

CASE STUDY

GOVERNMENT FACILITIES

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METAL BUILDING MANUFACTURERS ASSOCIATION®

Research | Leadership | Education





Nelson-Flanders Water Treatment Plant
Longmont, Colorado

Architect: Short and Brennan Architects
Builder: Black & Veatch/Western Summit Constructors

What's the Common Denominator?

What is one thing that government entities have in common when it comes to making facility choices? Whether it's a national institute, a state park management facility, a regional recycling complex, a city convention center or a community recreation center, many government agencies depend on metal building solutions. The following pages show just a few examples of how innovation and practicality merge through the cost-effective implementation of metal building systems.

What makes these options so popular? A variety of attributes play into the equations that influence metal building choices.

Custom engineering + material optimization + low impact on the environment = Sustainable solutions

Speed of delivery + cost-efficient materials + long life cycles = Long-term value

Wind, hail and fire resistance + low-combustion materials = Insurance cost reductions

Energy efficiency + low VOCs + recycled/recyclable steel = Planet-friendly

Optimized design ÷ zero material waste = Infinite recyclability

The versatility of metal buildings also makes them popular for an abundance of applications. Here are just some of the types of government facilities that are typically created using a metal building system approach:

- Airplane Hangars
- Arenas
- Civic Centers
- Educational Buildings
- Equipment Storage
- Fire Stations
- Maintenance Facilities
- Office Buildings
- Public Works Complexes
- Recreation Centers
- Recycling Plants
- Research Facilities
- Stadiums



Town of Harrisburg Fire Station 3
Harrisburg, North Carolina

Architect: Stewart-Cooper-Newell Architects, P.A.
Builder: D. R. Reynolds Company, Inc.

Bentonville Community Center

Bentonville, Arkansas

Architect: Barker Rinker Seacat Architecture (BRS)

Builder: Crossland Construction



The BRS-led design team began its research by bringing Bentonville residents together to create a “wish list” of desired building amenities and services. The city asked the architectural team to design a structure that would meet current community needs but that would also provide a focal point for a planned future 35-acre community center park. The result was an approximately 80,000-square-foot facility with a cost of \$14 million and a square foot budget of \$1.52 per square foot. The spacious metal building system is topped with a standing seam metal roof that enhances the exterior, as do the structure’s brick, stone and architectural-textured metal panels.

The Bentonville Community Center is designed to serve residents of all ages and to create a sense of place, community and inclusion. Amenities include an aquatic center with a zero-depth-entry family leisure pool and a 25-yard competitive pool. The facility is composed of two physical structures joined by one large wall. The



aquatics portion accommodates the high levels of humidity and chlorinated water required for the pool environments. The adjacent building offers a full fitness and exercise facility, a dance/aerobics studio, a gymnasium, an indoor running track, community rooms, an arts and crafts center, secure child care, a senior activity lounge and a mini-branch library. The project received a Facility of the Year award from the Arkansas Recreation and Parks Association.

Greene County Parks & Trails Building

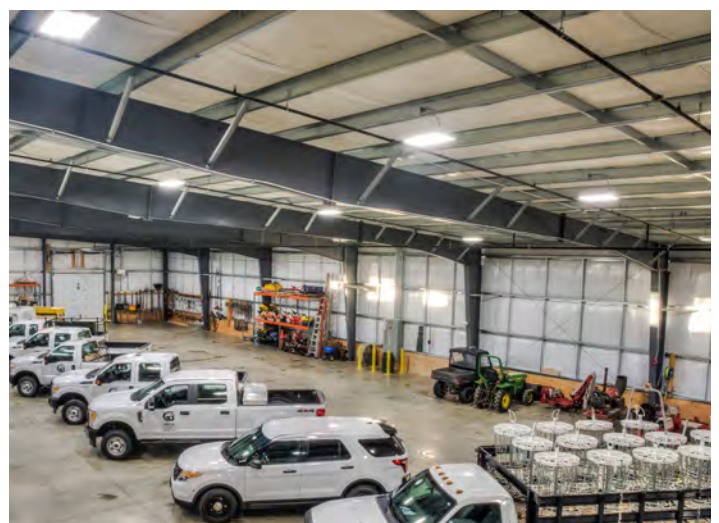
Xenia, Ohio

Architect: Sharp Conway Architects, LLC

Builder: Brentwood Builders, Inc./Foundation Steel, LLC

Greene County officials decided to develop a facility to bring four departments of its parks and trails team into one building. The 30+ employees had been located across the county. The result is a 25,000-plus-square-foot metal building that includes offices, a shop and vehicle maintenance area, rooms to host animals from the nature center and an evidence holding room for park rangers' activities.

Using the Sourcewell purchasing cooperative, the design and construction team achieved significant savings over a traditional design/bid/build process. Sourcewell is a government agency that offers North American cooperative purchasing contracts. According to Brentwood Builders, this approach provided a number of value-added savings including: process improvements that shaved three to four months off bidding, approvals and credentials; a significant reduction in staff administration time; and a reduction in the layers of reviews and approvals required with a traditional bidding process. As a result, the project team was able to add 10,000 square feet to the structure while achieving a cost savings of approximately \$1 million.



Castle Rock Fire and Rescue Department, Station #152

Castle Rock, Colorado

Architect: Short Elliott Hendrickson Inc.

Builder: Taylor Kohrs, LLC/Baker Steel Erectors



This \$4 million, 14,000-square-foot fire station provides a practical and attractive solution for the needs of the growing town of Castle Rock. The architect supplied five design alternatives, with the final design chosen by local residents. The building includes typical amenities—seven private bedrooms and three double-long fire truck bays as well as kitchen, recreational, dining, day room and fitness center spaces. Other amenities include the storage mezzanine floor and a self-contained breathing apparatus and mechanical workshop. A watchtower provides expansive views of the area to allow observation for brush fires and weather events. The facility features a state-of-the-art decontamination space with steam showers, which the architect’s website refers to as “an emerging trend in the industry.” LEED principles were prevalent in the design process to address energy efficiency and

sustainability goals. The design also called for the inclusion of Nederman magnetic exhaust removal systems. These automatically detach from the vehicles when the fire engines depart, effectively removing exhaust fumes and gases from the building to reduce staff exposure to toxic elements found in diesel fuel.



Grandview Heights Municipal Service Facility

Grandview Heights, Ohio

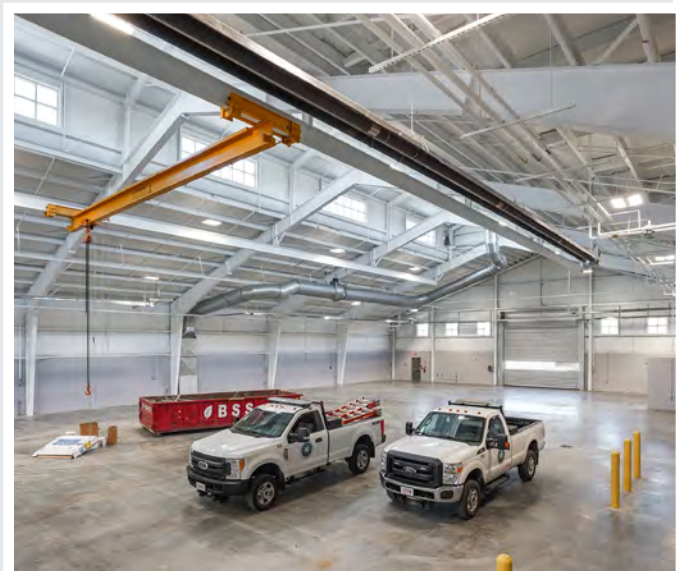
Architect: Ronald J. Gajoch & Associates, Inc.

Builder: Setterlin



The city of Grandview Heights, Ohio, recently built a new \$5.6 million complex for its Department of Building and Zoning Services. The multibuilding facility provides space for the city's vehicle service department, the city's building department and for the parks division of its Parks and Rec team. The building was created to house approximately 25 employees or one third of the city's staff members. Construction began in January 2019 and was delivered by the target completion date of November 2019 despite 55 days of weather delays. According to ThisWeek Community News, Mayor Ray DeGraw explained that nearly every architectural firm the city talked to about the project indicated the complex could not be completed before summer or fall 2020. "The reason we were able to get this building accomplished so quickly was the amazing team we had in place, both in house and with the

architect and contractor we brought in," DeGraw told the local newspaper. The office building is attached to the vehicle center and a vehicle wash bay is near an athletic field that is also located on the property.



Rehoboth Beach Volunteer Fire Company Station #2

Rehoboth Beach, Delaware



Architect: Moonlight Architecture, Inc.

Builder: EDiS Company

The 19,000-square-foot structure includes two buildings, housing an engine bay and office space. Project goals were to provide a cost-effective solution as well as aesthetic appeal. According to the contractor, “A metal building was the perfect solution as it not only saved on building cost, but also fit in extremely well with the surrounding structures (strip malls and other commercial buildings).

Additionally, the painted roof and siding along with galvanized secondary structural should fare well in the harsh marine environment. Metal was selected for its durability, cost advantage and its visual appeal in regards to blending in with the surrounding architecture.”

The project was far from straightforward. After the facility was designed, bid and about to break ground, significant design changes were

needed. EDiS and the design team delivered all of the owner’s additional needs, kept all communications towers and devices operating so that the firefighters would not miss any calls, and incorporated carbon dioxide sensors that had to simultaneously operate the exhaust fan and lift the overhead station door 6 inches to allow for proper ventilation when levels were deemed too high.

Another challenge was to maintain the project schedule during one of the worst winters Delaware has faced in decades. The design and construction professionals recommended that the owner approve the construction of a membrane roof with a temporary roof system so they could begin work in spite of harsh temperatures and snowstorms. When the winter subsided, the team built a permanent roof system over the temporary structure.

Seabrook Public Works & Animal Control Complex

Seabrook, Texas



Architect: PGAL

Builder: Crain Group



The city of Seabrook passed an \$8.55 million bond program to improve the quality of life and safety for its residents, which included approximately \$1 million for a long-awaited public works and animal control complex. The 32,000-square-foot property combines three metal buildings, aesthetically upgraded with an attractive brick facade.

The facility provides a variety of public works and parks and recreation services and expands the animal control department to include an animal shelter and adoption center. The buildings house administrative and office space as well as signage and welding shops, chemical storage and a six-bay vehicle maintenance, storage and fuel service canopy. The animal control building contains 12 kennels, medical examination and treatment rooms and intake/administrative areas. The complex has also been designed to function as a backup emergency operations center and staff storm weathering location for use during natural disasters.

National Institute of Standards and Technology (NIST) Robotics Test Facility

Gaithersburg, Maryland



Architect: Colimore Architects, Inc.

Builder: Biscayne Contractors, Inc.

This unique \$1.9 million, 7,500-square-foot facility is compact and optimally designed for a variety of scenarios. The LEED-certified building provides a flexible environment for scientists and engineers to test prototypes of autonomous robots in simulated military and civilian scenarios.

The 50-foot clear span and 24-foot-high open main floor testing area provide for a variety of obstacle courses. A drive-through central bay and perimeter bays have 10-foot sliding barn doors with glass windows in the top and 20-foot-wide bays. The website for McMullan & Associates, Inc., a firm that provides structural engineering consulting services, explains that, whether opened or closed, the overlapping doors were designed to avoid hindering traffic in the bay or access to the rooms. The facility also includes a glassed-in observation deck, a fabrication shop and administrative and conference spaces. Three 10-foot by 40-foot containers serve as environmentally controlled test chambers.

According to Colimore Architects, “The building design provides ample natural light in all occupied areas and an image suitable to the technology within [and] provides unlimited environmental control for severe heat and cold conditions.” Extensive use of skylights and other mechanical enhancements reduce energy consumption. The building exterior incorporates brick and metal wall panels to coordinate aesthetically with other NIST service buildings.



Park City Fire Department Fleet Services Building

Summit County, Utah



Architect: Archiplex Group

Builder: Ascent Construction, Inc.



The 12,000-square-foot Park City Fire Department Fleet Services Building is a multipurpose structure that includes a six-bay maintenance area for heavy and light fire department fleet vehicles plus storage, equipment, supply and office space. The facility, situated on a gentle hillside in Summit County, Utah, serves 110 square miles of the 1,800-plus-square-mile county and supports nearly 80% of the county's population. Access to and around the building was meticulously analyzed to minimize excavation and grading. Its roofs are sloped to the south, allowing for passive solar heat to encourage snow and ice melt while creating opportunity for the inclusion of renewable photovoltaic panels in the future. A metal building, according to the architect's website, provided a cost-effective solution for the intended use while providing for long-term reduced maintenance costs.

Dundee Township Fire Station

Dundee, Michigan

Architect: Kohler Architects

Builder: Krieghoff-Lenawee Company



This bold and attractive facility includes an 8,250-square-foot equipment bay for vehicle storage, a 5,400-square-foot administrative area that includes the fire chief's office, dispatch rooms, a conference room and a kitchen/pantry. A 1,280-square-foot mezzanine rises above the equipment bay. The 14,780-square-foot building also includes a decontamination area, laundry facilities, tool and scuba gear storage as well as dispatch rooms.

In planning for this new facility, the architect performed a needs analysis, developed a budget, then performed value engineering to minimize cost while maximizing aesthetics and functionality. Initially, various building types were studied for function and cost, with a metal building chosen as the most effective and practical choice. Due to the unique space needs, the structure is separated into two distinct functions consisting



of administrative and apparatus. While the administration area maintains a commercial feel, the apparatus area has an industrial vibe. The entire facility was completed for just over \$2.1 million.

Plano Recycling Facility and Learning Center

Plano, Texas

Architect: Anchor Construction

Builder: Anchor Construction



The 77,000-square-foot, state-of-the-art building serves the recycling needs of more than 510,000 residents and 2,500 commercial customers in North Texas. It houses advanced sorting equipment and technologies allowing the facility to process approximately 350 tons of recyclable material per day. The building incorporates optical sorters, next-generation anti-wrap fiber screens and other leading processing tools. An automated touch screen control system and tablet-based technologies aid the processes inherent in real-time systems management, monitoring and data acquisition. The facility includes a 5,000-square-foot interactive learning center with an observation deck.

This project achieved a LEED Silver designation from the U.S. Green Building Council. Constructed of steel and metal, its high percentage of recycled content reduced the

environmental impact and the resulting fossil fuels and carbon emissions. Despite weather delays, the project team was able to optimize construction by coordinating activities so that multiple trades could work simultaneously.



Alamosa County Justice Center

Alamosa, Colorado

Architect: Reilly Johnson Architecture

Builder: Alcon Construction and GH Phipps Construction



The county of Alamosa, Colorado, outgrew its courthouse and a space study determined that the district needed three times its existing space to accommodate current needs. The resultant 45,000-square-foot, \$14 million metal building system is a single-story facility that is actually three structures tied together as one building. The wall system is EIFS with fiberglass batt. The roof is standing seam metal over 6 inches of Polyiso insulation.

Intricate millwork at the judges' benches in the courtrooms and hearing rooms add to the facility's aesthetics. Three clerestories draw natural light into the building. The design includes a large multipurpose classroom for meetings, training and other county activities. Second-level mezzanines hold mechanical infrastructure. The building includes a state-of-the-art security system and incorporates two detention holding cells.

During groundbreaking ceremonies, Chief Judge Pattie Swift of the 12th Judicial District commented that this new justice center "meets our needs now and into the future." Project funding came from numerous sources including a 1-cent sales tax increase in addition to funding from the Colorado Department of Local Affairs and the Underfunded Courthouse Facility Commission. An Alamosa County Road and Bridge Department crew built the pad for the building.



South Adams County Water and Sanitation District

Commerce City, Colorado

Architect: Short and Brennan Architects

Builder: Moltz Construction, Inc.



This nearly 30,000-square-foot building is designed as four independent building shapes with expansion joints in between, which ties them all together yet allows them to move independently to allow for thermal expansion and contraction.

The facility has an eave height of 37 feet and sports a standing seam metal roof with insulated roof panels. Multiple exterior panel types and colors create the intended aesthetic appeal. The design team utilized BIM and 3D modeling technologies to ensure the interior clearances were met and to accommodate for specific functionality of equipment, platforms, cranes and electrical component supports.

Buildings designed as water treatment facilities have specific challenges including high moisture conditions, equipment clearances, platforms, component supports, special construction phasing and more. This facility was designed specifically

for handling water softening services. The architect designed an energy-code-compliant structure with insulated metal roof and wall panels and a specially integrated translucent wall system to allow natural light to flow into the building. The metal building package included all hot-dip galvanized components to combat the natural waterborne elements.

Construction challenges included building around platforms, pellet silos and other equipment. The team closely sequenced the erection of the building to coordinate with other trades that were installing specific water treatment products and devices. Staged deliveries of primary and secondary steel were followed by panels and trim. This allowed for ample work and storage space, rather than a cluttered and congested site. Roof sections were assembled on the ground and raised with a crane to minimize the risk of erecting steel over equipment.

Tulsa Expo Square

Tulsa, Oklahoma

Architect: GH2 Architects

Builder: Crossland Construction Company, Inc.



The 119,000-square-foot Tulsa Expo Square, located on the Tulsa State fairgrounds, features an arena with a translucent panel clerestory and accent panels that allow natural light to fill the space. Clerestory eave heights measure 57 feet, with a ridge height of over 60 feet. The building itself has a 4/12 roof pitch; 140 feet of clearspan rises over the arena. Nearly 400 slide-and-glide Priefert horse stalls will be the temporary homes of visiting livestock. Stalls are divided by precast concrete panels, into which the stalls are welded. The structure was designed with louvers, exhaust fans and makeup air fans to keep air quality high. Dimmable and programmable LED lighting

was added, and it fluctuates around the clock, according to the time of day. The arena and stall barn have nine, low-speed/high-volume fans to improve airflow and temperature. An event space on the south end provides restrooms and a kitchen.

The Tulsa Expo Square was constructed between existing buildings and a horse track, which created challenges for the construction team. Another difficulty was that electrical systems throughout the fairgrounds were installed over various decades and were undocumented. Many conflicted with the needs and location of the Tulsa Expo Square. To mitigate this challenge, the contractor worked with the property owner to relocate utilities while keeping those functional that were necessary to operate the year-round events that take place throughout the fairgrounds.



Bell County Expo Center Equine/Livestock Complex

Belton, Texas

Architect: Hahnfeld Hoffer Stanford

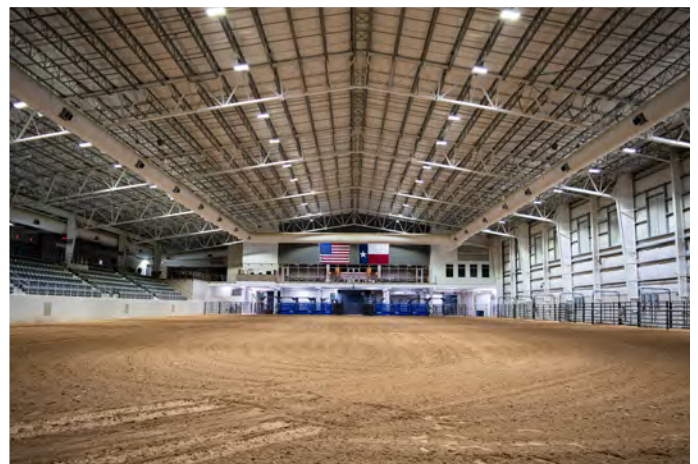
Builder: MW Builders and Sure Steel, Inc.



Bell County leaders wanted to create an indoor arena experience with a world-class feel. The result was a 174,000-square-foot equestrian/livestock facility with a 150-foot by 300-foot performance arena. Amenities include a generous concourse for vendors with an unrestricted view of the arena, a bar and grill, seating for 1,000 patrons and air conditioning. The facility supports a 110-foot by 200-foot warmup arena, 136 premium stalls, twelve 20-foot by 20-foot stock pens, private meeting rooms, a dedicated show office, premium RV parking and hookups.

Various terrain elevations complicated the design process. In addition, the building required several elevations throughout the three floor levels and at the base of the columns, which added to the engineering complexity.

The \$3.8 million structure has a clean, modern appearance and event users have expressed enthusiasm for its form and function. “It really takes us to a new level as to the kinds of events and the size of events that we can bring here,” said Bell County Expo Center Executive Director Tim Stephens to KWTX in Waco. The expansion is expected to generate \$6 million to \$9 million in area economic impact annually.



Auglaize County Neil Armstrong Airport Terminal

New Knoxville, Ohio

Architect: Baumer Construction, Inc.

Builder: Baumer Construction, Inc.



The Neil Armstrong Airport Terminal is 4,671 square feet. The truss framing system was designed by the contractor. The custom-designed roof frames were created to represent the appearance of airplane wings. The original cost estimate, prepared by the architect, came in at approximately \$1 million over budget. Working together, the design and construction teams defined hybrid systems to save money and make the project a reality.

The airport is owned by the Auglaize County Airport Authority and is included in the National Plan of Integrated Airport Systems for 2019-2023, which categorizes it as a general aviation facility. Nearby Wapakoneta is the birthplace of Neil Armstrong, aviator, astronaut and first person to walk on the moon.



Cleveland Community Fire Department

Cleveland, North Carolina

Architect: Pinnacle Architecture

Builder: D.R. Reynolds Company, Inc.



The 22,575-square-foot Cleveland Community Fire Department building holds 12 pieces of equipment and houses up to 10 firefighters. The facilities provide space to train up to 50 individuals simultaneously. The building amenities are well-appreciated, such as the stamped concrete and wood-trimmed side patio. The space provides extensive storage, a spacious galley-style kitchen and a fitness area. Brick was chosen for the facade for its earthy visual appeal. Construction was completed in just 14 months.

Central Nebraska Regional Airport ARFF Fire Station

Grand Island, Nebraska

Architect: Davis Design - Alfred Benesch & Company

Builder: Chief Construction



The aircraft rescue and firefighting (ARFF) station at Central Nebraska Regional Airport is an important facility that provides secure and speedy service for dramatic or critical events. Water table issues impacted construction, yet the 6,138-square-foot facility was completed in 190 days, which was well ahead of the projected schedule. The building was also completed under budget.

Towns County Recreation & Conference Center

Hiawassee, Georgia



Architect: Pieper O'Brien Herr Architects

Builder: RW Allen Construction

This community centerpiece is sited with the North Georgia mountains as a backdrop and engaging views of Lake Chatuge. The 35,635-square-foot, multipurpose venue includes two full-size basketball courts, a training fitness room and dance studio, and a second-story walking track. It can physically and acoustically be subdivided into four various-sized spaces to accommodate conference needs. Concessions and large storage areas are designed for events with up to 1,000 attendees and areas can be zoned separately to improve efficiency in both energy consumption and maintenance.



Los Osos Water Recycling Facility Maintenance Building

Los Osos, California

Architect: Steven D. Pults, AIA & Associates, LLP

Builder: Auburn Constructors, LLC/
Gonzales Construction



Columbus City Vehicle Storage Building

Columbus, Ohio

Architect: Abbot Studios

Builder: Setterlin

Bennett Town Hall

Bennett, Colorado

Architect: D2C Architects

Builder: Lefever Building Systems



Woods Cross Public Works Facility

Woods Cross, Utah

Architect: Think Architecture

Builder: Ascent Construction, Inc.

Elizabethtown Borough Public Works Garage
Elizabethtown, Pennsylvania

Architect: Beers + Hoffman Architecture
Builder: E.H. Beiler Industrial Services, LLC



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