MUSEUM AT PRAIRIEFIRE
FEATURING
AMERICAN MUSEUM OF NATURAL HISTORY
EXHIBITIONS
McCownGordon Construction Completes Phase I of Prairiefire Mixed-Use Development

Museum at Prairiefire Gives Overland Park a Vibrant New Civic Attraction

GREAT HALL
Facetted vertical panes of tinted and dichroic glass provide a stunning backdrop for the Tyrannosaurus rex at the east end of the Museum. The skeleton is an exact replica of the fossil unearthed in the badlands of Montana in 1908 by legendary fossil hunter (and Kansas native) Barnum Brown. At left, on the north side just out of camera range, is the main entrance. The reception desk is at center. The walls on either side of the stairway at lower right are faced with fleuri-cut red Utah sandstone veneer. To the right of the stairway is the Sprint Gallery featuring the “Picturing Science” Exhibition, with images (such as microscopic hair on wasp antennae) made possible by a range of advanced imaging techniques. The sculpted bridge at upper right has a glass railing system that provides excellent views of the displays below. To the right of the bridge are dividable classrooms (including the McCownGordon Classroom) and, at the end of the hallway (to the south), Administrative Offices. Partially visible at the top of the photo is one of two Pterosaur fossil replicas which soar above the Great Hall. One of them, the Pteranodon, is a Kansas State fossil.

McCownGordon Construction served as Construction Manager for Phase I of the Prairiefire Development, which includes the 41,000 square foot Museum at Prairiefire. Located at 5801 West 135th Street in Overland Park, Kansas, the Museum is an affiliate of and the only permanent space outside New York City dedicated to exhibitions from the American Museum of Natural History (AMNH). VernerJohnson, Inc. of Boston was the Architect for the new Museum. RMTA was the Architect of Record for Phase I of the development.

PROJECT TEAM
The McCownGordon team included Eric Turner, Project Executive; Arlen Kleinsorge, Senior Project Manager, and Michael Reardon, Senior Project Manager. Eric and Arlen led the project team for the Phase I sitework and infrastructure; the three buildings on the west; and, on the east, the parking garage, shell building and tenant finish for Cinetopia, and three additional shell buildings for restaurants and retail. Michael Reardon led the construction team on the construction of the Museum.

Jonathan Karfen, AIA, VernerJohnson, Inc., was the Project Architect for the Museum and was responsible for the design from concept to documentation and through construction.

Merrill Companies, LLC is the Owner and Developer of Prairiefire, which encompasses a total of approximately 60 acres. The Museum was built as a 501(c)(3) charitable institution, the Museum of Prairiefire Foundation.

The Prairiefire Development extends from Nall west to Lamar and from 135th Street south to 137th Street. Phase I lies on the east and west sides of Phase II, which is in the planning stages. McCownGordon used the Phase II area during construction for their trailer complex and as a laydown area for temporary storage of equipment and supplies.

Merrill Companies placed the Prairiefire (continued on next page)
Develop site under contract in 2006, but when the Great Recession hit, the project was put on hold. During the delay, Fred Merrill, President of Merrill Companies, learned that the AMNH wanted to expand its presence. In 2008, he reached an agreement allowing Prairiefire to host exhibitions from the AMNH. The agreement facilitated approval of $81 million in Kansas sales tax revenue (STAR) bonds from the Kansas Department of Commerce.

Phase I was separated into two contracts, with a base guaranteed maximum price (GMP) of $40.7 for the main development and a $17.1 million GMP for the Museum. The GMPs were signed in October 2012.

Groundbreaking on Phase I (including the Museum) was held on January 10, 2013. The project reached a peak of 275-300 workers between February 15 and April 15, 2014. McCownGordon completed Phase I on time and on budget, with a substantial completion date of May 1, 2014. The Museum’s grand opening was held on May 12, 2014.

The west portion of Phase I includes freestanding structures for REI (Recreational Equipment, Inc.) and The Fresh Market, as well as a smaller multi-tenant building to the south. Construction of these buildings was completed in September 2013.

From October 2013 to January 2014, while the Museum at Prairiefire was under construction to the east, the multi-tenant building served as temporary space for “The World’s Largest Dinosaurs.” This was the first exhibition by the AMNH to be held at Prairiefire. The Museum is scheduled to receive two exhibitions from the AMNH annually, according to Uli Sailer Das, the Museum’s Executive Director.

The parking garage is a 950-car, six-story precast structure. Its facade features a decorative mesh fabric screen depicting the prairie landscape. McCownGordon also developed the site for the building occupied by Pinstripes, a dining and entertainment venue.

Beginning in 2011, McCownGordon provided extensive preconstruction services on Phase I including programming, budgeting, and construction scheduling. During the preconstruction phase of the Museum, McCownGordon, working with VernerJohnson, implemented Building Information Modeling (BIM) to accelerate the schedule, stay on budget, meet design specifications, and detect clashes. This process continued into construction of the Museum as McCownGordon worked with the subcontractors to coordinate 3D models and find and correct errors and omissions.

“During construction we had a number of schedule coordination meetings with all the subcontractors in the room working through sequencing durations and constructibility reviews,” said Eric Turner.

The Prairiefire Development was built on a greenfield site which includes a natural wetlands area to the west and north of the Museum. McCownGordon arranged for extension of an Army Corps of Engineer’s permit so that construction could proceed. While building a temporary construction access road running east and west across the wetlands (and the stream which runs north and south), the project team discovered and removed an abandoned water well, noted Michael Reardon.

McCownGordon installed a trail and improved the wetlands habitat with aesthetic amenities such as native grasses and wildflowers. At the north entrance side of the Museum, they created a plaza area which serves as a starting point for interpretive storytelling within the wetlands area. Information and displays are provided along the perimeter of the plaza area.

Ochsner Hare & Hare was the Landscape Architect for the Museum and wetlands.

The greenfield site included limestone and other rock, especially on the east side, said Arlen Kleinsorge. Large backhoes with breakers were used to break through the rock, and a rock trencher was used to cut pathways for the underground plumbing in the garage.

Rock was excavated to a depth of around 12 feet for Cinetopia, which has theater seating below grade.

While much of the limestone was hauled offsite, some was ground up and used for temporary roads, laydown yards, and a dry stream bed in the wetlands area. Boulders recovered from the site have been staged around the Museum.

**THE MUSEUM BUILDING**

The Museum exterior was designed to evoke the tallgrass prairie, from the restorative controlled burns which occur in the spring to its gently undulating hills. The facade has a butt-glazed curtain wall system which is composed of tinted and dichroic glass, no one piece of which is the same size. From the interior, the tinted glass appears cool purple and blue.

The Museum is the first architectural structure in North America to utilize dichroic glass in its design. Dichroic glass was originally engineered by NASA during materials research, according to Museum literature. The outer glass lute is a laminated assembly with an interlayer of dichroic film. The glass mimics the colors of fire (red, yellow, orange, green and the like) depending on the weather and time of day.

The facade is partly clad in overlapping iridescent stainless steel Light Interference Color (LIC) panels. The panels are illuminated at night by color-changing LED light fixtures. The west entrance vestibule is flanked by two-sided wing.

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**We are thrilled about this iconic and beautiful facility. Our state-of-the-art exhibition gallery allows visitors to enjoy world class exhibitions from the American Museum of Natural History, right here in the KC Metro area.**

– Uli Sailer Das
Executive Director, Museum at Prairiefire

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**DISCOVERY ROOM**

The Discovery Room is a hands-on, interactive space where children can learn about paleontology, anthropology, invertebrate zoology, field biology, geology, and astronomy.

Several children are gathered around the central microscope area. In the background is a faux sycamore tree with replica insects, reptiles, mammals and birds. Just beyond the tree is the outdoor terrace.

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**Subcontractor Members of The Builders’ Association Who Worked on the Museum**

- Allied Construction Services, Inc./Color, Inc.
- C&G Group
- City Wide Maintenance Co., Inc.
- Commercial Openings, Inc.
- Combo Inc.
- Edwards McDowell, Inc.
- Faith Technologies, Inc.
- Great Plains Roofing & Sheet Metal Co., Inc.
- Jayhawk Fire Sprinkler Co., Inc.
- K&G Striping, Inc.
- Kansas City Mechanical, Inc.
- Livers Bronze Company
- Loveall Custom Sheetmetal
- Midland Steel Erection, LLC
- Midland Steel Company
- Musselman & Hall Contractors, L.L.C.
- S&W Waterproofing
- George J. Shaw Construction Co.
- Sorella Group, Inc.
- 2Point Construction Company LLC
- Thermal Components Company

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Photo: Michael Robinson
Prairiefire Development  
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The Museum has many sustainable attributes:
• To encourage reduction of personal automobile use, the Museum provides public bicycle racks and shower facilities for employees, as well as preferred parking for carpools and fuel-efficient, low-emitting vehicles;
• With the inclusion of the wetlands park, 77% of the site is dedicated to vegetated open space;
• The Museum has 60 mil PVC roofing with an SRI value of 110 over all of the low-slope roofing areas;
• A reduction of 41% water use has been achieved in the Museum building through installation of low-flow fixtures;
• A reduction of 76% water use has been achieved in landscaping through the use of native plantings, high-efficiency sprinkler heads, and automatic irrigation controls;
• Occupancy and daylight sensors reduce energy usage;
• Energy recovery wheels extract heat from exhaust air to heat incoming fresh air;
• High-efficiency glazing with low U-values reduces energy demand;
• Extensive recycling of waste construction materials was conducted;
• Building materials with a high recycled content were used extensively;
• The majority of building materials were harvested and manufactured within 500 miles of the site;
• Wood certified by the Forest Stewardship Council was used for the majority of the wood products in the building;
• Low-VOC materials were used on the building interior, including adhesives, paints, and carpet;
• To satisfy occupant comfort, individual control of lighting and thermal systems was provided for building occupants;
• Regional priority targets were met for water use reduction, inclusion of open space, and reduction of the heat island effect.  
(Source: VernerJohnson.)

The boilers are located inside the Museum building in an area that was originally (prior to redesign of the geothermal HVAC system) planned as a storage room. The cooling tower, backup generator, electrical transformer, and a small fluid cooler are located on the south side of the Museum in an equipment yard enclosed by an aluminum screen wall, which was painted to blend in with the native limestone. The dock and receiving area were designed to receive semi-trailers transporting AMNH exhibitions.

BUILDING INFORMATION MODELING

McCownGordon and its subcontractors used Building Information Modeling (BIM) extensively throughout the project. “We made a significant effort to create a complete 3D model which included all of the MEP systems, structural systems, and so on,” said Michael Reardon. “We had weekly coordination meetings with the subcontractors to review the model updates in BIM and identify clashes and other issues and get them corrected in the computer before we began to build.” BIM was also used for overhead coordination. “The ceiling detailing with its various slopes and elevations was very challenging, and building it in the model absolutely helped keep us on schedule.” The roof deck system has painted, sound-absorbing panels.

MEETING A CONSTRUCTABILITY CHALLENGE

During the spring of 2014, a Bricklayers and Allied Craftworkers (BAC) Local 15 signatory contractor collaborated with the BAC Local 15 Apprenticeship & Training Program at the Bricklayers’ Training Lab to meet the constructability challenge of installing stone on the angled bottom of the Discovery Room balcony (photo at right). Using actual rain screen system components and materials, the team built an 8’ x 8’ mock-up of the soffit and a wooden frame to hold it up off the ground so they could work underneath it. The work involved screwing the aluminum rail system onto the mock substrate and making sure the spacing for the two heights of stone was absolutely correct and flat so the stones would securely snap into place. The Bricklayers’ Training Lab is located at The Builders’ Association Education & Training Center in North Kansas City.

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and a skyline with multiple peaks and angles. “Our BIM coordinator was onsite in our trailer complex,” Michael continued. “We had great technology and could pull up the model on a huge flat screen TV. The fire protection engineer could look at the model from his offsite location in Oklahoma. We had another television in our operations trailer for our OAC [Owner Architect Contractor] coordination meetings, and two additional TVs in the superintendent’s trailer so the subcontractors could pull up drawing changes and access the most up-to-date information. “The BIM model was uploaded on our iPads® via a BIM 360 Field iPad app,” added Michael. “All of our superintendents and project managers have an iPad, so they could drive and scroll through the model literally while they were walking through and around the building.”

BIM was also used to prefabricate systems and materials offsite (a key component of LEAN construction), including the metal panels, ductwork, pipe runs, and piping assemblies for the Museum.

MEETING THE CHALLENGE

“One of the challenges we faced early on was the adverse weather and its impact on the schedule,” stated Arlen Kleinsorge. “In January 2013, as sitework got under way on the west part of the development, we experienced difficult winter weather conditions that developed into an unprecedented late winter, with snowstorms as late as May. We had hard turnover dates for the REI and Fresh Market buildings so their tenant construction teams could come in and start tenant improvements. To maintain the schedule, we had to think outside the box and identify different strategies including a ground warming system so we could lay down the sanitary pipe.”

The scheduled end date of May 1, 2014, for the east development never changed, noted Michael. “The permanent roofing material could be put down only under certain temperature constraints, so we put a temporary roof on the Museum. This allowed us to keep moving on the interior of the building or else we would never have made the schedule.” A mechanically-fastened EPDM membrane was used for the temporary roof until the weather allowed for installation of the fully-adhered PVC membrane.

Another challenge was the introduction of a new exhibition designer (Dimensional Innovations) in the fall of 2013, well into the project. “The exhibitions drive a lot of things inside the building, and we did have about a month where we could not work in certain areas of the building because we were waiting for an updated design,” related Michael. “The new design had a major impact on the electrical and low-voltage wiring, the wall systems, and the HVAC.”

McCownGordon and their subcontractors completed Phase I with no lost-time incidents, a result of their emphasis on safety training and adherence to strict safety procedures, said Eric Turner. They are a member of the Build Safe Partnership Program (BSPP), a cooperative partnership between The Builders’ Association and OSHA.

“McCownGordon was very excited to be part of the OAC team for Phase I of the Prairiefire Development and its iconic Museum,” commented Eric. “The Museum is a major new cultural attraction and a standout in terms of its architecture and design. The entire Prairiefire Development is now a popular destination not just for Overland Park but for the entire Kansas City metro.”

McCownGordon will be maintaining a presence in the area for the foreseeable future. They were selected as construction manager for the Church of the Resurrection’s new 3,500-person sanctuary and repurposing of the existing sanctuary. This project, which will encompass 130,000 square feet at an estimated cost of $93 million, is less than a mile east of the Prairiefire Development.

Subcontractor Members of The Builders’ Association Who Worked on Cinetopia

- BAM Contracting LLC
- Allied Construction Services, Inc./Color, Inc.
- Doherty Steel, Inc.
- E&K of Kansas City, Inc.
- R.F. Fisher Electric Co., LLC
- Great Plains Roofing & Sheet Metal Co., Inc.
- Kansas City Mechanical, Inc.
- FDC Contract, a John A. Marshall Company
- Jayhawk Fire Sprinkler Co., Inc.
- Musselman & Hall Contractors, L.L.C.
- K Building Specialties, Inc.
- dba Perkins Fireproofing
- Safway Services, LLC
- Sorella Group, Inc.
- Standard Sheet Metal, Inc.
- 2Point Construction Company LLC
- Trio Masonry

Subcontractor Members of The Builders’ Association Who Worked on the Parking Garage

- Allied Construction Services, Inc./Color, Inc.
- Barnes & Dodge, Inc.
- Coreslab Structures (Missouri) Inc.
- Design Supply Inc.
- Doherty Steel, Inc.
- JaBral, Inc.
- K&G Striping, Inc.
- PMC, Inc. dba KC Scaffold
- Great Plains Roofing & Sheet Metal Co., Inc.
- Lift, Inc./Omega Concrete
- FDC Contract, a John A. Marshall Company
- Midland Steel Company
- Pro Circuit Inc.
- Rodriguez Mechanical Contractors, Inc.
- George J. Shaw Construction Co.
- Standard Sheet Metal, Inc.
- 2Point Construction Company LLC
- Trio Masonry

Cinetopia is a high-end entertainment venue with three large theaters (each with 50’ screens and steep seating areas), two parlor rooms, and 15 “living rooms” with private box seating. The facade has integrally-colored, insulated precast concrete and metal panel canopies. Cinetopia’s outdoor deck overlooks the Museum to the southwest. The parking garage and retail is at far left.