Pedestrian Bridge Remodel
at
Tropicana Ave. and Las Vegas Blvd.
Las Vegas, Nevada

NVB18007
Project Information

Located at the world famous intersection of Las Vegas Blvd. South and Tropicana Ave., these four pedestrian bridges served millions of tourists on a yearly basis and provided the necessary grade separation between vehicular traffic and high volumes of pedestrian circulation. Constructed in 1994, these structures have served the Strip operating on a 24/7/365 basis, open to the elements and the extreme conditions of the Mojave Desert Region. After 20 years of operation these structures have surpassed their need for general maintenance and now require replacement of major components. A team was assembled to analyze / survey conditions, prepare recommendations and provide a design that would revive this intersection.

Our objective was to transform existing roadway structures into an innovative architectural project. It was crucial to complement adjacent properties with a light and airy expression and enhance the patron experience. Also essential was to update necessary safety requirements, incorporate all operational concerns, meet the demands of high volumes of pedestrian traffic and utilize materials, finishes and equipment that would withstand this exposure, abuse and address energy efficiency. Existing site constraints demanded special attention including a below grade parking facility, overhead transmission lines, flood control box culvert and infrastructure / utilities all within the construction easement. The design team and contractor worked closely with the property owners to minimize disruption to adjacent operation and facilitate their special event calendars while maintaining a safe work environment with 24hr. pedestrian and vehicular circulation during the entire multi-phased construction process.

To achieve these goals, all existing (16) escalators were replaced with upgraded 3-flat step Transit Grade units which were heavier and longer than the original equipment. The escalator pits were extended in length and a mid-span support was designed to carry the additional load. This approach maintained the existing easements, preserved the existing stair widths and most of the original structures.

All (8) hydraulic elevators were modernized with new energy efficient hydraulic equipment, hoistway and car doors, stainless steel sheet flooring and insulated Low E glazing. A prefinished metal composite cladding system replaced the existing bridge stucco finish. Safety glazing (8’-0” high) replaced the utilitarian grille containment system. The scope included the addition of (8) custodial rooms (one per touchdown) to house the necessary services and equipment. All of the selected materials were chosen with performance and ease of maintenance in mind.

Three separate project estimates were prepared to analyze the probable construction costs and establish the budget. The project amount was reconciled at 32M and delivered via a Construction Manager at Risk (CMAR) process.

This team collaborated to produce a successful project under an accelerated schedule, within the programmed budget and at a busy intersection of vehicles and pedestrians. The newly remodeled pedestrian bridges have received great reviews and are now in the care of Clark County Public Works and stand proudly to welcome all to share in the excitement of Las Vegas.
Sustainable Design Intent and Innovation

The pedestrian bridges renovation project embraced the fact that there was value in the existing structures and they could be re-fashioned to suit the current design demands. Every effort was made to conserve materials that were capable of re-use and not waste any resources. Based on the high use and harsh environment, the architect mandated that the materials, equipment and finishes secured the longest warranties and life-spans made available on the market.

A unique design feature employed a single light source to illuminate multiple surfaces. The continuous integral LED strip at the guardrail was used to supplement the deck surface lighting and also to reflect onto the stainless steel surfaces, delineating the interior and exterior arc of the bridge for an accent night display. The 1” thick laminated glass containment system met the safety requirements and offered unobstructed vistas.

Energy efficiency was increased via several methods. Modernized elevator equipment was more compact and operated cooler with submersible hydraulic pump units that required less energy and ran more efficiently. The new escalators also required less energy to operate under full load conditions and offered a sleep mode operation when not in use.

1” insulated hoistway glazing with Low E coating replaced existing 3/8” clear glass, reducing heat gain and therefore reducing the AC demand in the elevator car. All interior service and equipment rooms, both new and existing were outfitted to meet the current IECC US Energy Compliance. Existing through-wall AC units were replaced with efficient ductless split HVAC systems with independent zone controls to overcome specific equipment temperatures and promote optimum operation. LED lighting was used throughout the project, including integral LED light strips in aluminum guardrails and handrails, area down lights and pier light sconces. This effort included retrofitting existing cast-in-place deck lighting with an LED light package.

The objective was to focus on sustainability so that the equipment and finishes would perform for another 25 years.
Documentation of Specific Material Choices

The materials used were selected for their availability, performance and minimal maintenance in a harsh environment. All horizontal surfaces that collected debris were eliminated. Safety surfaces handled by pedestrians were given special consideration. Aluminum guardrails and handrails maintain lower surface temperatures and were chosen over stainless steel. Light colored deck coating provided cooler walking surfaces and offered a more reflective finish for night lighting. Light grey escalator handrail belts were installed to also reduce surface temperatures.

Marine grade type 316 stainless steel trim was applied in areas subjected to high abuse and rigorous cleaning. A maintenance free prefinished aluminum composite material serves as the cladding system that wraps the existing structure in a panelized application. 1,400 feet of 1” thick laminated safety guardrail glazing with graffiti coating was installed to maintain unobstructed views. Special profiles of 1” thick stainless steel vertical fins provided the support for glazing and guardrail systems to structure. Existing recessed curb lighting was retrofitted to receive an LED light package. Custom extruded anodized aluminum guardrail system was engineered to incorporate continuous LED pedestrian deck and stair lighting. The vitality of this major intersection, symbolizing the gateway to the Las Vegas Strip, is renewed with the design and materials on this renovation project.
PHOTO - OLD PEDESTRIAN BRIDGE AT TROPICANA AVE TO MGM PROPERTY

Photo By: Architect
PHOTO - OLD PEDESTRIAN BRIDGE AT LAS VEGAS BLVD. TO NY NY PROPERTY

Photo By: Architect
PHOTO - NEW PEDESTRIAN WALKWAY WITH GLASS GUARDRAIL AT LAS VEGAS BLVD.

Photo By: Visions In Photography Inc.
PHOTO - NEW PEDESTRIAN BRIDGE AT LAS VEGAS BLVD.

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