

AR 1/06

Busch Stadium

St. Louis Cardinals' major league baseball stadium incorporates state-of-the-art audio/video and control systems designed to provide fans with top-flight communications inside the stadium.



Busch Stadium Hits a Home Run with World-class Belden® Brilliance® Audio and Broadcast Systems

When the owners of the St. Louis Cardinals began their plans for a new major league baseball stadium, they wanted to ensure that the broadcasting, audio and control systems would meet the same high quality and design standards as the architecturally impressive stadium itself.

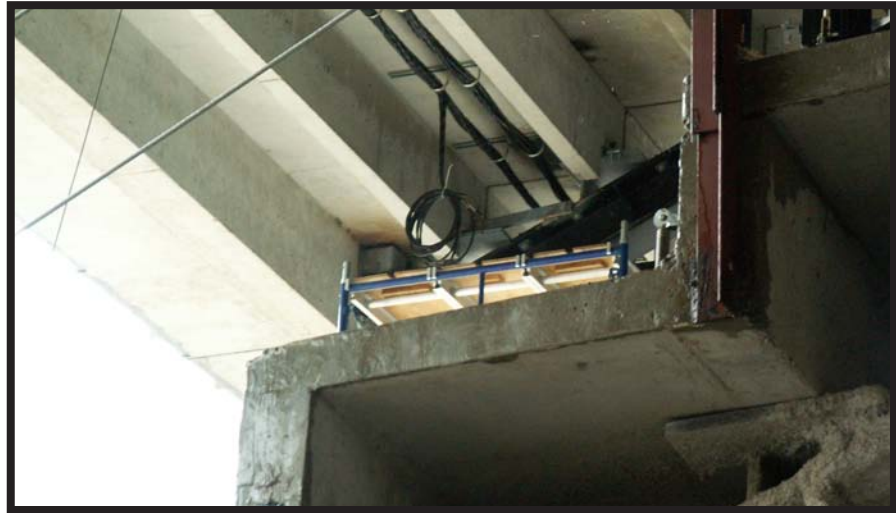
Construction began in the fall of 2004 and the new 46,000-fan capacity ballpark opened in Spring 2006, in time for the opening game of the season. Located in the heart of downtown St. Louis, Missouri, the new Busch Stadium offers dramatic views of the city's skyline and signature landmark, the soaring Gateway Arch. The Cardinals have been playing at the current Busch Stadium since it opened in 1966, and the new venue will continue the team's long association with Anheuser-Busch, one of the area's most prominent corporations.

Belden Cables: "Best Value"

Wrightson, Johnson, Haddon & Williams, Inc. (WJHW), one of the nation's premier audio, video and broadcast design and consulting firms, was responsible for designing the new Busch Stadium's highly sophisticated A/V system. SBC has been awarded the special systems contract by the general contractor, Hunt Construction. SBC had the responsibility to oversee installation and coordinate workflow between the cabling infrastructure installation teams and other construction trades. SBC's Milt Alberstadt (AIA) was project manager at the site for the installation of the special systems.

"Installation of the massive broadcast and A/V system began with installing the required conduit pathways - a job that took several months," says Alberstadt. "The construction of the ENG (electronic news gathering) room, AMP rooms and AV rooms take the most time and coordination because of the quantity of conduit and cables serving these areas."

Belden® YR46889 (P/N) Speaker Cables were used to provide optimal sound quality and integrity to the big speakers in the stadium's public address system. The cables are secured within the infrastructure by a J-hook two-hole strap.



We ultimately specified Belden Brilliance® broadcast and A/V cabling, not only because they were the best products for the job, but also because Belden offered us value-added services of custom cutting and labeling of the cables and on-site installation training.

During the planning phase, SBC worked closely with project manager Troy Bost of Telcom Services Installation (TSI) in St. Charles, Missouri - who, in turn, relied heavily upon Graybar, St. Louis for the placement of orders, the staging of materials and delivery scheduling. Steve Boschert, Comm/Data Branch Manager at Graybar, St. Louis adds that "Graybar also provided TSI with a job-site trailer to assist in the on-site storage of material." Graybar's valuable efforts left SBC and TSI free to work on the installation aspects of the job, i.e., the positioning of conduit pathways with the subcontractors responsible for the electrical, HVAC and other systems. To ensure proper placement, each subcontractor was required to submit a set of detailed drawings to indicate their specific conduit pathways prior to installation. The cabling conduit pathways were drawn in AutoCAD, which was then overlaid with other drawings to avoid any space conflicts. Once pathways were agreed upon, says Alberstadt, installation of the conduit began.

SBC turned to TSI to perform the A/V system cable specification and implementation. According to Mark Schultz, TSI's audio/video design specialist at the site, "Even though TSI is a Belden BRIC and CSV (Certified System Vendor), the design consultant recommended that we evaluate products from several



major manufacturers to be sure we were selecting the best quality and the best value for the owners. We ultimately specified Belden Brilliance broadcast and A/V cabling, not only because they were the best products for the job, but also because Belden offered us value-added services of custom cutting and labeling of the cables and on-site installation training. Local support is a tremendous advantage, especially for such a complex project."



Telcom Services Installation (TSI) of St. Charles, Missouri is the installer of the ballpark's high-tech audio/video system, which reaches into virtually every corner of the stadium premises.

Due to the massive scope of the A/V installation, which reaches into virtually every corner of the stadium premises, TSI required that the broadcast cabling be cut to specified lengths, other than standard 1000-ft put-ups. They also required the pre-labeling of cables and spools, based on broadcast box locations. Both steps save time, increase installation efficiency, and help eliminate errors caused by incorrect measuring.

Touring the A/V Infrastructure

Here is a "snapshot" of the audio/video cabling system at the new Busch Stadium, offered by Jim Faber of WJHW, the design consultant for the stadium's audio, video, broadcast, control, scoreboard and electronic display systems.

Audio Systems

The audio control room houses the mixing panel, along with program sources and patch panels. In addition, the digital signal processing system and amplifier control systems are controlled from this room. Tie lines from the field, video replay, main broadcast connection, and other areas terminate in the control room.

Field box input panels at the field provide for direct connection to the system through multiple input receptacles and tie lines. These field panels also provide for intercom connection as well as output receptacles for foldback monitor speakers.

Additional audio systems were installed in the following areas:

- *Stadium's Seating Bowl* reinforcement system is a distributed speaker style with speakers located around the fan's seating area. Power amplifiers are connected to a centralized monitoring system in the audio control room.
- *Interview/Press Dining Room* with broadcast plug-ins for interviews with the coaches and players.
- *Field Club Area* has local equipment rack controlled from a dedicated touch control panel for local and remote program sources, DVD changer, VCR and AM/FM tuner.
- *Club Lounge Areas.* Each of the three lounge areas, on different levels, has a local equipment rack and system similar to that in the Field Club Area.
- *Restrooms on each level* have speakers with programming selected in the audio control room.

- *Ticket Offices* have a paging system with exterior speakers over ticket windows to provide informational announcements and messages to patrons waiting in line.
- *Intercom Receptacles* are provided at multiple locations throughout and around the building.

Broadcast Cabling Systems

Busch Stadium's broadcast cabling system consists of cabling to support television broadcast systems, in-house and coaching videos. Each system has cables home run to its designated location, as well as cross-connect cables.

- JBTs are used by network broadcasters. All cables terminate at the Service Level broadcast truck parking area in a special cabling and equipment rack.*
- JBEs are used by local broadcasters. All cables terminate at the Service Level broadcast termination room in a special cabling and equipment rack.*
- Video Replay (Stadium) cables terminate in the Scoreboard/Organ/PA Booth.
- Broadcast radio cabling is run from the relevant JBE or JBT to the associate radio booth cross-connect located at the Press Level.

Audio/Video Control Systems

Control systems provide control of televisions and other A/V equipment and systems. Typically, a Graphical User Interface (GUI) control panel facilitates control of various systems with simple push-button activation, through software that coordinates the GUI and audio/video system controls.

* JBTs/JBEs are shared boxes between network and local broadcasters - the cabling terminates at their respective equipment racks.

In this close-up, the cables are shown going through a 4-inch EMT NEMA 1 Junction Box. The massive stadium's A/V infrastructure installation encompasses comprehensive audio systems, a broadcast cabling system, and A/V system controls, requiring hundreds of thousands of feet of Belden cabling.



With TSI's installation expertise and Belden Brilliance cables on the job, Busch Stadium's A/V system is a sure winner!

Belden® Brilliance® A/V Cables

Hundreds of thousands of feet of Brilliance cabling are required to fulfill all of the new Busch Stadium's broadcasting, and far-flung audio/video and control functions. The approximate quantity and types of Brilliance products being deployed include:

- **694A:** Precision Video Coaxial cable (RG-6/U Type); 300,000 feet; for TV broadcasting and video applications
- **8477:** Paired High-Conductivity Copper Speaker cable/Control & Instrumentation cable; 80,000 feet; Speakers
- **1816R:** Paired Analog Multi-Pair Snake cable; 100,000 feet; Audio and Speakers
- **9451:** Line Level Analog Audio cables; 100,000 feet; Audio
- **YR46889:** 8-9 AWG Speaker cables; Big Speakers; Public Address system

Opening Day 2006

When their beloved St. Louis Cardinals took the field for the first time in spring of 2006, chances were the cheering fans in the new Busch Stadium did not give a thought to the technology and products behind the state-of-the-art audio/video systems surrounding them. However, as TSI's Mark Schultz notes: "The biggest benefit realized will be by the fans - whether seated at the game, watching on television, or listening in to the radio broadcast. This is largely because of the high quality audio and video signals delivered by Belden cables.

"With any cabling installation of this magnitude, the performance quality is only as good as the products used and the skill of the contractor installing the system. With TSI's installation expertise and Belden Brilliance cables on the job, Busch Stadium's A/V system is a sure winner!"