgrade and engineer the Dearborn-Kalamazoo improvements to bring track speeds to 110 mph. Construction on infrastructure improvements to increase track speeds began in September 2013. Planned upgrades include replacement of ties, rails, and switches, and improvements to grade crossings and signal systems.

The project is expected to be completed in 2016. Over 200 miles of the Wolverine corridor are under the control of Amtrak and MDOT with the aim of reducing travel times between Chicago and Detroit from five hours, 15 minutes to under four hours.

Train stations along the Wolverine and related rail corridors have been undergoing improvements over the course of the last several years. In Port Huron, Amtrak has begun preliminary discussions with MDOT, the City of Port Huron and the Canadian National Railway regarding construction of a new station. Amtrak has also been in consultation with the City of Ann Arbor on a planned relocation of the station to a new intermodal station or rehabilitation of the current one. The City of Ann Arbor and MDOT received funding to complete environmental and preliminary engineering.

The opening of a relocated and newly constructed train station in Troy is expected in 2014, as well. *Source: Amtrak Fact Sheet, Fiscal Year 2013, State of Michigan.*

This close-up (left) shows the quality masonry of Baker Construction Company. Brick, decorative brackets and a central core of Indiana limestone are all artfully crafted pieces of the station's new clock tower. Twenty-one precast brick arches (right) add to the character of this masonry showpiece.

Piecing Together an Amazing Intermodal Station

Dearborn's new Intermodal Passenger Rail Station is a stunning, load-bearing masonry building. Baker Construction Company used a select palette of materials furnished by the following suppliers:

- **Burnished Block and Grey Block:** Grand Blanc Cement Products, Inc. supplied 30,900 units of burnished block and 22,760 units of grey block
- **Brick:** Belden Brick Co. supplied 133,500 bricks
- **Limestone:** Evan Limestone Company supplied 5, 170 square feet of Indiana limestone; Capital Stone Works supplied the dolomitic limestone
- **Granite:** Cold Springs Granite supplied 900 square feet of Mesabi Black granite
- **Precast Brick Arches:** International Precast Solutions produced 21 precast brick arches, and Assembler, Inc. installed all of the precast arches.

Source: Baker Construction Co.

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